



**James E. Darling, Mayor**

<b>Aida Ramirez,</b>	<b>Mayor Pro-Tem, Commissioner – District 4</b>
<b>Javier Villalobos,</b>	<b>Commissioner – District 1</b>
<b>Joaquin J. Zamora,</b>	<b>Commissioner – District 2</b>
<b>Julian Omar Quintanilla,</b>	<b>Commissioner – District 3</b>
<b>Tania Ramirez,</b>	<b>Commissioner – District 4</b>
<b>John Ingram,</b>	<b>Commissioner – District 5</b>
<b>Veronica Whitacre,</b>	<b>Commissioner – District 6</b>

**Roel “Roy” Rodriguez, P.E., City Manager**

**Yvette Barrera, P.E., CFM, City Engineer**

**Gerardo Noriega, CTPM Director of Purchasing & Contracting**

**Specifications, Forms of Contract,  
Bond and Proposal For**

**MCALLEN PUBLIC SAFETY BUILDING PARKING  
GARAGE REBID  
PROJECT NO. 07-19-C33-255**

**McAllen, Texas**

**DATED: JUNE 2019**

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## BID NOTICE

**Solicitation Type and Name:** Invitation to Bid Department of McAllen Public Safety Building Parking Garage Rebid

**Solicitation Number:** 07-19-C33-255

**Summary of Work:** Work consists of reconstruct of a one story parking garage at the McAllen Police Department..

**Bid Opening:** Sealed electronic bids addressed to Mr. Roel "Roy" Rodriguez P.E. will be received on **July 25 , 2019 until 3:00 p.m., Central Standard Time (CST)** at which time they shall be unlocked in a public meeting to be held in Conference Room 2A (2<sup>nd</sup> floor) of McAllen City Hall. All electronic bid submittals must be posted on the City of McAllen's bidding portal (<https://mcallen.procurement.com>) on or before the aforementioned dated and time. **Hard copy and/or late bids shall not be accepted.**

**Pre-Submittal Conference:** City of McAllen, City Hall, 2<sup>nd</sup> floor, Conference Room 2a, 1300 Houston Ave, McAllen, Texas 78501 on **Thursday July 11, 2019 at 11:00 a.m. CST**, all prospective respondents are encouraged to be in attendance.

Plans and Specifications may be obtained by visiting our bidding portal at <https://mcallen.procurement.com>. We are asking that vendors/contractors register online. Plans & specs may be viewed electronically. Once on the portal, after you have logged in you can click on the button titled "Documents" for details.

A Bidder's Bond from a reliable surety company licensed to operate in the State of Texas or certified Cashier's Check, payable without recourse to the City of McAllen, for the amount of not less than five (5) percent (%) of the total bid shall be submitted via a sealed envelope as a guaranty that, if awarded the contract, the bidder will enter into a contract with the City of McAllen. The Bidder's Bond shall be submitted before the above-mentioned, electronic bid opening date and time. Failure to submit shall be grounds for disqualification.

**Hand-deliver Bid Bond:** 1300 Houston Avenue, Purchasing & Contracting Department  
**If using Land Courier (e.g., FedEx, UPS):** 1300 Houston Avenue, Purchasing & Contracting Department  
McAllen, Texas 78501

**Mail Bid Bond:** P.O. Box 220, McAllen, TX 78505-0220

**Bid Bond shall be delivered in a sealed envelope and clearly marked as follows:**

**BID BOND FOR PROJECT NO. 07-19-C33-255 MCALLEN PUBLIC SAFETY BUILDING PARKING GARAGE REBID**

**Potential bidders are asked to post their questions on our bidding portal under the tab labeled "Clarifications" under the relative project number.**

The City of McAllen reserves the right to refuse and reject any or all Bids and to waive any or all formalities or technicalities, or to accept the Bid considered the best and most advantageous to the City and to hold the bids for a period of ninety (**90**) days without taking action thereon.

The **City of McAllen**, in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252, 42 USC §§ 2000d to 2000d-4) and the Regulations, hereby notifies all bidders or offerors that it will affirmatively ensure that any contract entered into pursuant to this advertisement, [select disadvantaged business enterprises or airport concession disadvantaged business enterprises] will be afforded full and fair opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, or national origin in consideration for an award.

**Applicable Product Categories:** 91327 Construction Highway and Road; 91336 Construction Parking Lot and Alley; 91371 Maintenance Repair, Highway and Roads, Including removal of asphalt, concrete, bitumens

CITY OF MCALLEN – PURCHASING & CONTRACTING DEPARTMENT

## INSTRUCTIONS TO BIDDERS

Bids will be submitted electronically via the electronic portal. Bid bonds must be submitted in a sealed envelope marked in the upper left-hand corner with the name of Bidder and Title of Project.

**Hand-deliver Bid Bonds:** 1300 Houston Avenue, Purchasing & Contracting Department (3<sup>rd</sup> Floor)  
**If using Land Courier (i.e., FedEx, UPS):** 1300 Houston Avenue, Purchasing & Contracting Department (3<sup>rd</sup> Floor), McAllen,  
Texas 78501  
**Mail Bid Bonds:** P.O. Box 220, McAllen, TX 78505-0220

In case of ambiguity, or lack of clearness in stating the prices in the bids, the Owner reserves the right to consider the most advantageous construction thereof, or to reject the bid. Unreasonable (or unbalanced) prices will authorize the Owner to reject any bid.

The successful bidder must furnish a performance bond and a payment bond upon the forms which are attached hereto in the amount of 100% of the contract price from an approved surety company holding a permit from the State of Texas to act as surety (and acceptable according to the latest list of companies holding certificates of authority from the Secretary of the Treasury of the United States) or other surety or sureties acceptable to Owner within ten (10) days from date of award of contract.

On all contracts that will equal to or exceed \$50,000.00, the performance bond and the payment bond must be provided from a surety that has a rating of “A” from AM BEST, MOODY’S or STANDARD & POORS.

In the event that the total amount bid is \$50,000 or less, the successful contractor has the option to enter into a single payment contract with the City of McAllen in lieu of a Performance Bond, provided that no money shall be paid to the contractor until completion of the work by the contractor and acceptance of same by the City of McAllen.

## INSURANCE REQUIREMENTS

During execution of Contracts the successful Prime Contractor shall provide a Certificate of Insurance made to the City of McAllen, P.O. Box 220, McAllen, TX 78505-0220, (1300 Houston, McAllen, Texas 78501) and should reference the project number and project Name. The prime contractor shall ensure that any and all subcontractors and/or lower-tier subcontractors comply with the insurance requirements as depicted herein. Such coverage(s) shall be acquired and maintained, for the duration of the contract period. All certificates must be received prior to commencement of service/work. All Certificates of insurance shall be approved by the Risk Manager and/or his/her designated representative prior to the commencement of any work. The City of McAllen will accept the Acord Form 25 as the Certificate of Insurance only.

In the event the insurance coverage expires prior to the completion of this contract, a renewal certificate shall be issued thirty (30) days prior to said expiration date. The City must be notified at least thirty (30) days prior to any material change in and/or cancellation and/or non-renewals of such policies.

The term “City” shall include The City of McAllen and/or McAllen Public Utilities (MPU) and their employees, officers, officials, agent, and volunteers in respect to the contracted services. Any failure on the part of the City to request required insurance documentation shall not constitute a waiver of the insurance requirement.

The City reserves the right to make reasonable requests or revisions pertaining to the types and limits of that coverage.

## INSTRUCTIONS TO BIDDERS Continued:

### INSURANCE REQUIREMENTS Continued:

During the term of the Contract, the successful contractor/respondent/selected firm shall acquire and maintain, for the duration of the contract period the following insurances:

- A. **Comprehensive Commercial General Liability:** The Contractor/Respondent/Selected Firm shall provide minimum limits of \$250,000 each occurrence, \$500,000 annual aggregate combined single limit for bodily injury and property damage liability. This shall include premises/operations, independent contractors, products, completed operations, personal and advertising injury, and contractual liability. This insurance shall apply as primary insurance with respect to any other insurance or self-insurance programs maintained by the City and shall name the “City of McAllen” as an additional insured with a waiver of subrogation. The policy of insurance shall be written on an “occurrence” form.

Blanket “XCU” – Explosion, Collapse & Underground  
Independent Contractors  
Care, Custody and Control  
Contractual Liability

No endorsements excluding these coverages are allowed.

Additional Insured Requirement:

To the fullest extent of coverage allowed under Chapter 151 of the Texas Insurance Code, the City of McAllen and/or McAllen Public Utilities (MPU) shall be included as additional insured under the CGL policy, using ISO Additional Insured Endorsements CG20101001 and CG20371001, or endorsements providing equivalent coverage, including products completed operations

- B. **Business Automobile Liability:** The Contractor/Respondent/Selected Firm shall maintain limits of no less than \$250,000 combined single limit per occurrence for bodily injury and property damage, and \$500,000 annual aggregate. This insurance shall apply as primary insurance with respect to any other insurance or self-insurance programs maintained by the City and shall name the “City of McAllen” as an additional insured with a waiver of subrogation. The policy of insurance shall be written on an “occurrence” form.

Applicable as long as no fragile or perishable products are transported; otherwise, Cargo Insurance is required.

Additional Insured Requirement:

To the fullest extent of coverage allowed under Chapter 151 of the Texas Insurance Code, the City of McAllen and/or McAllen Public Utilities (MPU) shall be included as additional insured under the CGL policy, using ISO Additional Insured Endorsements CG20101001 and CG20371001, or endorsements providing equivalent coverage, including products completed operations.

## INSTRUCTIONS TO BIDDERS Continued:

### INSURANCE REQUIREMENTS Continued:

C. **Builder's Risk/Fire & Extended Coverage**

The Contractor shall insure the building or other work included in this contract on an all-risk (special causes of loss) policy, with an insurance company or companies acceptable to the Owner. The amount of the insurance at all times to be at least equal to the amount paid on account of work and material and plus the value of the work or materials furnished or delivered but not yet paid for by the Owner. Builder's Risk Policies shall cover loss of materials by theft, vandalism, malicious mischief or other loss whether materials are incorporated in the work or not.

The policies shall be in the names of the City and the Contractor, as their interests may appear, and certificates of insurance shall be delivered to the Owner before monthly partial payments are made. The policy shall provide for the inclusion of names of all other contractors, subcontractors and other employed on the premises as ensured and shall stipulate that the insurance companies shall have no right to subrogation against any contractors, subcontractors or other parties employed on the premises for any work building alterations, construction or erection to the described property.

D. **Workers' Compensation:** The contractor/respondent/selected firm shall provide and maintain workers' compensation insurance for all employees in the full amount required by statute and full compliance with the applicable laws of the State of Texas. Employer's Liability insurance shall be provided in amounts not less than \$500,000 per accident for bodily injury by accident; \$500,000 policy limit by disease; and \$500,000 per employee for bodily injury by disease."

In addition, a Waiver of Subrogation Endorsement shall be provided by the contractor naming the City of McAllen in said policy for Worker's Compensation Insurance. Contractor/Respondent/Selected Firm shall further ensure that all of its sub-contractors maintain appropriate levels of workers' compensation insurance.

E. ~~**Professional Services - Insurance Provisions:** Errors & Omissions (Professional Liability): \$1,000,000 Each Claim Limit \$1,000,000 Aggregate Limit. If coverage is written on a claims-made basis, the retroactive date shall be on or prior to the date of the contractual Agreement. The certificate of insurance shall state that the coverage is claims-made and include the retroactive date. The insurance shall be maintained for the duration of the contractual Agreement and for four (4) years following completion of the services provides under the contractual Agreement or for the warranty period, whichever is longer. An annual certificate of insurance submitted to the City shall evidence coverage.~~

F. **Deductible Clause:** Contractor/Respondent/Selected Firm to declare self-insured retention or deductible amounts in excess of \$25,000.

## **INSTRUCTIONS TO BIDDERS Continued:**

### **INSURANCE REQUIREMENTS Continued:**

- G. **Other Provisions:** All insurance carriers shall be rated A6 or better and be published on a current A.M. Best Rating Guide, or some other recognized equivalent rating service (e.g., Moody's, Standard & Poor's). The City may request a copy of the insurance policy according to the nature of the project. City reserves the right to accept or reject the insurance carrier. All Certificates of Insurance shall be provided on the Acord Form 25. All insurance requirements are imposed and must be complied with by any and all sub-contractors, and/or lower-tier sub-contractors. A copy of endorsements providing Additional Insured, Primary Insurance and Waiver of Subrogation wording shall be attached to the certificates of insurance.

### **REQUIREMENTS**

Bidders shall carefully examine the plans, specifications and other documents, visit the site of the work, and fully inform themselves as to all conditions and matters which can in any way affect the work or the cost thereof. Should the bidder find discrepancies in, or omissions from the plans, specifications or other documents, or should he be in doubt as to their meaning, he should at once notify the Engineer/Architect and obtain clarification by addendum prior to submitting any bid.

The City of McAllen encourages the hiring of minority and minority women subcontractors and/or suppliers whenever and wherever feasible.

General and/or Prime Contractors submitting bids and/or proposals to the City of McAllen shall be refunded their deposits upon return of plans and specs in good condition. All other recipients of plans and specs shall be reimbursed their deposit only if they return plans and specs in good condition to the Purchasing and Contracting Department no later than the 5<sup>th</sup> working day after bid opening.

The bidder is specifically advised that the bid must be accompanied by a certified cashier's check or a bid bond from a reliable surety company licensed to operate in the State of Texas totaling five percent (5%) of the greatest amount bid, as a guaranty that if awarded the bid, the successful contractor will enter into a contract with the City of McAllen. Cashier checks and/or bid bonds will be returned to all except the three lowest bidders within five (5) days after opening of bids. The remaining cashier checks and/or bid bonds will be returned promptly after the successful contractor has entered into a contract with the City of McAllen. If no award has been made within sixty (60) days after opening of bids, cashier checks and/or bid bonds will be returned accordingly.

It shall be the responsibility of the successful contractor to pick up all contract documents for execution, in a timely manner, at the Purchasing and Contracting Department after notification of award of contract by telephone, fax, e-mail or letter sent with return receipt requested. Contract documents will not be sent to contractor via regular mail. If the contractor elects to have the contract documents sent via overland carrier, an account number must be provided to the City of McAllen or the contract documents shall be sent "collect" to the contractor.

Payment Schedule - Contractor to submit to the City, Certificate for Payment on or before the 1<sup>st</sup> of the month. City to reciprocate with payment on or before the 30<sup>th</sup> of the same month.

## **INSTRUCTIONS TO BIDDERS Continued:**

### **REQUIREMENTS Continued:**

Contractor is advised that it shall be a requirement of this contract to submit the following forms, properly executed, along with their final Request for Payment: "AFFIDAVIT AND WAIVER OF LIEN-PRIME CONTRACTOR", "RELEASE AND WAIVER OF CLAIMS BY SUBCONTRACTORS AND PRODUCT VENDORS", "CONTRACTOR'S AFFIDAVIT AS TO STATUS OF LIENS". **Failure to submit these forms as required will cause a delay in payment to the contractor.**

Retainage - Contracts equaling a total amount of \$400,000 or over will bear a retainage of five (5) percent (%) on each partial disbursement. Contracts totaling less than \$400,000 will bear a retainage of ten (10) percent (%) on each partial disbursement.

Overtime - Time and one half will be paid for all hours worked in excess of forty (40) hours in one work week

### **Liquidated Damages for Failure to Enter into Contract**

The successful bidder, upon his failure or refusal to execute and deliver the contract and bonds required within ten (10) days after he has received notice of the acceptance of his bid, shall forfeit to the Owner, as liquidated damages for such failure or refusal, the security deposited with his bid.

Liquidated damages in the amount per day shown in the "Time of Completion and Liquidated Damages" section of the Instructions to Bidders will be assessed against the Contractor for each calendar day or portion thereof that: (1) the Contractor has not fully and timely completed the specific portion or part of the work to be completed by the end of the current month as provided in the detailed description of work and/or schedule previously submitted by the Contractor on the first day of that particular month, after accounting for any agreed-upon changed orders, which will entitle the Owner to withhold the liquidated damages from the payment otherwise owed to the Contractor for work completed in that particular month; (2) the Contractor has not substantially completed all work following the expiration of the number of calendar days to complete the work referenced in the "Time of Completion and Liquidated Damages" section of the Instructions to Bidders, after accounting for any agreed-upon changed orders; or (3) all items listed as incomplete and attached to the Certificate of Substantial Completion are not completed or corrected after expiration of the agreed time allotted for completion and correction, including any approved extensions of time granted. These liquidated damages are cumulative.

The sum of the liquidated damages will be deducted from any monies due the Contractor. If no money is due the Contractor, said sum may be recovered by the Owner from the Contractor or the Contractor's surety, or from both combined. These deductions are to cover liquidated damages to the Owner for losses to Owner that include, but are not limited to, additional expenses of Contract administration, overhead and other costs resulting from failure of the Contractor to complete the Work within the designated time, and are not to be considered as penalties. The Owner shall not be considered liable for any extra or additional payment to the Contractor as a bonus or premium for early completion. Any failure on the part of the Owner to request or require payment or withholding of liquidated damages in any particular month shall not constitute a waiver

## INSTRUCTIONS TO BIDDERS Continued:

### REQUIREMENTS Continued:

of Contractor's requirement to pay, or the Owner's ability to withhold from payments owed to Contractor, any liquidated damages for work performed or completed in that particular month, in any prior or subsequent month, or at the time all work has been completed.

Delays because of strikes, fire, weather, or any cause beyond the contractor's control shall be granted, but claims for extension shall be in writing within a reasonable time after the occurrence.

### Time of Completion and Liquidated Damages

Bidder must agree to commence work on or before a date to be specified in written "Notice to Proceed" by Owner and to fully complete the project within the time stated on proposal. Bidder must agree also to pay as liquidated damages, the sum of as indicated on page F-2 for each consecutive calendar day thereafter as hereinafter provided in the Special Provisions (Refers to F2 of agreement form – LD'S).

Bidders are advised that they shall be required to go online to our Bidding Portal: <https://mcallen.procureware.com>. Bidders must submit a complete bid online. The complete bid includes bid prices, **every** page of the Bid Proposal Form (Section C) filled out completely, and the bid bond. Bidders must follow the step-by-step instructions below for both Electronic Bid and Sealed Bid. If this is your first time on our portal Click on the Login button, in the upper right-hand corner, kindly use your e-mail address under the "Forgot Password" area and a temporary Password shall be e-mailed to you. Once in the system you will be prompted for a "New" password. Respondents may Register and/or update their Vendor profile. To enter your bid prices just Click on the "Solicitation" tab, Select the appropriate Project and enter your bid. (Contractors are asked to check their submittals, in an effort to avoid discrepancies). The City of McAllen reserves the right to refuse and reject any or all Bids and to waive any or all formalities or technicalities, or to accept the Bid considered the best and most advantageous to the City.

### ELECTRONIC BID INSTRUCTION

( 4) Bidders must go online to the City's Bidding Portal (<https://mcallen.procureware.com> ) to submit bid prices. Bidders are asked to read the Welcome Screen (PDF document) and register if they have not done so previously. Once on the bidding portal, follow the steps below to enter the **electronic bid**:

- I. Click on, "**Bids**" located on left-hand column.
- II. Find the applicable project and click the, "**Project Number**"
- III. Click on, "**Response**" tab.
- IV. In the, "**Questions**" tab, upload required scanned documents into the bid portal by clicking "**Browse**" for each item.
- V. Click on, "**Pricing**" tab and enter a Unit Price for each pricing item. A "**Comment**" field is available if needed.
- VI. Once both the Questions and Pricing information has been entered, the yellow "**Question Response and Pricing Response**" information messages will change from incomplete to complete. Then the "**Submit**" button will become available.



## INSTRUCTIONS TO BIDDERS Continued:

### REQUIREMENTS Continued:

- VII. Click “**Submit Bid**” button and review the terms and agreements, Popup Window that appears. If you agree to the terms and conditions, click the “**I Accept and Submit this Bid**” button.
- VIII. If you want to remove your bid, click the red, “**Withdraw Bid**” button in the “**Response**” tab.

*The City may consider non-responsive any bid not prepared and submitted in accordance with the provisions herein and may waive any formalities and/or technicalities, or reject any and all bids*

**SEALED BID BOND.** Bidders must submit their original Bid Bond or cashier’s check in a sealed envelope in accordance with the bid solicitation requirements prior to aforementioned date and time. **Late bid bonds will not be accepted.**

The Owner may consider non-responsive any bid not prepared and submitted in accordance with the provisions hereof and may waive any formalities and/or technicalities or reject any and all bids.

All bids must be regular in every respect and no interlineations, excisions or special conditions may be made or included by the bidder.

### **HOUSE BILL (H.B.) 1295 (Certificate of Interested Parties – Form 1295)**

In 2015, the Texas Legislature adopted House Bill 1295 (H.B. 1295). **For contracts entered into on or after January 1, 2016, Texas Government Code Chapter §2252.908 (H.B. 1295) provides that a Texas governmental entity or state agency may not enter into a contract that either (1) requires an action or vote by the governing body of the entity or agency or (2) has a value of at least \$1 million, unless the business entity submits a disclosure of interested parties to the governmental entity or state agency at the time the business entity submits the signed contract to the governmental entity or state agency. The Texas Ethics Commission (Commission) has adopted a certificate of interested parties form (Form 1295) and adopted rules requiring the business entity to file Form 1295 electronically with the Commission. Information from the Commission regarding the requirements, including rules and filing information, are available on the Commission’s website at the following links:**

<https://www.ethics.state.tx.us/tec/1295-Info.htm>

[https://www.ethics.state.tx.us/whatsnew/FAQ\\_Form1295.html](https://www.ethics.state.tx.us/whatsnew/FAQ_Form1295.html)

[https://www.ethics.state.tx.us/whatsnew/elf\\_info\\_form1295.htm](https://www.ethics.state.tx.us/whatsnew/elf_info_form1295.htm)

As a business entity under this law, it is your firm’s responsibility to comply with all disclosure laws including Chapter 2252. The City of McAllen as the governmental entity must ensure compliance of the same.

## **INSTRUCTIONS TO BIDDERS Continued:**

Note: You will be required to register and create an account. Once registered, you will receive an email containing a password setup link. Click on the link to set your password. After you have established an account, you will use your email address, password, and user type (Business Entity) to log in to the filing application to enter the required information on Form 1295. Print a copy of the completed form which includes a unique certification of filing number assigned by the application. An authorized agent of the business entity must sign the form affirming under the penalty of perjury that the completed form is true and correct. The completed, printed, and signed Form 1295 bearing the unique certification of filing number must be submitted at the time the signed contract is submitted to the City of McAllen. Failure to comply may result in contract revocation and award to the next compliant contractor/vendor.

### **METHOD OF AWARD**

This contract will be awarded on the basis of the lowest, responsive and responsible bidder meeting the requirements and the most advantageous to the City of McAllen

### **CHAPTER 176 OF THE TEXAS LOCAL GOVERNMENT CODE**

Effective January 1, 2006, Chapter 176 of the Texas Local Government Code requires that any vendor or person considering doing business with a local government entity disclose in the Questionnaire Form CIQ, the vendor or person's affiliation or business relationship that might cause a conflict of interest with a local government entity. By law, this questionnaire must be filed with the records administrator of the City of McAllen not later than the 7<sup>th</sup> business day after the date the person becomes aware of facts that require the statement be filed. See Section 176.006, Local Government Code. A person commits an offense if the person violates Section 176.006, Local Government Code. An offense under this section is a Class C misdemeanor.

For more information or to obtain Questionnaire CIQ go to the Texas Ethics Commission web page at [www.ethics.state.tx.us/forms/CIQ.pdf](http://www.ethics.state.tx.us/forms/CIQ.pdf).

**IF YOU HAVE ANY QUESTIONS ABOUT COMPLIANCE, PLEASE CONSULT YOUR OWN LEGAL COUNSEL. COMPLIANCE IS THE INDIVIDUAL RESPONSIBILITY OF EACH PERSON OR AGENT OF A PERSON WHO IS SUBJECT TO THE FILING REQUIREMENT. AN OFFENSE UNDER CHAPTER 176 IS A CLASS "C" MISDEMEANOR.**

### **ANTI-LOBBYING PROVISION**

During the period between bid submission date and the contract award, bidders, including their agents and representatives, shall not directly discuss or promote, verbal or written, their bid with any member of the City Commission, Bridge Board members directly or indirectly through others, seek to influence any City Council member, City staff, or City's Contractor(s) regarding any matters pertaining to this solicitation, except as herein provided. If a representative of any Bidder violates the foregoing prohibition by contacting any of the above listed parties with whom contact is not authorized, such contact may result in the Bidder being disqualified from the procurement process. Any oral communications are considered unofficial and non-binding with regard to this bid. Violation of this provision may result in the rejection of the bidder's bid, except in the course of City-sponsored inquiries, briefings, interviews, or presentations.

## **BID PROPOSAL FORM**

TO: OWNER

The undersigned, as bidders, declares that the only person or parties interested in this proposal as principals are those named herein, that this proposal is made without collusion with any other person, firm or corporation; that he has carefully examined the form of contract, Notice to Contractors, specifications and the plans thereon referred to, and has carefully examined the locations, and conditions and classes of materials of the proposed work; and agrees that he will provide all the necessary labor, machinery, tools, and apparatus, and other items incidental to construction, and will do all the work and furnish all the materials called for in the contract and specifications in the manner prescribed therein and according to the requirements of the Engineer/Architect as therein set forth.

It is understood that the following quantities of work to be done at unit prices are approximate only and are intended principally to serve as a guide in evaluating bids.

It is further agreed that the quantities of work to be done at unit price and materials to be furnished, may be increased or diminished as may be considered necessary, in the opinion of the Engineer/Architect, to complete the work fully as planned and contemplated, and that all quantities of the work, whether increased or decreased, are to be performed at the unit prices set forth below except as provided for in the specifications.

It is further agreed that lump sum prices may be increased to cover additional work ordered by the Engineer/Architect, but not shown on the plans or required by the specifications, in accordance with the provisions of the General Conditions. Similarly, they may be decreased to cover deletion of work so ordered.

The bid security accompanying this proposal shall be returned to the bidder, unless in case of the acceptance of the proposal the bidder shall fail to execute a contract and file a performance bond and payment bond within the ten (10) days after its acceptance and notification of acceptance has been transmitted to successful bidder via telephone, fax, e-mail or letter sent with return receipt requested, in which case the bid security shall become the property of the OWNER, and shall be considered as payment for damages due to delay and other inconveniences suffered by the Owner on account of such failure of the bidder. It is understood that the Owner reserves the right to reject any or all bids.

**BID PROPOSAL FORM Continued:**

A Bidder's Bond in the amount of five (5) percent (%) of the Total Bid must be attached in compliance with the INSTRUCTION TO BIDDERS. The check or Bidder's Bond is to become the property of the City of McAllen, Texas in the event the construction contract (when offered by Owner) and bonds are not executed within the time set forth.

**ELECTRONIC BID INSTRUCTIONS.** Bidders must go online to submit their bid prices by following the instructions on the Instructions to Bidders. Bidding Portal: <https://mcallen.procureware.com>. **All supporting documents such as signature pages, attachments, and/ or additional information may be upload into the portal as previously instructed via Invitation, Notice to Bidders, Instructions to Bidders, and at the Pre-Bid Conference**

**BID ITEMS DESCRIPTIONS AND ESTIMATE OF QUANTITIES APPROXIMATE ONLY:**

**Note: This table describes the various bid items and estimated quantities reflected on the official bid form maintained on the City's bidding portal. Do not use this table for submitting a bid. Refer to the Instructions to Bidders for step-by-step instructions for submitting electronic and sealed bids. (Contractors are asked to check their submittals, in an effort to avoid discrepancies).**

The owner may consider non-responsive any bid not prepared and submitted in accordance with the provisions hereof and may waive any formalities and/or technicalities or reject any and all bids.

No.	Internal Ref. No.	Type	DESCRIPTION	UOM	QTY
1	91336	BASE	BASE BID: REMOVE EXISTING ASPHALT DOWN TO DEPTH OF 1 ½", APPLY PRIME COAT, LAYDOWN AND COMPACT 1 ½" HMAC, TYPE D LIMESTONE AGGREGATE WHERE THE NEW TWO STORY PARKING GARAGE ADDITION WILL BE LOCATED. A NEW PRE-CAST CONCRETE 2 STORY PARKING GARAGE STRUCTURE IS TO BE PROVIDED AND INSTALLED AS PER PLANS AND SPECIFICATIONS. A COVERED WALKWAY/BRIDGE THAT CONNECTS TO THE EXISTING FACILITY AS DESCRIBED IN THE PLANS AND SPECIFICATIONS. THE NEW TWO STORY ADDITION WILL CONNECT TO THE EXISTING FACILITY AND INCLUDE NEW FOUNDATION, STRUCTURAL SYSTEMS, AND NEW MECHANICAL, ELECTRICAL AND PLUMBING SYSTEMS. STORED DOUBLE TEES LOCATED AT PRECONTX TO BE USED, CONTACT INFORMATION PAUL BONILLA 956-239-0175 1308 E UPAS, MCALLEN TX, 78501. STORED MATERIALS ARE TO BE INSPECTED AND USED IF IN GOOD CONDITION, ANY DAMAGED	LS	1

			MATERIALS ARE TO BE REPLACED.		
2	91336	ALT	ADD ALTERNATE #1: PROVIDE AND INSTALL NEW DOUBLE TEES AS PER CLH SHOP DRAWINGS.	LS	1

**BIDDER'S MUST FILL-IN AND SUBMIT  
WITH FORMAL BID RESPONSE.**

**BID PROPOSAL FORM Continued:**

Number of working days to complete contract \_\_\_\_\_ (not to exceed **240 Calendar** days).

The undersigned agrees, unless hereinafter stated otherwise to furnish all materials as shown and specified in the Plans and Specifications.

Bidder hereby agrees to commence work under this contract within 10 days after Notice to PROCEED is issued and complete the work within \_\_\_\_\_ working days, and City recognized holidays.

DATE: \_\_\_\_\_

Respectfully submitted,

BY: \_\_\_\_\_  
(Signature)

\_\_\_\_\_  
(Type or Print Name)

\_\_\_\_\_  
(Title)

\_\_\_\_\_  
(Legal Company Name)

\_\_\_\_\_  
(Address)

\_\_\_\_\_  
(Phone Number)

(Seal - If bidder is a Corporation)

\_\_\_\_\_  
(Fax Number)

\_\_\_\_\_  
(E-Mail)

**SUPPLEMENT NO. 1 TO THE BID PROPOSAL FORM – NON-RESIDENT BIDDER**

**NONRESIDENT BIDDER:** Means a bidder whose principal place of business is not in this state but excludes a contractor whose ultimate parent company or majority owner has its principal place of business in this state.

**Nonresident Bidder:**      Yes\_\_\_\_\_ No\_\_\_\_\_

If yes, does your state have a preference law?

Yes \_\_\_\_\_ No\_\_\_\_\_

Percent (%) of preference \_\_\_\_\_

\_\_\_\_\_  
(Date)

\_\_\_\_\_  
(Type or Print Name)

\_\_\_\_\_  
(Title)

\_\_\_\_\_  
(Company)

\_\_\_\_\_  
(Address)

\_\_\_\_\_

\_\_\_\_\_  
(Phone Number)

\_\_\_\_\_  
(Fax Number)

**SUPPLEMENT NO. 2 TO BID PROPOSAL - BOND INFORMATION**

**(Form to be Executed & Submitted with Proposal)**

On all contracts that will equal to or exceed \$100,000.00, the performance bond and the payment bond must be provided from a surety that has rating of "A" from AM BEST, MOODY'S STANDARD & POORS.

**MAIN COMPANY**

**AGENT'S NAME:**

\_\_\_\_\_  
PLEASE TYPE/PRINT NAME

**COMPANY NAME:**

\_\_\_\_\_

**ADDRESS:**

\_\_\_\_\_

\_\_\_\_\_

**MAIN OFFICE**

**TELEPHONE NO.:**

\_\_\_\_\_

**LOCAL COMPANY**

**AGENT'S NAME:**

\_\_\_\_\_  
PLEASE TYPE/PRINT NAME

**COMPANY NAME:**

\_\_\_\_\_

**ADDRESS:**

\_\_\_\_\_

\_\_\_\_\_

**LOCAL MAIN OFFICE**

**TELEPHONE NO.:**

\_\_\_\_\_

**PROJECT NO.:**

\_\_\_\_\_

**PROJECT NAME:**

\_\_\_\_\_

**CONTRACTOR:**

\_\_\_\_\_  
SIGNATURE

\_\_\_\_\_  
PLEASE TYPE/PRINT NAME

\_\_\_\_\_  
COMPANY NAME



**SUPPLEMENT NO. 3 TO BID PROPOSAL - NON-COLLUSION AFFIDAVIT**

STATE OF \_\_\_\_\_

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 proposal. Affiant further states that the respondent/bidder has not been a party to any collusion among bidders in restraint of freedom of competition by agreement to purpose at a fixed price or to refrain from proposing; or with any state official, city employee, Board Trustee, or benefit consultant as to quantity, quality, or price in the prospective contract, or any other terms of said prospective contract; or in any discussions or actions between bidders, city employee, Board Trustee, or benefit consultant concerning exchange of money or other things of value for special consideration in the letting of this contract.

\_\_\_\_\_  
Subscribed and sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_, 2019.

\_\_\_\_\_  
Notary Public  
State of \_\_\_\_\_  
My Commission Expires: \_\_\_\_\_

## **SPECIAL PROVISIONS**

**IN ALL CASES WHERE THESE SPECIAL PROVISIONS CONFLICT WITH THE TECHNICAL SPECIFICATION SECTIONS, GENERAL CONDITIONS OF THE AGREEMENT, SUPPLEMENTARY GENERAL CONDITIONS, CONTRACT CONDITIONS, OR ANY OTHER DOCUMENT CONTAINED HEREIN, THESE SPECIAL PROVISIONS SHALL GOVERN.**

### **SPECIFICATIONS WHICH APPLY**

All work under this contract shall conform to the requirements of these specifications.

In cases where the standard specifications are in conflict with either Plans and Specifications or the Special Provisions, the order of supersedence shall be Special Provisions and Specifications and Plans.

All labor, materials, equipment, supervision and other services required for this demolition will be furnished in accordance with plans and specifications as prepared by the Engineering Department personnel of the City of McAllen, Texas.

All work to be performed in close association with project engineer or designer. Before demolition proceeds, verify site requirements with engineering staff.

City of McAllen has delineated work areas. Any damaged property not otherwise mentioned within plans or specifications to be demolished, shall be the responsibility of the Contractor to correct with no additional compensation.

The City of McAllen is a franchised area for sanitation and debris removal. Materials and debris can be disposed of by means of a dump truck or pickup truck. Should a roll-off container be needed due to the amount discarded a roll-off container would need to be set up through the City of McAllen Public Works Department (956-681-4050). Outside roll-off companies are not permitted on city projects.

Where conflicts occur between the drawings and specifications, between different drawings, between different portions of this section of the specifications, or between different sections of the specifications, the more stringent requirements and the greater quantity shall apply.

### **SECURITY MEASURES**

A contractor's superintendent shall be on the job at all times that construction/demolition workers are present at the construction site.

### **TESTING**

All testing will be made by an independent laboratory designated and paid by the owner, unless otherwise stated in the specifications of the items to be tested. Any costs associated with retesting of materials shall be the responsibility of the contractor as required by the City of McAllen. Any construction materials not meeting specifications may be rejected at contractor's expense or may be accepted by the city provided a deduction is granted. The Engineering Department must be notified 24 hours in advance of materials testing.

## **SPECIAL PROVISIONS Continued:**

### **SCHEDULE AND SEQUENCE OF CONSTRUCTION**

The Contractor shall, prior to beginning work, prepare and submit a proposed schedule of work to the Owner for his approval. Work schedule to be planned in coordination with McAllen personnel and performed such that minimal interference to City of McAllen staff. Recommended construction hours are between 6:00am and 6:00 pm.

### **UTILITIES**

Contractor to provide for his own utility requirements.

### **BUILDING PERMIT AND TAXES**

A building permit will be required for the demolition of this project. A project for the City of McAllen is exempt from sales taxes. Contractor is responsible for obtaining any required building permits. Associated fees are subsidiary to the construction cost.

### **MATERIAL DELIVERIES**

Engineering staff shall explain how material deliveries are to arrive and where materials and workman tool boxes may be stored at the pre-construction meeting (as required).

### **INSPECTION OF WORK**

The Owner will provide sufficient competent personnel, working under the supervision of a qualified Engineer, for the inspection of the work while such work is in progress to ascertain that the completed work will comply in all respects with the standards and requirements set forth in the Specifications. Contractor will be responsible for payment of city inspection personnel if major work related issues are scheduled outside of the normal business hours, as is required by the City of McAllen. Notwithstanding such inspection, the Contractor will be held responsible for the acceptability of the finished work.

The Engineer and his representatives shall at all times have access to the work whenever it is in preparation or progress, and the Contractor shall provide proper facilities for such access, and for inspection.

If the Specifications, the Engineer's instructions, laws, ordinances, or any public authority require any work to be specially tested or approved, the Contractor shall give the Engineer timely notice of its readiness for inspection. Inspections by the Engineer shall be made promptly, and where practicable at the source of supply. If any work should be covered up without approval or consent of the Engineer, it must be uncovered at the Contractor's expense, unless the Engineer has unreasonably delayed inspection.

Re-examination of the work may be ordered by the Engineer, and, if so ordered, the work must be uncovered by the Contractor. If such work is found to be in accordance with the Contract Documents, the Owner shall pay the cost of re-examination and replacement. If such work is not in accordance with the Contract Documents, the Contractor shall pay such cost.

### **CHANGES IN THE WORK**

The Owner may make changes in the Drawings and Specifications of scheduling of the Contract within the general scope at any time by a written order. If such changes add to or deduct from the contractor's cost of the work, the Contract shall be adjusted accordingly. All such work shall be executed under the conditions of the original Contract except that any claim for extension of

## **SPECIAL PROVISIONS Continued:**

time caused thereby shall be adjusted at the time of ordering such change. In giving instructions, the Engineer shall have authority to make minor changes in the work not involving cost, and not inconsistent with the purposes of the work, but otherwise, except in an emergency endangering life or property, no extra work or change shall be made unless in pursuance of a written order by the Engineer, and no claim for an addition to the Contract Sum shall be valid unless the additional work was so ordered.

### **COMPETENCY OF BIDDERS**

The Bidder must be capable of performing each of the various items of work bid upon. Upon request, the successful Bidder shall submit a complete statement of his financial resources and his previous experience in similar work.

### **GUARANTEE OF WORK**

All workmanship, equipment and materials, furnished or installed by the Contractor shall be guaranteed for a period represented in the applicable specification of system in question against faulty workmanship or defective materials.

### **FINAL CLEAN UP**

Upon completion of the work and before acceptance and final payment is made, the Contractor shall clean and remove from the site of the work all brush, trash, surplus and discarded materials, temporary services, materials and debris of every kind. The Contractor shall leave the site of the work in a neat and orderly condition equal to that which originally existed. Waste materials removed from the site shall be disposed of at locations satisfactory to the project engineer and shall be considered incidental to the bid.

### **CORRECTION OF WORK BEFORE FINAL PAYMENT**

The City is responsible for Texas Department of State Health Services (TDSHS) assessment notification fees based upon the quantity of asbestos removed.

The Contractor shall promptly remove from the premises all materials and work condemned by the Owner/Designer as failing to meet Contract requirements, whether incorporated in the work or not. The Contractor shall promptly replace and re-execute his own work in accordance with the Contract and without expense to the Owner and shall bear the expense of making good all work of other contractors destroyed or damaged by such removal or replacement.

If the Contractor does not take action to remove such condemned materials and work within 10 days after written notice, the Owner may remove them and may store the material at the expense of the Contractor. If the Contractor does not pay the expense of such removal and storage within ten days' time thereafter, the Owner may, upon ten days' written notice, sell such materials at auction or at private sale and shall pay the Contractor any net proceeds thereof, after deducting all the costs and expenses that should have been borne by the Contractor.

### **CMU TEXTURE AND BLACK MASTIC/VAPOR BARRIER ON THE WALLS**

The purpose of this Scope of Work is to relate the general requirements for remediation (removal) of asbestos-containing CMU texture and black mastic/vapor barrier on the walls of Buildings B and C. The asbestos-containing CMU texture and black mastic/moisture vapor barrier materials were uncovered during an asbestos inspection conducted by Terracon

Consultants at the above referenced site. The intent of this Scope of Work is to remove and properly dispose of the asbestos-containing CMU texture and black mastic/moisture vapor barrier materials, and associated asbestos-containing debris located within the work areas. The abatement contractor must comply with EPA NESHAP Regulations during the demolition of the buildings. These activities must be performed in accordance with the current TDSHS, EPA, and OSHA guidelines.

Currently, the perimeter CMU walls of Buildings B and C are known to that have asbestos-containing CMU texture and black mastic/vapor barrier materials. The Contractor will demarcate and regulate the work area with suitably secured asbestos specific barrier tape located a minimum of 5 linear feet (5') beyond the delineated work area on all sides, wherever feasible. Only personnel involved with the remediation will be allowed within the regulated work area during remediation activities.

The Client's intent is to have the work area wetted down prior to commencement of work activities on the site. A source of water is available on the site, and the Contractor will be responsible for routing the water source to the work area. The asbestos-containing CMU texture and black mastic/vapor barrier materials and contaminated debris in the work area will be continuously wetted with sprinklers and/or spray nozzles during remediation activities.

The asbestos-containing CMU black mastic/vapor barrier materials and contaminated debris within the work area will be abated utilizing mechanical and/or manual methods to expedite the removal of the asbestos-containing materials from the work site. The asbestos contaminated materials will be removed from the specified work areas down to clean sub-grade soil, plus 1 to 2 inches (1" – 2") below the clean sub-grade soil. A visual inspection of the work area will be conducted by the TDSHS Licensed Supervisor. If visible assumed asbestos debris is observed, the contaminated soil will be removed down to clean soil and an additional 1 to 2 inches (1" – 2") inches will be removed, and a visual inspection will be conducted. If no asbestos debris is observed following the removal of the additional soil, remediation work will be considered complete.

During the removal of the asbestos contaminated materials and waste loading activities, no visible emissions (dust) will be allowed to occur. If visible emissions are observed, the Contractor will re-wet the asbestos contaminated materials being worked to eliminate visible emissions.

The asbestos contaminated materials removed from the demarcated work area will be disposed of as asbestos-containing material at an approved landfill. The Contractor will supply open-top dumpster receptacles and/or trucks to accept the asbestos contaminated materials. The dumpsters and/or trucks will be lined with 6-mil poly prior to loading of the asbestos contaminated materials. The poly will be secured in such a way as to remain intact and in place during waste loading activities. The poly lining will be installed in such a way as to allow for "burrito" wrapping and sealing over the asbestos contaminated materials loaded into the dumpsters and/or trucks. Pre-printed Generator Labels shall be affixed to each load prior to departing the work site for transport to the landfill. A waste manifest will be completed by the Contractor and signed by the Client prior to the waste leaving the work site.

## **GENERAL CONSTRUCTION AND SPECIFICATIONS**

### **INTENT OF PLANS AND SPECIFICATIONS:**

The intent of the plans and specifications is to prescribe a complete work or improvement which the Contractor undertakes to do, in full compliance with the plans, specifications, special provisions, proposal and contract. The Contractor shall do all work as provided in the plans, specifications, special provisions, proposal and contract and shall do such additional work as may be considered necessary to complete the work in a satisfactory and acceptable manner. The Contractor shall furnish all labor, tools, materials, machinery, equipment and incidentals necessary to the prosecution of the work.

### **FINAL CLEAN-UP:**

Upon the completion of the work and before acceptance and final payment will be made, the Contractor shall clean and remove from the site of the work, surplus and discarded materials, temporary structures and debris of every kind. He shall leave the site of the work in a neat and orderly condition equal to that which originally existed. Surplus and waste materials removed from the site of the work shall be disposed of at locations satisfactory to the Engineer/Architect. Grounds around any structure shall be dressed to final grade as shown on plans.

### **EXISTING STRUCTURES:**

The plans show the locations of all known surface and sub-surface structures. However, the exact location of gas mains, water mains, conduits, sewers, etc., is unknown and the Owner assumed no responsibility for failure to show any or all of these structures on the plans or to show them in their exact location. It is mutually agreed that such failure will not be considered sufficient basis for claims for additional compensation for extra work or for increasing the pay quantities in any manner whatsoever, unless the obstruction encountered is such as necessitates, or requires the building of special work, provision for which is not made in the plans and proposal, in which case the provisions in these specifications for extra work shall apply.

### **COORDINATION OF PROJECT:**

The plans, the general conditions of contract for architectural construction, these specifications, the proposal, special provisions and all supplementary documents are intended to describe a complete work and are essential parts of the contract. A requirement occurring in any of them is binding. In case of discrepancies, figured dimensions shall govern over specifications; special provisions shall govern over both general and standard specifications; and plans and quantities shown on the plans shall govern over those shown in the proposal. The Contractor shall not take advantage of any apparent error or omission in the plans and specifications and the Engineer/Architect shall be permitted to make such corrections or interpretations as may be deemed necessary for the fulfillment of the intent of the plans and specifications. In the event the Contractor discovers an apparent error or discrepancy, he shall immediately call this to the attention of the Engineer/Architect

### **COOPERATION OF CONTRACTOR:**

The Contractor shall give to the work the consistent attention necessary to facilitate the progress thereof, and he shall cooperate with the Engineer/Architect, his inspectors, and with other contractors in every way possible.

**WAGES:**

All employees directly employed on the work shall be paid the prevailing wage scale for work of a similar character in this locality. Minimum wage scale is also included in these specifications.

**MATERIALS - GENERAL:**

The materials shall be the best procurable, as required by the plans, specifications and special provisions. The Contractor shall not start delivery of materials until the Engineer/Architect has approved the source of supply. Only materials conforming to these specifications shall be used in the work and such materials shall be used only after approval has been given by the Engineer/Architect and only so long as the quality of said materials remains equal to the requirements of the specifications. The Contractor shall furnish approved materials from other sources, if for any reason the product from any source at any time before commencement or during the prosecution of the work proves unacceptable. After approval, any material which has become mixed with or coated with dirt or any other foreign substances during its delivery and handling will not be permitted to be used in the work.

**MATERIAL STORAGE:**

Any and all materials, such as cement, lime, mill work, or other materials or equipment subject to deterioration by exposure to weather or other factors, shall be stored in such a manner to protect them from deterioration or damage preceding the time they become a permanent part of final structures.

**“OR EQUAL” CLAUSE:**

Whenever a material, article or piece of equipment is identified on the plans or in the specifications by reference to manufacturers' or vendors' names, trade names, catalogue numbers, etc., it is intended merely to establish a standard; and, any material, article or equipment of other manufacturers and vendors which will perform adequately the duties, imposed by the general design will be considered equally acceptable provided the material, article or equipment so proposed is, in the opinion of the Architect, of equal substance and function. It shall not be purchased or installed by the Contractor without the written approval of the Architect/Engineer and/or Owner's Representative.

**CONSTRUCTION JOINTS:**

Construction joints are to be kept to a minimum number, but when necessary they shall be designated in the plans or upon the approval of the Engineer/Architect. When pouring is stopped, dowels and 6-inch dumbbell Serviced polyvinyl plastic waterstops are to be inserted. Construction joints in walls shall be horizontal, unless otherwise allowed by the Engineer/Architect

**WALL AND FLOOR OPENINGS:**

Openings may be left in walls and floors while forms are being built, so that piping or wall sleeves may later be inserted in the openings when piping is put in place. Provision shall be made in these openings for concreting the piping and thimbles securely in place so that water tight joints will be secured.

All wall and floor openings are to be closed by general Contractor regardless of whether piping or fittings are furnished or installed by others.

**PAINTING:**

All exposed metal surfaces of every nature, such as pumps, piping, general equipment, window frames, valves, fittings, gratings, etc., shall receive one rust inhibitive primer coat followed by two coats of machinery enamel. Colors for enamel finish coats to be selected by Owner or Engineer/Architect.

All wood surfaces are to receive one primer coat and two coats of first grade outside oil paint. Colors to be selected by Owner or Engineer/Architect.

Any specific structure, or portions of structure, which provides for occupancy or use by operations, or houses general equipment or supplies; whether structure is masonry or concrete; shall be painted inside and outside as directed by Engineer/Architect. An alkali resisting primer coat shall be first applied followed by two coats of first class oil paint especially prepared for concrete or masonry surfaces. Any questions regarding foregoing shall be clarified to his satisfaction by bidding Contractor before submitting a bid on project. Colors to be selected by Owner or Engineer/Architect.

**HARDWARE:**

All hardware must be strictly standard first grade, Contractor's choice, and approved by Engineer/Architect.

**TELEPHONE CABLES:**

Contractor shall notify Telephone Co. 24 hours in advance of work in the vicinity of buried telephone cables. No work shall be performed in vicinity of cable except in presence of telephone company representatives. The Contractor shall be responsible for reducing, mitigating, eliminating or limiting any delays or damages caused, in whole or in part, by the telephone company, including, but not limited to, delays or damages caused by a lack of access to the lands upon which the work under the Contract is to be done. The parties agree that the Owner is not liable for any delays or damages caused, in whole or in part, by the telephone company.

**GAS LINES:**

Contractor shall notify Gas Co. 24 hours in advance of work in the vicinity of gas distribution lines and the proper transmission company in the case of transmission gas lines. The Contractor shall be responsible for reducing, mitigating, eliminating or limiting any delays or damages caused, in whole or in part, by the gas company, including, but not limited to, delays or damages caused by a lack of access to the lands upon which the work under the Contract is to be done. The parties agree that the Owner is not liable for any delays or damages caused, in whole or in part, by the gas company.

**ELECTRICAL:**

Contractor shall notify Power Company (AEP) 24 hours in advance of work in the vicinity of power distribution lines, for the necessity of securing power within the construction site, or for the any activity which will require coordination with the Power Company. The Contractor shall be responsible for reducing, mitigating, eliminating or limiting any delays or damages caused, in whole or in part, by AEP or those acting on its behalf, including, but not limited to, delays or damages caused by a lack of access to the lands upon which the work under the Contract is to be done. The parties agree that the Owner is not liable for any delays or damages caused, in whole or in part, by AEP or those acting on its behalf.



**RAILROAD CROSSINGS:**

Construction methods and materials for railroad crossings shall be in strict compliance with railroad company requirements. No work shall be started on railroad crossings until properly coordinated with the road-master 48 hours prior to beginning work.

**CANAL CROSSINGS:**

Construction methods and materials for canal crossings shall be in strict compliance with water district requirements. No work shall be started on canal right-of-ways until properly coordinated with the water district.

**DISINFECTION OF NEW OR REPAIRED FACILITIES, WATERWORKS CONSTRUCTION ONLY**

When repairs are made to existing mains or when new main extensions are provided, they must be disinfected using such amounts of chlorine or chlorine compounds as to fill the repaired or new mains and appurtenances with water containing 40-60 ppm chlorine. After the water containing this amount of chlorine, which is greater than that normally present in drinking water, has been in contact with the pipe and appurtenances at least six hours, the water shall be replaced with water to be transported normally, and samples of water from the new or repaired facilities submitted to laboratories for bacteriological examination so as to be assured that the disinfection procedure was effective. Foregoing shall also apply to treatment plant basins, piping, conduits, filters, clear-wells, etc. Procedure will be under the direction and supervision of the Consulting Engineer/Architect.

**EQUAL EMPLOYMENT OPPORTUNITY**

Respondent agrees that they will not discriminate in hiring, promotion, treatment, or other terms and conditions of employment based on race, sex, national origin, age, disability, or in any way violate Title VII of 1964 Civil Rights Act and amendments, except as permitted by said laws. Except as otherwise provided under 41 CFR Part 60, all contracts that meet the definition of “federally assisted construction contract” in 41 CFR Part 60–1.3 must include the equal opportunity clause provided under 41 CFR 60–1.4(b), in accordance with Executive Order 11246, “Equal Employment Opportunity” (30 FR 12319, 12935, 3 CFR Part, 1964– 1965 Comp., p. 339), as amended by Executive Order 11375, “Amending Executive Order 11246 Relating to Equal Employment Opportunity,” and implementing regulations at 41 CFR part 60, “Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor.”

**DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION**

Executive Order 12549, Debarment and Suspension, 28 CFR Part 67, Section 67.510, Participants' responsibilities. The regulations were published as Part VII of the May 26, 1988 *Federal Register* (pages 19160-19211). Executive Orders 12549 and 12689—A contract award (see 2 CFR 180.220) must not be made to parties listed on the government-wide Excluded Parties List System in the System for Award Management (SAM), in accordance with the OMB guidelines at 2 CFR 180 that implement Executive Orders 12549 (3 CFR Part 1986 Comp., p. 189) and 12689 (3 CFR Part 1989 Comp., p. 235), “Debarment and Suspension.” The Excluded Parties List System in SAM contains the names of parties debarred, suspended, or otherwise excluded by agencies, as well as parties declared ineligible under statutory or regulatory authority other than Executive Order 12549.

## **CLEAN AIR ACT**

Clean Air Act (42 U.S.C. 7401–7671q.) and the Federal Water Pollution Control Act (33 U.S.C. 1251–1387), as amended—Contracts and sub-grants of amounts in excess of \$150,000 must contain a provision that requires the non-Federal award to agree to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401–7671q) and the Federal Water Pollution Control Act as amended (33 U.S.C. 1251–1387). Violations must be reported to the Federal awarding agency and the Regional Office of the Environmental Protection Agency (EPA).

## **BYRD ANTI-LOBBYING AMENDMENT (31 U.S.C. 1352);**

Byrd Anti-Lobbying Amendment (31 U.S.C. 1352)—Contractors that apply or bid for an award of \$100,000 or more must file the required certification. Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. 1352. Each tier must also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Such disclosures are forwarded from tier to tier up to the non-Federal award.

## **ACCESS TO RECORDS AND REPORTS – 2 CFR 200**

Access to Records and Reports – 2 CFR 200 Appendix II;

## **RIGHTS TO INVENTIONS - 2 CFR 200 APPENDIX II;**

Rights to Inventions Made Under a Contract or Agreement. If the Federal award meets the definition of “funding agreement” under 37 CFR § 401.2 (a) and the recipient or sub-recipient wishes to enter into a contract with a small business firm or nonprofit organization regarding the substitution of parties, assignment or performance of experimental, developmental, or research work under that “funding agreement,” the recipient or sub-recipient must comply with the requirements of 37 CFR Part 401, “Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements,” and any implementing regulations issued by the awarding agency.

## **ENERGY POLICY AND CONSERVATION ACT**

Mandatory standards and policies relating to energy efficiency which are contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act (42 U.S.C. 6201).

## **FOREWORD**

These Agreement Forms and the Standard General Conditions of Contract which accompany them pertain to Engineering/Architectural Construction Contracts between Private or Public Owners and Contractors. They are intended as a guide in the preparation of Contract Documents for such construction and are subject to change or modification to suit particular conditions.

Ordinarily, a complete set of Contract Documents consists of the following:

- (a) Advertisement, or Notice to Contractors
- (b) Instructions to Bidder
- (c) Form of Bid or Proposal
- (d) Contract (Agreement)
- (e) General and Special Conditions of Contract
- (f) Specifications
- (g) Drawings

The first three items are essential to all contracts that are bid competitively. However, the last four are those essential to the actual Contract. The Forms and Standards contained herein pertain to Items (d) and (e).

The Contract Forms cover the basis of payment to the Contractor:

1. Lump Sum Basis

The City of McAllen encourages the hiring of minority and minority women subcontractors and/or suppliers whenever and wherever feasible.

# FORM OF AGREEMENT FOR ENGINEERING/ARCHITECTURAL CONSTRUCTION

THIS AGREEMENT, made this \_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_, by and between  
CITY OF McALLEN, herein called "Owner", acting herein through its BOARD OF COMMISSION, and  
(Title of Authorized Official)  
\_\_\_\_\_ of \_\_\_\_\_, County of \_\_\_\_\_, and State of \_\_\_\_\_  
hereinafter called "Contractor."

It is understood ARCHITECT representing OWNER shall be MILNET  
ARCHITECTURAL SERVICES, PLLC.

WITNESSETH, that the Contractor and the Owner, for the consideration hereinafter  
named, agree as follows:

## ARTICLE I - SCOPE OF THE WORK.

The Contractor hereby agrees to furnish all of the materials and all of the equipment and  
labor necessary and to perform all of the work shown on the drawings and described in the  
specifications for the project entitled CITY OF McALLEN, MCALLEN PUBLIC SAFETY  
BUILDING PARKING GARAGE REBID; PROJECT NO. 07-19-C33-255 for the contract  
amount of \_\_\_\_\_.

(a) Drawings prepared for same by MILNET ARCHITECTURAL SERVICES, PLLC.

(b) Specifications consisting of:

1. "Standard General Specifications" issued by the CITY OF McALLEN and as  
issued in the contract documents.
2. "Special Provisions", as prepared by City of McAllen, Engineering  
Department.
3. The "General Conditions for Engineering/Architectural Construction".
4. "Contracting Requirements and Technical Specifications", as included in the  
Project Manual and prepared by the Architect.
5. Addenda  
    NO. \_\_\_\_\_ DATED: \_\_\_\_\_  
    NO. \_\_\_\_\_ DATED: \_\_\_\_\_  
    NO. \_\_\_\_\_ DATED: \_\_\_\_\_

**FORM OF AGREEMENT FOR ENGINEERING/ARCHITECTURAL CONSTRUCTION**  
**Continued:**

**ARTICLE II - TIME OF COMPLETION.**

“If the contractor fails to complete this contract in the working days specified, the time charge will be made for each working day thereafter”.

The time set forth in the proposal for the completion of the work is an essential element of the contract. For each working day in addition to the working days herein before stated as extended by the Owner, the amount per day given in the following schedule will be deducted from the money due or to become due to the Contractor not as a penalty, but as added expense for Engineering/Architectural supervision.

<b>FOR AMOUNT OF CONTRACT</b>		<b>..... COST PER DAY</b>	
\$ 5,000.00	to	\$ 25,000.00	.....\$100.00
\$ 25,001.00	to	\$ 100,000.00	.....\$200.00
\$ 100,001.00	to	\$ 500,000.00	.....\$250.00
\$ 500,001.00	and over		.....\$300.00

**ARTICLE III - THE CONTRACT SUM.**

(a) The Owner shall pay to the Contractor for the performance of the work the amounts determined for the total number of each of the following units of work completed at the unit price stated thereafter. The total number of units contained in this schedule is approximate only, and the final payment shall be made for the actual number of units that are incorporated in or made necessary by the work covered by the contract.

When and where applicable the original contract price may be increased or decreased as contemplated to complete construction as called for in the plans and specifications and in accordance with Texas Local Government Code Chapter 252 (Formerly Article 2368a V.T.C.S. Section 2a).

(b) Changes in the work made under Section 18 of the General Conditions, and not included in Article I, that cannot be classified as coming under any of the Contract units may be done at mutually agreed-upon unit price, or under the provisions of Article V “Extra Work”.

**ARTICLE IV - PROGRESS PAYMENTS**

The owner shall make payments on account of the Contract as follows:

(a) On not later than the first day of every month the Contractor shall present to the Engineer/Architect an invoice covering the total quantities under each item of work that has been completed from the start of the job to and including the last day of the preceding month, and the value of the work so completed determined in accordance with the schedule of values for such items together with such supporting evidence as may be required by the Engineer/Architect.

## **FORM OF AGREEMENT FOR ENGINEERING/ARCHITECTURAL CONSTRUCTION Continued:**

### **ARTICLE IV - PROGRESS PAYMENTS Continued:**

Measurements of units for payment shall be made in accordance with the Special Conditions of the contract.

(b) On not later than the 30<sup>th</sup> of the month, the Owner shall pay by mail to the Contractor (90%) of the amount of the invoice--less previous payments made. The (10%) retained percentage may be held by the Owner until the value of the work completed at the end of any month equals 50 percent of the total amount of the Contract after which, if the Engineer/Architect finds that satisfactory progress is being made he shall recommend that all of the remaining monthly payments be paid at a percentage of retainage less than stated above. Payments for work under, Subcontracts of the General Contractor, shall be subject to the above conditions applying to the General Contract after the work under a Subcontract has been 50 percent completed.

(c) Final payment of all moneys due on the contract shall be made within 30 days of completion and acceptance of the work.

(d) If the Owner fails to make payment as herein provided, or as provided in Article V (d), in addition to those remedies available to the Contractor under Section 23 of the General Conditions, there shall be added to each such payment daily interest at the rate of 6 percent per annum commencing on the first day after said payment is due and continuing until the payment is delivered or mailed to the Contractor.

### **ARTICLE V - EXTRA WORK**

If the Engineer/Architect orders, in writing, the performance of any work not covered by the Drawings or included in the Specifications, and for which no items in the contract are provided, and for which no unit price or lump sum basis can be agreed upon, then such extra work shall be done on a Cost-Plus-Percentage basis of payment as follows:

(a) The contractor shall be reimbursed for all costs incurred in doing the work, and shall receive an additional payment of 5% of all such cost to cover his indirect overhead costs, plus 5% of all costs, including indirect overhead, as his fee.

(b) The "Cost of the Work" shall be determined as the net sum of the following items:

1. Job Office and all necessary temporary facilities such as buildings, use of land not furnished by the Owner, access roads and utilities. The costs of these items include construction, furnishings and equipment, maintenance during the period that they are needed, demolition and removal. Salvage valued agreed on or received by the Contractor shall be credited to the Owner.
2. All materials used on the work whether for temporary or permanent construction.

**FORM OF AGREEMENT FOR ENGINEERING/ARCHITECTURAL CONSTRUCTION**  
**Continued:**

**ARTICLE V - EXTRA WORK Continued:**

3. All small tools and supplies; all fuel, lubricants, power, light, water and telephone service.
4. All plant and equipment at specified rental rates and terms of use. If the rental rates do not include an allowance for running repairs and repair parts needed for ordinary maintenance of the plant and equipment, then such items of cost are to be included in the Cost of the Work.
5. All transportation costs on equipment, material and men.
6. All labor for the project and including the salaries of superintendents, foremen, engineers, inspectors, clerks and other employees or officers, who do not devote their full time to their work.
7. All payroll charges such as Social Security payments, unemployment insurance, workmen's compensation insurance premiums, pension and retirement allowances, and social insurance premiums, vacation and sick leave allowances applicable to wages or salaries paid to employees for work done in connection with the contract.
8. All premiums on fire, public liability, property damage or other insurance coverage authorized or required by the Engineer/Architect or the Owner or regularly paid by the Contractor in the conduct of his business.
9. All sales, use, excise, privilege, business, occupation, gross receipt and all other taxes paid by the Contractor in connection with the work, but excluding state income derived from this contract and Federal Income taxes.
10. All travel or other related expense of general supervisory employees for necessary visits to the job excluding expenses of such employees incurred at the Home Office of the contractor.
11. All Subcontracts approved by the Engineer/Architect or Owner.
12. (Insert other costs proper for inclusion in this contract).
  - a.
  - b.
  - c.
13. Any other cost incurred by the Contractor as a direct result of executing the Order, subject to approval by the Engineer/Architect.

**FORM OF AGREEMENT FOR ENGINEERING/ARCHITECTURAL CONSTRUCTION  
Continued:**

**ARTICLE V - EXTRA WORK Continued:**

14. Credit to the Owner for the following items:
- a. Such discounts on invoices as may be obtained provided that the Owner advances sufficient funds to pay the invoices within the discount period.
  - b. The mutually agreed salvage value of materials, tools or equipment charged to the Owner and taken over by the Contractor for his use or sale at the completion of the work.
  - c. Any rebates, refunds, returned deposits or other allowances properly credited to the Cost of the work.

(c) The cost of the work done each day shall be submitted to the Engineer/Architect in a satisfactory form on the succeeding day, and shall be approved by him or adjusted at once.

(d) Monthly payments of all charges for the Extra Work in any one month shall be made in full on or before the 15th day of the succeeding month. Those payments shall include the full amount of fee earned on the cost of the work done.

IN WITNESS WHEREOF the parties hereto have executed this Agreement, the day and year first above written.

CITY OF McALLEN OWNER

\_\_\_\_\_  
GERARDO NORIEGA, CTPM,  
DIRECTOR PURCHASING & CONTRACTING

BY: \_\_\_\_\_  
ROEL "ROY" RODRIGUEZ, P.E.,  
CITY MANAGER

WITNESS:

\_\_\_\_\_

\_\_\_\_\_  
LEGAL COMPANY NAME  
(Contractor)

\_\_\_\_\_  
TYPE/PRINT NAME (Authorized  
Company Representative)

BY: \_\_\_\_\_  
SIGNATURE & TITLE

(CORPORATE SEAL)



**PERFORMANCE BOND**

STATUTORY PERFORMANCE BOND PURSUANT TO ARTICLE 2253  
OF THE TEXAS LOCAL GOVERNMENT CODE AS AMENDED BY ACTS OF THE 1993,  
73<sup>RD</sup> LEGISLATURE, CH. 268, § 1, EFF. SEPT. 1, 1993, AMENDED BY ACTS 1999, 76<sup>TH</sup>  
LEGISLATURE, CH. 62, SECTION 8.20, EFF. SEPT. 1, 1999

\*\*\*\*\*

KNOW ALL MEN BY THESE PRESENTS, THAT \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

(hereinafter called the Principal(s), as Principal(s), and \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

(hereinafter called the Surety(s), as Surety(s), are held and firmly bound unto \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

(hereinafter called the Oblige), in the amount of \_\_\_\_\_

\_\_\_\_\_ Dollars (\$\_\_\_\_\_)

for the payment whereof the said Principal and Surety bind themselves, and their heirs,

administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into a certain written contract with the Oblige, dated the

\_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_, for the \_\_\_\_\_

\_\_\_\_\_

which contract is hereby referred to and made a part hereof as fully and to the same extent as if  
copies at length herein.

**PERFORMANCE BOND Continued:**

NOW THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, that if the said Principal shall faithfully perform the work in accordance with plans, specifications and contract documents, during the original term of said contract and any extension thereof that may be granted by the City of McAllen with or without notice to the surety and during the life of any guaranty required under the contract, and shall also truly perform and fulfill all the undertakings, covenants, terms, conditions and agreements of any and all authorized modifications of said contract that may hereafter be made, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, HOWEVER, that this bond is executed pursuant to the provisions of Statutory Performance Bond Pursuant To Article 2253 of the Texas Local Government Code as Amended by Acts of the 1993, 73<sup>rd</sup> Legislature, Ch. 268, § 1, Eff. Sept. 1, 1993, Amended By Acts 1999, 76<sup>th</sup> Legislature, Ch. 62, Section 8.20, Eff. Sept. 1, 1999, and all liabilities on this bond shall be determined in accordance with the provisions of said Article to the same extent as if it were copied at length herein.

IN WITNESS WHEREOF, this instrument is executed in five counterparts, each one of which shall be deemed an original, this the \_\_\_\_\_ day of \_\_\_\_\_ A.D., 20\_\_\_\_.

\_\_\_\_\_  
Principal

**ATTEST:**

\_\_\_\_\_  
(Principal) Secretary  
(SEAL)

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Witness as to Principal

\_\_\_\_\_  
(Print/Type Name)

\_\_\_\_\_  
(Address)

\_\_\_\_\_  
(Address)

**ATTEST:**

\_\_\_\_\_  
Surety

\_\_\_\_\_  
(Surety) Secretary  
(SEAL)

\_\_\_\_\_  
Attorney-in-Fact (Signature)

\_\_\_\_\_  
Witness as to Surety

\_\_\_\_\_  
(Print/Type Name)

\_\_\_\_\_  
(Address)

\_\_\_\_\_  
(Address)

NOTE: Date of Bond must not be prior to date of Contract

(1) Correct name of Contractor; (2) A Corporation, a Partnership or an Individual, as case may be; (3) Correct name of Surety; (4) Correct name of Owner; (5) County or Parish and State; (6) Owner; (7) If Contractor is Partnership, all partners should execute bond.

**P A Y M E N T   B O N D**

STATUTORY PAYMENT BOND PURSUANT TO ARTICLE 2253  
OF THE TEXAS LOCAL GOVERNMENT CODE AS AMENDED BY ACTS OF THE 1993,  
73<sup>RD</sup> LEGISLATURE, CH. 268, § 1, EFF. SEPT. 1, 1993, AMENDED BY ACTS 1999, 76<sup>TH</sup>  
LEGISLATURE, CH. 62, SECTION 8.20, EFF. SEPT. 1, 1999

\*\*\*\*\*

KNOW ALL MEN BY THESE PRESENTS, that \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

(hereinafter called the Principal(s), as Principal(s), and \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

(hereinafter called the Surety(s), as Surety(s), are held and firmly bond unto \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

(hereinafter called the Oblige), in the amount of \_\_\_\_\_

\_\_\_\_\_ Dollars (\$\_\_\_\_\_)

for the payment whereof, the said Principal and Surety bind themselves, and their heirs,  
administrators, executors, successors and assigns, jointly severally, firmly by these presents.

WHEREAS, the Principal has entered into a certain written contract with the Oblige,  
dated the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_, to

**P A Y M E N T   B O N D Continued:**

which contract is hereby referred to and made a part hereof as fully and to the same extent as if copies at length herein.

NOW THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, that if the said Principal shall pay all claimants supplying labor and material to him or a subcontractor in the prosecution of the work provided for in said contract, and any extension thereof that may be granted by the City of McAllen with or without notice to the surety and during the life of any guaranty required under the contract, and shall also truly perform and fulfill all the undertakings, covenants, terms, conditions and agreements of any and all authorized modifications of said contract that may hereafter be made, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, HOWEVER, that this bond is executed pursuant to the provisions of Statutory Payment Bond Pursuant To Article 2253 of the Texas Local Government Code as Amended by Acts of the 1993, 73<sup>rd</sup> Legislature, Ch. 268, § 1, Eff. Sept. 1, 1993, Amended By Acts 1999, 76<sup>th</sup> Legislature, Ch. 62, Section 8.20, Eff. Sept. 1, 1999, and all liabilities on this bond shall be determined in accordance with the provisions of said Article to the same extent as if it were copied at length herein.

IN WITNESS WHEREOF, this instrument is executed in five counterparts, each one of which shall be deemed an original, this the \_\_\_\_\_ day of \_\_\_\_\_ A.D., 20\_\_\_\_.

\_\_\_\_\_  
Principal

**ATTEST:**

\_\_\_\_\_  
(Principal) Secretary  
(SEAL)

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Witness as to Principal

\_\_\_\_\_  
(Print/Type Name)

\_\_\_\_\_  
(Address)

\_\_\_\_\_  
(Address)

**ATTEST:**

\_\_\_\_\_  
Surety

\_\_\_\_\_  
(Surety) Secretary  
(SEAL)

\_\_\_\_\_  
Attorney-in-Fact (Signature)

\_\_\_\_\_  
Witness as to Surety

\_\_\_\_\_  
(Print/Type Name)

\_\_\_\_\_  
(Address)

\_\_\_\_\_  
(Address)

NOTE: Date of Bond must not be prior to date of Contract

(1) Correct name of Contractor; (2) A Corporation, a Partnership or an Individual, as case may be; (3) Correct name of Surety; (4) Correct name of Owner; (5) County or Parish and State; (6) Owner; (7) If Contractor is Partnership, all partners should execute bond.

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# **GENERAL CONDITIONS OF CONTRACT FOR ENGINEERING/ARCHITECTURAL CONSTRUCTION**

## **SEC. 1 - DEFINITIONS**

(a) The Contract Documents shall consist of Advertisement for Bids or Notice to Contractors, Instructions to Bidders, form of Bid or Proposal, the signed Agreement, the General and Special conditions of contract, the Drawings, and the Specifications, including all modifications thereof incorporated in any of the documents before the execution of the Agreement.

(b) The Owner, the Contractor and the Engineer/Architect are those named as such in the Agreement. They are treated throughout the contract Documents as if each were of singular number and masculine gender.

(c) Wherever in this contract the word "Engineer"/ "Architect" is used it shall be understood as referring to the Engineer/Architect of the Owner, acting personally or through assistants duly authorized in writing by the Engineer/Architect.

(d) Written notice shall be deemed to have been duly served if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or to an authorized representative of such individual, firm, or corporation, or if delivered at or sent by registered mail to the last business address known to him who gives the notice, with a copy sent to the central office of the contractor.

(e) The term "Subcontractor" shall mean anyone (other than the contractor) who furnished at the site, under an Agreement with the contractor, labor, or labor and materials, or labor and equipment, but shall not include any person who furnishes services of a personal nature.

(f) Work shall mean the furnishing of all labor, materials, equipment, and other incidentals as are required to complete the Contract for the purpose for which it was intended but was not shown on the Drawings or called for in the Specifications, or is desired by the Owner in addition to that work called for in the Drawings and Specifications.

(g) Dispute shall mean lack of agreement between any parties that have any obligations, duties, or responsibilities under the terms of the contract, Drawings, or Specifications.

## **SEC. 2 - COPIES OF DRAWINGS FURNISHED**

Unless otherwise provided in the Contract Documents, the Engineer/Architect will furnish to the Contractor, free of charge, all copies of Drawings and Specifications reasonably necessary for the execution of the work.

## **SEC. 3 - ORDER OF COMPLETION**

On the first day of every month in which any portion of the work is to be completed, and at such times thereafter as may be reasonably requested by the Owner's Representative, the contractor shall submit schedules that show the order in which the Contractor proposes to carry out the work for the duration of the project and, in particular, for the current month, with dates at

## **GENERAL CONDITIONS OF CONTRACT FOR ENGINEERING/ARCHITECTURAL CONSTRUCTION Continued:**

### **SEC. 3 - ORDER OF COMPLETION Continued:**

which the Contractor will start each portion or part of the work, and specific estimated dates of completion of each portion or part of the work, and a detailed description of the specific portion or part of the work to be completed by the end of the current month. Contractor's failure to timely complete the specific portion or part of the work to be completed by the end of the current month will entitle the Owner to withhold liquidated damages from the payment otherwise owed to the Contractor for that particular month, as further provided in the Special Provisions.

### **SEC. 4 - OWNER OF DRAWINGS**

All drawings, Specifications and copies thereof furnished by the Engineer/Architect shall not be reused on other work and, with the exception of the signed Contract, sets are to be returned to him on request, at the completion of the work.

### **SEC. 5 - FAMILIARITY WITH WORK**

The Owner shall make known to all prospective bidders, prior to the receipt of bids, all information that he may have as to subsurface conditions in the vicinity of the work, topographical maps, or other information that might assist the bidder in properly evaluating the amount and character of the work that might be required. Such information is given, however, as being the best factual information available to the Owner. The Contractor, by careful examination, shall satisfy himself as to the nature and location of the work, the character of equipment and facilities needed preliminary to and during the prosecution of the work, the general and local conditions, and all other matters which can in any way affect the work under this Contract.

### **SEC. 6 - CHANGED CONDITIONS**

Before such conditions are disturbed, the Contractor shall notify the Owner in writing of: (1) Subsurface or latent physical conditions at the site differing materially from those indicated in this Contract; or (2) previously unknown physical or other conditions at the site, of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in this Contract. The Architect/Owner's Representative shall promptly investigate the conditions, and if he finds that such conditions do so materially differ and cause an increase or decrease in the cost of, or the time required for, performance of this Contract, the Contractor shall submit a claim for an adjustment in compensation and/or time. Any claim of the Contractor for an adjustment of compensation and/or time hereunder shall not be allowed or approved, and the Contractor waives all right to additional compensation or time, unless the Contractor provides written notice to the Owner of any physical or other conditions at the site differing materially from those indicated in this Contract, or differing materially from those ordinarily encountered and generally recognized as inherent in the work of the character provided for in this Contract, within seven (7) days after the Contractor knew, or reasonably should have known, of such condition(s). If the Contractor timely provides written notice in accordance with this Section 6 and the parties fail to agree upon the adjustment to be made, the dispute shall be determined as provided in Section 39 hereof.



## **GENERAL CONDITIONS OF CONTRACT FOR ENGINEERING/ARCHITECTURAL CONSTRUCTION Continued:**

### **SEC. 7 - MATERIALS AND APPLIANCES**

Unless otherwise stipulated, the Contractor shall provide and pay for all materials, labor, water, tools, equipment, light, power, transportation and other facilities necessary for the execution and completion of the work. Unless otherwise specified, all materials incorporated in the permanent work shall be new and both workmanship and materials shall be of good quality. The Contractor shall, if required, furnish satisfactory evidence as to the kind and quality of materials. **UNLESS OTHERWISE STIPULATED, THE CITY WILL NOT PAY FOR MATERIALS STORED ON HAND.**

### **SEC. 8 - EMPLOYEES**

The Contractor shall at all times enforce strict discipline and good order among his employees, and shall seek to avoid employing on the work any unfit person or anyone not skilled in the work assigned to him. The Owner shall have the authority to request that Contractor remove any objectionable employee from project site.

Adequate sanitary facilities shall be provided by the Contractor.

### **SEC. 9 - ROYALTIES AND PATENTS**

The Contractor shall hold and save the owner and its officers, agents, servants and employees harmless from liability of any nature or kind, including cost and expenses for, or on account of, any patented or unpatented invention, process, article or appliance manufactured or used in the performance of the contract, including its use by the Owner, unless otherwise specifically stipulated in the contract documents.

License or Royalty Fee: License and/or royalty fees for the use of a process which is authorized by the Owner of the project must be reasonable, and paid to the holder of the patent, or his/her authorized licensee, directly by the Contractor. If the Contractor uses any design, device or materials covered by letters, patent or copyright, he/she shall provide for such use by suitable agreement with the Owner of such patented or copyrighted design, device or material. It is mutually agreed and understood that, without exception, the contract prices shall include all royalties or costs arising from the use of such design, device or materials, in any way involved in the work. The Contractor and/or his/her Sureties shall indemnify and hold harmless the Owner of the project from any and all claims for infringement by reason of the use of such patented or copyrighted design, device or materials or any trademark or copyright in connection with work agreed to be performed under this contract, and shall indemnify the Owner for any cost, expense or damage which it may be obliged to pay by reason of such infringement at any time during the prosecution of the work or after completion of the work.

### **SEC. 10 - SURVEYS**

Unless otherwise specified, the Owner shall furnish all land surveys and establish all base lines for locating the principal component parts of the work together with a suitable number of bench marks adjacent to the work. From the information provided by the Owner, the Contractor shall develop and make all detail surveys needed for construction such as slope stakes, batter boards, stakes for pile locations and other working points, lines and elevations.

## **GENERAL CONDITIONS OF CONTRACT FOR ENGINEERING/ARCHITECTURAL CONSTRUCTION Continued:**

The contractor shall carefully preserve bench marks, reference points and stakes and, in case of willful or careless destruction, he shall be charged with the resulting expense and shall be responsible for any mistakes that may be caused by their unnecessary loss or disturbance.

### **SEC. 11 - PERMITS, LICENSES AND REGULATIONS**

Permits and licenses of a temporary nature necessary for the prosecution and completion of the work shall be secured and paid for by the Contractor. Permits, licenses and easements of a permanent nature, that will be required after the completion of the project, will be secured and paid for by the Owner, unless otherwise specified. The Contractor shall give all notices and comply with all laws, ordinances, rules and regulations bearing on the conduct of the work as drawn and specified. If the contractor observes that the Drawings and Specifications are at variance therewith, he shall promptly notify the Engineer/Architect in writing, and any necessary changes shall be adjusted as provided in the Contract for changes in the work.

### **SEC. 12 - PROTECTION OF THE PUBLIC AND OF WORK AND PROPERTY:**

The Contractor shall provide and maintain all necessary watchmen, barricades, warning lights and signs and take all necessary precautions for the protection, and safety of the public. He shall take all reasonable precautions to protect the Owner's property from injury or loss arising in connection with this contract. He shall make good any damage, injury or loss to his work and to the property of the Owner resulting from lack of reasonable protective precautions, except such as resulting from lack of reasonable protective precautions, except such as may be due to errors in the Contract Documents, or caused by agents or employees of the Owner. He shall adequately protect adjacent private and public property, as provided by law and the Contract Documents.

In an emergency affecting the safety of life, of the work, or of adjoining property, the Contractor is, without special instructions or authorization from the Engineer/Architect, hereby permitted to act at his discretion to prevent such threatened loss or injury. He shall also so act, without appeal, if so authorized or instructed by the Engineer/Architect.

Any compensation claimed by the Contractor on account of emergency work, shall be determined by agreement, litigation or arbitration.

### **SEC. 13 - INSPECTION OF WORK**

The Architect shall observe the Work. The Owner shall provide sufficient competent personnel, working under the supervision of a qualified Engineer, for the inspection of the work while such work is in progress to ascertain that the completed work will comply in all respects with the standards and requirements set forth in the Specifications. Notwithstanding such inspection, the Contractor will be held responsible for the acceptability of the finished work.

The Engineer/Architect and his representatives shall at all times have access to the work whenever it is in preparation or progress, and the Contractor shall provide proper facilities for such access, and for inspection.

## **GENERAL CONDITIONS OF CONTRACT FOR ENGINEERING/ARCHITECTURAL CONSTRUCTION Continued:**

If the Specifications, the Engineer's/Architect's instructions, laws, ordinances, or any public authority require any work to be specially tested or approved, the Contractor shall give the Engineer/Architect timely notice of its readiness for inspection, and if the inspected is by an authority other than the Engineer of the date fixed for such inspection. Inspections by the Engineer shall be made promptly, and where practicable at the source of supply. If any work should be covered up without approval or consent of the Engineer/Architect, it must be uncovered if required by the Engineer/Architect at the Contractor's expense, unless the Engineer/Architect has unreasonably delayed inspection.

Re-examination of the work may be ordered by the Engineer/Architect, and, if so ordered, the work must be uncovered by the Contractor. If such work is found to be in accordance with the Contract Documents, the Owner shall pay the cost of re-examination and replacement. If such work is not in accordance with the Contract Documents, the Contractor shall pay such cost.

### **SEC. 14 - SUPERINTENDENCE**

The Contractor shall keep on his work, during its progress, a competent superintendent and any necessary assistants. The superintendent shall represent the Contractor, and all directions given to him shall be binding as if given to the Contractor. Important directions shall immediately be confirmed in writing to the Contractor. Other directions shall be so confirmed on written request in each case. The Contractor shall give efficient superintendence to the work, using his best skill and attention.

### **SEC. 15 - DISCREPANCIES**

If the Contractor, in the course of the work, finds any discrepancy between the Drawings and the physical conditions of the locality, or any errors or omissions in Drawings or in the layout as given by survey points and instructions, he shall immediately inform the Engineer/Architect, in writing, and the Engineer/Architect shall promptly verify the same. Any work done after such discovery, until authorized will be done at the Contractor's risk.

### **SEC. 16 - CHANGES IN THE WORK**

The Owner may make changes in the Drawings and Specifications of scheduling of the Contract within the general scope at any time by a written order. If such changes add to or deduct from the contractor's cost of the work, the Contract shall be adjusted accordingly. All such work shall be executed under the conditions of the original Contract, **except that any claim for extension of time or additional compensation caused thereby shall be adjusted only at the time of ordering such change.**

In giving instructions, the Engineer/Architect shall have authority to make minor changes in the work not involving extra cost, and not inconsistent with the purposes of the work, but otherwise, except in an emergency endangering life or property, no extra work or change shall be made unless in pursuance of a written order by the Engineer/Architect, and no claim for an addition to the Contract Sum shall be valid unless the additional work was so ordered.

## **GENERAL CONDITIONS OF CONTRACT FOR ENGINEERING/ARCHITECTURAL CONSTRUCTION Continued:**

The Contractor shall proceed with the work as changed and the value of any such extra or decreased work or change shall be determined as provided in the Agreement. The Contractor's acceptance of any written order(s) for changes in the work constitutes the Contractor's acknowledgement that all extensions, increases or deductions of time and/or compensation, and claims and disputes related to the subject of the written order(s), have been or were resolved by the written order(s). By accepting the written order(s) for changes in the work, the Contractor waives and releases any and all claims and causes of action, including, but not limited to, claims for additional compensation or extensions of time, related to or arising from any work added to, deducted from, or affected by the written order(s).

### **SEC. 17 - EXTENSION OF TIME**

Extension of time stipulated in the Contract for completion of the Work may be made only when changes in the work occur, as provided in Section 16; and when the work is suspended as provided in Section 21 and when the work of the Contractor is delayed on account of conditions which could not have been foreseen, or which were beyond the control of the Contractor, his Subcontractors or suppliers, and which were not the result of their fault or negligence. Extension of time for completion shall also be allowed for any delays in the progress of the work caused by any act (except as provided elsewhere in these General Conditions) or neglect of the Owner or of his employees or by other contractors employed by the Owner, or by any delay in the furnishing of Drawings and necessary information by the Engineer/Architect, or by any other cause which in the opinion of the Engineer/Architect entitled the Contractor to an extension of time, including but not restricted to, acts of the public enemy, acts of any government in either its sovereign or any applicable contractual capacity, acts of another contractor in the performance of a contract with the Owner, fires, floods, epidemics, quarantine restrictions, freight embargoes, usually severe weather, or labor disputes.

The Contractor shall notify the Owner's Representative within seven (7) days of any occurrence or conditions which in the Contractor's opinion entitle him to an extension of time. Such notice shall be in writing and shall be submitted in ample time to permit full investigation and evaluation of the contractor's claim. The Engineer/Architect shall acknowledge receipt of the Contractor's notice within 5 days of its receipt. The Contractor's failure to provide such notice shall constitute a waiver by the Contractor of any claim.

### **SEC. 18 - CLAIMS**

If the Contractor claims that any instructions by Drawings or other media issued after the date of the Contract involve extra cost under this Contract, he shall give the Engineer/Architect written notice thereof within 7 days after the receipt of such instructions, and in any event before proceeding to execute the work, except in emergency endangering life or property, and the procedure shall then be as provided for changes in the work. No such claim shall be valid unless so made.

## **GENERAL CONDITIONS OF CONTRACT FOR ENGINEERING/ARCHITECTURAL CONSTRUCTION Continued:**

### **SEC. 19 - DEDUCTIONS FOR UNCORRECTED WORK**

If the Engineer/Architect deems it inexpedient to correct work that has been damaged or that was not done in accordance with the Contract, an equitable deduction from the Contract price shall be made therefore, unless the Contractor elects to correct to work.

### **SEC. 20 - CORRECTION OF WORK BEFORE FINAL PAYMENT**

The Contractor shall promptly remove from the premises all materials and work condemned by the Engineer/Architect as failing to meet Contract requirements, whether incorporated in the work or not. The Contractor shall promptly replace and re-execute his own work in accordance with the Contract and without expense to the Owner and shall bear the expense of making good all work of other contractors destroyed or damaged by such removal or replacement.

If the Contractor does not take action to remove such condemned materials and work within 10 days after written notice, the Owner may remove such condemned materials and may store the material at the expense of the Contractor. If the Contractor does not pay the expense of such removal and storage within ten days' time thereafter, the Owner may, upon ten days' written notice, sell such materials at auction or private sale and shall pay to the Contractor any net proceeds thereof, after deducting all the costs and expenses that should have been borne by the Contractor.

### **SEC. 21 - SUSPENSION OF WORK**

The Owner may at any time suspend the work, or any part thereof by giving 1 days' notice to the Contractor in writing. The work shall be resumed by the Contractor within ten (10) days after the date fixed in the written notice from the Owner to the Contractor so to do. The Owner may reimburse the Contractor for expense incurred by the Contractor in connection with the work under this Contract as a result of such suspension, eligibility and amount of disbursement to be determined by the Engineer/Architect.

If the work, or any part thereof, shall be stopped by notice in writing aforesaid, and if the Owner does not give notice in writing to the Contractor to resume work at a date within 15 days of the date fixed in the written notice to suspend, then the contractor may abandon that portion of the work so suspended and he will be entitled to the estimates and payments for all work done on the portions so abandoned, if any, but Contractor is not entitled to any compensation for loss of overhead, plant expense, and anticipated profit.

### **SEC. 22 - THE OWNER'S RIGHT TO TERMINATE CONTRACT**

If the Contractor should be adjudged as bankrupt, or if he should make a general assignment for the benefit of his creditors, or if a receiver should be appointed as a result of his insolvency, or if he should be guilty of a substantial violation of the Contract, then the Owner,

## **GENERAL CONDITIONS OF CONTRACT FOR ENGINEERING/ARCHITECTURAL CONSTRUCTION Continued:**

### **SEC. 22 - THE OWNER'S RIGHT TO TERMINATE CONTRACT Continued:**

upon the certificate of the Engineer/Architect that sufficient cause exists to justify such action, may, without prejudice to any other right or remedy and after giving the Contractor and his Surety seven days' written notice terminate the employment of the Contractor and take possession of the premises and of all materials, tools, equipment and other facilities installed on the work and paid for by the Owner, and finish the work by whatever method he may deem expedient. In such case the Contractor shall not be entitled to receive any further payment until the work is finished. If the unpaid balance of the Contract price shall exceed the expense of finishing the work, including compensation for additional managerial and administrative services, such excess shall be paid to the Contractor. If such expense shall exceed such unpaid balance, the Contractor shall pay the difference to the Owner. The expense incurred by the Owner as herein provided, and the damage incurred through the Contractor's default, shall be certified by the Engineer/Architect.

### **SEC. 23 - CONTRACTOR'S RIGHT TO STOP WORK OR TERMINATE CONTRACT**

If the work should be stopped under an order of any court, or other public authority, for a period of more than three months, through no act or fault of the contractor or of anyone employed by him, or if the Engineer/Architect should fail to issue any estimate for payment within seven days after it is due, then the Contractor, may, upon seven day's written notice to the Owner's Representative, stop work or terminate this Contract and recover from the Owner payment for all work executed.

### **SEC. 24 - REMOVAL OF EQUIPMENT**

In the case of termination of this Contract before completion from any cause whatever, the Contractor, if notified to do so by the Owner, shall promptly remove any part or all of his equipment and supplies from the property of the Owner, failing which the Owner shall have the right to remove such equipment and supplies at the expense of the Contractor.

### **SEC. 25 - RESPONSIBILITY FOR WORK**

The Contractor assumes full responsibility for the work. Until its final acceptance, the Contractor shall be responsible for damage to or destruction of the work (except for any part covered by partial acceptance as set forth in Sec. 26). He agrees to make no claims against the Owner for damages to the work from any cause except negligence or willful acts of the Owner, acts of an Enemy, acts of war or as provided in Sec. 32.

Existing Structures: The Contractor shall, at his own expense immediately make permanent repairs and restore to original condition any and all utility lines, irrigation lines, pipe lines, pavement, or structures that are to remain in place and damaged by the Contractor's equipment or workmen during the performance of work under this contract, or damaged as a result of improperly executed work.

## **GENERAL CONDITIONS OF CONTRACT FOR ENGINEERING/ARCHITECTURAL CONSTRUCTION Continued:**

### **SEC. 25 - RESPONSIBILITY FOR WORK Continued:**

Traffic Areas, Driveways, Entrances: All traffic areas, driveways and entrances shall be restored to usable condition at the Contractor's expense as the work progresses. The Contractor shall make every effort to cooperate with the wishes of the individual property owners in providing access to private property along the site of the work.

Detours: The Contractor shall do such work as may be necessary to provide and maintain a detour adjacent to all road structures for public travel. The Contractor shall maintain the detours in such condition that the public can travel over same in comfort and safety, and shall at his own expense perform such work as may be required to keep said detours open to the public at all times. The Contractor shall cooperate with the Engineer/Architect in the regulation of traffic and shall so govern his work that when it becomes necessary to suspend construction for a considerable period of time, the roadways will be re-opened to public travel. Materials and equipment shall be stored and the work shall be so conducted as to obstruct public travel as little as possible, and in no case shall there be less than twenty (20) feet in width of unobstructed roadway for the use of traffic. Materials and equipment stored in or near the path of traffic shall be protected with applicable traffic control devices in compliance with the Texas MUTCD.

Traffic Control Devices: When any section of the contraction site is closed to traffic, the Contractor shall furnish and maintain at each end of the closed section and at all intersecting streets - roads - construction site within the section, standard barricades, adequate warning signs and directional signs. All lights shall be kept burning from sunset to sunrise. If at any time the barricades are not, in the opinion of the Engineer/Architect, sufficient to prevent traffic from entering the closed portions of the street-road-construction site, the Contractor shall provide and maintain watchmen at such points and for such periods of time as the Engineer/Architect may direct. When directed by the Engineer/Architect, the Contractor shall provide and maintain such standard barricades, signs, lights and flags within the closed portion of the street-road-construction site as may be necessary to protect the work and safeguard local traffic.

No direct compensation except as specifically provided in these specifications will be made to the Contractor for the work and material involved in constructing and maintaining detours and approaches; furnishing, installing and maintaining barricades, danger, warning, and necessary for the proper direction, safety, and convenience of traffic during the Contract period, as this work is to be considered subsidiary to the several items for which unit prices are requested in the proposal.

### **SEC. 26 - PARTIAL COMPLETION AND ACCEPTANCE**

If at any time prior to the issuance of the final certificate referred to in Section 39 hereinafter, any portion of the permanent construction has been satisfactorily completed, and if the Engineer/Architect determines that such portion of the permanent construction is not required for the operations of the Contractor but is needed by the Owner, the Engineer/Architect shall issue to the Contractor a certificate of partial completion, and thereupon or at any time thereafter

## **GENERAL CONDITIONS OF CONTRACT FOR ENGINEERING/ARCHITECTURAL CONSTRUCTION Continued:**

### **SEC. 26 - PARTIAL COMPLETION AND ACCEPTANCE Continued:**

the Owner may take over and use the portion of the permanent construction described in such certificate, and exclude the Contractor therefrom. The issuance of a certificate of partial completion shall not be construed to constitute an extension of the Contractor's time to complete the portion of the permanent construction to which it relates if he has failed to complete it in accordance with the terms of this contract. The issuance of such a certificate shall not operate to release the Contractor or his sureties from any obligations under this contract or the performance bond. If any prior use increases the cost of or delays the work, the Contractor shall be entitled to extra compensation, or extension of time, or both, as the Engineer/Architect may determine, unless otherwise provided.

### **SEC. 27 - PAYMENTS WITHHELD PRIOR TO FINAL ACCEPTANCE OF WORK**

The Owner, as a result of subsequently discovered evidence, may withhold or nullify the whole or part of any payment certificate to such extent as may be necessary to protect himself from loss caused by:

- (a) Defective work not remedied.
- (b) Claims filed or reasonable evidence indicating probable filing of claims by other parties against the Contractor.
- (c) Failure of the Contractor to make payments properly to Subcontractors or for material or labor.
- (d) Damage to another contractor.
- (e) Claims filed or reasonable evidence indicating probable filing of claims by Contractor against Owner.

No money may be withheld under (b) and (c) above if a payment bond is included in the Contract.

### **SEC. 28 - CONTRACTOR'S INSURANCE**

The Contractor shall secure and maintain such insurance policies as will protect himself, his Subcontractors, and unless otherwise specified, the OWNER, from claims for bodily injuries, death or property damage which may arise from operations under this Contract whether such operations be by himself or by any Subcontractor or anyone employed by them directly or indirectly. The following insurance policies are required:



**GENERAL CONDITIONS OF CONTRACT FOR ENGINEERING/ARCHITECTURAL CONSTRUCTION Continued:**

**SEC. 28 - CONTRACTOR'S INSURANCE Continued:**

- (a) **Statutory Worker's Compensation**  
(b) **Contractor's Public Liability and Property Damage -**

**Bodily Injury:**

each person \_\_\_\_\_ \$ \_\_\_\_\_  
each person \_\_\_\_\_ \$ \_\_\_\_\_

SEE INSTRUCTIONS TO BIDDERS

**Property Damage:**

each accident \_\_\_\_\_ \$ \_\_\_\_\_  
aggregate \_\_\_\_\_ \$ \_\_\_\_\_

- (c) **Automobile Public Liability and Property damage -**

**Bodily Injury**

each person \_\_\_\_\_ \$ \_\_\_\_\_  
each accident \_\_\_\_\_ \$ \_\_\_\_\_

SEE INSTRUCTIONS TO BIDDERS

**Property Damage:**

each accident \_\_\_\_\_ \$ \_\_\_\_\_

All policies shall be for not less than the amounts set forth above or stated in the Special Conditions. Other forms of insurance shall also be provided if called for by the Special Provisions.

Certificates and/or copies of policy of such insurance shall be filed with the Engineer/Architect, and shall be subject to his approval as to adequacy of protection, within the requirements of the Specifications. Said certificates of insurance shall contain a thirty (30) day's written notice of cancellation in favor of the Owner. **(SEE SUPPLEMENTAL GENERAL CONDITIONS OF CONTRACT FOR ENGINEERING/ARCHITECTURAL CONSTRUCTION)**

**SEC. 29 - SURETY BONDS**

The Owner shall have the right, prior to the signing of the Contract, to require the Contractor to furnish bond covering the faithful performance of the Contract and the payment of all obligations arising thereunder, in such form as the Owner may prescribe in the bidding documents and executed by one or more financially responsible sureties. If such bonds are required, the premium shall be paid by the Contractor. The Owner may require additional bond if the contract is increased appreciably.

**SEC. 30 - ASSIGNMENT**

Neither party to the Contract shall assign the Contract or sublet it as a whole without the written consent of the other, nor shall the Contractor assign any moneys due to him or to become due to him hereunder, except to bank or financial institution acceptable to the Owner.

## **GENERAL CONDITIONS OF CONTRACT FOR ENGINEERING/ARCHITECTURAL CONSTRUCTION Continued:**

### **SEC. 31 - RIGHTS OF VARIOUS INTERESTS**

Whenever work being done by the Owners or by other contractor's forces is contiguous to work covered by this Contract, the respective rights of the various interests involved shall be established by the Engineer/Architect, to secure the completion of the various portions of the work in general harmony.

### **SEC. 32 - SEPARATE CONTRACTS**

The Owner reserves the right to let other contracts in connection with this project. The Contractor shall afford other contractors reasonable opportunity for the introduction and storage of their materials and the execution of their work, and shall properly connect and coordinate his work with theirs. The parties agree that the Owner shall not be responsible or liable for any delays in Contractor's progress or completion of the work that are caused, in whole or in part, by the acts or omissions of other contractors, subcontractors, or third parties.

If the proper execution or results of any part of the Contractor's work depends upon the work of any other contract, the Contractor shall inspect and promptly report to the Engineer/Architect any defects in such work that render it unsuitable for such proper execution and results.

### **SEC. 33 - SUBCONTRACTS**

The Contractor shall, as soon as practical after signing of the Contract, notify the Engineer/Architect in writing of the names of Subcontractors proposed for the work.

The Contractor agrees that he is as fully responsible to the Owner for the acts and omissions of his Subcontractors and of persons either directly or indirectly employed by them, as he is for the acts and omissions of persons directly employed by him.

Nothing contained in the Contract Documents shall create any contractual relation between any Subcontractor and the Owner.

### **SEC. 34 - ENGINEER'S/ARCHITECT'S STATUS**

The Engineer/Architect shall perform technical observation of the work. He has authority to stop the work whenever such stoppage may be necessary to insure the proper execution of the contract. He shall also have authority to reject all work and materials which do not conform to the Contract and to decide questions which arise in the execution of the work.

### **SEC. 35 - ENGINEER'S/ARCHITECT'S DECISION**

The Engineer/Architect shall, within a reasonable time after their presentation to him, make decisions in writing on all claims of the Owner or the Contractor and on all other matters relating to the execution and progress of the work or the interpretation of the Contract Documents.

## **GENERAL CONDITIONS OF CONTRACT FOR ENGINEERING/ARCHITECTURAL CONSTRUCTION Continued:**

### **SEC. 36 – JURISDICTION AND VENUE; MEDIATION, LITIGATION AND ARBITRATION**

As a condition precedent to any suit or arbitration being filed or initiated, any controversy or claim arising out of or relating to this contract, or the breach thereof, is subject to mandatory mediation to take place in Hidalgo County, Texas at a time agreed upon by the parties. Such mediation must be held within thirty (30) days after the date either party requests mediation, unless otherwise agreed. The Parties agree that any dispute arising out of or related to this Contract would likely involve an inquiry and interpretation of a substantial federal issue. Accordingly, the parties further agree that, if such mediation is unsuccessful, the proper and exclusive forum and venue in all legal actions brought to enforce or construe any of the provisions of this Contract shall be in the United States District Court for the Southern District of Texas, McAllen Division. The Owner and Contractor agree and stipulate that the United States District Court for the Southern District of Texas, McAllen Division, has personal jurisdiction over the parties. However, if federal subject matter jurisdiction is found to be lacking in any legal action, or if a federal court otherwise refuses or fails to exercise jurisdiction over the parties or the dispute, the Parties agree to submit any dispute arising out of or related to this Contract to binding arbitration pursuant to the Texas General Arbitration Act, Chapter 171 of the Texas Civil Practice and Remedies Code (“TAA”) and the terms of this Section 36. To the extent that TAA and this Section 36 conflict, the provisions of this Section 36 will apply.

The parties will select a single arbitrator in accordance with the rules of the American Arbitration Association. The parties further agree that all depositions in any arbitration shall be limited to a total of 24 hours for each party. The parties further agree that the parties shall not serve interrogatories or requests for admission on the other party. The parties further agree that the parties will instruct the Arbitrator, and the Arbitrator is required, to follow the substantive law of the State of Texas and to issue a reasoned award with findings of fact and conclusions of law. **The Arbitrator does not have authority to render a decision which contains a reversible error of state or federal law; the Arbitrator exceeds the Arbitrator’s powers if the Arbitrator renders a decision which contains a reversible error of state or federal law.** The parties further agree that a court reporter shall be present and keep a record of all hearings, which shall be conducted in Hidalgo County, Texas, and the cost of which will be divided equally among the parties notwithstanding any final award entered by the Arbitrator. The parties further agree that the award of the Arbitrator may be reviewed based on the record by a state district court having jurisdiction over the parties and the subject matter and that, notwithstanding the applicability of the TAA, such district court shall conduct a *de novo* review of the award of the Arbitrator and consider any improper application of the law, and/or abuse of discretion by the Arbitrator, in considering the award of the Arbitrator and determining whether to confirm, vacate or modify the award of the Arbitrator. The parties further agree that any judgment or final order entered by the district court is subject to further appellate review consistent with applicable rules of appellate procedure that otherwise would be followed upon a judgment or final order being issued by such district court.

## **GENERAL CONDITIONS OF CONTRACT FOR ENGINEERING/ARCHITECTURAL CONSTRUCTION Continued:**

### **SEC. 37 - COORDINATION WITH OTHER PARTIES**

The Contractor shall coordinate the Contractor's schedule with the schedule, work, labor, materials and/or equipment provided by all other contractors, subcontractors, manufacturers and suppliers to ensure timely completion of the project. The Contractor shall be responsible for reducing, mitigating, eliminating or limiting any delays or damages caused, in whole or in part, by all other contractors, subcontractors, manufacturers, suppliers and any other third parties, including, but not limited to, delays or damages caused by a lack of access to the lands upon which the work under the Contract is to be done. The parties agree that the Owner is not liable for any delays or damages caused, in whole or in part, by any other contractors, subcontractors, manufacturers, suppliers and/or any other third parties. The Contractor shall provide at his own expense and without liability to the Owner any land and access thereto that may be required for temporary construction facilities, or for storage of material.

### **SEC. 38 - LAND FOR WORK**

The Owner shall provide as indicated on Drawings and not later than the date when needed by the Contractor the lands upon which the work under this Contract is to be done, right-of-ways for access to same, and such other lands which are designated on the Drawings for the use of the Contractor. Such lands and right-of-ways shall be adequate for the performance of the Contract. Any delay in the furnishing of these lands by the Owner shall be deemed proper cause for an equitable adjustment in both Contract price and time of completion.

The Contractor shall provide at his own expense and without liability to the Owner any additional land and access thereto that may be required for temporary construction facilities, or for storage of material.

### **SEC. 39 - CLEANING UP**

The Contractor shall remove at his own expense from the Owner's property and from all public and private property all temporary structures, rubbish and waste materials resulting from his operations. This requirement shall not apply to property used for permanent disposal of rubbish or waste, materials in accordance with permission of such disposal granted to the Contractor by the Owner thereof.

### **SEC. 40 - ACCEPTANCE AND FINAL PAYMENT**

(a) Upon receipt of written notice that the work is substantially completed or ready for final inspection and acceptance, the Engineer/Architect will promptly make such inspection, and when he finds the work acceptable under the Contract and the Contract fully performed or substantially completed he shall promptly issue a certificate, over his own signature, stating that the work required by this Contract has been completed or substantially completed and is accepted by him under the terms and conditions thereof, and the entire balance found to be due the Contractor, including the retained percentage, less a retention based on the Engineer's/Architect's estimate of the fair value of the claims against the Contractor and the cost completing the incomplete or unsatisfactory items of work with specified amounts for each incomplete or defective item of work, is due and payable. The date of substantial completion of

## **GENERAL CONDITIONS OF CONTRACT FOR ENGINEERING/ARCHITECTURAL CONSTRUCTION Continued:**

### **SEC. 40 - ACCEPTANCE AND FINAL PAYMENT Continued:**

a project or specified area of a project is the date when the construction is sufficiently completed in accordance with the Contract Documents as modified by any change orders agreed to by the parties so that the Owner can occupy the project for the use for which it was intended.

(b) Before issuance of final payment, the Contractor, if required in the Special Conditions, shall certify in writing to the Engineer/Architect that all payrolls, material bills, and other indebtedness or liens, with the work have been paid, or otherwise satisfied, except that in case of disputed indebtedness or liens, if the Contract does not include a payment of all such disputed amounts, including all related costs and interest in connection with said disputed indebtedness or lien which the Owner may be compelled to pay upon adjudication.

(c) The making and acceptance of the final payment shall constitute a waiver of all claims by the Owner, other than those arising from unsettled liens, from faulty work appearing within a one year guarantee period from date of acceptance, from the requirements of the Drawings and Specifications, or from the manufacturer's guarantees. It shall also constitute a waiver of all claims by the Contractor, except those previously made and still unsettled. In the event that the Contractor has previously made a claim that is still unsettled, the Owner shall be entitled to withhold from the final payment, as an offset, any amounts that the Owner, in its sole discretion, believes that the Contractor may owe to the Owner for liquidated damages or for the Contractor's failure to timely complete the project. Notwithstanding anything to the contrary herein, the Owner shall not be liable, in any event, for any interest that accrues on any amount(s) withheld from the final payment, as an offset, that the Owner, in its sole discretion, believes that the Contractor may owe to the Owner for liquidated damages or for the Contractor's failure to timely complete the project.

(d) If after the work has been substantially completed, full completion thereof is materially delayed through no fault of the Contractor's and the Engineer/Architect so certified, the Owner shall, upon certificate of the Engineer/Architect, and without terminating the contract, make payment of the balance due for that portion of the work fully completed and accepted. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

(e) If the Owner fails to make payment as herein provided, there shall be added to each such payment daily interest at the rate of 6 per-cent (%) annum commencing on the first day after said payment is due and continuing until the payment is delivered or mailed to the Contractor. The Owner shall not be responsible for paying any interest on any amount(s) withheld from any progress payments or from final payment that the Owner, in its sole discretion, believes that the Contractor may owe to the Owner for liquidated damages or for the Contractor's failure to timely complete the project.

## **GENERAL CONDITIONS OF CONTRACT FOR ENGINEERING/ARCHITECTURAL CONSTRUCTION Continued:**

### **SEC. 41 - GENERAL GUARANTY**

Neither the final certificate of payment nor any provision in the Contract Documents nor partial or entire occupancy of the premises by the Owner shall constitute an acceptance of work not done in accordance with the Contract Documents or relieve the Contractor of liability in respect to any express warranties or responsibility for faulty materials or workmanship. The Contractor shall guarantee all materials and equipment furnished and Work performed for a period of one (1) year from the date of Substantial Completion. The Contractor warrants and guarantees for a period of one (1) year from the date of Final Acceptance of the system that the completed system is free from all defects due to faulty materials or workmanship and the Contractor shall promptly make such corrections as may be necessary by reason of such defects including the repairs of any damage to other parts of the system or other work resulting from such defects.

The Owner will give notice of observed defects with reasonable promptness. In the event that the Contractor should fail to make such repairs, adjustments, or other work that may be made necessary by such defects, the Owner may do so and charge the Contractor the cost thereby incurred. The Performance Bond shall remain in full force and effect through the guarantee period.

### **SEC. 42 - SHOP DRAWINGS**

The approval of (shop) drawings by the Engineer/Architect shall not be construed as a complete check, but will indicate only that the general method of construction and detailing is satisfactory. Approval of such drawings will not relieve the Contractor of the responsibility for any error which may exist as the contractor shall be responsible for the dimensions and design of adequate connections, details and satisfactory construction of all work.

### **SEC. 43 - TESTING**

All testing authorized by the Engineer/Architect that meets specification requirements will be paid for by the Owner; however, tests on materials that fail will be billed to and paid for by the Contractor.

### **SEC. 44 - PAYMENT SCHEDULE**

Contractor to submit to the City, Certificate for Payment on or before the 1<sup>st</sup> of the month. City to reciprocate with payment on or before the 30<sup>th</sup> of the same month.

### **SEC. 45 - RETAINAGE**

Contracts equaling a total amount of \$400,000.00 or over will bear a retainage of five (5) percent (%) on each partial disbursement. Contracts totaling less than \$400,000.00 will bear a retainage of ten (10) percent (%) on each partial disbursement.

## **GENERAL CONDITIONS OF CONTRACT FOR ENGINEERING/ARCHITECTURAL CONSTRUCTION Continued:**

### **SEC. 46 - OVERTIME**

Time and one half will be paid for all hours worked in excess of forty (40) hours in one work week.

### **SEC. 47 - INDEMNITY AND HOLD HARMLESS AGREEMENT**

**TO THE FULLEST EXTENT PERMITTED BY LAW, THE CONTRACTOR WILL DEFEND, INDEMNIFY AND HOLD HARMLESS THE OWNER, THE OWNER'S REPRESENTATIVE, THE ENGINEER/ARCHITECT AND THEIR AGENTS AND EMPLOYEES FROM ANY AND ALL CLAIMS, DAMAGES, LOSSES AND EXPENSES, INCLUDING ATTORNEYS' FEES, ARISING OUT OF OR RESULTING FROM THE PERFORMANCE OF THE WORK, INCLUDING, BUT NOT LIMITED TO, CLAIMS, DAMAGE, LOSS OR EXPENSES ATTRIBUTABLE TO BODILY INJURY, SICKNESS, DEATH OR TO ANY INJURY TO DESTRUCTION OF TANGIBLE PROPERTY, INCLUDING THE LOSS OF USE RESULTING THEREFROM, CAUSED IN WHOLE OR IN PART BY ANY NEGLIGENT OR WILLFUL ACT OR OMISSION OF THE CONTRACTOR, SUBCONTRACTOR, ANYONE DIRECTLY OR INDIRECTLY EMPLOYED BY THEM OR ANYONE FOR WHOSE ACTS ANY OF THEM MAY BE LIABLE.**

### **SEC. 48 - RIGHT TO AUDIT**

The City of McAllen reserves the right to audit the bidder's books and records relating to the performance of this contract. The City of McAllen, at its own expense, shall have the right at all reasonable times during normal business hours and upon at least twenty-four (24) hours' advance notice, to audit, to examine, and to make copies of or extracts from the books of account and records maintained by the vendor(s) with respect to the Construction Contract. If such audit shall disclose overpayment by City to vendor, written notice of such overpayment shall be provided to the vendor and the amount of overpayment shall be promptly reimbursed by vendor to the City. In the event any such overpayment is not paid within ten (10) business days after receipt of such notice, the unpaid amount of such overpayment shall bear interest at the rate of one percent (1%) per month from the date of such notice until paid.

### **SEC. 49 – LIMITATION OF LIABILITY**

**THE OWNER'S LIABILITY TO CONTRACTOR UNDER ANY CLAIM FOR BREACH OF CONTRACT IS LIMITED PURSUANT SECTION 271.153 OF THE TEXAS LOCAL GOVERNMENT CODE.**

**NOTWITHSTANDING THE FOREGOING, AND TO THE FULLEST EXTENT PERMITTED BY LAW, THE OWNER'S LIABILITY TO CONTRACTOR SHALL NOT EXCEED THE DIFFERENCE BETWEEN CONTRACTOR'S ACTUAL COSTS TO COMPLETE THE WORK, ON ONE HAND, AND THE TOTAL AMOUNT OF**

**GENERAL CONDITIONS OF CONTRACT FOR ENGINEERING/ARCHITECTURAL CONSTRUCTION Continued:**

**SEC. 49 – LIMITATION OF LIABILITY Continued**

**COMPENSATION FOR WHICH CONTRACTOR AGREED TO PERFORM ALL OF THE WORK DESCRIBED IN THE CONTRACT DOCUMENTS AS REFERENCED IN THE BID SCHEDULE AND IN SECTION 4 OF THE CONTRACT AGREEMENT,**

**ALLOWING FOR ADJUSTMENTS IN THE COMPENSATION OWED TO CONTRACTOR PURSUANT TO ANY CHANGE ORDERS AGREED UPON BY THE PARTIES IN WRITING, ON THE OTHER HAND. ADDITIONALLY, REGARDLESS OF THE NATURE OF ANY CLAIM(S) ASSERTED AGAINST THE OWNER, THE PARTIES AGREE THAT THE OWNER SHALL NOT BE LIABLE TO THE CONTRACTOR FOR ANY LABOR OVERRUN, EQUIPMENT OVERRUN, MATERIAL ESCALATION, EXTENDED FIELD COSTS, DELAYS CAUSED BY THE SUBMISSION OF INCORRECT OR INCOMPLETE SUBMITTALS, CONSEQUENTIAL DAMAGES, INDIRECT DAMAGES, INCIDENTAL DAMAGES, PUNITIVE OR EXEMPLARY DAMAGES, OR ANY OTHER NON-DIRECT DAMAGES, INCLUDING, BUT NOT LIMITED TO, LOST PROFITS, LOSS OF BONDING CAPACITY, UNABSORBED HOME OFFICE OVERHEAD, LOSS IN LABOR PRODUCTIVITY, OR ANY CONSEQUENTIAL DAMAGES THAT OTHERWISE WOULD BE ALLOWED UNDER SECTION 271.153(A)(1) OF THE TEXAS LOCAL GOVERNMENT CODE.**

**SECTION 51. CHAPTER 2252, TEXAS GOVERNMENT CODE**

In accordance with Chapter 2252 of the Texas Government Code, the Contractor hereby certifies that (a) Contractor does not engage in business with Iran, Sudan or any foreign terrorist organization and (b) Contractor is not listed by the Texas Comptroller as a terrorist organization.

**SECTION 52. CHAPTER 2270, TEXAS GOVERNMENT CODE**

If Respondent is required to make a certification pursuant to Section 2270.002 of the Texas Government Code, Respondent certifies that Respondent does not boycott Israel and will not boycott Israel during the term of the contract resulting from this solicitation. If Respondent does not make that certification, Respondent must indicate that in its Response and state why the certification is not required.



**SUPPLEMENTAL GENERAL CONDITIONS OF CONTRACT FOR  
ENGINEERING/ARCHITECTURAL  
CONSTRUCTION**

**1. INSURANCE**

The Contractor shall not commence work under this contract until he has obtained all the insurance required under this paragraph and such insurance has been approved by the Owner, nor shall the Contractor allow any subcontractor to commence work on his subcontract until the insurance required of the subcontractor has been so obtained and approved. For required coverages see INSTRUCTIONS TO BIDDERS on section entitled INSURANCE REQUIREMENTS.

Types of insurance normally required are: (SEE) INSTRUCTIONS TO BIDDERS on section entitled INSURANCE REQUIREMENTS

- (a) Worker's Compensation Insurance: The Contractor shall procure and shall maintain during the life of this contract Worker's Compensation Insurance as required by applicable State or territorial law for all of his employees to be engaged in work at the site of the project under this contract and, in case of any such work sublet, the Contractor shall require the subcontractor similarly to provide Worker's Compensation Insurance for all of the latter's employees to be engaged in such work unless such employees are covered by the protection afforded by the Contractor's Worker's Compensation Insurance.
- (b) Proof of Carriage of Insurance: The Contractor shall furnish the Owner with certificate showing the type, amount, class of operations covered, effective dates and date of expiration of policies. Such certificates shall also contain substantially the following statement. "The insurance covered by this certificate will not be canceled or materially altered, except after ten (10) days written notice has been received by the Owner."

## **PREAMBLE TO RULE 110.110**

The Texas Workers' Compensation Commission adopts new §110.110, concerning requirements for governmental entities awarding a contract for a building or construction project, and for persons providing services on a building or construction project for a governmental entity. The new rule is adopted with changes to the proposed text published in the April 26, 1994 issue of the Texas Register (19 TexReg 3131). Subsections (a)(7) and (c)(7) were amended by adding language to further clarify who is covered by the rule. Subsections (c)(7)(J) and (e)(3) were added to clarify that a contractor or subcontractor is representing to the governmental entity that workers' compensation coverage is provided. Subsections (d)(8)(C) were added to require specific language regarding representations of coverage to be added to contracts to provide services on the project. Subsections (c)(7)(F), and (c)(7)(I)(5), (d)(5), (d)(8)(F), (e)(6), and (e)(8)(F) were amended to reduce the retention period for contractors and other persons providing services on the project from three years to one year. Subsection (g) was changed to state that this rule applies to contract advertised for bid after September 1, 1994, rather than awarded after September 1, 1994.

The Texas Labor Code, §406.096, requires workers' compensation insurance coverage for all persons providing services on a building or construction project for a governmental entity. The commission is aware that this statutory requirement is not being met, and this rule is designed to achieve compliance and to implement a recordkeeping process which will enable oversight of compliance. The rule does this by placing requirements on the governmental entity and on contractors and other persons providing services on a project. These requirements include coverage, certificates of coverage, posted notices of coverage, and notification of changes in coverage status. The rule does not create any duty or burden on anyone which the law does not establish.

The rule defines terms which apply to governmental entity building or construction projects and sets up a clear procedure for governmental entities and contractors that bid for building and construction projects to follow in complying with the requirements of the Texas Labor Code §406.096. It also defines "persons who provide services on a project" who are subject to the statutory requirement of coverage, and sets forth their requirements to comply with the statute and the rule. It specifically excludes persons such as food/beverage vendors whose deliveries and labor are not permanently incorporated into the project. The rule puts persons on notice that providing false or misleading certificates of coverage, or failing to provide or maintain required coverage, or failing to report any change that materially affects the provision of coverage may subject the contractor or other persons providing services on the project to administrative penalties, civil penalties, or other civil actions.

The rule requires a governmental entity to timely obtain certificates of coverage, retain them for the duration of the project plus three years, and provide them to the commission upon request and to others entitled to them by law. It also requires the governmental entity, as a prerequisite to awarding a contract, and as part of the contract, to require that the contractor: provide coverage and certificates of coverage for the contractor's employees; timely obtain and provide the governmental entity all required certificates of coverage for all persons providing services on the project; retain certificates of coverage on file for the duration of the project and for one year thereafter; notify the governmental entity in writing by certified mail or person delivery, within 10 days after the contractor knew or should have known, of any change that materially affects the provision of coverage of any person providing services on the project; post notices on each project site; and contractually require persons with whom it contracts to do the same, with the certificates of coverage to be provided to the person

## **PREAMBLE TO RULE 110.110 Continued:**

for whom they are providing services. The rule also sets out the language to be included in bid specifications and in contracts awarded by a governmental entity and the information required to be in the posted notice to employees. It further established a method for obtaining the certificates from persons providing services on the project and providing them to the governmental entity.

It requires a contractor awarded a building or construction contract to: provide workers' compensation coverage to the contractor's employees for the duration of the project; file a certificate of coverage of the contractor's employees with the governmental entity prior to being awarded a contract; obtain and provide to the governmental entity, certificates of coverage from each other person with whom it has contracted to provide services on the project, prior to that person beginning work on the project; obtain and provide new certificates of coverage shown on the current certificate ends during the duration of the project; retain all certificates of coverage for the duration of the project and for one year thereafter; notify the governmental entity of material changes in coverage; contractually require each other person with whom it contracts to provide a certificate of coverage; and post notices on each project site.

All other persons providing services on a project have the same requirements as a contractor, with the exception of posting notices and with the exception that the certificate of coverage is given to the person for whom they contracted to provide services on the project. The rule uses the term "persons providing services on the project" in lieu of the statutory term "subcontractor" because the term "subcontractor" as used in the statute (§406.096) and in this rule is broader than standard industry usage. The use of the different terminology will prevent confusion.

The rule does not create any duty or burden on anyone which the law does not establish.

The new rule is adopted under the Texas Labor Code, §402.061, which authorizes the commission to adopt rules necessary to administer the Act, and Texas Labor Code, §406.096, which establishes requirements for governmental entities, contractors, and subcontractors ("persons providing services on the project") regarding workers' compensation coverage for workers on compensation coverage for workers on public building or construction projects.

### **Rule 110.100      Reporting Requirements for Building or Construction Projects for Governmental Entities**

- (a)      The following word and terms, when used in this rule, shall have the following meanings, unless the context clearly indicates otherwise. Terms not defined in this rule shall have the meaning defined in the Texas Labor Code, if so defined.
  - (1) Certificate of coverage ("certificate")-A copy of a certificate of insurance, a certificate of authority to self-insure issued by the commission, or a coverage agreement (TWCC-81, TWCC-82, TWCC-83, or TWCC-84), showing statutory workers' compensation insurance coverage for the person's or entity's employees (including those subject to a coverage agreement) providing services on a project, for the duration of the project.
  - (2) Building or construction - Has the meaning defined in the Texas Labor Code, (e)(1).

**PREAMBLE TO RULE 110.110 Continued:**

- (3) Contractor - A person bidding for or awarded a building or construction project by a governmental entity.
  - (4) Coverage - Workers' compensation insurance meeting the statutory requirements of the Texas Labor Code, §401.011(44).
  - (5) Coverage agreement - A written agreement on form TWCC-81, form TWCC-82, form TWCC-83, or form TWCC-84, filed with the Texas Workers' Compensation Commission which establishes a relationship between the parties for purposes of the Workers' Compensation Act, pursuant to the Texas Labor Code, Chapter 406, Subchapters F and G as one of employer/employee and establishes who will be responsible for providing workers' compensation coverage for person providing services on the project.
  - (6) Duration of the project - Includes the time from the beginning of work on the project until the work on the project has been completed and accepted by the governmental entity.
  - (7) Persons providing services on the project ("subcontractor" in §406.096 of the Act) - Includes all persons or entities performing all or part of the services the contractor has undertaken to perform on the project, regardless of whether that person contracted directly with the contractor and regardless of whether that person has employees. This includes but is not limited to independent contractors, subcontractors, leasing companies, motor carriers, owner-operators, employees of any such entity, or employees of any entity furnishing persons to perform services on the project. "Services" includes but is not limited to providing, hauling, or delivering equipment or materials, or providing labor, transportation, or other services related to a project. "Services" does not include activities unrelated to the project, such as food/beverage vendors, office supply deliveries, and delivery of portable toilets.
  - (8) Project - Includes the provision of all services related to a building or construction contract for a governmental entity.
- (b) Providing or causing to be provided a certificate of coverage pursuant to this rule is a representation by the insured that all employees of the insured who are providing services on the project are covered by workers' compensation coverage, that the coverage is based on proper reporting of classification codes and payroll amounts, and that all coverage agreements have been filed with the appropriate insurance carrier or, in the case of a self-insured, with the commission's Division of Self-Insurance Regulation. Providing false or misleading certificates of coverage, or failing to provide or maintain required coverage, or failing to report any change that materially affects the provision of coverage may subject the contractor or other person providing services on the project to administrative penalties, criminal penalties, civil penalties, or other civil actions.
- (c) A governmental entity that enters into a building or construction contract on a project shall:

**PREAMBLE TO RULE 110.110 Continued:**

- (1) include in the bid specifications, all the provisions of subsection (d) of this rule, using the language required by paragraph (7) of this subsection;
- (2) as part of the contract, using the language required by paragraph (7) of this subsection, require the contractor to perform as required in subsection (d) of this rule;
- (3) obtain from the contractor a certificate of coverage for each person providing services of the project, prior to that person beginning work on the project;
- (4) obtain from the contractor a new certificate of coverage showing extension of coverage:
  - (A) before the end of the current coverage period, if the contractor's current certificate of coverage shows that the coverage period ends during the duration of the project; and
  - (B) no later than seven days after the expiration of the coverage for each other person providing services on the project whose current certificate shows that the coverage period ends during the duration of the project;
- (5) retain certificates of coverage on file for the duration of the project and for three years thereafter;
- (6) provide a copy of the certificates of coverage to the commission upon request and to any person entitled to them by law; and
- (7) use the following language for bid specifications and contracts, without any additional words or changes, except those required to accommodate the specific document in which they are contained or to impose stricter standard of documentation in Figure 1:

Article \_\_. Worker's Compensation Insurance Coverage.

A. Definitions:

Certificate of coverage ("certificate")-A copy of a certificate of insurance, a certificate of authority to self-insure issued by the commission, or a coverage agreement (TWCC-81, TWCC-82, TWCC-83, or TWCC-84), showing statutory workers' compensation insurance coverage for the person's or entity's employees providing services on a project, for the duration of the project.

Duration of the project-includes the time from the beginning of the work on the project until the contractor's/person's work on the project has been completed and accepted by the governmental entity.

## **PREAMBLE TO RULE 110.110 Continued:**

Persons providing services on the project (“subcontractor” in §406.096)-includes all persons or entities performing all or part of the services the contractor has undertaken to perform on the project, regardless of whether that person contracted directly with the contractor and regardless of whether that person has employees. This includes, without limitation, independent contractors, subcontractors, leasing companies, motor carriers, owner-operators, employees of any such entity, or employees of any entity which furnishes persons to provide services on the project. “Services” include, without limitation, providing, hauling, or delivering equipment or materials, or providing labor, transportation or other service related to a project. “Services” does not include activities unrelated to the project, such as food/beverage vendors, office supply deliveries, and delivery of portable toilets.

- B. The contractor shall provide coverage, based on proper reporting a classification codes and payroll amounts and filing of any coverage agreements, which meets the statutory requirements of Texas Labor Code, Section 401.044(44) for all employees of the contractor providing services on the project, for the duration of the project.
- C. The contractor must provide a certificate of coverage to the governmental entity prior to being awarded the contract.
- D. If the coverage period shown on the contractor’s current certificate of coverage ends during the duration of the project, the contractor must, prior to the end of the coverage period, file a new certificate of coverage with the governmental entity showing that coverage has been extended.
- E. The contractor shall obtain from each person providing services on a project, and provide to the governmental entity:
  - (1) a certificate of coverage, prior to that person beginning work on the project, so the governmental entity will have on file certificate of coverage showing coverage for all persons providing services on the project; and
  - (2) no later than seven days after receipt by the contractor, a new certificate of coverage showing extension of coverage, if the coverage period shown on the current certificate of coverage ends during the duration of the project.
- F. The contractor shall retain all required certificates of coverage for the duration of the project and for one year thereafter.
- G. The contractor shall notify the governmental entity in writing by certified mail or personal delivery, within 10 days after the contractor knew or should have known, of any change that materially affects the provision of coverage of any person providing services on the project.

**PREAMBLE TO RULE 110.110 Continued:**

- H. The contractor shall post on each project site a notice, in the text, for and manner prescribed by the Texas Workers' Compensation Commission, informing all persons providing services on the project that they are required to be covered, and stating how a person may verify coverage and report lack of coverage.
- I. The contractor shall contractually require each person with whom it contracts to provide services on a project, to:
  - (1) provide coverage, based on proper reporting of classification codes and payroll amounts and filing of any coverage agreements, which meets the statutory requirements of Texas Labor Code, Section 401.011(44) for all of its employees providing services on the project, for the duration of the project;
  - (2) provide to the contractor, prior to that person beginning work on the project, a certificate of coverage showing that coverage is being provided for all employees of the person providing services on the project, for the duration of the project;
  - (3) provide the contractor, prior to the end of the coverage period, a new certificate of coverage showing extension of coverage, if the coverage period shown on the current certificate of coverage ends during the duration of the project;
  - (4) obtain from each person with whom it contracts, and provide to the contractor:
    - (a) a certificate of coverage, prior to the other person beginning work on the project; and
    - (b) a new certificate of coverage showing extension of coverage, prior to the end of the coverage period, if the coverage period shown on the current certificate of coverage ends during the duration of the project;
  - (5) retain all required certificates of coverage on file for the duration of the project and for one year thereafter;
  - (6) notify the governmental entity in writing by certified mail or personal delivery, within 10 days after the person knew or should have known, of any change that materially affects the provision of coverage of any persons providing services on the project; and
  - (7) contractually require each person with whom it contracts, to perform as required by paragraphs (1) - (7), with the certificates of coverage to be provided to the person for whom they are providing services.
- J. By signing this contract or providing or causing to be provided a certificate of coverage, the contractor is representing to the governmental entity that all employees of the contractor who will provide services on the project will be covered by workers' compensation coverage for the duration of the project, that the coverage will be based on proper reporting of classification codes and payroll amounts, and that all coverage agreements will be filed with

## **PREAMBLE TO RULE 110.110 Continued:**

J. Continued: the appropriate insurance carrier or, in the case of a self-insured, with the commission's Division of Self-Insurance Regulation. Providing false or misleading information may subject the contractor to administrative penalties, criminal penalties, or other civil actions.

K. The contractor's failure to comply with any of these provisions is a breach of contract by the contractor which entitles the governmental entity to declare the contract void if the contractor does not remedy the breach within ten (10) days after receipt of notice of breach from the governmental entity.

(d) A contractor shall:

- (1) provide coverage for its employees providing services on a project, for the duration of the project based on proper reporting of classification codes and payroll amounts and filing of any coverage agreements;
- (2) provide a certificate of coverage showing workers' compensation coverage to the governmental entity prior to beginning work on the project;
- (3) provide the governmental entity, prior to the end of the coverage period, a new certificate of coverage showing extension of coverage, if the coverage period shown on the contractor's current certificate of coverage ends during the duration of the project;
- (4) obtain from each person providing services on a project, and provide to the governmental entity:
  - (A) a certificate of coverage, prior to that person beginning work on the project, so the governmental entity will have on file certificates of coverage showing coverage for all persons providing services on the project; and
  - (B) no later than seven days after receipt by the contractor, a new certificate of coverage showing extension of coverage, if the coverage period shown on the current certificate of coverage ends during the duration of the project;
- (5) retain all required certificates of coverage on file for the duration of the project and for one year thereafter;
- (6) notify the governmental entity in writing by certified mail or personal delivery, within 10 days after the contractor knew or should have known, of any change that materially affects the provision of coverage of any person providing services on the project;



## **PREAMBLE TO RULE 110.110 Continued:**

- (7) post a notice on each project site informing all persons providing services on the project that they are required to be covered, and stating how a person may verify current coverage and report failure to provide coverage. This notice does not satisfy other posting requirements imposed by the Act or other commission rules. This notice must be printed with a title in at least 30-point bold type and text in at least 19-point normal type, and shall be in both English and Spanish and any other language common to the worker population. The text for the notices shall be the following text in Figure 2 provided by the commission on the sample notice, without any additional word or changes:

(Figure 2)

### **REQUIRED WORKERS' COMPENSATION COVERAGE**

“The law required that each person working on this site or providing services related to this construction project must be covered by workers’ compensation insurance. This includes persons providing, hauling, or delivering equipment or materials, or providing labor or transportation or other service related to the project, regardless of the identity of their employer or status as an employee.”

“Call the Texas Workers’ Compensation Commission at 512-440-3789 to receive information on the legal requirements of coverage, to verify whether your employer has provided the required coverage or to report an employer’s failure to provide coverage.” and

- (8) contractually require each person with whom it contracts to provide services on a project, to:
  - (A) provide coverage based on proper reporting of classification codes and payroll amounts and filing of any coverage agreements for all of its employees providing services on the project, for the duration of the project;
  - (B) provide a certificate of coverage to the contractor prior to that person beginning work on the project;
  - (C) include in all contracts to provide services on the project the language in subsection (e)(3) of this rule;
  - (D) provide the contractor, prior to the end of the coverage period, a new certificate of coverage showing extension of coverage, if the coverage period shown on the current certificate of coverage ends during the duration of the project;

**PREAMBLE TO RULE 110.110 Continued:**

- (E) obtain from each other person with whom it contracts and provide to the contractor:
    - (i) a certificate of coverage, prior to the other person beginning work on the project; and
    - (ii) prior to the end of the coverage period, a new certificate of coverage showing extension of the coverage period, if the coverage period shown on the current certificate of coverage ends during the duration of the project;
  - (F) retain all required certificates of coverage on file for the duration of the project and for one year thereafter;
  - (G) notify the governmental entity in writing by certified mail or personal delivery, within 10 days after the person knew or should have known, of any change that materially affects the provision of coverage of any person providing services on the project; and
  - (H) contractually require each other person with whom it contracts, to perform as required by paragraphs (A) - (H), with the certificate of coverage to be provided to the person for whom they are providing services.
- (e) A person providing services on a project, other than a contractor, shall:
- (1) provide coverage for its employees providing services on a project, for the duration of the project based on proper reporting of classification codes and payroll amounts and filing of any coverage agreements;
  - (2) provide a certificate of coverage as required by its contract to provide services on the project, prior to beginning work on the project;
  - (3) have the following language in its contract to provide services on the project:

“By signing this contract or providing or causing to be provided a certificate of coverage, the person signing this contract is representing to the governmental entity that all employees of the person signing this contract who will provide services on the project will be covered by workers’ compensation coverage for the duration of the project, that the coverage will be based on proper reporting of classification codes and payroll amounts, and that all coverage agreements will be filed with the appropriate insurance carrier or, in the case of a self-insured, with the commission’s Division of Self-Insurance Regulation. Providing false or misleading information may subject the contractor to administrative penalties criminal penalties, civil penalties, or other civil actions.”

**PREAMBLE TO RULE 110.110 Continued:**

- (4) provide the person for whom it is providing services on the project, prior to the end of the coverage period shown on its current certificate of coverage, a new certificate showing extension of coverage, if the coverage period shown on the certificate of coverage ends during the duration of the project;
- (5) obtain from each person providing services on a project under contract to it, and provide as required by its contract:
  - (A) a certificate of coverage, prior to the other person beginning work on the project; and
  - (B) prior to the end of the coverage period, a new certificate of coverage showing extension of the coverage period, if the coverage period shown on the current certificate of coverage ends during the duration of the project;
- (6) retain all required certificates of coverage on file for the duration of the project and for one year thereafter;
- (7) notify the governmental entity in writing by certified mail or personal delivery, of any change that materially affects the provision of coverage of any person providing services on the project and send the notice within 10 days after the person knew or should have known of the change; and
- (8) contractually require each other person with whom it contracts to:
  - (A) provide coverage based on proper reporting of classification codes and payroll amounts and filing of any coverage agreements for all of its employees providing services on the project, for the duration of the project;
  - (B) provide a certificate of coverage to it prior to that other person beginning work on the project;
  - (C) include in all contracts to provide services on the project the language in subsection (e)(3) of this rule;
  - (D) provide, prior to the end of the coverage period, a new certificate of coverage showing extension of the coverage period, if the coverage period shown on the current certificate of coverage ends during the duration of the project;
  - (E) obtain from each other person under contract to it to provide services on the project, and provide as required by its contract;
  - (F) retain all required certificates of coverage on file for the duration of the project and for one year thereafter;

**PREAMBLE TO RULE 110.110 Continued:**

- (G) notify the governmental entity in writing by certified mail or personal delivery, within 10 days after the person knew or should have known, of any change that materially affects the provision of coverage of any person providing services on the project; and
  - (H) contractually require each person with whom it contracts, to perform as required by paragraphs (A) - (H), with the certificate of coverage to be provided to the person for whom they are providing services.
- (f) If any provision of this rule or its application to any person or circumstance is held invalid, the invalidity does not affect other provisions or applications of this rule that can be given effect without the invalid provision or applications, and to this end the provisions of this rule are declared to be severable.
- (g) This rule is applicable for building or construction contracts advertised for bid by a governmental entity on or after September 1, 1994.

## **PREVAILING WAGE LEGAL REQUIREMENTS**

The Contractor's attention is called to Articles 5159A and 5160 of the Revised Civil statutes of Texas which Statutes must be complied with. These articles are as follows:

### **ARTICLE 5159A:**

**SECTION 1.** Not less than the general prevailing rate of per diem wages for work of a similar character in the locality which the work is performed, and not less than the general prevailing rate of per diem wages for legal holiday and overtime work, shall be paid to all laborers, workmen and mechanics employed by or on behalf of any County, City and County, City, Town, District or other political subdivision of the State, engaged in the construction of public works, exclusive of maintenance work. Laborers, workmen and mechanics employed by contractors or subcontractors in the execution of any contract or contracts for public works with the State, or any officer or public body thereof, or in the execution of any contract or contracts for public works, with any County, City and County, City, Town, District or other political subdivision of this State, or any officer or public body thereof, shall be deemed to be employed upon public work.

**SECTION 2.** The public body awarding any contract for public work on behalf of the State, or on behalf of any County, City and County, City, Town, District or other political subdivision thereof, or otherwise undertaking any public work, shall ascertain the general prevailing rate of per diem wages in the locality in which the work is to be performed for each craft or type of workmen or mechanic needed to execute the contract, and shall specify in the call for bids for said contract, and in the contract itself, what the general prevailing rate of per diem wages in the said locality is for each craft or type of workmen needed to execute the contract, also the prevailing rate for legal holiday and overtime work, and it shall be needed to execute the contract, also the prevailing rate for legal holiday and overtime work, and it shall be mandatory upon the Contractor to whom the contract is awarded, and upon any subcontractor under him, to pay not less than the said specified rates to all laborers, workmen and mechanics employed by them in the execution of the contract. The Contractor shall forfeit as a penalty to the State, County, City and County, City, Town, District or other political subdivision on whose behalf the contract is made or awarded, Ten Dollars (\$10.00) for each laborer, workman or mechanic employed for each calendar day, or portion thereof, such laborer, workman or mechanic is paid less than the stipulated rates for any work done under said contract, by him, or by any subcontractor under him, and the said public body awarding the contract shall cause to be inserted in the contract a stipulation to this effect. It shall be the duty of such public body awarding the contract, and its agents and officers to take cognizance of complaints of all violations of the provisions of this Act committed in the course of the execution of the contract, and when making payments to the contractor of monies becoming due under said contract to withhold and retain therefrom all sums and amounts which shall have been forfeited pursuant to the herein said stipulation and the terms of this Act; provided, however, that no sum shall be so withheld, retained or forfeited, except from the final payment, without a full investigation by the awarding body. It shall be lawful for any contractor to withhold from any subcontractor under him sufficient sums to cover any penalties withheld from him by the awarding body on account of said subcontractor's failure to comply with the terms of this Act, and if payment has already been made to him the contractor may recover from him the amount of the penalty or forfeiture in a suit at law.

## **PREVAILING WAGE LEGAL REQUIREMENTS Continued:**

**SECTION 3.** The contractor and each subcontractor shall keep, or cause to be kept, an accurate record showing the names and occupations of all laborers, workmen and mechanics employed by him, in connection with the said public work, and showing the actual per diem wages paid to each of such workers, which record shall be open at all reasonable hours to the inspection of the public body awarding the contract, its officers and agents.

**SECTION 4.** Any construction or repair work done under contract, and paid for in whole or in part out of public funds, other than work done directly by any public utility company pursuant to order of the Railroad Commission or other public authority, whether or not done under public supervision or direction or paid for wholly or in part out of public funds, shall be held to be “public works” within the meaning of political subdivision of this State in which the building, highway, road, excavation, or other structures, project, development or improvement is situated in all cases in which the contract is awarded by the State, or any public body thereof, and shall be held to mean the limits of the County, City and County, City, Town, District or other political subdivision on whose behalf the contract is awarded in all other cases. The term “general prevailing rate of per diem wages” shall be the rate determined upon as such rate by the public body awarding the contract, or authorizing the work, whose decision in the matter shall be final. Nothing in this act, however, shall be construed to prohibit the payment to any laborer, workman or mechanic employed on any public work as aforesaid of more than the said general prevailing rate of wages.

## **ARTICLE 5160.      **Bond for Wages:****

Any person or persons, firm or corporation, entering into a formal contract with this State or its counties or school districts or other subdivisions thereof or any municipality therein for the construction of any public building, or the prosecution and completion of any public work shall be required, before, commencing such work, to execute the usual Penal Bond, with additional obligation that such contractor shall promptly make payments to all persons supplying him or them with labor and materials in the prosecution of the work provided for in such contract. Any person, company, or corporation who has furnished labor or materials used in the construction or repair or any public building or public work, and payment for which has not been made, shall have the right to intervene and be made a party to any action instituted by the State or any adjudicated in such action and judgment rendered thereon, subject, however, to the priority of the claims and judgment of the State or municipality.

If the full amount of the liability of the surety on said bond is insufficient to pay the full amount of said claims and demands, then, after paying the full amount due to the State or municipality, the remainder shall be distributed pro-rata among said intervenors. Provided, further, that all claims for labor and materials furnished to said Contractor, and all claims for labor and material furnished to any contractor shall be itemized and sworn to as required by Statutes as to mechanic’s lien claims, and such claims shall be filed with the County Clerk of the County, in which said work is being prosecuted, within ninety days from the date of the delivery of said material and the performance of said work. The County Clerk shall note on the mechanic’s lien record, the name of the claimant, the amount claimed, the name of the contractor and the name of the county, School District, other subdivisions, or municipality with which the contract was made; and the County Clerk shall index the claim under the name of the contractor and under the name of the County, School District, other subdivision or municipality; with which the contract was made.

**PREVAILING WAGE LEGAL REQUIREMENTS Continued:**

**ARTICLE 5160.      Bond for Wages Continued:**

Provided further, that after completion and acceptance of completed project all moneys due contractor under said contract shall be held by the state or its counties or school districts or other subdivision, thereof or an affidavit made by Contractor that all just bills for labor and material under this contract has been paid in full by the Contractor.  
Acts 1913, P. 185; Acts 1929, 41<sup>st</sup> leg., P.4881. Ch. 22 paragraph 1.

## GENERAL PREVAILING WAGE RATES

General Decision Number: TX190255 01/04/2019 TX255

Superseded General Decision Number: TX20180305

State: Texas

Construction Type: Building

County: Hidalgo County in Texas.

BUILDING CONSTRUCTION PROJECTS (does not include single family homes or apartments up to and including 4 stories).

Note: Under Executive Order (EO) 13658, an hourly minimum wage of \$10.60 for calendar year 2019 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least \$10.60 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2019. If this contract is covered by the EO and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must pay workers in that classification at least the wage rate determined through the conformance process set forth in 29 CFR 5.5(a)(1)(ii) (or the EO minimum wage rate, if it is higher than the conformed wage rate). The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at [www.dol.gov/whd/govcontracts](http://www.dol.gov/whd/govcontracts).

Modification Number      Publication Date  
0                              01/04/2019

BOIL0074-003 01/01/2017

	Rates	Fringes
BOILERMAKER.....	\$ 28.00	22.35

-----  
ENGI0178-005 06/01/2014

	Rates	Fringes
POWER EQUIPMENT OPERATOR		
(1) Tower Crane.....	\$ 29.00	10.60
(2) Cranes with Pile Driving or Caisson Attachment and Hydraulic Crane 60 tons and above.....	\$ 28.75	10.60
(3) Hydraulic cranes 59 Tons and under.....	\$ 27.50	10.60

-----  
\* IRON0084-011 06/01/2018



	Rates	Fringes
IRONWORKER, ORNAMENTAL.....	\$ 23.77	7.12
-----		
PLUM0412-004 04/01/2013		
	Rates	Fringes
PLUMBER.....	\$ 31.14	12.43
-----		
SUTX2014-031 07/21/2014		
	Rates	Fringes
BRICKLAYER.....	\$ 16.17	0.00
CARPENTER.....	\$ 14.21	2.22
CEMENT MASON/CONCRETE FINISHER...	\$ 12.46	0.00
ELECTRICIAN.....	\$ 18.44	4.53
INSULATOR - MECHANICAL (Duct, Pipe & Mechanical System Insulation).....	\$ 11.54	2.17
IRONWORKER, REINFORCING.....	\$ 12.01	0.00
IRONWORKER, STRUCTURAL.....	\$ 15.04	4.34
LABORER: Common or General.....	\$ 8.00	0.00
LABORER: Mason Tender - Brick...	\$ 10.00	0.00
LABORER: Mason Tender - Cement/Concrete.....	\$ 10.89	0.96
LABORER: Pipelayer.....	\$ 11.00	3.47
LABORER: Roof Tearoff.....	\$ 10.06	0.00
OPERATOR: Backhoe/Excavator/Trackhoe.....	\$ 14.04	1.01
OPERATOR: Bobcat/Skid Steer/Skid Loader.....	\$ 13.93	0.00
OPERATOR: Bulldozer.....	\$ 18.29	1.31
OPERATOR: Drill.....	\$ 16.22	0.34
OPERATOR: Forklift.....	\$ 14.83	0.00
OPERATOR: Grader/Blade.....	\$ 10.00	0.00
OPERATOR: Loader.....	\$ 12.87	0.70
OPERATOR: Mechanic.....	\$ 17.00	0.00
OPERATOR: Paver (Asphalt, Aggregate, and Concrete).....	\$ 16.03	0.00

OPERATOR: Roller.....	\$ 12.70	0.00
PAINTER (Brush, Roller, and Spray).....	\$ 11.27	0.00
PIPEFITTER.....	\$ 15.22	3.16
ROOFER.....	\$ 11.42	0.00
SHEET METAL WORKER (HVAC Duct Installation Only).....	\$ 18.40	2.12
SHEET METAL WORKER, Excludes HVAC Duct Installation.....	\$ 21.13	6.53
TILE FINISHER.....	\$ 11.22	0.00
TILE SETTER.....	\$ 12.15	0.00
TRUCK DRIVER: Dump Truck.....	\$ 12.39	1.18
TRUCK DRIVER: Flatbed Truck.....	\$ 19.65	8.57
TRUCK DRIVER: Semi-Trailer Truck.....	\$ 12.50	0.00
TRUCK DRIVER: Water Truck.....	\$ 12.00	4.11
-----		

WELDERS - Receive rate prescribed for craft performing  
operation to which welding is incidental.

=====

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at [www.dol.gov/whd/govcontracts](http://www.dol.gov/whd/govcontracts).

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

#

## Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

## Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

## Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

## WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- \* an existing published wage determination
  - \* a survey underlying a wage determination
  - \* a Wage and Hour Division letter setting forth a position on a wage determination matter
  - \* a conformance (additional classification and rate) ruling
- 

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations  
Wage and Hour Division  
U.S. Department of Labor  
200 Constitution Avenue, N.W.  
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator  
U.S. Department of Labor  
200 Constitution Avenue, N.W.  
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board  
U.S. Department of Labor  
200 Constitution Avenue, N.W.  
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

**AFFIDAVIT AND WAIVER OF LIEN  
PRIME CONTRACTOR**

STATE OF \_\_\_\_\_

COUNTY OF \_\_\_\_\_

Personally appeared before me, the undersigned Notary Public for said County and State  
\_\_\_\_\_(Name of Individual),  
\_\_\_\_\_(Title) of \_\_\_\_\_

(Prime Contractor), who being duly sworn by me states on oath that all product suppliers and Subcontractors, payrolls, sales tax, privilege tax or license, old age benefits tax, state and federal unemployment insurance, and other liabilities incurred in the performance of \_\_\_\_\_  
(Type of Contract) Contract for the construction of improvements at **Project No. #** \_\_\_\_\_  
**Project Title** \_\_\_\_\_(**Name of Project**), have been paid in full and that the above named Prime Contractor waives any claims and released \_\_\_\_\_  
\_\_\_\_\_(Owner) from any rights or claims (including lien rights) for debts due and owing by virtue of the furnishing of any labor, products, and supplies furnished for such improvements.

The above named Prime Contractor agrees to indemnify the Owner and save him harmless on account of any loss he may sustain in reliance upon this Affidavit and Waiver of Lien including the amount of any lien he may be compelled to pay all costs relating thereto and a reasonable attorney's fee.

\_\_\_\_\_  
(Prime Contractor)

By: \_\_\_\_\_  
Type/Print Name

Title: \_\_\_\_\_

Date: \_\_\_\_\_

Sworn to and subscribed before me  
this the \_\_\_\_ day of \_\_\_\_\_, 20\_\_.

\_\_\_\_\_  
Notary Public

My Commission Expires: \_\_\_\_\_

**RELEASE AND WAIVER OF CLAIMS BY  
SUBCONTRACTORS AND PRODUCT VENDORS**

STATE OF \_\_\_\_\_

COUNTY OF \_\_\_\_\_

Personally appeared before me the undersigned authority in and for said County and State (Name of Individual), \_\_\_\_\_ (Title) of \_\_\_\_\_ (Company), who, being duly sworn by me states on oath that all bills for labor and products, sales tax, privilege tax or license, old age benefits tax, state and federal unemployment insurance and other liability have been paid in full, or that funds are in hand to discharge such liabilities when due, incurred in the performance of its Subcontract for furnishing labor or products in the construction of improvements at **Project No. #** \_\_\_\_\_ **Project Title** \_\_\_\_\_  
\_\_\_\_\_ (**Name of Project & Location**), upon receipt of check in the amount \$ \_\_\_\_\_, the undersigned company waives any claims and releases (Owner) \_\_\_\_\_ (Contractor) from any rights or claims for debts due and owing by virtue of the furnishing of any labor or products and any lien therefore.

\_\_\_\_\_  
(Name of Company)

Signature: \_\_\_\_\_

By: \_\_\_\_\_  
Type/Print Name

Title: \_\_\_\_\_

Date: \_\_\_\_\_

Sworn to and subscribed before me  
this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_.

\_\_\_\_\_  
Notary Public

My Commission Expires: \_\_\_\_\_

**CONTRACTOR'S AFFIDAVIT  
AS TO STATUS OF LIENS**

STATE OF \_\_\_\_\_

COUNTY OF \_\_\_\_\_

Personally appeared before me, the undersigned Notary Public for said County and State,  
\_\_\_\_\_(Name of Individual), \_\_\_\_\_ (Title), of \_\_\_\_\_ (Prime Contractor),  
who being duly sworn by me states on oath that to the best of his knowledge and belief, except as  
listed below, the Releases and Waivers of Claim attached hereto include all Subcontractors and  
all suppliers of labor, products, and equipment provided by all persons who may have lien  
against the property of \_\_\_\_\_ (Owner), **Project No. #**\_\_\_\_\_ **Project Title** \_\_\_\_\_  
\_\_\_\_\_, located at \_\_\_\_\_  
(Location of Project), arising out of the construction of improvements thereon.

Exceptions: (If none, write "NONE." Any exception listed shall be bonded by the Contractor to  
indemnify the Owner, and a copy of each such bond shall be attached hereto.)

- 1.
- 2.
- 3.
- 4.

\_\_\_\_\_  
(Name of Company)

By: \_\_\_\_\_  
Type/Print Name

Title: \_\_\_\_\_

Date: \_\_\_\_\_

Sworn to and subscribed before me  
this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_

\_\_\_\_\_  
Notary Public  
My Commission Expires: \_\_\_\_\_

## **TECHNICAL SPECIFICATIONS**





# SPECIFICATIONS

CITY OF MCALLEN

PUBLIC SAFETY BUILDING  
PARKING GARAGE

McAllen, Texas 78501

More Attentive Service

MILNET ARCHITECTURAL SERVICES

608 S. 12th Street  
McAllen, Texas 78501

Phone: 956-688-5656  
Fax: 956-687-9289  
Email: milnet@swbell.net

Project No. 215031
Set No.

MCALLEN PUBLIC SAFETY BUILDING  
PARKING GARAGE

# PROJECT MANUAL

**Plans and Specifications – Project No. 215031**

**FOR  
CITY OF MCALLEN  
PUBLIC SAFETY BUILDING PARKING GARAGE  
MCALLEN, TEXAS 78501**



**TEXAS BOARD OF ARCHITECTURAL EXAMINERS**  
333 Guadalupe, Suite 2-350, AUSTIN, TX 78701-3942  
(Tel: 512/305-9000)  
HAS JURISDICTION OVER INDIVIDUALS LICENSED UNDER  
THE ARCHITECT'S REGISTRATION LAW  
ARTICLE 249a, VERNON'S CIVIL STATUTES".

**MILNET ARCHITECTURAL SERVICES**  
608 S. 12<sup>th</sup> St.  
McALLEN, TEXAS 78501  
(956) 688-5656 - FAX (956) 687-9289

**CITY OF MCALLEN**  
**PUBLIC SAFETY BUILDING PARKING GARAGE**  
**McAllen, Texas 78501**  
**Project No. 215031**

Division	Section Title	Pages
<b>SERIES 0 BIDDING REQUIREMENTS AND CONTRACT FORMS</b>		
00300	INFORMATION AVAILABLE TO BIDDERS	30
<b>DIVISION 1 - GENERAL REQUIREMENTS</b>		
01019	ALLOWANCES	1
01045	CUTTING AND PATCHING	3
01120	ALTERATION PROJECT PROCEDURES	3
01200	PRICE AND PAYMENT PROCEDURES	2
01300	ADMINISTRATIVE REQUIREMENTS	3
01340	SUBMITTALS	4
01400	QUALITY REQUIREMENTS	2
01500	TEMPORARY FACILITIES AND CONTROLS	5
01600	SUBSTITUTION PROCEDURES	2
01732	SELECTIVE DEMOLITION	2
01800	GENERAL NOTES	6
<b>DIVISION 2 - SITE CONSTRUCTION</b>		
02100	SITE CLEARING, AND FILLING	3
02361	TERMITE CONTROL	2
02520	CONCRETE PAVING, CURBS AND SIDEWALKS	10
02580	TRAFFIC STRIPING AND PARKING SIGNAGE	2
02601	FLEXIBLE BASE	8
02610	PRIME COAT	4
02612	HOT MIX ASPHALT CONCRETE PAVEMENT	14
02680	FLAT WHEEL ROLLING	2
02682	ONEUMATIC TIRE ROLLING	3
02720	SITE DRAINAGE	3
02830	CHAIN LINK FENCING	4
<b>DIVISION 3 - CONCRETE</b>		
03300	CAST-IN-PLACE CONCRETE	5
<b>DIVISION 4 - MASONRY</b>		
04100	MORTAR	3
04210	BRICK MASONRY	5
04220	CONCRETE MASONRY UNIT	5
<b>DIVISION 5 - METALS</b>		
05120	STRUCTURAL STEEL	6
05210	STRUCTURAL JOISTS	4
05310	STEEL FORM FLOOR DECK AND STRUCTURAL ROOF DECK	2
05410	LIGHT GAGE METAL FRAMING SYSTEMS AND GYPSUM SHEATHING	4
05520	HANDRAILS AND RAILINGS	4
05800	EXPANSION CONTROL	7

**DIVISION 6 - WOOD AND PLASTICS**

06100	ROUGH CARPENTRY	3
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**DIVISION 7 - THERMAL AND MOISTURE PROTECTION**

07100	DAMPPROOFING AND WATERPROOFING	4
07210	BUILDING INSULATION	2
07220	ROOF AND DECK INSULATION	3
07260	UNDER-SLAB VAPOR BARRIER	2
07412	NEW STANDING SEAM METAL ROOF SYSTEM	15
07530	COAL-TAR ELASTOMERIC ROOFING SYSTEM	26
07600	SHEET METAL AND MISCELLANEOUS ACCESSORIES	8
07920	JOINT SEALANTS	2

**DIVISION 8 - DOORS AND WINDOWS**

08113	HOLLOW METAL DOORS AND FRAMES	10
08330	OVERHEAD COILING SERVICE DOORS	6
08411	ALUMINUM STOREFRONTS	8
08710	FINISH HARDWARE	21
08730	THRESHOLDS, WEATHERSTRIPPING AND SEALS	2
08810	GLASS AND GLAZING	4

**DIVISION 9 - FINISHES**

09101	CONSTRUCTION TRAFFIC CONTROL	10
092400	PORTLAND CEMENT PLASTER	5
09250	INTERIOR DRYWALL SYSTEMS	7
09512	ACOUSTICAL TILE CEILING	4
09650	RESILIENT FLOORING AND BASE	4
09800	ELASTOMERIC COATING	2
09910	PAINTING	6

**DIVISION 10 - SPECIALTIES**

10200	METAL LOUVERS	3
10523	FIRE EXTINGUISHERS AND CABINETS	4

**DIVISION 11 – EQUIPMENT****DIVISION 12 – FURNISHINGS**

12492	HORIZONTAL LOUVER BLINDS	3
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**DIVISION 13 - SPECIAL CONSTRUCTION**

13125	PRE-ENGINEERED METAL BUILDINGS	5
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**DIVISION 14 - CONVEYING SYSTEMS**

SECTION 00300 — INFORMATION AVAILABLE TO BIDDERS

PART 1 - GENERAL

1.1 EXISTING CONDITIONS:

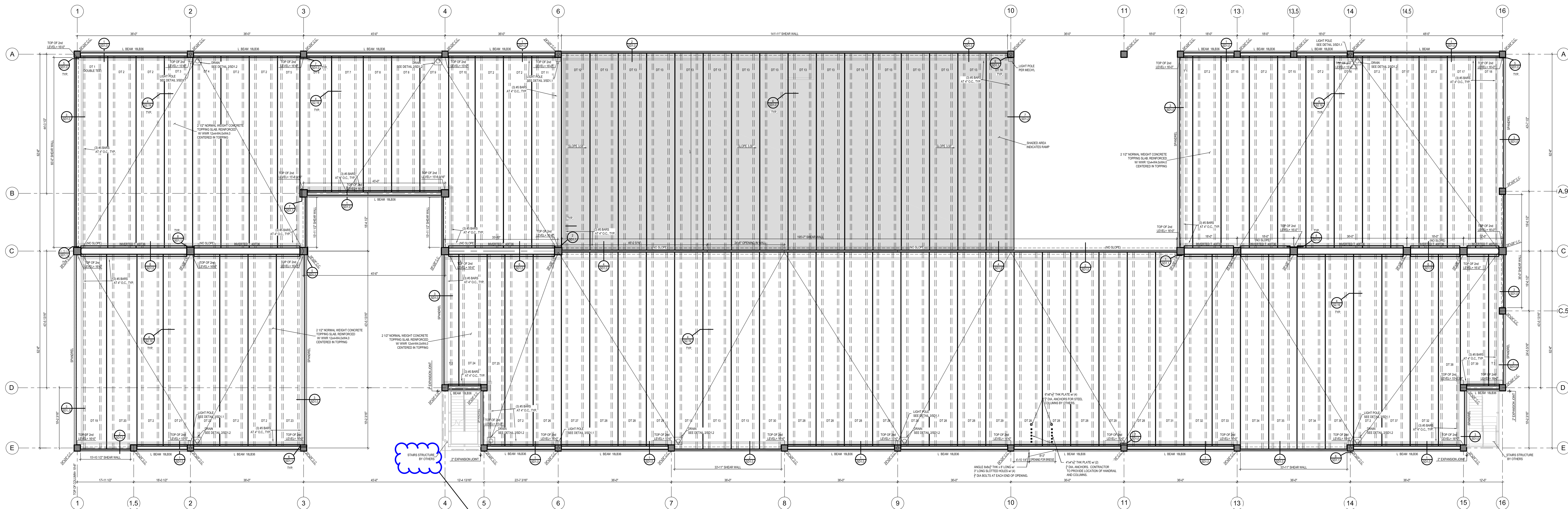
- A. A copy of a shop drawing with respect to the building site is included with this document:
  - 1. Title:  
Plant Precast Structural Concrete
  - 2. Date:  
June 1, 2017
  - 3. Prepared by:  
CLH Engineering, INC.
- B. This shop drawing identifies design that was started for this project and that must be followed to complete project, prepared primarily for the review of Milnet Architectural Services, PLLC.
- C. The information on this document must be field verified with existing conditions, and if any discrepancies arise these shop drawings must be followed. Reference structural drawings for additional information.

EXISTING REPORTS AND SURVEYS

1.2 SUBSURFACE INVESTIGATION REPORT

PART 2 -

END OF SECTION



1 OVERALL 2nd FLOOR FRAMING PLAN  
SCALE: 1/16"=1'-0"

Minnet Architectural Services  
608 S. 12th Street  
McAllen, Texas 78501  
(956)-688-5565

☒ Comments Noted  
☐ For Your Information and File  
☐ No Action

☐ No Exceptions Taken  
☐ For Your Review & Comments  
☐ Revise and Resubmit

Approval is only for general conformance with the design concept of the Project and the information given in the Contract Documents. Contractor is responsible for dimensions to be confirmed and correlated at the job site; information that pertains solely to the fabrication process or to the means and methods of construction; coordination of the work of all trades; and performing all work in a safe and satisfactory manner. This approval does not modify Contractor's duty to comply with the Contract Documents.

Date: **06-02-2017** Name: *[Signature]* Job No: **215031**

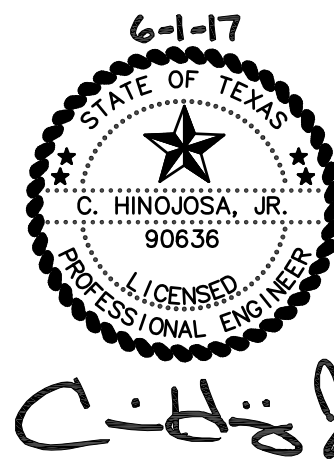
**Shop Drawing Review**

☐ No Exception Taken  
☒ Submit Specified Items

☐ Exceptions Noted  
☒ Revise and Resubmit

Checking is for general conformance with design concept of the project and general compliance with contract documents. Contractor is responsible for confirming and correlating dimensions at job site for information which pertains to fabrication processes or construction techniques, and for coordination of work of all trades. Checking of shop drawings shall not relieve the contractor's responsibility for deviation from requirements of the contract documents nor for errors or omissions in the shop drawings. No dimensions have been reviewed.

**SOLORIO** Solorio, Inc. (F-1616) Date: 06/01/2017



**CLH**  
ENGINEERING, INC.  
T&PE FIRM No. F-8719  
701 S. 15th STREET McALLEN, TX. 78501  
(956) 687-5560 (956) 687-5561 FAX

Project Name and Address or Nearest Intersection  
**McAllen Public Safety  
Building Parking Garage**

McAllen Texas

Owner:

Sheet Title	Sheet
Date June 1, 2017	<b>S2.0</b>
Scale As Noted	





Sheet Title	Sheet  <b>S2.1</b>
Date June 1, 2017	
Scale As Noted	



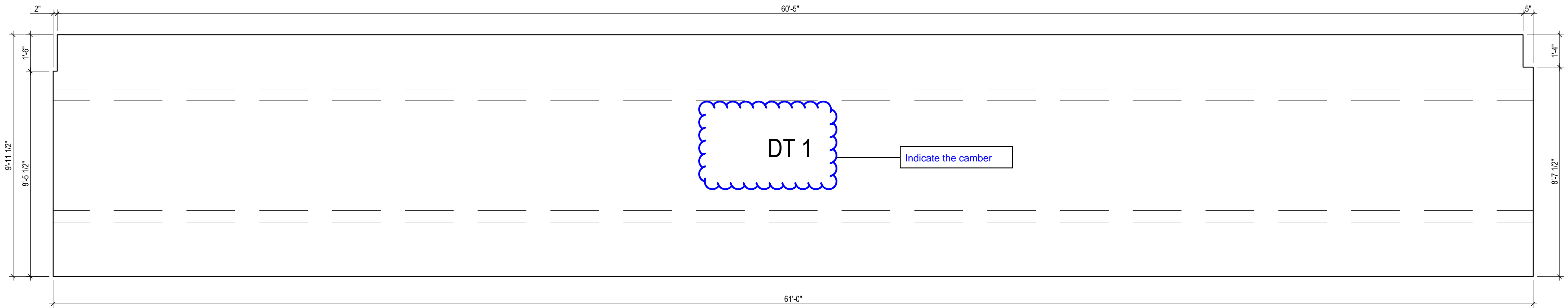
McAllen Texas

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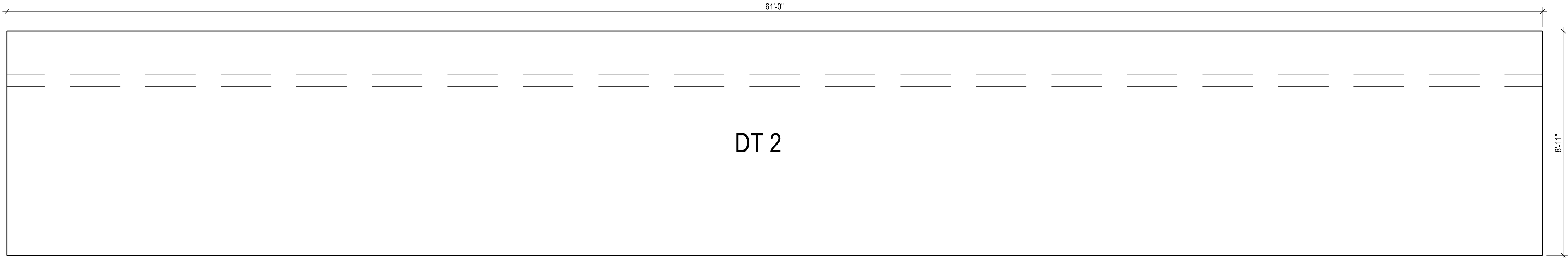
Owner:

Sheet Title	Sheet  <b>S2.2</b>
Date June 1, 2017	
Scale	
As Noted	

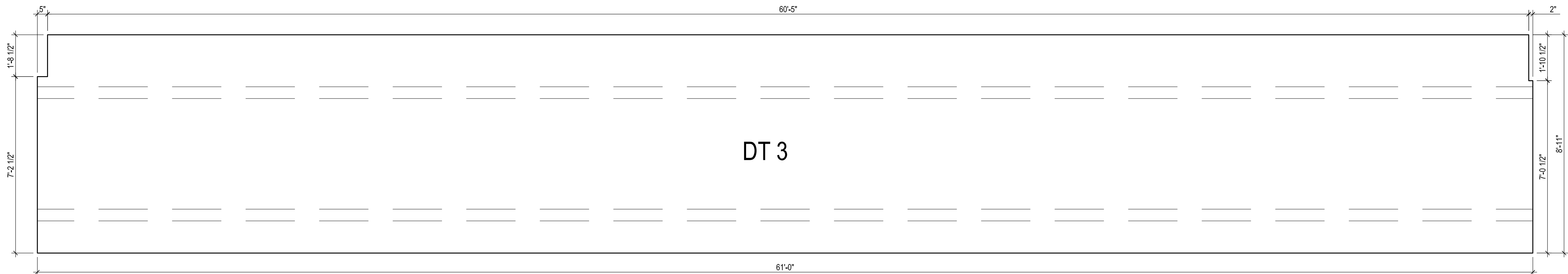




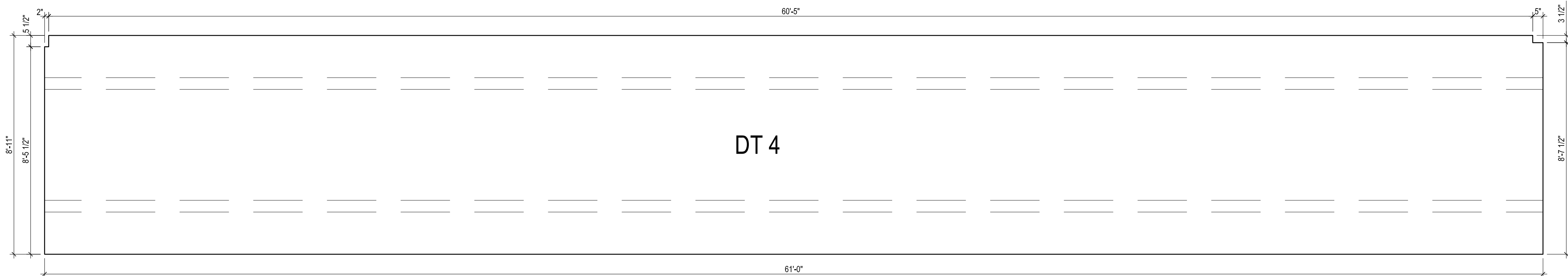
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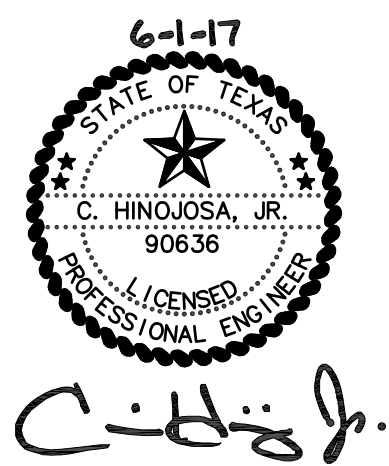
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DOUBLE T (DT 3)  
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DOUBLE T (DT 4)  
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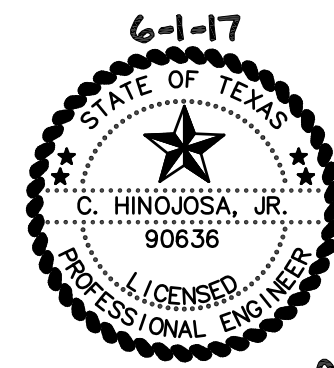
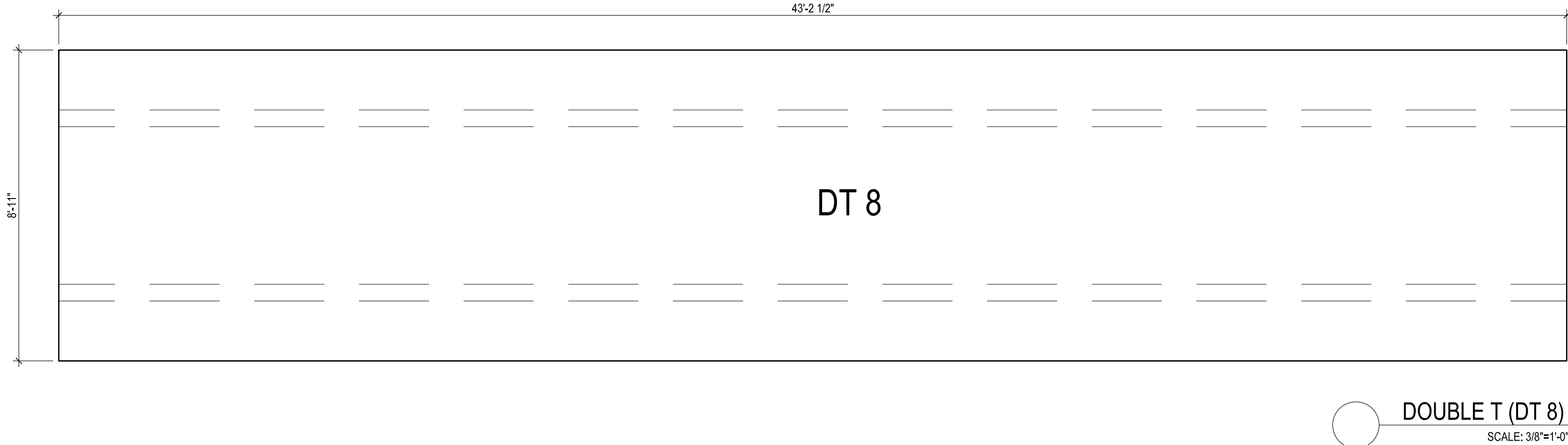
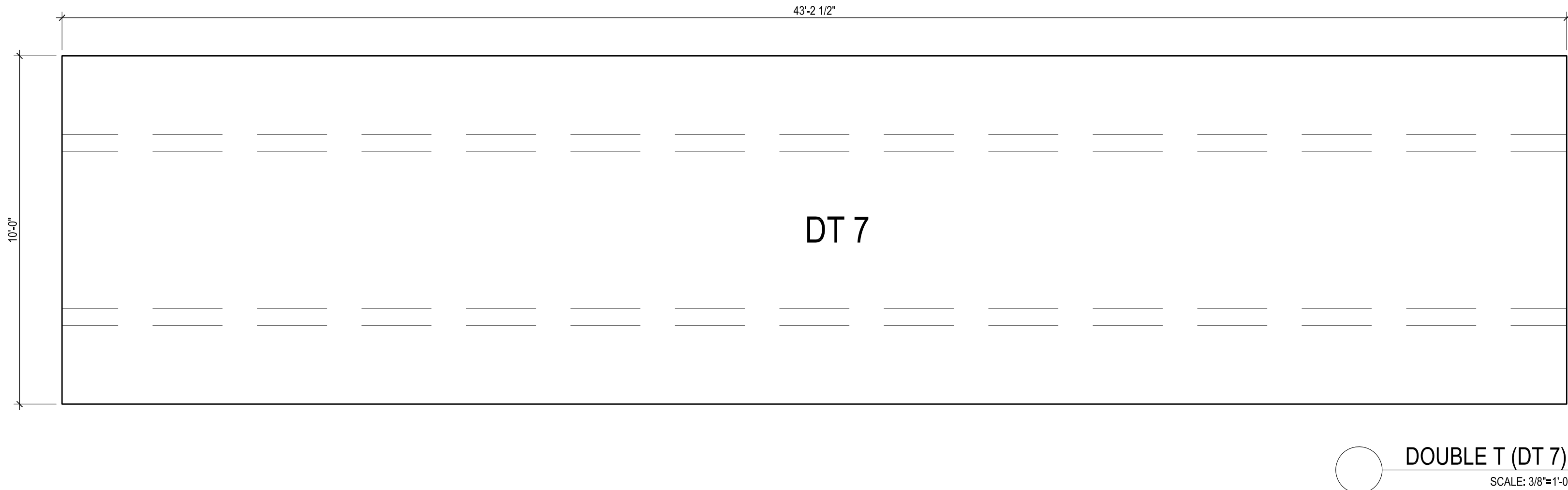
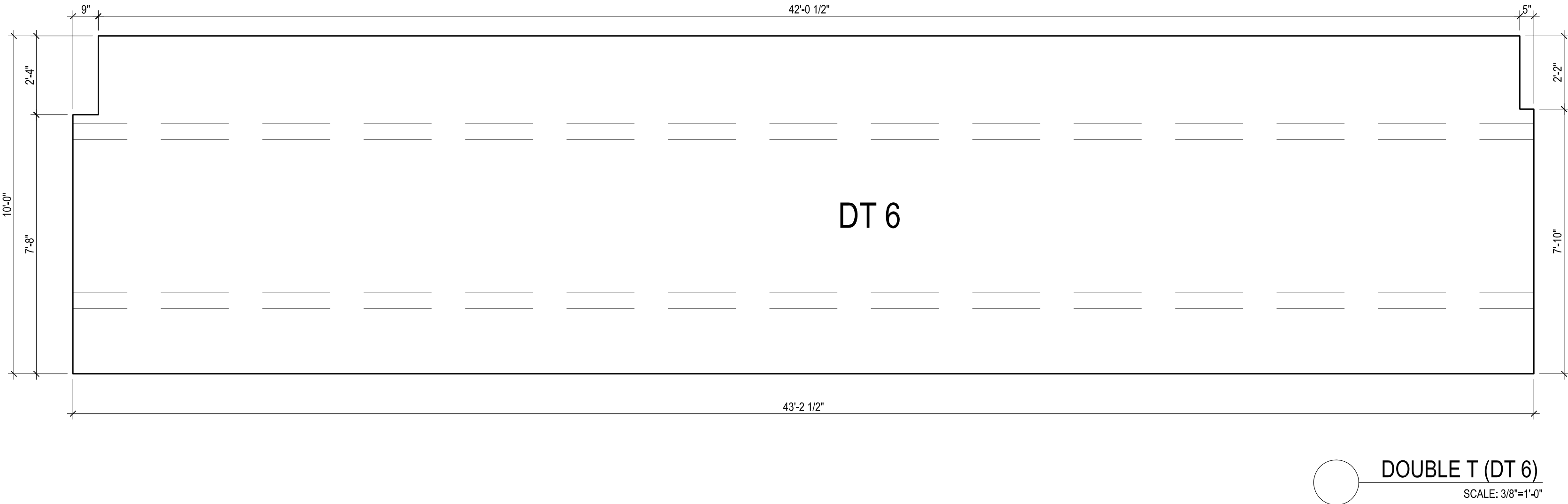
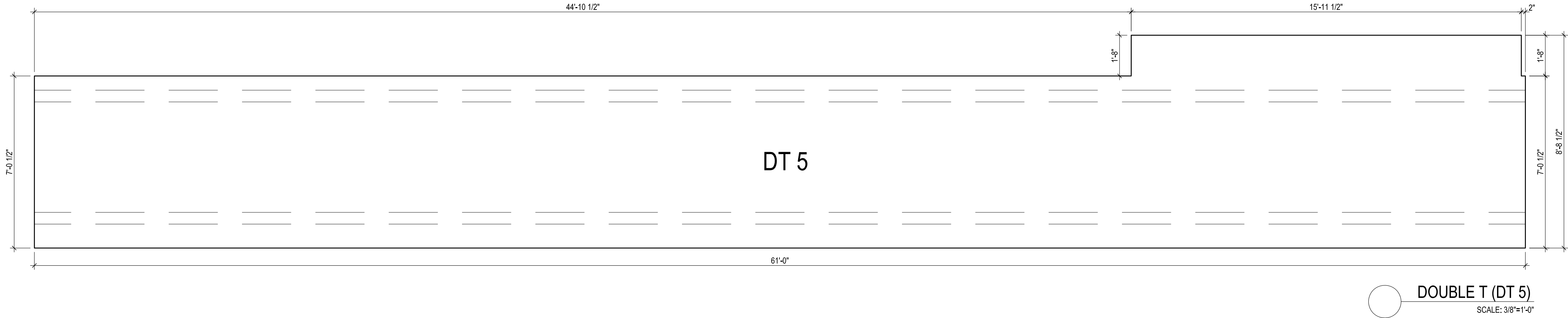


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Project Name and Address or Nearest Intersection  
**McAllen Public Safety  
Building Parking Garage**

Owner:  
**McAllen Texas**

Sheet Title DIMENSIONED DOUBLE T's	Sheet <b>S2.3</b>
Date June 1, 2017	
Scale As Noted	



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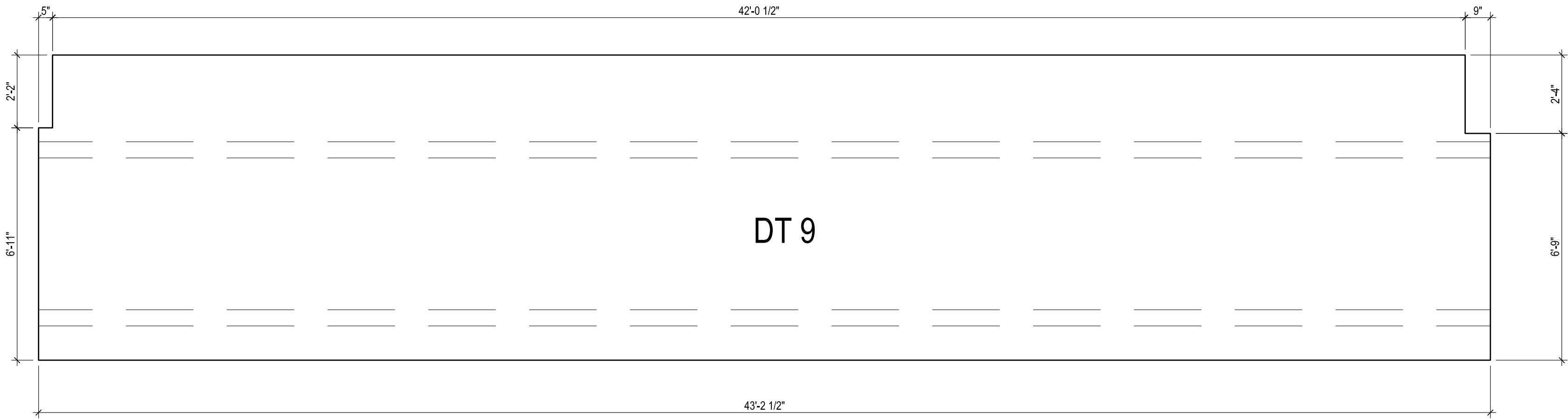
Project Name and Address or Nearest Intersection  
**McAllen Public Safety  
Building Parking Garage**

McAllen Texas

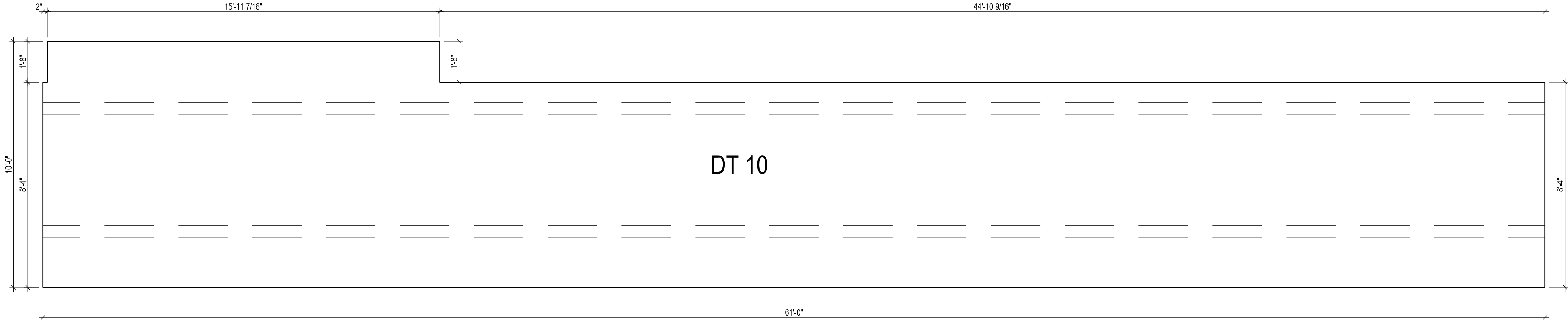
Owner:

Sheet Title DIMENSIONED DOUBLE T's	Sheet
Date June 1, 2017	
Scale As Noted	

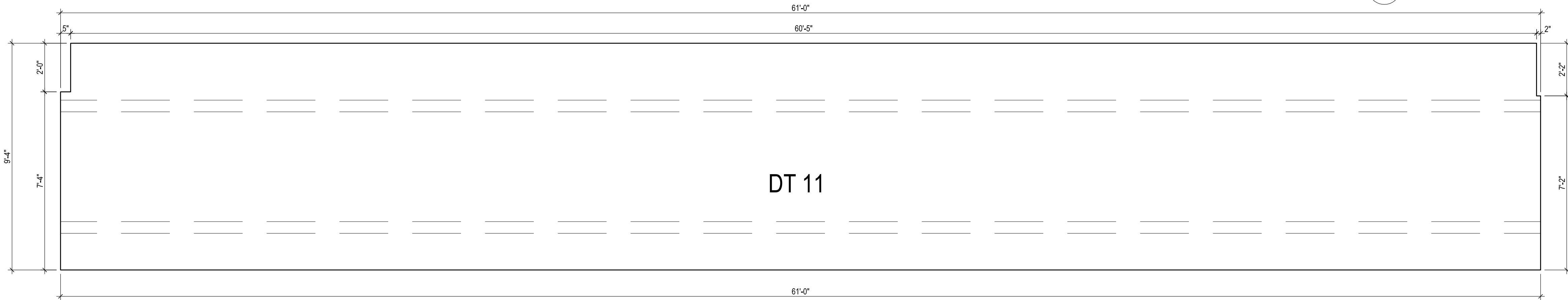
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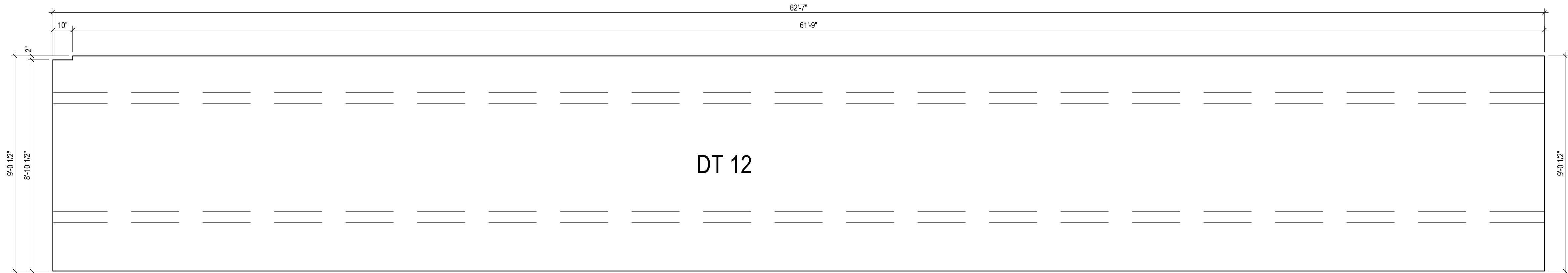
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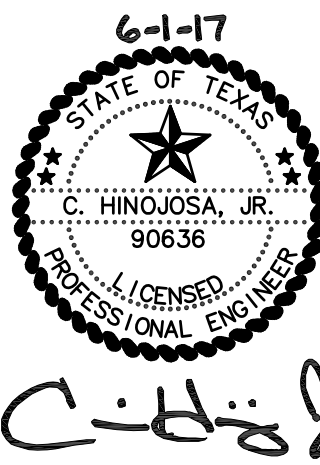
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DOUBLE T (DT 11)  
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DOUBLE T (DT 12)  
SCALE: 3/8"=1'-0"



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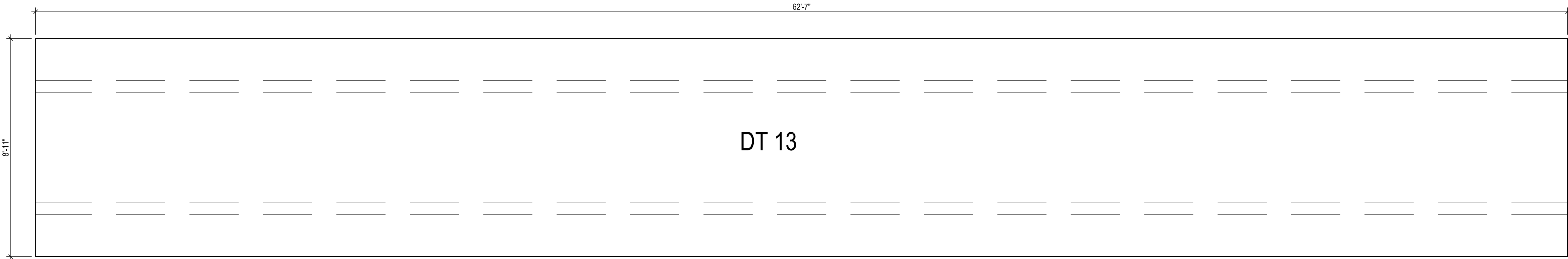
Project Name and Address or Nearest Intersection  
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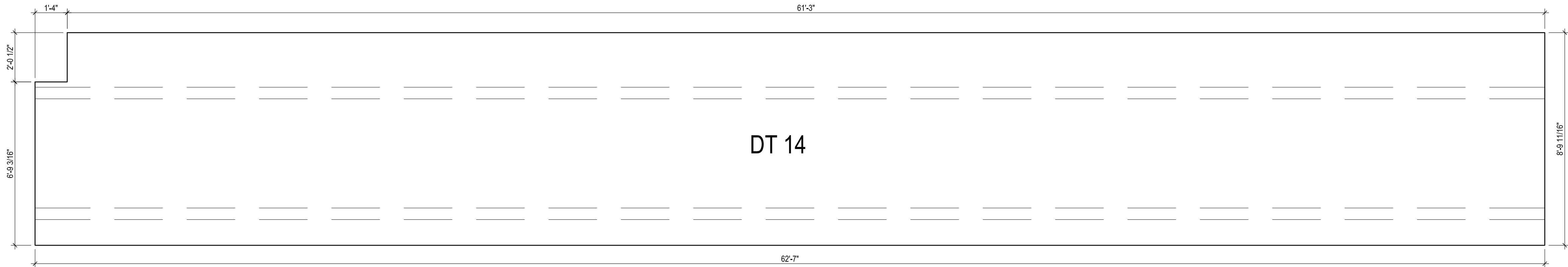
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Sheet Title DIMENSIONED DOUBLE T's	Sheet
Date June 1, 2017	
Scale As Noted	

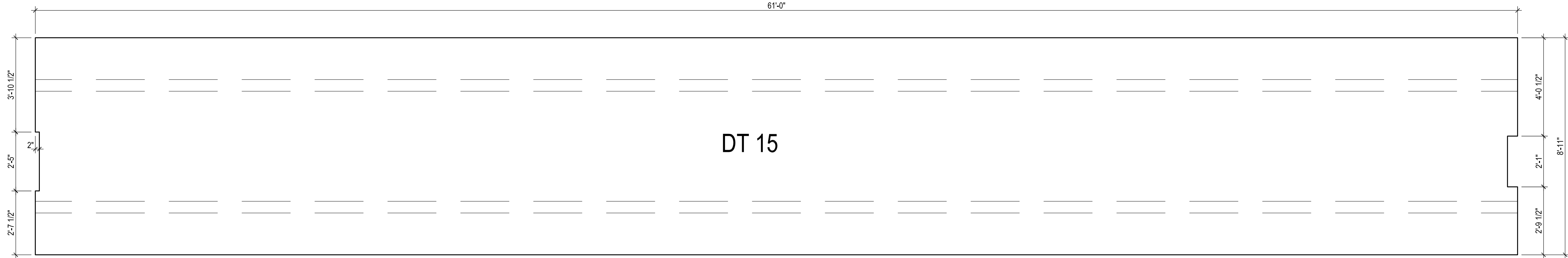
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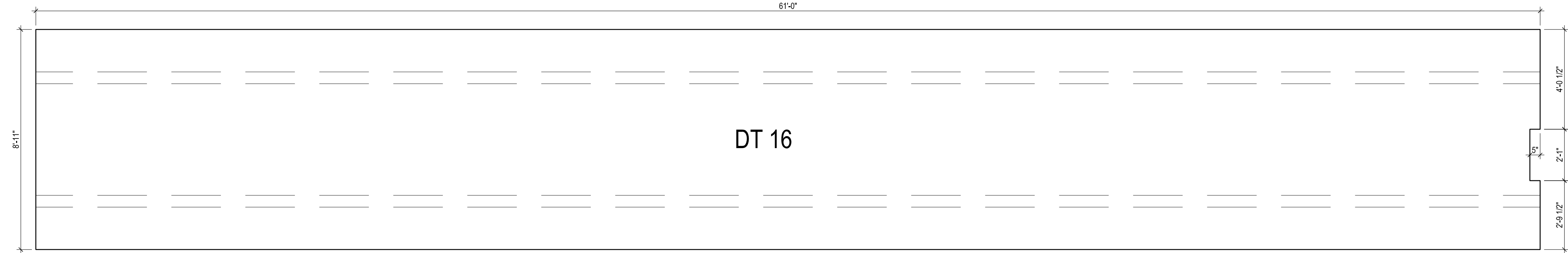
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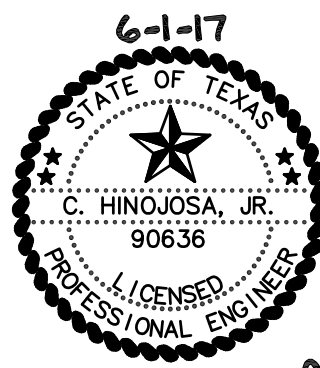
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DOUBLE T (DT 15)  
SCALE: 3/8"=1'-0"



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SCALE: 3/8"=1'-0"



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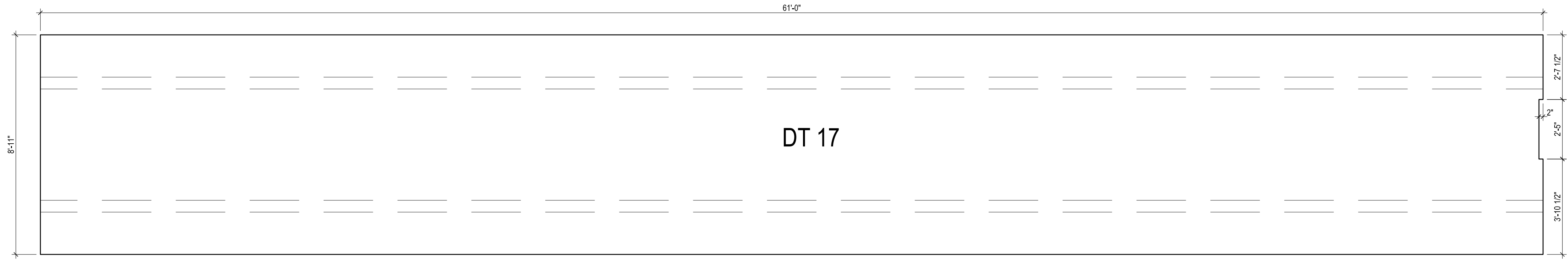
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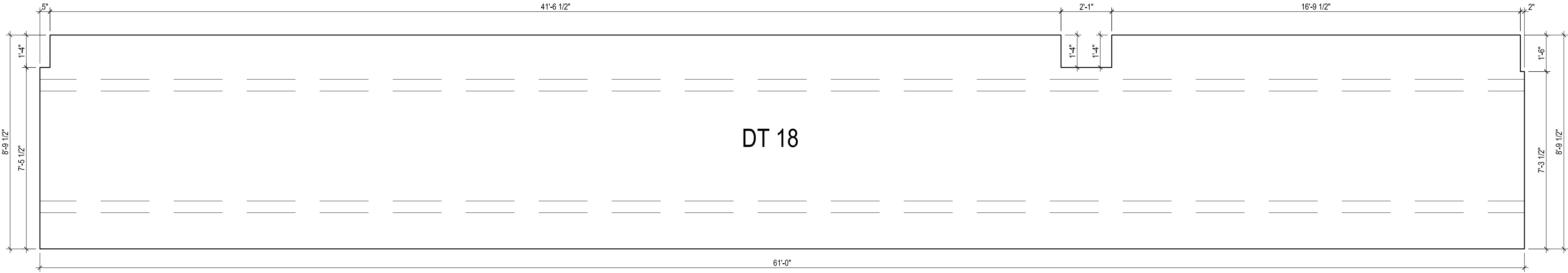
McAllen Texas

Owner:

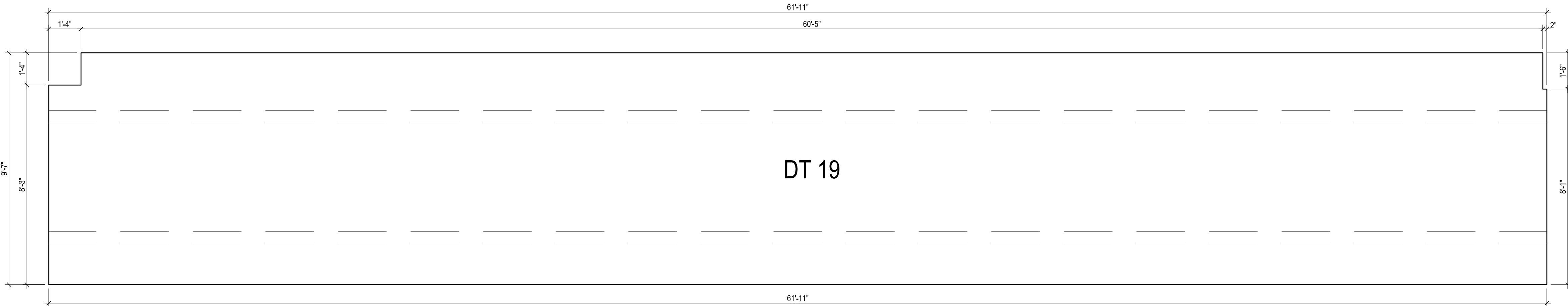
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Date June 1, 2017	<b>S2.6</b>
Scale As Noted	



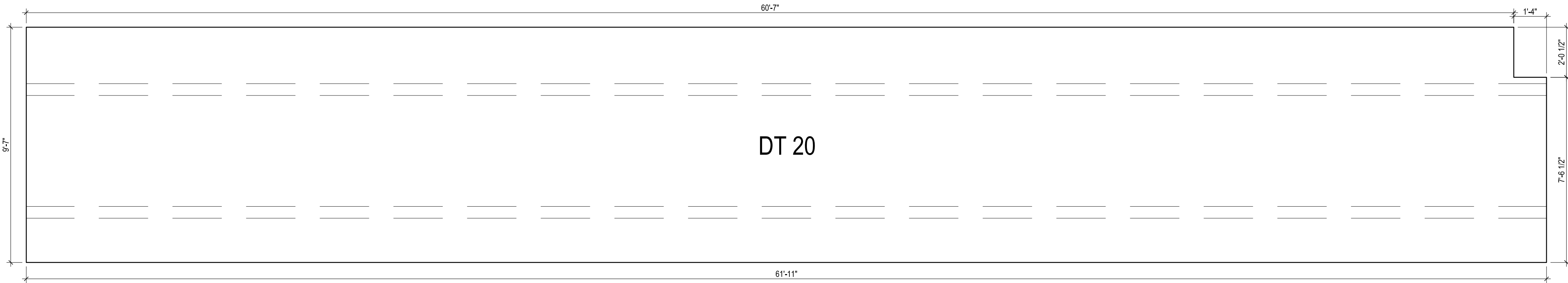
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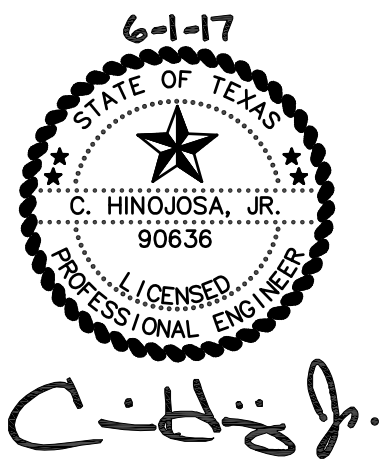
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DOUBLE T (DT 19)  
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DOUBLE T (DT 20)  
SCALE: 3/8"=1'-0"



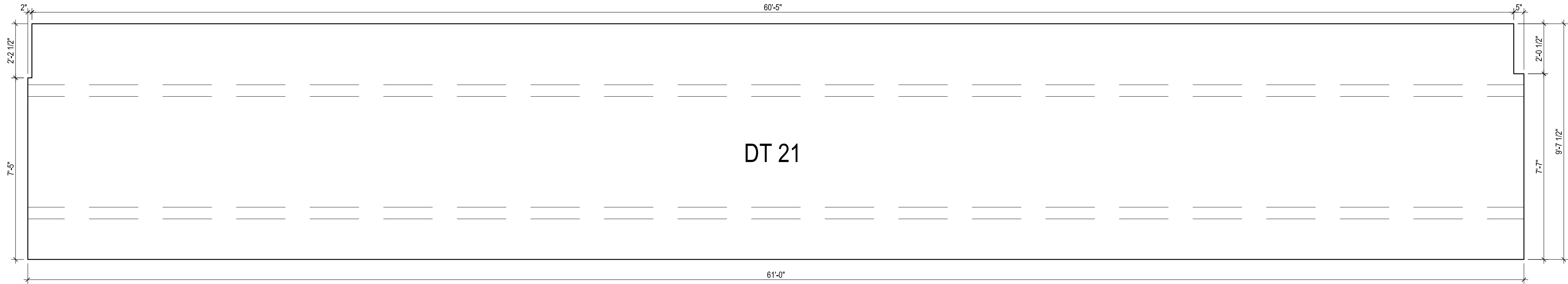
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**McAllen Public Safety  
Building Parking Garage**

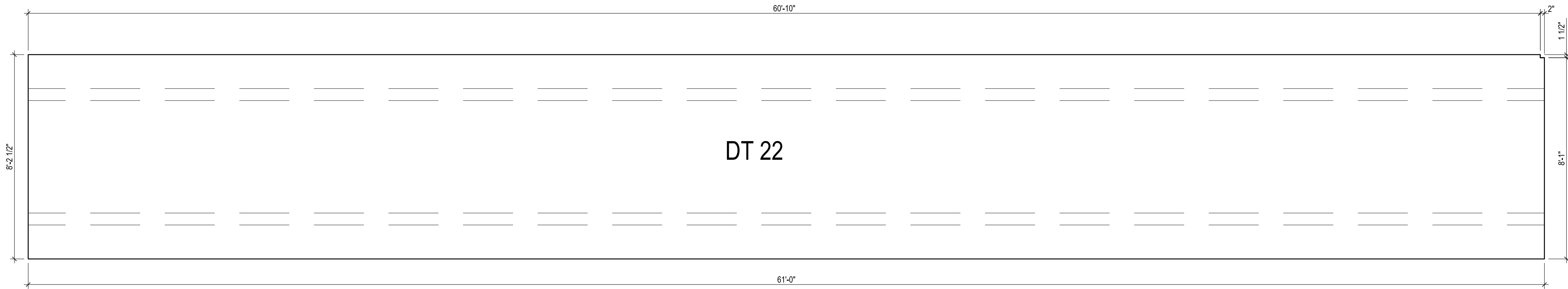
McAllen Texas

Owner:

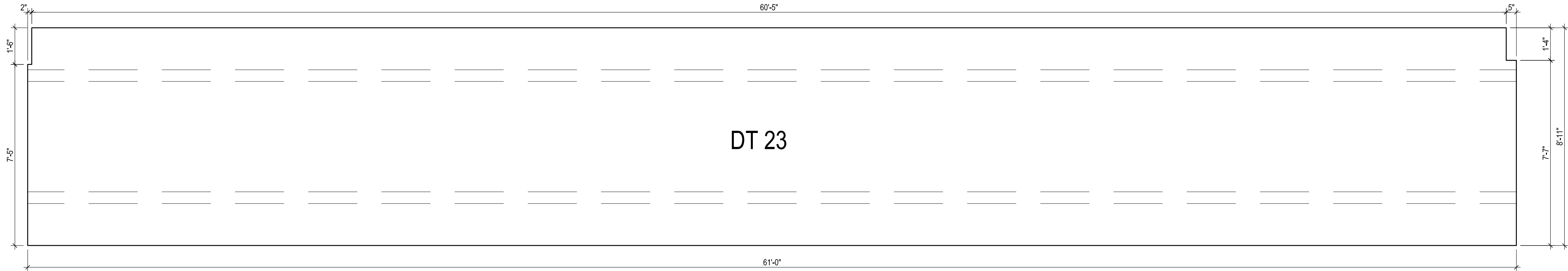
Sheet Title DIMENSIONED DOUBLE T's	Sheet
Date June 1, 2017	<b>S2.7</b>
Scale As Noted	



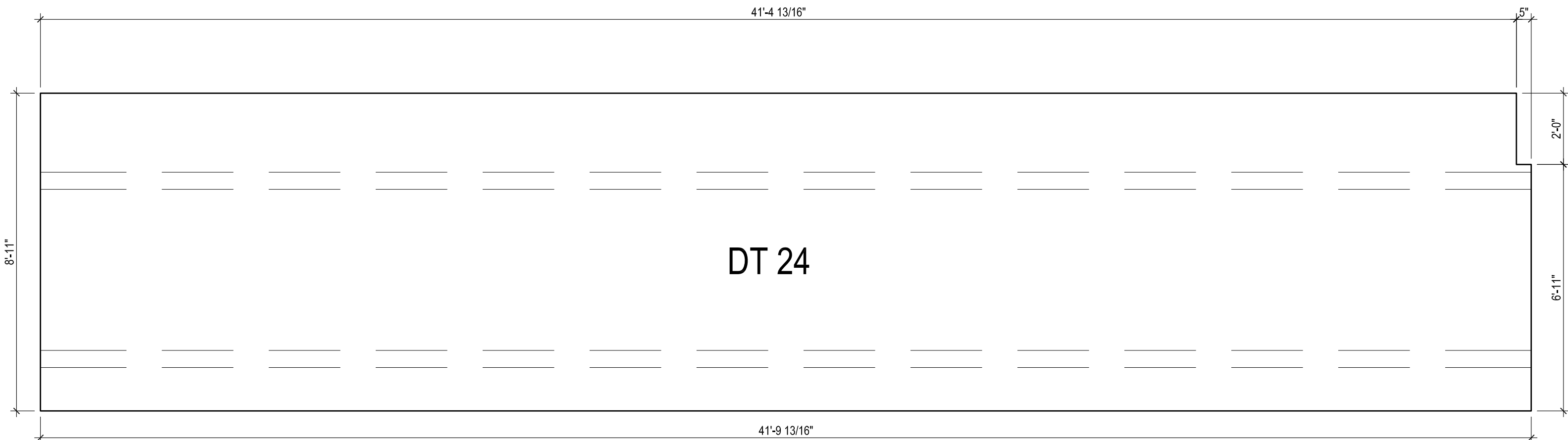
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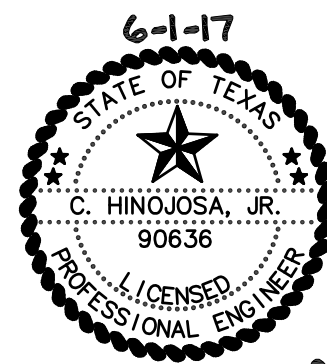
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DOUBLE T (DT 23)  
SCALE: 3/8"=1'-0"



DOUBLE T (DT 24)  
SCALE: 3/8"=1'-0"



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McAllen Public Safety  
Building Parking Garage

McAllen Texas

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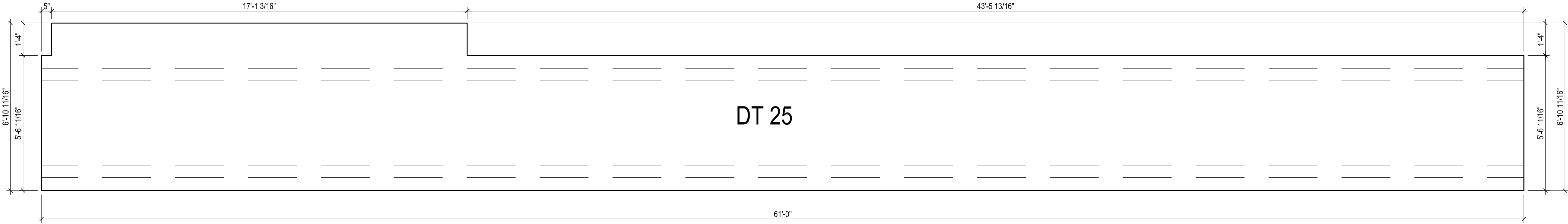
Sheet Title  
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DOUBLE T's

Date  
June 1, 2017

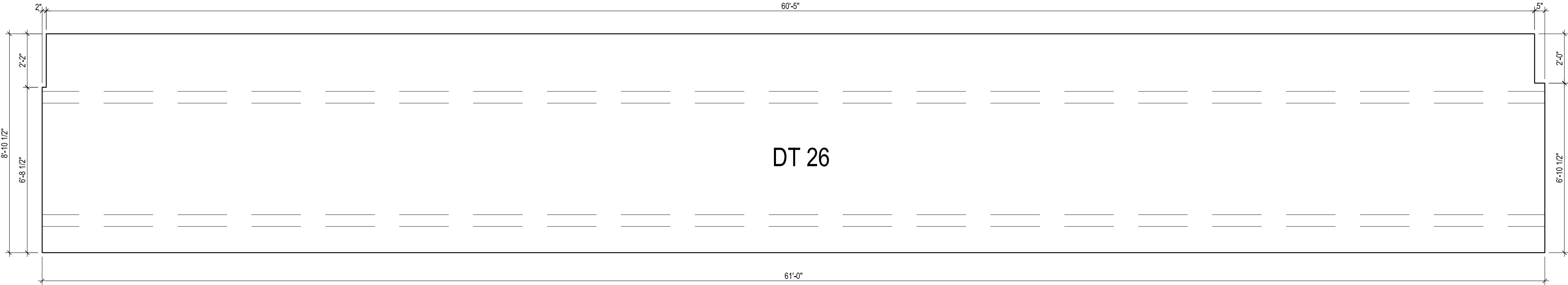
Scale  
As Noted

Sheet

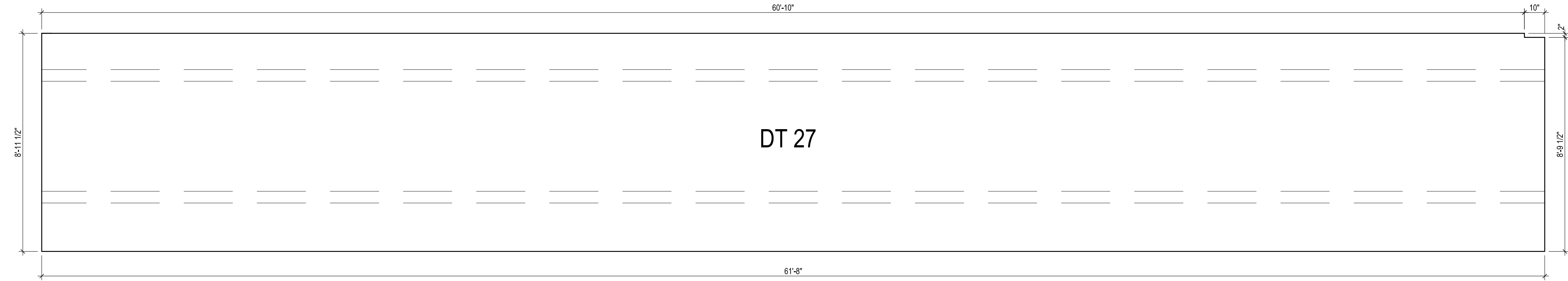
S2.8



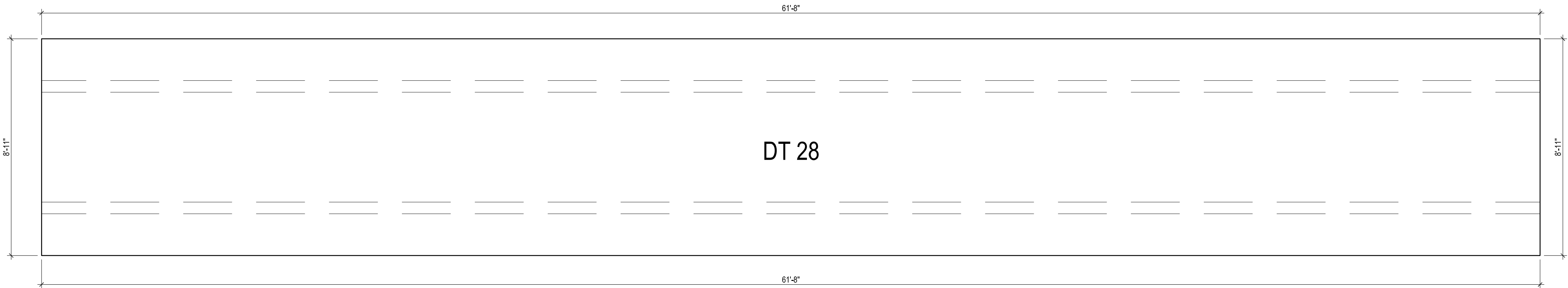
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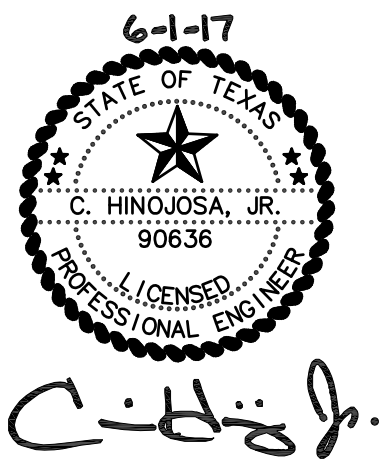
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DOUBLE T (DT 28)  
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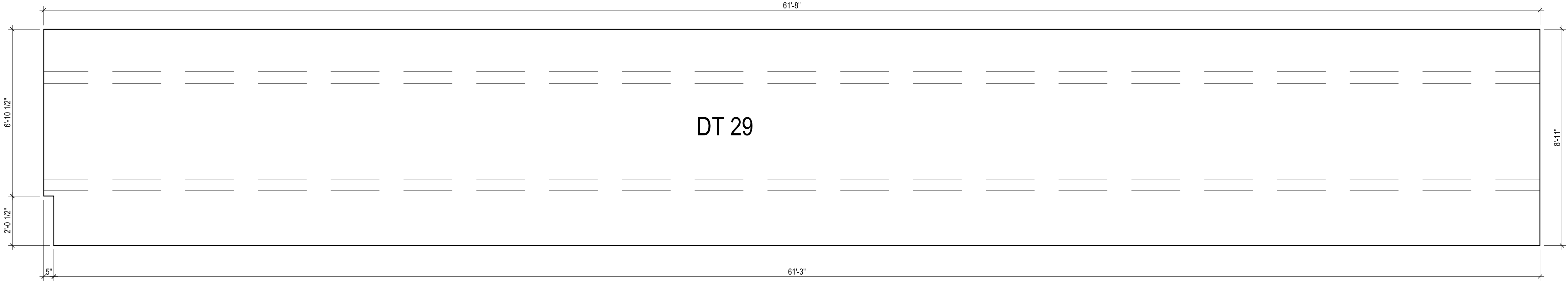
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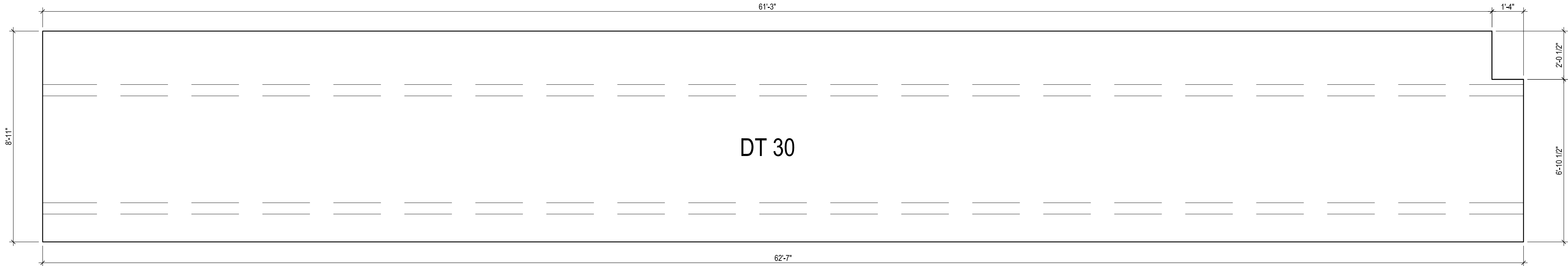
McAllen Texas

Owner:

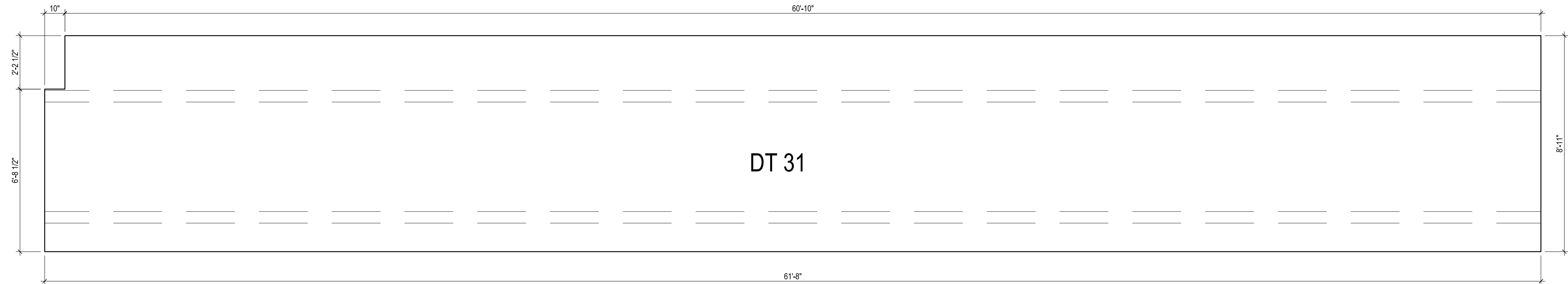
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Date June 1, 2017	<b>S2.9</b>
Scale As Noted	



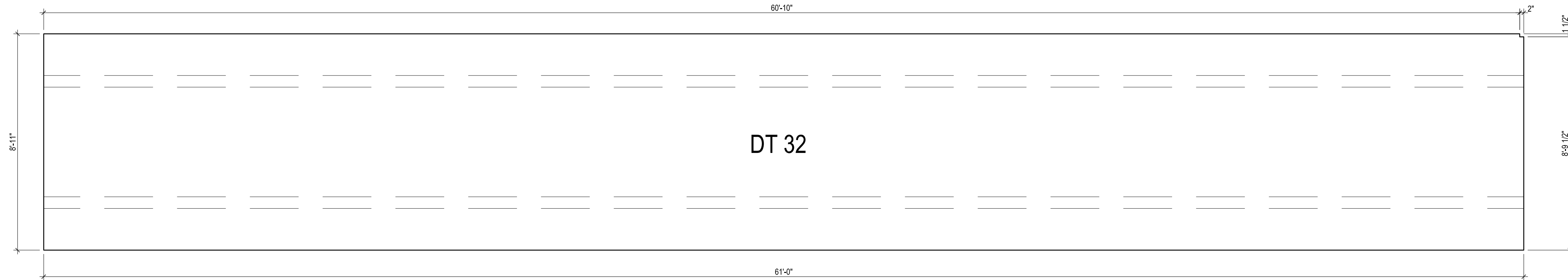
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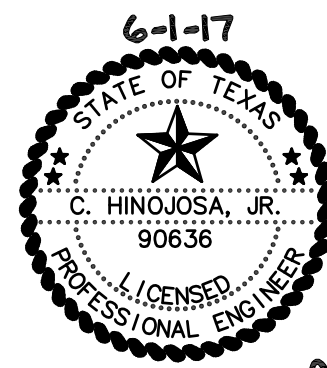
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DOUBLE T (DT 31)  
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DOUBLE T (DT 32)  
SCALE: 3/8"=1'-0"



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**McAllen Public Safety  
Building Parking Garage**

McAllen Texas

Owner:

Sheet Title  
DIMENSIONED  
DOUBLE T's

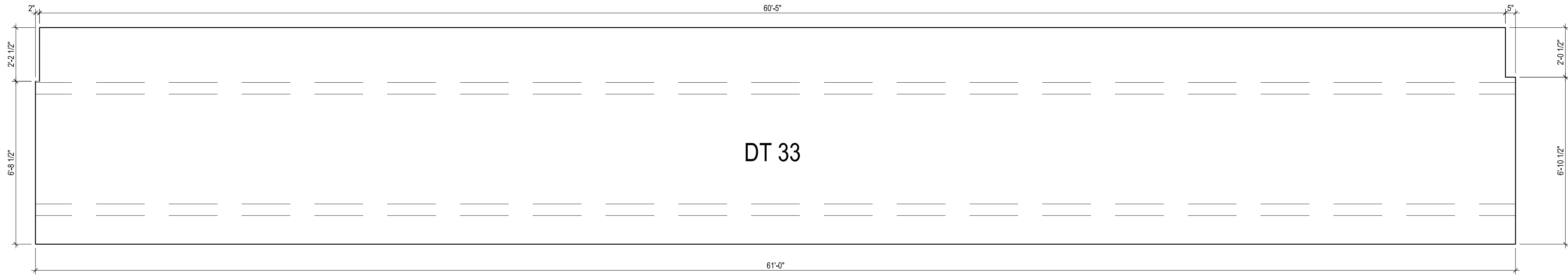
Date  
June 1, 2017

Scale  
As Noted

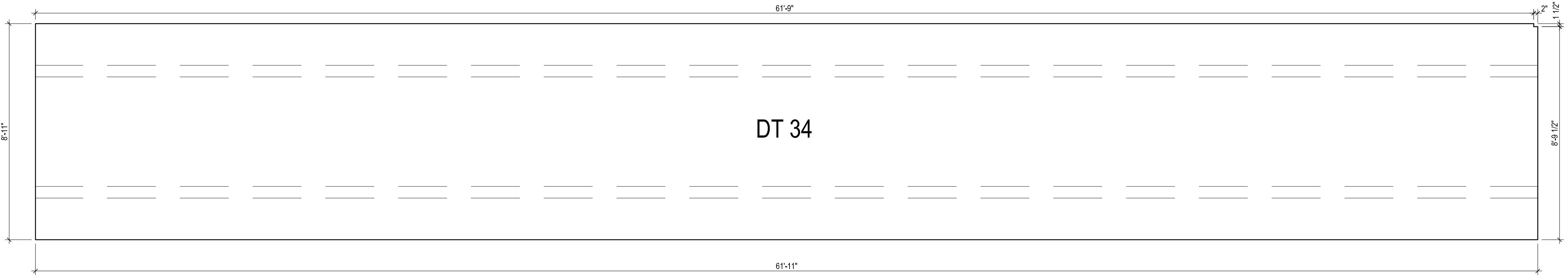
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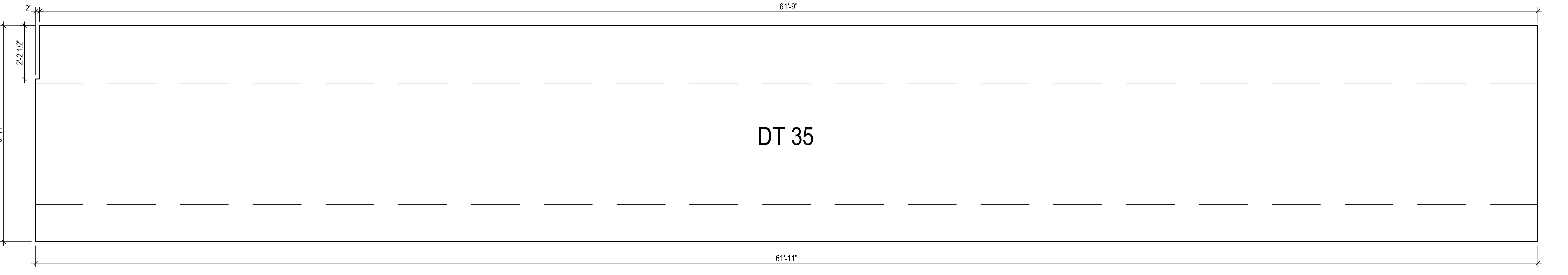




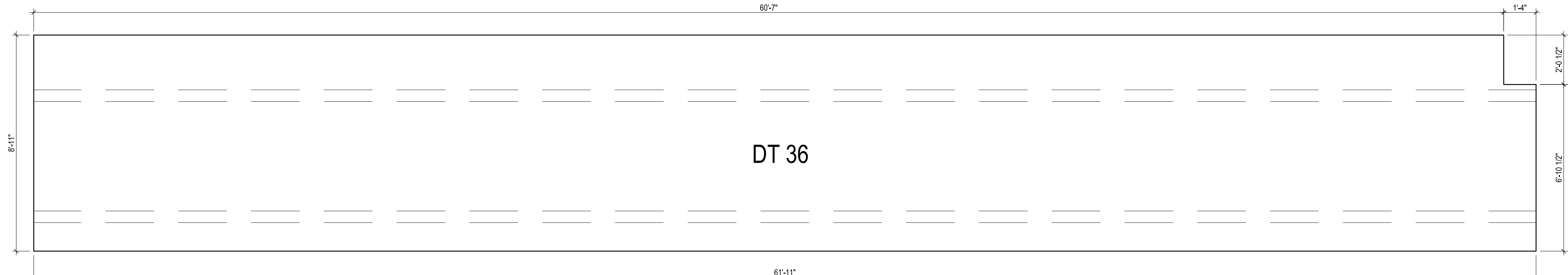
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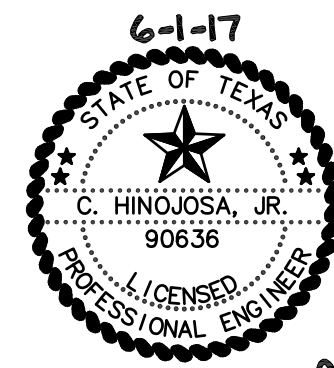
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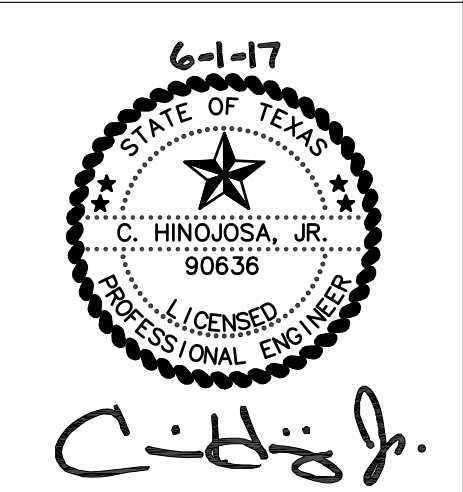
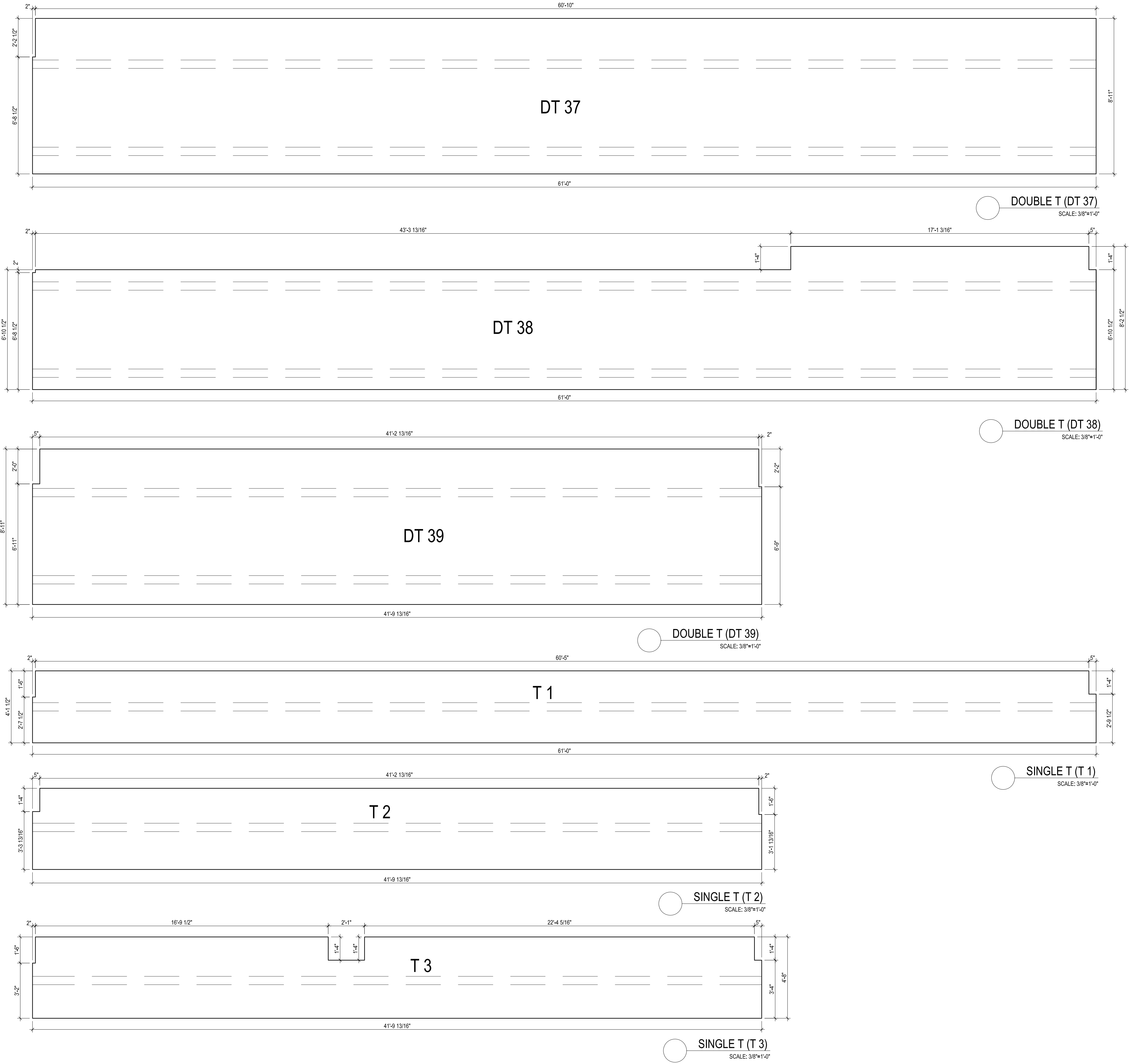
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Building Parking Garage**

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Sheet Title DIMENSIONED DOUBLE T's	Sheet
Date June 1, 2017	<b>S2.11</b>
Scale As Noted	

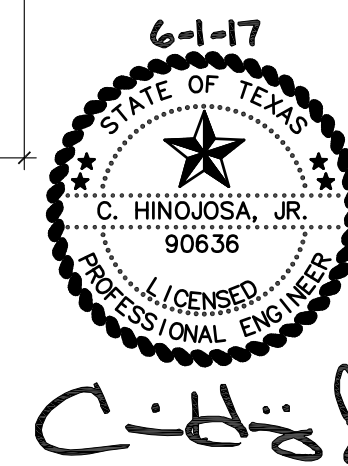
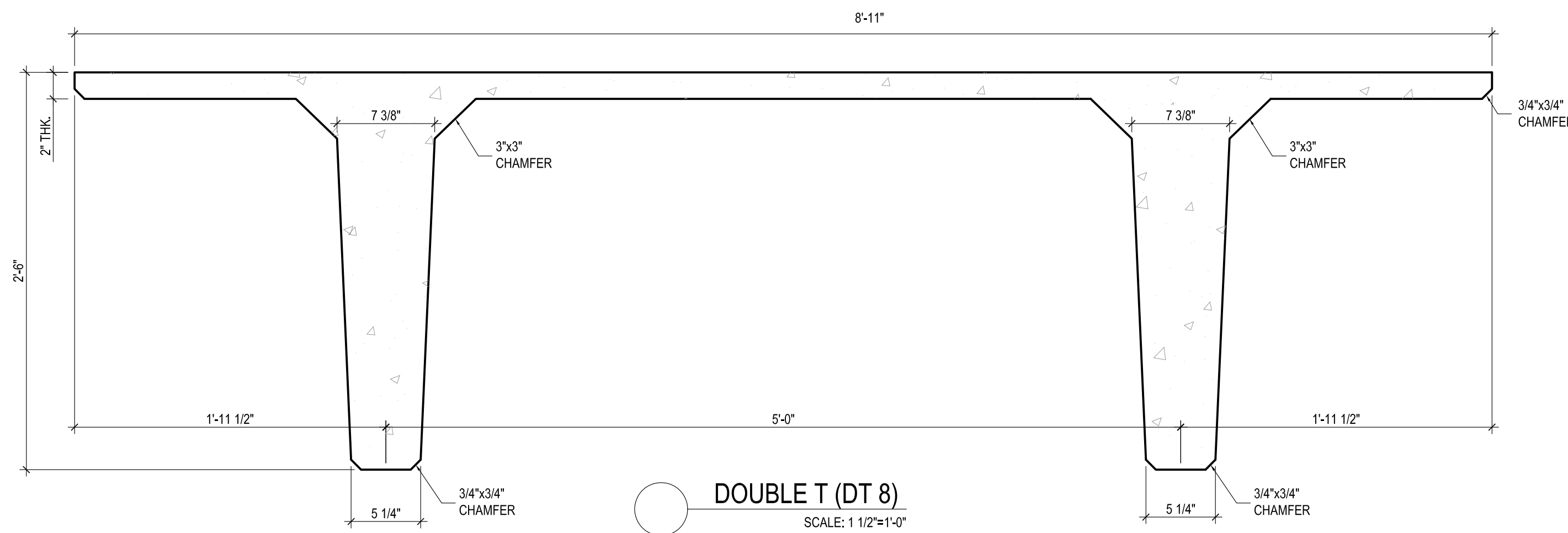
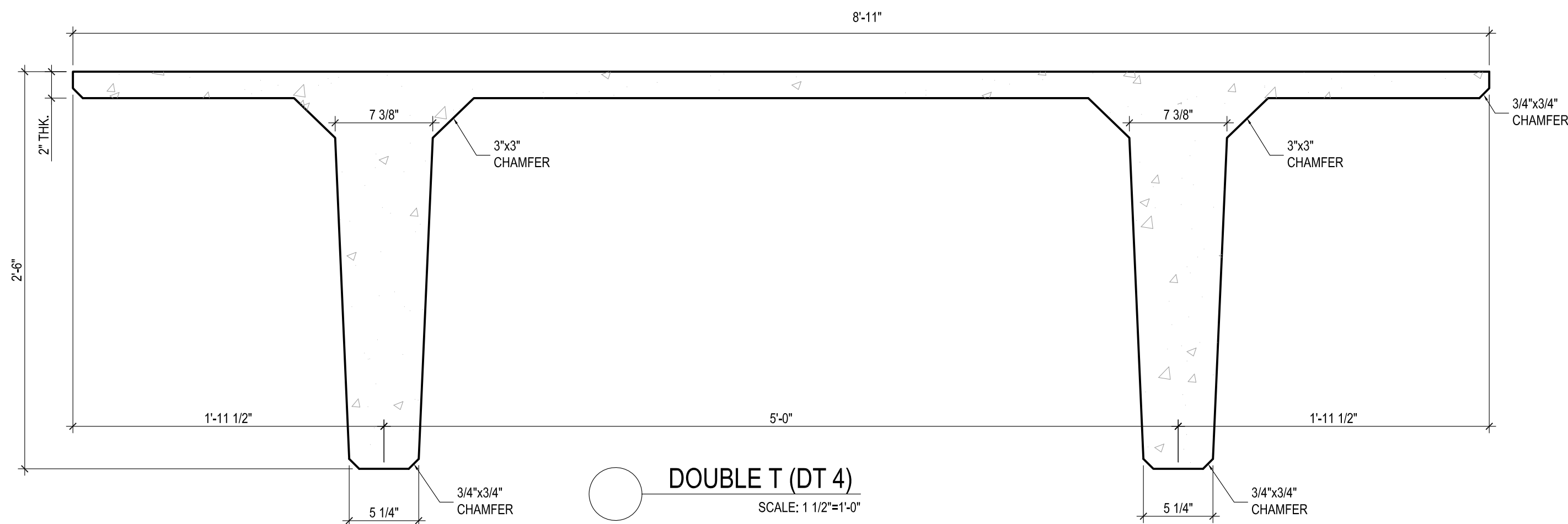
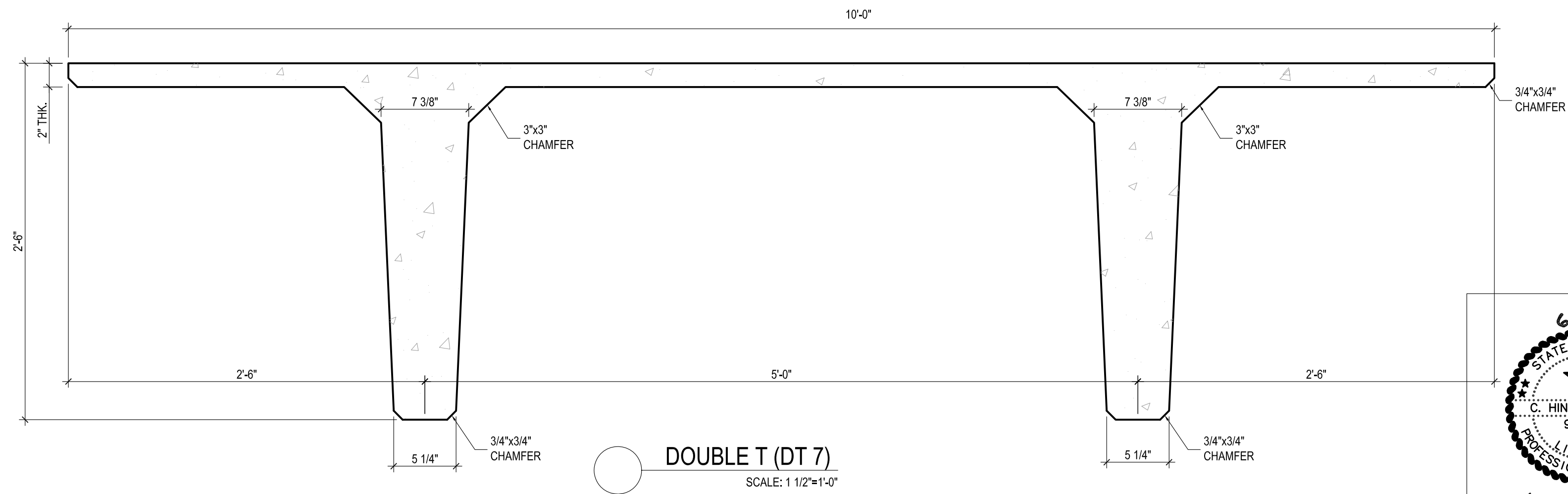
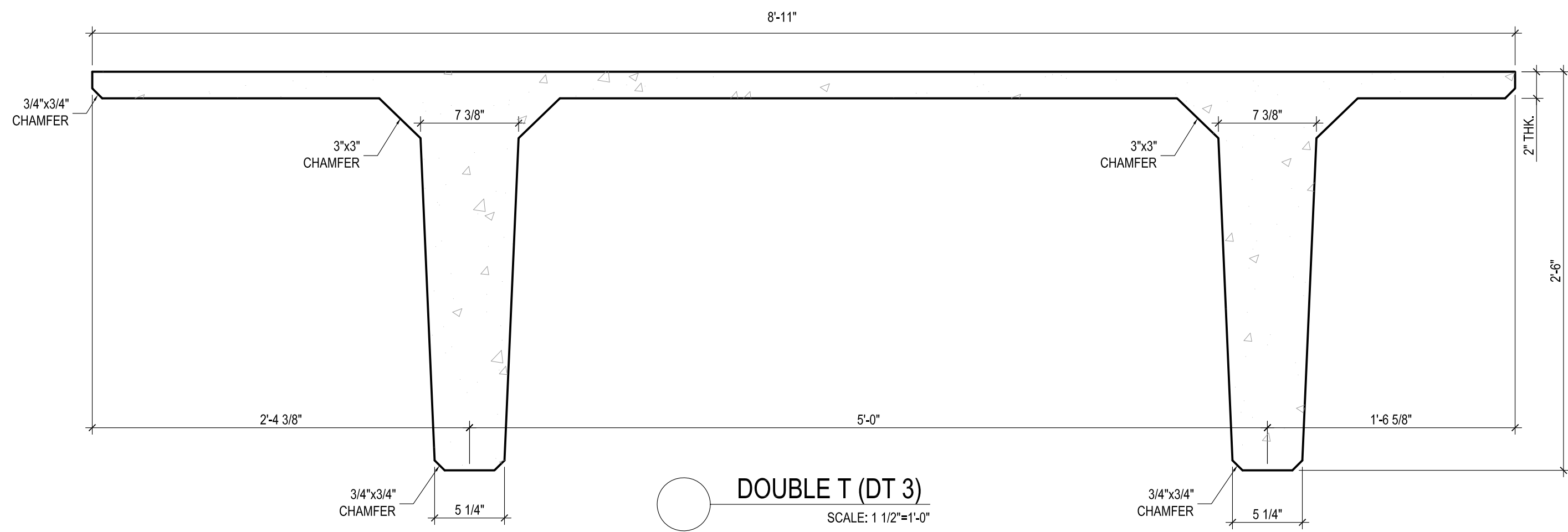
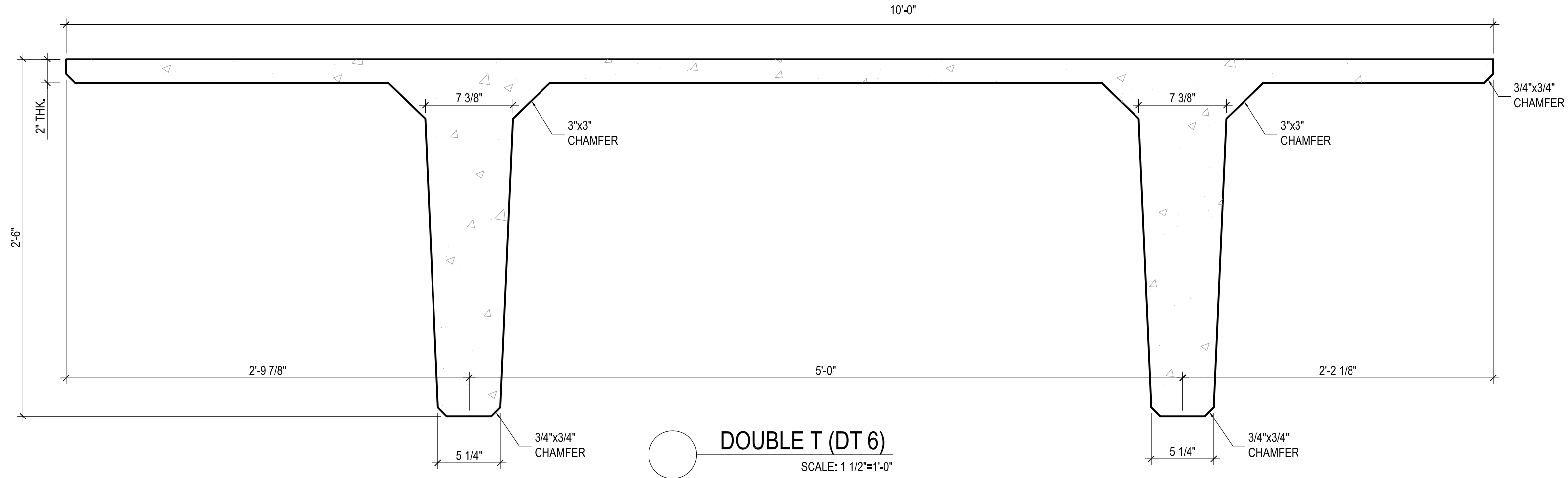
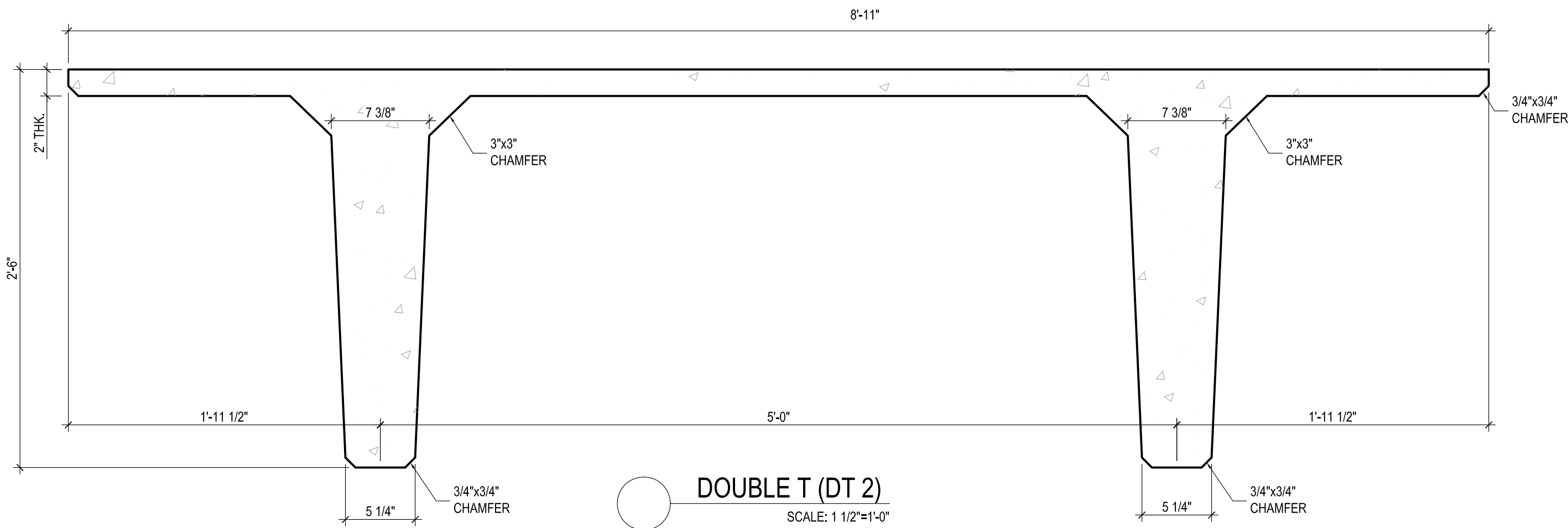
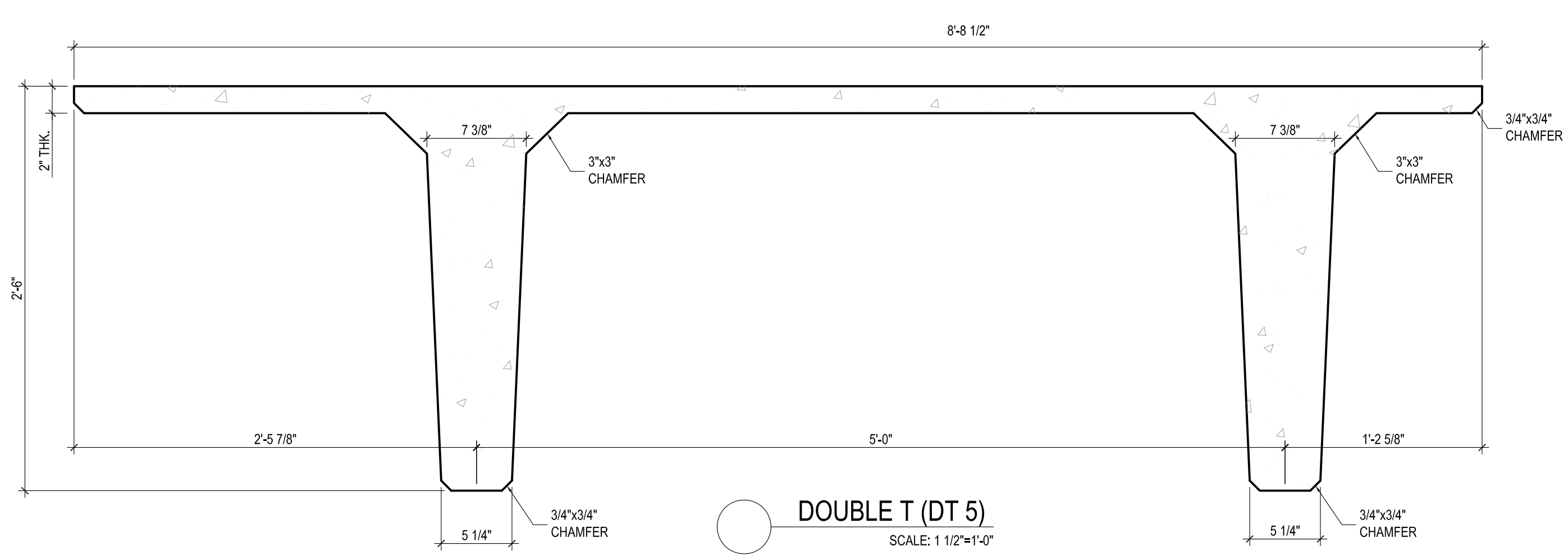
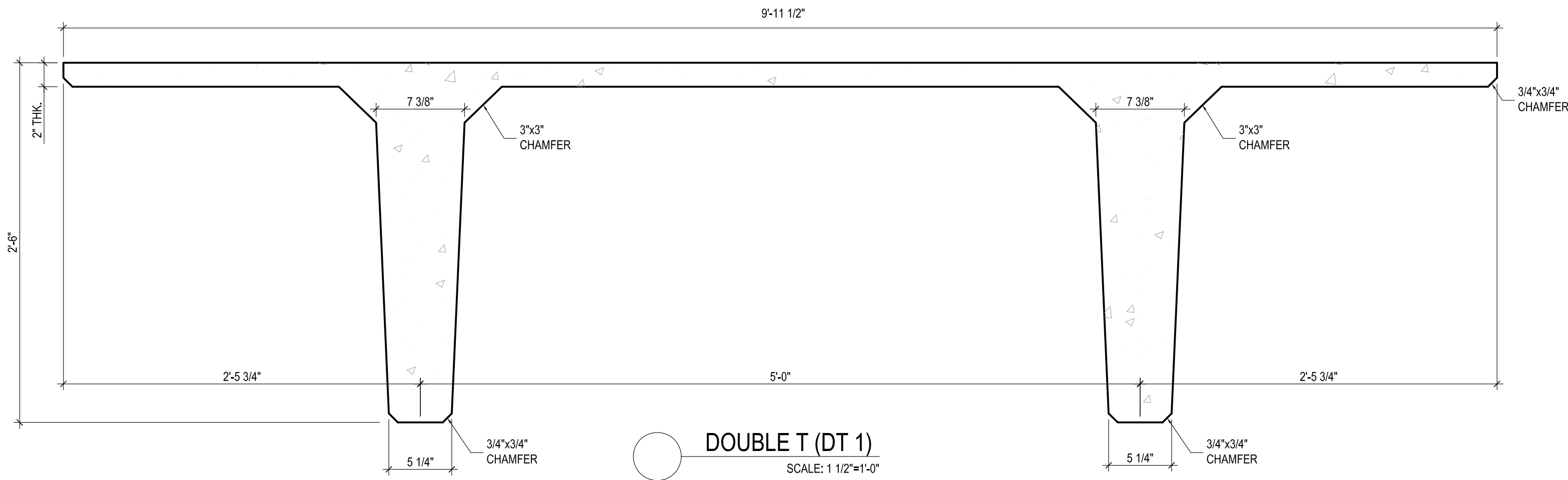


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Date June 1, 2017	<b>S2.12</b>
Scale As Noted	



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**McAllen Public Safety  
Building Parking Garage**

McAllen Texas

Owner:

Sheet Title  
DIMENSIONED DOUBLE  
T's SECTIONS

Date

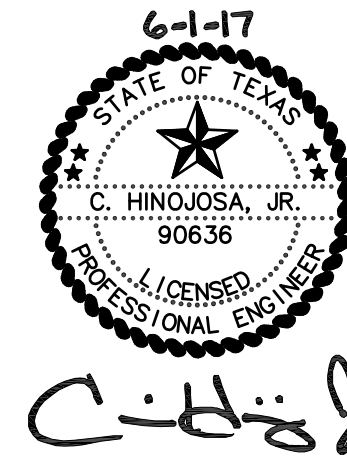
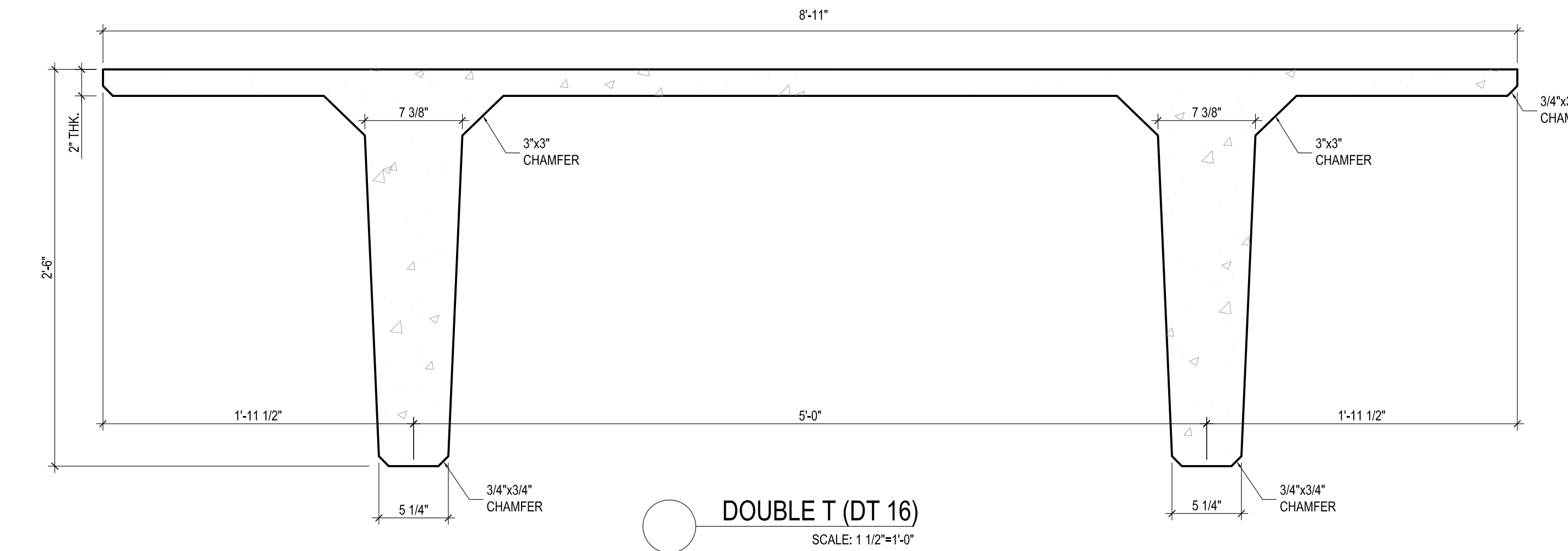
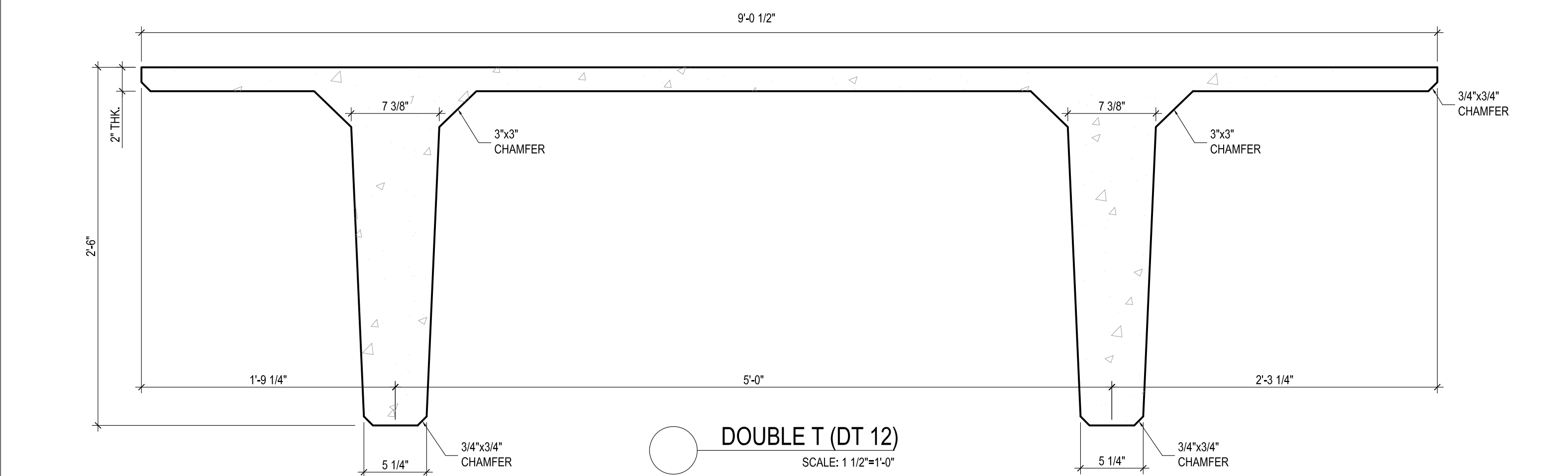
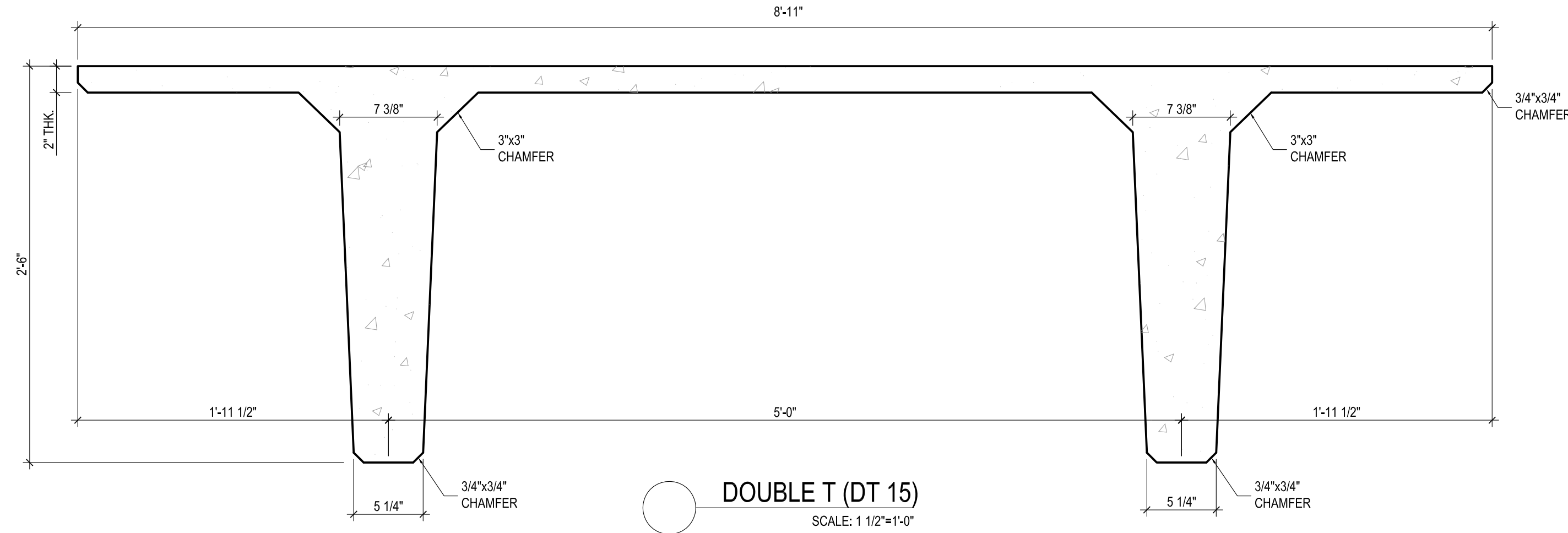
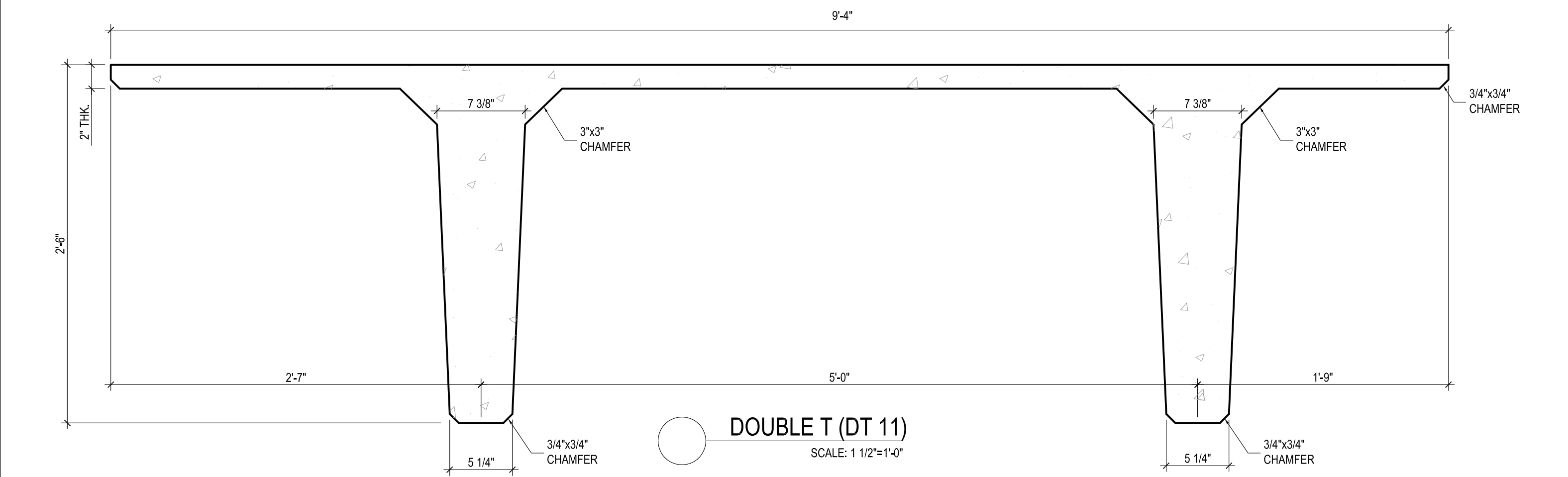
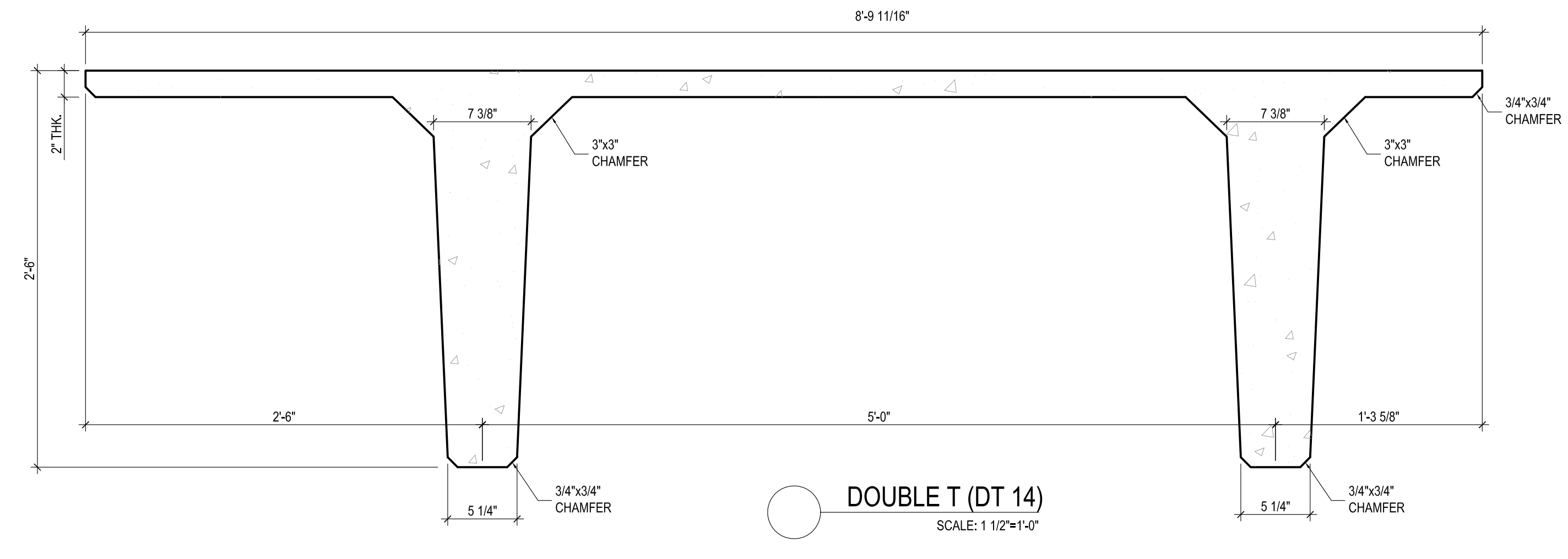
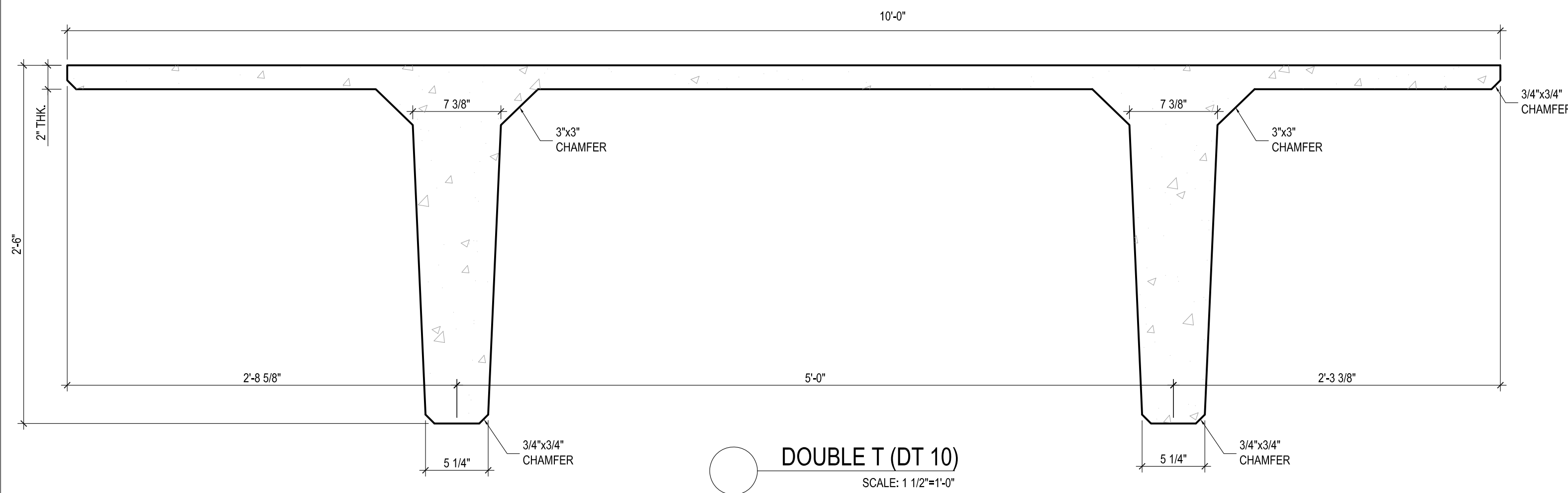
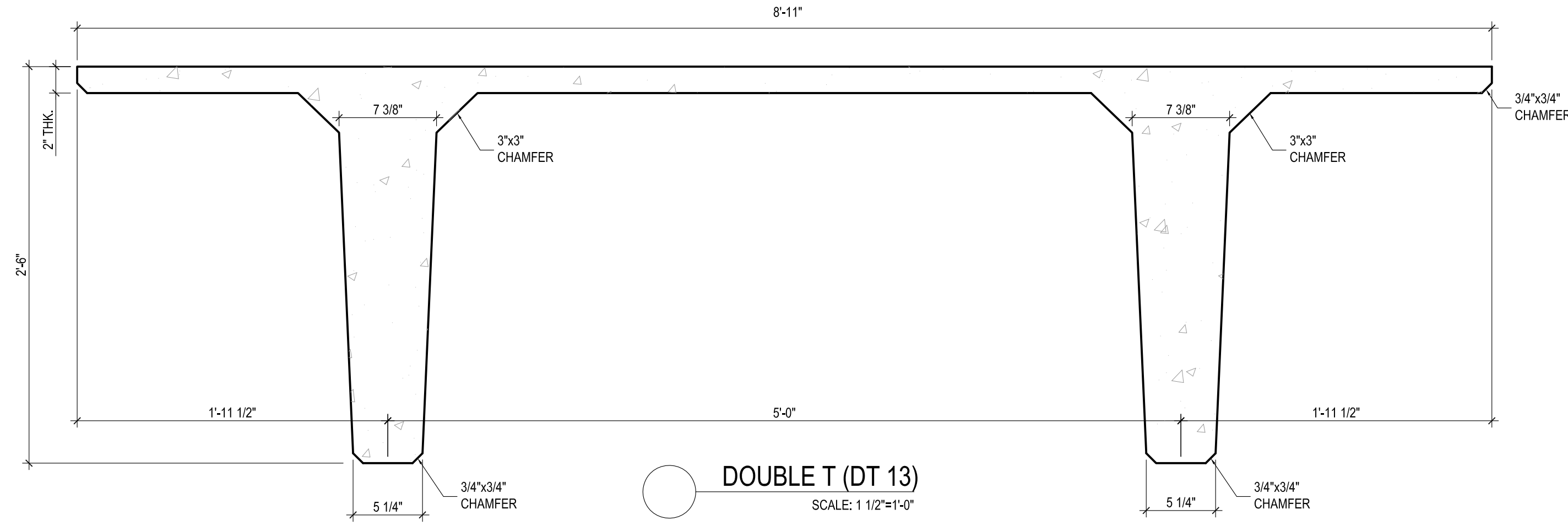
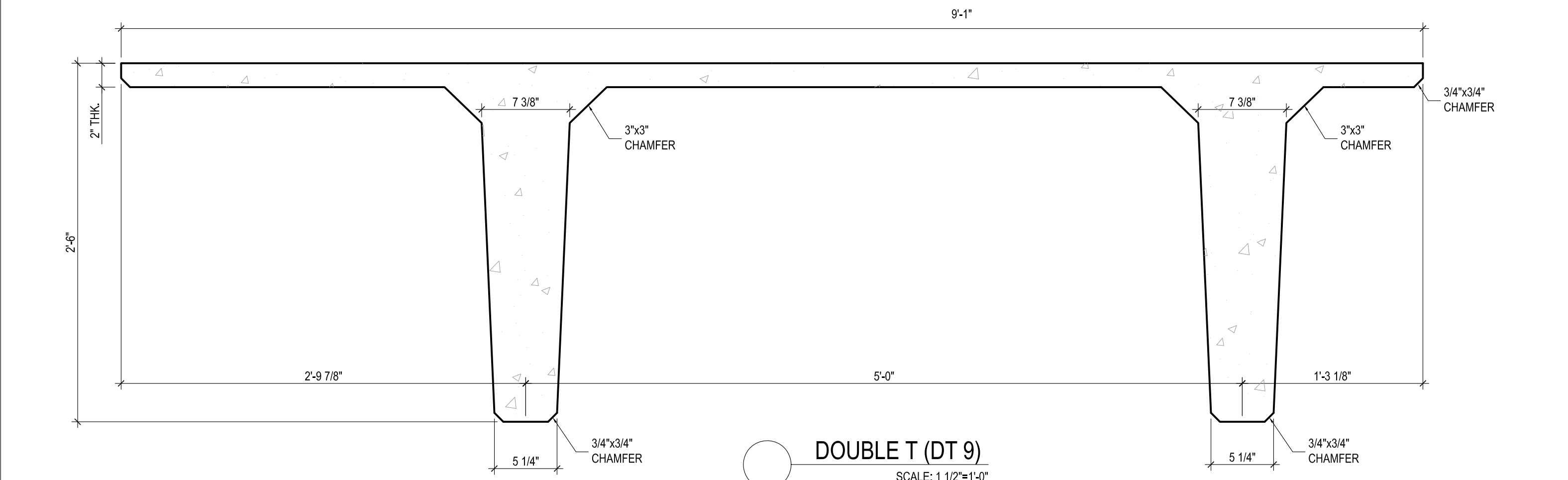
June 1, 2017

Scale

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Sheet

**S2.13**



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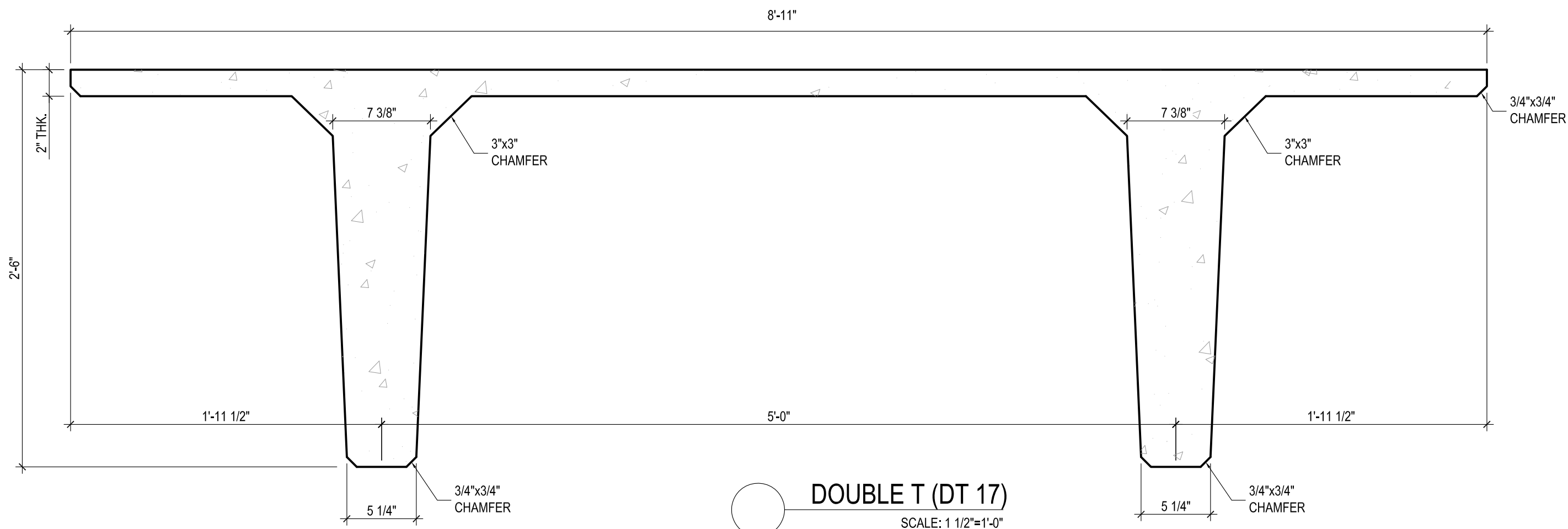
Project Name and Address or Nearest Intersection  
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Building Parking Garage**

McAllen Texas

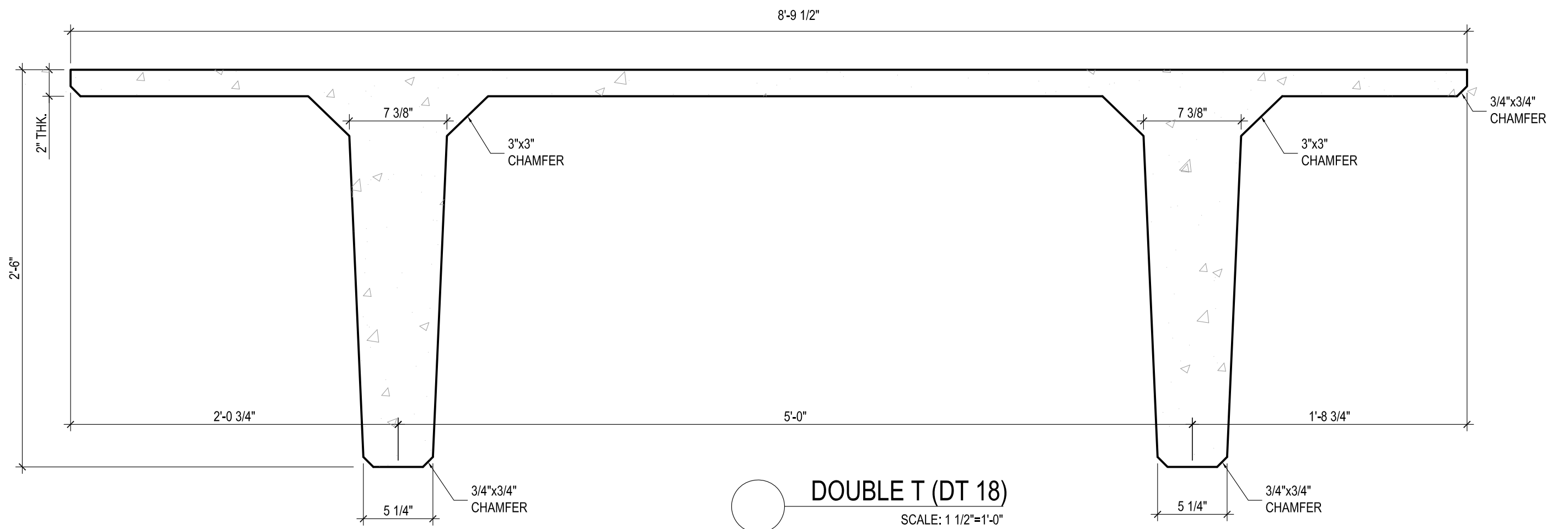
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Sheet Title  
DIMENSIONED DOUBLE  
T'S SECTIONS  
Date  
June 1, 2017  
Scale  
As Noted

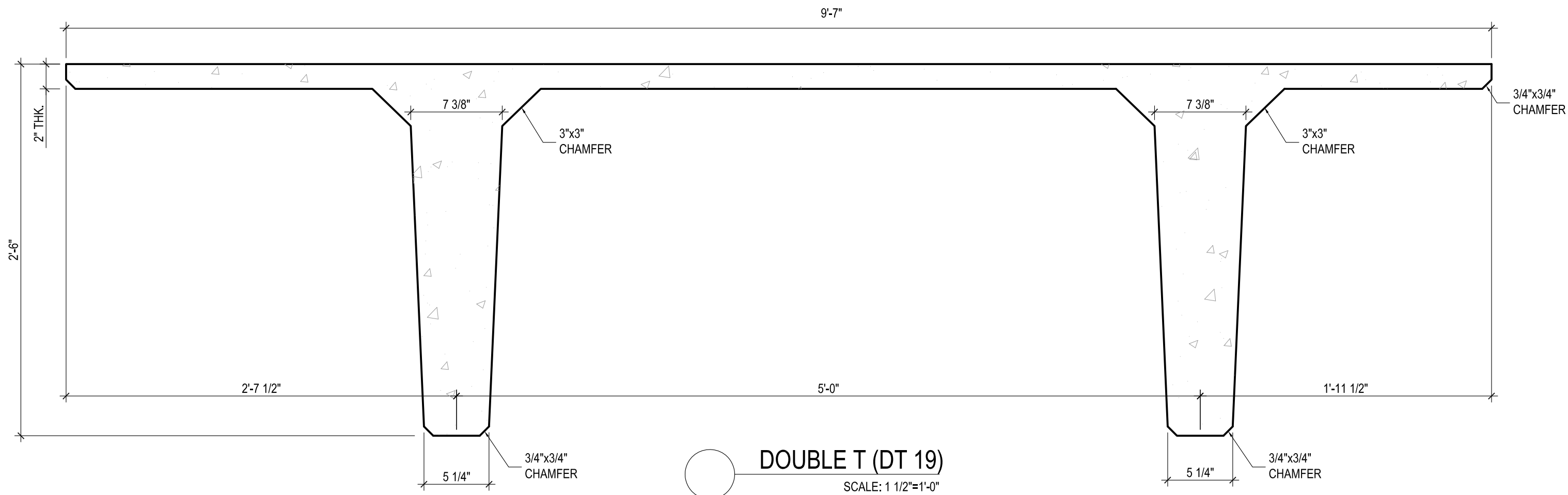
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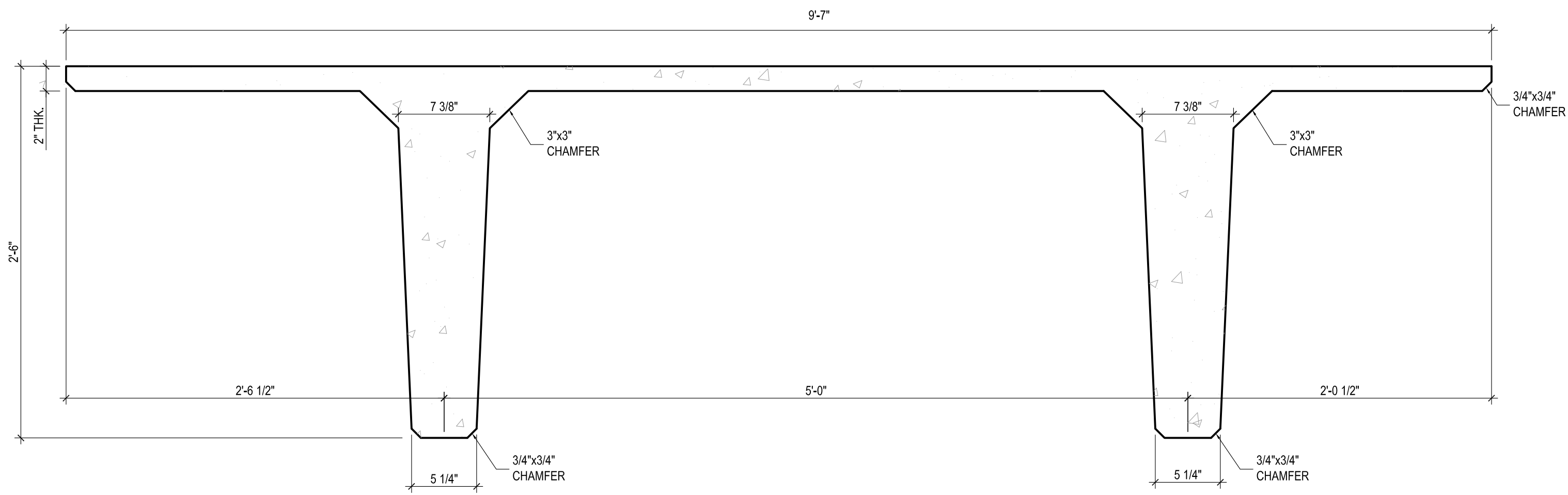
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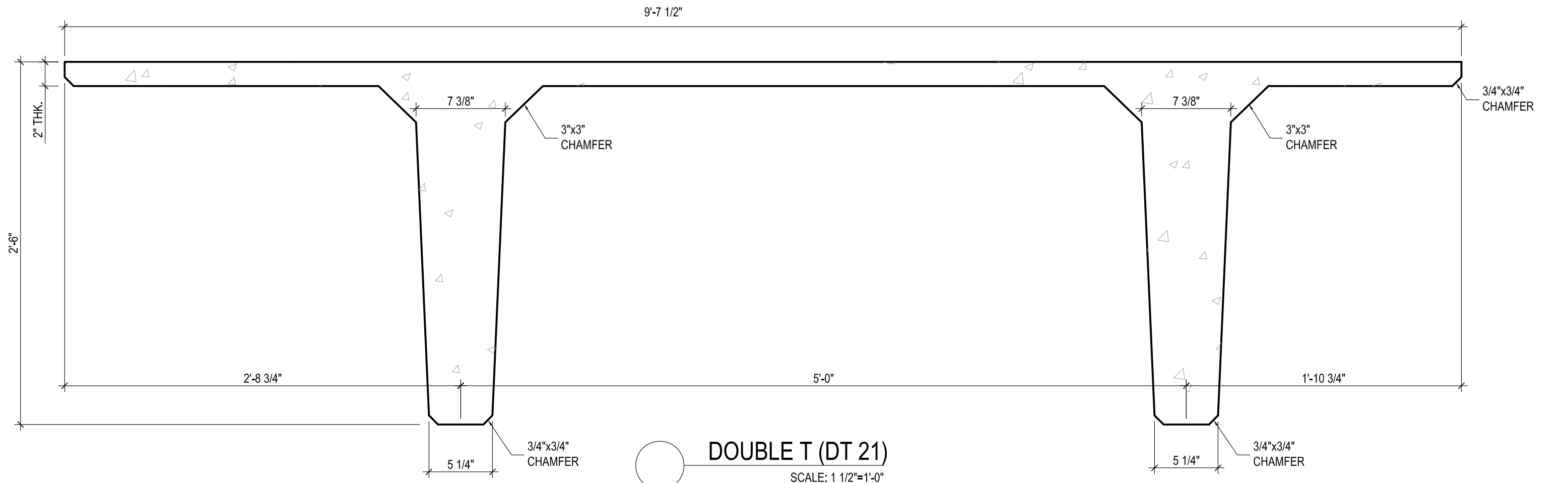
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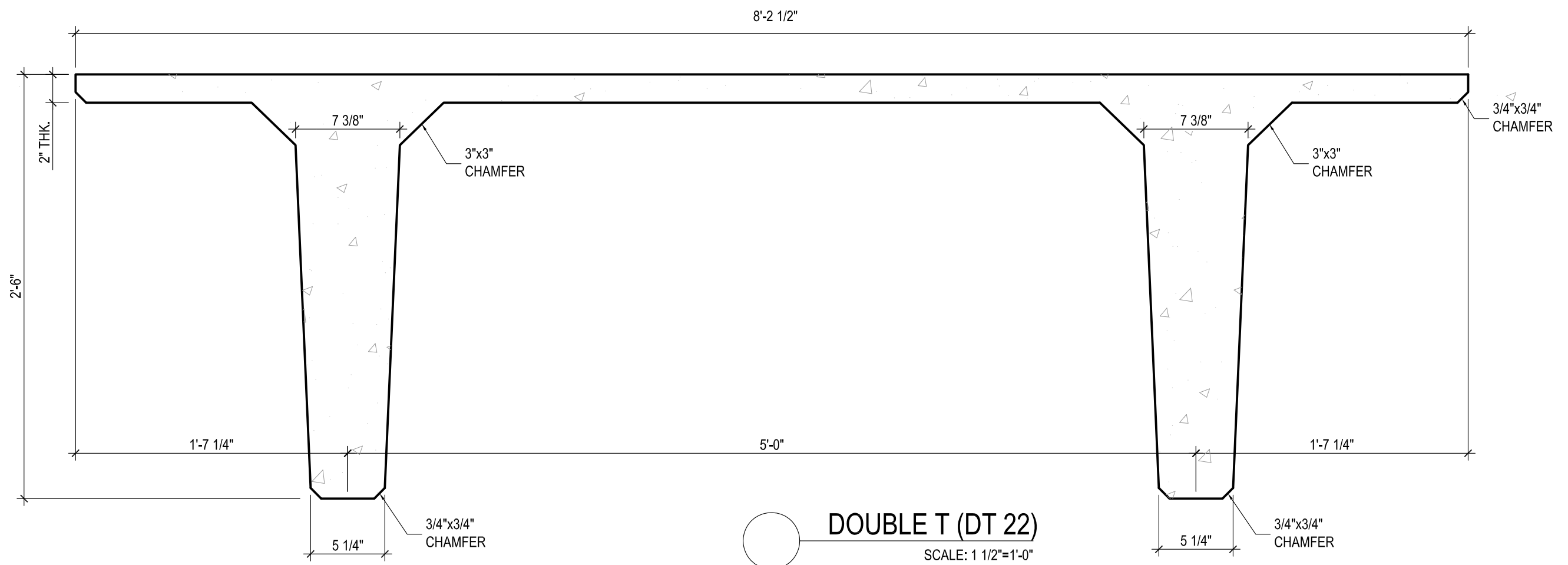
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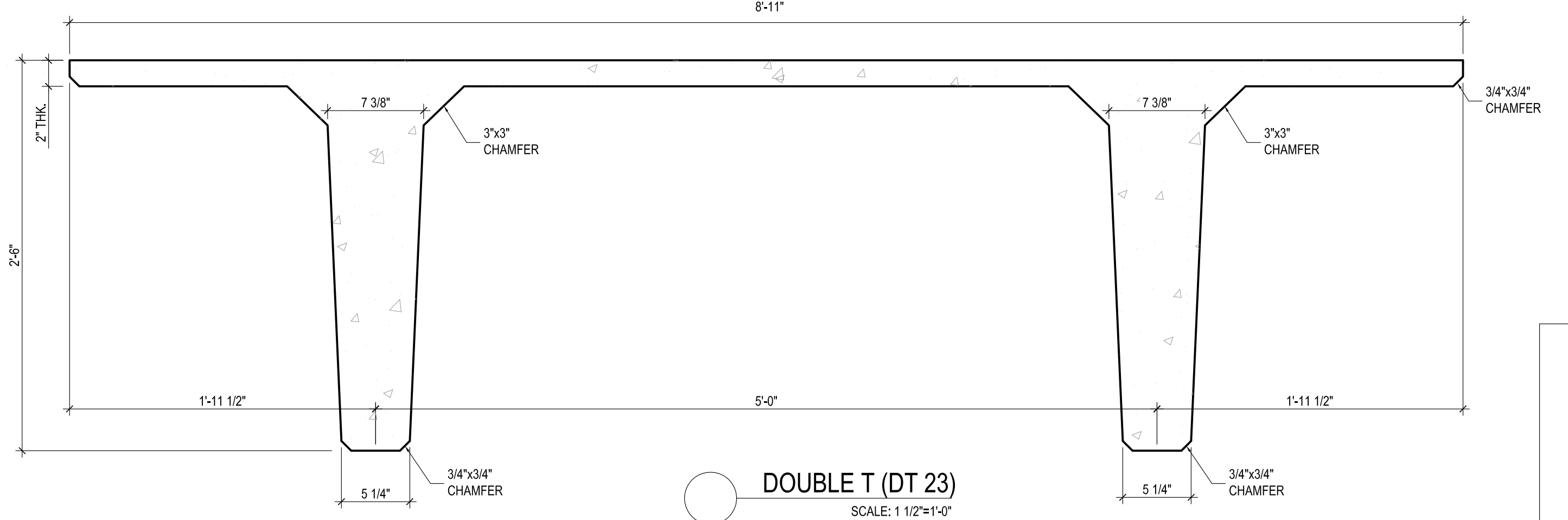
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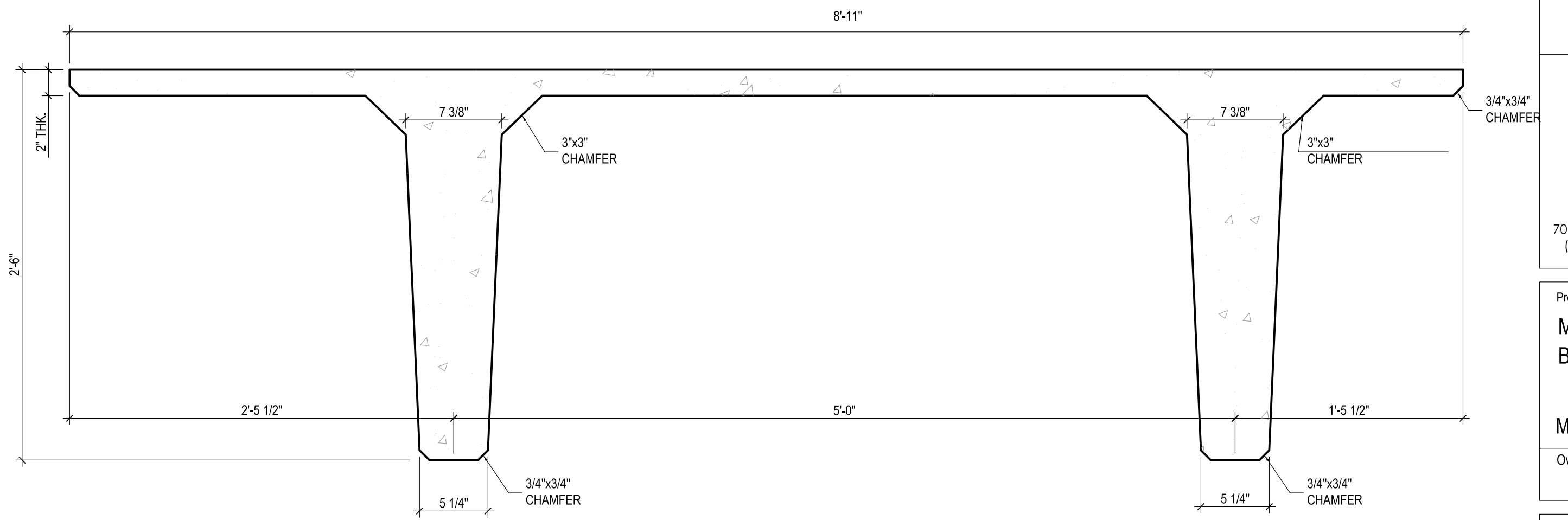
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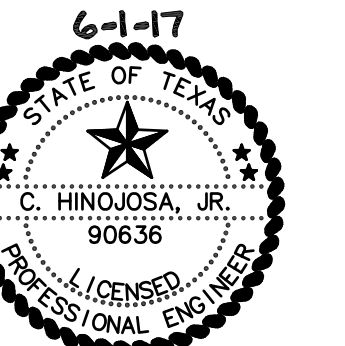
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DOUBLE T (DT 23)  
SCALE: 1 1/2"=1'-0"



DOUBLE T (DT 24)  
SCALE: 1 1/2"=1'-0"



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(956) 687-5560 (956) 687-5561 FAX

Project Name and Address or Nearest Intersection  
**McAllen Public Safety  
Building Parking Garage**

McAllen Texas

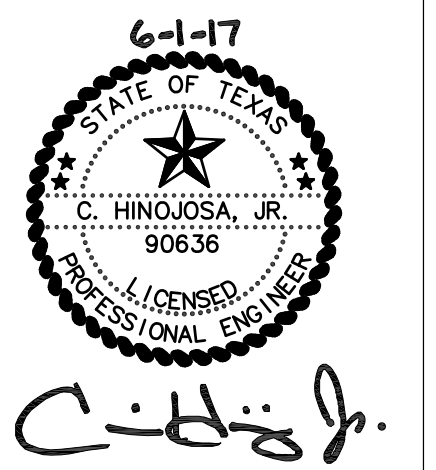
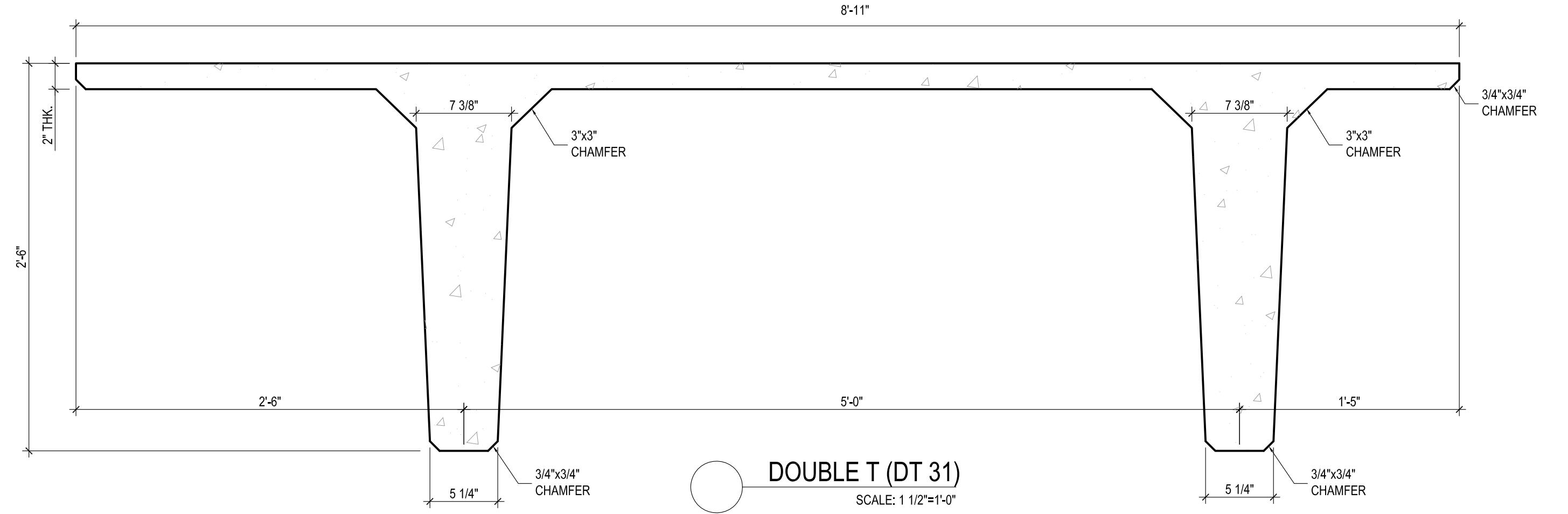
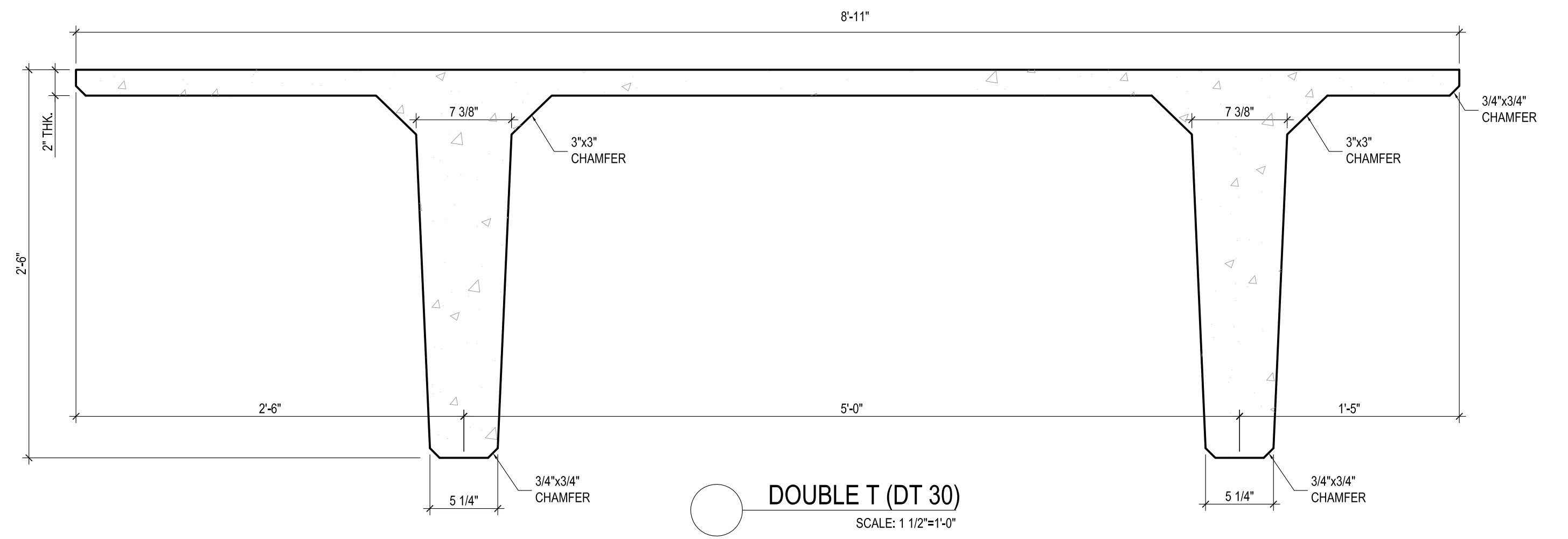
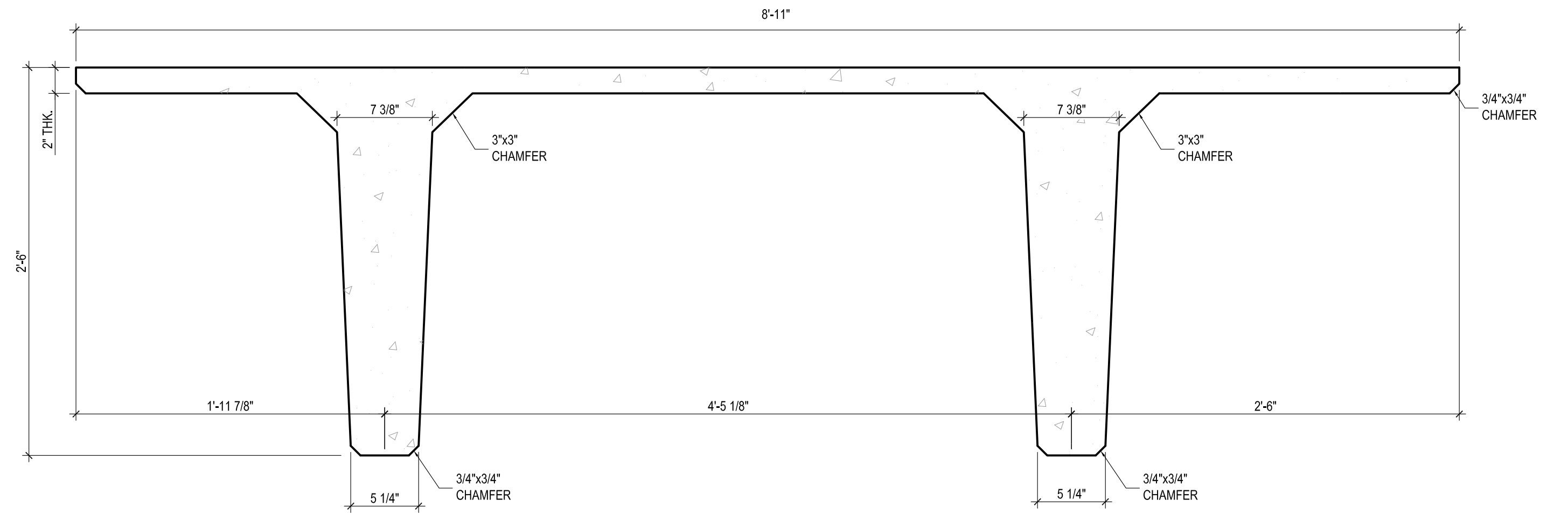
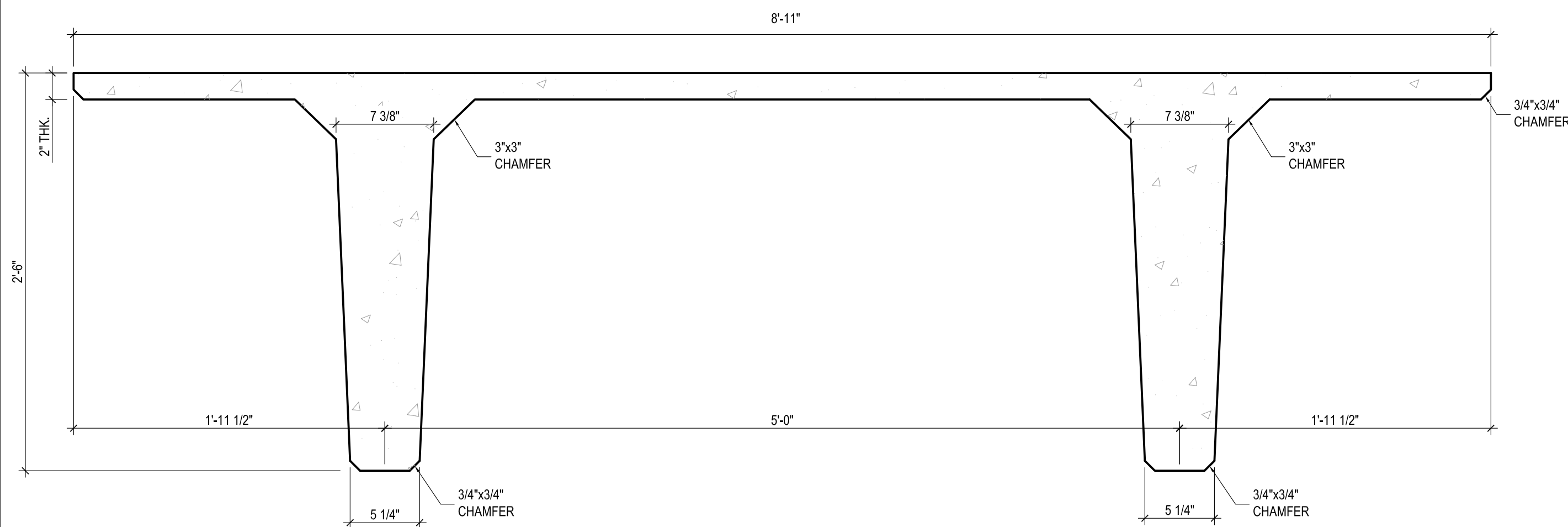
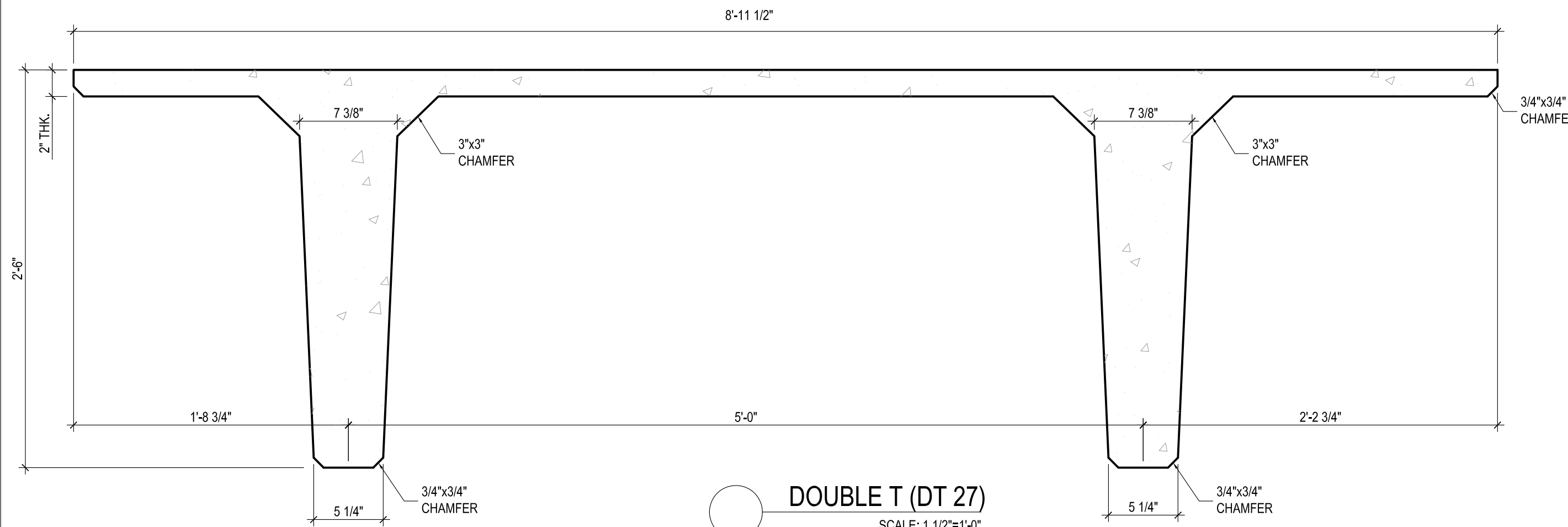
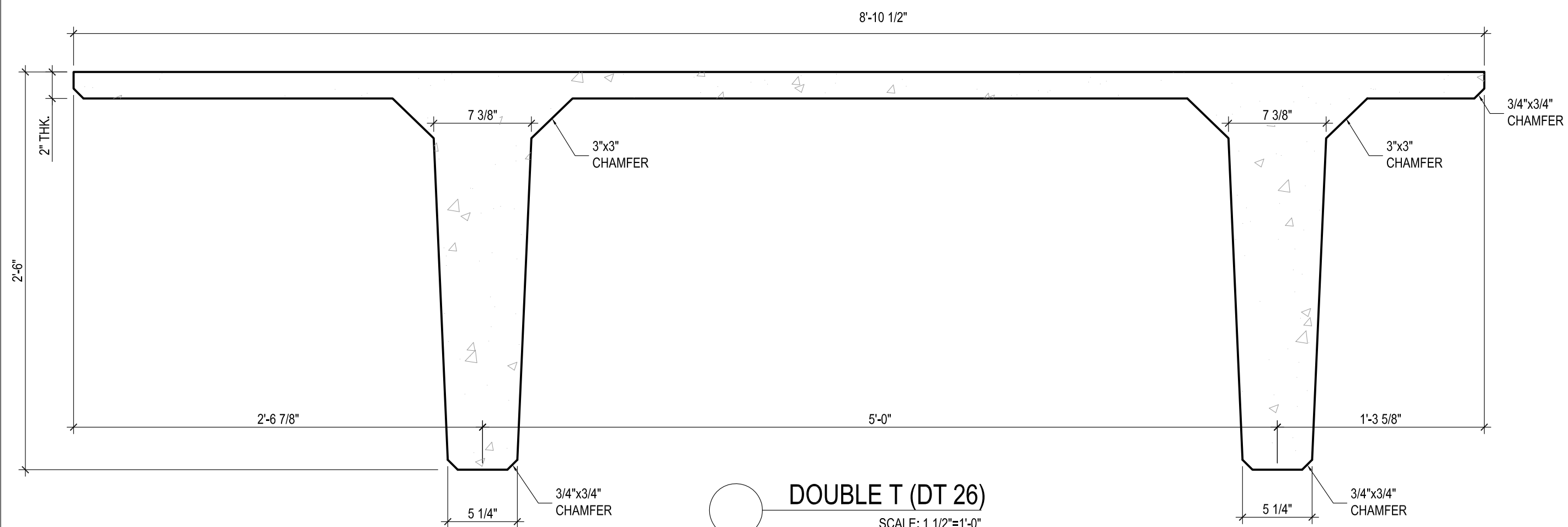
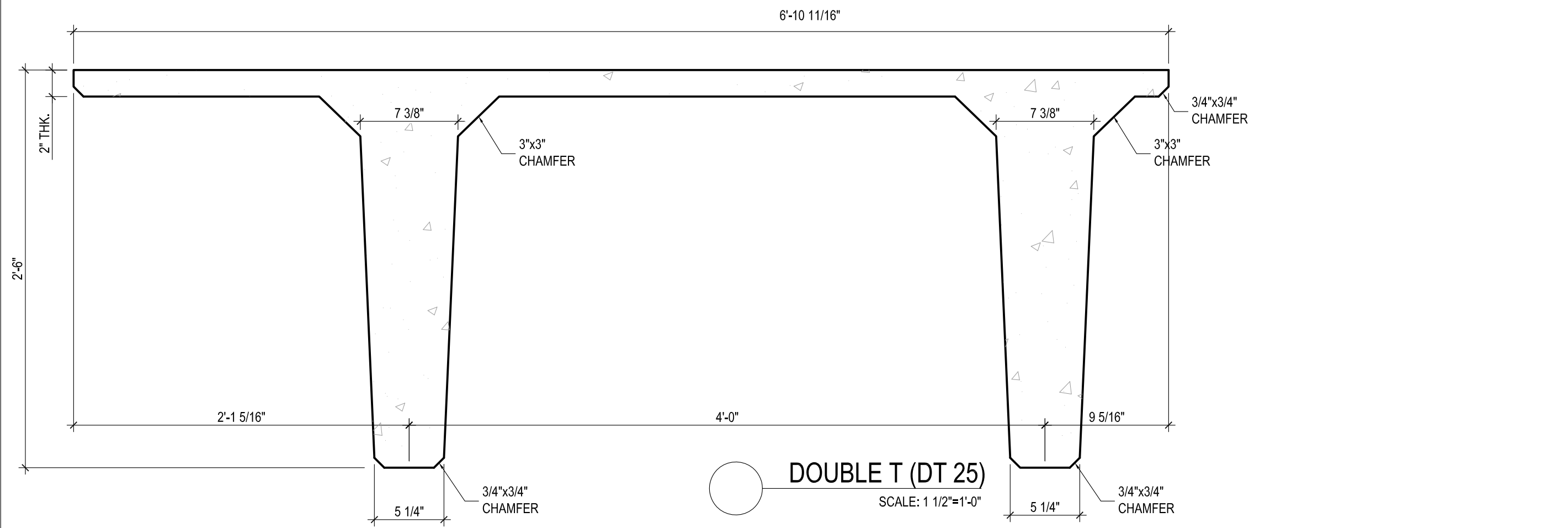
Owner:

Sheet Title  
DIMENSIONED DOUBLE  
T's SECTIONS

Date  
June 1, 2017

Scale  
As Noted

Sheet  
**S2.15**

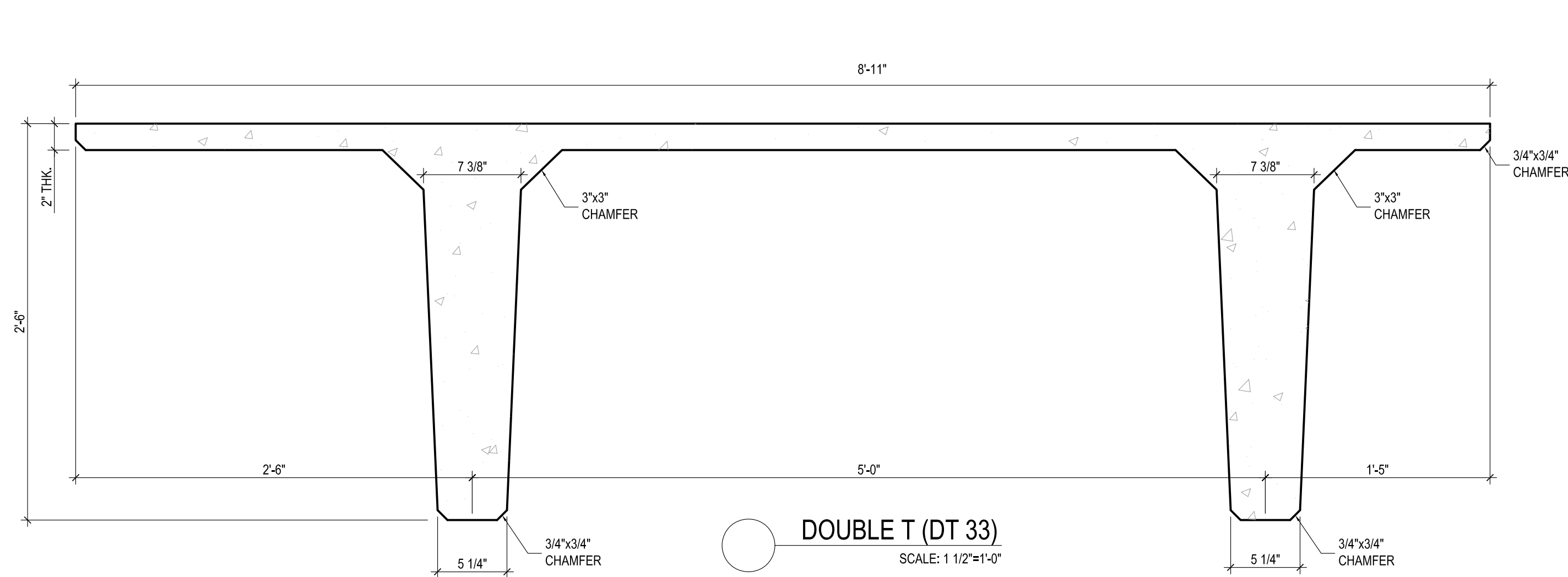


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TBP# FIRM No. F-8719  
701 S. 15th STREET McALLEN, TX. 78501  
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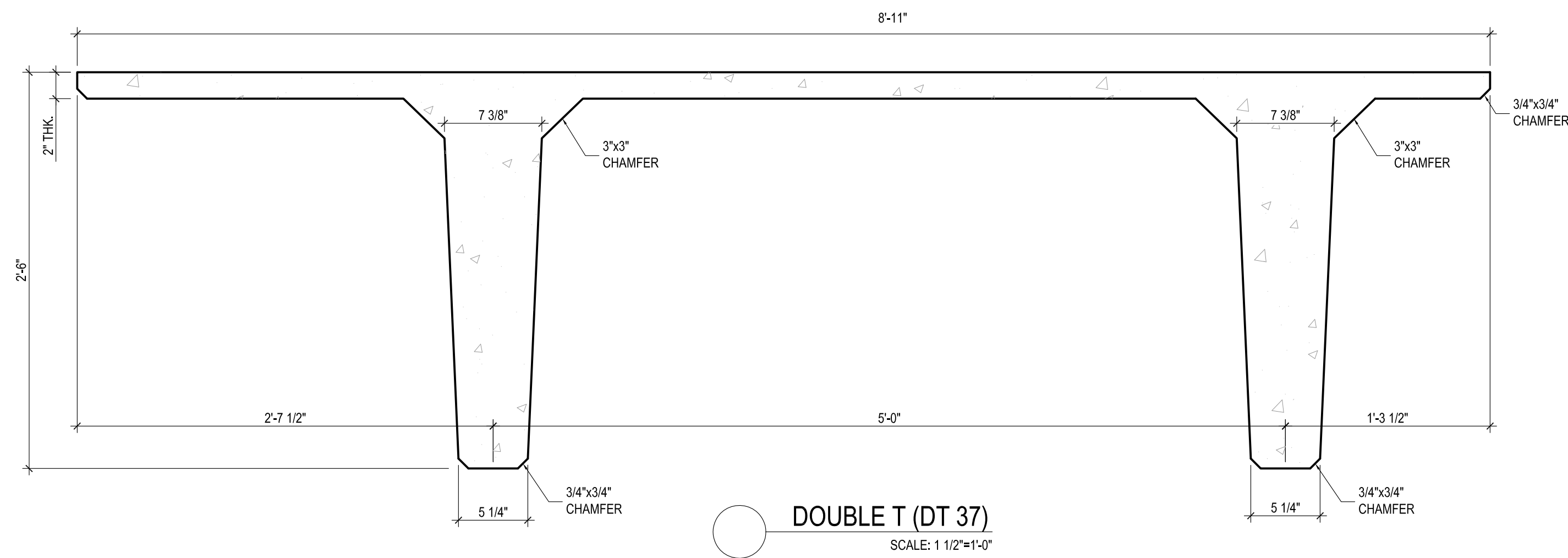
Project Name and Address or Nearest Intersection  
**McAllen Public Safety  
Building Parking Garage**

McAllen Texas  
Owner:

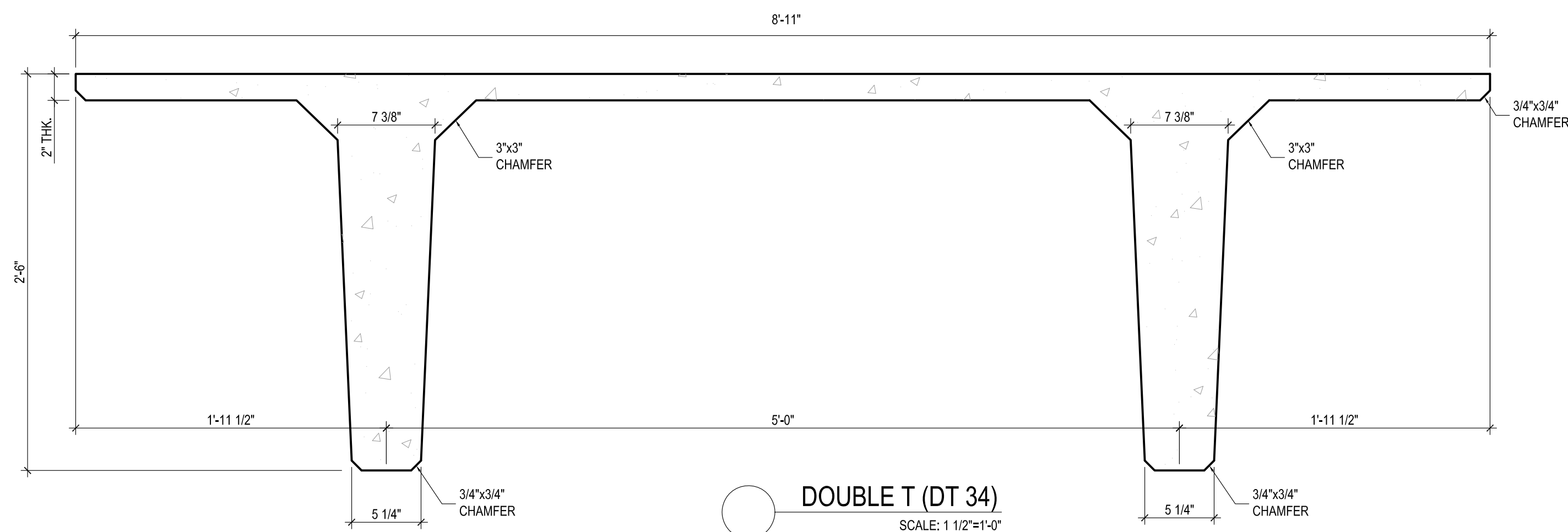
Sheet Title DIMENSIONED DOUBLE T'S SECTIONS	Sheet
Date June 1, 2017	<b>S2.16</b>
Scale As Noted	



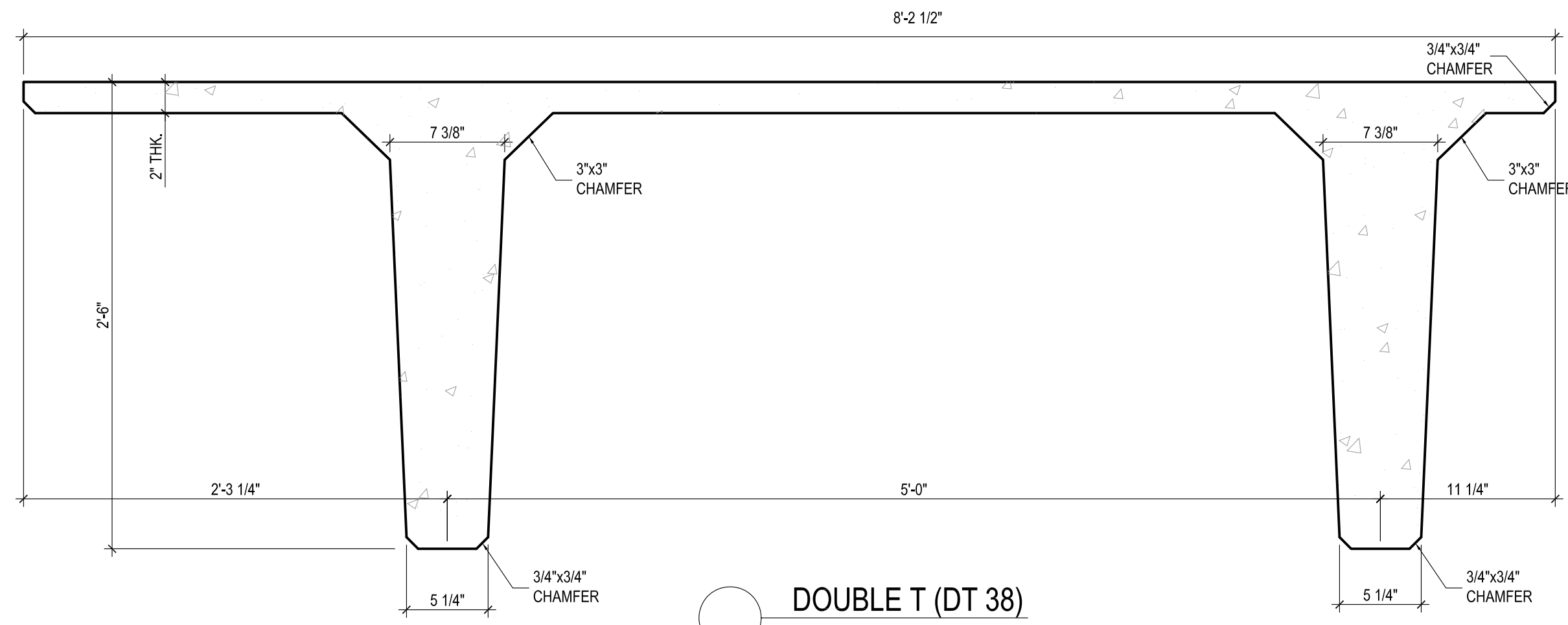
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SCALE: 1 1/2"=1'-0"



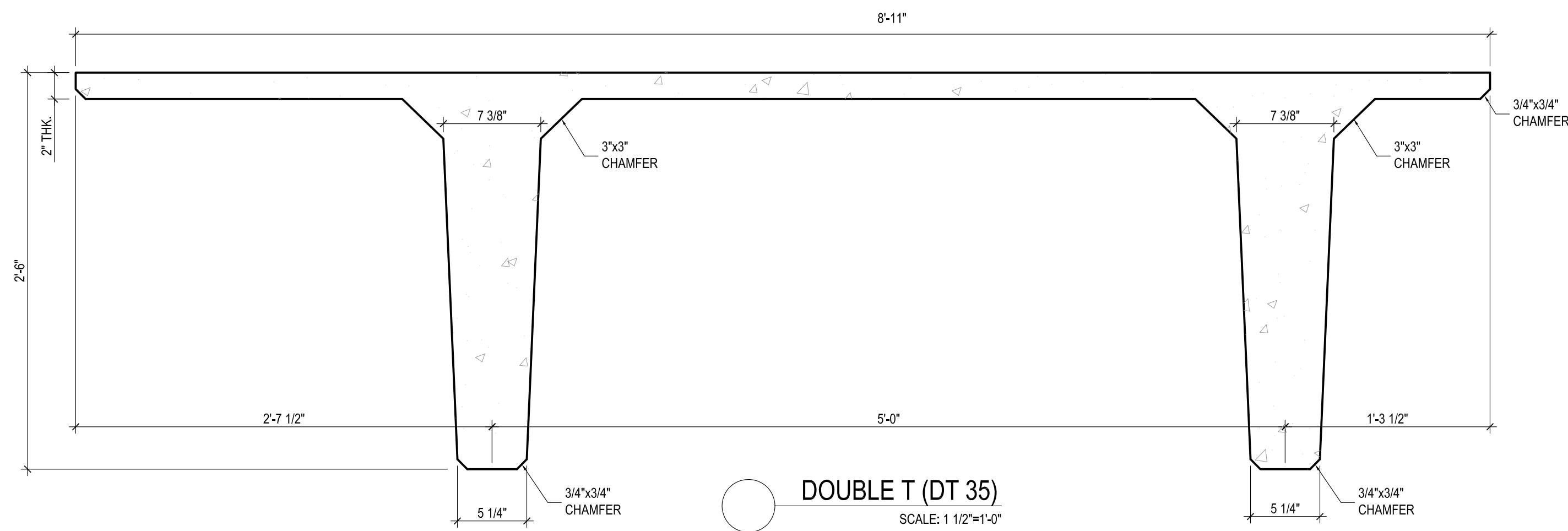
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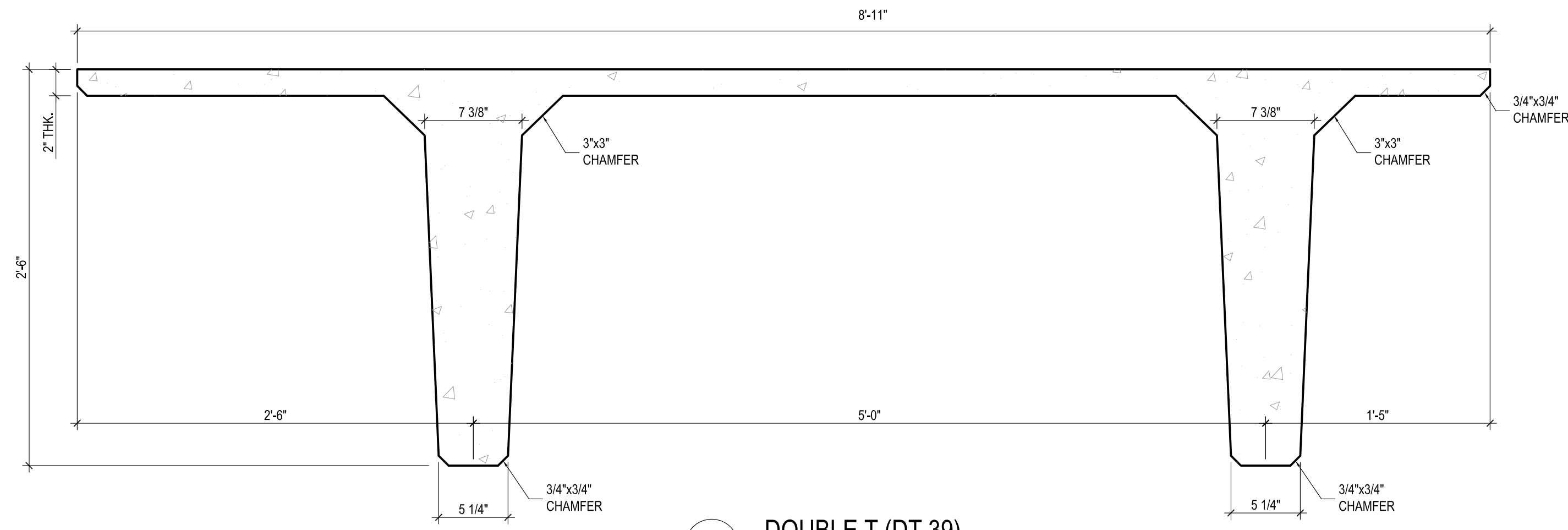
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SCALE: 1 1/2"=1'-0"



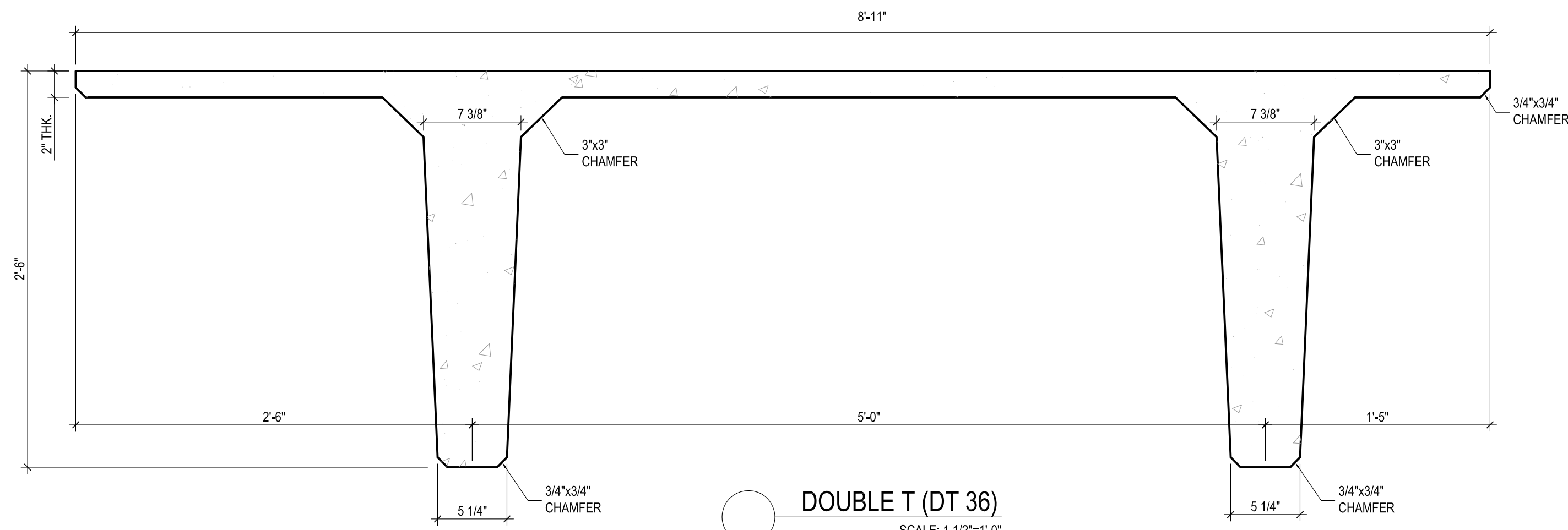
DOUBLE T (DT 38)  
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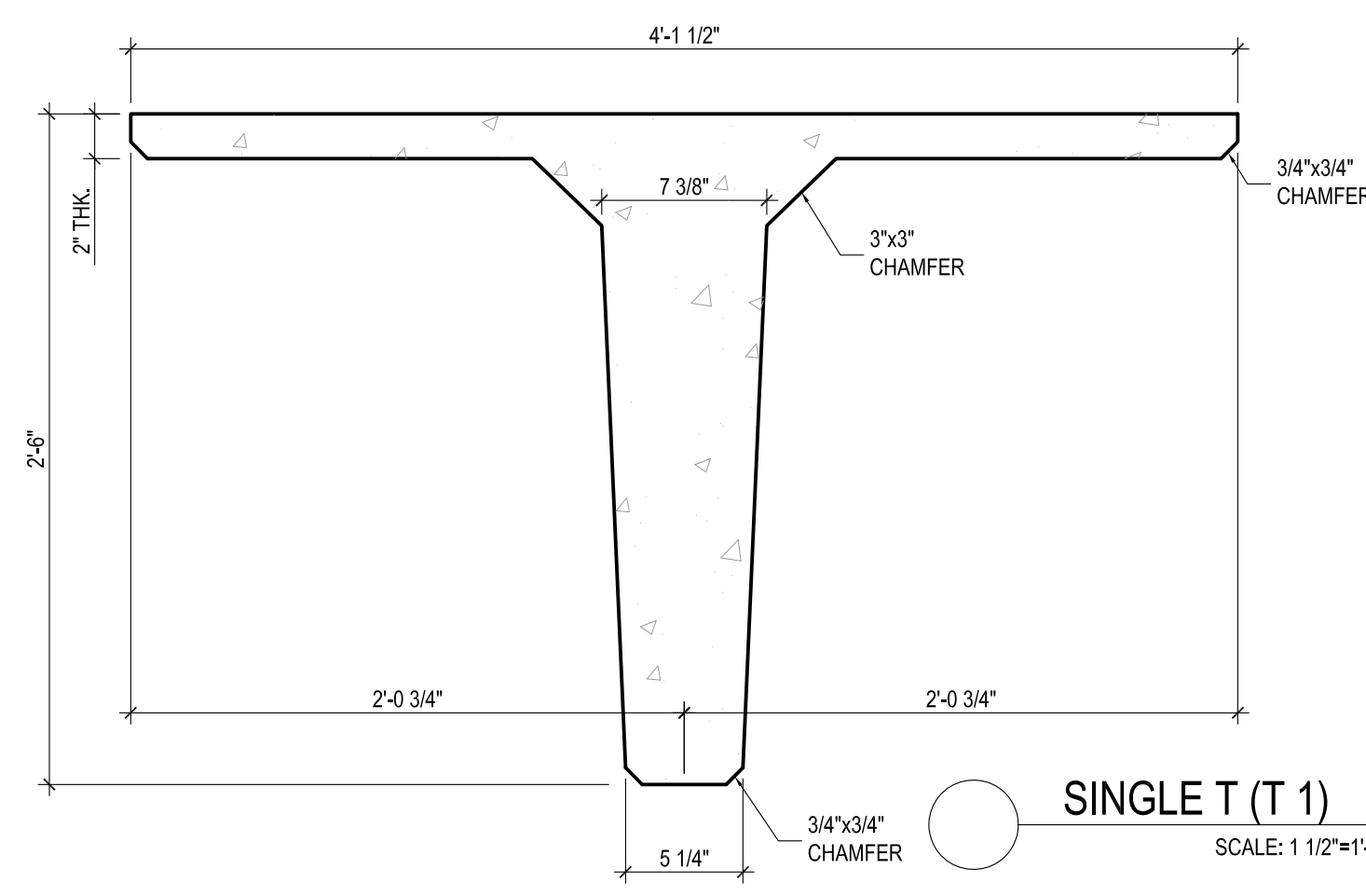
DOUBLE T (DT 35)  
SCALE: 1 1/2"=1'-0"



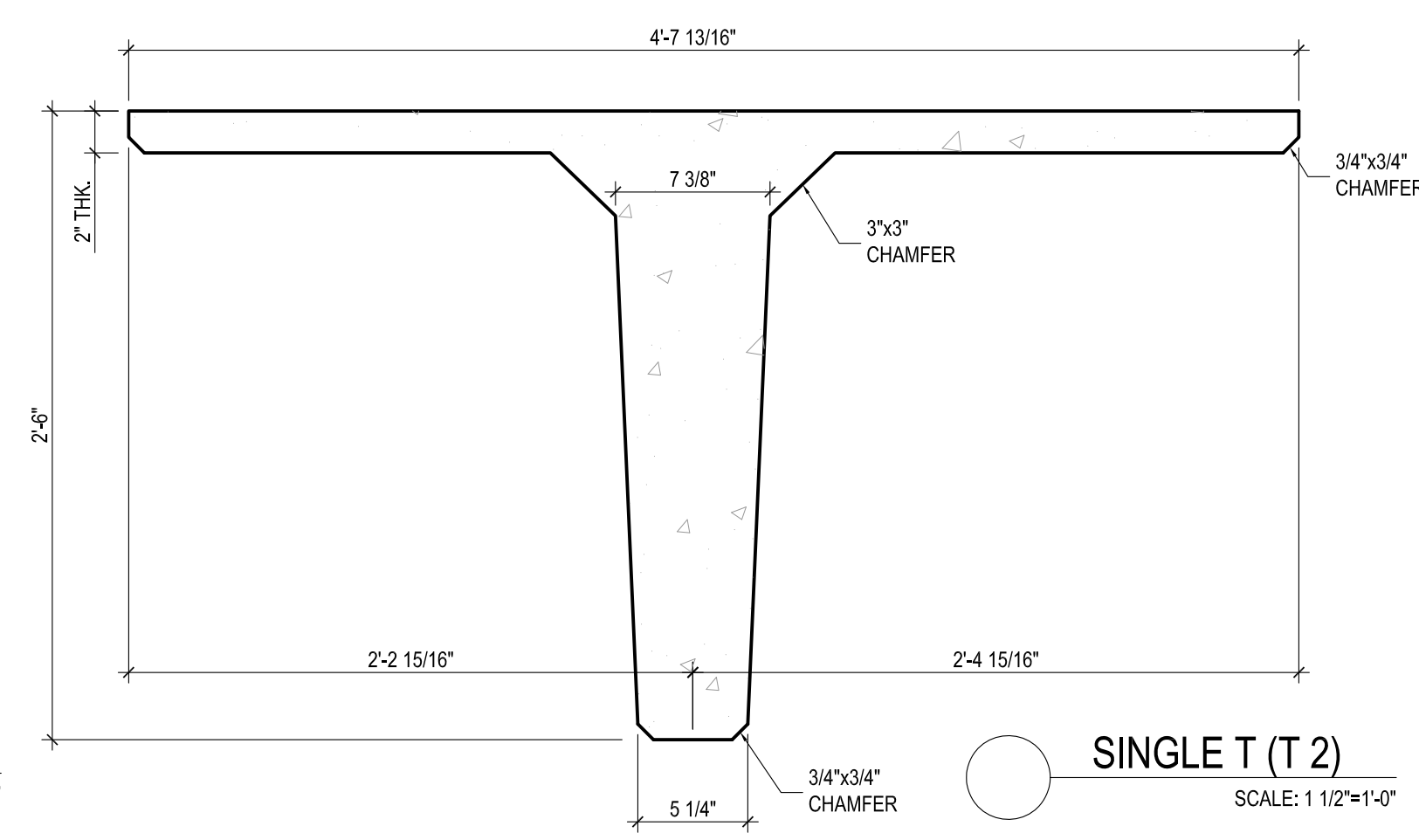
DOUBLE T (DT 39)  
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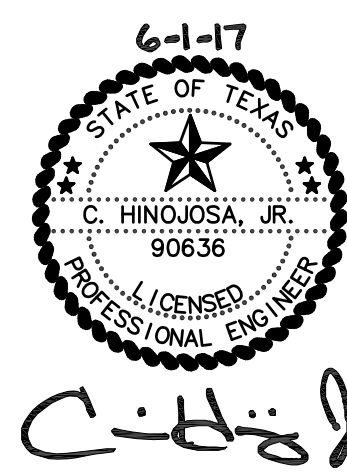
DOUBLE T (DT 36)  
SCALE: 1 1/2"=1'-0"



SINGLE T (T 1)  
SCALE: 1 1/2"=1'-0"



SINGLE T (T 2)  
SCALE: 1 1/2"=1'-0"

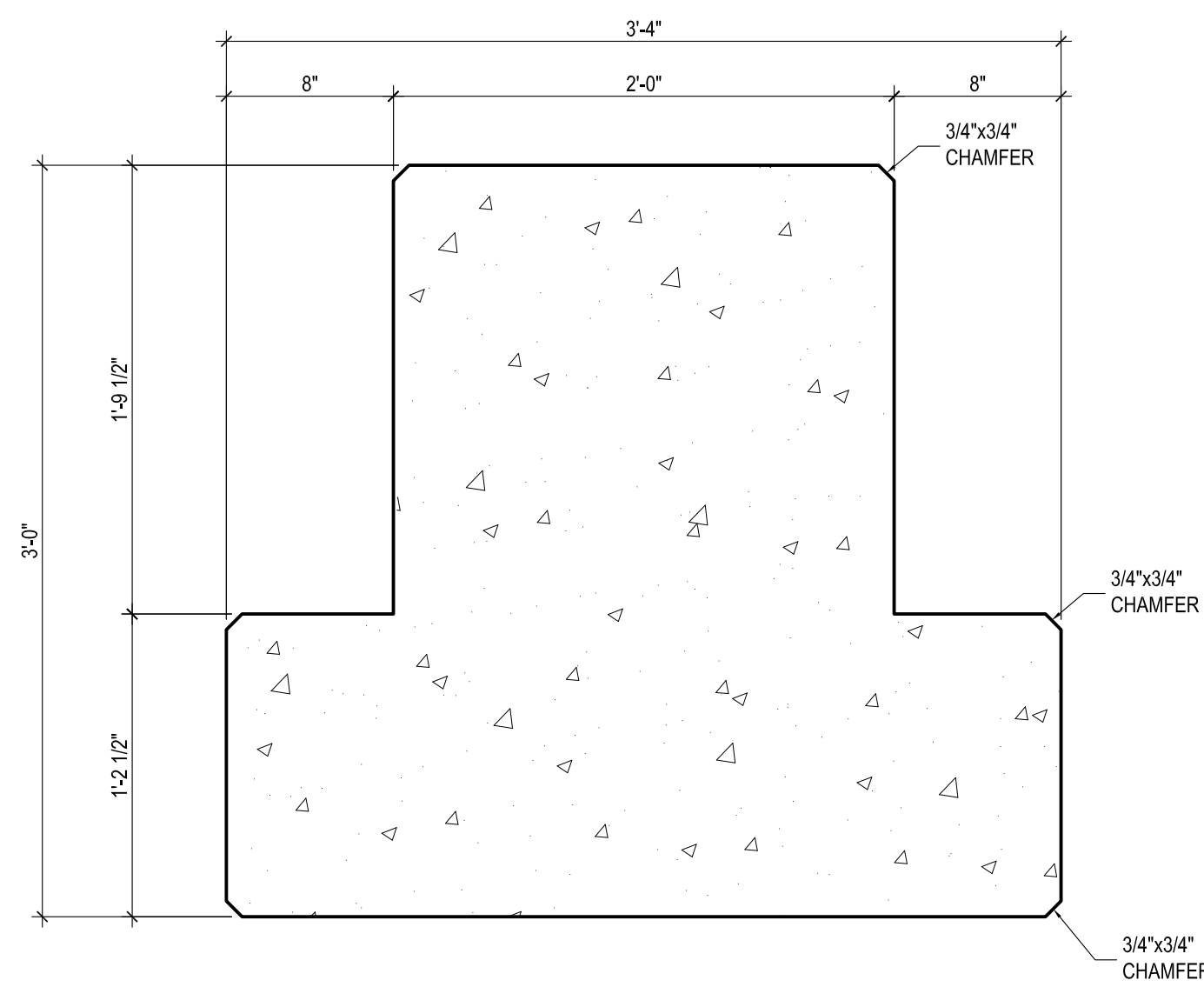


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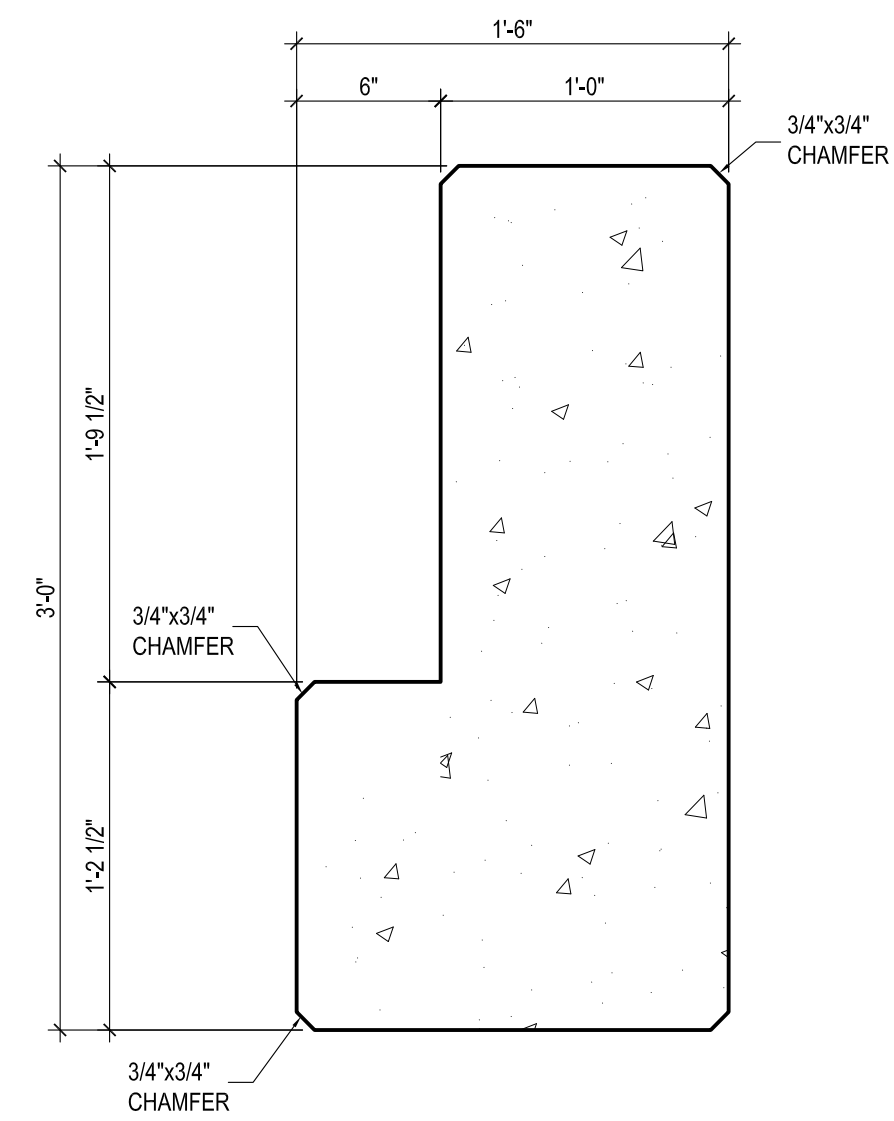
Project Name and Address or Nearest Intersection  
**McAllen Public Safety  
Building Parking Garage**

Owner:  
**McAllen Texas**

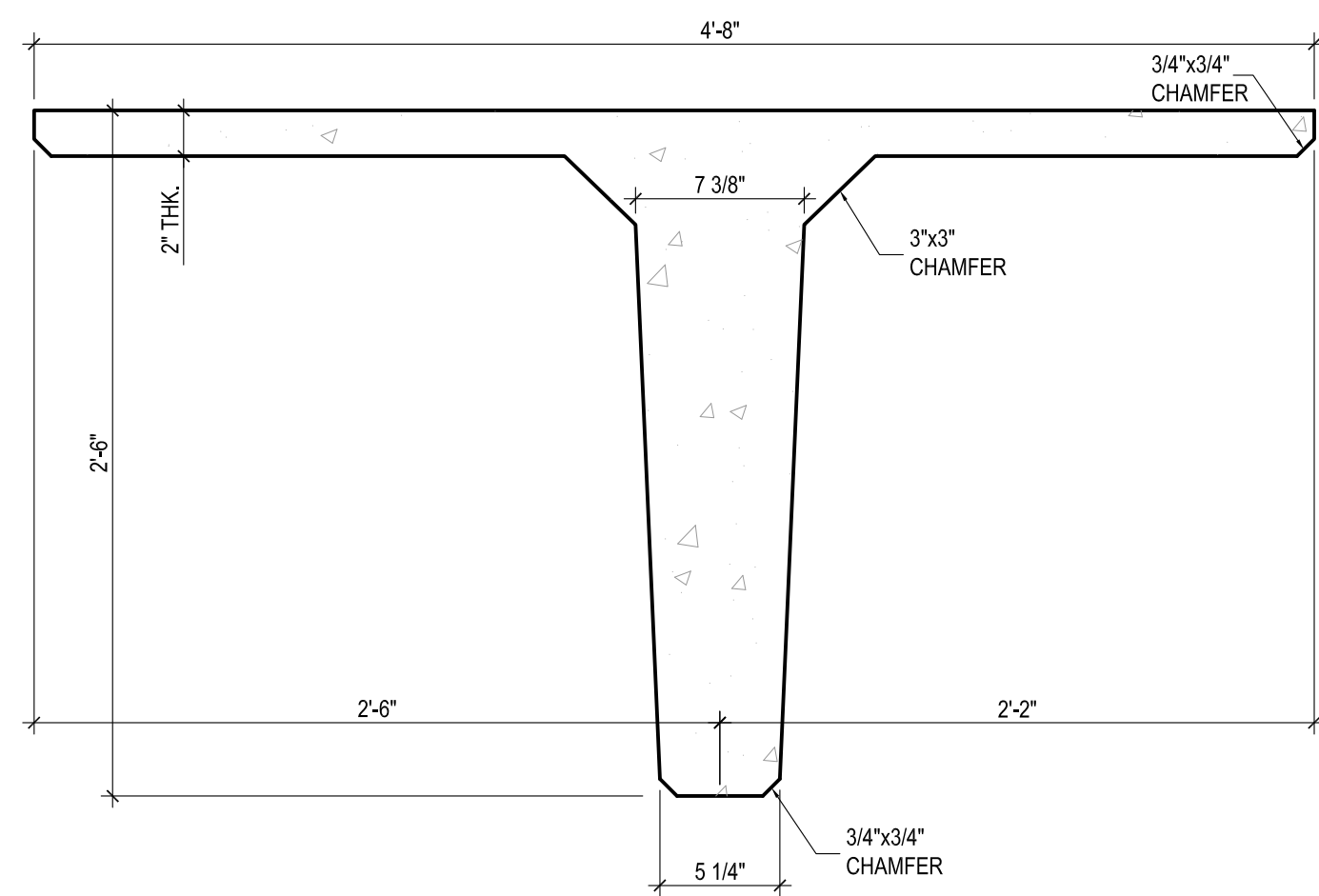
Sheet Title DIMENSIONED DOUBLE & SINGLE T's SECTIONS	Sheet <b>S2.16</b>
Date June 1, 2017	
Scale As Noted	



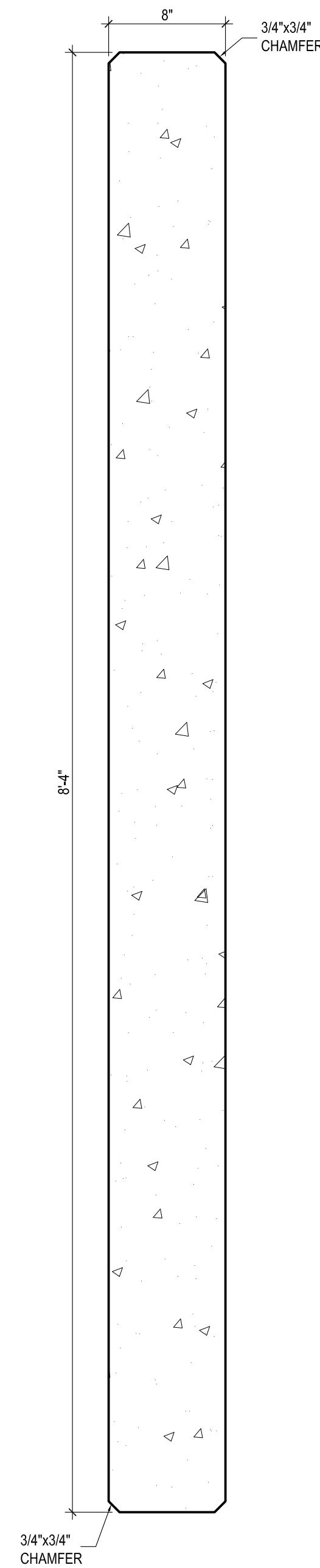
1 INVERTED T BEAM 40IT36  
SCALE: 1 1/2"=1'-0"



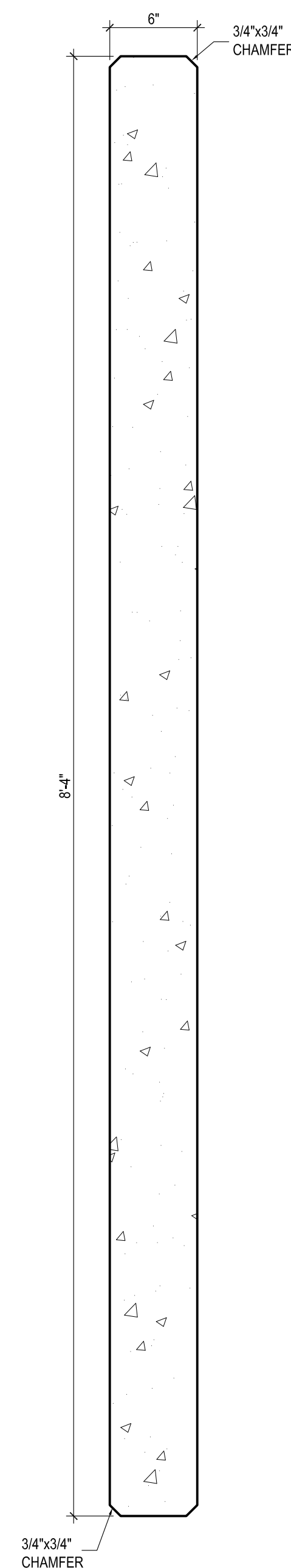
2 L BEAM 18LB36  
SCALE: 1 1/2"=1'-0"



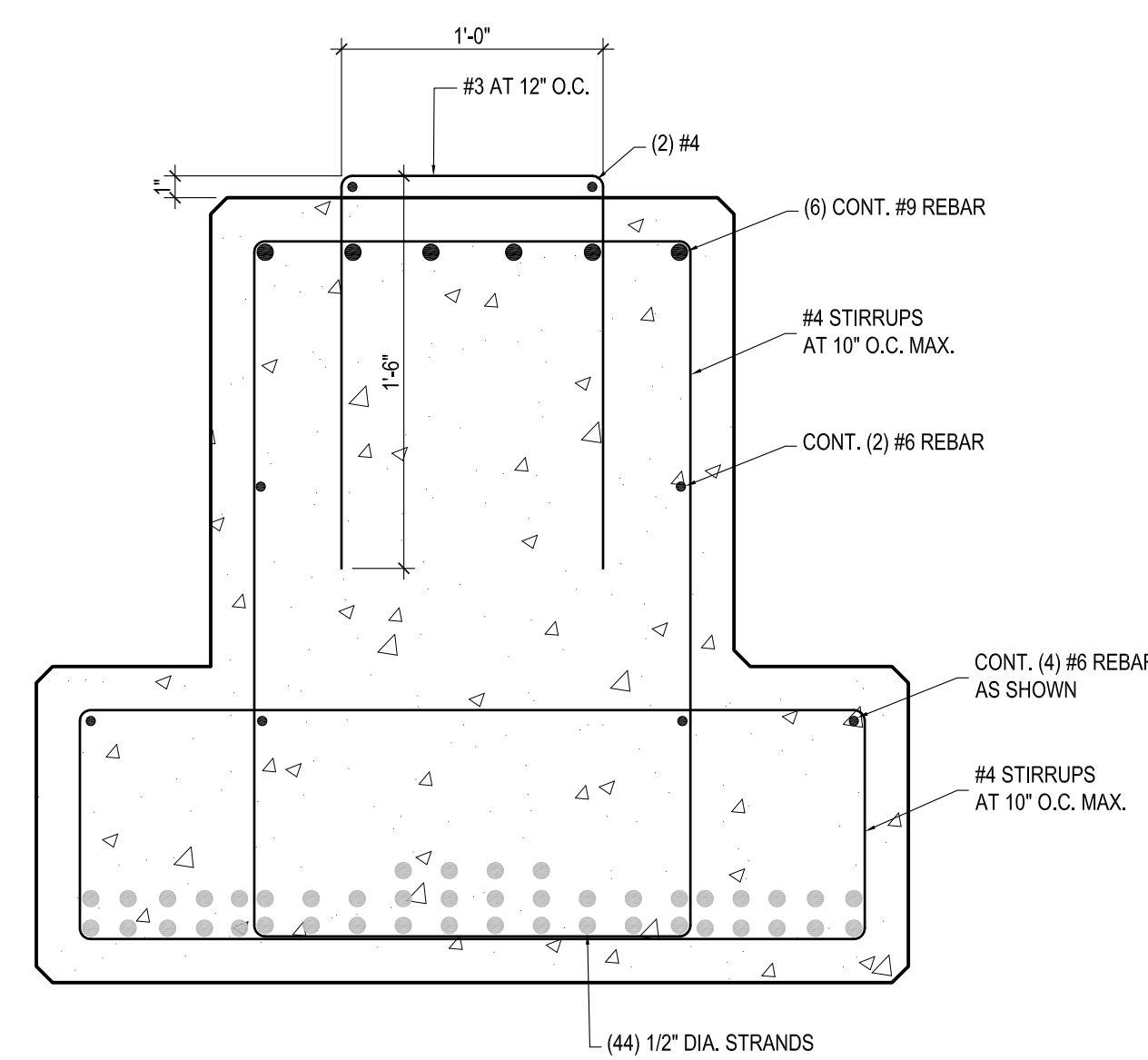
9 SINGLE T (T3)  
SCALE: 1 1/2"=1'-0"



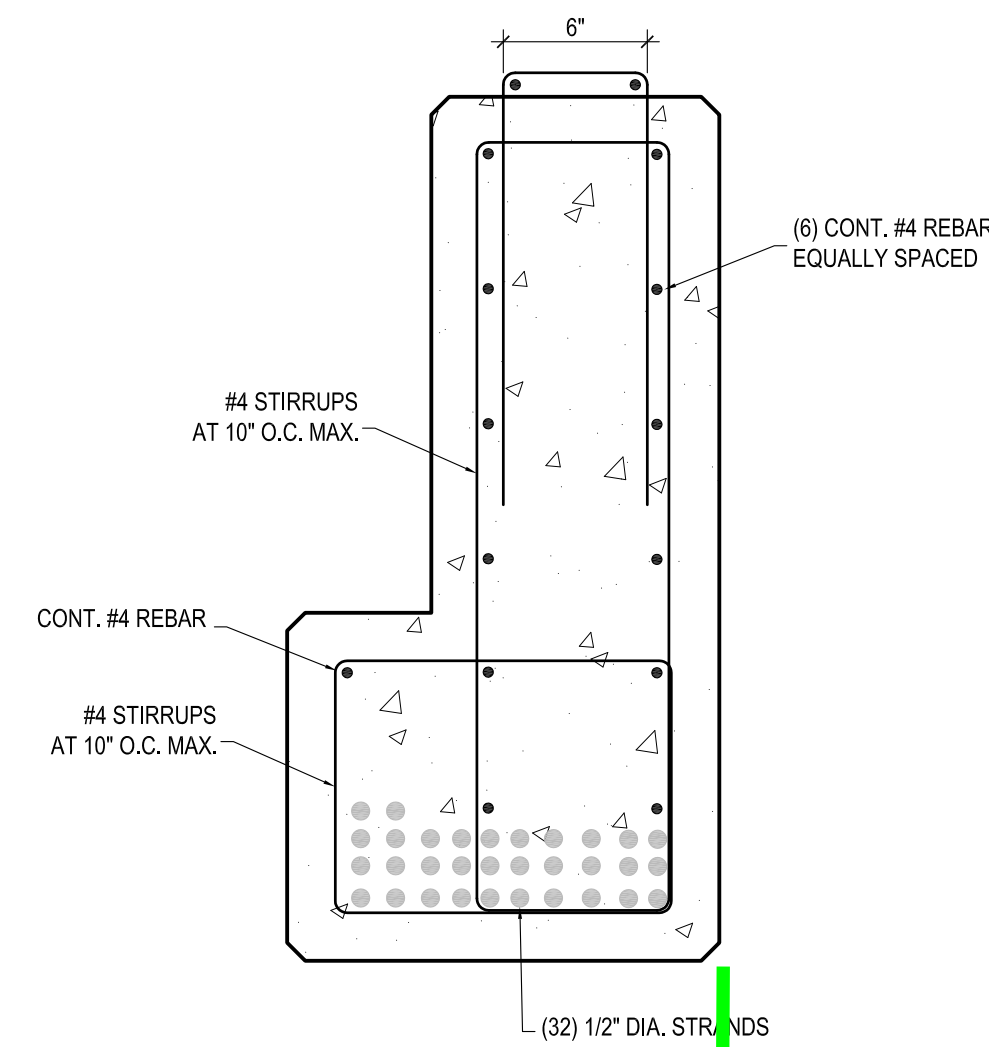
3 SPANDREL  
SCALE: 1 1/2"=1'-0"



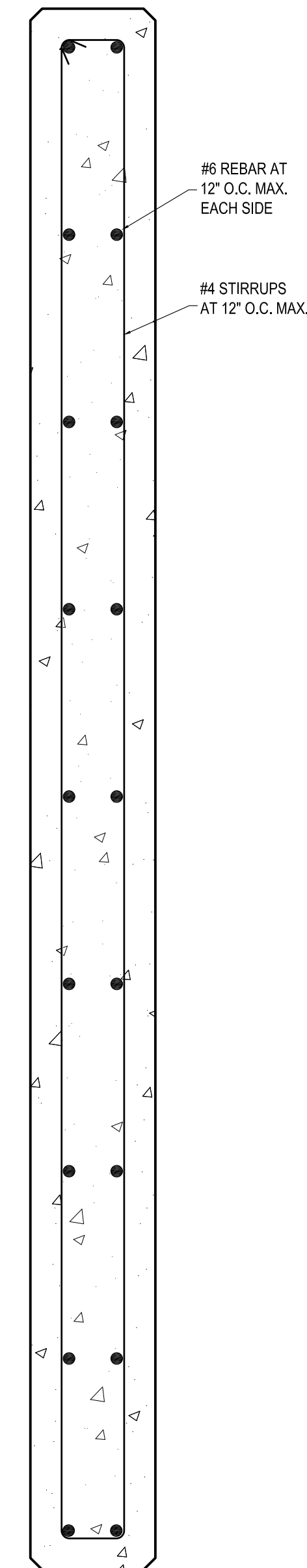
4 LIGHT WALL  
SCALE: 1 1/2"=1'-0"



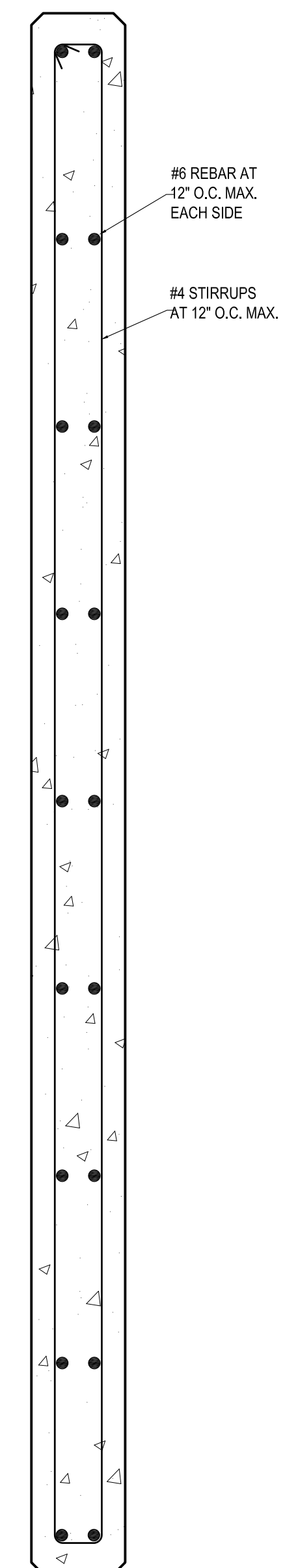
5 INVERTED T BEAM 40IT36  
SCALE: 1 1/2"=1'-0"



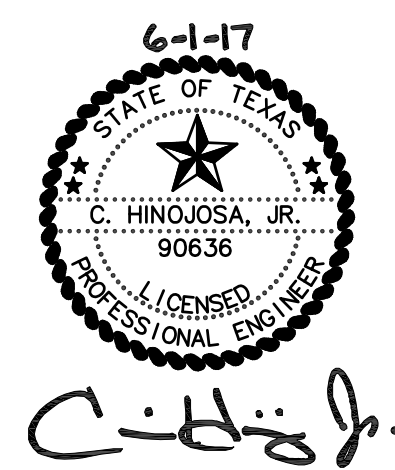
6 L BEAM 18LB36  
SCALE: 1 1/2"=1'-0"



7 SPANDREL  
SCALE: 1 1/2"=1'-0"



8 LIGHT WALL  
SCALE: 1 1/2"=1'-0"



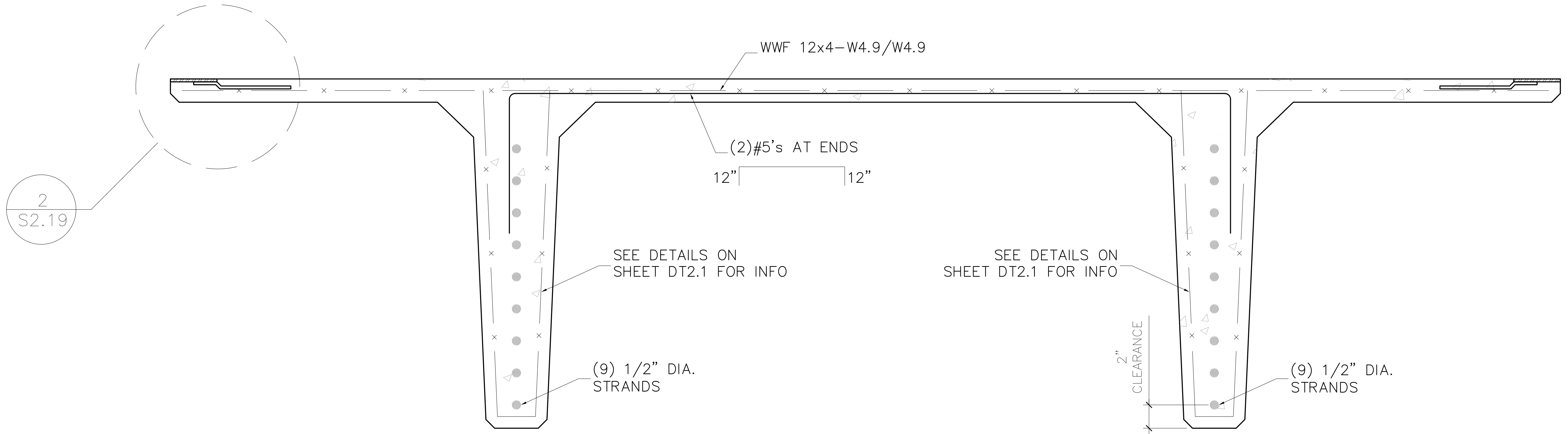
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T&PE FIRM No. F-8719  
701 S. 15th STREET McALLEN, TX. 78501  
(956) 687-5560 (956) 687-5561 FAX

Project Name and Address or Nearest Intersection  
McAllen Public Safety  
Building Parking Garage

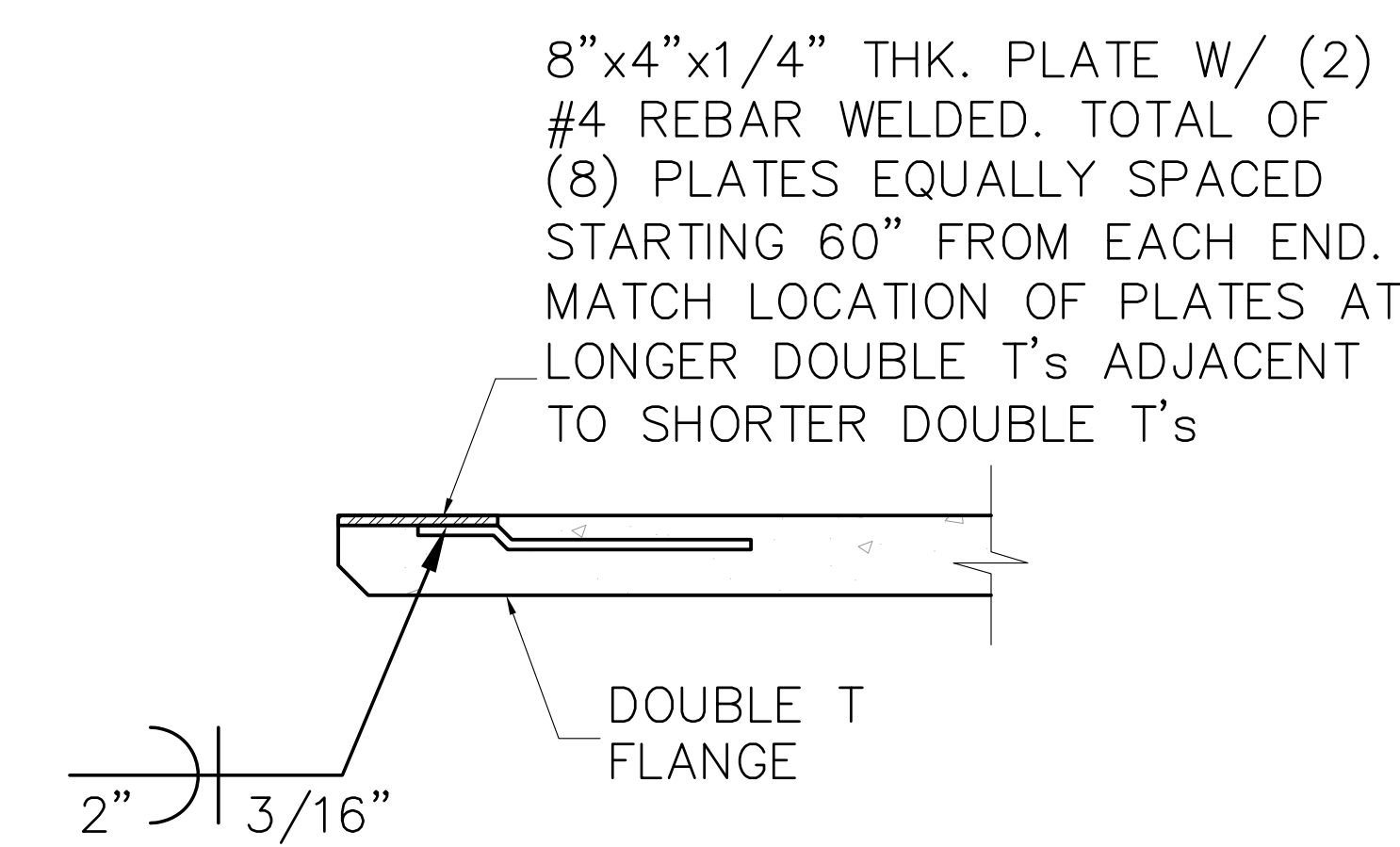
McAllen Texas  
Owner:

Sheet Title DIMENSIONED SECTIONS & REINFORCING	Sheet
Date June 1, 2017	S2.18
Scale As Noted	

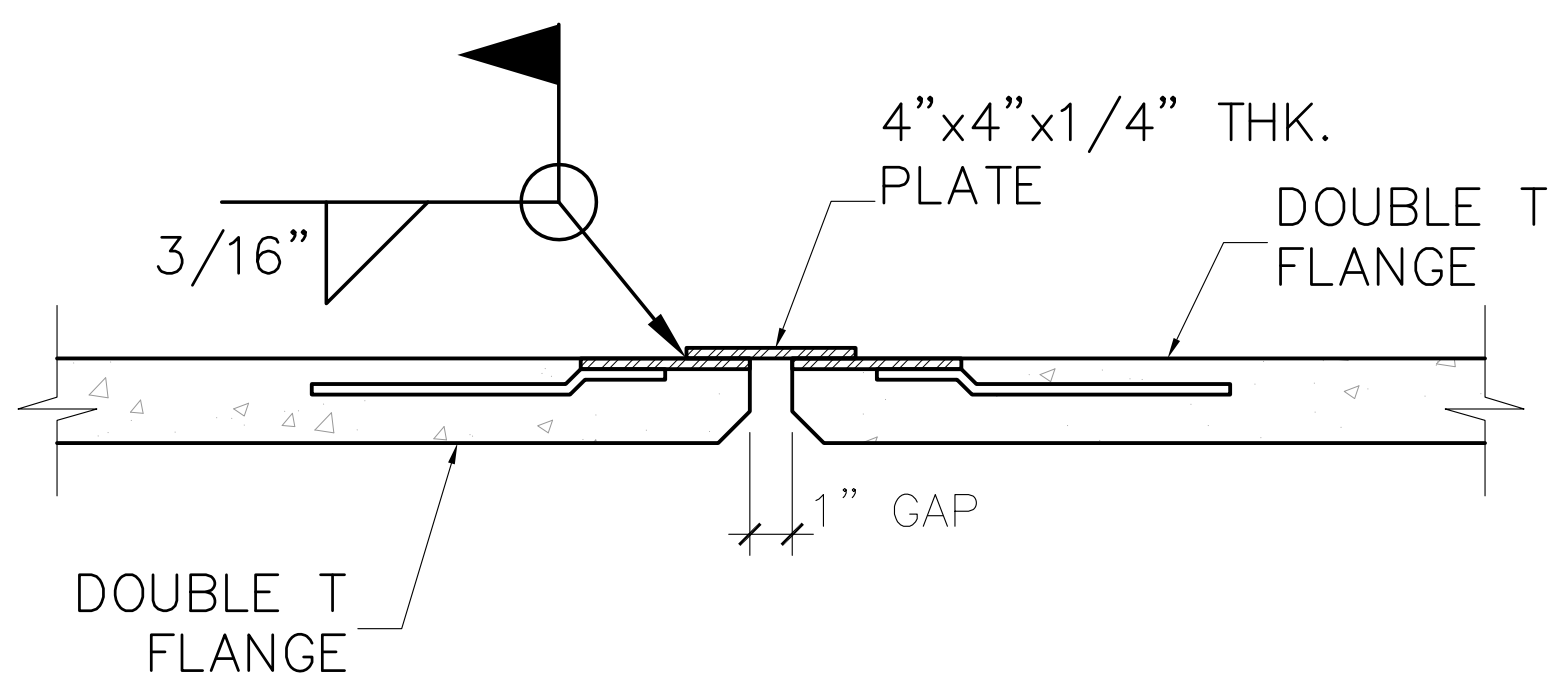




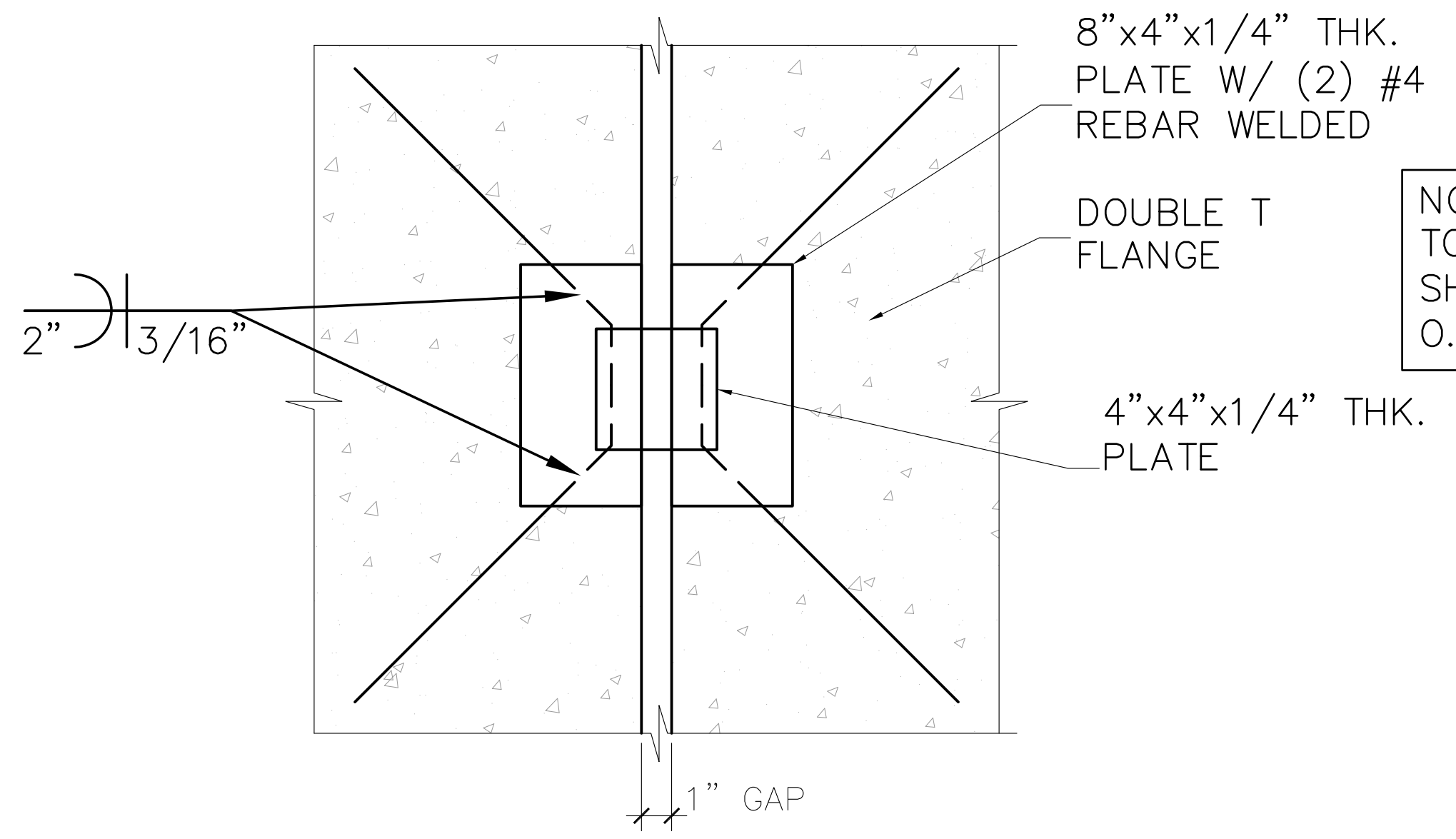
1 DOUBLE T REINFORCING  
NOT TO SCALE



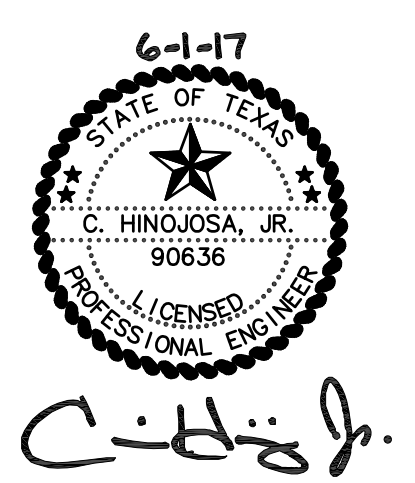
2 END OF DOUBLE T  
NOT TO SCALE



3 CONNECTION AT END OF DOUBLE Ts  
NOT TO SCALE



4 TOP VIEW CONNECTION AT END OF DOUBLE Ts  
NOT TO SCALE



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Project Name and Address or Nearest Intersection  
**McAllen Public Safety Building Parking Garage**

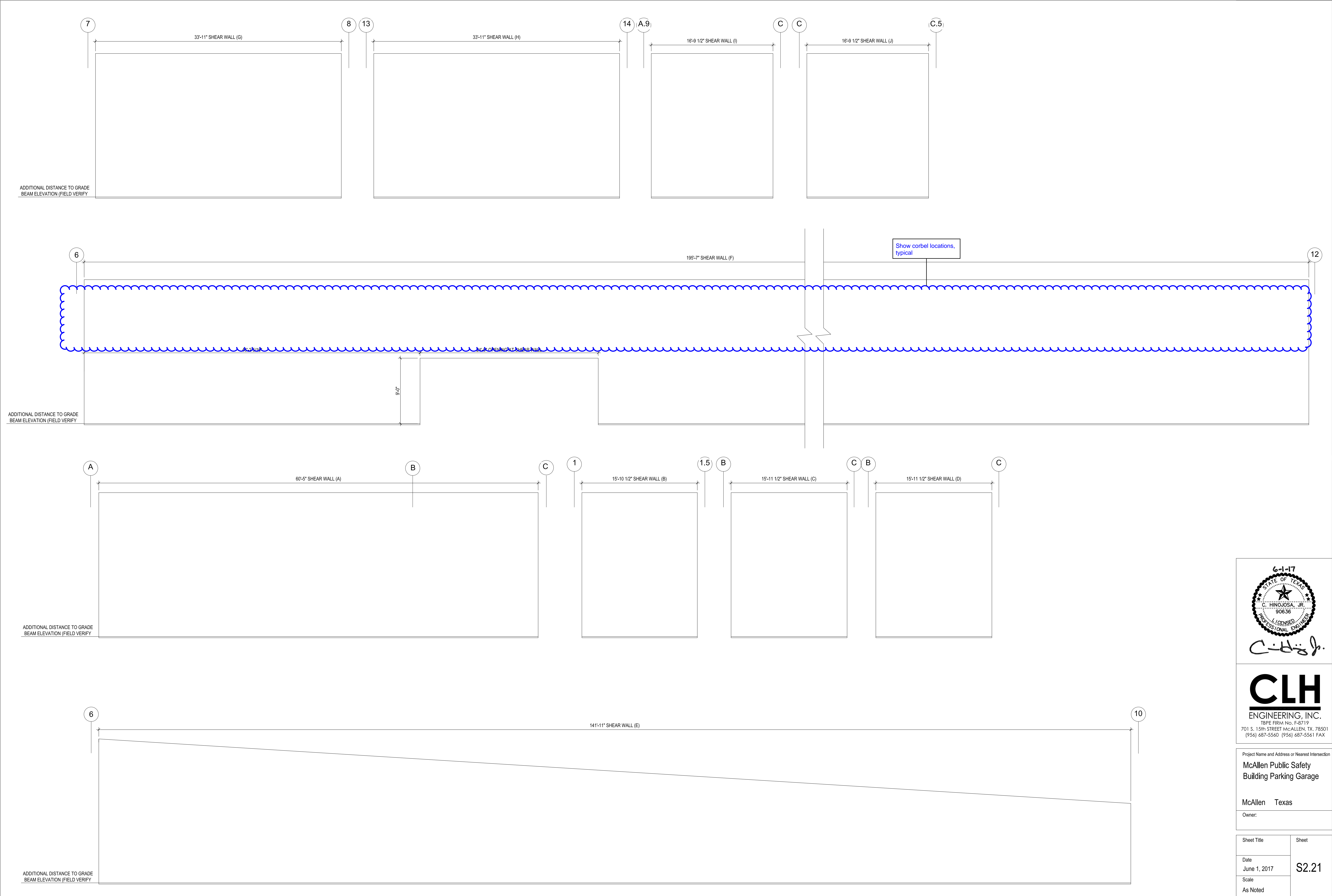
McAllen Texas

Owner:

Sheet Title	Sheet
Date June 1, 2017	<b>S2.19</b>
Scale As Noted	



AS Noted	
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6-1-17

STATE OF TEXAS

★

C. HINOJOSA, JR.

90636

LICENSED PROFESSIONAL ENGINEER

C. Hinojosa, Jr.

CLH

ENGINEERING, INC.

TBPE FIRM No. F-8719

701 S. 15th STREET McALLEN, TX. 78501

(956) 687-5560 (956) 687-5561 FAX

Project Name and Address or Nearest Intersection

McAllen Public Safety Building Parking Garage

McAllen Texas

Owner:

Sheet Title

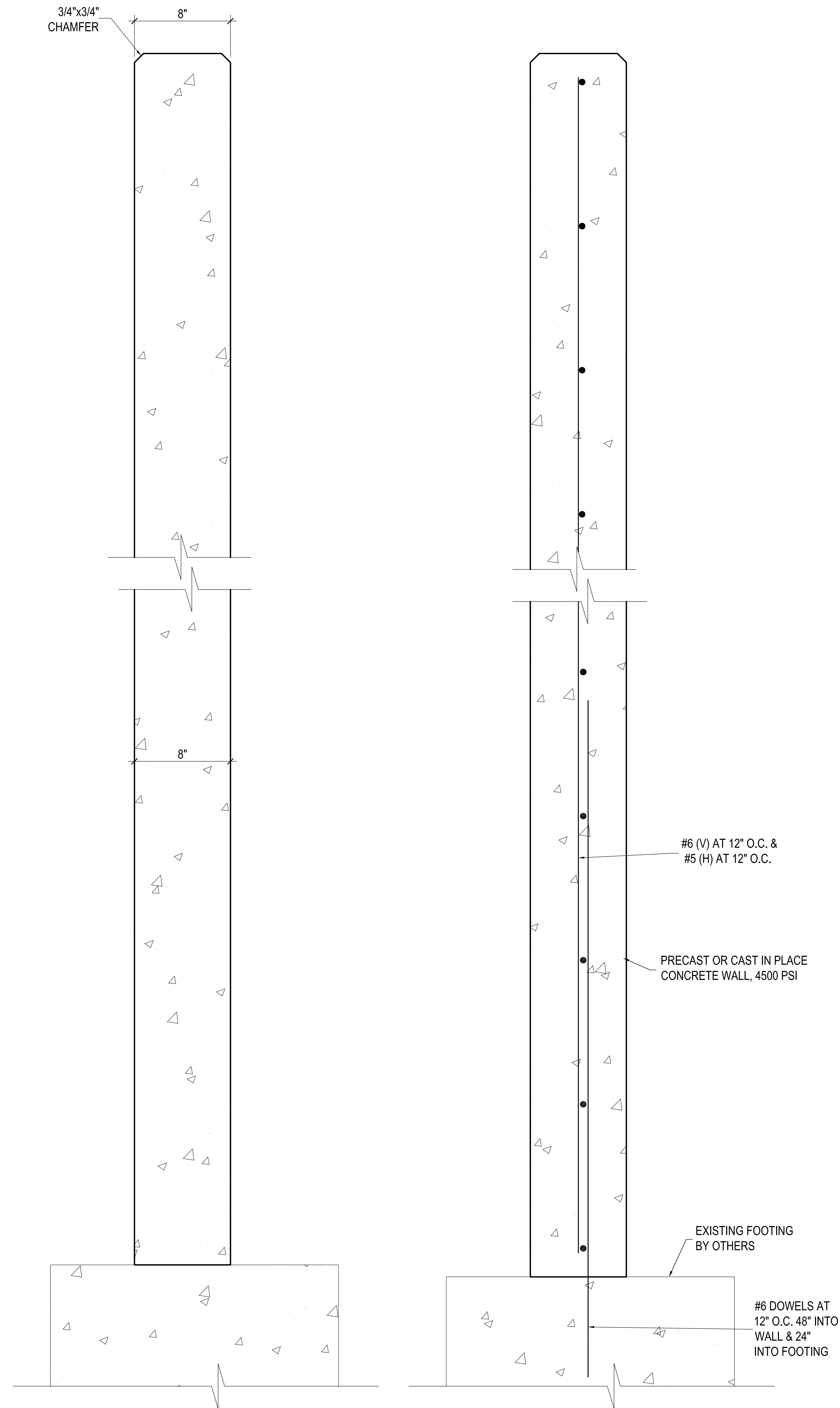
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Scale

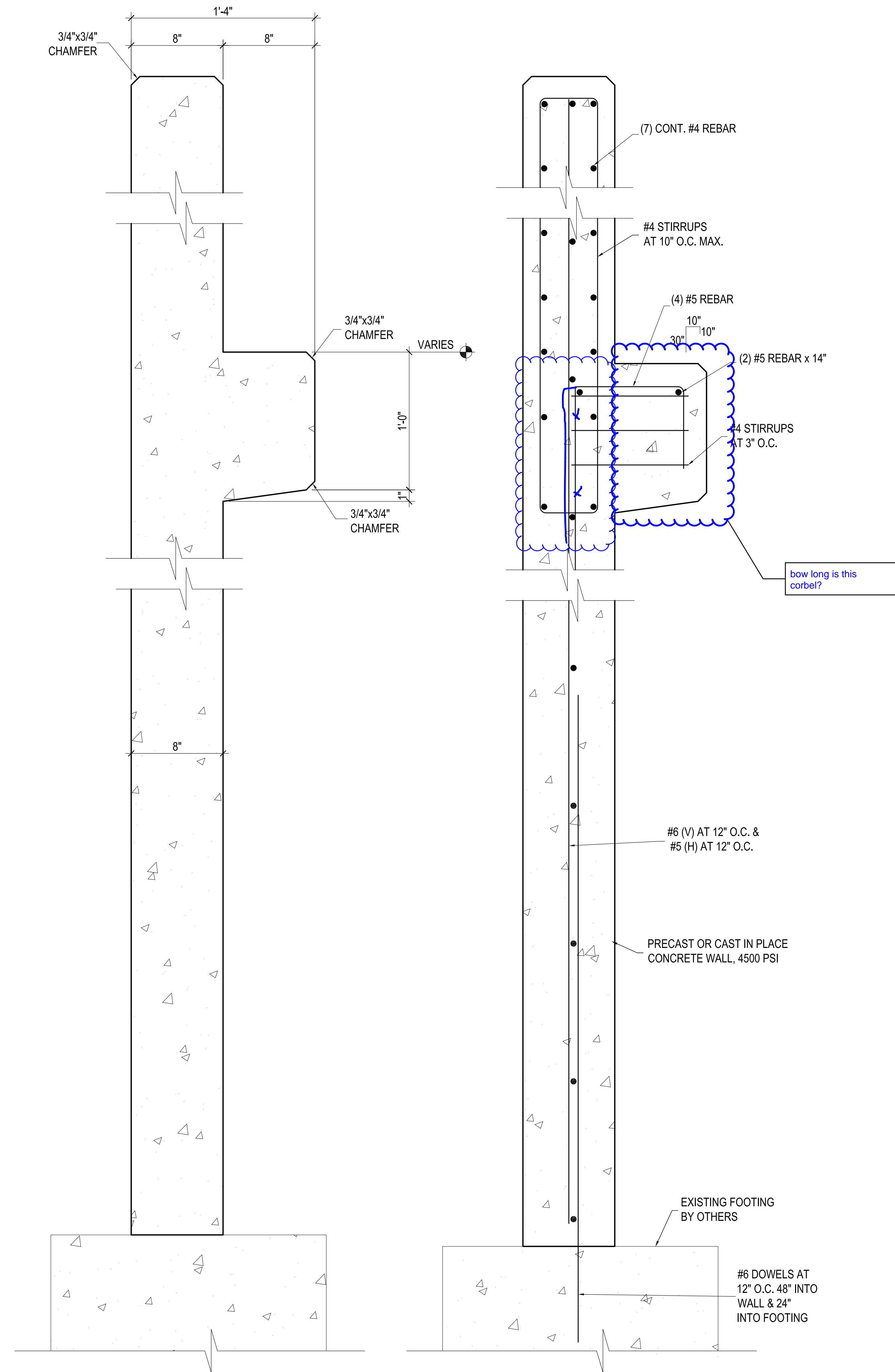
As Noted

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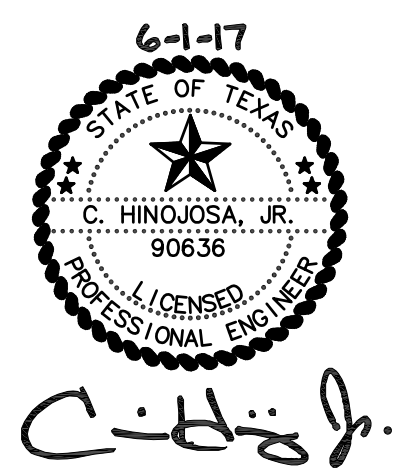
S2.21



1 SHEAR WALL (A,C,D,I,J) SECTION  
NOT TO SCALE



2 SHEAR WALL (B,E,G) SECTION  
NOT TO SCALE

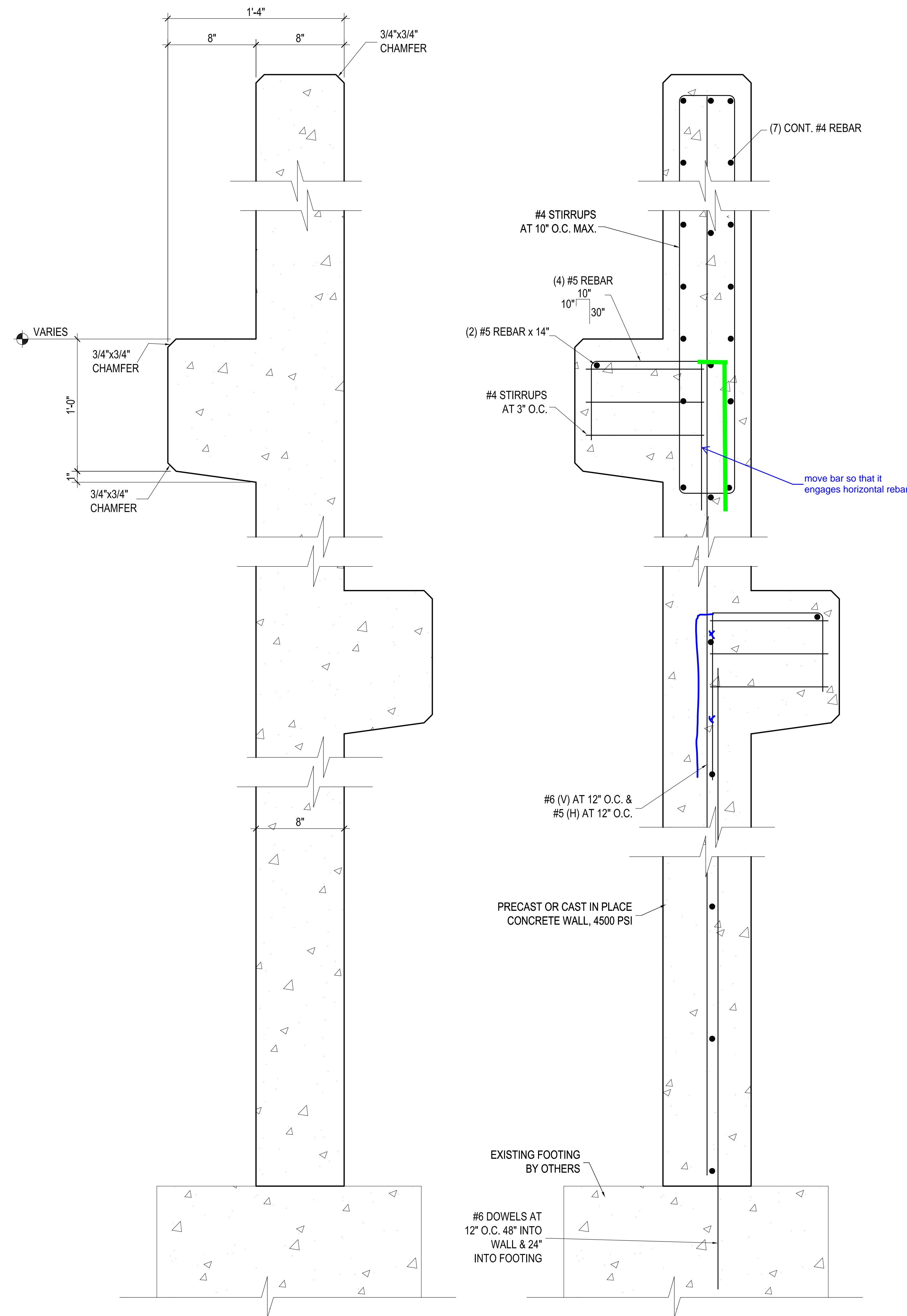


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(956) 687-5560 (956) 687-5561 FAX

Project Name and Address or Nearest Intersection  
McAllen Public Safety  
Building Parking Garage

Owner:  
McAllen Texas

Sheet Title	Sheet
Date June 1, 2017	S2.22
Scale As Noted	



1 SHEAR WALL (F) SECTION  
NOT TO SCALE

6-1-17

STATE OF TEXAS

C. HINOJOSA, JR.

90636

LICENSED PROFESSIONAL ENGINEER

*C. Hinojosa, Jr.*

**CLH**

ENGINEERING, INC.

TBPE FIRM NO. F-8719

701 S. 15TH STREET McALLEN, TX. 78501

(956) 687-5560 (956) 687-5561 FAX

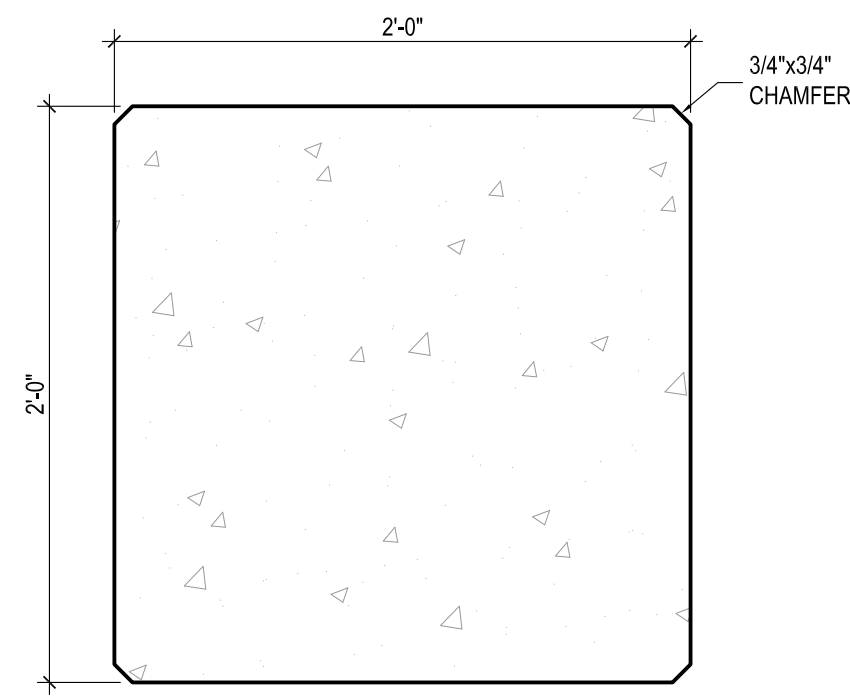
Project Name and Address or Nearest Intersection

McAllen Public Safety  
Building Parking Garage

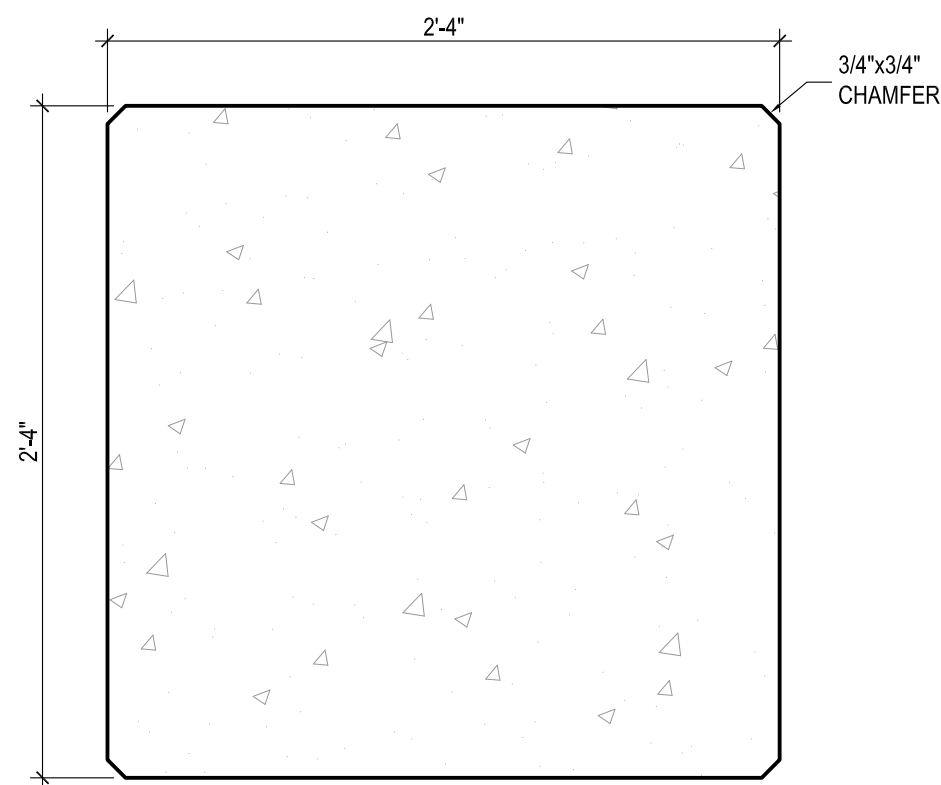
McAllen Texas

Owner:

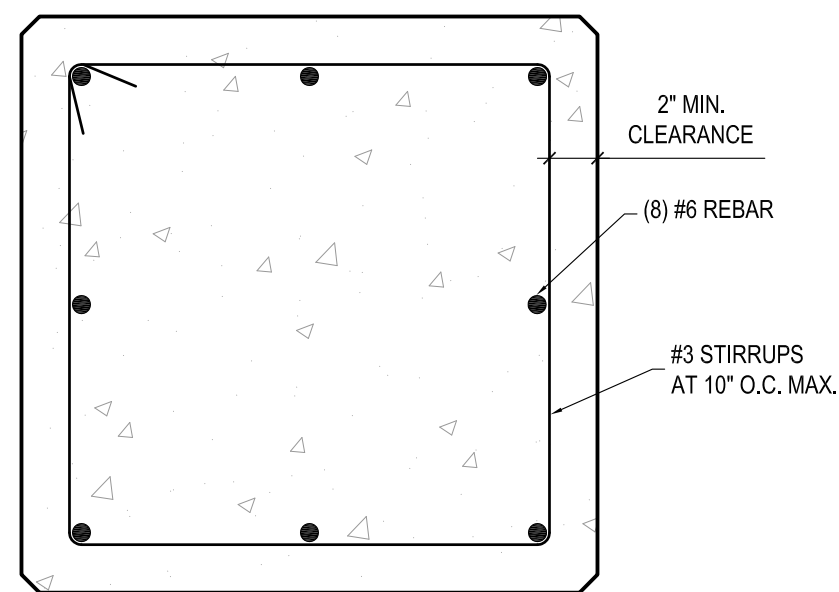
Sheet Title	Sheet
Date	S2.23
June 1, 2017	
Scale	
As Noted	



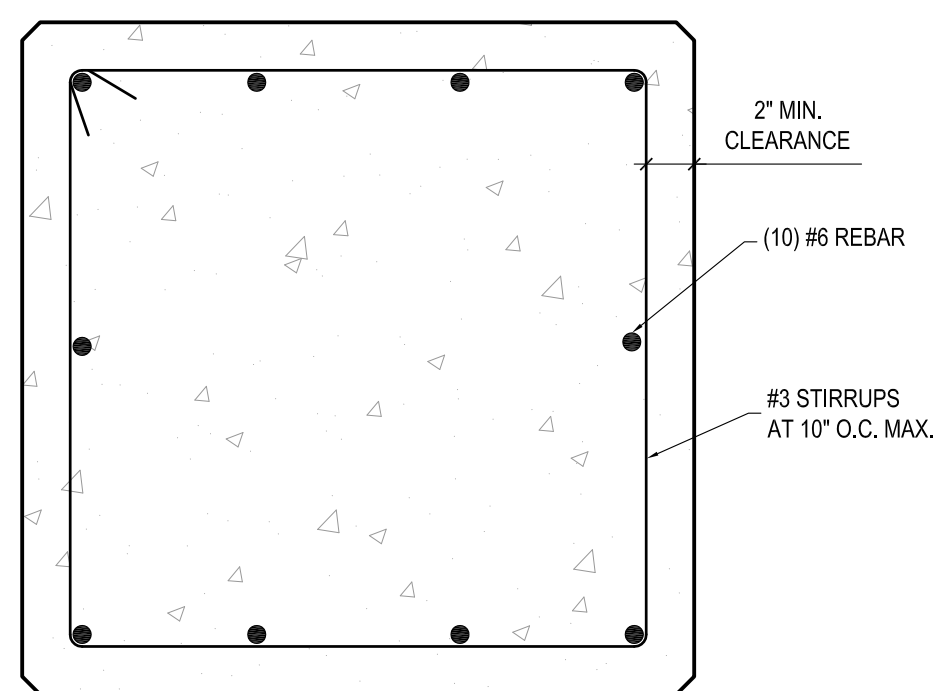
1 DIMENSIONED 24"x24" CONC. COLUMN  
SCALE: 1 1/2"=1'-0"



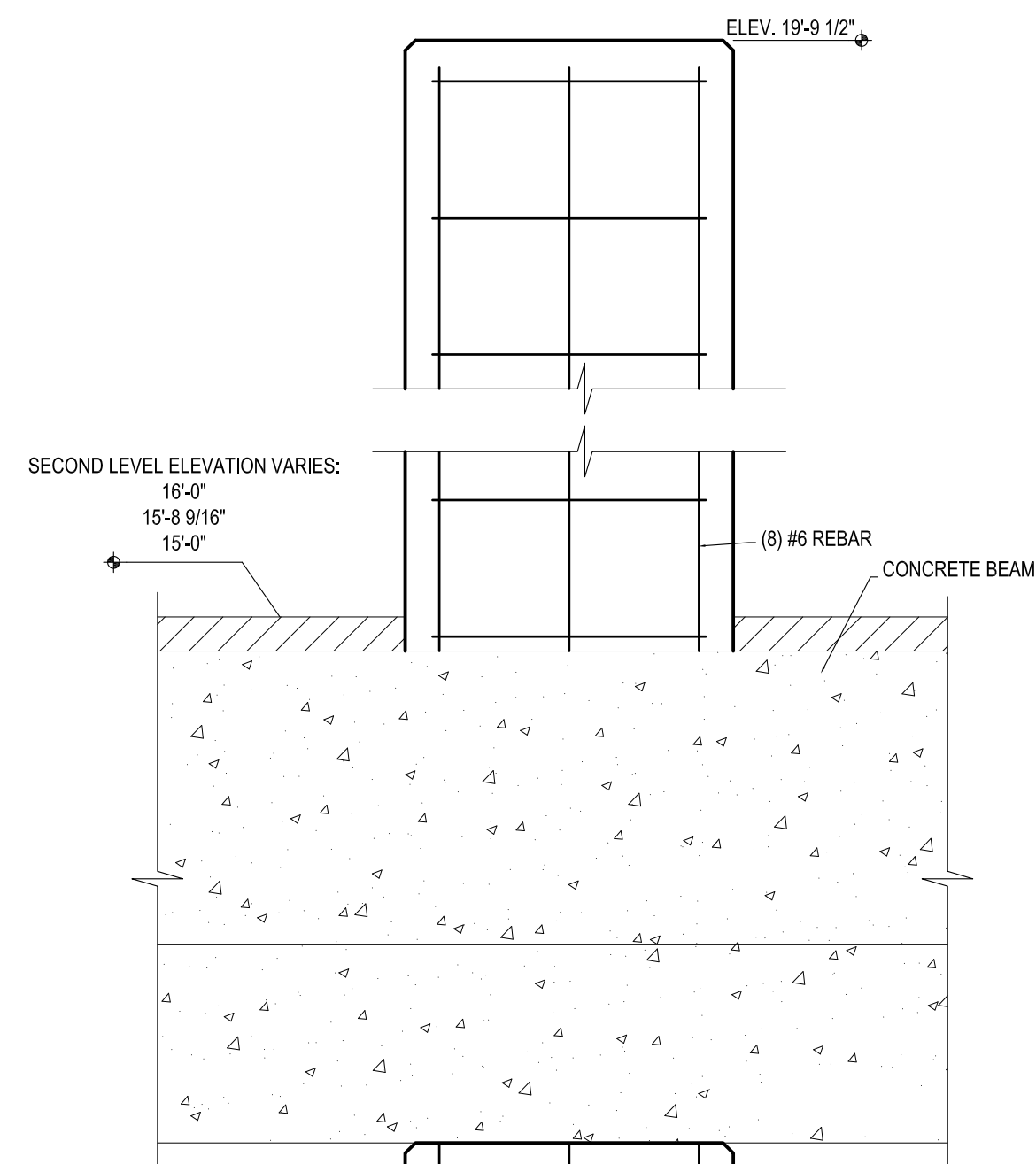
2 DIMENSIONED 28"x28" CONC. COLUMN  
SCALE: 1 1/2"=1'-0"



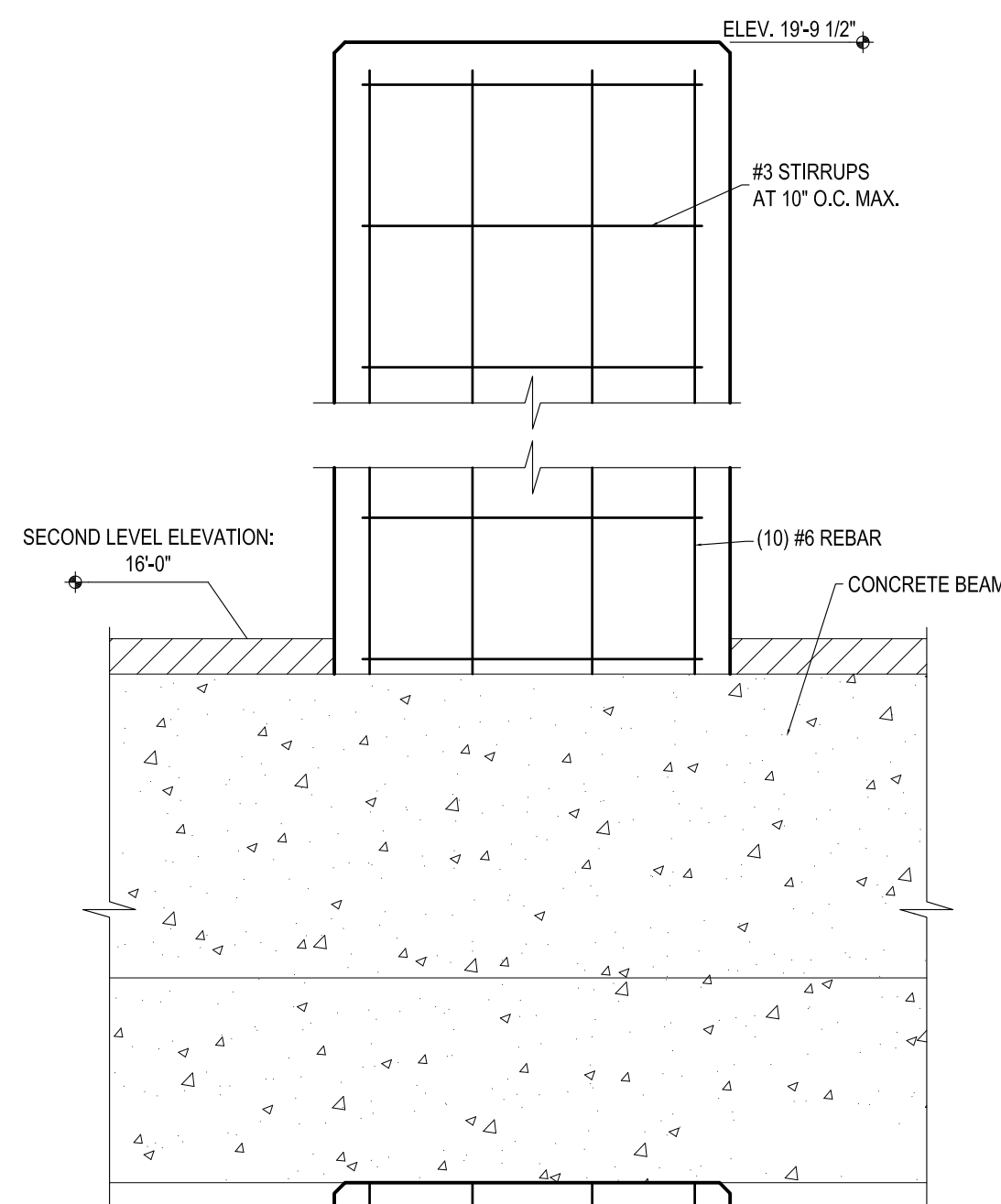
3 REINFORCING FOR 24"x24" CONC. COLUMN  
SCALE: 1 1/2"=1'-0"



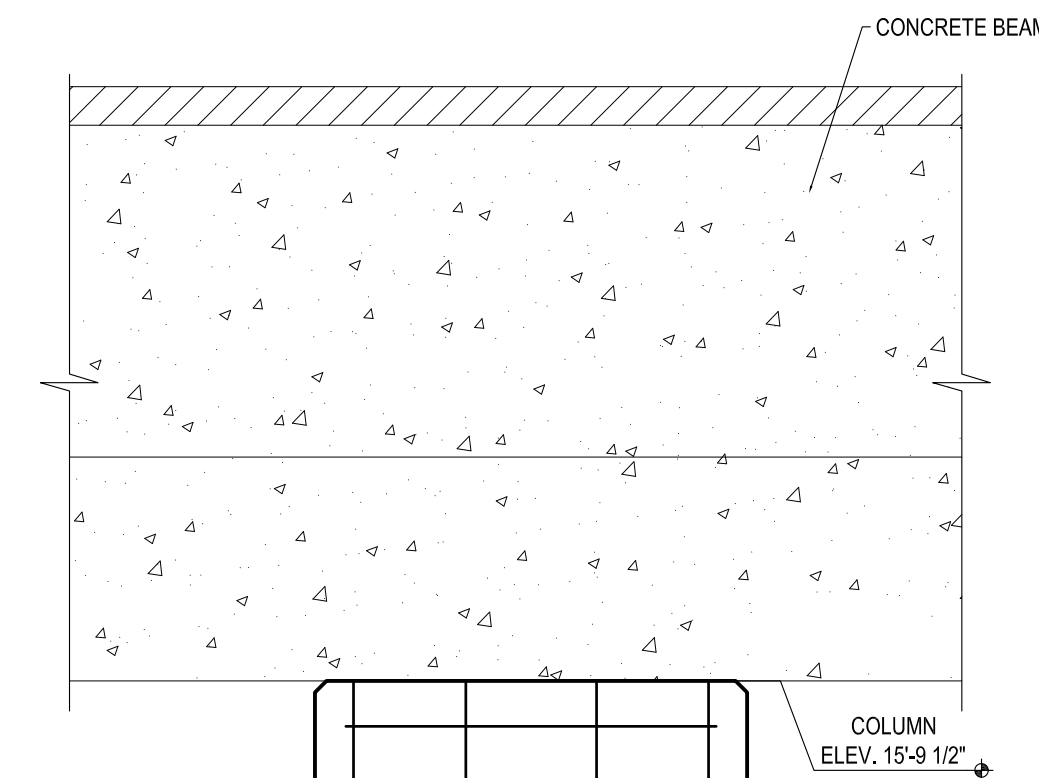
4 REINFORCING FOR 28"x28" CONC. COLUMN  
SCALE: 1 1/2"=1'-0"



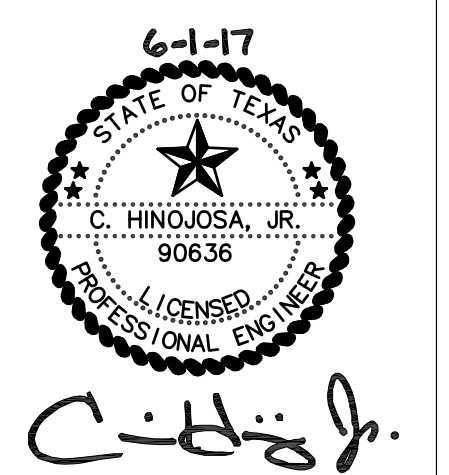
5 24"x24" COLUMN PROFILE  
NOT TO SCALE



6 28"x28" COLUMN PROFILE  
NOT TO SCALE  
(COLUMNS: C1, C3, C4, C6, C12, C16)



7 28"x28" COLUMN PROFILE  
NOT TO SCALE  
(COLUMNS: C2, C13, C13.5, C14.5, C15)



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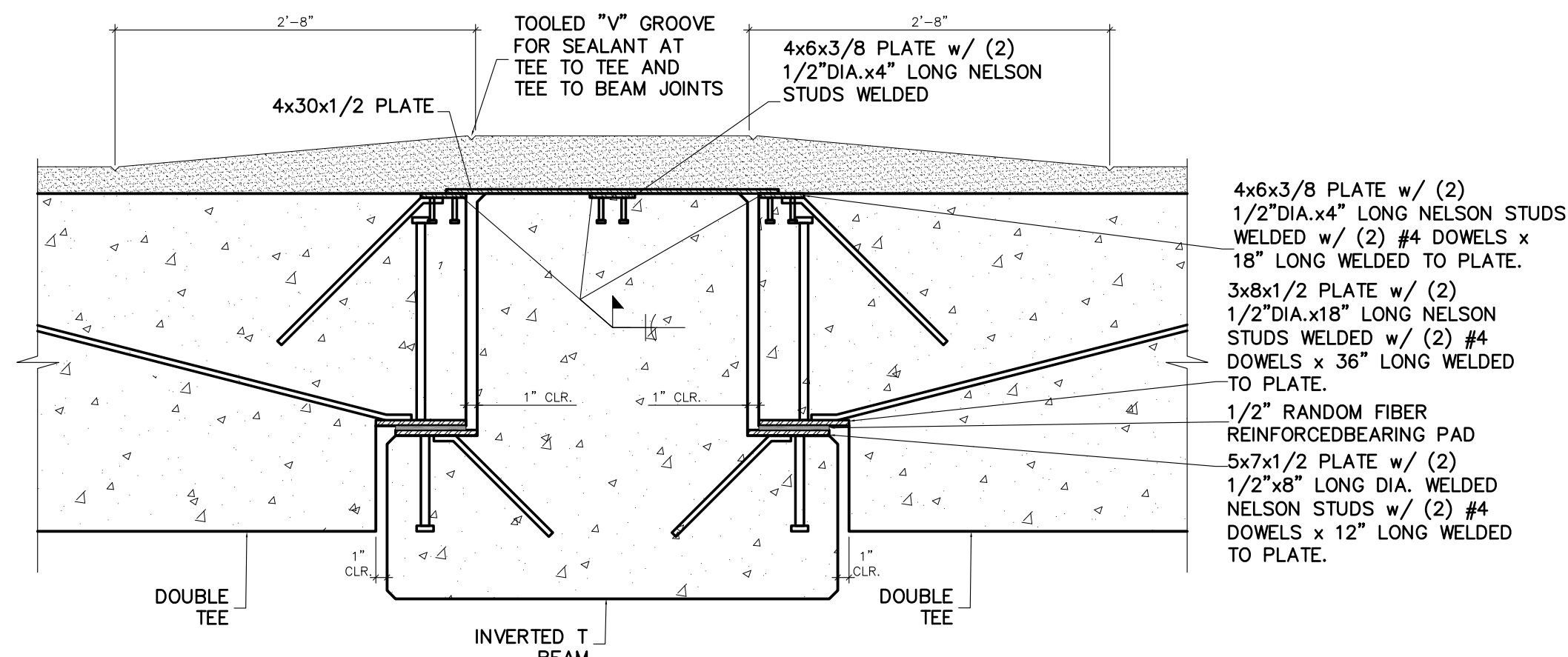
Project Name and Address or Nearest Intersection  
**McAllen Public Safety  
Building Parking Garage**

McAllen Texas

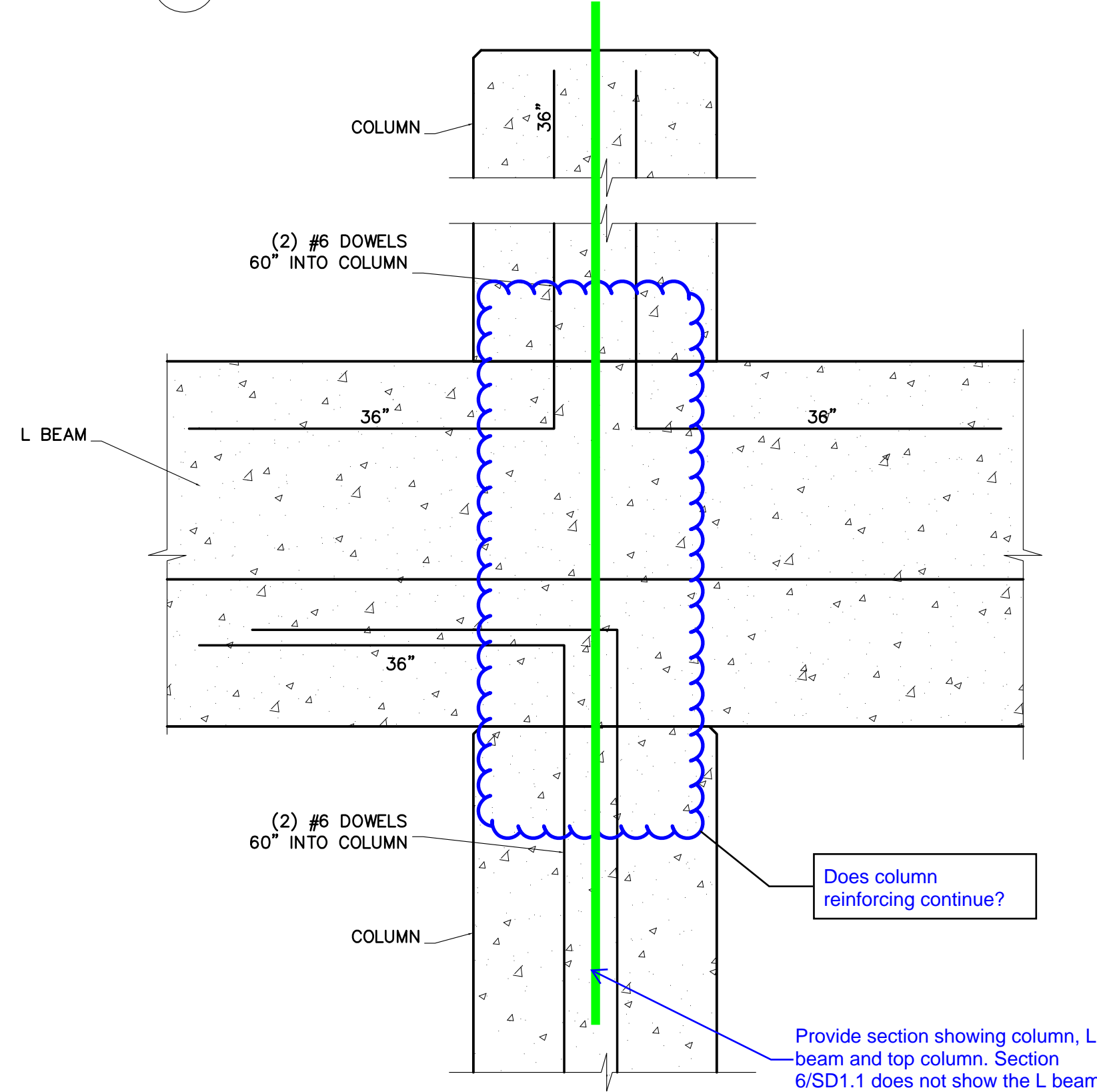
Owner:

Sheet Title CONCRETE COLUMNS	Sheet
Date June 1, 2017	<b>S2.24</b>
Scale As Noted	

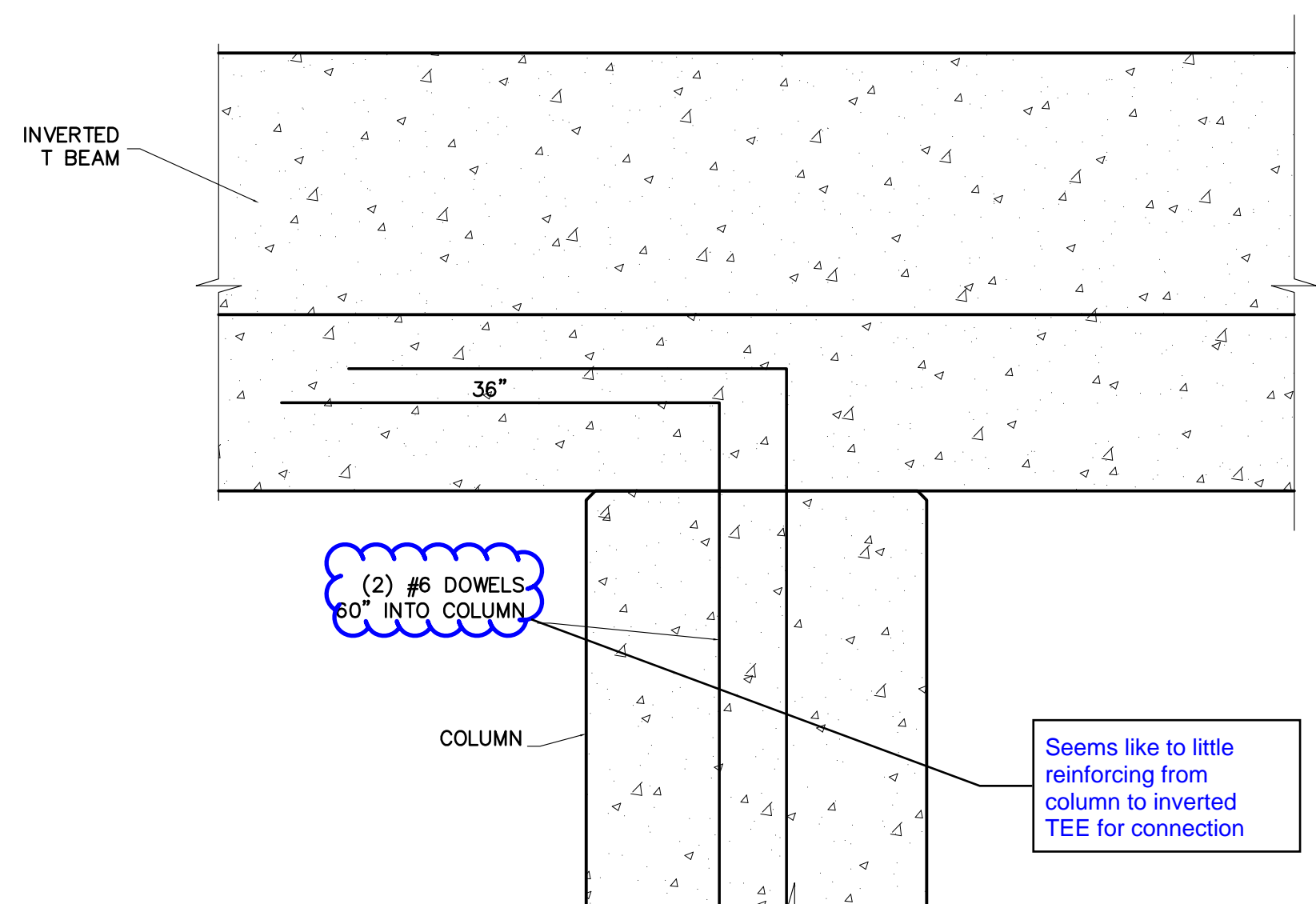




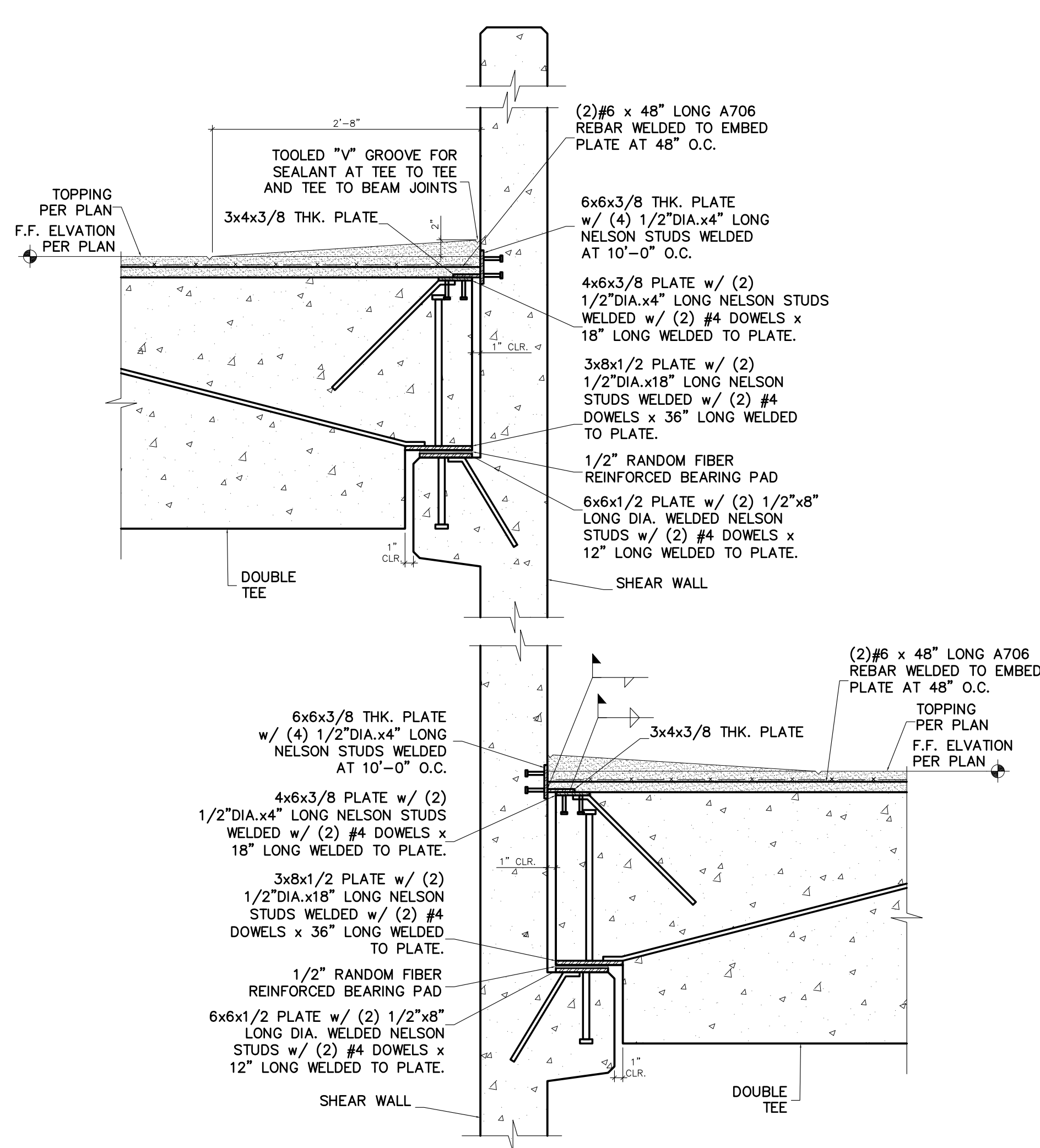
6 DOUBLE TEE TO INVERTED T BEAM CONNECTION  
NOT TO SCALE



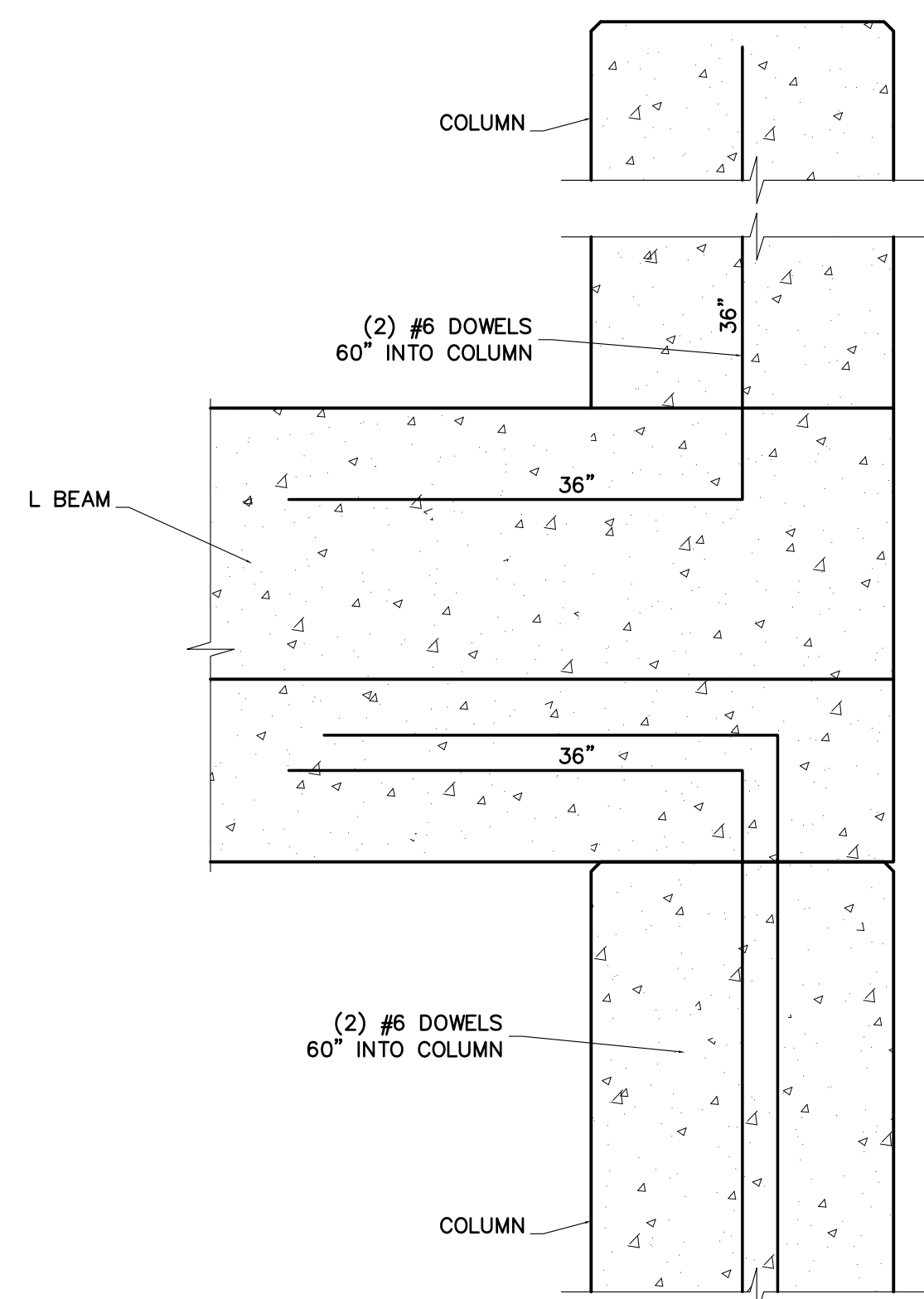
7 L BEAMS TO COLUMN CONNECTION  
NOT TO SCALE



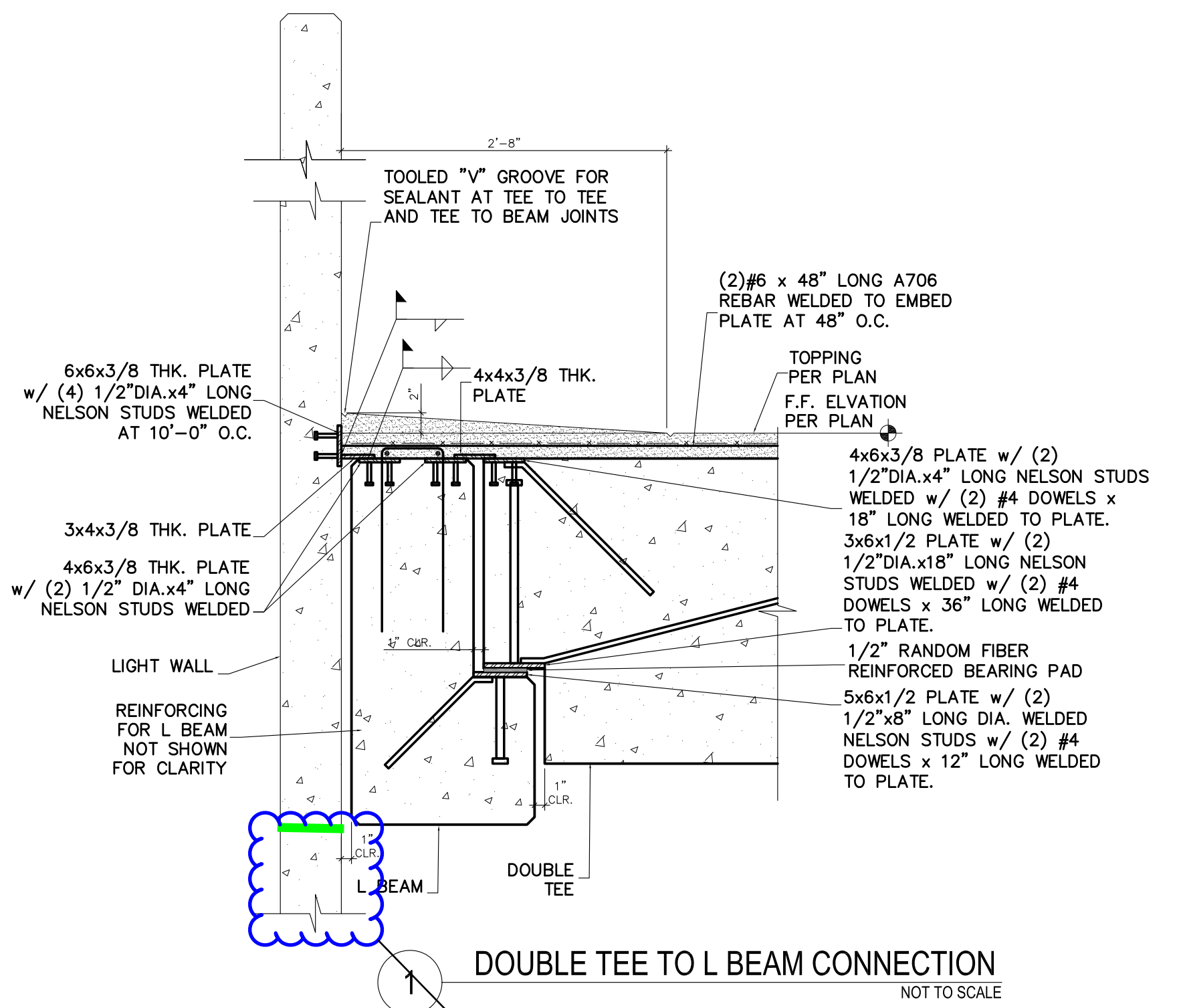
8 INVERTED T BEAMS TO COLUMN  
NOT TO SCALE



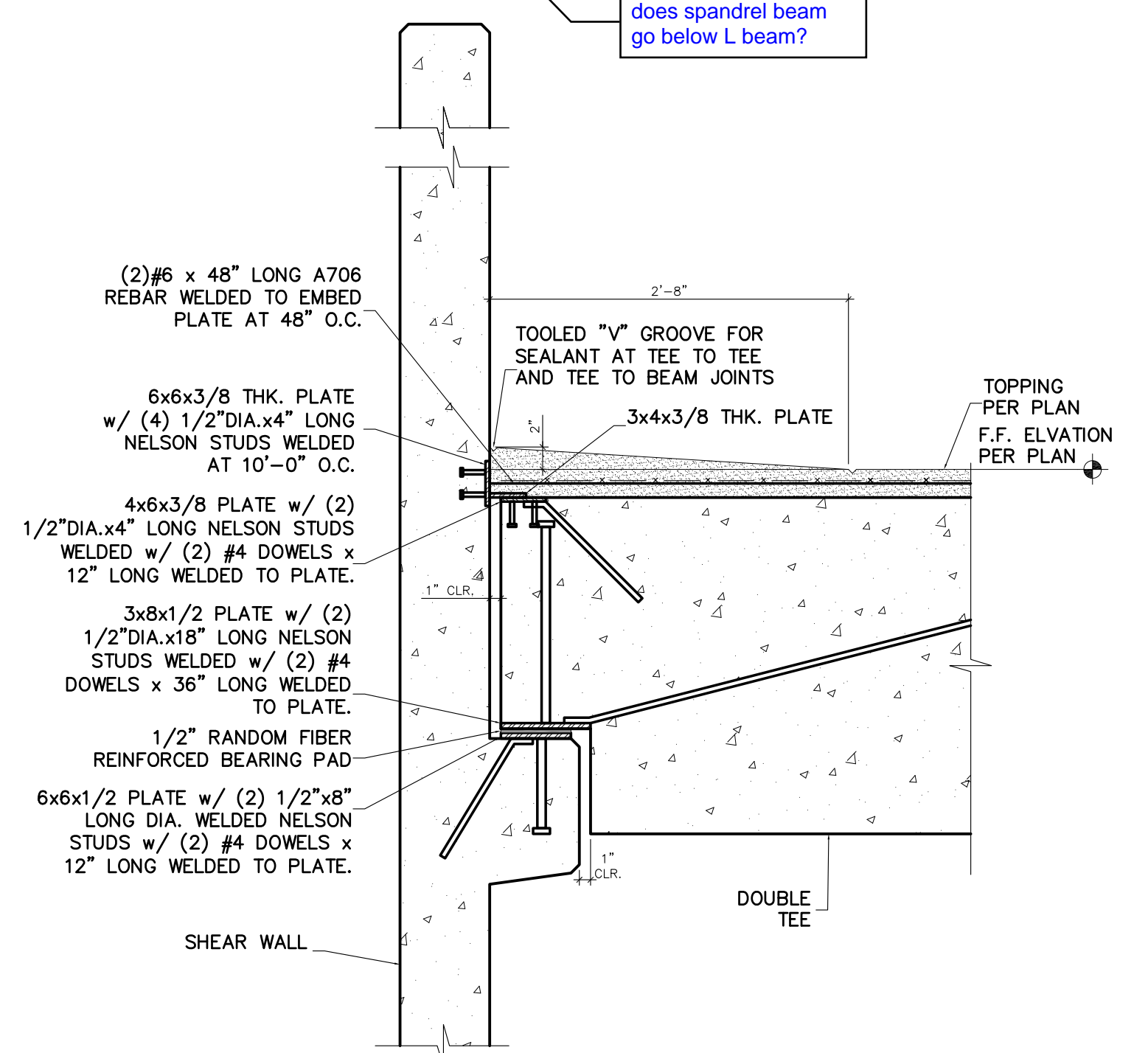
4 DOUBLE TEE TO SHEAR WALL CONNECTION  
NOT TO SCALE



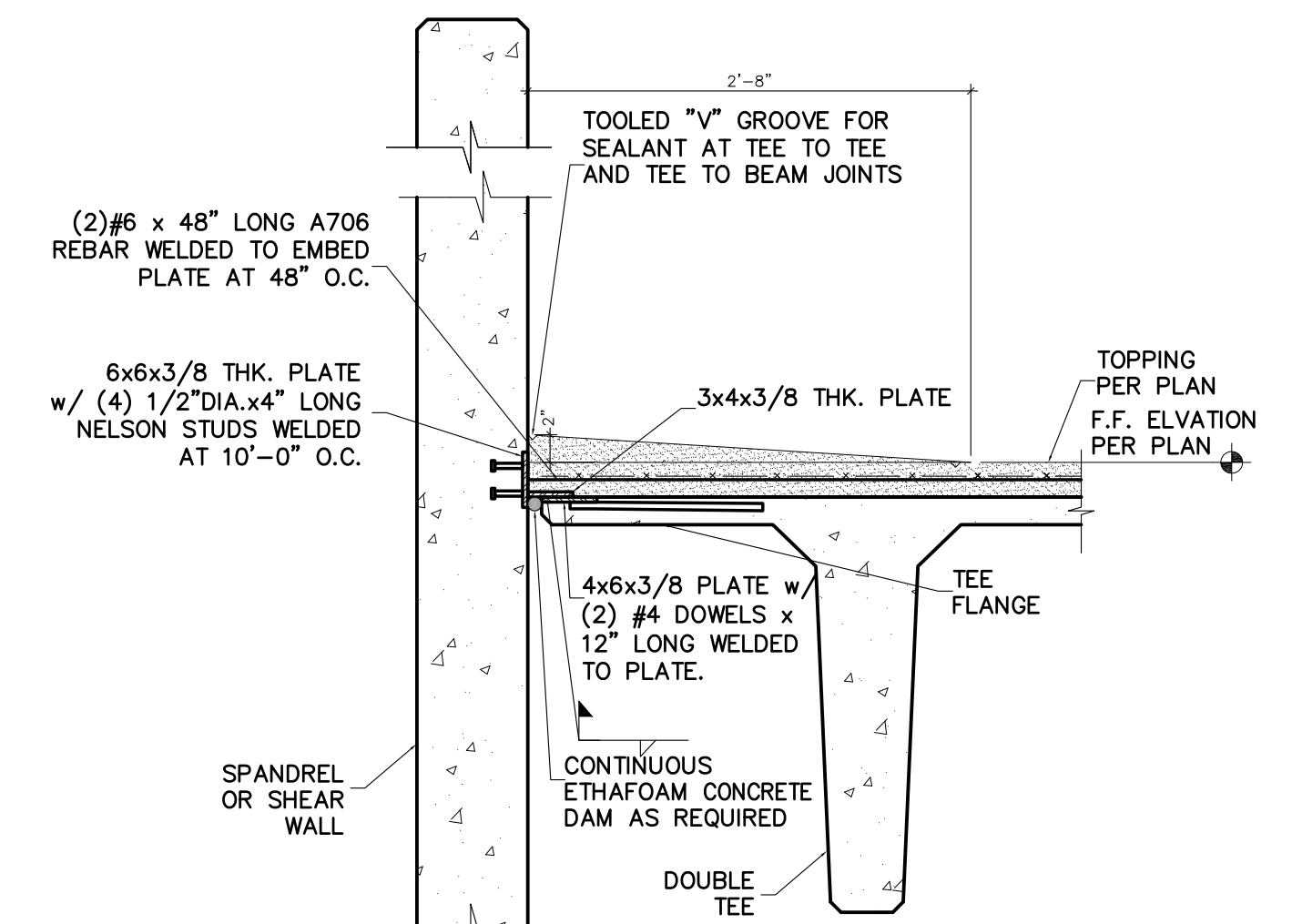
5 L BEAM TO COLUMN CONNECTION  
NOT TO SCALE



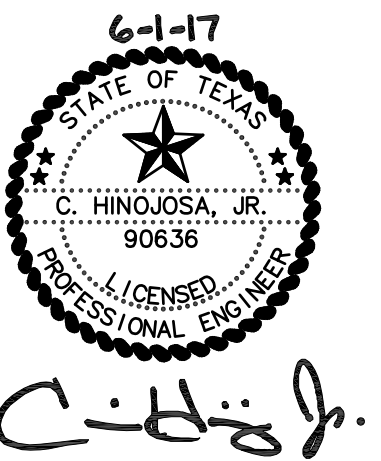
DOUBLE TEE TO L BEAM CONNECTION  
NOT TO SCALE



2 DOUBLE TEE TO SHEAR WALL CONNECTION  
NOT TO SCALE



3 DOUBLE TEE FLANGE TO SPANDREL OR SHEAR WALL CONNECTION  
NOT TO SCALE

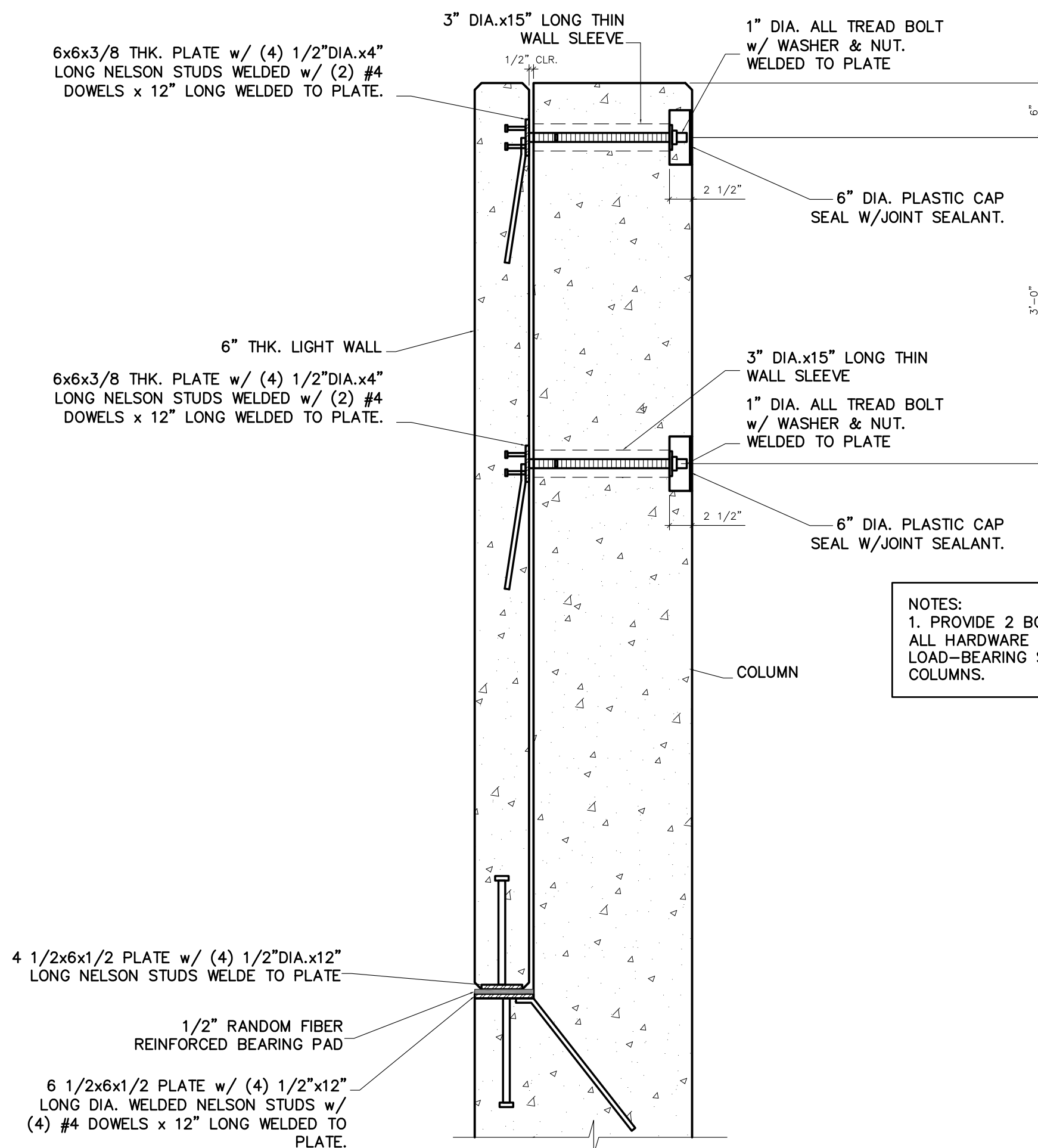


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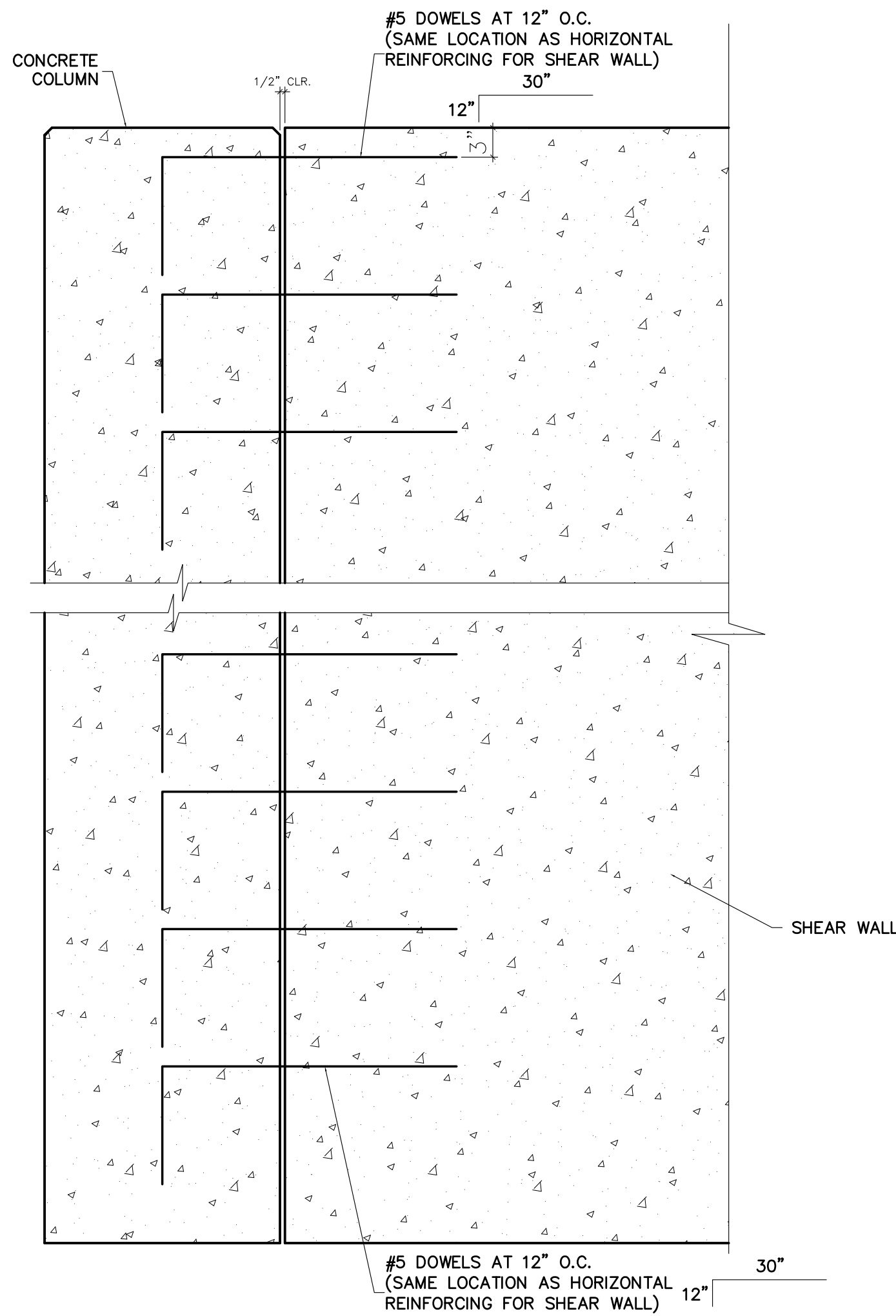
Project Name and Address or Nearest Intersection  
**McAllen Public Safety  
Building Parking Garage**

McAllen Texas  
Owner:

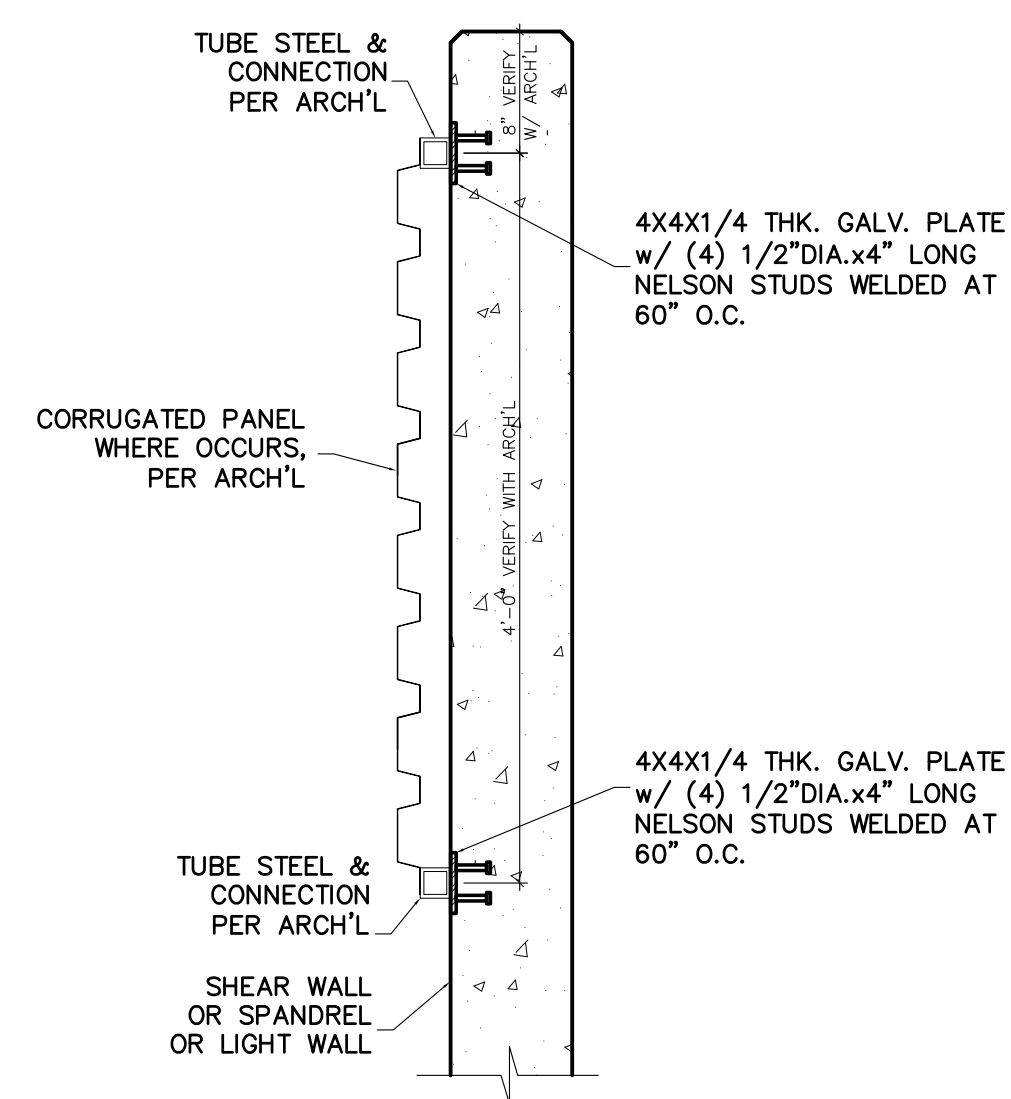
Sheet Title DETAILS	Sheet SD1.0
Date June 1, 2017	
Scale As Noted	



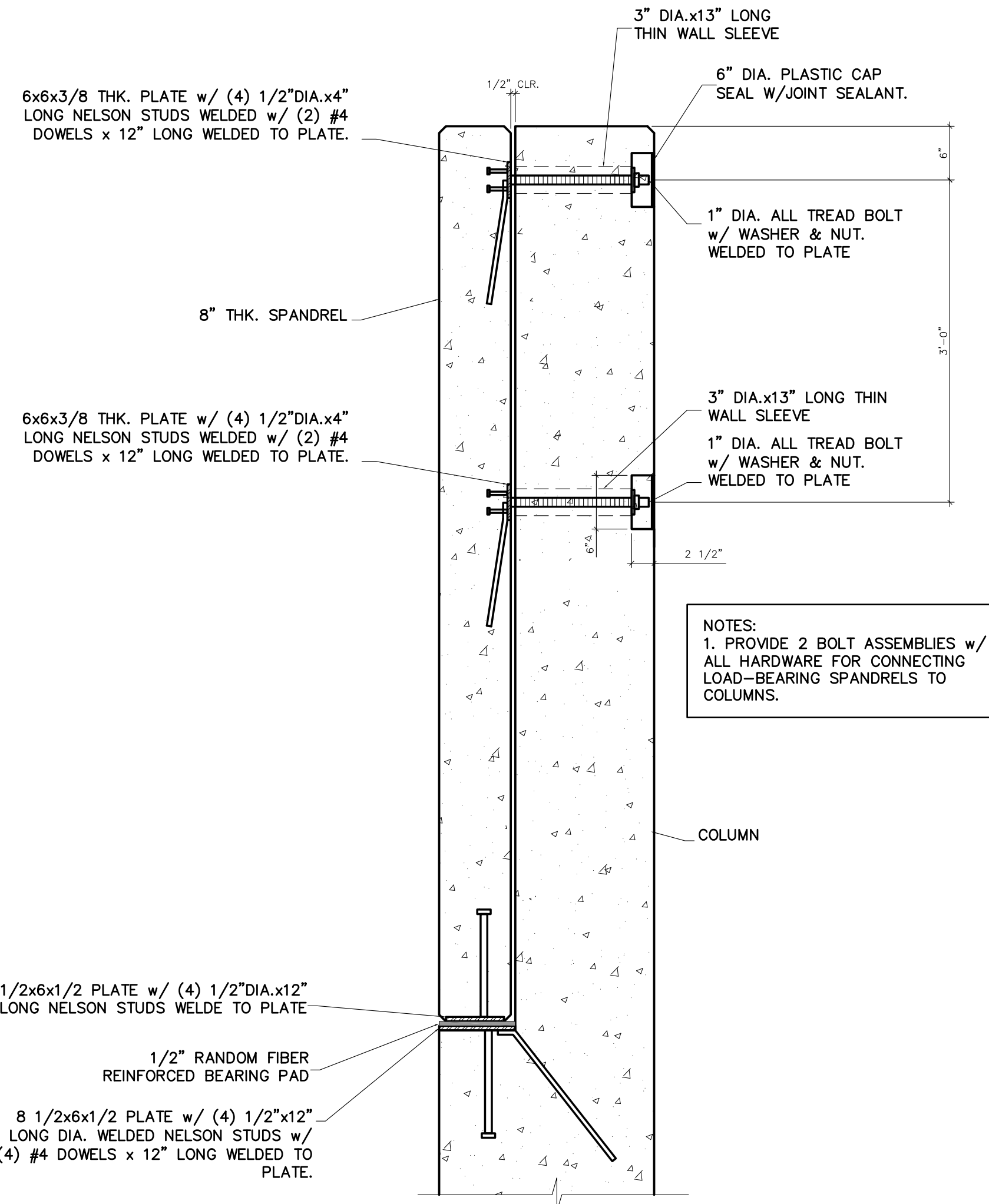
6 LIGHT WALL TO COLUMN CONNECTION  
NOT TO SCALE



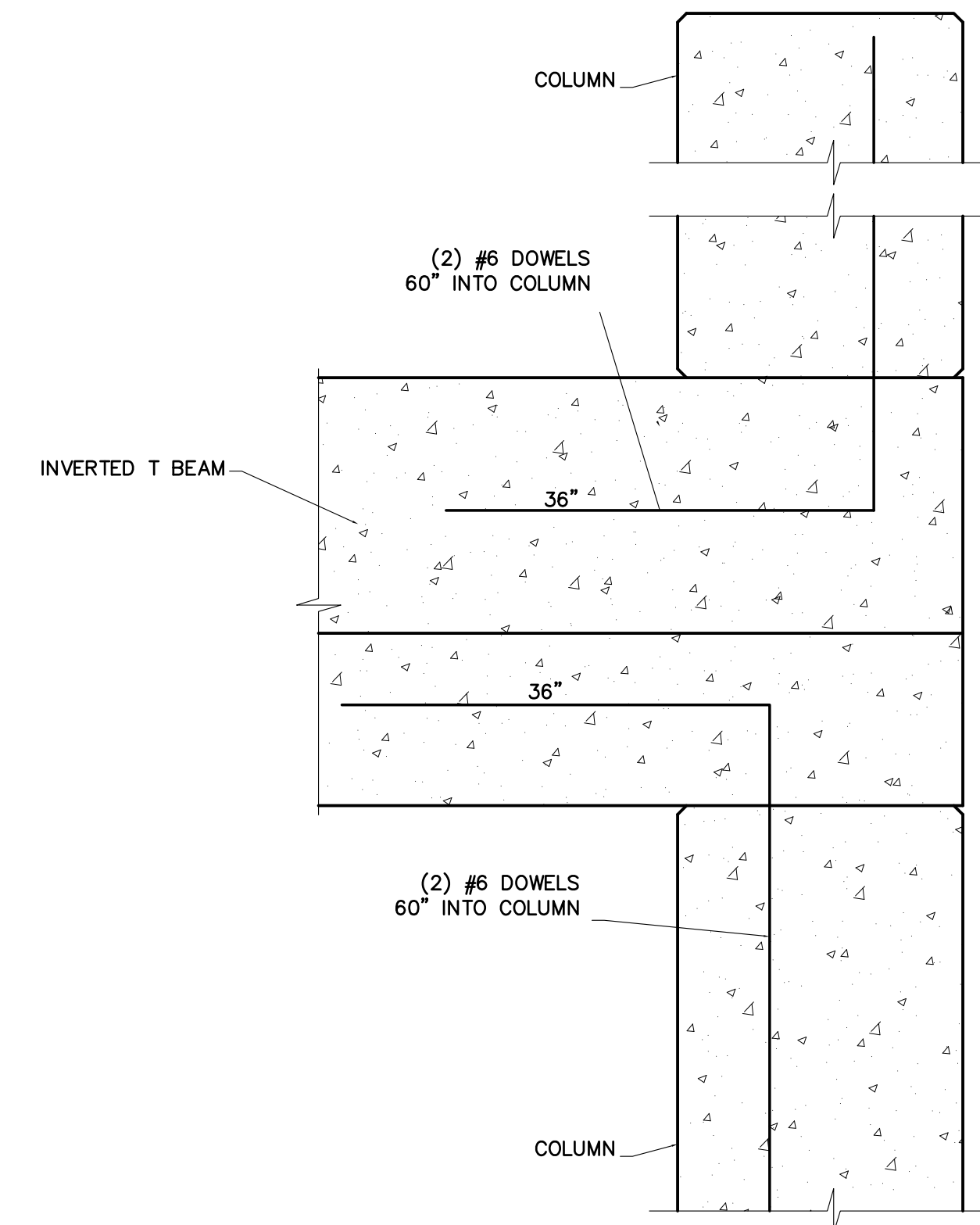
7 SHEAR WALL TO COLUMN CONNECTION  
NOT TO SCALE



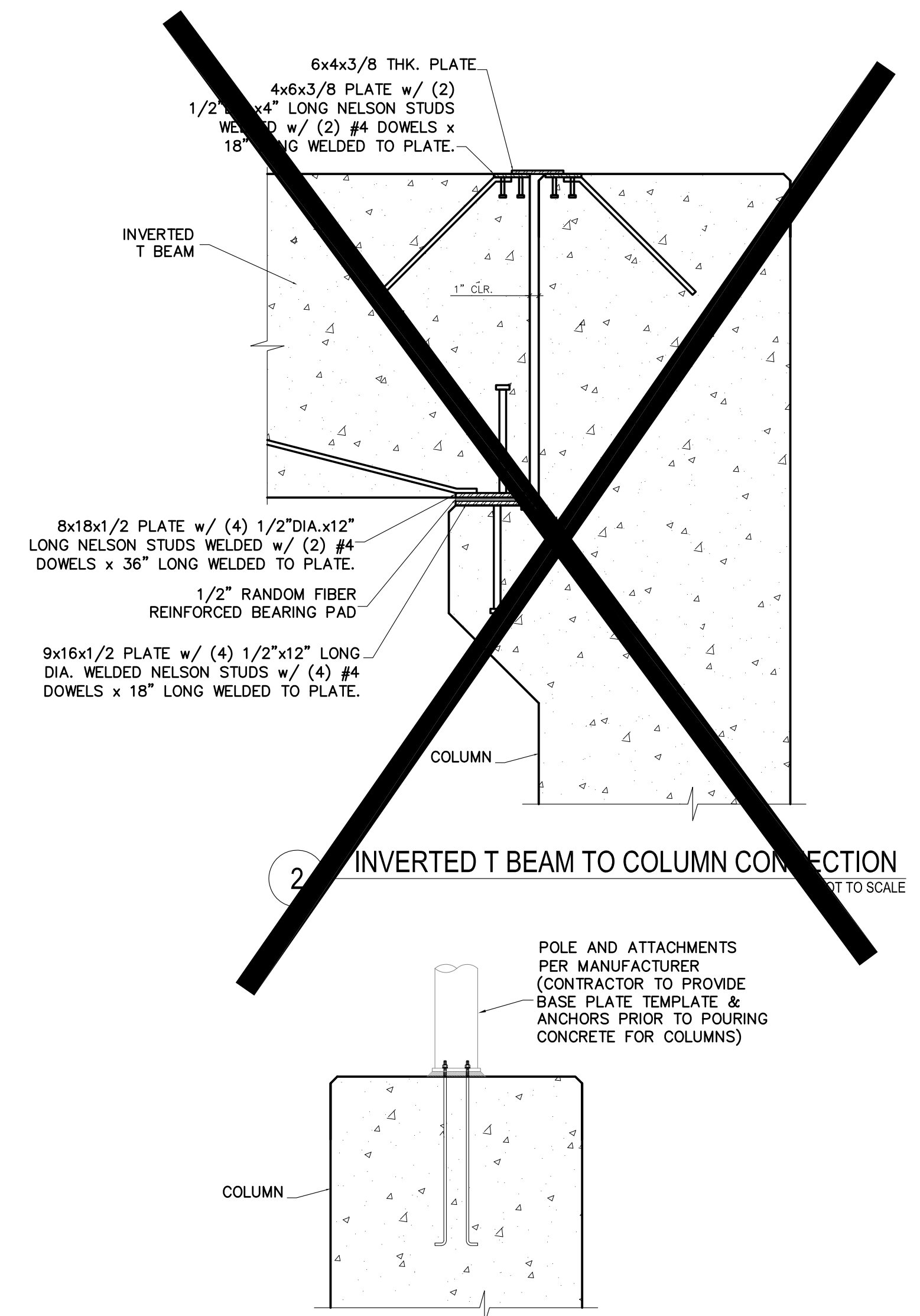
4 PLATES FOR PANEL ATTACHMENT  
NOT TO SCALE



5 SPANDREL TO COLUMN CONNECTION  
NOT TO SCALE

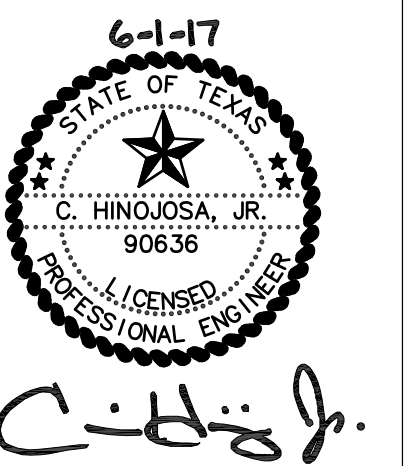


1 INVERTED T BEAM TO COLUMN CONNECTION  
NOT TO SCALE



2 INVERTED T BEAM TO COLUMN CONNECTION  
NOT TO SCALE

3 LIGHT POLE TO COLUMN  
NOT TO SCALE



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Project Name and Address or Nearest Intersection  
McAllen Public Safety  
Building Parking Garage

McAllen Texas

Owner:

Sheet Title  
DETAILS

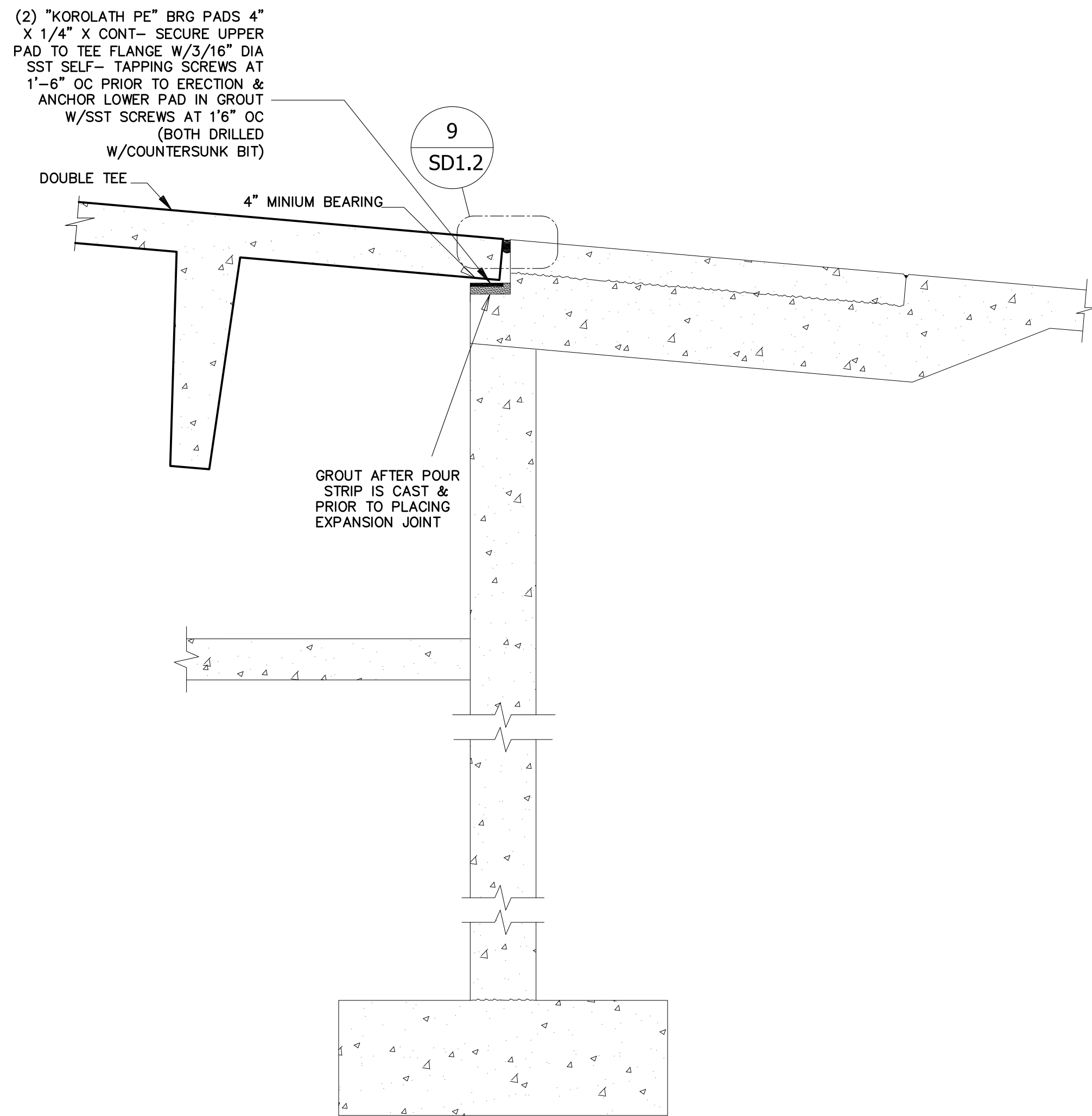
Date  
June 1, 2017

Scale  
As Noted

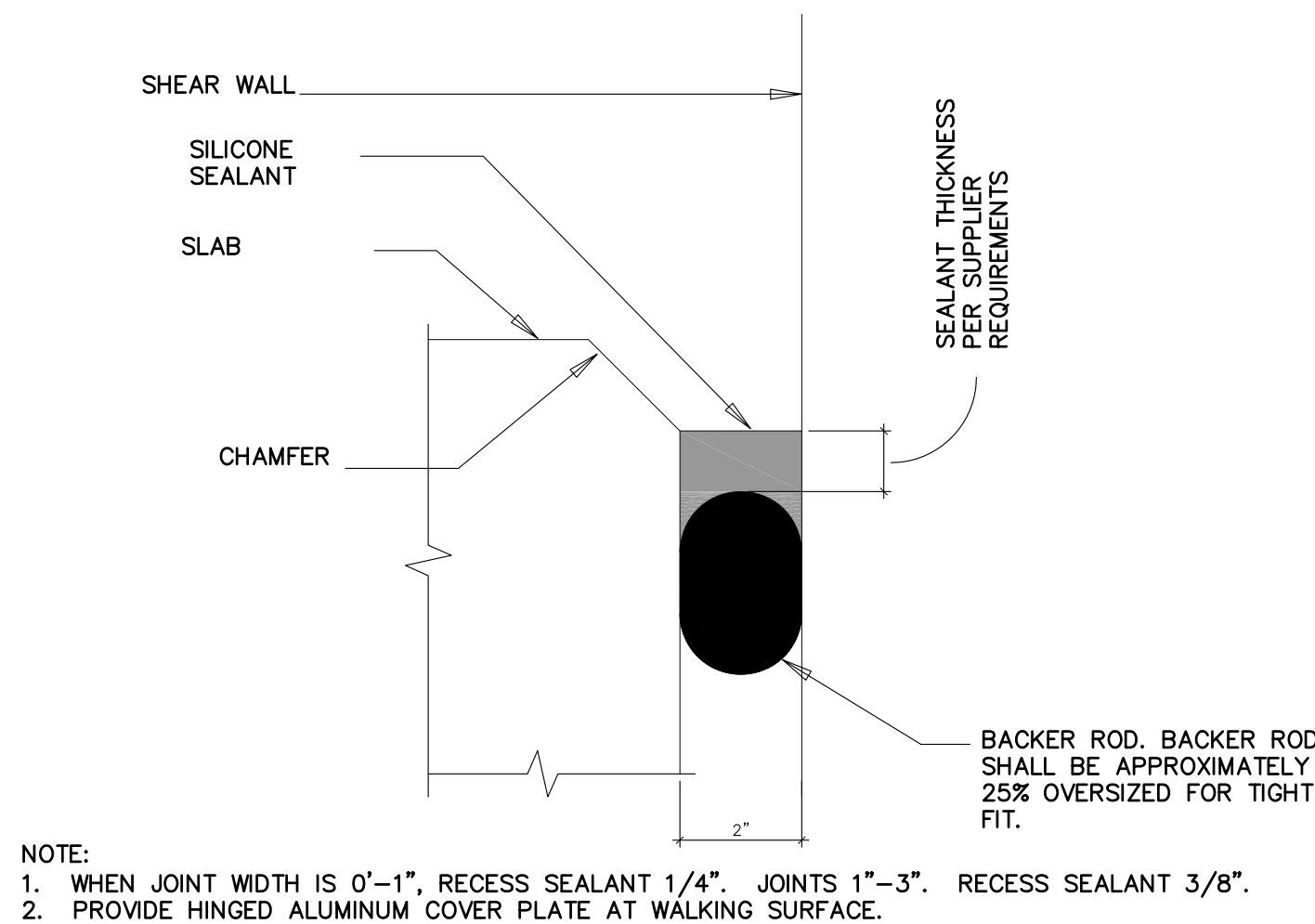
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SD1.1

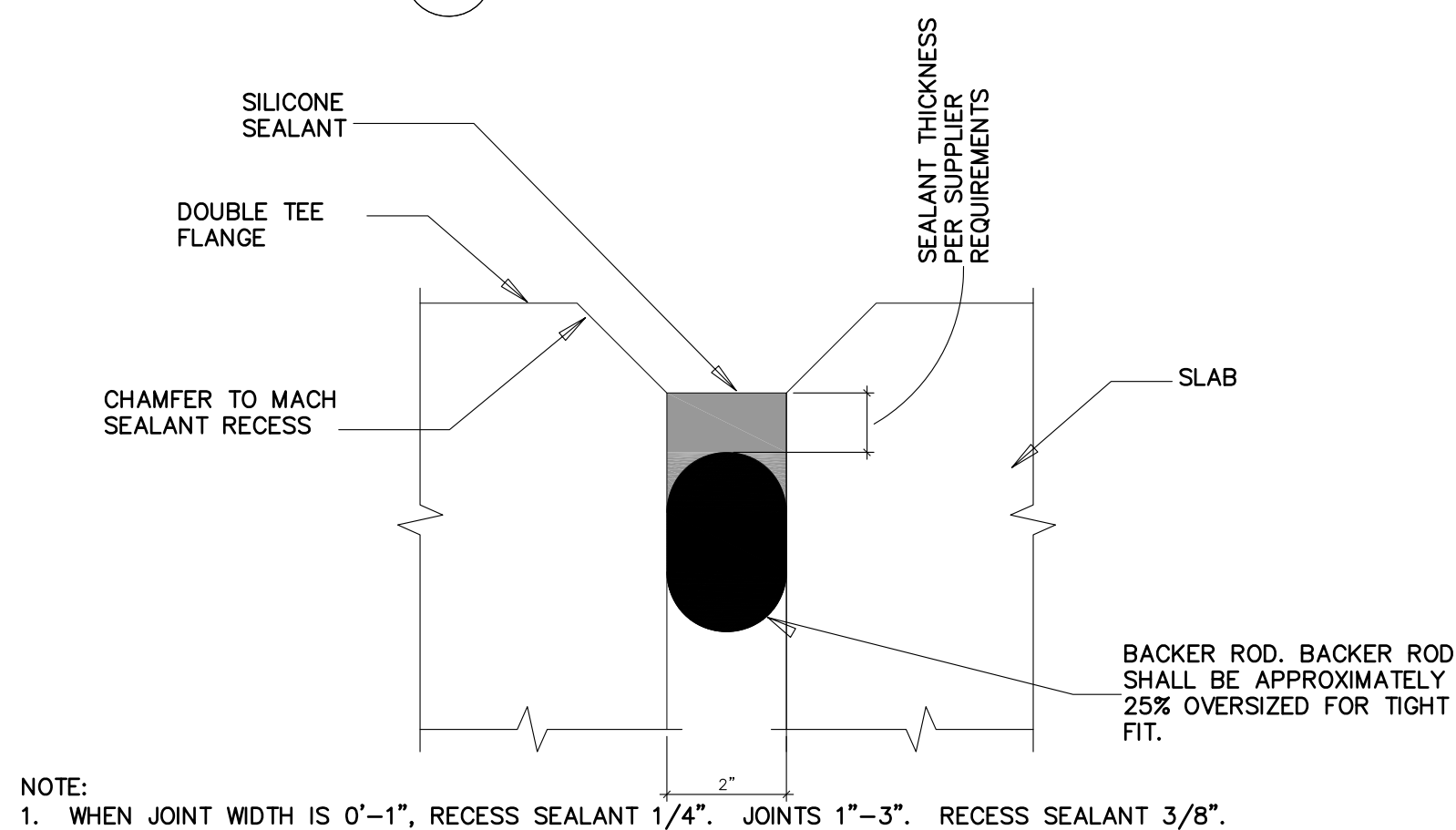




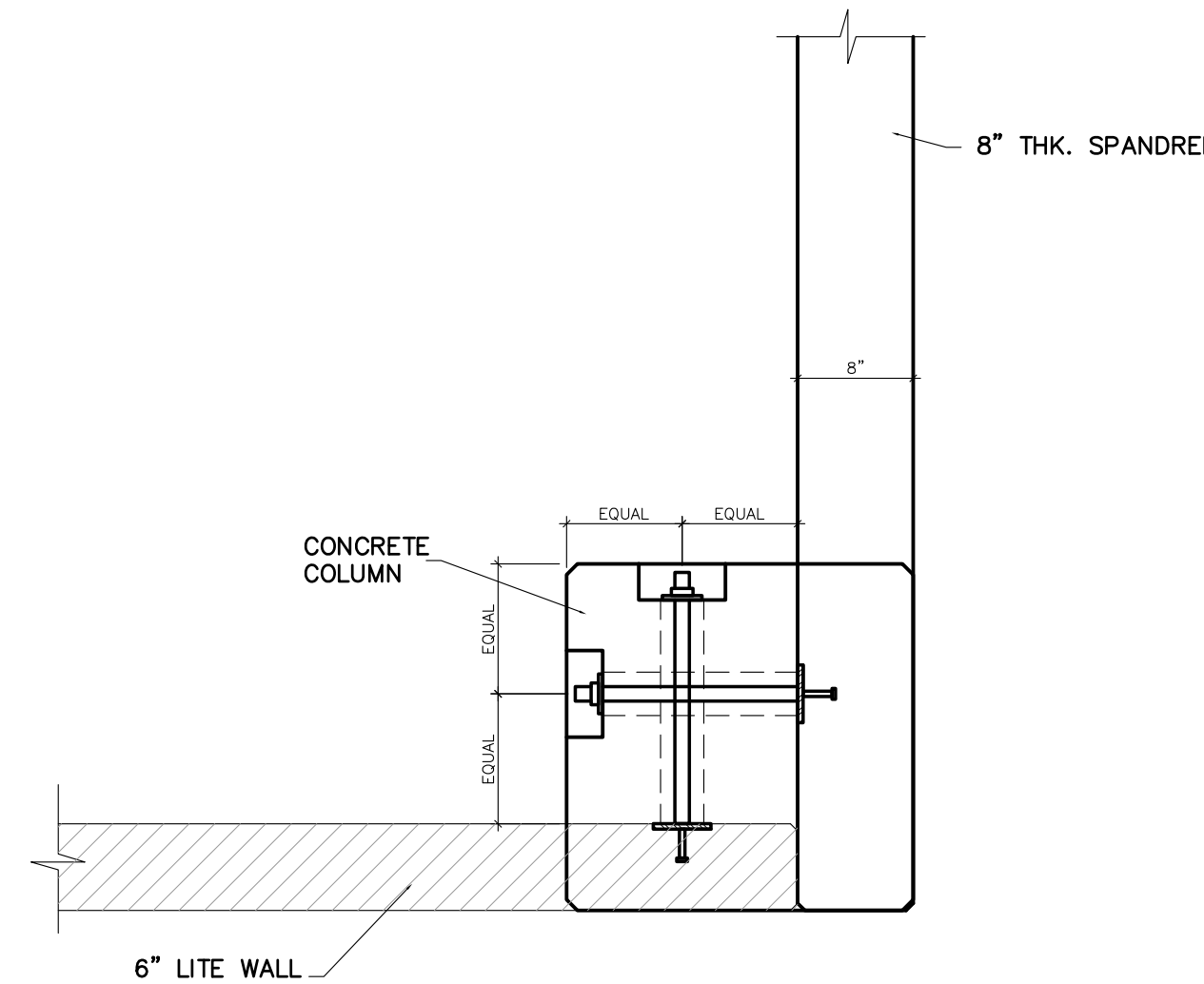
7 PRECAST SLAB TO TRANSITION  
NOT TO SCALE



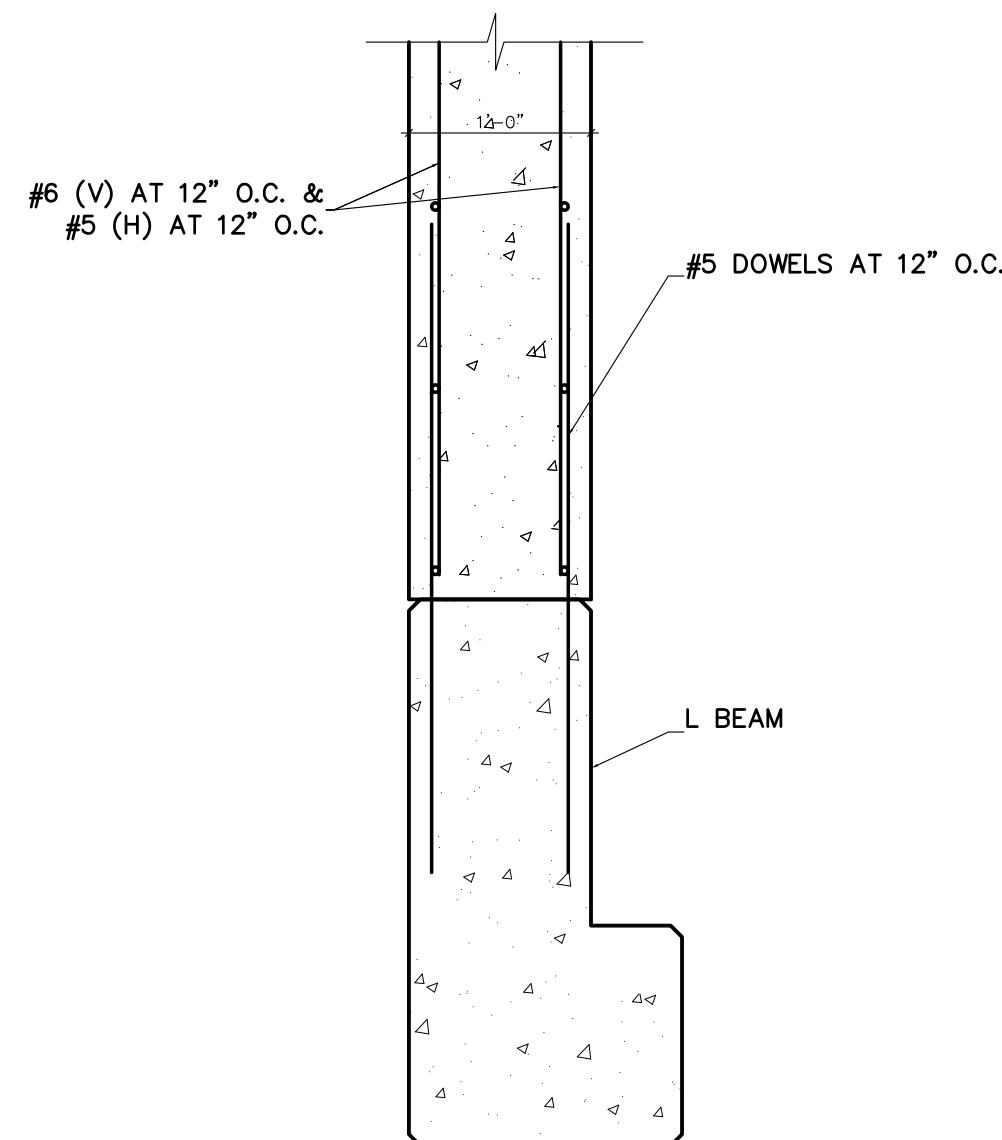
8 EXPANSION JOINT SEALANT  
NOT TO SCALE



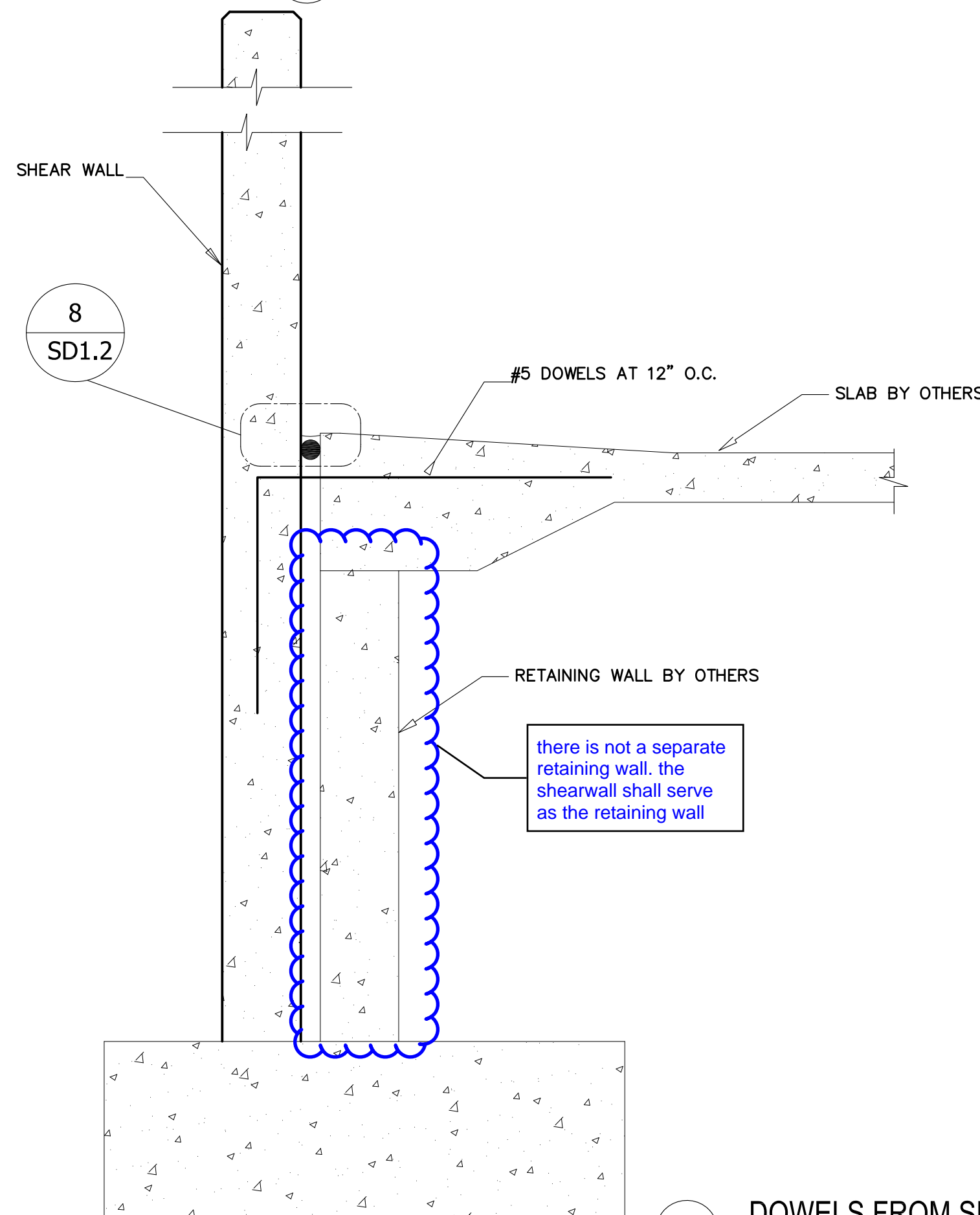
9 EXPANSION JOINT SEALANT  
NOT TO SCALE



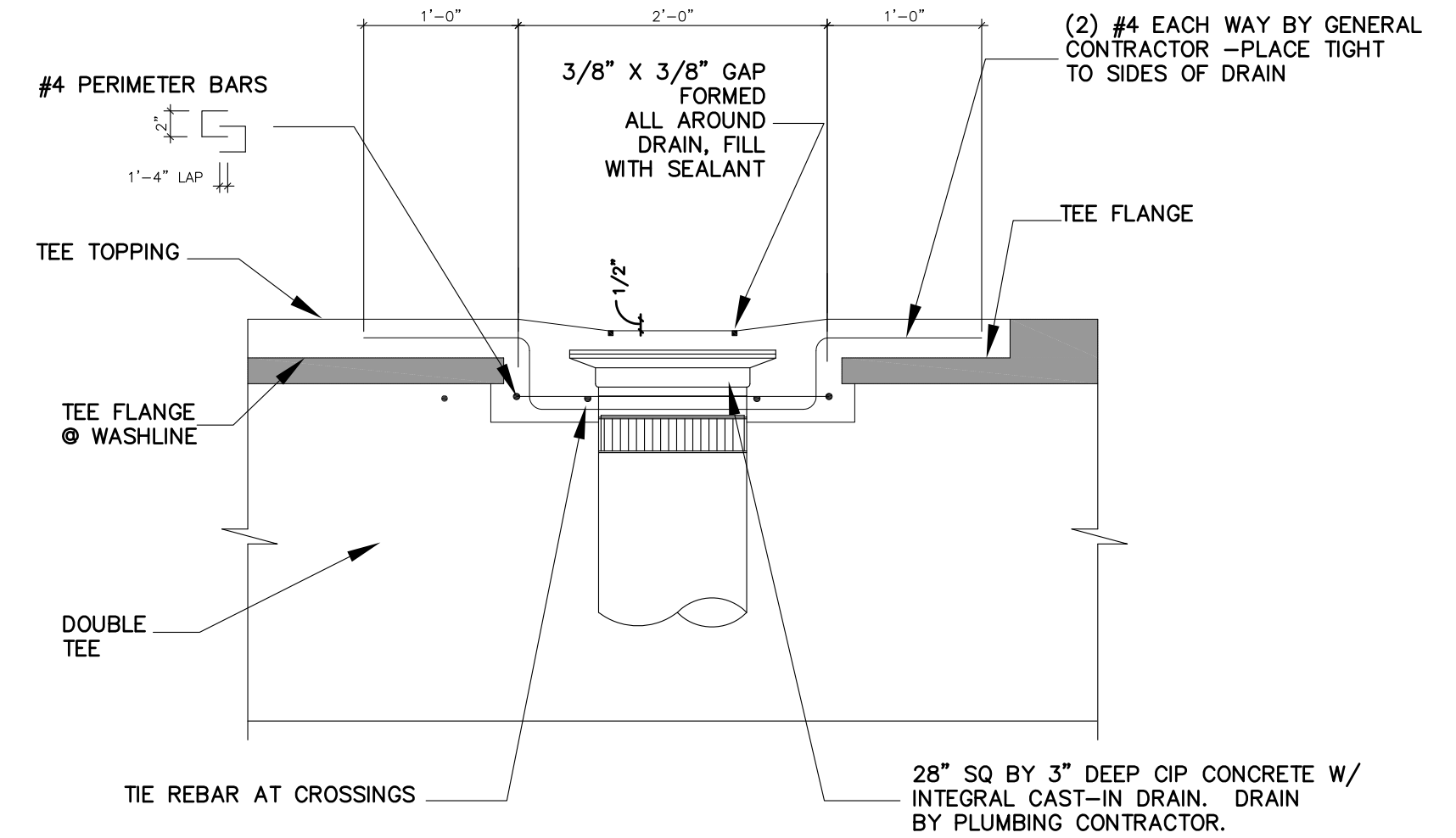
4 SPANDREL & LITE WALL TO COLUMN - TOP VIEW  
NOT TO SCALE



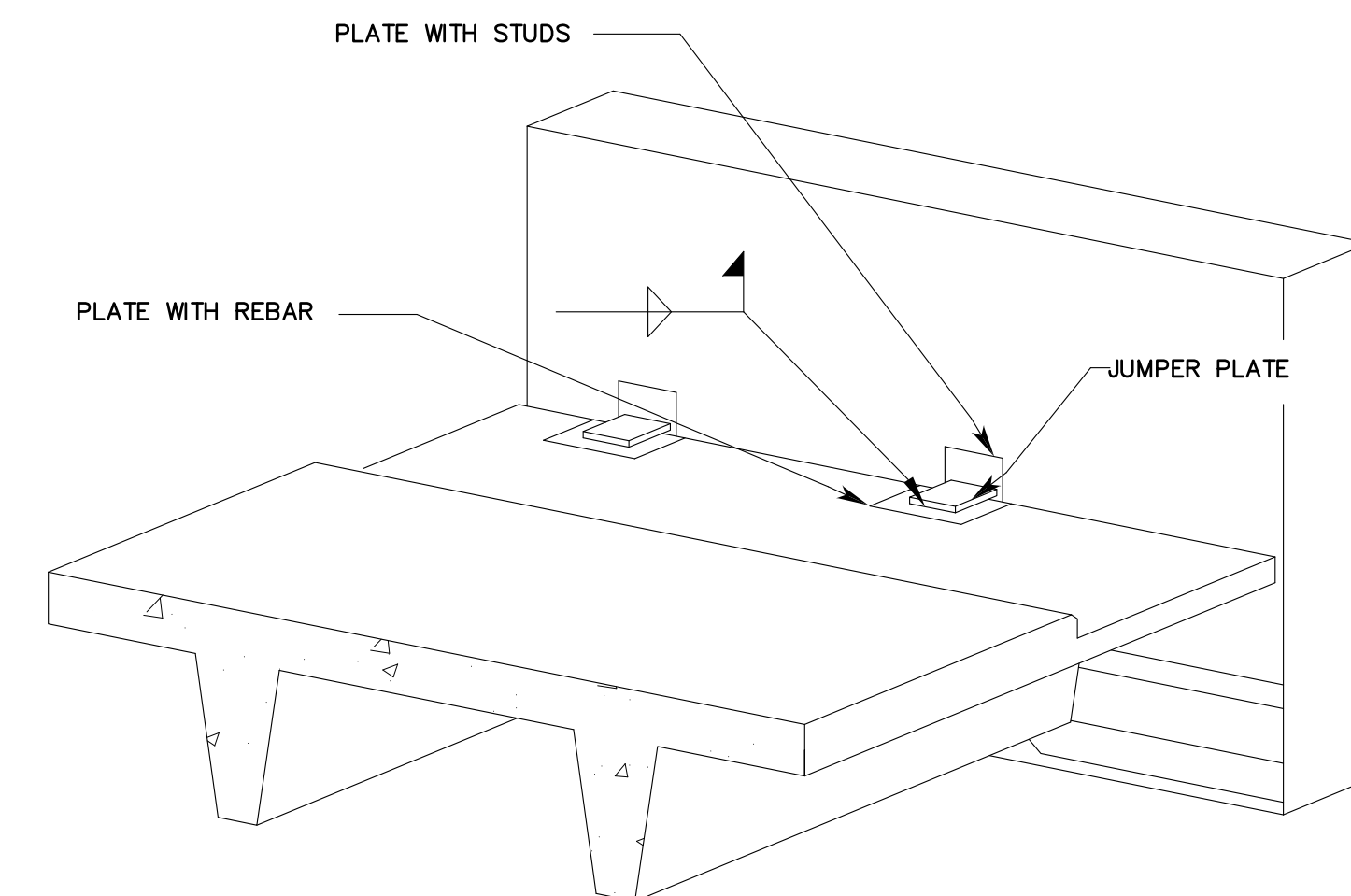
5 WALL ABOVE L-BEAM AT BRIDGE LOCATION  
NOT TO SCALE



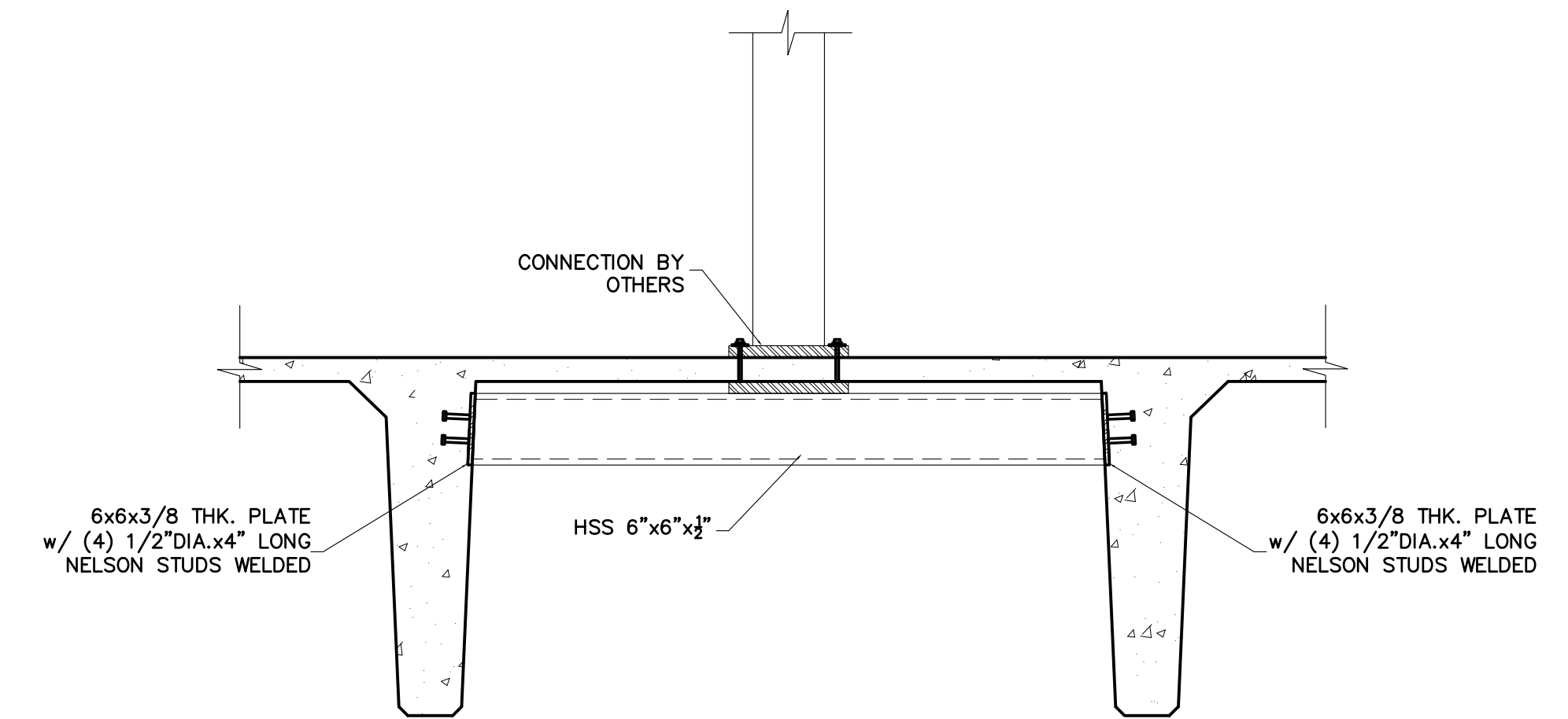
6 DOWELS FROM SHEAR WALL TO SLAB  
NOT TO SCALE



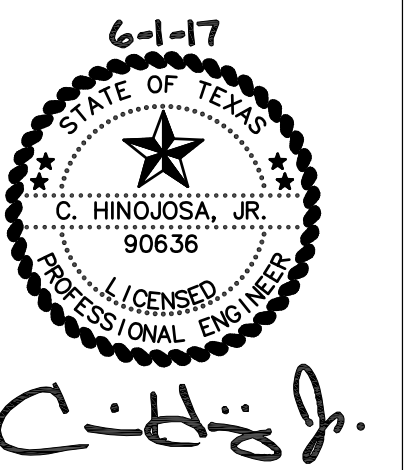
1 TYPICAL REINFORCING AT DRAIN  
NOT TO SCALE



2 DOUBLE TEE FLANGE TYPICAL CONNECTION  
NOT TO SCALE



3 STEEL COLUMN TO DOUBLE TEE REINFORCEMENT  
NOT TO SCALE



**CLH**  
ENGINEERING, INC.  
TBP# FIRM No. F-8719  
701 S. 15th STREET McALLEN, TX. 78501  
(956) 687-5560 (956) 687-5561 FAX

Project Name and Address or Nearest Intersection

McAllen Public Safety  
Building Parking Garage

McAllen Texas

Owner:

Sheet Title

DETAILS

Date

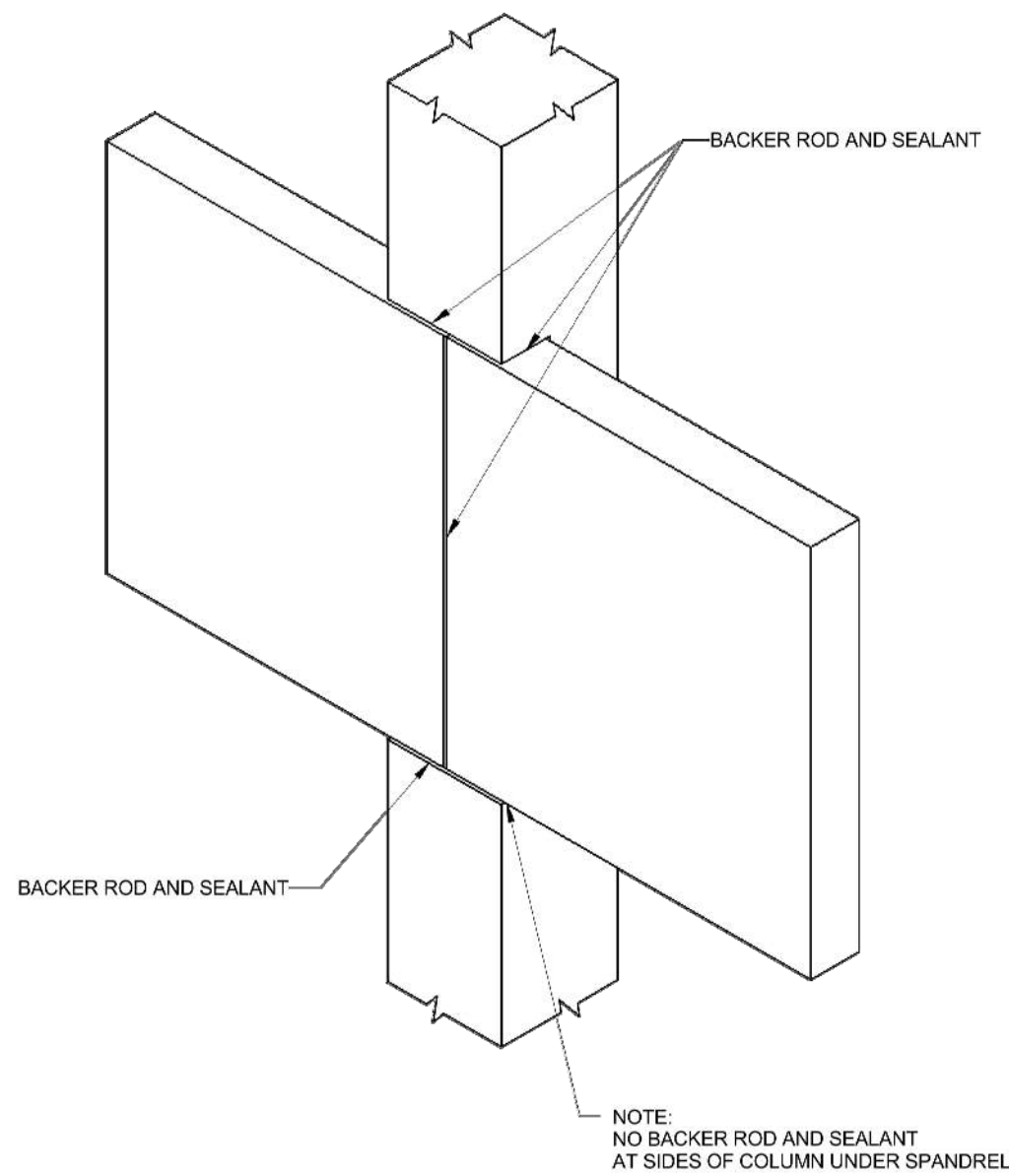
June 1, 2017

Scale

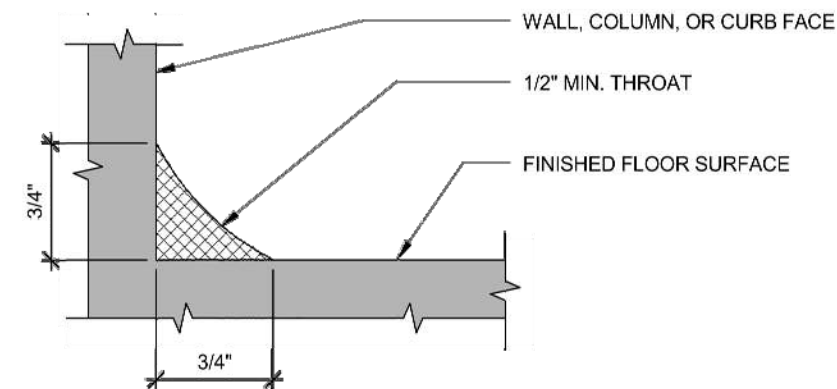
As Noted

Sheet

SD1.2

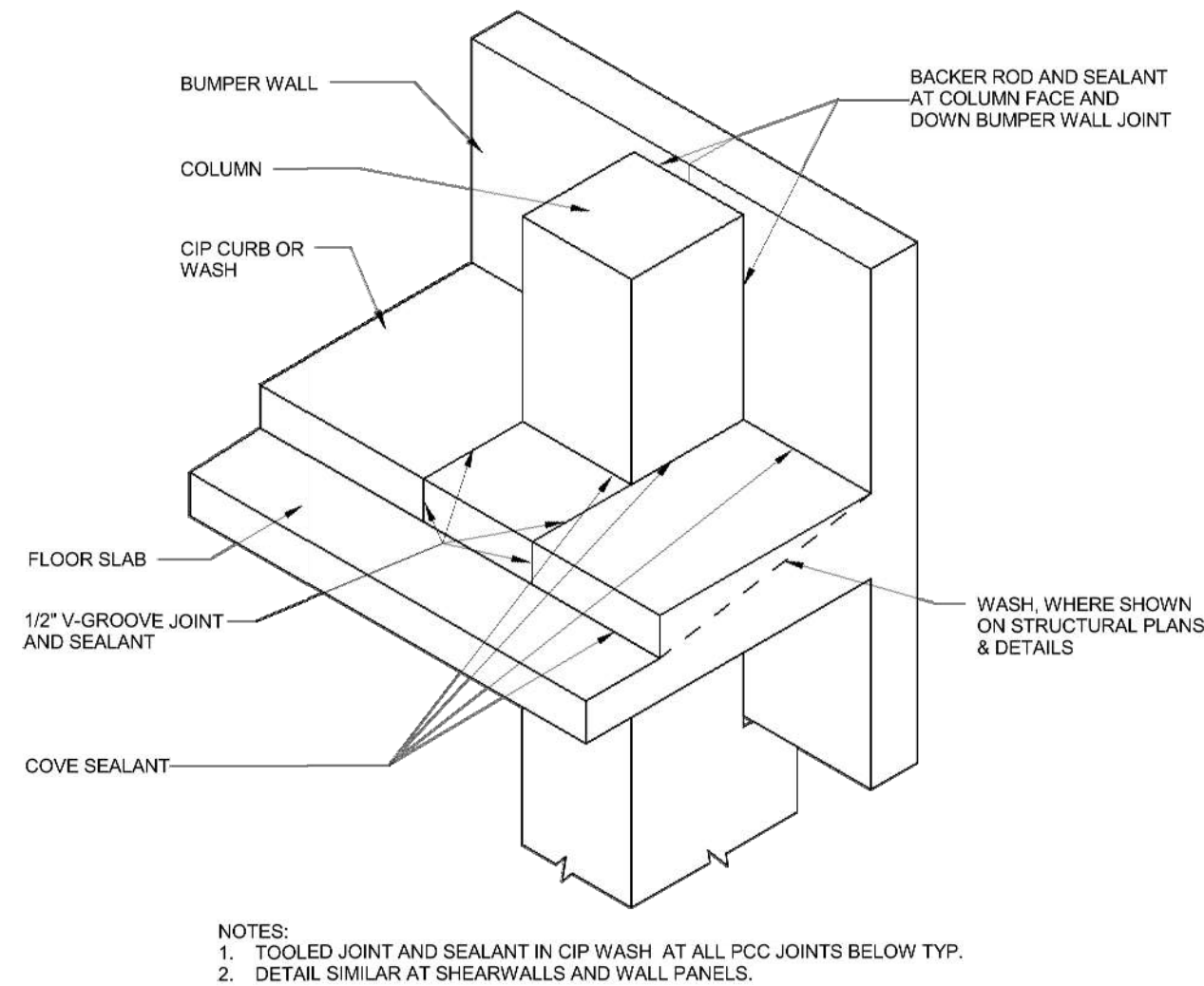


5 EXTERIOR FACADE SEALANT



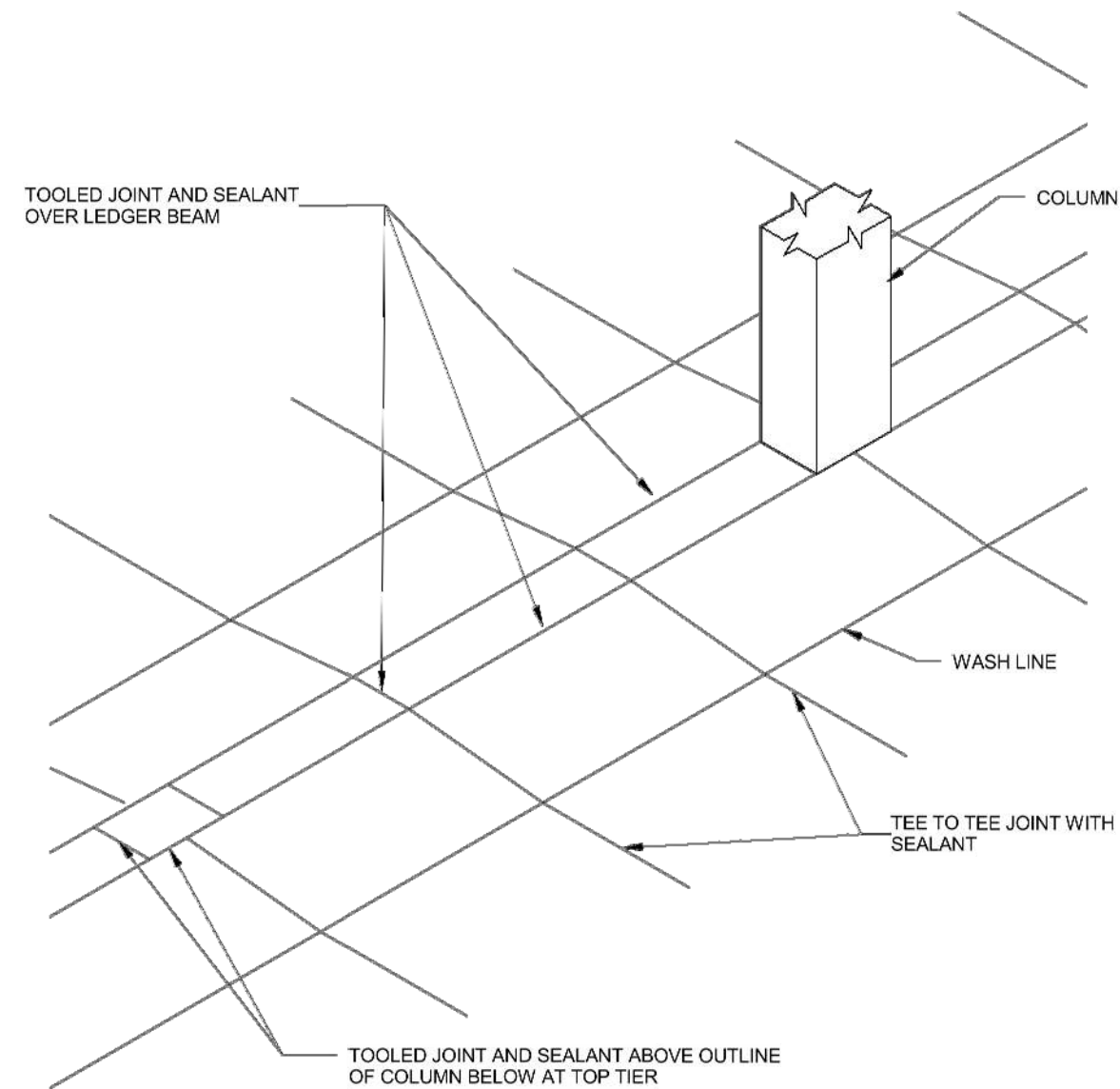
- NOTES:
1. PREPARE & ALLOW FOR PRIMER TO CURE PROPERLY PRIOR TO INSTALLING SEALANT.
  2. SEE SPECIFICATIONS FOR APPROVED MATERIALS.
  3. DETAIL NOT TO SCALE.

4 COVE SEALANT

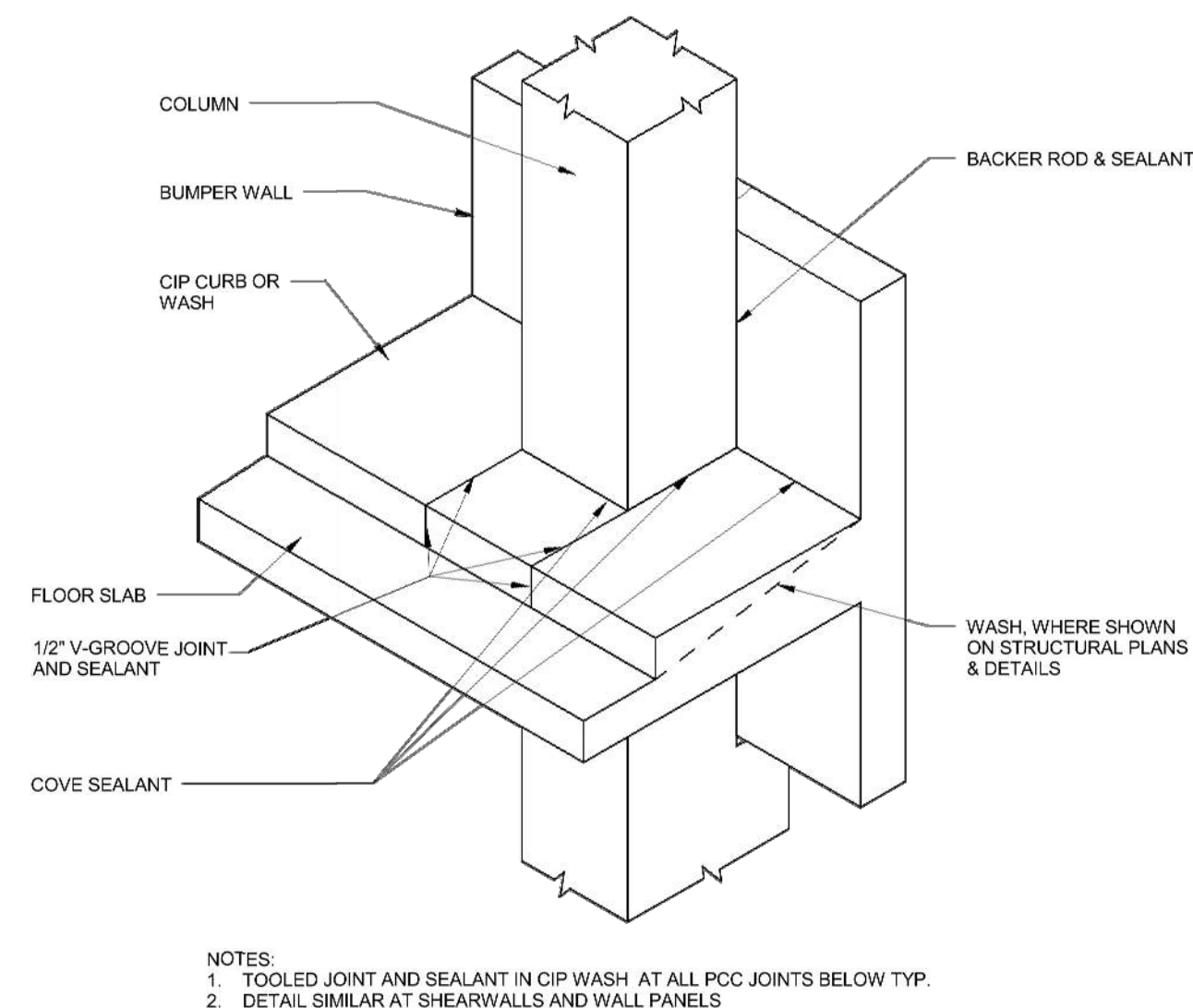


- NOTES:
1. TOOLED JOINT AND SEALANT IN CIP WASH AT ALL PCC JOINTS BELOW TYP.
  2. DETAIL SIMILAR AT SHEARWALLS AND WALL PANELS.

3 INSIDE FACE OF WALL/CURB/COLUMN SEALANT TOP TIER ONLY

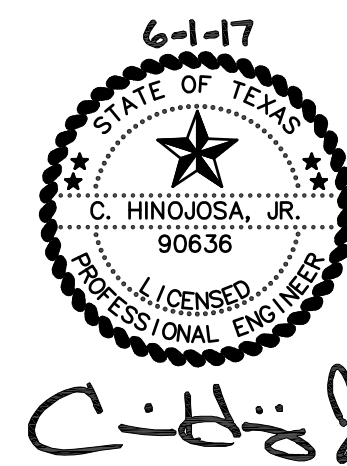


2 SEALANT ISOMETRIC



- NOTES:
1. TOOLED JOINT AND SEALANT IN CIP WASH AT ALL PCC JOINTS BELOW TYP.
  2. DETAIL SIMILAR AT SHEARWALLS AND WALL PANELS.

1 INSIDE FACE OF WALL/CURB/COLUMN SEALANT TYPICAL AT LOWER LEVELS



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Project Name and Address or Nearest Intersection  
**McAllen Public Safety  
Building Parking Garage**

McAllen Texas

Owner:

Sheet Title DETAILS	Sheet
Date June 1, 2017	SD1.3
Scale As Noted	

SECTION 01019 — ALLOWANCES

PART 1 - GENERAL

1.1 COORDINATION

- A. The General Conditions of the Contract for Construction and the Supplementary Conditions to the General Conditions of the Contract for Construction shall be considered as part of this section of the specifications.
- B. Each Bidder shall be responsible for determining during the bidding period the extent that any addenda issued during the bidding period may affect this section of the specifications.
- C. Reference Instructions to Bidders for requirements regarding substitutions of materials and products.
- D. Where conflicts occur between the drawings and specifications, between different drawings, between different portions of this section of the specifications, or between different sections of the specifications, the more stringent requirements and the greater quantity shall apply.

1.2 RELATED DOCUMENTS

- A. Section 01028 – Modification Requirements.

1.3 CONTINGENCY ALLOWANCE

- A. Include in the Contract, a stipulated sum of **One Hundred Thousand Dollars, (\$100,000.00)** for use upon Architect's instruction.
- B. Include in the Contract, a stipulated sum of **One Hundred Thousand Dollars, (\$100,000.00)** for civil storm drainage.

1.4 PROCEDURES FOR MANAGING ALLOWANCES

- A. Contractor's costs for Products, delivery, installation, labor, payroll, taxes, bonding, and equipment rental will be included in Construction Change Directives authorizing expenditure of funds from Allowances.
- B. Funds will be drawn from Allowances only by Construction Change Directives.
- C. At closeout of Contract, funds remaining in Allowances will be credited to Owner by Change Order.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

## SECTION 01045 — CUTTING AND PATCHING

### PART 1 - GENERAL

#### 1.1 COORDINATION

- A. The General Conditions of the Contract for Construction and the Supplementary Conditions to the General Conditions of the Contract for Construction shall be considered as part of this section of the specifications.
- B. Each Bidder shall be responsible for determining during the bidding period the extent that any addenda issued during the bidding period may affect this section of the specifications.
- C. Reference Instructions to Bidders for requirements regarding substitutions of materials and products.
- D. Where conflicts occur between the drawings and specifications, between different drawings, between different portions of this section of the specifications, or between different sections of the specifications, the more stringent requirements and the greater quantity shall apply.

#### 1.2 SECTION INCLUDES

- A. Requirements and limitations for cutting and patching of Work.

#### 1.3 RELATED SECTIONS

- A. Section 01100 – Summary: Work by Owner or by separate Contractors.
- B. Section 01120 – Alteration Project Procedures.
- C. Section 01600 – Product Requirements: Product options and substitutions.
- D. Individual Product Specification Sections:
  - 1. Cutting and patching incidental to work of the section.
  - 2. Advance notification to other sections of openings required in work of those sections.
  - 3. Limitations on cutting structural members.

#### 1.4 SUBMITTALS

- A. Submit written request in advance of cutting or alteration which affects:
  - 1. Structural integrity of any element of Project.
  - 2. Integrity of weather exposed or moisture resistant element.
  - 3. Efficiency, maintenance, or safety of any operational element.
  - 4. Visual qualities of sight exposed elements.
  - 5. Work of Owner or separate Contractor.
- B. Include in request:
  - 1. Identification of Project.
  - 2. Location and description of affected Work.
  - 3. Necessity for cutting or alteration.
  - 4. Description of proposed Work and Products to be used.
  - 5. Alternatives to cutting and patching.



6. Effect on work of Owner or separate Contractor.
7. Written permission of affected separate Contractor.
8. Date and time work will be executed.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. Primary Products: Those required for original installation.
- B. Product Substitution: For any proposed change in materials, submit request for substitution in accordance with Paragraphs 1.5, Product Options and 1.6, Substitutions of Section 01600 – Product Requirements of this Project Manual.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine existing conditions prior to commencing Work, including elements subject to damage or movement during cutting and patching.
- B. After uncovering existing Work, assess conditions affecting performance of work.
- C. Beginning of cutting or patching means acceptance of existing conditions.

### 3.2 PREPARATION

- A. Provide temporary supports to ensure structural integrity of the Work. Provide devices and methods to protect other portions of Project from damage.
- B. Provide protection from elements for areas which may be exposed by uncovering work. Avoid unnecessary or extended exposure to weather of work exposed by cutting. Avoid entrapment of moisture or other deleterious mater between existing substrates and new work.
- C. Maintain excavations free of water.

### 3.3 CUTTING

- A. Execute cutting and fitting including excavation and fill to complete the Work.
- B. Uncover work to install improperly sequenced work.
- C. Remove and replace defective or non-conforming work.
- D. Remove samples of installed work for testing when requested.
- E. Employ skilled and experienced installer to perform cutting for weather exposed and moisture resistant elements, and sight-exposed surfaces.

- F. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.

#### 3.4 PATCHING

- A. Execute patching to complement adjacent Work.
- B. Fit Products together to integrate with other Work.
- C. Execute work by methods to avoid damage to other Work, and which will provide appropriate surfaces to receive patching and finishing.
- D. Employ skilled installer to perform patching for weather exposed and moisture resistant elements, and sight-exposed surfaces.
- E. Restore work with new Products in accordance with requirements of Contract Documents.
- F. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- G. Refinish surfaces to match adjacent finish. For continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.

END OF SECTION 01045

## SECTION 01120 — ALTERATION PROJECT PROCEDURES

### PART 1 - GENERAL

#### 1.1 COORDINATION

- A. The General Conditions of the Contract for Construction and the Supplementary Conditions to the General Conditions of the Contract for Construction shall be considered as part of this section of the specifications.
- B. Each Bidder shall be responsible for determining during the bidding period the extent that any addenda issued during the bidding period may affect this section of the specifications.
- C. Reference Instructions to Bidders for requirements regarding substitutions of materials and products.
- D. Where conflicts occur between the drawings and specifications, between different drawings, between different portions of this section of the specifications, or between different sections of the specifications, the more stringent requirements and the greater quantity shall apply.

#### 1.2 SECTION INCLUDES

- A. Products and installation for patching and extending Work.
- B. Transition and adjustments.
- C. Repair of damaged surfaces, finishes, and cleaning.

#### 1.3 RELATED SECTIONS

- A. Section 01100 – Summary: Work sequence and Phasing.
- B. Section 01045 – Cutting and Patching: Requirements and limitations for cutting and patching of work.
- C. Section 01500 – Temporary Facilities and Controls: Temporary enclosures, protection of installed work, and cleaning during construction.

### PART 2 - PRODUCTS

#### 2.1 PRODUCTS FOR PATCHING AND EXTENDING WORK

- A. New Materials: As specified in product sections; match existing Products and work for patching and extending work.
- B. Type and Quality of Existing Products: Determine by inspecting and testing Products where necessary, referring to existing Work as a standard.

### PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Verify that demolition is complete and areas are ready for installation of new Work.
- B. Beginning of restoration Work means acceptance of existing conditions.

### 3.2 PREPARATION

- A. Cut, move, or remove items as necessary for access to alterations and renovation Work. Store items scheduled for reinstallation. Replace and restore at completion.
- B. Remove unsuitable material not marked for salvage, such as rotted wood, corroded metals, and deteriorated masonry and concrete. Replace materials as specified for finished Work.
- C. Remove debris and abandoned items from area and from concealed spaces.
- D. Prepare surface and remove surface finishes to provide for proper installation of new work and finishes.
- E. Close openings in exterior surfaces to protect existing work, salvaged, and stored items from weather and extremes of temperature and humidity. Temporarily seal wall cavities and substrates exposed by cutting, patching, and demolition work to prevent accumulation and trapping of moisture which will allow the development of mildew.

### 3.3 INSTALLATION

- A. Coordinate work of alterations and renovations to expedite completion sequentially. Do not remove existing items which weatherproof buildings (windows, roofing, doors, exterior finishes etc.) until new materials and items are ready for installation.
- B. Remove, cut, and patch Work in a manner to minimize damage and to provide a means of restoring products and finishes to specified condition. Refinish visible existing surfaces to remain in renovated rooms and spaces, to specified condition for each material, with a neat transition to adjacent finishes, in accordance with Section 01039 – Coordination and Meetings and Section 01045 – Cutting and Patching.
- C. Install Products as specified in individual sections.

### 3.4 TRANSITIONS

- A. Where new Work abuts or aligns with existing, perform a smooth and even transition. Patch Work to match existing adjacent Work in texture and appearance.
- B. When finished surfaces are cut so that a smooth transition with new Work is not possible, terminate existing surface along a straight line at a natural line of division. Consult Architect for direction on making transitions.

### 3.5 ADJUSTMENTS

- A. Where removal of partitions or walls result in adjacent spaces becoming one, rework floors, walls, and ceilings to a smooth plane without breaks, steps, or bulkheads.
- B. Fit work at penetrations of surfaces as specified in Section 01045 – Cutting and Patching.



3.6 REPAIR OF DAMAGED SURFACES

- A. Patch or replace portions of existing surfaces which are damaged, lifted, discolored, or showing other imperfections.
- B. Repair substrate prior to patching finish.

3.7 FINISHES

- A. Finish surfaces as specified in individual Product sections.
- B. Finish patches to produce uniform finish and texture over entire area. When finish cannot be matched, refinish entire surface to nearest intersections.

END OF SECTION

## SECTION 01200 - PRICE AND PAYMENT PROCEDURES

### PART 1 - GENERAL

#### 1.1 COORDINATION

- A. The General Conditions of the Contract for Construction and the Supplementary Conditions to the General Conditions of the Contract for Construction shall be considered as part of this section of the specifications.
- B. Each Bidder shall be responsible for determining during the bidding period the extent that any addenda issued during the bidding period may affect this section of the specifications.
- C. Reference Instructions to Bidders for requirements regarding substitutions of materials and products.
- D. Where conflicts occur between the drawings and specifications, between different drawings, between different portions of this section of the specifications, or between different sections of the specifications, the more stringent requirements and the greater quantity shall apply.

#### 1.2 UNIT PRICES

- A. Changes to the Work incorporating Unit Prices will be made by Change Order.

#### 1.3 CONTRACT MODIFICATION PROCEDURES

- A. On Owner's approval of a proposal from Contractor, Architect will issue a Change Order on AIA Document G701, for all changes to Contract Sum or Contract Time.
- B. When Owner and Contractor disagree on the terms of a proposal, Architect may issue a Construction Change Directive on AIA Document G714, instructing Contractor to proceed with the change. Construction Change Directive will contain a description of the change and designate the method to be followed to determine changes to Contract Sum or Contract Time.

#### 1.4 PAYMENT PROCEDURES

- A. Submit a Schedule of Values **at least 10 days before** the first Application for Payment. In Schedule of Values, break down Contract Sum into at least one line item for each Specification Section. Correlate the Schedule of Values with Contractor's Construction Schedule.
- B. Submit 3 copies of each application for payment on AIA Document G702/703, according to the schedule established in Owner/Contractor Agreement.
  - 1. For the second Application for Payment through the Application for Payment submitted at Substantial Completion, submit partial releases of liens from each subcontractor or supplier for whom amounts were requisitioned in the previous Application for Payment.
  - 2. Submit final Application for Payment after completion of Project closeout procedures with release of liens and supporting documentation. Include consent of surety to final payment and insurance certificates.

### PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01200

## SECTION 01300 - ADMINISTRATIVE REQUIREMENTS

### PART 1 - GENERAL

#### 1.1 COORDINATION

- A. The General Conditions of the Contract for Construction and the Supplementary Conditions to the General Conditions of the Contract for Construction shall be considered as part of this section of the specifications.
- B. Each Bidder shall be responsible for determining during the bidding period the extent that any addenda issued during the bidding period may affect this section of the specifications.
- C. Reference Instructions to Bidders for requirements regarding substitutions of materials and products.
- D. Where conflicts occur between the drawings and specifications, between different drawings, between different portions of this section of the specifications, or between different sections of the specifications, the more stringent requirements and the greater quantity shall apply.

#### 1.2 PROJECT MANAGEMENT AND COORDINATION

- A. Verify layout information shown on Drawings, in relation to property survey and existing benchmarks, before laying out the Work.
- B. Coordinate construction to ensure efficient and orderly execution of each part of the Work.
- C. Progress meetings will be held at Project site every two weeks. Notify Owner and Architect of meeting dates. Each subcontractor or other entity concerned with current progress or involved with planning or coordination of future activities, shall attend.

- 1. Prepare a progress meeting agenda.**
- 2. Prepare a sign in sheet for each progress meeting.**
- 3. Prepare minutes of each meeting and distribute to parties present.**

#### 1.3 CONSTRUCTION SCHEDULE

- A. Prepare a horizontal bar-chart construction schedule. Provide a separate time bar for each activity and a vertical line to identify the first workday of each week. Use same breakdown of Work indicated in the Schedule of Values. As Work progresses, mark each bar to indicate actual completion.
  - 1. Submit within twenty (20) days after date established for Commencement of the Work.
  - 2. Coordinate each element with other activities. Show each activity in proper sequence. Indicate sequences necessary for completion of related Work.
  - 3. Indicate Substantial Completion and allow time for Architect's procedures necessary for certifying Substantial Completion.
  - 4. Schedule Distribution: Distribute copies to Owner, Architect, subcontractors, and parties required to comply with dates.
  - 5. Updating: Revise the schedule after each meeting or activity where revisions have been made. Distribute revised copies to Owner, Architect, subcontractors, and parties required to comply with dates.

#### 1.4 SUBMITTAL PROCEDURES

- A. Coordinate submittal preparation with construction schedule, fabrication lead-times, other submittals, and activities that require sequential operations.
  - 1. No extension of Contract Time will be authorized due to failure to transmit submittals in time to permit processing sufficiently in advance of when materials are required in the Work.
  - 2. Architect will not accept submittals from sources other than Contractor.
- B. Prepare submittals by placing a permanent label on each for identification. Provide a **4- by 5-inch (100-by 125-mm)** space on the label or beside title block to record review and approval markings and action taken. Include the following information on the label:
  - 1. Project name.
  - 2. Date.
  - 3. Name and address of Contractor.
  - 4. Name and address of subcontractor or supplier.
  - 5. Number and title of appropriate Specification Section.
  - 6. Contractor's certification that materials comply with specified requirements.
- C. Coordinate each submittal with other submittals and with work that does not require submittals.
- D. Product Data: Mark each copy to show applicable choices and options. Include the following:
  - 1. Data indicating compliance with specified standards and requirements.
  - 2. Notation of coordination requirements.
  - 3. For equipment data, include rated capacities, dimensions, weights, required clearances, and furnished specialties and accessories.
- E. Shop Drawings: Submit newly prepared information drawn to scale. Do not reproduce Contract Documents or copy standard information. Submit 1 reproducible print and 1 blue- or black-line print on sheets at least **8-1/2 by 11 inches (215 by 280 mm)** but no larger than **30 by 42 inches (762 by 1067 mm)**. Architect will return the reproducible print. Include the following:
  - 1. Dimensions, profiles, methods of attachment, coordination with adjoining work, large scale details, and other information, as appropriate for the Work.
  - 2. Identification of products and materials.
  - 3. Notation of coordination requirements.
  - 4. Notation of dimensions established by field measurement.
  - 5. Identification of deviations from Contract Documents.
- F. Samples: Submit Samples finished as specified and identical with the material proposed. Where variations are inherent in the material, submit sufficient units to show limits of the variations. Include product name or name of the manufacturer.
- G. Architect will review each submittal, mark as appropriate to indicate action taken, and return copies less those retained. Compliance with specified requirements remains Contractor's responsibility.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01300

## SECTION 01340 — SUBMITTALS

### PART 1 - GENERAL

#### 1.1 COORDINATION

- A. The General Conditions of the Contract for Construction and the Supplementary Conditions to the General Conditions of the Contract for Construction shall be considered as part of this section of the specifications.
- B. Each Bidder shall be responsible for determining during the bidding period the extent that any addenda issued during the bidding period may affect this section of the specifications.
- C. Reference Instructions to Bidders for requirements regarding substitutions of materials and products.
- D. Where conflicts occur between the drawings and specifications, between different drawings, between different portions of this section of the specifications, or between different sections of the specifications, the more stringent requirements and the greater quantity shall apply.

#### 1.2 WORK INCLUDED

- A. Provide shop drawings, product data, physical samples and color samples as indicated herein and in each technical section of these specifications.

#### 1.3 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Additional submittal requirements specific to the particular section of the specifications.

### PART 2 - PRODUCTS

#### 2.1 SHOP DRAWINGS

- A. Prepare shop drawings using competent draftsmen, clearly and precisely showing the following:
  - 1. The size and gage of members.
  - 2. The method of anchoring and securing members of parts together.
  - 3. The quantity and location of each item.
  - 4. Other pertinent data necessary to show the Work to be done and where and how it is to be done.
- B. Prepare Drawings to scale, including full size details as required to fix and illustrate the Work required. Do not use Contract Documents or reproductions thereof as shop drawing submittals.
- C. Each sheet of Drawings shall be 30 x 40 inches maximum size with borders. Provide a title block in the lower right hand corner with the following information:
  - 1. Title of the sheet.
  - 2. Name and location of Project.
  - 3. Names of:
    - a. Architect/Engineer.
    - b. General Contractor.
    - c. Manufacturer of the specified materials and equipment.
  - 4. The date of the Submittal.

5. The date of each correction or revision.
  6. **Submittal number including Division No.** (such as submittal no. 3 under Division 11 is numbered "11-03").
- D. Fold drawings to 8-1/2x11 inch dimensions with title block exposed to top.
- E. Check the Drawings and add any corrections of field measurements needed. Stamp and sign the Contractor's approval, checker's signature, and date of approval before submitting to the Architect. Shop Drawings which do not bear the Contractor's stamp or have not been reviewed by the Contractor, will be returned by the Architect without review or approval.
- F. Number Shop Drawings consecutively. Indicate working and erection dimensions, arrangements, sectional views, necessary details including complete information for making connections with other Work, kinds of materials, and finishes.
- G. Provide a transmittal letter in duplicate, pointing out any deviations from items, methods or named manufacturers included in the Specifications or on the Drawings. Note submittal file number including Division.
- H. Submit six (6) blue-line prints of each Shop Drawing sheet.
- I. Make such corrections, changes, resubmit bound sets of Shop Drawings prints, as required herein, until approved is obtained. Any corrections or changes indicated on Shop Drawings shall not be considered as an extra work order.

## 2.2 PHYSICAL SAMPLES

- A. Provide duplicate samples of items as specified. Samples shall be 12 inches square or 12 inches long unless noted otherwise. Minimum liquid samples shall be 1 pint. Installed materials shall match approved samples.
- B. For Architect's permanent files provide one (1) 6" x 6" sample of all interior finishes, colors and materials (aluminum finish, glazing, plastic laminate, paint finish flooring materials, ceiling finish, etc.)
- C. Provide a transmittal letter with each sample, listing the following:
1. Specification section title and paragraph specifying the material.
  2. Name and location of Project.
  3. Names of:
    - a. Architect/Engineer.
    - b. General Contractor.
    - c. Manufacturer of the specified materials and equipment.
  4. The date of the Submittal.
  5. Submittal file number including Division.
- D. If samples are not acceptable they will be returned directly to the Contractor for modification and resubmission.
- E. If samples are acceptable, notification will be sent directly to the Contractor, and the sample retained for comparison with the complete Work.

## 2.3 MANUFACTURER'S PRODUCT DATA



- A. Provide **six (6)** copies of pre-printed Product Data of items as specified. Carefully mark out all items not applicable to the specified item.
- B. Standard catalogs, brochures, etc. including information not applicable to the project and not marked through, will be returned without review or approval.
- C. Provide a transmittal letter with the Product Data from each manufacturer, listing the following information:
  - 1. Name and location of Project.
  - 2. Names of:
    - a. Architect/Engineer.
    - b. General Contractor.
    - c. Manufacturer of the specified materials and equipment.
  - 3. The date of the Submittal.
  - 4. Submittal file number including Division.
- D. If Product Data is not approved, one copy will be marked and returned directly to the Contractor for modification and resubmission.
- E. If Product Data is approved, notification and one copy of the acceptable Product Data will be sent directly to the Contractor.
- F. When requested by the Architect, provide six (6) copies of each ASTM Federal Specification, or other applicable documents referenced in the material Section.

## PART 3 - EXECUTION

### 3.1 REVIEW PROCEDURE

- A. Submittals will be reviewed with reasonable promptness so as to cause no delay, but only for conformance with the design concept of the project and with the information given in the Contract Documents. Architect shall be allowed a maximum review period of **fourteen (14)** calendar days. The review of a separate item shall not indicate a review of an assembly in which the item functions. Submittals that contain excessive errors or that are incomplete will be returned without review and approval and any delay caused thereby shall be the responsibility of the Contractor.
- B. If any submittals are not approved as submitted, all copies will be returned directly to the Contractor for revision. The reviewed submittals will be returned to the Contractor as soon as practicable.
- C. The Contractor shall make all revisions as noted and shall resubmit the required number of corrected copies of submittals, until no exceptions are taken. The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, to revisions other than those requested on previous submissions.
- D. The review of submittals shall not relieve the Contractor of responsibility for deviations from the requirements of the Contract Documents unless the Contractor has submitted, in writing, such deviations and written approval has been given to each specific deviation. The review shall not relieve the Contractor from responsibility for errors and omissions in the Shop Drawings and samples.
- E. No portion of the Work requiring a submittal shall commence until the submittal has been approved as designated in the Conditions of the Contract. All such portions of the Work shall be in accordance with the submittal that has been stamped with final "Reviewed Without Exceptions" note, or "Approved" note.

- F. Materials and equipment specified or approved prior to beginning the Work are required to be used on the Project. Any proposed substitution resulting from no availability of specified items must be proven “better than” by the Contractor and approved in writing by the Architect. Substitutions included in submittals shall be so noted and brought to the Architect’s attention in the submittal and on the transmittal. Failure to follow this procedure will render the substitution as not acceptable whether or not reviewed by the Architect.
- G. The Contractor shall have the approved shop drawings at the site at all times for use in the construction of the Work. Failure of the Contractor to supply such drawings will be deemed sufficient cause to delay the Work until such drawings are available for field use and reference.
- H. For submittals that will be reviewed by one of the Architect’s consultants, these submittals shall be delivered directly to the Architect. The Architect will then be responsible to provide the Consultant with a copy of the submittal.
- I. For submittals that will be reviewed by one of the Architect’s consultants, do not send to the Consultant as part of the package any items which will be reviewed by the Architect. As an example, do not provide a single submittal package combining Structural Steel and Miscellaneous Metal Fabrications.

END OF SECTION

## SECTION 01400 - QUALITY REQUIREMENTS

### PART 1 - GENERAL

#### 1.1 COORDINATION

- A. The General Conditions of the Contract for Construction and the Supplementary Conditions to the General Conditions of the Contract for Construction shall be considered as part of this section of the specifications.
- B. Each Bidder shall be responsible for determining during the bidding period the extent that any addenda issued during the bidding period may affect this section of the specifications.
- C. Reference Instructions to Bidders for requirements regarding substitutions of materials and products.
- D. Where conflicts occur between the drawings and specifications, between different drawings, between different portions of this section of the specifications, or between different sections of the specifications, the more stringent requirements and the greater quantity shall apply.

#### 1.2 SECTION REQUIREMENTS

- A. Quality-control services include inspections, tests, and related actions including reports. Quality-control services are further specified in other Sections of these Specifications and shall be performed by independent testing agencies provided by Contractor or Owner, as specified.
  - 1. Unless otherwise indicated, quality-control services required by authorities having jurisdiction will be provided by Owner.
- B. Contractor is responsible for scheduling inspections and tests.
- C. **Retesting: Contractor shall pay for retesting where results of inspections and tests prove unsatisfactory and indicate noncompliance with requirements.**
- D. Auxiliary Services: Cooperate with agencies performing inspections and tests. Provide auxiliary services as requested. Notify agency in advance of operations requiring tests or inspections, to permit assignment of personnel. Auxiliary services include the following:
  - 1. Access to the Work.
  - 2. Incidental labor and facilities to assist inspections and tests.
  - 3. Adequate quantities of materials that require testing, and assisting in taking samples.
  - 4. Facilities for storage and curing of test samples.
  - 5. Security and protection of samples and test equipment.
- E. Duties of Testing Agency: Testing agency shall cooperate with Architect and Contractor in performing its duties. Agency shall provide qualified personnel to perform inspections and tests.
  - 1. Agency shall promptly notify Architect and Contractor of irregularities or deficiencies observed in the Work during performance of its services.
  - 2. Agency shall not release, revoke, alter, or enlarge requirements of the Contract Documents or approve or accept any portion of the Work.
  - 3. Agency shall not perform duties of Contractor.

- F. Submittals: Testing agency shall submit a certified written report of each inspection and test to the following:
1. Owner.
  2. Architect.
  3. Contractor.
  4. Structural engineer.
  5. Authorities having jurisdiction, when authorities so direct.
- G. Report Data: Reports of each inspection, test, or similar service shall include at least the following:
1. Name, address, and telephone number of testing agency.
  2. Project title and testing agency's project number.
  3. Designation (number) and date of report.
  4. Dates and locations where samples were taken or inspections and field tests made.
  5. Names of individuals taking the sample or making the inspection or test.
  6. Designation of the product and test method.
  7. Complete inspection or test data including an interpretation of test results.
  8. Ambient conditions at the time of sample taking and testing.
  9. Comments or professional opinion on whether inspected or tested Work complies with requirements.
  10. Recommendations on retesting or reinspection.
  11. Name and signature of laboratory inspector.
- H. Testing Agency Qualifications: Engage inspection and testing agencies that are prequalified as complying with the American Council of Independent Laboratories' "Quality Assurance Manual" and that specialize in the types of inspections and tests to be performed.
1. Each testing agency shall be authorized by authorities having jurisdiction to operate in the state where Project is located.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01400

## SECTION 01500 — TEMPORARY FACILITIES AND CONTROLS

### PART 1 - GENERAL

#### 1.1 COORDINATION

- A. The General Conditions of the Contract for Construction and the Supplementary Conditions to the General Conditions of the Contract for Construction shall be considered as part of this section of the specifications.
- B. Each Bidder shall be responsible for determining during the bidding period the extent that any addenda issued during the bidding period may affect this section of the specifications.
- C. Reference Instructions to Bidders for requirements regarding substitutions of materials and products.
- D. Where conflicts occur between the drawings and specifications, between different drawings, between different portions of this section of the specifications, or between different sections of the specifications, the more stringent requirements and the greater quantity shall apply.

#### 1.2 SECTION INCLUDES

- A. Temporary Utilities: Electricity, lighting, heat, ventilation, telephone and fax service, water, and sanitary facilities.
- B. Temporary Controls: Barriers, enclosures and fencing, protection of the Work, and water control.
- C. Construction Facilities: Access roads, parking, progress cleaning, project signage and temporary buildings.

#### 1.3 TEMPORARY ELECTRICITY

- A. Cost: By General Contractor. Utilize existing power service if approved by Owner. Extend temporary outlets in NEC and OSHA approved manner to facilitate construction.
- B. Provide power outlets for construction operations, with branch wiring and distribution boxes located as required. Provide flexible power cords as required.
- C. Provide main service disconnect and over correct protection at convenient location.
- D. Provide sufficient and adequate distribution equipment, wiring, and outlets to ensure unimpeded progress of the Work.
- E. Permanent convenience receptacles may be utilized during construction.

#### 1.4 TEMPORARY LIGHTING

- A. Provide and maintain lighting for construction operations to achieve a minimum lighting level of 2 watt/sq ft.
- B. Provide and maintain 1 watt/sq ft lighting to exterior staging and storage areas after dark for security purposes.

- C. Provide branch wiring from power source to distribution boxes with lighting conductors, pigtails, and lamps as required.
- D. Permanent building lighting may be utilized during construction.
- E. Maintain lighting and provide routine repairs.

1.5 TEMPORARY HEAT

- A. Provide and pay for heating devices and heat as needed to maintain specified conditions for construction operations.
- B. Maintain minimum ambient temperature of 50 degrees F (10 degrees C) in areas where construction is in progress, unless indicated otherwise in product sections.

1.6 TEMPORARY COOLING

- A. If required for the proper installation of particular materials, systems, or equipment, provide and pay for cooling devices and cooling as needed to maintain specified conditions.

1.7 TEMPORARY VENTILATION

- A. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.
- B. Utilize existing ventilation equipment if approved by Owner. Extend and supplement equipment with temporary fan units as required to maintain clear air for construction operations.

1.8 TELEPHONE SERVICE

- A. Provide, maintain and pay for telephone service to field office.

1.9 FACSIMILE SERVICE

- A. Provide, maintain and pay for separate telephone line to be used solely for fax service to field office.

1.10 TEMPORARY WATER SERVICE

- A. Utilize existing water service if approved by Owner for construction operations.
- B. Extend branch piping with outlets located so water is available by hoses with threaded connections. Provide temporary pipe insulation to prevent freezing as required.

1.11 TEMPORARY SANITARY

- A. Provide and maintain required facilities and enclosures. Existing facility use is **not** permitted. Provide at time of project mobilization.

1.12 BARRIERS

- A. Provide barriers to prevent unauthorized entry to construction areas to protect existing facilities and adjacent properties from damage from construction operations and demolition. Barriers must isolate occupied use from construction activities. If and when needed, barriers must be capable of attenuating sound.
- B. Provide protection for existing plant life and landscaped. Maintain plant life and landscaped areas as necessary during construction operations. Replace damaged plant life.
- C. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.
- D. Barrier plan and method subject to approval by the Architect and the Owner.

1.13 FENCING

- A. Construction: Commercial grade chain link fence.
- B. Provide 6 foot high fence around construction site, equip with vehicular and pedestrian gates with locks. Fence must be capable of restricting entry by on-site facility users.

1.14 WATER CONTROL

- A. Grade site to drain where additions are undertaken. Maintain excavations free of water. Provide, operate, and maintain pumping equipment and/or any other means, methods or techniques necessary to maintain excavation and site free of water.
- B. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion.

1.15 EXTERIOR ENCLOSURES

- A. Provide temporary insulated weather tight closure of exterior openings to accommodate acceptable working conditions and protect for products, to allow for temporary heating and maintenance of required ambient temperatures identified in individual specification sections, and to prevent entry of unauthorized persons. Provide access doors with self-closing hardware and locks.
- B. Provide temporary protection of existing wall cavities, substrates, and surfaces exposed to weather during cutting and minor demolition operations to prevent entrapment of moisture and development of mildew.

1.16 PROTECTION OF INSTALLED WORK

- A. Protect installed Work and provide special protection to prohibit damage and where specified in individual specification sections.
- B. Provide temporary and removable protection for installed Products. Control activity in immediate work area to minimize damage.
- C. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.

- D. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
- E. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
- F. Prohibit traffic in all landscaped areas.

#### 1.17 SECURITY

- A. Provide security and facilities to protect Work and existing facilities from unauthorized entry, vandalism, or theft.
- B. Coordinate project security program with Owner's existing security operations at project mobilization.
- C. Maintain program throughout construction period until Owner acceptance precludes the need for Contractor security.
- D. Restrict entrance of persons and vehicles into Project site and existing facilities, allowing entrance only to authorized persons and persons identified by the Contract Document and/or the Architect or Owner as authorized to visit Project site.

#### 1.18 ACCESS

- A. Provide and maintain temporary roads accessing public thoroughfares to serve construction area.
- B. Extend and relocate as work progress requires. Provide detours necessary for unimpeded traffic flow.
- C. Provide and maintain access to fire hydrants, free of obstructions.
- D. Provide means of removing mud from vehicle wheels before entering streets.
- E. Existing on-site roads may be used for construction traffic.

#### 1.19 PARKING

- A. Provide temporary surface parking areas to accommodate construction personnel. Existing site areas may be used if approved in advance by the Owner.
- B. Contractor to propose plan for Owner concurrence and approval.

#### 1.20 PROGRESS CLEANING AND WASTE REMOVAL

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
- B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
- C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.



- D. Collect and remove waste materials, debris, and rubbish from site weekly and dispose off-site.

1.21 PROJECT IDENTIFICATION

- A. Provide project sign. Refer to drawings for size and content.
- B. Erect on site at location established by Architect.
- C. No other signs are allowed without Owner permission except those required by law.

1.22 FIELD OFFICES AND SHEDS

- A. Office: Weather tight with lighting, electrical outlets, heating, cooling and ventilating equipment, and equipped with sturdy furniture drawing rack, and drawing display table, phone and fax.
- B. Provide space for Project meetings, with table and chairs to accommodate 6 persons.
- C. Provide storage sheds and facilities to accommodate Work. Size to storage requirements for products of individual Sections, allowing for access and orderly provision for maintenance and for inspection of products to requirements of Section 01600.
- D. Designated existing covered and uncovered hard paved areas and facilities may be used for field storage areas. Protect and secure existing areas used for storage. Upon completion of Work, clean, repair, and restore all existing areas used for storage and restore to acceptable condition.

1.23 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary utilities, equipment, facilities, materials prior to Substantial Completion.
- B. Remove underground installation to a minimum depth of 2 feet. Grade site to drain.
- C. Clean and repair damage caused by installation or use of temporary work.
- D. Restore existing and permanent facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

## SECTION 01600 – SUBSTITUTION PROCEDURES

### PART 1 - GENERAL

#### 1.1 COORDINATION

- A. The General Conditions of the Contract for Construction and the Supplementary Conditions to the General Conditions of the Contract for Construction shall be considered as part of this section of the specifications.
- B. Each Bidder shall be responsible for determining during the bidding period the extent that any addenda issued during the bidding period may affect this section of the specifications.
- C. Where conflicts occur between the drawings and specifications, between different drawings, between different portions of this section of the specifications, or between different sections of the specifications, the more stringent requirements and the greater quantity shall apply.

#### 1.2 SUBSTITUTION REQUIREMENTS

- A. When material, article, or method is specified using name of proprietary product manufacturer, vendor, or method followed by phrase "or equal," specific item mentioned establishes basis upon which projects are to be built.
  - 1. Other manufacturers' materials, articles, and methods not named will be considered as substitutions provided required information is submitted on "SUBSTITUTION REQUEST FORM" and will not require substantial revisions of Contract Documents.
  - 2. This applies to specific construction methods when required by Contract Documents.
  - 3. Substitution Requests must be filled out on enclosed "Substitution Request Form".
- B. Whenever material, article, or method is specified or described without phrase "or equal," no substitutions will be allowed.
- C. Costs for redesigns due to substituted items are responsibility of Applicant.
- D. In making request for substitution, Applicant/Contractor represents that he:
  - 1. Has personally investigated proposed product or method and determined that it is equal in all respects to that specified.
  - 2. Will provide same guarantee for substitution as for product or method specified.
  - 3. Will coordinate installation of accepted substitution into work, making design and construction changes to complete work in all respects following the Contract Documents.

#### 1.3 SUBMITTAL OF DATA FOR PROPOSED SUBSTITUTIONS

- A. In order for substitutions that do not change design intent to be considered, submit no later than 10 days prior to bid date deadline, 3 copies of complete data set forth herein to permit complete analysis of proposed substitutions listed on submitted "SUBSTITUTION REQUEST FORM".
  - 1. For Products:

- a. Identification including manufacturer's name and address.
  - b. Manufacturer's literature, including but not necessarily limited to:
    - 1) Product description, performance, and test data.
    - 2) Reference standards.
  - c. Samples where appropriate.
  - d. Name and address of similar projects on which product was used and dates of installation with contact name and telephone number.
2. For Construction Methods:
  - a. Detailed description of proposed method.
  - b. Drawings illustrating methods.
  - c. Name and address of similar projects on which method was used and dates of use with contact name and telephone number.
3. Comparison of proposed substitution with product or method specified
4. Data relating to impact on construction schedule by proposed substitution.
5. Impact on other contracts.

#### 1.4 APPROVAL OF SUBSTITUTION

- A. Architect's decision regarding evaluation of substitutions will be final and binding.
- B. All approved substitutions will be incorporated into the Contract Documents by Addendum.

PART 2 - PRODUCTS  
NOT USED

PART 3 - EXECUTION  
NOT USED

## SUBSTITUTION REQUEST FORM

Project: _____	Substitution Request Number: _____
_____	From: _____
To: _____	Date: _____
_____	A/E Project Number: _____
Re: _____	Contract For: _____
Specification Title: _____ Description: _____	
Section: _____ Page: _____	Article/Paragraph: _____

Proposed Substitution: \_\_\_\_\_

Manufacturer: _____	Address: _____	Phone: _____
Trade Name: _____	Model No.: _____	

Attached data includes product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation.

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.

Submitted by: \_\_\_\_\_

Signed by: \_\_\_\_\_

Firm: \_\_\_\_\_

Address: \_\_\_\_\_

Telephone: \_\_\_\_\_

### A/E's REVIEW AND ACTION

- ☐ Substitution approved - Make submittals in accordance with Specification Section 01340 Submittals
- ☐ Substitution approved as noted - Make submittals in accordance with Specification Section 01340 Submittals
- ☐ Substitution rejected - Use specified materials.
- ☐ Substitution Request received too late - Use specified materials.

Signed by: \_\_\_\_\_

Date: \_\_\_\_\_

Supporting Data Attached: ☐ Drawings ☐ Product Data ☐ Samples ☐ Tests ☐ Reports ☐ \_\_\_\_\_

END OF SECTION 01600

## SECTION 01732 - SELECTIVE DEMOLITION

### PART 1 - GENERAL

#### 1.1 COORDINATION

- A. The General Conditions of the Contract for Construction and the Supplementary Conditions to the General Conditions of the Contract for Construction shall be considered as part of this section of the specifications.
- B. Each Bidder shall be responsible for determining during the bidding period the extent that any addenda issued during the bidding period may affect this section of the specifications.
- C. Reference Instructions to Bidders for requirements regarding substitutions of materials and products.
- D. Where conflicts occur between the drawings and specifications, between different drawings, between different portions of this section of the specifications, or between different sections of the specifications, the more stringent requirements and the greater quantity shall apply.

#### 1.2 SECTION REQUIREMENTS

- A. Unless otherwise indicated, demolished materials become Contractor's property. Remove from Project site.
- B. Items indicated to be removed and salvaged remain Owner's property. Remove, clean, and deliver to Owner's designated storage area.
- C. Comply with EPA regulations and disposal regulations of authorities having jurisdiction.
- D. Conduct demolition without disrupting Owner's use of the building.

### PART 2 - PRODUCTS (Not Applicable)

### PART 3 - EXECUTION

#### 3.1 DEMOLITION

- A. Maintain and protect existing utilities to remain in service before proceeding with demolition, providing bypass connections to other parts of the building.
- B. Locate, identify, shut off, disconnect, and cap off utility services to be demolished.
- C. Employ a certified, licensed exterminator to treat building and to control rodents and vermin.
- D. Conduct demolition operations and remove debris to prevent injury to people and damage to adjacent buildings and site improvements.
- E. Provide and maintain shoring, bracing, or structural support to preserve building stability and prevent movement, settlement, or collapse.

- F. Protect building structure or interior from weather and water leakage and damage.
- G. Protect remaining walls, ceilings, floors, and exposed finishes. Erect and maintain dustproof partitions. Cover and protect remaining furniture, furnishings, and equipment.
- H. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction.
- I. Promptly patch and repair holes and damaged surfaces of building caused by demolition. Restore exposed finishes of patched areas and extend finish restoration into remaining adjoining construction.
- J. Promptly remove demolished materials from Owner's property and legally dispose of them. Do not burn demolished materials.

END OF SECTION 01732

SECTION 01800 — GENERAL NOTES

PART 1 - GENERAL

1.1 COORDINATION

- A. The General Conditions of the Contract for Construction and the Supplementary Conditions to the General Conditions of the Contract for Construction shall be considered as part of this section of the specifications.
- B. Each Bidder shall be responsible for determining during the bidding period the extent that any addenda issued during the bidding period may affect this section of the specifications.
- C. Reference Instructions to Bidders for requirements regarding substitutions of materials and products.
- D. Where conflicts occur between the drawings and specifications, between different drawings, between different portions of this section of the specifications, or between different sections of the specifications, the more stringent requirements and the greater quantity shall apply.

1.2 GENERAL NOTES

- A. **Do not dimension the drawings. Any dimensions, questions, should be directed to the Architect or Engineer.**
- B. Contractor shall protect all streets and sidewalks and shall make all necessary repairs at his own expense.
- C. Shall at all times protect the excavations, trenches, and/or the building from damage from rain water, ground water, backing up drains or sewers and all other water. He shall provide all pumps and equipment and enclosures to provide this protection.
- D. Contractor shall provide all shoring, bracing and sheathing as required for safety and proper execution of the work and remove same when work is completed. Contractor shall be responsible for all scaffolding, shoring, bracing, sheathing, temporary construction and temporary walkways, etc., and shall hold harmless the Owner and Architect from any injury or litigation as a result of causes related to any scaffolding, shoring, bracing, sheathing, temporary construction and temporary walkways.
- E. Contractor shall comply with the Trench Safety Law Requirements.

1.3 WAIVER OF LIEN:

- A. A. In submitting a proposal (Bid) Contractor, if awarded the Contract, explicitly warrants that the Owner shall be held free of any claim or lien of any nature resulting from Contractor's pursuance or prosecution of the work. This shall cover any third party lien in any manner whatsoever concerning Contractor's performance or payment on this project.

1.4 CONTRACTOR'S ASBESTOS FREE AFFIDAVIT:

- A. A. In order to protect staff, employees and public in general from any unnecessary exposure to asbestos fibers, the Asbestos Hazard Emergency Response Act prohibits the use of asbestos containing materials in all forms in the construction and operation of this facility.

- B. Failure to complete this waiver constitutes non-compliance with the job specifications. This document shall be attached to the Contract between Owner and Contractor.

1.5 AFFIDAVIT:

- A. I, certify that I am familiar with the materials used in the construction of, and incorporated into, the construction described below. I further certify that to the best of my knowledge and belief no asbestos containing materials, either friable or otherwise were used in the process of constructing or incorporated into the construction.
- B. The undersigned, being duly sworn upon his/her oath deposes and says that he/she is the person making the foregoing statements and that they are made in good faith and are true in every respect.
- C. Contractor's signature:
- D. STATE OF
- E. COUNTY OF
- F. I, \_\_\_\_\_, a Notary Public in and for said County, in the State aforesaid, DO THEREBY CERTIFY THAT \_\_\_\_\_, personally known to me to be the same person whose name is subscribed to the foregoing instrument, appeared before me this day in person, and acknowledge that he/she signed, sealed, and delivered said instrument as his/her free and voluntary act, for the uses and purposes herein set forth.
- G. GIVEN UNDER MY HAND AND NOTARIAL SEAL THIS  
, DATE OF , 20
- H. NOTARY PUBLIC: ,
- I. MY COMMISSION EXPIRES: ,
- J. (NOTARY SEAL)

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION



## SECTION 02100 — SITE CLEARING, GRADING AND FILLING

### PART 1 - GENERAL

#### 1.1 COORDINATION

- A. The General Conditions of the Contract for Construction and the Supplementary Conditions to the General Conditions of the Contract for Construction shall be considered as part of this section of the specifications.
- B. Each Bidder shall be responsible for determining during the bidding period the extent that any addenda issued during the bidding period may affect this section of the specifications.
- C. Reference Instructions to Bidders for requirements regarding substitutions of materials and products.
- D. Where conflicts occur between the drawings and specifications, between different drawings, between different portions of this section of the specifications, or between different sections of the specifications, the more stringent requirements and the greater quantity shall apply.

#### 1.2 WORK INCLUDED

- A. Clearing, filling and grading of the affected areas of the site.
- B. Top Soil removal and reuse.
- C. Disposal of debris and surplus materials.
- D. Protection of trees and vegetation to remain, coordinate with the Architect.

#### 1.3 RELATED WORK SPECIFIED IN OTHER SECTIONS:

- A. Excavation and backfilling for underground site utilities.
- B. Paving and sidewalks.
- C. Site drainage systems.

#### 1.4 QUALITY ASSURANCE

- A. Testing Laboratory Services: Installed materials shall meet specified requirements as determined by the Owner's Testing Laboratory.
- B. Proposed sitework contractor shall be able to provide documentation that he has a minimum of three years of satisfactory experience in the performance of similar operations.

### PART 2 - PRODUCTS

#### 2.1 MATERIALS

- A. Existing top soil to be stockpiled and reused.
- B. Existing and off-site earth fill as required.
- C. TOPSOIL:
  - 1. Rich sandy loam, low in silt, free of trash, rocks, debris and other foreign materials.
  - 2. Topsoil stripped at the site and stockpiled may be used if material meets the above requirements and quantities are sufficient to meet all topsoil needs of the site. Otherwise topsoil meeting specified requirements and approved by the testing laboratory shall be provided from an approved off site source.
- D. FERTILEZER AND GRASSING: Provide grass to replace any disturbed areas during regarding.

### PART 3 - EXECUTION

#### 3.1 PROTECTION OF EXISTING TREES AND VEGETATION

- A. GENERAL: In addition to any temporary construction fencing provided under Section 01500 Temporary Facilities, provide temporary chain link fencing around existing shrubs, grasses, ground cover and tress indicated to remain. Locate fencing around drip lines of individual trees or groups of trees.
- B. REPLACEMENT: Replace damaged existing trees and vegetation indicated to remain with materials of like kind, size and maturity as approved by the architect. Follow supplier's recommended procedures of planting.

#### 3.2 TOPSOIL REMOVAL AND EXCAVATION

- A. Strip topsoil to a depth of 4" to 6" under all new site paving, sidewalks, within new building lines and at all site areas which will receive earth fill for grading adjustments.
- B. Temporarily store removed topsoil at an on-site location designated by the Architect. Stored topsoil shall be kept free of trash and construction debris.
- C. Remove additional existing soil as required to achieve any finish paving grades which may be at or near natural grade elevation.

#### 3.3 EXCAVATING, GRADING AND FILLING

- A. GRADE ELEVATIONS: Establish finish grades as indicated on the drawings. Set and maintain grade stakes.
- B. ROUGH GRADING:
  - 1. Provide clean earth fill meeting specified requirements from off-site should additional earth fill be required.
  - 2. Provide temporary and permanent drainage swales, pumps, gutters and trenches necessary to dry existing soil and carry off water during construction. As indicated on drawings shape the site around structures to drain away from the building(s) at all times. Do not allow water to stand around trees scheduled to remain.

3. All site fill at unpaved and typical sidewalks areas shall be thoroughly compacted in lifts as specified below. Each layer and subgrade shall be wetted or dried as required to achieve optimum moisture content and then compacted to minimum ninety (90%) percent Proctor density per ASTM D1557. The subgrade shall be thoroughly and completely scarified before wetting and rolling.

C. COMPACTION: Compaction may be obtained by any of the following methods:

1. By sheepsfoot rollers having a unit weight on the contact feet of not less than 300 pounds per square inch with the soil being compacted in layers not exceeding 8" in depth (loose measurement).
2. By pneumatic tired rollers having a minimum compression of 325 pounds per inch of width of tire tread, with the soil being compacted in layers not exceeding 8" in depth (loose measurement).
3. For those portions of fill which cannot be reached with the sheepsfoot roller, such as corners and areas adjacent to columns, beams, etc., mechanical tampers shall be employed to obtain specified compaction.

D. EXISTING UTILITIES:

1. Arrange with utility companies for removal or relocation of any existing utilities.
2. Remove abandoned utilities up to the property line and provide permanent watertight cap.
3. If unknown or uncharted utilities are encountered during excavation, promptly notify the Architect before proceeding. Damage to existing utilities by continuing work without notifying the Architect shall be repaired by the Contractor at no additional cost to the Owner.

E. FINISH GRADING;

1. After rough grading and proof rolling operations are complete, install 2" of topsoil over unpaved open area (within the limits of grading) and fine grade to finish contours and make ready to receive grass planting (whether or not grass planting is required under this contract).
2. Open areas shall be raked smooth and left free of clumps, trash, debris and vegetation. Finish grading shall be uniform in planarity, meeting elevations and slopes as indicated on the drawings, and as required to ensure proper drainage.

3.4 DISPOSAL:

1. Adhere to Federal, State, County and local regulations regarding disposal of removed trees, shrubs, vegetation, soil, and rubble. It is the sole responsibility of the Contractor to determine the regulations regarding on-site burning of removed trees and vegetation.
2. Upon completion of fine grading operations, any excess soil shall be removed from the site, stockpiled at the site, or relocated to any property controlled by the Owner within five miles of the site. The above options shall be as determined by the Owner at no additional cost to the Owner.

END OF SECTION

## SECTION 02361 - TERMITE CONTROL

### PART 1 - GENERAL

#### 1.1 COORDINATION

- A. The General Conditions of the Contractor for Construction and the Supplementary Conditions to the General Conditions of the Contract for the Construction shall be considered as part of this section of the specifications.
- B. Each Bidder shall be responsible for determining during the bidding period the extent that any addendum issued during the bidding period may affect this section of the specifications.
- C. Reference Instructions to Bidders for requirements regarding substitutions of materials and products.
- D. Where conflicts occur between the drawings and specifications, between different drawings, between different portions of this section of the specifications, or between different sections of the specifications, the stringent requirements and the greater quantity shall apply.

#### 1.2 SECTION REQUIREMENTS

- A. Submittals: Product Data and product certificates signed by manufacturer certifying that products used comply with U.S. EPA regulations for termiticides. Include application instructions and EPA-Registered Label.
- B. Engage a licensed professional pest control operator to apply termite control solution.

### PART 2 - PRODUCTS

#### 2.1 TERMITICIDES

- A. Provide an EPA-registered termiticide (5 year) complying with requirements of authorities having jurisdiction, in a soluble or emulsible, concentrated formulation that dilutes with water or foaming agent. Use only soil treatment solutions that are not harmful to plants. Provide quantity required for application at the label volume and rate for the maximum termiticide concentration allowed for each specific use, according to the product's EPA-Registered Label.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION

- A. Prepare surfaces and apply treatment at rates and concentrations recommended in manufacturer's written instructions.
- B. Apply termite control to the following:
  - 1. At foundations. (Piers, mid-span supports)
  - 2. Under sub-floors and flooring materials.
  - 3. Under basement floor slabs.

4. At hollow masonry.
  5. At expansion and control joints and slab penetrations.
  6. At crawlspaces; treat soil under and adjacent to foundation supports. Treat adjacent areas including around entrance platform, porches, and equipment bases. Apply overall treatment.
- C. Post warning signs in areas of application.
- D. Reapply soil termiticide treatment solution to areas disturbed by subsequent excavation or other construction activities following application.

END OF SECTION - 02361

SECTION 02520 — CONCRETE PAVING, CURBS AND SIDEWALK

PART 1 - GENERAL

1.1 COORDINATION

- A. The General Conditions of the Contract for Construction and the Supplementary Conditions to the General Conditions of the Contract for Construction shall be considered as part of this section of the specifications.
- B. Each Bidder shall be responsible for determining during the bidding period the extent that any addenda issued during the bidding period may affect this section of the specifications.
- C. Reference Instructions to Bidders for requirements regarding substitutions of materials and products.
- D. Where conflicts occur between the drawings and specifications, between different drawings, between different portions of this section of the specifications, or between different sections of the specifications, the more stringent requirements and the greater quantity shall apply.

1.2 WORK INCLUDED

- A. All site concrete work, including sidewalks, paving, equipment slabs, ramps, and other miscellaneous concrete.
- B. All form work.
- C. Reinforcing steel.
- D. Installation of sleeves provided by plumbing, heating, and electrical contractors for work under site concrete. Sleeves for irrigation system.

1.3 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Testing Laboratory services.
- B. Excavation and fill.
- C. Soil stabilization.

1.4 DRAWING REFERENCES: See drawings for reinforcing sizes and placement.

1.5 SUBMITTALS

- A. DESIGN MIX: Submit six (6) copies directly to the Owners Testing Laboratory the proposed concrete mix for concrete paving and sidewalks. Include cement brand and type, aggregate identification, admixtures, proportions and anticipated strengths.
- B. PLASTIC CHAIR SUPPORT: Submit manufacturer's literature indicating dimensions, configuration, and performance data. Submit sample for approval by the Architect.

- C. JOINT FORMS: Submit manufacturer's literature indicating dimensions, configuration, reinforcing and accessories related to load transfer units.
- D. ADMIXTURES: Submit manufacturer's literature indicating composition and mix proportions.
- E. CURING COMPOUND: Submit manufacturer's literature indicating composition and recommended application procedures.
- F. JOINT SEALANT: Submit manufacturer's literature indicating sealant type(s), performance, recommended application procedures, and recommending open or closed cell backer material for the application.
- G. DELIVERY TICKETS: Furnish copies of delivery tickets for each load of concrete delivered to the site. Provide items of information as follows:
  - 1. Ambient temperature.
  - 2. Any modifications and dispositions of the load.
  - 3. Driver's identification.
  - 4. Identification of placement location at jobsite.
  - 5. Ingredients by weight.
  - 6. Number of cubic yards.
  - 7. Time emptied.
  - 8. Time loaded.
- H. TEST REPORTS: Arrange for the Owner's Testing Laboratory to submit reports to the Owner, Architect and Contractor indicating compressive strength, aggregate type and slump for samples taken at the site.

#### 1.6 SAMPLES

- A. Plastic chair support.
- B. Minimum 36" x 36" finish samples at the job site for Architects approval. Provide sample for each type of finish (smooth, light broom, medium broom, etc.) and each type of joint.

#### 1.7 WARRANTY

- A. Provide written warranty against defects in materials and workmanship for the work under this section for a period of one year after the date of Substantial Completion of the project.

#### 1.8 QUALITY ASSURANCE

- A. Cast-in-place concrete shall be installed by technicians specially trained in the proper handling, placing and protection of concrete and reinforcing steel. If required by the Architect, installer shall submit for approval a list of similar installations successfully completed.
- B. Cast-in-place concrete shall be mixed and installed in strict accordance with applicable written recommendations and requirements of the Texas State Department of Highways and Public Transportation (TSDHPT) and the American Concrete Association (ACI) including but not necessarily limited to the following where documents conflict, the most stringent of the requirements as determined by the Architect shall apply:
  - 1. TSDHPT, item 360.

2. ACI 302.
3. Building Code Requirements for Reinforced Concrete, ACI 318.
4. Recommended Practice for Hot Weather Concreting, ACI 305.
5. Recommended Practice for Cold Weather Concreting, ACI 306

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. GENERAL: All materials used in the Work shall be stored or handled in a manner which will prevent deteriorations; any materials that have been damaged shall be immediately and completely removed from the Work. All manufactured materials, such as cement, shall be delivered and stored in their original packages, plainly marked with the brand and manufacturer's name. Broken packages or packages that show marks or other evidence of damage shall be wholly rejected.
- B. CEMENT: Portland cement shall conform to standard specifications of ASTM,C-150, Type 1, latest edition. The brand shall be one approved by the Architect, and this one brand shall be used throughout the project.
- C. AGGREGATES: Aggregates for concrete of normal weight shall be clean, hard, strong, uncoated, free of loam, fine sand, clay dust, organic or other deleterious matter and shall conform to ASTM C-33.



Parking Garage

FINE AGGREGATE			COARSE AGGREGATE		
Sieve Size	Percent Passing	Sieve Size Passing	1-1/2	Percent	3/4
4	95-100	1-1/2	95-100	-	-
16	50- 88	1"	-	90-100	-
50	10-30	3/4"	40-70	-	90-100
100	0- 5	1/2"	-	25- 60	
		3/8"	10-30	-	20-55
		#4	0- 5	0- 10	0- 10

- D. Clay - 3% Maximum Clay - 1 % Maximum
- E. WATER: Water shall be clean and potable, free from injurious amounts of oil, acid, Alkali, organic matter or other deleterious substances.
- F. REINFORCING STEEL: All reinforcing steel shall be high bond, new billet stock, and shall conform with ASTM A-615, except that mesh shall conform with ASTM A-1 85. All materials must be free from seams, flaws, scale or an excessive amount of rust. The supplier shall furnish Architect with a certificate certifying the reinforcing steel is domestic, or supply laboratory tests acceptable to the Architect, that foreign steel meets these tests. Laboratory tests shall be made on each size of steel. Samples for testing shall be taken from jobsite. The samples shall be replaced with bar of like size and length, plus 40 diameter.
- G. ANCHORS: Install all necessary anchors, wire loops or other miscellaneous fasteners to be installed in concrete for anchoring masonry or other work.
- H. WOOD JOINT FORMS:
- Sidewalk Joints: Expansion joints at concrete walks shall be 1X Redwood.
  - Paving Joints: 3/4" thick redwood form with minimum 1" deep removable top strip, 3/4" x 1 0" steel reinforcing bars at 24" o.c. with bond-breaker sleeve on one side, and 3/16" thick steel rebar support plates each side. Provide custom size as required for full depth of paving as manufactured by Shepler Equipment Co., or equivalent by Commercial Lumber Supply, Marine Lumber Co., or Southern States Lumber.
- I. TRANSIT MIX CONCRETE: Contractor shall provide concrete meeting the specifications with regard to compressive strength, method of handling, and controlled by testing lab at batch plant. Concrete shall meet ASTM C-94; Certificate from supplier shall be furnished to Architect.
- J. CURING COMPOUND: Shall be Southform 4-way (cures, seals, dustproofs, and hardens), or equivalent product by Gifford-Hill, Nox-Chem, Sonneborn, or W.R. Grace.
- K. ADMIXTURES:

1. General: All admixtures shall be added at the plant during mixing and must be prior approved by the Testing Laboratory. Admixtures shall comply with requirements of ASTM C-260 and C-494. Admixtures containing calcium chloride are not acceptable. **Do not use admixtures in footings or seal slabs.**
  2. Water Reducing Agents: All design mixes must test with the required slumps prior to the addition of a water reducing agent. Each specified maximum slump may be increased by a maximum of 2" at the plant by the addition of a maximum of 3 ounces of water reducing agent per 94 pound bag of cement. Meet requirements of ASTM C494, Type F.
    - a. "PSI Super" as manufactured by Cormix Construction Chemicals.
    - b. "WRDA-1 9" as manufactured by W.R. Grace.
    - c. "Sikament" as manufactured by Sika Chemical Corp.
  3. Set-Controlling Agents: Under 40 degrees F., add accelerating agent Over 80 degrees F., add retarding agent.
    - a. Cormix Construction Chemicals.
    - b. Master Builders
    - c. Protex Industries
    - d. Sika Chemical Corp.
  4. Air Entrainment: All structural concrete shall contain an air entraining agent compatible with other approved admixtures. Agent added at the plant shall produce 4-5% air entrainment - not required at drilled footings.
- L. REINFORCING BAR SUPPORTS: Heavy-duty type four-legged plastic chair supports with sand plate. Series "G" or "B" (as determined by job conditions) as manufactured by W.H.C. Products, Inc. or approved equivalent by Aztec Concrete Accessories. Provide sand plate for slab on grade. Space at a maximum of 45" centers each way. Provide closer spacing where required to prevent excessive sag, or to support the weight of concrete pump hose.
- M. METAL REINFORCEMENT:
1. Bars
    - a. General: Detailing conform to ACI detailing manual.
    - b. Grade 60: Comply with ASTM A 615.
    - c. Grade 40 (#3 bars): Comply with ASTM A 615.
  2. Mesh
    - a. Comply with ASTM A 185.
    - b. Mesh shall be type which is fabricated and delivered in flat sheets.
    - c. Use mesh only where specifically indicated in the drawings for sidewalks or equipment pads.
- N. PAVING JOINT SEALANT: Polyurethane base, multi-component, chemical curing, self-leveling Type 1, conforming to requirements of FS TT-S-00227E, Class A (provide equivalent non-sagging Type 2 at vertical joints in curbs), as manufactured by Tremco or equivalent by Sonneborn, Sheplers, or Pecora. Use with flat strip, non-absorbent polyethylene joint backer-open or closed cell type as recommended by the sealant manufacturer.

## 2.2 MIX DESIGNS

- A. The concrete mix shall be designed by the concrete supplier and approved by the Owner's Testing Laboratory. Contractor shall furnish to the laboratory samples of the aggregate he proposes to use in the concrete work. Concrete mixes shall achieve twenty eight (28) day compressive strengths indicated below, and shall be so proportioned as to obtain a workable mix in accordance with the following limits:
- |    |                       |                   |                                |
|----|-----------------------|-------------------|--------------------------------|
| B. | Compressive Strength  | Minimum Cement    | Maximum Total                  |
| C. | at 28 days            | Content 94#       | Sacks Water Per Sack of Cement |
| D. | <u>Minimum P.S.I.</u> | <u>Cubic Yard</u> | <u>Gallons</u>                 |
| E. | Paving 3,500          | 5.5               | 7.0                            |
- F. SLUMPS: Slumps greater than specified can adversely affect concrete performance due to excessive shrinkage. Slumps specified below are based upon concrete design mix prior to addition of any approved water reducing agent.
1. 5" +/- 1": Sidewalks
  2. 3" +/- 1": Paving, curbs
- G. The use of fly ash in the concrete mix is not acceptable.
- H. MIXING
1. Comply with ASTM C 94.
  2. Mix concrete to a uniform distribution of materials. Mix at least two minutes after materials are in mixer. Discharge concrete completely before mixer is recharged.
  3. Mix each batch not less than 70 or more than 100 revolutions of the drum at mixing speed. Additional mixing is to be done at agitating speed.
- I. ADJUSTMENTS TO MIX DESIGN: Submit for approval by the Owner's Testing Laboratory any proposed adjustments to the approved mix design due to job conditions, weather or testing results. Necessary adjustments to the mix design shall be at the Contractor's expense.

### PART 3 - EXECUTION

#### 3.1 PREPARATION

- A. Any portions of the subgrade or fill that are below optimum moisture content shall be wetted at least one (1) week prior to placing concrete in order to achieve a proper uniform distribution of moisture.
- B. All preliminary work shall be carefully checked, all trash and debris removed, and the approval of the Architect obtained before any concrete is placed. The Architect shall be notified twenty-four (24) hours before any concrete is scheduled to be placed.
- C. SUBGRADE APPROVAL- The bearing grade of slab-on-grade concrete shall require approval of the Owner's testing laboratory immediately prior to the placement of concrete regardless of any previous test results. Bearing grade which is overly dry, saturated, exhibits standing water, contaminants, irregularities or other properties which may tend to be deleterious to the performance of the cast-in-place concrete will not be approved by the Owner's testing laboratory as suitable for concrete placement.

- D. Coordinate and provide for plumbing, electrical, carpentry, masonry, miscellaneous metals and other installation requirements, which must be completed prior to concrete work or which may require special forming or block-outs.
- E. **CLEANING:** Clean all forms of debris and thoroughly wet wood forms before placing concrete.
- F. Inspect subgrade to determine that uniform thickness of concrete paving and walks will result in proper drainage and no standing water. Notify Architect prior to beginning work of any no slope areas or potential standing water conditions.
- G. **HOT WEATHER CONDITIONS:** Where ambient temperature exceeds 95 degrees F. with a wind velocity exceeding 5 MPH or temperature exceeds 90 degrees F. with a wind velocity exceeding 15 MPH, follow recommendations in ACI publication "SLABS ON GRADE" to protect against rapid drying.
- H. Do not place concrete when air temperature is 40 degrees F. or below or when the air temperature is expected to go below 30 degrees F. in the following 48 hours after placing of concrete unless the concrete is protected from such temperature.
- I. Install all anchors, fasteners, junction boxes, curb dowels collection boxes or other construction to be installed within concrete paving.

### 3.2 INSTALLATION

- A. **TRANSIT:** Concrete shall be agitated continuously with slow revolutions of the drum while in transit. No concrete shall be deposited after being in the mixer more than 90 minutes. Testing laboratory shall check each delivery ticket and notify Contractor immediately of any concrete arriving more than 90 minutes after plant loading.
- B. **HANDLING:** Concrete shall be deposited in the forms as rapidly as practicable by methods which will prevent loss or separation. It shall be deposited as nearly as practicable in its final position to avoid rehandling. Provide runways, or other means for wheeled equipment to carry concrete to points of deposit.
- C. **PLACING REINFORCEMENT:**
  - 1. A thin film of rust will not be considered objectional, but no loose or scaly rust, dirt, mud or cement will be allowed. Steel must be cleaned with wire brushes or replaced if pitted from rust.
  - 2. Accurately position, secure against displacement with #18 gauge wire ties or suitable clips, support by heavy duty plastic chairs with sand plates. Do not use "brick bats" or rubble for support.
  - 3. Follow recommendations of Concrete Reinforcing Steel Institute as to type of steel, splicing, location and placement.
- D. **PLACING CONCRETE:**
  - 1. Deposit and consolidate concrete in a continuous operation, within the limits of joint forms, until the placing of a panel or section is completed.
  - 2. Consolidate concrete during placing operations so that concrete is thoroughly worked around reinforcement, other embedded items, and into corners.
  - 3. Maintain reinforcing steel in the proper position continuously during concrete placement operations.
  - 4. Bring slab surfaces to the correct plane with a straight edge or vibrating screed and strike off. Use bull floats or derbies to smooth the surface, leaving it free of humps or hollows. Do not sprinkle

water on the plastic surface. Do not disturb the slab surfaces prior to beginning finishing operations.

5. Concrete surface shall be true to plane within 1/4" against a 10' straight edge.

### 3.3 JOINTS

#### A. LOAD TRANSFER UNITS:

1. Install wood joint form in accordance with manufacturer's printed directions prior to concrete pour. All plastic sleeves at reinforcing bars shall be placed running in same direction.
2. Install manufacturers stakes at 48" o.c. maximum where concrete is to be placed on both sides of form simultaneously. Install at 36" o.c. maximum at cold joints.
3. Longitudinal joint forms shall be continuous through transverse joint forms.
4. Pre-wet form boards prior to placement to ensure against dry wood forms removing water at edges of concrete.
5. Leave removable top strip in place and protect until sealant operations begin.

#### B. WOOD FORMS:

1. Install similar to load transfer units. Use at radiused areas and sidewalks.
2. Kerf where required for radius.
3. Leave removable top strip in place at paving and protect until sealant operations begin. Top strip and sealant not required at sidewalks.

#### C. KEYED JOINTS:

1. Align metal joint forms and install manufacturer's splice clip at ends to keep joints in alignment during concrete placement.
2. Set all stakes securely to keep joint form from moving during concrete placement.
3. Do not remove forms until concrete has obtained sufficient strength. When removing forms, apply no vertical uplift which may damage or weaken concrete key.

### 3.4 CURBS

- A. Provide machine laid (extruded) reinforced concrete curbs unless monolithic or formed curbs are indicated in the drawings.
- B. Apply epoxy to cured concrete paving and continuously lay curb over installed dowels.

### 3.5 FINISHING

- A. GENERAL: Concrete finishes shall match approved jobsite samples approved by the Architect. Spreading of dry cement for finishing is not acceptable. Begin finishing operations as soon as water sheen has disappeared from surface.
- B. PAVING FINISHES: Slabs shall be true to plane within 1/4" in a length of 10' machine finish and provide light to medium broom finish (across the direction of traffic) at all paving as approved by the Architect.
- C. SIDEWALKS: Provide light broom finish perpendicular to walk. Provide Architect with sample panel of proposed finish for approval prior to beginning work.

- D. STEPS AND RAMPS: Shall be constructed as detailed. Exterior steps, landings, and ramps shall be medium broom finished.
- E. PAVING JOINTS: Provide tooled eased edges along both sides of redwood joint form to ensure neat appearance, sealant adhesion, and to facilitate removal of top strip. Use 1/8" radius jointing tool.
- F. OPEN TOOLED JOINT: Provide scored lines on concrete sidewalks 5'-0" o.c. unless spaced otherwise on the drawings. Joint size shall be 1/4" wide x 1/4 depth of concrete.
- G. All concrete paving and walks shall be uniform in color and consistent in finish. Remove and replace any areas dimpled by rain or discolored (concrete mix).

### 3.6 CURING

- A. Apply complete covering of curing compound as soon as concrete is finished and in accordance with manufacturer's instructions. Curing compound shall be applied as it comes from the can, at the rate of 200 to 300 square feet per gallon.
- B. To avoid sealant adhesion problems ensure that curing compound does not seep into paving joints that receive sealant.

### 3.7 CAP SEALANT

- A. Remove redwood top strip from joint forms. Take care to avoid damaging concrete edges. Clean sealant cavity and inspect for proper depth as recommended by sealant manufacturer.
- B. Ensure that sealant cavity is clean, dry, and free of dust, dirt, and small stones. Ensure that edges are not contaminated with curing compound, oil or other agents, which might cause adhesion failure. Prime side walls in accordance with sealant manufacturer's recommendations.
- C. Install flat ethafoam strip in bottom of sealant cavity to provide bond-breaker at bottom of sealant and to ensure against sealant loss past the joint form. Install strip in thickness required to provide sealant cavity size as recommended by sealant manufacturer. Use no sand or other loose material in joint cavity.
- D. Mix sealant thoroughly in accordance with manufacturer's recommendations and pour to within 1/8" of top of paving. Where sealant must be repoured due to run off or improper level, remove completely all traces of sealant on side walls before next application.
- E. At concrete curbs rake joint filler to minimum 1" depth and install sealant manufacturer's vertical joint grade sealant.

### 3.8 CLEANING AND PROTECTION

- A. Paving is to be kept free of any foreign substances (wax, oil, paint, etc.) or surface irregularities, which may affect the final appearance of the completed installation.
- B. Unless otherwise approved by the Architect, no vehicular traffic will be allowed on any concrete slab, paving or drive until after the 7 day concrete tests have been made by the laboratory indicating that the concrete has attained 3,000 psi compressive strength.
- C. Contractor shall coordinate with Architect and Owner to determine a suitable on-site "wash-out" area for concrete trucks. Contractor shall be responsible for clean up of the designated area.

- D. Contractor shall keep clean all adjacent public streets and rights of way. Wash down daily or more often as needed to maintain a safe condition at entrances/exits to site.

3.9 TESTING LABORATORY CONTROL

- A. Contractor shall contact Owner's Testing Laboratory at least 24 hours prior to time of anticipated concrete placement.
- B. Contractor shall require the manufacturers of the cement and metal reinforcement to be used in the work to furnish mill certificates showing that such materials meet ASTM standards as specified.
- C. Contractor shall follow all requirements of ASTM C 31 concerning the proper handling and protection of concrete test cylinders. Contractor shall provide locked storage facilities for test cylinders with all heat, insulation and protection as required by ASTM C 31.

END OF SECTION

## SECTION 02580 — TRAFFIC STRIPING AND PARKING SIGNAGE

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. The General Conditions of the Contractor for Construction and the Supplementary Conditions to the General Conditions of the Contract for the Construction shall be considered as part of this section of the specifications.
- B. Each Bidder shall be responsible for determining during the bidding period the extent that any addendum issued during the bidding period may affect this section of the specifications.
- C. Reference Instructions to Bidders for requirements regarding substitutions of materials and products.
- D. Where conflicts occur between the drawings and specifications, between different drawings, between different portions of this section of the specifications, or between different sections of the specifications, the stringent requirements and the greater quantity shall apply.

#### 1.2 WORK INCLUDED

- A. Provide traffic line, parking stripe and symbol painting on concrete/asphalt paving as indicated in the drawings.
- B. Provide and install pipe-mounted parking signs at handicapped parking spaces meeting requirements of ADA.

#### 1.3 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Reinforced concrete paving.

#### 1.4 SUBMITTALS

- A. PAINT: Submit manufacturer's product literature indicating Federal specification numbers and manufacturer's recommended use and application techniques.
- B. Reference Section 01340 SUBMITTALS for additional submittal requirements.
- C. Provide full size template for handicapped stall symbol.

#### 1.5 WARRANTY

- A. Provide written warranty against defects in material and workmanship for a period of one year after date of Substantial Completion.
- B. Warranted defects for paint striping shall include but not necessarily be limited to fading, bleed-thru, spalling, excessive wear or delamination.



## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. PAINT: "Traffic-Line" alkyd base marking paint meeting Federal Specifications TTP-85 and TTP-115 Type 1 as manufactured by Devoe or equivalent.
  - 1. Width: Typically 4 inches unless indicated otherwise in the drawings.
  - 2. Colors:
    - a. White: Traffic lines, directional symbols, symbols for the handicapped.
    - b. Yellow: Striping for parking stalls.
- B. HANDICAPPED PARKING SIGNS:
  - 1. Provide sign size, colors and copy meeting state, local and federal requirements for handicapped parking signage.
  - 2. Sign blank shall be 1/8" aluminum sheet with Dupont "Emron" glass paint background, graphics and copy.
  - 3. Graphics and copy shall be photo silk screened.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Ensure that paving operations are complete and surfaces thoroughly dry, clean, and free of oil or grease stains or other contaminants.
- B. Clean with high pressure wash or brush if necessary for proper adhesion.
- C.

### 3.2 PAINT

- A. Spray apply two coats of marking paint in patterns indicated on the drawings after weathering of asphalt or concrete paving for a minimum of 30 days. Edges shall be sharply defined.
- B. Provide minimum dry thickness of 2.5 mils. Provide additional coats if required for complete hiding.

- 3.3 HANDICAPPED PARKING SIGNS: Set 2" galvanized pipe sign support in minimum 6" diameter x 24" deep concrete footing.

END OF SECTION

SECTION 02601 — FLEXIBLE BASE

PART 1 - GENERAL

1.00 COORDINATION

- A. The General Conditions of the Contractor for Construction and the Supplementary Conditions to the General Conditions of the Contract for the Construction shall be considered as part of this section of the specifications.
- B. Each Bidder shall be responsible for determining during the bidding period the extent that any addendum issued during the bidding period may affect this section of the specifications.
- C. Reference Instructions to Bidders for requirements regarding substitutions of materials and products.
- D. Where conflicts occur between the drawings and specifications, between different drawings, between different portions of this section of the specifications, or between different sections of the specifications, the stringent requirements and the greater quantity shall apply.

1.01 GENERAL DESCRIPTION OF WORK:

- 1. This work shall consist of furnishing and placing a foundation course for surface courses or for other base courses.
- 2. Flexible base shall be composed of either caliche (argillaceous limestone, calcareous or calcareous clay particles, with or without stone, conglomerate, gravel, sand or other granular materials), crushed stone, gravel, iron, or topsoil, shell, or crushed slag.
- 3. Flexible base shall be constructed as specified herein in one or more courses in conformance with details, lines and grades shown on the plans, and as established by the ENGINEER.

PART 2 - PRODUCTS

2.01 MATERIALS

- 1. Materials for flexible base shall be crushed or uncrushed as necessary to comply with the requirements hereinafter specified.
- 2. Materials shall consist of durable course aggregate particles mixed with approved binding materials.

2.02 LIME STABILIZATION:

- 1. The material for flexible base shall be lime stabilized.

2.03 TYPES:

- 1. Type A - Crushed or broken aggregate (excluding gravel aggregate).
- 2. Type B - Gravel Aggregate
- 3. Type C - Iron Ore Topsoil
- 4. Type D - Shell Aggregate with Sand Admixture
- 5. Type E - Shell Aggregate with Sand and Caliche Ad mixture
- 6. Type F - Caliche
- 7. Type G - Crushed Slag
- 8. Unless otherwise noted on the plans, the CONTRACTOR may use any on type of these types provided the material used meet the requirements set forth in the specification test limits herein.

2.04 GRADES:

1. Unless otherwise shown on the plans or directed by the ENGINEER, the final course of base material shall consist of Grades 1, 2, 3, or 4 as specified in Table 02601-1.
2. Base courses or subbase materials, unless otherwise noted on the plans or directed by the ENGINEER, may consist of Grades 1, 2, 3, or 4 as specified in Table 02601-1.
3. All grades shall, when tested in accordance with standard laboratory test procedures, meet the physical requirements set forth in Table 0260 1 - 1.
4. Testing of flexible base materials shall be in accordance with the following test procedures:

TEST

TESTING PROCEDURE

Preparation for soil constants and sieve analysis	TEX-101-E
Liquid Limit	TEX-104-E
Plastic Limit	TEX-105-E
Plasticity Limit	TEX-106-E
Sieve Analysis	TEX-110-E
Wet Ball Mill	TEX-116-E
Triaxial Test	TEX-117-E (Part I or II)

5. Unless otherwise specified on the plans, samples for testing the material for Soil constants, Graduation and Wet Ball Mill shall be taken prior to the compaction operations.
6. Unless otherwise specified on the plans, samples for triaxial tests shall be taken from the stockpile or from production, as directed by the ENGINEER, where stockpiling is required and from production where stockpiling is not required.

PHYSICAL REQUIREMENTS FOR FLEXIBLE BASE MATERIALS				
GRADES				
TYPES	Grade 1:	Grade 2:	Grade 3:	Grade 4:
	(Triaxial class 1 Min. compressive Strength, psi: 45 at 0 psi lateral pressure and 175 at 15 psi lateral pressure	(Triaxial class 1 to 2.3)Min. compress- ive strength, psi: 35 at 0 psi lateral press- ure and 175 at 15 lateral pressure	(Unspecified Triaxial Class)	
TYPE A Crushed or Broken Aggregate (excluding gravel aggregate)	Retained on % Sq. Sieve 1-3/4".....0 7/8".....10-35 3/8".....30-50 No. 4.....45-65 No. 40.....70-85 Max LL.....35 Max PI.....10 Wet Ball Mill	Retained on % Sq. Sieve 1-3/4".....0-10 No. 4.....45-75 No. 40.....60-85 Max LL.....40 Max PI.....12 Wet Ball Mill Max. Amt.....50 Max increase in	Retained on % Sq. Sieve 1-3/4".....0-10 No. 40.....60-85 Max LL.....45 Max PI.....15 Wet Ball Mill Max. Amt.....55 Max increase in passing	As Shown On Plans

	Max Amt.....40 in Passing No. 40.....20	passing No. 40.....20	No. 40.....20	
TYPE B Gravel Aggregate		Retained on % Sq. Sieve 12-2/4".....0-10 No. 4.....30-75 No. 40.....70-85 Max LL.....35 Max PI.....12	Retained on % Sq. Sieve 1-3/4".....0-5 No. 4.....30-75 No. 40.....65-85 Max LL.....35 Max PI.....12	As Shown On Plans
TYPE C Iron Ore Topsoil		Retained on % Sq. Sieve 2-1/2".....0 No. 40.....50-85 Max LL.....35 Max PI.....12	Retained on % Sq. Sieve 2-3/4".....0 No. 40.....45-85 Max LL.....35 Max PI.....12	As Shown On Plans
TYPE D Sand-Shell		Retained on % Sq. Sieve 1-3/4".....0-10 No. 4.....45-65 No. 40.....50-70 Max LL.....35 Max PI.....12	Retained on % Sq. Sieve 1-3/4".....0 No. 40.....45-65 Max LL.....35 Max PI.....12	As Shown On Plans
TYPE E Shell with Sand and Caliche		Retained on % Sq. Sieve 1-3/4".....0 No. 40.....45-65 Max LL.....35 Max PI.....10	Retained on % Sq. Sieve 1-3/4".....0 No. 40.....45-65 Max LL.....35 Max PI.....12	As Shown On Plans
TYPE F Caliche		Retained on % Sq. Sieve 1-3/4".....0 No. 4.....45-75 No. 40.....50-85 Max LL.....40 Max PI.....12	Retained on % Sq. Sieve 1-3/4".....0 No. 40.....50-85  Max LL.....40 Max PI.....12	As Shown On Plans
TYPE G Crushed Blast Furn- ance Slag				As Shown On Plans

7. The limits establishing reasonable close conformity with the specified gradation and plasticity index are defined by the following:

- 1) The ENGINEER may accept the material, providing not more than 2 of 10 consecutive gradation tests performed are outside the specified limits on any individual or combination of sieves by no more than 5% and where no two consecutive tests are outside the specified limits.
- 2) The ENGINEER may accept the material providing not more than 2 of 10 consecutive plasticity index samples tested are outside the specified limit by no more than two points and where no two consecutive tests are outside the specified limit.

2.05 STOCKPILING:

1. When specified on the plans, the material shall be stockpiled prior to delivery on the road. The stockpile shall be not less than the height indicated and shall be made up of layers of material not to exceed the depth shown on the plans.
2. After a sufficient stockpile has been constructed as specified on the plans, the CONTRACTOR may proceed with loading from the stock - pile for delivery to the road.
3. In loading from the stockpile for delivery to the road, the material shall be loaded by making successive vertical cuts through the entire depth of the stockpile.
4. If the CONTRACTOR elects to produce the Type a material from more than one material or more than one source, each material shall be crushed separately and placed in separate stockpiles so that at least 75 percent of the material in the coarse aggregate stockpiles will be retained on the No. 4 sieve and at least 70 percent of the material in the fine aggregate stockpile will pass the No. 4 sieve.
5. The materials shall be combined in a central mixing plant in the proportions determined by the ENGINEER to produce a uniform mixture which meets all of the requirements of the specification. In the event that combinations of the materials produced fail to meet all of the specification requirements, the CONTRACTOR will be required to secure other materials which will meet specifications requirements.
6. The central mixing plant shall be either the batch or continuous flow type, and shall be equipped with feeding and metering devices which will add the materials into the mixer in the specified quantities.
7. Mixing shall continue until a uniform mixture is obtained.

PART 3 - EXECUTION

3.01 PREPARATION OF SUBGRADE

1. Type roadbed shall be excavated and shaped in conformity with the typical sections shown on the plans and to the lines and grades as established by the ENGINEER.
2. All unstable or otherwise objectionable material shall be removed from the subgrade and replaced with approved material.
3. All holes, ruts and depressions shall be filled with approved material and, if required, the subgrade shall be thoroughly wetted with water and reshaped and rolled to the extent directed in order to place the subgrade in an acceptable condition to receive the base material.
4. The surface of the subgrade shall be finished to line and grade as established and in conformity with the typical section shown on the plans, and any deviation in excess of 2 inch in cross section and in a length of 16-feet measured longitudinally shall be corrected by loosening, adding or removing material, reshaping and recompact by sprinkling and rolling.
5. Sufficient subgrade shall be prepared in advance to insure satisfactory prosecution of the work.
6. Material excavated in the preparation of the subgrade shall be utilized in the construction of adjacent shoulders and slopes or otherwise disposed on as directed, and any additional material required for the completion of the shoulders and slopes shall be secured from sources indicated on plans or as directed by the ENGINEER.

- 3.02 PLACEMENT OF FIRST COURSE-TYPE A, TYPE B, TYPE C, TYPE F, AND TYPE G MATERIAL:
1. Immediately before placing the base material, the subgrade shall be checked as to conformity with grade and section.
  2. The material shall be delivered in approved vehicles of a uniform capacity, and it shall be the charge of the CONTRACTOR that the required amount of specified material shall be delivered in each 100-foot station.
  3. Material deposited upon the subgrade shall be spread and shaped the same day.
  4. In the event inclement weather or other unforeseen circumstances render impractical the spreading of the material during the first 24-hour period, the material shall be scarified and spread as directed ENGINEER.
  5. The material shall be sprinkled, if directed, and shall then be bladed, dragged and shaped to conform to typical sections as shown on plans.
  6. All areas and Anests@ of segregated coarse or fine material shall be corrected to removed and replaced with well graded material, as directed by the ENGINEER.
  7. If additional binder is considered desirable or necessary after the material is spread and shaped, it shall be furnished and supplies in the amount directed by the ENGINEER. Such binder material shall be carefully and evenly incorporated with the material in place by scarifying, harrowing, brooming or by other approved methods.
  8. The course shall be compacted by method of compaction hereinafter specified as the AOrdinary Compaction@ method or the ADensity Control@ method of compaction as indicated on the plans, or as directed by the ENGINEER.
    1. When the AOrdinary Compaction@ method is to be used, the following provisions shall apply:
      - 1) The course shall be sprinkled as required and rolled as directed until a uniform compaction is secured. Throughout this entire operation, the shape of the course shall be maintained by blading and the surface upon completion shall be smooth and in conformity with the typical sections shown on the plans and to established lines and grades.
      - 2) In that area on which pavement is to be placed, any deviation in excess of 1/4 inch in cross section in a length of 16-feet measured longitudinally shall be corrected by loosening, adding or removing material, reshaping, and recompacting by sprinkling and rolling.
      - 3) All irregularities, depressions or weal spots which develop shall be corrected immediately by scarifying the areas affected, adding suitable material as required, reshaping and recompacting by sprinkling and rolling.
    2. When the ADensity Control@ method of compaction is to be used, the following provisions shall apply:
      - 1) The course shall be sprinkled as required and compacted to the extent necessary to provide not less than the percent density as hereinafter specified under ADensity@.
      - 2) In addition to the requirement specified for density, the full depth of the flexible base shown on the plans shall be compacted to the extent necessary to remain firm and stable under construction equipment.
      - 3) After each section of flexible base is completed, tests as necessary will be made by the ENGINEER. If the material fails to meet the density requirements, it shall be reworked as necessary to meet this requirements.
      - 4) Throughout this entire operation, the shape of the course shall be maintained blading, and the surface upon completion shall be smooth and in conformity with the typical sections shown on the plans and to established lined and grades.

- 5) In that area on which pavement is to be placed, any deviation in excess of 1/4 inch in cross section in a length of 16 feet measured longitudinally shall be corrected by loosening, adding or removing material, reshaping and recompacting by sprinkling and rolling.
- 6) All irregularities, depressions or weak spots which develop shall be corrected immediately by scarifying the areas affected, adding suitable material as required, reshaping and recompacting by sprinkling and rolling.
9. Should the base course, due to any reason or cause, lose the required stability, density or finish before the surfacing is complete, it shall be recompact and refinished at the sole expense of the CONTRACTOR.
10. Where Type C material is used, the material shall be scarified, thoroughly wetted, mixed, manipulated, and bladed so as to secure a uniformly wetted material, and pulled in over the subgrade in courses and set under the action of blading and rolling. The work of mixing, blading, rolling, shaping and subsequent maintenance shall be performed by the continuous use of sufficient number of satisfactory rollers and power maintainers with adequate scarifier attachments.

3.03 PLACEMENT OF FIRST COURSE – TYPE D MATERIAL:

1. Immediately before placing the base material, the subgrade shall be checked as to conformity with grade and section, and corrections made if necessary.
2. All materials shall be delivered in approved vehicles of a uniform capacity.
3. The required amount of shell shall be uniformly spread across the section and allowed to dry sufficiently to insure proper slaking and mixing of the binder material. Immediately upon completion of the drying period, as determined by the ENGINEER, the specified amount of sand admixture as produce a combined material meeting the requirements hereinbefore specified, shall be spread uniformly across the shell.
4. The material shall then be sprinkled as required and thoroughly mixed by blading and harrowing, or other approved methods.
5. Failure to proceed with the placing of sand admixtures or mixing and placing operations will be grounds for the suspension of placing of shell.
6. Under no condition will the CONTRACTOR be allowed to place an excessive amount of shell without proceeding with the mixing and placing operations.
7. The course shall be compacted by the method of compaction hereinafter specified as the AOrdinary Compaction@ method of the ADensity Control@ method of compaction as indicated on the plans, or as directed by the ENGINEER.
  1. When the plans indicate that the AOrdinary Compaction@ method is to be used, the following provisions shall apply:
    - 1) After mixing, all material shall be windrowed, and then spread over the section in layers.
    - 2) The layer shall not exceed 2 inches in loose depth.
    - 3) If necessary to prevent segregation, the material shall be wetted in the window prior to spreading.
    - 4) After each lift is spread, it shall be sprinkled and rolled to secure maximum compaction as directed by the ENGINEER. Succeeding layers shall then be placed similarly until the course is completed.
    - 5) All areas and nest of segregated coarse or fine material shall be corrected or removed and replaced with well graded material, as directed by the ENGINEER.
    - 6) The course shall then be sprinkled as required and rolled as directed until a uniform compaction is secured.
    - 7) Throughout this entire operation, the shape of the course shall be maintained by blading,; and the surface, upon completion, shall be smooth and in conformity with the typical sections shown on the plans, and to the established lines and grades.
    - 8) In that area on which pavement is to be place, any deviation in excess of 1/4 inch in cross section in a length of 16-feet measured longitudinally shall be corrected by

- loosening, adding or removing material, reshaping and recompacting by sprinkling and rolling.
- 9) All irregularities, depressions or weak spots which develop shall be corrected immediately by scarifying the areas affected, adding suitable material as required, reshaping and recompacting by sprinkling and rolling.
  2. When the plans indicate that the ADensity Control@ method of compaction is to be used, the compaction method shall be the same as prescribed for Type A, Type B, Type C, Type F and Type G materials.
  8. When indicated on the plans or permitted by the ENGINEER, Type D material may be mixed in a central mixing plant and delivered to the road as a combined mixture. When this method is used, the combined mixture shall meet the requirements for Type D material as hereinbefore specified and the placing and compaction requirement shall be the same as prescribed for Type A, Type B, Type C, Type F and Type G material.
- 3.04 PLACEMENT OF FIRST COURSE-TYPE E MATERIAL
1. The construction methods for placing the first course of Type E material shall be the same as prescribed for Type D material except that after the shell and sand have been placed, the prescribed amount of caliche shall then be spread across the sand and shell.
  2. The composite mixture shall than be sprinkled as required and thoroughly mixed by blading and harrowing or other approved methods.
  3. Compaction of the first course of Type E material shall be the same as prescribed above for Type D material.
  4. Failure to proceed with placing the sand and caliche admixture or mixing and placing operations will be grounds for the suspension of placing the shell.
  5. Under no conditions will the CONTRACTOR be allowed to place an excessive amount of shell without proceeding with the mixing and placing operations.
- 3.05 PLACEMENT OF SUCCEEDING COURSES – ALL MATERIAL TYPES:
1. Construction methods shall be the same as prescribed for the first course.
  2. Prior to placing the surfacing on the completed base, the base shall be Adry cured@ to the extent directed by the ENGINEER.
- 3.06 DENSITY CONTROL:
1. When the ADensity Control@ method of compaction is indicated on the plans, each course of flexible base shall be compacted to the percent density shown on the plans.
  2. The testing will be as outlined in Test Method Tex- I 14-E.
  3. It is the intent of this specification to provide in that part of the base included in the top 8 inches immediately below the finished surface of the roadway not less than 100 percent of the density as determined by the compaction ratio method.
  4. Field density determination shall be made in accordance with Test Method Tex115-E.
- 3.07 TOLERANCES:
1. Flexible base will be measured by the square yard of surface area of completed and accepted work based on the width of flexible base as shown on the plans.
    1. The ENGINEER may accept the work providing not more than 25 percent of the density tests performed each day are outside the specified density by no more than three pounds per cubic foot and where no two consecutive tests on continuous work are outside the specified limits.

#### PART 4 - MEASUREMENT AND PAYMENT



4.01 MEASUREMENT:

1. Flexible base will be measure by the square yard of surface area of completed and accepted work based on the width of flexible base as shown on the plans.
  1. The flexible base shall be measured for depth by the units of 2000 square yards, with one measurement taken at location selected by the ENGINEER.
  2. In that unit where flexible base is deficient by more than 2 inch in thickness, the deficiency shall be corrected by scarifying, adding material as required, reshaping and recompacting by sprinkling and rolling.
  3. No additional payment over the contract unit price will be made for any flexible base of a thickness exceeding that required by plans.
2. The CONTRACTOR shall schedule his operations in such a manner as to facilitate the measurement of the pay item.
3. The ENGINEER may accept the work provided no more than 2 out of 10 depth tests performed are deficient by not more 2 inch and where no two consecutive tests on continuous work are outside the specified depth.

4.02 PAYMENT:

1. The accepted quantities of flexible base of the type, grade, and compaction method specified will be paid at the contract unit bid price per square yard, complete in place.
2. Where ordinary Compaction is used, all sprinkling, rolling, and manipulation required will not be paid for directly, but will be incidental to other bid items.
3. The unit prices bid shall each be full compensation for shaping and fine grading the roadbed; for securing and furnishing all materials, including all royalty and freight involved, for furnishing scales and labor involved in weighing the material when required; for loosening, blasting, excavating, screening, crushing and temporary stockpiling when required; for loading all materials for all hauling and delivering on the road; for spreading, mixing, blading, dragging, shaping and finishing and for all manipulation, labor, tools, and incidentals necessary to complete the work.

END OF SECTION

## SECTION 02610 — PRIME COAT

### PART 1 - GENERAL

#### 1.01 COORDINATION

- A. The General Conditions of the Contractor for Construction and the Supplementary Conditions to the General Conditions of the Contract for the Construction shall be considered as part of this section of the specifications.
- B. Each Bidder shall be responsible for determining during the bidding period the extent that any addendum issued during the bidding period may affect this section of the specifications.
- C. Reference Instructions to Bidders for requirements regarding substitutions of materials and products.
- D. Where conflicts occur between the drawings and specifications, between different drawings, between different portions of this section of the specifications, or between different sections of the specifications, the stringent requirements and the greater quantity shall apply.

#### 1.02 GENERAL DESCRIPTION

- 1. Prime coat shall consist of application of asphaltic materials on completed base course and/or other approved area, which shall be applied in accordance with these specifications, as shown on the plans, and as directed by the ENGINEER.

#### 1.03 QUALITY ASSURANCE

- 1. Test and Certification of Bituminous Materials.
  - 1. Bituminous material is to be tested in accordance with the requirements of AASHTO M-82 and sampled in conformance with AASHTO T-40.
  - 2. Supply, at the time of delivery of each shipment of asphalt, two certified copies of test reports, from supplying vendor, to the ENGINEER.
  - 3. Test reports shall indicate name of vendor, type and grade of asphalt delivered, date and point of delivery, quantity delivered, delivery ticket number, purchase order number, and result of specified tests.
  - 4. The test report, signed by an authorized representative of the vendor, shall certify that the product delivered conforms to the specifications for type and grade indicated.
  - 5. Certified test reports and the testing required in the preparation of such report shall be at no cost to the City.
  - 6. Final acceptance of bituminous materials shall be dependent on the determination by the ENGINEER that the material meets prescribed standards.

### PART 2 - PRODUCTS

#### 2.01 MEDIUM CURING CUTBACK ASPHALT

- 1. Medium-curing liquid asphalt, designated by the letters MC, shall consist of an uncracked petroleum base stock, produced by the processing of asphaltic or semi asphaltic base crude petroleum, blended with a kerosene-type solvent. The base stock for all MC materials shall be straight run asphalt produced within the penetration range of 100 to 300, and the end point of the kerosene type solvent shall not exceed 525 degrees F. Medium curing liquid cutback asphalt shall be free from water and show no separation.

2. Medium curing cutback asphalt shall consist of materials specified above and conforming to the requirements set forth in Table 26 10- 1.
3. Unless otherwise noted on the plans or directed by the ENGINEER, cutback asphalt Grade MC-30 shall be used.

2.02 **BLOTTER MATERIAL:**

1. Supply blotter material consisting of native and/or sweeping from base course.
2. Native sand shall be local material obtained from approved sources as approved by the ENGINEER.

**PART 3 - EXECUTION**

3.01 **CONSTRUCTION METHODS**

1. Unless otherwise specified on the plans or, required by the ENGINEER, only asphaltic material shall be used. Where required, a combination of asphaltic and blotter material shall be used.
2. Application of Asphaltic Materials Only.
  1. Apply prime coat to prepared surface when ambient air temperature is above 40 degrees F. and raising and shall not be applied when the ambient air temperature is below 50 degrees F. and falling.
  2. Apply prime coat to surfaces that have been cleaned by sweeping or other approved methods and where base is thoroughly dry and satisfactory for receiving prime coat.
  3. Apply prime coat to cleaned base, at a rate of 0.2 to 0.5 gallons per square yard of surface area, using an approved type of self-propelled pressure distributor so constructed and operated to distribute the material evenly and smoothly.
  4. Provide necessary facilities for the determination of temperature of asphaltic material in all heating equipment and distributors; and for determination of rate at which it is applied; and for securing uniformity at the junction of two distributor loads.
  5. Keep in clean and good working condition all storage tanks, piping, reports, booster tanks and distributors used in the storage and handling of asphaltic materials.
  6. Operate all associated equipment in a manner such that there is no contamination of asphaltic material with foreign material.
  7. Calibrate distributor and furnish ENGINEER with an accurate and satisfactory record of such calibrations.

<b>TABLE 2610-1</b>							
Specification Designation	AASHTO Test Method	ASTM Test Method	MC 30	MC 70	MC 250	MC 800	MC 3000
Flash Point (Open Cleve) oF, Min.	T 48	D 92	100	100	150	150	150
Viscosity 140oF, Kinematic, CS	T 201	D2170	30 to 60	70 to 140	250 to 500	800 to 1600	3000 to 6000
Furol Viscosity at 77 F. (Secs.) at 122 F. (Secs.) at 140 F. (Secs.) at 180 F. (Secs.)	T 72	D 88	75-150	60-120	125-250	100-200	300 to 600
Distillation Distillate (% of	T 78	D 402					

Total Distillate) to 680 F. to 437 F. to 500 F. to 600 F.			0-25 40-70 75-93	0-20 25-60 75-90	0-10 20-55 70-85	-0- 10-35 65-80	-0- 0-15 50-75
Residue from Distillation to 680 F Volume % by Difference Min.			50	55	67	75	80
Test on Residue From Distillation Penetration at 77 F.	T 49	D 5	120 to 250	120 to 250	120 to 250	120 to 250	120 to 250
*Ductility 77 F cm., Min.	T 51	D 113	100	100	100	100	100
Solubility in CC14, % Min.	T 44	NONE	99.5	99.5	99.5	99.5	99.5
Water, % Min.	T 55	D 95	0.2	0.2	0.2	0.2	0.2
Reaction to Spot Test	T 102**	-0-		-0-	-0-	-0-	-0-

\* If penetration of residue is more than 200 and its ductility at 77° F is less than 100, the material will be acceptable if the ductility at 60° F is greater than 100.

\*\* Using 85% Standard Nephtha and 15% Xylene

NOTE: Viscosity tests may be made by either Kinematic or Furoil test methods.

8. Recalibrates distributor, in a manner satisfactory to the ENGINEER, after the beginning of work, should the yield on the asphaltic material applied appear to be in error.
9. No traffic, hauling or placing of subsequent courses shall be permitted over fleshy applied prime coat until authorized by the ENGINEER.
10. Apply asphaltic material at a temperature within 15° F of temperature of application selected by the ENGINEER based on temperature viscosity relationship noted in Table 2610- 1.
11. Maintain surface until work is Blotter Material.
3. Application of Asphaltic and Blotter Material.
  1. Haul blotter material in vehicles of uniform capacity and placed on shoulders at spacings designated by the ENGINEER.
  2. After application of asphaltic material as specified above, cover surface with blotter material as directed by the ENGINEER.
  3. After application of blotter material, drag surface with approved drag broom, evenly and smoothly distributing the blotter material. Brooming or dragging operation shall continue, as directed by the ENGINEER, until the course has properly cured under traffic.

#### PART 4 - MEASUREMENT AND PAYMENT

##### 4.01 PRIME COAT

1. Asphaltic material for prime coat will be measured for payment at point of delivery on the project in gallons at applied temperature.

2. When not listed as a separate contract pay item, prime coat shall be considered as incidental work, and the cost thereof shall be included in such contract pay item(s) as are provided in the proposal contract.
3. Compensation, whether by contract pay item or incidental work will be for furnishing all material, labor, equipment, tools and incidentals required for the work, all in accordance with the plans and these specifications.

4.02 BLOTTER MATERIALS

1. Blotter mater will be considered to asphaltic material for prime coat with no direct payment or payment therefore.

END OF SECTION

## **SECTION 02612**

### **HOT MIX ASPHALT CONCRETE PAVEMENT**

#### **PART 1 - GENERAL**

##### **1.01 DESCRIPTION:**

- A. Hot mix asphalt concrete (HMAC) pavement shall consist of a binder course, a leveling up course, a surface course or a combination of the courses as shown on the plans, or as directed by the ENGINEER.
- B. HMAC pavement shall be composed of a compacted mixture of mineral aggregate and asphaltic material, constructed on previously completed and approved subgrade, subbase course, base course, or existing pavement.
- C. HMAC pavement shall be in accordance with the specifications herein and in conformity with the lines, grades, quantities and typical sections in the contract and/or as directed by the ENGINEER.

##### **1.02 QUALITY CONTROL:**

- A. HMAC pavement and its constituent part shall conform to the ASTM, AASHTO and/or TxDOT test methods noted below.

#### **PART 2 - PRODUCTS**

##### **2.01 ASPHALTIC MATERIALS:**

- A. Asphalt cement binders shall be uncracked petroleum asphalt and shall be carefully refined, by steam, vacuum, or solvent, from asphaltic or semi-asphaltic base crude petroleum at a temperature not to exceed 700° F. Asphalt cements shall be free from thermal decomposition products and shall not be blended with any materials which have been subjected to cracking or produced from a crude petroleum source other than that of the original material. The asphalt cement shall not contain residues from non-asphaltic sources. Asphalt cement shall be homogeneous, free from water, and shall not foam when heated to 347° F.
- B. Paving asphalt shall be classified by penetration or viscosity and shall conform to the requirements set forth in one of the following tables as designated by the ENGINEER. The CONTRACTOR may supply asphalt meeting the requirements of one of the following tables provided that the CONTRACTOR obtains prior approval of the ENGINEER and with the provision that once approval has been obtained, that the CONTRACTOR will remain with that grade throughout the project.



**TABLE 2612-1**

Specification	AASHTO Test	ASTM Test						
Designation	Method	Method	40 to 50	60 to 70	85 to 100	120 to 150	150 to 200	200 to 250
Flash Point (Open Cup) Min	T48	D92	--	450	450	450	450	350
Penetration of Orig. Sample at 77° F	T49	D5	40 to 50	60 to 70	85 to 100	120 to 150	150 to 200	200 to 250
Thin-Film Oven Loss, Hours at 325°F, % Max	T179	D1754	0.75	0.75	0.75	0.75	1.00	1.00
Test of Residue from Thin-Film Oven Test; % of Orig. Pen., Min.	T49	D5	52	50	50	50	50	50
Ductility at 77° F cm. after los at 325° F, Min.	T51	D113	50	50	100	100	100	100
Solubility in CCl <sub>4</sub> Min.	T44*	None	99.5	99.5	99.5	99.5	99.5	99.5
Reaction to Spot Test	T102**	None	0	0	0	0	0	0

\* Procedure No. 1 with CCl<sub>4</sub> substituted for CS<sub>2</sub>.

\*\* Using 85% Standard Naphtha Solvent and 15% Xylene.



**TABLE 2612-2**

TYPE-GRADE	OA-30		OA-175*8		OA-400	
	Min	Max	Min	Max	Min	Max
Penetration at 32° F, 200 g, 60 sec	15	--	--	--	--	--
Penetration at 77° F, 100 g, 5 sec	25	35	150	200	--	--
Penetration at 115° F, 50 g, 5 sec	--	65	--	--	--	--
Ductility at 77° F, 5 cm/min, cms; Original OA	2	--	70	--	--	--
Flash Point COC, °F	450	--	425	--	425	--
Softening Point, R&B, °F	185	--	95	130	--	--
Thin Film Oven Test, 1/8 in. Film 50 g, 5 hrs, 325° F, % Loss by wt.	--	0.4	--	1.4	--	20
Penetration of Residue, at 77° F, 100 g, 5 sec % of Original Pen	--	--	40	--	--	--
Ductility of Residue at 77°F, 5 cm/min, cms	--	--	--	100	--	--
Solubility in Trichloroethylene, %	99	--	99	--	99	--
Spot Test on Original OA	Neg		Neg		Neg	
Float Test at 122° F, sec	--	--	--	--	120	150
Test on 85 to 115 Pen. Residue* Residue by Wt., %	--	--	--	--	75	--
Ductility, 77° F, 5 cm/min: Original Res, cms	--	--	--	--	100	--
Subjected to Thin Film Test, cms	--	--	--	--	100	--

\*Determined by Vacuum Distillation (by evaporation if unable to reduce by vacuum).

\*\* For use with Latex Additive  
only.

**TABLE 2612-3**

PROPERTIES	AC-1.5		AC-3		AC-5		AC-10		AC-20		AC-40	
	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
Viscosity, 140° F stokes ...	150	50	300	100	500	100	1000	200	2000	400	4000	800
Viscosity, 275° F stokes ...	0.7	--	1.1	--	1.4	--	1.9	--	2.5	--	3.5	--
Penetration, 77° F 100 g, 5 sec	250	--	210	--	135	--	85	--	55	--	35	--
Flash Point, COC, ° F	425	--	425	--	425	--	450	--	450	--	450	--
Solubility in trichloroethylene, percent ...	99	--	99	--	99	--	99	--	99	--	99	--
Test on residues from thin film oven test: Viscosity, 140° F stokes ...	--	450	--	900	1500	--	3000	--	6000	--	--	12000
Ductility, 77° F, 5 cms per min, cms	100	--	100	--	100	--	70	--	50	--	30	--
Spot Test	Negative for all grades											

- C. A minimum of two percent, by weight, latex additive (solids basis) shall be added to the OA-175 Asphalt or to AC-5 Asphalt when specified in the contract. The latex additive shall be governed by the following specifications:

The latex is to be an anionic emulsion of butadiene-styrene low-temperature copolymer in water, stabilized with fatty-acid soap so as to have good storage stability, and possessing the following properties:

Monomer ratio, B/S	70/30
Minimum solids content	67%
Solids content per gal.@ 67%	5.3 lbs.
Coagulum on 80-mesh screen	0.01% max.
Type Anti-oxidant	staining
Mooney viscosity of Polymer (M/L 4@212° F)	100 min.
pH of Latex	9.4 - 10.5
Surface tension	28-42 dynes/cm <sup>2</sup>

The finished latex-asphalt blend shall meet the following requirements:

Viscosity at 140° F, stokes 1500 max.  
Ductility at 39.2° F, 1 cm. per min., cm. 100 min.

D. Asphalt content shall be within the limits noted below:

**Table 2612-4**

HMAC Type	Percent of Mixture by Weight	Percent of Mixture by Volume
"A"	3.5 - 7.0	8.0 - 16.0
"B"	3.5 - 7.0	8.0 - 16.0
"C"	3.5 - 7.0	8.0 - 16.0
"D"	4.0 - 8.0	9.0 - 19.0
"F"	3.5 - 6.5	8.0 - 16.0

- E. At the time of delivery of each shipment of asphalt, the vendor supplying the material shall deliver to the purchaser certified copies of the test report which shall indicate the name of the vendor, type and grade of asphalt delivered, date and point of delivery, quantity delivered, delivery ticket number, and results of the above-specified tests. The test report shall be certified and signed by an authorized representative of the vendor that the product delivered conforms to the specifications for the type and grade indicated.
- F. Until the certified test reports and samples of the material have been checked by the ENGINEER to determine their conformity with the prescribed requirements, the material to which such report relates and any work in which it may have been incorporated as an integral component will be only tentatively accepted by the City. Final acceptance will be dependent upon the determination of the ENGINEER that the material involved fulfills the requirements prescribed therefor. The certified test reports and the testing required in connection with the reports will be at the expense to the City.
- G. Unless otherwise specified in these specifications or in the Supplementary Specifications, the various grades of paving asphalt shall be applied at a temperature range of from 210° F to 325° F, the exact temperature to be determined by the ENGINEER.
- H. Paving asphalt shall be heated in such a manner that steam or hot oils will not be introduced directly into the paving asphalt during heating. The CONTRACTOR shall furnish and keep on the site, at all times, an accurate thermometer suitable for determining the temperature of the paving asphalt.

- I. HMAC asphalt shall be the grade having the highest penetration, within specified limits, to produce a mix having a maximum stability of the compacted mixtures.
- J. Only one (1) grade of asphalt shall be required unless otherwise shown on the plans or as required by the ENGINEER.

## 2.02 AGGREGATES:

- A. HMAC aggregate will be tested in accordance with the following test standards:

AASHTO T-30	Mechanic Testing
AASHTO T-27	Passing No. 200 Sieve
AASHTO T-89	Liquid Limit
AASHTO T-96	Los Angeles Abrasion
AASHTO T-104	Soundness (Magnesium Sulfate)
ASTM C – 131	Resistance to Degradation
ASTM C – 136	Sieve Analysis
ASTM C – 2419	Sand Equivalence Value
TxDOT Tex -106-E	Method of Calculating Plasticity Index of Solids
TxDOT Tex-217 – F	(I & II) Determination of Deleterious Materials and Decantation Test
TxDOT Tex-203 – F	Quality Tests for Mineral Aggregates

- B. Aggregates shall have an abrasion of not more than 40 for all courses except the non-skid surface course, which shall have an abrasion of not more than 35.
- C. When properly proportioned, HMAC aggregate shall produce a gradation which will conform to the limitations for classification for HMAC type shown below, or as directed by the ENGINEER.
- D. Course aggregate to be crushed limestone rock or crushed gravel with hydrated lime or limestone filler. (Crushed gravel shall be per TxDOT Specifications.)
- E. Binder aggregate to be composed of 15% crushed limestone screening or as directed by the engineer.

### 1. Type "A" - Course Graded Base Course

	Percent Aggregate by Weight or Volume
Passing 2" sieve .....	100
Passing 1-3/4" sieve.....	95 to 100
Passing 1-3/4" sieve, retained on 7/8" sieve.....	16 to 42
Passing 7/8" sieve, retained on 3/8" sieve.....	16 to 42
Passing 3/8" sieve, retained on No. 4 sieve ....	10 to 26
Passing No. 4 sieve, retained on No. 10 sieve .	5 to 21
Total retained on No. 10 sieve.....	68 to 84
Passing No. 10 sieve, retained on No. 40 sieve .....	5 to 21
Passing No. 40 sieve, retained on No. 80 sieve .....	3 to 16

Passing No. 80 sieve, retained on No. 200 sieve ..... 2 to 16  
Passing No. 200 sieve ..... 1 to 8

## 2. Type "B" - Fine Graded or Leveling-Up Course

	Percent Aggregate by Weight or Volume
Passing 1" sieve.....	100
Passing 7/8" sieve.....	95 to 100
Passing 7/8" sieve, retained on 3/8" sieve .....	21 to 53
Passing 3/8" sieve, retained on No. 4 sieve.....	11 to 42
Passing No. 4 sieve, retained on No. 10 sieve.....	5 to 26
Total retained on No. 10 sieve.....	58 to 74
Passing No. 10 sieve, retained on No. 40 sieve.....	6 to 32
Passing No. 40 sieve, retained on No. 80 sieve.....	4 to 21
Passing No. 80 sieve, retained on No. 200 sieve.....	3 to 21
Passing No. 200 sieve.....	1 to 8

## 3. Type "C" - Course Graded Surface Course

	Percent Aggregate by Weight or Volume
Passing 7/8" sieve.....	100
Passing 5/8" sieve.....	95 to 100
Passing 5/8" sieve, retained on 3/8" sieve .....	16 to 42
Passing 3/8" sieve, retained on No. 4 sieve.....	11 to 37
Passing No. 4 sieve, retained on No. 10 sieve.....	11 to 32
Total retained on No. 10 sieve.....	54 to 74
Passing No. 10 sieve, retained on No. 40 sieve.....	6 to 32
Passing No. 40 sieve, retained on No. 80 sieve.....	4 to 27
Passing No. 80 sieve, retained on No. 200 sieve.....	3 to 27
Passing No. 200 sieve.....	1 to 8

## 4. Type "D" - Fine Graded Surface Course

	Percent Aggregate by Weight or Volume
Passing 1/2" sieve.....	100
Passing 3/8" sieve.....	85 to 100
Passing 3/8" sieve, retained on No. 4 sieve.....	21 to 53
Passing No. 4 sieve, retained on No. 10 sieve.....	11 to 32
Total retained on No. 10 sieve.....	54 to 74
Passing No. 10 sieve, retained on No. 40 sieve.....	6 to 32
Passing No. 40 sieve, retained on No. 80 sieve.....	4 to 27
Passing No. 80 sieve, retained on No. 200 sieve.....	3 to 27
Passing No. 200 sieve.....	1 to 8

## 5. Type "F" - Fine Graded Surface Course

	<u>Percent Aggregate by Weight or Volume</u>
Passing 3/8" sieve.....	100
Passing No. 4 sieve.....	95 to 100
Passing No. 4 sieve, retained on No. 10 sieve.....	58 to 73
Passing No. 10 sieve, retained on No. 40 sieve.....	6 to 26
Passing No. 40 sieve, retained on No. 80 sieve.....	3 to 13
Passing No. 80 sieve, retained on No. 200 sieve.....	2 to 11
Passing No. 200 sieve.....	1 to 8

### 2.03 PRIME COAT:

- A. Prime coat, when specified on the plans, or directed by the ENGINEER, shall be in accordance with Section 02610 - Prime Coat, and as specified herein.
- B. Prime coat shall be applied to the surfaces of bases at least 12 hours prior to placing the HMAC unless otherwise directed by the ENGINEER.
- C. Asphalt prime shall be applied uniformly at the rate in accordance with Section 02610 - Prime Coat.
- D. In order to prevent lapping at the junction of two applications, the distributor shall be promptly shut off. A hand spray shall be used to touch up all spots unavoidably missed by the distributor.
- E. Immediately prior to application of the asphalt prime, an inspection will be made by the ENGINEER to verify that the base course has been constructed as specified. Also, all loose and foreign material shall be removed by light sweeping. Material so removed shall not be mixed with cover aggregate.
- F. The surface to be primed shall be in a smooth and well-compacted condition, true to grade and cross section, and free from ruts and inequalities.
- G. The pressure distributor used for applying prime coat material shall be equipped with pneumatic tires and shall be so designed and operated as to distribute the prime material in a uniform spray without atomization, in the amount and between the limits of temperature specified. It shall be equipped with a speed tachometer registering feet per minute and so located as to be visible to the truck driver to enable him to maintain the constant speed required for application at the specified rate.
- H. The pressure distributor shall be equipped with a tachometer registering the pump speed, pressure gauge, and a volume gauge. The rates of application shall not vary from the rates specified by the ENGINEER by more than 10%. Suitable means for accuracy indicating at all times the temperature of the prime

material shall be provided. The thermometer well shall be so placed as not to be in contact with a heating tube.

- I. The distributor shall be so designed that the normal width of application shall be not less than 6 feet, with provisions for the application of lesser width when necessary. If provided with heating attachments, the distributor shall be so equipped and operated that the prime material shall be circulated or agitated through the entire heating process.
- J. The asphalt prime coat should preferably be entirely absorbed by the base course and, therefore, require no sand cover. If, however, it has not been completely absorbed prior to the start of placing the asphalt concrete mixture and in the meantime it is necessary to permit traffic thereon, sufficient sand shall be spread over the surface to blot up the excess liquid asphalt and prevent it from being picked it up by traffic. Also, sand shall be used in areas where traffic may pass over the prime coat. Prior to placing the asphalt concrete, loose or excess sand shall be swept from the base. If a sand cover is specified in the Supplementary Specifications or noted on the plans to cover asphalt prime, it shall be applied within 4 hours after the application of said prime coat, unless otherwise ordered by the ENGINEER.
- K. Liquid asphalt shall be prevented from being sprayed upon adjacent pavements, structures, guard rails, guide posts, culvert markers, trees, and shrubbery that are not to be removed; adjacent property and improvements; other facilities or that portion of the traveled way being used by traffic.
- L. The CONTRACTOR shall protect the prime coat against all damage and markings, both from foot and vehicle traffic. Barricades shall be placed where necessary to protect the prime coat. If, after the prime coat has been applied to the satisfaction of the ENGINEER and has been accepted, if it is disturbed by negligence on the part of the CONTRACTOR, it shall be restored at his expense to its condition at the time of acceptance. No material shall be placed until the prime coat is in a condition satisfactory to the ENGINEER.

## **2.04 TACK COAT:**

- A. If the asphalt concrete pavement is being constructed directly upon an existing hard-surfaced pavement, a tack coat shall be evenly and uniformly applied to the existing pavement prior to the placing of the new asphalt concrete. The surface shall be free of water, all-foreign material, or dust when the tack coat is applied. No area shall be treated in any one day greater than will be covered by the asphalt concrete during the same day. Traffic will not be permitted over tack coating.
- B. Tack coat for HMAC shall consist of either rapid curing cut-back asphalt RC-2 diluted by addition of (not to exceed 15 percent by volume) an approved grade of gasoline and/or kerosene; emulsified asphalt, EA-11M diluted with 50 percent water, or a cut-back asphalt made by combining 50 to 70 percent of the asphaltic



materials specified for the paving mixture with 30 to 50 percent gasoline and/or kerosene by volume.

- C. Tack coat shall conform to the requirements of Section 02620 - Tack Coat, or as specified herein.
- D. Application of tack coat shall be 0.10 to 0.15 gallons per square yard, or as directed by the ENGINEER.
- E. A similar tack coat shall be applied to the surface of any course if, in the opinion of the ENGINEER, the surface is such that a satisfactory bond cannot be obtained between it and the succeeding course.
- F. When required, the contact surfaces of all cold pavement joints, curbs, gutters, manholes, and the like shall be painted with a tack coat immediately before the adjoining asphalt concrete is placed. Asphalt tack coat shall be applied in controlled amounts as shown on the plans or determined by the ENGINEER. Surfaces where a tack coat is required shall be cleaned to the satisfaction of the ENGINEER before the tack coat is applied.

## **2.05 MINERAL FILLER:**

- A. Mineral filler, other than hydrated lime, shall consist of a thoroughly dry stone dust, portland cement or other mineral dust approved by the ENGINEER.
- B. The mineral filler shall be free from foreign or other deleterious matter.
- C. When tested by the method outlined in TxDOT Test Method Tex-200-F (Part 1 or 3), mineral filler shall meet the following gradations by weight:

Passing No. 30 Sieve	95-100%
Passing No. 80 Sieve	75%
Passing No. 200 Sieve	55%

## **2.06 ANTI-STRIPPING COMPOUND**

- A. Anti-Stripping compound, as required in the job mix formula, shall be furnished in the amounts calculated therein.

## **2.07 JOB MIX FORMULA:**

- A. A job mix formula based on representative samples, including filler if required, shall be determined submitted by the CONTRACTOR for approval of the ENGINEER.
- B. The resultant job mix formula shall be within the master range for the specified type of HMAC.

- C. The job mix formula for each mixture shall establish a single percentage of aggregate passing each required sieve size and a single percentage of bituminous material to be added to the aggregate and shall provide for 3 to 5% air voids in the resultant design mix. During the mix design process the following factors will be considered: air voids, Marshall stability, durability, water resistance, and asphalt film thickness.

- D. After the job mix formula is established, mixtures for the project shall conform to the following tolerances which may fall outside of the specified master range:

	Percent by Weight or Volume as Applicable
Passing 1-3/4" sieve, retained on 7/8" sieve	± 5
Passing 7/8" sieve, retained on 5/8" sieve	± 5
Passing 5/8" sieve, retained on 3/8" sieve	± 5
Passing 3/8" sieve, retained on No.4 sieve	± 5
Passing No.4 sieve, retained on No.10 sieve	± 5
Total retained on No.10 sieve	± 5
Passing No.10 sieve, retained on No.40 sieve	± 3
Passing No.40 sieve, retained on No.80 sieve	± 3
Passing No.80 sieve, retained on No.200 sieve	± 3
Passing No.200 sieve	± 3
Asphaltic Material	± 0.05 by wt or 1.2 by vol.
Mixing Temperature	± 20° F

- E. Asphaltic mixture shall be tested in accordance with TxDOT Test Method Tex-200-4 (Part I or Part III) and shall have the following laboratory values:

	Surface Course	Base Course
Density: Minimum	95%	95%
Maximum	98%	99%
Optimum	96.5%	96.5%
Stability (Hveem)		
Minimum	30%	30%
Maximum	45%	45%
Stability (Marshall – 75 Blow Briquette)	1500 lbs	1500 lbs.
Voids	3 - 7%	4 - 7%
Voids Filled With Asphalt	75 - 85%	65 - 80%
Sand Equivalent	40	40

## 2.08 EQUIPMENT:

- A. All equipment for the handling of all material, mixing, and placing of HMAC shall be in accordance with the provisions of TxDOT Item 340.

## **2.09 STOCKPILING, STORAGE, PROPORTIONING AND MIXING:**

- A. Stockpiling, storage proportioning and mixing operations shall be in accordance with the Provisions of TxDOT Item 340.

## **PART 3 - EXECUTION**

### **3.01 WEATHER AND TEMPERATURE LIMITATIONS:**

- A. Asphaltic mixture, when placed with a spreading and finishing machine, or the tack coat shall not be placed when the air temperature is 50° F and falling, but may be placed when the air temperature is 40° F and rising.
- B. Asphaltic mixture, when placed with a motor grader, shall not be placed when the air temperature is less than or equal to 60° F and falling, but may be placed when the air temperature is greater than or equal to 50° F and rising.
- C. Mat thicknesses of 1 inch or less shall not be placed when the temperature on which the mat is to be laid is below 50° F.
- D. No tack coat or asphaltic mixture shall be placed when the humidity, general weather conditions and temperature and moisture condition of the base, in the opinion of the ENGINEER, are unsuitable.
- E. If, after being discharged from the mixer and prior to placing, the temperature of the asphaltic mixture is 50° F or more below the temperature established by the ENGINEER, all or any part of the load may be rejected and payment will not be made for the rejected material.

### **3.02 EQUIPMENT:**

- A. Hauling Equipment:
  - 1. Trucks used for hauling asphaltic mixtures shall have tight, clean, smooth metal beds that have been thinly coated with a minimal amount of paraffin oil, lime slurry, tine solution or other approved material to prevent mixture adhesion to the bed.
  - 2. The dispatching of hauling equipment shall be arranged so that all material delivered may be placed and all rolling completed during daylight hours, unless otherwise directed by the ENGINEER.

3. All trucks shall be equipped with a cover of canvas, or other suitable material to protect the mixture from weather or on hauls where the temperature of the mixture will fall below specified level. Use of covers will be as directed by the ENGINEER.

B. Rollers:

1. Pneumatic Tire Roller. This roller shall consist of not less than seven pneumatic tire wheels, running on axles in such manner that the rear group of tires shall cover the entire gap between adjacent tires of the forward group; mounted in a rigid frame; and provided with a loading platform or body suitable for ballast loading. The front axle shall be attached to the frame in such manner that the roller may be turned within a minimum circle. The tire shall provide surface contact pressures up to 90 pounds per square inch or more. The roller shall be so constructed as to operate in both a forward and a reverse direction with suitable provisions for moistening the surface of the tires while operating; and shall be approved by the ENGINEER. It shall be operated in accordance with the manufacturer's recommendations.
2. Two Axle Tandem Roller. This roller shall be an acceptable power-driven, steel-wheel, tandem roller weighing not less than eight tons. It must operate in forward and reverse directions; contain provision for moistening the surface of the wheels while in motion; and shall be approved by the ENGINEER. It shall be operated in accordance with the manufacturer's recommendations.
3. Three Wheel Roller. This roller shall be an acceptable power-driven, all steel, three wheel roller weighing not less than 10 tons. It must operate in forward and reverse directions; contain provisions for moistening the surface of the wheel while in motion; and shall be approved by the ENGINEER. It shall be operated in accordance with the manufacturer's recommendations.
4. Vibratory Steel Wheel Roller. If approved for use by the OWNER, this roller shall have a minimum weight of six tons. The compactor shall be equipped with amplitude and frequency controls and shall be specifically designed to compact the material on which it is used. It shall be operated in accordance with the manufacturer's recommendations.

C. Straight Edges:

1. The CONTRACTOR shall provide an acceptable 16-foot straight-edge for surface testing. Satisfactory templates shall be provided as required by the ENGINEER.

D. Spreading and Finishing Machine:

1. Bituminous pavers shall be self-contained, power-propelled units, provided with an activated screed or a strike-off assembly, heated if necessary, and capable of spreading and finishing courses of bituminous plant mix material in lane widths applicable to the specified typical section and thickness shown on the plans.
2. The paver shall be equipped with a receiving hopper having sufficient capacity for a uniform spreading operation. The hopper shall be equipped with a distribution system to place the mixture uniformly in front of the screed. Design will be such that no part of the truck weight will be supported by the paver.
3. The screed or strike-off assembly shall effectively produce a finished surface of the required evenness and texture without tearing, shoving or gouging the mixture. When laying mixtures, the paver shall be capable of being operated at forward speeds consistent with satisfactory laying of the mixture. The screed shall be adjustable for both height and crown and shall be equipped with a controlled heating device.
4. The bituminous paver shall be equipped with an automatic leveling device controlled from an external guide. The initial pass for each course shall be made using a paver equipped with a 40-foot minimum external reference, except that these requirements will not apply when asphalt concrete is placed adjacent to portland cement concrete pavement. Subsequent passes may utilize the matching device of one foot minimum length riding on the adjacent lay.

### **3.03 CONSTRUCTION METHODS:**

#### **A. Spreading and Finishing:**

1. The asphalt concrete mixture shall be laid on the approved surface, spread and struck off to the grade and elevation established. It shall be spread and compacted in layers as shown on the plans or as directed by the ENGINEER. Bituminous pavers shall be used to distribute the mixture either over the entire width or over such partial width as may be practicable.
2. The ENGINEER will determine a minimum placement temperature within a range from 220° F to 300° F which will produce the required density. The established placement temperature, which is measured immediately behind the laydown machine, shall not vary more than 20° F.
3. A conventional paver or suitable equipment approved by the ENGINEER may be used to place asphalt concrete material on shoulders depressed from the traveled lanes in order to establish a uniform typical section. Approval of the equipment used will be based upon the results obtained.

4. The asphalt concrete may be dumped from the hauling vehicles directly into the paving machine or it may be dumped upon the surface being paved and subsequently loaded into the paving machine; however, no asphaltic concrete shall be dumped from the hauling vehicles at a distance greater than 250 feet in front of the paving machine. When asphaltic concrete is dumped first upon the surface being paved, the loading equipment shall be self-supporting and shall not exert any vertical load on the paving machine. Substantially all of the asphaltic concrete dumped shall be picked up and loaded into the paving machine.
5. To achieve, as far as practicable, a continuous operation, the speed of the paving machine shall be coordinated with the production of the plant. Sufficient hauling equipment shall be available to insure continuous operation.
6. The control system shall control the elevation of the screed at each end by controlling the elevation of one end directly and the other indirectly either through controlling the transverse slope or alternately when directed, by controlling the elevation of each end independently, including any screed attachment used for widening, etc. Failure of the control system to function properly shall be cause for the suspension of the asphaltic concrete operations.
7. When dumping directly into the paving machine from trucks, care shall be taken to avoid jarring the machine or moving it out of alignment.
8. All courses of asphaltic concrete shall be placed and finished by means of self-propelled paving machines except under certain conditions or at certain locations where the ENGINEER deems the use of self-propelled, paving machines impracticable.
9. Self-propelled paving machines shall spread the asphaltic concrete without segregation or tearing within the specified tolerances, true to the line, grade, and crown indicated on the plans. Pavers shall be equipped with hoppers and augers which will place the asphaltic concrete evenly in front of adjustable screeds without segregation. Screeds shall include any strike-off device operated by tamping or vibrating action which is effective without tearing, shoving or gouging the asphaltic concrete and which produces a finished surface of an even and uniform texture for the full width being paved. Screeds shall be adjustable as to height and crown and shall be equipped with a controlled heating device for use when required.
10. On areas where irregularities or unavoidable obstacles make the use of mechanical spreading and finishing equipment impracticable, the mixture shall be spread, raked, fluted and compacted with hand tools. For such areas the mixture shall be dumped, spread and screed to give the required compacted thickness.

B. Compaction:

1. Rolling with the 3-wheel and tandem roller shall start longitudinally at the sides and proceed toward the center of the surface course, overlapping on successive trips by at least half the width of the rear wheels.
2. Alternate trips of the roller shall be slightly different in length.
3. Rolling with a pneumatic tired roller shall be as directed by the ENGINEER.
4. Rolling shall continue with no further compression can be obtained and all roller marks are eliminated.
5. The motion of the roller shall be slow enough at all times to avoid displacement of asphaltic materials. If displacement occurs, it shall be corrected immediately by use of rakes and fresh asphaltic mixtures, where required.
6. The roller shall not be allowed to stand on the surface course when it has not been fully compacted and allowed to cool.
7. To prevent adhesion of the surface course to the roller, the wheels shall be kept thoroughly moistened with water; however, excess water shall not be allowed.
8. All precautions shall be taken to prevent dripping of gasoline, oil, grease, or other foreign substances on the surface or base courses during rolling operations or while rollers are standing.
9. With the approval of the ENGINEER, a vibratory steel wheeled roller may be substituted for the 3-wheel roller and tandem roller.
10. Along forms, curbs, headers, walls and other places not accessible to the rollers, the mixture shall be thoroughly compacted with hot hand tampers, smoothing irons, or with mechanical tampers. On depressed areas, a trench roller may be used or cleated compression strips may be used under the roller to transmit compression to the depressed area.
11. Any mixture that becomes loose, broken, mixed with dirt, segregated, or is in any way defective shall be removed and replaced with fresh hot bituminous mixture, which shall be compacted to conform with the surrounding area. Any area showing excess or deficiency of bituminous material shall be corrected immediately as directed by the ENGINEER.

C. In-Place Density:

1. In-place density shall be required for all mixtures except thin irregular depth leveling courses.



2. Each course, after final compaction, shall have a density of not less than 95 percent of the density developed in the laboratory test method outlined in TxDOT Bulletin C-14.
3. Density shall be determined with a portable nuclear test device in conformity with ASTM D-2950.76.
4. Calibration of the portable nuclear device will be established by the ENGINEER from cut pavement samples tested in accordance with AASHTO T-166 (weight, volume method). The density readings of the cut pavement samples determined in accordance with AASHTO T-166 (weight, volume method), and the density readings of the pavement samples determined by the portable nuclear test device in conformity with ASTM D 2950 will be correlated by the ENGINEER.
5. Other methods of determining in-place density may be used as deemed necessary by the ENGINEER.
6. It is intended that acceptance density testing will be done while the bituminous mixture is hot enough to permit further compaction if necessary. If the density of an acceptance section does not meet the specified requirements, the CONTRACTOR shall continue the compaction effort until the optimum density is obtained. Rolling for any compactive effort will not be allowed when the temperature of the mix is below 175° F unless authorized in writing by the ENGINEER. Rerolling the paved surface after it has initially cooled will not be allowed.
7. If in-place density tests of the mixture produce a value lower than specified and in the opinion of the ENGINEER is not due to a change in the quality of the material, production may proceed with subsequent changes in the mix and/or construction procedures until in-place density equals or exceeds the specified density.
8. In-place density tests will be provided by the ENGINEER unless otherwise specified.

D. Joints:

1. Placing of the asphalt concrete shall be as continuous as possible. Rollers shall not pass over the unprotected end of a freshly laid mixture unless authorized by the ENGINEER.
2. When plant mix bituminous pavement is placed over plant mix bituminous treated base or when plant mixed seal coat is placed over plant mix bituminous pavement, longitudinal joints shall be staggered at least 6 inches with relation to the longitudinal joints of the underlying course.

3. Transverse joints shall have a two foot or 12:1 minimum taper. Longitudinal joints shall have a one foot or 6:1 minimum taper. All transverse tapers shall be cut and squared off prior to commencing new work. Tapered longitudinal joints from previous operations shall be cleaned and tack coated if directed by the ENGINEER. All joints shall be completely bonded. The surface of each course at all joints shall be smooth and shall not show any deviations in excess of 3/16 of an inch when tested with a 10-foot straightedge in any direction.
4. When paving under traffic, the CONTRACTOR shall plan his daily surfacing operations on a schedule which will result in not more than one (1) day's operation of exposed longitudinal joints. The longitudinal joints shall not have a height greater than two (2) inches and shall not be left exposed longer than 24 hours.

E. Surface Tolerance:

1. Upon completion, the pavement shall be true to grade and cross section. Except at intersections or any changes of grade, when a 16 foot straight edge is laid on the finished surface parallel to the centerline of the roadway, the surface shall not vary from **the edge of the straight edge more than 1/16-inch per foot.** Areas that are not within this tolerance shall be brought to grade immediately following the initial rolling. After the completion of final rolling, the smoothness of the course shall be checked, and the irregularities that exceed the specified tolerances or that retain any water on the surface shall be corrected by removing the defective work and replacing with new material as directed by the ENGINEER at the expense of the CONTRACTOR.

F. Manholes and Valve Covers:

1. Manhole frames and valve covers shall be adjusted prior to placing the surface course.

G. Compacted Thickness of HMAC Surface and Base Courses:

1. Surface Courses. The compacted thickness or depth of the asphaltic concrete surface course shall be as shown on the plans. Where the plans require a depth or thickness of the surface course greater than two inches compacted depth, same shall be placed in multiple courses of equal depth, each of which shall not exceed two inches compacted depth. If, in the opinion of the ENGINEER, an additional tack coat is considered necessary between any of the multiple courses, it shall be applied at the rate as directed.
2. Base Courses. The compacted thickness or depth of each base course shall be as shown on the plans. Where the plans require a depth or thickness of the course greater than 4 inches, same shall be accomplished by

constructing multiple lifts of approximately equal depth, each of which shall not exceed these maximum compacted depths. If, in the opinion of the ENGINEER, an additional tack coat is considered necessary between any of the multiple lifts, it shall be applied as hereinbefore specified and at the rate as directed.

#### H. Pavement Thickness Tests:

1. Pavement Thickness Test. Upon completion of the work and before final acceptance and final payment shall be made, pavement thickness test shall be made by the ENGINEER or his authorized representative unless otherwise specified in the special provisions or in the plans. The number and location of tests shall be at the discretion of the OWNER. The cost for the initial pavement thickness test shall be at the expense of the ENGINEER. In the event a deficiency in the thickness of pavement is revealed during normal testing operations, subsequent tests necessary to isolate the deficiency shall be at the CONTRACTOR's expense.

#### I. Price Adjustment for Roadway Density

1. The payment of the unit price will be adjusted for roadway density as outlined in the following table. The adjustment will be applied on a lot by lot basis for each lift. The adjustment will be based on the average of five density tests. The price adjustment will be applied to the entire asphalt concrete mix which includes the HMAC aggregate, the asphalt cement and anti-stripping compound, if used.

Average Density % of Lab Density	Percent of Contract Price To Be Paid
Above 95%	100%
94.0 to 94.99	96%
93.0 to 93.99	91%
92.0 to 92.99	85%
Less than 92.00	*

\* This lot shall be removed and replaced to meet specification requirements as ordered by the ENGINEER. In lieu thereof, the CONTRACTOR and the

ENGINEER may agree in writing that for practical purposes, the lot shall not be removed and will be paid for at 50% of the contract price.

#### **PART 4 - MEASUREMENT AND PAYMENT**

##### **4.01 INCIDENTAL WORK:**

- A. Prime coat, anti-stripping compound, where used, and tack coat shall not be measured for direct payment, but shall be considered as subsidiary work pertaining to the placing of asphaltic mixtures of the contract price.

##### **4.02 MEASUREMENT:**

- A. Hot-mix asphalt concrete material shall be measured by the ton of 2,000 pounds or by the square yard of the type or types used in the completed and accepted work, as shown on the Bid Proposal.
- B. Weight shall be determined by a certified scale approved by the OWNER and recorded serially numbered weight tickets, identifying the vehicle and presented to the ENGINEER's representative on the job.

##### **4.03 PAYMENT:**

- A. Work performed and materials furnished, as prescribed by this item, measured as provided herein, shall be paid at the unit bid price per ton or square yard for the type or types of hot mix asphalt concrete pavement shown on the proposal.
- B. Unit bid price shall be payment in full for quarrying; furnishing all materials; for all heating; mixing; hauling; cleaning existing base course or pavement; placing asphaltic mixtures; rolling and finishing; and for all labor, tools, equipment and incidentals necessary to complete the work, including the work and materials involved in the application of prime coat and tack coat.

**\* \* \* END OF SECTION \* \* \***

## **SECTION 02680 FLAT WHEEL ROLLING**

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### **PART 1- GENERAL**

#### **1.01 GENERAL DESCRIPTION OF WORK:**

- A. This work shall consist of the compaction of subgrade, embankment, flexible base, surface treatments and asphalt surfaces by the operation of an approved power roller as herein specified and as directed by the ENGINEER.

### **PART 2 - PRODUCTS**

#### **2.01 EQUIPMENT:**

##### **A. Embankments and Flexible Bases**

1. Power rollers shall be of the 3-wheel, self-propelled type, weighing not less than 10 tons and shall provide a compression on the rear wheels of not less than 325 pounds per linear foot of wheel width. All wheels shall be flat.
2. The rear wheels shall have a diameter of not less than 48 inches and each shall have a wheel width of not less than 20 inches.

##### **B. Surface Treatments and Pavements**

1. Power rollers shall be the 3-wheel or tandem, self-propelled type, weighing not less than 3 tons nor more than 6 tons. All wheels shall be flat.
2. Rollers shall be equipped with an adequate scraping or cleaning device on each wheel.
3. Rollers used to compact asphalt mixture shall be equipped with a water system which will keep all tires uniformly wet.
4. In lieu of the rolling equipment specified, the CONTRACTOR may operate other compacting equipment that will produce equivalent relative compaction in the same period of time as the specified equipment. If the substituted compaction equipment fails to produce the desired compaction within the same period of time, its use shall be discontinued.
5. Rollers shall be maintained in good repair and operating condition and shall be approved by the ENGINEER.

### **PART 3 - EXECUTION**

#### **3.01 CONSTRUCTION METHODS:**

##### **A. Subgrades, Embankments and Flexible Base**

1. The subgrade, embankment layer, or the base course shall be sprinkled if directed. Rolling with a power roller shall start longitudinally at the sides and proceed towards the center, overlapping on successive trips by at least 1/2 the width of the rear wheel of the power roller.
2. On super-elevated curves, rolling shall begin at the low sides and progress toward the high sides. Alternate trips of the roller shall be slightly different in length.
3. The rollers, unless otherwise directed, shall be operated at a speed between 2 and 3 miles per hour.

##### **B. Surface Treatments and Pavements**

1. Rolling shall be done to produce a satisfactory surface as called for in surface treatment and pavement items.
2. The sequence of work shall be as indicated for embankment layer or base course.
3. The operating speed shall be determined by the CONTRACTOR.

### **PART 4 - MEASUREMENT AND PAYMENT**

#### **4.01 MEASUREMENT AND PAYMENT:**

- A. No additional compensation will be made for materials, equipment or labor required by this item, and shall be considered incidental to the other items included in the contract.

**END OF SECTION**

## **SECTION 02682 PNEUMATIC TIRE ROLLING**

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### **PART 1 - GENERAL**

#### **1.01 GENERAL DESCRIPTION OF WORK:**

- A. This work shall consist of the compaction of embankment, flexible base, surface treatments, or pavements by the operation of approved pneumatic tire rollers.

### **PART 2 - PRODUCTS**

#### **2.01 GENERAL REQUIREMENTS:**

- A. When used on seal coats, asphaltic surface treatments, and bituminous mixture pavements, the roller shall be self propelled and equipped with smooth tread tires with a tire pressure of 45 psi.
- B. The roller shall be so constructed as to be capable of being operated in both a forward and a reverse direction.
- C. When used on bituminous mixture pavements, the roller shall have suitable provision for moistening the surface of the tires while operating.
- D. When turning is impractical or detrimental to the work and when specifically directed by the ENGINEER, the roller shall be of the self-propelled type.
- E. In lieu of the rolling equipment specified, the CONTRACTOR may operate other compacting equipment that will produce equivalent relative compaction in the same period of time as the specified equipment. If the substituted compaction equipment fails to produce the desired compaction within the same period of time, its use shall be discontinued.
- F. Rollers shall be maintained in good repair and operating condition and shall be subject to approval of the ENGINEER.

#### **2.02 LIGHT PNEUMATIC TIRE ROLLER:**

- A. The light pneumatic tire roller shall consist of not less than 9 pneumatic tire wheels, running on axles in such manner that the rear group of tires will cover the entire gap between adjacent tires of the forward group, mounted in a rigid frame, and provided with a loading platform or body suitable for ballast loading.

- B. The front axle shall be attached to the frame in such manner that the roller may be turned within a minimum circle.
- C. Under working conditions the pneumatic tire roller shall have an effective rolling width of approximately 60 inches and shall be so designed that by ballast loading the total load can be varied uniformly from 9,000 pounds to 18,000 pounds.
- D. The roller shall be equipped with tires that will afford ground contact pressures to 45 pounds per square inch or more. The operating load and tire air pressure shall be within the range of the manufacturer's chart. The roller under working conditions shall provide a uniform compression under all wheels.
- E. Individual tire inflation pressures shall be within +5 psi of each other.
- F. The pneumatic tire roller shall be drawn by a suitable crawler type tractor, a pneumatic tired tractor, a truck of adequate tractive effort or may be of the self-propelled type and the roller, when drawn or propelled by either type of equipment, shall be considered a light pneumatic tire roller unit.

## 2.03 MEDIUM PNEUMATIC TIRE ROLLER (TYPE A):

- A. The medium pneumatic tire roller (Type A) shall consist of not less than 7 pneumatic tired wheels, running on axles in such manner that the rear group of tires will cover the entire gap between adjacent tires of the forward group and mounted in a rigid frame and provided with a loading platform or body suitable for ballast loading.
- B. The front axles shall be attached to the frame in such a manner that the roller may be turned within a minimum circle. The pneumatic tire roller, under working conditions, shall have an effective rolling width of approximately 84 inches and shall be so designed that, by ballast loading, the total load may be varied uniformly from 23,500 pounds to 50,000 pounds.
- C. The roller shall be equipped with tires that will afford ground contact pressures to 80 pounds per square inch or more. Individual tire inflation pressures shall be within +5 psi of each other.
- D. The operating load and tire air pressure shall be within the range of the manufacturer's chart.
- E. The pneumatic tire roller shall be drawn by a suitable crawler type tractor, a pneumatic tired tractor, a truck of adequate tractive effort or may be of the self-propelled type.



- F. The roller, when drawn or propelled by any type of equipment, shall be considered a medium pneumatic tire roller unit.
- G. The power unit shall have adequate tractive effort to properly move the operating roller at variable uniform speeds up to approximately 5 miles per hour.

#### 2.04 MEDIUM PNEUMATIC TIRE ROLLER (Type B):

- A. The medium pneumatic tire roller (Type B) shall conform to the requirements for Medium Pneumatic Tire Roller (Type A) as specified above, except that the roller shall be equipped with tires that will afford ground contact pressures to 90 psi or more.

### **PART 3 -EXECUTION**

#### 3.01 CONSTRUCTION METHODS:

- A. The embankment layer or the base course be sprinkled if directed and rolling with a pneumatic tire roller shall start longitudinally at the sides and proceed towards the center, overlapping on successive trips by at least 1/2 of width of the pneumatic tire roller.
- B. On super-elevated curves, rolling shall begin at the low sides and progress towards the high sides.
- C. Alternative trips of the roller shall be slightly different in length.
- D. The light pneumatic tire roller shall be operated at speeds between 2 and 6 miles per hour for asphalt surfacing work and all other work.
- E. The medium pneumatic tire roller shall be operated at speeds which produce a satisfactory product.
- F. Sufficient rollers shall be provided to compact the material in a satisfactory manner. When operations are so isolated from one another that 1 roller unit cannot perform the required compaction satisfactorily, additional roller units shall be provided.

### **PART 4 - MEASUREMENT AND PAYMENT**

#### 4.01 MEASUREMENT AND PAYMENT:

- A. No additional compensation will be made for materials, equipment or labor required by this item, but shall be considered subsidiary to the various items of the contract.

**END OF SECTION**

## SECTION 02720 — SITE DRAINAGE

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. The General Conditions of the Contractor for Construction and the Supplementary Conditions to the General Conditions of the Contract for the Construction shall be considered as part of this section of the specifications.
- B. Each Bidder shall be responsible for determining during the bidding period the extent that any addendum issued during the bidding period may affect this section of the specifications.
- C. Reference Instructions to Bidders for requirements regarding substitutions of materials and products.
- D. Where conflicts occur between the drawings and specifications, between different drawings, between different portions of this section of the specifications, or between different sections of the specifications, the stringent requirements and the greater quantity shall apply.

#### 1.2 WORK INCLUDED

- A. Provide and install storm sewer piping, collection boxes, grates, manholes, culverts, inlets and headwalls as indicated in the Architectural drawings and specified herein.
- B. Related trenching, pipe bedding, backfill, and compaction as indicated in the Civil and MEP documents drawings and specified herein.
- C. Trench safety in accordance with OSHA requirements and as specified **under Trench Safety Section.**

#### 1.3 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Piping indicated on plumbing drawings.
- B. Site clearing, grading and filling.

#### 1.4 SUBMITTALS

- A. **PRODUCT DATA:** Submit manufacturer's literature for piping precast drainage structures and grates illustrating performance, fabrication procedures, materials and sizes.
- B. Reference Section 01340 SUBMITTALS for additional submittal requirements.

### PART 2 - PRODUCTS

#### 2.1 MATERIALS

- A. **CONCRETE SEWER PIPING:** Extra strength tongue and groove pipe conforming to ASTM C-76, Class III for reinforced pipe.

B. JOINT SEALS:

1. Under 42" diameter: Provide Talcote Asphalt Primer No. 041 and Talcote Cold Plastic No. 052 joint compound.
2. 42" diameter and larger: Bell and rubber gasketed joints.

C. CONCRETE: Minimum compressive strength of 2,500 psi. Conform to requirements of Cast in Place Concrete Section 3.

D. POLYVINYL CHLORIDE (PVC) SDR 26 PIPING: Provide PVC piping where indicated on the drawings. Jointing shall be solvent weld or bell and gasket meeting requirements of A.S.T.M. 3212. Piping shall meet requirements of A.S.T.M. D-3034.

E. INLETS:

1. Precast concrete, cast in place concrete or brick collection boxes as indicated in the drawings. Brooks Products, or equivalent. Form both inner and outer walls for cast-in-place items.
2. Brick: ASTM C-32 sewer brick, Grade SS, 2-1/4" x 3-3/4" x 8".
3. Gratings, Covers and Frames: Cast iron, McKinley, Neenah or approved equal. Heavy duty in paving. Medium duty in walks. Light duty in grass or planting areas.

PART 3 - EXECUTION

3.1 INSTALLATION

A. INLETS:

1. All storm sewer inlets shall be constructed to the line and grade and at location shown on the drawings. Inlets shall be constructed in strict accordance with details as indicated in the drawings.
2. When the box section of the inlet has been completed, the floor of the inlet shall be shaped by filling with one-two mortar to conform to the section shown on the detail drawings.
3. Cast iron inlet frames and grates shall be accurately adjusted to line, grade and slope and grouted in place with mortar consisting of one part Portland Cement to two parts sand.

B. PIPING:

1. Inspection: Review drawings and job conditions and verify all inverts before trenching to avoid conflict with other below grade utilities either planned or existing. Immediately notify Architect of any apparent conflicts before beginning work.
2. Trenching: Provide trenching in strict compliance with current OSHA regulations and in accordance with **Trench Safety Section. Do not trench ahead of pipe laying unless trench is protected.**
3. Begin excavation work at the lower end of flow line and proceed to higher flow line. Avoid over-excavating; return over-excavated bed to grade and thoroughly compact. Remove large rocks, foreign or organic material; return bed to grade and thoroughly compact.
4. Lay all pipe on required bedding to a true line slope as indicated in the drawings. Hand excavate at joints to ensure that full length of pipe lays on a solid bed. Install tongue end of pipes facing direction of drainage flow.
5. Bedding and backfilling of pipe:
  - a. Bed and backfill all piping in accordance with the details indicated on the drawings. Where local or other applicable codes require more stringent specifications, those codes shall govern.

- b. All piping located in County Flood Control District right of way shall be bedded and backfilled with cement stabilized sand in accordance with Flood control District requirements.
- c. Cement stabilized sand shall be a homogeneous mixture of 1-1/2 sacks Portland Cement per cu. yd. of mixed material. Provide greater cement content where required by City or County Requirements.

END OF SECTION

## SECTION 02830 — CHAIN LINK FENCING

### PART 1 - GENERAL

#### 1.1 COORDINATION

- A. The General Conditions of the Contract for Construction and the Supplementary Conditions to the General Conditions of the Contract for Construction shall be considered as part of this section of the specifications.
- B. Each Bidder shall be responsible for determining during the bidding period the extent that any addenda issued during the bidding period may affect this section of the specifications.
- C. Reference Instructions to Bidders for requirements regarding substitutions of materials and products.
- D. Where conflicts occur between the drawings and specifications, between different drawings, between different portions of this section of the specifications, or between different sections of the specifications, the more stringent requirements and the greater quantity shall apply.

#### 1.2 WORK INCLUDED

- A. Provide all labor, equipment, and materials for the construction of galvanized chain link fencing and gates at the locations shown on the drawings.

#### 1.3 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Temporary construction fencing
- B. Concrete

#### 1.4 SUBMITTALS

- A. **PRODUCT DATA:** Submit manufacturer's literature indicating the performance, fabrication procedures, product variations and accessories.
- B. **SUBMITTALS:** Submit shop drawings including details illustrating fence height, size of posts, rails, braces, gates, and footings, accessories and erection procedures.
- C. Reference Section 01340 SUBMITTALS for additional submittal requirements.

#### 1.5 WARRANTY

- A. Provide written warranty against defects in materials and workmanship for the work under this section for a period of one year after the date of Substantial Completion of the project.

#### 1.6 QUALITY ASSURANCE

- A. **GENERAL:** Provide fences and gates as complete units produced by a single manufacturer, including necessary erection accessories, fittings and fastenings.

- B. EXAMINATION OF CONDITIONS: Installer shall examine the conditions under which the fences and gates are to be installed. Notify the Owner in writing of all conditions detrimental to the proper and timely completion of the work.
- C. QUALIFICATIONS FOR INSTALLER: Erection of the work of this section shall be done by qualified, experienced personnel under direct supervision of fencing manufacturer's field representative.
- D. PRODUCT DELIVERY, STORAGE AND HANDLING: Deliver material in manufacturer's original packaging with all tags and labels intact and legible. Handle and store material in such a manner as to avoid damage.
- E. PRODUCT REPLACEMENTS: In the event of damage, immediately make all repairs and replacements necessary to the approval of the Owner at no additional cost to the Owner.

## 2 PART TWO – PRODUCTS

### 2.1 MATERIALS

#### A. GENERAL:

- 1. All materials, fabric fittings, appurtenances, hardware, fasteners, and fabrications (other than aluminum or stainless steel ties) to be hot-dipped galvanized after fabrication; posts and rails may be field cut only when the cut ends will be covered completely and protected by concrete or fittings.
- 2. Zinc for galvanizing shall conform with the requirements A.S.T.M. B6. Galvanizing of materials shall conform with the following requirements:
  - (a) Pipe: A.S.T.M. A-120 (1.8 oz zinc psf)
  - (b) Hardware and Accessories: A.S.T.M. A-153 (2 oz zinc psf)
  - (c) Chain link fabric: A.S.T.M. A-392, Class II (not less than 1.2 oz zinc psf)

- B. CHAIN LINK FABRIC: One piece of fabric widths, No. 9 gauge wires, 2" mesh typical, 1-3/4" mesh at tennis courts. Copper bearing steel wire, tensile strength 80,000 psi. Hot dipped galvanized after weaving. Top and bottom selvages shall be knuckled for all chain link fabric.

#### C. POSTS, RAILS AND BRACES:

- 1. End, Corner and Pull Posts: 2-1/2" I.D. standard weight, Schedule 40 round galvanized steel pipe; weight 5.79 lbs./linear foot. Install one pull post at the center of FENCE Line and one terminal post at each end and/or change of direction.
- 2. Line Posts: Typical line posts up to 6' high shall be 2" I.D. standard weight, schedule 40 round galvanized steel pipe, weight 3.65 lbs./linear foot, spaced on 10' centers, maximum. Fabric shall be attached to posts with 9 gauge zinc coated wire ties 12" o.c. maximum. For posts up to 12' high, use 2-1/2" I.D. x 9.11 lbs./linear foot.
- 3. Top Rail: 1-1/4" I.D. Schedule 40 galvanized steel pipe, weight 2.27 lbs./linear foot furnished in manufacturer's standard lengths of approximately 21'-0" with couplings approximately 6" long for each joint, one coupling in each 5' to have expansion spring. Provide means for attaching top rail to each gate, corner, pull and end posts. Top rail shall form continuous brace from end to end of each run of fence.
- 4. Post Brace Assembly: Provide bracing assemblies at terminal and gate posts and at both sides of corner and pull posts, with the horizontal brace located at mid-height of the fabric. Use 1-1/4" I.D. Schedule 40 galvanized pipe for horizontal brace and 3/8" diameter rod with turnbuckle for diagonal truss.
- 5. Tension Wire: 7 gauge galvanized steel spring wire at bottom of fence.

6. Post Tops: Pressed steel, or malleable iron designed as a weathertight closure top for tubular posts. Provide one cap for each post. Provide tops to permit through passage of top rail.
7. Stretcher Bars: One piece lengths steel equal to full height of fabric with minimum cross-section of 3/16" x 3/4. Provide one stretcher bar for each gate and end post and 2 for each corner or pull post.
8. Stretcher Bar Bands: Heavy pressed steel or malleable iron, spaced not over 15" o.c. to secure stretcher bars to end, corner and gate posts.
9. Wire Ties: For tying fabric line posts, use minimum 9 gauge aluminum or galvanized steel wire ties for tubular posts spaced 14" o.c. For tying fabric to rails and braces, use 9 gauge aluminum wire ties spaced 24" o.c. For tying fabric to tension wire, use 11 gauge hog rings spaced 24" o.c.
10. Concrete: Conform with requirements of ASTM C-92, 1" maximum size aggregate and at least 4 sacks cement per cubic yard, 3% to 6% entrained air, 3,000 psi at 28 days, maximum 3" slump.

D. SWINGING GATES:

1. Fabricate gate perimeter frames of 1-1/2" I.D. Schedule 40 galvanized pipe; weight 2.72 pounds per linear foot. Provide additional horizontal and vertical members to ensure proper gate operation and for attachment of fabric, hardware and accessories. Assemble gate frames by welding or fittings and rivets for rigid connections. Use same fabric as for fence. Install fabric with stretchers bars at vertical edges and tie wires at top and bottom edges. Attach stretcher bars to gate frame at not more than 15" o.c. Attach hardware with rivets. Provide diagonal cross-bracing of gate frames by means of 3/8" diameter adjustable length truss rods.
2. Gate Posts:
  - (a) Single leaf 6 ft. or double leaf 12 ft.: 3 inch o.d. 7.58 pounds per foot, ASTM A120, galvanized schedule 50 pipe or 3 inch x 3 inch roll section, ASTM A501, hot dipped galvanized.
  - (b) Single leaf 10 ft. or double leaf 20 ft.: 4 inch o.d. pipe 9.11 pounds per foot, ASTM A120, galvanized schedule 50 or 3 inch x 3 inch roll section ASTM A501.
  - (c) Single leaf 16 ft. or double leaf 32 ft.: 6-5/8 inch o.d. pipe 18.97 pounds per foot, galvanized schedule 50 pipe.

E. GATE HARDWARE:

1. Pressed steel or malleable iron hinges to suit gate size, non-lift off type, offset to permit 180 degree gate opening. Provide 1 pair of hinges for each leaf.
2. Latch: Forked type or plunger-type to permit operation from either side of gates. Provide padlock eye as integral part of latch.
3. Keeper: Provide keeper which automatically engages gate leaf and holds in open position until manually released.

3 PART THREE - EXECUTION

2.2 INSTALLATION

- A. GENERAL: Obtain approval from Architect for fencing layout, gate locations, direction of gate swings, and corner and end post locations prior to beginning work.
- B. INSTALLING POSTS: All posts shall be spaced not more than 10' apart. Drill holes for post footings in firm undisturbed or compacted soil. The holes shall have a diameter equal to 3 times the diameter of the post (9" minimum). Excavate hole depths approximately 3" lower than post bottom for concrete coverage of post bottom. Set the posts and place concrete around posts in



a continuous pour, tamp for consolidation. Check each post for vertical and top alignment and hold in position during placement and finishing operation. Set top of concrete footing 2" above proposed finish grade and finish trowel top of footings with slope or dome to direct water away from posts. Set keepers, stops, sleeves and other accessories into concrete as required.

C. FOOTING DEPTHS:

1. Typical 4' to 6' high fencing
  - (a) Terminal and line posts: Minimum 36" deep.
  - (b) Corner and pull posts: Minimum 48" deep.
2. Gates
  - (a) 36" to 48" wide leaf: Minimum 48" deep.
  - (b) 54" to 72" wide leaf: Minimum 60" deep.
  - (c) 78" to 96" wide leaf: Minimum 72" deep.
  - (d) Tie each pair of gate posts together with 12" x 12" reinforced concrete beam poured with footings. Provide minimum 6" earth coverage over tie beam.

- D. CONCRETE STRENGTH: Allow concrete to attain at least 75% of its minimum 28 day compressive strength, but in no case sooner than 7 days after placement, before rails, tension wires, barbed wire, or fabric is installed. Do not stretch and tension fabric and wires, and do not hang gates until the concrete has attained its full design strength, minimum design strength for concrete of 3,000 pounds per square inch at 28 days.
- E. INSTALLING TOP AND MID RAILS: To start the installation, a length of top rail shall be run through the first couple of post tops; a rail clamp shall be assembled on the end, corner or gate posts, as the case may be. The end of the rail already placed shall be butted into the clamp and fastened. The top rail shall be installed along the run of the fence and the various sections joined with sleeve couplings. At no more than every 100' an expansion coupling shall be placed to allow for expansion and contractions of the rail. The rail shall be clamped in the end, corner or gate posts at the end of the run of the installation of the top rail.
- F. BRACE ASSEMBLIES: Install braces so posts are plumb when diagonal rod is under proper tension. Provide one brace assembly for each gate and end post and two for each corner and pull posts.
- G. TENSION WIRE: Install tension wire before stretching fabric and tie to each post with tie ties or clips.
- H. INSTALLING FABRIC: Leave approximately 1" between finish grade and bottom selvage. Pull fabric taut and tie to posts, rails and tension wires. Install fabric on the outside of the fence and anchor to framework so that fabric remains in tension after pulling fence is released. Stretcher bars shall be threaded through the fabric for seaming it to end, corner, pull and gate posts. The stretcher bars shall be secured to the posts with metal bands spaced not over 15" o.c.
- I. GATES: Install gates plumb, level and secure for full opening without interference. Install ground-set items in concrete for anchorage as recommended by the fence manufacturer. Adjust hardware for smooth operation and lubricate where necessary.
- J. CLEAN-UP: The Contractor shall remove from the site all tools, equipment, trash, etc, used in this work. Remove all markings from posts and rails.

END OF SECTION

## SECTION 03300 - CAST-IN-PLACE CONCRETE

### PART 1 - GENERAL

#### 1.1 COORDINATION

- A. The General Conditions of the Contract for Construction and the Supplementary Conditions to the General Conditions of the Contract for Construction shall be considered as part of this section of the specifications.
- B. Each Bidder shall be responsible for determining during the bidding period the extent that any addenda issued during the bidding period may affect this section of the specifications.
- C. Reference Instructions to Bidders for requirements regarding substitutions of materials and products.
- D. Where conflicts occur between the drawings and specifications, between different drawings, between different portions of this section of the specifications, or between different sections of the specifications, the more stringent requirements and the greater quantity shall apply.

#### 1.2 WORK INCLUDED

- A. All concrete work, including sidewalks, exterior ramps, steps, miscellaneous concrete.
- B. All form work.
- C. Reinforcing steel.
- D. Installation of sleeves which are furnished by plumbing, heating and electrical contractors.
- E. Equipment bases are shown on architectural, mechanical, plumbing and electrical drawings.
- F. Provide and install waterstop material at below grade joints.

#### 1.3 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Testing Laboratory services.
- B. Excavation and fill.
- C. Concrete paving, curbs, sidewalks and site concrete.

#### 1.4 DRAWING REFERENCES: See drawings for reinforcing sizes and placement.

#### 1.5 Submittals:

- A. DESIGN MIX: Submit six (6) copies directly to the project Architect the proposed concrete mix(es). Include cement brand and type, aggregate identification, admixtures, proportions and anticipated strengths.
- B. PLASTIC CHAIR SUPPORTS: Submit manufacturer's literature indicating dimensions, configurations and performance data. Submit sample for approval by the Architect. Space at a maximum of 45" centers

each way. Provide closer spacing where required to prevent excessive sag, where indicated on the drawings, or to support the weight of concrete pump hose.

- C. ADMIXTURES: Submit manufacturer's product data describing material and mix proportions.
- D. WATERSTOPS: Submit manufacturer's product data describing material and installation procedures.
- E. CURING COMPOUND: Submit Manufacturer's literature indicating composition and recommended application procedures.
- F. Reference Section 01340 SUBMITTALS for additional submittal requirements.

## 1.6 SAMPLES

- A. Plastic chair support.

## 1.7 WARRANTY

- A. Provide written warranty against defects in materials and workmanship for the work under this section for a period of one year after the date of Substantial Completion of the project.

## 1.8 QUALITY ASSURANCE

- A. Cast-in-place concrete shall be installed by technicians specially trained in the proper handling, placing and protection of concrete and reinforcing steel. If required by the Architect, installer shall submit for approval a list of similar installations successfully completed.
- B. Comply with ASTM C 94; ACI 301, "Specification for Structural Concrete"; ACI 117, "Specifications for Tolerances for Concrete Construction and Materials"; and CRSI's "Manual of Standard Practice."
- C. Engage a qualified independent testing agency to design concrete mixes.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. GENERAL: All materials used in the Work shall be stored or handled in a manner that will prevent deterioration; any materials that have been damaged shall be immediately and completely removed from the Work. All manufactured materials, such as cement, shall be delivered and stored in their original packages that show marks or other evidence of damage shall be wholly rejected.
- B. Deformed Reinforcing Bars: ASTM A 615/A 615M, Grade 60.
- C. Plain Steel Wire: ASTM A 82, as drawn.
- D. Steel Welded-Wire Fabric: ASTM A 185, flat sheets not rolls. Use mesh for sidewalks and equipment pads, as indicated on the drawings.
- E. Portland Cement: ASTM C 150, Type I, latest edition.

- F. The use of Fly Ash in the concrete mix is not acceptable.
- G. Aggregates: ASTM C 33, uniformly graded.
- H. Fiber Reinforcement: ASTM C 1116, Type III, synthetic fibers, **1/2 to 1 inch (13 to 25 mm)**.
- I. Air-Entraining Admixture: ASTM C 260.
- J. Chemical Admixtures:
  - 1. General: All admixtures shall be added only at the plant during mixing and must be prior approved by the Testing Laboratory. Admixtures shall comply with the requirements of ASTM C260 and C-494. Admixtures containing calcium chloride are not acceptable. Do not use admixtures in footings or seal slabs.
- K. Water Stops: Flat dumbbell or center-bulb type, of either rubber (CRD C 513) or PVC (CRD C 572).
- L. **Vapor Barrier: Reference Spec Section 07260 Under Slab Vapor Barrier.**
- M. Liquid Membrane-Forming Curing Compound: ASTM C 309, clear, Type I, Class A or B, solvent borne, wax free.
- N. Liquid Membrane-Forming Curing and Sealing Compound: ASTM C 1315, clear, Type I, Class A, solvent borne.
- O. Slip-Resistive Aggregate: Factory-produced, rustproof, nonglazing, fused aluminum-oxide granules or crushed emery, unaffected by freezing, moisture, and cleaning materials.
- P. Joint-Filler Strips: ASTM D 1751, cellulosic fiber, or ASTM D 1752, cork.
- Q. Repair Underlayment: Factory-packaged, portland or blended hydraulic cement-based, polymer-modified, self-leveling underlayment with minimum 28-day compressive strength of 4100 psi (29 MPa).
- R. Repair Topping: Factory-packaged, portland or blended hydraulic cement-based, polymer-modified, self-leveling traffic-bearing topping with minimum 28-day compressive strength of 5700 psi (39 MPa).

## 2.2 MIXES

- A. Proportion normal-weight concrete mixes to provide the following properties:
  - 1. Compressive Strength:
    - a. Ramps and sidewalks: 3000 psi (20.7 Mpa) at 28 days.
  - 2. Slump Limit: 5 inches (125 mm) at point of placement.
  - 3. Air Content: 5.5 to 7.0 percent for concrete exposed to freezing and thawing, 2 to 4 percent elsewhere.

## 2.3 FORMWORK

- A. GENERAL: Forms shall conform to the shapes, lines, grade and dimensions of the concrete as indicated in the drawings. Lumber used in forms for exposed surfaces shall be dressed to a uniform thickness and shall be free of loose knots or other defects. Lumber once used in forms shall be thoroughly cleaned before another usage. Form **full depth** of outside face of perimeter grade beams without horizontal joints or cracks. Forms shall be substantial and sufficiently tight to prevent leakage. They shall be properly

shored, braced or otherwise tied or supported to maintain the desired position and shape during and after placement of concrete. Use no formwork which may stain exposed concrete surfaces.

- B. FORM LINING: For exposed concrete the final finish shall be smooth, even and free of defects.
- C. FORM REMOVAL: Forms shall remain in place sufficient time for the concrete to obtain necessary strength to support its own weight and construction load.

### PART 3 - EXECUTION

#### 3.1 CONCRETING

- A. Construct formwork and maintain tolerances and surface irregularities within ACI 117 limits of Class A for concrete exposed to view and Class C for other concrete surfaces.
- B. Set water stops where indicated to ensure joint watertightness.
- C. Place vapor retarder on prepared subgrade, with joints lapped 6 inches (150 mm) and sealed.
- D. Accurately position, support, and secure reinforcement.
- E. Install construction, isolation, and contraction joints where indicated. Install full-depth joint-filler strips at isolation joints.
- F. Place concrete in a continuous operation and consolidate using mechanical vibrating equipment.
- G. Protect concrete from physical damage, premature drying, and reduced strength due to hot or cold weather during mixing, placing, and curing.
- H. Formed Surface Finish: Smooth-formed finish for concrete exposed to view, coated, or covered by waterproofing or other direct-applied material; rough-formed finish elsewhere.
- I. Slab Finishes: Float finish for ramps and surfaces to receive waterproofing or other direct-applied material. Trowel and fine-broom finish for surfaces to receive thin-set tile. Nonslip-broom finish to exterior concrete platforms, steps, and ramps.
- J. Uniformly spread 25 lb/100 sq. ft. (12 kg/10 sq. m) of dampened slip-resistive aggregate over initially floated surfaces; tamp and float. Expose nonslip aggregate after curing.
- K. Uniformly spread 100 lb/100 sq. ft. (49 kg/10 sq. m) of mineral dry-shake floor hardener over initially floated surfaces, repeat float finishing to embed each application, and then apply a trowel finish.
- L. Cure formed surfaces by moist curing for at least seven days.
- M. Begin curing concrete slabs after finishing. [Keep concrete continuously moist for at least seven days] [Apply membrane-forming curing compound to concrete] [Apply membrane-forming curing and sealing compound to concrete].
- N. Owner will engage a testing agency to perform field tests and to submit test reports.
- O. Protect concrete from damage. Repair surface defects in formed concrete and slabs.

- P. Repair slabs not meeting surface tolerances by grinding high areas and by applying a repair underlayment to low areas receiving floor coverings and a repair topping to low areas to remain exposed.

### 3.2 CLEANING AND PROTECTION

- A. **CLEANING:** Slabs are to be kept free of any foreign substances (wax, oil, paint, etc.) or surface irregularities that may affect the final appearance of the completed installation.
- B. Unless otherwise approved by the Architect, no vehicular traffic will be allowed on any concrete until after the 7 day concrete tests have been made by the laboratory indicating that the concrete has attained 2,800 psi compressive strength.
- C. Contractor shall coordinate with Architect and Owner to determine a suitable on-site “wash-out” area for concrete trucks. Contractor shall be responsible for clean-up of the area.
- D. Contractor shall keep clean all adjacent public streets and rights of way. Wash down daily or more often as needed to remove mud and maintain a safe condition at entrances/exits to job site.

END OF SECTION 03300

SECTION 04100 — MORTAR

PART 1 - GENERAL

1.01 COORDINATION

- A. The General Conditions of the Contractor for Construction and the Supplementary Conditions to the General Conditions of the Contract for the Construction shall be considered as part of this section of the specifications.
- B. Each Bidder shall be responsible for determining during the bidding period the extent that any addendum issued during the bidding period may affect this section of the specifications.
- C. Reference Instructions to Bidders for requirements regarding substitutions of materials and products.
- D. Where conflicts occur between the drawings and specifications, between different drawings, between different portions of this section of the specifications, or between different sections of the specifications, the stringent requirements and the greater quantity shall apply.

1.02 SCOPE:

- A. Perform all work required to furnish the Masonry Mortar indicated by the Contract Documents and furnish all supplementary items necessary for its proper installation.
- B. The requirements of Division 0 – “Bidding and Contract Requirements” and Division 1 – “General Requirements” of this Project Manual shall apply to all Work required for this Section.
- C. Application of Mortar used in the installation of masonry units is specified in each respective Unit Masonry Section and is not included in the work required for this Section.

1.03 SUBMITTALS:

- A. Submit product data on all mortar and admixtures.
- B. Submit certification that mortar and grout material meet ASTM standards.

1.04 PRODUCT DELIVERY AND STORAGE:

- A. Delivery: Delivery materials to Project site dry and in unbroken containers.
- B. Storage: Store materials above ground in waterproof shelters.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS:

- A. Material manufactured by any of the following manufacturers is acceptable, provided it complies with the Contract Documents.
  - 1. PORTLAND CEMENT:
    - a. Capitol Lone Star
    - b. Trinity Texas Industries
    - c. Universal Atlas Cement
  - 2. LIME:
    - a. Gibsonburg Lime Products Co., Tiger Limes
    - b. Texas Lime Company
    - c. United States Gypsum Company
    - d. National Gypsum Company
  - 3. WATER PROOFING ADMIXTURE:
    - a. Master Builders-Omicron Mortarproofing
    - b. Sonneborn Building Products-Hydracide
    - c. W.R. Grace-Hydratite Plus
  - 4. MORTAR COLOR:
    - a. Gray-
  - 5. ***DRY BLOCK-One pound per cubic foot of cementitious material, ½ sack per sack of 2 sacks of cement fluted, split –face CMU for warranty purposes***
- B. Refer to Section 01600-Substitutions for manufacturers not listed above.

2.02 MATERIALS:

- A. PORTLAND CEMENT: ASTM C150, TYPE I.
- B. HYDRATED LIME: ASTM C207, TYPE S.
- C. FINE AGGREGATE: ASTM C144,
- D. COARSE AGGREGATE: ASTM C404, Size No. 8
- E. WATER: Clean and free of deleterious acids, alkalies, or organic matter.
- F. WATERPROOFING ADMIXTURE: Omicron Mortarproofing, manufactured by Master Builders.
- G. GROUT ADMIXTURE: “Fluidifier” by Master Builders.
- H. SEALER: “DEFY” Block Water Repellant

2.03 PROPORTIONS AND MIXING:

- A. Meet requirements of ASTM C270 and proportion mortar types as specified.
- B. Meet requirements of ASTM C476 for masonry grout and proportion grout type as specified.
- C. Proportion material accurately and mix thoroughly by machine to a uniform consistency and color. Mix mortars with the maximum amount of water consistent with workability.



- D. Do not use mortar that has begun to set. Retemper mortar by adding water if mortar begins to stiffen from evaporation or absorption of a part of the mixing water. Use and place mortar in final position within 2-1/2 hours after mixing.

### PART 3 - EXECUTION

#### 3.01 INSTALLATION:

- A. See specific section of Masonry Materials for installation instructions.

#### 3.02 MORTAR SCHEDULE:

- A. Exterior Masonry Walls:
  - 1. Mortar-Type S, ASTM C270.
  - 2. Waterproofing Admixture-***dry block required to provide warranty.***
- B. Interior Masonry Partitions:
  - 1. Mortar-Type N, ASTM C270.
- C. Interior Paving Tile:
  - 1. Mortar-Type S, ASTM C270.
- D. Exterior Paving Tile:
  - 1. Mortar-Type M, ASTM C270.

#### 3.03 GROUT SCHEDULE:

- A. Paving Tile:
  - 1. Portland Cement-one part.
  - 2. Fine Aggregate-three parts.
  - 3. No lime.
  - 4. Sealer

END OF SECTION

## SECTION 04210 — BRICK MASONRY

### PART 1 - GENERAL

#### 1.1 COORDINATION:

- A. The General Conditions of the Contract for Construction and the Supplementary Conditions to the General Conditions of the Contract for Construction shall be considered as part of this section of the specifications.
- B. Each Bidder shall be responsible for determining during the bidding period the extent that any addenda issued during the bidding period may affect this section of the specifications.
- C. Reference Instructions to Bidders for requirements regarding substitutions of materials and products.
- D. Where conflicts occur between the drawings and specifications, between different drawings, between different portions of this section of the specifications, or between different sections of the specifications, the more stringent requirements and the greater quantity shall apply.

#### 1.2 SUBMITTALS:

- A. Within fifteen (15) calendar days after awarded of contract submit the following:
  - (1) Submit technical data for each type of masonry wall reinforcement, anchors, and ties.
  - (2) Submit sample panel of brick specified showing full color range.

#### 1.3 MOCKUP:

- A. Lay up, where directed at Site, mock-up panel 4 feet high by 6 feet wide using range of brick selected for facing and mortar specified.
- B. **Do not proceed** with brickwork on Project until sample panel has been approved for color and shading. Approved panel shall be the standard of comparison for workmanship and materials. Do not destroy, alter, or move panel until brickwork is completed.

#### 1.4 STORAGE AND HANDLING:

- A. Handle materials in manner to prevent breakage and chipping.
- B. Store materials on platforms raised free of the ground and protect materials with tarpaulin covers.

#### 1.5 ENVIRONMENTAL CONDITIONS:

- A. Do not lay brick when the temperature of the outside air is 40°F or less, or will fall below 40°F twenty – four (24) hours after laying.

### PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS:

- A. Material manufactured by any of the following manufacturers is acceptable provided it complies with the Contract Documents.

REINFORCEMENT, ANCHORS AND TIES:

1. AA Wire Products Company
2. Duro-O-Wall
3. Heckmann Building Products, Inc.
4. Hohmann and Barnard, Inc.
5. Masonry Reinforcing Corp. of America
6. National Wire Products Corp.

2.2 MATERIALS

A. MANUFACTURERS:

1. Hanson Brick Co.
2. Acme Brick Co.
3. Brick Selections

- B. Type: Comply with ASTM C-216, Grade SW, Type FBS for face brick. Comply with ASTM C902-87 for brick pavers. Provide letter for compliance from brick manufacturer or supplier.

- C. Shapes: Provide any special molded shapes required or as may be indicated in the drawings. All outside face brick corners other than 90° shall require shaped brick. All outside corners for soldier courses shall require shaped brick. Job cutting face brick shall not be acceptable where cut face is exposed. Provide shop drawings for Architect's approval.

- D. Solids: Provide solids as required to ensure against exposed cores or unfinished face on ends.

- E. Size: King size brick to match existing.

F. Selections:

- Brick Color, Field Color: Color to be selected by Architect.
- Brick Color, Accent #1: Color to be selected by Architect.
- Capstone, Accent #2: Color to be selected by Architect.

- G. CORRUGATED METAL TIES: DUR-O-WAL D/A 518 adjustable wall tie. Tie number as recommended by manufacturer for overall wall thickness. Zinc coating – 1.50 oz. per sq. ft. of uncoated wire surface – ASTM A 153- Class B-2.

- H. CLEANING AGENT: TRISODIUM PHOSPHATE (Calgon) and household detergent.

- I. WATER: Clean and free of deleterious acids, alkalies, or organic materials.

- J. CONTROL JOINT SPACER: As specified in the CONCRETE MASONRY Section.

- K. PREMOLDED NEOPRENE PAD: ASTM D – 1056SCE-43, R431-N by RUBTEX CORP., 3” wide, by 1/8” thick.
- L. WEEPS: Plastics tubes, 3/8” diameter, AA Wire Products Co., AA223.
- M. REINFORCING BARS: ASTM A615, Grade 60 deformation per ASTM A305, number 4 bars unless otherwise indicated.
- N. MORTAR SCREENS: #84 Weep thru mortar deflector by Heckmann Building Products.

### PART 3 - EXECUTION

#### 3.1 PREPARATION:

- A. Provide, install and maintain all scaffolding, staging and forms of protection necessary for execution of the work; substantially constructed, maintained, moved and dismantled as required to properly follow the sequence of the operation.
- B. Provide and install all shores and centering for the work, constructed true to required shape, size and form, well braced and made rigid in all parts, and capable of supporting and sustaining the loads to which subjected.
- C. Leave all shores and centering in place until the masonry has sufficiently set to safely carry its own weight and added loads of construction. Shore all free standing wall until protected from damage by windstorm.
- D. Examine surfaces to receive masonry and report and discrepancies before commencing work. Accept no former measurements, but layout work according to the plans and figures thereon.

#### 3.2 ADJUSTING

- A. All brick having absorption rates determined in accordance with ASTM C67 in excess of 0.025 oz. per sq. ft. inch per minute shall be wetted sufficiently so that the rate of absorption when laid does not exceed this amount. Wetting shall be such as to insure that each unit is nearly saturated, surface dry when laid.
- B. Lay brick plumb, level and true to a line running bond or as indicated. Lay 3 courses to 8” vertically with uniform horizontal and vertical joints. Glaze brick and tile shall be laid stack bond
- C. Lay brick in full bed or mortar with head and edge joints completely filled. Spread mortar for bed joint only so far ahead of laying units that the mortar will be plastic when units are laid. Butter end of brick for head joints with ample mortar so the vertical joint is completely filled with mortar when brick is shoved into place.
- D. Rock closures into place with both head joints and closure space spread with ample mortar. Shove against the two adjacent bricks in place so that both horizontal and vertical joints are completely filled. Do not disturb previously laid brick.
- E. Avoid over-plumbing and pounding of the corner and jambs to fit stretcher units after setting in place. Where adjustments must be made after initial setting, remove mortar and replace with fresh mortar.
- F. Fill the vertical, longitudinal joint between brick and backup as the course is laid, by pouring or slushing the vertical joint full or grout with the same mortar as used for setting.

- G. Keep cavity clear by laving a board,  $\frac{3}{4}$ " x cavity width, across a level of the ties to catch the droppings. As masonry reaches the next level for placing ties, raise the board, clean it and lay it on ties at that level.
- H. Finish joints that will remain exposed with a tool slightly larger than the width of the joint, to form a concave surface. Tool joints after the mortar has taken its initial set and in such manner as to squeeze the mortar back into the joint. Tool vertical joint first.
- I. Fill all nail or line-pipe holes with fresh mortar immediately upon removal. Provide weeps in head joints 16" on centers, in first horizontal course above flashings. Keep cavity side of weep free from mortar or accumulated materials.
- J. Cut brick, where necessary for fitting or bonding, with a power saw to insure straight, evenly cuts edges.
- K. Cover tops of walls at end of day's work and when rain or is imminent with waterproof membrane. Overhang two feet on each side of wall and anchor securely. Protect masonry from weather or construction damage.
- L. Stop off longitudinal run of masonry where absolutely necessary by racking one-half length in each course. Remove loose mortar before new work is started and slightly wet old work.

### 3.2 ANCHORING:

- A. Space anchors not over 16" on center vertically and 24" on centers horizontally. Locate anchors at vertical and horizontal supports, and at other locations as indicated.
- B. Bond brick to backup with adjustable wall ties and joint reinforcing installed in adjacent masonry.
- C. Maintain a minimum of  $\frac{1}{2}$ " clearance between masonry and concrete or steel structure. Keep space free of mortar and other rigid material.

### 3.3 CONTROL AND EXPANSION JOINTS:

- A. Locate expansion joints where they occur in backup material. Locate control joints no to exceed 25'-0" on center. Keep vertical joints straight, true and continuous from top to bottom of masonry. Verify locations of control joints with Architect.
- B. Keep joints clean of mortar as work progresses. Build-in control joint spacer at control joints and flashings at expansion joints

### 3.4 EMBEDDED ITEMS:

- A. Build in flashings, sleeves, anchors, clips and accessories as work progresses. Install loose lintels, as indicated, in full beds of mortar.

### 3.5 CLEANING:

- A. Keep face of brickwork free excess mortar while laying brick. Brush with dry fiber brush prior to wet cleaning.
- B. Clean brickwork that will remain exposed promptly with fiber brushes, clean water and cleaning agent. Use or wire brushes, commercial cleaner or acid permitted only with specific approval.

- C. Repair and repoint defective work. Replace broken, damaged or discolored brick.
- D. Pressure wash all exterior brick work prior to Owner occupying new building.

END OF SECTION

SECTION 04220 — CONCRETE MASONRY UNIT

PART 1 - GENERAL

1.01 COORDINATION

- A. The General Conditions of the Contractor for Construction and the Supplementary Conditions to the General Conditions of the Contract for the Construction shall be considered as part of this section of the specifications.
- B. Each Bidder shall be responsible for determining during the bidding period the extent that any addendum issued during the bidding period may affect this section of the specifications.
- C. Reference Instructions to Bidders for requirements regarding substitutions of materials and products.
- D. Where conflicts occur between the drawings and specifications, between different drawings, between different portions of this section of the specifications, or between different sections of the specifications, the stringent requirements and the greater quantity shall apply.

1.02 SCOPE:

- A. Perform all Work required to complete the Concrete Unit Masonry indicated by the Contract Documents and furnish all supplementary items necessary for its proper installation.
- B. The requirements of Division 0 – “Bidding and Contract Requirements” and Division 1 – “General Requirements” of this Project Manual shall apply to all Work required for this Section.

1.03 PRODUCTS INSTALLED UNDER THIS SECTION BUT SPECIFIED ELSEWHERE:

- A. Section 04100 – Mortar.
- B. Section 07920 – Sealants and Caulking.

1.04 SUBMITTALS:

- A. Submit technical data for each type wall reinforcement, anchors and ties.
- B. Submit 12” long sample of control joint filler.
- C. Submit certificate that masonry units conform to ASTM and NBFU standards specified.

1.05 STORAGE AND HANDLING:

- A. Handle materials in a manner to prevent breakage and chipping. Store materials on platforms raised free of ground and protect materials with stainproof tarpaulin covers.

1.06 ENVIRONMENTAL CONDITIONS:

- A. Lay no masonry when the temperature of the air is 40°F. twenty-four (24) hours after laying. Do not build on frozen work.
- B. Store masonry units on the job so that they are kept off the ground and protected from rain.

## PART 2 - PRODUCTS

### 2.01 ACCEPTABLE MANUFACTURERS:

- A. Material manufactured by any of the following manufacturers is acceptable, provided it complies with the Contract Documents.
  - 1. REINFORCEMENT, ANCHORS AND TIES:

Duro-O-Wal	AA Wire Products Company
Heckman Build Products, Inc.	Hohmann and Barnard, Inc.
Masonry Reinforcing Corp. of America	National Wire Products Corp.
  - SPLIT FACE BLOCK SEALER:  
"DEFY" Split Face Block Water Repellant

### 2.02 MATERIALS:

- A. UNITS:
  - 1. Hollow Concrete Masonry: ASTM C90, medium weight, Grade N-1
- B. REINFORCEMENT:
  - 1. Block Wall Joint Reinforcement:  
ASTM A82, AA Wire Products Co., "BLOK-TRUS", AA600 two wire, width 2" less than wall thickness, standard weight galvanized ASTM A116, Class 1.
  - 2. Lintel and Bond Beam Reinforcement: Domestic, ASTM A615, or ASTM A616, deformations ASTM A305. Unless otherwise shown on drawings provide 2-#4 Ø cont. lap 30 dias.
- C. WATER: Clean and free of deleterious acids, alkalies or organic material.
- D. **Bullnose edge at all masonry corners for interior walls.**

## PART 3 - EXECUTION

### 3.01 CONDITION OF SURFACES:

- A. Do not commence with masonry work until foundation has properly cured a minimum of seven (7) days and reinforcing steel that is dowelled for masonry units has been approved.
- B. Consult other trades and make provisions to permit installation of their work to avoid cutting and patching. Before closing up any pipe chase, or similar inaccessible spaces, remove all rubbish and sweep out areas to be enclosed.

### 3.02 PREPARATION:



- A. Provide, install and maintain all scaffolding, staging and forms of protection necessary for execution of the work; substantially constructed, maintained, moved and dismantled as required to properly follow the sequence of operation.
- B. Provide and install all shores and centering for the work, constructed true to require shape, size and form; well-braced and made rigid in all parts, and capable of supporting and sustaining the loads to which subjected.
- C. Leave all shores and centering in place until the masonry has sufficiently set to safely carry its own weight and the added loads of construction. Shore free-standing walls to prevent windstorm damage until walls are protected.
- D. Examine surfaces to receive masonry and report any discrepancies before commencing work. Accept no former measurements, but lay work according to the plans and dimensions thereon.

3.03 LAYING CONCRETE MASONRY UNITS:

- A. Do not dampen units before laying, and do not lay units which have surface water or contain frost. Lay units plumb, level, and true to a line in running bond, or as indicated. Align on exposed face or as indicated.
- B. Lay first course of masonry in full bed of mortar. Lay all other hollow units in a full mortar bed on shell surface and at ends.
- C. Lay hollow units with the thicker edge of the face shell up and make all joints 3/8" thick. Lay corners prior to laying mid-portion of wall. Rock closures into place with the head joints shoved against the two adjacent units in place.
- D. Cut units with power saw through the unit to insure straight, evenly cut edges. Do not use fractional parts of masonry units in the work where whole units can be used.
- E. Avoid over-plumbing and pounding of the corners and jambs to fit stretcher units after setting in place. Remove mortar and replace with fresh mortar where adjustment must be made after initial settings.
- F. Do not use masonry units having cracks, chipped edges, broken corners or other defects in exposed faces. Build walls full thickness as shown. Blocks with open cells exposed will not be permitted.
- G. Provide all special precast lintels, fillers, closers, control joint units, trough tile, etc., required to form all corners, returns, openings, jambs, offsets, etc., to maintain a proper bond throughout all masonry work.
- H. Protect all sills, ledges, off-sets, etc., from droppings of mortar and protect door jambs and corners from damage during construction.
- I. Stop off longitudinal run of masonry only where absolutely necessary by racking one-half block length in each course. Remove loose mortar before new work is started.
- J. Cover tops of walls at end of day's work and when rain is imminent, with waterproof membrane. Overhang two feet on each side of wall and anchor securely. Protect masonry from weather or construction damage.

3.04 JOINTS:

- A. Mortar joints shall be straight, clean and uniform in thickness. Tool joints of all walls to produce a dense surface well bonded to the edges. Joints which are not tight at the time of tooling shall be raked out, pointed, and then tooled.
- B. Tool when the mortar is partially set but still sufficiently plastic to bond. Use a tool which compacts the mortar, pressing the excess mortar out of the joint rather than dragging it out.
- C. Finish joints that will remain exposed with a tool slightly larger than the width of the joint to form a concave surface. Tool vertical joint first. Finish flush, joint that will not remain exposed.
- D. Unless otherwise specified the horizontal and vertical mortar joints shall be 3/8" thick with full mortar coverage on the face shells and on the webs surrounding cells to be filled with grout.
- E. Vertical head joints shall be buttered well for a thickness equal to the face shell of the unit and these joints shall be shoved tightly so that the mortar bonds with both units. Joints shall be solidly filled from the face of the block to at least the depth of the face shell.

3.05 REINFORCING:

- A. Install continuous joint reinforcing 16" on centers for running bond. Install joint reinforcing in the first and second bed joint above and below openings extending 24" beyond each side of opening.
- B. Lap splices a minimum of 6" and install prefabricated corners and tees at such locations. Do not extend reinforcing through expansion joints. Center reinforcing in joint with 5/8" minimum mortar coverage on the exterior face and 1/2" minimum mortar coverage on the interior face.
- C. Do not extend reinforcing through control joints when anchorage is provided on each side of joint. If no anchorage is provided at joint, extend reinforcing through control joint at 48" on center.
- D. Reinforce bond beams and lintels as indicated with continuous bars placed as the work progresses. Maintain 1/2" minimum clear distance between masonry units and reinforcement.

3.06 ANCHORING:

- A. Anchor interior partitions to abutting or intersecting walls by common bond or with prefabricated reinforcing tees.
- B. Anchor interior load bearing partitions laterally a maximum of 12'-0" o.c. by either an intersecting partition or anchorage to foundation with 4-#4Ø dowels and continuous 4 #4Ø bars to top of wall. Grout fill cells to top of wall.
- C. Do not attach construction supports to wall except where specifically permitted by the Architect.
- D. Intersecting load bearing masonry walls and partitions shall be bonded by the use of rigid steel anchors at twenty-four (24) inches o.c. maximum. Corners shall have a standard masonry bond by overlapping units and shall be solid grouted.

3.07 CONTROL JOINTS:

- A. Locate 3/8" wide control joints as indicated but do not exceed 50 feet on centers. Keep vertical joints straight, true and continuous from top to bottom of masonry.

- B. Use sash units to form control joints and install continuous control joint filler with sash units tightly butted to compress neoprene flanges and completely seal joint. Where masonry abuts structural concrete or steel and control joint filler cannot be used, keep joint clean of mortar as work progresses or use expansion joint spacer.
- C. Locate building expansion joints as indicated and install expansion joint spacer properly recessed back from face to allow for sealant.

3.08 EMBEDDED ITEMS:

- A. Build in flashing, sleeves, anchors, clips, mechanical and electrical items, and accessories as work progresses. Accurately cut units to fit all plumbing, ducts, openings and electrical work with all holes neatly patched.
- B. Install loose lintels, as indicated in full beds of mortar. Fill voids at metal frames with mortar and build in frame anchors.

3.09 GROUTING:

- A. Fill with grout, vertical cells, bond beams, lintels and other structural members having reinforcement. Secure in place and inspect reinforcing before grouting. Keep mortar droppings out of grout space and puddle or vibrate all grout in place.
- B. Provide solid bearing under structural members at least 8" vertically and at least 16" horizontally. Bearing shall be hollow units reinforced with 2#4Ø bars U.N.O. and filled with concrete grout.
- C. Build masonry in filled cell construction to preserve the unobstructed vertical continuity of the cells to be filled. Fully bed all walls and cross webs forming such cells to prevent leakage of grout and strike cell joints smooth. Maintain a continuous vertical alignment of cells so the unobstructed cell area is not less than 2"x3".
- D. Grout vertical cells in lifts not to exceed 4'-0". Stop grout where necessary at mid-point but not over openings, when filling trough unit and provide suitable dam to retain grout. Stop grout one and one half inches below the top of the last course when filling vertical cells to form key for next pour.
- E. Grout from inside face of masonry and prevent grout from staining masonry face. Protect projecting surfaces from droppings and clean immediately any grout which comes in contact with face of masonry.

3.010 CLEANING:

- A. Keep face of blockwork free from excess mortar while laying blocks. Clean blockwork that will remain exposed, promptly, with fiber brushes and clear water. Use of wire brushes or acid permitted only with specific approval.
- B. Repair and repoint defective work and pin line holes to match adjacent similar work. Replace broken or damaged blocks.

END OF SECTION

## SECTION 05120 — STRUCTURAL STEEL

### PART 1 - GENERAL

#### 1.1 COORDINATION

- A. The General Conditions of the Contract for Construction and the Supplementary Conditions to the General Conditions of the Contract for Construction shall be considered as part of this section of the specifications.
- B. Each Bidder shall be responsible for determining during the bidding period the extent that any addenda issued during the bidding period may affect this section of the specifications.
- C. Reference Instructions to Bidders for requirements regarding substitutions of materials and products.
- D. Where conflicts occur between the drawings and specifications, between different drawings, between different portions of this section of the specifications, or between different sections of the specifications, the more stringent requirements and the greater quantity shall apply.

#### 1.2 WORK INCLUDED

- A. Furnish and erect all structural steel.
- B. All cutting and fitting, welding and bolting of structural steel members.
- C. Loose lintels and lintels supported from structural members.
- D. Shop coat of paint on structural steel members and field touch-up.
- E. Temporary bracing of structural steel during erection.

#### 1.3 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Steel joists.
- B. Miscellaneous metals.

#### 1.4 SUBMITTALS

- A. Six (6) blue line prints of each sheet of shop drawings required. Contractor shall submit shop drawings directly to the project Architect.
  - 1. Indicate size, material, and strength of members.
  - 2. Show locations and installation procedures.
  - 3. Include details of shear heads, collar channels, camber, shop coats, joints, attachments, and clearances.
  - 4. Prepare setting Drawings, templates, and procedures indicating locations of structural bolts, and fastening holes for other Work.
- B. Submit mill certificates direct to Structural Engineer with shop drawings.
- C. Submit welder's qualification records.
- D. Miscellaneous metals shall be issued as a separate submittal directly to the Architect and not as part of the structural steel submittal.

- E. Where required submit proof of city approval for fabricator and erector.
- F. Submit written certification of domestic origin for bolts.
- G. Reference Section 01340 SUBMITTALS for additional submittal requirements.

#### 1.5 WARRANTY

- A. Provide written warranty against defects in metals and workmanship for the work under this section for a period of one year after the date of Substantial Completion of the Project.

#### 1.6 QUALITY ASSURANCE

- A. Fabrication and erection of structural steel shall meet or exceed the minimum current requirements of the following standards except where more stringent requirements are indicated in the drawings or specifications:
  - 1. AISC "Code of Standard practice for Steel Buildings and Bridges".
  - 2. AISC "Specifications for the Design, Fabrication, and Erection of Structural Steel for Buildings" and including the "Commentary of the AISC Specification", Eighth Edition.
  - 3. AWS D1.1, "Structural Welding Code D1.1".
  - 4. ASTM A-6 "General Requirements for Delivery of Rolled Steel Plates, Shapes, Sheet Piling, and Bars for Structural Use".
  - 5. ASTM A-36, Specification for Structural Steel.
  - 6. ASTM A-123, Specification for Zinc (Hot-Dip Galvanized Coatings on Iron and Steel Products.
  - 7. ASTM A-307, Specification for Carbon Steel Externally Threaded Standard Fasteners.
  - 8. ASTM A-325, Specification for High-Strength Bolts for Structural Steel Joints.
  - 9. ASTM A-436, Specification for Hardened Steel Washers.
  - 10. ASTM A-500, Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
  - 11. ASTM A-563, Specification for Carbon and Alloy Steel Nuts.
- B. Fabricators shall be currently approved by the local code authority for erection of steel structures. Contractor shall submit evidence of city approval with the list of proposed subcontractors for the project.
- C. Each welder performing work on this Project shall be qualified in accordance with American Welding Society Structural Welding Code, AWS D1.1 within 12 months of the commencement of welding on this Project. Welders shall be certified for the position of weld which they are performing. Welding shall be tested as specified under Testing Laboratory Control below.

### PART 2 - PRODUCTS

#### 2.1 MATERIALS

- A. GENERAL:
  - 1. All materials shall be new, clean and straight within allowable tolerances. Members damaged, warped or stressed prior to or after erection shall be replaced with new material.
  - 2. All structural steel shall conform to the Standard Specifications of the ASTM for Steel for Bridges and Buildings, A-36 (or ASTM A-500, grade B for square or rectangular tube shapes), unless otherwise indicated on the drawings.
  - 3. Purlins shall be precision roll-formed of 14 ga. or 16 ga. steel with a minimum yield of 55,000 psi. Size and spacing of purlins shall be as indicated on the drawings.
- B. WELDING ELECTRODES: #E60 Series Submerged Arc Grade SA-1, #E70 Series Submerged Arc Grade SA-2.

- C. BOLTS: Comply with ASTM A-307 for standard bolts and ASTM A-325 for high-strength bolts, sizes as indicated in the drawings and structural notes. Furnish certification that bolts are domestic origin.
- D. ANCHOR BOLTS:
  - 1. Furnish to the General Contractor all anchor bolts, setting templates and drawings required for complete and accurate installation.
  - 2. Coordinate delivery of anchor bolts for installation by other trades.
- E. GROUT: Premixed, non-shrink, non-metallic type providing a minimum compressive strength of 7,000 psi at 28 days and a maximum initial set time of one hour at 73 degrees F. "Masterflow 713" as manufactured by Master Builders or equivalent by Cormix Construction Chemicals or Sauereisen Cements Co.

### PART 3 - EXECUTION

#### 3.1 FABRICATION

- A. Fabricate the various parts of the steel frame from the materials specified using welded shop connections and bolted field connections. Shop drawings shall be prepared accordingly.
- B. Splicing of members is prohibited without prior approval of the project structural engineer. A member having splice not specifically approved on the shop drawings will be rejected. Spliced members will not be permitted where steel is exposed in finished areas.
- C. Provide holes @ maximum 36" o.c. for 3/8" diameter bolts in all steel where wood nailers occur, unless closer spacing is indicated in the drawings or notations.
- D. All workmanship shall be in accordance with the requirements of the AISC. The workmanship in exposed rigid frames shall be in accordance with the AISC requirements for Architecturally Exposed Structural Steel.

#### 3.2 GALVANIZING

- A. Hot dip galvanize all steel sections which are fully or partially exposed to weather or indicated in the drawings to be galvanized.
- B. All galvanizing shall be done after fabrication of members.
- C. Comply with requirements of ASTM A-384 to protect against warping.
- D. Do not apply silicone protective coating to galvanized steel.

#### 3.3 SHOP PAINTING

- A. Structural steel shall be given one shop coat of the specified paint. Do not shop coat the following members when scheduled to receive sprayed fireproofing:
  - 1. Beam with flange width exceeding 12 inches.
  - 2. Column with flange width exceeding 16 inches.
  - 3. Beam or column with web depth exceeding 16 inches.
- B. Verify with the fireproofing manufacturer the compatibility of the specific proposed primer with the fireproofing material.
- C. All surfaces shall be clean, dry and free from mill scale or rust.
- D. Fabricator shall exercise special care in painting those portions of structural steel which will be exposed to view when the building is complete. Sags, runs, crawls, and other defects will not be permitted.

### 3.4 DELIVERY AND HANDLING

- A. Contractor shall inspect all material when delivered and store on platforms or racks to keep material off the ground. Keep structural steel clean of dirt and other foreign matter.
- B. Clean all contact and bearing surfaces thoroughly before erection.

### 3.5 ERECTION

- A. The structure shall be erected, plumbed and leveled to the lines and grades indicated on the drawings before final connections are made. Base plates shall be grouted using specified nonshrink grout in accordance with manufacturer's printed directions.
- B. If exposed to View, erection angles, seats, tags shall be removed, etc., plugged, welded and ground smooth.
- C. All welding shall be performed by experienced mechanics and in accordance with the requirements of the American Welding Society Code (A.W.S.).
- D. For cantilever beams, allowance shall be made for deflection when final loads are applied.
- E. No field cuts or holes shall be flame cut. Necessary field holes shall be punched or drilled and slotted. All field steel modifications shall be inspected and approved by the project structural engineer and cost of such modifications shall be the responsibility of the Contractor.
- F. No structural members shall be erected which have been bent or deformed in transit to the site or by storage and handling on the site.
- G. Installed work shall comply with AISC allowable tolerances.

### 3.6 TEMPORARY BRACING

- A. Structural steel shall be temporarily braced as required to resist all wind loads and construction loading for which the structure has been designed.
- B. Structural steel shall be braced as the structure is erected and structure shall not be left overnight without adequate bracing.

### 3.7 WELDING

- A. All welds and the adjacent spattered areas shall be cleaned by sandblasting, wire brushing, chipping or other non-damaging means for removal of excess weld metal. Exposed welds shall be ground smooth. Welds in galvanized material shall be touched up after cleaning with "ZRC" cold galvanizing.
- B. Meet requirements of American Welding Society, "Code for Arc and Gas Welding in Building Construction".
- C. Meet requirements of American Welding Society, "Qualifications of Welding Procedures and Operators".
- D. Meet requirements of American Society of Testing Materials, "Specifications for Iron and Steel Arc Welding Electrodes", A233-43T.

### 3.8 TESTING LABORATORY CONTROL

A. GENERAL:

1. Three copies of mill certificates attesting to the physical and chemical characteristics of the steel shall be transmitted to the Owner's independent testing laboratory upon request. In the event that mill certificates are not submitted, the Owner's testing laboratory shall perform physical and chemical tests in accordance with ASTM requirements, all at the Contractor's expense.
2. Contractor shall submit to the Owner's testing laboratory the certificates from an independent testing laboratory attesting to each welders' qualifications in accordance with A.W.S. requirements.
3. Where structural steel is fabricated outside of the greater Houston area, fabricator shall pay the travel and daily subsistence expense of the Owner's laboratory technician.
4. The Owner's independent testing laboratory shall be the sole judge as to whether materials and erection of structural steel meets the requirements of these specifications. Materials and installation not meeting specified requirements shall be removed and replaced at the Contractor's expense.

B. TESTING OF WELDS:

1. Shop Welds:

- (a) An independent testing laboratory retained by the steel fabricator shall perform a visual inspection of a minimum of 10% of all structural steel shop welds. Any additional testing required by the Contractor shall be paid for by the Contractor. Any additional testing required by the fabricator shall be paid for by the fabricator.
- (b) Where the structural drawings indicate shop welded connections to be tested, 100% of such welds shall be tested by the fabricators independent testing laboratory using ultrasonic or radiographic methods.
- (c) Structural steel shall not be shipped until the laboratory testing reports have been reviewed by the structural engineer.
- (d) Inspection of shop welding of bar joists is at the fabricator's option.

2. Field Welds:

- (a) All field welds to be tested shall be tested by the Owner's independent testing laboratory using ultrasonic or radiographic methods. Such testing shall be paid from the Testing Allowance.
- (b) Test 100% of all field welds of the types indicated on the structural drawings to be tested.
- (c) 100% of the following types of field welds shall be tested whether or not indicated on the drawings to be tested: full moment connections in rigid frames, welded beam splices, and welded column splices.
- (d) 15%-20% of all other types of structural steel field welds shall be visually inspected by the Owner's testing laboratory. Any additional testing required by the Contractor shall be paid for by the Contractor.
- (e) All field welds which are indicated on the Structural Drawings to be tested shall be identified with the welder's initials in chalk or wax crayon.

3. Retesting:

- (a) All welds rejected after testing shall be repaired and retested at the Contractors expense, whether shop welds or field welds. Shop weld retesting shall be performed by the fabricators independent testing laboratory and field weld retesting shall be performed by the Owner's independent testing laboratory.
- (b) If more than 10% of the required numbers of tested shop welds fail testing, an additional 20% of the welds shall be tested. If more than 10% of these welds fail, another 20% of the welds shall be tested. This procedure shall continue until either all welds are tested, or less than 10% of the welds fail in the last 20% tested.

3.9 FIELD TOUCHUP



- A. After erection, all structural steel shall be cleaned of rust and touched up with the specified shop coat paint.
- B. Steel shall be touched up wherever the shop coat has been damaged by handling, or during erection or by welding.
- C. All erection nuts and bolts shall be wire brushed and painted.
- D. Upon completion of this erection, any exposed structural steel shall be made ready for finish painting.

END OF SECTION

## SECTION 05210 — STEEL JOISTS

### PART 1 - GENERAL

#### 1.1 COORDINATION

- A. The General Conditions of the Contract for Construction and the Supplementary Conditions to the General Conditions of the Contract for Construction shall be considered as part of this section of the specifications.
- B. Each Bidder shall be responsible for determining during the bidding period the extent that any addenda issued during the bidding period may affect this section of the specifications.
- C. Reference Instructions to Bidders for requirements regarding substitutions of materials and products.
- D. Where conflicts occur between the drawings and specifications, between different drawings, between different portions of this section of the specifications, or between different sections of the specifications, the more stringent requirements and the greater quantity shall apply.

#### 1.2 WORK INCLUDED

- A. Furnish and erect open web high strength steel joists, K-series, and long span joists produced of either cold formed or hot rolled sections as indicated in the drawings and as specified herein.
- B. Provide ceiling extensions where required, top and/or bottom chord extensions as detailed, top and bottom chord reinforcing as detailed, and all spacers, bridging, anchors, etc. required for complete installation.
- C. Provide shop primer coat on all steel joists and field touchup.
- D. Erection of all steel joists, all welding, boiling, cleaning and priming of welded areas, and all materials incidental to erection, including welding electrodes, temporary bracing, guy wires, bolts, washers, etc. as required for a complete installation.

#### 1.3 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Steel floor and roof deck, cementitious wood fiber deck.
- B. Structural steel.
- C. Miscellaneous metals.

#### 1.4 SUBMITTALS

- A. One (1) each reproducible sepia and four (4) blueline prints which include steel grades, weld size and grades for all steel joists. Contractor shall submit shop drawings directly to the project structural engineer.
- B. Submit mill certificates direct to Structural Engineer with shop drawings.
  - 1. Indicate size, material and strength of members.
  - 2. Show locations and installation procedures.
  - 3. Prepare templates and indicate locations of fastening holes for other work.
- C. Reference Section 01340 SUBMITTALS for additional submittal requirements.

1.5 WARRANTY

- A. Provide written warranty against defects in materials and workmanship for the work under this section for a period of one year after the date of Substantial Completion of the Project.

1.6 QUALITY ASSURANCE

- A. Design, fabrication and erection of steel joists shall meet or exceed the minimum standards of the Steel Joist Institute except where more stringent requirements are indicated in the drawings or specifications:
- B. Each welder performing work at the site shall be qualified in accordance with America Welding Society Structural Welding Code, AWS D1.1 within 12 months of the commencement of welding on this Project.
- C. Fabricators shall be currently approved by the local code authority for fabrication and erection of steel structures.

PART TWO - PRODUCTS

2.1 MATERIALS

- A. The steel used in the manufacturer of chord and web sections shall conform to ASTM Specifications for Structural Steel, A-36, modified to eliminate the upper limit of tensile strength.
- B. Steel for spacers, bridging, bearing plates, anchors, etc., shall conform to ASTM A-7.
- C. Shop coat paint shall be primer meeting requirements of Federal Specification TT-P-636C.
- D. Members damaged, warped or stressed prior to or after erection shall be replaced with new material.
- E. Joist manufacturer shall review all U.L. designs as indicated in the drawings or specifications and comply with all size and weight requirements stipulated. Reference Architectural drawings and Structural drawings for U.L. design indications.

PART THREE - EXECUTION

3.1 FABRICATION

- A. Steel joists shall be fabricated in accordance with Standards of the Steel Joist Institute.
- B. Punching of chord members shall not be permitted.
- C. Steel joists shall be symmetrical about the Y-Y axis.
- D. Splicing of members may occur at any point in chord or web members, and shall be designed in accordance with Standards of the Steel Joist Institute. Spliced members will not be permitted where joists are exposed in finished areas.

3.2 SHOP PAINTING

- A. All joists shall receive one shop coat of primer except where scheduled to receive sprayed fireproofing.
- B. All surfaces shall be clean, dry and free from mill scale or rust.
- C. During and after erection clean and touch-up scratches and welds with specified primer.

3.3 DELIVERY AND HANDLING

- A. Contractor shall inspect all material when delivered and store on platforms or racks to keep all material off the ground. Clean all dirt, rust and other foreign matter from joists before erection.

### 3.4 ERECTION

- A. Joists shall be set level and plumb or sloped as indicated on the drawings. Joists shall be welded to their steel supporting members and bridging shall be welded in place as soon as joists are set. Construction loads shall not be applied to the joists until they are permanently secured at bearing points and the bridging installed. Extend joist ends a minimum of 2-1/2" over steel supports.
- B. Erect steel joists in accordance with AISC S326. Hoist by top chord only between third and quarter points.
- C. No joist shall be erected which has been bent or deformed from its original shape. Replace with new members.
- D. Install horizontal or diagonal bridging as indicated in the drawings and in accordance with SJI, AISC.
- E. No field cuts or holes shall be flame cut. Necessary field holes shall be drilled. All proposed field modifications must be approved by the Project Structural Engineer.

### 3.5 FIELD WELDING OF JOISTS

- A. All welds and the adjacent spattered areas shall be cleaned by sandblasting, wire brushing, chipping or other non-damaging means for removal of excess weld metal. Exposed welds shall be ground smooth. Welds in galvanized material shall be touched up after cleaning with "ZRC cold galvanizing".
- B. Meet requirements of American Welding Society, "Code for Arc and Gas Welding in Building Construction".
- C. Meet requirements of American Welding Society, "Qualifications of Welding Procedures and Operators".
- D. Meet requirements of American Society of Testing Materials, "Specifications for Iron and Steel Arc Welding Electrodes", A233-43T.
- E. Shop welds shall be done in accordance with the Standards of the Steel Joist Institute.

### 3.6 FIELD TOUCHUP

- A. After erection, all steel joists shall be cleaned of rust and touched up with the specified shop coat paint.
- B. Steel shall be touched up wherever the shop coat has been damaged by handling, or during erection or by welding.
- C. Coat any surfaces to be in contact with mortar, concrete, masonry or aluminum with bituminous paint.
- D. Upon completion of this erection, any exposed steel joists shall be made ready for finish painting.

### 3.7 TESTING LABORATORY CONTROL

- A. A laboratory designated by the Owner will perform testing and inspection services in the shop and in the field. Contractor shall notify Testing Laboratory a minimum of 48 hours prior to beginning fabrication of members.
- B. Where defective work, or work not in accordance with these specifications is determined, the Contractor shall pay for correction of the work, re-testing and re-inspection of the work, and for X-ray testing of additional weldments.

- C. Three copies of mill certificates attesting to the physical and chemical characteristics of the steel shall be transmitted to the testing laboratory upon request. In the event that mill certificates are not submitted, the Owner's testing laboratory shall perform physical and chemical tests in accordance with ASTM requirements, all at the Contractor's expense.
- D. Contractor shall submit to the Owners testing laboratory for approval, certificates from an independent testing laboratory attesting to the welders qualifications in accordance with A.W.S. requirements. All welds shall be identifiable by the welder's mark.
- E. Where steel joists are fabricated outside of the Rio Grande Valley area, fabricator shall pay the travel and daily subsistence expense of the laboratory's technician.
- F. The Owners testing laboratory shall be the sole judge as to whether materials and erection of steel joists meets the requirements of these specifications. Materials and installation not meeting specified requirements shall be removed and replaced at the Contractors expense.

END OF SECTION

## SECTION 05310 — STEEL FORM FLOOR DECK AND STRUCTURAL ROOF DECK

### PART 1 - GENERAL

#### 1.1 COORDINATION

- A. The General Conditions of the Contract for Construction and the Supplementary Conditions to the General Conditions of the Contract for Construction shall be considered as part of this section of the specifications.
- B. Each Bidder shall be responsible for determining during the bidding period the extent that any addenda issued during the bidding period may affect this section of the specifications.
- C. Reference Instructions to Bidders for requirements regarding substitutions of materials and products.
- D. Where conflicts occur between the drawings and specifications, between different drawings, between different portions of this section of the specifications, or between different sections of the specifications, the more stringent requirements and the greater quantity shall apply.

#### 1.2 WORK INCLUDED

- A. Provide all labor, materials, equipment, and services necessary for the furnishing and installation of steel form floor and structural roof deck at above grade floors. For the purposes of this specification section, Structural Roof Deck is defined as any metal roof decking not integral with lightweight insulating concrete fill.
- B. Provide additional requirements as may be indicated on the structural drawings and notations.

#### 1.3 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Light gauge metal roofing deck (less than 22 gauge) at insulating concrete fill.
- B. Concrete and reinforcing.
- C. Structural steel and steel joists.
- D. Miscellaneous metals – supplementary framing.

#### 1.4 SUBMITTALS

- A. Submit manufacturer's printed literature indicating material properties, loading criteria, and installation procedures.
- B. Submit drawings or printed illustrations showing deck profile and configuration.
- C. Reference Section 01340 SUBMITTALS for additional submittal requirements.

#### 1.5 DRAWING REFERENCES

- A. Reference structural drawings and notes for gauge, depth and other requirements.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Wheeling
- B. Bowman
- C. Merco
- D. Roll Form
- E. Vulcraft

### 2.2 MATERIALS

- A. The steel floor deck and structural units shall be as manufactured by Roll Form Products, Inc., or equivalent by specified manufacturer. Type, finish, section modulus and gauge as shown on the structural drawings.
- B. The Units shall be formed from steel sheets conforming to ASTM A-611 Grade C or ASTM A446 Grade A with a minimum yield strength of 33 KSI, and shall be listed by Underwriter's Laboratories.
- C. Deformations shall be formed to provide a mechanical lock between concrete and steel.
- D. Unless noted otherwise, floor deck shall be galvanized to conform to ASTM A-525, G60. Provide field touch-up with "ZRC" zinc-rich primer at welds and where galvanizing is damaged.
- E. ACCESSORIES:
  - 1. Weld Washers: Mild steel, uncoated, 5/8 inch outside diameter, 1/8 inch thick. Use for light gauge non-composite decks.
  - 2. Where metal closure strips, wet concrete stops, and related accessories are required, but not indicated in the drawings, provide and install 22 gauge galvanized sheet steel of profile and size required.

## PART 3 - EXECUTION

### 3.1 ERECTION

- A. Panels shall be secured to the steel framework at ends and at intermediate supports by welds spaced 12" o.c. and not less than 3/4" diameter welds. Use welding washers at light gauge non composite decks. Side laps shall be nested and button punched 3'-0" maximum on centers. The erection of composite floor units shall be performed in accordance with manufacturer's printed instructions and approved erection drawings.
- B. Install sheet metal closures at ends of runs, penetrations and columns.

END OF SECTION

SECTION 05410 — LIGHT GAGE METAL FRAMING SYSTEMS AND GYPSUM SHEATHING

PART 1 - GENERAL

1.1 COORDINATION

- A. The General Conditions of the Contract for Construction and the Supplementary Conditions to the General Conditions of the Contract for Construction shall be considered as part of this section of the specifications.
- B. Each Bidder shall be responsible for determining during the bidding period the extent that any addenda issued during the bidding period may affect this section of the specifications.
- C. Reference Instructions to Bidders for requirements regarding substitutions of materials and products.
- D. Where conflicts occur between the drawings and specifications, between different drawings, between different portions of this section of the specifications, or between different sections of the specifications, the more stringent requirements and the greater quantity shall apply.

1.2 WORK INCLUDED

- A. Furnish and install exterior metal stud framing as shown on the drawings and specified herein.
- B. Furnish and install water resistant gypsum board sheathing at exterior face of exterior metal studs.

1.3 RELATED WORK SPECIFIED ELSEWHERE

- A. Masonry.
- B. Interior drywall systems.
- C. Wall Insulation.
- D. Dampproofing and Waterproofing.
- E. Exterior plaster (stucco).

1.4 SUBMITTALS

- A. Submit manufacturer's product data describing all materials.
- B. Submit manufacturer's certification of structural properties, only for products to be used in the project.

1.5 WARRANTY

- A. Provide written warranty against defects in materials and workmanship for the work under this section for a period of one year after the date of Substantial Completion of the project.

1.6 DELIVERY, STORAGE AND HANDLING



- A. All materials shall be delivered in manufacturer's original packaging and stored flat in a covered, dry area providing protection from damage and exposure to the elements.
- B. Damaged or deteriorated materials shall be removed from the premises.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. STUDS AND FRAMING: Unimast, Clark Dietrich, Maverick Steel Co., Dale Industries, Delta Metals, Bostwick, American Studco Inc.
- B. GYPSUM BOARD SHEATHING: United States Gypsum Co., National Gypsum Co., Domtar Gypsum, Inc. Georgia Pacific, Temple Inland.

### 2.2 MATERIALS

- A. STRUCTURAL STUDS AND RUNNERS: Galvanized "Cee" studs in sizes and gauges as indicated in the drawings. Unless otherwise indicated in the drawings, minimum gauge shall be 16 gauge and the following structural properties shall apply:

SIZE	ABOUT MAJOR AXIS X-X			ABOUT MINOR AXIS Y-Y		
	lx	Sx	rx	ly	Sy	ry
3-5/8"	.906	.500	1.430	.139	.142	.614
4"	1.145	.572	1.566	.147	.143	.615
6"	3.016	1.005	2.262	.180	.149	.595
8"	6.071	1.518	2.923	.201	.152	.565

- B. SHEATHING FASTENERS: Unimast self-drilling screw fasteners (bugle head).
- C. SHEATHING: Fire resistant gypsum board with treated water resistant gypsum core surfaced with water repellant paper both faces -1/2" x 4' x 8' with tongue and groove joint design at long edges. Meet requirements of ASTM C-79. Provide 5/8" thick rated X core where specifically indicated on the drawings.
- D. All metal studs, track, and bridging shall be formed from ASTM A-446 commercial grade steel having a minimum yield of 33,000 psi for 18 gauge and lighter members and 50,000 psi for 16 gauge and heavier members.
- E. All framing components shall be galvanized. Tracks, runners, bridging and bracing shall match grade and gauge of studs.

## PART 3 - EXECUTION

3.1 GENERAL

- A. Install studs plumb and in plane, without twist. System installation shall be in accordance with AISI Design Manual for "Light Gauge Cold Formed Steel".
- B. All framing components shall be cut tight against abutting members. Members shall be held firmly in position until properly fastened.
- C. All attachments of axial loaded framing components shall be welded in accordance with the American Welding Society's "Recommended Practices for Resistance Welding" and shall transfer the imposed load into the adjoining member. Use no splices in axial loaded members.
- D. Attachments of framing components not subject to axial loads may be welded or screw fastened.
- E. Members shall be braced as required to resist all wind loads and construction loading for which the system has been designed. System shall be braced as erected and shall not be left overnight without adequate bracing.
- F. Framing components used to frame openings shall be of a size and type to transfer any load imposed on the opening into the members adjacent to the opening. Additional framing shall be provided adjacent to the opening to carry the load imposed.
- G. Welds in galvanized material shall be coated with "ZRC" cold galvanizing after wire brushing.

3.2 ERECTION

- A. TRACK FASTENING: Secure metal floor track to concrete floor slab with Type "A" or "B" fasteners spaced as scheduled in the table below. For determining unbraced wall height, ceiling does not qualify as bracing.
  - 1. Type "A" fastener – minimum 5/32" diameter x 1-1/4" long powder actuated fasteners. Hilti #DS32P10 or Ramset #2335.
  - 2. Type "B" fastener – minimum 1/4" diameter x 2" long drilled sleeve anchor. Hilti sleeve anchor or Ramset "Thunder Nail".
  - 3. Demonstrate to the Architect that fasteners can be driven full length into concrete slab tight to stud track.
  - 4. Use similar fasteners (and spacing) suitable for steel at overhead track or weld track to overhead steel at 12" o.c.
  - 5. At track splices use anchored channel inserts or fully weld.

Spacing Schedule for Type A & B Fasteners

MAX. SPACING OF FASTENERS	*MAX. UNBRACED WALL HEIGHT	
	TYPE A	TYPE B
24"	7.4 FT.	8.3 FT.
16"	11.1 FT.	12.4 FT.
12"	14.8 FT.	16.5 FT.
8"	24.9 FT.	24.9 FT.
6"	29.7 FT.	33.2 FT.

\*NOTE: Ceiling at wall does not reduce unbraced wall height.

- B. STUD FASTENING: Each stud shall be fastened to top and bottom track (prior to gypsum board sheathing or interior wall finish) using one of the following two methods:
  - 1. Screw fastening: One self-drilling screw at the front and back faces of the top and bottom tracks for each stud (4 fasteners per stud.)

2. Welding: One weld at the front face of the top and bottom tracks for each stud (2 welds per stud).
  3. Additional: The above minimum fasteners are required regardless of any additional bracing or intermediate fastening which may be indicated in the drawings or required.
- C. BRIDGING: Provide bridging at all exterior stud walls whether or not indicated in the drawings. Unless more stringent requirements are indicated in the drawings provide the following:
1. Wind loading resistance only: Provide multiple bridging rows spaced 5'-0" o.c. vertically maximum.
  2. Axial loaded members: For stud lengths less than 10 feet, provide 2 rows of bridging at third points. For stud lengths 10 feet and greater, provide multiple bridging rows spaced 42" o.c. vertically maximum.
- D. SHEATHING INSTALLATION: Apply sheathing panels horizontally with the "v" edge turned up. Install with joints and penetrations tight and neatly fit. Stagger end joints over studs with screws spaced at maximum 12" centers at each stud and at 12" o.c. along top and bottom runners.

END OF SECTION

## SECTION 05520 - HANDRAILS AND RAILINGS

### PART 1 GENERAL

#### 1.1 COORDINATION

- A. The General Conditions of the Contract for Construction and the Supplementary Conditions to the General Conditions of the Contract for Construction shall be considered as part of this section of the specifications.
- B. Each Bidder shall be responsible for determining during the bidding period the extent that any addenda issued during the bidding period may affect this section of the specifications.
- C. Reference Instructions to Bidders for requirements regarding substitutions of materials and products.
- D. Where conflicts occur between the drawings and specifications, between different drawings, between different portions of this section of the specifications, or between different sections of the specifications, the more stringent requirements and the greater quantity shall apply.

#### 1.2 SECTION INCLUDES

- A. Handrails and guardrails
- B. Guardrails for hatches and openings.

#### 1.3 RELATED SECTIONS

- A. Section 05500 - Metal Fabrications: Associated metal supports.
- B. Section 07400 - Membrane Roofing: Coordination of roof edge protection installation.

#### 1.4 REFERENCES

- A. Americans with Disabilities Act Accessibility Guidelines (ADA).
- B. American National Standards Institute (ANSI) - A21.1 Safety Requirements for Floor and Wall Openings, Railings and Toe Boards.
- C. American National Standards Institute (ANSI) - A58.1 Minimum Design Loads in Buildings and Other Structures.
- D. American National Standards Institute (ANSI) - A17.1 Accessible and Usable Buildings and Facilities.
- E. American Society of Testing and Materials (ASTM) A47 - Standard Specification for Ferritic Malleable Iron Castings.
- F. American Society of Testing and Materials (ASTM) A53 - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
- G. American Society of Testing and Materials (ASTM) A153 - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
- H. Occupational Safety & Health Administration (OSHA): 1910.23 - Guarding Floor and Wall Openings and Holes.

## 1.5 SUBMITTALS

- A. Submit under provisions of Section 01340.
- B. [ Product Data ]: Manufacturer's data sheets on each product to be used, including:
  - 1. Preparation instructions and recommendations.
  - 2. Storage and handling requirements and recommendations.
  - 3. Installation methods.
- C. Shop Drawings: Drawings showing fabrication and installation of handrails and guardrails including plans, elevations, sections, details of components, anchor details, and attachment to adjoining units of work.
- D. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.
- E. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns.

## 1.6 QUALITY ASSURANCE

- A. Railings Structural Requirements:
  - 1. Handrail, wall rail and guardrail assemblies and attachments shall withstand a minimum concentrated load of 200 pounds (90719 g) applied horizontally or vertically down at any point on the top rail.
  - 2. Infill area of guardrail system capable of withstanding a horizontal concentrated load of 200 pounds (90719 g) applied to one square foot (8165 g/sm) at any point in the system. Load not to act concurrently with loads on top rail of system in determining stress on guardrail.
  - 3. Handrail assemblies and guards shall be designed to resist a load of 50 pounds per linear foot (0.73 kN/m) applied in any direction at the top and to transfer this load through the supports to the structure.
- B. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
  - 1. Install in areas designated by Architect.
  - 2. Do not proceed with remaining work until workmanship and installation are approved by Architect.
  - 3. Refinish mock-up area as required to produce acceptable work.

## 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Materials to be delivered to the job site in good condition and adequately protected against damage as handrails are a finished product.
- B. Store products in manufacturer's unopened packaging until ready for installation.

## 1.8 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.
- B. Field Measurements: Where handrails and railings are indicated to fit to other construction, check actual dimensions of other construction by accurate field measurements before fabrication; show recorded measurements on final shop drawings.
  - 1. Where field measurements cannot be made without delaying the railing fabrication and delivery, obtain guaranteed dimensions in writing by the Contractor and proceed

with fabrication of products to not delay fabrication, delivery and installation.

- C. Coordinate fabrication and delivery schedule of handrails with construction progress and sequence to avoid delay of railing installation.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Kee Industrial Products, Inc.  
100 Stradtman St. ; Buffalo, NY 14206; Toll Free Tel: 800-851-5181; Tel: 716-896-4949;  
Fax: 716-896-5696; Email: [info@keeklamp.com](mailto:info@keeklamp.com); Web: [www.keeklamp.com](http://www.keeklamp.com)
- B. Substitutions will be considered in accordance with provisions of Section 01600.

### 2.2 SYSTEMS

- A. Handrails and Guardrails: Provide pipe, fittings, and accessories as indicated or required to match design indicated on the Drawings.
  - 1. Fittings: Aluminum.
  - 2. Fittings: Cast iron.
  - 3. Handrail Pipe Size:
    - a. 1-1/2 inches (38 mm) industry standard - 1.90 inches (48 mm) O D.
    - b. 1-1/2 inches O D (38 mm).
  - 4. Infill Panels: As indicated. Refer to Drawings.
- B. Guardrails for Hatches and Openings: Railing system consisting of a top rail, mid rail, and chain or swinging gate, with the hatch curb acting as the toe plate. Extend railing system to a height of at least 42 inches (1067 mm) from the finished roof deck.
  - 1. Pipe: Galvanized pipe, 1-1/4 inches (32 mm).
  - 2. Pipe: Aluminum pipe 1-1/2 inches (38 mm).
  - 3. Base: Fixed base.
  - 4. Base: Ground socket base.
  - 5. Style: Three sided.
  - 6. Style: Two sided.
  - 7. Style: As indicated. Refer to drawings.
- C. Custom Design: Provide pipe, fittings, and accessories as indicated or required by Drawings to match design indicated.

### 2.3 MATERIALS

- A. Pipe:
  - 1. Steel Pipe: ASTM A53 Grade B seamed tube.
- B. Fittings, Including Elbows, Crossovers, Wall flanges, Tees, Couplings:
  - 1. Galvanized Malleable Cast Iron: Kee Klamp structural pipe fittings, ASTM A447 with ASTM A153 galvanizing.
  - 2. Aluminum Alloy: High grade aluminum silicon magnesium alloy.
- C. Finish: Hot dipped galvanized, paint finish.
- D. Fasteners: Type 304 or 305 stainless steel.

### 2.4 FABRICATION

- A. Fit and shop assemble components in largest practical sizes for delivery to site.
- B. Upright tops shall be plugged with weather and light resistant material.
- C. Assemble components with joints tightly fitted and secured. Accurately form components to suit installation.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

### 3.2 PREPARATION

- A. Coordinate post setting drawings, diagrams, templates, instructions, and directions for installation of anchorages, such as sleeves, concrete inserts, anchor bolts, and miscellaneous items having integral anchors that are to be embedded in concrete and masonry construction.
  - 1. Coordinate delivery of anchorages to project site.
  - 2. Coordinate that blocking is in place for all mounting fasteners.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

### 3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Fit exposed connections accurately together to form tight joints. For all connections with Kee Klamp fittings, each set screw is to be tightened to 29 foot pounds (39 N-m) of torque.
- C. Perform cutting, drilling, and fitting required for installation of handrails. Set handrails and accurately in location, alignment, and elevation, measured from established lines and levels.
- D. Set posts plumb within a tolerance of 1/8 inch (3 mm).

### 3.4 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

## SECTION 05800 - EXPANSION CONTROL

### PART 1 GENERAL

#### 1.00 COORDINATION

- A. The General Conditions of the Contractor for Construction and the Supplementary Conditions to the General Conditions of the Contract for the Construction shall be considered as part of this section of the specifications.
- B. Each Bidder shall be responsible for determining during the bidding period the extent that any addendum issued during the bidding period may affect this section of the specifications.
- C. Reference Instructions to Bidders for requirements regarding substitutions of materials and products.
- D. Where conflicts occur between the drawings and specifications, between different drawings, between different portions of this section of the specifications, or between different sections of the specifications, the stringent requirements and the greater quantity shall apply.

#### 1.01 SUMMARY

- A. Provide all labor, materials, equipment and services, and perform all operations required for complete installation of Expansion Control and related work as indicated on the drawings and specified herein.
- B. Work Included: The work of this section shall include, but not be limited to the following:
  - 1. Floor expansion joint cover assemblies.
  - 2. Wall/ceiling expansion joint cover assemblies.
  - 3. Exterior expansion joint seals.
  - 4. Roof expansion joint assemblies.
  - 5. Fire barrier systems.
- C. Related Work Specified Elsewhere
  - 1. Concrete - Section 03300.
  - 2. Unit Masonry - Section 04200.
  - 3. Miscellaneous Metal - Section 05500.
  - 4. Flashings and Sheet Metal - Section 07620.
  - 5. Sealants and Caulking - Section 07920.
  - 6. Color design - Section 09050.

#### 1.02 QUALITY ASSURANCE

- A. Materials and work shall conform to the latest edition of reference specifications specified herein and to all applicable codes and requirements of local authorities having jurisdiction.
- B. Fire Performance Characteristics:
  - 1. Fire Resistance: Where indicated, provide expansion joint cover assemblies identical to those of assemblies whose fire resistance and cycling capability has been determined per UL 2079 by Underwriter Laboratories, Inc. Fire rating not less than the rating of adjacent construction.
  - 2. Surface Burning Characteristics: Composite fiberglass interior wall and ceiling covers shall be U.L.® Tested, classified and labeled reflecting a class I fire rating in accordance with UL-723 (ASTM E84-91a) test procedures.
- C. Loading Characteristics:



1. Standard Floor Covers: Shall be designed to withstand a minimum load of 500 lbs. without damage or permanent deformation. Heavy duty covers should withstand a point load of 2,000 lbs.
  2. Fiberglass Wall Covers: Shall be designed to withstand a minimum impact load of 75 ft/lbs without damage or permanent deformation. Tested in accordance with applicable provisions of ASTM F476-84.
- D. Single-Source Responsibility: Obtain expansion joint cover assemblies from one source from a single manufacturer.

#### 1.03 SUBMITTALS

- A. Product Data: Submit copies of manufacturer's latest published literature for materials specified herein for approval, and obtain approval before materials are fabricated and delivered to the site. Data to clearly indicate movement capability of cover assemblies and suitability of material used in exterior seals for UV exposure.
- B. Certificates: Material test reports from qualified independent testing laboratory indicating and interpreting test results relative to compliance of fire-rated expansion joint assemblies with requirements indicated.
- C. Shop Drawings: Submit shop drawings for work specified herein for approval and obtain approval prior to fabrication and shipment of materials to the job site.
1. Shop Drawings showing full extent of expansion joint cover assemblies; include large-scale details indicating profiles of each type of expansion joint cover assembly, splice joints between sections, joinery with other types, special end conditions, anchorage's, fasteners, and relationship to adjoining work and finishes. Include description of materials and finishes and installation instructions.
- D. Samples: Samples of materials specified herein shall be submitted for approval, and approval obtained before materials are delivered to the site. Samples shall include the following:
1. Samples for each type of metal finish indicated on metal of same thickness and alloy to be used in work. Where normal color and texture variations are to be expected, include 2 or more units in each set of samples showing limits of such variations.
  2. Samples of each type of flexible seal to be used in work with color samples as above.

#### 1.04 DELIVERY, STORAGE, AND HANDLING

- A. Exercise proper care in the handling of all work so as not to injure the finished surface, and take proper precautions to protect the work from damage after it is in place.
- B. Deliver materials to the job site ready for use, and fabricated in as large sections and assemblies as practical. Assemblies shall be identical to submitted and reviewed shop drawings, samples and certificates.
- C. Store materials under cover in a dry and clean location off the ground. Remove materials that are damaged or otherwise not suitable for installation from the job site and replace with acceptable materials at no additional cost.

#### 1.05 PROJECT CONDITIONS

- A. Where necessary, check actual locations of walls and other construction to which work must fit, by accurate field measurements before fabrication. Show recorded measurements on final shop drawings and coordinate fabrication schedule with construction progress to avoid delay of work.

## PART 2 - PRODUCTS

### 2.01 MANUFACTURERS

- A. Expansion joint cover assemblies specified herein and indicated on the drawings shall be manufactured by:
  - 1. Conspec Systems, Inc., P.O. Box 380, Muncy, PA,
  - 2. Balco, Inc. 2626 S. Sheridan, Wichita, KS 67217

### 2.02 MATERIALS

- A. Structural Steel Shapes: ASTM A36.
- B. Steel Plates: ASTM A283 Grade C.
- C. Rolled Steel Floor Plates: ASTM A786.
- D. Aluminum: ASTM B 221, alloy 6063-T5 for extrusions; ASTM B 209, alloy 6061-T6, sheet and plate.
  - 1. Protect aluminum surfaces in contact with cementitious materials with heavy metal free high solids primer or chromate conversion coating.
- E. Bronze: ASTM B455 alloy C38500 for extrusions; alloy C28000, Muntz Metal for plates.
- F. Brass: UNS Alloy C26000 for half-hard sheet and coil.
- G. Stainless Steel: ASTM A 167, Type 304 with 2B finish, unless indicated otherwise, for plates, sheets and strips.
- H. Extruded Preformed Seals: Single or multilayered rubber extrusions as classified under ASTM D 2000, designed with or without continuous, longitudinal, internal baffles and formed to fit compatible frames, in color indicated, or, if not indicated, as selected by architect from manufacturer's standard colors.
- I. Exterior Seals: Typically two single layered flexible extrusions, one interior PVC and one exterior Santoprene 8000 Series non-hydroscopic, thermoplastic rubber, as classified under ASTM D 2000, retained in a set of compatible frames, in color indicated, or, if not indicated, as selected by architect from manufacturer's standard colors.
- J. Fire Barriers: Designed for indicated or required dynamic structural movement without material degradation or fatigue in accordance with ASTM E 1399. Tested in maximum joint width condition as a component of an expansion joint cover in accordance with UL 2079 including hose stream testing of wall assemblies at full-rated period by Underwriters Laboratories Inc.
- K. Composite Fiberglass Panels: Shall be UL<sup>®</sup> tested, classified and labeled reflecting a class I fire rating in accordance with UL-723 (ASTM E84-91a) test procedures and impact tested in accordance with applicable provisions of ASTM F476-84.
- L. Accessories: Manufacturer's standard anchors, fasteners, set screws, spacers, flexible vapor seals and filler materials, drain tubes, adhesive and other accessories compatible with material in contact, as indicated or required for complete installations.

### 2.03 FABRICATION

- A. General: Provide expansion joint cover assemblies of design, basic profile, materials, and operation indicated. Select units comparable to those indicated or required to accommodate joint size, variations in adjacent surfaces, and structural movement. Furnish units in longest practicable lengths to minimize number of end joints. Provide hairline-mitered corners where joint changes directions or abuts other materials. Include closure materials and transition pieces, tee-joints, corner, curbs, cross-connections, and other accessories as required to provide continuous joint cover assemblies.
- B. Interior Expansion Joint Covers
  - 1. Flush Cover Assemblies: Provide continuous extruded aluminum frame assemblies of a suitable profile to receive free floating cover plate of design indicated. Furnish colorable, thermoplastic frame seal with rigid edges for positive attachment to frame and center plate free from grooves or ridges. Seals to have flexible core of shore hardness 73 to allow movement of joint width without gaps occurring between seal and cover assembly. Seals to be replaceable without removal of center plate and to be in one of four standard colors unless otherwise specified. All aluminum in contact with concrete to receive heavy metal free/high solids primer, exposed aluminum to be mill finish. All as C/S Flush Series manufactured by Conspec Systems, Inc.
  - 2. Extruded Aluminum Cover Assemblies: Provide continuous extruded aluminum frame assemblies of suitable profile to receive free floating cover plate of design indicated. Furnish depth and configuration to suit type of construction with no exposed fasteners. All aluminum in contact with concrete to have zinc chromate finish, exposed aluminum to be finished as noted free of gaskets and fillers assemblies to be capable of +50% expansion and contraction without loss of cover. Floor covers must withstand min. 500 lb. point load without damage or permanent deformation unless otherwise indicated. Provide continuous flexible waterstop where detailed. All as C/S Allway series manufactured by Construction Specialties, Inc.
- C. Interior Seismic Joint Covers
  - 1. Flush Seismic Cover Assemblies: Provide continuous extruded aluminum frame assemblies of a suitable profile to receive free floating cover plate of design indicated. Center plate to be held in place and kept centered throughout movement cycle by stainless steel turnbar spaced 24" on center max. Assembly (where indicated) to be sealed with dual durometer, colorable thermoplastic seals with rigid edges for positive attachment to frame and center plate. Free from grooves or ridges, seals to have flexible core of shore hardness 73 to allow max. movement of + 1 inch without gaps occurring between seal and cover assembly. Center plate to include concealed lifting device to allow full seismic movement without damage to cover. Seals to disengage under seismic conditions only. All aluminum in contact with concrete to have a zinc chromate finish. All as C/S Seismic Series manufactured by Conspec Systems, Inc.
  - 2. Extruded Aluminum Seismic Cover Assemblies: Provide continuous extruded aluminum frame assemblies of suitable profile to receive free floating center plate of design indicated. Center plate to be held in place and kept centered throughout movement cycle by stainless steel turnbar spaced 24" on center max. All aluminum in contact with concrete to have a zinc chromate finish. All as C/S Seismic Series manufactured by Conspec Systems, Inc.
- D. Exterior Joint Covers
  - 1. Vertical Exterior Seals: Thermoplastic rubber primary seals extruded in Santoprene retained in extruded aluminum side frames complete with independent continuous PVC back seal. Side frames mounted on butyl caulk tape with appropriate anchors 18" o.c. Installation to include factory, heat welded transitions where applicable to ensure a watertight system. Color of primary seal to be one of four standard colors or custom color selected by architect. All as C/S Exterior Seals manufactured by Conspec Systems, Inc.
- E. Specialty Covers
  - 1. Parking Deck/Vehicular Seals: Provide continuous thermoplastic rubber (TPR) winged seal of configuration indicated, bedded in elastomeric concrete to finish flush with adjacent surfaces. Seal

should be capable of up to 50% movement while withstanding frequent vehicular traffic. Systems to be installed strictly in accordance with manufacturer's installation instructions. All as C/S Parking Deck Series manufactured by Conspec Systems, Inc.

2. Compression Seals: Provide continuous thermoplastic rubber or Neoprene compression seal bonded to continuous aluminum frame where indicated to finish flush with adjacent surfaces. Seal should be capable of movement indicated on the contract drawings. All as C/S Compression Seal Series manufactured by Conspec Systems, Inc.
  - a) Extruded Santoprene Floor/Wall Compression Seal: Provide continuous seal to be held in place by lubricating adhesive. **As Model CSS/CSSF**

#### F. Roof Covers

1. Metal Roof Covers: Provide continuous extruded aluminum base frame sections fastened to roof curb at 24" o.c. with aluminum cover formed from min. .078" thick aluminum sheet. Frames sealed with continuous extruded PVC gasket and seated on continuous neoprene waterstop. Frames to incorporate adjustable angle flange folded on site to cover adjacent edge of roof membrane. All transitions and end caps to be factory fabricated to ensure maximum weather tightness. All butt joints to be sealed with aluminum splice cover bedded on caulk and fastened on one side only. All as C/S Metal Roof Covers manufactured by Conspec Systems, Inc.
2. Elastomeric Flexible Roof Covers: Continuous neoprene sheet bellows complete with foam support membrane and continuous galvanized attachment flanges, mechanically fastened to curb member 24" o.c. Cover to be one-piece unit with optional back seal. All transitions and end caps to be factory fabricated with butt joints sealed with site applied flexible splice covers. All as C/S Elastomeric Roof Covers as manufactured by Conspec Systems, Inc.
3. Flexible Bellows Roof Covers Assembly: Roof-to-roof and roof-to-wall neoprene bellows. Color black. **As Model BRJ/BRJW**

#### G. Fire Barrier Systems (Delete this section if product is not part of spec.)

Prefabricated fire barrier assemblies tested in accordance with ANSI/UL 2079 for two-hour certification, unless otherwise detailed and in compliance with ASTM E 1399. Material to carry UL labeled and be subject to Underwriters Laboratories follow-up service for quality assurance. Systems to be installed strictly in accordance with manufacturer's installation instructions. All as C/S Fire Barrier manufactured by Conspec Systems, Inc.

1. For joint widths up to and including 24", the barrier shall be supplied in maximum lengths to minimize field splicing. Fire barrier to consist of intumescent blankets layered to provide a flame and insulation barrier and to accommodate the specified dynamic movement. **As Model FB-97.**
2. For all joints within enclosed spaces such as chase walls, fire barrier system to include .032" thick galvanized steel cover where conventional expansion joint cover is not used.

#### H. Metal Finishes

1. Comply with NAAM "Metal Finishes Manual" for finish designations and application recommendations, except as otherwise indicated. Apply finishes in factory after products are fabricated. Protect finishes on exposed surfaces with protective covering before shipment.
2. Aluminum Finishes
  - a) Clear Anodize Finish – AA-C204R1; medium matte etched finish with 0.4 mil minimum thick anodic coating.
  - b) Paint Finish: Shall be inhibited thermocured primer, .02 mil minimum dry film thickness and thermocured fluorocarbon coating containing full 70% Kynar 500 resin, 1.0 mil minimum dry film thickness. Provide color indicated or, if not indicated, as selected by Architect from manufacturer's standard colors. *[Specifier note: Paint is not recommended for use on floor covers.]*

- c) Duranodic Bronze Finish: AA-C22A42; integral color anodic coating min. 27 mg. per sq. in. Color to be light, medium or dark bronze.
  - d) Factory-Primed Concealed Surfaces: Protect concealed metal surfaces that will be in contact with concrete and masonry surfaces when installed by applying a shop coat of manufacturer's standard primer to contact surfaces. Provide minimum dry film thickness of 2.0 mils.
  - 3. Bronze /Stainless Finish
  - 4. Natural Satin Finish - NAAMM-M32, mechanical finish, directional textured, medium satin.
- I. Composite Fiberglass Panel Finishes
- 1. Panels shall be field primed (1 coat) and finish painted (2 coats) with commercial acrylic latex materials.

## PART 3 - EXECUTION

### 3.01 EXAMINATION

- A. Make a thorough examination of all surfaces receiving the work of this Section and before starting the installation, notify the Architect, in writing, of any defect which would affect the satisfactory completion of the work of this section.

### 3.02 PREPARATION

- A. Examine the Contract Drawings and specifications in order to insure the completeness of the work required under this Section.
- B. Verify all measurements and dimensions at the job site and cooperate in the coordination and scheduling of the work of this Section with the work of related trades, with particular attention given to the installation of items embedded in concrete and masonry so as not to delay job progress.
- C. Provide all templates as required to related trade for location of all support and anchorage items.

### 3.03 INSTALLATION

- A. In addition to requirements of these specifications, comply with manufacturer's instructions and recommendations for all phases of work, including preparation of substrate, applying materials, and protection of installed units.
- B. Provide anchorage devices and fasteners where necessary for securing expansion joint cover assemblies to in-place construction, including threaded fasteners with drilled-in fasteners for masonry and concrete where anchoring members are not embedded in concrete. Provide fasteners of metal, type, and size to suit type of construction indicated and provide for secure attachment of expansion joint cover assemblies.
- C. Perform all cutting, drilling and fitting required for installation of expansion joint covers. Install joint cover assemblies in true alignment and proper relationship to expansion joints and adjoining finished surfaces measured from established lines and levels.
- D. Allow adequate free movement for thermal expansion and contraction of metal to avoid buckling.
- E. Set floor covers at elevations to be flush with adjacent finished floor materials. If necessary, shim to level, but ensure base frames have continual support to prevent rocking and vertical deflection.
- F. Locate wall, ceiling, roof, and soffit covers in continuous contact with adjacent surfaces. Securely attach in place with all required accessories.

- G. Locate anchors at interval recommended by manufacturer, but not less than 3 inches from each end and not more than 24 inches on centers.
- H. Maintain continuity of expansion joint cover assemblies with end joints held to a minimum and metal members aligned mechanically using splice joints. Cut and fit ends to produce joints that will accommodate thermal expansion and contraction of metal to avoid buckling of frames.
- I. Adhere flexible filler materials (if any) to frames with adhesive or pressure-sensitive tape as recommended by manufacturer.
  - 1. Installation of Extruded Preformed Seals: Install seals to comply with manufacturer's instruction and with minimum number of end joints.
  - 2. For straight sections provide preformed seals in continuous lengths.
  - 3. Vulcanize or heat-seal all field splice joints in preformed seal material to provide watertight joints using manufacturer's recommended procedure.
  - 4. Apply manufacturer's approved adhesive, epoxy, or lubricant-adhesive to both frame interfaces prior to installing preformed seal.
  - 5. Seal transitions in accordance with manufacturer's instruction.
- J. Installation of Exterior Seal Joint Assemblies
  - 1. Seal all end joints within continuous runs and joints at transitions in accordance with manufacturer's directions to provide a watertight installation.
  - 2. Install exterior flexible seal in standard lengths.
  - 3. Seal transitions and butt joints in accordance with manufacturer's instructions.
  - 4. Install secondary seals in continuous lengths; vulcanize all field splice joints in secondary seal material to provide watertight joints using manufacturer's recommended procedures.
- K. Installation of Fire Barrier
  - 1. Install fire barrier in accordance with federal, state and local building codes using manufacturer's recommended procedures.
  - 2. Install transition and end joints to provide continuous fire resistance and in accordance with manufacturer's instructions.

### 3.04 CLEANING AND PROTECTION

- A. Do not remove strippable protective material until finish work in adjacent areas is complete. When protective material is removed, clean exposed metal surfaces to comply with manufacturer's instructions.

END OF SECTION

## SECTION 06100 - ROUGH CARPENTRY

### PART 1 - GENERAL

#### 1.1 COORDINATION

- A. The General Conditions of the Contract for Construction and the Supplementary Conditions to the General Conditions of the Contract for Construction shall be considered as part of this section of the specifications.
- B. Each Bidder shall be responsible for determining during the bidding period the extent that any addenda issued during the bidding period may affect this section of the specifications.
- C. Reference Instructions to Bidders for requirements regarding substitutions of materials and products.
- D. Where conflicts occur between the drawings and specifications, between different drawings, between different portions of this section of the specifications, or between different sections of the specifications, the more stringent requirements and the greater quantity shall apply.

#### 1.2 WORK INCLUDED

- A. Provide and install all rough carpentry, formwork, wood framing, blocking, wood furring, hardboard and related fasteners as indicated in the drawings or as required to complete the indicated construction.
- B. Install all related hardware and fasteners. Provide and install wood furring and/or trim for acoustical panels.

#### 1.3 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Cast-in place concrete
- B. Painting
- C. Finish hardware

#### 1.4 SECTION REQUIREMENTS

- A. Submittals manufacturer's printed literature describing wood preservatives treatment system and certifying that system meets all current requirements for applicable Federal, State and local governing agencies.
- B. Submittals manufacturer's printed literature describing fire retardant treatment system, any structural or usage limitations, and certifying that system meets all current requirements for applicable Federal, State and local governing agencies.

#### 1.5 WARRANTY

- A. Provide written warranty against defects in materials and workmanship for the work under this section for a period of one year after the date of Substantial Completion of the project.

#### 1.6 DELIVERY AND STORAGE

- A. Deliver and store lumber, plywood and hardwood on sills and cover for protection.

## 1.7 QUALITY ASSURANCE

- A. All lumber and plywood shall be grade marked by Southern Pine Inspection Bureau, West Coast Lumber Inspection Bureau, American Plywood Association, or Western Wood Products Association.
- B. All lumber and plywood shall be marked with producing manufacturer's trademark.
- C. Certificate of inspection issued by grading association for bundled lumber and plywood may substitute for individual piece marking.

## PART 2 - PRODUCTS

### 2.1 LUMBER, GENERAL

- A. Dressed lumber, S4S, [19] [15] percent maximum moisture content for 2-inch (38-mm) thickness or less, marked with grade stamp of inspection agency.

### 2.2 TREATED MATERIALS

- A. Preservative-Treated Materials: AWPAC2 lumber and AWPAC9 plywood, labeled by an inspection agency approved by ALSC's Board of Review. After treatment, kiln-dry lumber and plywood to 19 and 15 percent moisture content, respectively. Treat indicated items and the following:
  - 1. Wood members in connection with roofing, flashing, vapor barriers, and waterproofing.
  - 2. Concealed members in contact with masonry or concrete.
  - 3. Wood framing members less than 18 inches (460 mm) above grade.
  - 4. Wood floor plates installed over concrete slabs directly in contact with earth.
- B. Fire-Retardant-Treated Materials: AWPAC20 lumber and AWPAC27 plywood, interior Type A treatment, labeled by a testing and inspecting agency acceptable to authorities having jurisdiction.
  - 1. Use treated lumber and plywood with bending strength, stiffness, and fastener-holding capacities that are not reduced below values published by manufacturer of chemical formulation under elevated temperature and humidity conditions.

### 2.3 LUMBER

- A. Miscellaneous Lumber: No. 3 or Standard grade of any species for nailers, blocking, and similar members as indicated on drawings.

### 2.4 MISCELLANEOUS PRODUCTS

- A. Fasteners: Size and type indicated. Where rough carpentry is exposed to weather, in ground contact, or in area of high relative humidity, provide fasteners with a hot-dip zinc coating per ASTM A 153 or of Type 304 stainless steel.
  - 1. Power-Driven Fasteners: CABO NER-272.



2. Bolts: Steel bolts complying with ASTM A 307, Grade A (ASTM F 568, Property Class 4.6); with ASTM A 563 (ASTM A 563M) hex nuts and, where indicated, flat washers.
- B. Metal Framing Anchors: Hot-dip galvanized steel of structural capacity, type, and size indicated.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION

- A. COORDINATION: Coordinate work with other trades and provide cutting and patching required to accommodate the work. Verify all dimensions by taking field measurements to ensure proper fit. Accurately cut framing and blocking, and fit true to line and level, avoiding shims and wedges.
- B. Fit rough carpentry to other construction; scribe and cope for accurate fit. Correlate location of furring, blocking, and similar supports to allow attachment of other construction.
- C. ANCHORING AND FASTENTING: Use largest practicable fasteners for each type of work. Bolt nailers and blocking to steel, masonry or concrete members using bolts of proportionate strength to members attached. Unless otherwise noted in the drawings use  $\frac{3}{4}$ " diameter bolts at maximum 4'-0" centers. Use concealed fasteners in finish work, set nails and use flathead countersunk screws.
- D. WOOD BLOCKING: Install fire-retardant treated wood blocking between metal studs where wall-supported drinking fountains, casework, railings, and other equipment is attached. Install between studs for toilet partitions systems and toilet accessories where anchored to wall. Use minimum 2 x 4 dimension where not indicated otherwise in the drawings.

END OF SECTION 06100

## SECTION 07100 — DAMPPROOFING AND WATERPROOFING

### PART 1 - GENERAL

#### 1.1 COORDINATION

- A. The General Conditions of the Contract for Construction and the Supplementary Conditions to the General Conditions of the Contract for Construction shall be considered as part of this section of the specifications.
- B. Each Bidder shall be responsible for determining during the bidding period the extent that any addenda issued during the bidding period may affect this section of the specifications.
- C. Reference Instructions to Bidders for requirements regarding substitutions of materials and products.
- D. Where conflicts occur between the drawings and specifications, between different drawings, between different portions of this section of the specifications, or between different sections of the specifications, the more stringent requirements and the greater quantity shall apply.

#### 1.2 WORK INCLUDED

- A. Provide and install below-grade waterproofing.
- B. Provide and apply dampproofing on weather side of inside wythe of all exterior masonry cavity walls.
- C. Provide and apply dampproofing and joint taping on weather side of gypsum board sheathing.
- D. Provide and install membrane waterproofing (flashing) at exterior walls as indicated in the drawings and specified herein.

#### 1.3 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Unit masonry.
- B. Gypsum sheathing.
- C. Flashing at roof.
- D. Plastic membrane under slab-on-grade.
- E. Water stops.
- F. Metal thru-wall flashing.

#### 1.4 SUBMITTALS

- A. Submit manufacturer's printed literature describing each material, restrictions, and manufacturer's recommended procedures. Submit samples of each material.
- B. Reference Section 01340 SUBMITTALS for additional submittal requirements.

1.5 WARRANTY

- A. Provide written warranty against defects in materials and workmanship for the Work under this section for a period of one year after the date of Substantial Completion of the Project.

1.6 QUALITY ASSURANCE

- A. Waterproofing company shall have a minimum of 3 years experience in the dampproofing and waterproofing of building structures of similar size and scope as this project.
- B. Retain at the job site a properly calibrated gauge for use by the Architect to verify applied thickness of materials.

PART 2 - PRODUCTS

2.1 WALL MATERIALS

- A. MEMBRANE FLASHING: 40 mil thick polyethylene backed SBS modified bitumen self-adhering black membrane; "Protecto Flash" as manufactured by Protecto Wrap Co. or "Perm-A-Barrier" as manufactured by W.R. Grace and Co. or "Blueskin SA" as manufactured by Henry Company. Membrane shall comply with the following:
  - 1. Tensile Strength: ASTM D412; 1400 psi.
  - 2. Elongation: ASTM D412; 200% min.
  - 3. Water Absorption: ASTM D570; 0.1% max.
- B. DAMPPROOFING: Non-asbestos emulsion type coating No. 352 over No. 207 adhesive primer, as manufactured by Gulf States Asphalt or approved equivalent by Henry Company, Karnak, W.R. Meadows, Celotex, or Sonneborn. Comply with ASTM D1227, Type 1.
- C. SHEATHING TAPE: 4" wide glass fabric scrim complying with ASTM D1668 or 40 mil thick polyethylene backed SBS modified bitumen self-adhering tape as manufactured by Protecto Wrap Co. or equivalent by W.R. Grace and Co or Henry Company. Verify compatibility of tape with proposed dampproofing.

2.2 BELOW GRADE WATERPROOFING:

- A. WALLS: "Hydrocide Liquid Membrane 5000T", one part cold applied elastometric, modified urethane. Trowel applied, non-sag, as manufactured by Sonneborn or approved equivalent by Toch Bros. or Tremco or Henry Company.
- B. SLABS: "Hydrocide Liquid Membrane, HLM 5000" Cold Applied Seamless Elastomeric, Modified Urethane for use between concrete seal slab and concrete slab-on-grade as manufactured by Sonneborn or approved equivalent by Toch Bros. or Tremco or Henry Company.
- C. PROTECTION BOARD: Water-resistant, semi-rigid panel composed of a core of asphalt and inorganic mineral filler particles, bottom reinforcing cover of asphalt-saturated felt and top cover of fiber glass mat weather-coated with a bond-breaking film, as manufactured by W.R. Meadows, Inc or Henry Company.
- D. WATERSTOPS: Reference concrete section.

2.3 SHOWER PANS:

- A. MEMBRANE SHOWER PAN: 30 mil thick synthetic, heavy-duty, flexible membrane PVC sheet, Nervastral 300.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Contractor shall inspect exterior face of all masonry cavity walls to ensure that all penetrations and joints are completely filled prior to dampproofing operations beginning.

3.2 MEMBRANE FLASHING

- A. Prime concrete and masonry surfaces scheduled to receive membrane flashing using flashing manufacturer's recommended primer to ensure good adhesion.
- B. WALL FLASHINGS: Shall be installed above all openings occurring in an exterior wall, at base of exterior wall, and at wall interruptions by columns, beams, slabs, spandrels and other locations as indicated in the drawings. Flashing shall extend to within 1" of outside face of wall, shall be continuous and shall extend through cavity and be turned up to the top first course above finish floor on face of inner wythe, and to extend 1" minimum into back up or inner wythe. End laps to be 9" and side laps 6".
- C. STEEL STRUCTURE: Cover all steel columns or beams in exterior walls not protected by dampproofed concrete block or sheathing. Cover steel completely with membrane flashing lap 6" on to masonry on each side of columns. Conform and adhere to steel shapes not fireproofed. Cover all protruding angles or miscellaneous steel.
- D. FRAMES: Install at exterior window and door frames and other locations as indicated in the drawings.
- E. SHEATHING: Wrap all corners of gypsum board sheathing. See drawings for other details.

3.3 SHEATHING TAPE: Use one of the following systems:

- A. Imbed and cover glass fabric scrim tape in dampproofing mastic at all joints, cracks and penetrations at gypsum board sheathing.
- B. Apply specified self-adhering tape continuously over all joints, cracks and penetrations prior to beginning dampproofing operations.

3.4 DAMPPROOFING

- A. Spray or brush apply dampproofing coating to weather side of all gypsum sheathing and primed concrete block back-up at exterior masonry cavity walls in accordance with the following:
  - 1. Primer: Minimum ½ gallon material per 100 sq. ft. of wall surface.
  - 2. Coating: Minimum 2/32" (62.5mils) dry film thickness and minimum 5 gallons material per 100 sq. ft.

- B. Cover all corners and work thoroughly into all joints, cracks, or crevices. Finished coating shall be monolithic and free of pin holes or cracks. Seal cracks, voids and joints at dissimilar materials with glass fabric embedded in dampproofing coating.
- C. Seal around penetrations including all masonry anchors.
- D. Dampproofing shall be applied only when temperature is at 40 degrees F. and rising or above, and when no rain is forecast for the 24 hour period following application. No dampproofing shall be covered by masonry prior to observation by the Architect. All dampproofing shall dry for a minimum of 24 hours prior to being covered by finish masonry.

### 3.5 BELOW GRADE WATERPROOFING

#### A. LIQUID MEMBRANE:

- 1. Install liquid membrane systems at earth side of all below grade walls, between sub-slab ("mud-slab") and structural slab, and all outside surfaces of elevator pit. Allow concrete work to cure a minimum of 14 days. All surfaces shall be smooth, dry, sound and free of honeycombs. Concrete shall be free of curing and parting compounds, wax or other foreign materials.
- 2. Static joints or cracks less than 1/8" wide shall be sealed with "HLM" as manufactured by waterproofing manufacturer. Material shall fill and over-lap the edges of the joint to a width of 4" on both sides and shall have a minimum surface thickness of 55 (+5) mils.
- 3. Immediately prior to application of membrane, remove all dust and dirt by use of high-pressure air, by brushing with a soft broom or vacuum cleaning.
- 4. Apply material at a rate of 4 gallons per 100 square feet of surface to produce a membrane of 55 (+5) mil thick. Carefully control application to avoid runs and sags of fresh material.
- 5. Apply membrane to prestripped areas at cracks, joints, intersections, penetrations, etc., to provide a minimum total thickness of 110 mils over these areas. Mask any membrane edge exposed to view to provide a straight clean edge.
- 6. Before the membrane attains a final set, verify the applied thickness by use of a mil-thickness gauge. Where readings indicate a thickness less than specified, immediately apply additional membrane to produce required thickness.
- 7. Following the application of the membrane, place protection boards over the membrane waterproofing at walls receiving backfill. Use membrane material as required to adhere protection boards. Boards shall be firmly in place with joints closely butted and sealed with gusset tape before backfilling is started.
- 8. Protect membrane during construction. Any punctures or cuts in the membrane shall be patched and sealed in the manner described above for sealing joints in the sheeting.

### 3.6 SHOWER PANS

- 1. Ensure that surfaces receiving shower pan are clean, thoroughly dry and free from rough surfaces and sharp projections.
- 2. One-ply of 30 mil sheet shall be applied over concrete surface by embedding it in a coat of Nerva-Plast mastic trowel-applied at a rate of 40 sq. ft. per gallon. Turn up perimeter a minimum of 4".
- 3. Seal joints with 3" and final 2" wide strips of Nervastral tape in accordance with manufacturer's recommendations. Preform all corners and make without joints.
- 4. Roll entire horizontal area with 50 to 100 lb. Roller. Set corners and turn-ups with rubber roller.

END OF SECTION 07100

## SECTION 07210 — BUILDING INSULATION

### PART 1 - GENERAL

#### 1.1 COORDINATION

- A. The General Conditions of the Contract for Construction and the Supplementary Conditions to the General Conditions of the Contract for Construction shall be considered as part of this section of the specifications.
- B. Each Bidder shall be responsible for determining during the bidding period the extent that any addenda issued during the bidding period may affect this section of the specifications.
- C. Reference Instructions to Bidders for requirements regarding substitutions of materials and products.
- D. Where conflicts occur between the drawings and specifications, between different drawings, between different portions of this section of the specifications, or between different sections of the specifications, the more stringent requirements and the greater quantity shall apply.

#### 1.2 WORK INCLUDED

- A. Provide and install fiberglass roll or batt insulation as indicated in the drawings.
- B. Provide and install rigid insulation board at exterior cavity walls as indicated in the drawings.
- C. Provide and install fiberglass batt insulation at certain exterior stud walls as indicated in the drawings.

#### 1.3 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Unfaced acoustical insulation in drywall partitions.
- B. Piping and duct insulation.

#### 1.4 SUBMITTALS

- A. Submit manufacturer's product data describing materials and "R" values.
- B. Submit insulation manufacturer's written approval of proposed cavity wall insulation mastic to be used over specified dampproofing.
- C. Reference Section 01340 SUBMITTALS for additional submittal requirements.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. BATT OR ROLL INSULATION: As manufactured by Certainteed, Owens-Corning, Manville, or Celotex.
1. General: Insulation shall be fine fiber, flexible, resilient glass fiber blanket. Moisture absorption shall be less than .2% by volume.
  2. Exterior Stud Walls: 6" x 16" wide x 96" batts, "R" factor 19. Unfaced interior side. Exterior side shall be foil faced or Kraft paper faced.
  3. Interior Stud Walls: 4" x 16" wide x 96" sound attenuation batts "R" factor 11. Unfaced.
  4. Above Acoustical Ceiling Panels: Thermal Batt Insulation Kraft faced fiberglass. "R" factor 19.
- B. CAVITY WALL INSULATION: Rigid extruded polystyrene foam board in 1 1/2" thickness x 16" wide x length required. "R" value of 5 or greater per 1" thickness. Dow Corning "Styrofoam" or equivalent by Foamular or Amco. Minimum density 2.0 lbs. per cu. ft.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. WALL INSULATION:
1. New Exterior Stud Walls: Install between metal studs with snug fit. Install roll or batts continuous from floor to overhead structure. **Place vapor barrier face toward exterior of building.** Leave 1" space around electrical boxes. Where insulation is not covered on backside by gypsum board (above ceilings), cover with poultry mesh stretched across face of studs and screw fastened to studs.
  2. Exterior Cavity Walls:
    - a. Install insulation horizontally between wall ties on masonry backup, ends and edges butted tight. Install insulation according to manufacturer's printed instructions using mastic **compatible with insulation board and dampproofing.** Do not bend masonry anchors.
    - b. Saw cut insulation for tight fit around openings or other obstructions.
    - c. Keep stored insulation covered and protected from ultra-violet rays.
- B. ACOUSTICAL BATTS: Unfaced acoustical batts in interior partitions provided under Drywall Section 09250.

END OF SECTION - 07210

## SECTION 07220 - ROOF AND DECK INSULATION

### PART 1 GENERAL

#### 1.0 Coordination

- A. The General Conditions of the Contract for Construction and the Supplementary Conditions to the General Conditions of the Contract for Construction shall be considered as part of this section of the specifications.
- B. Each Bidder shall be responsible for determining during the bidding period the extent that any addenda issued during the bidding period may affect this section of the specifications.
- C. Reference Instructions to Bidders for requirements regarding substitutions of materials and products.
- D. Where conflicts occur between the drawings and specifications, between different drawings, between different portions of this section of the specifications, or between different sections of the specifications, the more stringent requirements and the greater quantity shall apply.

#### 1.1 Scope of Work:

- A. Provide all labor, equipment, and materials to install rigid thermal insulation and Dens Deck Prime recovery board over vented base sheets, ONLY where indicated on the drawings. Install cants, edge strips where indicated on drawings.

#### 1.2 Related Sections:

- A. Division 6 "Rough Carpentry"
- B. Division 7 "Preparation for Re-roofing"
- C. Division 7 "Coal Tar Modified Bitumen Roofing"

#### 1.3 Submittals:

- A. Samples and product literature for all products listed.

#### 1.4 Delivery Storage and Handling:

- A. Deliver materials in manufacturer's original unopened packages, dry, undamaged, seals and labels intact.
- B. Store all insulation delivered to the site in enclosed trailers.

#### 1.5 Environmental Requirements:

- A. Apply insulation only when the weather conditions are in compliance with the roof system limitations.
- B. Protect the installed insulation from water penetration at the end of each day's work.



- C. Application of the roof system shall immediately follow the installation of the roof insulation as it is installed.

## PART 2. PRODUCTS

### 2.1 General: (Provide as listed or approved equal)

- A. When a particular make or trade name is specified, it shall be indicative of a standard required.

### 2.2 Materials:

- A. Polyisocyanurate Insulation Board: 1.5 inch with fiberglass reinforced facers. Johns Manville, E'NRG'2, LTTR-value: 9.0. Size: Four feet by four feet(4'x4')
- B. Recoveryboard: 1/2-inch woodfiber as indicated on plans.
- C. Insulation Adhesive: Cold applied dual component polyurethane adhesive Insul-Loc HR.
- D. Roof Board Joint Tape: Six (6) inches wide glass fiber mat with adhesive compatible with insulation board facers.
- E. Steel Deck Fasteners: Olympic, CR334 CR-10 coated #10 fasteners with 3-inch steel plates.
- F. Cant Strips: Fiberglass, Glass Cant.
- G. As required by the membrane manufacturer.

## PART 3. EXECUTION

### 3.1 Examination:

- A. Examine substrate surfaces to receive roof and deck insulation and associated work and conditions under which insulation will be installed. Do not proceed with roofing until unsatisfactory conditions have been corrected in a manner acceptable to Installer.
- B. Verify deck and surfaces are clean, smooth, dry, free of depressions or irregularities prior to beginning installation of materials.
- C. Verify roof openings, curbs, pipes, sleeves, ducts, penetrations or vents through roof are solidly set, wood nailing strips are in place.
- D. Verify all specifications related to Carpentry, have been followed prior to beginning installation of insulation. Beginning installation means acceptance of substrate.

### 3.2 Protection:

- A. During execution of work covered by this Section, the Contractor shall provide protection for roof insulation from water and wind penetration at the end of each day's work.
- B. Protect the roof insulation in areas that will receive excessive traffic with a surface protection such as plywood.
- C. All workmen shall wear clean, soft rubber-soled shoes for any application work where they may be

walking on the in-place insulation.

3.3 Installation:

- A. Ensure all surfaces are clean, dry, free of dirt, debris, oils, loose or embedded gravel and other contaminants that may inhibit adhesion.
- B. Over Steel Deck: Mechanically attach the first layer of rigid insulation to the substrate using specified fasteners and plates applied at 3-ft<sup>2</sup> maximum contributory area per fastener, in accordance with Factory Mutual Approval Guide.
- C. Over vented base sheet, apply insulation adhesive directly to the substrate using a ribbon pattern with one half (1/2) inch to three quarter (3/4) inch wide beads, using either the pail or an automatic applicator, at a rate of one (1) gallon per one hundred (100) square feet. Use two (2) gallons per one hundred (100) square feet to adhere to smooth BUR.
- D. Immediately place insulation boards into wet adhesive. Do not slide boards into place. Do not allow the adhesive to skin over before installing insulation boards.
- E. Briefly step each board into place to ensure contact with the adhesive. Substrates with irregular surfaces may prevent the insulation board from making positive contact with the adhesive. Relief cuts or temporary weights may be required to ensure proper contact.
- F. All boards shall be cut and fitted where the roof deck intersects a vertical surface. The boards shall be cut to fit a minimum of one quarter (1/4) inch away from the vertical surface.
- G. Embed recovery board in adhesive after first layer has been attached as recommended by insulation manufacturer. Stagger end joints of boards so all open joints will be eliminated. Walk in each piece of insulation and leave boards completely adhered to base felt or deck. Each insulation board shall be butt firmly against adjoining panels. All open joints shall be eliminated.
- H. Trim surface of insulation where necessary at roof drains so completed surface is flush with ring of drain.
- I. Cant Strips/Tapered Edge/Crickets: Install preformed 45-degree fiberglass cant strips at junctures of vertical surface. Provide preformed, tapered edge/crickets where indicated on the drawings.

END OF SECTION

## SECTION 07260 - UNDER-SLAB VAPOR BARRIER

### PART 1 – GENERAL

#### 1.0 COORDINATION

- A. The General Conditions of the Contract for Construction and the Supplementary Conditions to the General Conditions of the Contract for Construction shall be considered as part of this section of the specifications.
- B. Each Bidder shall be responsible for determining during the bidding period the extent that any addenda issued during the bidding period may affect this section of the specifications.
- C. Reference Instructions to Bidders for requirements regarding substitutions of materials and products.
- D. Where conflicts occur between the drawings and specifications, between different drawings, between different portions of this section of the specifications, or between different sections of the specifications, the more stringent requirements and the greater quantity shall apply.

#### 1.1 SUMMARY

- A. Products supplied under this section:
  - 1. Vapor barrier, seam tape, and mastic for installation under concrete slabs.
- B. Related sections:
  - 1. Section 03 30 00 Cast-in-Place Concrete
  - 2. Section 07 26 00 Vapor Retarders

#### 1.2 REFERENCES

- A. American Society for Testing and Materials (ASTM):
  - 1. ASTM E 1745-09 Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill Under Concrete Slabs.
  - 2. ASTM E 154-99 (2005) Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover.
  - 3. ASTM E 96-05 Standard Test Methods for Water Vapor Transmission of Materials.
  - 4. ASTM F 1249-06 Standard Test Method for Water Vapor Transmission Rate Through Plastic Film and Sheeting Using a Modulated Infrared Sensor.
  - 5. ASTM E 1643-09 Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs.
- B. American Concrete Institute (ACI):
  - 1. ACI 302.2R-06 Guide for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials.

#### 1.3 SUBMITTALS

- A. Quality control/assurance:
  - 1. Summary of test results as per paragraph 8.3 of ASTM E 1745.
  - 2. Manufacturer's samples, literature.
  - 3. Manufacturer's installation instructions for placement, seaming and penetration repair instructions.

## PART 2 – PRODUCTS

### 2.1 MATERIALS

- A. Vapor barrier must have all of the following qualities:
  - 1. Permeance of less than 0.01 Perms [ $\text{grains}/(\text{ft}^2 \cdot \text{hr} \cdot \text{inHg})$ ] as tested in accordance with ASTM E 1745 Section 7.
  - 2. Other performance criteria:
    - a. Strength: ASTM E 1745 Class A.
    - b. Thickness: 15 mils
- B. Vapor barrier products:
  - 1. Basis of Design: Stego Wrap Vapor Barrier (15-mil) by Stego Industries LLC, (877) 464-7834 [www.stegoindustries.com](http://www.stegoindustries.com).
  - 2. Other Acceptable Vapor Barrier Products:
    - a. Ecoshield-E 15mil by Epro
    - b. Reflex Super by Monarflex

### 2.2 ACCESSORIES

- A. Seam tape:
  - 1. Stego Tape by Stego Industries LLC, (877) 464-7834 [www.stegoindustries.com](http://www.stegoindustries.com).
- B. Vapor-proofing mastic:
  - 1. Stego Mastic by Stego Industries LLC, (877) 464-7834 [www.stegoindustries.com](http://www.stegoindustries.com).

## PART 3 – EXECUTION

### 3.1 PREPARATION

- A. Ensure that base material is approved by Architect or Geotechnical Engineer.
  - 1. Level and compact base material.

### 3.2 INSTALLATION

- A. Install vapor barrier in accordance with manufacturer's instructions and ASTM E 1643.
  - 1. Unroll vapor barrier with the longest dimension parallel with the direction of the concrete placement.
  - 2. Lap vapor barrier over footings and/or seal to foundation walls.
  - 3. Overlap joints 6 inches and seal with manufacturer's tape.
  - 4. Seal all penetrations (including pipes) per manufacturer's instructions.
  - 5. No penetration of the vapor barrier is allowed except for reinforcing steel and permanent utilities.
  - 6. Repair damaged areas by cutting patches of vapor barrier, overlapping damaged area 6 inches and taping all sides with tape.

END OF SECTION

## SECTION 07412 - NEW STANDING SEAM METAL ROOF SYSTEM

### PART 1 – GENERAL

#### 1.00 COORDINATION

- A. The General Conditions of the Contract for Construction and the Supplementary Conditions to the General Conditions of the Contract for Construction shall be considered as part of this section of the specifications.
- B. Each Bidder shall be responsible for determining during the bidding period the extent that any addenda issued during the bidding period may affect this section of the specifications.
- C. Reference Instructions to Bidders for requirements regarding substitutions of materials and products.
- D. Where conflicts occur between the drawings and specifications, between different drawings, between different portions of this section of the specifications, or between different sections of the specifications, the more stringent requirements and the greater quantity shall apply.

#### 1.01 RELATED WORK

- A. Section 07412 – Standing Seam Roof System
- B. Section 07530 - Coal-tar Elastomeric Roofing System
- C. Section 07600 - Sheet Metal and Miscellaneous Accessories

#### 1.02 INSTALLER QUALIFICATIONS

- A. Roofing installer must be:
  - 1. Currently prequalified with the Owner in accordance with Owner's prequalification requirements.
  - 2. Currently in good standing with the manufacturer.
  - 3. Installer must be an experienced single firm specializing in the type of roofing repair and/or removal and replacement work required, employing only experienced workers for the class of work in which they are employed, having at least five (5) years successful experience on projects similar in size and scope and acceptable as applicators by the Owner's representative.
  - 4. Contractor must have successfully completed previous projects warranted by the manufacturer.
- B. It shall remain each Bidder's responsibility to determine his current status with the manufacturer's certification plan.

#### 1.03 QUALITY ASSURANCE

- A. Applicator/Installer:
  - 1. Must be acceptable to roof material manufacturer for the manufacturer's warranty requirements.
  - 2. Must be an experienced single firm specializing in the type of roofing repair and/or removal and replacement work required, employing only experienced workers for the class of work in which they are employed, having at least five (5) years successful experience on projects similar in size and scope and acceptable as applicators by the Owner's representative.
- B. Testing Laboratory Services: Test results shall meet or exceed established standards.

- C. Underwriters Laboratories, Inc.; Roofing Covering: Class A fire hazard classification.
- D. Factory Mutual: Wind uplift requirements

#### 1.04 REFERENCES (INCLUDING LATEST REVISIONS)

- A. American Society for Testing and Materials:
  - 1. ASTM A 792 Finish Application on Metal Wall Panels
  - 2. ASTM B 209 - 90, Specification for Aluminum and Aluminum Alloy Sheet and Plate
  - 3. ASTM C 719 - 86, Test Method for Adhesion and Cohesion of Elastomeric Joint Sealants Under Cycle Movement (Hockman Cycle)
  - 4. ASTM C 794 - 80 (1986), Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants
  - 5. ASTM C 920 - 87, Specification for Elastomeric Joint Sealants
  - 6. ASTM A 361 - 90, Sheet Steel, Zinc-Coated (Galv.) by the Hot-Dip Process for Roofing and Siding
  - 7. ASTM C 177, Test for Thermal Laboratory Services
  - 8. ASTM C 728, Perlite Thermal Insulation Board
  - 9. ASTM D 523 Reflective Finish on Metal Roof Panels
- B. Federal Specifications:
  - 1. LLL-I-535B
  - 2. SS-A-701B
  - 3. SS-C-153
  - 4. SS-C-153C
  - 5. SS-R-620B
  - 6. TT-C-498C
  - 7. TT-P-320D
  - 8. TT-S-00227E
  - 9. TT-S-00230C
  - 10. SS-S-001534 (GSA-FSS)
  - 11. L-P-375
- C. Industry Standards:
  - 1. The National Roofing Contractors Association (NRCA) - Roofing and Waterproofing Manual
  - 2. Sheet Metal and Air Conditioning Contractors National Association (SMACNA) - Architectural Sheet Metal Manual

#### 1.05 SUBMITTALS

- A. Samples and Manufacturer's Submittals: Submit prior to delivery or installation.
  - 1. Samples of all roofing system components including all specified accessories.
  - 2. Submit samples of proposed warranty complete with any addenda necessary to meet the warranty requirements as specified.
  - 3. Submit latest edition of manufacturer's specifications and installation procedures. Submit only those items applicable to this project.
  - 4. A written statement from the roofing materials manufacturer approving the installer, specifications and drawings as described and/or shown for this project and stating the intent to guarantee the completed project.
- B. Shop Drawings: Provide manufacturer's approved details of all perimeter conditions, projection conditions, and any additional special job conditions which require details other than indicated in the drawings.
- C. Maintenance Procedures: Within ten days of the date of Substantial Completion of the project, deliver to the Owner three copies of the manufacturer's printed instructions regarding care and maintenance of the roof.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in manufacturer's original packaging with all labels intact and legible, including labels indicating storage conditions, lot numbers, and usage instructions. Materials damaged in shipping or storage shall not be used.
- B. Manufacturer's packaging and/or roll plastic is not acceptable for exterior storage. Tarpaulin with grommets shall be minimum acceptable for exterior coverings. All materials stored as above shall be minimum of four inches (4") off the substrate, and the tarpaulin tied off with rope.
- C. Deliver materials requiring fire resistance classification to the job with labels attached and packaged as required by labeling service.
- D. Deliver materials in sufficient quantity to allow continuity of work.
- E. Handle and store material and equipment in such a manner as to avoid damage. Liquid products shall be delivered sealed, in original containers.
- F. Handle rolled goods so as to prevent damage to edge or ends.
- G. Select and operate material handling equipment so as not to damage existing construction or applied roofing.
- H. Moisture-sensitive products shall be maintained in dry storage areas and properly covered. Provide continuous protection of materials against wetting and moisture absorption. Store roofing and flashing materials on clean raised platforms with weather protective covering when stored outdoors.
- I. Store rolled goods on end.
- J. Protect materials against damage by construction traffic.
- K. The proper storage of materials is the sole responsibility of the contractor and any wet or damaged roofing materials shall be discarded, removed from the project site, and replaced prior to application.
- L. Comply with fire and safety regulations, especially with materials which are extremely flammable and/or toxic. Use safety precautions indicated on labels.
- M. Products liable, such as emulsions, to degrade as a result of being frozen shall be maintained above 40° F in heated storage.
- N. No storage of materials shall be permitted on roof areas other than those materials that are to be installed the same day. Any exception must be in written form.

1.07 SITE CONDITIONS

- A. Job Condition Requirements:
  - 1. Apply roofing in dry weather.
  - 2. Do not apply roofing when ambient temperature is below 40° F (4° C).
  - 3. Proceed with roofing work only when weather conditions are in compliance with manufacturer's recommended limitations, and when conditions will permit the work to proceed in accordance with specifications.
  - 4. For further information regarding roofing material manufacturer's recommendations for project conditions, refer to the manufacturer's published application manual.

5. All surfaces to receive new roofing shall be smooth, dry, and free from dirt, debris, and foreign material before any of this work is installed. Competent operators shall be in attendance at all times equipment is in use. Materials shall be stored neatly in areas designated by the Owner. Load placed on the roof at any point shall not exceed the safe load for which the roof is designed.
  6. The contractor shall take all necessary precautions to protect the roof mat and deck from damage. The contractor shall be responsible for repairing all new areas of damage caused by the negligence of the contractor, at the contractor's expense. The Owner's on-site representative shall determine damage caused by contractor negligence.
  7. Follow insurance underwriter's requirements acceptable for use with specified products or systems.
  8. All kettles shall have an automatic thermostat control, and temperature gauge, all in working order.
  9. Surface and air temperatures should be a minimum 45° F during applications of cleaner and waterproof coating and remain above 45° F for a minimum of four (4) hours following applications. Verify compatibility of cleaner with coatings, paints, primers and joint sealers specified. Advise Owner's representative of any problems in this regard prior to commencing cleaning operations.
  10. Temporary Sanitary Facilities: The contractor shall furnish and maintain temporary sanitary facilities for employees' use during this project. These will be removed after the completion of the project. All portable facilities shall comply with local laws, codes, and regulations.
- B. Protection of Work and Property:
1. Work: The contractor shall maintain adequate protection of all his work from damage and shall protect the Owner's and adjacent property from injury or loss arising from this contract. He shall provide and maintain at all times any OSHA required danger signs, guards, and/or obstructions necessary to protect the public and his workmen from any dangers inherent with or created by the work in progress. All federal, state, and city rules and requirements pertaining to safety and all EPA standards, OSHA standards, NESHAP regulations pertaining to asbestos as required shall be fulfilled by the contractor as part of his proposal.
  2. Twenty-four Hour Call: The contractor shall have personnel on call 24 hours per day, seven (7) days per week for emergencies during the course of a job. The Owner's project manager is to have the 24 hour numbers for the contact. Contractor must be able to respond to any emergency call and have personnel on-site within two (2) hours after contact. Numbers available to the Owner's project manager are to be both home and office numbers for:
    - a) Job Foreman
    - b) Job Superintendent
    - c) Owner or Company Officer
- C. Damage to Work of Others: The contractor shall repair, refinish, and make good any damage to the building or landscaping resulting from any of his operation. This shall include, but is not limited to, any damage to plaster, tile work, wall covering, paint, ceilings, floors, or any other finished work. Damage done to the building, equipment, or grounds must be repaired at the successful contractor's expense holding the Owner harmless from any other claims for property damage and/or personal injury.
- D. Measurements: It will be the contractor's responsibility to obtain and/or verify any necessary dimensions by visiting the job site, and the contractor shall be responsible for the correctness of same. Any drawings supplied are for reference only.
- E. Cleaning and Disposal of Materials:
1. Contractor shall keep the job clean and free from all loose materials and foreign matter. Contractor shall take necessary precautions to keep outside walls clean and shall allow no roofing materials to remain on the outside walls.



2. All waste materials, rubbish, etc., shall be removed from the Owner's premises as accumulated. Rubbish shall be carefully handled to reduce the spread of dust. A suitable scrap chute or hoist must be used to lower any debris. At completion, all work areas shall be left broom clean and all contractor's equipment and materials removed from the site.
3. All bituminous or roofing related materials shall be removed from ladders, stairs, railings, and similar parts of the building.
4. Debris shall be deposited at an approved disposal site.

#### 1.08 WARRANTY

- A. Roofing - Manufacturer: Project shall be installed in such a manner that the material manufacturer will furnish a written twenty (20) year labor and materials watertight warranty from the date of substantial completion of the completed project.
- B. Project shall be completed in such a manner that the material manufacturer shall furnish a standard twenty (20) year warranty on the product finish against oxidation failure.
- C. Roofing - Contractor: The contractor, jointly with any subcontractors employed by him, shall guarantee the work required and performed under this contract will be free from defects in workmanship and materials, and that the building will be and remain waterproof for a two (2) year warranty period, after the Owner accepts the work as substantially complete. The warranty shall be in approved notarized written form, to obligate the contractor and his subcontractors, if any, to make good the requirements of the warranty.
- D. Warranty repairs shall be performed by a certified installer. The repairs shall be performed in accordance with the manufacturer's written instructions and recommended procedures so as to not void the warranty. Repair of the system, including materials and labor, shall be done at no cost to the Owner.
- E. During the proposal period each Bidder shall make arrangements with the material manufacturer to provide the required warranty. Refer to paragraph 1.05 SUBMITTALS in this section for requirements concerning submittals of warranty.

### PART 2 - PRODUCTS

#### 2.01 GENERAL

- A. All materials shall be furnished, specified, or approved in writing by the manufacturer issuing the warranty.
- B. Samples of all materials used on the project, which are not supplied by the membrane manufacturer, shall be submitted to the membrane manufacturer for written approval prior to work starting.
- C. All materials used on the project shall be asbestos free.

#### 2.02 FELTS

- A. Shall be Underwriters Laboratory approved and listed in the FM Global Approval Guide.

2.03 UNDERLAYMENT MEMBRANE

- A. Membrane shall be nominal sixty (60) mil in overall thickness consisting of forty-five (45) mil thick calendered coal-tar elastomeric membrane thickness with fifteen (15) mil thick backing of styrene butadiene styrene (SBS) adhesive with a selvage edge. The self-adhering membrane shall be a high-performance elastomeric membrane incorporating DuPont™ Elvaloy□ KEE (ketone ethylene ester), extended with coal-tar pitch and reinforced with polyester fibers.
- B. The self-adhering membrane shall meet the following physical properties: Elongation 170%, ASTM D 412; Tensile Strength 1600 lbs/in<sup>2</sup>, ASTM D 412; Tear Strength 300 ppi, ASTM D 624; Density @ 70° F, 80 lbs/ft<sup>3</sup>; Low Temperature Flexibility, Pass, 37-GP-56M; and Water Absorption less than 0.1%, 37-GP-56M. Roll shall have one and one-half inch (1-1/2") wide dry lap for hot-air welding.

2.04 UNDERLAYMENT FLASHING MEMBRANE

- A. Flashing shall be same base material as the finish ply self-adhered coal-tar elastomeric membrane (CTEM) and be installed using the design principles set forth in the National Roofing Contractors Association Manual and attached details.

2.05 END LAP MEMBRANES

- A. Shall be a sixty (60) mil overall calendered thickness membrane. The membrane shall be a high performance elastomeric membrane incorporating a DuPont™ Elvaloy□ KEE (ketone ethylene ester), extended with coal-tar pitch and reinforced with polyester fibers.
- B. End lap splice strip shall be the same type material as the finish ply membrane not to exceed nominal 60 mils in overall calendered thickness. Strips shall be nine inches (9") by forty-two inches (42") long. All four edges shall have a minimum one and one-half inch (1-1/2") wide dry lap for hot-air welding.

2.06 CAULKS

- A. Sealant for use at coping joints, reglet joints, etc., shall be a one-component urethane non-sag, gun grade sealant designed for use in active exterior joints, and shall meet or exceed Federal Specification No. 1 TT-S-00230C, Type II, Class A, ASTM C 920. Where joint surfaces are contained or are contaminated with bituminous materials, provide manufacturer's modified-type sealant (modified with coal-tar or asphalt as required).
- B. To seal the leading edge of the CTEM membrane, to bond CTEM at terminations with metal, and for open CTEM seam repair, sealant shall be a thermosetting, solvent free, non-slump, self-fixturing, multipurpose structural sealant which shall meet the following physical and performance properties.

Properties

Specific Gravity	1.62 (13.5 lbs./gallon)
Viscosity	800,000 cps Brookfield RTV, TF spindle, 4 rpm 70
degrees F.	
Shear Strength (ASTM D-1002)	300 psi+ (7 day ambient cure)
Elongation @ break (ASTM D-412)	300% (7 day ambient cure)
Hardness Shore A (ASTM C-661)	50 – 55 (14 day ambient cure)
Tack free time (ASTM C-679)	35 minutes
Low temperature flex	Minus 20 degrees F: PASS
Slump (sag) (ASTM C-639)	Zero slump
Shrinkage (ASTM D-2453)	No measurable shrinkage (14 day cure)
Service temperature	-40 degrees F to 200 degrees F

2.07 PITCH PAN SEALANT

- A. Shall be one-part, self-leveling polyurethane sealant meeting Federal Specification No. TT-S-00230C, Type I, Class A, ASTM C 920, Type S, Grade P, Class 25, for use in new pitch pans.

2.08 CANT STRIP

- A. Shall be wood fiber where used for non-structural purposes. Shall be treated solid wood where used for structural purposes meeting NRCA, Factory Mutual and Underwriters Laboratory guidelines. If solid wood cant is used where insulation exists, cant is to be toe nailed into treated solid wood nailer the same height as insulation.

2.09 FASTENERS

- A. Shall be Factory Mutual approved and as recommended by the manufacturer for the specific application.
- B. Fastener for Brick: Shall be one-fourth inch by two inch (1/4" x 2"), zinc with plated steel or stainless steel nail, one piece unit, flat head.
- C. Fastener for Wood Deck: Shall be a annular threaded shank with a galvanized round cap of appropriate length for use in attaching base sheets to wooden substrates.
- D. Fastener for Miscellaneous Metal Roof Application: Shall be a #12 fastener, fluorocarbon coated, with CR-10 coating. A minimum .200 diameter shank and .250 diameter thread. To be used with round pressure plates or bar, and having a fluorocarbon CR-10 coating, when subjected to thirty (30) Kesternich cycles (DIN 50018) shows less than 10% red rust which surpasses Factory Mutual Approval Standard 4470. Fasteners, plates, and/or bars shall be listed in the Factory Mutual Approval Guide.

2.10 WOOD

- A. All nailers, wooden cants and wooden curbs shall be treated lumber as required by NRCA, Factory Mutual and Underwriters Laboratory and installed according to NRCA and Factory Mutual guidelines.

2.11 ASPHALT ROOF PRIMER

- A. Quick-dry asphalt-based primer for priming of asphalt roof surfaces.

Applicable Federal Specification	SS-A-701B
ASTM	D 41
Flash Point	105° F
Viscosity at 80° F (ASTM D 217)	50-60 K.U.
Weight per gallon	7.4 pounds
Drying time (to touch)	Min. 4 hours

2.12 STYRENE, BUTADIENE, STYRENE (SBS) PRIMER

- A. SBS primer made from natural resins, solvent and synthetic rubber. For application on concrete, metal or wooden substrate.

## 2.13 ASPHALT FLASHING CEMENT

- A. Designed for laying-up cold process roof membrane flashings where fast-setting adhesive is required.

Applicable Federal Specification	SS-C-153C, Type I
ASTM	D 4586
Flash Point	105° F (41° C)
Weight per gallon (approximate)	10.8 lbs.
Viscosity @ 77° F (25° C) (ASTM D 217)	230-330
% Non-Volatile (Fed. Test Method 141)	68% Min.
% Specially Processed Bitumen	42% Min.
% Total Solids, by Volume	60% Min.
Cured film thickness of 1 gal./15 sq. ft.	75 Mils
Drying time	2 to 3 days
Service Temperature, Extended Exposure	-40° to +180° F
Resistance to Oils & Solvents	Poor
Resistance to Sunlight	Good
Resistance to Chemicals	Good
Effects of Weathering	Slight chalking
Water Resistance	
Under Good Drainage Conditions	Excellent
Under Continuous Submersion	Fair

## 2.14 KRAFT SHEATHING PAPER

- A. Minimum 28-pound kraft sheathing or red rosin paper for use as separator sheet.

## 2.15 STANDING SEAM ROOF PANELS

- A. Panels:
1. Shall be prefinished Galvalume™ UL 90 rated, 24-gauge, eighteen inch (18") seam sheet made up of 55% aluminum, 1.6% silicon and the balance zinc as described in ASTM specification A792.
  2. Factory fabricates panel with integral continuous interlocking standing seam without need for separate seam covers. **Field formed panels will not be acceptable.**
  3. Sealant shall be high grade, hot-melt elastomeric sealant in top edge of female seam cap, designed to seal against adjacent male panel leg.
  4. All held panels shall be continuous, no exceptions.
  5. Panel Fabrication:
    - a) Provide factory formed panel width of 18" with 1 3/4" high x 3/8" wide standing seam.
    - b) Provide panels in full length from ridge to eave.
    - c) Vertical striations (shadowline) to be furnished on all panels over sixteen inches (16") wide.
  6. Seams:
    - a) Panel cap shall have pitched bottom edge hook elements to ease installation of cap over clips.
    - b) Provide factory sealant inside female seam to aid in resistance of leaks and to provide panel-to-panel seal while allowing expansion and contraction movement.
  7. Seam Size:
    - a) Male leg: 1 1/2" high
    - b) Female cap: 1 3/4" high x 3/8" wide

B. Clip/Fastener Assemblies:

1. UL 90 Requirements:
  - a) Fasteners: Manufacturer's standard #10 – 16 x 1" long self-drilling, self-tapping pancake head Phillips drive screws for metal; noncorrosive base material.
2. Standard Clip: 24-gauge galvanized steel, 33 ksi yield strength, and 2" long single fastener type.
3. Standard Fasteners: Same as UL 90 fasteners specified above.
4. Clips:
  - a) Provide UL listed (standard) clip designated to allow panels to thermally expand and contract.
  - b) Fabricate clips with embossments that raise underside of panels above substrate to allow underside ventilation and prevent clip deformation.
  - c) Fabricate clips with structurally embossed outstanding legs to prevent distortion to wind uplift forces.
5. Nailable Substrate Fasteners: #10 – 12 x 1" long A-Point fastener, pancake head Phillips drive screws for plywood; noncorrosive base material.

C. Accessories:

1. Provide manufacturer's standard accessories and other items essential to completeness of standing seam roof installation.
2. Provide nylon seam end plugs for clean termination of panel.
3. Gutters and downspouts will be fabricated to the same gauge and specification as panel and match metal profile of the details herein.

D. Field Sealant:

1. Color coordinated primerless silicone or high grade, nondrying butyl as recommended by panel manufacturer.
2. Do not use sealant containing asphalt.

E. Engineer panels to use concealed anchors that permit expansion and contraction. Exposed fasteners in roofing panels will not be permitted.

F. Provide factory eave panel notch for eave termination (to be utilized with joggle cleat detail).

G. Panel Finish:

1. Full strength 70% Kynar 500® coating baked on for 15 minutes at 450° F to dry-film thickness of 1.0 mil.
2. 15% reflective gloss (ASTM D 523). (Low Gloss).
3. 0.3 mil baked on epoxy primer.
4. Standard Color: To match existing standing seam roof in place.

2.16 LEAD JACKS

- A. Shall be four pound (4#) lead, and of dimensions required to completely cover existing plumbing stack.

2.17 TERMINATION/PRESSURE BARS

- A. Aluminum strip shall be extruded channel bar with a mill finish, width one inch (1"), thickness 0.100" ± .008", leg height one-fourth inch (1/4") top and bottom, leg angle ninety degrees (90°), for perimeter and curb anchorage, having predrilled holes six inches (6") on center, as manufactured by Olympic Fasteners, or approved equal.

2.18 DELIVERY AND STORAGE

- A. All materials shall be delivered with appropriate carton and can labels indicating appropriate warnings, storage conditions, lot numbers, and usage instructions. Materials damaged in shipping or storage shall not be used.

2.19 PRECAUTIONS

- A. Some of the indicated materials are extremely flammable and/or toxic. Use precautions indicated on can and carton labels.

2.20 MULTI-COMPONENT POLYURETHANE SEALANT

- A. Except as otherwise indicated, provide manufacturer's standard, non-modified, 2-or-more-part, polyurethane-based, elastomeric sealant; complying with either ASTM C 920, Type M, Class 25, or FS TT-S-00227E, Class A; self-leveling grade/type where used in joints of surfaces subject to traffic, otherwise non-sag grade/type.
- B. Durability: Less than 0.5 square inch adhesion/cohesion loss for three (3) samples of both mortar and aluminum; ASTM C 719 test procedure.
- C. Adhesion in Peel: Fifteen pound (15#) peel strength and ten percent (10%) maximum loss of bond to substrate; ASTM C 794.
- D. Bituminous Modification: Where joint surfaces contain or are contaminated with bituminous materials, provide manufacturer's modified type sealant which is compatible with joint surfaces (modified with coal-tar or asphalt as required).

2.21 EXPANDED POLYETHYLENE JOINT FILLER

- A. Provide flexible, compressible, closed-cell, polyethylene of not less than 10 psi compression deflection (25%); except provide higher compression deflection strength as may be necessary to withstand installation forces and provide proper support for sealants, surface water absorption of not more than 0.1 pounds per square foot.

2.22 JOINT PRIMER/SEALER

- A. Provide type of joint primer/sealer recommended by sealant manufacturer for joint surfaces to be primed or sealed.

2.23 BOND BREAKER TAPE

- A. Provide polyethylene tape or other plastic tape as recommended by sealant manufacturer, to be applied to sealant-contact surfaces where bond to substrate or joint filler must be avoided for proper performance of sealant. Provide self-adhesive tape where applicable.

2.24 SEALANT BACKER ROD

- A. Provide compressible rod stock of polyethylene foam, polyurethane foam, polyethylene jacketed polyurethane foam, butyl rubber foam, neoprene foam or other flexible, permanent, durable, non-absorptive material as recommended by sealant manufacturer for back-up of and compatibility with sealant. Where used with hot-applied sealant, provide heat-resistant type which will not be deteriorated by sealant application temperature as indicated.

## 2.25 MISCELLANEOUS MATERIALS

- A. Other materials shall be as specified or of the best grade for the proposed use as recommended by the manufacturer.

## PART 3 - EXECUTION

### 3.01 REFERENCE

- A. The manufacturer's Technical Specifications shall be considered a part of this specification and should be referred to for more specific application procedures and recommendations.
- B. Application of materials shall be in strict accordance with the manufacturer's recommendations except where more stringent requirements are shown or specified. In the instance of a conflict between these specifications and those of the manufacturer, the more stringent specifications shall take precedence.
- C. General Installation:
  - 1. Protect adjacent areas with tarpaulin or other durable materials.
  - 2. Contractor shall prevent overspray, and be responsible for parking lot areas and/or adjoining areas not part of this contract.
  - 3. Contractor shall be responsible for sealing, as required, all openings that may allow bitumen migration or drippage, i.e. pitch dams, envelopes, and filler strips.
  - 4. Prepare surfaces according to manufacturer's or applicator's published instructions. All metal that is to receive bitumen, or come in contact with bitumen or adhesive, shall be first primed with appropriate primer. Any prefinished galvanized sheet steel that is to receive bitumen, or come in contact with bitumen or adhesive, shall be scored, scuffed or abraded before receiving primer application.
  - 5. Use cleaning materials or primers necessary to render an acceptable surface/substrate.
  - 6. All surfaces/substrates shall be clean and dry prior to application of materials.
  - 7. Prior to application of membrane, all foreign matter, gravel, etc., shall be removed from the insulation and/or substrate. Gravel or debris between the insulation/substrate and plies is not acceptable.
  - 8. Ambient temperature shall be 50° F and rising.
  - 9. All plies shall be laid in the direction of maximum roof slope, working from bottom of slope toward ridge.
  - 10. Any self-adhered membranes shall be picture framed on all roof areas as the system is being applied. The outer edge of the picture frame sheet shall extend approximately two inches (2") above the top of the cant. All end laps of the field sheets of the self-adhered coal-tar elastomeric membrane shall lap the picture frame sheet a minimum of eight inches (8") or the picture frame sheet side laps shall lap the field sheet a minimum of eight inches (8").
  - 11. Wrinkles, buckles, kinks, and fishmouths are not acceptable when laying felt and membrane.
  - 12. Dry voids of felt on felt or membrane on membrane are not acceptable.
  - 13. Where deteriorated base flashing is removed, primed cant strips shall be installed at the intersection of the deck and the vertical surfaces. All flashings shall be mechanically top-fastened with a termination bar a minimum of six inches (6") on center at the top leading edge, and be a minimum of eight inches (8") in height from finished membrane.
  - 14. On slopes greater than one inch (1") in twelve inches (12"), refer to NRCA and/or manufacturer's guidelines for backnailing procedures and follow the more stringent guidelines for all specified materials.
  - 15. All base sheet applications and surfaces that are to receive the self-adhered membranes shall be primed with a fast drying asphaltic primer. Except when self-adhered membrane is to be installed over a CTEM surface.

### 3.02 NAILERS

- A. Wooden nailers shall be installed at gravel stops or drip edges on outside perimeter of building according to NRCA, Factory Mutual and Underwriters Laboratory guidelines.
- B. All Construction: Nailers shall be the same height as the new insulation being installed where required. Nailers shall be raised if necessary by anchoring an additional nailer of appropriate height to the existing nailer if the existing nailer is not to be replaced. All existing nailers and new nailers, if required, shall be installed according to Factory Mutual and Underwriters Laboratory Guidelines.

### 3.03 APPLICATION OF UNDERLAYMENT

- A. The fiberglass base sheet shall be primed with asphalt based primer in accordance with manufacturer's recommended procedures and allowed to thoroughly dry.
- B. Unroll self-adhered membrane and allow to relax a minimum of two hours at 70° F plus temperature or longer if temperature is below 70° F. If after the period of relaxation, the membrane is not to be immediately installed, cover the membrane with white polyethylene tarp or release paper until ready for installation. All membrane applications shall be applied parallel with slope, no exceptions.
- C. Slide the membrane in place aligning with three inch (3") lap line. Fold second half of relaxed roll over the first half of relaxed roll. Kiss cut the release paper at the fold, taking care not to cut the adhesive and/or membrane, install two feet (2') of self-adhered membrane pulling release paper low to roof line. Roll excess release paper on unused core and pull low to the roof surface removing the release paper while simultaneously setting the remainder of the self-adhered membrane in place. Upon completion, fold first half of membrane over installed second half and repeat procedure. The end laps of the finish ply membrane shall be a minimum of three inches (3").
- D. Immediately following the laying of the self-adhering membrane, it shall be rolled in the width direction using a minimum seventy pound (70#) linoleum roller. This will prevent excessive entrapment of air beneath the membrane. The rolling is in the width direction and with the laps so as not to buck the laps.
- E. Position the next roll of self-adhering membrane adjacent to the membrane already applied so that there is a three inch (3") side lap. The membrane has a one and one-half inch (1-1/2") dry lap; therefore, the three inch (3") side lap will comprise one and one-half inch (1-1/2") adhered lap and one and one-half inch (1-1/2") welded lap.
- F. End laps of membrane shall be a minimum three inches (3"). If possible, lay the end laps in line.
- G. Picture frame all roof areas with self-adhered coal-tar elastomeric membrane (CTEM) as finish membrane ply is being applied. Rectangular type projections should also be picture framed.

### 3.04 LAP SPLICE

- A. Self-adhered coal-tar elastomeric membrane (CTEM) shall be installed as above with three inch (3") side laps. End laps shall be a minimum three inches (3") and in line if possible.
- B. Hot-Air or Solvent Welded Side Laps:
  - 1. WELDING OF SIDE LAPS SHALL BE DONE DAILY.
  - 2. Clean the laps of any bituminous adhesive, dirt, or contaminants to ensure clean, dry, hot-air welded seams. All seams shall have a three inch (3") minimum width, with a one and one-half inch (1-1/2") hot-air weld, and welded the same day the membrane is laid.



3. Using either a Leister Variant hot air automatic welding machine or a Leister High Pressure 220/240, 42V double insulated hand-held blower with slot nozzle, weld the three inch (3") laps together. When using a hand-held hot-air welder, the seams should be pressed together using a hand-held roller. The speed and temperature settings of the welding equipment can be affected by the weather conditions at the site of application, therefore, these parameters should be set by the contractor by using two (2) pieces of self-adhered coal-tar elastomeric membrane (CTEM). Minimum width of hot-air weld one and one-half inches (1-1/2").
  4. Lay the laps together and apply pressure to the welded seam to ensure full adhesion.
  5. Allow the seams to set fully, and probe the entire length for voids. Reseam voids immediately with a hot-air gun and roller.
- C. End Laps: A piece of double sided adhesive tape two inches (2") wide shall be installed so that the end of the three inch (3") lap of the top roll is centered in the middle of the tape and the double sided adhesive tape extends two inches (2") beyond the sides edges of the membrane. A piece of coal-tar elastomeric membrane (CTEM) which is four inches (4") longer and four inches (4") wider than the double sided adhesive tape shall be applied so the coal-tar elastomeric membrane (CTEM) lap strip is centered over the double sided adhesive tape. The two inch (2") dry lap around the perimeter of the coal-tar elastomeric membrane (CTEM) lap strip shall be heat-welded to the field of the self-adhered coal-tar elastomeric membrane (CTEM).

### 3.05 PERIMETER FASTENING

- A. Wood nailers are required for perimeter gravel stops or drip edges. Field membrane and all plies shall be mechanically fastened to nailer on twelve inch (12") centers maximum.

### 3.06 FLASHING - GENERAL

- A. Flashings shall be installed using the self-adhered coal-tar elastomeric membrane (CTEM) flashing, with length of run not to exceed the width of the material roll.
- B. Wooden nailers or curbs shall be installed at all edges and openings in the roof, mechanically fastened to the deck. The nailers should be of exterior grade timber, and of the same thickness as any insulation to be used on the roof.
- C. Cant strips shall be installed at the intersection of the deck and all vertical surfaces.
- D. The roofing field membrane shall extend up over and to the top of cant strips at all vertical intersections or out to the roof's edge.
- E. All existing substrates receiving flashing membrane shall be clean and primed with asphalt primer, prior to application.
- F. Flashing membrane shall always be installed with Type IV glass felt as an underlayment. The Type IV glass felt shall be set in hot asphalt.
- G. Self-adhered CTEM sheet shall always be installed with self-adhered CTEM as an underlayment.
- H. All flashings shall be mechanically fastened with a termination bar a maximum of six inches (6") on center, be a minimum of eight inches (8") above finished roof height, extend a minimum of nine inches (9") onto the field of horizontal roof membrane, and not exceed the width of the material roll.
- I. All surface mounted flashings terminated with a pressure bar shall have an additional surface mounted counterflashing installed immediately above the pressure bar. The counterflashing shall extend a minimum of two and one-half inches (2-1/2") below the pressure mounted termination bar. Both the top edge of the surface mounted termination bar and the surface mounted counterflashing shall be sealed with a liberal bead of sealant.

- J. All vertical flashing lap seams of the self-adhered coal-tar elastomeric membrane (CTEM) shall be hot-air welded. NOTE: Clean lap area of any bituminous adhesive prior to welding.
- K. The self-adhered ply sheet shall extend a minimum of two inches (2") beyond the top edge of the cant. The self-adhered flashing underlayment should then be applied from a minimum of eight inches (8") above the finished roof line down the vertical extending a minimum of nine inches (9") out onto the field of the roof. The finish ply membrane shall then be installed so as to extend from the field of the roof to a minimum of two inches (2") beyond the top edge of the cant. Following the installation of the finish ply membrane a minimum of two inches (2") above the cant, the top self-adhered flashing membrane shall be installed from a minimum of eight inches (8") above the finished roof line down the vertical extending a minimum of nine inches (9") out onto the field of the roof. All exposed vertical flashing and all exposed horizontal flashing laps shall be hot-air welded.
- L. All flashing membrane shall be hot mopped to the vertical flashing and to field of roof membrane; hot-air weld vertical laps. NOTE: All bitumen shall be removed from hot-air weld area.
- M. All flashing membrane shall be self-adhered to the vertical flashing, horizontal laps, and to field of roof membrane; hot-air weld vertical laps.
- N. Flashing laps shall be minimum three inch (3") width, no maximum.
- O. Hot-air weld of flashing lap shall be minimum one and one-half inch (1-1/2") width, no maximum.
- P. Any flashing extending further than eighteen inches (18") up onto a vertical surface shall be terminated at eighteen inch (18") height intervals and be mechanically fastened at the top with a termination pressure bar. The additional height needed to be flashed will have a second piece of self-adhered coal-tar elastomeric membrane (CTEM) and Type IV fiberglass felt underlayment installed in hot asphalt lapping the terminated lower sheet by six inches (6"). The new piece shall be properly fastened with a termination bar.
- Q. The self-adhered coal-tar elastomeric flashing sheets shall be run up the wall in three foot (3') widths and under the coping cap and terminated on the outside of the wall six inches (6") on center, then the coping cap reset. All side laps are to be hot-air welded. The underlayment ply shall be a self-adhered coal-tar elastomeric membrane (CTEM).
- R. All hot-air welded seams/laps shall be tested daily with a probe for integrity. no variance.
- S. Hot-air Welding Laps:
  - 1. When using a hand-held hot-air welder, the seams should be pressed together using a hand-held roller. The speed and temperature settings of the welding equipment can be affected by the weather conditions at the site of application, therefore, these parameters should be set by the contractor by using two (2) pieces of self-adhered coal-tar elastomeric membrane (CTEM). Minimum width of hot-air weld one and one-half inches (1-1/2").
  - 2. Lay the laps together and apply pressure to the welded seam to ensure full adhesion.
  - 3. Allow the seams to set fully, and probe the entire length for voids. Reseal voids immediately with a hot-air gun and roller.

### 3.07 PROJECTION FLASHINGS

- A. Plumbing Vents: Soil vent stack pipes shall receive new lead flashings installed in strict accordance with practices set forth in the NRCA Roofing Manual. The lead shall be carried up and over the top of the stack, and crimped down into the pipe to form a watertight seal. Projections that cannot be sealed thus should be boxed in and flashed as recommended by the roof membrane manufacturer.

- B. Square Projections: Lay the self-adhered coal-tar elastomeric membrane (CTEM) up to the projection, and cut membrane so that it will extend twelve inches (12") beyond the projection. Cut a slit in the membrane to correspond with the position of the projection, and lay the membrane in hot asphalt. Apply another layer of membrane in exactly the same fashion, but from the opposite direction. For metal flange-type projections, after doing above, strip in with six inch (6") strips of membrane.
- C. Round Projections: Cut membrane square and eighteen inches (18") from perimeter of projection. Slit square membrane with an "X" of proper size to ensure a close fit and positive seal. Place over projection, and adhere to clean membrane already on the roof. Cut a six inch (6") piece of membrane to apply as a collar, and secure with all stainless steel clamp.

### 3.08 STANDING SEAM METAL ROOF

- A. General:
  - 1. Examine substrate to ensure it is properly secured and prepared to receive metal roofing.
  - 2. Ensure substrate is installed flat, free from objectionable warp, wave and buckle.
  - 3. Do not proceed with installation until unsatisfactory conditions have been corrected.
- B. Standing Seam Roof Installation:
  - 1. Comply with manufacturer's instructions for assembly, installation and erection in order to achieve weathertight installation. Install in accordance with approved shop drawings.
  - 2. Standing Seam System:
    - a) Install panels in accordance with manufacturer's instructions and recommendations.
    - b) Prior to application of metal roof panels, all underlayment shall be covered with kraft sheathing separator sheet or similar, no exceptions.
    - c) Anchor securely in place using clips and fasteners spaced in accordance with manufacturer's recommendations for design and wind load criteria, minimum wind uplift of FM 1-90 is required or as per the most current published Factory Mutual windspeed map for the area for which the project is located.
    - d) Fully seat adjacent panel to achieve continuous engagement of standing seam joint.
    - e) All panels shall be installed in a workmanlike manner and panels true, straight and watertight.
  - 3. Dissimilar Metals:
    - a) Where sheet metal is in contact with dissimilar metals, execute juncture to facilitate drainage and minimize possibility of galvanic action.
    - b) At point of contact with dissimilar metal, coat metal with protective paint or tape which can be placed between metals.
  - 4. Field apply sealant to penetrations, transitions and other locations necessary (not standing seam) for airtight, waterproof installation.
- C. Cleaning: Clean exposed surfaces of work promptly after completion of installation.
- D. Protection: Protect work as required to ensure roofing will be without damage at time of final completion.

END OF SECTION 07412

**SECTION 07530  
COAL-TAR ELASTOMERIC ROOFING SYSTEM**

**PART 1 - GENERAL**

**1.01 AREAS COVERED**

- A. Low sloped roof areas adjacent to new covered walkway addition as shown on plans.

**1.02 DEFINITIONS**

ACM	Asbestos Containing Materials
ANSI	American National Standards Institute
ASCE	American Society of Civil Engineers
ASTM	American Society for Testing and Materials
CTEM	Coal-Tar Elastomeric Membrane
EIP	Ethylene Interpolymer
EPA	Environmental Protection Agency
EPDM	Ethylene Propylene Diene Monomer
EPS	Expanded Polystyrene
EVT	Equiviscous Temperatures
FM	Factory Mutual
IBC	International Building Code
KEE	Ketone Ethylene Ester
NDL	No Dollar Limit
NESHAP	National Emissions Standards for Hazardous Air Pollutants
NRCA	National Roofing Contractors Association
OSHA	Occupational Safety & Health Administration
SBS	Styrene-Butadiene-Styrene
SDI	Steel Deck Institute
SMACNA	Sheet Metal and Air Conditioning Contractors National Association
SPRI	Single Ply Roofing Industry
UL	Underwriters Laboratories, Inc.

**1.03 REFERENCES (INCLUDING LATEST REVISIONS)**

- A. Comply with governing local, state, and federal regulations, safety standards, and codes.
- B. Testing Laboratory Services: Test results shall meet or exceed established standards.
- C. Underwriters Laboratories, Inc. (Roofing Covering): Class A fire hazard classification.
- D. American Society for Testing and Materials (ASTM)
- E. The National Roofing Contractors Association (NRCA) - Roofing and Waterproofing Manual
- F. Sheet Metal and Air Conditioning Contractors National Association (SMACNA) - Architectural Sheet Metal Manual

G. American Society of Civil Engineers – ASCE 7

1.04 INSTALLER QUALIFICATIONS

- A. Roofing installer must be:
  - 1. Currently prequalified with the Owner in accordance with Owner's prequalification requirements as applicable.
  - 2. Currently an approved and/or licensed applicator in good standing with the existing roofing system manufacturer; Hyload, Inc. 5020 Enterprise Parkway, Seville, Ohio 44273.
  - 3. Installer must be an experienced single firm specializing in the type of roofing repair and/or removal and replacement work required, employing only experienced workers for the class of work in which they are employed, having at least five (5) years successful experience on projects similar in size and scope and acceptable as applicators by the Project Manager/Architect.
  - 4. Contractor must have successfully completed previous projects warranted by the manufacturer.
- B. It shall remain each Bidder's responsibility to determine his current status with the manufacturer's certification plan.

1.05 MANUFACTURER QUALIFICATIONS

- A. The existing roofing system is currently under warranty by the roofing material manufacturer. The existing roofing system is a Coal Tar Elastomeric membrane roofing system as manufactured by Hyload, Inc., 5020 Enterprise Parkway, Seville, Ohio 44273.
- B. The existing roofing system manufacturer's warranty shall remain in place and unaffected. All materials, components, and accessories shall be as approved by the manufacturer to keep the existing roof warranty in place and unaffected. NO EXCEPTIONS.

1.06 CONTRACT DOCUMENT QUALITY ASSURANCE

- A. In the case of an inconsistency between the drawings and specifications or within either document not clarified by addendum, the better quality or greater quantity of work shall be provided in accordance with the Project Manager's/Architect's interpretation.

1.07 SUBMITTALS

- A. Samples and Manufacturer's Submittals: Submit prior to delivery or installation.
  - 1. Samples of all roofing system components including all specified accessories.
  - 2. Samples of all materials used on the project, which are not supplied by the membrane manufacturer, shall be submitted to the membrane manufacturer for written approval prior to work starting.
  - 3. Submit samples of proposed warranty complete with any addenda necessary to meet the warranty requirements as specified.
  - 4. Submit latest edition of manufacturer's specifications and installation procedures. Submit only those items applicable to this project.
  - 5. A written statement from the roofing materials manufacturer approving the installer, specifications and drawings as described and/or shown for this project and stating the intent to guarantee the completed project.

6. Manufacturer's Equiviscous Temperatures (EVT) for the specified bitumens.
- B. Shop Drawings: Provide details of all perimeter conditions, projection conditions, and any additional special job condition details other than indicated in the drawings.
- C. Maintenance Procedures: Within ten days of the date of Substantial Completion of the project, deliver to the Owner two copies of the manufacturer's printed instructions regarding care and maintenance of the roof.

#### 1.08 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in manufacturer's original, unopened containers and rolls with all labels intact and legible including labels indicating appropriate warnings, storage conditions, lot numbers, and usage instructions. Materials damaged in shipping or storage shall not be used.
- B. Manufacturer's packaging and/or roll plastic is not acceptable for exterior storage. Tarpaulin with grommets shall be minimum acceptable for exterior coverings. All materials stored as above shall be a minimum of four inches (4") off the substrate, and the tarpaulin tied off with rope.
- C. Deliver materials requiring fire resistance classification to the job with labels attached and packaged as required by labeling service.
- D. Deliver materials in sufficient quantity to allow continuity of work.
- E. Handle and store material and equipment in such a manner as to avoid damage. Liquid products shall be delivered sealed, in original containers.
- F. Handle rolled goods so as to prevent damage to edge or ends.
- G. Select and operate material handling equipment so as not to damage existing construction or applied roofing.
- H. Moisture-sensitive products shall be maintained in dry storage areas and properly covered. Provide continuous protection of materials against wetting and moisture absorption. Store roofing and flashing materials on clean raised platforms with weather protective covering when stored outdoors.
- I. Store rolled goods on end.
- J. Protect materials against damage by construction traffic.
- K. The proper storage of materials is the sole responsibility of the contractor and any wet or damaged roofing materials shall be discarded, removed from the project site, and replaced prior to application.
- L. Comply with fire and safety regulations, especially with materials which are extremely flammable and/or toxic. Use safety precautions indicated on labels.

- M. Products liable, such as emulsions, to degrade as a result of being frozen shall be maintained above 40° F in heated storage.
- N. No storage of materials shall be permitted on roof areas other than those materials that are to be installed the same day. Any exception must be in written form.
- O. The contractor is to erect a temporary chain link fence, minimum six feet (6') in height, around work area stage and kettles. Fence is to be secured on a daily basis.

#### 1.09 SITE CONDITIONS

- A. Job Condition Requirements:
  - 1. Coordinate the work of the contractor with the work to be performed by other trades, to ensure proper sequencing of the entire work. The contractor is to schedule his work so that adequate time is allowed for other trades to perform their work.
  - 2. Apply roofing in dry weather.
  - 3. Do not apply roofing when ambient temperature is below 45° F.
  - 4. Proceed with roofing work only when weather conditions are in compliance with manufacturer's recommended limitations, and when conditions will permit the work to proceed in accordance with specifications.
  - 5. Schedule the work so the building will be left watertight at the end of each day. Do not remove more roofing materials than can be reinstalled in any working day.
  - 6. Load placed on the roof at any point shall not exceed the safe load for which the roof is designed.
  - 7. All surfaces to receive new roofing shall be smooth, dry, and free from dirt, debris, and foreign material before any of this work is installed. Competent operators shall be in attendance at all times equipment is in use. Materials shall be stored neatly in areas designated by the Project Manager/Architect.
  - 8. The contractor is to be aware of the potential for roof leaks on the existing roof as a result of ruptured blisters and/or roof mat damage caused by the vacuum process, foot traffic, or material and equipment storage. The contractor is to take all necessary precautions to prevent damage to the existing roof. All damage to the existing roof that could result in roof leaks is to be repaired on a daily basis by the roofing contractor.
  - 9. The contractor shall follow local, state, and federal regulations, safety standards, and codes for the removal, handling, and disposal of asbestos containing materials, if present. When a conflict exists, follow the stricter document.
  - 10. Due caution should be exercised so as not to alter the structural integrity of the deck. When cutting through any deck, care should be taken so as not to damage the deck or any part of the deck, such as post tension cables, etc.
  - 11. All kettles shall have a fume recovery system, automatic thermostat control, and visible temperature gauge all in working order.
  - 12. The contractor is to verify the location of all interior ducts, electrical lines, piping, conduit, and/or similar obstructions. The contractor is to perform all work in such a manner as to avoid contact with the above mentioned items.
  - 13. Surface and air temperatures should be a minimum 40° F during applications of cleaner and waterproof coating and remain above 40° F for a minimum of four (4) hours following applications. Verify compatibility of cleaner with coatings, paints, primers and joint sealers specified. Advise Project Manager/Architect of any problems in this regard prior to commencing cleaning operations.

14. Temporary Sanitary Facilities: The contractor shall furnish and maintain temporary sanitary facilities for employees' use during this project. These will be removed after the completion of the project. All portable facilities shall comply with local laws, codes, and regulations.
- B. Protection of Work and Property:
1. Work: The contractor shall maintain adequate protection of all his work from damage and shall protect the Owner's and adjacent property from injury or loss arising from this contract. Contractor shall provide and maintain at all times any OSHA required danger signs, guards, and/or obstructions necessary to protect the public and his workmen from any dangers inherent with or created by the work in progress. All federal, state, and city rules and requirements pertaining to safety and all EPA standards, OSHA standards, NESHAP regulations pertaining to asbestos as required shall be fulfilled by the contractor as part of his proposal.
  2. Property: Protect existing planting and landscaping as necessary or required to provide and maintain clearance and access to the work of this contract. Examples of two categories or degrees of protection are generally as follows: a) removal, protection, preservation, or replacement and replanting of plant materials; b) protection of plant materials in place, and replacement of any damage resulting from the contractor's operations.
  3. Existing and Finished roof areas shall be protected from damage by the contractor during construction.
  4. Twenty-four Hour Call: The contractor shall have personnel on call 24 hours per day, seven (7) days per week for emergencies during the course of a job. The Owner/Project Manager/Architect is to have the 24 hour numbers for the contact. Contractor must be able to respond to any emergency call and have personnel on-site within two (2) hours after contact. Numbers available to the Owner/Project Manager/Architect are to be both home and office numbers for:
    - a) Job Foreman
    - b) Job Superintendent
    - c) Owner or Company Officer
- C. Damage to Work of Others: The contractor shall repair, refinish, and make good any damage to the building or landscaping resulting from any of his operation. This shall include, but is not limited to, any damage to plaster, tile work, wall covering, paint, ceilings, floors, or any other finished work. Damage done to the building, equipment, or grounds must be repaired at the successful contractor's expense holding the Owner harmless from any other claims for property damage and/or personal injury.
- D. Measurements: It will be the contractor's responsibility to obtain and/or verify any necessary dimensions by visiting the job site, and the contractor shall be responsible for the correctness of same. Any drawings supplied are for reference only.
- E. Use of Premises:
1. The contractor is advised that the Owner will occupy the building at all times, and the contractor must provide all safeguards required to protect personnel and to keep noise levels as low as reasonably possible for each operation.
  2. The contractor shall:
    - a) Coordinate work in such a manner as to not interfere with the normal operation of the building.



- b) Assume full responsibility for protection and safekeeping of products stored on premises.
- c) Agree to hold the Owner harmless in any and all liability of every nature and description which may be suffered through bodily injuries, including death of any persons by reason of negligence of the contractor, agents, employees, or subcontractors.

F. Cleaning and Disposal of Materials:

- 1. Contractor shall keep the job clean and free from all loose materials and foreign matter. Contractor shall take necessary precautions to keep outside walls clean and shall allow no roofing materials to remain on the outside walls.
- 2. All waste materials, rubbish, etc., shall be removed from the Owner's premises as accumulated. Rubbish shall be carefully handled to reduce the spread of dust. A suitable scrap chute or hoist must be used to lower any debris. At completion, all work areas shall be left broom clean and all contractor's equipment and materials removed from the site.
- 3. All bituminous or roofing related materials shall be removed from ladders, stairs, railings, and similar parts of the building.
- 4. Debris shall be deposited at an approved disposal site.

1.10 SEQUENCING AND SCHEDULING

- A. Coordinate roofing schedule with work of other trades.
- B. Plan lay up of roofing membrane with respect to deck slope. Avoid situations where excessive drainage could pass into completed roofing.
- C. Maintain communication with roofing manufacturer's representative to inform of progress and to schedule periodic observations.
- D. All penetrations shall be made in roof prior to beginning with roof installation.

1.11 WARRANTIES

- A. Roofing - Manufacturer: Project shall be installed in such a manner that the roofing material manufacturer will continue the existing current warranty in place without interruption.
- B. Roofing - Contractor: The contractor, jointly with any subcontractors employed by him, shall guarantee the work required and performed under this contract will be free from defects in workmanship and materials, and that the building will be and remain waterproof for a two (2) year warranty period, at the affected areas for the scope of work of this project, after the Owner accepts the work as substantially complete. The warranty shall be in approved notarized written form, to obligate the contractor and his subcontractors, if any, to make good the requirements of the warranty.
- C. Warranty repairs shall be performed by a certified installer. The repairs shall be performed in accordance with the manufacturer's written instructions and recommended procedures so as to not void the warranty. Repair of the system, including materials and labor, shall be done at no cost to the Owner.

- D. During the proposal period each Bidder shall make arrangements with the material manufacturer to provide the required warranty. Refer to SUBMITTALS Paragraph in this section for requirements concerning submittals of warranty.

## **PART 2 - PRODUCTS**

### **2.01 GENERAL**

- A. Compatibility: Provide materials that are recommended by manufacturers to be fully compatible with indicated substrates, or provide separation materials as required to eliminate contact between incompatible materials.
- B. All materials shall be furnished, specified, or approved in writing by the manufacturer issuing the warranty.
- C. All materials used on the project shall be asbestos free.
- D. Liquid-type auxiliary materials shall meet VOC limits of authorities having jurisdiction.

### **2.02 INTERPLY MEMBRANE**

- A. The coal-tar elastomeric membrane (CTEM) shall be 60 mil overall calendered thickness. The membrane shall be a high-performance elastomeric membrane incorporating a DuPont™ Elvaloy® KEE (ketone ethylene ester), extended with coal-tar pitch and reinforced with polyester fibers as manufactured by Hyload, Inc.
- B. The coal-tar elastomeric membrane (CTEM) shall meet the following physical properties: Elongation 170%, ASTM D 412; Tensile Strength 1500 lbs/in<sup>2</sup>, ASTM D 412; Tear Strength 330 ppi, ASTM D 624; Density @ 70° F, 80 lbs/ft<sup>3</sup>; Low Temperature Flexibility, Pass, 37-GP-56M; and Water Absorption less than 0.1%, 37-GP-56M.

### **2.03 FINISH MEMBRANE**

- A. Granulated, SBS modified membrane, reinforced with a 180 g/m<sup>2</sup> non-woven polyester mat, meeting ASTM D 6164.
  - 1. Ratings: UL Class "A" UL Class 90 and FM 1-90
  - 2. Reinforcement: Non-woven polyester mat, 180 grams, minimum
  - 3. Thickness: 138 mil, minimum
  - 4. Color: White
  - 5. Surface: Mineral granules
  - 6. Adhesive: Type IV, asphalt

### **2.04 INTERPLY BASE FLASHING**

- A. The coal-tar elastomeric membrane (CTEM) shall be 60 mil overall calendered thickness. The membrane shall be a high-performance elastomeric membrane incorporating a DuPont™ Elvaloy® KEE (ketone ethylene ester), extended with coal-tar pitch and reinforced with polyester fibers as manufactured by Hyload, Inc.

- B. The coal-tar elastomeric membrane (CTEM) shall meet the following physical properties: Elongation 170%, ASTM D 412; Tensile Strength 1500 lbs/in<sup>2</sup>, ASTM D 412; Tear Strength 330 ppi, ASTM D 624; Density @ 70° F, 80 lbs/ft<sup>3</sup>; Low Temperature Flexibility, Pass, 37-GP-56M; and Water Absorption less than 0.1%, 37-GP-56M.

## 2.05 BASE FLASHING FINISH MEMBRANE

- A. Granulated, SBS modified membrane, reinforced with a 180 g/m<sup>2</sup> non-woven polyester mat, meeting ASTM D 6164.
  - 1. Ratings: UL Class "A", UL Class 90 and FM 1-90
  - 2. Reinforcement: Non-woven polyester mat, 180 grams, minimum
  - 3. Thickness: 138 mil, minimum
  - 4. Color: White
  - 5. Surface: Mineral granules
  - 6. Adhesive: Type IV, asphalt

## 2.06 SELF-ADHERING WELDED-SEAM VERTICAL FLASHING INTERPLY MEMBRANE

- A. Membrane shall be nominal fifty (50) mil in overall thickness consisting of thirty-five (35) mil thick calendered coal-tar elastomeric membrane thickness with fifteen (15) mil thick backing of styrene butadiene styrene (SBS) adhesive. The self-adhering membrane shall be a high-performance elastomeric membrane incorporating DuPont™ Elvaloy® KEE (ketone ethylene ester), extended with coal-tar pitch and reinforced with polyester fibers
- B. The self-adhering welded-seam membrane shall meet the following physical properties: Elongation 170%, ASTM D 412; Tensile Strength 1500 lbs/in<sup>2</sup>, ASTM D 412; Tear Strength 300 ppi, ASTM D 624; Density @ 70° F, 80 lbs/ft<sup>3</sup>; Low Temperature Flexibility, Pass, 37-GP-56M; and Water Absorption less than 0.1%, 37-GP-56M. Roll shall have one and one-half inch (1-1/2") wide dry lap for hot-air welding.

## 2.07 VERTICAL FLASHING FINISH MEMBRANE

- A. Granulated, SBS modified membrane, reinforced with a 180 g/m<sup>2</sup> non-woven polyester mat, meeting ASTM D 6164.
  - 1. Ratings: UL Class "A", UL Class 90 and FM 1-90
  - 2. Reinforcement: Non-woven polyester mat, 180 grams, minimum
  - 3. Thickness: 138 mil, minimum
  - 4. Color: White
  - 5. Surface: Mineral granules
  - 6. Adhesive: Flashing Cement

## 2.08 BITUMEN

- A. Shall be ASTM D 312 Type IV extra steep asphalt.
- B. Contractor shall mix with the hot asphalt an additive that eliminates the asphalt odor, such as descent, as manufactured by ArrMaz Custom Chemicals, or approved equal.

## 2.09 MODIFIED ASPHALT FLASHING CEMENT

- A. Premium Grade Rubber – Modified Mastic Compound designed for vertical wall flashing.

Properties:

ASTM: D 4586, Type I

Flash Point (ASTM D 3278): 100° F Min.

Weight per gallon (approximate): 10.4 lbs

Density @ 77° F, ASTM D 1475, 9.9-10.3 lbs/gal

Manufactured to meet the requirements of ASTM D 4586, Type I and Dade County Compliance No. 95-0228.09

## 2.10 UNDERLAYMENT BASE PLY

- A. Shall be Underwriters Laboratory approved.
- B. Shall be nominal eighty-five (85) mil, smooth surfaced, SBS modified asphalt glass reinforced base sheet coated with flexible, SBS polymer-modified asphalt, meeting ASTM D6163, Type 1, Grade S.

## 2.11 INSULATION

- A. All insulation shall be approved in writing by the membrane manufacturer as to thickness, type, and manufacturer. All insulation must be approved for the specific application, Underwriters Laboratory approved.
- B. Polyisocyanurate Roof Insulation: Insulation shall be two layers of rigid polyisocyanurate foam board; total thickness and LTTR-value shall be a minimum of 3.7" = 21.7 or match existing; meeting Federal Specification No. HH-I-1972/1 or 2 with 20 psi minimum compressive strength and nominal 2.0 pcf density. Boards shall be surfaced on two (2) sides with non-asphaltic facer material.
- C. Factory Tapered Perlite Insulation: (FOR REPAIRS TO DAMAGED EXISTING TAPERED PERLITE) at affected roof areas as shown on plans, factory cut twenty-four inch by forty-eight inch (24" x 48") perlite board cut to one-fourth inch (1/4") per foot slope used in conjunction with standard thickness of perlite board to provide positive slope.
- D. Factory Tapered Perlite Crickets: Factory cut twenty-four inch by forty-eight inch (24" x 48") perlite board cut to one-half inch (1/2") per foot slope used in conjunction with standard thickness of perlite board to provide positive slope.

## 2.12 SUBSTRATE BOARDS

- A. High Density Wood Fiberboard: Shall be thickness of one-half inch (1/2"), R of 1.32; board size four feet by eight feet (4' x 8'), impregnated six (6) sides with asphalt.

## 2.13 CANT STRIP

- A. Structural: Shall be wood where used for structural purposes meeting NRCA, FM Global and Underwriters Laboratory guidelines.

- B. Non-structural: Shall be wood fiber where used for non-structural purposes, conforming to ASTM C208 and C209.

## 2.14 ROUGH LUMBER

- A. All wood nailers, structural cants, curbs, and other miscellaneous rough carpentry, shall be lumber as recommended by NRCA, and Underwriters Laboratory guidelines.
- B. Vertical Wall Shimming Material: Shall be exterior grade plywood, gypsum core board, or concrete core board unless otherwise accepted by Project Manager/Architect. Thickness shall be as required for attachment or to make material flashing flush or level with offsets and/or transitions, minimum three-fourths inch (3/4"). Proper selection of material is required to achieve UL guidelines.

## 2.15 SEALANTS

- A. One-part Urethane Sealant: Sealant for use at coping joints, reglet joints, etc., shall be a one-component, high performance, non-priming, non-sag, gun grade elastomeric polyurethane sealant designed for use in active exterior joints, ASTM C 920, shall meet the following physical and performance properties, SONOLASTIC® NP 1™ as manufactured by BASF Construction Chemicals, LLC, or approved equal.

<u>Properties</u>	<u>Results</u>	<u>Test Methods</u>
Movement capability, %	±35	ASTM C719
Tensile strength, psi (MPa)	350 (2.4)	ASTM D412
Tear strength, pli	50	ASTM D1004
Ultimate elongation at break, %	800	ASTM D412
Rheological, at 120° F (49° C) (sag in vertical displacement)	No sag	ASTM C639
Extrudability, 3 seconds	Passes	ASTM C603
Hardness, Shore A		ASTM C661
At standard conditions	25 – 30	
After heat aging (max Shore A: 50)	25	
Weight loss, after heat aging	3%	ASTM C792
Cracking and chalking, after heat aging	None	ASTM C792
Tack-free time, hrs, (maximum 72 hrs)	Passes	ASTM C679
Stain and color change	Passes (no visible stain)	ASTM C510
Bond durability,* on glass, aluminum, and concrete ±35% movement	Passes	ASTM C719
Adhesion* in peel, pli (min. 5 pli)	30	ASTM C794
Adhesion* in peel after UV radiation through glass (min. 5 pli)	Passes	ASTM C794
Artificial weathering, Xenon arc, 250 hours	Passes	ASTM C793
Artificial weathering, Xenon arc, 3,000 hours	No surface cracking	ASTM G26
Water immersion, 122° F (50° C)	Passes 10 weeks with movement cycling	ASTM C1247

\*Primed for water immersion dictated by ASTM C920.

- B. Silyl-terminated Polyether Sealant: Sealant shall be a thermosetting, solvent free, non-slump, self-fixturing, multipurpose structural sealant which shall meet the following physical and performance properties, M-1 as manufactured by Chem Link, Inc., or approved equal.

Properties

Specific Gravity	1.62 (13.5 lbs./gallon)
Viscosity	800,000+ cps Brookfield RTV, TF spindle, 4 rpm 73° F.
Shear Strength (ASTM D-1002)	400 psi+ (7 day ambient cure)
Elongation @ break (ASTM D-412)	400-550% (7 day ambient cure)
Hardness Shore A (ASTM C-661)	45 ± 3
Tack free time (ASTM C-679)	20 minutes
Low temperature flex ASTM D-816)	Minus 10° F pass 1/4" mandrel
Slump (sag) (ASTM C-697)	Zero slump
Shrinkage (ASTM D-2453)	No measurable shrinkage (after 14 days)
Service temperature	-40° F to 200° F continuous service

## 2.16 FASTENERS

- A. Fasteners and fastening plates or bars shall be as recommended by the fastener manufacturer for the specific application.
- B. Fastener for Brick: Shall be one-fourth inch by two inches (1/4" x 2"), zinc with plated steel or stainless steel nail, one piece unit, flat head, as manufactured by Rawl Zamac Nailin, or approved equal.
- C. Fastener for Steel Deck: Shall be a minimum #14 fastener, fluorocarbon coated, with CR-10 coating. A minimum .200 diameter shank and .250 diameter thread. To be used with round pressure plates or bar, and having a fluorocarbon CR-10 coating, when subjected to thirty (30) Kesternich cycles (DIN 50018) shows less than 10% red rust which surpasses FM Global Approval Standard 4470, as manufactured by Olympic Manufacturing Group, Inc., or approved equal. Fasteners, plates, and/or bars shall be listed in the FM Global Approval Guide.

## 2.17 ASPHALT ROOF PRIMER

- A. Quick-dry asphalt-based primer for priming of asphalt roof surfaces, as manufactured by Gardner-Gibson, Inc. / GAF, or approved equal.

ASTM	D 41
Flash Point	105° F
Viscosity at 80° F (ASTM D 217)	50-60 K.U.
Weight per gallon	7.4 pounds
Drying time (to touch)	Min. 4 hours

## 2.18 ASPHALT PLASTIC ROOF CEMENT

- A. Trowel-applied mastic used on flanges of gravel stops, stacks, vents, and similar applications, as manufactured by Gardner-Gibson, Inc. / Johns-Manville, or approved equal.

ASTM	D 4586
Flash Point	105° F
Weight per gallon (approximate)	11 lbs.
Viscosity @ 80° F (ASTM D 217)	270-330
% Non-Volatile (Fed. Test Method 141)	70% Min.
% Specially Processed Bitumen	30% Min.
% Total Solids, by Volume	75% Min.
Dry film thickness of 1 gal./15 sq. ft.	85 Mils
Drying time	2 to 3 days
Service Temperature, Extended Exposure	-20° to +150° F
Resistance to Oils & Solvents	Poor
Resistance to Sunlight	Good
Resistance to Chemicals	Good
Effects of Weathering	Slight chalking
Water Resistance	
Under Good Drainage Conditions	Excellent
Under Continuous Submersion	Fair

## 2.19 FIBERGLASS COATED MEMBRANE

- A. A non-rotting, non-absorbent woven fiberglass membrane having a vinyl coating designed for membrane reinforcement for all roof repairs. Compatible with either tar or asphalt bitumens, having ten (10) open-weave squares per inch.

## 2.20 ALUMINUM ROOF COATING

- A. Aluminized heat reflective roof coating, VOC compliant, containing three pounds (3#) per gallon of aluminum paste pigment, as manufactured by Gardner-Gibson, Inc., or approved equal.

ASTM	D 2824, Type III
Flash Point (ASTM D 93)	100° F Min.
Weight per gallon (approximate)	9.5 lbs.
Drying time	Overnight
Viscosity @ 80° F (ASTM D 562)	120-145 K.U.
% Non-Volatile (Fed. Test Method 141)	55% Min.
% Specially Processed Asphalt	25% Min.
% Polished Aluminum Leafing Paste	32%
Type of Aluminum Paste, TT-P-320D, Type II	Class B
% Total Solids, by Volume	38%
Film Thickness of 1 gal./100 sq. ft. (Less absorption by surface)	6 Mils
Service Temperature, Extended Exposure	-20° to +180° F
Resistance to Oils, Solvents & Chemicals	Poor
Resistance to Sunlight	Excellent
Effects of Weathering	Very Slow Erosion
Water Resistance	
Under Good Drainage Conditions	Excellent
Under Continuous Submersion	Poor

## 2.21 LEAD JACKS

- A. Shall be four pound (4#) lead, and of dimensions required to completely cover existing plumbing stack.

## 2.22 PITCH PAN SEALANT

- A. Pitch pan sealant shall be one part, self-leveling coal-tar elastomeric urethane which shall meet the following physical and performance properties, or approved equal.

<u>Test</u>	<u>Typical Value</u>	<u>Test Method</u>
Elongation	300%	ASTM D 2370
Viscosity	15,000 – 25,000 cps	ASTM D 2196
Flash Point	325°F minimum	ASTM D 93

## 2.23 PIPE SUPPORTS

- A. Pipe support system shall be a prefabricated, engineered support system designed specifically for use on roofing without adhesive, roof penetrations, flashings, or damage to roofing system. Supports shall be as recommended by manufacturer as suitable for size and type of conduit or pipe being supported. Shall be as manufactured by Advanced Support Products, Inc., or approved equal.
1. Base shall be seventeen inches (17") circular base, injected molded polypropylene, with 227 square inches of surface on bottom, designed for weight disbursement;
  2. Dimensions shall be three inches (3") high by seventeen inches (17") in diameter, with molded insert for square tubing and two threaded rod couplings molded in.
  3. Frame shall be pre-galvanized zinc coated 12 gauge channel meeting ASTM A653.
  4. Hangers shall be clevis and/or band type as per pipe requirements.
  5. Accessories shall consist of cadmium plated threaded rods, clamps, nuts, bolts, and washers.
  6. Rollers shall be non-binding heavy duty SBR rubber.

## 2.24 ROOF WALKWAY MEMBRANE

- A. The walkway pad shall have the following minimum physical properties, and be applied with edges heat or solvent welded; size shall be 1/4" x 24" x 48", color shall be yellow, as manufactured by The Biltrite Corporation, or approved equal.

Shore A Hardness (ASTM D2240)	85 +/- 5
Elongation (ASTM D412)	100% min.
Tensile Strength (ASTM D412)	500 psi min.
Dimensional Stability (ASTM D1204)	0.2% max. change
24 hours at 120° F	
Tear Resistance (ASTM D624)	95 min
Tabor Abrasion, H-18 wheel/500 gr/1,000 rev.	
Weight Loss Grams	2.0 max.
Gauge Loss Inches	0.025 max
Heat Aging (ASTM D573), 70 hours at 158° F	
Tensile	± 15%
Elongation	± 15%
Shore A Hardness	± 10%



## 2.25 TERMINATION/PRESSURE BARS

- A. Aluminum strip shall be extruded channel bar with a mill finish, width one inch (1"), thickness 0.100"  $\pm$  .008", leg height one-fourth inch (1/4") top and bottom, leg angle ninety degrees (90°), for perimeter and curb anchorage, having predrilled holes six inches (6") on center, as manufactured by Olympic Fasteners, or approved equal.

## 2.26 ELASTOMERIC SEALANT

- A. Multi-Component Polysulfide Sealant: Except as otherwise indicated, provide manufacturer's standard, non-modified, 2-or-more-part, polyurethane-based, elastomeric sealant; complying with either ASTM C 920, Type M, Class 25, or FS TT-S-00227E, Class A; self-leveling grade/type where used in joints of surfaces subject to traffic, otherwise non-sag grade/type, as manufactured by Sonneborn, or approved equal.
- B. Durability: Less than 0.5 square inch adhesion/cohesion loss for three (3) samples of both mortar and aluminum; ASTM C 719 test procedure.
- C. Adhesion in Peel: Fifteen pound (15#) peel strength and 10% maximum loss of bond to substrate; ASTM C 794.
- D. Bituminous Modification: Where joint surfaces contain or are contaminated with bituminous materials, provide manufacturer's modified type sealant which is compatible with joint surfaces (modified with coal-tar or asphalt as required).

## 2.27 SELF-ADHERING UNDERLAYMENT FOR TEMPORARY WATERPROOFING

- A. A premium heavyweight, minimum 60 mil, self-adhering underlayment, to use as a temporary waterproofing barrier.

## 2.28 EXPANDED POLYETHYLENE JOINT FILLER

- A. Provide flexible, compressible, closed-cell, polyethylene of not less than 10 psi compression deflection (25%); except provide higher compression deflection strength as may be necessary to withstand installation forces and provide proper support for sealants, surface water absorption of not more than 0.1 pounds per square foot, as manufactured by Sonneborn, or approved equal.

## 2.29 JOINT PRIMER/SEALER

- A. Provide type of joint primer/sealer recommended by sealant manufacturer for joint surfaces to be primed or sealed.

## 2.30 BOND BREAKER TAPE

- A. Provide polyethylene tape or other plastic tape as recommended by sealant manufacturer, to be applied to sealant-contact surfaces where bond to substrate or joint filler must be avoided for proper performance of sealant. Provide self-adhesive tape where applicable.

## 2.31 SEALANT BACKER ROD

- A. Provide compressible rod stock of polyethylene foam, polyurethane foam, polyethylene jacketed polyurethane foam, butyl rubber foam, neoprene foam or other flexible, permanent, durable, non-absorptive material as recommended by sealant manufacturer for back-up of and compatibility with sealant. Where used with hot-applied sealant, provide heat-resistant type which will not be deteriorated by sealant application temperature as indicated.

## 2.32 DELIVERY AND STORAGE

- A. All materials shall be delivered with appropriate carton and can labels indicating appropriate warnings, storage conditions, lot numbers, and usage instructions. Materials damaged in shipping or storage shall not be used.

## 2.33 PRECAUTIONS

- A. Some of the indicated materials are extremely flammable and/or toxic. Use precautions indicated on can and carton labels.

## 2.34 MISCELLANEOUS MATERIALS

- A. Other materials shall be as specified, or of the best grade for the proposed use, as recommended by the manufacturer of said product.

# PART 3 - EXECUTION

## 3.01 REFERENCE

- A. In the instance of a conflict between these specifications and those of the manufacturer and/or current NRCA, Underwriters Laboratory and IBC guidelines, the more stringent specifications (better quality or greater quantity of work) shall take precedence.
- B. The manufacturer's Technical Specifications and current NRCA, Underwriters Laboratory and IBC guidelines shall be considered a part of this specification and shall be referred to for general application procedures and recommendations.
- C. Application of materials shall be in strict accordance with the manufacturer's recommendations and current NRCA, Underwriters Laboratory and IBC guidelines, except where more stringent requirements (better quality or greater quantity of work) are shown or specified.
- D. General Installation:
  - 1. Comply with governing local, state, and federal regulations, safety standards, and codes.
  - 2. Protect adjacent areas with tarpaulin or other durable materials.
  - 3. Contractor shall prevent overspray, and be responsible for parking lot areas and/or adjoining areas not part of this contract.
  - 4. Contractor shall be responsible for sealing, as required, all openings that may allow bitumen migration or drippage, i.e. pitch dams, envelopes, and filler strips.

5. Prepare surfaces according to manufacturer's or applicator's published instructions. All metal that is to receive bitumen, or come in contact with bitumen or adhesive, shall be first primed with appropriate primer. Any prefinished galvanized sheet steel that is to receive bitumen, or come in contact with bitumen or adhesive, shall be scored, scuffed or abraded before receiving primer application.
6. Use cleaning materials or primers necessary to render an acceptable surface/substrate.
7. All surfaces/substrates shall be clean and dry prior to application of materials.
8. Prior to application of felts and membrane, all foreign matter, gravel, etc., shall be removed from the insulation and/or substrate. Gravel or debris between the insulation/substrate and plies is not acceptable.
9. Prior to application of flashing membranes, substrate shall be clean and free of any previously installed roofing materials. Contractor shall ensure that all components of substrate be structurally sound before application of flashing materials.
10. Bitumen kettle shall have a fume recovery system, and visible thermometer to provide positive monitoring of the bitumen temperature when it is heated in accordance with manufacturer's instructions.
11. Ambient temperature shall be 40° F and rising.
12. The underlayment plies and field membrane are to be laid in the direction of maximum roof slope, working from bottom of slope toward ridge.
13. All roof areas will be picture framed with the 60 mil coal-tar elastomeric membrane (CTEM) as the system is being applied. The outer edge of the picture frame sheet shall extend approximately two inches (2") above the top of the cant. All end laps of the field sheets of the 60 mil coal-tar elastomeric membrane shall lap the picture frame sheet a minimum of eight inches (8") or the picture frame sheet side laps shall lap the field sheet a minimum of eight inches (8").
14. Wrinkles, buckles, kinks, and fishmouths are not acceptable when laying felt and membrane.
15. Dry voids of felt on felt or membrane on membrane are not acceptable.
16. All surfaces that are to receive the self-adhered membranes shall be primed with a fast drying asphaltic primer, except when self-adhered membrane is to be installed over a CTEM surface.

### 3.02 SUBSTRATE PREPARATION

- A. Tear-off: At designated areas, remove all existing roof assembly down to the roof deck or original substrate, where the new addition shall be constructed, and extending approximately four feet, (4'-0") of each side of the new addition. Including the adjacent base flashings and parapet wall membrane flashings. Substrate shall be smooth, free of debris, sharp edges, and other surface irregularities prior to starting roofing application. Substrate repair shall be performed as required to minimum of NRCA standards.
- B. Metal Decks:
  1. All loose rust, bitumen, or other foreign material shall be removed from the deck before applying metal primer at the minimal rate of one and one-half (1-1/2) gallons per one hundred (100) square feet of area.
  2. Deteriorated metal decking shall be repaired or replaced as required and as recommended by the deck manufacturer on a unit cost basis as approved by Project Manager/Architect.
  3. The metal deck shall be of like kind, quality, gauge and configuration. The deck span shall not exceed that recommended by FM Global Bulletin 1-28.

4. If metal deck must be replaced:
  - a) Erect metal decking as recommended by the SDI. Properly align and level on structural supports.
  - b) Allow minimum three inch (3") bearing when supported by structural steel and minimum six inch (6") bearing when supported by masonry.
  - c) Care shall be exercised in the selection of electrodes and amperage to provide positive welds and to prevent blowholes.
  - d) Weld metal shall penetrate all layers of deck material at end laps and side joints and shall have good fusion to the supporting members.
  - e) Side lap fasteners shall be No. 12, self-drilling, self-tapping screws.
  - f) Install closure strips and angle flashings as required to close openings between deck and walls, columns and openings.
  - g) Immediately after installation, touchup welds, burned areas and damaged spots with prime paint.
5. Expansion/control joints shall be installed so that no one area exceeds two hundred feet by two hundred feet (200' x 200').

### 3.03 CATEGORY II (NON-FRIABLE) ASBESTOS CONTAINING MATERIALS (ACM) REMOVAL

- A. Owner and Contractor agree to exonerate, indemnify, defend, and hold harmless the roofing material manufacturer from and against all claims, demands, lawsuits, damages, expenses and losses incurred by Contractor's removal of asbestos-containing materials from Owner's building and work site. Contractor must conduct its operations according to applicable requirements including but not limited to those established by:
  1. Occupation Safety and Health Administration (OSHA).
  2. Environmental Protection Agency (EPA).
  3. Department of Transportation (DOT).
  4. State or Local Air Pollution Control Authorities/Agencies.
  5. State or Local Solid Waste or Hazardous Waste Authorities/Agencies.
  6. State or Local Health Department(s).
  7. State or Local Building Code Authorities.
  8. Other federal, state or local agencies or authorities.
- B. Contractor or Owner shall perform appropriate inspections, surveys and file timely notifications to proper authorities prior to starting roof renovation or demolition activities. Inspectors, project planners, project managers, contractors and workers involved in the roof project shall have appropriate training, licenses and registrations. Contractor and Owner shall be responsible for determining and implementing regulatory compliance activities, including but not limited to work practices, engineering controls, personal protection, air monitoring, testing, hazard communication, material handling, record retention, and arranging for waste disposal/handling.
- C. Contractor must file a Uniform Hazardous Waste Manifest from proper landfill site for each load of asbestos containing material removed. Copies must be sent to Owner and material manufacturer/specifier. Transportation of waste shall be in accordance with applicable Department of Transportation (DOT) requirements.

### 3.04 ASPHALT HEATING

- A. Use low burner flames during initial melt-downs. Circulate asphalt after initial melt-down.
  - 1. Maximum asphalt temperature shall be 25°F below the flash point.
- B. Avoid prolonged heating of asphalt at high temperatures. Reduce the asphalt temperature to below 500°F if asphalt is not being used for periods of four (4) hours or more.
- C. Kettle shall be free of contaminants.
- D. Application rates: Bitumen quantities for waterstop/tie-offs, flashings, miscellaneous detail applications, and minimum kettle capacity are not included in application rates. To account for these factors, add approximately 25 percent additional bitumen on a total job average basis.

### 3.05 ROUGH CARPENTRY

- A. Nailers shall be installed according to NRCA, Underwriters Laboratory, and IBC guidelines.
- B. Wooden nailers shall be installed at gravel stops, drip edges, expansion joints, and on outside perimeter of building.
- C. Gravel stop and drip edge nailers shall be the same height as the new insulation being installed where required.
- D. Nailers shall be raised if necessary by anchoring an additional nailer of appropriate height to the existing nailer if the existing nailer is not to be replaced.
- E. Expansion joint nailers shall extend upward a minimum of eight inches (8") above finish roof height.
- F. Where parapet wall exists, specified vertical wall shimming material shall be installed beginning at roof height up to a minimum of twelve inches (12") above finished roof surface, or as detailed, to provide substrate for horizontal termination of roof to wall flashing system.
- G. Any lumber or shimming required for attachment, or to make material flashing flush or level with offsets and/or transitions, shall be incorporated in these specifications.

### 3.06 CANTS

- A. Provide full 45 degree cant strips (no partials) at all intersections of vertical and horizontal surfaces, such as walls, parapet walls, curbs, expansion joints, etc., and as recommended by membrane manufacturer.
- B. Cants shall provide a four (4) inch rise above the roof's surface.
- C. Toe of cant shall be level with the surface to receive new roof membrane and in all cases anchored according to NRCA, Underwriters Laboratory, and IBC guidelines.
- D. Cant strips shall be installed at the intersection of the deck and all vertical surfaces.

- E. If a wood cant is used where insulation exists, cant shall be toe nailed into treated wood nailer under cant the same height as insulation.

### 3.07 INSULATION - GENERAL

- A. Manufacturer's Instructions: In regard to attachment, the manufacturer's instructions or specifications shall determine the suitability for an application. Installation must meet ASCE 7 criteria and meet local governing building codes.
- B. Precautions: The surface of the insulation must not be ruptured due to overdriving of fasteners.
- C. Thermal insulation boards shall be laid on the substrate in parallel rows with end joints staggered and butted as close as possible. All joints shall be tight and at the roof perimeter and roof penetrations, insulation shall be cut neatly and fitted to reduce openings to a minimum. All openings one-fourth inch (1/4") or larger shall be filled with insulation.
- D. Insulation shall be tapered or feathered at drains and scuppers, where applicable, to provide proper drainage.
- E. No more insulation shall be installed than can be covered by the completed roof system by the end of the day or the onset of inclement weather.
- F. Tapered insulation and/or crickets shall be placed in accordance with the drawings and/or as required to minimum of NRCA standards.

### 3.08 MECHANICALLY FASTENED INSULATION

- A. Specified insulation shall be mechanically fastened to conform to the ASCE 7 criteria for wind uplift as dictated by wind zone applicable to location of project. Fasteners and fastening patterns shall be determined by building height, location and geographical area of the United States. It is the contractor's responsibility to consult current publications, literature, and bulletins of IBC and the manufacturer that are in effect at the time of this project. Boards shall be staggered and butted as close as possible with voids over one-fourth inch (1/4") to be filled.
- B. Insulation shall be installed to conform to the ASCE 7 criteria, and shall be laid with edges parallel to flutes and bearing on deck surface/flats. The long dimension of base insulation layer must be fully supported by the top flange of the metal deck. The edges of insulation boards must not cantilever over the flutes of the metal deck.
- C. The top surface of insulation shall be coated with hot asphalt using thirty pounds (30#) per one hundred (100) square feet of surface, and specified layer of tapered insulation shall be applied using offset joints, so that each layer breaks joints to a minimum of six inches (6") both ways with the preceding layer, and immediately walked in place.

- D. The top surface of the tapered insulation shall be coated with hot asphalt using thirty pounds (30#) per one hundred (100) square feet of surface, and specified cover board shall be applied using offset joints, so that each layer breaks joints to a minimum of six inches (6") both ways with the preceding layer, and immediately walked in place.

### 3.09 BASE SHEET OVER COVER BOARD

- A. Base sheet shall be solid mopped at the nominal rate of thirty pounds (30#)  $\pm$  20% per one hundred (100) square feet using steep asphalt Type IV as required by slope, properly heated. Base sheet shall be applied in accordance with the manufacturer's recommendations and in accordance with general practices as set forth by the NRCA Roofing Manual.

### 3.10 APPLICATION OF INTERPLY FIELD PLY

- A. Unroll at least ten feet (10') of the 60 mil coal-tar elastomeric membrane (CTEM) and position the sheet. The properly heated steep asphalt (per specification) should be applied at the rate of approximately thirty pounds (30#)  $\pm$  20% per one hundred (100) square feet with a mop just ahead of the roll of the CTEM to form a pool of asphalt into which the membrane is to be rolled. The roll of CTEM should push a puddle of asphalt ahead of it with no voids. Care should also be taken not to trap air under the membrane. The pool of asphalt in front of the roll will eliminate entrapped air.
- B. The asphalt must be mopped so as to extend beyond both edges of the sheet. The amount of asphalt should be just sufficient for excess asphalt to squeeze out along the edges.
- C. If slope dictates, membrane shall be installed using the strapped method going with the slope as required by membrane manufacturer.
- D. Picture frame all roof areas with 60 mil coal-tar elastomeric membrane (CTEM) as finish membrane ply is being applied. Rectangular type projections should also be picture framed.

### 3.11 FIELD LAP SPLICE

- A. Coal-tar elastomeric membrane (CTEM) shall be installed as above with side lap minimum three inches (3"), no maximum. End laps shall be minimum eight inches (8"), no maximum, and staggered a minimum of four feet (4'), no maximum.
- B. Field Lap Splice with Bitumen: The membrane shall be laid in the same direction as the base sheet, but the laps shall not coincide with the base sheet. While asphalt is still hot, pressure shall be applied to the laps with a trowel or similar tool to ensure complete contact with the asphalt, and a squeeze-out of bitumen shall be visible. The side laps in the 60 mil coal-tar elastomeric membrane (CTEM) should not be located above those in the base sheet, but located to one side or other to avoid excessive ply build-up. Lack of or no side lap bitumen squeeze-out is not acceptable. Contractor shall cut away dry material to dry material, and install a minimum of twelve inch (12") wide membrane overlaid in hot bitumen.

C. Field Seams/Laps:

1. All laps/seams, cross seams, T-joints, seams/openings at penetrations, or other details shall be sealed and checked daily, no variance.
2. Laps: All laps shall be straight and free of wrinkles and/or fishmouths, no variance.

3.12 APPLICATION OF FINISH FIELD PLY

- A. Install one (1) ply of SBS modified, granulated cap sheet in a solid mopping, 25 pounds  $\pm$ , 10%, of Type IV asphalt. Offset laps from bottom layer. Stagger all end laps three feet (3'), lap the end laps eight inches (8"), and lap side laps four inches (4"). Installation of the SBS sheet may be phased. Mop head will be a maximum of five. Care will be taken to maintain asphalt EVT at maximum. Insulate all luggers, no exceptions.

3.13 BACKNAILING/STRAPPING

- A. On slopes greater than one inch (1") in twelve inches (12"), refer to NRCA and/or manufacturer's guidelines for backnailing procedures and follow the more stringent guidelines for all specified materials.

<u>Slope</u>	<u>Interply&amp; Top Pour</u>	<u>Backnail</u>	<u>Strap</u>
0 - 1/2" per 12"	Type IV	No	No
1/2" - 2" per 12"	Type IV	Yes	Strap if possible
2" - 3" per 12"	Type IV	Yes	Yes

3.14 PERIMETER FASTENING

- A. Wood nailers are required for perimeter gravel stops or drip edges. Field membrane and all plies shall be mechanically fastened on the vertical face of nailer, twelve inches (12") on center maximum.

3.15 INTERPLY BASE FLASHING (APPROXIMATELY 8" IN HEIGHT MINIMUM)

- A. Base flashings shall be installed using the 60 mil overall calendered thickness coal-tar elastomeric roof membrane (CTEM) flashing, with length of run not to exceed ten linear feet (10').
- B. The roofing interply flashing membrane shall extend up over and two inches (2") above the top of cant strips at all vertical intersections or out to the roof's edge.
- C. All existing substrates receiving flashing membrane shall be clean and primed with asphalt primer, prior to application.
- D. Flashing membrane shall always be installed with specified modified bitumen base sheet as an underlayment. Both the Type IV glass felt underlayment and the flashing membrane shall be set in hot asphalt.
1. NOTE: Care shall be taken to avoid asphalt contamination at end laps where the vertical laps of the CTEM must be hot-air welded.
- E. All flashings shall be mechanically top fastened with a termination bar a minimum of six inches (6") on center at the top leading edge, be a minimum of eight inches (8") in height above finished membrane, extend a minimum of nine inches (9") onto the field of horizontal roof membrane, and not exceed ten linear feet (10') of run in length.



- F. After proper termination of the base flashing at approximate eight inch (8") height, a two piece reciever reglet with counterflashing shall be installed according to NRCA and SMACNA guidelines.
- G. All vertical flashing lap seams of the coal-tar elastomeric membrane (CTEM) shall be hot-air welded, and not exceed ten feet (10') on center.
- H. All flashing membrane shall be hot mopped to the vertical flashing and to field of roof membrane; hot-air weld vertical laps. NOTE: Once the CTEM membrane has been contaminated with hot asphalt, it is not possible to clean the asphalt off and hot air weld it for long term effectiveness. A patch of CTEM must be welded over the area large enough to be welded one and one-half inches (1-1/2") past any contaminated area.
- I. Flashing laps shall be minimum three inch (3") width, no maximum. Hot-air weld of flashing lap shall be minimum one and one-half inch (1-1/2") width, no maximum.
- J. Hot-Air Welding of Flashing Laps:
  - 1. When using a hand-held hot-air welder, the seams should be pressed together using a hand-held roller. The speed and temperature settings of the welding equipment can be affected by the weather conditions at the site of application, therefore, these parameters should be set by trial and error using two (2) pieces of the coal-tar elastomeric membrane (CTEM). Minimum width of hot-air weld one and one-half inches (1-1/2"), no maximum.
  - 2. Lay the laps together and apply pressure to the welded seam to ensure full adhesion.
  - 3. Allow the seams to set fully, and probe the entire length for voids. Reseal voids immediately with a hot-air gun and roller.
- K. All hot-air welded seams/laps shall be tested daily with a probe for integrity, no variance.

### 3.16 FINISH BASE FLASHING

- A. SBS granulated flashing membrane shall be installed per manufacturer's recommendations.
- B. SBS granulated flashing membrane shall be installed over all CTEM flashings per manufacturer's recommendations. SBS granulated flashing membrane laps shall be installed offset from CTEM flashing laps. Termination bars shall be installed six inches (6") on center. Apply three-course over the termination bar with mastic and membrane along with the laps of the membrane.

3.17 BLACK SELF-ADHERING WELDED-SEAM VERTICAL WALL FLASHING  
(FOR USE APPROXIMATELY 8" ABOVE THE FINISHED ROOF LINE AND EXTENDING UPWARD)

- A. Black self-adhered welded seam membrane flashing shall be installed on the vertical beginning approximately eight inches (8") above the finished roof line (where the 8" coal-tar elastomeric membrane flashing is terminated), with length of run not to exceed the width of the material roll. Strapped flashing method shall be installed in strict accordance with the manufacturer's recommendations.
- B. All flashing extending further than eighteen inches (18") up onto a vertical surface shall be installed using the strapped method and must be fastened at the lower edge of the membrane with a wrapped termination bar. Wrapped termination bars shall be installed approximately eighteen inch (18") apart continuing up the vertical until the membrane can be installed up and over the parapet wall and fastened to the nailer on the outside of the wall.
- C. The flashing membrane shall be run up the wall in three foot (3') widths, run under the coping cap and be terminated on the outside of the wall six inches (6") on center; then the coping cap shall be reset. All side laps are to be hot-air welded.
- D. Hot-Air Welding of Flashing Laps:
  - 1. When using a hand-held hot-air welder, the seams should be pressed together using a hand-held roller. The speed and temperature settings of the welding equipment can be affected by the weather conditions at the site of application, therefore, these parameters should be set by trial and error using two (2) pieces of the coal-tar elastomeric membrane (CTEM). Minimum width of hot-air weld one and one-half inches (1-1/2"), no maximum.
  - 2. Lay the laps together and apply pressure to the welded seam to ensure full adhesion.
  - 3. Allow the seams to set fully, and probe the entire length for voids. Reseal voids immediately with a hot-air gun and roller.
- E. All hot-air welded seams/laps shall be tested daily with a probe for integrity, no variance.
- F. Any lumber or shimming required for attachment or to make material flashing flush or level with offsets and/or transitions shall be incorporated in the flashing specifications.

3.18 FINISH VERTICAL WALL FLASHING

- A. SBS granulated flashing membrane shall be installed per manufacturer's recommendations.
- B. SBS granulated flashing membrane shall be installed over all CTEM flashings per manufacturer's recommendations. SBS granulated flashing membrane laps shall be installed offset from CTEM flashing laps. Termination bars shall be installed six inches (6") on center. Apply three-course over the termination bar with mastic and membrane along with the laps of the membrane.

### 3.19 PROJECTION FLASHINGS

- A. Plumbing Vents: Soil vent stack pipes shall receive new lead flashings installed in strict accordance with practices set forth in the NRCA Roofing Manual. The lead shall be carried up and over the top of the stack, and crimped down into the pipe to form a watertight seal. Projections that cannot be sealed thus should be boxed in and flashed as recommended by the roof membrane manufacturer.
- B. Square Projections: Lay the 60 mil coal-tar elastomeric membrane (CTEM) up to the projection, and cut membrane so that it will extend twelve inches (12") beyond the projection. Cut a slit in the membrane to correspond with the position of the projection, and lay the membrane in hot asphalt. Apply another layer of membrane in exactly the same fashion, but from the opposite direction. For metal flange-type projections, after doing above, strip in with six inch (6") strips of membrane.
- C. Round Projections: Cut membrane square and eighteen inches (18") from perimeter of projection. Slit square membrane with an "X" of proper size to ensure a close fit and positive seal. Place over projection, and adhere to clean membrane already on the roof. Cut a six inch (6") piece of membrane to apply as a collar, and secure with an all stainless steel clamp.

### 3.20 CURB FLASHINGS

- A. The flashing substrate shall be free of any dirt and loose material.
- B. The underlayment ply or plies and the coal-tar elastomeric membrane (CTEM) shall be brought to two inches (2") past the top of the cant strip and adhered.
- C. Starting on the roof at least six inches (6") from the roofside edge of the cant strip, adhere specified base sheet extending over the cant and up the vertical a minimum of eight inches (8"). Each lap of the ply sheet shall be a minimum of three inches (3").
- D. Over the base sheet starting on the roof at least eight inches (8") from the roofside edge of the cant strip, adhere the coal-tar elastomeric membrane (CTEM) extending over the cant and up the vertical a minimum of eight inches (8"). Each lap of the coal-tar elastomeric membrane (CTEM) shall be a minimum of three inches (3"), hot-air welded, and shall not coincide with the laps of the underlayment sheet.
- E. Fasten the top edge of the flashings on six inch (6") centers using approved termination bar and fasteners.
- F. An NRCA-approved metal counterflashing shall extend down over the flashing a minimum of four inches (4").

### 3.21 PIPING/CONDUIT

- A. Piping/conduit shall be raised to NRCA recommended heights, and new supports furnished. Permanent supports shall be installed upon pads approved by membrane manufacturer. Coordinate work with Project Manager/Architect.
- B. All gas lines, piping, and conduits shall be coated with industrial grade yellow paint.

### 3.22 PIPE/EQUIPMENT SUPPORTS

- A. All gas lines, piping, and conduit must be supported on specified stands or hangars.
- B. Supports shall be attached to pipes with oversized strapping.
- C. Designated pipe/equipment supports shall be removed and replaced with new.
- D. Verify that roof surface is smooth and clean to extent needed to receive materials. Surface shall be cleaned by removing any loose gravel and any foreign matter.
- E. Install support systems in accordance with manufacturer's instructions and approved shop drawings. Accurately locate and align pre-fabricated pipe supports in locations specified as per approved shop drawings. Pipe supports shall be placed not to exceed ten feet (10') on center and within two feet (2") of all elevation changes, intersections, and corners.
- F. Supports shall be set on a double layer of membrane, adhered to the roof surface using specified silyl-terminated polyester sealant, unless noted otherwise by support manufacturer.
- G. Provide bond breaker between dissimilar metals.

### 3.23 MEMBRANE PROTECTION

- A. Walk Way Pads: Install manufacturer's walk way pads continuously on each side of each air-handling/mechanical unit on the roof in accordance with the manufacturer's recommended procedures.
- B. Where equipment pads, wood sleepers, or walkway slabs are to be installed over the roofing membrane, an additional layer of the roofing membrane shall be installed between the roofing membrane and the pad, sleeper, or slab. Due caution shall be exercised to prevent roofing membrane damage during placement. Where required, membrane shall be welded to field membrane to prevent slippage.

### 3.24 TERMINATION OF NEW ROOF TO EXISTING

- A. The final juncture of the new roof shall consist of an tie-in to the existing as detailed, suitably flashed and sealed for a permanent watertight installation. A water cutoff shall be incorporated into the termination to prevent moisture migration.

### 3.25 OVERNIGHT SEAL

- A. Provide temporary weather protection during interval between demolition and removal of existing construction on exterior surfaces and installation of new construction to ensure that no water leakage or damage occurs to structure or interior areas of existing building.
- B. Installation shall be performed according to accepted roofing practice as outlined in the NRCA Roofing Manual.

**END OF SECTION 07530**



**ROOF PLANS/DETAIL DRAWINGS**

**1.01 ROOF PLANS**

- A. Any drawings supplied are for reference purposes only. Dimensions, penetrations, curbs, etc. must be field verified. Those shown are typical but may not be all inclusive, and contractor shall be responsible for the correctness of same. Any existing insulation thickness, deck type or other details shown on the drawings shall be subject to contractor confirmation.

**1.02 DETAIL DRAWINGS**

- A. The enclosed details for this project are intended primarily to present the proper installation of the membranes used for waterproofing at flashings, perimeter closures, roof projections, etc. Specific underlying construction configurations, such as walls, nailers, wood backing, structural steel, etc., which may currently be in place may or may not be accurately depicted on the attached details. Unless specifically called out in the accompanying written specifications, or where a detail is noted "AS DRAWN", and/or proper roofing and construction practices are not being followed, underlying construction configurations are to remain unchanged from those in place on the building prior to this reroofing.

**END OF SECTION**



**SECTION 07600**  
**SHEET METAL AND MISCELLANEOUS ACCESSORIES**

**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. Section Includes:
  - 1. Provide flashing and sheet metal components for moisture protection.
  - 2. Related accessories.

**1.02 DEFINITIONS**

ACM	Asbestos Containing Materials
ASCE	American Society of Civil Engineers
ASTM	American Society for Testing and Materials
CTEM	Coal-Tar Elastomeric Membrane
EIP	Ethylene Interpolymer
EPA	Environmental Protection Agency
EPDM	Ethylene Propylene Diene Monomer
EPS	Expanded Polystyrene
EVT	Equiviscous Temperatures
FM	Factory Mutual
IBC	International Building Code
KEE	Ketone Ethylene Ester
NDL	No Dollar Limit
NESHAP	National Emissions Standards for Hazardous Air Pollutants
NRCA	National Roofing Contractors Association
OSHA	Occupational Safety & Health Administration
SBS	Styrene-Butadiene-Styrene
SDI	Steel Deck Institute
SMACNA	Sheet Metal and Air Conditioning Contractors National Association
UL	Underwriters Laboratories, Inc.

**1.03 SUBMITTALS**

- A. Product Data:
  - 1. Submit shop drawings, product data and mockups of all sheet metal.

**1.04 QUALITY ASSURANCE**

- A. Comply with governing local, state, and federal regulations, safety standards, and codes. Provide products of acceptable manufacturers in satisfactory use in similar service for five (5) years. Use experienced installers. Deliver, handle and store materials in accordance with manufacturer's instructions.
- B. Reference Standards: Applicable portions of ASCE, SMACNA, ASTM, and NAAMM publications.



## 1.05 WARRANTIES

- A. **Manufacturer's Product Warranty:** Submit manufacturer's standard limited product warranty signed by the manufacturer's authorized official, guaranteeing to correct failures in product which may occur during the warranty period, without reducing or otherwise limiting any other rights to correction which the Owner/Project Consultant may have under the contract documents. Failure is defined to include product failure which leads to interruption of a watertight installation. Correction may include repair or replacement of failed product.
- B. **Contractor's Warranty Period:** For roofing flashing and sheet metal, provide a written warranty which shall warrant work to be free of leaks and defects in materials and workmanship for two (2) years, starting from date of substantial completion.
- C. Defects of the sheet metal occurring during the warranty period shall be promptly corrected by the contractor, and defects of the roofing shall be promptly corrected by the manufacturer at no additional cost to the Owner. Upon notification from the Owner or the Owner's representative that evidence of a defect exists, the responsible party shall immediately inform the Owner's representative of the date on which corrective work will be scheduled, and shall notify the Owner's representative when the corrective work has been completed.

## PART 2 - PRODUCTS

### 2.01 SHEET METAL MATERIAL

- A. Hot-dipped Galvanized Steel for use as counterflashings (where not visible from the ground), and expansion joints: Minimum 24-gauge, G-90, hot-dipped galvanized metal, commercial quality, ASTM A 653/A 653M.
- B. Stainless Steel for use as pitch pans: Minimum 24-gauge, commercial quality, ASTM A 653/A 653M.
- C. Hot-dipped Galvanized Steel for use as continuous clips: Minimum 22-gauge, G-90, hot-dipped galvanized metal, commercial quality, ASTM A 653/A 653M.
- D. Prefinished Galvanized Sheet Steel (where visible from the ground): Shall be 24-gauge flat stock, prefinished with Kynar finish meeting ASTM A 446, forty-five and one-half inches to forty-eight inches width by one hundred twenty inches in length (45-1/2" - 48" x 120") for use as new metal edge gravel guard, cover plates, downspouts, gutters, coping and miscellaneous metal.
- E. Stainless Steel: QQ-S-766, Class 304 or 316; or ASTM A 167, Type 304 or 316; form and condition most suitable for the purpose.
- F. Prefinished Aluminum: Shall be that most suitable for the purpose.
- G. All existing sheet metal shall be replaced with new metal of like gauge and type, or as specified on drawings.

- H. All prefinished metal color shall be as selected by Owner/Architect from manufacturer's full range of colors, including metallics.

## 2.02 FASTENERS

- A. Fasteners shall be same metal as flashing/sheet metal, or other non-corrosive metal as recommended by sheet manufacturer for the specific application. Match finish of exposed heads with material being fastened.
- B. Fasteners and fastening plates or bars shall be listed in the FM Global Approval Guide.
- C. Fastener for Brick: Shall be one-fourth inch by two inches (1/4" x 2"), zinc with plated steel or stainless steel nail, one piece unit, flat head.
- D. Screws: Self-taping sheet metal type with neoprene washer, as appropriate.
- E. Pop Rivets: Full stainless steel Series 42 or 44, as appropriate.
- F. Continuous Clip: Concealed hold-down clip type; of same materials as coping, gravel guard, sized to suit application. Use a continuous clip, minimum 22-gauge G-90 galvanized.

## 2.03 RELATED MATERIAL

- A. Plastic Cement: FS SS-C-153, cutback asphalt type.
- B. Solder: QQ-S-571 composition best suited for purpose; use high tin content, minimum 60/40, for stainless steel and monel alloy.
- C. Copper, Sheet, and Strip: QQ-C-576, ASTM B 370, light cold-rolled temper, minimum 16 ounce.
- D. Sealant (for Sheet Metal): One-component polyurethane, conforming to requirements of FS TT-S-230C, non-staining and non-bleeding.
- E. Miscellaneous Materials:
  - 3. Metal Accessories: Provide and install sheet metal clips, straps, anchoring devices, and similar accessory units as required for installation of work, matching or compatible with material being installed, non-corrosive, size, and gauge required for performance.

## PART 3 - EXECUTION

### 3.01 INSPECTION

- A. Verify roof openings, curbs, pipes, sleeves, ducts or vents through roof are solidly set, cant strips and reglets in place, substrates are smooth and clean and nailing strips located.

- B. Verify membrane termination and base flashings are in place, sealed and secure, prior to metal installation.
- C. Beginning of installation means acceptance of conditions.

### 3.02 PREPARATION

- A. Field measure site conditions prior to fabricating work. Provide all shop drawings and mock-ups one month prior to installation to the Owner/Project Consultant for approval.
- B. Install starter and edge strips and cleats before starting installation.

### 3.03 FABRICATION - GENERAL

- A. Shop-fabricate work to greatest extent possible. Comply with details shown, and with applicable requirements of SMACNA "Architectural Sheet Metal Manual" and other recognized industry practices. Fabricate for waterproof and weather-resistant performance; with expansion provisions for running work, sufficient to permanently prevent leakage, damage or deterioration of the work. Form work to fit substrates. Comply with material manufacturer's instructions and recommendations. Form exposed sheet metal work without excessive oil-canning, buckling, and tool marks, true to line and levels as indicated, with exposed edges folded back to form hems.
- B. Fabricate, counterflashings, expansion joints, etc. with new galvanized sheet metal as specified. Fabricate sheet metal components to size and dimensions as indicated on the drawings.
- C. Fabricate pitch pans with new stainless steel as specified.
- D. Form sheet metal on bending brake.
- E. Form materials with straight lines, sharp angles and smooth curves.
- F. Fold back edges on concealed side of exposed edge to form hem (1/4" minimum).
- G. Weld or solder joints on parts that are to be permanently and rigidly assembled.
- H. Limit single-piece lengths to ten feet (10').
- I. Fabricate corner pieces with eighteen inch (18") extensions, mitered and sealed by forming as one piece.
- J. Where installing flashing directly to masonry or dissimilar materials, backpaint with bituminous paint.
- K. Install new metal rooftop projections. New rooftop projection details shall be as recommended in NRCA or SMACNA handbooks. All rooftop projections shall be cleaned, all joints sealed, and painted with a rust inhibitive paint.
- L. All sheet metal shall be sealed and watertight.

- M. Metal work should be secured so as to prevent damage from buckling or wind. Where clips are shown, fabricate as detailed.
- N. All metal to receive bitumen or adhesive shall be first primed with asphalt primer.
- O. All prefinished metal shall be sanded and/or abraded prior to receiving primer.
- P. Separations: Provide for separation of metal from non-compatible metal or corrosive substrates by coating concealed surfaces at locations of contact, with bituminous coating or other permanent separation as recommended by manufacturer/fabricator.
- Q. Bed flanges of work in a thick coat of bituminous roofing cement where required for waterproof performance.

### 3.04 INSTALLATION

- A. General: All sheet metal termination to vertical wall shall have a through-wall with receiver installed on masonry walls or prefabricated "Z" bar flashing pre-installed to fluid applied wall finished prior to installation of sheet metal termination. This applies to edge metal, base flashing closures and all vertical surface intersections. Refer to NRCA, SMACNA, and metal manufacturer's guidelines.
- B. Counterflashing:
  - 1. Provide and install new two-piece sheet metal counterflashing as required for a permanent watertight installation.
- C. Pitch Pans – Stainless Steel:
  - 1. Install pitch pans of 24-gauge stainless steel according to NRCA standards, minimum of six inches by six inches (6" x 6").
  - 2. Pitch pans shall be fabricated to minimum of four inches (4") above the finished roof membrane. Seams of pitch pans shall be soldered inside and out.
  - 3. Mastic shall be applied under pitch pan flange a minimum of one-half pound (1/2#) per linear foot.
  - 4. All metal flanges shall be primed with asphalt primer prior to flashing installation. Inside of pitch pan shall be cleaned and primed.
  - 5. All projections enclosed in pitch pans shall be cleaned in any manner suitable and coated with a rust inhibitive coating as approved by the Owner/Project Consultant. Coating shall be allowed to dry prior to pitch pan fill.
  - 6. Base of pitch pans shall be filled around penetration with M-1 sealant. Sprinkle mod bit granules over sealant 1/4" deep.
  - 7. Top finish fill shall be coal-tar urethane, with maximum fill to within three-eighths inch (3/8") of top of pitch pan sides.
  - 8. Strip metal flange of pitch pan with one strip of Type IV fiberglass felt set in hot bitumen extending from the outer edge of the flange a minimum of three inches (3") inward to base of pitch pan.
  - 9. Strip in fiberglass felt with 60 mil coal-tar elastomeric membrane (CTEM) flashing set in hot asphalt extending from the outer edge of the Type IV fiberglass underlayment a minimum of three inches (3") inward to the base of the pitch pan.

- D. Bonnets/Hoods:
  - 1. Fabricate and install above all pitch pans, where necessary, or reinstall as applicable, metal bonnets over all pitch pans, NO EXCEPTIONS.
  - 2. Bonnets/Hoods shall be manufactured with metal compatible with metal to which bonnet is to be attached.
  - 3. On beams and other steel, weld in place bonnets fabricated from one-fourth inch (1/4") steel plate.
  - 4. Draw band bonnets fabricated from 22-gauge galvanized steel may be used on circular projections.

### 3.05 FINISH

- A. Backpaint concealed metal surfaces with bituminous paint where expected to be in contact with cementitious materials or dissimilar metals. Exposed surfaces to be provided with a factory applied fluorocarbon Kynar finish meeting ASTM A 446 and AAMA specification 605.2 for high performance coating.
- B. New 24-gauge hot-dipped galvanized metal shall be painted on all locations visible from the ground with an industrial grade paint as selected by Project Manager/Architect from manufacturer's full range of colors, including metallics. Galvanized metal surface must be properly prepared by removing all oil, grease, and/or protective mill coatings by solvent cleaning surface in accordance with SSPC-SP1, and according to paint manufacturer's recommendation, to ensure proper adhesion of paint to metal.

**END OF SECTION 07600**

## **ROOF PLANS/DETAIL DRAWINGS**

### **1.01 ROOF PLANS**

- A. Any drawings supplied are for reference purposes only. Dimensions, penetrations, curbs, etc. must be field verified. Those shown are typical but may not be all inclusive, and contractor shall be responsible for the correctness of same. Any existing insulation thickness, deck type or other details shown on the drawings shall be subject to contractor confirmation.

### **1.02 DETAIL DRAWINGS**

- A. The enclosed details for this project are intended primarily to present the proper installation of the membranes used for waterproofing at flashings, perimeter closures, roof projections, etc. Specific underlying construction configurations, such as walls, nailers, wood backing, structural steel, etc., which may currently be in place may or may not be accurately depicted on the attached details. Unless specifically called out in the accompanying written specifications, or where a detail is noted "AS DRAWN", and/or proper roofing and construction practices are not being followed, underlying construction configurations are to remain unchanged from those in place on the building prior to this reroofing.

**END OF SECTION**

## SECTION 07920 - JOINT SEALANTS

### PART 1 - GENERAL

#### 1.1 COORDINATION

- A. The General Conditions of the Contract for Construction and the Supplementary Conditions to the General Conditions of the Contract for Construction shall be considered as part of this section of the specifications.
- B. Each Bidder shall be responsible for determining during the bidding period the extent that any addenda issued during the bidding period may affect this section of the specifications.
- C. Reference Instructions to Bidders for requirements regarding substitutions of materials and products.
- D. Where conflicts occur between the drawings and specifications, between different drawings, between different portions of this section of the specifications, or between different sections of the specifications, the more stringent requirements and the greater quantity shall apply.

#### 1.2 SECTION REQUIREMENTS

- A. Submittals: Product Data and color Samples.

### PART 2 - PRODUCTS

#### 2.1 JOINT SEALANTS

- A. Compatibility: Provide joint sealants, joint fillers, and other related materials that are compatible with one another and with joint substrates under service and application conditions.
- B. Elastomeric Sealants: Comply with ASTM C 920.
  - 1. Single-component, neutral-curing silicone sealant, Type S; Grade NS; Class 25; Uses T, M, and O, with the additional capability to withstand **[50 percent movement in both extension and compression for a total of 100 percent movement] [100 percent movement in extension and 50 percent movement in compression for a total of 150 percent movement]**. Use for building expansion joints.
  - 2. Single-component, nonsag polysulfide sealant, Type S; Grade NS; Class 12-1/2; Uses NT, M, G, A, and O. For general exterior use.
  - 3. Single-component, neutral-curing silicone sealant, Type S; Grade NS; Class 25; Uses T, NT, M, G, A, and O. For general exterior use.
  - 4. Single-component, nonsag urethane sealant, Type S; Grade NS; Class 25; and Uses NT, M, A, and O. For general exterior use.
  - 5. Single-component, nonsag urethane sealant, Type S; Grade NS; Class 25; Uses T, NT, M, G, A, and O. Use for exterior traffic-bearing joints, where slope precludes use of pourable sealant.
  - 6. Single-component, pourable urethane sealant, Type S; Grade P; Class 25; Uses T, M, G, A, and O. Use for exterior traffic-bearing joints.

- 7. Single-component, mildew-resistant silicone sealant, Type S; Grade NS; Class 25; Uses NT, G, A, and O; formulated with fungicide. Use for interior sealant joints in ceramic tile, stone, and other hard surfaces in kitchens and toilet rooms and around plumbing fixtures.
- C. Latex Sealant: Single-component, nonsag, mildew-resistant, paintable, acrylic-emulsion sealant complying with ASTM C 834. For interior use only at perimeters of door and window frames.
- D. Acoustical Sealant for Exposed Joints: Nonsag, paintable, nonstaining, latex sealant complying with ASTM C 834. For interior use only at acoustical assemblies.
- E. Acoustical Sealant for Concealed Joints: Nondrying, nonhardening, nonskinning, nonstaining, gunnable, synthetic-rubber sealant recommended for sealing interior concealed joints to reduce transmission of air-borne sound. For interior use only at acoustical assemblies.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION

- A. Comply with ASTM C 1193.
- B. Comply with ASTM C 919 for use of joint sealants in acoustical applications.

END OF SECTION 07920



## SECTION 08113 - HOLLOW METAL DOORS AND FRAMES

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. Section Includes:

- 1. Standard and custom hollow metal doors and frames.
  - 2. Steel sidelight, borrowed lite and transom frames.
  - 3. Light frames and glazing installed in hollow metal doors.

- B. Related Sections:

- 1. Division 04 Section "Unit Masonry" for embedding anchors for hollow metal work into masonry construction.
  - 2. Division 08 Section "Glazing" for glass view panels in hollow metal doors.
  - 3. Division 08 Section "Door Hardware".
  - 4. Division 08 Section "Access Control Hardware".
  - 5. Division 09 Sections "Exterior Painting" and "Interior Painting" for field painting hollow metal doors and frames.

- C. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.

- 1. ANSI/SDI A250.8 - Recommended Specifications for Standard Steel Doors and Frames.
  - 2. ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames, Frames Anchors and Hardware Reinforcing.
  - 3. ANSI/SDI A250.6 - Recommended Practice for Hardware Reinforcing on Standard Steel Doors and Frames.
  - 4. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames.
  - 5. ANSI/SDI A250.11 - Recommended Erection Instructions for Steel Frames.
  - 6. ASTM A1008 - Standard Specification for Steel Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.
  - 7. ASTM A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
  - 8. ASTM A924 - Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
  - 9. ASTM C 1363 - Standard Test Method for Thermal Performance of Building Assemblies by Means of a Hot Box Apparatus.
  - 10. ANSI/BHMA A156.15 - Hardware Preparation in Steel Doors and Frames.

11. ANSI/SDI 122 - Installation and Troubleshooting Guide for Standard Steel Doors and Frames.
12. ANSI/NFPA 80 - Standard for Fire Doors and Fire Windows; National Fire Protection Association.
13. ANSI/NFPA 105: Standard for the Installation of Smoke Door Assemblies.
14. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; National Fire Protection Association.
15. UL 10C - Positive Pressure Fire Tests of Door Assemblies.
16. UL 1784 - Standard for Air Leakage Tests of Door Assemblies.

### 1.3 SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, core descriptions, hardware reinforcements, profiles, anchors, fire-resistance rating, and finishes.
- B. Door hardware supplier is to furnish templates, template reference number and/or physical hardware to the steel door and frame supplier in order to prepare the doors and frames to receive the finish hardware items.
- C. Shop Drawings: Include the following:
  1. Elevations of each door design.
  2. Details of doors, including vertical and horizontal edge details and metal thicknesses.
  3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
  4. Locations of reinforcement and preparations for hardware.
  5. Details of anchorages, joints, field splices, and connections.
  6. Details of accessories.
  7. Details of moldings, removable stops, and glazing.
  8. Details of conduit and preparations for power, signal, and control systems.
- D. Samples for Verification:
  1. Samples are only required by request of the architect and for manufacturers that are not current members of the Steel Door Institute.

### 1.4 QUALITY ASSURANCE

- A. Source Limitations: Obtain hollow metal doors and frames through one source from a single manufacturer wherever possible.
- B. Quality Standard: In addition to requirements specified, comply with ANSI/SDI A250.8, latest edition, "Recommended Specifications for Standard Steel Doors and Frames".
- C. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 (neutral pressure at 40" above sill) or UL 10C.
  1. Smoke Control Door Assemblies: Comply with NFPA 105.

- a. Smoke "S" Label: Doors to bear "S" label, and include smoke and draft control gasketing applied to frame and on meeting stiles of pair doors.
- D. Fire-Rated, Borrowed-Light Frame Assemblies: Assemblies complying with NFPA 80 that are listed and labeled, by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on testing according to NFPA 257. Provide labeled glazing material.
- E. Pre-Submittal Conference: Conduct conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier, Installer, and Contractor to review proper methods and procedures for installing hollow metal doors and frames and to verify installation of electrical knockout boxes and conduit at frames with electrified or access control hardware.

#### 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver hollow metal work palletized, wrapped, or crated to provide protection during transit and Project site storage. Do not use non-vented plastic.
- B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.
- C. Store hollow metal work under cover at Project site. Place in stacks of five units maximum in a vertical position with heads up, spaced by blocking, on minimum 4-inch high wood blocking. Do not store in a manner that traps excess humidity.
  - 1. Provide minimum 1/4-inch space between each stacked door to permit air circulation. Door and frames to be stacked in a vertical upright position.

#### 1.6 PROJECT CONDITIONS

- A. Field Measurements: Verify actual dimensions of openings by field measurements before fabrication.

#### 1.7 COORDINATION

- A. Coordinate installation of anchorages for hollow metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

#### 1.8 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace doors that fail in materials or workmanship within specified warranty period.
- B. Warranty includes installation and finishing that may be required due to repair or replacement of defective doors.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. CECO Door Products.
  - 2. Curries Company.
  - 3. Steelcraft.

### 2.2 MATERIALS

- A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable for exposed applications.
- B. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B; with minimum G60 (Z180) or A60 (ZF180) metallic coating.
- C. Frame Anchors: ASTM A 653/A 653M, Commercial Steel (CS), Commercial Steel (CS), Type B; with minimum G60 (Z180) or A60 (ZF180) metallic coating.

### 2.3 STANDARD HOLLOW METAL DOORS

- A. General: Provide 1-3/4 inch 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/SDI A250.8.
- B. Exterior Doors: Face sheets fabricated of commercial quality hot-dipped zinc coated steel that complies with ASTM A 653/A 653M, Coating Designation A60. Provide doors complying with requirements indicated below by referencing ANSI/SDI A250.8 for level and model and ANSI/SDI A250.4 for physical performance level:
  - 1. Design: Flush panel.
  - 2. Core Construction: Manufacturer's standard polystyrene. Where indicated, provide doors fabricated as thermal-rated assemblies with a minimum R-value of 2.8 or better.
  - 3. Top and Bottom Edges: Reinforce tops and bottoms of doors with a continuous steel channel not less than 16 gauge, extending the full width of the door and welded to the face sheet. Doors with an inverted top channel to include a steel closure channel, screw attached, with the web of the channel flush with the face sheets of the door. Plastic or composite channel fillers are not acceptable.
  - 4. Hinge Reinforcement: Minimum 7 gauge (3/16") plate 1-1/4" x 9" or minimum 14 gauge continuous channel with pierced holes, drilled and tapped.
  - 5. Hardware Reinforcements: Fabricate according to ANSI/SDI A250.6 with reinforcing plates from same material as door face sheets.
- C. Interior Doors: Face sheets fabricated of commercial quality cold rolled steel that complies with ASTM A 1008/A 1008M. Provide doors complying with requirements indicated below by referencing ANSI/SDI A250.8 for level and model and ANSI/SDI A250.4 for physical performance level:

1. Design: Flush panel.
2. Core Construction: Manufacturer's standard one-piece polystyrene core, securely bonded to both faces.
  - a. Fire Door Core: As required to provide fire-protection and temperature-rise ratings indicated.
3. Top and Bottom Edges: Reinforce tops and bottoms of doors with a continuous steel channel not less than 16 gauge, extending the full width of the door and welded to the face sheet.
4. Hinge Reinforcement: Minimum 7 gauge (3/16") plate 1-1/4" x 9" or minimum 14 gauge continuous channel with pierced holes, drilled and tapped.
5. Hardware Reinforcements: Fabricate according to ANSI/SDI A250.6 with reinforcing plates from same material as door face sheets.

## 2.4 STANDARD HOLLOW METAL FRAMES

- A. General: Comply with ANSI/SDI A250.8 and with details indicated for type and profile.
- B. Exterior Frames: Fabricated of hot-dipped zinc coated steel that complies with ASTM A 653/A 653M, Coating Designation A60.
  1. Fabricate frames with mitered or coped corners.
  2. Fabricate frames, with the exception of knock down types, with "closed and tight" miter seams continuously welded on face, finished smooth with no visible seam unless otherwise indicated.
  3. Frames for teel Doors: Minimum 16 gauge (0.053-inch -1.3-mm) thick steel sheet.
- C. Interior Frames: Fabricated from cold-rolled steel sheet that complies with ASTM A 1008/A 1008M.
  1. Fabricate frames with mitered or coped corners.
  2. Fabricate frames, with the exception of slip-on drywall types, with "closed and tight" miter seams continuously welded on face, finished smooth with no visible seam unless otherwise indicated.
  3. Frames for Steel Doors: Minimum 16 gauge (0.053-inch -1.3-mm) thick steel sheet.
  4. Frames for Wood Doors: Minimum 16 gauge (0.053-inch-1.3-mm-) thick steel sheet.
  5. Frames for Borrowed Lights: Minimum 16 gauge (0.053-inch-1.3-mm-) thick steel sheet.
- D. Fire rated frames: Fabricate frames in accordance with NFPA 80, listed and labeled by a qualified testing agency, for fire-protection ratings indicated.
- E. Hardware Reinforcement: Fabricate according to ANSI/SDI A250.6 Table 4 with reinforcement plates from same material as frames.

## 2.5 FRAME ANCHORS

- A. Jamb Anchors:

1. Masonry Type: Adjustable strap-and-stirrup or T-shaped anchors to suit frame size, formed from A60 metallic coated material, not less than 0.042 inch thick, with corrugated or perforated straps not less than 2 inches wide by 10 inches long; or wire anchors not less than 0.177 inch thick.
  2. Stud Wall Type: Designed to engage stud and not less than 0.042 inch thick.
  3. Compression Type for Drywall Slip-on (Knock-Down) Frames: Adjustable compression anchors.
- B. Floor Anchors: Floor anchors to be provided at each jamb, formed from A60 metallic coated material, not less than 0.042 inches thick.
- C. Mortar Guards: Formed from same material as frames, not less than 0.016 inches thick.

## 2.6 LIGHT OPENINGS AND GLAZING

- A. Stops and Moldings: Provide stops and moldings around glazed lites where indicated. Form corners of stops and moldings with butted or mitered hairline joints at fabricator's shop. Fixed and removable stops to allow multiple glazed lites each to be removed independently. Coordinate frame rabbet widths between fixed and removable stops with the type of glazing and installation indicated.
- B. Moldings for Glazed Lites in Doors and Loose Stops for Glazed Lites in Frames: Minimum 20 gauge thick, fabricated from same material as door face sheet in which they are installed.
- C. Fixed Frame Moldings: Formed integral with hollow metal frames, a minimum of 5/8 inch (16 mm) high unless otherwise indicated. Provide fixed frame moldings and stops on outside of exterior and on secure side of interior doors and frames
- D. Preformed Metal Frames for Light Openings: Manufacturer's standard frame formed of 0.048-inch-thick, cold rolled steel sheet; with baked enamel or powder coated finish; and approved for use in doors of fire protection rating indicated. Match pre-finished door paint color where applicable.
- E. Glazing: Comply with requirements in Division 08 Section "Glazing" and with the hollow metal door manufacturer's written instructions.
1. Factory Glazing: Factory install glazing in doors as indicated. Doors with factory installed glass to include all of the required glazing material.

## 2.7 ACCESSORIES

- A. Mullions and Transom Bars: Join to adjacent members by welding or rigid mechanical anchors.
- B. Grout Guards: Formed from same material as frames, not less than 0.016 inches thick.

## 2.8 FABRICATION

- A. Fabricate hollow metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for thickness of metal. Where practical, fit and assemble units in manufacturer's plant. When shipping limitations so dictate,

frames for large openings are to be fabricated in sections for splicing or splining in the field by others.

B. Tolerances: Fabricate hollow metal work to tolerances indicated in ANSI/SDI A250.8.

C. Hollow Metal Doors:

1. Exterior Doors: Provide optional weep-hole openings in bottom of exterior doors to permit moisture to escape where specified.
2. Glazed Lites: Factory cut openings in doors with applied trim or kits to fit. Factory install glazing where indicated.
3. Astragals: Provide overlapping astragals as noted in door hardware sets in Division 08 Section "Door Hardware" on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated. Extend minimum 3/4 inch beyond edge of door on which astragal is mounted.
4. Continuous Hinge Reinforcement: Provide welded continuous 12 gauge strap for continuous hinges specified in hardware sets in Division 08 Section "Door Hardware".

D. Hollow Metal Frames:

1. Shipping Limitations: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.
2. Welded Frames: Weld flush face joints continuously; grind, fill, dress, and make smooth, flush, and invisible.
  - a. Welded frames are to be provided with two steel spreaders temporarily attached to the bottom of both jambs to serve as a brace during shipping and handling. Spreader bars are for bracing only and are not to be used to size the frame opening.
3. Sidelight and Transom Bar 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.
4. High Frequency Hinge Reinforcement: Provide high frequency hinge reinforcements at door openings 48-inches and wider with mortise butt type hinges at top hinge locations.
5. Continuous Hinge Reinforcement: Provide welded continuous 12 gauge straps for continuous hinges specified in hardware sets in Division 08 Section "Door Hardware".
6. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated for removable stops, provide security screws at exterior locations.
7. Mortar Guards: Provide guard boxes at back of hardware mortises in frames at all hinges and strike preps regardless of grouting requirements.
8. Floor Anchors: Weld anchors to bottom of jambs and mullions with at least four spot welds per anchor.
9. Jamb Anchors: Provide number and spacing of anchors as follows:
  - a. 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:

- 1) Two anchors per jamb up to 60 inches high.
      - 2) Three anchors per jamb from 60 to 90 inches high.
      - 3) Four anchors per jamb from 90 to 120 inches high.
      - 4) Four anchors per jamb plus 1 additional anchor per jamb for each 24 inches or fraction thereof above 120 inches high.
    - b. Stud Wall Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:
      - 1) Three anchors per jamb up to 60 inches high.
      - 2) Four anchors per jamb from 60 to 90 inches high.
      - 3) Five anchors per jamb from 90 to 96 inches high.
      - 4) Five anchors per jamb plus 1 additional anchor per jamb for each 24 inches or fraction thereof above 96 inches high.
      - 5) Two anchors per head for frames above 42 inches wide and mounted in metal stud partitions.
  10. Door Silencers: Except on weatherstripped or gasketed doors, drill stops to receive door silencers. Silencers to be supplied by frame manufacturer regardless if specified in Division 08 Section "Door Hardware".
  - E. Hardware Preparation: Factory prepare hollow metal work to receive template mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to the Door Hardware Schedule and templates furnished as specified in Division 08 Section "Door Hardware."
    1. Locate hardware as indicated, or if not indicated, according to ANSI/SDI A250.8.
    2. Reinforce doors and frames to receive non-template, mortised and surface mounted door hardware.
    3. Comply with applicable requirements in ANSI/SDI A250.6 and ANSI/DHI A115 Series specifications for preparation of hollow metal work for hardware.
    4. Coordinate locations of conduit and wiring boxes for electrical connections with Division 26 Sections.
- ## 2.9 STEEL FINISHES
- A. Prime Finishes: Doors and frames to be cleaned, and chemically treated to insure maximum finish paint adhesion. Surfaces of the door and frame exposed to view to receive a factory applied coat of rust inhibiting shop primer.
    1. Shop Primer: Manufacturer's standard, fast-curing, lead and chromate free primer complying with ANSI/SDI A250.10 acceptance criteria; recommended by primer manufacturer for substrate; and compatible with substrate and field-applied coatings.



## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. General Contractor to verify the accuracy of dimensions given to the steel door and frame manufacturer for existing openings or existing frames (strike height, hinge spacing, hinge back set, etc.).
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Remove welded in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces.
- B. Prior to installation, adjust and securely brace welded hollow metal frames for squareness, alignment, twist, and plumbness.
- C. Tolerances shall comply with SDI-117 "Manufacturing Tolerances Standard Steel Doors and Frames."
- D. Drill and tap doors and frames to receive non-template, mortised, and surface-mounted door hardware.

### 3.3 INSTALLATION

- A. General: Install hollow metal work plumb, rigid, properly aligned, and securely fastened in place; comply with Drawings and manufacturer's written instructions.
- B. Hollow Metal Frames: Install hollow metal frames of size and profile indicated. Comply with ANSI/SDI A250.11 and NFPA 80 at fire rated openings.
  - 1. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete and frames properly set and secured, remove temporary braces, leaving surfaces smooth and undamaged. Shim as necessary to comply with installation tolerances.
  - 2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with post-installed expansion anchors.
  - 3. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with mortar.
  - 4. Grout Requirements: Do not grout head of frames unless reinforcing has been installed in head of frame. Do not grout vertical or horizontal closed mullion members.
- C. Hollow Metal 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 NFPA 80.
- D. Field Glazing: Comply with installation requirements in Division 08 Section "Glazing" and with hollow metal manufacturer's written instructions.

### 3.4 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 hollow metal work that is warped, bowed, or otherwise unacceptable.
- B. Remove grout and other bonding material from hollow metal work immediately after installation.
- C. Prime-Coat and Painted Finish Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat, or painted finishes, and apply touchup of compatible air drying, rust-inhibitive primer, zinc rich primer (exterior and galvanized openings) or finish paint.

END OF SECTION 081113

## SECTION 08330 - OVERHEAD COILING SERVICE DOORS

### PART 1 GENERAL

#### 1.0 COORDINATION

- A. The General Conditions of the Contract for Construction and the Supplementary Conditions to the General Conditions of the Contract for Construction shall be considered as part of this section of the specifications.
- B. Each Bidder shall be responsible for determining during the bidding period the extent that any addenda issued during the bidding period may affect this section of the specifications.
- C. Reference Instructions to Bidders for requirements regarding substitutions of materials and products.
- D. Where conflicts occur between the drawings and specifications, between different drawings, between different portions of this section of the specifications, or between different sections of the specifications, the more stringent requirements and the greater quantity shall apply.

#### 1.1 SECTION INCLUDES

- A. Overhead coiling insulated doors.
- B. Overhead coiling doors.

#### 1.2 RELATED SECTIONS

- A. Section 05500 - Metal Fabrications: Support framing and framed opening.
- B. Section 06200 - Finish Carpentry: Wood jamb and head trim.
- C. Section 08710 - Door Hardware: Product Requirements for cylinder core and keys.
- D. Section 09900 - Painting: Field applied finish.
- E. Section 16130 - Raceway and Boxes: Conduit from electric circuit to door operator and from door operator to control station.
- F. Section 16150 - Wiring Connections: Power to disconnect.

#### 1.3 REFERENCES

- A. ASTM A 653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- B. ASTM A 666 - Standard Specification for Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
- C. ASTM A 924 - Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
- D. ASTM B 221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

- E. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).
- F. NEMA MG 1 - Motors and Generators.

#### 1.4 DESIGN / PERFORMANCE REQUIREMENTS

- A. Overhead coiling insulated doors:
  - 1. Wind Loads: Design door assembly to withstand wind/suction load of 20 psf (958 Pa) without damage to door or assembly components.
  - 2. Operation: Design door assembly, including operator, to operate for not less than 20,000 cycles.
- B. Single-Source Responsibility: Provide doors, tracks, motors, and accessories from one manufacturer for each type of door. Provide secondary components from source acceptable to manufacturer of primary components.

#### 1.5 SUBMITTALS

- A. Submit under provisions of Section 01340.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
  - 1. Preparation instructions and recommendations.
  - 2. Storage and handling requirements and recommendations.
  - 3. Details of construction and fabrication.
  - 4. Installation instructions.
- C. Shop Drawings: Include detailed plans, elevations, details of framing members, anchoring methods, required clearances, hardware, and accessories. Include relationship with adjacent construction.
- D. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.
- E. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) long, representing actual product, color, and patterns.
- F. Manufacturer's Certificates: Certify products meet or exceed specified requirements.
- G. Operation and Maintenance Data: Submit lubrication requirements and frequency, and periodic adjustments required.

#### 1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in performing Work of this section with a minimum of five years experience in the fabrication and installation of security closures.
- B. Installer Qualifications: Company specializing in performing Work of this section with minimum three years and approved by manufacturer.
- C. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
  - 1. Finish areas designated by Architect.
  - 2. Do not proceed with remaining work until workmanship, color, and sheen are approved by Architect.
  - 3. Refinish mock-up area as required to produce acceptable work.

## 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Protect materials from exposure to moisture. Do not deliver until after wet work is complete and dry.
- C. Store materials in a dry, warm, ventilated weathertight location.

## 1.8 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

## 1.9 COORDINATION

- A. Coordinate Work with other operations and installation of adjacent materials to avoid damage to installed materials.

# PART 2 PRODUCTS

## 2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Overhead Door Corp., 2501 S. State Hwy. 121, Suite 200, Lewisville, TX 75067. ASD. Tel. Toll Free: (800) 275-3290. Phone: (469) 549-7100. Fax: (972) 906-1499. Web Site: [www.overheaddoor.com](http://www.overheaddoor.com). E-mail: [info@overheaddoor.com](mailto:info@overheaddoor.com).
- B. Substitutions: permitted.
- C. Requests for substitutions will be considered in accordance with provisions of Section 01600.

## 2.2 INSULATED OVERHEAD COILING SERVICE DOORS

- A. Overhead Coiling Stormtite Insulated Service Doors: Overhead Door Corporation 625 Series.
  - 1. Curtain: Interlocking roll-formed slats as specified following. Endlocks shall be attached to each end of alternate slats to prevent lateral movement.
    - a. Flat profile type F-265i for doors up to 40 feet (12.19 m) wide.
    - b. Front slat fabricated of:
      - 1) 22 gauge galvanized steel.
    - c. Back slat fabricated of:
      - 1) 24 gauge galvanized steel.
    - d. Slat cavity filled with CFC-free foamed-in-place, polyurethane insulation.
      - 1) R-Value: 7.7, U-Value: 0.13.
      - 2) Sound Rating: STC-21.
  - 2. Finish:
    - a. Galvanized Steel: Slats and hood galvanized in accordance with ASTM A 653 and receive rust-inhibitive, roll coating process, including 0.2 mils thick baked-on prime paint, and 0.6 mils thick baked-on polyester top coat.
      - 1) Powder coat: PowderGuard

- (a) PowderGuard Weathered Finish: Industrial textured powder coat provides a thicker, more scratch resistant coat. Applied to entire door system including slats, guides, bottom bar and head plate.
- 3. Weatherseals:
  - a. Vinyl bottom seal, exterior guide and internal hood seals.
- 4. Bottom Bar:
  - a. Two galvanized steel angles minimum thickness 1/8 inch (3 mm) bolted back to back to reinforce curtain in the guides.
- 5. Guides: Three Structural steel angles
  - a. Finish: PowderGuard Weathered finish with iron/black powder.
- 6. Brackets:
  - a. Galvanized steel to support counterbalance, curtain and hood.
- 7. Counterbalance: Helical torsion spring type housed in a steel tube or pipe barrel, supporting the curtain with deflection limited to 0.03 inch per foot of span. Counterbalance is adjustable by means of an adjusting tension wheel.
- 8. Hood: Provide with internal hood baffle weatherseal.
  - a. 24 gauge galvanized steel with intermediate supports as required.
- 9. Manual Operation:
  - a. Chain hoist.
- 10. Windload Design:
  - a. Standard windload shall be 20 PSF.
- 11. Locking:
  - a. Chain keeper locks for chain hoist operation.
- 12. Wall Mounting Condition:
  - a. Reference drawings.
- 13. Operation: Chain operated doors shall open and close with a maximum of 30 pounds of effort utilizing an endless chain and cast iron reduction gears.

## 2.3 OVERHEAD COILING SERVICE DOORS

- A. Industrial Doors: Overhead Door Corporation, 610 Series Service Doors.
  - 1. Curtain: Interlocking roll-formed slats as specified following. Endlocks shall be attached to each end of alternate slats to prevent lateral movement.
    - a. Curved profile type C-187 for doors up to 15 feet 4 inches (4.67 m) wide, fabricated of:
      - 1) 22 gauge galvanized steel.
    - b. Curved profile type C-275 for doors up to and between 15 feet 4 inches (4.67 m) and 18 feet 4 inches (5.59 m) wide, fabricated of:
      - 1) 22 gauge galvanized steel.

2. Finish:
  - a. Galvanized Steel: Slats and hood galvanized in accordance with ASTM A 653 and receive rust-inhibitive, roll coating process, including 0.2 mils thick baked-on prime paint, and 0.6 mils thick baked-on polyester top coat.
    - 1) Powder coat: PowderGuard
      - (a) PowderGuard Weathered Finish: Industrial textured powder coat provides a thicker, more scratch resistant coat. Applied to entire door system including slats, guides, bottom bar and head plate.
3. Weatherseals:
  - a. Vinyl bottom seal.
4. Bottom Bar:
  - a. Two galvanized steel angles.
5. Guides: Roll-formed galvanized steel shapes attached to continuous galvanized steel wall angle.
  - a. Finish: PowderGuard Weathered finish with iron/black powder.
6. Brackets:
  - a. Galvanized steel to support counterbalance, curtain and hood.
7. Counterbalance: Helical torsion spring type housed in a steel tube or pipe barrel, supporting the curtain with deflection limited to 0.03 inch per foot of span. Counterbalance is adjustable by means of an adjusting tension wheel.
8. Hood:
  - a. 24 gauge galvanized steel with intermediate supports as required.
9. Manual Operation:
  - a. Chain hoist for doors up to 96 SF.
10. Windload Design:
  - a. Standard windload shall be 20 PSF.
11. Locking:
  - a. Two interior bottom bar slide bolts for manually operated doors.
12. Wall Mounting Condition:
  - a. Reference drawings.
13. Operation: Chain operated doors shall open and close with a maximum of 30 pounds of effort utilizing an endless chain and cast iron reduction gears.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify opening sizes, tolerances and conditions are acceptable.
- B. Examine conditions of substrates, supports, and other conditions under which this work is to be performed.

- C. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

### 3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

### 3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Use anchorage devices to securely fasten assembly to wall construction and building framing without distortion or stress.
- C. Securely and rigidly brace components suspended from structure. Secure guides to structural members only.
- D. Fit and align assembly including hardware; level and plumb, to provide smooth operation.
- E. Coordinate installation of sealants and backing materials at frame perimeter as specified in Section 07920.
- F. Install perimeter trim and closures.
- G. Instruct Owner's personnel in proper operating procedures and maintenance schedule.

### 3.4 ADJUSTING

- A. Test for proper operation and adjust as necessary to provide proper operation without binding or distortion.
- B. Adjust hardware and operating assemblies for smooth and noiseless operation.

### 3.5 CLEANING

- A. Clean curtain and components using non-abrasive materials and methods recommended by manufacturer.
- B. Remove labels and visible markings.
- C. Touch-up, repair or replace damaged products before Substantial Completion.

### 3.6 PROTECTION

- A. Protect installed products until completion of project.

END OF SECTION



## SECTION 08411 – ALUMINUM STOREFRONT

### PART 1 - GENERAL

#### 1.0 COORDINATION

- A. The General Conditions of the Contract for Construction and the Supplementary Conditions to the General Conditions of the Contract for Construction shall be considered as part of this section of the specifications.
- B. Each Bidder shall be responsible for determining during the bidding period the extent that any addenda issued during the bidding period may affect this section of the specifications.
- C. Reference Instructions to Bidders for requirements regarding substitutions of materials and products.
- D. Where conflicts occur between the drawings and specifications, between different drawings, between different portions of this section of the specifications, or between different sections of the specifications, the more stringent requirements and the greater quantity shall apply.

#### 1.1 SUMMARY

- A. Related Documents: Conditions of the Contract, Division 1 - General Requirements, and Drawings apply to Work of this Section.
- B. Section Includes:
  - 1. Entrance and storefront systems, complete with reinforcing, fasteners, anchors and attachment devices.
  - 2. Aluminum doors complete with hardware.
  - 3. Accessories necessary to complete work.
- C. Related Sections:
  - 1. Section 01400 - Quality Requirements.
  - 2. Section 05500 - Metal Fabrications.
  - 3. Section 06100 - Rough Carpentry.
  - 4. Section 07920 - Joint Sealants.
  - 5. Section 08710 - Door Hardware.
  - 6. Section 08810 - Glass and Glazing.

#### 1.2 REFERENCES

- A. Aluminum Association (AA):
  - 1. DAF-45 Designation System for Aluminum Finishes.
- B. American Architectural Manufacturers Association (AAMA):
  - 1. 503.1 Test Method for Condensation Resistance of Windows, Doors and Glazed Wall Systems.
  - 2. 701.2 Specifications for Pile Weatherstripping.
  - 3. Manual #10 Care and Handling of Architectural Aluminum From Shop to Site.
  - 4. SFM-1 Aluminum Storefront and Entrance Manual.
- C. American National Standards Institute (ANSI):
  - 1. A117.1 Safety Standards for the Handicapped.

- D. American Society for Testing and Materials (ASTM):
1. A36 Structural Steel.
  2. B209 Aluminum and Aluminum - Alloy Sheet and Plate.
  3. B221 Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes and Tubes.
  4. B308 Aluminum-Alloy 6061-T6 Standard Structural Shapes, Rolled or Extruded.
  5. C509 Cellular Elastomeric Pre-formed Gasket and Sealing Material.
  6. C864 Dense Elastomeric Compression Seal Gaskets, Setting Blocks and Spacers.
  7. E283 Test Method for Rate of Air Leakage Through Exterior Windows, Curtain Walls and Doors.
  8. E330 Test Method for Structural Performance of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference.
  9. E331 Test Method for Water Penetration of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference.
- E. Federal Specifications (FS):
1. TT-P-645A Primer, Paint, Zinc Chromate, Alkyd Type.
- F. Steel Structures Painting Council (SSPC):
1. Paint 12 Cold-Applied Asphalt Mastic (Extra Thick Film).

### 1.3 SYSTEM REQUIREMENTS

- A. Design Requirements:
1. Drawings are diagrammatic and do not purport to identify nor solve problems of thermal or structural movement, glazing, anchorage or moisture disposal.
  2. Requirements shown by details are intended to establish basic dimension of units, sight lines and profiles of members.
  3. Provide concealed fastening.
  4. Provide entrance and storefront systems, including necessary modifications, to meet specified requirements and maintaining visual design concepts.
  5. Attachment considerations are to take into account site peculiarities and expansion and contraction movements so there is no possibility of loosening, weakening or fracturing connection between units and building structure or between units themselves.
  6. Anchors, fasteners and braces shall be structurally stressed not more than 50% of allowable stress when maximum loads are applied.
  7. Provide for expansion and contraction without detriment to appearance or performance.
  8. Assemblies shall be free from rattles, wind whistles and noise due to thermal and structural movement and wind pressure.
- B. Performance Requirements:
1. Air infiltration: Air leakage through fixed light areas of storefront shall not exceed 0.06 cfm per square foot (0.0003 m3/sm2) of surface area when tested in accordance with ASTM E283 at differential static pressure of 6.24 psf (300 Pa).
  2. Water infiltration: No uncontrolled water penetration when tested in accordance with ASTM E

331 at test pressure of 8.0 psf 380 Pa.

C. Thermal Requirements:

1. Framing systems shall accommodate expansion and contraction movement due to surface temperature differentials of 180 degrees Fahrenheit (82 degrees Celsius) without causing buckling, stress on glass, failure of joint seals, excessive stress on structural elements, reduction of performance, or other detrimental effects.
2. Ensure doors function normally within limits of specified temperature range.

D. Structural Requirements, as measured in accordance with ANSI/ASTM E330:

1. Wind loads for exterior assemblies:
  - a. Basic loading:
    - 1) [ ] psf acting inward.
    - 2) [ ] psf acting outward.
2. Deflection: Maximum calculated deflection of any framing member in direction normal to plane of wall when subjected to specified design pressures shall not exceed 1/175 of its clear span.

E. Testing Requirements: Provide components that have been previously tested by an independent testing laboratory.

1.4 SUBMITTALS

A. General: Submit in accordance with Section 01300.

B. Product Data:

1. Submit manufacturer's descriptive literature and product specifications.
2. Include information for factory finishes, hardware, accessories and other required components.
3. Include color charts for finish indicating manufacturer's standard colors available for selection.

C. Shop Drawings:

1. Submit shop drawings covering fabrication, installation and finish of specified systems.
2. Include following:
  - a. Fully dimensioned plans and elevations with detail coordination keys.
  - b. Locations of exposed fasteners and joints.
3. Provide detailed drawings of:
  - a. Composite members.
  - b. Joint connections for framing systems and for entrance doors.
  - c. Anchorage.
  - d. System reinforcements.
  - e. Expansion and contraction provisions.
  - f. Hardware, including locations, mounting heights, reinforcements and special installation provisions.
  - g. Glazing methods and accessories.
  - h. Internal sealant requirements as recommended by sealant manufacturer.
4. Schedule of finishes.

D. Samples:

1. Submit samples indicating quality of finish, in required colors, on alloys used for work, in sizes as

- standard with manufacturer.
    - 2. Where normal texture or color variations are expected, include additional samples illustrating range of variation.
  - E. Test Reports:
    - 1. Standard Systems: Submit certified copies of previous test reports substantiating performance of system in lieu of re-testing. Include other supportive data as necessary.
  - F. Certificates:
    - 1. Submit manufacturer's certification stating that systems are in compliance with specified requirements.
  - G. Qualification Data:
    - 1. Submit installer qualifications verifying years of experience.
    - 2. Include list of projects having similar scope of work identified by name, location, date, reference name and phone number.
  - H. Manufacturer's Instructions: Submit manufacturer's printed installation instructions.
- 1.5 QUALITY ASSURANCE
- A. Single Source Responsibility:
    - 1. To ensure quality of appearance and performance, obtain materials for each system from either a single manufacturer or from manufacturer approved by each system manufacturer.
  - B. Installer Qualifications: Certified in writing by Contractor as qualified for installation of specified systems.
  - C. Perform Work in accordance with AAMA SFM-1 and manufacturer's written instructions.
  - D. Conform to requirements of ANSI A117.1 and local amendments.
- 1.6 DELIVERY, STORAGE AND HANDLING
- A. Comply with requirements of Section 01600.
  - B. Protect finished surfaces as necessary to prevent damage.
  - C. Do not use adhesive papers or sprayed coatings which become firmly bonded when exposed to sun.
  - D. Do not leave coating residue on any surfaces.
  - E. Replace damaged units.
- 1.7 WARRANTY
- A. Provide warranties in accordance with Section 01700.
  - B. Provide written manufacturer's warranty, executed by company official, warranting against defects in materials and products for two (2) years from date of Substantial Completion.
  - C. Provide written installer's warranty, warranting work to be watertight, free from defective materials, defective workmanship, glass breakage due to defective design, and agreeing to replace components

which fail within 1 year from date of Substantial Completion.

1. Warranty shall cover following:
  - a. Complete watertight and airtight system installation within specified tolerances.
  - b. Completed installation will remain free from rattles, wind whistles and noise due to thermal and structural movement and wind pressure.
  - c. System is structurally sound and free from distortion.
  - d. Glass and glazing gaskets will not break or "pop" from frames due to design wind, expansion or contraction movement.
  - e. Glazing sealants and gaskets will remain free from abnormal deterioration or dislocation due to sunlight, weather or oxidation.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. Manufacturers
  1. Kawneer
  2. Vista Wall Architectural Products
  3. YKK AP America, Inc.
- B. Substitutions: Submit under provisions of Section 01600, a minimum of 7 days prior to bid date.
- C. Acceptable Entrance Doors:
  1. Standard Duty Doors: Model 35D Medium Stile Door YKK AP with Mid-panel panic device system or equivalent by specified manufacturer.
- D. Acceptable Storefront Framing Systems:
  1. Framing System: YES 45 FI (2" x 4-1/2") YKK AP or equivalent by specified manufacturer.

### 2.2 FRAMING MATERIALS AND ACCESSORIES

- A. Aluminum:
  1. ASTM B221, alloy 6063-T5 for extrusions; ASTM B209, alloy 5005-H34 for sheets; or other alloys and temper recommended by manufacturer appropriate for specified finish.
- B. Internal Reinforcing:
  1. ASTM A36 for carbon steel; or ASTM B308 for structural aluminum.
  2. Shapes and sizes to suit installation.
  3. Shop coat steel components after fabrication with alkyd type zinc chromate primer complying with FS TT-P-645.
- C. Anchorage Devices:
  1. Manufacturer's standard formed or fabricated steel or aluminum assemblies of shapes, plates, bars or tubes.
- D. Fasteners:

1. Aluminum, non-magnetic stainless steel or other materials warranted by manufacturer to be non-corrosive and compatible with components being fastened.
  2. Do not use exposed fasteners, except where unavoidable for application of hardware.
  3. For exposed locations, provide countersunk Phillips head screws with finish matching items fastened.
  4. For concealed locations, provide manufacturer's standard fasteners.
  5. Provide nuts or washers of design having means to prevent disengagement; deforming of fastener threads is unacceptable.
- E. Expansion Anchor Devices: Lead-shield or toothed-steel, drilled-in, expansion bolt anchors.
- F. Protective Coatings: Cold-applied asphalt mastic complying with SSPC-Paint 12, compounded for 30 mil (0.77 mm) thickness for each coat; or alkyd type zinc chromate primer complying with FS TT-P-645.
- G. Glazing Gaskets:
1. Compression type design, replaceable, molded or extruded, of neoprene, or ethylene propylene diene monomer (EPDM).
  2. Conform to ASTM C509 or C864.
  3. Profile and hardness as required to maintain uniform pressure for watertight seal.
  4. Provide in manufacturer's standard black color.
- H. Weatherstripping:
1. Wool pile conforming to AAMA 701.2; or extruded EPDM elastomeric conforming to ASTM C509 or C864.
  2. Provide EPDM or vinyl-blade gasket weatherstripping in bottom door rail, adjustable for contact with threshold.
- I. Internal Sealants: Types recommended by sealant manufacturer.
- J. "Anti-Walk" Edge Blocking: "W" shaped EPDM blocks for use in keeping glazing material stationary under vibration or seismic loading.
- K. Baffles (at weep holes): Type as recommended by system manufacturer and shown in published installation instructions.

## 2.3 GLASS AND GLAZING ACCESSORIES

- A. Refer to Section 08810.

## 2.4 FABRICATION

- A. Coordination of Fabrication:
1. Check actual frame or door openings required in construction work by accurate field measurements before fabrication.
  2. Fabricate units to withstand loads which will be applied when system is in place.
- B. General:
1. Conceal fasteners wherever possible.
  2. Reinforce work as necessary for performance requirements and for support to structure.
  3. Separate dissimilar metals and aluminum in contact with concrete utilizing protective coating or pre-formed separators which will prevent contact and corrosion.
  4. Comply with Section 08810 for glazing requirements.
- C. Aluminum Framing:

1. Provide members of size, shape and profile indicated, designed to provide for glazing from interior.
2. Fabricate frame assemblies with joints straight and tight fitting.
3. Reinforce internally with structural members as necessary to support design loads.
4. Maintain accurate relation of planes and angles, with hairline fit of contacting members.
5. Seal horizontals and direct moisture accumulation to exterior.
6. Provide flashings and other materials used internally or externally that are corrosive resistant, non-staining, non-bleeding and compatible with adjoining materials.
7. Provide manufacturer's extrusions and accessories to accommodate expansion and contraction due to temperature changes without being detrimental to appearance or performance.
8. Make provisions in framing for minimum edge clearance, nominal edge cover and nominal pocket width for thickness and type of glazing or infill used in accordance with recommendations of manufacturer and FGMA Glazing Manual.
9. Provide tight fitting, injection molded, plastic water deflectors at all intermediate horizontals.

D. Entrance Doors:

1. Fabricate with mechanical joints using internal reinforcing plates and shear blocks attached with fasteners and by welding.
2. Provide extruded aluminum glazing stops of [square] [beveled and mitered (for single glazing only)] design, [permanently anchored on security side and removable on opposite side.]

E. Hardware:

1. Receive hardware supplied in accordance with Section 08710 and install in accordance with requirements of this Section.
2. Cut, reinforce, drill and tap frames and doors as required to receive hardware.
3. Comply with hardware manufacturer's templates and instructions.
4. Use concealed fasteners wherever possible.

F. Welding:

1. Comply with recommendations of the American Welding Society.
2. Use recommended electrodes and methods to avoid distortion and discoloration.
3. Grind exposed welds smooth and flush with adjacent surfaces; restore mechanical finish.

G. Flashings:

1. Form from sheet aluminum with same finish as extruded sections. Apply finish after fabrication. Material thickness as required to suit condition without deflection or "oil-canning".

2.5 FINISH

- A. Manufacturer's standard colors as selected by Architect.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine conditions and proceed with Work in accordance with Section 01400.
- B. Verify dimensions, tolerances and method of attachment with other Work.

### 3.2 INSTALLATION

#### A. Erection Tolerances:

1. Limit variations from plumb and level:
  - a. 1/8 inch (3 mm) in 10 feet (3 M) vertically.
  - b. 1/8 inch (3 mm) in 20 feet (6 M) horizontally.
2. Limit variations from theoretical locations: 1/4 inch (6 mm) for any member at any location.
3. Limit offsets in theoretical end-to-end and edge-to-edge alignment: 1/16 inch (2 mm) from flush surfaces not more than 2 inches (51 mm) apart or out-of-flush by more than 1/4 inch (6 mm).

B. Install doors and hardware in accordance with manufacturer's printed instructions.

C. Set units plumb, level and true to line, without warp or rack of frame.

D. Anchor securely in place, allowing for required movement, including expansion and contraction.

E. Separate dissimilar materials at contact points, including metal in contact with masonry or concrete surfaces, with bituminous paint or pre-formed separators to prevent contact and corrosion.

F. Seal perimeter members as shown on manufacturer's installation instructions or as required for unique job conditions. Set other members with internal sealants and baffles as called for in manufacturer's installation instructions. Use sealants as recommended by sealant manufacturer.

G. Coordinate installation of perimeter sealant and backing materials between assemblies and adjacent construction in accordance with requirements of Section 07920.

H. Glazing: Refer to requirements of Section 08810. Utilize "anti-walk" edge blocking on all vertical edges of glazing.

### 3.3 ADJUSTING

A. Test door operating functions. Adjust closing and latching speeds and other hardware in accordance with manufacturer's instructions to ensure smooth operation.

### 3.4 CLEANING

A. Clean surfaces in compliance with manufacturer's recommendations; remove excess mastic, mastic smears, foreign materials and other unsightly marks.

B. Clean metal surfaces exercising care to avoid damage.

END OF SECTION



## SECTION 08710 – DOOR HARDWARE

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. This Section includes commercial door hardware for the following:
  - 1. Swinging doors.
- B. Door hardware includes, but is not necessarily limited to, the following:
  - 1. Mechanical door hardware.
  - 2. Electromechanical door hardware, power supplies, back-ups and surge protection.
  - 3. Cylinders specified for doors in other sections.
- C. Related Sections:
  - 1. Division 08 Section “Door Hardware Schedule”.
  - 2. Division 08 Section “Hollow Metal Doors and Frames”.
  - 3. Division 08 Section “Access Control Hardware”.
- D. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.
  - 1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
  - 2. ICC/IBC - International Building Code.
  - 3. NFPA 80 - Fire Doors and Windows.
  - 4. NFPA 101 - Life Safety Code.
  - 5. NFPA 105 - Installation of Smoke Door Assemblies.
  - 6. State Building Codes, Local Amendments.
- E. Standards: All hardware specified herein shall comply with the following industry standards:
  - 1. ANSI/BHMA Certified Product Standards - A156 Series
  - 2. UL10C – Positive Pressure Fire Tests of Door Assemblies

### 1.3 SUBMITTALS

- A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.
- B. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
  - 1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
  - 2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.
  - 3. Content: Include the following information:
    - a. Type, style, function, size, label, hand, and finish of each door hardware item.
    - b. Manufacturer of each item.
    - c. Fastenings and other pertinent information.
    - d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
    - e. Explanation of abbreviations, symbols, and codes contained in schedule.
    - f. Mounting locations for door hardware.
    - g. Door and frame sizes and materials.
  - 4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.
- C. Shop Drawings: Details of electrified access control hardware indicating the following:
  - 1. Wiring Diagrams: Upon receipt of approved schedules, submit detailed system wiring diagrams for power, signaling, monitoring, communication, and control of the access control system electrified hardware. Differentiate between manufacturer-installed and field-installed wiring. Include the following:
    - a. Elevation diagram of each unique access controlled opening showing location and interconnection of major system components with respect to their placement in the respective door openings.
    - b. Complete (risers, point-to-point) access control system block wiring diagrams.

2. Electrical Coordination: Coordinate with related Division 26 Electrical Sections the voltages and wiring details required at electrically controlled and operated hardware openings.
- D. Keying Schedule: Prepared under the supervision of the Owner, separate schedule detailing final keying instructions for locksets and cylinders in writing. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner to approve submitted keying schedule prior to the ordering of permanent cylinders.
- E. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Closeout Submittals. The manual to include the name, address, and contact information of the manufacturers providing the hardware and their nearest service representatives. The final copies delivered after completion of the installation test to include "as built" modifications made during installation, checkout, and acceptance.
- F. Warranties and Maintenance: Special warranties and maintenance agreements specified in this Section.

#### 1.4 QUALITY ASSURANCE

- A. Manufacturers Qualifications: Engage qualified manufacturers with a minimum 5 years of documented experience in producing hardware and equipment similar to that indicated for this Project and that have a proven record of successful in-service performance.
- B. Installer Qualifications: Installers, trained by the primary product manufacturers, with a minimum 3 years documented experience installing both standard and electrified builders hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
- C. Door Hardware Supplier Qualifications: Experienced commercial door hardware distributors with a minimum 5 years documented experience supplying both mechanical and electromechanical hardware installations comparable in material, design, and extent to that indicated for this Project. Supplier recognized as a factory direct distributor in good standing by the manufacturers of the primary materials with a warehousing facility in Project's vicinity. Supplier to have on staff a certified Architectural Hardware Consultant (AHC) available during the course of the Work to consult with Contractor, Architect, and Owner concerning both standard and electromechanical door hardware and keying.
  1. Scheduling Responsibility: Preparation of door hardware and keying schedules.
- D. Source Limitations: Obtain each type and variety of Door Hardware specified in this Section from a single source, qualified supplier unless otherwise indicated.
  1. Electrified modifications or enhancements made to a source manufacturer's product line by a secondary or third party source will not be accepted.
  2. Provide electromechanical door hardware from the same manufacturer as mechanical door hardware, unless otherwise indicated.

- E. Regulatory Requirements: Comply with NFPA 70, NFPA 80, NFPA 101 and ANSI A117.1 requirements and guidelines as directed in the model building code including, but not limited to, the following:
1. NFPA 70 "National Electrical Code", including electrical components, devices, and accessories listed and labeled as defined in Article 100 by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
  2. Where indicated to comply with accessibility requirements, comply with Americans with Disabilities Act (ADA), "Accessibility Guidelines for Buildings and Facilities (ADAAG)," ANSI A117.1 as follows:
    - a. Handles, Pulls, Latches, Locks, and other Operating Devices: Shape that is easy to grasp with one hand and does not require tight grasping, tight pinching, or twisting of the wrist.
    - b. Door Closers: Comply with the following maximum opening-force requirements indicated:
      - 1) Interior Hinged Doors: 5 lbf applied perpendicular to door.
      - 2) Fire Doors: Minimum opening force allowable by authorities having jurisdiction.
    - c. Thresholds: Not more than 1/2 inch high. Bevel raised thresholds with a slope of not more than 1:2.
  3. NFPA 101: Comply with the following for means of egress doors:
    - a. Latches, Locks, and Exit Devices: Not more than 15 lbf to release the latch. Locks shall not require the use of a key, tool, or special knowledge for operation.
    - b. Thresholds: Not more than 1/2 inch high.
  4. Fire-Rated Door Assemblies: Provide door hardware for assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to NFPA 252 (neutral pressure at 40" above sill) or UL-10C.
    - a. Test Pressure: Positive pressure labeling.
- F. Each unit to bear third party permanent label demonstrating compliance with the referenced standards.
- G. Keying Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings." Keying conference to incorporate the following criteria into the final keying schedule document:
1. Function of building, purpose of each area and degree of security required.
  2. Plans for existing and future key system expansion.
  3. Requirements for key control storage and software.
  4. Installation of permanent keys, cylinder cores and software.

5. Address and requirements for delivery of keys.

- H. Pre-Submittal Conference: Conduct coordination conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier(s), Installer(s), and Contractor(s) to review proper methods and the procedures for receiving, handling, and installing door hardware.
  - 1. Prior to installation of door hardware, arrange for manufacturers' representatives to hold a project specific training meeting to instruct the installing contractors' personnel on the proper installation and adjustment of their respective products. Product training to be attended by installers of door hardware (including electromechanical hardware) for aluminum, hollow metal and wood doors. Training will include the use of installation manuals, hardware schedules, templates and physical product samples as required.
  - 2. Inspect and discuss electrical roughing-in, power supply connections, and other preparatory work performed by other trades.
  - 3. Review sequence of operation narratives for each unique access controlled opening.
  - 4. Review and finalize construction schedule and verify availability of materials.
  - 5. Review the required inspecting, testing, commissioning, and demonstration procedures
- I. At completion of installation, provide written documentation that components were applied to manufacturer's instructions and recommendations and according to approved schedule.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.
- B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.
- C. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

1.6 COORDINATION

- A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing standard and electrified hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.
- B. Door Hardware and Electrical Connections: Coordinate the layout and installation of scheduled electrified door hardware and related access control equipment with required connections to source power junction boxes, low voltage power supplies, detection and monitoring hardware, and fire and detection alarm systems.

- C. Door and Frame Preparation: Related Division 08 Sections (Steel, Aluminum and Wood) doors and corresponding frames are to be prepared, reinforced and pre-wired (if applicable) to receive the installation of the specified electrified, monitoring, signaling and access control system hardware without additional in-field modifications.

## 1.7 WARRANTY

- A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.
- B. Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace components of standard and electrified door hardware that fails in materials or workmanship within specified warranty period after final acceptance by the Owner. Failures include, but are not limited to, the following:
  - 1. Structural failures including excessive deflection, cracking, or breakage.
  - 2. Faulty operation of the hardware.
  - 3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
  - 4. Electrical component defects and failures within the systems operation.
- C. Standard Warranty Period: One year from date of Substantial Completion, unless otherwise indicated.
- D. Special Warranty Periods:
  - 1. Ten years for mortise locks and latches.
  - 2. Five years for exit hardware.
  - 3. Twenty five years for manual surface door closers.
  - 4. Two years for electromechanical door hardware.

## 1.8 MAINTENANCE SERVICE

- A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

## PART 2 - PRODUCTS

### 2.1 SCHEDULED DOOR HARDWARE

- A. General: Provide door hardware for each door to comply with requirements in Door Hardware Sets and each referenced section that products are to be supplied under.

1. Designations: Requirements for quantity, item, size, finish or color, grade, function, and other distinctive qualities of each type of door hardware are indicated in the Door Hardware Sets at the end of Part 3. Products are identified by using door hardware designations, as follows:

- a. Named Manufacturer's Products: Product designation and manufacturer are listed for each door hardware type required for the purpose of establishing requirements. Manufacturers' names are abbreviated in the Door Hardware Schedule.

- B. Substitutions: Requests for substitution and product approval for inclusive mechanical and electromechanical door hardware in compliance with the specifications must be submitted in writing and in accordance with the procedures and time frames outlined in Division 01, Substitution Procedures. Approval of requests is at the discretion of the architect, owner, and their designated consultants.

## 2.2 HANGING DEVICES

- A. Hinges: ANSI/BHMA A156.1 certified butt hinges with number of hinge knuckles as specified in the Door Hardware Sets.

1. Quantity: Provide the following hinge quantity, unless otherwise indicated:

- a. Two Hinges: For doors with heights up to 60 inches.
- b. Three Hinges: For doors with heights 61 to 90 inches.
- c. Four Hinges: For doors with heights 91 to 120 inches.
- d. For doors with heights more than 120 inches, provide 4 hinges, plus 1 hinge for every 30 inches of door height greater than 120 inches.

2. Hinge Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:

- a. Widths up to 3'0": 4-1/2" standard or heavy weight as specified.
- b. Sizes from 3'1" to 4'0": 5" standard or heavy weight as specified.

3. Hinge Weight and Base Material: Unless otherwise indicated, provide the following:

- a. Exterior Doors: Heavy weight, non-ferrous, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate standard weight.
- b. Interior Doors: Standard weight, steel, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate heavy weight.

4. Hinge Options: Comply with the following where indicated in the Hardware Sets or on Drawings:

- a. Non-removable Pins: Provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for the following applications:

- 1) Out-swinging exterior doors.
- 2) Out-swinging access controlled doors.
- 3) Out-swinging lockable doors.

5. Acceptable Manufacturers:

- a. Hager Companies (HA).
- b. McKinney Products (MK).

- B. Continuous Geared Hinges: ANSI/BHMA A156.26 certified continuous geared hinge with minimum 0.120-inch thick extruded 6060 T6 aluminum alloy hinge leaves and a minimum overall width of 4 inches. Hinges are non-handed, reversible and fabricated to template screw locations. Provide concealed flush mount (with or without inset), full surface, or half surface, in standard and heavy duty models, as specified in the Hardware Sets. Concealed continuous hinges to be U.L. listed for use on up to and including 90 minute rated door installations and U.L. listed for windstorm components where applicable. Factory cut hinges for door size and provide with removable service power transfer panel where indicated at electrified openings.

1. Acceptable Manufacturers:

- a. McKinney Products (MK).
- b. Pemko Manufacturing (PE).

## 2.3 POWER TRANSFER DEVICES

- A. Electrified Quick Connect Transfer Hinges: Provide electrified transfer hinges with Molex™ standardized plug connectors and sufficient number of concealed wires (up to 12) to accommodate the electrified functions specified in the Door Hardware Sets. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Wire nut connections are not acceptable.

1. Acceptable Manufacturers:

- a. Hager Companies (HA) - ETW-QC (# wires) Option.
- b. McKinney Products (MK) - QC (# wires) Option.

- B. Electrified Quick Connect Continuous Geared Transfer Hinges: Provide electrified transfer continuous geared hinges with a 12" removable service panel cutout accessible without de-mounting door from the frame. Furnish with Molex™ standardized plug connectors with sufficient number of concealed wires (up to 12) to accommodate the electrified functions specified in the Door Hardware Sets. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Wire nut connections are not acceptable.

1. Acceptable Manufacturers:

- a. McKinney Products (MK) - SER-QC (# wires) Option.
- b. Pemko Manufacturing (PE) - SER-QC (# wires) Option.



## 2.4 DOOR OPERATING TRIM

- A. Flush Bolts and Surface Bolts: ANSI/BHMA A156.3 and A156.16, Grade 1, certified automatic, self-latching, and manual flush bolts and surface bolts. Manual flush bolts to be furnished with top rod of sufficient length to allow bolt location approximately six feet from the floor. Furnish dust proof strikes for bottom bolts. Surface bolts to be minimum 8" in length and U.L. listed for labeled fire doors and U.L. listed for windstorm components where applicable. Provide related accessories (mounting brackets, strikes, coordinators, etc.) as required for appropriate installation and operation.

1. Acceptable Manufacturers:

- a. Ives (IV).
- b. Rockwood Manufacturing (RO).
- c. Trimco (TC).

- B. Coordinators: ANSI/BHMA A156.3 certified door coordinators consisting of active-leaf, hold-open lever and inactive-leaf release trigger. Coordinators fabricated from steel with nylon-coated strike plates and built-in adjustable safety release.

1. Acceptable Manufacturers:

- a. Ives (IV).
- b. Rockwood Manufacturing (RO).
- c. Trimco (TC).

- C. Door Push Plates and Pulls: ANSI/BHMA A156.6 certified door pushes and pulls of type and design specified below or in the Hardware Sets. Coordinate and provide proper width and height as required where conflicting hardware dictates.

1. Push/Pull Plates: Minimum .050 inch thick, 4-inches wide by 16-inches high, with square corners and beveled edges, secured with exposed screws unless otherwise indicated.
2. Straight Pull Design: Minimum 1-inch round diameter stainless steel bar or tube stock pulls with 2 1/2-inch projection from face of door unless otherwise indicated.
3. Offset Pull Design: Minimum 1-inch round diameter stainless steel bar or tube stock pulls with 2 1/2-inch projection and offset of 90 degrees unless otherwise indicated.
4. Push Bars: Minimum 1-inch round diameter horizontal push bars with minimum clearance of 2 1/2-inch projection from face of door unless otherwise indicated.
5. Fasteners: Provide manufacturer's designated fastener type as indicated in Hardware Sets.

a. Acceptable Manufacturers:

- 1) Ives (IV).
- 2) Rockwood Manufacturing (RO).
- 3) Trimco (TC).

## 2.5 CYLINDERS AND KEYING

- A. Key cylinders to existing key system as directed by owner's representative.

- B. General: Cylinder manufacturer to have minimum (10) years experience designing secured master key systems and have on record a published security keying system policy.
- C. Source Limitations: Obtain each type of keyed cylinder and keys from the same source manufacturer as locksets and exit devices, unless otherwise indicated.
- D. Cylinders: Original manufacturer cylinders complying with the following:
  - 1. Mortise Type: Threaded cylinders with rings and straight- or clover-type cam.
  - 2. Rim Type: Cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
  - 3. Bored-Lock Type: Cylinders with tailpieces to suit locks.
  - 4. Mortise and rim cylinder collars to be solid and recessed to allow the cylinder face to be flush and be free spinning with matching finishes.
  - 5. Keyway: Match Facility Standard.
- E. Keying System: Each type of lock and cylinders to be factory keyed. Conduct specified "Keying Conference" to define and document keying system instructions and requirements. Furnish factory cut, nickel-silver large bow permanently inscribed with a visual key control number as directed by Owner. Incorporate decisions made in keying conference, and as follows:
  - 1. Master Key System: Cylinders are operated by a change key and a master key.
  - 2. Grand Master Key System: Cylinders are operated by a change key, a master key, and a grand master key.
  - 3. Great-Grand Master Key System: Cylinders are operated by a change key, a master key, a grand master key, and a great-grand master key.
  - 4. Existing System: Master key or grand master key locks to Owner's existing system.
  - 5. Keyed Alike: Key all cylinders to same change key.
- F. Key Quantity: Provide the following minimum number of keys:
  - 1. Top Master Key: One (1)
  - 2. Change Keys per Cylinder: Two (2)
  - 3. Master Keys (per Master Key Group): Two (2)
  - 4. Grand Master Keys (per Grand Master Key Group): Two (2)
- G. Key Registration List: Provide keying transcript list to Owner's representative in the proper format for importing into key control software.
- H. Key Control Cabinet: Provide a key control system including envelopes, labels, and tags with self-locking key clips, receipt forms, 3-way visible card index, temporary markers, permanent markers, and standard metal cabinet. Key control cabinet shall have expansion capacity of 150% of the number of locks required for the project.
  - 1. Acceptable Manufacturers:
    - a. Lund Equipment (LU).
    - b. MMF Industries (MM).
    - c. Telkee (TK).

- I. Key Control Software: Provide one network version of "Key Wizard" branded key management software package that includes one year of technical support and upgrades to software at no charge. Provide factory key system formatted for importing into "Key Wizard" software.

## 2.6 MECHANICAL LOCKS AND LATCHING DEVICES

- A. Mortise Locksets, Grade 1 (Heavy Duty): ANSI/BHMA A156.13, Series 1000, Operational Grade 1 certified mortise locksets furnished in the functions as specified in the Hardware Sets. Locksets to be manufactured with a corrosion resistant, stamped 12 gauge minimum formed steel case and be field-reversible for handing without disassembly of the lock body. Lockset trim (including knobs, levers, escutcheons, roses) to be the product of a single manufacturer. Furnish with standard 2 3/4" backset, 3/4" throw anti-friction stainless steel latchbolt, and a full 1" throw stainless steel bolt for deadbolt functions.
  1. Acceptable Manufacturers:
    - a. Corbin Russwin Hardware (RU) – ML2000 Series.
    - b. Sargent Manufacturing (SA) – 8200 Series.
    - c. Schlage (SC) – L9000 Series.
- B. Lock Trim Design: As specified in Hardware Sets.

## 2.7 INTEGRATED WIEGAND OUTPUT LOCKING DEVICES – MULTI-CLASS READER

- A. Integrated Wiegand Output Multi-Class Mortise Locks: Wiegand output ANSI A156.13, Grade 1, mortise lockset with integrated card reader, request-to-exit signaling, door position status switch, and latchbolt monitoring in one complete unit. Hard wired, solenoid driven locking/unlocking control of the lever handle trim, 3/4" deadlocking anti-friction latch, and 1" case-hardened steel deadbolt. Lock is U.L listed and labeled for use on up to 3 hour fire rated openings. Available with or without keyed high security cylinder override.
  1. Open architecture, hard wired platform supports centralized control of locking units with new or existing Wiegand compatible access control systems. Latchbolt monitoring and door position switch act in conjunction to report door-in-frame (DPS) and door latched (door closed and latched) conditions.
  2. Integrated reader supports the following credentials:
    - a. 125kHz proximity credentials: HID, AWID, Indala, and EM4102.
    - b. 13.56 MHz proximity credentials: HID iClass, HID iClass SE, SE for MIFARE Classic, DESFire EV1.
  3. 12VDC external power supply required for reader and lock, with optional 24VDC lock solenoid. Fail safe or fail secure options.
  4. Installation requires only one cable run from the lock to the access control panel without requirements for additional proprietary lock panel interface boards or modules.
  5. Installation to include manufacturer's access control panel interface board or module where required for Wiegand output protocol.
    - a. Acceptable Manufacturers:
      - 1) Sargent Manufacturing (SA) – M1 8200 Series.

## 2.8 AUXILIARY LOCKS

- A. Narrow Case Deadlocks and Deadlatches: ANSI/BHMA 156.13 Series 1000 Grade 1 certified narrow case deadlocks and deadlatches for swinging or sliding door applications. All functions shall be manufactured in a single sized case formed from 12 gauge minimum, corrosion resistant steel (option for fully stainless steel case and components). Provide minimum 2 7/8" throw laminated stainless steel bolt. Bottom rail deadlocks to have 3/8" diameter bolts.
  - 1. Acceptable Manufacturers:
    - a. Adams Rite Manufacturing (AD) - MS1850S / MS1950 Series.

## 2.9 LOCK AND LATCH STRIKES

- A. Strikes: Provide manufacturer's standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, unless otherwise indicated, and as follows:
  - 1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
  - 2. Aluminum-Frame Strike Box: Provide manufacturer's special strike box fabricated for aluminum framing.
- B. Standards: Comply with the following:
  - 1. Strikes for Mortise Locks and Latches: BHMA A156.13.
  - 2. Strikes for Auxiliary Deadlocks: BHMA A156.5.
  - 3. Dustproof Strikes: BHMA A156.16.

## 2.10 CONVENTIONAL EXIT DEVICES

- A. General Requirements: All exit devices specified herein shall meet or exceed the following criteria:
  - 1. At doors not requiring a fire rating, provide devices complying with NFPA 101 and listed and labeled for "Panic Hardware" according to UL305. Provide proper fasteners as required by manufacturer including sex nuts and bolts at openings specified in the Hardware Sets.
  - 2. Where exit devices are required on fire rated doors, provide devices complying with NFPA 80 and with UL labeling indicating "Fire Exit Hardware". Provide devices with the proper fasteners for installation as tested and listed by UL. Consult manufacturer's catalog and template book for specific requirements.
  - 3. Except on fire rated doors, provide exit devices with hex key dogging device to hold the pushbar and latch in a retracted position. Provide optional keyed cylinder dogging on devices where specified in Hardware Sets.

4. Lever Operating Trim: Where exit devices require lever trim, furnish manufacturer's heavy duty trim with cold forged escutcheons, beveled edges, and four threaded studs for thru-bolts.
    - a. Lock Trim Design: As indicated in Hardware Sets, provide finishes and designs to match that of the specified locksets. Provided free-wheeling type trim where indicated.
    - b. Where function of exit device requires a cylinder, provide an interchangeable core type keyed cylinder (Rim or Mortise) as specified in Hardware Sets.
  5. Rail Sizing: Provide exit device rails factory sized for proper door width application.
  6. Through Bolt Installation: For exit devices and trim as indicated in Door Hardware Sets.
- B. Conventional Push Rail Exit Devices (Heavy Duty): ANSI/BHMA A156.3, Grade 1 certified panic and fire exit hardware devices furnished in the functions specified in the Hardware Sets. Mounting rails to be formed from smooth stainless steel, brass or bronze architectural materials no less than 0.072" thick, with push rails a minimum of 0.062" thickness. Painted or aluminum metal rails are not acceptable. Exit device latch to be investment cast stainless steel, pullman type, with deadlock feature.
1. Acceptable Manufacturers:
    - a. Corbin Russwin Hardware (RU) - ED4000 / ED5000 Series.
    - b. Sargent Manufacturing (SA) - 80 Series.
    - c. Von Duprin (VD) - 35A/98 XP Series.

## 2.11 ELECTROMECHANICAL CONVENTIONAL EXIT DEVICES

- A. Electrified Conventional Push Rail Devices (Heavy Duty): Subject to same compliance standards and requirements as mechanical exit devices, electrified devices to be of type and design as specified below.
1. Acceptable Manufacturers:
    - a. Corbin Russwin Hardware (RU) - ED4000 / ED5000 Series.
    - b. Sargent Manufacturing (SA) - 80 Series.
    - c. Von Duprin (VD) - 35A/98/99 Series.
- B. Electrified Options: As indicated in hardware sets, provide electrified exit device options including: electric latch retraction , electric dogging, outside door trim control, exit alarm, delayed egress, latchbolt monitoring, lock/unlock status monitoring, touchbar monitoring and request-to-exit signaling. Unless otherwise indicated, provide electrified exit devices standard as fail secure.

## 2.12 INTEGRATED WIEGAND OUTPUT EXIT DEVICES – MULTI-CLASS READER

- A. Integrated Wiegand Output Multi-Class Exit Hardware: Wiegand output ANSI 156.3 Grade 1 rim, mortise, and vertical rod exit device hardware with integrated proximity card reader, latchbolt and touchbar monitoring, and request-to-exit signaling, in one complete unit. Hard wired, solenoid driven locking/unlocking control of the lever handle exit trim with 3/4" throw latch bolt. U.L listed and labeled for either panic or "fire exit hardware" for use on up to 3 hour fire rated openings. Available with or without keyed high security cylinder override.
1. Open architecture, hard wired platform supports centralized control of locking units with new or existing Wiegand compatible access control systems. Inside push bar (request-to-exit) signaling and door position (open/closed status) monitoring (via separately connected DPS).
  2. Integrated reader supports the following credentials:
    - a. 125kHz proximity credentials: HID, AWID, Indala, and EM4102.
    - b. 13.56 MHz proximity credentials: HID iClass, HID iClass SE, SE for MIFARE Classic, DESFire EV1.
  3. 12VDC external power supply required for reader. 24VDC required for solenoid operated exit trim. Fail safe or fail secure options.
  4. Installation requires only one cable run from the exit hardware to the access control panel without requirements for additional proprietary lock panel interface boards or modules.
  5. Competitor Alternates Allowed Option>Installation to include manufacturer's access control panel interface board or module where required for Wiegand output protocol.
    - a. Acceptable Manufacturers:
      - 1) Sargent Manufacturing (SA) – M1 80 Series.

## 2.13 DOOR CLOSERS

- A. All door closers specified herein shall meet or exceed the following criteria:
1. General: Door closers to be from one manufacturer, matching in design and style, with the same type door preparations and templates regardless of application or spring size. Closers to be non-handed with full sized covers including installation and adjusting information on inside of cover.
  2. Standards: Closers to comply with UL-10C and UBC 7-2 for Positive Pressure Fire Test and be U.L. listed for use of fire rated doors.
  3. Size of Units: Comply with manufacturer's written recommendations for sizing of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Where closers are indicated for doors required to be accessible to the physically handicapped, provide units complying with ANSI ICC/A117.1.
  4. Closer Arms: Provide heavy duty, forged steel closer arms unless otherwise indicated in Hardware Sets.
    - a. Where closers are indicated to have mechanical dead-stop, provide heavy duty arms and brackets with an integral positive stop.

- b. Where closers are indicated to have mechanical hold open, provide heavy duty units with an additional built-in mechanical holder assembly designed to hold open against normal wind and traffic conditions. Holder to be manually selectable to on-off position.
  - c. Where closers are indicated to have a cushion-type stop, provide heavy duty arms and brackets with spring stop mechanism to cushion door when opened to maximum degree.
  - d. Closers shall not be installed on exterior or corridor side of doors; where possible install closers on door for optimum aesthetics. Provide drop plates or other accessories as required for proper mounting.
- 5. Closer Accessories: Provide door closer accessories including custom templates, special mounting brackets, spacers and drop plates, and through-bolt or security type fasteners as specified in the door Hardware Sets.
- B. Door Closers, Surface Mounted (Heavy Duty): ANSI/BHMA A156.4, Grade 1 surface mounted, heavy duty door closers with complete spring power adjustment, sizes 1 thru 6; and fully operational adjustable according to door size, frequency of use, and opening force. Closers to be rack and pinion type, one piece cast iron or aluminum alloy body construction, with adjustable backcheck and separate non-critical valves for closing sweep and latch speed control. Provide non-handed units standard.
  - 1. Acceptable Manufacturers:
    - a. Corbin Russwin Hardware (RU) - DC8000 Series.
    - b. LCN Closers (LC) - 4040XP Series.
    - c. Sargent Manufacturing (SA) - 351 Series.
    - d. Norton Door Controls (NO) - 7500 Series.

## 2.14 DOOR STOPS AND HOLDERS

- A. General: Door stops and holders to be of type and design as specified below or in the Hardware Sets.
- B. Door Stops and Bumpers: ANSI/BHMA A156.16, Grade 1 certified door stops and wall bumpers. Provide wall bumpers, either convex or concave types with anchorage as indicated, unless floor or other types of door stops are specified in Hardware Sets. Do not mount floor stops where they will impede traffic. Where floor or wall bumpers are not appropriate, provide overhead type stops and holders.
  - 1. Acceptable Manufacturers:
    - a. Ives (IV).
    - b. Rockwood Manufacturing (RO).
    - c. Trimco (TC).
- C. Overhead Door Stops and Holders: ANSI/BHMA A156.6, Grade 1 certified overhead stops and holders to be surface or concealed types as indicated in Hardware Sets. Track, slide, arm and jamb bracket to be constructed of extruded bronze and shock absorber spring of heavy tempered

steel. Provide non-handed design with mounting brackets as required for proper operation and function.

1. Acceptable Manufacturers:
  - a. Rixson Door Controls (RF).
  - b. Rockwood Manufacturing (RO).
  - c. Sargent Manufacturing (SA).

## 2.15 ARCHITECTURAL SEALS

- A. General: Thresholds, weatherstripping, and gasket seals to be of type and design as specified below or in the Hardware Sets. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated. At exterior applications provide non-corrosive fasteners and elsewhere where indicated.
- B. Smoke Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke control ratings indicated, based on testing according to UL 1784.
  1. Provide smoke labeled perimeter gasketing at all smoke labeled openings.
- C. Fire Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to UL-10C.
  1. Provide intumescent seals as indicated to meet UL10C Standard for Positive Pressure Fire Tests of Door Assemblies, and UBC 7-2, Fire Tests of Door Assemblies.
- D. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.
- E. Acceptable Manufacturers:
  1. Pemko Manufacturing (PE).
  2. Reese Enterprises, Inc. (RS).

## 2.16 ELECTRONIC ACCESSORIES

- A. Power Supplies: Provide Nationally Recognized Testing Laboratory Listed 12VDC or 24VDC (field selectable) filtered and regulated power supplies. Include battery backup option with integral battery charging capability in addition to operating the DC load in event of line voltage failure. Provide the least number of units, at the appropriate amperage level, sufficient to exceed the required total draw for the specified electrified hardware and access control equipment.
  1. Acceptable Manufacturers:
    - a. Corbin Russwin Hardware (RU) – 781N.



- b. Sargent Manufacturing (SA) – 3500 Series.
  - c. Securitron (SU) - BPS Series.
  - d. Von Duprin (VO) - PS.
- B. Switching Power Supplies: Provide UL listed or recognized filtered and regulated power supplies. Provide single, dual, or multi-voltage units as shown in the hardware sets. Units must be expandable up to eight Class 2 power limited outputs. Units must include the capability to incorporate a battery backup option with integral battery charging capability in addition to operating the DC load in event of line voltage failure. Provide the least number of units, at the appropriate amperage level, sufficient to exceed the required total draw for the specified electrified hardware and access control equipment.
  - 1. Acceptable Manufacturers:
    - a. Securitron (SU) - AQ Series.

## 2.17 FABRICATION

- A. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to manufacturers recognized installation standards for application intended.

## 2.18 FINISHES

- A. Standard: Designations used in the Hardware Sets and elsewhere indicate hardware finishes complying with ANSI/BHMA A156.18, including coordination with traditional U.S. finishes indicated by certain manufacturers for their products.
- B. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware.
- C. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine scheduled openings, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.
- B. Notify architect of any discrepancies or conflicts between the door schedule, door types, drawings and scheduled hardware. Proceed only after such discrepancies or conflicts have been resolved in writing.

### 3.2 PREPARATION

- A. Hollow Metal Doors and Frames: Comply with ANSI/DHI A115 series.
- B. Wood Doors: Comply with ANSI/DHI A115-W series.

### 3.3 INSTALLATION

- A. Install each item of mechanical and electromechanical hardware and access control equipment to comply with manufacturer's written instructions and according to specifications.
  - 1. Installers are to be trained and certified by the manufacturer on the proper installation and adjustment of fire, life safety, and security products including: hanging devices; locking devices; closing devices; and seals.
- B. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:
  - 1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
  - 2. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."
  - 3. Where indicated to comply with accessibility requirements, comply with ANSI A117.1 "Accessibility Guidelines for Buildings and Facilities."
  - 4. Provide blocking in drywall partitions where wall stops or other wall mounted hardware is located.
- C. Retrofitting: Install door hardware to comply with manufacturer's published templates and written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.
- D. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."
- E. Storage: Provide a secure lock up for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items so that the completion of the work will not be delayed by hardware losses before and after installation.

### 3.4 FIELD QUALITY CONTROL

- A. Field Inspection: Supplier will perform a final inspection of installed door hardware and state in report whether work complies with or deviates from requirements, including whether door hardware is properly installed, operating and adjusted.

### 3.5 ADJUSTING

- A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

### 3.6 CLEANING AND PROTECTION

- A. Protect all hardware stored on construction site in a covered and dry place. Protect exposed hardware installed on doors during the construction phase. Install any and all hardware at the latest possible time frame.
- B. Clean adjacent surfaces soiled by door hardware installation.
- C. Clean operating items as necessary to restore proper finish, and provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of owner occupancy.

### 3.7 DEMONSTRATION

- A. Instruct Owner's maintenance personnel to adjust, operate, and maintain mechanical and electromechanical door hardware.

### 3.8 DOOR HARDWARE SCHEDULE

- A. The hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.

**Hardware Schedule**

**Set: 1.0**

Doors: 1

Description: Garage Alum - Access Control

1 Pivot Set	147	626	Rixson
1 Elec Intermediate Pivot	EM19	626	Rixson
1 Access Control Exit Device	M1-8876-12V-IPS ETP LC	US32D	Sargent
1 Cylinder	To Match Existing	626	
1 Drop Plate	351D	EN	Sargent
1 Closer w/ Stop Arm	351 PS	EN	Sargent
1 Threshold	171A		Pemko
1 Perimeter Seal	By door mfgr		
1 Sweep	315CN		Pemko
1 Elec Cables - Exit to Hinge	QC-C006P		McKinney
1 Elec Cables - Hinge to Above	QC-C1500P		McKinney
1 Power Supply	AQD3		Securitron

**Set: 2.0**

Doors: 1A

Description: Alum - Access Control

1 Pivot Set	147	626	Rixson
1 Elec Intermediate Pivot	EM19	626	Rixson
1 Access Control Exit Device	M1-8876-12V-IPS ETP LC	US32D	Sargent
1 Cylinder	To Match Existing	626	
1 Drop Plate	351D	EN	Sargent
1 Closer w/ Stop Arm	351 PS	EN	Sargent
1 Perimeter Seal	By door mfgr		
1 Elec Cables - Exit to Hinge	QC-C006P		McKinney
1 Elec Cables - Hinge to Above	QC-C1500P		McKinney
1 Power Supply	AQD3		Securitron

**Set: 3.0**

Doors: 3

Description: Access Control - Outswing

2 Hinge	T4A3386 4-1/2" x 4-1/2" NRP	US32D	McKinney
1 Elec Hinge	T4A3386 4-1/2" x 4-1/2" QC	US32D	McKinney
1 Access Control Lock	M1-82270-24V-IPS LNP LC	US26D	Sargent
1 Cylinder	To Match Existing	626	
1 Closer w/ Stop Arm	351 PS	EN	Sargent
1 Threshold	171A		Pemko
1 Perimeter Seal	S773D		Pemko
1 Sweep	315CN		Pemko
1 Elec Cables - Hinge to Above	QC-C1500P		McKinney
1 Elec Cables - Lock to Hinge	QC-C306P		McKinney
1 Power Supply	AQD3		Securitron
1 Card Reader	By Security Contractor.		

**Set: 4.0**

Doors: 1B

Description: ROOF ACCESS

2 Hinge	TA2714 4-1/2" x 4-1/2"	US26D	McKinney
1 Storeroom Lock	8204 LNP LC	US26D	Sargent
1 Cylinder	To Match Existing	626	
1 Door Stop	442	US26D	Rockwood
3 Silencer	608		Rockwood

**Set: 5.0**

Doors: 4

Description: OH

1 Cylinder	To Match Existing	626	
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Notes: Balance of hardware by door mfgr. Verify cylinder type and cam required.  
Impound gates to have card readers.

END OF SECTION 087100

## SECTION 08730 — THRESHOLDS, WEATHERSTRIPPING AND SEALS

### PART 1 - GENERAL

#### 1.1 COORDINATION

- A. The General Conditions of the Contract for Construction and the Supplementary Conditions to the General Conditions of the Contract for Construction shall be considered as part of this section of the specifications.
- B. Each Bidder shall be responsible for determining during the bidding period the extent that any addenda issued during the bidding period may affect this section of the specifications.
- C. Reference Instructions to Bidders for requirements regarding substitutions of materials and products.
- D. Where conflicts occur between the drawings and specifications, between different drawings, between different portions of this section of the specifications, or between different sections of the specifications, the more stringent requirements and the greater quantity shall apply.

#### 1.2 WORK INCLUDED

- A. Provide and install thresholds. Weatherstripping, door sweeps, and sound seals as scheduled or indicated on the drawings and as specified herein.
- B. All exterior doors shall receive thresholds, weatherstripping and door sweeps whether or not indicated on the drawings.

#### 1.3 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Doors and frames.

#### 1.4 SUBMITTALS

- A. Submit manufacturer's product literature indicating model numbers, configurations and materials.
- B. Upon request submit sample sections of thresholds or seals.
- C. Reference Section 01340 SUBMITTALS for additional submittal requirements.

#### 1.5 WARRANTY

- A. Provide written warranty against defects in materials and workmanship for the work under this section for a period of one year after the date of Substantial Completion of the project.

#### 1.6 QUALITY ASSURANCE

- A. Installer shall have a minimum of 3 years experience in the installation of thresholds, weatherstripping and seals for projects of similar size and scope as this project.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. National Guard.
- B. A. J. May Co.
- C. Zero International, Inc.
- D. Balco, Inc.
- E. Metalines

### 2.2 MATERIALS

- A. GENERAL: Items specified below are from the catalog of the particular manufacturer named for each item. Equivalent products by other specified manufacturers shall match dimensions and profiles of the scheduled items.
- B. METAL THRESHOLDS: Shall be extruded mill finished aluminum thresholds complete with ¼" stainless steel machine screws set in expansion anchors. Provide sizes and configurations as indicated in the drawings and as manufactured by A.J. May. Profiles and dimensions shall comply with state and federal regulations for the elimination of Architectural Barriers.
- C. WEATHERSTRIPPING: At all exterior hollow metal doors, provide cushion weatherstripping as manufactured by A.J. May or equivalent by specified manufacturer.
- D. DRIP CAP: At all exterior hollow metal doors not protected with overhang, provide aluminum duranodic drip cap as manufactured by A.J. May or equivalent by specified manufacturer. Mount on frame over door head. Mount in bed of silicone.
- E. DOOR SWEEP: At all exterior hollow metal doors and aluminum doors, provide No.198NDkB duranodic aluminum/neoprene door bottom weather seal as manufactured by National Guard or equivalent by specified manufacturer.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. THRESHOLDS: Install metal thresholds in solid bed of clear silicone rubber sealant using specified anchors with stainless steel screws. Field cut ends of thresholds to fit neatly around door frame configurations.
- B. OTHER: Install weatherstripping, drip caps, door sweeps and seals with stainless steel screws in accordance with manufacturer's printed instructions. Set items in a bed of clear silicone rubber sealant.

### 3.2 ADJUSTING

- A. Adjust all items for continuous snug contact to prevent water entry.

END OF SECTION

## SECTION 08810 — GLASS AND GLAZING

### PART 1 - GENERAL

#### 1.1 COORDINATION

- A. The General Conditions of the Contract for Construction and the Supplementary Conditions to the General Conditions of the Contract for Construction shall be considered as part of this section of the specifications.
- B. Each Bidder shall be responsible for determining during the bidding period the extent that any addenda issued during the bidding period may affect this section of the specifications.
- C. Reference Instructions to Bidders for requirements regarding substitutions of materials and products.
- D. Where conflicts occur between the drawings and specifications, between different drawings, between different portions of this section of the specifications, or between different sections of the specifications, the more stringent requirements and the greater quantity shall apply.

#### 1.2 WORK INCLUDED

- A. Glazing for hollow metal doors and frames.
- B. Glazing for aluminum frames.

#### 1.3 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Hollow metal doors and frames.
- B. Aluminum entrances and storefronts.
- C. Aluminum window systems.

#### 1.4 SUBMITTALS

- A. Submit manufacturer's literature with material and performance descriptions for each type of glass, sealant and glazing accessories.
- B. Submit detailed shop drawings indicating locations, installation and sealing methods.
- C. Submit 12" x 12" physical samples of each type of tinted or wire glass and panel.
- D. Obtain approved shop drawings from hollow metal supplier, aluminum frame supplier, plastic laminate door supplier.
- E. Reference Section 01340 SUBMITTALS for additional submittal requirements.

#### 1.5 WARRANTY



- A. Provide written warranty against defects in materials and workmanship for the work under this section for a period of one year after the date of Substantial Completion of the project.
- B. Warranted defects shall include but not necessarily be limited to water infiltration, air infiltration, glass failure due to improper sizing or installation, sealant failure.

#### 1.6 QUALITY ASSURANCE

- A. Glazing contractor shall have a minimum of 3 years experience in the installation of glazing products for projects of similar size and scope as this project.
- B. Each piece of glass shall bear manufacturer's label indicating type.

#### 1.7 DELIVERY, STORAGE AND HANDLING

- A. Do not deliver glass or panels to the jobsite until openings are ready for glazing.
- B. Deliver glass and panels in manufacturer's original protective packaging. Store in a dry, well ventilated area and take care to prevent condensation on the materials. Keep glass faces separated.

#### 1.8 MINIMUM COMPLIANCE STANDARDS

- A. SAFETY: Contractor shall be responsible for meeting all Federal and applicable code requirements for types and locations of glazing regardless of drawing indications. Comply with the current standards of the Consumer Products Safety Commission and Federal Standard 16 CFR 1201 Federal Architectural Glazing Materials Safety Standard.
- B. INSTALLATION: Comply with recommendations of Flat Glass Marketing Association – FGMA Glazing Manual.

### PART 2 - PRODUCTS

#### 2.1 GENERAL

- A. GLAZING SHEETS: Glazing materials shall conform to the highest qualities as specified in the following standards:
  - 1. Float glass: FS DD-G-451d and ASTM C1036.
  - 2. Float glass, heat strengthened: ASTM C1036 and ASTM C1048.
  - 3. Float glass, tempered: FS DD-G-1403B and ASTM C1036, ASTM C1048, ANSI Z97.1, and Consumer Product Safety Commission 16 CFR 1201.
  - 4. Wired glass: FS DD-G-451, ASTM C1036 and ANSI Z97.1. Misco diamond pattern.
  - 5. Insulating glass: ASTM C1036. Meet industry standards set by the Sealed Insulating Glass Manufacturers Association (SIGMA).
- B. MISCELLANEOUS
  - 1. Glazing sealants: FS TT-S-1543A (silicone rubber); FS TT-S-230 (synthetic rubber); FS TT-S-001657 (butyl rubber).
  - 2. Glazing tape: Architectural Aluminum Manufacturer's Association.

2.2 MANUFACTURERS

- A. GLASS: PPG Industries, Libbey-Owens Ford.
- B. TEMPERING, LAMINATING AND HEAT STRENGTHENING: Hordis Brothers, Guardian, Libbey-Owens Ford, PPG Industries, Tempglas Southern, HGP Industries.
- C. WIRE GLASS: Pilkington, Hordis.
- D. TRANSLUCENT GLASS: Cesar Color Inc. (Chroma Fusion), tel. 800-275-7272 or approved equivalent.
- E. GLAZING TAPE: Tremco – tape, shims, setting blocks, edge blocking.
- F. GLAZING SEALANT: Tremco, General Electric.

2.3 MATERIALS: Types as indicated in the drawings.

- A. TEMPERED GLASS: 1/4" clear and solar tint float glass tempered by the vertical or horizontal process and meeting requirements of FS DD-G-1403B.
- B. HEAT STRENGTHENED GLASS: 1/4" clear and solar tint float glass heat strengthened by the vertical or horizontal process and meeting requirements of FS DD-G-1403B.
- C. WIRE GLASS: Shall be 1/4" thick. Polish plate glass reinforced with diamond pattern wire mesh No. 24 gauge minimum, with a mesh not larger than 1". Provide fire rated wire glass at doors along corridors only.
- D. INSULATED UNITS: 1" thick sealed unit with exterior pane of 1/4" tempered solar bronze, interior pane of 1/4" tempered clear, and 1/2" hermetically sealed air space between. Nominal shading coefficient of 0.57.
- E. HOLLOW METAL FRAME AND DOOR GLAZING SYSTEM:
  - 1. Glazing: Tempered.
  - 2. Glazing tape: 1/8" x 3/8" x continuous preshimmed butyl tape; Tremco 440.
  - 3. Setting blocks: Neoprene or EPDM in minimum 4" lengths.
  - 4. Edge blocking: Neoprene or EPDM in minimum 4" lengths and sized to allow for 1/8" clear expansion at both vertical edges.
  - 5. Add sealant at exterior glazing.
- F. SOUND GLAZING: At certain hollow metal frames glazed on both sides of stop, provide 1/4" clear tempered on one side and 3/16" clear tempered on other side.
- G. TRANSLUCENT GLASS: Tempered glass uniformly sandblasted to specified manufacturer's standard density rating of 3,4, or 5 as selected by the Architect from submitted samples.
- H. GLASS SHELVING:
  - 1. Tempered glass with all edges polished. Glass thickness as indicated on the drawings.
  - 2. Support System: Knappe and Vogt (KV) standards and adjustable supports as indicated in the drawings.
- I. SPANDREL GLASS UNITS: 1" thick unit with exterior pane of 1/4" opaque spandrel glass, interior pane of 1/4" tempered clear glass, and 1/2" hermetically sealed air space between. Color to be selected by the Architect.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION

- A. GENERAL: Install glass without warping, binding or stress. Allow for expansion and contraction of glass due to temperature changes. Do not install sealant with surfaces or ambient temperature below 40 degrees F.
- B. HOLOW METAL FRAMES AND DOORS:
  - 1. Ensure that finish painting of doors and frames is complete.
  - 2. Cut glazing tape to length and install against permanent stop, flush with face of stop.
  - 3. Place setting blocks at 1/4 points.
  - 4. Rest glass on setting blocks and press against stop for full contact and adhesion at perimeter.
  - 5. Place continuous glazing tape on opposite-face perimeter of glass in same manner described above. Install removable stop; avoid displacement of tape; and exert pressure on tape for full continuous contact.
  - 6. Knife trim excess of protruding tape (leave recessed for sealant at exterior glazing).
  - 7. Do not touch glass to metal.
- C. PLASTIC LAMINATE DOORS:
  - 1. Follow procedures specified above for non-rated doors. Metal stops provided by door manufacturer.
  - 2. Follow recommendations of door manufacturer for rated doors. Metal stops provided by door manufacturer.
- D. ALUMINUM FRAMES: Follow door and frame manufacturer's printed instructions for glazing gasketed systems. Provide watertight installation at exterior systems.
- E. GLASS SHELVING:
  - 1. Secure vertical standards to varying wall materials as recommended by the manufacturer. Use toggle bolts at hollow masonry walls. Screw fasten to studs at drywall.
  - 2. Mount adjustable supports securely to standards.

#### 3.2 CLEANING AND PROTECTION

- A. During glazing operations, provide sufficient stick-on safety labels or hang streamers on new glazing.
- B. Prior to project closeout, thoroughly clean all glazing inside and out with commercial glass cleaner.
- C. Reglaze any openings where glass is chipped, broken, scratched, pitted or stained.

END OF SECTION - 08810

## **SECTION 09101 CONSTRUCTION TRAFFIC CONTROL**

### **PART 1 - GENERAL**

#### **1.01 GENERAL DESCRIPTION OF WORK:**

- A. This item shall consist of the construction, manipulation, maintenance and removal, if required, of detours of the length and to the lines, grades, and typical sections indicated and providing for installing, moving, replacing, maintaining, cleaning and removing upon completion of the work, as required, all detour markers, signs, barricades and other devices used in traffic control and handling at the construction site as indicated or as directed by the ENGINEER.
- B. CONTRACTOR shall be responsible for submittal of a traffic control plan sealed by a registered professional engineer in the state of Texas prior to the start of construction. CONTRACTOR shall be responsible for all traffic control measures and implementation. All proposed routing of traffic must be approved in writing prior to implementation. All traffic control devices shall be in accordance with the Texas Manual on Uniform Traffic Control Devices (TMUTCD), latest edition.
- C. This item shall also consist of providing, installing, moving, replacing, maintaining, cleaning and removing temporary or permanent street closure barricades, signs or other devices required to handle the traffic in conformance with the current edition of the Texas Manual of Uniform Traffic Control Devices for Street and Highways and as indicated or directed by the ENGINEER.
- D. Implementation. Before beginning work, designate in writing a Contractor's Responsible Person (CRP) to be the representative of the Contractor who is responsible for taking or directing corrective measures of installation and maintenance deficiencies as soon as possible. The CRP must be accessible by phone and able to respond to emergencies 24 hours per day.
- E. Follow the Traffic Control Plan (TCP) and install traffic control devices as shown on the plans and as directed. Install traffic control devices straight and plumb. Do not make changes to the location of any device or implement any other changes to the TCP without the approval of the Engineer. Minor adjustments to meet field constructability and visibility are allowed.
- F. Submit Contractor-proposed TCP changes, signed and sealed by a licensed professional engineer, to the Engineer for approval. The Engineer may develop, sign, and seal Contractor-proposed changes. Changes must conform to guidelines established in the TMUTCD using approved products

from the Texas DOT Compliant Work Zone Traffic Control Device List (CWZTCDL).

- G. Maintain traffic control devices by taking corrective action as soon as possible. Corrective action includes but is not limited to cleaning, replacing, straightening, covering, or removing devices. Maintain the devices such that they are properly positioned, spaced, and legible, and that reflective characteristics meet requirements during darkness and rain.
- H. Flaggers. Provide a Contractor representative who has been certified as a flagging instructor through courses offered by the Texas Engineering Extension Service, the American Traffic Safety Services Association, the National Safety Council, or other approved organizations. Provide the certificate indicating course completion when requested. This representative is responsible for training and assuring that all flaggers are qualified to perform flagging duties. A qualified flagger must be independently certified by one of the organizations listed above or trained by the Contractor's certified flagging instructor. Provide the Engineer with a current list of qualified flaggers before beginning flagging activities. Use only flaggers on the qualified list. Flaggers must be courteous and able to effectively communicate with the public. When directing traffic, flaggers must use standard attire, flags, signs, and signals and follow the flagging procedures set forth in the TMUTCD.
- I. Removal. Upon completion of work, remove all barricades, signs, cones, lights, and other traffic control devices used for work-zone traffic handling, unless otherwise shown on the plans.
- J. Traffic control shall be provided to vehicular and non-vehicular traffic, including pedestrians and cyclists.

## **PART 2 - PRODUCTS**

### **2.01 CONSTRUCTION TRAFFIC CONTROL SIGNS:**

- A. Construction traffic control signs shall conform to the State of Texas DOT Manual of Uniform Traffic Control Devices, Parts 5 & 6 unless otherwise directed by the ENGINEER.
- B. The substrate for construction signs need only be sufficiently durable to last the life of the project and sufficiently rigid to hold the sheeting in a flat plane.

### **2.02 SIGN SUPPORTS:**

- A. Supports for construction traffic control signs shall be grade #2 fir or yellow pine, pressure treated with pentachlorophenol.
- B. Supports shall have a minimum nominal size of 4-inches x 4-inches and conform to the details shown on the plans.

#### 2.03 PORTABLE SIGN SUPPORT:

- A. Materials for portable sign supports shall comply with the details shown on the plans. Portable sign supports other than those shown on the plans shall be submitted to the ENGINEER for approval prior to use.

#### 2.04 BARRICADES:

- A. Barricades shall be classified as Type I, Type II, or Type III and shall comply with the details shown on the plans and the TMUTCD.
- B. Barricade rails shall be fabricated using grade #2 fir or yellow pine and reflectorized sheeting conforming to the requirements shown in Section 2.08(5).

#### 2.05 VERTICAL PANELS:

- A. Materials for vertical panels shall conform to the details shown on the plans. Vertical panels shall be reflectorized with orange and white reflective sheeting or tape in accordance with the requirements of the TMUTCD and Table 9000-3.

#### 2.06 CONSTRUCTION TRAFFIC MARKINGS:

- A. Construction traffic markings shall comply with Section 9101 and the details shown in the plans.

#### 2.07 ABBREVIATED PAVEMENT MARKINGS FOR CONSTRUCTION:

- A. The pavement-marking material shall consist of an adhesive-backed reflective tape that can be applied to the pavement. Markings shall be of good appearance, have straight, unbroken edges and have a color that complies with all federal regulations.
  - 1. Color
    - a) The markings, as well as retroreflected light from the markings, shall be white or yellow as indicated.

## 2. Visibility

- a) The pavement markings (during daylight hours) shall be distinctively visible for a minimum of 300 feet unless sight distance is restricted by geometric roadway features.
- b) The pavement markings (when illuminated by automobile low beam headlights at night) shall be distinctly visible for a minimum of 160 feet unless sight distance is restricted by geometric features.
- c) The above day and night visibility requirements shall be met when viewed from an automobile traveling on the roadway.

## 2.08 CHANNELIZATION DEVICES:

### A. Barrels

- 1 Barrels shall be of metal or nonmetal composition approved by the ENGINEER and of 30 to 55 gallon capacity. Only one size may be used on the project. The barrels shall be reflectorized with orange and white reflective sheeting or tape in accordance with the requirements of TMUTCD. The markings on the barrels shall be horizontal, circumferential, orange, and wide. There shall be a minimum of 5 alternating orange and white stripes on each barrel. Barrels shall also conform to the details shown on the plans.
- 2. Type "B" barrels shall be equipped with either Type "A" low intensity or Type "C" steady-burn warning lights complying with the provisions to TMUTCD and the Institute of Transportation Engineers (ITE) standard for flashing and steady-burn lights. The use of warning lights shall be as directed by the ENGINEER.

### B. Traffic Cones

- 1. Traffic cones shall conform to the details shown on the plans.

### C. Tubular Traffic Markers

- 1. Post

- a) The post shall be of a thermoplastic or pliable elastomeric composition meeting the manufacturer's requirements.

- b) Properties:

- Outside Diameter.....2.23 inches to 4 inches
  - Wall Thickness.....0.125 inches min.
  - Length.....18 to 36 inches
  - Color.....Orange

## 2. Base

- a) The base shall be of a thermoplastic or pliable elastomeric composition meeting the manufacturer's requirements.

- b) Properties:

- Height.....1/2 to 2 inches
  - Outside Diameter:... 7 to 12 inches
  - Color: .....black or same color as post

## 3. Assembly Units

- a) Assembly units which are inherent with the particular marker shall be as per manufacturer's recommendations.

## 4. Adhesives

- a) Adhesive shall be epoxy type (temporary installation, permanent installation or butyl type) as per manufacturer's recommendations.
- b) Other methods approved by the ENGINEER prior to initiating the work may be used; however, said approval does not abrogate the CONTRACTOR'S responsibility of effecting the temporary or permanent installation.

## 5. Reflectorization

- a) If used at night, tubular traffic markers shall have two 3-inch, circumferential reflective bands, no more than 2-inches from the top with no more than 6-inches separating the bands. Reflective material shall be SIA-250 or higher sheeting conforming to the provisions of Section 9000. The color of reflective material shall be as shown in the plans.

## 2.09 SEQUENTIAL ARROW DISPLAYS



- A. Sequential arrow displays shall be sequentially lighted and roof or trailer mounted. The minimum panel size shall be 30-inches high and 54-inches wide. The display shall have 22 hooded sealed beam amber lamps rated at a maximum intensity of 8800 candlepower.
- B. Light intensity shall be adjustable by dimmer switch. The operating modes shall be as follows:
  - 1 Pass Left. 3 chevrons of 5 lamps each sequence in right to left pattern, 40 to 50 times per minute.
  - 2 Pass Right. 3 chevrons of 5 lamps each sequence in left to right pattern, 40 to 50 times per minute.
  - 3 Pass Either Side. The two outermost chevrons on each end of the panel pointing like arrowheads and flashing 40 to 50 times per minute with crossing row of lamps burning continuously.
  - 4 Warning. 4 lamps, one at each corner of the panel, flashing 40 to 50 times per minute.

## 2.10 MATERIALS FOR CONSTRUCTION DETOURS

### A. Flexible Base

- 1. Flexible base shall conform to Section 02601.

### B. Prime Coat

- 1. Prime Coat shall conform to Section 02610.

### C. Seal Coat

- 1. Seal Coat shall conform to Section 02617.

### D. Hot Mix Asphaltic Concrete Pavement

- 1. Hot Mix shall be Type D conforming to Section 02612.

### E. Seeding

- 1. Seeding shall conform to Section 02936.

## PART 3 - EXECUTION

**3.01 CONSTRUCTION TRAFFIC CONTROL SIGNS AND SIGN SUPPORTS:**

- A. Construction traffic control signs and sign supports shall be installed at locations noted on the plans in conformance with the TMUTCD or as directed by the ENGINEER.

**3.02 PORTABLE SIGN SUPPORTS:**

- A. Portable sign supports for traffic control devices for detours shall be furnished by the CONTRACTOR or shall be installed at the locations shown on the plans, and shall remain the property of the CONTRACTOR.
- B. Unless otherwise specified, portable sign supports shall be of the dimensions shown on the plans.

**3.03 BARRICADES:**

- A. Barricades shall be installed in conformity with the details noted on the plans or as directed by the ENGINEER.

**3.04 VERTICAL PANELS:**

- A. Vertical panels shall be installed in conformity with the details noted on the plans or as directed by the ENGINEER.

**3.05 CONSTRUCTION TRAFFIC MARKINGS:**

- A. Construction traffic markings shall be installed in conformity with TxDOT MUTCD, Part 5, Section 5E.01 and the details shown on the plans or as directed by the ENGINEER.

**3.06 ABBREVIATED PAVEMENT MARKING FOR CONSTRUCTION:**

- A. Abbreviated markings meeting all specification requirements shall be in place on all roadways on which traffic is allowed and where suitable standard pavement marking is not in place. The transverse location of the line(s) formed by the markings shall be as determined by the ENGINEER.
- B. Unless otherwise indicated, the abbreviated markings shall be placed as follows:

**Condition**

**Spacing**

**Length of Stripe**

Straight	40 feet approximately	48 inch
Curve greater than 2 degrees	20 feet maximum	48 inch
Curve less than or equal 2 degrees	40 feet maximum	48 inch

- C. Pavement markings shall be a minimum of 3-7/8 inches wide. Length and spacing will be in accordance with these specifications.
- D. The spacing of stripes may be modified by the ENGINEER. However, the maximum spacing specified above shall not be exceeded in any case.
- E. The CONTRACTOR will be responsible for maintaining the abbreviated pavement markings until standard pavement markings are in place.
- F. Abbreviated pavement markings shall be removed after all permanent markings have been placed.

### 3.07 CHANNELIZATION DEVICES:

#### A. Type "A" Barrels

- 1. Type "A" barrels shall be used during daylight hours only and shall not be equipped with warning lights of any type. The term "daylight hours" refers to those hours between dawn and dusk.

#### B. Type "B" Barrels

- 1. Type "B" barrels shall be equipped with warning lights. Type "B" barrels shall be used during nighttime hours only, unless otherwise shown on the plans or directed by the Project Manager. The term "nighttime hours" refers to those hours between dusk and dawn.

#### C. Traffic Cones

- 1. Traffic cones shall be installed in conformity with the plans and the TMUTCD or as directed by the ENGINEER.

#### D. Tubular Traffic Markers

- 1. The metal, concrete, or bituminous surface where the tubular traffic markers are to be placed shall be thoroughly cleaned.

2. Metal and concrete surfaces shall be sandblasted or wire brushed. Bituminous surfaces shall be cleaned in accordance with manufacturer's recommendations.
  3. All loose sand, dust and other deleterious debris from cleaned mounting surfaces shall be removed.
  4. Tubular traffic markers shall be installed in conformity with details and at locations shown on the plans or as directed by the ENGINEER and in accordance with the manufacturer's recommendation.
  5. In the event that removal of an installation (temporary or permanent) is effected and the metal, concrete, or bituminous surface is damaged the CONTRACTOR shall repair and otherwise restore said surface to its original condition at no additional cost to the City.
  6. All defective post(s), base(s), assembly unit(s), adhesive(s), or reflective sheeting contributing to the detriment of the intended function of the tubular traffic markers shall be replaced by the CONTRACTOR at no additional cost to the City.
- E. Channelization devices shall be installed and of the type in accordance with the details shown on the plans. Barrels shall be as noted herein.

### 3.08 SEQUENTIAL ARROW DISPLAY:

- A. Sequential arrow displays shall be used according to the requirements shown on the plans and as shown in TxDOT MUTCD.

### 3.09 CONSTRUCTION DETOURS:

- A. The detours shall be constructed at the locations and to the lines and grades indicated. It shall be the entire responsibility of the CONTRACTOR to provide for the passage of traffic in comfort and safety without creating a dust problem.

### 3.10 CONSTRUCTION METHODS:

- B. Prior to commencing construction, suitable "Construction Traffic Control" devices shall be installed to protect the workers and the public.
- C. The CONTRACTOR shall be responsible for installing all markers, signs and barricades conforming to The Texas Manual on Uniform Traffic Control Devices and/or as indicated. If, in the opinion of the ENGINEER, additional markers, signs or barricades are needed in the interest of safety, the

CONTRACTOR will install such as are required or as directed by the ENGINEER.

**3.11 MAINTENANCE:**

- A. It shall be the CONTRACTOR'S responsibility to maintain, clean, move and replace if necessary, barricades, signs and traffic handling devices during the time required for construction of the project. Permanent barricades shall be constructed as required after the completion of the streets by drilling holes to place the posts and concrete foundations. Foundation concrete shall be cured before the rails are attached.
- B. When no longer needed, all temporary barricades, signs and traffic handling devices shall be removed and the area restored to its original condition or as directed by the ENGINEER.

**PART 4 - PAYMENT**

**4.02 PAYMENT:**

- A. Traffic control will be considered incidental to the cost of the overall project. There shall be no separate pay for the traffic control.

**END OF SECTION**

## SECTION 09250 — INTERIOR DRYWALL SYSTEMS

### PART 1 - GENERAL

#### 1.1 COORDINATION

- A. The General Conditions of the Contract for Construction and the Supplementary Conditions to the General Conditions of the Contract for Construction shall be considered as part of this section of the specifications.
- B. Each Bidder shall be responsible for determining during the bidding period the extent that any addenda issued during the bidding period may affect this section of the specifications.
- C. Reference Instructions to Bidders for requirements regarding substitutions of materials and products.
- D. Where conflicts occur between the drawings and specifications, between different drawings, between different portions of this section of the specifications, or between different sections of the specifications, the more stringent requirements and the greater quantity shall apply.

#### 1.2 WORK INCLUDED

- A. Provide and install acoustical batt insulation within interior drywall partitions.
- B. Provide and install all interior drywall systems including light gauge metal studs and tracks, gypsum wall board and finishing systems, suspended gypsum board ceilings and soffits, furred gypsum board.
- C. Provide and install troweled firestopping system at drywall ceiling and wall penetrations at rated walls.
- D. Provide and install specified corner guards at each wall corner.

#### 1.3 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Painting
- B. Door frames
- C. Carpentry (wood [blocking](#))
- D. Vinyl wallcovering
- E. Plaster on metal studs
- F. Mechanical, electrical and plumbing penetrations in rated drywall systems.

#### 1.4 SUBMITTALS

- A. Submit manufacturer's product data describing all materials.

- B. Submit gypsum board finish schedule indicating level of finish proposed per each area. Finish levels shall be levels 1 through 4 as specified herein and defined by "Recommended Specification: Levels of Gypsum Board Finish" as jointly published by AWCI, CISA, GA, and PDCA. Submit copy of publication with finish schedule.
- C. Submit manufacturers detail drawings and detailed installation methods for fire rated penetrations and filling of voids with specified firestopping system. Submit only those systems applicable to this project.
- D. Reference Section 01 340 SUBMITTALS for additional submittal requirements.

#### 1.5 WARRANTY

- A. Provide written warranty against defects in materials and workmanship for the work under this section for a period of one year after the date of Substantial Completion of the project.
- B. Warranted defects shall include but not necessarily be limited to cracking, joint tape delamination or tearing, dimpling at fastener heads, bowing or warping of wall board, cracking at metal accessories, acoustical sealant failure.

#### 1.6 DELIVERY, STORAGE AND HANDLING

- A. All materials shall be delivered in manufacturer's original packaging and stored flat in a covered, dry area providing protection from damage and exposure to the elements.
- B. Damaged or deteriorated materials shall be removed from the premises.
- C. During cold weather installation of gypsum panels and joint finishing, temperatures within the building shall be maintained within the range of 50 degrees to 80 degrees F. Adequate ventilation shall be provided to carry off excess moisture.
- D. Steel framing and related accessories shall be stored and handled in accordance with AISI's "Code of Standard Practice"

### PART 2 - PRODUCTS

#### 2.1 MANUFACTURERS

- |  |  |
|--|--|
| A. <u>Drywall Framing:</u><br>CLARKDIETRICH BUILDING SYSTEMS   | D. <u>Acoustical Sealant:</u><br>TREMCO<br>OHIO SEALANTS, INC.     |
| B. <u>Gypsum Board and Related Accessories:</u><br>UNITED STATES GYPSUM CO.<br>NATIONAL GYPSUM CO.<br>GEORGIA PACIFIC<br>TEMPLE INLAND<br>JAMES HARDIE | E. <u>Specialty Trims:</u><br>FRY REGLET CORP.<br>MM SYSTEMS CORP. |
| C. <u>Acoustical Batts:</u><br>OWENS-CORNING<br>CERTAINEED<br>MANVILLE   | F. <u>Corner Guards:</u><br>WALL GUARD                             |

2.2 FRAMING: Comply with ASTM C645-09 for conditions indicated.

1. Steel Sheet Components: Comply with ASTM C645-09 requirements for metal unless otherwise indicated.
  2. Protective coating: Comply with ASTM C645-09; roll formed from hot dipped galvanized steel; complying with ASTM A1003/A1003M and ASTM A653/A653M G40 (Z120) or having a coating that provides equivalent corrosion resistance. A40 galvanized products are not acceptable.
- A. METAL STUDS: 25 gauge galvanized roll formed, screw channel type studs with minimum 5/16 inch flanges and 1-1/4 inch legs. Provide widths of 1-5/8 inch, 2-1/2 inch, 3-5/8 inch, 4 inches and 6 inches as indicated in the drawings. Provide conduit punchouts at 24" o.c.
1. "EQ" (Equivalent Gauge Thickness) Steel Studs and Runners: Members that can show certified third party testing with gypsum board in accordance with ICC ES AC86-2010 (approved February 2010 Effective March 1, 2010) need not meet the minimum thickness limitation or minimum section properties set forth in ASTM C645-09.
  2. Non-structural Studs: Cold-formed galvanized steel C-studs, ClarkDietrich Building Systems Pro STUD drywall studs as per ASTM C645-09 for conditions indicated below:
    - a. Flange Size: 1 1/4 inch (32mm)
    - b. Web Depth: As specified on drawings, 1-5/8 inches (41 mm) 2-1/2 inches (64 mm) 3-5/8 inches (92 mm) 4 inches (102 mm) 6 inches (152 mm).
    - c. Member Description: ProSTUD 25 (25ga equivalent drywall stud) 70ksi Minimum Thickness: 0.0150 inches (0.3810mm) Minimum Design Thickness: 0.0158 inches (0.4013mm)
    - d. Member Description: ProSTUD 22 (22ga equivalent drywall stud) 70ksi Minimum Thickness: 0.0179 inches (0.4547mm) Minimum Design Thickness: 0.0188 inches (0.4775mm)
    - e. Member Description: ProSTUD 20 (20ga equivalent drywall stud) 65ksi Minimum Thickness: 0.0220 inches (0.5588mm) Minimum Design Thickness: 0.0232 inches (0.5893mm)
- B. RUNNER CHANNELS: Provide 25 gauge galvanized channels with minimum 1-1/4 inch flanges with hemmed edges, in widths to accommodate stud sizes.
1. Non structural Track: Cold-Formed galvanized steel runner tracks, ClarkDietrich Building Systems ProTRAK drywall track in conformance with ASTM C645-09 for conditions indicated below:
    - a. Flange Size: 1 1/4 inch (32mm)
    - b. Web Depth: Track web to match stud web size.
    - c. Minimum Material Thickness: Track thickness to match wall stud thickness or as per design.
- C. FURRING CHANNELS: Provide 20 gauge galvanized "hat" channels with face width of 1-1/4 inches, depth of 7/8 inches, and back Width of 2-9/16 inches minimum, hemmed edges.
- D. CEILING SUSPENSION: Provide 16 gauge galvanized channels, 3/4" x 1/2" and 11/2" or 2" x 17/32".



1. Firestop tracks: Top runner manufactured to allow partition heads to expand and contract with movement of the structure while maintaining continuity of fire-resistance rated assembly indicated; in thickness not less than indicated for studs and in width to accommodate depth of studs.
  - a. Basis of Design Product: Subject to compliance with requirements, provide ClarkDietrich Building Systems; MaxTrak or an equivalent product.

## 2.3 ACCESSORIES

- A. CORNER BEADS: 26 gauge galvanized beaded angle with 1-1/4" legs.
- B. EDGE TRIM: 26 gauge galvanized steel "J" mould and angle with continuous bead. ClarkDietrich Building Systems 200.A and 200.B.
  1. Channel Bridging and Bracing: Steel, 0.0538-inch (1.37mm) minimum base metal thickness, with minimum 1/2 inch (13mm) wide flanges.
    - a. Basis of Design Product: Subject to compliance with requirements, provide ClarkDietrich Building Systems; Spazzer 9200 Bridging and Spacing Bar, or an equivalent product.
    - b. Depth: As indicated on drawings, 7/8 inch by 7/8 inch by 50 inches.
  2. Backing Plate: Proprietary fire-resistance treated blocking and bracing in width indicated.
    - a. Basis of Design Product: Subject to compliance with requirements, provide ClarkDietrich Building Systems; Danback Fire-treated wood backing plate or an equivalent product.
- C. WIRE: 9 gauge galvanized hanger wire and 16 gauge galvanized be wire.
- D. SCREWS: Bugel head Type "S" self tapping drywall screws in lengths recommended by wallboard manufacturer. USG "Super-Tite".
- E. CONTROL JOINTS: Roll formed zinc with 1/4" open joint, and perforated flanges. Provide with fireseal backing at rated systems. ClarkDietrich Building Systems No. 093.
- F. JOINT ADHESIVE: Premixed water based compound. USG taping joint compound.
- G. LAMINATING ADHESIVE: Durabond sheetrock setting-type for double-layer application and column fireproofing.
- H. JOINT REINFORCING: Center creased paper tape equal to "Perf-A-Tape".
- I. TROWELED FIRESTOPPING
  1. System Type: A combination of glass fiber or mineral wool insulation packing material with troweled-on application of sealing compound.
  2. Sealing Compound: Red tinted compound job mixed with water providing protection from heat (to temperatures of 1850 degrees F), smoke, toxic gas, fire and water. "Sta-Smooth FS 90 Fire-Shield Compound Fire and Smoke Stop" as manufactured by National Gypsum Co. or approved equivalent by Domtar Gypsum, Inc.
  3. Approvals:
    - a. Rated as noncombustible as defined by NFPA Standard 220 when tested in accordance with ASTM E 136 at Underwriters Laboratories.
    - b. Meet all requirements of ASTM E 814 and UL 1479: Fire tests of through penetration fire stops.

## 2.4 WALLBOARD

- A. TYPICAL: 5/8" thick x 48" wide paper-faced gypsum panels, tapered long edges, lengths as required. U.L. listed and conforming to ASTM C-1396/C1396M-09a Standard Specification for Gypsum Board, Type X. USG fire code.
- B. WATER RESISTANT: 5/8" thick x 48" wide U.L. listed, Type X board with chemically treated face paper and water resistant gypsum core. Comply with ASTM C-1396/C1396M-09a Standard Specification for Gypsum Board.
- C. HIGH IMPACT: 5/8" thick x 48" wide, length as required. U.L. listed, "Fiberock Interior Panel Abuse Resistant" by USG or equal.

## 2.5 TILE BACKER BOARD

- A. 5/8" thick cement board formed of aggregated Portland cement slurry with polymer-coated, glass-fiber mesh. "Durock" as manufactured by United States Gypsum Co or approved equivalent.

# PART 3 - EXECUTION

## 3.1 PARTITION INSTALLATION

- A. STUD SYSTEM ERECTION: Attach metal runners at floor and to structural elements with suitable fasteners spaced maximum 24" o.c. Position studs vertically, engaging floor track and runner at ceiling or structure. Place studs in direct contact with all door frame jambs, abutting partitions, partition corners and existing construction elements.
- B. Anchor all studs adjacent to door and window frames, partition intersections, and corners to ceiling and floor runner flanges. Securely anchor studs to jamb and head anchor clips of door or side-light frames by screw attachment. Over door and side-light frames, install horizontal runner with a web-flange bend at each end, and secure with one positive attachment per flange.
- C. Install diagonal stud bracing above ceiling at strike side of door jambs and at other locations as indicated in the drawings. Secure to structure.
- D. Follow stud manufacturer's recommendations for all framing construction and fastening.

## 3.2 WALL PANEL ERECTION

- A. Apply gypsum panels vertically or horizontally. Position all edges over studs for vertical application; all ends over studs for horizontal application. Use maximum practical lengths to eliminate end joints. Fit ends and edges closely together. Stagger joints on opposite side of partition.
- B. For single-layer vertical application of gypsum panels, space screws 12" o.c. in field of panels and 8" o.c. staggered along vertical abutting edges. For horizontal panel application, space screws 12" o.c. in field and along abutting end joints.
- C. For double-layer screw attachment, space screws 16" o.c. for both layers. Apply both layers of gypsum panels vertically with joints in face layer offset from base layer joints. For 5/8" panels, use 1" screws for base layer and 1-5/8" screws for face layers. For 1/2" panels, use 7/8" screws for base layer and 1-5/16" screws for face layer.

### 3.3 CHASE WALL ERECTION

- A. Align two parallel rows of floor and ceiling runners spaced as indicated in the drawings. Attach to concrete slabs with powder actuated anchors 24" o.c. and to suspended ceiling tees or structure with suitable fasteners 24" o.c.
- B. Position metal studs vertically in runners, 16" o.c., with flanges in the same direction and with studs on opposite sides of chase directly across from each other. Anchor all studs to floor and ceiling runner flanges with U.S.G. Metal Lock Fastener tool.
- C. Cut gypsum panel bracing to be placed between rows of studs, 12" high by chase wall width. Space braces 48" o.c. vertically and attach to stud webs with screw fasteners. 2-1/2" metal studs may be used in lieu of gypsum panels. Anchor web at each end of metal brace to stud web with two 3/8" pan head screws.

### 3.4 CEILING FRAMING

- A. GRILLAGE ERECTION: Space 8 gauge hanger wires 48" o.c. along carrying channels and within 6" of ends of carrying-channel runs. Wrap hanger around and through beams or joists. Install 1-1/2" carrying channels at 24" o.c. Position channels for proper ceiling height, level and secure with hanger wire saddle-bed along channel. Provide 1" clearance between runners and abutting walls and partitions. Secure furring to carrying channels with clips or saddle-tie to support. Overlap splices at least 8" and securely wire-tie each end with double-strand 16 gauge tie wire.
- B. Erect metal furring channels at right angles to 1-1/2" carrying channels or main support members Space furring (16") o.c. and within 6" of walls. Provide 1" clearance between furring ends and abutting walls and partitions. Secure furring to carrying channels with clips or saddle-tie to supports with double strand 16 gauge tie wire. Overlap splices at least 8" and securely wire-tie each end with double-strand 16 gauge tie wire.
- C. At light troffers or any openings that interrupt the carrying or furring channels, install additional cross reinforcing to restore lateral stability of grillage.
- D. At rated ceilings meet all requirements of selected U.L. Design No.
- E. METAL STUD CEILING FRAMING OPTION: Attach runners at ceiling height through gypsum panels to each partition stud with two screws. Insert metal studs in runners and attach each end with one 3/8" pan head screw. Install 1-5/8" stud cross-bracing over stud framing, space 48" o.c. and attach to each framing stud with two 3/8" pan head screws. At hangers, install 12" long stud section for box reinforcing or lap studs 12" and secure each end with two 3/8" pan head screws. At light troffers or any openings that interrupt the ceiling, install additional cross reinforcing to maintain structural integrity of framing.
- F. GYPSUM PANEL ERECTION: Apply gypsum panels of maximum practical length with long dimension at right angles to furring channels. Position end joints over channel web and stagger in adjacent rows. Fit ends and edges closely. Fasten panels to channels with 1", Type S screws, spaced 8" o.c. in field of panels and 8" along ends and edges.

### 3.5 EXTERIOR WALLS: Reference Section 05410.

### 3.6 ACOUSTICAL BATTS

- A. Install unfaced full thickness acoustical fiberglass batts between studs at partitions as scheduled on the drawings. Fit batts tight to studs, tight to floor and head tracks and tight to one another. Batts shall run full height of partition unless indicated otherwise in the drawings.

### 3.7 ACOUSTICAL SEALANT

- A. Install continuous bead of sealant at bottom tracks at drywall partitions.
- B. Install vinyl foam double stick tape and sealant where head track terminates at ceiling.
- C. See drawings for additional locations.

### 3.8 ACCESSORY APPLICATION

- A. JOINT SYSTEM: Finish all face panel joints and corners with U.S.G. Joint System installed according to manufacturer's directions.
  - 1. Mix joint cement in strict accordance with manufacturers directions.
  - 2. Butter cement into joints filling them evenly and fully.
  - 3. Center tape and press down into cement leaving sufficient cement under tape for proper bond. Cover with thin coat of cement to fill recess between tape and board to bring material flush with surface.
  - 4. Face panels shall be cut fit around all wall outlets and switch boxes, utility lines, etc. All voids and cracks, occurring around all openings in board shall be taped and covered with joint cement.
- B. LAMINATING ADHESIVE: Spread to provide 1/2" adhesive beads 4-1/2" o.c. for full sheet lamination. For strip lamination, apply adhesive in vertical strips of four 1/2" beads, 1-1/2" to 2" o.c. Space strips 24" o.c.
- C. CORNER BEAD: Reinforce all vertical and horizontal exterior corners with corner bead fastened with 9/16" rosin-coated staples 9" o.c. on both flanges along entire length of bead.
- D. METAL TRIM: At exposed edges of board or where board terminates against other materials, apply metal trim over panel edge and fasten with screws.
- E. SCREWS: Power-drive at least 3/8" from edges or ends of panel to provide uniform dimple of 1/32" deep.
- F. CONTROL JOINTS: Cut panel at joint and back with double framing members. Attach control joint to face layer with 9/16" rosin-coated staples spaced 6" o.c. on both flanges along entire length of joint. At rated walls, provide fireseal behind joint. Provide joints at 30' maximum or as otherwise indicated in the drawings.

### 3.9 TROWELED FIRESTOPPING:

- A. General: Install systems in complete accordance with manufacturers printed instructions and approved submittal for the required fire rating of the particular condition. Install firestopping systems at all penetrations and voids in all rated drywall ceilings and walls.
- B. Through-penetrations. Ensure that pipe, conduit, duct, cables or other penetration element is rigidly supported by drywall framing on both sides of wall or ceiling assembly. Oversize opening in wall board to allow for required opening size and thickness of packing material in accordance with system and rating requirements. Install packing material in accordance with system requirements and compressed to allow

for required thickness of sealing material. Trowel red-tint sealing material into void (same thickness as gypsum board) and smooth flush with both faces of drywall. Provide additional layer(s) of gypsum board around penetration where necessary to achieve required minimum thickness of sealing material.

- C. Void-filling: For voids such as intersection of walls and smooth or corrugated deck, pack void with compressed packing material and trowel red-tint sealing material into void (same thickness as gypsum board) and smooth flush with both faces of drywall. Provide additional layer(s) of gypsum board around penetration where necessary to achieve required minimum thickness of sealing material.

3.10 WOOD BLOCKING: Coordinate with project carpenter to ensure installation of fire retardant wood blocking between studs for mounting casework, millwork, toilet partitions, drinking fountains and other equipment.

3.11 FINISHING SCHEDULE: Follow published "Recommended Specification: Levels of Gypsum Board Finish" as follows:

- A. LEVEL 1 FINISH: At concealed areas above ceiling.
- B. LEVEL 2 FINISH: At gypsum backing board to be covered with file or panels thicker than 1/4".
- C. LEVEL 3 FINISH: At mechanical rooms, storage rooms, custodial and maintenance rooms, electrical and telephone closets.
- D. LEVEL 4 FINISH: All other drywall areas scheduled for paint, fabric or vinyl wall covering.

END SECTION - 09250

## SECTION 09512 - ACOUSTICAL TILE CEILINGS

### PART 1 - GENERAL

#### 1.1 COORDINATION

- A. The General Conditions of the Contract for Construction and the Supplementary Conditions to the General Conditions of the Contract for Construction shall be considered as part of this section of the specifications.
- B. Each Bidder shall be responsible for determining during the bidding period the extent that any addenda issued during the bidding period may affect this section of the specifications.
- C. Reference Instructions to Bidders for requirements regarding substitutions of materials and products.
- D. Where conflicts occur between the drawings and specifications, between different drawings, between different portions of this section of the specifications, or between different sections of the specifications, the more stringent requirements and the greater quantity shall apply.

#### 1.2 WORK INCLUDED

- A. Provide and install all lay-in acoustical ceiling panels and suspended grid system in accordance with the drawings and as specified herein.
- B. Provide and install light fixture protection at all rated ceilings.
- C. Provide and install hold-down clips where required for rated system.

#### 1.3 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Steel joists (spacing)
- B. Mechanical (air devices)
- C. Electrical (lighting fixtures)

#### 1.4 DRAWING REFERENCES

- A. See drawings, finish schedule and Section 2.2 for ceiling types and ratings.

#### 1.5 SUBMITTALS

- A. Submit manufacturer's product data describing all materials, finishes, ratings and installation requirements.
- B. Submit physical samples for each type of acoustical tile proposed.
- C. Submit physical samples for each type of grid proposed.
- D. Submit tile manufacturer's certification for whether hold-down clips are required for the selected tile(s) and rated system(s).
- E. Reference Section 01340 SUBMITTALS for additional submittal requirements.

1.6 WARRANTY

- A. Provide written warranty against defects in materials and workmanship for the work under this section for a period of one year after the date of Substantial Completion of the project.
- B. Warranted defects shall include but not necessarily be limited to rusting or deflection of grid, deterioration or deflection of acoustical tiles.

1.7 QUALITY ASSURANCE

- A. Suspended acoustical ceiling contractor shall have a minimum of 3 years experience in the installation of specified systems for projects of similar size and scope of this project.
- B. Installation of acoustical tile and panels shall not begin until residual moisture from plaster, drywall, concrete or terrazzo work is dissipated. Before installation, the building shall be enclosed and permanent heating and cooling equipment in operation.

1.8 DELIVERY AND STORAGE OF MATERIALS

- A. Do not deliver materials to jobsite until spaces are ready for ceiling installation.
- B. All materials shall be delivered in manufacturer's original packaging and stored in an enclosed shelter providing protection from damage and exposure to the elements.
- C. Damaged, rusted or deteriorated materials shall be removed from the premises.

PART TWO – PRODUCTS

2.1 MANUFACTURERS

- A. TYPICAL CEILING PANELS:
  - 1. Armstrong World Industries, Inc.
  - 2. USG Interiors, Inc.
- B. SPECIALTY CEILING PANELS
  - 1. Acoustical Resources, Inc.
  - 2. Wenger
  - 3. U.S.G.
- C. GRID SYSTEMS:
  - 1. Armstrong World Industries, Inc.
  - 2. USG Interiors, Inc.
  - 3. Chicago Metallic Corp.

2.2 MATERIALS:

- A. TYPICAL CEILING PANELS:
  - 1. 24" x 24" x 5/8" white **“Cortega Square Lay-in” No. 770**, square-edged as manufactured by Armstrong or equivalent (color, pattern, texture) by specified manufacturer. **Non-rated system.**

2. 24" x 24" x 5/8" white "**Cortega Square Lay-In" No. 824** square-edged as manufactured by Armstrong or equivalent (color, pattern, texture) by specified manufacturer. **Fire-rated system at following locations: Rm. #A106, Rm. #A108, Rm. #A128, Rm. #B125, Rm. #C102, Rm. #E101, Rm. #E102, Rm. #E112, RM. E119, Rm. F119, Rm. G110 and Rm. #G112.**

B. SUSPENSION SYSTEM:

1. Components shall be formed from commercial quality cold-rolled steel, electro-galvanized, 2'x2' module.
2. The suspension system shall support the ceiling assembly with a maximum deflection of 1/360 of the span per A.S.T.M. C-635-69.
3. Main tee with double web design 1-1/2" high and rectangular bulb; 15/16" exposed flange with rolled cap; cross tee holes at 6" o.c.
4. Four foot cross tee 1-1/2" high with double web design. Rectangular bulb joining main runners at 2' on center.
5. Two foot cross tees perpendicular to 4' cross tees. Two foot cross tees minimum of 1-1/2" high, No. CMC 222-41 or equivalent by specified manufacturer.
6. Wall molding - hemmed edge, electro-galvanized cold rolled steel with equal leg width, finish to match grid.
7. Finish: Typical finish, factory white painted steel. At high humidity areas including kitchens, dressing rooms, toilet rooms provide factory white painted aluminum cap.
8. Rating: Provide U.L. listed grid for scheduled system rating.

PART THREE – EXECUTION

3.1 COORDINATION

- A. Verify that above ceiling work, including fire dampers, ductwork, piping, wiring and insulation is complete and approved prior to beginning ceiling work.

3.2 INSTALLATION

- A. Ceiling systems shall be suspended from structural members by 12 gauge annealed wire; spacing as recommended by manufacturer. Provide additional support for light fixtures and grilles at each corner. Provide secondary support framing ("Unistrut") where spacing of structural members exceeds suspension system manufacturer's recommendations.
- B. Acoustical lay-in panels shall be installed in strict accordance with the manufacturer's instructions. Tile shall be installed with fissures or pattern all in same direction.
- C. Provide additional hangers at ceiling suspended items including projection screens, speakers, exit lights, air supply and return grilles.
- D. Space main runner hangers a maximum of 6 inches from wall. Do not support systems from wall.



- E. Adjust hangers to ensure level ceiling in plane.

### 3.3 RATED CEILINGS

- A. Provide specified ceilings in fire rated assembly. Protect light fixture protection in accordance with approved U.L. Design to meet required assembly rating. Provide additional hangers to meet the requirements of the particular U.L. rating.
- B. Ceiling system manufacturers not listed in the required U.L. design number (reference drawings) shall be responsible for determining whether their rated system is acceptable to the particular local code authority.
- C. For ceiling tiles weighing 1 lb. per square foot or more, verify no requirement for hold-down clips at rated systems.

### 3.4 CLEANING AND REPLACEMENT

- A. At completion, replace file unit and grid systems that are damaged. Clean or replace tile and grid systems that cannot be cleaned. Deliver extra 5% of each type of ceiling tile to the Owner.

END OF SECTION 09512

## SECTION 09650 – RESILIENT FLOORING AND BASE

### PART 1 - GENERAL

#### 1.1 COORDINATION

- A. The General Conditions of the Contract for Construction and the Supplementary Conditions to the General Conditions of the Contract for Construction shall be considered as part of this section of the specifications.
- B. Each Bidder shall be responsible for determining during the bidding period the extent that any addenda issued during the bidding period may affect this section of the specifications.
- C. Reference Instructions to Bidders for requirements regarding substitutions of materials and products.
- D. Where conflicts occur between the drawings and specifications, between different drawings, between different portions of this section of the specifications, or between different sections of the specifications, the more stringent requirements and the greater quantity shall apply.

#### 1.2 WORK INCLUDED

- A. Provide and install all vinyl tile flooring as indicated in the drawings and specified herein.
- B. Provide and install all resilient base as scheduled throughout the project, regardless of floor finish.
- C. Provide and install all resilient transition strips at resilient flooring, steps, stairs and change of flooring materials.
- D. Install tapered resilient transition edge strip at any place where resilient floor is installed on concrete steps/stairs and terminates with risers.
- E. Provide five (5) coats of wax on all new resilient flooring.

#### 1.3 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Cast in place concrete.
- B. Millwork.

#### 1.4 SUBMITTALS

- A. Submit manufacturer's product data describing all materials.
- B. Submit physical samples of all resilient materials to the Architect for approval. Color(s) to be selected by the Architect.
- C. Submit manufacturer's recommendations for finishing and maintenance of resilient flooring materials.
- D. Reference Section 01340 SUBMITTALS for additional submittal requirements.

## 1.5 WARRANTY

- A. Provide written warranty against defects in materials and workmanship for the work under this section for a period of one year after the date of Substantial Completion of the project.
- B. Warranted defects shall include but not necessarily be limited to loss of adhesion, excessive surface wear, color change, curling or other deterioration.

## 1.6 DELIVERY, STORAGE AND HANDLING

- A. Do not deliver flooring materials to the jobsite until spaces are ready for installation of resilient flooring.
- B. Open material packages and acclimate flooring materials within the installation spaces for a minimum of 3 days prior to installation.

## 2 PART TWO – PRODUCTS

### 2.1 MANUFACTURERS

- A. VINYL TILE:
  - 1. Armstrong World Industries
  - 2. Azrock Industries, Inc.
  - 3. Johnsonite
  - 4. Tarkett
- B. RESILIENT BASE:
  - 1. Roppe
  - 2. Burke Flooring Products
  - 3. Mercer Products Co., Inc.

### 2.2 MATERIALS

- A. VINYL TILE: 12" x 12" x 1/8" Standard Excelon "Imperial Texture" vinyl composition tile, as manufactured by Armstrong World Industries, or equivalent in color and design by specified manufacturer.
- B. RESILIENT BASE: 4" high x 1/8" thick x 4' lengths, rubber cove base as manufactured by Roppe or equivalent by specified manufacturer. Color(s) to be selected by the Architect. Provide manufacturer's pre-molded outside corners.
- C. TRANSITION STRIPS: Vinyl transition strips as manufactured by Roppe or equivalent by specified manufacturer. Color(s) to be selected by the Architect.

### 3 PART THREE – EXECUTION

#### 3.1 PREPARATION

- A. Inspect the completed floor slab for defects which may adversely affect the finished resilient tile work. Commencing resilient flooring operations indicates acceptance of the sub-floor.
- B. Subfloor depressions shall be brought to level with latex underlayment. Raised areas shall ground and smoothed prior to resilient flooring installation.
- C. Thoroughly clean subfloor of all wax, oil, dusting, dirt or other deleterious material.

#### 3.2 INSTALLATION

##### A. VINYL COMPOSITION TILE

- 1. Tile shall be installed in strict accordance with the manufacturer's recommendations using adhesive approved by tile manufacturer.
- 2. Unless otherwise indicated in the drawings, lay flooring with joints and seams aligned with building walls. Start laying tiles from the center of the room out for equal sized tiles at the perimeters. Avoid tiles of less than ½ size.
- 3. Spread adhesive using notched trowel. Apply only enough adhesive at one time to allow placing of tile prior to initial setting of adhesive.
- 4. Use heavy roller to smooth tile and ensure complete adhesion.
- 5. Install tapered resilient edge strip at any place where resilient floor meets concrete, carpet or other finish flooring material. Typically material changes should be made at the centerlines of doors. Color(s) as selected by the Architect.
- 6. Install tapered resilient transition edge strip at any place where resilient/wood flooring is installed on concrete steps/stairs and terminates with risers. Ensure a tight fit so resilient floor will not crack or be damaged by foot traffic. Color(s) and size as selected by the Architect.
- 7. Install tapered resilient transition edge strip at any place where there is a change of height and/or flooring materials.
- 8. A feature strip shall be used to divide any two areas where it is not possible to maintain alignment from one area to the adjoining area. Coordinate with Architect.
- 9. Scribe flooring to walls, columns, cabinets, floor outlets and other interruptions to ensure tight fitted joints.

##### B. RESILIENT BASE:

- 1. Install base using manufacturer's recommended adhesive applied with notched trowel. Install with contact cement within 6" of a job-formed outside corner.
- 2. Miter inside corners. Use factory-formed outside corners unless job-formed corners are specifically approved by the Architect.
- 3. Butt joints tight and scribe base to door frames, columns and other interruptions.

##### C. TRANSITION STRIP:

- 1. Subfloor must be smooth, sound, dry, clean, and free of dirt, wax, polish, paint, and all other foreign matter which may interfere in a good bond, including curing agents and sealers.

2. Carefully follow warnings on container of the Solvent-Based Contact Adhesive. Follow adhesive manufacturer's recommendations for the installation of TRANSITION STRIPS.
3. Roll TRANSITION STRIP with a hand roller.

D. EXISTING GYMNASIUM:

1. Install the basketball stripping by utilizing vinyl composition tiles as shown on drawings. Colors to be selected by Architect.

3.3 CLEANING AND ADJUSTING

- A. After installation all resilient flooring shall be cleaned and contractor shall provide **five (5)** coats of wax on all new resilient flooring.
- B. Replace any damaged tile or tile that shows inconsistent shades of color/pattern. Remove glue stains or other marks.
- C. Deliver to the Owner an extra 5% of each type of resilient tile used and an extra 5% of resilient rubber base for each accent color and pattern.

END OF SECTION 09650

## SECTION 09800 - ELASTOMERIC COATING

### PART 1 – GENERAL

#### 1.0 Coordination

- A. The General Conditions of the Contract for Construction and the Supplementary Conditions to the General Conditions of the Contract for Construction shall be considered as part of this section of the specifications.
- B. Each Bidder shall be responsible for determining during the bidding period the extent that any addenda issued during the bidding period may affect this section of the specifications.
- C. Reference Instructions to Bidders for requirements regarding substitutions of materials and products.
- D. Where conflicts occur between the drawings and specifications, between different drawings, between different portions of this section of the specifications, or between different sections of the specifications, the more stringent requirements and the greater quantity shall apply.

#### 1.1 Description

- A. Provide internally plasticized, elastomeric high-build waterproof emulsion coating with terpolymer acrylic resins coating for vertical applications for sealing exterior exposed masonry, stone, stucco, tile and concrete walls.

#### 1.2 Submittals

- A. Submit for approval samples, product data.

#### 1.3 Quality Assurance

- A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for five years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

### PART 2 - PRODUCTS

#### 2.1 Materials

- A. Elastomeric Coating: Concretite Color: White
- B. Sealant: One-part Urethane sealant, Tuff-Stuff.

### PART 3 - EXECUTION

#### 3.1 Installation

- A. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Install materials with uniform appearance.
- B. Coordinate with work of other sections.

B. Surface Preparation:

1. Masonry: Masonry, concrete and stucco surfaces should be clean and free of oil and grease. Remove loose particles, laitance, efflorescence, and other foreign materials by wire brushing, power washing, or other effective means. Surface with heavy chalk face should be power-washed or sand blasted. Repair all cracks, openings, and imperfections with one-part urethane sealant.
2. Concrete Block: Concrete block should be clean and dry. Mortar joints should be free of voids and cracks. Fill all block with a quality exterior block filler.
3. Previously Coated Surfaces: All surface contamination- such as oil, grease, loose paint, mill scale, dirt, foreign matter, rust, mold, mildew, loose mortar and efflorescence- must be removed to assure sound bonding to the tightly adhering old paint.

C. Application:

Roller Application: Spread Rate: 1-1/2 gallons/100 sq. ft.

3.2 CLEANING

- A. As work proceeds and upon completion of areas, remove coating where spilled, splashed or spattered.
- B. During progress of work keep premises free from accumulation of tools, equipment, surplus materials.
- C. Upon completion of work, leave premises neat and clean, to the satisfaction of the Owner.

END OF SECTION

## SECTION 09910 – PAINTING AND FINISHING

### PART 1 - GENERAL

#### 1.1 COORDINATION

- A. The General Conditions of the Contract for Construction and the Supplementary Conditions to the General Conditions of the Contract for Construction shall be considered as part of this section of the specifications.
- B. Each Bidder shall be responsible for determining during the bidding period the extent that any addenda issued during the bidding period may affect this section of the specifications.
- C. Reference Instructions to Bidders for requirements regarding substitutions of materials and products.
- D. Where conflicts occur between the drawings and specifications, between different drawings, between different portions of this section of the specifications, or between different sections of the specifications, the more stringent requirements and the greater quantity shall apply.

#### 1.2 WORK INCLUDED

- A. Provide all labor, materials, and equipment required for all painting, staining and finishing as indicated in the drawings, the approved submittals, and as specified herein. Painted or stained systems include but are not necessarily limited to the items listed below:
- B. EXTERIOR SYSTEMS:
  - 1. All visible wood unless noted otherwise.
  - 2. All ferrous metal. All galvanized metal unless noted otherwise. Touch-up on welds or damaged finishes.
  - 3. Exposed conduit, piping, etc., except for roof mounted piping not visible.
  - 4. Exposed roof mounted equipment visible from ground level or from upper floors of the building.
  - 5. All exposed concrete masonry units.
  - 6. All items normally painted in accordance with good construction practice.
- C. INTERIOR SYSTEMS:
  - 1. All visible wood or behind cabinet doors unless noted otherwise.
  - 2. All ferrous metal. All galvanized metal unless noted otherwise. Touch-up on welds or damaged finishes. Structural steel, steel joists and deck exposed to view except in mechanical rooms.
  - 3. Exposed conduit, piping, outlet boxes, raceways, and panel boxes except galvanized or aluminum piping located in mechanical or electrical rooms.
  - 4. All exposed concrete masonry units, gypsum board and plaster unless otherwise noted.
  - 5. All factory-primed hardware. Back-priming of all wood trim, millwork or finished carpentry prior to installation.
  - 6. All hollow metal doors and frames.
  - 7. All items normally painted in accordance with good construction practice.
  - 8. All unfinished louvers and grilles.

#### 1.3 WORK TYPICALLY EXCLUDED



- A. Shop applied primer on structural steel and miscellaneous metals items.
- B. Aluminum frames, doors, and windows.
- C. Plastic clad casework, millwork, and wall panels.
- D. Factory finished equipment unless noted otherwise (provide job touch-up).

1.4 DRAWING REFERENCE: Reference any paint or finish notes in the drawings for any pre-selected colors or other requirements.

#### 1.5 SUBMITTALS

- A. Submit manufacturer's product data describing each proposed type of paint, sealer, stain, or coating and its recommended use. Include viscosity and percent solids information. Where not the specified base manufacturer, list the specified brand name and type and the proposed substitute. The Architect shall be the sole judge as to equivalency of systems.
- B. Reference Section 01340 SUBMITTALS for additional submittal requirements.

#### 1.6 WARRANTY

- A. Provide written warranty against defects in materials and workmanship for the work under this section for a period of two years after the date of Substantial Completion of the project.
- B. Warranted defects shall include but not necessarily be limited to peeling, crazing, cracking, blistering, mildewing, chalking or dusting, pin holes, color fade or loss of hardness or sheen.

#### 1.7 QUALITY ASSURANCE

- A. Painting contractor shall have a minimum of 5 years experience in the application of the specified systems for projects of similar size and scope as this project.
- B. If requested by the Architect, provide system manufacturer's certification of the proposed painting contractor as approved for application of the product.

#### 1.8 DELIVERY, STORAGE AND HANDLING

- A. Do not deliver painting materials to the jobsite until spaces and surfaces are ready for painting.
- B. Deliver materials in manufacturer's original containers, unopened except for shop mixing of colors. Containers shall bear manufacturer's readable labels indicating brand and type of paint. Any additional containers with labels indicating products not approved shall be removed from the jobsite. Any applied material not previously approved by the Architect is subject to removal and reapplication with the appropriate approved product.
- C. Store materials in environmentally controlled area. Interior products shall be acclimated to a temperature range of 50-80 degrees F. at least 24 hours prior to application.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. **TYPICAL PAINTS:** Systems are based on the first listed manufacturer. Only equivalent systems provided by specified manufacturers in accordance with attached Product Comparison sheet and as approved by the Architect are approved for use.

1. Sherwin Williams, Inc.
2. Pittsburgh Paints
3. Pratt & Lambert
4. Benjamin Moore Co.

- B. **SPECIALTY PAINTS:**

1. Epoxies: Sherwin Williams, PPG, Pratt & Lambert.

### 2.2 INTERIOR SYSTEMS

- A. **SYSTEM TYPES FOR NEW WALLS** (Unless indicated otherwise on Finish Schedule or drawings):

1. Drywall in toilet rooms, storage rooms, and mechanical/electrical/toilet rooms/ classrooms: **Semi Gloss Enamel** at walls and ceilings.
2. Drywall soffits: **Eggshell Enamel**.
3. Typical masonry (CMU): **Gloss Enamel**.
4. Masonry (CMU) in toilet rooms: **Gloss Epoxy**.
5. Steel railings: **Gloss Aliphatic Urethane**.
6. Suspended rigging over stage: **Dry Fog**.

- B. **SYSTEM DESCRIPTIONS** (Reference item 3.3 for modifications and preparation required for these systems when applied to existing walls already painted):

1. Primer on gypsum board: SW PrepRite High Build Primer B28W601 – one coat over light to medium texture (submit texture sample for approval)
2. Eggshell Enamel on Drywall: SW Pro Mar 400 Latex Eg-Shel B20W4400 – one coat over specified primer.
3. Semi-Gloss Enamel on Drywall: SW Pro Mar 400 Latex Semi Gloss B31W4400 - one coat over specified primer.
4. Epoxy Paint on Drywall: One coat SW PrepRite 200 Latex Primer B28W200 over specified primer.
5. Gloss Enamel on Drywall: Two coats SW Water Based Catalyzed Epoxy B70 Series gloss acrylic over specified primer.
6. Semi-Gloss Enamel on shop-primed metals: SW Water Based Industrial Enamel B53-300 acrylic gloss Enamel – two coats.
7. Natural Finish on Wood: SW Sherwood BAC Wiping Stain (one coat) + SW Wood Classics Sanding Sealer B26V3 (one coat) + SW Wood Classics Satin Varnish A66.
8. Clear Finish on Wood: SW Wood Classics Polyurethane Varnish A67 (two coats). Sand lightly between all coats.
9. Block Filler: SW Prep Rite Block Filler B25W25 (for areas not subject to moisture); SW Heavy Duty Block Filler (for areas subject to moisture). Provide 2 coats as specified under “Execution”.
10. Gloss Enamel on CMU or concrete: Two coats block filler plus two coats SW Water based Industrial Enamel gloss acrylic latex over specified primer.

11. Semi-Gloss Enamel on CMU or concrete: Two coats block filler plus two coats SW Water Based Industrial Enamel semi-gloss acrylic latex over specified primer.
12. Semi-Gloss Epoxy Paint on concrete: One coat SW Water Based Epoxy semi-gloss over cured concrete plus finish coat of SW Water Based Epoxy semi-gloss. Minimum paint thickness 3.0 dry mils.
13. Gloss Epoxy Paint on CMU: Two coats block filler (unless surface-bonded) plus finish coat of gloss. Minimum paint thickness 3.0 dry mils.
14. Gloss Epoxy Paint on concrete: One coat SW Water Based Epoxy gloss over cured concrete plus finish coat of SW Water Based Epoxy gloss. Minimum paint thickness 3.0 dry mils.
15. Semi-Gloss Enamel on utility piping and galvanized metals: SW Pro-Cryl Universal Metal Primer – one coat + SW DTM Acrylic Semi Gloss – two coats.
16. Semi-Gloss Epoxy Paint on CMU: Two coats block filler plus finish coat of SW Water Based Epoxy semi-gloss. Minimum paint thickness 3.0 dry mils.
17. Gloss Aliphatic Urethane Enamel on primed steel railings: Over epoxy shop primer apply two coats SW Hydrogloss Single Component Water Based Urethane B65-181 Urethane Gloss Enamel using airless spray equipment.
18. Dry Fall Acrylic (exposed deck, structure and rigging): One coat SW Super Save Lite Acrylic Dry Fall Eggshell Primer & Finish. Black color. Overspray dries to non-adhering dust in a ten foot fall.

## 2.3 EXTERIOR SYSTEMS

### A. SYSTEM TYPES:

1. Exterior Metals: **Gloss Enamel.**
2. Field welds: **Zinc-Rich Coating.**

### B. SYSTEM DESCRIPTION:

1. Gloss Enamel on Galvanized Metals: SW Pro-Cryl Universal Metal Primer B66W310 (one coat) + SW Sher-Cryl HPA B66-300 enamel – two coats.
2. Block Filler on CMU: SW Heavy Duty Block Filler B24W46, one coat.
3. Gloss Enamel on Shop-Primed Metals: SW Sher-Cryl HPA B66-300 gloss enamel-two coats.
4. Gloss Enamel on Aluminum: SW Pro-Cryl Universal Metal Primer B66W310 – (one coat) + SW Sher-Cryl HPA B66-300 gloss enamel – two coats.
5. Field Welds: “ZRC” cold-applied galvanizing.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. METALS: Remove grease, oil, and dirt. Touch-up any damaged primer with like material. Remove any welding tags and grind smooth before painting. Fill any open galvanizing ports.
- B. PLASTER, CMU, CONCRETE: Remove dusting and mortar residue. Remove any efflorescence and seal. Ensure that plaster, concrete and mortar joints are dry and fully cured.

### 3.2 APPLICATION

- A. GENERAL: All paint and finishes be brushed or sprayed in even, uniform coats without runs or sags. Allow each coat to dry completely before applying succeeding coats. All surfaces shall be dry and no painting shall be done in damp conditions or when the ambient temperature is below 50 degrees F.

- B. WOOD DOORS: Factory sealed tops, bottoms, and edges of plastic laminate surfaced doors left undisturbed require no additional finishing. Reseal any job cuts. Paint metal glazing stops.
- C. MECHANICAL/ELECTRICAL EQUIPMENT: Painting contractor shall examine the mechanical and electrical drawings to determine quantities and locations of exposed piping, louvers not shown in Architectural drawings, electrical and telephone panels in finished areas, exposed electrical conduit in finished areas.
- D. BLOCK FILLER AT CMU: Apply **first coat** of filler to ensure penetration into voids and work into block texture with bristle brush. Follow with a **minimum of one additional coat**. Provide uniform finish with no pinholes.
- E. DRYWALL: Paint finish, sheen and texture shall be uniform and match the samples submitted to and approved by the Architect.

### 3.3 PREPARATION OF EXISTING PAINTED SURFACES

Maintenance painting will frequently not permit or require complete removal of all old coatings prior to repainting. However, all surface contamination such as oil, grease. Loose paint, mill scale dirt, foreign matter, rust, mold, mildew, mortar, efflorescence, and sealers must be removed to assure sound bonding to the tightly adhering old paint. Glossy surfaces of old paint films must be clean and dull before repainting. Thoroughly washing with an abrasive cleanser will clean and dull in one operation, or, wash thoroughly and dull by sanding. Spot prime any bare areas with an appropriate primer. Recognize that any surface preparation short of total removal of the old coating may compromise the service length of the system. Check for compatibility by applying a test patch of the recommended coating system, covering at least 2 to 3 square feet. Allow to dry one week before testing adhesion per ASTM D3359. If the coating system is incompatible, complete removal is required.

## PART 4 – SCHEDULES

### 4.1 COLOR SELECTIONS

- A. SCHEDULE: Unless colors are pre-selected in the Bidding Documents, the Architect shall prepare color schedule for the project using colors selected from the approved paint manufacturer(s). Where colors are pre-selected, the painting contractor shall use the colors selected or submit a schedule of proposed exact color matches by one of the specified paint manufacturers. **Provide 12" x 12" samples of actual paint for each color** whether pre-selected color or proposed color match.
- B. DOCUMENTATION: Upon completion of the Project, painting contractor shall furnish to the Architect a complete schedule of paint brands, types, and colors actually used for each room and area.

### 4.2 EXTRA MATERIALS

- A. Upon completion of the Project, painting contractor shall furnish to the Owner an extra 5% of each different type of paint used in the Project.

END OF SECTION - 09910

## SECTION 10200 — METAL LOUVERS

### PART 1 - GENERAL

#### 1.1 COORDINATION

- A. The General Conditions of the Contract for Construction and the Supplementary Conditions to the General Conditions of the Contract for Construction shall be considered as part of this section of the specifications.
- B. Each Bidder shall be responsible for determining during the bidding period the extent that any addenda issued during the bidding period may affect this section of the specifications.
- C. Reference Instructions to Bidders for requirements regarding substitutions of materials and products.
- D. Where conflicts occur between the drawings and specifications, between different drawings, between different portions of this section of the specifications, or between different sections of the specifications, the more stringent requirements and the greater quantity shall apply.

#### 1.2 WORK INCLUDED

- A. Provide and install all prefinished metal louvers as indicated in the drawings, the approved shop drawings, and as specified herein.
- B. Provide and install matching one-piece aluminum sill pan under louver sill to ensure the removal of water away from the interior of the building.

#### 1.3 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Metal Building
- B. Sealants

#### 1.4 WARRANTY

- A. Provide written warranty against defects in materials and workmanship for the work under this section for a period of one year after the date of Substantial Completion of the project.
- B. Warranted defects shall include but not necessarily be limited to water leakage; failure of welds or fasteners; corrosion; crazing, fading, or other finish failure.
- C. Submit manufacturer's written 20 years warranty against failure of finish.

#### 1.5 SUBMITTALS

- A. Submit manufacturer's product literature describing materials, finishes and sq. ft., and percent of free area.

- B. Submit detailed shop drawings indicating louver and frame profile, installation and attachment requirements.
- C. Reference Section 01340 SUBMITTALS for addition submittal requirements.

## 1.6 QUALITY ASSURANCE

- A. Louver installer shall have a minimum of 3 years experience in the installation of louvers for projects of similar size and scope of this project.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Airline Products
- B. American Warming & Ventilation
- C. Ruskin Architectural Products
- D. Construction Specialties, Inc.
- E. National Controlled Air (NCA-Empco).

### 2.2 MATERIALS

#### A. GENERAL:

- 1. Sizes: As indicated in the drawings. Louver size shown is based on 50% free area. Louvers with less than 50% free area shall be provided in increased size as required to provide free area equal to 50% of drawn size.
- 2. Splice Bars: Not visible to exterior.
- 3. Vertical Dividers: "1" Type mullion for blade lengths over 5'-6".
- 4. Sill Pan: Provide one-piece formed continuous sill plate to carry water to exterior wall face. Match finish and color of louver.
- 5. Certification: Louvers shall bear the AMCA Certified Ratings Seal for air performance and water penetration.

#### B. EXTRUDED ALUMINUM:

- 1. Type: Fixed, stormproof, drainable blades.
- 2. Depth: 4" for up to any 4' dimension. 6" deep for any dimension greater than 4'.
- 3. Model: XWD4-HP as per Airline Products or equivalent by specified manufacturer.
- 4. Material: Minimum .081" (12 gauge) extruded 6063-T52 aluminum alloy.
- 5. Accessories: 1/2" x 1/2" aluminum wire mesh in removable extruded aluminum frame mounted on interior side.
- 6. Finish: Factory finish Kynar 500 in color(s) as selected by the Architect.

## PART 3 - EXECUTION

### 3.1 INSPECTION

- A. Inspect openings constructed by other trades to ensure completion and readiness for louver installation.

- B. Take careful job measurements of rough openings to ensure proper fit and consistent perimeter sealant gap.

### 3.2 INSTALLATION

- A. Install louvers in accordance with manufacturer's printed instructions, the project drawings, and approved shop drawings.
- B. Install louvers straight and plumb. Leave 1/4" gap around perimeter for sealant application. Sealant provided and installed under another section of these specifications.
- C. Where fans or fan housings have direct connection to back of louvers, coordinate size and frame design fan and housing requirements.

END OF SECTION

## SECTION 10523 - FIRE EXTINGUISHERS AND CABINETS

### PART 1 GENERAL

#### 1.0 COORDINATION

- A. The General Conditions of the Contract for Construction and the Supplementary Conditions to the General Conditions of the Contract for Construction shall be considered as part of this section of the specifications.
- B. Each Bidder shall be responsible for determining during the bidding period the extent that any addenda issued during the bidding period may affect this section of the specifications.
- C. Reference Instructions to Bidders for requirements regarding substitutions of materials and products.
- D. Where conflicts occur between the drawings and specifications, between different drawings, between different portions of this section of the specifications, or between different sections of the specifications, the more stringent requirements and the greater quantity shall apply.

#### 1.01 SECTION INCLUDES

- A. Fire extinguishers.
- B. Fire extinguisher cabinets.
- C. Accessories.

#### 1.02 RELATED SECTIONS

- A. Section 04220 – Concrete Masonry Units; CMU walls to receive bracket mounted fire extinguisher.
- B. Section 06100 – Rough Carpentry: Wood blocking and framing to receive semi-recessed fire extinguisher cabinets.
- C. Section 09260 – Gypsum Drywall Assemblies: Finished openings in walls for semi-recessed fire extinguisher cabinets.

#### 1.03 REFERENCES

- A. NFPA 10 – Standard for Portable Fire Extinguishers; National Fire Protection Association; 2002.
- B. UL (FPED) – Fire Protection Equipment Directory; Underwriters Laboratories Inc.; current edition.

#### 1.04 PERFORMANCE REQUIREMENTS

- A. Conform to NFPA 10.
- B. Provide extinguishers classified and labeled by Underwriters Laboratories Inc. for the purpose specified and indicated.



## 1.05 SUBMITTALS

- A. See Section 01300 – Submittals, procedures and requirements for shop drawings, product data and submittal requirements.
- B. Shop Drawings: Indicate cabinet physical dimensions.
- C. Product Data: Provide extinguisher operational features.
- D. Manufacturer's Installation Instructions: Indicate special criteria and wall opening coordination requirements.
- E. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- F. Maintenance Data: Include test, refill or recharge schedules and re-certification requirements.

## 1.06 ENVIRONMENTAL REQUIREMENTS

- A. Do not install extinguishers when ambient temperature may cause freezing of extinguisher ingredients.

## PART 2 PRODUCTS

### 2.01 MANUFACTURERS

- A. Fire Extinguishers, Cabinets and Accessories:
  - 1. JL Industries, Inc; Product 1037B20 with Extinguisher: [www.jlindustries.com](http://www.jlindustries.com).
  - 2. Larsen's Manufacturing Co: [www.larsensmfg.com](http://www.larsensmfg.com).
  - 3. Potter-Roemer: [www.potterroemer.com](http://www.potterroemer.com).
  - 4. Substitutions: See Section 01600 – Product Requirements.

### 2.02 FIRE EXTINGUISHERS

- A. Basis of Design: JL Industries, "Cosmic 10E".
- B. Type: Multipurpose dry chemical.
- C. Rating: Sized for project requirements.
- D. Mounting: Refer to floor plans for locations, annotated FEC for cabinets and FE extinguishers alone.
- E. Dry Chemical Type: Stainless steel tank, with pressure gage.
  - 1. Class A:B:C.
  - 2. Size 10.
  - 3. Finish: Baked enamel, Red color.
- G. ALL fire extinguishers shall be inspected and certified by the local authority having jurisdiction that they are charged and ready for use and shall be "tagged" identifying such.

### 2.03 FIRE EXTINGUISHER CABINETS

- A. Basis of Design:
  - 1. JL Industries, "Cosmopolitan – 1035B20 ADAC with Saf-T-Loc, TAS compliant.
  - 2. Designations: Refer to the floor plans, FEC for Extinguishers in cabinets and FE for surface mounted extinguishers secured to walls.

- B. Surface Mounted (Non-Cabinet, FE Type) – Bracket and Extinguisher (non-cabinet):  
Manufacturer's standard stainless steel strap with enamel finished bracket with locking band retainer.
  - 1. Bracket shall match the extinguisher type.
- C. Metal for Cabinets: Formed stainless steel sheet; 0.036 inch thick base metal; #4 finish stainless steel.
- D. Cabinet Configuration: Recessed type.
  - 1. Sized to accommodate accessories.
  - 2. Exterior nominal dimensions of 13 7/8 inch wide x 27 3/8 inch high x 6 inch deep.
  - 3. Trim: Returned to wall surface, with 3 inch projection, 1 1/2 inch wide face.
  - 4. Form cabinet enclosure with right angle inside corners and seams. Form perimeters trim and door stiles.
- E. Door: 0.036 inch thick, reinforced for flatness and rigidity; lock with full glass access. Hinge doors for 180 degree opening with two butt hinge. Provide nylon catch.
- F. Door Glazing: Glass, clear, 1/8 inch thick float. Set in resilient channel gasket glazing.
- G. Cabinet Mounting Hardware: Appropriate to cabinet. Pre-drill for anchors.
- H. Weld, fill, and grind components smooth.
- I. Finish of Cabinet Interior: Enamel, color to select from manufacturer's full color line.

#### 2.04 ACCESSORIES

- A. Extinguisher Brackets: Formed steel, chrome-plated.
- B. Cabinet Signage: FIRE EXTINGUISHER, vertical up face of cabinet to one side.

### PART 3 EXECUTION

#### 3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify rough openings for cabinet are correctly sized and located.

#### 3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install cabinets plumb and level in wall openings, 30 inches from finished floor to inside bottom of cabinet.
- C. Secure rigidly in place.
- D. Place extinguishers in cabinets.

END OF SECTION

## SECTION 12492 - HORIZONTAL LOUVER BLINDS

### PART 1 – GENERAL

#### 1.00 COORDINATION

- A. The General Conditions of the Contract for Construction and the Supplementary Conditions to the General Conditions of the Contract for Construction shall be considered as part of this section of the specifications.
- B. Each Bidder shall be responsible for determining during the bidding period the extent that any addenda issued during the bidding period may affect this section of the specifications.
- C. Reference Instructions to Bidders for requirements regarding substitutions of materials and products.
- D. Where conflicts occur between the drawings and specifications, between different drawings, between different portions of this section of the specifications, or between different sections of the specifications, the more stringent requirements and the greater quantity shall apply.

#### 1.01 DESCRIPTION

- A. 2" Horizontal Louver Blinds With Aluminum Slats.

#### 1.02 SUBMITTALS

- A. Manufacturer's complete CSI 3- part specification sheet.
- B. Submit working hand sample or mock up blind as required.
- C. Submit two 6" samples of aluminum slat indicating color and dimensions.
- D. Approval of submittals by Architect shall not relieve contractor from installing blinds with adequate clearance to permit smooth operation of the blinds and demonstrating blinds to be in smooth, uniform working order. Contractor must field verify all dimensions.

#### 1.03 DELIVERY, STORAGE AND HANDLING

- A. Product to be delivered in manufacturer's original packaging.
- B. Products to be handled and stored to prevent damage to materials, finishes and operating mechanisms. Store in a clean, dry area, laid flat to prevent sagging and twisting of packaging.

#### 1.04 EXTRA STOCK

- A. Describe extra attic stock as required: One (1) additional horizontal louver blind.

## PART 2 – PRODUCTS

### 2.01 ACCEPTABLE MANUFACTURERS

- A. Springs Window Fashions LLC or approved architect equivalent.
- B. Substitutions Request: Submit for approval under provisions of section 01600.

### 2.02 HORIZONTAL BLINDS

- A. Product: Bali® 2” Aluminum School Blinds
- B. Color Name: As Selected by Architect; Color Number: As Selected by Architect.
- C. SureClose® Headrail shall be 1 5/8" high x 2 1/4" wide x .022" thick U-shaped steel with 1/8" light blocking lip on the bottom centerline. The steel finishing process includes phosphate treatment for corrosion resistance, a chrome-free sealer, a low HAP urethane primer and a topcoat with low HAP polyester baked enamel.
- D. Cord tilter shall be a snap-in component incorporating a worm and pulley of low-friction thermoplastic and a nylon gear. Standard tilt cords shall measure 2.2 mm in diameter.  
Select One:
  - ☐ Cord tilter (standard)
  - ☐ Wand tilter
  - ☐ Ring tilter
- E. Cord lock shall be metal of a snap-in design incorporating a floating, shaft-type locking pin and shall incorporate a crash proof safety feature that will lock blind automatically upon release of cord  
Options:
  - ☐ Ring pull provides a single plated steel ring in lieu of tassels with a nominal 4" cord length.
- F. Lift cord shall be made of braided polyester measuring 2.2mm in diameter.
- G. Vinyl ladder tape shall be 1 1/2" wide reinforced vinyl. Standard ladder spacing shall be 42mm.  
Select One Vinyl Tape Color:
  - ☐ 005 White
  - ☐ 670 Creamy Beige
  - ☐ 904 Lamplight
  - ☐ 983 Gray Haze
  - ☐ 062 Char Brown
- H. Slats shall be 5000 series cold-rolled aluminum containing the maximum allowable recycled content to produce a high strength and corrosion resistant flexible product. Slats shall be nominally 2" wide x .008" thick and treated with Advanced Finishing Technology (AFT), providing a smooth, hard, less porous surface. AFT delivers anti-static performance to repel dust and anti-microbial qualities to resist fungal and bacterial growth. Slats shall be treated with a chrome-free sealer and a topcoat of low HAP polyester baked enamel.

- I. Bottomrail shall be "C" shaped 9/16" high x 2" wide x .040 thick anodized aluminum. It is fully enclosed with a dust cover slat and finished with a polyester baked enamel to match headrail.

## 2.03 FABRICATION

- A. Blinds shall be fabricated according to specifications and accurate to tolerance established by SWF engineering standards

## PART 3 – EXECUTION

### 3.01 INSPECTION

- A. Installer shall be responsible for inspection of jobsite, approval of mounting surfaces, verification of field measurements and installation conditions. Installation shall commence when satisfactory conditions are met.
- B. Do not dimension the drawings. Any questions concerning dimensions should be directed to the Architect for clarification.

### 3.02 INSTALLATION

- A. Install blinds in accordance with manufacturer's instructions including recommended support brackets and fasteners.
- B. Install blinds with adequate clearance to permit smooth operation of the blinds. Demonstrate blinds to be in smooth, uniform working order.

### 3.03 MAINTENANCE AND CLEANING

- A. Maintain and clean blinds in accordance with manufacturer's instructions.

END OF SECTION

## SECTION 13125 — PRE-ENGINEERED METAL BUILDINGS

### PART 1 - GENERAL

#### 1.00 COORDINATION

- A. The General Conditions of the Contract for Construction and the Supplementary Conditions to the General Conditions of the Contract for Construction shall be considered as part of this section of the specifications.
- B. Each Bidder shall be responsible for determining during the bidding period the extent that any addenda issued during the bidding period may affect this section of the specifications.
- C. Reference Instructions to Bidders for requirements regarding substitutions of materials and products.
- D. Where conflicts occur between the drawings and specifications, between different drawings, between different portions of this section of the specifications, or between different sections of the specifications, the more stringent requirements and the greater quantity shall apply.

#### 1.01 SCOPE:

- A. Provide all pre-engineered metal buildings, complete, as shown on the Drawings, specified herein, or needed for a complete and proper installation and not specifically called for under other Sections of these specifications.
- B. The requirements of Division 0 – “Bidding and Contract Requirements” and Division 1 – “General Requirements” of this Project Manual apply to all work required for this section.

### PART 2 - PRE-ENGINEERED METAL BUILDING SYSTEM:

#### 2.01 GENERAL:

- A. The intent of these specifications and drawings is to establish a quality and performance level for structural design, material, durability, and workmanship.
- B. All bidders must conform strictly to these specifications in their bid.
- C. The building shall be the design of a manufacturer who is regularly engaged in the fabrication of pre-engineered structures. All materials shall be new, unused, free from defects and of American manufacture.
- D. The following standards and criteria (of most recent issue) shall be used where applicable in the structural design of the building covered by this specification:

“MANUAL OF STEEL CONSTRUCTION”	American Institute of Steel Construction
“COLD FORMED STEEL DESIGN MANUAL”	American Iron and Steel Institute
“ALUMINUM CONSTRUCTION MANUAL”	The Aluminum Association
“CODE FOR WELDING IN BUILDING CONSTRUCTION”	American Welding Society

The following criteria shall also be applicable in other phases of design: latest edition of the INTERNATIONAL BUILDING CODE.

E. Listing by:

*Underwriters' Laboratories Inc.  
Factory Mutual System or other recognized testing laboratories*

2.02 DESIGN LOADS:

A. GENERAL:

1. The basic design loads shall include live and wind, in addition to dead load. All other design loads, whether they be of static or dynamic nature, shall be considered as auxiliary loads.

B. VERTICAL LIVE LOAD:

1. Roof covering shall be designed for either 50 psf uniformly distributed or a 200-pound concentrated (point) load (over a 1' x 1' area) located at center of maximum roof (panel) span. The most severe conditions shall govern.
2. Purlins shall be designed for 20 psf uniformly distributed over the roof area which they support.
3. Primary framing (frames) shall be designed for 20 psf uniformly distributed over the roof area which it supports.
4. All the above loads to be in addition to the applicable dead loads and shall be applied to the horizontal projection of the roof.

C. WIND LOADS:

1. The wind load on the structure shall be proportioned and applied as horizontal and uplift forces according to and as recommended by the latest edition of the INTERNATIONAL BUILDING CODE.
2. The roof construction shall carry a U.L. Construction (Uplift) Listing of not less than Class 90.
3. Wind load may be proportioned as allowed by the latest edition of the INTERNATIONAL BUILDING CODE. However, such proportioning shall not compromise the UL-Class 90 listing.

D. AUXILIARY (ADDITIONAL COLLATERAL) LOADS:

1. Other superimposed dynamic and/or static loads shall be considered as part of the design requirements and combined with normal design (live and/or wind) loads as prescribed hereafter:

*DYNAMIC LOADS:VARIOUS HVAC EQUIPMENT (REFER TO DRAWINGS FOR LOCATIONS).*

*STATIC LOADS:THE ROOF FRAMING AT 1:12 PITCH SHALL BE DESIGNED FOR AN AUXILIAR LOAD OF 5 PSI.*

E. COMBINATION OF LOADS:

1. The combining of normal loads and auxiliary loads for design purposes shall be as prescribed and recommended by the latest edition of the INTERNATIONAL BUILDING CODE.

F. CERTIFICATION:

1. After the awarding of the Contract, complete structural analysis shall be submitted by the Metal Building Manufacturer to the Architect upon request for same. Structural design must be sealed by a **Texas Registered Professional Structural Engineer.**

2.03 DESCRIPTION:

- A. The pre-engineered metal buildings covered in this specifications are to be rigid frame structure of steel (frames) rafter beams.
- B. The roof slope shall be not less than 1"; 12" as indicated on the drawings.
- C. Column spacing shall be as indicated on the drawings.
- D. Nominal eave height shall be as indicated on the drawings.

2.04 ROOF COVERING AND SUPPORTS:

A. ROOF PANELS – ***“Standing Seam Metal Roof” Panel:*** At 1:12 ROOFS:

- 1. The exposed metal roof covering shall be 24-gauge (minimum) “Standing Seam Metal Roof” Panel as manufactured by Berridge Manufacturing Co. or equal. Roof panels shall be of “Standing Seam Metal Roof ” panel design and secured to the purlins with a concealed structural fastening system (mechanically seamed panel). The concealed system shall provide minimal through penetration of the exposed roofing surface and allow the roof covering to move independently of any differential thermal movement by the structural framing system. Except at the concealed fastener, there shall be no thermal contact of the roof panels with the supporting purlin. Roof panels with lap-type side (longitudinal) joints and exposed structural fasteners shall not be considered acceptable.
- 2. Roof panels shall be fastened to the purlins or secondary support members with a concealed clip or backing device of steel having a protective metallic coating. Through penetration of the roofing surface by exposed fasteners shall occur only at terminal locations of the roof panels. Such fasteners shall be stainless steel or aluminum screws, bolts, or rivets, with weather-seals washers. Carbon steel shank-fasteners with vinyl or stainless steel-capped heads shall be acceptable also.
- 3. Deflection of the roof panel shall not exceed L/180 of its span when supporting the applicable vertical live loads previously described.
- 4. Roof Panels to be “Standing Seam Metal Roof” Panels with overall panel width to be 38-1/4", with 36" net coverage.

B. WARRANTY:

- 1. Durability of the roof panels due to rupture, structural failure, perforation, or noticeable discoloration or fading shall be warranted for a period of twenty {20} years by the Roofing Manufacturer and the General Contractor.

C. PURLINS (ROOF COVER SUPPORT MEMBERS):

- 1. The configuration, thickness and spacing of the purlins shall be the Building Manufacturer’s standard. The allowance design capacity of cold-formed purlin members shall be calculated in accordance with the provisions of the AISI Specification for the Design of Cold-Formed Steel Structural Members.
- 2. The deflection of the purlin or secondary member shall not exceed L/180 of its span when supporting the applicable vertical live loads previously prescribed and any collateral loads required.
- 3. The standing seam roof does not provide a diaphragm or purlin bracing function. Brace purlins as required to conform with A.I.S.C. and A.I.S.I. specifications.



D. ROOF JACKS AND CURBS:

1. At roof penetrations for plumbing vents, install roof jacks (rubber) DEKTITE type where standing seam roofing is installed.
2. At roof penetrations for mechanical equipment skylights requires curbs; provide custom fabricated roof curbs as manufactured by CUSTOM CURB, INC., LCM INC.

2.05 RAKE, TRIM, GUTTERS, ROOF DOWNSPOUTS, TRIMS AND SOFFIT LINERS:

- A. The closures, flashings, fascias, gutters, and trim shall be the Building Manufacturer's standard, compatible with the material furnished as roof panels.
- B. Buildings shall have continuous gutters with downspouts where shown on the drawings.
- C. Gutters, downspouts, rake trim, ridge panels, and trim associated with standing seam roof panels shall be a color to be selected by Architect from manufacturer's KYNAR 500 custom and to be part of base bid colors.

D. WARRANTY:

1. The exterior color finish for the metal panels shall be warranted by the Material Manufacturer and General Contractor for twenty (20) years against blistering, peeling, cracking, flaking, checking, and chipping. Excessive color change and chalking shall be warranted for twenty (20) years. Color change shall not exceed 5 N.B.S. units (per ASTM D-2244.64T) and chalking shall not be less than a rating of 8 per ASTM D-659.

E. GIRTS:

1. The girt's configuration and thickness shall be the Building Manufacturer's standard provided all design criteria, including deflection and girt spacing is met.
2. Based on a simple span, the deflection of the girts (supporting the wall covering) shall be proportioned with due regard to that produced by the previously prescribed design (wind) load.

2.06 STRUCTURAL STEEL PRIMER:

- A. All uncoated structural steel shall be given one (1) coat of rust inhibitive (primer) paint which meets or exceeds Federal Specifications TT-P-664, or certification shall be submitted that it conforms to a recognized authoritative specification, such as from a Federal or Military authority or the Structural Steel Painting Council.
- B. Exposed pre-engineered metal building must be painted with at least one (1) coat of primer and two (2) coats of finish paint.

2.07 INSULATION AND INTERIOR FINISH:

A. ROOF

1. The upper layer of insulation system shall be applied under the metal roofing panels. The insulation, R-19 batt, should be over the roof support member. The vapor membrane shall always be placed nearest the interior of the building, whether it be exposed or non-exposed. All joints shall be lapped, taped, or folded and stapled in accordance with the Building Manufacturer's standard. The vapor membrane shall have a perm rating of not more than 0.02. The second layer

insulation shall be polypropylene scrim-foil; R-10 suspended between the purlins. Both layers to provide R-20. At exposed locations insulation shall be **White** plastic faced.

2. All exposed roof insulation shall be supported by **white** plastic mesh.
3. With blanket-type insulation, a thermal spacer (break) shall separate the roof support member from the roof panel, except at each concealed structural fastener. The spacer shall be of material having a density of not less than 2 pcf and, if of a combustible material, shall be classified (ASTM E-84) as having a flame spread rating no greater than 25.
4. Roof insulation shall be flexible, non-combustible fiberglass blankets with a vapor resistant membrane. The vapor resistant membrane shall be laminated to the insulation as a composite unit. The insulation and vapor membrane shall carry an Underwriters' Laboratories Inc. (U.L. Label) fire hazard classification indicating a flame spread rating of 25 or less and a smoke developed rating of 450 or less, as a tested assembly.

### PART 3 - EXECUTION

#### 3.01 ERECTION:

- A. Erection of metal building, accessories, and insulation shall be performed by one of the following:
  1. Authorized systems contractors or builders of the manufacturer.
  2. Building manufacturer's crews.
  3. Other erectors authorized by the manufacturer as trained and qualified to erect that manufacturer's product. In this case, the manufacturer shall inspect the work and certify its correctness.

END OF SECTION

## **CSI SECTION 09 24 00 – PORTLAND CEMENT PLASTER**

### **SureCrete: Wall Spray™ Light Weight Vertical Overlay**

#### **Cement Finish**

## **PART 1 - GENERAL**

### **1.1 SECTION INCLUDES**

- A. Installation of SureCrete Wall Spray™ Stucco Assemblies on CMU.

### **1.2 RELATED SECTIONS**

- A. Section 03 30 00 - Cast-in-Place Concrete
- B. Section 04 20 00 - Unit Masonry
- C. Section 07 27 00 - Air Barriers
- D. Section 07 62 00 - Sheet Metal Flashing and Trim
- E. Section 07 90 00 - Joint Protection
- F. Section 08 50 00 - Windows

### **1.3 REFERENCES**

- A. ASTM C897 - Standard Specification for Aggregate for Job-Mixed Portland Cement-Based Plaster
- B. ASTM C926 - Standard Specification for Application of Portland Cement-Based Plaster
- C. ASTM E84 - Test Method for Surface Burning Characteristics of Building Materials
- D. ASTM E119 - Method for Fire Tests of Building Construction and Materials
- E. ASTM E330 - Test Method for Structural Performance of Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference
- F. ASTM G153 - Standard Practice for Operating Enclosed Carbon Arc Light Apparatus for Exposure of Nonmetallic Materials

### **1.4 ASSEMBLY DESCRIPTION**

- A. Wall Spray™ is a cement-based overlay designed for both interior and exterior vertical surfaces. It offers a wide variety of finishes from a simple knock-down to a sophisticated faux Venetian Plaster.

### **1.5 SUBMITTALS**

- A. General: Submit Samples, Certificates in accordance with Division 1 General Requirements Submittal Section.
- B. Samples: Submit samples for approval. Samples shall be of materials specified and of suitable size as required to accurately represent each color and texture used on project. Prepare each sample using same tools and techniques for actual project application. Maintain and make available, at job site, approved samples.
- C. Manufacturer's Warranty: Submit sample copies of Manufacturer's Warranty indicating Single Source Responsibility.

### **1.6 QUALITY ASSURANCE**

- A. Qualifications:
  - 1. Manufacturer: Shall have marketed stucco assemblies in United States for at least five years.
  - 2. Applicator: Shall be experienced and competent in installation of stucco-like materials, and shall provide evidence of a minimum of 5 years experience in work similar to that required by this section.
- B. Wall Spray™ Assembly Functional Criteria:
  - 1. General: Stucco application shall be to vertical substrates or to substrates sloped for positive

drainage. Substrates sloped for drainage shall have additional protection from weather exposure that might be harmful to coating performance.

- C. Substrate Conditions:
  - 1. Substrates shall be sound, dry and free of dust, dirt, laitance, efflorescence and other harmful contaminants.
  - 2. Substrate Dimensional Tolerances: Flat with 1/4 in (6.4 mm) within any 4 ft (1219 mm) radius.
  - 3. Maximum deflection of substrate system under positive or negative design loads shall not exceed L/360 of span.
- D. Expansion and Control Joints: Continuous expansion and control joints shall be installed at locations in accordance with ASTM C1063 and ASTM C926
  - 1. Substrate movement, and expansion and contraction of Wall Spray™ Stucco Assembly and adjacent materials shall be taken into account in design of expansion joints, with proper consideration given to sealant properties, installation conditions, temperature range, coefficients of expansion of materials, joint width to depth ratios, and other material factors. Minimum width of expansion joints shall be as specified by the designer or shown on the project drawings.

## **1.7 DELIVERY, STORAGE, AND HANDLING**

- A. Delivery: Deliver SureCrete Wall Spray™ Stucco Assembly products in original packaging with manufacturer's identification.
- B. Storage: Wall Spray™ Stucco Assembly products in dry location, off the ground, protected from moisture conditions harmful to product performance.

## **1.8 PROJECT / SITE CONDITIONS**

- A. Substrate Temperature: Do not apply Wall Spray™ Stucco Assembly products to substrates whose temperature are below 50°F (10°C) or contain frost or ice.
- B. Inclement Weather: Do not apply , Wall Spray™ Stucco Base during inclement weather, unless appropriate protection is employed.
- C. Sunlight Exposure: Avoid, when possible, installation of the Wall Spray™ Stucco Base in direct sunlight. Application of Finishes in direct sunlight in hot weather may adversely affect aesthetics.
- D. Wall Spray™ Stucco Assembly materials shall not be applied if ambient temperature exceeds 120°F (49°C) or falls below 50°F (10°C) within 24 hours of application. Protect stucco from uneven and excessive evaporation during hot, dry weather.
- E. Prior to installation, the wall shall be inspected for surface contamination, or other defects that may adversely affect the performance of the Wall Spray™ Stucco Assembly, and shall be free of residual moisture.

## **1.9 COORDINATION AND SCHEDULING:**

- A. Coordination: Coordinate Wall Spray™ Stucco Assembly installation with other construction operations.

## **1.10 WARRANTY**

- A. Warranty: Upon request.

# **PART 2 - PRODUCTS**

## **2.1 MANUFACTURERS**

- A. Manufacturer: SureCrete Inc., 15246 Citrus Country Drive, Dade City Florida 33523
- B. Components: Obtain components of Wall Spray™ Stucco Assembly from authorized distributors. No substitutions or additions of other materials are permitted without prior written permission from SureCrete Inc for this project.

## **2.2 MATERIALS**

- A. Bonding Agent

1. SureCrete's SC Polymer Acrylic Bonder & Admix: 100% acrylic emulsion additive for Portland cement-based products, to enhance curing, adhesion, freeze-thaw resistance and workability and as an acrylic polymer bonding agent.
- B. SureCrete's Wall Spray™ Stucco Base (1/8 in – 1/4 in)
  1. SureCrete's Wall Spray™ Stucco Base: Proprietary mixture of portland cement, and proprietary ingredients mixed with clean, cool, potable water, and ASTM C897 or ASTM C144 sand added in the field.
  - OR-
  1. SureCrete Wall Spray™: Proprietary mixture of portland cement, and proprietary ingredients mixed with clean, cool, potable water in the field.
- C. LaHabra Finish:
  1. Exterior Stucco Finish Coat: blend of portland cement, hydrated lime, aggregates and additives. a

## **2.3 RELATED MATERIALS AND ACCESSORIES**

- A. General: SureCrete's Stucco Assembly and its related materials shall conform to ICC ESR 2564, this specification and Product Data Sheets

EDITOR NOTE: THE SELECTION OF AN APPROPRIATE TYPE OF MATERIAL FOR ACCESSORIES SHALL BE DETERMINED BY APPLICABLE SURROUNDING CLIMATIC AND ENVIRONMENTAL CONDITIONS SPECIFIC TO THE PROJECT LOCATION, SUCH AS SALT AIR, INDUSTRIAL POLLUTION, HIGH MOISTURE, OR HUMIDITY.

- B. Lath and Accessories: Conform to ASTM C847, ASTM C933, ASTM C1032 and ASTM C1063 and Appendix
  1. Accessories: Manufacturer's standard steel products with G60 galvanizing unless otherwise indicated as rigid polyvinyl chloride (pvc plastic) or zinc alloy
  2. Weep Screeds: Foundation weep screed with minimum 3½ inch vertical attachment flange.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Verify project site conditions under provisions of Section 01 00 00.
- B. Compliance: Comply with manufacturer's instructions for installation of SureCrete Wall Spray™: Stucco.
- C. Substrate Examination: Examine prior to SureCrete Wall Spray™: Stucco Base installation as follows:
  1. Substrate shall be of a type approved by SureCrete Inc
  2. Concrete and Masonry must be cured a minimum of 28 days.
  3. Substrate shall be examined for soundness, and other harmful conditions.
  4. Substrate shall be free of dust, dirt, laitance, efflorescence, and other harmful contaminants.
  5. Substrate construction in accordance with substrate material manufacturer's specifications and
- D. Advise Contractor of discrepancies preventing installation of the SureCrete Wall Spray™: Stucco Assembly. Do not proceed with the SureCrete Wall Spray™: Stucco Assembly work until unsatisfactory conditions are corrected.

### **3.2 PREPARATION**

- A. Concrete (Cast-in-Place): Provide a surface that is slightly scarified, water absorbent, straight and true to line and plane. Remove form ties and trim projecting concrete so it is even with the plane of the wall. Remove form release agents. Pre-moisten the surface with water just prior to placement of stucco, or apply one uniform coat of SureCrete's, SC Polymer according to application instructions.
- B. Concrete Masonry Units: Remove projecting joint mortar so it is even with the plane of the wall. Remove

surface contaminants such as efflorescence, existing paint or any other bond inhibiting material by sandblasting, waterblasting, wire brushing, chipping or other appropriate means. Pre-moisten the surface with water just prior to placement of stucco, or apply one uniform coat of LaHabra Acrylic Bonder & Admix according to application instructions.

- C. Ensure that metal flashing has been installed per Specification Section 07 60 00 - Flashing and Sheet Metal.

### 3.3 MIXING

- A. Mix proprietary products in accordance with manufacturer's instructions, including the applicable SureCrete Wall Spray™ and SC polymer: Stucco Assembly Product Data Sheets.

### 3.4 APPLICATION Mixing and handling

1. Add 3 ½ qts. (3.3 liter) water, to a 5 gal. (18.9 liter) pail. 2. Add SC TruColor if desired. 3. Mix with a handheld concrete mixer, such as an Eibenstock model #EHR 20R or a ½" (12.7 mm) 450 – 600 rpm drill equipped with a cage mixing blade for a minimum of 15 seconds. 4. Slowly introduce Wall Spray into the pail with mixer running. 5. Scrape side of pail with a margin trowel to ensure all dry product is incorporated into the wet mix. 6. Continue to mix for a minimum of 1 minute after all ingredients are combined to achieve a lump-free consistency. Additional water may be added up to a total of 4 qt. (3.8 liter) water to 1 – 40 lb. (18.1 kg) bag.
2. **Base Coat** All exterior Wall Spray applications are recommended to have a base coat. Base coats are most commonly sprayed on with compressed air spray equipment, but may also be applied with hawk and trowel. Concrete, common substrates 1. Common setting for spray gun orifice is approximately ¼" (6.3mm). 2. Setting for air compressor should be approximately 8 ft³(.23m³) per minute at 40 psi (276 kPa) continuous. 3. Spray 100% coverage, leaving no bare spots, a minimum of 1/8-3/16" (3—5 mm) of material. 4. Depending upon desired finished texture, may or may not be troweled. Finish Coat 1. The base coat must dry sufficiently (minimum overnight). Longer dry times are required on concrete block to prevent joints from "ghosting" through the finish coat. 2. Scrape the surface of base coat and remove any loose material. 3. **The finish coat applies as the base coat described above.** Alterations of air pressure, spray gun orifice size, and trowel techniques will yield numerous p finish coats.
3. **Sealing:** To complete a Wall Spray project sealing is required. While multi-colored, "designer finishes" may seal clear, for the simple single color projects, use **SureCrete's Colortec Acrylic** Excellent choices for multi colored sealer include: • **Colortec Acrylic • Super 20 – clear 30% solids, 600 g/L solvent • Super WB – clear 30% solids water based • Super WB LL – clear low luster water based** Refer to the appropriate spec sheet for details. Note: never use a solvent based sealer on Wall Spray placed over a polystyrene foam substrate

### 3.5 CLEAN-UP

- A. Removal: Remove and legally dispose of SureCrete Wall Spray™: Stucco Assembly component debris material from job site.

### 3.6 PROTECTION

- A. Provide protection of installed materials from water infiltration into or behind them.
- B. Provide protection of installed stucco from dust, dirt, precipitation, and freezing during installation.
- C. Provide protection of installed finish from dust, dirt, precipitation, freezing and continuous high humidity until fully cured and dry.
- D. Clean exposed surfaces using materials and methods recommended by the manufacturer of the material or product being cleaned. Remove and replace work that cannot be cleaned to the satisfaction

of the Project Designer/Owner.

#### END OF SECTION

Disclaimer: This guide specification is intended for use by a qualified designer. The guide specification is not intended to be used verbatim as an actual specification without appropriate modifications for the specific use intended. The guide specification must be integrated into and coordinated with the procedures of each design firm, and the requirements of a specific project.

ABBREVIATIONS

ABV	above	FIN	finish (ed)	OBS	obscure
AFF	above finish floor	FFE	finished floor elevation	OC	on center (s)
ASC	above suspended ceiling	FFL	finished floor line	OP	opaque
ACC	access	FA	fire alarm	OPG	opening
ACFL	access floor	FBRK	fire brick	OJ	open-web joist
AP	access panel	FE	fire extinguisher	OPP	opposite
AC	acoustical	FEC	fire extinguisher cabinet	OPH	opposite hand
ACPL	acoustical plaster	FHS	fire hose station	OPS	opposite surface
ACT	acoustical tile	FPL	fireplace	OD	outside diameter
ACR	acrylic plastic	FP	fireproof	OHMS	overhead machine screw
ADD	addendum	FRC	fire-resistant coating	OHWS	overhead wood screw
ADH	adhesive	FRT	fire-retardant	OA	overall
ADJ	adjacent	FLG	flashing	OH	overhead
ADJT	adjustable	FHMS	flathead machine screw	PNT	point (ed)
AGG	aggregate	FHWS	flathead wood screw	PNL	panel
A/C	air conditioning	FLX	flexible	PB	panic bar
ALT	alternate	FLR	floor (ing)	PTD	paper towel dispenser
AL	aluminum	FLCO	floor cleanout	PTR	paper towel receptor
ANC	anchor, anchorage	FD	floor drain	PAR	parallel
AB	anchor bolt	FPL	floor plate	PK	parking
ANOD	anodized	FLUR	fluorescent	PBD	particle board
APX	approximate	FJT	flush joint	PTN	partition
ARCH	architect (ural)	FTG	footing	PV	pave (d), (ing)
AD	area drain	FRC	forged	PVT	pavement
ASB	asbestos	FND	foundation	PED	pedestal
ASPH	asphalt	FR	frame (d), (ing)	PERF	perforate (d)
AT	asphalt tile	FRA	fresh air	PERI	perimeter
AUTO	automatic	FS	full size	PLAS	plaster
BP	back plaster (ed)	FBO	furnished by others	PLAM	plastic laminate
BSMT	basement	FUR	furred (ing)	PLT	plate
BRG	bearing	FUT	future	PG	plate glass
BPL	bearing plate	GA	gage, gauge	PWD	plywood
BJT	bed joint	GV	galvanized	PT	point
BM	bench mark	GI	galvanized iron	PVC	polyvinyl chloride
BEL	below	GP	galvanized pipe	PE	porcelain enamel
BET	between	GSS	galvanized steel sheet	PTC	post-tensioned concrete
BVL	beveled	GKT	gasket (ed)	PCF	pounds per cubic foot
BIT	bituminous	GC	general contract (or)	PFL	pounds per linear foot
BLK	black	GL	glass, glazing	PSF	pounds per square foot
BLKG	blocking	GLB	glass block	PSI	pounds per square inch
BD	board	GLF	glass fiber	PCC	precast concrete
BW	both ways	GCMU	glazed concrete masonry units	PFR	prefabricate (d)
BOT	bottom	GST	glazed structural tile	PFN	prefinished
BR	brick	GB	grab bar	PRF	preformed
BRZ	bronze	GD	grade, grading	PSC	prestressed concrete
BLDG	building	GRN	granite	PL	property line
BUR	built up roofing	GVL	gravel	QT	quarry tile
BBD	bulletin board	GF	ground face	RBT	rabblet, rebate
CB	cabinet	GT	grout	RAD	radius
CAD	cadmium	GPW	gypsum dry wall	RL	rail (ing)
CPT	carpet (ed)	GPL	gypsum lath	RWC	rainwater conductor
CSMT	casement	GPPL	gypsum plaster	REF	reference
CI	cast iron	GPT	gypsum tile	RFL	reflect (ed),(ive)(or)
CIPC	cast-in-place concrete	HST	cast-in-place	REFR	refrigerator
CBT	cast stone	HRD	hardboard	REG	register
CB	catch basin	HDW	hardware	RE	reinforce (d), (ing)
CK	caulk (ing) caulk (ing)	HWD	hardwood	RCP	reinforced concrete pipe
CLG	ceiling	HJT	head joint	REM	remove
CHT	ceiling height	HOR	header	RES	resilient
CEM	cement	HTC	heating	RET	return
CPL	cement plaster (portland)	HVAC	heating/ventilation/air conditioning	RA	return air
CM	centimeter (s)	HD	heavy duty	RVS	reverse (side)
CER	ceramic	HT	height	REV	revision (s), revised
CT	ceramic tile	HX	hexagonal	RH	right hand
CMT	ceramic mosaic (tile)	HES	high early-strength	ROW	right of way
CKBD	chalkboard	HC	hollow core	R	riser
CHAM	chromium	HLD	hollow metal	RVT	roof drain
CR	chromium (plated)	HK	hook (s)	RH	roof hatch
CIR	circle	HOR	horizontal	RM	room
CIRC	circumference	HB	hose bibb	RO	rough opening
CLR	clear (once)	HWH	hot water heater	RB	rubber base
CLS	closure	INCIN	incinerator	RB	rubber tile
COL	column	INCL	include (d), (ing)	RBL	rubber stone
COMB	combination	IDCL	inside diameter	SFGL	safety glass
COMPT	compartment	INS	insulate (d), (ion)	SCH	schedule
COMPO	composition (composite)	INS	insulating concrete	SCN	screen
COMP	compress (ed), (ion), (ible)	INT	interior	SNT	sealant
CONC	concrete	INT	interlock	STG	sealing
CMU	concrete masonry unit	ILK	intermediate	SEC	section
CX	connection	INTM	intermediate	SSK	service sink
CONST	construction	INV	invert	SHTH	sheathing
CONT	continuous or continue	IPS	iron pipe size	SH	sheet
CONTR	contract (or)	JC	joiner's closet	SG	sheet glass
L	contract limit line	JT	joint	SH	shelf, shelving
CJT	control joint	JF	joint filler	SHO	shore (d), (ing)
CPR	copper	J	joist	SM	similar
CS	corner guard	KCP	keene's cement plaster	SKL	skylight
CORR	corrugated	KPL	kickplate	SL	sleeve
CIR	counter	KIT	kitchen	SC	solid core
CFL	counterflashing	KO	knockout	SP	sound proof
CS	countersink	LBL	label	S	south
TSK	countersunk screw	LAR	laboratory	SPC	spacer
CRS	course (s)	LAD	ladder	SPK	speaker
CRG	cross grain	LB	lag bolt	SPL	special
CFT	cubic foot	LAM	laminare	SPEC	specification(s)
CYD	cubic yard	LAV	lavatory	SQ	square
DPR	damp	LH	left hand	SST	stainless steel
DP	dampproofing	LT	length	STD	standard
DL	dead load	LC	light control	STA	station
DEM	demolish, demolition	LP	lightproof	ST	steel
DMT	demountable	LD	depressed	STO	storage
DEP	depressed	LWC	lightweight concrete	SD	storm drain
DLT	detail	LWS	limestone	STR	structural
DIAG	diagonal	LTL	lintel	SCT	structural clay tile
DIAM	diameter	LL	live load	SUS	suspended
DIM	dimension	LVR	lower	SYN	synthetic
DPR	dispenser	LPT	low point	SYS	system
DIV	division	MB	machine bolt	TB	tackboard
DR	door	M	malleable iron	TKB	tackstrip
DA	doubleacting	MH	manhole	TEI	telephone
DH	double hung	MFR	manufacture (er)	TV	television
DTA	dovetail anchor	MRR	marble	TC	terra cotta
DTS	dovetail anchor slot	MFR	manufacture (er)	TZ	terrazzo
DS	downspout	MAS	masonry	THK	thick (ness)
D	drain	MO	masonry opening	THR	threshold
DB	drainboard	MTL	material (s)	TPTN	toilet partition
DT	drain tile	MAX	maximum	TPD	toilet paper dispenser
DWR	drawer	MCH	mechanic (al)	TOL	tolerance
DWG	drawing	MED	medium	T&G	tongue and groove
DF	drinking fountain	MBR	member	TSL	top of slab
DW	dumbwater	MMB	membrane	TST	top of steel
EF	each face	MET	metal	TW	top of wall
E	east	MFD	metal floor decking	TB	towel bar
ELEC	electric (al)	MFR	metal furring	TR	transom
EP	electrical panelboard	MRD	metal roof decking	T	tread opening
ENC	electric water cooler	MTHR	metal threshold	TYP	typical
EL	elevation	M	meter	UC	undercut
ELEV	elevator	MM	millimeter (s)	UNF	unfinished
EMER	emergency	MWK	millwork	UR	urinal
ENC	enclose (ure)	MIN	minimum	VJ	v-joint
EQ	equal	MIR	mirror	VB	vapor barrier
EOP	equipment	MISC	miscellaneous	VAR	varnish
ESC	escalator	MOD	modular	VNR	veneer
EST	estimate	MED	molding, moulding	VRM	vermiculite
EXCA	excavate	MOT	mount (ed), (ing)	VERT	vertical
EXH	exhaust	MT	movable	VG	vertical grain
EXG	existing	MV	mullion	VIN	vinyl
EXMP	expanded metal plate	NAT	nailable	VAT	vinyl asbestos tile
EB	expansion bolt	NL	natural	VB	vinyl base
EXP	exposed	NAT	natural	VT	vinyl fabric
EXT	exterior	NB	noise	WSC	wainscot
EXS	extra strong	NR	noise reduction	WTW	wall to wall
FB	face brick	NRC	noise reduction coefficient	WH	wall hung
FOC	face of concrete	NCM	nominal	WC	water closet
FOF	face of finish	NOM	nonmetallic	WP	waterproofing
FOM	face of masonry	N	North	WR	water repellent
FOS	face of studs	NIC	not in contract	WS	waterslop
FF	factory finish	NTS	not to scale	WWF	welded wire fabric
FAS	fasten fastener			W	west
FBD	fiberboard			WHB	wheel bumper
FN	fence			W	width, wide
FGL	fiberglass			WIN	window
				WG	wired glass
				WM	wire mesh
				WO	without
				WD	wood
				WB	wood base
				WPT	working point
				WI	wrought iron

McALLEN PUBLIC SAFETY BUILDING-PARKING GARAGE



GENERAL NOTES

1. ALL CONSTRUCTION INCLUDING MATERIAL AND WORKMANSHIP, SHALL CONFORM TO THE 2012 INTERNATIONAL BUILDING CODE.
2. ALL ASTM STANDARDS LISTED HERE WITHIN, SHALL BE AS REFERENCED IN THE LATEST ISSUE OF THE ANNUAL BOOK OF STANDARDS OF THE AMERICAN SOCIETY FOR TESTING AND MATERIALS
3. THE CONTRACTOR, SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS AND SITE CONDITIONS BEFORE BEGINNING WORK. THE ARCHITECT AND ENGINEER, SHALL IMMEDIATELY BE NOTIFIED IN WRITING OF ANY DISCREPANCIES. THE CONTRACTOR SHALL CAREFULLY STUDY AND COORDINATE THE MECHANICAL, PLUMBING, AND ELECTRICAL SYSTEMS WITH THE ARCHITECTURAL WORK PRIOR TO INSTALLATION AND SHALL NOTIFY THE ARCHITECT IN WRITING OF ALL APPARENT INCONSISTENCIES FOR CLARIFICATION.
4. ALL OMISSIONS AND OR CONFLICTS BETWEEN THE VARIOUS ELEMENTS OF THE WORKING DRAWINGS AND SPECIFICATIONS, SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT OR ENGINEER. WORK SHOULD NOT PROCEED UNTIL A SOLUTION IS GIVEN BY THE ARCHITECT OR ENGINEER.
5. IN CASE OF CONFLICTS BETWEEN GENERAL NOTES AND DETAILS, THE DETAILS, SHALL TAKE PRECEDENCE OVER THE GENERAL NOTES. TYPICAL DETAILS, SHALL BE USED WHENEVER APPLICABLE. REFER TO SPECIFICATIONS FOR INFORMATION NOT COVERED BY THESE NOTES OR DRAWINGS.
6. IF A SPECIFIC DETAIL IS NOT SHOWN FOR ANY PART OF WORK, THE CONSTRUCTION, SHALL BE THE SAME AS FOR SIMILAR WORK.
7. COORDINATE FOUNDATION PLANS AND MECHANICAL DRAWINGS, FOR ALL OPENINGS, INSERTS AND RELATED ITEMS.
8. DIMENSIONS ARE TO FINISH FACE OF WALLS UNLESS NOTED OTHERWISE.
9. ADDITIONAL MISCELLANEOUS STEEL ITEMS NOT SHOWN ON STRUCTURAL DRAWINGS MAY BE REQUIRED. GENERAL CONTRACTOR AND FABRICATOR SHALL COORDINATE ALL REQUIREMENTS AND SHALL NOTIFY THE ARCHITECT IN WRITING OF ALL APPARENT INCONSISTENCIES FOR CLARIFICATION. (SUCH AS SIMPSON STRONG TIES)
10. DO NOT DIMENSION THIS DRAWING. ANY DIMENSIONS, QUESTIONS, SHOULD BE DIRECTED TO THE ARCHITECT OR ENGINEER.

McALLEN BOARD OF COMMISSIONERS

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COMMISSIONER DISTRICT 1  
COMMISSIONER DISTRICT 2  
COMMISSIONER DISTRICT 3  
COMMISSIONER DISTRICT 4  
COMMISSIONER DISTRICT 5  
COMMISSIONER DISTRICT 6

MAYOR

CODE SUMMARY

NEW CONSTRUCTION	2012 INTERNATIONAL BUILDING CODE
PARKING GARAGE GROUND LEVEL	40,500.00 SQ. FT.
PARKING GARAGE 2ND LEVEL	56,300.00 SQ. FT.
TOTAL SQ. FT.	96,800.00 SQ. FT.
OCCUPANCY CLASSIFICATION	OCCUPANCY GROUP "S-2
CONST. TYPE 1 - UNPROTECTED, SPRINKLED	
HAVE:	2 STORIES - 96,800.00 SQ FT

PROJECT CONTACTS

ARCHITECT: RUDY MOLINA, A.I.A.	MILNET ARCHITECTURAL SERVICES 608 S. 12th STREET Mc ALLEN, TEXAS 78501 (956) 688-5656	MEP: ALEX N. GHOLMIEH, PE <b>T A G</b>	THE ALEX GROUP, LLC 1400 N. McCOLL ST. STE 202 McALLEN, TX 78501 956-687-2539
OWNER: CITY OF McAllen	CITY OF McAllen 1300 HOUSTON AVE. McALLEN, TEXAS 78501	STRUC TURAL: SIMON SOLORIO, PE 	SOLORIO & ASSOCIATES 108 W 18TH ST MISSION, TX 78572 956-631-1500

SYMBOLS

X/AXX	ELEVATION SYMBOL
X/AXX	SECTION/DETAIL SYMBOL
(X)	WALL TYPE SYMBOL
(X)	WINDOW SYMBOL
ROOM NAME RM # FIN #	ROOM NAME & NUMBER SYMBOL FINISH NUMBER
(XX)	DOOR SYMBOL

MATERIALS LEGEND

	CONTINUOUS WOOD BLOCKING
	NON-CONTINUOUS WOOD BLOCKING (SHIM)
	STEEL
	GYPSUM BOARD
	PLYWOOD
	RIGID INSULATION
	BATT INSULATION
	CONCRETE MASONRY UNITS

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		AS1.0	SITE PLAN	E2.0	POWER PLAN FIRST FLOOR
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S405	STEEL DETAILS	A7.0	SCHEDULES		
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S601	SECTIONS	A9.0	ADA DETAILS		
S602	SECTIONS				
S603	SECTIONS				



JUNE 18, 2019



McALLEN PUBLIC SAFETY BUILDING

PARKING GARAGE

CITY OF McALLEN

McALLEN, TX

PROJECT NUMBER  
215031

DATE  
JUNE 18, 2019

ISSUE FOR BIDS

S H E E T

A0.0

OF



GENERAL

- THIS CONTRACT STRUCTURAL DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE, UNLESS OTHERWISE INDICATED THEY DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY TO PROTECT THE STRUCTURE, WORKMEN, AND OTHER PERSONS DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE, BUT NOT BE LIMITED TO, BRACING, SHORING FOR EARTH BANKS, FORMS, SCAFFOLDING, PLANKING SAFETY NETS, SUPPORT AND BRACING FOR CRANES, POLES, ETC. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND HE SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES. OBSERVATION VISITS TO THE SITE BY THE ARCHITECT OR THE ENGINEER DO NOT INCLUDE INSPECTION OF THE ABOVE AND BELOW ITEMS.
- ALL CONSTRUCTION AND QUALITY OF MATERIALS SHALL COMPLY WITH THE GOVERNING BUILDING CODES AND REGULATIONS.
- THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, TOLERANCES AND CONDITIONS AT THE JOB SITE BEFORE COMMENCEMENT OF WORK AND SHALL IMMEDIATELY REPORT ANY DISCREPANCIES OR OMISSIONS TO THE ARCHITECT AND ENGINEER IN WRITING. ANY OMISSION OR CONFLICT BETWEEN THE VARIOUS ELEMENTS OF THE WORKING DRAWINGS AND/OR SPECIFICATIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER BEFORE PROCEEDING WITH ANY WORK SO INVOLVED.
- IN CASE OF CONFLICT, NOTES AND DETAILS ON THE BALANCE OF THE DRAWINGS TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS. DRAWINGS TAKE PRECEDENCE OVER SPECIFICATIONS.
- WHERE CONSTRUCTION DETAILS ARE NOT SPECIFICALLY SHOWN OR NOTED FOR ANY PART OF THE WORK, SUCH DETAILS SHALL BE CONSTRUCTED IN ACCORDANCE WITH DETAILS SHOWN FOR SIMILAR CONDITIONS AND MATERIALS. WHERE SUFFICIENTLY SIMILAR WORK IS NOT SHOWN, THE ENGINEER SHALL BE CONSULTED FOR CLARIFICATION. EACH SUBCONTRACTOR IS CONSIDERED AN EXPERT IN HIS RESPECTIVE FIELD AND SHALL PRIOR TO THE PERFORMANCE OF WORK NOTIFY THE GENERAL CONTRACTOR, ARCHITECT, ENGINEER OR OWNER, IN WRITING OF ANY WORK CALLED OUT ON THE DRAWINGS IN HIS TRADE THAT CANNOT BE GUARANTEED OR PERFORMED AS INDICATED.
- THE CONTRACTOR SHALL COORDINATE ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AS TO WEIGHTS AND EXACT LOCATIONS, WITH STRUCTURAL SUPPORTS. IN THE EVENT THAT THE PURCHASED EQUIPMENT DEVIATES IN WEIGHT AND LOCATION FROM THAT INDICATED ON THE PLANS, THE ARCHITECT AND ENGINEER MUST BE NOTIFIED AND APPROVAL OBTAINED PRIOR TO INSTALLATION.
- THIS STRUCTURE IS DESIGNED AS A STABLE UNIT AFTER ALL COMPONENTS ARE IN PLACE. THE CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE TEMPORARY BRACING AS REQUIRED TO INSURE THE VERTICAL AND LATERAL STABILITY OF THE ENTIRE STRUCTURE, OR ANY PORTION THEREOF, DURING CONSTRUCTION.
- NEITHER THE OWNER NOR THE ARCHITECT NOR THE ENGINEER WILL ENFORCE SAFETY MEASURES OR REGULATIONS. THE CONTRACTOR SHALL DESIGN, CONSTRUCT AND MAINTAIN ALL SAFETY DEVICES, INCLUDING SHORING AND BRACING, AND SHALL BE SOLELY RESPONSIBLE FOR CONFORMING TO ALL LOCAL, STATE AND FEDERAL SAFETY AND HEALTH STANDARDS, LAWS AND REGULATIONS.
- TRADE NAMES AND MANUFACTURERS REFERRED TO ARE FOR QUALITY STANDARDS ONLY. SUBSTITUTIONS WILL BE PERMITTED AS APPROVED BY THE ENGINEER.
- ANY OPTIONS OR APPROVED SUBSTITUTIONS ARE AT THE CONTRACTOR'S CONVENIENCE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CHANGES, ADDITIONAL COSTS (INCLUDING REDESIGN BY THE ENGINEER), AND COORDINATION WITH ALL ITEMS THAT THE SUBSTITUTIONS MAY IMPACT.
- THE ARCHITECT AND ENGINEER ARE TO BE NOTIFIED IN WRITING WHEN CONSTRUCTION AT THE SITE BEGINS.
- ANY QUESTIONS RELATED TO INTERPRETATION OR INTENT OF THESE DRAWINGS SHALL BE REFERRED TO THE ENGINEER.
- THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO LOCATE AND PROJECT ANY EXISTING OR ADJACENT CONCEALED CONDUIT, PLUMBING, OR OTHER UTILITIES PRIOR TO BEGINNING ANY WORK.
- PIPES, DUCTS, SLEEVES, CHASES, ETC. SHALL NOT BE PLACED IN BEAMS OR WALLS UNLESS SPECIFICALLY SHOWN OR NOTED. NOR SHALL ANY STRUCTURAL MEMBER BE CUT FOR PIPES, DUCTS, ETC. UNLESS NOTED CONTRACTOR SHALL OBTAIN PRIOR APPROVAL FOR INSTALLATION OF ANY ADDITIONAL PIPES, DUCTS, ETC.

DESIGN

DESIGN LOADS, STRUCTURAL ANALYSIS AND PREPARATIONS OF STRUCTURAL MEMBERS ARE BASED UPON THE FOLLOWING CRITERIA:

- CODE: IBC 2015
- LATERAL LOADS:
  - WIND SPEED ( $V^3$ ): 145 MPH
  - EXPOSURE CATEGORY: C
  - IMPORTANCE FACTOR: 1.15
  - BUILDING CATEGORY: II
  - SEISMIC DESIGN CATEGORY: A
  - SITE CLASS: D
  - SEISMIC COEFFICIENTS:

Ss	0.056 g
S1	0.014 g
Fv	2.5
Fs	3.5
Sms	0.140 g
Sml	0.050 g
Sml1	0.093 g
Sd1	0.033 g
- VERTICAL LOADS:

ROOF:

A. COLLATERAL LOAD:	0 PSF
B. DEAD LOAD:	ACTUAL WEIGHT PSF
C. LIVE LOAD (REDUCIBLE):	20 PSF
D. WIND UPLIFT LOAD (NET):	AS CALCULATED BY SUB-CONTRACTOR PSF
E. GROUND SNOW LOAD:	0 PSF
F. CRANE LOADS:	NONE
G. MECHANICAL UNITS:	SEE PLANS

FLOOR:

A. DEAD LOAD:	50 PSF
B. LIVE LOAD, Parking: 50 psf + 3000 lb in an area 4.5' x 4.5'	
C. LIVE LOAD, LIGHT STORAGE:	125 PSF
D. LIVE LOAD, HEAVY STORAGE:	250 PSF
E. LIVE LOAD, CLASSROOM:	40 PSF
F. LIVE LOAD, CORRIDOR:	100 PSF
G. MECHANICAL UNITS:	SEE PLANS
- SUBSURFACE INFORMATION:
  - PREPARED BY: AMA16-035-00
  - SHALLOW FOUNDATION:

MINIMUM FOOTING DEPTH:	24 INCHES
MINIMUM FOOTING WIDTH:	12 INCHES
ALLOWABLE BEARING PRESSURE (CONTINUOUS FOOTINGS):	2100 PSF
ALLOWABLE BEARING PRESSURE (ISOLATED FOOTINGS):	2400 PSF
  - WIRE REINFORCEMENT INSTITUTE (WRI) CRITERIA:

CLIMATIC RATING (Cw):	15
EFFECTIVE PLASTICITY INDEX (UNDISTURBED, NATIVE SOIL):	25
EFFECTIVE PLASTICITY INDEX (SITE IMPROVED SOIL):	18
PVR (UNDISTURBED SOIL):	1.0 TO 1.5 INCHS
PVR (WITH SITE IMPROVEMENT):	1.0 INCH
  - DEEP FOUNDATION:

MINIMUM PIER DEPTH:	20 FEET
MAXIMUM PIER DEPTH:	75 FEET
END BEARING:	6.2 TO 18.5 KSF
SKIN FRICTION (EXCLUDE TOP 8" AND BOTTOM 150% PIER DIA.):	0.3-1.5 KIPS

Sheet List	
Sheet Number	Sheet Name

S101	General Notes
S102	General Notes
S103	General Notes
S202	Existing Foundation Plan
S301	Existing Garage Framing Plan
S302	Prestressed Concrete Beams
S303	Roof Framing Plan
S401	Typical Concrete Details
S402	Foundation Details
S403	Typical CMU Details
S404	Steel Details
S405	Steel Details
S406	Concrete Repair Details
S601	Sections
S602	Sections
S603	Sections

SHOP DRAWINGS AND

- SHOP DRAWINGS SHALL BE PREPARED AND SUBMITTED FOR REVIEW TO THE ENGINEER FOR EACH STRUCTURAL BUILDING MATERIAL AS INDICATED IN THE STRUCTURAL GENERAL NOTES AND THE CONTRACT SPECIFICATIONS. SEE THE CONTRACT SPECIFICATIONS FOR SUBMITTAL PROCEDURES AND ADDITIONAL INFORMATION.
- SHOP DRAWINGS SHALL USE DRAFTING LINE WORK AND LETTERING THAT IS CLEARLY LEGIBLE. SHOP DRAWINGS SHALL NOT CONTAIN NO REPRODUCTIONS OF THE CONTRACT DRAWING PLANS OR DETAILS.
- SUBMIT SHOP DRAWINGS IN PDF FORMAT.
- SHOP DRAWINGS SHALL NOT SHOW MATERIALS FOR MORE THAN ONE LEVEL OF THE SAME PLAN.
- SHOP DRAWINGS SHALL SHOW CLEAR AND COMPLETE INFORMATION FOR THE FABRICATION (DETAIL SHEETS AND/OR MATERIAL LISTS) AND INSTALLATION.
- ALLOW A MINIMUM OF (2) WEEKS FOR REVIEW OF EACH SET OF SHOP DRAWINGS.
- THE CONTRACTOR SHALL REVIEW THE SHOP DRAWINGS SUBMITTED BY THE SUB-CONTRACTOR AND COORDINATE SHOP DRAWINGS WITH ALL OTHER TRADING.
- CONTRACTOR SHALL ANSWER ALL QUESTIONS OR CLARIFICATIONS BY THE SUB-CONTRACTOR BEFORE SUBMITTING TO ENGINEER FOR REVIEW. ANY QUESTIONS THAT THE CONTRACTOR CANNOT ANSWER WITH THE INFORMATION ON THE DRAWINGS SHALL CLEARLY BE MARKED FOR THE ENGINEER FOR REVIEW.
- CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL DIMENSIONS. SEE NOTE NUMBER 3 UNDER GENERAL NOTES.
- REVIEW OF SHOP DRAWINGS BY THE ENGINEER IS FOR GENERAL CONFORMANCE TO THE STRUCTURAL DRAWINGS. REVIEW OF THE SHOP DRAWINGS BY THE ENGINEER DOES NOT RELIEF THE CONTRACTOR FOR ANY ERRORS IN DIMENSIONS OR MATERIALS INDICATED ON THE SHOP DRAWINGS.
- IF THERE IS ANY DISCREPANCY BETWEEN THE STRUCTURAL DRAWINGS AND SHOP DRAWINGS, THE INFORMATION SHOWN ON THE STRUCTURAL DRAWINGS GOVERN. INFORMATION THAT IS NOT INDICATED ON THE SHOP DRAWINGS SHALL BE OBTAINED FROM THE STRUCTURAL DRAWINGS.
- PROVIDE SUBMITTALS FOR THE FOLLOWING ITEMS:

ITEM	REQUIRED
A. CONCRETE MIX DESIGN	X
B. CURING COMPOUND FOR CONCRETE	X
C. REINFORCING STEEL	X
D. STRUCTURAL STEEL	X
E. STEEL JOIST	X
F. METAL DECKING (INDICATE LAYOUT AND TYPES OF DECK PANELS, ANCHORAGE DETAILS, REINFORCING CHANNELS, PANS, DECK OPENINGS, SPECIAL JOINTING, ACCESSORIES, AND ATTACHMENTS TO OTHER CONSTRUCTION)	X
G. PRE-MANUFACTURED METAL BUILDING (INCLUDE CALC'S & REACTIONS)	X
H. PRE-MANUFACTURED WOOD TRUSSES	X

REINFORCING

- BAR REINFORCEMENT SHALL CONFORM TO THE FOLLOWING GRADES OF ASTM A615, INCLUDING SUPPLEMENT S1, GRADE 40 - #3 AND SMALLER GRADE 60 - #4 AND LARGER.
- DETAILS OF REINFORCEMENT SHALL BE IN ACCORDANCE WITH CHAPTER 7 OF THE AMERICAN CONCRETE INSTITUTE (ACI) 318, UNLESS OTHERWISE NOTED.
- VERTICAL REINFORCEMENT SHALL BE TIED OR OTHERWISE FIXED IN POSITION AT THE TOP AND BOTTOM AND AT INTERMEDIATE LOCATIONS, SPACED NOT GREATER THAN 192 BAR DIAMETERS OR 48" O.C. WHICH EVER IS LESS. IN MASONRY CONSTRUCTION, THE REINFORCEMENT SHALL BE SECURED IN PLACE WITH REBAR SPACERS AND SHALL NOT BE SPACED APART MORE THAN 48 INCHES ON CENTER.
- WELDED STEEL WIRE FABRIC REINFORCEMENT SHALL CONFORM TO ASTM A185.
- WALLS, PLASTER, COLUMNS SHALL BE DOWELED TO THE SUPPORTING MEMBERS WITH REINFORCEMENT OF THE SAME SIZE, GRADE AND AT THE SAME SPACING AS THE VERTICAL REINFORCEMENT IN THE WALLS, PILASTER, OR COLUMNS.
- BAR SUPPORTS SHALL BE PROVIDED IN ACCORDANCE WITH THE PROVISIONS OF "BAR SUPPORT SPECIFICATIONS" AS CONTAINED IN THE LATEST EDITION OF THE "MANUAL OF STANDARD PRACTICE" BY THE CONCRETE REINFORCING STEEL INSTITUTE (CRSI). PLASTIC CHAIRS ARE NOT ALLOWED. FOR SLAB ON GRADE AND GRADE BEAMS, USE CONCRETE BRICK CHAIRS.
- REINFORCING STEEL DETAILING, BENDING AND PLACING SHALL BE IN ACCORDANCE WITH THE CONCRETE REINFORCING STEEL INSTITUTE "MANUAL OF STANDARD PRACTICE", LATEST EDITION.
- ALL REINFORCEMENT SHALL BE SECURELY TIED IN PLACE BEFORE PLACING CONCRETE OR GROUT. INCLUDING EXTERIOR CORNER DOWELS FOR CMU OR CONCRETE WALLS.
- PROVIDE CORNER BARS TOP AND BOTTOM AT ALL BEAM CORNERS AND DEAD END BEAM INTERSECTION. BARS TO EQUAL SIZE AND QUANTITY OF THE NOTED BEAM STEEL. BARS SHALL LAP BEAM REINFORCEMENT 40 BAR DIAMETERS.
- BARs DETAIL AS CONTINUOUS SHALL BE LAPPED 40 BAR DIAMETERS AT SPLICES.
- EXTEND THE SLAB REINFORCING STEEL PERPENDICULAR TO BEAM TO THE TOP OUTSIDE REINFORCING BAR OF PERIMETER BEAMS. START THE SLAB REINFORCING STEEL PARALLEL TO BEAM, NOT MORE THAN 6" FROM THE TOP INSIDE REINFORCING BAR OF PERIMETER BEAMS.
- PROVIDE #4 "Z" BARS AT 12" ON CENTER WHERE THE SLAB STEPS DOWN MORE THAN 3". THE "Z" BARS SHALL LAP THE MAIN SLAB REINFORCING STEEL 40 BAR DIAMETERS.
- ALL CONDUIT ON SLAB SHALL BE REINFORCED WITH SLAB REINFORCING. ALL CONDUIT TO BE NO GREATER THAN 1" DIAMETER AND TO BE PLACED IN CENTER OF SLAB. NO PLUMBING LINES GREATER THAN 1 INCH ALLOWED IN THE SLAB.
- WELDING OF CROSSING BARS AND TACK WELDING OF REINFORCEMENT SHALL NOT BE PERMITTED.
- WELDING OF REINFORCING STEEL, IF PERMITTED BY THE STRUCTURAL ENGINEER, SHALL BE PERFORMED IN ACCORDANCE WITH THE "STRUCTURAL WELDING CODE REINFORCING STEEL" ON THE AMERICAN WELDING SOCIETY, AWS D1.4-96 AS INCORPORATED IN CBC CHAPTER NO. 19, AND BY CERTIFIED WELDERS QUALIFIED USING PROCEDURES CONTAINED THEREIN. E70XX ELECTRODES SHALL BE USED IN WELDING GRADE 60 REINFORCEMENT. REINFORCEMENT SHALL NOT BE WELDED UNTIL A CHEMICAL ANALYSIS SUFFICIENT TO DETERMINE THE CARBON EQUIVALENT (C.E.) IS PERFORMED, THE C.E. OF REINFORCING STEEL SHALL BE CALCULATED FROM THE CHEMICAL COMPOSITION AS SHOWN IN THE MILL TEST REPORT. IF MILL TEST REPORTS ARE NOT AVAILABLE, A CHEMICAL ANALYSIS SHALL BE MADE ON REINFORCEMENT REPRESENTATIVE OF THOSE TO BE WELDED. THE C.E. SHALL NOT EXCEED 0.55 AS CALCULATED PER IBC CHAPTER 19. A COPY OF THE MILL TEST OF REINFORCING STEEL IN CONCRETE MEMBERS. (SPECIAL INSPECTION IS REQUIRED FOR ALL FIELD WELDING).
- CONTRACTOR SHALL SUBMIT REINFORCING STEEL SHOP DRAWINGS FOR REVIEW BEFORE FABRICATION AND INSTALLATION.
- CONCRETE COVER FOR REINFORCING AS FOLLOWS:

EXPOSURE CONDITION	MINIMUM COVER	TOLERANCE
DRILLED PIERS, FOOTINGS AND OTHER PRINCIPAL STRUCTURAL MEMBERS IN WHICH CONCRETE IS DEPOSITED AGAINST GROUND: WHERE CONCRETE SURFACES, AFTER REMOVAL OF FORMS, ARE EXPOSED TO WEATHER OR GROUND:	3"	3/8"
FOR BARS 5/8" IN DIAMETER	2"	1/4"
FOR BARS 3/8" OR LESS IN DIAMETER	1 1/2"	1/4"
WHERE SURFACES ARE NOT DIRECTLY EXPOSED TO WEATHER OR GROUND:		
FOR SLAB ON GRADE (FROM TOP OF SLAB)	1 1/2"	1/4"
FOR BEAMS, COLUMNS	1 1/2"	1/4"
FOR JOISTS AND SLABS	1"	1/8"

- LAPS AT BAR SPLICES, UNLESS NOTED OTHERWISE, SHALL BE AS FOLLOWS:

MASONRY - GRADE 60: LAP 20 DIA. (30" MIN.)  
GRADE 40: LAP 26 DIA. (24" MIN.)

CONCRETE - LAP PER SCHEDULE BELOW

BAR SIZE	fc = 2000 PSI	fc = 3000 PSI	fc = 4000 PSI	fc = 5000 PSI
#3	22	22	22	22
#4	29	29	29	29
#5	40	36	36	36
#6	57	46	43	43
#7	77	63	54	54
#8	100	84	71	71
#9	128	104	90	90
#10	162	132	115	115
#11	200	163	141	141

FOR WELDED WIRE FABRIC: SPACING OF WIRE PLUS 12".

STRUCTURAL

- MATERIAL AND WORKMANSHIP SHALL CONFORM TO THE LATEST EDITION OF THE AISC SPECIFICATIONS FOR THE DESIGN, FABRICATION, AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS.
- STRUCTURAL STEEL SHALL COMPLY WITH THE FOLLOWING ASTM DESIGNATIONS:

MATERIAL	DESIGNATION	STRENGTH
ANCHOR BOLTS	A36	Fy=36 ksi
PLATES	A36	Fy=36 ksi
ANGLES	A36	Fy=36 ksi
CHANNELS	A36	Fy=36 ksi
WIDE FLANGE SHAPES	A572	Fy=50 ksi
STEEL PIPE	A53 GRADE B	Fy=35 ksi
SQUARE & RECT. STEEL TUBES (HSS)	A500 GRADE B	Fy=46 ksi
ROUND TUBES (HSS)	500 GRADE B	Fy=42 ksi
- ALL STRUCTURAL STEEL SHALL BE FABRICATED, ERECTED, AND PAINTED IN ACCORDANCE WITH THE SPECIFICATIONS FOR THE DESIGN, FABRICATION, AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS AS AMENDED TO DATE AND THE CODE OF STANDARD PRACTICE, LATEST EDITION AS ADOPTED BY THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION, AMENDED AS FOLLOWS:

SECTION 4.2.1, DELETE FIRST TWO SENTENCES.

SECTION 7, ALL REFERENCE TO OWNER SHALL BE CHANGED TO GENERAL CONTRACTOR.

SECTION 7.9.3, THE CONTRACTOR SHALL PROVIDE THE SEQUENCE AND SCHEDULE OF PLACEMENT OF NON-SELF SUPPORTING STEEL FRAMES.

SECTION 7.9.4, THE CONTRACTOR TO DESIGN SHORES, JACKS OR LOADS.
- WELDING SHALL BE DONE IN ACCORDANCE WITH THE STANDARD CODE FOR ARC AND GAS WELDING IN BUILDING CONSTRUCTION AS PUBLISHED BY THE AMERICAN WELDING SOCIETY, EXCEPT THAT ALL WELDING SHALL BE DONE BY THE ELECTRIC ARC PROCESS. ALL WELDING SHALL BE PERFORMED BY CERTIFIED WELDERS AND SHALL CONFORM TO ANSIWAWS D1.4.
- DETAILED AND OR SCHEDULED CONNECTIONS HAVE BEEN DESIGNED BY STRUCTURAL ENGINEER. ANY CONNECTION NOT DETAILED OR SCHEDULED OR ALTERED FOR FABRICATION PURPOSES SHALL BE SIZED AND DETAILED BY FABRICATOR AND SHALL BE MARKED FOR ENGINEER'S VERIFICATION. FABRICATOR SIZED AND DETAILED CONNECTIONS SHALL SUPPORT ONE HALF THE TOTAL UNIFORM LOAD CAPACITY SHOWN IN THE TABLES OF UNIFORM CONSTANTS, PART 2 OF THE AISC MANUAL OF STEEL CONSTRUCTION FOR THE GIVEN BEAM, SPAN AND GRADE OF STEEL SPECIFIED. THE EFFECT OF ANY CONCENTRATION LOADS MUST BE TAKEN INTO ACCOUNT.
- FOR METAL DECKING, PLANS FOR MISCELLANEOUS STEEL ITEMS NOT INDICATED ON STRUCTURAL DRAWINGS, STEEL ITEMS SHOWN ON ARCHITECTURAL DRAWINGS AND NOT SPECIFIED ON THE STRUCTURAL DRAWINGS SHALL BE DESIGN BY THE STEEL FABRICATOR. SEE DESIGN CRITERIA FOR LOADING.
- ALL WELDED CONNECTIONS SHALL BE MADE USING 1/4" FILLET WELD, U.N.O. ALL BOLTED CONNECTIONS SHALL BE MADE USING 3/4" DIAMETER HIGH STRENGTH BOLTS, ASTM A325, BEARING TYPE CONNECTION W/ WASHERS ASTM F438, U.N.O. ON DESIGN DRAWINGS. SPECIAL INSPECTION REQUIRED FOR ALL HIGH STRENGTH BOLTING. ALL NUTS SHALL BE PER ASTM A563.
- ALL CONNECTION PLATES AND STIFFENERS SHALL BE MADE WITH 1/4" THICK PLATES, UNLESS OTHERWISE NOTED ON PLANS.
- ALL STEEL (INCLUDING BOLTS) EXPOSED TO THE WEATHER SHALL BE HOT DIPPED GALVANIZED, (INCLUDES STEEL THAT IS ONLY COVERED WITH PLESTER OR STUCCO). SEE ARCHITECTURAL PLANS FOR STRICTER REQUIREMENTS ARE REQUIRED.
- ALL EXPOSED STEEL SHALL FOLLOW SECTION 10 OF THE CODE OF STANDARD PRACTICE OF AISC. SECTION 10 OF THE CODE ADDRESSES ARCHITECTURALLY EXPOSED STRUCTURAL STEEL (AESS).
- CONNECTIONS SHALL BE PER HOLLOW STRUCTURAL SECTIONS, CONNECTION MANUAL BY AISC WHERE STEEL MEMBERS PASS THROUGH CMU WALLS. PROVIDE HALF INCH GAP BETWEEN THE CMU AND THE STEEL MEMBER. PROVIDE ELASTOMERIC MATERIAL BETWEEN THE STEEL MEMBER AND CMU WALL.
- ALL BEAMS NOT SHOWN SHALL BE W14x26. ALL COLUMNS NOT SHOWN SHALL BE HSS44x14.
- STEEL SHOP SHALL BE AISC CERTIFIED.
- HOLES FOR BOLTS IN STRUCTURAL STEEL SHALL BE DRILLED OR PUNCHED. BURNING OF HOLES SHALL NOT BE PERMITTED. UNLESS NOTED OTHERWISE, HOLES SHALL BE STANDARD SIZE 1/16 INCH LARGER THAN THE BOLT.
- SHAPES SHALL BE PRIMED WITH A RUST RESISTANT PRIMER BEFORE SHIPMENT TO THE PROJECT SITE. PRIMER SHALL NOT BE APPLIED TO THE IMMEDIATE AREA OF STEEL INTENDED TO RECEIVE SLIP CRITICAL BOLTED CONNECTIONS. HIGH STRENGTH BOLTS INSTALLATION SHALL BE CONTINUOUSLY INSPECTED BY A SPECIAL INSPECTOR. FOLLOWING ARE REQUIREMENTS OF THE SPECIAL INSPECTOR:
  - HE SHALL VERIFY THE MILL CERTIFICATES FOR MATERIAL.
  - HE SHALL VERIFY THAT THE MATERIAL USED ARE PROPERLY STORED AND PREPARED FOR USE.
  - HE SHALL VERIFY THAT CONSTRUCTION DETAILS, PROCEDURES, TOOL CALIBRATIONS WORKMANSHIP ARE IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS AND BUILDING CODE.
  - FOR SMUG-TIGHT CONNECTIONS, HE SHALL VERIFY THAT THE PLIES OF THE CONNECTED ELEMENTS HAVE BEEN BROUGHT INTO SMUG CONTACT WITH EACH OTHER.
  - FOR SLIP-TIGHT CONNECTIONS, HE SHALL VERIFY THE PRETENSION METHOD SELECTED BY THE CONTRACTOR HAS INDUCED THE REQUIRED MINIMUM TENSION IN THE BOLT.
  - A CERTIFICATE OF INSPECTION SHALL BE FURNISHED BY THE SPECIAL INSPECTOR TO THE BUILDING OFFICIAL PRIOR TO HIS INSPECTION AND TO THE ARCHITECT AND ENGINEER.
- WELDING IN THE FIELD SHALL BE CONTINUOUSLY INSPECTED, BY A SPECIAL INSPECTOR FOLLOWING ARE REQUIREMENTS OF THE SPECIAL INSPECTOR:
  - HE SHALL VERIFY THAT THE MATERIAL USED ARE PROPERLY STORED AND PREPARED FOR USE.
  - HE SHALL VERIFY THE WELDER'S QUALIFICATIONS.
  - HE SHALL VERIFY THAT CONSTRUCTION DETAILS, PROCEDURES AND WORKMANSHIP ARE IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS AND BUILDING CODE.
  - A CERTIFICATE OF INSPECTION SHALL BE FURNISHED BY THE SPECIAL INSPECTOR TO THE BUILDING OFFICIAL PRIOR TO HIS INSPECTION AND TO THE ARCHITECT AND ENGINEER.
- ALL NON SHRINK GROUT FOR LEVELING OF BASE PLATES SHALL HAVE A MINIMUM 5000 PSI COMPRESSIVE STRENGTH AT 28 DAYS. GROUT SHALL COMPLY WITH CORPS OF ENGINEERS SPECIFICATION CRD-C 621.
- AT ALL TUBES, PROVIDE 3/8" THICK END PLATE, U.N.O.

ALLOWANCE

- IN ADDITION TO THE MATERIAL SHOWN, THE CONTRACTOR TO PROVIDE ADDITIONAL MATERIAL, FOR USE ON THE PROJECT AS DIRECTED BY THE STRUCTURAL ENGINEER FIELD REPRESENTATIVE. THE ALLOWANCE COST SHALL INCLUDE MATERIAL COST, LABOR COSTS AND PLACEMENT AT THE SITE.
  - REMAINING BALANCE AT THE END OF THE PROJECT SHALL BE RETURNED/CREDITED BACK TO THE OWNER.
  - THE ALLOWANCE SHALL APPEAR ON THE SCHEDULE OF VALUE AS A LINE ITEM.
- | MATERIAL          | ALLOWANCE   |
|-------------------|-------------|
| CONCRETE          | 10 CU YD.   |
| REINFORCING STEEL | 5000 LBS    |
| STRUCTURAL STEEL  | 5000 LBS    |
| CMU               | 200 SQ. FT. |

SPECIAL NOTES TO

- UNDER NORMAL CONDITIONS, AND FOR CONVENTIONAL BUILDINGS SUCH AS THE SUBJECT WATER, REINFORCED CONCRETE AND MASONRY DEVELOP CRACKS. THE CRACKS ARE DUE TO INHERENT SHRINKAGE OF CONCRETE, CREEP AND RESTRAINING EFFECTS OF VERTICAL AND OTHER STRUCTURAL ELEMENTS TO WHICH THE BEAMS/SLABS ARE TIED.
- THE CRACKS FORMED ARE NORMALLY COSMETIC. THE SLAB MAINTAINS ITS Serviceability AND STRENGTH REQUIREMENTS. IT IS EMPHASIZED THAT ALTHOUGH SPECIAL EFFORT IS MADE TO REDUCE THE POTENTIAL CAUSES AND NUMBER OF SUCH CRACKS, IT IS NOT PRACTICAL TO PROVIDE TOTAL ARTICULATION BETWEEN THE FLOOR SYSTEM AND ITS SUPPORTS AND THEREBY ACHIEVE COMPLETE INHIBITION OF ALL CRACKS.
- MOST SUCH CRACKS DEVELOP OVER THE FIRST THREE YEARS OF THE LIFE OF THE FLOOR SYSTEM. CRACKS WHICH ARE WIDER THAN 0.01 INCH MAY NEED TO BE PRESSURE EPOXIED. REFER TO THE NOTES UNDER "ALLOWANCES".
- THE OBJECT OF THE JOINTS PROVIDED IS TO ALLOW MOVEMENT. MOVEMENTS DUE TO CREEP AND SHRINKAGE MAY BE NOTICEABLE AT JOINTS UP TO TWO YEARS AFTER CONSTRUCTION. BEYOND WHICH MOVEMENTS DUE TO VARIATIONS IN TEMPERATURE WILL PERSIST.

CAST-IN-PLACE

- VERIFY ALL DIMENSIONS. COORDINATE WITH ARCHITECTURAL PLANS PRIOR TO CONSTRUCTION AND NOTIFY ARCHITECT AND/OR ENGINEER OF ANY DISCREPANCIES.
- ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE AMERICAN CONCRETE INSTITUTE SPECIFICATIONS, ACI #301-05, OR LATEST EDITION, DRILLED PIERS SHALL COMPLY WITH ACI 308.1-01 AND ACI 308.3R-05.
- ALL DETAILING, FABRICATION AND ERECTION OF REINFORCING BARS, ACCESSORIES UNLESS OTHERWISE NOTED, SHALL BE IN ACCORDANCE WITH THE ACI "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE" ACI #315 LATEST EDITION THE MINIMUM 28 DAYS CYLINDER STRENGTH SHALL BE AS FOLLOWS:

LOCATION	STRENGTH AT 28 DAYS	MAXIMUM SLUMP	SIZE OF LARGE AGGREGATE	WATER/CEMENT RATIO
FOUNDATIONS	3000 PSI	5"	1 1/2"	0.50
SLAB ON GRADE	3000 PSI	5"	1 1/2"	0.50
GRADE BEAMS	3000 PSI	5"	1 1/2"	0.50
WALL AND COLUMNS	4500 PSI	6"	3/4"	0.50
- NO HORIZONTAL CONSTRUCTION JOINTS WILL BE PERMITTED IN SLABS OR BEAMS.
- VERTICAL CONSTRUCTION JOINTS IN SLABS ARE TO BE AS SHOWN ON PLANS OR AS APPROVED BY ENGINEER.
- ALL OPENINGS IN SLAB (FOR PIPING, DRAINS, ETC.) SHALL BE SEALED WITH 1/2 SEALANT '2A' (SELF-LEVELING 2-PART POLYURETHANE).
- UTILITIES THAT PROJECT THROUGH SLAB FLOORS SHOULD BE DESIGNED WITH EITHER SOME DEGREE OF FLEXIBILITY OR WITH SLEEVES IN ORDER TO PREVENT DAMAGE TO THESE LINE SHOULD VERTICAL MOVEMENT OCCUR.
- BACKFILL AROUND PERIMETER TO PROVIDE POSITIVE DRAINAGE AWAY FROM SLAB.
- FLOOR TOLERANCES

F-NUMBER SYSTEM	COMPOSITE	MINIMUM LOCAL VALUE
FLATNESS (F) F	30	23
LEVELNESS (F) F	25	19
- IN ALL INSTANCES MINIMUM SLAB THICKNESS SHALL BE OBTAINED. COORDINATE SLAB FINISHES WITH ARCHITECTURAL PLANS.
- ANCHOR BOLTS, DOWELS, INSERTS, ETC. SHALL BE SECURELY TIED IN PLACE PRIOR TO PLACING CONCRETE.
- REFER TO ARCHITECTURAL, MECHANICAL, PLUMBING, AND ELECTRICAL DRAWINGS FOR ALL MOLDS, GROOVES, REGLETS, ORNAMENTAL CLIPS, PIPES, CONDUITS, INSERTS, ETC. FOR THE ERECTION OF MISCELLANEOUS SLEEVES FOR PLUMBING AND ELECTRICAL CONDUITS AND PIPES. NO PIPES OR DUCTS SHALL BE PLACED IN CONCRETE, FOOTINGS, OR SLAB UNLESS SPECIFICALLY DETAILED IN THESE PLANS, OR AS DIRECTED BY THE ENGINEER.
- MECHANICALLY W/ VAPOR RETARDANT WHEN PLACED.
- CONCRETE TESTING SHALL BE ONE SET OF CYLINDERS FOR EVERY 50 CUBIC YARDS OR PORTION THEREOF FOR EACH TYPE OF CONCRETE POURED ON ANY GIVEN DAY. ONE SET CONSISTS OF 2 CYLINDERS TESTED FOR COMPRESSION AT 7 DAYS AND 2 CYLINDERS AT 28 DAYS.
- VAPOR RETARDANT:
  - VAPOR RETARDANT (UNDER SLAB): SHALL CONFORM TO ASTM E1745, CLASS A OR BETTER AND SHALL HAVE A MINIMUM VAPOR PERMEANCE OF 0.01 PERMS WHEN TESTED IN ACCORDANCE WITH ASTM E96. VAPOR RETARDANT SHALL BE NOT LESS THAN 15 INCHES FROM THE CONCRETE.

APPROVED PRODUCTS

- STEGO WRAP BY STEGO INDUSTRIES LLC, (887) 464-7834.
  - GRIFOLYN T-65 BY REEF INDUSTRIES (800) 231-6074.
  - ALUFUQ D10WB BY RAVEN IND. AT TEXAS ENVIRONMENTAL PLASTIC; (281) 821-7320. INSTALLATION:
    - LAY SHEETS SMOOTHLY, STRETCH AND WEIGHT EDGES, LAP JOINTS TWELVE (12) INCHES AND SEAL WITH TAPE AS SPECIFIED BY VAPOR RETARDANT MANUFACTURER.
    - TURN BARRIER UP SIX INCHES AT WALLS AND AT ALL PIPES, ABUTMENTS, ETC.
    - TAPE AND SEAL AT PENETRATIONS AND AT EDGES.
  - AT GRADE BEAMS, EXTEND VAPOR RETARDANT DOWN BOTH SIDES OF BEAM TRENCHES (AND FOOTING EXCAVATIONS) TO WITHIN 4" OF TRENCH BOTTOM AND SECURE TO SIDES OF TRENCH. DO NOT EXTEND RETARDANT ACROSS BOTTOM OF BEAM TRENCH. PATCHING:
    - PATCH ALL PUNCTURES WITH A MINIMUM OVERLAP OF 6" IN ALL DIRECTIONS AND TAPE AROUND ENTIRE PERIMETER OF REPAIR.
  - ALL CONDUIT OR PLUMBING LINES IN SLAB SHALL BE PLACED BELOW SLAB REINFORCING. ALL CONDUITS OR PLUMBING LINES SHALL NOT BE GREATER THAN 1 INCH DIAMETER AND SHALL BE PLACED NEAR THE CENTER OF THE SLAB AS MUCH AS POSSIBLE.
- PRE-INSTALLATION CONFERENCE:
    - AT LEAST 30 DAYS PRIOR TO THE START OF THE CONCRETE SLAB CONSTRUCTION SCHEDULE, THE CONTRACTOR SHALL CONDUCT A MEETING TO REVIEW THE PROPOSED MIX DESIGNS AND TO DISCUSS THE REQUIRED METHODS AND PROCEDURES TO ACHIEVE THE REQUIRED CONCRETE CONSTRUCTION. THE CONTRACTOR SHALL SEND A PRE-CONCRETE CONFERENCE AGENDA TO ALL ATTENDEES 20 DAYS PRIOR TO THE SCHEDULED DATE OF THE CONFERENCE.
  - THE CONTRACTOR SHALL REQUIRE RESPONSIBLE REPRESENTATIVES OF EVERY PARTY CONCERNED WITH THE CONCRETE WORK TO ATTEND THE CONFERENCE, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
    - CONTRACTOR'S SUPERINTENDENT
    - LABORATORY RESPONSIBLE FOR CONCRETE MIXES AND/OR FIELD QUALITY CONTROL
    - READY-MIX CONCRETE PRODUCER
    - CONCRETE SUBCONTRACTOR
    - AD MIXTURE MANUFACTURERS
    - LIQUID DENSIFIER AND SEALER MANUFACTURER
    - LIQUID DENSIFIER AND SEALER APPLICATION
    - JOINT FILLING APPLICATOR
  - MINUTES OF THE MEETING SHALL BE RECORDED, TYPED AND PRINTED BY THE CONTRACTOR AND DISTRIBUTED BY HIM TO ALL CONCERNED PARTIES, INCLUDING THE OWNER'S REPRESENTATIVE, THE ARCHITECT, AND THE STRUCTURAL ENGINEER WITHIN FIVE DAYS OF THE MEETING.

B. CONCRETE SUBCONTRACTOR QUALIFICATION:

- THE CONCRETE SUBCONTRACTOR SHALL INCLUDE IN THEIR BID PACKAGE TO THE CONTRACTOR, SUFFICIENT DATA THAT CLEARLY INDICATES THE CONCRETE CONTRACTOR'S ABILITY TO SUCCESSFULLY PERFORM THE WORK AND TO ACHIEVE THE FLOOR SLAB TOLERANCES SPECIFIED IN THIS SECTION. THE CONCRETE SUBCONTRACTOR'S TEAM SHALL HAVE THE MAJORITY OF THESE PROJECTS, AND THAT TEAM SHALL REMAIN THE SAME THROUGHOUT THE DURATION OF THIS PROJECT.
- CONCRETE MATERIAL:
  - PORTLAND CEMENT: ASTM C 150, TYPE I. USE ONE BRAND OF CEMENT THROUGHOUT THE PROJECT.
  - AGGREGATES: ASTM C33. COMBINED AGGREGATE GRADATION FOR SLABS ON GRADE AND OTHER DESIGNATED CONCRETE SHALL BE 8% - 18% FOR LARGE TOP AGGREGATES (1 1/2") OR 8% - 22% FOR SMALLER TOP SIZE AGGREGATES (1" OR 3/4") RETAINED ON EACH SIEVE BELOW THE TOP SIZE AND ABOVE THE NO. 100 SIEVE. SLABS ON GRADE SHALL HAVE A MAXIMUM AGGREGATE SIZE OF 1-1/2" FOOTINGS AND PIERS 1" AND BEAMS 3/4".
- WATER: COMPLYING WITH ASTM C 94.
- ALL CONCRETE SHALL CONTAIN "POZZOLITH" ADMIX AS PER MANUFACTURER'S SPECIFICATIONS, IN ACCORDANCE WITH ASTM C494.
- ADMIXTURES:
  - AIR-ENTRAINING ADMIXTURES: SHALL CONFORM TO ASTM C-260. ADMIXTURE MANUFACTURER SHALL PROVIDE WRITTEN CERTIFICATION THAT THE AIR-ENTRAINING ADMIXTURE IS COMPATIBLE WITH OTHER REQUIRED ADMIXTURES. ALL EXTERIOR SLABS SHALL BE AIR-ENTRAINED (4% - 6%) ACCEPTABLE PRODUCTS: EUCLID CHEMICAL AEA-92 AND AIRMIX 200, MASTER BUILDERS MICROAIR, W. R. GRACE DARAVAIR 1000 AND DAREX-11.

NOTE: AIR-ENTRAINING ADMIXTURE SHALL NOT BE USED ON INTERIOR CONCRETE.
  - WATER-REDUCING ADMIXTURE: SHALL CONFORM TO ASTM C494, TYPE A AND CONTAIN NOT MORE THAN 0.05% CHLORIDE IONS. ACCEPTABLE PRODUCTS: EUCLID CHEMICAL WR-89 AND WR-91, MASTER BUILDERS 200N AND 322N, W. R. GRACE WRD-36 AND WRD-64.
  - WATER-REDUCING, RETARDING ADMIXTURE: SHALL CONFORM TO ASTM C494, TYPE D, AND CONTAIN NOT MORE THAN 0.05% CHLORIDE IONS. ACCEPTABLE PRODUCTS: EUCLID CHEMICAL RETARDER 75, MASTER BUILDERS POZZOLITH R, W. R. GRACE DARATARD 17.
  - HIGH RANGE WATER-REDUCING ADMIXTURE (SUPERPLASTICIZER): SHALL CONFORM TO ASTM C494, TYPE F OR TYPE G AND CONTAIN NOT MORE THAN 0.05% CHLORIDE IONS. ACCEPTABLE PRODUCTS : EUCLID CHEMICAL EUCON 37, MASTER BUILDERS REBUILD 1000 W. R. GRACE DARACEM - 1000.
- WATER-REDUCING, NON-CORROSIVE ACCELERATING ADMIXTURE: SHALL CONFORM TO ASTM C494, TYPE C OR E, AND CONTAIN NOT MORE CHLORIDE IONS THAN ARE PRESENT IN MUNICIPAL DRINKING WATER. THE ADMIXTURE MANUFACTURER MUST HAVE LONG-TERM, NON-CORROSIVE TEST DATA FROM AN INDEPENDENT TESTING LABORATORY (OF AT LEAST A YEAR'S DURATION) USING AN ACCEPTABLE ACCELERATED CORROSION TEST METHOD SUCH AS THAT USING ELECTRICAL POTENTIAL MEASURES. ACCEPTABLE PRODUCTS: EUCLID CHEMICAL ACCELGUARD 80/90 AND ACCELGUARD NCA, MASTER BUILDERS NC534 AND POZZUTEC 20, W. R. GRACE POLARSET.
- PROHIBITED ADMIXTURES:
  - CALCIUM CHLORIDE OR ADMIXTURES CONTAINING MORE THAN 0.05% CHLORIDE IONS ARE NOT PERMITTED.
  - FLYASH: A MAXIMUM OF 20% AS CEMENT REPLACEMENT ALLOWED

E. VAPORRETARDER:

- WATERBORNE, MONOMOLECULAR FILM FORMING, MANUFACTURED FOR APPLICATION TO FRESH CONCRETE.
  - ACCEPTABLE PRODUCTS: "EUCOBAR" BY THE EUCLID CHEMICAL COMPANY - CONTACT: PHIL BRANDT (877) 438-3225
- CURING MATERIALS:
  - EXTERIOR CURING: ALL EXTERIOR CONCRETE SLABS SHALL BE CURED USING A LIQUID MEMBRANE-FORMING CURING COMPOUND. THE LIQUID MEMBRANE-FORMING CURING COMPOUND SHALL MEET THE REQUIREMENTS OF ASTM C 1315 WITH A MAXIMUM V.O.C. CONTENT OF 700 G/L.
  - ACCEPTABLE PRODUCTS: "SUPER REZ SEAL" BY EUCLID CHEMICAL COMPANY - CONTACT PHIL BRANDT (877) 438-3225
- INTERIOR CURING: ALL INTERIOR CONCRETE SLABS SHALL BE CURED USING A REDUCED ODOR, DISSIPATING LIQUID MEMBRANE FORMING CURING COMPOUND THAT IS FORMULATED FROM HYDROCARBON RESINS. THE DISSIPATING LIQUID MEMBRANE FORMING CURING COMPOUND SHALL MEET THE REQUIREMENTS OF ASTM C-309 AND V.O.C. CONTENTS IN ACCORDANCE TO EPA 40 CFR, PART 59, TABLE 1 SUBPART D FOR CONCRETE CURING COMPOUNDS WITH A MAXIMUM V.O.C. CONTENT OF 350 G/L. APPLY AT 400 SQUARE FT./GALLON.
- ACCEPTABLE PRODUCTS: "KUREZ DR VOX" BY THE EUCLID CHEMICAL COMPANY







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PLANT PRECAST STRUCTURAL CONCRETE and CIP concrete columns and CIP Prestressed concrete beams  
(See shop drawings prepared by CH Engineering)

PART 1. GENERAL

SECTION 1.01: RELATED DOCUMENTS:

1. Drawings and general provisions of Contract, including General and Supplementary Conditions sections, apply to work of this section.
2. Related work specified in other sections:
  - A. Poured-in-Place Concrete
  - B. Field Poured Topping & Reinforcing
  - C. Expansion Joint Materials
  - D. Sealants and Caulking
  - E. Painting
  - F. Flashing and Sheet Metal
  - G. Waterproofing/Water Repellent Coatings
  - H. Miscellaneous Metals
  - I. Architectural Precast Concrete
  - J. Unit Masonry
  - H. Guard Rail or Closure Fence/Barrier

SECTION 1.02: QUALIFICATIONS

1. The work of this Subcontract shall be executed only by a Company with 5 years proven experience in the design and manufacture of precast concrete and prestressed components, and having adequate finances, equipment, plant and skilled personnel to expeditiously detail, fabricate and install the work of this section as required by the Drawings and Specifications.
2. The manufacturer shall be responsible for the design, connections and installation of the precast concrete units and shall provide placing details for all items to be cast in poured concrete, or attached to structural walls and framing provided by others.
3. Production and erection drawings and design calculations shall be the responsibility of a registered Professional Engineer. Design calculations shall be sealed by the Engineer.

SECTION 1.03: GUARANTEE

1. Provide the Owner with the following guarantee in writing:

"We (name of Manufacturer or Subcontractor) do, hereby, guarantee that the precast units will not spall or show evidence of visible cracking beyond accepted industry standards, splitting, deformation, or loosening resulting from inferior materials or workmanship by this trade for a period of one (1) year effective from the date of the substantial completion of the precast erection. Precast units showing such defects will be repaired or replaced and made acceptable at no expense to the Owner."

SECTION 1.04: SHOP DRAWINGS

1. Submit for approval, framing (erection) drawings for all precast and prestressed concrete work. One copy of piece drawings are to be submitted at the conclusion of the project for record purposes only; typical piece drawings [only] are to be submitted with the design calculations. Calculations and drawings shall be sealed by a licensed Professional Engineer in the State of Texas
2. Erection drawings shall include:
  - a. Location of each unit in the completed structure.
  - b. All dimensions of each unit.
  - c. Jointing clearances and clearances between units and the structural building framework.
  - d. Complete connection and insert details including materials, size and length of welds.
  - e. Class of finish and location of each precast item.
  - f. Identifying mark number for each precast product.
  - g. Any special handling instructions or bracing required.
  - h. Special precautions to be taken by other trades affecting the work of this subcontract.
  - i. Location of shearwalls.
  - j. Connection details.

SECTION 1.05: INSPECTION AND TESTING

1. Inspection and testing of precast and prestressed concrete may be carried out by an independent Inspection and Testing Company appointed and paid for by the Owner, except for the testing requirements listed below. If inspection discloses improper workmanship or inferior material, any subsequent inspection or test deemed necessary by the Architect shall be at no cost to the Owner. The precast manufacturer may perform the necessary inspection and testing of the precast components if the facility is a PCI Certified Plant.
2. Cooperate with the Inspection and Testing Company and provide access to all materials used in the concrete.
3. The following inspection must be carried out at the plant:
  - a. Forms.
  - b. Size and location of reinforcing.
  - c. Size and location of cast-in hardware.
  - d. Mill test reports.
  - e. Concrete batching methods.
  - f. 6" Diameter x 12" long cylinder tests.
  - g. Curing Methods.
  - h. Slump tests.
  - i. Air tests.
  - j. Size of completed units.
  - k. Finishes.
4. Inspection Company shall immediately report results of tests and inspections directly to Architect who will issue copies to the Contractor and the Precast Concrete Manufacturer.

SECTION 1.06: HANDLING, STORAGE AND PROTECTION

1. Design and cast lifting devices into the units to ensure that they will be safely and efficiently handled at all times. Lifting devices shall be so arranged that they do not have to be removed; or, if they must be removed, they shall be arranged so that they are readily removed and any planned depressions in the concrete can be readily filled.
2. Stack units on properly cushioned supports to protect the edges.
3. Do not permit units to contact earth or other staining influences or to rest on corners.
4. Protect all holes and reglets against water and ice in freezing weather.
5. Protect work while in progress.

PART 2. PRODUCTS

SECTION 2.01: MATERIALS

1. Cement Type:
  - a. Portland Cement, ASTM C 150, Type I or Type III (White and/or Gray) to match control sample.
2. Aggregates:
  - a. Shall conform to applicable section of ASTM C33. Provide aggregates from a single source for architecturally finished concrete. Local aggregates not complying with ASTM C 33, but which have shown by special test or actual service to produce concrete of adequate strength and durability, may be used when acceptable to the Architect. Aggregate materials to match Owner's control sample.
  - b. Concrete shall have a minimum compressive strength at 28 days of 5,000 PSI (max. .38 w/c ratio)
3. Admixtures:
  - a. Air-entrained admixture shall be 5% (+ or -) 1.5%.
  - b. Water reducing admixtures: Use in strict compliance with manufacturer's directions. Admixtures to increase cement dispersion, or provide increased workability for low slump concrete, may be used subject to Architect's acceptance. Use amounts as recommended by admixture manufacturer for climatic conditions prevailing at time of placing. Adjust quantities of admixtures as required to maintain quality control.
4. Reinforcing Steel:
  - a. Billet steel bars conforming to ASTM A 615, Grade 60K.
  - b. Low alloy steel reinforcing should conform to ASTM A 706, Grade 60K.
  - c. Reinforcing larger than 1/4" diameter shall be deformed bars conforming to the same standard as (a) above.
  - d. Welded wire mesh shall conform to ASTM A 185, Grade 60K, Plain.
  - e. Increase reinforcing cover by 50% from what the code indicates.
5. Prestressing strand shall be uncoated seven (7) wire low relaxation strand ASTM A416, Grade 270K.

6. Anchors and inserts:

- a. Materials:
  1. Structural Steel shall be of new material conforming to ASTM A 36.
  2. Bolts: A325
  3. Welded headed studs: AWS D1.1-Type B.
  4. Deformed bar anchors: ASTM A496.
- b. Finish:
  1. Shop primer: Manufacturer's standards.
  2. Hot dipped galvanized: ASTM A153.
  3. Zinc Rich Coating: Self curing, one component, "Galv-a-kote" 13F22 gray, standard brushing grade.
  4. Cadmium plated: ASTM A165.
7. Forms:
  - a. To be constructed of approved concrete, steel, wood or fiberglass reinforced plastic or high density overlaid plywood to obtain the quality of the finish specified.
1. Plastic Void Forms:
  - a. Forms manufactured by High Concrete Accessories, Lancaster, PA 17605; Phone (800) 508-2583
  - b. Products:
    1. Grouted Connection Tube (for CIP Concrete Interface)
    2. Spandrel-to-Column Connection Sleeve & Closure Cap
    3. Double Tee Stem Blockout
    4. Swift-Lift Cover
9. Grout:
  - a. Cement Grout: Portland cement, ASTM C150, Type I and Clean; natural sand, ASTM C404. Mix at ratio of 1.0 part cement to 3 parts sand, by volume, with minimum water required for placement and hydration.
  - b. Non-metallic, non-corrosive, non-staining product containing selected silica sands, Portland cement, shrinkage compensating agents, plasticizing and water reducing agents, complying with CRD-C621.

Available products--Available products subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:

1. Euco N.S., Euclid Chemical Company
2. Masterflow 713, Master Builders
3. Five Star Grout, U.S. Grout Corporation
4. B/C Non-shrink Grout, Admixtures, Inc.

SECTION 2.02: SAMPLES

1. Provide 12" x 12" samples of each finish as required by the Architect for his approval. Upon approval of samples for finish and color, the Architect will inspect a full size first piece cast unit at manufacturer's plant no later than 5 days after precaster's request. Provide representative details such as returns, edges, repairs and finished lift point patching or plastic caps. Upon approval of the first run units, they shall become the identified standard, and may be used in the structure.

SECTION 2.03: FINISHES

1. The vertical face of the exterior spandrels and exterior wall panels shall be cast to provide an architectural sandblast finish as designated by the architectural drawings and the Owner's control sample.
2. Precast structural units other than (1) above, shall be Architectural Grade B finish. Per PCI MNL 117.
3. Double Tees shall have a normal, plant run finish on the underside resulting from casting against approved forms using good industry practice, and an unformed surface with the designated finish. Wall panels, spandrels, and columns to have a trowel finish on the unformed surface; double tees to have a broom finish.
4. Exterior precast elements required to have an architectural finish shall receive a sandblasted finish.

SECTION 2.04: DESIGN

1. Design of the precast work shall be in accordance with the following:
  - a. ACI 318-latest edition, Code.
  - c. PCI Design Handbook Latest Edition.

SECTION 2.05: FIELD DIMENSIONS

1. Perform a field pre-erection survey prior to erection of precast members. Report any discrepancies to the contractor as soon as they are discovered for correction prior to start of precast erection.

SECTION 2.06: FABRICATION

1. Precast concrete exposed surface finish shall match approved samples.
2. Fabricate units to profiles and sizes detailed in accordance with approved shop drawings.
3. Execute work accurately, true to dimensions, square, in true planes, free from twists, cracks, broken edges or warped conditions.
4. Quality of concrete, placing materials in forms, vibrating, curing, stripping and handling shall be within accordance with PCI-MNL 116 & PCI-MNL-117, and this standard shall apply to all precast units required under this contract. For prestressed units, minimum release strength shall be 3,000 PSI.
5. Fabricate precast work within dimensional tolerances in compliance with PCI-MNL-116.
6. Cast-in lifting devices required for erection of precast concrete work. Manufacturer shall ensure that all lifting devices used externally or embedded are capable of supporting precast concrete work in all attitudes occurring during course of manufacturing and installation.
7. The Architect shall visit the plant to inspect proposed methods of control of mix, fabrication, curing practices and approve first run production units no later than five days after precaster's request.
8. Manufacture units in accurate molds designed to withstand vibration and lateral forces.
9. Identify all precast units with a number on back face or other unexposed area as mark identifies the orientation of unit in final position.
10. Curing should be performed in accordance with PCI recommended practices such that the strength and finish of the unit is not impaired.
11. The precast manufacturer shall provide for those openings 12" round/square or larger as shown on the structural drawings. Other openings shall be located and field drilled [or cut] by the trade requiring them after the precast, prestressed concrete products have been installed. Locations of all field cut openings shall be reviewed and approved by the precast manufacturer prior to any field drilling or cutting of the precast.

SECTION 2.07: WELDING

1. Perform welding in accordance with AWS D12.1 Reinforcing Steel Welding Code, and AWS D1.1 Structural Welding Code.
2. Provide fit up plates or angles to compensate for deviations, alignment or location of inserts.
3. Exercise care to minimize effect of welding heat. Design welds to prevent tearing at end of weld, which would cause progressive failure.

PART 3. EXECUTION

SECTION 3.01: ERECTION EQUIPMENT AND SAFETY REGULATIONS

1. This contractor shall be responsible for safe erection and comply with applicable local and state safety regulations.
2. Secure each unit safely and adequately in position by positive mechanical connections.
3. Use sufficient temporary bracing to brace work adequately.
4. Use erection equipment that is not bent, twisted, warped or damaged in any way. All wire ropes for cranes or lifting bars shall be of full sections -- not bent, twisted, kniked, torn or stretched. Clearly mark the lifting capacity of all lifting beams, platforms and trusses.

SECTION 3.02: SITE ACCESS

1. General Contractor shall be responsible for providing suitable access to the building, proper drainage and firm, level bearing for the hauling and erection equipment to operate under its own power to the point of erection.
2. General Contractor shall provide provisions as required for placement and accurate alignment of anchor bolts, plates or dowels in column footings, grade beams and other field placed supporting members.

SECTION 3.03: INSTALLATION

1. Execute this work with workmen skilled in this trade, set work plumb, true and square with joints parallel and uniform, all in accordance with the approved erection drawings. Accurately place all shims and bearing pads.
2. Install precast concrete units in conformance with the tolerances listed in PCI-MNL-127-85.
3. Anchor units in final position by bolting and/or welding as shown on drawings. All field welding must be done by certified welders in accordance with AWS D12.1. Complete grouting and packing as shown.

SECTION 3.04: REJECTION OF WORK

1. Any concrete units containing concrete which has failed to meet strength requirements of plans and specifications shall be cored as directed by the Architect. Unit may be rejected and replaced at the Architect's discretion after the core test. The costs of these tests shall be borne by this subcontractor.
2. Damaged, chipped or discolored units shall be replaced, patched or refinished as directed by the Architect and to his approval.
3. Except for hairline cracks (which are defined as surface cracks of minute width, visible but not measurable by ordinary means), units which have become cracked or broken may be repaired after approval of a written remedial procedure by the Engineer of record. If this repair work is aesthetically unacceptable the unit may be rejected and shall be replaced.

SECTION 3.05: CLEAN UP

1. As work progresses, remove all excess or foreign materials which would become difficult to remove from finished surfaces, or which would harden on finished surfaces.
2. On completion of the work under this Subcontract, remove all surplus materials, tools, equipment and debris, leaving the building in a clean condition to the satisfaction of the Owner.
3. Final cleaning of all material is the responsibility of the general contractor/construction manager of the project.

Partial List of Items that are missing or that require repair or replacement

FABRICATION

- DOUBLE TEES
  - Fabrication of missing Double Tees
- COLUMNS
  - Fabrication of 17 missing column heads.
  - A12, A13, A13.5, A14, A16, A.9-16, C12, C16, C.5-16, D15, D16, E1, E2, E11, E13, E14, E15
  - Demolition of 2 column heads and reinstallation of CIP concrete columns. Re-use reinforcing if possible, if not, install new reinforcing.
- LIGHTWALLS
  - Fabrication of 17 Lightwalls
  - (A1-A2), (A2-A3), (A3-A4), (A4-A6), (A12-A13), (A13-A13.5), (A13.5-A14), (A14-A16), (B3-B4), (E1.5-E2), (E2-E3), (E5-E6), (E6-E7), (E8-E9), (E9-E10a), (E10b- E13), (E14-E15)
- SPANDRELS
  - Fabrication of 8 Spandrels
  - (1C-1E), (3C-3E), (4C-4D), (5D-5E), (12A-12C), (15D-15E), (16A-16A.9), (16C.5,16D)
- SHEARWALLS
  - Fabrication of 4 Shearwalls
  - (E1-E2), (E7-E8), (E13-E14), (16A.9-16C.5)
- BRIDGE WALL LIGHTWALL SUPPORTS
  - Fabrication of 2 impact wall supports for bridge lightwall support (between E10-E11), as per plans.
- STRUCTURAL STEEL
  - Fabrication of structural steel for bridge, stairs and canopy

INSTALLATION

- DISASSEMBLY OF FORMS
  - Disassembly of existing forms on Shearwall C6-C12
- DOUBLE TEES
  - Transportation and Installation of 66 Double Tees
  - Installation shall include welding to end supports and flange connections, as per CH drawings.
- POST TENSIONING AND GROUTING
  - After installing corresponding Double Tees, on required beams, the beams shall be Post Tension to 100% of Stressing capacity.
  - Sealing, capping anchors, and grouting of beam ends will be required.
- LIGHTWALLS
  - Installation of 17 Lightwalls
  - Installation includes assembly of bolts and nuts and welding to welding plates, as per CH drawings.
- SPANDRELS
  - Installation of 8 Spandrels
  - Installation shall include assembly of bolts and nuts and welding to welding plates, as per plans.
- MISSING WELDING PLATES
  - Replacement and installation of missing welding plates shall be included in this scope of work and will be done by mechanically bolting a 1/2" thick plate with 3/4" dia. bolts and nuts with Simpson SET-XP adhesive with 8" minimum embedment.
- STRUCTURAL STEEL
  - Installation of structural steel for bridge, stairs and canopy

REPAIR

- Repair of honeycombs in concrete walls, columns and beams.
- Repair of cracks in concrete walls.
- Remove and replace trench drain.

SEE DRAWINGS FOR MORE INFORMATION AND ITEMS

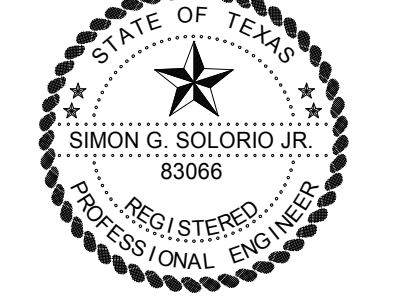


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June 17, 2019

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY SIMON G. SOLORIO, JR. TO BE USED AS EVIDENCE OF A REGISTERED PROFESSIONAL ENGINEER. IT IS NOT TO BE USED FOR ANY OTHER PURPOSES WITHOUT THE WRITTEN PERMISSION OF THE ENGINEER. THE SEAL IS THE PROPERTY OF THE ENGINEER AND SHALL BE RETURNED TO HIM UPON THE COMPLETION OF THE PROJECT.

For bids

*[Signature]*

McAllen PUBLIC SAFETY BUILDING PARKING  
GARAGE RE-BID  
CITY OF McALLEN  
McALLEN, TX

PROJECT NUMBER  
16158

DATE  
June 17, 2019

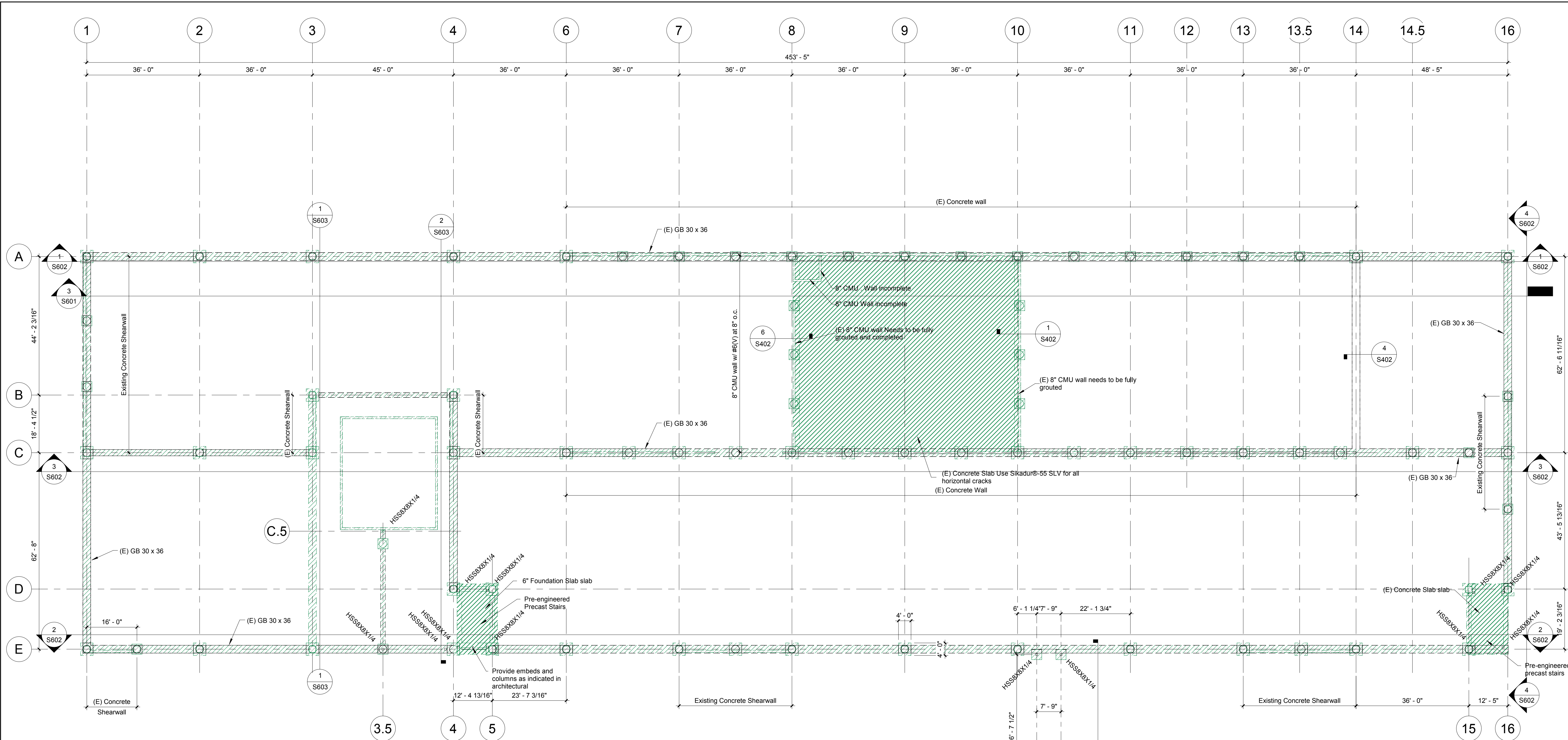
S H E E T

S103



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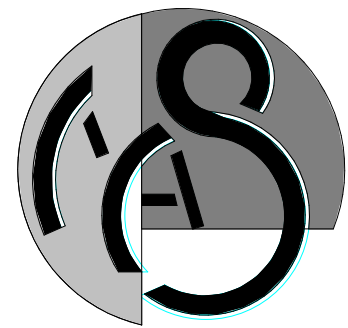
#### FOUNDATION

- FOR GENERAL NOTES SEE SHEET S101 AND S102
- FOR TYPICAL DETAILS SEE SHEETS NUMBER S400'S
- CONTRACTOR/SUBCONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL DIMENSIONS WITH ARCHITECTURAL PLANS BEFORE COMMENCING ANY WORK. THE CONTRACTOR AND OR SUBCONTRACTOR SHALL REPORT ANY DISCREPANCIES TO THE ARCHITECT AND ENGINEER BEFORE THE WORK HAS BEGUN.
- REFER TO ARCHITECTURAL PLANS FOR ADDITIONAL DIMENSIONS.
- REFER TO ARCHITECTURAL PLANS FOR FLOOR DRAIN LOCATIONS.
- SLOPE SLAB TO DRAINS, SEE ARCHITECTURAL PLANS FOR SLOPE.
- REFER TO ARCHITECTURAL PLANS FOR FLOOR FINISHES. ENGINEER IS NOT RESPONSIBLE FOR TYPE OF FLOOR FINISHES.
- THE TESTING LABORATORY SHALL BE THE OWNERS REPRESENTATIVE TO CONTROL THE PLACEMENT OF COMPACTED FILL. THE TESTING LABORATORY SHALL APPROVE THE SUBGRADE PREPARATION, THE FILL MATERIALS, THE METHOD OF PLACEMENT AND COMPACTION, AND SHALL GIVE WRITTEN APPROVAL OF THE COMPLETED FILL. THE TESTING LABORATORY SHALL INDICATE ON THERE REPORT THE ELEVATION OF THE COMPLETED SUBGRADE.
- ALL EARTHWORK AND GRADING SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE GEOTECHNICAL ENGINEERING STUDY. THE MORE STRINGENT REQUIREMENTS BETWEEN THESE SUBGRADE NOTES AND GEOTECHNICAL ENGINEERING STUDY SHALL GOVERN AND EXECUTED BY THE CONTRACTOR.
- IN THE EVENT FOUNDATION EXCAVATIONS ARE CARRIED TO A DEPTH GREATER THAN REQUIRED, THE ADDITIONAL DEPTH SHALL BE FILLED WITH THE SAME CONCRETE AS THAT USED FOR FOOTING AT NO ADDITIONAL EXPENSE TO THE OWNER. NO UNCONTROLLED FILL WILL BE PERMITTED.
- THE FOOTING EXCAVATIONS SHALL BE KEPT FREE FROM LOOSE MATERIAL AND STANDING WATER.
- THE FOUNDATION EXCAVATIONS SHOULD BE OBSERVED BY THE TESTING LABORATORY PRIOR TO STEEL OR CONCRETE PLACEMENT TO ASSESS THAT THE FOUNDATION MATERIALS ARE CAPABLE OF SUPPORTING THE DESIGN LOADS AND ARE CONSISTENT WITH THE MATERIALS DISCUSSED IN THE STUDY. THIS IS ESPECIALLY IMPORTANT TO IDENTIFY THE ACCEPTABILITY OF THE SUBGRADE OR FILL MATERIAL UNDER THE FOOTING. SOFT OR LOOSE SOIL ZONES ENCOUNTERED AT THE BOTTOM OF THE FOOTING OR BEAM EXCAVATIONS SHOULD BE EXCAVATIONS SHOULD BE REMOVED TO THE LEVEL OF COMPETENT SOIL AS DIRECTED BY THE TESTING LABORATORY. CAVITIES FORMED AS A RESULT OF EXCAVATION OF SOFT OR LOOSE SOIL ZONES SHOULD BE BACKFILLED WITH LEAN CONCRETE OR SELECT FILL AS DETERMINED BY THE TESTING LABORATORY.
- CARE SHOULD BE TAKEN TO SHAPE THE BUILDING AREAS SUCH THAT WATER WILL NOT POND AROUND THE STRUCTURE DURING CONSTRUCTION AND CAUSE THE NEAR SURFACE CLAYS TO SWELL. THE PROPOSED STRUCTURE SHALL BE ISOLATED FROM ANY MOISTURE SOURCE WHICH MIGHT ALSO CAUSE SWELLING OF THE CLAYS AFTER COMPLETION OF THE CONSTRUCTION.
- WHEN THE STRUCTURE IS COMPLETE, THE GROUND SURFACE SHOULD SLOPE AWAY FROM THE STRUCTURE AND DOWN SPOUTS SHOULD CARRY RUNOFF WATER SEVERAL FEET FROM THE BUILDING, PREFERABLY INTO PAVED AREAS OR SEWERS, BEFORE DISCHARGING.
- DO NOT PLANT, OR LEAVE IN PLACE, DEEP ROOTED TREES WITHIN CLOSE PROXIMITY TO THE PERIMETER OF THE STRUCTURE. DEEP ROOTED TREES HAVE POTENTIAL TO REMOVE MOISTURE FROM BENEATH THE BUILDING IF PLANTED CLOSE ENOUGH TO ALLOW THE ROOT BULB EXTEND NEAR OR BENEATH THE BUILDING.
- AIR CONDITIONING CONDENSER DRAIN LINES TO DISCHARGE WATER A MINIMUM OF 5 FEET FROM THE PERIMETER OF THE STRUCTURE. THE DISCHARGE AREA SHALL HAVE SUFFICIENT SLOPE AWAY FROM THE STRUCTURE TO PREVENT STANDING WATER.
- THE FINAL ONE (1) FOOT OF FILL OUTSIDE THE BUILDING AREA SHOULD CONSIST OF A COHESIVE CLAYEY (CL) SOIL. FILL CAN NOT BE ALLOWED TO DRY OUT DURING OR AFTER COMPACTION. (P1 BETWEEN 15 AND 25)
- NOTE THAT SOME LEVELS OF RISK ARE ASSOCIATED WITH ALL FOUNDATION SYSTEMS AND THERE IS NO SUCH THING AS A "ZERO RISK" FOUNDATION. IT ALSO SHOULD BE NOTED THAT THE FOUNDATION PROVIDED IS NOT DESIGNED TO RESIST SOIL MOVEMENT AS A RESULT OF SEWER/PLUMBING LEAKS, EXCESSIVE IRRIGATION, NON UNIFORM IRRIGATION, POOR DRAINAGE, AND WATER PONDING NEAR THE FOUNDATION SYSTEM.
- CONSTRUCTION FOLLOWING WET WEATHER PERIODS WILL LIKELY ENCOUNTER DIFFICULTIES DUE TO THE WET OR SOFT SURFACE SOILS BECOMING A GENERAL HINDRANCE TO EQUIPMENT DUE TO RUTTING AND PUMPING OF THE SOIL SURFACE. IF THE SUBGRADE CANNOT BE ADEQUATELY COMPACTED TO MINIMUM DENSITIES AS DESCRIBED ABOVE, ONE OF THE FOLLOWING MEASURES WILL BE REQUIRED:
  - REMOVAL AND REPLACEMENT WITH SELECT FILL;
  - CHEMICAL TREATMENT OF THE SOIL TO DRY SOIL AND INCREASE THE STABILITY OF THE SUBGRADE;
  - DRYING BY NATURAL MEANS.

SLAB ON GRADE	
THICKNESS	6.0 INCHES
REINFORCING (EACH WAY)	#4 AT 12" O.C.
REINFORCING LOCATION	2" FROM TOP
VISQUEEN	10 MIL

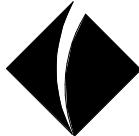
Existing Foundation Plan  
1/16" = 1'-0"

1
S402 S202



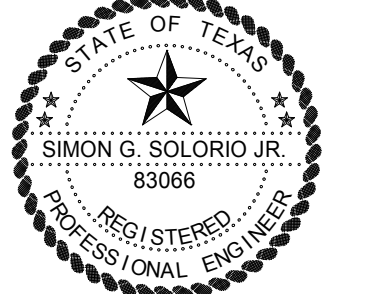
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For bids

*[Signature]*

McAllen Public Safety Building Parking  
Garage Re-Bid  
City of McAllen  
McAllen, TX

PROJECT NUMBER  
16158

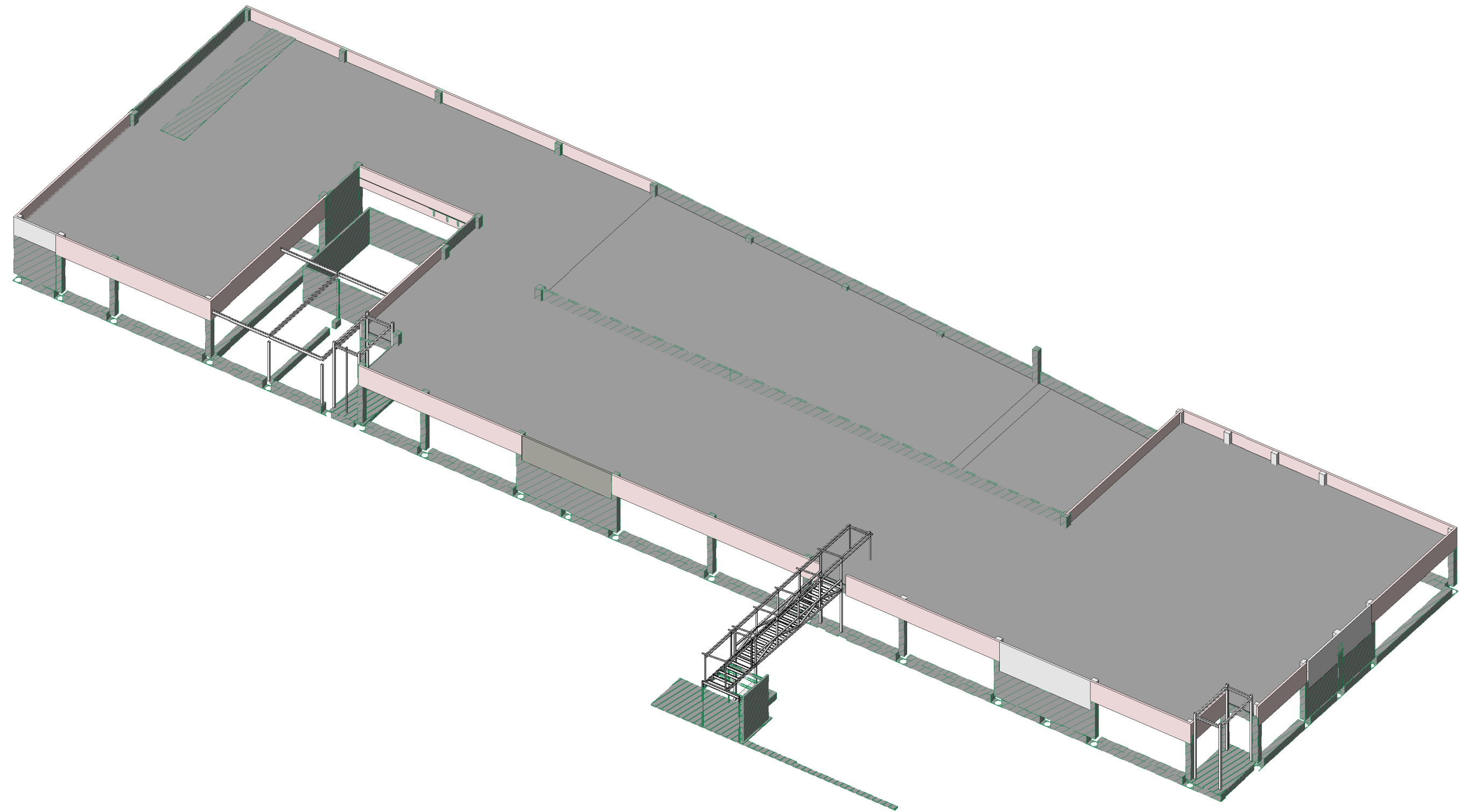
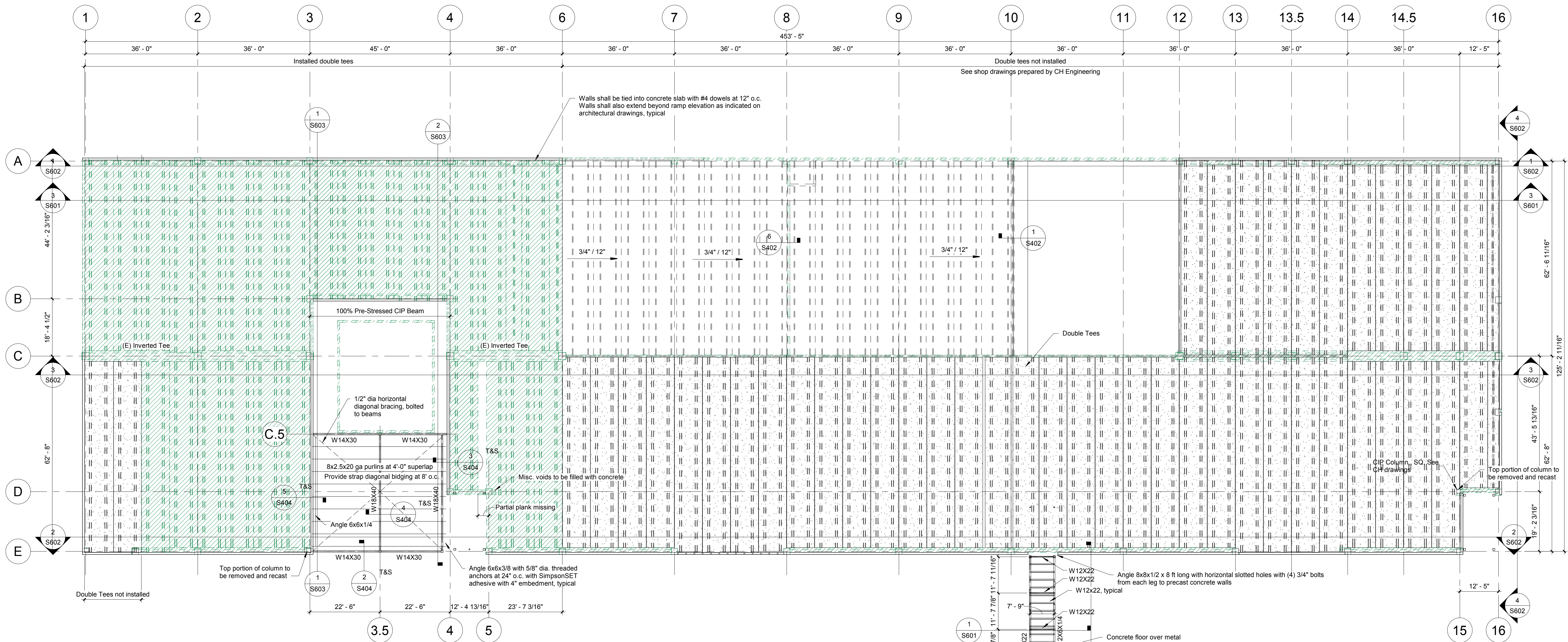
DATE  
June 17, 2019

S H E E T

S202

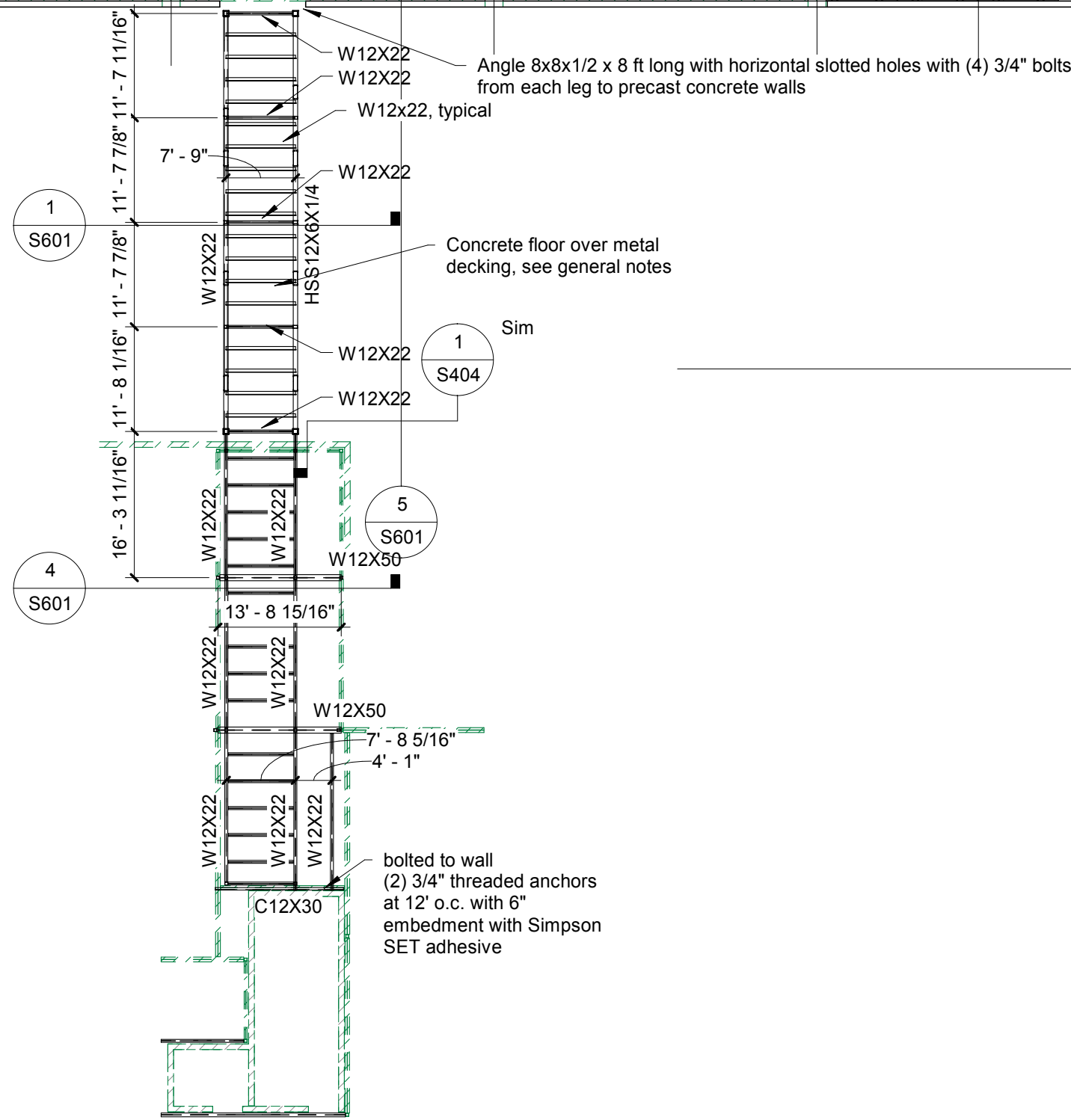


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3d View

2  
S301



#### MASONRY LAYOUT

- FOR GENERAL NOTES SEE SHEET S101, S102 AND S103.
- FOR TYPICAL DETAILS SEE S400 SHEETS.
- DIMENSIONS SHOWN ARE FOR GENERAL INFORMATION. COORDINATE WITH ARCHITECTURAL PLANS.
- SEE MECHANICAL PLANS FOR MECHANICAL OPENINGS.
- SEE DETAIL 4/S402 REINFORCING AT WINDOW, DOOR AND OPENING JAMBS.

CMU	VERTICAL	HORIZONTAL	OPENINGS AND DOWELS	CORNERS
8"	#6 AT 32" O.C.	#5 AT 96" O.C.	(2) #5	(3) #5
6"	#4 AT 48" O.C.	#4 AT 96" O.C.	(1) #4	(3) #4
12"	(2) #6 AT 32" O.C.	(2) #5 AT 96" O.C.	(2) #6	(3) #6

INDICATES CMU WALL/COLUMN/PILASTER REINFORCED PER DETAIL 1/S402

#### Framing

- FOR GENERAL NOTES SEE SHEET S101, S102
- FOR TYPICAL DETAILS SEE S400 SHEETS.
- DIMENSIONS SHOWN ARE FOR GENERAL INFORMATION. COORDINATE WITH ARCHITECTURAL PLANS.
- SEE ARCHITECTURAL ROOF PLAN FOR ROOF HATCHES.
- SEE MECHANICAL PLANS FOR MECHANICAL OPENINGS.
- STEEL BEAM TO STEEL BEAM CONNECTION PER TYPICAL DETAILS, U.N.O.
- STEEL BEAM TO STEEL COLUMN CONNECTION PER TYPICAL DETAILS, U.N.O.
- STEEL BRACE TO STEEL BEAM AND STEEL COLUMN CONNECTION PER TYPICAL DETAILS U.N.O.
- DESIGN JOISTS UNDER UNITS WITH LOADS INDICATED ON THE DRAWINGS PER DESIGN CRITERIA STEEL JOIST MANUFACTURER TO PROVIDE STEEL JOIST SIZE (MAX. JOIST DEPTH TO BE AS SHOWN ON PLANS) DESIGN JOIST FOR L600. (MECHANICAL WEIGHT + DEAD LOAD ONLY) COORDINATE OPENINGS WITH MECHANICAL PLANS.
- JOIST MANUFACTURE TO VERIFY THE MINIMUM ROW OF BRIDGING AND BRIDGING SIZE, AS REQUIRED BY SJI.
- MAXIMUM JOIST SPACING SHALL BE 30 INCHES ON CENTER.
- JOISTS UNDER MECHANICAL UNITS MAY BE DOUBLED IF REQUIRED.
- FOR OPENING IN ROOF AND AT MECHANICAL UNITS, SEE TYPICAL DETAILS.

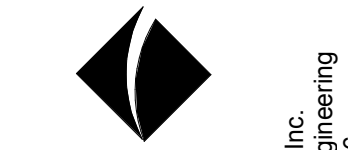
Garage Framing Plan  
1/16" = 1'-0"

1  
S404, S301

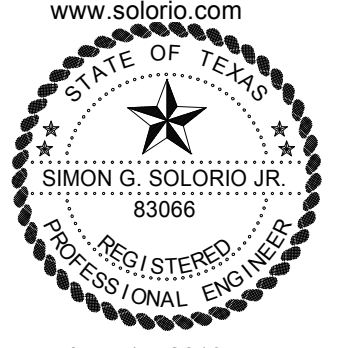


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McAllen Public Safety Building Parking  
GARAGE RE-BID  
CITY OF McALLEN  
McALLEN, TX

PROJECT NUMBER  
16158

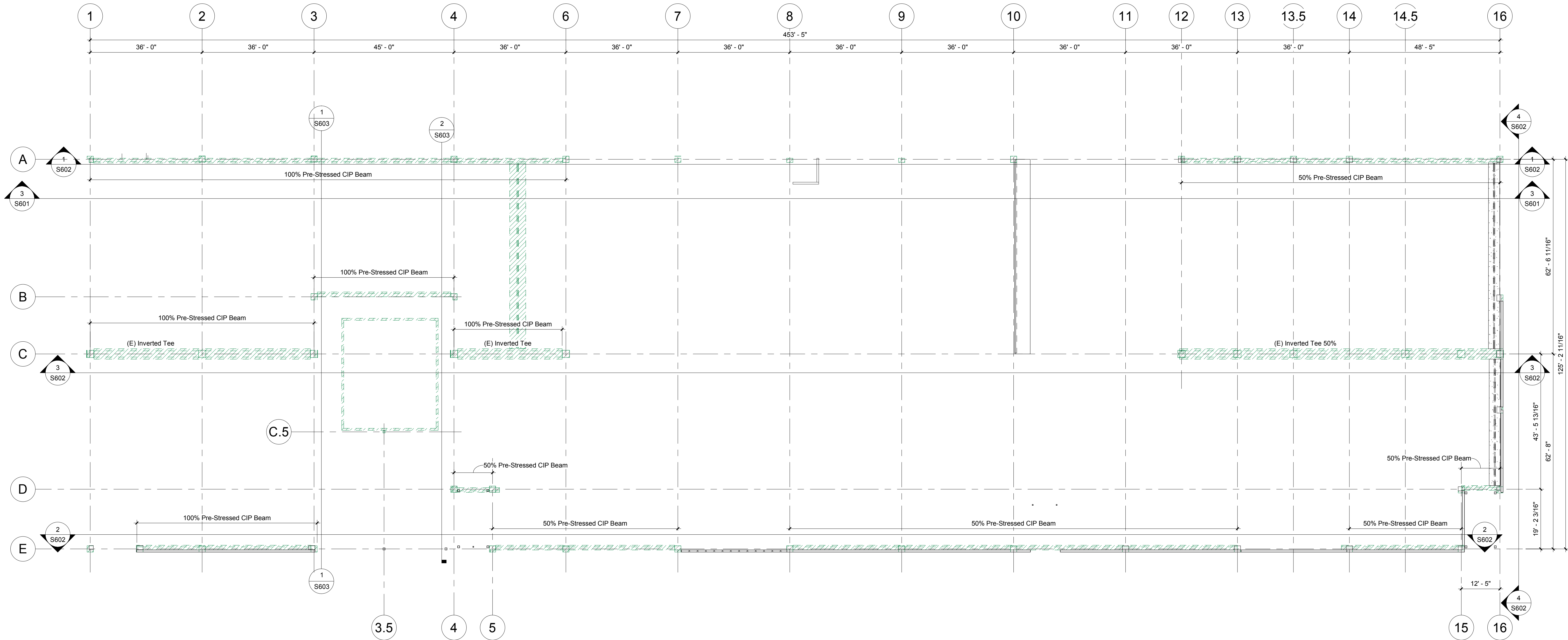
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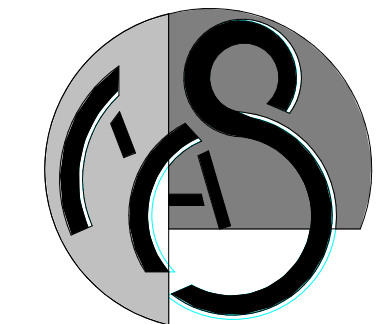
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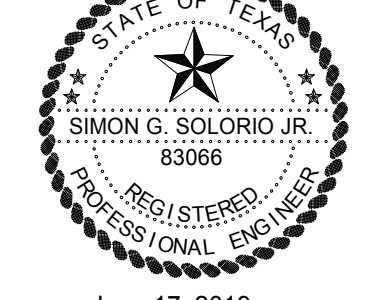
**Note:**  
See shop drawings prepared by CH Engineering for structural information of prestressed concrete beams, prestressed double Tees and precast concrete spandrel beams.



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CITY OF McALLEN  
McALLEN, TX

PROJECT NUMBER

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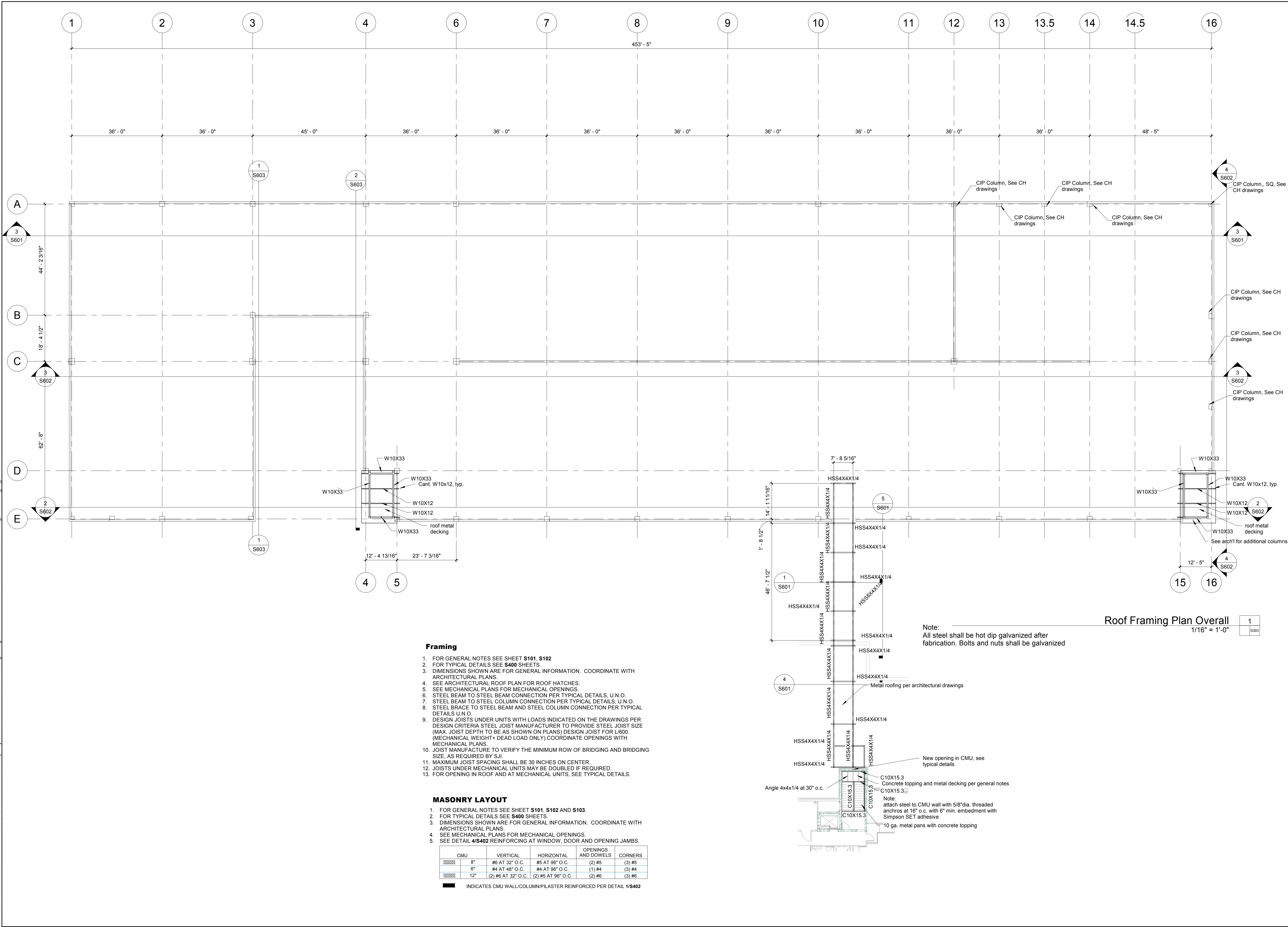
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S H E E T

S302

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Structural Engineering  
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STATE OF TEXAS  
SIMON G. SOLORIO JR.  
83066  
REGISTERED PROFESSIONAL ENGINEER  
June 17, 2019

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**CITY OF McALLEN**  
McALLEN, TX

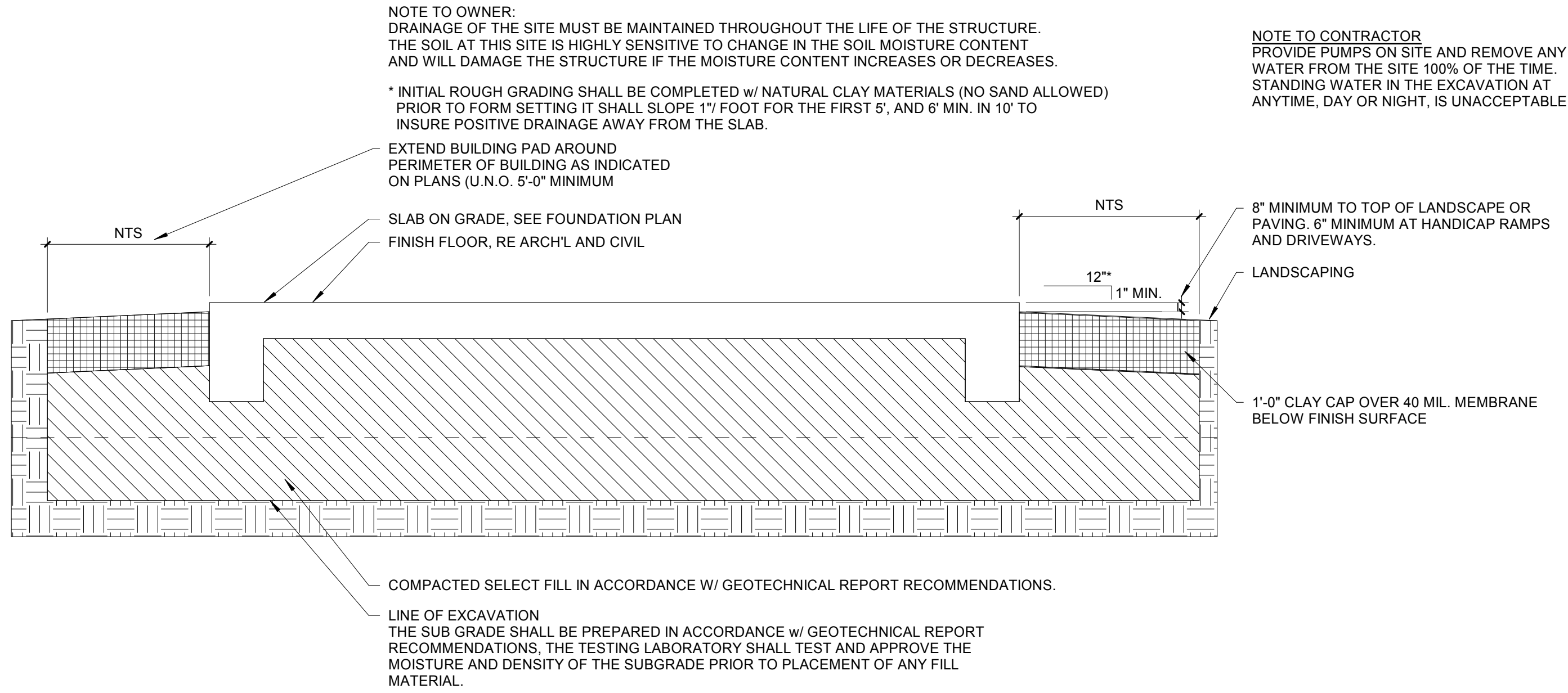
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16158

DATE  
June 17, 2019

S H E E T  
**S303**



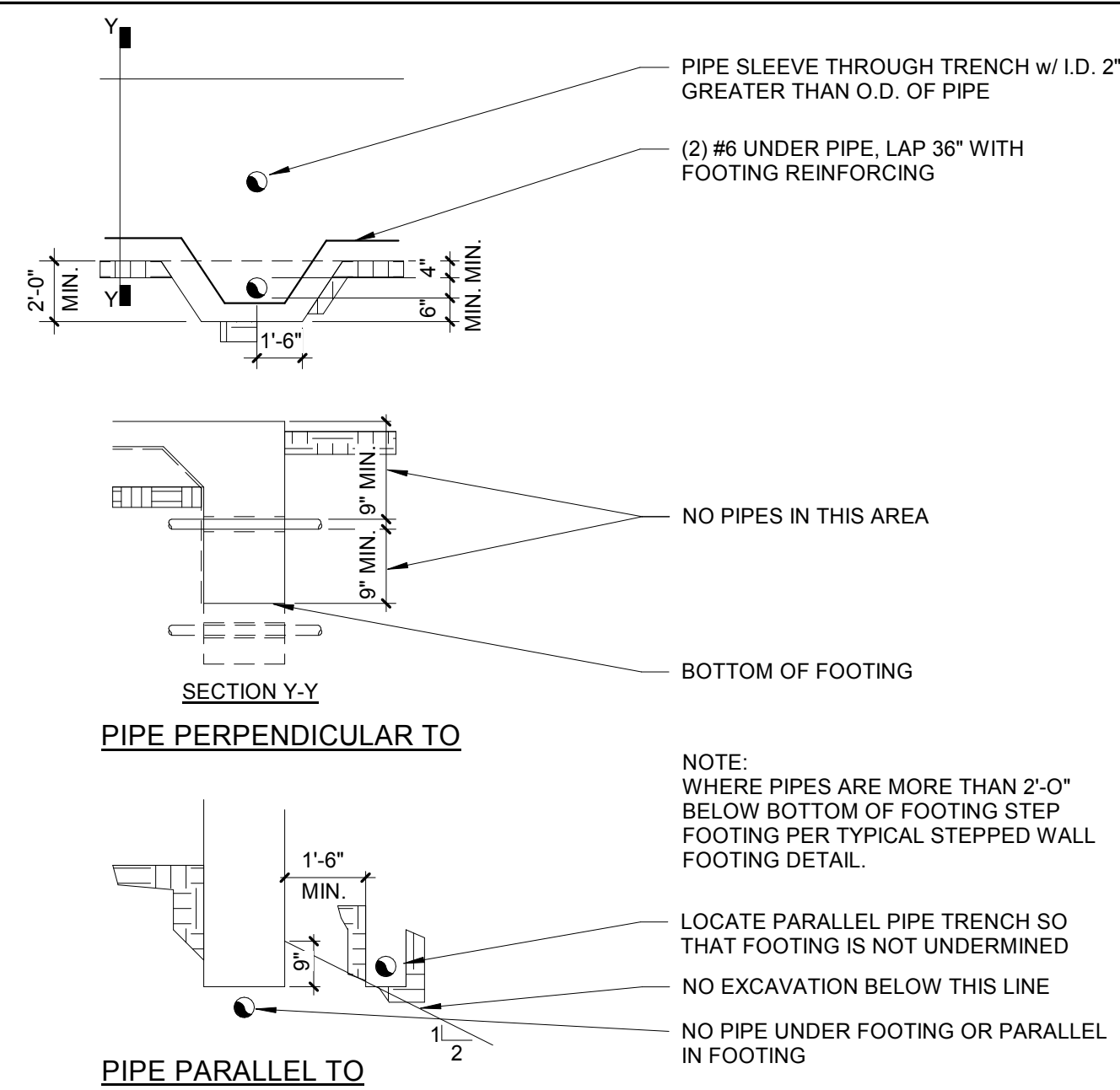
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Typical Building Subgrade Preparation

1" = 1'-0"

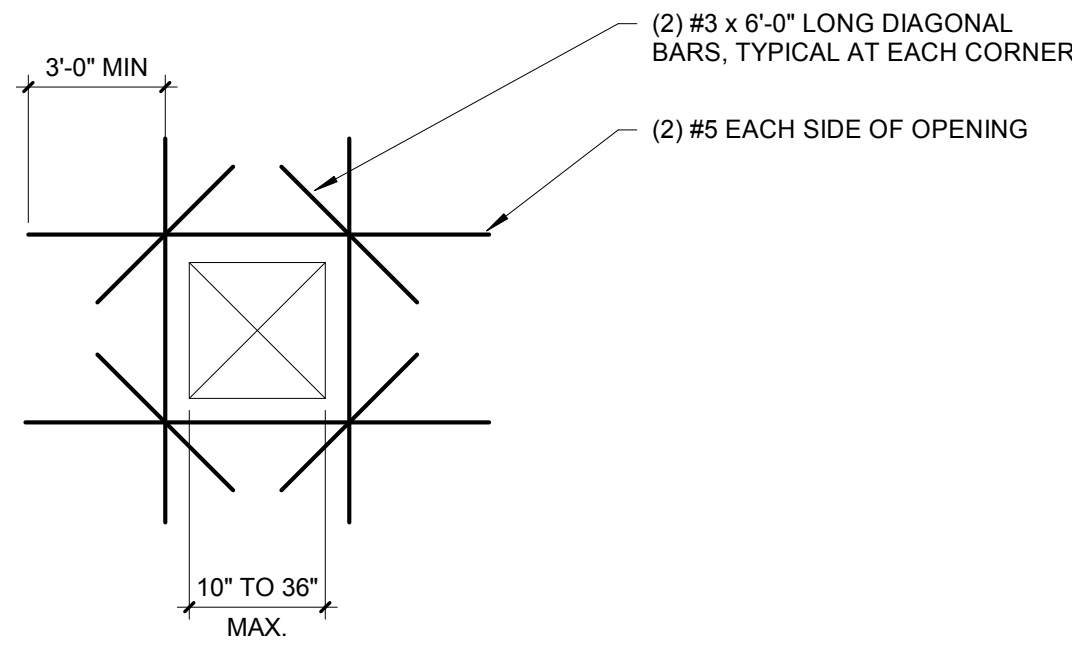
7  
S401



Typical Piping Through Footing

3/8" = 1'-0"

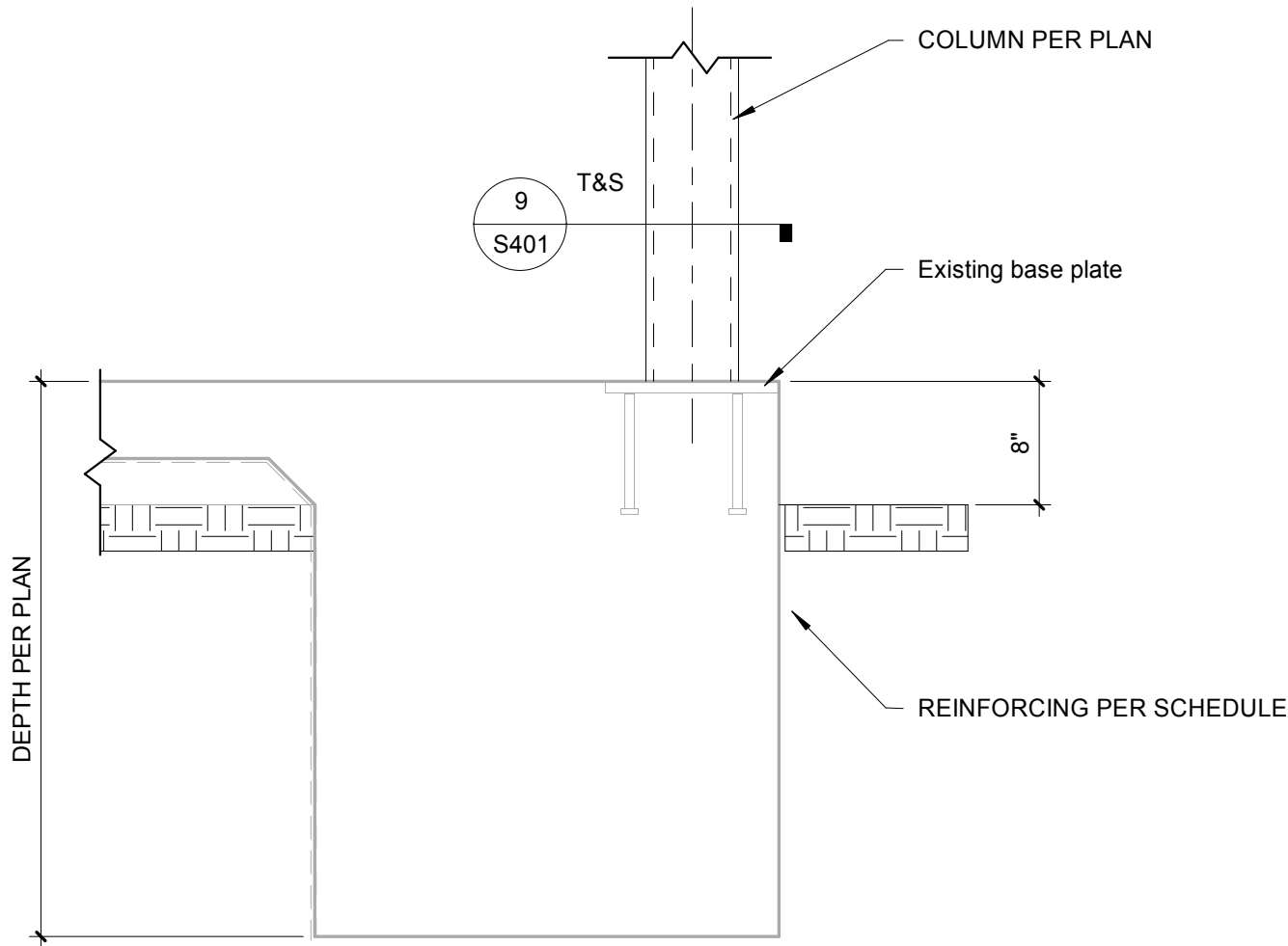
4  
S401



Typical Slab Opening Reinforcing

1/4" = 1'-0"

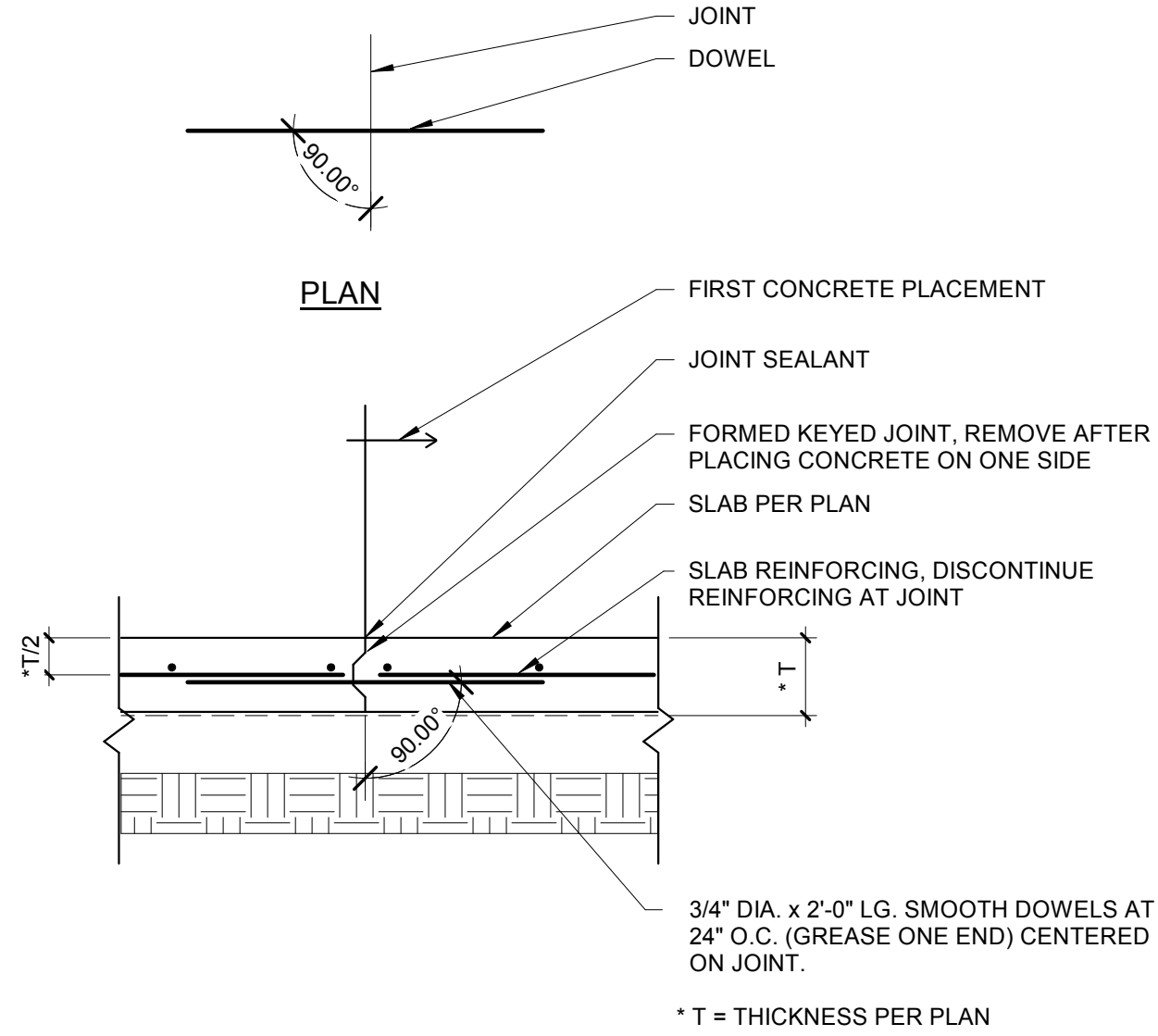
1  
S401



Footing at Exterior Steel Column

1" = 1'-0"

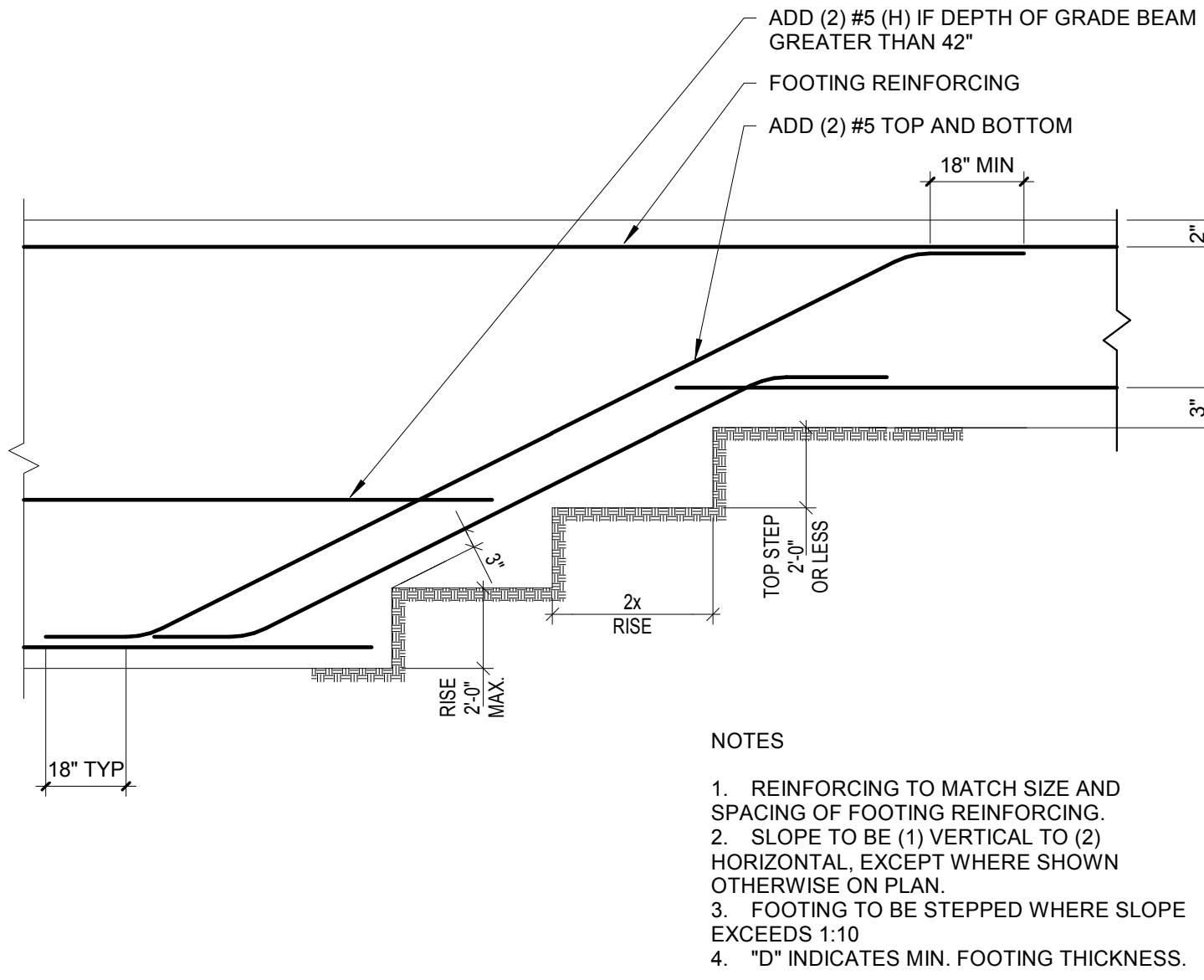
10  
S401



Typical Slab Construction Joint

1" = 1'-0"

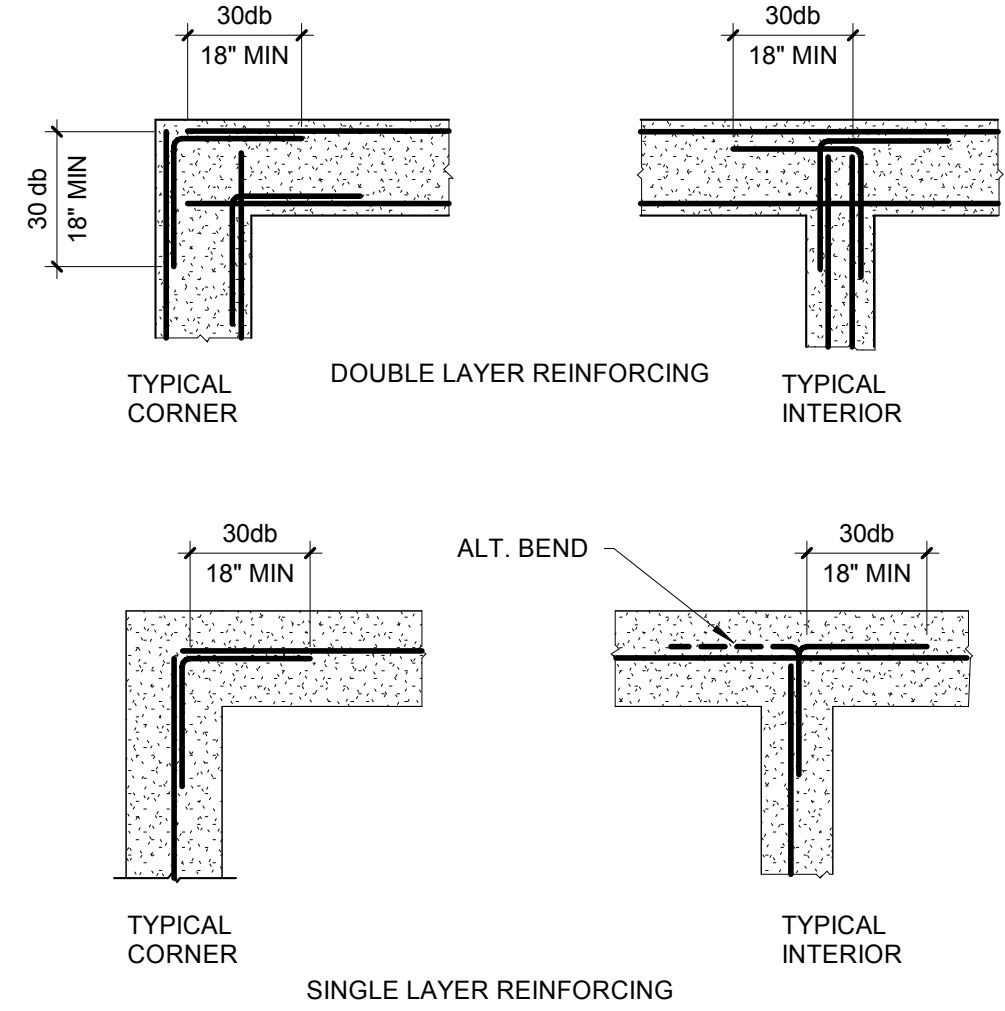
8  
S401



Typical Stepped Footing

1" = 1'-0"

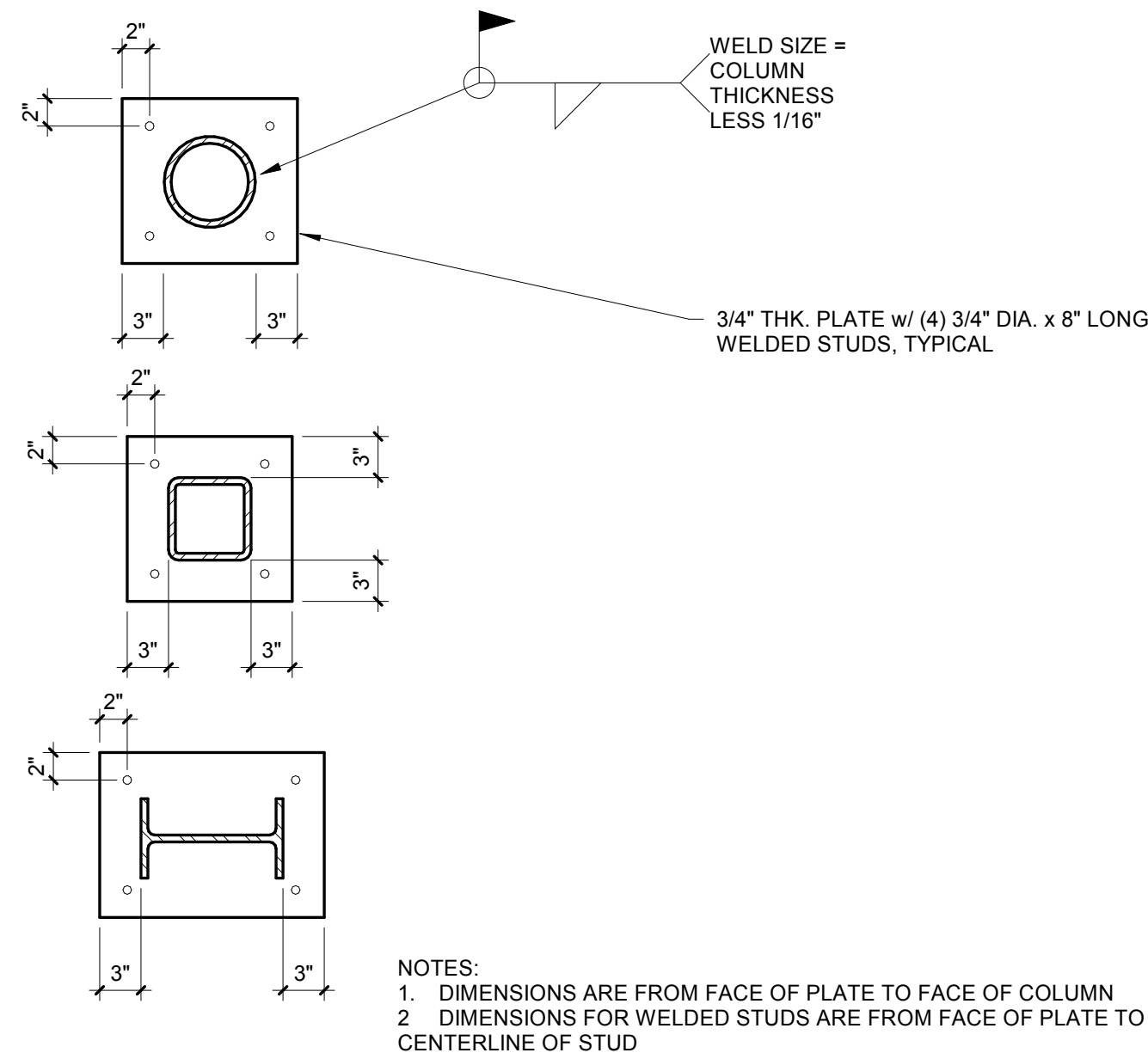
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S401



Typical Reinforcing at Concrete Intersections

1/4" = 1'-0"

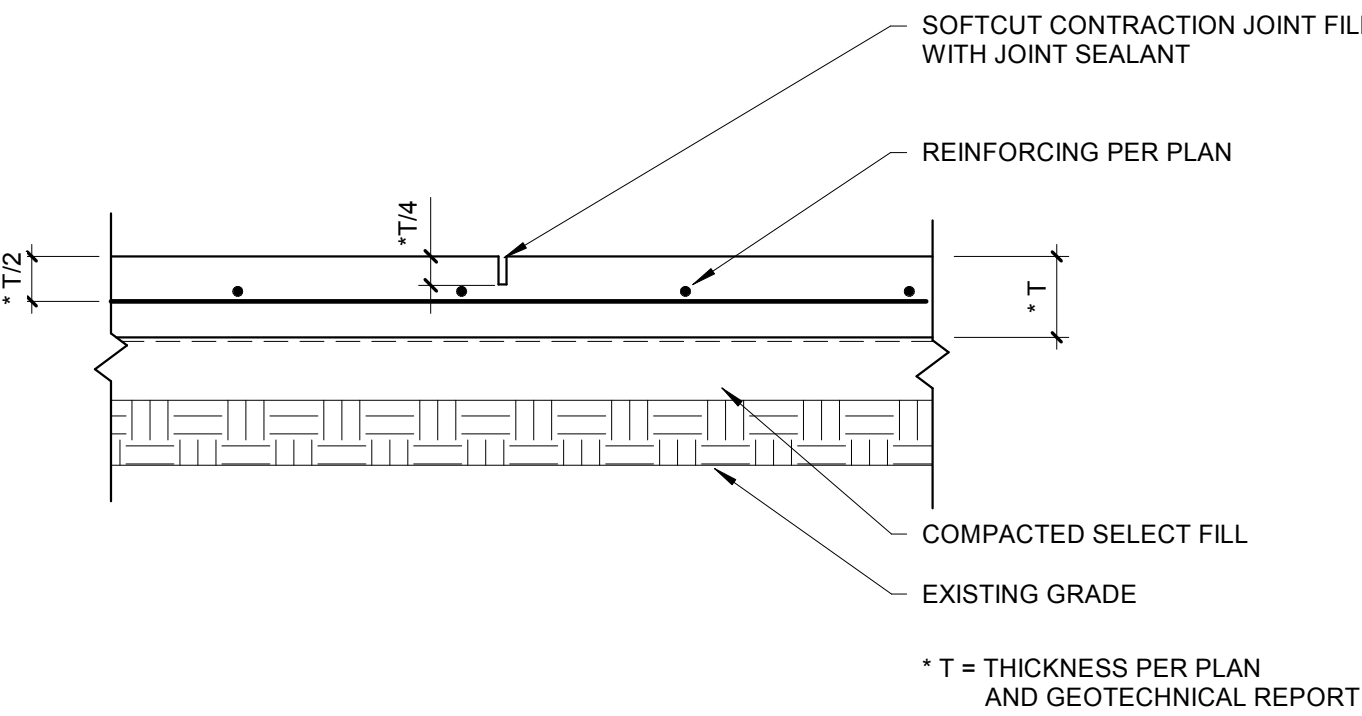
2  
S401



Steel Column Base Plate

1" = 1'-0"

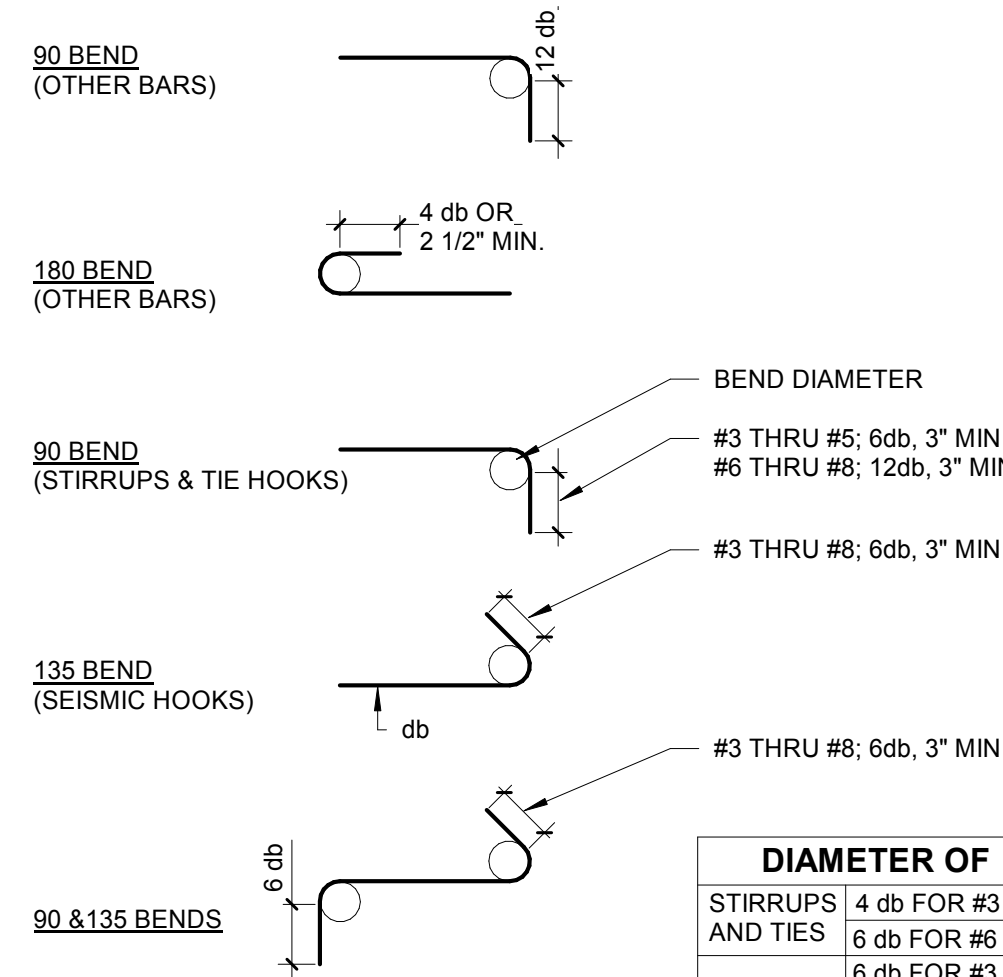
9  
S401 S401



Typical Slab Contraction Joint

1" = 1'-0"

6  
S401

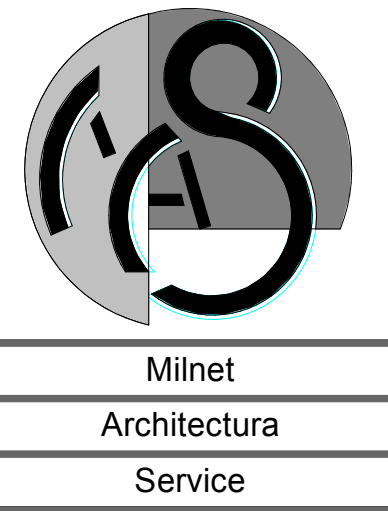


DIAMETER OF	
STIRRUPS AND TIES	4 db FOR #3 THRU #5 BARS
	6 db FOR #6 THRU #8 BARS
ALL OTHERS	6 db FOR #3 THRU #8 BARS
	8 db FOR #9 THRU #11 BARS
	10 db FOR #14 THRU #18 BARS

Typical Reinforcing Bends

1/4" = 1'-0"

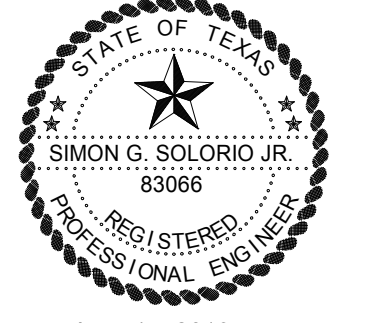
3  
S401



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For bids

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CITY OF McALLEN  
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PROJECT NUMBER  
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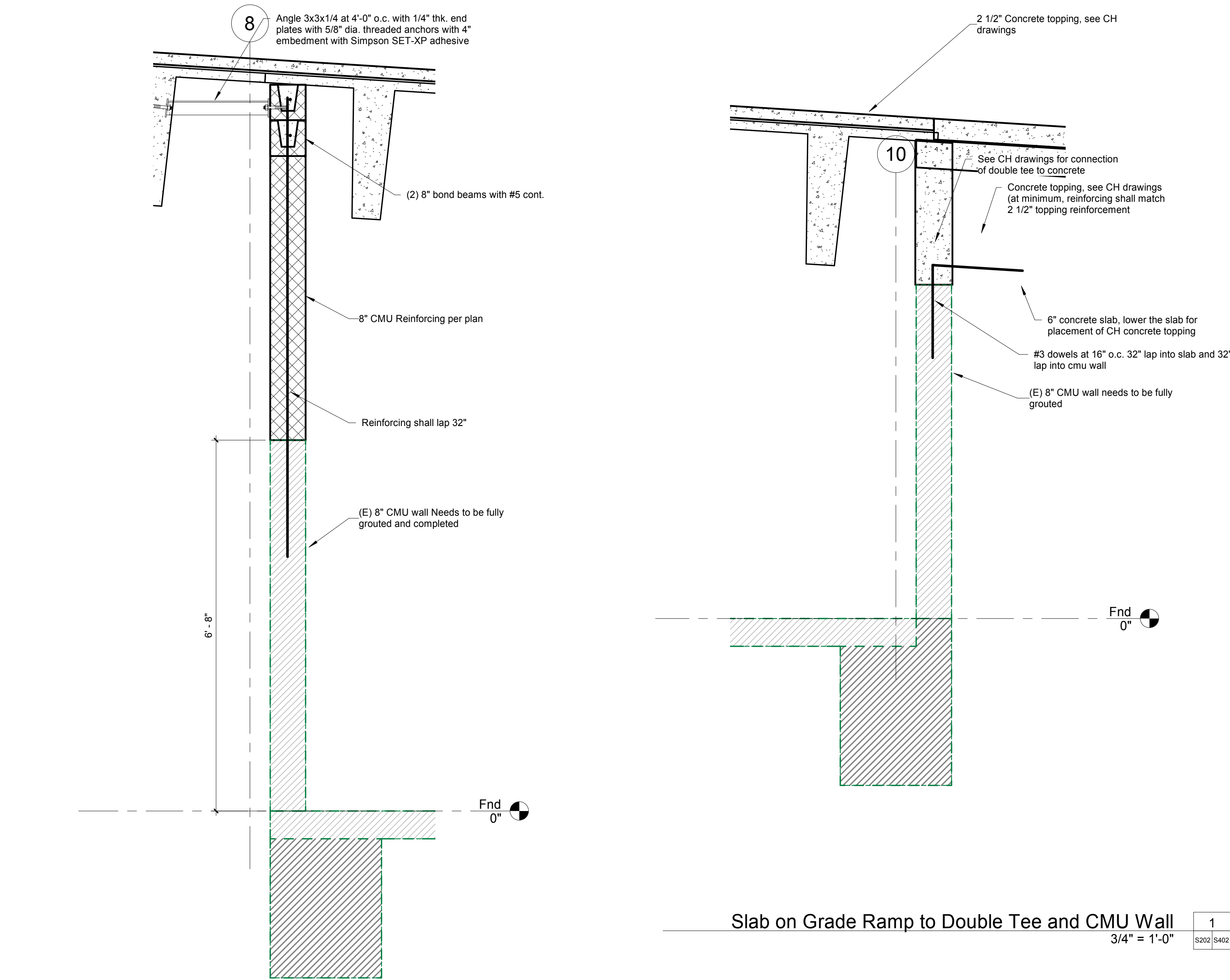
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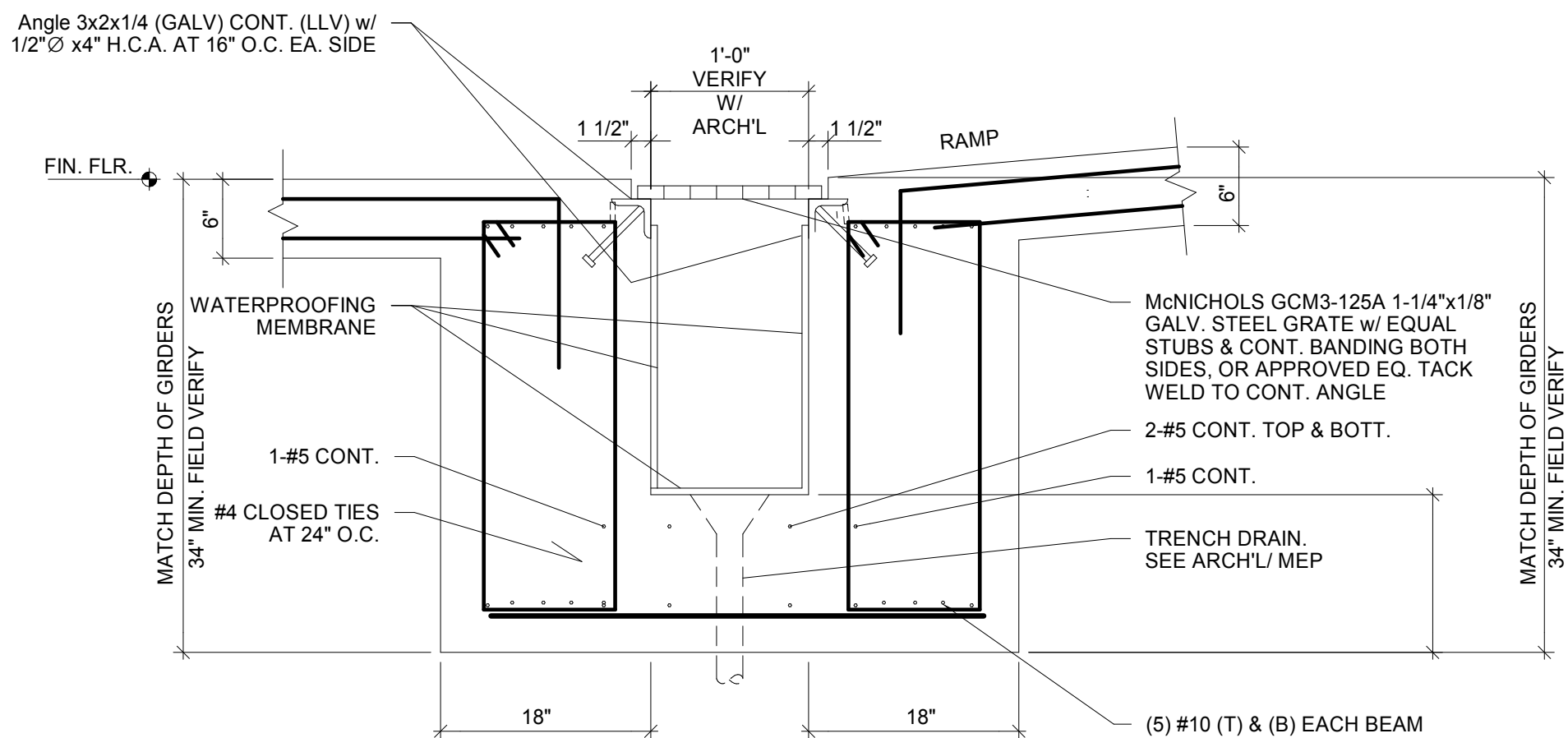
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Detail of CMU to Precast Concrete Double Tees

3/4" = 1'-0"

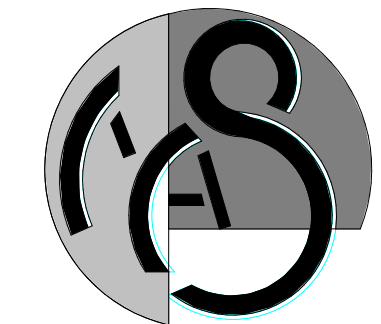
6  
S202 S402



Trench Drain

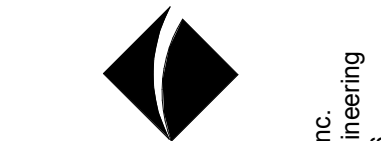
1" = 1'-0"

4  
S202 S402

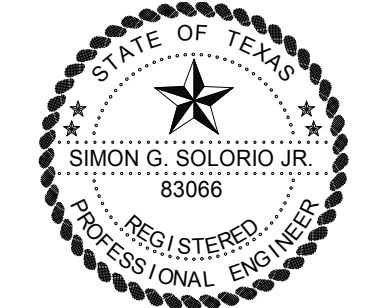


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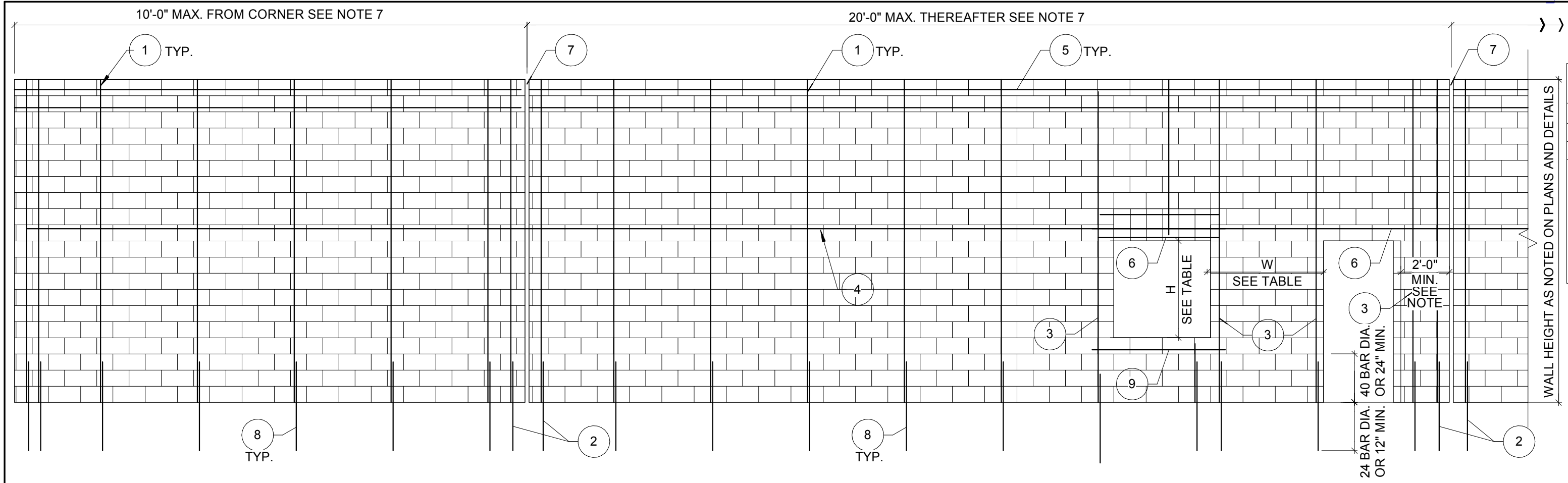
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S402



WALL THICKNESS (T)	DIMENSIONAL LIMITS		
	CLEAR	PIER	COLUMN
	H > 24" AND W > 32"	H > 24" AND 32" > W > 24"	H > 24" AND W < 24"
	H > 32" AND W > 40"	H > 32" AND 40" > W > 24"	H > 32" AND W < 24"
6"	H > 48" AND W > 64"	H > 48" AND 64" > W > 40"	H > 48" AND W < 40"
8"			
12"			

1/4" DIA. SMOOTH BAR TIES AT 8" O.C., SET IN CMU JOINTS

4 (V) BARS TO MATCH TYPICAL WALL REINFORCING

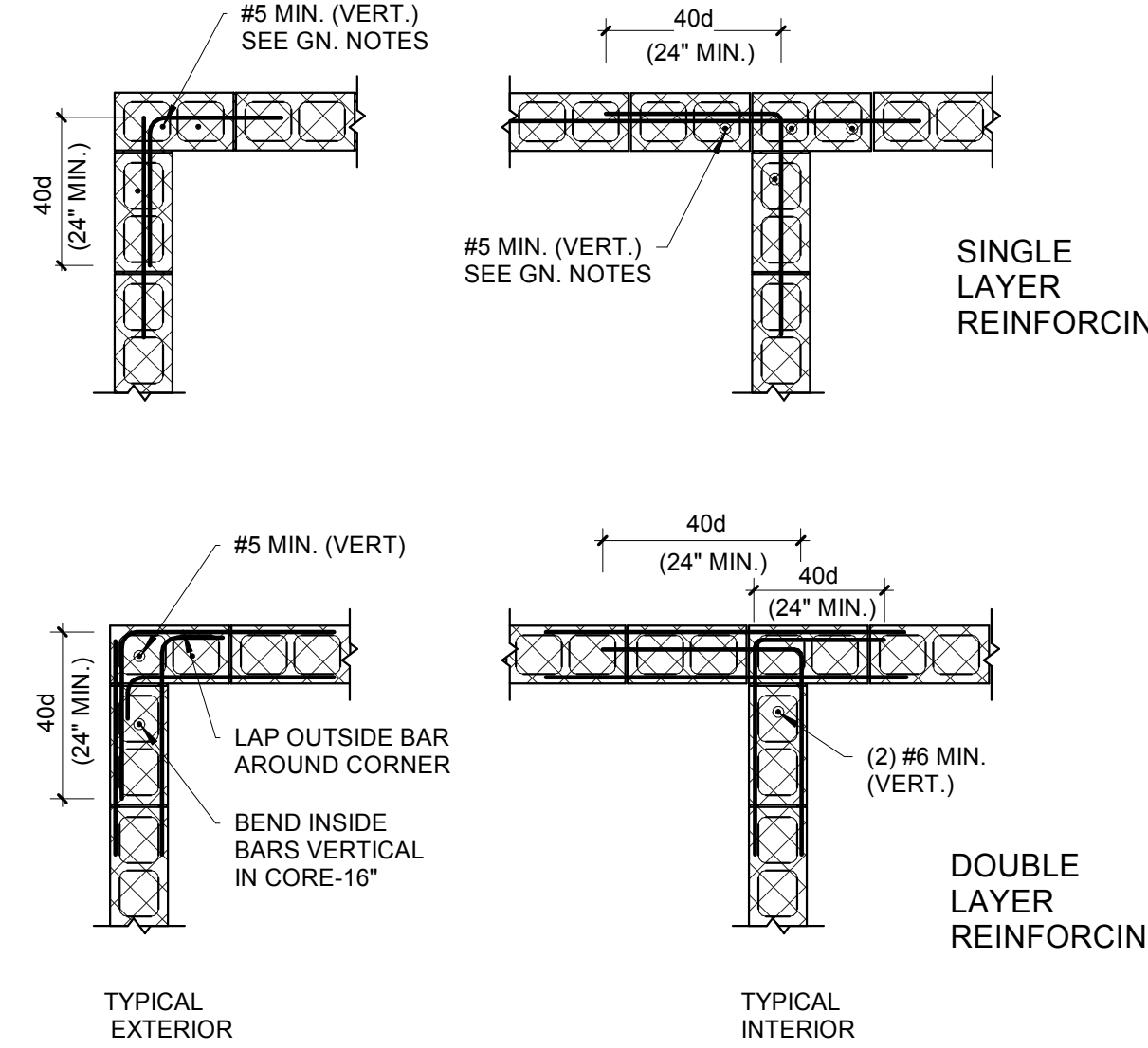
PIER DETAIL

1/4" DIA. SMOOTH BAR TIES w/ HOOKED END AT 8" O.C., SET IN CMU JOINTS

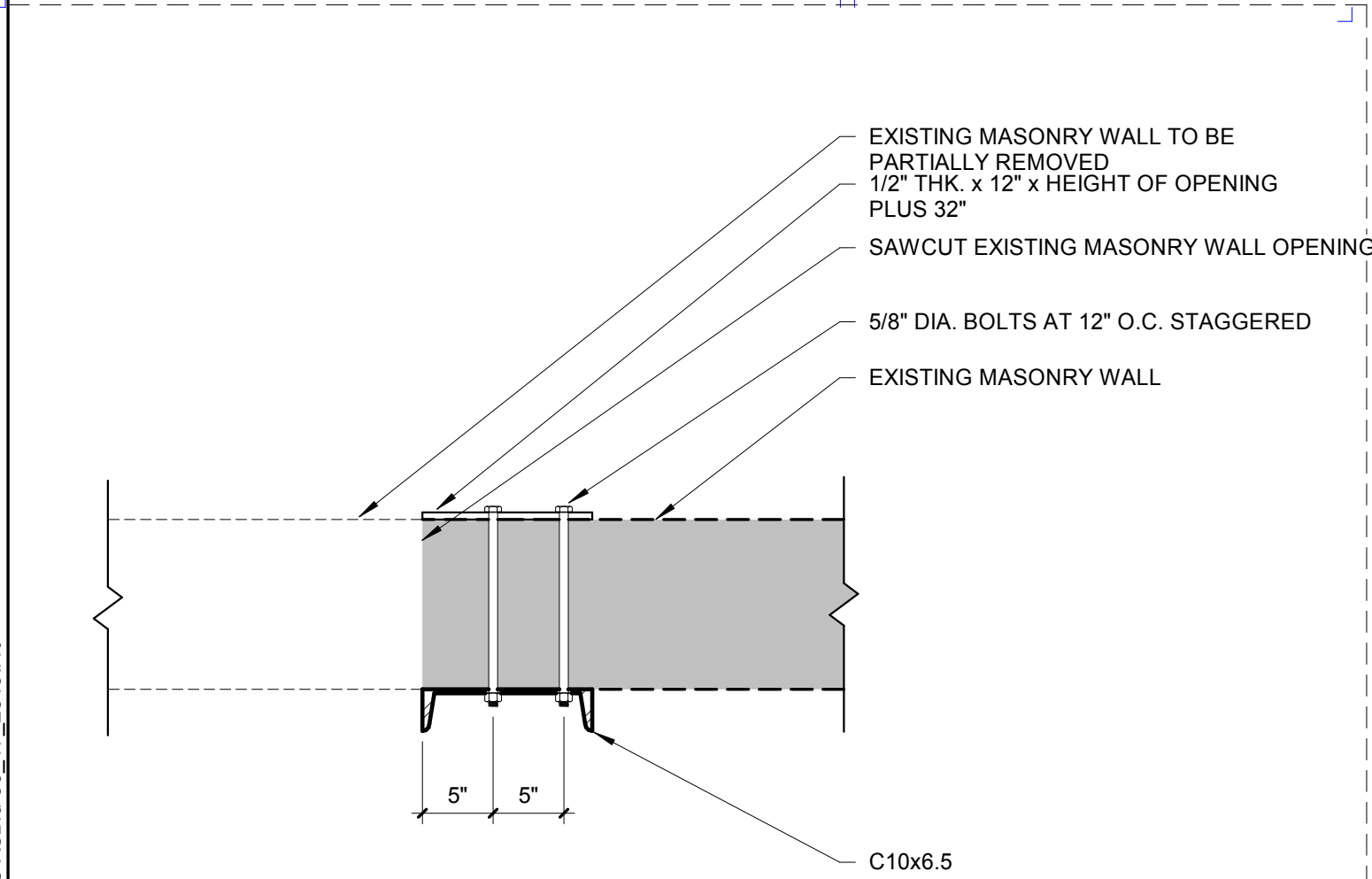
VERTICAL BARS EACH CELL TO MATCH TYPICAL WALL REINFORCING

- NORMAL WALL REINFORCING AS NOTED ON DETAILS AND DESCRIBED IN GENERAL NOTES.
- ADDITIONAL VERTICAL REINFORCING AT CONTROL JOINTS - SEE TYPICAL CONTROL JOINT DETAIL.
- ADDITIONAL VERTICAL REINFORCING AT JAMBS OF ALL WALL OPENINGS.
- INTERMEDIATE BOND BEAM REINFORCED AND SPACED AS REQUIRED ON DRAWINGS. CUT ONE INTERMEDIATE BOND BEAM SHALL BE PLACED AT WINDOW LINTEL ELEVATION AND AT 8'-0" O.C.
- ROOF LEVEL BOND BEAM REINFORCED AS NOTED ON DETAILS - CONTINUE ALL REINFORCING UNCUT THROUGH CONTROL JOINTS.
- LINTEL REINFORCING AS DETAILED AND/OR SCHEDULED.
- CONTROL JOINTS (CJ): UNLESS NOTED OTHERWISE ON THE ARCHITECTURAL DRAWINGS, THE CJ SPACING NOTED IS THE MAXIMUM PERMITTED. THE SPACING OF CJ'S SHALL BE COORDINATED WITH THE WALL OPENING LOCATIONS AND IN NO CASE SHALL A CJ BE LOCATED CLOSER THAN 24" TO THE JAMB OF ANY WALL OPENING.
- FOUNDATION DOWELS TO MATCH VERTICAL WALL REINFORCING SIZE AND SPACING.
- SILL LEVEL BOND BEAM REINFORCED AS NOTED IN MASONRY GENERAL NOTES.

CMU Wall Reinforcing 1" = 1'-0" 4 S403

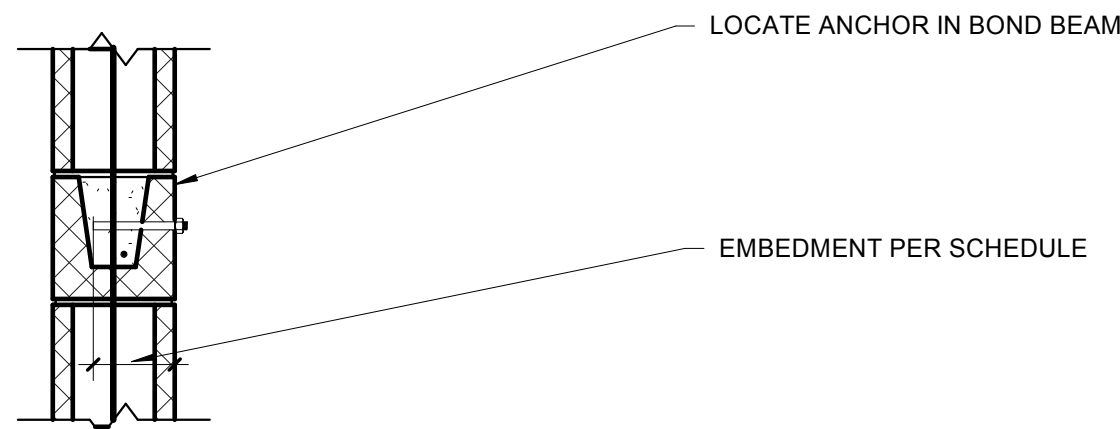


CMU Reinforcing at Intersections 1/2" = 1'-0" 1 S403

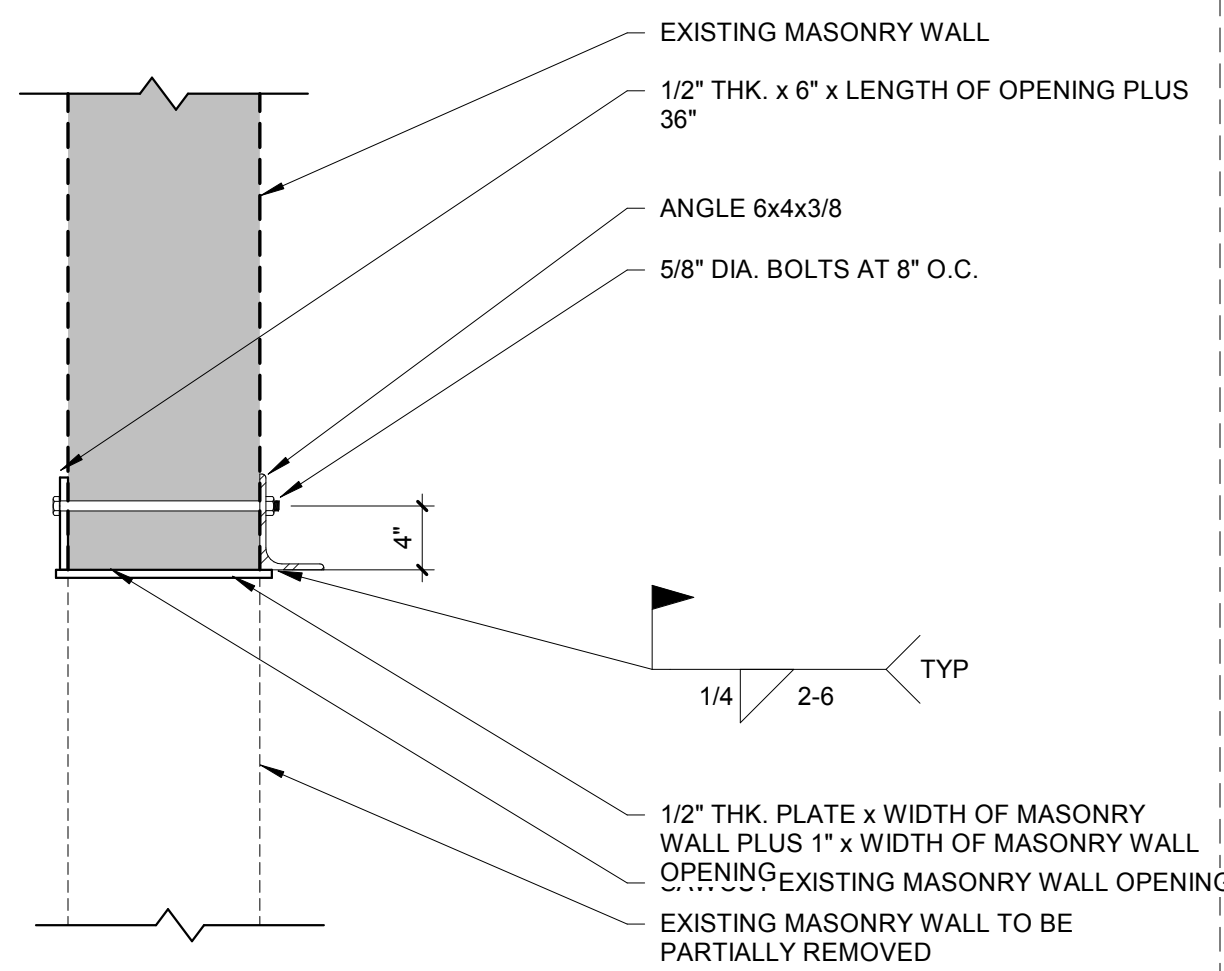


Jamb at new opening 1" = 1'-0" 7 S403

DIA.	EMBEDMENT		ADHESIVE
	CONCRETE	MASONRY	
1/2"	4"	6"	SIMPSON SET or HILTI HY150
5/8"	5"	6"	SIMPSON SET
3/4"	6"	6"	SIMPSON SET

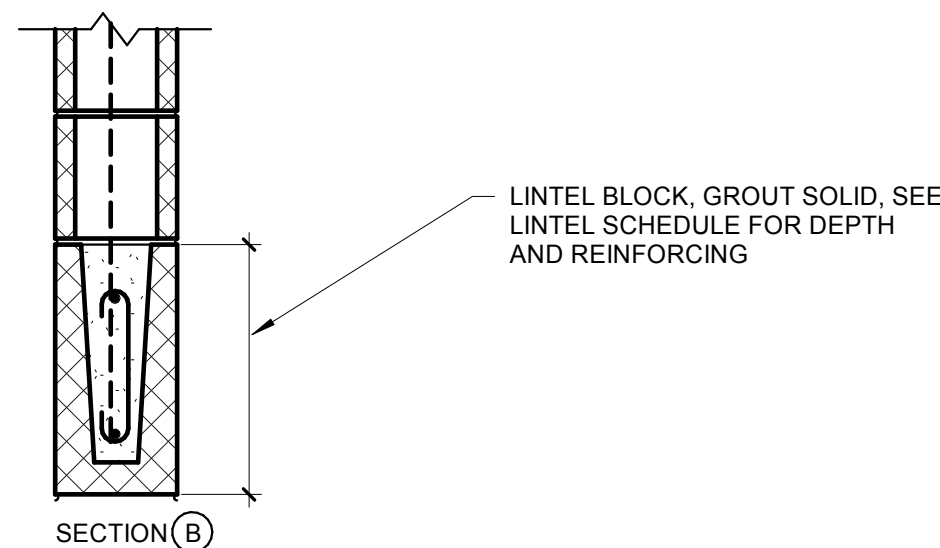
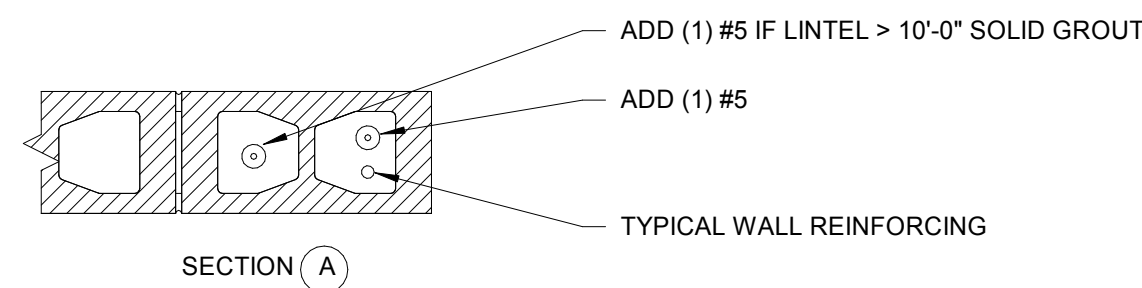
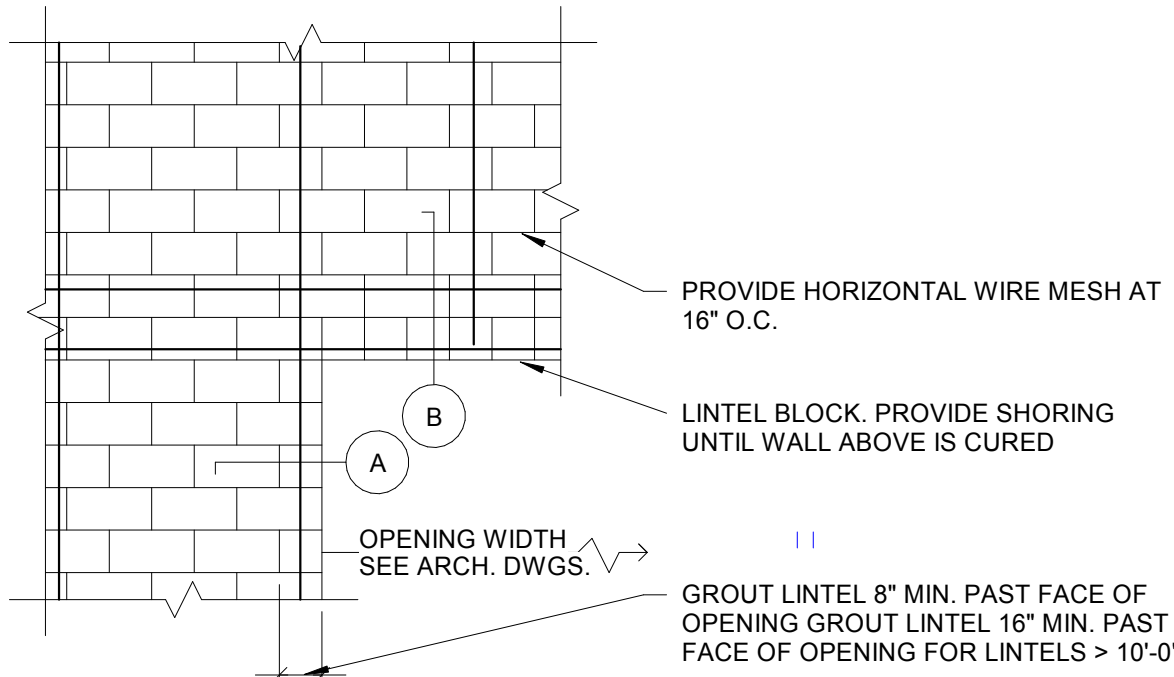


Anchor to CMU or concrete 1" = 1'-0" 5 S403

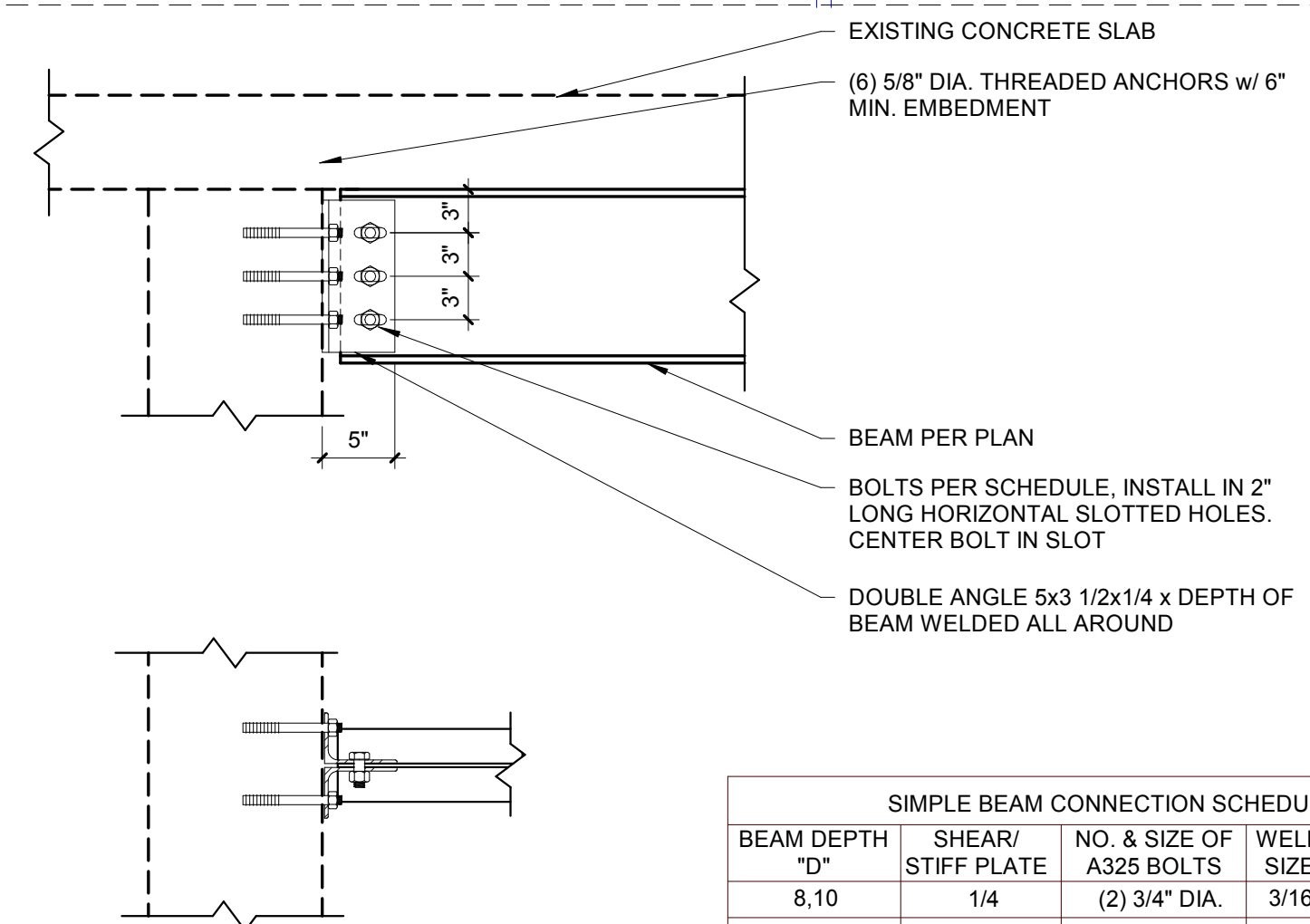


Sill at New Opening 1" = 1'-0" 6 S403

LINTEL					
CLEAR SPAN	WIDTH	DEPTH	REINFORCING	#3 TIES AT:	REMARKS
<3'-4"	8"	8"	(1) #5		
<6'-6"	8"	16"	(1) #5 (T) & (B)	8"	
<10'-0"	8"	16"	(1) #6 (T) & (B)	8"	
<12'-0"	8"	24"	(1) #7 (T) & (B)	8"	
<14'-8"	8"	36"	(1) #7 (T) & (B)	8"	
<16'-0"	8"	24"	(2) #6 (T) & (B)	8"	C.I.P. CONC.

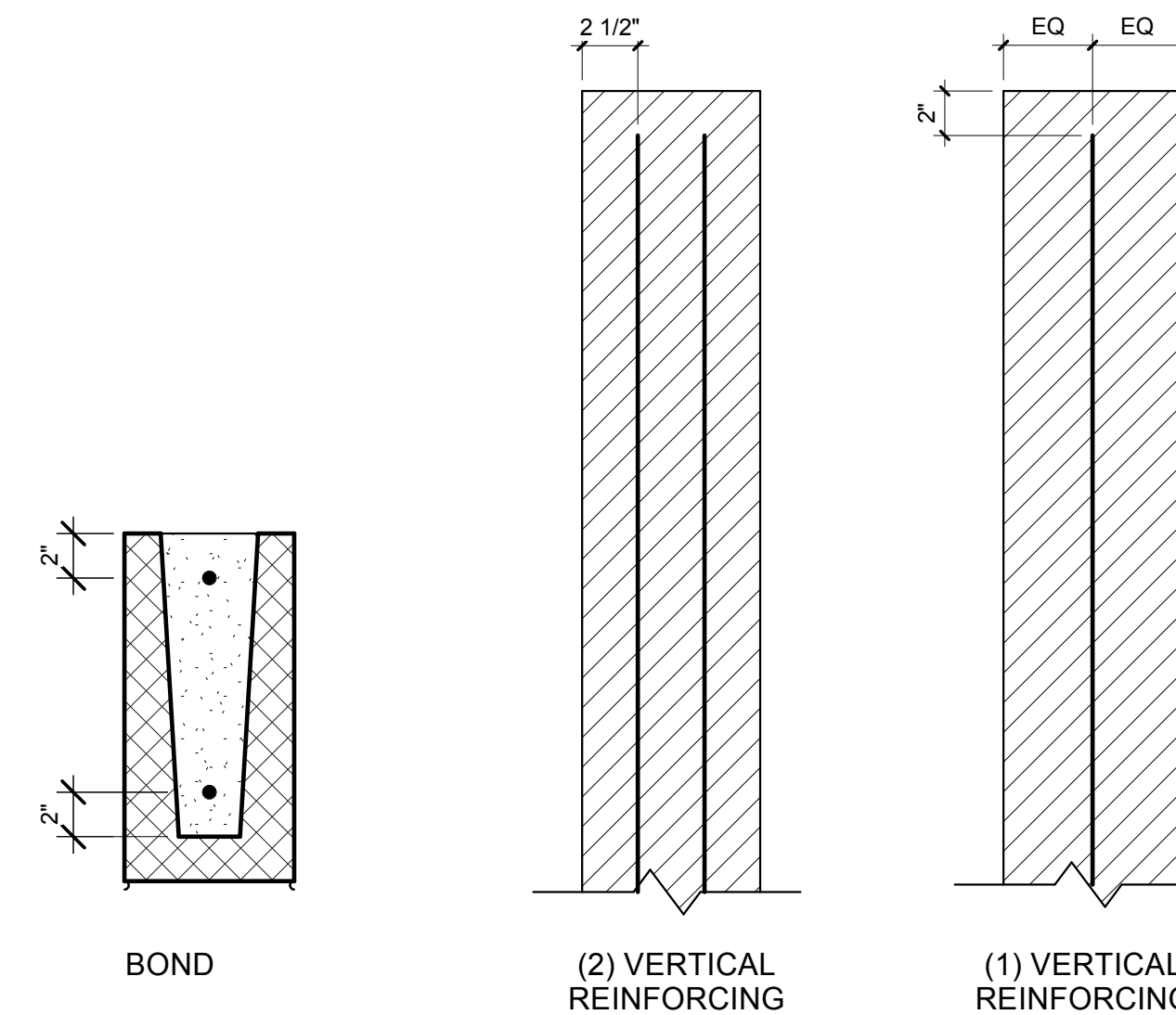


CMU Lintel 1" = 1'-0" 9 S403



SIMPLE BEAM CONNECTION SCHEDULE			
BEAM DEPTH "D"	SHEAR/ STIFF PLATE	NO. & SIZE OF A325 BOLTS	WELD SIZE
8, 10	1/4	(2) 3/4" DIA.	3/16"
12, 14	3/8	(3) 3/4" DIA.	1/4"
16	3/8	(4) 3/4" DIA.	1/4"
18	1/2	(5) 3/4" DIA.	3/8"
21	1/2	(6) 3/4" DIA.	3/8"
24	1/2	(7) 3/4" DIA.	3/8"

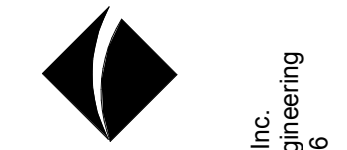
Steel Beam to Concrete 1" = 1'-0" 2 S403



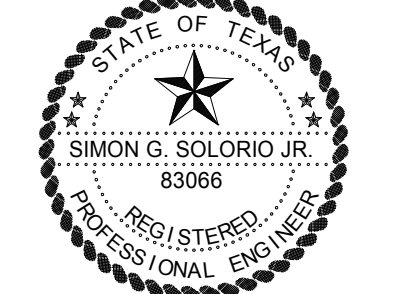
CMU Rebar Placement 1 1/2" = 1'-0" 3 S403



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GARAGE RE-BID  
CITY OF McAlLEN  
McAlLEN, TX

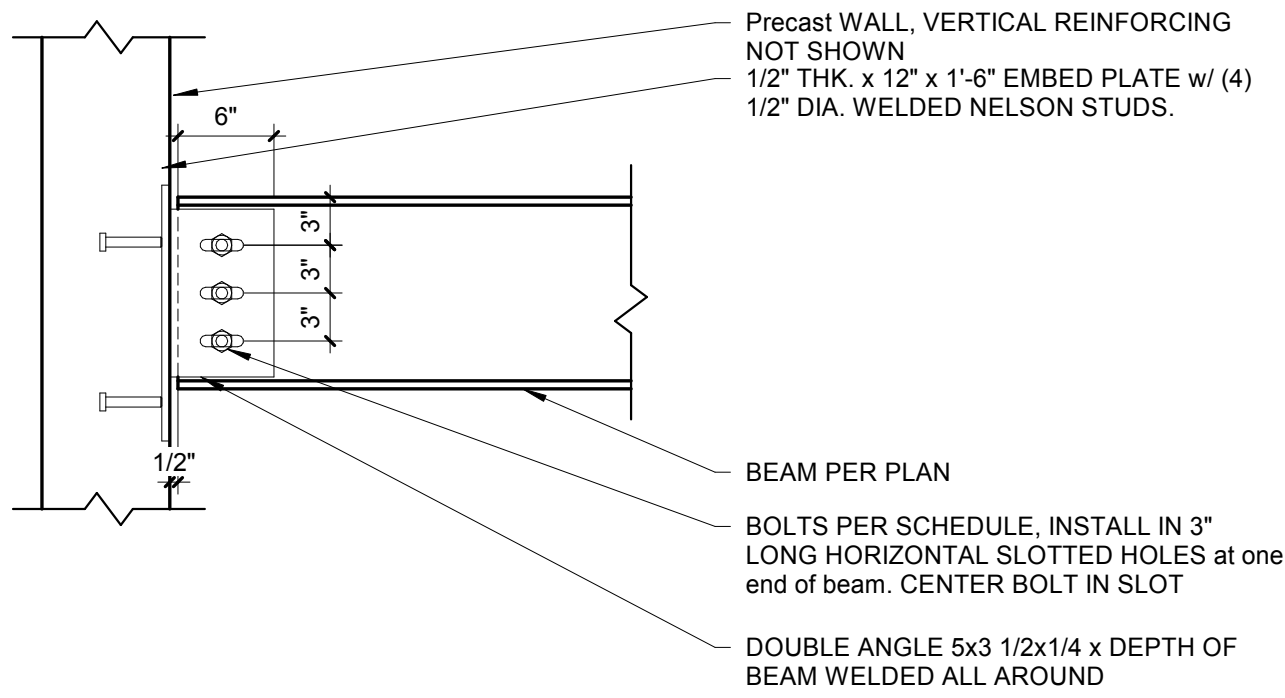
PROJECT NUMBER  
16158

DATE  
June 17, 2019

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S403

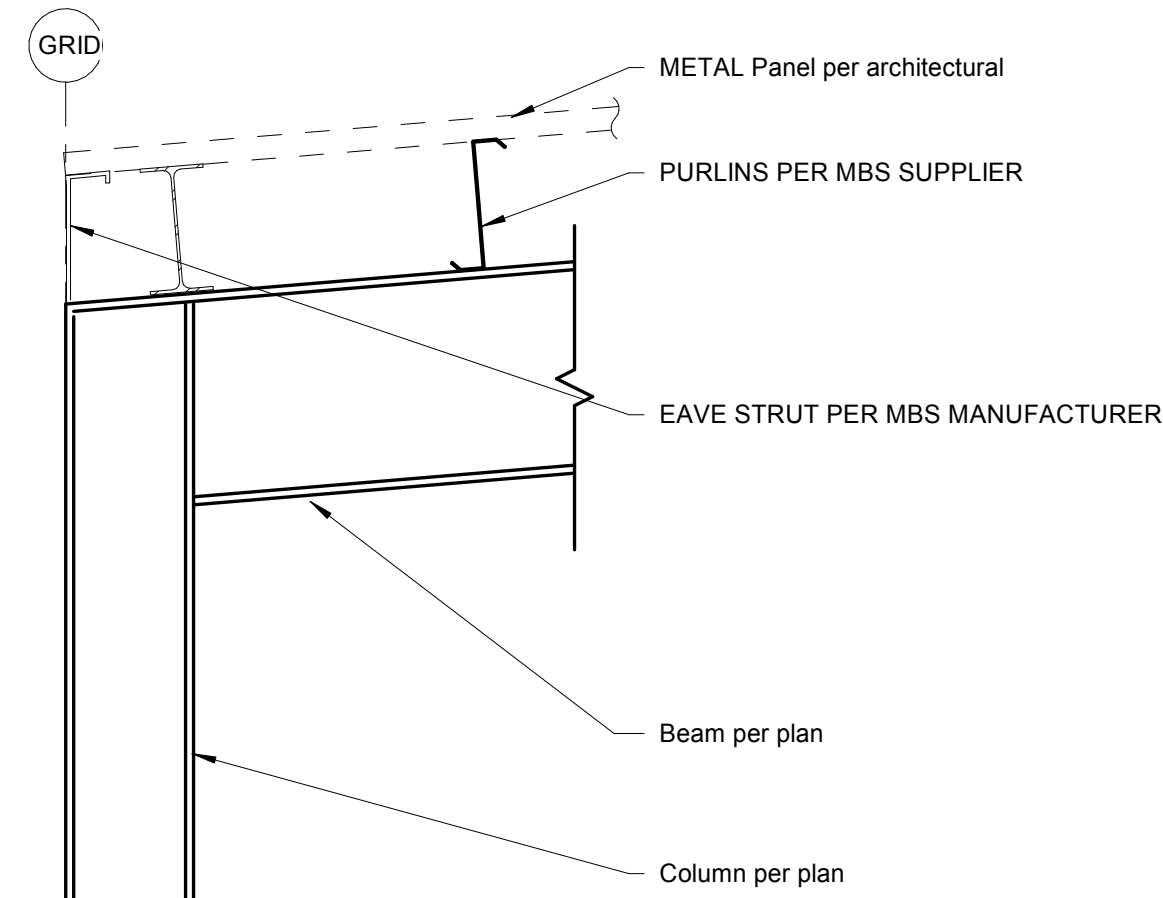




SIMPLE BEAM CONNECTION SCHEDULE			
BEAM DEPTH "D"	SHEAR/ STIFF PLATE	NO. & SIZE OF A325 BOLTS	WELD SIZE
8, 10	1/4	(2) 3/4" DIA.	3/16"
12, 14	3/8	(3) 3/4" DIA.	1/4"
16	3/8	(4) 3/4" DIA.	1/4"
18	1/2	(5) 3/4" DIA.	3/8"
21	1/2	(6) 3/4" DIA.	3/8"
24	1/2	(7) 3/4" DIA.	3/8"

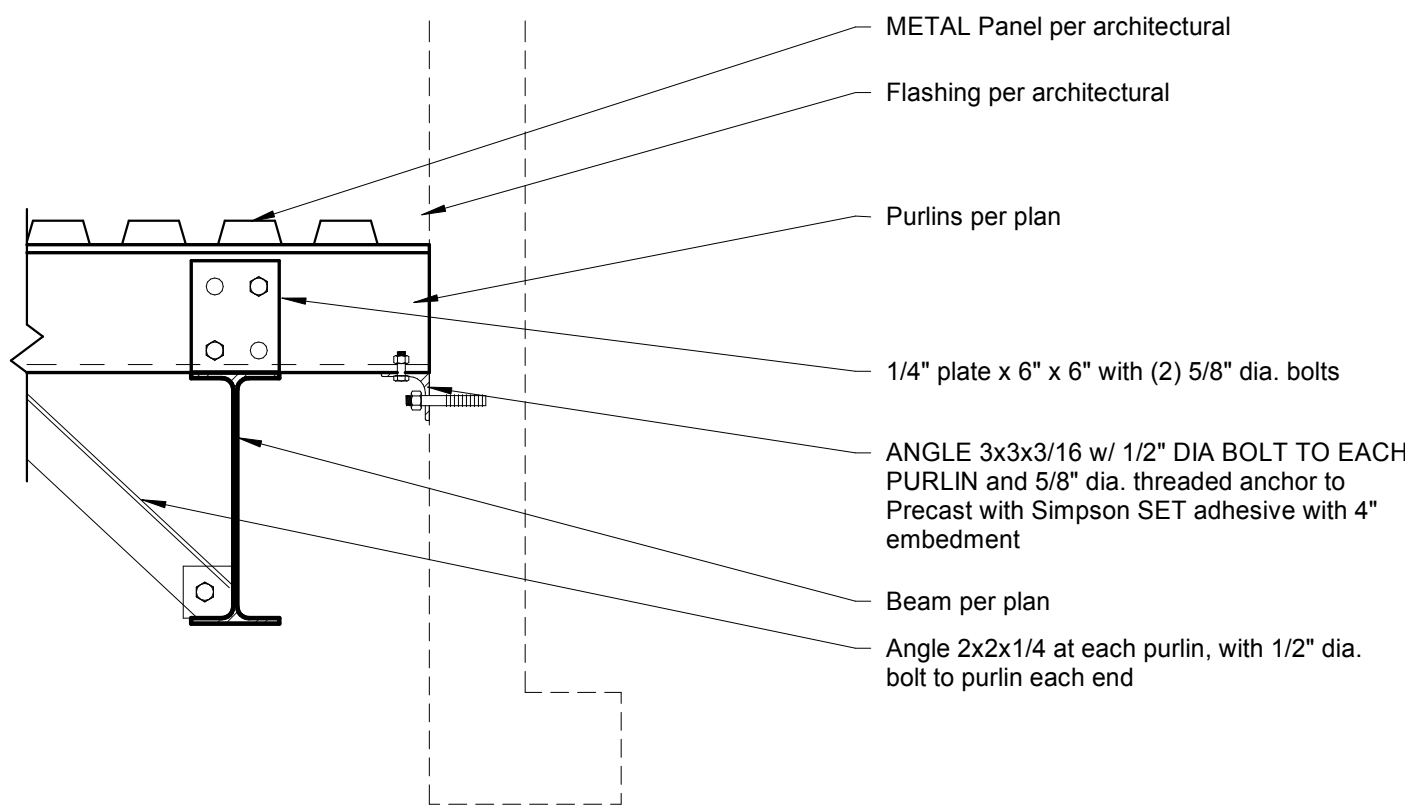
Steel Beam to Precast wall  
1" = 1'-0"

6  
S301 S404



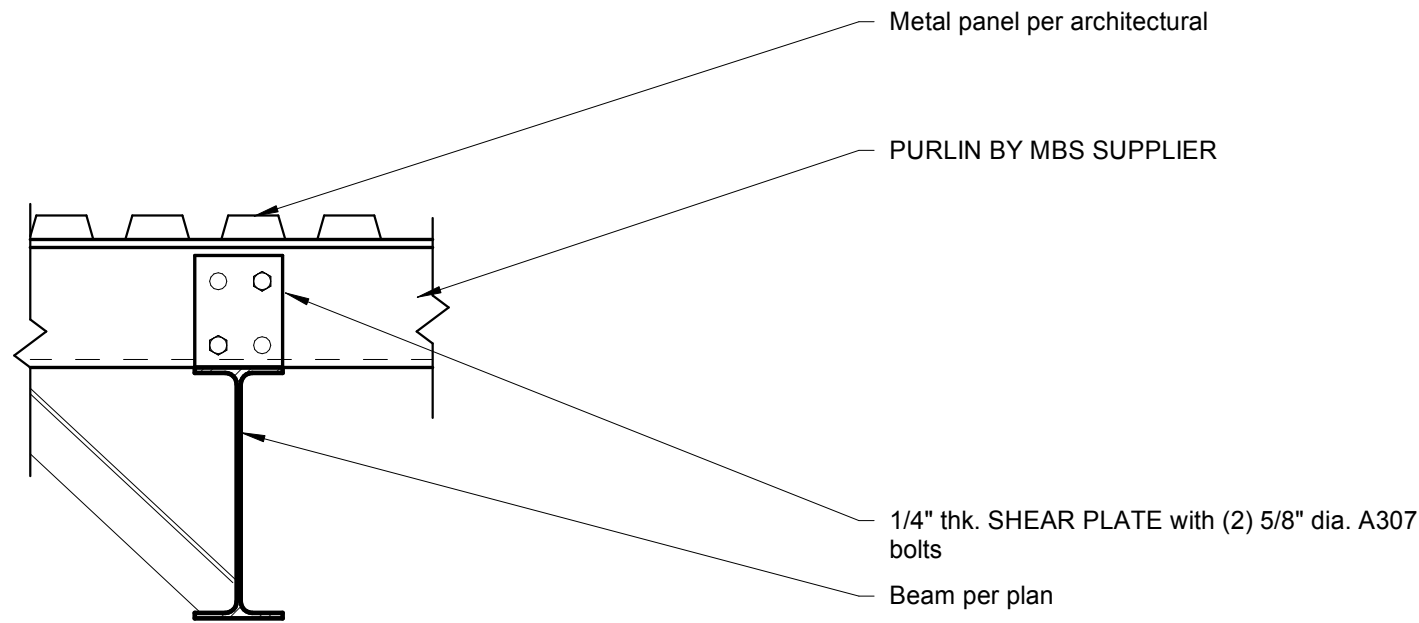
MBS Parallel  
1" = 1'-0"

2  
S301 S404



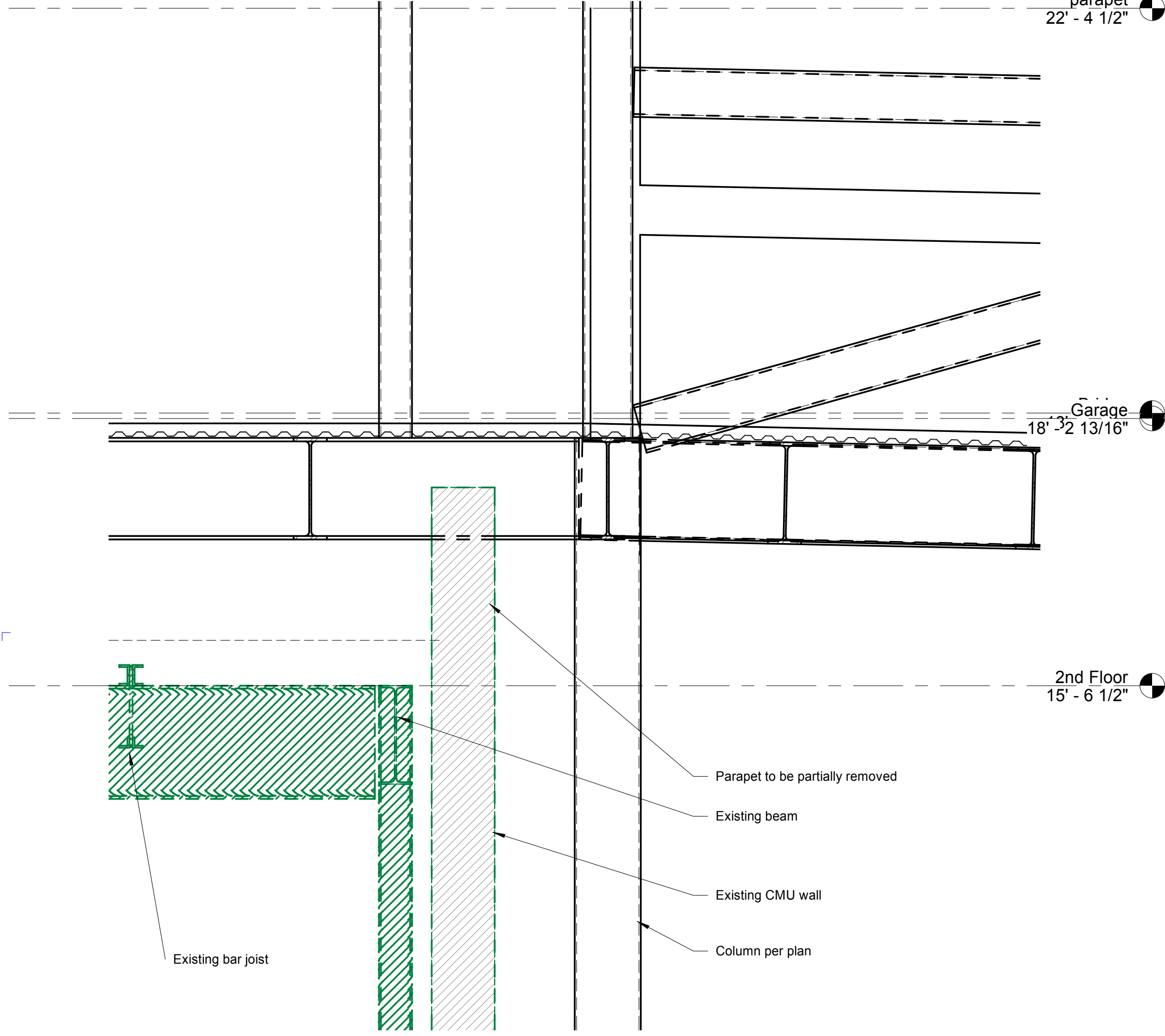
MBS to Beam Perpendicular  
1" = 1'-0"

3  
S301 S404



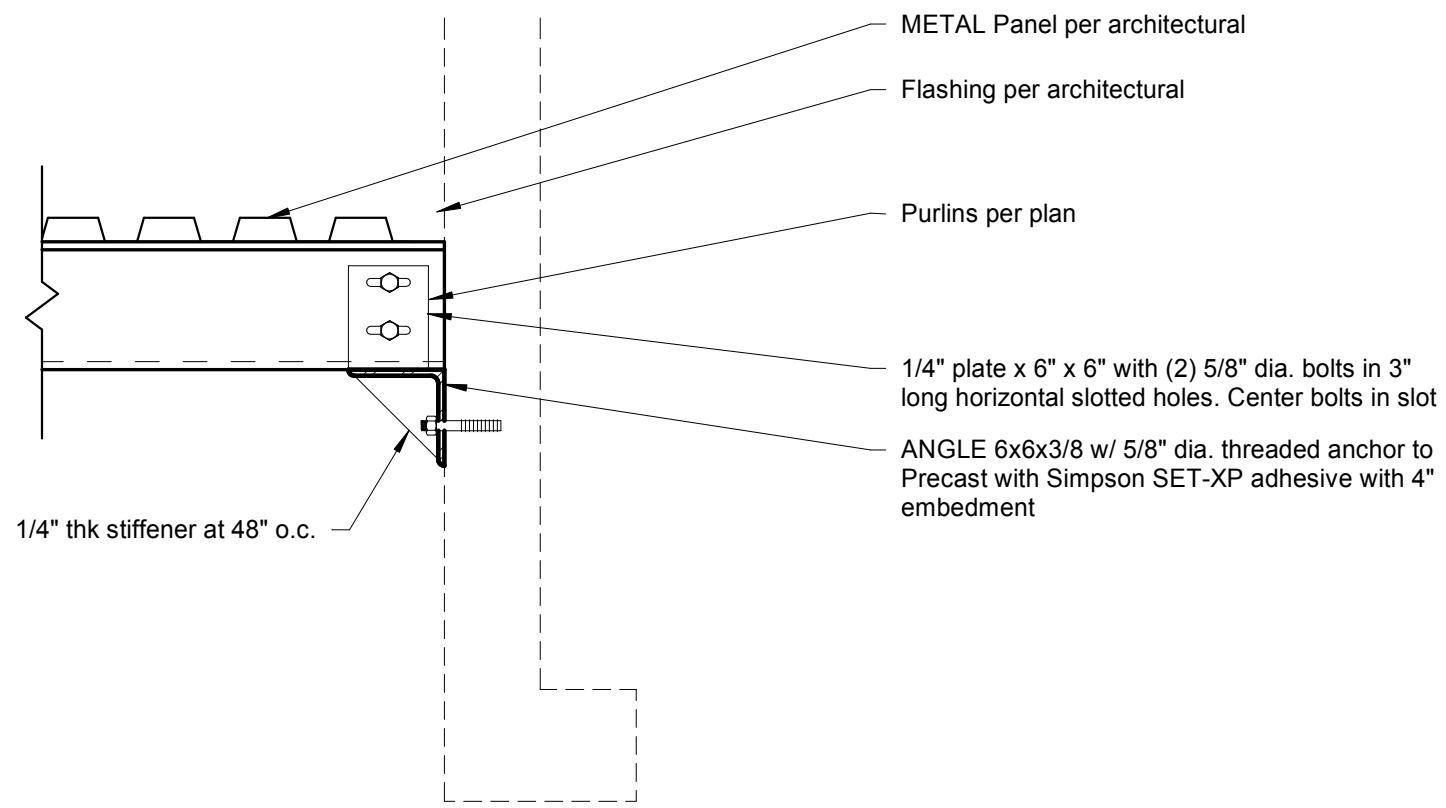
MBS to Steel Beam Interior, Perpendicular  
1" = 1'-0"

4  
S301 S404



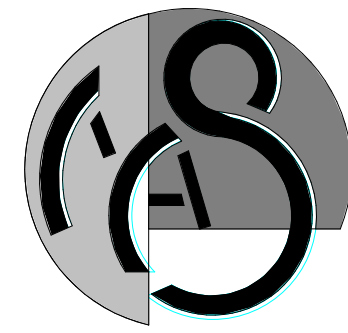
Detail 19  
1" = 1'-0"

1  
S301 S404



MBS to Beam Perpendicular at South  
1" = 1'-0"

5  
S301 S404



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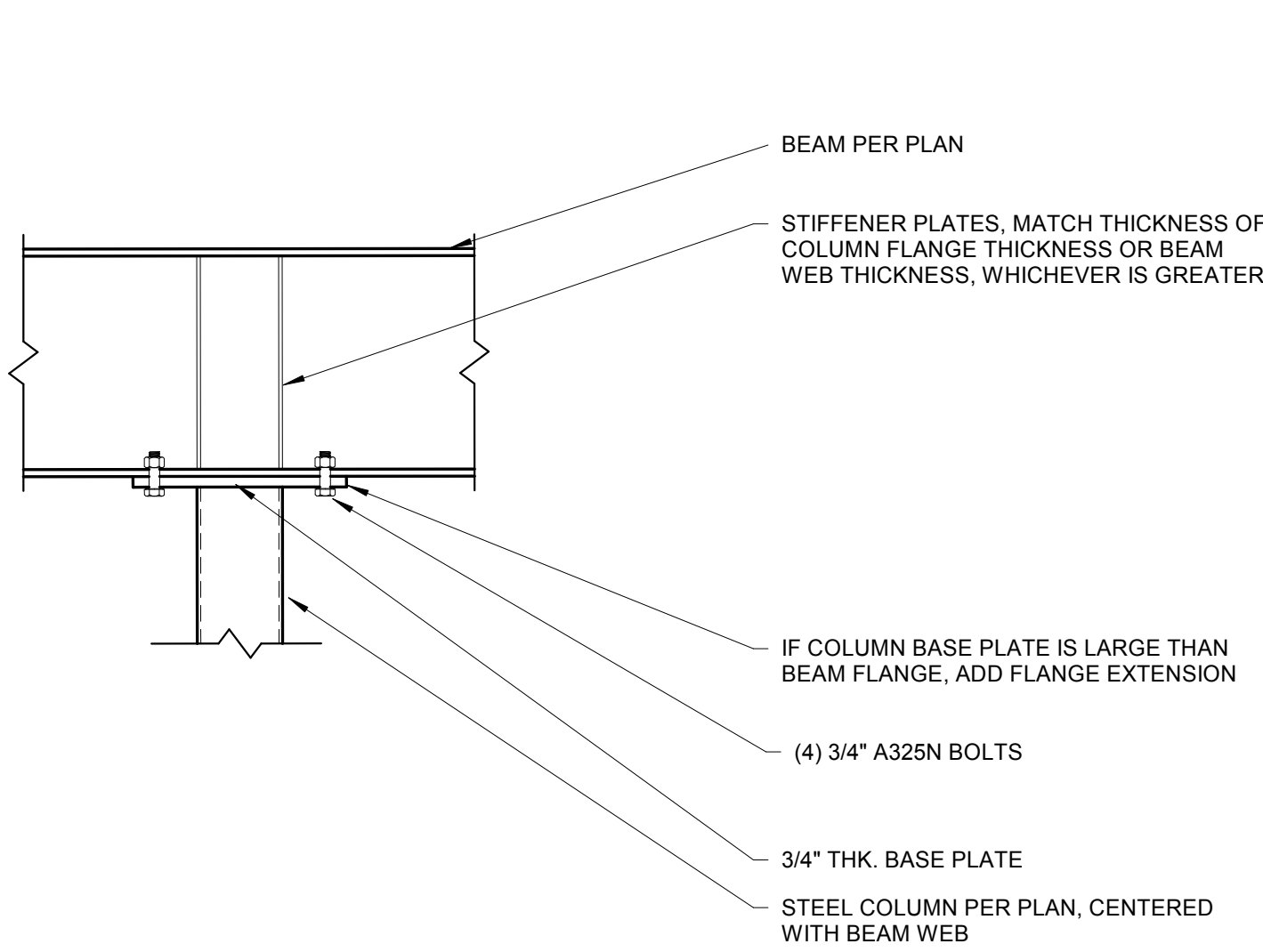
McALLEN PUBLIC SAFETY BUILDING PARKING  
GARAGE RE-BID  
CITY OF McALLEN  
McALLEN, TX

PROJECT NUMBER  
16158

DATE  
June 17, 2019

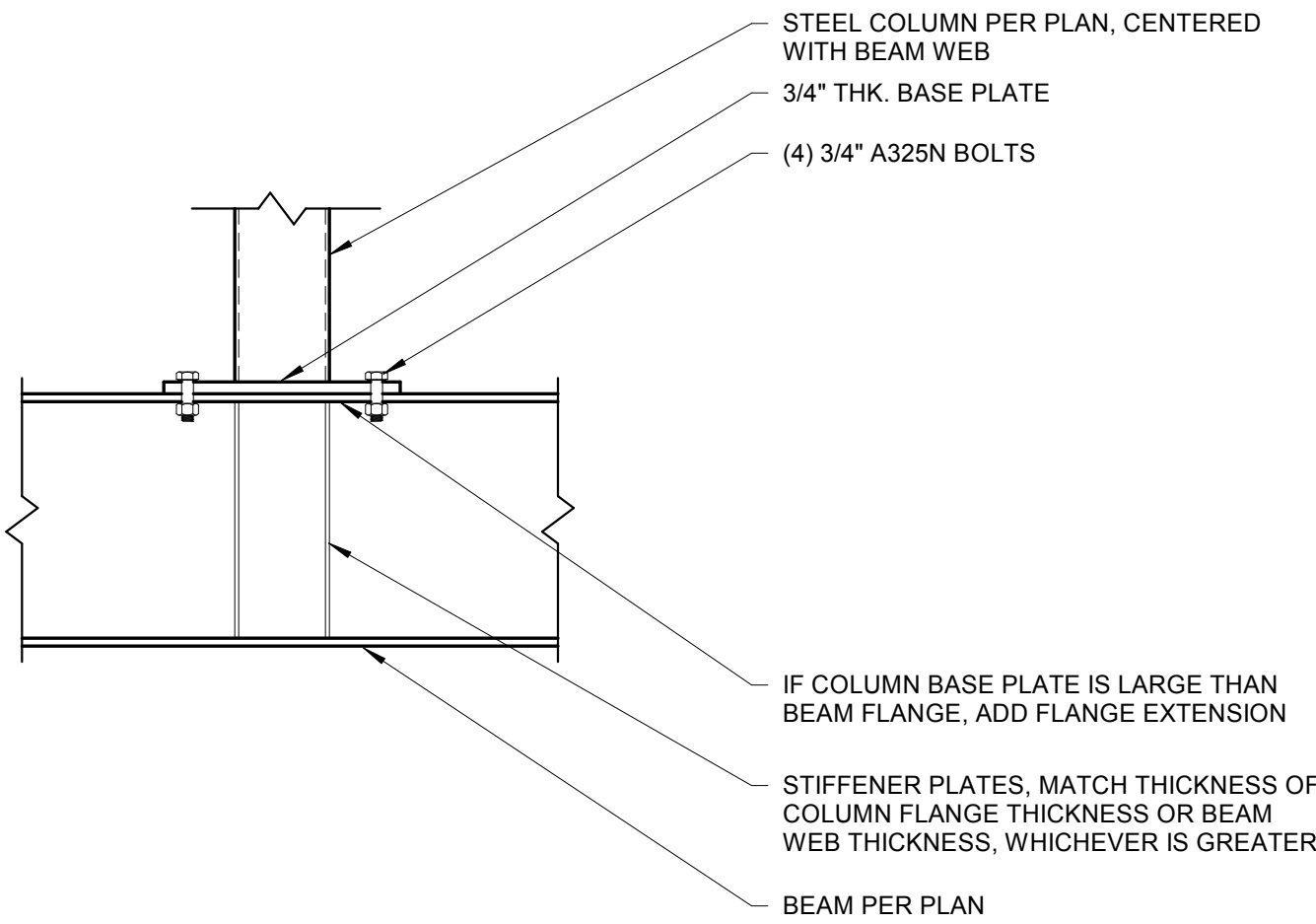
S H E E T

S404



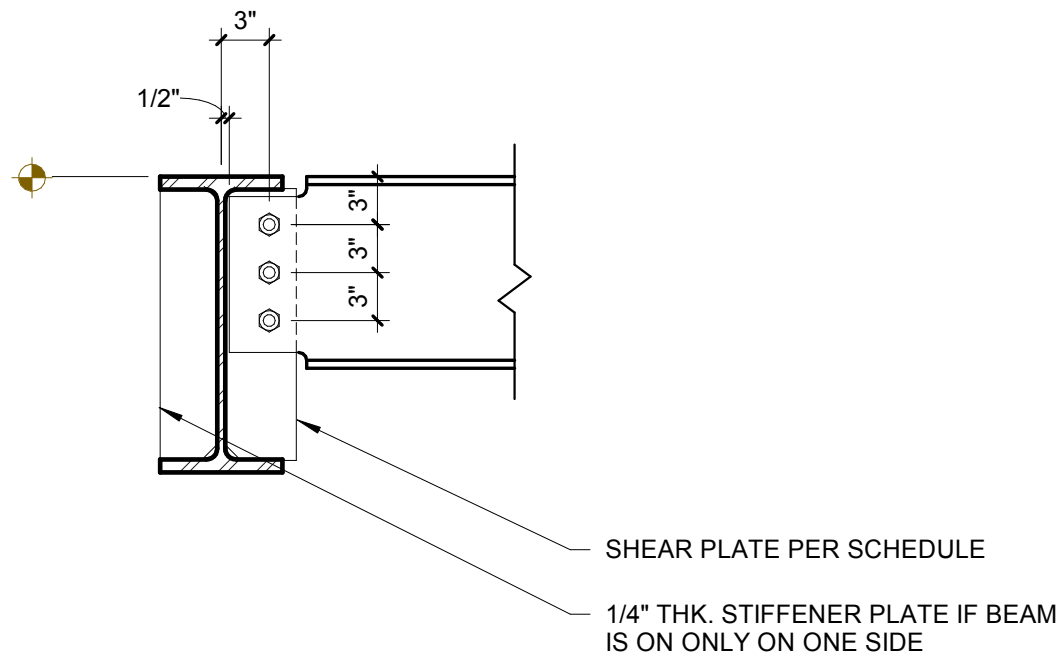
Typical Steel Beam to Steel Column

4  
1" = 1'-0"  
S405



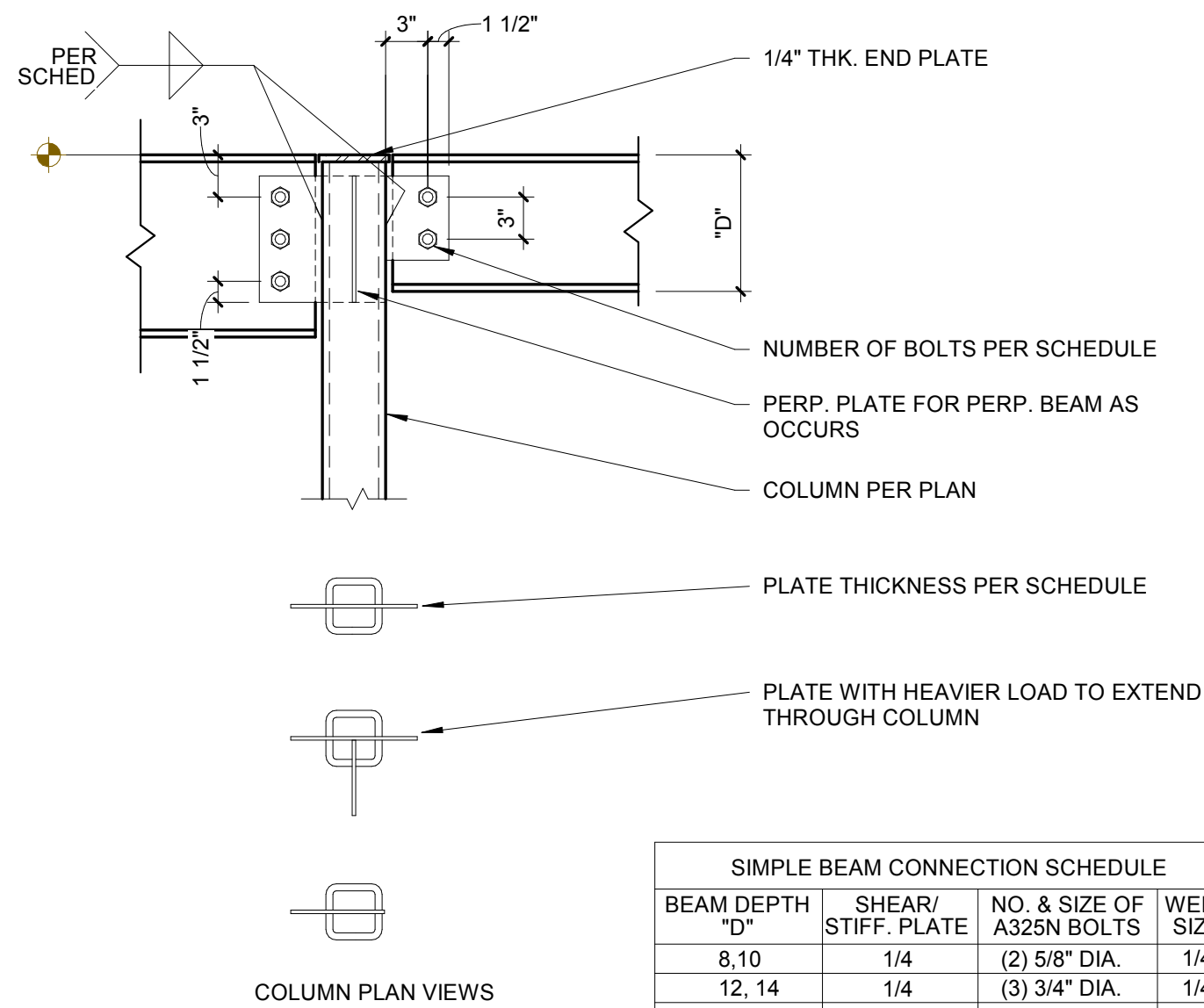
Typical Steel Stub Column to Steel Beam

5  
1" = 1'-0"  
S405



Steel Beam to Steel Beam

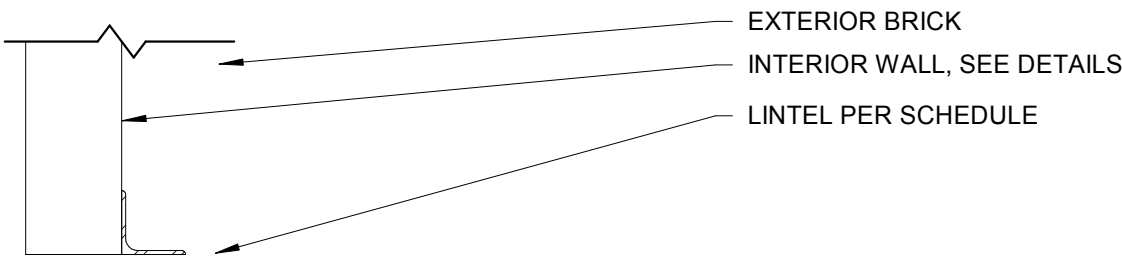
1  
1" = 1'-0"  
S405



SIMPLE BEAM CONNECTION SCHEDULE			
BEAM DEPTH "D"	SHEAR/ STIFF. PLATE	NO. & SIZE OF A325N BOLTS	WELD SIZE
8,10	1/4	(2) 3/4" DIA.	3/16"
12, 14	1/4	(3) 3/4" DIA.	1/4"
16	3/8	(4) 3/4" DIA.	1/4"
18	3/8	(5) 3/4" DIA.	3/8"
21	1/2	(6) 3/4" DIA.	3/8"

Steel Beam to Steel Column

2  
1" = 1'-0"  
S405

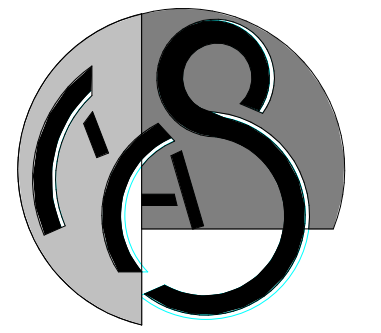


LOOSE ANGLE LINTEL SCHEDULE			
ANGLE SIZE (LLV)	CLEAR OPENING		REMARKS
	GREATER THAN	UP TO	
4" x 4" x 5/16"	---	3'-0"	8" MIN. BEARING EA. END
4" x 4" x 3/8"	3'-1"	6'-0"	12" MIN. BEARING EA. END
5" x 3-1/2" x 3/8"	6'-1"	8'-0"	12" MIN. BEARING EA. END
6" x 4" x 3/8"	8'-1"	9'-0"	16" MIN. BEARING EA. END
6" x 4" x 1/2"	9'-1"	10'-0"	16" MIN. BEARING EA. END
7" x 4" x 1/2"	10'-1"	11'-0"	16" MIN. BEARING EA. END
8" x 4" x 1/2"	11'-1"	12'-0"	16" MIN. BEARING EA. END

- NOTES:
- SEE ARCHITECTURAL DRAWINGS FOR SIZE AND LOCATION OF OPENINGS.
  - PROVIDE 1" OF BEARING AT EACH JAMB FOR EACH FOOT OF CLEAR SPAN BUT NOT LESS THAN 6".
  - WHERE MINIMUM BEARING CANNOT BE ACHIEVED, PROVIDE ADEQUATE CONNECTION TO ADJACENT STRUCTURAL MEMBERS OR PROVIDE SEPARATE VERTICAL SUPPORTS. SUBMIT SUCH DETAILS FOR THE ENGINEER'S REVIEW.
  - ALL LINTELS SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION.
  - FOR MASONRY OPENINGS GREATER THAN 10'-0", SEE DETAILS ON THE DRAWINGS OR REFER TO ENGINEER.
  - BRICK HEIGHTS OVER OPENINGS GREATER THAN ONE HALF THE LINTEL SPAN SHALL BE SHORED UNTIL MORTAR HAS SET AND CURED.
  - CUT HORIZONTAL LEG 1/4" FROM OUTSIDE FACE OF VENEER.

Steel Loose Angle Lintel Schedule1

3  
1" = 1'-0"  
S405



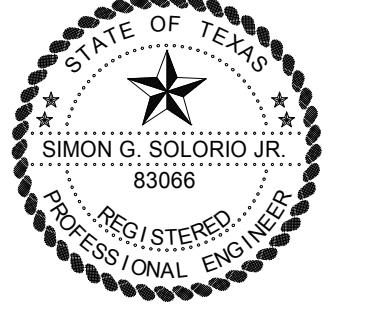
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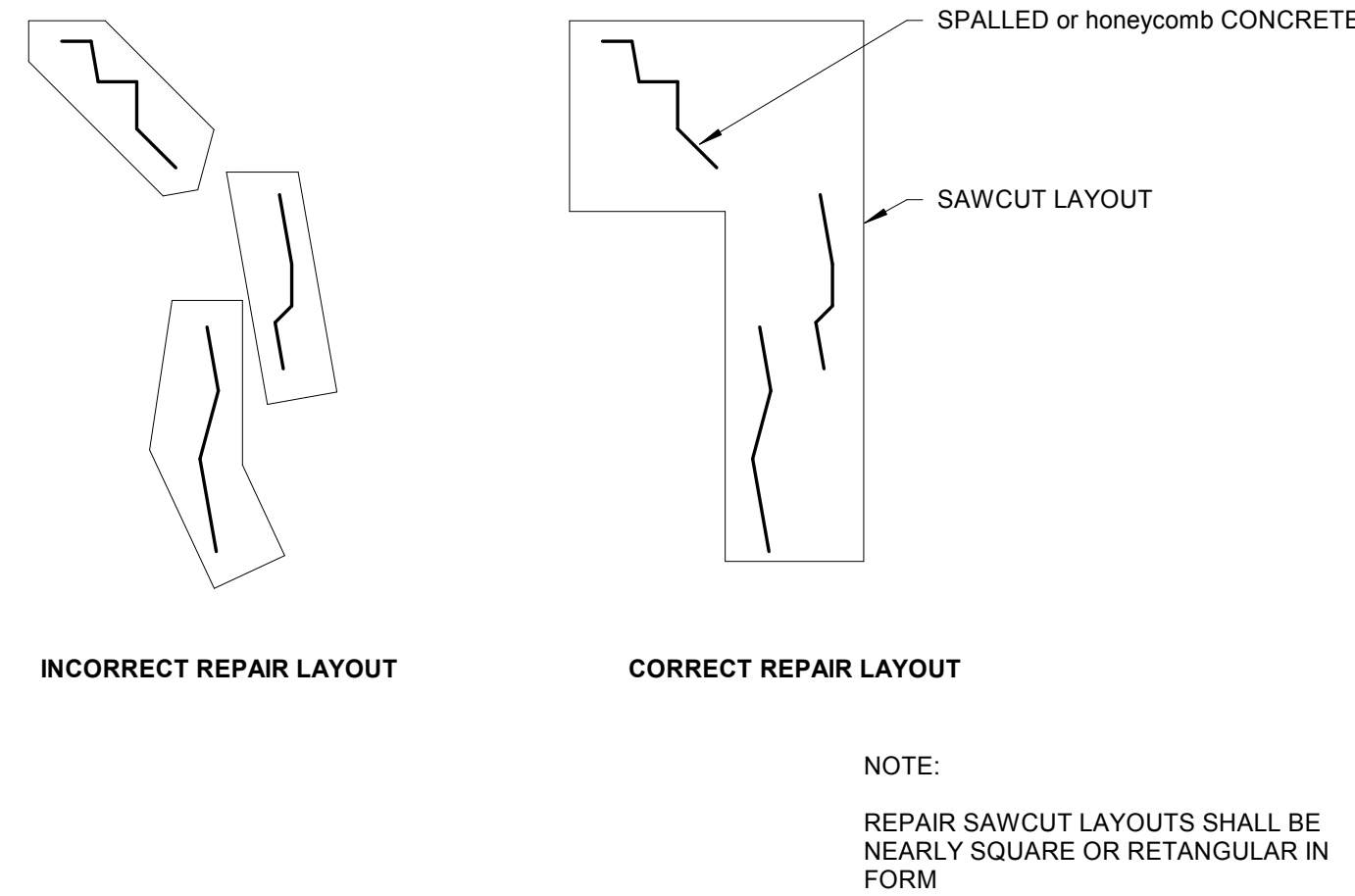
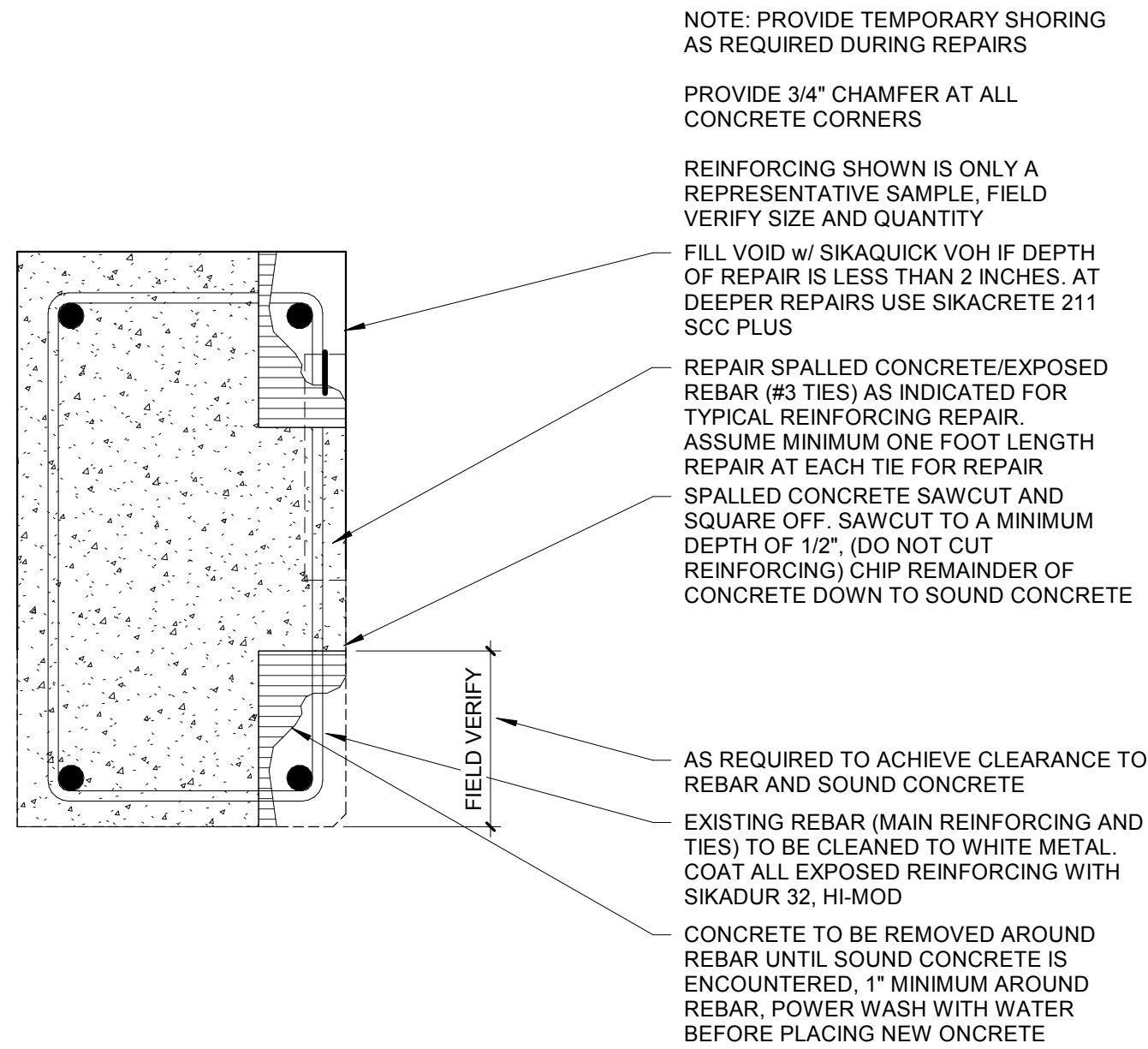
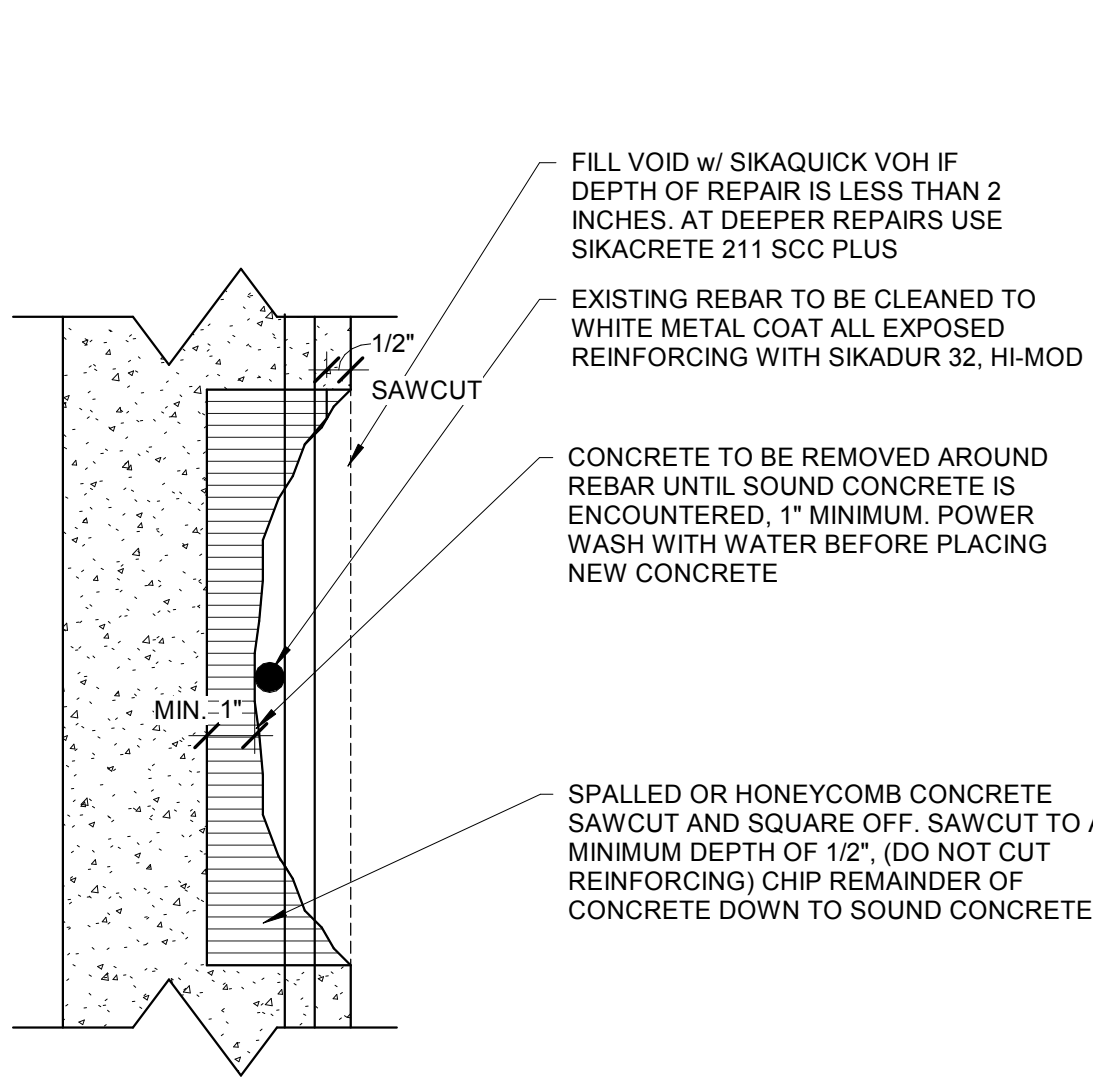
DATE  
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S405



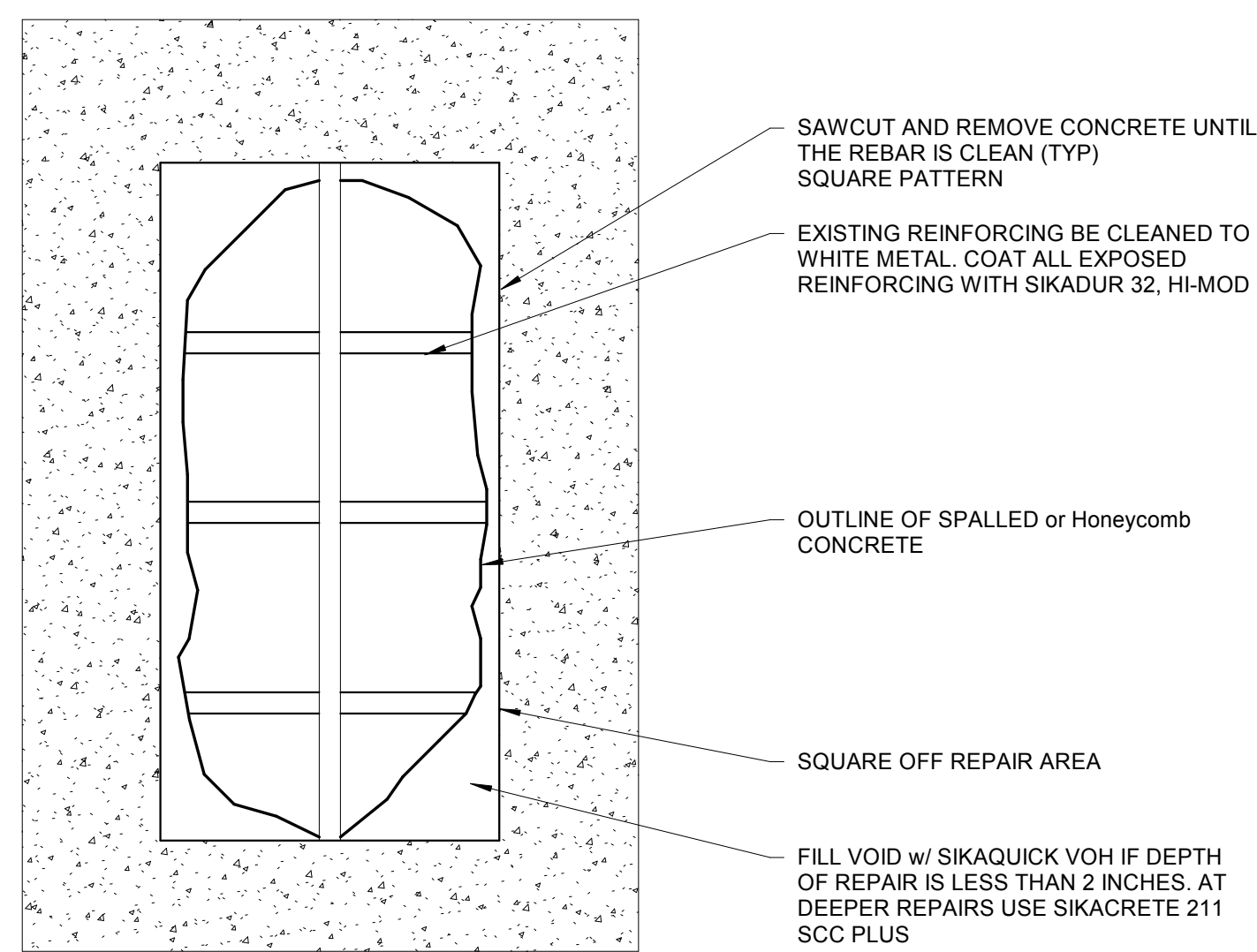
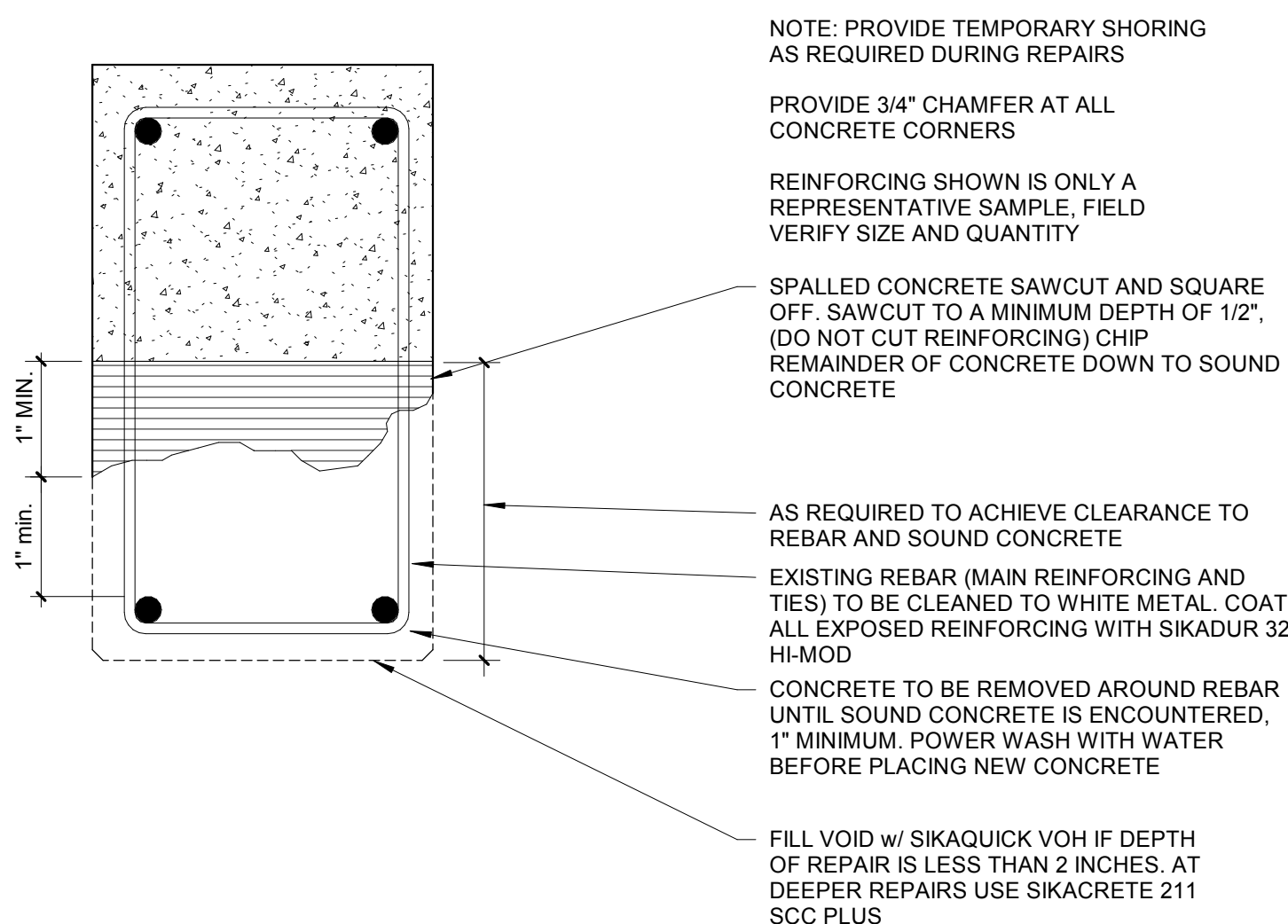
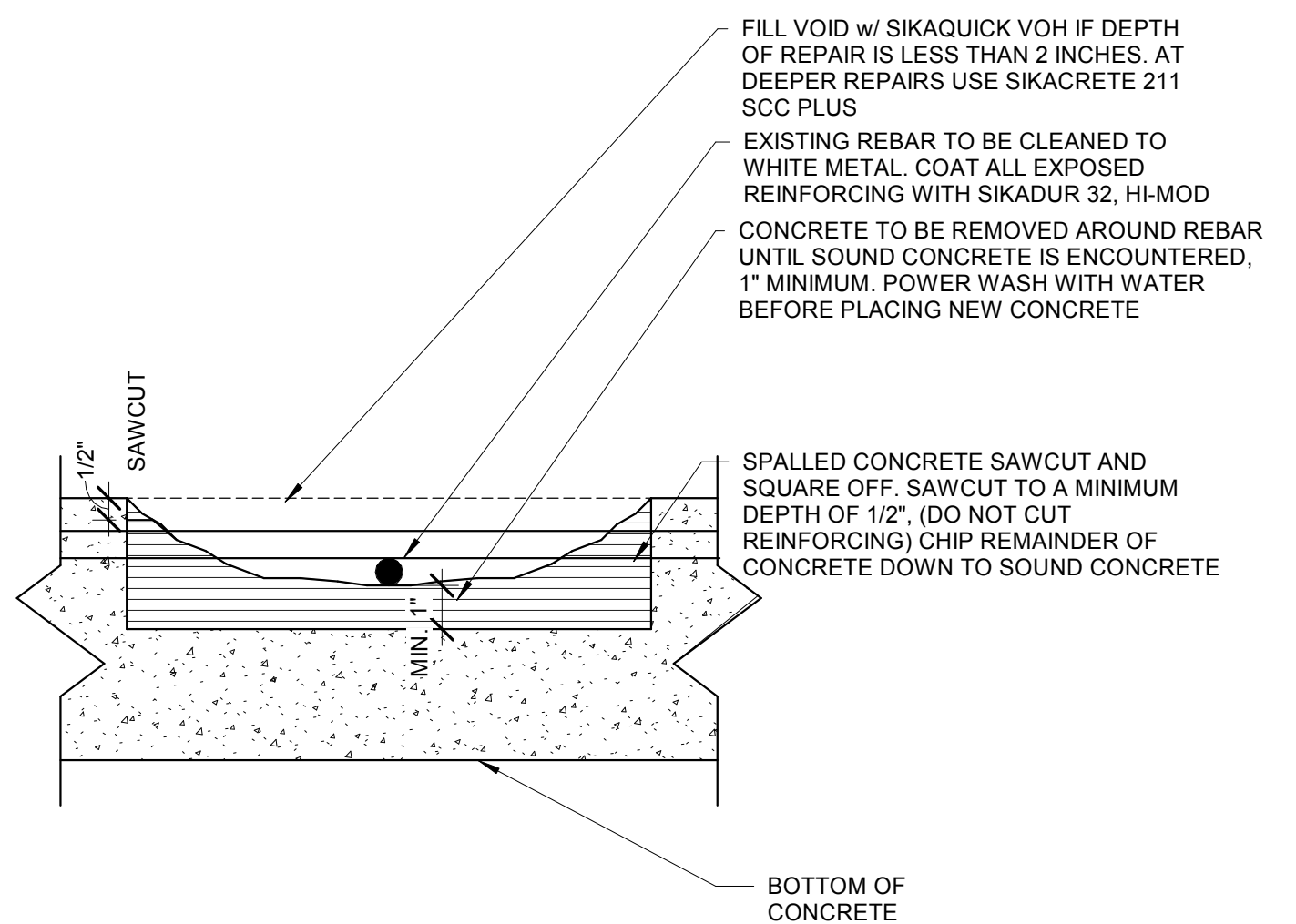
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Spalled Concrete Repair, Walls 7  
3" = 1'-0"

Concrete Repair, Beam or Column Partial R2a  
3" = 1'-0"

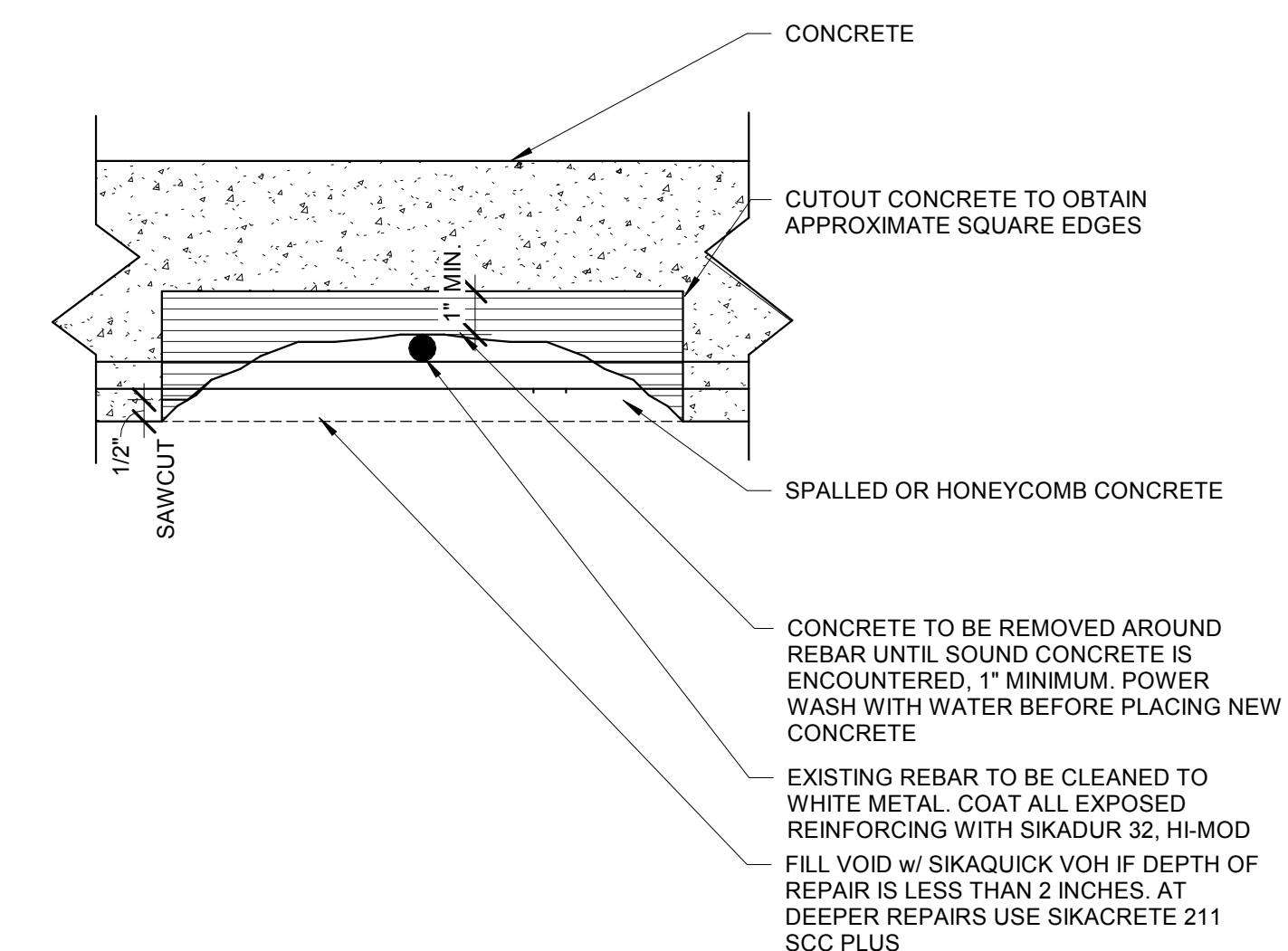
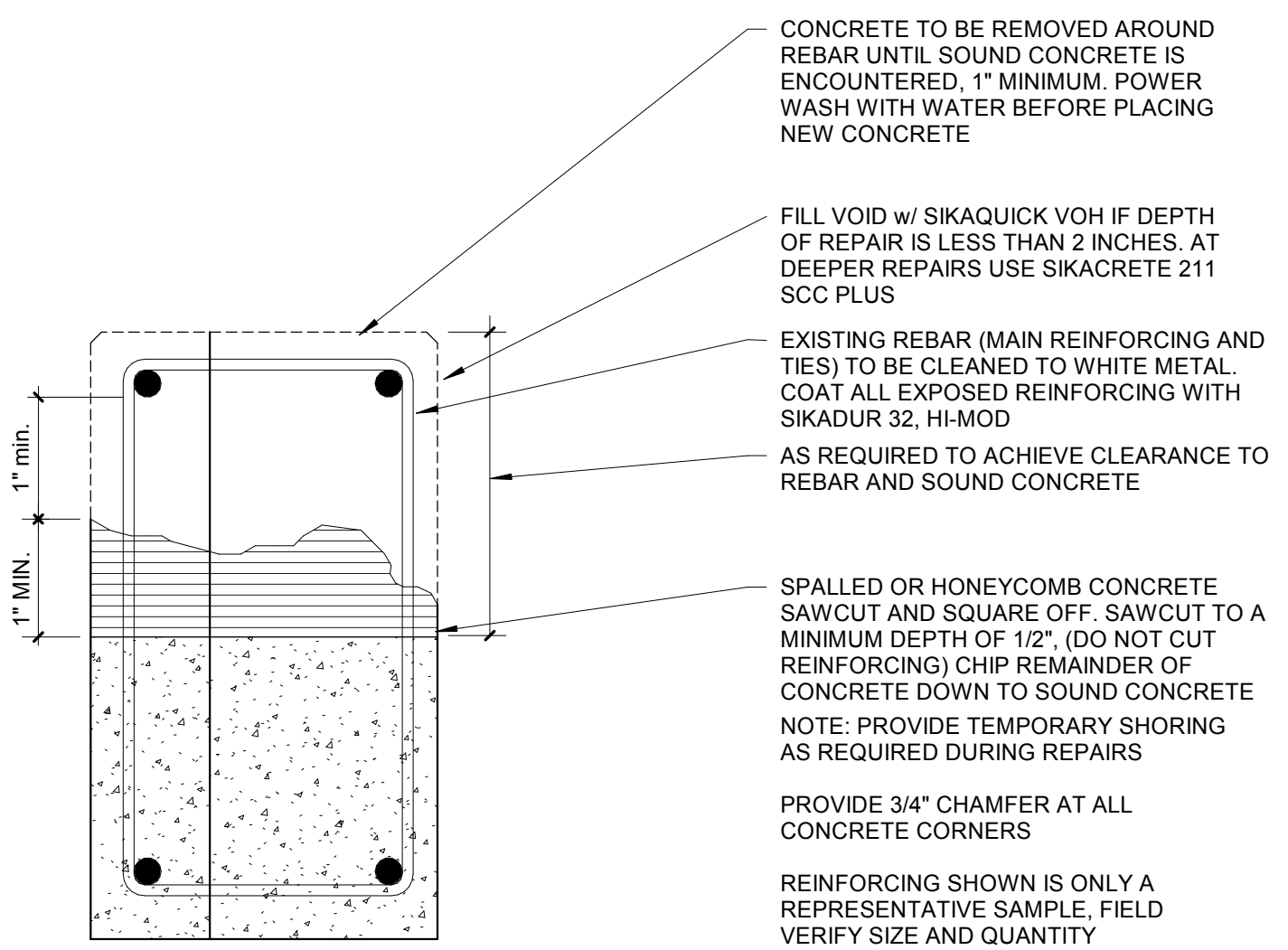
Spalled or HoneycombConcrete Layout 1  
1" = 1'-0"



Spalled Concrete Repair, Top of Slab 8  
3" = 1'-0"

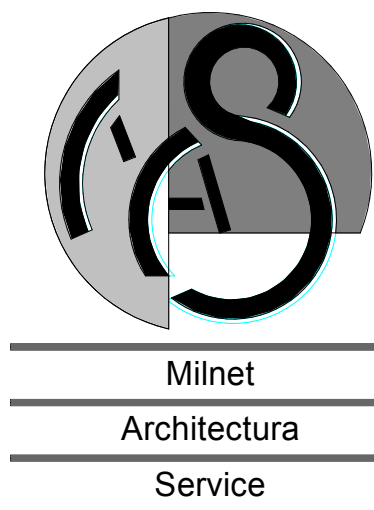
Concrete Repair, Edge Beam Bottom R2b  
3" = 1'-0"

Spalled Concrete Repair Slab 2  
1" = 1'-0"




Concrete Repair, Beam top or Column Corner R2c  
3" = 1'-0"

Spalled Concrete Repair, Bottom of Slab R3  
3" = 1'-0"



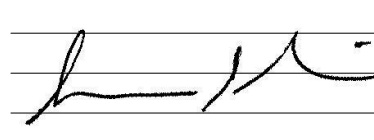
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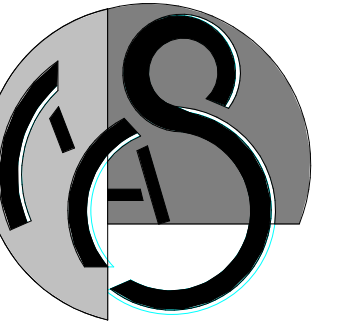
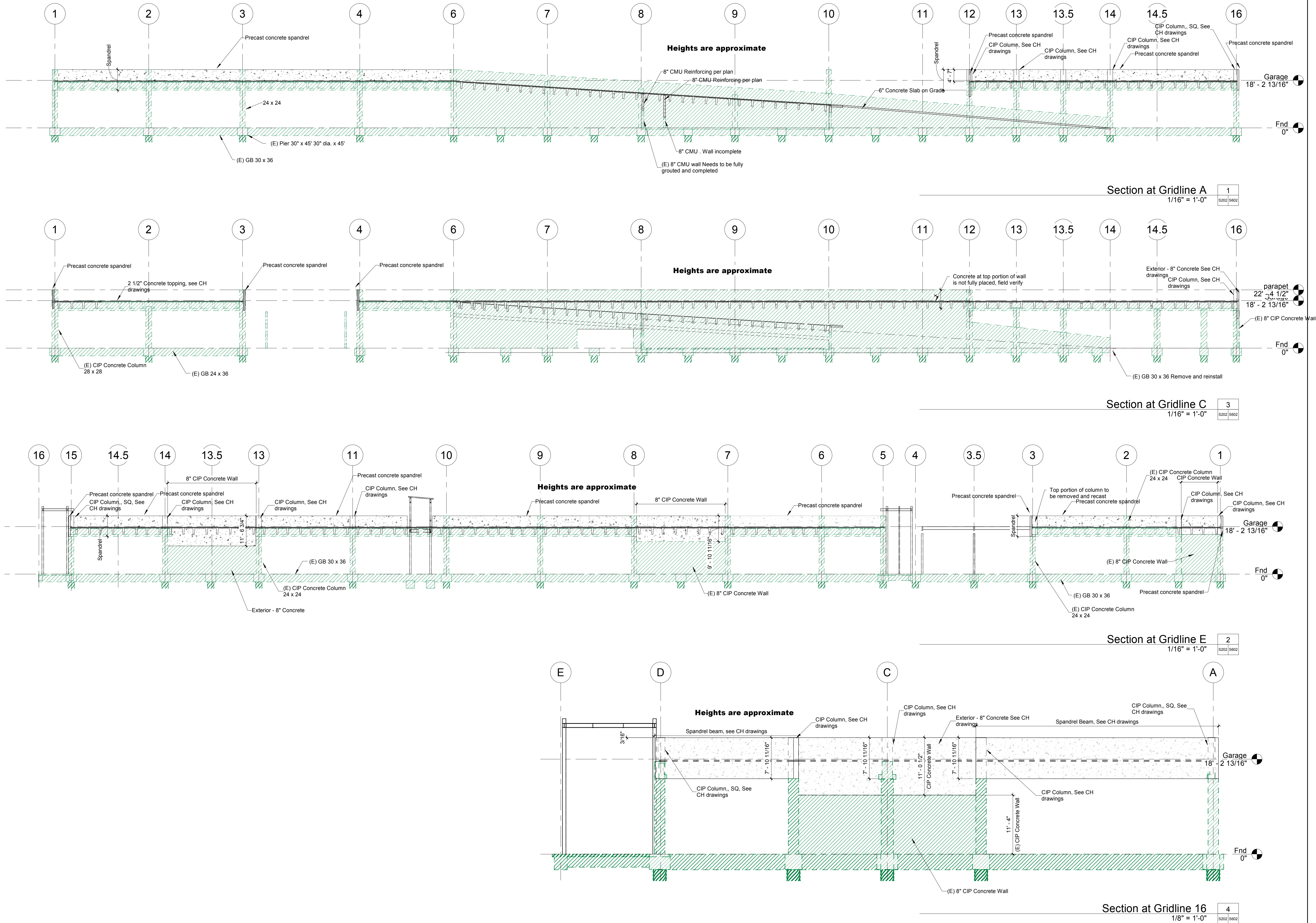
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S406





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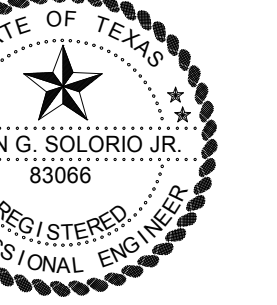


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*[Signature]*

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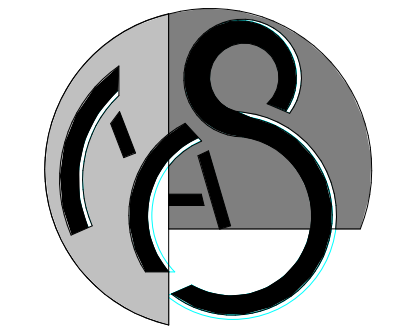
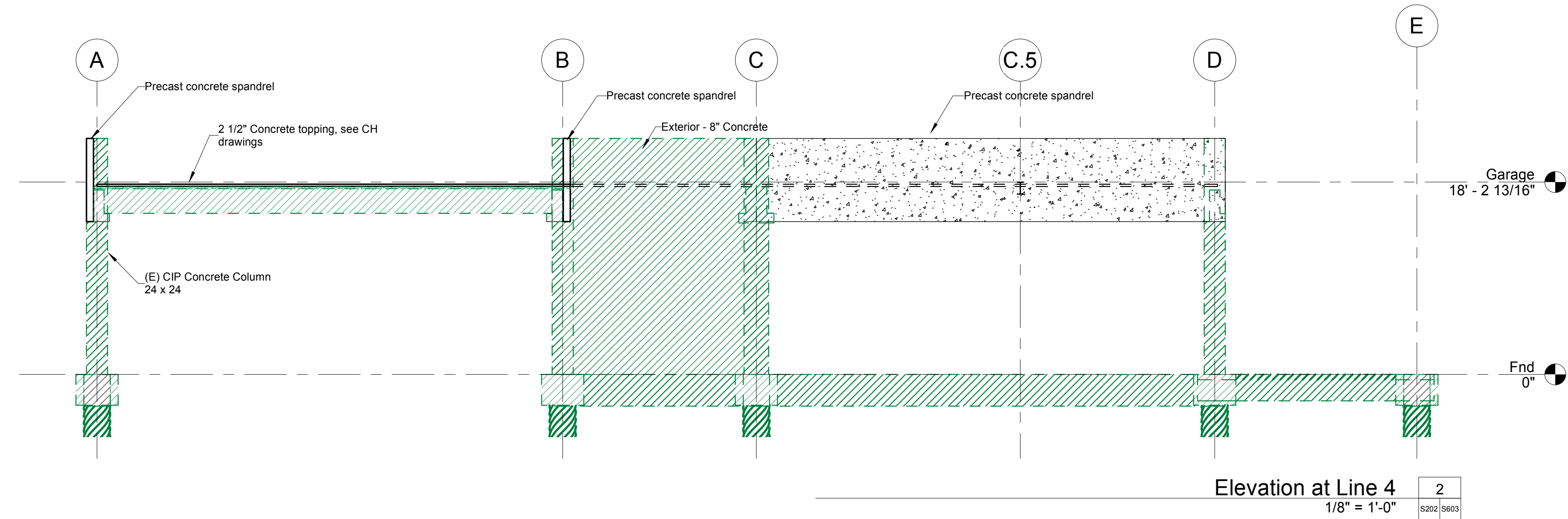
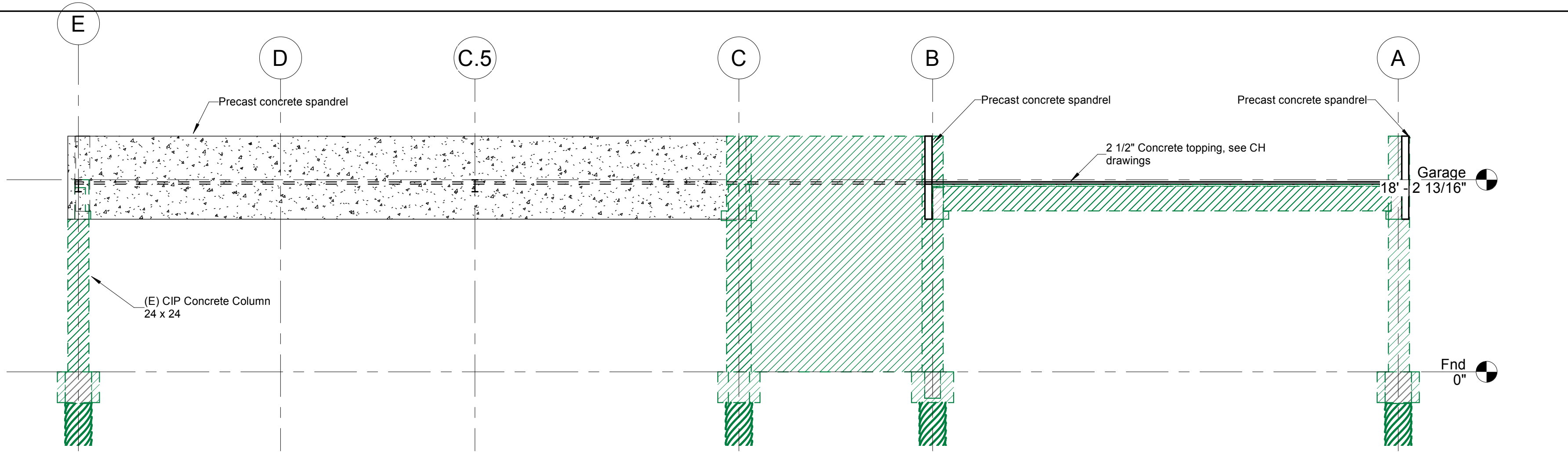
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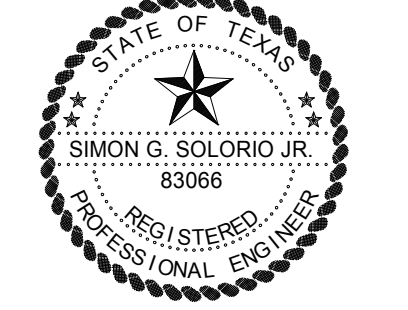
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Garage  
18' - 2 13/16"

Fnd  
0"

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GARAGE RE-BID  
CITY OF McALLEN  
McALLEN, TX

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16158

DATE  
June 17, 2019

S H E E T

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PARKING GARAGE  
CITY OF MCALLEN  
McALLEN, TX

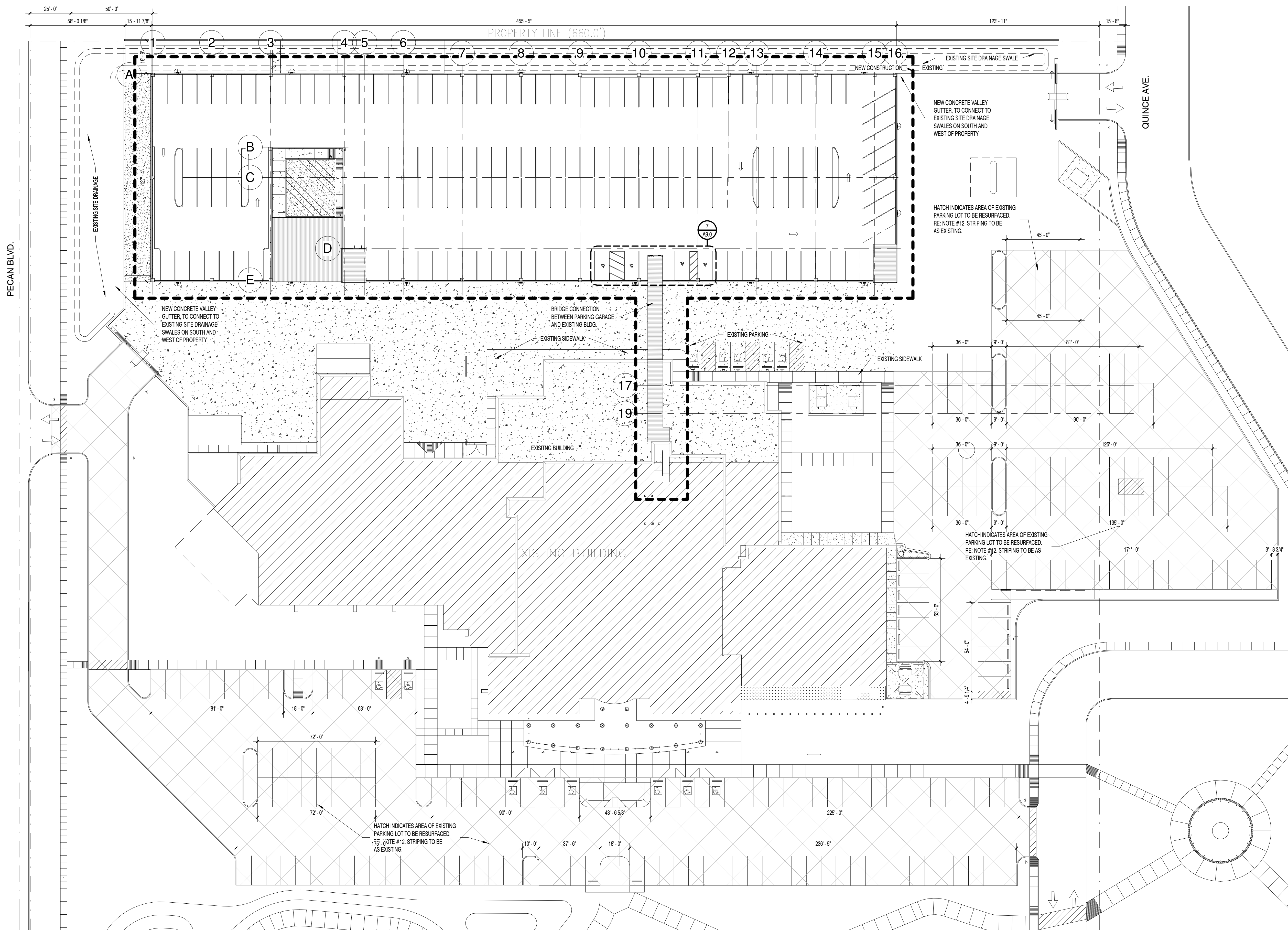
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DATE  
JUNE 18, 2019

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OF



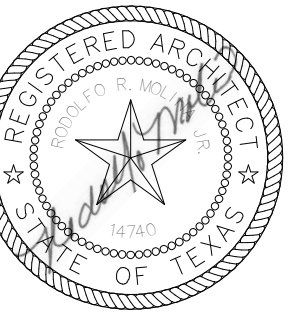
1 SITE PLAN  
1" = 30'-0"

GENERAL NOTES:

- OWNER WILL PROVIDE SOIL TESTS PRIOR TO FOUNDATION WORKS.
- PROVIDE SIDEWALK AS PART OF BASE BID.
- RE: CIVIL FOR UTILITY CONNECTIONS (U.R. WATER & SEWER)
- WARNING:  
CONTACT 1-800-DIG-TESS FOR UNDERGROUND ELECTRIC CABLES PLACED IN SITE.
- ALL CONSTRUCTION AND MATERIALS FOR DRAINAGE, GRADING AND PAVING TO BE IN ACCORD WITH STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
- ALL SOIL PLACED ONTO SITE IS TO BE COMPACTED TO 80% DENSITY, EXCEPT UNDER ANY PAVING COMPACTION IS TO BE 95%.
- CONTRACTOR IS RESPONSIBLE FOR ALL HORIZONTAL AND VERTICAL CONTROL FOR CONSTRUCTION.
- CONTRACTOR IS RESPONSIBLE FOR PAYING ANY FEES FOR PERMITS AS MAY BE REQUIRED FOR THIS CONSTRUCTION.
- ALL PIPE SLEEVES SHALL BE SCH. 40 PVC AND FURNISHED IN PLACE BY THE CONTRACTOR BEFORE PAVING.  
TUELECTRIC SLEEVES:  
6" SLEEVES ARE TO BE DOVE GREY Y AND PLACED 48" BELOW TOP OF CURB ELEVATIONS, WITH END CONDUIT MARKERS FURNISHED BY TUELECTRIC PLACED ON EACH END OF CONDUIT.  
IRRIGATION SLEEVES:  
2 & 4" SLEEVES ARE TO BE PLACED 24" BELOW TOP OF CURB.
- CONTRACTOR TO SET CONTROL GRADES AT 25' INTERVALS ALONG ALL PAVING FLOW LINES.
- CONTRACTOR TO PROVIDE JOB SIGN. RE: A8.0
- REMOVE EXISTING ASPHALT DOWN TO DEPTH OF 1 1/2". APPLY PRIME COAT, LAYDOWN AND COMPACT 1 1/2" HMA, TYPE D LIMESTONE AGGREGATE. THIS INCLUDES ALL ASPHALT ON GROUND LEVEL LOCATED IN NEW CONSTRUCTION AREA. BASE BID.
- CONTRACTOR TO FIELD VERIFY EXISTING PAVING GRADE ELEVATIONS, REPAIRING TO MATCH EXISTING CONDITIONS U.N.O. PAVING CONTRACTOR RESPONSIBLE FOR FIELD VERIFYING STRIPING. STRIPING PLAN TO BE SUBMITTED FOR OWNER APPROVAL.

PARKING

PARKING SPACES ON 1ST LEVEL	134
PARKING SPACES IN IMPOUND LOT	24
PARKING SPACES ON 2ND LEVEL	136
TOTAL PARKING	294



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PARKING GARAGE  
CITY OF McALLEN  
McALLEN, TX

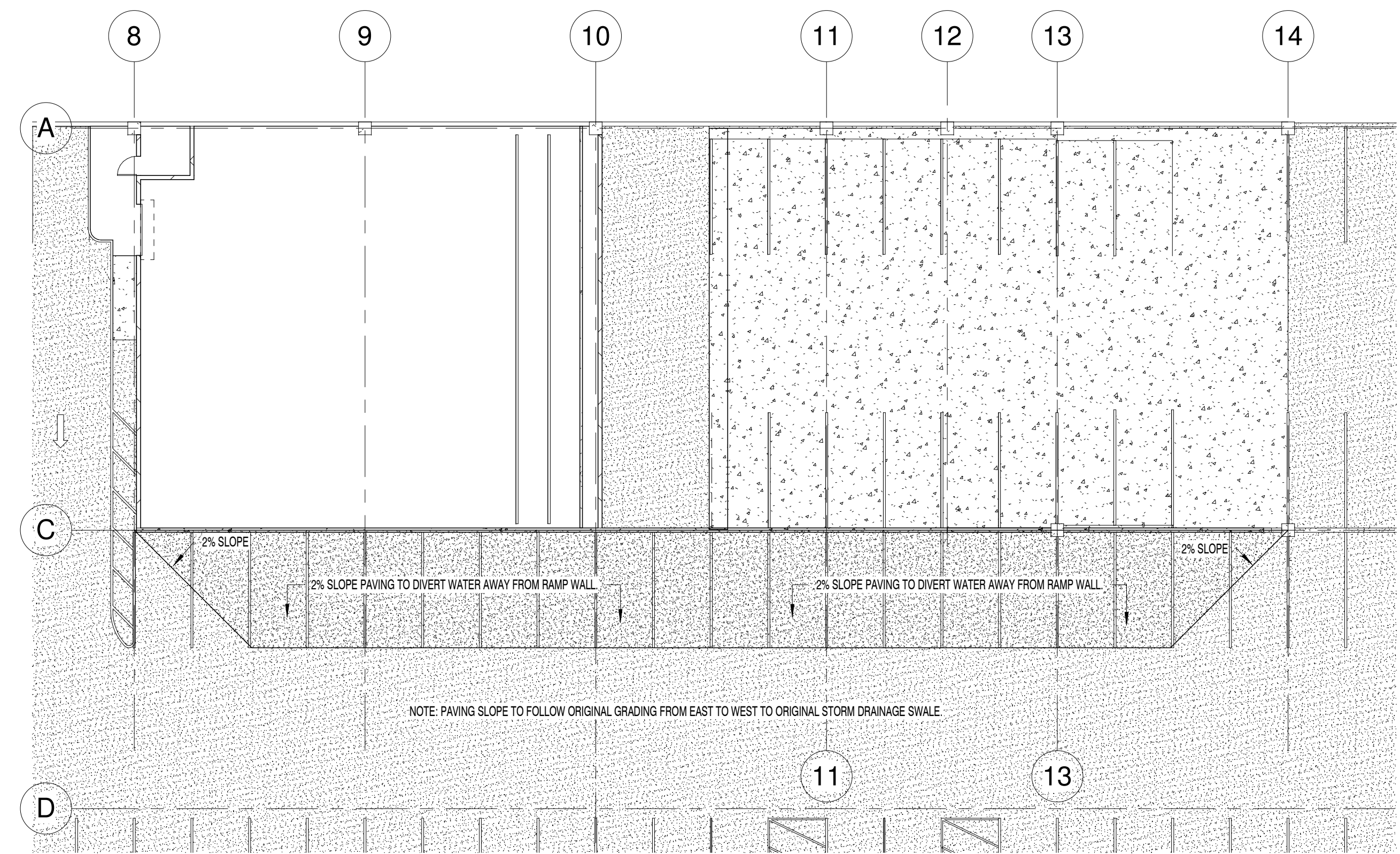
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215031

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AS1.1  
OF



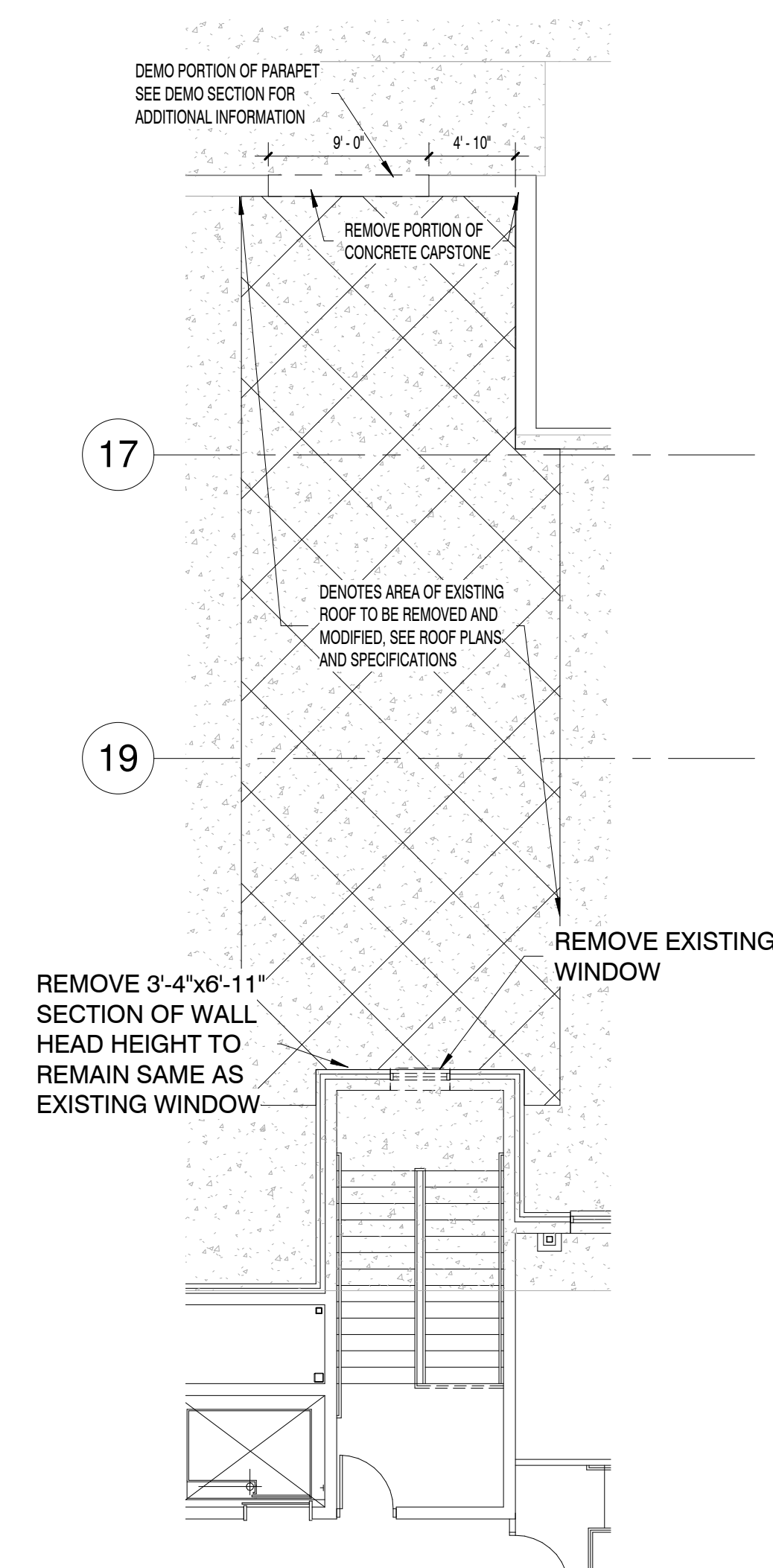
1 FLOOR PLAN - FIRST FLOOR  
1/16" = 1'-0"



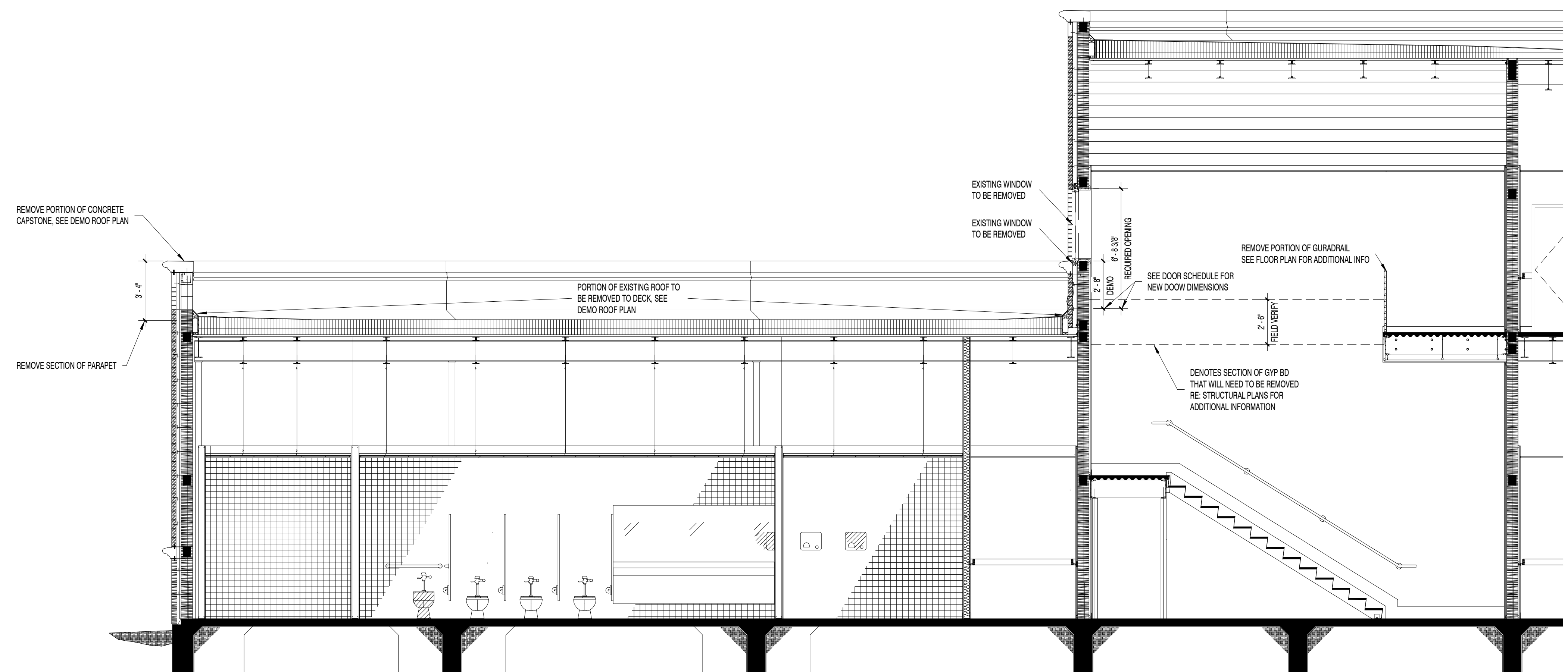
MCALLEN PUBLIC SAFETY BUILDING  
PARKING GARAGE  
CITY OF MCALLEN  
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DATE  
JUNE 18, 2019  
ISSUE FOR BIDS

S H E E T  
D1.0  
OF



② DEMO PLAN - SECOND FLOOR  
1/8" = 1'-0"



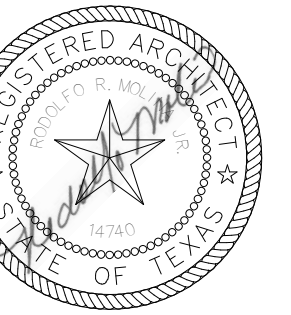
① BUILDING SECTION-DEMO  
1/4" = 1'-0"





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Architectural  
Services

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MCALLEN PUBLIC SAFETY BUILDING  
PARKING GARAGE  
CITY OF MCALLEN  
McALLEN, TX

PROJECT NUMBER  
215031

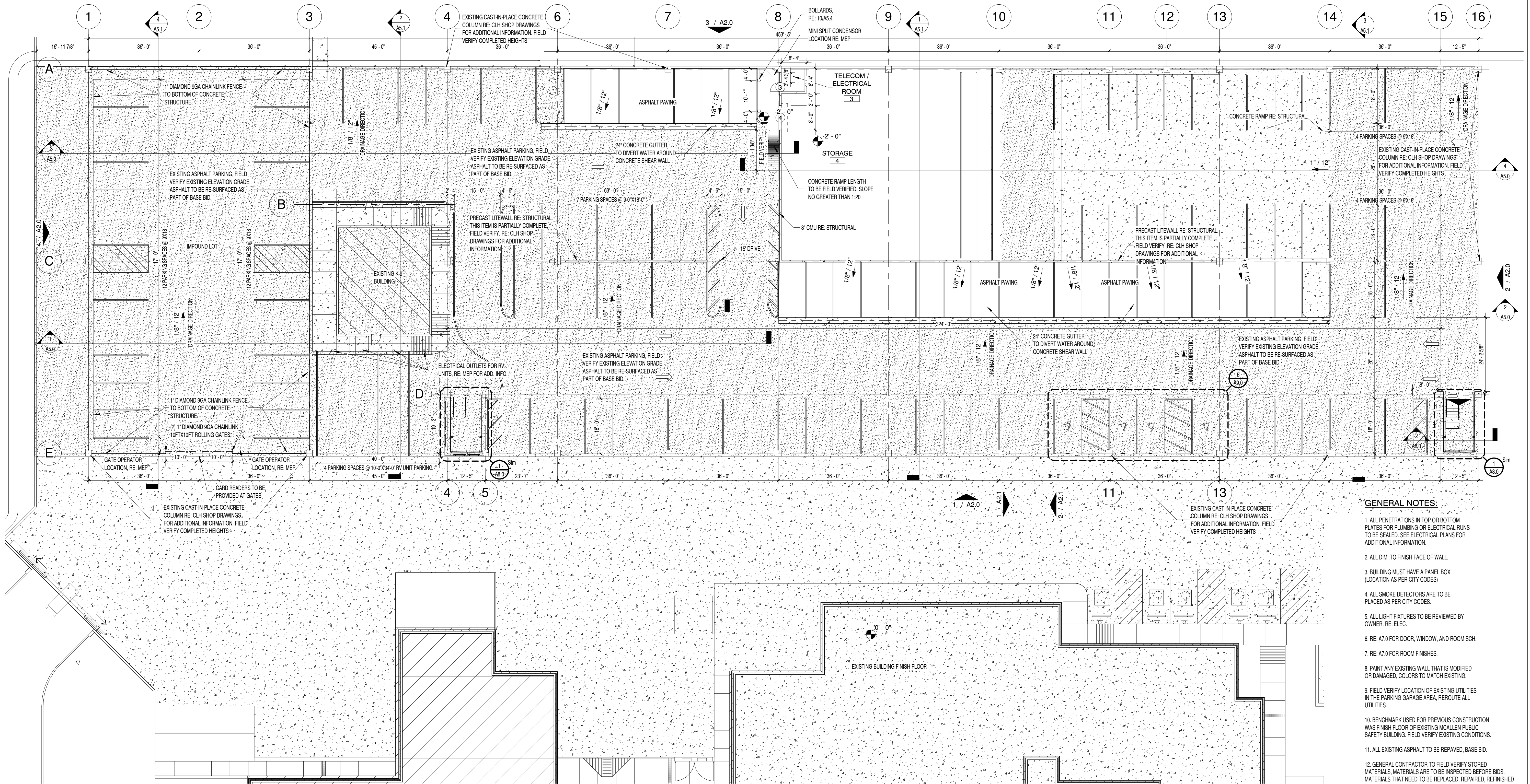
DATE  
JUNE 18, 2019

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S H E E T

A1.0

OF



- GENERAL NOTES:**
1. ALL PENETRATIONS IN TOP OR BOTTOM PLATES FOR PLUMBING OR ELECTRICAL RUNS TO BE SEALED. SEE ELECTRICAL PLANS FOR ADDITIONAL INFORMATION.
  2. ALL DIM. TO FINISH FACE OF WALL.
  3. BUILDING MUST HAVE A PANEL BOX (LOCATION AS PER CITY CODES).
  4. ALL SMOKE DETECTORS ARE TO BE PLACED AS PER CITY CODES.
  5. ALL LIGHT FIXTURES TO BE REVIEWED BY OWNER. RE: ELEC.
  6. RE: A7.0 FOR DOOR, WINDOW, AND ROOM SCH.
  7. RE: A7.0 FOR ROOM FINISHES.
  8. PAINT ANY EXISTING WALL THAT IS MODIFIED OR DAMAGED, COLORS TO MATCH EXISTING.
  9. FIELD VERIFY LOCATION OF EXISTING UTILITIES IN THE PARKING GARAGE AREA, REROUTE ALL UTILITIES.
  10. BENCHMARK USED FOR PREVIOUS CONSTRUCTION WAS FINISH FLOOR OF EXISTING MCALLEN PUBLIC SAFETY BUILDING. FIELD VERIFY EXISTING CONDITIONS.
  11. ALL EXISTING ASPHALT TO BE REPAVED, BASE BID.
  12. GENERAL CONTRACTOR TO FIELD VERIFY STORED MATERIALS. MATERIALS ARE TO BE INSPECTED BEFORE BIDS. MATERIALS THAT NEED TO BE REPLACED, REPAIRED, REFINISHED ETC. MUST BE INCLUDED IN BASE BID.
- SQUARE FOOTAGE:**
- PARKING GARAGE 1ST LEVEL GROSS AREA: 40,500SF  
PARKING GARAGE 2ND LEVEL GROSS AREA: 56,300SF

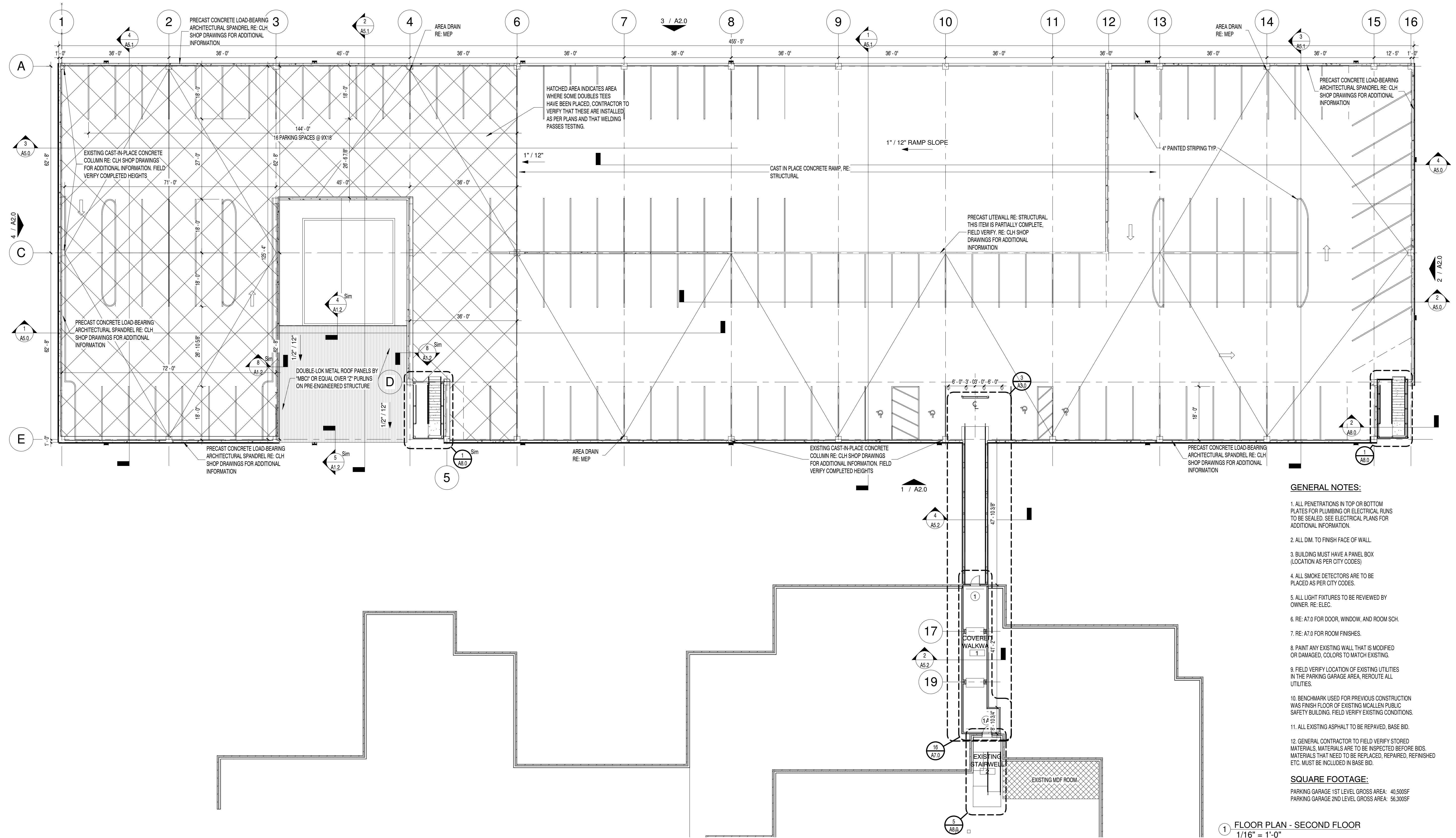
1 FLOOR PLAN - FIRST FLOOR  
1/16" = 1'-0"

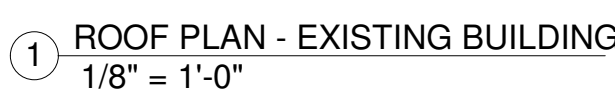
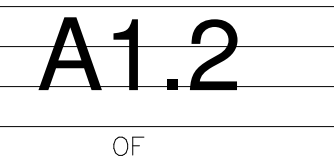
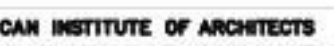




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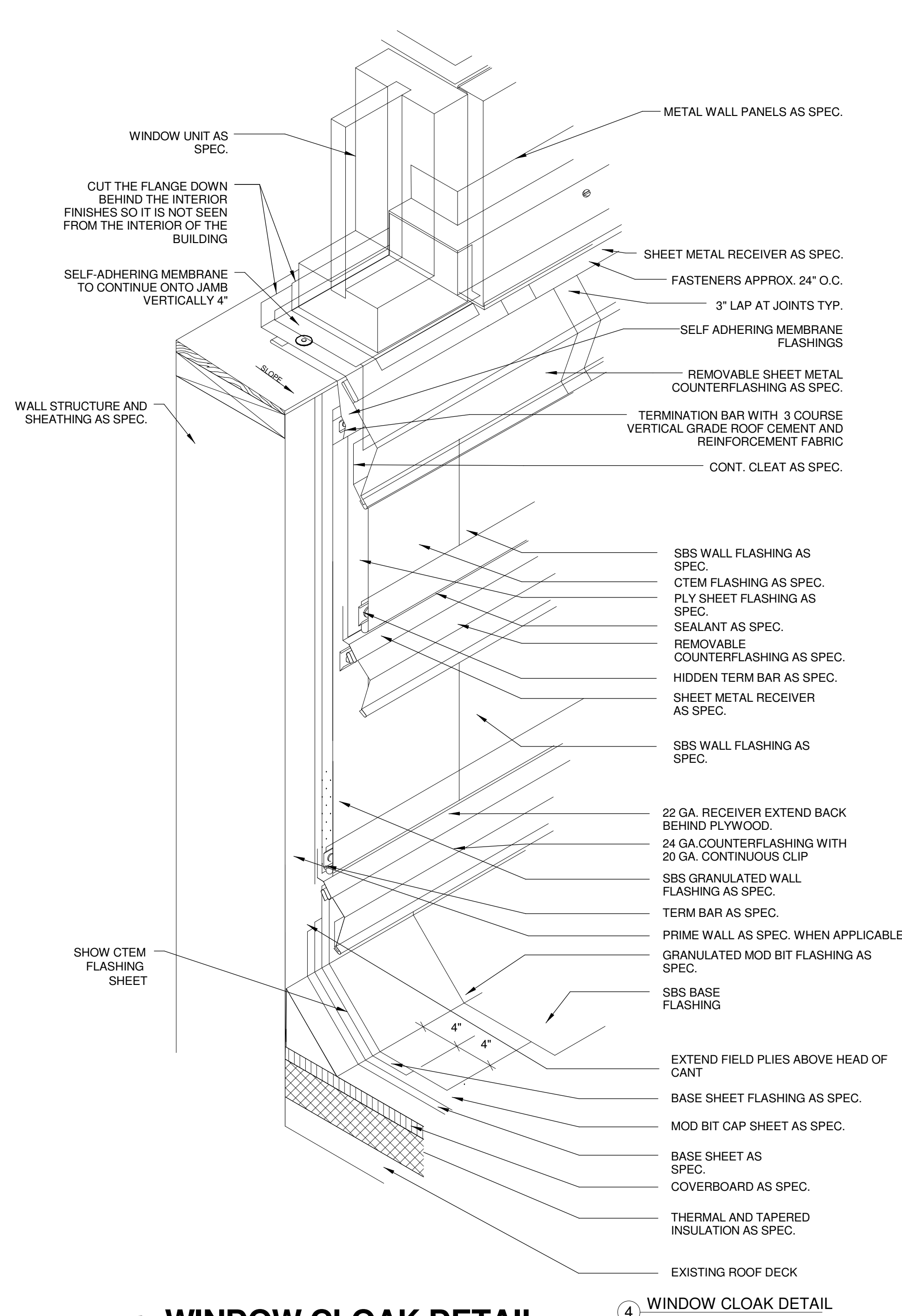
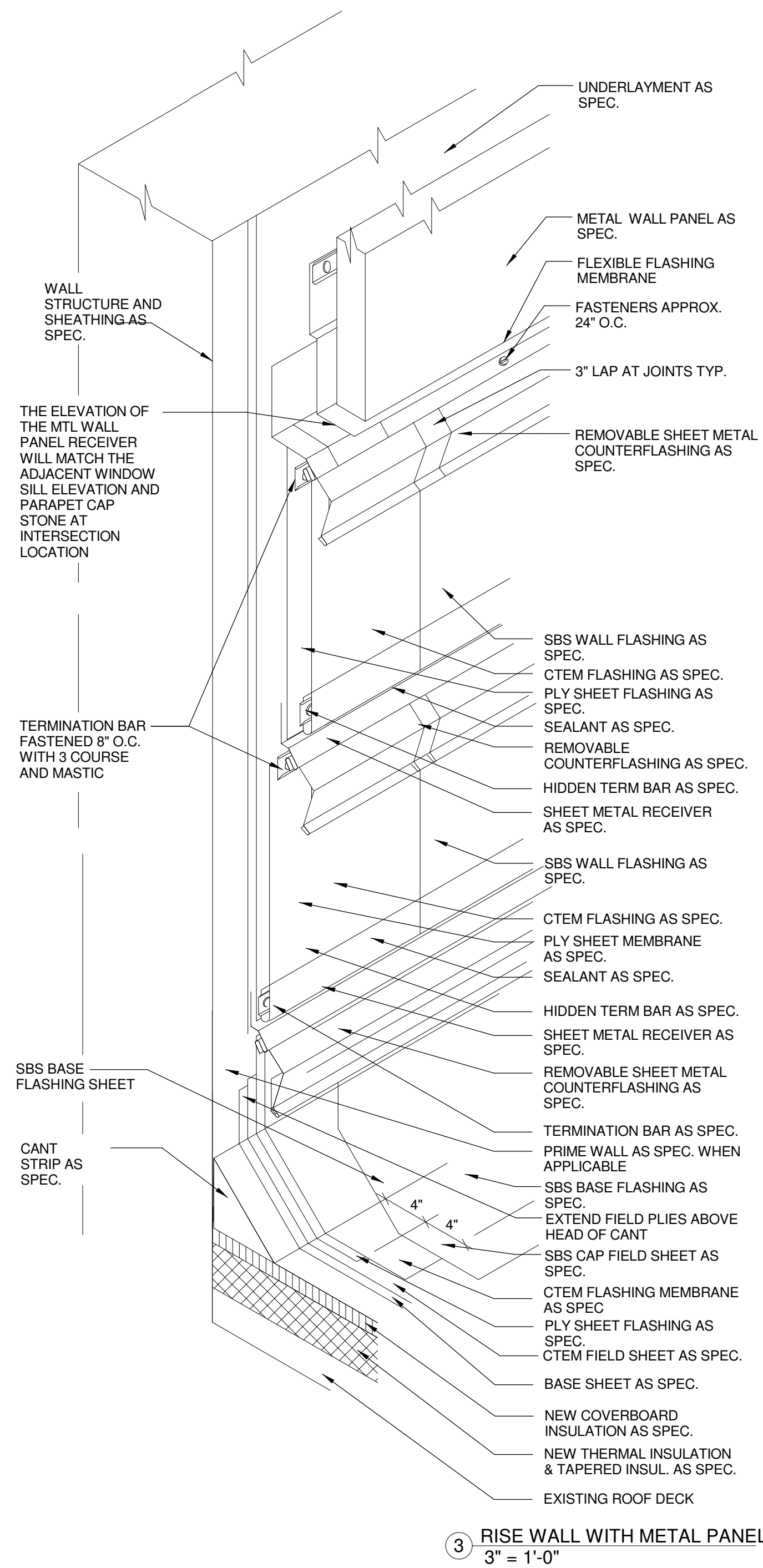
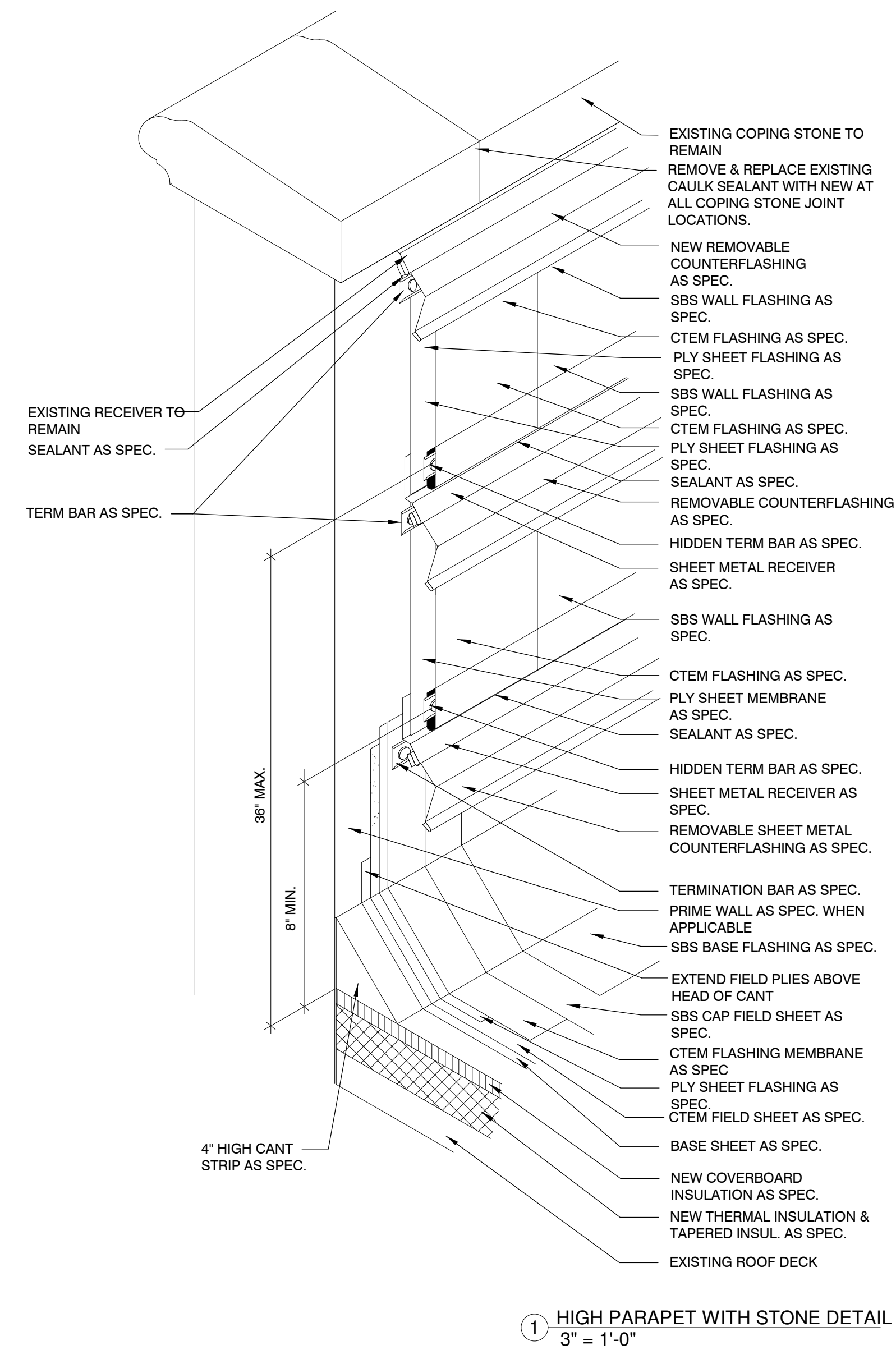
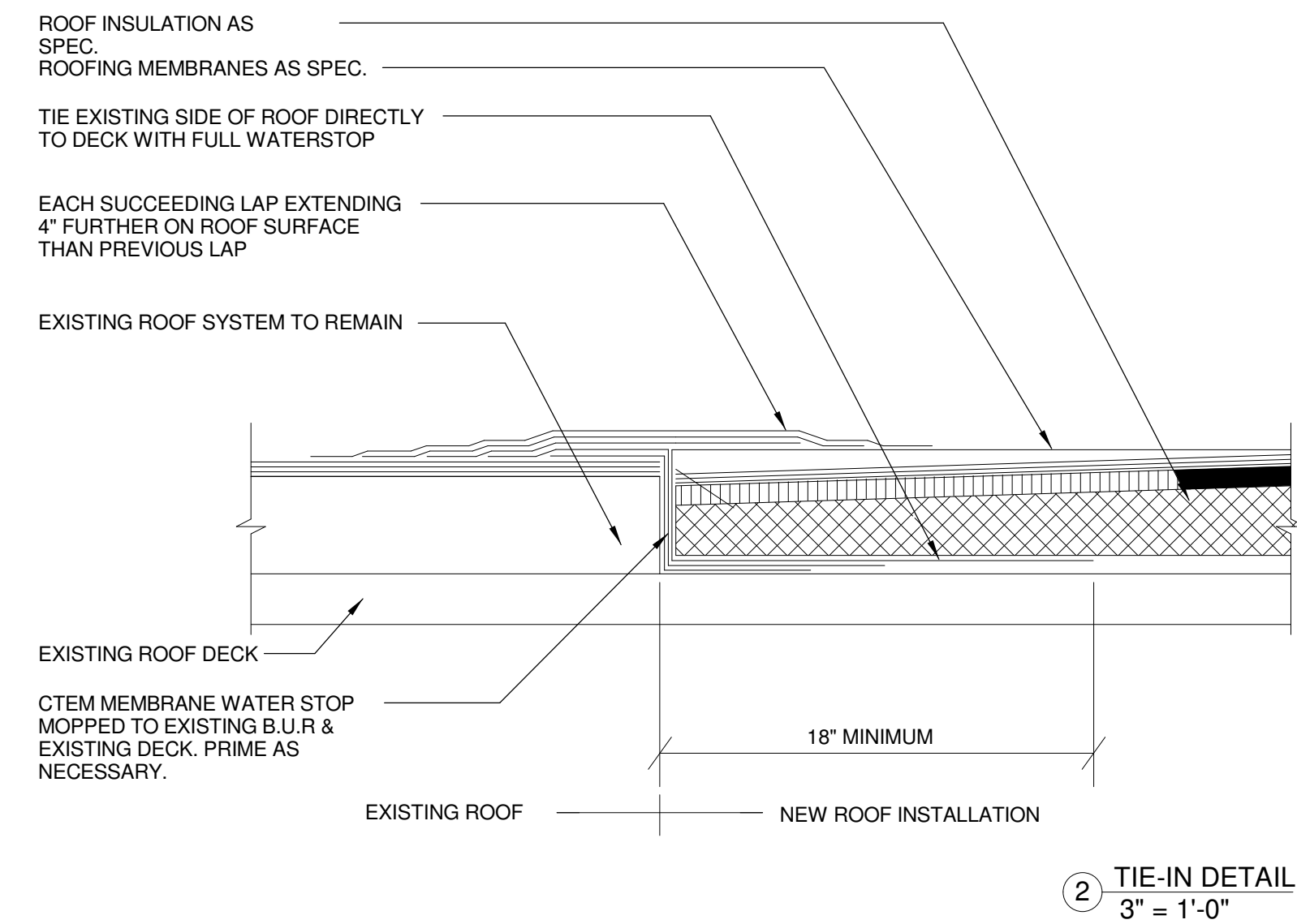




MCALLEN PUBLIC SAFETY BUILDING  
PARKING GARAGE  
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ISSUE FOR BIDS

S H E E T  
A1.3  
OF



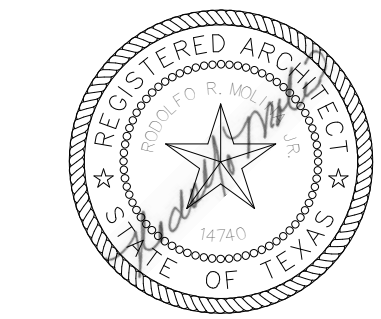
4 WINDOW CLOAK DETAIL  
NOT TO SCALE





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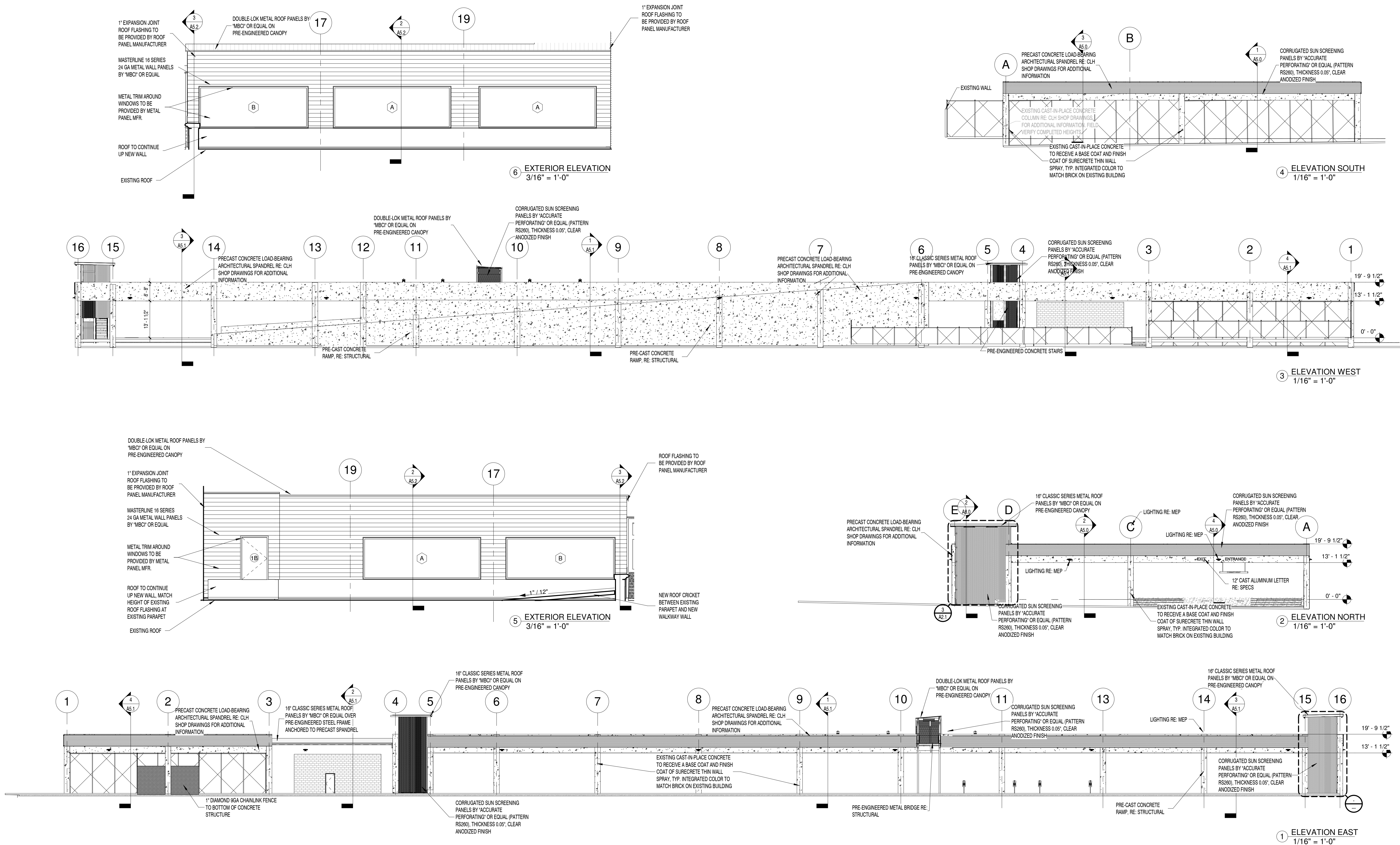
DATE  
JUNE 18, 2019

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S H E E T

A2.0

OF



MCALLEN PUBLIC SAFETY BUILDING  
PARKING GARAGE  
CITY OF MCALLEN  
McALLEN, TX

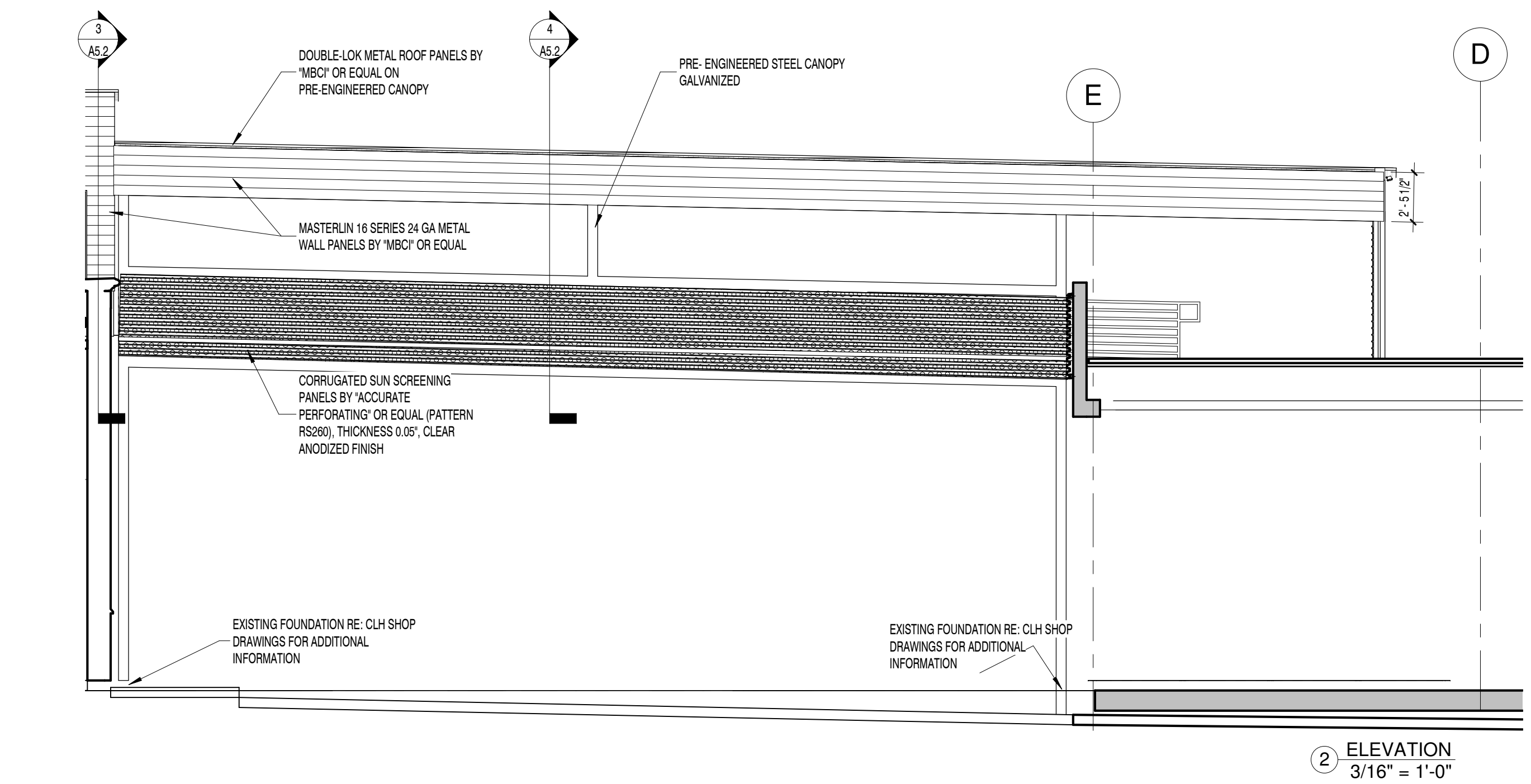
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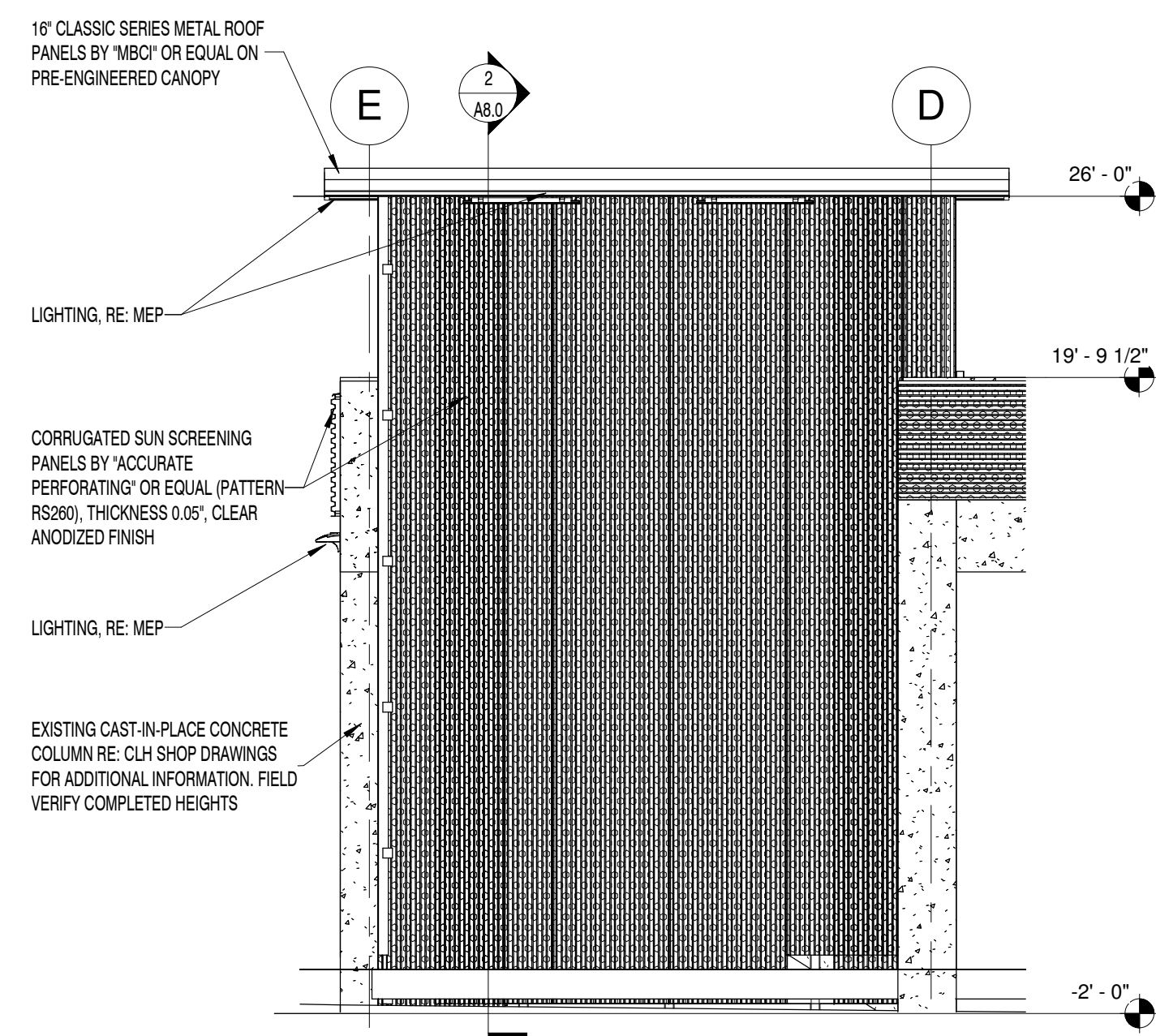
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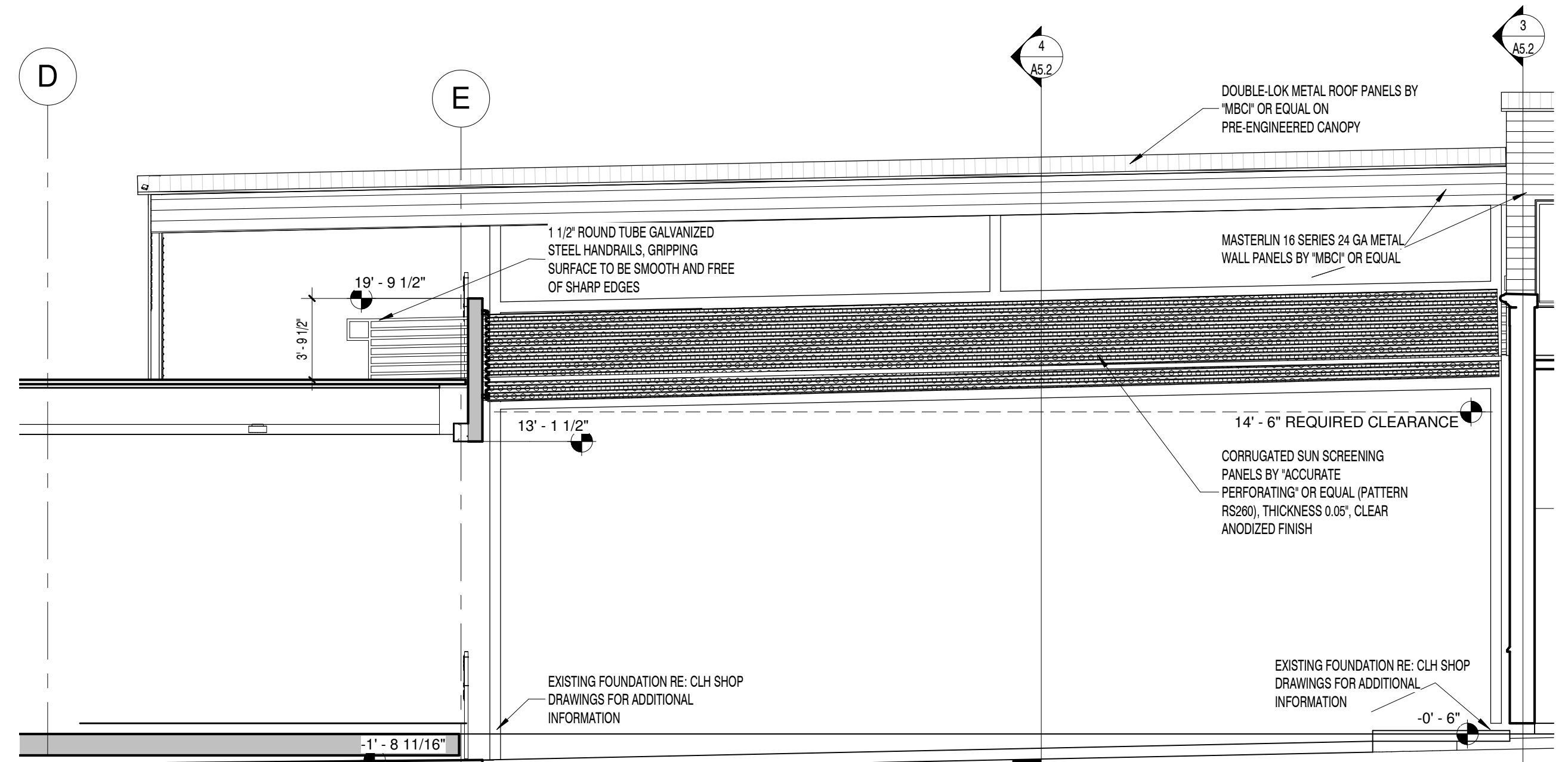
A2.1  
OF



② ELEVATION  
3/16" = 1'-0"



③ ELEVATION - STAIRWELL  
3/16" = 1'-0"

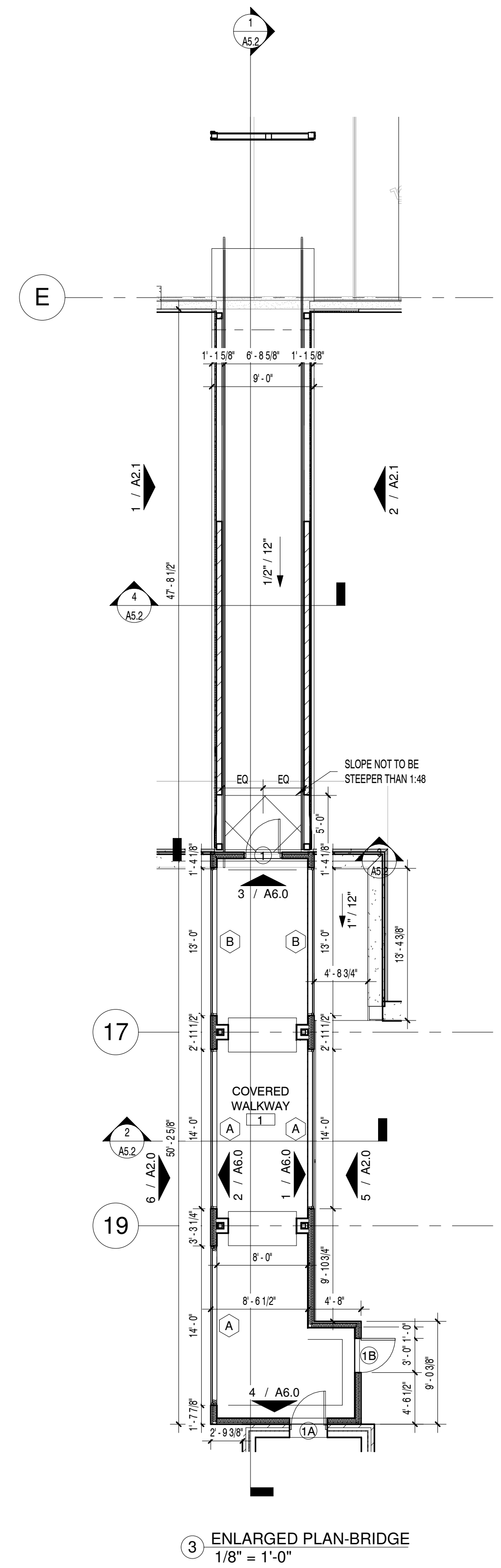


① ELEVATION  
3/16" = 1'-0"



ISSUE FOR BIDS

100



MCALLEN PUBLIC SAFETY BUILDING  
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ISSUE FOR BIDS

S H E E T

A4.0

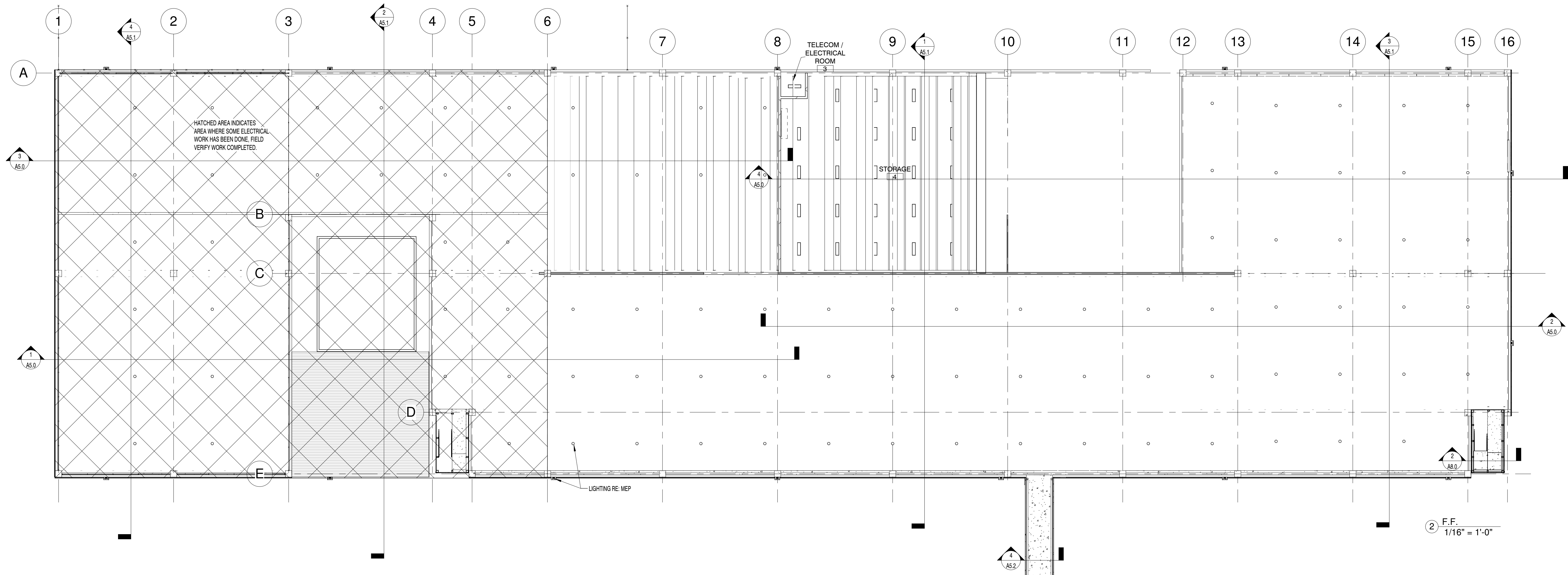
OF

LIGHTING SCHEDULE

- PARKING GARAGE LUMINAIRE
- 2X4 PARABOLIC LIGHT FIXTURE
- 1X4 CASED FLOURECENT LIGHT FIXTURE
- 4' WALL MOUNTED LED LIGHT FIXTURE
- WALL MOUNTED LED LIGHT FIXTURE

REFLECTED CEILING PLAN NOTES

1. RE: ELECTRICAL FOR ADDITIONAL INFORMATION.
2. 10'-0" CEILING HEIGHT UNLESS NOTED OTHERWISE.
3. 2X4 CEILING GRID AT COVERED WALKWAY.
4. PROVIDE CABLE TRAY AT COVERED WALKWAY ABOVE CEILING TILE AND A 2" SLEEVE INTO EXISTING STAIRWELL.
5. PROVIDE AND INSTALL BAT INSULATION ABOVE ACOUSTICAL CEILING TILES, RE: SPECS FOR ADDITIONAL INFORMATION.
6. GENERAL CONTRACTOR TO VERIFY FIXTURE LOCATIONS, TYPES AND QUANTITIES WITH MEP DRAWINGS.
7. GENERAL CONTRACTOR TO REVIEW WALL, CEILING HEIGHTS, AND CEILING MATERIALS WITH ALL DRAWINGS AND SPECS. SHOULD A CONFLICT ARISE CONSULT ARCHITECT BEFORE COMMENCING.
8. REFER TO ENGINEER DRAWINGS FOR EMERGENCY LIGHTING AND EXIT LIGHT LOCATIONS.
9. REFER TO MEP ENGINEER DRAWINGS FOR LIGHTING SPECIFICATIONS, CIRCUITING AND SWITCHING CONTROLS.



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ISSUE FOR BIDS

S H E E T  
A4.1  
OF

LIGHTING SCHEDULE

PARKING GARAGE LUMINAIRE

2X4 PARABOLIC LIGHT FIXTURE

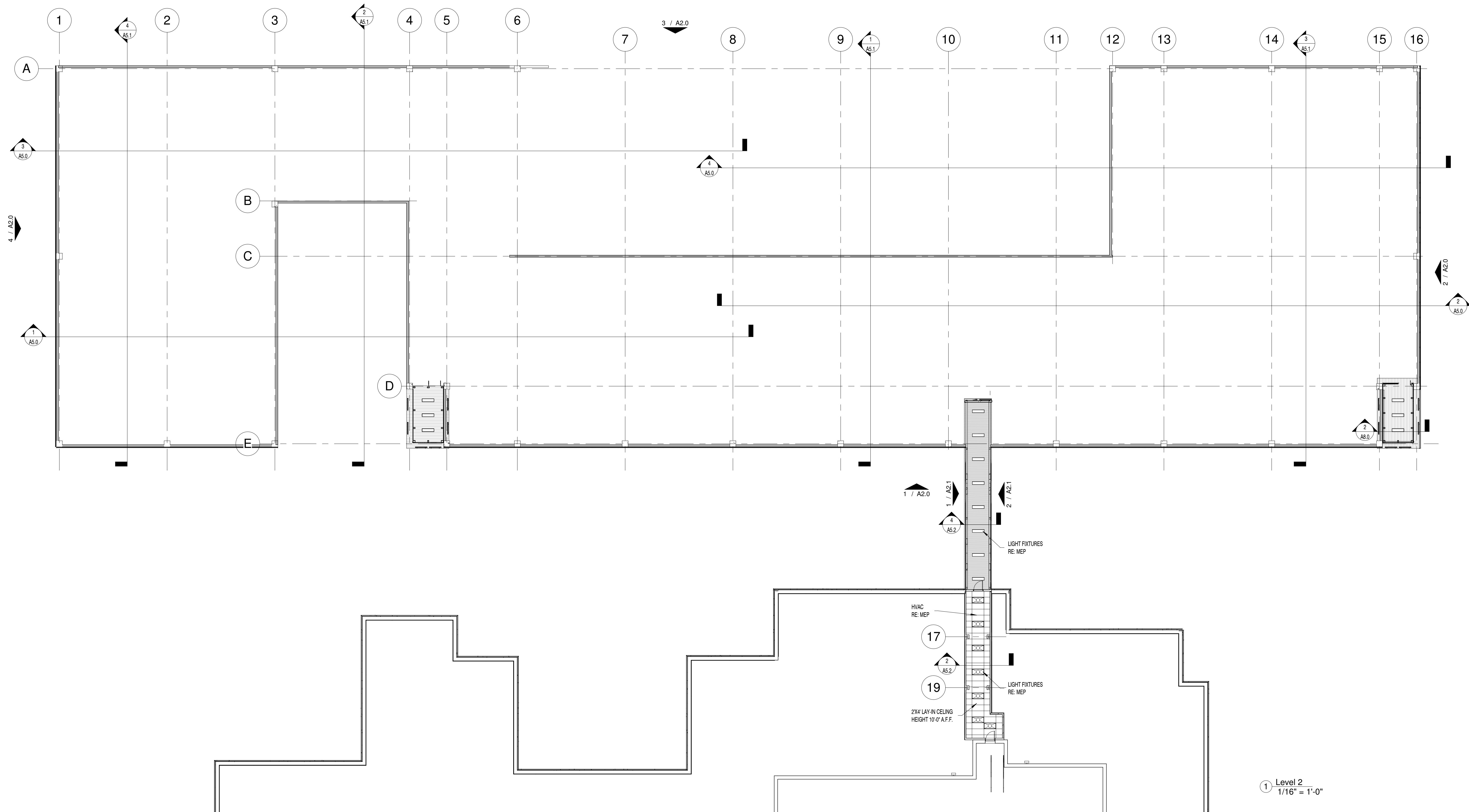
1X4 CASED FLOURECENT LIGHT FIXTURE

4" WALL MOUNTED LED LIGHT FIXTURE

WALL MOUNTED LED LIGHT FIXTURE

REFLECTED CEILING PLAN NOTES

- RE: ELECTRICAL FOR ADDITIONAL INFORMATION.
- 10'-0" CEILING HEIGHT UNLESS NOTED OTHERWISE.
- 2X4 CEILING GRID AT COVERED WALKWAY.
- PROVIDE CABLE TRAY AT COVERED WALKWAY ABOVE CEILING TILE AND A 2" SLEEVE INTO EXISTING STAIRWELL.
- PROVIDE AND INSTALL BAT INSULATION ABOVE ACOUSTICAL CEILING TILES. RE: SPECS FOR ADDITIONAL INFORMATION.
- GENERAL CONTRACTOR TO VERIFY FIXTURE LOCATIONS, TYPES AND QUANTITIES WITH MEP DRAWINGS.
- GENERAL CONTRACTOR TO REVIEW WALL, CEILING HEIGHTS, AND CEILING MATERIALS WITH ALL DRAWINGS AND SPECS. SHOULD A CONFLICT ARISE CONSULT ARCHITECT BEFORE COMMENCING.
- REFER TO ENGINEER DRAWINGS FOR EMERGENCY LIGHTING AND EXIT LIGHT LOCATIONS.
- REFER TO MEP ENGINEER DRAWINGS FOR LIGHTING SPECIFICATIONS, CIRCUITING AND SWITCHING CONTROLS.



1 Level 2  
1/16" = 1'-0"





MCALLEN PUBLIC SAFETY BUILDING  
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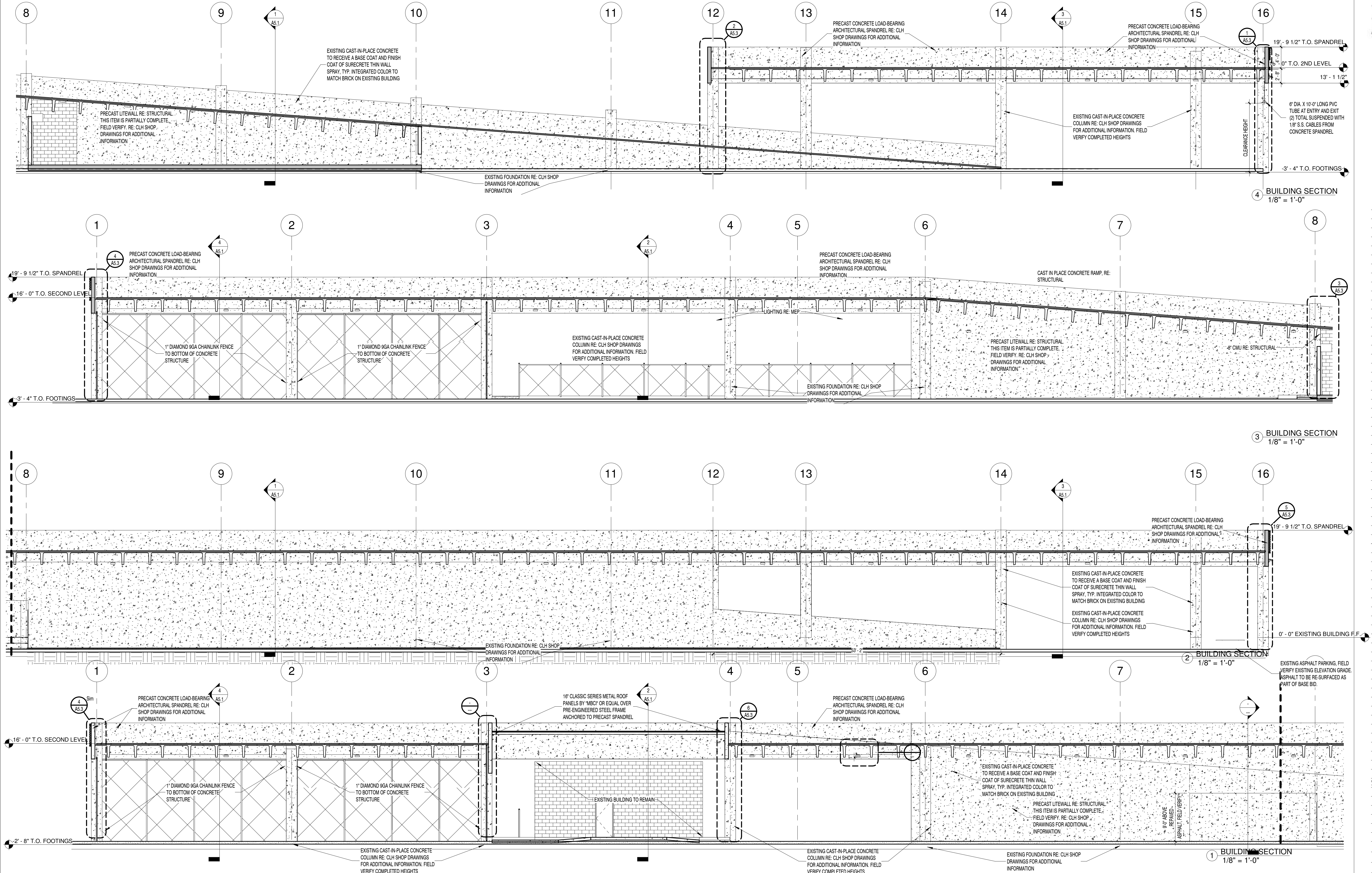
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ISSUE FOR BIDS

H E E T

## A5.0

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MCALLEN PUBLIC SAFETY BUILDING  
PARKING GARAGE  
CITY OF MCALLEN  
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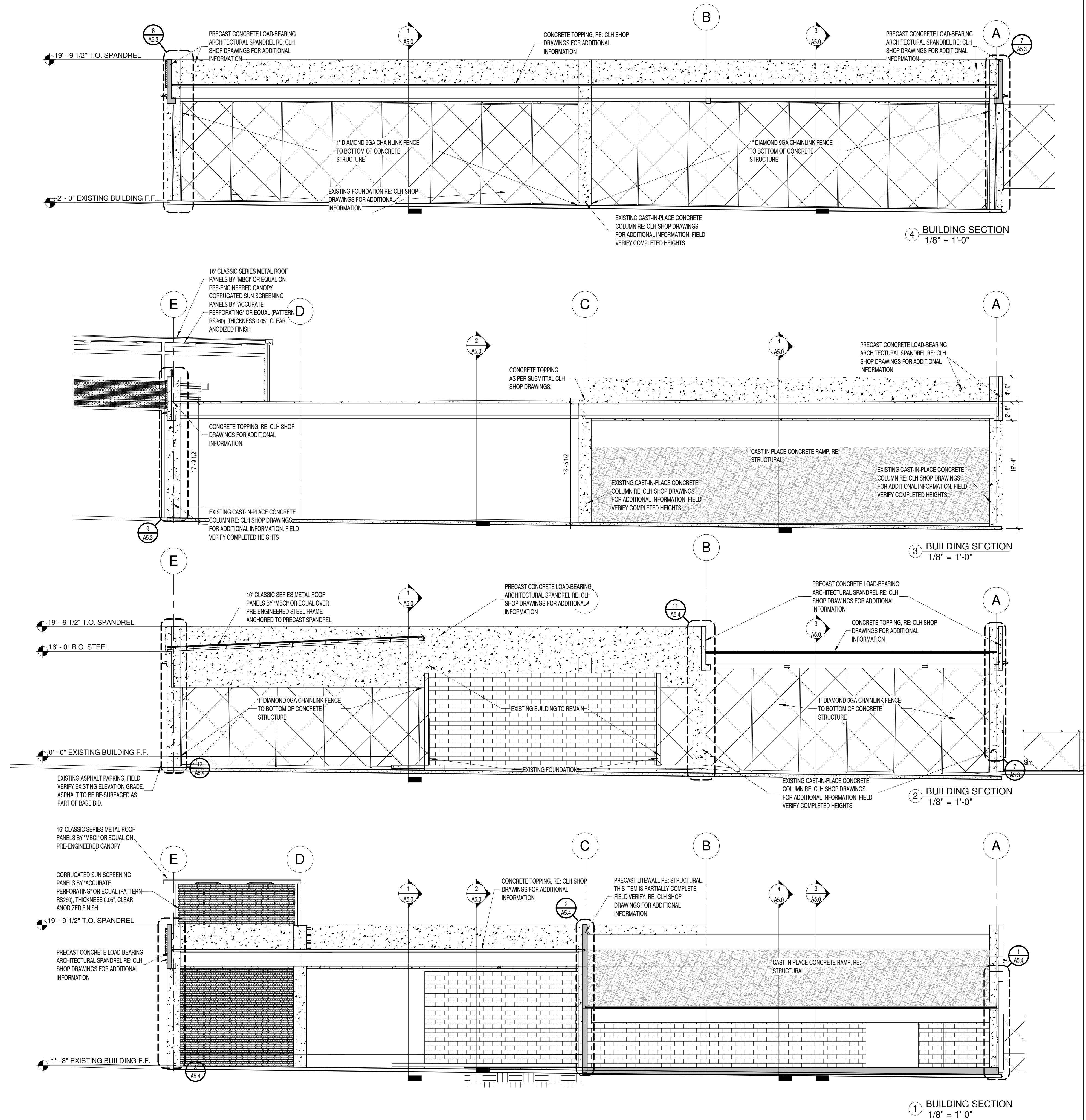
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ISSUE FOR BIDS

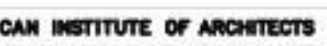
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OF

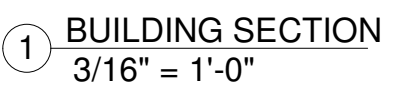




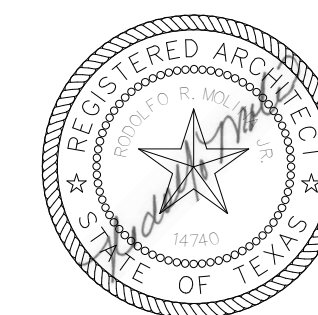


## ISSUE FOR BIDS

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McALLEN PUBLIC SAFETY BUILDING  
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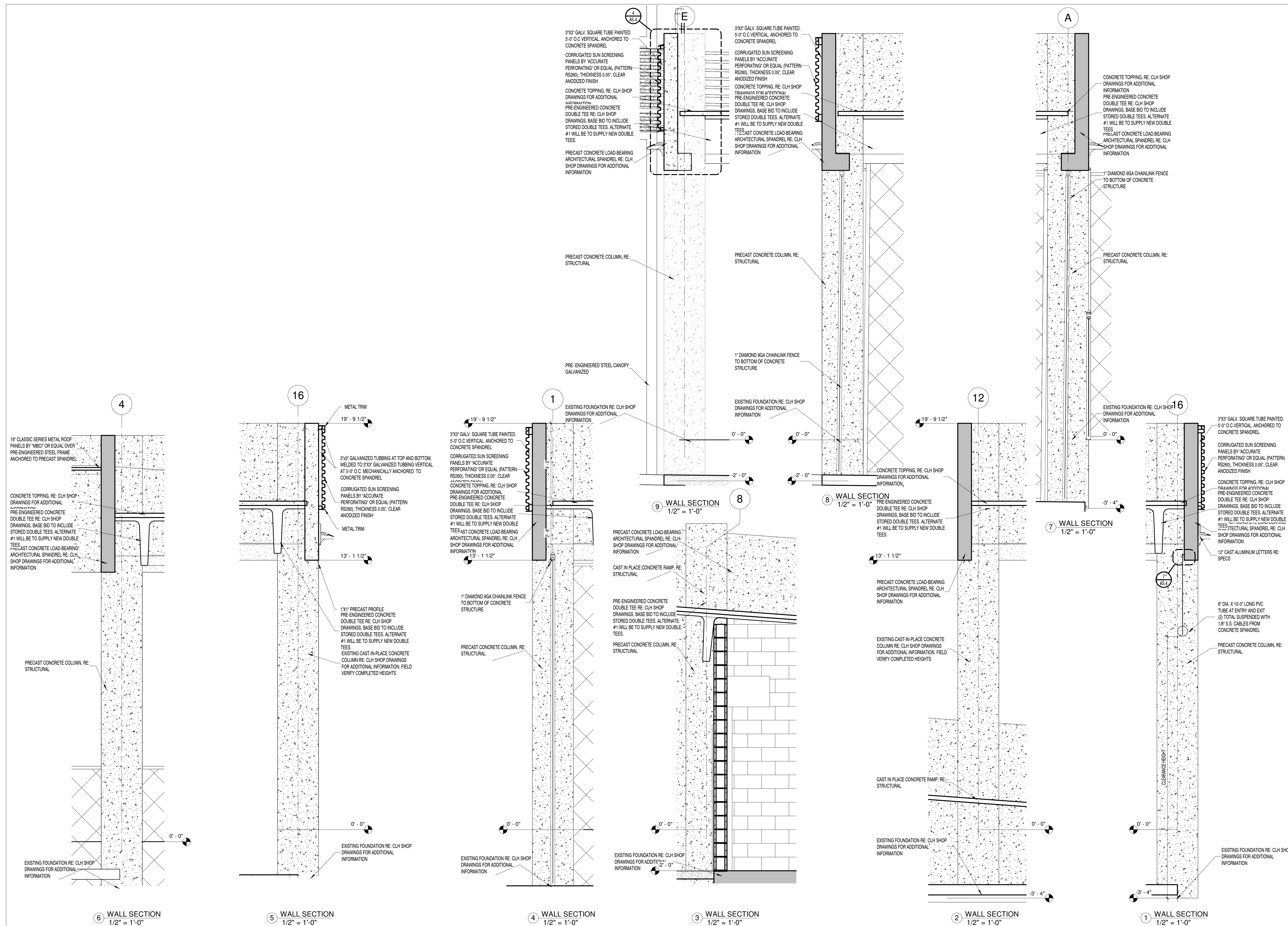
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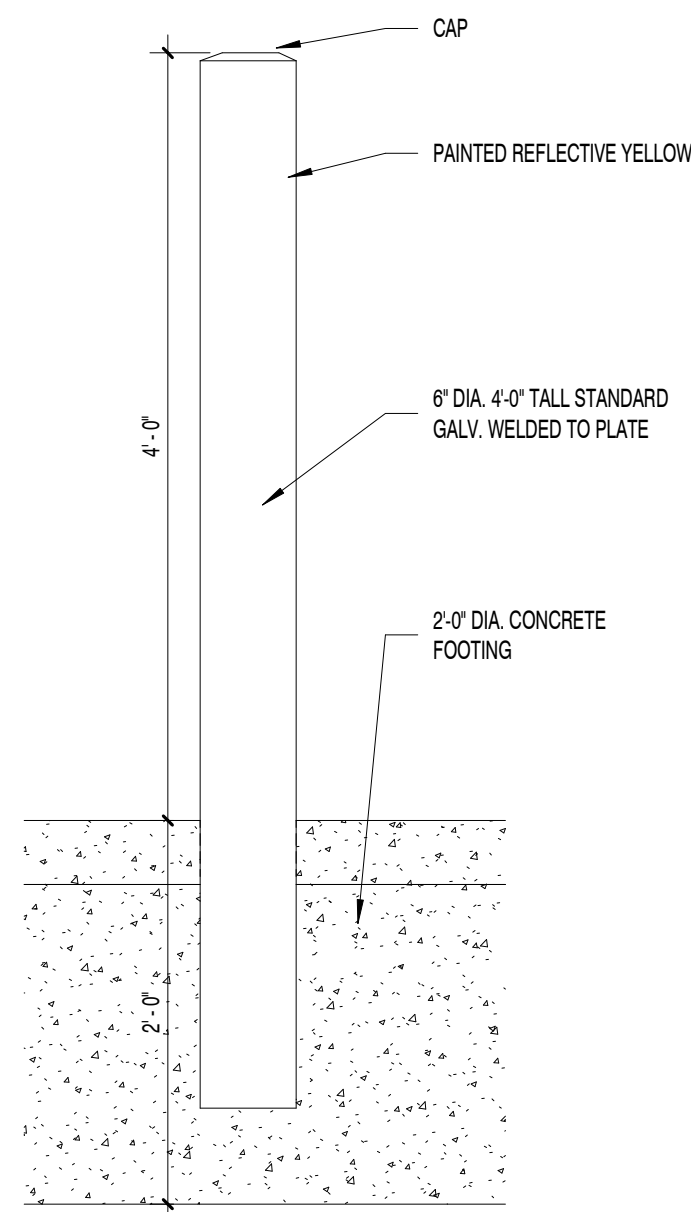
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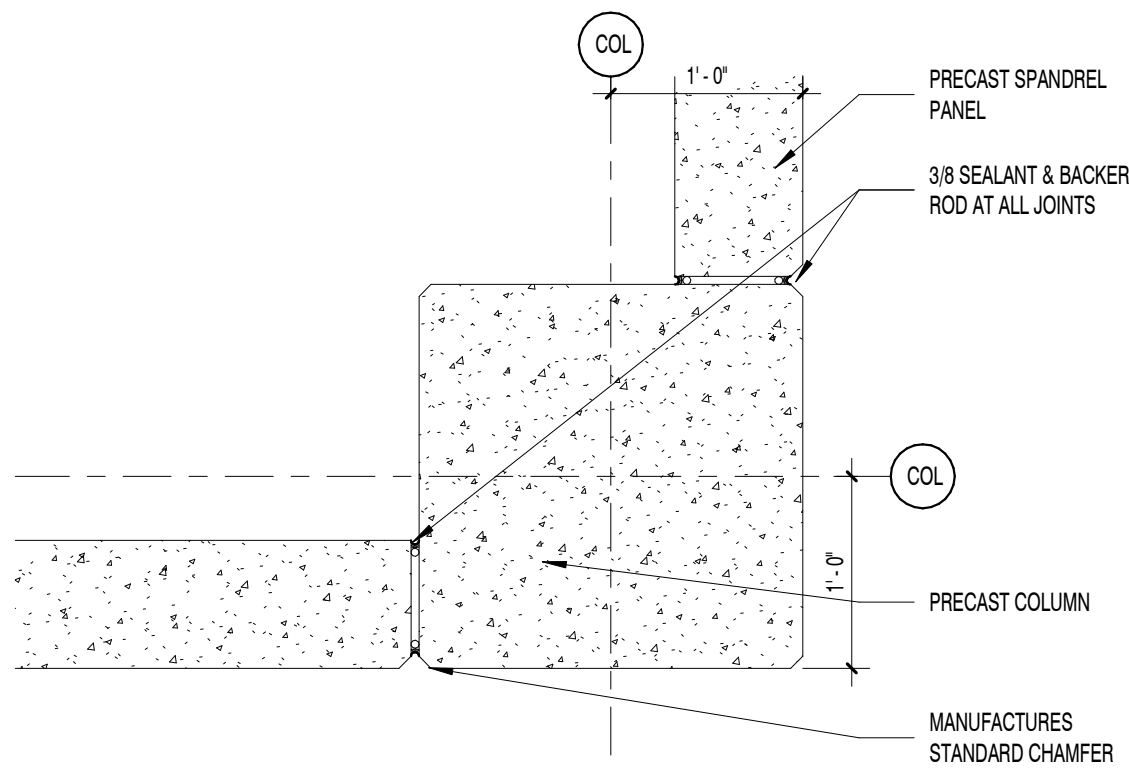
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A5.3

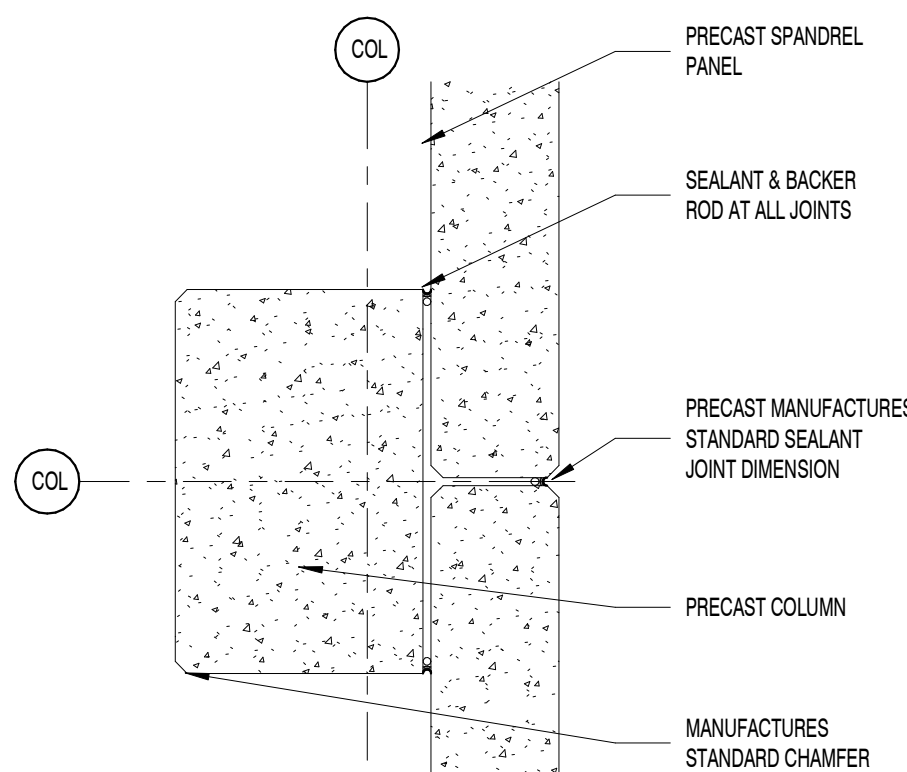




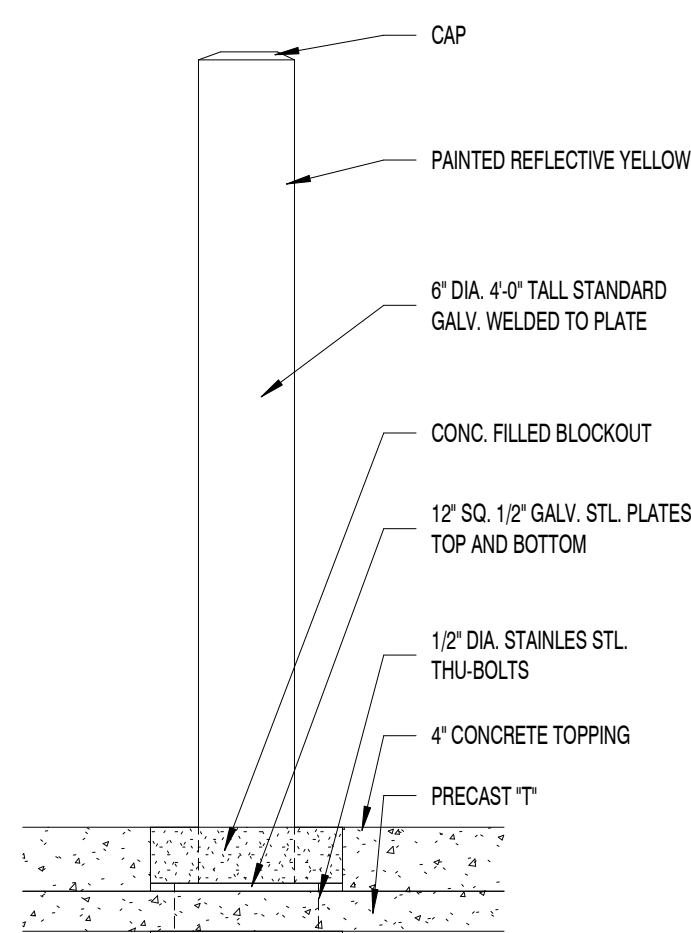
10 BOLLARD DETAIL  
1" = 1'-0"



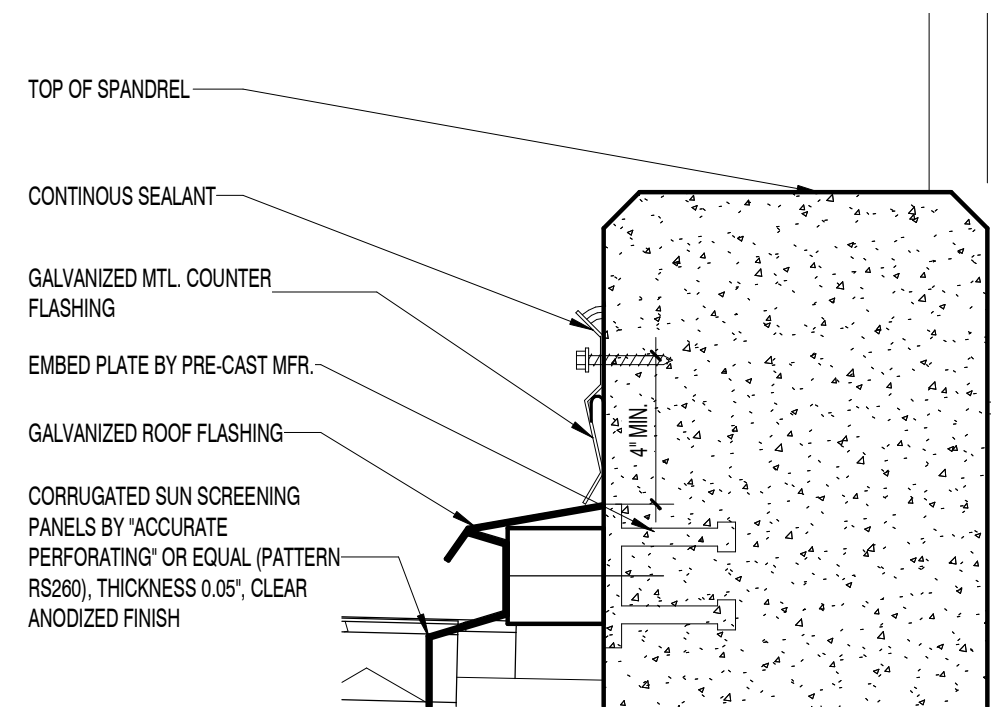
6 PLAN DETAIL  
1" = 1'-0"



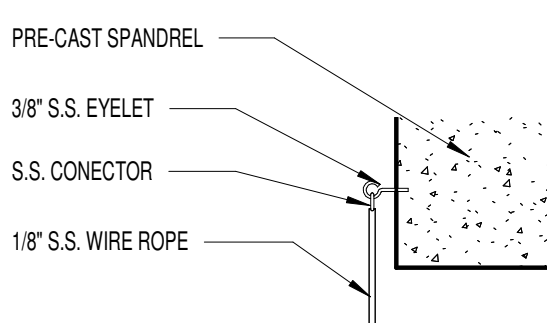
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1" = 1'-0"



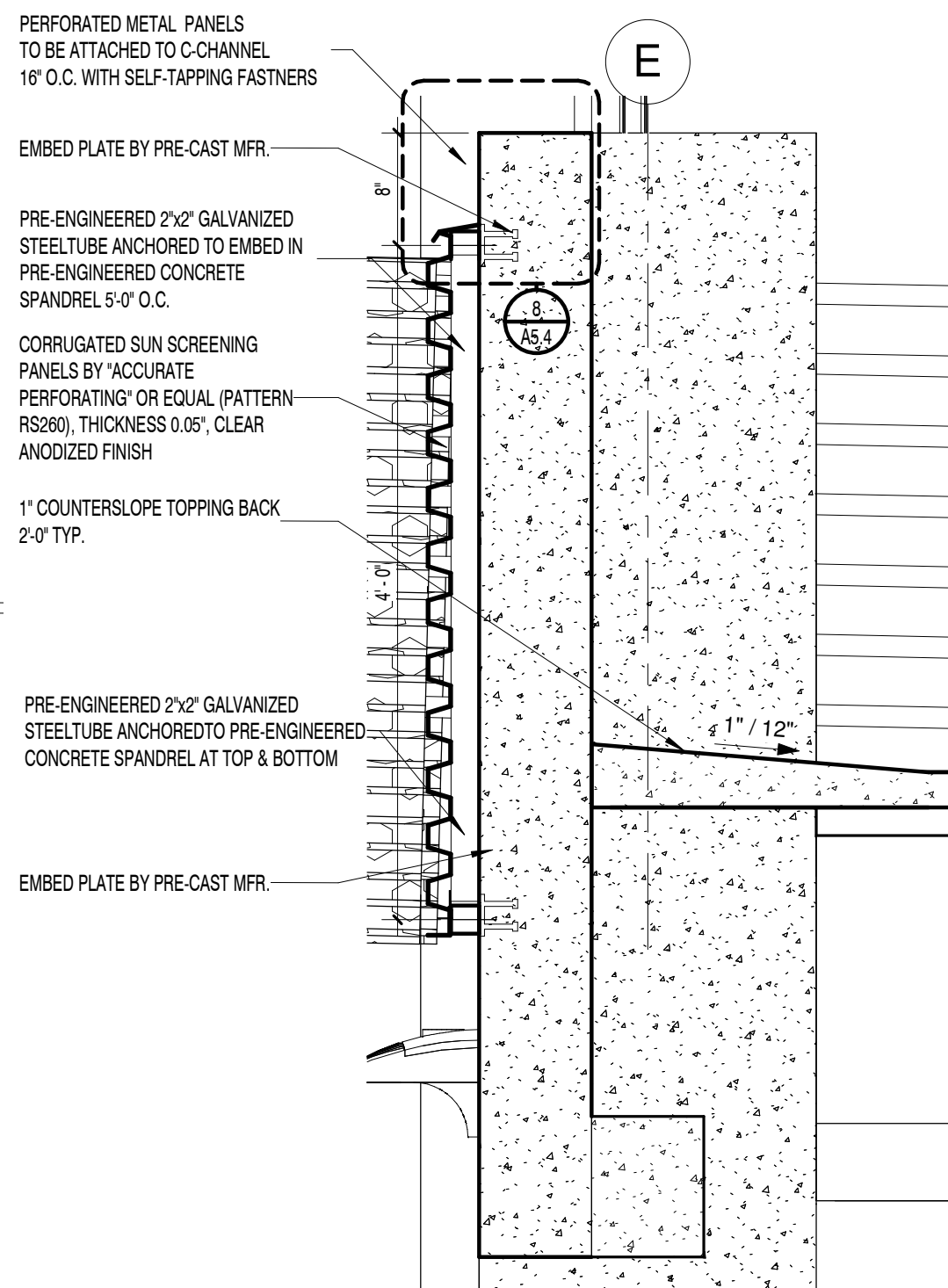
9 BOLLARD DETAIL  
1" = 1'-0"



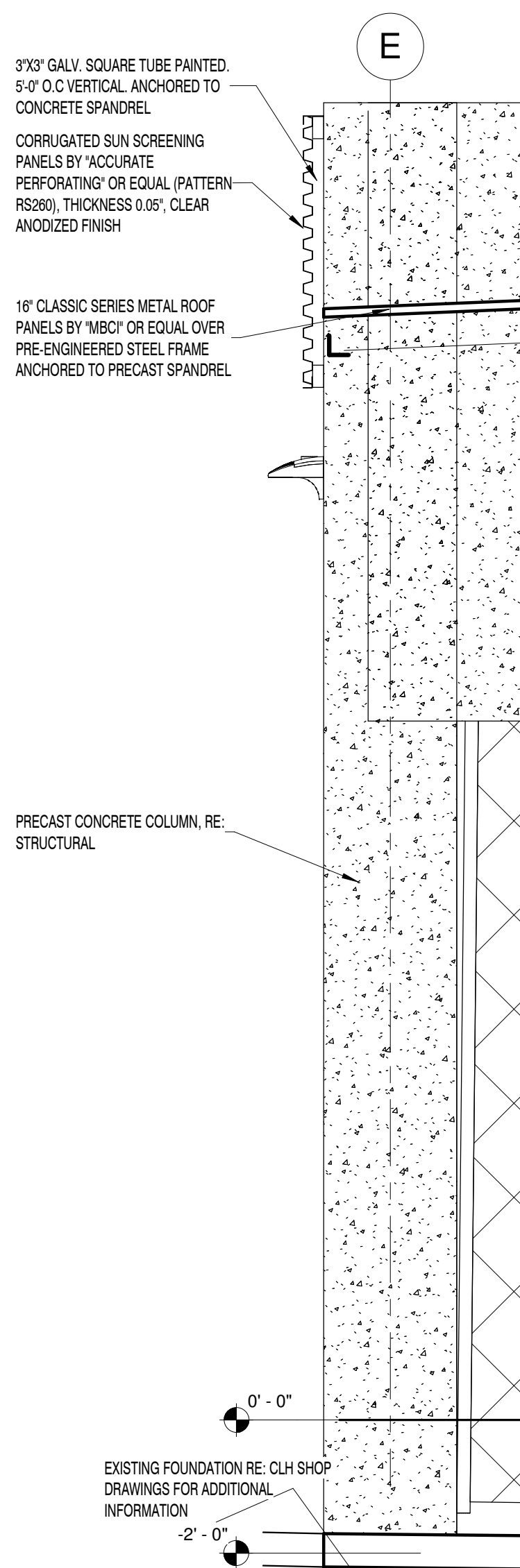
8 WALL SECTION DETAIL  
3" = 1'-0"



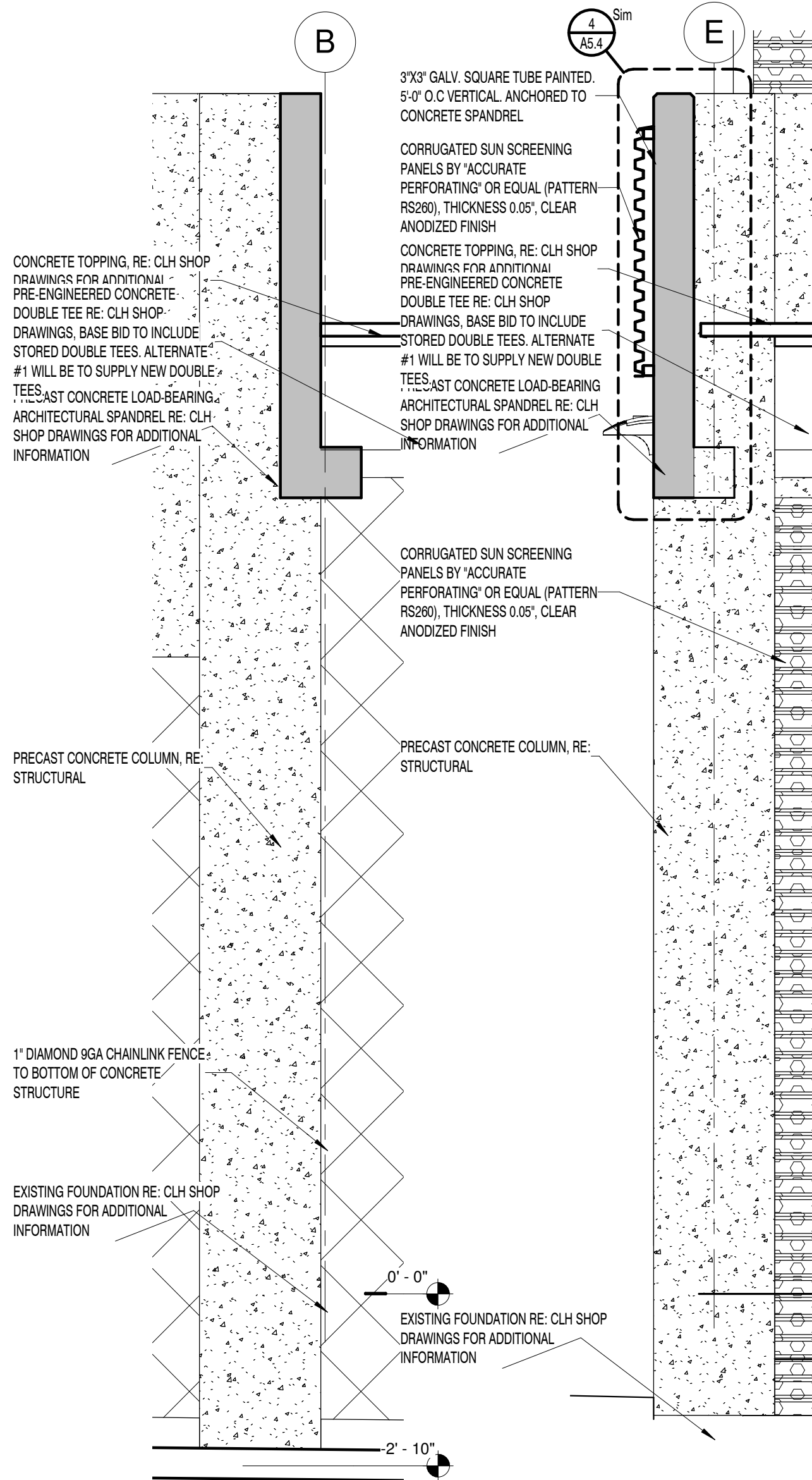
7 WALL SECTION DETAIL  
1 1/2" = 1'-0"



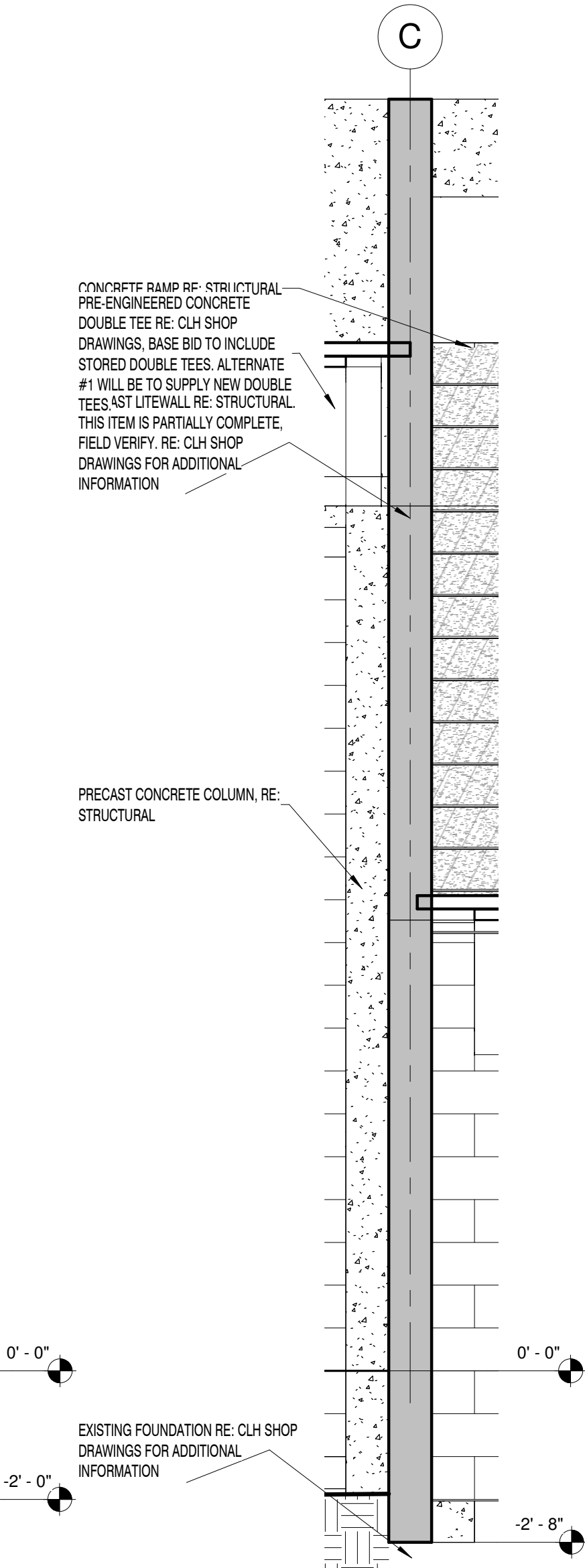
4 WALL SECTION DETAIL  
1" = 1'-0"



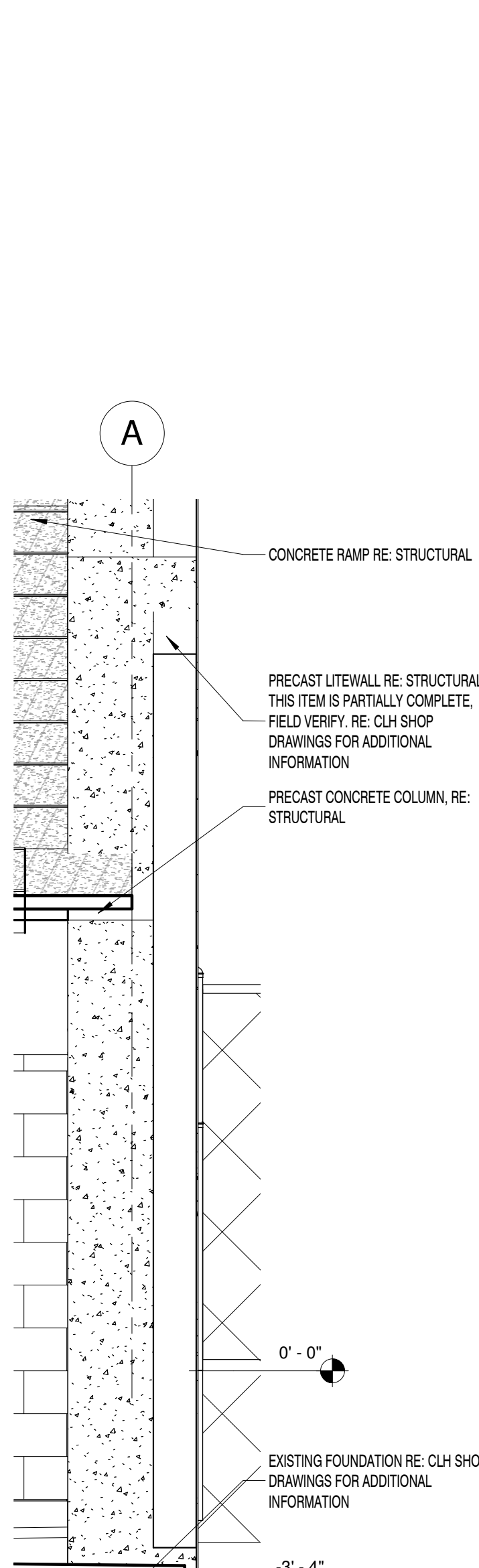
12 WALL SECTION  
1/2" = 1'-0"



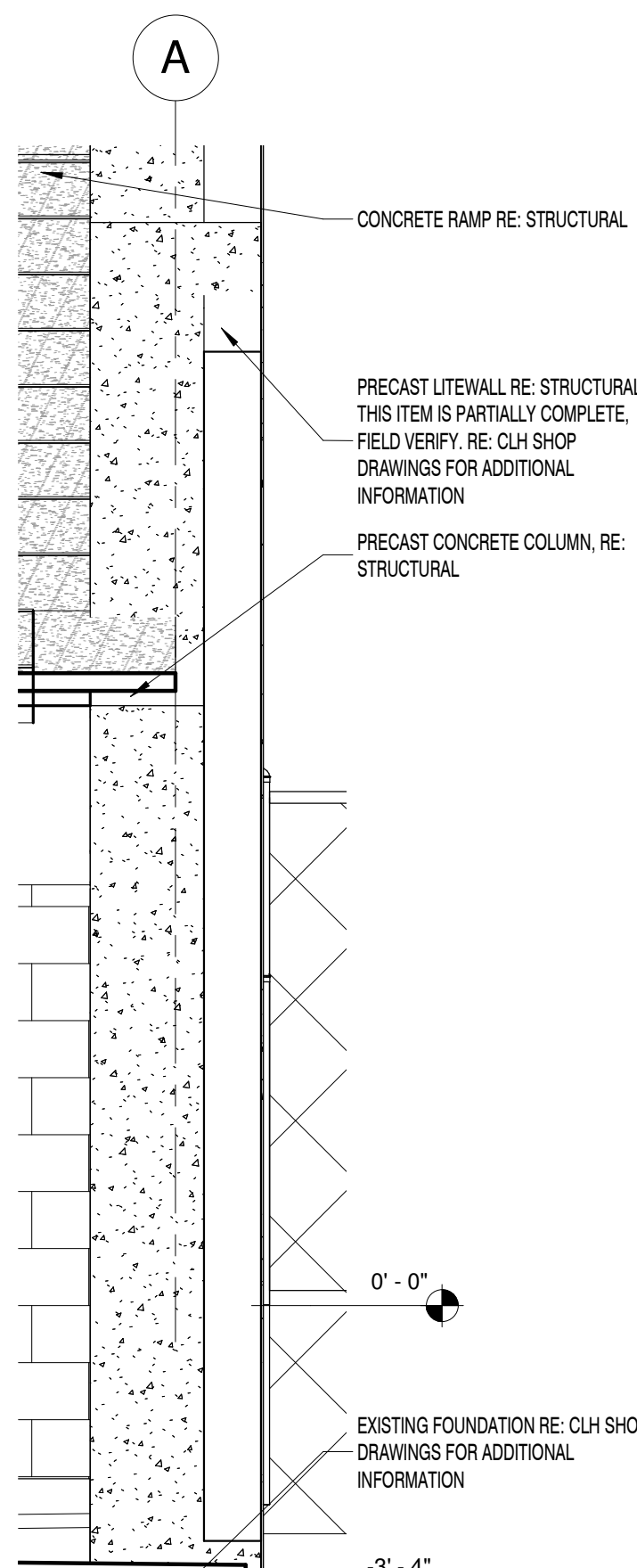
11 WALL SECTION  
1/2" = 1'-0"



3 WALL SECTION  
1/2" = 1'-0"



2 WALL SECTION  
1/2" = 1'-0"



1 WALL SECTION  
1/2" = 1'-0"

MCALLEN PUBLIC SAFETY BUILDING  
PARKING GARAGE  
CITY OF MCALLEN  
McALLEN, TX

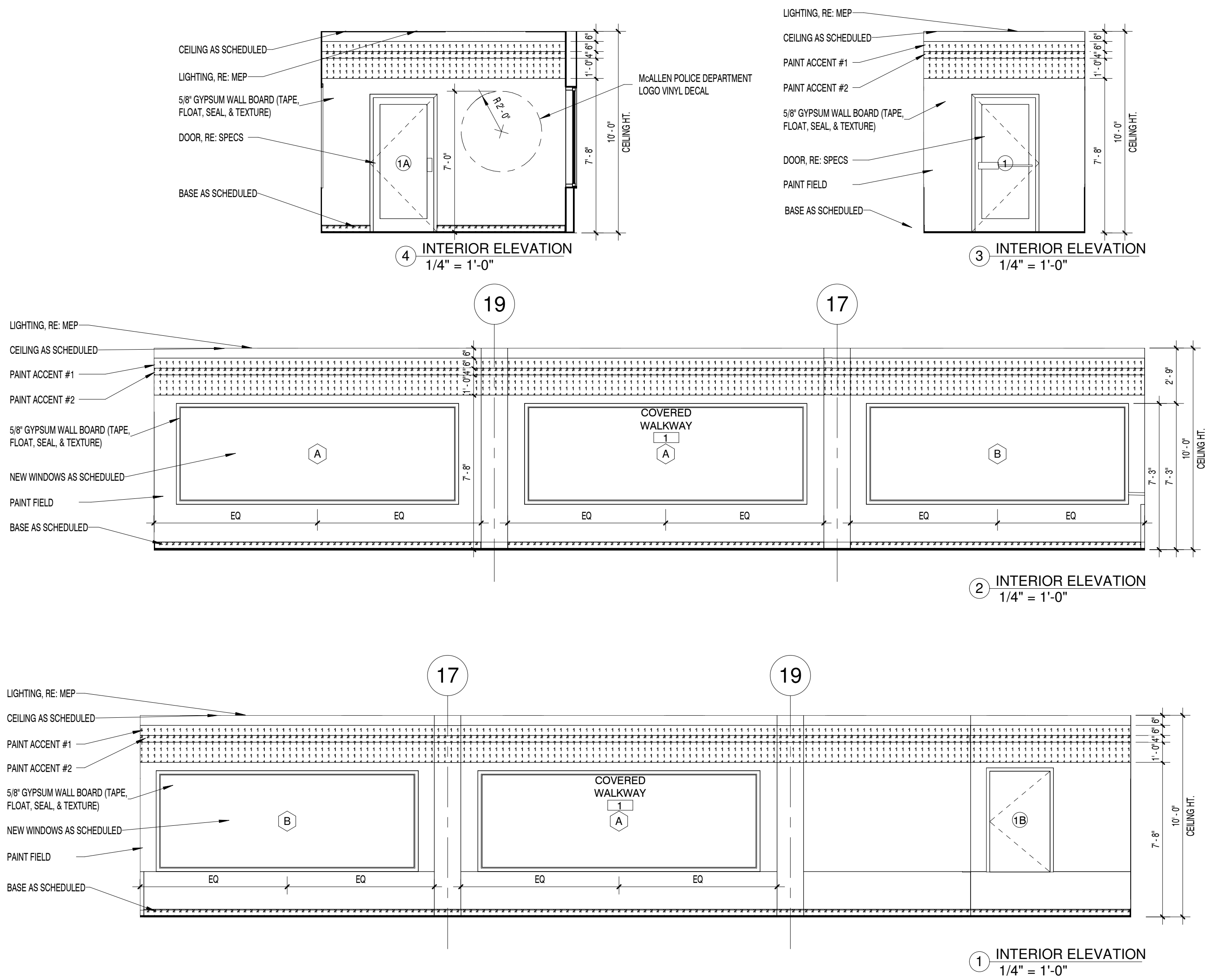
PROJECT NUMBER  
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S H E E T

A6.0  
OF





DOOR SCHEDULE													
MARK	DOOR DESCRIPTION	TYPE	WIDTH	HEIGHT	THICKNESS	MATERIAL	FINISH	FRAME TYPE	FIRE RATING	HEAD DETAIL	JAMB DETAIL	SILL DETAIL	COMMENTS
1	COVERED WALKWAY	A	3' - 0"	6' - 8"	0' - 0"	ALUMINUM & GLASS		A		4/A7.0	5/A7.0	6/A7.0	KEY CARD READER ACCESS
1A	COVERED WALKWAY	A	3' - 0"	6' - 8"	0' - 1 3/4"	ALUMINUM & GLASS		A		1/A7.0	2/A7.0	3/A7.0	KEY CARD READER ACCESS
1B	ROOF ACCESS	C	3' - 0"	5' - 0"	0' - 2"	HOLLOW METAL	PAINTED	C		4/A7.0	5/A7.0	6/A7.0	
1D		B	3' - 0"	7' - 0"	0' - 2"	HOLLOW METAL	PAINTED	B		10/A7.0	11/A7.0	12/A7.0	
1E	STORAGE	D	8' - 0"	8' - 0"	0' - 2"					13/A7.0	14/A7.0	15/A7.0	KEY CARD READER ACCESS
1F	ELECTRICAL ROOM	B	3' - 0"	7' - 0"	0' - 2"	HOLLOW METAL	PAINTED	B		10/A7.0	11/A7.0	12/A7.0	KEY CARD READER ACCESS

NOTE: PROVIDE KEY CARD READER AT (2) CHAINLINK GATES FOR IMPOUND LOT

BUILDING ROOM SCHEDULE							
MARK	ROOM NAME	FINISH KEY NOTE	WALLS	BASE	FLOOR	CEILING	COMMENTS
1	COVERED WALKWAY	F1	W-1	B-1	F-VCT	C-1	
2	EXISTING STAIRWELL	F2	W-3	B-1	F-VCT	C-3	
3	TELECOM / ELECTRICAL ROOM	F3	W-2	-	F-2	C-2	
4	STORAGE	F3	W-2	-	F-2	C-2	

WALL FINISHES

W-1 5/8" GYP. BD. T.F.T. & PAINTED  
W-2 SEALED & PAINTED CMU (ELASTOMERIC PAINT)  
W-3 EXISTING TO REMAIN, NEW PAINT TO MATCH EXISTING

BASE FINISH

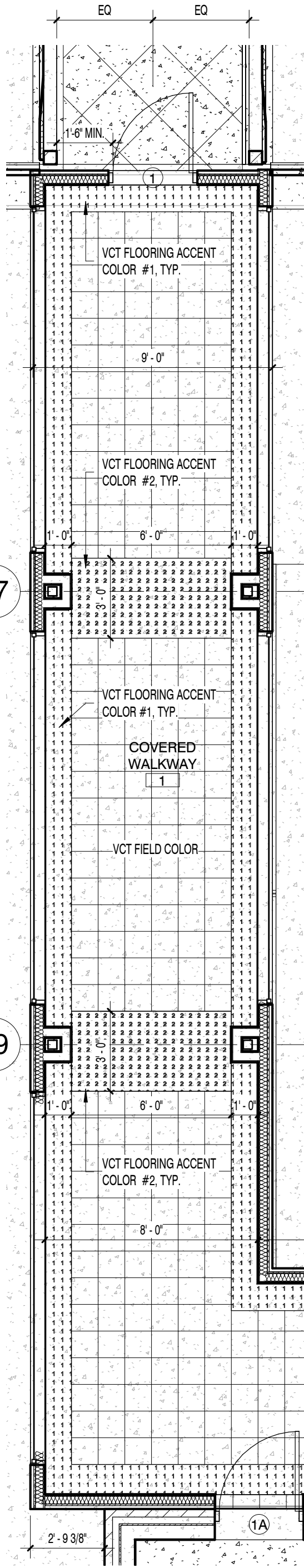
B-1 4" RUBBER COVE BASE  
B-2 EXISTING TO REMAIN

FLOOR FINISH

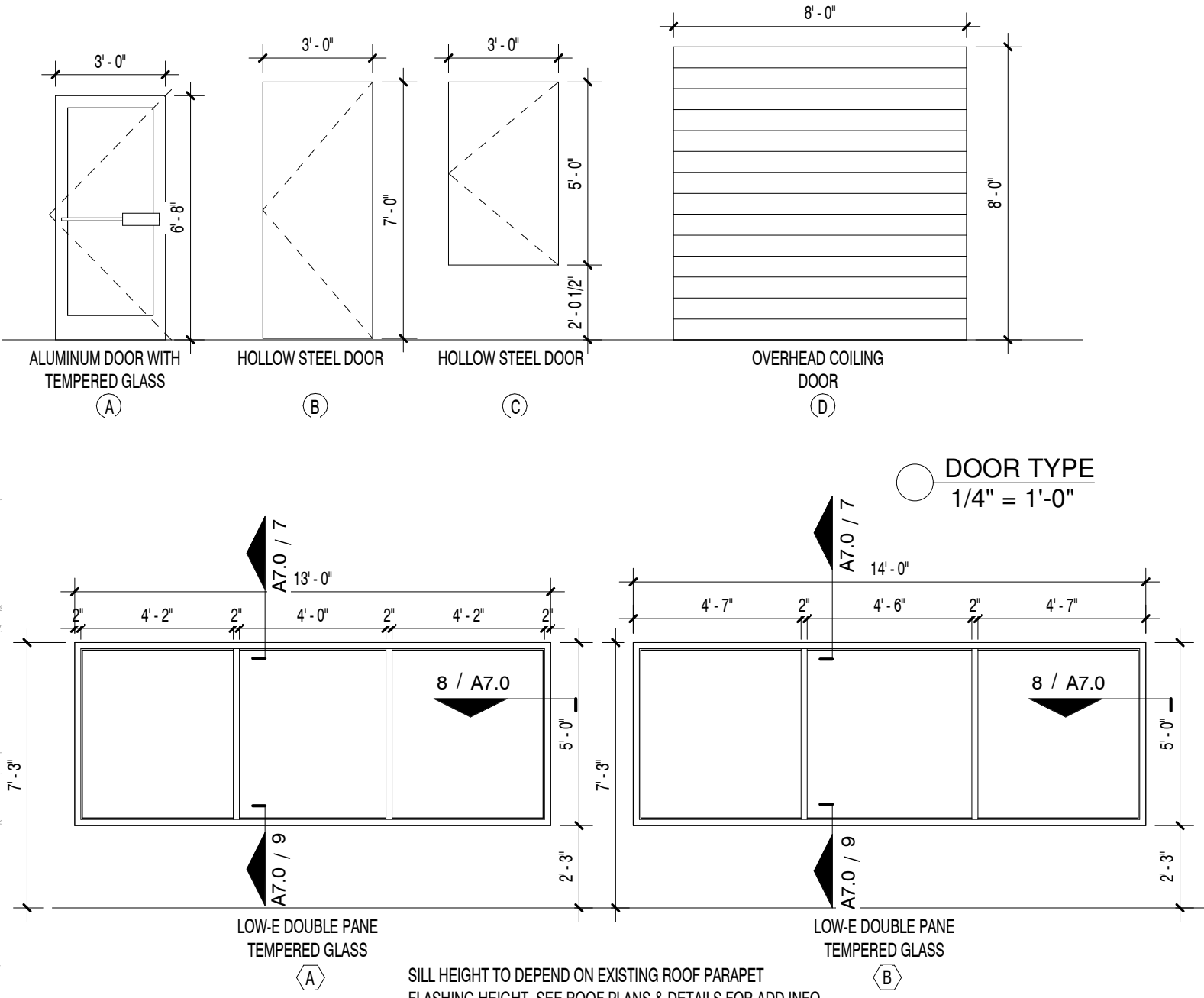
F-VCT 12X12 VCT FLOORING  
F-2 EXPOSED CONCRETE (TROWEL FINISH)

CEILING FINISH

C-1 2X4 SUSPENDED CEILING  
C-2 EXPOSED TO STRUCTURE  
C-3 EXISTING TO REMAIN

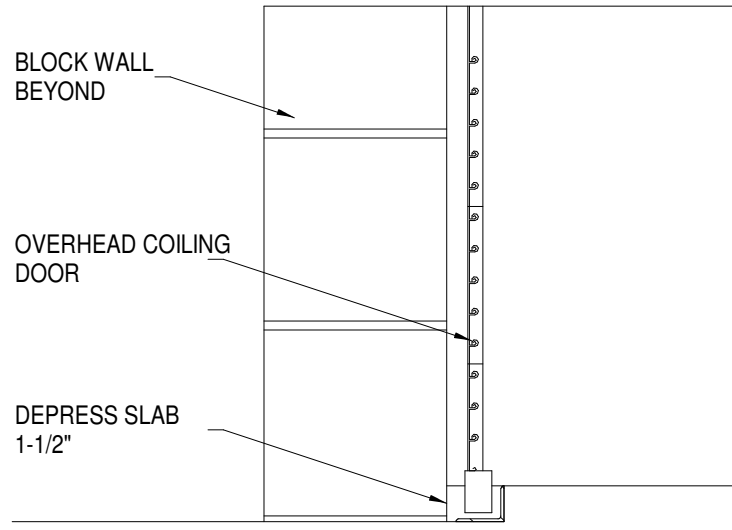


16 ENLARGED FLOOR FINISH PLAN  
1/4" = 1'-0"

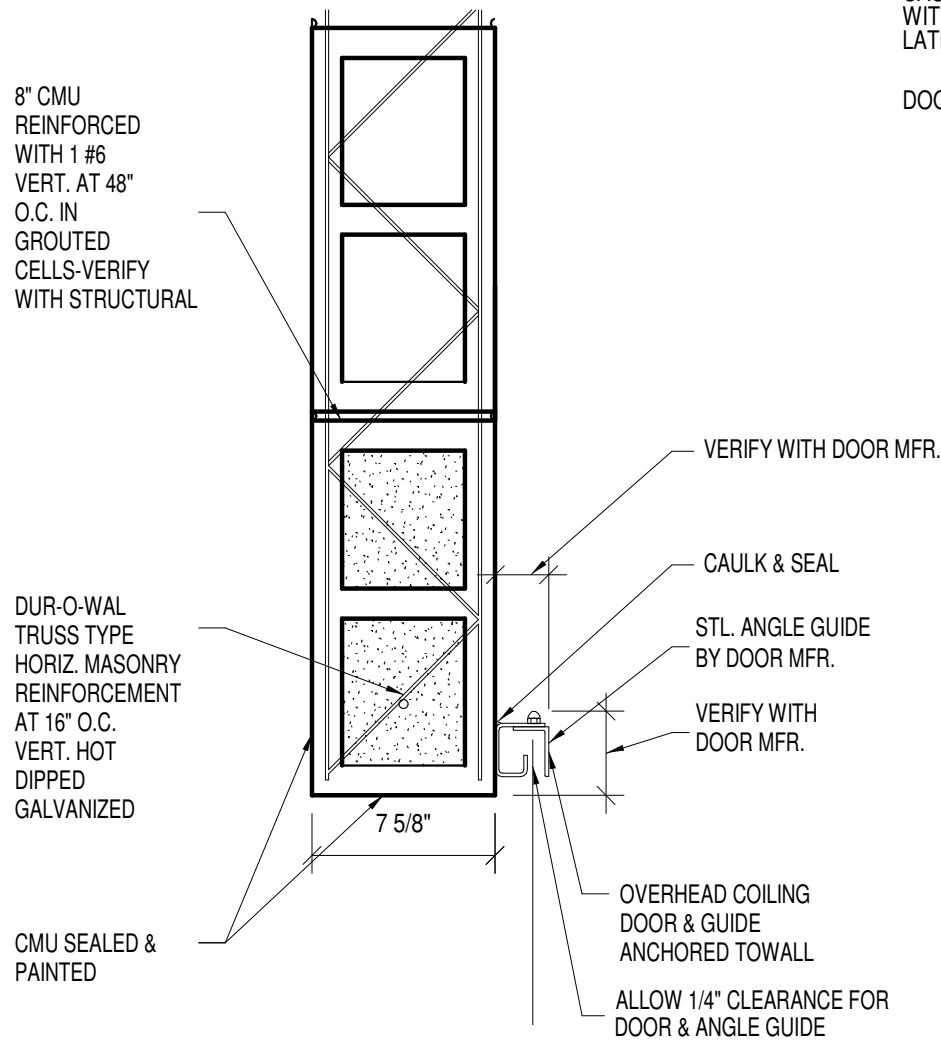


DOOR TYPE  
1/4" = 1'-0"

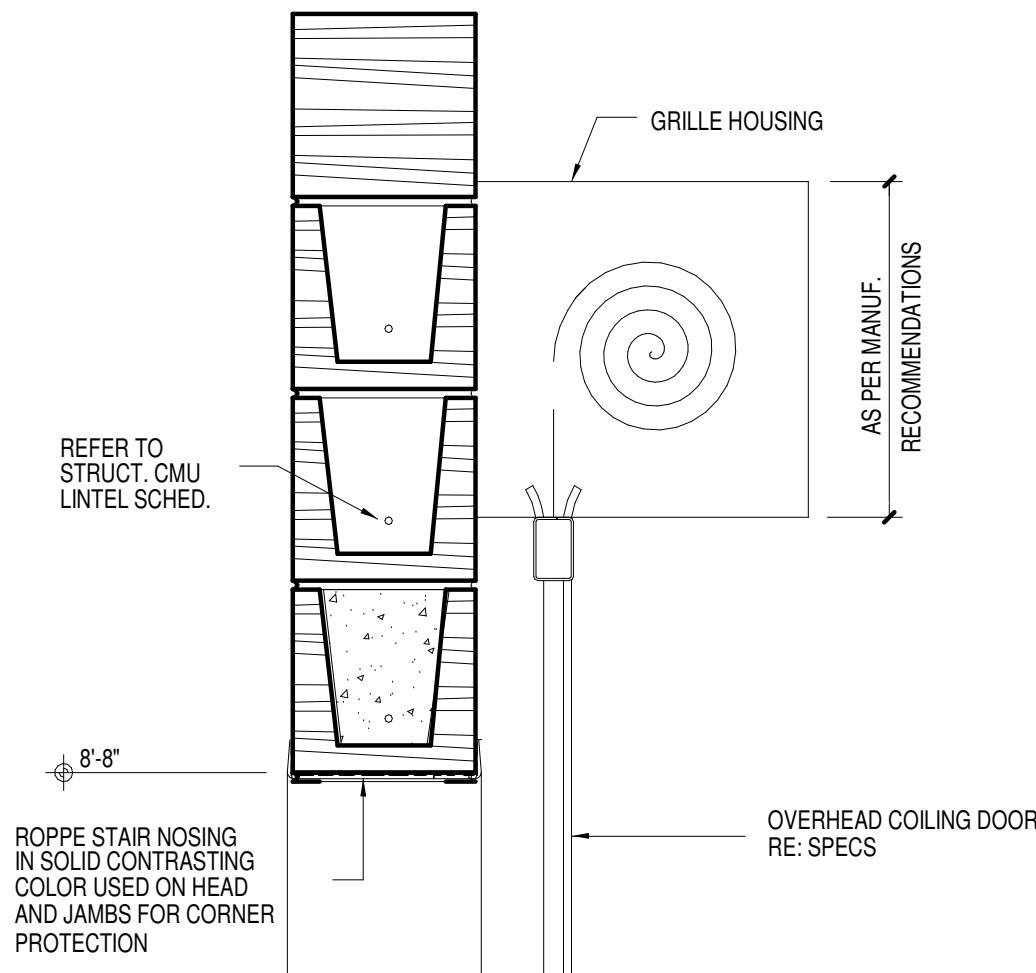
WINDOW TYPE  
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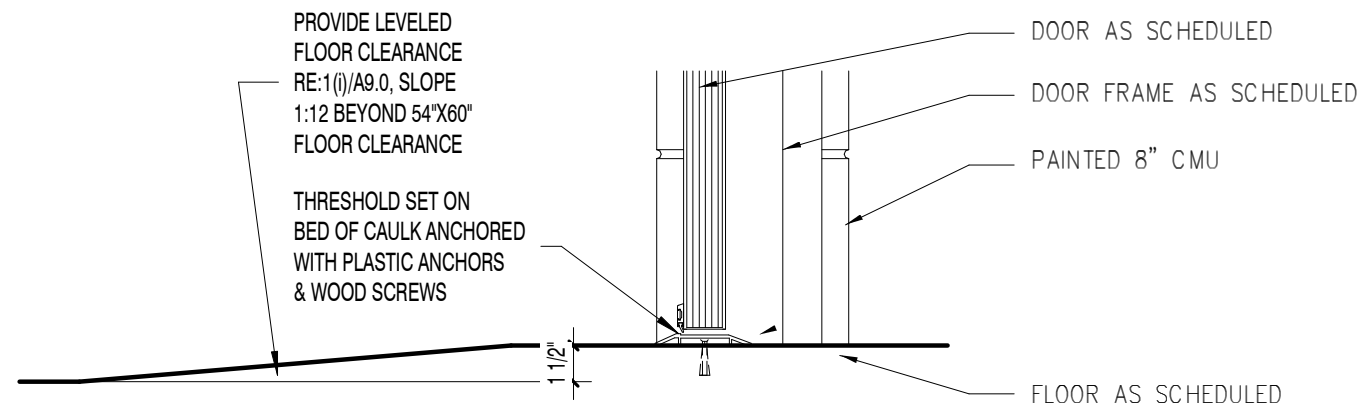
15 OVERHEAD COILING DOOR SILL DETAIL  
1 1/2" = 1'-0"



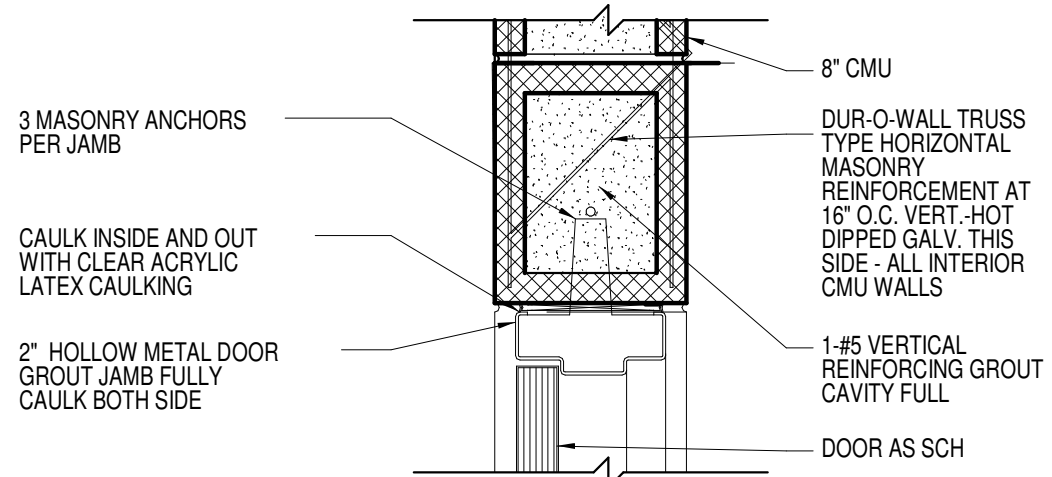
14 OVERHEAD COILING DOOR JAMB DETAIL  
1 1/2" = 1'-0"



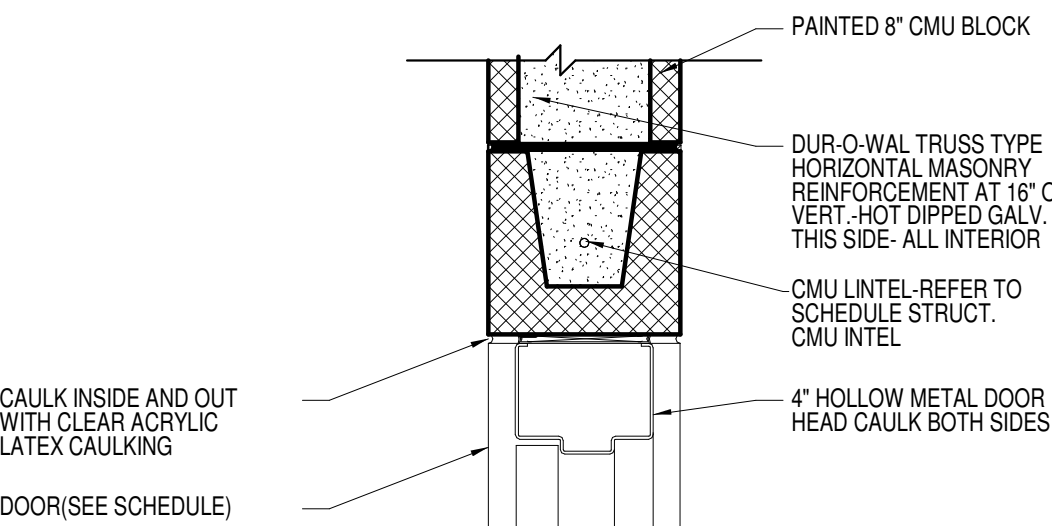
13 OVERHEAD COILING DOOR HEAD DETAIL  
1 1/2" = 1'-0"



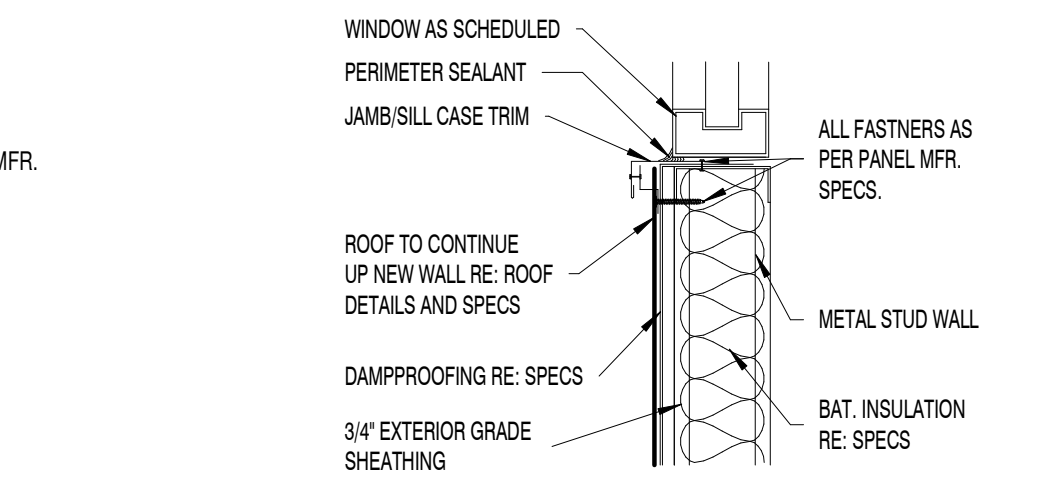
12 INT DOOR SILL DETAIL  
1 1/2" = 1'-0"



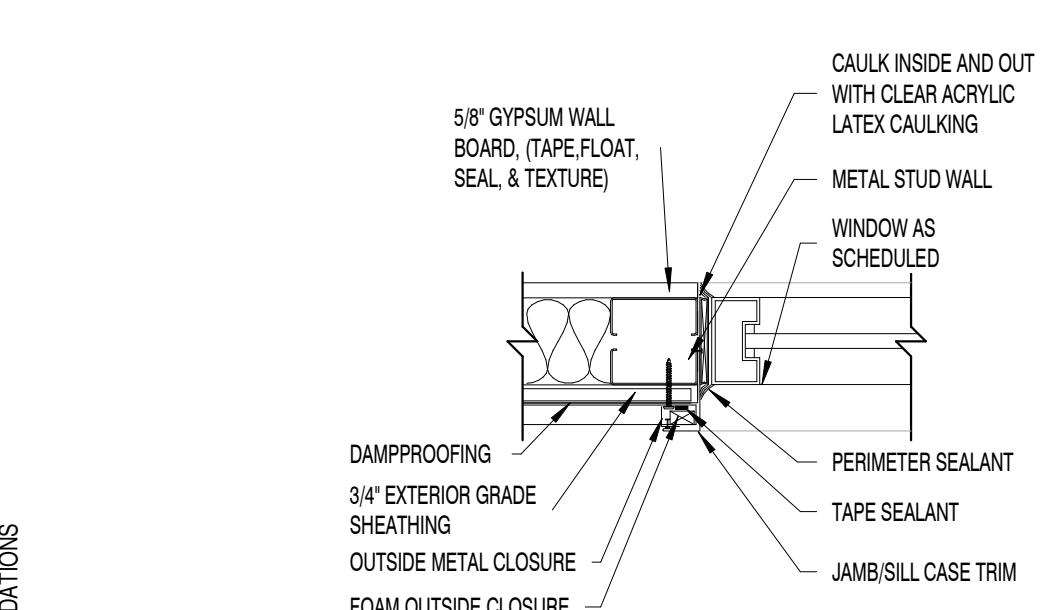
11 DOOR JAMB DETAIL  
1 1/2" = 1'-0"



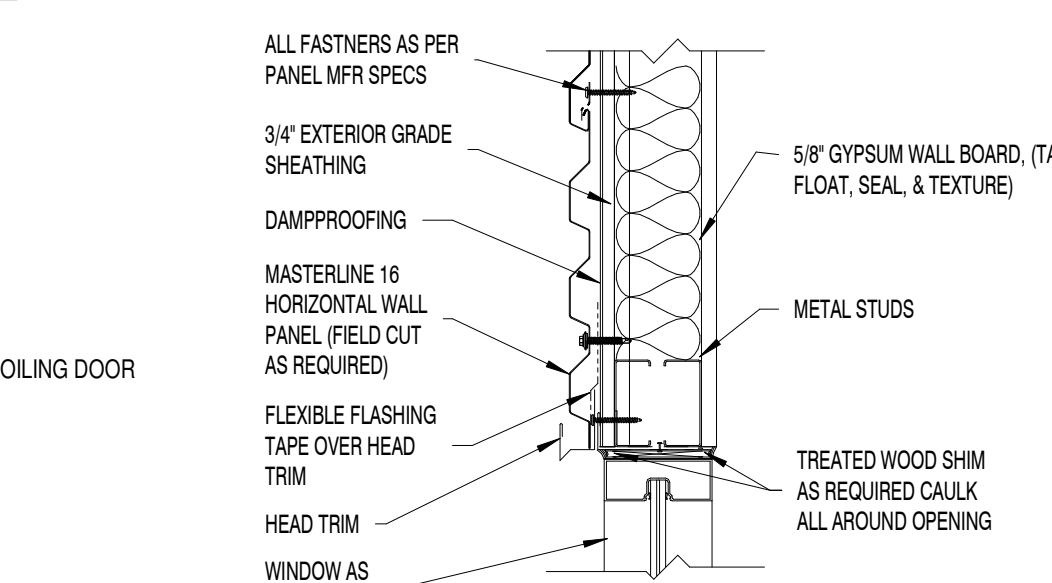
10 DOOR HEAD DETAIL  
1 1/2" = 1'-0"



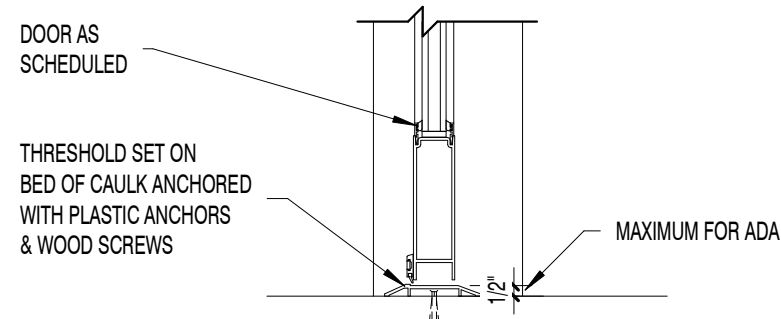
9 WALKWAY WINDOW SILL DETAIL  
1 1/2" = 1'-0"



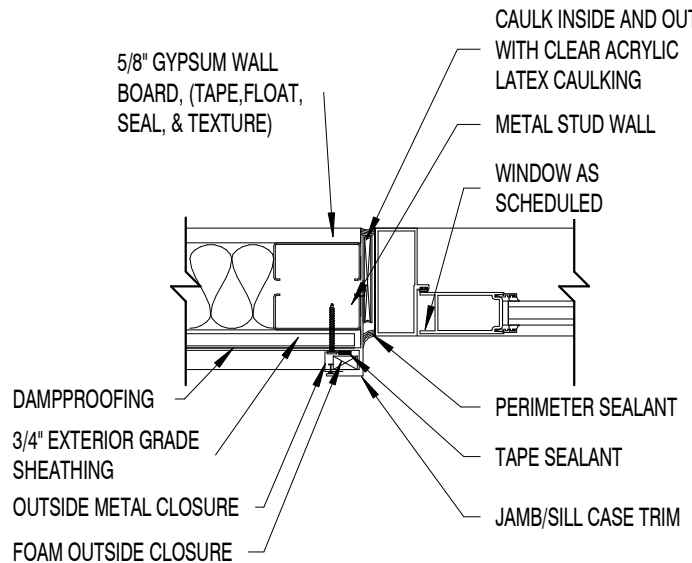
8 WALKWAY WINDOW JAMB DETAIL  
1 1/2" = 1'-0"



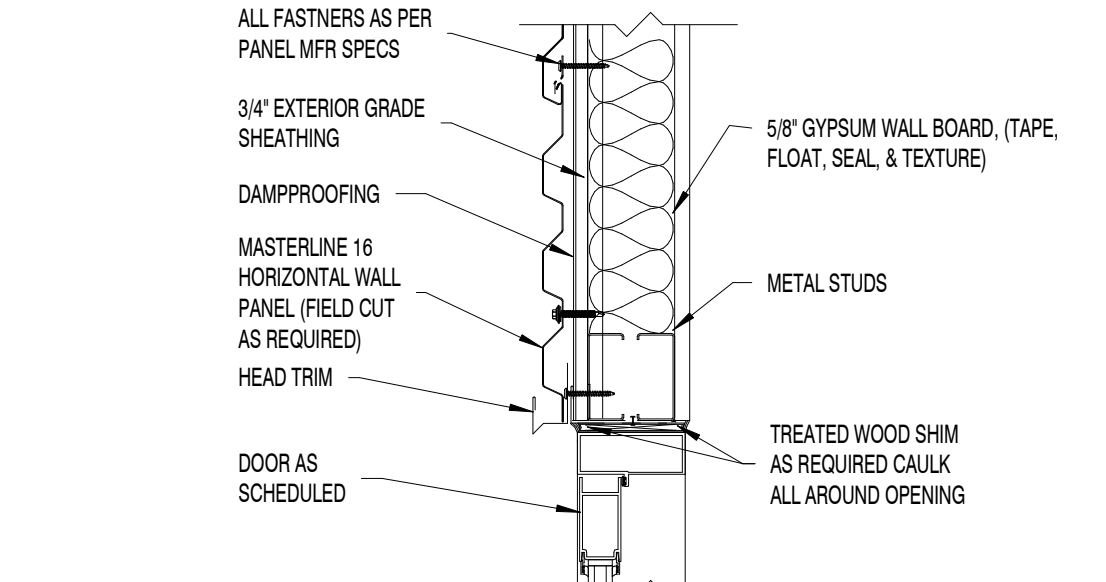
7 WALKWAY WINDOW HEAD DETAIL  
1 1/2" = 1'-0"



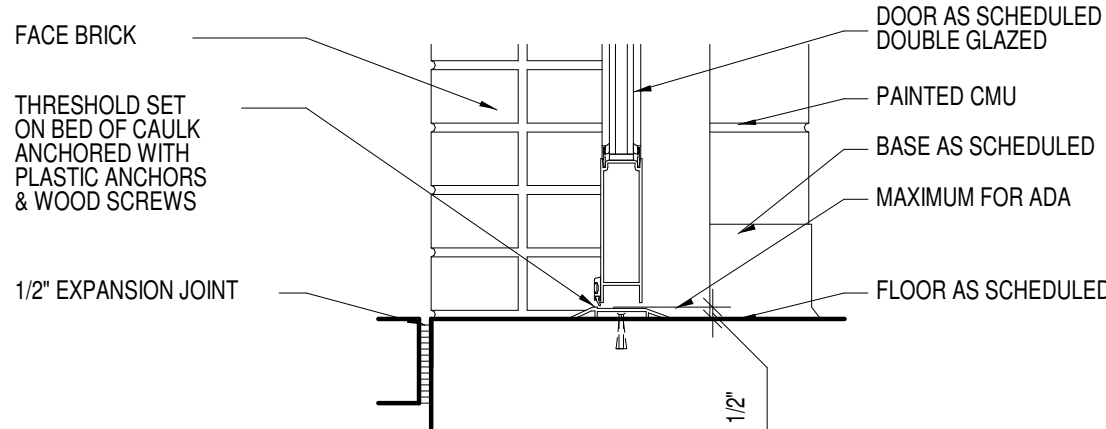
6 WALKWAY DOOR SILL DETAIL  
1 1/2" = 1'-0"



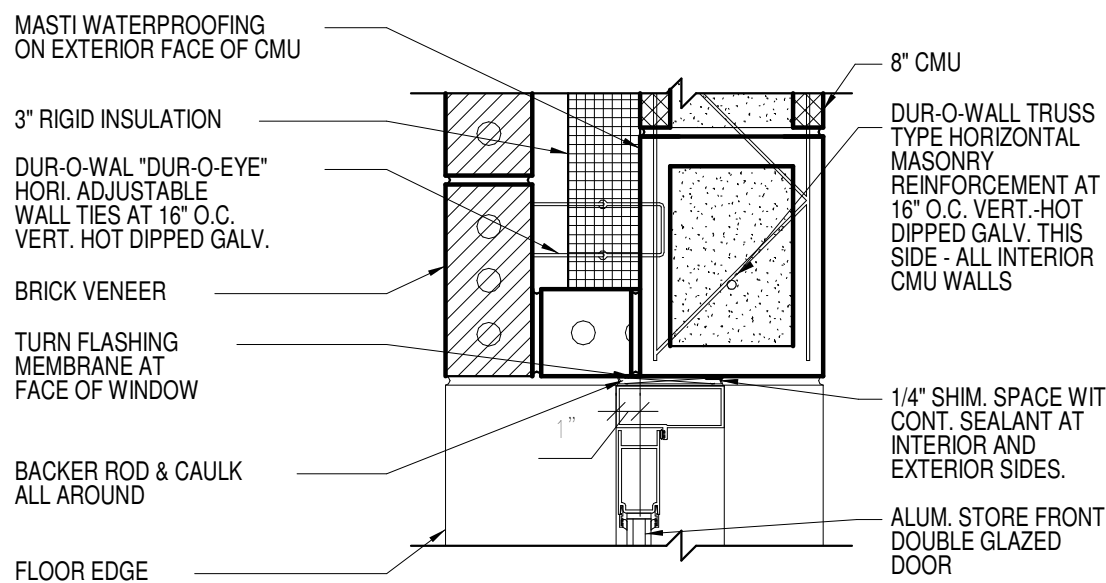
5 WALKWAY DOOR JAMB DETAIL  
1 1/2" = 1'-0"



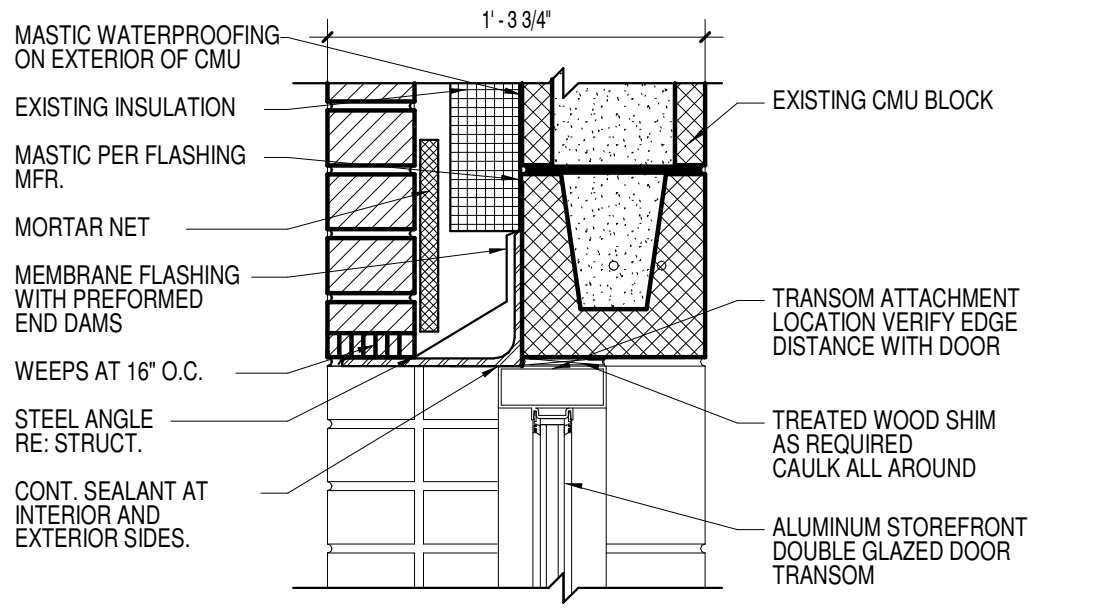
4 WALKWAY DOOR HEAD DETAIL  
1 1/2" = 1'-0"



3 DOOR SILL DETAIL  
1 1/2" = 1'-0"



2 DOOR JAMB DETAIL  
1 1/2" = 1'-0"



1 DOOR HEAD DETAIL  
1 1/2" = 1'-0"

DOOR SCHEDULE													
MARK	DOOR DESCRIPTION	TYPE	WIDTH	HEIGHT	THICKNESS	MATERIAL	FINISH	FRAME TYPE	FIRE RATING	HEAD DETAIL	JAMB DETAIL	SILL DETAIL	COMMENTS
1	COVERED WALKWAY	A	3' - 0"	6' - 8"	0' - 0"	ALUMINUM & GLASS		A		4/A7.0	5/A7.0	6/A7.0	KEY CARD READER ACCESS
1A	COVERED WALKWAY	A	3' - 0"	6' - 8"	0' - 1 3/4"	ALUMINUM & GLASS		A		1/A7.0	2/A7.0	3/A7.0	KEY CARD READER ACCESS
1B	ROOF ACCESS	C	3' - 0"	5' - 0"	0' - 2"	HOLLOW METAL	PAINTED	C		4/A7.0	5/A7.0	6/A7.0	
1D		B	3' - 0"	7' - 0"	0' - 2"	HOLLOW METAL	PAINTED	B		10/A7.0	11/A7.0	12/A7.0	
3	ELECTRICAL ROOM	B	3' - 0"	7' - 0"	0' - 2"	HOLLOW METAL	PAINTED	B		10/A7.0	11/A7.0	12/A7.0	KEY CARD READER ACCESS
4	STORAGE	D	8' - 0"	8' - 0"	0' - 2"					13/A7.0	14/A7.0	15/A7.0	KEY CARD READER ACCESS

NOTE: PROVIDE KEY CARD READER AT (2) CHAINLINK GATES FOR IMPOUND LOT

BUILDING ROOM SCHEDULE							
MARK	ROOM NAME	FINISH KEY NOTE	WALLS	BASE	FLOOR	CEILING	COMMENTS
1	COVERED WALKWAY	F1	W-1	B-1	F-VCT	C-1	
2	EXISTING STAIRWELL	F2	W-3	B-1	F-VCT	C-3	
3	TELECOM / ELECTRICAL ROOM	F3	W-2	-	F-2	C-2	
4	STORAGE	F3	W-2	-	F-2	C-2	

WALL FINISHES

W-1 5/8" GYP. BD. T.F.T. & PAINTED  
W-2 SEALED & PAINTED CMU (ELASTOMERIC PAINT)  
W-3 EXISTING TO REMAIN, NEW PAINT TO MATCH EXISTING

BASE FINISH

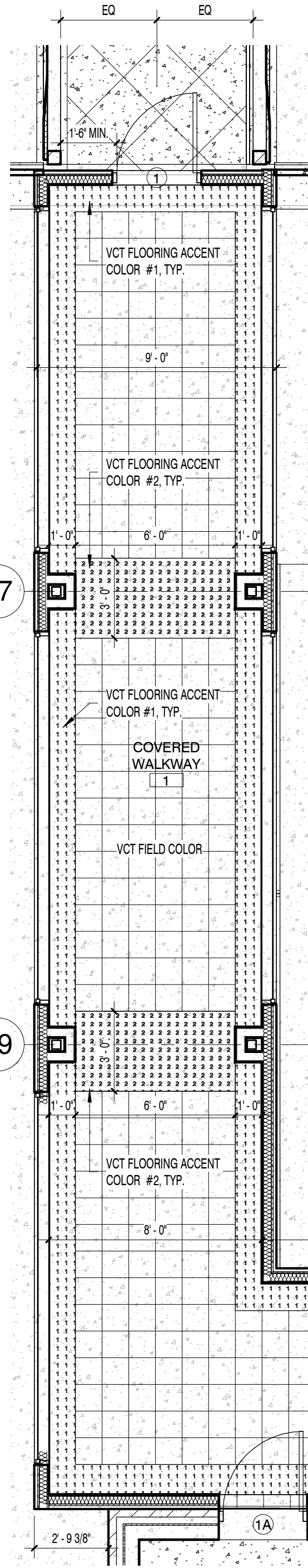
B-1 4" RUBBER COVE BASE  
B-2 EXISTING TO REMAIN

FLOOR FINISH

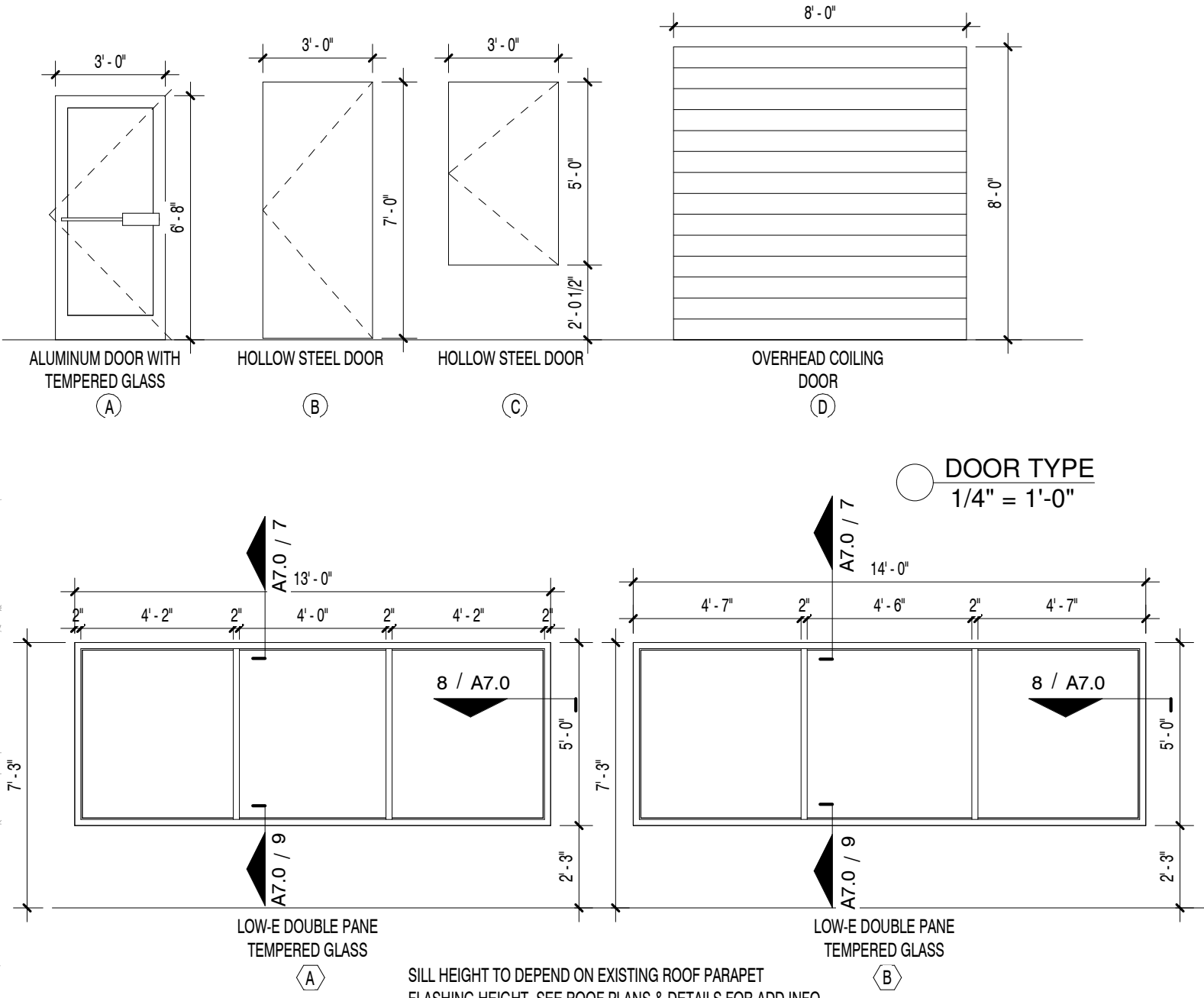
F-VCT 12X12 VCT FLOORING  
F-2 EXPOSED CONCRETE (TROWEL FINISH)

CEILING FINISH

C-1 2X4 SUSPENDED CEILING  
C-2 EXPOSED TO STRUCTURE  
C-3 EXISTING TO REMAIN

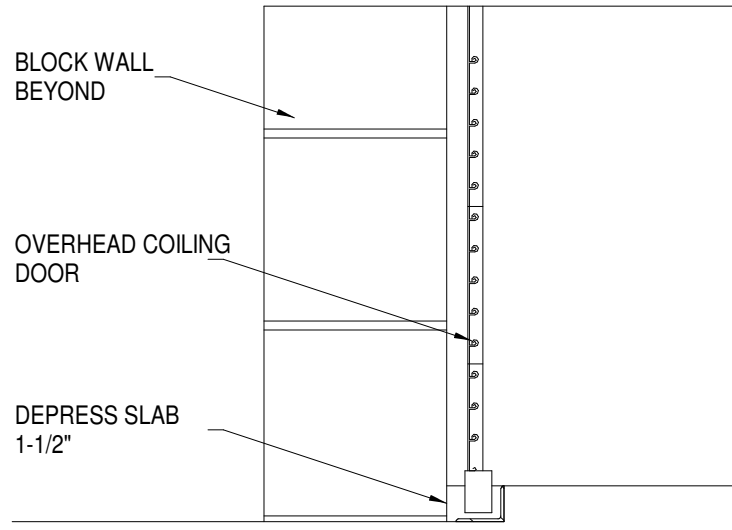


16 ENLARGED FLOOR FINISH PLAN  
1/4" = 1'-0"

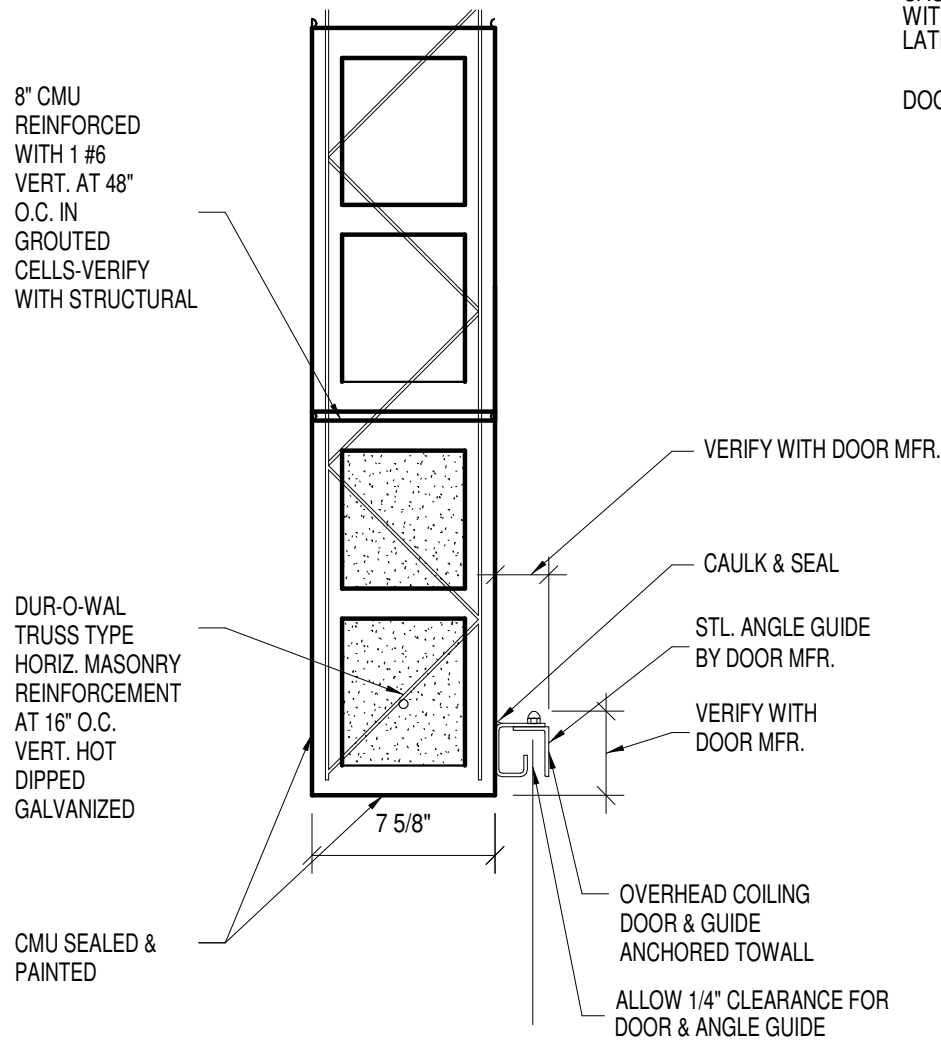


DOOR TYPE  
1/4" = 1'-0"

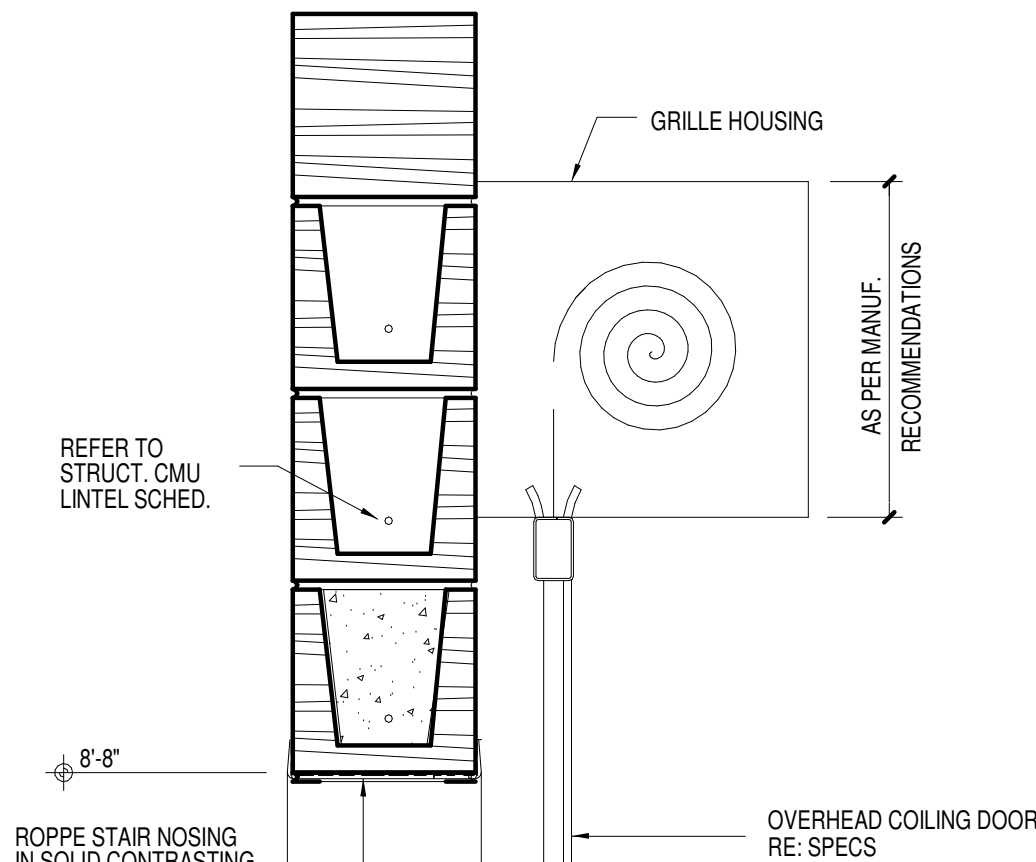
WINDOW TYPE  
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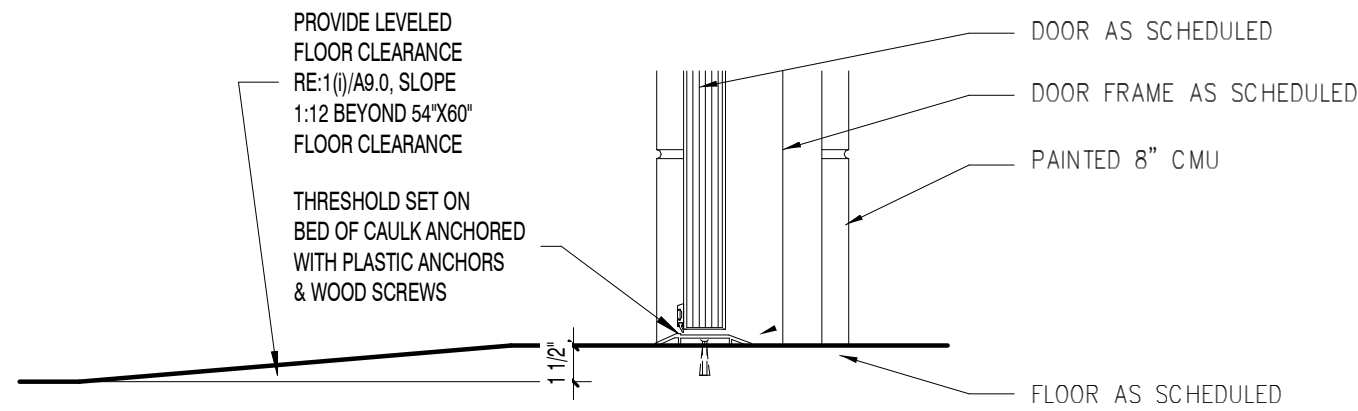
15 OVERHEAD COILING DOOR SILL DETAIL  
1 1/2" = 1'-0"



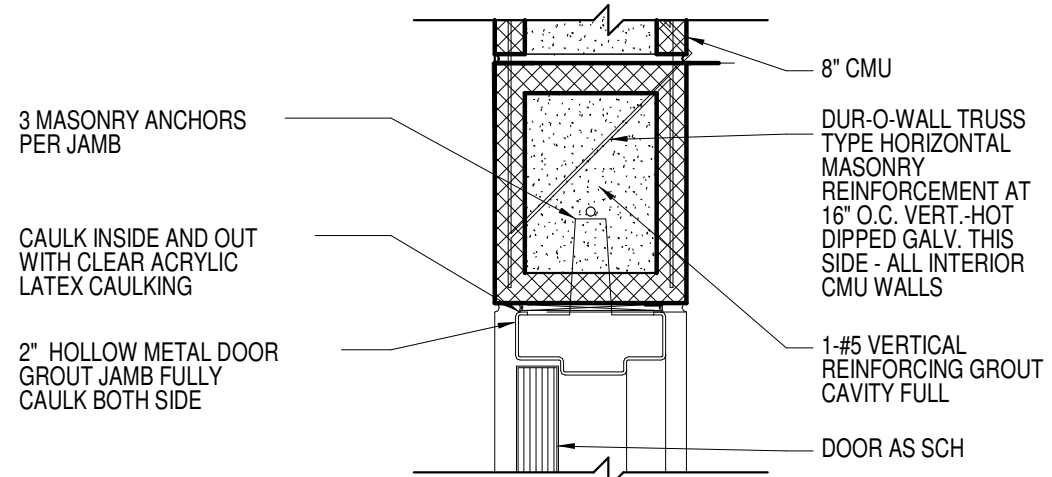
14 OVERHEAD COILING DOOR JAMB DETAIL  
1 1/2" = 1'-0"



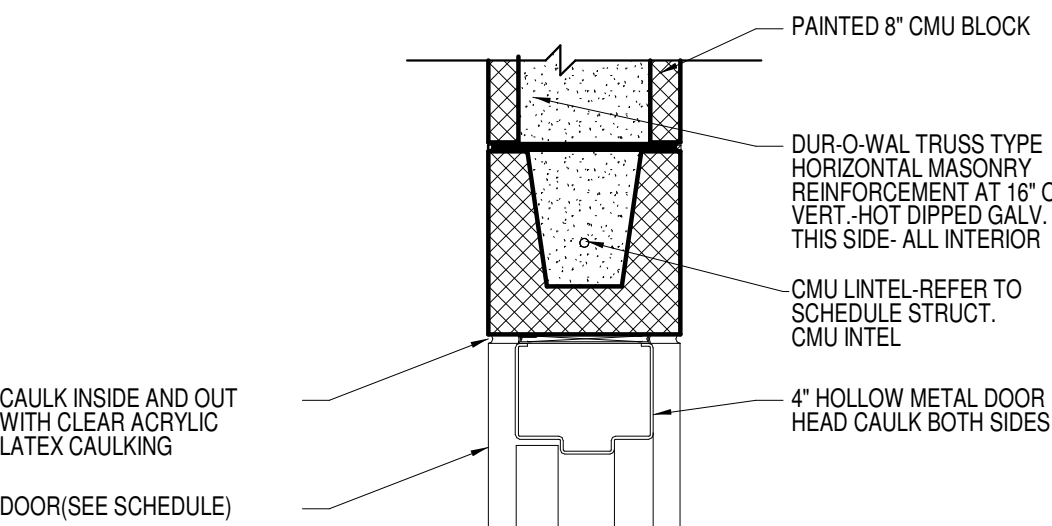
13 OVERHEAD COILING DOOR HEAD DETAIL  
1 1/2" = 1'-0"



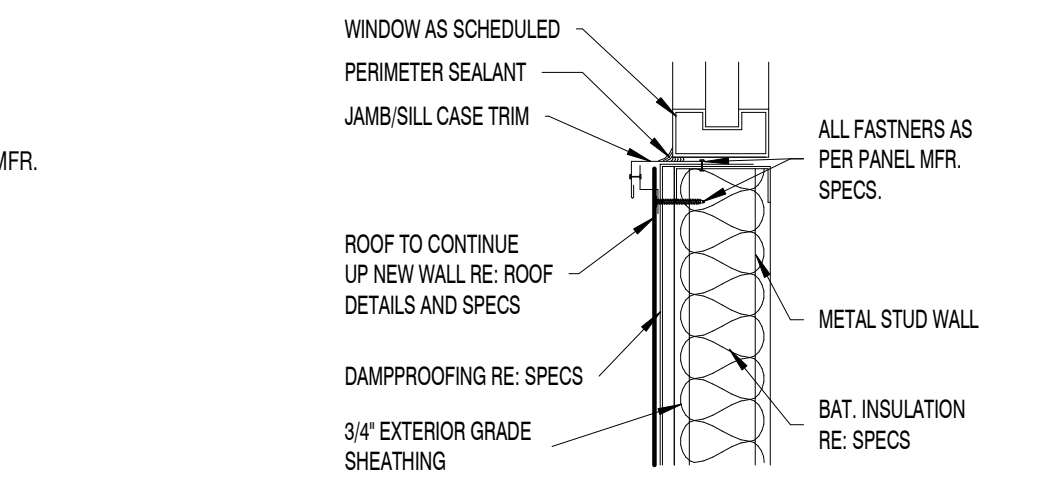
12 INT DOOR SILL DETAIL  
1 1/2" = 1'-0"



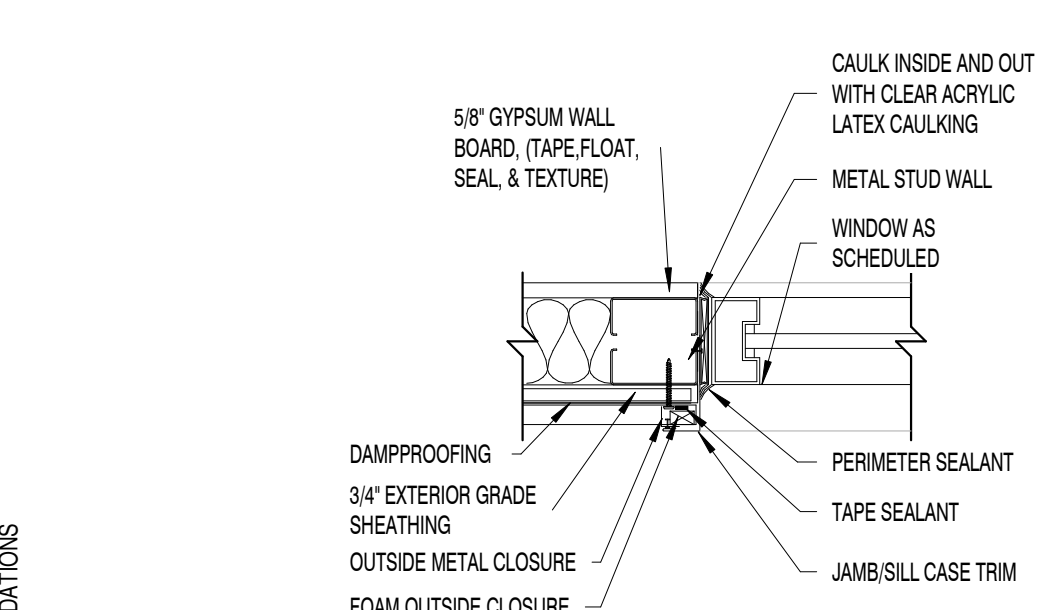
11 DOOR JAMB DETAIL  
1 1/2" = 1'-0"



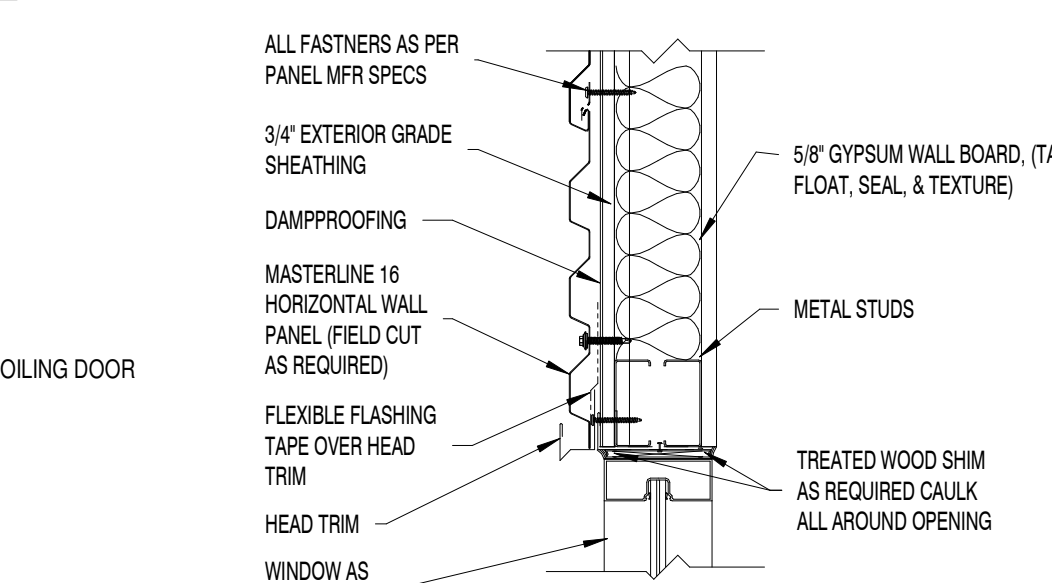
10 DOOR HEAD DETAIL  
1 1/2" = 1'-0"



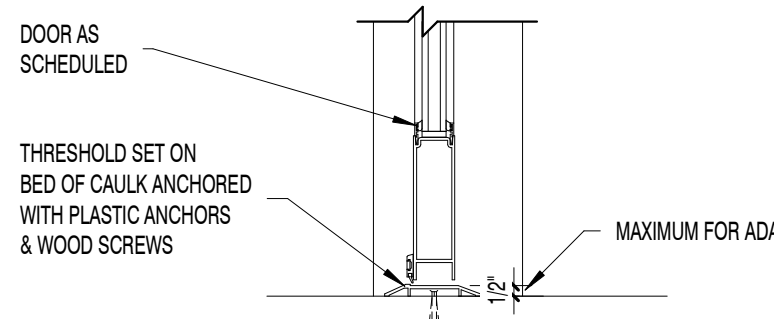
9 WALKWAY WINDOW SILL DETAIL  
1 1/2" = 1'-0"



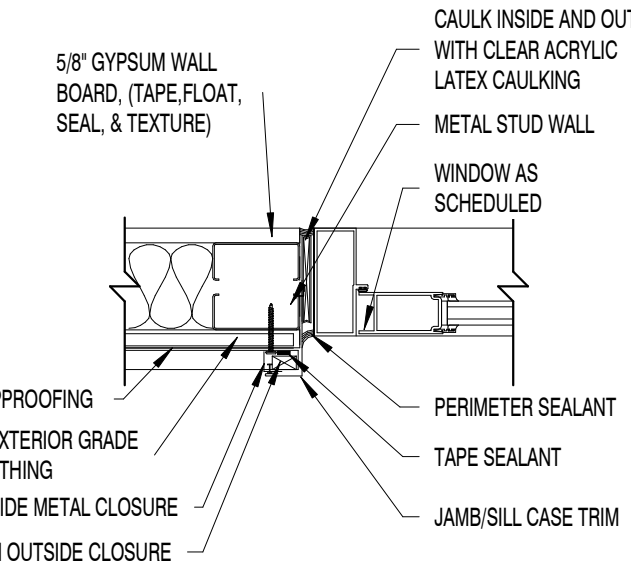
8 WALKWAY WINDOW JAMB DETAIL  
1 1/2" = 1'-0"



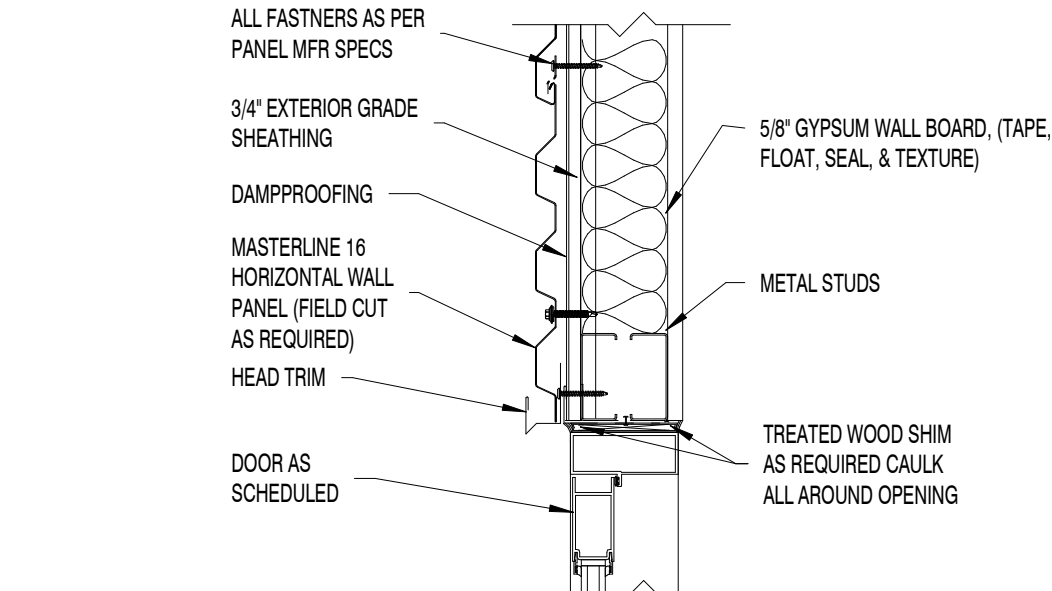
7 WALKWAY WINDOW HEAD DETAIL  
1 1/2" = 1'-0"



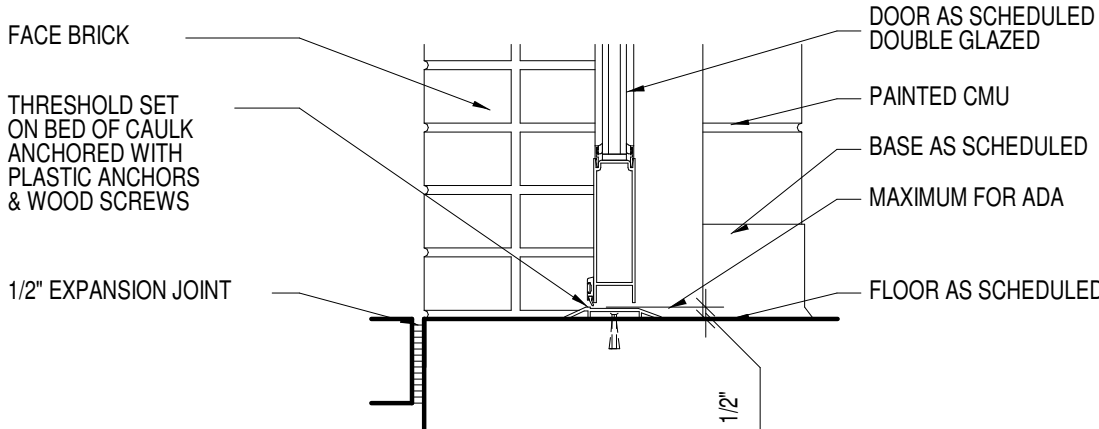
6 WALKWAY DOOR SILL DETAIL  
1 1/2" = 1'-0"



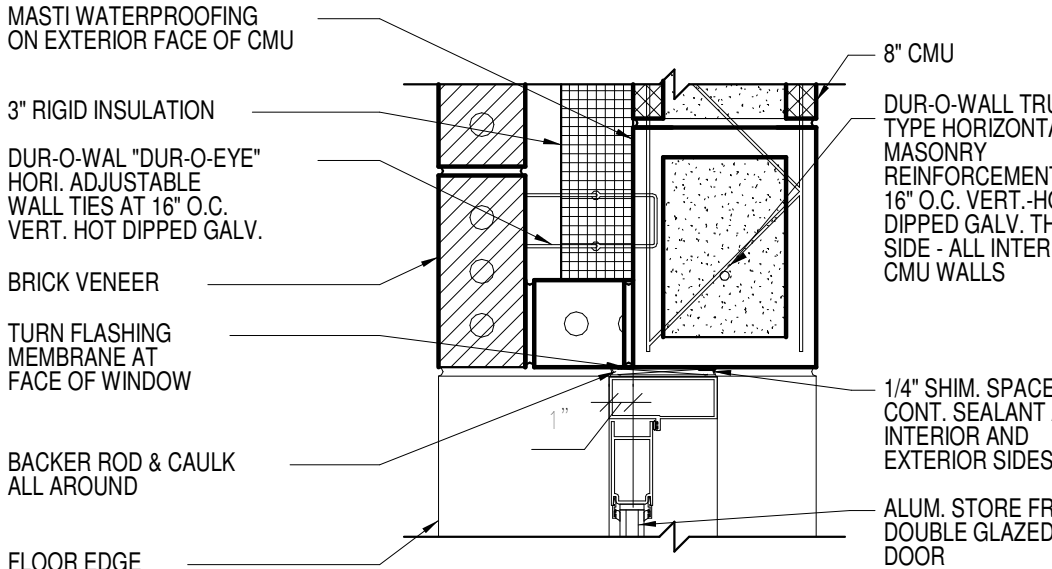
5 WALKWAY DOOR JAMB DETAIL  
1 1/2" = 1'-0"



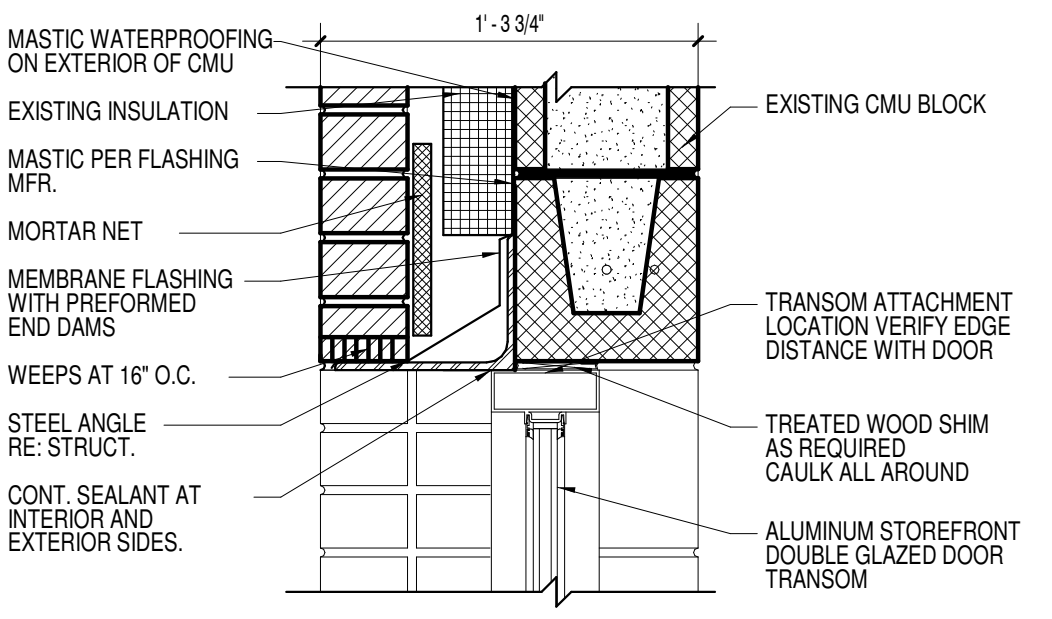
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2 DOOR JAMB DETAIL  
1 1/2" = 1'-0"



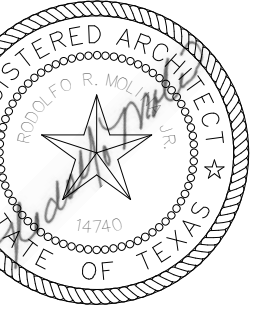
1 DOOR HEAD DETAIL  
1 1/2" = 1'-0"





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McALLEN, TX

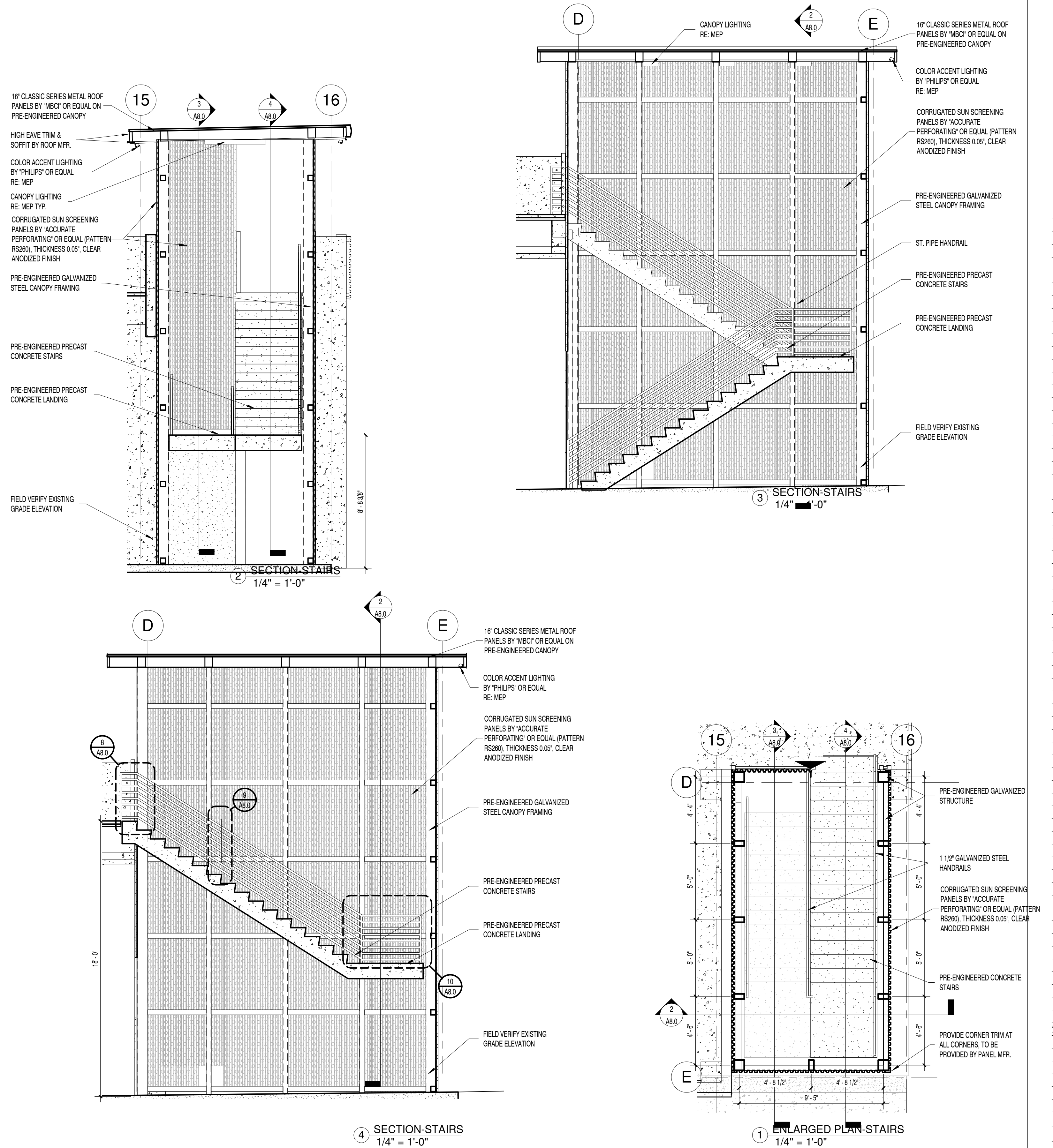
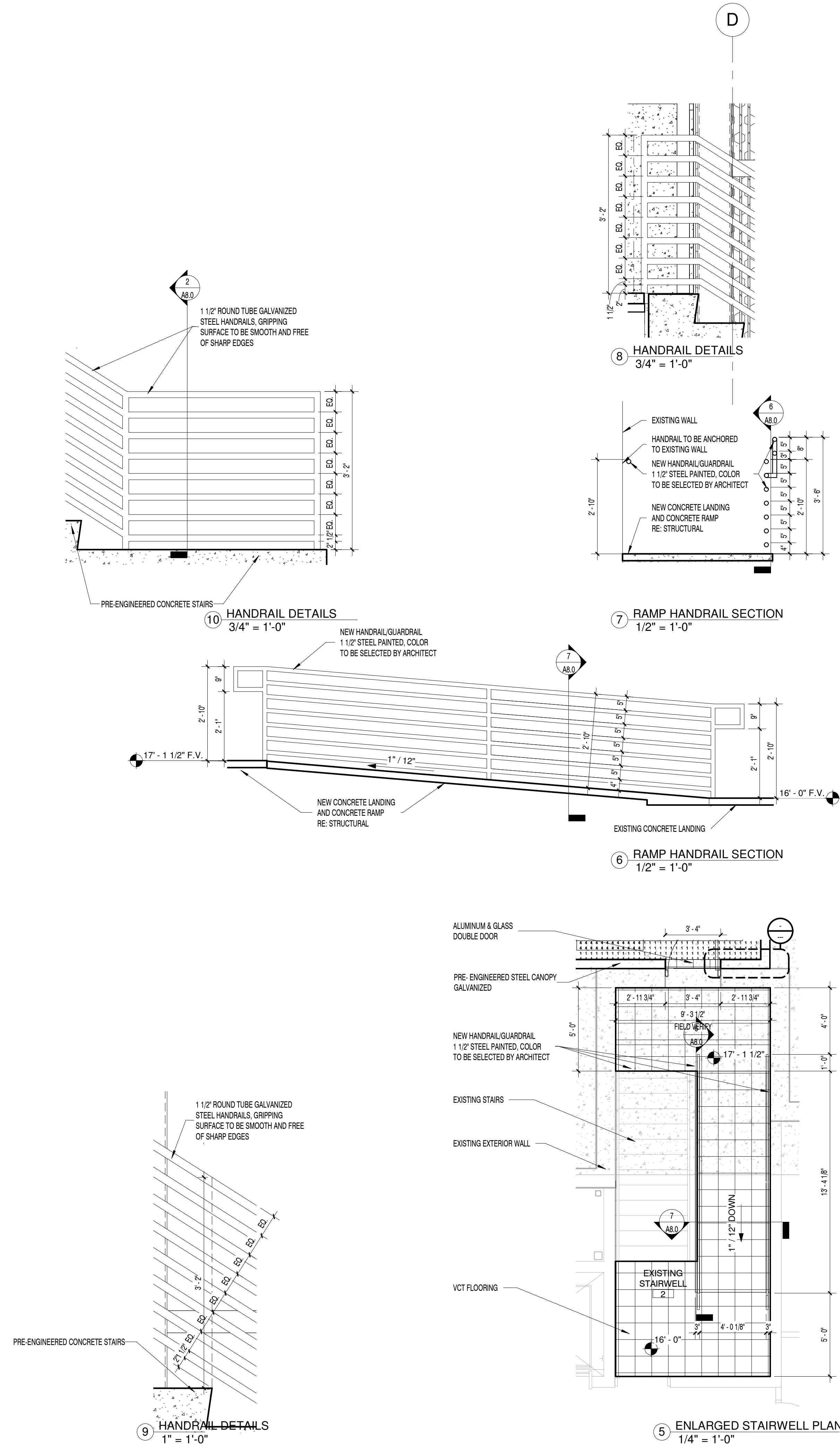
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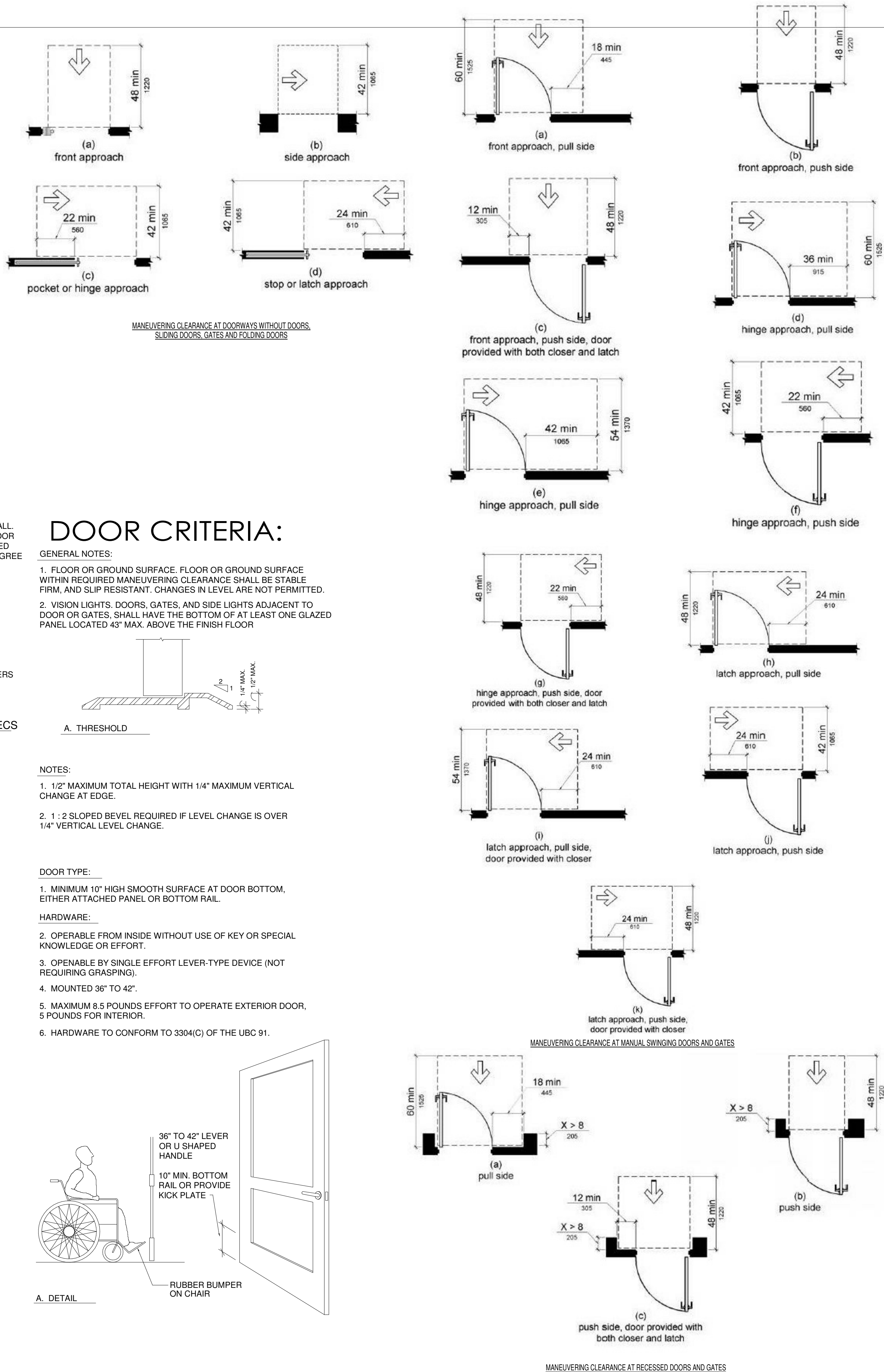
DATE  
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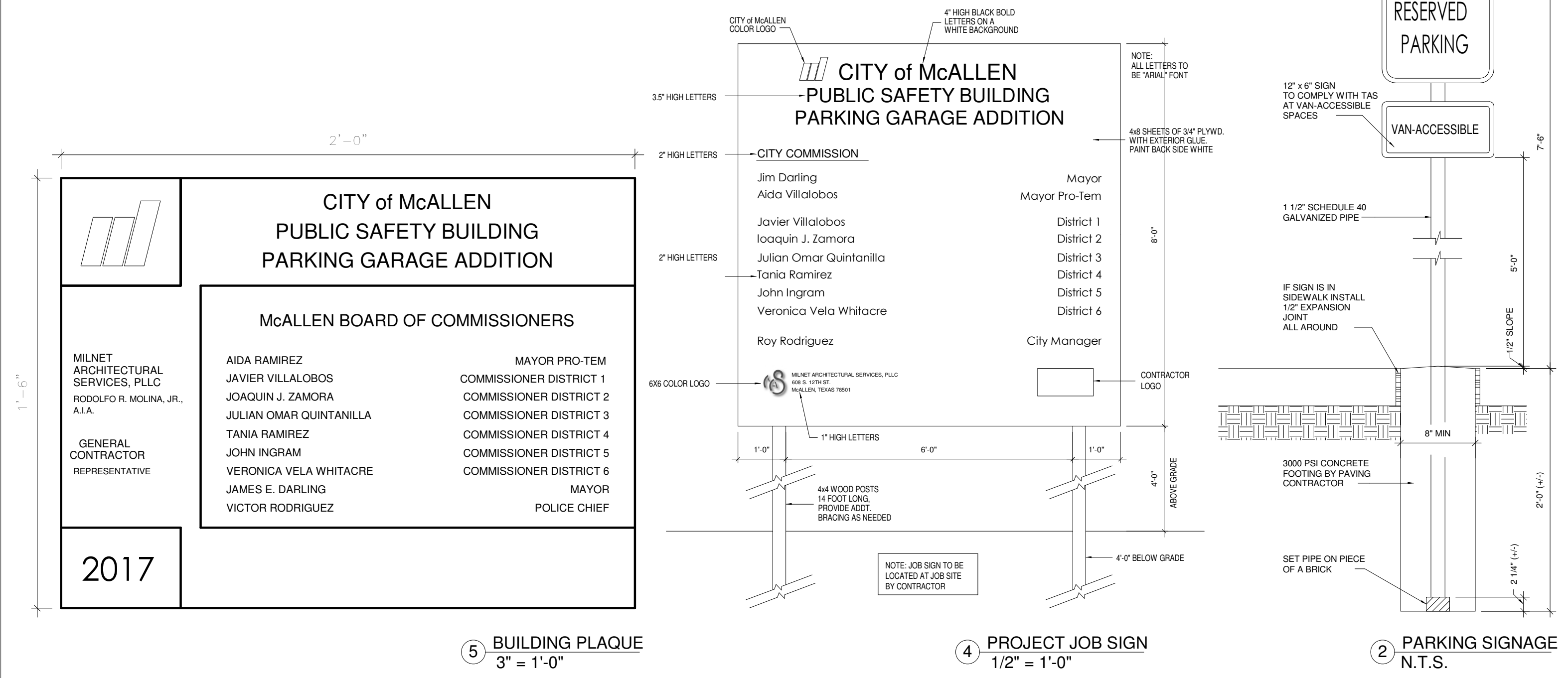
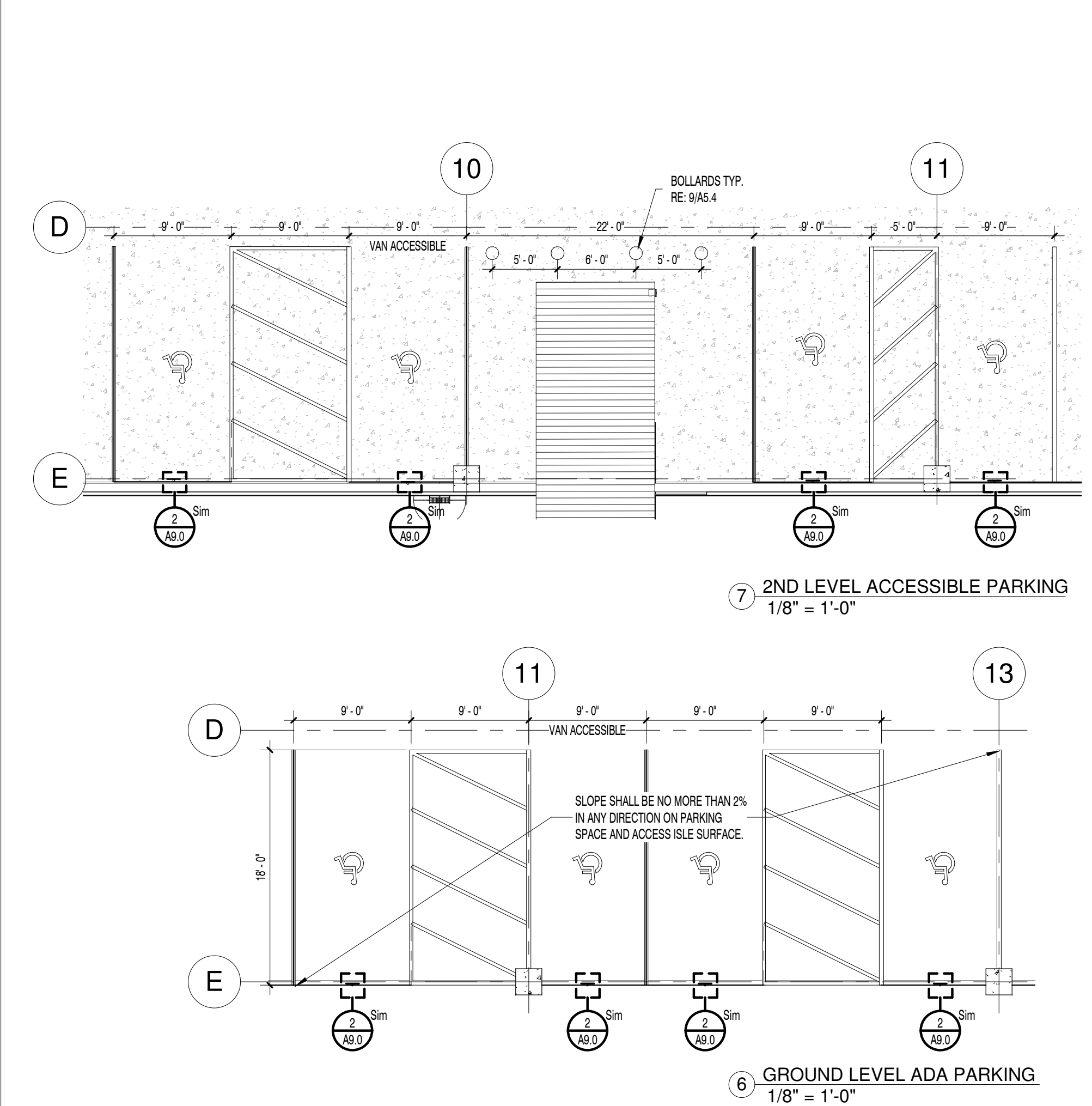
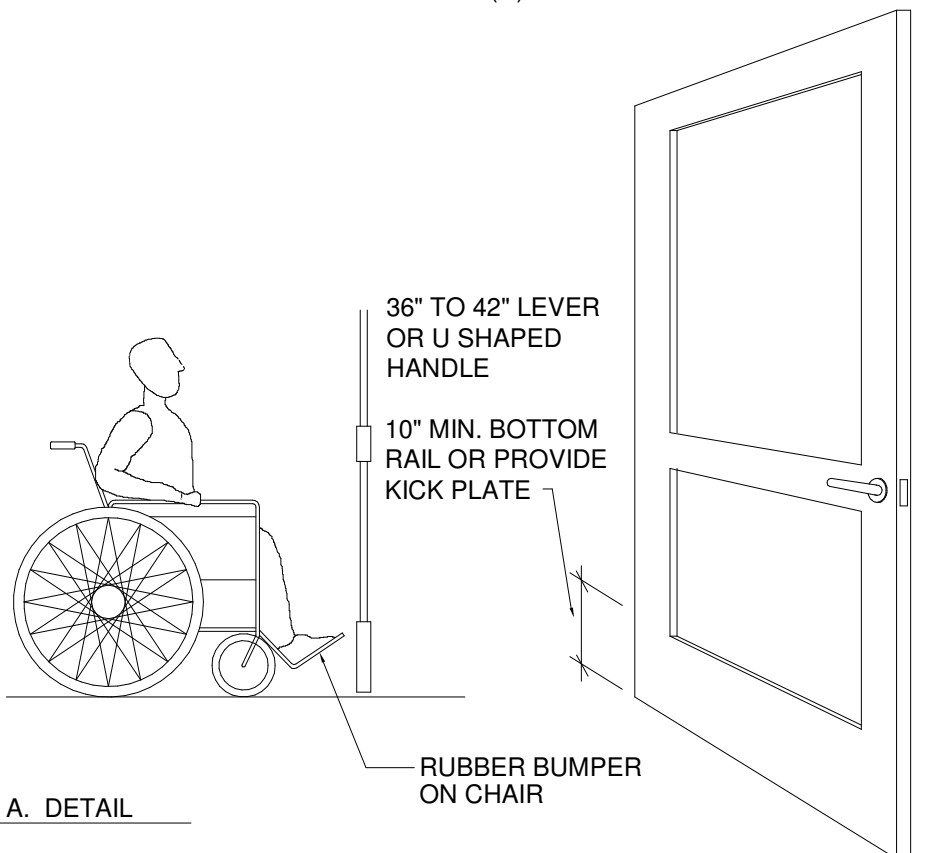


DOOR CRITERIA:

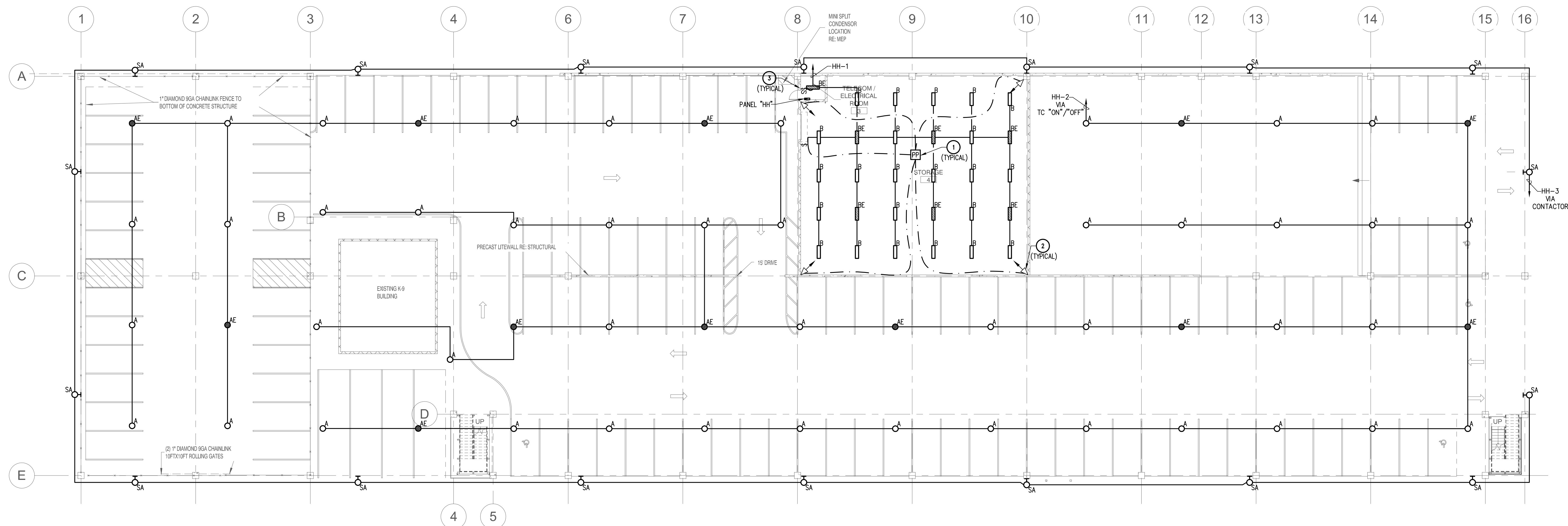
- GENERAL NOTES:
1. FLOOR OR GROUND SURFACE, FLOOR OR GROUND SURFACE WITHIN REQUIRED MANEUVERING CLEARANCE SHALL BE STABLE, FIRM, AND SLIP RESISTANT. CHANGES IN LEVEL ARE NOT PERMITTED.
  2. VISION LIGHTS, DOORS, GATES, AND SIDE LIGHTS ADJACENT TO DOOR OR GATES, SHALL HAVE THE BOTTOM OF AT LEAST ONE GLAZED PANEL LOCATED 43" MAX. ABOVE THE FINISH FLOOR

- NOTES:
1. 1/2" MAXIMUM TOTAL HEIGHT WITH 1/4" MAXIMUM VERTICAL CHANGE AT EDGE.
  2. 1 : 2 SLOPED BEVEL REQUIRED IF LEVEL CHANGE IS OVER 1/4" VERTICAL LEVEL CHANGE.

- DOOR TYPE:
1. MINIMUM 10" HIGH SMOOTH SURFACE AT DOOR BOTTOM, EITHER ATTACHED PANEL OR BOTTOM RAIL.
- HARDWARE:
2. OPERABLE FROM INSIDE WITHOUT USE OF KEY OR SPECIAL KNOWLEDGE OR EFFORT.
  3. OPENABLE BY SINGLE EFFORT LEVER-TYPE DEVICE (NOT REQUIRING GRASPING).
  4. MOUNTED 36" TO 42".
  5. MAXIMUM 8.5 POUNDS EFFORT TO OPERATE EXTERIOR DOOR, 5 POUNDS FOR INTERIOR.
  6. HARDWARE TO CONFORM TO 3304(C) OF THE UBC 91.







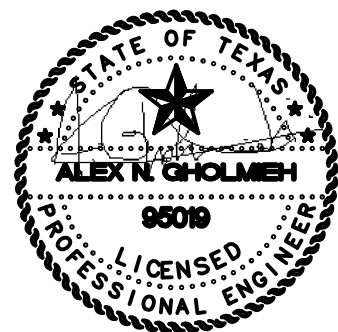
GENERAL NOTES

- A. REFER TO ARCHITECTURAL REFLECTED CEILING AND ELEVATION PLANS FOR EXACT LOCATION AND MOUNTING HEIGHT OF ALL LIGHT FIXTURES.
- B. ELECTRICAL CONTRACTOR TO REFER TO MANUFACTURER DRAWINGS OF ALL EQUIPMENT FOR EXACT LOCATION AND FOR THE PROVIDING AND INSTALLATION OF ALL DEVICES, RACEWAYS, WALL BOXES AND WIRING NOT SHOWN ON THIS DRAWING. VERIFY ALL REQUIREMENTS PRIOR TO ANY ROUGH-IN.
- C. REFER TO STRUCTURAL DRAWINGS FOR CONDUIT RUNS UP IN JOIST AND SUSPENDING REQUIREMENTS.
- D. VERIFY EXACT LOCATION AND MOUNTING HEIGHT OF ALL TOGGLE/PILOT SWITCHES WITH ARCHITECT AND OWNER PRIOR TO ROUGH-IN.
- E. ELECTRICAL CONTRACTOR SHALL COORDINATE THE WORK OF ALL TRADES INVOLVED IN THE CEILING WORK TO INSURE CLEARANCES FOR LIGHT FIXTURES, ETC. NECESSARY TO MAINTAIN THE FINISHED CEILING HEIGHTS INDICATED ON ARCHITECTURAL DRAWING. ELECTRICAL CONTRACTOR TO NOTIFY ARCHITECT OF ANY CONFLICT OF LIGHT FIXTURE LOCATIONS WITH MAIN RUNNERS, DUCTS, ETC. PRIOR TO INSTALLATION.

LEGEND NOTES

- 1 FURNISH AND INSTALL A POWER PACK EQUAL TO WATT STOPPER #B277EP. VERIFY EXACT LOCATION AND MOUNTING HEIGHT WITH MANUFACTURER. CONNECT AND WIRE AS SHOWN.
- 2 FURNISH AND INSTALL OCCUPANCY SENSOR EQUAL TO WATT STOPPER #OT-205. VERIFY EXACT LOCATION AND MOUNTING HEIGHT WITH MANUFACTURER. CONNECT AND WIRE AS SHOWN.
- 3 PROVIDE OCCUPANCY SENSOR SWITCH. OCCUPANCY SENSOR SWITCH SHALL IMMEDIATELY SWITCH THE LIGHTS "ON" WHEN MOVEMENT IS DETECTED AND SHALL AUTOMATICALLY SWITCH THE LIGHTS "OFF" AFTER THE ROOM IS VACATED FOR A PRESET LENGTH OF TIME. OCCUPANCY SENSOR SWITCH SHALL BE WATT STOPPER #WS-200 OR EQUAL.

1 FLOOR PLAN - FIRST FLOOR - LIGHTING  
1/16" = 1'-0"



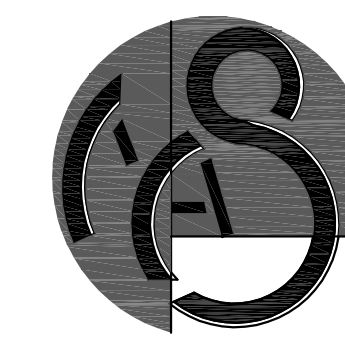
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THE ALEX GROUP, LLC  
TEXAS REGISTERED ENGINEERING FIRM F-6580  
**TAG**  
the alex group, llc  
Professional & Consulting Engineers  
929 E. Esperanza, Suite 20  
McAllen, Texas 78501  
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Fax: 956.687.2545

MCALLEN PUBLIC SAFETY BUILDING  
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CITY OF MCALLEN

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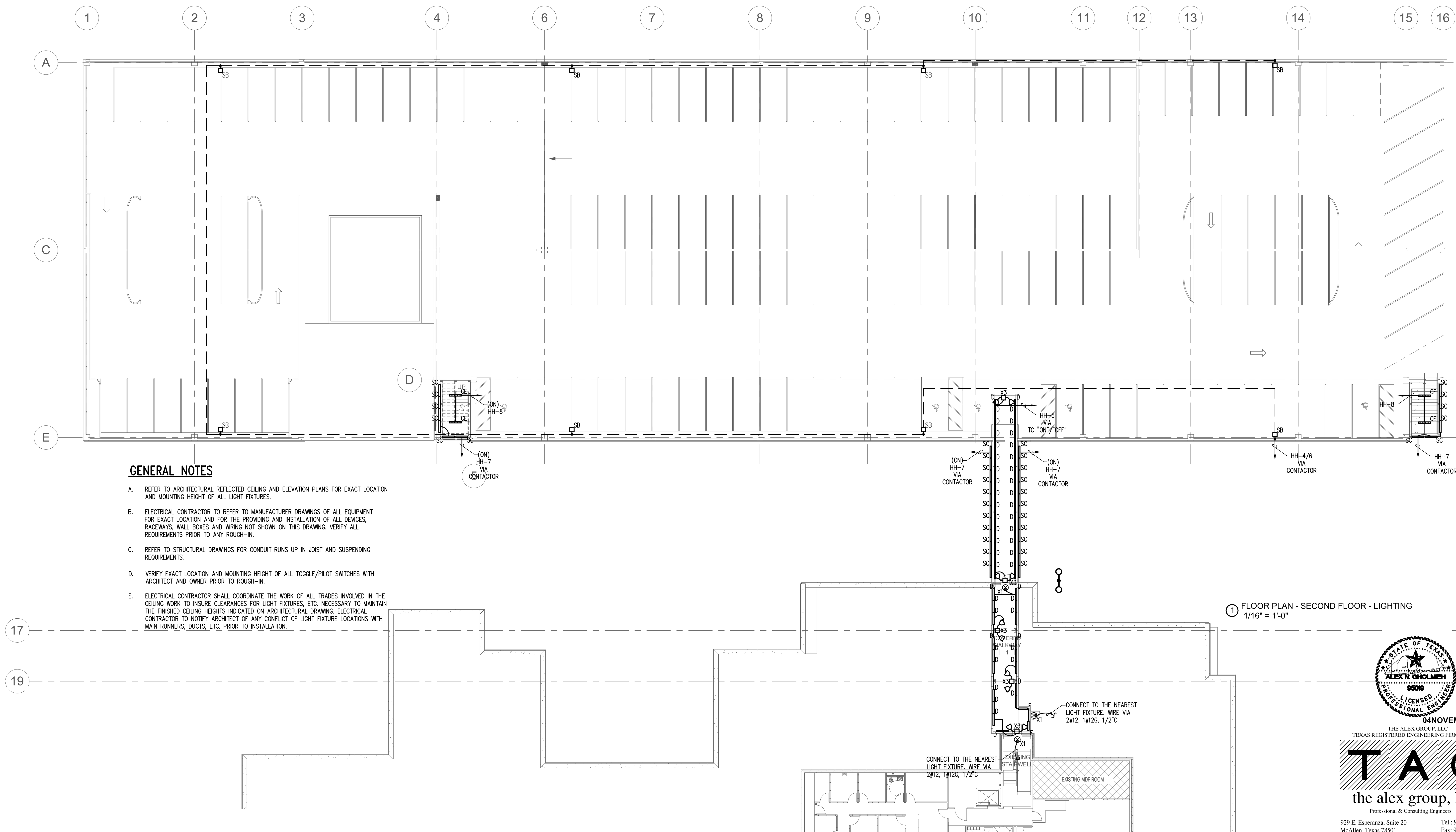
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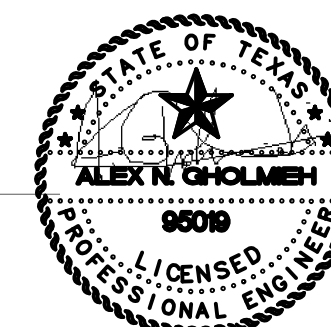
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GENERAL NOTES

- REFER TO ARCHITECTURAL REFLECTED CEILING AND ELEVATION PLANS FOR EXACT LOCATION AND MOUNTING HEIGHT OF ALL LIGHT FIXTURES.
- ELECTRICAL CONTRACTOR TO REFER TO MANUFACTURER DRAWINGS OF ALL EQUIPMENT FOR EXACT LOCATION AND FOR THE PROVIDING AND INSTALLATION OF ALL DEVICES, RACEWAYS, WALL BOXES AND WIRING NOT SHOWN ON THIS DRAWING. VERIFY ALL REQUIREMENTS PRIOR TO ANY ROUGH-IN.
- REFER TO STRUCTURAL DRAWINGS FOR CONDUIT RUNS UP IN JOIST AND SUSPENDING REQUIREMENTS.
- VERIFY EXACT LOCATION AND MOUNTING HEIGHT OF ALL TOGGLE/PILOT SWITCHES WITH ARCHITECT AND OWNER PRIOR TO ROUGH-IN.
- ELECTRICAL CONTRACTOR SHALL COORDINATE THE WORK OF ALL TRADES INVOLVED IN THE CEILING WORK TO INSURE CLEARANCES FOR LIGHT FIXTURES, ETC. NECESSARY TO MAINTAIN THE FINISHED CEILING HEIGHTS INDICATED ON ARCHITECTURAL DRAWING. ELECTRICAL CONTRACTOR TO NOTIFY ARCHITECT OF ANY CONFLICT OF LIGHT FIXTURE LOCATIONS WITH MAIN RUNNERS, DUCTS, ETC. PRIOR TO INSTALLATION.

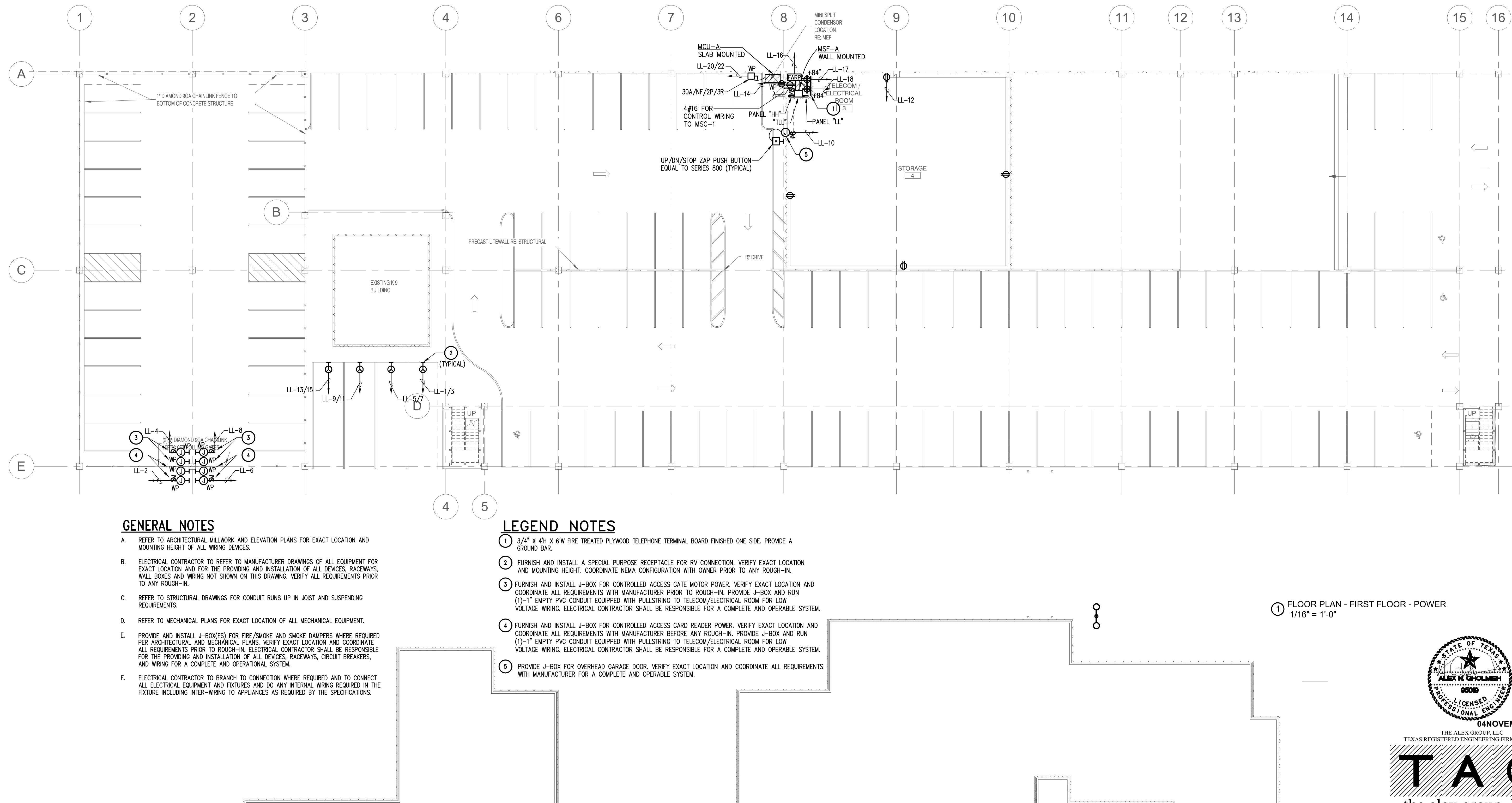


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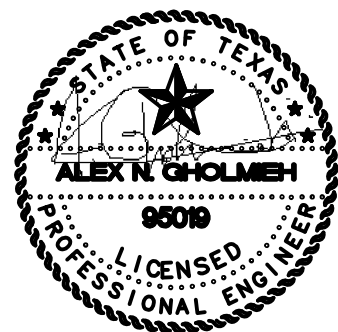
**GENERAL NOTES**

- A. REFER TO ARCHITECTURAL MILLWORK AND ELEVATION PLANS FOR EXACT LOCATION AND MOUNTING HEIGHT OF ALL WIRING DEVICES.
- B. ELECTRICAL CONTRACTOR TO REFER TO MANUFACTURER DRAWINGS OF ALL EQUIPMENT FOR EXACT LOCATION AND FOR THE PROVIDING AND INSTALLATION OF ALL DEVICES, RACEWAYS, WALL BOXES AND WIRING NOT SHOWN ON THIS DRAWING. VERIFY ALL REQUIREMENTS PRIOR TO ANY ROUGH-IN.
- C. REFER TO STRUCTURAL DRAWINGS FOR CONDUIT RUNS UP IN JOIST AND SUSPENDING REQUIREMENTS.
- D. REFER TO MECHANICAL PLANS FOR EXACT LOCATION OF ALL MECHANICAL EQUIPMENT.
- E. PROVIDE AND INSTALL J-BOX(ES) FOR FIRE/SMOKE AND SMOKE DAMPERS WHERE REQUIRED PER ARCHITECTURAL AND MECHANICAL PLANS. VERIFY EXACT LOCATION AND COORDINATE ALL REQUIREMENTS PRIOR TO ROUGH-IN. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROVIDING AND INSTALLATION OF ALL DEVICES, RACEWAYS, CIRCUIT BREAKERS, AND WIRING FOR A COMPLETE AND OPERATIONAL SYSTEM.
- F. ELECTRICAL CONTRACTOR TO BRANCH TO CONNECTION WHERE REQUIRED AND TO CONNECT ALL ELECTRICAL EQUIPMENT AND FIXTURES AND DO ANY INTERNAL WIRING REQUIRED IN THE FIXTURE INCLUDING INTER-WIRING TO APPLIANCES AS REQUIRED BY THE SPECIFICATIONS.

**LEGEND NOTES**

1. 3/4" X 4H X 6"W FIRE TREATED PLYWOOD TELEPHONE TERMINAL BOARD FINISHED ONE SIDE. PROVIDE A GROUND BAR.
2. FURNISH AND INSTALL A SPECIAL PURPOSE RECEPTACLE FOR RV CONNECTION. VERIFY EXACT LOCATION AND MOUNTING HEIGHT. COORDINATE NEMA CONFIGURATION WITH OWNER PRIOR TO ANY ROUGH-IN.
3. FURNISH AND INSTALL J-BOX FOR CONTROLLED ACCESS GATE MOTOR POWER. VERIFY EXACT LOCATION AND COORDINATE ALL REQUIREMENTS WITH MANUFACTURER PRIOR TO ROUGH-IN. PROVIDE J-BOX AND RUN (1)-1" EMPTY PVC CONDUIT EQUIPPED WITH PULLSTRING TO TELECOM/ELECTRICAL ROOM FOR LOW VOLTAGE WIRING. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR A COMPLETE AND OPERABLE SYSTEM.
4. FURNISH AND INSTALL J-BOX FOR CONTROLLED ACCESS CARD READER POWER. VERIFY EXACT LOCATION AND COORDINATE ALL REQUIREMENTS WITH MANUFACTURER BEFORE ANY ROUGH-IN. PROVIDE J-BOX AND RUN (1)-1" EMPTY PVC CONDUIT EQUIPPED WITH PULLSTRING TO TELECOM/ELECTRICAL ROOM FOR LOW VOLTAGE WIRING. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR A COMPLETE AND OPERABLE SYSTEM.
5. PROVIDE J-BOX FOR OVERHEAD GARAGE DOOR. VERIFY EXACT LOCATION AND COORDINATE ALL REQUIREMENTS WITH MANUFACTURER FOR A COMPLETE AND OPERABLE SYSTEM.

1 FLOOR PLAN - FIRST FLOOR - POWER  
1/16" = 1'-0"

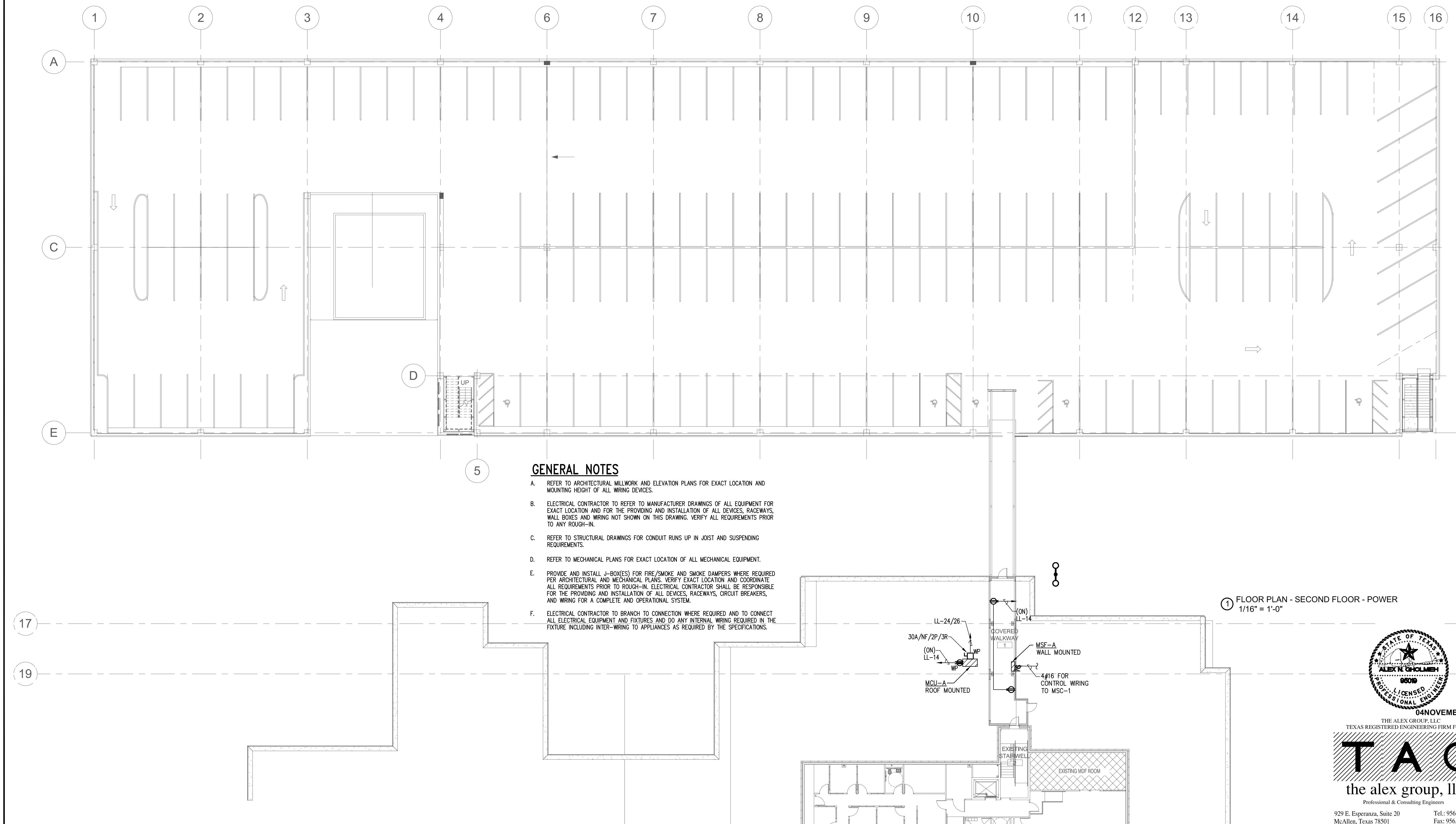


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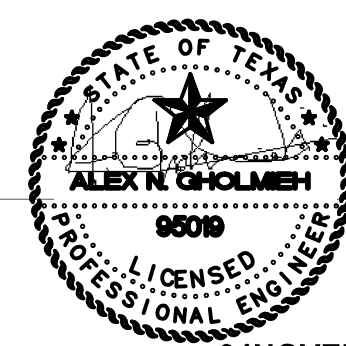
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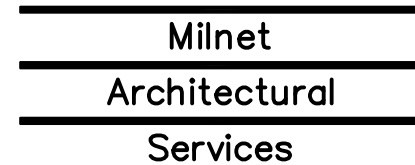
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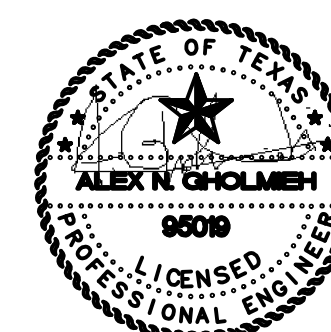


- A. REFER TO ARCHITECTURAL MILLWORK AND ELEVATION PLANS FOR EXACT LOCATION AND MOUNTING HEIGHT OF ALL WIRING DEVICES.
- B. ELECTRICAL CONTRACTOR TO REFER TO MANUFACTURER DRAWINGS OF ALL EQUIPMENT FOR EXACT LOCATION AND FOR THE PROVIDING AND INSTALLATION OF ALL DEVICES, RACEWAYS, WALL BOXES AND WIRING NOT SHOWN ON THIS DRAWING. VERIFY ALL REQUIREMENTS PRIOR TO ANY ROUGH-IN.
- C. REFER TO STRUCTURAL DRAWINGS FOR CONDUIT RUNS UP IN JOIST AND SUSPENDING REQUIREMENTS.
- D. FURNISH AND INSTALL DUCT SMOKE DETECTOR IN SUPPLY/RETURN AIR DUCT. VERIFY EXACT LOCATION WITH MECHANICAL PLANS.
- E. FURNISH AND INSTALL DUCT SMOKE DETECTOR OUTSIDE AIR DUCT. VERIFY EXACT LOCATION WITH MECHANICAL PLANS.
- F. FURNISH AND INSTALL DUCT SMOKE DETECTOR WITHIN 5 FEET OF EACH SMOKE OR FIRE/ SMOKE DAMPER NOT LOCATED IN A CORRIDOR.
- G. ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL J-BOXES, RACEWAYS REQUIRED FOR ALL CCTV CAMERAS SHOWN ON THE PLANS. VERIFY EXACT LOCATION AND COORDINATE ALL REQUIREMENTS WITH OWNER PRIOR TO ANY ROUGH-IN FOR A COMPLETE AND OPERABLE CCTV SYSTEM. THERE SHALL BE NO EXPOSED CONDUIT OR CONDUCTOR ALLOWED ON VISIBLE FACE OF WALL.
- H. ALL FIRE ALARM DEVICES SHOWN ARE NEW TO MATCH EXISTING POLICE DEPARTMENT STANDARD. PROVIDE A NEW FIRE ALARM RETROFIT PANEL AND CONNECT TO EXISTING FIRE ALARM CONTROL PANEL. RUN (1)-2" WITH PULLSTRONG FROM NEW FIRE ALARM RETROFIT PANEL TO EXISTING FIRE ALARM CONTROL PANEL. VERIFY LOCATION/MANUFACTURER OF EXISTING PANEL IN EXISTING POLICE DEPARTMENT BUILDING PRIOR TO BID. COORDINATE ALL REQUIREMENTS FOR A COMPLETE AND OPERABLE SYSTEM.

## LEGEND NOTES

- ① 3/4" x 4 1/2" x 6' 6" FIRE TREATED PLYWOOD TELEPHONE TERMINAL BOARD FINISHED ONE SIDE. PROVIDE A GROUND BAR.
- ② ELECTRICAL CONTRACTOR SHALL RUN (1)-1 1/2"C WITH PULLSTRING TO EACH CCTV CAMERA SHOWN ON BOTH PARKING GARAGE FLOOR PLANS. TERMINATE ONE END OF CONDUIT AT CAMERA IN-BOX, AND THE OTHER IN ROOM. VERIFY AND COORDINATE ALL REQUIREMENTS WITH OWNER FOR A COMPLETE AND OPERABLE CCTV SYSTEM.
- ③ ELECTRICAL CONTRACTOR SHALL RUN (1)-3"C WITH PULLSTRING FROM TELECOM/ ELECTRICAL ROOM TO EXISTING MFD ROOM SHOWN ON SHEET E3.1. TERMINATE AT EXISTING IN AND CAP-VECTO AND COORDINATE WITH OWNER FOR ALL REQUIREMENTS AND CONDUIT ROUTING FOR A COMPLETE AND OPERABLE SYSTEM.

① FLOOR PLAN - FIRST FLOOR - SPECIAL SYSTEMS  
1/16" = 1'-0"

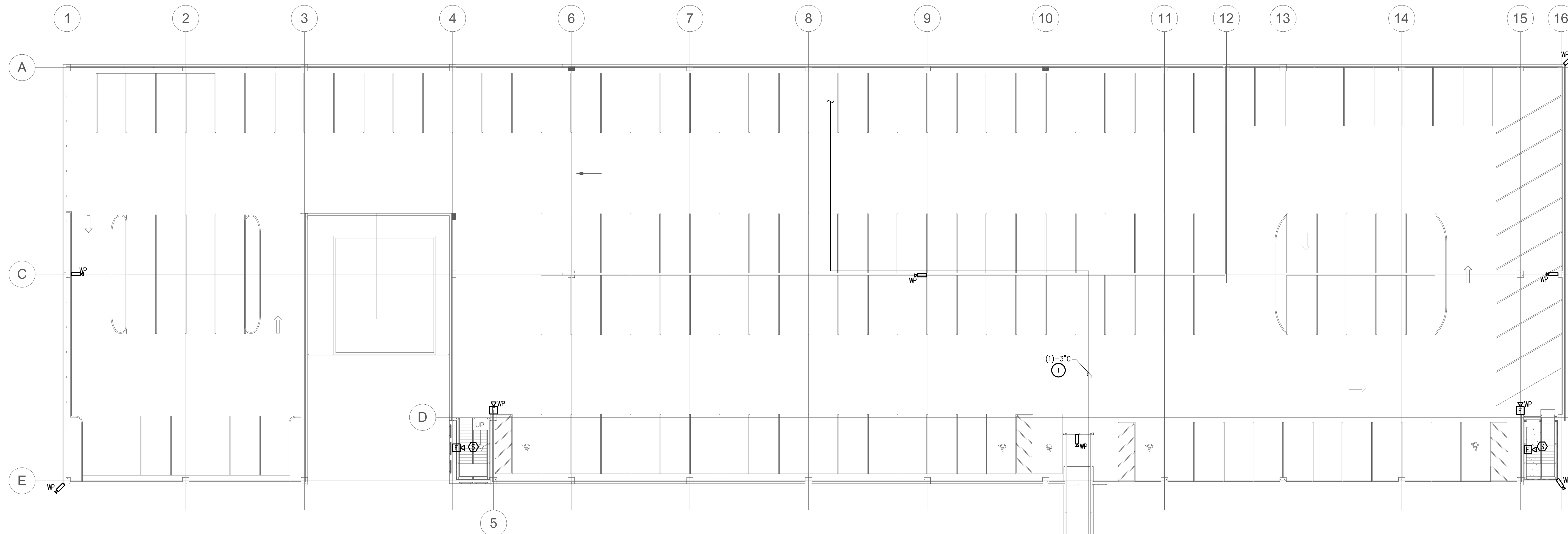


04NOVEMBER16

THE ALEX GROUP, LLC  
TEXAS REGISTERED ENGINEERING FIRM E-6580

**TAG**  
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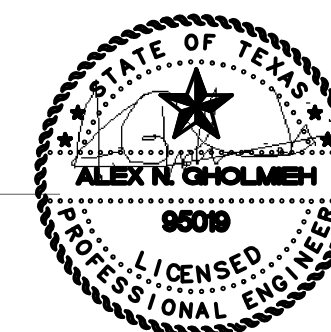
### GENERAL NOTES

- REFER TO ARCHITECTURAL MILLWORK AND ELEVATION PLANS FOR EXACT LOCATION AND MOUNTING HEIGHT OF ALL WIRING DEVICES.
- ELECTRICAL CONTRACTOR TO REFER TO MANUFACTURER DRAWINGS OF ALL EQUIPMENT FOR EXACT LOCATION AND FOR THE PROVIDING AND INSTALLATION OF ALL DEVICES, RACEWAYS, WALL BOXES AND WIRING NOT SHOWN ON THIS DRAWING. VERIFY ALL REQUIREMENTS PRIOR TO ANY ROUGH-IN.
- REFER TO STRUCTURAL DRAWINGS FOR CONDUIT RUNS UP IN JOIST AND SUSPENDING REQUIREMENTS.
- FURNISH AND INSTALL DUCT SMOKE DETECTOR IN SUPPLY/RETURN AIR DUCT. VERIFY EXACT LOCATION WITH MECHANICAL PLANS.
- FURNISH AND INSTALL DUCT SMOKE DETECTOR OUTSIDE AIR DUCT. VERIFY EXACT LOCATION WITH MECHANICAL PLANS.
- FURNISH AND INSTALL DUCT SMOKE DETECTOR WITHIN 5 FEET OF EACH SMOKE OR FIRE/ SMOKE DAMPER NOT LOCATED IN A CORRIDOR.
- ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL J-BOXES, RACEWAYS REQUIRED FOR ALL CCTV CAMERAS SHOWN ON THE PLANS. VERIFY EXACT LOCATION AND COORDINATE ALL REQUIREMENTS WITH OWNER PRIOR TO ANY ROUGH-IN FOR A COMPLETE AND OPERABLE CCTV SYSTEM. THERE SHALL BE NO EXPOSED CONDUIT OR CONDUCTOR ALLOWED ON VISIBLE FACE OF WALL.
- ALL FIRE ALARM DEVICES SHOWN ARE NEW TO MATCH EXISTING POLICE DEPARTMENT STANDARD. PROVIDE A NEW FIRE ALARM REMOTE PANEL AND CONNECT TO EXISTING FIRE ALARM CONTROL PANEL. RUN (1)-2" C WITH PULLSTRING FROM NEW FIRE ALARM REMOTE PANEL TO EXISTING FIRE ALARM CONTROL PANEL. VERIFY LOCATION/MANUFACTURER OF EXISTING PANEL IN EXISTING POLICE DEPARTMENT BUILDING PRIOR TO BID. COORDINATE ALL REQUIREMENTS FOR A COMPLETE AND OPERABLE SYSTEM.

### LEGEND NOTES

- ELECTRICAL CONTRACTOR SHALL RUN (1)-3" C WITH PULLSTRING FROM TELECOM/ ELECTRICAL ROOM TO EXISTING MDF ROOM AS SHOWN. TERMINATE AT BOTH ENDS AND CAP. VERIFY AND COORDINATE WITH OWNER FOR ALL REQUIREMENTS AND CONDUIT ROUTING FOR A COMPLETE AND OPERABLE SYSTEM.

1 FLOOR PLAN - SECOND FLOOR - SPECIAL SYSTEMS  
1/16" = 1'-0"



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LIGHTING FIXTURE SCHEDULE		
TYPE	DESCRIPTION	
A	DESCRIPTION: LAMPS: VOLTAGE: INSTALLATION: MANUFACTURER: SUBSTITUTIONS:	DECORATIVE LED PARKING GARAGE LIGHT FIXTURE WITH TSM OPTICS  1-30W LED 277V SURFACE LITHONIA #PGX LED-P1-40K-T5M-MVOLT-SRM-DDBXD OR APPROVED EQUAL
AE	DESCRIPTION: LAMPS: VOLTAGE: INSTALLATION: MANUFACTURER: SUBSTITUTIONS:	SAME AS TYPE "A" LIGHT FIXTURE EXCEPT WITH EMERGENCY BATTERY PACK  1-30W LED 277V SURFACE LITHONIA #PGX LED-P1-40K-T5M-MVOLT-SRM-ELCW-DDBXD OR APPROVED EQUAL
B	DESCRIPTION: LAMPS: VOLTAGE: INSTALLATION: MANUFACTURER: SUBSTITUTIONS:	4', DECORATIVE LED VOLUMETRIC LIGHT FIXTURE  1-34.9W LED 277V SURFACE LITHONIA #STL4-40L-EZ1-UP835 OR APPROVED EQUAL
BE	DESCRIPTION: LAMPS: VOLTAGE: INSTALLATION: MANUFACTURER: SUBSTITUTIONS:	SAME AS TYPE "B" LIGHT FIXTURE EXCEPT WITH EMERGENCY BATTERY PACK  1-34.9W LED 277V SURFACE LITHONIA #STL4-40L-EZ1-UP835-EL14L OR APPROVED EQUAL
CE	DESCRIPTION: LAMPS: VOLTAGE: INSTALLATION: MANUFACTURER: SUBSTITUTIONS:	4', DECORATIVE LED LIGHT FIXTURE WITH EMERGENCY BATTERY PACK  1-40W LED 277V SURFACE LITHONIA #PTSL4-ND-MVOLT-35K-80CRI-E7W-DSPD OR APPROVED EQUAL
D	DESCRIPTION: LAMPS: VOLTAGE: INSTALLATION: MANUFACTURER: SUBSTITUTIONS:	4' DECORATIVE LED LIGHT FIXTURE  1-23.3W LED 277V SURFACE LUMENPULSE #LX1-277-48-RGB-SI OR APPROVED EQUAL
F	DESCRIPTION: LAMPS: VOLTAGE: INSTALLATION: MANUFACTURER: SUBSTITUTIONS:	3' DECORATIVE LED LIGHT FIXTURE  1-15W LED 277V SURFACE LUMENPULSE #LX1-277-36-RGB-SI OR APPROVED EQUAL
SA	DESCRIPTION: LAMPS: VOLTAGE: INSTALLATION : MANUFACTURER: SUBSTITUTIONS:	DECORATIVE LED WALL LIGHT FIXTURE WITH T4M OPTICS  1-71W LED 277V SURFACE LITHONIA #DSXW2 LED-30C-700-40K-T4M-MVOLT-DDBXD OR APPROVED EQUAL
SB	DESCRIPTION: LAMPS: VOLTAGE: INSTALLATION : MANUFACTURER: SUBSTITUTIONS:	DECORATIVE LED PARKING LOT LIGHT FIXTURE WITH T4M OPTICS  1-209W LED 480V POLE (20'-0") LITHONIA #DSX1 LED-60C-1000-40K-T4M-MVOLT-DDBXD OR APPROVED EQUAL
SC	DESCRIPTION: LAMPS: VOLTAGE: INSTALLATION : MANUFACTURER: SUBSTITUTIONS:	DECORATIVE LED FACADE LIGHT FIXTURE  1-69W LED 277V SURFACE LUMENPULSE #LOG RGB-277-48-10X10-SI OR APPROVED EQUAL
X1	DESCRIPTION: LAMPS: VOLTAGE: INSTALLATION : MANUFACTURER: SUBSTITUTIONS:	DIE CAST ALUMINUM HOUSING, RED LETTERS, WHITE FINISH, SINGLE FACE, DIRECTIONAL CHEVRONS AS INDICATED  LED 120V UNIVERSAL MOUNT LITHONIA #EDG-1-R-120/277/ELN OR APPROVED EQUAL
X3	DESCRIPTION: LAMPS: VOLTAGE: INSTALLATION : MANUFACTURER: SUBSTITUTIONS:	DUAL HEAD EMERGENCY LIGHT FIXTURE  INCLUDED 120/277V SURFACE LITHONIA #ELM2-SD OR APPROVED EQUAL

GENERAL NOTES

- A. ALL EMERGENCY LIGHT FIXTURES SHALL BE EQUIPPED WITH 90 MINUTES BACK UP BATTERY PACK.

ELECTRICAL LEGEND						
ALL SYMBOLS SHOWN MAY NOT APPEAR IN ALL DRAWINGS. SYMBOLS ARE SHOWN SCHEMATIC AND MAY NOT BE TO SCALE.						
SYMBOL	DESCRIPTION	MNTG. HT. UNO (SEE NOTE 1)	SYMBOL	DESCRIPTION	MNTG. HT. UNO (SEE NOTE 1)	
	2'x4' FLUORESCENT LIGHT FIXTURE	SEE FIX. SCH.		FIRE ALARM PULL STATION	48" AFF	
	2'x4' FLUORESCENT LIGHT FIXTURE ON EMERGENCY CIRCUIT	SEE FIX. SCH.		FIRE ALARM AUDIBLE/VISUAL SIGNAL	80" AFF	
	2'x4' FLUORESCENT LIGHT FIXTURE SWITCHED W/ INBOARD LAMPS ONE SWITCH AND OUTBOARD LAMPS ON ANOTHER	SEE FIX. SCH.		FIRE ALARM AUDIBLE SIGNAL	80" AFF	
	2'x4' FLUORESCENT FIXTURE W/INBOARD LAMPS ON EMERGENCY CIRCUIT AND OUTBOARD LAMPS ON NORMAL CIRCUIT	SEE FIX. SCH.		FIRE ALARM VISUAL SIGNAL	80" AFF	
	2'x2' FLUORESCENT LIGHT FIXTURE	SEE FIX. SCH.		FIRE ALARM SPRINKLER FLOW SWITCH	-	
	2'x2' FLUORESCENT LIGHT FIXTURE ON EMERGENCY CIRCUIT	SEE FIX. SCH.		FIRE ALARM SPRINKLER TAMPER SWITCH	-	
	FLUORESCENT STRIP LIGHT	SEE FIX. SCH.		FIRE ALARM SPRINKLER PRESSURE SWITCH	-	
	1'x4' FLUORESCENT LIGHT FIXTURE	SEE FIX. SCH.		FIRE ALARM SMOKE DETECTOR CEILING OR WALL MOUNTED	80" AFF	
	TRACK LIGHT	SEE FIX. SCH.		HEAT DETECTOR CEILING OR WALL MOUNTED	-	
	INCANDESCENT, FLUORESCENT, OR HID WALL WASHER LIGHT FIXTURE CEILING MTD.	SEE FIX. SCH.		DUCT SMOKE DETECTOR	-	
	INCANDESCENT, FLUORESCENT, OR HID FIXTURE CLG. OR WALL MTD.	SEE FIX. SCH.		FIRE ALARM CONTROL PANEL	-	
	INCANDESCENT, FLUORESCENT, OR HID FIXTURE ON EMERGENCY CCT. CLG. OR WALL MTD.	SEE FIX. SCH.		FIRE ALARM POWER SUPPLY	-	
	EXIT LIGHT, CEILING OR WALL MOUNTED - SHADING INDICATING SINGLE OR DOUBLE FACE, DIRECTIONAL ARROWS AS INDICATED	9" BFC		SECURITY SYSTEM KEY PAD, WALL MOUNTED - STUB 3/4" C. ABOVE ACCESSIBLE CEILING FROM OUTLET BOX	48" AFF	
	WALL SWITCH SPST, 20A,120/277V	48" AFF		P.A. SPEAKER, CEILING OR WALL MOUNTED	9" BFC	
	DOUBLE POLE TOGGLE SWITCH, 20A,120/277V	48" AFF		MICROPHONE OUTLET	-	
	3-WAY WALL SWITCH, 20A,120/277V	48" AFF		DISCONNECT SWITCH - 30/-/3 INDICATES 30A, 3-POLE, NONFUSED; 30/30/3 INDICATES 30A, 3-POLE, 30A FUSE	AS REQD.	
	4-WAY WALL SWITCH, 20A,120/277V	48" AFF		CIRCUIT BREAKER DISCONNECT SWITCH - THERMAL MAGNETIC CB IN NEMA 1 ENCL; AMPS/POLES AS INDICATED	AS REQD.	
	WALL DIMMER SWITCH	48" AFF		DISCONNECT SWITCH - 30/30/3 INDICATES 30A, 3-POLE, 30A FUSE	AS REQD.	
	KEY OPERATED WALL SWITCH	48" AFF		MOTOR STARTER FVNR UNO; NUMBER INDICATES NEMA SIZE	AS REQD.	
	WALL SWITCH WITH PILOT LIGHT	48" AFF		COMBINATION MOTOR CONTROLLER/DISCONNECT SWITCH	AS REQD.	
	SINGLE RECEPTACLE - 20A/125V/2P/3W/G NEMA 5-20R	18" AFF		MANUAL MOTOR STARTER SWITCH WITH THERMAL OVERLOAD AND PILOT LIGHT	-	
	DUPLEX RECEPTACLE - 20A/125V/2P/3W/G NEMA 5-20R	18" AFF		MOTOR	-	
	DUPLEX RCPT. SPLIT-WIRED - 20A/125V/2P/3W/G NEMA 5-20R	18" AFF		PANELBOARD	-	
	DUPLEX RCPT. GFI - 20A/125V/2P/3W/G NEMA 5-20R	18" AFF		EQUIPMENT CONNECTION	-	
	QUADRAPLEX RECEPTACLE (TWO DUPLEX RCPTS. UNDER ONE COVERPLATE)	18" AFF		CIRCUIT CONDUCTOR INDICATION (NEUTRAL, PHASE, EQUIPMENT GROUND, ISOLATED GROUND, SWITCH LEG) (NO INDICATION REPRESENTS 2#12, 1#12G, 1/2"C. UNO)	-	
	ISOLATED GROUND DUPLEX RECEPTACLE - 20A/125V NEMA 5-20R	18" AFF		CIRCUIT HOME RUN TO PANELBOARD (2 #12, 1 #12G, 3/4"C. 20A/1P CB UNO)	-	
	DUPLEX RECEPTACLE ON EMERGENCY CIRCUIT	18" AFF		THREE SINGLE POLE DEVICE CIRCUIT NUMBERS	-	
	FLOOR MOUNTED DUPLEX RECEPTACLE - FLUSH MOUNTED UNO	-		MULTI-POLE DEVICE CIRCUIT NUMBERS	-	
	SPECIAL PURPOSE RECEPTACLE (NEMA NO. AS INDICATED)	18" AFF	ELECTRICAL ABBREVIATIONS			
	JUNCTION BOX - SIZE & MOUNTING AS REQUIRED	AS REQD.	AFF	ABOVE FINISHED FLOOR	NL	NIGHT LIGHT
	MULTIOUTLET ASSEMBLY - LENGTH AND OUTLET SPACING AS INDICATED	AS NOTED	BFC	BELOW FINISHED CEILING	NO (N.O.)	NORMALLY OPEN
	TELEPHONE/DATA OUTLET, WALL MOUNTED - STUB 3/4" C. ABOVE ACCESSIBLE CEILING FROM OUTLET BOX	18" AFF	C	CONDUIT	RCPT(S)	RECEPTACLE(S)
	TELEPHONE OUTLET, WALL MOUNTED - STUB 3/4" C. ABOVE ACCESSIBLE CEILING FROM OUTLET BOX	18" AFF	CB	CIRCUIT BREAKER	PNL	PANEL
	TELEPHONE OUTLET, WALL MOUNTED - STUB 3/4" C. ABOVE ACCESSIBLE CEILING FROM OUTLET BOX	18" AFF	EC	EMPTY CONDUIT	SO (S.O.)	SPACE ONLY
	PAY TELEPHONE OUTLET, WALL MOUNTED - STUB 3/4" C. ABOVE ACCESSIBLE CEILING FROM OUTLET BOX	48" AFF	EX	EXISTING	SP	SPARE
	FLOOR MOUNTED TELEPHONE OUTLET - FLUSH MOUNTED UNO	-	F	FUSE	ST (S.T.)	SHUNT TRIP
	DATA OUTLET, WALL MOUNTED - STUB 3/4" C. ABOVE CEILING FROM OUTLET BOX	18" AFF	G	GROUND (EQUIPMENT)	SW	SWITCH
	FLOOR MOUNTED DATA OUTLET - FLUSH MOUNTED UNO	-	GFI	GROUND FAULT INTERRUPTER	UF	UNDERFLOOR
	FLOOR MOUNTED TELEPHONE/DATA OUTLET - FLUSH MOUNTED UNO	-	IC	INTERRUPTING CAPACITY	UG	UNDERGROUND
	TELEVISION OUTLET, CLG. OR WALL MOUNTED - STUB 3/4" C. ABOVE CEILING FROM OUTLET BOX	18" AFF	IG	ISOLATED GROUND	UNO(U.N.O.)	UNLESS NOTED OTHERWISE
	PUSHBUTTON	48" AFF	MTD	MOUNT OR MOUNTED	WG	WIRE GUARD
	CLOCK HANGER OUTLET 15A/125V/2P/3W/G RECEPTACLE	80" AFF	NC (N.C.)	NORMALLY CLOSED	WP	WEATHERPROOF
	DOOR HOLD OPEN	-	NF	NONFUSED		
			NIC	NOT IN CONTRACT	XFMR	TRANSFORMER
NOTES:						
1. 48" AFF INDICATES TO TOP OF DEVICE. 18" AFF INDICATES TO BOTTOM OF DEVICE. ALL OTHER MOUNTING HEIGHTS REFER TO CENTERLINE OF DEVICE.						

SPECIAL SYSTEMS LEGEND		
ALL SYMBOLS SHOWN MAY NOT APPEAR IN ALL DRAWINGS. SYMBOLS ARE SHOWN SCHEMATIC AND MAY NOT BE TO SCALE.		
SYMBOL	DESCRIPTION	MNTG. HT. UNO
	SECURITY CONTROL PANEL	AS REQD.
	KEYPAD	AS REQD.
	GLASS BREAK	AS REQD.
	360 DEGREE MOTION DETECTOR	AS REQD.
	DOOR CONTACT	AS REQD.
	OVERHEAD DOOR CONTACT	AS REQD.
	LONG RANGE MOTION DETECTOR	AS REQD.
	SECURITY CAMERA (FIXED) SEE SPECIFICATIONS	AS REQD.
	SECURITY CAMERA (PAN / TILT / ZOOM)	AS REQD.
	CARD READER	AS REQD.
	SECURITY SIREN	AS REQD.
	DIGITAL VIDEO RECORDER	AS REQD.
	VIDEO MONITOR	AS REQD.

PANEL HH										SECTION - 1									
TRIM: SURFACE VOLTS: 480Y/277 200A M.C.B.										200A CU BUSSING 3 PHASE 4 WIRE +GND									
RATED KAIC= 35K																			
DESCRIPTION	LOAD TYPE	LOAD VA	(WIRES) CONDUIT	OC/P	CCT No.	PHASE	CCT No.	OC/P	(WIRES) CONDUIT	LOAD VA	LOAD TYPE	DESCRIPTION							
LTG/RMS 3,4	C	1,050	(2#12+#12G) 1/2"C	20/1	1	A	2	20/1	(2#12+#12G) 1/2"C	1,680	C	LTG/PARKING/1ST FLOOR							
LTG/EXTERIOR	C	1,278	(2#12+#12G) 1/2"C	20/1	3	B	4	20/2	(2#10, #10G) 3/4"C	836	C	LTG/PARKING/2ND FLOOR							
LTG/BRIDGE+WALKWAY	C	1,200	(2#12+#12G) 1/2"C	20/1	5	A	6			836	C								
LTG/DECO/EXTERIOR	C	2,346	(2#12+#12G) 1/2"C	20/1	7	A	8	20/1	(2#12+#12G) 1/2"C	160	C	LTG/STAIRS							
SPARE				20/1	9	B	10	20/1				SPARE							
SPARE				20/1	11	C	12	20/1				SPARE							
SPARE				20/1	13	A	14	20/1				SPARE							
SPARE				20/1	15	B	16	20/1				SPARE							
SPARE				20/1	17	C	18	125/3	(3#1+#6G) 1 1/2"C	20,040		TRANSFORMER "TLL"							
SPARE				20/1	19	A	20			19,960									
SPARE				20/1	21	B	22			15,400									
SPARE				20/1	23	C	24	20/1				SPARE							
SPACE					25	A	26					SPACE							
SPACE					27	B	28					SPACE							
SPACE					29	C	30					SPACE							
SPACE					31	A	32					SPACE							
SPACE					33	B	34					SPACE							
SPACE					35	C	36					SPACE							
SPACE					37	A	38					SPACE							
SPACE					39	B	40					SPACE							
SPACE					41	C	42					SPACE							

TOTAL PER PHASE  
A 25196 -17%  
B 17514 19%  
C 22076 -2%

LOAD TYPE  
CONNECTED LOAD  
DEMAND FACTOR  
DEMAND LOAD  
LIGHTING 9,386 125% 11,733  
RECEPTACLES 0 100% 0  
KITCHEN EQUIP. 0 100% 0  
AIR CONDITION 0 100% 0  
HEAT (ELECTRIC) 0 0% 0  
NON-CONTINUOUS 55,400 100% 55,400  
LARGEST MOTOR 25% 0  
TOTAL VA 64,786 67,133  
AMPERES 78 81

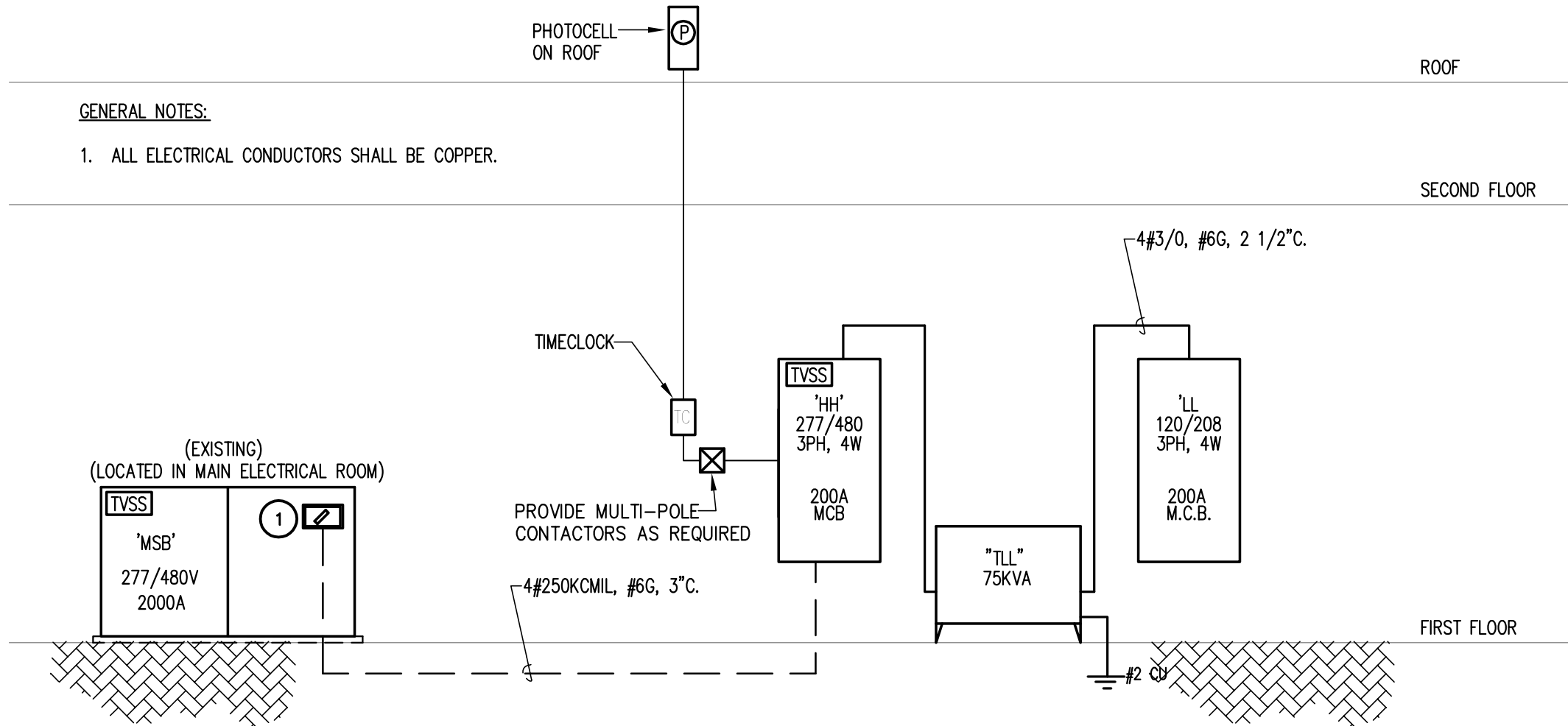
NOTES:  
ALL BREAKERS SHALL BE BOLT-ON TYPE BREAKERS.  
ALL HEATING, AIR CONDITIONING AND REFRIG. CIRCUITS SHALL HAVE HACR TYPE BREAKERS.

PANEL LL										SECTION - 1									
TRIM: SURFACE VOLTS: 208Y/120 200A M.C.B.										200A CU BUSSING 3 PHASE 4 WIRE +GND									
RATED KAIC= 25K																			
DESCRIPTION	LOAD TYPE	LOAD VA	(WIRES) CONDUIT	OC/P	CCT No.	PHASE	CCT No.	OC/P	(WIRES) CONDUIT	LOAD VA	LOAD TYPE	DESCRIPTION							
RCPT/RV CONNECTION		4,160	(2#6+#10G) 1"C	50/2	1	A	2	20/1	(2#10+#10G) 3/4"C	600		J-BOX/GATE CARD READER							
		4,160			3	B	4	20/1	(2#10+#10G) 3/4"C	1,800		J-BOX/ACCESS GATE							
RCPT/RV CONNECTION		4,160	(2#6+#10G) 1"C	50/2	5	C	6	20/1	(2#10+#10G) 3/4"C	600		J-BOX/GATE CAR READER							
		4,160			7	A	8	20/1	(2#10+#10G) 3/4"C	1,800		J-BOX/ACCESS GATE							
RCPT/RV CONNECTION		4,160	(2#6+#10G) 1"C	50/2	9	B	10	20/1	(2#12+#12G) 1/2"C	1,800		J-BOX/OVHD DOOR							
		4,160			11	C	12	20/1	(2#12+#12G) 1/2"C	800	R	RCPTS/STORAGE							
RCPT/RV CONNECTION		4,160	(2#6+#10G) 1"C	50/2	13	A	14	20/1	(2#12+#12G) 1/2"C	1,000	R	RCPTS/ELEC+EXTR+WALKWAY							
		4,160			15	B	16	20/1	(2#12+#12G) 1/2"C	1,800		FIRE ALARM REMOTE PANEL							
RCPT/IT/TELECOM		1,800	(2#12+#12G) 1/2"C	20/1	17	C	18	20/1	(2#12+#12G) 1/2"C	1,800		RCPT/IT/TELECOM							
SPARE				20/1	19	A	20	30/2	(2#10+#10G) 3/4"C	2,080	H	MSF-A/MCU-A							
SPARE				20/1	21	B	22			2,080	H								
SPARE				20/1	23	C	24	30/2	(2#10+#10G) 3/4"C	2,080	H	MSF-A/MCU-A							
SPARE				20/1	25	A	26			2,080	H								
SPARE				20/1	27	B	28	20/1				SPARE							
SPARE				20/1	29	C	30	20/1				SPARE							
SPARE				20/1	31	A	32	20/1				SPARE							
SPARE				20/1	33	B	34	20/1				SPARE							
SPARE				20/1	35	C	36	20/1				SPARE							
SPARE				20/1	37	A	38	20/1				SPARE							
SPARE				20/1	39	B	40	20/1				SPARE							
SPARE				20/1	41	C	42	20/1				SPARE							

TOTAL PER PHASE  
A 20040 -9%  
B 19960 -8%  
C 15400 17%

LOAD TYPE  
CONNECTED LOAD  
DEMAND FACTOR  
DEMAND LOAD  
LIGHTING 0 125% 0  
RECEPTACLES 1,800 100% 1,800  
KITCHEN EQUIP. 0 100% 0  
AIR CONDITION 0 0% 0  
HEAT (ELECTRIC) 8,320 100% 8,320  
NON-CONTINUOUS 45,280 100% 45,280  
LARGEST MOTOR 25% 0  
TOTAL VA 55,400 55,400  
AMPERES 154 154

NOTES:  
ALL BREAKERS SHALL BE BOLT-ON TYPE BREAKERS.  
ALL HEATING, AIR CONDITIONING AND REFRIG. CIRCUITS SHALL HAVE HACR TYPE BREAKERS.

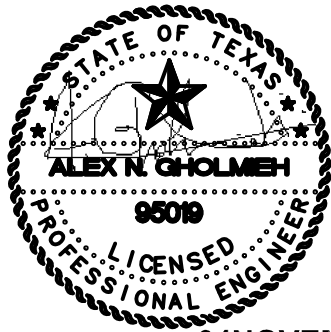


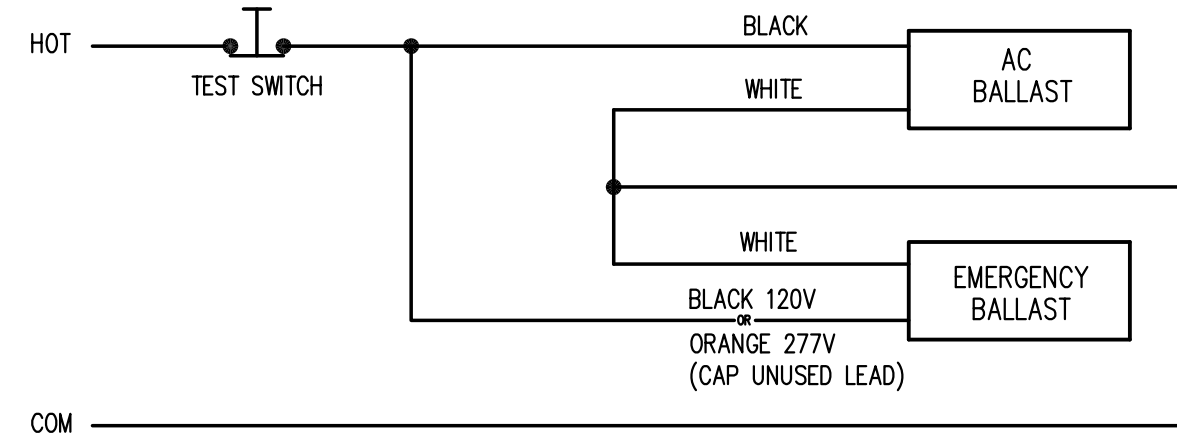
#### LEGEND NOTES

- ① FURNISH AND INSTALL 3P/200A CIRCUIT BREAKER IN EXISTING SWITCHBOARD "MSB" (LOCATED IN THE MAIN ELECTRICAL ROOM). NEW CIRCUIT BREAKER SHALL BE UL LISTED AND SHALL HAVE AN AIC RATING TO MATCH EXISTING SWITCHBOARD. CONNECT AND WIRE AS SHOWN ON PLANS. VERIFY EXISTING SWITCHBOARD LOAD PER LATEST NEC CODE PRIOR TO NEW CONNECTION. FIELD VERIFY EXISTING CONDITIONS. NOTIFY ENGINEER OF ANY DISCREPANCIES PRIOR TO BID.

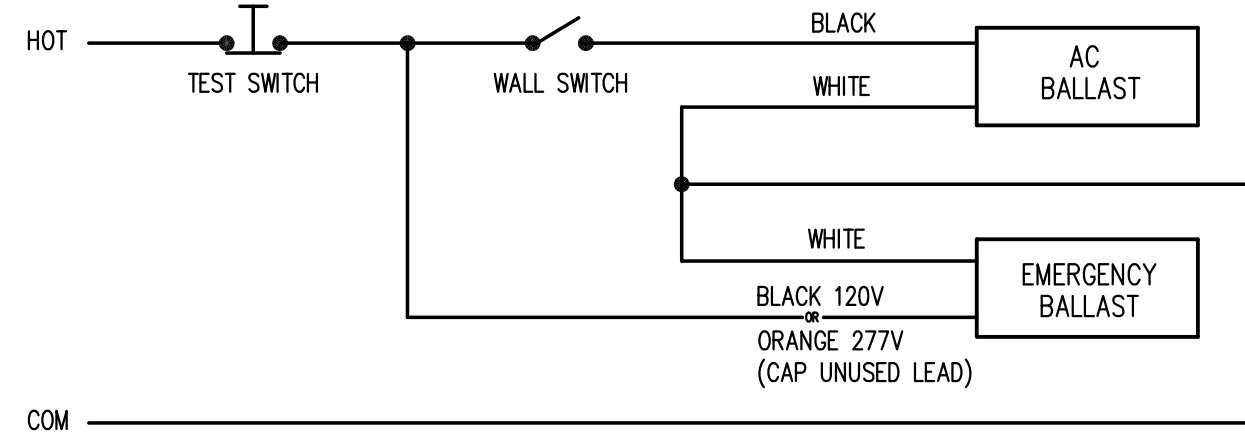
LOAD ANALYSIS		
EXISTING SWITCHBOARD "MSB" 2000 AMP, 480/277V, 3Ø, 4WIRE		
CATEGORY	CONNECTED	DEMAND
EXISTING LOAD	997.6 KVA	1247.0 KVA
LIGHTING	9.4 KVA	11.7 KVA
RECEPTACLES	1.8 KVA	1.8 KVA
ELECTRIC HEATING	8.3 KVA	8.3 KVA
MISC.	45.3 KVA	45.3 KVA
TOTAL LOAD		1314.1 KVA
TOTAL AMPS		1580.7 A

#### 01 ELECTRICAL RISER DIAGRAM NOT TO SCALE

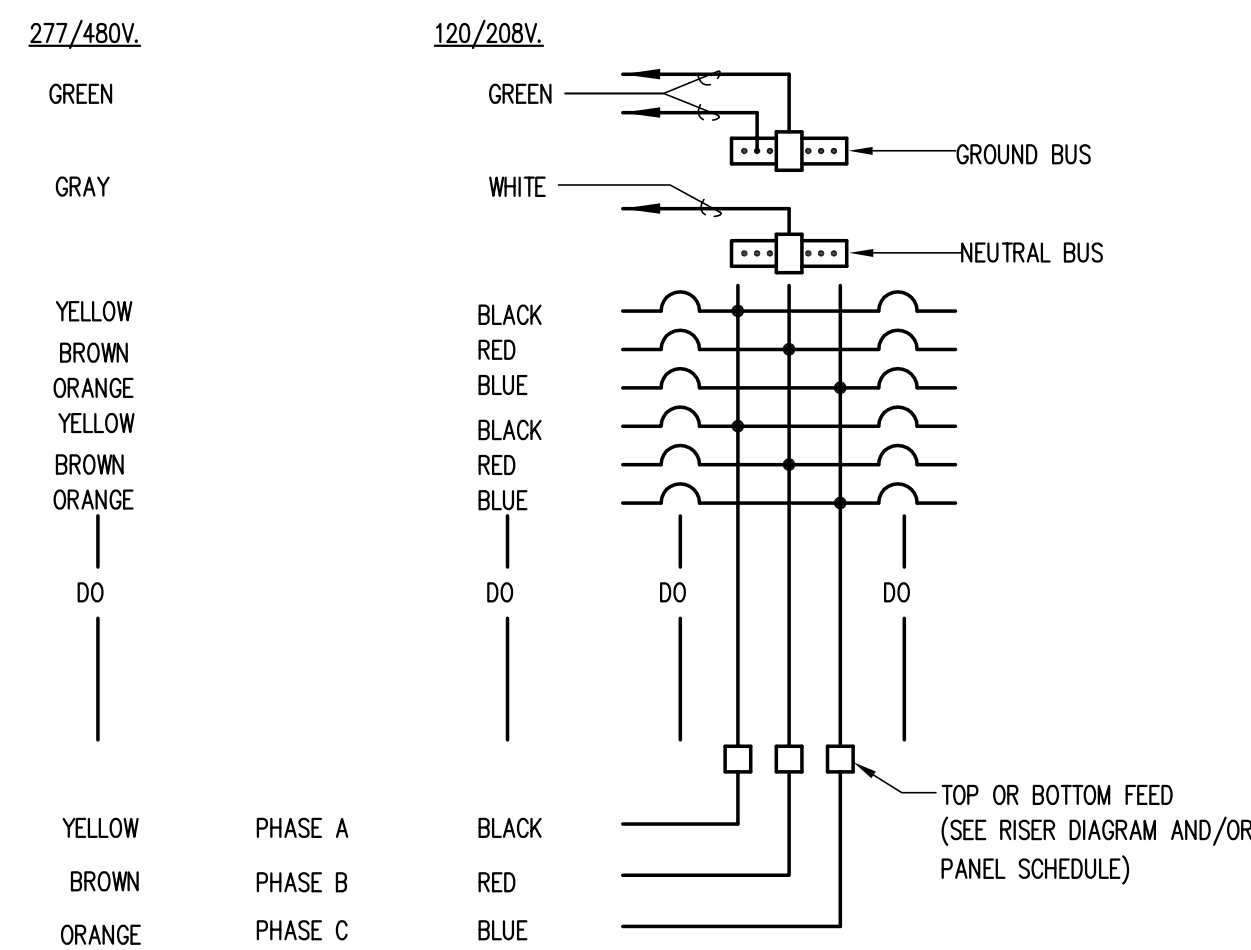




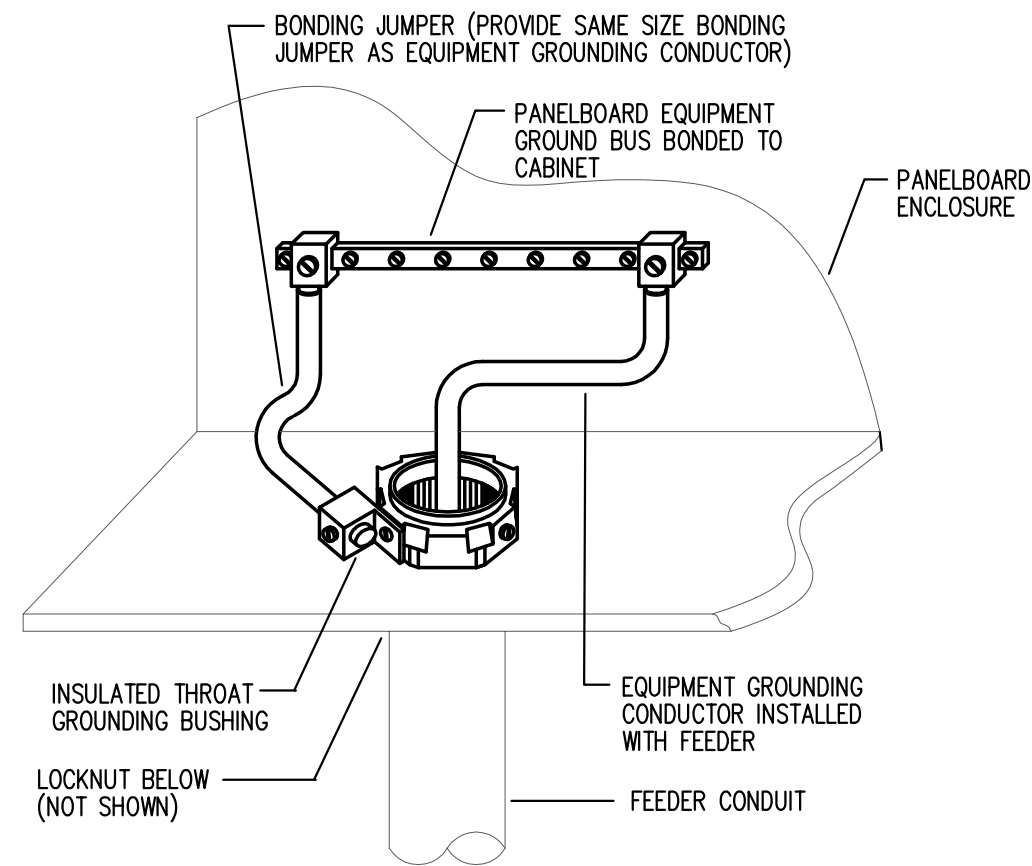
06 UNSWITCHED EMERGENCY BALLAST  
NO SCALE



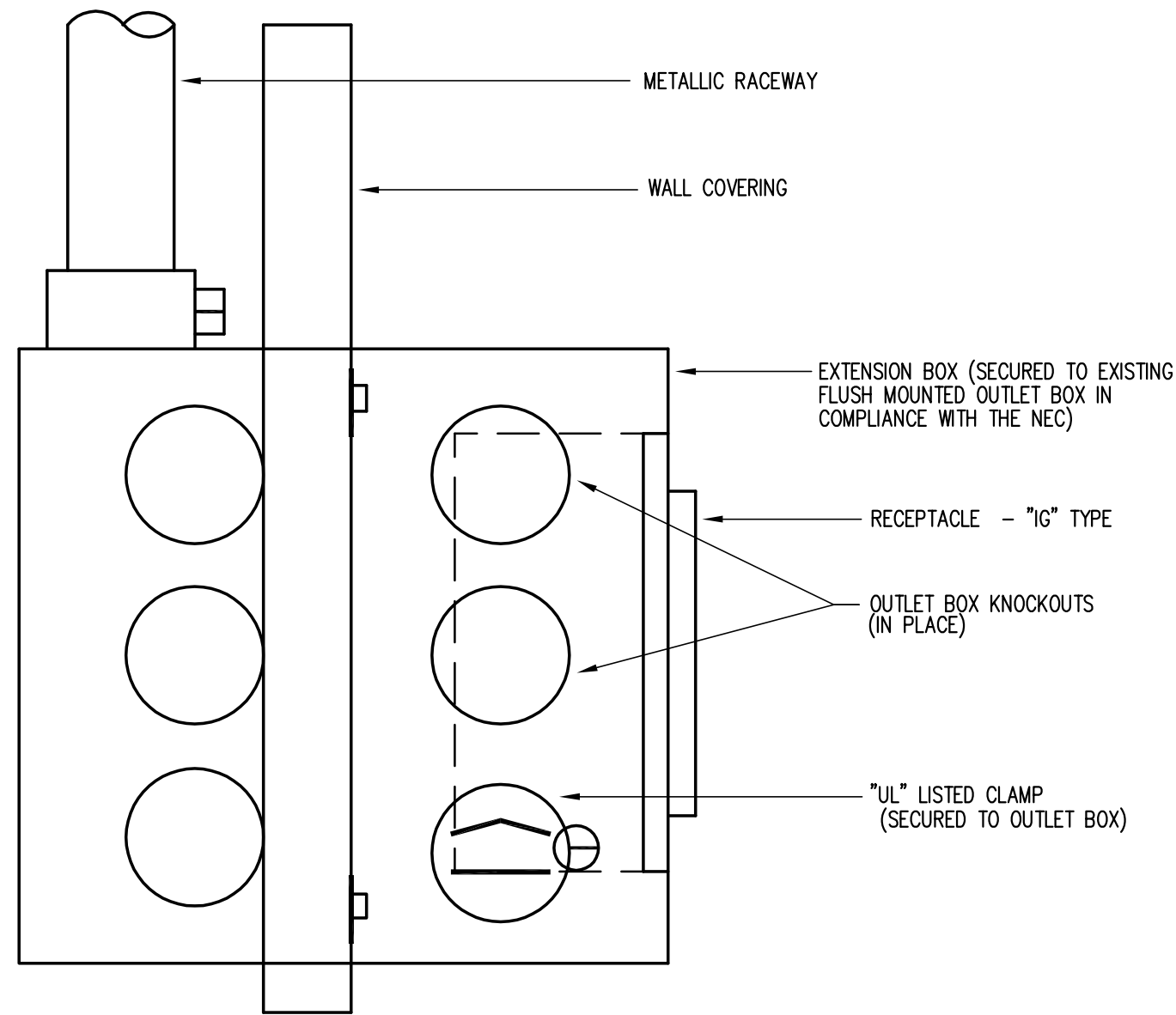
07 SWITCHED EMERGENCY BALLAST  
NO SCALE



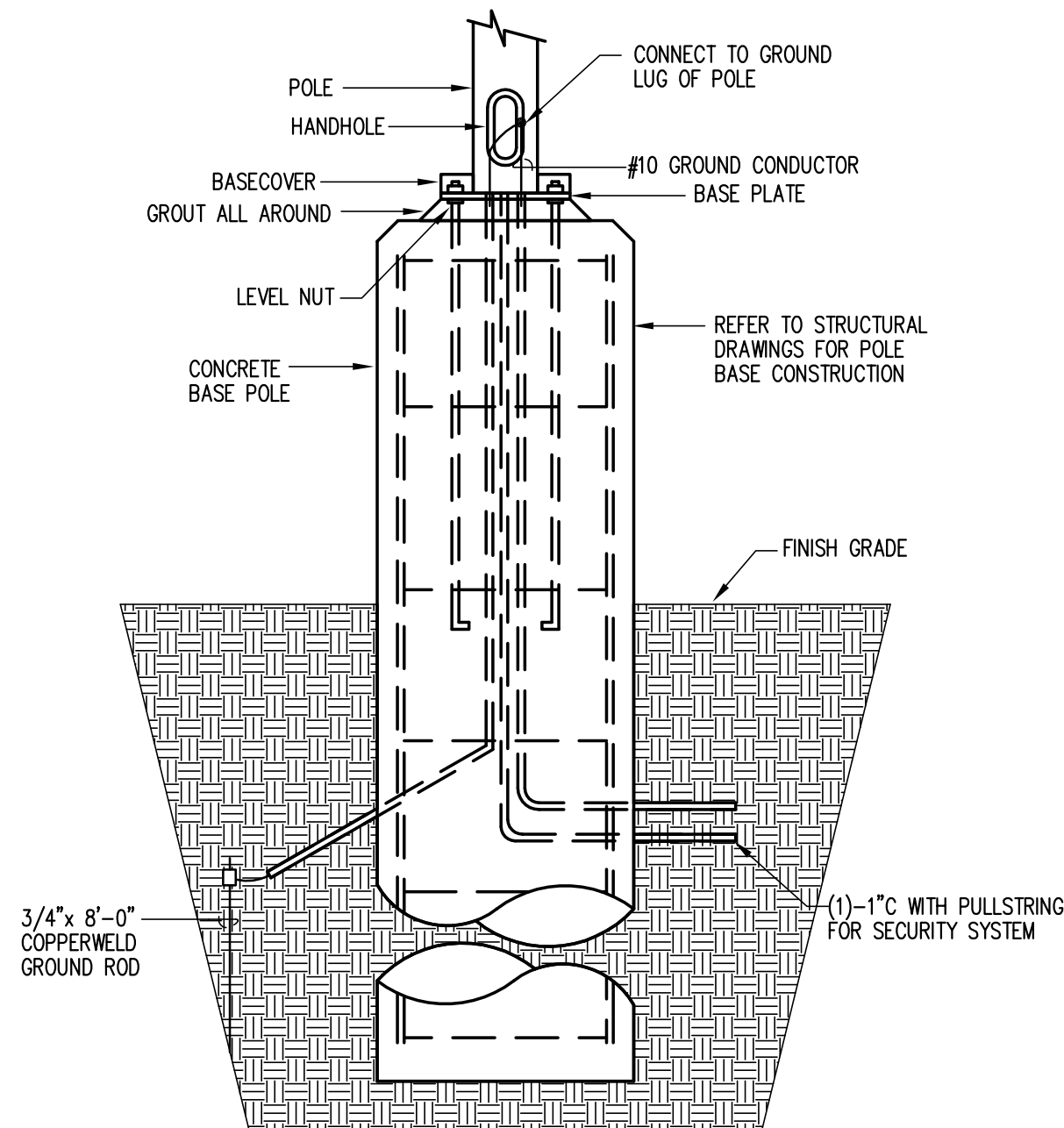
08 TYPICAL PANEL COLOR CODE DETAIL  
NO SCALE



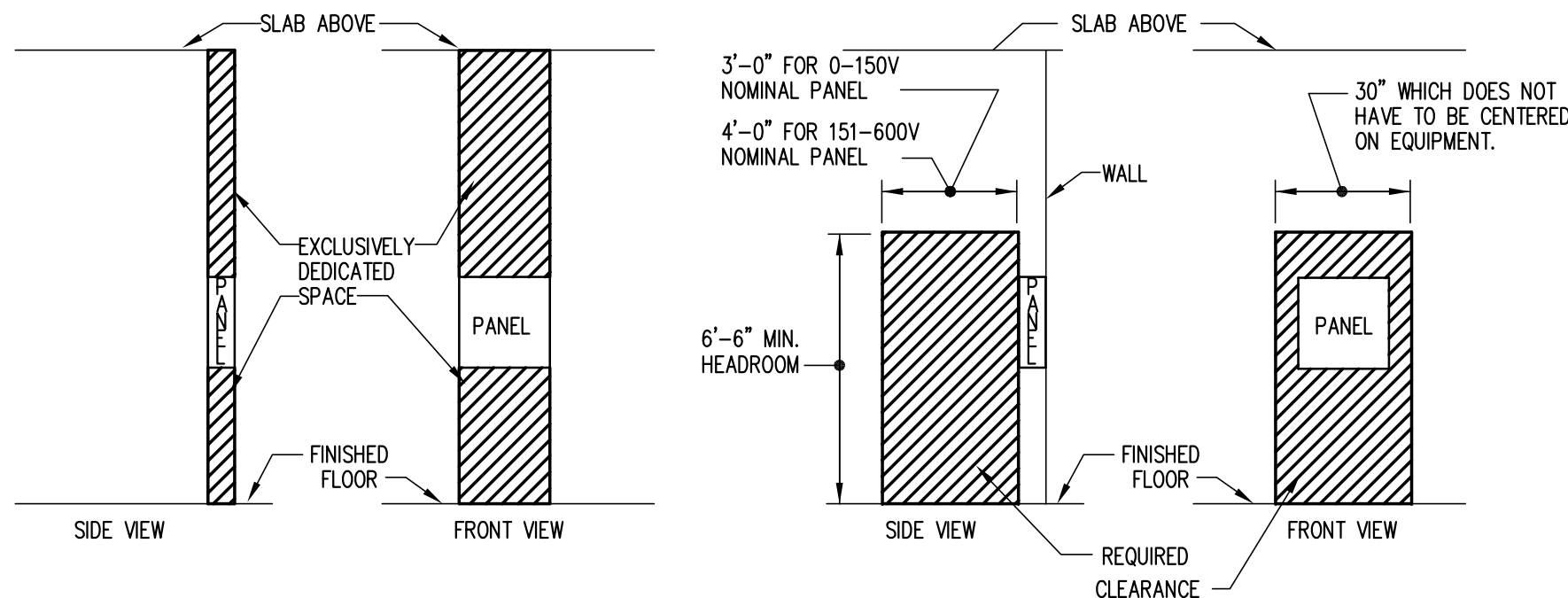
09 PANELBOARD BONDING DETAIL  
NO SCALE



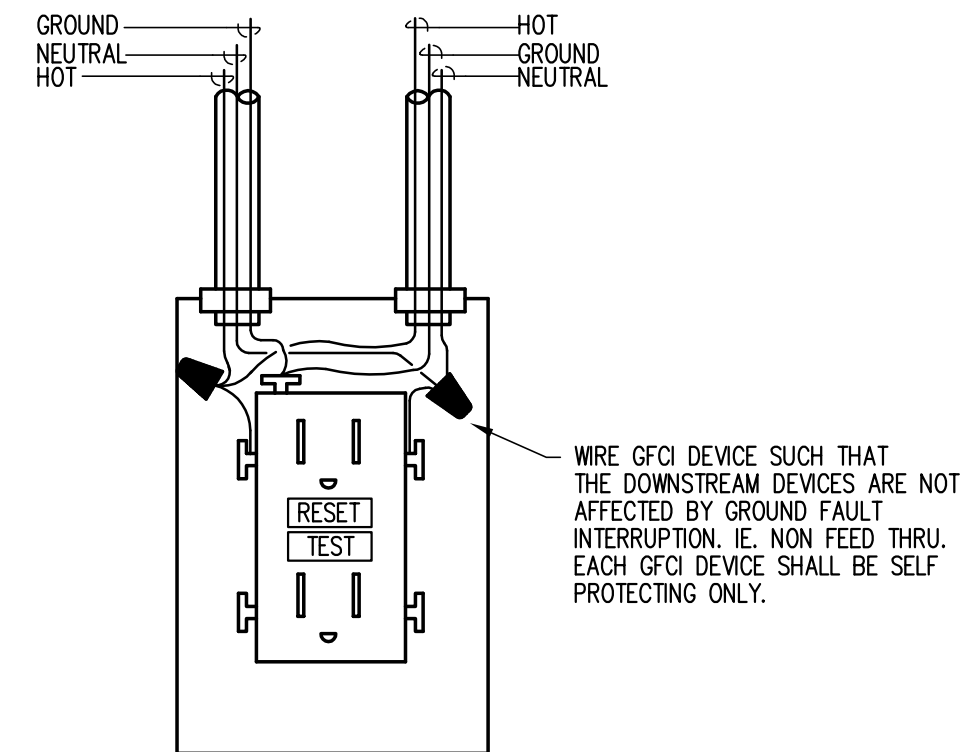
03 TELEPHONE SWITCH FLUSH MOUNTED  
OUTLET BOX / RECEPTACLE DETAIL  
NO SCALE



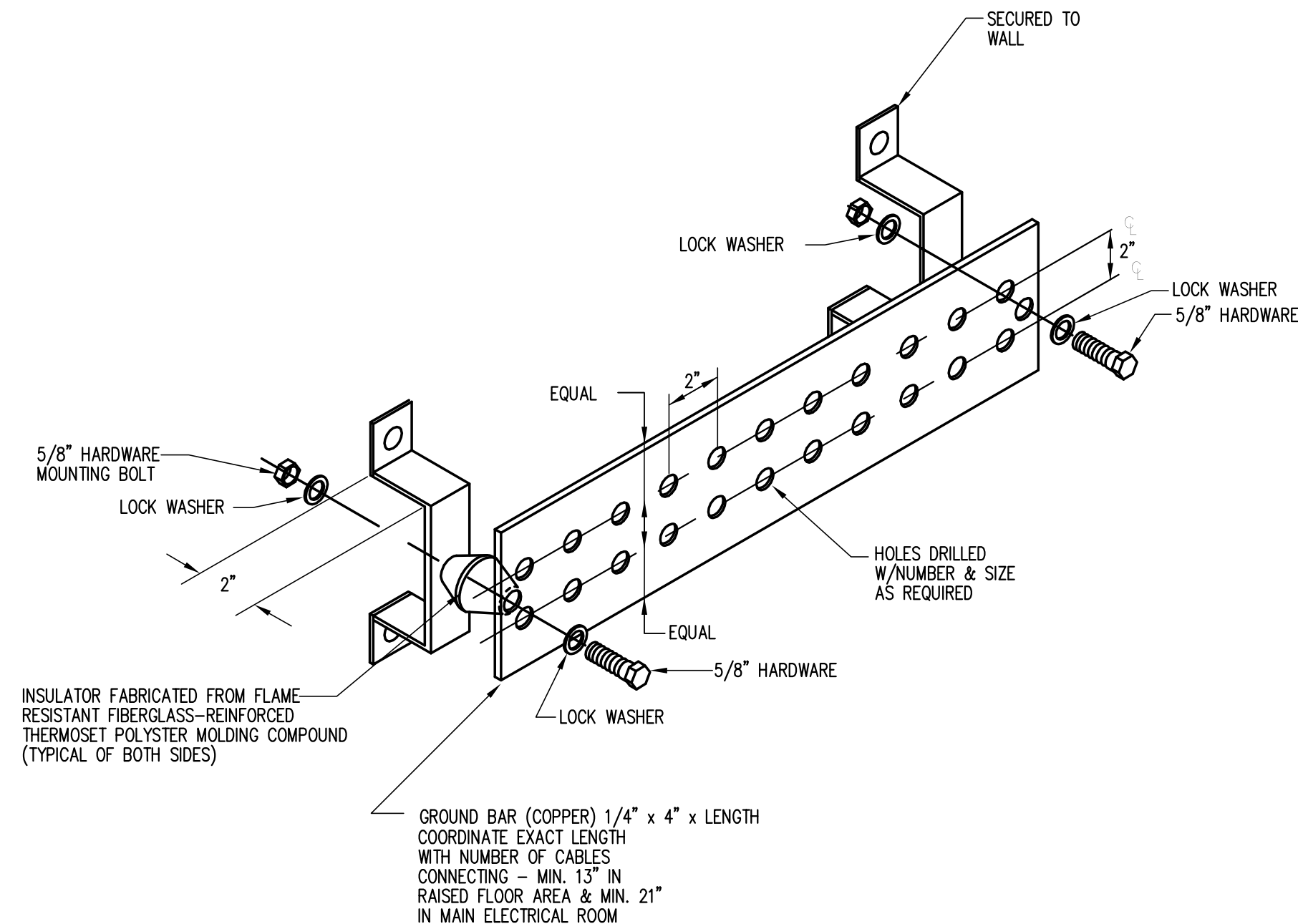
04 PARKING LOT LIGHT POLE BASE DETAIL  
NO SCALE



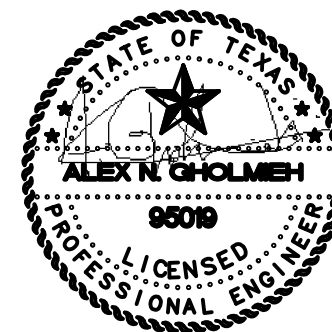
05 TYPICAL PANELBOARD REQUIRED CLEARANCE  
NO SCALE



01 GFCI RECEPTACLE - WIRING DIAGRAM  
NO SCALE

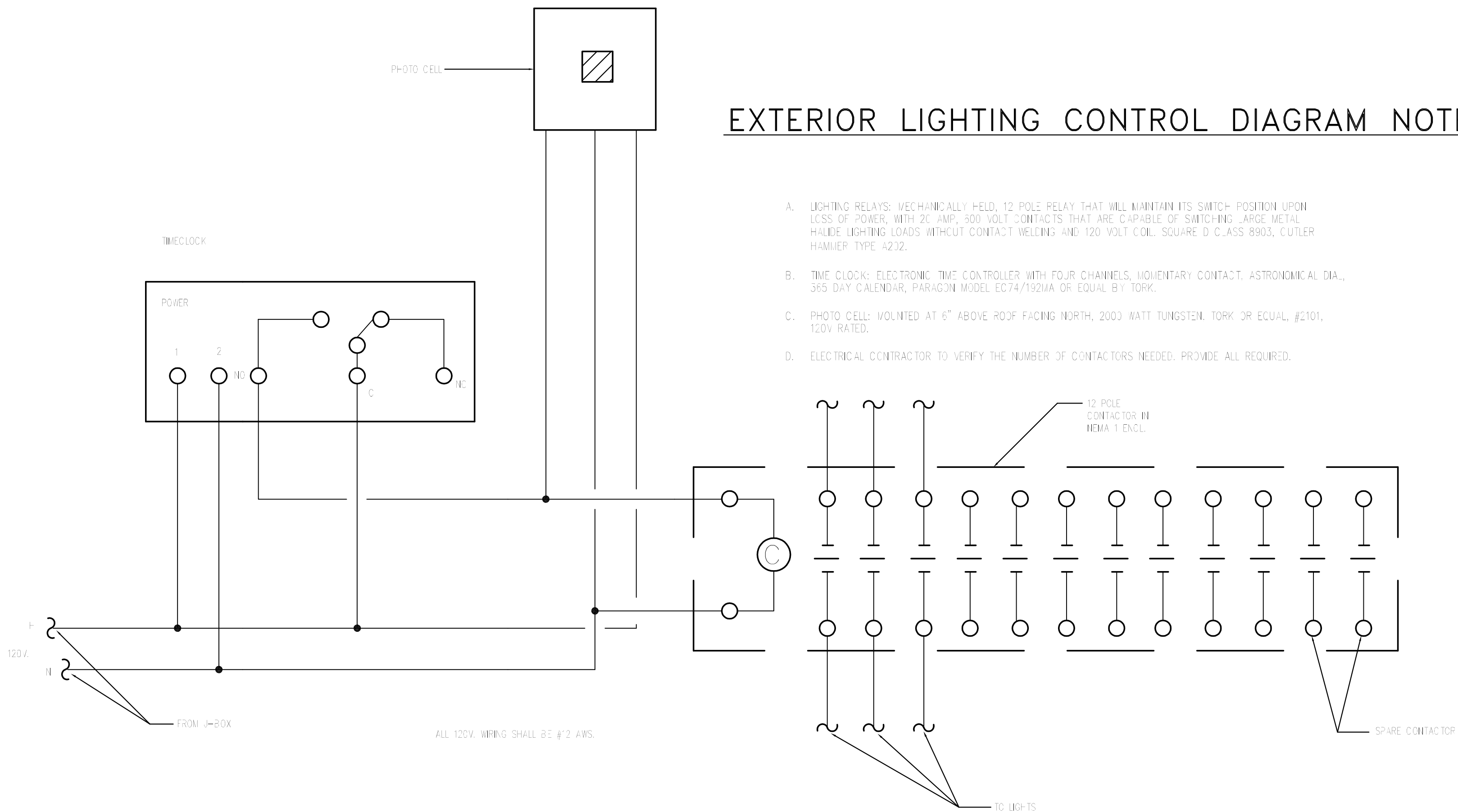


02 WALL MOUNTED SINGLE-POINT GROUND BAR DETAIL  
NO SCALE

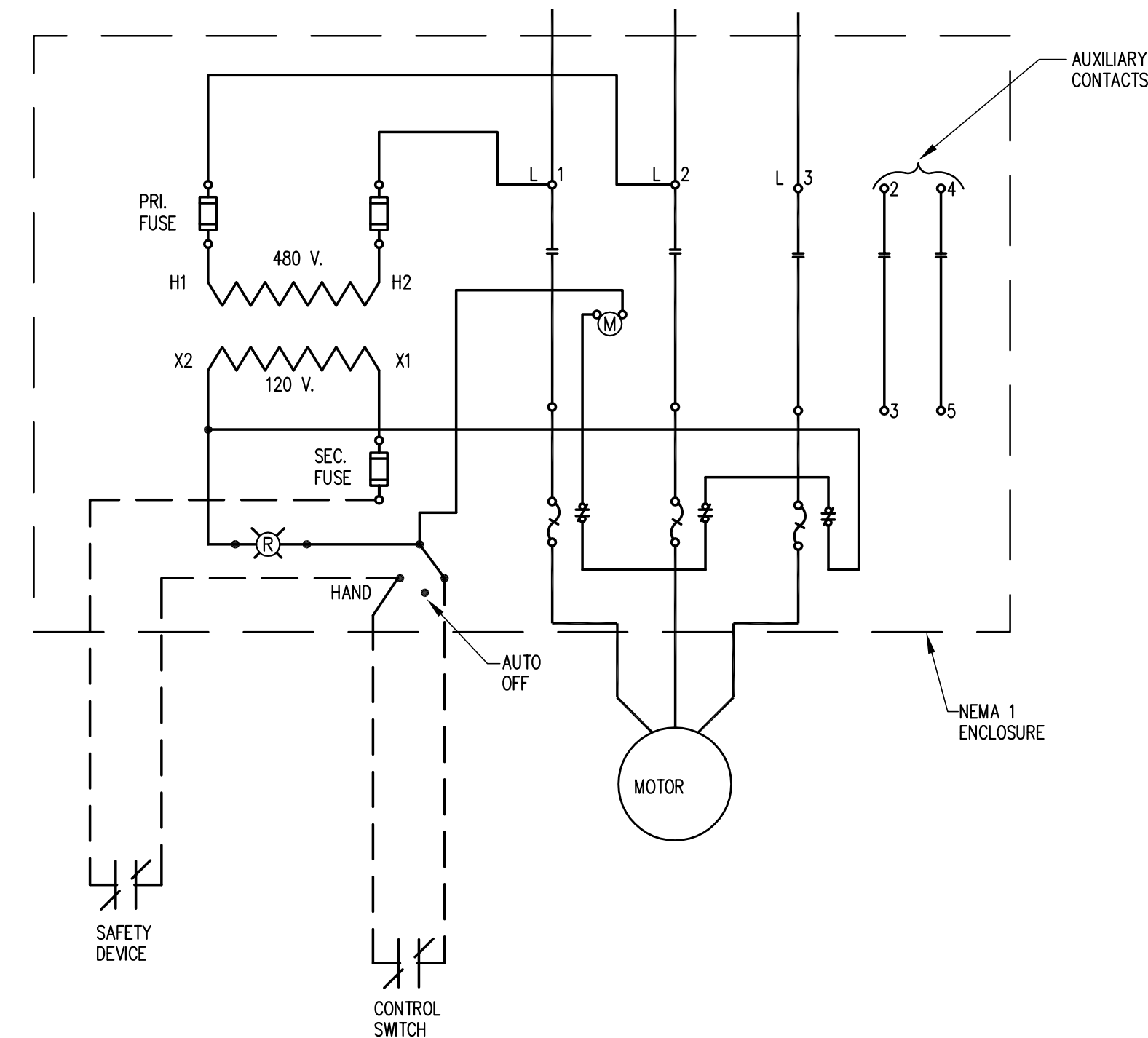


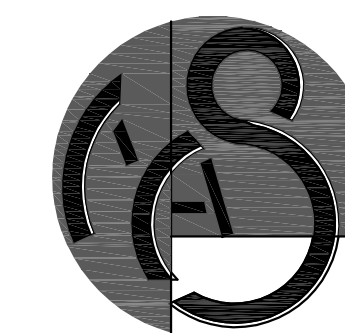
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TEXAS REGISTERED ENGINEERING FIRM F-6580  
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03 EXTERIOR LIGHTING CONTROL DIAGRAM  
NO SCALE





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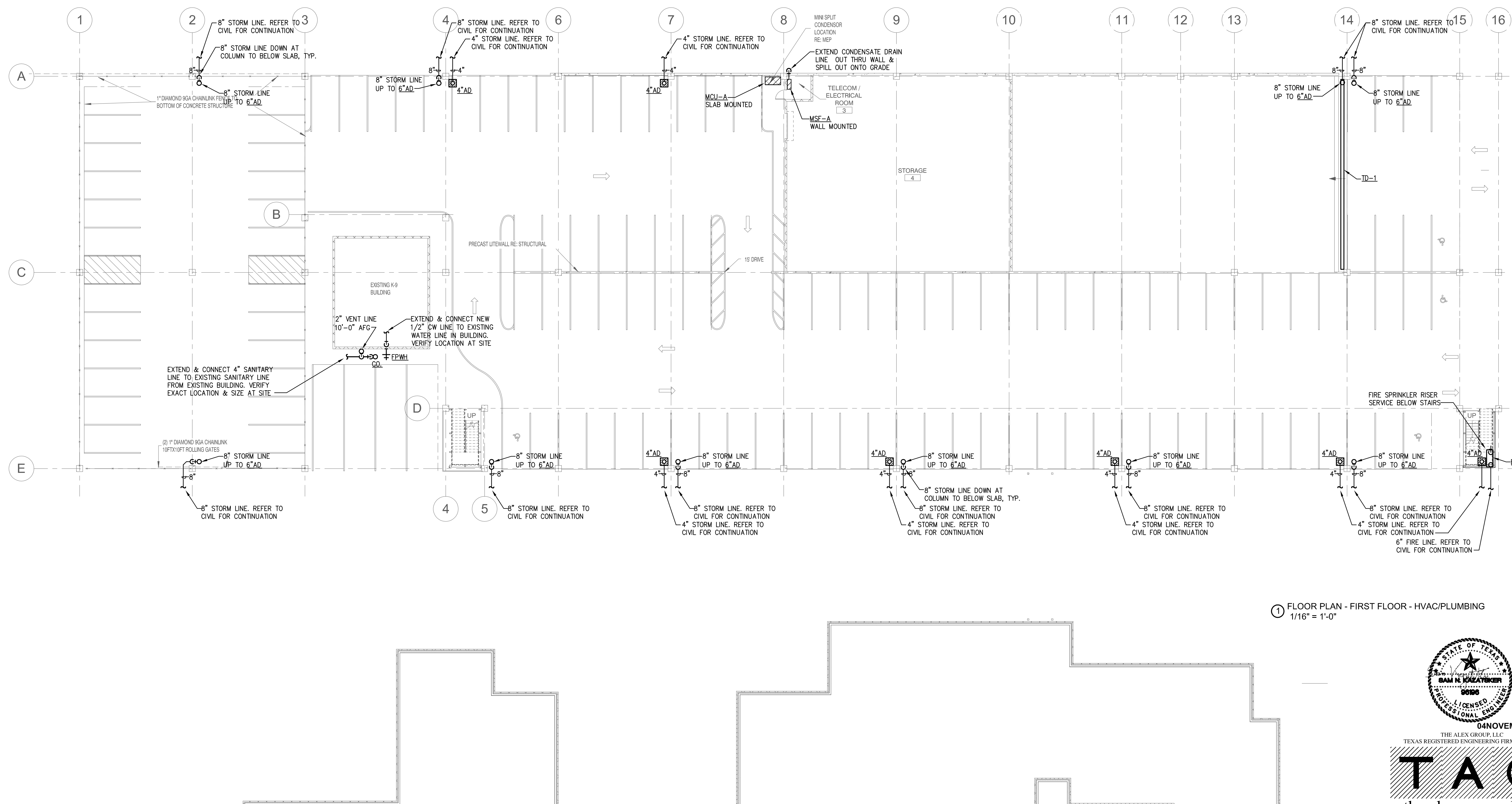
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215031

DATE  
NOVEMBER 04, 2016

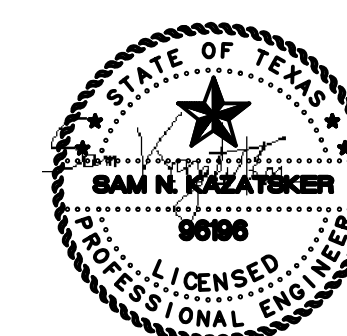
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SHEET

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OF

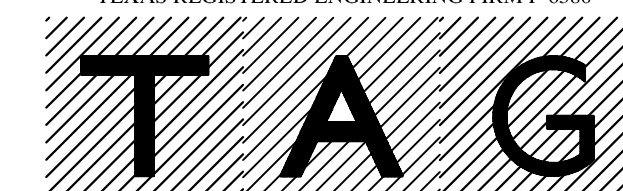


① FLOOR PLAN - FIRST FLOOR - HVAC/PLUMBING  
1/16" = 1'-0"



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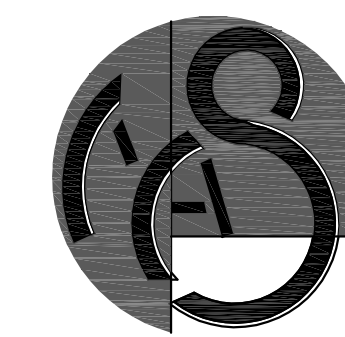
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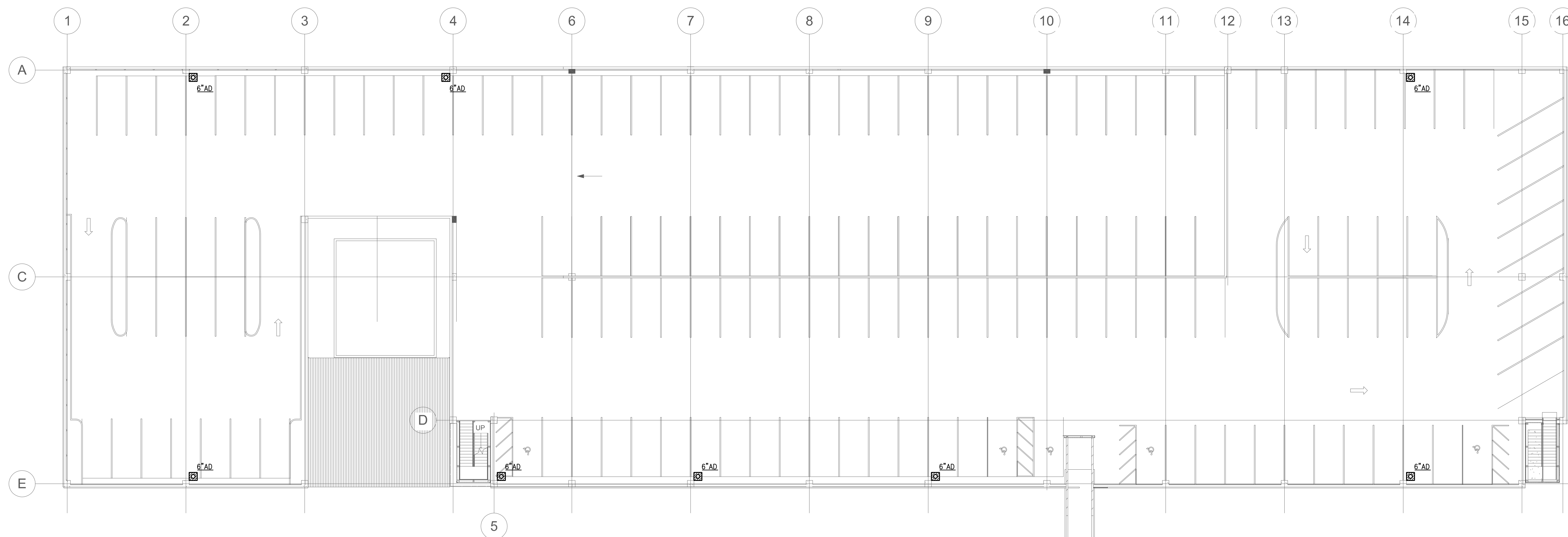
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DATE  
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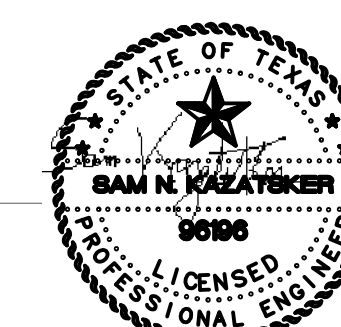
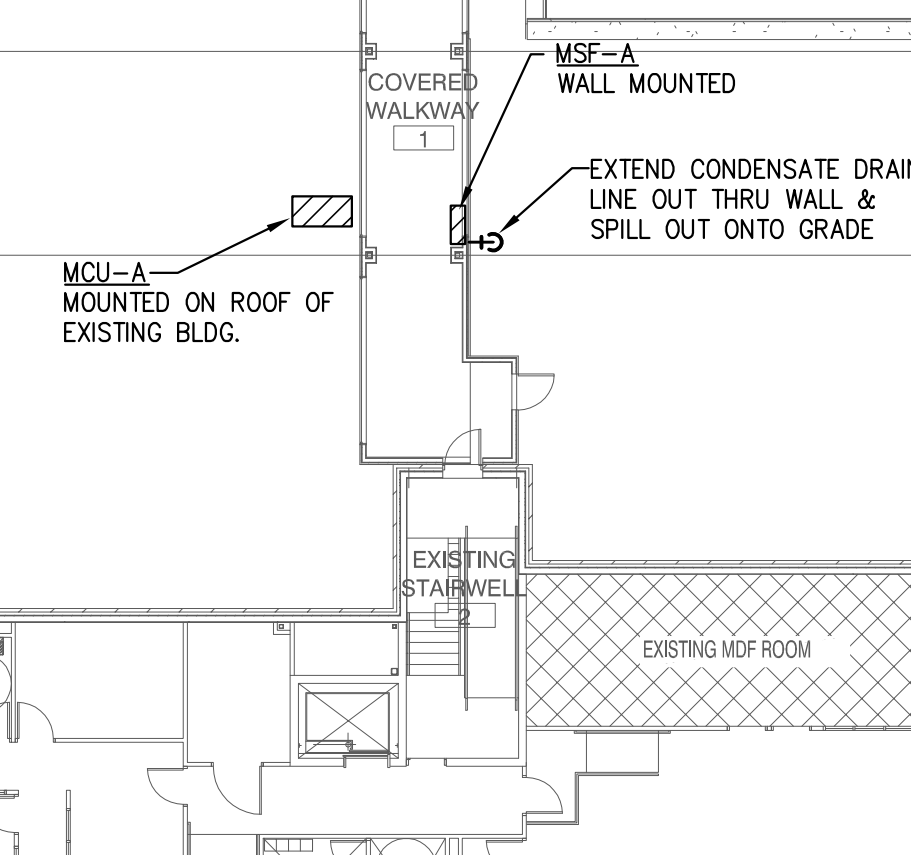
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SHEET

MP1.1  
OF

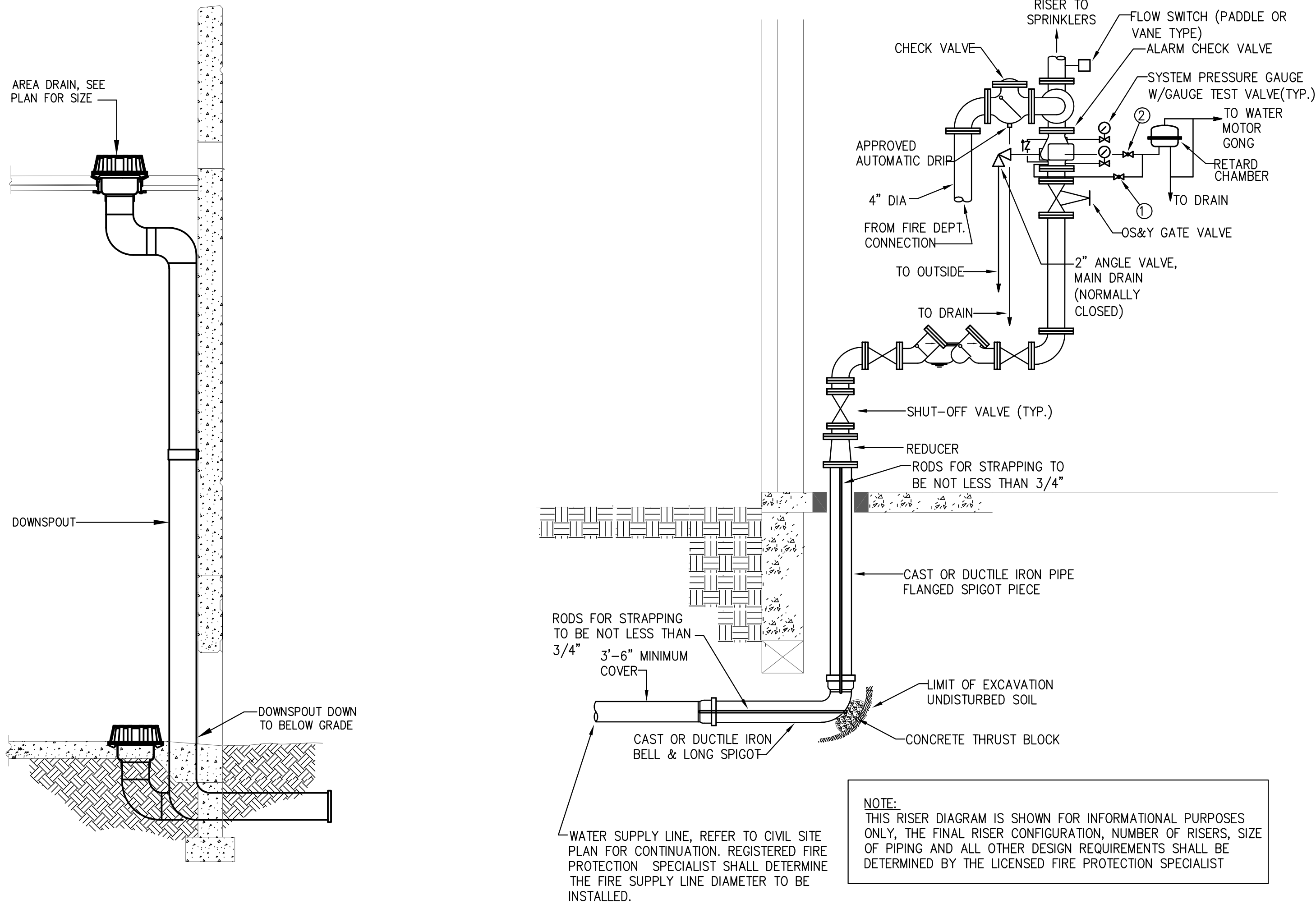


1 FLOOR PLAN - SECOND FLOOR - HVAC/PLUMBING  
1/16" = 1'-0"



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01 AREA DRAIN DETAIL  
SCALE:N.T.S.

02 AUTOMATIC SPRINKLER SYSTEM  
SCALE:N.T.S.

#### GENERAL NOTES – PLUMBING

- CONTRACTOR SHALL COMPLY WITH ALL LOCAL, STATE, AND FEDERAL CODES AND AUTHORITIES HAVING JURISDICTION AND MAKE FINAL CONNECTIONS TO ALL FIXTURES AND EQUIPMENT.
- ALL STORM PIPING SHALL BE PVC MUST BE SUPPORTED PROPERLY IN ACCORDANCE WITH LOCAL CODES.
- CONTRACTOR SHALL COORDINATE WITH STRUCTURAL CONDITIONS AT THE SITE AND PROVIDE PROPER ROUGH-IN CONNECTIONS AS REQUIRED.
- CONTRACTOR SHALL COORDINATE PLUMBING PIPING WITH ALL OTHER TRADES PRIOR TO INSTALLATION OF ANY PIPING.
- IF VARIATIONS ARE FOUND FROM THAT SHOWN ON THE DRAWINGS, NOTIFY THE ARCHITECT IMMEDIATELY.
- CONTRACTOR SHALL VERIFY, AT SITE, THE EXACT LOCATIONS FOR MAKING FINAL CONNECTIONS, PRIOR TO TURNING IN FINAL BID. CONNECTIONS TO PIPING, INCLUDING PIPE ROUTING MODIFICATIONS, WHEN REQUIRED, SHALL BE INCLUDED IN THE BID.
- FIXTURE MANUFACTURER SHALL BE EQUAL TO THOSE LISTED.
- PROVIDE ALL CARRIERS AND SUPPORT MATERIALS REQUIRED FOR A SOLID, SECURE INSTALLATION.
- PROVIDE ALL DRAIN COVERS, ESCUTCHEONS, AND MISCELLANEOUS TRIM ITEMS FOR A NEAT APPEARANCE.
- ALL MOUNTING HEIGHTS SHALL BE VERIFIED WITH THE ELEVATIONS SHOWN ON THE ARCHITECTURAL PLANS.
- DO NOT SCALE PLUMBING DRAWINGS. REFER TO DIMENSIONED DRAWINGS OF THE ARCHITECT OR OTHER TRADES FOR EXACT LOCATIONS OF FIXTURES, EQUIPMENT, ETC.

A/C UNIT SCHEDULE		
<b>GENERAL</b>		
DESIGN MANUFACTURER	LG	
<b>INDOOR FAN/COIL UNIT</b>		
DESIGNATION	MSF-A	
TYPE	HIGH WALL	
SEER	13	
MODEL	LSN246HE	
UNIT MOCP	0.25	
UNIT MCA	15	
COOLING CAPACITY BTU	22,500	
DEHUMIDIFICATION (PTS/HR)	6.6	
AIR FLOW	530 CFM	
WEIGHT	28.6 LBS	
REFRIGERANT	R-410A	
<b>CONDENSING UNIT</b>		
DESIGNATION	MCU-A	
TYPE	COOLING ONLY	
MODEL	LSU246HE	
VOLT/PHASE	208-1	
COND UNIT MOCP	30	
COND UNIT MCA	20	
WEIGHT	169 LBS	
<b>NOTES</b>		
DIGITAL WIRED WALL THERMOSTAT #PYRCUCA0A WITH LOCKABLE COVER CONDENSER MOUNTING BRACKET. INTEGRAL CONDENSATE PUMP		

PLUMBING FIXTURE SCHEDULE		
ITEM	DESCRIPTION	MANUFACTURER & MODEL
AD	CAST IRON AREA DRAIN	JOSAM SERIES 37900-19-VP-84
FPWH	FREEZEPROOF WALL HYDRANT	WOODFORD 65 SERIES
TD-1	ABT, POLYDRAIN, PRE-SLOPED PRE-MFG TRENCH DRAIN SYSTEM, 4" DEEP AND 39.2" IN LENGTH EACH SECTION, OVERALL LENGTH TO BE 60'-8" IN LENGTH. PROVIDE LOAD CLASS D WITH DUCTILE IRON #512AF FRAME AND GRATE ASSEMBLY FOR TRAFFIC.	
<b>NOTES:</b>		
1. FIXTURE MANUFACTURER SHALL BE EQUAL TO THOSE LISTED.		
2. PROVIDE ALL CARRIERS AND SUPPORT MATERIALS REQUIRED FOR A SOLID, SECURE INSTALLATION.		
3. PROVIDE ALL DRAIN COVERS, ESCUTCHEONS, AND MISCELLANEOUS TRIM ITEMS FOR A NEAT APPEARANCE.		

#### MECHANICAL SPECIFICATIONS – DIVISION 15

##### 15050 – BASIC MECHANICAL MATERIALS AND METHODS

- PROVIDE ALL EQUIPMENT, MATERIALS, LABOR, SUPERVISION, AND SERVICES NECESSARY FOR OR INCIDENTAL TO THE INSTALLATION OF COMPLETE AND OPERATING MECHANICAL SYSTEMS AS SHOWN ON THE DRAWINGS. PROPER PRECAUTIONS SHALL BE TAKEN TO PROTECT ALL EXISTING PROPERTY WITH WHICH WORK COMES IN CONTACT OR OVER WHICH MATERIALS, EQUIPMENT, DEBRIS, ETC. MAY BE TRANSPORTED, HOISTED, OR MOVED. ALL DAMAGE RESULTING FROM THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE LANDLORD.
- MATERIALS AND/OR EQUIPMENT FAILING TO GIVE SATISFACTORY SERVICE DURING A ONE YEAR MATERIALS AND LABOR WARRANTY PERIOD SHALL BE REPAIRED OR REPLACED WITH NEW. COMPLETE WITH A TABLE OF CONTENTS.
- NOTIFY AND COORDINATE WITH THE BUILDING LANDLORD FOR APPROVAL AND SCHEDULING OF ANY BUILDING OR EXISTING TENANT SYSTEM INTERRUPTION.
- ALL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S PUBLISHED RECOMMENDATIONS FOR THE SERVICE INTENDED. THE INSTALLATION OF ALL EQUIPMENT SHALL BE MADE BY EXPERIENCED CRAFTSMEN IN A MANNER DEMONSTRATING NEAT WORKMANSHIP.
- THE SCOPE OF WORK SHALL INCLUDE ALL MATERIAL, TOOLS, SERVICE, AND COSTS NECESSARY TO COMPLETELY INSTALL ALL MECHANICAL WORK. IT IS THE INTENT AND MEANING OF THE CONTRACT DOCUMENTS THAT THE MECHANICAL SYSTEM BE INSTALLED COMPLETE INCLUDING ALL ITEMS AND APPURTENANCES NECESSARY, REASONABLE INCIDENTAL, OR CUSTOMARILY INCLUDED EVEN THOUGH EACH AND EVERY ITEM IS NOT SPECIFICALLY MENTIONED OR SHOWN.
- MATERIALS AND WORKMANSHIP SHALL COMPLY WITH THE CONTRACT DOCUMENTS AND ALL APPLICABLE CODES AND STANDARDS WHICH INCLUDE ALL ORDINANCES, AMMENDMENTS, AND THAT DOES NOT COMPLY WITH APPLICABLE CODES AND STANDARDS, THOSE DEFECTS SHALL BE CORRECTED WITH NO CHANGE IN CONTRACT AMOUNT.
- THE CONTRACT DOCUMENTS WERE PREPARED FROM INFORMATION MADE AVAILABLE; HOWEVER, CONDITIONS SURROUNDING THE INSTALLATION OF THE WORK SHALL BE CAREFULLY INVESTIGATED PRIOR TO SUBMITTING A BID, FABRICATION OF DUCTS OR PIPING, OR PROCEEDING WITH INSTALLATION. CONFLICTS DUE TO EXISTING CONDITIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT FOR REVIEW AND RESOLUTION. UPON COMMENCEMENT OF CONSTRUCTION, IT SHALL BE UNDERSTOOD THAT THE CONDITIONS OF THE PREMISES HAVE BEEN ACCEPTED.
- COORDINATE LOCATIONS OF EXISTING EQUIPMENT (DUCTS, TERMINAL, BOXES, ETC.) WITH NEW FLOOR TO STRUCTURE PARTITIONS. RELOCATE EQUIPMENT IF REQUIRED TO MAINTAIN ADEQUATE SERVICE CLEARANCE.
- ALL EXISTING MECHANICAL EQUIPMENT AND PLUMBING FIXTURES DESIGNATED TO REMAIN SHALL BE INSPECTED PRIOR TO SUBMITTING A BID. THIS EQUIPMENT IS TO BE SERVICED, CLEANED, AND PLACED IN WORKING ORDER AS PART OF THIS WORK; THEREFORE, ALL REPAIRS, PARTS, ETC. SHALL BE INCLUDED.
- ALL MECHANICAL AND PLUMBING EQUIPMENT SHALL BE SCHEDULED OR AS APPROVED EQUAL BY THE ENGINEER.
- ALL WORK SHALL COMPLY WITH THE REQUIREMENTS OF THE AMERICANS WITH DISABILITIES ACT (ADA) AND THE TEXAS ACCESSIBILITY STANDARDS (TAS).
- ALL BIDDERS SHALL BE FAMILIAR WITH EXISTING CONDITIONS ON THE PREMISIS AND BE PREPARED TO COORDINATE WITH ALL EXISTING CONDITIONS TO BE ENCOUNTERED BY ALL TRADES. ANY EXCEPTIONS SHALL BE NOTED IN WRITING AND SHALL BE INCLUDED IN THE BID.
- IN THE EVENT OF A CONFLICT WITHIN THE CONTRACT DOCUMENTS, PROVIDE THE GREATER QUANTITY OR HIGHER QUALITY.
- MAINTAIN MINIMUM CLEARANCES ABOVE FINISHED CEILINGS TO ALLOW INSTALLATION OF MECHANICAL EQUIPMENT, DUCTS, CONDUIT, PLUMBING PIPING, FIRE SUPPRESSION PIPING, AND HANGERS AND SUPPORTS.

##### 15075 – MECHANICAL IDENTIFICATION

- ALL MAJOR EQUIPMENT SHALL BE PROVIDED WITH ENGRAVED NAMEPLATES ATTACHED WITH SCREWS. LABELS SHALL USE NOMENCLATURE FROM EQUIPMENT SCHEDULES.
- PIPING SYSTEMS SHALL BE IDENTIFIED WITH SNAP-ON PIPE MARKERS LOCATED EVERY TEN FEET. MARKERS SHALL DESIGNATE PIPE CONTENT AND FLOW DIRECTION.
- MANUFACTURED PIPE MARKERS, GENERAL: PREPRINTED, COLOR-CODED, WITH LETTERING INDICATING SERVICE AND SHOWING DIRECTION OF FLOW.
- SELF-ADHESIVE PIPE MARKERS: PLASTIC WITH PRESSURE-SENSITIVE, PERMANENT-TYPE, SELF-ADHESIVE BACK.
- ELASTIC TAPE: CONTINUOUSLY PRINTED, VINYL TAPE AT LEAST 3 MILS THICK WITH PRESSURE SENSITIVE, PERMANENT-TYPE, SELF-ADHESIVE BACK.

##### 15083 – PIPE INSULATION

- DOMESTIC HOT WATER PIPING SHALL BE INSULATED WITH 1 INCH THICKNESS PRE-FORMED GLASS FIBER PIPE INSULATION WITH WHITE ALL SERVICE JACKET.
- ALL INSULATION AND JACKET MATERIALS EXPOSED TO RETURN AIR SHALL BE SPECIFICALLY APPROVED FOR THAT APPLICATION.

##### 15110 – VALVES

- ALL VALVES SHALL BE RATED FOR THE MAXIMUM PRESSURE OF THE SYSTEM IN WHICH THEY ARE TO BE INSTALLED.
- ALL WATER SERVICE VALVES SHALL BE BALL TYPE.

##### 15140 – DOMESTIC WATER PIPING

- DOMESTIC COLD, HOT WATER PIPING AND EQUIPMENT CONDENSATE DRAIN PIPING SHALL BE TYPE L HARD COPPER WITH WROUGHT COPPER FITTINGS.
- DIELECTRIC UNIONS, FITTINGS, OR COUPLINGS SHALL BE USED WHEN DISSIMILAR METALS ARE JOINED.

##### 15150 – SANITARY, WASTE AND VENT, AND CONDENSATE PIPING

- SANITARY WASTE, VENT, AND DRAIN PIPING 2 INCHES AND LARGER SHALL BE SERVICE WEIGHT CAST IRON. PIPING BELOW THE SLAB SHALL BE HUB AND SPIGOT TYPE WITH SEALED JOINTS. PIPING ABOVE THE SLAB SHALL BE NO-HUB TYPE. VENT PIPING MAY BE SCHEDULE 40 GALVANIZED STEEL, DWV COPPER, OR SERVICE WEIGHT CAST IRON. WASTE PIPING SMALLER THAN 2 INCHES MAY BE DWV COPPER. SCHEDULE 40 PVC PIPING MAY BE USED WHERE ACCEPTED BY THE AUTHORITIES HAVING JURISDICTION; HOWEVER, PVC PIPING MAY NOT BE USED IN SPACES USED FOR RETURN AIR PLENUMS.

- PROVIDE CONDENSATE DRAIN PIPING FOR AIR CONDITIONING UNITS AS INDICATED ON PLANS AND AS REQUIRED. PIPING SHALL BE TYPE M HARD COPPER WITH BRASS FITTINGS

##### 15410 – PLUMBING FIXTURES

- PLUMBING FIXTURES AND EQUIPMENT SHALL BE PROVIDED AS AS SCHEDULED OR INDICATED AND INSTALLED COMPLETE WITH STOP VALVES, SUPPLIES, ESCUTCHEONS, AND ALL OTHER APPURTENANCES REQUIRED TO CONNECT TO ROUGH-IN PIPING AT FLOORS AND WALLS.

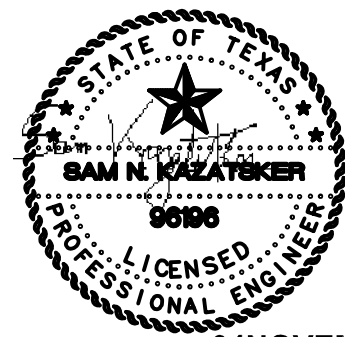
##### 15870 – MINI-SPLIT AIR CONDITIONING UNITS

###### PART 1 GENERAL

- SECTION INCLUDES
  - MINI-SPLIT AIR CONDITIONING UNITS.

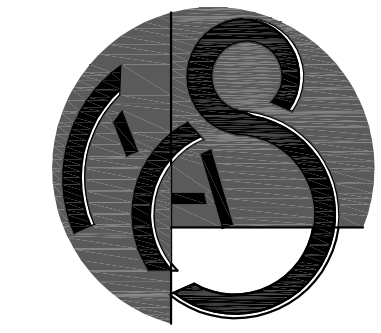
- QUALITY ASSURANCE
  - CODES AND STANDARDS

- THE HVAC EQUIPMENT PACKAGE SUPPLIED SHALL MEET MOSTSTANDARD CODES. HOWEVER, IT IS THE RESPONSIBILITY OF THE INSTALLING CONTRACTOR TO CONFORM STRICTLY TO THE LOCAL RULES AND REGULATIONS OF THE LATEST EDITIONS OF THE LOCAL CODES GOVERNING HEATING, VENTILATING AND AIR CONDITIONING INSTALLATIONS; THE FIRE MARSHALL'S RULES AND REGULATIONS; AND ANY OTHER LOCAL ORDINANCES WHICH APPLY IN CONNECTION WITH THIS WORK. IF ANY OF THE WORK SHOWN OR SPECIFIED CONFLICTS IN ANY WAY WITH ANY OF THE RULES AND REGULATIONS OF THE ABOVE, THIS CONTRACTOR SHALL MAKE SUCH CHANGES AS REQUIRED WITHOUT ADDITIONAL COST TO THE OWNER.



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