

GENERAL CONTRACTOR (G.C.) SHALL READ AND UNDERSTAND ALL NOTES INCLUDING HERewith AND ADHERE CAREFULLY TO THEM THROUGHOUT ALL PHASES OF THE PROJECT.

2. ALL NEW CONSTRUCTION SHALL BE IN STRICT COMPLIANCE WITH LOCAL BUILDING CODES AND THE AMERICANS WITH DISABILITIES ACT (A.D.A.) REGULATIONS AND TEXAS ACCESSIBILITY STANDARDS.

3. ALL WORK SHALL BE DONE IN COMPLIANCE WITH THE OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA).

4. DIMENSIONS GIVEN IN FIGURES ON THE PLANS SHALL TAKE PRECEDENCE OVER SCALED DIMENSIONS. ALL DIMENSIONS SHALL BE VERIFIED IN FIELD. DIMENSIONS ARE NOT ADJUSTABLE UNLESS NOTED (+/-).

5. ALL DIMENSIONS ARE GIVEN FROM FACE OF STUD TO FACE OF STUD UNLESS OTHERWISE NOTED.

6. "EQUAL" WHEN USED SHALL MEAN AN EQUIVALENT PRODUCT OR MATERIAL AS APPROVED BY TENANT.

7. ALL HEIGHTS ARE DIMENSIONED FROM FINISHED FLOOR UNLESS OTHERWISE NOTED.

8. THE CONTRACTOR SHALL VERIFY THAT NO LIGHTS EXIST IN LOCATIONS OF ANY AND ALL MECHANICAL, TELEPHONE/DATA, ELECTRICAL, FUMING AND SPRINKLER EQUIPMENT (TO INCLUDE ALL PIPING, DUCTWORK AND ABOVE) AND THAT ALL REQUIRED CLEARANCES FOR INSTALLATION OR MAINTENANCE OF THE EQUIPMENT IS PROVIDED.

9. ALL GYPSUM WALL BOARD PARTITIONS SHALL BE TAPED, BEDDED AND SANDED SMOOTH WITH NO VISIBLE JOINTS, AND ALL CORNERS SHALL RECEIVE METAL CORNER BEAD UNLESS OTHERWISE NOTED.

10. ALL RATED WALLS SHALL HAVE THEIR RATING MAINTAINED AND NO PENETRATIONS SEALED TO MEET CURRENT CODE REQUIREMENTS.

11. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE FREE FROM DEFECTS. ALL MATERIALS AND WORKMANSHIP SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR FROM DATE OF ACCEPTANCE. DURING THIS PERIOD, PROBLEMS DUE TO DEFECTIVE MATERIALS OR FAULTY WORKMANSHIP SHALL BE CORRECTED AT NO COST TO TENANT. ANY PROBLEMS THAT OCCUR DURING CONSTRUCTION SHALL BE CORRECTED IMMEDIATELY TO THE SATISFACTION OF TENANT.

12. GENERAL CONTRACTOR SHALL PROVIDE ADEQUATE BRACING AS REQUIRED TO SECURE WORK TO STRUCTURE ABOVE CEILING WHERE REQUIRED AND SHALL BE TOTALLY RESPONSIBLE FOR HIS WORK.

13. DURING AND AT THE COMPLETION OF THE CONTRACTORS DAILY WORK, CONTRACTORS ARE RESPONSIBLE FOR THE CLEANING UP AND REMOVAL OF ALL RUBBISH AND DEBRIS BEFORE LEAVING THE JOB SITE.

14. THE FOLLOWING ARE STRICTLY PROHIBITED WORK AND PRACTICES:

A. ANY COMBUSTIBLE MATERIALS ABOVE FINISHED CEILING.

B. IMPOSING ANY STRUCTURAL LOAD, TEMPORARY OR PERMANENT, ON ANY PART OF BUILDING STRUCTURE WITHOUT IN WRITTEN SLAB, WALLS OR ROOF WITHOUT PROPER APPROVAL. BEFORE STARTING ANY UNDER SLAB WORK, CHECK TO DETERMINE IF ANY COMMON UTILITY OR OTHER UTILITY LINES EXIST WITHIN THE SPACE.

C. CUTTING ANY HOLES IN FLOOR SLABS, WALLS OR ROOF WITHOUT PROPER APPROVAL.

15. CONTRACTORS SHALL CARRY ADEQUATE LIABILITY INSURANCE AS SET FORTH BY TENANT AND THE SHOPPING CENTER AND/OR MALL OWNER.

16. A CERTIFICATE OF OCCUPANCY MUST BE OBTAINED UPON COMPLETION OF ALL WORK AND FINAL INSPECTIONS. THE ORIGINAL C.O. TO BE SUBMITTED TO TENANT STORE MANAGER AND (1) COPY TO BE SUBMITTED TO TENANT CONSTRUCTION & PLANNING MANAGER.

17. IN EVENT OF CONFLICT, DISCREPANCY, ETC. OBLIGATION TO G.C. TO CONTACT DESIGNER FOR CLARIFICATION PRIOR TO PROCEEDING.

18. PROVIDE ALL INSURANCE, LICENSES, BONDING, AND RELEASE OF LIENS REQUIRED BY TENANT AND LANDLORD. PROVIDE COPIES OF DOCUMENTATION UPON REQUEST.

19. PROVIDE COMPLETE OPERATING MAINTENANCE AND SPECIFICATION MANUALS TO TENANT FOR ALL EQUIPMENT WITHIN (15) DAYS OF FINAL COMPLETION OF JOB.

20. PROVIDE A WRITTEN LIST OF SERVICE SUB-CONTRACTORS TO TENANT INCLUDING NAMES, ADDRESSES, PHONE NUMBERS, AND CONTACT PERSONS, FOR FUTURE SERVICE NEEDS WITHIN (15) DAYS OF COMPLETION OF JOB.

21. TENANTS REPRESENTATIVE AND/OR TENANTS' CONTRACTORS SHALL NOT BE ALLOWED TO USE, STORE OR DISPOSE OF ANY HAZARDOUS, FLAMMABLE, EXPLOSIVE, RADIOACTIVE, TOXIC, CONTAMINATING, POLLUTING MATERIALS OR SUBSTANCES RELATED TO INJURIOUS OR CHEMICALLY REGULATED MATERIALS ON THE JOB SITE.

22. ALL INTERIOR WALLS SHALL HAVE ONE COAT OF WHITE PRIMER.

23. GENERAL CONTRACTOR IS TO CONSTRUCT INTERIOR WALLS FROM METALS STUDS. GENERAL CONTRACTOR MUST USE FIRE RETARDANT WOOD STUDS AT CRITICAL LOCATIONS DIMENSIONED ON PLANS FOR MOUNTING OF FIXTURE HARDWARE BY OTHER TRADES. ALL WALLS SHALL BE SQUARE AND PLUMB.

24. TENANT SHALL VERIFY THAT ALL STUDS (FOR RECESSED STANDARDS) ARE LOCATED IN WALLS PROPERLY BEFORE G.W.B IS G.W.B OR PATCHED. GENERAL CONTRACTOR SHALL SCHEDULE INSPECTION BY TENANT PRIOR TO INSTALLATION.

25. GENERAL CONTRACTOR SHALL PROVIDE ADEQUATE PROTECTION OF WORK, MATERIALS, FIXTURES, ETC. ON JOB SITE FROM LOSS OR DAMAGE FROM FIRE, THEFT OR VANDALISM.

26. GENERAL CONTRACTOR SHALL USE AN ENTRANCE PROVIDED BY TENANT FOR TRANSPORTING MATERIALS TO AND FROM JOB SITE. ALL EMPLOYEES OF G.C. SHALL USE THESE SAME ENTRANCES. G.C. SHALL CONFINE ALL VEHICLES TO DESIGNATED AREA AS REQUIRED BY TENANT.

27. GENERAL CONTRACTORS BID QUOTATIONS SHALL INCLUDE THE USE OF EQUIPMENT AND MATERIALS EXACTLY AS SPECIFIED HEREIN.

28. GENERAL CONTRACTOR IS TO VERIFY ALL EXISTING CONDITIONS. ANY DIMENSIONS SHOWN WHICH INDICATE AN EXISTING CONDITION ARE APPROXIMATE AND SHOULD BE VERIFIED ON SITE.

29. IT IS THE RESPONSIBILITY OF THE G.C. TO DETERMINE THE EXISTING CONDITIONS WHICH MAY AFFECT THE COMPLETION OF THE PROJECT IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS. NOTIFY THE ARCHITECT OR EXISTING CONTRACTOR IN WRITING SUCH THAT IMPLEMENTATION OF THE DOCUMENTS WILL ADVERSELY AFFECT THE PROJECT COST OR PROJECT SCHEDULE.

30. IT IS NOT WITHIN THE SCOPE OF WORK OF THE DESIGNER TO DISCOVER, LOCATE, HANDEL, REMOVE OR DISPOSE OF ANY HAZARDOUS MATERIALS INCLUDING, BUT NOT LIMITED TO, ASBESTOS, ASBESTOS PRODUCTS, POLYCHLORINATED BIPHENYL (PCB), HYDROCARBONS OR ANY OTHER TOXIC SUBSTANCES. SHOULD THE G.C. OR ANY OTHER ENTITY WORKING ON BEHALF OF THE G.C. OR THE CONTRACTOR, DISCOVER OR ENCOUNTER ANY HAZARDOUS MATERIALS, THE G.C. SHALL NOTIFY THE APPROPRIATE AUTHORITIES IMMEDIATELY AND PROCEED IN ACCORDANCE WITH ALL APPLICABLE LAWS AND REGULATIONS.

31. GENERAL CONTRACTOR SHALL BE RESPONSIBLE TO THE TENANT FOR ANY DAMAGE TO THE FACILITY DURING CONSTRUCTION.

32. G.C. SHALL DISPOSE ALL DEMOLISHED MATERIALS NOT RETAINED BY THE TENANT IN ACCORDANCE WITH ALL APPLICABLE REGULATIONS.

33. G.C. SHALL MAINTAIN REQUIRED DOCUMENTS AND UP-TO-DATE CONSTRUCTION PLANS ON THE JOB SITE.

34. G.C. SHALL NOTIFY THE TENANT'S CONSTRUCTION COORDINATOR IF MATERIAL OR EQUIPMENT DOES NOT ARRIVE AT THE JOB SITE PRIOR TO THE TIME REQUIRED. G.C. SHALL INSPECT FOR DAMAGE, SHORTAGES, AND ERRORS IN SHIPPING. REPORT PROBLEMS TO TENANT'S CONSTRUCTION COORDINATOR IMMEDIATELY.

35. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR FINAL CLEANING PRIOR TO TURNING THE SPACE OVER TO THE TENANT. CLEANING SHALL INCLUDE, BUT NOT BE LIMITED TO: REMOVAL OF GREASE, MASTIC ADHESIVES, DUST, DIRT, STAINS, FINGERPRINTS, LABELS, AND OTHER FOREIGN MATERIALS FROM EXPOSED INTERIOR AND EXTERIOR SURFACES. PRESSURE WASH EXTERIOR PAVED SURFACES.

36. SUBCONTRACTORS ARE DISCOURAGED TO CONTACT TENANT STORES AND DESIGNER FOR SOLICITING A "BIDDERS LIST"

37. GC TO VERIFY THE DIMENSIONS OF ALL RELATED PLAN, ELEVATION, SECTIONS, SCHEDULES, AND DETAILS. REPORT DISCREPANCIES TO DESIGNER.

1		BUILDING PLANNING & DESCRIPTION				
<input type="checkbox"/> NEW CONSTRUCTION		<input type="checkbox"/> SHELL BUILDING				
<input type="checkbox"/> LEASE SPACE BUILD-OUT (LSBO)		<input type="checkbox"/> CHANGE OF OCCUPANCY				
<input type="checkbox"/> SUBSTANTIAL IMPROVEMENT		<input type="checkbox"/> OTHER _____				
<input type="checkbox"/> SINGLE OCCUPANCY N/A		<input type="checkbox"/> MIXED OCCUPANCY N/A				
<input type="checkbox"/> SEPARATED USE		<input type="checkbox"/> NON-SEPARATED USE				
(SECTION 508.3 OR 508.4 IBC 2018)						
OCCUPANCY TYPE: "S-1" WAREHOUSE						
REQUIRED SEPARATION OF OCCUPANCIES: _____ N/A _____ (TABLE 508.4)						
PROVIDED SEPARATION BETWEEN OCCUPANCIES: _____ N/A _____						
TYPE OF CONSTRUCTION: _____ II-B _____ (CHAPTER 6 IBC 2018)						
HEIGHT LIMITATION: _____ 55' _____						
AREA LIMITATION: _____ 17,500 SF _____ (TABLE 506.2 IBC 2018)						
FRONTAGE INCREASE CALCULATIONS ARE SHOWN ON SHEET: _____ N/A _____						
PROPOSED GROSS SQUARE FOOTAGE: 6,000 SF #OF FLOORS: 1 HEIGHT: 20'						
LIST BELOW THE PURPOSE/USE OF THE BUILDING OR AREA BEING REVIEWED. INCLUDE DETAILS ON THE PRODUCTS/MATERIALS BEING STORED/FABRICATED AND NOTE HOW THEY ARE BEING PACKAGED.						
THE CONSTRUCTION OF THE OFFICE / WAREHOUSE BUILDING WILL BE DONE AS A SPECULATIVE BUILDINGS. THERE ARE NO CURRENT TENANTS AT THIS TIME. IT IS DESIGNED FOR FUTURE "B" OFFICE OCCUPANCY AND S-1 OCCUPANCY IN THE WAREHOUSE.						
2		OCCUPANCY TYPE AND LOAD				
		CHAPTER 2, 3 & TABLE 1004.5 IBC 2018				
OCCUPANCY CLASSIFICATION TYPES						
A-1	A-2	A-3	A-4	A-5	B	F
F-1	F-2	H-1	H-2	H-3	H-4	H-5
I-1	I-2	I-3	I-4	M	R-1	R-2
	R-3	R-4	S-1	S-2	U	
BREAK DOWN AREAS AND OCCUPANT LOADS PER FLOOR						
OCCUP. CLASS.	SPECIFIC USE			SQUARE FOOTAGE	SF PER OCCUPANT	DESIGN OCCUPANTS
S-1	WAREHOUSE			6,000	500	12
TOTAL				6,000		12
3		MEANS OF EGRESS				
		CHAPTER 10 IBC 2018				
MEANS OF EGRESS		# OF REQUIRED EXITS	# OF EXITS PROVIDED	SHEET #		
STAIRWAYS (PER FLOOR)		N/A				
EGRESS @ 1ST FL.		2	6	A2.0		
(SECTION 1005.3 IBC 2018)						
PANIC HARDWARE ON EXIT DOORS? YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> (SECTION 1008.1.9 IBC 2018)						
STAIRWAYS (SECTION 1011 IBC 2018)						
MINIMUM CLEAR WIDTH SHOWN ON: _____ N/A _____ (EACH STAIRWELL)						
EGRESS WIDTHS ARE SHOWN ON: _____ N/A _____						
ACCESSIBLE AREAS OF REFUGE & 2-WAY COMMUNICATIONS SHOWN ON: _____ N/A _____ (SECTION 1009.3 TO 1009.8 IBC 2018)						
EXIT SIGNS/EGRESS ILLUMINATION						
(SECTION 1008 & 1013 IBC 2018)						
REQUIRED AND SHOWN ON: _____ A2.0 _____ (HIGHLIGHT ON PLANS)						
EXTERIOR MEANS OF EGRESS LIGHTING PROVIDED? YES <input checked="" type="checkbox"/> (SECTION 1008 IBC 2018)						
EXIT TRAVEL DISTANCE (TABLE 1017.2 IBC 2018)						
OCCUPANCY TYPE	MAX TRAVEL DISTANCE	PROVIDED TRAVEL DISTANCE	SHEET #			
S-1	200'	59'	A2.0			
4		INTERIOR FINISH				
		CHAPTER 8 & TABLE 803.13 IBC 2018				
NOT APPLICABLE						

ALTERNATIVE AUTOMATIC FIRE EXTINGUISHING SYSTEM		
ALL SPRINKLERS SHALL COMPLY WITH MONITORING AND OCCUPANT NOTIFICATION PER SECTION 903.4.2.1		
(SECTION 903 HC FCODE AMENDMENTS & SECTION 903.4 IFC 2018)		
<div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="width: 45%;"> <p><input type="checkbox"/> PROVIDED AS NOTED ON:</p> </div> <div style="width: 45%;"> <p><input checked="" type="checkbox"/> NOT REQUIRED PER SECTION 903</p> </div> </div>		
SYSTEM PROVIDED:	SPRINKLER HEAD PROVIDED:	FIRE PUMP PROVIDED:
<input type="checkbox"/> NFA 13	<input type="checkbox"/> STANDARD	<input type="checkbox"/> YES
<input type="checkbox"/> NFA 13R	<input type="checkbox"/> ELO	<input type="checkbox"/> NO
<input type="checkbox"/> NFA 13D	<input type="checkbox"/> ESFR	
<input type="checkbox"/> OTHER: _____	<input type="checkbox"/> QUICK RESPONSE	
FIRE DEPARTMENT ACCESS TO SPRINKLER CONTROLS:		
<input type="checkbox"/> SPRINKLER RISER ROOM OR POST INDICATOR VALVE SHOWN ON: <u>NA</u>		
(SECTION 901.4.6 IFC AMENDMENTS IFC 2018)		
<input type="checkbox"/> FDC SHOWN ON: <u>NA</u> (FDC SHALL COMPLY WITH SECTION 912 IFC 2018)		

FIRE LANE LAYOUT PLAN, WHICH SHALL INCLUDE THE SITE PLAN, THE FIRE LANE & FIRE HYDRANTS, IS SHOWN ON: A1.0. AERIAL ACCESS LAYOUT, FOR BUILDINGS OVER 30 FT, IS SHOWN ON: N/A.

YES ☐ NO ☒ PRODUCTS BEING STORED: THIS IS A SPECULATIVE BUILDING. NO TENANT AT THIS TIME.

YES ☐ NO ☒ STORAGE PACKAGING (I.E. PALLETS, RACKS, SOLID PILED, DRUMS, CARDBOARD BOXES, WRAPPED IN PLASTIC, ETC.): _____

YES ☐ NO ☒ MAXIMUM HEIGHT OF COMMODITY: _____

YES ☐ NO ☒ ***THIS BUILDING IS DESIGNED FOR THE INTENT OF HIGH PILED STORAGE.

YES ☐ NO ☒ FIRE DEPARTMENT ACCESS DOORS _____

YES ☐ NO ☒ HIGH PILED STORAGE RACK LAYOUT/ELEVATIONS, CODE ANALYSIS, ETC. SHOWN ON: _____

YES ☐ NO ☒ DOES THE BUILDING HAVE HAZARDOUS MATERIAL USE OR STORAGE? IF YES, THEN PROVIDE ALL HMIS SUMMARY AND MSDS REPORTS.

YES ☐ NO ☒ IF YES, DO THE QUANTITIES EXCEED THE MAXIMUM ALLOWABLE PER IFC 2018?

IF YES, YOU WILL BE REQUIRED TO PROVIDE THE FOLLOWING:
CODE ANALYSIS BY FIRE PROTECTION ENGINEER TO SHOW COMPLIANCE WITH IFC 2018.
CODES AND REFERENCED STANDARDS SHOWN ON SHEET(S) _____

YES	<input type="checkbox"/>	NO	<input type="checkbox"/>	ATRIUM(S) PER 404 IBC 2018?
YES	<input type="checkbox"/>	NO	<input type="checkbox"/>	HIGH RISE BLDG PER 403 IBC 2018?
YES	<input type="checkbox"/>	NO	<input type="checkbox"/>	ANY FUEL STORAGE TANKS PER 5704 IFC 2018?
YES	<input type="checkbox"/>	NO	<input type="checkbox"/>	CRITICAL FACILITIES (HARRIS COUNTY REGULATIONS AND AMENDMENTS)
YES	<input type="checkbox"/>	NO	<input type="checkbox"/>	OTHER: _____
YES	<input type="checkbox"/>	NO	<input type="checkbox"/>	PAINT SPRAY BOOTHS, COATINGS, DIPPING OR INDUSTRIAL OVENS USED PER 2404, 2405, 2406 AND CHAPTER 30 FC 2018?
YES	<input type="checkbox"/>	NO	<input type="checkbox"/>	HEALTH DEPARTMENT APPROVAL/ REQUIRED FOR ALL ESTABLISHMENTS THAT SERVE/PREPARE FOOD AND BEVERAGES FOR THE PUBLIC OR HAVE REFRIGERATED FOOD STORAGE.

A0.0	COVER SHEET
A1.0	SITE PLAN
A2.0	FLOOR PLAN, CEILING PLAN
A2.1	ROOF PLANS, DOOR SCHEDULE, WALL SECTIONS
A3.0	EXTERIOR ELEVATIONS
A4.0	TEXAS ACCESSIBILITY STANDARDS

BUILDING ELEMENTS	HOURS REQUIRED	HOURS PROVIDED	UL OR IBC STANDARD USED & DESIGN DETAIL SHOWN ON
STRUCTURAL FRAME	0	0	
EXTERIOR BEARING WALLS	0	0	
EXTERIOR NON-BEARING WALLS	0	0	
INTERIOR BEARING WALLS	0	0	
INTERIOR NON-BEARING WALLS	0	0	
FLOOR CONSTRUCTION	0	0	
ROOF CONSTRUCTION	0	0	
STAIRWELLS (SECTION 1023)	0	0	
ELEVATOR SHAFTS (SECTION 713)	N/A		
CORRIDORS (SECTION 1020)	0	0	
FIRE RATED DOORS (TABLE 716.1(2))	0	0	
DEMISING/PARTITION WALL (SECTION 708)	N/A		
FIRE BARRIER (SECTION 707.3.9 & 508.4)	0	0	
FIRE WALL (SECTION 706)	N/A		
DRAFTSTOPS: <input type="checkbox"/> YES, SHOWN ON: _____ <input type="checkbox"/> NO (SPRINKLED ATTIC) <input checked="" type="checkbox"/> N/A (SECTION 718.4)			

NOT APPLICABLE

FIRE-RESISTANCE RATING REQUIREMENTS (TABLES 601 & 602 IBC 2018)

MEANS OF EGRESS	# OF REQUIRED EXITS	# OF EXITS PROVIDED	SHEET #
STAIRWAYS (PER FLOOR)	N/A		
EGRESS @ 1ST FL	2	6	A2.0

MEANS OF EGRESS	# OF REQUIRED EXITS	# OF EXITS PROVIDED	SHEET #
STAIRWAYS (PER FLOOR)	N/A		
EGRESS @ 1ST FL	2	6	A2.0

OCCUPANCY CLASSIFICATION TYPES						
A-1	A-2	A-3	A-4	A-5	B	E
F-1	F-2	H-1	H-2	H-3	H-4	H-5
I-1	I-2	I-3	I-4	M	R-1	R-2
	R-3	R-4	S-1	S-2	U	
BREAK DOWN AREAS AND OCCUPANT LOADS PER FLOOR						
OCCUP. CLASS	SPECIFIC USE			SQUARE FOOTAGE	SF PER OCCUPANT	DESIGN OCCUPANTS
S-1	WAREHOUSE			6,000	500	12
TOTAL				6,000		12

OCCUPANCY CLASSIFICATION TYPES						
A-1	A-2	A-3	A-4	A-5	B	E
F-1	F-2	H-1	H-2	H-3	H-4	H-5
I-1	I-2	I-3	I-4	M	R-1	R-2
	R-3	R-4	S-1	S-2	U	

<input type="checkbox"/> NEW CONSTRUCTION <input type="checkbox"/> LEASE SPACE BUILD-OUT (LSBO) <input type="checkbox"/> SUBSTANTIAL IMPROVEMENT	<input checked="" type="checkbox"/> SHELL BUILDING <input type="checkbox"/> CHANGE OF OCCUPANCY <input type="checkbox"/> OTHER: _____
<input type="checkbox"/> SINGLE OCCUPANCY N/A	MIXED OCCUPANCY N/A <input type="checkbox"/> SEPARATED USE <input type="checkbox"/> NON-SEPARATED USE

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ISSUE DATE: 11-8-21



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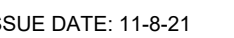
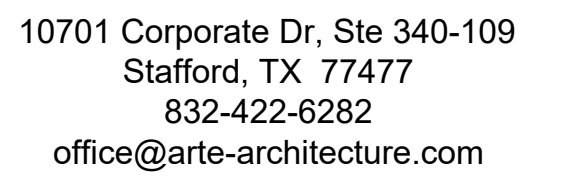
DRAWINGS, SPECIFICATIONS AND OTHER DOCUMENTS, INCLUDING THOSE IN ELECTRONIC FORM, PREPARED BY OR FOR ARTS ARCHITECTURE SHALL BE THE SOLE INSTRUMENTS OF SERVICE FOR USE SOLELY WITH RESPECT TO THIS PROJECT. ARTS ARCHITECTURE SHALL NOT BE RESPONSIBLE FOR THE REUSE OF ANY OF THE INSTRUMENTS OF SERVICE, EITHER IN WHOLE OR IN PART, IN ANY OTHER PROJECT, EITHER BEFORE OR AFTER THE PROJECT, AND CONDITIONED ON THE FULL AND TIMELY PAYMENT OF ALL SUMS DUE TO ARTS ARCHITECTURE. ARTS ARCHITECTURE SHALL BE RESPONSIBLE FOR THE ARCHITECTURE'S DELIVERY OF SEALED CONSTRUCTION DRAWINGS TO CLIENT. ARTS ARCHITECTURE GRANTS CLIENT THE RIGHT TO REPRODUCE THE DRAWINGS FOR THE PURPOSE OF CONSTRUCTING THE BUILDING DEPICTED IN THE PLANS, ONCE AND ONLY ONCE, AND ONLY ON THE SITE SPECIFICALLY IDENTIFIED IN THE PLANS, AND NOT FOR REPRODUCTION OF THE PLANS, OR CREATION OF ANY DERIVATIVE ARCHITECTURAL WORKS IS PERMITTED WITHOUT ARTS ARCHITECTURE'S EXPRESS WRITTEN PERMISSION. ARTS ARCHITECTURE'S DESIGN SHALL BE THAT ARTS ARCHITECTURE IS OR SHALL BE THE SOLE AUTHOR OF THE PLANS, AND THAT ARTS ARCHITECTURE IS GRANTING CLIENT THE SOLE OWNERSHIP OF ALL COPYRIGHTS IN THE PLANS, INCLUDING THE COPYRIGHTS IN ALL GRAPHIC AND ARCHITECTURAL MATERIALS, INCLUDING BUT NOT LIMITED TO, THE PLANS, REMAIN THE EXCLUSIVE PROPERTY OF ARTS ARCHITECTURE. ANY USE, COPYING, OR MODIFICATIONS OF ANY OF THE INSTRUMENTS OF SERVICE WITHOUT ARTS ARCHITECTURE'S WRITTEN PERMISSION SHALL CONSTITUTE COPYRIGHT INFRINGEMENT. UNLESS ADDITIONAL COMPENSATION HAS BEEN AGREED TO AND PAID FOR, ARTS ARCHITECTURE SHALL NOT BE RESPONSIBLE FOR THE REUSE OR REPRODUCTION OF ANY OF THE INSTRUMENTS OF SERVICE, EITHER BEFORE OR AFTER THE PROJECT, AND CONDITIONED ON THE FULL AND TIMELY PAYMENT OF ALL SUMS DUE TO ARTS ARCHITECTURE. ARTS ARCHITECTURE SHALL HAVE CUSTODY OF THE ORIGINAL INSTRUMENTS OF SERVICE, INCLUDING ALL ORIGINAL DOCUMENTS. ARTS ARCHITECTURE SHALL PERMIT THE CLIENT AND BUILDER TO RETAIN ARCHIVE COPIES OF THE INSTRUMENTS OF SERVICE FOR THE PROJECT, AND USE AND OCCUPANCY OF THE PROJECT. THE PARTIES ACKNOWLEDGE AND AGREE THAT, UNLESS EXPLICITLY STATED OTHERWISE, ARTS ARCHITECTURE SHALL HAVE THE RIGHT TO GENERATE CONSTRUCTION DRAWINGS OR TO MAKE SUBSTANTIVE CHANGES TO THE PLANS, AND THAT ARTS ARCHITECTURE SHALL BE RESPONSIBLE FOR THE ABOVE PROJECT IS CONSTRUCTED OR NOT.

SHEET TITLE

COVER SHEET

SHEET NO.

A0.0

[illegible]

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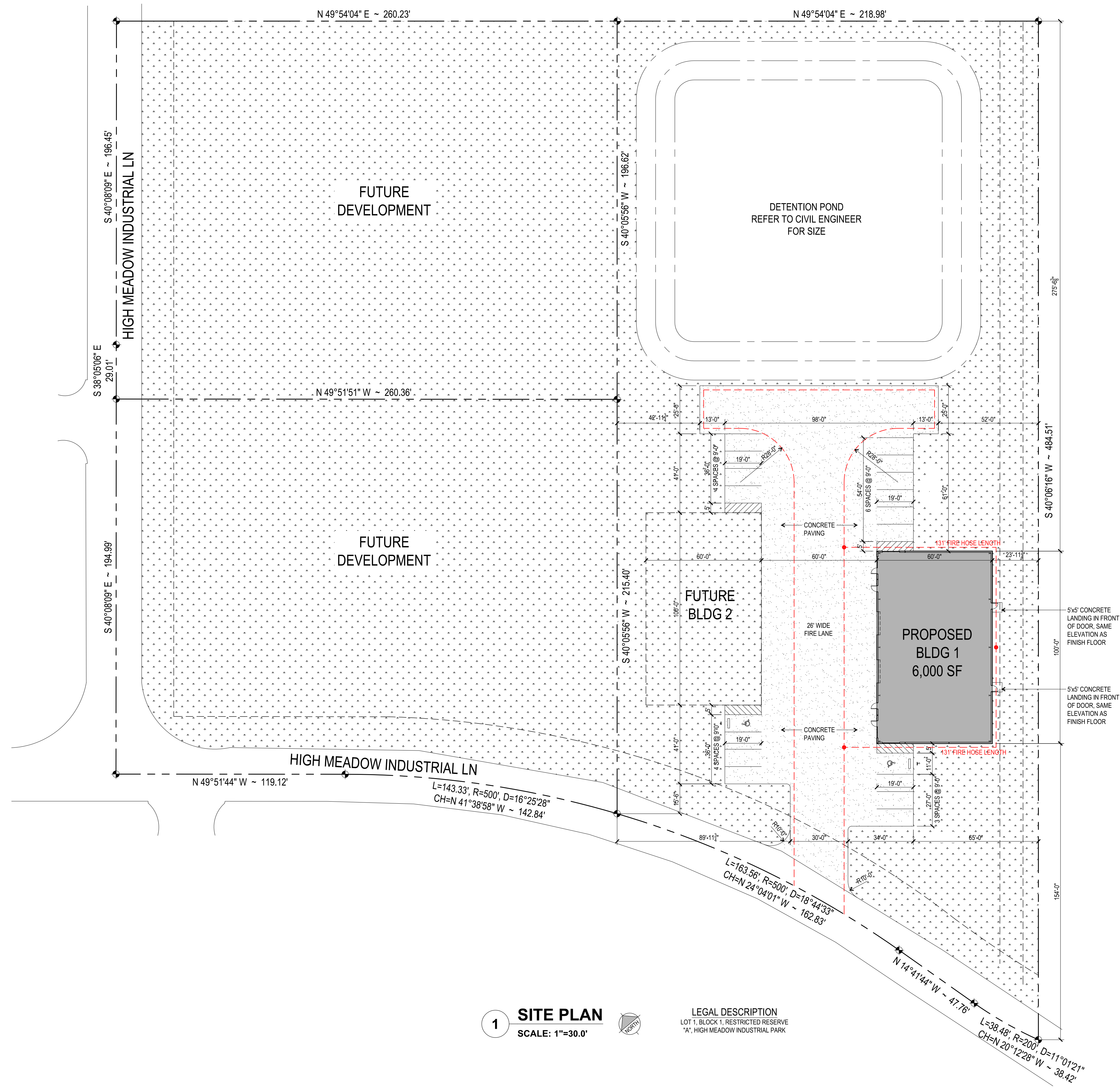
DRAWINGS, SPECIFICATIONS AND OTHER DOCUMENTS, INCLUDING THOSE IN ELECTRONIC FORM, PREPARED BY ARTE ARCHITECTURE AND THEIR CONSULTANTS ARE HEREBY TRANSFERRED TO THE CLIENT IN FULL RESPECT TO THIS PROJECT. IN ASSENT A WRITTEN AGREEMENT SIGNED BY ARTE ARCHITECTURE TO THE CLIENT, THE CLIENT SHALL PAY TO ARTE ARCHITECTURE THE FOLLOWING PAYMENT: DUE AT FULL PAYMENT OF THE PROJECT. DUE AT THE END OF THE PROJECT. UNDER THIS AGREEMENT, UPON ARTE ARCHITECTURE'S DELIVERY OF SEALED CONSTRUCTION DRAWINGS TO THE CLIENT, THE CLIENT SHALL OBTAIN A NONTRANSFERABLE, NON-EXCLUSIVE RIGHT TO CONSTRUCT THE BUILDING DEPICTED IN THE PLANS AND TO MAKE ANY CHANGES TO THE PLANS IDENTIFIED ON THE PLANS, NO REUSE, REDRATING, OR REPRODUCTION OF THE PLANS, OR CREATION OF ANY NEW WORK, WITHOUT ARTE ARCHITECTURE'S EXPRESS WRITTEN PERMISSION. THE PARTIES ACKNOWLEDGE AND AGREE THAT ARTE ARCHITECTURE IS OR SHALL BE THE SOLE OWNER OF ALL COPYRIGHTS IN THE PLANS, INCLUDING THE DRAWINGS, SPECIFICATIONS AND OTHER DOCUMENTS. THE DRAWINGS AND SPECIFICATIONS SHALL REMAIN THE EXCLUSIVE PROPERTY OF ARTE ARCHITECTURE AND ITS CONSULTANTS. ANY ATTEMPT TO SAID PROJECT DRAWINGS SHALL BE CONSIDERED A COPYRIGHT INFRINGEMENT UNLESS AN ADDITIONAL WRITTEN AGREEMENT IS SIGNED AND SIGNED AND SUBSEQUENT RELEASES OBTAINED BY ARTE ARCHITECTURE. HAVE BEEN OBTAINED BY ARTE ARCHITECTURE. THE CLIENT HAS THE ORIGINAL DRAWINGS AND DOCUMENTS AS THE AUTHOR OF SAID DOCUMENTS. ARTE ARCHITECTURE SHALL PERMIT THE CLIENT'S LEGITIMATE BUILDER TO REPRODUCE, FOR THE USE AND OBJECT OF THE PROJECT FOR REFERENCE AND TO MAKE ANY CHANGES TO THE PROJECT. THE PARTIES ACKNOWLEDGE AND AGREE THAT, UNLESS EXPLICITLY STATED OTHERWISE, ARTE ARCHITECTURE DOES NOT HAVE THE RIGHT TO GENERATE CONSTRUCTION DRAWINGS OR TO MAKE SUBSTANTIVE CHANGES TO THE PLANS. THE CLIENT'S BUILDER SHALL BE RESPONSIBLE FOR OBTAINING THE ABOVE PROJECT IS CONSTRUCTED OR NOT.

SITE PLAN

A1.0



1. WHITE PAINT STRIPING 4" WIDE
2. ACCESSIBLE SIGN ON PAVEMENT PAINT SYMBOL: WHITE (TWO COATS)
BACKGROUND: BLUE (#H5090 IN FED. STD. 595A) SIZE: 4'-0"x4'-0"
3. PARKING SPACES AND ACCESS AISLES SHALL BE LEVEL WITH SURFACE
SLOPES NOT EXCEEDING 1:50 (2%) IN ALL DIRECTIONS.
4. MAXIMUM SLOPES OF ADJOINING GUTTERS, ROAD SURFACE IMMEDIATELY ADJACENT TO THE CURB RAMP, OR ACCESSIBLE ROUTE SHALL NOT EXCEED 1:20.



SITE PLAN
SCALE: 1"=30.0'

LEGAL DESCRIPTION
LOT 1, BLOCK 1, RESTRICTED RESERVE
"A", HIGH MEADOW INDUSTRIAL PARK

DATE / TIME : Nov 08, 2021 - 10:19am
FILE NAME : Z:\SHARED\PROJECTS\2021\COMMERCIAL\021-05 HIGH MEADOW WAREHOUSE\021-05 PLANS.DWG

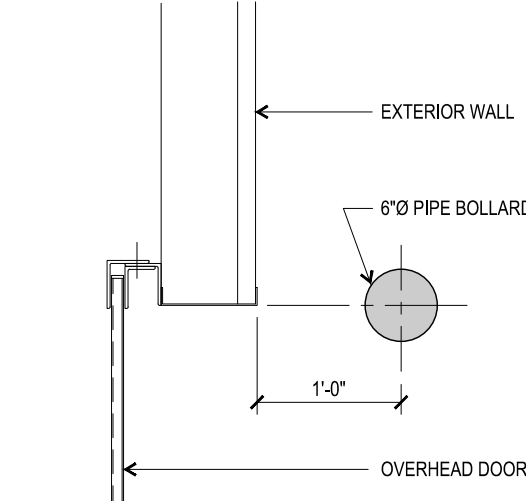
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SHEET NO:

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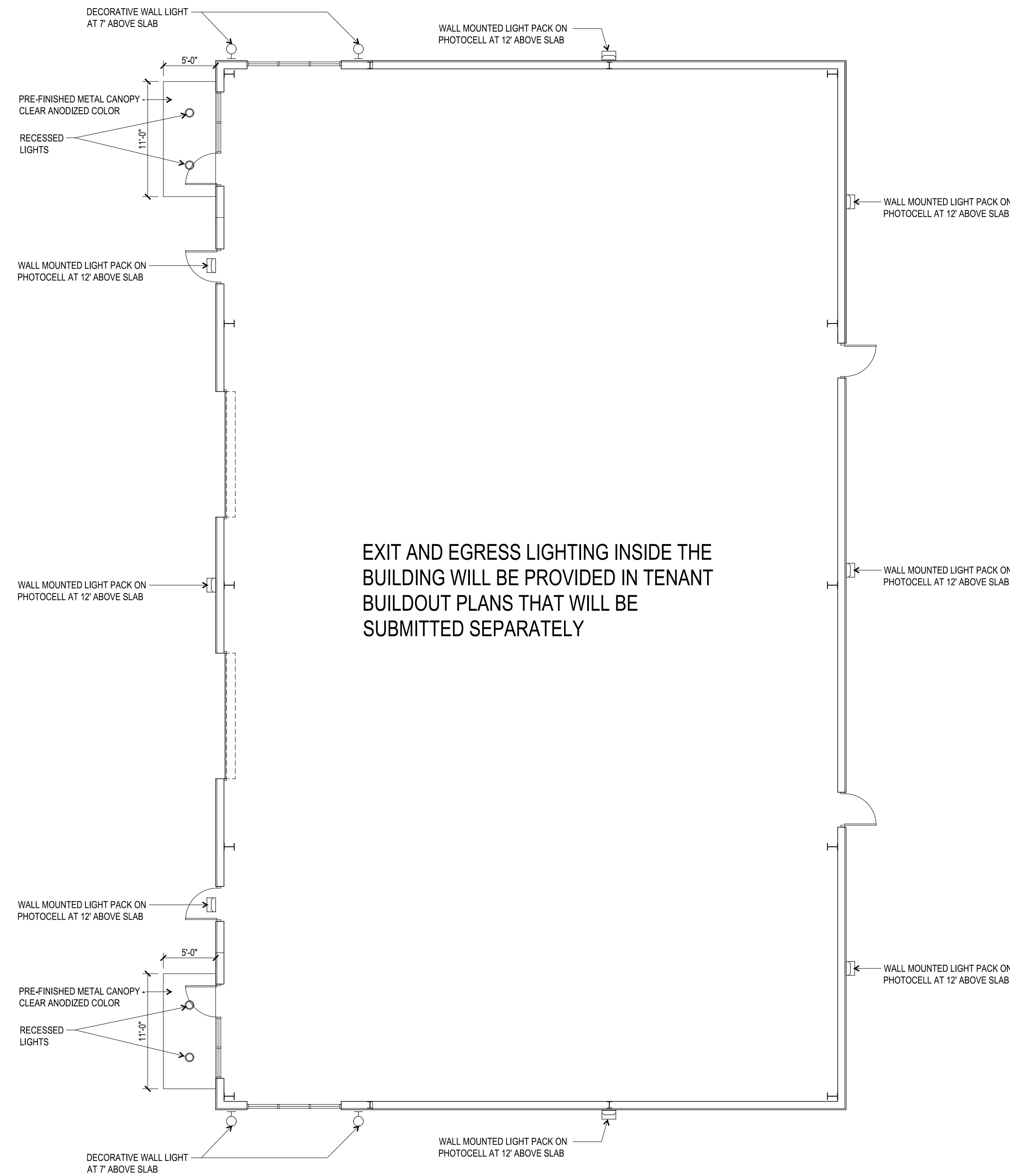


3 BOLLARD PLAN

SCALE: 3/4"=1'-0"

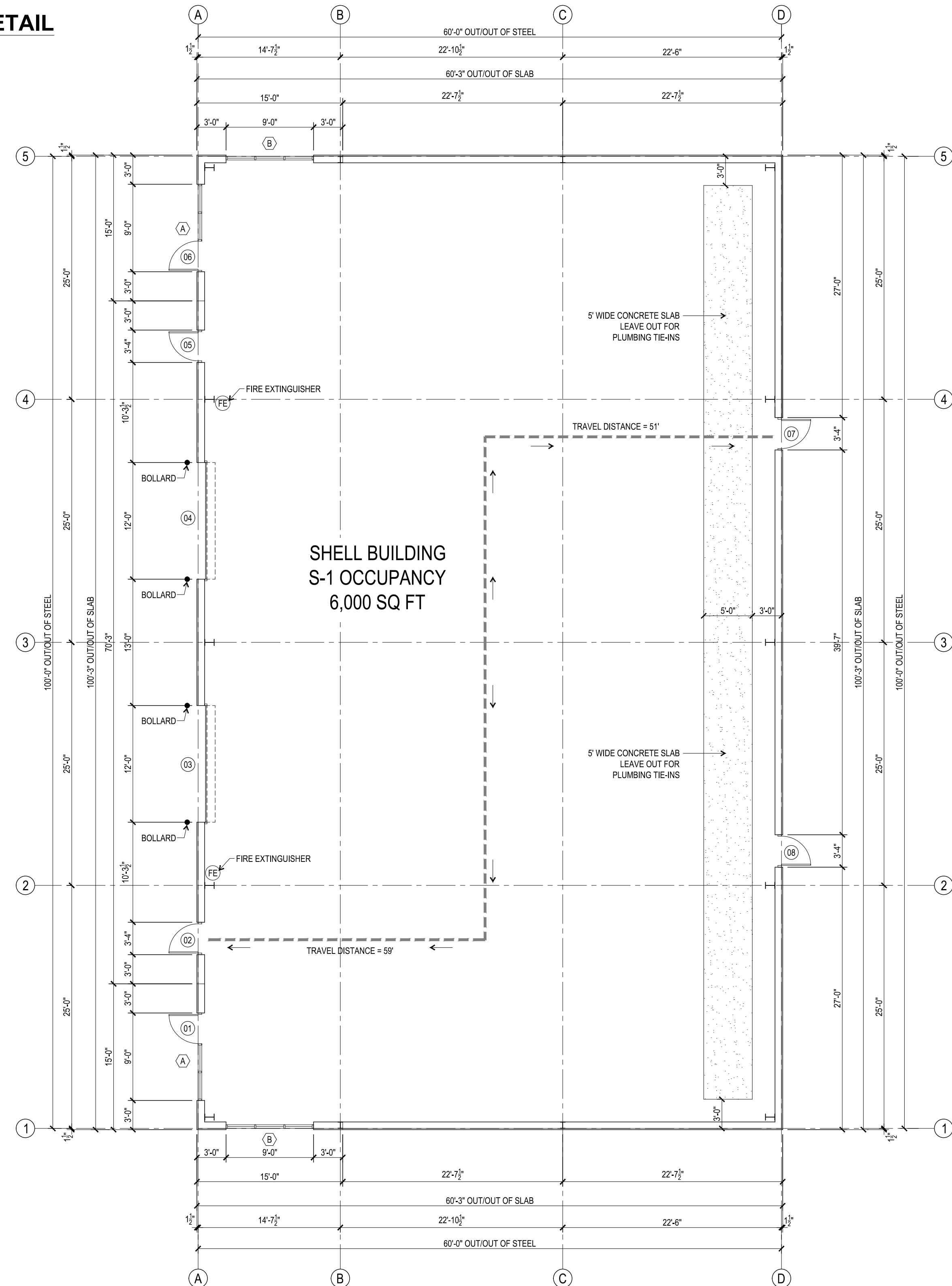
4 BOLLARD DETAIL

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



2 CEILING/LIGHTING PLAN

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



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

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ARTS ARCHITECTURE, ALL RIGHTS RESERVED, DRAWINGS, SPECIFICATIONS AND OTHER DOCUMENTS, INCLUDING THOSE IN ELECTRONIC FORM, PREPARED BY ARTS ARCHITECTURE AND THEIR CONSULTANTS ARE THE SOLE PROPERTY OF ARTS ARCHITECTURE. WITH RESPECT TO THIS PROJECT, ARTS ARCHITECTURE AGREES TO SIGN, AND ARTS ARCHITECTURE'S CONSULTANTS TO SIGN, AN AGREEMENT SIGNED BY ARTS ARCHITECTURE TO THE ARCHITECTURAL FIRM, CONDITIONED UPON THE ARCHITECTURAL FIRM'S AGREEMENT TO SIGN, UPON THE ARTS ARCHITECTURE'S DELIVERY OF SEALED CONSTRUCTION DOCUMENTS TO THE ARCHITECTURAL FIRM, A NON-EXCLUSIVE RIGHT TO CONSTRUCT THE BUILDING DEPICTED IN THE PLANS IDENTIFIED ON THE PLANS, AND TO MAKE ANY CHANGES IDENTIFIED ON THE PLANS. NO REUSE, REDRAFTING, OR REPRODUCTION OF THE PLANS, OR CREATION OF ANY NEW WORK, WITHOUT ARTS ARCHITECTURE'S EXPRESS WRITTEN PERMISSION. THE PARTIES ACKNOWLEDGE AND AGREE THAT ARTS ARCHITECTURE IS OR SHALL BE THE SOLE OWNER OF ALL COPYRIGHTS IN THE PLANS, INCLUDING THE DRAWINGS, SPECIFICATIONS, AND OTHER DOCUMENTS. THE DRAWINGS AND SPECIFICATIONS SHALL REMAIN THE EXCLUSIVE PROPERTY OF ARTS ARCHITECTURE. ARTS ARCHITECTURE'S MODIFICATION TO SAID PROJECT DRAWINGS SHALL BE CONSIDERED A COPYRIGHT INFRINGEMENT UNLESS ADDITIONAL WRITTEN PERMISSION IS AGREED UPON BY ARTS ARCHITECTURE AND SUBSEQUENT RELEASES OBTAINED BY ARTS ARCHITECTURE. ARTS ARCHITECTURE HAS REVIEWED THE DRAWINGS AND DOCUMENTS AS THE AUTHOR OF SAID DOCUMENTS. ARTS ARCHITECTURE SHALL PERMIT THE ARCHITECTURAL FIRM TO REPRODUCE AND REUSE THE PROJECT DRAWINGS FOR REFERENCE AND IN THE DESIGN AND OCCUPANCY OF THE PROJECT. THE PARTIES ACKNOWLEDGE AND AGREE THAT, UNLESS EXPLICITLY STATED OTHERWISE, ARTS ARCHITECTURE SHALL RESERVE THE RIGHT TO GENERATE CONSTRUCTION DRAWINGS OR MAKE SUBSTANTIVE CHANGES TO THE PLANS. THE PROJECT SHALL BE CONSTRUCTED BY THE ARCHITECTURAL FIRM ABOVE PROJECT IS CONSTRUCTED OR NOT.

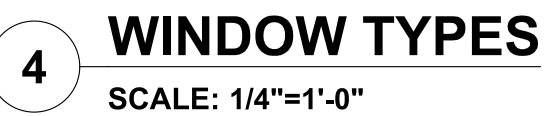
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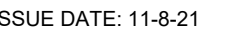
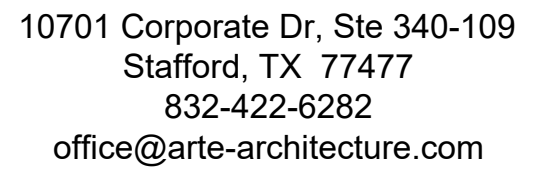
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HARDWARE SET 1	HARDWARE SET 2	HARDWARE SET 3	HARDWARE SET 4	HARDWARE SET 5	HARDWARE SET 6
2 PIVOT HINGES 1 CLOSER 1 PUSH BAR INSIDE 1 PULL BAR OUTSIDE 1 CYLINDER LOCK W/ INDICATOR BY PRIME-LINE MODEL #4529 1 THRESHOLD 1 WEATHER STRIPPING	3 BUTT HINGES 1 CLOSER 1 EMERGENCY PUSH BAR DEVICE W/ LEVER HANDLE ON OUTSIDE 1 THRESHOLD 1 WEATHER STRIPPING	OVERHEAD DOOR HARDWARE MANUAL OPERATED PULL CHAIN			

1. ON ALL EXTERIOR DOORS PROVIDE SIGN ON MAIN ENTRANCE DOOR TO READ THE FOLLOWING: "THESE DOORS TO REMAIN UNLOCKED WHEN BUILDING IS OCCUPIED". THE SIGN SHALL BE IN LETTERS 1 INCH HIGH ON A CONTRASTING BACKGROUND.
2. HANDLES, PULLS, LATCHES, LOCKS, AND OTHER OPERATING DEVICES ON ALL DOORS SHALL HAVE A SHAPE THAT IS EASY TO GRASP WITH ONE HAND AND WITHOUT REQUIRING THE USE OF THE WRIST, PINCH, OR TWISTING OF THE WRIST TO OPERATE. LEVER-OPERATED MECHANISMS, PUSH-TYPE MECHANISMS, AND U-SHAPED HANDLES ARE ACCEPTABLE DESIGNS. HARDWARE REQUIRED FOR ACCESSIBLE DOOR PASSAGE SHALL BE MOUNTED NO HIGHER THAN 48" ABOVE FINISHED FLOOR.
3. DOOR LATCH SHALL RELEASE WHEN SUBJECTED TO A 5 - POUND FORCE FOR INTERIOR AND A 8.5 - POUND FORCE FOR EXTERIOR DOOR FROM INSIDE WITHOUT THE USE OF A KEY OR ANY SPECIAL FORCE.
4. THRESHOLDS, LANDINGS. THERE SHALL BE A FLOOR OR LANDINGS ON EACH SIDE OF A DOOR WITH THE SAME ELEVATION ON BOTH SIDES AND THRESHOLDS SHALL NOT EXCEED 1/2" IN HEIGHT.

ID	WIDTH	HEIGHT	THICK	MATERIAL	FINISH	FRAME	FR..FINISH	HWR..SET	REMARKS
01	3'-0"	7'-0"	1 3/4"	ALUM / GLASS	CLEAR ANODIZED	ALUM	CLEAR ANODIZED	1	
02	3'-0"	7'-0"	1 3/4"	HOLLOW METAL	PAINT	HOLLOW METAL	PAINT	2	
03	12'	14'-0"	2"	METAL	PRE-FINISHED	HOLLOW METAL	PRE-FINISHED	3	MANUAL CRANK ROLL UP DOOR
04	12'	14'-0"	2"	METAL	PRE-FINISHED	HOLLOW METAL	PRE-FINISHED	3	MANUAL CRANK ROLL UP DOOR
05	3'-0"	7'-0"	1 3/4"	HOLLOW METAL	PAINT	HOLLOW METAL	PAINT	2	
06	3'-0"	7'-0"	1 3/4"	ALUM / GLASS	CLEAR ANODIZED	ALUM	CLEAR ANODIZED	1	
07	3'-0"	7'-0"	1 3/4"	HOLLOW METAL	PAINT	HOLLOW METAL	PAINT	2	
08	3'-0"	7'-0"	1 3/4"	HOLLOW METAL	PAINT	HOLLOW METAL	PAINT	2	

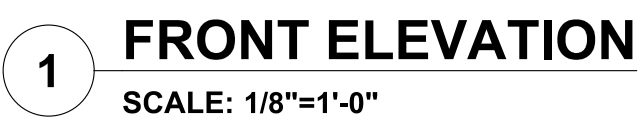
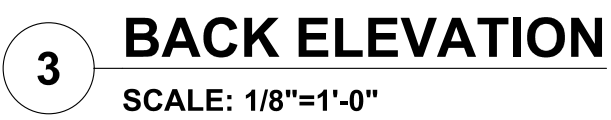


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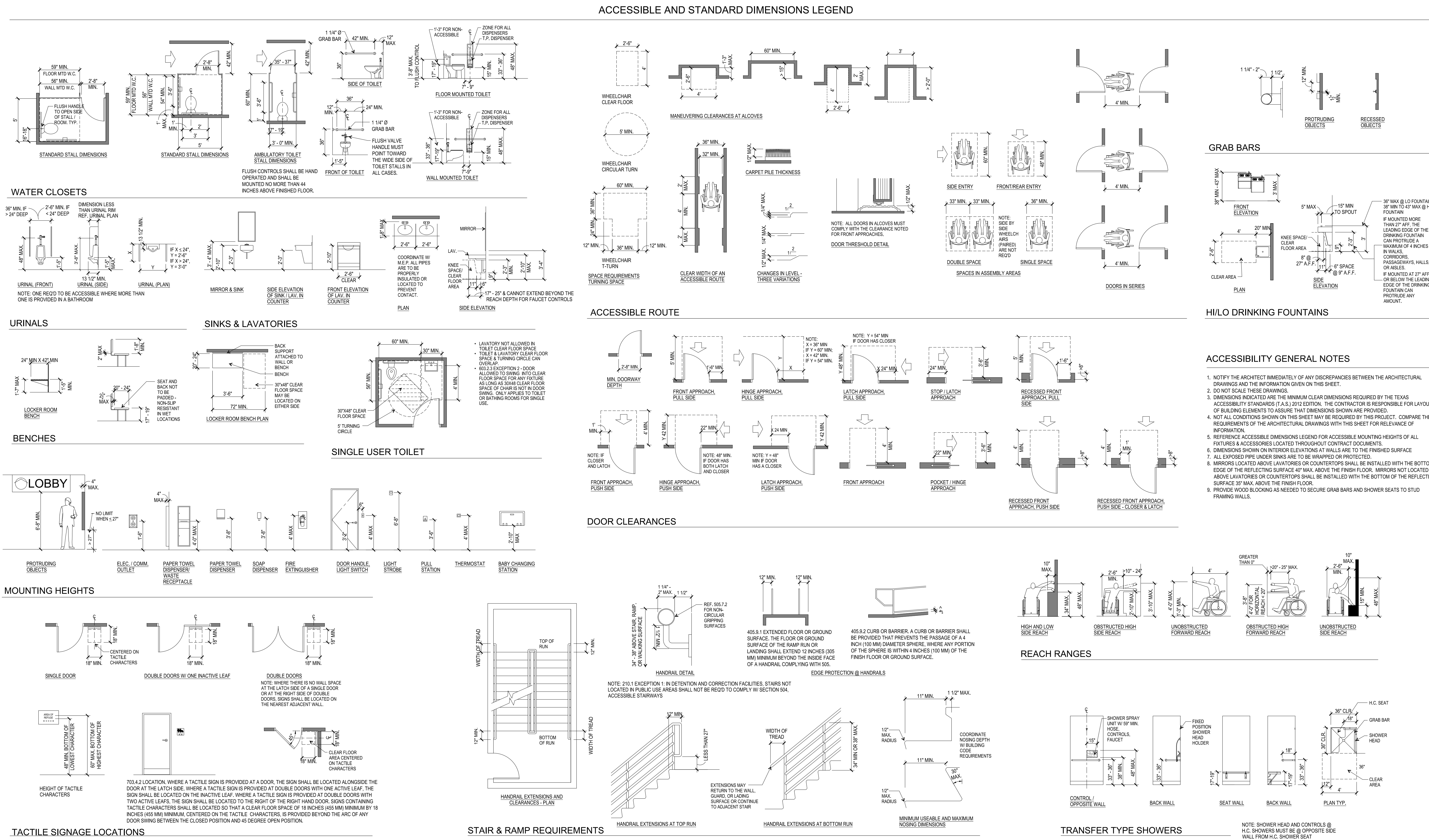
AND SPECIFICATIONS, SPECIFICATIONS AND OTHER DOCUMENTS, INCLUDING THOSE IN ELECTRONIC FORM, PREPARED BY OR FOR THE ARCHITECT, SHALL BE THE SOLE PROPERTY OF THE ARCHITECT. THE ARCHITECT'S INSTRUMENTS OF SERVICE FOR USE SOLELY WITH RESPECT TO THIS PROJECT. ARTIST A WRITTEN ASSIGNMENT OF ALL RIGHTS IN THE ARCHITECTURE, CONTRARY, AND CONDITIONED ON THE FULL AND TIMELY PAYMENT OF ALL SUMS DUE TO ARCHITECT, ARCHITECT SHALL HAVE THE RIGHT TO REQUIRE ARCHITECT'S DELIVERY OF SEALED CONSTRUCTION DRAWINGS TO CLIENT, ARTE ARCHITECTURE GRANTS ARCHITECT THE RIGHT TO REPRODUCE AND TO USE THE DRAWINGS TO CONSTRUCT THE BUILDING DEPICTED IN THE PLANS, AND ONLY ONCE, AND ONLY ON THE SITE OF THE BUILDING, FOR THE PURPOSES OF CONSTRUCTION OR REPRODUCTION OF THE PLANS, OR CREATION OF ANY DERIVATIVE ARCHITECTURAL WORKS IS PERMITTED WITHOUT THE WRITTEN PERMISSION OF ARCHITECT. THE PARTIES ACKNOWLEDGE AND AGREE THAT ARCHITECT IS OR SHALL BE THE SOLE OWNER OF ALL COPYRIGHTS IN THE PLANS, INCLUDING THE ARCHITECT'S GRAPHS, ARCHITECTURE DRAWINGS, THE DRAWINGS AND SPECIFICATIONS SHALL REMAIN THE EXCLUSIVE PROPERTY OF ARCHITECT. ANY USE, COPYING, OR MODIFICATIONS OF THE ARCHITECTURE OR ANY PART THEREOF WITHOUT ARCHITECT'S WRITTEN PERMISSION SHALL CONSTITUTE COPYRIGHT INFRINGEMENT. UNLESS ADDITIONAL COMPENSATION HAS BEEN AGREED TO AND PAID FOR, ARCHITECT HAS RELEASED AND RELEASES ARCHITECT FROM OBLIGATION TO HAVE OBTAINED ARCHITECT'S WRITTEN PERMISSION. ARCHITECT SHALL HAVE CUSTODY OF THE ORIGINAL ARCHITECTURE AND SPECIFICATIONS AND ALL OTHER DOCUMENTS. ARCHITECT SHALL PERMIT THE CLIENT AND BUILDER TO RETAIN ARCHIVE COPIES OF THE ARCHITECTURE AND SPECIFICATIONS FOR THE USE AND OCCUPANCY OF THE PROJECT. THE PARTIES ACKNOWLEDGE AND AGREE THAT, UNLESS EXPLICITLY AGREED TO IN WRITING, ARCHITECT SHALL HAVE THE RIGHT TO GENERATE CONSTRUCTION DRAWINGS OR TO MAKE SUBSTANTIVE CHANGES TO THE PLANS. THE ARCHITECT'S INSTRUMENT OF SERVICE SHALL BE THE ABOVE PROJECT IS CONSTRUCTED OR NOT.

ELEVATIONS

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DATE / TIME : Nov 08, 2021 - 10:59am
FILE NAME : Z:\SHARED\PROJECTS\2021\COMMON\ARCH\CL21-05-HIGH MEADOW WOODS\HDC21-05-PLAN-01.dwg



PROJECT NUMBER: C21-05

A New Development for
High Meadow Business Park
36660 High Meadow Industrial Ln
Magnolia, TX 77355

REV.	DATE	DESCRIPTION
11-8-21		FOR PERMIT

Arte

Architecture

10701 Corporate Dr, Ste 340-109
Stafford, TX 77477
832-422-6282
office@arte-architecture.com

REGISTERED ARCHITECT
JAMES J. ARTE
2085
STATE OF TEXAS

ISSUE DATE: 11-8-21

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SHEET TITLE:
TEXAS ACCESSIBILITY STANDARDS

SHEET NO:
A4.0

DATE / TIME : Nov 08, 2021 - 10:59am
FILE NAME : Z:\SHARED\PROJECTS\2021\COMMON\ARCH\CL21-05-HIGH MEADOW WOODS\HDC21-05-PLAN-01.dwg

DESIGN & MISCELLANEOUS

- ## SITework

- CONCRETE**
CONCRETE SHALL BE SUPPLIED AND CONSTRUCTED IN ACCORDANCE WITH ACI-310 LATEST EDITION AND SHALL HAVE A MINIMUM 20 DAY COMPRESSIVE STRENGTH AS FOLLOWS:
- | | |
|----------|----------|
| FOOTINGS | 3000 PSI |
|----------|----------|

- ## REINFORCING STEEL

- G. REINFORCING STEEL SHALL BE ASTM A615 GRADE 60 WITH DEFORMATIONS PER ASTM A305 AND SHALL BE DETAILLED AND INSTALLED AS SHOWN ON S11-511.
- H. WELDED WIRE FABRIC SHALL BE 6x6xW2.9/W2.9 (6 GAUGE) PER ASTM A185. WVF SHALL BE SUPPLIED IN SHEETS AND SHALL BE 18" WIDE BY 18" INCHES LONG.
- I. MINIMUM REINFORCING STEEL AND WVF COVERAGE SHALL BE AS FOLLOWS:
 - 1. DRILLER FOOTINGS
 - a. 2" 1/2" SIDES, 6" BOTTOM
 - 2. SLABS-ON-GROUND
 - a. 2" 1/2" FROM TOP
 - 3. GRADE BEAMS
 - a. 3" 1/2" BOTTOM, 2" TOP & SIDES
 - 4. WHERE JOINTS OCCUR IN REINFORCING STEEL OR WVF, BARS SHALL BE LAPPED AT A DISTANCE OF 30 TIMES THE BAR DIAMETER. WVF LAPS SHALL BE 12 INCHES MINIMUM.
- J. PROVIDE REINFORCING STEEL OR WVF TO MATCH THE GRADE BEAMS TO MATCH THE HORIZONTAL EXTENSION FROM THE INTERIOR FACE OF THE EXTERIOR WALL.
- K. F. AT THE RE-ENTRANT CORNER, PLACE 2 #4 x 5'-0" IN THE SLAB.
- L. EXISTING FILL SHALL BE REPLACED IN ACCORDANCE WITH THE SOILS REPORT.
- M. IF AMBIENT TEMPERATURES WILL REACH ABOVE 60°F, THE ENTIRE SLAB SURFACE SHALL BE ADDITIONALLY CURED BY KEEPING IT WET FOR A MINIMUM OF 72 HOURS, COMMENCING THE MORNING AFTER CONCRETE PLACEMENT.



—SEE FOUNDATION DETAILS IN DWG. S-02

SEE DOORS & ANCHOR BOLTS
LOCATIONS IN ANCHOR
BOLT SETTING PLAN OF
METAL BUILDING FABRICATORS

ROOF :
DEAD LOAD = 5 PSF
LIVE LOAD = 20 PSF

WINDLOAD :
110 MPH, 3 SEC. GUSTS EXP. "C"

APPLICABLE CODES :
2015 IBC, IN ADDITION TO LOCAL CODE REQ'S.
AISC STEEL CONSTRUCTION MANUAL (15th EDITION)

THE COMPACTED SELECT FILL SHOULD BE
ACCORDING TO SOIL REPORT RECOMMENDATIONS

THE FOUNDATION SHOUL HAVE POSITIVE DRAINAGE
ACCORDING TO THE SOIL REPORT.

THIS FOUNDATION IS DESIGN IN ACCORDANCE WITH THE
FOLLOWING GEOTECHNICAL INVESTIGATION:
SOIL REPORT No.: RT21-172
BY: RAM TESTING & DRILLING, LLC
DATED: MARCH 4, 2021

<div><div><div>■</div><div>■</div><div>■</div></div><div><div>ABC</div><div>DESIGN STUDIO</div><div>PLANNING - DESIGN - BUILD</div></div></div> <div>5450 NW CENTRAL DR. # 127 HOUSTON, TX 77092 PH. 713. 899.8089 PH. 832. 298.5448 www.abcdesignstudio.com abcdesignstudio@yahoo.com</div>		<p>Copyright, ABC DESIGN STUDIO, All Rights Reserved. The duplication, reproduction, copying, site, rental, licensing or any other distribution or use of these drawings (any portion thereof) or the plans depicted herein without the written consent of ABC DESIGN STUDIO is strictly prohibited. ABC DESIGN STUDIO, the quality & workmanship of the construction is the responsibility of the owner/contractor. ABC DESIGN STUDIO cannot and does not assume any responsibility of the quality of their workmanship or site warranties.</p>		
PROPOSED METAL BUILDING AT LOT 14, HIGH MEADOW INDUSTRIAL LANE MAGNOLIA, TX 77355	DATE:	AUGUST 2, 2021	DESIGN BY:	JLT
	OWNER:		SCALE:	3/16" = 1'-0"
	LEGAL DESC:	LOT 14, HIGH MEADOW INDUSTRIAL LANE	ABC PROJ. No.	ABC21-143
	FLOORPLAN DESC:	MAGNOLIA, TX 77355	FLOORPLAN ZONE:	
	KEY MAP:	MONTGOMERY COUNTY, TEXAS	FEMA MAP PANEL:	
TITLE:		FOUNDATION PLAN		
REVISION:	SHEET:			
S-01				

FOUNDATION NOTES:

DESIGN & MISCELLANEOUS

- A. CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE UNIFORM BUILDING CODE LATEST EDITION OR LOCAL BUILDING CODES WHERE APPLICABLE.
- B. THIS FOUNDATION IS DESIGNED IN ACCORDANCE WITH CURRENT ACCEPTABLE ENGINEERING PRACTICES FOR THE SITE SHOWN ON THE PLANS AND MAY NOT BE USED IN ANY OTHER LOCATION.
- C. FOOTING DESIGN FOR A NET ALLOWABLE BEARING PRESSURE OF 2,000 PSF FOR DEAD LOAD PLUS SUSTAINED LIVE LOADS AND 3,000 PSF FOR DEAD LOADS PLUS SUSTAINED & TRANSIENT LIVE LOADS WHICHEVER RESULTS IN A LARGE BEARING AREA. (SEE SOIL REPORT)
- D. HOLES FOR DRILLED FOOTINGS SHALL BE CLEAN, PLUMB, AND CONCRETE SHALL BE PLACED THE SAME DAY OF EXCAVATION.
- E. WHERE SHOWN IN SECTIONS, GRADE BEAMS SHALL BE CAST ON WAX-IMPREGNATED CORRUGATED FIBER CEMENT VOID BOXES WHICH ARE 2" LESS THAN GRADE BEAM WIDTHS. VOID BOXES SHALL BE CENTERED UNDER GRADE BEAMS AND SHALL BE DISCONTINUOUS AT SPREAD FOOTINGS.
- F. BUILDER SHALL VERIFY ALL DIMENSIONS, DROPS, OFFSETS, BRICK LEDGES, INSERTS AND OPENINGS WITH ARCHITECTURAL DRAWINGS.
- G. THIS FOUNDATION IS DESIGN IN ACCORDANCE WITH THE FOLLOWING GEOTECHNICAL INVESTIGATION:
SOIL REPORT No.: RT21-172
BY: RAM TESTING & DRILLING, LLC
DATED: MARCH 4, 2021.

SITWORK

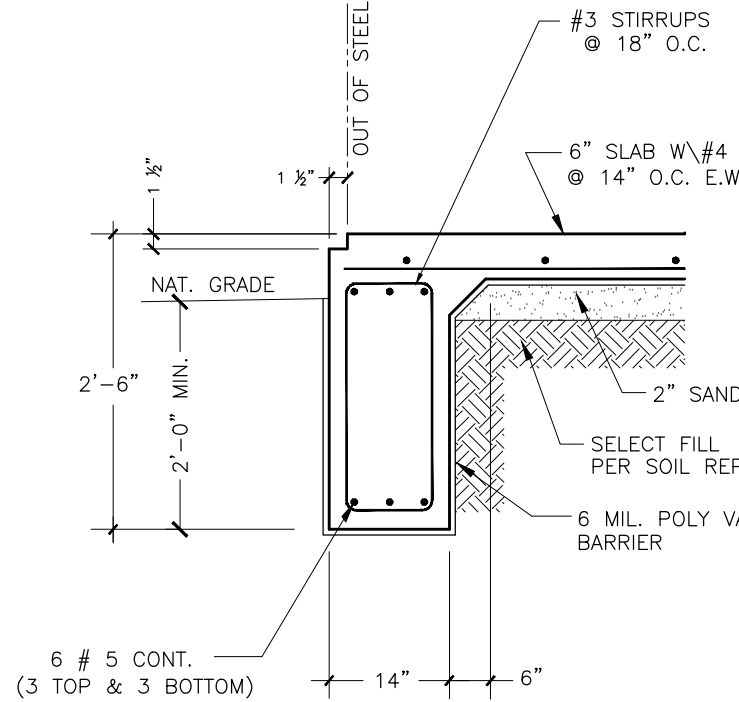
- A. SITE PREPARATION BENEATH THE SLAB SHALL BE IN ACCORDANCE WITH THE SOIL REPORT AND SHALL MEET THE FOLLOWING MINIMUM REQUIREMENTS.
1. STRIP 6 INCHES OF TOPSOIL TO REMOVE ALL ORGANIC MATERIAL.
 2. REMOVE EXISTING SOIL AS REQUIRED TO A MINIMUM REQ'D. PER SOIL REPORT BELOW BOTTOM OF PROPOSED SLAB. DO NOT REUSE THIS MATERIAL FOR FILL.
 3. PROOF ROLL EXPOSED SUBGRADE. REPLACE ANY SOFT POCKETS WITH SELECT FILL MATERIAL AS SPECIFIED HEREIN.
 4. LARGE TREES AND SHRUBS SHOULD NOT BE ALLOWED CLOSER TO THE FOUNDATION THAN A HORIZONTAL DISTANCE EQUAL TO ROUGHLY THEIR MATURE HEIGHT DUE TO THEIR SIGNIFICANT MOISTURE DEMAND UPON MATURING.
 5. BRING SUBGRADE TO REQUIRED ELEVATION WITH SELECT FILL MATERIAL. SELECT FILL SHALL BE SANDY CLAY OR CLAYEY SAND, FREE OF ORGANIC MATERIAL, HAVING A PLASTICITY INDEX GREATER THAN 7 BUT LESS THAN 20.
 6. FILL SHALL BE PLACED IN MAXIMUM 8" LIFTS AND COMPACTED TO 95% OF ITS MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D698 (STANDARD PROCTOR).
- B. THE 3 INCH SAND FILL SHALL BE WELL-COMPACTED BANK SAND OR OTHER CLEAN GRANULAR MATERIAL.
- C. INITIAL SITE GRADING SHALL BE COMPLETED PRIOR TO SETTING FORMS. FINAL GRADE SHALL SLOPE AWAY FROM THE FOUNDATION 1 INCH PER FOOT FOR THE FIRST 5 FEET SUCH THAT POSITIVE DRAINAGE AWAY FROM SLAB IS ASSURED.

CONCRETE

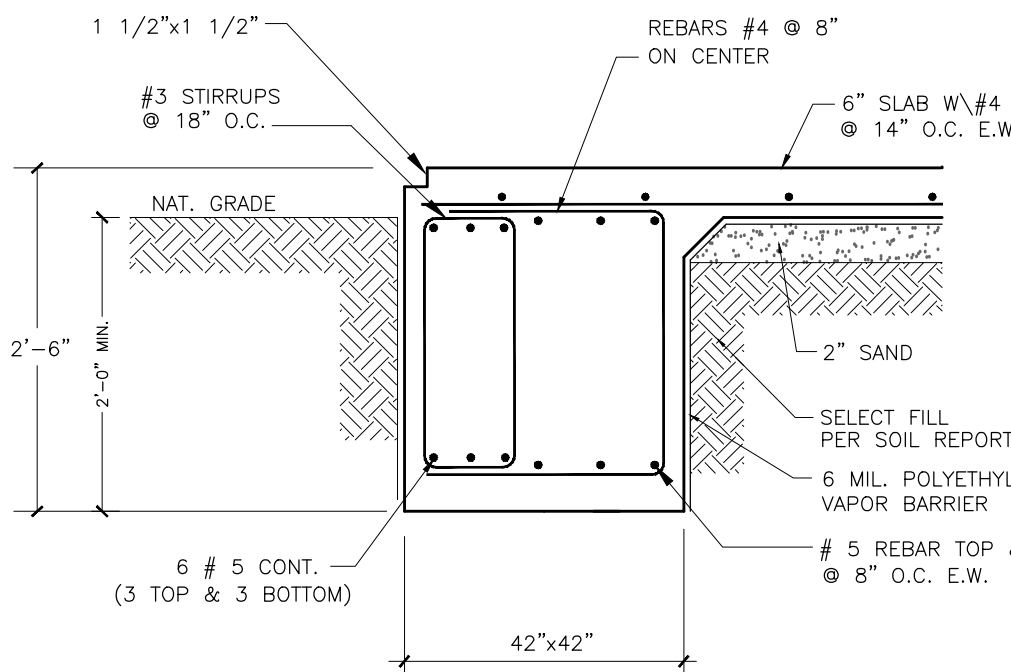
- A. CONCRETE SHALL BE SUPPLIED AND CONSTRUCTED IN ACCORDANCE WITH ACI-310 LATEST EDITION AND SHALL HAVE A MINIMUM 20 DAY COMPRESSIVE STRENGTH AS FOLLOWS:
FOOTINGS 3000 PSI
SLABS-ON-GROUND 3000 PSI
- B. CONCRETE AGGREGATES SHALL BE IN ACCORDANCE WITH ASTM C33 LATEST EDITION EXCEPT THAT 1/2" PEA GRAVEL SHALL BE USED WHERE SITE NECESSITATES CONCRETE TO BE PUMPED.
- C. WATER SHALL NOT BE ADDED TO CONCRETE AT THE JOBSITE UNLESS APPROVED BY THE ENGINEER. IF MORE WORKABILITY IS NEEDED, CONTRACTOR SHALL SPECIFY REQUIRED SLUMP ON JOB ORDER. CONCRETE PLANT TO INCREASE WORKABILITY BY ADDING UP TO 2% AIR ENTRAINMENT, ADDITIONAL CEMENT, OR OTHER APPROVED ADMIXTURES.
- D. CONCRETE SHALL NOT BE PLACED AT TEMPERATURES BELOW 40 DEGREES FAHRENHEIT. IN RAINY WEATHER OR IN OTHER ADVERSE WEATHER CONDITIONS.
- E. A 6 MIL POLYETHYLENE VAPOR BARRIER SHALL BE PLACED UNDER ALL SLABS. ALL LAPS SHALL BE TAPERED.
- F. CURE ALL SLABS WITH A CHEMICAL CURING COMPOUND OR KEEP MOIST 7 DAYS AFTER PLACEMENT.
- G. FORMS TO BE STRIPPED NO LESS THAN 24 HOURS AND NO MORE THAN 6 DAYS AFTER PLACEMENT OF CONCRETE.

REINFORCING STEEL

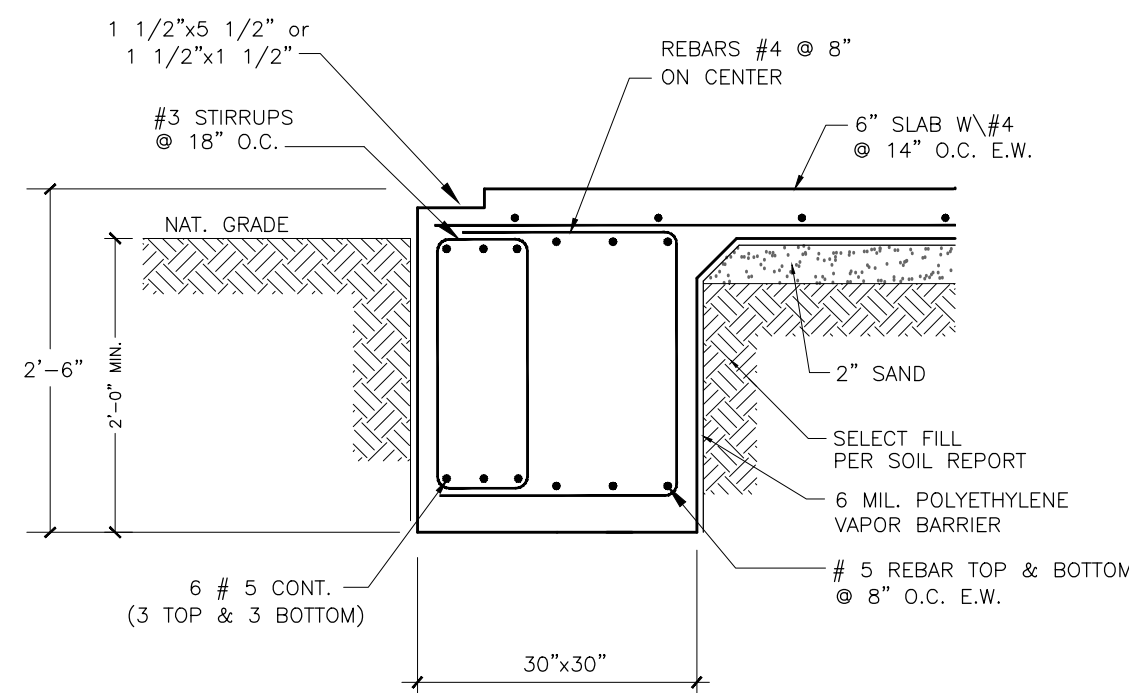
- A. REINFORCING STEEL SHALL BE ASTM A615 GRADE 60 WITH DEFORMATIONS PER ASTM A305 AND SHALL BE DETAILED AND INSTALLED PER ACI-318 LATEST EDITION.
- B. WELDED WIRE FABRIC SHALL BE 6x6xW2.9xW2.9 WWF (6 GAUGE) PER ASTM A185. WWF SHALL BE SUPPLIED IN SHEETS AND SHALL BE SUPPORTED AT 18 INCHES EACH WAY ON WWF CHAIRS.
- C. MINIMUM REINFORCING STEEL AND WWF COVERAGE SHALL BE AS FOLLOWS:
DRILLED FOOTINGS 2 1/2" SIDES, 6" BOTTOM
SLABS-ON-GROUND 2 1/2" FROM EARTH
GRADE BEAMS 3" BOTTOM, 2" TOP & SIDES
- D. WHERE FIELD SPLICES IN THE CONTINUOUS REINFORCING OCCUR, BARS SHALL BE LAPPED AT A DISTANCE OF 30 TIMES THE BAR DIAMETER. WWF LAPS SHALL BE 10 INCHES MINIMUM.
- E. PROVIDE CORNER BARS IN THE OUTSIDE FACE OF EXTERIOR GRADE BEAMS TO MATCH THE HORIZONTAL STEEL FROM THE INTERSECTING INTERIOR AND EXTERIOR BEAMS.
- F. AT ALL RE-ENTRANT CORNERS, PLACE 2 #4 x 5'-0" IN THE SLAB.
- G. EXISTING FILL SHALL BE REPLACED IN ACCORDANCE WITH THE SOILS REPORT.
- H. IF AMBIENT TEMPERATURES WILL REACH ABOVE 60°F, THE ENTIRE SLAB SURFACE SHALL BE ADDITIONALLY CURED BY KEEPING IT WET FOR A MINIMUM OF 72 HOURS, COMMENCING THE MORNING AFTER CONCRETE PLACEMENT.



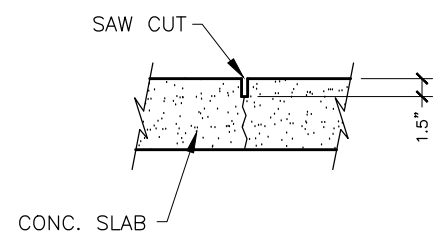
SECTION A
NTS



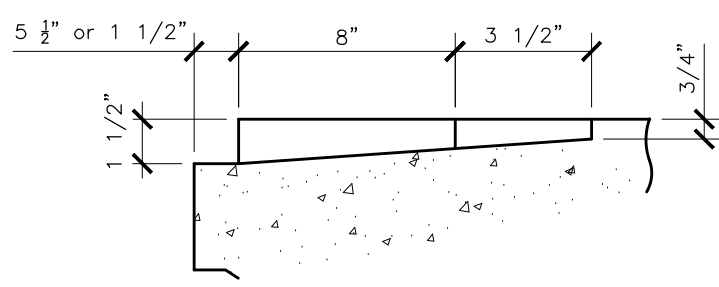
1 FOOT BLOCK DETAIL
N.T.S.



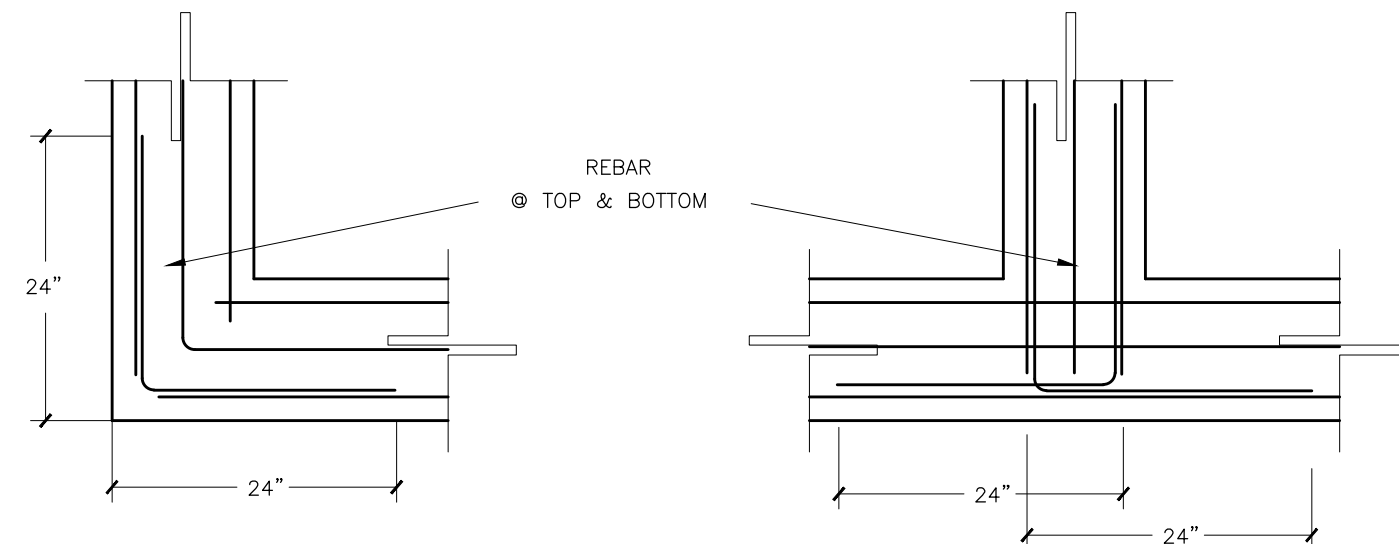
2 FOOT BLOCK DETAIL
N.T.S.



3 CONTROL JOINT DETAIL
NTS



4 GARAGE DOORS SECTION
NTS



TYPICAL BAR PLACING DETAILS

© CORNER & INTERSECTION
N.T.S.

DESIGN LOADS & CODES

ROOF :
DEAD LOAD = 5 PSF
LIVE LOAD = 20 PSF

WINDLOAD :
110 MPH, 3 SEC. GUSTS EXP. "C"

APPLICABLE CODES :
2015 IBC, IN ADDITION TO LOCAL CODE REQ'S.
AISC STEEL CONSTRUCTION MANUAL (15th EDITION)

COMPACTED SELECT FILL NOTE:

THE COMPACTED SELECT FILL SHOULD BE ACCORDING TO SOIL REPORT RECOMMENDATIONS

POSITIVE DRAINAGE GRADE NOTE:

THE FOUNDATION SHOULD HAVE POSITIVE DRAINAGE ACCORDING TO THE SOIL REPORT.

GEOTECHNICAL EVALUATION NOTE:

THIS FOUNDATION IS DESIGN IN ACCORDANCE WITH THE FOLLOWING GEOTECHNICAL INVESTIGATION:
SOIL REPORT No.: RT21-172
BY: RAM TESTING & DRILLING, LLC
DATED: MARCH 4, 2021.

ABC
DESIGN STUDIO

PLANNING · DESIGN · BUILD

5450 NW CENTRAL DR. # 127
HOUSTON, TX 77092
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DESIGN BY:	JLT
SCALE:	3/16"=1'-0"
ABC PROJ. No.	ABC21-43
FLOODPLAIN ZONE:	
FEMA MAP PANEL:	
KEY MAP:	

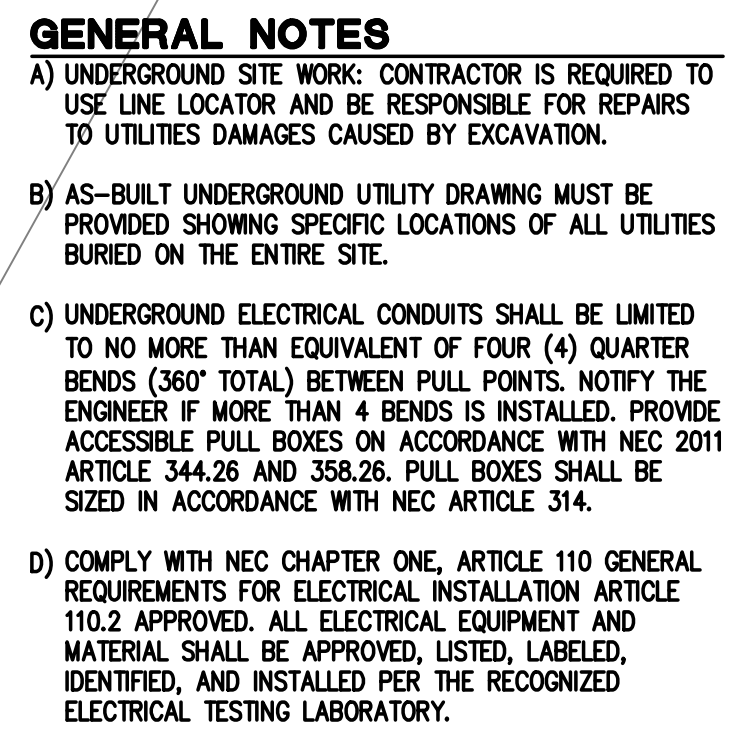
PROPOSED METAL BUILDING AT
LOT 14, HIGH MEADOW INDUSTRIAL LANE
MAGNOLIA, TX 77355

DATE:	AUGUST 2, 2021
OWNER:	
LEGAL DESC:	LOT 14, HIGH MEADOW INDUSTRIAL LANE MAGNOLIA, TX 77355 MONTGOMERY COUNTY, TEXAS

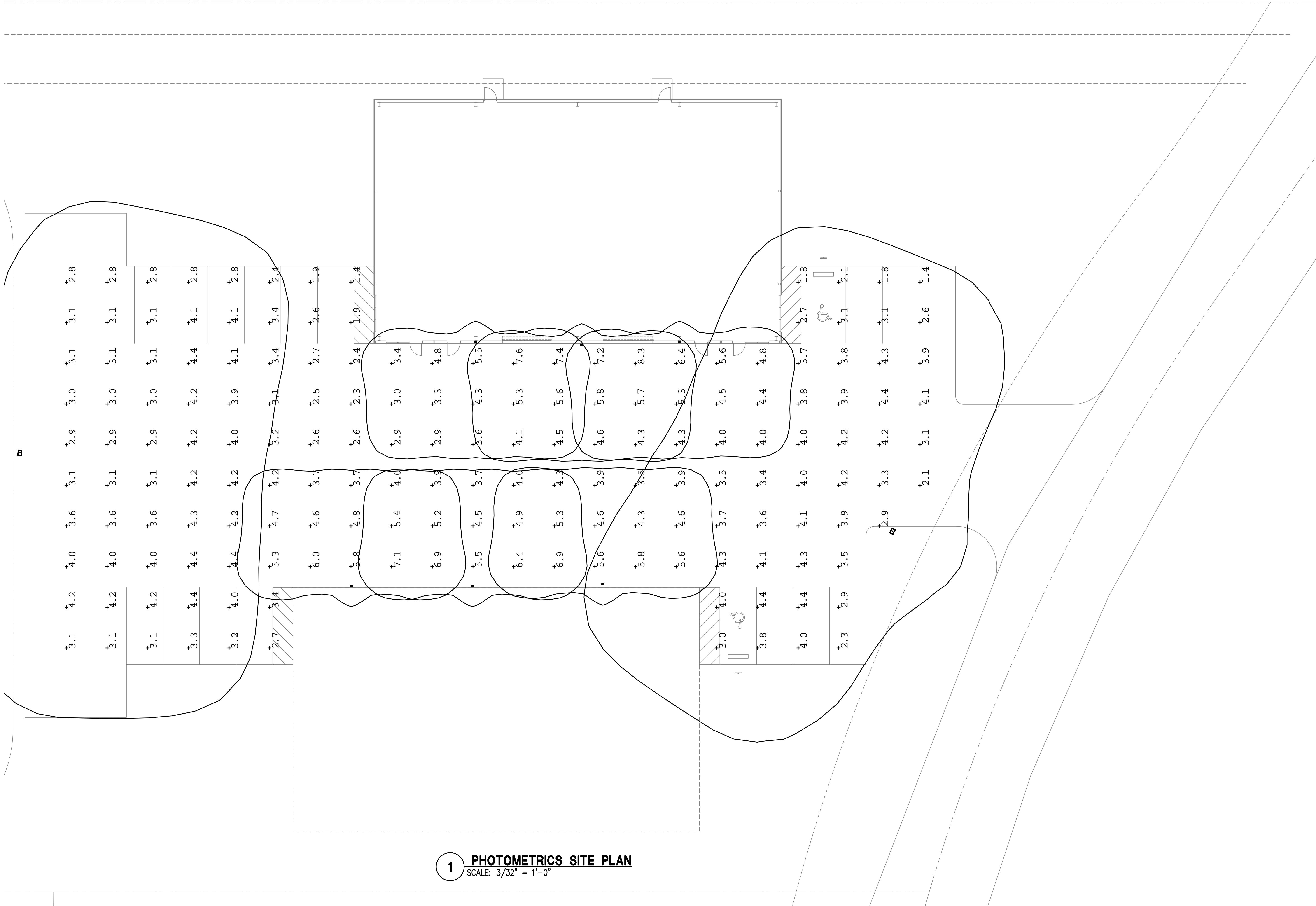
TITLE:
FOUNDATION DETAILS

REVISION:
SHEET:
S-02





- ① APPROXIMATE LOCATION OF POWER POLE & POLE MOUNT TRANSFORMER. COORDINATE WITH CENTERPOINT PRIOR TO INSTALLATION
- ② PROVIDE TWO 4" EMPTY CONDUIT WITH PULL STRING 24" BELOW CONCRETE SURFACE. STUB-UP WITH CAP FLUSH TO CONCRETE OR GRADE.
- ③ PROVIDE WATERPROOF J-BOX WITH NEMA 3R DISCONNECT FOR SIGNAGES. COORDINATE ON SITE WITH ARCHITECT AND OWNER PRIOR TO INSTALLATION
- ④ TC: HOMERUN TO PANEL VIA DIGITAL TIMELOCK, TC: PROVIDE COMMERCIAL GAGE DIGITAL TIMELOCK INTERMATIC E8215CR OR EQUAL, TIMELOCK SHALL HAVE STEEL N.E.A 3R ENCLOSURE, 7-DAY ASTRONOMIC ELECTRONIC TYPE TIME SWITCH TO CONTROL TWO LIGHTING CIRCUITS. MOUNT TIMELOCK NEXT TO SOURCE PANEL. LABEL TIMELOCK FOR PARKING LOT LIGHTING APPROPRIATELY AND INDICATE ASSOCIATED CIRCUITS.
- ⑤ TELEPHONE CABINET. INSTALL CABINET AND CONDUITS PER AT&T REQUIREMENTS.



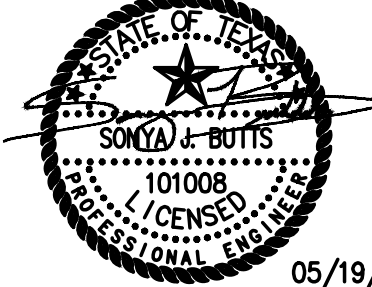
1 **PHOTOMETRICS SITE PLAN**
SCALE: 3/32" = 1'-0"

REV:	DATE:	DESCRIPTION:
	5-12-21	ISSUE FOR PERMIT

www.breakthroughengineeringdesigns.com
832-413-5390 phone
832-200-1559 fax
TEXAS FIRM REGISTRATION #: 11984



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05/19/21

SHEET TITLE:
**PHOTOMETRICS
SITE PLAN**

SHEET NO:
E1.1

GENERAL NOTES

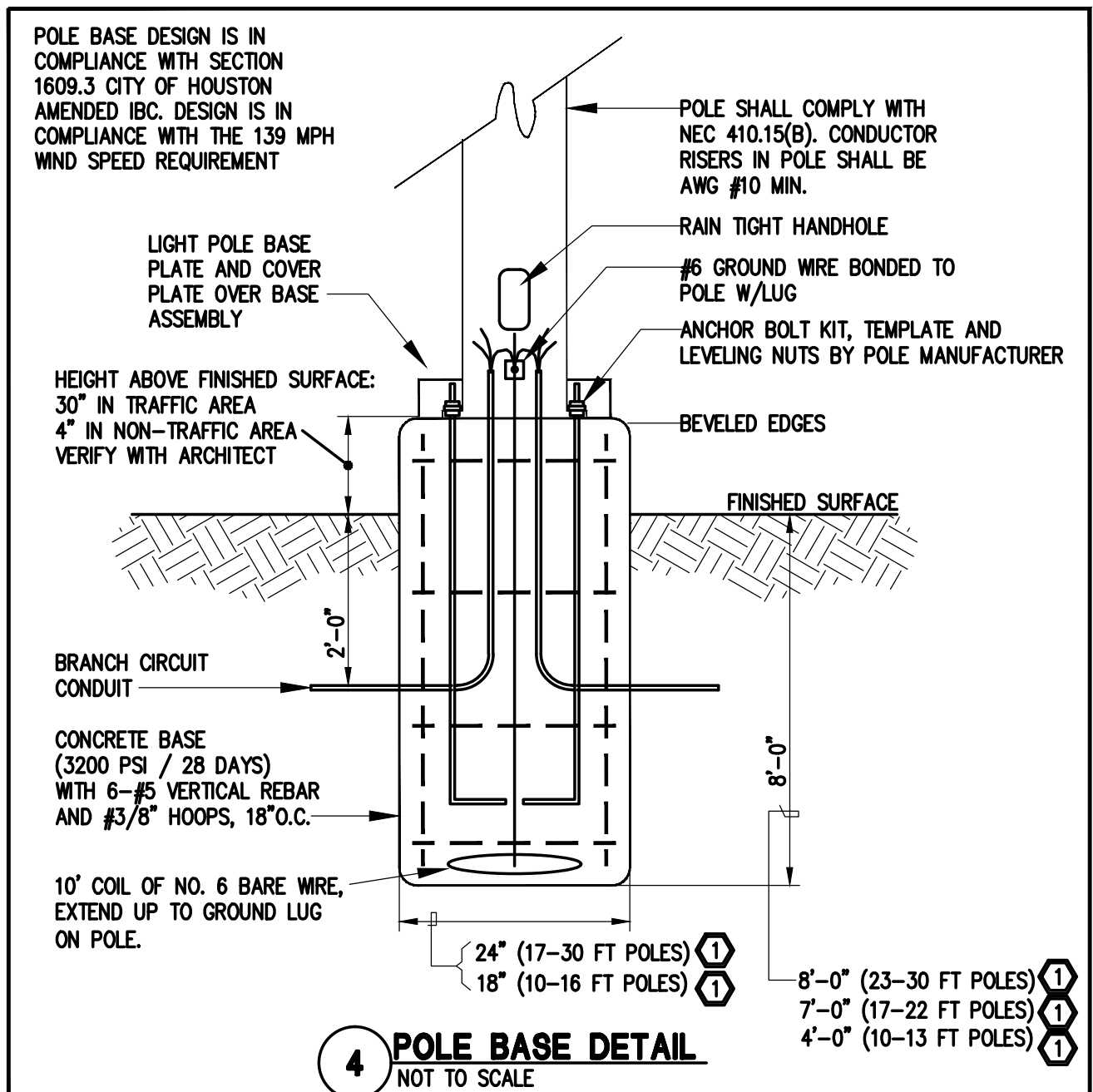
- A) REFER TO ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT LOCATION OF LIGHTING FIXTURES. VERIFY FIXTURE TYPE AND CEILING COMPATIBILITY PRIOR TO ORDERING FIXTURES.
- B) WHERE LIGHT SWITCHES ARE SHOWN ADJACENT TO ONE ANOTHER, THEY SHALL BE GANGED UNDER A COMMON FACEPLATE.
- C) FURNISH AND INSTALL SECURITY CLIPS ON ALL FOUR SIDE OF 2'X4', 2'X2' AND 1'X4' RECESSED FIXTURES. SEE GENERAL LIGHTING NOTE (LIGHTING FIXTURE SCHEDULE).
- D) EXIT LIGHTS CONNECTED TO EMERGENCY GENERATOR POWER: CONNECT ALL EXIT LIGHTS TO UN-SWITCHED POWER, AHEAD OF LIGHT SWITCHES. EXIT LIGHTS ARE SWITCHED AT PANEL ONLY. CONNECT EXIT LIGHTS TO EMERGENCY CIRCUIT SLELS-11.
- E) EMERGENCY EGRESS LIGHTS:
(1) EMERGENCY POWER PROVIDED BY GENERATOR: FLUORESCENT & NON-FLUORESCENT FIXTURES: CONNECT ALL EMERGENCY EGRESS LIGHTS TO UN-SWITCHED GENERATOR POWER UNLESS INDICATED OTHERWISE ON PLANS. FIXTURES SWITCHED AT PANEL ONLY. CONNECT EGRESS LIGHTS TO CIRCUIT HLS-1.
- (a) NON-FLUORESCENT FIXTURE: CONNECT ALL EMERGENCY EGRESS LIGHTS TO UN-SWITCHED NORMAL POWER UNLESS OTHERWISE INDICATED ON PLANS. FIXTURES SWITCHED AT PANEL ONLY.
- (b) FLUORESCENT FIXTURES: UNLESS OTHERWISE INDICATED ON PLANS, CONNECT NORMAL BALLASTS OF FIXTURES TO LIGHT SWITCHES, AND BATTERY BALLAST TO UN-SWITCHED POWER. BATTERY BALLAST IS SWITCHED AT PANEL ONLY. NORMAL SWITCHING OF FIXTURES SHALL NOT AFFECT THE BATTERY BALLAST.
- ALL EMERGENCY EGRESS FIXTURES WITH INTEGRAL BATTERY PACK SHALL BE CONNECTED TO THE SAME BRANCH CIRCUIT AS THAT SERVING THE NORMAL LIGHTING IN THE AREA AND CONNECTED AHEAD OF ALL LOCAL SWITCHES.
- F) DIMMER-CONTROLLED BRANCH CIRCUIT: PROVIDE A DEDICATED FULL SIZE NEUTRAL WIRE. DO NOT SHARE NEUTRAL WIRE BETWEEN TWO OR MORE BRANCH CIRCUITS. THIS REQUIREMENT ALSO APPLY TO DIMMING SYSTEM BRANCH CIRCUITS.

LEGENDS

- ⊕ DUPLEX RECEPTACLE
⊕ QUAD RECEPTACLE
⊕ FLOOR MOUNTED RECEPTACLE
⊕ JUNCTION BOX
⊕ COMBINATION DATA/PHONE OUTLET
⊕ SINGLE POLE SWITCH
⊕ THREE WAY SWITCH
⊕ MOTOR RATED SWITCH
⊕ OCCUPANCY SENSOR SWITCH - SEE OCCUPANCY SENSOR DETAIL

KEYED NOTES

- ① COORDINATE MOUNTING ELEVATION WITH ARCHITECT.
- ② TC: HOMERUN TO PANEL VIA DIGITAL TIMECLOCK, TC. PROVIDE COMMERCIAL GADE DIGITAL TIMECLOCK, INTERMATIC ET8215C OR EQUAL. TIMECLOCK SHALL HAVE STEEL NEMA 3R ENCLOSURE, 7-DAY ASTRONOMIC ELECTRONIC TYPE TIME SWITCH TO CONTROL TWO LIGHTING CIRCUITS. MOUNT TIMECLOCK NEXT TO SOURCE PANEL. LABEL TIMECLOCK FOR CANOPY LIGHTING APPROPRIATELY AND INDICATE ASSOCIATED CIRCUITS.
- ③ TELEPHONE CABINET. INSTALL CABINET AND CONDUITS PER AT&T REQUIREMENTS.
- ④ TC: HOMERUN TO PANEL VIA DIGITAL TIMECLOCK, TC. PROVIDE COMMERCIAL GADE DIGITAL TIMECLOCK, INTERMATIC ET8215C OR EQUAL. TIMECLOCK SHALL HAVE STEEL NEMA 3R ENCLOSURE, 7-DAY ASTRONOMIC ELECTRONIC TYPE TIME SWITCH TO CONTROL TWO LIGHTING CIRCUITS. MOUNT TIMECLOCK NEXT TO SOURCE PANEL. LABEL TIMECLOCK FOR PARKING LOT LIGHTING APPROPRIATELY AND INDICATE ASSOCIATED CIRCUITS.
- ⑤ PROVIDE (1) 2" EMPTY CONDUIT WITH PULL STRING FOR FUTURE POWER SERVICE. ROUTE AT BAR JOIST LEVEL. CONTRACTOR TO COORDINATE TERMINATION OF CONDUIT WITH OWNER PRIOR TO INSTALLATION, AND CAP AND TAG EACH END.
- ⑥ PROVIDE (1) 2" EMPTY CONDUIT WITH PULL STRING FOR FUTURE TELEPHONE SERVICE. ROUTE AT BAR JOIST LEVEL. CONTRACTOR TO COORDINATE TERMINATION OF CONDUIT WITH OWNER PRIOR TO INSTALLATION, AND CAP AND TAG EACH END.
- ⑦ OUTDOOR EMERGENCY LIGHTING IS NOT REQUIRED PER THE 2015 IBC 1006.3(3) AND (5) BECAUSE THE LEASE SPACES DO NOT REQUIRE 2 EXITS, RATHER THEY HAVE 2 EXITS FOR CONVENIENCE. TWO OR MORE EXITS ARE REQUIRED IF (IBC 2015 SECTION 1015.1):
a) OCCUPANCY IS GREATER THAN 49 PEOPLE, OR
b) THE COMMON PATH OF EGRESS TRAVEL EXCEEDS 75 FEET, OR
c) SPECIAL MACHINERY ROOMS ARE IN THE SPACE. EACH LEASE SPACE DOES NOT SATISFY ANY OF THESE CONDITIONS THEREFORE NO OUTSIDE EMERGENCY LIGHTING IS REQUIRED.
- ⑧ FOR IRRIGATION CONTROLLER. FIELD COORDINATE EXACT LOCATION OF IRRIGATION CONTROLLER AND EXTEND POWER AS REQUIRED.



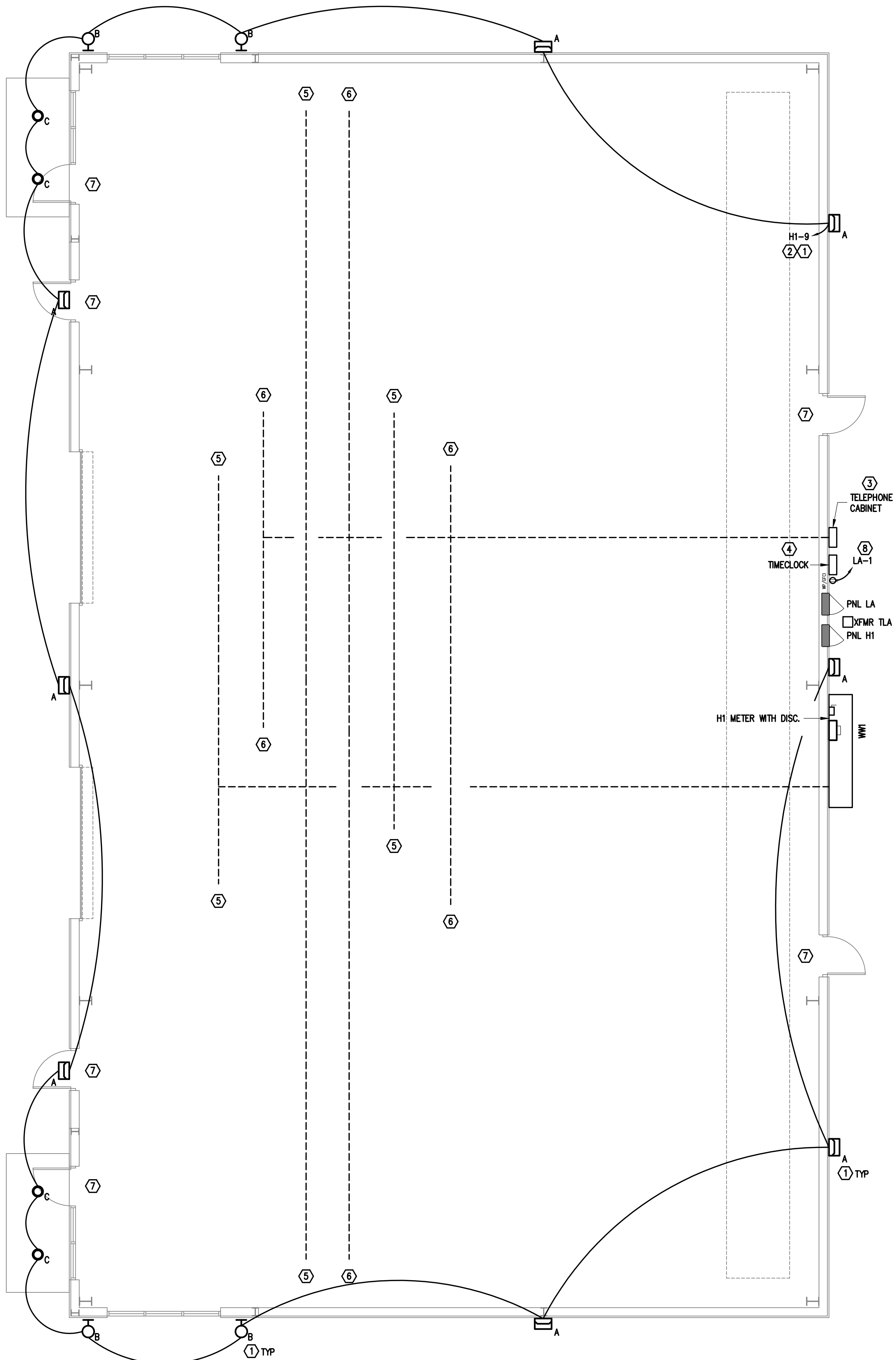
KEYED NOTES ⑦

- ① POLE BASE DIAMETERS AND VERTICAL DEPTHS INTO EARTH SHALL COMPLY WITH POLE MANUFACTURER'S ENGINEERED CALCULATIONS & THE STRUCTURAL ENGINEER CALCULATIONS WHICH TAKE INTO ACCOUNT THE ACTUAL POLE DIAMETER AND THE GEOTECHNICAL CONDITIONS.

LIGHTING FIXTURE SCHEDULE

TYPE	DESCRIPTIONS	MOUNTING	LAMP (QTY, WATT AND TYPE)	VOLTS	REMARKS
A	LED WALL PACK LIGHT	SURFACE	45W LED	277V	1,2
B	6" LED WALL SCONCE LIGHT	SURFACE	23W LED	277V	1,2
C	6" LED RECESSED LIGHT	LAY IN	23W LED	277V	1,2

1. PROVIDE ALL NECESSARY ACCESSORIES AS REQUIRED FOR A COMPLETE AND OPERATING SYSTEM.
2. SELECTION TO BE APPROVED BY ARCHITECT AND OWNER BEFORE PURCHASING.



1 ELECTRICAL PLAN
SCALE: 3/16" = 1'-0"

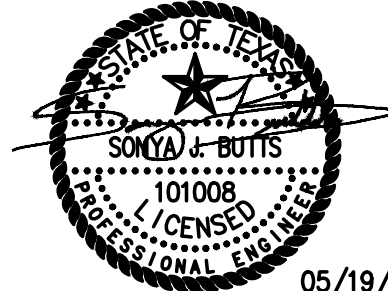
A New Development for
High Meadow Business Park

REV:	DATE:	DESCRIPTION:
	5-12-21	ISSUE FOR PERMIT

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832-200-1559 fax
TEXAS FIRM REGISTRATION #: 11984



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05/19/21

SHEET TITLE:

ELECTRICAL
PLAN

SHEET NO:

E1.2

ELECTRICAL LOAD ANALYSIS
HIGH MEADOW SHELL

SERVICE VOLTAGE: 480Y/277V, 3 PHASE, 4 WIRE
OCCUPANCY: STORES

	CONN. LOAD KVA	DIV. %	CALCULATED LOAD KVA	CALCULATED LOAD AMP	COMMENTS
1 LIGHTS (select larger of (a) or (b))					
(a) CONNECTED LOADS			----		
(b) 6,000 SF x 3 VA/SF	18.0	125%	22.5	27.1	code loads larger than connected loads
2 RECEPTACLES (Qty 1@180VA each=.2kva)		0.2	0.2	0.2	
3 COOLING LOADS - HVAC					
4 HEATING LOADS - HVAC (non-coincident w/cooling)			----		
5 HEATING LOADS - HVAC (coincident w/cooling)					
6 MOTOR					
7 MISC. CONTINUOUS LOADS					
8 KITCHEN LOADS					
9 OUTSIDE LIGHTING		1.0 125%	1.3	1.5	
10 NON-COINCIDENT LOADS			----		
11 TRANSFORMER SPARE CAPACITY		8.8	8.8	10.6	
25% largest motor					
TOTAL LOADS	30.8 kva		53.6 kva	64.4 A	
PROPOSED SERVICE CAPACITY			665 kva	800 A	
**Provide service feeder from Power Co. : 2 runs of 4#600 KCM,4" conduit (RMC) THHN/THWN (Equivalent aluminum feeders acceptable)					
Service Feeder Capacity			698 KVA	840 AMP	
Provide bussed C.T. can, P.T. box & meter per CenterPoint's service standards					
Spare Capacity Available			612 kva	736 A	Percent Spare Capacity Available = 92%
Grounding Electrode Conductor (NEC article 250.66)	#3/0				
** Provide ground wire where required by local Pwr Co					

Short Circuit Point-to-Point Calculations

HIGH MEADOW SHELL

EQPT	DIST. FROM UPSTREAM EQPT (FT)	CALCULATED SHORT CKT CURRENT (AMPS)	EQPT A.I.C. RATINGS (AMPS)
WW1	225	3,436	14,000
HA	5	3,406	14,000
LA	5	901	10,000

NOTE 1: DO NOT USE 'DIST. FROM UPSTREAM EQPT (FT)' FOR MATERIAL TAKE-OFF.
DISTANCES MAY VARY DEPENDING ON ACTUAL FIELD CONDITIONS.

480Y/277V 3Ph 4W,full size neutral, w/copper ground

HIGH MEADOW SHELL

WIREWAY "WW1"

NORMAL POWER PANEL

12" x 12" x length as req'd.

2 runs of 4#600 KCM,4" conduit (RMC) THHN/THWN
Feeder Ampacity = 840A

Circuit Breaker (CB)

Fused Switch (FS)

Status NEW
Enclosure (NEMA) 1
A.I.C. (KA) 14 KA
Mounting Wall

Upstream Feeder Breaker Protecting "WW1" - 800Amp

CKT.	LOAD DESCRIPTIONS	Load Type	CONN. KVA	CONN. AMP	Cont. Loads	O.C. Type	FUSED SWITCH SWITCH AMP	POLES	Phase	PHASE WIRES, NEUTRAL & GRD & CONDUIT SIZE	FEEDER AMPACITY
1	Panel "HA"	---	31.1	37.4	--	FS	100	100	3P	A B C 1 run 4#3, 1 #8 G, 1 1/2"C.	100 Amp
2					--	FS	--		A B C		
3					--	FS	--		A B C		
4					--	FS	--		A B C		
5					--	FS	--		A B C		
6					--	FS	--		A B C		
7					--	FS	--		A B C		

WIREWAY "WW1" LOAD ANALYSIS

LOAD DESCRIPTION	Load Type	DMND FCTR	LOAD (KVA) CONNECTED	LOAD (KVA) CALCULATED	NEC CALCULATION REFERENCE
OUTSIDE LIGHTING	OL	1.25	1.0	1.3	
TRANSFORMER LOADS	X	1	9.0	9.0	
TOTAL LOAD (KVA)			30.8 KVA	31.1 KVA	
TOTAL LOAD (AMP AVG)			37.1 AMP	37.4 AMP	PhA=38A, PhB=38A, PhC=36A, Neut=2A

Service / Feeder Schedule

HIGH MEADOW SHELL

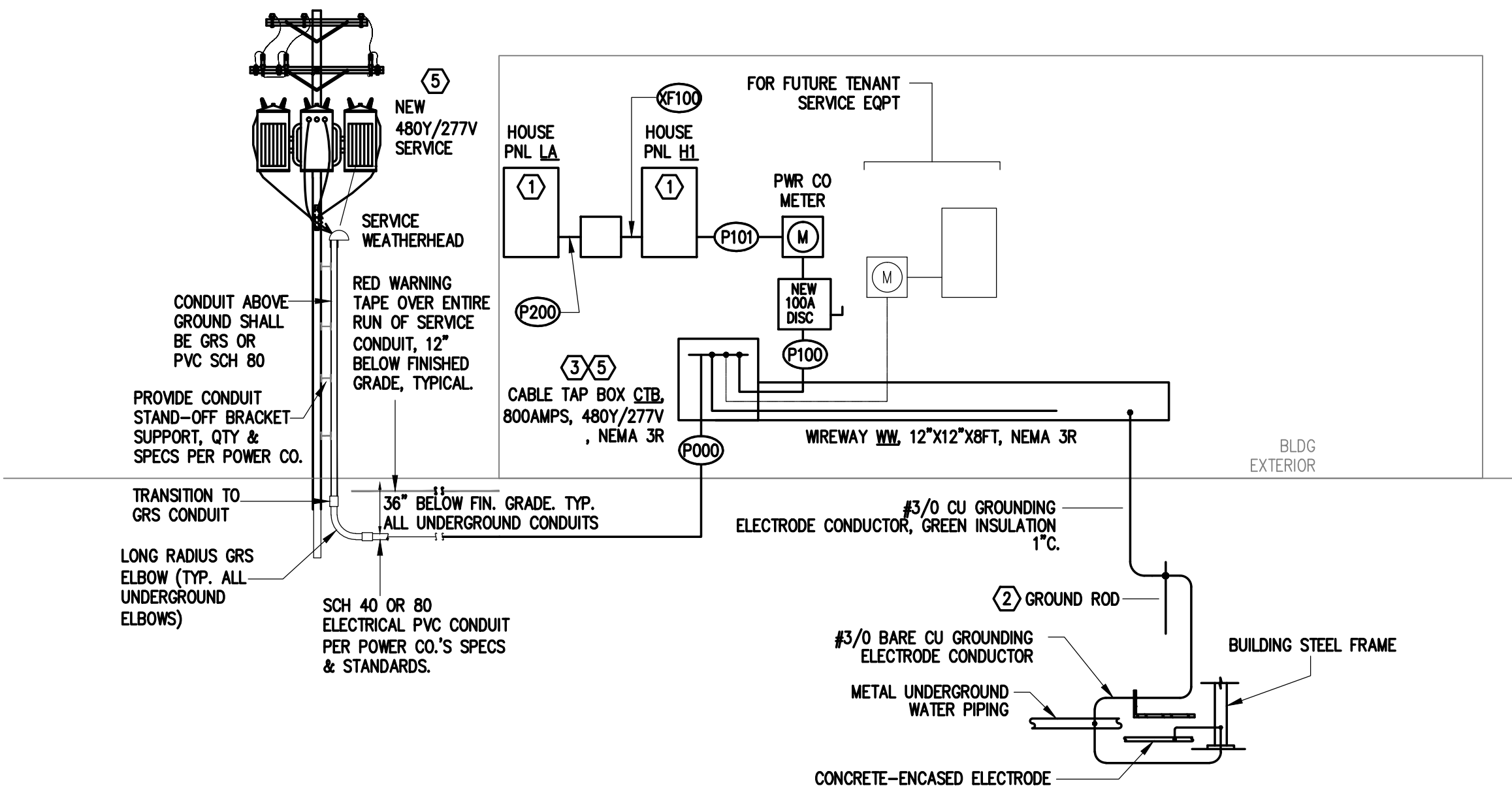
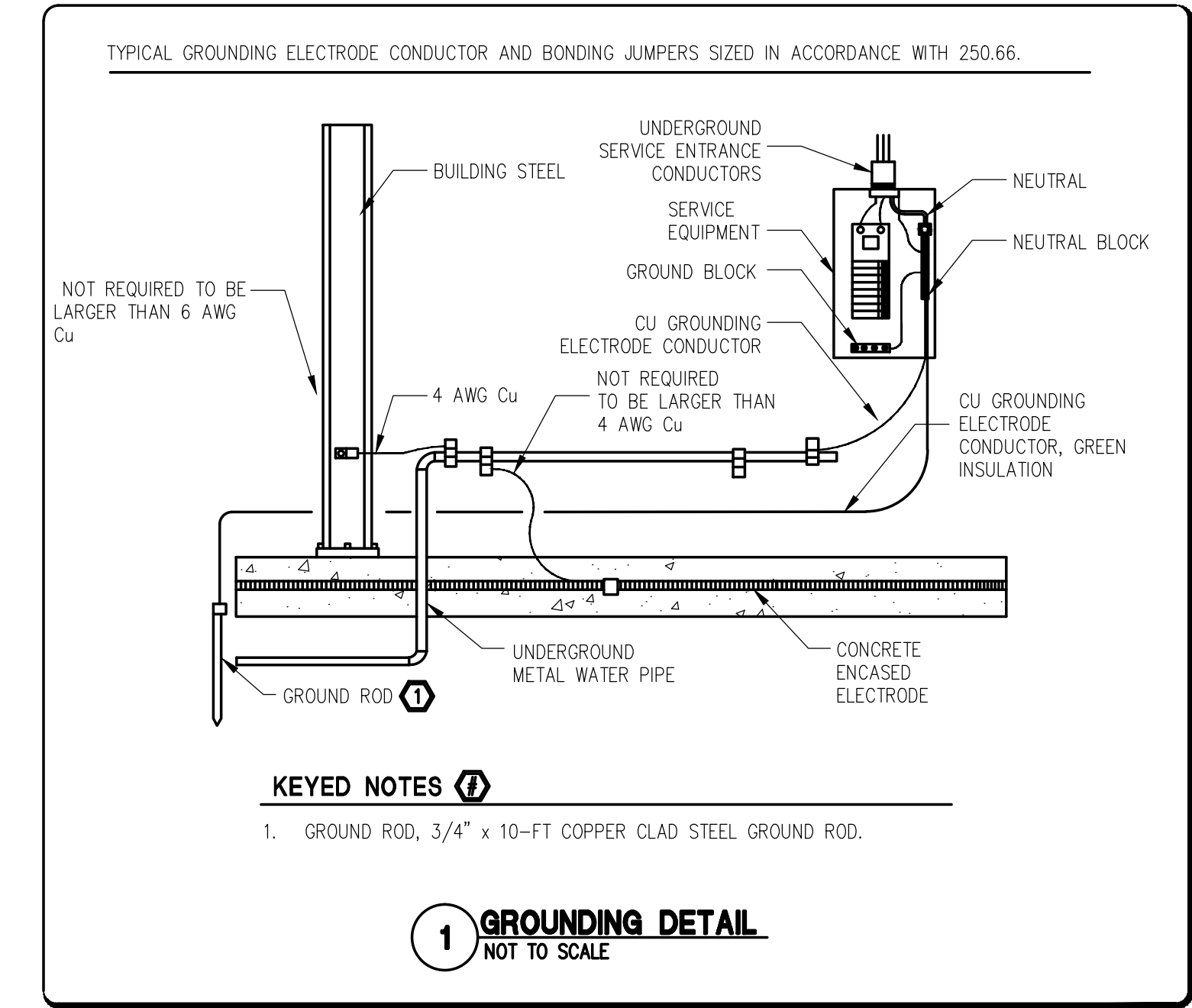
TAG	EQPT	MAIN BUS (AMPS)	MCB (AMPS)	MLO (AMPS)	Feeder	Feeder Ampacity
P000	WW1	800	--	--	2 runs of 4#600 KCM, 1 #1/0 G, 4"conduit	840A
P100	HA	100	100	--	1 run of 4#3, 1 #8 G, 1 1/2"C.	100A
P200	LA	60	30	--	1 run of 4#10, 1 #8 G, 1"C.	35A
XF100	TLA	9			3#12,1#8G,3/4"C	

General Notes:

- All wires shall have type "THHN/THWN" insulation typical unless noted otherwise.
- May provide parallel feeder runs with equivalent ampacity in lieu of single run
- All indoor conduits shall be EMT or RMC (exposed to damage) typical unless noted otherwise. All outdoor conduits shall be RMC typical UN.O.
- All underground conduits shall be PVC Sch 40 or 80 typical unless noted otherwise.
- RMC (Rigid Metal Conduit) where installed below grade shall have 40-mil thick external PVC coating for corrosion protection

KEYED NOTES

- CONTRACTOR SHALL PERFORM SHORT CIRCUIT & ARC FLASH HAZARDS CALCULATIONS AND PROVIDE PERMANENTLY AFFIXED LABEL ON SERVICE EQUIPMENT AT TIME OF INSTALLATION, INDICATING THE AVAILABLE FAULT CURRENT AND THE DATE OF CALCULATION. LABEL SHALL BE 2" X 3" IN SIZE AND BLUE LETTERING ON CONTRASTING BACKGROUND. THIS LABEL SHALL ALSO INCLUDE THE DATE OF CALCULATION. IN ADDITION TO THE ABOVE LABEL, PROVIDE A SIMILAR LABEL TO WARN PERSONS OF POTENTIAL ELECTRIC ARC FLASH HAZARDS, IN COMPLIANCE WITH NEC 110.16.
- 3/4" x 10-FT COPPER CLAD STEEL GROUND ROD
- CABLE TAP BOX (CTB) SHALL BE
- FABRICATED FROM 12 GA. MILD STEEL
- CTB TO BE POWDER COATED #61 LT GRAY
- CTB COVER TO HAVE TWO LIFTING HANDLES AND PAD LOCKING PROVISIONS
- BUS SUPPORTS TO BE FORMED FROM 1/4"x2" FLAT BAR WITH 600V, 1-3/8" INSULATED STANDOFFS.
- CONTRACTOR TO MAKE FINAL LINE/NEUTRAL TAPS IN THE TAP BOX
- CTB SHALL BE LOCKABLE AND CAN ACCEPT A UTILITY COMPANY LOCK.
- COVERS SHALL BE FASTENED WITH SCREWS OR BOLTS. HINGED COVERS ARE NOT PERMITTED.
- CTB SHALL HAVE MECHANICAL STRENGTH AND MOMENTARY RATING TO WITHSTAND SHORT CIRCUIT CURRENT GIVEN.
- PROVIDE BUS BARS WITH 2 ROWS OF 1/2" HOLE NEMA SPACED FOR CABLE TERMINATION.
- REFER TO WIREWAY "WW" SCHEDULE FOR RATING.
- CONTRACTOR SHALL CONTACT CENTERPOINT AND COORDINATE SERVICE REQUIREMENTS. PROVIDE ALL ACCESSORIES PER CNP'S REQUIREMENTS.



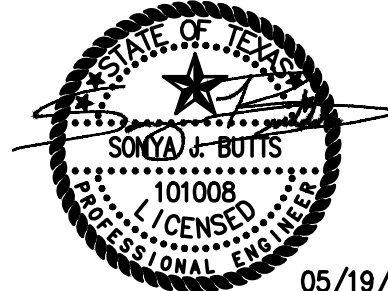
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05/19/21

SHEET TITLE:

ELECTRICAL
SCHEDULES

SHEET NO:

E2.0

480Y/277V 3Ph 4W,full size neutral,w/copper ground bus														(Fed from WW1)															
<div><div>PANEL "HA"</div><div>Copper Bus Rating 100 AMP</div><div>Mains Rating (M.C.B.) 100 AMP</div><div>1 run of 4#3, 1 #8 G, 1 1/2"C.</div><div>Feeder Ampacity = 100A</div></div>														NORMAL POWER PANEL															
														<div><div>X</div><div>MCB</div><div>New</div><div>Panel</div><div>MLO</div><div>Isolated Ground Bus</div><div>Thru-Feed Lugs</div><div>Location</div><div>Shunt-Trip MCB</div><div>Surface</div><div>Mounting</div><div>14 KA</div><div>A.I.C.</div><div>1</div><div>Enclosure (NEMA)</div></div>															
LOAD DESCRIPTION	TYPE	LOAD KVA	LOAD AMP	WIRE/CONDUIT SIZE (Note 1)	TRIP/POLE (Note 2)	CKT #	PH	CKT #	TRIP/POLE (Note 2)	WIRE/CONDUIT SIZE (Note 1)	LOAD AMP	LOAD KVA	TYPE	LOAD DESCRIPTION															
SITE LIGHTING	OL	0.48	1.73	2#12,1#12G,1/2"C	20 /1	1	A	2	/1																				
SIGNAGE	MIS	6.93	25.00	4#10,1#10G,1/2"C (Note 3)	30 /3	3	B	4	/1																				
*** 25 FLA 20.8 KVA	MIS	6.93	25.00	#10 = 35Amp		5	C	6	/1																				
*** Disc30A/3P/600V/NF/N3R	MIS	6.93	25.00			7	A	8	/1																				
FAÇADE LIGHTING	OL	0.54	1.96	2#12,1#12G,1/2"C	20 /1	9	B	10	/1																				
					/1	11	C	12	/1																				
					/1	13	A	14	/1																				
					/1	15	B	16	/1																				
					/1	17	C	18	/1																				
					/1	19	A	20	/1																				
					/1	21	B	22	/1																				
					/1	23	C	24	/1																				
					/1	25	A	26	/1																				
					/1	27	B	28	/1																				
					/1	29	C	30	/1																				
					/1	31	A	32	/1																				
					/1	33	B	34	/1																				
					/1	35	C	36	/1																				
					/1	37	A	38	20 /3	3#12,1#8G,3/4"C	10.83	3.00	X	XFMR TLA															
					/1	39	B	40			10.83	3.00	X	*** 9KVA XFMR 10.8 FLA															
					/1	41	C	42			10.83	3.00	X	*** Primary Disc 30A/3P/600V/NF/N3R															
PANEL "HA" LOAD ANALYSIS																													
LOAD DESCRIPTION	TYPE	DEMAND FACTOR	LOAD (KVA)		NEC CALCULATION																								
			CONNECTED	CALCULATED	REFERENCE																								
MISC. NON-CONTINUOUS LOADS	MIS	1		20.8	20.8																								
OUTSIDE LIGHTING	OL	1.25		1.0	1.3																								
TRANSFORMER LOADS	X	1		9.0	9.0																								
TOTAL LOAD (KVA)				30.8 KVA	31.1 KVA																								
TOTAL LOAD (AMP AVG)				37.1 AMP	37.4 AMP	Calc'd Amps: Ph A=38.0Amp Ph B=38.3Amp Ph C=35.8Amp Neut= 1.1 Amp																							

208Y/120V 3Ph 4W,full size neutral,w/copper ground bus														(Fed from HA) (Fed thru 9KVA Transformer, 24.9FLA secondary)															
<div><div>PANEL "LA"</div><div>Copper Bus Rating 60 AMP</div><div>Mains Rating (M.C.B.) 30 AMP</div><div>1 run of 4#10, 1 #8 G, 1"C.</div><div>Feeder Ampacity = 35A</div></div>														NORMAL POWER PANEL															
														<div><div>X</div><div>MCB</div><div>New</div><div>Panel</div><div>MLO</div><div>Isolated Ground Bus</div><div>Thru-Feed Lugs</div><div>Location</div><div>Shunt-Trip MCB</div><div>Surface</div><div>Mounting</div><div>10 KA</div><div>A.I.C.</div><div>1</div><div>Enclosure (NEMA)</div></div>															
LOAD DESCRIPTION	TYPE	LOAD KVA	LOAD AMP	WIRE/CONDUIT SIZE (Note 1)	TRIP/POLE (Note 2)	CKT #	PH #	CKT # (Note 2)	WIRE/CONDUIT SIZE (Note 1)	LOAD AMP	LOAD KVA	TYPE	LOAD DESCRIPTION																
1 D.R. IRRIGATION	R	0.18	1.50	2#12,1#12G,1/2"C	20 /1	1	A	2 /1																					
SPARE					20 /1	3	B	4 /1																					
SPARE					20 /1	5	C	6 /1																					
					/1	7	A	8 /1																					
					/1	9	B	10 /1																					
					/1	11	C	12 /1																					
					/1	13	A	14 /1																					
					/1	15	B	16 /1																					
					/1	17	C	18 /1																					
					/1	19	A	20 /1																					
					/1	21	B	22 /1																					
					/1	23	C	24 /1																					
					/1	25	A	26 /1																					
					/1	27	B	28 /1																					
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					/1	31	A	32 /1																					
					/1	33	B	34 /1																					
					/1	35	C	36 /1																					
					/1	37	A	38 /1																					
					/1	39	B	40 /1																					
					/1	41	C	42 /1																					
PANEL "LA" LOAD ANALYSIS																													
LOAD DESCRIPTION	TYPE	DEMAND FACTOR	LOAD (KVA)		NEC CALCULATION REFERENCE																								
			CONNECTED	CALCULATED																									
RECEPTACLES	R	1	0.2	0.2																									
TOTAL LOAD (KVA)			.2 KVA	.2 KVA																									
TOTAL LOAD (AMP AVG)			.5 AMP	.5 AMP	Calc'd Amps: Ph A=1.5amp Neutr= 0 Amp																								

COORDINATION

EACH CONTRACTOR SHALL COORDINATE ITS CONSTRUCTION OPERATIONS WITH THOSE OF OTHER CONTRACTORS AND ENTITIES TO ENSURE EFFICIENT AND ORDERLY INSTALLATION OF EACH PART OF THE WORK. EACH CONTRACTOR SHALL COORDINATE ITS OPERATIONS WITH OPERATIONS, INCLUDED IN DIFFERENT SECTIONS, THAT DEPEND ON EACH OTHER FOR PROPER INSTALLATION, CONNECTION, AND OPERATION.

1. SCHEDULE CONSTRUCTION OPERATIONS IN SEQUENCE REQUIRED TO OBTAIN THE BEST RESULTS BEFORE INSTALLATION OF ONE PART OF THE WORK DEPENDS ON INSTALLATION OF OTHER COMPONENTS, BEFORE OR AFTER ITS OWN INSTALLATION.
2. COORDINATE INSTALLATION OF DIFFERENT COMPONENTS WITH OTHER CONTRACTORS TO ENSURE MAXIMUM PERFORMANCE AND MINIMIZATION OF REQUIRED MAINTENANCE, SERVICE, AND REPAIR.
3. MAKE ADEQUATE PROVISIONS TO ACCOMMODATE ITEMS SCHEDULED FOR LATER INSTALLATION.
4. VISIT THE SITE PRIOR TO SUBMITTING A BID TO VERIFY THE EXISTING CONDITIONS AND DESIGN CONSTRAINTS. FAILURE TO MEET THIS REQUIREMENT SHALL NOT BE JUSTIFICATION FOR FAULTY INSTALLATION OR ADDITIONAL COSTS.
5. SECURE ALL PERMITS AND INSPECTIONS REQUIRED FOR WORK, AND PAY ALL FEES FOR REQUIRED WORK.
6. COMPLY WITH ALL CURRENT LAWS, BUILDING CODES AND REGULATIONS FEDERAL, STATE AND LOCAL AUTHORITIES HAVING JURISDICTION. IN THE EVENT OF CONFLICT BETWEEN THE CONTRACT DOCUMENTS AND THE LOCAL AUTHORITY HAVING JURISDICTION, THE LATTER SHALL RULE. ANY CHANGES RESULTING SHALL BE MADE WITHOUT ADDITIONAL COST TO THE OWNER OR ARCHITECT/ENGINEER. THE CONTRACTOR SHALL REPORT ANY SUCH MODIFICATIONS TO THE ARCHITECT/ENGINEER AND SECURE HIS APPROVAL BEFORE PROCEEDING. SHOULD THE REQUIREMENTS OF THE CONTRACT DOCUMENTS EXCEED THE REQUIREMENTS OF THE CODES, THE CONTRACT DOCUMENTS SHALL GOVERN, PROVIDED THOSE REQUIREMENTS ARE NOT IN CONFLICT WITH THOSE CODES. ALL ITEMS OF EQUIPMENT AND ALL MATERIALS FOR WHICH APPROVAL STANDARDS HAVE BEEN ESTABLISHED BY UNDERWRITERS' LABORATORIES, INC. (UL), FACTORY MUTUAL (FM), AMERICAN STANDARD CODES, ASME, AGA, AMCA, ASA, ANSI, ASHRAE, AND ARI SHALL BE SO APPROVED AND SHALL BEAR APPROVAL LABELS.
7. PENETRATIONS OF WALLS AND FLOORS OF FIRE-RATED ASSEMBLIES SHALL COMPLY WITH ASTM, U.L., AND THE AUTHORITIES HAVING JURISDICTION.
8. IF THE DRAWINGS AND SPECIFICATIONS ARE IN CONFLICT THE GREATER AMOUNT OF WORK SHALL BE PRICED. BRING THE CONFLICT TO THE ATTENTION OF THE ENGINEER AND REQUEST DIRECTION.
9. DRAWINGS ARE DIAGRAMMATIC AND ARE NOT INTENDED TO SHOW ALL FITTINGS, COMPONENTS AND OFFSETS, ETC. THE CONTRACTOR SHALL PROVIDE ALL FITTINGS, COMPONENTS, OFFSETS OR OTHER FEATURES REQUIRED FOR THE FULL OPERATIONAL CONDITION OF THIS PROJECT.
10. CONFIRM DIMENSIONS AND LOCATIONS IN THE FIELD. DRAWINGS ARE NOT TO BE SCALED AND ARE NOT INTENDED TO SHOW EXACT LOCATIONS BASED ON SCALING DIMENSIONS.
11. GUARANTEE LABOR AND MATERIALS OF ENTIRE INSTALLATION FOR ONE YEAR. WORK BELOW FLOOR OR OVER CORRIDORS SHALL BE PERFORMED AT THE OWNER'S CONVENIENCE. THE CONTRACTOR SHALL BE REQUIRED TO DO ONE DURING EVENINGS AND WEEKENDS. DEMOLITION DAMAGE TO EXISTING MATERIALS/EQUIPMENT WILL BE REPAIRED AT NO ADDITIONAL COST TO OWNER. RE-SUPPORT ANY REMAINING PIPING OR DEVICES THAT WERE SUPPORTED BY WALLS BEING REMOVED.

ACOUSTIC TREATMENT

- A. IT IS THE INTENT OF THESE DRAWINGS TO SPECIFY AND FOR THE CONTRACTOR TO INSTALL SYSTEMS THAT ARE QUIET AND FREE OF VIBRATION. EQUIPMENT SHALL BE BALANCED AND VIBRATION ISOLATED TO MEET THE REQUIREMENTS SPECIFIED HEREIN FOR BOTH THE EQUIPMENT ITSELF AND CONDITIONS WITHIN OCCUPIED SPACES. THIS CONTRACTOR IS RESPONSIBLE FOR OBTAINING AND INSTALLING EQUIPMENT THAT IS QUIET IN OPERATION AS COMPARED TO OTHER AVAILABLE EQUIPMENT OF ITS SIZE, CAPACITY, AND TYPE.
- B. EQUIPMENT NOT MEETING THESE REQUIREMENTS SHALL BE CORRECTED BY THE CONTRACTOR TO AN ACCEPTABLE LEVEL BUT WITHIN THE REQUIREMENTS OF THE SPECIFICATIONS AT NO COST TO THE OWNER, ARCHITECT OR ENGINEER.
- C. AIR DISTRIBUTION EQUIPMENT SHALL BE SOUND TESTED AT THE DESIGN OPERATING CONDITIONS AND SHALL NOT EXCEED A MAXIMUM DISCHARGE NC RATING OF 25 OR A RADIATED NC RATING OF 30 AT RATED CFM.
- D. UNLESS NOTED OTHERWISE HEREIN OR ON THE DRAWINGS, THE NOISE LEVEL IN ALL OCCUPIED SPACES SHALL NOT EXCEED THE "LOWEST VALUE IN THE RANGE" OF THE NOISE CRITERIA CURVES PUBLISHED IN THE CURRENT FUNDAMENTALS EDITION OF THE ASHRAE GUIDE AND DATA BOOK. THE NOISE CRITERIA CURVES ARE BASED UPON THE ANSI STANDARD S1.1-1987 OCTAVE BANDS AND A SOUND PRESSURE LEVEL IN DECIBELS REFERENCED TO 0.002 MICROBARS. SOUND LEVELS IN OCCUPIED SPACES MUST MEET THE DESIGN CRITERIA WITH ALL CONSTRUCTION IN PLACE.
- E. SHOULD A QUESTION ARISE REGARDING THE ACCEPTABLE LEVEL OF NOISE OR VIBRATION IN PARTICULAR SPACE OR PIECE OF EQUIPMENT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING THE SERVICES OF AN APPROVED ACoustICAL CONSULTANT TO DETERMINE ACTUAL NOISE/VIBRATION CONDITIONS.

SUBMITTAL ADMINISTRATIVE REQUIREMENTS

- A. ELECTRONIC COPIES OF CAD DRAWINGS OF THE CONTRACT DRAWINGS WILL NOT BE PROVIDED BY THE ENGINEER FOR CONTRACTOR'S USE IN PREPARING SUBMITTALS OR AS-BUILT DRAWINGS.
- B. COORDINATE PREPARATION AND PROCESSING OF SUBMITTALS WITH PERFORMANCE OF CONSTRUCTION ACTIVITIES. COORDINATE EACH SUBMITTAL WITH FABRICATION, PURCHASING, TESTING, DELIVERY, OTHER SUBMITTALS, AND RELATED ACTIVITIES THAT REQUIRE SEQUENTIAL ACTIVITY. SUBMIT ALL ITEMS REQUIRED FOR EACH SPECIFICATION SECTION CONCURRENTLY.
- C. ALLOW TIME FOR SUBMITTAL REVIEW, INCLUDING TIME FOR RESUBMITTALS, AS FOLLOWS: TIME FOR REVIEW SHALL COMMENCE ON ENGINEER'S RECEIPT OF SUBMITTAL. NO EXTENSION OF THE CONTRACT TIME WILL BE AUTHORIZED BECAUSE OF FAILURE TO TRANSMIT SUBMITTALS ENOUGH IN ADVANCE OF THE WORK TO PERMIT PROCESSING, INCLUDING RESUBMITTALS.
1. INITIAL REVIEW: ALLOW 7 DAYS FOR INITIAL REVIEW OF EACH SUBMITTAL EXCLUSIVE OF TRAVEL TIME. ALLOW ADDITIONAL TIME IF COORDINATION WITH SUBSEQUENT SUBMITTALS IS REQUIRED.
2. RESUBMITTAL REVIEW: ALLOW 7 DAYS FOR REVIEW OF EACH RESUBMITTAL EXCLUSIVE OF TRAVEL TIME.
- D. PLACE A PERMANENT LABEL OR TITLE BLOCK ON EACH PAPER COPY SUBMITTAL ITEM FOR IDENTIFICATION. INDICATE NAME OF FIRM OR ENTITY THAT PREPARED EACH SUBMITTAL ON LABEL OR TITLE BLOCK.
- E. INCLUDE THE FOLLOWING INFORMATION FOR PROCESSING AND RECORDING ACTION TAKEN:
1. PROJECT NAME.
 2. DATE.
 3. NAME OF ARCHITECT.
 4. NAME OF ENGINEER.
 5. NAME OF CONTRACTOR.
 6. NAME OF SUBCONTRACTOR.
 7. NAME OF SUPPLIER.
 8. NAME OF MANUFACTURER.

REVIEW EACH SUBMITTAL AND CHECK FOR COORDINATION WITH OTHER WORK OF THE CONTRACT AND FOR COMPLIANCE WITH THE CONTRACT DOCUMENTS. NOTE ANY DISCREPANCIES. MARK WITH APPROVAL STAMP BEFORE SUBMITTING TO ARCHITECT/ENGINEER. STAMP EACH SUBMITTAL WITH A UNIFORM, APPROVAL STAMP. PROVIDE A UNIFORM, APPROVAL STAMP FOR EACH SUBMITTAL. APPROVE AND CHECKED FOR COMPLIANCE WITH THE CONTRACT DOCUMENTS AND THE PHYSICAL SPACE LIMITATIONS AT THE SITE. PROVIDE A STATEMENT CERTIFYING THAT SUBMITTAL HAS BEEN REVIEWED, CHECKED, AND APPROVED FOR COMPLIANCE WITH THE CONTRACT DOCUMENTS AND THE PHYSICAL SPACE LIMITATIONS AT THE SITE.

IF THE GENERAL CONTRACTOR IS DEFERRING THE ABOVE REQUIREMENTS TO THE SUBCONTRACTOR, THEN THE SUBCONTRACTOR MUST ALSO REVIEW, STAMP AND CERTIFY THE SUBMITTAL.

9. ENGINEER'S ACTION:
ENGINEER WILL NOT REVIEW SUBMITTALS THAT DO NOT BEAR CONTRACTOR'S
APPROVAL STAMP AND WILL RETURN THEM.
ENGINEER WILL REVIEW EACH SUBMITTAL, NOTE CORRECTIONS OR MODIFICATIONS
REQUIRED, AND RETURN IT. ENGINEER WILL PROVIDE SUBMITTAL WITH AN ACTION
SHEET TO INDICATE ACTION.

REQUESTS FOR INFORMATION (RFI)

IMMEDIATELY ON DISCOVERY OF THE NEED FOR ADDITIONAL INFORMATION OR INTERPRETATION OF THE CONTRACT DOCUMENTS, CONTRACTOR SHALL PREPARE AND SUBMIT AN RFI IN THE FORM SPECIFIED.

1. ENGINEER WILL RETURN RFIS SUBMITTED TO ENGINEER BY OTHER ENTITIES CONTROLLED BY CONTRACTOR WITH NO RESPONSE.
 2. COORDINATE AND SUBMIT RFIS IN A PROMPT MANNER SO AS TO AVOID DELAYS IN CONTRACTOR'S WORK OR WORK OF SUBCONTRACTORS.
 3. INCLUDE A PROPOSED SOLUTION AS WELL AS INCLUDE A DETAILED, LEGIBLE DESCRIPTION OF ITEM NEEDING INFORMATION OR INTERPRETATION. INCLUDE SKETCHES, DESCRIPTIONS, MEASUREMENTS, PHOTOS, PRODUCT DATA, SHOP DRAWINGS, COORDINATION DRAWINGS, AND OTHER INFORMATION NECESSARY TO FULLY DESCRIBE ITEMS NEEDING INTERPRETATION.
- RECORD DRAWINGS**
- A. WITHIN 90 DAYS OF COMPLETION OF THE PROJECT, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER, A COMPLETE SET OF "AS BUILT" DRAWINGS PORTRAYING ACTUAL SITE CONDITIONS OF THE MECHANICAL, ELECTRICAL, PLUMBING AND FIRE PROTECTION WORK. SUBMISSION SHALL INCLUDE ONE SET OF PAPER SEPIAS AND ONE SET OF CAD FILES IN AUTOCAD 2007 FORMAT. ENGINEER AND ARCHITECT SEALS AND LOGOS SHALL BE REMOVED FROM THE DRAWINGS AND THEY SHALL BE STAMPED "AS-BUILT DRAWINGS".
 - B. WITHIN 90 DAYS OF COMPLETION OF THE PROJECT, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER, A COMPLETE SET OF "O&M MANUALS", EQUIPMENT MAINTENANCE AND REPLACEMENT SCHEDULES, PARTS LIST, AND LIGHTING CONTROL TESTING REPORT FOR COMPLIANCE WITH CURRENT ENERGY CODE. THE CONTRACTOR SHALL PROVIDE A WRITTEN CERTIFICATION THAT ALL NEW MATERIALS AND COMPONENTS DO NOT CONTAIN ASBESTOS OR PCBs.

REQUIRED SUBMITTALS

- A. PROVIDE FOUR BOUND PRODUCT DATA SUBMITTALS FOR THE NEW EQUIPMENT LISTED BELOW TO THE ARCHITECT/ENGINEER. EACH CONTRACTOR RESPONSIBLE FOR THE WORK SHALL REVIEW AND CERTIFY THE SUBMITTAL DATA TO BE IN FULL COMPLIANCE WITH THE CONTRACT DOCUMENTS AND THE PHYSICAL SPACE LIMITATIONS.
1. AIR HANDLING UNITS
 2. FAN COIL UNITS
 3. AIR DISTRIBUTION DEVICES
 4. ELECTRICAL PANELS
 5. ELECTRICAL TRANSFORMERS
 6. LIGHTING FIXTURES
 7. WIRING DEVICES
 8. PLUMBING FIXTURES
 9. AIR AND WATER BALANCE REPORTS
 10. CIRCUIT DIRECTORY CARDS

ELECTRICAL SPECIFICATIONS

ELECTRICAL CONDUCTORS

- A. MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING:
- ALCAN PRODUCTS CORPORATION; ALCAN CABLE DIVISION.
 - AMERICAN INSULATED WIRE CORP.; A LEVITON COMPANY.
 - GENERAL CABLE CORPORATION.
 - SENATOR WIRE & CABLE COMPANY.
 - SOUTHWIRE COMPANY.
- B. CONDUCTOR CONDUCTORS: COMPLY WITH NEMA WC 70.
- CONDUCTOR INSULATION: COMPLY WITH NEMA WC 70 FOR TYPES THW, THHN-THWN, XHHW, UF, USE, AND SO.
- MULTICONDUCTOR CABLE: COMPLY WITH NEMA WC 70 FOR ARMORED CABLE, TYPE AC, METAL-CLAD CABLE, TYPE MC, TYPE SO, AND TYPE USE WITH GROUND WIRE.
- C. CONDUCTOR MATERIAL APPLICATIONS:
1. COPPER: SOLID FOR NO. 10 AWG AND SMALLER; STRANDED FOR NO. 8 AWG AND LARGER.
- C. CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS:
1. SERVICE ENTRANCE: TYPE THHN-THWN, SINGLE CONDUCTORS IN RACEWAY, TYPE SE OR USE MULTICONDUCTOR CABLE.
 2. EXPOSED FEEDERS: TYPE THHN-THWN, SINGLE CONDUCTORS IN RACEWAY.
 3. FEEDERS CONCEALED IN CEILINGS, WALLS, PARTITIONS, AND CRAWLSPACES: TYPE THHN-THWN, SINGLE CONDUCTORS IN RACEWAY.
 4. FEEDERS CONCEALED IN CONCRETE, BELOW SLABS-ON-GRADE, AND UNDERGROUND: TYPE THHN-THWN, SINGLE CONDUCTORS IN RACEWAY.
 5. FEEDERS INSTALLED BELOW RAISED FLOORING: TYPE THHN-THWN, SINGLE CONDUCTORS IN RACEWAY.
 6. EXPOSED BRANCH CIRCUITS, INCLUDING IN CRAWLSPACES: TYPE THHN-THWN, SINGLE CONDUCTORS IN RACEWAY, METAL-CLAD CABLE, TYPE MC.
 7. BRANCH CIRCUITS CONCEALED IN CEILINGS, WALLS, AND PARTITIONS: TYPE THHN-THWN, SINGLE CONDUCTORS IN RACEWAY, ARMORED CABLE, TYPE AC, METAL-CLAD CABLE, TYPE MC.
 8. BRANCH CIRCUITS CONCEALED IN CONCRETE, BELOW SLABS-ON-GRADE, AND UNDERGROUND: TYPE THHN-THWN, SINGLE CONDUCTORS IN RACEWAY.
 9. BRANCH CIRCUITS INSTALLED BELOW RAISED FLOORING: TYPE THHN-THWN, SINGLE CONDUCTORS IN RACEWAY OR ARMORED CABLE, TYPE AC, METAL-CLAD CABLE, TYPE MC.
 10. BRANCH CIRCUITS INSTALLED IN PATIENT CARE AREAS: TYPE HCF-MC-AP OR AC-HCF WITH ASSEMBLY FOR EQUIPMENT GROUNDING CONDUCTOR AND A GREEN INSULATED EQUIPMENT GROUNDING CONDUCTOR CONNECTED TO ALL RECEPTACLES, METALLIC BOXES CONTAINING RECEPTACLES, AND ALL METALLIC EQUIPMENT CASINGS.

GROUNDING

- A. INSULATED CONDUCTORS: COPPER WIRE OR CABLE INSULATED FOR 600 V UNLESS OTHERWISE REQUIRED BY APPLICABLE CODE OR AUTHORITIES HAVING JURISDICTION.
- B. BARE COPPER CONDUCTORS:
1. SOLID CONDUCTOR: ASTM B 3.
 2. STRANDED CONDUCTORS: ASTM B 8.
 3. BONDING CABLE: 28 KCMIL, 14 STRANDS OF NO. 17 AWG CONDUCTOR, 1/4 INCH (6 MM) IN DIAMETER.
 4. BONDING CONDUCTOR: NO. 4 OR NO. 6 AWG, STRANDED CONDUCTOR.
 5. BONDING JUMPER: COPPER TAPE, BRAIDED CONDUCTORS TERMINATED WITH COPPER FERRULES; 1-5/8 INCHES (41 MM) WIDE AND 1/16 INCH (1.6 MM) THICK.
- C. GROUNDING BUS: PREDRILLED RECTANGULAR BARS OF ANNEALED COPPER, 1/4 BY 4 INCHES (6.3 BY 100 MM) IN CROSS SECTION, WITH 9/32-INCH (7.14-MM) HOLES SPACED 1-1/8 INCHES (28 MM) APART. STAND-OFF INSULATORS FOR MOUNTING SHALL COMPLY WITH UL 891 FOR USE IN SWITCHBOARDS, 600 V.

- D. CONNECTORS: LISTED AND LABELED BY AN NRTL ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION FOR APPLICATIONS IN WHICH USED AND FOR SPECIFIC TYPES, SIZES, AND COMBINATIONS OF CONDUCTORS AND OTHER ITEMS CONNECTED.
- E. BOLTED CONNECTORS FOR CONDUCTORS AND PIPES: COPPER OR COPPER ALLOY, PRESSURE TYPE WITH AT LEAST TWO BOLTS.
PIPE CONNECTORS: CLAMP TYPE, SIZED FOR PIPE.
- F. WELDED CONNECTORS: EXOTHERMIC-WELDING KITS OF TYPES RECOMMENDED BY KIT MANUFACTURER FOR MATERIALS BEING JOINED AND INSTALLATION CONDITIONS.
- G. BUS-BAR CONNECTORS: MECHANICAL TYPE, CAST SILICON BRONZE, SOLDERLESS COMPRESSION-TYPE WIRE TERMINALS, AND LONG-BARREL, TWO-BOLT CONNECTION TO GROUND BUS BAR.
- H. CONDUCTORS: INSTALL SOLID CONDUCTOR FOR NO. 8 AWG AND SMALLER, AND STRANDED CONDUCTORS FOR NO. 6 AWG AND LARGER UNLESS OTHERWISE INDICATED.
- I. ISOLATED GROUNDING CONDUCTORS: GREEN-COLORED INSULATION WITH CONTINUOUS YELLOW STRIPS OR FEEDERS WITH ISOLATED GROUND, IDENTIFY GROUNDING CONDUCTOR WHERE VISIBLE TO NORMAL INSPECTION, WITH ALTERNATING BANDS OF GREEN AND YELLOW TAPE, WITH AT LEAST THREE BANDS OF GREEN AND TWO BANDS OF YELLOW.
- J. CONDUCTOR TERMINATIONS AND CONNECTIONS:
PIPE AND EQUIPMENT GROUNDING CONDUCTOR TERMINATIONS: BOLTED CONNECTORS.
UNDERGROUND CONNECTIONS: WELDED CONNECTORS EXCEPT AT TEST WELLS AND AS OTHERWISE INDICATED. CONNECTIONS TO GROUND RODS AT TEST WELLS: BOLTED CONNECTORS. CONNECTIONS TO STRUCTURAL STEEL: WELDED CONNECTORS.
- K. EQUIPMENT GROUNDING:
INSTALL INSULATED EQUIPMENT GROUNDING CONDUCTORS TO COMPLY WITH THE NEC AND AS INDICATED ON THE DRAWINGS.

ELECTRICAL HANGERS AND SUPPORTS

- A. COMPPLY WITH NECA 1 AND NECA 101 FOR APPLICATION OF HANGERS AND SUPPORTS FOR ELECTRICAL EQUIPMENT AND SYSTEMS EXCEPT IF REQUIREMENTS IN THIS SECTION ARE STRICTER. MAXIMUM SUPPORT SPACING AND MINIMUM HANGER ROD SIZE IN RACEWAYS: TRAPEZE SUPPORTS FOR EMT, IMC, AND RMC AS SCHEDULED IN NECA 101. WHERE ITS TABLE 1 LISTS MAXIMUM SPACINGS LESS THAN STATED IN NFPA 70, MINIMUM ROD SIZE SHALL BE 1/4 INCH (6 MM) IN DIAMETER. MULTIPLE RACEWAYS OR CABLES: INSTALL TRAPEZE-TYPE SUPPORTS FABRICATED WITH STEEL SLOTTED OR OTHER SUPPORT SYSTEM, SIZED SO CAPACITY CAN BE INCREASED BY AT LEAST 25 PERCENT IN FUTURE WITHOUT EXCEEDING SPECIFIED DESIGN LOAD LIMITS. SECURE RACEWAYS AND CABLES TO THESE SUPPORTS WITH TWO BOLT CONDUIT CLAMPS. SPRING-STEEL CLAMP DESIGN FOR SUPPORTING RACEWAYS OR CONDUITS WITHOUT BOLTS MAY BE USED FOR 1-1/2-INCH (38-MM) AND SMALLER RACEWAYS SERVING BRANCH CIRCUITS AND COMMUNICATION SYSTEMS ABOVE SUSPENDED CEILINGS AND FOR FASTENING RACEWAYS TO TRAPEZE SUPPORTS.
- B. SUPPORT INSTALLATION: COMPPLY WITH NECA 1 AND NECA 101 FOR INSTALLATION REQUIREMENTS EXCEPT AS SPECIFIED IN THIS ARTICLE.
- C. RACEWAY SUPPORT METHODS: IN ADDITION TO METHODS DESCRIBED IN NECA 1, EMT, IMC, AND RMC MAY BE SUPPORTED BY OPENINGS THROUGH STRUCTURE MEMBERS, AS PERMITTED IN NFPA 70.
- D. STRENGTH OF SUPPORT ASSEMBLIES: WHERE NOT INDICATED, SELECT SIZES OF COMPONENTS SO STRENGTH WILL BE ADEQUATE TO CARRY PRESENT AND FUTURE STATIC LOADS WITHIN SPECIFIED LOADING LIMITS. MINIMUM STATIC DESIGN LOAD USED FOR STRENGTH DETERMINATION SHALL BE WEIGHT OF SUPPORTS PLUS 200 LB (90 KG).
- E. MOUNTING AND ANCHORAGE OF SURFACE-MOUNTED EQUIPMENT AND COMPONENTS: ANCHOR AND FASTEN ELECTRICAL ITEMS AND THEIR SUPPORTS TO BUILDING STRUCTURAL ELEMENTS BY THE FOLLOWING METHODS UNLESS OTHERWISE INDICATED BY CODE:
1. TO WOOD: FASTEN WITH LAG SCREWS OR THROUGH BOLTS.
 2. TO NEW CONCRETE: BOLT TO CONCRETE INSETS.
 3. TO MASONRY: APPROVED TOGGLE-TYPE BOLTS ON HOLLOW MASONRY UNITS AND EXPANSION ANCHOR FASTENERS ON SOLID MASONRY UNITS.
 4. TO EXISTING CONCRETE: EXPANSION ANCHOR FASTENERS.
 5. INSTEAD OF EXPANSION ANCHORS, POWDER-ACTUATED DRIVEN THREADED STUDS PROVIDED WITH LOCK WASHERS AND NUTS MAY BE USED IN EXISTING STANDARD-WEIGHT CONCRETE 4 INCHES (100 MM) THICK OR GREATER. DO NOT USE FOR ANCHORAGE TO LIGHTWEIGHT-AGGREGATE CONCRETE OR FOR SLABS LESS THAN 4 INCHES (100 MM) THICK.
 6. TO STEEL: WELDED THREADED STUDS COMPLYING WITH AWS D1.1/D1.1M, WITH LOCK WASHERS AND NUTS OR BEAM CLAMPS (MSS TYPE 19, 21, 23, 25, OR 27) COMPLYING WITH MSS.
 7. TO LIGHT STEEL: SHEET METAL SCREWS.
 8. DRILL HOLES FOR EXPANSION ANCHORS IN CONCRETE AT LOCATIONS AND TO DEPTHS THAT AVOID REINFORCING BARS.

ELECTRICAL CONDUIT

- A. METAL CONDUIT AND TUBING
MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING:
1. AFC CABLE SYSTEMS, INC.
 2. ALFLEX INC.
 3. ALLIED TUBE & CONDUIT; A TYCO INTERNATIONAL LTD. CO.
 4. ANAMET ELECTRICAL, INC.; ANACONDA METAL HOSE.
 5. ELECTRI-FLEX CO.
 6. MAVERICK TUBE CORPORATION.
 7. O-Z GEDNEY; A UNIT OF GENERAL SIGNAL.
 8. WHEATLAND TUBE COMPANY.
- B. RIGID STEEL CONDUIT: ANSI C80.1.
- C. ALUMINUM RIGID CONDUIT: ANSI C80.5.
- D. IMC: ANSI C80.6.
- E. PVC-COATED STEEL CONDUIT: PVC-COATED RIGID STEEL CONDUIT.
- F. COMPLY WITH NEMA RN 1.
- G. COATING THICKNESS: 0.040 INCH (1 MM), MINIMUM.
- H. EMT: ANSI C80.3.
- I. FMC: ZINC-COATED STEEL.
- J. LFMC: FLEXIBLE STEEL CONDUIT WITH PVC JACKET.
- K. FITTINGS FOR CONDUIT (INCLUDING ALL TYPES AND FLEXIBLE AND LIQUIDTIGHT), EMT, EMT AND CABLE: NEMA FB 1; LISTED FOR TYPE AND SIZE RACEWAY WITH WHICH CONNECTED FOR APPLICATION AND ENVIRONMENT IN WHICH INSTALLED.
- L. 1. FITTINGS FOR EMT: SET-SEW OR COMPRESSION TYPE. DIE-CAST IS NOT ACCEPTABLE.
2. COATING FOR FITTINGS FOR PVC-COATED CONDUIT: MINIMUM THICKNESS, 0.040 INCH (1 MM), WITH OVERLAPPING SLEEVES PROTECTING THREADED JOINTS.
- M. JOINT COMPOUND FOR RIGID STEEL CONDUIT OR IMC: LISTED FOR USE IN CABLE CONNECTOR ASSEMBLIES, AND COMPOUNDED FOR USE TO LUBRICATE AND PROTECT THREADED RACEWAY JOINTS FROM CORROSION AND ENHANCE THEIR CONDUCTIVITY.
- N. SURFACE METAL RACEWAYS: GALVANIZED STEEL WITH SNAP-ON COVERS. MANUFACTURER'S STANDARD ANAMEL FINISH IN COLOR SELECTED BY ARCHITECT.
- MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING:
1. THOMAS & BETTS CORPORATION.
 2. WALKER SYSTEMS, INC.; WIREMOLD COMPANY (THE).
 3. WIREMOLD COMPANY (THE); ELECTRICAL SALES DIVISION.
- O. BOXES, ENCLOSURES, AND CABINETS:
- MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING:
1. COOPER CROUSE-HINDS; DIV. OF COOPER INDUSTRIES, INC.
 2. EGS/APPLETON ELECTRIC.
 3. HOFFMAN.
 4. HUBBELL INCORPORATED; KILLARK ELECTRIC MANUFACTURING CO. DIVISION.
 5. O-Z/GEDNEY; A UNIT OF GENERAL SIGNAL.
 6. RACO; A HUBBELL COMPANY.
 7. ROBROY INDUSTRIES, INC.; ENCLOSURE DIVISION.
 8. THOMAS & BETTS CORPORATION.
 9. WALKER SYSTEMS, INC.; WIREMOLD COMPANY (THE).
 10. SHEET METAL OUTLET AND DEVICE BOXES: NEMA OS 1.
 11. CAST-METAL OUTLET AND DEVICE BOXES: NEMA OS 1. FERROUS ALLOY TYPE FD.

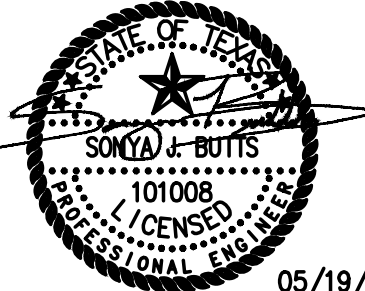
- METAL FLOOR BOXES: CAST METAL, FULLY ADJUSTABLE, RECTANGULAR.
SMALL SHEET METAL PULL AND JUNCTION BOXES: NEMA OS 1.
C. CAST-METAL ACCESS, PULL, AND JUNCTION BOXES: NEMA FB 1, GALVANIZED, CAST IRON, WITH GASKETED COVER.
T. HINGED-COVER ENCLOSURES: NEMA 250, TYPE 1, WITH CONTINUOUS-HINGE COVER WITH FLUSH LATCH, UNLESS OTHERWISE INDICATED.
1. METAL ENCLOSURES: STEEL, FINISHED INSIDE AND OUT WITH MANUFACTURER'S STANDARD ENAMEL.
A. IN STANDARD PARTITIONS, WHERE 1/2" AND 3/4" CONDUITS ARE EMPLOYED: 4" SQUARE BY 2-1/8" DEEP BOXES WITH 1-GANG OR 2-GANG PLASTER COVERS SHALL BE USED, NO. 45D-SPL.
B. IN THIN PARTITIONS MEASURING 3-1/2" OR LESS: 4" SQUARE BY 1-1/2" DEEP BOXES WITH 1-GANG OR 2-GANG PLASTER COVERS SHALL BE USED, NO. 45-SPL.
C. IN STANDARD PARTITIONS, WHERE CONDUITS OF A SIZE GREATER THAN 3/4" ARE EMPLOYED: 4" SQUARE BY 2-1/8" DEEP BOXES WITH 1-GANG OR 2-GANG PLASTER COVERS SHALL BE USED, NO. 45D SERIES. THE OUTLET BOXES SHALL BE LOCATED WHEREBY NO TWO (2) OUTLET BOXES ARE INSTALLED CLOSER THAN 24" ON CENTER, AND SECURELY ATTACHED TO THE PARTITION STUDS, WITH AT LEAST ONE (1) PARTITION STUD SEPARATING THE OUTLET BOXES. IT IS NOT ACCEPTABLE TO SECURE OUTLET BOXES ONLY TO DRYWALL PARTITION.
U. CABINETS:
1. NEMA 250, TYPE 1, GALVANIZED-STEEL BOX WITH REMOVABLE INTERIOR PANEL AND REMOVABLE FRONT, FINISHED INSIDE AND OUT WITH MANUFACTURER'S STANDARD ENAMEL.
2. HINGED FRONT COVER WITH FLUSH LATCH AND CONCEALED HINGE.
3. KEY LATCH TO MATCH PANELBOARDS.
4. METAL BARRIERS TO SEPARATE WIRING OF DIFFERENT SYSTEMS AND VOLTAGE.
5. ACCESSORY FEET WHERE REQUIRED FOR FREESTANDING EQUIPMENT.
V. RACEWAY APPLICATION:
OUTDOORS: APPLY RACEWAY PRODUCTS AS SPECIFIED BELOW, UNLESS OTHERWISE INDICATED.
1. EXPOSED CONDUIT: RIGID STEEL CONDUIT.
2. CONCEALED CONDUIT, ABOVEGROUND: RIGID STEEL CONDUIT, EMT, RNC.
3. UNDERGROUND CONDUIT: RNC, TYPE EPC-40-PVC, DIRECT BURIED.
4. CONNECTION TO VIBRATING EQUIPMENT (INCLUDING TRANSFORMERS AND HYDRAULIC, PNEUMATIC, ELECTRIC SOLENOID, OR MOTOR-DRIVEN EQUIPMENT):
LFCM
5. BOXES AND ENCLOSURES, ABOVEGROUND: NEMA 250, TYPE 3R.
W. COMPLY WITH THE FOLLOWING INDOOR APPLICATIONS, UNLESS OTHERWISE INDICATED:
1. EXPOSED, NOT SUBJECT TO PHYSICAL DAMAGE: EMT.
2. EXPOSED, NOT SUBJECT TO SEVERE PHYSICAL DAMAGE: EMT.
3. EXPOSED, SUBJECT TO SEVERE PHYSICAL DAMAGE: RIGID STEEL CONDUIT.
INCLUDES RACEWAYS IN THE FOLLOWING LOCATIONS: LOADING DOCK, CORRIDORS USED FOR TRAFFIC OF MECHANIZED CARTS, FORKTRUCKS, AND PALLET-HANDLING UNITS, MECHANICAL ROOMS.
4. CONCEALED IN CEILINGS AND INTERIOR WALLS AND PARTITIONS: EMT.
5. CONNECTION TO VIBRATING EQUIPMENT (INCLUDING TRANSFORMERS AND HYDRAULIC, PNEUMATIC, ELECTRIC SOLENOID, OR MOTOR-DRIVEN EQUIPMENT):
FMC, EXCEPT USE LFCM IN DAMP OR WET LOCATIONS.
6. DAMP OR WET LOCATIONS: RIGID STEEL CONDUIT.
7. RACEWAYS FOR OPTICAL FIBER OR COMMUNICATIONS CABLE IN SPACES USED FOR ENVIRONMENTAL AIR: PLENUM-TYPE, OPTICAL FIBER/COMMUNICATIONS CABLE RACEWAY, EMT.
8. RACEWAYS FOR OPTICAL FIBER OR COMMUNICATIONS CABLE RISERS IN VERTICAL SPACES: OPTICAL FIBER/COMMUNICATIONS CABLE RACEWAY, EMT.
9. RACEWAYS FOR CONCEALED GENERAL PURPOSE DISTRIBUTION OF OPTICAL FIBER OR COMMUNICATIONS CABLE: GENERAL-USE, OPTICAL FIBER/COMMUNICATIONS CABLE RACEWAY, RISER-TYPE, OPTICAL FIBER/COMMUNICATIONS CABLE RACEWAY, PLENUM-TYPE, OPTICAL FIBER/COMMUNICATIONS CABLE RACEWAY, EMT.
10. BOXES AND ENCLOSURES: NEMA 250, TYPE 1, EXCEPT USE NEMA 250, TYPE 4X, STAINLESS STEEL IN DAMP OR WET LOCATIONS.
X. MINIMUM RACEWAY SIZE: 1/2-INCH (16-MM) TRADE SIZE.
Y. RACEWAY FITTINGS: COMPATIBLE WITH RACEWAYS AND SUITABLE FOR USE AND LOCATION.
1. RIGID AND INTERMEDIATE STEEL CONDUIT: USE THREADED RIGID STEEL CONDUIT FITTINGS, UNLESS OTHERWISE INDICATED.
2. PVC EXTERNALLY COATED, RIGID STEEL CONDUITS: USE ONLY FITTINGS LISTED FOR USE WITH THAT MATERIAL. PATCH AND SEAL ALL JOINTS, NICKS, AND SCORING IN PROPORTION TO THE INSTALLING CONDUITS AND FITTINGS. USE SEALANT RECOMMENDED BY FITTING MANUFACTURER.
Z. INSTALLATION
COMPLY WITH NECA 1 FOR INSTALLATION REQUIREMENTS APPLICABLE TO PRODUCTS SPECIFIED EXCEPT WHERE REQUIREMENTS ON DRAWINGS OR IN THIS ARTICLE ARE STRICTER.
AA. KEEP RACEWAYS AT LEAST 6 INCHES (150 MM) AWAY FROM PARALLEL RUNS OF FLUES AND STEAM OR HOT-WATER PIPES. INSTALL HORIZONTAL RACEWAY RUNS ABOVE WATER AND STEAM PIPING.
AB. COMPLETE RACEWAY INSTALLATION BEFORE STARTING CONDUCTOR INSTALLATION.
AC. SUPPORT RACEWAYS AS SPECIFIED IN "HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS."
AD. ARMED, STUB-UPS SO CURVED PORTIONS OF BENDS ARE NOT VISIBLE ABOVE THE FINISHED SLAB.
AE. INSTALL NO MORE THAN THE EQUIVALENT OF THREE 90-DEGREE BENDS IN ANY CONDUIT RUN EXCEPT FOR COMMUNICATIONS CONDUITS, FOR WHICH FEWER BENDS ARE ALLOWED.
AF. CONCEAL CONDUIT AND EMT WITHIN FINISHED WALLS, CEILINGS, AND FLOORS, UNLESS OTHERWISE INDICATED.
AG. RACEWAYS EMBEDDED IN SLABS:
1. RUN CONDUIT LARGER THAN 1-INCH (27-MM) TRADE SIZE, PARALLEL OR AT RIGHT ANGLES TO MAIN REINFORCEMENT. WHERE AT RIGHT ANGLES TO REINFORCEMENT, PLACE CONDUIT CLOSE TO SLAB SUPPORT.
2. ARRANGE RACEWAYS TO CROSS BUILDING EXPANSION JOINTS AT RIGHT ANGLES.
3. CHANGE FROM ENT TO RNC, TYPE EPC-40-PVC, RIGID STEEL CONDUIT, OR IMC BEFORE RISING ABOVE THE FLOOR.
AH. THREADED CONDUIT JOINTS, EXPOSED TO WET, DAMP, CORROSIVE, OR OUTDOOR CONDITIONS: APPLY LISTED COMPOUND TO THREADS OF RACEWAY AND FITTINGS BEFORE MAKING UP JOINTS. FOLLOW COMPOUND MANUFACTURER'S WRITTEN INSTRUCTIONS.
AI. RACEWAY TERMINATIONS AT LOCATIONS SUBJECT TO MOISTURE OR VIBRATION: USE INSULATING BUSHINGS TO PROTECT CONDUCTORS, INCLUDING CONDUCTORS SMALLER THAN NO. 4 AWG.
AJ. INSTALL PULL WIRES IN EMPTY RACEWAYS. USE POLYPROPYLENE OR MONOFILAMENT PLASTIC LINE WITH NOT LESS THAN 200-LB (90-KG) TENSILE STRENGTH. LEAVE AT LEAST 12 INCHES (300 MM) OF SLACK AT EACH END OF PULL WIRE.
AK. RACEWAYS FOR OPTICAL FIBER AND COMMUNICATIONS CABLE: INSTALL RACEWAYS METALLIC AND NONMETALLIC, RIGID AND FLEXIBLE, AS FOLLOWS:
1. 3/4-INCH (19-MM) TRADE SIZE AND SMALLER: INSTALL RACEWAYS IN MAXIMUM LENGTHS OF 50 FEET (15 M).
2. 1-INCH (25-MM) TRADE SIZE AND LARGER: INSTALL RACEWAYS IN MAXIMUM LENGTHS OF 75 FEET (23 M).
3. INSTALL WITH A MAXIMUM OF TWO 90-DEGREE BENDS OR EQUIVALENT FOR EACH LENGTH OF RACEWAY. SEE DRAWINGS SHOW STRICTER REQUIREMENTS. SEPARATE LENGTHS WITH PULL OR JUNCTION BOXES OR TERMINATIONS AT DISTRIBUTION FRAMES OR CABINETS WHERE NECESSARY TO COMPLY WITH THESE REQUIREMENTS.
AL. INSTALL RACEWAY SEALING FITTINGS AT SUITABLE, APPROVED, AND ACCESSIBLE LOCATIONS AND FILL WITH LISTED SEALING COMPOUND. FOR CONCEALED RACEWAYS, INSTALL EACH FITTING IN A FLUSH STEEL BOX WITH A BLANK COVER PLATE HAVING A FINISH SIMILAR TO THAT OF ADJACENT PLATES OR SURFACES. INSTALL RACEWAY SEALING FITTINGS AT THE FOLLOWING POINTS:
1. WHERE CONDUITS PASS FROM WARM TO COLD LOCATIONS, SUCH AS BOUNDARIES OF REFRIGERATED SPACES.
2. WHERE OTHERWISE REQUIRED BY NFPA 70.
AP. FLEXIBLE CONDUIT CONNECTIONS: USE MAXIMUM OF 48 INCHES (1219 MM) OF FLEXIBLE CONDUIT FOR RECESSED AND SEMIRECESSED LIGHTING FIXTURES, EQUIPMENT SUBJECT TO VIBRATION, NOISE TRANSMISSION, OR MOVEMENT, AND FOR TRANSFORMERS AND MOTORS.
1. USE LFCM IN DAMP OR WET LOCATIONS.
AQ. RECESSED BOXES IN MASONRY WALLS: SAW-CUT OPENING FOR BOX IN CENTER OF CELL OF MASONRY BLOCK, AND INSTALL BOX FLUSH WITH SURFACE OF WALL.
AR. SET METAL FLOOR BOXES LEVEL AND FLUSH WITH FINISHED FLOOR SURFACE.
APPLY FIRESTOPPING TO ELECTRICAL PENETRATIONS OF FIRE-RATED FLOOR AND WALL ASSEMBLIES TO RESTORE ORIGINAL FIRE-RESISTANCE RATING OF ASSEMBLY. PROVIDE SLEEVES FOR FLOOR PENETRATIONS EXTENDING 2" ABOVE FLOOR EXCEPT IN

[illegible]

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05/19/21

SHEET TITLE

ELECTRICAL SPECIFICATIONS

SHEET NO.

E3.0

FINISHED AREAS WHERE COORDINATED WITH ARCHITECT.

TRANSFORMERS

- A. SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING:
ACME ELECTRIC CORPORATION; POWER DISTRIBUTION PRODUCTS DIVISION.
EATON ELECTRICAL INC.; CUTLER-HAMMER PRODUCTS.
GENERAL ELECTRIC COMPANY.
SIEMENS ENERGY & AUTOMATION, INC.
SOLA/HEVI-DUTY.
SQUARE D; SCHNEIDER ELECTRIC.
- B. GENERAL TRANSFORMER REQUIREMENTS
DESCRIPTION: FACTORY-ASSEMBLED AND -TESTED, AIR-COOLED UNITS FOR 60-HZ SERVICE.
GRAIN-ORIENTED, NON-AGING SILICON STEEL.
CONTINUOUS WINDINGS WITHOUT SPLICES EXCEPT FOR TAPS.
INTERNAL COIL CONNECTIONS: BRAZED OR PRESSURE TYPE.
COIL MATERIAL: COPPER.
- C. COMPLY WITH NEMA ST 20, AND LIST AND LABEL AS COMPLYING WITH UL 1561. ONE LEG PER PHASE.
- D. ENCLOSURE: VENTILATED, NEMA 250, TYPE 2. CORE AND COIL SHALL BE ENCAPSULATED WITHIN RESIN COMPOUND, SEALING OUT MOISTURE AND AIR.
- E. ENCLOSURE: VENTILATED, NEMA 250, TYPE 3R. CORE AND COIL SHALL BE ENCAPSULATED WITHIN RESIN COMPOUND, SEALING OUT MOISTURE AND AIR.
- F. TRANSFORMER ENCLOSURE FINISH: COMPLY WITH NEMA 250. FINISH COLOR: GRAY.
- G. TAPS FOR TRANSFORMERS SMALLER THAN 7.5 KVA: ONE 5 PERCENT TAP ABOVE NORMAL FULL CAPACITY.
- H. TAPS FOR TRANSFORMERS 7.5 TO 24 KVA: ONE 5 PERCENT TAP ABOVE AND ONE 5 PERCENT TAP BELOW NORMAL FULL CAPACITY.
- I. TAPS FOR TRANSFORMERS 25 KVA AND LARGER: TWO 2.5 PERCENT TAPS ABOVE AND TWO 2.5 PERCENT TAPS BELOW NORMAL FULL CAPACITY.
- J. INSULATION CLASS: 220 DEG C, UL-COMPONENT-RECOGNIZED INSULATION SYSTEM WITH A MAXIMUM OF 115 DEG C RISE ABOVE 40 DEG C AMBIENT TEMPERATURE.
- K. ENERGY EFFICIENCY FOR TRANSFORMERS RATED 15 KVA AND LARGER: COMPLYING WITH DOE-2016 10 CFR PART 431.
- L. K-FACTOR RATING: TRANSFORMERS INDICATED TO BE K-FACTOR RATED SHALL COMPLY WITH UL 1561 REQUIREMENTS FOR NONINSULATED LOAD CURRENT-HANDLING CAPABILITY TO THE DEGREE DEFINED BY DESIGNATED K-FACTOR. UNIT SHALL NOT OVERHEAT WHEN CARRYING FULL-LOAD CURRENT WITH HARMONIC DISTORTION CORRESPONDING TO DESIGNATED K-FACTOR. INDICATE VALUE OF K-FACTOR ON TRANSFORMER NAMEPLATE.
- M. ELECTROSTATIC SHIELDING: EACH WINDING SHALL HAVE AN INDEPENDENT, SINGLE, FULL-WIDTH COPPER ELECTROSTATIC SHIELD ARRANGED TO MINIMIZE INTERWINDING CAPACITANCE. ARRANGE COIL LEADS AND TERMINAL STRIPS TO MINIMIZE CAPACITIVE COUPLING BETWEEN INPUT AND OUTPUT TERMINALS. INCLUDE SPECIAL TERMINAL FOR GROUNDING THE SHIELD. SHIELD EFFECTIVENESS: CAPACITANCE BETWEEN PRIMARY AND SECONDARY WINDINGS: NOT TO EXCEED 33 PICOFARADS OVER A FREQUENCY RANGE OF 20 HZ TO 1 MHZ. COMMON-MODE NOISE ATTENUATION: MINIMUM OF MINUS 120 DBA AT 0.5 TO 1.5 KHZ; MINIMUM OF MINUS 65 DBA AT 1.5 TO 100 KHZ. NORMAL-MODE NOISE ATTENUATION: MINIMUM OF MINUS 52 DBA AT 1.5 TO 10 KHZ.
- N. FUNGUS PROOFING: PERMANENT FUNGICIDAL TREATMENT FOR COIL AND CORE.
- O. LUG RATING: ALL LUG CONNECTIONS SHALL BE RATED FOR CONNECTION OF 75 DEG C INSULATION CONDUCTORS.

PANELBOARDS

- A. ENCLOSURES: FLUSH- AND SURFACE-MOUNTED CABINETS. RATED FOR ENVIRONMENTAL CONDITIONS AT INSTALLED LOCATION. INDOOR DRY AND CLEAN LOCATIONS: NEMA 250, TYPE 1. OUTDOOR LOCATIONS: NEMA 250, TYPE 3R. WET OR DAMP INDOOR LOCATIONS: NEMA 250, TYPE 4X STAINLESS STEEL.
- B. FRONT: SECURED TO BOX WITH CONCEALED TRIM CLAMPS. FOR SURFACE-MOUNTED FRONTS, MATCH BOX DIMENSIONS; FOR FLUSH-MOUNTED FRONTS, OVERLAP BOX.
- C. HINGED FRONT COVER: ENTIRE FRONT TRIM HINGED TO BOX AND WITH STANDARD DOOR WITHIN HINGED TRIM COVER.
- D. FINISHES:
PANELS AND TRIM: GALVANIZED STEEL, FACTORY FINISHED IMMEDIATELY AFTER CLEANING AND PRETREATING WITH MANUFACTURER'S STANDARD TWO-COAT, BAKED-ON FINISH CONSISTING OF PRIME COAT AND THERMOSETTING TOPCOAT.
- E. BACK BOXES: GALVANIZED STEEL.
- F. FUNGUS PROOFING: PERMANENT FUNGICIDAL TREATMENT FOR OVERCURRENT PROTECTIVE DEVICES AND OTHER COMPONENTS.
- G. DIRECTORY CARD: INSIDE PANELBOARD DOOR, MOUNTED IN TRANSPARENT CARD HOLDER.
- H. INCOMING MAINS LOCATION: TOP AND BOTTOM.
- I. PHASE, NEUTRAL AND GROUND BUSES:
MATERIAL: TIN-PLATED ALUMINUM OR HARD-DRAWN COPPER, 98 PERCENT CONDUCTIVITY.
EQUIPMENT GROUND BUS: ADEQUATE FOR FEEDER AND BRANCH-CIRCUIT EQUIPMENT GROUNDING CONDUCTORS; BONDED TO BOX.
- J. CONDUCTOR CONNECTORS: SUITABLE FOR USE WITH CONDUCTOR MATERIAL AND SIZES. MATERIAL: TIN-PLATED ALUMINUM OR HARD-DRAWN COPPER, 98 PERCENT CONDUCTIVITY. MAIN AND NEUTRAL LUGS: COMPRESSION TYPE. GROUND LUGS AND BUS-CONFIGURED TERMINATORS: COMPRESSION TYPE. FEED-THROUGH LUGS: COMPRESSION TYPE, SUITABLE FOR USE WITH CONDUCTOR MATERIAL. LOCATE AT OPPOSITE END OF BUS FROM INCOMING LUGS OR MAIN DEVICE. RATED FOR CONNECTION OF 75 DEG C INSULATED CONDUCTORS.
- K. PANELBOARD SHORT-CIRCUIT CURRENT RATING: FULLY RATED TO INTERRUPT SYMMETRICAL SHORT-CIRCUIT CURRENT AVAILABLE AT TERMINALS.
- L. LIGHTING AND APPLIANCE BRANCH-CIRCUIT PANELBOARDS
MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING:
EATON ELECTRICAL INC.; CUTLER-HAMMER BUSINESS UNIT.
GENERAL ELECTRIC COMPANY; GE CONSUMER & INDUSTRIAL
SIEMENS ENERGY & AUTOMATION, INC.
SQUARE D; A BRAND OF SCHNEIDER ELECTRIC.
PANELBOARDS: NEMA PB 1. LIGHTING AND APPLIANCE BRANCH-CIRCUIT TYPE.
MAIN: CIRCUIT BREAKER OR LUGS ONLY.
BRANCH OVERCURRENT PROTECTIVE DEVICES: BOLT-ON CIRCUIT BREAKERS, REPLACEABLE WITHOUT DISTURBING ADJACENT UNITS.
DOORS: CONCEALED HINGES; SECURED WITH FLUSH LATCH WITH TUMBLER LOCK; KEYED ALIKE.

LIGHTING FIXTURES

- A. GENERAL REQUIREMENTS FOR LIGHTING FIXTURES AND COMPONENTS.
1. RECESSED FIXTURES: COMPLY WITH NEMA LE 4 FOR CEILING COMPATIBILITY FOR RECESSED FIXTURES.
 2. INCANDESCENT FIXTURES: COMPLY WITH UL 1598. WHERE LER IS SPECIFIED, TEST ACCORDING TO NEMA LE 5A.
 3. FLUORESCENT FIXTURES: COMPLY WITH UL 1598. WHERE LER IS SPECIFIED, TEST ACCORDING TO NEMA LE 5 AND NEMA LE 5A AS APPLICABLE.
 4. LED FIXTURES:
 - 4.1. LISTED AND LABELED AS DEFINED IN NFPA 70, BY A QUALIFIED TESTING AGENCY, AND MARKED FOR INTENDED LOCATION AND APPLICATION.
 - 4.2. EACH LUMINAIRE TYPE SHALL BE BINNED WITHIN A THREE-STEP MACADAM ELLIPSE TO ENSURE COLOR CONSISTENCY AMONG LUMINAIRES.
- METAL PARTS: FREE OF BURRS AND SHARP CORNERS AND EDGES. SHEET METAL COMPONENTS: STEEL UNLESS OTHERWISE INDICATED. FORM AND SUPPORT TO PREVENT WARPING AND SAGGING. DOORS, FRAMES, AND OTHER INTERNAL ACCESS: SMOOTH OPERATING, FREE OF LIGHT LEAKAGE UNDER OPERATING CONDITIONS, AND DESIGNED TO PREVENT ACCUMULATION OF MOISTURE, CONDENSATION, OR CORROSION.

- DOORS, FRAMES, LENSES, DIFFUSERS, AND OTHER COMPONENTS FROM FALLING ACCIDENTALLY DURING RELAMPING AND WHEN SECURED IN OPERATING POSITION. DIFFUSERS AND GLOBES:
1. ACRYLIC LIGHTING DIFFUSERS: 100 PERCENT VIRGIN ACRYLIC PLASTIC. HIGH RESISTANCE TO YELLOWING AND OTHER CHANGES DUE TO AGING, EXPOSURE TO HEAT, AND UV RADIATION.
 2. LENS THICKNESS: AT LEAST 0.125 INCH (3.175 MM) MINIMUM UNLESS OTHERWISE INDICATED.
 3. UV STABILIZED.
 4. GLASS: ANNEALED CRYSTAL GLASS UNLESS OTHERWISE INDICATED.
- C. FACTORY-APPLIED LABELS: COMPLY WITH UL 1598. INCLUDE RECOMMENDED LAMPS AND BALLASTS. LABELS SHALL BE LOCATED WHERE THEY WILL BE READILY VISIBLE TO SERVICE PERSONNEL, BUT NOT SEEN FROM NORMAL VIEWING ANGLES WHEN LAMPS ARE IN PLACE. LABEL SHALL INCLUDE THE FOLLOWING LAMP AND BALLAST CHARACTERISTICS:
1. "USE ONLY" AND INCLUDE SPECIFIC LAMP TYPE.
 2. LAMP DIAMETER CODE (T-4, T-5, T-8, T-12, ETC.), TUBE CONFIGURATION (TWIN, QUAD, TRIPLE, ETC.), BASE TYPE, AND NOMINAL WATTAGE FOR FLUORESCENT AND COMPACT FLUORESCENT LUMINAIRES.
 3. LAMP TYPE, WATTAGE, BULB TYPE (ED17, BD56, ETC.) AND COATING (CLEAR OR COATED) FOR HID LUMINAIRES.
 4. START TYPE (PREHEAT, RAPID START, INSTANT START, ETC.) FOR FLUORESCENT AND COMPACT FLUORESCENT LUMINAIRES.
 5. ANSI BALLAST TYPE (M98, M57, ETC.) FOR HID LUMINAIRES.
 6. CCT AND CRI FOR ALL LUMINAIRES.
- D. ELECTROMAGNETIC-INTERFERENCE FILTERS: FACTORY INSTALLED TO SUPPRESS CONDUCTED ELECTROMAGNETIC INTERFERENCE AS REQUIRED BY MIL-STD-461E. FABRICATE LIGHTING FIXTURES WITH ONE FILTER ON EACH BALLAST INDICATED TO REQUIRE A FILTER.

BALLASTS

- A. BALLASTS FOR LINEAR FLUORESCENT LAMPS, GENERAL REQUIREMENTS FOR ELECTRONIC BALLASTS:
1. COMPLY WITH UL 935 AND WITH ANSI C82.11.
 2. DESIGNED FOR TYPE AND QUANTITY OF LAMPS SERVED.
 3. BALLASTS SHALL BE DESIGNED FOR FULL LIGHT OUTPUT UNLESS ANOTHER BF, DIMMER, OR BI-LEVEL CONTROL IS INDICATED.
 4. SOUND RATING: CLASS A.
 5. TOTAL HARMONIC DISTORTION RATING: LESS THAN 10 PERCENT.
 6. TRANSIENT VOLTAGE PROTECTION: IEEE C62.41.1 AND IEEE C62.41.2, CATEGORY A OR BETTER.
 7. OPERATING FREQUENCY: 42 KHZ OR HIGHER.
 8. LAMP CURRENT CREST FACTOR: 1.7 OR LESS.
 9. BF: 0.85 OR HIGHER.
 10. POWER FACTOR: 0.95 OR HIGHER.
 11. PARALLEL LAMP CIRCUITS: MULTIPLE LAMP BALLASTS SHALL COMPLY WITH ANSI C82.11 AND SHALL BE CONNECTED TO MAINTAIN FULL LIGHT OUTPUT ON SURVIVING LAMPS IF ONE OR MORE LAMPS FAIL.
- B. LUMINAIRES CONTROLLED BY OCCUPANCY SENSORS SHALL HAVE PROGRAMMED-START BALLASTS.
- C. ELECTRONIC PROGRAMMED-START BALLASTS FOR T8 AND T5 AND T5HO LAMPS: COMPLY WITH ANSI C82.11 AND THE FOLLOWING:
1. LAMP END-OF-LIFE DETECTION AND SHUTDOWN CIRCUIT FOR T5 DIAMETER LAMPS.
 2. AUTOMATIC LAMP STARTING AFTER LAMP REPLACEMENT.
- D. ELECTROMAGNETIC BALLASTS: COMPLY WITH ANSI C82.1; ENERGY SAVING, HIGH-POWER FACTOR, CLASS P, AND HAVING AUTOMATIC-RESET THERMAL PROTECTION.
- E. BALLAST MANUFACTURER CERTIFICATION: INDICATED BY LABEL.
- F. SINGLE BALLASTS FOR MULTIPLE LIGHTING FIXTURES: FACTORY WIRED WITH BALLAST ARRANGEMENTS AND BUNDLED EXTENSION WIRING TO SUIT FINAL INSTALLATION CONDITIONS WITHOUT MODIFICATION OR REWIRING IN THE FIELD.
- G. BALLASTS FOR COMPACT FLUORESCENT LAMPS
- H. DESCRIPTION: ELECTRONIC-PROGRAMMED RAPID-START TYPE, COMPLYING WITH UL 935 AND WITH ANSI C 82.11, DESIGNED FOR TYPE AND QUANTITY OF LAMPS INDICATED. BALLAST SHALL BE DESIGNED FOR FULL LIGHT OUTPUT UNLESS DIMMER OR BI-LEVEL CONTROL IS INDICATED:
1. LAMP END-OF-LIFE DETECTION AND SHUTDOWN CIRCUIT.
 2. AUTOMATIC LAMP STARTING AFTER LAMP REPLACEMENT.
 3. SOUND RATING: CLASS A.
 4. TOTAL HARMONIC DISTORTION RATING: LESS THAN 20 PERCENT.
 5. TRANSIENT VOLTAGE PROTECTION: IEEE C62.41.1 AND IEEE C62.41.2, CATEGORY A OR BETTER.
 6. OPERATING FREQUENCY: 20 KHZ OR HIGHER.
 7. LAMP CURRENT CREST FACTOR: 1.7 OR LESS.
 8. BF: 0.95 OR HIGHER UNLESS OTHERWISE INDICATED.
 9. POWER FACTOR: 0.95 OR HIGHER.
 10. INTERFERENCE: COMPLY WITH 47 CFR 18, CH. 1, SUBPART C, FOR LIMITATIONS ON ELECTROMAGNETIC AND RADIO-FREQUENCY INTERFERENCE FOR NONCONSUMER EQUIPMENT.

FLUORESCENT LAMPS

- A. T8 RAPID-START LAMPS, RATED 32 W MAXIMUM, NOMINAL LENGTH OF 48 INCHES (1220 MM), 2800 INITIAL LUMENS (MINIMUM), CRI 85 (MINIMUM), COLOR TEMPERATURE 3000 K, AND AVERAGE RATED LIFE 20,000 HOURS UNLESS OTHERWISE INDICATED.
- B. T8 RAPID-START LAMPS, RATED 17 W MAXIMUM, NOMINAL LENGTH OF 24 INCHES (610 MM), 1300 INITIAL LUMENS (MINIMUM), CRI 85 (MINIMUM), COLOR TEMPERATURE 3000 K, AND AVERAGE RATED LIFE OF 20,000 HOURS UNLESS OTHERWISE INDICATED.
- C. T5 RAPID-START LAMPS, RATED 28 W MAXIMUM, NOMINAL LENGTH OF 45.2 INCHES (1150 MM), 2900 INITIAL LUMENS (MINIMUM), CRI 85 (MINIMUM), COLOR TEMPERATURE 3000 K, AND AVERAGE RATED LIFE OF 20,000 HOURS UNLESS OTHERWISE INDICATED.
- D. T5HO RAPID-START, HIGH-OUTPUT LAMPS, RATED 54 W MAXIMUM, NOMINAL LENGTH OF 45.2 INCHES (1150 MM), 5000 INITIAL LUMENS (MINIMUM), CRI 85 (MINIMUM), COLOR TEMPERATURE 4100 K, AND AVERAGE RATED LIFE OF 20,000 HOURS UNLESS OTHERWISE INDICATED.
- E. COMPACT FLUORESCENT LAMPS: 4-PIN, CRI 80 (MINIMUM), COLOR TEMPERATURE 3000 K, AVERAGE RATED LIFE OF 10,000 HOURS AT THREE HOURS OPERATION PER START, AND SUITABLE FOR USE WITH DIMMING BALLASTS UNLESS OTHERWISE INDICATED.
1. 13 W: T4, DOUBLE OR TRIPLE TUBE, RATED 900 INITIAL LUMENS (MINIMUM).
 2. 18 W: T4, DOUBLE OR TRIPLE TUBE, RATED 1200 INITIAL LUMENS (MINIMUM).
 3. 26 W: T4, DOUBLE OR TRIPLE TUBE, RATED 1800 INITIAL LUMENS (MINIMUM).
 4. 32 W: T4, TRIPLE TUBE, RATED 2400 INITIAL LUMENS (MINIMUM).
 5. 42 W: T4, TRIPLE TUBE, RATED 3200 INITIAL LUMENS (MINIMUM).
 6. 57 W: T4, TRIPLE TUBE, RATED 4300 INITIAL LUMENS (MINIMUM).
 7. 70 W: T4, TRIPLE TUBE, RATED 5200 INITIAL LUMENS (MINIMUM).

LED LAMPS

- A. MINIMUM LUMENS PER SCHEDULED FIXTURE.
- B. MINIMUM ALLOWABLE EFFICACY OF 85 LM/W.
- C. CRI OF MINIMUM 80. CPT PER SCHEDULED FIXTURE.
- D. RATED LAMP LIFE OF 50,000 HOURS TO L70.
- E. DIMMABLE FROM 100 PERCENT TO 1 PERCENT OF MAXIMUM LIGHT OUTPUT.
- F. INTERNAL DRIVER.
- G. USER-REPLACEABLE LAMPS:
1. BULB SHAPE COMPLYING WITH ANSI C78.79.
 2. LAMP BASE COMPLYING WITH ANSI C81.61 OR IEC 60061-1.

WIRING DEVICES

- A. MANUFACTURERS:
1. COOPER WIRING DEVICES;
 2. HUBBELL INCORPORATED; WIRING DEVICE-KELLUMS
 3. LEVITON MFG. COMPANY INC.
 4. PASS & SEYMOUR/LEGRAND; WIRING DEVICES & ACCESSORIES
- B. ALL WIRING DEVICES TO BE WHITE OR COLOR AS SELECTED BY ARCHITECT.
- C. STRAIGHT BLADE RECEPTACLES:
CONVENIENCE RECEPTACLES, 125 V, 20 A: COMPLY WITH NEMA WD 1, NEMA WD 6 CONFIGURATION 5-20R, AND UL 498. PRODUCTS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE ONE OF THE FOLLOWING:
1. LEVITON; 16341-W (SINGLE), 16382-W (DUPLEX).
 2. ANY EQUAL BY ABOVE LISTED MANUFACTURERS.

- D. ISOLATED-GROUND, DUPLEX CONVENIENCE RECEPTACLES, 125 V, 20 A: COMPLY WITH NEMA WD 1, NEMA WD 6 CONFIGURATION 5-20R; AND UL 498. PRODUCTS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE ONE OF THE FOLLOWING:
 3. LEVITON; 16362-IGW.
 4. ANY EQUAL BY ABOVE LISTED MANUFACTURERS.
- DESCRIPTION: STRAIGHT BLADE; EQUIPMENT GROUNDING CONTACTS SHALL BE CONNECTED ONLY TO THE GREEN SURROUNDING SCREW TERMINAL OF THE DEVICE, AND WITH INHERENT ISOLATION FROM MOUNTING STRIP. ISOLATION FROM MOUNTING STRIP SHALL BE INTEGRAL TO RECEPTACLE CONSTRUCTION AND NOT DEPENDENT ON REMOVABLE PARTS.
- E. GFCI RECEPTACLES
GENERAL DESCRIPTION: STRAIGHT BLADE, FEED-THROUGH TYPE. COMPLY WITH NEMA WD 1, NEMA WD 6, UL 498, AND UL 943, CLASS A, AND INCLUDE INDICATOR LIGHT THAT IS LIGHTED WHEN DEVICE IS TRIPPED. DUPLEX GFCI CONVENIENCE RECEPTACLES, 125 V, 20 A: PRODUCTS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE ONE OF THE FOLLOWING:
1. LEVITON; 7899-W.
 2. ANY EQUAL BY ABOVE LISTED MANUFACTURERS.
- F. SNAP SWITCHES, COMPLY WITH NEMA WD 1 AND UL 20. SWITCHES, 120/277 V, 20 A: PRODUCTS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE ONE OF THE FOLLOWING:
1. LEVITON; 5621-2W (SINGLE POLE), 5622-2 (TWO POLE), 5623-2 (THREE WAY)
 2. ANY EQUAL BY ABOVE LISTED MANUFACTURERS.
- G. WALL-BOX DIMMERS, DIMMER SWITCHES: MODULAR, FULL-WAVE, SOLID-STATE UNITS WITH INTEGRAL, QUIET ON-OFF SWITCHES, WITH AUDIBLE FREQUENCY AND EMI/RFI SUPPRESSION FILTERS. CONTROL: CONTINUOUSLY ADJUSTABLE SLIDER; WITH SINGLE-POLE OR THREE-WAY SWITCHING. COMPLY WITH UL 1472.
1. INCANDESCENT LAMP DIMMERS: 120 V: CONTROL SHALL FOLLOW SQUARE-LAW DIMMING CURVE. ON-OFF SWITCH POSITIONS SHALL BYPASS DIMMER MODULE. 2000 W: DIMMERS SHALL REQUIRE NO DERATING WHEN GANGED WITH OTHER DEVICES.
 2. FLUORESCENT LAMP DIMMER SWITCHES: MODULAR; COMPATIBLE WITH DIMMER BALLASTS; TRIM POTENTIOMETER TO ADJUST LOW-END DIMMING; DIMMER-BALLAST COMBINATION CAPABLE OF CONSISTENT DIMMING WITH LOW END NOT GREATER THAN 20 PERCENT OF FULL BRIGHTNESS.
 3. ACCEPTABLE MANUFACTURERS: LUTRON, LEVITON.
- H. VACANCY/OCCUPANCY SENSORS, WALL-SWITCH SENSORS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE ONE OF THE FOLLOWING:
1. LUTRON; MS-B102. (PROGRAMMED FOR VACANCY OR OCCUPANCY OPERATION AS SHOWN)
 2. ANY EQUAL BY NOVITAS, WATTSTOPPER, LEVITON OR SENSOR SWITCH.
- DESCRIPTION: DUAL TECHNOLOGY TYPE, 120/277 V, ADJUSTABLE TIME DELAY UP TO 20 MINUTES, 180-DEGREE FIELD OF VIEW, WITH A MINIMUM COVERAGE AREA OF 900 SQ. FT. (81 SQ. M). MANUAL-ON/AUTO-OFF OR AUTO-ON TO 50%/AUTO-OFF.
- I. WALL PLATES, SINGLE AND COMBINATION TYPES TO MATCH CORRESPONDING WIRING DEVICES. PLATE-SECURING SCREWS: METAL WITH HEAD COLOR TO MATCH PLATE FINISH.
1. MATERIAL FOR FINISHED SPACES: SMOOTH, HIGH-IMPACT THERMOPLASTIC 0.035-INCH- (1-M35-M) THK.
 2. MATERIAL FOR UNFINISHED SPACES: SMOOTH, HIGH-IMPACT THERMOPLASTIC.
 3. MATERIAL FOR DAMP LOCATIONS: THERMOPLASTIC WITH SPRING-LOADED LIFT COVER, AND LISTED AND LABELED FOR USE IN "WET LOCATIONS."
 4. WET-LOCATION, WEATHERPROOF COVER PLATES: NEMA 250, COMPLYING WITH TYPE 3R WEATHER-RESISTANT, THERMOPLASTIC WITH LOCKABLE COVER.

LIGHTING SYSTEM FUNCTIONAL TESTING

- A. ALL REQUIREMENTS SHALL BE PERFORMED PER THE CURRENTLY ADOPTED ENERGY CONSERVATION CODE IN THE AUTHORITY HAVING JURISDICTION. THE FOLLOWING IS NOT A COMPLETE LISTING.
- B. OCCUPANT SENSOR CONTROLS. WHERE OCCUPANT SENSOR CONTROLS ARE PROVIDED, THE FOLLOWING PROCEDURES SHALL BE PERFORMED:
1. CERTIFY THAT THE OCCUPANT SENSOR HAS BEEN LOCATED AND AIMED IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.
 2. FOR PROJECTS WITH SEVEN OR FEWER OCCUPANT SENSORS, EACH SENSOR SHALL BE TESTED.
 3. FOR PROJECTS WITH MORE THAN SEVEN OCCUPANT SENSORS, TESTING SHALL BE DONE FOR EACH UNIQUE COMBINATION OF SENSOR TYPE AND SPACE GEOMETRY. WHERE MULTIPLE OF EACH UNIQUE COMBINATION OF SENSOR TYPE AND SPACE GEOMETRY ARE PROVIDED, NOT LESS THAN 10 PERCENT, BUT IN NO CASE LESS THAN ONE, OF EACH COMBINATION SHALL BE TESTED UNLESS THE CODE OFFICIAL OR DESIGN PROFESSIONAL REQUIRES A HIGHER PERCENTAGE TO BE TESTED. WHERE 30 PERCENT OR MORE OF THE TESTED CONTROLS FAIL, ALL REMAINING IDENTICAL COMBINATIONS SHALL BE TESTED. FOR OCCUPANT SENSOR CONTROLS TO BE TESTED, VERIFY THE FOLLOWING:
 - 3.1. WHERE OCCUPANT SENSOR CONTROLS INCLUDE STATUS INDICATORS, VERIFY CORRECT OPERATION.
 - 3.2. THE CONTROLLED LIGHTS TURN OFF OR DOWN TO THE PERMITTED LEVEL WITHIN THE REQUIRED TIME.
 - 3.3. FOR AUTO-ON OCCUPANT SENSOR CONTROLS, THE LIGHTS TURN ON TO THE PERMITTED LEVEL WHEN AN OCCUPANT ENTERS THE SPACE.
 - 3.4. FOR MANUAL-ON OCCUPANT SENSOR CONTROLS, THE LIGHTS TURN ON ONLY WHEN MANUALLY ACTIVATED.
 - 3.5. THE LIGHTS ARE NOT INCORRECTLY TURNED ON BY MOVEMENT IN ADJACENT AREAS OR BY HVAC OPERATION.
- C. TIME-SWITCH CONTROLS. WHERE TIME-SWITCH CONTROLS ARE PROVIDED, THE FOLLOWING PROCEDURES SHALL BE PERFORMED:
1. CONFIRM THAT THE TIME-SWITCH CONTROL IS PROGRAMMED WITH ACCURATE WEEKDAY, WEEKEND AND HOLIDAY SCHEDULES.
 2. PROVIDE DOCUMENTATION TO THE OWNER OF TIMESWITCH CONTROLS PROGRAMMING INCLUDING WEEKDAY, WEEKEND, HOLIDAY SCHEDULES, AND SET-UP AND PREFERENCE SETTINGS.
 3. VERIFY THE CORRECT TIME AND DATE IN THE TIME SWITCH.
 4. VERIFY THAT ANY BATTERY BACK-UP IS INSTALLED AND ENERGIZED.
 5. VERIFY THAT THE OVERRIDE TIME LIMIT IS SET TO NOT MORE THAN 2 HOURS.
 6. SIMULATE OCCUPIED CONDITION. VERIFY AND DOCUMENT THE FOLLOWING:
 - 6.1. ALL LIGHTS CAN BE TURNED ON AND OFF BY THEIR RESPECTIVE AREA CONTROL SWITCH.
 - 6.2. THE SWITCH ONLY OPERATES LIGHTING IN THE ENCLOSED SPACE IN WHICH THE SWITCH IS LOCATED.
 7. SIMULATE UNOCCUPIED CONDITION. VERIFY AND DOCUMENT THE FOLLOWING:
 - 7.1. NONEXEMPT LIGHTING TURNS OFF.
 - 7.2. MANUAL OVERRIDE SWITCH ALLOWS ONLY THE LIGHTS IN THE ENCLOSED SPACE WHERE THE OVERRIDE SWITCH IS LOCATED TO TURN ON OR REMAIN ON UNTIL THE NEXT SCHEDULED SHUTOFF OCCURS.
 8. ADDITIONAL TESTING AS SPECIFIED BY THE REGISTERED DESIGN PROFESSIONAL.
- D. DAYLIGHT RESPONSIVE CONTROLS. WHERE DAYLIGHT RESPONSIVE CONTROLS ARE PROVIDED, THE FOLLOWING SHALL BE VERIFIED:
1. CONTROL DEVICES HAVE BEEN PROPERLY LOCATED, FIELD CALIBRATED AND SET FOR ACCURATE SETPOINTS AND THRESHOLD LIGHT LEVELS.
 2. DAYLIGHT CONTROLLED LIGHTING LOADS ADJUST TO LIGHT LEVEL SET POINTS IN RESPONSE TO AVAILABLE DAYLIGHT.
3. THE LOCATIONS OF CALIBRATION ADJUSTMENT EQUIPMENT ARE READILY ACCESSIBLE ONLY TO AUTHORIZED PERSONNEL.

DEVICE MOUNTING HEIGHTS

IN GENERAL, UNLESS OTHERWISE NOTED ON THE ARCHITECTURAL DRAWINGS OR THE ELECTRICAL DRAWINGS, MOUNTING HEIGHTS SHALL BE AS FOLLOWS: (HEIGHTS SHOWN ARE ABOVE FINISHED FLOOR TO CENTER LINE OF OUTLET)

WALL SWITCHES		48 INCHES	ELECTRICAL,
Voice/DATE OUTLETS	18 INCHES		
CLOCK OUTLETS		90 INCHES	RECEPTACLES (
MOUNTED ABOVE A COUNTER)	42 INCHES		
FIRE ALARM PULL STATIONS		42 INCHES	
FIRE ALARM SYSTEM AUDIO/VISUAL STROBES		80 INCHES	
FIRE ALARM SYSTEM VISUAL STROBES		80 INCHES	
WALL MOUNTED TELEPHONE		42 INCHES	

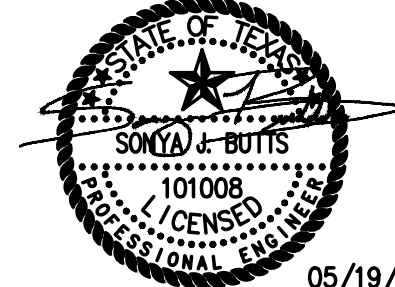
A New Development for
High Meadow Business Park

REV:	DATE:	DESCRIPTION:
	5-12-21	ISSUE FOR PERMIT

www.breakthroughengineeringdesigns.com
832-413-5390 phone
832-200-1659 fax
TEXAS FIRM REGISTRATION #: 11984



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ALABAMA F-4
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SONJABUTTS@GMAIL.COM 832.413.5390 X101



05/19/21

SHEET TITLE:

ELECTRICAL
SPECIFICATIONS

SHEET NO:

E3.1

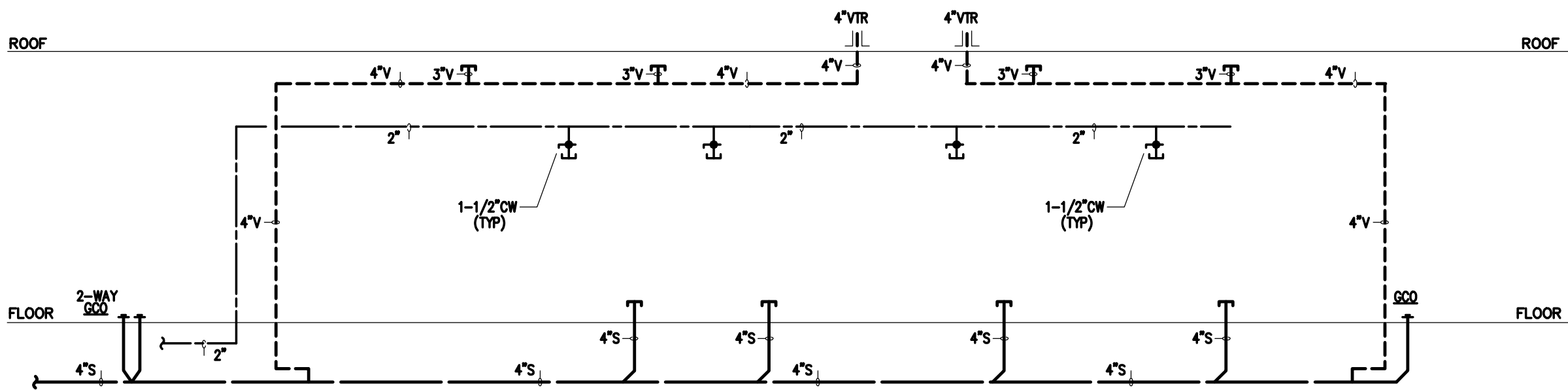
GENERAL NOTES

- A. PRICING SHALL INCLUDE ANY PLUMBING PIPING OFFSETS OR REROUTING DUE TO OBSTRUCTIONS.
- B. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR PROPER ALIGNMENT OF PIPES AT POINT OF CONNECTION AND SHALL CORRECT MISALIGNED PIPING AT NO COST TO THE OWNER.
- C. DRAWINGS ARE DIAGRAMMATIC. FIELD COORDINATE DIMENSIONS AND LOCATIONS. COORDINATE EXACT ROUTING OF ALL SERVICES WITH ALL OTHER TRADES. USE LARGER DIMENSIONS IF MULTIPLE DIMENSIONAL CONSTRAINTS APPEAR TO OVERLAP OR CONFLICT WITH EACH OTHER.
- D. GUARANTEE LABOR AND MATERIALS FOR ONE YEAR.
- E. ALL FIXTURES, EQUIPMENT PROVIDED SHALL MEET OR EXCEED STATE AND LOCAL CODE REQUIREMENTS IN ADDITION TO REQUIREMENTS IN THE SPECIFICATION.
- F. COORDINATE WITH STRUCTURE AND OTHER DISCIPLINES.
- G. SHARE TRENCHES WITH OTHER TRADES WHERE POSSIBLE.
- H. SEPARATE UNDERGROUND WATER LINES FROM UNDERGROUND SANITARY LINES AND ELECTRICAL BY 12" MINIMUM.
- I. ALL NEW CONSTRUCTION MATERIALS AND PRODUCTS TO BE USED IN THE BUILDING MUST BE CERTIFIED BY THE MANUFACTURE AS ASBESTOS FREE OR ARE ACCOMPANIED BY MATERIAL SAFETY DATA SHEETS/PRODUCT DATA SHEETS THAT INDICATE THEY ARE ASBESTOS FREE.
- J. CONTRACTOR IS RESPONSIBLE FOR CLEANING AND SANITIZING THE WATER LINES AT THE COMPLETION OF THE PROJECT.
- K. ALL PIPE PENETRATIONS THRU EXTERIOR WALLS AND ROOF SHALL BE CAULK AND SEAL AIRTIGHT WITH WATER PROOF SEALANT.
- L. ALL PIPE PENETRATIONS THRU FIRE / SMOKE RATED WALLS SHALL BE INSTALLED IN ACCORDANCE WITH 2012 INTERNATIONAL BUILDING CODE, SECTION 714.3 TO PRESERVE THE WALL RATINGS. FIRESTOP SYSTEM INSTALLED AS TESTED IN ACCORDANCE WITH ASTM E 814 OR UL1479.

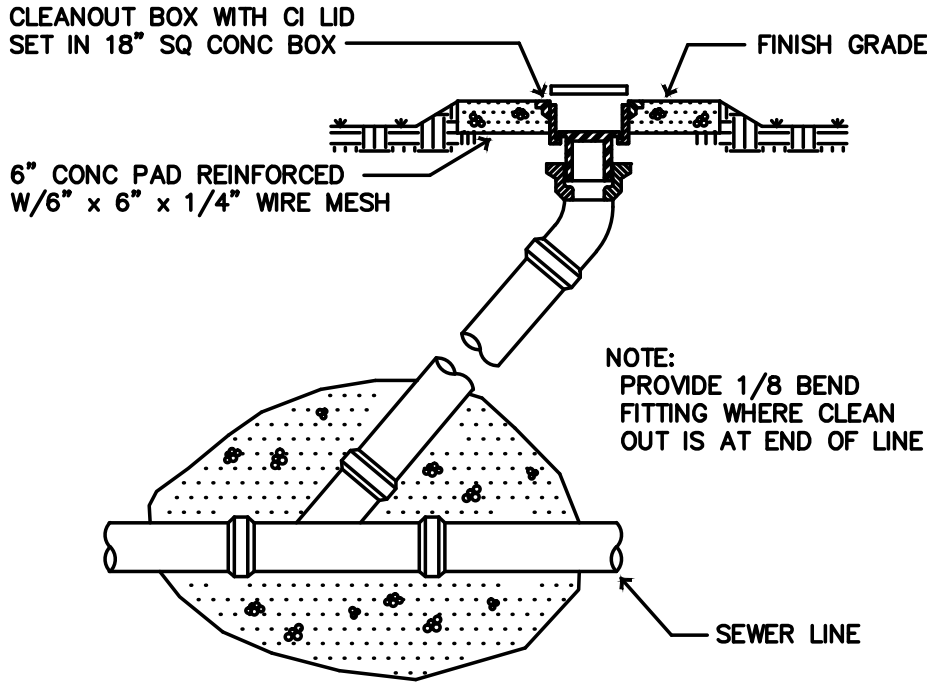
KEYED NOTES

- ① ROUTE 4" SANITARY STUB UP WITH CAP AT END. STUB UP TO BE 2'-0" A.F.F. FOR FUTURE TENANT CONNECTION.
- ② 3"V PIPING TO BE CAPPED OFF FOR FUTURE TENANT CONNECTION.
- ③ 1-1/2" CW PIPING WITH BALL VALVE FOR FUTURE TENANT CONNECTION.
- ④ ROUTE 2" DOMESTIC WATER PIPE INTO BUILDING. REFER TO WATER BLDG. ENTRY DETAIL.
- ⑤ PROVIDE WALL CLEAN OUT AT VENT RISER. REFER TO WALL CLEAN OUT DETAIL.
- ⑥ ROUTE PIPING AS HIGH AS POSSIBLE BETWEEN JOISTS WEBBING.

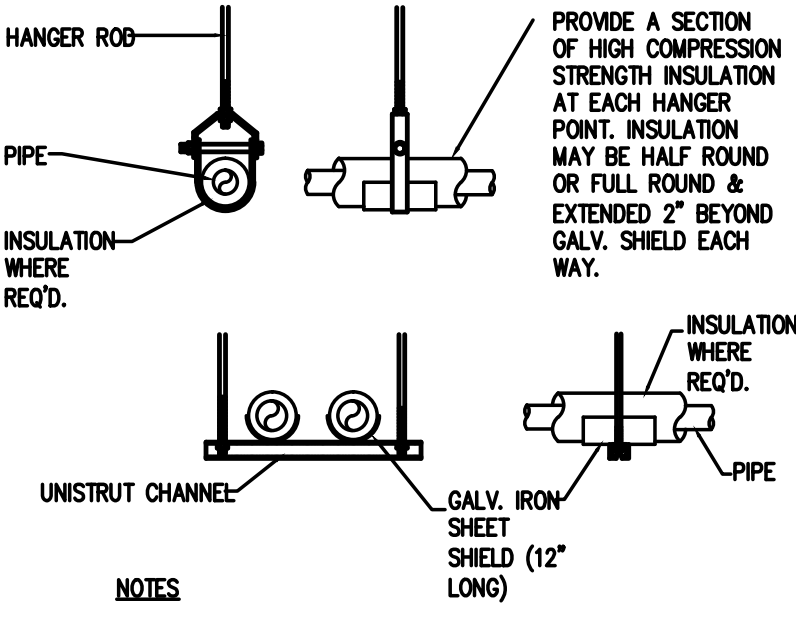
PLUMBING FIXTURE SCHEDULE							
PLAN MARK	DESCRIPTION	MANUFACTURE CATALOG #	MINIMUM ROUGH-IN SIZES				ACCEPTABLE MANUFACTURES
			W	V	CW	HW	
GCO	DUCO CAST IRON ADJUSTABLE SURFACE LEVEL CLEANOUT WITH ROUND ADJUSTABLE SCORIATED CAST IRON TOP.WITHSTAND HEAVY LOAD TRAFFIC.	JR SMITH #4231	4"	---	---	---	OR EQUAL
FCO	FLOOR CLEANOUT, ROUND NICKLE BRONZE TOP	JR SMITH #4020 SERIES	4"	---	---	---	OR EQUAL
HB-1	ENCASE, NON FREEZE, ANTI SIPHON, AUTOMATIC DRAINING WALL HYDRANT	ZURN # Z1320	---	---	3/4"	---	OR EQUAL



PLUMBING RISER DIAGRAM BLDG. 1
NO SCALE



EXTERIOR CLEANOUT DETAIL
NO SCALE

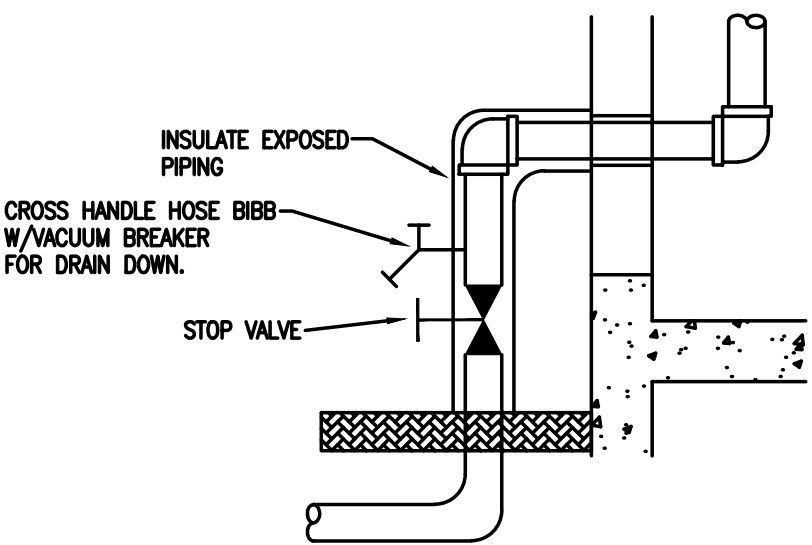


PIPE HANGERS DETAIL
SCALE: NOT TO SCALE

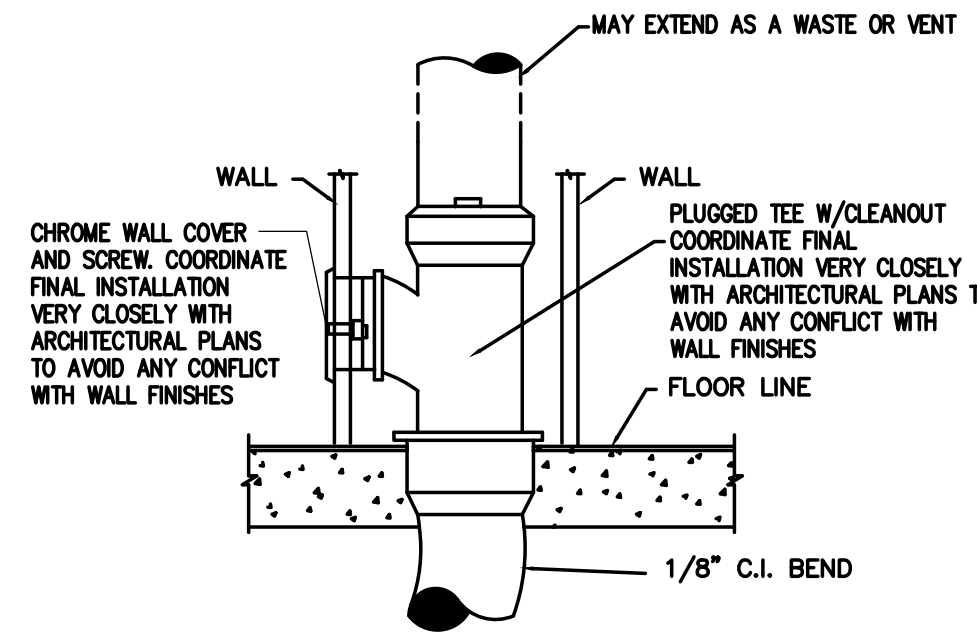
CODE INFORMATION	
CITY OF HOUSTON UNIFORM PLUMBING CODE 2012 PLUS AMENDMENTS	
CITY OF HOUSTON INTERNATIONAL BUILDING CODE 2012 PLUS AMENDMENTS	
CITY OF HOUSTON ENERGY CODE - 2015 INTERNATIONAL ENERGY CONSERVATION CODE	
CITY OF HOUSTON INTERNATIONAL FIRE CODE 2012 PLUS AMENDMENTS	
LIFE SAFETY CODE (NFPA 101)	
STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS (NFPA 13)	
TEXAS ACCESSIBILITY STANDARDS, WITH DISABILITIES ACT	

PLUMBING PIPE MATERIALS SCHEDULE	
PIPING SYSTEM	PIPING MATERIAL
SANITARY DRAIN, SANITARY VENT AND STORM PIPING BELOW GRADE	SCHEDULE 40 POLY VINYL CHLORIDE (PVC) PLASTIC PIPE
SANITARY DRAIN, SANITARY VENT AND STORM PIPING BUILDINGS ABOVE GRADE	STANDARD WEIGHT NO-HUB CAST IRON PIPE AND FITTINGS
DOMESTIC HOT & COLD WATER	COPPER, TYPE "L" HARD DRAWN
DOMESTIC WATER BELOW GROUND PIPING 1-1/2" SIZE AND SMALLER	COPPER, SOFT TYPE "K" (SEAMLESS WITH NO JOINTS BELOW FLOOR)

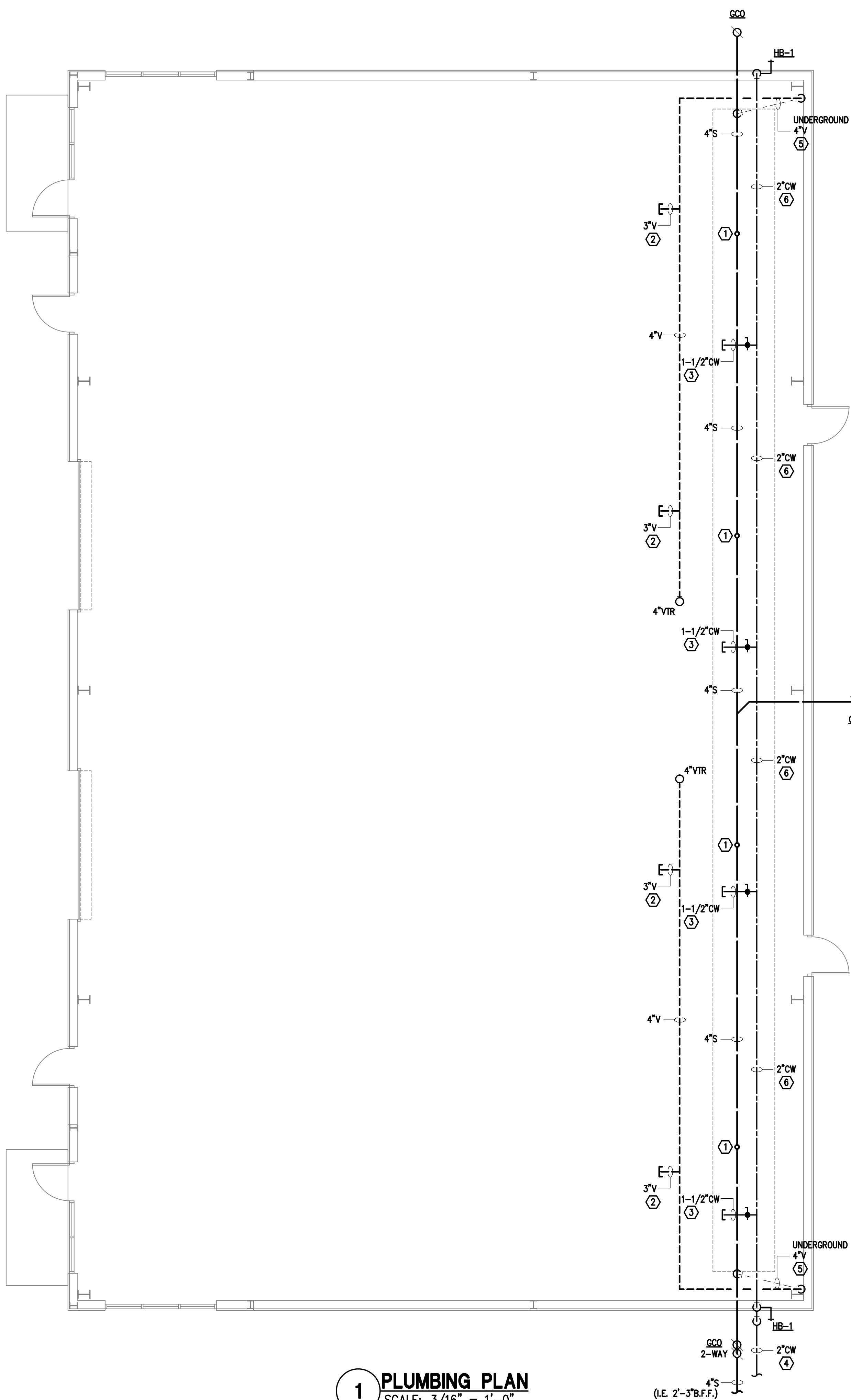
SYMBOLS AND ABBREVIATIONS			
MARK	DESCRIPTION	MARK	DESCRIPTION
---	SANITARY PIPING	---○	PIPING UP
----	SANITARY VENT PIPING	---○	PIPING DOWN
----	COLD WATER PIPING	+	BALL VALVE
---○	CLEAN OUT	---○	DOWN
---+	HOSE BIB	○ VTR	VENT THRU ROOF
UNLESS NOTED OTHERWISE, WATER AND VENT PIPING SHOWN ARE ABOVE CEILING, WASTE IS BELOW FLOOR.			



WTR. BLDG. ENTRY DETAIL
NO SCALE



TYPICAL WALL CLEANOUT DETAIL
NO SCALE



1 PLUMBING PLAN
SCALE: 3/16" = 1'-0"

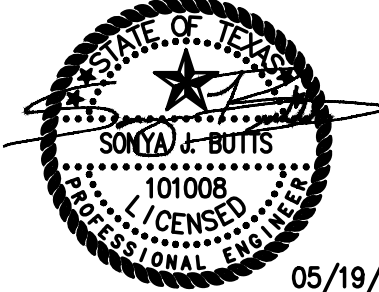
A New Development for
High Meadow Business Park

REV.	DATE:	DESCRIPTION:
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TEXAS FIRM REGISTRATION #: 11984



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UNDER THE TEXAS ENGINEERING PRACTICE ACT.
SONJABUTTS@BUTTS.COM 832.413.5390 X101



05/19/21

SHEET TITLE:

PLUMBING
PLAN

SHEET NO:

P1.0

GENERAL MEP NOTES

COORDINATION

EACH CONTRACTOR SHALL COORDINATE ITS CONSTRUCTION OPERATIONS WITH THOSE OF OTHER CONTRACTORS AND ENTITIES TO ENSURE EFFICIENT AND ORDERLY INSTALLATION OF EACH PART OF THE WORK. EACH CONTRACTOR SHALL COORDINATE OPERATIONS WITH OPERATIONS INCLUDED IN DIFFERENT SECTIONS, THAT DEPEND ON EACH OTHER FOR PROPER INSTALLATION, CONNECTION, AND OPERATION.

- SCHEDULE CONSTRUCTION OPERATIONS IN SEQUENCE REQUIRED TO OBTAIN THE BEST RESULTS WHERE INSTALLATION OF ONE PART OF THE WORK DEPENDS ON INSTALLATION OF OTHER COMPONENTS, BEFORE OR AFTER ITS OWN INSTALLATION.
- COORDINATE INSTALLATION OF DIFFERENT COMPONENTS WITH OTHER CONTRACTORS TO ENSURE MAXIMUM PERFORMANCE AND ACCESSIBILITY FOR REQUIRED MAINTENANCE, SERVICE, AND REPAIR.
- MAKE ADEQUATE PROVISIONS TO ACCOMMODATE ITEMS SCHEDULED FOR LATER INSTALLATION.

- VISIT THE SITE PRIOR TO SUBMITTING A BID TO VERIFY THE EXISTING CONDITIONS AND DESIGN CONSTRAINTS. FAILURE TO MEET THIS REQUIREMENT SHALL NOT BE JUSTIFICATION FOR FAULTY INSTALLATION OR ADDITIONAL COSTS.

- SECURE ALL PERMITS AND INSPECTIONS REQUIRED FOR WORK, AND PAY ALL FEES FOR REQUIRED WORK.

- COMPLY WITH ALL CURRENT LAWS, BUILDING CODES AND REGULATIONS FEDERAL, STATE AND LOCAL. AUTHORITIES HAVING JURISDICTION. IN THE EVENT OF CONFLICT BETWEEN THE CONTRACT DOCUMENTS AND THE LOCAL AUTHORITY HAVING JURISDICTION, THE LATTER SHALL RULE. ANY CHANGES RESULTING SHALL BE MADE WITHOUT ADDITIONAL COST TO THE OWNER OR ARCHITECT/ENGINEER. THE CONTRACTOR SHALL REPORT ANY SUCH MODIFICATIONS TO THE ARCHITECT/ENGINEER AND SECURE HIS APPROVAL BEFORE PROCEEDING. SHOULD THE REQUIREMENTS OF THE CONTRACT DOCUMENTS EXCEED THE REQUIREMENTS OF THE CODES, THE CONTRACT DOCUMENTS SHALL GOVERN PROVIDED THOSE REQUIREMENTS ARE NOT IN CONFLICT WITH THOSE CODES. ALL ITEMS OF EQUIPMENT AND ALL MATERIALS FOR WHICH APPLICABLE STANDARDS HAVE BEEN ESTABLISHED BY UNDERWRITERS' LABORATORIES, INC. (UL), FACTORY MUTUAL (FM), AMERICAN STANDARD CODES, ASME, AGA, AMCA, ASA, ANSI, ASHRAE, AND AIR SHALL BE SO APPROVED AND SHALL BEAR APPLICABLE LABELS.

- PENETRATIONS OF WALLS AND FLOORS OF FIRE-RATED ASSEMBLIES SHALL COMPLY WITH ASTM, U.L., AND THE AUTHORITIES HAVING JURISDICTION.

- SEAL ALL PENETRATIONS THRU WALLS, ROOF, FLOORS, AND EXTERIOR WALLS. PENETRATIONS OF EXTERIOR WALLS AND ROOFS SHALL BE SEALED WITH WATER-PROOF SEALANTS.

- IF THE DRAWINGS AND SPECIFICATIONS ARE IN CONFLICT THE GREATER AMOUNT OF WORK SHALL BE PRICED. BRING THE CONFLICT TO THE ATTENTION OF THE ENGINEER AND REQUEST DIRECTION.

- DRAWINGS ARE DIAGRAMMATIC AND ARE NOT INTENDED TO SHOW ALL FITTINGS, COMPONENTS AND OFFSETS. ETC. THE CONTRACTOR SHALL PROVIDE ALL FITTINGS, COMPONENTS, OFFSETS OR OTHER FEATURES REQUIRED FOR THE FULL OPERATIONAL CONDITION OF THIS PROJECT.

- CONFIRM DIMENSIONS AND LOCATIONS IN THE FIELD, DRAWINGS ARE NOT TO BE SCALED AND ARE NOT INTENDED TO SHOW EXACT LOCATIONS BASED ON SCALING DIMENSIONS.

- GARANTEE LABOR AND MATERIALS OF ENTIRE INSTALLATION FOR ONE YEAR, WORK BELOW FLOOR OR OVER CORRIDORS SHALL BE PERFORMED AT THE OWNER'S CONVENIENCE AND MAY BE REQUIRED TO BE DONE DURING EVENINGS AND WEEKENDS. DEMOLITION DUE TO EXISTING MATERIALS/EQUIPMENT WILL BE REPAIRED AT NO ADDITIONAL COST TO OWNER. RE-SUPPORT ANY REMAINING PIPING OR DEVICES THAT WERE SUPPORTED BY WALLS BEING REMOVED.

- ELECTRONIC COPIES OF CAD DRAWINGS OF THE CONTRACT DRAWINGS WILL NOT BE PROVIDED BY THE ENGINEER FOR CONTRACTOR'S USE IN PREPARING SUBMITTALS OR AS-BUILT DRAWINGS.

ACOUSTIC TREATMENT

- IT IS THE INTENT OF THESE DRAWINGS TO SPECIFY AND FOR THE CONTRACTOR TO INSTALL SYSTEMS THAT ARE QUIET AND FREE OF VIBRATION. EQUIPMENT SHALL BE BALANCED AND VIBRATION ISOLATED TO MEET THE REQUIREMENTS SPECIFIED HEREIN FOR BOTH THE EQUIPMENT ITSELF AND CONDITIONS WITHIN OCCUPIED SPACES. THIS CONTRACTOR IS RESPONSIBLE FOR OBTAINING AND INSTALLING EQUIPMENT THAT IS QUIET IN OPERATION AS COMPARED TO OTHER AVAILABLE EQUIPMENT OF ITS SIZE, CAPACITY, AND TYPE.

- EQUIPMENT NOT MEETING THESE REQUIREMENTS SHALL BE CORRECTED BY THE CONTRACTOR TO AN ACCEPTABLE LEVEL, BUT WITHIN THE REQUIREMENTS OF THE SPECIFICATIONS AT NO COST TO THE OWNER, ARCHITECT OR ENGINEER.

- AIR DISTRIBUTION EQUIPMENT SHALL BE SOUND TESTED AT THE DESIGN OPERATING CONDITIONS AND SHALL NOT EXCEED A MAXIMUM DISCHARGE NC RATING OF 25 OR A RADIATED NC RATING OF 30 AT RATED CFM.

- UNLESS NOTED OTHERWISE HEREIN OR ON THE DRAWINGS, THE NOISE LEVEL IN ALL OCCUPIED SPACES SHALL NOT EXCEED THE "LOWEST VALUE IN THE RANGE" OF THE NOISE CRITERIA CURVES PUBLISHED IN THE CURRENT FUNDAMENTALS EDITION OF THE ASHRAE GUIDE AND DATA BOOK. THE NOISE CRITERIA CURVES SHALL BE BASED ON AND STANDARD S&L-1987 OCTAVE BANDS AND A SOUND PRESSURE LEVEL IN DECIBELS REFERENCED TO 0.002 MICRONS. SOUND LEVELS IN OCCUPIED SPACES MUST MEET THE DESIGN CRITERIA WITH ALL CONSTRUCTION IN PLACE.

- SHOULD A QUESTION ARISE REGARDING THE ACCEPTABLE LEVEL OF NOISE OR VIBRATION IN A PARTICULAR SPACE OR PIECE OF EQUIPMENT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING THE SERVICES OF AN APPROVED ACOUSTICAL CONSULTANT TO DETERMINE ACTUAL NOISE/VIBRATION CONDITIONS.

SUBMITTAL ADMINISTRATIVE REQUIREMENTS

- ELECTRONIC COPIES OF CAD DRAWINGS OF THE CONTRACT DRAWINGS WILL NOT BE PROVIDED BY THE ENGINEER FOR CONTRACTOR'S USE IN PREPARING SUBMITTALS OR AS-BUILT DRAWINGS.

- COORDINATE PREPARATION AND PROCESSING OF SUBMITTALS WITH PERFORMANCE OF CONSTRUCTION ACTIVITIES. COORDINATE EACH SUBMITTAL WITH FABRICATION, PURCHASING, TESTING, DELIVERY, OTHER SUBMITTALS, AND RELATED ACTIVITIES THAT REQUIRE SEQUENTIAL ACTIVITY. SUBMIT ALL ITEMS REQUIRED FOR EACH SPECIFICATION SECTION CONCURRENTLY.

- ALLOW TIME FOR SUBMITTAL REVIEW, INCLUDING TIME FOR RESUBMITTALS, AS FOLLOWS. TIME FOR REVIEW SHALL COMMENCE ON ENGINEER'S RECEIPT OF SUBMITTAL. NO EXTENSION OF THE CONTRACT TIME WILL BE AUTHORIZED BECAUSE OF FAILURE TO TRANSMIT SUBMITTALS ENOUGH IN ADVANCE OF THE WORK TO PERMIT PROCESSING, INCLUDING RESUBMITTALS.

- INITIAL REVIEW: ALLOW 7 DAYS FOR INITIAL REVIEW OF EACH SUBMITTAL EXCLUSIVE OF TRAVEL TIME. ALLOW ADDITIONAL TIME IF COORDINATION WITH SUBSEQUENT SUBMITTALS IS REQUIRED.

- RESUBMITTAL REVIEW: ALLOW 7 DAYS FOR REVIEW OF EACH RESUBMITTAL EXCLUSIVE OF TRAVEL TIME.

- PLACE A PERMANENT LABEL OR TITLE BLOCK ON EACH PAPER COPY SUBMITTAL ITEM FOR IDENTIFICATION. INDICATE NAME OF FIRM OR ENTITY THAT PREPARED EACH SUBMITTAL ON LABEL OR TITLE BLOCK.

- INCLUDE THE FOLLOWING INFORMATION FOR PROCESSING AND RECORDING ACTION TAKEN:

- PROJECT NAME.
- DATE.
- NAME OF ARCHITECT.
- NAME OF ENGINEER.
- NAME OF CONTRACTOR.
- NAME OF SUBCONTRACTOR.
- NAME OF SUPPLIER.
- NAME OF MANUFACTURER.

- CONTRACTOR'S REVIEW:
REVIEW EACH SUBMITTAL AND CHECK FOR COORDINATION WITH OTHER WORK OF THE CONTRACT AND FOR COMPLIANCE WITH THE CONTRACT DOCUMENTS. NOTE CORRECTIONS AND FIELD DIMENSIONS. MARK WITH APPROVAL STAMP BEFORE SUBMITTING TO ARCHITECT/ENGINEER.
STAMP EACH SUBMITTAL WITH A UNIFORM APPROVAL STAMP. PROVIDE A STATEMENT CERTIFYING THAT SUBMITTAL HAS BEEN REVIEWED, CHECKED, AND APPROVED FOR COMPLIANCE WITH THE CONTRACT DOCUMENTS AND THE PHYSICAL SPACE LIMITATIONS AT THE SITE.
PROVIDE A STATEMENT CERTIFYING THAT SUBMITTAL HAS BEEN REVIEWED, CHECKED, AND APPROVED FOR COMPLIANCE WITH THE CONTRACT DOCUMENTS AND THE PHYSICAL SPACE LIMITATIONS AT THE SITE.

- IF THE GENERAL CONTRACTOR IS DEFERRING THE ABOVE REQUIREMENTS TO THE SUBCONTRACTOR, THEN THE SUBCONTRACTOR MUST ALSO REVIEW, STAMP, AND CERTIFY THE SUBMITTAL.

- ENGINEER'S ACTION:
ENGINEER WILL NOT REVIEW SUBMITTALS THAT DO NOT BEAR CONTRACTOR'S APPROVAL STAMP AND WILL RETURN THEM.
ENGINEER WILL REVIEW EACH SUBMITTAL, NOTE CORRECTIONS OR MODIFICATIONS REQUIRED, AND RETURN.
H.I.T. ENGINEER WILL PROVIDE SUBMITTAL WITH AN ACTION SHEET TO INDICATE ACTION.

REQUESTS FOR INFORMATION (RFI)

- ENGINEER WILL RETURN RFIS SUBMITTED TO ENGINEER BY OTHER ENTITIES CONTROLLED BY CONTRACTOR WITH NO RESPONSE.

- COORDINATE AND SUBMIT RFIS IN A PROMPT MANNER SO AS TO AVOID DELAYS IN CONTRACTOR'S WORK OR WORK OF SUBCONTRACTORS.

- INCLUDE A PROPOSED SOLUTION AS WELL AS INCLUDE A DETAILED, LEGIBLE DESCRIPTION OF ITEM NEEDING INFORMATION OR INTERPRETATION, INCLUDING SKETCHES, DESCRIPTIONS, MEASUREMENTS, PHOTOS, PRODUCT DATA, SHOP DRAWINGS, CONSTRUCTION DRAWINGS, AND OTHER INFORMATION NECESSARY TO FULLY DESCRIBE ITEMS NEEDING INTERPRETATION.

RECORD DRAWINGS

- WITHIN 90 DAYS OF COMPLETION OF THE PROJECT, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER, A COMPLETE SET OF "AS-BUILT" DRAWINGS PORTRAYING ACTUAL SITE CONDITIONS OF THE MECHANICAL, PLUMBING, AND FIRE PROTECTION WORK. SUBMISSION SHALL CONSIST OF ONE SET OF PAPER SETS AND ONE SET OF CAD FILES IN AUTOCAD 2007 FORMAT. ENGINEER AND ARCHITECT SEALS AND LOGOS SHALL BE REMOVED FROM THE DRAWINGS AND THEY SHALL BE STAMPED "AS-BUILT DRAWINGS".

- WITHIN 90 DAYS OF COMPLETION OF THE PROJECT, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER, A COMPLETE SET OF "O&M MANUALS", EQUIPMENT DATA, HVAC AIR AND WATER BALANCING REPORT, AND LIGHTING CONTROL TESTING REPORT FOR COMPLIANCE WITH CURRENT ENERGY CODE. THE CONTRACTOR SHALL PROVIDE A

REQUIRED SUBMITTALS

- PROVIDE FOUR BOUND PRODUCT DATA SUBMITTALS FOR THE NEW EQUIPMENT LISTED BELOW TO THE ARCHITECT/ENGINEER. EACH CONTRACTOR RESPONSIBLE FOR THE WORK SHALL REVIEW AND CERTIFY THE SUBMITTAL DATA TO BE IN FULL COMPLIANCE WITH THE CONTRACT DOCUMENTS AND THE PHYSICAL SPACE LIMITATIONS.
- AIR HANDLING UNITS
- ROOF-TOP UNITS
- FAN COIL UNITS
- AIR DISTRIBUTION DEVICES
- ELECTRICAL PANELS
- ELECTRICAL TRANSFORMERS
- LIGHTING FIXTURES
- WIRING DEVICES
- PLUMBING FIXTURES
- AIR WATER BALANCE REPORTS
- CIRCUIT DIRECTORY CARDS

MECHANICAL AND SERVICE WATER HEATING COMMISSIONING

- ALL REQUIREMENTS SHALL BE PERFORMED PER THE CURRENTLY ADOPTED ENERGY CONSERVATION CODE IN THE AUTHORITY HAVING JURISDICTION. THE FOLLOWING IS NOT A COMPLETE LISTING.

- SYSTEMS ADJUSTING AND BALANCING: HVAC SYSTEMS SHALL BE BALANCED IN ACCORDANCE WITH GENERALLY ACCEPTED ENGINEERING STANDARDS. AIR AND WATER FLOW RATES SHALL BE MEASURED AND ADJUSTED TO DELIVER FINAL FLOW RATES WITHIN TOLERANCES PROVIDED IN THE PRODUCT SPECIFICATIONS. TEST AND BALANCE ACTIVITIES SHALL INCLUDE AIR SYSTEM AND HYDRONIC SYSTEM BALANCING. THE FOLLOWING SYSTEMS ARE EXEMPT:

- MECHANICAL SYSTEMS AND SERVICE WATER HEATER SYSTEMS IN BUILDINGS WHERE THE TOTAL MECHANICAL EQUIPMENT CAPACITY IS LESS THAN 480,000 BTUH COOLING CAPACITY AND 600,000 BTUH COMBINED SERVICE WATER HEATING AND SPACE HEATING CAPACITY.
- SYSTEMS THAT SERVE INDIVIDUAL DWELLING UNITS AND SLEEPING UNITS.

- AIR SYSTEMS BALANCING: EACH SUPPLY AIR OUTLET AND ZONE TERMINAL DEVICE SHALL BE EQUIPPED WITH MEANS FOR AIR BALANCING. DISCHARGE DAMPERS USED FOR AIR SYSTEM BALANCING ARE PROHIBITED ON CONSTANT VOLUME FANS AND VARIABLE VOLUME FANS WITH MOTORS 1/2 HP AND LARGER. AIR SYSTEMS SHALL BE BALANCED IN A MANNER TO FIRST MINIMIZE THROTTLING LOSSES THEN, FOR FANS WITH SYSTEM POWER OF GREATER THAN 1 HP, FAN SPEED SHALL BE ADJUSTED TO MEET DESIGN FLOW CONDITIONS. EXCEPTIONS: FANS WITH MOTORS OF 1 HP OR LESS ARE NOTE REQUIRED TO BE PROVIDED WITH A MEANS FOR AIR BALANCING.

- FUNCTIONAL PERFORMANCE TESTING: FUNCTIONAL PERFORMANCE TESTING SHALL BE CONDUCTED.
- EQUIPMENT, EQUIPMENT FUNCTIONAL PERFORMANCE TESTING SHALL DEMONSTRATE THE INSTALLATION AND OPERATION OF COMPONENTS, SYSTEMS, AND SYSTEM-TO-SYSTEM INTERFACING RELATIONSHIPS IN ACCORDANCE WITH APPROVED PLANS AND SPECIFICATIONS SUCH THAT OPERATION, FUNCTION, AND MAINTENANCE SERVICEABILITY FOR EACH OF THE COMMISSIONING SYSTEMS IS CONFIRMED. TESTING SHALL INCLUDE ALL MODES AND SEQUENCE OF OPERATION, INCLUDING UNDER FULL-LOAD, PART-LOAD AND THE FOLLOWING EMERGENCY CONDITIONS:
 - ALL MODES AS DESCRIBED IN THE SEQUENCE OF OPERATION.
 - REDUNDANT OR AUTOMATIC BACK-UP MODE.
 - PERFORMANCE OF ALARMS.
 - MODE OF OPERATION UPON A LOSS OF POWER AND RESTORATION OF POWER.

- EXCEPTION: UNITARY OR PACKAGED HVAC EQUIPMENT THAT DO NOT REQUIRE SUPPLY AIR ECONOMIZERS.

- CONTROLS: HVAC AND SERVICE WATER-HEATING CONTROL SYSTEMS SHALL BE TESTED TO DOCUMENT THAT CONTROLS DEVICES, COMPONENTS, EQUIPMENT AND SYSTEMS ARE CALIBRATED AND ADJUSTED AND OPERATE IN ACCORDANCE WITH APPROVED PLANS AND SPECIFICATIONS. SEQUENCES OF OPERATION SHALL BE FUNCTIONALLY TESTED TO DOCUMENT THEY OPERATE IN ACCORDANCE WITH APPROVED PLANS AND SPECIFICATIONS.

- ECONOMIZERS: AIR ECONOMIZERS SHALL UNDERGO A FUNCTIONAL TEST TO DETERMINE THAT THEY OPERATE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.

PLUMBING-SPECIFICATIONS

GENERAL NOTES – PLUMBING

- DRAWING PLANS, SCHEMATICS, AND DIAGRAMS INDICATE GENERAL LOCATION AND ARRANGEMENT OF PIPING SYSTEMS. INDICATED LOCATIONS AND ARRANGEMENTS ARE USED TO SIZE PIPE AND CALCULATE FRICTION LOSS, EXPANSION, PIPE SIZING, AND OTHER DESIGN CONSIDERATIONS. INSTALL PIPING AS INDICATED UNLESS DEVIATIONS TO LAYOUT ARE APPROVED ON COORDINATION DRAWINGS.
- INSTALL COPPER TUBING UNDER BUILDING SLAB ACCORDING TO CODE "COPPER TUBE HANDBOOK."
- INSTALL SHUTOFF VALVE IMMEDIATELY UPSTREAM OF EACH DIELECTRIC FITTING.
- INSTALL DOMESTIC WATER PIPING LEVEL WITH 0.125 PERCENT SLOPE DOWNWARD TOWARD DRAIN AND PLUMB.
- INSTALL PIPING CONCEALED FROM VIEW AND PROTECTED FROM PHYSICAL CONTACT BY BUILDING CONDITIONS UNLESS OTHERWISE INDICATED AND EXCEPT IN EQUIPMENT ROOMS AND SERVICE AREAS.
- INSTALL PIPING INDICATED TO BE EXPOSED AND PIPING IN EQUIPMENT ROOMS AND SERVICE AREAS AT RIGHT ANGLES OR PARALLEL TO BUILDING WALLS. DIAGONAL RUNS ARE PROHIBITED UNLESS SPECIFICALLY INDICATED OTHERWISE.
- INSTALL PIPING ADJACENT TO EQUIPMENT AND SPECIALTIES TO ALLOW SERVICE AND MAINTENANCE.
- INSTALL PIPING TO PERMIT VALVE SERVICING.
- INSTALL NIPPLES, UNIONS, SPECIAL FITTINGS, AND VALVES WITH PRESSURE RATINGS THE SAME AS OR HIGHER THAN SYSTEM PRESSURE RATING USED IN APPLICATIONS BELOW UNLESS OTHERWISE INDICATED.
- INSTALL PIPING FREE OF SAGS AND BENDS.
- INSTALL FITTINGS FOR CHANGES IN DIRECTION AND BRANCH CONNECTIONS.
- INSTALL UNIONS IN COPPER TUBING AT FINAL CONNECTION TO EACH PIECE OF EQUIPMENT, MACHINE, AND SPEED.
- INSTALL SLEEVES FOR PIPING PENETRATIONS OF WALLS, CEILINGS, AND FLOORS.
- INSTALL ESCUTCHEONS FOR PIPING PENETRATIONS OF WALLS, CEILINGS, AND FLOORS.
- INSTALL SHUTOFF VALVE CLOSE TO WATER MAIN ON EACH BRANCH AND RISER SERVING PLUMBING FIXTURES OR EQUIPMENT, ON EACH WATER SUPPLY TO EQUIPMENT, AND ON EACH WATER SUPPLY TO PLUMBING FIXTURES THAT DO NOT HAVE SUPPLY STOPS. USE BALL VALVES FOR PIPING NPS 2 (DN 50) AND SMALLER. USE GATE VALVES FOR PIPING NPS 2-1/2 (DN 65) AND LARGER.
- INSTALL PIPING AT INDICATED SLOPES.
- INSTALL PIPING TO ALLOW APPLICATION OF INSULATION.
- MAKE CHANGES IN DIRECTION FOR SOIL AND WASTE DRAINAGE AND VENT PIPING USING APPROPRIATE BRANCHES, BENDS, AND LONG-SWEEP BENDS. SAWING SHORT-SWEEP 1/4 BENDS MAY BE USED ON VERTICAL STACKS IF CHANGE IN DIRECTION OF FLOW IS FROM HORIZONTAL TO VERTICAL. USE LONG-TURN, DOUBLE Y-BRANCH AND 1/8-BEND FITTINGS IF TWO FITTURES ARE INSTALLED BACK TO BACK OR SIDE BY SIDE WITH COMMON DRAIN PIPE. STRAIGHT TEES, ELBOWS, AND CROSSES MAY BE USED ON VENT LINES, DO NOT CHANGE DIRECTION OF FLOW MORE THAN 90 DEGREES. USE PROPER SIZE OF STANDARD INCREASERS AND REDUCERS IF PIPES OF DIFFERENT SIZES ARE CONNECTED. REDUCING SIZE OF DRAINAGE PIPING IN DIRECTION OF FLOW IS PROHIBITED.
- LAY BURIED BUILDING DRAINAGE PIPING BEGINNING AT LOW POINT OF EACH SYSTEM. INSTALL TRUE TO GRADES AND ALIGNMENT INDICATED, WITH UNBROKEN CONTINUITY OF INVERT. PLACE HUB ENDS OF PIPING UPSTREAM. INSTALL REQUIRED GASKETS ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS FOR USE OF LUBRICANT, GENTS, AND OTHER INSTALLATION REQUIREMENTS. MAINTAIN SNAKE IN PIPING AND PULL PAST EACH JOINT AS COMPLETED.
- INSTALL SOIL AND WASTE DRAINAGE AND VENT PIPING AT THE FOLLOWING MINIMUM SLOPES UNLESS OTHERWISE INDICATED:

- BUILDING SANITARY DRAIN: 2 PERCENT DOWNWARD IN DIRECTION OF FLOW FOR PIPING NPS 3 (DN 80) AND SMALLER; 1 PERCENT DOWNWARD IN DIRECTION OF FLOW FOR PIPING NPS 4 (DN 100) AND LARGER.
- HORIZONTAL SANITARY DRAINAGE PIPING: 1 PERCENT DOWNWARD IN DIRECTION OF FLOW.
- VENT PIPING: 1 PERCENT DOWN TOWARD VERTICAL FIXTURE VENT OR TOWARD VENT STACK.
- INSTALL CAST-IRON SOIL PIPING ACCORDING TO CSPST'S "CAST IRON SOIL PIPE AND FITTINGS HANDBOOK," CHAPTER IV, "INSTALLATION OF CAST IRON SOIL PIPE AND FITTINGS."
- INSTALL ENCASEMENT ON UNDERGROUND PIPING ACCORDING TO ASTM A 874 OR AWWA C105/A 215.
- DO NOT ENCLOSE, COVER, OR PUT PIPING INTO OPERATION UNTIL IT HAS BEEN INSPECTED AND APPROVED BY AUTHORITIES HAVING JURISDICTION.
- MAKE CONNECTIONS BETWEEN DISSIMILAR PIPING MATERIALS WITH ADAPTORS MANUFACTURED FOR THE APPLICABLE TYPE OF TRANSITION.
- PROVIDE DIELECTRIC ISOLATION DEVICE (DIELECTRIC UNION OR COUPLING) WHERE COPPER LINES CONNECT TO FERROUS LINES OR EQUIPMENT.
- ALL PIPING PENETRATIONS THROUGH FLOORS SHALL BE SEALED WITH UL LISTED PRESTOP.
- PROVIDE MILCO® ARCHITECTURAL GRADE FLUSH DOOR, STANDARD FLUSH DOOR, UNIVERSAL FIRE RATED INSULATED DOOR, OR EQUAL, FOR ACCESS TO ALL VALVES, CONTROLS, WATER HAMMER ARRESTORS, OR OTHER DEVICES REQUIRING MAINTENANCE. DOORS SHALL MATCH WALL OR CEILING RATING. GALVANIZED STEEL IN GENERAL APPLICATIONS, STAINLESS STEEL IN RESTROOMS, HOSPITALS, AND LABORATORIES. MINIMUM 18-20 GAUGE IN GENERAL APPLICATION, TO GAUGE MINIMUM IN VANDALISM APPLICATION. ARCHITECT MUST APPROVE LOCATION AND APPEARANCE OF ALL ACCESS DOORS, PRIOR TO INSTALLATION.
- PROVIDE VIBRATION ISOLATION TO PUMP/SUSPENDED OR SUPPORT WITH RUBBER OR SPRING ISOLATORS.
- INSTALL FLOOR DRAINS AT LOW POINTS OF SURFACE AREAS TO BE DRAINED. SET GRATES OF DRAINS FLUSH WITH FINISHED FLOOR, UNLESS OTHERWISE INDICATED.
- INSTALL ROOF FLASHING ASSEMBLIES ON SANITARY STACK VENTS AND VENT STACKS THAT EXTEND THROUGH ROOF.
- ASSEMBLE OPEN DRAIN FITTINGS AND INSTALL WITH TOP OF HUB 2 INCHES (51 MM) ABOVE FLOOR.
- INSTALL DEEP-SEAL TRAPS ON FLOOR DRAINS AND OTHER WASTE OUTLETS, IF INDICATED.
- INSTALL FLOOR-DRAIN, TRAP-SEAL PRIMER FITTINGS ON INLET TO FLOOR DRAINS THAT REQUIRE TRAP-SEAL PRIMER CONNECTION.
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- SIZE: SAME AS FLOOR DRAIN INLET.
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- INSTALL ROOF FLASHING ASSEMBLIES ON SANITARY STACK VENTS AND VENT STACKS THAT EXTEND THROUGH ROOF.
- ASSEMBLE OPEN DRAIN FITTINGS AND INSTALL WITH TOP OF HUB 2 INCHES (51 MM) ABOVE FLOOR.
- INSTALL DEEP-SEAL TRAPS ON FLOOR DRAINS AND OTHER WASTE OUTLETS, IF INDICATED.
- INSTALL FLOOR-DRAIN, TRAP-SEAL PRIMER FITTINGS ON INLET TO FLOOR DRAINS THAT REQUIRE TRAP-SEAL PRIMER CONNECTION.
- EXCEPTION: FITTING MAY BE OMITTED IF TRAP HAS TRAP-SEAL PRIMER CONNECTION.
- SIZE: SAME AS FLOOR DRAIN INLET.
- INSTALL AIR-GAP FITTINGS ON DRAINING-TYPE BACKFLOW PREVENTERS AND ON INDIRECT-WASTE PIPING DISCHARGE INTO SANITARY DRAINAGE SYSTEM.

- BUILDING SANITARY DRAIN: 2 PERCENT DOWNWARD IN DIRECTION OF FLOW FOR PIPING NPS 3 (DN 80) AND SMALLER; 1 PERCENT DOWNWARD IN DIRECTION OF FLOW FOR PIPING NPS 4 (DN 100) AND LARGER.
- HORIZONTAL SANITARY DRAINAGE PIPING: 1 PERCENT DOWNWARD IN DIRECTION OF FLOW.
- VENT PIPING: 1 PERCENT DOWN TOWARD VERTICAL FIXTURE VENT OR TOWARD VENT STACK.
- INSTALL CAST-IRON SOIL PIPING ACCORDING TO CSPST'S "CAST IRON SOIL PIPE AND FITTINGS HANDBOOK," CHAPTER IV, "INSTALLATION OF CAST IRON SOIL PIPE AND FITTINGS."
- INSTALL ENCASEMENT ON UNDERGROUND PIPING ACCORDING TO ASTM A 874 OR AWWA C105/A 215.
- DO NOT ENCLOSE, COVER, OR PUT PIPING INTO OPERATION UNTIL IT HAS BEEN INSPECTED AND APPROVED BY AUTHORITIES HAVING JURISDICTION.
- MAKE CONNECTIONS BETWEEN DISSIMILAR PIPING MATERIALS WITH ADAPTORS MANUFACTURED FOR THE APPLICABLE TYPE OF TRANSITION.
- PROVIDE DIELECTRIC ISOLATION DEVICE (DIELECTRIC UNION OR COUPLING) WHERE COPPER LINES CONNECT TO FERROUS LINES OR EQUIPMENT.
- ALL PIPING PENETRATIONS THROUGH FLOORS SHALL BE SEALED WITH UL LISTED PRESTOP.
- PROVIDE MILCO® ARCHITECTURAL GRADE FLUSH DOOR, STANDARD FLUSH DOOR, UNIVERSAL FIRE RATED INSULATED DOOR, OR EQUAL, FOR ACCESS TO ALL VALVES, CONTROLS, WATER HAMMER ARRESTORS, OR OTHER DEVICES REQUIRING MAINTENANCE. DOORS SHALL MATCH WALL OR CEILING RATING. GALVANIZED STEEL IN GENERAL APPLICATIONS, STAINLESS STEEL IN RESTROOMS, HOSPITALS, AND LABORATORIES. MINIMUM 18-20 GAUGE IN GENERAL APPLICATION, TO GAUGE MINIMUM IN VANDALISM APPLICATION. ARCHITECT MUST APPROVE LOCATION AND APPEARANCE OF ALL ACCESS DOORS, PRIOR TO INSTALLATION.
- PROVIDE VIBRATION ISOLATION TO PUMP/SUSPENDED OR SUPPORT WITH RUBBER OR SPRING ISOLATORS.
- INSTALL FLOOR DRAINS AT LOW POINTS OF SURFACE AREAS TO BE DRAINED. SET GRATES OF DRAINS FLUSH WITH FINISHED FLOOR, UNLESS OTHERWISE INDICATED.
- INSTALL ROOF FLASHING ASSEMBLIES ON SANITARY STACK VENTS AND VENT STACKS THAT EXTEND THROUGH ROOF.
- ASSEMBLE OPEN DRAIN FITTINGS AND INSTALL WITH TOP OF HUB 2 INCHES (51 MM) ABOVE FLOOR.
- INSTALL DEEP-SEAL TRAPS ON FLOOR DRAINS AND OTHER WASTE OUTLETS, IF INDICATED.
- INSTALL FLOOR-DRAIN, TRAP-SEAL PRIMER FITTINGS ON INLET TO FLOOR DRAINS THAT REQUIRE TRAP-SEAL PRIMER CONNECTION.
- EXCEPTION: FITTING MAY BE OMITTED IF TRAP HAS TRAP-SEAL PRIMER CONNECTION.
- SIZE: SAME AS FLOOR DRAIN INLET.
- INSTALL AIR-GAP FITTINGS ON DRAINING-TYPE BACKFLOW PREVENTERS AND ON INDIRECT-WASTE PIPING DISCHARGE INTO SANITARY DRAINAGE SYSTEM.

- BUILDING SANITARY DRAIN: 2 PERCENT DOWNWARD IN DIRECTION OF FLOW FOR PIPING NPS 3 (DN 80) AND SMALLER; 1 PERCENT DOWNWARD IN DIRECTION OF FLOW FOR PIPING NPS 4 (DN 100) AND LARGER.
- HORIZONTAL SANITARY DRAINAGE PIPING: 1 PERCENT