# BIJAN RETAIL CENTER

San Antonio, Texas

## Architect

## Kamran Mouzoon Architects

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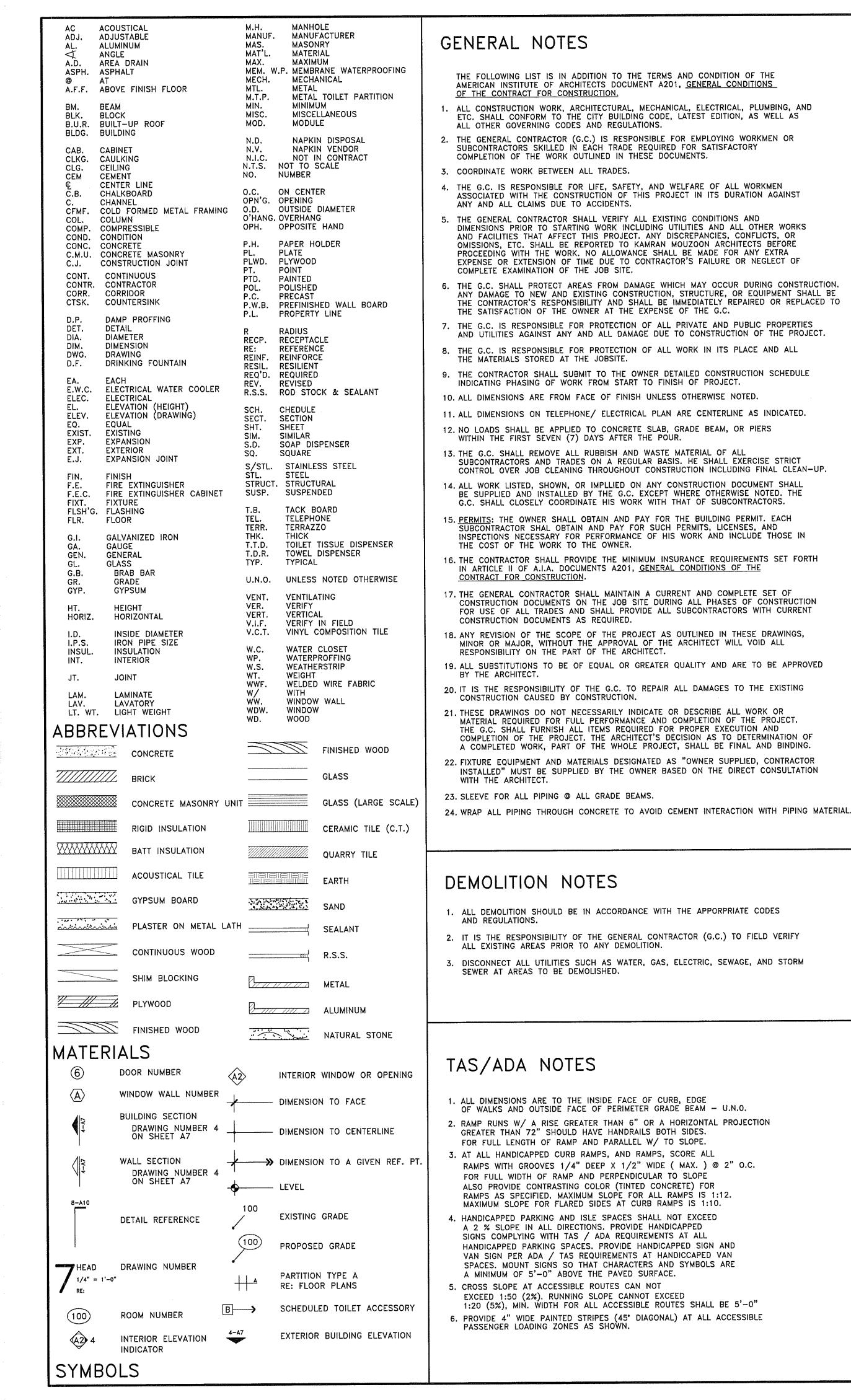
## Structural/Civil Engineer Professional StruCIVIL Engineers, Inc.

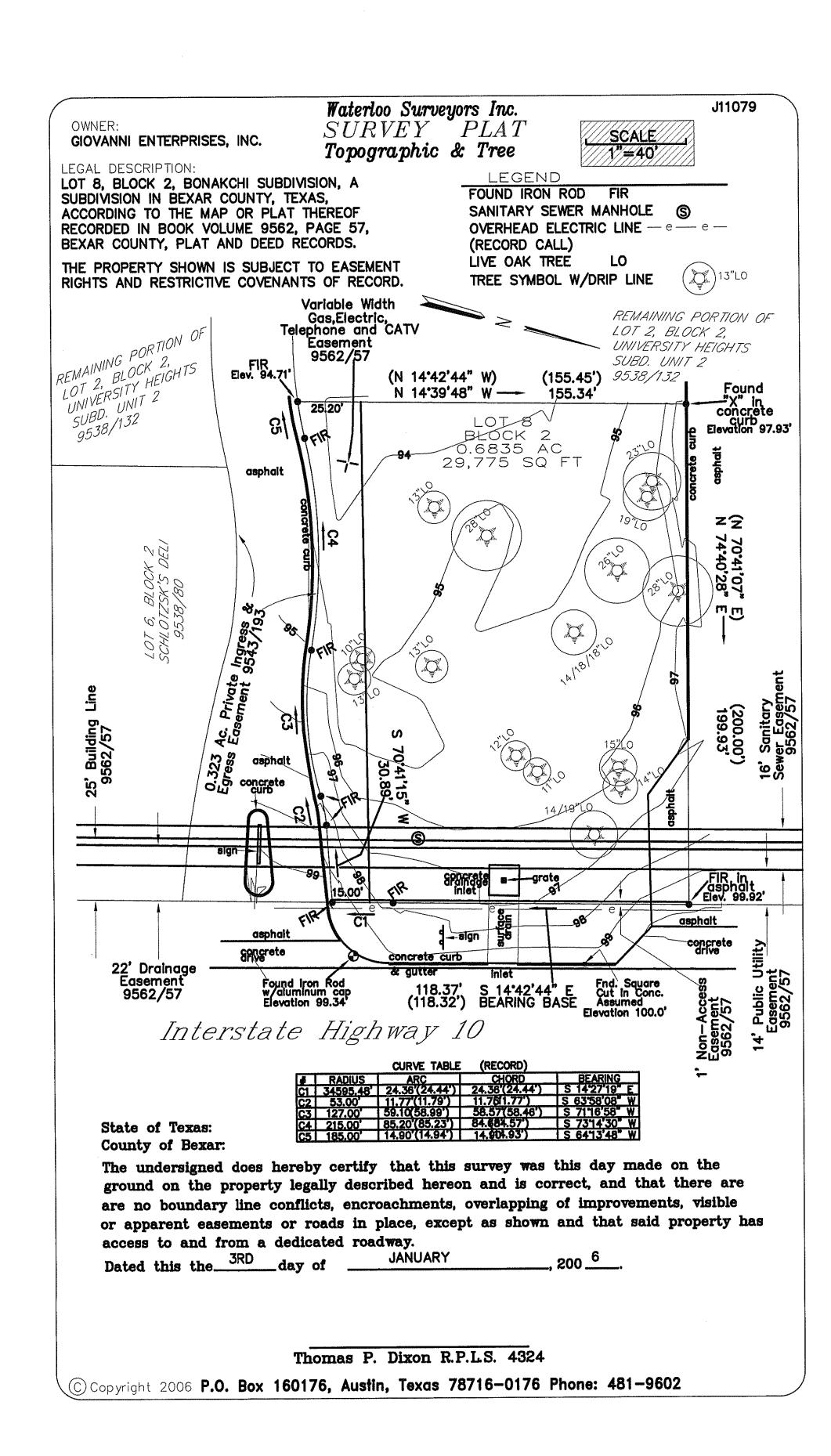
Consulting Civil & Structural Engineers 12710 Research Blvd., Suite 390 Austin, TX 78759 512.238.6422 Fax 512.258.8095

## MEP Engineer

## Verde Engineering

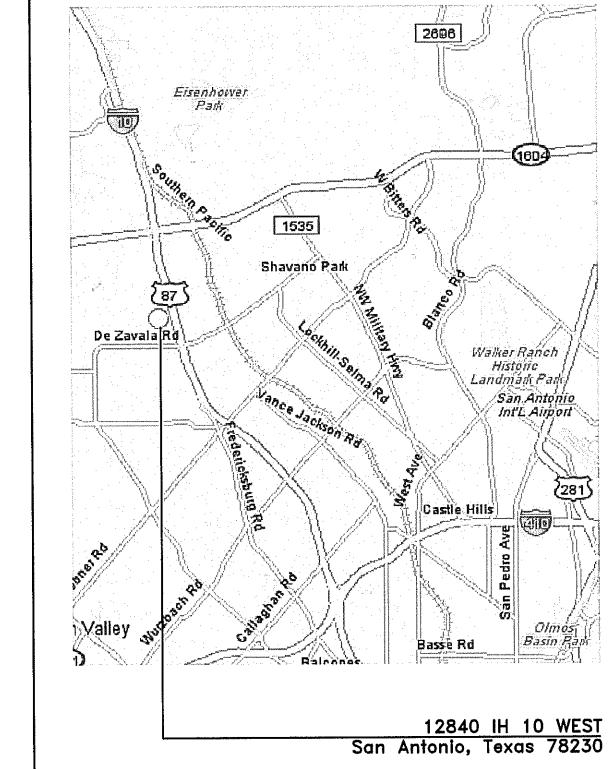
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Pflugerville, Texas 78660
512.990.0696
Fax 512.990.8287



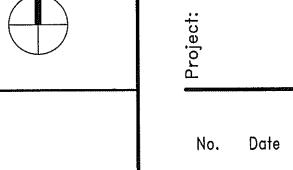


**SURVEY** 

**RE:** 1A2.0



## PROJECT LOCATION MAP RE: SURVEY



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COVER SHEET CIVIL ARCHITECTURAL (CONT'D) COVER SHEET PLAN DETAILS A6.3 C-2 GENERAL NOTES CANOPY DETAILS A6.4 **EXISTING SURVEY** C-3SIGN RAIL DETAILS C-4DIMENSIONAL SITE PLAN A6.6 ROOF DETAILS GRADING SITE PLAN C-5C-6 DRAINAGE SITE PLAN MECHANICAL, ELECTRICAL, EROSION/SEDIMENTAION/ **PLUMBING** T.P. SITÉ PLAN UTILITY SITE PLAN E - 1.1ELECTRICAL SCHEDULES FIRE LANE & SAFETY ELECTRICAL SITE PLAN E - 1.2LANDSCAPE PLAN SPECIFICATIONS ELECTRICAL LANDSCAPE DETAILS E - 1.3C - 11IRRIGATION DETAILS SPECIFICATIONS C - 12GENERAL DETAILS ELECTRICAL SITE E - 2.0C - 14C-15 GENERAL DETAILS PLAN ELECTRICAL E - 2.1LIGHTING / POWER **STRUCTURAL** PLAN PLUMBING GENERAL DETAILS **SPECIFICATIONS** FOUNDATION PLAN PLUMBING FLOOR P - 2.1FOUNDATION DETAILS PLAN ROOF FRAMING PLAN \$4.0 CMU WALL ELEVATION CMU WALL ELEVATION ROOF FRAMING DETAILS **ARCHITECTURAL** INDEX, SURVEY, PROJECT LOCATION MAP, NOTES, ABBREVIATIONS, SYMBOLS

MATERIALS SITE DEMOLITION PLAN SITE PLAN, ROOF PLAN A1.0 FLOOR PLAN, CODE ANALYSIS BUILDING ELEVATIONS A3.0 A3.1 **BUILDING ELEVATIONS** 

BUILDING SECTIONS A3.2 A5.0 SCHEDULES A5.1

SCHEDULES A6.0 WALL SECTIONS WALL SECTIONS

A6.

A6.2

RE: ---

1 PROJECT INDEX

WALL SECTIONS

20516

S.W.

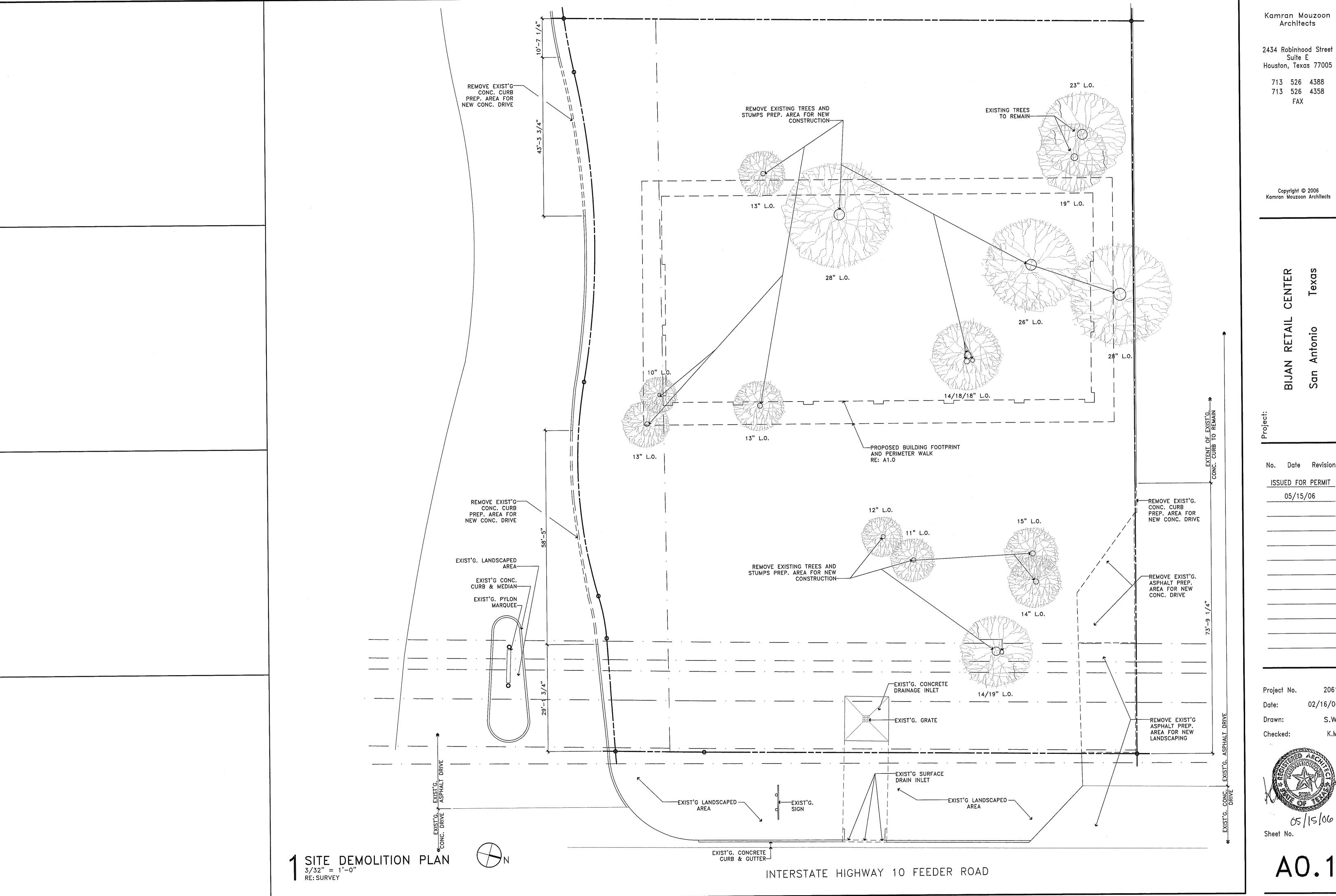
02/16/06

Project

Drawn:

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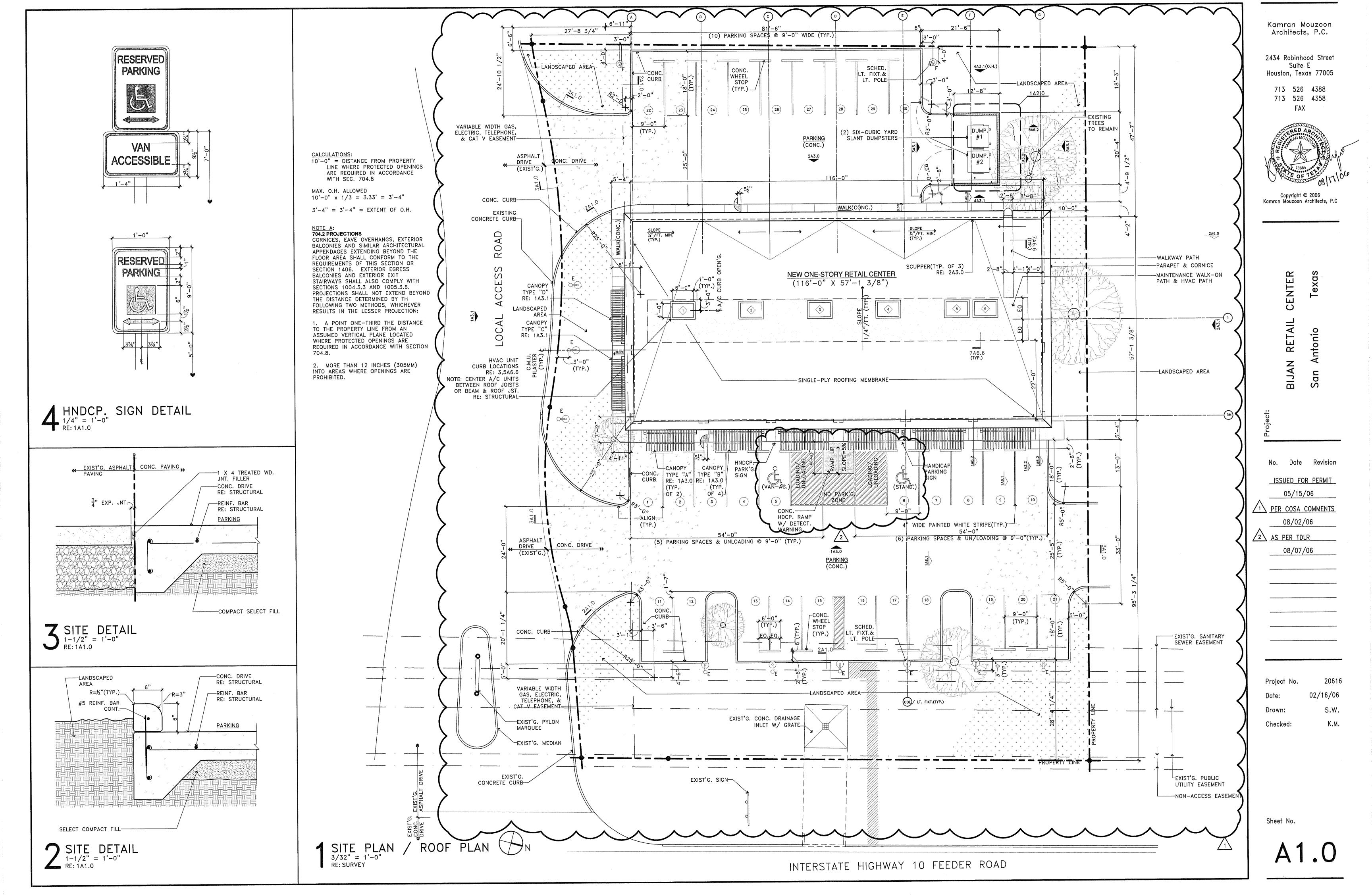
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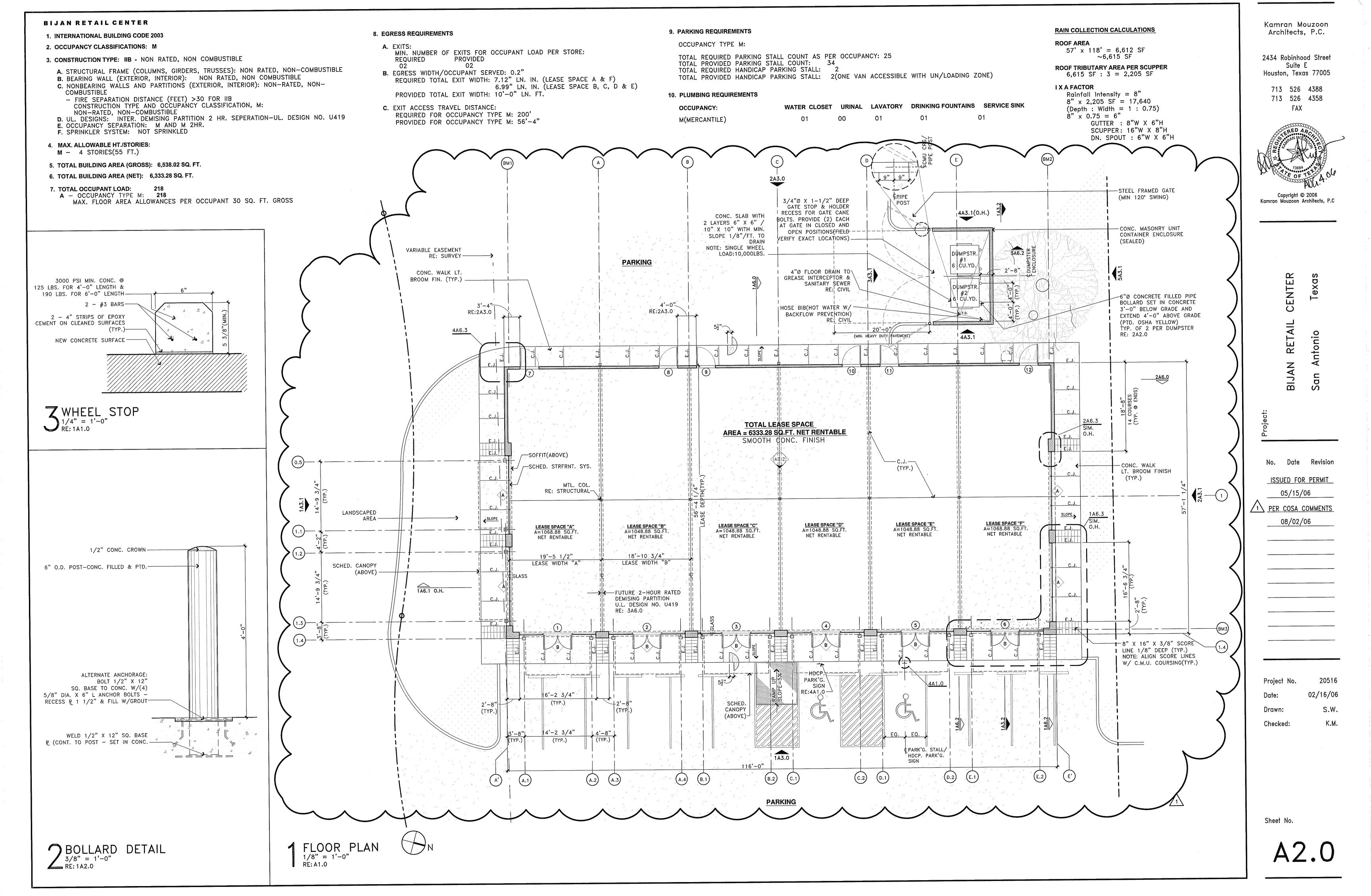


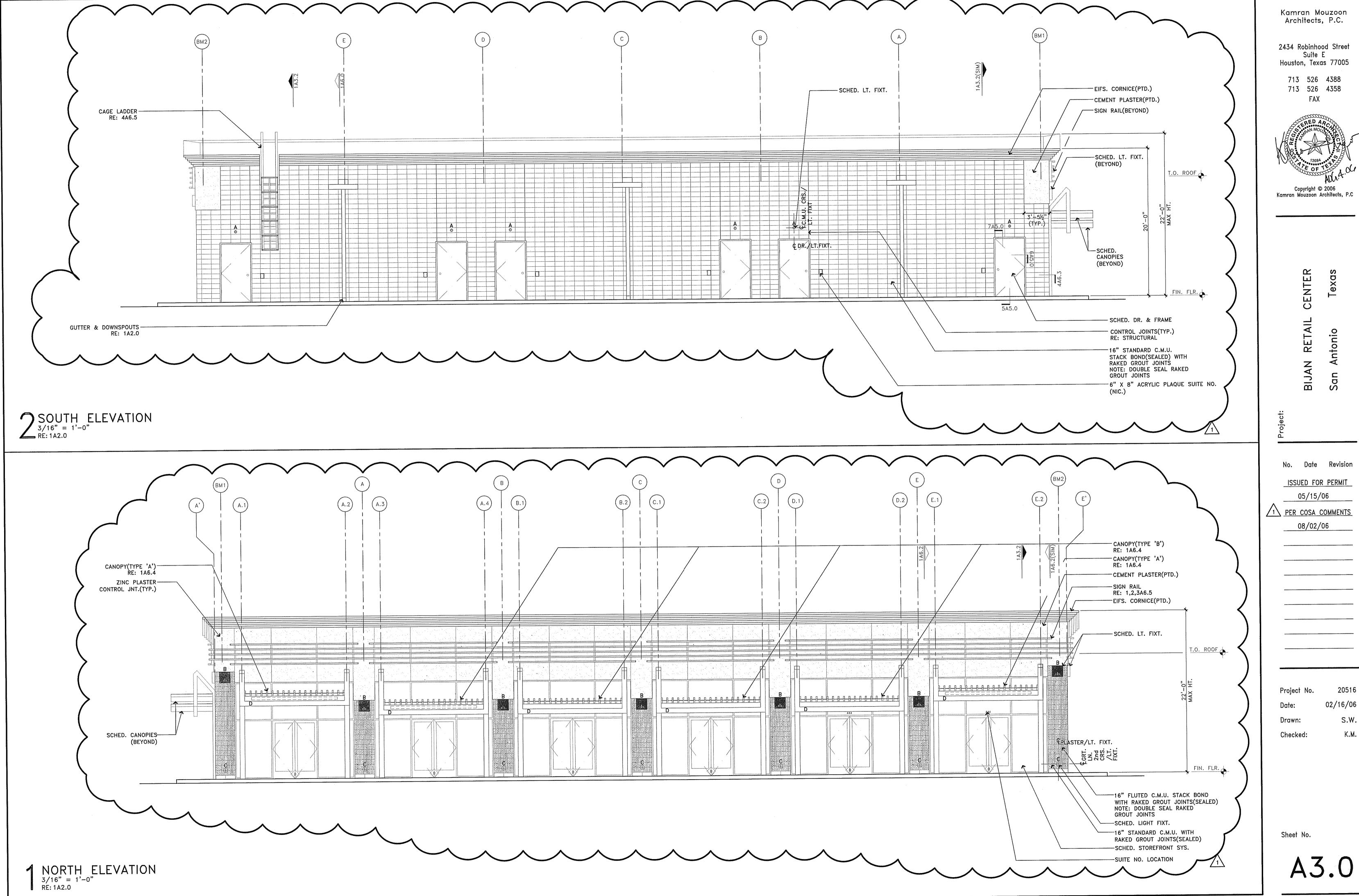
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02/16/06



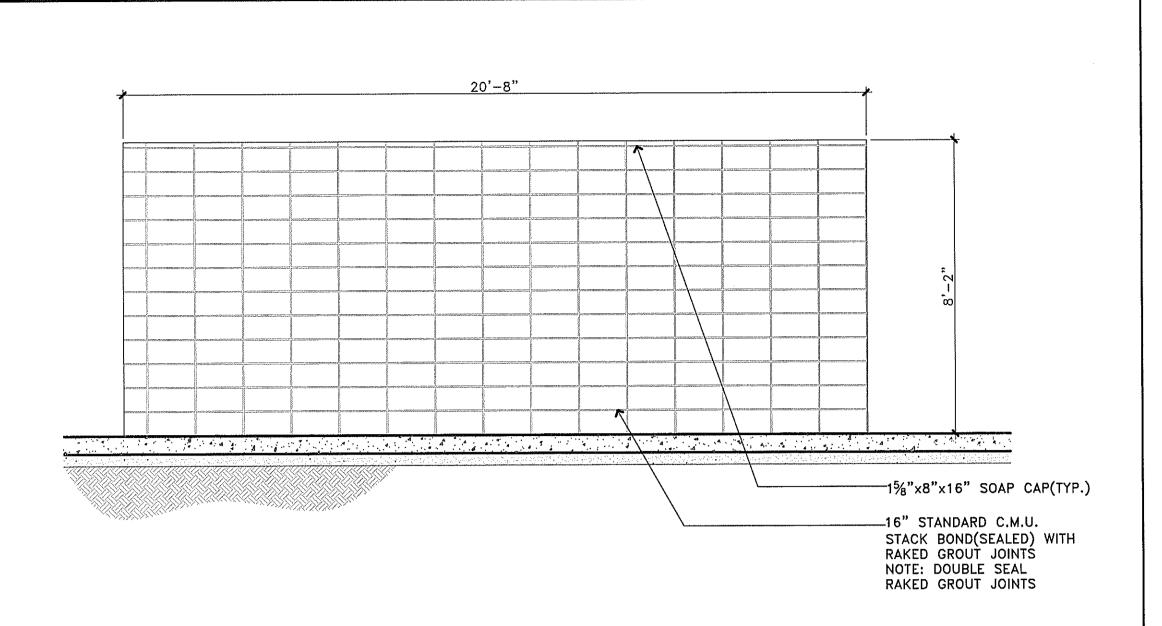




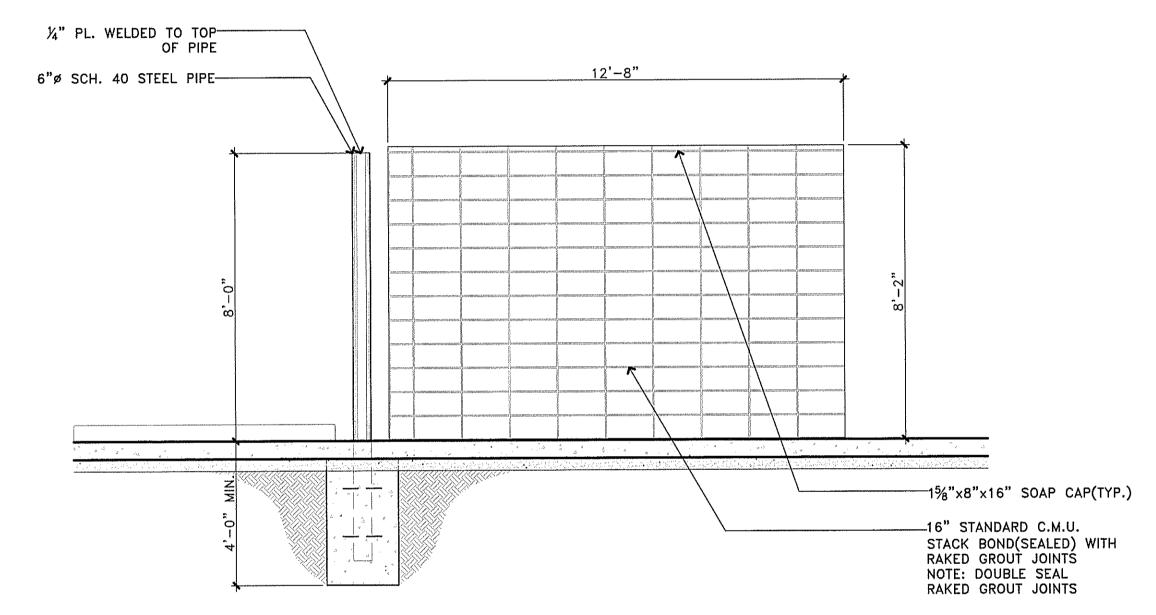




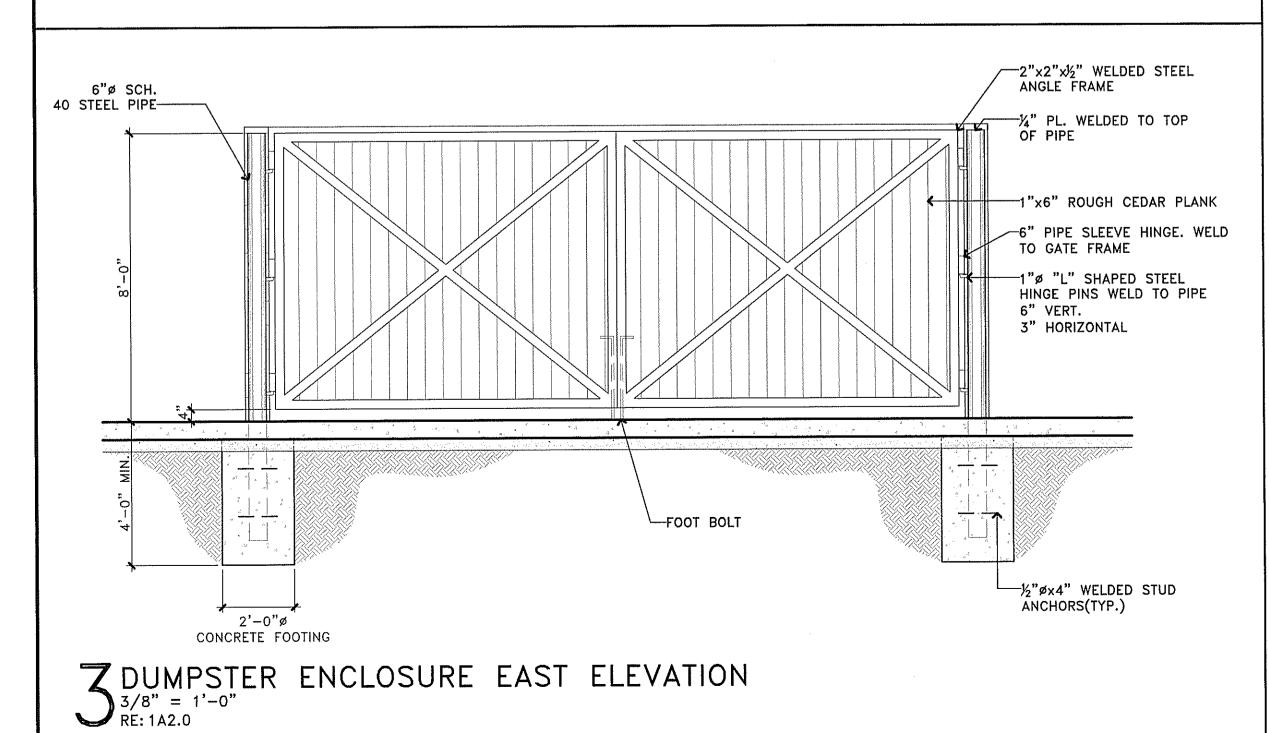
02/16/06 s.W.

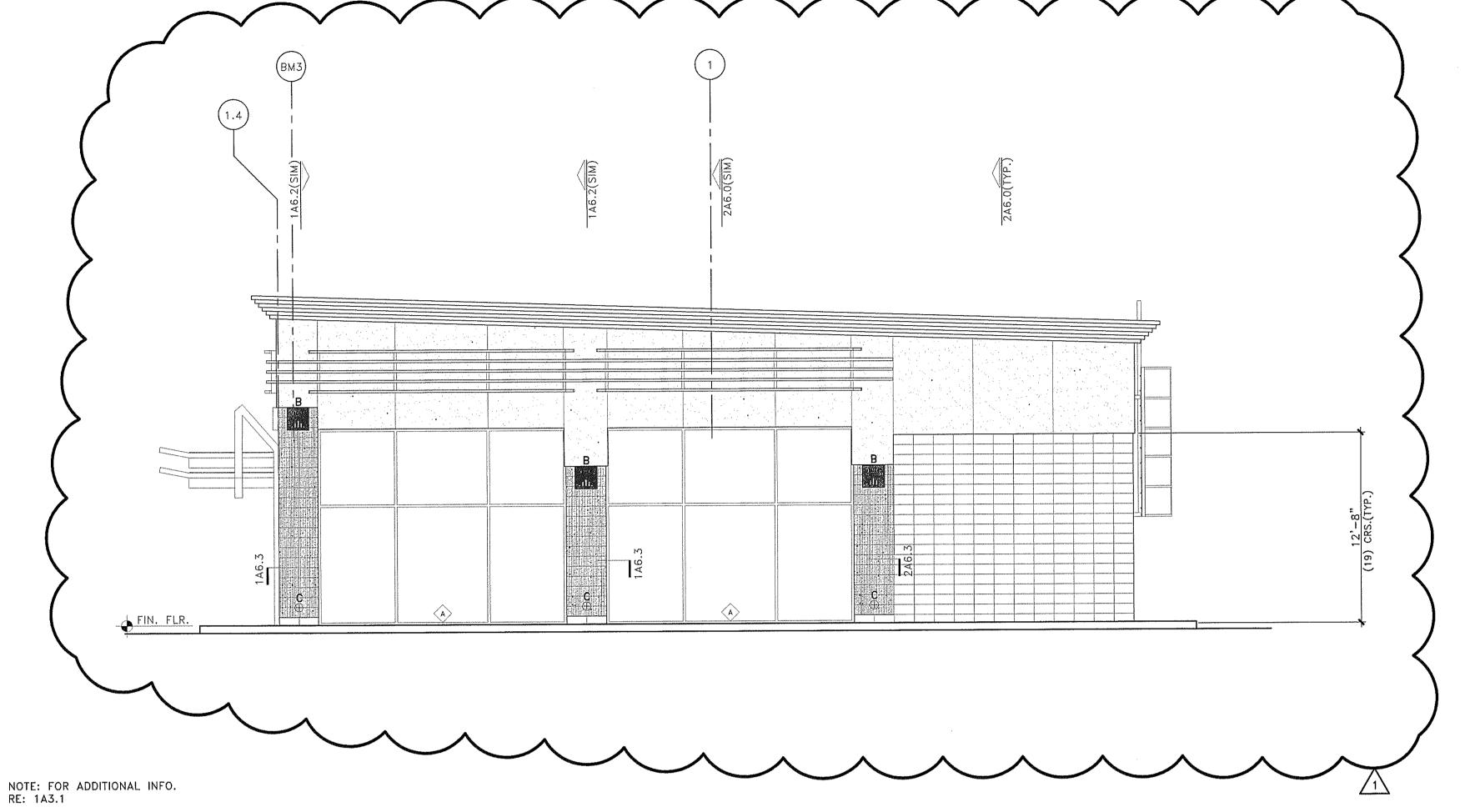


## 5 DUMPSTER ENCLOSURE WEST ELEVATION RE: 1A2.0



DUMPSTER ENCLOSURE NORTH ELEVATION
3/8" = 1'-0"
RE: 1A2.0

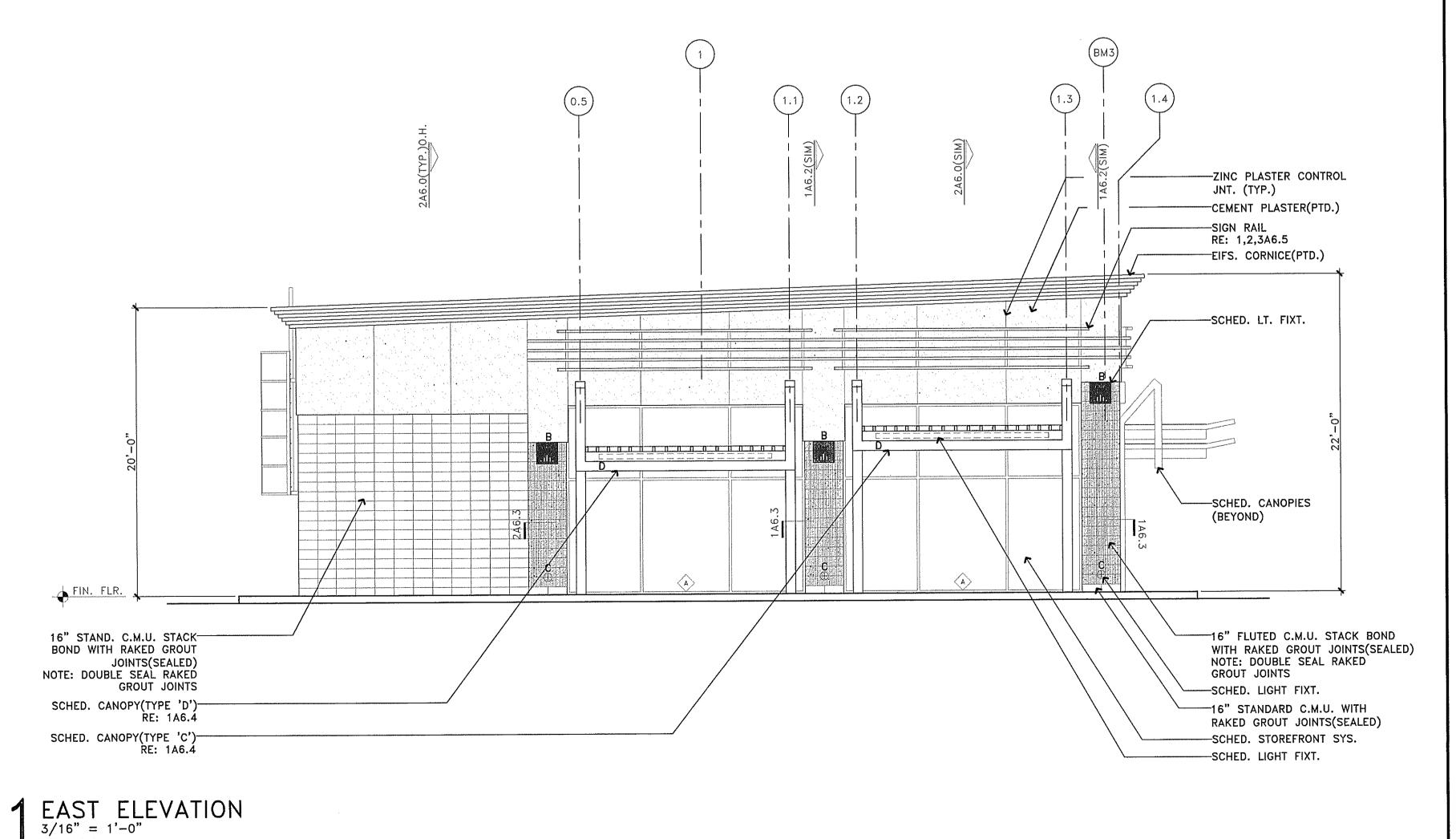




WEST ELEVATION

3/16" = 1'-0"

RE: 1A2.0



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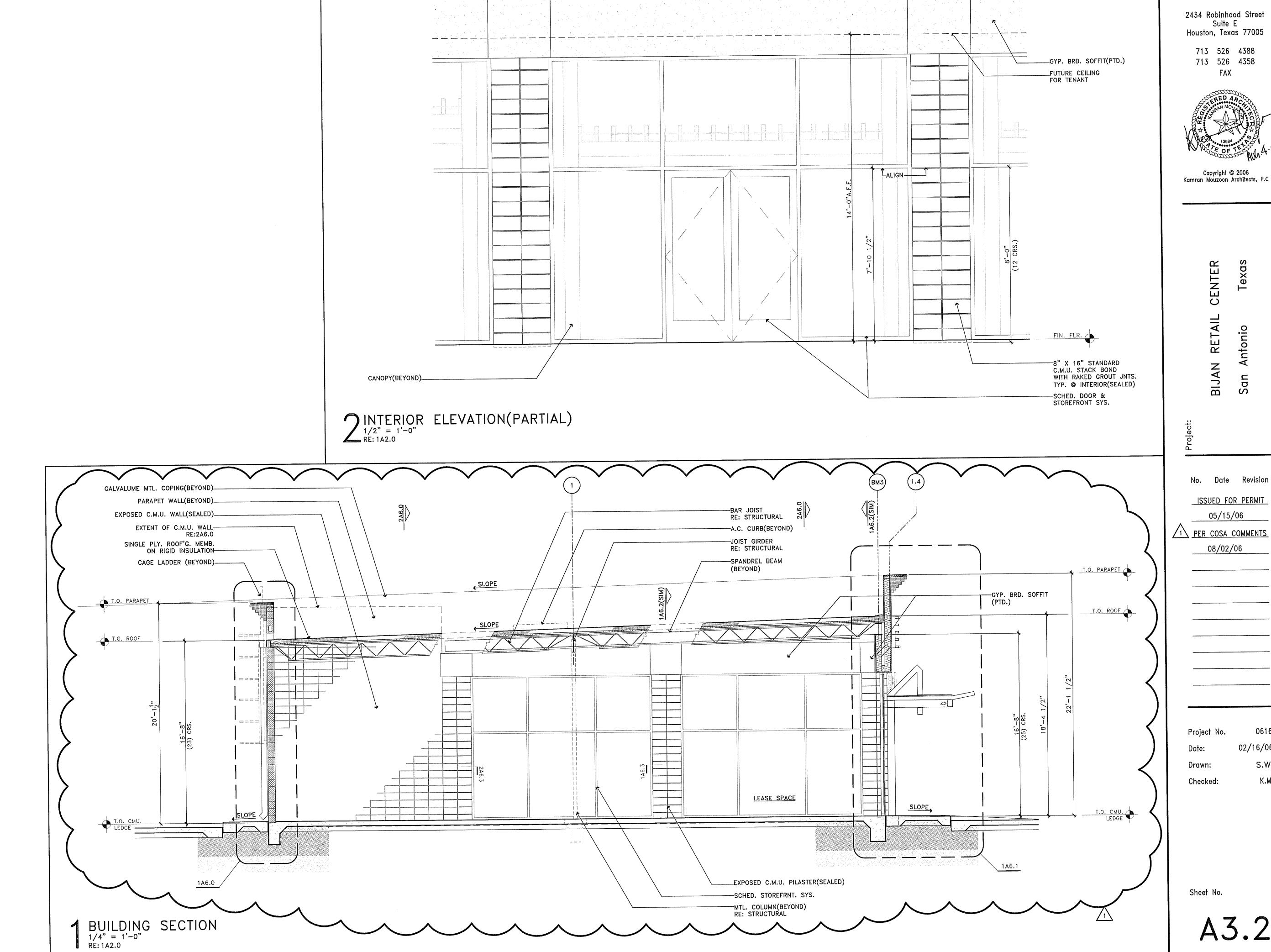
08/02/06

oject No. 20516 ite: 02/16/06

Drawn: S.W.
Checked: K.M.

Sheet No.

A3.1



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05/15/06

08/02/06

02/16/06 s.w.

## PARTITION TYPE NOTES DESIGN CRITERIA: 1 - ALLOWABLE DEFLECTION = L/240. 2 - 28 GAUGE MTL. STUDS @ 16" O.C. 3 - 5/8" THK. GYP. BD., UNLESS NOTED OTHERWISE. FIRE RATED PARTITIONS: 1 - PROVIDE 5/8" TYPE "X" FIRE RESISTIVE GYP. BD. 2 - FILL ALL DECK VOIDS WITH FIRE SAFING INSULATION. 3 - SEAL PARTITION PERIMETER AND ALL PENETRATIONS WITH RATED SEALANT. SOUND RATED PARTITIONS: 1 - PROVIDE SOUND ATTENUATION BLANKETS; FOR BLANKET THICKNESS REFER TO STUD DEPTH. 2 - FILL ALL DECK VOIDS WITH SOUND ATTENUATION. 3 - SEAL PARTITION PERIMETER AND ALL PENETRATIONS WITH ACOUSTICAL SEALANT. 4 - WHERE SOUND RATED PARTITIONS ARE FIRE RATED SEAL PARTITION AS REQUIRED FOR FIRE RATING. 1-1/2" = 1'-0" RE: 1A2.0

#### DAMP LOCATIONS:

- 1 PROVIDE WATER RESISTIVE GYP. BD. @ PARTITIONS RECEIVING TILE, AND OR PLASTIC-FACED WALL PANELS.
- REFER TO ROOM FINISH SCHEDULE FOR LOCATIONS. 2 - PROVIDE INTERIOR TILE BACKER BOARD @ WET LOCATIONS.

- 1 ALL PARTITIONS EXCEEDING THE LIMITING HT. ARE TO BE
- RIGIDLY BRACED. 2 - ALL PARTITIONS THAT STOP ABOVE THE CEILING ARE TO BE RIGIDLY BRACED.
- 3 RIGIDLY BRACE ALL DOOR JAMBS.

DOOR NO. TYPE HWSET MODE WIDTH HEIGHT THICK DOOR FRAME RATING LABEL N.T.D. HEAD JAMB SILL OUTSIDE LOCATION INSIDE LOCATION FINISH

NON-RTE

NON-RTD

NON-RT

NON-RT

NON-RT

NON-RT

NON-RTD

NON-RTD

NON-RTD

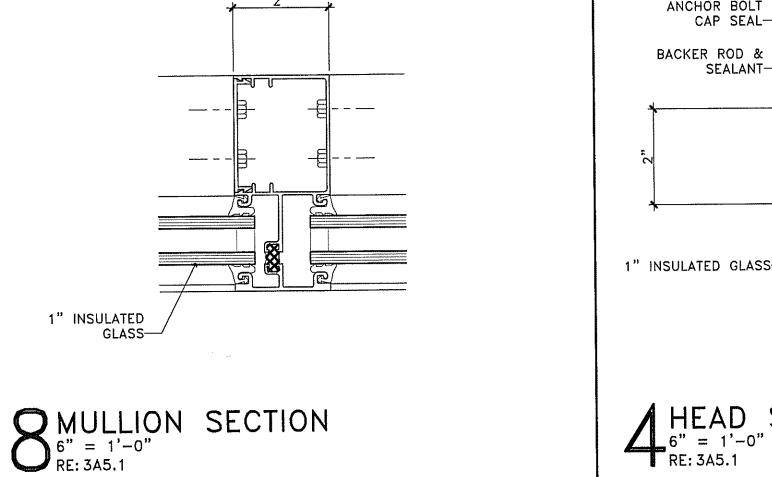
NON-RTD

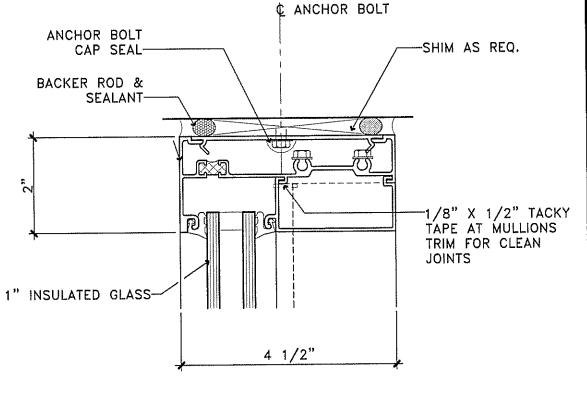
NON-RTD

HMDG

8'-0" 1 3/4"

## - FILL VOIDS © STRUCTURE RE: PARTITION TYPES NOTES - UNDERSIDE OF MTL. DECK - RATED SEALANT/ ACOUSTIC SEALANT (CONT.) @ BACKLAYER BOTH SIDES - CONT. MTL. "L" TRIM WHERE EXPOSED 2 LAYERS 5/8" THK. GYP. BD. TYPE "X" EACH SIDE OF 6" MTL. STUD @ 16" O.C. UL. DESIGN NO. U411 NONBEARING WALL RATING — 2HR. - BATT. INSULATION/ SOUND ATTENUATION BLANKET WHERE OCCUR ---- RATED SEALANT





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CENTER RETAIL BIJAN

FS-8 #14 X 1" ASSEMBLY SCREW

—1" INSULATED

GLASS

-1/8" X 1/2" TACKY TAPE

AT MULLIONS TRIM FOR CLEAN JOINTS

-CONT. SEAL

-(4) FS-8

#14 X 1" H.H.S.T.S.

AT BG VERTICALS

-COSMETIC SEAL

CAP SEAL

& ANCHOR BOLT

-ANCHOR BOLT &

Date Revision ISSUED FOR PERMIT 05/15/06

20516 02/16/06 S.W. Drawn:

Checked:



Sheet No.

## PARTITION TYPE(FUTURE NON-BEARING RATED DEMISING PARTITION)

DOOR	NO.							
01	02	03	04	05	06			
EACH	TO HAVE:						<del></del>	
02	EA. PIV	OT SET		7215			626	IVE
04	EA. PIV	OT		7215IN	Γ	·····	626	IVE
02	EA. MA	NUAL FL	JSH BOL	T FB458	*********		626	IVE
01	EA. DU	ST PROO	F STRIKI	E DP1			626	IVE
01	EA. DE	ADLOCK	Jumns	MS1850	S(PROV.	BACKSET)	628	ADA
02		RTISE CY				AM/COLLAR	626	FAL
02	EA. PU	LL/PUSH	BAR	9190-	18-NO		630	IVE
02	EA. CO	NCEALED	CLOSER	OHC10	)(S105) \	/0	689	DOR
02	EA. OV	ERHEAD	STOP	900\$			630	GLY
01	SET SE	ALS		BY DO	OR MANUE	ACTURER		B/0
01	EA. TH	RESHOLD		513			AL	NGP
01	EA. EX	IT INDICA	TOR	4089			130	ADA

DOOR	NO.							
07	80	09	10	11	12			
EACH	TO HAVE:	<del></del>						
04	EA. HI	NGE		5BB1H	W 5 X 4.5	NRP	630	IVE
01	EA. PA	NIC DEV	CE	19-R-	P-CONTRO	L	630	MON
01	EA. RII	M CYLIND	ER	951 6	PIN		626	FAL
01	EA. LC	CK GUAF	RD.	LG1			600	IVE
01	EA. SU	JRFACE C	LOSER	SC71	HO/DS		689	DOR
01	EA. AF	MOR PLA	TE	8400	34"x2" LD	W	630	DOR
01	SET SI	EALS		5050B	- Charles Miner		BRN	NGP
01	EA. DF	RIP CAP		16A			AL	NGP
01	EA. DO	OOR SWE	EP	C607A			AL	NGP
01	EA. Th	IRESHOLD		425			AL	NGP
01	EA. VI	EWER		698			626	IVE

LEASE SPACE

LEASE SPACE

EXTERIOR

EXTERIOR

EXTERIOR

EXTERIOR

EXTERIOR

EXTERIOR

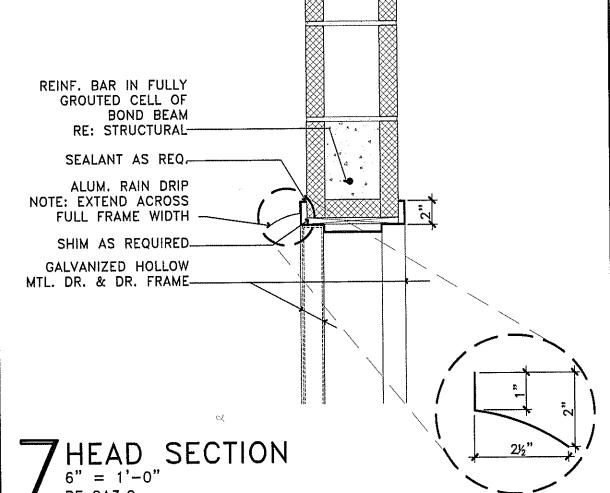
EXTERIOR

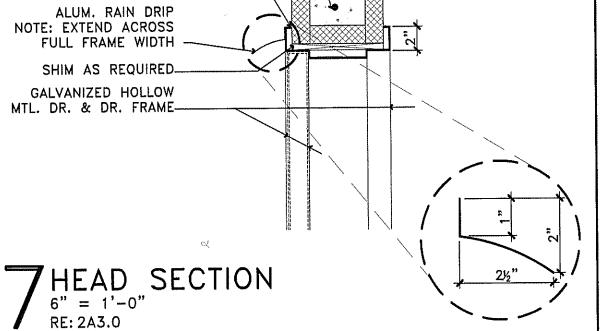
EXTERIOR

EXTERIOR

**EXTERIOR** 

EXTERIOR





SCHED. ALUM. THRESHOLD →

3/4" EXP. JNT...

GALV. ANVHOR

(TYP. OF 3 MIN.) PER JAMB

8" X 16" C.M.U.(SEALED)—

6" = 1'-0" RE: 2A3.0

REINF. BAR IN FULLY GROUTED CELL RE: STRUCTURAL....

8" C.M.U. WALL(BEYOND)\_\_\_\_

SCHED. ALUM. THRESHOLD

COMPRESSIBLE JNT. FILLER(TYP.)

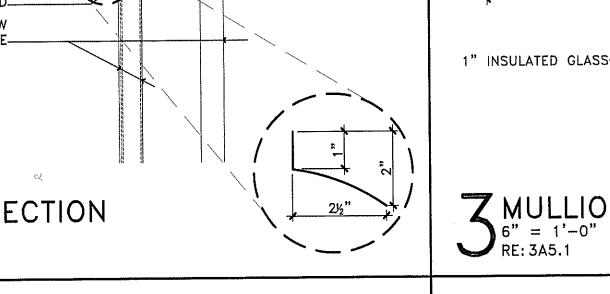
SCHED. HMFG.

SCHED. HMDG.

DR. SWEEP-

LEASE SPACE

SCHED. DR.



Z MULLION SECTION 6" = 1'-0"RE: 3A5.1

SHIM AS REQ'D-

FG-2122 ALUM.

FILLER 4" LONG

FG-2188 VINYL

BACKER ROD &

ALUM. FILLER-

SEALANT-

FILLER RUNS BTWN.

**7** JAMB

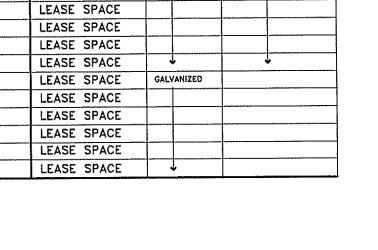
RE: 3A5.1

6" = 1'-0"

AT ANCHORS-

HEAD SECTION





## LEGEND: PR. = PAIR

MARDWARE SCHEDULE

NO SCALE

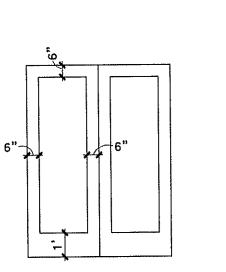
RE: DR. SCHEDULE

A/G = ALUMINUM/GLASS SGL. = SINGLE ALF = ALUMINUM FRAME

HMDG = HOLLOW METAL DOOR GALVANIZED
HMFG = HOLLOW METAL FRAME GALVANIZED N.T.D. = NOMINAL THROAT DIMENSION

02

SGL 4'-0"

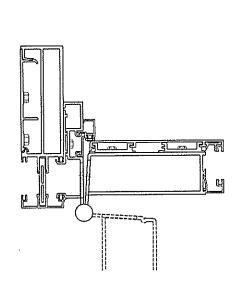


ALUM. WITH 1"

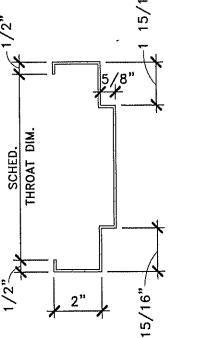
THK. SCHED.

TEMP. GLASS

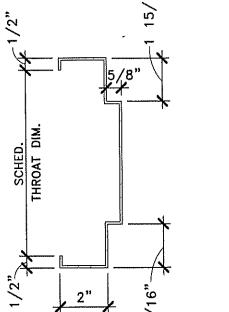
HMDG



2"x4 1/2" EXTRUDED ALUM. FRAME NOTE: FOR FINISHES RE: DR. SCHED.



HOLLOW MTL. FRAME GALVANIZED (PTD.) NOTE: FOR FINISHES



RE: DR. SCHED.



5 SILL 6" = 1'-0" RE: 2A3.0

SILL 6" = 1'-0" RE: 3A5.1

1/4" WEEP HOLES REQ'D IN FLASHING

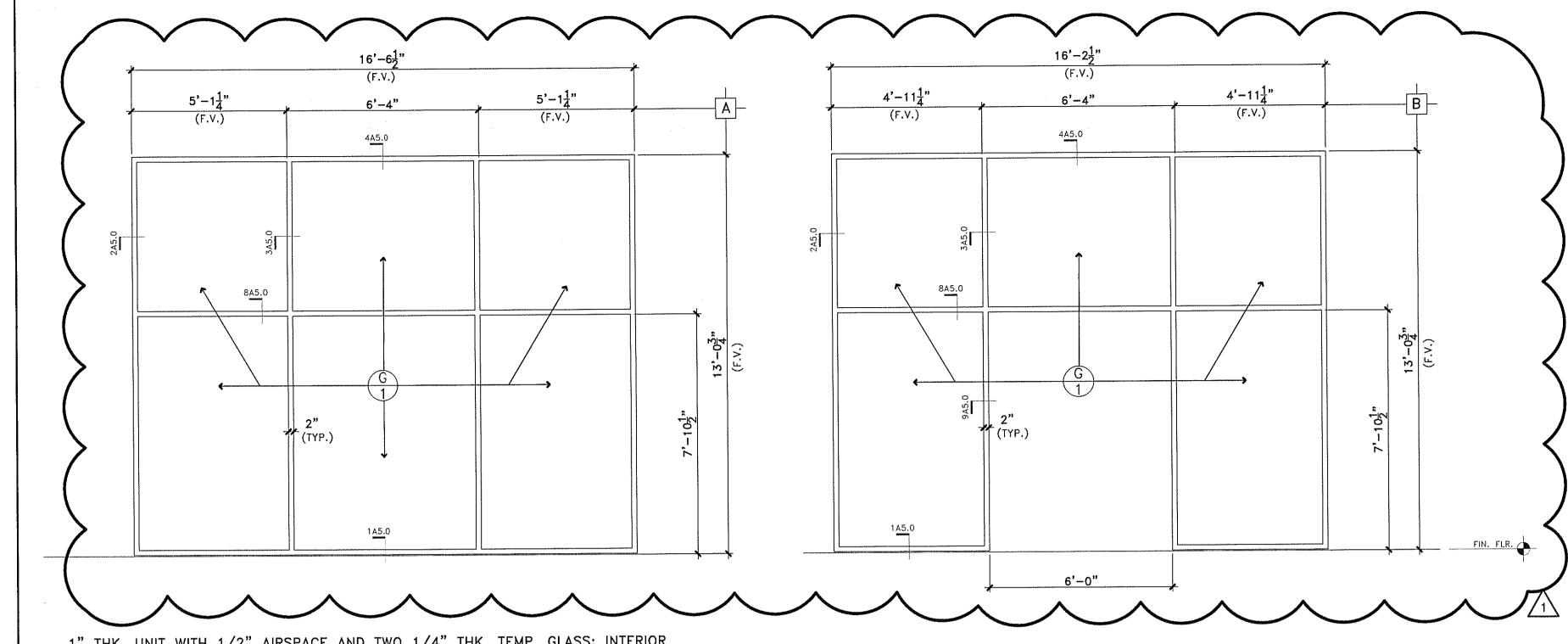
AT CL. OF MULLIONS-

BACKER ROD &

SHIM AS REQ'D .-

SEALANT-

O DOOR SCHEDULE, DOOR AND FRAME TYPES
NO SCALE
RE: 1A2.0

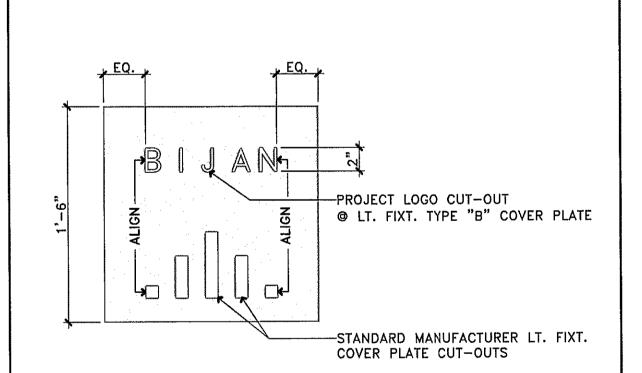


1" THK. UNIT WITH 1/2" AIRSPACE AND TWO 1/4" THK. TEMP. GLASS; INTERIOR GLASS CLEAR LOW "E", ARGON GAS FILLED

NOTE: ALL STOREFRONT SYSTEM IS EXTRUDED ALUM. WITH THERMAL BREAK TYPICAL FRAME DIMENSION: 2" X 4 1/2" FRAME FINISH: WHITE PTD. SHGC = 0.44U-FACTOR = 0.29

F.V. = FIELD VERIFY

## STOREFRONT SCHEDULE 3/8" = 1'-0" RE: 1,2A3.0; 1,2A3.1



## 3 LIGHTING FIXTURE DETAIL NO SCALE RE: 1,2A3.0; 1,2A3.1, 2A5.1

TYPE	QTY.	MFG.	MODEL	LAMP(WATTS, VOLTS, & TYPE)	FINISH	MOUNTING	REMARKS
TYPE A	6	STONCO	VWXL21GC	200W,	CAST ALUM.	VERTICAL SURFACE	
TYPE B	13	VISA	OW1422	IN150	WHT.	VERTICAL SURFACE	CUSTOM CUTOUT AND LOGO IN FRONT SHIELD RE: 3A5.1 FOR LOGO INFORMATION/TEMPLATE
TYPE C	13	BEGA	2023 W/GUARD	50W, 12V, G46.35	BRUSHED STAINLESS STEEL	VERTICAL SURFACE	ETCHED GLASS
TYPE D	10	INSIGHT	EX5/SMM/TA/ T5HO/54W/12'/1/ TW/PCDM	54W, 120V, T5HO	TEXTURED WHITE	SMM	12'-0" L. FIXTURE  CLEAR POLYCARBONATE LENS(MAX. 8'-0")  PROVIDE ADDITIONAL 4'-0" CLEAR POLYCARBONATE  LENS TO COVER ALL 12'-0" L. FIXTURE.  NOTE: THERE SHOULD BE NO GAP BETWEEN 4'-0"  SECTION & 8'-0" SECTION FOR INSECT INFILTRATIO
TYPE E	9	LOUIS POULSEN	AHNI/175W/MH/ED-28 MOGUL 120W WHTOPALSRA	175W,	WHT.	POLE	POST TOP:POST INFO.:AHNTRI 16 WHT. RE: 1A1.0 FOR LOCATIONS
TYPE F	2	MCGRAW EDISON	AMF2512976YMHWG/ AMSAB-BK	MH250W	WHT.	POLE	POLE INFO.: RSS4A18SW2XXG NOTE: ONE FIXTURE PER POLE NOTE: ADDITIONAL POLE INFO. 18RSS4A205W, WALL THKNS. = 120, BASE SQAURE 10½", BOLT CIRCLE Ø 11.0", BOLT PROJ 4½", SHAFT SIZE 4", DXABXH = ¾" × 25" × 3"

RECOMMENDED LOADING Guidelines for Selecting Sheet Thickness and Purlin Spacing (Sheet Supported on the Four Sides) MAXIMUMPURLINSPACING(inches) DEFLECTION- 1"

LOAD PER		4' WII	HTC	
GAUGE (Ib./fl.²)	15	30	4	0
6 mm 1/4"	32"	22*	12"	******
8 mm 5/16"	38"	28"	18*	PERMANESI.
10 mm 3/8"	45"	34"	28*	24"
16 mm 5/8"	75"	43"	36"	30"
20 mm 3/4"	80"	48"	41*	35"
LOAD PER	Hittishark Amerikan pengunya yang mengang mengang mengang mengang mengang mengang mengang mengang mengang mengan	6' WII	DTH	
GAUGE (Ib./fl.²)	15	30	4	0
6 mm 1/4"	26"	12"		
8 mm 5/16"	36"	26"	12"	200000
10 mm 3/8"	44"	33"	27*	22°
16 mm 5/8"	60"	40"	36°	30"
AXIMUMPURLI				

10 mm	3/0	~~~	400	36°	30"
16 mm	5/8"	60"	40"	30-	.) W
MAXIMUA	APURLI	NSPACINO	(inches) D	EFLECTION	
LOAD P	ER		4' WII	HTC	
GAUGE (I	b./ft.²)	15	30	4	0
8 mm	5/16"	80"	54"	46**	40"
10 mm	3/8"	96"	69"	58*	54"
16 mm	5/8"	120"	110*	104"	84"
20 mm	3/4"	125"	115°	109°	89"
LOADF	ER	Elife (In It supposes to suppose SAC ASSESSED THE SUCCESSORY	6. MII	DTH	revenues consentent sign et al 14 et martis A
GAUGE (	b./ft.²)	15	30	4	0
8 mm	5/16"	60"	44"	38"	34"
10 mm	3/8"	80"	S6"	44"	38"
16 mm	5/8"	120"	78"	72*	62"

#### TECHNICAL DATA

Immediate delivery of sheets in 4 and 6 foot wildths. Sheets may be supplied cut to your exact size specifications with no extra cutting charges.

SPICET	MM.	4	4.5	6	8	8	10	10	. 16	16	16	20	25	.25	32
THICKNESS	INCH	5/32	3/16	1/4	5/16	5/16	3/8	3/8	5/8	5/8	5/8	3/4	1	1	1-1/4
WALL TYPE	М. нешки плания в в неш в в неш	Twin	Twin	Twin	Twin	Four	Twin	Trip!e	Trip!∉	five	Four/M	Triple	five	five/M	Five/A
RIB SPACING	INCI	.236	,236	.236	.354	.354	.354	.787	.787	.787	.625	.787	.787	1.25	1.25
STRUCTURE TWAT	Well Version	1	Triple W	/all Versio	) () 	8mm 4	Wall L	M-	Wall Vers	Ž	AT	Wall Vers	<b>*</b>	Five Wal	l Version
WEIGHT (Ibs.//t <sup>3</sup> )	10319X034600mespangoappa	.16	.20	.27	.35	.35	.41	.41	.55	.57	.57	.64	.70	.74	.80
LICHT	CLEAR	83%	83%	82%	81%	80%	77%	76%	72%	62%	67%	62%	61%	60%	59%
TRANSMISSION	BRONZE	70%	70%	70%	50%	49%	35%	34%	40%	33%	35%	33%	32%	29%	26%
ASTM-D1003 (%)	OPAL	54%	54%	54%	46%	48%	SS%	51%	46%	41%	41%	29%	36%	33%	29%
MINIMUM BENDIP RADIUS	√G	1.11	2' 4'	3, 2,2	3' 11"	5'2"	4' 8'	5' 7"	9' 4"	7° 10°	7' 10"	11' 3"	12' 6"	12' 6'	15' 7'
U FACTOR (BTU/h	r (L. <sup>2</sup> F)	.67	.67	.63	.59	.47	.56	.52	.40	.33	.37	.31	.28	.29	.28
R-VALUE	**************************************	1.49	1.49	1.59	1.69	2.13	1.79	1.92	2.50	3.03	2.70	3.23	3.57	3.45	3.57

TYPE	THICKNESS	WALL TYPE	RIB SPACING	STRUCTURE TYPE	WEIGHT (Lbs/Ft*)	LIGHT TRANSMISSION ASTM-D1003(%)	U FACTOR	R VALUE	REMARKS
A	¥4"	TRIPLE	.787	FIVE M WALL VERSION	0.64	OPAL 29%	0.31	3.23	PROVIDE ALL REQ'D. PROPER MECH. FASTENERS, WASHERS, SEALANTS, AND FITTINGS
В	J	<b>↓</b>	<b>I</b>	•	•	CLEAR 62%	↓ ↓	J	

NOTE: THE U.V. PROTECTED(COEXTRUDED) SURFACE OF MULTIWALL SHEETS MUST BE FACED TOWARDS THE SUN. MULTIWALL SHEETS MUST NOT BE EXPOSED TO SOURCE OF HEAT.

MULTIWALL POLYCARBONATE(ROOF PANEL) SCHEDULE
NO SCALE
RE: 1A6.4

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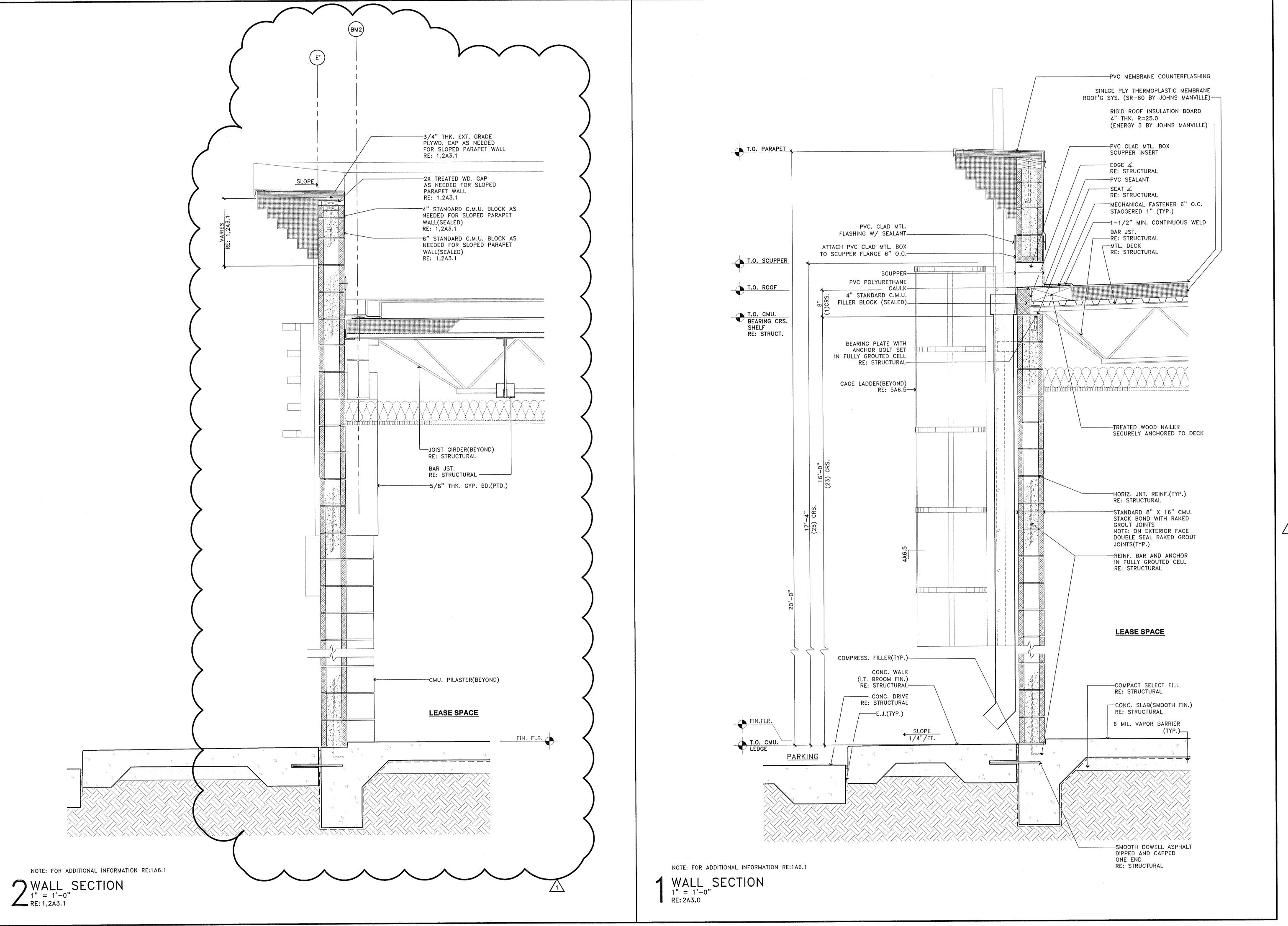
2 LIGHTING FIXTURE SCHEDULE
NO SCALE
RE: 1,2A3.0; 1,2A3.1

No. Date Revision 05/15/06 PER COSA COMMENTS 08/02/06

02/16/06

Checked:

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08/02/06

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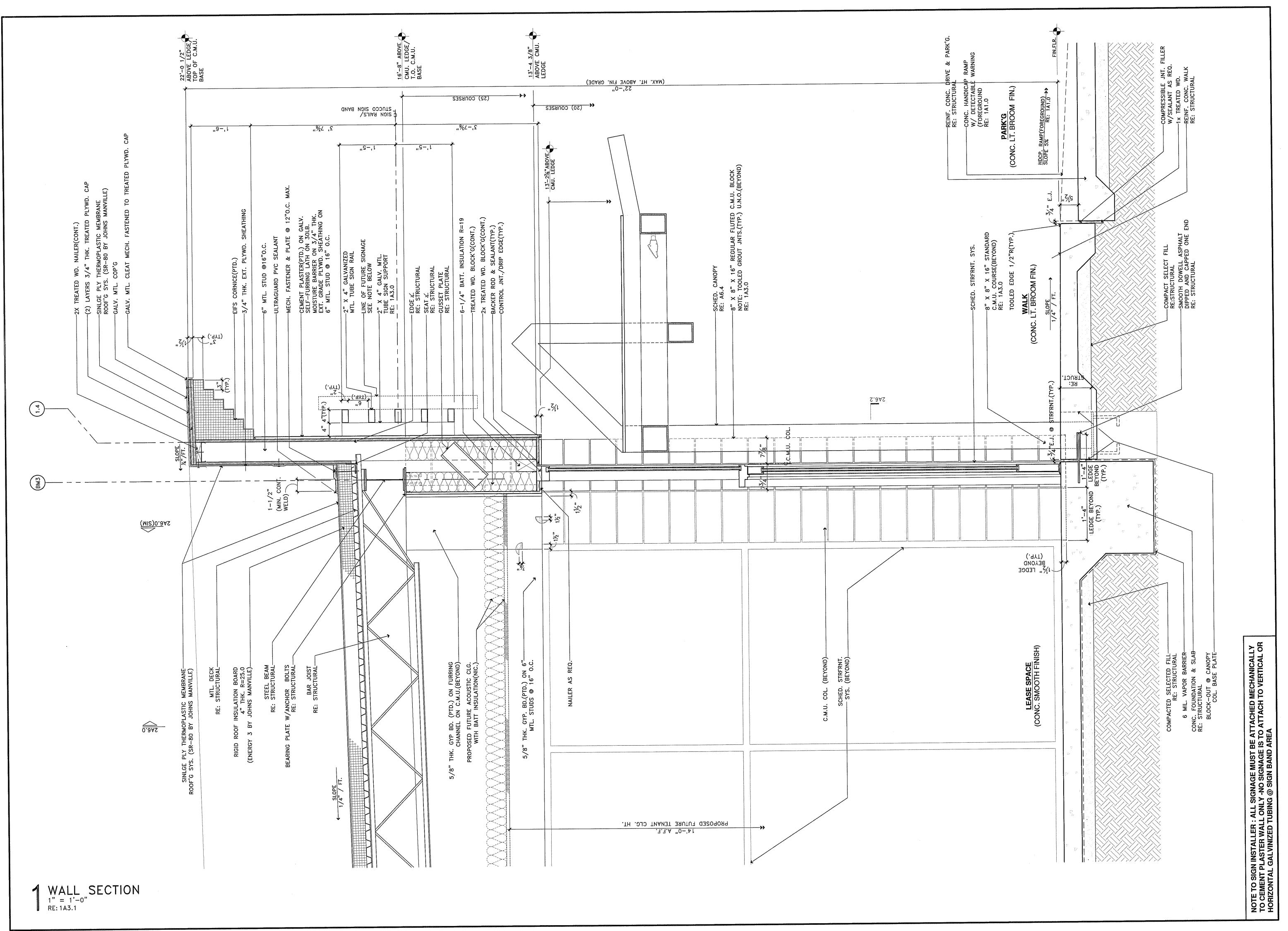
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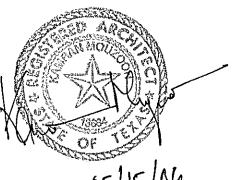
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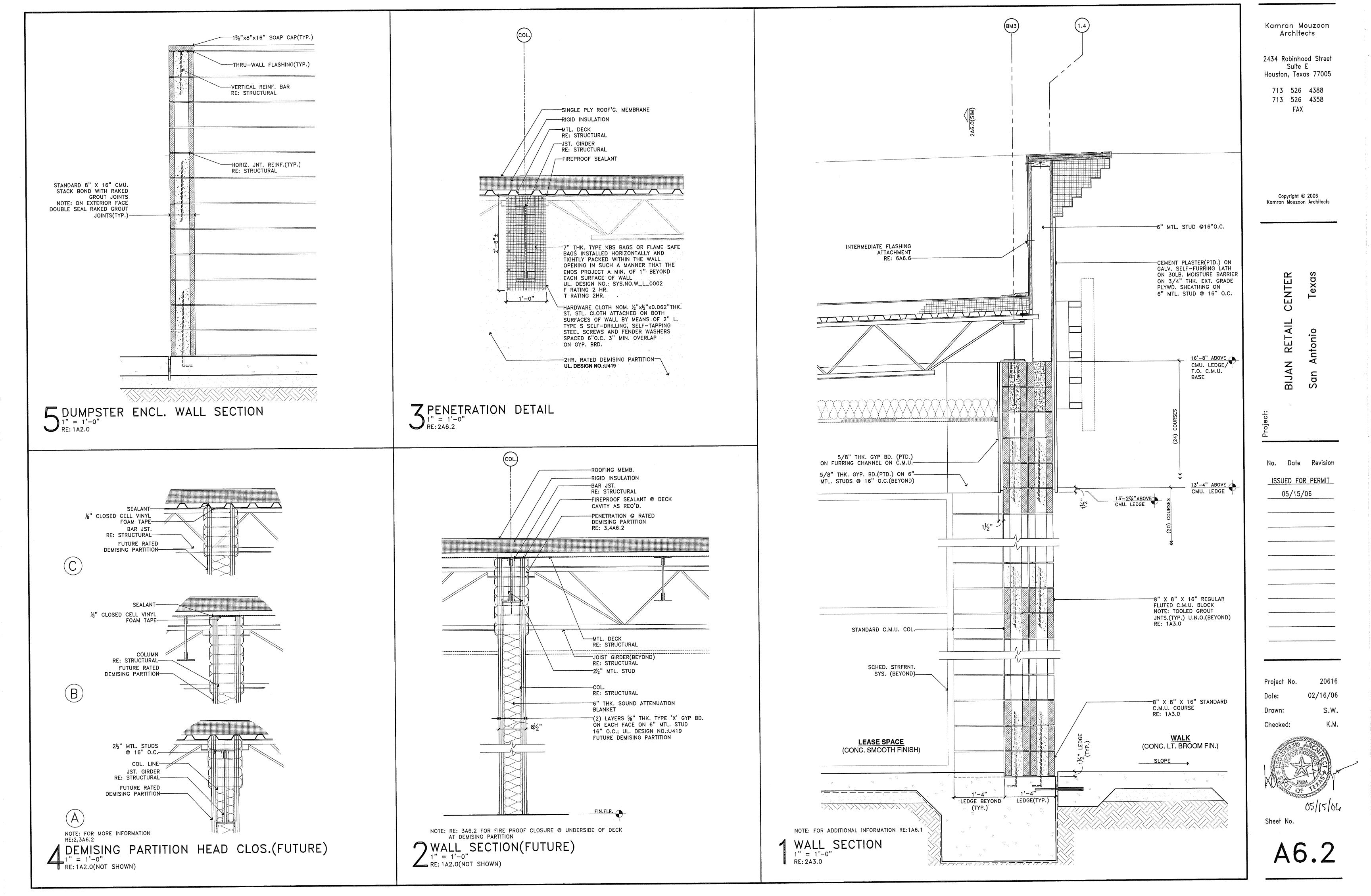
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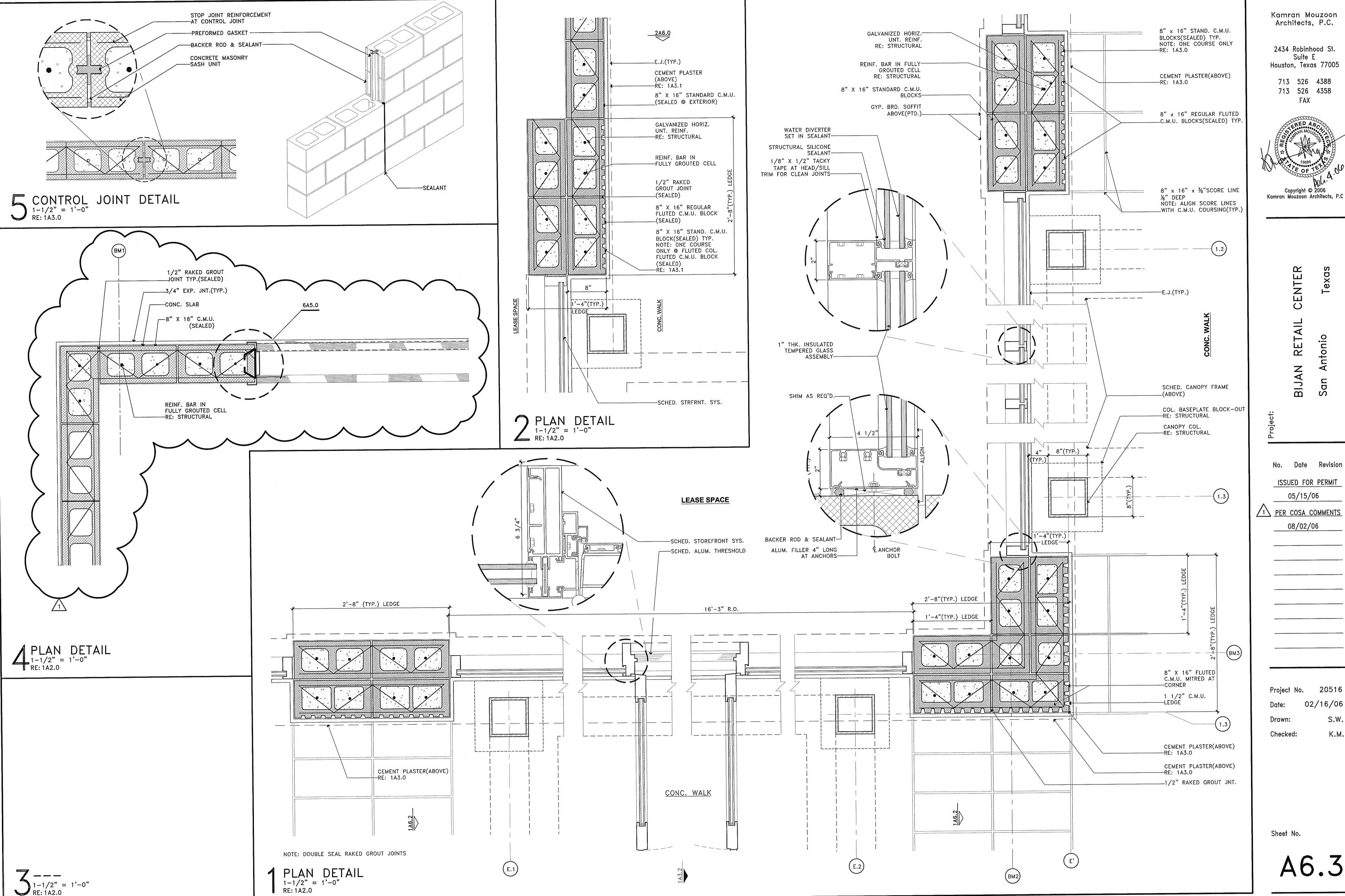


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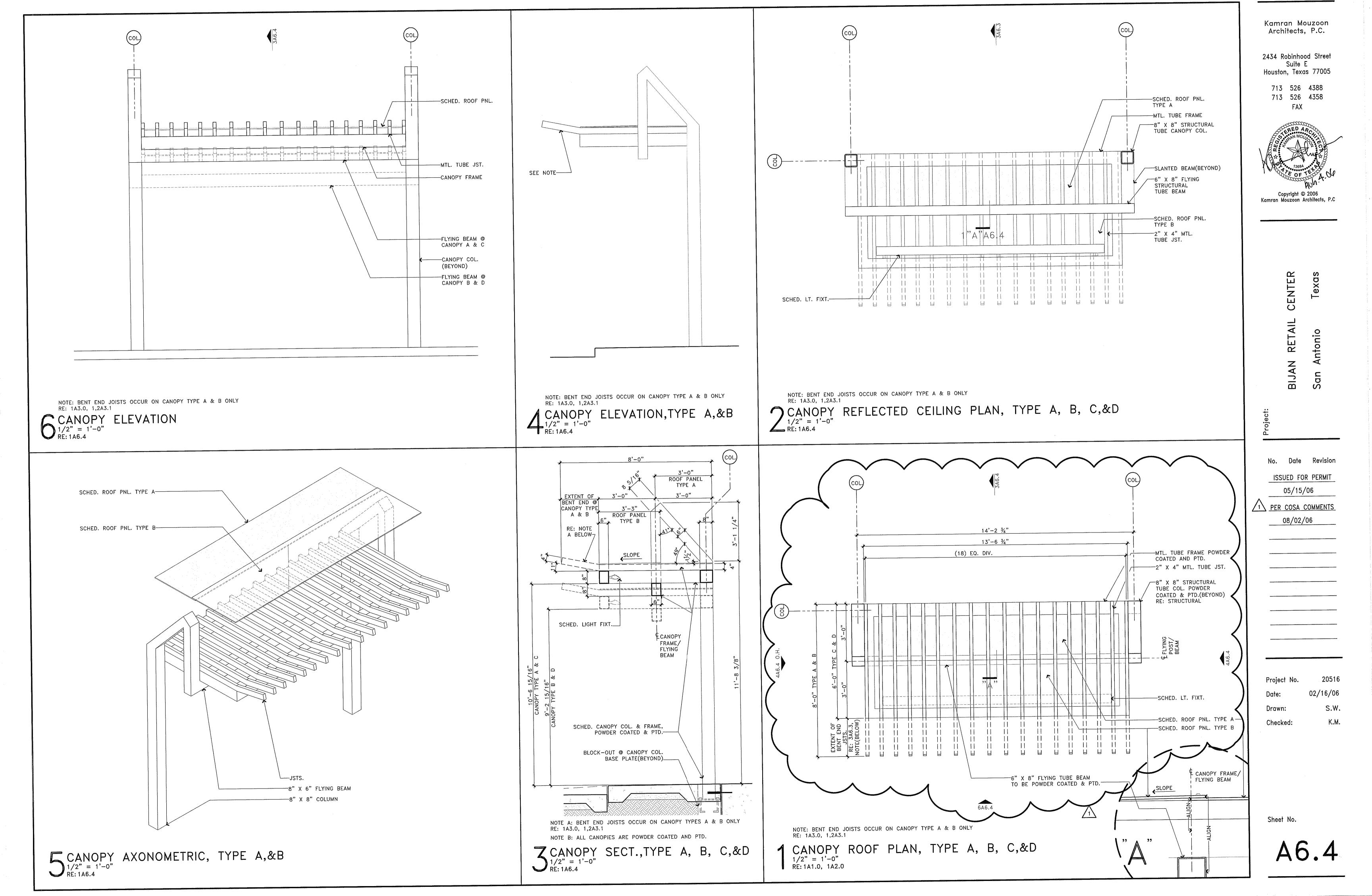
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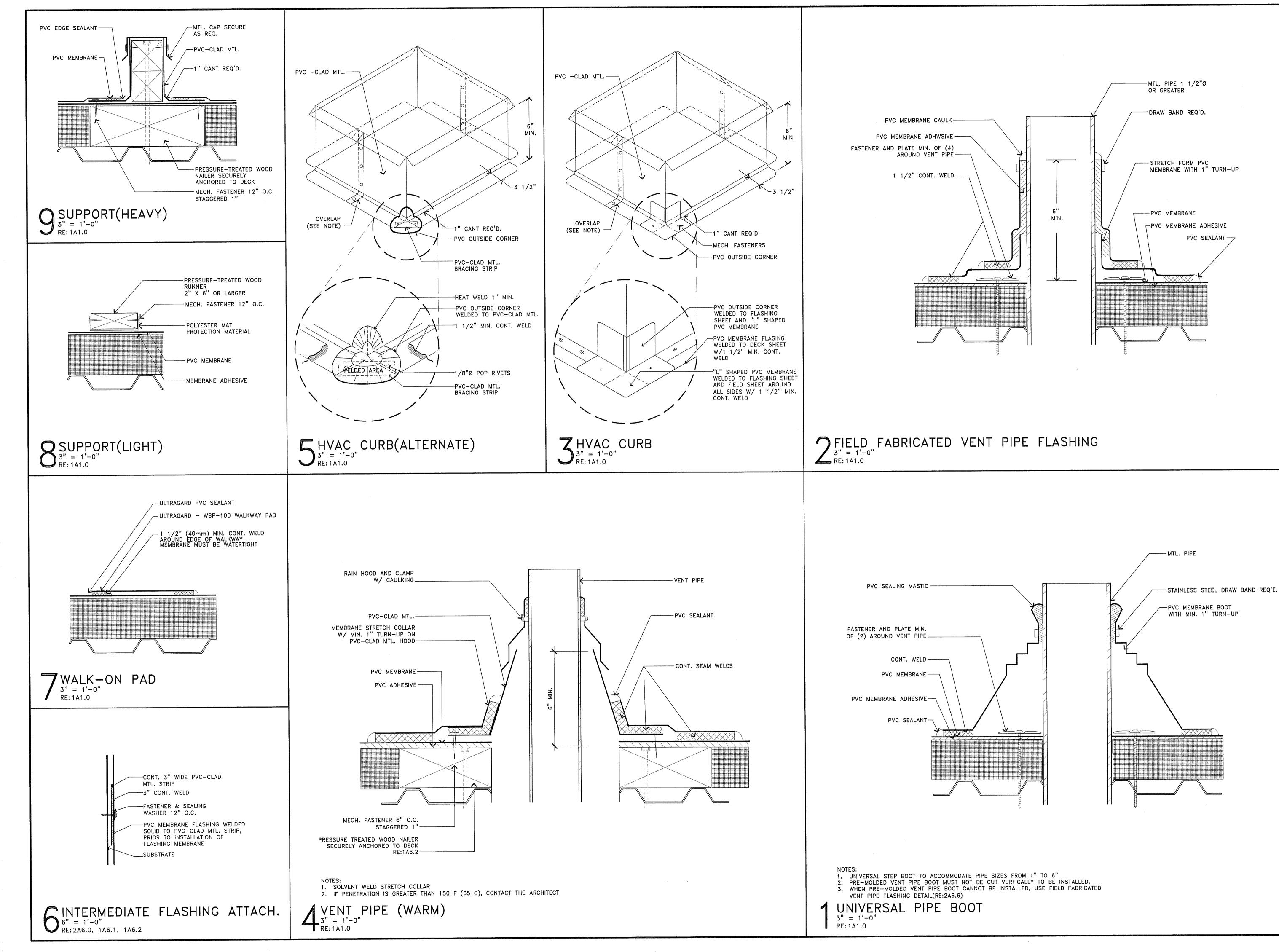
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#### GENERAL:

- 1. CONTRACTOR TO VERIFY ALL DIMENSIONS, ELEVATIONS AND EXISTING FIELD CONDITIONS. ANY DISCREPANCIES AND INCONSISTENCIES BETWEEN FIELD DIMENSIONS AND PLAN DIMENSIONS SHALL BE IMMEDIATELY REPORTED TO THE ARCHITECT.
- 2. ALL PHASES OF THE WORK SHALL CONFORM TO THE MINIMUM STANDARDS OF THE UNIFORM BUILDING CODE 1994 EDITION AND ALL OTHER REGULATING AGENCIES EXERCISING

AUTHORITY OVER ANY PORTION OF THE WORK.

- 3. THE CONTRACT STRUCTURAL DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE. UNLESS OTHERWISE INDICATED. THEY DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY TO PROTECT THE STRUCTURE, WORKMEN AND OTHER PERSONS DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE, BUT NOT BE LIMITED TO, BRACING, SHORING FOR CONSTRUCTION EQUIPMENT, SHORING FOR THE BUILDING, FORMS AND SCAFFOLDING, AND SHORING OF RETAINING
- 4. OPENINGS, POCKETS, ETC., SHALL NOT BE PLACED IN SLABS, BEAMS, COLUMNS, WALLS, ETC. UNLESS SPECIFICALLY SHOWN ON THE STRUCTURAL DRAWINGS OR APPROVED IN WRITING BY THE STRUCTURAL ENGINEER.
- 5. ALL ASTM SPECIFICATIONS NOTED ON THESE DRAWINGS SHALL BE OF THE LATEST REVISIONS.
- 6. IN THE EVENT CERTAIN FEATURES OF THE CONSTRUCTION ARE NOT FULLY SHOWN ON THE DRAWINGS OR CALLED FOR IN THE NOTES OR SPECIFICATIONS, THEIR CONSTRUCTION SHALL BE OF THE SAME CHARACTER AS FOR SIMILAR CONDITIONS THAT ARE SHOWN OR CALLED FOR AND SHALL BE REVIEWED BY
- SPECIFIC NOTES AND DETAILS SHALL TAKE PRECEDENCE OVER NOTES AND TYPICAL DETAILS.

#### DESIGN LOADS:

LIVE LOADS:

ROOF OFFICE

SEISMIC:

50 PSF PLUS 20 PSF PARTITION

- EXPOSURE C

1-1/2"

3/4"

1-1/2"

WIND:

BASIC WIND SPEED = 90 MPH

WIRE FABRIC SHALL CONFORM TO ASTM A-185.

#### SEISMIC ZONE = ZONE XX FOUNDATIONS:

1. THIS DRAWING MUST BE READ IN CONJUNCTION WITH ALL ARCHITECTURAL, ELECTRICAL, MECHANICAL, PLUMBING AND CIVIL DRAWINGS.

2. THE MINIMUM 28-DAY CONCRETE STRENGTH SHALL BE 3000 PSI. ADDITIONAL PROVISIONS FOR CONCRETE SHALL CONFORM TO APPLICABLE REQUIREMENTS OF ACI 302.1R-89 " GUIDE FOR CONCRETE FLOOR AND SLAB CONSTRUCTION." 3. REINFORCING BARS SHALL CONFORM TO ASTM A-615, GRADE 60. WELDED

4. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCEMENT FOR CAST-IN-PLACE CONCRETE ( NON-PRESTRESSED

> (i) CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH (ii) CONCRETE EXPOSED TO EARTH OR WEATHER (III) CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND

BEAMS, COLUMNS

5. MIN. LENGTH OF LAP = 60 BAR DIAMETER; CORNER BARS = 24" 6. CONCRETE PLACEMENT AND CURING SHALL CONFORM TO THE REQUIRE-MENTS OF ACI 302"GUIDE FOR CONCRETE FLOOR AND SLAB CONSTRUCTION."

7. SITE SLOPE SHALL CAUSE WATER TO FLOW AWAY FROM THE STRUCTURE FOOTPRINT FOR A MINIMUM DISTANCE OF 10 FEET. NO VEGETATION OVER SIX FEET IN HEIGHT SHALL BE PLANTED WITHIN 20 FEET OF BUILDING PERIMETER UNLESS SPECIALLY ACCOUNTED FOR. 8. IT IS RECOMMENDED THAT A QUALIFIED GEOTECHNICAL ENGINEER BE

RETAINED AT THE TIME OF THE CONSTRUCTION PHASE OF THE PROJECT TO VISIT THE PROJECT SITE AND OBSERVE AND TEST THE EARTHWORK PLACEMENT. THE GEOTECHNICAL ENGINEER WILL INFORM THE FOUNDATION DESIGNER, SHOULD CONDITIONS DIFFER FROM THOSE NOTED ON THE DRAWING. IT IS RECOMMENDED THAT THE GEOTECHNICAL ENGINEER CONFIRMS ALL GEOTECHNICAL CRITERIA USED BY THE FOUNDATION DESIGN-ER. ASSUME BEARING CAPACITY OF SOIL 3000 PSF, AND A P.I.=17 OR LESS.

9. ON-SITE FILL SOILS, ENCOUNTERED IN THE STRUCTURE AREAS DURING CONSTRUCTION, MUST HAVE REPORTS SIGNED BY A REGISTERED GEOTECHNICAL ENGINEER THAT CONFIRMS THE PLACEMENT OF THE FILL AND A RECORD OF CONSTRUCTION AND EARTHWORK TESTING. IN THE EVENT THAT THAT NO COMPACTION TEST RESULTS ARE AVAILABLE, THE FILLS SOILS MUST BE PROCESSED IN ACCORDANCE WITH THE ENGINEERS' SITE PREPARATION RECOMMENDATIONS. ALTERNATIVELY. THE EXISTING FILL SOILS MAY BE TESTED COMPREHENSIVELY TO EVALUATE THE DEGREE OF COMPACTION OF OF THE FILL SOILS. EXCAVATIONS SHOULD EXTEND BEYOND THE STRUCTURE AREAS AS SPECIFIED BY THE GEOTECHNICAL ENGINEER. IN GENERAL FILL SOILS TO BE CRUSHER FINE OR SCALPING ( MAX. P.I.=17 ). FILL SHALL BE PLACED IN LOOSE LIFTS NOT EXCEEDING 8", AND EACH LAYER SHALL BE COMPACTED TO 95% PER ASTM D-698.

10. SITE PREPARATION: IN GENERAL, REMOVE VEGETATION, TREE ROOTS, ORGANIC TOP SOIL, EXISTING FOUNDATIONS, PAVED AREAS AND UNDESIRABLE MATERIALS FROM THE BUILDING AREA.

11. FORM WORK FOR CONCRETE SHALL CONFORM TO THE REQUIREMENTS

OF ACI 347 "GUIDE TO FORM WORK FOR CONCRETE." 12. PROVIDE #5 CORNER BARS AT EACH HORIZONTAL REINFORCEMENT ON ON WALLS, CORNER BEAMS, AND DEAD-END BEAMS.

13. ALL EXTERIOR WALLS AND LOAD BEARING WALLS SHALL HAVE 1/2" DIA X 8" LONG ANCHOR BOLTS AT 48" O.C. OR EQUAL.

#### RFINFORCED CONCRETE:

- 1. GENERAL: FABRICATION AND CONSTRUCTION SHALL CONFORM TO THE UNIFORM BUILDING CODE, AND ACI 318 LATEST
- 2. CONCRETE SHALL ATTAIN THE FOLLOWING MINIMUM COMPRESSIVE STRENGTHS IN 28 DAYS FOR DIFFERENT STRUCTURAL ELEMENTS USING MINIMUM 5 SACKS OF CEMENT
- A. SLAB ON GRADE AND FOUNDATION 4.5KSI TYPE V W/C<0.45
- B. CONCRETE PANELS

- 3. PORTLAND CEMENT SHALL CONFORM TO ASTM C-150, TYPE C FOR CONCRETE IN CONTACT WITH SOIL. AGGREGATE FOR STONE CONCRETE SHALL CONFORM TO ASTM C-33 AND GRADE "A" PER UNIFORM BUILDING CODE. MAXIMUM AGGREGATE SIZE FOR FOOTINGS, SLABS ON GRADE AND MASS CONCRETE SHALL NOT EXCEED 1-1/2". MAXIMUM AGGREGATE SIZE FOR ALL OTHER CONCRETE SHALL NOT EXCEED 3/4"
- 4. ALL REINFORCING BARS, ANCHOR BOLTS, AND OTHER CONCRETE INSERTS SHALL BE WELL SECURED IN POSITION PRIOR TO PLACING OF CONCRETE.
- 5. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCEMENT FOR CAST-IN-PLACE CONCRETE ( NON-PRESTRESSED ).

MIN. COVER

1-1/2"

(i) CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH (ii) CONCRETE EXPOSED TO EARTH OR WEATHER

- 6. CONCRETE QUALITY, INSPECTION AND TEST SHALL CONFORM TO THE LOCAL BUILDING CODE REQUIREMENTS FOR CONCRETE DESIGNED BY ULTIMATE STRENGTH METHOD
- 7. ALL CONCRETE MIXES SHALL CONFORM TO THE PROPORTIONS ESTABLISHED BY THE CODE FOR THE VARIOUS CONCRETE STRENGTHS REQUIRED FOR THE WORK. CONTRACTOR SHALL ENGAGE A CERTIFIED INDEPENDENT TESTING LABORATORY TO PREPARE MIX DESIGNS FOR THE WORK. COPIES OF SUCH MIX DESIGN, AS WELL AS 7 DAY AND 28 DAY CYLINDER TEST RESULTS SHALL BE SENT TO THE STRUCTURAL ENGINEER AND THE LOCAL BUILDING OFFICIAL AND OBTAIN APPROVAL PRIOR TO ITS USE IN THE WORK

#### REINFORCING STEEL:

- 1. REINFORCING STEEL SHALL CONFORM TO ASTM A-615 GRADE 60 IN ALL CONCRETE UNLESS NOTED OTHERWISE ON PLANS. REINFORCING STEEL THAT IS TO BE WELDED SHALL HAVE CARBON EQUIVALENT NOT TO EXCEED 0.75% (OR OTHERWISE USE ASTM A706 BARS). FOR CARBON EQUIVALENT BETWEEN 0.55% & 0.75% PREHEAT REBARS PER AWS STANDARDS. GRADE 60 REBAR SHALL BE WELDED USING E70XX ELECTRODES (LOW HYDROGEN).
- 2. CLEAR COVERAGE OF CONCRETE OVER OUTER REINFORCING BARS SHALL BE AS FOLLOWS (UNLESS NOTED OTHERWISE). SEE ACI 318 FOR CONDITIONS NOT INDICATED:
  - A. CONCRETE POURED DIRECTLY AGAINST EARTH: 3" CLEAR
  - B) FORMED CONCRETE AGAINST EARTH OR EXPOSED TO WEATHER: 1 1/2" CLEAR (2" CLEAR FOR #6 OR LARGER).
- 3. WIRE MESH SHALL CONFORM TO ASTM A-185 AND SHALL BE LAPPED 1 1/2" SPACES ( 12" MINIMUM ). WIRE MESH SHALL BE SUPPORTED BY BOLSTERS.
- 4. ALL REINFORCING BARS BENDS TO BE MADE COLD.
- 5. REINFORCING BARS SHALL BE SPLICED AS SHOWN ON DRAWINGS. CONTINUOUS BARS IN FOOTINGS/WALLS/SLABS MAY BE SPLICED WITH 36 DIAMETER LAP IN CONCRETE AND 40 DIAMETER LAP IN CMU BUT NOT LESS THAN 24". LAP SPLICE CONTINUOUS BARS AT SUPPORT FOR BOTTOM BARS AND AT MIDSPAN FOR TOP & SIDE BAR.
- 6. ALL BENDS SHALL BE MADE COLD AND BY BY BENDING MACHINE.

### STRUCTURAL STEEL:

- 1. ALL PLATE CONNECTORS, BOLTS, ANCHORS, WASHERS, STRAPS, TIMBER CONNECTORS, ETC. SHALL BE HOT-DIPPED GALVANIZED.
- 2. TIMBER CONNECTORS SHALL BE "STRONG-TIE" CONNECTORS AS MANUFACTURED BY BY THE SIMPSON COMPANY OR APPROVED EQUAL. ALL CONNECTORS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS" RECOMMENDATIONS AND SPECIFICATIONS.
- 3. ALL STRUCTURAL STEEL SHALL BE A-36, Fy = 36 KSI
- 4. ALL STRUCTURAL STEEL SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH A.I.S.C. SPECIFICATIONS AND CODE OF STANDARD PRACTICE AS AMENDED TO DATE.
- 5. ALL SHOP AND FIELD WELDING SHALL BE BY THE ELECTRIC SHIELDED ARC PROCESS AND SHALL CONFORM TO THE STANDARD CODE FOR ARC AND GAS WELDING IN BUILDING CONSTRUCTION OF THE AMERICAN WELDING SOCIETY AND SHALL BE PERFORMED BY QUALIFIED AND CERTIFIED
- 6. U.N.O., ALL BOLTS SHALL CONFORM TO ASTM A-307. THIS INCLUDES ANCHOR BOLTS
- 7. PIPE COLUMNS SHALL BE ASTM A-501, Fy = 36 KSI.
- 8. SQUARE OR RECTANGULAR TUBES SHALL BE ASTM A-500, GRADE B, Fy = 46 KSI
- 9. ALL FABRICATION SHALL BE DONE IN SHOP OF THE FABRICATOR LICENSED BY THE LOCAL BUILDING OFFICIAL OR UNDER THE CONTINUOUS INSPECTION OF A REGISTERED DEPUTY INSPECTOR LICENSED BY THE SAME BODY.
- 10. SHOP DRAWINGS SHALL BE SUBMITTED TO THE ARCHITECT AND STRUCTURAL ENGINEER FOR REVIEW PRIOR TO FABRICATION. ANY FABRICATION DONE PRIOR TO RECEIPT OF SUCH REVIEW SHALL BE DONE AT THE CONTRACTOR'S OWN RICK.

#### MASONRY STRUCTURES:

- 1. MATERIALS, LABOR AND CONSTRUCTION: COMPOSITION, QUALITY, STORAGE, HANDLING, PREPARATION AND PLACEMENT FOR MATERIALS, AND MASONRY, AND CONSTRUCTION OF MASONRY SHALL COMPLY WITH ACI530.1 / ASCE 6/ TMS 602. A QUALITY ASSURANCE PROGRAM SHALL BE USED TO ENSURE THAT THE CONSTRUCTED MASONRY IS IN CONFORMANCE WITH THE CONTRACT DOCUMENTS.
- 2. GROUTING, MINIMUM SPACES: THE MINIMUM DIMENSIONS OF SPACES SPACES PROVIDED FOR THE PLACEMENT OF GROUT SHALL BE IN ACCORDANCE WITH TABLE 3.1.2.; ACI 530-95/ASCE 5-95/TMS 402-95.
- 3. COMPLIANCE WITH COMPRESSIVE STRENGTH: COMPRESSIVE STRENGTH OF MASONRY SHALL BE CONSIDERED SATISFACTORY IF THE COMPRESSIVE STRENGTH OF EACH MASONRY WYTHE AND GROUTED COLLAR JOINTS EQUALS OR EXCEEDS THE VALUE OF f'm=1200 PSI.
- 4. DETERMINATION OF COMPRESSIVE STRENGTH: COMPRESSIVE STRENGTH OF MASONRY SHALL BE DETERMINED IN ACCORDANCE WITH THE PROVISIONS OF ACI530.1 / ASCE 6 / TMS 602.
- 5. EMBEDDED CONDUITS, PIPES, AND SLEEVES: CONDUITS, PIPES, AND SLEEVES OF ANY MATERIAL TO BE EMBEDDED IN MASONRY SHALL BE COMPATIBLE WITH MASONRY AND SHALL COMPLY WITH THE BE COMPATIBLE WITH MASONRY.

#### STRUCTURAL STEEL JOISTS:

1. MATERIAL: THE STEEL USED IN THE MANUFACTURE OF CHORD AND WEB SECTIONS SHALL CONFORM TO ASTM SPECIFICATIONS OF LATEST ADOPTION STRUCTURAL STEEL, ASTM A36 / A36M.

2. INSTALLATION OF BRIDGING: ALL BRIDGING AND BRIDGING ANCHORS SHALL BE COMPLETELY INSTALLED BEFORE CONSTRUCTION LOADS ARE PLACED ON THE JOISTS. BRIDGING SHALL SUPPORT THE TOP CHORDS AGAINST LATERAL MOVEMENT DURING CONSTRUCTION PERIOD AND SHALL HOLD THE STEEL JOISTS IN THE APPROXIMATE POSITION AS SHOWN ON THE PLANS. THE ENDS OF ALL BRIDGING LINES TERMINATE AT WALLS OR BEAMS SHALL BE ANCHORED THERETO.

3. INSPECTION: JOISTS SHALL BE INSPECTED BY THE MANUFACTURE BEFORE SHIPMENT TO INSURE COMPLIANCE OF MATERIALS AND WORKMANSHIP WITH THE REQUIREMENTS OF THESE SPECIFICATIONS. IF THE PURCHASER WISHES AN INSPECTION OF THE STEEL JOISTS BY SOMEONE OTHER THAN THE MANUFACTURE 'S OWN INSPECTORS, HE MAY RESERVE THE RIGHT TO DO SO IN HIS "INVITATION TO BID" OR THE ACCOMPANYING "JOB SPECIFICATIONS". ARRANGEMENTS SHALL BE MADE WITH THE MANUFACTURER FOR SUCH INSPECTION OF THE JOISTS AT THE MANUFACTURING SHOP BY THE PURCHASER'S INSPECTORS AT PURCHASER'S EXPENSE.

4. ERECTION STABILITY AND HANDLING: WHEN IT IS NECESSARY FOR THE ERECTOR TO CLIMB ON THE JOISTS, EXTREME CAUTION MUST BE EXCERISED SINCE UNBRIDGED JOISTS MAY EXHIBIT SOME DEGREE OF INSTABILITY UNDER THE ERECTOR'S WEIGHT. DURING THE CONSTRUCTION PERIOD, THE CONTRACTOR SHALL PROVIDE MEANS FOR ADEQUATE DISTRIBUTION OF CONCENTRATED LOADS SO THAT THE CARRYING CAPACITY OF ANY JOIST IS NOT EXCEEDED.

#### SLAB ON GROUND:

1. SOIL SUPPORT SYSTEM: THE SOIL SUPPORT SYSTEM SHOULD BE WELL DRAINED AND PROVIDE ADEQUATE AND UNIFORM LOAD-BEARING SUPPORT.

2. BASE MATERIAL: THE MATERIAL SHOULD BE A COMPACTIBLE, EASY-TO-TRIM, GRANULAR FILL THAT WILL REMAIN STABLE AND SUPPORT CONSTRUCTION TRAFFIC. A CLEAN, FINE-GRADED MATERIAL WITH AT LEAST 10 PERCENT TO 30 PERCENT OF PARTICLES PASSING A NO: 100 SIEVE BUT NOT CONTAMINATE WITH CLAY, SILT, OR ORGANIC MATERIAL IS RECOMMENDED.

3. VAPOR BARRIER: IF A VAPOR BARRIER OR VAPOR RETARDER IS REQUIRED DUE TO LOCAL CONDITIONS, THESE PRODUCTS SHOULD BE PLACED UNDER A MINIMUM OF 4" OF TRIMABLE, COMPACTIBLE, GRANULAR FILL (NOT SAND). A USUALLY GRADED FROM 1 1/2" TO 2" DOWN TO ROCK DUST, IS SUITABLE. FOLLOWING COMPACTION, THE SURFACE CAN BE CHOCKED OFF WITH A FINE GRADED MATERIAL TO REDUCE FRICTION BETWEEN THE BASE MATERIAL AND THE SLAB. THE RECOMMENDED POLYETHYLENE FILM A THICKNESS OF NOT LESS THAN 10 MILS BE USED.

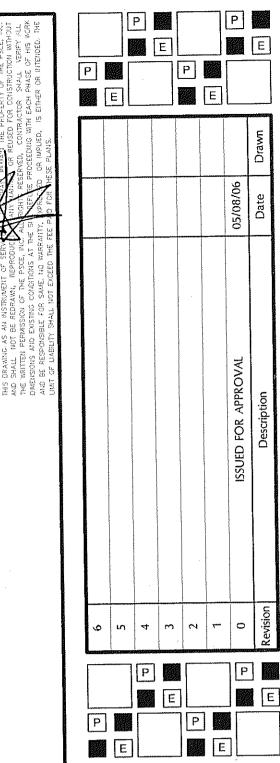
4. SAW-CUT JOINTS: THE RECOMMENDED SAW CUTTING SHOULD BE PERFORMED (i) BEFORE CONCRETE STARTS TO COOL, (ii) AS SOON AS THE CONCRETE SURFACE IS FIRM ENOUGH TO BE TORN OR DAMAGED BY THE BLADE, AND (iii) BEFORE RANDOM - DRYING - SHRINKAGE CRACKS CAN FORM IN THE CONCRETE SLAB. IF SAWING IS UNDULY DELAYED, THE CONCRETE CAN CRACK RANDOMLY BEFORE IT IS SAWED. ADDITIONALLY, DELAY CAN GENERATE CRACKS THAT RUN OFF FROM THE SAW BLADE TOWARD THE EDGE OF THE SLAB AT AN OBTUSE OR SKEWED ANGLE TO THE SAW CUT.

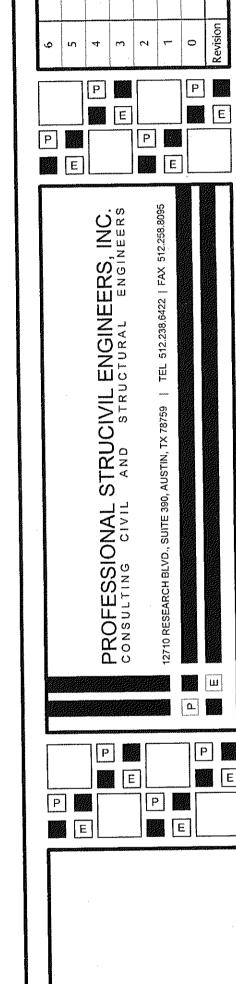
5. JOINT FILLING : WHERE THERE ARE WET CONDITIONS, HYGIENIC AND DUST-CONTROL REQUIREMENTS, OR WHERE THE FLOOR IS SUBJECTED TO TRAFFIC BY SMALL, HARD-WHEELED VEHICLES SUCH AS FORKLIFTS, CONTRACTION & CONSTRUCTION JOINTS SHOULD BE FILLED AND PROTECTED WITH A SEMIRIGID EPOXY THAT GIVES ADEQUATE SUPPORT TO THE JOINT EDGES AND HAS SUFFICIENT RESISTANCE TO WEAR.

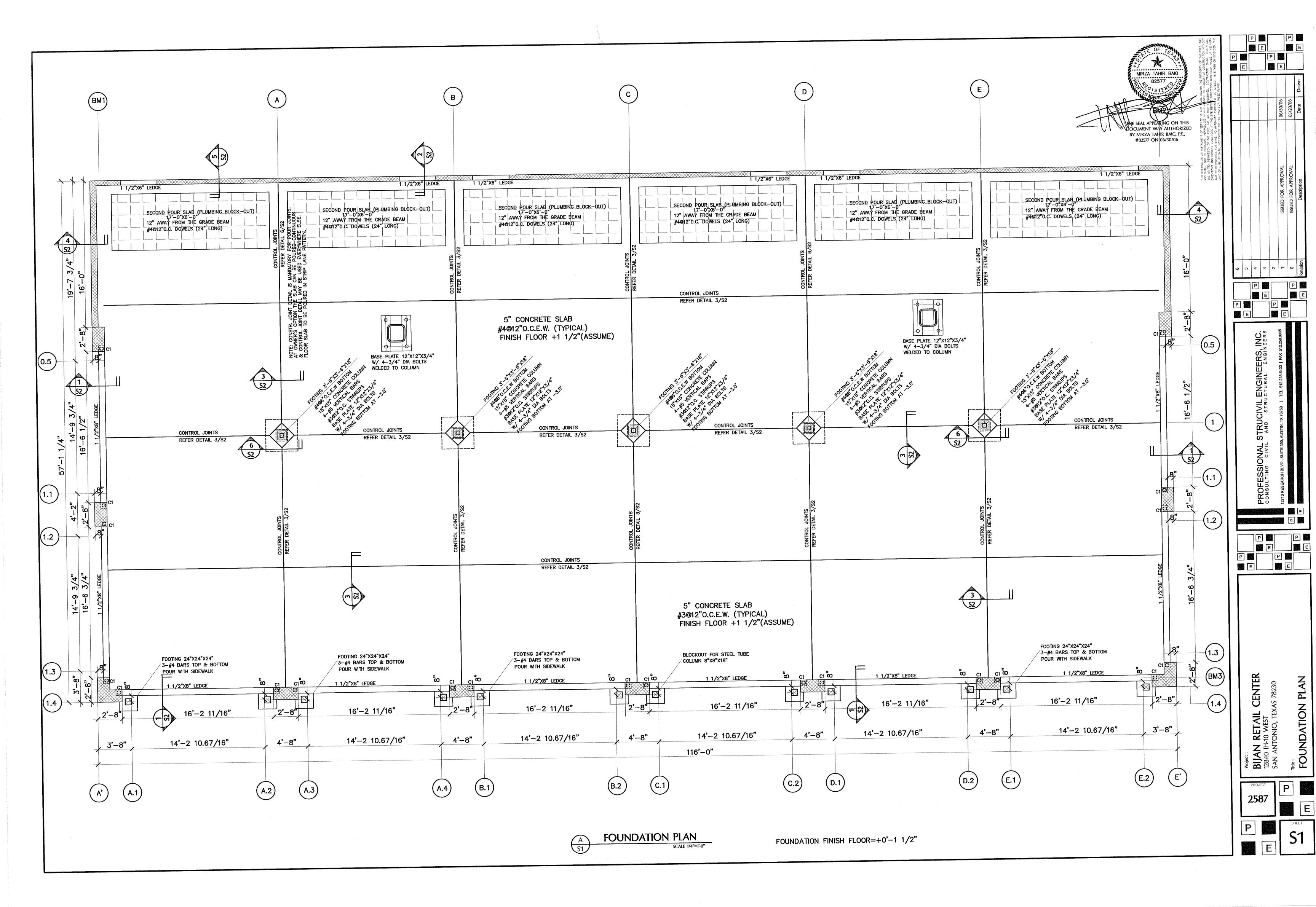
#### SPECIAL INSPECTION:

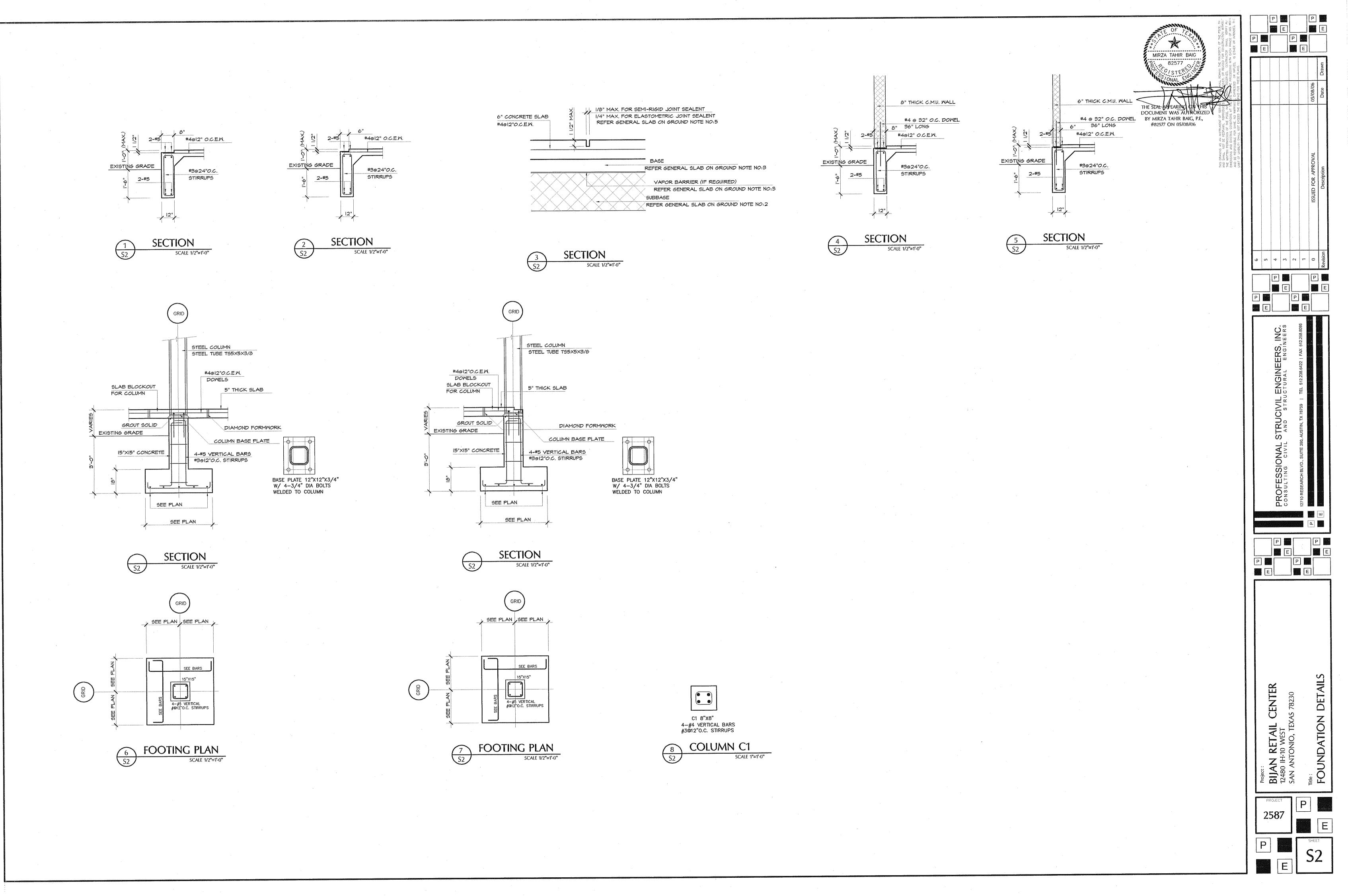
- 1. SPECIAL INSPECTION IS REQUIRED IN ACCORDANCE WITH THE UNIFORM BUILDING CODE SECTION 1701 FOR THE FOLLOWING ITEMS:
- A. CONCRETE W/ STRENGTH GREATER THAN 2500 PSI EXCEPT FOUNDATION
- B. REINFORCING STEEL.
- C. FIELD WELDING.
- D. HIGH STRENGTH BOLTS
- E. STRUCTURAL STEEL

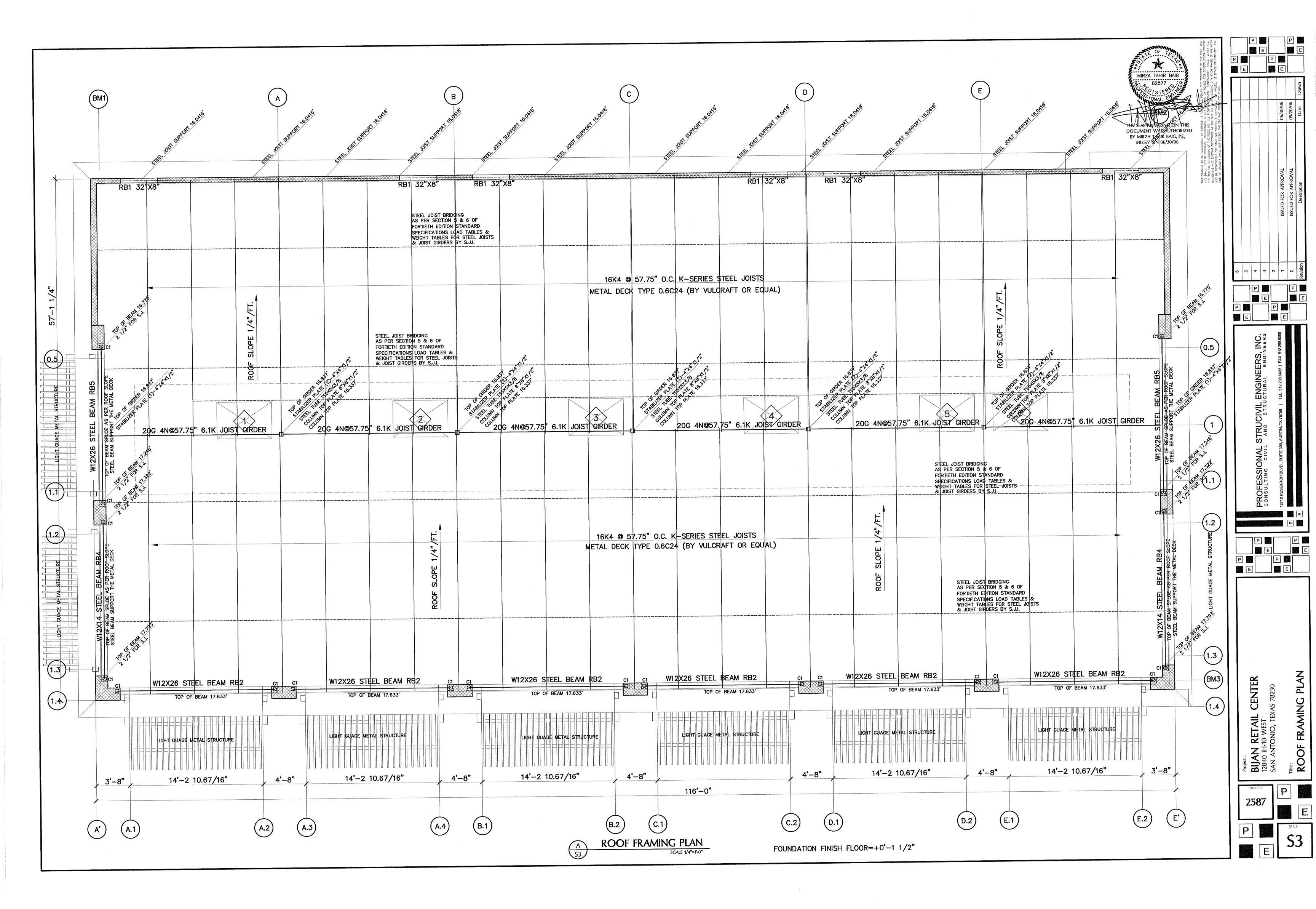


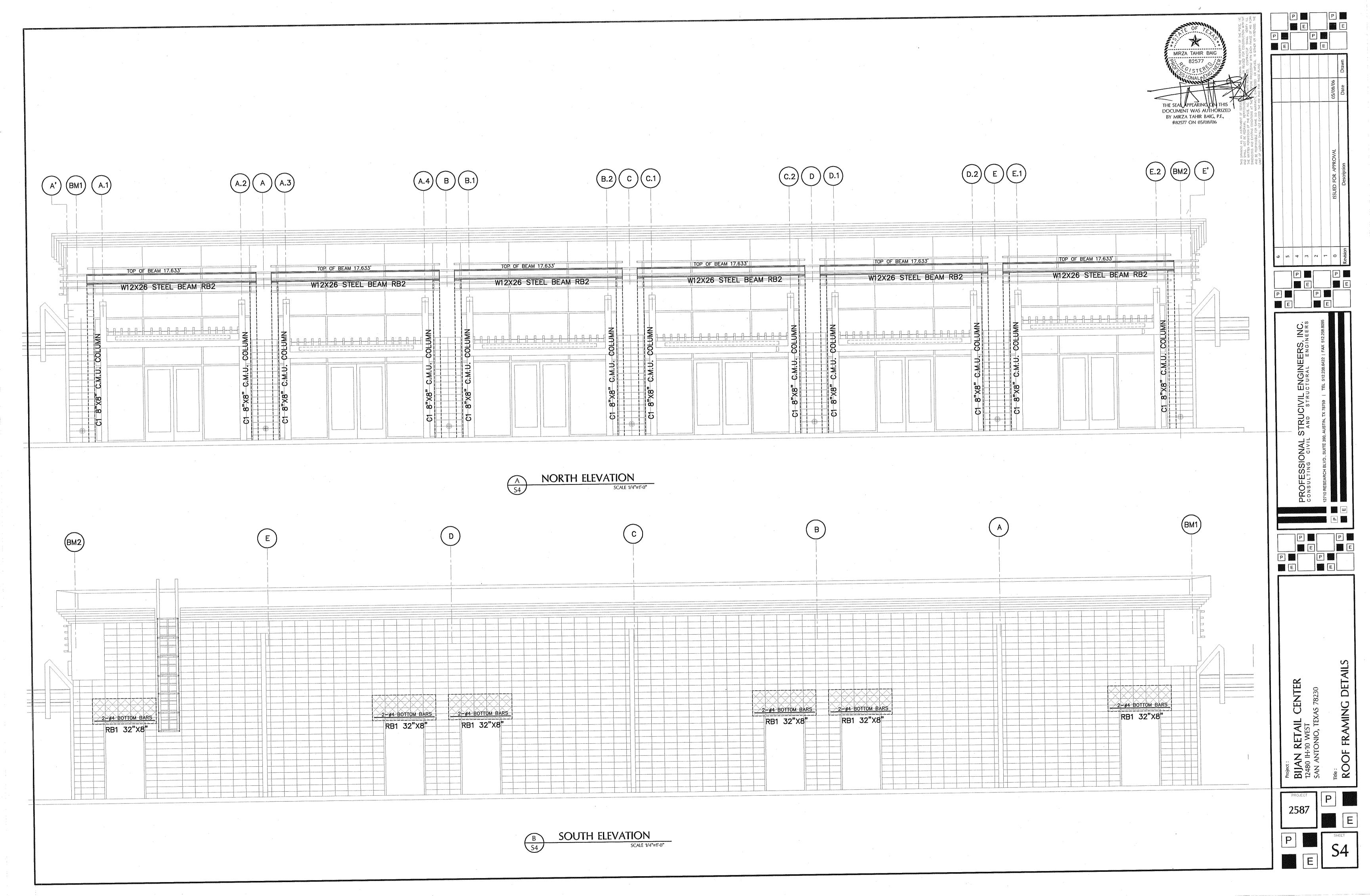


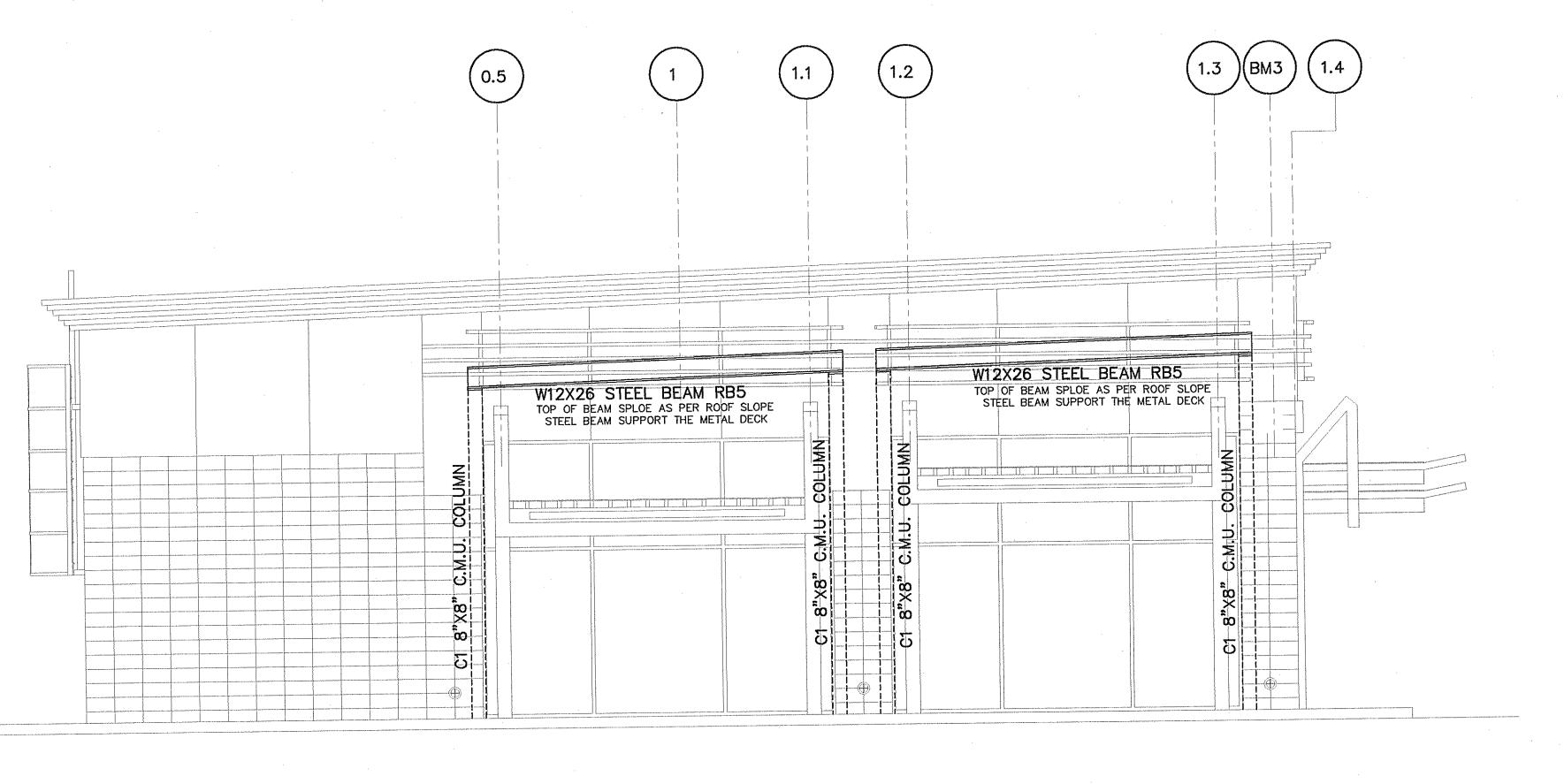






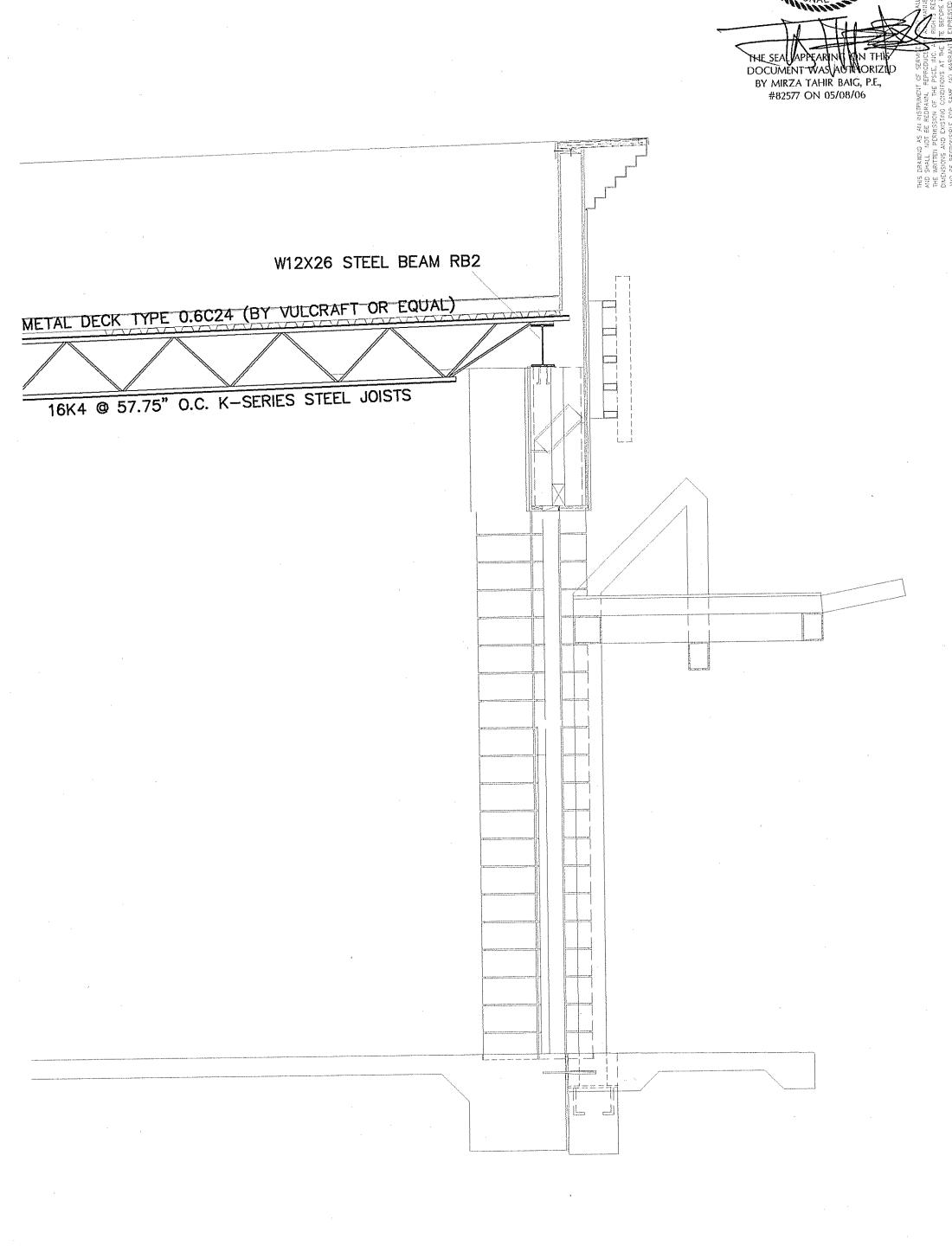






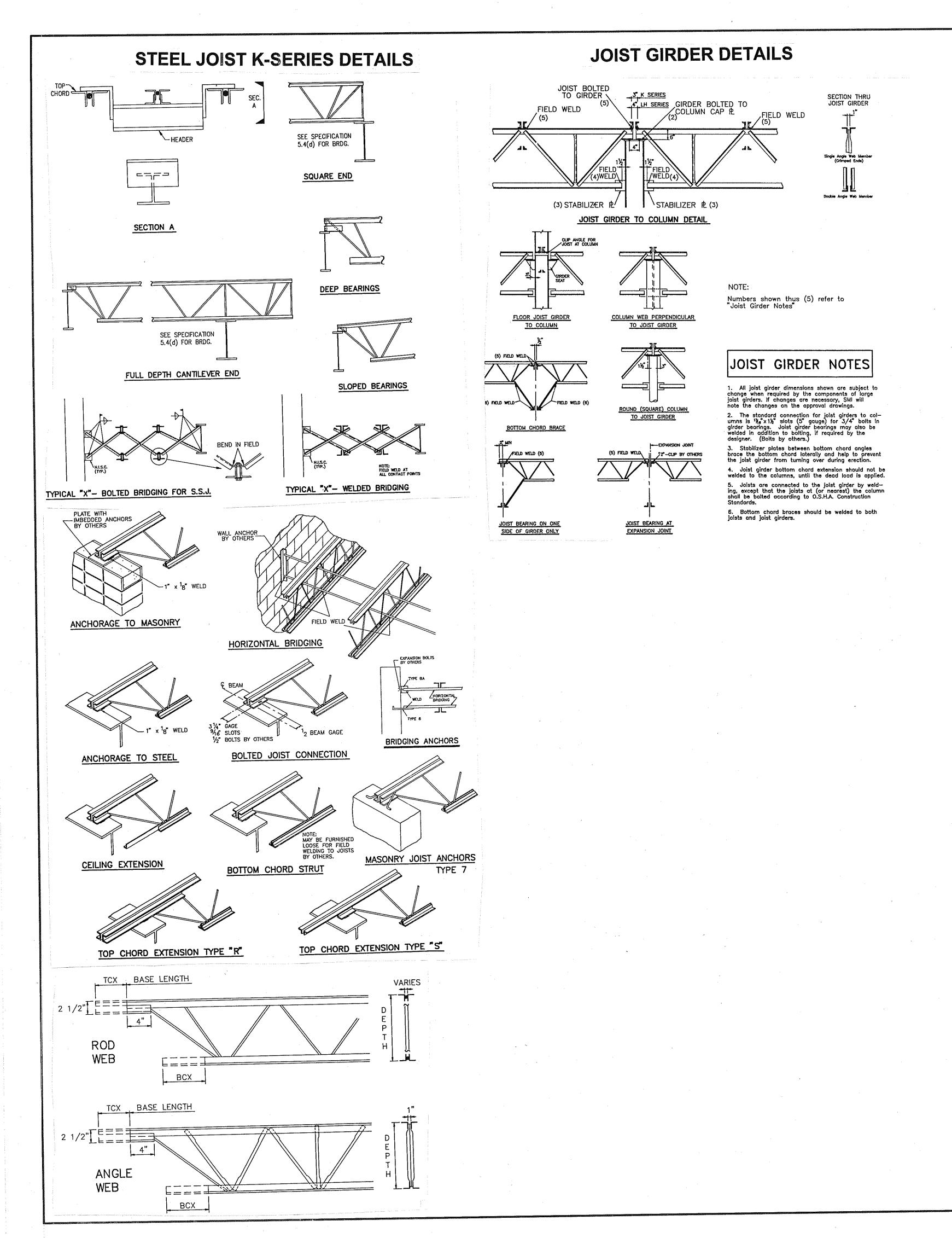
EAST ELEVATION

SCALE 1/4"=1'.0" NOTE: WEST ELEVATION (MIRROR IMAGE)



FRONT WALL SECTION

SCALE 1/2"=1'-0"

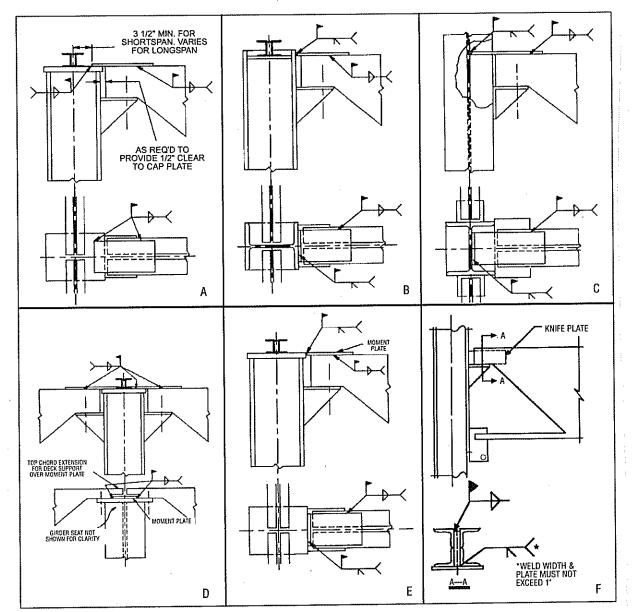


## MOMENT CONNECTION DETAILS

MOMENT CONNECTION DETAILS

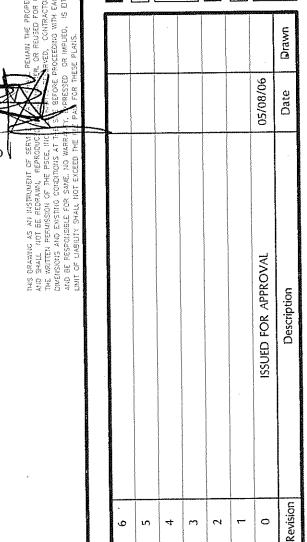
Presented below are six suggested details for a moment resistive connection involving roof Joist Girders. Similar details should be utilized for longspan joists with end moments. In all cases, the bottom chord is to be connected to the column with a vertical stabilizer plate

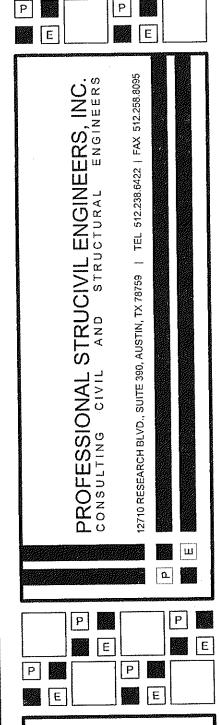
which is to be sized to carry the required load and obtain required weld (use 6 x 6 x 3/4 plate minimum for Joist



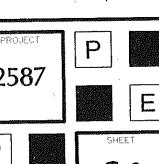
NOTES:
(1) Connections type B & C would also be recommended for floor girder details. (2) Where a backer bar is required for groove welds, additional clearance must be provided when determining girder hold back dimension. (3) Similar details would apply at other types of columns. (4) Additional stiffener plates as required not shown for clarity.(5) In all details, moment plate design and material is not by Vulcraft.











	SYMBOL SCHEDULE	
NOTE:		
A. ALL	SYMBOLS DO NOT NECESSARILY APPEAR ON THESE DRAWINGS	
SYMBOL	DESCRIPTION	REMARKS
	HOMERUN (REFER TO PANEL SCHEDULES FOR CONDUIT/WIRING)	
	CIRCUIT ROUTED THRU CONTACTOR OR RELAY	
	UNDERGROUND ELECTRIC	
UT	UNDERGROUND TELEPHONE	
OE	OVERHEAD ELECTRIC	
— от —	OVERHEAD TELEPHONE	
	CIRCUIT INDICATORS (HOT, NEUTRAL, GROUND, SWITCHLEG)	
P	PHOTOCELL	
0	JUNCTION BOX	
	JUNCTION BOX, FLOOR MOUNTED FLUSH	A MARINE CONTROL OF THE STATE O
	JUNCTION BOX, FLOOR MOUNTED PEDESTAL	
HŪ	JUNCTION BOX, WALL MOUNTED	
\$ <sup>M</sup>	MANUAL STARTER WITH THERMAL TRIP	
LC)	DISCONNECT SWITCH, REFER TO DISCONNECT SCHEDULE	
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L	COMBINATION STARTER/DISCONNECT SWITCH, REFER TO SCHEDULE	
	POWER AND/OR LIGHTING PANELBOARD, REFER TO PANELBOARD SCHEDULE	The state of the s
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4	TELEPHONE OUTLET, FLOOR MOUNTED PEDESTAL	A CONTRACTOR OF THE PROPERTY O
	TELEPHONE OUTLET, FLOOR MOUNTED FLUSH	A CONTROL FOR STANDARD AND A CONTROL OF A CO
<b>⋖</b> ₩	TELEPHONE OUTLET, WALL MOUNTED 48"AFF UON	The second secon
	COMBINATION TELEPHONE/DATA OUTLET, 16"AFF UON COMBINATION TELEPHONE/DATA OUTLET, FLOOR MOUNTED FLUSH	A support reports and the contract of the cont
	The state of the s	The state of the s
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	DATA OUTLET, FLOOR MOUNTED FLUSH	and the second of the second o
	TELEPHONE EQUIPMENT BOARD	To the manufacture of the control of
	SINGLE RECEPTACLE 20A/120V 16" AFF UON	A securing and A strain planes states, among an examination of all the artificial above states at the artificial and a state of the artificial and a state o
	DUDIEV PECEDTACIE 204 /120V 16"AFF 110N	
=	DUPLEX RECEPTACLE 20A/120V 16" AFF UON WITH GROUND FAULT INTERRUPTER	
ıg 🕽	DUPLEX RECEPTACLE 20A/120V 16" AFF UON WITH ISOLATED/INSULATED GROUND	
<b>=</b>	FOURPLEX RECEPTACLE 20A/120V 16" AFF UON	
c <del>O</del> -	CLOCK RECEPTACLE 120V 96" AFF UON	And the second s
	SPECIAL PURPOSE RECEPTACLE 16" AFF SEE PLANS FOR DETAILS	and former with the common measure of the former way with the common of a first man (see from the first former). The first man is a first man of the first man is a first man of the first man of
Φ=	DUPLEX RECEPTACLE 20A/120V MOUNTED HORIZONTALLY 48" AFF UON	
WP C=	WEATHER-PROOF DUPLEX RECEPTACLE 20A/120V 18"AFF UON	
sc 🕽	DUPLEX RECEPTACLE W/ SURGE SUPPRESSION 20A/120V 16" AFF UON	No. of the control of
	DUPLEX RECEPTACLE, FLOOR MOUNTED FLUSH	
	DUPLEX RECEPTACLE, FLOOR MOUNTED PEDESTAL	The state of the s
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₩4	FOURPLEX RECEPTACLE, FLOOR MOUNTED FLUSH	
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\$ <sup>05</sup>	OCCUPANCY SENSOR SWITCH, 48"AFF UON	and the fact of the state of the fact of the state of the
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\$ <sup>T</sup>	TIMER SWITCH, 48"AFF UON	The second section is the second present contents (see A code of Salacia Communications), section of an Adada Communication of the second section of the section of the second section of the section of th

RISER DIAGRAM KEYED NOTES

ELECTRODE. INSTALL PER NEC 2002 AND PER CITY OF SAN ANTONIO EQUIREMENTS. ALSO

 $\left\langle \begin{array}{c} 1 \end{array} \right\rangle$  ONE (1) #3/0 BARE COPPER GROUNDING ROD IN 1" CONDUIT X 20' LONG CONCRETE ENCASED

CONNECT TO BUILDING STEEL AND METALLIC WATER LINE PER 2002 NEC, 250-50. MAKE

5 PROVIDE 600A WIREWAY AND TERMINAL BLOCKS FOR SPACE FOR 6 ADDITIONAL METERS.

FAN SWITCH, 48"AFF UON

EXOTHERMIC CONNECTIONS.

 $\langle 2 \rangle$  2 SETS OF (4) #600 IN 4" CONDUIT.

 $\langle 3 \rangle$  1 SETS OF (4) #6 AND (1) #8 GROUND IN 1" CONDUIT.

 $\langle 4 \rangle$  PROVIDE 120/208V/3ø/4W 60A, 24 SPACE, NEMA 3R PANEL.

					LOAD, VA		СКТ	PH	СКТ		LOAD, VA					
SERVES		NOTE	AMPS /POLE	LTG	RECPT.	OTHER			1	LTG	RECPT.	OTHER	AMPS /POLE	NOTE		SERVES
POLE LIGHTS	П		20/1	1040			1	A	2			300	20/1		MI	IRRIGATION
POLE LIGHTS	U		20/1	1400			3	В	4			500	20/1		MI	TIMECLOCK
LIGHTS — BLDG, MTD.	LI		20/1	600			5	С	6	500			20/1		LI	SIGNAGE
LIGHTS — BLDG. MTD.	LI		20/1	1950			7	A	8	500			20/1		Ш	SIGNAGE
LIGHTS — BLDG. MTD.	L	1	20/1	650			9	В	10		360		20/1	WP	R	RECEPTACLE - SERVIC
LIGHTS — BLDG, MTD.	LI		20/1	1620	***************************************		11	С	12		***************************************	750	20/2		WH	WH-1
SIGNAGE -SP.A	LI		20/1	500			13	Α	14			750			WH	15
SIGNAGE -SP.B	LI		20/1	500			15	В	16							SPACE
SIGNAGE -SP.C	LI		20/1	500			17	С	18							SPACE
SIGNAGE -SP.D	LI		20/1	500			19	Α	20						ļ	SPACE
SIGNAGE -SP.E	LI		20/1	500			21	В	22							SPACE
SIGNAGE -SP.F	LJ		20/1	500			23	С	24					1		SPACE
		CONN.	LOAD	10260	DESIGN L		<u>l                                     </u>	<u> </u>		1000	360	2300				
CATEGORY	<del>                                     </del>	KVA		DIV.	KVA	<u> </u>	1	MOUNT	NG⊧		SURFACE	-	NOTES:			***************************************
LIGHTING:	<u> </u>	11.3		1.25	14.1		1	VOLTS:			120/		*			
RECEPTACLE:		0.4		1	0.4		1	PHASE/	WIRE:		3 /		1			
MOTORS:	-	0.0		1 1	0.0		1	MAIN ST				AMPS	**			
MISCELLANEOUS:		0.8		1	0.8		1	MAIN TY	PE:		MLO		1			
ELECTRIC HEATING	<b>—</b>	0.0		1	0.0		1	BUSS T	YPE:		COPPER		X	PROVID	E CO	PPER GROUND BAR
WATER HEATERS:		1.5		1	1.5		1	ALC. (R	MS):		10K		7			
HVAC:		0.0		1	0.0		1	BREAKE	R TYPE:		BOLT-0	N	X	PROVIE	E FEE	D-THRU LUGS
EOUPMENT:		0.0		1	0.0		1	NEMA F	RATING:		3R			FOR F	UTURE	SECTION
							1				WIRE	WIRE	GRD.	CONDU	JIT T	
								F	EEDER S	ZE:	QTY.	SIZE	SIZE	SIZE		
		•					1	1				#6	#8	1"		I .

	ELECTRICAL LOAD ANALYSIS		
NO"	TES:	*****	
1.	LIGHTING LOAD: A. 11.3 KW x 1.25 KW	stana	KW 14.
2.	RECEPTACLE LOAD:  A. 0.4 KW - 10 KW = 0.0 x 50% = 0.0 KW + 10 KW  B.	=	0.4
3.	EQUIPMENT LOAD:  A. MOTORS:  B. MISCELLANEOUS:  C. ELECTRIC HEATING:  D. WATER HEATERS:  E. HVAC:  F. EQUIPMENT:		0.4 0.4 0.4 1.4 0.4 0.4
4.	25% OF LARGEST MOTOR (KW):	=	
5.	TOTAL CONNECTED LOAD (KW):	~~~ <del>=</del> ~	16.
	FUTURE LOAD: 128.4 KVA + TOTAL CONNECTED LOAD 16.7 KVA  TOTAL AMP LOAD: 403 A AT 208 VOLT, 3 PHASE, 4 WIRE	******	145

## 

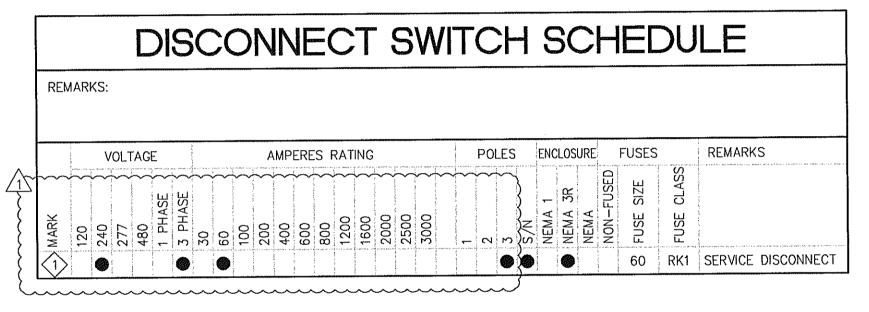
## 1 ELECTRICAL - RISER E1.1 SCALE: NOT TO SCALE

## LIGHT FIXTURE SCHEDULE

#### GENERAL NOTES:

- A. CONFIRM CEILING TYPE AND CONSTRUCTION PRIOR TO ORDERING LIGHT FIXTURE.
- B. COORDINATE EXACT LOCATION AND MOUNTING HEIGHT OF WALL MOUNTED LIGHT FIXTURES WITH ARCHITECT PRIOR TO ROUGH-IN.
- C. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT LOCATION OF LIGHT FIXTURE.
- D. CONFIRM FINISH WITH ARCHITECT PRIOR TO ORDERING LIGHT FIXTURES.
- E. 'E' DESIGNATION ADJACENT TO LIGHTING FIXTURE TYPE INDICATES FIXTURE SHALL BE PROVIDED WITH EMERGENCY BATTERY PACK UNIT (BODINE B70 OR EQUAL). LIGHT FIXTURE SHALL BE NON-SWITCHED, BATTERY PACK SHALL BE NON-SWITCHED.
- F. 'N' DESIGNATION ADJACENT TO LIGHTING FIXTURE TYPE INDICATES FIXTURE SHALL BE UNSWITCHED.
- G. SOME ITEMS LISTED ON THIS SCHEDULE MAY NOT BE USED ON THIS PROJECT.

TYPE	MFG.	MODEL	LAMP(WATTS, VOLTS, & TYPE)	FINISH	MOUNTING	REMARKS
TYPE A	STONCO	VWXL21GC	200W,	CAST ALUM.	VERTICAL SURFACE	
TYPE B	VISA	OW1422	IN150	WHT.	VERTICAL SURFACE	CUSTOM CUTOUT AND LOGO IN FRONT SHIELD RE: —— FOR LOGO INFORMATION/TEMPLATE
TYPE C	BEGA	2023 W/GUARD	50W, 12V, G46.35	BRUSHED STAINLESS STEEL	VERTICAL SURFACE	ETCHED GLASS
TYPE D	INSIGHT	EX5/SMM/TA/ T5HO/54W/12'/1/ TW/PCDM	54W, 120V, T5H0	TEXTURED WHITE	SMM	12'-0" L. FIXTURE CLEAR POLYCARBONATE LENS(MAX. 8'-0") PROVIDE ADDITIONAL 4'-0" CLEAR POLYCARBONATE LENS TO COVER ALL 12'-0" L. FIXTURE. NOTE: THERE SHOULD BE NO GAP BETWEEN 4'-0" SECTION & 8'-0" SECTION FOR INSECT INFILTRATION.
TYPE E	LOUIS POULSEN	AHNI/175W/MH/ED-28 MOGUL 120W WHTOPALSRA	175W, ——	WHT.	POLE	POST TOP: POST INFO.: AHNTRI 16 WHT. RE: 1A1.0 FOR LOCATIONS
TYPE F	MCGRAW- EDISON	AMF2512976YMHWG/ AMSAB-BK	MH250W	WHT.	POLE	POLE INFO.: RSS4A18SW2XXG NOTE: ONE FIXTURE PER POLE NOTE: ADDITIONAL POLE INFO. 18RSS4A205W, WALL THKNS. = 120, BASE SQAURE 10½", BOLT CIRCLE Ø 11.0", BOLT PROJ 4½", SHAFT SIZE 4", DXABXH = ¾" x 25" x 3"



### **DESIGN NOTE**

THE SPECIFICATIONS AND DRAWINGS ARE PROVIDED IN ADDITION TO THE CODE. THE CODE SHOULD BE CONSIDERED AS PART OF THE CONTRACT DOCUMENT. ALL MATERIAL AND LABOR SHALL COMPLY WITH ASTM, ASME, UL AND OTHER STANDARDS LISTED IN THE CODE. ALL APPLICABLE CODES AND STANDARDS ARE LISTED IN THE CODE BOOK. CONTRACTOR SHALL REVIEW THE CODE AND BE FAMILIAR WITH ALL REQUIREMENTS PRIOR TO BIDDING AND BEGINNING WORK. IF CONTRACTOR NEEDS CLARIFICATION RELATED TO CODE ISSUES, THEY SHALL SUBMIT AN RFI PRIOR TO BIDDING. RFI SUBMITTED AFTER BID SHALL BE CONSIDERED AS A NO CHARGE REQUEST FOR INFORMATION.

## GENERAL NOTES

- A. THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL EQUIPMENT, MATERIALS AND LABOR NECESSARY TO MAKE A COMPLETE AND FUNCTIONAL JOB.
- B. ALL ELECTRICAL WORK SHALL COMPLY WITH N.E.C. AND LOCAL CODES.
- C. ALL GROUNDING SHALL BE PER N.E.C. ARTICLE 250 AND LOCAL CODES.
- D. THE ELECTRICAL CONTRACTOR SHALL COORDINATE HIS WORK WITH OTHER TRADES TO AVOID CONFLICTS AT THE SITE.
- E. THE ELECTRICAL CONTRACTOR SHALL VERIFY SIZE OF BREAKERS, FUSES, WIRES, ETC., FOR ALL EQUIPMENT PROVIDED AND REPORT DISCREPANCIES TO THE ENGINEER/ARCHITECT PRIOR TO MAKING CONNECTIONS.
- F. HOMERUNS SHALL BE COORDINATED WITH PANELBOARDS. RUN CONDUIT AS HIGH AS POSSIBLE TO ACCOMODATE FUTURE TENANT FINISH WORK.
- G. ALL WIRING SHALL BE FREE OF SHORTS AND GROUNDS. NO WIRING SHALL BE LOADED
- BEYOND THE PERMITTED AMPACITIES ALLOWEED BY N.E.C.
- H. WALL WIRE/CONDUIT SIZES ARE #10 AWG IN 3/4" CONDUIT, MINIMUM.
- I. CONFIRM THE EXACT LOCATION AND MOUNTING OF LIGHT FIXTURES WITH ARCHITECT BEFORE ROUGH-IN.
- J. LABEL ALL CIRCUITS PROPERLY ON TYPED PANELBOARD INDEX.
- K. THE CONTRACTOR IS TO LAY OUT SERVICE ENTRANCE AND PANELS TO SCALE WITH ACTUAL GEAR TO BE INSTALLED TO ENSURE PROPER FIT AND CLEARANCES BEFORE INSTALLATION. NOTIFY ARCHITECT/ENGINEERS OF ANY DIMENSIONAL PROBLEMS.
- .. REFERENCE ARCHITECTURAL PLANS FOR ADDITIONAL PIPING REQUIREMENTS FROM DOWN SPOUTS TO CURB DISCHARGE.
- M. ENSURE ALL STEEL AND IRON FITTINGS USED IN SPRINKLER SYSTEM ARE PROPERLY COATED TO PREVENT RUSTING IN INSTALLED CONDITION. PROVIDE CATHODIC PROTECTION FOR SPRINKLER MAIN AT SPRINKLER PIPING RISER LOCATION INTO BUILDING.





Project:

Bijan Retail Center

12840 IH-10 West, San Antonio, Texas 78230

THIS DRAWING IS THE PROPERTY OF VERDE ENGINEERING, INC. THE INFORMATION IS CONFIDENTIAL AND IS TO BE USED ONLY IN CONNECTION WITH WORK DIRECTED BY SAID FIRM. NO PART OF IT IS TO BE DISCLOSED TO OTHERS WITHOUT WRITTEN PERMISSION FROM SAID FIRM.

DRAWN BY:	AG, AH	
REVIEWED BY:	FF	
JOB NO.:	06012	
DATE:	05-10-06	

→ PERMIT COMMENTS

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ELECTRICAL SCHEDULES

DRAWING NO.

E1.1

## DIVISION 16 — ELECTRICAL GENERAL REQUIREMENTS

#### 16.1 SCOPE

- A. GENERAL: FURNISH ALL LABOR, SUPPLIES AND MATERIALS AS SHOWN ON THE DRAWINGS AND AS SPECIFIED HEREIN INCLUDING, BUT NOT LIMITED TO, INSTALLATION OF LIGHT FIXTURES, CUTTING AND CHASING, COORDINATION WITH OTHER TRADES ON THE JOB, ETC., NECESSARY FOR THE INSTALLATION OF COMPLETE ELECTRICAL SYSTEMS. INCLUDES EMPTY CONDUIT AS REQUIRED FOR THE TELEPHONE, SOUND AND TELEVISION SYSTEMS (IF REQUIRED), ALSO PROVIDE FOR CONTROL AND INTERLOCK WIRING WITH ASSOCIATED OUTLETS AND CONDUIT FOR HEATING AND AIR CONDITIONING EQUIPMENT. INCLUDE POWER FOR CONDENSATE PUMPS AS REQUIRED BY HVAC CONTRACTOR.
- B. SUBMITTALS: PROVIDE SHOP DRAWINGS OF SWITCHBOARDS AND PANELBOARDS, ETC., CUT SHEETS AND A LIST OF MODEL AND CATALOGUE NUMBERS OF ALL EQUIPMENT AND MATERIALS TO BE INSTALLED AND TO PERFORM ALL OPERATIONS.

#### 16.2 DEFINITIONS

- A. "WIRING": AS USED HEREIN, SHALL REFER TO WIRE OR CABLE, INSTALLED IN RACEWAY WITH ALL REQUIRED BOXES, FITTINGS, CONNECTORS AND ACCESSORIES, COMPLETELY INSTALLED.
- B. "FEEDER": AS USED HEREIN, SHALL REFER TO WIRING TO ANY DEVICE OR EQUIPMENT WHERE NUMBER SIX AWG COPPER (#6 CU) OR LARGER CONDUCTORS ARE USED.
- C. "POWER WIRING": AS USED HEREIN, SHALL REFER TO WIRING TO ANY DEVICE OR EQUIPMENT SERVED BY A MULTIPOLE BREAKER.
- D. "SERVICE": AS USED HEREIN, SHALL REFER TO ALL WIRING, DISCONNECTS, METERS, AND MISCELLANEOUS MATERIAL REQUIRED BETWEEN THE CUSTOMER SERVICE POINT (USUALLY THE SERVICE GUTTER) AND THE SUBPANEL FEEDER ENTRY INTO THE BUILDING INCLUDING NECESSARY TERMINAL BLOCKS IF NOT EXISTING.
- E. "PROVIDE" OR "INSTALL": INCLUDES ALL MATERIALS, LABOR, TAXES, SUBCONTRACTS, APPRENTICES AND MARK-UP REQUIRED FOR A COMPLETE OPERABLE SYSTEM AS SHOWN AND SPECIFIED, SET IN PLACE, CONNECTED AND READY TO USE.

#### 16.3 CODES, PERMITS AND INSPECTIONS

- A. CODES: THE INSTALLATION SHALL COMPLY WITH THE LATEST EDITION OF THE LOCAL CITY ELECTRICAL CODE AND THE LATEST ADOPTED EDITION OF THE NATIONAL ELECTRICAL CODE AND ANY OTHER AUTHORITIES HAVING JURISDICTION OVER THE WORK. WHERE, IN ANY SPECIFIC CASE, DIFFERENT SECTIONS OF ANY OF THE AFOREMENTIONED CODES FOR THESE PLANS AND SPECIFICATIONS SPECIFY DIFFERENT MATERIALS, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE SHALL GOVERN.
- B. PERMITS & INSPECTIONS: PROVIDE ALL PERMITS REQUIRED AND OBTAIN FINAL INSPECTION AND APPROVAL FROM THE INSPECTION DEPARTMENT HAVING JURISDICTION.

#### 16.4 STANDARDS

ALL MATERIAL USED IN THIS WORK SHALL BE NEW AND SHALL BE LISTED AND LABELED BY THE UNDERWRITER'S LABORATORIES, INC. AS CONFORMING TO ITS STANDARDS, WHERE SUCH A STANDARD HAS BEEN ESTABLISHED FOR THE PARTICULAR TYPE OF MATERIAL IN QUESTION. ALL WORK SHALL BE EXECUTED IN A WORKMANLIKE MANNER, AND SHALL PRESENT A NEAT AND PROFESSIONAL APPEARANCE WHEN COMPLETED.

#### 16.5 SUBSTITUTION OF MATERIALS

- A. SUBMISSION: THE CONTRACTOR'S MATERIAL SUBSTITUTION SUBMISSION SHALL INCLUDE SUFFICIENT DESCRIPTIVE INFORMATION INCLUDING MANUFACTURER'S PUBLISHED ILLUSTRATIONS TO ESTABLISH CONTRACT COMPLIANCE. CONTRACTOR SHALL SUBMIT A SAMPLE IF REQUESTED BY ARCHITECT OR ENGINEER.
- B. COORDINATION OF SUBSTITUTION: IT SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR TO NOTIFY ALL TRADES OF ADDENDUM APPROVED SUBSTITUTIONS THAT AFFECT DETAIL CHANGES, OTHER MATERIALS, OR ANY WORK BY OTHERS.

#### 16.6 DRAWINGS AND SPECIFICATIONS

- A. THE WIRING LAYOUTS ARE SCHEMATIC AND ARE NOT NECESSARILY INTENDED TO SHOW THE EXACT LOCATION OF RACEWAYS, OUTLETS, ETC. THE CONTRACTOR SHALL REFER TO THE ARCHITECTURAL PLANS AND DETAILS FOR DIMENSIONS AND SHALL FIT HIS WORK TO CONFORM TO THE DETAILS OF BUILDING CONSTRUCTION.
- B. CHANGES: CHANGES FROM THE DRAWINGS NECESSARY TO FIT THE WORK OF VARIOUS TRADES, TO CONFORM TO EQUIPMENT ACTUALLY BEING INSTALLED, OR TO CONFORM TO THE REGULATIONS OF AUTHORITIES HAVING JURISDICTION SHALL BE MADE WITHOUT ADDITIONAL COST TO VERDE ENGINEERING, INC. (VEI).
- C. PREPARE AND SUBMIT WORKING CONSTRUCTION DRAWINGS TO DEMONSTRATE PROPER PLANNING FOR INSTALLATION AND ARRANGEMENT OF ALL WORK. LAYOUT DRAWINGS TO SCALE AND SHOW DIMENSIONS WHERE ACCURACY OF LOCATION IS NECESSARY FOR COORDINATION OR COMMUNICATION PURPOSES. SHOW WORK OF ALL TRADES, INCLUDING ARCHITECTURAL, STRUCTURAL, MECHANICAL, AND ELECTRICAL ITEMS WHICH MAY BE PERTINENT TO PROPER AND ACCURATE COORDINATION. PROVIDE SHOP DRAWINGS FOR ALL PRODUCTS, DUCTWORK, SYSTEMS, SYSTEM COMPONENTS, AND SPECIAL SUPPORTS WHICH ARE NOT STANDARD CATALOG PRODUCTS AND WHICH MAY BE FABRICATED FOR THE CONTRACTOR OR BY THE CONTRACTOR. IDENTIFY ALL SHOP DRAWINGS AS TO WHICH SECTION AND PARAGRAPH OF THE SPECIFICATIONS AND/OR DRAWING NUMBER THE ITEM IS COVERED UNDER. SHOP DRAWINGS TO BE DONE AT A MINIMUM 1/4" = 1-0" SCALE, EXCEPT IN ELECTRICAL ROOM WHERE THEY ARE TO BE AT A MINIMUM OF 3/8" = 1-0".
- D. AS BUILT DRAWINGS: (REQUIRED ON ALL) AS WORK PROGRESSES, RECORD ON ONE SET OF CLEAN ELECTRICAL PLANS ALL CHANGES AND DEVIATIONS FROM THE CONTRACT DRAWINGS IN SIZE, LOCATIONS, OF ALL OUTLETS, SWITCHES, STARTERS, ETC., SUFFICIENTLY TO INDICATE THE FINAL INSTALLATION. MAKE EXACT MEASUREMENTS TO LOCATE ALL EQUIPMENT.

THE CONTRACTOR SHALL PROVIDE "CAD" SET OF DRAWINGS TO SHOW COMPLETE ROUTING AND SIZING OF ALL WORK AND ANY REVISIONS TO THE SYSTEMS SHOWN. AT COMPLETION OF PROJECT, DELIVER PLANS AND CAD DISKS TO VEI REPRESENTATIVE. FINAL PAYMENT MAY BE WITHHELD UNTIL REPRODUCIBLE "AS-BUILT" DRAWINGS AND "CAD" DISKS ARE COMPLETED AND TURNED OVER TO VEI REPRESENTATIVE.

E. CAD BACKGROUNDS: VERDE ENGINEERING, INC. (VEI) WILL PROVIDE AUTOCAD RELEASE 2005 BACKGROUNDS FOR CONTRACTOR USE IN PREPARATION OF SHOP AND AS-BUILT DRAWINGS.

#### 16.9 MAINTENANCE DATA

FURNISH AND DELIVER TO THE OWNER AT FINAL COMPLETION, TWO (2) COMPLETE COPIES OF ALL DATA PREPARED BY MANUFACTURERS DETAILING OPERATION AND MAINTENANCE INSTRUCTIONS ON ALL FOUIPMENT REQUIRING MAINTENANCE.

#### 16.10 CUTTING AND PATCHING

- A. CUT AND REPAIR ALL NEW WALLS, FLOORS, AND CEILING NECESSARY FOR THE INSTALLATION OF THE ELECTRICAL WORK. NO CUTTING OF WORK OF OTHER CONTRACTORS WILL BE PERMITTED WITHOUT THE CONSENT OF THE ARCHITECT OR THE VEI REPRESENTATIVE.
- B. SLEEVES: PROVIDE ALL SLEEVES REQUIRED FOR PROPER INSTALLATION OF WORK INCLUDED UNDER THIS HEADING.

#### 16.11 SHOP DRAWINGS AND MATERIAL BROCHURES

IF REQUESTED, FURNISH THREE (3) SETS OF SHOP DRAWINGS AND MATERIAL CUTS TO THE VEI REPRESENTATIVE ON THE FOLLOWING MATERIALS:

LIGHTING FIXTURESPANELS & SWITCHGEARTIME CLOCKSTRANSFORMERS

- EMERGENCY GENERATOR

- LIGHTING CONTRACTORS

SWITCHES
DISCONNECT SWITCHES
TRANSFER SWITCHES
DIMMER SWITCHES
FIRE ALARM SYSTEMS
FUSES

DISTRIBUTION EQUIPMENT

#### 16.12 COOPERATION

DEVICES

THE CONTRACTOR SHALL SCHEDULE HIS WORK, AND IN EVERY WAY POSSIBLE, COOPERATE WITH ALL OTHER TRADES IN THE JOB TO AVOID DELAYS, INTERFERENCES AND UNNECESSARY WORK. HE SHALL COOPERATE WITH THEM IN PROVIDING FOR THE INSTALLATION OF THIS WORK AND COORDINATE WITH WORK OF OTHER TRADES TO ASSURE PROPER CLEARANCE OF PIPING, DUCTWORK, CONDUIT, ETC., WHEN SUCH IS REQUIRED.

#### 16.13 CONTRACTOR'S RESPONSIBILITY

- A. THE CONTRACTOR SHALL VISIT THE SITE AND FAMILIARIZE HIMSELF WITH THE CONDITIONS UNDER WHICH THE WORK IS TO BE DONE. NO COMPENSATION OR ALLOWANCES WILL BE MADE IN HIS BEHALF BECAUSE OF ANY ERROR ON HIS PART OR HIS LACK OF KNOWLEDGE OF EXISTING CONDITIONS.
- B. POWER ON ASAP! AS PART OF THE ELECTRICAL CONTRACTOR'S RESPONSIBILITY, COORDINATE THOROUGHLY WITH THE NECESSARY AGENCIES AND UTILITY SUPPLIERS TO MAKE SURE ALL PAPERWORK HAS BEEN DONE, I.E., TEMPORARY SERVICE AGREEMENT, TENANT'S APPLICATION, ETC. IF ANY COMPLICATIONS ARISE, CONTACT THE VEI REPRESENTATIVE IMMEDIATELY FOR FOLLOW—UP.

#### 16.14 WIRING WORKMANSHIP

- A. WIRING (GENERAL): WIRING IN ALL SWITCHBOARDS, BRANCH CIRCUIT PANELBOARDS, STARTER PANELS, DISTRIBUTION PANELS, AND TERMINAL CABINETS SHALL BE RUN PARALLEL OR AT RIGHT ANGLES TO THE SIDES OR TOP OF THE EQUIPMENT HOUSING.
- B. CONDUCTORS: CONDUCTORS SHALL BE GROUPED AND HARNESSED TOGETHER USING LOCKING TYPE CABLE TIES. CABLE TIES SHALL BE AS MANUFACTURED BY THE PANDUIT CORP., OR THOMAS AND BETTS.

#### 16.15 STORAGE OF MATERIALS

KEEP THE BUILDING AND PREMISES CLEAN AND CLEAR OF SCRAP MATERIALS AT ALL TIMES. STORAGE SPACE AT THE SITE AND IN THE BUILDING WILL BE APPROVED BY THE VEI REPRESENTATIVE.

#### 16.16 MOTOR HORSEPOWER

THE HORSEPOWER OF MOTORS INDICATED ON THE MECHANICAL PLANS IS THE ESTIMATED HORSEPOWER REQUIREMENTS OF EQUIPMENT FURNISHED UNDER OTHER SECTIONS OF THE SPECIFICATIONS. ALL WIRING, FEEDER PROTECTION DEVICES, STARTERS AND DISCONNECT DEVICES SHALL BE OF THE SIZE AND AMPACITY FOR THE HORSEPOWER OF THE RESPECTIVE MOTOR ACTUALLY INSTALLED. THE CONTRACTOR SHALL COORDINATE WITH OTHER TRADES, AND PROVIDE SUITABLE EQUIPMENT SO THAT THE AFOREMENTIONED REQUIREMENTS SHALL BE MET.

#### 16.17 ORDERING OF MATERIALS

CONTRACTOR SHALL ORDER MATERIALS AND EQUIPMENT SO AS NOT TO JEOPARDIZE PROGRESS OF CONSTRUCTION OR COMPLETION DATE.

#### 16.18 DEVIATIONS

SHOULD THE CONTRACTOR FIND, AT ANY TIME, DURING THE PROGRESS OF THE WORK, THAT IN HIS JUDGMENT, EXISTING CONDITIONS MAKE DESIRABLE A MODIFICATION IN REQUIREMENTS COVERING ANY PARTICULAR ITEM OR ITEMS, HE SHALL REPORT SUCH ITEMS PROMPTLY TO THE VEI REPRESENTATIVE FOR COORDINATION.

#### 16.19 MATERIALS AND EXECUTION

#### A. CONDUITS

1. EXCEPT AS OTHERWISE NOTED, SPECIFIED, OR REQUIRED, INSTALL ALL WIRES USED IN THIS PROJECT IN RIGID STEEL CONDUIT, INTERMEDIATE METAL CONDUIT, ELECTRICAL METALLIC TUBING, OR RIGID SCHEDULE 40 PVC AS HEREINAFTER SPECIFIED. NO PVC CONDUIT IS ALLOWED ABOVE GRADE.

- 2. ALL CONDUIT AND ELECTRICAL METAL TUBING SHALL BE OF THE BEST QUALITY STEEL TUBING, OR STANDARD DIMENSION, SMOOTH INSIDE AND OUT, AND SHALL BE GALVANIZED OR SHERARDIZED.
- 3. CONNECTORS AND COUPLINGS FOR THE ELECTRIC METALLIC TUBING SHALL BE SET SCREW TYPE LISTED FOR THE PROPER USAGE
- 4. THICK WALL CONDUIT SHALL HAVE THREADED COUPLINGS WITH LOCKNUTS AND BUSHINGS. WHERE THE WORD "CONDUIT" IS USED HEREINAFTER, IT SHALL REFER TO EITHER THICK WALL CONDUIT OR ELECTRIC METALLIC TUBING. FLEXIBLE CONDUIT SHALL BE SINGLE STRIP.
- 5. CONDUITS SHALL BE CONTINUOUS FROM OUTLET TO OUTLET, FROM OUTLET TO CABINET, JUNCTION BOX AND PULL BOX. THEY SHALL ENTER AND BE SECURED TO ALL BOXES, ETC., IN SUCH A MANNER THAT EACH SYSTEM WILL BE ELECTRICALLY CONTINUOUS FROM SERVICE TO ALL OUTLETS. ALL CONDUIT RUNS FROM CABINETS AND JUNCTION BOXES SHALL TERMINATE IN APPROVED OUTLET BOXES OR CONDUIT
- 6. ALL CONDUIT LINES LEFT EMPTY FOR FUTURE USE AND FOR TELEPHONE WIRE SHALL BE LEFT WITH A NYLON PULL WIRE, (200 LB. TEST) AND THE ENDS TIED OFF.
- 7. NO OUTLETS, JUNCTION BOXES, ETC., SHALL BE TRAPPED OR INACCESSIBLE.
- 8. GENERALLY, ALL CONDUIT SHALL BE CONCEALED UNLESS OTHERWISE DIRECTED OR INDICATED ON THE DRAWINGS.
- 9. BENDS ARE NOT PERMITTED WITH A RADIUS LESS THAN SIX
  (6) TIMES THE DIAMETER OF THE CONDUIT NOR MORE THAN
  NINETY DEGREES. PROVIDE JUNCTION BOXES OR PULL BOXES
  TO AVOID EXCESSIVE RUNS OR TOO MANY BENDS BETWEEN
- 10. THE CONDUIT SIZES SHOWN ON THE PLAN MAY BE INCREASED TO FACILITATE THE PULLING OF CABLES.
- 11. CONDUITS LAID BELOW GROUND OR BELOW FLOOR SLABS ON GRADE SHALL BE SCHEDULE 40 PVC.
- 12. RUN ALL CONDUITS PARALLEL TO OR AT RIGHT ANGLES TO THE BUILDING WALLS AND SUPPORT FROM WALLS OR CEILING AT INTERVALS REQUIRED BY CODE WITH APPROVED CLAMPS AND HANGERS. ALL CONDUITS 3" AND LARGER AND CONDUIT TRAPEZES SHALL BE SUPPORTED FROM STRUCTURE ABOVE. FASTEN TO THE TOP CHORD OF THE BAR JOIST. RUN ALL CONDUIT IN SUCH A WAY TO LEAST INTERFERE WITH FUTURE SERVICES.
- 13. AT COUPLINGS, CONDUIT ENDS SHALL BE THREADED SO THAT THEY MEET IN THE COUPLING. CONDUIT COUPLINGS OF THE ERICKSON TYPE SHALL BE USED AT LOCATIONS REQUIRING SUCH JOINTS.
- 14. WHERE CONNECTIONS ARE TO BE MADE TO MOTORS MORE THAN TWO FEET AWAY FROM WALLS OR COLUMNS, A VERTICAL CONDUIT SECURELY ATTACHED TO THE FLOOR AND CEILING, SHALL BE INSTALLED.
- 15. APPROVED APPLETON, CROUSE HINDS, OR O.Z.
  MANUFACTURING CO. EXPANSION FITTINGS SHALL BE
  INSTALLED IN ALL RIGID CONDUIT AND EMT RUNS WHICH
  PASS THROUGH EXPANSION JOINTS IN THE BUILDING. OTHER
  ACCEPTABLE METHODS TO PROVIDE THIS EXPANSION MAY ALSO
  BE USED.

#### B. FLEXIBLE CONDUIT

- 1. PERMITTED ONLY FOR USE IN MAKING UP SHORT FLEXIBLE CONNECTIONS TO ROTATING OR VIBRATING MACHINERY, TRANSFORMERS, OR SIMILAR EQUIPMENT AND SHALL BE USED AT EACH OF THESE LOCATIONS. CONDUIT AT THESE LOCATIONS SHALL HAVE A MINIMUM LENGTH OF 12" AND A MAXIMUM LENGTH OF 6' 0". FLEX CONDUIT SHALL ALSO BE USED TO CONNECT LAY—IN OR RECESSED FIXTURES. THESE CONDUIT LENGTHS SHALL BE AS REQUIRED TO MAKE A PROPER INSTALLATION AND ALLOW FOR RELOCATION OF FIXTURES ONE GRID SPACE IN ANY DIRECTION (APPROX. 4' OF "SLACK" TO ACCOMMODATE RELOCATION).
- 2. A FIELD INSTALLED BONDING JUMPER SHALL BE INSTALLED INSIDE OF ALL FLEXIBLE CONDUITS AND SHALL BE BONDED BEYOND EACH OF THE FLEXIBLE CONDUITS TO PROVIDE GROUND CONTINUITY.

#### C. WIRING

- 1. FEEDERS AND POWER WIRING: SHALL BE CONDUCTORS IN RIGID GALVANIZED STEEL CONDUIT IMC, OR EMT WHEN INSTALLED IN DRY LOCATION ABOVE GRADE.
- 2. BRANCH CIRCUITS: SHALL BE CONDUCTORS IN EMT, EXCEPT WHERE EMBEDDED IN CONCRETE IN CONTACT WITH THE EARTH OR WHERE IN THE EARTH, IN WHICH CASE THE CONDUCTORS SHALL BE INSTALLED IN IMC OR PVC.
- 3. TELEPHONE AND MISCELLANEOUS SYSTEMS: SHALL BE EMT, EXCEPT AS NOTED FOR BRANCH CIRCUIT WIRING AND TELEPHONE SYSTEM PRIMARY WIRES (PVC). IN UNINSULATED WALLS MUDRING AND PULLSTRING ARE ACCEPTABLE.
- 4. ALL WIRING (EXCEPT LOW VOLTAGE CONTROL AND TELEPHONE) SHALL BE INSTALLED IN EMT, GRC, IMC, OR PVC. ONLY U.L. LISTED LUBRICANTS MAY BE USED IN PULLING THE CONDUCTORS.
- 5. CONDUCTORS SHALL BE CONTINUOUS FROM OUTLET TO OUTLET AND FROM OUTLET TO JUNCTION BOX OR PULL BOX. ALL SPLICES AND JOINTS SHALL BE CAREFULLY AND SECURELY MADE TO BE MECHANICALLY AND ELECTRICALLY SOLID WITH PRESSURE TYPE CONNECTORS, 3M "SCOTCHLOK" OR "IDEAL WING NUT" OR EQUAL. TAPE SHALL BE "SCOTCH" NO. 33 FOR INDOOR AND NO. 88 FOR OUTDOOR OR EQUAL APPROVED BY VEI REPRESENTATIVE.
- 6. CONORICOORS SHALLICHTHINSEANTHROUGHOWELETHEIRENTIFE SHALLICHTHINSEANTHROUGHOWELETHEIRENTIFE SHALLIPER NEC.
  BE CONNECTED TO THE PANEL AS DETAILED AND SHALL HAVE
  COLOR CODED JACKET. ALL WIRES SHALL BE CODED WITH THE
  TYPE, SIZE, MAKE AND VOLTAGE MARKED ON IT. THE SAME

BRANCH CIRCUIT CONDUCTORS SHALL NOT BE SMALLER THAN NO. 12 AWG.

- 7. THE FEEDER AND SERVICE ENTRANCE CONDUCTORS SHALL BE COLOR CODED BY THE USE OF COLORED PLASTIC TAPE APPLIED WITHIN SIX (6) INCHES OF EACH CONDUCTOR END.
- 8. BRANCH CIRCUIT WIRING WHICH SUPPLIES MORE THAN ONE FLUORESCENT FIXTURE THROUGH THE WIRE WAY OF OTHER FIXTURES SHALL BE RATED FOR USE AT 105 DEGREES C.

9. COLOR CODE IN ACCORDANCE WITH THE WIRING DIAGRAMS FURNISHED WITH EQUIPMENT. ALL WIRING FOR CONTROL SYSTEMS TO BE INSTALLED IN CONJUNCTION WITH MECHANICAL AND/OR MISCELLANEOUS EQUIPMENT. COLOR CODE BY LINE OR PHASE ALL BRANCH CIRCUIT WIRING INCLUDING CIRCUITS TO MOTORS AND FEEDERS AS FOLLOWS: WIRE NO. 6 AND SMALLER SHALL BE FACTORY COLOR CODED. WIRE NO. 4 AND LARGER MAY BE COLOR CODED BY COLOR TAPING WITHIN SIX INCHES (6") OF EXPOSED ENDS.

120/208 VOLT	(AUSTIN) 120/208 VOLT	120/240 VOLTS	277/480 VOLTS
PHASE A — BLACK PHASE B — RED PHASE C — BLUE	PHASE A — RED PHASE B — BLACK PHASE C — BLUE	PHASE A — RED PHASE B — BLACK PHASE C — ORANGE	PHASE A — BROWN PHASE B — YELLON PHASE C — PURPL
NEUTRAL — WHITE GROUND — GREEN	NEUTRAL — WHITE GROUND — GREEN	NEUTRAL — WHITE GROUND — GREEN ORANGE IS HIGH LEG	NEUTRAL — GREY GROUND — GREEN

#### D. CONDUCTORS

- 1. ALL CONDUCTORS SHALL BE COPPER OF 98% CONDUCTIVITY.
  CONDUCTORS NO. 10 AND SMALLER SHALL BE SOLID; NO. 8 AND
  LARGER SHALL BE STRANDED TYPE. CONDUCTORS NO. 6 AND
  SMALLER SHALL BE THHN/THWN. CONDUCTORS LARGER THAN NO.
  6 SHALL BE TYPE THW OR THHN/THWN.
- 2. ALL WIRE AND CABLE SHALL BE OF THE SAME NAME BRAND, SHALL BE IN THE ORIGINAL WRAPPING AND SHALL BEAR THE UNDERWRITER'S LABORATORIES, INC. LABEL OF APPROVAL. MINIMUM SIZE CONDUCTORS USED SHALL BE NO. 12 AWG FOR ALL APPLICATIONS EXCEPT WHERE SPECIFICALLY NOTED OTHERWISE (A.C. CONTROLS, ETC.)

#### E. OUTLETS

- 1. AT ALL OUTLETS FOR LIGHTING FIXTURES, WALL SWITCHES, WALL RECEPTACLES, TELEPHONES, INTERCOM EQUIPMENT, TELEVISION ANTENNA, ETC., GALVANIZED STEEL OR CAST TYPE BOXES AS HEREINAFTER SPECIFIED SHALL BE USED.
- 2. OUTLET BOXES FOR FIXTURES AND DEVICES SHALL BE SECURELY ATTACHED TO THE BUILDING CONSTRUCTION; BOLTS FOR STEEL CONSTRUCTION AND EXPANSION BOLTS FOR MASONRY OR CONCRETE. BOXES IN TILE OR MASONRY CONSTRUCTION SHALL BE SECURED IN PLACE WITH CEMENT MORTAR.
- 3. CEILING OUTLETS FLUSH IN FURRED ACOUSTICAL TILE CEILING CONSTRUCTION FOR SURFACE OR PENDANT MOUNTED LIGHTING FIXTURES SHALL BE 4" SQUARE OR OCTAGONAL PRESSED STEEL BOXES SUPPORTED FROM STUD AND ROD, BARS OR HANGERS SUPPORTED FROM THE BUILDING STRUCTURE IF NECESSARY.
- 4. OUTLET BOXES OCCURRING IN METAL STUD PARTITIONS SHALL BE SECURED WITH METAL STUD BRACKETS SPECIFICALLY DESIGNED FOR THAT PURPOSE.
- 5. PROVIDE PLASTER RINGS FOR ALL BOXES SET IN PLASTER WALLS OR CEILINGS. BOXES FOR DEVICES IN UNFINISHED MASONRY WALLS OR STUD WALLS SHALL BE PRESSED STEEL, SQUARE CORNER, SECTIONAL SWITCH BOXES OR SHALL BE 4" SQUARE BOX WITH A SQUARED CORNERED TILE WALL COVER, SET FLUSH WITH MASONRY CONSTRUCTION. BOXES IN CONCRETE CEILING SLABS SHALL BE OCTAGONAL, SHALLOW PRESSED STEEL CONCRETE BOXES.
- 6. BOXES FOR ALL EXPOSED WORK IN WET LOCATIONS SHALL BE OF THE CAST TYPE.
- 7. BOXES FOR ALL EXPOSED WORK ON INTERIOR WALLS MAY BE UTILITY BOXES.
- 8. ALL OUTLET BOXES SHALL BE FLUSH MOUNTED WITHIN THE WALL REGARDLESS OF WALL CONSTRUCTION, UNLESS THEY ARE SPECIFICALLY SHOWN AS BEING USED WITH EXPOSED CONDUIT; IN WHICH CASE, THEY SHALL BE OF CAST TYPE AS SPECIFIED ABOVE. UTILITY BOXES WILL NOT BE ACCEPTABLE.

#### F. LOCATIONS OF OUTLETS

- 1. THE APPROXIMATE LOCATION OF OUTLETS ARE SHOWN ON THE PLANS. THE RIGHT IS RESERVED TO CHANGE THE EXACT LOCATION OF ANY OUTLET BEFORE IT IS PERMANENTLY INSTALLED.
- 2. UNLESS OTHERWISE INDICATED OR DIRECTED, WALL OUTLET BOXES SHALL BE PLACED WITH CENTERLINES AT EIGHTEEN (18) INCHES ABOVE THE FINISHED FLOOR. WHERE OUTLETS AT DIFFERENT LEVELS ARE SHOWN ADJACENT THEY SHALL BE INSTALLED IN ONE VERTICAL LINE.
- 3. OUTLETS OCCURRING IN ARCHITECTURAL FEATURE SHALL BE ACCURATELY CENTERED. SPACE WALL SWITCH OUTLETS SO THAT FIRST GANG BOX IS TWO (2) INCHES FROM DOOR TRIMS ON THE STRIKE SIDE OF DOORS AS ACTUALLY INSTALLED. INSTALL ALL OUTLET BOXES FLUSH WITH WALL OR CEILING FINISH.

#### G. INSTALLATION

- 1. RACEWAYS SHALL BE INSTALLED CONCEALED IN THE FURRED SPACE ABOVE CEILINGS, IN MASONRY WALLS, IN WALL CAVITIES, IN FLOOR OR CEILING SLABS, AND (AS REQUIRED) EXPOSED ON CEILING. CONCEALED RACEWAYS SHALL BE SUPPORTED FROM THE BUILDING CONSTRUCTION AT INTERVALS NOT EXCEEDING TEN (10) FEET WITH STRAPS AND WOOD SCREWS FOR WOOD CONSTRUCTION, MACHINE SCREWS FOR METAL CONSTRUCTION AND EXPANSION BOLTS FOR MASONRY CONSTRUCTION.
- 2. SWITCHES AND OUTLET BOXES ARE TO BE INSTALLED PRIOR TO SHEET ROCK APPLICATION. HOLES IN THE SHEET ROCK FOR ELECTRICAL AND MECHANICAL BOXES ARE TO BE CUT BY THE DRYWALL CONTRACTOR ONLY.
- 3. THE DEVICES THAT FIT INTO THE OUTLET BOXES SHALL BE SCREWED TIGHT BEFORE THE COVERPLATE IS INSTALLED AND THE COVERPLATE SHALL NOT BE USED AS A MEANS OF TIGHTENING THE DEVICES IN PLACE.

#### H. DISCONNECT AND FEEDER SWITCHES

- FEEDER SWITCHES AND DISCONNECT SWITCHES SHALL BE HEAVY DUTY EXCEPT AS OTHERWISE NOTED AND IN DAMP LOCATIONS OR EXPOSED TO THE WEATHER SHALL BE NEMA 3R, RAINTIGHT.
- 2. ALL DISCONNECT SWITCHES SHALL HAVE FACTORY INSTALLED PROVISIONS FOR PADLOCKING IN EITHER "ON" OR "OFF" POSITION. NONFUSED DISCONNECT SWITCHES SHALL BE HORSEPOWER RATED FOR THE MOTOR INSTALLED. DISCONNECTS FOR A/C CONDENSING UNITS OR PACKAGE UNITS SHALL BE FUSIBLE AND HAVE FUSES SIZED AT NOT MORE THAN THE MAXIMUM FUSE SIZE LISTED ON THE EQUIPMENT NAMEPLATE.



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ELECTRICAL SPECIFICATIONS

DRAWING NO.

E1.2

#### I. FUSES

ALL FUSES SHALL BE BUSSMAN OR EQUAL APPROVED BY VEI REPRESENTATIVE

#### J. LABELING

LABEL ALL PANELS, CONTROL POINTS, SWITCHES, AND MOTORS AS DIRECTED. PANELS SHALL BE IDENTIFIED BY PANEL NUMBER. SWITCHES SHALL BE LABELED INDICATING THE EQUIPMENT WHICH THEY CONTROL. TYPED (CIRCUIT) PANEL DIRECTORIES ARE TO BE SUPPLIED AND INSTALLED.

#### K. PHONE EQUIPMENT

CONTRACTOR TO PROVIDE DEDICATED 120V OUTLET FOR THE TELEPHONE SYSTEM (OR AS REQUESTED BY PHONE COMPANY PERSONNEL). VERIFY MOUNTING HEIGHT WITH VEI REPRESENTATIVE.

#### L. TELEPHONE RACEWAY SYSTEM

THE CONTRACTOR SHALL PROVIDE OUTLETS FOR THE TELEPHONES, AS SHOWN ON THE DRAWINGS AND SHALL LEAVE THE OUTLETS IN READINESS FOR WIRING BY OTHERS. PULL A NYLON PULL WIRE IN ALL TELEPHONE CONDUITS (200 LB. TEST). GROUNDING SHALL BE PROVIDED IN ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE.

#### M. MOTORS, MOTOR STARTERS, POWER AND CONTROL

- 1. PROVIDE DISCONNECT SWITCHES FOR ALL MOTORS PER LATEST ADOPTED EDITION OF THE NATIONAL ELECTRICAL CODE.
- 2. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL POWER WIRING TO DISCONNECT SWITCHES, TO STARTERS AND TO MOTORS. CONNECTION AT MOTORS SHALL BE MADE WITH A SHORT SECTION OF FLEXIBLE CONDUIT. SEALTITE SHALL BE USED IN DAMP OR WET LOCATIONS AND TO ALL ROOF MOUNTED FOLIPMENT.
- MOTOR POWER WIRING IS DEFINED AS THOSE CONDUCTORS NECESSARY BETWEEN THE ENERGY SOURCE AND THE MOTOR TO CONDUCT THE ELECTRICAL ENERGY.
- 4. ELECTRICAL CONTRACTOR SHALL PROVIDE WIRING AND CONDUIT FOR ALL EXHAUST FANS.
- 5. TOILET EXHAUST FANS SHALL BE INSTALLED TO BE SWITCHED AT PANEL BREAKER.
- 6. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND INSTALLING JUNCTION BOXES, CONDUIT (WHERE REQUIRED) AND PULL STRINGS FOR CONTROL WIRING WHICH IS TO BE FURNISHED AND INSTALLED BY THE MECHANICAL CONTRACTOR.

#### N. COVER PLATES

- 1. WHERE WIRING DEVICES ARE FLUSH MOUNTED, THE COVER PLATES SHALL BE SMOOTH PLASTIC.
- 2. WHERE WIRING DEVICES ARE SURFACE MOUNTED, THE COVER PLATE SHALL BE FORMED STEEL WITH CADMIUM PLATING.
- 3. WHERE WEATHERPROOF COVER PLATES ARE REQUIRED, THEY SHALL MEET U.L. "WET LOCATION COVER CLOSED" REQUIREMENTS AND BE HINGED AND GASKETED WITH SPRING LOADED CLOSER.
- 4. ALL JUNCTION BOXES, OUTLET BOXES, SECTIONAL SWITCH BOXES, UTILITY BOXES, ETC., SHALL BE COVERED WITH A FINISHED COVER PLATE.
- 5. WHERE MORE THAN ONE DEVICE IS INDICATED AT A LOCATION, THE DEVICES SHALL BE MOUNTED IN COMBINED SECTIONAL GANG BOXES AND COVERED JOINTLY BY A COMMON PLATE.

#### 16.20 WALL SWITCHES

- A. SWITCHES SHALL BE TOTALLY ENCLOSED, QUIET ROCKER TYPE RATED FOR 20 AMPERES AT 277 VOLTS.
- B. WALL SWITCH MODEL AND COLORS SHALL BE AS FOLLOWS (IF NOT NOTED ON THE DRAWINGS): WHITE
- LEVITON ("DECORA QUIET ROCKER" WHITE #5621-W)
- C. SWITCHES FOR ROOF MOUNTED EXHAUST FANS TO HAVE "ON/OFF" INDICATOR LIGHT WHEN EXHAUST FANS ARE TO BE ROOF MOUNTED. (DECORA QUIET ROCKER INDICATOR SWITCH #5611).

#### 16.21 RECEPTACLES

- A. DUPLEX RECEPTACLES SHALL BE 20 AMPERES, 125 VOLT AUTOMATIC GROUNDING.
- B. DUPLEX OUTLETS SHALL BE AS FOLLOWS (IF NOT NOTED ON THE DRAWINGS): WHITE
- LEVITON 16342-W ("GROUNDAMATIC" -WHITE)
- C. DEVICES UNLESS OTHERWISE INDICATED ON THE DRAWINGS SHALL BE MOUNTED AT THE FOLLOWING HEIGHTS (TO CENTERLINE):

   RECEPTACLES
   TELEPHONES
   SWITCHES
   SWITCHES
   THERMOSTATS
   THERM

#### 16.22 ELECTRICAL SERVICE DISTRIBUTION EQUIPMENT

#### A. PANELBOARDS

1. GENERAL: FURNISH AND INSTALL WHERE SHOWN ON THE PLANS, PANELBOARDS, OF THE THERMAL MAGNETIC AUTOMATIC CIRCUIT BREAKER TYPE, FACTORY ASSEMBLED. PANELBOARDS SHALL BE NEW AND SHALL BE OF THE MANUFACTURER'S LATEST STANDARD CATALOGUED DESIGN (MINIMUM 42 CIRCUIT PANEL). PANELBOARDS SHALL BE THE PRODUCT OF THE SAME MANUFACTURER AS THE CABINETS AND SHALL BEAR U.L. LABELS. DISCONNECTS SHALL NOT BE MOUNTED HIGHER THAN 6'-6" TO TOP OF THE SWITCH.

2. THE PANELS SHALL CONTAIN MAIN LUGS SIZED FOR EACH RESPECTIVE FEEDER AND MAIN BUS EQUAL TO OR GREATER IN CAPACITY THAN THE RATING OF THE RESPECTIVE OVER CURRENT PROTECTIVE DEVICE SERVING THE PANEL.

#### B. BUSSING

- 1. PANELBOARD BUSSING SHALL BE COPPER WITH CURRENT DENSITY NOT TO EXCEED 1000 AMPERES PER SQUARE INCH.
- 2. THE NEUTRAL BUS SHALL UTILIZE SET-SCREWS TO BOND THE NEUTRAL CONDUCTOR TO THE NEUTRAL BUS THROUGH HOLES DRILLED IN THE NEUTRAL BAR.

#### C. CIRCUIT BREAKERS

- 1. ALL CIRCUIT BREAKERS SHALL BE THERMAL AND MAGNETIC MOLDED CASE TYPE QUICK—MAKE AND QUICK—BREAK BOTH ON MANUAL AND ON AUTOMATIC OPERATION AND SHALL BE BOLTED TO THE PANEL BUS. BREAKERS SHALL BE OF THE OVER—THE—CENTER TOGGLE OPERATING TYPE, WITH THE HANDLE GOING TO A POSITION BETWEEN "ON" AND "OFF" TO INDICATE AUTOMATIC
- 2. ALL MULTIPLE BREAKERS SHALL BE OF THE INTERNAL COMMON TRIP AND INTERNAL COMMON RESET TYPE; TIE—HANDLE BREAKERS SHALL HAVE NON—REMOVABLE MONOLITHIC EXTERNAL HANDLE TO BE ACCEPTABLE.
- 3. BREAKERS SHALL HAVE A MINIMUM U.L. LISTED INTERRUPTING CAPACITY OF 14,000 SYMMETRICAL AMPERES FOR 277/480 VOLTS AND 10,000 SYMMETRICAL AMPERES FOR 120/208 VOLTS.
- 4. PROVISIONS FOR ADDITIONAL BREAKERS SHALL BE SUCH THAT NO ADDITIONAL CONNECTORS WILL BE REQUIRED TO ADD

#### D. CABINETS AND FRONTS

- 1. BRANCH CIRCUITS SHALL BE CONSECUTIVELY NUMBERED AND SEQUENCE PHASE, (I.E., CIRCUITS 1,3, AND 5 TO BE CENTERED TO PHASES A, B, AND C RESPECTIVELY).
- 2. PANELBOARDS SHALL BE FLUSH MOUNTED IN SHEET ROCK WALLS OR SURFACE MOUNTED ON CONCRETE OR BRICK EXTERIOR WALLS, AS SHOWN, HAVING A MINIMUM WIDTH CAN OF 20" AND A DEPTH OF 5 3/4", WITH BAKED-ON ENAMEL TRIM, ADJUSTABLE TRIM CLAMPS AND DOOR LOCK AND CATCH; ALL LOCKS SHALL BE KEYED ALIKE.
- 3. THE CABINETS SHALL BE SUFFICIENT SIZE TO ALLOW A GUTTER SPACE OF AT LEAST FOUR (4) INCHES ON EACH SIDE AROUND THE PANEL AND EIGHT (8) INCHES AT THE TOP AND BOTTOM.
- 4. PROVIDE A TYPEWRITTEN DIRECTORY (UNDER PLASTIC) TO INDICATE CIRCUITS CONTROLLED WITH ALL SPARES MARKED IN PENCIL
- 5. PANELBOARDS CONTAINING MORE THAN 42 POLES SHALL BE TWO SECTIONS MADE UP OF TWO EQUAL SIZE CANS.

### 16.23 SERVICE SWITCHBOARDS - 480/277 VOLT SERVICE OR 120/208 VOLT SERVICE

A. GENERAL: PROVIDE AS HEREINAFTER SPECIFIED AND SCHEDULED AND WHERE INDICATED ON THE PLANS, A SECTIONAL, TOTALLY FREESTANDING, INDOOR, STEEL ENCLOSED, DEAD FRONT, LOW VOLTAGE SWITCHBOARD IN ACCORDANCE WITH THE LATEST APPLICABLE STANDARDS OF NEMA AND U.L. (WITH U.L. LABEL AND SERVICE ENTRANCE LABEL). THE SWITCHBOARD SHALL BE FRONT ACCESSIBLE. GENERAL ELECTRIC TYPE AV OR EQUAL.

#### B. ENCLOSURE CONSTRUCTION

- 1. SWITCHBOARD SECTIONS SHALL BE MAXIMUM NINETY (90) INCHES HIGH, DIE FORMED FROM CODE GAUGE (MINIMUM) STEEL, FINISHED AND RUST INHIBITING PRIME COAT AND THEN BAKED—ON ENAMEL FINISH. ADJOINING SECTIONS OF THE SAME SWITCHBOARD SHALL BE BOLTED TOGETHER (NOT WELDED) TO FORM THE COMPLETE SWITCHBOARD.
- 2. AMPLE WIRING GUTTER AREAS SHALL BE PROVIDED AT TOP, BOTTOM AND SIDES TO ACCOMMODATE ALL FEEDER CABLES.
- 3. SWITCHBOARD SHALL HAVE EXTERNAL CHANNEL IRON SILLS LEFT TO RIGHT AT FRONT AND BACK.
- 4. ALL CLOSURE PLATES SHALL BE SCREW REMOVABLE AND SMALL ENOUGH FOR EASY HANDLING BY ONE MAN.

#### C. BUSSING

- 1. ALL BUSSING SHALL BE 98% CONDUCTIVITY COPPER (ALUMINUM ALLOWED ONLY WITH THE VEI REPRESENTATIVE'S APPROVAL), SIZED ON THE BASIS OF A MAXIMUM TEMPERATURE RISE OF 50 DEGREES C. ABOVE 40 DEGREES C. AMBIENT TEMPERATURE. CURRENT DENSITY FOR ALUMINUM SHALL NOT EXCEED 800 AMPERES PER SQUARE INCH BASED ON SIZE OF MAIN ENTRANCE DEVICE.
- 2. BUS SHALL BE PROVIDED THROUGH ALL SECTIONS, WITH CAPACITY AS SPECIFIED BUT AT LEAST EQUAL TO OR GREATER THAN THE RATING OR SETTING OF THE OVER CURRENT DEVICE PROTECTING THE BUS. VERTICAL OR HORIZONTAL CABLING IS NOT ACCEPTABLE. BUS BARS SHALL BE BRACED FOR RMS SYMMETRICAL AMPERES SPECIFIED IN SCHEDULE.
- 3. SWITCHBOARD SHALL HAVE FULL LENGTH 50% GROUND BUS SECURELY BOLTED TO EACH FRAME, WITH SECTIONALIZING LINKS AT SHIPPING SECTIONS AND AT SERVICE SECTIONS BOUNDARIES. THE NEUTRAL BUS AND THE GROUND BUS SHALL BE CONNECTED BY MEANS OF A REMOVABLE BUS LINK. PROVIDE SERVICE NEUTRAL.
- 4. SPACES FOR FUTURE INSTALLATION OF BRANCH DEVICES ARE SPECIFIED BY AMPERE SIZE. THE SPACES SO SPECIFIED AND/OR SCHEDULED SHALL BE COMPLETE WITH ALL BUS AND REQUIRED CONNECTORS SUCH THAT FUTURE DEVICES CAN BE INSTALLED WITHOUT ADDING OR CHANGING BUS CONNECTORS ON THE MAIN BUS.
- 5. CURRENT DENSITY OF ALL SWITCHBOARD BUSSING CONTACT AREAS SHALL NOT EXCEED 200 AMPERES PER SQUARE INCH.

#### 16.24 INTEGRATED EQUIPMENT RATING

A. SWITCHBOARD AS A COMPLETE UNIT SHALL BE GIVEN A SINGLE INTEGRATED EQUIPMENT RATING AND BE LABELED. THE CIRCUIT RATING SHALL CERTIFY THAT ALL EQUIPMENT IS CAPABLE OF WITHSTANDING THE STRESSES OF A FAULT EQUAL TO THAT OF THE LEAST OVER CURRENT PROTECTIVE DEVICE THEREIN. SUCH RATING SHALL BE ESTABLISHED BY ACTUAL TESTS BY THE MANUFACTURER ON SIMILAR EQUIPMENT CONSTRUCTION AS THE SUBJECT SWITCHBOARD.

#### 16.25 FUSIBLE SWITCHES

A. FUSIBLE SWITCHES SHALL BE MANUALLY OPERATED, FUSIBLE, FOR 240 VOLT OR 480 VOLT SERVICE, AS REQUIRED OF THE AMPACITY AND POLES AS SCHEDULED OR REQUIRED. THEY SHALL BE QUICK—MAKE, QUICK—BREAK, TWO POSITION, SINGLE THROW, VISIBLE BLADE TYPE WITH DUAL HORSEPOWER RATINGS. SWITCH HANDLES SHALL PHYSICALLY INDICATE "ON" AND "OFF" POSITION. THE SWITCH HANDLE SHALL BE MECHANICALLY INTERLOCKED TO MAKE IT DIFFICULT TO OPEN THE SWITCH DOOR IN THE "ON" POSITION, AND HAVE PROVISION FOR PADLOCKING IN THE OPEN POSITION. THE SWITCHES SHALL BE U.L. LABELED, HAVE CLIPS FOR NEMA CLASS R FUSES AS SCHEDULED.

#### 16.26 DISTRIBUTION SWITCHBOARDS

A. GENERAL: PROVIDE AS HEREINAFTER SPECIFIED AND SCHEDULED AN INDOOR, STEEL ENCLOSED, DEAD FRONT, LOW VOLTAGE APPLICABLE STANDARD OF U.L. THE SWITCHBOARD SHALL BE FRONT ACCESSIBLE UNLESS OTHERWISE SPECIFIED OR INDICATED ON THE PLANS.

#### 16.27 ENCLOSURE CONSTRUCTION

- A. DISTRIBUTION SWITCHBOARD SHALL BE FREESTANDING.
- B. SWITCHBOARD SHALL BE HIGH DIE FORMED FRONT, 12 GAUGE (MINIMUM) STEEL, FINISHED WITH RUST INHIBITING PRIME COAT AND THEN BAKED—ON ENAMEL FINISH.
- C. AMPLE WIRING GUTTER AREAS SHALL BE PROVIDED AT TOP, BOTTOM, AND SIDES TO ACCOMMODATE ALL FEEDER CABLES.

#### 16.28 DRY-TYPE TRANSFORMERS

- A. GENERAL: DRY-TYPE TRANSFORMERS SHALL BE DESIGNED FOR INDOOR OPERATION (UNLESS OTHERWISE REQUIRED) AND SHALL BE DESIGNED AND TESTED IN ACCORDANCE WITH ALL APPLICABLE NEMA, ANSI, AND U.L. STANDARDS.
- B. TRANSFORMERS SHALL BE FLOOR MOUNTED (UNLESS OTHERWISE NOTED), 480 VOLTS DELTA PRIMARY TO 120/208 VOLTS SECONDARY, GROUNDED WIRE, WITH 2-5% FCBN TAPS UP TO 15 KVA AND 4-2-1/2% FCBN ON ALL SIZES LARGER. TRANSFORMERS SHALL HAVE CLASS "F" INSULATION, 115 DEGREE C. RISE FOR ALL LARGER SIZES. TWENTY-FIVE PERCENT (25%) EXCESS CAPACITY SHALL BE PROVIDED.

#### 16.29 SOUND LEVEL

- A. TRANSFORMER SOUND LEVELS SHALL NOT EXCEED 45 DÉCIBELS ON UNITS THROUGH 150 KVA, 50 DÉCIBELS ON UNITS THROUGH 300 KVA AND 55 DÉCIBELS ON UNITS THROUGH 500 KVA.
- B. CORE AND COILS SHALL BE INTERNALLY ISOLATED TO MINIMIZE TRANSMISSION OF VIBRATION.

#### 16.30 EXECUTION

- A. PANELBOARDS
- 1. RECESSED PANELS SHALL HAVE THREE 3/4" CONDUITS STUBBED OUT INTO CEILING SPACE ABOVE PANEL FOR FUTURE EXPANSION.
- ALL PANELBOARDS SHALL BE INSTALLED WITH THE TOP 6'-6" ABOVE THE FINISHED FLOOR.

#### 16.31 SWITCHBOARDS (INCLUDING DISTRIBUTION SWITCHBOARDS)

ALL CONDUCTORS ENTERING SWITCHBOARD SHALL HAVE INSULATION RATED FOR 90 DEGREES C. (MINIMUM).

#### 16.32 LIGHTING FIXTURES

- A. PROVIDE ALL LIGHTING FIXTURES AS SCHEDULED ON DRAWINGS, LAMPS AND HARDWARE, INSTALLED COMPLETELY WIRED, CONNECTED AND LEFT IN COMPLETE OPERATING ORDER.
- B. CONFIRM ALL CEILING TYPES, CLEARANCES AND OPERATING VOLTAGES BEFORE ORDERING LIGHTING FIXTURES.

#### 16.33 LAMPS

- A. PROVIDE FLUORESCENT LAMPS WHICH ARE SUITABLE FOR USE WITH PROPOSED BALLASTS AND MEET THE FOLLOWING PERFORMANCE CRITERIA:
- 1. NOMINAL WATTAGE: AS SCHEDULED
- 2. COLOR TEMPERATURE: 4100K OR AS OTHERWISE SCHEDULED. 3. CRI: >75
- 4. AVERAGE LIFE: 20,000 HOURS
- 5. INITIAL LUMENS: 2950 FOR 32 WATT T-8, 5800 FOR 59 WATT T-8
  6. INSTANT START/RAPID START: PROVIDE LAMPS WHICH ARE COMPATIBLE WITH BALLASTS.

#### 16.34 LENS

ALL PLASTIC LENSES FOR FLUORESCENT TROFFERS SHALL BE CLEAR ACRYLIC PRISMATIC OR AS INDICATED IN FIXTURE SCHEDULE.

#### 16.35 BALLAST

- A. PROVIDE NON-PCB DISCRETE ELECTRONIC BALLASTS WITH ENCAPSULATED COMPONENTS THAT ARE U.L. LISTED AND MEET THE FOLLOWING PERFORMANCE CRITERIA:
- 1. SOUND RATING: "A" FOR F32T8 BALLASTS, "A" FOR F96T8 BALLASTS
- 2. THERMAL PROTECTION: U.L. CLASS "P"
- 3. ANSI SYSTEM WATTS: AS SCHEDULED
- 4. LAMP NUMBER: AS SCHEDULED
  5. BALLAST FACTOR: 0.88 OR HIGHER FOR STANDARD F32T8 BALLASTS, 0.83 OR HIGHER FOR STANDARD F96T8 BALLASTS, 1.15 OR HIGHER FOR BALLASTS SCHEDULED AS "HBF"
- 6. POWER FACTOR: 0.95 OR GREATER7. LAMP CURRENT CREST FACTOR: 1.7 OR LESS
- 8. LAMP OPERATING FREQUENCY: 20 kHz
- 9. CIRCUITING: PARALLEL
  10. TOTAL HARMONIC DISTORTION: LESS THAN 20%
- 11. STARTING TEMPERATURE: 50°F OR LOWER 12. WARRANTY: 5 YEAR REPLACEMENT

#### 16.36 FIXTURE

A. FLUORESCENT LIGHT FIXTURES SHALL BE AS MANUFACTURED BY BY LITHONIA, HUBBELL OR EQUAL APPROVED BY VEI REPRESENTATIVE. EACH LIGHTING FIXTURE SHALL HAVE BEEN TESTED AND CERTIFIED FOR PROPER OPERATION BY THE FIXTURE MANUFACTURER.

#### 16.37 INSTALLATION

- A. A LIGHTING FIXTURE SHALL BE PROVIDED AT EACH PLACE SHOWN ON THE DRAWINGS. THE FIXTURE INSTALLED SHALL BE THE TYPE INDICATED OR SPECIFIED.
- B. ALL FLUORESCENT FIXTURES IN THE SAME GENERAL AREA SHALL BE THE SAME TYPE.
- C. WHEN WAREHOUSE HIGH-BAY FIXTURE INSTALLATIONS ARE INDICATED, THE BOTTOM EDGE OF THE FIXTURE SHALL NOT CONFLICT WITH THE MINIMUM CLEAR HEIGHT OF THE BUILDING. CONTACT THE VEI REPRESENTATIVE FOR THE CLEAR HEIGHT.

#### 16.38 SUPPORT OF LIGHTING FIXTURES

- A. ALL LIGHTING FIXTURES SHALL BE ADEQUATELY SUPPORTED AND SECURELY FASTENED.
- B. FIXTURES SHALL BE SUPPORTED IN A MANNER THAT WILL INSURE THE FIXTURE WEIGHT BEING EQUALLY DISTRIBUTED FROM EACH SUPPORT AND THE FIXTURE REMAINING IN A LEVEL POSITION.
- C. ALL FIXTURES WITH LAMP POSITION, TILT, SHUTTERS, ROTATION OR OTHER TYPES OF ADJUSTMENT SHALL BE ROUGH ADJUSTED AT THE TIME OF INSTALLATION. FIXTURES SERVING AREAS WHERE DAY LIGHTING IS PREDOMINATE WILL BE ADJUSTED AFTER SUNSET.

#### 16.39 LIGHTING

A. INSTALL OFFICE AND WAREHOUSE LIGHT PER PLANS.

#### 16.40 TEMPORARY POWER

PROVIDE TEMPORARY POWER (SMALL TOOL) AND LIGHTING PER OSHA REQUIREMENTS. IT SHOULD BE NOTED THAT THERE MAY NOT BE CITY POWER AVAILABLE AT THE SITE. IT IS THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR TO CONFIRM (TEMPORARY POWER) CONDITIONS AND RESPOND ACCORDINGLY TO PROVIDE TEMPORARY POWER. REMOVE ANY TEMPORARY WIRING ONCE PERMANENT ELECTRICAL SERVICE IS ESTABLISHED.

#### END OF DIVISION 16



FRANK E. FORAN
78261
78261

DOCUMENT WAS AUTHORIZED BY

Project:
Bijan Reta

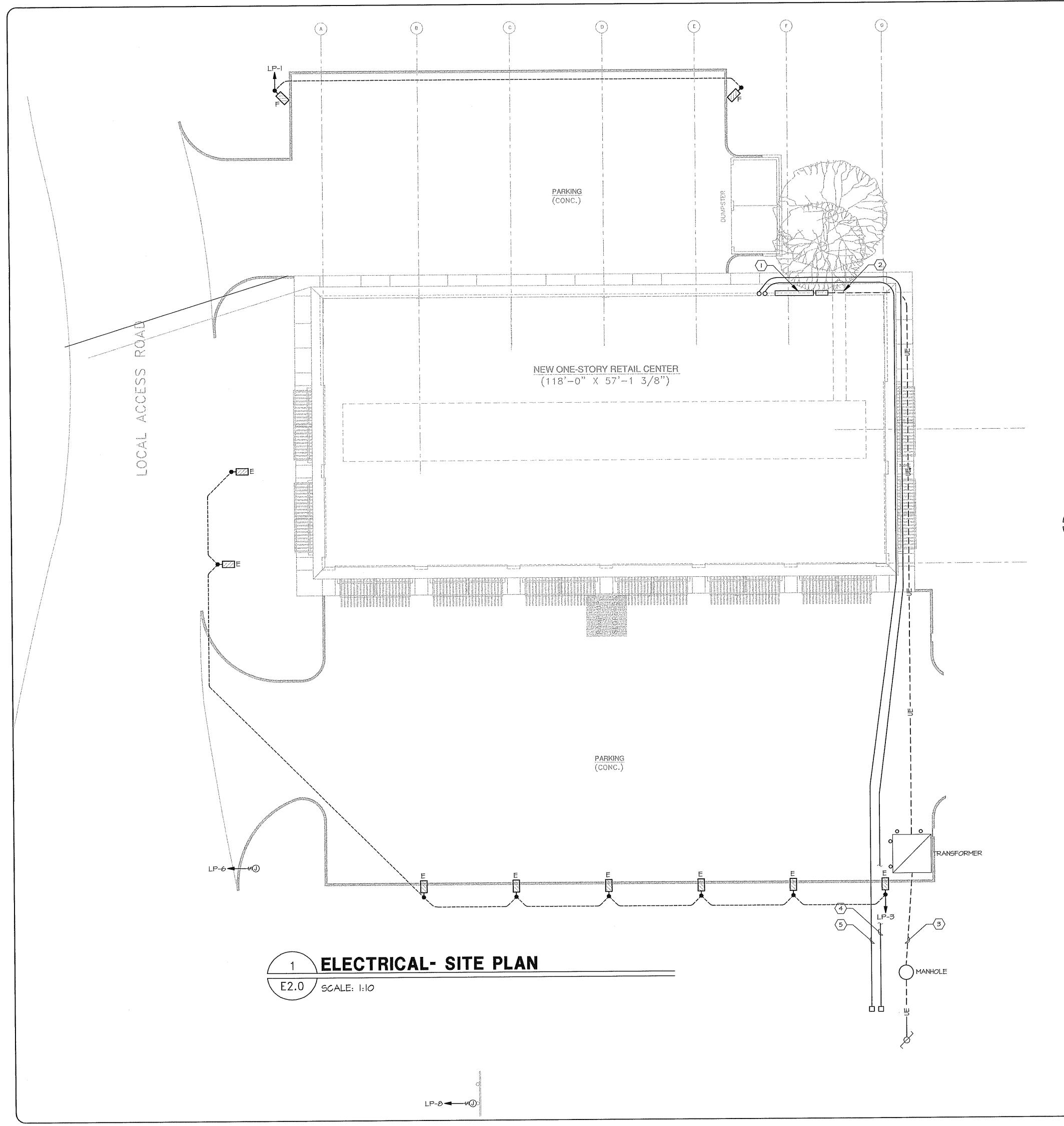
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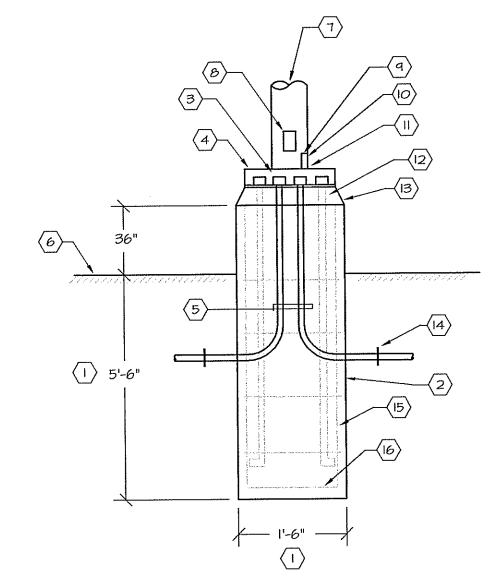
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ELECTRICAL SPECIFICATIONS

DRAWING NO.





## KEYED NOTES

- CONTRACTOR SHALL ENGAGE FOUNDATION
  DESIGNER, POLE BASE FOUNDATION & REBAR
  SHALL BE DESIGNED BY QUALIFIED FOUNDA—
  TION DESIGNER WHO IS FAMILIAR WITH SOIL
  CONDITIONS AND POLE LOADING.
- CONCRETE BASE, MINIMUM 3500 PSI (COMPRESSIVE STRENGTH 28 DAYS) (3) CAP CONDUITS (BEFORE POURING CONCRETE)
- 4 BASE COVER
- RIGID STEEL ELBOWS WRAP WITH PVC TAPE OVERLAP 50%
- 6 FINISH GRADE (7) LUMINAIRE POLE

- (4) GROUNDING LUG
- GROUND CONDUCTOR
- ANCHOR BOLTS VERIFY BOLT SIZE & BOLT CIRCLE WITH POLE MANUFACTURER
- PVC SCH40 FROM RIGID STEEL ELBOWS TO NEXT POLE (SEE PLAN)
- VERT REBAR (#4 GRADE 40 MINIMUM)

(16) TIES REBAR (#4 GRADE 40 MINIMUM)

RAISED POLE BASE DETAIL

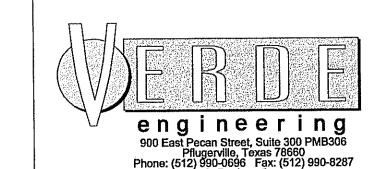
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### GENERAL NOTES:

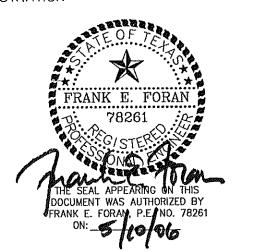
- I.) THESE NOTES APPLY TO THIS SHEET ONLY.
- PROVIDE AND INSTALL 120/208 VOLT, 3 PHASE ELECTRICAL SERVICE. PRIMARY SERVICE TRANSFORMER AND METER PROVIDED AND INSTALLED BY ELECTRIC COMPANY. SECONDARY CONDUITS, METER AND CT ENCLOSURES PROVIDED BY ELECTRICAL CONTRACTOR, REFER TO ELECTRICAL RISER AND PANEL SCHEDULES SHEET EI.I. EXTEND BRANCH CIRCUITS TO FIXTURES, RECEPTACLES, AND EQUIPMENT. ALL WORK SHALL COMPLY WITH NFPA TO (2005 NATIONAL ELECTRICAL CODE) AND ALL LOCAL CODES AND
- 3.) ELECTRICAL CONTRACTOR TO PROVIDE AND INSTALL ALL LIGHT FIXTURES AS SCHEDULED OR AS SPECIFIED BY OWNER.
- 4.) ALL BUILDING AND PARKING LOT LIGHTS SHALL BE CONTROLLED BY TIMECLOCK/PHOTOCELL. PHOTOCELL ON / TIMECLOCK OFF.

## KEYED NOTES:

- ELECTRICAL SERVICE ENTRANCE EQUIPMENT, REFER TO ELECTRICAL RISER DIAGRAM SHEET EI.I
- (2) LOCATION OF HOUSE PANEL "LP". REFER TO ELECTRICAL RISER DIAGRAM SHEET EI.I. COORDINATE WITH OWNER.
- RUN (2) 4" CONDUITS FOR POWER FROM POLE TO BUILDING TRANSFORMER. INSTALLATION SHALL BE PER CPS REQUIREMENTS.
- RUN (I) 4" CONDUIT FOR TELEPHONE FROM POLE TO BUILDING FOR SBC DEMARK. RUN CONDUIT WITH (4) I" INTERDUCTS. ALL INSTALLATION WORK SHALL BE PER SBC STANDARDS. PROVIDE (I) #6 GROUND FROM BUILDING SERVICE ENTRANCE TO DEMARK.
- (5) RUN (1) 4" CONDUIT FOR CABLE TV FROM POLE TO BUILDING. RUN CONDUIT WITH (4) 1" INTERDUCTS. PROVIDE (1) #6 GROUND FROM BUILDING SERVICE ENTRANCE TO DEMARK.



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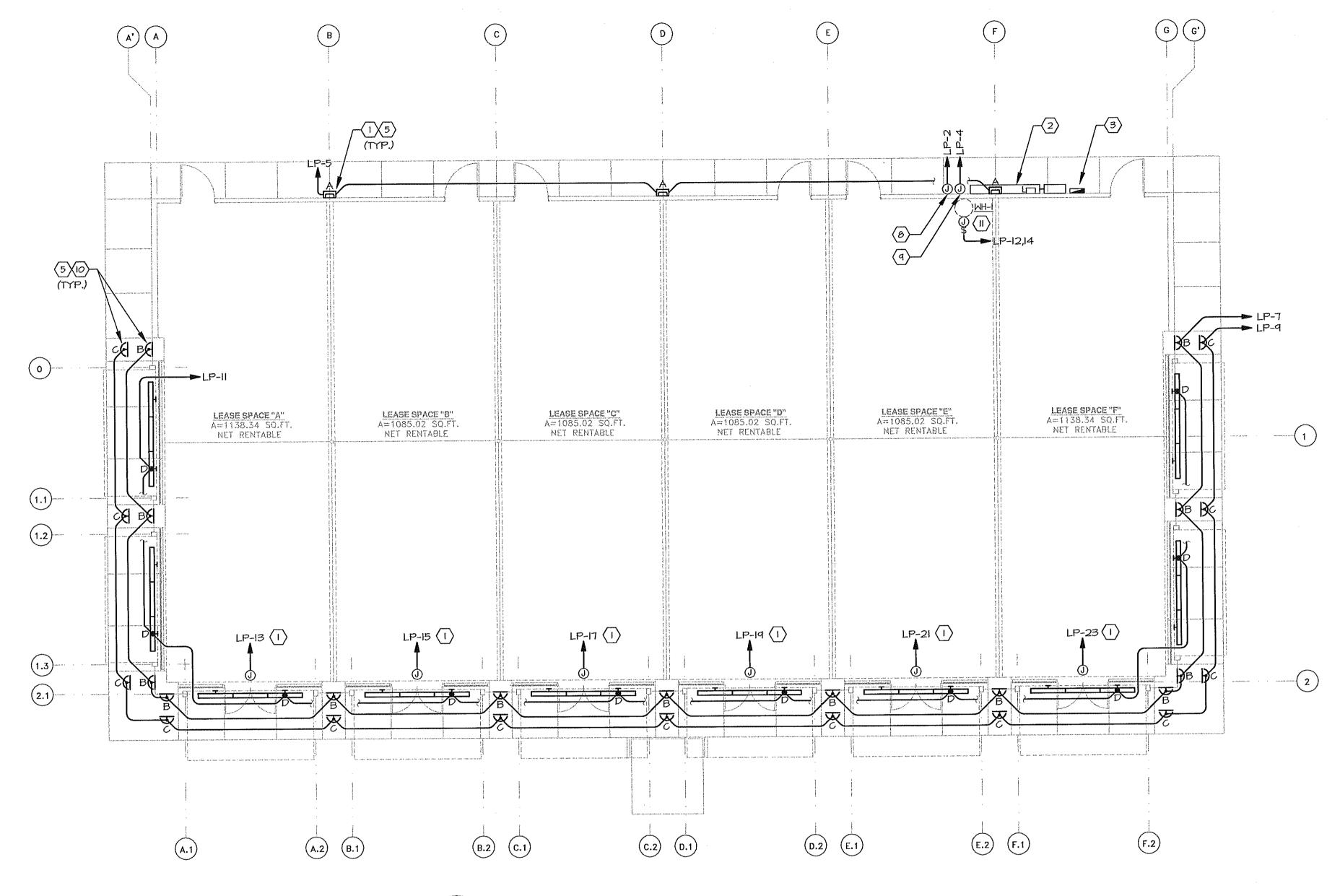
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ELECTRICAL SITE PLAN

DRAWING NO.

E2.0



## 1 ELECTRICAL- LIGHTING/POWER PLAN E2.1 | SCALE: 1/8" = 1'-0"

## GENERAL NOTES:

- I.) THESE NOTES APPLY TO THIS SHEET ONLY.
- 2.) PROVIDE AND INSTAIL 120/208 VOLT, 3 PHASE ELECTRICAL SERVICE. PRIMARY SERVICE TRANSFORMER AND METER PROVIDED AND INSTALLED BY ELECTRIC COMPANY. SECONDARY CONDUITS, METER AND CT ENCLOSURES PROVIDED BY ELECTRICAL CONTRACTOR. REFER TO ELECTRICAL RISER AND PANEL SCHEDULES SHEET EI.I. EXTEND BRANCH CIRCUITS TO FIXTURES, RECEPTACLES, AND EQUIPMENT. ALL WORK SHALL COMPLY WITH NFPA 70 (2002 NATIONAL ELECTRICAL CODE) AND ALL LOCAL CODES AND ORDINANCES.
- 3.) ELECTRICAL CONTRACTOR TO PROVIDE ELECTRICAL ROUGH-IN AND FINAL CONNECTIONS FOR EQUIPMENT PROVIDED BY MECHANICAL AND PLUMBING CONTRACTORS.
- 4.) ELECTRICAL CONTRACTOR TO PROVIDE AND INSTALL ALL LIGHT FIXTURES AS SCHEDULED OR AS SPECIFIED BY OWNER.

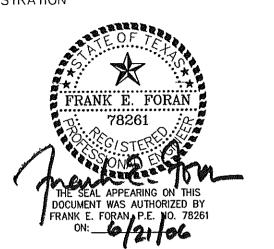
### KEYED NOTES:

- PROVIDE 120V/20A CIRCUIT FOR EXTERIOR BUILDING LIGHTS. PROVIDE PHOTOCELL-ON/TIMECLOCK-OFF CONTROLS FOR EXTERIOR LIGHTS.
- (2) ELECTRICAL SERVICE ENTRANCE EQUIPMENT, REFER TO ELECTRICAL RISER DIAGRAM SHEET EI.I
- (3) LOCATION OF HOUSE PANEL "LP". REFER TO ELECTRICAL RISER DIAGRAM SHEET EI.I. COORDINATE WITH OWNER.
- REFER TO ARCHITECT'S ELEVATION FOR EXACT MOUNTING HEIGHT OF LIGHTS.

  (5) REFER TO ARCHITECTS ELEVATION FOR WALL SCONCES AND WALL PACKS.
- (6) PROVIDE 120V/20AMP, GENERAL PURPOSE, GFI, WEATHERPROOF RECEPTACLE.
- PROVIDE A JUNCTION BOX AND 3/4" CONDUIT BACK TO HOUSE PANEL FOR FUTURE EXTERIOR SIGNAGE. COORDINATE MOUNTING HEIGHT AND LOCATION WITH ARCHITECT. SIGNAGE TO BE PLACED ON PHOTOCELL/TIMECLOCK.
- (8) PROVIDE 120V/20A CIRCUIT FOR IRRIGATION SYSTEM.
- PROVIDE CIRCUIT AND MAKE FINAL CONNECTION FOR WATER HEATER. COORDINATE WITH PLUMBING CONTRACTOR FOR EXACT REQUIREMENTS.
- PROVIDE 120V/20A CIRCUIT FOR TIMECLOCK.
- FIXTURE "C" IS MOUNTED BELOW FIXTURE "B" REFER TO ARCHITECTURAL DRAWINGS FOR EXACT MOUNTING HEIGHT. SHOWN HERE FOR CIRCUITING AND FIXTURE SPECIFICATION PURPOSES.



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ELECTRICAL LIGHTING/POWER PLAN

DRAWING NO.

E2.1

#### PLUMBING

#### DIVISION 15 - PLUMBING

#### 15.1 SCOPE

THE CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, EQUIPMENT AND SERVICES NECESSARY FOR THE COMPLETE INSTALLATION OF THE WORK AS SHOWN ON THE DRAWINGS AND/OR DESCRIBED HEREIN, INCLUDING ALL INCIDENTAL ITEMS NECESSARY FOR COMPLETE SATISFACTORY OPERATING SYSTEMS. ALL WORK SHALL BE FULLY COORDINATED WITH THE WORK OF OTHER TRADES.

#### 15.2 PERMITS, FEES, CODES AND REGULATIONS

- A. PERMITS: THE CONTRACTOR SHALL PROCURE ALL PERMITS AND LICENSES, PAY ALL CHARGES AND FEES, AND GIVE ALL NOTICES NECESSARY AND INCIDENT FOR THE DUE AND LAWFUL EXECUTION OF THE WORK.
- B. CODES AND APPROVALS: ALL WORK SHALL COMPLY WITH LATEST ADOPTED EDITIONS OF LOCAL, STATE, AND FEDERAL CODES AND REGULATIONS, AND IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN APPROVAL OF ALL REGULATORY AUTHORITIES.

#### 15.3 SUBSTITUTION OF MATERIALS

- A. SUBMISSION: THE CONTRACTOR'S MATERIAL SUBSTITUTION SUBMISSION SHALL INCLUDE SUFFICIENT DESCRIPTIVE INFORMATION INCLUDING MANUFACTURER'S PUBLISHED ILLUSTRATIONS TO ESTABLISH CONTRACT COMPLIANCE. CONTRACTOR SHALL SUBMIT A SAMPLE IF REQUESTED BY ARCHITECT OR ENGINEER.
- B. COORDINATION OF SUBSTITUTION: IT SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR TO NOTIFY ALL TRADES OF ADDENDUM APPROVED SUBSTITUTIONS THAT AFFECT DETAIL CHANGES, OTHER MATERIALS, OR ANY WORK BY OTHERS.

#### 15.4 DRAWINGS AND SPECIFICATIONS

- A. INTENT: DRAWINGS AND SPECIFICATIONS SHALL BE CONSIDERED AS COMPLIMENTARY, AND WORK OR MATERIALS CALLED FOR IN ONE AND NOT MENTIONED IN THE OTHER SHALL BE PROVIDED AS BINDING BY BOTH. IT IS NOT THE INTENTION OF THE DRAWINGS AND SPECIFICATIONS TO SHOW ALL MATERIALS, EQUIPMENT, ETC., NECESSARY FOR THE PROPER CONSTRUCTION OF ALL SYSTEMS INVOLVED. THE DRAWINGS AS PREPARED ARE DIAGRAMMATIC BUT SHALL BE FOLLOWED AS CLOSELY AS ACTUAL CONSTRUCTION OF THE PROJECT AND THE WORK OF OTHER TRADES WILL PERMIT.
- B. CHANGES: CHANGES FROM THE DRAWINGS NECESSARY TO FIT THE WORK OF VARIOUS TRADES, TO CONFORM TO EQUIPMENT ACTUALLY BEING INSTALLED, OR TO CONFORM TO THE REGULATIONS OF AUTHORITIES HAVING JURISDICTION SHALL BE MADE WITHOUT ADDITIONAL COST TO VERDE ENGINEERING, INC. (VEI).
- C. SHOP DRAWINGS: PREPARE AND SUBMIT WORKING CONSTRUCTION DRAWINGS TO DEMONSTRATE PROPER PLANNING FOR INSTALLATION AND ARRANGEMENT OF ALL WORK. LAYOUT DRAWINGS TO SCALE AND SHOW DIMENSIONS WHERE ACCURACY OF LOCATION IS NECESSARY FOR COORDINATION OR COMMUNICATION PURPOSES. SHOW WORK OF ALL TRADES, INCLUDING ARCHITECTURAL, STRUCTURAL, MECHANICAL, AND ELECTRICAL ITEMS WHICH MAY BE PERTINENT TO PROPER AND ACCURATE COORDINATION. PROVIDE SHOP DRAWINGS FOR ALL PRODUCTS, SYSTEMS, SYSTEM COMPONENTS, AND SPECIAL SUPPORTS WHICH ARE NOT STANDARD CATALOG PRODUCTS AND WHICH MAY BE FABRICATED FOR THE CONTRACTOR OR BY THE CONTRACTOR. IDENTIFY ALL SHOP DRAWINGS AS TO WHICH SECTION AND PARAGRAPH OF THE SPECIFICATIONS AND/OR DRAWING NUMBER THE ITEM IS COVERED UNDER. SHOP DRAWINGS TO BE DONE AT A MINIMUM 1/4" = 1'-0" SCALE, EXCEPT IN MECHANICAL ROOMS. WHERE THEY ARE TO BE AT A MINIMUM OF 3/8" = 1'-0".
- D. AS-BUILT DRAWINGS: THE CONTRACTOR SHALL PROVIDE "CAD" SET OF DRAWINGS TO SHOW COMPLETE ROUTING AND SIZING OF ALL WORK AND ANY REVISIONS TO THE SYSTEMS SHOWN. AT COMPLETION OF PROJECT, DELIVER PLANS AND CAD DISKS TO VEI REPRESENTATIVE. FINAL PAYMENT MAY BE WITHHELD UNTIL REPRODUCIBLE "AS-BUILT" DRAWINGS AND CAD DISKS ARE COMPLETED AND TURNED OVER TO VEI REPRESENTATIVE.
- E. CAD BACKGROUNDS: VERDE ENGINEERING, INC. (VEI) WILL PROVIDE AUTOCAD RELEASE 14 BACKGROUNDS FOR CONTRACTOR USE IN PREPARATION OF SHOP AND AS—BUILT DRAWINGS.

#### 15.5 CUTTING AND PATCHING

- A. ALL ROOF CUTTING & SEALING SHALL BE COORDINATED WITH VEI REPRESENTATIVE.
- B. RESPONSIBILITY: THE CUTTING OF OPENINGS NECESSARY FOR THE INSTALLATION OF PLUMBING WORK, THE FLASHING AND SEALING OF THE OPENINGS, AND/OR THE PATCHING OF ABANDONED OPENINGS FOR PLUMBING EQUIPMENT SHALL BE THE RESPONSIBILITY OF THE PLUMBING CONTRACTOR. ALL ROOFING WORK TO BE DONE BY APPROVED ROOFING CONTRACTOR.

#### 15.6 TESTS

A. PRIOR TO ACCEPTANCE OF THE WORK BY THE OWNER, ALL SYSTEMS SHALL BE TESTED FOR PROPER OPERATION. IT SHALL BE THE RESPONSIBILITY OF THE PLUMBING CONTRACTOR TO SUPPLY TEST EQUIPMENT AND SERVICE PERSONNEL NECESSARY.

#### 15.7 OPERATING INSTRUCTIONS

A. THE CONTRACTOR SHALL PROVIDE VEI REPRESENTATIVE, TWO (2) BOUND COPIES OF OPERATING INSTRUCTIONS ON ALL EQUIPMENT AND SYSTEMS AT THE TIME OF STARTUP. IN ADDITION, THE CONTRACTOR'S REPRESENTATIVE SHALL DEMONSTRATE TO VEI REPRESENTATIVE OR TENANT THE OPERATION OF ALL SYSTEMS IN THE LEASE SPACE.

#### 15.8 UTILITIES AND ROUGH-IN WORK

#### A. SANITARY SEWER

#### 1. LOCATION:

- 2. MATERIAL: SANITARY SEWER AND VENT PIPES AND FITTINGS MAY BE SCHEDULE 40 PVC, DWF, NSF MEETING COMMERCIAL STANDARD CS-272-65, UNLESS THE BUILDING TYPE AND RATING DICTATES THE INSTALLATION OF CAST IRON. WHEN IN DOUBT, CONTACT THE VEI REPRESENTATIVE.
- 3. CLEAN-OUTS: PROVIDE ONE IN-WALL CLEANOUT (WITH CHROME COVER) PER RESTROOM OR ONE IN-WALL CLEANOUT FOR BACK-TO BACK RESTROOMS, AND AT EACH CHANGE IN DIRECTION IN HORIZONTAL RUNS OF PIPE. EXPOSED OFFICE "IN-FLOOR" CLEANOUTS WILL BE SEALED WITH FLUSH MOUNTED, LIGHT TRAFFIC RATED CHROME COVERS. EXPOSED WAREHOUSE "IN-FLOOR" CLEANOUTS WILL BE SEALED WITH FLUSH MOUNTED ALL METAL CASING AND COVER THAT WITHSTANDS TRUCK LIFT TRAFFIC.
- 4. UNDERSLAB INSTALLATION: SAW CUT AND REMOVE CONCRETE.
  MECHANICALLY RECOMPACT THE EXISTING FILL TO 95% PROCTOR
  DENSITY AND PROVIDE FOR 2" CLEAN BANK SAND UNDER 6 MIL
  POLYETHYLENE FILM ON TOP OF THE FILL. INSTALL REINFORCING BARS
  (TO MATCH EXISTING) IN ALL SLAB BREAKOUTS AND DOWEL ALL
  EXPOSED EDGES WITH 1"-6" LONG #4 DOWELS ANCHORED IN EPOXY
  MINIMUM 6: DEEP SPACED TO MATCH EXISTING REINFORCING. POUR
  CONCRETE TO THE SAME DEPTH AND PSI STRENGTH AS THE EXISTING
  SLAB. MAINTAIN A SMOOTH, LEVEL, HARD TROWELED FINISH.
  CONTRACTOR SHALL BE RESPONSIBLE FOR WATER AND/OR DUST
  CONTROL IN OCCUPIED BUILDINGS. SAWCUTTING AND JACKHAMMER
  WORK SHALL BE SCHEDULED AFTER HOURS OR ON WEEKENDS (IN
  OCCUPIED BUILDINGS).
- 5. THROUGH CONCRETE WALL INSTALLATION: HOLES CUT IN CONCRETE WALL PANELS FOR PIPING, ETC. SHALL BE CUT ONLY WITH APPROPRIATE TOOLS TO ASSURE AN EVEN CUT WITH CLEAN EDGES. HOLES SHALL BE CUT NO LARGER THAN NECESSARY TO ALLOW PIPE TO FIT THROUGH. REFER TO DIVISION 3 FOR REQUIRED PROCEDURES.

#### 15.9 ROOF PLUMBING PROCEDURES

FOLLOW SPECIFICATIONS AS INDICATED IN "ROOF PENETRATIONS AND PROCEDURES" SECTION.

#### 15.10 WATER

- A. PIPING: DOMESTIC WATER PIPING THROUGHOUT SHALL BE COPPER WITH SOLDERED CONNECTIONS.
- B. VALVES: VALVES IN COPPER PIPING-GATE VALVES TO BE NIBCO 29.
- C. INSTALLATION: RIGIDLY SECURE WATER PIPES IN CHASES. PROVIDE ACCESS DOOR FOR ALL VALVES (WATER AND FIRE SPRINKLER TEST) WHICH ARE LOCATED IN THE LEASE SPACE.
- D. INSULATION: INSULATE ALL WATER PIPING WITH 1" INSULATION. USE 1 1/2" INSULATION FOR PIPING IN EXTERIOR WALLS.
- E. VALVES: PROVIDE ACCESSIBLE VALVES ON EACH BRANCH LINE SERVING ALL BATTERIES OF PLUMBING FIXTURES OR RESTROOMS. PROVIDE VALVE FOR CONNECTION OF FUTURE LINE.
- F. ARRESTORS: FACTORY SHOCK ARRESTORS TO BE INSTALLED AS SPECIFIED ON THE PLANS.
- G. TESTING: TEST AND STERILIZE ALL WATER PIPING BEFORE ACCEPTANCE FOR DOMESTIC OPERATION.

#### 15.11 FLOOR DRAINS

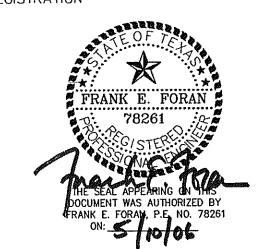
- A. TYPE: FLOOR DRAINS SHALL BE JOSAM, SMITH, WADE, OR ZURN EQUAL TO JOSAM 30200 SERIES WITH "E" STRAINER, SIZE AS SHOWN ON DRAWINGS.
- B. INSTALLATION: FLOOR DRAINS ARE TO BE INSTALLED WHERE SHOWN ON THE DRAWINGS. WHEN INSTALLING A FLOOR DRAIN IN AN EXISTING SLAB, BREAK OUT A 24" X 24" SQUARE AREA OF CONCRETE CENTERED ON THE DRAIN AND REPOUR WITH 1/4"/LF SLOPING SURFACE TO DRAIN. INSTALL AS PREVIOUSLY DESCRIBED. INSTALL TRAP PRIMERS FOR ALL FLOOR DRAINS NOT LOCATED IN RESTROOMS.

#### 15.12 TRAPS AND CONDENSATE LINES

A. PLUMBING CONTRACTOR WILL BE RESPONSIBLE FOR PROVIDING DEEP SEAL TRAPS ON ALL PLUMBING AND H.V.A.C. EQUIPMENT. COORDINATE WITH HVAC CONTRACTOR FOR SIZES AND LOCATIONS.



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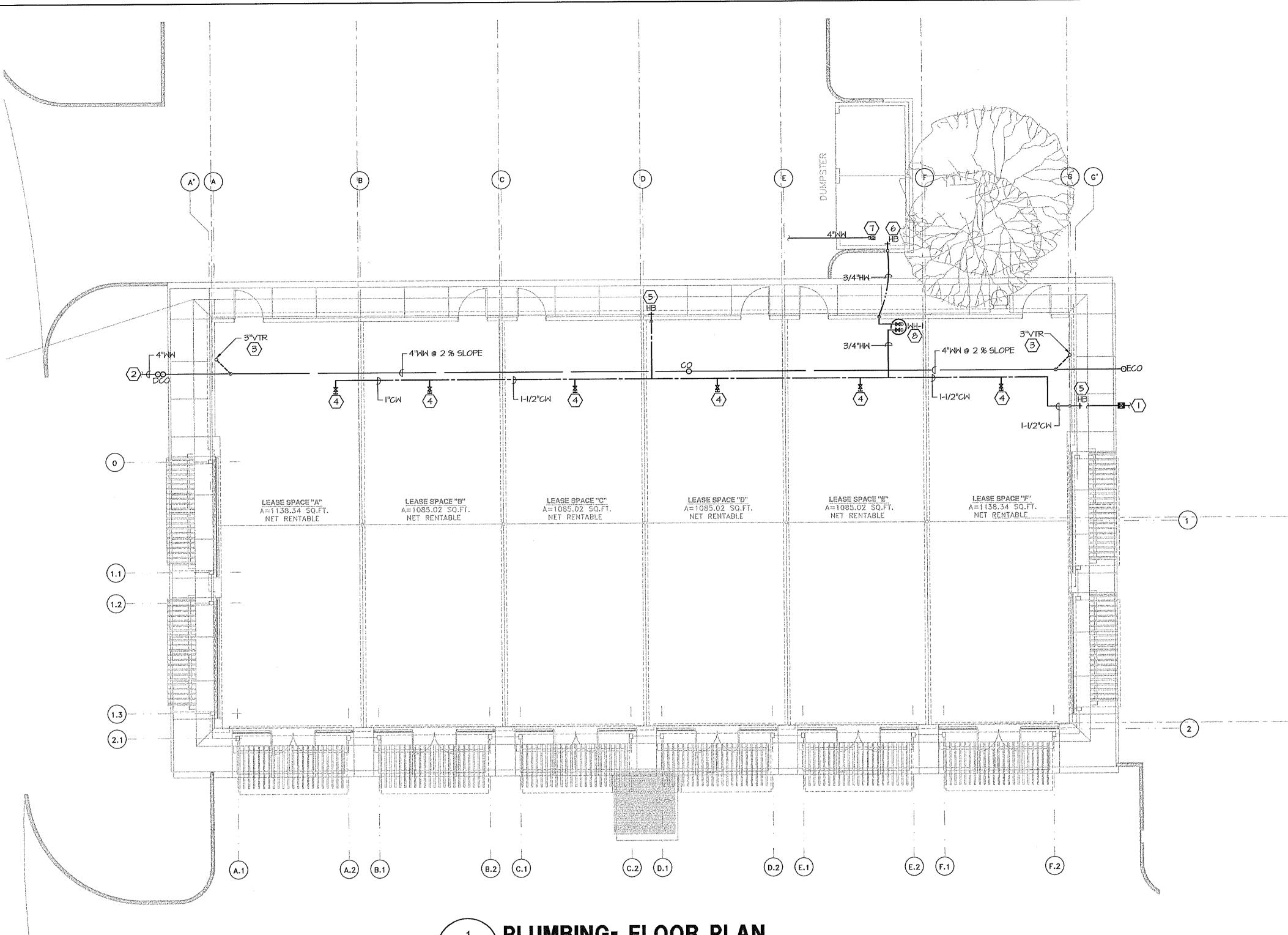
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PLUMBING SPECIFICATIONS

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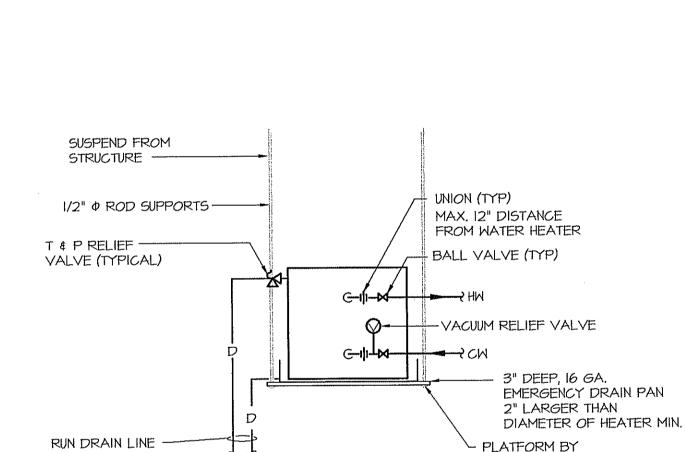
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### GENERAL NOTES:

- 1.) COORDINATE WITH ARCHITECTURAL AND STRUCTURAL PLANS TO AVOID INTERFERENCE OF WASTE AND VENT PIPING WITH STRUCTURAL COLUMNS AND FOOTINGS.
- 2.) INSULATE ALL WATER LINES IN UNCONDITIONED SPACE. COORDINATE WITH STRUCTURAL AND MECHANICAL CONTRACTORS TO AVOID INTERFERENCE.
- 3.) THE SPECIFICATIONS AND DRAWINGS ARE PROVIDED IN ADDITION TO THE CODE. THE CODE SHOULD BE CONSIDERED AS PART OF THE CONTRACT DOCUMENT. ALL MATERIAL AND LABOR SHALL COMPLY WITH ASTM, ASME, UL AND OTHER STANDARDS LISTED IN THE CODE. ALL APPLICABLE CODES AND STANDARDS ARE LISTED IN THE CODE BOOK. CONTRACTOR SHALL REVIEW THE CODE AND BE FAMILIAR WITH ALL REQUIREMENTS PRIOR TO BIDDING AND BEGINNING WORK, IF CONTRACTOR NEEDS CLARIFICATION RELATED TO CODE ISSUES, THEY SHALL SUBMIT AN RFI PRIOR TO BIDDING. RFI SUBMITTED AFTER BID SHALL BE CONSIDERED AS A NO CHARGE REQUEST FOR INFORMATION.

### KEYED NOTES:

- (I) EXTEND NEW WATER LINE INTO BUILDING FROM STUB PROVIDED BY CIVIL SITE UTILITY CONTRACTOR, PROVIDE FULL-OPEN VALVE AT BASE OF WATER RISER PIPE AT BUILDING ENTRANCE. ROUTE WATER PIPING VERTICALLY INSIDE OF EXTERIOR WALL AND THEN HORIZONTALLY IN OVERHEAD STRUCTURE AS HIGH AS POSSIBLE. COORDINATE WITH CIVIL SITE UTILITY CONTRACTOR FOR EXACT LOCATION OF NEW WATER SERVICE
- CONNECT NEW FOUR INCH (4") WASTE WATER LINE TO STUB PROVIDED BY CIVIL CONTRACTOR. COORDINATE THE EXACT LOCATION AND INVERT IN FIELD.
- ROUTE THREE INCH (3") HORIZONTAL VENT BELOW SLAB TO 3" VENT RISER. OFFSET VENT THROUGH ROOF FIVE FEET INWARD FROM EDGE OF BUILDING. EXTEND VENT THROUGH ROOF NINE INCHES ABOVE ROOF LINE.
- (4) PROVIDE I" CAPPED WATER LINE WITH SHUT-OFF VALVE FOR FUTURE USE.
- (5) PROVIDE 3/4" WATER LINE TO FREEZE PROOF HOSE BIBB WITH NON-REMOVABLE VACUUM BREAKER.
- PROVIDE 3/4" INSULATED HW BELOW GRADE (TYPE K) TO FREEZE PROOF HOSE BIBB WITH NON-REMOVABLE VACUUM BREAKER. COORDINATE EXACT LOCATION OF HOSE BIBB WITH ARCHITECT.
- 7 PROVIDE FLOOR DRAIN WITH HEAVY DUTY GRATE AND 4" WASTE WATER CONNECTION AT DUMPSTER ENCLOSURE. CONNECT WASTE WATER LINE TO NEAREST STORM DRAIN. COORDINATE WITH ARCHITECT FOR EXACT LOCATION OF FLOOR DRAIN. COORDINATE WITH CIVIL FOR EXACT LOCATION OF STORM DRAINAGE.
- (8) MOUNT WATER HEATER (A.O. SMITH DEL-15 OR APPROVED EQUAL) IN APPROVED DRAIN PAN AND SUSPEND FROM STRUCTURE. PROVIDE VACUUM RELIEF VALVE AT WATER HEATER SUPPLY LINE, ROUTE T&P RELIEF VALVE LINE AND DRAIN PAN LINE DOWN IN EXTERIOR WALL AND PENETRATE TO BUILDING EXTERIOR.



CEILING

GENERAL CONTRACTOR

WATER HEATER DETAIL

P2.1 / SCALE: N.T.S.

FULL SIZE TO EXTERIOR



REGISTRATION



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**PLUMBING** FLOOR PLAN

DRAWING NO.

P2.1