

- 1) Contractor Bid Acknowledgement (*Attachment A*): Signed by a representative of contractor attesting that all terms and conditions and procedures outlined in this RFP are understood and have been followed.
- 2) Proposed Project Team Members: Provide a list indicating project lead (general contractor) which includes company name and owner, or authorized representative, performing work on the project.
- 3) Timeline: A proposed schedule that indicates project milestones and overall time for completion.
- 4) Specific Project Experience: Descriptions detailing a minimum of two (2) similar relevant projects that applicant has completed. Pictures and/or links may be provided and encouraged.
- 5) List of References: Provide a minimum of three (3) references with which the applicant has provided similar design/build services within the last 5 years. Include the name and telephone numbers of references.
- 6) Bid Form: Provide a completed Bid Form (*Attachment B*) that outlines specific facets of construction project.
- 7) Submitting Bid:
  - a. Deadline/Acceptance of bids must follow timeline on Page 1.
  - b. Bids must be in a sealed envelope adequately labeled as a bid
  - c. Two (2) copies of the bid must be included in the bid package
  - d. Faxed or Early/Late proposals will not be considered

### **CONTRACTOR SELECTION**

Contractors will be evaluated based on the following criteria:

Budget & Value  
Ability to Meet Schedule  
Experience & Qualifications  
Experience with similar construction projects  
Quality, Clarity, & Completeness of submitted package.

### **SUBMISSIONS**

Proposals and questions shall be hand-delivered on Friday, September 15, 2023 between the hours of 8:30am through 12:00 noon (as per Page 1) and addressed to:

Luis H. Saldana  
Executive Director & General Manager  
Rio Grande Valley Livestock Show, Inc.  
1000 N Texas Ave  
Mercedes, Texas 78570  
Ofc 956.565.2456  
Email [Lsaldana@rgvls.com](mailto:Lsaldana@rgvls.com)

### **ATTACHMENTS**

Attachment A – Contractor Acknowledgement Form  
Attachment B – Bid Form  
Attachment C – Phase II Music Pavilion & Green Room Design & Construction Plans

**AGREEMENT REQUIREMENTS**

The selected contractor will be required to execute a contract with RGVLS on the terms and conditions required by RGVLS, including but not limited to the Draft Agreement.

**INDEMNIFICATION**

The contractor awarded this project will be required to indemnify, defend, and hold harmless the RGVLS, its officers, and employees from all liability and any claims, suits, expenses, losses, judgments, and damages arising as a result of the responding party's acts and/or omissions in or related to the submission of the response.

**OWNERSHIP OF DOCUMENTS**

Any materials submitted to RGVLS, in any form, become property of RGVLS. Likewise, the materials distributed in connection with this RFP remain exclusive property of RGVLS and cannot be copied, distributed, sold, or used outside of the scope of submitting a bid to RGVLS for this project.

**RGVLS, Inc.  
Contractor Acknowledgement Form**

***This page to be returned with the proposal submitted.***

I acknowledge that I have read and understand all the procedures and requirements of the above referenced RFP and have complied fully with the Terms and Conditions outlined in this RFP.

Contractor/Business: \_\_\_\_\_

Representative Printed Name: \_\_\_\_\_

Representative's Signature: \_\_\_\_\_

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



**RGVLS, Inc.**  
**Contractor Bid Form**

*This page to be returned with the proposal submitted.*

Description	Total Price in Numbers (\$XXX,XXX.XX)
Site Preparation & Foundation	
General Construction of Stage & Building	
Finishing Work & Site Clean-up	
<b>TOTAL BID PRICE in Numbers (\$XXX,XXX.XX)</b>	

Total Lump Sum of Bid in Words: \_\_\_\_\_

Representative's Signature: \_\_\_\_\_

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





3D RENDERING  
FOR ILLUSTRATION ONLY NOT TO SCALE

GENERAL NOTES:

THIS PLAN SET, COMBINED WITH THE BUILDING CONTRACT, PROVIDES BUILDING DETAILS FOR THE RESIDENTIAL PROJECT. THE CONTRACTOR SHALL VERIFY THAT SITE CONDITIONS ARE CONSISTENT WITH THESE PLANS BEFORE STARTING WORK. WORK NOT SPECIFICALLY DETAILED SHALL BE CONSTRUCTED TO THE SAME QUALITY AS SIMILAR WORK THAT IS DETAILED. ALL WORK SHALL BE DONE IN ACCORDANCE WITH INTERNATIONAL BUILDING CODES AND LOCAL CODES. CONTRACTOR SHALL BE RESPONSIBLE AND BEAR ANY FINES OR PENALTIES FOR CODE, ORDINANCE, REGULATION OR BUILDING PROCESS VIOLATIONS. INSURANCES SHALL BE IN FORCE THROUGHOUT THE DURATION OF THE BUILDING PROJECT.

WRITTEN DIMENSIONS AND SPECIFIC NOTES SHALL TAKE PRECEDENCE OVER SCALED DIMENSIONS AND GENERAL NOTES. THE ENGINEER/DESIGNER SHALL BE CONSULTED FOR CLARIFICATION IF SITE CONDITIONS ARE ENCOUNTERED THAT ARE DIFFERENT THAN SHOWN, IF DISCREPANCIES ARE FOUND IN THE PLANS OR NOTES, OR IF A QUESTION ARISES OVER THE INTENT OF THE PLANS OR NOTES. CONTRACTOR SHALL VERIFY AND IS RESPONSIBLE FOR ALL DIMENSIONS (INCLUDING ROUGH OPENINGS). ALL TRADES SHALL MAINTAIN A CLEAN WORK SITE AT THE END OF EACH WORK DAY.

PLEASE SEE ADDITIONAL NOTES CALLED OUT ON OTHER SHEETS.

ARCHITECTURAL INDEX OF DRAWINGS

TITLE	SHEET
PROJECT SUMMARY	1
OVER ALL DIMENSIONAL FLOOR PLAN	2
ENLARGED DIMENSIONAL FLOOR PLAN SEC.2	3
OVER ALL NOTED FLOOR PLAN	4
ENLARGED NOTED FLOOR PLAN SEC.2	5
ELEVATIONS	6
ELEVATIONS	7
ROOF PLAN	8

CIVIL INDEX OF DRAWINGS

- F-1 FOUNDATION PLAN
- S-1 STRUCTURAL PLAN
- S-2 CMU DETAIL
- S-3 WOOD DETAIL

MEP INDEX OF DRAWINGS

- B 1.0 - COVER SHEET
- E 0.0 - GENERAL NOTES-ELEC
- E 1.0 - LIGHTING-ELEC
- E 2.0 - POWER-ELEC
- E 3.0 - SCHEDULES/DETAILS-ELEC
- E 3.1 - SCHEDULES/DETAILS-ELEC
- M 0.0 - GENERAL NOTES-MECH
- M 2.0 - SCHEDULES/DETAILS - MECH
- P 0.0 - GENERAL NOTES-PLUMB
- P 1.0 - WATER/WATER-PLUMB
- P 2.0 - SCHEDULES/DETAILS-PLUMB

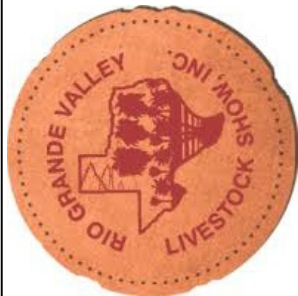
AREA TABULATION

TOTAL CONDITIONED AREA:	1,364.0'
STAGE AREA	1,000.0'
RAMP AREA	244.0'
TOTAL NON-CONDITION AREA:	1,244.0'
TOTAL AREA	2,608.0'

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DATE: 8/28/2023  
DRAWN BY:  
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PLAN # -057-23

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LIVE STOCK SHOW  
EVENT CENTER  
MERCEDDES, TX



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OFFICE (210) 355-2728  
2312 S. EXPRESSWAY  
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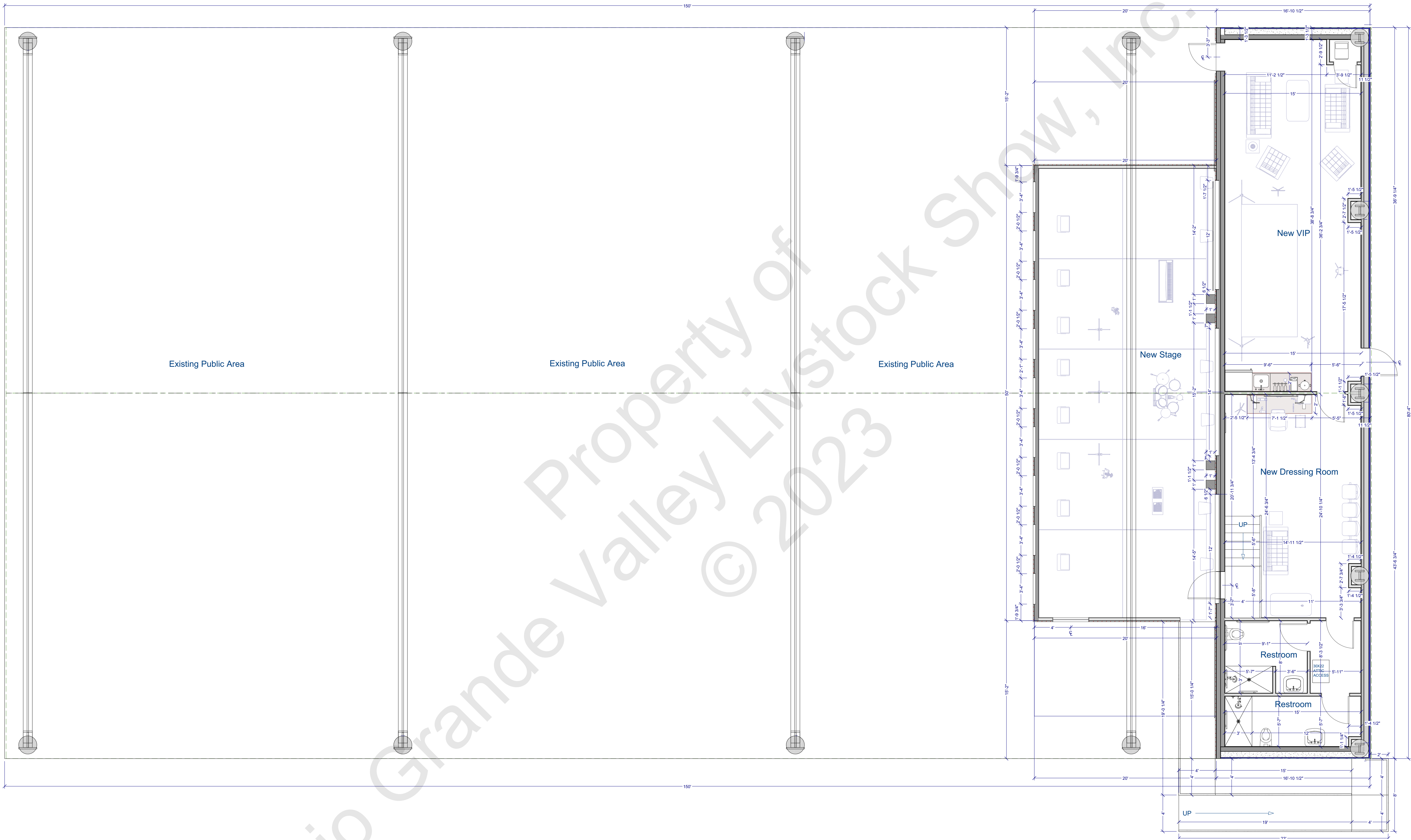
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1

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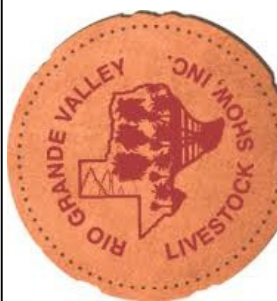


**1 OVER ALL DIMENSIONAL FLOOR PLAN**  
SCALE: N.T.S.

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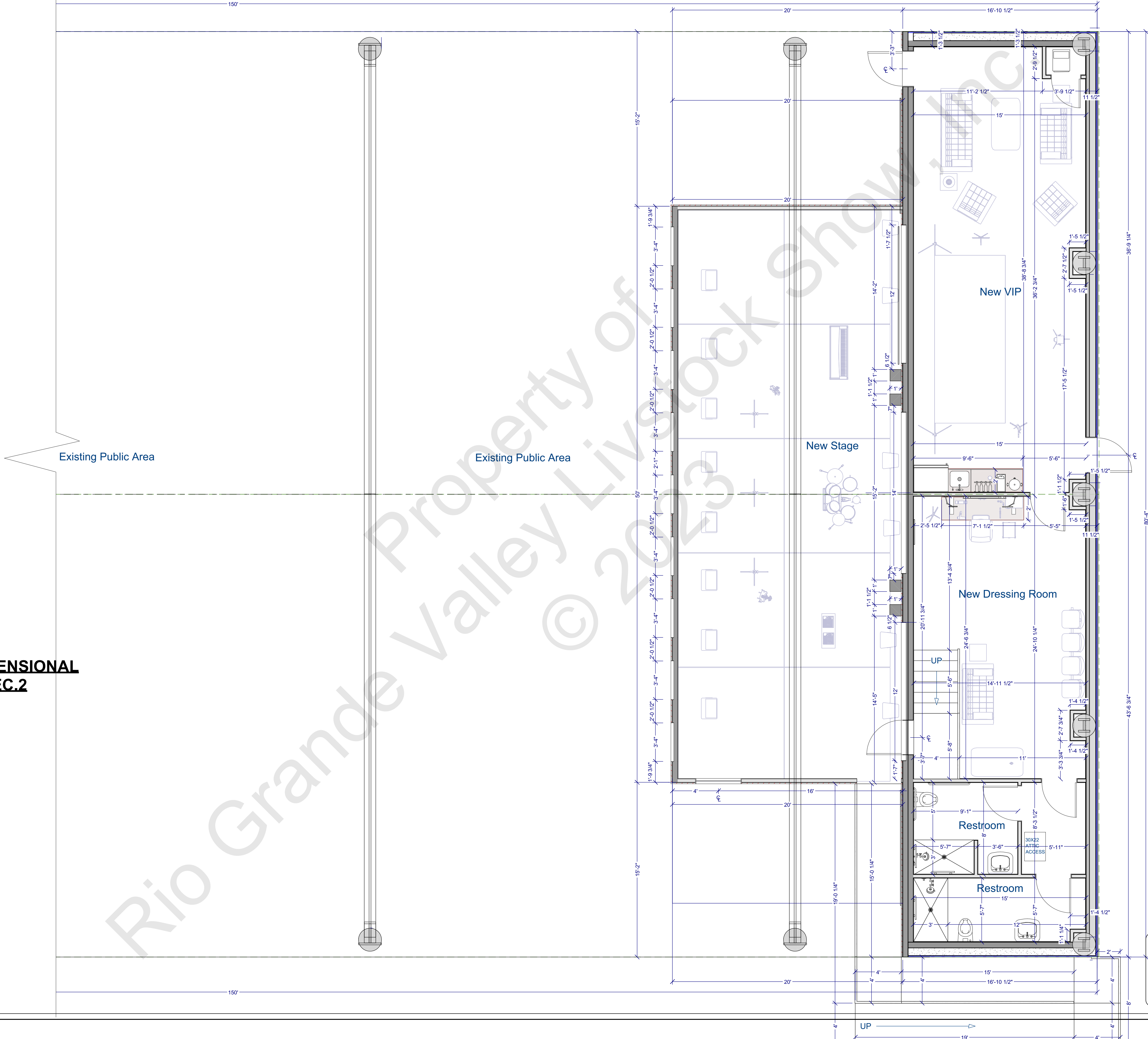
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1 ENLARGED DIMENSIONAL  
FLOOR PLAN SEC.2

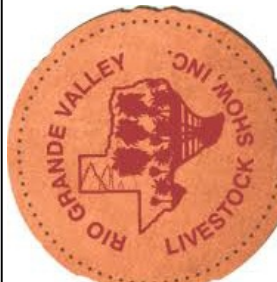
SCALE: 1/4"=1'-0"



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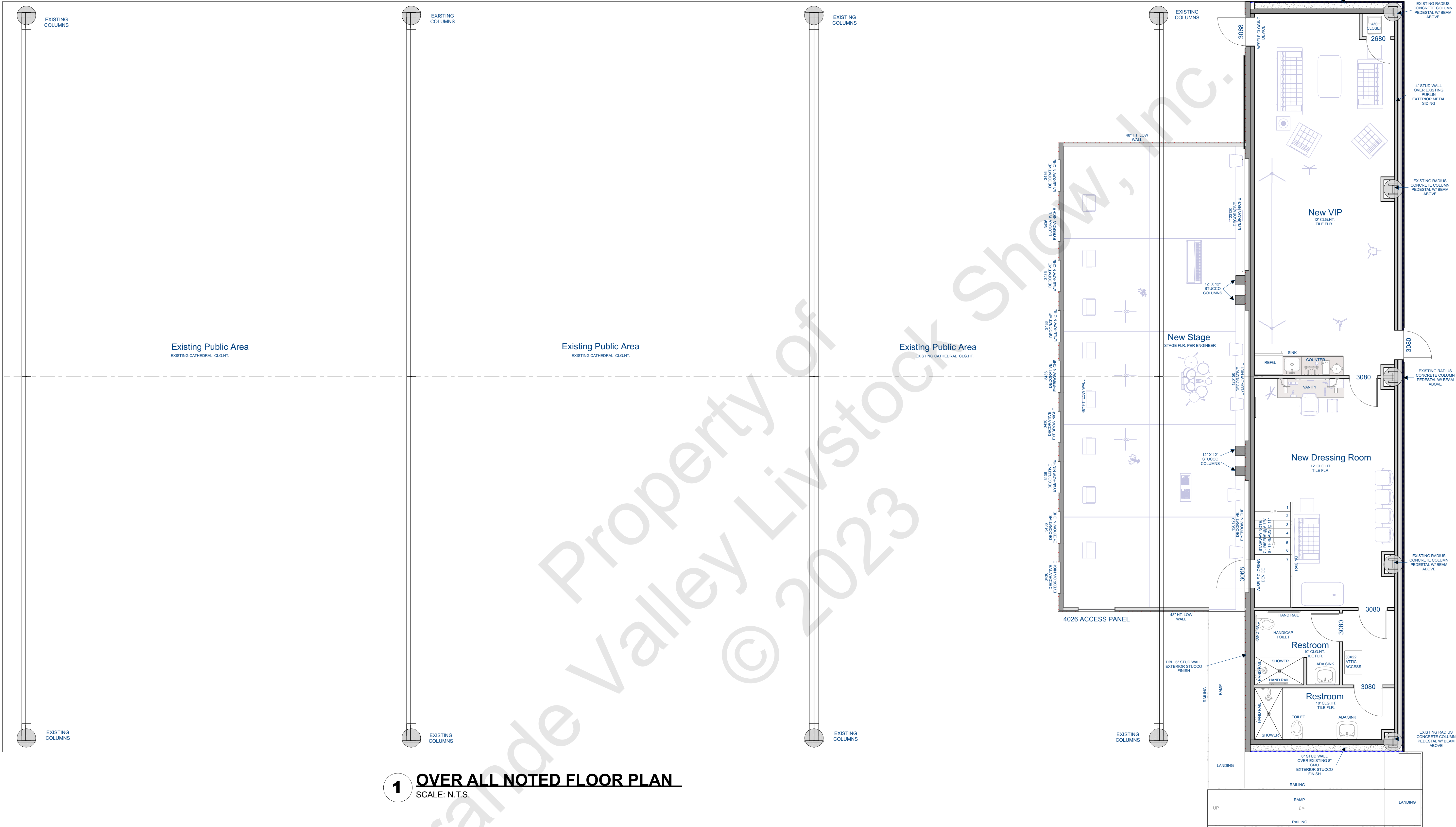


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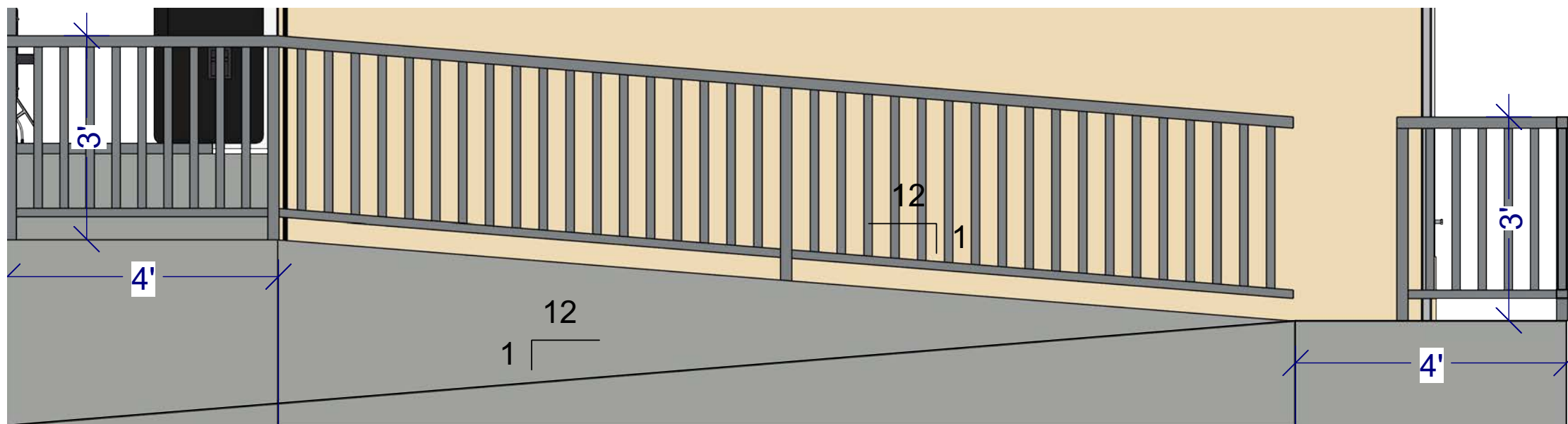
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3  
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WALL SCHEDULE	
2D SYMBOL	WALL TYPE
	8" CONCRETE STEM WALL W/ 6" STUD
	STUCCO-4
	8" METAL W/ 4" WALL
	STUCCO-6
	INTERIOR-4
	INTERIOR-6
	DBL. STUCCO-6



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

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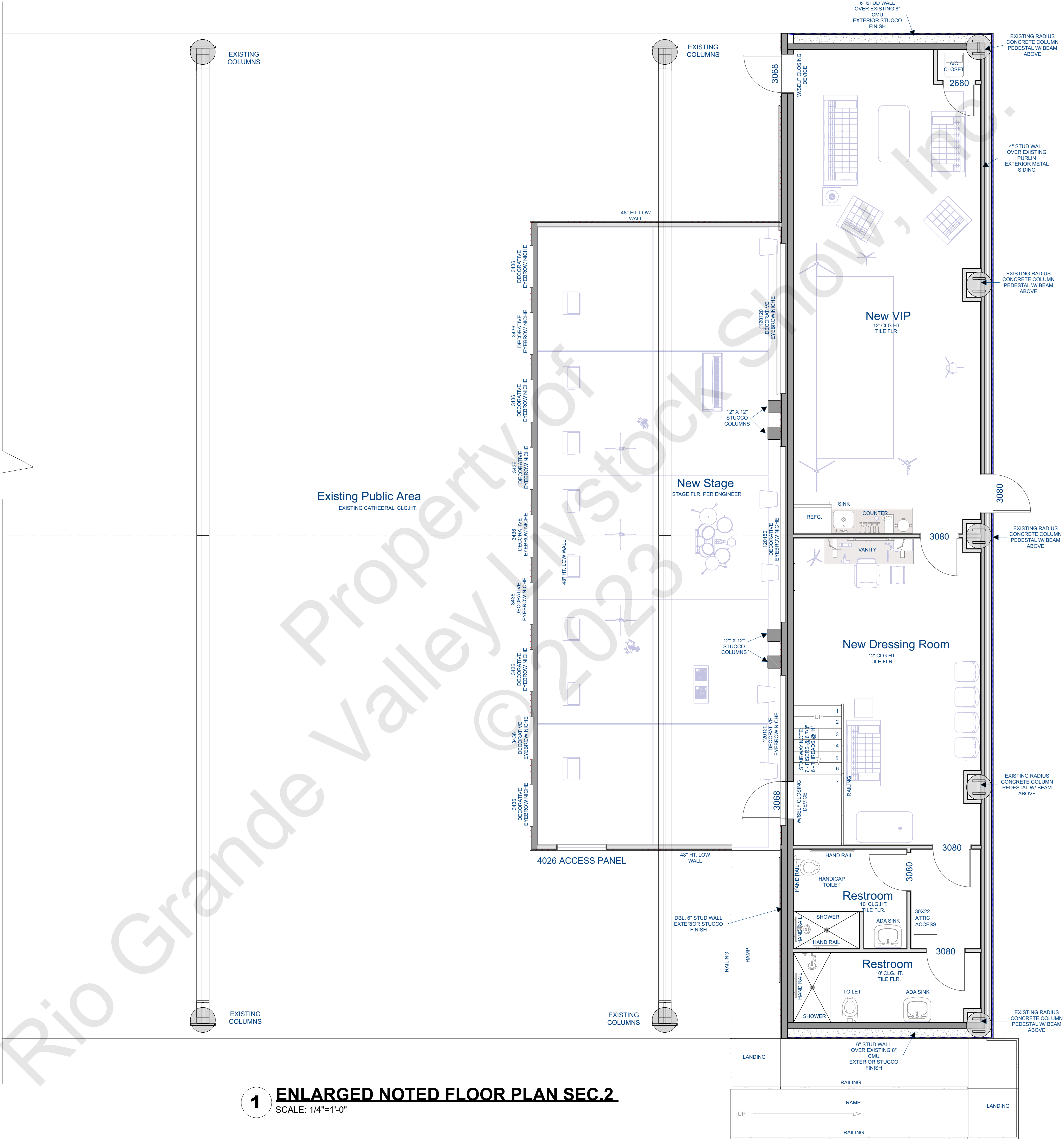
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WALL SCHEDULE	
2D SYMBOL	WALL TYPE
	8" CONCRETE STEM WALL W/ 6" STUD
	STUCCO-4
	8" METAL W/ 4" WALL
	STUCCO-6
	INTERIOR-4
	INTERIOR-6
	DBL. STUCCO-6

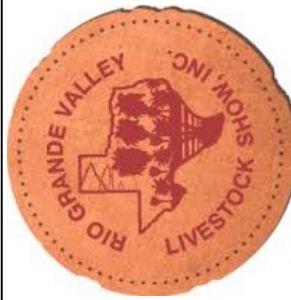


**1 ENLARGED NOTED FLOOR PLAN SEC.2**  
SCALE: 1/4"=1'-0"

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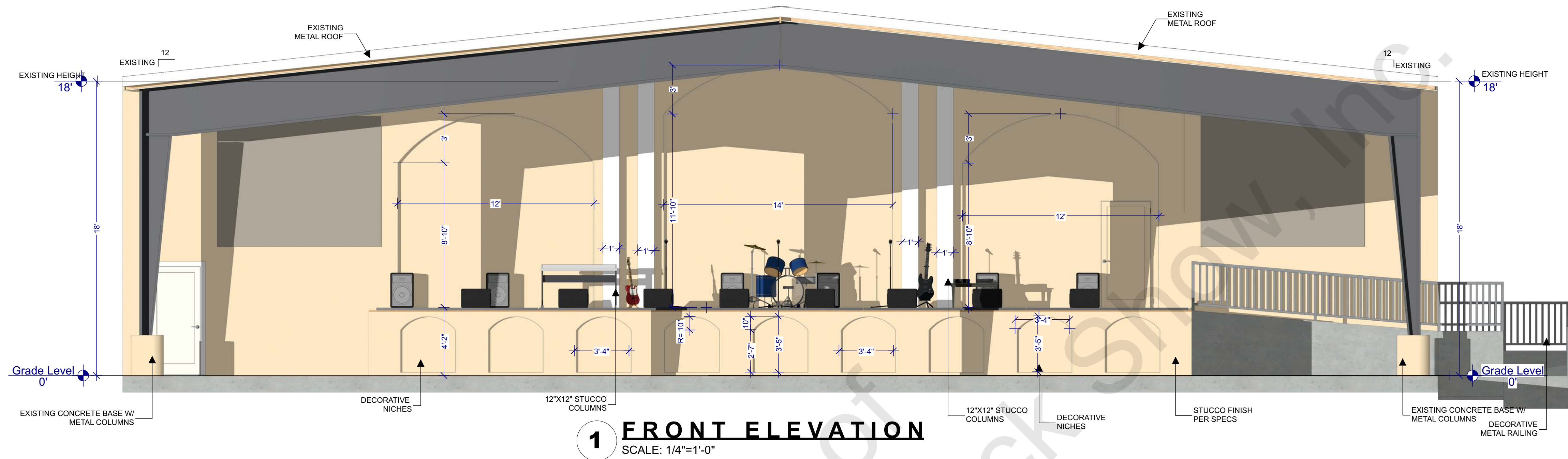


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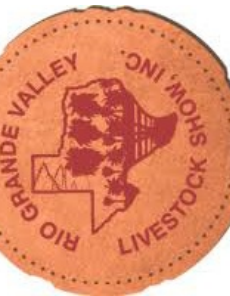




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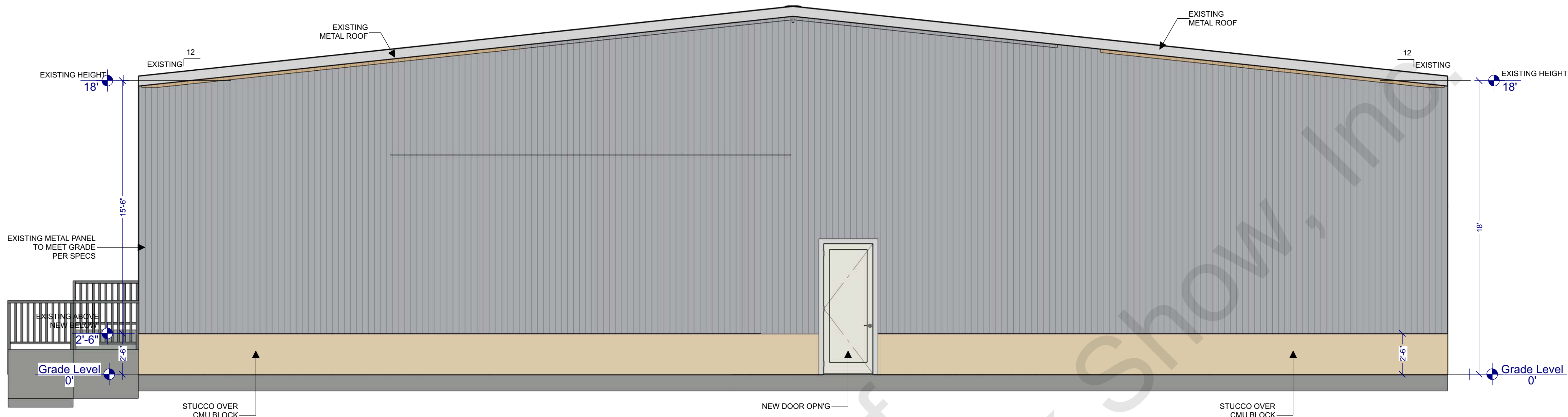
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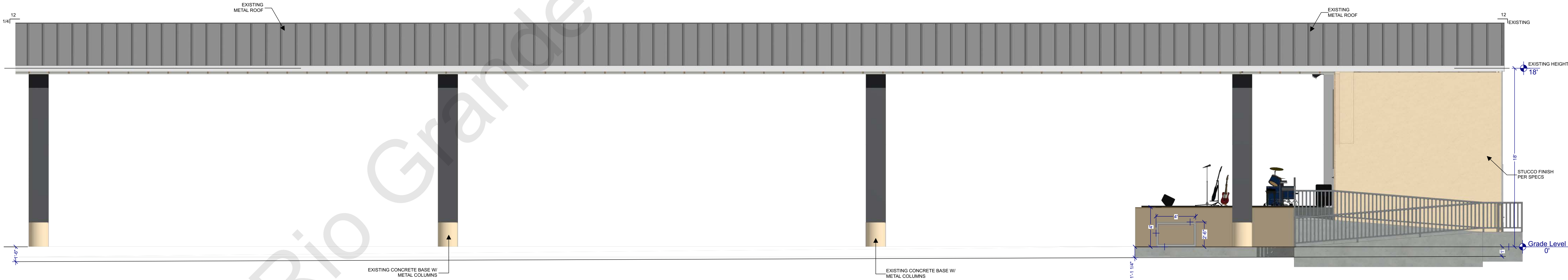
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1 REAR ELEVATION  
SCALE: 1/4"=1'-0"

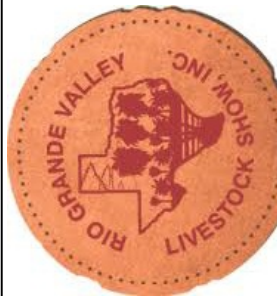


2 RIGHT ELEVATION  
SCALE: 1/4"=1'-0"

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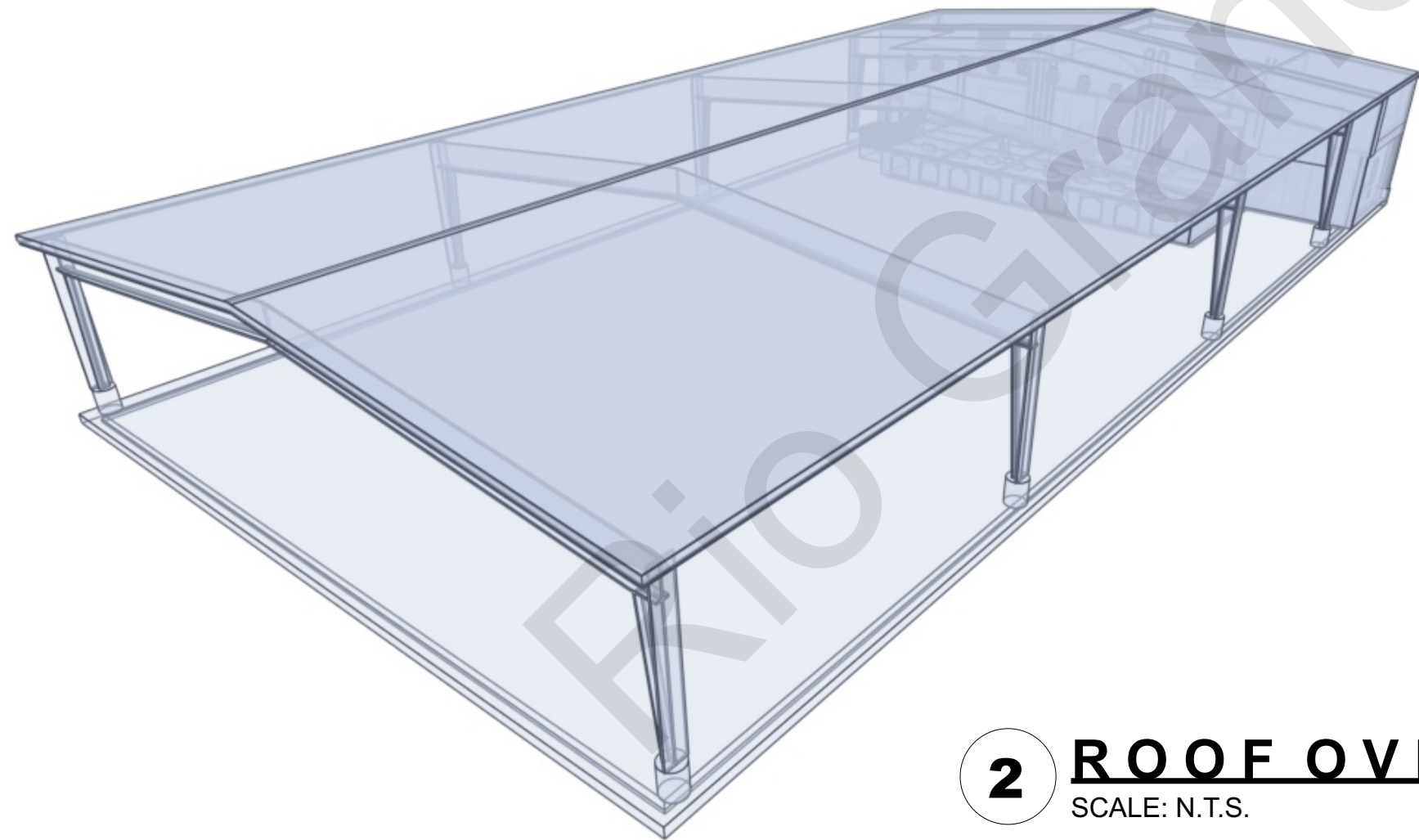
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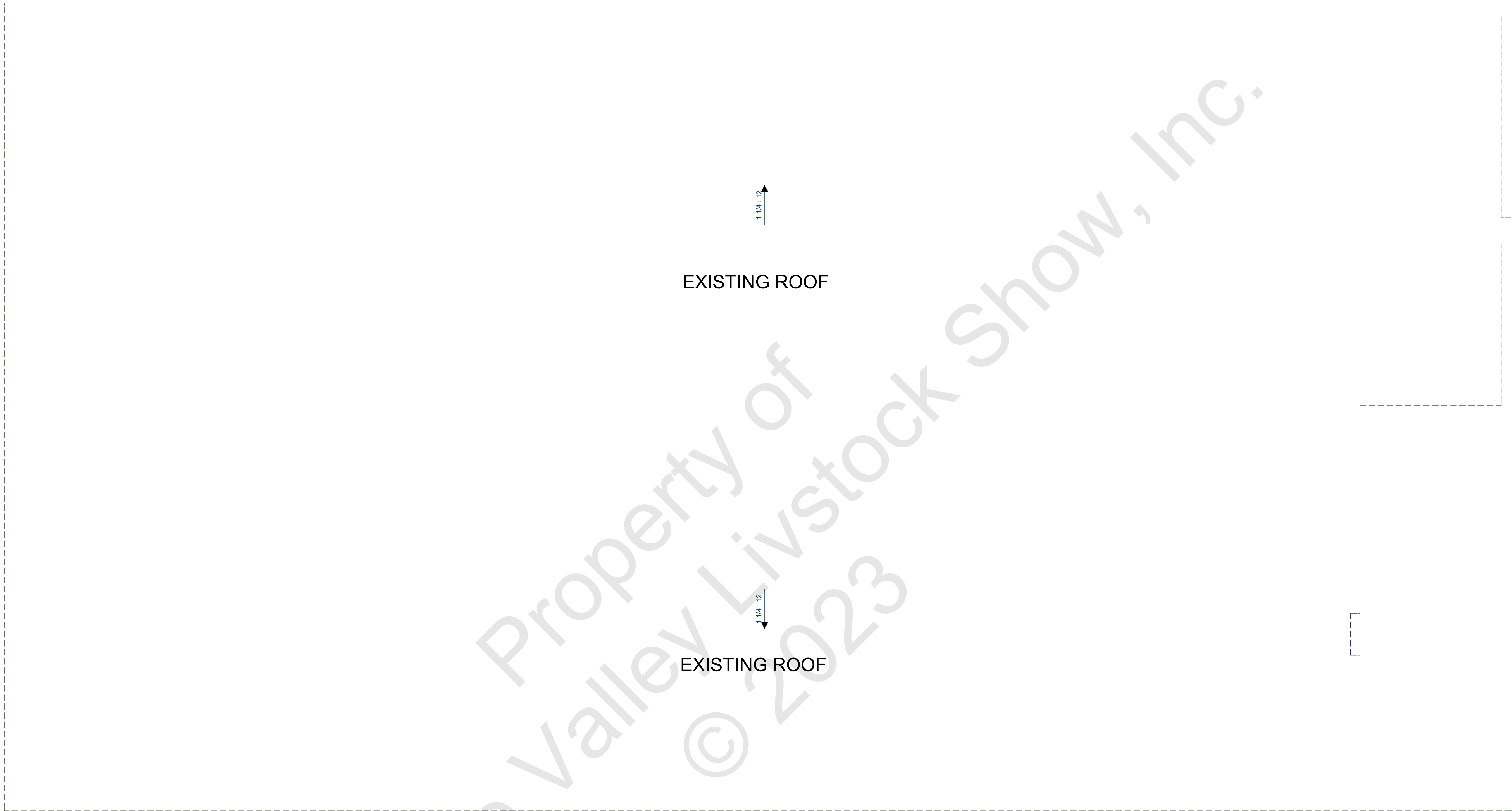
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**2 ROOF OVERVIEW**  
SCALE: N.T.S.



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

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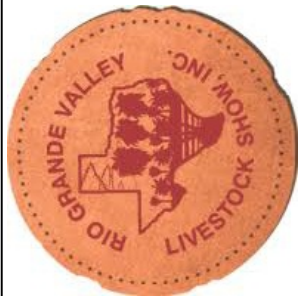


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**RIO GRANDE VALLEY  
LIVE STOCK SHOW  
EVENT CENTER  
MERCEDES, TX**

DATE: 8/28/2023  
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PLAN #-057-23



1. PROVIDE CONCRETE HAVING THE FOLLOWING GENERAL CHARACTERISTICS:
- | 28 DAY COMP. MAX |              |            |           |          |
|------------------|--------------|------------|-----------|----------|
| USAGE            | STRENGTH PSI | SLU MP(IN) | AGG. TYPE | MAX SIZE |
| ALL              | 3000         | 5          | HARDROCK  | 3/4"     |
2. WORKABILITY ADMIXTURES MAY BE UTILIZED, PROVIDED THAT BATCH PROPORTIONS ARE DETERMINED IN THE MANNER DESCRIBED IN THE SPECIFICATIONS.
3. PROVIDE THREE PERCENT (3%) TO FIVE PERCENT(5%) AIR ENTRAINMENT IN CONCRETE PERMANENTLY EXPOSED TO THE WEATHER (AND ELSEWHERE AT THE CONTRACTORS OPTION). USE OF AIR ENTRAINMENT, AND CORRESPONDING REDUCTION OF THE W/C RATIO, MUST BE NOTED ON THE MIX DESIGNS.
4. USE OF ACCELERATING OR SET-RETARDING ADMIXTURES REQUIRES PRIOR APPROVAL FROM THE ENGINEER. IN GENERAL, USE OF CALCIUM CHLORIDE WILL NOT BE PERMITTED.
5. FLY ASH IS EXPRESSLY PROHIBITED.
6. WHERE GROUT IS CALLED FOR, USE A NON-SHRINK, NON-STAINING PREMIXED GROUT.

### CONCRETE REINFORCEMENT:

1. REINFORCING STEEL SHALL BE NEW DOMESTIC DEFORMED BILLET STEEL CONFORMING TO A.S.T.M. A-615, GRADE 60.
2. WELDED WIRE FABRIC SHALL CONFORM TO A.S.T.M. A-185.
3. REINFORCING BARS SHALL BE DETAILED IN ACCORDANCE WITH THE A.C.I. DETAILING MANUAL. PROVIDE BAR SUPPORTS AND SPACERS AS REQUIRED.
4. PROVIDE CORNER BARS AT ALL INTERSECTING REINFORCING MEMBERS IN WALLS AND BEAMS. CORNER BAR SHALL BE THE SAME SIZE AS THE LARGER INTERSECTION BAR AND SHALL PROVIDE A MINIMUM LAP OF 40 BAR DIAMETERS.
5. DETAILING OF REINFORCING BARS SHALL BE AS FOLLOWS:
  - A. TOP AND BOTTOM BARS TO BE CONTINUOUS BETWEEN SUPPORTS.
  - B. TOP BARS AT THE ENDS OF BEAMS TO HAVE STANDARD 90° HOOKS.
  - C. SPLICE TOP BARS AT THE MID SPAN BETWEEN SUPPORTS.(U.N.O.)
  - D. SPLICE BOTTOM BARS DIRECTLY OVER SUPPORTS. (U.N.O.)
  - E. ALTERNATE SPLICES IN MIDDLE BARS BETWEEN SUPPORTS AND MIDSPANS WITH NO MORE THAN 1/2 OF THE BARS SPLICED AT ANY ONE LOCATION.
  - F. ALL BAR SPLICES SHALL BE 40 BAR DIAMETERS MINIMUM.

GENERAL NOTES:

1. Coordinate foundation plans and mechanical drawings, for all openings, inserts and other related items.
2. The contractor shall verify field dimensions and conditions before commencing, Engineer shall be notified off conflicts or discrepancies.
3. Concrete compressive strength shall be a minimum of 3000 PSI @ 28 days.
4. Five sacks min. of cement (94 lbs./sack) required per cubic yard.
5. Water cement ratio shall be a maximum of 0.60 addition of water on site is not permitted, workability shall be controlled by addition of a water reducing admixture.
6. Reinforcing deformed bars shall be grade 60 new billet steel (#3 bars may be grade 40) placing and bending of bars shall conform to A.C.I. standards.
7. Use of heat to bend bars is not permitted.
8. Rebars shall be placed in strict accordance with plans.
9. Area should be striped all vegetation and topsoil and the exposed sub grade shall be scarified to a depth of at least 8" removing all soft spots necessary.
10. Concrete shall be memorane or moisture cured for at least 7 days.
11. Curing compound shall comply with A.S.T.M. C-309.
12. Forming of the slab and footing shall be strictly in accordance with plan.
13. The sub grade shall be recompactd to approximately ninety five (95%)percent of standard proctor density (A.S.T.M. D-698) atoptimum moisture.
14. The fill material shall be placed in 8" lifts and shall have a plasticity index ranges of 7 to 17 a maximum liquid limit of 40, and shall be compactd to approximately 95% of standard proctor density at optimum moisture.
15. Corner bars shall be # 6 at all corners & # 5 @ all intersection - 1 top 1 bottom.

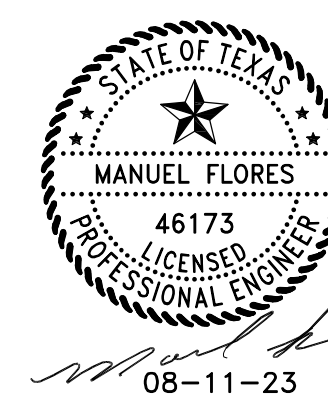
FOUNDATION PLAN  
FOR  
R.G.V.L.S. STAGE

*FRESNO SYSTEMS SERVICES*

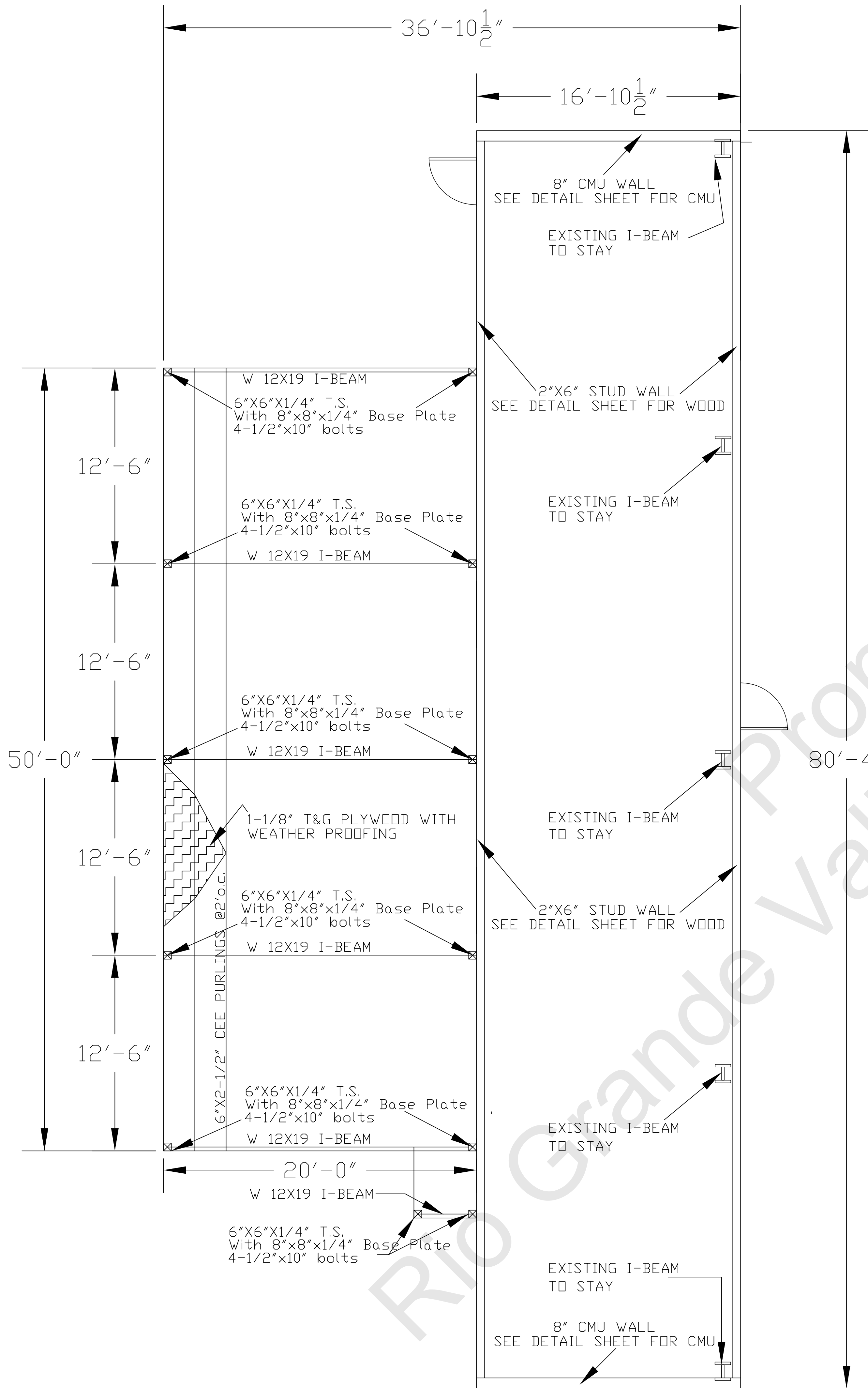
*P.O. BOX 889  
LOS FRESNOS, TEXAS 78566  
(956) 233-4687  
FAX (956) 233-9003  
MEMEPE@AOL.COM*

*MANUEL FLORES P.E.  
ENGINEER  
WINDSTORM INSPECTIONS  
STRUCTURAL CIVIL  
HVAC CONSULTING  
PLUMBING*

Date:08-11-23	Job No.:R.G.V.L.S.
FIRM # 2547	







GENERAL NOTES

- HOT ROLLED MILL SHAPES SHALL BE OF ASTM A441 OR A572 STEEL W/MINIMUM Fy= 50 KSI
- COLD FORM CEES AND ZEES SHALL HAVE A MINIMUM Fy= 57KSI AND SHALL CONFORM TO 1990 LGS SPECIFICATIONS AND SHAPES.
- FIELD WELDING SHALL BE ACCOMPLISHED USING E60XX OR E70XX ELECTRODES BY CERTIFIED WELDERS IN ACCORDINANCE W/ CURRENT AWS SPECIFICATIONS.
- CABLE BRACING SHALL BE OF SIZE SHOWN ON DRAWING AN SHALL BE EXTRA STRENGTH GALVANIZED STEEL CABLE. EE BOLTS SHALL PROVIDE A MIN. OF 100 P OF THE TENSILE STRENGTH OF THE CABLE. RATED BREAKING STRENGTH OF CABLE SHALL BE :  
1/4 IN DIAMETER 6.650 POUNDS  
3/8 IN DIAMETER 15.400 POUNDS
- WELDS FOR MOMENT CONNECTIOND SHALL BE AS DETAILED ON DRAWINGS WELDS FOR SHEAR TYPE CONNECTIONS WHICH ARE NOT DETAILED SHALL BE IN ACCORDINANCE WITHIN AISC & AISI SPECS.
- MISCELLANEOUS CLIPS WICH ARE NOT SPECIFIED ON THE DRAWINGS SHALL BE A MIN. OF 3/16 IN THICK A36 STEEL MATERIAL.
- FRAMES ARE TO BE FIELD FABRICATED ON THE GROUND AND LIFTED INTO POSITION AS A UNIT. IF ANY MEMBERS ARE TO BE FIELD WELDED IN THE AIR. ERECTION BOLTS WILL BE REQUIRED. ERECTION BOLTING SHALL COMPLY W/ ALL LOCAL,STATE, AND NATIONAL SAFETY CODE REQUIRMENTS (INCLUDING OSHA).

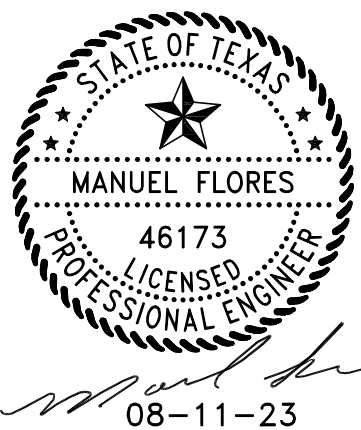
Codes and Design Specification

- Building Code : IBC 2018
- IBC 2018 Risk category II
- Wind: 2018 IBC wind speed 136 mph exposure "B"

GENERAL NOTES

- MATERIAL AND WORKMANSHIP SHALL CONFORM TO THE LATEST EDITION OF THE AISC SPECIFICATIONS FOR THE DESIGN, FABRICATION, AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS.
- STRUCTURAL STEEL SHALL COMPLY WITH THE FOLLOWING ASTM DESIGNATIONS:  
STEEL TUBES (COLD FORMED HSS) A500, GRADE B (Fy=46ksi)  
STEEL PIPES A53, GRADE B (Fy=35ksi)  
ROLLED SHAPES A36 (Fy=36 ksi)  
PLATES A36
- ALL STRUCTURAL STEEL SHALL BE FABRICATED, ERECTED, AND PAINTED IN ACCORDANCE WITH THE SPECIFICATIONS FOR THE DESIGN, FABRICATION, AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS AS AMENDED TO DATE AND THE CODE OF STANDARD PRACTICE, LATEST EDITION AS ADOPTED BY THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION, AMENDED AS FOLLOWS:  
\*SECTION 4.2.1, DELETE FIRST TWO SENTENCES.  
\*SECTION 7, ALL REFERENCE TO OWNER SHALL BE CHANGED TO GENERAL CONTRACTOR.  
\*SECTION 7.9.3, THE CONTRACTOR SHALL PROVIDE THE SEQUENCE AND SCHEDULE OF PLACEMENT OF NON-SELF SUPPORTING STEEL FRAMES.  
\*SECTION 7.9.4, THE CONTRACTOR TO DESIGN SHORES, JACKS OR LOADS.
- WELDING SHALL BE DONE IN ACCORDANCE WITH THE STANDARD CODE FOR ARC AND GAS WELDING IN BUILDING CONSTRUCTION AS PUBLISHED BY THE AMERICAN WELDING SOCIETY, EXCEPT THAT ALL WELDING SHALL BE PERFORMED BY CERTIFIED WELDERS AND SHALL CONFORM TO THE LATEST CODE OF THE AWS.
- DETAILED AND OR SCHEDULED CONNECTIONS HAVE BEEN DESIGNED BY STRUCTURAL ENGINEER. ANY CONNECTION NOT DETAILED OR SCHEDULED OR ALTERED FOR FABRICATION PURPOSES SHALL BE SIZED AND DETAILED BY FABRICATOR AND SHALL BE MARKED FOR ENGINEER'S VERIFICATION. FABRICATOR SIZED AND DETAILED CONNECTIONS SHALL SUPPORT ONE-HALF THE TOTAL UNIFORM LOAD CAPACITY SHOWN IN THE TABLES OF UNIFORM CONSTANTS, PART 2 OF THE AISC MANUAL OF STEEL CONSTRUCTION FOR THE GIVEN BEAM, SPAN AND GRADE OF STEEL SPECIFIED. THE EFFECT OF ANY CONCENTRATION LOADS MUST BE TAKEN INTO ACCOUNT.
- SEE ARCHITECTURAL PLANS FOR MISCELLANEOUS STEEL ITEMS NOT INDICATED ON STRUCTURAL DRAWINGS. STEEL ITEMS SHOWN ON ARCHITECTURAL DRAWINGS AND NOT SPECIFIED ON THE STRUCTURAL DRAWINGS SHALL BE DESIGNED BY THE STEEL FABRICATOR. SEE DESIGN CRITERIA FOR LOADING.
- ALL WELDED CONNECTIONS SHALL BE MADE USING 1/4" FILLET WELD, U.N.O.
- ALL BOLTED CONNECTIONS SHALL BE MADE USING 3/4" DIAMETER HIGH STRENGTH BOLTS, ASTM A325, BEARING TYPE CONNECTION w/ WASHERS, U.N.O. ON DESIGN DRAWINGS. SPECIAL INSPECTION REQUIRED FOR ALL HIGH STRENGTH BOLTING.
- ALL CONNECTION PLATES AND STIFFENERS SHALL BE MADE WITH 1/4" THICK PLATES, UNLESS OTHERWISE NOTED ON PLANS.
- ALL STEEL (INCLUDING BOLTS) EXPOSED TO THE WEATHER SHALL BE HOT-DIPPED GALVANIZED. (INCLUDES STEEL THAT IS ONLY COVERED WITH PLASTER OR STUCCO). SEE ARCHITECTURAL PLANS IF STRICTER REQUIREMENTS ARE REQUIRED.
- ALL EXPOSED STEEL SHALL FOLLOW SECTION 10 OF THE CODE OF STANDARD PRACTICE OF AISC. SECTION 10 OF THE CODE ADDRESSES ARCHITECTURALLY EXPOSED STRUCTURAL STEEL (AESS).
- CONNECTIONS SHALL BE PER HOLLOW STRUCTURAL SECTIONS, CONNECTION MANUAL BY AISC.
- WHERE STEEL JOIST PASS THROUGH CMU WALLS, PROVIDE HALF INCH GAP BETWEEN THE CMU AND THE STEEL JOIST. PROVIDE ELASTOMERIC MATERIAL BETWEEN THE STEEL JOIST AND CMU WALL.
- ALL BEAMS NOT SHOWN SHALL BE W14x26. ALL COLUMNS NOT SHOWN SHALL BE Ts4x4x1/4.
- STEEL SHOP SHALL BE AISC CERTIFIED.
- PROVIDE 800 LBS OF RED IRON ALLOWANCE.

STRUCTURAL PLAN  
FOR  
R.G.V.L.S. STAGE



FRESNO SYSTEMS SERVICES

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WINDSTORM INSPECTIONS  
STRUCTURAL CIVIL  
MECHANICAL CONSULTING  
HVAC PLUMBING

Date: 08-16-23	Job No.: RGVLS STAGE
F.N. 2547	
	Drawn By : R.M.F.



STRUCTURAL MASONRY

- 1. HOLLOW LOAD BEARING MASONRY UNITS SHALL CONFORM TO A.S.T.M. C-90 LIGHT WEIGHT, TYPE N1 W/ A MINIMUM COMPRESSIVE STRENGTH OF 1800 P.S.I. ON THE NET AREA OF THE BLOCK.
- 2. MORTAR SHALL CONFORM TO A.S.T.M. C-476, TYPE S.
- 3. COARSE GROUT SHALL CONFORM TO A.S.T.M. 476 W/ A MAXIMUM AGGREGATE SIZE OF 3/8" AND A MIN. COMPRESSIVE STRENGTH OF 3000 P.S.I.
- 4. VERTICAL BARS SHALL BE HELD IN POSITION AT TOP AND BOTTOM AND AT INTERVALS NOTE EXCEEDING 8"0" W/ A MIN. CLEARANCE OF 3/4" FROM THE MASONRY, AND NOT LESS THAN ONE BAR DIAMETER BETWEEN BARS.
- 5. REINFORCING BARS SHALL BE STRAIGHT EXCEPT FOR BENDS AROUND CORNERS AND WHERE BENDS AND HOOKS ARE DETAILED ON THE PLANS
- 6. HORIZONTAL WALL REINFORCING IN WALLS WHICH ARE FULLY GROUTED SHALL BE 9 GAGE DURO-O-WALL TRUSS TYPE HORIZONTAL REINFORCING @ 8" O.C.
- 7. WIRE REINFORCING SHALL BE LAPPED @ LEAST 6" AT SPLICES AND SHALL CONTAIN AT LEAST ONE CROSS WIRE OF EACH PIECE OF REINFORCEMENT IN THE LAPPED DISTANCE.
- 8. VERTICAL REINFORCING BARS MAY BE SPLICED INTO 6' TO 8' (+-) LENGTHS PROVIDED THE SPLICES IN THE ADJACENT BARS ARE STAGGERED AND ARRANGED SO THAT NOT MORE THEN 1/3 OF THE TOTAL NUMBER OF BARS ARE SPLICED AT ANY LOCATION AND NOT MORE THAN 1/2 OF THE TOTAL NUMBER OF BARS ARE SPLICED AT MID-HEIGHT OF THE WALL OR PILASTER (BETWEEN POINTS AND LATERAL BRACING). MINIMUM LAP AT SPLICE SHALL BE 30 BAR DIAMETER
- 9. ALL CELLS ARE REQUIRED TO BE GROUTED SHALL BE GROUTED W/ COARSE GROUT, NOT MASONRY MORTAR
- 10. WALLS WHICH ARE TO BE FULLY GROUTED SHALL HAVE TOP AND BOTTOM COURSES CONSISTING OF THROUGH BLOCKS.

CONCRETE REINFORCEMENT:

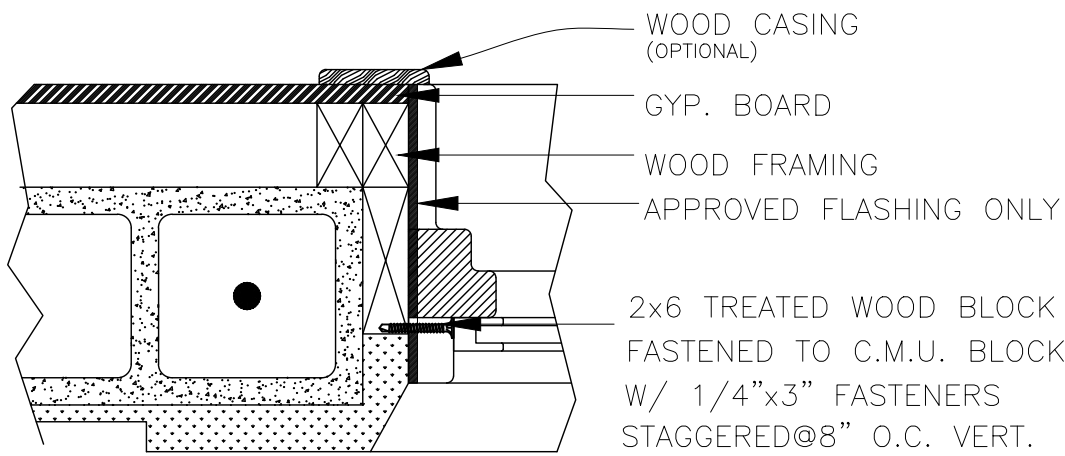
- 1. REINFORCING STEEL SHALL BE NEW DOMESTIC DEFORMED BILLET STEEL CONFORMING TO A.S.T.M. A-615, GRADE 60.
- 2. WELDED WIRE FABRIC SHALL CONFORM TO A.S.T.M. A-185.
- 3. REINFORCING BARS SHALL BE DETAILED IN ACCORDANCE WITH THE A.C.I. DETAILING MANUAL. PROVIDE BAR SUPPORTS AND SPACERS AS REQUIRED.
- 4. PROVIDE CORNER BARS AT ALL INTERSECTING REINFORCING MEMBERS IN WALLS AND BEAMS. CORNER BAR SHALL BE THE SAME SIZE AS THE LARGER INTERSECTION BAR AND SHALL PROVIDE A MINIMUM LAP OF 40 BAR DIAMETERS.
- 5. DETAILING OF REINFORCING BARS SHALL BE AS FOLLOWS:
  - A. TOP AND BOTTOM BARS TO BE CONTINUOUS BETWEEN SUPPORTS.
  - B. TOP BARS AT THE ENDS OF BEAMS TO HAVE STANDARD 90° HOOKS.
  - C. SPLICE TOP BARS AT THE MID SPAN BETWEEN SUPPORTS.(U.N.O.)
  - D. SPLICE BOTTOM BARS DIRECTLY OVER SUPPORTS. (U.N.O.)
  - E. ALTERNATE SPLICES IN MIDDLE BARS BETWEEN SUPPORTS
  - AND MIDSPANS WITH NO MORE THAN 1/2 OF THE BARS SPLICED AT ANY ONE LOCATION.
  - F. ALL BAR SPLICES SHALL BE 30 BAR DIAMETERS MINIMUM.

CONCRETE MIX DESIGNS:

- 1. PROVIDE CONCRETE HAVING THE FOLLOWING GENERAL CHARACTERISTICS:

28 DAY COMP. MAX	AGG. TYPE	MAX SIZE
USAGE	STRENGTH PSI	SLU MP(IN)
ALL	3000	5
	HARDROCK	3/4"
- 2. WORKABILITY ADMIXTURES MAY BE UTILIZED, PROVIDED THAT BATCH PROPORTIONS ARE DETERMINED IN THE MANNER DESCRIBED IN THE SPECIFICATIONS.
- 3. PROVIDE THREE PERCENT (3%) TO FIVE PERCENT(5%) AIR ENTRAINMENT IN CONCRETE PERMANENTLY EXPOSED TO THE WEATHER (AND ELSEWHERE AT THE CONTRACTORS OPTION). USE OF AIR ENTRAINMENT, AND CORRESPONDING REDUCTION OF THE W/C RATIO, MUST BE NOTED ON THE MIX DESIGNS.
- 4. USE OF ACCELERATING OR SET-RETARDING ADMIXTURES REQUIRES PRIOR APPROVAL FROM THE ENGINEER. IN GENERAL, USE OF CALCIUM CHLORIDE WILL NOT BE PERMITTED.
- 5. FLY ASH IS EXPRESSLY PROHIBITED.
- 6. WHERE GROUT IS CALLED FOR, USE A NON-SHRINK, NON-STAINING PREMIXED GROUT.

MASONRY LINTEL SCHEDULE			EXCEPT AS NOTED ON PLANS
SPAN	BEAM (W. X HT.)	REINFORCING	
UP TO 42"	8" X 8"	2- #5'S	
42" TO 64"	8" X 8"	2- #5'S	
64" TO 72"	8" X 8"	2- #6'S	
72" TO 96"	8"X 16"	4 #5'S W/ #3 STIRRUPS @ 12" O.C. (2 TOP BARS & 2 BOTTOM BARS)	
96" TO 144"	8" X 16"	4 #6'S W/ #3 STIRRUPS @ 12" O.C. (2 TOP BARS & 2 BOTTOM BARS)	
144" TO 216"	8" X 16"	4 #7S W/ #3 STIRRUPS @ 12" O.C. (2 TOP BARS & 2 BOTTOM BARS)	
ALL OPENINGS IN MASONRY SHALL RECEIVE HEADERS— GROUT CELLS @ EACH SIDE OF OPENINGS & REINFORCE CELLS @ EACH SIDES W/ BAR VERT. TO BOND BEAM ABOVE & BELOW AT OPENINGS GREATER THAN 16" COORDINATE OPENINGS W/ BOND BEAMS & VERTICALLY GROUTED & REINFORCED CELLS TYP.			



8"x8"x16" C.M.U. W/HORIZONTAL REINFRING 9 GAGE DUR-O-WALL TRUSS TYPE @16"O.C. VERTICALLY

FOAM INSULATION ALL EXTERIOR WALL.(OPTIONAL)

WOOD FRAME WALL

#5 REBAR 1st FLOOR, DOWELLED FROM SLAB FILL CELL W/ CONC. & BEND BARS INTO TOP BOND BEAM

#5 VERT.

TYPICAL 3,000 SI CONC.

#5 REBAR 1st FLOOR, DOWELLED FROM SLAB FILL CELL W/ CONC. & BEND BARS INTO TOP BOND BEAM

40 BAR DIA.

INSIDE BARS EXTEND 40 BAR DIAMETERS & BEND INTO CORNER CELL OR ONE INSIDE BAR SHALL TURN CORNER & LAP OTHER BAR 40 BAR DIAMETERS

40 BAR DIA. MIN.

TYPICAL 3,000 SI CONC.

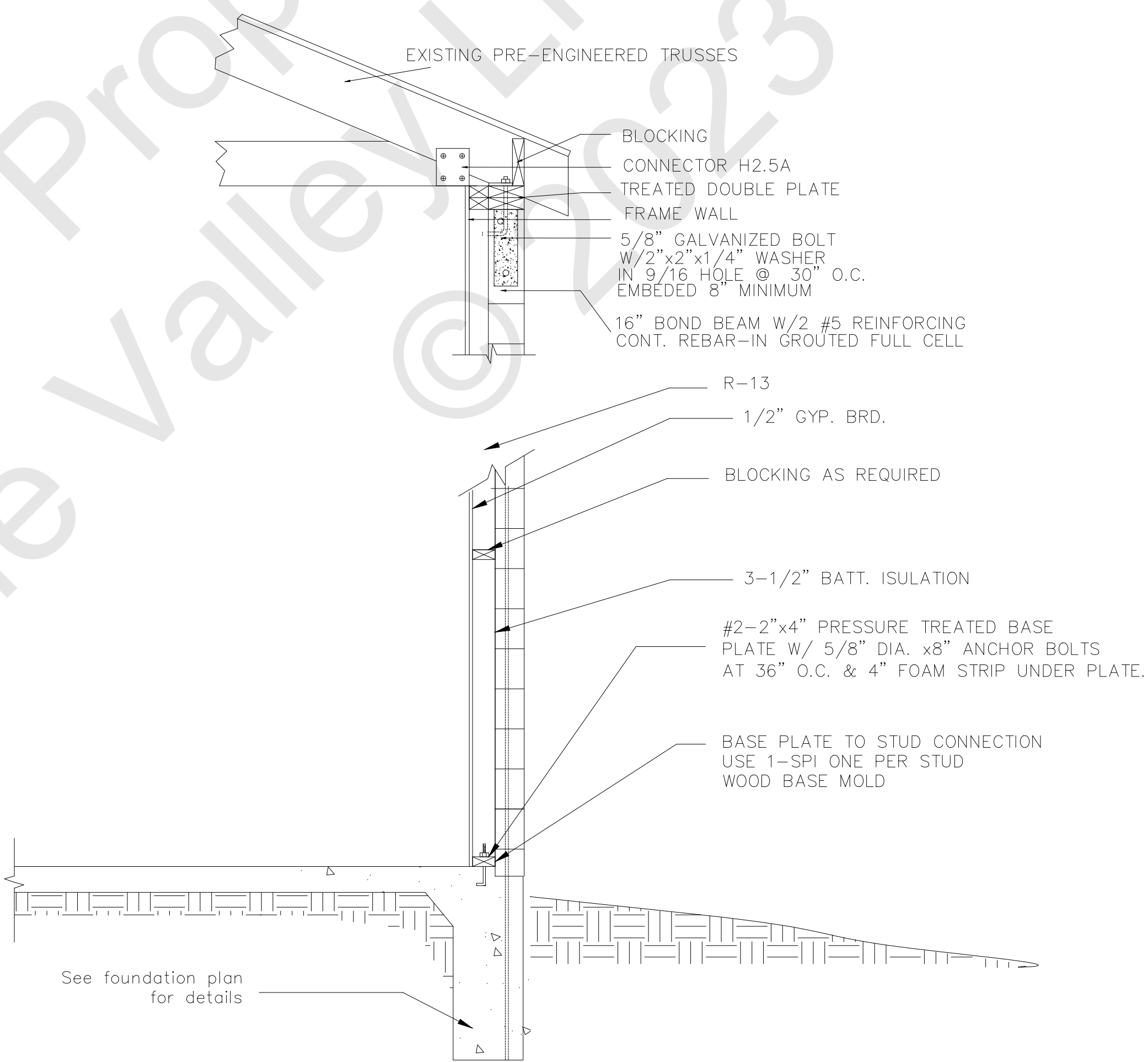
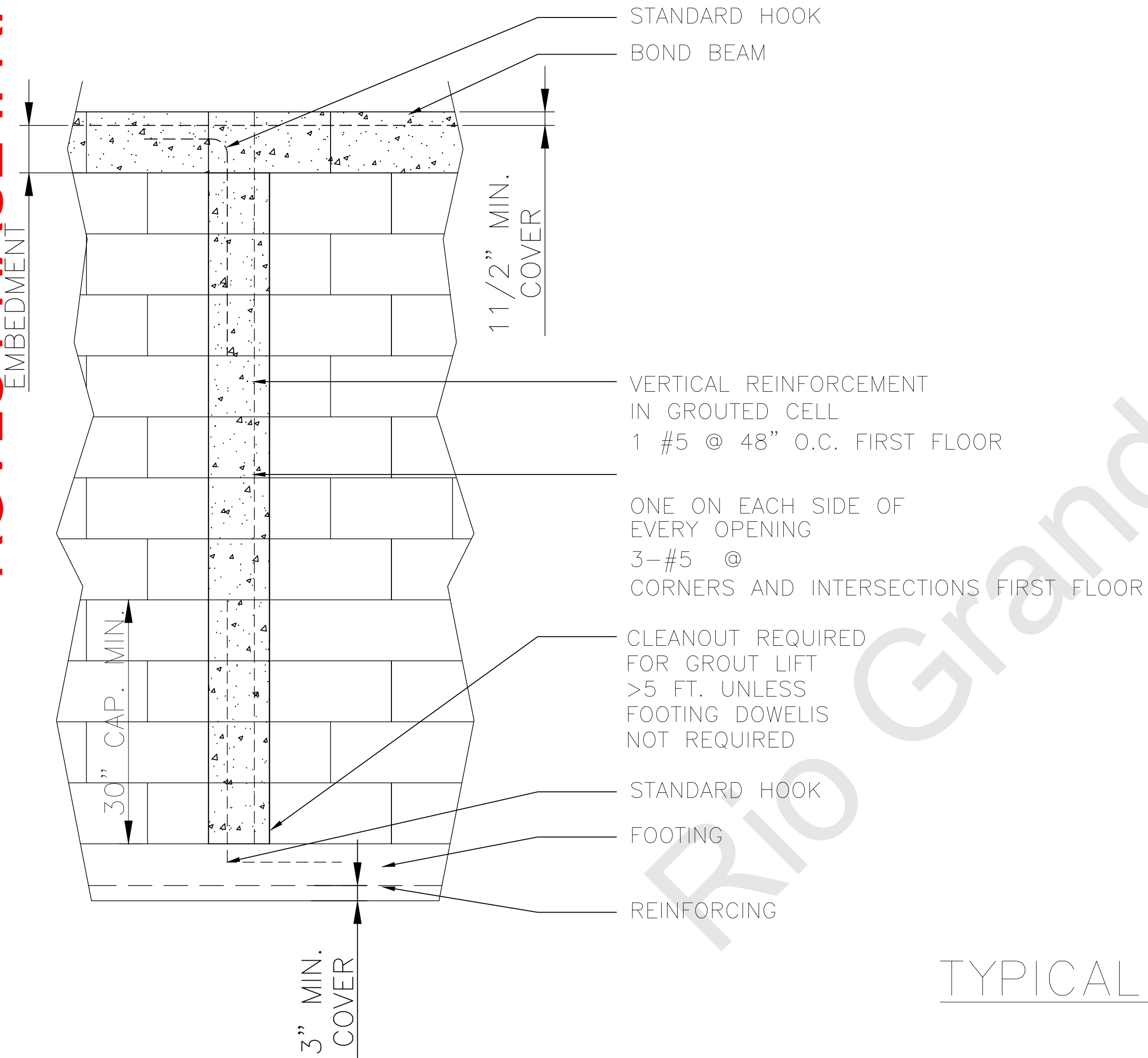
EXTERIOR BOND BEAM & CORNER REINFORCING

INTERIOR BOND BEAM & VERT. REINFORCING

VERTICAL BARS @ OPENINGS (JAMBS, ETC.) SHALL BE DOWELED FROM SLAB & SHALL BEND INTO BOND BEAM ABOVE REINFORCE CMU WALLS W/ BARS IN SOLIDLY CONCRETED CELLS @ 48" O.C. TYP.

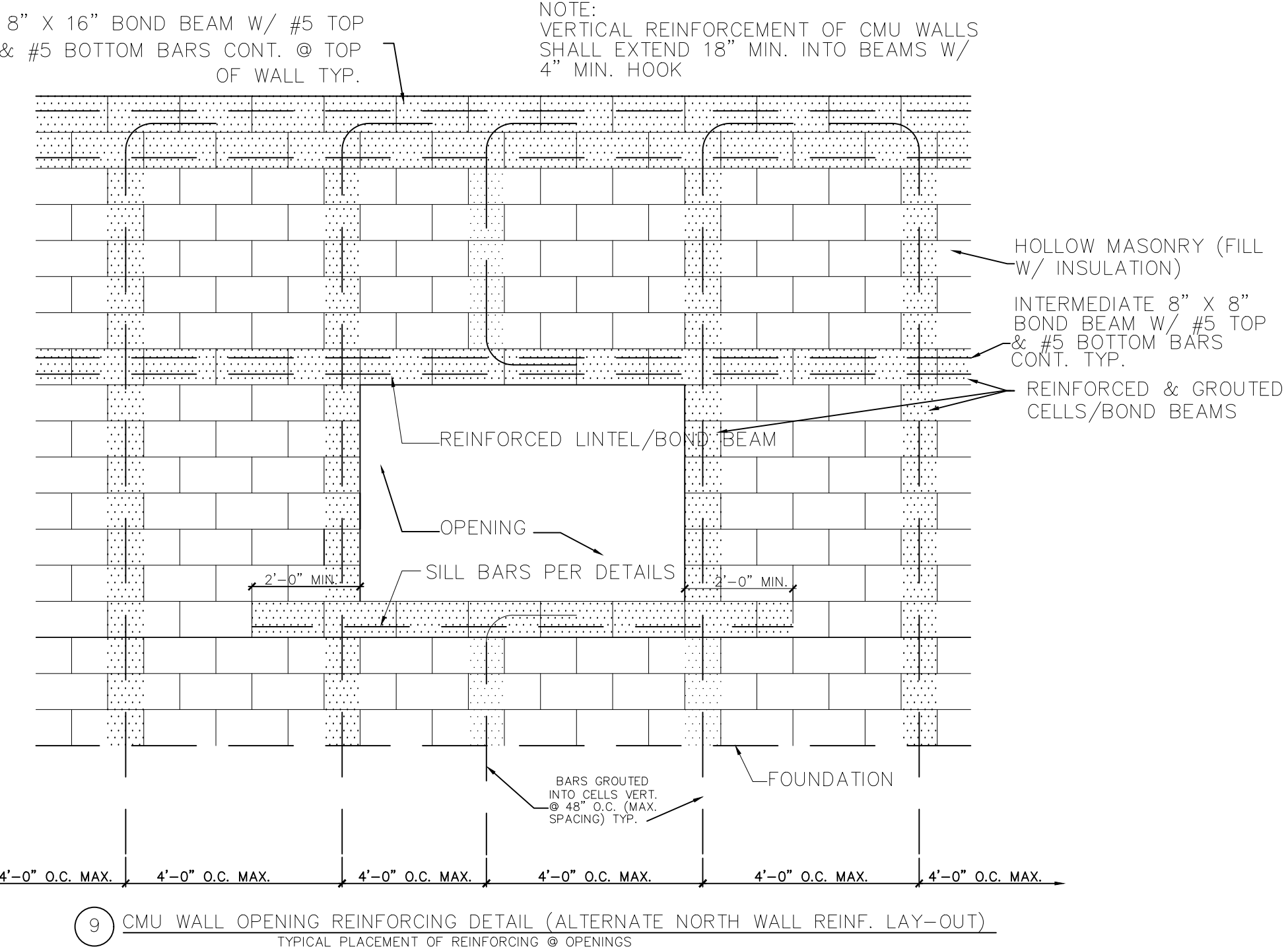
NOTE:  
AT CHANGES IN BOND BEAM HEIGHT, FILL 2 ADJACENT CELLS EACH W/ CONC. & 1- #5 BAR VERT.- TURN BOND BEAM BARS DOWN INTO REINFORCED CELLS. EACH SHALL LAP CLOSEST FILLED CELL & TERMINATE IN OTHER FILLED CELL- LAP BARS 40 DIAMETERS TYP.

7 CMU REINFORCING DETAIL

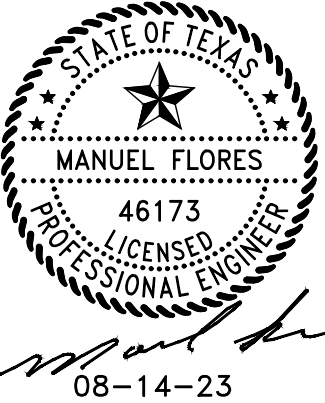


TYPICAL EXTERIOR WALL SECTION

SCALE: NTS



9 CMU WALL OPENING REINFORCING DETAIL (ALTERNATE NORTH WALL REINF. LAY-OUT) TYPICAL PLACEMENT OF REINFORCING @ OPENINGS



CMU DETAIL FOR R.G.V.L.S., MERCEDES, TEXAS

FRESNO SYSTEMS SERVICES

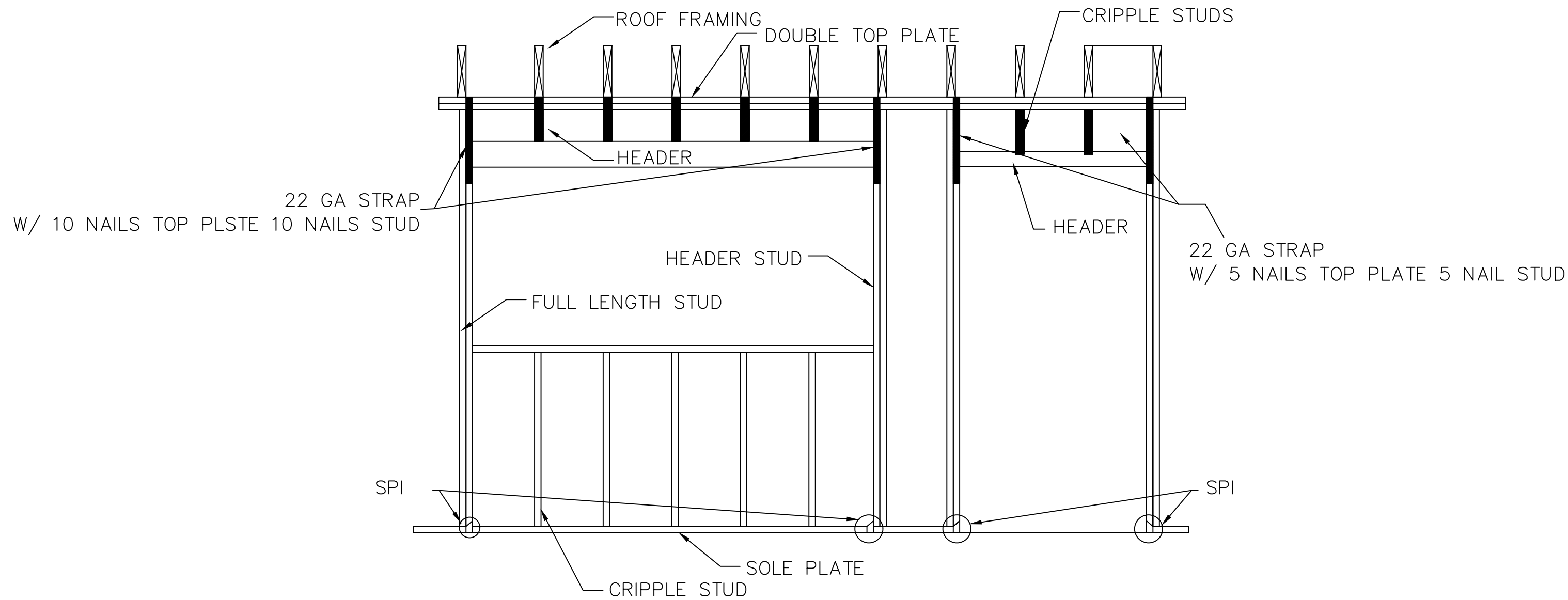
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MANUEL FLORES P.E.  
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WINDSTORM INSPECTIONS  
STRUCTURAL  
HVAC  
CONSULTING  
PLUMBING

Date:08-14-23 JOB NO.:R.G.V.L.S

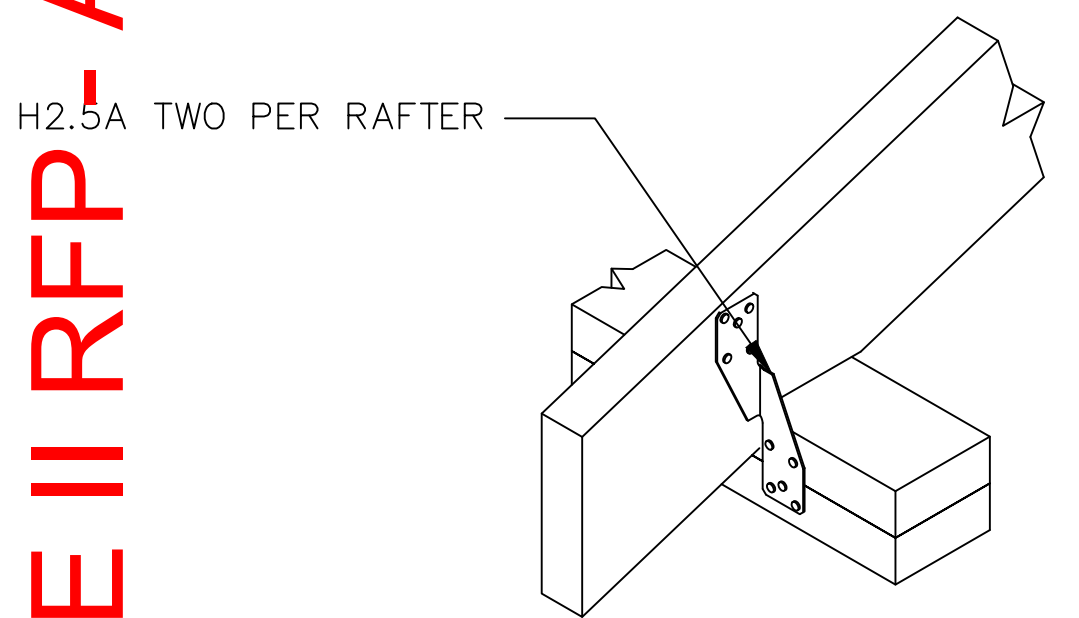
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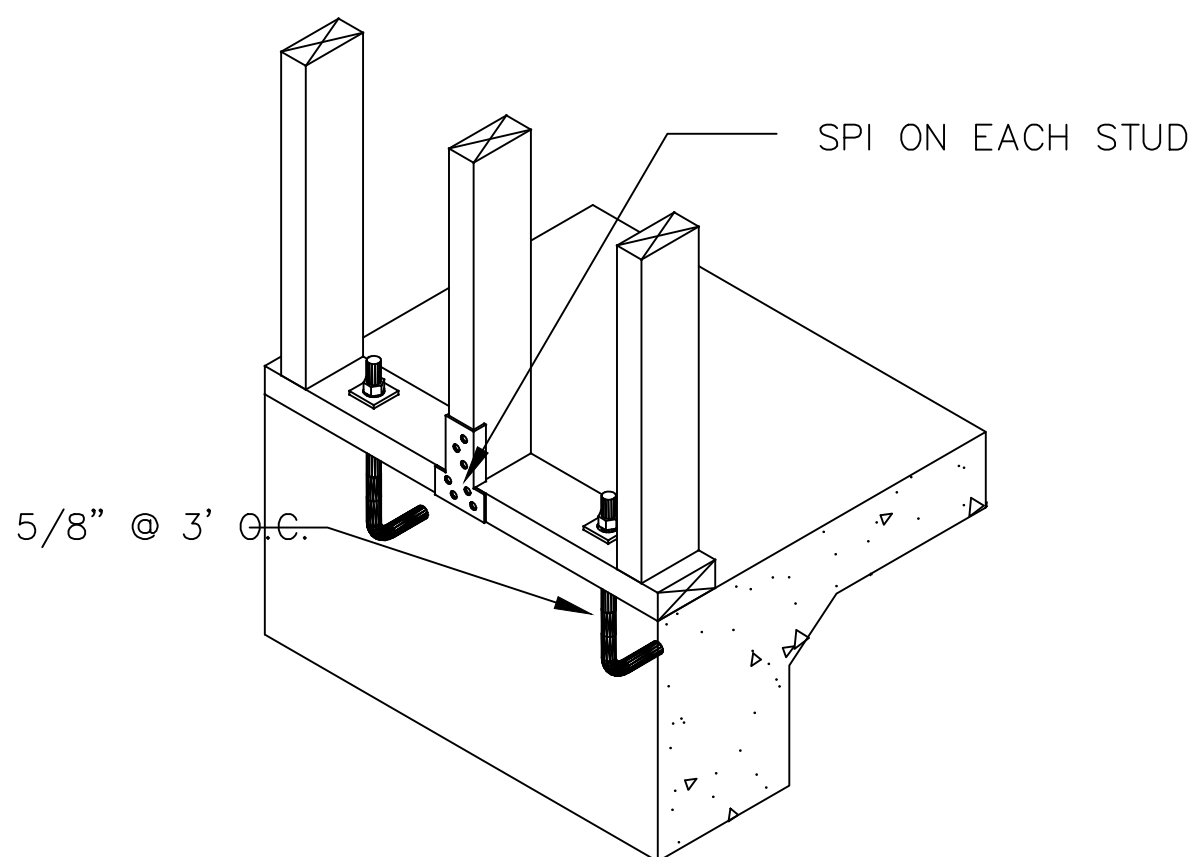


Codes and Design Specification

1. Building Code : IBC 2018
2. IBC 2018 Risk category II
3. Wind: 2018 IBC wind speed 136 mph exposure "B"



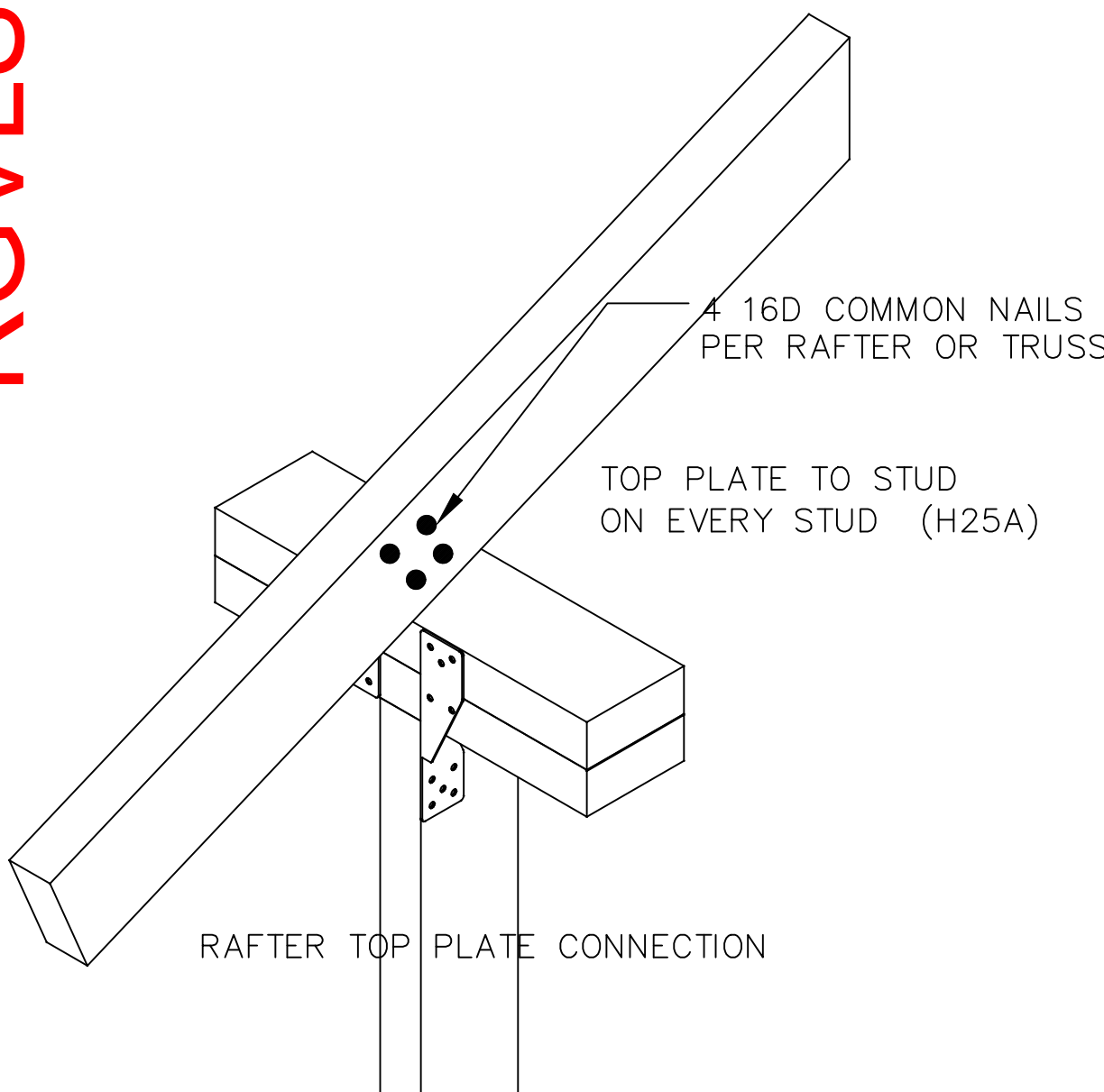
RAFTER TOP PLATE CONNECTION



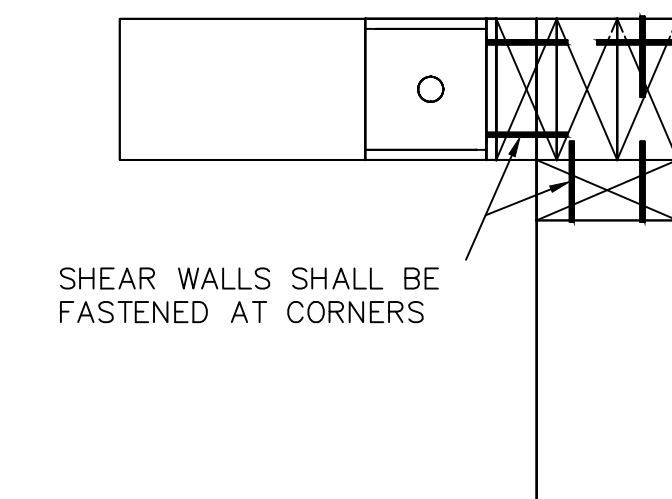
STUD & SOLE PLATE CONNECTIONS  
NOTES:

Slab corner bars shall be # 6 at all corners & # 5 @ all intersection - 1 top 1 bottom  
All nails into treated wood shall be min. Hot Dip Galvanized, all other fasteners shall be Hot Dipped, Electrically or Mechanically Galvanized, or Stainless Steel.

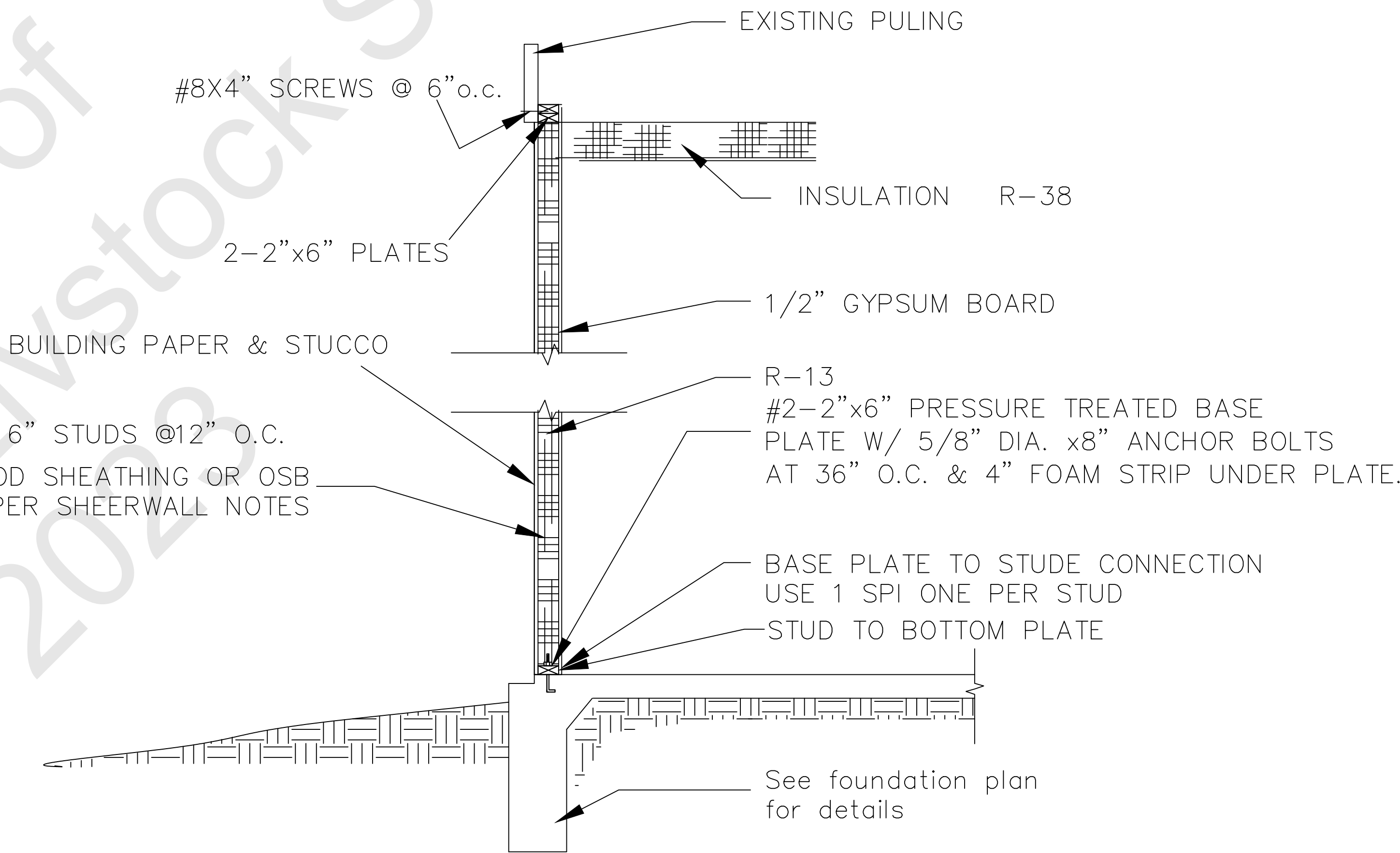
Framing Material-S.P.F. #2 or better  
Sheating Material-Plywood or Oriented Strand Board, shall be APA-Rated  
Sheating for floors, roofs and walls.



RAFTER TOP PLATE CONNECTION



CORNER STUD DETAIL



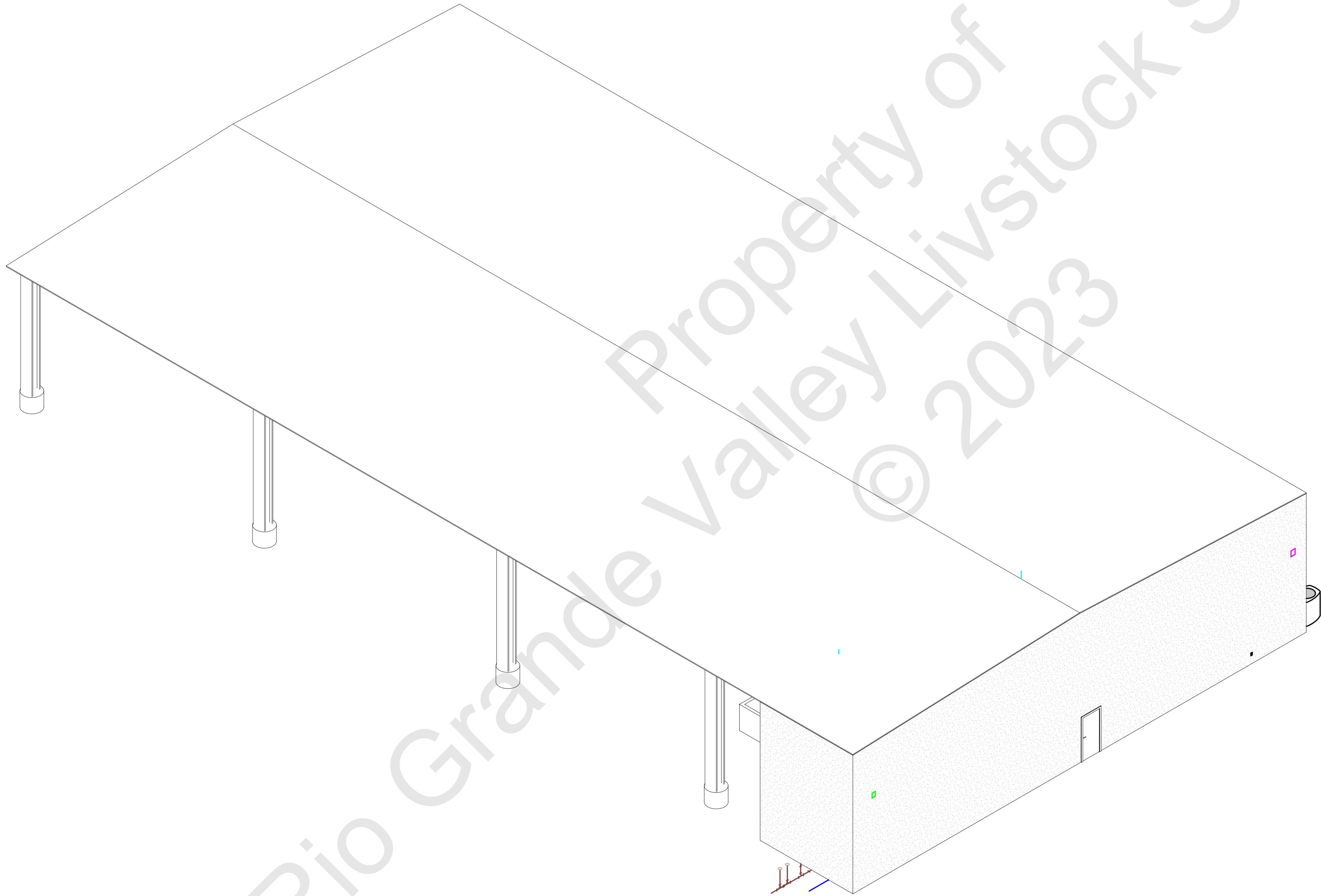
TYPICAL EXTERIOR WALL SECTION



WOOD DETAILS  
R.G.V.L.S. MERCEDES, TX

FRESNO SYSTEMS SERVICES	
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MANUEL FLORES P.E. ENGINEER WINDSTORM INSPECTIONS STRUCTURAL HVAC CONSULTING PLUMBING RN# F-2547	
Date:08-14-23	JOB: R.G.V.L.S.

# RGV LIVESTOCK SHOW INC.



SHEET INDEX		
NUMBER	NAME	DESIGNED BY
B 1.0	Cover Sheet	A&G Engineering
E 0.0	General Notes - Elec	A&G Engineering
E 1.0	Lighting - Elec	L.Madrigal
E 2.0	Power - Elec	L.Madrigal
E 3.0	Schedules/Details - Elec	L.Madrigal
E 3.1	Schedules/Details - Elec	L.Madrigal
M 0.0	General Notes - Mech	A&G Engineering
M 1.0	Supply/Return - Mech	R. Martinez
M 2.0	Schedules/Details - Mech	R. Martinez
P 0.0	General Notes - Plumb	A&G Engineering
P 1.0	Waste/Water - Plumb	O Rodriguez
P 2.0	Schedules/Details - Plumb	O Rodriguez

AG

ENGINEERING

TX PE FIRM # F16900  
1004 W FRONTAGE RD  
ALAMO, TX 78516  
956.787.FIRE

2015 INTERNATIONAL MECHANICAL CODE 2015 INTERNATIONAL PLUMBING CODE 2014 NATIONAL ELECTRICAL CODE		21 JUL 2023	
ISSUE FOR PERMITTING		DATE	
DESCRIPTION		DATE	
REVISION SCHEDULE		DATE	
0	REV		



21 AUG 2023

PROJECT: 23 03 08

**RGV LIVESTOCK SHOW INC.**  
1000 N Texas Ave  
Mercedes, TX 78570

Cover Sheet

**B 1.0**





GENERAL NOTES - ELECTRICAL

- A. CONTRACTOR REQUIREMENTS:  
A.1. ALL WORK UNDER THIS CONTRACT SHALL BE ACCOMPLISHED IN STRICT ACCORDANCE WITH FEDERAL, STATE, AND LOCAL CODES. WHERE THESE PLANS AND SPECIFICATIONS ARE IN CONFLICT WITH SUCH CODES, THE CODES SHALL GOVERN. BIDS SUBMITTED BY CONTRACTOR SHALL INCLUDE WORK REQUIRED TO COMPLY WITH ALL SUCH CODES. ANY ITEMS REQUIRED AND/OR MISSED IN THESE BASIS OF DESIGN DOCUMENT, SHALL BE PROVIDED AND INSTALLED BY CONTRACTOR AT CONTRACTORS EXPENSE AND ZERO EXPENSE TO THE OWNER AND/OR DESIGN TEAM. CONTRACTOR SHALL PAY FOR AND OBTAIN ALL NECESSARY CONSTRUCTION PERMITS AND CERTIFICATES OF INSPECTION.
- A.2. CONTRACTOR SHALL STUDY DOCUMENTS, FULLY UNDERSTAND AND ACCEPT THE BASIS OF DESIGN AND SCOPE OF WORK. SUBMISSION OF BID INDICATES CONTRACTOR'S COMPLETE APPROVAL AND ACCEPTANCE OF CONSTRUCTION DOCUMENTS.
- A.3. CONTRACTOR SHALL USE ADEQUATE NUMBER OF SKILLED WORKERS, WHO ARE TRAINED, LICENSED AND EXPERIENCED IN COMMERCIAL ELECTRICAL, AND WHO ARE FAMILIAR WITH THE CONSTRUCTION DOCUMENTS AND METHODS OF PERFORMING THE WORK REQUIRED. EACH WORKDAY WILL BE FROM 8:00 AM UNTIL 5:00 PM. ANY DEVIATIONS MUST BE REQUESTED IN WRITING A MIN OF 24 HOURS PRIOR TO DATE OF DEVIATION.
- A.4. ALL CONSTRUCTION DEBRIS SHALL BE REMOVED FROM THE JOBSITE PRIOR TO THE COMPLETION OF EACH WORKDAY. ALL WORK AREAS SHOULD BE BROOM CLEANED, AND EQUIPMENT WIPED CLEAN PRIOR TO FINISHING PROJECT AND PRIOR TO SUBMISSION OF FINAL PAYMENT APPLICATION. CONTRACTOR SHALL PROVIDE A MINIMUM 1 YR. WARRANTY ON ALL LABOR AND MATERIALS INSTALLED. CONTRACTOR SHALL MAKE ALL WARRANTY REPAIRS OR REPLACEMENTS IN A TIMELY MANNER, AT NO ADDITIONAL COST TO THE OWNER.
- B. BASIS OF DESIGN:  
B.1. ALL CONSTRUCTION DOCUMENTS PROVIDED BY OWNER, INCLUDING ENGINEERING DRAWINGS, NOTES, SCHEDULES, DETAILS, CALCULATIONS AND SPECIFICATIONS, EQUIPMENT MANUFACTURER'S DRAWINGS AND DATA SHEETS, SHALL BE THE BASIS OF DESIGN.
- B.2. THE BASIS OF DESIGN WILL BE USED FOR ALL INSPECTIONS, TESTING AND ACCEPTANCE OF THE WORK PERFORMED BY THE CONTRACTOR TO VERIFY SUCCESSFUL COMPLETION OF SCOPE OF WORK.
- B.3. THESE DRAWINGS ARE INTENDED TO GENERALLY SHOW THE EXISTING BUILDING ELECTRICAL AND LIGHTING SYSTEMS MODIFICATIONS REQUIRED FOR THIS PROJECT. INFORMATION PROVIDED INCLUDES LOCATION, QUANTITY, TYPE, SIZE, CAPACITY, AND FUNCTION OF SPECIFIC COMPONENTS OF THE NEW AND MODIFIED ELECTRICAL AND LIGHTING SYSTEMS THAT ARE TO BE PROVIDED BY THE CONTRACTOR.
- B.4. ALL WIRE AND CONDUIT SHALL BE SIZED BY A LICENSED ELECTRICAL CONTRACTOR AND SHALL ACCOUNT FOR VOLTAGE DROP OF LESS THAN 3%. ALL ELECTRICAL CIRCUITS ON PLAN ARE IDENTIFIED AT HOMERUN BY PANEL AND CIRCUIT NUMBERS.
- B.5. INCIDENTAL MODIFICATIONS OR DEMOLITION OF EXISTING ELECTRICAL SYSTEMS AND COMPONENTS AS REQUIRED FOR INSTALLATION OF NEW WORK IS INCLUDED AS PART OF THE PROJECT, WHETHER SHOWN ON PLANS OR NOT. CONTRACTOR SHALL FIELD VERIFY ALL REQUIREMENTS PRIOR TO BIDDING PROJECT. ANY ITEMS REQUIRED, REGARDLESS IF ON PLANS, SHALL BE INSTALLED BY CONTRACTOR. ALL SUCH INSTALLATION SHALL BE INSTALLED AT CONTRACTORS EXPENSE.
- B.6. CEILING TILE AND GRID MODIFICATION, AND REINSTALLATION AS REQUIRED FOR WORK SHOWN IS TO BE PROVIDED BY OTHERS AND IS NOT CONSIDERED PART OF THE ELECTRICAL CONTRACTOR'S SCOPE OF WORK. COORDINATE WITH OWNER TO PROVIDE THE REQUIRED WORK ACCESS ABOVE ALL LAY-IN CEILINGS.
- B.7. RELOCATION OF EXISTING BUILDING SYSTEMS AND EQUIPMENT, SUCH AS DUCT WORK, FIRE SPRINKLER PIPING AND HEADS, SMOKE DETECTORS, PLUMBING, ETC., AS REQUIRED FOR INSTALLATION OF NEW WORK IS TO BE PROVIDED BY OTHERS AND IS NOT CONSIDERED PART OF THE ELECTRICAL CONTRACTOR'S SCOPE OF WORK. COORDINATE WITH OWNER TO PROVIDE THE REQUIRED INTERFERENCE REMOVAL OF OTHER TRADES.
- B.8. THE EXISTING BUILDING ELECTRICAL SYSTEMS ARE INTENDED TO BE REUSED AS SHOWN ON PLANS OR AS INSTALLED IF NOT SHOWN. ALL EXISTING ELECTRICAL AND LIGHTING SYSTEMS ON PLANS ARE FOR REFERENCE ONLY AND MAY BE DIFFERENT IN THE FIELD. CONTRACTOR SHALL FIELD SURVEY, TEST AND INSPECT ALL EXISTING ELECTRICAL AND LIGHTING SYSTEMS PRIOR TO BIDDING TO ENSURE HE UNDERSTANDS AND ACCEPTS ALL EXISTING CONDITIONS.
- B.9. THE EXISTING ELECTRICAL LOADS AND PANEL SCHEDULES SHOWN ON PLANS ARE FOR REFERENCE ONLY TO ASSIST WITH NEW LOAD BALANCING BY THE ELECTRICAL CONTRACTOR. CONTRACTOR SHALL FIELD VERIFY ALL ACTUAL LOADS PRIOR TO FINAL LOAD BALANCING AND BREAKER SPACE SELECTION FOR ALL NEW CIRCUITS.
- C. SCOPE OF WORK:  
C.1. FURNISH ALL REQUIRED LABOR, MATERIALS, EQUIPMENT, TOOLS AND INCIDENTALS NECESSARY TO PERFORM THE WORK DESCRIBED IN THE CONSTRUCTION DOCUMENTS. CONTRACTOR SHALL MAKE ALL INSTALLATIONS ACCORDING TO MANUFACTURERS INSTRUCTIONS AND SPECIFICATIONS, IN ADDITION TO THOSE SHOWN ON PLANS.
- C.2. INSTALL COMPLETE AND OPERABLE ELECTRICAL SYSTEMS AS DESCRIBED BY THE CONSTRUCTION DOCUMENTS. INCIDENTAL ITEMS NOT SPECIFIED, BUT WHICH ARE ESSENTIAL FOR THE PROPER OPERATION OF SPECIFIED SYSTEMS AND EQUIPMENT, ARE CONSIDERED INCLUDED IN THE SCOPE OF WORK AND SHALL BE PROVIDED BY CONTRACTOR AT THE CONTRACTORS EXPENSE.
- D. CODE COMPLIANCE :  
D.1. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL LOCALLY ADOPTED BUILDINGS CODES AS LISTED ON THE DRAWINGS, AND ACCORDING TO THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ).
- D.2. THE BASIS OF DESIGN IS INTENDED TO COMPLY WITH ALL LOCAL CODES ENFORCED BY THE AHJ OVER THIS PROJECT. THE CONTRACTOR SHALL COMPLY WITH ALL REQUIREMENTS MADE BY THE AHJ, WHETHER SPECIFICALLY SHOWN ON PLANS OR NOT.
- E. DISCREPANCIES:  
E.1. IN THE CASE OF A DISCREPANCY BETWEEN DRAWINGS, SPECIFICATIONS, OR MANUFACTURERS REQUIREMENTS, THE MOST STRINGENT SHALL APPLY AND BE COMPLIED WITH BY THE CONTRACTOR.
- E.2. IN THE CASE OF A DISCREPANCY BETWEEN CODES AND THE CONSTRUCTION DOCUMENTS OR MANUFACTURERS REQUIREMENTS, THE AHJ SHALL DETERMINE WHICH SHOULD BE COMPLIED WITH BY THE CONTRACTOR.
- F. JOBSITE CONDITIONS:  
F.1. CONTRACTOR SHALL EXAMINE THE JOBSITE PRIOR TO BIDDING AND FULLY UNDERSTAND THE CONDITIONS UNDER WHICH THE WORK IS TO BE PERFORMED BY SUBMITTING FOR WORK CONTRACTOR ACCEPTS ALL JOB CONDITIONS AS-IS.
- F.2. CONTRACTOR SHALL LOCATE THE EXISTING ELECTRIC UTILITY POINT OF SERVICE PRIOR TO STARTING ANY OTHER WORK. SERVICE CONNECTION SHOWN ON THE PLANS ARE PRELIMINARY ONLY AND SHALL BE VERIFIED BY ELECTRICAL CONTRACTOR.
- G. PERMITS AND FEES:  
G.1. CONTRACTOR SHALL OBTAIN THE NECESSARY PERMITS, LICENSES, AND CERTIFICATIONS REQUIRED BY THE AHJ AND PAY FOR ALL PERMITTING FEES AT ZERO ADDITIONAL CHARGE TO THE OWNER.
- G.2. CONTRACTOR SHALL INCLUDE ANY/ALL FEES ON CONTRACTUAL BID REGARDLESS IF KNOWN OR UNKNOWN DURING BIDDING.
- H. CONSTRUCTION DRAWINGS:  
H.1. DRAWINGS ARE GENERAL SCHEMATIC IN NATURE. ELECTRICAL EQUIPMENT AND LIGHTING SHOWN ON DRAWINGS IS UNDERSTOOD TO BE THE GENERAL ARRANGEMENT ONLY, TO BE FIELD ADJUSTED AS REQUIRED.
- H.2. ITEMS WITH SPECIFIC LOCATION AND OR SIZES WILL BE DIMENSIONED ON THE PLANS.
- H.3. DRAWINGS DO NOT SHOW EVERY DETAIL OR ITEM REQUIRED FOR EQUIPMENT INSTALLATIONS. REFER TO ALL EQUIPMENT MANUFACTURERS INSTRUCTIONS FOR ADDITIONAL; REQUIRED PARTS AND ACCESSORIES NEEDED FOR COMPLETE INSTALLATIONS.
- I. COORDINATION WITH OTHER TRADES:  
I.1. CONTRACTOR SHALL COORDINATE WITH OTHER TRADES TO AVOID INTERFERENCES, PROPERLY SEQUENCE INSTALLATIONS, AND PROVIDE MANUFACTURERS REQUIRED SERVICE CLEARANCES. WHERE REQUIRED, CONTRACTOR SHALL MAKE THE REQUIRED ADJUSTMENTS TO EQUIPMENT LOCATIONS AND INSTALLATION SCHEDULE.
- I.2. ALL ELECTRICAL CONNECTIONS TO OWNER FURNISHED HVAC EQUIPMENT SHALL BE PROVIDED BY ELECTRICAL CONTRACTOR, INCLUDING STARTERS, SPEED CONTROLLERS, DISCONNECTS, ENCLOSURES AND LABELS AS NEEDED. OBTAIN FINAL ELECTRICAL SERVICE REQUIREMENTS FROM OWNER'S SUPPLIER.
- I.3. IF APPLICABLE, ALL ELECTRICAL CONNECTIONS TO OWNER FURNISHED KITCHEN EQUIPMENT SHOWN ON PLANS SHALL BE PROVIDED BY ELECTRICAL CONTRACTOR, INCLUDING DISCONNECTS, ENCLOSURES AND LABELS. OBTAIN FINAL ELECTRICAL SERVICE REQUIREMENTS FROM KITCHEN EQUIPMENT SUPPLIER.
- I.4. COORDINATE WITH ROOFING CONTRACTOR TO SEAL ALL CONDUIT PENETRATIONS THROUGH ROOF AS REQUIRED, PER ARCHITECTURAL ROOFING SPECIFICATIONS. PROVIDE ALL WEATHERPROOFING REQUIRED.
- I.5. IF REQUIRED, COORDINATE WITH OWNER'S FOR ALARM, SECURITY, COMMUNICATIONS OR OTHER MEDIA COMPANY, TO INSTALL BACK BOXES, CONDUIT AND PULL STRING AS SHOWN ON PLANS FOR CABLE INSTALLATIONS BY OTHERS. VERIFY ROUGH-IN, ROUTING AND CONDUIT SIZES WITH EQUIPMENT PROVIDERS PRIOR TO INSTALLATIONS.
- I.6. CEILING TILE AND GRID REMOVAL, MODIFICATION AND REINSTALLATIONS AS REQUIRED FOR WORK SHOWN IS TO BE PROVIDED BY OTHERS AND IS NOT CONSIDERED PART OF THE ELECTRICAL CONTRACTOR'S SCOPE OF WORK. COORDINATE WITH OWNER TO PROVIDE THE REQUIRED INTERFERENCE REMOVAL OF OTHER TRADES.
- J. CONTRACTOR FURNISHED EQUIPMENT & MATERIALS:  
J.1. SHALL BE NEW, MANUFACTURED AND CERTIFIED TO COMPLY WITH THE BASIS OF DESIGN, FREE OF DEFECT AND COVERED UNDER A MINIMUM OF 1-YEAR FACTORY WARRANTY, UNLESS SPECIFIED DIFFERENTLY ELSEWHERE.
- J.2. SHALL BE AS SPECIFIED IN CONSTRUCTION DOCUMENTS, OR AS ACCEPTABLE SUBSTITUTIONS OF EQUAL ITEM. ALL SUBSTITUTIONS MUST BE 'APPROVED' THROUGH THE COMMISSIONING PROCESS TO BE ACCEPTABLE.



- K. DELIVERY, STORAGE AND PROTECTION:  
K.1. CONTRACTOR SHALL FURNISH DELIVERY OF ALL REQUIRED MATERIALS AND EQUIPMENT TO BE INSTALLED. CONTRACTOR SHALL VERIFY ALL EQUIPMENT IS UNDAMAGED AT THE TIME OF DELIVERY FROM THE FACTORY. DAMAGED ITEMS SHALL BE RETURNED TO THE FACTORY FOR REPLACEMENTS AT NO ADDITIONAL COST TO THE OWNER.
- K.2. CONTRACTOR SHALL COORDINATE WITH OWNER TO OBTAIN ACCEPTABLE JOBSITE STORAGE LOCATION FOR MATERIALS. CONTRACTOR SHALL COMPLY WITH OWNER REQUIREMENTS FOR PROTECTION, ACCESS AND SECURITY OF MATERIALS STORED ONSITE.
- K.3. CONTRACTOR SHALL TAKE ALL REQUIRED PRECAUTIONS TO PROPERLY PROTECT ALL STORED MATERIALS FROM WEATHER, DAMAGE, THEFT OR ANY OTHER HAZARD PRESENT AT THE STORAGE LOCATION.
- L. CORRECTIONS REQUIRED: (ONLY IF CONSTRUCTION ADMINISTRATION SERVICES WERE SELECTED)  
L.1. IF CONTRACTOR IDENTIFIES ANY ACTUAL SITUATION OR SITE CONDITION THAT WILL PROHIBIT OR NEGATIVELY IMPACT THE INSTALLATION OR PERFORMANCE OF THE SYSTEMS AS DESIGNED, CONTRACTOR SHALL STOP ALL WORK AND NOTIFY THE ENGINEER IMMEDIATELY.
- L.2. IF CONTRACTOR PERFORMS WORK, AND OR INSTALLS ANY EQUIPMENT THAT IS FOUND TO BE DEFECTIVE, OR OUT OF COMPLIANCE WITH BASIS OF DESIGN OR CODE, CONTRACTOR SHALL REPLACE THE DEFECTIVE WORK AT NO ADDITIONAL COST TO THE OWNER. ALL NEW WORK SHALL COMPLY WITH THE CONTRACT DOCUMENTS.
- L.3. IF CONTRACTOR DAMAGES ADJACENT PROPERTY WHILE PERFORMING SCOPE OF WORK, HE SHALL MAKE PROMPT REPAIR AT CONTRACTORS EXPENSE, PRIOR TO COMPLETING PROJECT.
- M. CONDUITS AND SUPPORTS:  
M.1. HOLD ALL CONDUITS TIGHT AGAINST STRUCTURE TO AVOID DAMAGE AND INTERFERENCE FORM OTHER TRADES. RUN ALL CONDUITS IN A NEAT AND WORKMAN LIKE MANNER PARALLEL TO BUILDINGS LINES.
- M.2. PROVIDE ALL REQUIRED CONDUIT HANGERS AND SUPPORTS WITH PROPER SPACING PER CODE REQUIREMENTS. GROUP PARALLEL RUNS OF CONDUIT TOGETHER ON COMMON HANGERS.
- N. EQUIPMENT CONNECTIONS:  
N.1. INSTALL ALL UNIT MOUNTED SWITCHES AND EQUIPMENT IN A MANNER THAT DOES NOT COVER UP MANUFACTURER'S EQUIPMENT LABELS OR BLOCK ACCESS TO REMOVABLE SERVICE PANELS. WHERE REQUIRED FOR EQUIPMENT SERVICE CONNECTIONS, PROVIDE STEEL CHANNEL SUPPORT STANDS FOR MOUNTING OF UNIT DISCONNECT SWITCHES, STARTERS, SPEED CONTROLLERS AND CONDUITS. PROPERLY SECURE SUPPORTS TO FLOORS OR WALLS.
- N.3. ENSURE THAT SERVICE CLEARANCES ARE NOT BLOCKED BY ROUTING OF CONDUIT OR SUPPORT STRUCTURES AT ALL EQUIPMENT SERVICE CONNECTIONS. COORDINATE WITH HVAC CONTRACTOR TO DETERMINE REQUIRED CLEARANCES AND SERVICE WORK AREAS.
- N.4. VERIFY WITH OWNER EQUIPMENT IDENTIFICATION MARKS, PRIOR TO ORDERING AND INSTALLING LABELS ON UNIT DISCONNECT SWITCHES. UNIT MARK SHOWN ON PLANS IS PRELIMINARY.
- O. LIGHTING INSTALLATIONS:  
O.1. COORDINATE MOUNTING HEIGHT OF ALL LIGHT FIXTURES WITH ARCH PLANS, PRIOR TO STARTING WORK. HEIGHTS SHOWN ON SCHEDULE ARE APPROXIMATE AND MUST BE FIELD VERIFIED BY CONTRACTOR.
- O.2. ALL LIGHTING SWITCHES SHALL BE INSTALLED ON THE STRIKE SIDE OF DOOR. VERIFY ALL SWITCH LOCATIONS WITH ARCHITECTURAL PLANS PRIOR TO STARTING WORK.
- O.3. ALL LIGHTING CONTROL CABLES SHALL BE PLENUM RATED AND RUN EXPOSED TIGHT AGAINST BUILDING STRUCTURE IN MANNER TO KEEP IT FROM DAMAGE BY OTHER TRADES. PROVIDE TIE-WRAP SUPPORTS TO HOLD TIGHT AGAINST STRUCTURE.
- O.4. COORDINATE LIGHTING CONTROL DEVICE LOCATIONS WITH MANUFACTURER'S REQUIREMENTS, INCLUDING SENSORS, SWITCHES AND CONTROLLERS. LOCATIONS SHOWN ON PLANS ARE APPROXIMATE.
- O.5. INSTALL ALL LIGHTING CONTROLLERS IN ACCESSIBLE LOCATION ABOVE CEILING OR OTHER APPROVED LOCATION. WHEN ABOVE CEILING, PROVIDE PERMANENT MARKER FOR LOCATING CONTROLLER FROM THE GROUND.
- O.6. PROGRAM LIGHTING CONTROLLERS WITH OWNER FURNISHED OCCUPANCY SCHEDULES FOR GANG ON/OFF CONTROL OF ALL INTERIOR LIGHTING. SETUP ALL CONTROLLERS AND DEVICES AS REQUIRED TO PERFORM SEQUENCE OF OPERATIONS ON LIGHTING CONTROLLER SCHEDULE.
- COMMISSIONING PLAN - ELECTRICAL:
- A. COMMISSIONING AGENT:  
THE OWNER'S PROJECT MANAGER OR OTHER PERSON DESIGNATED SHALL FUNCTION AS THE 'COMMISSIONING AGENT' (CA) FOR THE PROJECT. THE CA SHALL INITIATE, DIRECT AND SUPERVISE ALL PHASES OF COMMISSIONING PLAN SPECIFIED BELOW. AGENT SHALL BE RESPONSIBLE TO ENSURE THAT COMMISSIONING PLAN IS FULLY IMPLEMENTED AND DOCUMENTED. OWNER HAS NOT CHOSEN A&G ENGINEERING AS THEIR COMMISSIONING AGENT AND QUESTIONS SHALL NOT BE DIRECTED TO THEM.
- B. SUBMITTALS:  
B.1. PROVIDE TO CA WITH MANUFACTURER'S SUBMITTAL DATA ON NEW EQUIPMENT TO BE FURNISHED AND OBTAIN OFFICIAL APPROVAL PRIOR TO ORDERING. PRE-CONSTRUCTION SUBMITTALS SHALL INCLUDE MANUFACTURER'S SPECIFICATIONS, SHOP DRAWINGS AND INSTALLATIONS MANUALS. PROVIDE SUBMITTALS FOR THE FOLLOWING MAJOR COMPONENTS AND EQUIPMENT PRIOR TO ORDERING:  
B.1.1. ELECTRICAL PANELS, LIGHT FIXTURES, LIGHTING CONTROLS, RECEPTACLES, RECEPTACLE COVER PLATES, ELECTRIC HEATERS, ELECTRIC WATER HEATERS, CEILING FANS, FLOOR DEVICES, ETC
- C. FIELD INSPECTIONS:  
C.1. WHERE REQUIRED BY CA, CONTRACTOR SHALL COORDINATE FIELD INSPECTIONS OF CRITICAL CONSTRUCTION DETAILS FOR APPROVAL, PRIOR TO PROCEEDING WITH ADDITIONAL WORK. AT A MINIMUM, FIELD INSPECTIONS SHALL INCLUDE:  
C.1.1. LIGHTING SYSTEMS STARTUP AND TESTING.  
C.1.2. FINAL LOCATIONS OF RECEPTACLE AND DATA BOXES.
- D. STARTUP AND TESTING:  
D.1. TEST AND ADJUST ALL OUTDOOR LIGHTING CONTROLS AFTER INSTALLATION. PROVIDE NAME AND SIGNATURE OF PERSON(S) COMPLETING THE TESTING, DATE PERFORMED, INITIAL AND FINAL SETTINGS OF CONTROLS ADJUSTMENTS AND THE RESULTING OPERATIONAL PERFORMANCE. ENSURE LIGHT FIXTURES ARE INSTALLED AND OPERATIONAL.
- D.2. OPERATIONAL TESTING OF EMERGENCY LIGHTING SYSTEMS REQUIRED BY NFPA 101, ANNUAL TESTING PROCEDURE.
- D.3. VERIFY OPERATION OF ALL WALL MOUNTED OCCUPANCY LIGHT SWITCHES AND ADJUSTMENTS REQUIRED FOR PROPER OPERATION, PER MANUFACTURER'S INSTRUCTIONS.
- D.4. VERIFY OPERATION OF ALL CEILING MOUNTED OCCUPANCY SENSORS IN EACH ZONE SHOWN ON PLANS. ADJUST SET-POINTS AS REQUIRED FOR PROPER OPERATION, PER MANUFACTURER'S INSTRUCTIONS.
- D.5. VERIFY OPERATION OF ALL CEILING MOUNTED DAYLIGHTING SENSORS IN EACH ZONE SHOWN ON PLANS. ADJUST SET-POINTS AS REQUIRED FOR PROPER OPERATION, PER MANUFACTURER'S INSTRUCTIONS.
- D.6. VERIFY OPERATION OF OUTSIDE LIGHTING TIME CLOCK AND PHOTOCELL CONTROLS. ADJUST SET-POINTS ON TIME CLOCK AND LIGHTING CIRCUIT INDEPENDENT OF SEASONAL CHANGES. VERIFY PHOTOCELL WILL BRING ON/OFF THE OUTDOOR LIGHTING WHEN TIMER HAS ENABLED CIRCUITS. PERFORM ALL TESTING PER MANUFACTURER'S INSTRUCTIONS.
- E. O&M DOCUMENTATION:  
PROVIDE THE CA AND OWNER W/A MINIMUM OF 2 SETS OF BINDERS FOR THE PROJECT. EACH BINDER SHOULD INCLUDE THE FOLLOWING ITEMS:  
E.0.1. AS-BUILT DRAWING MARKUPS SHOWING MODIFICATIONS WHERE INSTALLATIONS ARE DIFFERENT THAN DESIGN DRAWINGS.  
E.0.2. EQUIPMENT MANUFACTURER'S INSTALLATION, OPERATION MAINTENANCE MANUALS.  
E.0.3. COMPLETED MANUFACTURER'S EQUIPMENT STARTUP SHEETS.  
E.0.4. EQUIPMENT PROGRAMMED SCHEDULES AND SET-POINTS DETERMINED AT STARTUP.  
E.0.5. EQUIPMENT WARRANTIES
- F. TRAINING:  
PROVIDE A MINIMUM OF 2 HOURS ON-SITE TRAINING FOR OWNER'S OPERATIONAL STAFF. UPON COMPLETION SHALL COVER OPERATIONS AND MAINTENANCE ON ALL NEW LIGHTING AND ELECTRICAL SYSTEMS INSTALLED BY CONTRACTOR, INCLUDING LIGHTING CONTROLS. TRAINING SHALL UTILIZE MANUFACTURER'S OPERATIONS AND MAINTENANCE MANUALS AS BASIS FOR INSTRUCTION.
- G. ELEC. COMMISSIONING REPORT:  
THE CONTRACTOR SHALL COMPLETE THE TASKS BELOW TO COMMISSION THE LIGHTING CONTROL SYSTEM AND SUBMIT WRITTEN DOCUMENTATION DEALING THE TASKS BELOW. SUBMIT DOCUMENTATION AT OR BEFORE TIME OF COMPLETION.
- G1.0 - MAKE SURE ALL LIGHTING FIXTURES HAVE LAMPS INSTALLED AND ARE FUNCTIONAL.
- G2.0 - TEST ALL EXIT SIGNS AND EMERGENCY LIGHTING.
- G3.0 - MAKE SURE ALL OCCUPANCY SENSORS ARE INSTALLED AND WORKING.
- G4.0 - MAKE SURE WALLBOX AND SCENE CONTROLLERS ARE INSTALLED AND WORKING.
- G5.0 - TEST 10% OF DEVICES FOR OCCUPANCY SENSOR TYPES: WALLBOX TYPE WSD-PDT.
- G6.0 - VERIFY THE FOLLOWING:  
-SENSORS HAVE BEEN LOCATED AND AIMED PER MANUFACTURER'S REQUIREMENTS.  
-STATUS INDICATORS ON DEVICES ARE OPERATIONAL AND CORRECT.  
-MOVEMENT IN ADJACENT AREA AND/OR CYCLING OF HVAC SYSTEMS NOT FALSE TRIGGER SENSORS.



EQUIPMENT & MATERIALS - ELECTRICAL

- A. CONDUIT:  
A.1. EMT, PVC AND RIGID GALVANIZED STEEL ARE ACCEPTABLE AS ALLOWED BY THE NEC. ELBOWS AND BENDS FOR ALL CONDUIT SYSTEMS SHALL USE THE SAME MATERIAL AS THE CONDUIT WITH WHICH THEY ARE INSTALLED.
- A.2. PROVIDE FLEXIBLE CONDUIT CONNECTIONS AT ALL EQUIPMENT TERMINATIONS.
- A.3. INSTALL A GALVANIZED IRON OR PVC SLEEVE FOR THE CONDUIT PASSING THROUGH CONCRETE OR MASONRY CONSTRUCTION.
- A.4. EMT- UTILIZE WHERE INSTALLING ELECTRICAL IN EXPOSED LOCATIONS IN MECHANICAL ROOMS, SERVICE UTILITY AND OTHER WORK AREAS NOT OPEN TO PUBLIC. IN HIGH CEILING OR HIGH BAY AREAS, USE EMT CONDUIT FOR WIRING UP TO MINIMUM 10' ABOVE FLOOR BEFORE SWITCHING TO MC CABLE.
- A.5. PVC- UTILIZE FOR INSTALLING ELECTRICAL IN UNDERGROUND EXTERIOR LOCATIONS WHERE ALLOWED AND NOT SUBJECT TOP DAMAGE. PROVIDE WITH RIGID STEEL FOR ALL BENDS AND ASSOCIATED FITTINGS. WHERE EXPOSED RISING OUT OF EXCAVATION TRENCH PROVIDE SCHEDULE 80 PVC PIPE AND FITTINGS.
- A.6. RIGID STEEL: UTILIZE FOR INSTALLING ELECTRICAL IN ALL HIGH ABUSE AREAS INDOORS AND OUTDOORS.
- B. WIRE AND CABLE:  
B.1. COPPER CONDUCTORS FOR ALL WIRING SHOWN ON DRAWINGS. MINIMUM 90°F RATED INSULATION FOR ALL CONDUCTORS USED, SUCH AS THHN, THHW, THW OR EQUAL. ALUMINUM CONDUCTORS OF EQUIVALENT AMPACITY CAN BE SUBSTITUTED FOR SIZES #6 AND ABOVE.
- B.2. MC CABLE: METAL CLAD CABLE WITH COPPER CONDUCTORS, RATED FOR WET OR DRY LOCATIONS, 90C TEMPERATURE RATING, WITH GREEN INSULATED GROUNDING CONDUCTOR. ALL CONDUCTORS CABLED TOGETHER WITH SEPARATOR TAPE, INTERLOCKED ALUMINUM ARMOR, FLAME RETARDANT BLACK PVC JACKET OVER THE ARMOR.
- B.2.1. UTILIZE IN PLACE OF EMT CONDUIT AND WIRE WHERE ALLOWED FOR CONCEALED WIRING INSTALLATIONS, INSIDE WALLS OR OTHER BUILDING FRAMING, AND IN ATTIC AND CEILING PLENUM SPACES. INSTALL PER NEC REQUIREMENTS AND MANUFACTURERS INSTRUCTIONS WITH FACTORY FITTINGS AND CONNECTIONS.
- B.2.2. UTILIZE IN PLACE OF RIGID OR PVC CONDUIT AND WIRE FOR UNDERGROUND OUTDOOR INSTALLATIONS WHERE ALLOWED AND POTENTIAL FOR DAMAGE IS MINIMAL.
- C. RECEPTACLES AND COVER PLATES:  
C.1. INDOORS:  
C.1.1. DUPLEX RECEPTACLES -120V, DUPLEX, IVORY COLOR, SMOOTH NYLON FACE, DUPLEX, BACK AND SIDE WIRED, 15A 125V, NEMA 5-15R, AS MANUFACTURED BY HUBBELL MODEL #BR151 OR EQUAL. PROVIDE WITH MATCHING COVER PLATE.
- C.1.2. GFI RECEPTACLES -120V, DUPLEX, IVORY COLOR, SMOOTH NYLON FACE, TEST BUTTON, LED INDICATOR LIGHT, BACK AND SIDE WIRED, 15A 125V, NEMA 5-15R, AS MANUFACTURED BY HUBBELL MODEL #GF15L OR EQUAL. PROVIDE WITH MATCHING COVER PLATE.
- C.1.3. 240V RECEPTACLES: 240V, MULTI-POLE WITH GROUND, COORDINATE FINAL NEMA TYPE AND AMPERAGE RATING WITH EQUIPMENT SUBMITTALS, SINGLE OR DUPLEX, AS MANUFACTURED BY HUBBELL OR EQUAL. PROVIDE WITH MATCHING COVER PLATE.
- C.2. OUTDOORS:  
C.2.1. GFI RECEPTACLES: 120V, WEATHER RESISTANT, DUPLEX, IVORY COLOR, SMOOTH NYLON FACE, TEST BUTTON, LED INDICATOR LIGHT, BACK AND SIDE WIRED, 15A 125V, NEMA 5-15R, AS MANUFACTURED BY HUBBELL MODEL #GF15LWR OR EQUAL. INSTALL IN WEATHERPROOF BOX WITH MATCHING GASKETED COVER PLATE.
- D. WALL SWITCHES AND COVER PLATES:  
D.1. MOTOR RATED SWITCH: 1P/20A, SUITABLE FOR USAGE AS MANUAL TOGGLE CONTROLLER FOR FRACTIONAL HP MOTORS, AS MANUFACTURED BY HUBBELL, CIRCUIT-LOOK MODEL #HBL7832D OR EQUAL. PROVIDE SUITABLE NEMA RATED BOX AND COVER PLATE AS REQUIRED.
- E. DISCONNECT SWITCHES:  
E.1. SQUARE D, HEAVY DUTY SAFETY SWITCH, OR EQUAL. QUICK-MAKE, QUICK-BREAK OPERATING MECHANISM, FUSIBLE OR NON-FUSIBLE, COLOR-CODED "ON-"OFF" INDICATOR HANDLE, COVER PADLOCK HASP AND HANDLE LOCK "OFF" PROVISION FOR MULTIPLE PADLOCKS, 200.00 RMS SYMMETRICAL AMPERES SCOR, PROVIDE NEMA 1 OR 3R ENCLOSURE AS REQUIRED. PROVIDE CLASS R, L OR J FUSES AND SPRING REINFORCED PLATED COPPER FUSE CLIPS WHERE SPECIFIED.
- F. LABELS:  
F.1. PROVIDE EQUIPMENT LABELS FOR ALL DISCONNECT SWITCHES, PANEL-BOARDS AND ENCLOSURES. LABELS SHALL BE PERMANENT AND LOCATED TO EXTERIOR OR ENCLOSE IN VISIBLE LOCATION, AND SHALL MATCH EQUIPMENT IDENTIFICATION MARKS SHOWN ON PLANS.
- F.2. INTERIOR LABELS SHALL BE BLACK PLASTIC WITH WHITE LETTERS, MINIMUM 3/4" HIGH.
- F.3. EXTERIOR LABELS SHALL BE METALLIC, SUITABLE FOR EXTERIOR LOCATIONS WITH BLACK LETTERS MINIMUM 3/4" TALL.
- G. ELECTRICAL PANELS:  
G.1. PANELS SHALL BE AS MANUFACTURED BY SQUARE D, OR EQUAL. PROVIDE SUBMITTALS FROM VENDOR PRIOR TO ORDERING. PANELS AND BREAKERS. VERIFY PANELS MEET THE FAULT CURRENT RMS VALUES AS SHOWN ON THE PLANS.
- H. BUSSED GUTTERS:  
H.1. SURFACE MOUNT, NEMA 3R STEEL ENCLOSURE, REMOVABLE FRONT COVER(S) WITH FACTORY HANDLES, ALUMINUM BUSSING, UL1773 LISTED, AS MANUFACTURED BY EATON B-LINE #R1060HEE OR APPROVED EQUAL. MUST COMPLY WITH REQUIREMENTS OF LOCAL UTILITY SPECIFICATIONS AS DISTRIBUTION POINT FOR MULTIPLE METER APPLICATIONS. PROVIDE SINGLE LENGTHS OR MULTIPLE SECTIONS AS REQUIRED BUY TOTAL SERVICE LENGTH ON PLANS.
- I. INDOOR LIGHTING CONTROLS:  
I.1. LIGHTING MASTER INTERFACE: PROVIDES 'GATEWAY' TO ETHERNET NETWORK, PROGRAMMING AND CONTROL OF UP TO 100 DIRECTLY CONNECTED DEVICES, INCLUDES 120V POWER SUPPLY, CAT5 NETWORK CONNECTIONS AND STEEL NEMA 1 ENCLOSURE, AS MANUFACTURED BY TOUCHE LIGHTING CONTROL. MODEL #MSTR-DVOLT-S2 OR EQUAL.
- I.2. LIGHTING RELAY MODULE: CONSISTS OF (2) INDEPENDENT LATCHING, MECHANICALLY HELD, SINGLE POLE RELAYS, EACH RATED AT 20A/120V, (3) CAT5 INPUT PORTS FOR DAISY CHAIN OF UP TO (8) AMBIENT/OCCUPANCY SENSORS, (2) CAT 5 INPUT PORTS FOR SWITCHES OR DRY CONTACT DEVICES, (2) 0-10V DIMMING OUTPUT CHANNELS, AS MANUFACTURED BY TOUCHE LIGHTING CONTROL. MODEL #LRM-2P-120-0/10DM OR EQUAL.
- I.3. AMBIENT/OCCUPANCY SENSOR: CEILING MOUNTED, INTEGRATED OCCUPANCY DETECTION AND AMBIENT LIGHT CONTROL ON SINGLE SENSOR, AUTO- ADDRESSING AND AUTO-CONFIGURING, CAT5 CONNECTION PORTS;AUTOMATIC CALIBRATION, SOFTWARE CONFIGURATION THROUGH LIGHTNING MASTER INTERFACE, SURFACE OR FLUSH MOUNTING OPTIONS, AS MANUFACTURED BY TOUCHE LIGHTING CONTROL. MODEL #SMAOS-P, OR EQUAL. SELECT PROPER COVERAGE PATTERN FOR EACH SPECIFIC INSTALLATION SHOWN ON PLANS AS FOLLOWS:  
I.3.1. AISLES AND CORRIDORS: #SMAOS-P-A  
I.3.2. 360 COVERAGE, BELOW 20' CEILING HEIGHT: #SMAOS-P-360L  
I.3.3. 360 COVERAGE, ABOVE 20' CEILING HEIGHT: #SMAOS-P-360H  
I.4. LOW-VOLTAGE LIGHT SWITCH: MOMENTARY CONTACT SWITCH THAT PROVIDES DIGITAL INPUT TO CONTROLLER WHEN PRESSED, CUSTOM CONFIGURABLE THROUGH SOFTWARE AT THE LIGHTING MASTER INTERFACE, CAN BE PROGRAMMED TO FUNCTION AS ON/OFF ONLY, BI-LEVEL WITH DIMMING FIXTURES, ON/OFF WITH MANUAL OVERRIDE, AND 3-WAY SWITCH, AS MANUFACTURED BY TOUCHE LIGHTING CONTROL, MODEL #SW-SF, OR EQUAL. PROVIDE WITH MATCHING DECORATIVE COVER PLATE.
- J. ROOM CONTROLLERS:  
J.1. PROVIDE INTELLIGENT LIGHTING CONTROL ROOM CONTROLLERS TO ACHIEVE ZONING AS INDICATED ON PLANS. WHEN POWER PACKS ARE PROVIDED, CONTRACTOR MUST PROVIDE 0-10V DIMMING WIRES FROM POWER PACK TO FIXTURE FOR CONTROL.
- K. MOTION SENSORS:  
K.1. PROVIDE COMPLETE MOTION SENSOR COVERAGE FOR ENTIRE BUILDING, EXCEPT ELECTRIC ROOMS, AND AS WHEN NOTED EXCEPTED SHOWN ON PLANS. PROVIDE DUAL TECHNOLOGY MOTION SENSORS IN EVERY ROOM AS REQUIRED BY IECC 2021. ASSUME CEILING MOUNT UNLESS WALL MOUNT SHOWN.
- L. VACANCY SENSORS:  
L.1. PROVIDE COMPLETE DUAL TECHNOLOGY VACANCY SENSOR COVERAGE PER IECC 2021 IN ALL AREAS EXCEPT EMERGENCY EGRESS CORRIDORS AND PATHWAYS. SHOP DRAWING REQUIRED.
- M. OCCUPANCY SENSORS:  
M.1. PROVIDE COMPLETE DUAL TECHNOLOGY OCCUPANCY SENSOR COVERAGE PER IECC 2021 IN ALL EMERGENCY EGRESS CORRIDORS AND PATHWAYS. SHOP DRAWING REQUIRED.
- N. CONTROL STATION:  
N.1. ALL ROOMS SHALL HAVE A CONTROL STATION FOR CONTROL OF LIGHTS IN ROOM. IF NO CONTROL STATION IS SHOWN, ASSUME A TWO ZONE CONTROLLER FOR ROOMS LARGER THAN 9' X 9' AND A WALL MOUNT DUAL TECHNOLOGY CONTROLLER FOR ROOMS SMALLER THAN 9' X 9'.



DESIGN WITHOUT CONSTRUCTION ADMINISTRATION:

IT IS UNDERSTOOD AND AGREED THAT THE ARCHITECT/ENGINEER'S SCOPE DOES NOT INCLUDE PROJECT OBSERVATION OR REVIEW OF THE CONTRACTOR'S PERFORMANCE OR ANY OTHER CONSTRUCTION PHASE SERVICES. THE OWNER AGREES TO PROVIDE REMOVAL OF CONSTRUCTION ADMINISTRATION AND ASSUMES ANY AND ALL POTENTIAL LIABILITY ARISING FROM SUCH ADMINISTRATION. THE OWNER ASSUMES ALL RESPONSIBILITY FOR INTERPRETATION OF THE CONTRACT DOCUMENTS AND FOR CONSTRUCTION OBSERVATION AND THE OWNERS WAIVES ANY CLAIMS AGAINST THE ARCHITECT/ENGINEER THAT MAY BE IN ANY WAY CONNECTED THERETO. THE ARCHITECT/ENGINEER SHALL NOT RESPOND TO ANY AND ALL QUESTIONS DIRECTED TO THE INTERPRETATION OF THE CONTRACT DOCUMENTS OR IN RESPONSE TO ISSUES ENCOUNTERED BY AND AS RELAYED BY THE CONTRACTOR IN THE FIELD. ANY AND ALL QUESTIONS SHALL BE SUBMITTED DURING THE BIDDING PHASE.

- 2' X 4' FLAT PANEL LIGHT
- 2' X 4' FLAT PANEL LIGHT (EMERGENCY)
- 2' X 2' FLAT PANEL LIGHT
- 2' X 2' FLAT PANEL LIGHT (EMERGENCY)
- 2" PENDANT
- 4" PENDANT
- 6" ROUND RECESSED DOWNLIGHT
- 6" ROUND RECESSED EMERGENCY DOWNLIGHT
- 4' STRIPLIGHT BASIC LIGHTING
- 4' STRIPLIGHT BASIC EMERGENCY LIGHTING
- EXIT/EMERGENCY LED LIGHTS. SHALL NOT BE CONNECTED TO SWITCH LEG
- 1'X4" SURFACE, LOW PROFILE
- STRIP LED LIGHT
- LIGHT TRACK KIT
- ARCHITECTURAL WALL PACK
- SINGLE HEAD ARM MOUNTED POLE LIGHT
- WALL MOUNTED SCONCE UP/DOWN LIGHT
- LED HIGH BAY
- LED HIGH BAY EMERGENCY
- SWITCH 120V/20A WALL MOUNTED. (MOUNTED AT A MAX HEIGHT OF 48" AFF)
- 3-WAY SWITCH 120V/20A WALL MOUNTED. (MOUNTED AT A MAX HEIGHT OF 48" AFF)
- 4-WAY SWITCH 120V/20A WALL MOUNTED. (MOUNTED AT A MAX HEIGHT OF 48" AFF)
- DIMMER SWITCH 120V/20A WALL MOUNTED. (MOUNTED AT A MAX HEIGHT OF 48" AFF)
- DATA/TELEPHONE WALL MOUNTED DEVICE. FASTENED TO STRUCTURE WITHIN 8" OF BOX (MOUNTED AT 18" AFF)
- ELECTRICAL PANEL BOARD (REFER TO SCHEDULE)
- ELECTRICAL DISCONNECT (REFER TO SCHEDULE)
- DUPLEX RECEPTACLE GENERAL 120V/20A (MOUNTED AT 18" AFF)-UNLESS NOTED OTHERWISE
- TELEVISION DUPLEX RECEPTACLE 120V/20A (MOUNTED AT 72" AFF)
- QUAD RECEPTACLE 120V/20A (MOUNTED 18" AFF)-UNLESS NOTED OTHERWISE
- GROUND FAULT DUPLEX RECEPTACLE 120V/20A (MOUNTED 18" AFF)
- GROUND FAULT QUAD RECEPTACLE 120V/20A (MOUNTED 18" AFF)
- GROUND FAULT WEATHER RESISTANT RECEPTACLE 120V/20A (MOUNTED 18" AFF)
- 4-GANG STEEL RECESSED FLOOR BOX TO INCLUDE 2-DUPLEX AND 2-DATA DEVICES
- DUPLEX RECEPTACLE GENERAL 208V/20A (MOUNTED AT 18" AFF)
- JUNCTION (J) BOX. PROVIDE CORRECT BOX FOR A OPERABLE AND COMPLIANT SYSTEM
- HOMERUN CIRCUIT BREAKER SINGLE POLE
- HOMERUN CIRCUIT BREAKER TWO POLE
- HOMERUN CIRCUIT BREAKER THREE POLE
- ELECTRICAL UTILITY
- TELEPHONE & CABLE UTILITY

ABBREVIATIONS:

- |       |   |                                |      |   |                             |
|-------|---|--------------------------------|------|---|-----------------------------|
| A     | - | AMPERES; AMPS (CURRENT)        | MCB  | - | MAIN CIRCUIT BREAKER        |
| AC    | - | ABOVE COUNTER                  | MD   | - | MEDIUM                      |
| AFF   | - | ABOVE FINISHED FLOOR           | MFG  | - | MANUFACTURER                |
| AFG   | - | ABOVE FINISH GRADE             | ML   | - | MAIN LUGS ONLY              |
| AHJ   | - | AUTHORITY HAVING JURISDICTION  | MOOP | - | MAX OVER-CURRENT PROTECTION |
| ARCH  | - | ARCHITECTURAL                  | NEC  | - | NATIONAL ELECTRIC CODE      |
| BC    | - | BELOW COUNTER                  | NFDS | - | NON-FUSED DISCONNECT SWITCH |
| C     | - | CONDUIT                        | NO   | - | NUMBER                      |
| CA    | - | COMMISSIONING AGENT            | OH   | - | OVERHEAD                    |
| CB    | - | CIRCUIT BREAKER                | P    | - | PHASE OR POLE               |
| CONC  | - | CONCRETE                       | PC   | - | PHOTOCELL                   |
| CU    | - | COPPER                         | PM   | - | PROJECT MANAGER             |
| DEG   | - | DEGREE                         | T    | - | TELEPHONE                   |
| DET   | - | DETAIL                         | UG   | - | UNDERGROUND                 |
| DIM   | - | DIMMABLE                       | V    | - | VOLTS                       |
| EXIST | - | EXISTING                       | VA   | - | VOLTAMPS                    |
| GFCI  | - | GRD FAULT CIRCUIT INTERRUPTING | W    | - | WIRE OR WATTS               |
| GND   | - | GROUND                         | WP   | - | WEATHERPROOF                |
| IECC  | - | INT ENERGY CONSERVATION CODE   | XFMR | - | TRANSFORMER                 |
| IG    | - | ISOLATED GROUND                | °    | - | DEGREE CELSIUS              |
| JB    | - | JUNCTION BOX (J-BOX)           | °F   | - | DEGREE FAHRENHEIT           |
| KVA   | - | KILOVOLT AMP                   | "K   | - | DEGREE KELVIN               |
| KW    | - | KILOWATT                       | 1Ø   | - | SINGLE PHASE                |
| LC    | - | LIGHTING CONTACTOR             | 3Ø   | - | THREE PHASE                 |
| MCA   | - | MINIMUM CIRCUIT AMPACITY       |      |   |                             |



PROJECT: 23 03 08

RGV LIVESTOCK SHOW INC.

1000 N Texas Ave  
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General Notes - Elec

E 0.0



TX PE FIRM # F16900  
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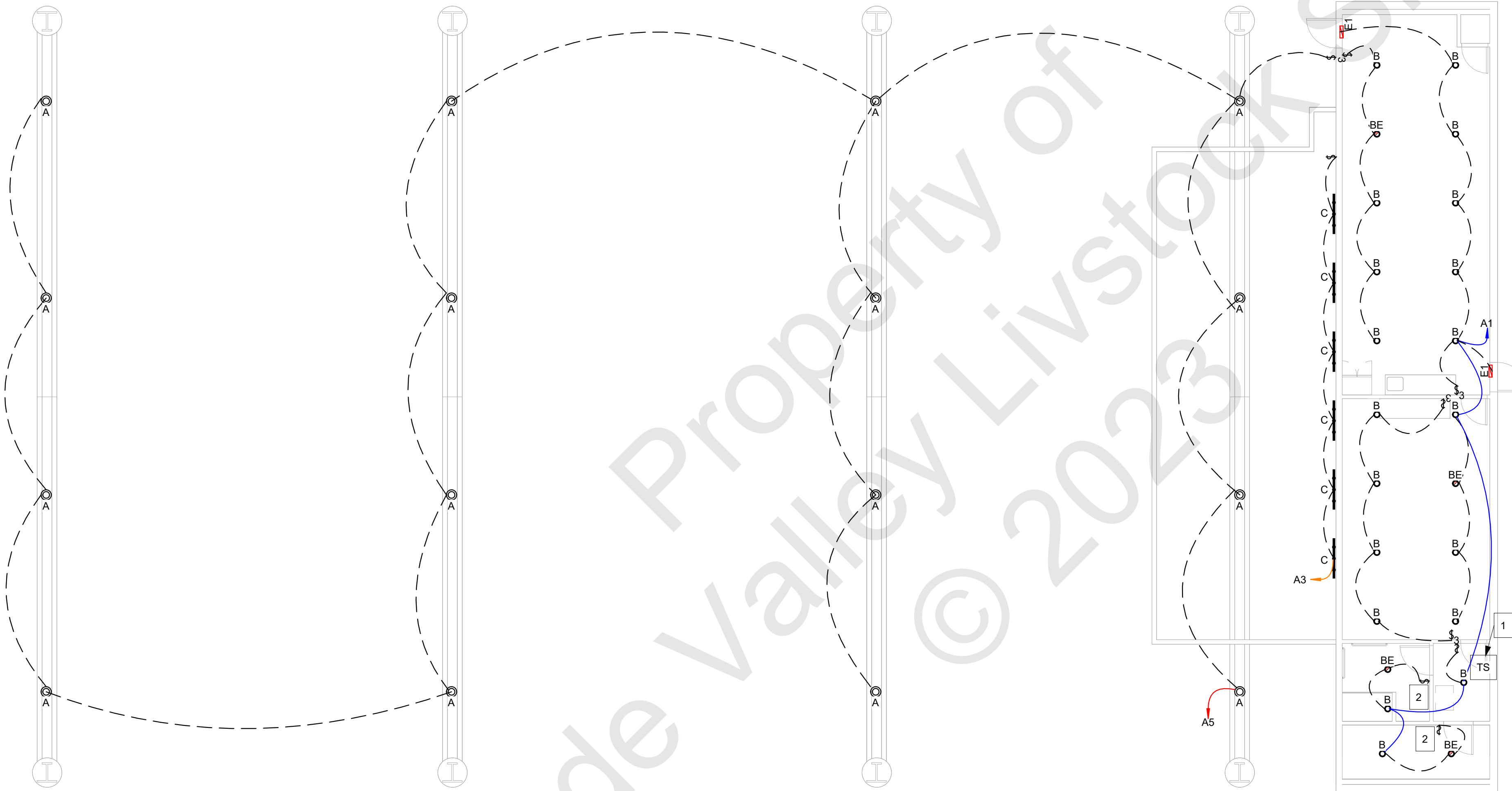
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2015 INTERNATIONAL MECHANICAL CODE  
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2014 NATIONAL ELECTRICAL CODE



21 AUG 2023





1 LIGHTING PLAN  
1/8" = 1'-0"

**GENERAL NOTES:**

- THE CONTRACTOR SHALL:
- COMPARE LIGHT FIXTURE PLACEMENT ON ARCHITECTURAL AND MEP PLANS. ANY DEVIATIONS FROM THE TWO SHALL BE REPORTED TO OWNER PRIOR TO BIDDING. NOT DEVIATE FROM FIXTURE SCHEDULE UNLESS APPROVED BY OWNER.
  - ENSURE ALL EMERGENCY LIGHT FIXTURES ARE PURCHASED WITH OPTIONAL FACTORY-INSTALLED BACKUP BATTERY PACK IN COMPLIANCE WITH *NFPA 101 LIFE SAFETY CODE* SECTION 7.9.2.1. IF FIXTURE DOES NOT COME WITH THAT OPTION, THEN CONTRACTOR SHALL PROVIDE ONE (1) "LVS LED-BP-SLM-18W" AND BE INSTALLED IN COOL DRY LOCATION. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN (RCP) FOR EXACT LOCATION OF LIGHT FIXTURES. FURNISH FIXTURES WITH TRIM COMPATIBLE WITH THE TYPE OF CEILING AS INDICATED ON THE RCP.
  - CONNECT EXISTING EMERGENCY LIGHTS AND EMERGENCY BALLASTS IN EMERGENCY LIGHTS IN EACH SPACE TO UNSWITCHED HOT LEG OF LOCAL LIGHTING CIRCUIT.
  - COORDINATE PLACEMENT OF FIXTURES WITH ACTUAL INSTALLATION OF MECHANICAL EQUIPMENT AND DUCTWORK.
  - WHERE DUAL LEVEL SWITCHING IS INDICATED IN A SPACE WITH 3-LAMP FLUORESCENT FIXTURES, PROVIDE BALLASTS IN ALL FIXTURES AND WIRING TO ALLOW FOR SWITCHING OF MIDDLE LAMPS INDEPENDENTLY OF OUTER LAMPS.
  - ENSURE SWITCH LEGS ARE NOT SHOWN WHERE DIGITAL SWITCHES ARE USED TO CONTROL LIGHTS.
  - INCLUDE IN HIS BID TO OWNER THE COST OF ALL CONTROL PANELS, DEVICES, NETWORK CABLING AND LOW OR LINE VOLTAGE WIRING FOR A COMPLETE LIGHTING CONTROL SYSTEM AS SPECIFIED. REFER TO MANUFACTURERS WIRING DIAGRAMS AND INSTALLATION MANUALS PRIOR TO BID.
  - ENSURE LIGHTING CONTROL SYSTEM IS DESIGNED TO MEET CURRENT VERSION OF *INTERNATIONAL ENERGY CONSERVATION CODE*. ALL LIGHT SWITCHES SHALL OPERATE AS BOTH MANUAL AND AUTOMATIC LINE VOLTAGE SWITCHES OR AS MOMENTARY DIGITAL SWITCHES IN CONJUNCTION WITH RELAY CONTROL PANELS, UNLESS OTHERWISE NOTED. REFER TO ELECTRICAL GENERAL LEGEND.
  - REFER TO LIGHTING CONTROL RELAY SCHEDULE FOR CIRCUITING OF LIGHT SWITCHES AND LIGHT FIXTURES THROUGH RELAYS IN LIGHTING RELAY PANELS.
  - ENSURE ALL LIGHTING CONTROL SYSTEM "CONTROL" AND "POWER" WIRING IS INSTALLED IN CONDUIT.
  - COORDINATE LOCATION OF LIGHTS WITH DIFFUSERS AND GRILLS.
  - USE #10 AWG CONDUCTORS FOR 20 AMPERE, 120 VOLT BRANCH CIRCUITS LONGER THAN 100 FEET.
  - USE #10 AWG CONDUCTORS FOR 20 AMPERE, 227 VOLT BRANCH CIRCUITS USE #10 AWG CONDUCTORS FOR 20 AMPERE, 227 VOLT BRANCH CIRCUITS LONGER THAN 200 FEET.

**KEYED NOTES:**

- PROVIDE AND INSTALL TIME SWITCH CONTROL. COORDINATE EXACT LOCATION WITH ELECTRICAL CONTRACTOR PRIOR TO INSTALLATION.
- PROVIDE AND INSTALL OCCUPANCY SENSOR CONTROL WITH MANUAL SWITCH "DOUGLAS DIVERSA WOSSDU1-P-1W". COORDINATE EXACT LOCATION WITH ELECTRICAL CONTRACTOR PRIOR TO INSTALLATION.



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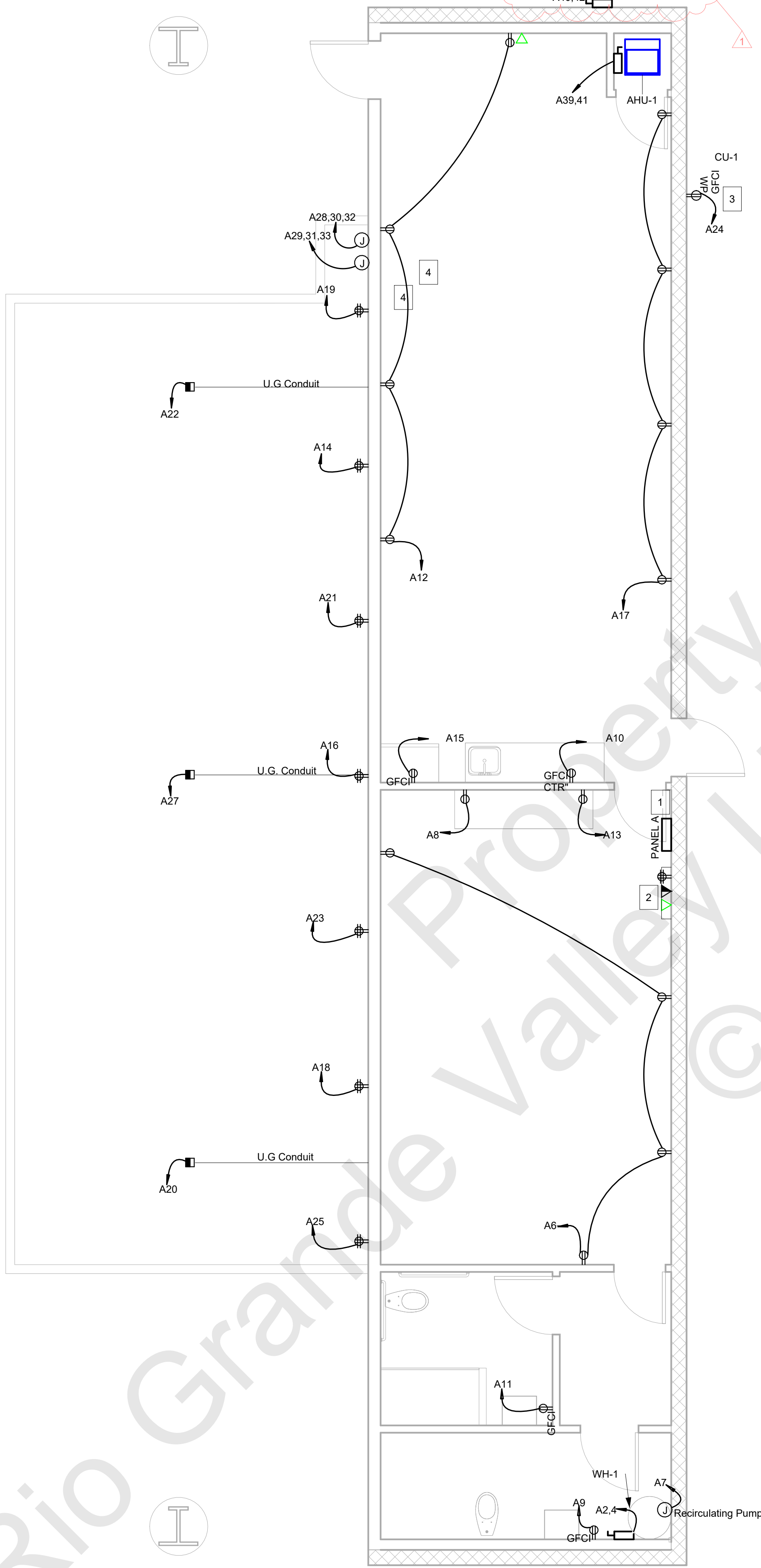
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PROJECT: 23 03 08  
**RGV LIVESTOCK SHOW INC.**  
1000 N Texas Ave  
Mercedes, TX 78570

Lighting - Elec

**E 1.0**





1 POWER PLAN  
1/4" = 1'-0"

GENERAL NOTES:

- THE CONTRACTOR SHALL:
- ENSURE ALL 120VAC, 1-PHASE, 20A RECEPTACLES ARE INSTALLED WITH AFCI CIRCUIT BREAKERS
  - PROVIDE A 120VAC DEDICATED CIRCUIT AND INSTALL SMOKE DETECTORS AS REQUIRED BY NFPA 72 NATIONAL FIRE ALARM AND SIGNALING CODE. ENSURE TO GET APPROVAL FROM THE AHJ PRIOR TO BIDDING.
  - ENSURE EQUIPMENT GROUNDING CONDUCTORS ARE NOT ROUTED NOR TERMINATE THROUGH THE METER SOCKET. GROUNDING SHALL BE ESTABLISHED PER MOST CURRENT VERSION OF THE NFPA 70 NATIONAL ELECTRIC CODE ARTICLE 250.24(A)(1).
  - ENSURE ALL REQUIRED TAMPER-RESISTANT RECEPTACLES ARE INSTALLED AS PER MOST CURRENT VERSION OF THE NFPA 70 NATIONAL ELECTRIC CODE ARTICLE 406.12.
  - PROVIDE AND INSTALL DUCT MOUNTED SMOKE DETECTORS WITHIN THE RETURN DUCT FOR ANY SYSTEM RETURNING 2,000CFM OR MORE AND A SUPPLY DUCT DETECTOR FOR ANY SYSTEM SUPPLYING 15,000 CFM OR MORE.
  - ENSURE ALL DUCT MOUNTED SMOKE DETECTORS ARE PROVIDED WITH A REMOTE ALARM INDICATOR AND ARE LABELED TO INDICATE THE UNIT THEY SERVE. AN EXCEPTION TO THIS REQUIREMENT IS WHERE THE SPECIFIC IN-DUCT SMOKE DETECTOR IS ADDRESSABLE AND ITS LOCATION IS INDICATED AT THE FACP.
  - ENSURE ALL FIRE ALARM DEDICATED BRANCH CIRCUITS ARE MECHANICALLY PROTECTED, HAVE A RED MARKING, ACCESSIBLE ONLY TO AUTHORIZED PERSONNEL, AND BE IDENTIFIED, IN RED, AS "FIRE ALARM CIRCUIT".
  - ENSURE SMOKE DETECTORS ARE INSTALLED FURTHER THAN 3 FEET FROM ANY AIR SUPPLY OR RETURN GRILL.
  - ENSURE AUXILIARY RELAYS, TO INITIATE CONTROL OF FIRE SAFETY FUNCTIONS, ARE LOCATED WITHIN 3 FEET OF THE CONTROLLED CIRCUIT OR DEVICE.
  - ENSURE ALL CONDUIT AND CONDUIT STUBS ARE 1" (UC ON DRAWINGS).
  - ENSURE THAT ALL ELECTRICAL CONDUIT IS SECURELY FASTENED IN PLACE BY AN APPROVED MEANS PER NFPA 70, NATIONAL ELECTRICAL CODE 2020, ARTICLE 348.
  - ENSURE ONE (1) 120VAC DEDICATED BRANCH CIRCUIT IS INSTALLED FOR THE FIRE ALARM CONTROL PANEL. CIRCUIT SHALL BE TERMINATED WITH 3' OF FLEX CABLE.
  - ENSURE THE FIRE ALARM PANEL IS INSTALLED BY A TEXAS LICENSED FIRE ALARM COMPANY.
  - ENSURE THAT ALL ELECTRICAL PANELS HAVE A DEDICATED WORKING SPACE PER NFPA 70, NATIONAL ELECTRICAL CODE 2020, ARTICLE 110.26.
  - ENSURE ALL PATIENT CARE SPACES & FIXED EQUIPMENT, INCLUDING BUT NOT LIMITED TO EXAM ROOMS, THERAPY AREAS, MRI MACHINES, ETC, HAVE REDUNDANT GROUNDING IN ACCORDANCE WITH NFPA 70 NEC, ARTICLE 517.13 (A) AND 517.13 (B) AND FOLLOW THE GROUNDING SIZING IN ACCORDANCE WITH NEC ARTICLE 250.122.
  - USE #10 AWG CONDUCTORS FOR 20 AMP 120V BRANCH CIRCUITS LONGER THAN 100 FEET.
  - FURNISH AND INSTALL TV OUTLET AND TV RECEPTACLES IN SEPERATE BACKBOX WALL PLATE AND REQUIRED BLOCKING.
  - ENSURE ALL PENETRATIONS THROUGH FIRE RATED WALLS SHALL HAVE SOUND RETARDING/ABSORBING FIRE STOP MATERIAL. REFER TO ARCHITECTURAL MILLWORK AND ELEVATION PLANS FOR EXACT LOCATION AND MOUNTING HEIGHTS OF ALL WIRING DEVICES.
  - COORDINATE ROUGH-IN LOCATIONS OF ALL DEVICES WITH ARCHITECTURAL ELEVATIONS DETAILS AND PLANS.

KEYED NOTES:

- ELECTRICAL PANEL BOARD. REFER TO ELECTRICAL SCHEDULES FOR FURTHER INFORMATION.
- 2'X2'X3/4" PLYWOOD TELEPHONE BOARD MOUNTED ON WALL. PROVIDE ONE (1) #6 GROUND CONDUCTOR AT BOARD FROM PANEL GROUND BUSS. ROUTE TWO (2) CONDUITS WITH PULL STRINGS, STUB 1'-0" AFF FOR TELEPHONE / INTERNET SERVICE.
- ACCORDING TO 2020 NFPA 70 NATIONAL ELECTRIC CODE ARTICLE 210.63, PROVIDE AND INSTALL ONE (1) GFCI WEATHERPROOF RECEPTACLE FOR EVERY HVAC EQUIPMENT INSTALLED.
- CONTRACTOR SHALL WORK WITH OWNER TO PROVIDE CAM-LOCK CONNECTIONS



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		REV	
1	RELOCATED CUT TO SIDE OF BUILDING	0	REV
0	ISSUE FOR PERMITTING	0	REV



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**RGV LIVESTOCK SHOW INC.**  
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Power - Elec

E 2.0

LIGHTING SCHEDULE							
GENERAL				SPECIFICATIONS			
LABEL	QTY	DESCRIPTION	MAKE/MODEL	LAMP	VOLTAGE	WATTS	MOUNTING
A	16	Sealed High Bay, 14,000/21,000 Lumens, Color Select 400K-5000K, 80CRI, General Distribution	HCY-1421L-8CST-UN3-DIM	LED	120 V	87 VA	PENDANT
B	19	6" RECESSED DOWNLIGHT	SIGNIFY: #6RN / Z6RDL20840W OCDZ10U	LED	120 V	21 VA	RECESSED
BE	4	6" RECESSED DOWNLIGHT EMERGENCY BATTERY PACK	SIGNIFY: #6RNEM6 / Z6RDL20840W OCDZ10U	LED	120 V	21 VA	RECESSED
C	6	STAGE LIGHTS	BY OWNER	LED	120 V	100 VA	SURFACE
E1	2	EMERGENCY EXIT 1W (2) LED LAMPS FURNISHED	SIGNIFY: #VLT CR3R	LED	120 V	3 VA	WALL MOUNTED
Grand total: 47							

Branch Panel: A

Location:

Supply From:

Mounting: Recessed

Enclosure: NEMA-1

Volts: 120/208 Wye

Phases: 3

Wires: 4

A.I.C. Rating: See Notes 1 & 2

Mains Type:

Mains Rating: 1000 A

MCB Rating: 900 A

Notes:

CKT	Circuit Description	Trip	Poles	A	B	C	Poles	Trip	Circuit Description	CKT	
A1	LTS: VIP, Dressing Room, Restrooms	20 A	1	483 VA	2250...		2	30 A	WH: Water Heater 1	A2	
A3	LTS: Stage Lights	20 A	1		600 VA	2250...	--	--		A4	
A5	LTS: High Bays	20 A	1			1390...	720 VA	1	20 A	REC: Dressing Room	A6
A7	PWR: Recirculating Pump	20 A	1	500 VA	800 VA			1	20 A	REC: Vanity Hairdryer	A8
A9	REC: Restroom 2	20 A	1		180 VA	500 VA		1	20 A	REC:VIP Counter	A10
A11	REC: Restroom 1	20 A	1			180 VA	720 VA	1	20 A	REC: VIP Room	A12
A13	REC: Vanity Hairdryer	20 A	1	800 VA	360 VA			1	20 A	REC: Stage Quad	A14
A15	REC: Refrigerator VIP room	20 A	1		300 VA	360 VA		1	20 A	REC: Stage Quad	A16
A17	REC: VIP Room	20 A	1			720 VA	360 VA	1	20 A	REC: Stage Quad	A18
A19	REC: Stage Quad	20 A	1	360 VA	360 VA			1	20 A	REC: Stage Floor Gang	A20
A21	REC: Stage Quad	20 A	1		360 VA	360 VA		1	20 A	REC: Stage Floor Gang	A22
A23	REC: Stage Quad	20 A	1			360 VA	180 VA	1	20 A	REC: HVAC Outside Rec	A24
A25	REC: Stage Quad	20 A	1	360 VA	360 VA			1	20 A	REC: Telephone Board	A26
A27	REC: Stage Floor Gang	20 A	1		360 VA	4803...		3	500 A	EQ: Stage Sound & Light	A28
A29	EQ: Stage Sound & Light	250 A	3			2401...	4803...	--	--		A30
A31	--	--	--	2401...	4803...			--	--	--	A32
A33	--	--	--		2401...						A34
A35											A36
A37											A38
A39	HVAC: AHU-1	80 A	2		7738...	0 VA		2	50 A	HVAC: CU-1	A40
A41	--	--	--			7738...	0 VA	--	--	--	A42
Total Load:				78638 VA	85061 VA	84285 VA					
Total Amps:				655 A	716 A	710 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
Water Heater	4500 VA	100.00%	4500 VA	
HVAC	15476 VA	100.00%	15476 VA	Total Conn. Load: 247983 VA
Equipments	216160 VA	100.00%	216160 VA	Total Est. Demand: 248681 VA
Other	0 VA	0.00%	0 VA	Total Conn.: 688 A
Receptacle	9060 VA	100.00%	9060 VA	Total Est. Demand: 690 A
Power	500 VA	125.00%	625 VA	
Lighting	2427 VA	125.00%	3034 VA	

Notes:

1.- Electrical contractor shall submit over current protective device short circuit study prior to approval of the distribution equipment submittals.

2.- Estimated loads were conservative estimates at time of design, contractor shall contact A&G Engineering should actual connected loads be higher.



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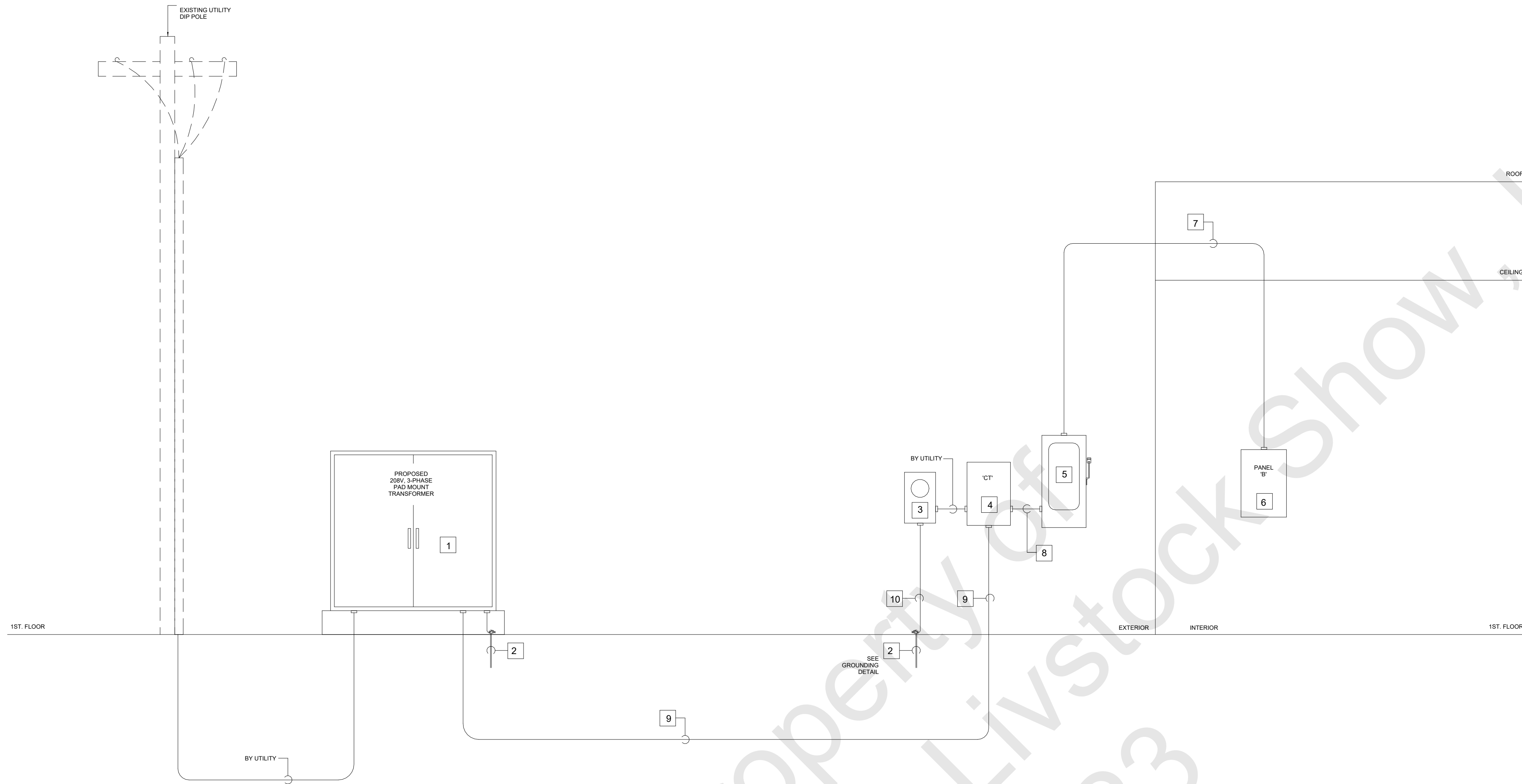
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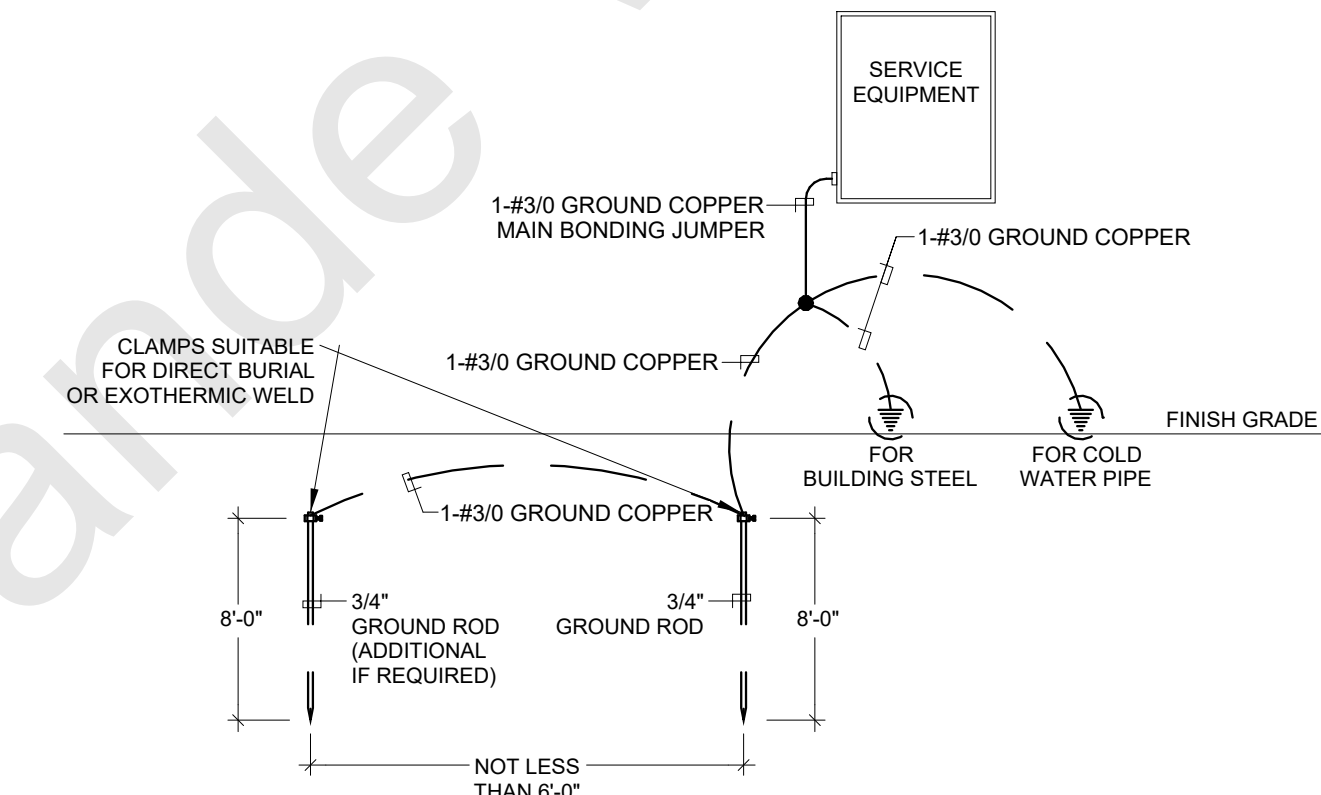
Schedules/Details - Elec

**E 3.0**





1 ELECTRICAL RISER DIAGRAM - Elec  
6" = 1'-0"



2 GROUNDING DETAIL  
NOT TO SCALE

**GENERAL NOTES:**

- A. ALL LIGHT FIXTURE SUBSTITUTION SHALL BE APPROVED BY OWNER AND MUST BE EQUAL OR BETTER QUALITY THAN APPROVED FIXTURES.
- B. ALL 120 VOLTS, 1-PHASE, 20 AMPS RECEPTACLES INSTALLED SHALL BE AFCI CIRCUIT BREAKER TYPE.
- C. PROVIDE A 120V DEDICATED CIRCUIT FOR WIRED SMOKE DETECTORS. CONTRACTOR SHALL PLACE SMOKE DETECTORS AS REQUIRED BY IFC AND THE LOCAL AUTHORITY HAVING JURISDICTION.
- D. EQUIPMENT GROUNDING CONDUCTORS SHALL NOT BE TERMINATED OR ROUTED THROUGH METER SOCKET. GROUNDING SHALL BE ESTABLISHED PER 2017 NEC 250.24(A)(1)

**KEYED NOTES:**

- 1. PROPOSED POWER COMPANY PAD MOUNT TRANSFORMER ON CONCRETE PAD. CONTRACTOR SHALL COORDINATE CONFIGURATION WITH UTILITY COMPANY AND ENSURE INSTALLATION.
- 2. CONTRACTOR SHALL PROVIDE AND INSTALL GROUNDING ROD PER NOTED NEC.
- 3. CONTRACTOR SHALL PROVIDE AND INSTALL AN ELECTRIC METER. ELECTRICAL CONTRACTOR SHALL COORDINATE METER SOCKET CONFIGURATION WITH LOCAL UTILITY COMPANY.
- 4. CONTRACTOR SHALL PROVIDE AND INSTALL A 'CT' BOX ENCLOSURE. ELECTRICAL CONTRACTOR SHALL COORDINATE CONFIGURATION WITH LOCAL UTILITY COMPANY.
- 5. CONTRACTOR SHALL PROVIDE AND INSTALL 1000A, 208V, 3-PHASE, 900A FUSED, NEMA-3R, MAIN DISCONNECT SWITCH TO SERVE WIRING LUGS INSIDE WIREWAY. NOTE: UTILITY COMPANY SHALL PROVIDE VANDAL RESISTANT SEAL ON DISCONNECT AND CONTRACTOR SHALL ENSURE INSTALLATION.
- 6. CONTRACTOR SHALL REVIEW ELECTRICAL PANEL BOARD AND REFER TO PANEL SCHEDULES FOR FURTHER INFORMATION.
- 7. CONTRACTOR SHALL PROVIDE AND INSTALL THREE (3) SETS EACH WITH: 4-#400 KCMIL COPPER, 1-#2/0 GROUND COPPER, IN 3" CONDUIT.
- 8. CONTRACTOR SHALL PROVIDE AND INSTALL THREE (3) SETS EACH WITH: 4-#400 KCMIL COPPER, IN 3" CONDUIT.
- 9. CONTRACTOR SHALL PROVIDE AND INSTALL THREE (3) SETS EACH WITH: 4-#400 KCMIL COPPER, IN 4" CONDUIT.
- 10. CONTRACTOR SHALL PROVIDE AND INSTALL 1-#3/0 GROUND COPPER, IN 3/4" CONDUIT.



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Schedules/Details - Elec

**E 3.1**





GENERAL NOTES - MECHANICAL (HVAC):

- A. HVAC CONTRACTOR REQUIREMENTS:
- A.1. ALL WORK UNDER THIS CONTRACT SHALL BE ACCOMPLISHED IN STRICT ACCORDANCE WITH FEDERAL, STATE, AND LOCAL CODES. WHERE THESE PLANS AND SPECIFICATIONS ARE IN CONFLICT WITH SUCH CODES, THE CODES SHALL GOVERN. BIDS SUBMITTED BY CONTRACTOR SHALL INCLUDE WORK REQUIRED TO COMPLY WITH ALL SUCH CODES, ANY ITEMS REQUIRED AND/OR MISSED IN THESE BASIS OF DESIGN DOCUMENT SHALL BE PROVIDED AND INSTALLED BY CONTRACTOR AT CONTRACTORS EXPENSE AND ZERO EXPENSE TO THE OWNER AND/OR DESIGN TEAM. CONTRACTOR SHALL PAY FOR AND OBTAIN ALL NECESSARY CONSTRUCTION PERMITS AND CERTIFICATES OF INSPECTION.
- A.2. CONTRACTOR SHALL STUDY CONTRACT DOCUMENTS, FULLY UNDERSTAND AND ACCEPT THE BASIS OF DESIGN AND SCOPE OF WORK. SUBMISSION OF BID INDICATES CONTRACTOR'S COMPLETE APPROVAL AND ACCEPTANCE OF CONSTRUCTION DOCUMENTS.
- A.3. CONTRACTOR SHALL USE ADEQUATE NUMBERS OF SKILLED WORKMEN, TRAINED, LICENSED AND EXPERIENCED IN COMMERCIAL HVAC WORK, AND WHO ARE FAMILIAR WITH THE CONSTRUCTION DOCUMENTS AND METHODS OF PERFORMING THE WORK REQUIRED.
- A.4. CONTRACTOR SHALL PROVIDE A MINIMUM 1 YR. WARRANTY ON ALL LABOR AND MATERIALS INSTALLED. CONTRACTOR SHALL MAKE ALL WARRANTY REPAIRS OR REPLACEMENTS IN A TIMELY MANNER, AT NO ADDITIONAL COST TO THE OWNER.
- B. BASIS OF DESIGN:
- B.1. ALL CONSTRUCTION DOCUMENTS PROVIDED BY OWNER, INCLUDING ENGINEERING DRAWINGS, NOTES, SCHEDULES, DETAILS, CALCULATIONS AND SPECIFICATIONS PROVIDED, ALONG WITH EQUIPMENT MANUFACTURER'S DRAWINGS AND SPECIFICATIONS, FORM THE BASIS OF DESIGN. THE BASIS OF DESIGN WILL BE USED FOR ALL INSPECTIONS, TESTING AND ACCEPTANCE OF THE WORK PERFORMED BY THE CONTRACTOR TO VERIFY SUCCESSFUL COMPLETION OF SCOPE OF WORK.
- C. SCOPE OF WORK:
- C.1. FURNISH ALL REQUIRED LABOR, MATERIALS, EQUIPMENT, TOOLS AND INCIDENTALS NECESSARY TO PERFORM THE WORK DESCRIBED IN THE CONSTRUCTION DOCUMENTS. CONTRACTOR SHALL MAKE ALL PRELIMINARY CALLS TO UTILITIES SHOWN ON PLANS.
- C.2. INSTALL COMPLETE AND OPERABLE HVAC SYSTEMS AS DESCRIBED BY THE CONSTRUCTION DOCUMENTS. INCIDENTAL ITEMS NOT SPECIFIED BUT WHICH ARE ESSENTIAL FOR THE PROPER OPERATION OF SPECIFIED SYSTEMS AND EQUIPMENT, ARE INCLUDED IN THE SCOPE OF WORK AND SHALL BE PROVIDED BY CONTRACTOR AT NO ADDITIONAL COST.
- C.3. COMPLY WITH ALL COMMISSIONING PLAN SHOWN ON DRAWINGS AND AS IMPLEMENTED BY OWNER'S DESIGNATED COMMISSIONING AUTHORITY (CA).
- C.4. PROVIDE STRUCTURAL ENGINEERING DESIGN, DRAWINGS AND MODIFICATIONS FOR INSTALLATION OF HVAC EQUIPMENT OVER 200 LBS., UTILIZING THE BUILDING STRUCTURE OR FOUNDATION FOR SUPPORT, UNLESS PROVIDED BY OWNER OR ARCHITECT.
- D. CODE OF COMPLIANCE:
- D.1. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL LOCALLY ADOPTED MECHANICAL, FUEL GAS AND PLUMBING CODES, ACCORDING TO THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ).
- D.2. THE BASIS OF DESIGN IS INTENDED TO COMPLY WITH ALL LOCAL CODES ENFORCED BY THE AHJ OVER THIS PROJECT. THE CONTRACTOR SHALL COMPLY WITH ALL REQUIREMENTS MADE BY THE AHJ, WHETHER SPECIFICALLY SHOWN ON PLANS OR NOT.
- E. DISCREPANCIES:
- E.1. IN THE CASE OF A DISCREPANCY BETWEEN DRAWINGS, SPECIFICATIONS OR MANUFACTURER'S REQUIREMENTS, THE MOST STRINGENT SHALL APPLY AND BE COMPLIED WITH BY THE CONTRACTOR.
- E.2. IN THE CASE OF A DISCREPANCY BETWEEN CODES AND THE CONSTRUCTION DOCUMENTS OR MANUFACTURERS REQUIREMENTS, THE AHJ SHALL DETERMINE WHICH SHOULD BE COMPLIED WITH BY THE CONTRACTOR.
- F. JOBSITE CONDITIONS:
- F.1. CONTRACTOR SHALL EXAMINE THE JOBSITE PRIOR TO BIDDING AND FULLY UNDERSTAND THE CONDITIONS UNDER WHICH THE WORK IS TO BE PERFORMED, BY SUBMITTING BID FOR WORK CONTRACTOR ACCEPTS ALL JOB CONDITIONS AS-IS.
- F.2. CONTRACTOR SHALL INSURE AND INSPECT ANY EXISTING HVAC EQUIPMENT TO BE REUSED AND/OR MODIFIED, PRIOR TO BIDDING WORK. DIMENSIONAL AND PERFORMANCE DATA FOR EXISTING EQUIPMENT SHOWN ON THE PLANS ARE ESTIMATES ONLY AND NOT EXACT.
- F.3. FIELD VERIFY ROOF STRUCTURE AND TRUSS SPACING PRIOR TO STARTING WORK. CONTRACTOR SHALL EMPLOYEE A STRUCTURAL ENGINEER FOR ANY ROOF MOUTED EQUIPMENT ABOVE 100 LBS.
- G. PERMITS AND FEES:
- CONTRACTOR SHALL OBTAIN THE NECESSARY PERMITS, LICENSES, AND CERTIFICATIONS REQUIRED BY THE AHJ AND PAY FOR ALL PERMITTING FEES.
- H. CONSTRUCTION DRAWINGS:
- H.1. DRAWINGS ARE GENERALLY SCHEMING IN NATURE. DUCTWORK, PIPING, CONTROLS AND EQUIPMENT SHOWN ON DRAWINGS IS UNDERSTOOD TO BE THE GENERAL ARRANGEMENT ONLY, TO BE FIELD ADJUSTED AS REQUIRED.
- H.2. ITEMS WITH SPECIFIC LOCATIONS AND OR SIZES WILL BE DIMENSIONED ON THE PLANS. DRAWINGS DO NOT SHOW EVERY DETAIL OR ITEM REQUIRED FOR EQUIPMENT INSTALLATIONS. REFER TO ALL EQUIPMENT MANUFACTURERS INSTRUCTIONS FOR ADDITIONAL REQUIRED PARTS AND ACCESSORIES NEEDED FOR COMPLETE INSTALLATIONS.
- H.4. FOR ALL STRUCTURAL ENGINEERING REQUIRED, UTILIZE ACTUAL EQUIPMENT WEIGHTS FROM EQUIPMENT SUPPLIERS FOR STRUCTURAL DESIGN. EQUIPMENT WEIGHTS SHOWN ON SCHEDULES ARE PRELIMINARY.
- H.5. OBTAIN FINAL SUBMITTALS ON ALL OWNER FURNISHED COMMERCIAL KITCHEN FANS, HOODS AND REFRIGERATION EQUIPMENT TO BE INSTALLED BY HVAC CONTRACTOR, AS SHOWN ON PLANS, PRIOR TO STARTING WORK. EQUIPMENT DATA SHOWN AND SCHEDULED ON PLANS IS PRELIMINARY.
- H.6. ADJUST DUCTWORK SIZES AND PROVIDE OFFSETS AS NEEDED TO PASS DUCTWORK BETWEEN ROOF TRUSSES OR THROUGH WALL FRAMING WHERE REQUIRED. SIZES AND TRANSITIONS SHOWN ON PLANS ARE PRELIMINARY ONLY. FINAL COORDINATION AND DETAILING OF DUCTWORK SHALL BE PROVIDED BY HVAC CONTRACTOR.
- I. COORDINATION WITH OTHER TRADES:
- I.1. CONTRACTOR SHALL COORDINATE WITH OTHER TRADES TO AVOID INTERFERENCES, PROPERLY SEQUENCE INSTALLATION, AND PROVIDE MANUFACTURERS REQUIRED SERVICE CLEARANCES. WHERE REQUIRED, CONTRACTOR SHALL MAKE THE REQUIRED ADJUSTMENTS.
- I.2. ALL FUEL GAS CONNECTION TO HVAC EQUIPMENT, INCLUDING SERVICE VALVES, REGULATORS, FLEXIBLE COUPLINGS, AND OTHER FITTINGS SHALL BE PROVIDED BY PLUMBING CONTRACTOR AS REQUIRED BY MANUFACTURER'S INSTALLATION INSTRUCTIONS. PROVIDE THE ACTUAL FUEL GAS PIPING REQUIREMENTS TO PLUMBING CONTRACTOR.
- I.3. ALL ELECTRICAL CONNECTIONS TO HVAC EQUIPMENT SHALL BE PROVIDED BY ELECTRICAL CONTRACTOR, INCLUDING STARTERS, SPEED CONTROLLERS, DISCONNECTS, ENCLOSURES AND LABELS. PROVIDE ELECTRICAL CONTRACTOR THE ACTUAL SERVICE REQUIREMENTS FOR ALL HVAC EQUIPMENT.
- I.4. COORDINATE WITH ROOFING CONTRACTOR TO SEAL ALL ROOF CURBS AND PIPING PENETRATIONS THROUGH ROOF PER ARCHITECTURAL ROOFING SPECIFICATIONS. PROVIDE ALL REQUIRED WEATHERPROOFING.
- I.5. COORDINATE WITH FIRE ALARM CONTRACTOR TO CONNECT DUCT MOUNTED SMOKE DETECTORS TO FIRE ALARM SYSTEM, IF REQUIRED. PROVIDE ALL REQUIRED FAN SAFETY INTERLOCKS PER CONTROL DRAWINGS.
- J. CONTRACTOR FURNISHED EQUIPMENT & MATERIALS:
- J.1. SHALL BE NEW, MANUFACTURED AND CERTIFIED TO COMPLY WITH THE BASIS OF DESIGN, FREE OF DEFECTS AND COVERED UNDER A MINIMUM 1-YEAR FACTORY WARRANTY, UNLESS SPECIFIED OTHERWISE.
- J.2. SHALL BE AS SPECIFIED IN CONSTRUCTION DOCUMENTS, OR AS ACCEPTABLE SUBSTITUTION OF EQUAL ITEM. ALL SUBSTITUTIONS MUST BE 'APPROVED' THROUGH THE COMMISSIONING PROCESS TO BE ACCEPTABLE.
- J.3. SHALL BE COMMERCIAL GRADE EQUIPMENT AND MATERIALS, UNLESS OTHERWISE INDICATED IN CONSTRUCTION DOCUMENTS.
- K. DELIVERY, STORAGE AND PROTECTION:
- K.1. CONTRACTOR SHALL FURNISH DELIVERY OF ALL REQUIRED MATERIALS AND EQUIPMENT TO BE INSTALLED. CONTRACTOR SHALL VERIFY ALL EQUIPMENT IS UN Damaged AT THE TIME OF DELIVERY FROM THE FACTORY. Damaged ITEMS MUST BE RETURNED TO THE FACTORY FOR REPLACEMENTS AT NO ADDITIONAL COST TO THE OWNER.
- K.2. WHERE REQUIRED, CONTRACTOR SHALL PROVIDE CRANE AND OR ALL RIGGING EQUIPMENT NEEDED TO INSTALL HVAC EQUIPMENT IN PLACE AS SHOWN ON PLANS.
- K.3. CONTRACTOR SHALL COORDINATE WITH OWNER TO OBTAIN ACCEPTABLE JOBSITE STORAGE LOCATION FOR MATERIALS. CONTRACTOR SHALL COMPLY WITH OWNER REQUIREMENTS FOR PROTECTIONS, ACCESS AND SECURITY OF MATERIALS STORED ON SITE.
- K.4. CONTRACTOR SHALL TAKE ALL REQUIRED PRECAUTION TO PROPERLY, PROTECT ALL STORED MATERIALS FORM WEATHER, DAMAGE, THEFT OR ANY OTHER HAZARD PRESENT AT THE STORAGE LOCATION.
- L. JOBSITE CLEANUP:
- REMOVE ALL CONSTRUCTIONS DEBRIS FROM THE JOBSITE AS REQUIRED AND PRIOR TO COMPLETION OF ALL WORK. ALL WORK AREAS SHOULD BE BROOK CLEANED, AND EQUIPMENT WIPED CLEAN PRIOR TO FINISHING PROJECT.
- M. SPARE PARTS:
- PRIOR TO COMPLETION OF WORK, CONTRACTOR SHALL PROVIDE OWNER WITH ALL SPARE PARTS PROVIDED FORM FACTORY WITH ANY EQUIPMENT PURCHASED FOR THE PROJECT.

- N. CORRECTIONS REQUIRED:
- N.1. IF CONTRACTOR IDENTIFIES ANY ACTUAL SITUATION OR SITE CONDITION THAT WILL PROHIBIT OR NEGATIVELY IMPACT THE INSTALLATION OR PERFORMANCE OF THE SYSTEMS AS DESIGNED, CONTRACTOR SHOULD STOP ALL WORK AND NOTIFY THE ENGINEER IMMEDIATELY.
- N.2. IF CONTRACTOR PERFORMS WORK, AND OR INSTALLS ANY EQUIPMENT THAT IS FOUND TO BE DEFECTIVE, OR OUT OF COMPLIANCE WITH BASIS OF DESIGN, MANUFACTURERS INSTRUCTIONS, OR PERFORMANCE REQUIREMENTS, CONTRACTOR SHALL REPLACE THE DEFECTIVE WORK AT NO ADDITIONAL COST TO THE OWNER. ALL NEW WORK SHALL COMPLY WITH THE CONTRACT DOCUMENTS.
- N.3. IF CONTRACTOR DAMAGES ADJACENT PROPERTY WHILE PERFORMING SCOPE OF WORK, HE SHALL MAKE PROMPT REPAIR OF ALL DAMAGE AT OWN EXPENSE, PRIOR TO REQUESTING FINAL PAYMENT.
- O. SCOPE: PROVIDING ALL LABOR, MATERIAL, AND EQUIPMENT IN ACCORDANCE WITH THESE SPECIFICATIONS AND THE ACCOMPANYING DRAWING TO PROVIDE A COMPLETE AND PROPERLY OPERATING HEATING, VENTILATING, AIR CONDITIONING, AND REFRIGERATION SYSTEMS FOR THE BUILDING. WORK UNDER THIS SECTION INCLUDES, BUT IS NOT NECESSARILY LIMITED TO, FURNISH AND INSTALL THE FOLLOWING: ROOFTOP UNITS AND CURBS OR DX SPLIT SYSTEMS DUCT INSULATION AND DUCT WORK FOR FOR HVAC SYSTEMS DIFFUSERS, GRILLES, AND PLENUM BOXES CONTROL PANEL AND CONTROL WIRING.
- O.2. INSTALL THE FOLLOWING: - EXHAUST FANS, HOODS, AND DUCTS FOR VENTILATION OF COOKING EQUIPMENT - ICE MACHINE AIR COOLED CONDENSER ON ROOF.
- O.3. GENERAL REQUIREMENTS: COORDINATION: COORDINATE WORK WITH OTHERS TRADES. LOCATIONS SHOWN ARE APPROXIMATE. REFER TO THE ARCHITECTURAL PLANS FOR EXACT MEASUREMENTS IN THE PLACEMENT OF EQUIPMENT, FIXTURES, OUTLETS, ETC. WHERE THE LOCATIONS ARE NOT CLEAR, OBTAIN THE EXACT LOCATION FROM OWNER AND FIELD VERIFY. THE PLANS DO NOT GIVE EXACT DETAILS AS TO ELEVATIONS AND LOCATION OF VARIOUS PIPES, FITTINGS, DUCTS, CONDUIT, ETC., AND DO NOT SHOW ALL OFFSETS AND OTHER INSTALLATION DETAILS WHICH MAY BE REQUIRED.
- P. MECHANICAL CONTRACTOR SHALL VERIFY THAT ALL EQUIPMENT, AS SHOWN ON THESE DRAWINGS, WILL NOT CONFLICT WITH ANY DRAINS, SCUTTLES, JOINTS, EVENTS, ETC.
- Q. ALL ROOF MOUNTED EQUIPMENT AND PENETRATIONS SHALL BE FLASHED A MINIMUM OF 12" ABOVE THE ROOF. PROVIDE AMPLE CURBS OF PIPE SEALS FOR ELECTRICAL CONDUITS WHICH SUPPLY MECHANICAL EQUIPMENT.
- R. ALL OUTSIDE AIR INTAKES SHALL BE A MINIMUM OF 10'-0" FROM ANY EXHAUST FAN OR PLUMBING VENT.
- S. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR EQUIPMENT FOR ADMINISTERING ALL WARRANTIES ON EQUIPMENT WHICH HE INSTALLS. THIS INCLUDES ALL CONDENSERS REFRIGERANT LINES, AND OTHERS ITEMS FURNISHED BY OTHERS AS WELL AS THOSE FURNISHED BY HIM.
- T. CONDENSATE DRAINAGE FROM ROOF TOP HVAC UNITS SHALL BE TRAPPED.
- U. PROVIDE VIBRATIONS ISOLATION DEVICES AND FLEXIBLE CONNECTIONS TO ALL MOVING MACHINERY.
- V. ALL DUCT DIMENSIONS SHOWN ON DRAWINGS ARE CLEAR INSIDE DIMENSIONS.
- W. MECHANICAL CONTRACTORS SHALL COORDINATE ALL DUCTS AND DIFFUSER LOCATIONS WITH LIGHTING LAYOUTS AS REQUIRED.
- X. THE CONTRACTOR SHALL PROVIDE COMPLETE INFORMATION TO THE OTHER CONTRACTORS AND TRADES AS REQUIRED FOR COMPLETION AND COORDINATION OF THE COMPLETE PROJECT.
- Y. THE CONTRACTOR SHALL COORDINATE WITH THE GENERAL CONTRACTOR AND OTHER TRADES. ALL REQUIRED OPENINGS AND EXCAVATIONS. ALL OPENINGS IN FOUNDATIONS, FLOORS, WALLS AND ROOFS SHALL BE DESIGNED INTO THE STRUCTURE INITIALLY BY THE USE OF SLEEVES, CURBS, ETC. CUTTING AND PATCHING SHALL BE HELD TO A MINIMUM.
- Z. THERMOSTATS SHALL BE LOCATED GENERALLY AS SHOWN BUT THEIR EXACT LOCATION SHALL BE FIELD COORDINATED TO AVOID INTERFERENCE WITH WALL MOUNTED ITEMS. ONCE FIELD IDENTIFICATION, MOUNT 42" AFF.
- AA. THE GENERAL CONTRACTOR SHALL PERFORM AND BE RESPONSIBLE FOR ALL REFRIGERATION WORK REQUIRED FOR THE ICE MACHINES. ALL THIS WORK SHALL BE DONE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. CONTACT THE EQUIPMENT SUPPLIERS TO OBTAIN ALL NECESSARY INFORMATION TO PERFORM THE REFRIGERATION WORK. G.C. SHALL ALSO BE RESPONSIBLE FOR ARRANGING FACTORY AUTHORIZED START-UP AND ADJUSTMENT ON THE ICE MACHINES.
- AB. MECHANICAL CONTRACTOR TO INSULATE BACKSIDE OF ALL DIFFUSERS.
- AC. TRANSITION ALL DUCTS AS REQUIRED TO ATTACH TO EQUIPMENT.
- AD. OFFSET RETURN AIR DUCTS FOR ROOF TOP AC UNITS TO AVOID FRAMING AS REQUIRED.
- AE. ALL DAMAGED COIL FINS SHALL BE COMBED STRAIGHT PRIOR TO OWNER HANDOVER.
- AF. "RE-ENGINEERING" "VALUE ENGINEERING" OR ANY DEVIATIONS FROM THE SHOWN DESIGN AND REQUIRED HVAC EQUIPMENT MUST BE REQUESTED AND APPROVED PRIOR TO BIDDING. UNAUTHORIZED SUBSTITUTIONS OR ALTERATIONS WILL VOID THE SIGNATURE AND SEAL OF THE PROFESSIONAL ENGINEER & ARCHITECT OF RECORD AND LEAVE VIOLATORS RESPONSIBLE FOR RESUBMISSION OF SIGNED AND SEALED DRAWINGS.
- AG. EXHAUST HOOD NOTES
- AG.1. THE FOLLOWING EQUIPMENT SHALL BE SUPPLIED BY OWNER AND INSTALLED BY THE MECHANICAL CONTRACTOR.
- AG.2. STAINLESS STEEL HOODS AS SPECIFIED PRE PIPED FOR FIRE PROTECTION SYSTEM, AND CEILING CLOSURE STRIP.
- AG.3. EXHAUST FANS AND CURBS EXCEPT RESTROOM EXHAUST FAN AND CUBS.
- AH. THE MECHANICAL CONTRACTOR SHALL RECEIVE THE ABOVE EQUIPMENT, UNCRATE, BE RESPONSIBLE FOR REPORTING DAMAGE RECEIVED DURING SHIPMENT, AND BE RESPONSIBLE FOR LOSS OR DAMAGE TO THE ABOVE EQUIPMENT ONCE RECEIVED ON THE JOB.
- AI. EXHAUST HOODS PROVIDED WILL MEET OR EXCEED THE FOLLOWING REQUIREMENTS:
- AK. - NSF # 1362 BEAR THE NSF SEAL OF APPROVAL
- AL. - U.L. CLASSIFICATION # 24N1
- AM. - MEET OR EXCEED NFPA # 96, (AHJ ADOPTED EDITION) & IMC
- AO. - IF REQUIREMENTS ARE NOT MET, SEEK OWNER APPROVAL.
- AP. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE TO OBTAINING A SET OF SHOP DRAWINGS FROM THE HOOD MANUFACTURER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING THE HOOD MANUFACTURER OF ANY LOCAL CODES WHICH WILL AFFECT THE HOOD MANUFACTURE OR INSTALLATION.
- AQ. THE HOOD MANUFACTURER WILL PROVIDE PRE-PIPED AUTOMATIC FIRE CONTROL SYSTEMS FOR ANY FRYER HOOD INCLUDING FIRE CONTROL CABINETS - AND FURNISH A 2 POLE MICRO SWITCH FURNISHED FOR EQUIPMENT SHUT OFF TO BE HOOKED UP BY G.C. THE HOOD MANUFACTURER WILL BE RESPONSIBLE FOR FINAL INSTALLATION AND INSPECTIONS OF THE HOOD FIRE EXTINGUISHING SYSTEM. - COMPLETE EXTINGUISHING BY HOOD MANUFACTURER.
- AR. THE PLUMBING CONTRACTOR SHALL INSTALL THE MECHANICAL GAS VALVE IN ACCORDANCE WITH THE PLUMBING DRAWING. THE VALVE WILL BE PROVIDED TO HIM BY THE HOOD SUPPLIER. VERIFY WITH LOCAL AUTHORITIES.
- AS. EXHAUST HOOD DUCT NOTES
- AS.1. ALL FLYER EXHAUST COLLARS AND EXHAUST DUCTWORKS ARE SIZED TO MAINTAIN NOTED EXHAUST AIR VELOCITY. ALL GREASE EXHAUST DUCTWORK SHALL BE CONSTRUCTED AND INSTALLED IN ACCORDANCE WITH NFPA-96. GREASE EXHAUST DUCTWORK SHALL HAVE ALL SEAMS, JOINTS AND PENETRATIONS SEALED LIQUID TIGHT.
- AS.2. ALL HORIZONTAL RUNS OF GREASE DUCT, EXHAUST OR CONDENSATE SHALL SLOPE BACK TOWARD THE HOOD, GRILLE OR DRAIN AT A SLOPE OF 1" PER FOOT. PROVIDE A RESIDUE TRAP AT THE BASE OF EACH VERTICAL RISER.
- AS.3. THE MECHANICAL CONTRACTOR IS TO PROVIDE CLEANOUTS, IN GREASE EXHAUST DUCTWORK AT A MINIMUM OF 10' INTERVALS, AT EACH CHANGE OF DIRECTION AND AT EACH RESIDUE TRAP.
- AS.4. THE DISCHARGE OF THE GREASE EXHAUST FAN SHALL BE UPWARD AND A MINIMUM OF 40" ABOVE THE HOOD SURFACE AND A MINIMUM OF 10" FROM ANY OUTSIDE AIR INTAKE.
- AS.5. ALL GREASE EXHAUST DUCTS SHALL HAVE LONG RADIUS ELBOWS.
- AS.6. GREASE EXHAUST DUCT SHALL BE CARBON STEEL 16 GAUGE WELDED DUCTS PER NFPA-96 PROTECTED WITH THE FOLLOWING: 1" AIR SPACE FROM DUCT TO 22 GA SHEET METAL COVERED WITH 1" MINERAL WOOD AND WIRE MESH SECURED TO COMBUSTIBLES WITH 1" NON COMBUSTIBLE SPACERS TO REDUCE CLEARANCE TO COMBUSTIBLE TO 3" PER NFPA 96 A-1-3.2.

EQUIPMENT & MATERIAL - MECHANICAL (HVAC):

- AT. DUCTWORK SYSTEMS:
- AT.1. ROUND DUCT: GALVANIZED STEEL, MINIMUM 1" PRESSURE RATED OR AS SHOWN ON PLANS. FACTORY MADE ELBOWS AND FITTINGS OR QUALITY GAUGE, AND SLIP JOINT CONNECTIONS. CONCEALED: SNAP-ON TYPE LONGITUDINAL SEAL. STANDING GAUGES AND SIZED FOR 1" PRESSURE RATING, OR AS SHOWN ON PLANS. ALL TRANSVERSE JOINTS AND DUCT WALL PENETRATION SEALED WITH METALLIC DUCT TAPE OR MASTIC. ANY INTERIOR DUCTWORK DOWNSTREAM OF EXHAUST FANS SHALL HAVE HARD CAST MASTIC SEALER ON ALL JOINTS AND SEAMS.
- AT.1.2. EXPOSED: SPIRAL ROUND TYPE, STANDARD GAUGES AND SIZES FOR 1" PRESSURE RATING OR AS SHOWN ON PLANS. ALL TRANSVERSE JOINTS AND DUCT WALL PENETRATIONS SEALED WITH CLEAR SILICONE. INSTALL IN NEAT AND ORDERLY MANNER WITH FINISHED APPEARANCES, INCLUDING ALL HANGERS AND SUPPORTS. CLEAN ALL EXTERIOR SURFACES FOR PAINTING AFTER INSTALLATION.
- AT.2. RECTANGULAR DUCT: GALVANIZED STEEL, MINIMUM 1" PRESSURE RATED OR AS SHOWN ON PLANS. MINIMUM GAUGE, JOINTS AND REINFORCEMENT PER LATEST VERSION OF "SMACNA HVAC DUCT CONSTRUCTION STANDARDS". ANY INTERIOR DUCTWORK DOWNSTREAM OF EXHAUST FANS SHALL HAVE HARD CAST MASTIC SEALER ON ALL JOINTS AND SEAMS.
- AT.2.1. CONCEALED: ALL TRANSVERSE JOINTS AND DUCT WALL PENETRATIONS SEALED WITH METALLIC DUCT TAPE OR MASTIC. SUPPLY AND RETURN DUCTWORK IN UNCONDITIONED SPACES SHALL HAVE MINIMUM R-6 EXTERNAL DUCT WRAP INSULATION AFTER SEALING.
- AT.2.2. EXPOSED ALL TRANSVERSE JOINTS AND DUCT WALL PENETRATIONS SEALED WITH CLEAR SILICONE CAULKING. EXTERIOR DUCT INSTALLATIONS SHALL HAVE WELDED OR FLANGED AND GASKETED JOINTS. MINIMUM R-6 INTERNAL, FOIL-FACED DUCT LINER FOR FINISHED AREAS, MINIMUM R-6 EXTERIOR DUCT INSULATION BOARD FOR MECHANICAL ROOMS, AND R-6 DUCT WRAP FOR ALL OTHER UNCONDITIONED AREAS WHERE EXPOSED.
- AT.3. FLEX DUCT: HEAVY SPRING STEEL WIRE HELIX, PERMANENTLY BONDED INNER FILM LINER AND FIBERGLASS SCRIM, FIBERGLASS BLANKET INSULATION AND POLYETHYLENE OUTER JACKET, AS MANUFACTURED BY THERMAFLEX, TYPE G-KM OR EQUAL. PROVIDE 2 IE THE WRAPS AT EACH CONNECTION TO STEEL DUCTWORK, DEVICES OR EQUIPMENT.
- AT.4. FLEX CONNECTION: 3" GALVANIZED STEEL EDGES WITH 3" FLEXIBLE VINYL STRIP IN MIDDLE, MINIMUM R-6 EXTERNAL DUCT WRAP INSULATION AFTER SEALING.
- AT.5. PLENUMS: GALVANIZED STEEL, MINIMUM STEEL GAUGE, JOINTS AND REINFORCEMENT PER LATEST VERSION OF "SMACNA HVAC DUCT CONSTRUCTION STANDARDS".
- AT.5.1. ALL TRANSVERSE JOINTS AND DUCT WALL PENETRATIONS SEALED WITH METALLIC DUCT TAPE OR MASTIC.
- AT.5.2. FAN INLET OR DISCHARGE: PROVIDE ALL PLENUMS WITH MINIMUM 2" INTERIOR, FOIL-FACED DUCT LINER FOR NOISE REDUCTION. PROVIDE MINIMUM 12" SQ. DUCT ACCESS FOR DOOR FOR INTERNAL SERVICE AND CLEANING, AS SHOWN ON PLANS.
- AT.5.3. ROOF HOODS OR WALL LOUVERS: PROVIDE ALL PLENUMS WITH MINIMUM 1" EXTERIOR DUCT INSULATION BOARD IN MECHANICAL ROOMS, AND 1" DUCT WRAP WHERE CONCEALED. PROVIDE MINIMUM 12" SQ. DUCT ACCESS DOOR FOR INTERNAL SERVICE AND CLEANING, OR AS SHOWN ON PLANS.
- AT.6. INSULATION: SUPPLY, RETURN AND OUTSIDE AIR VENTILATION DUCTWORK INSTALLED IN UNCONDITIONED SPACES SHALL HAVE MINIMUM R-6 EXTERNAL DUCT WRAP INSULATION AFTER SEALING. SEE DUCT WRAP SPECIFICATIONS.
- AT.6.1. PROVIDE INTERNAL DUCT LINER FOR RECTANGULAR DUCTWORK OR PLENUMS INSTALLED IN EXPOSED FINISHED AREAS.
- AT.6.2. PROVIDE EXTERNAL DUCT INSULATION BOARD FOR RECTANGULAR DUCTWORK OR PLENUMS INSTALLED IN MECHANICAL SPACES. SEE DUCT INSULATION BOARD SPECIFICATIONS.
- AT.7. DUCT LINER: OWENS CORNING, SERIES 703 OR EQUAL, FIBERGLASS INSULATION FORMED INTO RIGID BOARD, BONDED TO FOIL-REINFORCED FACTORY VAPOR RETARDING FACING, MINIMUM R-8 RATING FOR INTERIOR AND R-8 RATING FOR EXTERIOR INSTALLATIONS.
- AT.8. DUCT WRAP: PROVIDE DUCT WRAP ON ALL SUPPLY AND RETURN DUCTWORK INSTALLED IN CONCEALED, UNCONDITIONED SPACES OWENS CORNING, ALL SERVICE DUCT WRAP, OR EQUAL, FIBERGLASS BLANKET, FACTORY LAMINATED TO FRK VAPOR RETARDING FACING, MINIMUM R-8 RATING FOR INTERIOR INSTALLATIONS, AND R-8 FOR EXTERIOR INSTALLATIONS.
- AT.9. DUCT INSULATION BOARD: OWENS CORNING, SERIES 701 FOR CURVED SURFACES AND SERIES 7056 FOR FLAT SURFACES, OR EQUAL, FIBERGLASS INSULATION FORMED INTO RIGID BOARD, BONDED TO FOIL-REINFORCED FACTORY VAPOR RETARDING FACING, MINIMUM R-8 RATING FOR INTERIOR INSTALLATIONS, AND R-8 FOR EXTERIOR INSTALLATIONS.
- AT.10. DUCT ACCESS DOOR: NALLOR INDUSTRIES, 08SCL SERIES, OR EQUAL, RATED FOR MEDIUM AND LOW PRESSURES. ALL CONSTRUCTIONS SPECIFICATIONS, GALVANIZED STEEL CONSTRUCTION, REMOVABLE DOOR WITH 1" INTERNAL FOIL-FACED INSULATION, KNOCK-OVER TABS PROGRESSIVE CAMLOCK OPERATION.
- AT.11. MANUAL BALANCING DAMPERS: PROVIDE MANUAL BALANCING DAMPERS WHERE SHOWN ON PLANS AND AS NEEDED FOR PROPER DISTRIBUTION OF AIRFLOWS. BALANCING DAMPERS SHALL BE SEPARATE FROM THE GRILLES AND DIFFUSERS AND INSTALLED A MINIMUM OF 5 DUCT DIAMETERS UPSTREAM OR DOWNSTREAM TO REDUCE AIR NOISE.
- AT.11.1. ROUND DAMPERS: 20 GAGE, GALVANIZED STEEL, 3/8" SQUARE AXLE SHAFT EXTENDING BEYOND FRAME THROUGH FACTORY MOUNTED LOCKING HAND QUADRANT. MOLDED SYNTHETIC BEARINGS, MILL GALVANIZED FINISH, AS MANUFACTURED BY RUSKIN, MODEL MD0R25 PR APPROVED EQUAL.
- AT.11.2. RECTANGULAR DAMPERS: 22 GAGE, GALVANIZED STEEL DRT SMANCA STANDARD, WHICHEVER IS GREATER, SQUARE AXLE SHAFT EXTENDING BEYOND FACTORY MOUNTED LOCKING HAND QUADRANT. MOLDED SYNTHETIC BEARINGS, MILL GALVANIZED FINISH, AS MANUFACTURED BY RUSKIN, MODEL MD05 OR APPROVED EQUAL.
- AT.12. MOTORIZED BACKDRAFT DAMPERS: GALVANIZED STEEL FRAME, ALUMINUM BLADES WITH SEALS, SIR LEAKAGE OF 4 CFM/SQFT OR LESS AT 1"WC PRESSURE DIFFERENTIAL, RATED FOR VELOCITIES UP TO 2500 FPM AND PRESSURES UP TO 21" WC, AS MANUFACTURED BY GRABCO, OR EQUAL. PROVIDE WITH CLASS I DAMPER MOTOR ON ALL AIR INTAKE AND EXHAUST OPENINGS FOR HOODS AND FANS.
- AT.13. GRILLES AND DIFFUSERS: AS SCHEDULED OR EQUAL. PROVIDE WITH ALL REQUIRED FACTORY ACCESSORIES NEEDED FOR COMPLETE INSTALLATION.
- AT.13.1. WHERE REQUIRED, PROVIDE FACTORY MOUNTING FRAME FOR INSTALLATION INTO SHEETROCK CEILINGS.
- AT.13.2. FOR SPIRAL DUCT MOUNTED SIDEWALL GRILLES, PROVIDE FACTORY SCOOP FOR BALANCING.
- AT.14. WALL LOUVERS: AS SCHEDULED OR EQUAL. FIELD VERIFY FRAME SIZE AND TYPE WITH ACTUAL WALL SECTION PRIOR TO ORDERING. PROVIDE WITH BAROMETRIC OR MOTORIZED BACKDRAFT DAMPER AS NOTED ON PLANS.
- AT.15. ROOF HOODS: AS SCHEDULED OR EQUAL. PROVIDE WITH
- AT.16. FACTORY CURBS AND BAROMETRIC OR MOTORIZED BACKDRAFT DAMPERS AS NOTED ON PLANS.
- BA. ROOFTOP UNITS: RTU PERFORMANCE, MAKE AND MODEL NUMBERS AS SCHEDULED. MAKE MODIFICATIONS OR ADJUSTMENTS AS REQUIRED TO OPERATE EXISTING RTUS PER CONTROL DETAILS ON PLANS AND CONTRACTOR TO ASSUME ALL LIABILITY ON EXISTING UNITS.
- BB. EXHAUST FAN: PERFORMANCE, MAKE AND MODEL NUMBER AS SCHEDULED, OR APPROVED EQUAL. PROVIDE WITH FACTORY CURB, CLASS I MOTORIZED BACKDRAFT DAMPERS, DISCONNECT SWITCH AND ECM MOTOR IF FRACTIONAL HP.
- BC. CONTROL SYSTEMS: PROVIDE A COMPLETE SYSTEM OF CONTROLS TO PROPERLY OPERATE ALL HVAC SYSTEMS SHOWN ON PLANS. PLANS SHOW ONLY THE ANTICIPATED MAJOR COMPONENTS OF CONTROL SYSTEMS AND SEQUENCE OF OPERATIONS ONLY. THEY DO NOT SHOWN EVERY SINGLE COMPONENT OF THE SYSTEM OR WIRING AND INSTALLATION DETAILS. CONTRACTOR SHALL PROVIDE ALL ADDITIONAL ITEMS AS NEEDED TO MEET THE PERFORMANCE SEQUENCES SHOWN ON PLANS.
- BC.1. CONTROL WIRING:
- BC.1.1. ALL CONTROL WIRING SHALL BE AS SPECIFIED BY CONTROL EQUIPMENT MANUFACTURER. THE NUMBER OF CONDUCTORS AND GAUGE SHALL MEET THEIR REQUIREMENTS, AS WELL AS THE METHOD OF INSTALLATION.
- BC.1.2. ALL CONTROL WIRING EXPOSED IN MECHANICAL ROOMS SHALL BE INSTALLED IN EMT CONDUIT.
- BC.1.3. WIRING INSTALLED IN CEILING PLENUMS AND INSIDE WALLS SHALL BE PLENUM RATED AND RUN EXPOSED UNLESS OTHERWISE REQUIRED BY THE LOCAL AUTHORITY.
- BC.2. THERMOSTATS: AS MANUFACTURED BY HONEYWELL, OR EQUAL, DESIGNED TO OPERATE THE TYPE OF OPERATING SYSTEM AND MODELS TO BE CONNECTED, WITH NUMBER OF COOLING AND HEATING STAGES EQUAL TO THOSE OF THE UNIT SERVED. ALL THERMOSTATS SHALL INCLUDE CAPABILITIES AS REQUIRED BY STATED IECC, INCLUDING 7-DAY SCHEDULED TEMPERATURE SETBACK WITH OPTIMAL START AND MANUAL OVERRIDE OF UP TO 2 HRS.
- BC.2.1. MULTI-STAGE UNITS: PROVIDE SEPARATE CONTROL WIRE FOR EACH STAGE OF HEAT AND COOLING FOR ALL MULTI-STAGE UNITS. DO NOT JUMPER WIRE STAGES TOGETHER TO MAKE THEM RUN SIMULTANEOUSLY.
- BC.2.2. REMOTE SENSORS: WHERE SHOWN ON PLANS PROVIDE A REMOTE TEMPERATURE SENSOR COMPATIBLE WITH THERMOSTAT CONTROLLING UNIT. CONNECT TO THERMOSTAT PER MANUFACTURER'S INSTRUCTIONS. ADJUST THERMOSTAT PER MANUFACTURER'S INSTRUCTIONS TO UTILIZE REMOTE SENSOR FOR UNIT CONTROL AFTER INSTALLATION.
- BD. INTERLOCKS:
- BD.1. BACKDRAFT DAMPERS: FOR ALL BACKDRAFT DAMPERS SERVING EXHAUST AND OUTSIDE AIR OPENING ON THE PLANS, INTERLOCK CLASS I MOTORIZED DAMPERS TO CLOSE WHEN SYSTEMS ARE NOT IN OPERATION.
- BD.2. EXHAUST FANS: INTERLOCK EXHAUST FANS TO OPERATE SIMULTANEOUSLY WITH HVAC UNITS AS NOTED ON PLANS, USING AUXILIARY CONTACTS OR RELAYS IN UNIT STARTERS. PROVIDE ALL REQUIRED CONDUIT, WIRING AND CONTROL COMPONENTS NEEDED TO PROVIDE THE AUTOMATIC SIMULTANEOUS OPERATION.
- BD.3. TESTING OF THE INTERLOCKS SHALL BE A PART OF THE STARTUP PROCESS FOR HVAC EQUIPMENT AND SHALL BE DOCUMENTED ON STARTUP SHEETS, PROVIDED TO THE PM.
- BE. SMOKE DETECTORS:
- BE.1. PROVIDE A RETURN DUCT MOUNTED SMOKE DETECTOR FOR ALL HVAC UNITS WITH GREATER THAN 2,000 CFM OF AIRFLOW. HVAC UNITS WITH GREATER THAN 15,000 CFM OF AIRFLOW SHALL ALSO HAVE SMOKE DETECTOR INSTALLED IN SUPPLY DUCTWORK. AS SPECIFIED IN NFPA-96, SMOKE DETECTORS SHALL BE WIRED TO SHUT DOWN THE UNIT UPON ACTIVATION, AND INITIATE A VISIBLE AND AUDIBLE SUPERVISORY SIGNAL.

- BE.2. WHERE AN APPROVED FIRE ALARM SYSTEM IS INSTALLED IN THE BUILDING, THE DUCT SMOKE DUCTWORK AS SPECIFIED IN NFPA 90A, DETECTORS SHALL BE WIRED TO SHUT DOWN THE UNIT UPON ACTIVATION, AND INITIATE A VISIBLE AND AUDIBLE SUPERVISORY SIGNAL.
- BE.3. WHERE AN APPROVED FIRE ALARM SYSTEM IS INSTALLED IN THE BUILDING, THE DUCT SMOKE DETECTORS SHALL BE CONNECTED TO THE FIRE ALARM SYSTEM AND INITIATE EITHER AN ALARM SIGNAL AT THE PROTECTED PREMISES, A SUPERVISORY SIGNAL AT A CONSTANTLY ATTENDED LOCATION, OR BE MONITORED BY A SUPERVISING STATION.
- BF.1. HVAC DRAWINGS:
- BF.1. THESE DRAWINGS ARE INTENDED TO GENERALLY SHOW THE EXISTING BUILDING AND HVAC SYSTEMS MODIFICATIONS REQUIRED FOR THIS PROJECT. INFORMATION PROVIDED INCLUDES LOCATION, QUANTITY, TYPE, SIZE, CAPACITY AND FUNCTION OF SPECIFIC COMPONENTS OF THE NEW AND MODIFIED HVAC SYSTEMS TO BE PROVIDED BY THE CONTRACTOR.
- BF.2. SEE DIFFUSER AND GRILLE SCHEDULE FOR ALL BRANCH DUCT SIZES NOT SHOWN ON PLANS FOR CLARITY. ALL BRANCH DUCTS AND CONNECTING FLEX DUCTS SHALL EQUAL DIFFUSER OR GRILLE COLLAR SIZE AS SCHEDULE.
- BF.3. ADJUST DUCT SIZES SHOWN ON PLANS AS NEEDED FOR OFFSETS AND INTERFERENCES IDENTIFIED IN THE FIELD AND OR CREATED BY OTHER TRADES. MAINTAIN DUCT CROSS SECTIONAL AREA THROUGH OFFSETS, ELBOWS AND TRANSITIONS.
- BF.4. INCIDENTAL MODIFICATION OR DEMOLITION OF EXISTING HVAC SYSTEMS AND COMPONENTS AS REQUIRED FOR INSTALLATION OF NEW WORK IS INCLUDED AS PART OF THE PROJECT, WHETHER SHOWN ON PLANS OR NOT. CONTRACTOR SHALL FIELD VERIFY ALL REQUIREMENTS PRIOR TO BIDDING PROJECT.
- BF.5. CEILING TILE AND GRID REMOVAL MODIFICATION AND REINSTALLATION AS REQUIRED FOR WORK SHOWN IS TO BE PROVIDED BY OTHERS AND NOT CONSIDERED PART OF THE HVAC CONTRACTOR'S SCOPE OF WORK. COORDINATE WITH OWNER TO PROVIDE THE REQUIRED WORK ACCESS ABOVE ALL LAY-IN CEILINGS.
- BF.6. RELOCATION OF EXISTING BUILDING SYSTEMS AND EQUIPMENT SUCH AS LIGHT FIXTURES, FIRE SPRINKLER PIPING AND HEADS, SMOKE DETECTORS, ELECTORS, ELECTRICAL CONDUITS, PLUMBING, ETC., AS REQUIRED FOR INSTALLATION OF NEW WORK IS TO BE PROVIDED BY OTHERS AND IS NOT CONSIDERED PART OF THE HVAC CONTRACTOR'S SCOPE OF WORK. COORDINATE WITH OWNER TO PROVIDE THE REQUIRED INTERFERENCE REMOVAL OF OTHER TRADES.
- BG.7. THE EXISTING BUILDING HVAC SYSTEMS ARE INTENDED TO BE REUSED AS SHOWN ON PLANS OR AS INSTALLED IF NOT SHOWN ON PLANS. ALL EXISTING HVAC SYSTEMS AND PERFORMANCE DATA SHOWN ON PLANS IS FOR REFERENCE ONLY AND MAY BE DIFFERENT IN THE FIELD. CONTRACTOR SHALL FIELD SURVEY, TEST AND INSPECT ALL EXISTING HVAC SYSTEMS PRIOR TO BUILDING TO ENSURE HE UNDERSTANDS AND ACCEPTS ALL EXISTING CONDITIONS.
- BG.8. THE EXISTING HVAC SYSTEMS AIRFLOWS SHOWN ON PLANS ARE FOR REFERENCE ONLY TO ASSIST WITH COMFORT BALANCING TO BE PROVIDED BY THE HVAC CONTRACTOR AND SPECIFIED BY THE OWNER.
- BH. CUTTING AND PATCHING:
- BH.1. WHERE CUTTING AND PATCHING ARE REQUIRED TO INSTALL HVAC SYSTEMS, CONTRACTOR SHALL PROVIDE WORK AS NEEDED AFTER INSTALLATION, PATCH ALL OPENING TO MATCH ADJUSTMENT FINISHED SURFACES. FINISHED PAINTING TO BE PROVIDED BY OTHERS.
- BI.1. DUCTWORK, PIPING AND SUPPORTS:
- BI.1. LOCATE ALL BALANCING DAMPERS IN ACCESSIBLE LOCATIONS, WHERE INSTALLED ABOVE SHEETROCK CEILING, COORDINATE WITH OTHER TRADES TO PROVIDE ACCESS HATCH FOR BALANCING.
- BI.2. HOLD ALL DUCTWORK AND PIPING TIGHT AGAINST STRUCTURES, RUN IN A NEAT AND WORKMAN LIKE MANAGER PARALLEL TO BUILDING LINES WHEREVER POSSIBLE. PROVIDE ALL REQUIRED DUCT AND PIPE HANGERS AND SUPPORTS WITH PROPER SPACING PER CODE REQUIREMENTS.
- BI.3. GROUP PARALLEL RUNS OF DUCTWORK AND PIPING TOGETHER ON COMMON HANGERS AND SUPPORTS TO MINIMIZE SPACE WHEREVER POSSIBLE.
- BI.4. ALL SUPPLY AND RETURN DUCTWORK CONCEALED ABOVE CEILINGS SHALL BE INSULATED AFTER INSTALLATION AND SEALING. SEE SPECS FOR INSULATION REQUIREMENTS.

**DESIGN WITHOUT CONSTRUCTION ADMINISTRATION:**

IT IS UNDERSTOOD AND AGREED THAT THE ARCHITECT/ENGINEER'S SCOPE DOES NOT INCLUDE PROJECT OBSERVATION OR REVIEW OF THE CONTRACTOR'S PERFORMANCE OR ANY OTHER CONSTRUCTION PHASE SERVICES. THE OWNER AGREES TO PROVIDE CONSTRUCTION ADMINISTRATION AND ASSUMES ANY AND ALL POTENTIAL LIABILITY ARISING FROM SUCH ADMINISTRATION. THE OWNER ASSUMES ALL RESPONSIBILITY FOR INTERPRETATION OF THE CONTRACT DOCUMENTS AND FOR CONSTRUCTION OBSERVATION AND THE OWNERS WAIVES ANY CLAIMS AGAINST THE ARCHITECT/ENGINEER THAT MAY BE IN ANY WAY CONNECTED THERETO. THE ARCHITECT/ENGINEER WILL NOT RESPOND TO ANY QUESTIONS DIRECTED TO THE INTERPRETATION OF THE CONTRACT DOCUMENTS OR IN RESPONSE TO ISSUES ENCOUNTERED BY AND AS RELAYED BY THE CONTRACTOR IN THE FIELD.

SYMBOL LEGEND - MECHANICAL:

- |  |                                  |  |   |
|--|----------------------------------|--|---|
|  | RTU (ROOF TOP UNIT).             |  | EXHAUST FAN.                            |
|  | CU (COMPRESSOR UNIT).            |  | CFM's.                                  |
|  | COMPRESSOR.                      |  | ROUND BRANCH DUCT W/ BALANCING DAMPER   |
|  | PTAC.                            |  | DUCT/INTERNAL DIMENSIONS (WIDTH/DEPTH). |
|  | AHU (AIR HANDLING UNIT).         |  | RECTANGULAR DUCT TRANSITION.            |
|  | 2x2' SUPPLY AIR DIFFUSER.        |  | ROUND FLEX DUCT.                        |
|  | 1'x1' SUPPLY DIFFUSER.           |  | LIQUID LEVEL SENSOR.                    |
|  | 12'x6' SUPPLY DIFFUSER.          |  | SMOKE DETECTOR.                         |
|  | 2x2' RETURN/TRANSFER AIR DEVICE. |  | TEMPERATURE SENSOR.                     |

ABBREVIATIONS:

- |       |                                  |        |                                 |
|-------|----------------------------------|--------|---------------------------------|
| AFF   | - ABOVE FINISHED FLOOR           | KW     | - KILOWATT                      |
| AHJ   | - AUTHORITY HAVING JURISDICTION  | L      | - LOUVER                        |
| ARCH  | - ARCHITECTURAL                  | LAT    | - LEAVING AIR TEMPERATURE       |
| BAL   | - BALANCE                        | LBS    | - POUNDS                        |
| BTU   | - BRITISH THERMAL UNIT           | LVG    | - LEAVING                       |
| CA    | - COMMISSIONING AGENT            | MAU    | - MAKEUP AIR UNIT               |
| CAP   | - CAPACITY                       | MFC    | - 1000 BTU PER HOUR             |
| CFM   | - CUBIC FEET PER MINUTE          | MCA    | - MINIMUM CIRCUIT AMPACITY      |
| CLG   | - COOLING                        | MFG    | - MANUFACTURER                  |
| CO    | - COMPANY                        | MIN    | - MINIMUM                       |
| CB    | - DRY BULB                       | MOCOP  | - MAXIMUM OVERCURRENT           |
| DI    | - DIAMETER                       | NO     | - NOISE CRITERIA                |
| DMPR  | - DAMPER                         | NO     | - NUMBER                        |
| DN    | - DOWN                           | OA     | - OUTSIDE AIR                   |
| DX    | - DIRECT EXPANSION               | OCPD   | - OVERCURRENT PROTECTION DEVICE |
| EA    | - EXHAUST AIR                    | PD     | - PRESSURE DROP                 |
| EAF   | - ENTERING AIR TEMPERATURE       | PH     | - PHASE                         |
| EER   | - ENERGY EFFICIENCY RATIO        | PLCS   | - PLACES                        |
| EF    | - EXHAUST FAN                    | PM     | - PROJECT MANAGER               |
| ELECT | - ELECTRICAL                     | PSIG   | - POUNDS PER SQUARE INCH        |
| ENGR  | - ENGINEER OR ENGINEERING        | RA     | - RETURN AIR                    |
| ENR   | - ENTERING                       | SP     | - STATIC PRESSURE               |
| EXH   | - EXHAUST                        | SGFT   | - SQUARE FEET                   |
| EXT   | - EXTERNAL                       | HP     | - HORSEPOWER                    |
| F     | - FEET                           | HTG    | - HEATING                       |
| FT    | - FEET                           | HVAC   | - HEATING, VENTILATION AND AIR  |
| HTG   | - HEATING                        | HZ     | - HERTZ                         |
| IECC  | - INTL. ENERGY CONSERVATION CODE | INCHES | - INCHES                        |
| IMC   | - INTERNATIONAL MECHANICAL CODE  | WG     | - WATER GAUGE                   |

TX PE FIRM # F16900  
1004 W FRONTAGE RD  
ALAMO, TX 78516  
956.787.FIRE

ISSUE FOR PERMITTING	DESCRIPTION	DATE	REV	REVISION SCHEDULE
0		21 JUL 2023		



21 AUG 2023

PROJECT: 23 03 08

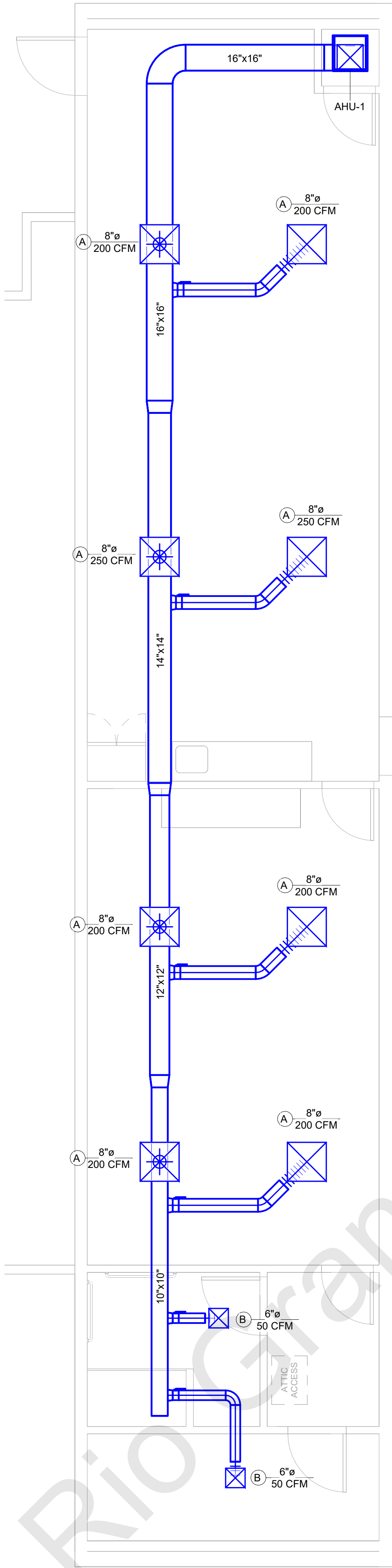
RGV LIVESTOCK SHOW INC.

1000 N Texas Ave  
Mercedes, TX 78570

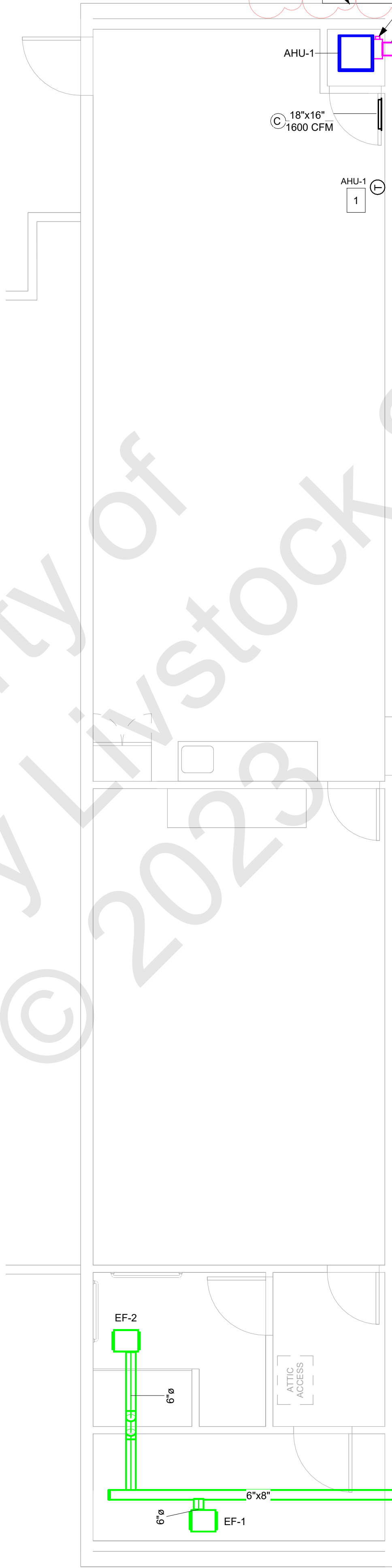
General Notes - Mech

M 0.0





1 SUPPLY PLAN  
1/4" = 1'-0"



2 RETURN PLAN  
1/4" = 1'-0"

### GENERAL NOTES:

- HVAC UNIT FAN SHALL BE PLACED IN "AUTO" RUN POSITION, NOT "CONTINUOUS RUN" POSITION. THERMOSTAT SHALL NOT BE SET BELOW 72 deg. F FOR COOLING.
- SYSTEM SHALL NOT BE OPERATED UNTIL BUILDING INTERIOR IS "FINISHED OUT". FIRST WEEK OF OPERATION, TEMPERATURE SHALL NOT BE SET BELOW 78 deg. F, SECOND WEEK: 76 deg. F, THIRD WEEK: 74 deg. F, BUILDING MUST BE SLOWLY BROUGHT TO OPERATING TEMPERATURE TO PREVENT THE FORMATION OF MOISTURE ON THE WALLS, CEILING, ETC.
- CONTRACTOR SHALL ENSURE REFRIGERANT LINE IS LESS THAN 60 FEET. IF OVER 60 FEET CONTRACTOR SHALL ADD A PUMP.
- CONTRACTOR SHALL PROVIDE AND INSTALL FIRE DAMPER(S) AT THE DUCT PENETRATIONS OF THE FIRE RATED PARTITIONS, AND SHALL SUPPLY AND INSTALL ACCESS DOOR(S) IN THE HORIZONTAL DUCTS WHERE THEY PENETRATE FIRE WALLS & BARRIERS ACCORDING TO 2018 IMC, SECTION 607.
- PROVIDE 1-1/2" HOUR RATING DYNAMIC FIRE DAMPER EQUAL TO "RUSKIN ADH-22" WITH DUCT ACCESS DOOR ("RUSKIN ADH-22" FOR RECTANGULAR DUCT OR "ACUDOR RD" FOR ROUND DUCT).
- SLEEVE ALL WALL PENETRATIONS PER SPECIFICATIONS. SEAL AROUND DUCTS & PIPING AT ALL WALLS, AC ROOMS AND WALL LOUVER PENETRATIONS WITH FIRE-PROOF CAULKING. PROVIDE ESCUTCHEON PLATES AND FLASHING AROUND PENETRATION, BOTH INSIDE AND OUTSIDE TO PROVIDE A FINISH LOOK.
- WHEREVER PENETRATING FIREWALL, CONTRACTOR SHALL PROVIDE 1-1/2" HOUR RATING, DYNAMIC FIRE DAMPER EQUAL TO RUSKIN DIBD2 AND DUCT ACCESS DOOR EQUAL TO RUSKIN ADH-22 FOR RECTANGULAR DUCT, ACUDOR RD FOR ROUND DUCT. TYP.
- CONTRACTOR SHALL ENSURE DESIGN MEETS NFPA 72 NATIONAL FIRE ALARM AND SIGNALING CODE.
- CONTRACTOR SHALL PROVIDE AND INSTALL DUCT MOUNTED SMOKE DETECTORS WITHIN THE RETURN DUCT FOR ANY SYSTEM RETURNING 2000CFM OR MORE AND A SUPPLY DUCT DETECTOR FOR ANY SYSTEM SUPPLYING 15,000 CFM OR MORE.
- CONTRACTOR SHALL ENSURE ALL DUCT MOUNTED SMOKE DETECTORS ARE PROVIDED WITH A REMOTE ALARM INDICATOR AND ARE LABELED TO INDICATE THE UNIT THEY SERVE. AN EXCEPTION TO THIS REQUIREMENT IS WHERE THE SPECIFIC IN-DUCT SMOKE DETECTOR IS ADDRESSABLE AND ITS LOCATION IS INDICATED AT THE FACP.
- CONTRACTOR SHALL ENSURE ALL DEDICATED BRANCH CIRCUITS ARE MECHANICALLY PROTECTED, HAVE A RED MARKING, ACCESSIBLE ONLY TO AUTHORIZED PERSONNEL, AND BE IDENTIFIED, IN RED, AS "FIRE ALARM CIRCUIT". CONTRACTOR SHALL ENSURE SMOKE DETECTORS ARE INSTALLED FURTHER THAN 3 FEET FROM ANY AIR SUPPLY OR RETURN GRILL. AUXILIARY RELAYS TO INITATE CONTROL OF FIRE SAFETY FUNCTIONS SHALL BE LOCATED WITHIN 3 FEET OF THE CONTROLLED CIRCUIT OR DEVICE.
- ALL CONDUIT AND CONDUIT STUBS MUST BE 1" UNLESS OTHERWISE NOTED ON DRAWINGS.
- OPERATIONS: ACTIVATION OF A COMPATIBLE SMOKE DETECTOR OR ANY NORMALLY OPEN FIRE ALARM INITIATING DEVICE ACTIVATES AUDIBLE AND VISUAL SIGNALING DEVICES, ILLUMINATES AND INDICATING LED, SOUNDS THE PIEZO SOUNDER AT THE FACP. ACTIVATES THE FACP ALARM RELAY AND OPERATES AN OPTIONAL MODULE USED TO NOTIFY A REMOTE STATION OR INITIATE AN AUXILIARY CONTROL FUNCTION.
- CONTRACTOR SHALL ENSURE ONE 120VAC DEDICATED BRANCH CIRCUIT IS INSTALLED FOR THE FIRE ALARM SYSTEM. CIRCUIT SHALL BE TERMINATED WITH 3' OF FLEX CABLE.
- CONTRACTOR SHALL ENSURE THE FIRE ALARM PANEL IS INSTALLED BY A TEXAS LICENSED FIRE ALARM COMPANY.
- CONTRACTOR SHALL PROVIDE AND INSTALL FIRE DAMPER(S) AT THE DUCT PENETRATIONS OF THE FIRE RATED PARTITIONS, AND SHALL SUPPLY AND INSTALL ACCESS DOOR(S) IN THE HORIZONTAL DUCTS WHERE THEY PENETRATE FIRE WALLS & BARRIERS ACCORDING TO 2018 IMC, SECTION 607.
- PROVIDE 1-1/2" HOUR RATING DYNAMIC FIRE DAMPER EQUAL TO "RUSKIN DIBD2", WITH DUCT ACCESS DOOR ("RUSKIN ADH-22" FOR RECTANGULAR DUCT OR "ACUDOR RD" FOR ROUND DUCT).
- SLEEVE ALL WALL PENETRATIONS PER SPECIFICATIONS. SEAL AROUND DUCTS & PIPING AT ALL WALLS, AC ROOMS AND WALL LOUVER PENETRATIONS WITH FIRE-PROOF CAULKING. PROVIDE ESCUTCHEON PLATES AND FLASHING AROUND PENETRATION, BOTH INSIDE AND OUTSIDE TO PROVIDE A FINISH LOOK.
- CONTRACTOR SHALL ENSURE THAT ALL DUCTS EXPOSED TO THE OUTSIDE AIR OR SUBJECTED TO A CORROSIVE ENVIRONMENT SHALL BE PROTECTED AGAINST CORROSION IN AN APPROVED MANNER.

### KEYED NOTES:

- CONTROLS FOR A/C UNIT WILL BE BY MEANS OF A 24 VOLT 7-DAY PROGRAMMABLE THERMOSTAT WITH HEAT-OFF-COOL AND FAN-ON-AUTO CAPABILITIES SHOWN ON A DIGITAL DISPLAY. MOUNT THERMOSTAT AT 48" ABOVE FINISHED FLOOR. PROVIDE WITH KEYED CLEAR PLASTIC COVER.
- WEATHERPROOF METAL WALL CAP FOR EXHAUST SYSTEM. MECHANICAL CONTRACTOR SHALL FIELD VERIFY EXACT LOCATION PRIOR TO INSTALLATION.
- WEATHERPROOF METAL WALL CAP FOR OUTSIDE AIR SYSTEM. MECHANICAL CONTRACTOR SHALL FIELD VERIFY EXACT LOCATION PRIOR TO INSTALLATION.
- PROVIDE MANUAL VOLUME DAMPERS ON OUTSIDE AIR DUCT.
- CONTRACTOR SHALL PROVIDE 6" CONCRETE PAD FOR CONDENSING UNIT. COORDINATE EXACT LOCATION WITH OTHER TRADES PRIOR TO BIDDING.



TX PE FIRM # F16900  
1004 W FRONTAGE RD  
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2015 INTERNATIONAL MECHANICAL CODE 2015 INTERNATIONAL PLUMBING CODE 2014 NATIONAL ELECTRICAL CODE			
1	RELOCATED CUT TO SIDE OF BUILDING	21 AUG 2023	DATE
0	ISSUE FOR PERMITTING	21 JUL 2023	DATE
REV	DESCRIPTION		REVISION SCHEDULE



21 AUG 2023

PROJECT: 23 03 08

**RGV LIVESTOCK SHOW INC.**

1000 N Texas Ave  
Mercedes, TX 78570

Supply/Return - Mech

**M 1.0**









GENERAL NOTES - PLUMBING

- A. PLUMBING CONDITIONS FOR PLUMBING WORK.
- A.1. POLY WORK UNDER THIS CONTRACT SHALL BE ACCOMPLISHED IN STRICT ACCORDANCE WITH FEDERAL, STATE, AND LOCAL CODES. WHERE THESE PLANS AND SPECIFICATIONS ARE IN CONFLICT WITH SUCH CODES, THE CODES SHALL GOVERN. BIDS SUBMITTED BY CONTRACTOR SHALL INCLUDE WORK REQUIRED TO COMPLY WITH ALL SUCH CODES. ANY ITEMS REQUIRED AND/OR MISSED IN THESE BASIS OF DESIGN DOCUMENT, SHALL BE PROVIDED AND INSTALLED BY CONTRACTOR AT CONTRACTORS' EXPENSE AND AND/OR DESIGN TEAM. CONTRACTOR SHALL PAY FOR AND OBTAIN ALL NECESSARY CONSTRUCTION PERMITS AND CERTIFICATES OF INSPECTION.
- A.2. CONTRACTOR SHALL STUDY CONTRACT DOCUMENTS, FULLY UNDERSTAND AND ACCEPT THE BASIS OF DESIGN AND SCOPE OF WORK. SUBMISSION OF BID INDICATES CONTRACTOR'S COMPLETE APPROVAL AND ACCEPTANCE OF CONSTRUCTION DOCUMENTS.
- A.3. CONTRACTOR SHALL USE ADEQUATE NUMBERS OF SKILLED WORKMEN, TRAINED LICENSED AND EXPERIENCED IN COMMERCIAL PLUMBING, AND WHO ARE FAMILIAR WITH THE CONSTRUCTION DOCUMENTS AND METHODS OF PERFORMING THE WORK REQUIRED.
- A.4. CONTRACTOR SHALL PROVIDE A MINIMUM ONE (1) YEAR WARRANTY ON ALL LABOR AND MATERIALS INSTALLED. CONTRACTOR SHALL MAKE ALL WARRANTIED REPAIRS OR REPLACEMENT WITHIN SEVEN (7) CALENDAR DAYS, AT NO ADDITIONAL COST TO THE OWNER.
- B. BASIS OF DESIGN:
- B.1. ALL CONSTRUCTION DOCUMENTS PROVIDED BY OWNER, INCLUDING ENGINEERING DRAWINGS, NOTES, SCHEDULE, DETAILS, CALCULATIONS AND SPECIFICATIONS PROVIDED. ALONG WITH EQUIPMENT MANUFACTURER'S DRAWINGS AND SPECIFICATIONS. FROM THE BASIS OF DESIGN AND GENERALLY SCHEMATIC IN NATURE. PIPING, FIXTURES AND EQUIPMENT SHOWN ON DRAWINGS IS UNDERSTOOD TO BE THE GENERAL ARRANGEMENT ONLY, TO BE FIELD ADJUSTED AS REQUIRED.
- B.2. DRAWINGS DO NOT SHOW EVERY DETAIL OR ITEM REQUIRED FOR FIXTURE AND EQUIPMENT INSTALLATIONS. REFER TO ALL EQUIPMENT MANUFACTURER'S INSTRUCTIONS FOR ADDITIONAL REQUIRED PARTS AND ACCESSORIES NEEDED FOR COMPLETE INSTALLATIONS.
- B.3. DOWNVERT ELEVATIONS (IE) OF SANITARY DRAIN PIPING, SHOWN ON PLANS, IS ESTIMATED MINIMUM DEPTH BELOW FINISHED FLOOR ONLY, COORDINATE W/CIVIL FOR ADDITIONAL INFORMATION NOT SHOWN. THESE DRAWINGS ARE INTENDED TO GENERALLY SHOW THE EXISTING BUILDING AND PLUMBING SYSTEMS MODIFICATION REQUIRED FOR THIS PROJECT. INFORMATION PROVIDED INCLUDES LOCATION, QUANTITY, TYPE, SIZE, CAPACITY AND FUNCTION OF SPECIFIC COMPONENTS OF THE NEW/MODIFIED PLUMBING SYSTEMS TO BE PROVIDED BY CONTRACTOR.
- B.5. FOR CLARITY, SEE PLUMBING FIXTURE AND DRAIN SCHEDULES FOR ALL PIPING CONNECTIONS SIZES NOT SHOWN ON PLANS.
- B.6. INCIDENTAL MODIFICATIONS FOR DEMOLITION OF EXISTING PLUMBING SYSTEMS AND COMPONENTS AS REQUIRED FOR INSTALLATION OF NEW WORK IS INCLUDED AS PART OF THE PROJECT. WEATHER SHOWN ON PLANS OR NOT. CONTRACTOR SHALL FIELD VERIFY ALL REQUIREMENTS PRIOR TO BIDDING PROJECT.
- B.7. CEILING TILE AND GRID REMOVAL, MODIFICATIONS AND REINSTALLATION AS REQUIRED FOR WORK SHOWN SHALL BE PROVIDED BY OTHERS AND IS NOT CONSIDERED PART OF THE PLUMBING CONTRACTOR'S SCOPE OF WORK. COORDINATE WITH OWNER TO PROVIDE THE REQUIRED WORK ACCESS ABOVE ALL LAY-IN CEILINGS.
- B.8. RELOCATION OF EXISTING BUILDING SYSTEMS AND EQUIPMENT, SUCH AS LIGHT FIXTURES, FIRE SPRINKLER PIPING AND HEADS, SMOKE DETECTORS, ELECTRICAL CONDUITS, DUCTWORK, ETC., AS REQUIRED BY FOR INSTALLATION OF NEW WORK IS TO BE PROVIDED BY OTHERS AND IS NOT CONSIDERED PART OF THE PLUMBING CONTRACTOR'S SCOPE OF WORK. COORDINATE WITH OWNER TO PROVIDE THE REQUIRED INTERFERENCE REMOVAL OF OTHER TRADES.
- B.9. THE EXISTING BUILDING PLUMBING SYSTEMS ARE INTENDED TO BE REUSED AS SHOWN ON PLANS OR AS INSTALLED IF NOT SHOWN ON PLANS. ALL EXISTING PLUMBING SYSTEMS AND EQUIPMENT SHOWN ON PLANS IS FOR REFERENCE ONLY AND MAY BE DIFFERENT IN THE FIELD. CONTRACTOR SHALL FIELD SURVEY, TEST AND INSPECT ALL EXISTING PLUMBING SYSTEMS PRIOR TO BIDDING TO ENSURE HE UNDERSTANDS AND ACCEPTS ALL EXISTING CONDITIONS.
- B.10. THE EXISTING GAS EQUIPMENT SHOWN ON PLANS ARE FOR REFERENCE ONLY TO ASSIST WITH MODIFICATIONS TO BE PROVIDED BY THE PLUMBING CONTRACTOR AND GAS UTILITY COMPANY. FIELD VERIFY ALL ACTUAL GAS LOADS PRIOR TO COORDINATING MODIFICATIONS WITH GAS UTILITY. GAS DESIGN, SIZING, LAYOUT, AND MODIFICATIONS ESTIMATES SHOWN ON PLANS ARE STRICTLY PRELIMINARY.
- C. SCOPE OF WORK:
- C.1. FURNISH ALL REQUIRED LABOR, MATERIALS, EQUIPMENT, TOOLS AND INCIDENTALS NECESSARY TO PERFORM THE WORK DESCRIBED IN THE CONSTRUCTION DOCUMENTS. CONTRACTOR SHALL MAKE ALL INSTALLATIONS ACCORDING TO MANUFACTURER'S INSTRUCTIONS AND SPECIFICATION, IN ADDITION TO THOSE SHOWN ON PLANS.
- C.2. INSTALL COMPLETE AND OPERABLE PLUMBING SYSTEMS AS DESCRIBED BY THE BASIS OF DESIGN DOCUMENTS. INCIDENTALS ITEMS NOT SPECIFIED, BUT WHICH ARE ESSENTIAL FOR THE PROPER OPERATION OF SPECIFIED SYSTEMS AND EQUIPMENT, ARE INCLUDED IN THE SCOPE OF WORK AND SHALL BE PROVIDED BY CONTRACTOR AT NO ADDITIONAL COST.
- C.3. COMPLY WITH COMMISSIONING PLAN SHOWN ON DRAWINGS AND AS IMPLEMENTED BY OWNER'S DESIGNATED 'COMMISSIONING AGENT/AUTHORITY' (CA).
- C.4. PROVIDE STRUCTURAL ENGINEERING DESIGN, DRAWINGS AND MODIFICATIONS FOR INSTALLATION OF PLUMBING EQUIPMENT OVER 100 LBS., UTILIZING THE BUILDING STRUCTURE OR FOUNDATION FOR SUPPORT, UNLESS PROVIDED IN ADVANCE BY OWNER.
- D. CODE COMPLIANCE:
- D.1. ALL WORK SHALL BE PREPARED IN ACCORDANCE WITH ALL LOCALLY ADOPTED MECHANICAL FUEL GAS AND PLUMBING CODES, ACCORDING TO THE LOCAL AUTHORITY HAVING JURISDICTION(AHJ), THE BASIS OF DESIGN IS INTENDED TO COMPLY WITH ALL LOCAL CODES ENFORCED BY THE AHJ OVER THOSE PROJECTS. THE CONTRACTOR SHALL COMPLY WITH ALL REQUIREMENTS MADE BY THE AHJ, WHETHER SPECIFICALLY SHOWN ON PLANS OR NOT.
- E. DISCREPANCIES:
- E.1. IN THE CASE OF A DISCREPANCY BETWEEN DRAWINGS, SPECIFICATIONS OR MANUFACTURER'S REQUIREMENTS, THE MOST STRINGENT SHALL APPLY AND BE COMPLIED WITH BY THE CONTRACTOR.
- E.2. IN THE CASE IF A DISCREPANCY BETWEEN CODES AND THE CONSTRUCTION DOCUMENTS OR MANUFACTURER'S REQUIREMENTS, THE AHJ SHALL DETERMINE WHICH SHOULD BE COMPLIED WITH BY THE CONTRACTOR
- F. JOBSITE CONDITIONS:
- F.1. CONTRACTOR SHALL EXAMINE THE JOBSITE PRIOR TO BIDDING AND FULLY UNDERSTAND THE CONDITIONS UNDER WHICH THE WORK IS TO BE PERFORMED. BY SUBMITTING A BID FOR WORK, CONTRACTOR ACCEPTS ALL JOB CONDITIONS AS-IS WITHOUT EXTRA COMPENSATION.
- F.2. CONTRACTOR SHALL LOCATE AND UNCOVER THE EXISTING UTILITY SERVICES, INCLUDING GAS, WATER AND SEWER PIPING, TO DETERMINE EXISTING SIZE AND DEPTH OF EACH PRIOR TO STARTING WORK. SERVICE CONNECTIONS SHOWN ON THE PLANS ARE PRELIMINARY ONLY.
- G. PERMITS AND FEES:
- G.1. CONTRACTOR SHALL OBTAIN THE NECESSARY PERMITS, LICENSES, AND CERTIFICATIONS REQUIRED BY THE AHJ AND PAY FOR ALL PERMITTING FEES.
- H. COORDINATION WITH OTHER TRADES:
- H.1. CONTRACTOR SHALL COORDINATE WITH OTHER TRADES TO AVOID INTERFERENCES, PROPERLY SEQUENCE INSTALLATIONS, AND PROVIDE MANUFACTURER'S REQUIRED SERVICE CLEARANCES. WHERE REQUIRED, CONTRACTOR SHALL MAKE THE ADJUSTMENTS TO PLUMBING SYSTEMS AND OR INSTALLATION SCHEDULE.
- H.2. ALL FUEL GAS CONNECTIONS TO HVAC EQUIPMENT, INCLUDING SERVICE VALVES REGULATORS, FLEXIBLE COUPLINGS, AND OTHER FITTINGS SHALL BE PROVIDED BY PLUMBING CONTRACTOR AS REQUIRED BY MANUFACTURER'S INSTALLATION INSTRUCTIONS, OBTAIN COMPLETE AND FINAL FUEL PIPING REQUIREMENTS FROM EQUIPMENT SUPPLIER.
- H.3. ALL ELECTRICAL CONNECTIONS TO PLUMBING FIXTURES AND EQUIPMENT SHALL BE PROVIDED BY ELECTRICAL CONTRACTOR, INCLUDING DISCONNECTS, ENCLOSURES REQUIREMENTS FOR EQUIPMENT FURNISHED.
- H.4. COORDINATE WITH ROOFING CONTRACTOR TO SEAL ALL PIPING PENETRATION THROUGH ROOF PER ARCHITECTURAL ROOFING SPECIFICATIONS, PROVIDE ALL WEATHERPROOFING REQUIRED.
- I. UTILITY CONNECTIONS:
- I.1. COORDINATE WITH UTILITY TO DETERMINE ACTUAL REQUIREMENTS FOR NEW SERVICE CONNECTION SAND METERING. INSTALL ALL UTILITY CONNECTIONS AS REQUIRED BY UTILITY SPECIFICATIONS.
- I.2. PAY ALL UTILITY REQUIRED FEES FOR SERVICE CONNECTIONS OR MODIFICATIONS SHOWN ON PLANS.
- J. CONTRACTOR FURNISHED EQUIPMENT & MATERIALS:
- J.1. SHALL BE NEW, MANUFACTURED CERTIFIED TO COMPLY WITH THE BASIS OF DESIGN, FREE OF DEFECT AND COVERED UNDER A MINIMUM 1-YEAR FACTORY WARRANTY, UNLESS SPECIFIED DIFFERENTLY ELSEWHERE.
- J.2. SHALL BE AS SPECIFIED IN CONSTRUCTION DOCUMENTS OR AN ACCEPTABLE SUBSTITUTION OF EQUAL ITEM. ALL SUBSTITUTIONS MUST BE APPROVED THROUGH THE COMMISSIONING PROCESS TO BE ACCEPTABLE.
- J.3. SHALL BE COMMERCIAL GRADE EQUIPMENT AND MATERIALS, UNLESS OTHERWISE INDICATED IN CONSTRUCTION DOCUMENTS.
- K. CUTTING AND PATCHING:
- K.1. WHERE CUTTING AND PATCHING ARE REQUIRED TO INSTALL PLUMBING SYSTEMS, CONTRACTOR SHALL PROVIDE THE CUTTING SERVICE AND DO SO AS TO MINIMIZE THE AMOUNT OF OPENING. AFTER PLUMBING SYSTEMS HAVE BEEN INSTALLED, PATCH ALL OPENINGS TO MATCH ADJACENT FINISHED SURFACES.
- K.2. FINISHED TEXTURING AND PAINTING TO BE PROVIDED BY OTHERS BUT AT THE PLUMBING CONTRACTORS EXPENSES.
- L. PIPING AND SUPPORTS:
- L.1. OPEN PIPING SYSTEMS, INCLUDING FLOOR DRAINS, FLOOR SINKS, HUB DRAINS, ETC., SHALL BE CAPPED OR PLUGGED DURING ALL CONSTRUCTION TO PREVENT DAMAGE AND THE ENTRANCE OF FOREIGN MATERIALS. REMOVE ALL PROTECTIVE COVERINGS UPON COMPLETION OF ALL WORK.

- L.2. COORDINATE WITH HVAC CONTRACTOR TO MAINTAIN A MINIMUM OF TEN (10) FEET OF SEPARATION BETWEEN ALL VENT STACKS TERMINATIONS AND ALL OUTDOOR AIR INTAKES.
- L.3. HOLD ALL PIPING TIGHT AGAINST STRUCTURE TO AVOID DAMAGE AND INTERFERENCE FROM OTHER TRADES. RUN ALL PIPING IN A NEAT AND WORKMAN LIKE MANNER PARALLEL TO BUILDING LINES.
- L.4. PROVIDE ALL REQUIRED PIPING HANGERS AND SUPPORTS WITH PROPER SPACING PER CODE REQUIREMENTS. GROUP PARALLEL RUNS OF PIPING TOGETHER ON COMMON HANGERS AND SUPPORTS TO MINIMIZE SPACE WHEREVER POSSIBLE.
- L.5. MAINTAIN MINIMUM 1/4" PER FOOT SLOPE TOWARDS DRAIN FOR BOTH WASTE AND VENT PIPING. ROUT ALL DRAIN PIPING AS NEEDED TO MINIMIZE DEPTH OF BUILDING SEWER. DRAIN PIPING ROUTING SHOWN ON PLANS IS SCHEMATIC LAYOUT, PLUMBING CONTRACTOR SHALL DETERMINE ACTUAL ROUTING PER CODE AND AS TO MINIMIZE COST TO OWNER.
- L.6. PROVIDE INSULATION FOR ALL PLUMBING SYSTEMS AND EQUIPMENT AS REQUIRED FOR PREVENTION OF HEAT LOSS AND/OR FREEZING, REGARDLESS IF SHOWN ON PLANS OR NOT.
- M. EQUIPMENT INSTALLATIONS:
- M.1. WHERE REQUIRED FOR EQUIPMENT PIPING CONNECTIONS, PROVIDE STEEL CHANNEL SUPPORTS STANDS FOR MOUNTING OF PIPING, VALVES, AND FITTINGS. PROPERLY SECURE SUPPORTS TO FLOORS OR WALLS.
- M.2. ENSURE THAT SERVICE CLEARANCES ARE NOT BLOCKED BY ROUTING OF PIPING OR SUPPORT STRUCTURES AT ALL EQUIPMENT CONNECTIONS. COORDINATE WITH HVAC CONTRACTOR AND OR EQUIPMENT PROVIDER TO DETERMINE REQUIRED CLEARANCES AND SERVICE WORK AREAS.
- M.3. PROVIDE WATER HAMMER ARRESTERS ON HOT AND COLD-WATER SUPPLY PIPING FOR ALL WASHING MACHINES, DISHWASHERS, FLUSH VALVES, AND ANY OTHER EQUIPMENT WITH QUICK CLOSING VALVES, AND WHERE REQUIRED BY THE LOCAL AUTHORITY HAVING JURISDICTION. FOR CLARITY, ARRESTORS MAY NOT BE SHOWN ON PLANS.
- M.4. PROVIDE TRAP PRIMERS AND WATER SUPPLY PIPING ON ALL FLOOR DRAINS. FOR CLARITY, TRAP PRIMERS MAY NOT BE SHOWN ON PLANS.
- M.5. INSTALL PUMP AND OTHER VIBRATING EQUIPMENT IN A MANNER THAT MINIMIZES NOISE LEVELS. MAKE ALL POSSIBLE ADJUSTMENTS TO REDUCE NOISE TO ACCEPTABLE LEVELS. SQUEAKS, SQUEALING AND RATTLING ARE NOT ACCEPTABLE.
- N. EXCAVATIONS:
- N.1. IT IS THE PLUMBING CONTRACTORS JOB TO CALL FOR A DIG TEST.
- N.2. PERFORM EXCAVATIONS CAUTIOUSLY TO AVOID DISRUPTION OR DAMAGE TO UNDERGROUND UTILITIES. HAVE ALL UNDERGROUND UTILITIES LOCATED AND MARKED. PRIOR TO DIGGING. UTILIZE HAND DIGGING WHEN NEAR BURIED PIPING, CABLES, GAS LINES, ETC. ANY AND ALL DAMAGE TO UNDERGROUND UTILITIES WILL BE REPAIRED BY OTHERS BUT AT THE PLUMBING CONTRACTORS EXPENSE.
- N.3. E.C.COMBINE UNDERGROUND PIPING INTO COMMON TRENCHES WHERE POSSIBLE TO MINIMIZE TRENCHING. PIPE PROFILES SHOWN ON PLANS IS PRELIMINARY. SEE CIVIL ENGINEERING PLANS FOR FINAL ROUTING, EQUIPMENT AND UTILITY CONNECTION LOCATIONS.
- O. DELIVERY, STORAGE AND PROTECTION:
- O.1. CONTRACTOR SHALL FURNISH DELIVERY OF ALL REQUIRED MATERIALS AND EQUIPMENT TO BE INSTALLED ABOVE ALL LAY-IN EQUIPMENT IS UNLADGED AT 170-TLIF. OR EQUAL. ADJUST AS NEEDED TO FORM THE FACTORY. DAMAGED ITEMS SHOULD BE RETURNED TO THE FACTORY FOR REPLACEMENTS AT NO ADDITIONAL COST TO THE OWNER.
- O.2. WHERE REQUIRED, CONTRACTOR SHALL PROVIDE CRANE AND OR ALL RIGGING EQUIPMENT NEEDED TO INSTALL PLUMBING EQUIPMENT IN PLACE AS SHOWN ON PLANS.
- O.3. CONTRACTOR SHALL ADVISE OWNER TO OBTAIN ACCEPTABLE JOBSITE STORAGE LOCATION FOR MATERIALS. CONTRACTOR SHALL COMPLY WITH OWNER REQUIREMENTS FOR PROTECTION, ACCESS AND SECURITY OF MATERIALS STORED ONSITE.
- O.4. CONTRACTOR SHALL TAKE ALL REQUIRED PRECAUTIONS TO PROPERLY PROTECT ALL STORED MATERIALS FORM WEATHER, DAMAGE, THEFT OR ANY OTHER HAZARD PRESENT AT THE STORAGE LOCATION.
- P. SPARE PARTS:
- P.1. PRIOR TO COMPLETION OF WORK, CONTRACTOR SHALL PROVIDE OWNER WITH ALL SPARE PARTS PROVIDED FROM FACTORY WITH ANY EQUIPMENT PURCHASED FOR THE PROJECT.
- COMMISSIONING PLAN - PLUMBING:**
- A. COMMISSIONING AGENT
- A.1. THE OWNER'S PROJECT MANAGER OR OTHER PERSON DESIGNATED SHALL FUNCTION AS THE COMMISSIONING AGENT (CA) FOR THE PROJECT.
- B. SUBMITTALS
- B.1. IN ORDER TO OBTAIN OFFICIAL APPROVAL PRIOR TO ORDERING OF EQUIPMENT, CONTRACTOR SHALL PROVIDE THE CA WITH MANUFACTURE'S SUBMITTAL DATA ON ALL NEW EQUIPMENT TO BE FURNISHED. PRE-CONSTRUCTION SUBMITTALS SHALL INCLUDE MANUFACTURER'S SPECIFICATIONS, SHOP DRAWINGS AND MATERIALS SUBMITTALS FOR THE FOLLOWING MAJOR COMPONENTS AND EQUIPMENT PRIOR TO ORDERING.
- B.1.1. PLUMBING FIXTURES, PLUMBING FIXTURE ACCESSORIES, FAUCETS, VALVES, ETC. WATER HEATERS, HOT WATER CIRCULATION PUMPS, PIPING (HOT, DOMESTIC, AND NATURAL GAS)
- C. FIELD INSPECTIONS:
- C.1. WHERE REQUIRED BY CA, COORDINATE FIELD INSPECTIONS OF CRITICAL CONSTRUCTION DETAILS FOR APPROVAL, PRIOR TO PROCEEDING WITH ADDITIONAL WORK. AT A MINIMUM, FIELD INSPECTIONS SHALL INCLUDE:
- C.1.1. PIPING SYSTEM STARTUP AND TESTING, EQUIPMENT STARTUP AND TESTING, OPERATIONS AND MAINTENANCE TRAINING
- D. STARTUP AND TESTING:
- D.1. PRESSURE TEST THE WASTE/VENT PIPING SYSTEMS BY PLUGGING BUILDING MAIN DRAIN CONNECTION TO SEWER, AND FILLING ENTIRE SYSTEM FULL OF WATER FROM LOWEST POINT TO HIGHEST POINT.
- D.2. PRESSURE TEST THE POTABLE WATER SYSTEMS TO MINIMUM OF 60 PSIG, USING POTABLE WATER OR AIR. FOR A MINIMUM OF 60 MINUTES WITHOUT LEAKS. FLUSH TO REMOVE DEBRIS AND PROVIDE DISINFECTION AS REQUIRED BY THE AUTHORITY HAVING JURISDICTION.
- D.3. FOLLOW ALL EQUIPMENT MANUFACTURERS INSTALLATION INSTRUCTIONS TO PROVIDE COMPLETE STARTUP AND TESTING OF NEW PLUMBING EQUIPMENT. MAKE MODIFICATION ADJUSTMENTS AS REQUIRED TO MEET PERFORMANCE SPECIFICATIONS ON PLANS. PROVIDE THE CA WITH COMPLETED MANUFACTURE'S STARTUP SHEETS AS RECORD OF SUCCESSFUL INSTALLATION. PROVIDE STARTUP FOR THE FOLLOWING:
- D.3.1. NATURAL GAS FIRED WATER HEATERS, CIRCULATION PUMPS, NATURAL GAS FIRED DRIERS
- E. O&M DOCUMENTATION:
- E.1. PROVIDE THE CA WITH A MINIMUM OF TWO (2) SETS OF BINDERS FOR THE PROJECT. EACH BINDER SHOULD INCLUDE THE FOLLOWING ITEMS:
- E.1.1. AS-BUILD DRAWING MARKUPS SHOWING MODIFICATIONS WHERE INSTALLATIONS ARE DIFFERENT THAN DESIGN DRAWINGS.
- E.1.2. EQUIPMENT MANUFACTURES' INSTALLATION, OPERATION MAINTENANCE MANUALS.
- E.1.3. COMPLETED MANUFACTURE'S EQUIPMENT STARTUP SHEETS.
- E.1.4. EQUIPMENT SET-POINTS DETERMINED AT STARTUP.
- E.1.5. EQUIPMENT WARRANTIES
- F. TRAINING:
- F.1. PROVIDE A MINIMUM OF ONE (1) TRAINING SESSION OF NO LESS THAN TWO (2) HOURS OF ON-SITE TRAINING FOR OWNER'S OPERATIONAL STAFF UPON COMPLETION OF ALL STARTUP WORK. TRAINING SHALL COVER OPERATIONS AND MAINTENANCE ON ALL NEW PLUMBING SYSTEMS AND EQUIPMENT INSTALLED BY CONTRACTOR. TRAINING SHALL UTILIZE MANUFACTURER'S OPERATIONS AND MAINTENANCE MANUALS AS BASIS FOR INSTRUCTION.
- EQUIPMENT & MATERIALS - PLUMBING**
- A. NATURAL GAS EQUIPMENT:
- A.1. GAS PIPING: BLACK STEEL, CONFIRMING TO ASTM A 53 OR ASTM A 106. SCHEDULE 40 WITH SCREWED OR WELDED JOINTS AND FITTINGS OF SAME MATERIAL AS PIPING. SCREWED FITTINGS SHALL USE JOINT TAPE ON ALL MALE THREADS WELDED JOINTS SHALL USE AN APPROVED METAL FILLER MATERIAL FOR NATURAL GAS.
- A.2. GAS COCK: FLAT TEE HEAD GAS PLUG VALVE. BRONZE BODY, RATED TO 2 PSIG, FNPT THREADED, AS MANUFACTURED BY A.Y. MCDONALD OR EQUALS. SELECT VALVE SUITABLE FOR LOCATION WHERE INSTALLED.
- A.3. VENT PIPING: SHALL BE AS SPECIFIED BY GAS FIRED EQUIPMENT MANUFACTURER'S INSTRUCTIONS AS FOLLOWS:
- A.3.1. TYPE B, HEAVY-GAUGE, DOUBLE WALL AIR-INSULATED PIPE, GALVANIZED STEEL OUTER WALL, ALUMINUM INNER WALL, MANUFACTURED BY AMERVENT, OR EQUAL. FITTINGS AND ACCESSORIES SHALL BE BY SAME MANUFACTURER AS VENT PIPING.
- A.3.2. SCHEDULE 40 PVC PIPING AND FITTINGS AS REQUIRED BY MANUFACTURER'S INSTRUCTIONS. PROVIDE FACTORY WALL CAP AT TERMINATION. PROVIDE CONDENSATE DRAIN PIPING AND FITTINGS AND ROUTE TO APPROVED DRAIN LOCATIONS, PER MANUFACTURE'S INSTRUCTIONS. WHERE REQUIRED FOR PROPER DRAINAGE, PROVIDE FACTORY CONDENSATE DRAIN PUMP AND CONDENSATE NEUTRALIZER.
- B. DOMESTIC WATER PIPING :
- B.1. WATER SERVICE PIPING (OUTSIDE BUILDING): MINIMUM 160 PSI PRESSURE RATED, CONFORMING TO NSF 61 STANDARDS. OF THE FOLLOWING APPROVED TYPES:
- B.1.1. TYPE K COPPER, WITH JOINTS AND FITTINGS OF SAME MATERIAL. SOLDER JOINTS SHALL HAVE A MAXIMUM OF 8% LEAD CONTENT.

- B.1.2. GALVANIZED STEEL PIPING,JOINTS AND FITTINGS.
- B.1.3. PVC PLASTIC PIPE AND FITTINGS WITH SLIP OR SCREWED JOINTS AND FITTINGS OF SAME MATERIAL.
- B.1.4. POLYETHYLENE (PE) PLASTIC TUBING, JOINTS, AND FITTINGS.
- B.1.5. POLYPROPYLENE (PP) PLASTIC PIPE OR TUBING, JOINTS AND FITTINGS.
- B.2. WATER DISTRIBUTION PIPING (INSIDE BUILDING): MINIMUM 100 PSI PRESSURE RATED, CONFORMING TO NSF 61 STANDARDS OF THE FOLLOWING APPROVED TYPES:
- B.2.1. TYPE L OR M COPPER, WITH JOINTS AND FITTINGS OF SAME MATERIAL. SOLDER JOINTS SHALL BE TYPE L OR M COPPER, WITH JOINTS AND FITTINGS OF SAME MATERIAL.
- B.2.2. GALVANIZED STEEL PIPING, JOINTS AND FITTINGS.
- B.2.3. CPVC PLASTIC PIPE AND FITTINGS WITH SLIP OR SCREWED JOINTS AND FITTINGS OF SAME MATERIAL.
- B.2.4. PEX PLASTIC TUBING AND FITTINGS.
- C. SANITARY WASTE AND VENT PIPING: CAN UTILIZE ANY OF THE FOLLOWING PIPING MATERIAL TYPES DEPENDING UPON THE APPLICATION:
- C.1. BUILDING DRAINAGE (INSIDE BUILDING):
- C.1.1. SCHEDULE 40 ABS PLASTIC PIPE AND FITTINGS
- C.1.2. CAST IRON PIPE AND FITTINGS
- C.1.3. SCHEDULE 40 PVC PLASTIC PIPING AND FITTINGS
- C.2. BUILDING SEWER(OUTSIDE BUILDING):
- C.2.1. SCHEDULE 40 ABS PLASTIC PIPE AND FITTINGS
- C.2.2. CAST IRON PIPE AND FITTINGS
- C.2.3. SCHEDULE 40 PVC PLASTIC PIPING AND FITTINGS
- D. PIPING INSULATION:
- D.1. MATERIALS: PIPING INSULATION MATERIALS SHALL BE ONE OF THE FOLLOWING TYPES:
- D.1.1. POLYETHYLENE FOAM, SELF-SEALING TYPE
- D.1.2. RUBBER, SELF-SEALING TYPE/MOLDED FIBERGLASS WITH ALL SERVICE JACKET
- D.2. DOMESTIC HW PIPING:
- D.2.1. PROVIDE PIPING INSULATION ON ALL DOMESTIC HOT WATER PIPING, AS WELL AS ALL DOMESTIC WATER PIPING INSTALLED IN EXTERIOR WALLS, ATTICS OR UNCONDITIONED SPACES. INSULATION SHALL BE MINIMUM R-4 RATED, WITH MINIMUM 1" THICKNESS ON HW PIPING UP THRU 1-1/4" AND MINIMUM 1/2" ON PIPING OVER 1-1/4".
- D.3. LAVATORIES:
- D.3.1. INSULATE ALL EXPOSED DRAIN AND WATER PIPING UNDER LAVATORIES WITH FACTORY COVERS AS MANUFACTURED BY TRUEBRU LAVGUARD, MODEL #102 OR EQUAL.
- E. PLUMBING FIXTURES AND ACCESSORIES:
- E.1. AS SCHEDULED ON DRAWINGS OR APPROVED EQUAL. FURNISH AND INSTALL PER MANUFACTURER'S INSTRUCTIONS. PROVIDE ALL REQUIRED FITTINGS AND ACCESSORIES FOR A COMPLETE AND FUNCTIONING FIXTURE, WHETHER SPECIFIED ON PLANS OR NOT.
- E.1.1. POINT OF USE MIXING VALVES:
- E.1.2. THERMOSTATIC TEMPERATURE LIMITING DEVICE USED TO SUPPLY SINGLE OUTLET, AS MANUFACTURED BY THERM-O-JET, MODEL #170-TLIF, OR EQUAL. ADJUST AS NEEDED TO MAINTAIN MAXIMUM WATER TEMPERATURE AT OUTLET BELOW 120-F.
- E.2. WATER HEATERS:
- E.2.1. TYPE, STORAGE CAPACITY (IF NOT TANKLESS), AND PERFORMANCE AS SCHEDULED ON DRAWINGS OR APPROVED EQUAL. INSTALL PER MANUFACTURER'S INSTRUCTIONS. PROVIDE ALL ACCESSORIES AND FITTINGS AS SHOWN ON THE PLANS, INCLUDING THE FOLLOWING ACCESSORIES:
- E.3. EXPANSION TANK:
- E.3.1. ANTI-MICROBIAL LINER, WATER DIFFUSER, PRE-CHARGED TO MATCH WATER SERVICE PRESSURE, DEEP DRAWN STEEL DOMES, THICK RUBBER DIAPHRAGM, STAINLESS STEEL SYSTEM CONNECTION. NSF61 APPROVED, AS MANUFACTURED BY AMITROL, MODEL THERM-X-TROL, OR EQUAL. SIZING SHALL BE PROVIDED BY VENDOR BASED ON WATER HEATER CAPACITY.
- E.4. VACUUM BREAKER:
- E.4.1. LOW PROFILE, ALL BRASS BODY, PROTECTIVE CAP, AS MANUFACTURED BY WATTS MODEL #N36-M1 OR EQUAL. LINE SIZED FOR COLD WATER INLET PIPING.
- E.5. T&P RELIEF VALVE:
- E.5.1. TEMPERATURE AND PRESSURE RELIEF VALVE, LEAD-FREE COPPER ALLOY BODY WITH NPT MALE INLET AND NPT FEMALE OUTLET CONNECTIONS. UNIQUE THERMOSTAT WITH SPECIAL THERMO-BONDED COATING, AND A TEST LEVER. TEMPERATURE RELIEF:210°F, PRESSURE RELIEF RANGE: 75PSI TO 150PSI, AS MANUFACTURED BY WATTS, SERIES LF100XL.
- E.6. HW RECIRCULATION PUMP:
- E.6.1. IN-LINE CENTRIFUGAL PUMP, ELECTRONIC CONTROLS CAPABLE OF STARTING/STOPPING THE PUMP AS THE DEMAND FOR HOT WATER COMES AND GOES, AND STOPPING PUMP WITHIN 5 MINUTES OF END OF HEATING CYCLE. INCLUDE ALL FACTORY REMOTE TEMPERATURE SENSORS AND ACCESSORIES REQUIRED TO COMPLY WITH IECC (AHJ APPROVED YEAR).
- E.7. HOSE BIBBS:
- E.7.1. OUTDOOR:
- E.7.1.1. SHALL BE WOODFORD MODEL 67, CHROME FINISH, FREEZEPROOF TYPE, AUTOMATIC DRAINING WITH BACK FLOW PREVENTER AND KEVED OPERATION, OR APPROVED EQUAL. CONTRACTOR SHALL VERIFY WALL THICKNESS PRIOR TO ORDERING HOSE BIBBS.
- E.7.2. INDOOR:
- E.7.2.1. SHALL BE WOODFORD MODEL 24P-1/2, CHROME FINISH, ANTI-SIPHON VACUUM BREAKER, OPTIONAL TEE KEY, OR APPROVED EQUAL.
- E.8. FLOOR DRAINS:
- E.8.1. AS SCHEDULED ON DRAWINGS OR MANUFACTURER RECOMMENDED EQUAL. VERIFY SCHEDULED SELECTIONS WITH DRAIN MANUFACTURER FOR EXPECTED USE AND LOCATION AND PROVIDE MANUFACTURER SPECIFIED DRAINS, ALONG WITH RECOMMENDED ACCESSORIES.
- E.9. TRAP PRIMERS:
- E.10. CLEANOUTS:

E.10.1. PROVIDE WHERE SHOWN ON PLANS AND AS REQUIRED BY LOCAL PLUMBING CODES. CLEANOUTS SHALL BE SUITABLE FOR CONDITIONS WHERE INSTALLED AS FOLLOWS:

E.10.1. FLOORS, FINISHED:

E.10.1.1. CAST IRON WITH NICKEL BRONZE, ADJUSTABLE TOP, AS MANUFACTURED BY J.R. SMITH,MODEL # 4020 OR EQUAL.

E.10.2. FLOORS UNFINISHED:

E.10.2.1. CAST IRON WITH NON-TILT TRACTOR COVER, ADJUSTABLE TOP, AS MANUFACTURED BY J.R.SMITH, MODEL #4237 OR EQUAL.

E.10.3. WALL:

E.10.3.1. CAST IRON CLEAN-OUT TEE, STAINLESS STEEL ROUND COVER AND SCREW, IRON PLUG WITH SEAL, AS MANUFACTURED BY J.R. SMITH,MODEL#4520S OR EQUAL.

E.10.4. GRADE:

E.10.4.1. HEAVY DUTY CAST IRON COVER, FLANGED FOR USE IN POURED CONCRETE, SUITABLE FOR USE IN ASPHALT PAVING OR EARTH, CAST IRON BODY WITH ADJUSTABLE TOP, AS MANUFACTURED BY J.R. SMITH, MODEL #4250 OR EQUAL.

E.10.5. 2-WAY(DOUBLE):

E.10.5.1. GRADE CLEAN-OUT WITH 2-WAY CLEAN-OUT TEE FITTING IN SEWER LINE, JUST OUTSIDE BUILDINGS WALL OR AS SHOWN ON PLANS.

E.11. BACK-FLOW PREVENTER:

E.11.1. REDUCED PRESSURE TYPE, DUAL CHECK VALVES WITH INTERMEDIATE RELIEF VALVE, TEE HANDLE SHUTOFF VALVES, AS MANUFACTURED BY WATTS, SERIES 009 OR EQUAL.

E.12. BALL VALVES:

E.12.1. LINE SIZED, FULLY PORTED, BRASS BODY.

E.13. WATER HAMMER ARRESTERS:

E.13.1. PROVIDE SHOCK ABSORBER ON DOMESTIC WATER AND HOT WATER SUPPLY LINES FOR ALL FAST ADJUSTING CLEAN-OUT NOT LIMITED TO WASHING MACHINES, DISHWASHERS AND OTHER EQUIPMENT WITH AUTOMATIC VALVES, AS MANUFACTURED BY WATTS. MODEL #51M2 OR EQUAL. SELECT AND INSTALL PER MANUFACTURERS INSTRUCTIONS.

E.14. ELECTRIC WATER COOLER:

E.14.1. SELF-CONTAINED, HEAVY DUTY, VANDAL RESISTANT WATER COOLER, FRONT PUSHBUTTON ACTIVATION, INTERNAL BASIN DRAIN, WALL MOUNTED, AS MANUFACTURED BY ELKAY. #1VCHT0185SC OR APPROVED EQUAL. SEE SCHEDULES FOR PERFORMANCE REQUIREMENTS. REFRIGERATION SYSTEM INCLUDES RECIPROCATING TYPE COMPRESSOR WITH R134 REFRIGERANT, COPPER TUBING AND STAINLESS-STEEL TANK.EPS FOAM INSULATION, CONDENSER FAN AND ADJUSTABLE THERMOSTATIC CONTROLS.

E.15. SAMPLE WELL:

E.15.1. FACTORY MADE, BELOW GRADE INSTALLATION. CONCRETE CONSTRUCTION WITH STEEL RISER COVER. PEDESTRIAN RATED LOADING ON COVER, AS MANUFACTURED BY PARK ENVIRONMENTAL. MODEL #SWBP OR EQUAL. COORDINATE FINAL SELECTION. INCLUDING REQUIRED ACCESSORIES AND DESIGN.

**DESIGN WITHOUT CONSTRUCTION ADMINISTRATION:**

IT IS UNDERSTOOD AND AGREED THAT THE ARCHITECT/ENGINEER'S SCOPE DOES NOT INCLUDE PROJECT OBSERVATION OR REVIEW OF THE CONTRACTOR'S PERFORMANCE OR ANY OTHER CONSTRUCTION PHASE SERVICES. THE OWNER AGREES TO PROVIDE CONSTRUCTION ADMINISTRATION AND ASSUMES ANY AND ALL POTENTIAL LIABILITY ARISING FROM SUCH ADMINISTRATION. THE OWNER ASSUMES ALL RESPONSIBILITY FOR THE INTERPRETATION OF THE CONTRACT DOCUMENTS AND FOR CONSTRUCTION OBSERVATION AND THE OWNERS WAIVES ANY CLAIMS AGAINST THE ARCHITECT/ENGINEER THAT MAY BE IN ANY WAY CONNECTED THERETO. THE ARCHITECT/ENGINEER WILL NOT RESPOND TO ANY QUESTIONS DIRECTED TO THE INTERPRETATION OF THE CONTRACT DOCUMENTS OR IN RESPONSE TO ISSUES ENCOUNTERED BY AND AS RELAYED BY THE CONTRACTOR IN THE FIELD.

SYMBOL LEGEND - PLUMBING:

- SANITARY SEWER LINE
- VENT — SANITARY VENT LINE
- DOMESTIC COLD WATER LINE
- DOMESTIC HOT WATER LINE (INSULATED)
- DOMESTIC HW RE-CIRCULATION LINE
- GAS — NATURAL GAS LINE
- GW — GREASE WASTE LINE
- O2 — OXYGEN LINE (1/2" COPPER, UON)
- N2O — MED GAS (NITROUS OXIDE) PIPING (3/8" COPPER, UON)
- AIR — COMPRESSED AIR LINE (1/2" COPPER, UON)
- VAC — VACUUM LINE (1/2" PVC, UON) CONNECTED TO SCAVENGE
- POINT OF CONNECTION TO EXISTING WATER PIPING
- PIPE ELBOW, 90 DEG TURNED DOWN
- PIPE ELBOW, 90 DEG TURNED UP
- PIPE TEE, BRANCH TURNED DOWN
- PIPE TEE, BRANCH TURNED UP
- VENT STACK CONNECTION TO WASTE LINE BELOW
- WASTE STACK THROUGH FLOOR
- CLEANOUT, FLOOR OR GRADE, WITH PROPER COVER
- WALL CLEANOUT PLUG AND COVER
- WALL HYDRANT, FREEZEPROOF WITH VACUUM BREAKER
- GATE VALVE, LINE SIZED
- BALL VALVE, LINE SIZED
- GAS COCK, LINE SIZED
- CHECK VALVE OR BACKFLOW PREVENTOR AS NOTED
- PRESSURE REGULATOR VALVE, GAS OR WATER
- BALANCING VALVE OR CIRCUIT SETTER
- PIPE UNION COUPLING
- PIPE FLEXIBLE COUPLING
- HW RECIRCULATION PUMP (WITH AQUASTAT)
- NEW PLUMBING FIXTURE
- NEW FLOOR DRAIN
- FLOOR SINK
- TEMPERING VALVE
- A — OUTLET PORT - AIR 1/2" UON
- N — OUTLET PORT - NITROUS OXIDE 3/8" UON
- O — OUTLET PORT - OXYGEN 1/2" UON
- S — INLET PORT - VACUUM/SCAVANGE 1/2" UON



TX PE FIRM # F16900  
1004 W FRONTAGE RD  
ALAMO, TX 78516  
956.787.FIRE

2015 INTERNATIONAL MECHANICAL CODE 2015 INTERNATIONAL PLUMBING CODE 2014 NATIONAL ELECTRICAL CODE	21 JUL 2023	DATE	REVISION SCHEDULE
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21 AUG 2023

PROJECT: 23 03 08

RGV LIVESTOCK SHOW INC.

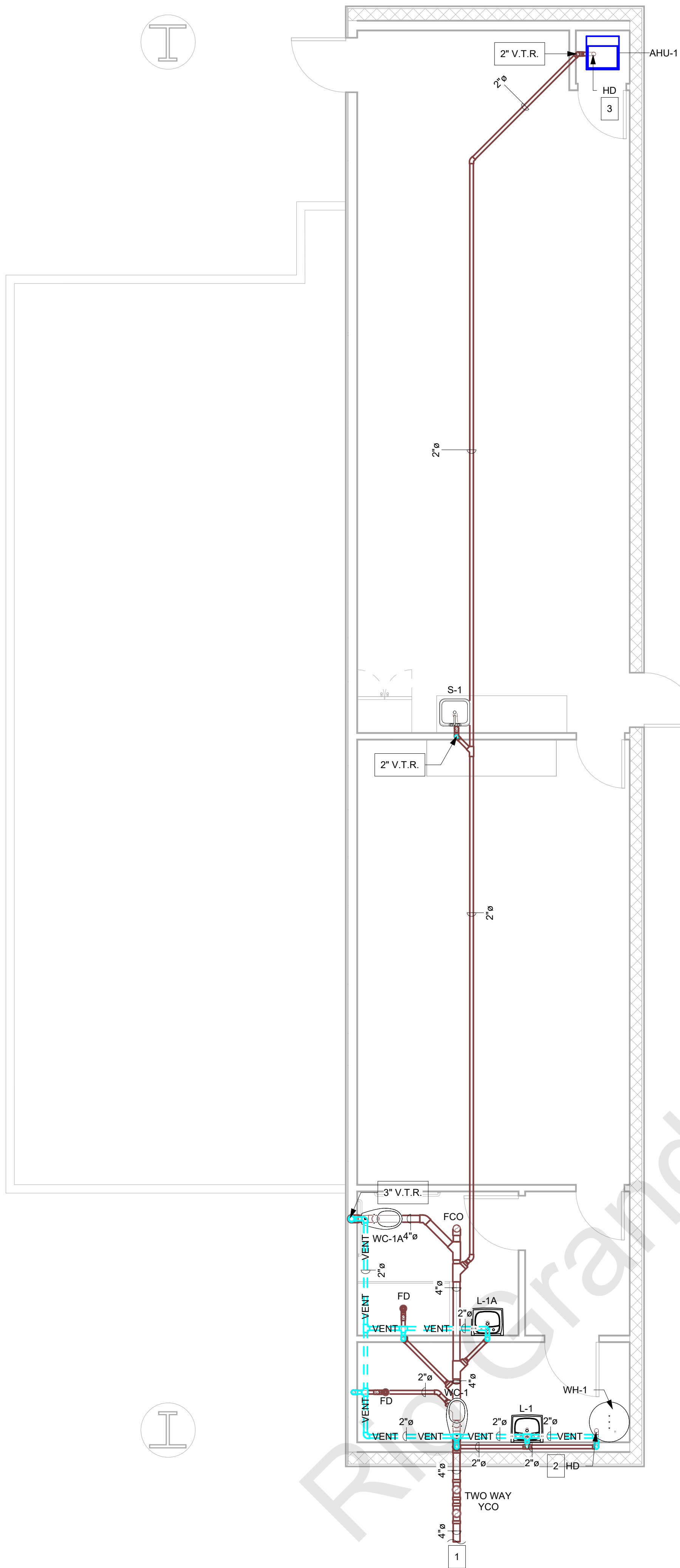
1000 N Texas Ave  
Mercedes, TX 78570

General Notes - Plumb

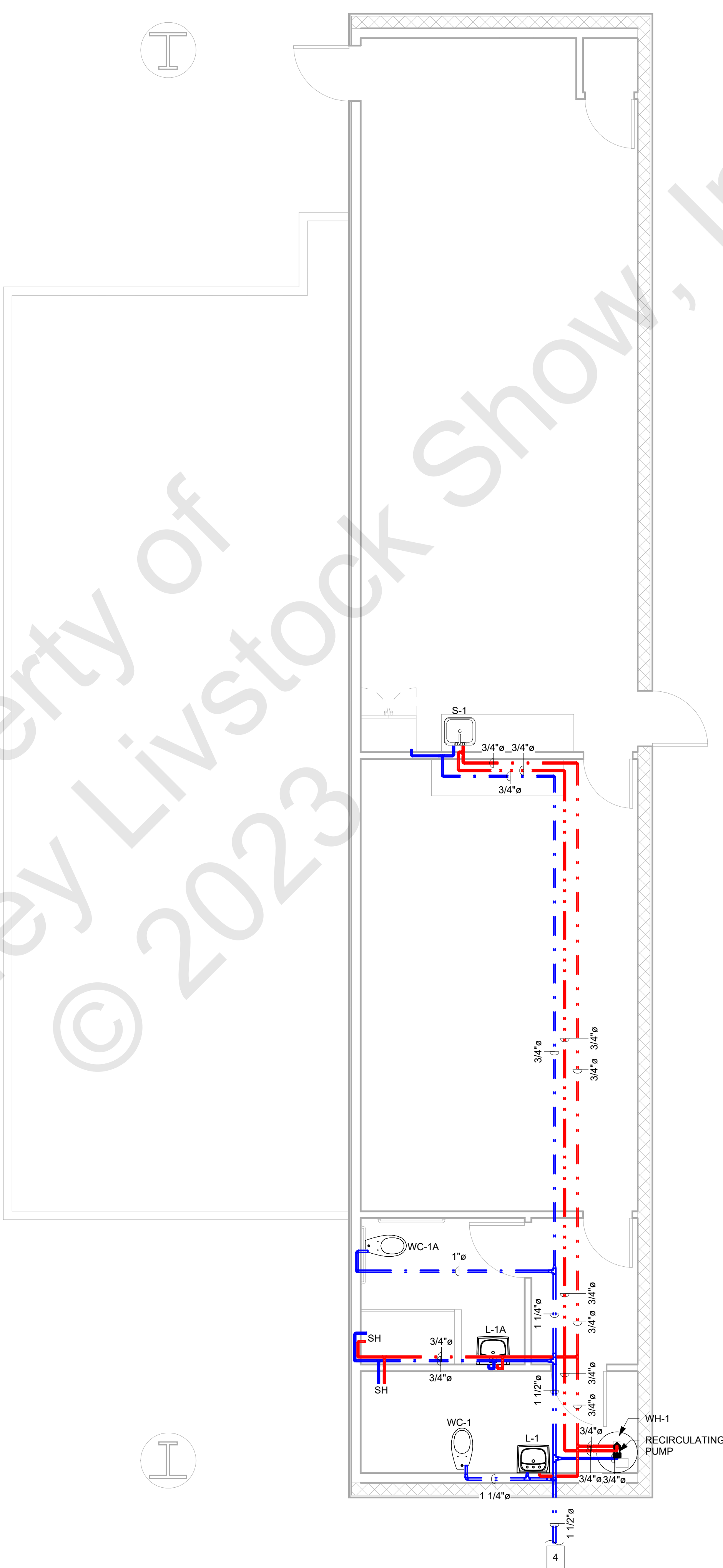
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1 WASTE/VENT PLAN  
1/4" = 1'-0"



2 DOM/HOT WATER PLAN  
1/4" = 1'-0"

GENERAL NOTES:

- A. THE PLUMBING CONTRACTOR SHALL: ENSURE ALL COST ASSOCIATED WITH REQUIRED SAW CUTS, TO MEET PLANS, ARE INCLUDED IN BIDDING. SAW CUT SHALL BE A MINIMUM OF 18" WIDE. 6" OF SAND BEDDING UNDER PIPE SHALL BE INSTALLED THEN FILLED WITH VIRGIN DIRT AT 6" LAYERS, THEN COMPACTED. A VAPOR BARRIER SHALL BE INSTALLED AS REQUIRED BY FOUNDATION ENGINEER.
- B. BE RESPONSIBLE TO FIELD VERIFY THE EXACT LOCATION OF ALL UTILITY SERVICES AND SLOPE PRIOR TO BIDDING. PIPE THAT CANNOT MEET SLOPE REQUIREMENTS SHALL BE CORRECTED WITH A GRINDER OR SEWAGE PUMP AT NO EXTRA COST TO THE OWNER.
- C. PROVIDE AND INSTALL YARD CLEANOUTS A MAXIMUM DISTANCE OF 100'-0" ON CENTER.
- D. ENSURE ALL PRIMARY A/C CONDENSATE LINES ARE CONNECTED DIRECTLY FROM THE HVAC EQUIPMENT AND DISCHARGED IN TO AN ADEQUATELY SIZED DRAIN/CONDENSATE RECEPTOR NO SMALLER THAN 2".
- E. ENSURE ALL SECONDARY A/C CONDENSATE LINES ARE CONNECTED FROM EACH SAFETY DRAIN PAN AND DISCHARGED INDIVIDUALLY TO A VISIBLE HEIGHT, NOT LESS THAN 6", BELOW CEILING IN TO THE NEAREST SINK, LAVATORY, OR MOP SINK.
- F. ENSURE ALL CONDENSATE LINES ARE INSULATED A MINIMUM OF 10 FEET FROM THE POINT OF ORIGIN.

KEYED NOTES:

- 1. CONNECT NEW SANITARY SEWER LINE TO EXISTING SANITARY SEWER LINE BELOW SLAB. REFER TO CIVIL DRAWINGS FOR EXACT POINT OF CONNECTION PRIOR BIDDING.
- 2. 2" HUB DRAIN LOCATED UNDER WATER HEATER COLLECTION PAN. COORDINATE HEIGHT AND LOCATION REQUIREMENTS PRIOR TO BIDDING.
- 3. 2" HUB DRAIN LOCATED ABOVE A/C PLATFORM. PRIMARY CONDENSATE LINE SHALL RUN FROM UNIT OUTLET TO AN APPROVED HUB DRAIN AND SHALL MAINTAIN A MINIMUM HORIZONTAL SLOPE IN THE DIRECTION OF DISCHARGE OF NOT LESS THAN ONE (1) PERCENT SLOPE.
- 4. THE CONTRACTOR SHALL CONNECT NEW WATER LINE TO EXISTING DOMESTIC WATER LINE BELOW SLAB. REFER TO CIVIL DRAWINGS FOR EXACT LOCATION OF WATER METER PRIOR TO ANY WORK.



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ISSUE FOR PERMITTING		DESCRIPTION	
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21 AUG 2023

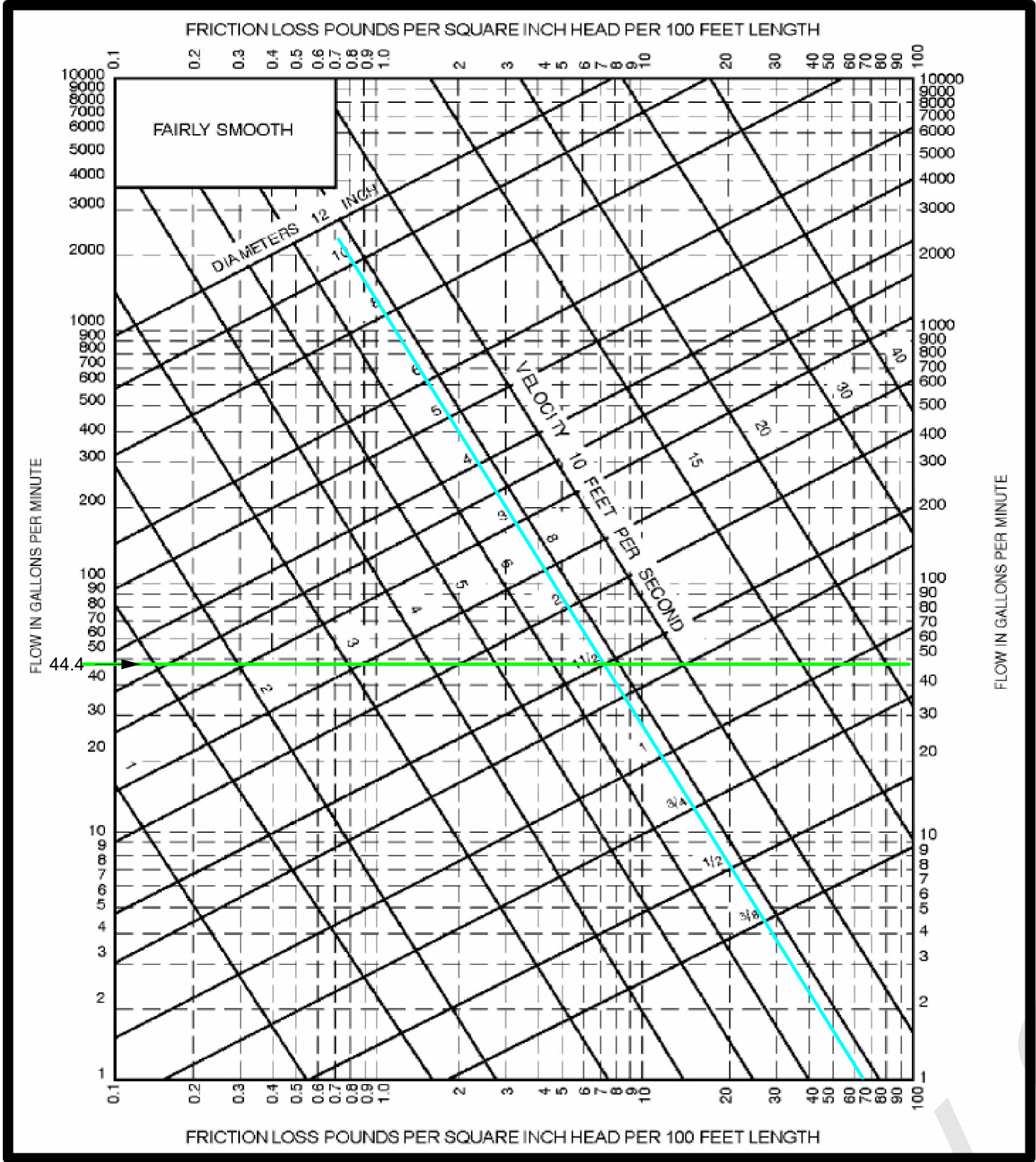
PROJECT: 23 03 08  
**RGV LIVESTOCK SHOW INC.**  
1000 N Texas Ave  
Mercedes, TX 78570

Waste/Water - Plumb

P 1.0



WATER SUPPLY FIXTURE UNITS (IPC-Table E103.3(2))							
DEVICE	WSFU PER DEVICE			QTY	TOTAL WSFU		
	COLD	HOT	TOTAL		COLD	HOT	TOTAL
BATHROOM GROUP (PRIVATE FLUSH TANK)	2.70	1.50	3.60	0	0.00	0.00	0.00
BATHROOM GROUP (PRIVATE FLUSH VALVE)	6.00	3.00	8.00	0	0.00	0.00	0.00
BATHTUB (PRIVATE)	1.00	1.00	1.40	0	0.00	0.00	0.00
BATHTUB (PUBLIC)	3.00	3.00	4.00	0	0.00	0.00	0.00
LAVATORY (PRIVATE)	0.50	0.50	0.70	0	0.00	0.00	0.00
LAVATORY (PUBLIC)	1.50	1.50	2.00	2	3.00	3.00	4.00
WATER CLOSET (PRIVATE FLUSH TANK)	2.20	0.00	2.20	0	0.00	0.00	0.00
WATER CLOSET (PRIVATE FLUSH VALVE)	6.00	0.00	6.00	0	0.00	0.00	0.00
WATER CLOSET (PUBLIC FLUSH TANK)	5.00	0.00	5.00	0	0.00	0.00	0.00
WATER CLOSET (PUBLIC FLUSH VALVE)	10.00	0.00	10.00	2	20.00	0.00	20.00
WATER CLOSET (PUB./PRIV. FLUSHOMETER)	2.00	0.00	2.00	0	0.00	0.00	0.00
SHOWER HEAD (PUBLIC)	3.00	3.00	4.00	2	6.00	6.00	8.00
SHOWER HEAD (PRIVATE)	1.00	1.00	1.40	0	0.00	0.00	0.00
KITCHEN SINK (PRIVATE)	1.00	1.00	1.40	0	0.00	0.00	0.00
KITCHEN SINK (HOTEL/RESTAURANT)	3.00	3.00	4.00	1	3.00	3.00	4.00
SERVICE SINK	2.25	2.25	3.00	0	0.00	0.00	0.00
BIDET	1.50	1.50	2.00	0	0.00	0.00	0.00
URINAL (1" FLUSHOMETER)	10.00	0.00	10.00	0	0.00	0.00	0.00
URINAL (3/4" FLUSHOMETER)	5.00	0.00	5.00	0	0.00	0.00	0.00
WASHING MACHINE (8 LBS PUBLIC)	2.25	2.25	3.00	0	0.00	0.00	0.00
WASHING MACHINE (8 LBS PRIVATE)	1.00	1.00	1.40	0	0.00	0.00	0.00
WASHING MACHINE (15 LBS PUBLIC)	3.00	3.00	4.00	0	0.00	0.00	0.00
HOSE BIB	2.50	0.00	2.50	0	0.00	0.00	0.00
DRINKING FOUNTAIN	0.25	0.00	0.25	0	0.00	0.00	0.00
DISHWASHING MACHINE	0.00	1.40	1.40	0	0.00	0.00	0.00
ICE MACHINE	8.00	0.00	8.00	0	0.00	0.00	0.00
FLOOR DRAIN	0.00	0.00	0.00	0	0.00	0.00	0.00
TOTAL (WSFU)					32.0	12.0	36.0
TOTAL(GPM) (Table E103.3(3))					44.4		



PLUMBING SCHEDULE							
GENERAL				CONNECTION SIZE			
LABEL	DESCRIPTION	MAKE	MODEL	DW	HW	WASTE	VENT
FCO	CLEANOUT	ZURN	Z1400-HD	0'-0"	0'-0"	0'-4"	0'-0"
FD	FLOOR DRAIN	ZURN	Z319	0'-0"	0'-0"	0'-2"	0'-2"
L-1	LAVATORY	KOHLER	K-2006	0'-0 3/4"	0'-0 3/4"	0'-2"	0'-2"
L-1A	LAVATORY (HANDICAPPED)	KOHLER	K-2006	0'-0 3/4"	0'-0 3/4"	0'-2"	0'-2"
PUMP-HWR	HOT WATER RECIRCULATION PUMP	ARMSTRONG	ASTRO 220SSU075S-TA	0'-0"	0'-0 3/4"	0'-0"	0'-0"
S-1	SINGLE COMPARTMENT SINK	---	BY OWNER	0'-0 3/4"	0'-0 3/4"	0'-2"	0'-2"
WC-1	WATER CLOSET	SLOAN	ST-2029	0'-1"	0'-0"	0'-4"	0'-2"
WC-1A	WATER CLOSET (HANDICAPPED)	SLOAN	ST-2029	0'-1"	0'-0"	0'-4"	0'-2"
WH-1	ELECTRIC WATER HEATER (TANK)	A.O. SMITH	DEL-50	0'-0 3/4"	0'-0 3/4"	0'-0 3/4"	0'-2"
YCO	YARD CLEANOUT	ZURN	Z1402	0'-0"	0'-0"	0'-4"	0'-0"
Grand total: 12							



TX PE FIRM # F16900  
1004 W FRONTAGE RD  
ALAMO, TX 78516  
956.787.FIRE

ISSUE FOR PERMITTING		DATE
DESCRIPTION	REV	
0	REV	21 JUL 2023

2015 INTERNATIONAL MECHANICAL CODE  
2015 INTERNATIONAL PLUMBING CODE  
2014 NATIONAL ELECTRICAL CODE



21 AUG 2023

PROJECT: 23 03 08  
**RGV LIVESTOCK SHOW INC.**  
1000 N Texas Ave  
Mercedes, TX 78570

Schedules/Details - Plumb

**P 2.0**

