

May 21, 2019

**ADDENDUM ACKNOWLEDGEMENT FORM**

To Whom It May Concern:

Concerning the **PSJA ISD CARNAHAN, FRANKLIN, AND BUELL CENTRAL HVAC ADDITIONS TO GYMS # 18-19-052**, to be opened at 4:00 p.m., Thursday, May 23, 2019. Please consider the following:

<b>Addendum Number:</b>	<b>Description of REVISED Addendum:</b>
2	<b>QUESTIONS / ANSWERS</b> <b>REVISED BID FORM / SUBSTITUTION / ADDITION / CORRECTIONS</b> <b>ATTACHMENTS / DRAWINGS</b>

For any questions pertaining to these changes, please contact Emily Garza, Director of Purchasing at (956) 354-2000.

Sincerely,



Emily Garza  
Director of Purchasing

With the acceptance of this form, I acknowledge that I have received the above ***“ADDENDUM ACKNOWLEDGEMENT FORM”*** for the **PSJA ISD CARNAHAN, FRANKLIN, AND BUELL CENTRAL HVAC ADDITIONS TO GYMS # 18-19-052**, to be opened at 4:00 p.m., Thursday, May 23, 2019. Please include a signed copy of this ***“ADDENDUM ACKNOWLEDGMENT FORM”*** with your bid/proposal.

Company Name: _____	Authorized Signature: _____
Address: _____	Authorized Signature (Print): _____
City / State / Zip: _____	Email: _____
Telephone Number: _____	Fax Number: _____

**START COLLEGE NOW! COMPLETE EARLY! GO FAR!**

# ADDENDUM # 2

Date: May 21, 2019

**PROJECT: P S J A I. S. D.**  
**Carnahan, Franklin & Buell**  
**HVAC Additions to Gyms**  
Bid # 18-19-052

**ARCHITECT: EGV Architects, Inc.**  
220 S. Bridge  
Hidalgo, TX 78557  
(956) 843-2987



This addendum applies to work designated herein, shall be understood to be and as such shall be part and is included in the contract.

**ITEM #1 Correction, Invitation for Bid,**

- Electronic bids will be postponed to May 30, 2019 before 4:00 pm in lieu of May 23, 2019.

**ITEM #2 Questions / Requests for Substitutions**

- Refer to attached questions and answers page labeled **ATTACHMENT #1** (1 page).

**ITEM #3 Substitution, Specifications Section 00200 Bid Form**

- Substitute herein attached specification Section 00200 Bid Form labeled **ATTACHMENT #2** (3 pages) in lieu of that issued with Addendum #1, Item #4.

**ITEM #4 Substitution, Specifications Section 01030 Alternates**

- Substitute herein attached specification Section 01030 Alternates labeled **ATTACHMENT #3** (2 pages) in lieu of that issued with Addendum #1, Item #6.

**ITEM #5 Addition, Specifications Section 02830 Chain Link Fencing and Gates**

- Insert herein attached specification Section 02830 Chain Link Fencing and Gates labeled **ATTACHMENT #4** (4 pages) after section 02514.

**ITEM #6 Addition, Specifications Section 07541 Fully Adhered Multi-Ply Roof System Over Metal Roof.**

- Insert herein attached specification Section 07541 Fully Adhered Multi-Ply Roof System Over Metal Roof labeled **ATTACHMENT #5** (18 pages) after section 07411.

**ITEM #7 Addition, Specifications Section 07605 Sheet Metal and Miscellaneous Accessories**

- Insert herein attached specification Section 07605 Sheet Metal and Miscellaneous Accessories labeled **ATTACHMENT #6** (8 pages) after section 07541.

**ITEM #8 Addition, Specifications Section 09656 Synthetic Athletic Flooring**

- Add Champion Flooring, LLC (Monoflex HD) to the list of acceptable manufacturers for the synthetic athletic flooring at Carnahan gym.

NOTIFICATION: It is the responsibility of the General Contractor to notify all of his subcontractors of the contents of all addenda.

## ADDENDUM # 2

### **ITEM #9 Addition, Specifications Section 11662 Basketball Equipment**

- Add ADP Lemco Inc. to the list of acceptable manufacturers for the basketball equipment at Carnahan gym.

### **ITEM #10 Addition, Sheet AH1.0, Details 1, 7, 8, and 9**

- Refer to attached additions to Sheet AH1.0 labeled **ATTACHMENT #7** (3 sheets) for new door at Fire Riser Room at classroom wing.

### **ITEM #11 Addition, Sheet AH1.1**

- Insert herein attached Sheet AH1.1 labeled **ATTACHMENT #8** (1 sheet) for Carnahan Elementary Gym Re-Roofing plans and details.

### **ITEM #12 Corrections, Structural Addendum**

- Refer to attached structural addendum labeled **ATTACHMENT #9** (7 sheets).

### **ITEM #13 Corrections, MEP Addendum**

- Refer to attached MEP addendum labeled **ATTACHMENT #10** (9 sheets).

**P S J A I. S. D.**

**Carnahan, Franklin & Buell HVAC Additions to Gym**

**Bid # 18-19-052**

**Electronic Bids due on May 30, 2019, at 4:00 pm**

**QUESTIONS / REQUEST FOR SUBSTITUTIONS**

---

1. Question: Champion Flooring, LLC is requesting to be added as an acceptable manufacturer for the synthetic athletic flooring.
  - Add Champion Flooring, LLC (Monoflex HD) to the list of acceptable manufacturers for the synthetic athletic flooring at Carnahan gym.
  
2. Question: ADP Lemco Inc. is requesting to be added as an acceptable manufacturer for the basketball equipment.
  - Add ADP Lemco Inc. to the list of acceptable manufacturers for the basketball equipment at Carnahan gym.

**BID FORM**

**Bidder/Contractor:** \_\_\_\_\_

**TO OWNER:** Pharr-San Juan-Alamo I.S.D.  
601 E. Kelly  
Pharr, TX 78577

**PROJECT:** PSJA ISD Carnahan, Franklin & Buell HVAC Additions to Gyms  
Bid #18-19-052

**Ladies and Gentlemen:**

The bidder in compliance with Notice to Bidders for the construction of this project, having examined the plans and specifications with related documents and having examined the site and all conditions affecting the work, hereby proposes to furnish and to construct the project in accordance with Contract Documents for the sum set below.

All labor, materials, services, and equipment necessary for completion of work shown on the drawings and in the specifications, except the work indicated by the Alternatives.

Refer to Specifications Section 01020 for allowances to be included in each base bid.

**ALLOWANCES**

- |                |           |
|----------------|-----------|
| 1. CONTINGENCY | \$ 50,000 |
| 2. LAB TESTING | By Owner  |

**BASE BID:**

\_\_\_\_\_ Dollars  
\$ \_\_\_\_\_

**Time of completion:** 75 consecutive calendar days for Carnahan.  
**Time of completion:** 90 consecutive calendar days for Buell and Franklin.

**Contingency Allowance: Add \$50,000 to this base bid**

**ADD ALTERNATE #1:** Upgrade Fire Alarm panel at Buell

\_\_\_\_\_ Dollars  
\$ \_\_\_\_\_

**Time of completion:** Within the 90 days listed above.

**ADD ALTERNATE #2:** Upgrade Fire Alarm panel at Franklin

\_\_\_\_\_ Dollars  
\$ \_\_\_\_\_

**Time of completion:** Within the 90 days listed above.

**ADD ALTERNATE #3: CARNAHAN ELEMENTARY GYM RE-ROOFING**

\_\_\_\_\_ Dollars

\$ \_\_\_\_\_

Time of completion: Within the 75 days listed above.

---

---

**THE 75 AND 90 DAYS LISTED ABOVE SHALL RUN CONCURRENT.**

---

---

Refer to specification Section 01010 Summary of Work, Items 1.18 and 1.29 for substitution guidelines.

---

---

The Undersigned, if awarded the contract agrees to commence work within eight consecutive calendar days from date of Notice to Proceed.

It is understood that if accepted by Owner, this bid becomes a part of the contract documents upon signing of this contract.

It is also understood that the Owner reserves the right to reject any or all bid and waive irregularities and formalities or to accept any bid considered advantageous.

The Undersigned agrees to waive any claim against the district, the architect, or engineer on the project, or any of their employees, arising out of or in connection with the administration, evaluation, or recommendation of any bid.

The undersigned agrees that he will not withdraw this bid for a period of thirty days from the date thereof.

---

---

I hereby acknowledge the receipt of Addendum No. \_\_\_\_\_ Dated: \_\_\_\_\_

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

By \_\_\_\_\_

Address \_\_\_\_\_

---

**(Seal if Bid is by corporation)**

**DIVISION 1 GENERAL REQUIREMENTS**  
**01030 ALTERNATES**

PART 1 GENERAL

1.1 DESCRIPTION:

- A. Work Included: Certain Alternates have been established as described herein. These are to allow the Owner to:
  - 1. Compare costs where Alternate materials and methods may be used.
  - 2. Make a decision concerning Alternate materials and methods prior to awarding the Contract.

1.2 RELATED WORK:

- A. Pertinent Sections of the Specifications describe the materials and methods required under the Various Alternates.
- B. The method for stating the proposed Contract Sum is described on the Bid Form.

1.3 SUBMITTALS:

- A. Indicate on the Bid Form a proposal for each Alternate listed.
- B. If no figure is indicated for an Alternate, that Alternate may be accepted at no charge in the Base Bid.
- C. Do not submit Alternates other than those described in this Section.
- D. Do not submit statements qualifying alternates.

PART 2 - PRODUCT HANDLING

2.1 ALTERNATES:

- A. If the Owner elects to accept one or more Alternates, make all modifications required if furnishing and installation of the selected Alternates to approval of Architect and at no additional cost other than proposed on the Bid Form.

**ADD ALTERNATE #1: UPGRADE FIRE ALARM PANEL AT BUELL AS PER ELECTRICAL ADDENDUM #1.**

**ADD ALTERNATE #2: UPGRADE FIRE ALARM PANEL AT FRANKLIN AS PER ELECTRICAL ADDENDUM #1.**

**ADD ALTERNATE #3: CARNAHAN ELEMENTARY GYM RE-ROOFING. PROVIDE ROOFING AS PER ADDENDUM #2, ITEMS #6, #7 AND #11.**

PART 3 EXECUTION

3.1 ADVANCED COORDINATION:

- A. Immediately after award of Contract, advise necessary subcontractors and suppliers as to:
  - 1. Nature and extent of accepted alternates.

2. Involved changes caused by alternates selection.

3.2 SURFACE CONDITIONS:

- A. Prior to installation of Alternative items, verify that work has been modified as necessary to accept the installation and that items may be installed in complete accordance with their manufacturer's current recommendations. In the event of discrepancy, notify Architect and proceed as directed.

END OF SECTION

**DIVISION 2 SITE WORK**  
**02830 CHAIN LINK FENCING AND GATES**

PART 1 GENERAL

1.1 SUMMARY

- A. This section includes the following:
  - 1. Chain Link Fences: Industrial
  - 2. Gates: horizontal slide swing
  - 3. Protective yellow safety cover around softball field
- B. Provide chain link fences and gates as completed units controlled by a single source necessary erection accessories, fittings, and fastenings. **Reference plans for quantities and sizes of gates, fence heights, and other information.**

1.2 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Provide chain-link fences and gates capable of withstanding the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
  - 1. Minimum Post Size and Maximum Spacing for Wind Velocity Pressure: Determine based on mesh size and pattern specified, and on the following minimum design wind pressures and according to CLFMI WLG 2445:
    - a. Wind Speed: 90 mph
    - b. Fence Height: 6 feet
    - c. Line Post Group: IA, ASTM F 1043, Schedule 40 steel pipe
    - d. Wind Exposure Category: B
  - 2. Determine minimum post size, group, and section according to ASTM F 1043 for framework up to 12 feet high, and post spacing no to exceed 10 feet (3 m).

1.3 SUBMITTALS

- A. Product Data: Submit manufacturer's technical product data, and installation instructions for metal fencing, fabric, gates accessories. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for chain link fences and gates.
  - 1. Fence and gate posts, rails and fittings
  - 2. Chain link fabric, reinforcements and attachments
  - 3. Gates and hardware
- B. Shop Drawings: Show locations of fences, gates, post, rails, tension wires, details of extended posts, extension arms, gate swing, or other operation, hardware and accessories. Indicate materials, dimensions, sizes, weights, and finishes of components. Indicate plans, gate elevations, sections, details of post anchorage, attachment, bracing, and other required installation and operational clearances.
  - 1. Dimensions indicated for pipe, roll-formed, and H-sections are outside dimensions, exclusive of coatings.

1.4 PROJECT CONDITIONS

- A. Field Measurements: Verify layout information for chain-link fences and gates shown on Drawings in relation to property survey and existing structures. Field verify all dimensions.

1.5 QUALITY ASSURANCE

- A. Manufacturer: Company having manufacturing facilities in the United States with a minimum 5 years experience specializing in manufacturing of chain link fence products.
- B. Fence contractor: Contractor having 5 years experience installing similar projects in accordance with ASTM F567.
- C. Substitutions: Alternate chain link products may be acceptable by the architect as equal if approved in writing prior to bidding provided that the items submitted meet the specifications contained in this document.
- D. Single source: To ensure system integrity obtain the chain link system, framework, fabric, fittings, gates and accessories from a single source.

## PART 2 PRODUCTS

### 2.1 MANUFACTURER

- A. Subject to compliance with requirements, provide galvanized steel fencing fabric products of one of the following.
  - 1. Allied Tube and Conduit Corp.
  - 2. Anchor Fence, Inc.
  - 3. American Fence Corp.
  - 4. or approved equal

### 2.2 CHAIN LINK FENCE FABRIC

- A. General: Height indicated on drawings. Provide fabric in one-piece height measured between top and bottom of outer edge of selvage knuckle or twist. Comply with ASTM A 392, CLFMI CLF 2445, and requirements indicated below:
  - 1. Steel wire Fabric: Metallic-coated wire with a diameter of 0.148 inch
    - a. Mesh Size: 2 inches
      - 1) 1 inch at Detention Pond perimeter
    - b. Weight of Metallic (Zinc) Coating: ASTM A 392, Type II, Class 1, 1.2 oz./sq. ft. with zinc coating applied before weaving.
    - c. Coat selvage ends of fabric that is metallic coated before the weaving process with manufacturer's standard clear protective coating.
  - 2. Selvage: Knuckled at both selvages.
- B. FABRIC: No. 9 ga. (0.148") finished size steel wires, 2" mesh, with top selvages knuckled for fabric 60" high and under, and both top and bottom selvages twisted and barbed for fabric over 60" high.
  - 1. Furnished one-piece fabric widths for fencing up to 12' high.
  - 2. Fabric finish, galvanized, ASTM A 392, Class I, with not less than 1.8 oz. zinc per sq. ft. of surface.

### 2.3 FRAMEWORK

- A. Galvanized steel, ASTM A 120 OR ASTM A 123, with not less than 1.8 oz. zinc per sq. ft. of surface.

### 2.4 FITTINGS AND ACCESSORIES

- A. Galvanized, ASTM A 153, with zinc weights per Table I.
- B. FRAMING AND ACCESSORIES: End, Corner and Pull Posts: Minimum sizes and weights as follows:
  - 1. Up to 6' fabric height, 2.375" OD steel pipe, 3.65 lbs. per lin. ft., or 3.5" x 3.5" roll-formed sections, 4.85 lbs. per lin. ft.

2. Over 6' fabric height, 2.875" OD steel pipe, 5.79 lbs. lin. ft., or 3.5" x 3.5" roll-formed sections, 4.85 lbs. per lin. ft.
- C. LINE POSTS: Space 10' o.c. maximum, unless otherwise indicated, of following minimum sizes and weights.
  1. Up to 6' fabric height, 1.90" OD steel pipe, 2.70 lbs. per lin. ft. or 1.875" x 1.625" C-sections, 2.28 lbs. per lin. ft.
  2. 6' to 8' fabric height, 2.375" OD steel pipe, 3.65 lbs. per lin. ft. or 2.25" x 1.875" H-sections, 2.64 lbs. per lin. ft.
  3. Over 8' fabric height, 2.875" OD steel pipe, 5.79 lbs. per lin. ft. or 2.25" x 1.875" H-sections, 3.26 lbs. per lin. ft.
- D. GATES POSTS: Furnish posts for supporting single gate leaf, or one leaf of a double gate installation, for nominal gate widths as follows:
 

Leaf Width	Gate Post	lbs./lin. ft.
Up to 6'	3.5" x 3.5" roll-formed section	4.85
	or 2.875" OD pipe	5.79
Over 6' to 13'	4.000" OD pipe	9.11
Over 13' to 18'	6.625" OD pipe	18.97
Over 18'	8.625" OD pipe	28.55
- E. TOP RAIL: Manufacturer's longest lengths, with expansion type couplings, approximately 6" long, for each joint. Provide means for attaching top rail securely to each gate corner, pull and end post.
  1. 1.66" OD pipe, 2.27 lbs. per ft. or 1.625" x 1.25" roll-formed sections. 1.35 lbs. per ft.
- F. TENSION WIRE: 7-gage, coated coil spring wire, metal and finish to match fabric.
  1. Locate at bottom of fabric.
- G. POST TOPS: Provide weather tight closure cap with loop to receive tension wire or top rail; one cap for each post.
- H. STRETCHER BARS: One-piece lengths equal to full height of fabric, with min. cross-section of 3/16" x 3/4". Provide one stretcher bar for each gate and end post, and 2 for each corner and pull post, except where fabric is integrally woven into post.
- I. STRETCHER BAR BANDS: Space not over 15" o.c., to secure stretcher bars to end, corner, pull, and gate posts.
- J. PROTECTIVE YELLOW SAFETY COVER: Provide safety cover all around baseball/softball field above the 4' fence.

## 2.5 GATES

- A. Fabricate perimeter frames of gates from metal and finish to match fence framework. Assemble gate frames by welding or with special fittings and rivets for rigid connections, providing security against removal of breakable operation and attachment of fabric, hardware and accessories. Space frame members max. of 8' apart unless otherwise indicated.
- B. Provide same fabric as for fence, unless otherwise indicated. Install fabric with stretcher bars at vertical edges and at top and bottom edges. Attach stretcher bars to gate frame at not more than 15" o.c.
- C. Install diagonal cross-bracing consisting of 3/8" diameter adjustable length truss rods on gates to ensure frame rigidity without sag or twist.
- D. Where barbed wire is indicated above gates, extend end members or gate frames 1'-0"

above top member. Provide necessary clips to receive and secure 3 strands of wire.

E. SWING GATES: Fabricate perimeter frames of min. 1.90" OD pipe.

## 2.6 GATE HARDWARE

- A. Provide hardware and accessories for each gate, galvanized per ASTI A 153, and in accordance with the following:
  - 1. HINGES: Size and material to suit gate size, non-lift-off type, offset to permit 180 deg. gate opening. Provide 1-1/2 pair of hinges for each leaf over 6' nominal height.
  - 2. LATCH: Forked type or plunger-bar type to permit operation from either side of gate, with padlock eye as integral part of latch.
  - 3. DOUBLE GATES: Provide gate stops for double gates, consisting of mushroom type plate with anchors, set in concrete, and designed to engage center drop rod or plunger bar.
  - 4. Include locking device and padlock eyes as integral part of latch, permitting both gate leaves to be locked with single padlock.
- B. SLIDING GATES: Provide manufacturer's standard heavy-duty inverted channel track, ball-bearing hanger sheaves, overhead framing and supports, guides, stays, bracing, hardware, and accessories as required.
- C. WIRE TIES: For tying fabric to line posts, use wire ties spaced 12" o.c. For tying fabric to rails and braces, use wire ties spaced 24" o.c. for tying fabric to tension wire, use hog rings spaced 24" o.c.
- D. Manufacturer's standard procedure will be accepted if of equal strength and durability.

## 2.7 CONCRETE

- A. Provide concrete consisting of Portland cement, ASTI C 150, aggregates ASTI C 33, and clean water. Mix materials to obtain concrete with a minimum 28-day compressive strength of 2500 psi using at least 4 snacks of cement per cu. yd., 1" maximum size aggregate. maximum 3" slump, and 2% to 4% entrained air.

## PART 3 EXECUTION

### 3.1 SITE EXAMINATION AND CLEAN UP

- A. Ensure property lines and legal boundaries of work are clearly established.
- B. Verify areas to receive fencing are completed to final grade.
- C. Clean up area adjacent to fence line from debris and unused material created by fence installation.

### 3.2 EXCAVATION

- A. If not shown on drawings, excavate holes to min. depth and diameter as recommended by fence manufacturer.

### 3.3 INSTALLATION

- A. Install in accordance with ASTM F 567 and written installation instructions of fencing manufacturer to provide secure, aligned installation.

END OF SECTION

**DIVISION 7 THERMAL AND MOISTURE PROTECTION**  
**07541 FULLY ADHERED MULTI-PLY ROOF SYSTEM OVER METAL ROOF**

**PART 1 - GENERAL**

1.01 AREAS COVERED

- A. Existing metal roof at Carnahan Elementary Gym as indicated on plans.

1.02 INSTALLER QUALIFICATIONS

- A. Roofing Installer must be:
  - 1. Currently pre-qualified with the Owner in accordance with Owner's prequalification requirements.
  - 2. Currently in good standing with the manufacturer.
- B. It shall remain each Contractor's responsibility to determine his current status with the manufacturer's certification plan.

1.03 QUALITY ASSURANCE

- A. Applicator/Installer:
  - 1. Acceptable to roof material manufacturer for the manufacturer's warranty requirements.
  - 2. Five (5) years successful experience on projects similar in size and scope.
  - 3. Experienced in the type of roofing work required.
  - 4. Successfully completed previous projects warranted by the manufacturer.
- B. Manufacturer Qualifications:
  - 1. A qualified manufacturer that has been UL Listed and has FM Approvals for membrane roofing system similar to that used in this project for a minimum of fifteen (15) years.
  - 2. The roofing membrane manufacturer is defined as a company which makes the primary roofing membrane and flashing membrane in its own factories from raw materials. No "Private Label" material, in which one company's name goes on a product manufactured by others is acceptable for this project.
- C. Manufacturer's Observation Reports: Beginning with the commencement of the roofing system installation for the project and continuing through the completion of the roofing system installation and all its associated components, the Roofing System Manufacturer or their appointed representative shall provide jobsite observations and written observation reports including digital photos as follows and this shall be confirmed in writing by the manufacturer and made part of the roofing submittals.
  - 1. Keep the Architect / Owner informed as to the progress, status, and quality of work as observed.
  - 2. Provide weekly jobsite observations no less than (2) hours per week throughout the installation of the roofing system and its associated components. Reports shall include detailed weekly reports to the Architect, Contractor, and Subcontractor along with digital photographs of work in progress. These reports and photographs shall be descriptive of actual work in progress, status, and condition, and be presented in a written format with digital color photographs.

3. Report to the Architect / Owner in writing any refusal or failure of the Contractor to correct installations, practices and/or conditions in conflict with the specifications and/or manufacturer's recommended guidelines called to the Contractor's attention.
  4. It will be the sole responsibility of each bidder to ensure these conditions are to be met by the roofing system manufacturer and/or their appointed representative prior to bidding.
- D. Testing Laboratory Services: Test results shall meet or exceed established standards.
- E. Underwriters Laboratories, Inc.; Roofing Covering: Class A fire hazard classification.
- F. Comply with governing local, state, and federal regulations, safety standards, and codes.

1.04 REFERENCES (INCLUDING LATEST REVISIONS)

- A. American Society for Testing and Materials:
1. ASTM B 209 - 90, Specification for Aluminum and Aluminum Alloy Sheet and Plate
  2. ASTM C 719 - 86, Test Method for Adhesion and Cohesion of Elastomeric Joint Sealants Under Cycle Movement (Hockman Cycle)
  3. ASTM C 794 - 80 (1986), Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants
  4. ASTM C 920 - 87, Specification for Elastomeric Joint Sealants
  5. ASTM D 312 - 89, Specification for Asphalt Used in Roofing
  6. ASTM D 1863 - 86, Specification for Mineral Aggregate Used on Built-up Roofs
  7. ASTM D 2178 - 89, Specification for Asphalt Glass Felt Used in Roofing and Waterproofing
  8. ASTM D 2824 - 85, Specification for Aluminum - Pigmented Asphalt Roof Coatings
  9. ASTM D 4586 - 86, Specification for Asphalt Roof Cement, Asbestos Free
  10. ASTM A 361 - 90, Sheet Steel, Zinc-Coated (Galv.) by the Hot-Dip Process for Roofing and Siding
  11. ASTM C 177, Test for Thermal Laboratory Services
  12. ASTM C 728, Perlite Thermal Insulation Board
- 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. Single-ply Roofing Institute (SPRI) - A Professional Guide to Specifications Manual
  3. Sheet Metal and Air Conditioning Contractors National Association (SMACNA) -

## Architectural Sheet Metal Manual

## 4. American Society of Civil Engineers – ASCE 7

## 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.
  5. Manufacturer's Equiviscous Temperatures (EVT) for the specified bitumen's as applicable.
- 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. Shop drawings shall be engineered drawings, digital or CAD. Hand sketches, copies or tracings of projects documents are not acceptable. Manufacturer's details are acceptable provided they are job specific and representative of actual conditions.
- 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, 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. Deliver materials requiring fire resistance classification to the job with labels attached and packaged as required by labeling service.
- C. Deliver materials in sufficient quantity to allow continuity of work.
- D. Handle and store material and equipment in such a manner as to avoid damage. Liquid products shall be delivered sealed, in original containers.
- E. Handle rolled goods so as to prevent damage to edge or ends.
- F. Select and operate material handling equipment so as not to damage existing construction or applied roofing.
- G. 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.

- H. Store rolled goods on end.
- I. Protect materials against damage by construction traffic.
- J. 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.
- K. Comply with fire and safety regulations, especially with materials which are extremely flammable and/or toxic. Use safety precautions indicated on labels.
- L. Products liable, such as emulsions, to degrade as a result of being frozen shall be maintained above 40° F in heated storage.
- M. No storage of materials shall be permitted on roof areas other than those materials that are to be installed the same day.

#### 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. Coordinate the work of the contractor with the work to be performed by the Owner's personnel, to ensure proper sequencing of the entire work. The Owner's personnel will be erecting interior protection for equipment, if required. The contractor is to schedule his work so that adequate time is allowed for the Owner's personnel to perform the work. No roof work shall be performed until the Owner's personnel have completed erection of the interior protection in that area.
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 material than can be reinstalled in any working day.
6. 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.
7. 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.
8. 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, use the stricter document.
9. Follow insurance underwriter's requirements acceptable for use with specified products or systems.
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 an automatic thermostat control, and 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 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.
  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. 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. 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.

1.08 WARRANTY

- A. Twenty (20) Year NDL Total System Warranty: The complete roofing system shall be guaranteed for a minimum of twenty (20) years from the date of Substantial Completion for this project. Guarantee responsibilities shall be as follows:
  1. Roofing contractor shall guarantee the entire roofing system for a period of two (2) years from the date of Substantial Completion.
  2. The materials manufacturer shall guarantee the entire roofing system as supplied by system manufacturer for a total period of twenty (20) years from the date of substantial completion.
  3. Membrane manufacturer shall provide the written warranty as specified.
  4. The entire roofing system shall be guaranteed to be watertight and against any failures of workmanship and materials. Repair of the system, including materials and labor, shall be done at no cost to the Owner.
  5. 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.
- B. During the proposal period each Contractor shall make arrangements with the materials manufacturer to provide the required warranty. Refer to Submittals Paragraph 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. Materials herein specified shall be supplied or approved in writing by the manufacturer issuing the warranty.

- C. The white polyester reinforced fleece backed adhered PVC with Elvaloy® roofing system shall only be applied by manufacturer approved and trained roofing contractors.
- D. The manufacturer shall have 15 years UL listing for the membrane to be used on the project. Membrane manufacturer shall have a minimum of 15 years FM approval, and 15 years manufacturing experience with the roofing membrane specified for this project.
- E. All roofing and roof accessories shall be installed in compliance with manufacturer's current specifications and details.
- F. All materials used on the project shall be asbestos free.

2.02 ROOFING MEMBRANE

- A. The white 60 mil polyester reinforced fleece backed PVC with Elvaloy® membrane shall have the following minimum physical properties:

<u>Property</u>	<u>Test Procedure</u>	<u>Physical Properties</u>
Color	ASTM D 751	White
Thickness	ASTM D 751	60 mil (.060")
Thickness over Scrim	ASTM D 7635	.030"
Polyester Fleece Backing		5.5 oz.
Reinforcement Scrim		Polyester
Solar Reflectance Index (SRI)	ASTM E 1980	109

- B. Basis of Design: Flex FB 60 Elvaloy® KEE Roof Membrane as manufactured by Flex Membrane International.
- C. Approved Manufacturer's and Membranes:
  1. Flex Membrane International Corp. / Flex FB 60 Elvaloy® KEE Roof Membrane
  2. The Garland Company / KEE- Stone® FB 60 mil
  3. Tremco Roofing & Waterproofing / TPA FB 60 mil Roof Membrane

2.07 FLASHING MEMBRANE

- A. The flashing membrane shall be a white Elvaloy® polyester reinforced flexible sheet shall have the following minimum physical properties:

<u>Property</u>	<u>Test Procedure</u>	<u>Physical Properties</u>
Color	ASTM D 751	White
Thickness	ASTM D 751	60 mil (.060")
Thickness over Scrim	ASTM D 7635	.031"
Reinforcement Scrim		Polyester
Solar Reflectance Index (SRI)	ASTM E 1980	109

- B. Basis of Design: Flex MF/R 60 Elvaloy® KEE Roof Membrane as manufactured by Flex Membrane International.
- C. Approved Manufacturer's and Membranes:
  1. Flex Membrane International Corp. / Flex MF/R 60 Elvaloy® KEE Roof Membrane
  2. The Garland Company / KEE-Stone 60 mil
  3. Tremco Roofing & Waterproofing / TPA Flashing Membrane 60 mil

2.08 NON-REINFORCED MEMBRANE

- A. The non-reinforced membrane shall have the following minimum properties or approved equal.
  - 1. Description: Non-reinforced thermoplastic white membrane, thickness approximately 45 mils.
  - 2. Use: Inside/outside corners, multiangled intersections, sealant pockets and other conditions where molding of the membrane is required.

2.09 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 as manufactured by BASF, or approved equal.
- B. To seal the leading edge of the membrane, to bond membrane at terminations with metal, and for open 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, 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 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

- C. Polyether sealant: The joint sealant shall be a 100% solid, one-component, gun grade, non sag, polyether-base material. It shall be applicable for use at Kynar 500 coated metal, in, vertical, and overhead joints. The sealant shall cure under the influence of atmospheric moisture to form an elastomeric joint material. Materials shall comply to: ASTM C920, Type S, Grade NS, Class 50, Use T2, NT, M, A, G, and O; Canadian Specification CAN/CGSB-19.13-M87, Classification MCG-2-25-A-N, No. 81026; DuraLink as manufactured by Chem Link, Inc., or approved equal.

<u>Properties</u>	<u>Results</u>	<u>Test Methods</u>
Tensile strength, psi	250-300	ASTM D412
Peel strength, psi	25-30	ASTM C794
Elongation at break, %	750-800	ASTM D412
Hardness, Shore A	17-23	ASTM C661
Lap shear Strength, psi	150-175	ASTM D1002
Low temp. flexibility	Pass-10°F (-23°C) 1/4inch mandrel	ASTM D816
Service Temperature	-40°F to 200°F (-40°C to 93°C)	

2.10 BASE SHEET

- A. Shall be Underwriters Laboratory approved and listed in the FM Global Approval Guide.
- B. Shall be A Styrene Butadiene Styrene (SBS) 80 mils thick, smooth surfaced modified bitumen base sheet, tested in accordance with ASTM D 5147, as approved by field membrane manufacturer.
- C. Basis of Design: Flex SBS 80 mil S/S Base Sheet Roof Membrane as manufactured by Flex Membrane International.
- D. Approved Manufacturer's and Membranes:
  - 1. Flex Membrane International Corp. / Flex SBS 80 Mil S/S Base Sheet
  - 2. The Garland Company / Stress Base
  - 3. Tremco Roofing & Waterproofing / POWERply Standard Smooth

2.11 FILLER FOR FLUTES

- A. Expanded polystyrene flute filler insulation shall meet ASTM C578, Type VIII; one and one-fourth pound (1-1/4#) nominal density per ASTM C303, pre-cut and preformed with beveled edges to fill flute and match height to top of rib/flange.

2.12 COVER BOARD

- A. Impact-resistant, nonstructural, specially engineered gypsum and cellulose fiber panels with 95% recycled content; uniform water-resistance throughout core and surface. Board size four feet by eight feet (4' x 8'), thickness 1/4" = R of 0.2; conforming to ASTM C 1278, meeting FM 4470 Class 1 criteria, classified by Underwriters Laboratories, and listed in the FM Global Approval Guide. Board will meet the following physical properties, Securock® Roof Board, as manufactured by USG Corporation, or approved equal.

<u>Test</u>	<u>Typical Value</u>	<u>Test Method</u>
Fire Resistance	Class A	UL 790
Permeance	≤ 30	ASTM C473
Surface water absorption	≤ 1.6 nominal grams	ASTM C473
Water resistance	Maximum 10% weight percentage gain	
Mold Resistance	Minimum rating of "10"	ASTM D3273

2.13 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, and be listed in the FM Global Approval Guide.
- B. Polyisocyanurate Roof Insulation: Insulation shall be a single layer of rigid polyisocyanurate foam board; total thickness and LTTR-value shall be a minimum of 1.0" = 5.6; 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.

2.14 CANT STRIP

- A. Shall be treated solid wood meeting NRCA, FM Global and Underwriters Laboratory

guidelines.

2.15 WOOD

- A. All nailers, cants and wooden curbs shall be treated lumber as required by NRCA, FM Global and Underwriters Laboratory guidelines.

2.16 FASTENERS AND PLATES

- A. General: All fasteners and plates for the installation of insulation, and for the installation of the membrane, shall be supplied and warranted by the membrane manufacturer for the specific application.
- B. All fasteners and plates shall be FM Global approved corrosion resistant screws or anchors supplied and warranted by the membrane manufacturer. Fasteners shall be of a type and length recommended by the manufacturer for fastening the insulation and/or protection layer (through the existing roof in reroofing) to the structural roof deck.

2.17 FASTENERS

- A. Fasteners and fastening plates or bars shall be listed in the FM Global Approval Guide, and be as recommended by the fastener manufacturer for the specific application.
- B. Fastener for Steel Deck: Shall be a #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 ten percent (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.
- C. Fastener for Purlin: Shall have a shank diameter of .168 and a thread diameter of .205. The purlin fastener will be used with a FM Global approved two inch (2") round steel barbed pressure plate, or approved equal.

2.18 MODIFIED BITUMEN COLD ADHESIVE

- A. Shall be a fibrated rubberized adhesive specially formulated for horizontal applications of roofing plies, having the following minimum properties, as manufactured by Flex Membrane International, or approved equal.

Physical Properties

Stormer viscosity @ 77° F	100-140 sec. (ASTM D-4479)
Density @ 77°	7.9 –8.3 lbs./gal. (ASTM D-1475)
Solids by Weight	61-65% minimum (ASTM D-4479)
Flash Point	100° F minimum (ASTM D-3278)
Moisture by Weight	2.5% maximum (ASTM D-4479)
Mineral/Other stabilizers by wt.	15-18% (ASTM D-4479)
Asphalt by weight	45% (ASTM D-3019)
Lap Adhesion @ 24 hours cure	30 lbf/in. min. (ASTM D-3019)
Color	Black
Material shall be tested in accordance with ASTM D-3019, Type III and Dade County Compliance No. (95-0228).09	

2.19 COLD APPLIED SUBSTRATE ADHESIVE

- A. Shall have the following minimum properties, as manufactured by Flex Membrane International, or approved equal.

<u>Property</u>	<u>Characteristics</u>
Type	Rubber, asphalt, resin dispersion; Water vehicle
Color Dried Film	Black
Viscosity	Approximately 18,000 cps. (Brookfield at 77° F) Heavy paint consistency -- readily pourable
Solids, Wt. %	Approximately 75%
Application Procedure	Brush, squeegee or roller
Working Period	Remains tacky permitting wet or dry combining over wide range of conditions.
Application Limits (Temp.)	Between 50 and 100° F. However apply at near mid-temperature range whenever possible.
Service After Application	Not affected by extremes in atmospheric conditions. Maintains good bond over range minus 20° F to plus 200° F. Excellent water and moisture resistance.
Caution	Keep from freezing. Store above 40° F
Weight per Gallon Net	Approximately 8.4 lbs.
Container Sizes	5 gallon
Primer Use	When the product is used over cementitious surfaces, the surface must first be primed 24 hours before adhesive applications. The primer should be a solvent base asphalt cut back. The application rate is approximately 3/4 gallon per 100 square feet.

2.20 BONDING ADHESIVE FOR FLASHING

- A. Description: Adhesive is a bonding cement of synthetic rubber for fully adhering membranes to various substrates, produced by Ashlund Chemical or approved equal.

<u>Typical Liquid Properties (Room Temperature)</u>		
Color	Amber/Yellow	
Base Product	Neoprene	
Solids	25%	
Specific Gravity	.87	
Pounds/Gallon	7.25	
Viscosity (CPS)	2500	
Solvents	Ketone, Toluene, Aliphatic Hydrocarbon, Zylene	
Estimated Coverage.	2 Sided Application	55/70 sq. ft. (2/2.5 mils dry)
DOT Label Required	Flammable Liquid	Code - 584661

- B. Handling: Contains ingredients which could be harmful if mishandled. Contact with skin and eyes should be avoided and necessary protective equipment and clothing should be worn.

2.21 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, or approved equal.

2.22 ASPHALT ROOF PRIMER

- A. To be used only where asphalt to asphalt products are employed; not for use on field membrane and cladded accessories. Shall be quick-dry asphalt-based primer for priming of asphalt roof surfaces or approved equal.

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

## 2.23 TRIM STRIP

- A. The trim strip shall be six inch (6") wide non-reinforced 45 mil thermoplastic used for capping butted ends of rolls or approved equal. The trim strip shall be seamed with the use of hot-air welding.

## 2.24 T- JOINT COVERS

- A. Supplied by the membrane manufacturer as a secondary covering to all T-joints in the installation of thermoplastic roof systems consisting of waterproofing coverings equal to or greater than 60 mils in thickness.

## 2.25 PIPE BANDS

- A. Pipe bands shall be stainless steel bands with self-locking heads and shall be tightened with hand tool for tension control and flush cut off.

## 2.26 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.

## 2.27 PRECAUTIONS

- A. Some of the indicated materials are extremely flammable and/or toxic. Use precautions indicated on can and carton labels.

## 2.28 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 sheet steel that is to receive bitumen, or come in contact with bitumen or adhesive, shall be scored, scuffed or abraded prior to receiving primer.
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 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.
8. Ambient temperature shall be 45° F and rising.
9. Stir/Circulate bituminous materials.
10. Wrinkles, buckles, kinks, and fishmouths are not acceptable when laying membrane.
11. 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.
12. Provide a water test of each roof section prior to substantial completion. The test should simulate rainfall of one inch (1") per hour minimum.
13. 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.

## 3.02 SUBSTRATE PREPARATION

- A. Layover Existing: Remove all dust, dirt, and debris by use of enclosed vacuum. Substrate shall be smooth and free of debris, sharp edges, and other surface irregularities prior to work starting. **All rusted areas of the existing metal roof shall be treated with approved rust arresting paint applied in accordance with the manufacturer's instructions. Ensure that all fasteners are tight. Loose or missing fasteners shall be replaced with oversized fasteners.**

B. Metal Roof:

1. All loose rust, bitumen, or other foreign material shall be removed from the roof before commencing installation.
2. Deteriorated metal roofing shall be repaired or replaced as required and as recommended by the deck manufacturer on a unit cost basis as approved by the Owner's representative.
3. The metal roof shall be of like kind, quality, gauge and configuration. The roof span shall not exceed that recommended by a FM Global Bulletin 1-28.
4. If metal roof panel must be replaced:
  - a) Erect metal roofing 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 roof 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.

### 3.03 NAILERS

- A. Wooden nailers shall be installed at eaves, drip edges, expansion joints, and on outside perimeter of building according to NRCA, Underwriters Laboratory and IBC guidelines.
- B. A layer of self-adhered membrane shall be placed between the existing metal roof and the new nailers. IN NO CIRCUMSTANCE SHALL THE WOOD NAILERS BE ALLOWED TO COME INTO DIRECT CONTACT WITH ANY METAL, WHETHER NEW OR EXISTING.
- C. All Construction: Nailers shall be the same height as the new substrate board 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. Nailers shall be anchored to resist a pull-out force of one hundred seventy-five pounds (175#) per foot. Fasteners shall be no less than two (2) per nailer and be spaced at three feet (3') on center maximum. Expansion joint nailers shall extend upward a minimum of eight inches (8") above finish roof height.

### 3.04 WOOD CANTS

- A. Toe of cant shall be level with the surface to receive new roof membrane and in all cases anchored according to NRCA, FM Global and Underwriters Laboratory guidelines.

### 3.05 APPLICATION OF FILLERS FOR FLUTES

- A. Flutes of metal panels shall be filled with EPS board to match depth and configuration of flute prior to applying specified roofing components. Hot wire cut sections of specified EPS insulation to fit between the existing metal panel or standing seam metal panel rib configurations so as to minimize any gaps between the insulation and the metal roof panel. Prior to installation of the EPS fillers, the metal roof panels must be dry with all surface contaminants, mastics, dirt and debris removed. Substrate repair shall be performed as required to minimum of NRCA standards. If necessary, the EPS shall be tacked down with appropriate compatible adhesive to prevent any slipping or sliding of the EPS Filler.

### 3.06 INSULATION

- 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. 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.

### 3.07 LOOSE LAID INSULATION

- A. Specified insulation shall be loose laid over the EPS Flute Fill. 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 laid perpendicular to slope. The insulation layer must be fully supported by the EPS flute fill.

### 3.08 MECHANICALLY FASTENED COVER BOARD

- A. Specified cover board shall be laid over the thermal insulation and mechanically fastened to conform to 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. Cover board shall be laid with long dimension edges parallel to slope and tightly butted. Cover board shall be mechanically fastened in to the purlins and existing metal panel as per ASCE 7 criteria for wind uplift as dictated by wind zone applicable to location of project and per the manufacturer's requirements.
- C. Fasteners must penetrate the purlin a minimum of one inch (1"). Using a screw gun with a minimum of 1800 RPM, drive the fastener through the purlin until a slight depression is seen around the plate. Caution should be taken not to overdrive the fastener causing stress plate surface to deflect more than one sixteenth inch (1/16").

### 3.09 COLD PROCESS APPLICATION OF BASE SHEET

- A. Cover board shall be covered with SBS 80 mil SS base sheet fully adhered as follows:  
All layers shall be applied using modified bitumen adhesive by notched squeegee or spray equipment at the nominal rate of one and one-half to three (1.5 – 3) gallons per one hundred (100) square feet ± 20 percent. Sheets shall be lapped four inches (4") on

the sides and six inches (6") on ends. Sufficient adhesive shall be applied at laps to result in a visible bead of adhesive at completed lap edge. End and side laps shall be rolled with a weighted roller immediately after installation. Specified layers shall be applied in accordance with the manufacturer's recommendations and in accordance with general practices as set forth by the NRCA Roofing Manual. NOTE: Base may not be left exposed more than five (5) days. NO EXPECTATIONS.

### 3.10 COLD PROCESS APPLICATION OF FLEECE BACKED MEMBRANE

- A. Fully Adhered Application: Fully adhere membrane to acceptable substrate with substrate adhesive applied at the rate of one and one-half to three (1.5 – 3) gallons per one hundred (100) square feet  $\pm$  20 percent or as specified by the manufacturer.
1. The roof surface must be clean, dry and free of foreign material.
  2. Position sheets as indicated on approved shop drawings. Membrane shall be applied shingle fashion, perpendicular to the slope of the roof deck.
  3. The membrane material shall be unrolled, cut into twelve feet to eighteen feet (12'-18') lengths, placed upside down and allowed to "relax" prior to installation. Then re-roll to apply.
  4. Install full width sheets, lapping four inches (4") on the sides and six inches (6") on ends. Stagger adjacent end laps a minimum of eighteen inches (18") apart. Where installed over base sheet, stagger sheet's side and end laps from underlying plies.
  5. Starting at the low point or the drains, apply the modified bitumen cold adhesive to the substrate in either method as follows:
    - a. Pour the adhesive on the substrate and spread, using a serrated edged squeegee, applied at the rate of 1-1/2 gal per square.
    - b. Spray, using equipment that will apply the adhesive at a rate equal to one and one-half (1-1/2) gallons per square.
  6. Apply the adhesive so that the substrate is coated in a pattern slightly larger than the first sheet being applied.
  7. Lap seams shall be done by lapping the selvedge edge over the non-selvedge edge of the previous roll four inches (4"). End laps and selvage laps of the membrane being lapped shall be coated with adhesive so that a visible bead of adhesive appears. Roll all laps with a steel roller to ensure proper adhesion.
  8. LAP OPTION: The end laps and side laps may be hot-air welded. The hot-air welding method will provide a watertight lap immediately and is preferable when inclement weather is threatening.
  9. Carefully push into place from fold line to overlap, avoiding wrinkles and air pockets. Roll or broom membrane flat.
  10. Repeat procedure for other sheet half.
  11. T-joint covers are required over all T-joints on installations of thermoplastic roofing membranes equal to or greater than 60 mils in thickness. Center T-joint cover over the T-joint and completely hot air weld the cover to the field membrane.
- B. Welded Lap Seaming Procedure: Overlap membrane for attachment method specified and hot-air welded with manufacturer's approved equipment.
1. All surfaces to be weld shall be clean, dry and free of foreign material.
  2. All seams must then be checked with a needle probe and any voids repaired with the heat gun.

### 3.11 FLASHING

- A. Flash all penetrations, metal edge systems, walls, curbs, expansion joints, drains as shown on details and approved shop drawings with white reinforced Elvaloy® flashing membrane.
  - 1. Mechanically fasten flashing at terminations according to approved details.
  - 2. Fastening membrane flashing through metal counterflashing is not acceptable.
- B. 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.

### 3.12 WOOD NAILERS

- A. Locate and install as shown on details, along gravel stops and drip edges and other areas as required by membrane manufacturer.
- B. Anchor nailer to structural deck with manufacturer's approved fasteners, spaced appropriately for the specified installation; minimum withdrawal resistance: one hundred (100) pounds.
- C. Height and Taper: Match top of adjacent construction within one-fourth inch (1/4"). Taper as required to provide continuous contact surface without creating ponding.

### 3.13 CLEANING

- A. Clean exposed surfaces of excess cement, adhesive, sealants, mortar and paint associated with the new work.
- B. Clean work area of excess roofing materials and installation debris daily.
- C. Repair or replace defaced or disfigured finishes caused by the work.

### 3.14 PROTECTION

- A. Protect all building surfaces against damage from roofing work.
- B. Where traffic must continue over finished, installed roofing system, protect membrane, underlayment accessories and finishes from damage.

### 3.15 MEMBRANE PROTECTION

- A. 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.

### 3.16 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 Owner's representative.

### 3.17 PIPE/EQUIPMENT SUPPORTS

- A. Designated pipe/equipment supports shall be removed and replaced with new specified pipe supports. Pipe supports shall be placed approximately ten feet (10') on center. New blocks shall be set on a double layer of membrane, and attached to the pipe with suitable strapping. Double layer of membrane shall be adhered to the roof surface.
- B. Gas lines three inches (3") and over must be supported on wood block with pipe roll stands.

3.18 OVERNIGHT SEAL

- A. Shall be performed according to accepted roofing practice as outlined in the NRCA Roofing Manual, SPRI and membrane manufacturer's recommended procedure.
- B. The roofing membrane shall be sealed to the roof deck or existing roof at the end of the day or at the onset of inclement weather to prevent water from flowing into the completed roofing system. Temporary seals shall be removed upon resumption of work.

3.19 MEMBRANE CLEANING

- A. After all membrane has been installed, it shall be cleaned with a cleaning agent compatible with the membrane to return the membrane to like new appearance.

END OF SECTION 07541

**DIVISION 7 THERMAL AND MOISTURE PROTECTION**  
**07605 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 SUBMITTALS

- A. Product Data:
  - 1. Submit shop drawings, product data and mockups of all sheet metal.

1.03 QUALITY ASSURANCE

- A. Comply with governing codes and regulations. Provide products of acceptable manufacturers in satisfactory use in similar service for five years. Use experienced installers. Deliver, handle and store materials in accordance with manufacturer's instructions.
- B. Reference Standards: Applicable portions of SMACNA, ASTM and NAAMM publications.

1.04 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), pitch pans and expansion joints: Minimum 24-gauge, G-90, hot-dipped galvanized metal, commercial quality, ASTM A 525.
- B. Hot-dipped Galvanized Steel for use as continuous clips: Minimum 20-gauge, G-90, hot-dipped galvanized metal, commercial quality, ASTM A 525.
- C. 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, downspouts, gutters, coping and miscellaneous metal. Standard color to be selected by Owner/Project Consultant.
- D. Elvaloy® Cladded Metal: Shall be G-90 galvanized steel with 25 mil Elvaloy® membrane lamination; width shall be four feet, length shall be eight or ten feet.
- E. Stainless Steel: QQ-S-766, Class 301, 302, 304, or 316; or ASTM A 167, Type 301, 302, 304, or 316; form and condition most suitable for the purpose.
- F. Aluminum and Aluminum Alloy Plate and Sheet: QQ-A-250; form, alloy, and temper shall be that most suitable for the purpose.
- G. Sheet Lead: QQ-L-201, Grade B.
- H. All existing sheet metal shall be replaced with new metal of like gauge and type, or as specified on drawings.

## 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 20-gauge G-90 galvanized.

## 2.03 RELATED MATERIAL

- A. Bituminous Paint: Acid and alkali resistant, black color.
- B. Plastic Cement: FS SS-C-153, cutback asphalt type.
- C. Solder: For use with steel or copper, provide 50-50 tin/lead solder (ASTM B 32), with rosin flux.
- D. Copper, Sheet, and Strip: QQ-C-576, ASTM B 370, light cold-rolled temper.
- E. Lead-coated Copper: ASTM B 101, Type I or II, Class A.
- F. Sealant (for Sheet Metal): One-component polyurethane, conforming to requirements of FS TT-S-230C, non-staining and non-bleeding.
- G. Miscellaneous Materials:
  - 1. Splash Blocks: Concrete, 3000 psi, 28 days. Provide and install with protection pads at all downspouts.
  - 2. Metal Accessories: Provide 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.
- 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 gravel stops/fascia, gutters/downspouts, counterflashings, pitch pans, expansion joints, and copings with new galvanized sheet metal as specified. Fabricate gravel guard and fascia to size and dimensions as indicated on the drawings. Fabricate light metal coping, gutters and downspouts as indicated.
- C. Form sheet metal on bending brake.
- D. Shape, trim and hand seam metal on bench insofar as practicable.
- E. Form materials with straight lines, sharp angles and smooth curves.
- F. Fold back edges on concealed side of exposed edge to form hem (1/2" minimum).
- G. Weld or solder joints on parts that are to be permanently and rigidly assembled.
- H. Submit sheet metal models for approval by the Owner/Project Consultant.
- I. Limit single-piece lengths to ten feet (10').
- J. Fabricate corner pieces with eighteen-inch (18") extensions, mitered and sealed by forming as one piece.
- K. Surface sand flange prior to applying any primers on Kynar metal.
- L. Backpaint flashing in contact with masonry or dissimilar materials with bituminous paint.
- M. All existing or missing metal rooftop projections shall be replaced. 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. Standard color to be selected by the Owner/Project Consultant.
- N. All sheet metal shall be sealed and watertight.
- O. Metal work should be secured so as to prevent damage from buckling or wind. Where clips are shown, these are to be continuous.
- P. All metal to receive bitumen or adhesive shall be first primed with asphalt primer.
- Q. All prefinished metal shall be sanded and/or abraded prior to receiving primer.
- R. Seams: Fabricate non-moving seams in sheet metal with flat-lock seams. For metal other than aluminum, tin edges are to be seamed, form seams, and solder.
- S. Expansion Provisions: Form expansion joints of intermeshing hooked flanges, not less than one inch (1") deep, filled with mastic sealant (concealed within joints).
- T. Sealant Joints: Where movable, non-expansion type joints are indicated or required for proper performance of work, form metal to provide for proper installation of elastomeric sealant, in compliance with industry standards.
- U. 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.

- V. 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. Elvaloy® clad metal shall be fabricated as needed; follow these specifications and standard sheet metal practice for attachment to roof details.
- C. Edge/Fascia:
  1. Shall be installed with expansion joints, ten feet (10') on center, one-fourth inch (1/4") expansion leeway, with a cover plate.
  2. Secure metal flashings per specifications.
  3. Lock seams and end joints.
  4. Form sections identical to profiles as shown or approved similar, to match existing building.
  5. Fabricate corner pieces with minimum eighteen-inch (18"), maximum forty-eight inch (48") extensions, formed and sealed with rivets and sealant, as one piece.
  6. Hem exposed edges three-fourths inch (3/4") minimum.
  7. Backpaint flashing in contact with masonry or dissimilar materials with bituminous paint. Surface sand before applying primers.
  8. Integrate flashing in a manner consistent with detailing.
  9. Provide and install continuous clip around perimeter.
  10. Shall be fabricated in accordance with all SMACNA provisions.
- D. Coping:
  1. Remove existing and replace with new metal coping as required for a permanent watertight installation.
  2. All coping shall be manufactured with low profile standing seam metal to meet ES-1.
  3. Shall be minimum 24-gauge prefinished Kynar installed in ten foot (10') sections maximum.
  4. Vertical fascia shall extend minimum two and one-half inches (2-1/2") or be minimum one and one-half inches (1-1/2") below bottom of nailer, whichever is greater.
  5. Secure metal flashings per specifications.
  6. Lock seams and end joints.
  7. Form sections identical to profiles as shown or approved similar, to match existing building.
  8. Fabricate corner pieces with minimum eighteen-inch (18"), maximum forty-eight inch (48") extensions, formed and sealed with rivets and sealant, as one piece.
  9. Hem exposed edges three-fourths inch (3/4") minimum.
  10. Backpaint flashing in contact with masonry or dissimilar materials with bituminous paint. Surface sand before applying primers.
  11. Integrate flashing in a manner consistent with detailing.
  12. Provide and install continuous clip, minimum 20-gauge.
  13. Shall be fabricated in accordance with all SMACNA provisions.

- E. Expansion Joint Field and at Wall:
1. Shall be as outlined by details, and be in full compliance with all provisions of SMACNA and FM Global requirements for attachment, installation and recommendations.
  2. Secure metal flashings per specifications.
  3. Lock seams and end joints.
  4. Form sections identical to profiles as shown or approved similar, to match existing building.
  5. Fabricate corner pieces with minimum eighteen inch (18"), maximum forty-eight inch (48") extensions, formed and sealed with rivets and sealant, as one piece.
  6. Hem exposed edges three-fourths inch (3/4") minimum.
  7. Backpaint flashing in contact with masonry or dissimilar materials with bituminous paint. Surface sand before applying primers.
  8. Integrate flashing in a manner consistent with detailing.
  9. Provide and install continuous clip around perimeter.
  10. Shall be fabricated in accordance with all SMACNA provisions.
- F. Counterflashing:
1. Remove existing and replace with new metal counterflashing as required for a permanent watertight installation.
- G. Gutter and Downspout:
1. Remove existing gutters and downspouts and replace with new as required for a permanent watertight installation.
  2. Fabrication:
    - a) Fabricate gutter and downspouts of profile and size indicated.
    - b) Field measure site conditions prior to fabricating work.
    - c) Fabricate with required connection pieces.
    - d) Fabricate section square, true, and accurate in size, in maximum possible lengths and free of distortion or defects detrimental to appearance or performance.
    - e) Hem exposed edges of metal.
    - f) Form and seal all metal joints; provide for expansion joints per SMACNA.
  3. Installation:
    - a) Install collector head, downspout, and accessories.
    - b) Join lengths with seams pop riveted and sealed watertight. Flash and seal gutter to downspouts and accessories.
    - c) Seal all metal joints watertight for full metal surface contact.
    - d) Gutter: SMACNA style profile; submit detail for approval.
    - e) Downspouts: Rectangular profile. Seal all joints, four inches by six inches (4" x 6").
    - f) Support Brackets, Joint Fasteners: Profiled to suit gutters and downspouts.
    - g) Anchorage Devices: SMACNA requirements. Type recommended by fabricator.
    - h) Gutter: Kynar. Color and Finish to match, as recommended by SMACNA.
    - i) Downspout Supports: Straps, Kynar. Color and Finish to match.

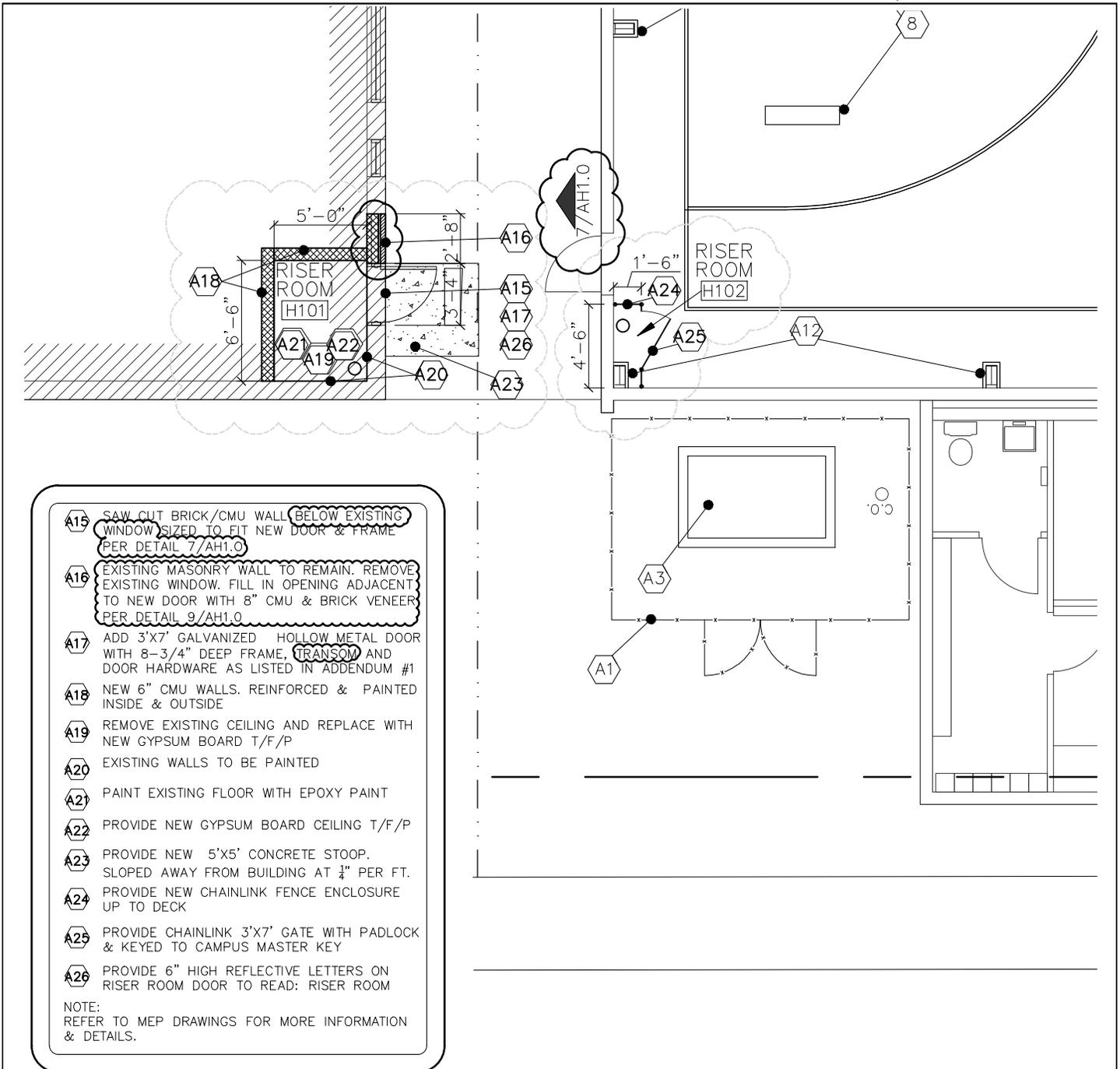
- H. Scupper, Overflow Scupper, Collector Head and Downspout:
1. Fabrication:
    - a) Fabricate overflow scupper, collector head and downspout of profile and size indicated, taking care that the roof drain leader fits properly into the back of the collector head. Seal the pipe to the collector head for watertightness.
    - b) Field measure site conditions prior to fabricating work.
    - c) Fabricate with required connection pieces.
    - d) Fabricate section square, true, and accurate in size, in maximum possible lengths and free of distortion or defects detrimental to appearance or performance.
    - e) Hem exposed edges of metal.
    - f) Form and seal all metal joints; provide for expansion joints per SMACNA.
  2. Installation:
    - a) Install collector head, downspout, and accessories.
    - b) Join lengths with seams pop riveted and sealed watertight. Flash and seal collector head to downspouts and accessories.
    - c) Seal all metal joints watertight for full metal surface contact.
    - d) Collector Head: SMACNA style profile; submit detail for approval.
    - e) Downspouts: Rectangular profile. Seal all joints, four inches by six inches (4" x 6").
    - f) Support Brackets, Joint Fasteners: Profiled to suit gutters and downspouts.
    - g) Anchorage Devices: SMACNA requirements. Type recommended by fabricator.
    - h) Collector Head Support: Kynar. Color and Finish to match, as recommended by SMACNA.
    - i) Downspout Supports: Straps, Kynar. Color and Finish to match.
- I. Pitch Pans:
1. Install pitch pans of 24-gauge, G-90 galvanized steel with a 25 Mil Elvaloy® Kee membrane lamination according to NRCA standards, minimum of six inches by six inches (6" x 6").
  2. Pitch pans shall be fabricated to a minimum of six inches (6") above the finished roof membrane. The top vertical edge of the thermoplastic clad metal must be folded over to conceal the uncoated side of the metal inside the pitch pan. The pitch pan flange must be a minimum of three and one half inches (3.5") wide in contact with the horizontal roof plain or field of roof membrane.
  3. Approved caulking or water block shall be applied under the pitch pan flange prior to securing the flange to the deck with approved fasteners a minimum of 4" on center.
  4. 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.
  5. Base of pitch pans shall be filled with grout or cementitious binder to proper height and allowed to cure.
  6. Top finish fill shall be self-leveling, one-part urethane pourable sealer maximum fill to within three-eighths inch (3/8") of top of pitch pan sides.

7. Strip the thermoplastic clad metal flange of the pitch pan to the field membrane with one strip of flashing membrane. The flashing membrane must extend from the outer edge of the pitch pan flange onto the field membrane a minimum of 3 inches and butt to the vertical sides of the pitch pan on all 4 sides. The flashing membrane shall be hot air welded to the thermoplastic clad metal pitch pan and to the field membrane. Hot air welds shall be a minimum of two inches (2") wide.
  8. Install preformed outside corners by hot air welding in place at all four (4) corners of the pitch pan.
  9. Apply seam sealer to the edges of the flashing membrane.
- J. 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 to match existing, or standard color selected by Owner/Project Consultant. 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 07605



1

# ENLARGED GYM PLAN

SCALE: 1/8"=1'-0" (CARNAHAN)

P.S.J.A. ISD - CARNAHAN, FRANKLIN & BUELL  
HVAC ADDITIONS TO GYMS

ADDENDUM #2

DATE:

FILE:  
DWG/

SCALE:

SHEET  
AH1.0  
1 OF 3

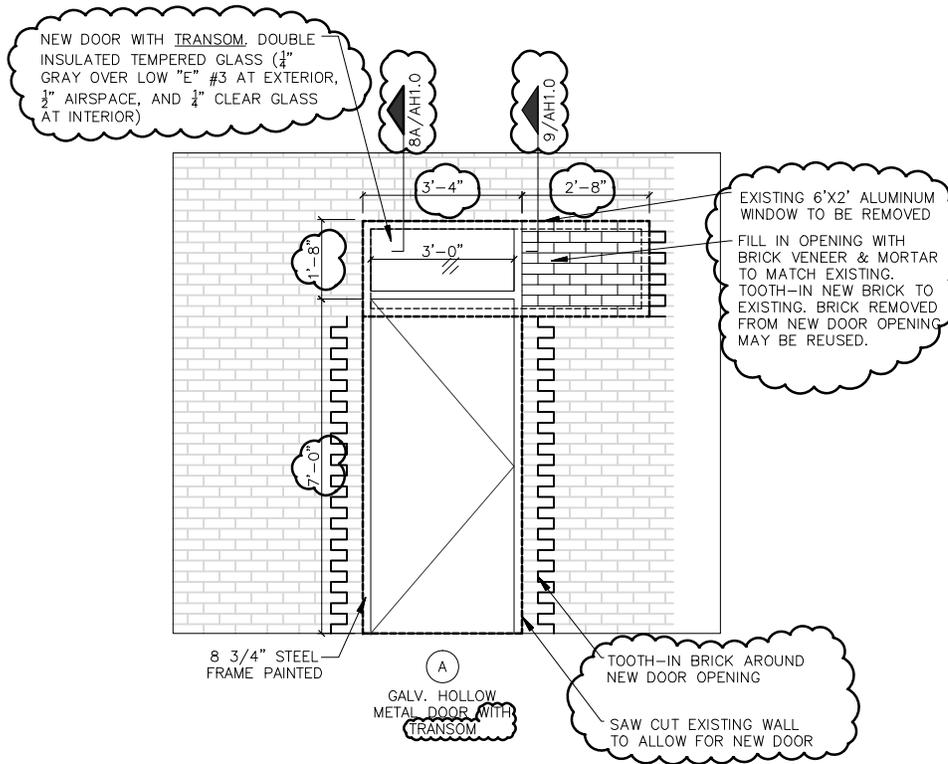


EGV ARCHITECTS, INC.  
220 S. BRIDGE STREET  
PO BOX 8627  
HIDALGO, TX 78557

TEL: (956) 843-2987  
FAX: (956) 843-9726



MAY 21 2019



**7 DOOR DET.**  
SCALE: 1/4" = 1'-0"

P.S.J.A. ISD - CARNAHAN, FRANKLIN & BUELL  
HVAC ADDITIONS TO GYMS

ADDENDUM #2

DATE:

FILE:  
DWG/

SCALE:

SHEET  
AH1.0  
2 OF 3

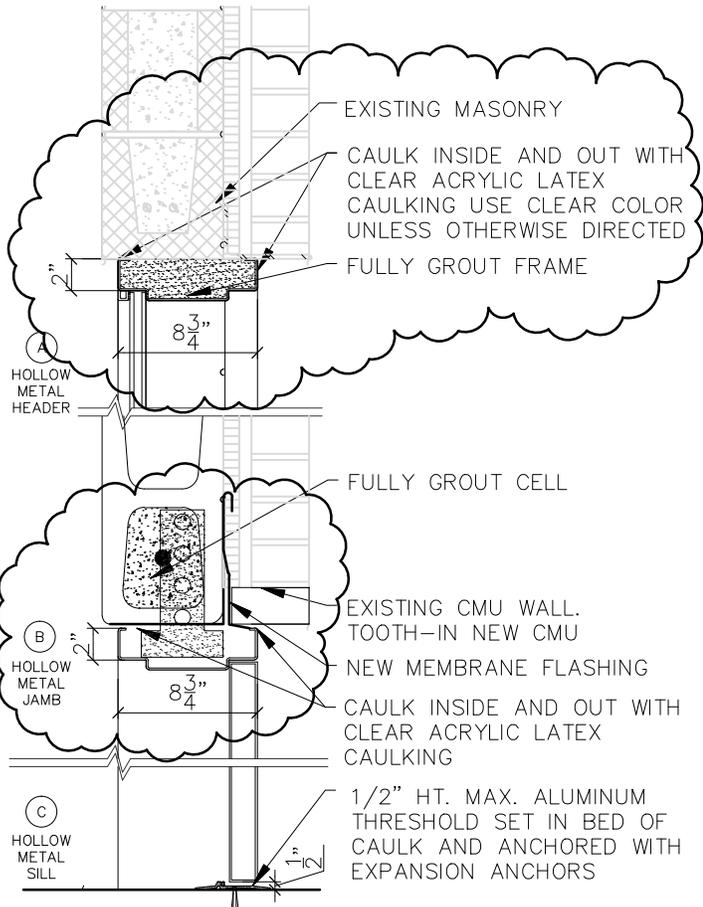


EGV ARCHITECTS, INC.  
220 S. BRIDGE STREET  
PO BOX 8627  
HIDALGO, TX 78557

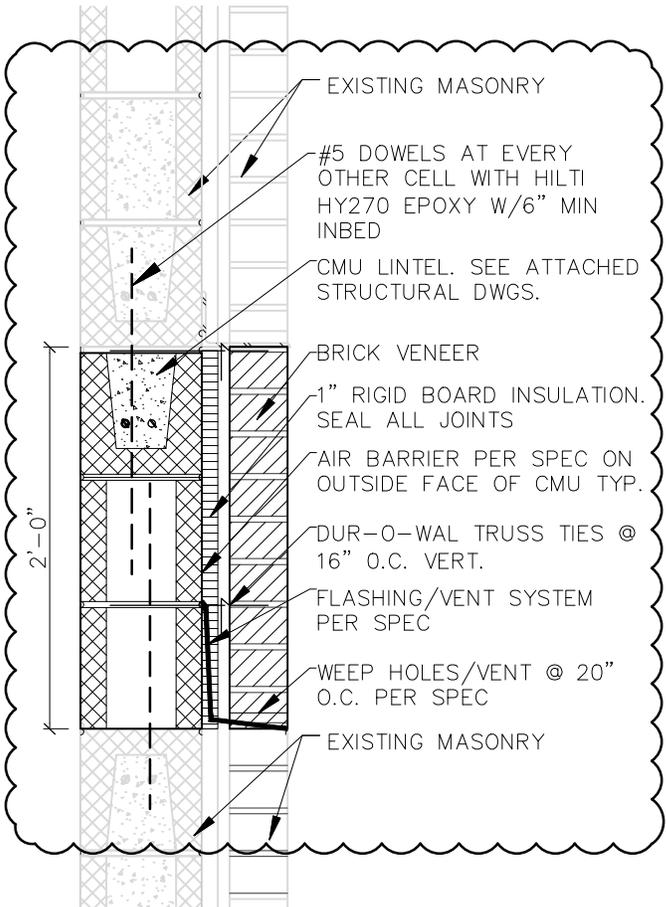
TEL: (956) 843-2987  
FAX: (956) 843-9726



MAY 21 2019



**8 DOOR DET.**  
SCALE: 1"=1'-0"



**9 WALL DET.**  
SCALE: 1"=1'-0"

**P.S.J.A. ISD - CARNAHAN, FRANKLIN & BUELL  
HVAC ADDITIONS TO GYMS**

<b>ADDENDUM #2</b>		DATE:	
 EGV ARCHITECTS, INC. 220 S. BRIDGE STREET PO BOX 8627 HIDALGO, TX 78557 TEL: (956) 843-2987 FAX: (956) 843-9726		FILE: DWG/	
		SCALE:	SHEET <b>AH1.0</b> 3 OF 3



MAY 21 2019

GENERAL ROOF NOTES

- PROVIDE ALL REQUIRED UTILITY STRUCTURAL COMPONENTS AND/OR CONNECTIONS FOR THE FUNCTIONAL USE OF ALL CONTRACTOR SUPPLIED EQUIPMENT OR APPLIANCES, REGARDLESS OF ANY OMISSIONS OR INCONSISTENCIES ENCOUNTERED IN THE CONSTRUCTION DOCUMENTS.
- THE ORDER PROVIDED SHALL MEAN FURNISH AND INSTALL COMPLETE AND READY TO USE.
- IF DISCREPANCIES APPEAR BETWEEN THE DRAWINGS AND THE SPECIFICATIONS, THE HIGHER QUALITY, QUANTITY, AND PRICE SHALL SUPERSEDE.
- THE GENERAL CONTRACTOR AND SUBCONTRACTORS SHALL BECOME FAMILIAR WITH THE PROJECT AND THE ON-SITE OFF-SITE CONDITIONS PRIOR TO BIDDING OR COMMENCING WORK.
- PROVIDE METAL END CLOSURE ON EXPANSION JOINTS WHERE THEY OCCUR AT THE EDGE OF THE ROOF.
- ROOF SLOPES SHOWN ON DRAWING ARE GENERAL AND CONCEPTUAL ONLY. PROVIDE POSITIVE DRAINAGE TO ALL ROOF DRAINS. VERIFY TAPER IN SHOP DRAWINGS. REFER TO STRUCTURAL DOCUMENTS FOR ELEVATIONS.
- PROVIDE TAPERED INSULATION CRICKETS AT MIN. SLOPE AT HIGH SIDE OF ALL MECHANICAL UNITS SMOKE VENTS, ROOF HATCHES & OTHER MISC. ROOF PENETRATIONS, TO SHED WATER AROUND & TO ENSURE POSITIVE ROOF DRAINAGE.
- PROVIDE ADDITIONAL ADHERED ALK PADS AS PROTECTION AT "SERVICE SIDE" OF ALL MECH. EQUIPMENT - FIELD VERIFY LOCATIONS, AS WELL AS PROTECTION AT "ACCESS SIDE" OF ALL ROOF HATCHES ROOF ACCESS LADDERS AND AT DOWNSPOUT LOCATIONS FIELD VERIFY LOCATIONS.
- ALL ROOF BLOCKING AT ROOF EDGES ARE TO BE FABRICATED FROM CONT. FR-EP BOARD. PROVIDE LARGER FR-EP BOARD REQUIRED PER DIMENSIONED DETAILED OR AS FIELD CONDITIONS DICTATE. ALL COPING TO BE SLOPED TO THE INTERIOR.
- ALL EXP. FLASHING, COPING IF APPLICABLE AND THEIR ACCESSORIES SHALL BE AS SPECIFIED. PAINT ALL METAL FLASHING THAT IS NOT PREFINISHED TYP. AND VISIBLE FROM THE GROUND.
- HEIGHT OF ALL NAILERS SHALL BE FLUSH WITH INSULATION AND COVERBOARD THICKNESS.
- ALL THROUGH ALL FLASHING SYSTEMS TO ACCOMMODATE MINIMUM FLASHING HEIGHT FROM FINISHED ROOF SURFACE. PROVIDE END DAMS AS CONDITIONS ALLOW. ALL FLASHING TO HAVE 1/2" LAP MINIMUM AND OR STEP.
- ALL PITCH PANS SHALL BE CLAD METAL AND RECEIVE EITHER MECHANICALLY FASTENED ATTACHED GOOSENECK OR METAL BONNETS UNO. METAL BONNETS SHALL BE SECURED WITH CLAMPING RING AND SEALANT. SPECIAL CARE GIVEN TO FLASH ALL METAL PRIOR TO INSTALLATION.
- ALL INFIELD EXPANSION JOINTS SHALL HAVE LOW SLOPED STANDING SEAM JOINTS AND SHALL BE CHAMFERED AT TERMINATION AT ROOF EDGE TO MEET PROFILE OF PERIMETER.
- ANY CRACKS OR VOIDS IN RISER WALLS ABOVE COUNTER FLASHING SHALL BE REPAIRED WITH COMPATIBLE SEALANT.
- ALL VERTICAL MEMBRANE FLASHING SHALL BE MECHANICALLY FASTENED AND INSTALLED WITH NE METAL COUNTER FLASHING UTILIZING A CONTINUOUS CLIP. SLIDE METAL COVER PLATE DOWN OVER VERTICAL CLIP AND SEAL.
- PROVIDE NE CONCRETE SPLASH BLOCKS ON ROOF ELEVATION SUPPORTED BY A ALK PAD WHERE DOWNSPOUTS OCCUR.
- ALL PIPE AND CONDUIT SHALL RECEIVE PIPE SUPPORTS AND RELATED SHIMS, AND SHALL BE PLACED ON AN ADDITIONAL ADHERED ROOF MEMBRANE UNDER SPECIFIED ALK PAD PRIOR TO SURFACE APPLICATION. SUPPORTS TO OCCUR AT 1/2" O.C. AND WITHIN 1/2" OF ALL SLOPES, TEES AND CORNERS. ALL PIPE TO BE PAINTED PER BUILDING CODE REQUIREMENTS.
- ALL METAL FLASHING SHALL EXTEND BEYOND ROOF EDGE MIN. 1/2" HERE FLASHING ABUTS VERTICAL ALL SURFACE AS DETAILED. ALL FLASHING SHALL BE INSTALLED IN SHINGLE FASHION. ALL EQUIPMENT CURBS TO BE RAISED AS NECESSARY TO MAINTAIN 1/2" MINIMUM HEIGHT ABOVE FINISHED ROOF SURFACE.
- MECHANICAL, ELECTRICAL, AND PLUMBING ROOF EQUIPMENT SHOWN ON THIS PLAN IS FOR GENERAL ARCHITECTURAL INFORMATION ONLY. CONTRACTOR SHALL FIELD VERIFY ALL EQUIPMENT, QUANTITIES, SIZES, TYPE, MEASUREMENTS, ETC. PRIOR TO BIDDING OR COMMENCING WORK.
- FLASHING AND STRIPPING MATERIALS, BASE PLY SHEETS, MEMBRANES, INSULATION, AND ACCESSORIES SHOULD BE RECOMMENDED BY THE ROOFING SYSTEM MANUFACTURER FOR INTENDED USE AND COMPATIBILITY WITH THE MEMBRANE ROOFING SYSTEM.
- WHERE ROOF BLOCKING EXCEEDS 1/2" IN VERTICAL THICKNESS AT TAPERED INSULATION, PROVIDE STEEL ROOF BLOCKING OF GALVANIZED COLORFORM FRAMING AT 1/2" O.C. WITH CONT. TRACK AT TOP AND BOTTOM AND WITH FR-EP T. GRADE PLYWOOD AT EACH SIDE, TOP TO SLOPE WITH TAPERED INSULATION.
- GUTTERS SHALL BE PREFINISHED GALVANIZED STEEL, SIZE PER ROOF PLAN, UNO. PROVIDE PREFINISHED GALVANIZED STEEL BENT PLATE BRACKETS AND PREFINISHED GALVANIZED STEEL SPACERS AT 1/2" O.C. MAX. STAGGER EACH OTHER AT 1/2" O.C.
- PROVIDE PREFINISHED GUTTER EDGES AT 1/2" O.C. MAX.
- DOWNSPOUTS SHALL BE PREFINISHED GALVANIZED STEEL UNO AS INDICATED ON ROOF PLAN OR SPECS. PROVIDE PREFINISHED GALVANIZED STEEL HANGERS AT 1/2" O.C. PROVIDE VANDAL PROOF STAINLESS STEEL STRAINERS AT EACH OUTLET. COORDINATE LOCATION WITH ARCHITECT PRIOR TO INSTALLATION.
- PROVIDE SPLASH BLOCKS AT ALL ROOF LEADER NOZZLES THAT SPILL ONTO GROUND.
- VERIFY ELEVATION OF ROOF DRAIN RELATIVE TO OVERFLOW SCUPPER PRIOR TO INSTALLATION OF SCUPPERS.
- LOCATE SCUPPERS AS INDICATED ON ELEVATIONS, EITHER CENTERED OVER INDENTED OPENINGS, OR CENTERED BETWEEN INDENTED OPENINGS, UNO. ADJUST PLACEMENT TO MEET MASONRY COURSING MODULES.
- ROOF PLAN SHOWS TAPERED INSULATION CONCEPTUALLY AND FOR INTENT ONLY. TAPERED INSULATION IS NOT SHOWN TO SCALE AND IS SHOWN AS GRAPHIC REPRESENTATION ONLY IN ORDER TO SHOW SLOPE AND APPROXIMATE LOCATIONS OF MATERIAL. VERIFY INSULATION REQUIRED TO MAINTAIN SLOPE PRIOR TO INSTALLATION. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.
- PROVIDE 1/2" GA. SST HOODS AT ALL ROOF RISES AT ALL PIPING, ALL LOUVER, DUCT WORK, ETC. PENETRATIONS.

(NOT ALL SPECIFIC ROOF NOTES MAY OR MAY NOT BE KEYS TO EVERY CONDITION WHERE SUCH EXISTS. CONTRACTOR TO VERIFY ALL SUCH LOCATIONS AND CONDITIONS)

SPECIFIC ROOF NOTES


DATE:	DESIGNED:	DRAWN:	CHECKED:	SCALE:

EGV ARCHITECTS, INC.  
220 S. BRIDGE STREET  
PO BOX 8827  
HOUSTON, TX 78557  
TEL: (956) 845-2987  
FAX: (956) 845-9726

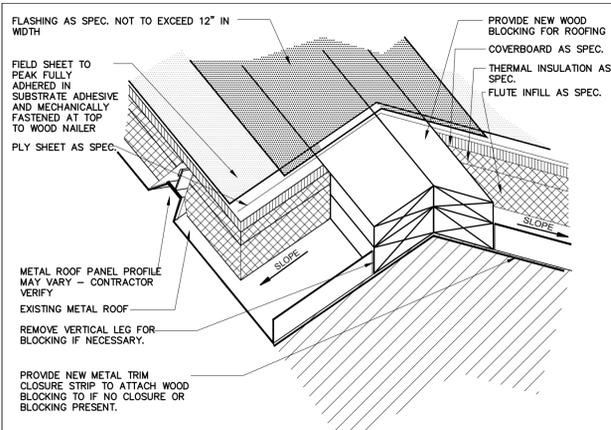


MAY 21 2019

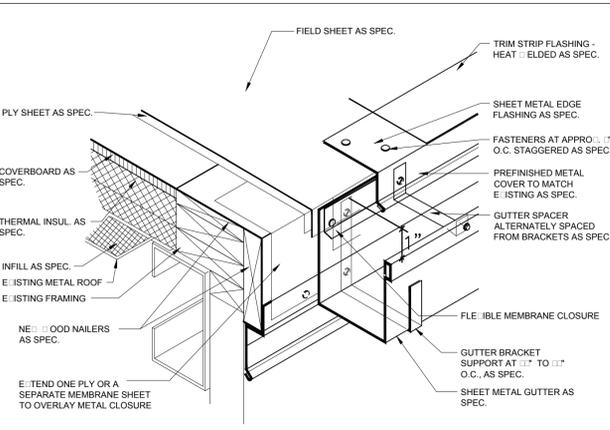
P.S.J.A. ISD - CARNAHAN, FRANKLIN & BUELL  
HVAC ADDITIONS TO GYMS

JOB NO.  
FILE NO. 042/1919

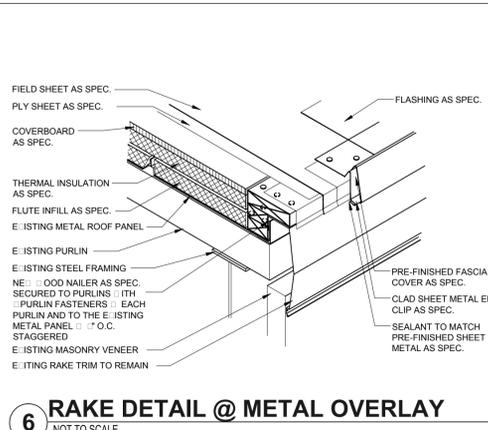
AH.1 SHEET OF



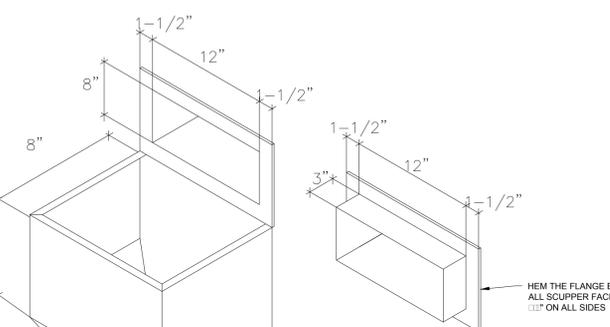
8 RIDGE CAP FLASHING FLUTE INFILL DETAIL  
NOT TO SCALE



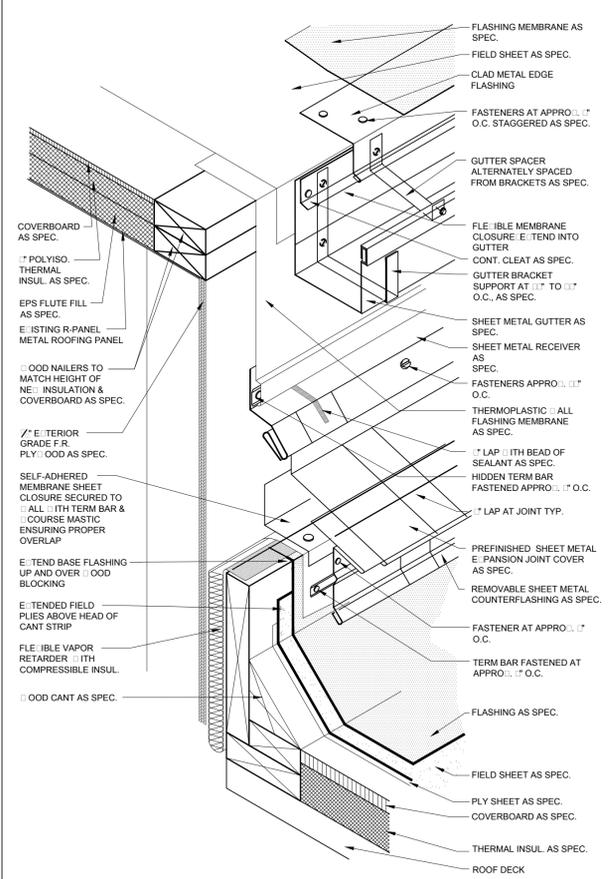
7 GUTTER EAVE DETAIL FOR METAL ROOF OVERLAY  
NOT TO SCALE



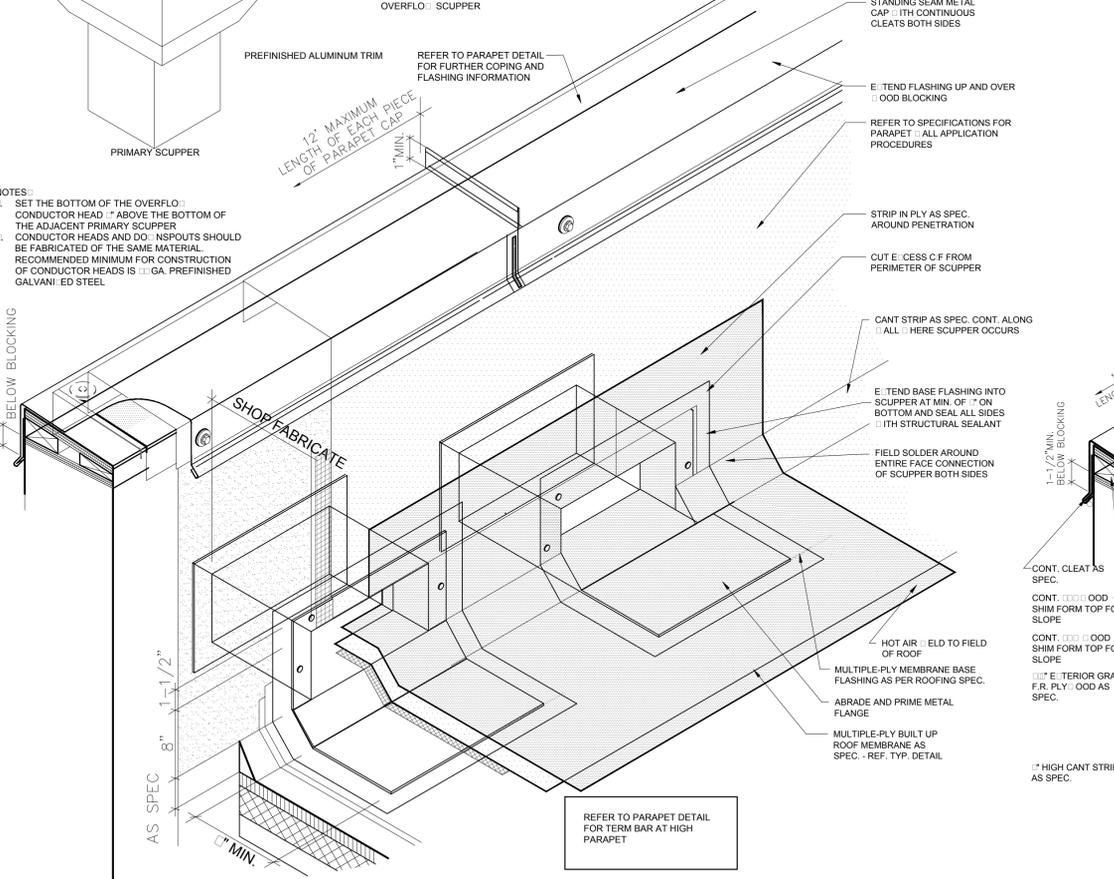
6 RAKE DETAIL @ METAL OVERLAY  
NOT TO SCALE



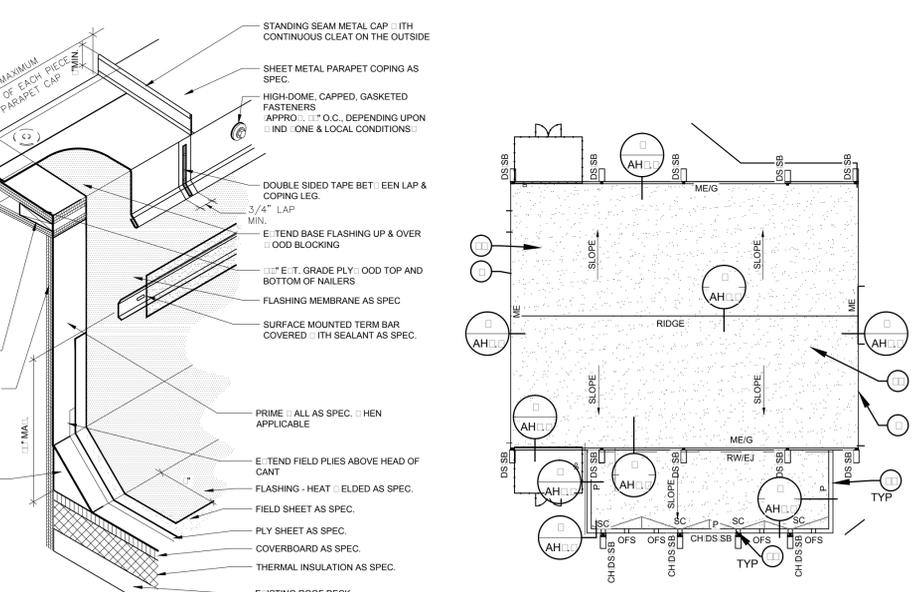
3 PRIMARY AND OVERFLOW SCUPPER  
NOT TO SCALE



4 CHANGE IN ELEV. W/ RISEWALL EJ W/ GUTTER  
NOT TO SCALE



2 HIGH PARAPET  
NOT TO SCALE



1 ROOF PLAN (ALTERNATE #3)  
SCALE: 1/2"=20' (CARNAHAN)



STRUCTURAL ENGINEERING

400 NOLANA SUITE H2  
MCALLEN, TX 78504  
TEL. 956- 687- 9421  
FAX 956- 687- 3218  
FIRM REG. NUMBER F-9369

**ADD #2**  
May 17, 2019

**“P.S.J.A.- Carnahan, Franklin, & Buell  
HVAC Additions to Gyms”**

**PLEASE NOTE CHANGES AS FOLLOWS:**

Structural Attachments:

- A. Addition of 6 11”x17” sheets (S1.0, S1.1, S1.2, S1.3, S2.0, and S3.0).

End of ADD #2



# GENERAL NOTES

## GENERAL

1. THE 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 CONSTRUCTION EQUIPMENT, SHORING FOR THE BUILDING, SHORING FOR THE EARTH BANKS, FORMS, SCAFFOLDING, PLANNING, SAFETY NETS, SUPPORT AND BRACING FOR CRANES, GIN 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 SHALL NOT INCLUDE INSPECTION OF THE ABOVE ITEMS.
2. IT IS SOLELY THE CONTRACTOR'S RESPONSIBILITY TO FOLLOW ALL APPLICABLE SAFETY CODES AND REGULATIONS DURING ALL PHASES OF CONSTRUCTION.
3. EQUIPMENT FRAMING LOADS, OPENINGS AND STRUCTURE IN ANY WAY RELATED TO HVAC, PLUMBING, OR ELECTRICAL REQUIREMENTS ARE SHOWN FOR BIDDING PURPOSES ONLY. EXACT WEIGHTS AND LOCATIONS OF MECHANICAL EQUIPMENT SHALL BE COORDINATED BY CONTRACTOR. IF THE FINAL LOCATION VARIES FROM THAT SHOWN ON THE PLANS, CONTRACTOR TO NOTIFY ARCHITECT AND ENGINEER FOR APPROVAL BEFORE INSTALLATION.
4. SHOULD ANY OF THE DETAILED INSTRUCTIONS SHOWN ON THE PLANS CONFLICT WITH THESE STRUCTURAL NOTES, THE SPECIFICATIONS, OR WITH EACH OTHER, THE STRICTEST PROVISION SHALL GOVERN.
5. THE GENERAL CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS AT THE JOB SITE AND SHALL BE RESPONSIBLE FOR CONDITIONS OF ALL WORK AND MATERIALS.
6. THE CONTRACTOR SHALL REVIEW AND VERIFY ALL DIMENSIONS AND ELEVATIONS. CONTRACTOR SHALL REPORT ANY DISCREPANCIES IN WRITING TO THE ARCHITECT. ANY CONFLICT BETWEEN THE DRAWING AND SPECIFICATIONS OF THE VARIOUS TRADES INVOLVED SHALL BE REPORTED TO THE ARCHITECT AND ENGINEER.
7. DETAILS SHOWN ON DRAWINGS APPLY AT SIMILAR CONDITIONS.
8. ALL WORK SHALL BE DONE IN ACCORDANCE WITH LOCAL STANDARDS AND TO ALL APPLICABLE PROVISIONS OF THE GOVERNING BUILDING CODE.
9. THE ARCHITECT AND ENGINEER SHALL BE NOTIFIED IN WRITING WHEN WORK COMMENCES.
10. CONTRACTOR SUBSTITUTIONS: ANY MATERIALS OR PRODUCTS THAT ARE SUBMITTED FOR APPROVAL THAT ARE DIFFERENT FROM THE MATERIALS OR PRODUCTS SPECIFIED IN THE CONTRACT DOCUMENTS WILL ONLY BE CONSIDERED IF THE FOLLOWING CRITERIA ARE SATISFIED.
  - A) A COST SAVING TO THE OWNER IS DOCUMENTED AND SUBMITTED WITH THE REQUEST
  - B) THE MATERIAL OR PRODUCT HAS BEEN APPROVED BY THE INTERNATIONAL CONFERENCE OF BUILDING OFFICIALS (ICBO) AND THE ICBO REPORT IS SUBMITTED WITH THE REQUEST.

## STRUCTURAL OBSERVATION

1. THE PROFESSIONAL ENGINEER OR HIS/HER AUTHORIZED REPRESENTATIVE SHALL CONDUCT ALL STRUCTURAL OBSERVATIONS. STRUCTURAL OBSERVATIONS SHALL BE FOR THE PURPOSE OF ASCERTAINING GENERAL COMPLIANCE WITH THE CONSTRUCTION DOCUMENTS. HOWEVER, SUCH OBSERVATION VISITS SHALL NOT RELIEVE THE CONTRACTOR FROM HIS OBLIGATIONS AND RESPONSIBILITIES TO THE CONSTRUCTION DOCUMENTS.
2. ITEMS THAT REQUIRE A STRUCTURAL OBSERVATION ARE AS FOLLOWS:
  - A. STEEL REINFORCEMENT PLACEMENT AND SHORING PRIOR TO CUTTING NEW OPENING
3. NOTIFY ENGINEER 24 HOURS IN ADVANCE WHEN A STRUCTURAL OBSERVATION IS REQUIRED.
4. WORK SHALL NOT CONTINUE AT THESE AREAS UNTIL OBSERVATION AND APPROVAL BY ENGINEER. FAILURE BY THE CONTRACTOR TO PROVIDE PROPER NOTICE FOR AN OBSERVATION VISIT AT THE REQUIRED TIME OR ADDITIONAL WORK PERFORMED WITHOUT AN OBSERVATION VISIT WILL BE DONE AT CONTRACTOR'S RISK AND MAY BE SUBJECT TO COMPLETE OR PARTIAL REMOVAL TO VERIFY COMPLIANCE OF PREVIOUS WORK.

## SHOP DRAWINGS & SUBMITTALS

1. SUBMITTAL THAT WILL BE REQUIRED FOR APPROVAL INCLUDE:
  - A. REINFORCING STEEL
  - B. CMU WALL COMPONENTS
2. DEFERRED SUBMITTALS THAT WILL REQUIRE APPROVAL INCLUDE:
  - A. SHORING PLANS
3. DEFERRED SUBMITTALS SHALL BE DESIGNED BY A TEXAS REGISTERED PROFESSIONAL ENGINEER ACCORDING TO THE DESIGN CRITERIA STATED IN THE PLANS AND SPECIFICATIONS, AND AS REQUIRED BY THE RESPECTIVE BUILDING CODE, WHICHEVER IS GREATER. THE SUBMITTAL SHALL INCLUDE SIGNED AND SEALED CALCULATIONS.
4. ALLOW (2) WEEKS MINIMUM FOR REVIEW OF SHOP DRAWINGS.
5. PRIOR TO ISSUING THE SUBMITTALS TO THE ENGINEER, THE CONTRACTOR SHALL REVIEW THE SHOP DRAWINGS. CONTRACTOR MUST VERIFY ALL DIMENSION WITH ARCHITECTURAL PLANS.
6. REVIEW OF SHOP DRAWINGS BY THE ENGINEER IS FOR GENERAL CONFORMANCE TO THE STRUCTURAL DRAWINGS. APPROVAL OF THE SHOP DRAWINGS BY THE ENGINEER DOES NOT RELIEVE THE CONTRACTOR FOR ANY ERRORS IN DIMENSIONS OR MATERIAL INDICATED ON THE SHOP DRAWINGS.

## DESIGN CRITERIA

1. DESIGN LOADS, STRUCTURAL ANALYSIS AND PREPARATION OF STRUCTURAL MEMBERS ARE BASED ON THE FOLLOWING CRITERIA:
2. CODE: ..... IBC 2012
3. VERTICAL LOADS
  - A. ROOF DEAD LOAD (BUILT-UP ROOF): ..... 25 PSF
  - B. ROOF LIVE LOAD (REDUCIBLE) : ..... 20 PSF
4. LATERAL LOADS
  - A. WIND SPEED (V-ULT): ..... 131 MPH
  - WIND SPEED (V-ASD) ..... 101 MPH
  - B. EXPOSURE CATEGORY: ..... C
  - C. IMPORTANCE FACTOR: ..... 1.0
  - D. BUILDING CATEGORY: ..... II
  - E. WALL PRESSURE (COMPONENTS AND CLADDING): ..... 30PSF
5. GEOTECHNICAL ENGINEERING REPORT: NOT PROVIDED

**CHANIN**  
**ENGINEERING, LLC**  
 TBPE FIRM REG. NUMBER F-9369  
 PH: (956) 687-9421  
 FAX: (956) 687-3211  
 400 Nolana, Suite N2  
 McAllen, Texas 78504  
 www.chaninengineering.com



**P.S.J.A. ISD - CARNAHAN, FRANKLIN & BUELL**  
**HVAC ADDITIONS TO GYMS**

EGV ARCHITECTS, INC.  
 220 S. BRIDGE STREET  
 PO BOX 8627  
 HIDALGO, TX 78557  
 TEL: (956) 843-2987  
 FAX: (956) 843-9726

**ARCHITECTS, INC.**

**ADDENDUM #2**

SCALE: \_\_\_\_\_

DATE: 5-17-19

FILE: DWG/psjjo

SHEET  
**\$1.0**  
 OF  
**#**

# GENERAL NOTES

## MASONRY

1. MATERIALS:
  - A. CONCRETE BLOCK: MEDIUM WEIGHT ASTM C90 (HOLLOW) ASTM C145 (SOLID) MINIMUM COMPRESSIVE STRENGTH: 1900 PSI
  - B. MORTAR: ASTM C270 TYPE S.
  - C. GROUT: MINIMUM COMPRESSIVE STRENGTH: 2000 PSI
  - D. NET AREA COMPRESSIVE STRENGTH: 1500 PSI TO BE TESTED IN ACCORDANCE TO ATSM C1314 STANDARDS.
  - E. JOINT REINFORCING: MILL GALVANIZED FINISH, 9 GAGE MINIMUM SIDE WIRES AND CROSS WIRES (DUR-O-WALL). A HOHMANN + BARNARD COMPANY.
  - F. BAR REINFORCING: ASTM A615, GRADE 60 (UNLESS NOTED OTHERWISE).
  - G. TYPICAL CMU WALL REINFORCING SHALL BE #5 (V) AT 48" O.C. AND #5 (H) AT 8'-0" O.C. U.N.O. ON DRAWINGS.
2. REINFORCED MASONRY, WHERE VERTICAL BARS ARE TO BE GROUTED INTO CORES, THE FOLLOWING REQUIREMENTS APPLY:
  - A. PROVIDE DOWELS FROM WALL, SAME SIZE AND SPACING AS WALL BARS. LAP 48 BAR DIAMETERS MINIMUM WITH WALL BAR.
  - B. PROVIDE A CONTINUOUS VERTICAL CAVITY, AT LEAST 2" x 3" IN SIZE, FREE OF MORTAR DROPPINGS.
  - C. PROVIDE REBAR ALIGNMENT DEVICES AT A MAXIMUM SPACING OF 96 BAR DIAMETERS (MINIMUM OF 2 PER BAR).
  - D. AT SPLICES IN VERTICAL BARS, PROVIDE MECHANICAL COUPLERS OR 48 BAR DIAMETER LAP.
  - E. ALL REINFORCEMENT MUST BE INSTALLED AND SECURELY ANCHORED IN PLACE PRIOR TO PLACEMENT OF GROUT.
  - F. MAXIMUM HEIGHT OF GROUT LIFT = 4'-0". UNLESS HIGH LIFT GROUTING PROCEDURES ARE EMPLOYED IN ACCORDANCE WITH ASI 530-99
3. MISCELLANEOUS:
  - A. FILL CORE SOLID AROUND ANCHOR BOLTS.
  - B. PROVIDE SOLIDLY FILLED HOLLOW BLOCKS AT ALL EMBED ANCHOR LOCATIONS.
  - C. SET WELD PLATES IN BOND BEAMS AFTER THE GROUT IS PLACED, BUT WHILE IT IS STILL PLASTIC.
  - D. HOLLOW MASONRY UNITS TO BE LAID WITH FULL MORTAR COVERAGE ON HORIZONTAL AND VERTICAL FACE SHELLS. WEBS SHALL ALSO BE BEDDED IN ALL COURSES OF PIERS, COLUMNS, AND PILASTERS, AND IN THE STARTING COURSE ON FOOTING, AND WHEN ADJACENT TO CELLS OR CAVITIES TO BE REINFORCED OR FILLED WITH CONCRETE OR GROUT. SOLID UNITS TO BE LAID WITH FULL HEAD AND BED JOINTS.
  - E. PROVIDE JOINT REINFORCING AT 16 INCHES, EXCEPT AS NOTED.
  - F. LAP JOINT REINFORCING 6 INCHES FOR STANDARD, 15 INCHES FOR HEAVY WEIGHT.
  - G. VERTICAL CONTROL JOINTS SHALL BE PROVIDED FULL HEIGHT OF MASONRY WALLS AS LOCATED ON THE DRAWINGS. THE JOINT SHALL BE PROVIDED AS A CONTINUOUS HEAD JOINT WITH MORTAR RAKED BACK 3/4" AT BOTH FACES AND 50% OF THE HORIZONTAL JOINT REINFORCING CUT AT THE JOINT. AFTER THE MORTAR IS SET, THE JOINT SHALL BE CAULKED.
  - H. FILL ALL VOIDS AND CELLS WITHIN 12" EITHER SIDE OF CENTERLINE OF BEAM AND/OR COLUMN BEARING LOCATIONS WITH A #4 REINFORCING BAR AND GROUT U.N.O.
  - I. ALL CMU WALLS MUST HAVE SPECIAL INSPECTION PER IBC CODE 2012 SECTION 1705.4 "MASONRY CONSTRUCTION" ON CHAPTER 17-"STRUCTURAL TEST & SPECIAL INSPECTION". THE CONTRACTOR MUST PROVIDE REPORTS OF THESE "SPECIAL INSPECTIONS".
  - J. BARS SCHEDULED "CONTINUOUS" SHALL BE SPLICED AS FOLLOWS:

REINFORCING BAR SIZE	MIN. LAP SPLICE LENGTH
#5	30"
#6	36"
#7	42"
#8	48"
#9	54"
#10	MECHANICAL CONNECTOR
#11	

4. STABILITY AND BRACING: ALL MASONRY WALLS SHOWN ON THE CONTRACT DRAWINGS HAVE BEEN DESIGNED TO RESIST THE REQUIRED CODE VERTICAL AND LATERAL FORCES APPLIED TO THEM IN THEIR FINAL CONSTRUCTED POSITION ONLY ASSUMING FULL BRACING AT TOP, BOTTOM, AND/ OR SIDES AS INDICATED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT CONSTRUCTION RESIST ANY ERECTION VERTICAL OR LATERAL LOADS THAT COULD BE IMPOSED ON THE WALLS PRIOR TO CONSTRUCTION COMPLETION.
5. TESTING:
  - A. TESTING FREQUENCY: ONE SET OF SPECIFIED TESTS FOR EVERY 5,000 SF OF COMPLETED WALL AREA.
  - B. TESTING OF MORTAR MIX: IN ACCORDANCE WITH ASTM C780 FOR AGGREGATE RATIO AND WATER CONTENT, AIR CONTENT, CONSISTENCY, AND COMPREHENSIVE STRENGTH.
  - C. TESTING OF GROUT MIX: IN ACCORDANCE WITH ASTM C1019 FOR COMPREHENSIVE STRENGTH, AND IN ACCORDANCE WITH ASTM C143/C143M FOR SLUMP.
  - D. TEST COMPREHENSIVE STRENGTH OF MORTAR AND MASONRY TO ASTM C1314: TEST IN ACCORDANCE WITH MASONRY UNIT SECTIONS SPECIFIED.
6. GENERAL CONTRACTOR SHALL HOLD A PRE-CONSTRUCTION MEETING WITH STRUCTURAL ENGINEER AND MASONRY CONTRACTOR BEFORE MASONRY WORK COMMENCES.

## STRUCTURAL STEEL

1. STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED, AND ERECTED IN ACCORDANCE TO AISC SPECIFICATIONS.
2. MATERIALS USED SHALL BE AS FOLLOWS=
 

A. STRUCTURAL W-SHAPES	- ASTM A992 GRADE 50
B. STRUCTURAL M-SHAPES AND S-SHAPES	- ASTM A36
C. STRUCTURAL T-SHAPES	- CUT FROM W-SHAPES
D. CHANNELS AND ANGLES	- ASTM A36
E. ROUND HOLLOW STRUCTURAL SECTIONS	- ASTM A500 GRADE B
F. SQUARE AND RECTANGULAR HOLLOW STRUCTURAL SECTIONS	- ASTM A500 GRADE B
G. STRUCTURAL PLATES	- ASTM A36
H. STRUCTURAL BARS	- ASTM A36
I. HIGH STRENGTH BOLTS	- ASTM A325
J. ELECTRODES	- SERIES E70
3. ALL WELDING SHALL BE DONE BY CERTIFIED WELDERS IN ACCORDANCE WITH THE LATEST EDITION OF THE AMERICAN WELDING SOCIETY SPECIFICATIONS.
4. CONNECTIONS NOT DETAILED AND/OR SCHEDULED ON STRUCTURAL DRAWINGS SHALL BE DETAILED BY FABRICATOR AND MARKED FOR ENGINEERS APPROVAL. CONNECTIONS TO BE DESIGNED TO AISC SPECIFICATIONS AND SHALL BE CAPABLE OF SUPPORTING 55% OF THE MAXIMUM UNIFORM LOAD CAPACITY FOR THE SPAN SPECIFIED, SHOWN IN THE TABLES OF UNIFORM CONSTANTS OF THE AISC MANUAL OF STEEL CONSTRUCTION.
5. REFER TO ARCHITECTURAL PLANS FOR ANY MISCELLANEOUS STEEL NOT SHOWN ON STRUCTURE DRAWING. MISCELLANEOUS STEEL AND CONNECTIONS SHALL BE DESIGNED BY STEEL FABRICATOR.
6. HOT DIP GALVANIZE, IN ACCORDANCE WITH ASTM A123 AND ASTM A153, STRUCTURAL STEEL AND FASTENERS PERMANENTLY EXPOSED TO THE WEATHER.
7. STEEL SUPPORTING OR CONNECTED TO HVAC AND OTHER EQUIPMENT AS SHOWN ON THE DRAWINGS IS SHOWN FOR BIDDING PURPOSES ONLY CONTRACTOR SHALL COORDINATE EXACT LOCATION AND SIZE BEFORE COMMENCING WORK.
8. STRUCTURAL STEEL SHALL BE PAINTED WITH ONE COAT OF RUST INHIBITIVE PAINT.
9. STRUCTURAL DRAWINGS SHALL NOT BE REPRODUCED IN WHOLE OR IN PART FOR SHOP DRAWING SUBMITTALS.
10. PROVIDE ---TONS OF RED IRON ALLOWANCE TO BE USED AS DIRECTED BY STRUCTURAL ENGINEER. INCLUDE LABOR COSTS IN THE ALLOWANCE. ANY UNUSED ALLOWANCE SHALL BE CREDITED BACK TO OWNER AT A COST OF \$3500 PER TON.
11. ALL WELDED CONNECTION SHALL BE MADE WITH A 1/4" FILLET WELD U.N.O.
12. PROVIDE 1/2" GAP AT ALL PENETRATIONS THROUGH CMU WALL AND INFILL WITH ELASTOMERIC MATERIAL.
13. STEEL FABRICATOR SHALL BE CERTIFIED BY ONE OF THE FOLLOWING: AISC/ IBC/ IAS-ICC

**CHANIN**  
**ENGINEERING, LLC**  
 TBPE FIRM REG. NUMBER F-9369  
 PH: (956) 687-9421  
 FAX: (956) 687-3211  
 400 Nolana, Suite N2  
 McAllen, Texas 78504  
 www.chaninengineering.com



**P.S.J.A. ISD - CARNAHAN, FRANKLIN & BUELL**  
**HVAC ADDITIONS TO GYMS**

EGV ARCHITECTS, INC.  
 220 S. BRIDGE STREET  
 PO BOX 8827  
 HIDALGO, TX 78557  
 TEL: (956) 843-2887  
 FAX: (956) 843-9726



**ADDENDUM #2**

SCALE:

DATE: 5-17-19

FILE: DWG/psjg

SHEET

**S1.1**  
 OF  
**#**

# GENERAL NOTES

## STEEL REINFORCING

- ALL REINFORCEMENT SHALL BE NEW BILLET STEEL CONFORMING TO ASTM A-615 GRADE 60.
- REINFORCING STEEL SHALL BE DESIGNED, DETAILED, FABRICATED AND PLACED IN ACCORDANCE WITH THE LATEST ACI DETAILING MANUAL (SP-66) AND CSRI MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE, (ACI #315) LATEST EDITIONS.
- BARS SCHEDULED OR DETAILED "CONT" SHALL BE SPLICED ONLY WHEN UNAVOIDABLE AT POINTS OF MINIMUM STRESS AND WITH A MINIMUM LAP AS FOLLOWS:
  - HORIZONTAL BARS w/ MORE THAN 12" OF FRESH CONCRETE CAST BELOW LAPS.
    - #6 BARS AND SMALLER - 57 BAR DIAMETERS
    - #7 BARS AND BIGGER - 72 BAR DIAMETERS
  - OTHER BARS
    - #6 BARS AND SMALLER - 44 BAR DIAMETERS
    - #7 BARS AND BIGGER - 55 BAR DIAMETERS
- ALL SPLICES TO BE STAGGERED A MINIMUM OF 4'-0". TOP BAR AND BOTTOM BAR SPLICES TO BE LOCATED AT MID-SPAN AND WITHIN 1/3 SPAN RESPECTIVELY.
- CORNER REINFORCING BARS SHALL BE USED AT ALL CORNERS AND INTERSECTIONS.
- EXTEND THE SLAB REINFORCING STEEL PERPENDICULAR TO EXTERIOR GRADE BEAM TO THE TOP OUT SIDE REINFORCING BAR OF BEAM.
- SPACE REINFORCING BARS WITH MINIMUM CLEAR SPACING IN ACCORDANCE WITH ACI 318 OF ONE BAR DIAMETER, BUT NOT LESS THAN 1 INCH. FOR COMPRESSION MEMBERS, SPACE AT A MINIMUM OF 1.5 INCHES OR 1.5 BAR DIAMETERS, WHICHEVER IS GREATER.
- WHERE REINFORCING BARS ARE PLACED IN MULTIPLE LAYERS, PLACE UPPER BARS DIRECTLY ABOVE LOWER BARS.
- MAINTAIN CONCRETE COVER AROUND REINFORCEMENT IN ACCORDANCE WITH ACI 318 AND AS FOLLOWS:
  - FOOTING AND CONCRETE CAST AGAINST EARTH - 3 INCHES
  - EXPOSED TO EARTH OR WEATHER
    - #6 BARS AND BIGGER - 2 INCHES
    - #5 BARS AND SMALLER - 1.5 INCHES
  - BEAMS AND COLUMNS - 1.5 INCHES
  - SLABS AND WALLS - 1 INCH
- REPAIR ANY DAMAGE TO VAPOR RETARDER PER MANUFACTURER SPECIFICATIONS.
- ADDITIONAL REINFORCING TO BE PROVIDED ON SITE FOR USE AS DIRECTED BY STRUCTURAL ENGINEER.
  - #4 BARS - 100 FT.
  - #5 BARS - 100 FT.
  - #6 BARS - 100 FT.

## CONTRACTOR NOTE

THE STRUCTURAL SYSTEM FOR THIS PROJECT SHALL NOT BE CONSTRUCTED BY USING THE STRUCTURAL DRAWINGS ALONE. THESE DRAWINGS WERE DEVELOPED FROM DATA DERIVED PRIMARILY FROM THE ARCHITECTURAL DRAWINGS AND SECONDARILY FROM MEP, CIVIL AND OTHER DISCIPLINES' DOCUMENTS. IT IS INTENDED THAT CONSTRUCTION PROCEED BY UTILIZING ALL OF THE INFORMATION CONTAINED IN THE ENTIRE SET OF CONSTRUCTION DOCUMENTS TAKEN AS A WHOLE; FAILURE TO DO SO WILL RESULT IN ERRORS WHICH SHALL BE CORRECTED AT THE CONTRACTOR'S EXPENSE.

© COPYRIGHT 2019 - ALL RIGHTS RESERVED

These drawings, as instruments of professional service, are the property of Chanin Engineering LLC for use solely with respect to this Project and shall not be reproduced for other purposes.

The Professional Engineer whose seal appears on the structural construction documents is the project Structural Engineer-of-Record (SER) who bears legal responsibility for the performance of the structural framing relating to the public health, safety and welfare. No other party, whether or not a Professional Engineer, may complete, correct, revise, delete or add to these construction documents or perform inspections of the work without the written permission of the SER.

## STRUCTURAL TESTS AND SPECIAL INSPECTION

- THE OWNER SHALL EMPLOY A SPECIAL INSPECTOR TO PROVIDE INSPECTIONS DURING CONSTRUCTION ON THE TYPES OF WORK LISTED IN THIS SECTION.
- THE FOLLOWING TERMS AND PHRASES SHALL HAVE THE MEANINGS SHOWN BELOW AS IT PERTAINS TO THIS SECTION,
  - APPROVED AGENCY - AN ESTABLISHED AND RECOGNIZED AGENCY REGULARLY ENGAGED IN CONDUCTING AND FURNISHING SPECIAL INSPECTION SERVICES.
  - APPROVED FABRICATOR - AN ESTABLISHED AND QUALIFIED FIRM APPROVED BY BUILDING OFFICIAL. SPECIAL INSPECTIONS ARE NOT REQUIRED WHEN WORK IS PERFORMED ON THE PREMISES OF AN APPROVED FABRICATOR.
  - SPECIAL INSPECTION, CONTINUOUS - THE FULL TIME OBSERVATION OF WORK REQUIRING SPECIAL INSPECTION.
  - SPECIAL INSPECTION, PERIODIC - THE PART TIME OR INTERMITTENT OBSERVATION OF WORK REQUIRING SPECIAL INSPECTION.
- SPECIAL INSPECTORS SHALL KEEP RECORDS OF ALL INSPECTIONS AND SHALL FURNISH REPORTS TO THE BUILDING OFFICIAL AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION. IF THE DISCREPANCIES ARE NOT CORRECTED THEY SHALL BE BROUGHT TO THE ATTENTION OF THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE.
- THE FOLLOWING ITEMS REQUIRE SPECIAL INSPECTION.
- SPECIAL INSPECTION FOR STRUCTURAL STEEL SHALL BE IN ACCORDANCE WITH THE QUALITY ASSURANCE INSPECTION REQUIREMENTS OF AISC 360.

TABLE 1705.2.2

REQUIRED VERIFICATION AND INSPECTION OF STEEL CONSTRUCTION OTHER THAN STRUCTURAL STEEL

VERIFICATION AND INSPECTION	CONTINUOUS	PERIODIC	REFERENCED STANDARD <sup>a</sup>
1. MATERIAL VERIFICATION OF COLD-FORMED STEEL DECK.			
a. IDENTIFICATION MARKINGS TO CONFORM TO ASTM STANDARDS SPECIFIED IN THE APPROVED CONSTRUCTION DOCUMENTS.	---	X	APPLICABLE ASTM MATERIAL STANDARDS
b. MANUFACTURER'S CERTIFICATE TEST REPORTS.	---	X	---
2. INSPECTION OF WELDING:			
a. COLD-FORMED STEEL DECK:			
1) FLOOR AND ROOF DECK WELDS	---	X	AWS D1.3
b. REINFORCING STEEL:			
1) VERIFICATION OF WELDABILITY OF REINFORCING STEEL OTHER THAN ASTM A 706.	---	X	
2) REINFORCING STEEL RESISTING FLEXURAL AND AXIAL FORCES IN INTERMEDIATE AND SPECIAL MOMENT FRAMES, AND BOUNDARY ELEMENTS OF SPECIAL STRUCTURAL WALLS OF CONCRETE AND SHEAR REINFORCEMENT.	X	---	AWS D1.4 ACI 318: SECTION 3.5.2
3) SHEAR REINFORCEMENT.	X	---	
4) OTHER REINFORCING STEEL.	---	X	

**CHANIN**  
ENGINEERING, LLC

TBPE FIRM REG. NUMBER F-9369

PH: (956) 687-9421  
FAX: (956) 687-3211  
400 Nolana, Suite N2  
McAllen, Texas 78504  
www.chaninengineering.com



P.S.J.A. ISD - CARNAHAN, FRANKLIN & BUELL  
HVAC ADDITIONS TO GYMS

EGV ARCHITECTS, INC.  
220 S. BRIDGE STREET  
PO BOX 8627  
HIDALGO, TX 78557  
TEL: (956) 843-2987  
FAX: (956) 843-9726



ADDENDUM #2

SCALE:

DATE: 5-17-19

FILE: DWG/psjg

SHEET  
**51.2**  
OF  
#

# GENERAL NOTES

## LEVEL 1 REQUIRED VERIFICATION AND INSPECTION OF MASONRY CONSTRUCTION

INSPECTION TASK	FREQUENCY OF INSPECTION		REFERENCE FOR CRITERIA		
	CONTINUOUS DURING TASK LISTED	PERIODICALLY DURING TASK LISTED	IBC SECTION	ACI 530/ ASCE 5/ TMS 402 <sup>a</sup>	ACI 530.1/ ASCE 6/ TMS 602 <sup>a</sup>
1. AS MASONRY CONSTRUCTION BEGINS, THE FOLLOWING SHALL BE VERIFIED TO ENSURE COMPLIANCE:					
a. PROPORTIONS OF SITE-PREPARED MORTAR.	—	X	—	—	Art. 2.6A
b. CONSTRUCTION OF MORTAR JOINTS.	—	X	—	—	Art. 3.3B
c. LOCATION OF REINFORCEMENT , CONNECTORS, PRESTRESSING TENDONS AND ANCHORAGES.	—	X	—	—	Art. 3.4, 3.6A
d. PRESTRESSING TECHNIQUE.	—	X	—	—	Art. 3.6B
e. GRADE AND SIZE OF PRESTRESSING TENDONS AND ANCHORAGES.	—	X	—	—	Art. 2.4B, 2.4H
2. THE INSPECTION PROGRAM SHALL VERIFY:					
a. SIZE AND LOCATION OF STRUCTURAL ELEMENTS.	—	X	—	—	Art. 3.3G
b. TYPE, SIZE AND LOCATION OF ANCHORS, INCLUDING OTHER DETAILS OF ANCHORAGE OF MASONRY TO STRUCTURAL MEMBERS, FRAMES OR OTHER CONSTRUCTION.	—	X	—	Sec. 1.2.2(e), 2.1.4, 3.1.6	—
c. SPECIFIED SIZE, GRADE AND TYPE OF REINFORCEMENT	—	X	—	Sec. 1.13	Art. 2.4, 3.4
d. WELDING OF REINFORCING BARS.	X	—	—	Sec. 2.1.10.7.2, 3.3.3.4(b)	—
e. PROTECTION OF MASONRY DURING COLD WEATHER (TEMPERATURE BELOW 40°F) OR HOT WEATHER (TEMPERATURE ABOVE 90°F).	—	X	—	—	Art. 1.8C, 1.8D
f. APPLICATION AND MEASUREMENT OF PRESTRESSING FORCE.	—	X	—	—	Art. 3.6B
3. PRIOR TO GROUTING, THE FOLLOWING SHALL BE VERIFIED TO ENSURE COMPLIANCE:					
a. GROUT SPACE IS CLEAN.	—	X	—	—	Art. 3.2D
b. PLACEMENT OF REINFORCEMENT AND CONNECTORS AND PRESTRESSING TENDONS AND ANCHORAGES.	—	X	—	Sec. 1.13	Art. 3.4
c. PROPORTIONS OF SITE-PREPARED GROUT AND PRESTRESSING GROUT FOR BONDED TENDONS.	—	X	—	—	Art. 2.6B
d. CONSTRUCTION OF MORTAR JOINTS.	—	X	—	—	Art. 3.3B
4. GROUT PLACEMENT SHALL BE VERIFIED TO ENSURE COMPLIANCE WITH CODE AND CONSTRUCTION DOCUMENT PROVISIONS.	X	—	—	—	Art. 3.5
a. GROUTING OF PRESTRESSING BONDED TENDONS.	X	—	—	—	Art. 3.6C
5. PREPARATION OF ANY REQUIRED GROUT SPECIMENS, MORTAR SPECIMENS AND/OR PRISMS SHALL BE OBSERVED.	X	—	—	—	Art. 1.4
6. COMPLIANCE WITH REQUIRED INSPECTION PROVISIONS OF THE CONSTRUCTION DOCUMENTS AND THE APPROVED SUBMITTALS SHALL BE VERIFIED.	—	X	—	—	Art. 1.5

**CHANIN**  
**ENGINEERING, LLC**  
 TBPE FIRM REG. NUMBER F-9369  
 PH: (956) 687-9421  
 FAX: (956) 687-3211  
 400 Nolana, Suite N2  
 McAllen, Texas 78504  
 www.chaninengineering.com



**P.S.J.A. ISD - CARNAHAN, FRANKLIN & BUELL  
 HVAC ADDITIONS TO GYMS**

**EGV ARCHITECTS, INC.**  
 220 S. BRIDGE STREET  
 PO BOX 8627  
 HIDALGO, TX 78557  
 TEL: (956) 843-2987  
 FAX: (956) 843-9726

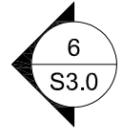
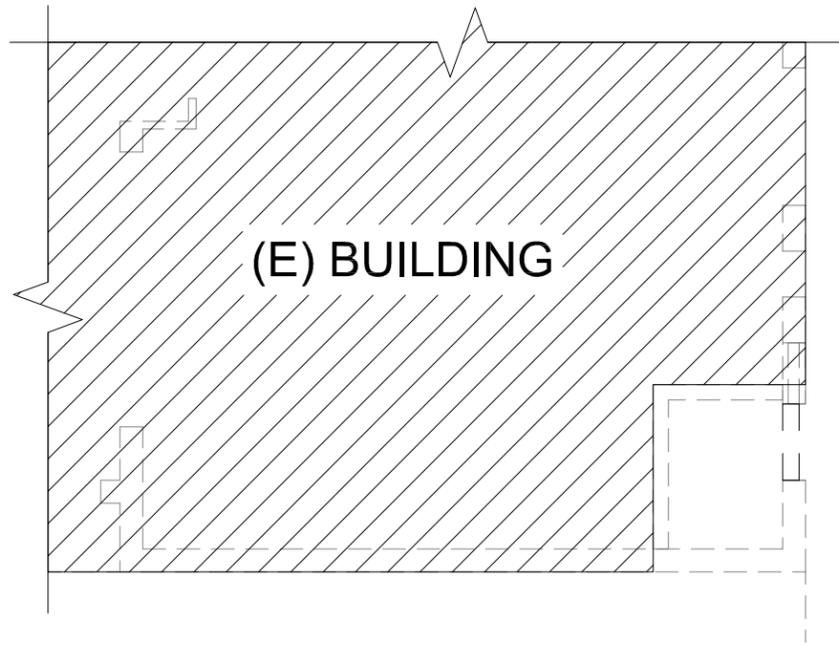
**ADDENDUM #2**

SCALE: \_\_\_\_\_

DATE: 5-17-19  
 FILE: DWG/psjg

SHEET **51.3** OF #

**CHANIN**  
**ENGINEERING, LLC**  
 TBPE FIRM REG. NUMBER F-9369  
 PH: (956) 687-9421  
 FAX: (956) 687-3211  
 400 Nolana, Suite N2  
 McAllen, Texas 78504  
 www.chaninengineering.com



# CMU WALL LAYOUT PLAN

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

**P.S.J.A. ISD - CARNAHAN, FRANKLIN & BUELL**  
**HVAC ADDITIONS TO GYMS**

**EGV ARCHITECTS, INC.**  
 220 S. BRIDGE STREET  
 PO BOX 8627  
 HIDALGO, TX 78557  
 TEL: (956) 843-2987  
 FAX: (956) 843-9726

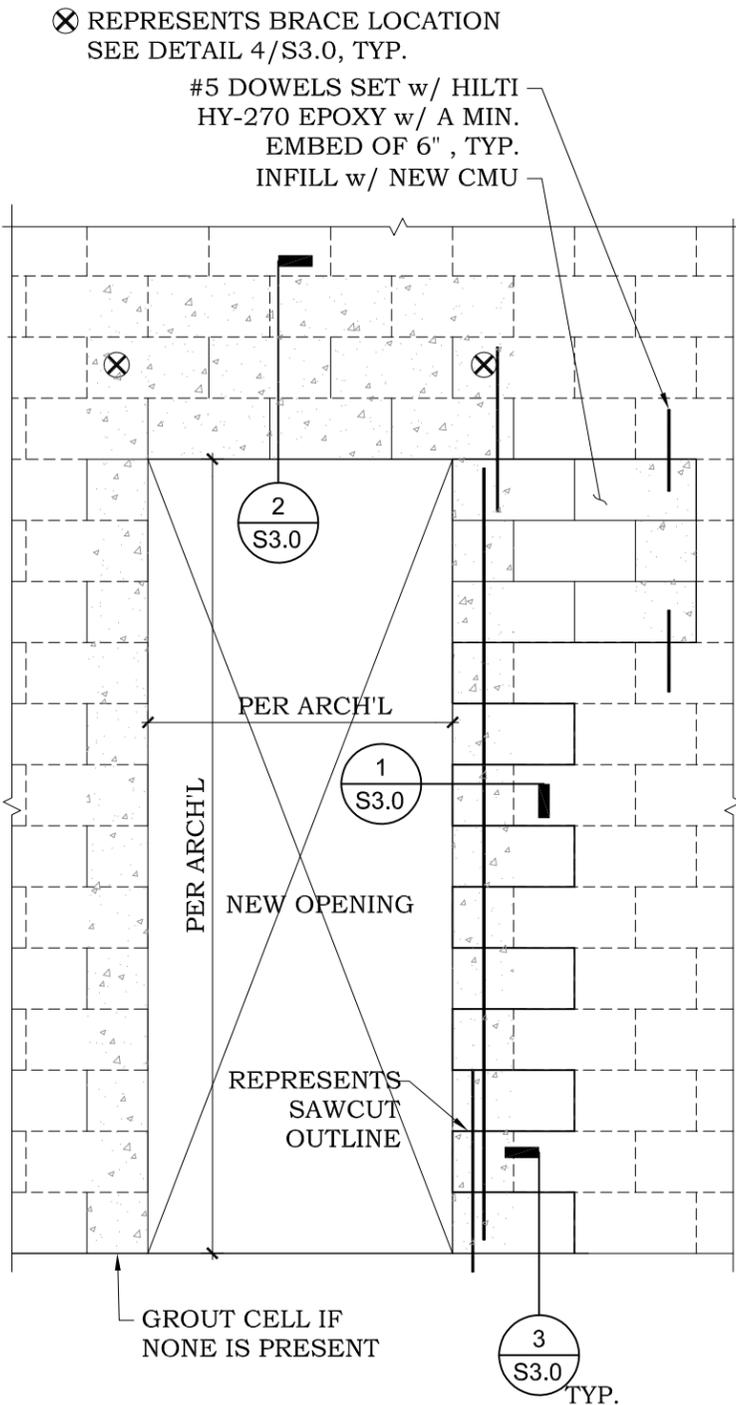


**ADDENDUM #2**

DATE: 5-17-19  
 SCALE:  
 FILE: DWG/psjg

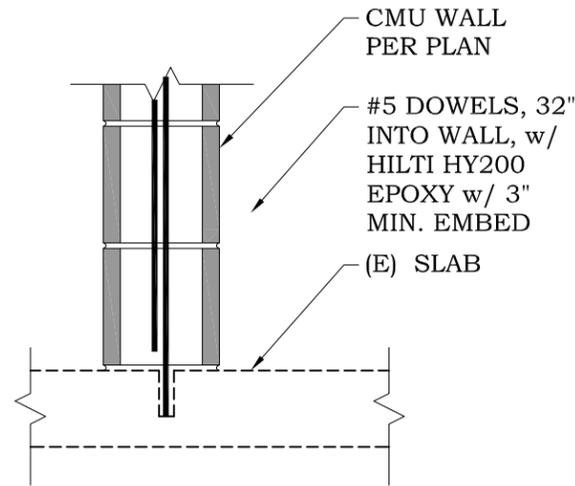
SHEET  
**S2.0**  
 OF  
**#**

**CHANIN**  
**ENGINEERING, LLC**  
 TBPE FIRM REG. NUMBER F-9369  
 PH: (956) 687-9421  
 FAX: (956) 687-3211  
 400 Nolana, Suite N2  
 McAllen, Texas 78504  
 www.chaninengineering.com



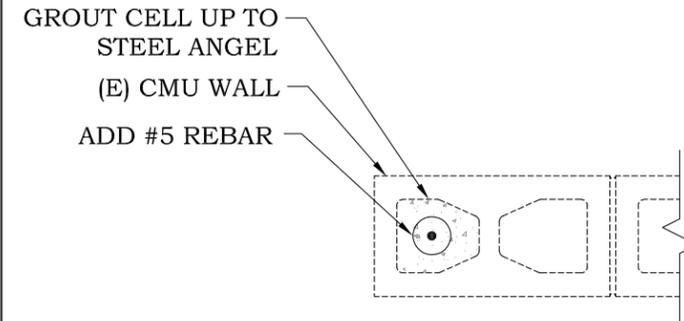
NEW OPENING

6



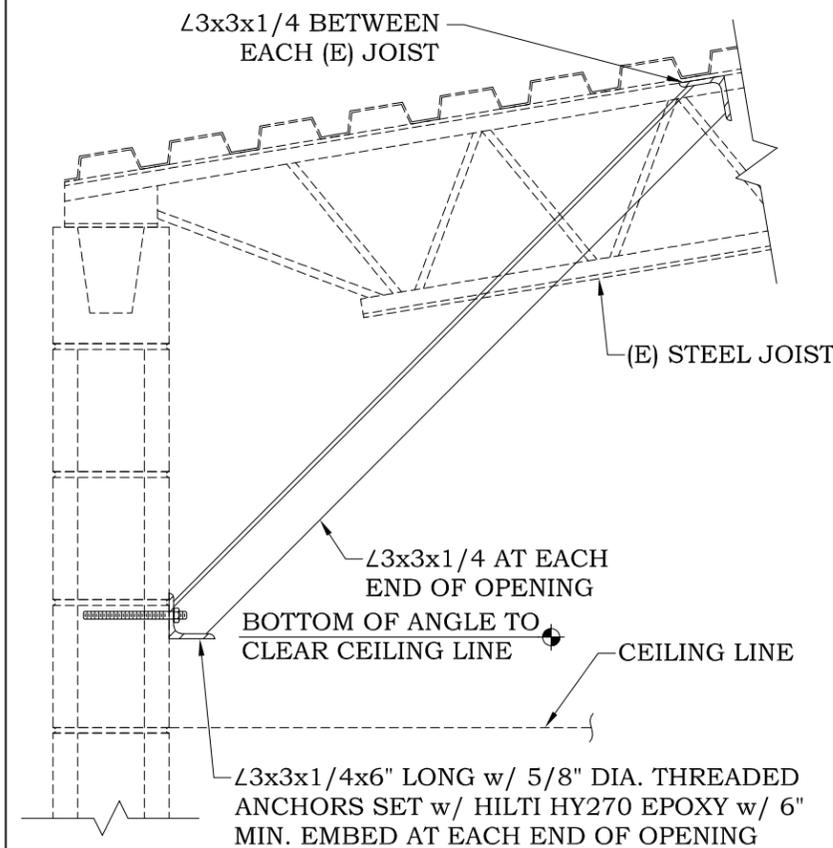
CMU WALL TO (E) SLAB

3



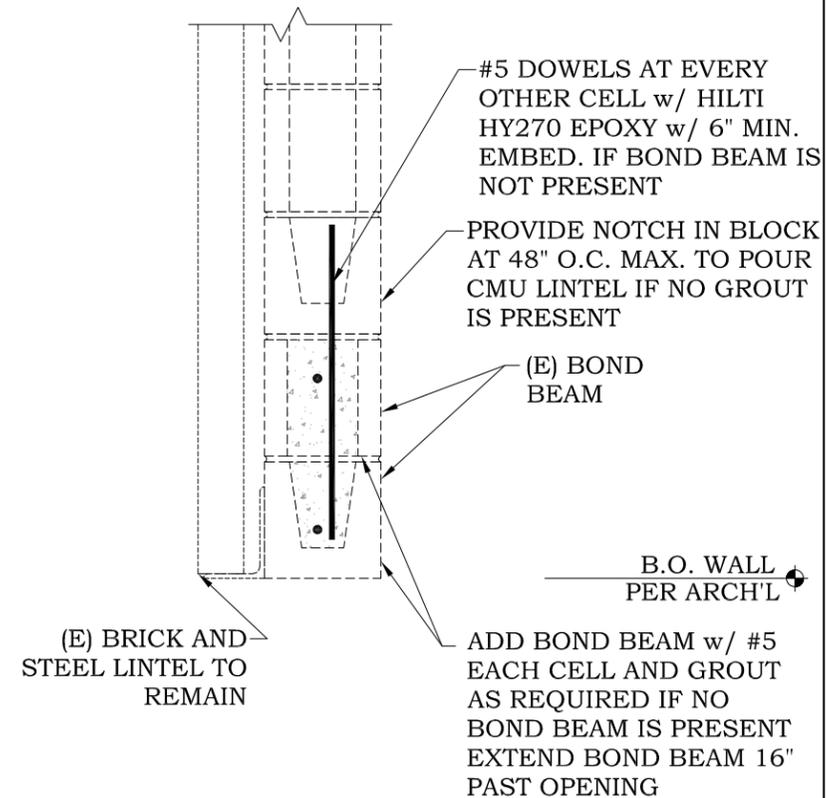
GROUT OF (E) CMU WALL

1



STEEL BRACE TO (E) JOIST

4



CMU LINTEL (N) TO (E) CMU WALL

2

**P.S.J.A. ISD - CARNAHAN, FRANKLIN & BUELL**  
**HVAC ADDITIONS TO GYMS**

EGV ARCHITECTS, INC.  
 220 S. BRIDGE STREET  
 PO BOX 8627  
 HIDALGO, TX 78657  
 TEL: (956) 843-2987  
 FAX: (956) 843-9726

**ADDENDUM #2**

SCALE:  
 DATE: 5-17-19  
 FILE: DWG/psjg

SHEET  
**S3.0**  
 OF  
**#**

05/20/19



**ADDENDUM #2**

Architect: EGV Architects

Project Name: PSJA -Carnahan. Franklin & Buell Additions To Gyms

Project Number: 19.1.31

Date: 05-20-19

**Note:** The work shall be carried out in accordance with the following supplemental instructions issued in accordance with the Contract Documents without change in Contract Sum or Contract Time Proceeding with the Work in accordance with these instructions indicates your acknowledgement that there will be no change in the Contract Sum or Contract Time.

I. Specifications:

1. Add section 16511. Another acceptable manufactures are as follow: Fail Safe

II. General: N/A

III. Mechanical:

IV. Electrical:

1. Sheet E0.0 – Revised Light fixture schedule note.

V. Plumbing: n/a

VI. Fire Protection:

**DIVISION 16511**  
**INTERIOR LIGHTING**

**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 interior lighting fixtures, lighting fixtures mounted on exterior building surfaces, emergency lighting units, and accessories.
- B. Related Sections include the following:

**1.3 SUBMITTALS**

- A. Product Data: For each type of lighting fixture indicated, arranged in order of fixture designation. Include data on features, accessories, and the following:
  - 1. Dimensions of fixtures.
  - 2. Certified results of laboratory tests for fixtures and lamps for photometric performance.
  - 3. Emergency lighting unit battery and charger.
  - 4. LED lights
  - 5. Types of lamps.
- B. Shop Drawings: Show details of nonstandard or custom fixtures. Indicate dimensions, weights, method of field assembly, components, features, and accessories.
  - 1. Wiring Diagrams: Detail wiring for fixtures and differentiate between manufacturer-installed and field-installed wiring.
- C. Coordination Drawings: Reflected ceiling plans and sections drawn to scale and coordinating fixture installation with ceiling grid, ceiling-mounted items, and other components in the vicinity. Include work of all trades that is to be installed near lighting equipment.
- D. Product Certificates: Signed by manufacturers of lighting fixtures certifying that products comply with requirements.
- E. Field Test Reports: Indicate and interpret test results for compliance with performance requirements.
- F. Maintenance Data: For lighting fixtures to include in maintenance manuals specified in Division 1.

**1.4 QUALITY ASSURANCE**

- A. Fixtures, Emergency Lighting Units, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by an acceptable to authorities having jurisdiction.
- B. Comply with NFPA 70.
- C. NFPA 101 Compliance: Comply with visibility and luminance requirements for exit signs.

**1.5 COORDINATION**

- A. Fixtures, Mounting Hardware, and Trim: Coordinate layout and installation of lighting fixtures with ceiling system and other construction.

**1.6 WARRANTY**

- A. General Warranty: Special warranty 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.

**1.7 EXTRA MATERIALS**

- A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

**PART 2 - PRODUCTS**

**2.1 MANUFACTURERS**

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the products indicated in the Interior Lighting Fixture Schedule at the end of Part 3.
- B. Products: Subject to compliance with requirements, provide one of the products indicated for each designation in the Interior Lighting Fixture Schedule in the plans. Submit Manufacturers as is in the Lighting Fixture Schedule or Equal. Submit Equal Manufacturers 10 days prior to bidding day for approval. For Equal Manufacturers submit lighting calculation for each equal fixture submitted for approval.

**2.2 FIXTURES AND FIXTURE COMPONENTS, GENERAL**

- A. Metal Parts: Free from burrs, sharp corners, and edges.
- B. Sheet Metal Components: Steel, unless otherwise indicated. Form and support to prevent warping and sagging.
- C. Doors, Frames, and Other Internal Access: Smooth operating, free from light leakage under operating conditions, and arranged to permit relamping without use of tools. Arrange doors,

frames, lenses, diffusers, and other pieces to prevent accidental falling during relamping and when secured in operating position.

- D. Reflecting Surfaces: Minimum reflectance as follows, unless otherwise indicated:
  - 1. White Surfaces: 85 percent.
  - 2. Specular Surfaces: 83 percent.
  - 3. Diffusing Specular Surfaces: 75 percent.
  - 4. Laminated Silver Metallized Film: 90 percent.
- E. Lenses, Diffusers, Covers, and Globes: 100 percent virgin acrylic plastic or annealed crystal glass, unless otherwise indicated.
  - 1. Plastic: High resistance to yellowing and other changes due to aging, exposure to heat, and ultraviolet radiation.
  - 2. Lens Thickness: 0.125 inch (3 mm) minimum, unless greater thickness is indicated.

## 2.3 LED FIXTURES

- A. Except as otherwise indicated, provide LED luminaires, of types and sizes indicated on fixture schedules.
- B. Include the following features unless otherwise indicated:
  - 1. Each Luminaire shall consist of an assembly that utilizes LEDs as the light source. In addition, a complete luminaire shall consist of a housing, LED array, and electronic driver (power supply).
  - 2. Each luminaire shall be rated for a minimum operational life of 50,000 hours utilizing a minimum ambient temperature of (25°C).
  - 3. Light Emitting Diodes tested under LM-80 Standards for a minimum of 12,000 hours.
  - 4. Color Rendering Index (CRI) of 82 at a minimum.
  - 5. Color temperature [3500] <Insert value> K, unless otherwise indicated.
  - 6. Rated lumen maintenance at 70% lumen output for 50,000 hours, unless otherwise indicated.

7. Fixture efficacy of 60 Lumens/Watt, minimum.
8. 5 year luminaire warranty, minimum.
9. Photometry must comply with IESNA LM-79.
10. The individual LEDs shall be constructed such that a catastrophic loss of the failure of one LED will not result in the loss of the entire luminaire.
11. Luminaire shall be constructed such that LED modules may be replaced or repaired without the replacement of the whole fixture.

#### C. Technical Requirements

1. Luminaire shall have a minimum efficacy of 60 lumens per watt. The luminaire shall not consume power in the off state.
2. Operation Voltage: The luminaire shall operate from a 50 HZ to 60 HZ AC line over a voltage ranging from 120 VAC to 277 VAC. The fluctuations of line voltage shall have no visible effect on the luminous output.
3. Power Factor: The luminaire shall have a power factor of 0.9 or greater.
4. THD: Total harmonic distortion (current and voltage) induced into an AC power line by a luminaire shall not exceed 15 percent.
5. Operational Performance: The LED circuitry shall prevent visible flicker to the unaided eye over the voltage range specified above.

#### D. Thermal Management

1. The thermal management (of the heat generated by the LEDs) shall be of sufficient capacity to assure proper operation of the luminaire over the expected useful life.

2. The LED manufacturer's maximum thermal pad temperature for the expected life shall not be exceeded.
3. Thermal management shall be passive by design. The use of fans or other mechanical devices shall not be allowed.
4. The luminaire shall have a minimum heat sink surface such that LED manufacturer's maximum junction temperature is not exceeded at maximum rated ambient temperature.

## **2.4 LED EXIT SIGNS**

- A. Exit light fixtures shall meet applicable requirements of NFPA and UL.
- B. Housing and door shall be die-cast aluminum.
- C. For general purpose exit light fixtures, door frame shall be hinged, with latch. For vandal-resistant exit light fixtures, door frame shall be secured with tamper-resistant screws.
- D. Finish shall be satin or fine-grain brushed aluminum.
- E. There shall be no radioactive material used in the fixtures.
- F. Fixtures:
  1. Inscription panels shall be cast or stamped aluminum a minimum of 2.25 mm (0.090 inch) thick, stenciled with 150 mm (6 inch) high letters, baked with red color stable plastic or fiberglass. Lamps shall be luminous Light Emitting Diodes (LED) mounted in center of letters on red color stable plastic or fiberglass.
  2. Double-Faced Fixtures: Provide double-faced fixtures where required or as shown on drawings.
  3. Directional Arrows: Provide directional arrows as part of the inscription panel where required or as shown on drawings. Directional arrows shall be the "chevron-type" of similar size and width as the letters and meet the requirements of NFPA 101.
- G. Voltage: Multi-voltage (120 – 277V).

## **2.5 EMERGENCY LIGHTING UNITS**

- A. General Requirements: Self-contained units. Comply with UL 924. Units include the following features:
  1. Battery: Sealed, maintenance-free, lead-acid type with minimum 5-year nominal life and special warranty.

2. Charger: Fully automatic, solid-state type with sealed transfer relay.
3. Operation: Relay automatically turns lamp on when supply circuit voltage drops to 80 percent of nominal voltage or below. Lamp automatically disconnects from battery when voltage approaches deep-discharge level. When normal voltage is restored, relay disconnects lamps, and battery is automatically recharged and floated on charger.

## **2.6 LAMPS**

- A. ALL LED – NO LAMPS

## **2.7 FINISHES**

- A. Fixtures: Manufacturer's standard, unless otherwise indicated.

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION**

- A. Fixtures: Set level, plumb, and square with ceiling and walls, and secure according to manufacturer's written instructions and approved submittal materials. Install lamps in each fixture.
- B. Support for Fixtures in or on Grid-Type Suspended Ceilings: Do not use grid for support.
  1. Install a minimum of two ceiling support system wires for each fixture. Locate not more than 6 inches (150 mm) from fixture corners.
  2. Support Clips: Fasten to fixtures and to ceiling grid members at or near each fixture corner.
  3. Fixtures of Sizes Less Than Ceiling Grid: Arrange as indicated on reflected ceiling plans or center in acoustical panel, and support fixtures independently with at least two 3/4-inch (20-mm) metal channels spanning and secured to ceiling tees.
- C. Suspended Fixture Support: As follows:
  1. Pendants and Rods: Where longer than 48 inches (1200 mm), brace to limit swinging.
  2. Stem-Mounted, Single-Unit Fixtures: Suspend with twin-stem hangers.

### **3.2 CONNECTIONS**

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

### **3.3 FIELD QUALITY CONTROL**

- A. Inspect each installed fixture for damage. Replace damaged fixtures and components.
- B. Advance Notice: Give dates and times for field tests.

- C. Provide instruments to make and record test results.
- D. Tests: As follows:
  - 1. Verify normal operation of each fixture after installation.
  - 2. Emergency Lighting: Interrupt electrical supply to demonstrate proper operation.
  - 3. Verify normal transfer to battery source and retransfer to normal.
  - 4. Report results in writing.
- E. Malfunctioning Fixtures and Components: Replace or repair, then retest. Repeat procedure until units operate properly.
- F. Corrosive Fixtures: Replace during warranty period.

### **3.4 CLEANING AND ADJUSTING**

- A. Clean fixtures internally and externally after installation. Use methods and materials recommended by manufacturer.
- B. Adjust aimable fixtures to provide required light intensities.

**END OF SECTION**

### ELECTRICAL LEGEND-LIGHTING

---ALL SYMBOLS SHOWN MAY NOT APPEAR IN ALL DRAWINGS. SYMBOLS ARE SHOWN SCHEMATIC AND MAY NOT BE TO SCALE.

SYMBOL	DESCRIPTION
	2'X4' LIGHT FIXTURE, REFER TO LUMINAIRE SCHEDULE
	2'X4' LIGHT FIXTURE W/EMERGENCY BATTERY PACK, REFER TO LUMINAIRE SCHEDULE
	2'X2' LIGHT FIXTURE, REFER TO LUMINAIRE SCHEDULE
	2'X2' LIGHT FIXTURE W/EMERGENCY BATTERY PACK, REFER TO LUMINAIRE SCHEDULE
	1'X4' LIGHT FIXTURE, REFER TO LUMINAIRE SCHEDULE
	TRACK LIGHT WITH HEADS AS INDICATED
	INCANDESCENT, LED, FLUORESCENT, OR HID WALL WASHER LIGHT FIXTURE CEILING MTD, REFER TO LUMINAIRE SCHEDULE
	INCANDESCENT, LED, FLUORESCENT, OR HID FIXTURE CLG. OR WALL MTD, REFER TO LUMINAIRE SCHEDULE
	LED, FLUORESCENT, OR HID FIXTURE WITH EMERGENCY BATTERY PACK, CLG. OR WALL MTD, REFER TO LUMINAIRE SCHEDULE
	EXIT LIGHT, CEILING OR WALL MOUNTED - SHADING INDICATING SINGLE OR DOUBLE FACE, DIRECTIONAL ARROWS AS INDICATED REFER TO LUMINAIRE SCHEDULE
	EXIT LIGHT SAME AS ABOVE, EXCEPT WITH AN EMERGENCY UNIT AS A COMBO, REFER TO LUMINAIRE SCHEDULE
	CEILING FAN
	STRIP UTILITY LIGHT FIXTURE, REFER TO LUMINAIRE SCHEDULE
	STRIP UTILITY STRIP LIGHT WITH EMERGENCY BATTERY PACK, REFER TO LUMINAIRE SCHEDULE
	WALL SWITCH SPST, 20A, 120/277V
	DOUBLE POLE TOGGLE SWITCH, 20A/120/277V
	3-WAY WALL SWITCH, 20A, 120/277V
	4-WAY WALL SWITCH, 20A, 120/277V
	WALL DIMMER SWITCH
	WALL SWITCH SPST, 20A, 120/277V - PILOT LIGHT SWITCH
	WALL SWITCH SPST, 20A, 120/277V - KEYED SWITCH, X = 3 OR 4 WAY

### ELECTRICAL LEGEND-SPECIAL SYSTEMS

---ALL SYMBOLS SHOWN MAY NOT APPEAR IN ALL DRAWINGS. SYMBOLS ARE SHOWN SCHEMATIC AND MAY NOT BE TO SCALE.

SYMBOL	DESCRIPTION
	WALL MOUNTED TELEPHONE/DATA OUTLET, FURNISH AND INSTALL 1.25" C., WITH PULLSTRING AND INSULATED BUSHING, STUBBED ABOVE CEILING. +24" UNLESS OTHERWISE NOTE. BOX TO BE MINIMUM 2 1/8" DEEP.
	WALL MOUNTED TELEPHONE OUTLET, FURNISH AND INSTALL 1" C., WITH PULLSTRING AND INSULATED BUSHING, STUBBED ABOVE CEILING. +24" UNLESS OTHERWISE NOTE. BOX TO BE MINIMUM 2 1/8" DEEP.
	WALL MOUNTED DATA OUTLET, FURNISH AND INSTALL 1.25" C., WITH PULLSTRING AND INSULATED BUSHING, STUBBED ABOVE CEILING. +24" UNLESS OTHERWISE NOTE. BOX TO BE MINIMUM 2 1/8" DEEP.
	PUBLIC TELEPHONE OUTLET, J-BOX & 1" C.
	TELEVISION OUTLET, CLG. OR WALL MOUNTED - STUB 1" C. ABOVE CEILING FROM OUTLET BOX
	PUSHBUTTON WALL MOUNTED.
	AUDIO VIDEO DROP, REFER TO DETAIL
	INTERCOM - CALL SWITCH- J-BOX WITH 3/4" C.
	INTERCOM/PAGING LAY-IN SPEAKER
	PA EXTERIOR SPEAKER 10'-6" AFF
	SECURITY DOOR CONTACT SENSOR - STUB 1/2" C ABOVE CEILING FROM OUTLET BOX
	SECURITY MOTION DETECTOR SENSOR - STUB 1/2" C ABOVE CEILING FROM OUTLET BOX
	SECURITY GLASS BREAK SENSOR - STUB 1/2" C ABOVE CEILING FROM OUTLET BOX
	SECURITY KEY PAD - STUB 3/4" C ABOVE CEILING FROM OUTLET BOX
	SECURITY PANEL JUNCTION BOX 54"
	ACCESS CONTROL PANEL JUNCTION BOX - BY OTHERS 54"
	CARD READER BOX - STUB 3/4" C ABOVE CEILING LEVEL FROM OUTLET BOX SYSTEM BY OTHERS
	MAGNETIC LOCK BOX - STUB 3/4" C ABOVE CEILING LEVEL FROM OUTLET BOX SYSTEM BY OTHERS
	INTRUSION EXTERIOR SPEAKER 10'-6" AFF
	SINGLE SIDED CLOCK, J-BOX W/3/4" C 96" AFF MIN.
	DOUBLE SIDED CLOCK, J-BOX W/3/4" C 96" AFF MIN.
	CAMERA J-BOX W/ 3/4" CONDUIT
	TELEPHONE BOARD- 3/4"x8" FIRE RATED

### ELECTRICAL LEGEND-FIRE ALARM

---ALL SYMBOLS SHOWN MAY NOT APPEAR IN ALL DRAWINGS. SYMBOLS ARE SHOWN SCHEMATIC AND MAY NOT BE TO SCALE.

SYMBOL	DESCRIPTION
	FIRE ALARM PULL STATION: STUB 3/4" C ABOVE CEILING FROM J-BOX
	FIRE ALARM AUDIBLE/VISUAL SIGNAL: STUB 3/4" C ABOVE CEILING FROM J-BOX
	FIRE ALARM VISUAL SIGNAL: STUB 3/4" C ABOVE CEILING FROM J-BOX
	FIRE ALARM CEILING MOUNT SPEAKER STROBE, UL LISTED, : J-BOX WITH 3/4" C
	FIRE ALARM CEILING WALL MOUNT OUTDOOR SPEAKER STROBE, UL LISTED, : J-BOX WITH 3/4" C
	FIRE ALARM SMOKE DETECTOR CEILING OR WALL MOUNTED: STUB 3/4" C ABOVE CEILING FROM J-BOX
	HEAT DETECTOR CEILING OR WALL MOUNTED: STUB 3/4" C ABOVE CEILING FROM J-BOX
	DUCT SMOKE DETECTOR: STUB 3/4" C ABOVE CEILING FROM J-BOX
	SMOKE DETECTOR WITH AN AUDIBLE BASE: STUB 3/4" C ABOVE CEILING FROM J-BOX
	FIRE ALARM CONTROL PANEL, ADDRESSABLE, SURFACE MTD UNO, INCLUDE A FIRE DOCUMENT BOX EQUAL TO MFR. SPACE AGE ELECTRONICS #FDB-ACE-11.
	FIRE ALARM CONTROL PANEL WITH EMERGENCY VOICE SYSTEM, ADDRESSABLE, FLUSH MTD UNO, INCLUDE A FIRE DOCUMENT BOX EQUAL TO MFR. SPACE AGE ELECTRONICS #FDB-ACE-11.
	FIRE ALARM EMERGENCY VOICE EVACUATION SYSTEM, FLUSH OR SURFACE.
	FIRE ALARM REMOTE ANNUNCIATOR PANEL, FLUSH MOUNTED UNO
	POWER SUPPLY, DEDICATED 110V
	DOOR HOLDER DEVICE: STUB 3/4" C ABOVE CEILING FROM J-BOX
	TAMPER SWITCH: STUB 3/4" C ABOVE CEILING FROM J-BOX
	FLOW SWITCH: STUB 3/4" C ABOVE CEILING FROM J-BOX
	FIRE ALARM OUTDOOR SPEAKER, WEATHER PROOF: STUB 3/4" C ABOVE CEILING FROM J-BOX

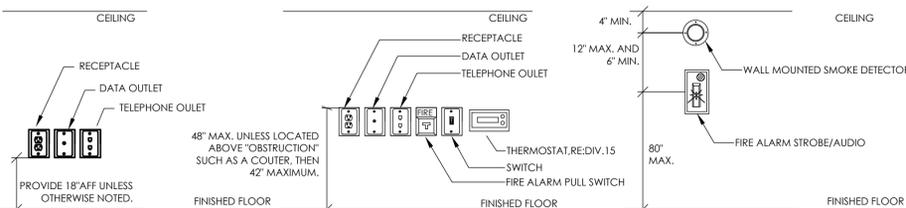
### ELECTRICAL LEGEND-GENERAL

---ALL SYMBOLS SHOWN MAY NOT APPEAR IN ALL DRAWINGS. SYMBOLS ARE SHOWN SCHEMATIC AND MAY NOT BE TO SCALE.

SYMBOL	DESCRIPTION
	HEAVY DUTY DISCONNECT SWITCH FUSED
	HEAVY DUTY DISCONNECT SWITCH NONFUSED
	HEAVY DUTY COMBINATION DISCONNECT/MOTOR STARTER
	HEAVY DUTY MOTOR STARTER
	ENCLOSED BREAKER, RE: TO SCH. FOR MORE INFO.
	ROTARY TYPE DISCONNECT SWITCH
	120/277-208/480V 20AMP, MOTOR RATED SWITCH, NEMA-1 (INTERIOR) ENCLOSURE, NEMA-3R (EXTERIOR) ENCLOSURE. VOLTAGE TO BE SELECTED PER EQUIPMENT CIRCUIT REQUIREMENTS.
	MOTOR
	PANELBOARD, CLEARANCE AS PER LATEST NEC SWITCH LEG
	ELECTRICAL CONDUIT
	UNDERGROUND ELECTRICAL CONDUIT
	COMMUNICATION CONDUIT AND WIRING
	MULTI-POLE DEVICE CIRCUIT NUMBERS
	THREE SINGLE POLE DEVICE CIRCUIT NUMBERS
	CONDUIT AND WIRE HOMERUN TO PANEL, SHORT HATCH INDICATES NEUTRAL CONDUCTOR, LONG HATCHES INDICATE PHASE CONDUCTORS, AND LONG HATCH WITH CIRCLE INDICATES ISOLATED OR INSULATED GROUND. ALPHANUMERIC DESCRIPTION INDICATES PANEL AND BREAKER.
	UNDERGROUND CONDUIT AND WIRE HOMERUN TO PANEL, SHORT HATCH INDICATES NEUTRAL CONDUCTOR, LONG HATCHES INDICATE PHASE CONDUCTORS, AND LONG HATCH WITH CIRCLE INDICATES ISOLATED OR INSULATED GROUND. ALPHANUMERIC DESCRIPTION INDICATES PANEL AND BREAKER.
	DETAIL NUMBER
	SHEET NUMBER
	THERMOSTAT WALL MOUNTED - STUB 1/2" C ABOVE CEILING FROM OUTLET BOX. COORDINATE EXACT LOCATION AND HEIGHT WITH MECHANICAL DIVISION.
	JUNCTION BOX - SIZE & MOUNTING AS REQUIRED MINIMUM OF 4" SQUARE
	PHOTO CELL (MFR: INTERMATIC #K4136M)
	LIGHTING CONTACTOR, NEMA-1, W/H.O.A. SWITCH
	TIME CLOCK (MFR: TORK #7202Z)
	CIRCULATING PUMP
	ELECTRICAL DEVICE AS SHOWN ON PLANS SURFACE MOUNT RACEWAY. SURFACE MOUNT RACEWAY SHALL BE WIREMOLD #V700 SERIES. PROVIDE ALL RELATED #V700 SERIES ACCESSORIES FOR AN OPERABLE SYSTEM.

### MOUNTING HEIGHT DETAIL

NOTE: VERIFY WITH ARCHITECTURAL FOR ADA REQUIREMENTS.



### ELECTRICAL ABBREVIATIONS:

ABBV:	DESCRIPTION	ABBV:	DESCRIPTION
AFF	ABOVE FINISHED FLOOR	MFR.	MANUFACTURER
BFC	BELOW FINISHED CEILING	(S.C.)	SHARE CIRCUIT
C	CONDUIT	QRCP(S)	QUAD RECEPTACLE(S)
CB	CIRCUIT BREAKER	RCPT(S)	DUPLEX RECEPTACLE(S)
EC	EMPTY CONDUIT	CRCP(S)	I.G. RECEPTACLE(S)
EX	EXISTING	QCRCPT(S)	QUAD I.G. RECEPTACLE(S)
F	FUSE	PNL	PANEL
G	GROUND (EQUIPMENT)	SO (S.O.)	SPACE ONLY
GFI	GROUND FAULT INTERRUPTER	SP	SPARE
MTD	MOUNT OR MOUNTED	ST (S.T.)	SHUNT TRIP
NF	NONFUSED	SW	SWITCH
NIC	NOT IN CONTRACT	UF	UNDERFLOOR
H.D	HEAVY DUTY	UG	UNDERGROUND
NL	NIGHT LIGHT	UNO(U.N.O.)	UNLESS NOTED OTHERWISE
AC	ABOVE COUNTER	WG	WIRE GUARD
HT.	HEIGHT	WP	WEATHERPROOF
MTD.	MOUNTING	XFMR	TRANSFORMER
FDR.	FEEDER	MB	MAIN BREAKER
CKT.	CIRCUIT	MLO	MAIN LUGS ONLY
LTG.	LIGHTING	RMC	RIGID METAL CONDUIT
LC	LIGHTING CONTACTOR	RNC	RIGID NONMETALLIC CONDUIT
IG	ISOLATED GROUND	EMT	ELECTRICAL METALLIC TUBING CONDUIT
EA.	EACH	S/N	SOLID NEUTRAL
N1	NEMA-1	A/C	ABOVE COUNTER
N3R	NEMA-3R	AHJ	AUTHORITY HAVING JURISDICTION
N4X	NEMA-4X	T	TAMPER PROOF
SS	STAINLESS STEEL		

#### NOTES:

- 48" AFF INDICATES TO TOP OF DEVICE.
- 15" AFF INDICATES TO BOTTOM OF DEVICE.
- ALL OTHER MOUNTING HEIGHTS REFER TO CENTERLINE OF DEVICE.
- AC INDICATES 6" ABOVE COUNTER TO BOTTOM OF DEVICE.

### GENERAL ELECTRICAL NOTES

- ALL SYMBOLS AND ABBREVIATIONS SHOWN ON THIS LEGEND MAY NOT APPEAR ON THIS SET OF DRAWINGS.
- USE DIRECTIONAL ARROW ON EXIT SIGNS AS REQUIRED.
- IEEE STANDARD C37.2-1991, ELECTRICAL POWER SYSTEM DEVICE FUNCTION NUMBERS.
- CONTRACTOR SHALL NOT INSTALL MORE THAN THREE CURRENT CARRYING CONDUCTORS IN A COMMON RACEWAY. IF CONTRACTOR IS PLANNING ON GROUPING MULTIPLE CIRCUITS IN A SINGLE RACEWAY, THE CONTRACTOR MUST SUBMIT ALL DERATING CALCULATIONS FOR THE PROPOSED INSTALLATION IN ACCORDANCE WITH NEC ARTICLE 310.15 (B) (2) FOR APPROVAL PRIOR TO INSTALLATION. NON APPROVED INSTALLATIONS WILL BE REMOVED AND REINSTALLED BY THE CONTRACTOR IN ACCORDANCE WITH THE NEC AT NO ADDITIONAL COST TO THE OWNER.
- THERE SHALL NOT BE MORE THAN THE EQUIVALENT OF THREE 90° BENDS (270 DEGREES TOTAL) BETWEEN PULL POINTS. WHERE THERE ARE MORE THAN THREE QUARTER BENDS, CONTRACTOR SHALL PROVIDE PULL BOXES AS SPECIFIED AND SIZED IN ACCORDANCE WITH NEC.
- COMPLY WITH NEC REQUIREMENTS FOR ELECTRICAL INSTALLATIONS. ALL ELECTRICAL EQUIPMENT AND MATERIAL TO BE APPROVED, LISTED, LABELED, IDENTIFIED AND INSTALLED PER RECOGNIZED ELECTRICAL TESTING LABORATORY.
- ALL RECEPTACLES, SWITCHES AND JUNCTION BOXES SERVED BY EMERGENCY BRANCH CIRCUITS SHALL BE "RED" IN COLOR. COVERPLATES SHALL BE LABELED IN ACCORDANCE WITH SPECIFICATIONS TO INDICATE PANELBOARD AND CIRCUIT NO. (IE: E1A-3).

### LUMINAIRE SCHEDULE

MARK	VOLTAGE	LAMP	MOUNTING	DESCRIPTION	MODEL NO.
A	120V	LED 12000 LM 3500K 77.3W	SURFACE	2FT LED HIGH BAY FIXTURE WITH INTEGRAL OCCUPANCY SENSOR AND LED DRIVER.	LITHONIA I8G-2FT-12000LM-SEF-WDL-40K-70CRI-G210-WGX-LAH052U
AE	SAME AS TYPE 'A' EXCEPT WITH 1400 LUMEN EMERGENCY BATTERY PACK				
B	120V	LED 4000 LM 3500K 77.3W	SURFACE	2FT VANDAL RESISTANT LED HIGH BAY FIXTURE WITH INTEGRAL OCCUPANCY SENSOR AND LED DRIVER.	LUX DYNAMICS LUX-IK10-E-1-SA-H03-835-2-U10-CA2-OCC-DIR-STD-UH2-GYM
BE	SAME AS TYPE 'B' EXCEPT WITH 1400 LUMEN EMERGENCY BATTERY PACK				
E	120V	INCLUDED	SURFACE	EMERGENCY LIGHTING UNIT W/ SELF-DIAGNOSTICS	LITHONIA ELM2 LED SD
X1	120V	INCLUDED	SURFACE	LED THERMOPLASTIC EXIT/EMERGENCY UNIT WITH SELF-DIAGNOSTICS	LITHONIA LHQM LED_R SD
X2	120V	INCLUDED	SURFACE	VANDAL RESISTANT LED THERMOPLASTIC EXIT/EMERGENCY UNIT WITH SELF-DIAGNOSTICS	KENALL METEC-24N-MW-R-2-6.5L-120

#### NOTE:

- EQUAL MANUFACTURER SHALL BE ACCEPTABLE WITH EQUAL PERFORMANCE OF SPECIFIED EQUIPMENT AND APPROVED BY ENGINEER.
- SUBMIT EQUAL MANUFACTURERS TO ENGINEER 10 DAYS PRIOR TO BID DATE.
- SUBMIT LIGHT FIXTURES CUTSHEETS TO OWNER FOR APPROVAL PRIOR TO ORDER.
- CONTRACTOR SHALL VERIFY THAT ANY IRRIGATION SPRINKLER HEAD IS AWAY FROM ANY LIGHT POLE A MINIMUM OF 75' TO AVOID CONSISTENT WATER TO LIGHT POLE. COORDINATE WITH IRRIGATION CONTRACTOR PRIOR TO ANY WORK.
- CONTRACTOR SHALL VERIFY THAT ANY LIGHT POLES ON COMMON AREAS AND SIDE WALKS, THAT THE LOCATION OF THE POLE TO MEET THE ADA REQUIREMENTS.
- CONTRACTOR SHALL VERIFY FOR EXISTING/NEW UNDERGROUND UTILITIES PRIOR TO ANY WORK.
- SECTION 16511 APPROVED EQUAL MANUFACTURE SHALL BE FAILSAFE LIGHTING.

DATE APPROVED	05-08-2019
DESIGNED:	
DRAWN:	
CHECKED:	
SCALE:	

EGV ARCHITECTS, INC.  
220 S. BRIDGE STREET  
PO BOX 8827  
HIDALGO, TX 78557  
TEL: (956) 843-2887  
FAX: (956) 843-9726

05/20/19

TRINITY  
MEP ENGINEERING  
3533 Mowland Dr. Ste A | Westaco, TX 78699  
p: 956-979-0500 | f: 956-951-5759  
www.trinitymep.com | Copyright 2019  
Texas Registered Engineering Firm - P 10302  
Project number:  
1702019.01.31.DWG/16.131.ELEC-Carnahan Gym.dwg

P.S.J.A. ISD - CARNAHAN, FRANKLIN & BUELL  
HVAC ADDITIONS TO GYMS

JOB NO.  
FILE NO. dwg/psj/psj/reroofing 17-18

EO. OF