Hidalgo County Biosafety Lab

100% Schematic Design Submittal

Final Report



May 5, 2021

APPROVAL SHEET

Submitted for Approval of Schematic Design

The A/E represents that the drawings and descriptions, to the best of the A/E's knowledge and belief, fulfill the Project Scope requirements and that the construction can be completed for the Construction Budget amount, and within the Project Schedule:

May 10, 2021

Eli R. Ochoa, PE, AIA Principal / CEO — Date

May 10, 2021

Brian Godinez, Principal / CMO — Date

Maria Scurry — May 10, 2021

Maria O. Scurry, Senior Project Manager — Date

Approval on Behalf of Hidalgo County

Those signing below have reviewed the information contained within this Schematic Design Submittal:

Richard F. Cortez, County Judge — Date

Arturo Guajardo Jr., County Clerk — Date

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Program of Spaces

HC Bio-Science Labs

ERO Architects

ERO Architects
Project No. 20030

Designed By:
Eli R. Ochoa, PE, AIA

Prepared By: Maria O. Scurry, P.E.
Preparation Date: May 5, 2021

ERO Architects

Program for Spaces

HC Bio-Science Labs

Schematic Design

May 5, 2021

	Name / Type of Space		Pre Design Qty	ASF	Total ASF		Schematic Design Qty	ASF	Total ASF	
1.00	**Clinic**									
1.01	Waiting		1	200	200		1	236	236	
1.02	Reception		1	110	110		1	121	121	
1.03	Public Restroom		1	70	70		1	68	68	
1.04	Small Exam Room		2	100	200		2	110	220	
1.05	Clinical Restroom		1	70	70		1	68	68	
1.07	Storage		1	100	100		1	99	99	
1.08	Soiled Storage Closet		1	60	60		1	72	72	
1.09	Vitals		1	100	100		1	99	99	
	Subtotal Assignable sf				910				983	
	Department Grossing Factor			25%		228		24%		236
	Total Department					**1,138**				**1,219**

2.00	**Administration & Laboratory Support**									
2.01	Nursing Station		1	200	200		1	187	187	
2.02	Head Nurse Office		1	120	120		1	125	125	
2.03	Lab Staff Offices		12	100	1,200		12	102	1,224	
2.04	Lab Support Cubicles		16	48	768		15	66	985	
2.05	Microscopy		1	200	200		1	274	274	
2.06	Conference		1	280	280		1	315	315	
2.07	Storage		1	150	150		1	104	104	
2.08	Single Restroom		3	64	192		3	61	183	
2.09	Breakroom		1	280	280		1	318	318	
2.10	Janitor Closest		1	60	60		1	64	64	
2.11	Electric Room		2	60	120		1	69	69	
2.12	Mechanical Room		1	120	120				0	
2.13	MDF		1	100	100		1	124	124	
2.14	Fire Riser Room		1	100	100		1	64	64	
	Subtotal Assignable sf				3,890				4,036	
	Department Grossing Factor			25%		973		25%		1,009
	Total Department					**4,863**				**5,045**

ERO Architects

Program for Spaces

HC Bio-Science Labs

Schematic Design

May 5, 2021

			Pre Design				Schematic Design		
	Name / Type of Space	Qty	ASF	Total ASF		Qty	ASF	Total ASF	
3.00	**Laboratory**								
3.01	Laboratory Spaces								
3.02	BSL_2					1	969	969	
3.03	Chemistry/UA/Send Outs	1	480	480					
3.04	Hematology/Serology	1	480	480					
3.05	Refrigerator Room	1	120	120		1	120	120	
3.06	BSL_2+					1	244	244	
3.07	Microbiology/Molecular	1	245	245					
3.08	Lab Support Spaces								
3.09	Changing Room	1	130	130		1	137	137	
3.10	Lab Manager Office	1	140	140		1	136	136	
3.11	Vestibule	1	64	64		1	77	77	
3.12	Gown Room	1	90	90		1	100	100	
3.13	Ante Room	1	100	100		1	100	100	
3.14	Clean Storage	1	120	120		1	120	120	
3.15	Soiled Storage	1	100	100		1	100	100	
3.16	Test Sample Storage	1	90	90		1	90	90	
	Subtotal Assignable sf			2,159				2,193	
	Department Grossing Factor		25%		540		26%		570
	Total Department				**2,699**				**2,763**

4.00	**Totals**								
4.01	Total Assignable Area			6,959				7,212	
4.02	Total Gross Department Area				8,699				9,027
4.03	Building Grossing Factor		15%		1,305		11%		999
	Total Building Area				**10,004**				**10,026**

Probable Cost of Construction

HC BIOSAFETY LABS

ERO Architects

ERO Architects
Project No. 20030

Designed By:
Maria O. Scurry, PE

Prepared By:	Maria O. Scurry, PE
Preparation Date:	Tuesday, May 4, 2021
Effective Date of Pricing:	Tuesday, May 4, 2021
Est Construction Time:	300 Days

DISCLAIMER

We wish to inform you that because of the uncertainty in the construction industry, resulting from the effects of the COVID-19 pandemic, ERO Architects cannot and does not warrant or represent that bids or negotiated prices will not vary from the Hidalgo County Health and Human Services. budget for the Cost of the Work (CW), or from any Probable Costs of Construction (PCC) of the CW, or evaluation, prepared or agreed to by ERO Architects. It is acknowledged that ERO Architects has no control over market conditions, in general nor those resulting from COVID-19 responses, that affect; the availability of either contractors, sub-contractors, suppliers or vendors, the cost of labor, materials, or equipment; the Contractor's methods of determining bid prices; or competitive bidding, or negotiating conditions.

For further clarification, Cost of the Work (CW), is defined as the total cost to Hidalgo County Health and Human Services. to construct all elements of the projects designed or specified by ERO Architects, and includes contractors' general conditions costs, overhead and profit. The CW also includes the reasonable value of labor, materials, and equipment, donated to, or otherwise furnished by Hidalgo County Health and Human Services. The CW does not include the compensation of ERO Architects, the costs of the land, rights-of-way, financing, or contingencies for changes in the Work; or other costs that are the responsibility of Hidalgo County Health and Human Services.

CLARIFICATIONS & EXCLUSIONS

1. This Probable Cost of Construction (PCC) report is based on the Feasibility Phase.
2. PCC Report is based on today's pricing available through RS Means and local pricing from contractors, sub-contractors, suppliers and vendors.
3. It is the ERO's opinion that the anticipated (PCC) in this report should be escalated at a rate of 6% per year, compounded, to the start of construction once the construction schedule is determined. The PCC on this report has an escalation of 6 months.
4. PCC Report includes the following contingencies:
    a. Feasibility Package Design Contingency of 7%.
    b. Owner Contingency of 3%.
5. PCC report does not include fixtures, furniture and equipment (FFE) similar but not limited to:
    a. Desks and chairs.
    b. Computers.
6. PCC Report does not include any utility deposits or inspection fees.
7. PCC Report does not include any costs associated with inspections or specialty inspectors of any kind. Owner will provide all required inspections and certified inspectors required in association with permits provided by TCEQ, TPDES and all other governing agencies that may be applicable to this project.
8. PCC Report does not include the cost of relocation or moving expenses.
9. PCC Report does not include materials testing, which shall be paid for and provided by the Owner and will be coordinated with the Contractor.
10. PCC Report does not include hazardous material surveys, abatement, handling and/or removal of any of any environmentally hazardous material encountered, removal or replacement of any unsuitable subsurface materials during the course of the work.
11. The following detailed prices are derived from projects in the Rio Grande Valley, TX.

SUMMARY INFORMATION

AREA INFORMATION

	Interior	Porches	Totals
CLINIC/ADMINISTRATION	7,747	117	7,864
LABORATORY	2,279	0	2,279
	10,026	117	**10,143 SF**

COST ESTIMATE LEVEL I SUMMARY

System	Sub-Total	$/SF	%
A. SUBSTRUCTURE	$206,027	$20.31	5.20%
B. SHELL	$512,213	$50.50	12.93%
C. INTERIORS	$522,002	$51.46	13.18%
D. SERVICES	$1,561,641	$153.96	39.43%
E. EQUIPMENT & FURNISHINGS	$0	$0.00	0.00%
F. SPECIAL CONSTRUCTION & DEMOLITION	$176,924	$17.44	4.47%
G. BUILDING SITEWORK	$187,394	$18.48	4.73%
	$3,166,201	**$312.16**	**79.94%**
H. CONTRACTOR FEES & CONTINGENCIES	$794,320	$78.31	20.06%
TOTAL Building Cost Estimate for 02.12.2021	**$3,960,521**	**$390.47**	**100.00%**
Escalated Total Building Cost	**$4,079,337**	**$402.18**	

11/2/2021 Date of Escalated Estimate
6 Number of months escalated
6.00% per year

$4,079,337

OWNER PROVIDED FFE

VALUE MANAGEMENT STRATEGIES

Line Number	Description	Quantity	Unit	Unit Cost	Sub-Total	Total
A. SUBSTRUCTURE		**10,143**	**SF**	**$20.31**		**$206,027**
A10	**Foundations**			**$20.31**	**$206,027**	
A1010	**Standard Foundation**				**$71,164**	
A102021102220a	3'-6" x 3'-6" Thickened, widened grade beams	9.00	Ea	$716.26	$6,446	
A102021102220b	Perimeter Grade Beam, 12" x 30"	404.00	LF	$73.01	$29,496	
A102021102220c	Interior Grade Beam, 12" x 24"	603.00	LF	$58.41	$35,221	
A1020	**Special Foundation**				**$57,269**	
A1020	Excavation for building pad foundations, remove 24" to 5ft outside of the building line, includes haul-off.	909.04	CY	$18.00	$16,363	
A1020	Compacted select fill for building pad, includes a 40 miles cycle haul, sheepsfoot rollover, 8" lifts	1,363.56	CY	$30.00	$40,907	
A1030	**Slab on grade**				**$77,594**	
A10301204520	Slab on grade, 6" thick, light industrial, reinforced	10,143.00	SF	$7.65	$77,594	
A20	**Basement Excavation**			**$0.00**	**$0**	
B. SHELL		**10,143**	**SF**	**$50.50**		**$512,213**
B10	**Superstructure**			**$15.51**	**$157,302**	
B1020	**Roof Construction**				**$157,302**	
B10201124900	Typical K-series Joist, 20K4 @5ft O.C., 7.2 plf, 1.4 lb/sf	7.10	Ton.	$6,000.00	$42,601	
B1020a	Metal roof deck, 1.5B22 Galv., 1.78 lb/sf	9.03	Ton.	$6,000.00	$54,164	
B1020b	Steel Columns, 22.37 plf,	1.61	Ton.	$6,000.00	$9,664	
B1020c	Steel Beams, 35plf	5.67	Ton.	$6,000.00	$34,020	
B1020d	Misc. steel, Ton. @ 12% of total steel = 5.25 Ton., used for bracing, closure angles, loose lintels, connections.	2.81	Ton.	$6,000.00	$16,854	
B20	**Exterior Closure**			**$22.61**	**$229,321**	
B2010	**Exterior Walls**				**$153,648**	
B2010004000a	5.1/2" Tilt-Up Concrete Walls, includes 2" insulation, fluid applied membrane, exterior paint, gyp, & scaffolding	5,951.00	SF	$21.53	$128,125	
	6" metal studs, includes 2" insulation, fluid applied membrane, metal panel, gyp, & scaffolding	307.00	SF	$30.00	$9,210	
B2010004000b	5.1/2" Tilt-Up Concrete Walls and scaffolding	402.00	SF	$15.21	$6,114	
B20101305000	6" metal studs, brick, gyp, & scaffolding	42.00	SF	$20.43	$858	
B20101251000	Brick veneer only	662.00	SF	$14.11	$9,341	
B2010	**Exterior Soffit**				**$4,320**	
B20101461500	Metal Panel	109.00	SF	$39.63	$4,320	
B2020	**Exterior Windows**				**$42,926**	
B2020210180a	Alum. Storefront w/ 1" Ins. Glass.	450.00	SF	$75.25	$33,863	

Line Number	Description	Quantity	Unit	Unit Cost	Sub-Total	Total
12211313130020	Metal 1' horizontal blinds	862.00	SF	$7.34	$6,327	
88130100700	Frosted Glass (additional)	135.00	SF	$20.27	$2,736	
B2030	**Exterior Doors**				**$28,427**	
B20301106400	Door, Aluminum & glass, hardware, single door 3'-0" x 7'-0" opening.	3	Ea	$3,549.32	$10,648	
B20302203700	Door, steel 18 gauge, hollow metal, double door with frame, no label, 6'-0" x 7'-0".	2	Ea	$5,139.68	$10,279	
B2030001a	Door Hardware Accessories.	5	Ea	$1,500.00	$7,500	
B30	**Roofing**			**$12.38**	**$125,590**	
B3010	**Roof Coverings**				**$121,716**	
B30101204000a	TPO, single-ply.	10,143.00	SF	$12.00	$121,716	
B3020	**Roof Openings**				**$3,874**	
B3020	Metal Roof Ladder.	16.00	VLF	$63.93	$1,023	
B30202100800	Roof hatch, with curb, 1" fiberglass insulation, 2'x6" x 8'-0", aluminum curb and cover, 260 lbs.	1.00	Ea	$2,851.00	$2,851	
C. INTERIORS		**10,143**	**SF**	**$51.46**		**$522,002**
C10	**Interior Construction**			**$36.51**	**$370,368**	
C1010	**Partitions**				**$97,959**	
C10101265060	Metal Partitions, 5/8" gyp. Board face, both faces 3 5/8" @ 16" O.C.	10,269	SF	$4.83	$49,599	
C10101265060a	Metal Partitions, 5/8" gyp. Board face, both faces 6" @ 16" O.C.	4,357	SF	$5.41	$23,571	
C10107100000a	Glazed openings, Aluminum Frames, 1/4" Tempered	412	SF	$56.94	$23,459	
85113204300	Sliding Windows, aluminum, commercial grade, standard glas 5' x 3'	3	Ea	$443.08	$1,329	
C1020	**Interior Doors**				**$151,800**	
C10201222020	Wood door/metal frame, hollow core/flush, 3'-0" x 7'-0" opening, no label.	36	Ea	$1,133.04	$40,789	
	Interior Storefront Door	1	Ea	$1,620.00	$1,620	
	Lab door/meal frame, poly door with foam core, 3'-0" x 7'-0" opening, no label.	11	Ea	$3,399.12	$37,390	
C1020001a	Door Hardware Accessories.	48	Ea	$1,500.00	$72,000	
C1030	**Fittings**				**$66,044**	
C10307100130	Paper towel dispenser, flush mounted, waste receptacle.	10	Ea	$474.00	$4,740	
C10307100150	Grab bar sets. 1.1/2" diameter, 36" long	5	Ea	$136.28	$681	
C10307100170	Lavatory Mirror.	5	Ea	$337.90	$1,690	
C10307100190	Roll tissue dispenser, surface mounted. Electric hand dryers	5	Ea	$38.11	$191	
C1030a	Clothes hooks.	13	Ea	$24.00	$312	
C1030b	Soap dispenser, wall mounted.	10	Ea	$85.54	$855	
C10300000000c	Casework, upper/lower cabinets	127	LF	$432.00	$54,648	
C10300000000d	Fabricated Desk Millwork	17	LF	$120.00	$2,040	
10303100610	Metal Shelving	61	LF	$14.57	$887	
	Laboratory Fittings				**$54,565**	
	Base Cabinet Casework	147	LF	$180.00	$26,370	
	Lab Counter Tops	355	SF	$20.00	$7,095	

Line Number	Description	Quantity	Unit	Unit Cost	Sub-Total	Total
	Lab Sink with Faucet	5	Ea	$600.00	$3,000	
	Eyewash	2	Ea	$525.00	$1,050	
	Safety Shower	2	Ea	$360.00	$720	
	Wall Cabinet Casework	58	LF	$120.00	$6,960	
	Island Upper Shelving	18	LF	$230.00	$4,140	
	Flamable Cabinet	1	Ea	$480.00	$480	
	Wall Mounted Lab Sink w/ Foot Pedal Control	1	Ea	$4,750.00	$4,750	
C20	**Staircases**			**$0.00**	**$0**	
C30	**Interior Finishes**			**$14.95**	**$151,634**	
C3010	**Wall Finishes**				**$56,747**	
C30102301940	Wall Ceramic tile, thinset, 4.1/4" x 4.1/4".	1,007	SF	$7.16	$7,210	
C30102300080	Painting interior on plaster and drywall, brushwork, primer & 2 coats.	31,051	SF	$1.13	$35,088	
C30102301160	Epoxy coating (BSL-2, 2+, Soiled Storage). Up to 10 ft ceiling	4,152	SF	$3.48	$14,449	
C3020	**Floor Finishes**				**$47,001**	
C30204101600	VCT	6,101	SF	$5.02	$30,627	
C30204101740	Floor Mosaic Tile, porcelain.	325	SF	$10.05	$3,266	
C3020a	Carpet (offices, bullpen, corridor, receptionist)	-	SF	$6.20	$0	
C3020b	Concrete Floor Sealer.	319	SF	$1.19	$380	
C3020c	Epoxy Floor	1,920	SF	$5.00	$9,600	
C3020d	Vinyl Sheet Flooring	391	SF	$8.00	$3,128	
C3030	**Ceiling Finishes**				**$47,886**	
C30301105700	Gypsum board ceilings, 5/8" fire rated gypsum board, painted and textured finish,1-5/8" metal stud furring, 24" OC support.	662	SF	$3.61	$2,390	
C3030a	Gypsum ceiling tile, 3/4", moisture and fire resistant (vinyl), 24" x 24" tile, tee grid, suspended support.	2,024	SF	$8.50	$17,204	
C30302105900	Acoustic ceilings, 3/4" fiberglass board, 24" x 24" tile, tee grid, suspended support.	5,007	SF	$5.53	$27,689	
C3030d	Exposed structure, spray painted.	321	SF	$1.88	$603	
D. SERVICES		**10,143**	**SF**	**$153.96**		**$1,561,641**
D10	**Conveying Systems**			**$0.00**	**$0**	
D20	**Plumbing**			**$10.54**	**$106,877**	
D2010	Plumbing Fixtures.	10,026	SF	$1.64	$16,443	
D2020	Domestic Water Distribution.	10,026	SF	$2.11	$21,155	
D2030	Sanitary Waste.	10,026	SF	$4.08	$40,906	
D2040	Rain Water Drainage.	10,026	SF	$1.64	$16,443	
D2090	Other Plumbing Systems.	10,026	SF	$1.19	$11,931	
D30	**HVAC**			**$107.25**	**$1,087,790**	
D3020	Heat Generating Systems.	8,401	SF	$8.64	$72,585	
D3030	Cooling Generating Systems.	8,401	SF	$8.64	$72,585	
D3040	Distribution Systems.	8,401	SF	$2.76	$23,187	
D3050	Terminal & Package Units.	8,401	SF	$8.29	$69,644	

Line Number	Description	Quantity	Unit	Unit Cost	Sub-Total	Total
D3060	Controls & Instrumentation.	8,401	SF	$3.46	$29,067	
D3070	System Testing & Balancing.	8,401	SF	$1.73	$14,534	
D3070	Commissioning.	8,401	SF	$0.00	$0	
D3090	Other HVAC Systems & Equipment.	8,401	SF	$1.04	$8,737	
D3091	Special HVAC Systems & Equipment (Lab)	1,425	SF	$557.51	$794,452	
D3092	Speical HVAC Systems & Equipment (Clinic)	200	SF	$15.00	$3,000	
D40	**Fire Protection**			**$3.25**	**$32,965**	
D4010	Sprinklers	10,143	SF	$1.63	$16,533	
D4020	Standpipes.	10,143	SF	$1.46	$14,809	
D4030	Fire Protection Specialties.	10,143	SF	$0.08	$811	
D4090	Other Fire Protection Systems.	10,143	SF	$0.08	$811	
D50	**Electrical**			**$32.93**	**$334,009**	
D5010	Electrical Service & Distribution.	10,143	SF	$16.46	$166,954	
D5020	Lighting & Branch Wiring.	10,143	SF	$14.16	$143,625	
D5030	Communications & Security.	10,143	SF	$1.48	$15,012	
D5090	Other Electrical Systems.	10,143	SF	$0.83	$8,419	
E. EQUIPMENT & FURNISHINGS		**10,143**	**SF**	**$0.00**		**$0**
E10	**Equipment**			**$0.00**	**$0**	
E1090	**Other Equipment**				**$0**	
E20	**Furnishings**			**$0.00**	**$0**	
E2020	**Moveable Furnishings**				**$0**	
F. SPECIAL CONSTRUCTION & DEMOLITION		**10,143**	**SF**	**$17.44**		**$176,924**
F10	**Special Construction**			**$17.44**	**$176,924**	
F10	Pre-finished aluminum canopies.	610.00	SF	$56.00	$34,160	
F1010a	10% Drop Off	10%			$142,763.60	
F20	**Selective Building Demolition**			**$0.00**	**$0**	
G. BUILDING SITEWORK		**10,143**	**SF**	**$18.48**		**$187,394**
G10	**Civil Improvements**			**$14.72**	**$149,339**	
A1010	Clear and grub	2.10	Acre	$4,789.24	$10,057	
	Mobilization	1	LS	$10,000.00	$10,000	
	2" HMAC (Parking Stalls)	817	SY	$12.50	$10,213	
	6" Compacted Crushed Limestone (Parking Stalls)	817	SY	$10.00	$8,170	
	8" Subgrade Lime Treated (Parking Stalls)	817	SY	$20.00	$16,340	
	2" HMAC (Driveway Isles)	682	SY	$12.50	$8,525	

Line Number	Description	Quantity	Unit	Unit Cost	Sub-Total	Total
	8" Compacted Crushed Limestone (Driveway Isles)	682	SY	$11.00	$7,502	
	8" Subgrade Lime Treated (Driveway Isles)	682	SY	$20.00	$13,640	
	Yellow 4" Striping	860	LF	$0.60	$516	
	Blue Handicap Symbol	4	EA	$100.00	$400	
	Yellow One Way Arrow	2	EA	$95.00	$190	
	Curb & Gutter	1065	LF	$20.00	$21,300	
	Excavation (10")	417	CY	$30.00	$12,510	
	4" Concrete Sidewalk	288	SY	$37.00	$10,656	
	Sidewalk Drains	2	EA	$250.00	$500	
	Parallel Curb Ramp	2	EA	$500.00	$1,000	
	Connect to Existing Sewer Line	1	LS	$500.00	$500	
	6" San. Sewer Service Lateral	23	LF	$25.00	$575	
	6" Clean Out	1	EA	$500.00	$500	
	2" Water Service Line	21	LF	$15.00	$315	
	6" Dip Fire Line	111	LF	$30.00	$3,330	
	Sediment Control Fense	800	LF	$3.00	$2,400	
	Grate Inlet Protection	75	LF	$10.00	$750	
	Curb Inlet Gravel Filter	45	LF	$10.00	$450	
	Barricades, Signs & Traffic Handling	3	LS	$3,000.00	$9,000	
G2050	**Landscape**					**$38,056**
	Hydro Mulch	1175	SY	$0.25	$294	
	Grass Solid Sod	0				
6001	SPRAY IRRIGATION SYSTEM	1	LS	$3,900.00	$3,900	
6001	DRIP IRRIGATION SYSTEM TREES	1	LS	$2,960.00	$2,960	
6001	DRIP IRRIGATION SYSTEM	1	LS	$11,600.00	$11,600	
6017	Vegetation Barrier	315	SY	$0.75	$236	
	PLANT MATERIAL (100-GAL)	4	EA	$1,025.00	$4,100	
	PLANT MATERIAL (65-GAL)	0	EA	$600.00	$0	
	PLANT MATERIAL (45-GAL)	0	EA	$200.00	$0	
	PLANT MATERIAL (30-GAL)	10	EA	$235.00	$2,350	
	PLANT MATERIAL (4' Palm)	0	EA	$250.00	$0	
	PLANT MATERIAL (2.5)[B&B]	4	EA	$275.00	$1,100	
	PLANT MATERIAL (20-GAL)	2	EA	$125.00	$250	
	PLANT MATERIAL (15 GAL)	0	EA	$75.00	$0	
	PLANT MATERIAL (10-GAL)	0	EA	$45.00	$0	
	PLANT MATERIAL (5-GAL)	3	EA	$15.00	$45	
	PLANT MATERIAL (1-GAL)	135	EA	$12.00	$1,620	
	PLANT MATERIAL (B&B - 1 GAL)	0	EA	$25.00	$0	
6059	Plant Bed Preparation	315	SY	$5.50	$1,733	
6001	Landscape Amenity Type 1 (boulder)	12	EA	$200.00	$2,400	
6001	Loose Aggr. Type 1	35	CY	$97.00	$3,395	
6002	Landscape Boulder 3'x5'	0				
6003	Landscape Boulder 2'x4'	0				
6001	Loose Aggr. Type 2	0	CY	$97.00	$0	
6008	Top Soil	315	SY	$3.00	$945	
6097	CONCRETE CURB (SPECIAL)	94	LF	$12.00	$1,128	
2001	Mobilization	0	LS	$0.00	$0	
2001	Barricades Signs Traffic Hand.	0	MO	$0.00	$0	

Line Number	Description	Quantity	Unit	Unit Cost	Sub-Total	Total
	LEVEL I - SYSTEMS SUB-TOTAL	10,143	SF	**$312.16**		**$3,166,201**
H.	**Contractor Fees & Contingencies**	**10,143**	**SF**	**$78.31**		**$794,320**
H10	**Contractor Fees (in Series)**			**$42.82**	**$434,273**	
	General Conditions			8.00%	$253,296	$3,419,497
	Bonds			1.00%	$34,195	$3,453,692
	Overhead & Fee			4.25%	$146,782	$3,600,474
H20	**Contingencies on "Fee" total above**			**$35.50**	**$360,047**	
	Feasibility Package Design Contingency			7.00%	$252,033	
	Owner Contingency			3.00%	$108,014	
TOTAL Building Cost Estimate for 02.12.2021		**10,143**	**SF**	**$390.47**		**$3,960,521**
** Refer to Escalated Total Building Cost Estimate*						
K.	**Escalated Total Building Cost**	**10,143**	**SF**	**$402.18**		**$4,079,337**

11/2/2021	Date of Escalated Estimate
6	Number of months escalated
6.00%	per year

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HC BIOSAFETY LAB

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HIDALGO COUNTY
BIOSAFETY LABORATORY

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Hidalgo County Testing Laboratory

County of Hidalgo

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HC Biosafety Lab

County of Hidalgo

S 25th Ave, Edinburg, TX 78542



100% SCHEMATIC DESIGN

ERO'S PROJECT #20030

OWNER: County of Hidalgo

COUNTY OF HIDALGO
100 EAST CANO, 2ND FLOOR
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WWW.GOERO.COM

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3533 MORELAND DR. STE. A
WESLACO, TX 78596
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SUPERIOR LABORATORY SERVICES, INC.
1710 PRESTON AVE STE A
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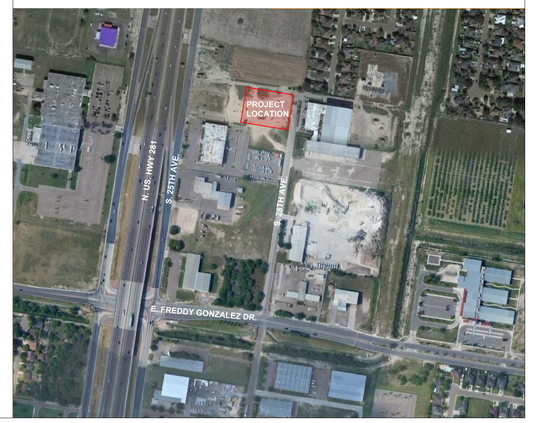
CIVIL ENGINEER:

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200 S. 10TH ST. STE.1500
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TEL: (956) 702-8880
FAX: (956) 702-8883
WWW.SAMESINCWEB.COM

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ero

300 S. 8th Street, McAllen, Tx 78501
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"NOT FOR CONSTRUCTION"

THIS DOCUMENT IS INTENDED FOR REVIEW ONLY AND IS NOT INTENDED FOR BIDDING, PERMIT OR CONSTRUCTION PURPOSES.

ELI R OCHOA, P.E., AIA
TEXAS REGISTRATION NO.
Engineer: 60251
Architect: 19160

HC Biosafety Lab

County of Hidalgo
S 25th Ave, Edinburg, TX 78542

No.	Description	Date

PROJECT NO.: 20030
ISSUE DATE: 05/03/2021
DRAWN BY: Author
CHECKED BY: Checker
Sheet Name

COVER SHEET

Sheet Number

GI001

Project Status:

100% SCHEMATIC DESIGN

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ABBREVIATIONS

A	
A/C	AIR CONDITIONING
AWP	ACOUSTICAL WALL PANEL
AB	ANCHOR BOLT
ABV	ABOVE
ACT	ACOUSTICAL TILE
AD	AREA DRAIN
ADA	AMERICANS WITH DISABILITIES ACT (1990)
ADJ	ADJUSTABLE
AFF	ABOVE FINISH FLOOR
AGG	AGGREGATE
AHU	AIR HANDLING UNIT
ALST	ALUMINUM STOREFRONT
AFG	ABOVE FINISH GRADE
ALUM	ALUMINUM
ALT	ALTERNATE
ANG	ANGLE
ANOD	ANODIZED
AP	ACCESS PANEL
APPROX	APPROXIMATELY
ARCHL	ARCHITECTURAL
ASPH	ASPHALT
B	
BD	BOARD
BLDG	BUILDING
BLK	BLOCKING
BM	BEAM
BO	BOTTOM OF
BOS	BOTTOM OF STEEL
BOT	BOTTOM
BRZ	BRONZE
BUR	BUILT-UP ROOF
C	
C	CHANNEL
CABT	CABINET
CB	CHALK BOARD
CD	CEILING DIFFUSER
CFMF	COLD FORMED METAL FRAMING
CG	CORNER GUARD
C&G	CURB AND GUTTER
CH	COAT HOOK
CJ	CONTROL JOINT
CL	CENTER LINE
CLG	CEILING
CLR	CLEAR
CMU	CONCRETE MASONARY UNIT
COL	COLUMN
COMP	COMPRESSIBLE
CONC	CONCRETE
COND	CONDITION
CONNX	CONNECTION
CONST	CONSTRUCTION
CONT	CONTINUOUS
CORR	CORRIDOR
CPT	CARPET
CT	CERAMIC TILE
CTSK	COUNTERSINK
CW	COLD WATER
D	
DBL	DOUBLE
DEF	DEFORMED
DIA	DIAMETER
DIM	DIMENSION
DIV	DIVISION
DN	DOWN
DP	DAMPPROOFING
DR	DOOR
DTL	DETAIL
DS	DOWNSPOUT
DWG	DRAWING
DWL	DOWEL
DWR	DRAWER
E	
EA	EACH
EF	EACH FACE
EGSB	EXTERIOR GYPSUM SOFFIT BOARD
EIFS	EXTERIOR INSULATED FINISH SYSTEM
EL	ELEVATION
ELEC	ELECTRICAL
ELEV	ELEVATOR
EJ	EXPANSION JOINT
EQ	EQUAL
EQUIP	EQUIPMENT
ETC	ETCETERA
EW	EACH WAY
EWC	ELECTRIC WATER COOLER
EXGR	EXISTING GRADE
EXH	EXHAUST
EXIST	EXISTING
EXP	EXPANSION
EXPO	EXPOSED
EXT	EXTERIOR
F	
FA	FIRE ALARM
FB	FACE BRICK
FC	FIRE CODE
FD	FLOOR DRAIN
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER CABINET
FF	FINISH FLOOR
FFE	FINISH FLOOR ELEVATION
FGD	FINISH GRADE
FHC	FIRE HOSE CABINET
FIN	FINISH
FIXT	FIXTURE
FLR	FLOOR
FLSHG	FLASHING
FLUOR	FLUORESCENT
FOC	FACE OF CONCRETE
FOM	FACE OF MASONRY
F PART	FOLDING PARTITION
FR-WD	FIRE-RETARDANT TREATED WOOD
FT	FEET
FUR	FURRING
G	
G	GAS
GA	GAUGE
GALV	GALVANIZED
GB	GRAB BAR
GC	GENERAL CONTRACTOR
GCMU	GLAZED CONCRETE MASONARY UNIT
GEN	GENERAL
GI	GALVANIZED IRON
GL	GLASS
GR	GRADE
GRD	GROUND
GSFT	GLAZED STRUCTURAL FACING TILE
GTP	GLAZED TILE PAVER
GWB	GYPSUM WALL BOARD
H	
HB	HOSE BIBB
HC	HANDICAPPED ACCESSIBLE
HD	HEAD, HEADED, HEAVY DUTY
HDG	HOT-DIPPED GALVANIZED
HDW	HARDWARE
HLB	HORIZONTAL LOUVER BLINDS
HORIZ	HORIZONTAL
HM	HOLLOW METAL FRAME
HR	HOUR
HT	HEIGHT
HW	HOT WATER
I	
ID	INSIDE DIAMETER
IG	INSULATING GLASS
IN	INCHES
INC	INCANDESCENT
INCL	INCLUDING
INFO	INFORMATION
INSUL	INSULATION
INT	INTERIOR
J	
JAN	JANITOR
JST	JOIST
JT	JOINT
L	
LAM	LAMINATE
LAV	LAVATORY
LB	POUND
LF	LINEAR FOOT
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LP	LIGHTPOLE
LT	LIGHT
LT WT	LIGHT WEIGHT
L	LOUVER
M	
MAX	MAXIMUM
MANUF	MANUFACTURER
MAS	MASONRY
MATL	MATERIAL
MAX	MAXIMUM
MOB	MOP BASIN
MB	MARKER BOARD
MECH	MECHANICAL
MEM WP	MEMBRANE WATERPROOFING
MEP	MECHANICAL, ELECTRICAL & PLUMBING
MEZZ	MEZZANINE
MID	MIDDLE
MIR	MIRROR
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLENEOUS
MO	MASONRY OPENING
MOD	MODULE
MTD	MOUNTED
MTG	MOUNTING
MTL	METAL
MTP	METAL TOILET PARTITIONS
MULL	MULLION
N	
NA	NOT APPLICABLE
NIC	NOT IN CONTRACT
NO	NUMBER
NOM	NOMINAL
NTS	NOT TO SCALE
O	
OC	ON CENTER
OCD	OVERHEAD COILING DOOR
OCG	OVERHEAD COILING GRILL
OD	OUTSIDE DIAMETER/DIMENSION
OFF	OFFICE
OF-CI	OWNER FURNISHER, CONTRACTOR INSTALLED
OH	OVERHEAD
OPNG	OPENING
OPP	OPPOSITE
ORD	OVERFLOW ROOF DRAIN
OTS	OPEN TO STRUCTURE
P	
PAR	PARALLEL
PC	PRECAST
PCP	PORTLAND CEMENT PLASTER
PEN	PENETRATION
PG	PLATE GLASS
PH	PAPER HOLDER
PL	PLATE
PLUMB	PLUMBING
PLWD	PLYWOOD
PNTGR	PAINT GRADE
POL	POLISHED
PP	POWER POLE
PR	PAIR
PRL	PROPERTY LINE
PT	PRESSURE TREATED
PTD	PAPER TOWEL DISPENSER
PTN	PARTITION
PVMT	PAVEMENT
PWB	PREFINISHED WALL BOARD
Q	
QA	QUALITY ASSURANCE
QT	QUARRY TILE
R	
R	RADIUS
RAF	RESILIENT ATHLETIC FLOORING
RBR	RUBBER
RCP	REINFORCED CONCRETE PIPE
RD	ROOF DRAIN
RE	REFERENCE
RECP	RECEPTACLE
REINF	REINFORCE
REQD	REQUIRED
RES	RESILIENT
REV	REVISED
RF	ROOF
RO	ROUGH OPENING
RM	ROOM
RV	ROOF VENT
RVT	RESILIENT VINYL TILE
S	
SB	SPLASH BLOCK
SC	SEALED CONCRETE
SCHED	SCHEDULE
SCFV	SOLID CORE FLUSH VENEER
SCPL	SOLID CORE PLASTIC LAMINATE
SD	SOAP DISPENSER
SEC	SECTION
SF	SQUARE FEET
SG	SLIDING GLASS DOOR
SGFT	STRUCTURAL GLAZED FACING TILE
SGL	SINGLE
SHT	SHEET
SIM	SIMILAR
SJ	SAWN CONTROL JOINT
SPC	SPECIAL COATING SYSTEM
SPEC	SPECIFICATION
SQ	SQUARE
SS	SOUND STRIP
SSTL	STAINLESS STEEL
SR	SHOWER ROD
SS	STAINLESS STEEL
STD	STANDARD
STL	STEEL
STRUCT	STRUCTURAL
SUSP	SUSPENDED
SAC	SUSPENDED ACOUSTICAL CEILING
T	
T&B	TOP AND BOTTOM
TB	TACKBOARD
TDR	TOWEL DISPENSER AND RECEPTACLE
TECH	TECHNICAL
TEMP	TEMPERATURE
TEL	TELEPHONE
TERR	TERRAZZO
THK	THICK
THR	THRESHOLD
TKS	TACKSTRIP
TLT	TOILET
TO	TOP OF _____
TOB	TOP OF WOOD BLOCKING
TOC	TOP OF CURB
TOD	TOP OF DRAIN
TOM	TOP OF MASONRY
TOS	TOP OF STEEL
TTD	TOILET TISSUE DISPENSER
TYP	TYPICAL
U	
UNO	UNLESS NOTED OTHERWISE
UR	URINAL
URS	URINAL SCREEN
UTIL	UTILITY
V	
V	VENT
VCT	VINYL COMPOSITION TILE
VEND	VENDING
VENT	VENTILATING
VER	VERIFY
VERT	VERTICAL
VEST	VESTIBULE
VIF	VERIFY IN FIELD
VTR	VENT THROUGH ROOF
VGE	PREFINISHED VINYL CLAD GYPSUM BOARD
VWC	VINYL WALL COVERING
W	
W/	WITH
WA	WATT
WB	WIND BRACE
WC	WATER CLOSET
WD	WOOD
WDW	WINDOW
WH	WATER HEATER
WNDW	WINDOW
W/O	WITHOUT
WP	WATERPROOFING
WR	WASTE RECEPTICLE
WS	WEATHERSTRIP
WT	WEIGHT
WWF	WELDED-WIRE FABRIC

DRAWING CONVENTIONS

PLAN NORTH

COLUMN REFERENCE. GRID (LETTER, NUMBER)

CENTER LINE

LEVEL MARKER

MATCH LINE

INTERIOR ELEVATION SYMBOL

EXTERIOR ELEVATION SYMBOL

SECTION SYMBOL

ROOM NAME AND NUMBER

DOOR DESIGNATION

WINDOW DESIGNATION

ENLARGED PLAN OR DETAIL

DIMENSIONS

ONE HOUR FIRE RATING

MATERIAL LEGEND

EARTH (UNDISTURBED)

EARTH (COMPACTED)

POROUS FILL (STONE OR GRAVEL, ETC.)

CAST - IN - PLACE CONCRETE

BRICK (COMMON OR FACE)

CONCRETE MASONRY UNIT (CMU)

CUT STONE

STEEL (LARGE SCALE)

RESILIENT FLOORING

ACOUSTICAL CEILING TILE

TERRAZZO

PLASTER, SAND, CEMENT, GROUT

GYPSUM BOARD

CLAY STRUCTURAL TILE

GLASS

RIGID INSULATION

GYPSUM SHEATING

BATT INSULATION

ROUGH WOOD (CONTINUOUS)

ROUGH WOOD (NON-CONTINUOUS)

PLYWOOD

FINISHED WOOD

PROJECT GENERAL NOTES

PROJECT GENERAL NOTES PROVIDE INFORMATION CONCERNING THE WORK OF THE ENTIRE PROJECT AND ARE NOT LIMITED TO ANY INDIVIDUAL DRAWING OR SHEET.

1. THE CONTRACTOR SHALL CAREFULLY REVIEW AND COMPARE THE CONTRACT DOCUMENTS WITH EACH OTHER AND WITH INFORMATION FURNISHED BY THE OWNER AND SHALL AT ONCE REPORT TO THE ARCHITECT ANY INCONSISTENCIES, OMISSIONS OR ERRORS FOUND. IF THE CONTRACTOR PERFORMS ANY CONSTRUCTION ACTIVITY KNOWING IT INVOKES A RECOGNIZED INCONSISTENCIES, OMISSIONS OR ERROR IN THE CONTRACT DOCUMENT WITHOUT SUCH NOTICE TO THE ARCHITECT, THE CONTRACTOR SHALL ASSUME APPROPRIATE RESPONSIBILITY FOR SUCH PERFORMANCE AN SHALL BEAR AN APPROPRIATE AMOUNT OF HTE ATTRIBUTABLE COST FOR THE CORRECTION.
2. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK USING THE CONTRACTOR'S BEST SKILL AND ATTENTION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR AND HAVE CONTROL OVER CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF WORK UNDER THE CONTRACT, UNLESS THE CONTRACT DOCUMENTS GIVE OTHER SPECIFIC INSTRUCTIONS CONCERNING THESE MATTERS.
3. THE DRAWINGS AND SPECIFICATIONS ARE COOPERATIVE. WHERE DRAWINGS AND SPECIFICATIONS OR DRAWINGS OR SPECIFICATIONS THEMSELVES ARE IN CONFLICT, CONTRACTOR SHALL PROVIDE THE BETTER QUALITY OR GREATER QUANTITY.
4. GENERAL DATA/ INFORMATION SHOWN ON ONE PART OF THE DRAWINGS SHALL APPLY TO ALL SIMILAR CONDITIONS UNO.
5. THE DRAWINGS INDICATE IN GENERAL THE PROJECT IN TERMS OI ARCHITECTURAL DESIGN INTENT, THE DIMENSIONS OF THE BUILDING, THE MAJOR ARCHITECTURAL ELEMENTS AND TYPE OF STRUCTURAL, MECHANICAL AND ELECTRICAL SYSTEMS. THE DRAWINGS DO NOT NECESSARILY INDICATE OR DESCRIBE ALL WORK REQUIRED FOR FULL PERFORMANCE AND COMPLETION OF THE REQUIREMENTS OF THE CONTRACT DOCUMENTS. AS INDICATED OR DESCRIBED, THE CONTRACTOR SHALL FURNISH ALL ITEMS REQUIRED FOR THE PROPER EXECUTION AND COMPLETION OF THE WORK.
6. THE CONTRACTOR SHALL COORDINATE ALL MECHANICAL FLOOR/WALL SLEEVES AND SHAFTS IN CONCRETE SLABS/WALLS WITH MECHANICAL, PLUMBING, FIRE PROTECTION. SHOULD BE REPORTED TO THE ARCHITECT FOR CLARIFICATION AND VERIFICATION PRIOR TO EXECUTION OF WORK.
7. THE CONTRACTOR SHALL CONDUCT HIS OWN SITE SURVEY OF THE EXISTING GROUND AND CURB ELEVATIONS (LEVELS) AND REPORT ACTUAL ELEVATIONS (LEVELS) TO THE ARCHITECT.
8. CONTRACTOR'S SHOP DRAWINGS SHOULD INDICATE ACTUAL ELEVATIONS (LEVELS).
9. ALL ELEVATIONS (LEVELS) ARE IN FEET.
10. ALL DIMENSIONS ARE IN FEET AND ANGLES IN DEGREES.
11. ONLY WRITTEN DIMENSIONS IN ALL CASES SHALL BE FOLLOWED.
12. ALL EXISTING OR PROPOSED ELEVATIONS (LEVELS) AND DIMENSIONS, ON SITE AND ON DRAWINGS MUST BE CHECKED AND VERIFIED BY THE CONTRACTOR BEFORE THE PREPARATION OF SHOP DRAWINGS OR COMMENCEMENT OF ANY ITEM OF WORK ON THE SITE.
13. ARCHITECTURAL DRAWINGS MUST ALWAYS BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS, SPECIFICATIONS AND CONTRACT DOCUMENTS. ANY DISCREPANCY BETWEEN THESE DRAWINGS AND DOCUMENTS SHOULD BE REPORTED TO THE ARCHITECT FOR CLARIFICATION AND VERIFICATION.
14. ALL SHAFT WALLS TO PROVIDE FOR 2 HRS. FIRE RATING UNO.
15. FOR AREAS WITHOUT SUSPENDED CEILING HAVING EXPOSED SLAB AND BEAMS, WALL FINISH MATERIAL SHALL BE FROM FLOOR LEVEL TO BOTTOM OF SLAB LEVEL.
16. NOTES APPEARING ON VARIOUS DRAWINGS FOR DIFFERENT SYSTEMS AND MATERIALS ARE TO BE REVIEWED, COORDINATED AND ARE TO BE APPLIED TO ALL RELATED DRAWINGS AND DETAILS.

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PD01	PLUMBING DETAILS

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ELI R OCHOA, P.E., AIA
TEXAS REGISTRATION NO.
Engineer: 60251
Architect: 19160

HC Biosafety Lab

County of Hidalgo
S 25th Ave, Edinburg, TX 78542

No.	Description	Date

PROJECT NO.: 20030
ISSUE DATE: 05/03/2021
DRAWN BY: Author
CHECKED BY: Checker

SHEET NAME

INDEX OF DRAWINGS

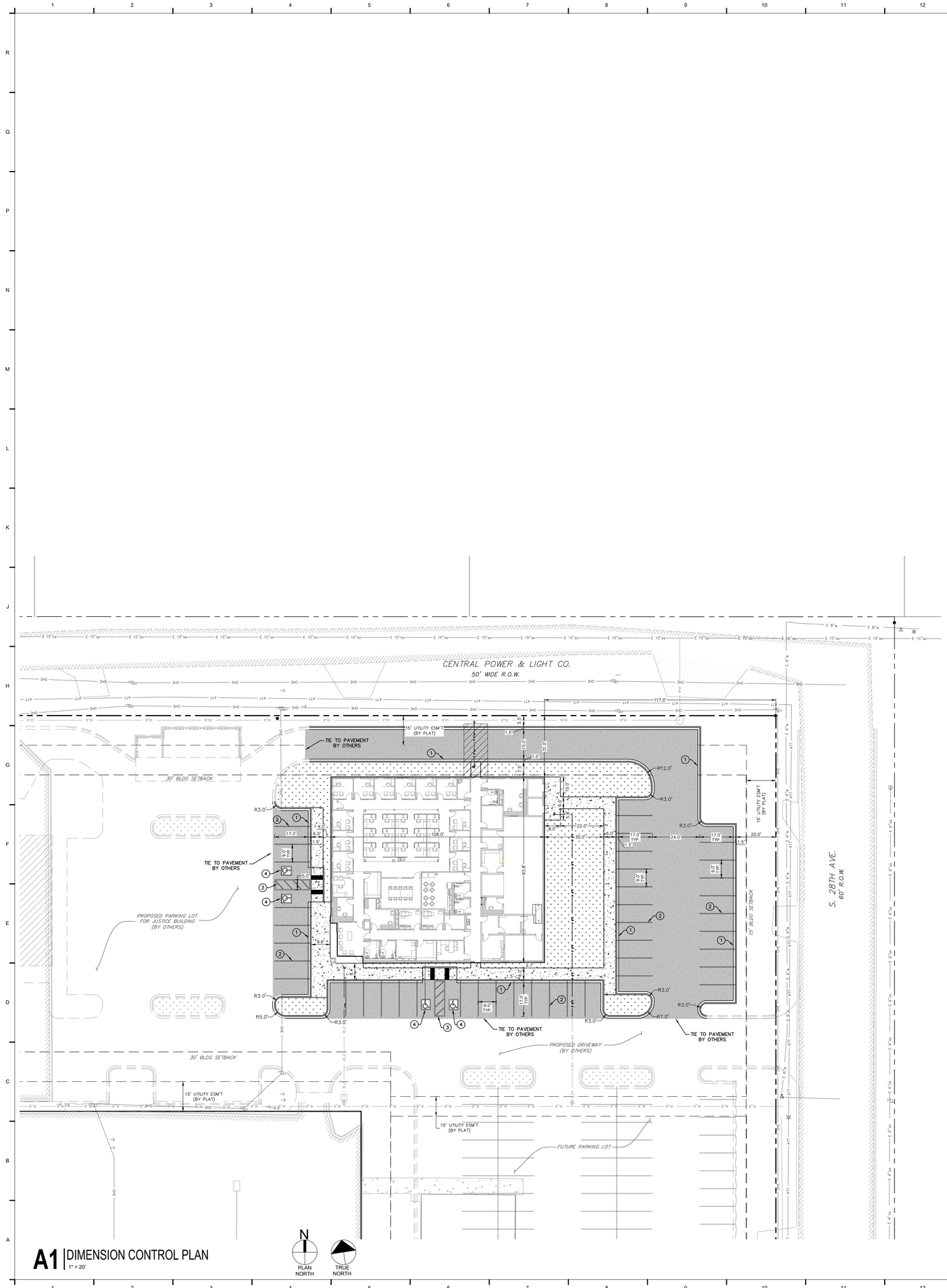
Sheet Number

GI002

Project Status:

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5/3/2021 5:40:01 PM
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A1 | DIMENSION CONTROL PLAN
1" = 20'

4/23/2021 3:00 PM

N

0 20' 40'
GRAPHIC SCALE 20'

LEGEND

- NEW LIGHT-DUTY PAVEMENT SECTION
- NEW HEAVY-DUTY PAVEMENT SECTION

NOTES:

1. **NO SLOPE SHALL EXCEED 2% IN ANY DIRECTION WITHIN HANDICAP SPACES.**
2. **NO ACCESSIBLE ROUTES SHALL EXCEED A RUNNING SLOPE GREATER THAN 1:20.**
3. **ALL CONCRETE CURBS SHALL BE 6" UNLESS OTHERWISE NOTED ON PLAN.**

EXISTING LEGEND

● – FND. 1/2" IRON ROD	WV – WATER VALVE
○ – SET MONUMENT BRASS DISC WITH WITNESS	CP – CABLE PEDESTAL
◑ – SERVICE POLE	WM – WATER METER
○ – LIGHT POLE	UGE – UNDER GROUND CABLE
TP – TELEPHONE PEDESTAL	ATT – ATT UNDER GROUND LINE
STOP – STOP SIGN	S.E.T. – SAFETY END TREATMENT
TRAFFIC – TRAFFIC SIGN	EB – ELECTRICAL BOX
SMH – SANITARY SEWER MANHOLE	EOP – EDGE OF PAVEMENT
FH – FIRE HYDRANT	BOC – BACK OF CURB
– PALM TREE	W – WATER LINE
– TREE	12" S – 12" SANITARY SEWER LINE
– LOT LINE	– IRRIGATION CONTROL VALVE
EXIST. – EXISTING	– POWER POLE
CONC. – CONCRETE	– FLUSH VALVE
– ASPHALT	– CMU FENCE LINE
– CONCRETE	– CALICHE
– BRICK PAVERS	OHW – OVERHEAD ELECTRIC LINE
H.C.M.R. – HIDALGO COUNTY MAP RECORDS	– CENTER LINE
H.C.D.R. – HIDALGO COUNTY DEED RECORDS	
O.R.H.C. – OFFICIAL RECORDS OF HIDALGO COUNTY	
R.O.W. – RIGHT OF WAY	
FND. – FOUND	
TYP. – TYPICALLY	

PROPOSED LEGEND

1. 6" CURB & GUTTER
2. 4" WIDE SINGLE SOLID LINE
3. 4" WIDE BLUE STRIPING, 45° @ 3' SPACING
4. BLUE HANDICAP SYMBOL

PRELIMINARY
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HC Biosafety Lab

No.	Date	Description

PROJECT NO.: 20030
ISSUE DATE: 04/30/2021
DRAWN BY: E.S.
CHECKED BY: N.L.

SHEET NAME

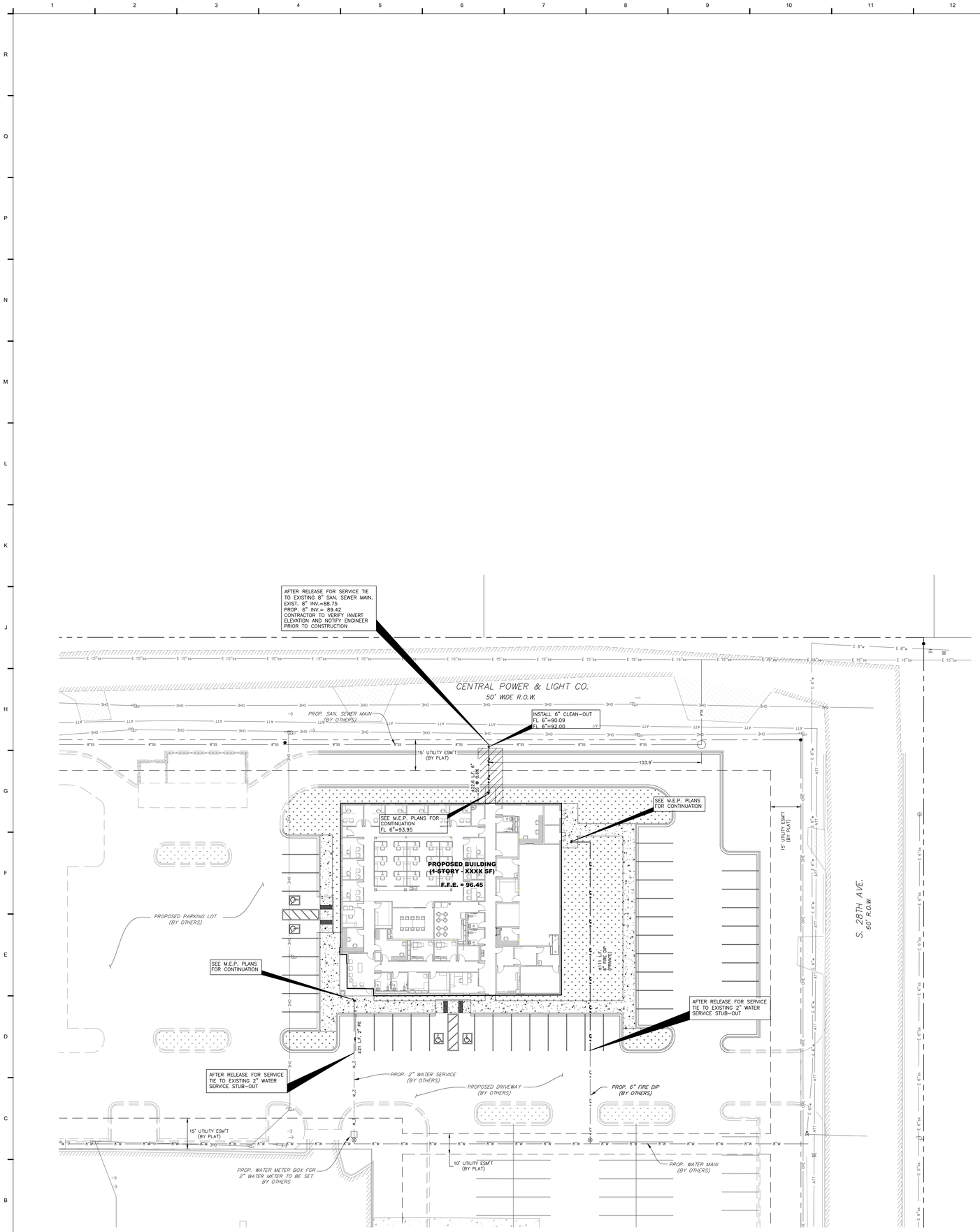
DIMENSION CONTROL PLAN

Sheet Number

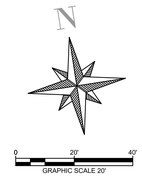
C3.0

Project Status:

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A1 | UTILITY PLAN
1" = 20'



GENERAL NOTES:

1. REFER TO MEP PLANS FOR CONTINUATION OF WATER AND SEWER SERVICES.
2. SERVICE ALIGNMENT SHOWN ON THIS PLAN ARE TENTATIVE AND SUBJECT TO COORDINATION WITH AND APPROVAL BY THE UTILITY COMPANIES.
3. SEE WATER AND SEWER DETAILS ON SHEET C4.1
4. DIMENSIONS ARE TO CENTER OF PIPE, UNLESS OTHERWISE NOTED.
5. ALL UTILITIES TO BE CONSTRUCTED PRIOR TO STREETS.

PRELIMINARY
FOR REVIEW

THE EXISTING UTILITY LOCATIONS SHOWN ARE APPROXIMATE ONLY. SOME OF THE LOCATIONS WERE DETERMINED FROM MAPS PROVIDED BY THE RESPECTIVE UTILITY OWNER AND ARE NOT GUARANTEED. UTILITIES NOT SHOWN ON THIS DRAWING MAY EXIST. THE CONTRACTOR SHALL CONTACT THE RESPECTIVE UTILITY OWNER FOR FIELD VERIFICATION AND IS RESPONSIBLE FOR ANY DAMAGES TO AND FOR MAINTENANCE AND PROTECTIONS OF ALL EXISTING UTILITIES. CONTRACTOR SHALL NOTIFY AND COORDINATE WITH EACH UTILITY OWNER 72 HOURS PRIOR TO ANY EXCAVATION. CONTRACTOR SHALL CALL A UTILITY LOCATOR FOR GENERAL UTILITY LOCATIONS

TRENCH EXCAVATION SAFETY PROTECTION

CONTRACTOR AND/OR CONTRACTORS INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITE(S) WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES. THE CONTRACTOR'S IMPLEMENTATION OF THE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION THAT COMPLIES WITH, AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTORS INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

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HC Biosafety Lab

Hidalgo County Health Department
S 25th Ave, Edinburg, TX 78542

No.	Description	Date

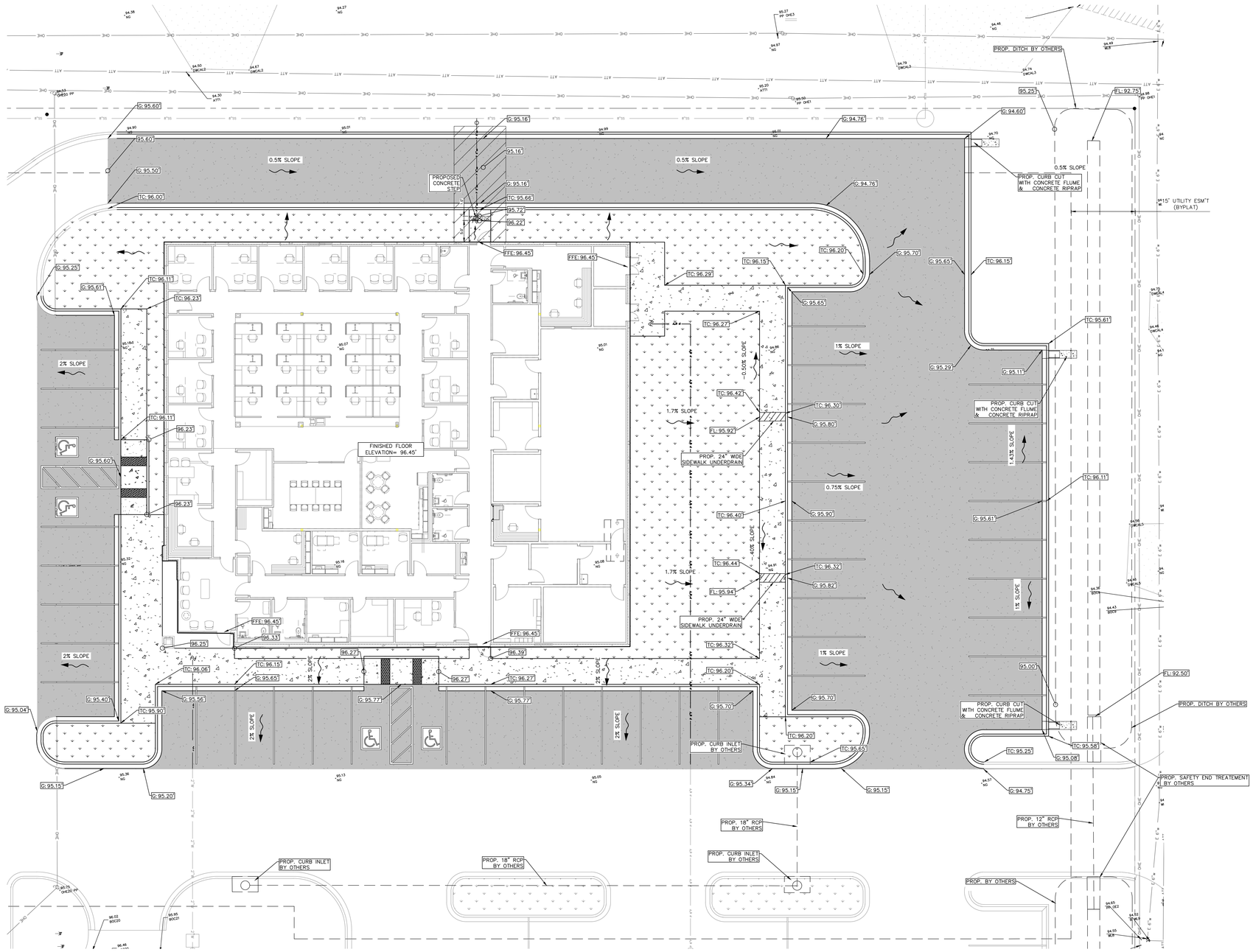
PROJECT NO.: 20030
ISSUE DATE: 04/30/2021
DRAWN BY: E.S.
CHECKED BY: N.L.

SHEET NAME
UTILITY PLAN

Sheet Number
C4.0

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N

0 10' 20'
GRAPHIC SCALE 1:0'

LEGEND

FFE: 96.45	PROPOSED FINISHED FLOOR ELEVATION
95.53	PROPOSED SPOT ELEVATION
G: 94.95	PROPOSED GUTTER ELEVATION
TC: 94.95	PROPOSED TOP OF CURB ELEVATION
FL: 92.00	PROPOSED FLOW LINE ELEVATION
97.00'	EXISTING SPOT ELEVATION

NOTES:

1. NO SLOPE SHALL EXCEED 2% IN ANY DIRECTION WITHIN HANDICAP SPACES.
2. NO ACCESSIBLE ROUTES SHALL EXCEED A RUNNING SLOPE GREATER THAN 1:20.

THE EXISTING UTILITY LOCATIONS SHOWN ARE APPROXIMATE ONLY. SOME OF THE LOCATIONS WERE DETERMINED FROM MAPS PROVIDED BY THE RESPECTIVE UTILITY OWNER AND ARE NOT GUARANTEED. UTILITIES NOT SHOWN ON THIS DRAWING MAY EXIST. THE CONTRACTOR SHALL CONTACT THE RESPECTIVE UTILITY OWNER FOR FIELD VERIFICATION AND IS RESPONSIBLE FOR ANY DAMAGES TO AND FOR MAINTENANCE AND PROTECTIONS OF ALL EXISTING UTILITIES. CONTRACTOR SHALL NOTIFY AND COORDINATE WITH EACH UTILITY OWNER 72 HOURS PRIOR TO ANY EXCAVATION. CONTRACTOR SHALL CALL A UTILITY LOCATOR FOR GENERAL UTILITY LOCATIONS

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Hidalgo County Health Department
S 25th Ave, Edinburg, TX 78542

No.	Date	Description

PROJECT NO.: 20030
ISSUE DATE: 04/30/2021
DRAWN BY: E.S.
CHECKED BY: N.L.

SHEET NAME
GRADING PLAN

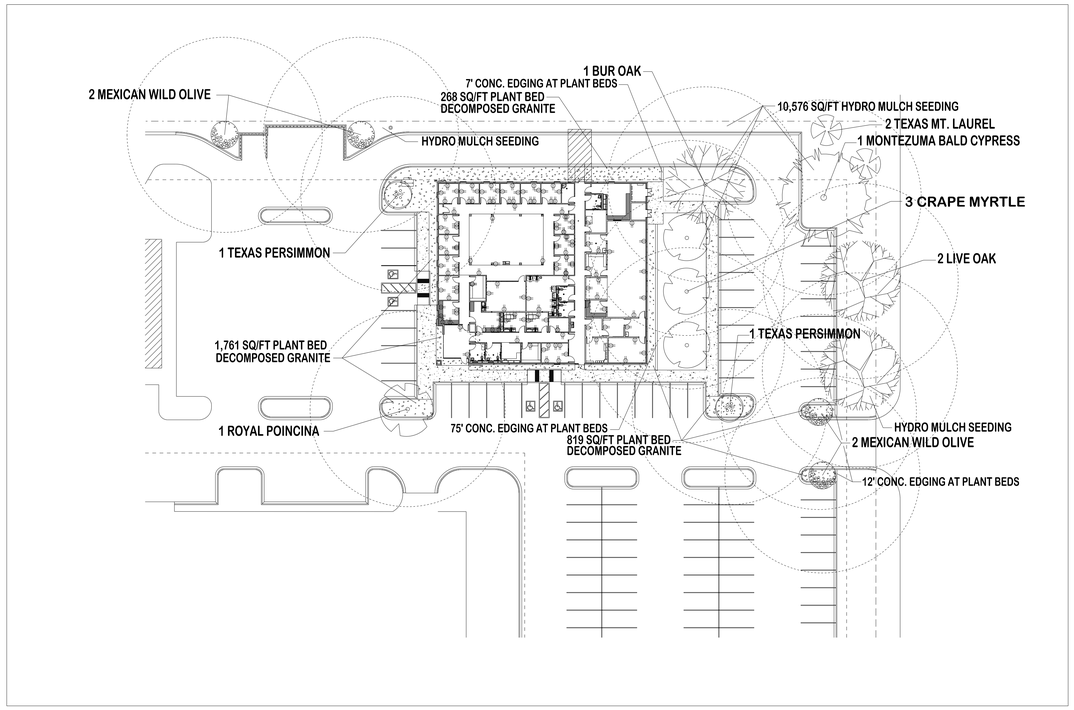
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C6.0

Project Status:
100% SCHEMATIC DESIGN

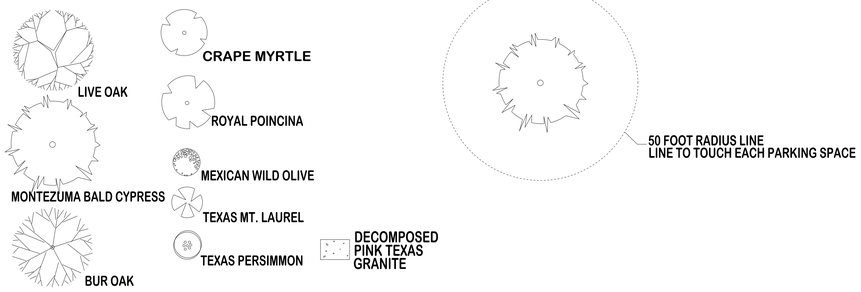
A1 | GRADING PLAN
1" = 10'

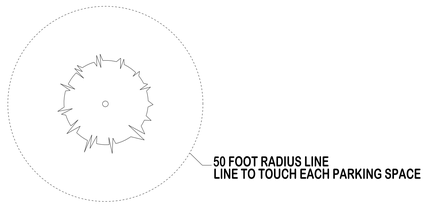
N
PLAN NORTH
TRUE NORTH

4/23/2021 3:00 PM



PLANT LEGEND
LARGE TREES





* ESTIMATED SHEET TOTALS

				SIZE	QTY.
TREES	LIVE OAK	QUERCUS VIRGINIANA	4" CAL. CONTAINER	NO.100	
	MONTEZUMA BALD CYPRESS	TAXODIUM MUCRONATUM	4" CAL. CONTAINER	NO.100	
	BUR OAK	QUERCUS MCROCARPA	4" CAL. CONTAINER	NO.100	
SMALL TREES	ROYAL POINCINA	DELONIX REGIA	2" CAL. CONTAINER	NO.45	
	MEXICAN WILD OLIVE	CORDIA BOSSERII	B&B 2.5" CAL		
	TEXAS MT. LAUREL	SOPHORA SECUNDIFLORA	CONTAINER	NO.30	
	TEXAS PERSIMMON	DIOSPYROS TEXANA	CONTAINER	NO.20	
PALM TREES	CRAPE MYRTLE	LARGERSTOMINA INDICA - 'PETIT PINK'	CONTAINER	NO.30	
	DECOMPOSED GRANITE	4 DEPTH - SQ/YDS	AS PER DETAIL	NO.30	

* ESTIMATE OLNY, CONTRACTOR TO VERIFY

LANDSCAPE TREE LAYOUT

NORTH

SCALE = 1" = 30'

0' 30' 60' 90'

GRAPHIC SCALE

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CERTIFICATIONS

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ELI R.OCHOA, P.E., AIA
TEXAS REGISTRATION NO.
Engineer: 65291
Architect: 19160

HC Biosafety Lab

Hidalgo County Health Department
S 25th Ave, Edinburg TX 78542

No.	Description	Date

PROJECT NO.: 20030
ISSUE DATE: 04.23.21
DRAWN BY: SWALKER
CHECKED BY: SWALKER

SHEET NAME

LANDSCAPE TREE LAYOUT

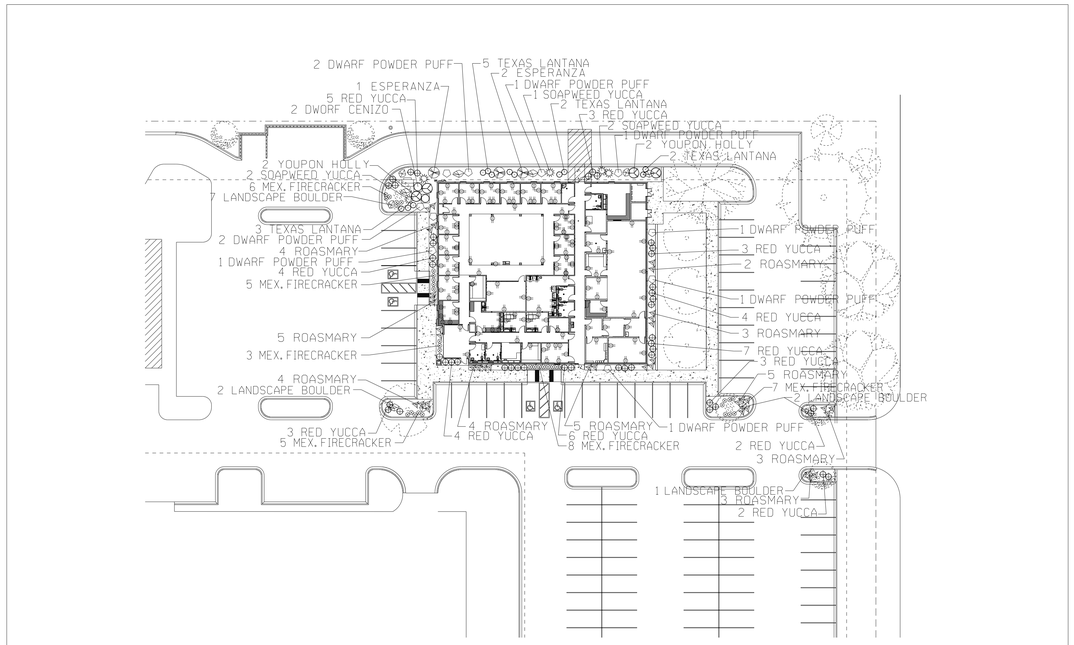
Sheet Number

L101

Project Status:

100% SCEMATIC DESIGN

SITEWORK LA LLC
LANDSCAPE ARCHITECTURE
STEPHEN P. WALKER R.L.A.
LANDSCAPE ARCHITECT
SOCIETY OF WETLAND SCIENTIST
(956)-309-3113
stephenpwalker@sbcglobal.net



PLANT LEGEND

- YOUPON HOLLY
- SOAPWEED YUCCA
- DWORF CENIZO
- ROASMARY
- RED YUCCA
- ESPERANZA
- DWARF POWDER PUFF
- TEXAS LANTANA
- MEX. FIRECRACKER

PLANT SPECIFICATIONS

Common Name	Max. Size	Botanical Name	Container		× Quantity	
YAUPON HOLLY	4'Wx8'H	ILEX VOMITORIA	CONTAINER	NO. 30	4	
ESPERANZA	4'Wx6'H	TECOMA STANS	CONTAINER	NO. 5	3	
SOAPWEED YUCCA	2'Wx2'H	YUCCA GLAUCA	2' B&B	NO.1	5	
GREEN CLOUD SEGE (CENIZO)	12"Wx12"H	LEUCOPHYLLUM FRUTESCENS	CONTAINER	NO.1	2	
DWARF POWDER PUFF	3'Wx2'H	CALLIANDRA EMARGINATA	CONTAINER	NO.1	10	
RED YUCCA	18"Wx18"H	HESPERALOE PARVIFLORA	CONTAINER	NO.1	45	
TEXAS LANTANA	12"Wx18"H	LANTANA HORRIDA	CONTAINER	NO.1	12	
MEX. FIRECRACKER	12"Wx18"H	RUSELLIA EQUISETIFORMIS	CONTAINER	NO.1	34	
ROASMARY	12"Wx18"H	DESERT OFFICINALLS "ARP"	CONTAINER	NO.1	39	
LANDSCAPE BOULDER		COLOR AND SHAPE TO BE APPROVED	50% 3'X4' & 50% 2'X3'		12	EACH
CONC. EDGING AT PLANT BEDS		SEE DETAILS	AS PER DETAIL		94	L/FT
PLANT BED PREP		SEE GENERAL NOTES	AS PER GEN. NOTES		2,840	SQ/FT OR 315 SQ/YDS
TOP SOIL 4" DEPTH		4 INCH DEPTH *	AS PER GEN. NOTES		2,840	SQ/FT OR 315 SQ/YDS
VEGETATION BARRIER		ALL DECOMPOSED GRANITE AREAS	AS PER GEN. NOTES		2,840	SQ/FT OR 315 SQ/YDS
HYDRO MULCH SEEDING		ALL GRASS SODDING AREAS	AS PER GEN. NOTES		10,576	SQ/FT OR 1,175 SQ/YDS

* ESTIMATE ONLY, CONTRACTOR TO VERIFY

LANDSCAPE BOULDER
COLOR AND SHAPE TO BE APPROVED
50% 3'X4' & 50% 2'X3'

LANDSCAPE SHRUB LAYOUT

NORTH

SCALE = 1" = 30'

0' 30' 60' 90'

GRAPHIC SCALE

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ISSUE DATE: 04.23.21
DRAWN BY: SWALKER
CHECKED BY: SWALKER

SHEET NAME

LANDSCAPE SHRUB LAYOUT

Sheet Number

L102

Project Status:

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SITEWORK LA LLC
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STEPHEN P. WALKER R.L.A.
LANDSCAPE ARCHITECT
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stephenpwalker@sbcglobal.net

PLANT SPECIFICATIONS

	Botanical Name	Common Name	Color	Quantity	Root Condition		Min. Caliper	Min. Height	Min. Spread	Remarks
TREES	LIVE OAK	QUERCUS VIRGINIANA		2	CONTAINER	NO.100	4" CAL.	12'-15'	8'-10'	CENTRAL TRUNK / NO LOW FORKS
	MONTEZUMA BALD CYPRESS	TAXODIUM MUCRONATUM		1	CONTAINER	NO.100	4" CAL.	12'-15'	8'-10'	CENTRAL TRUNK / NO LOW FORKS
	BUR OAK	QUERCUS MCROCARPA		1	CONTAINER	NO.100	4" CAL.	12'-15'	8'-10'	CENTRAL TRUNK / NO LOW FORKS
SMALL TREES	ROYAL POINCINA	DELONIX REGIA		1	CONTAINER	NO.30	2" CAL.	6'-8'	4'-6'	NURSERY GROWN
	MEXICAN WILD OLIVE	CORDIA BOSSERII		4	B&B		2" CAL.	8'	4'-6'	NURSERY GROWN
	TEXAS MT. LAUREL	SOPHORA SECUNDIFLORA		2	CONTAINER	NO.30	1" CAL.	4'-6'	4'-6'	MULI TRUNK
	TEXAS PERSIMMON	DIOSPYROS TEXANA		2	CONTAINER	NO.20	1" CAL.	4'-6'	4'-6'	MULI TRUNK
	CRAPE MYRTLE	LARGERSTROMINA INDICA		3	CONTAINER	NO.30	1" CAL.	6'-8'		MULI TRUNK
	YAUPON HOLLY	ILEX VOMITORIA		4	CONTAINER	NO.30		6'-8'		MULI TRUNK
	ESPERANZA	TECOMA STANS		3	CONTAINER	NO.5		24"		NURSERY GROWN
SHURBS	SOAPWEED YUCCA	YUCCA GLAUCA		5	CONTAINER	NO.1		12"		NURSERY GROWN
	GREEN CLOUD SEGE (CENIZO)	LEUCOPHYLLUM FRUTESCENS		2	CONTAINER	NO.1		12"		NURSERY GROWN
	DWARF POWDER PUFF	CALLIANDRA EMARGINATA		10	CONTAINER	NO.1		12"		NURSERY GROWN
	RED YUCCA	HESPERALOE PARVIFLORA		45	CONTAINER	NO.1		12"		NURSERY GROWN
	ROASMARY	DESERT OFFICINALLS 'ARP'		39	CONTAINER	NO.1		12"		NURSERY GROWN
	TEXAS LANTANA	LANTANA HORRIDA		12	CONTAINER	NO.1		12"		NURSERY GROWN
	MEX. FIRECRACKER	RUSELLIA EQUISETIFORMIS		34	CONTAINER	NO.1		12"		NURSERY GROWN

*** ESTIMATE OLNY, CONTRACTOR TO VERIFY**

PLANT SPECIFICATIONS:

1. Contractor shall be responsible for referencing the general notes for specifications dimensions volumes and measurements that have been modified or not shown. Rejection of plants shall be in accordance with the general notes.
2. The contractor shall be responsible for the safe transportation of plants to the project
3. site and their condition upon arrival. Plant materials shall not be stored on hard surface or left exposed to the sun. Protect
4. the root balls and water regularly until planting. If plants are left in storage over the weekend or holiday, a means of periodically watering and inspection container moisture shall be provided.
5. All plants shall be hardy, symmetrical, tight knit, and so trained or favored in development of branches, and compactness. Plants shall be sound, healthy and vigorous, well branched, and densly folliated when in leaf, and shall have healthy, well developed root systems.
6. All plants shall be nursery-grown in containers unless otherwise shown on plans.

ITEM	EST. QTY.
LANDSCAPE BOULDER	12
CONC. EDGING AT PLANT BEDS	94
PLANT BED PREP	2,840 SQ/FT OR 315 SQ/YD
TOP SOIL 4" DEPTH	2,840 SQ/FT OR 315 SQ/YD
DECOMPOSED GRANITE	2,840 SQ/FT OR 35 CU/YD
VEGETATION BARRIER	2,840 SQ/FT OR 315 SQ/YD
HYDRO MULCH SEEDING	10,576 SQ/FT OR 1,175 SQ/YDS

*** ESTIMATE OLNY, CONTRACTOR TO VERIFY**

LANDSCAPE SHEET TOTALS

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TEXAS REGISTRATION NO.
Expires:
Architect

HC Biosafety Lab

Hidalgo County Health Department
S 25th Ave, Edinburg TX 78542

No.	Date	Description

PROJECT NO.: 20030
ISSUE DATE: 04.27.21
DRAWN BY: SWALKER
CHECKED BY: SWALKER

SHEET NAME

LANDSCAPE SHEET TOTALS

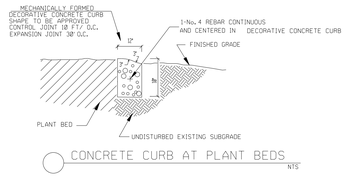
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L103

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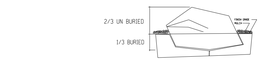
100% SCEMATIC DESIGN

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LANDSCAPE ARCHITECTURE
STEPHEN P. WALKER R.L.A.
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SOCIETY OF WETLAND SCIENTIST
(956)-739-3113
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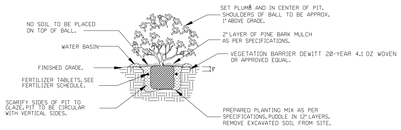
CONCRETE CURB AT PLANT BEDS
NTS

FERTILIZER SCHEDULE: PLANTING	
TREES	SHRUBS AND PERENNIALS
5-GALLON TREES 2 AGRIFORM® 21 GRAM TABLETS 15-GALLON TREES 3 AGRIFORM® 21 GRAM TABLETS 30-GALLON AND LARGER, 24" BOX AND LARGER, AND ALL B&B MATERIAL 1 AGRIFORM® 21 GRAM TABLET PER INCH OF CALIPER (1/2 INCH HALF INCH) OF CALIPER	2-GALLON AND SMALLER 1 AGRIFORM® 21 GRAM TABLET 3 TO 5-GALLON AND B&B MATERIAL WITH SPREADS TO THREE (3) FT. 2 AGRIFORM® 21 GRAM TABLETS 15-GALLON AND B&B MATERIAL WITH SPREADS GREATER THAN THREE (3) FT. 3 AGRIFORM® 21 GRAM TABLETS
SPACE TABLETS EVENLY AROUND ROOT BALL APPROX. 6" BELOW GRADE, PLACE NEXT TO BALL. (SEE TREE PLANTING DETAIL) • OR APPROVED EQUAL	SPACE TABLETS EVENLY AROUND ROOT BALL AND PLACE AT A DEPTH APPROX. 1/3 BALL DEPTH NEXT TO BALL. (SEE SHRUB PLANTING DETAIL) • OR APPROVED EQUAL.

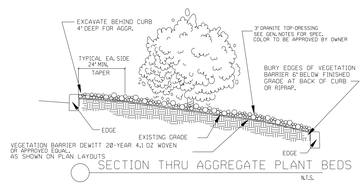


TYPICAL BOULDER PLACEMENT

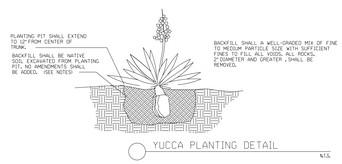
SECTION THROUGH LANDSCAPE BOULDERS
NTS



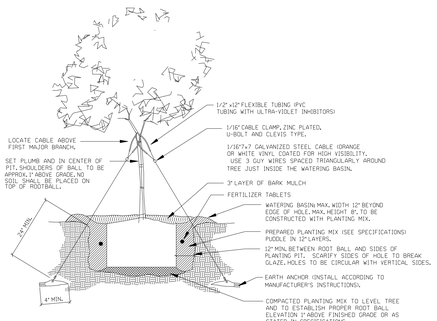
SHRUB PLANTING WITH VEGETATION BARRIER
N.T.S.



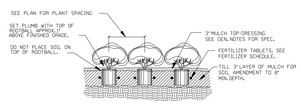
SECTION THRU AGGREGATE PLANT BEDS
N.T.S.



YUCCA PLANTING DETAIL
N.T.S.



TREE PLANTING - B&B, BOX, CAN
GUYING FOR SINGLE TRUNK TREES LESS THAN 3" CAL. FOR ALL OTHER SIZES SEE APPLICABLE DETAILS.
N.T.S.



BED PREPARATION & PLANTING
N.T.S.

LANDSCAPE DETAILS

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SITE-WORK LA LLC
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STEPHEN P. WALKER, R.L.A.
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ELI RUCHOA, P.E., AIA
TEXAS REGISTRATION NO.
[illegible]
DATE: [illegible]

HC Biosafety Lab
Hidalgo County Health Department
S 25th Ave, Edinburg TX 78542

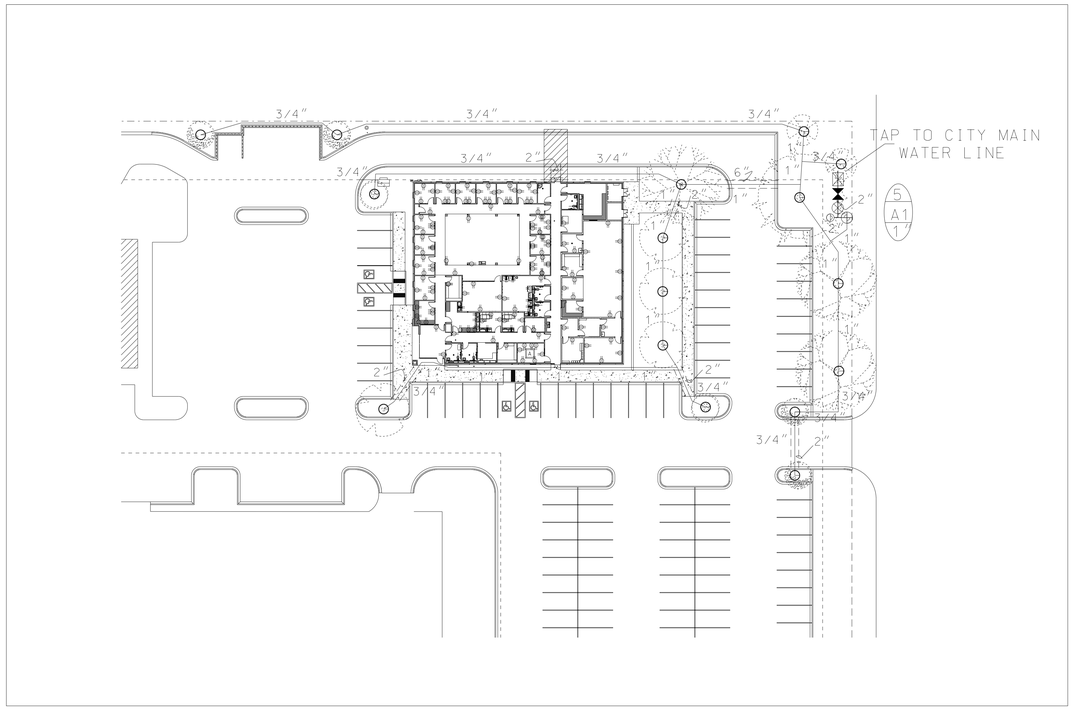
No. | Date | Description

PROJECT NO.: 20030
ISSUE DATE: 04.23.21
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LANDSCAPE DETAILS

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L104

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○ BUBBLER GPH AT EACH TREE WELL
(OR EQUEL)

NAME	GPH	
LIVE OAK	30	PCN - .50 .5 GPM
MONTEZUMA BALD CYPRESS	30	
BUR OAK	30	
ROYAL POINCINA	30	
MEXICAN WILD OLIVE	15	PCN - .25 .25 GPM
TEXAS MT. LAUREL	15	
TEXAS PERSIMMON	15	
CRAPE MYRTLE	15	

LEGEND

- ⊠ 1.5" WATER METER
- ⋈ 2" RP BACKFLOW PREVENTION DEVICE WITH GUARDSHACK ENCLOSURE (SEE DETAIL SHEET)
- ⊗ 2" MAIN SHUT-OFF VALVE
- ⊕ RAINBIRD PEB 1" – 2" ELECTRIC REMOTE CONTROL VALVE
  100-PEB, 150-PEB, 200-PEB
- ⊖ RAIN BIRD 5LRC QUICK COUPLING VALVE
- [A] RAINBIRD MDC-50 IRRIGATION CONTROLLER
  WITH WALL MOUNT METAL CABINET AND RAIN SENSOR
  W/ RAINBIRD DECODER CONTROLLERS
  TWO WIRE SYSTEM
  FD-101TURF TO FD-601TURF AS NEEDED
  AT EACH VALVE GROUP
  FINAL LOCATION TO BE APPROVED BY THE OWNER
- —— CITY MAIN
- —— MAINLINE PIPE: CLASS 200 PVC
  (1 – 3" INCH SIZE)
- —— LATERAL PIPE: CLASS 200 PVC
  (SIZED AS SHOWN)
- 28 — INDICATES LATERAL DISCHARGE IN GPM
- A1 / 1 — INDICATES CONTROLLER AND CONTROLLER STATION NUMBER
- INDICATES REMOTE CONTROL VALVE SIZE
- :====== BORING WITH 6" SCH 40 SLEEVE BY CONTRACTOR

CONTRACTOR TO VERIFY 55 PSI STATIC WATER PRESSURE.

TREE DRIP LAYOUT

NORTH

SCALE = 1" = 30'

0' 30' 60' 90'

GRAPHIC SCALE

SITE-WORK LA LLC
LANDSCAPE ARCHITECTURE
STEPHEN P. WALKER R.L.A.
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TEXAS REGISTRATION NO.
Engineer: 65291
Architect: 18160

HC Biosafety Lab

Hidalgo County Health Department
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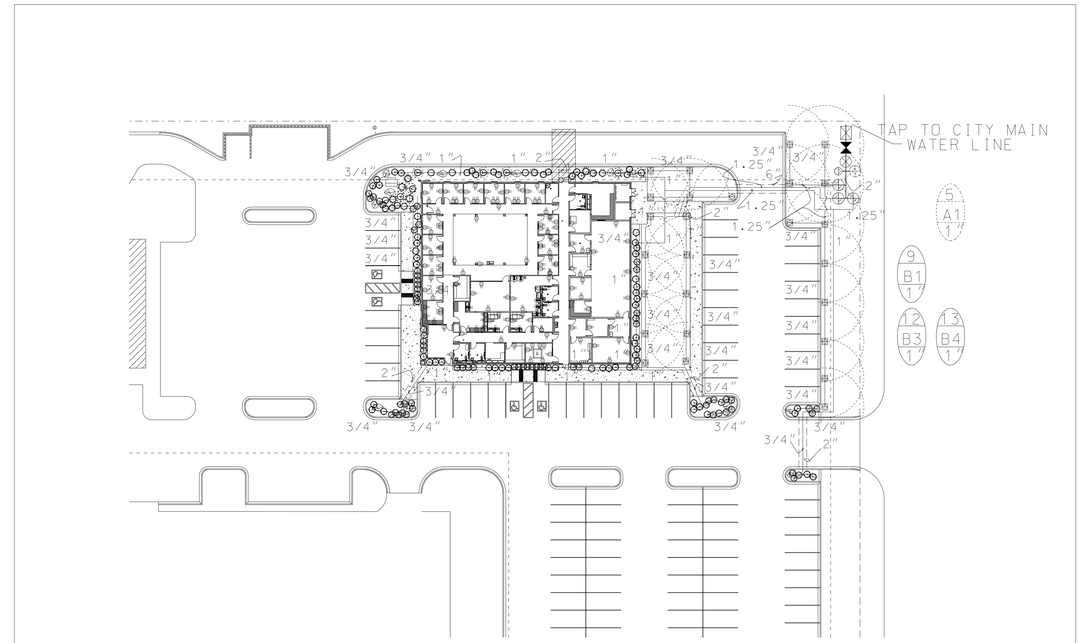
TREE DRIP LAYOUT

Sheet Number

L105

Project Status:

100% SCEMATIC DESIGN



O BUBBLER GPH AT EACH TREE WELL
(OR EQUEL)

NAME	GPH
YAUPON HOLLY	5
ESPERANZA	5
SOAPWEED YUCCA	5
GREEN CLOUD SEGE (CENIZO)	5
DWARF POWDER PUFF	5
RED YUCCA	5
TEXAS LANTANA	5
MEX. FIRECRACKER	5
ROASMARY	5

PCN - .25
.25 GPM
1401 RAINBIRD

LEGEND

- ⊠ 1" WATER METER
- ⋈ 1" RP BACKFLOW PREVENTION DEVICE WITH GUARDSHACK ENCLOSURE (SEE DETAIL SHEET)
- ⊗ 1" MAIN SHUT-OFF VALVE
- ⊕ RAINBIRD PEB 1" ELECTRIC REMOTE CONTROL VALVE 100-PEB
- ⊖ RAIN BIRD 5LRC QUICK COUPLING VALVE
- [A] RAINBIRD ESP-LX IRRIGATION CONTROLLER TWO WIRE SYSTEM W/6 STATIONS EXPANDABLE WITH WALL MOUNT METAL CABINET. RAIN-CLICK RAIN SENSOR AND VALVE DECODERS VERIFY FINAL LOCATION WITH OWNER.
- —— CITY MAIN
- —— MAINLINE PIPE: CLASS 200 PVC (1 - 3" INCH SIZE)
- —— LATERAL PIPE: CLASS 200 PVC (SIZED AS SHOWN)
- (28) INDICATES LATERAL DISCHARGE IN GPM
- (A1) INDICATES CONTROLLER AND CONTROLLER STATION NUMBER
- (1") INDICATES REMOTE CONTROL VALVE SIZE

= = = = = BORING WITH 2". 4" OR 6" SCH 40 SLEEVE BY CONTRACTOR

⊠ RAINBIRD 3500
FLOW = .77 GPM 360 No. 1.0 NOZZLE
PRESSURE = 25 PSI RADIUS = 20 FEET

CONTRACTOR TO VERIFY 55 PSI STATIC WATER PRESSURE.

IRRIGATION LAYOUT

NORTH

SCALE = 1" = 30'
0' 30' 60' 90'
GRAPHIC SCALE

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Engineer: 65291
Architect: 19160

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IRRIGATION LAYOUT

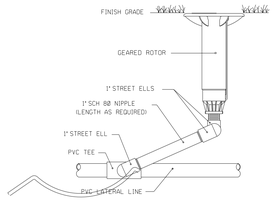
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L106

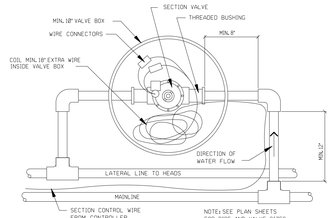
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100% SCEMATIC DESIGN

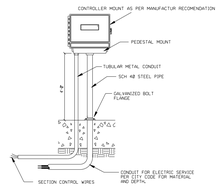
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LANDSCAPE ARCHITECTURE
STEPHEN P. WALKER R.L.A.
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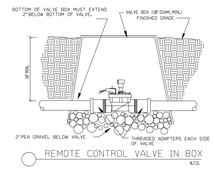
BALL OR GEAR ROTOR
N.T.S.



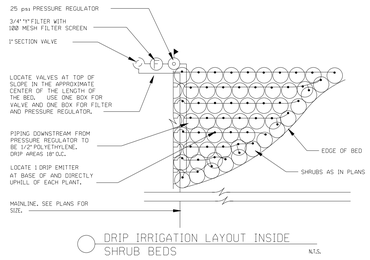
PLAN OF PIPING TO SECTION VALVE
N.T.S.



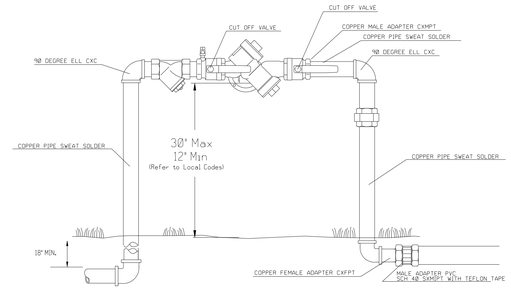
CONTROLLER ON WALL
(IF REQUIRED)
N.T.S.



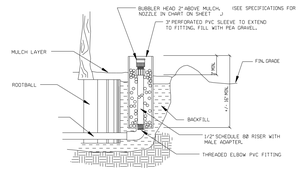
REMOTE CONTROL VALVE IN BOX
N.T.S.



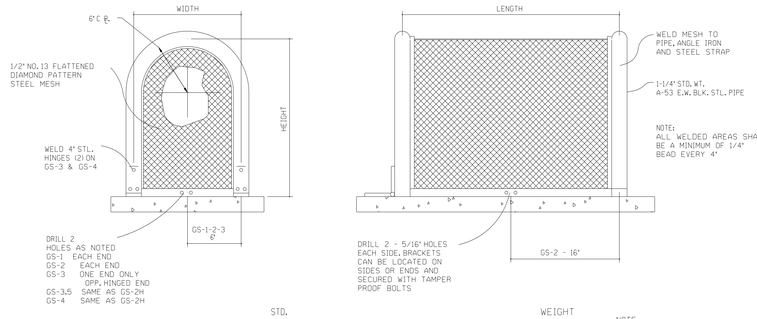
DRIP IRRIGATION LAYOUT INSIDE SHRUB BEDS
N.T.S.



REDUSED PRESSURE VACCUME BREAKER
2" FEBCO MODEL 825Y
OUTSIDE INSTALLATION
N.T.S.



BUBBLER HEAD IN TREE-WELL
N.T.S.

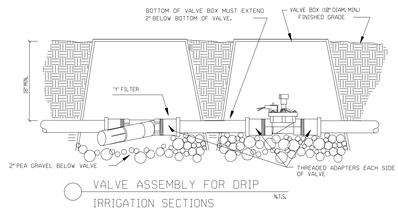


STD. SIZES	CENTERLINE DIMENSIONS		WEIGHT GS	WEIGHT CGS
GS-2	12"W x 24"H x 32"L	LIFT OFF UNIT	45	

NOTE:
AFTER ALL WELDING, ENTIRE UNIT SHALL BE PROCESSED WITH IRON PHOSPHATE PRETREATMENT. ELECTROSTATIC APPLICATION OF POWDER SHALL BE FUSION BONDED - PRS-8-4024-C (BEIGE) OR PRS-8-4203-C (LEAF GREEN) OR APPROVED EQUAL.

NOTE:
ALL BOLTS FOR HINGES AND HASPS SHALL BE ZINC PLATED TAMPER PROOF, EXCEPTION - USE SS HARDWARE FOR SS UNITS.

GS = POWDER COATED STEEL GUARD SHACK



VALVE ASSEMBLY FOR DRIP IRRIGATION SECTIONS
N.T.S.

IRRIGATION DETAILS

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S 25th Ave, Edinburg TX 78542

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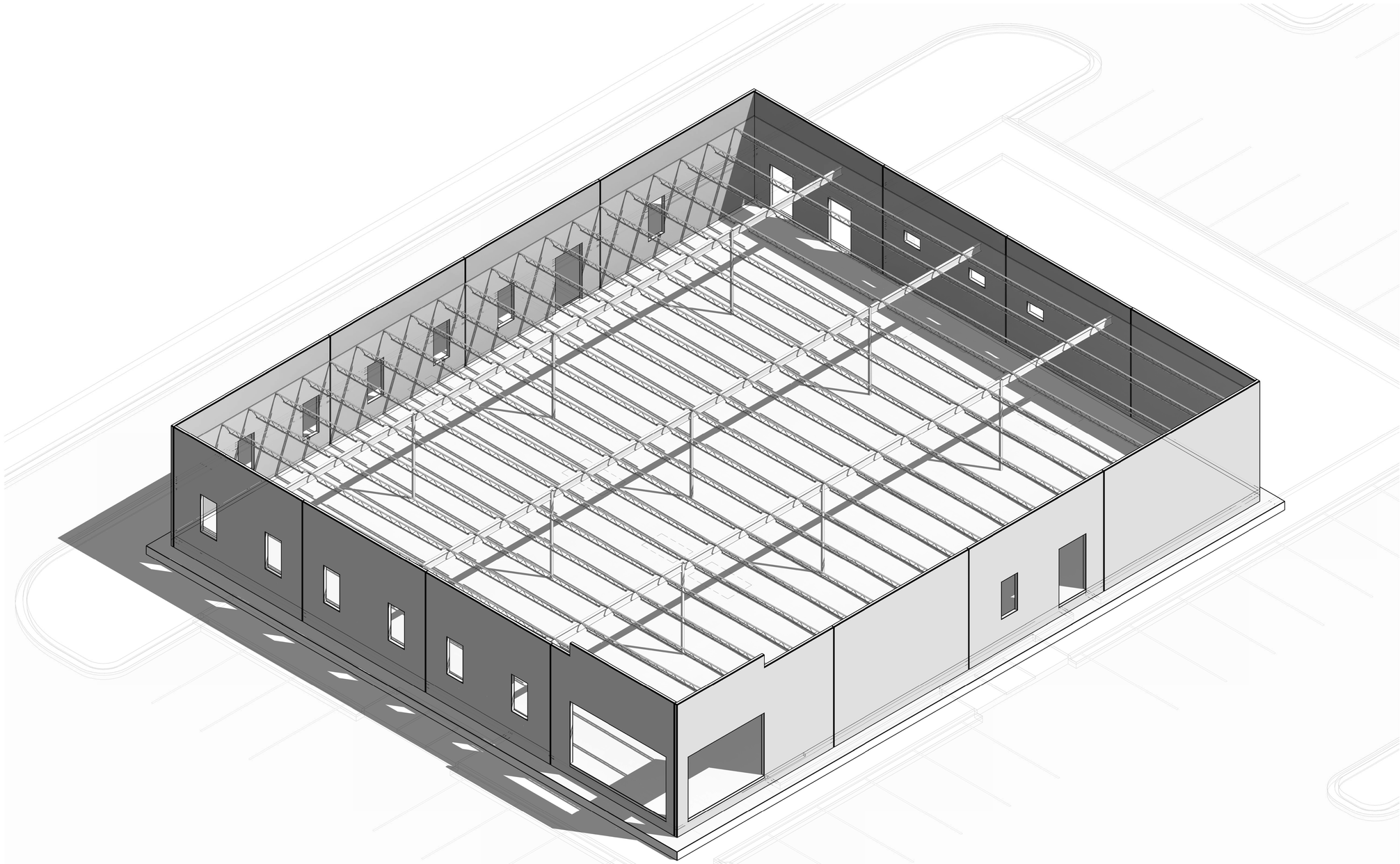
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IRRIGATION DETAILS

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L107

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TEXAS REGISTRATION NO.
Engineer: 93351
Architect: 16190

HC Biosafety Lab

County of Hidalgo
S 25th Ave, Edinburg, TX 78542

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Sheet Name

COVER SHEET

Sheet Number

SG000

Project Status:

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A1 | COVER SHEET

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GENERAL NOTES:

A. GENERAL

1. ALL CONSTRUCTION AND QUALITY OF MATERIALS SHALL COMPLY WITH THE GOVERNING BUILDING CODES AND REGULATIONS, CONTRACT DOCUMENTS, AND SPECIFICATIONS.
2. THE ARCHITECT AND ENGINEER ARE TO BE NOTIFIED IN WRITING WHEN CONSTRUCTION AT THE SITE BEGINS.

B. MEANS AND METHODS

1. THE CONTRACT DOCUMENTS AND SPECIFICATIONS DO NOT INDICATE THE METHOD OF CONSTRUCTION.
2. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES.
3. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY TO PROTECT THE STRUCTURE DURING CONSTRUCTION.

C. SAFETY

1. ALL CONSTRUCTION PROCEDURES AND JOB SITE CONDITIONS SHALL COMPLY WITH THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) LAW AND REGULATIONS.
2. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY TO PROTECT THE CONSTRUCTION WORKERS, INSPECTORS, AND OTHER JOB SITE VISITORS DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE, BUT NOT BE LIMITED TO: BRACING, SHORING FOR EARTH BANKS, FORMS, SCAFFOLDING, PLANKING, SAFETY NETS, SUPPORT AND BRACING FOR CRANES, POLES, ETC.
3. THE CONTRACTOR SHALL DESIGN, CONSTRUCT AND MAINTAIN ALL SAFETY DEVICES, INCLUDING SHORING AND BRACING, AND SHALL BE SOLELY RESPONSIBLE FOR CONFORMING TO ALL LOCAL, STATE AND FEDERAL SAFETY AND HEALTH STANDARDS, LAWS AND REGULATIONS.
4. NEITHER THE OWNER NOR THE ARCHITECT NOR THE ENGINEER WILL ENFORCE SAFETY MEASURES OR REGULATIONS. OBSERVATION VISITS TO THE SITE BY THE ARCHITECT OR THE ENGINEER DO NOT INCLUDE INSPECTION OF OSHA SAFETY LAWS AND REGULATIONS.

D. GENERAL CONTRACTOR RESPONSIBILITIES PRIOR TO CONSTRUCTION

1. THE GENERAL CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, TOLERANCES AND CONDITIONS AT THE JOB SITE BEFORE COMMENCEMENT OF WORK AND SHALL IMMEDIATELY REPORT ANY DISCREPANCIES OR OMISSIONS TO THE ARCHITECT AND ENGINEER IN WRITING BEFORE PROCEEDING WITH THAT PORTION OF THE WORK.
2. THE GENERAL CONTRACTOR SHALL COORDINATE ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AS TO WEIGHTS AND EXACT LOCATIONS WITH STRUCTURAL SUPPORTS. IN THE EVENT THAT THE PURCHASED EQUIPMENT DEVIATES IN WEIGHT AND LOCATION FROM THOSE INDICATED ON THE PLANS, THE ARCHITECT AND ENGINEER MUST BE NOTIFIED IN WRITING AND APPROVAL MUST BE OBTAINED PRIOR TO INSTALLATION.
3. ANY OMISSION OR CONFLICT BETWEEN THE VARIOUS ELEMENTS OF THE CONTRACT DOCUMENTS AND/OR SPECIFICATIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AND ENGINEER BEFORE PROCEEDING WITH ANY WORK SO INVOLVED.

E. SUBCONTRACTOR QUALIFICATION

1. EACH SUBCONTRACTOR IS CONSIDERED AN EXPERT IN HIS/HER RESPECTIVE FIELD AND SHALL, PRIOR TO THE SUBMISSION OF A BID OR PERFORMANCE OF WORK, NOTIFY THE GENERAL CONTRACTOR, ARCHITECT, ENGINEER, OR OWNER, IN WRITING OF ANY WORK CALLED OUT IN THE CONTRACT DOCUMENTS IN HIS/HER TRADE THAT CANNOT BE GUARANTEED OR PERFORMED AS INDICATED.

F. STRUCTURAL DRAWINGS AND CONTRACT DOCUMENTS

1. THE STRUCTURAL DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE.
2. THE STRUCTURAL DRAWINGS ARE ONLY A PORTION OF THE ENTIRE CONTRACT DOCUMENTS.
3. THE GENERAL CONTRACTOR AND ALL TRADE SUBCONTRACTORS ARE NOT LIMITED TO ONE SHEET NOR ONE DRAWING DISCIPLINE. THE GENERAL CONTRACTOR AND ALL TRADE SUBCONTRACTORS ARE RESPONSIBLE FOR ALL APPLICABLE AND ASSOCIATED WORK WITHIN THE ENTIRE CONTRACT DOCUMENTS AND SPECIFICATIONS.
4. IN CASE OF DISCREPANCIES, PROJECT SPECIFIC NOTES AND DETAILS TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS. DRAWINGS TAKE PRECEDENCE OVER SPECIFICATIONS. IN CASE OF A DISCREPANCY ON THE SAME ITEM, TAKE THE MORE STRINGENT OR MORE EXPENSIVE ITEM.
5. WHERE CONSTRUCTION DETAILS ARE NOT SPECIFICALLY SHOWN OR NOTED FOR ANY PART OF THE WORK, SUCH DETAILS SHALL BE CONSTRUCTED IN ACCORDANCE WITH DETAILS SHOWN FOR SIMILAR CONDITIONS AND MATERIALS. WHERE SUFFICIENTLY SIMILAR WORK IS NOT SHOWN, THE ENGINEER SHALL BE CONSULTED FOR CLARIFICATION.
6. ANY QUESTIONS RELATED TO INTERPRETATION OR INTENT OF THESE DRAWINGS SHALL BE REFERRED TO THE ARCHITECT AND ENGINEER.

G. STRUCTURAL DESIGN

1. THIS STRUCTURE IS DESIGNED AS A STABLE UNIT AFTER ALL COMPONENTS ARE IN PLACE.
2. THE CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE TEMPORARY BRACING AS REQUIRED TO ENSURE THE VERTICAL AND LATERAL STABILITY OF THE ENTIRE STRUCTURE, OR ANY PORTION THEREOF, DURING CONSTRUCTION.

H. SUBSTITUTIONS

1. TRADE NAMES AND MANUFACTURERS REFERRED TO ARE FOR QUALITY STANDARDS ONLY. SUBSTITUTIONS WILL BE PERMITTED AS APPROVED BY THE ENGINEER.
2. ANY OPTIONS OR APPROVED SUBSTITUTIONS ARE FOR THE CONTRACTOR'S CONVENIENCE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CHANGES, ADDITIONAL COSTS (INCLUDING REDESIGN SERVICES BY THE ENGINEER), AND COORDINATION WITH ALL ITEMS THAT THE SUBSTITUTIONS MAY IMPACT.

I. EXISTING UTILITIES AND ADJACENT STRUCTURES

1. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO LOCATE AND PROTECT ANY EXISTING UNDERGROUND OR CONCEALED CONDUIT, PLUMBING, OR OTHER UTILITIES PRIOR TO BEGINNING ANY WORK.
2. THE CONTRACTOR SHALL ALSO TAKE ALL NECESSARY PRECAUTIONS TO PROTECT EXISTING STRUCTURES NEAR, ADJACENT, OR WITHIN THE EFFECTIVE AREA OF CONSTRUCTION.

J. NON-PERMITTED PROCEDURES

1. PIPES, DUCTS, SLEEVES, CHASES, ETC. SHALL NOT BE PLACED IN BEAMS, COLUMNS, OR WALLS UNLESS SPECIFICALLY SHOWN OR NOTED IN THE STRUCTURAL DRAWINGS.
2. STRUCTURAL MEMBERS SHALL NOT BE CUT OR MODIFIED FOR PIPES, DUCTS, ETC. UNLESS NOTED OTHERWISE.

ALLOWANCES:

A. MATERIAL ALLOWANCE

1. IN ADDITION TO THE MATERIAL SHOWN IN THESE CONTRACT DOCUMENTS, THE CONTRACTOR SHALL PROVIDE AN ADDITIONAL MATERIAL ALLOWANCE FOR USE ON THIS PROJECT AS DIRECTED BY THE ARCHITECT AND/OR THE STRUCTURAL ENGINEER OF RECORD.
2. THE MATERIAL ALLOWANCE SHALL BE AS FOLLOWS:

MATERIAL	ALLOWANCE
CONCRETE	10 CU YD
REINFORCING STEEL	1000 LBS
STRUCTURAL STEEL	5000 LBS
8" CMU	1000 SQ FT

3. THE MATERIAL ALLOWANCE COST SHALL INCLUDE MATERIAL COST, LABOR COSTS, AND INSTALLATION PLACEMENT AT THE SITE.

B. CREDIT TO OWNER

1. REMAINING INSTALLATION BALANCE AT THE END OF THE PROJECT SHALL BE RETURNED/CREDITED BACK TO THE OWNER.
2. THE ALLOWANCE SHALL APPEAR ON THE SCHEDULE OF VALUE AS A LINE ITEM.

SERVICEABILITY AND MAINTENANCE:

A. CONCRETE CRACKING STATEMENT

1. STRUCTURAL ELEMENTS CONSTRUCTED OUT OF CONCRETE AND/OR MASONRY MAY DEVELOP CRACKS DUE TO INHERENT CONCRETE SHRINKAGE AND CREEP, AND RESTRAINING EFFECTS DUE TO CONNECTIONS IN WHICH THE CONCRETE AND/OR MASONRY MEMBERS ARE TIED TO.
2. CRACKING DUE TO SHRINKAGE, CREEP, AND RESTRAINING EFFECTS ARE COSMETIC. THE CONCRETE AND/OR MASONRY MEMBERS WILL MAINTAIN THE STRENGTH AND SERVICEABILITY REQUIREMENTS EVEN WITH SUCH CRACKS PRESENT.
3. SPECIAL EFFORT HAS BEEN MADE TO REDUCE THE POTENTIAL CAUSES AND NUMBER OF CRACKS SUCH AS LOCATING CONTROL JOINTS, EXPANSION JOINTS, ISOLATION JOINTS, CONTRACT JOINTS, AND TEMPERATURE SUPPLEMENTARY REINFORCING; HOWEVER, IT IS NOT PRACTICAL TO ACHIEVE COMPLETE INHIBITION OF ALL CRACKS.
4. MOST CRACKS DEVELOP WITHIN 3 YEARS OF THE LIFESPAN OF THE STRUCTURE. CRACKS WIDER THAN 0.01" SHOULD BE PRESSURE EPOXIED.

B. MAINTENANCE STATEMENT

1. ALL STRUCTURES REQUIRE PERIODIC MAINTENANCE TO EXTEND THE LIFESPAN OF THE STRUCTURE AND TO ENSURE THE STRUCTURAL INTEGRITY FROM EXPOSURE TO THE ENVIRONMENT.
2. THE OWNER SHALL ESTABLISH A PLANNED PROGRAM FOR MAINTENANCE THAT SHALL INCLUDE SERVICING ITEMS INCLUDING BUT NOT LIMITED TO:
   a. STRUCTURAL STEEL PAINT
   b. CONCRETE PROTECTIVE COATING
   c. SEALANTS
   d. CAULKED JOINTS
   e. EXPANSION JOINTS
   f. CONTROL JOINTS
   g. SPALLS AND CRACKS IN CONCRETE
   h. PRESSURE WASHING OF STRUCTURAL ELEMENTS EXPOSED TO SALT OR OTHER DAMAGING CHEMICALS

DESIGN CRITERIA:

A. CODES:

BUILDING CODE:	IBC 2018
MINIMUM DESIGN LOADS:	ASCE 7-10
CONCRETE:	ACI 318-14
STEEL:	AISC 360-10 (14TH EDITION)
MASONRY:	TMS 402-16/ACI 530-11/ASCE 5-11
COLD-FORMED STEEL:	AISI S100-2016

B. GRAVITY LOADS

1. DEAD LOAD
   a. ROOFS: 25 PSF
   b. CEILING: 22 PSF
2. ROOF LIVE LOAD: 20 PSF
3. LIVE LOAD

	UNIFORM	CONCENTRATED
PARTITIONS:	SEE NOTE iv	-
ACCESS FLOOR SYSTEMS		
OFFICE:	50 PSF	2000 LB
COMPUTER:	100 PSF	2000 LB
ASSEMBLY AREAS		
FIXED SEATS:	60 PSF	-
FOLLOW SPOT BOOTHS:	50 PSF	-
LOBBIES:	100 PSF	-
MOVEABLE SEATS:	100 PSF	-
STAGE FLOORS:	150 PSF	-
OTHER ASSEMBLY AREAS:	100 PSF	-
BALCONIES AND DECKS:	SEE NOTE iii	
CATWALKS:	40 PSF	300 LB
CORRIDORS		
FIRST FLOOR:	100 PSF	1000 LB
OTHER FLOORS:	SEE NOTE ii	1000 LB
DINING ROOMS:	100 PSF	-
LIBRARIES		
READING ROOMS:	60 PSF	1000 LB
STACK ROOMS:	150 PSF	1000 LB
RECREATION USE		
DANCE HALLS:	100 PSF	-
GYMNASIUMS:	100 PSF	-
WEIGHTROOMS:	-	SEE NOTE v
BLEACHERS:	100 PSF	-
SIDEWALKS:	100 PSF	8000 LB
STAIRS AND EXIT WAYS:	100 PSF	300 LB
STORAGE/MECHANICAL		
LIGHT:	125 PSF	SEE NOTE v
HEAVY:	250 PSF	SEE NOTE v

LIVE LOAD NOTES:
i. DESIGN LIVE LOADS ARE BASED ON THE MORE RESTRICTIVE OF THE UNIFORM LOAD OR THE CONCENTRATED LOAD ACTING OVER AN AREA OF 2'-6" BY 2'-6", 4 1/2" BY 4 1/2" FOR PARKING GARAGES, OR 2" BY 2" FOR STAIR TREADS.
ii. SAME AS THE OCCUPANCY SERVED.
iii. 1.5 TIMES THE OCCUPANCY SERVED BUT NOT GREATER THAN 100 PSF.
iv. IN AREAS WHERE PARTITIONS ARE SUBJECTED TO CHANGE, AN ALLOWANCE OF 15 PSF OF ADDITIONAL LIVE LOAD HAS BEEN MADE FOR PARTITIONS AS A UNIFORMLY DISTRIBUTED LIVE LOAD WHERE THE LIVE LOAD IS LESS THAN OR EQUAL TO 80 PSF.
v. DESIGN CONCENTRATED LOAD IS THAT REQUIRED BY THE ASSUMED EQUIPMENT WEIGHT.
vi. LIVE LOADS HAVE BEEN REDUCED USING THE STANDARD PROCEDURE IN THE BUILDING CODE UP TO A MAXIMUM REDUCTION OF 50% FOR MEMBERS SUPPORTING ONE FLOOR AND 60% FOR MEMBERS SUPPORTING TWO OR MORE FLOORS.

REFERENCE SHEETS SG006 FOR LIVE LOAD PLANS.

4. RAIN LOAD: 23.4 PSF (AREA A)

AREA A ROOF STRUCTURE HAS BEEN DESIGNED TO SUPPORT THE WEIGHT OF 4 1/2 INCHES OF PONDED WATER CAUSED BY CLOGGING OF THE PRIMARY ROOF DRAINS. ROOF SURFACES WITH A SLOPE TOWARDS POINTS OF FREE DRAINAGE OF AT LEAST 1/4:12 ARE NOT CONSIDERED SUSCEPTIBLE TO PONDING INSTABILITY.

5. SNOW LOAD
   GROUND SNOW LOAD, p_g: 0 PSF
6. ICE LOAD: NOT APPLICABLE

C. LATERAL LOADS

1. WIND LOAD
   ULTIMATE WIND SPEED, V_{ult}: 138 MPH
   NOMINAL WIND SPEED, V_{asd}: 107 MPH

THE STRUCTURE IS LOCATED IN A HURRICANE PRONE REGION (V_{ult} > 115 MPH) AS DEFINED BY ASCE 7-10 SECTION 26.2.

THE STRUCTURE IS NOT LOCATED WITHIN 1 MILE OF THE COASTAL MEAN HIGH WATER LINE.

RISK CATEGORY:	IV
EXPOSURE CATEGORY:	B
ENCLOSURE CLASSIFICATION	ENCLOSED
INTERNAL PRESSURE COEFFICIENT	±0.18

2. SEISMIC LOAD

SEISMIC IMPORTANCE FACTOR, I_E:	1.50
MAPPED SPECTRAL RESPONSE ACCELERATION (SHORT), S_S:	0.043 g
MAPPED SPECTRAL RESPONSE ACCELERATION (1 SEC), S_1:	0.015 g
SITE CLASS:	D
DESIGN SPECTRAL RESPONSE ACCELERATION (SHORT), S_{DS}:	0.046 g
DESIGN SPECTRAL RESPONSE ACCELERATION (1 SEC), S_{D1}:	0.023 g
SEISMIC DESIGN CATEGORY (SDC):	A
SEISMIC FORCE-RESISTING SYSTEMS	ORDINARY REINFORCED CONCRETE SHEAR WALLS
ANALYSIS PROCEDURE USED:	ASCE 7-10 SECTION 1.4.3
RESPONSE MODIFICATION COEFFICIENT, R	4
OVERSTRENGTH FACTOR, Ω_0	2 1/2
DEFLECTION AMPLIFICATION FACTOR, C_d	4
SEISMIC RESPONSE COEFFICIENT, C_s	
BASE SHEARS, V	

3. FLOOD LOAD

FLOOD INSURANCE RATE MAP (FIRM) COMMUNITY-PANEL NO.:	480101 0275 C
REVISION DATE:	MARCH 18, 1991
ZONE DESIGNATION:	ZONE C (AREAS OF MINIMAL FLOODING)

THE PROJECT IS NOT LOCATED IN A FLOOD HAZARD AREA. FLOOD LOADS DO NOT GOVERN THE DESIGN OF THE STRUCTURE.

D. GEOTECHNICAL INFORMATION

1. GEOTECHNICAL REPORT

PREPARED BY:	RABA-KISTNER CONSULTANTS, INC.
PROJECT NO.:	ABA16-021-10 (ABA16-021-01 SUPPLEMENTARY)
DATE:	MARCH 22, 2017

2. SHALLOW FOUNDATION
   a. MINIMUM FOUNDATION REQUIREMENTS:
      MINIMUM FOOTING DEPTH BELOW THE FINISH GRADE: 24 INCHES
      MINIMUM FOOTING WIDTH: 12 INCHES
   b. SOIL PARAMETERS:
      MODULUS OF SUBGRADE REACTION, k: 125 PCI (SELECT FILL)
      ALLOWABLE SOIL BEARING PRESSURE: 1900 PSF (CONTINUOUS FOOTINGS)
      ALLOWABLE SOIL BEARING PRESSURE: 2300 PSF (SPREAD FOOTINGS)
      ALLOWABLE SOIL BEARING PRESSURE: 2500 PSF (UNDERGROUND GAS TANKS)
   c. WIRE REINFORCEMENT INSTITUTE (WRI) CRITERIA:
      CLIMATIC RATING, C_w: 15
      EFFECTIVE PLASTICITY INDEX, PI: 52
      POTENTIAL VERTICAL RISE (PVR) - UNDISTURBED SOIL: 2 TO 3 INCHES
      POTENTIAL VERTICAL RISE (PVR) - WITH SELECT FILL: 1 INCH
   d. UPLIFT RESISTANCE:
      UNIT WEIGHT OF SOIL FOR UPLIFT: 125 PCF
      UNIT WEIGHT OF CONCRETE FOR UPLIFT: 150 PCF
   e. LATERAL RESISTANCE:
      ALLOWABLE SOIL ADHESION: 500 PSF

SHOP DRAWINGS AND SUBMITTALS:

A. SUBMITTAL LIST AND SCHEDULE

1. THE GENERAL CONTRACTOR SHALL PREPARE A DETAILED LIST AND SCHEDULE OF ALL SUBMITTAL ITEMS TO BE SENT TO THE STRUCTURAL ENGINEER PRIOR TO THE START OF CONSTRUCTION. THE LIST SHALL INCLUDE:
   a. SHOP DRAWINGS
   b. PRODUCTS, ASSEMBLIES, AND HARDWARE
   c. PRODUCT CERTIFICATES, MILL CERTIFICATES, AND FABRICATOR CERTIFICATES
   d. DESIGN CALCULATIONS

B. SHOP DRAWINGS AND SUBMITTALS

1. THE GENERAL CONTRACTOR SHALL SUBMIT FOR ENGINEERING REVIEW SHOP DRAWINGS AND SUBMITTALS FOR THE FOLLOWING ITEMS BUT NOT LIMITED TO:
   a. CONCRETE MIX DESIGN AND ACCESSORIES
   b. CONCRETE TILT-UP PANELS
   c. CONSTRUCTION JOINT LOCATIONS IN FLOORS, WALLS, AND SLAB-ON-GRADE
   d. EMBEDDED PLATES
   e. FLOOR STEEL FORM DECK (NON-COMPOSITE)
   f. GROUT MIX DESIGN
   g. MASONRY ASSEMBLAGE
   h. MISCELLANEOUS STEEL
   i. MORTAR MIX DESIGN
   j. PRE-ENGINEERED CANOPY REACTIONS*
   k. REINFORCING STEEL
   l. ROOF DECK
   m. ROOFTOP UNITS LOCATIONS AND ANCHORAGE*
   n. STEEL JOISTS AND JOIST GIRDERS
   o. STEEL STAIRS AND LADDERS*
   p. STRUCTURAL STEEL CONNECTION DESIGN*
   q. STRUCTURAL STEEL

   *INDICATES SHOP DRAWINGS OR SUBMITTALS REQUIRED TO BE SIGNED AND SEALED BY A LICENSED PROFESSIONAL ENGINEER IN THE STATE WHERE THE PROJECT IS IN.

2. ALLOW A MINIMUM OF 10 WORKING DAYS FOR REVIEW OF EACH SET OF SHOP DRAWINGS.

C. GENERAL CONTRACTOR'S ROLE PRIOR TO SUBMISSION

1. ALL SHOP DRAWINGS AND SUBMITTALS SHALL BE REVIEWED AND APPROVED BY THE GENERAL CONTRACTOR PRIOR TO SUBMITTING TO THE ENGINEER FOR REVIEW. REFER TO ARCHITECTURAL FOR SUBMISSION REQUIREMENTS.
2. THE GENERAL CONTRACTOR SHALL REVIEW THE SHOP DRAWINGS SUBMITTED BY THEIR SUB-CONTRACTORS AND COORDINATE SHOP DRAWINGS WITH ALL OTHER TRADES PRIOR TO SUBMISSION TO THE ENGINEER FOR REVIEW.
3. THE GENERAL CONTRACTOR SHALL ANSWER ALL QUESTIONS OR CLARIFICATIONS BY THE SUB-CONTRACTORS BEFORE SUBMITTING TO THE ENGINEER FOR REVIEW.

D. SHOP DRAWING AND SUBMITTAL LEGIBILITY

1. SHOP DRAWINGS AND SUBMITTALS SHALL USE DRAFTING LINE WORK AND LETTERING THAT IS CLEARLY LEGIBLE.
2. SHOP DRAWINGS AND SUBMITTALS SHALL SHOW CLEAR AND COMPLETE INFORMATION FOR THE FABRICATION AND INSTALLATION.

E. ERRORS AND OMISSIONS

1. REVIEW OF THE SHOP DRAWINGS AND SUBMITTALS IS FOR GENERAL CONFORMANCE TO THE STRUCTURAL DRAWINGS. REVIEW OF THE SHOP DRAWINGS AND SUBMITTALS BY THE ENGINEER DOES NOT INDEMNIFY THE CONTRACTOR FOR ANY ERRORS AND/OR OMISSIONS IN DIMENSIONS, MATERIALS, AND/OR STRUCTURAL ELEMENTS INDICATED IN THE SHOP DRAWINGS AND SUBMITTALS.

F. DISCREPANCIES

1. IF THERE EXISTS ANY DISCREPANCIES BETWEEN THE STRUCTURAL DRAWINGS AND SHOP DRAWINGS AND/OR SUBMITTALS, THE INFORMATION IN THE STRUCTURAL DRAWINGS SHALL SUPERSEDE. INFORMATION THAT IS NOT INDICATED ON THE SHOP DRAWINGS SHALL BE OBTAINED FROM THE STRUCTURAL DRAWINGS.

G. REPRODUCTION

1. THE USE OF THE ELECTRONIC FILES OR REPRODUCTIONS OF THESE CONTRACT DOCUMENTS BY THE GENERAL CONTRACTOR, AND SUB-CONTRACTOR, ERECTOR, FABRICATOR, OR SUPPLIER IN LIEU OF PREPARATION OF SHOP DRAWINGS AND/OR SUBMITTALS INDICATES THEIR ACCEPTANCE OF ALL INFORMATION SHOWN IN THESE DOCUMENTS ARE 100% CORRECT, AND OBLIGATES THEMSELVES TO ANY EXPENSES, REAL OR IMPLIED, ARISING DUE TO ANY ERRORS THAT MAY OCCUR HEREON.

ROOF DECK:

A. SHEET METAL

MATERIAL:	ASTM A653, STRUCTURAL STEEL (SS), GRADE 33 (Fy = 33 KSI MINIMUM)
GALVANIZING:	G60 ZINC COATED, ACCORDING TO ASTM A653 AND ASTM A924
LOCATION:	TYPICAL
DECK PROFILE:	B, WR
PROFILE DEPTH:	1 1/2"
GAUGE:	20
SPAN CONDITION:	SEE NOTE C.2

B. ATTACHMENT

INTERIOR SUPPORT FASTENER PATTERN:	36/4
EXTERIOR SUPPORT FASTENER PATTERN:	36/7
PERIMETER SUPPORT FASTENER PATTERN:	36/7
SUPPORT FASTENER:	BULDEX #12-14 TEKS SCREW (HWH)
SIDE-LAP FASTENER:	BULDEX #12-14 TEKS SCREW (HWH)
EDGE FASTENER:	BULDEX #12-14 TEKS SCREW (HWH)
NO. OF SIDE-LAP FASTENERS PER SPAN:	5
NO. OF EDGE FASTENERS PER SPAN:	3

REFERENCE SHEET SF101 FOR SPECIAL DECK ATTACHMENT.

C. INSTALLATION

1. INSTALL ROOF DECK EXTERIOR ENDS WITH AN END-LAP CONDITION OVER SUPPORTING FRAMING CONSISTING OF A MINIMUM END BEARING OF 1 1/2" WITH END JOINTS LAPPED AT A MINIMUM OF 2".
2. ROOF DECK PANELS SHALL BE 3-SPAN MINIMUM; HOWEVER, DO NOT EXCEED 5-SPAN. SPAN CONDITIONS SHALL BE MARKED UP IN THE SHOP DRAWINGS FOR THE ENGINEER OF RECORD TO REVIEW.
3. PROVIDE THE FULL PANEL WIDTH AT ALL ROOF EDGES AND WHERE THE ROOF DIAPHRAGM LOADS ARE BEING TRANSFERRED TO THE LATERAL FORCE-RESISTING STRUCTURAL ELEMENTS. FILLER SHEETS ARE PERMITTED EXCEPT WHERE THE FULL PANEL WIDTH IS REQUIRED. FILLER SHEETS SHALL BE MARKED IN THE SHOP DRAWINGS FOR THE ENGINEER OF RECORD TO REVIEW.
4. SCREWS MUST BE INSTALLED USING PROPERLY CALIBRATED TOOLS..
5. WELDING ELECTRODES FOR ARC SPOT WELDS SHALL BE E60XX UNLESS NOTED OTHERWISE.
6. PROVIDE CLOSURE SHEETS OVER EXPOSED WALLS AND BEAMS.
7. AT VALLEYS, RIDGES AND WHERE DECK CHANGES DIRECTIONS, PROVIDE 9" WIDE x 1/4" THICK CONTINUOUS FLAT PLATES (BEND AS REQUIRED).

COMPOSITE DECK:

A. SHEET METAL

MATERIAL:	ASTM A653, STRUCTURAL STEEL (SS), GRADE 50 CLASS 1
GALVANIZING:	G90 ZINC COATED, ACCORDING TO ASTM A653 AND ASTM A924
LOCATION:	AREA D (MEZZANINE)
DECK PROFILE:	VL
PROFILE DEPTH:	1.5"
GAUGE:	20
SDI MAX SPAN:	8'-2" UNSHORED FOR A 3-SPAN CONDITION

B. CONCRETE TOPPING

CONCRETE THICKNESS (t):	5" (MEASURE FROM TOP OF CORRUGATION CRESTS)
TOTAL SLAB DECK THICKNESS:	6 1/2"
CONCRETE STRENGTH, f'c:	4000 PSI
CONCRETE WEIGHT:	LIGHTWEIGHT (w_c = 110 PCF ± 5 PCF MAX)
REINFORCING:	#3 @ 12" OC EW

C. ATTACHMENT

FASTENER LAYOUT:	36/4
SUPPORT FASTENERS:	#12 SCREWS
SIDELAP FASTENERS:	#10 SCREWS
NUMBER OF SIDELAPS PER SPAN:	2

D. SHEAR CONNECTORS

HEADED STUD DIAMETER:	3/4"
HEADED STUD LENGTH:	4 1/2"

1. HEADED STUDS USED AS SHEAR CONNECTORS FOR COMPOSITE BEAMS SHALL BE AWS D1.1 TYPE B (TABLE 7.1) STUDS MANUFACTURED IN CONFORMANCE WITH SPECIFICATION ASTM A108 WITH A MINIMUM TENSILE STRENGTH OF 65 KSI.

E. INSTALLATION

1. INSTALL DECK ENDS OVER SUPPORT FRAMING WITH A MINIMUM END BEARING OF 3" AT INTERIOR SUPPORTS AND 1 1/2" AT EXTERIOR SUPPORTS WITH END JOINTS BUTTED OVER THE SUPPORT WITH A GAP NOT LARGER THAN 1".
2. DECK UNITS SHALL BE 3 OR MORE SPANS AND SHALL BE ATTACHED TO THE STRUCTURAL SUPPORT.
3. PROVIDE CLOSURE OVER WALLS AND UNDER DECKS, ALSO OVER STEEL BEAMS AND DECKS.
4. PROVIDE FILLER SHEETS AS REQUIRED.

ROOF DECK WITH INSULATING CONCRETE:

A. SHEET METAL

MATERIAL:	ASTM A653, STRUCTURAL STEEL (SS), GRADE 33 (Fy = 33 KSI
MINIMUM)	
GALVANIZING:	G90 ZINC COATED, ACCORDING TO ASTM A653 AND ASTM A924
LOCATION:	AREA A & D

	AREA A	AREA D
DECK PROFILE:	B5V	B5V
PROFILE DEPTH:	1.5"	1.5"
GAUGE:	20	18
SPAN:	5'-0"	5'-0"

B. INSULATING CONCRETE (TYPE II)

MATERIAL	
AGGREGATES:	ASTM C332, GROUP I
PORTLAND CEMENT:	ASTM C150
EPS INSULATING BOARD:	ASTM C578 TYPE I
BASIS OF DESIGN:	ELASTIZELL LOW DENSITY (1 PCF) INSULATING CONCRETE
PROFILE (TYPE II):	1.5BSV ROOF DECK + 1 1/2" LWIC + EPS INSULATION + 2" LWIC
TOP COAT	
CONCRETE STRENGTH, f'c:	300 PSI (MIN)
CONCRETE UNIT WEIGHT:	LIGHTWEIGHT (w_c = 50 PCF MAX)

C. ATTACHMENT

	AREA A	AREA D
INTERIOR SUPPORT FASTENER PATTERN:	36/4	36/5
EXTERIOR SUPPORT FASTENER PATTERN:	36/8	36/8
PERIMETER SUPPORT FASTENER PATTERN:	36/8	36/8
SUPPORT FASTENER:	STRONG-DRIVE XLQ	STRONG-DRIVE XLQ
SIDE-LAP FASTENER:	5/8" Ø ARC SPOT WELD	5/8" Ø ARC SPOT WELD
EDGE FASTENER:	STRONG-DRIVE XLQ	STRONG-DRIVE XLQ
NO. OF SIDE-LAP FASTENERS PER SPAN:	9	8
NO. OF EDGE FASTENERS PER SPAN:	7	7

D. INSULATING FILL DIAPHRAGM REQUIREMENTS

1. ALL METAL DECKING, INSULATING BOARDS, AND INSULATING CONCRETE FILL SHALL BE INSTALLED IN ACCORDANCE WITH SDI NC-2010 AND SDI-DDM04.
2. TYPE II INSULATING CONCRETE DIAPHRAGM SHALL CONSIST OF THE FOLLOWING PROFILE FROM BOTTOM TO TOP:
   a. 1.5BSV ROOF DECK ATTACHED TO SUPPORT FRAMING IN ACCORDANCE WITH NOTE C ABOVE.
   b. LIGHTWEIGHT INSULATING CONCRETE PLACED SLIGHTLY ABOVE THE CORRUGATION CRESTS OF THE ROOF DECK.
   c. EPS INSULATING BOARDS (TAPERED WHEN REQUIRED) WITH AT LEAST 2% OF THE AREA CONSISTING OF HOLES FILLED WITH LIGHTWEIGHT INSULATING CONCRETE.
   d. A TOPPING COAT OF 2" LIGHTWEIGHT INSULATING CONCRETE TO FINISH THE DIAPHRAGM.
3. EPS INSULATING BOARDS SHALL BE HELD 3 FEET AWAY FROM THE INSIDE FACE OF THE PERIMETER CONCRETE TILT-UP WALLS.
4. THE LIGHTWEIGHT INSULATING CONCRETE AGGREGATES SHALL CONFORM TO ASTM C332.

E. INSTALLATION

1. INSTALL ROOF DECK EXTERIOR ENDS WITH AN END-LAP CONDITION OVER SUPPORTING FRAMING CONSISTING OF A MINIMUM END BEARING OF 1 1/2" WITH END JOINTS LAPPED AT A MINIMUM OF 2".
2. ROOF DECK PANELS SHALL BE 3-SPAN, UNLESS NOTED OTHERWISE. OTHER SPAN CONDITIONS SHALL BE MARKED UP IN THE SHOP DRAWINGS FOR THE ENGINEER OF RECORD TO REVIEW.
3. PROVIDE THE FULL PANEL WIDTH AT ALL ROOF EDGES AND WHERE THE ROOF DIAPHRAGM LOADS ARE BEING TRANSFERRED TO THE LATERAL FORCE-RESISTING STRUCTURAL ELEMENTS. FILLER SHEETS ARE PERMITTED EXCEPT WHERE THE FULL PANEL WIDTH IS REQUIRED. FILLER SHEETS SHALL BE MARKED IN THE SHOP DRAWINGS FOR THE ENGINEER OF RECORD TO REVIEW.
4. SCREWS MUST BE INSTALLED USING PROPERLY CALIBRATED TOOLS..
5. WELDING ELECTRODES FOR ARC SPOT WELDS SHALL BE E60XX UNLESS NOTED OTHERWISE.
6. PROVIDE CLOSURE SHEETS OVER EXPOSED WALLS AND BEAMS.
7. AT VALLEYS, RIDGES AND WHERE DECK CHANGES DIRECTIONS, PROVIDE 9" WIDE x 1/4" THICK CONTINUOUS FLAT PLATES (BEND AS REQUIRED).

OPEN WEB STEEL JOISTS:

A. DESIGN

1. ALL STEEL JOISTS SHALL BE DESIGNED AND MANUFACTURED BY A STEEL JOIST INSTITUTE (SJI) CERTIFIED MANUFACTURER WITH DESIGN AND MANUFACTURING MEANS AND METHODS IN COMPLIANCE WITH SJI STANDARD SPECIFICATIONS AND LOAD TABLES.
2. ALL JOISTS AND JOIST GIRDERS SHALL CARRY THE DESIGN LOADS INDICATED IN THE STEEL JOIST INSTITUTE (SJI) LOAD TABLES AS A MINIMUM REQUIREMENT. THE JOIST MANUFACTURER SHALL DESIGN ALL JOISTS IN ACCORDANCE TO THE DESIGN CRITERIA INDIC

REINFORCING STEEL:

A. GENERAL

1. DEFORMED BAR REINFORCEMENT SHALL CONFORM TO THE FOLLOWING GRADES OF ASTM A615 GRADE 60 UNLESS NOTED OTHERWISE ON THE DRAWINGS OR IN NOTES.
2. DETAILING OF REINFORCEMENT SHALL BE IN ACCORDANCE WITH CHAPTER 7 OF ACI 318 (EDITION ON DESIGN CRITERIA), UNLESS OTHERWISE NOTED.
3. REINFORCING STEEL REQUIRED TO BE WELDED SHALL CONFORM TO ASTM A706.
4. WELDED WIRE REINFORCEMENT SHALL CONFORM TO ASTM A1064.
5. ALL REINFORCEMENT SHALL BE SECURELY TIED IN PLACE BEFORE PLACING CONCRETE OR GROUT.

B. SUPPORTS FOR REINFORCEMENT

1. PROVIDE SUPPORT FOR REINFORCEMENT INCLUDING BOLSTERS, CHAIRS, SPACERS, AND OTHER DEVICES FOR SPACING, SUPPORTING, AND FASTENING REINFORCING BARS AND WELDED WIRE REINFORCEMENT IN PLACE.
2. BAR SUPPORTS SHALL BE PROVIDED IN ACCORDANCE WITH THE PROVISIONS OF "BAR SUPPORT SPECIFICATIONS" AS CONTAINED IN THE LATEST EDITION OF THE "MANUAL OF STANDARD PRACTICE" BY THE CONCRETE REINFORCING STEEL INSTITUTE (CRSI).
   a. SLAB-ON-GRADE: USE PRECAST CONCRETE BAR SUPPORTS (DOBIES) OR CHAIRS DESIGNED FOR SOIL-SUPPORTED SLABS SPACED AT 36 INCHES ON CENTER FOR #3 BARS AND 48 INCHES ON CENTER FOR LARGER BARS.
   b. SPREAD FOOTINGS AND GRADE BEAMS: USE PRECAST CONCRETE BAR SUPPORTS (DOBIES) OR CHAIRS DESIGNED FOR SOIL-SUPPORTED SLABS.
   c. PIERS: USE PRECAST CONCRETE BAR SUPPORTS (DOBIES) AND CRSI CLASS 1 WHEELS.
   d. SUSPENDED SLABS, BEAMS, AND GIRDERS: PROVIDE CRSI CLASS 1 SUPPORTS WITH LEGS.

C. DETAILING

1. REINFORCING STEEL DETAILING, BENDING AND PLACING SHALL BE IN ACCORDANCE WITH THE CONCRETE REINFORCING STEEL INSTITUTE (CRSI) "MANUAL OF STANDARD PRACTICE", LATEST EDITION.
2. BARS DETAILED AS CONTINUOUS SHALL BE LAPPED AT SPLICES.
3. REFERENCE APPLICABLE SCHEDULES FOR LAPS AT BAR SPLICES, UNLESS NOTED OTHERWISE.

D. PLACEMENT OF WELDED WIRE REINFORCING

1. WHERE SPECIFIED, WELDED WIRE REINFORCING SHALL BE CONTINUOUS ACROSS THE ENTIRE CONCRETE SURFACE AND NOT INTERRUPTED BY BEAMS OR GIRDERS.
2. LAPS OF WELDED WIRE REINFORCING AT SPLICES SHALL BE AS INDICATED IN THE SCHEDULE. REFERENCE THE TYPICAL CONCRETE DETAILS.

E. NON-PERMITTED ITEMS

1. WELDING OF CROSSING BARS AND TACK WELDING OF REINFORCEMENT SHALL NOT BE PERMITTED.
2. WELDING OF REINFORCING STEEL IS NOT PERMITTED, UNLESS NOTED OTHERWISE.

F. SHOP DRAWINGS

1. CONTRACTOR SHALL SUBMIT REINFORCING STEEL SHOP DRAWINGS FOR REVIEW BEFORE FABRICATION AND INSTALLATION

REINFORCED CONCRETE MASONRY UNIT WALLS:

A. MATERIAL

1. REINFORCED CONCRETE MASONRY MATERIAL SHALL CONFORM TO THE FOLLOWING CRITERIA ESTABLISHED BY THE TMS 602/ACI 530.1/ASCE 6 SPECIFICATION ARTICLE 1.4 B.2 UNLESS NOTED OTHERWISE:
   a. SPECIFIED COMPRESSIVE STRENGTH OF MASONRY, f'_m: 1500 PSI (UNLESS NOTED OTHERWISE)
   b. COMPRESSIVE STRENGTH OF CONCRETE MASONRY UNITS: 1900 PSI
   c. BLOCK WEIGHT: MEDIUM
   d. MORTAR: TYPE S
   e. COMPRESSIVE STRENGTH OF GROUT: 2500 PSI @ 28 DAYS
   f. GROUT DENSITY: NORMALWEIGHT (w_c = 140 PCF)
2. CONCRETE MASONRY UNITS SHALL COMPLY WITH ASTM C90.
3. MORTAR SHALL MEET THE PROPORTION SPECIFICATION OF ASTM C270. FIELD SAMPLING AND TESTING OF MORTAR SHALL BE IN ACCORDANCE WITH ASTM C780.
4. THE THICKNESS OF ALL BED JOINTS SHALL NOT EXCEED 5/8".
5. GROUT, OTHER THAN SELF-CONSOLIDATING GROUT, SHALL CONFORM TO ASTM C476. MEET THE MINIMUM COMPRESSIVE STRENGTH OF 2500 PSI AT 28 DAYS WHEN TESTED IN ACCORDANCE WITH ASTM C1019, AND SHALL HAVE A SLUMP BETWEEN 8" AND 11".
6. SELF-CONSOLIDATING GROUT SHALL CONFORM TO THE MATERIAL REQUIREMENTS OF ASTM C476 AND THE FOLLOWING CRITERIA:
   a. COMPRESSIVE STRENGTH SHALL BE AT LEAST 2500 PSI AT 28 DAYS WHEN TESTED IN ACCORDANCE WITH ASTM C1019.
   b. SLUMP FLOW SHALL BE BETWEEN 24" TO 30" WHEN TESTED IN ACCORDANCE WITH ASTM C1611.
   c. VISUAL STABILITY INDEX (VSI) SHALL BE LESS THAN OR EQUAL TO 1 WHEN TESTED IN ACCORDANCE WITH ASTM C1611, APPENDIX X1.
   d. FIELD ADDITION OF ADMIXTURES TO SELF-CONSOLIDATING GROUT IS NOT PERMITTED.
   e. FIELD PROPORTIONING IS NOT PERMITTED.
   f. FIELD ADDITION OF WATER SHALL BE IN ACCORDANCE TO THE MANUFACTURER'S INSTRUCTIONS.
7. GROUT SHALL BE A WORKABLE MIX SUITABLE FOR PUMPING WITHOUT SEGREGATION AND SHALL BE THOROUGHLY MIXED. GROUT SHALL BE PLACED BY PUMPING OR AN APPROVED ALTERNATE METHOD AND SHALL BE PLACED BEFORE INITIAL SET OR HARDENING OCCURS.

B. PLACEMENT OF REINFORCING:

1. UNLESS DETAILED OR SCHEDULED OTHERWISE, TYPICAL MASONRY REINFORCEMENT SHALL BE:
   a. VERTICAL: 1 - #5 @ 48" OC (2 - #5 @ 48" OC FOR 12" BLOCK)
   b. HORIZONTAL: 1 - #5 @ 48" OC (2 - #5 @ 48" OC FOR 12" BLOCK)
   c. JAMBS: 2 - #6 PER CELL
   d. SILLS: 2 - #5 PER CELL
   e. CORNERS: 3 - #6 (6 - #6 FOR 12" BLOCK)
   f. TEES: 3 - #6 (6 - #6 FOR 12" BLOCK)
   g. CONTROL JOINTS: 1 - #5 EA SIDE
   h. LINTELS: REFERENCE SCHEDULE
   i. DOWELS: REFERENCE SCHEDULE, SAME SIZE AND SPACING UNLESS NOTED OTHERWISE.
2. PROVIDE ADDITIONAL VERTICAL REINFORCEMENT FOR SPECIAL CONDITIONS AS DETAILED.
3. ALL VERTICAL AND HORIZONTAL REINFORCEMENT SHALL BE IN GROUT FILLED CELLS WITH THE MINIMUM SPECIFIED COMPRESSIVE STRENGTH.

C. ACCESSORIES

1. PROVIDE HOT-DIPPED GALVANIZED 9 GA X 9 GA TRUSS-TYPE REINFORCING OR APPROVED EQUIVALENT IN EVERY OTHER COURSE (16" ON CENTER) STARTING WITH THE FIRST COURSE IN ALL MASONRY WALLS. INSTALL TRUSS-TYPE REINFORCING IN ACCORDANCE TO THE MANUFACTURER'S INSTRUCTIONS.
2. FOR NON-LOAD BEARING WALLS TEE-INTERSECTING WITH A LOAD BEARING OR ANOTHER NON-LOAD BEARING WALL, PROVIDE 1/4" X 1 1/2" X 24" (2" BENDS) METAL Z-STRAPS (HOT-DIPPED GALVANIZED) AT 4'-0" ON CENTER.

D. PILASTERS

1. PROVIDE FLUSH PLANE MASONRY WALL PILASTERS WHERE THE WALL LENGTH IS LESS THAN OR EQUAL TO FOUR (4) TIMES THE THICKNESS OF THE WALL. REINFORCE THE PILASTER WITH 4 - #7 BARS EQUALLY SPACED AND WITH #3 TIES AT 8" ON CENTER UNLESS NOTED OTHERWISE. REFERENCE DETAILS FOR ADDITIONAL INFORMATION.

E. OPENINGS

1. WHERE AN OPENING OR A PENETRATION OCCURS, PROVIDE LINTEL, SILL, AND JAMB REINFORCING AS NEEDED. JAMB REINFORCING SHALL BEGIN FROM THE BASE OF THE WALL TO THE TOP OF THE WALL. SILL AND LINTEL REINFORCING SHALL EXTEND 16" MINIMUM ON EACH SIDE TO DEVELOP ADEQUATE BEARING.

F. FIELD CONDITIONS

1. VERTICAL CELLS TO BE FILLED SHALL HAVE VERTICAL ALIGNMENT SUFFICIENT TO MAINTAIN A CLEAR, UNOBSTRUCTED, CONTINUOUS VERTICAL. REFERENCE TYPICAL DETAILS FOR ADDITIONAL REQUIREMENTS.
2. ALL REINFORCING SHALL BE IN PLACE PRIOR TO PLACING GROUT. VERTICAL REINFORCING BARS SHALL BE HELD IN POSITION AT THE TOP, BOTTOM AND AT INTERVALS NOT FARTHER APART THAN 48 INCHES ON CENTER. REFERENCE TYPICAL DETAILS FOR ADDITIONAL REQUIREMENTS.
3. ALLOW MASONRY WALLS TO SET FOR AT LEAST 4 HOURS AFTER COMPLETION BEFORE GROUTING. GROUT, OTHER THAN SELF-CONSOLIDATING GROUT, SHALL BE CONSOLIDATED AND RECONSOLIDATED WITH MECHANICAL VIBRATION AFTER EXCESS MOISTURE HAS BEEN ABSORBED BUT BEFORE WORKABILITY IS LOST. THE FILLING OF ANY SECTION OF A WALL SHALL BE COMPLETED IN ONE DAY WITHOUT INTERRUPTIONS GREATER THAN ONE HOUR. CONSOLIDATION OR RECONSOLIDATION IS NOT REQUIRED FOR SELF-CONSOLIDATING GROUT.
4. GROUT LIFTS SHALL BE TO THE TOP OF INTERMEDIATE REINFORCED BOND BEAMS BUT SHALL NOT EXCEED 12'-8" IN HEIGHT.
5. WHERE THE GROUT LIFT EXCEEDS 5'-4" IN HEIGHT, CLEANOUTS SHALL BE PROVIDED BY SUITABLE OPENINGS IN THE FACE SHELLS IN THE BOTTOM COURSE OF EACH CELL TO BE FILLED, OR OTHER APPROVED LOCATIONS (3" MINIMUM OPENING SIZE). FOR FULLY GROUTED WALLS, CLEANOUTS SHALL BE SPACED AT 32" ON CENTER. THE CLEANOUTS SHALL BE SEALED AFTER INSPECTION AND BEFORE BEING FILLED.
6. WHEN CELL FILLING HAS STOPPED FOR ONE HOUR OR LONGER, FORM A GROUT KEY BY TERMINATING THE GROUT A MINIMUM 1 1/2" BELOW A MORTAR JOINT. DO NOT FORM GROUT KEYS WITHIN LINTELS.
7. END WALLS AND CROSS WEBS FORMING CELLS TO BE FILLED SHALL BE FULLY BEDDED IN MORTAR TO PREVENT LEAKAGE OF GROUT UNLESS THE WALL IS INTENDED TO BE POURED SOLID.

G. CONTROL JOINTS

1. PROVIDE VERTICAL CONTROL JOINTS AT A MAXIMUM SPACING OF 24'-0" OR 1 1/2 TIMES THE HEIGHT OF THE WALL, WHICHEVER IS SMALLER (2'-8" FROM CORNERS). REFERENCE THE TYPICAL DETAILS FOR ADDITIONAL INFORMATION.
2. DO NOT CONTINUE THE TYPICAL TRUSS-TYPE JOINT REINFORCEMENT THROUGH THE JOINT.
3. CONTROL JOINTS LOCATIONS SHALL BE COORDINATED WITH THE ARCHITECT BUT NOT TO EXCEED THE MAXIMUM SPACING.
4. CONTROL JOINTS SHALL BE FILLED WITH A PREFORMED GASKET SPECIFICALLY DESIGNED FOR CONTRACTION JOINT MATERIAL AND SHALL COMPLY WITH ONE OF THE FOLLOWING CRITERIA:
   a. RUBBER GASKETS - CONFORM TO ASTM D2000, M2AA-805 RUBBER SHEAR KEYS WITH A MINIMUM DUROMETER HARDNESS OF 80.
   b. PVC GASKETS - CONFORM TO ASTM D2287, TYPE PVC 654-4 PVC SHEAR KEYS WITH A MINIMUM DUROMETER HARDNESS OF 85.
5. BOND BEAM REINFORCEMENT SHALL BE INTERRUPTED AT THE CONTROL JOINT; HOWEVER, CHORD REINFORCING STEEL AT FLOORS AND ROOFS MUST CONTINUE THROUGH THE CONTROL JOINTS.
6. SASH BLOCKS SHALL BE USED ON BOTH SIDES OF THE CONTROL JOINT. REFERENCE THE TYPICAL DETAILS FOR ADDITIONAL INFORMATION.

H. MASONRY PROTECTION

1. DURING ERECTION, COVER THE TOP OF WALLS, PROJECTIONS AND SILLS WITH WATERPROOF SHEATHING AT THE END OF EACH DAY'S WORK.
2. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE TEMPORARY BRACING FOR ALL MASONRY WALLS AT ALL STAGES OF CONSTRUCTION TO RESIST ERECTION LOADS AND INCIDENTAL LATERAL LOADS.

REINFORCED CONCRETE:

A. GENERAL

1. VERIFY ALL DIMENSIONS. COORDINATE WITH ARCHITECTURAL PLANS PRIOR TO CONSTRUCTION AND NOTIFY THE ARCHITECT AND ENGINEER OF ANY DISCREPANCIES PRIOR TO BIDDING.
2. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE AMERICAN CONCRETE INSTITUTE (ACI) SPECIFICATIONS, ACI 301, ACI 304, AND ACI 117 LATEST EDITIONS. FOOTINGS, MATS, AND DRILLED PIERS SHALL COMPLY WITH ACI 336, LATEST EDITION.
3. ALL DETAILING, FABRICATION AND ERECTION OF REINFORCING BARS, AND ALL ACCESSORIES UNLESS OTHERWISE NOTED, SHALL BE IN ACCORDANCE WITH ACI 315 "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE", LATEST EDITION.

B. CLASSES OF CONCRETE

1. REFERENCE FOR THE MINIMUM 28-DAY COMPRESSIVE STRENGTH (f'_c) FOR ALL CLASSES OF CONCRETE.

C. CONCRETE MIX

1. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR DESIGNING THE CONCRETE MIX FOR EACH CLASS OF CONCRETE TO ACHIEVE THE 28-DAY COMPRESSIVE STRENGTH. PREPARE DESIGN MIXES SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE THE PROJECT IS IN FOR EACH CLASS OF CONCRETE, PROPORTIONED ACCORDING TO ACI 301 ARTICLE 4.2.3, FOR BOTH NORMALWEIGHT AND LIGHTWEIGHT CONCRETE DETERMINED BY EITHER LABORATORY TRIAL MIX OR FIELD TEST DATA.
2. FIELD EXPERIENCE OR TRIAL MIXTURES ARE ACCEPTABLE PROVIDED ALL CRITERIA ARE MET:
   a. THE CONTRACTOR PROVIDES PROPER DOCUMENTATION OF THE STRENGTH TEST RECORDS NOT MORE THAN 24 MONTHS OLD AND SHALL CLEARLY INDICATE MATERIALS, QUALITY CONTROL PROCEDURES, AND CONDITIONS SIMILAR TO THOSE EXPECTED FOR THE PROJECT. THE CONCRETE MATERIALS INCLUDED IN THE MIX DESIGN SHALL BE THE SAME MATERIALS PROVIDED FOR THE PROJECT, AND SHALL BE PREPARED BY AN INDEPENDENT TESTING LABORATORY APPROVED BY THE OWNER.
   b. A MINIMUM OF 30 CONSECUTIVE TESTS OR TWO GROUPS OF CONSECUTIVE TESTS TOTALING AT LEAST 30 TESTS.
   c. ALL CONSECUTIVE TESTS ARE WITHIN 1000 PSI OF f'_c.
   d. THE CONTRACTOR SHALL SUBMIT A CALCULATION OF THE SAMPLE STANDARD DEVIATION AND THE REQUIRED AVERAGE COMPRESSIVE STRENGTH, f'_{cr}, IN ACCORDANCE TO ACI 301, LATEST EDITION, TABLE 4.2.3.3a.
3. SLUMP: REFERENCE FOR SLUMP; 9" UNLESS NOTED OTHERWISE.
4. ADJUSTMENT TO CONCRETE MIXES: MIX DESIGN ADJUSTMENTS MAY BE REQUESTED BY THE CONTRACTOR WHEN CHARACTERISTICS OF MATERIALS, JOB CONDITIONS, WEATHER, TEST RESULTS, OR OTHER CIRCUMSTANCES WARRANT, AT NO ADDITIONAL COST TO OWNER AND AS ACCEPTED BY THE OWNER. LABORATORY TEST DATA FOR REVISED MIX DESIGN AND STRENGTH RESULTS MUST BE SUBMITTED TO AND ACCEPTED BY THE OWNER BEFORE USING IN WORK. BOTH THE CONCRETE TESTING AND INSPECTION AGENCY AND THE CONCRETE CONTRACTOR SHALL SATISFY THEMSELVES THAT THE CONCRETE MIX DESIGN WILL PRODUCE A CONCRETE THAT WILL MEET THE SPECIFICATIONS FOR THIS PROJECT. IN ADDITION, THE CONTRACTOR AND CONCRETE FINISHER SHALL VERIFY THAT THE WORKABILITY, FINISHABILITY, AND SETTING TIMES ARE APPROPRIATE FOR CONCRETE INSTALLATIONS. PLACEMENT SHALL BE MADE BY CHUTE DIRECTLY FROM THE CONCRETE TRUCKS. IF PUMPING OF THE CONCRETE IS CONTEMPLATED FOR ANY SPECIAL LOCATIONS, THE PROPORTIONS ESTABLISHED ABOVE SHALL NOT BE ALTERED TO THE CAPABILITIES OF THE PUMPING EQUIPMENT.
5. READY MIX CONCRETE SHALL COMPLY WITH THE REQUIREMENTS OF ASTM C94. DISCHARGE OF THE CONCRETE SHALL BE COMPLETED WITHIN 90 MINUTES OR BEFORE THE DRUM HAS REVOLVED 300 REVOLUTIONS, WHICHEVER COME FIRST.
6. WATER/CEMENT RATIO SHALL BE BASED ON SURFACE DRY MATERIAL. REFERENCE
7. PORTLAND CEMENT: CONFORM TO ASTM C150, TYPE I. USE ONE BRAND OF CEMENT THROUGHOUT THE PROJECT.
8. FLY ASH: CONFORM TO ASTM C618.
9. COARSE AND FINE AGGREGATES: CONFORM TO ASTM C33 FOR NORMALWEIGHT CONCRETE AND ASTM C330 FOR LIGHTWEIGHT CONCRETE.
10. WATER: CONFORM WITH ASTM C1602.
11. CHEMICAL ADMIXTURES: ALL CONCRETE SHALL CONTAIN CHEMICAL ADMIXTURES TO OBTAIN THE SPECIFIED DESIGN STRENGTH IN ACCORDANCE WITH ASTM C494.
12. AIR-ENTRAINING ADMIXTURES: SHALL CONFORM TO ASTM C260. AIR-ENTRAINING ADMIXTURE SHALL NOT BE USED ON INTERIOR CONCRETE.
13. WATER-REDUCING ADMIXTURE: SHALL CONFORM TO ASTM C494, TYPE A AND CONTAIN NOT MORE THAN 0.05% CHLORIDE IONS.
14. WATER REDUCING, RETARDING ADMIXTURE: SHALL CONFORM TO ASTM C494, TYPE D, AND CONTAIN NOT MORE THAN 0.05% CHLORIDE IONS.
15. HIGH RANGE WATER-REDUCING ADMIXTURE (SUPERPLASTICIZER): SHALL CONFORM TO ASTM C494, TYPE F OR TYPE G AND CONTAIN NOT MORE THAN 0.05% CHLORIDE IONS.
16. WATER-REDUCING, NON-CORROSIVE ACCELERATING ADMIXTURE: SHALL CONFORM TO ASTM C494, TYPE C OR E AND CONTAIN NOT MORE CHLORIDE IONS THAN THAT ARE PRESENT IN MUNICIPAL DRINKING WATER. THE ADMIXTURE MANUFACTURER MUST HAVE LONG-TERM, NON-CORROSIVE TEST DATA FROM AN INDEPENDENT TESTING LABORATORY (OF AT LEAST A YEAR'S DURATION) USING AN ACCEPTABLE ACCELERATED CORROSION TEST METHOD SUCH AS THAT USING ELECTRICAL POTENTIAL MEASURES.
17. PROHIBITED ADMIXTURES: CALCIUM CHLORIDE OR ADMIXTURES CONTAINING MORE THAN 0.05% CHLORIDE IONS ARE NOT PERMITTED.

D. CONSTRUCTION JOINTS

1. NO HORIZONTAL CONSTRUCTION JOINTS WILL BE PERMITTED IN SLABS OR BEAMS.
2. VERTICAL CONSTRUCTION JOINTS IN SLABS OR BEAMS ARE TO BE AS SHOWN ON PLANS OR AS APPROVED BY THE ENGINEER.
3. SURFACE OF CONSTRUCTION JOINTS SHALL BE CLEANED AND LAITANCE REMOVED.
4. IMMEDIATELY BEFORE NEW CONCRETE IS PLACED, ALL CONSTRUCTION JOINTS SHALL BE WETTED AND STANDING WATER REMOVED.
5. REFERENCE TYPICAL DETAILS FOR CONSTRUCTION JOINT REINFORCING AND SHEAR KEY REQUIREMENTS.
6. CONSTRUCTION JOINTS IN FLOORS SHALL BE LOCATED WITHIN THE MIDDLE THIRD OF THE SPAN OF SLABS, BEAMS, AND GIRDERS.
7. CONSTRUCTION JOINTS IN GIRDERS SHALL BE OFFSET A MINIMUM DISTANCE OF TWO TIMES THE WIDTH OF THE INTERSECTING BEAMS.
8. BEAMS, GIRDERS, HAUNCHES, DROP PANELS, SHEAR CAPS, AND CAPITALS SHALL BE PLACED MONOLITHICALLY UNLESS NOTED OTHERWISE.

E. OPENINGS AND PENETRATIONS

1. ALL OPENINGS IN SLAB (FOR PIPING, DRAINS, ETC.) SHALL BE SEALED WITH SEALANT.
2. UTILITIES THAT PROJECT THROUGH SLAB FLOORS SHALL BE DESIGNED WITH SLEEVES IN ORDER TO PREVENT DAMAGE TO THE LINE SHOULD VERTICAL MOVEMENT OCCUR.
3. ALL OPENINGS AND PENETRATIONS ARE TO BE REINFORCED AROUND THE PERIMETER. REFERENCE THE TYPICAL DETAILS FOR REINFORCING REQUIREMENTS.

F. EMBEDMENTS

1. ANCHOR RODS, DOWELS, INSERTS, ETC. SHALL BE SECURELY TIED IN PLACE PRIOR TO PLACING CONCRETE.
2. REFER TO ARCHITECTURAL, MECHANICAL, PLUMBING, AND ELECTRICAL DRAWINGS FOR ALL MOLDS, GROOVES, REGLETS, ORNAMENTAL CLIPS, PIPES, CONDUITS, INSERTS, ETC. TO BE CAST IN CONCRETE. PROVIDE OVERSIZED SLEEVES FOR PLUMBING AND ELECTRICAL CONDUITS AND PIPES. NO PIPES OR DUCTS SHALL BE PLACED IN CONCRETE FOOTINGS, BEAMS, COLUMNS, WALLS, OR SLABS UNLESS SPECIFICALLY DETAILED IN THESE CONTRACT STRUCTURAL DRAWINGS OR AS APPROVED BY THE ENGINEER OF RECORD.
3. CONDUITS ARE PERMITTED TO BE LOCATED BELOW SLAB-ON-GRADE REINFORCING PROVIDED THAT THEY ARE LOCATED BELOW THE DESIGN DEPTH OF THE SLAB WITHIN A THICKENED SLAB. COORDINATE INSTALLATION OF RACEWAYS PRIOR TO PLACEMENT.
4. NO LIQUID, GAS, OR VAPOR, EXCEPT WATER NOT EXCEEDING 90 DEGREES FAHRENHEIT NOR 50 PSI PRESSURE SHALL BE PLACED IN THE PIPES UNTIL THE CONCRETE HAS ACHIEVED ITS DESIGN STRENGTH.
5. ALUMINUM CONDUITS, PIPES, OR OTHER INSERTS ARE NOT PERMITTED TO BE EMBEDDED INTO STRUCTURAL CONCRETE.

G. FORMWORK, SHORING, AND BACKSHORING

1. ALL FORMWORK SHALL BE DESIGNED BY THE GENERAL CONTRACTOR IN ACCORDANCE TO THE ACI 347 " GUIDE TO FORMWORK FOR CONCRETE" LATEST EDITION.
2. DESIGN OF FORMWORK SHALL INCLUDE CONSIDERATION OF THE FOLLOWING:
   a. RATE AND METHOD OF PLACING CONCRETE.
   b. CONSTRUCTION LOADS, INCLUDING VERTICAL, HORIZONTAL, AND IMPACT LOADS.
   c. SPECIAL FORM REQUIREMENTS FOR CONSTRUCTION OF CURVED MEMBERS, SHELLS, FOLDED PLATES, DOMES, ARCHITECTURAL CONCRETE, OR SIMILAR TYPES OF ELEMENTS.
3. FORMS SHALL BE PROPERLY BRACED OR TIED TOGETHER TO MAINTAIN POSITION OF SHAPE.
4. FORMS SHALL BE SUBSTANTIAL AND SUFFICIENTLY TIGHT TO PREVENT LEAKAGE OR BLOWOUTS.
5. FORMS SHALL BE REMOVED IN SUCH A MANNER SUCH THAT IT DOES IMPAIR THE SAFETY, SERVICEABILITY, AND STRUCTURAL INTEGRITY OF THE STRUCTURE.
6. BEFORE STARTING CONSTRUCTION, THE GENERAL CONTRACTOR IS RESPONSIBLE TO DEVELOP A PROCEDURE AND SCHEDULE FOR REMOVAL OF SHORES AND INSTALLATION OF RESHORES AND FOR CALCULATING THE LOADS TRANSFERRED TO THE STRUCTURE DURING THE PROCESS.
7. NO CONSTRUCTION LOADS SHALL BE SUPPORTED ON, NOR ANY SHORING REMOVED FROM, ANY PART OF THE STRUCTURE UNDER CONSTRUCTION EXCEPT WHEN PART OF THE STRUCTURE IN COMBINATION WITH REMAINING FORMING AND SHORING HAS SUFFICIENT STRENGTH TO SUPPORT, SAFELY, ITS SELF-WEIGHT AND LOADS PLACED THEREON.
8. SUFFICIENT STRENGTH OF THE STRUCTURE BEING CONSIDERED IS OBTAINED WHEN THE CONCRETE STRENGTH HAS REACHED ITS DESIGN STRENGTH THROUGH APPROVED TESTING.

H. CONCRETE TESTING

1. CONCRETE SHALL BE TESTED IN ACCORDANCE TO ASTM C172, ASTM C31, ASTM C39, ASTM D3665, AND ACI 214R, ALL LATEST EDITION.
2. FREQUENCY OF SAMPLES FOR STRENGTH TESTING OF EACH CLASS OF CONCRETE SHALL BE:
   a. ONCE EACH DAY A GIVEN CLASS IS PLACED.
   b. ONCE FOR EACH 150 CYD OF EACH CLASS PLACED EACH DAY.
   c. FOR SLABS OR WALLS LESS THAN OR EQUAL TO 9 3/4" THICK, SAMPLING SHALL BE ONCE FOR EACH 5000 SQ FT OF SLAB OR WALL SURFACE AREA (ONE SIDE ONLY) PLACED EACH DAY. FOR SLABS OR WALLS GREATER THAN 9 3/4" THICK, SAMPLING SHALL BE ONCE FOR EACH 2500 SQ FT OF SLAB OR WALL SURFACE AREA (ONE SIDE ONLY) PLACED EACH DAY.
3. CONCRETE TESTING SHALL BE TWO SETS OF CYLINDERS: ONE SET CONSISTS OF THREE 4 BY 8 IN CYLINDERS TESTED FOR COMPRESSION AT 7 DAYS AND THREE 4 BY 8 IN CYLINDERS AT 28 DAYS.
4. WHERE THE TOTAL VOLUME OF CONCRETE FOR A GIVEN CLASS OF CONCRETE WOULD BE LESS THAN FIVE TESTS, PROVIDE A TEST FOR EACH BATCH.
5. LABORATORY AND FIELD TECHNICIANS SHALL BE CERTIFIED IN ACCORDANCE WITH THE REQUIREMENTS OF ACI "CONCRETE FIELD TESTING TECHNICIAN-GRADE 1 CERTIFICATION PROGRAM" OR THE REQUIREMENTS OF ASTM C1077 OR AN EQUIVALENT PROGRAM.
6. TEST REPORTS SHOULD BE PROMPTLY DISTRIBUTED TO THE OWNER, ARCHITECT, ENGINEER, GENERAL CONTRACTOR, APPLICABLE SUB-CONTRACTORS, SUPPLIERS, AND BUILDING OFFICIAL TO ALLOW TIMELY IDENTIFICATION OF EITHER COMPLIANCE OR THE NEED FOR CORRECTIVE ACTION.

REINFORCED CONCRETE (CONT):

7. IF THE CRITERIA ABOVE IS NOT MET, THREE CORE DRILLED SAMPLES IN THE AREA OF QUESTION SHALL BE TAKEN, AT THE EXPENSE OF THE GENERAL CONTRACTOR, FOR EACH STRENGTH TEST THAT FAILS TO MEET THE CRITERIA. TESTING OF CORE DRILLED SAMPLES SHALL BE IN ACCORDANCE TO ASTM C42.
8. CORE DRILLED SAMPLES SHALL BE TESTED NO EARLIER THAN 48 HOURS AND NOT LATER THAN 7 DAYS AFTER CORING.

I. PLACEMENT OF CONCRETE

1. READY-MIXED CONCRETE SHALL BE MIXED AND DELIVERED IN ACCORDANCE TO ASTM C94.
2. CONCRETE SHALL BE CONVEYED FROM MIXER TO PLACE OF FINAL DEPOSIT BY METHODS THAT WILL PREVENT SEPARATION OR LOSS OF MATERIALS. CONCRETE SHALL BE DEPOSITED AT OR NEAR ITS FINAL POSITION BY THE USE OF PUMPS, TREMIES, AND OTHER MEANS AND METHODS.
3. DO NOT ALLOW CONCRETE TO FREE FALL MORE THAN 3 FEET DURING PLACEMENT.
4. ALL CONCRETE SHALL BE THOROUGHLY CONSOLIDATED DURING PLACEMENT IN ACCORDANCE TO ACI 309R LATEST EDITION.
5. MECHANICALLY VIBRATE ALL CONCRETE DURING PLACEMENT TO AVOID AIR ENTRAPMENTS.
6. NO CONCRETE PLACEMENT IS PERMITTED WHEN THE TEMPERATURE OF FRESH CONCRETE IS GREATER THAN OR EQUAL TO 95°F.
7. NO CONCRETE PLACEMENT IS PERMITTED DURING RAIN FALL.
8. COLD WEATHER REQUIREMENTS:
   a. WHEN THE AMBIENT TEMPERATURE IS BELOW 50°F, PLACEMENT OF CONCRETE SHALL BE IN ACCORDANCE TO ACI 306R.
   b. ADEQUATE EQUIPMENT SHALL BE PROVIDED FOR HEATING CONCRETE MATERIALS AND PROTECTING CONCRETE DURING FREEZING OR NEAR-FREEZING WEATHER.
   c. ALL CONCRETE MATERIAL AND ALL REINFORCING, FORMS, FILLERS, AND GROUND WITH WHICH CONCRETE IS TO COME IN CONTACT SHALL BE FREE OF FROST.
9. HOT WEATHER REQUIREMENTS:
   a. WHEN THE AMBIENT TEMPERATURE EQUALS OR EXCEEDS 80°F, PLACEMENT OF CONCRETE SHALL BE IN ACCORDANCE TO ACI 305R.
   b. PROPER ATTENTION SHALL BE GIVEN TO CONCRETE MIX, PRODUCTION METHODS, HANDLING, PLACING, PROTECTION, CURING TO PREVENT EXCESSIVE CONCRETE TEMPERATURES OR WATER EVAPORATION THAT COULD IMPAIR THE REQUIRED DESIGN STRENGTH.
   c. NON-TOXIC EVAPORATION RETARDERS ARE ACCEPTABLE PROVIDED THE PRODUCT DOES NOT IMPAIR THE REQUIRED DESIGN STRENGTH. WHEN USED, THE GENERAL CONTRACTOR MUST EXERCISE PROPER SAFETY MEASURES.
10. ALL EXPOSED CONCRETE SHALL HAVE A SMOOTH FINISH SURFACE. EXPOSED CONCRETE SURFACES WITH SPALLS, CHIPS, CRACKS, HONEYCOMBS, DISCOLORATION, AND OTHER IMPERFECTIONS SHALL BE PATCHED WITH A FAST-SETTING, NON-SHRINK, CEMENTITIOUS POLYMER-MODIFIED REPAIR MORTAR THAT SHALL MEET ALL THE FOLLOWING CRITERIA:
    a. MINIMUM COMPRESSIVE STRENGTH = 5000 PSI @ 28 DAYS IN ACCORDANCE WITH ASTM C109
    b. MINIMUM FLEXURAL STRENGTH = 1100 PSI @ 28 DAYS IN ACCORDANCE WITH ASTM C293
    c. MINIMUM BOND STRENGTH = 1800 PSI @ 28 DAYS IN ACCORDANCE WITH ASTM C882
    d. COLOR = CONCRETE GRAY
    e. WET MIX DENSITY ≤ 110 PCF

J. TOLERANCES

1. ALL CONCRETE TOLERANCES SHALL COMPLY WITH ACI 117, "SPECIFICATIONS FOR TOLERANCES FOR CONCRETE CONSTRUCTION AND MATERIALS" LATEST EDITION.
2. ALL SLAB-ON-GRADES AND SUSPENDED FLOOR SLABS SHALL BE TESTED FOR FLOOR FLATNESS AND FLOOR LEVELNESS IN ACCORDANCE TO ASTM E1155 UTILIZING THE F-NUMBER METHOD. THE SLAB-ON-GRADE AND SUSPENDED FLOOR SLABS MEASURED F-NUMBERS SHALL MEET THE FOLLOWING CLASSIFICATION:
   a. SPECIFIED OVERALL FLOOR FLATNESS (SOF)$_F$: 25
   b. SPECIFIED OVERALL FLOOR LEVELNESS (SOF)$_L$: 20
   c. MINIMUM LOCAL FLOOR FLATNESS (MLF)$_F$: 15
   d. MINIMUM LOCAL FLOOR LEVELNESS (MLF)$_L$: 12
3. F-NUMBERS SHALL BE MEASURED WITHIN 72 HOURS OF PLACING THE SLAB.
4. WHERE DEFICIENCIES ARE DETECTED, REMEDIATION TO THE DEFICIENT AREA WILL BE REQUIRED AT THE EXPENSE OF THE GENERAL CONTRACTOR. REMEDIAL PROCEDURES SUCH AS, BUT NOT LIMITED TO, GRINDING OR THE USE OF A SELF-LEVELING UNDERLAYMENT SHALL BE DETERMINED BY THE CONTRACTOR TO BRING THE DEFICIENT AREA IN COMPLIANCE WITH MINIMUM TOLERANCES.
5. IN ALL INSTANCES THE MINIMUM SLAB/WALL THICKNESS, BEAM DEPTHS AND WIDTHS, COLUMN DIMENSIONS, SHALL BE OBTAINED. COORDINATE SLAB FINISHES WITH ARCHITECTURAL PLANS.

K. PLACEMENT OF REINFORCEMENT

1. ALL REINFORCING STEEL SHALL BE ASTM A615 GRADE 60 UNLESS NOTED OTHERWISE. REFERENCE "REINFORCING STEEL" NOTES FOR ADDITIONAL INFORMATION.
2. SLAB-ON-GRADE:
   a. REINFORCEMENT SHALL BE CONTINUOUS ACROSS THE

COLD-FORMED METAL FRAMING:

A. GENERAL

1. ALL COLD-FORMED METAL FRAMING SHALL CONFORM TO THE AISI S100 (LATEST EDITION).
2. THE GENERAL CONTRACTOR SHALL DESIGN, DETAIL, MANUFACTURE, AND INSTALL ALL EXTERIOR COLD-FORMED METAL FRAMING IN ITS ENTIRETY THROUGHOUT THE PROJECT.

B. DESIGN

1. ALL EXTERIOR COLD-FORMED METAL FRAMING SHALL BE DESIGNED BY A LICENSED PROFESSIONAL ENGINEER INCLUDING BUT NOT LIMITED TO: JOISTS, PURLINS, EXTERIOR STUDS, TRACKS, CONNECTIONS, BRACING, SPECIAL DETAILED CONDITIONS, ETC.
2. EXTERIOR METAL STUDS LATERALLY SUPPORTING A BRITTLE VENEER SHALL HAVE A MAXIMUM ALLOWABLE DEFLECTION OF L/600.

C. MATERIAL

1. COLD-FORMED METAL FRAMING MATERIAL SHALL CONFORM TO ASTM A653, SS GRADE 33 (Fy = 33 KSI, Fu = 45 KSI) UNLESS NOTED OTHERWISE.
2. ALL STRUCTURAL COLD-FORMED MEMBERS SHALL HAVE A MINIMUM G60 GALVANIZED COAT IN ACCORDANCE WITH ASTM A653. ALL NON-STRUCTURAL COLD-FORMED MEMBERS SHALL HAVE A MINIMUM G40 GALVANIZED COAT IN ACCORDANCE WITH ASTM A653.
3. ALL COLD-FORMED STEEL PRODUCTS DELIVERED TO THE JOB SITE SHALL NOT BE LESS THAN 95% OF THE DESIGN THICKNESS.
4. COLD-FORMED METAL FRAMING NOMENCLATURE ESTABLISHED BY THE STEEL STUD MANUFACTURERS ASSOCIATION (SSMA) AND THE AMERICAN IRON AND STEEL INSTITUTE (AISI) AND USED IN THESE STRUCTURAL DRAWINGS IS AS FOLLOWS:

600S162-43

MEMBER DEPTH
162 = 1 5/8"
250 = 2 1/2"
350 = 3 1/2"
362 = 3 5/8"
400 = 4"
550 = 5 1/2"
600 = 6"
800 = 8"
1000 = 10"
1200 = 12"
1400 = 14"
1600 = 16"

MEMBER SHAPE
S = STUD/JOIST
T = TRACK
U = U-CHANNEL
F = FURRING CHANNEL

FLANGE WIDTH
125 = 1 1/4"
137 = 1 3/8"
162 = 1 5/8"
200 = 2"
250 = 2 1/2"
300 = 3"
350 = 3 1/2"

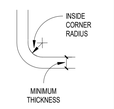
THICKNESS (MILS)		
MILS[1]	GAUGE[2]	DESIGN THICKNESS[3]
18	25	0.0188"
27	22	0.0283"
30	20 (DRYWALL)	0.0312"
33	20	0.0346"
43	18	0.0451"
54	16	0.0566"
68	14	0.0713"
97	12	0.1017"
118	10	0.1242"

[1] 1 MIL = 1/1000 INCH
[2] GAUGE THICKNESS (REFERENCE ONLY)
[3] MINIMUM THICKNESS = 95% OF DESIGN THICKNESS

5. THE DESIGN INSIDE CORNER RADII SHALL BE AS FOLLOWS:

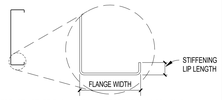
DESIGN INSIDE CORNER RADII TABLE			
MILS[1]	GAUGE[2]	DESIGN THICKNESS[3]	INSIDE CORNER RADII[4]
18	25	0.0188"	0.0843"
27	22	0.0283"	0.0796"
30	20 (DRYWALL)	0.0312"	0.0781"
33	20	0.0346"	0.0764"
43	18	0.0451"	0.0712"
54	16	0.0566"	0.0849"
68	14	0.0713"	0.1069"
97	12	0.1017"	0.1525"
118	10	0.1242"	0.1863"

[1] 1 MIL = 1/1000 INCH
[2] GAUGE THICKNESS (REFERENCE ONLY)
[3] MINIMUM THICKNESS = 95% OF DESIGN THICKNESS
[4] INSIDE CORNER RADII = MAX(3/32 - t/2, 1.5*t), WHERE t = DESIGN THICKNESS



6. THE STIFFENING LIP LENGTH FOR STUD SECTIONS SHALL BE AS FOLLOWS:

STUD FLANGE WIDTH	STIFFENING LIP LENGTH
S125 = 1 1/4"	0.188"
S137 = 1 3/8"	0.375"
S162 = 1 5/8"	0.500"
S200 = 2"	0.625"
S250 = 2 1/2"	0.625"
S300 = 3"	0.625"
S350 = 3 1/2"	1.000"



7. MEMBERS DESIGNATED WITH A YIELD STRENGTH OTHER THAN 33 KSI WILL BE SPECIFIED AS FOLLOWS:

600S162-43 (50)

REFERENCE NOTE 3 ABOVE — YIELD STRENGTH (Fy = 50 KSI)

D. CONSTRUCTION PROVISIONS

1. ALL COLD-FORMED METAL FRAMING SHALL BE ERECTED PLUMB, LEVEL, AND SQUARE. BRIDGING AND DIAGONAL TENSION STRAPS SHALL BE USED.
2. TEMPORARY BRACING SHALL BE PROVIDED AS REQUIRED UNTIL ERECTION IS COMPLETE AND SAFELY SECURED TO THE STRUCTURE.

E. SUBMITTAL

1. PRIOR TO FABRICATION OF COLD-FORMED METAL FRAMING, THE CONTRACTOR SHALL SUBMIT CALCULATIONS AND ERECTION DRAWINGS TO THE ARCHITECT AND ENGINEER FOR REVIEW.
2. REFERENCE "SHOP DRAWING AND SUBMITTALS" GENERAL NOTES FOR ADDITIONAL INFORMATION.

POST-INSTALLED ANCHORS:

A. GENERAL

1. POST-INSTALLED ANCHORS SHALL ONLY BE USED WHERE SPECIFIED ON THE CONTRACT DOCUMENTS.
2. THE CONTRACTOR SHALL OBTAIN APPROVAL FROM THE EOR PRIOR TO INSTALLING POST-INSTALLED ANCHORS IN PLACE OF MISSING OR MISPLACED CAST-IN-PLACE ANCHORS.
3. CARE SHALL BE TAKEN IN PLACING POST-INSTALLED ANCHORS TO AVOID CONFLICTS WITH EXISTING REINFORCING STEEL.
4. HOLES SHALL BE DRILLED AND CLEANED IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS.

B. SUBSTITUTIONS

1. SUBSTITUTION REQUESTS FOR PRODUCTS OTHER THAN THOSE SPECIFIED BELOW SHALL BE SUBMITTED BY THE CONTRACTOR TO THE EOR ALONG WITH CALCULATIONS THAT ARE PREPARED AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER.
2. THE CALCULATIONS SHALL DEMONSTRATE THAT THE SUBSTITUTED PRODUCT IS CAPABLE OF ACHIEVING THE PERTINENT EQUIVALENT PERFORMANCE VALUES (MINIMUM) OF THE SPECIFIED PRODUCT USING THE APPROPRIATE DESIGN PROCEDURE AND/OR STANDARD(S) AS REQUIRED BY THE GOVERNING BUILDING CODE.

C. SPECIAL INSPECTION

1. REFERENCE "SPECIAL INSPECTION AND MATERIAL TESTING" FOR SPECIAL INSPECTION REQUIREMENTS FOR POST-INSTALLED ANCHORS.
2. THE SPECIAL INSPECTOR SHALL PROVIDE CONTINUOUS SPECIAL INSPECTION FOR ALL MECHANICAL AND ADHESIVE ANCHORS PER THE APPLICABLE EVALUATION REPORT.

D. INSTALLATION TRAINING/PRE-INSTALLATION CONFERENCE

1. CONTACT MANUFACTURER'S REPRESENTATIVE FOR THE INITIAL TRAINING AND INSTALLATION OF ANCHORS AND FOR PRODUCT RELATED QUESTIONS AND AVAILABILITY PRIOR TO INSTALLING ALL POST-INSTALLED ANCHORS.

E. CONCRETE ANCHORS

1. **MECHANICAL ANCHORS** SHALL HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ACI 355.2 AND ICC-ES AC193 FOR CRACKED AND UNCRACKED CONCRETE RECOGNITION. PRE-APPROVED MECHANICAL ANCHORS INCLUDE:
   a. SIMPSON STRONG-TIE
      i. SIMPSON STRONG-TIE "TITEN-HD" AND "TITEN-HD ROD HANGER" (ICC-ES ESR-2713)
      ii. SIMPSON STRONG-TIE "STRONG-BOLT" (ICC-ES ESR-1771)
      iii. SIMPSON STRONG-TIE "STRONG-BOLT 2" (ICC-ES ESR-3037)
      iv. SIMPSON STRONG-TIE "TORQ-CUT" (ICC-ES ESR-2705)
   b. HILTI
      i. HILTI "KWIK HUS EZ" AND "KWIK EZ-I SCREW" (ICC-ES ESR-3027)
      ii. HILTI "BOLT-TZ" EXPANSION ANCHOR (ICC-ES ESR-1917)
      iii. HILTI "BOLT 3" EXPANSION ANCHOR (ICC-ES ESR-2302)
      iv. HILTI "HDA" UNDERCUT ANCHOR (ICC-ES ESR-1546)
      v. HILTI "HSL-3" EXPANSION ANCHOR (ICC-ES ESR-1545)
   c. C. DEWALT
      i. DEWALT POWER-STUD+SD1 (ICC-ES-ESR 2818)
      ii. DEWALT POWER-STUD+SD4, TYPE 304 STAINLESS STEEL (ICC-ES-ESR 2502)
      iii. DEWALT POWER-BOLT+, SLEEVE ANCHOR (ICC-ES-ESR3260)
      iv. DEWALT SCREW BOLT+ (ICC-ES-ESR 3889)
      v. DEWALT ATOMIC+UNDERCUT ANCHOR, (ICC-ES-ESR3067)
      vi. DEWALT SNAKE+, INTERNALLY THREADED (ICC-ES-ESRP2272)
      vii. DEWALT ATOMIC+UNDERCUT ANCHOR, UNDERCUT ANCHOR (ICC-ES-ESR 3067)
      viii. DEWALT MINI-UNDERCUT+ (ICC-ES-ESR 3912)
2. **ADHESIVE ANCHORS** SHALL HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ACI 355.4 AND ICC-ES AC308 FOR CRACKED AND UNCRACKED CONCRETE RECOGNITION. A PRE-APPROVED ADHESIVE ANCHORING SYSTEM INCLUDE:
   a. SIMPSON STRONG-TIE
      i. SIMPSON STRONG-TIE "AT-XP" ADHESIVE (ICC-ES AC308)
      ii. SIMPSON STRONG-TIE "SET-XP" ADHESIVE (ICC-ES ESR-2508)
   b. HILTI
      i. HILTI "HIT-RE 500-SD" ADHESIVE (ICC-ES ESR-2322)
      ii. HILTI "HIT-HY 150 MAX-SD" ADHESIVE (ICC-ES ESR-3013)
      iii. HILTI "HIT-HY 150 MAX" ADHESIVE (ICC-ES ESR-2282)
   c. DEWALT
      i. DEWALT PURE 110+, EPOXY SYSTEM (ICC-ES-ESR 3298)
      ii. DEWALT AC200+, ACRYLIC ADHESIVE SYSTEM (ICC-ES-ESR 4027)
3. **POWDER ACTUATED FASTENERS** SHALL HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ICC-ES AC70. PRE-APPROVED POWDER ACTUATED FASTENERS INCLUDE:
   a. SIMPSON STRONG-TIE
      i. SIMPSON STRONG-TIE "POWER-DRIVEN FASTENERS" (ICC-ES ESR-2138)
   b. DEWALT
      i. DEWALT POWER DRIVEN FASTENERS, POWDER ACTUATED (ICC-ES-ESR 2024)

F. MASONRY ANCHORS

1. **ANCHORAGE TO SOLID-GROUTED CONCRETE MASONRY**

MECHANICAL ANCHORS SHALL HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ICC-ES AC01 OR AC106. PRE-APPROVED MECHANICAL ANCHORS INCLUDE:
   a. SIMPSON STRONG-TIE
      i. SIMPSON STRONG-TIE "TITEN-HD" (ICC-ES ESR-1056)
      ii. SIMPSON STRONG-TIE "STRONG BOLT 2" (IAPMO-ES ER-0240)
      iii. SIMPSON STRONG-TIE "WEDGE-ALL" (ICC-ES ESR-1396)
   b. DEWALT
      i. DEWALT POWER-STUD+SD1 (ICC-ES-ESR 2966)
      ii. DEWALT SCREW-BOLT+ (ICC-ES-ESR 4042)
      iii. DEWALT ULTRACON+ SCREW ANCHORS (ICC-ES-ESR 3196)

ADHESIVE ANCHORS SHALL HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ICC-ES AC58. PRE-APPROVED ADHESIVE ANCHORING SYSTEM INCLUDE:
   a. SIMPSON STRONG-TIE
      i. SIMPSON STRONG-TIE "SET-XP" ADHESIVE (ICC-ES ESR-2508)
   b. DEWALT
      i. DEWALT AC100+GOLD (ICC-ES-ESR 3200)

2. **ANCHORAGE TO HOLLOW CONCRETE MASONRY/UNREINFORCED CLAY BRICK MASONRY**

MECHANICAL ANCHORS SHALL HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ICC-ES AC01 OR AC106. PRE-APPROVED MECHANICAL ANCHORS INCLUDE:
   a. SIMPSON STRONG-TIE
      i. SIMPSON STRONG-TIE "TITEN-HD" (ICC-ES ESR-1056)
   b. DEWALT
      i. DEWALT AC100+GOLD (ICC-ES-ESR 4105)

ADHESIVE ANCHORS WITH SCREEN TUBES SHALL BE TESTED AND QUALIFIED IN ACCORDANCE WITH ICC-ES AC58 OR AC60, AS APPROPRIATE. THE APPROPRIATE SCREEN TUBE SHALL BE USED AS RECOMMENDED BY THE ADHESIVE MANUFACTURER. PRE-APPROVED ADHESIVE ANCHORS WITH SCREEN TUBES INCLUDE:
   a. SIMPSON STRONG-TIE
      i. SIMPSON STRONG-TIE "SET-XP" ADHESIVE (ICC-ES ESR-2508)
   b. DEWALT
      i. DEWALT AC100+GOLD (ICC-ES-ESR 4105)

3. **ANCHORAGE TO HOLLOW/MULTI-WYTHE MASONRY**

ADHESIVE ANCHORS WITH SCREEN TUBES SHALL BE TESTED AND QUALIFIED IN ACCORDANCE WITH ICC-ES AC58 OR AC60, AS APPROPRIATE. THE APPROPRIATE SCREEN TUBE SHALL BE USED AS RECOMMENDED BY THE ADHESIVE MANUFACTURER. PRE-APPROVED ADHESIVE ANCHORS WITH SCREEN TUBES INCLUDE:
   a. HILTI
      i. HILTI "HIT-HY 70" MASONRY ADHESIVE (ICC-ES ESR-3442)
   b. DEWALT
      i. DEWALT AC100+GOLD (ICC-ES-ESR 4105)

STRUCTURAL OBSERVATION:

A. SCOPE

1. JOB SITE STRUCTURAL OBSERVATIONS BY THE LICENSED PROFESSIONAL ENGINEER OR HIS/HER AUTHORIZED REPRESENTATIVE SHALL CONSIST OF VISUAL OBSERVATION OF MATERIALS, EQUIPMENT OR CONSTRUCTION WORK FOR THE PURPOSE OF ASCERTAINING THAT THE WORK IS IN GENERAL CONFORMANCE WITH THE CONTRACT DOCUMENTS AND WITH THE DESIGN INTENT.
2. STRUCTURAL OBSERVATIONS SHALL NOT BE RELIED UPON BY OTHERS AS ACCEPTANCE OF THE WORK, NOR SHALL IT BE CONSTRUED TO RELIEVE THE CONTRACTOR IN ANY WAY FROM HIS/HER OBLIGATIONS AND RESPONSIBILITIES UNDER THE CONSTRUCTION CONTRACT.
3. STRUCTURAL OBSERVATIONS BY THE LICENSED PROFESSIONAL ENGINEER OR HIS/HER AUTHORIZED REPRESENTATIVE SHALL NOT REQUIRE THE STRUCTURAL OBSERVER TO ASSUME RESPONSIBILITY FOR THE MEANS AND METHODS OF CONSTRUCTION, NOR FOR SAFETY ON THE JOB SITE, NOR FOR ITEMS NOT FOUND INSTALLED OR IMPROPERLY INSTALLED BY THE CONTRACTOR OR SUB-CONTRACTORS.
4. A STRUCTURAL OBSERVATION IS NOT TO BE EQUATED NOR TO BE CONSIDERED A REPLACEMENT FOR A SPECIAL INSPECTION. REFERENCE "SPECIAL INSPECTION AND MATERIAL TESTING" GENERAL NOTES FOR DETAILED REQUIREMENTS.
5. A STRUCTURAL OBSERVER IS NOT A SPECIAL INSPECTOR.
6. A STRUCTURAL OBSERVATION DOES NOT REPLACE OR SUBSTITUTE FOR SITE INSPECTIONS REQUIRED BY MUNICIPAL, COUNTY, OR OTHER GOVERNMENTAL ORDINANCES AND REGULATIONS.

B. CONTRACTOR'S RESPONSIBILITY FOR STRUCTURAL OBSERVATIONS

1. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF RECORD 48 HOURS IN ADVANCE WHEN A STRUCTURAL ELEMENT IS READY FOR VISUAL OBSERVATION.
2. THE CONTRACTOR SHALL ENSURE THAT THE STRUCTURAL ELEMENT TO BE OBSERVED IS FULLY PREPARED AND AT OR NEAR ITS COMPLETION PRIOR TO SCHEDULING A STRUCTURAL OBSERVATION.
3. THE CONTRACTOR SHALL ENFORCE SAFETY PRECAUTIONS FOR THE STRUCTURAL OBSERVER DURING A STRUCTURAL OBSERVATION.
4. FOR INACCESSIBLE STRUCTURAL ELEMENTS, THE CONTRACTOR SHALL PROVIDE ALL THE NECESSARY EQUIPMENT SUCH AS LADDERS, LIFTS, SCAFFOLDING, ETC. FOR THE STRUCTURAL OBSERVER TO ACCESS AND VISUALLY OBSERVE.
5. THE GENERAL CONTRACTORS SUPERINTENDENT OR APPROVED REPRESENTATIVE MAY ESCORT THE STRUCTURAL OBSERVER THROUGHOUT THE ENTIRE DURATION OF THE STRUCTURAL OBSERVATION.

C. STRUCTURAL ELEMENTS TO BE OBSERVED

1. THE FOLLOWING STRUCTURAL ELEMENTS ARE REQUIRED FOR VISUAL OBSERVATION UNLESS APPROVED OTHERWISE BY THE ENGINEER OF RECORD:
   a. FOUNDATIONS (BEFORE PLACEMENT OF CONCRETE)
   b. TILT-UP PANELS (BEFORE PLACEMENT OF CONCRETE)
   c. CMU WALLS (FIRST LIFT BEFORE PLACEMENT OF GROUT)
   d. SPECIAL STRUCTURAL ELEMENTS (TO BE IDENTIFIED BY THE ENGINEER OF RECORD DURING THE CONSTRUCTION PHASE)
2. THE ENGINEER OF RECORD HAS THE FULL AUTHORITY TO REQUEST A STRUCTURAL OBSERVATION OF ANY PARTICULAR STRUCTURAL ELEMENT HE/SHE WISHES TO VISUALLY OBSERVE DURING THE CONSTRUCTION PHASE.

D. NONCONFORMING STRUCTURAL ELEMENTS

1. ALL DEFICIENT AND NONCONFORMING STRUCTURAL ELEMENTS WILL BE NOTED IN A STRUCTURAL OBSERVATION REPORT AND SUBMITTED TO THE ARCHITECT AND OWNER FOR THEIR RECORDS.
2. THE CONTRACTOR IS RESPONSIBLE FOR ADDRESSING ALL DEFICIENT AND NONCONFORMING STRUCTURAL ELEMENTS.
3. THE CONTRACTOR SHALL SUBMIT A REPAIR SOLUTION OR REMEDY FOR A DEFICIENT AND NONCONFORMING STRUCTURAL ELEMENTS WITH SIGNED AND SEALED CALCULATIONS, REQUIRED SUPPORT DRAWINGS, AND DOCUMENTATION TO THE ENGINEER OF RECORD FOR REVIEW.
4. FAILURE TO PROVIDE A REPAIR SOLUTION OR A REMEDIATION TO ANY DEFICIENT AND NONCONFORMING STRUCTURAL ELEMENTS WILL BE ADDRESSED TO THE ARCHITECT AND OWNER AND LABEL AS OUTSTANDING PUNCH LIST ITEMS FOR PROJECT CLOSE OUT.

EXTERIOR COMPONENT AND CLADDING:

A. GENERAL

1. ALL EXTERIOR COMPONENT AND CLADDING SYSTEMS SHALL MEET THE MINIMUM WIND REQUIREMENTS AS PRESCRIBED BY THE INTERNATIONAL BUILDING CODE (IBC), PROJECT EDITION.
2. EXTERIOR COMPONENT AND CLADDING SYSTEMS INCLUDE (BUT NOT LIMITED TO): WINDOWS, CURTAINWALLS, STOREFRONTS, DOORS, ARCHITECTURAL SIDINGS, METAL WALL AND ROOF PANELS, ROOFING SYSTEMS, SKYLIGHTS, ROOFTOP EQUIPMENT, ETC.
3. CONTRACTOR SHALL SUBMIT COMPONENT AND CLADDING ASSEMBLY WIND PRESSURE AND IMPACT RESISTANCE TESTING RATINGS (WHEN APPLICABLE) TO THE ARCHITECT AND ENGINEER FOR REVIEW.

B. TESTED ASSEMBLIES

1. THE CONTRACTOR SHALL INSTALL PROJECT SPECIFIC ASSEMBLIES THAT HAVE BEEN TESTED AND MEET THE APPLICABLE PERFORMANCE REQUIREMENTS.
2. PROJECT ASSEMBLIES SHALL BE INSTALLED IN THE SAME MANNER AS TESTED ASSEMBLIES INCLUDING COMPONENTS, REINFORCEMENT, GLAZING, HARDWARE, ANCHORS, FASTENING LOCATIONS, SEALANTS AND ALL APPLICABLE ACCESSORIES.
3. THE TESTED ASSEMBLY SHALL MEET THE POSITIVE AND NEGATIVE COMPONENT AND CLADDING WIND PRESSURES INDICATED ON THE STRUCTURAL DRAWINGS.

C. ASSEMBLY PERFORMANCE STANDARDS

1. ASTM E330 - STANDARD TEST FOR STRUCTURAL PERFORMANCE OF EXTERIOR WINDOWS, DOORS, SKYLIGHTS, AND CURTAIN WALLS BY UNIFORM STATIC AIR PRESSURE DIFFERENCE
2. ASTM E1592 - STANDARD TEST METHOD FOR STRUCTURAL PERFORMANCE OF SHEET METAL ROOF AND SIDING SYSTEMS BY UNIFORM STATIC AIR PRESSURE DIFFERENCE
3. ASTM E1886 - STANDARD TEST METHOD FOR PERFORMANCE OF EXTERIOR WINDOWS, CURTAIN WALLS, DOORS, AND IMPACT PROTECTIVE SYSTEMS IMPACTED BY MISSILE(S) AND EXPOSED TO CYCLIC PRESSURE DIFFERENTIALS
4. ASTM E1996 - STANDARD SPECIFICATION FOR PERFORMANCE OF EXTERIOR WINDOWS, CURTAIN WALLS, DOORS, AND IMPACT PROTECTIVE SYSTEMS IMPACTED BY WIND-BORNE DEBRIS IN HURRICANES
5. FM 4450 - APPROVAL STANDARD FOR CLASS 1 INSULATED STEEL DECK ROOFS
6. FM 4470 - APPROVAL STANDARD FOR SINGLE-PLY, POLYMER-MODIFIED BITUMEN SHEET, BUILT-UP ROOF (BUR) AND LIQUID APPLIED ROOF ASSEMBLIES FOR USE IN CLASS 1 AND NONCOMBUSTIBLE ROOF DECK CONSTRUCTION
7. FM 4474 - AMERICAN NATIONAL STANDARD FOR EVALUATING THE SIMULATED WIND UPLIFT RESISTANCE OF ROOF ASSEMBLIES USING STATIC POSITIVE AND/OR NEGATIVE DIFFERENTIAL PRESSURES
8. UL 580 - STANDARD FOR TESTS FOR UPLIFT RESISTANCE OF ROOF ASSEMBLIES
9. UL 1897 - STANDARD FOR UPLIFT TESTS FOR ROOF COVERING SYSTEMS
10. ASTM D1758 - STANDARD TEST METHOD FOR WIND RESISTANCE OF ASPHALT SHINGLES (UPLIFT FORCE/UPLIFT RESISTANCE METHOD)
11. ASTM D226 - STANDARD SPECIFICATION FOR ASPHALT-SATURATED ORGANIC FELT USED IN ROOFING AND WATERPROOFING

MISCELLANEOUS:

A. CONTRACT DOCUMENTS

1. IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO OBTAIN ALL CONTRACT DOCUMENTS AND THE LATEST ADDENDA AND TO SUBMIT SUCH DOCUMENTS TO ALL SUB-CONTRACTORS AND MATERIAL SUPPLIERS PRIOR TO THE SUBMITTAL OF SHOP DRAWINGS, FABRICATION OF ANY STRUCTURAL MEMBERS, AND ERECTION IN THE FIELD.
2. THE CONTRACT STRUCTURAL DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE, AND DO NOT INDICATE THE METHOD OR MEANS OF CONSTRUCTION. THE GENERAL CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, PROCEDURES, TECHNIQUES, AND SEQUENCE.
3. THE GENERAL CONTRACTOR SHALL COORDINATE ALL OPENINGS WITH MECHANICAL, ELECTRICAL, PLUMBING, AND FIRE PROTECTION DRAWINGS AND THEIR RESPECTIVE SUB-CONTRACTORS.
4. REFERENCE THE COMPLETE CONTRACT DOCUMENTS ASIDE FROM THE CONTRACT STRUCTURAL DRAWINGS SUCH AS ARCHITECTURAL, MECHANICAL, ELECTRICAL, PLUMBING, CIVIL, AND OTHER DRAWINGS FOR ITEMS SUCH AS, BUT NOT LIMITED TO: DEPRESSIONS, CURBS, OPENINGS, STAIRS, RAMPS, LADDERS, CANOPIES, FENCES, DUMPSTER ENCLOSURES, LIGHTPOLES, MONUMENTS, MARQUEE SIGNS, ETC.
5. IF CERTAIN FEATURES ARE NOT FULLY SHOWN OR SPECIFIED ON THE DRAWINGS OR IN THE SPECIFICATIONS, THEIR CONSTRUCTION SHALL BE OF THE SAME CHARACTER AS SHOWN OR SPECIFIED IN SIMILAR CONDITIONS.
6. WHERE DETAILS OR SECTIONS ARE NOT SHOWN IN THE DRAWINGS, THE GENERAL CONTRACTOR SHALL DEVELOP THEIR OWN DETAILS OR SECTIONS BASED ON SIMILAR DETAILS OR SECTIONS IN THE DRAWINGS.

B. DRAWING CONFLICTS

1. THE GENERAL CONTRACTOR SHALL REPORT ANY AND ALL DISCREPANCIES WITHIN THE CONTRACT DOCUMENTS PRIOR TO BIDDING, FABRICATION, AND INSTALLATION OF ALL STRUCTURAL MEMBERS.

C. CONFLICTS IN STRUCTURAL REQUIREMENTS

1. WHERE CONFLICTS EXIST WITHIN THE STRUCTURAL DRAWINGS, GENERAL NOTES, OR SPECIFICATIONS, THE MORE STRINGENT, STRICTEST, OR MORE EXPENSIVE REQUIREMENT SHALL SUPERCEDE.

D. EXISTING CONDITIONS

1. THE GENERAL CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS OF THE EXISTING BUILDINGS AT THE JOB SITE AND REPORT ANY DISCREPANCIES FROM ASSUMED CONDITIONS SHOWN ON THE DRAWINGS TO THE ARCHITECT AND ENGINEER PRIOR TO THE FABRICATION, ERECTION, OR INSTALLATION OF ANY STRUCTURAL MEMBERS.
2. WORK SHOWN ON THE DRAWINGS IS NEW CONSTRUCTION, UNLESS NOTED AS EXISTING IN THE DRAWINGS.
3. EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS WAS OBTAINED FROM EXISTING CONSTRUCTION DOCUMENTS AND LIMITED SITE OBSERVATION. THESE DRAWINGS OF EXISTING CONSTRUCTION ARE AVAILABLE FOR CONTRACTOR USE; HOWEVER, THEY MAY NOT BE NECESSARILY COMPLETE. THE CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS.
4. DEMOLITION, CUTTING, DRILLING, ETC. OF EXISTING WORK SHALL BE PERFORMED WITH HIGH CAUTION SUCH THAT IT DOES NOT JEOPARDIZE THE STRUCTURAL INTEGRITY OF THE EXISTING BUILDING. IF ANY ARCHITECTURAL, STRUCTURAL, OR MEP MEMBERS OR ELEMENTS ARE CONFLICTING WITH THE NEW CONSTRUCTION, THE ARCHITECT SHALL BE NOTIFIED IMMEDIATELY AND APPROVAL SHALL BE OBTAINED PRIOR TO REMOVING CONFLICTING MEMBERS OR ELEMENTS.
5. THE CONTRACTOR SHALL SHORE EXISTING CONSTRUCTION WHEREVER EXISTING SUPPORTS ARE REMOVED TO ALLOW THE INSTALLATION OF NEW CONSTRUCTION. ALL SHORING METHODS AND SEQUENCING OF DEMOLITION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
6. THE CONTRACTOR SHALL VERIFY THE LOCATION OF EXISTING UTILITIES PRIOR TO THE START OF CONSTRUCTION AND INITIATE CARE TO PROTECT EXISTING UTILITIES THAT ARE TO REMAIN.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DAMAGES CAUSED DURING CONSTRUCTION WITH SIMILAR AND DISSIMILAR MATERIALS AS WELL AS WORKMANSHIP TO RESTORE CONDITIONS TO LEVELS ACCEPTABLE TO THE ARCHITECT OF RECORD.

E. ADJACENT BUILDINGS

1. THE GENERAL CONTRACTOR SHALL ENSURE THAT ALL CONSTRUCTION MEANS AND METHODS WILL NOT CAUSE DAMAGE TO THE ADJACENT BUILDINGS AND PROPERTY.

F. RESPONSIBILITY OF THE CONTRACTOR

1. ALL STRUCTURAL ELEMENTS AND MEMBERS OF THE PROJECT HAVE BEEN DESIGNED BY THE STRUCTURAL ENGINEER TO RESIST THE CODE REQUIRED VERTICAL AND LATERAL LOADS THAT COULD OCCUR IN THE FINAL COMPLETED STRUCTURE ONLY. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO BRACE, STABILIZE, AND MAINTAIN SAFETY OF ALL STRUCTURAL ELEMENTS DURING THE CONSTRUCTION PROCESS UNTIL THE STRUCTURAL SYSTEM HAS BEEN COMPLETELY TIED TOGETHER.
2. THE STRUCTURE HAS BEEN DESIGNED TO THE VERTICAL AND LATERAL LOADS INDICATED IN THESE DOCUMENTS. THE CONTRACTOR IS CAUTIONED NOT TO OVERLOAD THE STRUCTURAL SYSTEM DURING CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CHECKING THE ADEQUACY OF THE STRUCTURE TO SUPPORT ANY APPLIED CONSTRUCTION LOADS, INCLUDING THOSE DUE TO CONSTRUCTION VEHICLES OR EQUIPMENT, MATERIAL HANDLING AND STORAGE, SHORING OR RESHORING, OR ANY OTHER CONSTRUCTION ACTIVITY. THE CONTRACTOR SHALL SUBMIT CALCULATIONS SIGNED AND SEALED BY A LICENSED REGISTERED ENGINEER IN THE STATE THE PROJECT IS LOCATED TO VERIFY THE ADEQUACY OF THE STRUCTURE FOR ANY PROPOSED CONSTRUCTION LOADS THAT ARE IN EXCESS OF THE STATED DESIGN LOADS. THE ENGINEER OF RECORD IS NOT RESPONSIBLE TO DESIGN OR CHECK THE STRUCTURE FOR LOADS APPLIED TO THE STRUCTURE FOR ANY CONSTRUCTION ACTIVITY.

G. SUBSTITUTIONS

1. ANY MATERIALS OR PRODUCTS SUBMITTED FOR APPROVAL THAT DIFFER FROM THE MATERIAL OR PRODUCTS SPECIFIED IN THE CONTRACT STRUCTURAL DOCUMENTS WILL BE APPROVED ONLY IF THERE IS A COST SAVINGS TO THE OWNER, DOCUMENTED, AND AN INTERNATIONAL CODE COUNCIL (ICC) REPORT IS SUBMITTED WITH THE REQUEST.
2. FOR SUBSTITUTIONS FOR ANY MATERIALS OR PRODUCTS SUPPORTING VERTICAL OR LATERAL LOADS SHALL BE SUBMITTED WITH SIGNED AND SEALED CALCULATIONS BY A LICENSED REGISTERED ENGINEER IN THE STATE THE PROJECT IS LOCATED IN ADDITION TO THE CRITERIA STATED ABOVE. REFER TO THE SPECIFICATIONS ON SUBSTITUTIONS.

DRAWING INTERPRETATION:

A. GENERAL

1. DECISIONS REGARDING THE APPLICABILITY OF "TYPICAL" AND/OR "SIMILAR" DRAWING VIEWS SHALL BE DETERMINED BY THE ARCHITECT OF RECORD AND THE STRUCTURAL ENGINEER OF RECORD.

B. DRAWING VIEWS LABELED AS "TYPICAL"

1. PARTIAL PLANS, ELEVATIONS, SECTIONS, DETAILS, OR SCHEDULES LABELED WITH "TYPICAL" SHALL APPLY TO ALL SITUATIONS OCCURRING ON THE PROJECT THAT ARE THE SAME TO THOSE SPECIFICALLY SHOWN.
2. THE APPLICABILITY OF THE CONTENT OF THESE VIEWS TO LOCATIONS ON THE PLAN CAN BE DETERMINED FROM THE TITLE OF THE VIEWS WHETHER OR NOT THEY ARE LABELED OR KEYED IN AT EACH LOCATION.

C. DRAWING VIEWS LABELED AS "SIMILAR"

1. PARTIAL PLANS, ELEVATIONS, SECTIONS, DETAILS, OR SCHEDULES LABELED WITH "SIMILAR" SHALL APPLY TO ALL SITUATIONS OCCURRING ON THE PROJECT THAT ARE OF SIMILAR CONTENT AND DESIGN INTENT.
2. VIEWS LABELED AS "SIMILAR" MAY REFERENCE A PARENT DETAIL THAT MAY NOT MATCH THE EXACT CONTENT OF THE INDICATED DRAWING VIEW, BUT HAS SUFFICIENT AMOUNT INFORMATION TO REPRESENT THE DESIGN INTENT.
3. VIEWS AMBLED AS "SIMILAR" MAY REQUIRE MODIFICATIONS TO THE PARENT DETAIL TO MATCH THE CONDITION OF THE INDICATED DRAWING VIEW.

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"NOT FOR CONSTRUCTION"
THIS DOCUMENT IS INTENDED FOR REVIEW ON

SPECIAL INSPECTION AND MATERIAL TESTING:

A. GENERAL

1. SPECIAL INSPECTION AND MATERIAL TESTING ARE REQUIRED FOR THIS PROJECT TO ENSURE COMPLIANCE WITH THE PROJECT BUILDING CODE, THE CONTRACT DOCUMENTS, AND SPECIFICATIONS.
2. ALL SPECIAL INSPECTION AND MATERIAL TESTING DUTIES SHALL COMPLY WITH CHAPTER 17 OF THE INTERNATIONAL BUILDING CODE (IBC), PROJECT EDITION.
3. ALL SPECIAL INSPECTION AND MATERIAL TESTING SHALL BE PERFORMED BY A QUALIFIED APPROVED AGENCY.

B. DEFINITIONS

1. SPECIAL INSPECTION: INSPECTION OF CONSTRUCTION REQUIRING THE EXPERTISE OF AN APPROVED SPECIAL INSPECTOR IN ORDER TO ENSURE COMPLIANCE WITH THE APPLICABLE BUILDING CODE AND THE CONTRACT DOCUMENTS.
2. APPROVED AGENCY: AN ESTABLISHED AND RECOGNIZED AGENCY REGULARLY ENGAGED IN CONDUCTING TESTS AND/OR FURNISHING INSPECTION SERVICES APPROVED BY THE BUILDING OFFICIAL OR AUTHORITIES HAVING JURISDICTION.
3. SPECIAL INSPECTOR: A QUALIFIED PERSON, EMPLOYED OR RETAINED BY THE APPROVED AGENCY AND APPROVED BY THE BUILDING OFFICIAL, A HAVING THE COMPETENCE AND QUALIFICATIONS NECESSARY TO INSPECT A PARTICULAR TYPE OF CONSTRUCTION REQUIRING SPECIAL INSPECTION.
4. CONTINUOUS INSPECTION: SPECIAL INSPECTION BY THE SPECIAL INSPECTOR WHO IS PRESENT WHEN AND WHERE THE WORK TO BE INSPECTED IS BEING PERFORMED.
5. PERIODIC INSPECTION: SPECIAL INSPECTION BY THE SPECIAL INSPECTOR WHO IS INTERMITTENTLY PRESENT WHEN THE WORK TO BE INSPECTED HAS BEEN OR IS BEING PERFORMED.
6. APPROVED FABRICATOR: AN AISC OR IAS CERTIFIED FABRICATOR THAT HAS AN ESTABLISHED QUALITY CONTROL MANAGEMENT PROGRAM AND PERIODIC AUDITING OF FABRICATION PRACTICES THAT IS APPROVED BY THE BUILDING OFFICIAL AND THE ENGINEERING OF RECORD THAT ALLOWS WORK TO BE DONE ON THE PREMISES OF THE FABRICATOR WITHOUT SPECIAL INSPECTION.
7. ENGINEER OF RECORD (EOR): REGISTERED DESIGN PROFESSIONAL RESPONSIBLE FOR THE DESIGN OF THE STRUCTURAL SYSTEM.
8. REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE (RDPRC): A LICENSED ARCHITECT OR ENGINEER ACTING AS THE OWNER'S AGENT WHO IS RESPONSIBLE FOR THE SPECIAL INSPECTION.
9. BUILDING OFFICIAL: AN OFFICER OR OTHER DESIGNATED AUTHORITY CHARGED WITH THE ADMINISTRATION AND ENFORCEMENT OF THE GOVERNING BUILDING CODE.

C. OWNER RESPONSIBILITIES

1. THE OWNER SHALL EMPLOY OR CONTRACT THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE (RDPRC). THE RDPRC SHALL NOT BE ANY DESIGN PROFESSIONAL ASSOCIATED WITH THE DESIGN TEAM.
2. THE OWNER OR THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE (RDPRC), ACTING AS THE OWNER'S AGENT, SHALL EMPLOY ANY APPROVED AGENCY TO PERFORM SPECIAL INSPECTIONS AND MATERIAL TESTING DUTIES SPECIFIED IN THE SECTION, APPROVED BY THE BUILDING OFFICIAL OR AUTHORITIES HAVING JURISDICTION. THE RDPRC IS PERMITTED TO ACT AS THE APPROVED AGENCY.

D. REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE RESPONSIBILITIES

1. THE RDPRC SHALL IMPLEMENT A SPECIAL INSPECTIONS PROGRAM AND IS RESPONSIBLE FOR DETERMINING ALL REQUIRED SPECIAL INSPECTIONS AS DEFINED IN THE PROJECT BUILDING CODE.
2. THE RDPRC SHALL ASSIGN ONLY TRAINED, EXPERIENCED, QUALIFIED SPECIAL INSPECTORS AND TESTING TECHNICIANS.
3. THE RDPRC IS RESPONSIBLE FOR PROVIDING THE ARCHITECT, THE ENGINEER(S) OF RECORD, AND THE GENERAL CONTRACTOR A LIST OF ALL REQUIRED SPECIAL INSPECTIONS AND THE ASSOCIATED SPECIAL INSPECTORS PRIOR TO CONSTRUCTION.
4. THE RDPRC SHALL PREPARE A STATEMENT OF SPECIAL INSPECTIONS.
5. THE RDPRC SHALL SUBMIT APPLICABLE REPORTS AND CERTIFICATES TO THE BUILDING OFFICIAL.

E. STATEMENT OF SPECIAL INSPECTIONS

1. THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE (RDPRC) SHALL PREPARE, SIGN AND SEAL A STATEMENT OF SPECIAL INSPECTIONS IN ACCORDANCE TO THE INTERNATIONAL BUILDING CODE (IBC), PROJECT EDITION, SECTION 1704.3 AND SUBMIT TO THE BUILDING OFFICIAL AS A CONDITION OF PERMIT ISSUANCE.
2. THE STATEMENT OF SPECIAL INSPECTIONS SHALL INCLUDE THE FOLLOWING:
   a. OWNER'S NAME
   b. OWNER'S ADDRESS
   c. PROJECT NAME
   d. PROJECT ADDRESS
   e. PROJECT BUILDING CODE
   f. ARCHITECT OF RECORD
   g. STRUCTURAL ENGINEER OF RECORD
   h. MEP ENGINEER OF RECORD
   i. RDPRC'S NAME
   j. RDPRC'S SEAL AND SIGNATURE
   k. BUILDING PERMIT NUMBER
3. THE STATEMENT OF SPECIAL INSPECTIONS SHALL INCLUDE CONTENT, AS REQUIRED IN THE INTERNATIONAL BUILDING CODE SECTION 1704.3, SUCH AS, BUT NOT LIMITED TO:
   a. THE MATERIALS, SYSTEMS, COMPONENTS AND WORK REQUIRED TO HAVE SPECIAL INSPECTION
   b. THE TYPE AND EXTENT OF EACH SPECIAL INSPECTION
   c. THE TYPE AND EXTENT OF EACH TEST
   d. ADDITIONAL REQUIREMENTS FOR SPECIAL INSPECTION OR TESTING FOR SEISMIC OR WIND REQUIREMENTS
   e. IDENTIFICATION AS TO WHERE IT WILL BE CONTINUOUS OR PERIODIC SPECIAL INSPECTION FOR EACH TYPE OF SPECIAL INSPECTION.

F. SUBMITTALS TO THE BUILDING OFFICIAL

1. THE REGISTERED DESIGN PROFFESSIONAL IN RESPONSIBLE CHARGE (RDPRC) SHALL SUBMIT REPORTS AND CERTIFICATES IN ACCORDANCE TO THE INTERNATIONAL BUILDING CODE (IBC), PROJECT EDITION, SECTION 1704.5, TO THE BUILDING OFFICIAL FOR EACH OF THE FOLLOWING:
   a. CERTIFICATES OF COMPLIANCE FOR THE FABRICATION OF STRUCTURAL LOAD-BEARING OR LATERAL LOAD-RESISTING MEMBERS OF ASSEMBLIES ON THE PREMISES OF AN APPROVED FABRICATOR.
   b. CERTIFICATES OF COMPLIANCE FOR THE SEISMIC QUALIFICATION OF NONSTRUCTURAL COMPONENTS, SUPPORTS, AND ATTACHMENTS.
   c. CERTIFICATES OF COMPLIANCE FOR DESIGNATED SEISMIC SYSTEMS.
   d. REPORTS OF PRECONSTRUCTION TESTS FOR SHOTCRETE.
   e. CERTIFICATES OF COMPLIANCE FOR OPEN-WEB STEEL JOISTS AND JOIST GIRDERS
   f. REPORTS OF MATERIAL PROPERTIES VERIFYING COMPLIANCE WITH THE REQUIREMENTS OF AWS D1.4 FOR WELDABILITY FOR REINFORCING BARS IN CONCRETE COMPLYING WITH A STANDARD OTHER THAN ASTM A706.
   g. REPORTS OF MILL TESTS FOR ASTM A615 REINFORCING BARS USED IN EARTHQUAKE-INDUCED FLEXURAL OR AXIAL FORCES IN SPECIAL MOMENT FRAMES, SPECIAL STRUCTURAL WALLS, OR COMPLING BEAMS OF SEISMIC FORCE-RESISTING SYSTEMS IN STRUCTURES ASSIGNED TO SEISMIC DESIGN CATEGORY B, C, D, E, OR F.

G. CONTRACTOR RESPONSIBILITIES

1. THE CONTRACTOR SHALL SUBMIT A WRITTEN STATEMENT OF RESPONSIBILITY ACKNOWLEDGING THE SPECIAL INSPECTION REQUIREMENTS OF THE MAIN WIND OR SEISMIC FORCE-RESISTING SYSTEM AS INDICATED IN THE STATEMENT OF SPECIAL INSPECTION, TO THE ARCHITECT OF RECORD, STRUCTURAL ENGINEER OF RECORD, THE BUILDING OFFICIAL AND THE OWNER PRIOR TO THE COMMENCEMENT OF WORK ON THE SYSTEM OR COMPONENT.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING THE SPECIAL INSPECTOR AND TESTING LABORATORY WITH A CONSTRUCTION SCHEDULE TO FACILITATE THE PROPER COORDINATION. ANY WORK PERFORMED WITHOUT SPECIAL INSPECTION IS SUBJECT TO REMOVAL AT THE CONTRACTOR'S EXPENSE.
3. THE CONSTRUCTION OR WORK FOR WHICH SPECIAL INSPECTION IS REQUIRED SHALL REMAIN ACCESSIBLE AND EXPOSED FOR SPECIAL INSPECTION PURPOSES UNTIL COMPLETION OF THE REQUIRED SPECIAL INSPECTIONS.
4. THE CONTRACTOR SHALL REIMBURSE THE OWNER FOR RETESTING WHERE RESULTS OF INSPECTIONS AND TESTS PROVE UNSATISFACTORY AND INDICATED NONCOMPLIANCE WITH THE CONTRACT DOCUMENTS AND SPECIFICATIONS.

H. SCOPE

1. THE ITEMS LISTED HEREIN PERTAN TO THE SPECIAL INSPECTIONS AND MATERIAL TESTING REQUIRED BY THE INTERNATIONAL BUILDING CODE (IBC) CHAPTER 17. THE APPROVED AGENCY SHALL DETERMINE ALL THE PROJECT'S APPLICABLE SPECIAL INSPECTION AND MATERIAL TESTING REQUIREMENTS FOR THE PROJECT.
2. PRIOR TO PROJECT COMMENCEMENT, THE APPROVED AGENCY WILL CONFER WITH AND OBTAIN THE APPROVAL FROM THE APPROPRIATE ENGINEER OF RECORD REGARDING THE INSPECTION AND TESTING PROCEDURES OR SPECIFICATIONS INCLUDING ANY APPROPRIATE ASTM METHODS, CODE REQUIREMENTS, OR PROJECT SPECIFICATION REQUIREMENTS AT THE START AND DURING EACH INSPECTION OF THE PROJECT TO ASCERTAIN PROPOSED CONFORMITY OF MATERIALS, PERSONNEL, QUALIFICATIONS, AS REQUIRED, AND PROCEDURES WITH THE APPLICABLE CODES, THE CONTRACT DOCUMENTS, AND SPECIFICATIONS.
3. THE FOLLOWING CONSTRUCTION TYPES REQUIRE SPECIAL INSPECTION:
   a. STEEL CONSTRUCTION (1705.2)
      - STRUCTURAL STEEL (1705.2.1)
        - STRUCTURAL STEEL WELDING (AISC 360 N5.4)
        - NONDESTRUCTIVE TESTING OF WELDED JOINTS (AISC 360 N5.5)
        - STRUCTURAL STEEL BOLTING (AISC 360 N5.6)
        - STRUCTURAL STEEL FRAMING (AISC 360 N5.7)
        - COMPOSITE CONSTRUCTION (AISC 360 N6)
      - STEEL CONSTRUCTION OTHER THAN STRUCTURAL STEEL (1705.2.2)
      - OPEN-WEB STEEL JOISTS AND JOIST GIRDERS (1705.2.3)
   b. CONCRETE CONSTRUCTION (1705.3)
   c. MASONRY CONSTRUCTION (1705.4)
   d. WOOD CONSTRUCTION (1705.5)
   e. SOILS (1705.6)
   f. DRIVEN DEEP FOUNDATIONS (1705.7)
   g. CAST-IN-PLACE DEEP FOUNDATIONS (1705.8)
   h. HELICAL PILE FOUNDATIONS (1705.9)
   i. FABRICATED ITEMS (1705.10)
   j. WIND RESISTANCE (1705.11)
      - STRUCTURAL WOOD (1705.11.1)
      - COLD-FORMED STEEL (1705.11.2)
      - WIND-RESISTING COMPONENTS (1705.11.3)
   k. SEISMIC RESISTANCE (1705.12)
      - STRUCTURAL STEEL (1705.12.1)
      - STRUCTURAL WOOD (1705.12.2)
      - COLD-FORMED STEEL (1705.12.3)
      - DESIGNATED SEISMIC SYSTEMS (1705.12.4)
      - ARCHITECTURAL COMPONENTS (1705.12.5)
      - MECHANICAL AND ELECTRICAL COMPONENTS (1705.12.6)
      - STORAGE RACKS (1705.12.7)
      - SEISMIC ISOLATION SYSTEMS (1705.12.8)
      - COLD-FORMED STEEL BOLTED MOMENTS FRAMES (1705.12.9)
   l. TESTING FOR SEISMIC RESISTANCE (1705.13)
      - STRUCTURAL STEEL (1705.13.1)
      - NONSTRUCTURAL COMPONENTS (1705.13.2)
      - DESIGNED SEISMIC SYSTEMS (1705.13.3)
      - SEISMIC ISOLATION SYSTEMS (1705.13.4)
   m. SPRAYED FIRE-RESISTANT MATERIALS (1705.14)
   n. MASTIC AND INTUMESCENT FIRE-RESISTANT COATINGS (1705.15)
   o. EXTERIOR INSULATION AND FINISH SYSTEMS (1705.16)
   p. FIRE-RESISTANT PENETRATIONS AND JOINTS (1705.17)
   q. SMOKE CONTROL (1705.18)

SPECIAL INSPECTION AND MATERIAL TESTING (CONT):

I. SPECIAL INSPECTION AND TEST REPORTS

1. ALL REPORTS SHALL BE PREPARED BY A LICENSED PROFESSIONAL ENGINEER IN THE STATE THE PROJECT IS LOCATED IN.
2. ALL COPIES OF THE TEST RESULTS AND FINAL REPORTS SHALL BE FURNISHED TO THE ARCHITECT, ENGINEER, AND BUILDING OFFICIAL WITHIN TWO DAYS AFTER THE ELEMENT HAS BEEN INSPECTED AND/OR TESTED.
3. THE SPECIAL INSPECTOR SHALL FURNISH DAILY INSPECTION REPORTS TO THE ARCHITECT, ENGINEER, AND BUILDING OFFICIAL AT A MINIMUM PER WEEK FREQUENCY. THE SPECIAL INSPECTOR SHALL SUBMIT A FINAL REPORT, SIGNED BY BOTH THE INSPECTOR AND THE INSPECTOR'S SUPERVISING LICENSED PROFESSIONAL ENGINEER STATING WHETHER THE WORK REQUIRING SPECIAL INSPECTION WAS IN CONFORMANCE WITH THE APPROVED CONTRACT DOCUMENTS, SPECIFICATIONS, AND APPLICABLE BUILDING CODE.
4. IN CASE OF DISCREPANCIES OR DEFICIENCIES. THE APPROVED AGENCY SHALL IMMEDIATELY NOTIFY THE ENGINEER OF RECORD, THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE, AND THE BUILDING OFFICIAL. ALL DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE CONTRACTOR FOR CORRECTION; THEN IF UNCORRECTED, TO THE PROPER DESIGN AUTHORITY HAVING JURISDICTION AND THE BUILDING OFFICIAL.
5. SPECIAL INSPECTION REPORTS SHALL INCLUDE, AS A MINIMUM, THE FOLLOWING INFORMATION:
   a. APPROVED AGENCY NAME, ADDRESS, AND PHONE NUMBER
   b. OWNER'S NAME AND ADDRESS
   c. NAME AND ADDRESS OF THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE
   d. UNIQUE IDENTIFICATION OF THE REPORT
   e. DESCRIPTION OF THE TYPE OF INSPECTION PERFORMED
   f. ANY UNRESOLVED DEVIATION, EXCLUSIONS, AND ADDITIONS TO OR FROM THE APPROVED CONTRACT DOCUMENTS AND SPECIFICATIONS RELEVANT TO THE SPECIFIC INSPECTION OR TEST
   g. COMPLIANCE OF FINDINGS AND REFERENCE
   h. DESCRIPTION OF LOCATION WHERE THE INSPECTION WAS PERFORMED WITHIN THE PROJECT
   i. TIME AND DATE OF THE INSPECTION
   j. MEASUREMENTS, EXAMINATIONS, AND DERIVED RESULTS SUPPORTED BY TABLES, GRAPHS, SKETCHES, OR PHOTOGRAPHS AS NEEDED
   k. THE NAME, SIGNATURE, AND TITLE OF THE FIELD INSPECTOR PERFORMING THE SPECIAL INSPECTION
   l. SIGNATURE AND PROFESSIONAL ENGINEERING SEAL OF THE SPECIAL INSPECTOR'S SUPERVISING LICENSING PROFESSIONAL ENGINEER IN THE STATE THE PROJECT IS LOCATED IN.

VERIFICATION AND INSPECTION OF OPEN-WEB STEEL JOISTS AND JOIST GIRDERS

SPECIAL INSPECTION REQUIRED	VERIFICATION AND INSPECTION TASK	INSPECTION FREQUENCY CONTINUOUS	INSPECTION FREQUENCY PERIODIC	REFERENCE STANDARD	IBC REFERENCE
	1. INSTALLATION OF OPEN-WEB STEEL JOISTS AND JOIST GIRDERS				
YES	a. END CONNECTIONS - WELDING OR BOLTED	-	X	SJI	1705.2.3
	b. BRIDGING - HORIZONTAL OR DIAGONAL				
	i. STANDARD BRIDGING		X	SJI	
	ii. BRIDGING THAT DIFFERS FROM THE SJI SPECIFICATIONS		X	SJI	

VERIFICATION AND INSPECTION OF WIND-RESISTING COMPONENTS

SPECIAL INSPECTION REQUIRED	VERIFICATION AND INSPECTION TASK	INSPECTION FREQUENCY CONTINUOUS	INSPECTION FREQUENCY PERIODIC	REFERENCE STANDARD	IBC REFERENCE
YES	1. ROOF CLADDING	-	X	-	1705.10.3
YES	2. WALL CLADDING	-	X	-	

NOTES:

1. PERIODIC SPECIAL INSPECTION OF WIND-RESISTING COMPONENTS IS REQUIRED IF ONE OF THE FOLLOWING CRITERIA IS MET:
   a. IN WIND EXPOSURE B, WHERE $V_{asd} \geq 120$ MPH
   b. IN WIND EXPOSURE C OR D, WHERE $V_{asd} \geq 110$ MPH

VERIFICATION AND INSPECTION OF MASONRY CONSTRUCTION (LEVEL C QUALITY ASSURANCE)

SPECIAL INSPECTION REQUIRED	VERIFICATION AND INSPECTION TASK	INSPECTION FREQUENCY CONTINUOUS	INSPECTION FREQUENCY PERIODIC	TMS 602/ACI 530.1/ASCE 6 REFERENCE	IBC REFERENCE
YES	1. VERIFY COMPLIANCE WITH THE APPROVED SUBMITTALS	-	X	1.5	1705.4
	2. VERIFY THAT THE FOLLOWING ARE IN COMPLIANCE:				
YES	a. PROPORTIONS OF SITE-MIXED MORTAR, GROUT AND PRESTRESSING GROUT FOR BONDED TENDONS	-	X	2.1, 2.6 A, 2.6 B, 2.6 C, 2.4 G.1.b	
YES	b. GRADE, TYPE, AND SIZE OF REINFORCEMENT AND ANCHOR BOLTS, AND PRESTRESSING TENDONS AND ANCHORAGES	-	X	2.4, 3.4	
YES	c. PLACEMENT OF MASONRY UNITS AND CONSTRUCTION OF MORTAR JOINTS	-	X	3.3 B	
YES	d. PLACEMENT OF REINFORCEMENT, CONNECTORS, AND PRESTRESSING TENDONS AND ANCHORAGES	X	-	3.2 E, 3.4, 3.6 A	
YES	e. GROUT SPACE PRIOR TO GROUTING	X	-	3.2 D, 3.2 F	
YES	f. PLACEMENT OF GROUT AND PRESTRESSING GROUT FOR BONDED TENDONS	X	-	3.5, 3.6 C	
YES	g. SIZE AND LOCATION OF STRUCTURAL ELEMENTS	-	X	3.3 F	
YES	h. TYPE, SIZE, AND LOCATION OF ANCHORS INCLUDING OTHER DETAILS OF ANCHORAGE OF MASONRY TO STRUCTURAL MEMBERS, FRAMES, OR OTHER CONSTRUCTION	X	-	SEC. 1.16.4.3, 1.17.1	
NO	i. WELDING OF REINFORCEMENT	X	-	SEC. 2.1.7.7.2, 3.3.3.4(c), 8.3.3.4(b)	
YES	j. PREPARATION, CONSTRUCTION, AND PROTECTION OF MASONRY DURING COLD WEATHER (TEMPERATURE BELOW 40°F) OR HOT WEATHER (TEMPERATURE ABOVE 90°F)	-	X	1.8 C, 1.8 D	
NO	k. APPLICATION AND MEASUREMENT OF PRESTRESSING FORCE	X	-	3.6 B	
NO	l. PLACEMENT OF AAC MASONRY UNITS AND CONSTRUCTION OF THIN-BED MORTAR FOR AAC MASONRY	X	-	3.3 B.8	
NO	m. PROPERTIES OF THIN-BED MORTAR FOR AAC MASONRY	X	-	2.1, C.1	
YES	n. OBSERVED PREPARATION OF GROUT SPECIMENS, MORTAR SPECIMENS, AND/OR PRISMS	X	-	1.4 B.2, 1.4 B.3, 1.4 B.4	1705.4

NOTES:

1. SPECIAL INSPECTION SHALL BE A LEVEL C QUALITY ASSURANCE, UNLESS NOTED OTHERWISE, IN ACCORDANCE TO THE TMS 602/ACI 530/ASCE 6, PROJECT EDITION.
2. MASONRY TESTING SHALL INCLUDE THE FOLLOWING:
   a. VERIFICATION OF SLUMP FLOW AND THE VISUAL STABILITY INDEX (VSI) FOR SELF-CONSOLIDATING GROUT IN ACCORDANCE TO ASTM C1611.
   b. DETERMINE THE COMPRESSIVE STRENGTH OF THE UNIT AND TYPE OF MORTAR SPECIFIED PRIOR TO CONSTRUCTION AND FOR EVERY 5000 SQ FT DURING CONSTRUCTION USING THE UNIT STRENGTH METHOD. THE FOLLOWING CRITERIA MUST BE MET TO COMPLY WITH THE UNIT STRENGTH METHOD:
      i. UNITS ARE SAMPLED AND TESTED IN ACCORDANCE TO ASTM ASTM C90.
      ii. THICKNESS OF BED JOINTS DO NOT EXCEED 5/8".
      iii. GROUT ATTAINS ITS SPECIFIED DESIGN STRENGTH AND IS TESTED IN ACCORDANCE WITH ASTM C1019.
   c. VERIFICATIONS OF PROPORTIONS OF MATERIALS IN PREMIXED OR PREBLENDED MORTAR, PRESTRESSING GROUT, AND GROUT OTHER THAN SELF-CONSOLIDATING GROUT AS DELIVERED TO THE PROJECT SITE IN ACCORDANCE WITH ASTM C270.
3. PERIODIC INSPECTIONS SHALL BE PERFORMED AT LEAST TWICE A DAY FOR A MINIMUM OF 1 HOUR EACH VISIT.

VERIFICATION AND INSPECTION OF STEEL FRAMING

SPECIAL INSPECTION REQUIRED	VERIFICATION AND INSPECTION TASK	SPECIAL INSPECTOR QCI	SPECIAL INSPECTOR QAI	REFERENCE STANDARD	IBC REFERENCE
YES	1. VERIFY FABRICATED STEEL IS IN COMPLIANCE WITH THE SHOP DRAWINGS	P	O	AISC 360-10 N5.7	1705.2.1
YES	2. VERIFY ERECTED STEEL IS IN COMPLIANCE WITH THE ERECTION DRAWINGS	P	O		
YES	3. INSPECTION DURING PLACEMENT OF ANCHOR RODS AND OTHER EMBEDMENTS SUPPORTING STRUCTURAL STEEL FOR COMPLIANCE WITH THE CONTRACT DOCUMENTS	-	P		
YES	4. VERIFY DIAMETER, GRADE, TYPE AND LENGTH OF THE ANCHOR ROD OR EMBEDDED ITEM AND THE EXTENT OR DEPTH OF EMBEDMENT INTO CONCRETE PRIOR TO PLACEMENT OF CONCRETE	-	P		

NOTES:

1. QCI = FABRICATOR'S OR ERECTOR'S QUALITY CONTROL INSPECTOR RESPONSIBLE FOR WORK PERFORMED IS IN COMPLIANCE WITH THE SHOP DRAWINGS, ERECTION DRAWINGS, REFERENCE SPECIFICATIONS, CODES AND STANDARDS.
   QAI = THE OWNER'S APPROVED AGENCY'S QUALITY ASSURANCE INSPECTOR (SPECIAL INSPECTOR) RESPONSIBLE FOR INSPECTION OF FABRICATED ITEMS, INSPECTION OF THE ERECTED STEEL SYSTEM, REVIEW TEST REPORTS AND CERTIFICATIONS, ITEMS NOTED IN THE TABLE ABOVE, AND FURNISHES INSPECTIONS, REPORTS, AND NONDESTRUCTIVE TESTING (NDT) REPORTS.
   O = OBSERVE THESE ITEMS IN A RANDOM BASIS. OPERATIONS NEED NOT BE DELAYED PENDING THESE INSPECTIONS.
   P = PERFORM THE TASK FOR EACH STEEL ELEMENT.
2. THE QAI IS NOT REQUIRED TO INSPECT FABRICATED ITEMS IF THE STEEL FABRICATOR IS DEEMED AN APPROVED FABRICATOR.
3. WHERE A TASK IS NOTED TO BE PERFORMED BY BOTH THE QCI AND QAI, IT IS PERMITTED TO COORDINATE THE INSPECTION FUNCTION BETWEEN THE QCI AND QAI SO THAT THE INSPECTION FUNCTION IS PERFORMED BY ONLY ONE PARTY.
4. AS A MINIMUM, THE DIAMETER, GRADE, TYPE AND LENGTH OF THE ANCHOR RODS OR EMBEDDED ITEM, AND THE EXTENT OR DEPTH OF EMBEDMENT INTO THE CONCRETE SHALL BE VERIFIED PRIOR TO PLACEMENT OF CONCRETE.

VERIFICATION AND INSPECTION OF STRUCTURAL STEEL WELDING

SPECIAL INSPECTION REQUIRED	VERIFICATION AND INSPECTION TASK	SPECIAL INSPECTOR QCI	SPECIAL INSPECTOR QAI	REFERENCE STANDARD	IBC REFERENCE
	1. INSPECTION TASK PRIOR TO WELDING:				
YES	a. WELDING PROCEDURES SPECIFICATIONS (WPS) AVAILABLE	P	P	AISC 360-10 TABLE N5.4-1, AWS D1.1	1705.2.1
YES	b. MANUFACTURER CERTIFICATIONS FOR WELDING CONSUMABLES AVAILABLE	P	P		
YES	c. MATERIAL IDENTIFICATION (TYPE/GRADE)	O	O		
YES	d. WELDER IDENTIFICATION SYSTEM	O	O		
YES	e. FIT-UP OF GROOVE WELDS (INCLUDING JOINT GEOMETRY) 1) JOINT PREPARATION 2) DIMENSIONS (ALIGNMENT, ROOT OPENING, ROOT FACE, BEVEL) 3) CLEANLINESS (CONDITION OF STEEL SURFACES) 4) TACKING (TACK WELD QUALITY AND LOCATION) 5) BACKING TYPE AND FIT (IF APPLICABLE)	O	O		
YES	f. CONFIGURATION AND FINISH OF ACCESS HOLES	O	O		
YES	g. FIT-UP OF FILLET WELDS 1) DIMENSIONS (ALIGNMENT, GAPS AT ROOT) 2) CLEANLINESS (CONDITION OF STEEL SURFACES) 3) TACKING (TACK WELD QUALITY AND LOCATION)	O	O		
YES	h. CHECK WELDING EQUIPMENT	O	-		
	2. INSPECTION TASK DURING WELDING:				
YES	a. USE OF QUALIFIED WELDERS	O	O	AISC 360-10 TABLE N5.4-2, AWS D1.1	1705.2.1
YES	b. CONTROL AND HANDLING OF WELDING CONSUMABLES 1) PACKING 2) EXPOSURE CONTROL	O	O		
YES	c. NO WELDING OVER CRACKED TACK WELDS	O	O		
YES	d. ENVIRONMENTAL CONDITIONS 1) WIND SPEED WITHIN LIMITS 2) PRECIPITATION AND TEMPERATURE	O	O		
YES	e. WPS FOLLOWED 1) SETTINGS ON WELDING EQUIPMENT 2) TRAVEL SPEED 3) SELECTED WELDING MATERIALS 4) SHIELDING GAS TYPE/FLOW RATE 5) PREHEAT APPLIED 6) INTERPASS TEMPERATURE MAINTAINED (MINMAX) 7) PROPER POSITION (F,V,H,OH)	O	O		
YES	f. WELDING TECHNIQUES 1) INTERPASS AND FINAL CLEANING 2) EACH PASS WITHIN PROFILE LIMITATIONS 3) EACH PASS MEETS QUALITY REQUIREMENTS	O	O		
	3. INSPECTION TASK AFTER WELDING:				
YES	a. WELDS CLEANED	O	O	AISC 360-10 TABLE N5.4-3, AWS D1.1	1705.2.1
YES	b. SIZE, LENGTH AND LOCATION OF WELDS	P	P		
YES	c. WELD MEET VISUAL ACCEPTANCE CRITERIA 1) CRACK PROHIBITION 2) WELD/BASE-METAL FUSION 3) CRATER CROSS SECTION 4) WELD PROFILES 5) WELD SIZE 6) UNDERCUT 7) POROSITY	P	P		
YES	d. ARC STRIKES	P	P		
YES	e. k-AREA	P	P		
YES	f. REMOVED AND WELD TABS REMOVED	P	P		
YES	g. REPAIR ACTIVITIES	P	P		
YES	h. DOCUMENT ACCEPTANCE OR REJECTION OF WELD JOINT OR MEMBER	P	P		

NOTES:

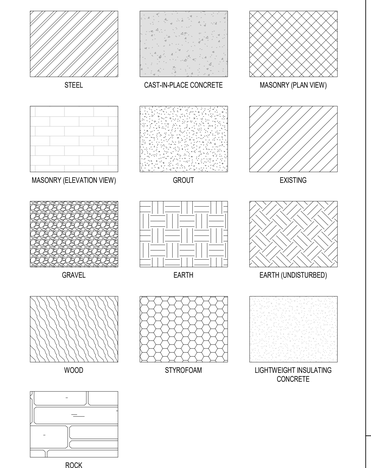
1. QCI = FABRICATOR'S OR ERECTOR'S QUALITY CONTROL INSPECTOR RESPONSIBLE FOR WORK PERFORMED IS IN COMPLIANCE WITH THE SHOP DRAWINGS, ERECTION DRAWINGS, REFERENCE SPECIFICATIONS, CODES AND STANDARDS.
   QAI = THE OWNER'S APPROVED AGENCY'S QUALITY ASSURANCE INSPECTOR (SPECIAL INSPECTOR) RESPONSIBLE FOR INSPECTION OF FABRICATED ITEMS, INSPECTION OF THE ERECTED STEEL SYSTEM, REVIEW TEST REPORTS AND CERTIFICATIONS, ITEMS NOTED IN THE TABLE ABOVE, AND FURNISHES INSPECTIONS, REPORTS, AND NONDESTRUCTIVE TESTING (NDT) REPORTS.
   O = OBSERVE THESE ITEMS IN A RANDOM BASIS. OPERATIONS NEED NOT BE DELAYED PENDING THESE INSPECTIONS.
   P = PERFORM THE TASK FOR EACH STEEL ELEMENT.
2. THE QAI IS NOT REQUIRED TO INSPECT FABRICATED ITEMS IF THE STEEL FABRICATOR IS DEEMED AN APPROVED FABRICATOR.
3. WHERE A TASK IS NOTED TO BE PERFORMED BY BOTH THE QCI AND QAI, IT IS PERMITTED TO COORDINATE THE INSPECTION FUNCTION BETWEEN THE QCI AND QAI SO THAT THE INSPECTION FUNCTION IS PERFORMED BY ONLY ONE PARTY.
4. ALL FIELD WELDING, COMPLETE, AND PARTIAL JOINT PENETRATION WELDS SHALL BE SUBJECTED TO NONDESTRUCTIVE TESTING (NDT) IN ACCORDANCE WITH AWS D1.1. ACCEPTANCE CRITERIA SHALL BE IN ACCORDANCE WITH THE AWS D1.1.
5. ACCEPTABLE NONDESTRUCTIVE TESTING (NDT) METHODS AS PER THE AISC 360 SPECIFICATION ARE AS FOLLOWS:
   a. ULTRASONIC TESTING (UT)
   b. MAGNETIC PARTICLE TESTING (MT)
   c. PENETRANT TESTING (PT)
   d. RADIOGRAPHIC TESTING (RT)
6. THE SPECIAL INSPECTOR SHALL BE RESPONSIBLE FOR DETERMINING THE APPROPRIATE NDT METHOD FOR EACH WELD.
7. ALL NOT PERFORMED SHALL BE DOCUMENTED INTO A REPORT AND SHALL INCLUDE THE FOLLOWING:
   a. LOCATION OF THE TESTED WELD
   b. PIECE MARK
   c. LOCATION OF THE PIECE

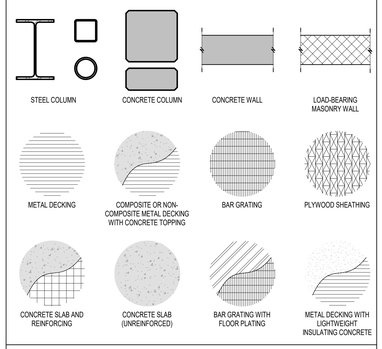
VERIFICATION AND INSPECTION OF STRUCTURAL STEEL BOLTING

SPECIAL INSPECTION REQUIRED	VERIFICATION AND INSPECTION TASK	SPECIAL INSPECTOR QCI	SPECIAL INSPECTOR QAI	REFERENCE STANDARD	IBC REFERENCE
	1. INSPECTION TASK PRIOR TO BOLTING:				
YES	a. MANUFACTURER'S CERTIFICATIONS AVAILABLE FOR FASTENER MATERIALS	O	P	AISC 360-10 TABLE N5.6-1	1705.2.1
YES	b. FASTENERS MARKED IN ACCORDANCE WITH ASTM REQUIREMENTS	O	O		
YES	c. PROPER FASTENERS SELECTED FOR THE JOINT DETAIL (GRADE, TYPE, BOLT LENGTH IF THREADS ARE TO BE EXCLUDED FROM SHEAR PLANE)	O	O		
YES	d. PROPER BOLTING PROCEDURE SELECTED FOR JOINT DETAIL	O	O		
YES	e. CONNECTING ELEMENTS, INCLUDING THE APPROPIATE FAYING SURFACE CONDITION AND HOLE PREPARATION, IF SPECIFIED, MEET APPLICABLE REQUIREMENTS	O	O		
YES	f. PRE-INSTALLATION VERIFICATION TESTING BY INSTALLATION PERSONNEL OBSERVED AND DOCUMENTED FOR FASTENER ASSEMBLIES AND METHODS USED	P	O		
YES	g. PROPER STORAGE PROVIDED FOR BOLTS, NUTS, WASHERS AND OTHER FASTENER COMPONENTS	O	O		
	2. INSPECTION TASK DURING BOLTING:				
YES	a. FASTENER ASSEMBLIES, OF SUITABLE CONDITION, PLACED IN ALL HOLES AND WASHERS (IF REQUIRED) ARE POSITIONED AS REQUIRED	O	O	AISC 360-10 TABLE N5.6-2	1705.2.1
YES	b. JOINT BROUGHT TO THE SNUG-TIGHT POSITION CONDITION PRIOR TO THE PRETENSIONING OPERATION	O	O		
YES	c. FASTENER COMPONENT NOT TURNED BY THE WRENCH PREVENTED FROM ROTATING	O	O		
YES	d. FASTENERS ARE PRETENSIONED IN ACCORDANCE WITH THE RCSC SPECIFICATION, PROGRESSING SYSTEMATICALLY FROM THE MOST RIGID POINT TOWARD TH

SYMBOLS AND ANNOTATIONS:

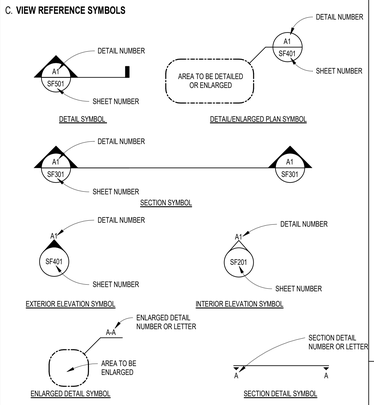
A. MATERIAL IDENTIFICATION SYMBOLS



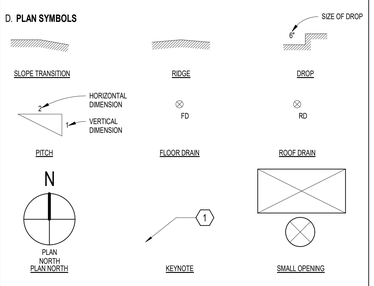


B. SYMBOLIC LINEWORK

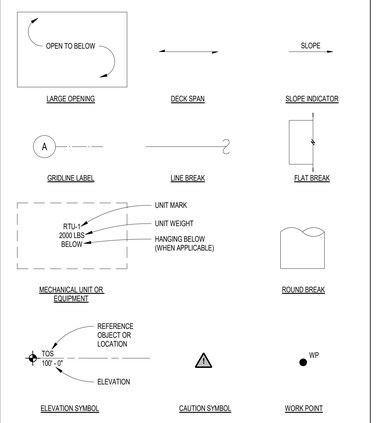
C. VIEW REFERENCE SYMBOLS



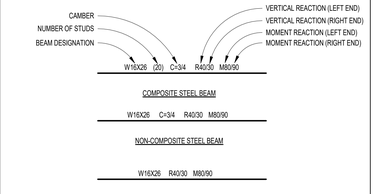
D. PLAN SYMBOLS



SYMBOLS AND ANNOTATIONS (CONT):

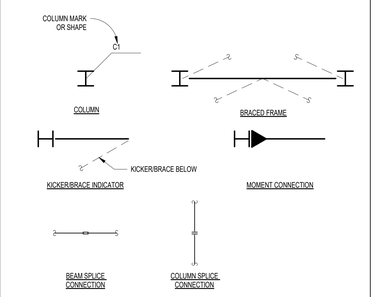


E. STEEL ANNOTATIONS

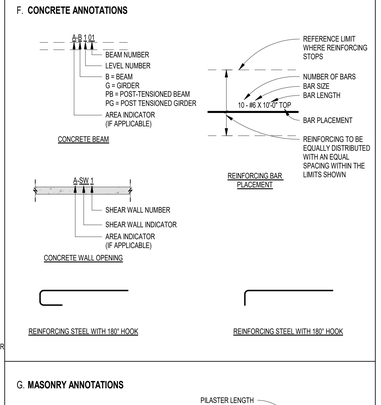


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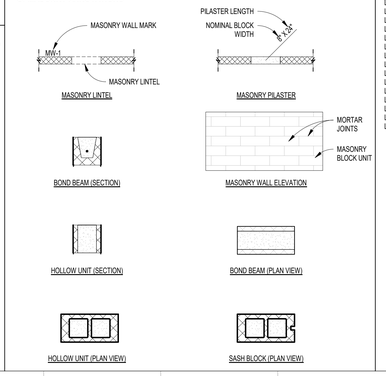
1. IF ONE REACTION IS SPECIFIED ON THE BEAM MEMBER, THAT INDICATES THE REACTION IS APPLIED TO BOTH SIDES.



F. CONCRETE ANNOTATIONS



G. MASONRY ANNOTATIONS



ABBREVIATIONS:

A	
AB	ANCHOR BOLT
ACI	AMERICAN CONCRETE INSTITUTE
ADDL	ADDITIONAL
ADH	ADHESIVE
A/E	ARCHITECT/ENGINEER
AFF	ABOVE FINISH FLOOR
AHR	ANCHOR
AHU	AIR HANDLING UNIT
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
AISI	AMERICAN IRON AND STEEL INSTITUTE
ALT	ALTERNATE
ALUM	ALUMINUM
AMSL	ABOVE MEAN SEA LEVEL
ANG	ANGLE
ANG BM	ANGLE BEAM
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
APA	AMERICAN PLYWOOD ASSOCIATION
ARCHL	ARCHITECTURAL
ASCE	AMERICAN SOCIETY OF CIVIL ENGINEERS
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
AWS	AMERICAN WELDING SOCIETY
B	
BC	BOTTOM CHORD
BM	BEAM
BO	BOTTOM OF
BOA	BOTTOM OF ANGLE
BOC	BOTTOM OF CONCRETE
BOF	BOTTOM OF FOOTING
BOM	BOTTOM OF MASONRY
BOS	BOTTOM OF STEEL
BOT	BOTTOM
BPL	BASE PLATE
BRA	BRACE
BRCG	BRACING
BRDG	BRIDGING
BRG	BEARING
BRG PL	BEARING PLATE
BTWN	BETWEEN
C	
C	CAMBER
CANTIL	CANTILEVER
CB	CONCRETE BEAM
CBF	CONCENTRIC BRACED FRAME
CHFR	CHAMFER
CIP	CAST-IN-PLACE
CJ	CONSTRUCTION/CONTROL/CONTRACTION JOINT
CJP	COMPLETE JOINT PENETRATION
CL	CENTERLINE
CMU	CONCRETE MASONRY UNIT
CONC	CONCRETE
CONNX	CONNECTION
CONT	CONTINUOUS
COV	COVER
CTR	CENTER
C&C	COMPONENTS AND CLADDING
D	
DBA	DEFORMED BAR ANCHOR
DBL	DOUBLE
DBP	DOUBLE PITCHED
DIA	DIAMETER
DIAG	DIAGONAL
DIAPH	DIAPHRAGM
DIM	DIMENSION
DL	DEAD LOAD
DN	DOWN
DP	DRILLED PIER
DWL	DOWEL
E	
EA	EACH
EBF	ECCENTRIC BRACED FRAME
EF	EACH FACE
EJ	EXPANSION JOINT
EL	ELEVATION
ELEV	ELEVATOR
EMBED	EMBEDMENT/EMBEDDED
ENGR	ENGINEER
EOD	EDGE OF DECK
EOS	EDGE OF SLAB
EPL	EMBEDDED PLATE
EPS	EXPANDED CELLULAR POLYSTYRENE
EQ	EQUAL
EQUIP	EQUIPMENT
EQUIV	EQUIVALENT
ES	EQUALLY SPACED
ETC	AND SO FORTH
EW	EACH WAY
EXIST	EXISTING
EXP	EXPANSION
EXT	EXTERIOR
F	
f'c	28-DAY CONCRETE COMPRESSIVE STREGNTH
f'm	28-DAY MASONRY COMPRESSIVE STREGNTH
FD	FLOOR DRAIN
FFE	FINISH FLOOR ELEVATION
FGE	FINISH GRADE ELEVATION
FH	FLOOR HATCH
FIN	FINISH
FOS	FACE OF STUD
FOUND	FOUNDATION
FOW	FACE OF WALL
FRC	FIBER REINFORCED CONCRETE
FS	FLOOR SINK
FT	FEET
FTG	FOOTING
FV	FIELD VERIFY
G	
GA	GAUGE
GALV	GALVANIZED
GB	GRADE BEAM
GEN	GENERAL
GL	GRIDLINE
GLU LAM	GLUED LAMINATED WOOD
GR	GRADE
GRTG	GRATING
H	
HC	HOLLOW CORE
HCA	HEADED CONCRETE ANCHOR
HDG	HOT-DIPPED GALVANIZED
HDR	HEADER
HGR	HANGER
HI	HIGH
HLDN	HOLDOWN
HORIZ	HORIZONTAL
HS	HEADED STUD
HSA	HEADED STUD ANCHOR
HSS	HOLLOW STRUCTURAL STEEL
HST	HOIST
HT	HEIGHT
HWH	HEX WASHER HEAD
I	
IBC	INTERNATIONAL BUILDING CODE
IF	INSIDE FACE
IMF	INTERMEDIATE MOMENT FRAME
IN	INCHES
INFO	INFORMATION
INT	INTERIOR
J	
JST	JOIST
JT	JOINT
K	
K	KIPS
KLF	KIPS PER LINEAR FOOT
KPL	KICK PLATE
KSF	KIPS PER SQUARE FOOT
KSI	KIPS PER SQUARE INCH
L	
L	ANGLE
LAD	LADDER
LATL	LATERAL
LB(S)	POUND(S)
Ld	TENSION DEVELOPMENT LENGTH
Ldc	COMPRESSION DEVELOPMENT LENGTH
Ldh	HOOK DEVELOPMENT LENGTH
Ldm	MASONRY DEVELOPMENT LENGTH
LG	LONG
LL	LIVE LOAD
LLBB	LONG LENGTH BACK TO BACK
LLH	LONG LEG HORIZONTAL
LLV	LONG LENGTH VERTICAL
LO	LOW
LONG	LONGITUDINAL
LSH	LONG SIDE HORIZONTAL
LSLP	LONG-SLOTTED HOLE PARALLEL
LSLT	LONG-SLOTTED HOLE TRANSVERSE
LSV	LONG SIDE VERTICAL
LT GA	LIGHT GAUGE
LWC	LIGHTWEIGHT CONCRETE
LWIC	LIGHTWEIGHT INSULATING CONCRETE

M	
M	MOMENT
MAS	MASONRY
MATL	MATERIAL
MAUNF	MANUFACTURER
MAX	MAXIMUM
MC	MOMENT CONNECTION
MCJ	MASONRY CONTROL JOINT
MECH	MECHANICAL
MEZZ	MEZZANINE
MID	MIDDLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MK	MARK
MTL	METAL
MWFRS	MAIN WIND FORCE RESISTING SYSTEM
N	
NF	NEAR FACE
NIC	NOT IN CONTRACT
NIS	NOT IN SCOPE
NS	NEAR SIDE
NTS	NOT TO SCALE
NWC	NORMAL/WEIGHT CONCRETE
O	
OC	ON CENTER
OF	OUTSIDE FACE
OMF	ORDINARY MOMENT FRAME
OSB	ORIENTED STRAND BOARD
OPH	OPPOSITE HAND
OPNG	OPENING
OPP	OPPOSITE
OVH	OVERHANG
OVS	OVERSIZED HOLE
P	
PAF	POWDER-ACTUATED FASTENER
PAR	PARALLEL
PDF	POWER-DRIVEN FASTENER
PED	PEDESTAL
PERP	PERPENDICULAR
PCC	PRECAST CONCRETE
PCF	POUNDS PER CUBIC FOOT
PCI	POUNDS PER CUBIC INCH
PCY	POUNDS PER CUBIC YARD
PIL	PILASTER
PJP	PARTIAL JOINT PENETRATION
PL	PLATE
PLF	POUNDS PER LINEAR FOOT
PLYWD	PLYWOOD
PREFAB	PREFABRICATED
PRELIM	PRELIMINARY
PSF	POUNDS PER SQUARE FOOT
PT	POST-TENSIONED
PTI	POST-TENSIONING INSTITUTE
PW	PUDDLE WELD
R	
R	REACTION
RAD	RADIUS
RBS	REDUCED BEAM SECTION
RC	REINFORCED CONCRETE
REF	REFERENCE
REINF	REINFORCING
REM	REMAINDER
REQD	REQUIRED
REV	REVISION
RD	ROOF DRAIN
REBAR	REINFORCING STEEL BARS
RH	ROOF HATCH
RLL	ROOF LIVE LOAD
RND	ROUND
RTU	ROOF TOP UNIT
S	
SC	SLIP-CRITICAL
SCHED	SCHEDULED
SDI	STEEL DECK INSTITUTE
SDL	SUPERIMPOSED DEAD LOAD
SDS	SELF-DRILLING SCREWS
SECT	SECTION
SHT	SHEET
SIM	SIMILAR
SIP	STRUCTURAL INSULATED PANEL
SJI	STEEL JOIST INSTITUTE
SL	SNOW LOAD
SLBB	SHORT LEG BACK TO BACK
SMP	SUMP PUMP
SMS	SHEET METAL SCREW
SOG	SLAB-ON-GRADE
SP	SOUTHERN PINE
SPA	SPACING
SMF	SPECIAL MOMENT FRAME
SSMA	STEEL STUD MANUFACTURERS ASSOCIATION
SSLP	SHORT SLOTTED HOLE PARALLEL
SSLT	SHORT SLOTTED HOLE TRANSVERSE
SST	STAINLESS STEEL
STD	STANDARD
STIFF	STIFFENER
STIRR	STIRRUP
STL	STEEL
STRUCT	STRUCTURAL
SW	SHEAR WALL
SYMM	SYMMETRICAL
T	
T&B	TOP AND BOTTOM
T&G	TONGUE AND GROOVE
TCX	TOP CHORD EXTENSION
TEMP	TEMPERATURE
THD	THREADED
THK	THICK
THRU	THROUGH
TO	TOP OF
TOA	TOP OF ANGLE
TOB	TOP OF BEAM
TOC	TOP OF CONCRETE
TOF	TOF OF FOOTING
TOJ	TOP OF JOIST
TOM	TOP OF MASONRY
TOP	TOP OF PARAPET
TOS	TOP OF STEEL
TOT	TOP OF TRUSS
TOW	TOP OF WALL
TRANS	TRANSVERSE
TRNBKL	TURNBUCKLE
TYP	TYPICAL
U	
UNO	UNLESS NOTED OTHERWISE
V	
VERT	VERTICAL
VNR	VENEER
VR	VAPOR RETARDER
W	
WD	WOOD
WF	WALL FOOTING
WL	WIND LOAD
WP	WORKING POINT
WS	WATER STOP
WT	WEIGHT
WWF	WELDED WIRE FABRIC
WWM	WELDED WIRE MESH
WWR	WELDED WIRE REINFORCING
X	
XBRA	CROSSBRACING
XPS	EXTRUDED POLYSTYRENE
XS	EXTRA STRONG
XXS	DOUBLE EXTRA STRONG
SYMBOLS	
@	AT
&	AND
#	NUMBER
2L	DOUBLE ANGLE
°	DEGREES
Ø	DIAMETER
w/	WITH
'	FEET
"	INCHES
<	LESS THAN
>	GREATER THAN
≤	LESS THAN OR EQUAL TO
≥	GREATER THAN OR EQUAL TO
+	POSITIVE/PLUS
-	NEGATIVE/MINUS
±	PLUS OR MINUS
X	BY

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HC Biosafety Lab

County of Hidalgo
S 25th Ave, Edinburg, TX 78542

No.	Description	Date

PROJECT No.: 20030
ISSUE DATE: 05/03/2021
DRAWN BY: JC
CHECKED BY: Checker

Sheet Name

SYMBOLS AND ANNOTATIONS

Sheet Number

SG005

Project Status:

100% SCHEMATIC DESIGN

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A1 | LIVE LOAD PLAN
1/4" = 1'-0"

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TEXAS REGISTRATION NO.
Engineer: 83301
Architect: 16780

HC Biosafety Lab

County of Hidalgo
S 25th Ave, Edinburg, TX 78542

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PROJECT No.: 20030
ISSUE DATE: 05/03/2021
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LIVE LOAD PLAN

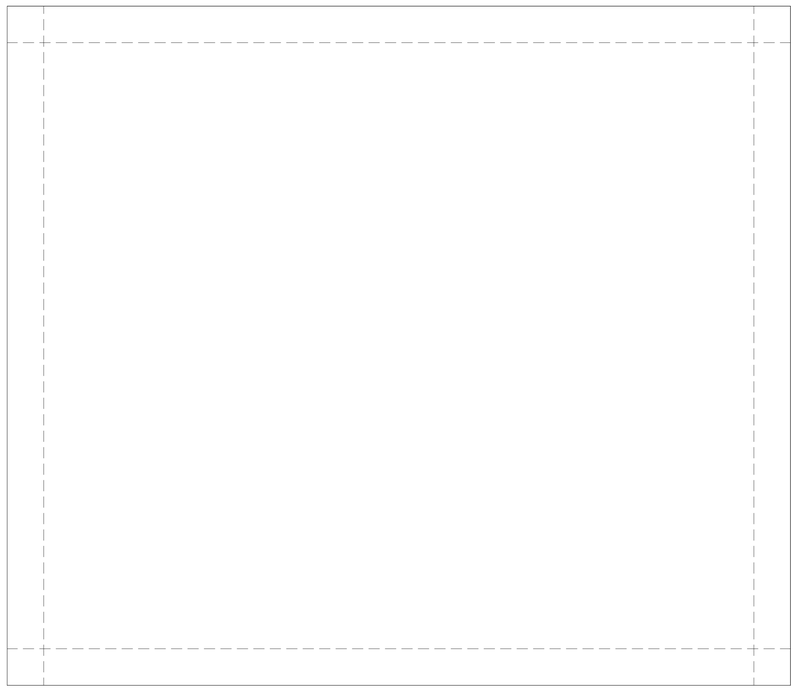
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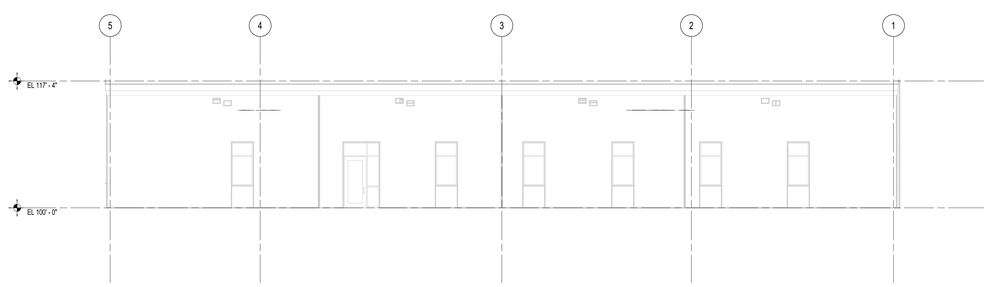
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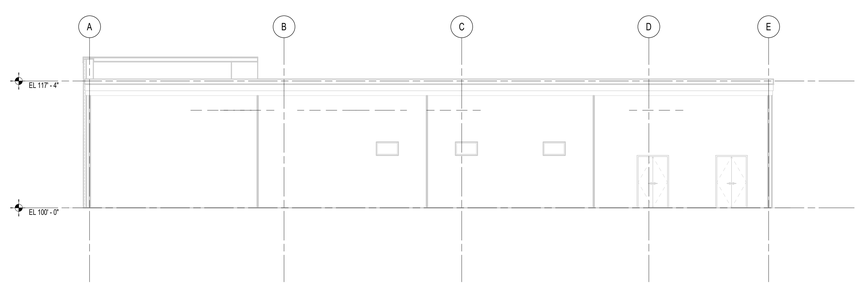


J1 WIND LOAD DIAGRAM
1/8" = 1'-0"

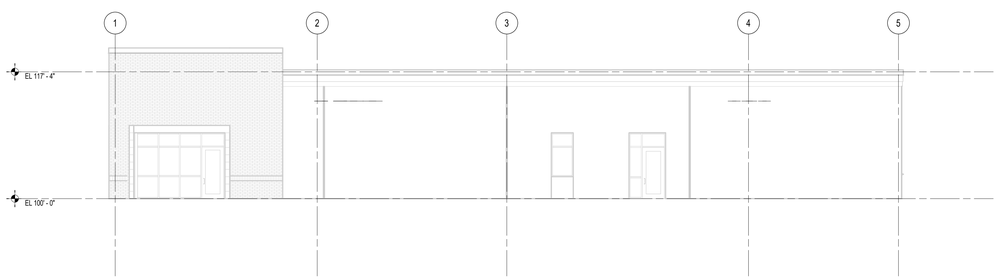
A1
SG007



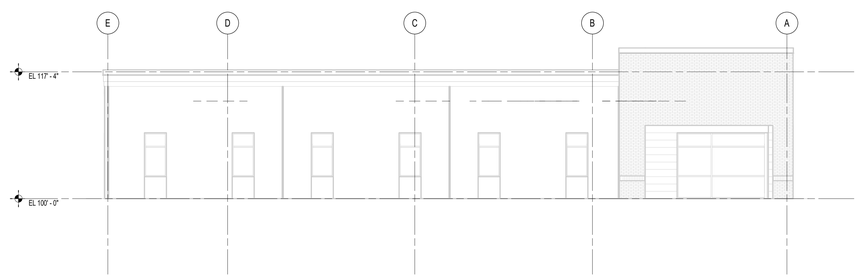
E1 NORTH ELEVATION
1/8" = 1'-0"



E10 EAST ELEVATION
1/8" = 1'-0"



A1 SOUTH ELEVATION
1/8" = 1'-0"



A10 WEST ELEVATION
1/8" = 1'-0"

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ELI ROCHOA, P.E., AIA
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HC Biosafety Lab

County of Hidalgo
S 25th Ave, Edinburg, TX 78542

No.	Date	Description

PROJECT No.: 20030
ISSUE DATE: 05/03/2021
DRAWN BY: JC
CHECKED BY: Checker

Sheet Name

WIND LOAD DIAGRAM

Sheet Number

SG007

Project Status:

100% SCHEMATIC DESIGN

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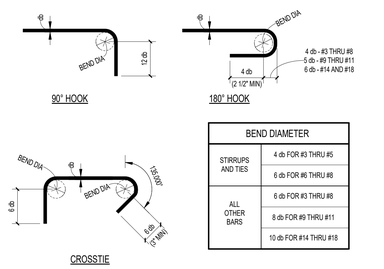
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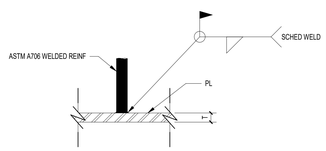
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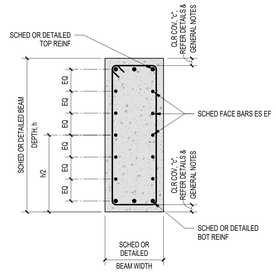
BEND DIAMETER	
STIRRUPS AND TIES	4 db FOR #3 THRU #5
	6 db FOR #6 THRU #8
ALL OTHER BARS	6 db FOR #3 THRU #8
	8 db FOR #9 THRU #11
	10 db FOR #14 THRU #18

D1 | TYPICAL STANDARD HOOKS AND BENDS
NTS



DEVELOPMENT OF WELDABLE REINFORCING GRADE 60 ASTM A706 REINFORCING, E70 ELECTRODE		
BAR SIZE	NOMINAL WELD SIZE	MINIMUM PLATE THICKNESS, T
#3	1/4"	1/4"
#4	5/16"	1/4"
#5	3/8"	1/4"
#6	7/16"	5/16"
#7	1/2"	3/8"
#8	9/16"	7/16"
#9	5/8"	1/2"
#10	11/16"	9/16"
#11	3/4"	5/8"

D5 | TYPICAL DEVELOPMENT OF WELDABLE REINFORCING
NTS

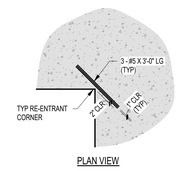


BEAM DEPTH	BARS EACH FACE	
	c < 3"	c ≥ 3"
36" ≤ h ≤ 42"	4 - #5	4 - #5
42" < h ≤ 48"	4 - #5	4 - #5
48" < h ≤ 54"	5 - #5	5 - #5
54" < h ≤ 60"	6 - #5	5 - #5
60" < h ≤ 66"	6 - #5	6 - #5
66" < h ≤ 72"	7 - #5	6 - #5
72" < h ≤ 78"	7 - #5	7 - #5
78" < h ≤ 84"	8 - #5	7 - #5
84" ≤ h ≤ 90"	8 - #5	8 - #5
90" < h ≤ 96"	9 - #5	8 - #5

NOTES:

1. FACE BARS ARE REQUIRED FOR ALL CONCRETE BEAMS GREATER THAN OR EQUAL TO 36". PROVIDE FACE BARS AS SCHEDULED UNLESS NOTED OR DETAILED OTHERWISE.
2. SCHEDULED FACE BARS APPLY TO EACH FACE OF THE BEAM.
3. FACE BARS SHALL BE CONTINUOUS THROUGH THE SPAN.
4. LAP BOTTOM FACE BARS (BELOW N2) WITH CLASS B LAP SPLICE AT SUPPORTS. SIMILARLY, LAP TOP FACE BARS, INCLUDING CENTER BARS (ABOVE OR EQUAL TO N/2), WITH A CLASS B LAP SPLICE AT MIDSPAN. REFERENCE -/--- FOR BAR PLACEMENT DIAGRAM FOR ADDITIONAL INFORMATION.
5. SPACE FACE BARS EVENLY EACH FACE BETWEEN TOP AND BOTTOM REINFORCEMENT.
6. REFERENCE "REINFORCED CONCRETE" GENERAL NOTES AND DETAILS FOR APPLICABLE CLEAR COVER.

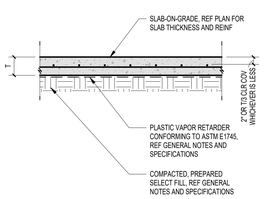
G1 | TYPICAL FACE BAR PLACEMENT SCHEDULE FOR CONCRETE BEAMS GREATER THAN OR EQUAL TO 3 FEET
NTS



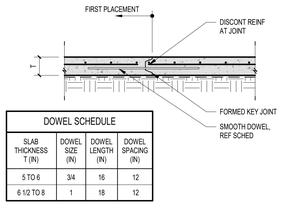
NOTES:

1. DETAIL APPLIES TO CONCRETE FOUNDATIONS, CONCRETE FLOORS, AND CONCRETE FILL ON METAL DECKING.
2. DESIGN REINFORCING IS NOT SHOWN FOR CLARITY.

A1 | TYPICAL CONCRETE RE-ENTRANT CORNER REINFORCING
NTS

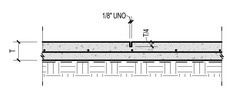


A4 | TYPICAL SLAB-ON-GRADE PROFILE
NTS



DOWEL SCHEDULE			
SLAB THICKNESS T (IN)	DOWEL SIZE (IN)	DOWEL LENGTH (IN)	DOWEL SPACING (IN)
5 TO 6	3/4	16	12
6 1/2 TO 8	1	18	12

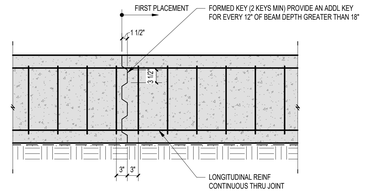
A7 | TYPICAL SLAB-ON-GRADE CONSTRUCTION JOINT
NTS



NOTES:

1. CONTRACT JOINTS SHALL BE SPACED NOT FURTHER THAN 15 FEET EACH WAY.
2. JOINT PATTERN SHALL BE NEARLY SQUARE.

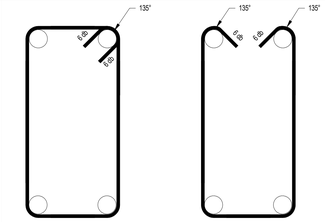
A10 | TYPICAL SLAB-ON-GRADE CONTRACTION JOINTS
NTS



NOTES:

1. LOCATIONS NOT SHOWN ON THE DRAWINGS SHALL BE APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION.
2. ALL FORMED KEYS SHALL BE HORIZONTAL.

A13 | TYP GRADE BEAM CONSTRUCTION JOINTS
NTS



NOTE:

1. REFERENCE D1/SG008 FOR TYPICAL REINFORCING BAR BENDS.

A17 | TYPICAL STIRRUPS
NTS

No.	Description	Date

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Sheet Name

TYPICAL CONCRETE DETAILS

Sheet Number

SG008

Project Status:

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TENSION DEVELOPMENT AND LAP SPLICE LENGTHS
GRADE 60 REINFORCEMENT, NORMALWEIGHT CONCRETE

BAR SIZE	LAP CLASS	f'c = 3000 PSI		f'c = 3500 PSI		f'c = 4000 PSI		f'c = 4500 PSI		f'c = 5000 PSI		f'c = 6000 PSI	
		TOP BARS	OTHER BARS	TOP BARS	OTHER BARS	TOP BARS	OTHER BARS	TOP BARS	OTHER BARS	TOP BARS	OTHER BARS	TOP BARS	OTHER BARS
#3	A	22	17	20	16	19	15	18	14	17	13	16	12
	B	29	23	26	21	25	20	24	19	23	17	21	16
#4	A	29	22	27	21	25	19	24	18	23	17	21	16
	B	38	29	36	28	33	25	32	24	30	23	28	21
#5	A	36	28	33	26	31	24	30	23	28	22	26	20
	B	47	37	43	34	41	32	39	30	37	29	34	26
#6	A	43	33	40	31	37	29	35	27	34	26	31	24
	B	56	43	52	41	49	38	46	36	45	34	41	32
#7	A	63	48	58	45	54	42	51	40	49	38	45	34
	B	82	63	76	59	71	55	67	52	64	50	59	45
#8	A	72	55	66	51	62	48	59	45	56	43	51	39
	B	94	72	86	67	81	63	77	59	73	56	67	51
#9	A	81	62	75	58	70	54	66	51	63	48	57	44
	B	106	81	98	76	91	71	86	67	82	63	75	58
#10	A	90	69	83	64	78	60	73	56	69	54	63	49
	B	117	90	108	84	102	78	95	73	90	71	82	64
#11	A	98	76	91	70	85	66	80	62	76	59	70	54
	B	128	99	119	91	111	86	104	81	99	77	91	71
#14	A	125	96	116	89	108	84	102	79	97	75	89	68
	B	163	125	151	116	141	110	133	103	127	98	116	89
#18	A	161	124	149	115	139	107	131	101	125	96	114	88
	B	210	162	194	150	181	140	171	132	163	125	149	115

NOTES:

1. ALL DEVELOPMENT AND LAP SPLICE LENGTHS ARE IN INCHES.
2. THE TENSION DEVELOPMENT LENGTH (Ld) IS EQUAL TO A "CLASS A" LAP SPLICE LENGTH.
3. "TOP BARS" INDICATES HORIZONTAL BARS WITH 12" OR MORE OF FRESH CONCRETE CAST BELOW THE BARS BEING DEVELOPED OR SPLICED.
4. "OTHER BARS" PERTAIN TO ALL OTHER CONDITIONS THAT DO NOT SATISFY THE CONDITIONS OF "TOP BARS."
5. FOR EPOXY-COATED BARS, MULTIPLY THE TABULATED BY THE FOLLOWING FACTORS: (db = BAR DIAMETER)

   TOP BARS:
   1.3 FOR BAR COVER < 3db
   1.2 FOR BAR COVER > 3db

   OTHER BARS:
   1.5 FOR BAR COVER < 3db
   1.2 FOR BAR COVER > 3db

6. FOR LIGHTWEIGHT CONCRETE, MULTIPLY TABULATED VALUES BY 1.33.
7. EPOXY AND LIGHTWEIGHT CONCRETE FACTORS ARE MULTIPLICATIVE:

   SPLICE LENGTH = (TABULATED VALUE) x (EPOXY-COATED FACTOR) x (LIGHTWEIGHT CONCRETE FACTOR)

8. WHEN LAP SPLICING BARS OF DIFFERENT SIZES, THE LAP LENGTH IS DETERMINED BY THE SMALLER BAR BUT NOT LESS THAN THE "CLASS A" SPLICE LENGTH OF THE LARGER BAR.

J1 | TENSION DEVELOPMENT AND LAP SPLICE LENGTHS SCHEDULE
NTS

COMPRESSION DEVELOPMENT AND LAP SPLICE LENGTHS
GRADE 60 REINFORCEMENT, NORMALWEIGHT CONCRETE

BAR SIZE	COMPRESSION DEVELOPMENT LENGTH (Ldc)						LAP SPLICE
	f'c = 3000 PSI	f'c = 3500 PSI	f'c = 4000 PSI	f'c = 4500 PSI	f'c = 5000 PSI	f'c = 6000 PSI	
#3	9	8	8	8	8	8	12
#4	11	11	10	9	9	9	15
#5	14	13	12	12	12	12	19
#6	17	16	15	14	14	14	23
#7	20	18	17	16	16	16	27
#8	22	21	19	18	18	18	30
#9	25	23	22	21	21	21	34
#10	28	26	24	23	23	23	38
#11	31	28	27	25	25	25	42
#14	39	36	34	32	32	32	53
#18	50	46	43	41	41	41	68

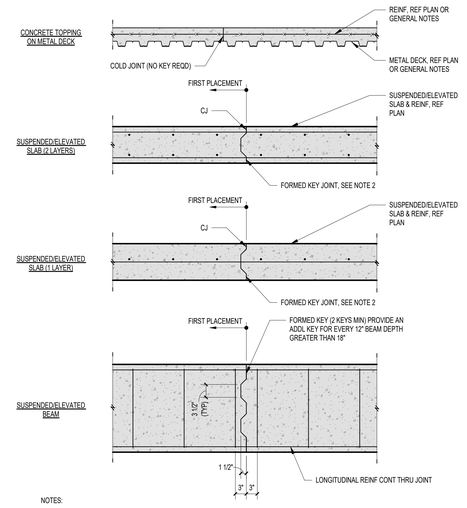
NOTES:

1. ALL DEVELOPMENT AND LAP SPLICE LENGTHS ARE IN INCHES.
2. FOR BARS ENCLOSED IN SPIRALS OR TIES WITH A PITCH OR SPACING NO MORE THAN 4", MULTIPLY THE TABULATED DEVELOPMENT LENGTH (Ldc) BY 0.75.
3. FOR LIGHTWEIGHT CONCRETE, MULTIPLY THE TABULATED DEVELOPMENT LENGTH (Ldc) BY 1.33.
4. SPIRAL/TIE AND LIGHTWEIGHT CONCRETE FACTORS ARE MULTIPLICATIVE:

   Ldc = (TABULATED VALUE) x (SPIRAL/TIE ENCLOSURE FACTOR) x (LIGHTWEIGHT CONCRETE FACTOR)

5. WHEN LAP SPLICING BARS OF DIFFERENT SIZES, THE LAP LENGTH IS DETERMINED BY THE SMALLER BAR BUT NOT LESS THAN THE COMPRESSION DEVELOPMENT LENGTH (Ldc) OF THE LARGER BAR.

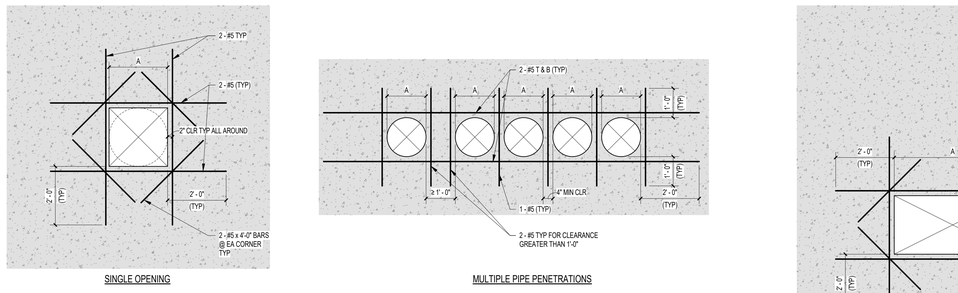
J9 | COMPRESSION DEVELOPMENT AND LAP SPLICE LENGTHS SCHEDULE
NTS



NOTES:

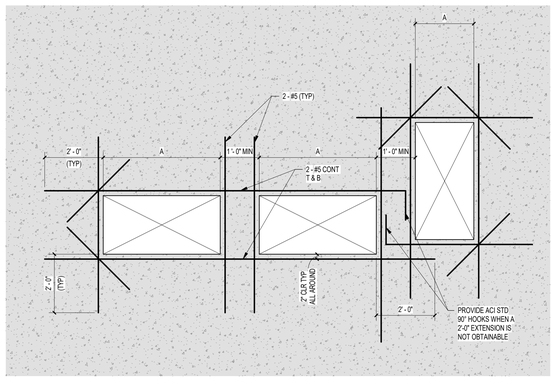
1. LOCATIONS NOT SHOWN ON THE DRAWINGS SHALL BE APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION.
2. FOR SUSPENDED/ELEVATED SLABS WITH A THICKNESS GREATER THAN 12", PROVIDE TWO FORMED KEYS.
3. REFERENCE A13/SG008 AND A7/SG008 FOR GRADE BEAM AND SLAB-ON-GRADE CONSTRUCTION JOINTS.
4. REFERENCE -/--- FOR CONCRETE WALL CONSTRUCTION JOINTS.
5. REFERENCE THE GENERAL NOTES FOR ADDITIONAL INFORMATION.

J15 | TYPICAL CONSTRUCTION JOINTS IN SUSPENDED CONCRETE SLABS AND BEAMS
NTS



SINGLE OPENING

MULTIPLE PIPE PENETRATIONS

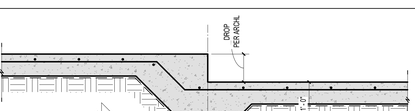


MULTIPLE OPENINGS

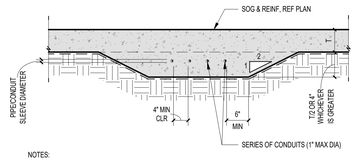
NOTES:

1. COORDINATE OPENING SIZES AND LOCATIONS WITH ARCHITECTURAL AND MECHANICAL/ELECTRICAL/PLUMBING DRAWINGS.
2. DIMENSION "A" APPLIES TO HORIZONTAL DIMENSIONS ON WALLS, OR THE DIRECTION PERPENDICULAR TO THE SPAN OF REINFORCING ON A ONE-WAY SLAB, OR PERPENDICULAR TO THE SPAN OF THE METAL DECK OF COMPOSITE OR NON-COMPOSITE SLAB. DETAIL IS APPLICABLE FOR "A" LESS THAN OR EQUAL TO 4'-0" ("A" ≤ 4'-0").
3. FOR TWO-WAY SLABS AND SLAB-ON-GRADE, THE DIMENSION "A" APPLIES IN BOTH DIRECTIONS WHERE THE MORE STRINGENT REQUIREMENTS APPLY.
4. OPENINGS OR GROUPS OF OPENINGS LESS THAN OR EQUAL TO 10" DO NOT REQUIRE ADDITIONAL REINFORCEMENT.
5. TYPICAL REINFORCING NOT SHOWN FOR CLARITY.

D1 | TYPICAL OPENINGS IN CONCRETE WALLS, ONE-WAY SLABS, TWO-WAY SLABS, COMPOSITE SLABS, NON-COMPOSITE SLABS, OR SLAB-ON-GRADE
NTS



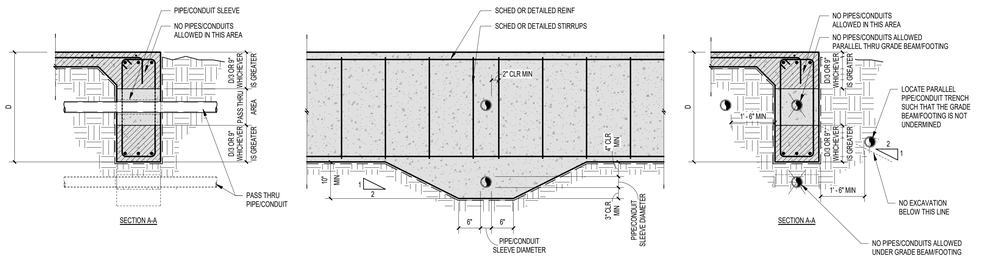
G14 | TYPICAL SLAB-ON-GRADE DROP
NTS



NOTES:

1. CONDUITS ARE NOT ALLOWED TO BE LOCATED WITHIN THE SLAB THICKNESS (T), WHEN T < 6".
2. FOR VERTICAL PENETRATIONS THROUGH THE SLAB, REFERENCE D1/SG009.
3. CONDUITS SHALL NOT BE LARGER THAN 1".
4. SERIES OF CONDUITS SHALL BE SPACED APART TO ALLOW FOR SUFFICIENT AMOUNT OF CONCRETE.
5. CONDUITS SHALL BE FABRICATED AND INSTALLED TO AVOID CUTTING, BENDING OR DISPLACEMENT OF REINFORCING STEEL.
6. ALUMINUM CONDUITS, OR OTHER EMBEDS ARE NOT ALLOWED.
7. FOR PIPING GREATER THAN 1", DETAIL A1/SG009 APPLIES.

D14 | TYPICAL SERIES OF CONDUITS IN A SLAB-ON-GRADE
NTS



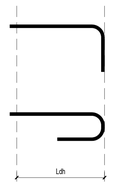
NOTES:

1. CONDUITS OR PIPING ARE NOT ALLOWED TO BE LOCATED IN THE INDICATED AREAS SHOWN IN THIS DETAIL. FAILURE TO COORDINATE ALL TRADES WITH THIS DETAIL WILL RESULT IN REMOVAL OF NON-COMPLIANT ELEMENTS AT THE CONTRACTOR'S EXPENSE.
2. VERTICAL PENETRATIONS THROUGH GRADE BEAMS OR FOOTINGS ARE NOT ALLOWED.
3. PIPING AND CONDUITS SHALL BE FABRICATED AND INSTALLED TO AVOID CUTTING, BENDING OR DISPLACEMENT OF THE REINFORCING STEEL.
4. ALUMINUM PIPING, CONDUITS, OR OTHER OTHER EMBEDS ARE NOT ALLOWED.
5. FOR MULTIPLE PIPES IN SERIES, PROVIDE A 4" CLEARANCE BETWEEN PIPES.

A1 | TYPICAL PIPE/CONDUIT PENETRATIONS IN GRADE BEAMS OR FOOTINGS
NTS

DEVELOPMENT LENGTHS OF STANDARD HOOKS IN TENSION
GRADE 60 REINFORCEMENT, NORMALWEIGHT CONCRETE

BAR SIZE	f'c = 3000 PSI	f'c = 3500 PSI	f'c = 4000 PSI	f'c = 4500 PSI	f'c = 5000 PSI	f'c = 6000 PSI
#3	9	8	8	7	7	6
#4	11	11	10	9	9	8
#5	14	13	12	12	11	10
#6	17	16	15	14	13	12
#7	20	18	17	16	15	14
#8	22	21	19	18	17	16
#9	25	23	22	21	20	18
#10	28	26	24	23	22	20
#11	31	28	27	25	24	22
#14	39	36	34	32	30	28
#18	50	46	43	41	39	35



NOTES:

1. Ldh = DEVELOPMENT LENGTH OF STANDARD HOOKS IN TENSION (INCHES).
2. WHERE 2 1/2" MINIMUM COVER IS PROVIDED NORMAL TO THE PLANE OF THE HOOK AND 2" MINIMUM COVER IS PROVIDED ON THE BAR EXTENSION FOR 90° HOOKS, MULTIPLY THE TABULATED VALUE BY 0.7. (APPLIES TO #11 BARS OR SMALLER)
3. FOR EPOXY-COATED BARS, MULTIPLY THE TABULATED VALUES BY 1.2.
4. FOR LIGHTWEIGHT CONCRETE, MULTIPLY TABULATED VALUES BY 1.33.
5. REFERENCE DETAIL D1/SG008 FOR STANDARD HOOK BENDS.
6. CLEAR COVER, EPOXY, AND LIGHTWEIGHT CONCRETE FACTORS ARE MULTIPLICATIVE WHEN APPLICABLE.

   Ldh = (TABULATED VALUE) x (CLEAR COVER FACTOR) x (EPOXY-COATED FACTOR) x (LIGHTWEIGHT CONCRETE FACTOR)

A2 | DEVELOPMENT LENGTHS OF STANDARD HOOKS IN TENSION SCHEDULE
NTS

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TEXAS REGISTRATION NO.
Engineer: 83351
Architect: 16180

HC Biosafety Lab

County of Hidalgo
S 25th Ave, Edinburg, TX 78542

No.	Date	Description

PROJECT No.: 20030
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Sheet Name

TYPICAL CONCRETE DETAILS

Sheet Number

SG009

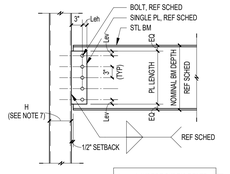
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SINGLE PLATE AT HSS COLUMN CONNECTION CAPACITY

BEAM DEPTH	NO. OF BOLTS PER VERT ROW	PLATE SIZE	WELD SIZE	MAXIMUM REACTION (LRFD) - KIPS			
				3/4" DIA BOLTS		7/8" DIA BOLTS	
				STD	SSLT	STD	SSLT
W8	2	1/4"	3/16"	24	24	26	26
W10	2	1/4"	3/16"	24	24	26	26
W12	3	1/4"	3/16"	38	38	39	39
W14	3	5/16"	1/4"	43	43	48	48
W16	4	5/16"	1/4"	62	62	65	65
W18	5	5/16"	1/4"	81	80	81	81
W21	6	5/16"	1/4"	89	95	97	97
W24	7	5/16"	1/4"	108	111	114	114
W27	7	3/8"	1/4"	-	118	137	137
W30	8	3/8"	1/4"	-	137	157	156
W33	9	3/8"	1/4"	-	155	175	174
W36	10	3/8"	1/4"	-	173	194	192
W40	11	3/8"	1/4"	-	190	212	210
W44	12	3/8"	1/4"	-	208	230	228



Lev = 1 1/4" FOR 3/4" DIA BOLTS
= 1 1/2" FOR 7/8" DIA BOLTS
Leh = 1 1/2" FOR 3/4" DIA BOLTS
= 1 3/4" FOR 7/8" DIA BOLTS

NOTES:

1. PROVIDED REACTION CAPACITIES ARE GIVEN IN KIPS AND AT STRENGTH DESIGN LEVEL USING LOAD-RESISTANCE FACTOR DESIGN (LRFD).
2. ALL BOLTS SHALL BE ASTM A325N.
3. THE SINGLE PLATE SHALL CONFORM TO ASTM A36 (Fy = 36 KSI).
4. WELDING ELECTRODES SHALL CONFORM TO E70XX.
5. BEAMS OF VARIOUS WEB THICKNESSES ARE GROUPED BASED ON THEIR DEPTH. NUMBER OF BOLTS SHOWN ARE BASED ON THE THINNEST WEB IN EACH GROUP.
6. WHEN THE TOP FLANGE IS COPED OR WHEN BOTH FLANGES ARE COPED, REFERENCE THE APPLICABLE ALL-BOLTED DOUBLE ANGLE PRE-ENGINEERED REACTION CAPACITIES.
7. THIS DETAIL IS ONLY APPLICABLE WHEN THE HSS COLUMN IS CLASSIFIED AS NONSLENDER IN ACCORDANCE WITH AISC 360. THE NONSLENDER CRITERIA IS AS FOLLOWS:

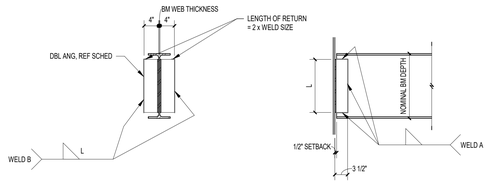
HSS NONSLENDER CRITERIA

SQ OR RECT HSS (Fy = 46 KSI)		ROUND HSS (Fy = 42 KSI)
NOMINAL WALL THICKNESS (IN)	MAXIMUM H (IN)	
5/8"	20"	ALL AISC ROUND HSS SHAPES ARE CLASSIFIED AS NONSLENDER
1/2"	16"	
3/8"	12"	
5/16"	10"	
1/4"	8"	
3/16"	6"	
1/8"	4"	

G1 | TYPICAL PRE-ENGINEERED SINGLE PLATE AT HSS COLUMN CONNECTION
NTS

ALL-WELDED DOUBLE ANGLE CONNECTION CAPACITY

BEAM DEPTH	L (IN)	ANGLE SIZE	WELD A	WELD B	MINIMUM BEAM WEB THICKNESS	MINIMUM SUPPORT THICKNESS	MAXIMUM REACTION (LRFD) - KIPS
W8	6"	2L4X3 1/2X1/4	3/16"	1/4"	0.285"	0.190"	32
W10	6"	2L4X3 1/2X1/4	3/16"	1/4"	0.285"	0.190"	32
W12	9"	2L4X3 1/2X1/4	3/16"	1/4"	0.285"	0.190"	64
W14	9"	2L4X3 1/2X5/16	1/4"	5/16"	0.381"	0.238"	80
W16	12"	2L4X3 1/2X5/16	1/4"	5/16"	0.381"	0.238"	124
W18	16"	2L4X3 1/2X5/16	1/4"	5/16"	0.381"	0.238"	185
W21	18"	2L4X3 1/2X5/16	1/4"	5/16"	0.381"	0.238"	196
W24	22"	2L4X3 1/2X5/16	1/4"	5/16"	0.381"	0.238"	256
W27	22"	2L4X3 1/2X5/16	1/4"	5/16"	0.381"	0.238"	256
W30	24"	2L4X3 1/2X5/16	1/4"	5/16"	0.381"	0.238"	286
W33	28"	2L4X3 1/2X3/8	5/16"	3/8"	0.476"	0.286"	416
W36	30"	2L4X3 1/2X3/8	5/16"	3/8"	0.476"	0.286"	452
W40	34"	2L4X3 1/2X3/8	5/16"	3/8"	0.476"	0.286"	523
W44	36"	2L4X3 1/2X3/8	5/16"	3/8"	0.476"	0.286"	558



NOTES:

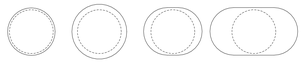
1. PROVIDED REACTION CAPACITIES ARE GIVEN IN KIPS AND AT STRENGTH DESIGN LEVEL USING LOAD-RESISTANCE FACTOR DESIGN (LRFD).
2. DOUBLE ANGLES SHALL CONFORM TO ASTM A36 (F_y = 36 KSI).
3. WELDING ELECTRODES SHALL CONFORM TO E70XX.

G7 | TYPICAL PRE-ENGINEERED ALL-WELDED DOUBLE ANGLE CONNECTION
NTS

NOMINAL BOLT HOLE DIMENSIONS

BOLT DIAMETER	STANDARD (DIA)	OVERSIZED (DIA)	SHORT-SLOTTED (WIDTH X LENGTH)	LONG-SLOTTED (WIDTH X LENGTH)
1/2"	9/16"	5/8"	9/16" X 11/16"	9/16" X 1 1/4"
5/8"	11/16"	13/16"	11/16" X 7/8"	11/16" X 1 9/16"
3/4"	13/16"	15/16"	13/16" X 1"	13/16" X 1 7/8"
7/8"	15/16"	1 1/16"	15/16" X 1 1/8"	15/16" X 2 3/16"
1"	1 1/16"	1 1/4"	1 1/16" X 1 5/16"	1 1/16" X 2 1/2"
≥ 1 1/8"	d + 1/16"	d + 1/8"	(d + 1/16") x (d + 3/8")	(d + 1/16") X (2.5*d)

d = NOMINAL BOLT DIAMETER



NOTES:

1. ALL BOLT HOLES SHALL BE STANDARD SIZE HOLES UNLESS NOTED OR DETAILED OTHERWISE.
2. NOMINAL BOLT HOLE DESIGNATIONS ARE AS FOLLOWS:
   STD = STANDARD HOLE
   OVS = OVERSIZED HOLE
   SSL = SHORT-SLOTTED HOLE
   LSL = LONG-SLOTTED HOLE
3. SHORT-SLOTTED OR LONG-SLOTTED HOLE DESIGNATIONS SHOWN OR NOTED IN THE DRAWINGS SPECIFY THE ORIENTATION OF THE SLOT BY ADDING A "P" OR "T" TO THE DESIGNATION (i.e. SSLP, SSLT, LSLP, LSLT) INDICATING THE SLOT IS PARALLEL TO THE DIRECTION OF THE APPLIED LOAD OR THE SLOT IS TRANSVERSE TO THE DIRECTION OF THE APPLIED LOAD, RESPECTIVELY.

G12 | TYPICAL NOMINAL BOLT HOLE DIMENSIONS
12" = 1'-0"

PRE-ENGINEERED STEEL CONNECTIONS:

A. GENERAL

1. ALL THE PRE-ENGINEERED CONNECTION DETAILS SHOWN ON THIS SHEET ARE PROVIDED TO ASSIST THE STEEL FABRICATOR WITH THE DETAILING OF THE SIMPLE SHEAR CONNECTIONS FOR ALL THE STEEL FRAMING BASED OFF THE REACTIONS INDICATED ON THE STRUCTURAL DRAWINGS.
2. WHERE THESE PRE-ENGINEERED CONNECTION DETAILS ARE USED, NO DESIGN CALCULATIONS ARE REQUIRED TO BE SUBMITTED FROM THE STEEL FABRICATOR.
3. WHERE THESE PRE-ENGINEERED CONNECTION DETAILS ARE USED, ALL ASPECTS OF THE CONNECTIONS MUST CONFORM TO THE APPLICABLE PRE-ENGINEERED CONNECTION DETAIL BEING REFERENCED.

B. REACTIONS

1. THE FABRICATOR SHALL SELECT A TYPICAL PRE-ENGINEERED BEAM CONNECTION FROM THESE DETAILS USING THE REACTION INDICATED ON THE DRAWINGS.
2. ALL REACTIONS INDICATED ON THE DRAWINGS HAVE BEEN FACTORED USING THE LOAD RESISTANCE FACTOR DESIGN (LRFD) METHOD.
3. WHERE REACTIONS HAVE NOT BEEN PROVIDED, THE STEEL FABRICATOR SHALL ASSUMED THE REACTION TO BE 60% OF THE FACTORED SHEAR STRENGTH OF THE BEAM, BUT NOT LESS THAN 10 KIPS.

C. PRE-ENGINEERED CONNECTION PROVISIONS

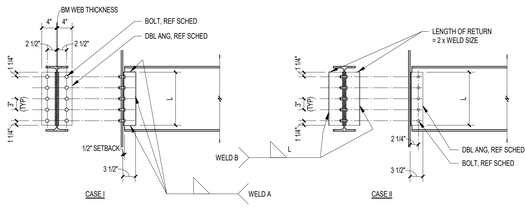
1. BEAMS OF VARIOUS WEB THICKNESSES HAVE BEEN GROUPED BASED ON THEIR NOMINAL DEPTH.
2. THE NUMBER OF BOLTS INDICATED IN ALL DETAILS ARE BASED ON THE THINNEST WEB OF EACH GROUP.
3. BEAMS ARE BASED OFF ASTM A992 (Fy = 50 KSI), ANGLES AND PLATES ARE BASED OFF ASTM A36 (Fy = 36 KSI), BOLTS ARE BASED OFF ASTM A325N (THREADS NOT EXCLUDED FROM THE SHEAR PLANE), AND WELDS ARE BASED OFF E70XX ELECTRODES.

D. CONNECTIONS NOT COVERED BY PRE-ENGINEERED CONNECTIONS

1. CONNECTIONS SHOWN IN THE STRUCTURAL DRAWINGS NOT COVERED BY THE PRE-ENGINEERED CONNECTION DETAILS SHALL BE DESIGNED BY THE STEEL FABRICATOR AND SUBMITTED WITH DESIGN CALCULATIONS SEALED BY A LICENSED PROFESSIONAL ENGINEER IN THE STATE THE PROJECT IS IN. REFERENCE THE "STRUCTURAL STEEL" GENERAL NOTES FOR ADDITIONAL INFORMATION.
2. THE STEEL FABRICATOR MAY, AT THEIR OPTION, SUBMIT ALTERNATE CONNECTION DETAILS FOR USE ON THE PROJECT. ALTERNATE CONNECTION DETAILS MUST CONFORM TO THE PRE-ENGINEERED DETAILS AND SUBMITTED WITH SIGNED AND SEAL CALCULATIONS FROM A LICENSED PROFESSIONAL ENGINEER IN THE STATE THE PROJECT IS IN.
3. WHEN A CONNECTION IS SHOWN TO HAVE OTHER REACTIONS OTHER THAN A VERTICAL REACTION (R) SUCH AS: AXIAL REACTION (P) – TENSION (+) OR COMPRESSION (-), HORIZONTAL REACTION (H), VERTICAL MOMENT (M), HORIZONTAL MOMENT (MH), AND/OR TORSION REACTION (T), THEN THE STEEL FABRICATOR SHALL SUBMIT SIGNED AND SEALED CALCULATIONS FROM A LICENSED PROFESSIONAL ENGINEER IN THE STATE THE PROJECT IS IN. DO NOT PROVIDE SLOTTED HOLES WHEN AXIAL OR HORIZONTAL REACTIONS ARE PRESENT UNLESS THE CONNECTION IS SPECIFICALLY DESIGNED FOR SLIP.

BOLTED/WELDED DOUBLE ANGLE CONNECTION CAPACITY

BEAM DEPTH	NO. OF BOLTS PER VERT ROW	L (IN)	CASE I				CASE II			
			WELD A	MINIMUM BEAM WEB THICKNESS	ANGLE SIZE	REACTION (LRFD) - KIPS	WELD B	MINIMUM SUPPORT THICKNESS	ANGLE SIZE	REACTION (LRFD) - KIPS
W8	2	5 1/2"	3/16"	0.285"	2L4X3 1/2X1/4	75	1/4"	0.190"	2L4X3 1/2X5/16	21
W10	2	5 1/2"	3/16"	0.285"	2L4X3 1/2X1/4	75	1/4"	0.190"	2L4X3 1/2X5/16	21
W12	3	8 1/2"	3/16"	0.285"	2L4X3 1/2X1/4	110	1/4"	0.190"	2L4X3 1/2X5/16	48
W14	3	8 1/2"	1/4"	0.381"	2L4X3 1/2X5/16	147	5/16"	0.238"	2L4X3 1/2X3/8	60
W16	4	11 1/2"	1/4"	0.381"	2L4X3 1/2X5/16	190	5/16"	0.238"	2L4X3 1/2X3/8	99
W18	5	14 1/2"	1/4"	0.381"	2L4X3 1/2X5/16	229	5/16"	0.238"	2L4X3 1/2X3/8	143
W21	6	17 1/2"	1/4"	0.381"	2L4X3 1/2X5/16	267	5/16"	0.238"	2L4X3 1/2X3/8	188
W24	7	20 1/2"	5/16"	0.476"	2L4X3 1/2X3/8	379	3/8"	0.286"	2L4X3 1/2X1/2	280
W27	7	20 1/2"	5/16"	0.476"	2L4X3 1/2X3/8	379	3/8"	0.286"	2L4X3 1/2X1/2	280
W30	8	23 1/2"	5/16"	0.476"	2L4X3 1/2X3/8	422	3/8"	0.286"	2L4X3 1/2X1/2	335
W33	9	26 1/2"	5/16"	0.476"	2L4X3 1/2X3/8	463	3/8"	0.286"	2L4X3 1/2X1/2	389
W36	10	29 1/2"	5/16"	0.476"	2L4X3 1/2X1/2	505	3/8"	0.286"	2L4X3 1/2X1/2	443
W40	11	32 1/2"	5/16"	0.476"	2L4X3 1/2X1/2	548	3/8"	0.286"	2L4X3 1/2X1/2	496
W44	12	35 1/2"	5/16"	0.476"	2L4X3 1/2X1/2	589	3/8"	0.286"	2L4X3 1/2X1/2	550



NOTES:

1. PROVIDED REACTION CAPACITIES ARE GIVEN IN KIPS AND AT STRENGTH DESIGN LEVEL USING LOAD-RESISTANCE FACTOR DESIGN (LRFD).
2. ALL BOLTS SHALL BE 3/4" DIAMETER A325N INSTALLED IN STANDARD HOLES.
3. CASE I: BOLTED AT SUPPORT AND WELDED TO BEAM WEB. CASE II: BOLTED TO BEAM WEB AND WELDED TO SUPPORT.
4. THIS PRE-DESIGNED CONNECTION IS ONLY APPLICABLE IF THE WEB OR SUPPORT THICKNESSES MEET THE TABULATED MINIMUM THICKNESSES FOR CASE I AND CASE II, RESPECTIVELY.
5. WHEN THE TOP FLANGE IS COPED OR WHEN BOTH FLANGES ARE COPED FOR A CASE II ARRANGEMENT, REFERENCE THE APPLICABLE ALL-BOLTED DOUBLE ANGLE PRE-DESIGNED REACTION CAPACITIES.
6. WELDING ELECTRODES SHALL CONFORM TO E70XX.

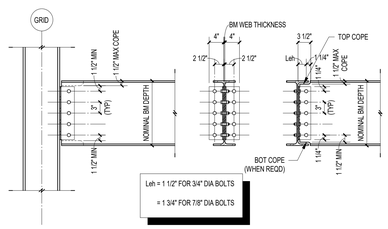
A1 | TYPICAL PRE-ENGINEERED BOLTED/WELDED DOUBLE ANGLE CONNECTION
3/4" = 1'-0"

ALL-BOLTED DOUBLE ANGLE CONNECTION CAPACITY

BEAM DEPTH	NO. OF BOLTS PER VERT ROW	MIN BEAM WEB/COLUMN FLANGE THICKNESS	ANGLE SIZE	MAXIMUM REACTION (LRFD) - KIPS											
				3/4" DIA BOLTS							7/8" DIA BOLTS				
				UNCOPED	TOP FLANGE COPED			BOTH FLANGES COPED			UNCOPED	TOP FLANGE COPED		BOTH FLANGES COPED	
				STD/OVS/SSLT	STD	OVS	SSLT	STD	OVS	SSLT	STD/OVS/SSLT	STD	OVS	SSLT	STD	OVS	SSLT
W8	2	0.170"	2L4X3 1/2X1/4	29	22	21	21	21	19	21	34	21	19	20	19	18	19
W10	2	0.190"	2L4X3 1/2X1/4	33	25	23	24	23	22	23	38	23	22	22	22	20	22
W12	3	0.200"	2L4X3 1/2X1/4	52	39	36	38	37	35	37	61	36	34	35	35	33	35
W14	3	0.230"	2L4X3 1/2X5/16	60	44	42	43	42	40	42	70	42	39	40	40	37	40
W16	4	0.250"	2L4X3 1/2X5/16	87	64	60	63	62	58	62	102	60	56	59	58	54	58
W18	5	0.300"	2L4X3 1/2X5/16	131	95	90	94	93	87	93	153	90	84	88	87	82	87
W21	6	0.350"	2L4X3 1/2X5/16	184	133	125	131	130	122	130	185*	135**	117**	122**	122**	115**	122**
W24	7	0.395"	2L4X3 1/2X3/8	242	175	164	173	171	161	171	258*	164**	154**	162**	161**	151**	161**
W27	7	0.460"	2L4X3 1/2X3/8	251*	204**	191**	201**	200**	188**	200**	258*	191**	179**	189**	188**	176**	188**
W30	8	0.470"	2L4X3 1/2X3/8	286*	237**	223**	235**	233**	219**	233**	295*	223**	209**	221**	219**	206**	219**
W33	9	0.550"	2L4X3 1/2X3/8	322*	312**	293**	309**	307**	289**	307**	331*	293**	275**	290**	289**	271**	289**
W36	10	0.600"	2L4X3 1/2X1/2	358*	358*	355**	358*	358*	351**	358*	481*	355**	333**	352**	351**	328**	351**
W40	11	0.630"	2L4X3 1/2X1/2	394*	394*	394*	394*	394*	394*	394**	533*	470**	383**	406**	405**	379**	405**
W44	12	0.710"	2L4X3 1/2X1/2	430*	430*	430*	430*	430*	430*	430*	584*	503**	471**	500**	498**	467**	498**

*INDICATES THAT A REACTION INCREASE IS NOT PERMITTED.

**INDICATES THAT A REACTION INCREASE IS PERMITTED BUT NOT MORE THAN THE CORRESPONDING UNCOPED REACTION CAPACITY.



NOTES:

1. PROVIDED REACTION CAPACITIES ARE GIVEN IN KIPS AND AT STRENGTH DESIGN LEVEL USING LOAD-RESISTANCE FACTOR DESIGN (LRFD).
2. ALL BOLTS SHALL BE ASTM A325N.
3. DOUBLE ANGLES SHALL CONFORM TO ASTM A36 (F_y = 36 KSI).
4. BEAMS OF VARIOUS WEB THICKNESSES ARE GROUPED BASED ON THEIR DEPTH. NUMBER OF BOLTS SHOWN ARE BASED ON THE THINNEST WEB IN EACH GROUP.
5. REACTION CAPACITIES TABULATED ARE BASED ON THE THINNEST WEB IN EACH GROUP. AN INCREASE IN THE REACTION CAPACITY IS PERMITTED, WHERE ALLOWED IN THE TABLE, BY MULTIPLYING THE TABULATED VALUE BY THE RATIO OF THE ACTUAL BEAM WEB THICKNESS TO THE MINIMUM BEAM WEB THICKNESS TABULATED. THIS CAN BE EXPRESSED AS FOLLOWS:

   ACTUAL REACTION CAPACITY = (TABULATED REACTION CAPACITY) x (ACTUAL WEB THICKNESS/TABULATED MINIMUM WEB THICKNESS)

6. WHERE TABULATED REACTION CAPACITIES DO NOT HAVE * OR ** INCREASES SHALL NOT EXCEED THE FOLLOWING RESPECTIVE ULTIMATE REACTION CAPACITIES:

DEPTH	ULTIMATE REACTION (KIPS)	
	3/8" DIA BOLTS	7/8" DIA BOLTS
W8	48	45
W10	48	45
W12	76	71
W14	95	89
W16	126	122
W18	156	155
W21	187	-
W24	251	-

A9 | TYPICAL PRE-ENGINEERED ALL-BOLTED DOUBLE ANGLE CONNECTION
NTS

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Architect: 16190

HC Biosafety Lab

County of Hidalgo
S 25th Ave, Edinburg, TX 78542

No.	Description	Date

PROJECT No.: 20030
ISSUE DATE: 05/03/2021
DRAWN BY: JC
CHECKED BY: Checker
Sheet Name

TYPICAL PRE-ENGINEERED STEEL CONNECTION DETAILS

Sheet Number

SG010

Project Status:

100% SCHEMATIC DESIGN

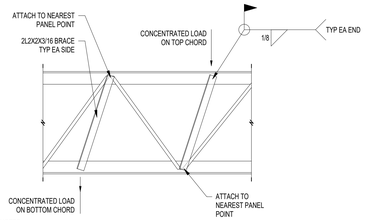
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GROUT THICKNESS SCHEDLUE	
BASE PLATE SMALLER PLAN DIMENSION	MINIMUM GROUT THICKNESS
18" OR LESS	1 1/2"
19" TO 24"	1 1/2"
25" TO 30"	2"
31" TO 36"	2 1/2"
37" TO 42"	3"
43 TO 48"	3 1/2"
49" TO 54"	4"
> 54"	SEE NOTE 2

NOTES:

1. REFERENCE SPECIFICATIONS AND GENERAL NOTES FOR GROUT STRENGTH AND INSTALLATION.
2. PROVIDE AN ADDITIONAL 1/2" THICKNESS OF GROUT FOR EACH ADDITIONAL 6" OF SMALLER BASE PLATE PLAN DIMENSION.

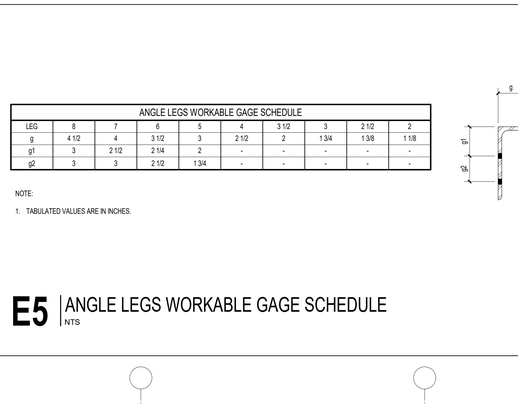
Q1 | GROUT THICKNESS SCHEDULE
NTS



NOTES:

1. PROVIDE BRACE AT LOCATIONS OF CONCENTRATED LOADS, SUCH AS, PARTITIONS, HEAVY PIPES, HOT WATER LINES, CHILLED WATER LINES, MECHANICAL UNITS, HEAVY LIGHTS, HEAVY CEILINGS, AND ANY OTHER CONCENTRATED LOADS, AND AS NOTED ELSEWHERE IN THE STRUCTURAL DRAWINGS.
2. PROVIDE THIS DETAIL FOR HANGING LOADS GREATER THAN 50 LBS.
3. THE GENERAL CONTRACTOR SHALL COORDINATE AND SUBMIT ALL CONCENTRATED LOADS AND THEIR LOCATIONS APPLICABLE TO THIS DETAIL TO THE JOIST MANUFACTURER TWO WEEKS PRIOR TO FABRICATION.
4. FOR HOT WATER & CHILLED WATER LINES MINIMUM WEIGHTS, REFERENCE SHEET S0012.

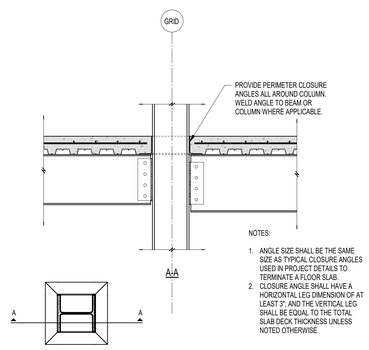
L1 | TYPICAL STEEL JOIST BRACING FOR CONCENTRATEDLOADS
NTS



NOTES:

1. ANGLE SIZE SHALL BE THE SAME SIZE AS TYPICAL CLOSURE ANGLES USED IN PROJECT DETAILS TO TERMINATE A FLOOR SLAB.
2. CLOSURE ANGLE SHALL HAVE A HORIZONTAL LEG DIMENSION OF AT LEAST 3", AND THE VERTICAL LEG SHALL BE EQUAL TO THE TOTAL SLAB DECK THICKNESS UNLESS NOTED OTHERWISE.

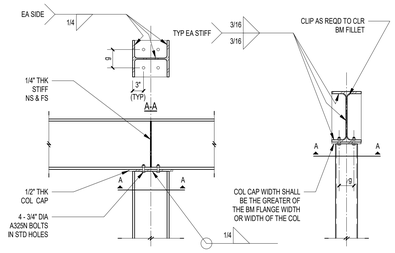
M5 | TYPICAL CLOSURE ANGLES AROUND HSS COLUMN
NTS



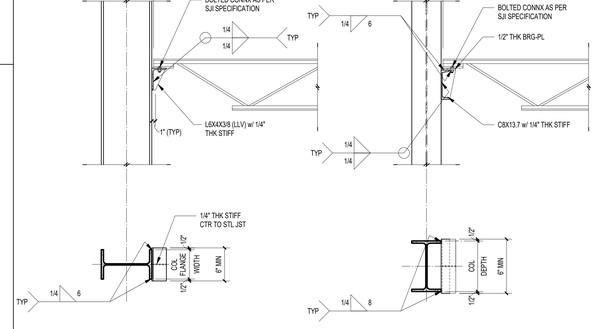
NOTES:

1. ANGLE SIZE SHALL BE THE SAME SIZE AS TYPICAL CLOSURE ANGLES USED IN PROJECT DETAILS TO TERMINATE A FLOOR SLAB.
2. CLOSURE ANGLE SHALL HAVE A HORIZONTAL LEG DIMENSION OF AT LEAST 3", AND THE VERTICAL LEG SHALL BE EQUAL TO THE TOTAL SLAB DECK THICKNESS UNLESS NOTED OTHERWISE.

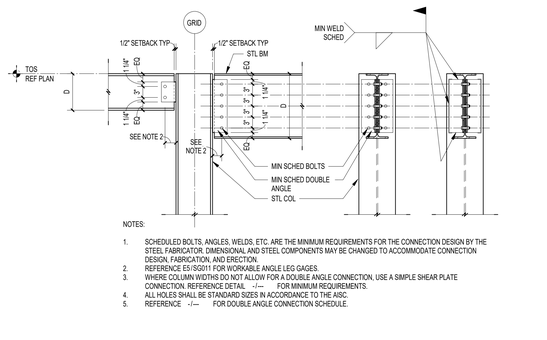
M10 | TYPICAL CLOSURE ANGLES AROUND STEEL COLUMN
NTS



M14 | TYPICAL STEEL BEAM BEARING ON WIDE FLANGE COLUMN
NTS



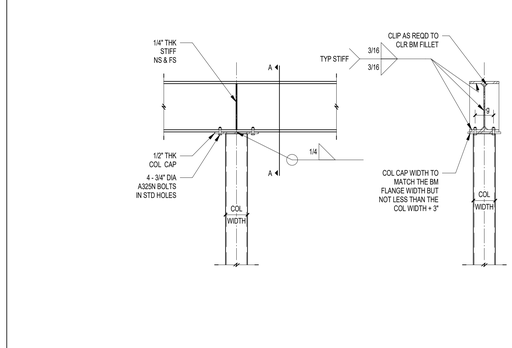
H5 | TYPICAL JOIST SEAT AT WIDE FLANGE COLUMN
NTS



NOTES:

1. SCHEDULED BOLTS, ANGLES, WELDS, ETC. ARE THE MINIMUM REQUIREMENTS FOR THE CONNECTION DESIGN BY THE STEEL FABRICATOR. DIMENSIONAL AND STEEL COMPONENTS MAY BE CHANGED TO ACCOMMODATE CONNECTION DESIGN, FABRICATION, AND ERECTION.
2. REFERENCE ES-SG011 FOR WORKABLE ANGLE LEG GAGES.
3. WHERE COLUMN WIDTHS DO NOT ALLOW FOR A DOUBLE ANGLE CONNECTION, USE A SIMPLE SHEAR PLATE CONNECTION. REFERENCE DETAIL -/--- FOR MINIMUM REQUIREMENTS.
4. ALL HOLES SHALL BE STANDARD SIZES IN ACCORDANCE TO THE AISC.
5. REFERENCE -/--- FOR DOUBLE ANGLE CONNECTION SCHEDULE.

H10 | TYPICAL STEEL BEAM TO COLUMN DOUBLE ANGLE
NTS



H15 | TYPICAL STEEL BEAM BEARING ON HSS COLUMN
NTS

HEADED STUD DIMENSIONAL SCHEDULE		
SHANK DIAMETER (C)	HEAD * DIAMETER (H)	MINIMUM HEAD HEIGHT (T)
1/2"	1"	9/32"
5/8"	1 1/4"	9/32"
3/4"	1 1/4"	3/8"
7/8"	1 3/8"	3/8"
1"	1 5/8"	1/2"

* TOLERANCE SHALL BE ±1/64"



NOTE: "L" IS THE MANUFACTURED LENGTH BEFORE WELDING.

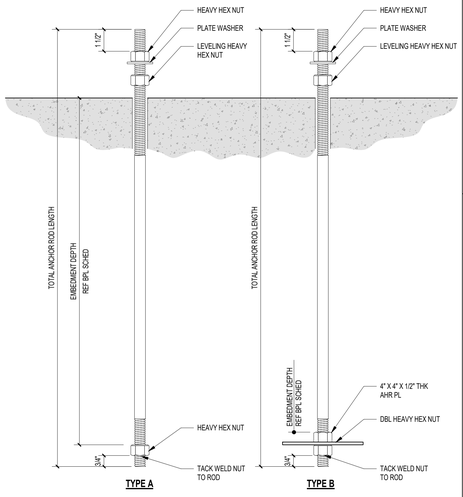
HEADED STUD STRENGTH PROPERTIES:

STUD TYPE	F_y (KSI)	F_u (KSI)
TYPE A	49	61
TYPE B	51	65
TYPE C	-	80

NOTES:

1. TYPE A, B, AND C HEADED STUDS SHALL MEET THE MINIMUM MECHANICAL PROPERTIES IN AWS D1.1 TABLE 7.1 WHEN TESTED IN ACCORDANCE TO ASTM A370.
2. HEADED STUDS SHALL CONFORM TO ASTM A108.
3. TYPE A OR C HEADED STUDS SHALL NOT BE USED FOR SHEAR TRANSFER IN COMPOSITE CONSTRUCTION.
4. HEADED STUDS MUST COMPLY WITH THE DIMENSIONAL REQUIREMENTS AND MECHANICAL PROPERTIES ESTABLISHED IN THIS DETAIL TO BE CONSIDER AN "AWS HEADED STUD".
5. THE CONTRACTOR SHALL SUBMIT CERTIFIED MATERIAL TEST REPORTS INDICATING DIAMETER, CHEMICAL PROPERTIES, AND GRADE ON EACH HEAT NUMBER DELIVERED.

G1 | TYPICAL HEADED STUD DETAIL
NTS

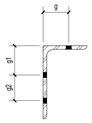


NOTES:

1. REFERENCE COLUMN BASE PLATE SCHEDULE FOR ANCHOR ROD SIZE AND EMBEDMENT LENGTH.
2. ALL NUTS SHALL BE TIGHTENED TO A SNUG-TIGHT CONDITION IN ACCORDANCE TO AISC 360 AND RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS (RCSC) SPECIFICATION.
3. HEAVY HEX NUTS SHALL CONFORM TO ASTM A563.
4. WASHERS SHALL CONFORM TO ASTM F436.

A1 | TYPICAL ANCHOR ROD DETAIL
NTS

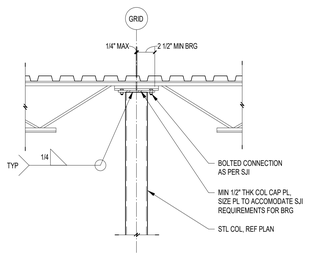
ANGLE LEGS WORKABLE GAGE SCHEDULE									
LEG	8	7	6	5	4	3 1/2	3	2 1/2	2
g	4 1/2	4	3 1/2	3	2 1/2	2	1 3/4	1 3/8	1 1/8
g1	3	2 1/2	2 1/4	2	-	-	-	-	-
g2	3	3	2 1/2	1 3/4	-	-	-	-	-



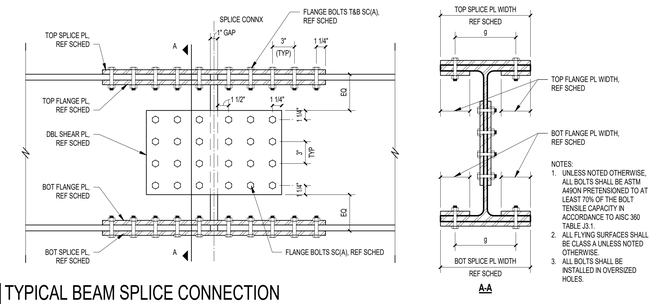
NOTE:

1. TABULATED VALUES ARE IN INCHES.

E5 | ANGLE LEGS WORKABLE GAGE SCHEDULE
NTS



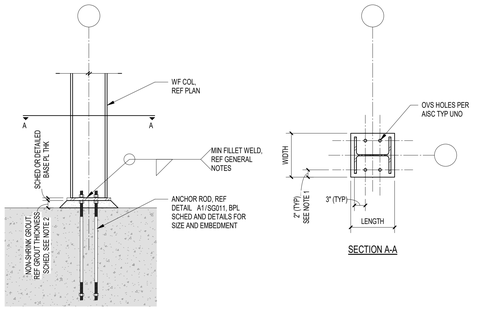
E10 | TYPICAL STEEL JOIST TO STEEL COLUMN CONNECTION
NTS



NOTES:

1. UNLESS NOTED OTHERWISE, ALL BOLTS SHALL BE ASTM A490N PRETENSIONED TO AT LEAST 70% OF THE BOLT TENSILE CAPACITY IN ACCORDANCE TO AISC 360 TABLE J3.1.
2. ALL FLYING SURFACES SHALL BE CLASS A UNLESS NOTED OTHERWISE.
3. ALL BOLTS SHALL BE INSTALLED IN OVERSIZED HOLES.

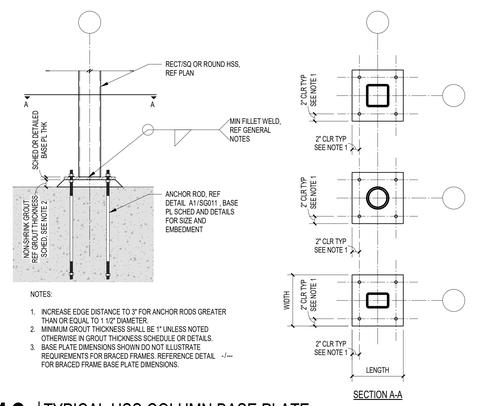
E13 | TYPICAL BEAM SPLICE CONNECTION
1 1/2" = 1'-0"



NOTES:

1. INCREASE EDGE DISTANCE TO 3" FOR ANCHOR RODS GREATER THAN OR EQUAL TO 1 1/2" DIAMETER.
2. MINIMUM GROUT THICKNESS SHALL BE 1 1/2" UNLESS NOTED OTHERWISE IN GROUT THICKNESS SCHEDULE OR DETAILS.
3. BASE PLATE DIMENSIONS SHOWN DO NOT ILLUSTRATE REQUIREMENTS FOR BRACED FRAMES.

A5 | TYPICAL WIDE FLANGE COLUMN BASE PLATE
NTS

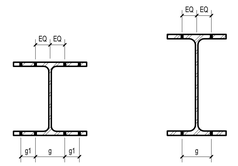


NOTES:

1. INCREASE EDGE DISTANCE TO 3" FOR ANCHOR RODS GREATER THAN OR EQUAL TO 1 1/2" DIAMETER.
2. MINIMUM GROUT THICKNESS SHALL BE 1" UNLESS NOTED OTHERWISE IN GROUT THICKNESS SCHEDULE OR DETAILS.
3. BASE PLATE DIMENSIONS SHOWN DO NOT ILLUSTRATE REQUIREMENTS FOR BRACED FRAMES. REFERENCE DETAIL -/--- FOR BRACED FRAME BASE PLATE DIMENSIONS.

A10 | TYPICAL HSS COLUMN BASE PLATE
NTS

WIDE FLANGE WORKABLE GAGE SCHEDULE		
SHAPE	g (IN)	g1 (IN)
W4 (ALL)	2 1/4	
W5 (ALL)	2 3/4	
W6X8.5 - W6X16	2 1/4	
W8X15 - W8X25	3 1/2	
W8X10 - W8X15	2 1/4	
W8X18 - W8X21	2 3/4	
W8X24 - W8X28	4	
W10X12 - W10X19	2 1/4	
W10X22 - W10X30	2 3/4	
W12X14 - W12X22	2 1/4	
W12X26 - W12X35	3 1/2	
W14X22 - W14X26	2 3/4	
W14X30 - W14X38	3 1/2	
W14X145 - W14X730	7 1/2	3
W16X26 - W16X57	3 1/2	
W18X35 - W18X71	3 1/2	
W21X44 - W21X57	3 1/2	
W24X55 - W24X62	3 1/2	
W36X231 - W36X800	7 1/2	
W40X149 - W40X593	7 1/2	



NOTES:

1. FOR ALL OTHER SHAPES NOT SCHEDULED, THE WORKABLE GAGE, g, EQUALS 5 1/2 INCHES.
2. GAGE DISTANCES ARE MEASURED FROM THE CENTER OF THE BOLT HOLES.

A15 | TYPICAL WIDE FLANGE WORKABLE GAGE
NTS

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TEXAS REGISTRATION NO.
Engineer: 83301
Architect: 16190

HC Biosafety Lab

County of Hidalgo
S 25th Ave, Edinburg, TX 78542

No.	Date	Description

PROJECT No.: 20030
ISSUE DATE: 05/03/2021
DRAWN BY: JC
CHECKED BY: Checker

Sheet Name

TYPICAL STRUCTURAL STEEL DETAILS & SCHEDULES

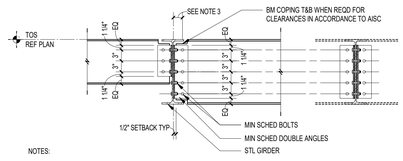
Sheet Number

SG011

Project Status:

100% SCHEMATIC DESIGN

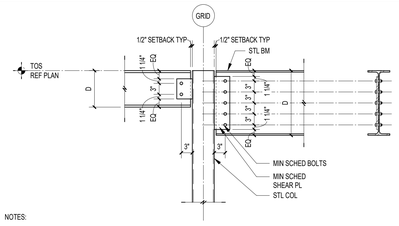
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NOTES:

1. REFERENCE DETAIL SCHEDULE -/--- FOR SCHEDULED BOLTS, ANGLES, ETC.
2. FOR BEAMS ON BOTH SIDES, ALIGN BOLTS ON SUPPORTED BEAMS TO ACHIEVE SINGLE HOLES ON THE STEEL GIRDER.
3. REFERENCE E3/SG011 FOR WORKABLE ANGLE LEG GAGES.
4. SCHEDULED BOLTS, ANGLES, ETC. ARE THE MINIMUM REQUIREMENTS FOR THE CONNECTION DESIGN BY THE STEEL FABRICATOR. DIMENSIONAL AND STEEL COMPONENTS MAY BE CHANGED TO ACCOMMODATE CONNECTION DESIGN, FABRICATION, AND ERECTION.
5. ALL HOLES SHALL BE STANDARD SIZES IN ACCORDANCE TO AISC.

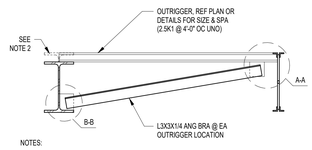
P1 | TYPICAL STEEL BEAM TO STEEL GIRDER CONNECTION
NTS



NOTES:

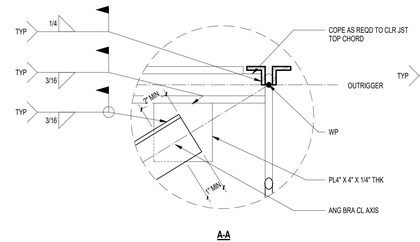
1. SCHEDULED BOLTS, ANGLES, WELDS, ETC. ARE THE MINIMUM REQUIREMENTS FOR THE CONNECTION DESIGN BY THE STEEL FABRICATOR. DIMENSIONAL AND STEEL COMPONENTS MAY BE CHANGED TO ACCOMMODATE CONNECTION DESIGN, FABRICATION, AND ERECTION.
2. ALL HOLES SHALL BE STANDARD SIZES IN ACCORDANCE TO THE AISC.

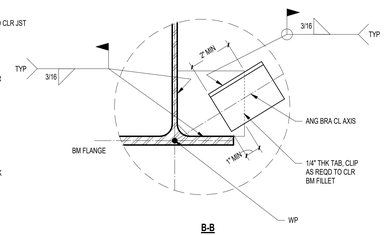
P6 | TYPICAL STEEL BEAM TO COLUMN SIMPLE SHEAR PLATE CONNECTION
NTS



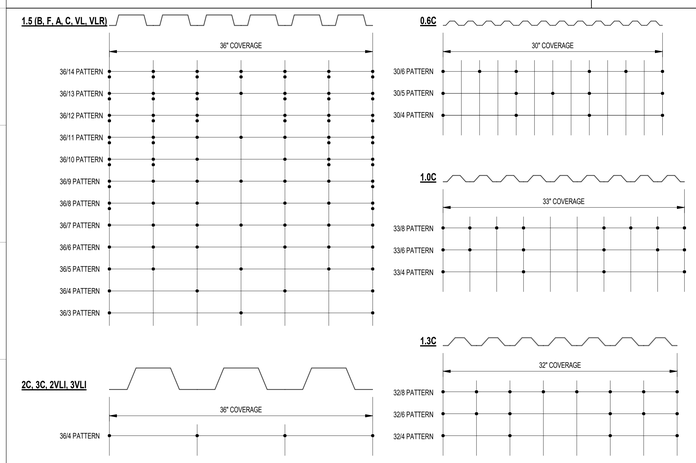
NOTES:

1. THIS DETAIL IS APPLICABLE TO ALL ROOF END BAYS UNLESS NOTED OR DETAILED OTHERWISE.
2. WHEN THE STEEL BEAM IS THE SAME ELEVATION AS THE JOIST, USE THE CONNECTION ARRANGEMENT ILLUSTRATED IN DETAIL A-A.





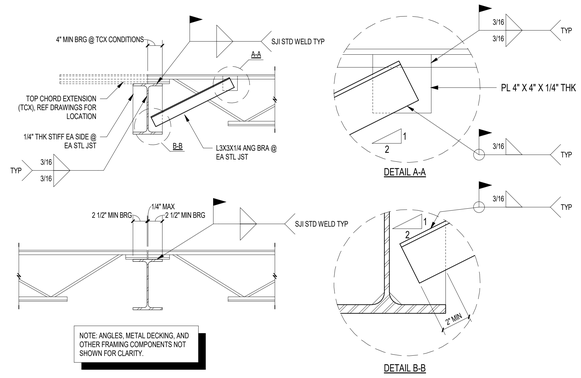
P10 | TYPICAL END BAY STEEL JOIST PARALLEL TO STEEL BEAM OUTRIGGER CONNECTION
NTS



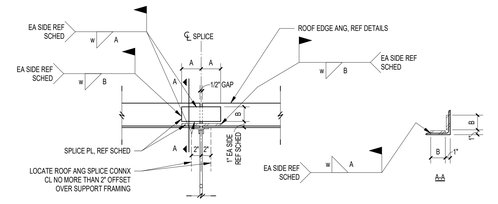
NOTES:

1. WELDED FASTENERS SHALL BE INSTALLED BY QUALIFIED OPERATORS FOLLOWING AWS D1.3.
2. THE QUALIFIED WELDER SHALL TAKE PARTICULAR CARE WHEN WELDING DECK TO STEEL JOISTS IN ORDER TO AVOID DAMAGE TO THE JOIST CHORDS.
3. WELDING ELECTRODES FOR ARC SPOT WELDS SHALL BE E60XX UNLESS NOTED OTHERWISE.
4. SCREWS MUST BE INSTALLED USING PROPERLY CALIBRATED TOOLS TO AVOID STRIPPING THE THREADS OR SEVER THE SCREW.

J1 | TYPICAL METAL DECKING SUPPORT FASTENER PATTERNS
NTS



J7 | TYPICAL STEEL JOIST TO STEEL BEAM CONNECTION
NTS

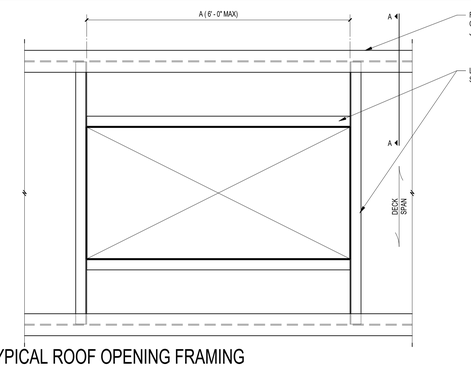


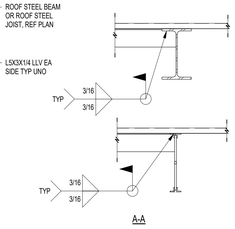
ROOF EDGE ANGLE SPLICE SCHEDULE				
ANGLE	SPLICE PL THICKNESS	DIM "A"	DIM "B"	w
L3X3	1/2"	4"	1 1/2"	3/16"
L4X4	3/8"	4"	2 1/2"	3/16"
L5X5	7/16"	4"	3 1/2"	1/4"

NOTES:

1. THIS DETAIL IS APPLICABLE TO ALL ROOF EDGE ANGLE UNLESS NOTED OR DETAILED OTHERWISE.

L12 | TYPICAL ROOF EDGE ANGLE SPLICE DETAIL
1" = 1'-0"

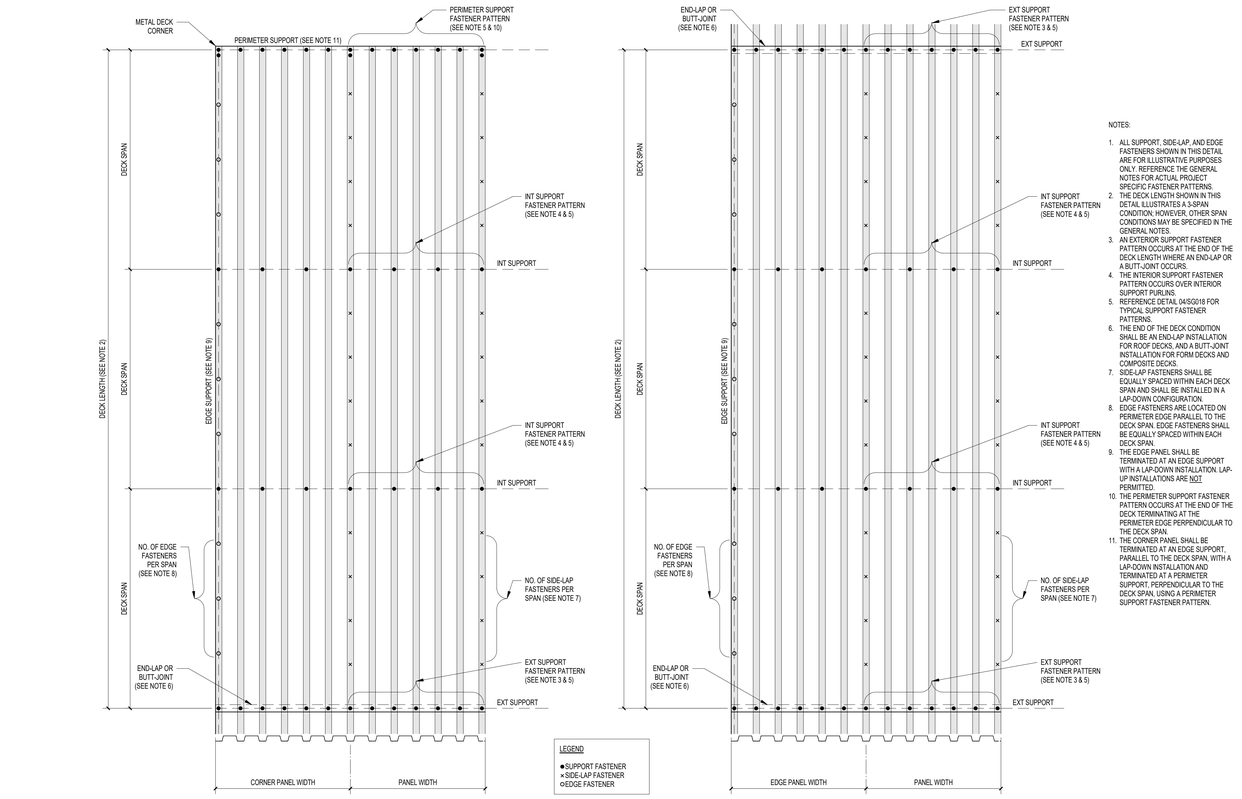




NOTES:

1. COORDINATE OPENING SIZES AND LOCATIONS WITH ARCHITECTURAL AND MECHANICAL DRAWINGS.
2. VERIFY FRAMING WITH ENGINEER WHERE OPENING DIMENSIONS EXCEED THE MAXIMUM SHOWN.

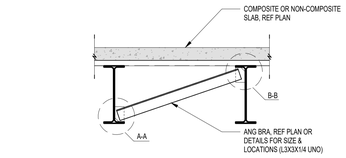
H12 | TYPICAL ROOF OPENING FRAMING
NTS



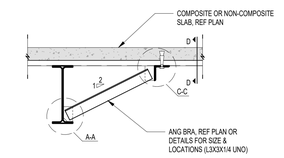
NOTES:

1. ALL SUPPORT, SIDE-LAP, AND EDGE FASTENERS SHOWN IN THIS DETAIL ARE FOR ILLUSTRATIVE PURPOSES ONLY. REFERENCE THE GENERAL NOTES FOR ACTUAL PROJECT SPECIFIC FASTENER PATTERNS.
2. THE DECK LENGTH SHOWN IN THIS DETAIL ILLUSTRATES A 3-SPAN CONDITION; HOWEVER, OTHER SPAN CONDITIONS MAY BE SPECIFIED IN THE GENERAL NOTES.
3. AN EXTERIOR SUPPORT FASTENER PATTERN OCCURS AT THE END OF THE DECK LENGTH WHERE AN END-LAP OR A BUTT-JOINT OCCURS.
4. THE INTERIOR SUPPORT FASTENER PATTERN OCCURS OVER INTERIOR SUPPORT PURLINS.
5. REFERENCE DETAIL 04/SG018 FOR TYPICAL SUPPORT FASTENER PATTERNS.
6. THE END OF THE DECK CONDITION SHALL BE AN END-LAP INSTALLATION FOR ROOF DECKS, AND A BUTT-JOINT INSTALLATION FOR FORM DECKS AND COMPOSITE DECKS.
7. SIDE-LAP FASTENERS SHALL BE EQUALLY SPACED WITHIN EACH DECK SPAN AND SHALL BE INSTALLED IN A LAP-DOWN CONFIGURATION.
8. EDGE FASTENERS ARE LOCATED ON PERIMETER EDGE PARALLEL TO THE DECK SPAN. EDGE FASTENERS SHALL BE EQUALLY SPACED WITHIN EACH DECK SPAN.
9. THE EDGE PANEL SHALL BE TERMINATED AT AN EDGE SUPPORT WITH A LAP-DOWN INSTALLATION. LAP-UP INSTALLATIONS ARE NOT PERMITTED.
10. THE PERIMETER SUPPORT FASTENER PATTERN OCCURS AT THE END OF THE DECK TERMINATING AT THE PERIMETER EDGE PERPENDICULAR TO THE DECK SPAN.
11. THE CORNER PANEL SHALL BE TERMINATED AT AN EDGE SUPPORT, PARALLEL TO THE DECK SPAN, WITH A LAP-DOWN INSTALLATION AND TERMINATED AT A PERIMETER SUPPORT, PERPENDICULAR TO THE DECK SPAN, USING A PERIMETER SUPPORT FASTENER PATTERN.

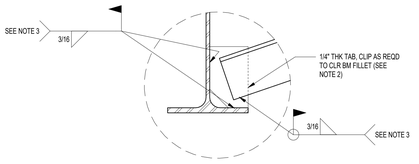
A1 | TYPICAL METAL DECKING ATTACHMENT DIAGRAM
3/4" = 1'-0"

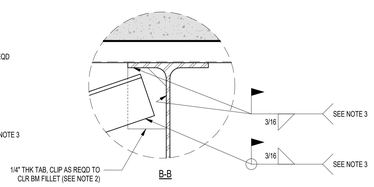


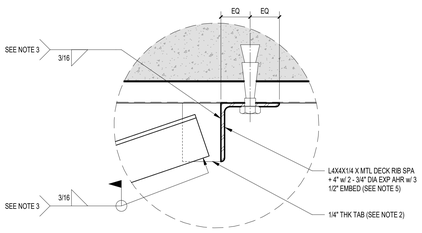
BRACE TO BEAM TOP FLANGE

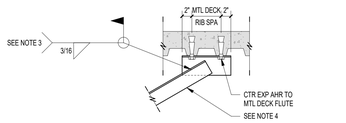


BRACE TO METAL DECK FLUTE









NOTES:

1. REFERENCE PLAN AND DETAILS FOR BRACE SIZE AND LOCATIONS.
2. FOR ANGLE BRACES LARGER THAN AN L4XXX1/4, INCREASE THE PLATE THICKNESS TO 5/16".
3. FOR ANGLE BRACES LARGER THAN AN L4X4X1/4, INCREASE THE WELD SIZE TO 5/16".
4. WHEN THE METAL DECK RIBS ARE ORIENTED PARALLEL TO THE STEEL BEAM, WELD THE ANGLE BRACE TO THE LEG OF THE L4X4 ANGLE.
5. FOR ANGLE BRACES LARGER THAN AN L4X4X1/4, INCREASE THE L4X4 TO AN L5X5X5/16.

A12 | TYPICAL BEAM BOTTOM FLANGE BRACING
3/4" = 1'-0"

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TEXAS REGISTRATION NO.
Engineer: 83301
Architect: 16190

HC Biosafety Lab

County of Hidalgo
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No.	Date	Description

PROJECT No.: 20030
ISSUE DATE: 05/03/2021
DRAWN BY: JC
CHECKED BY: Checker
Sheet Name

TYPICAL STRUCTURAL STEEL DETAILS & SCHEDULES

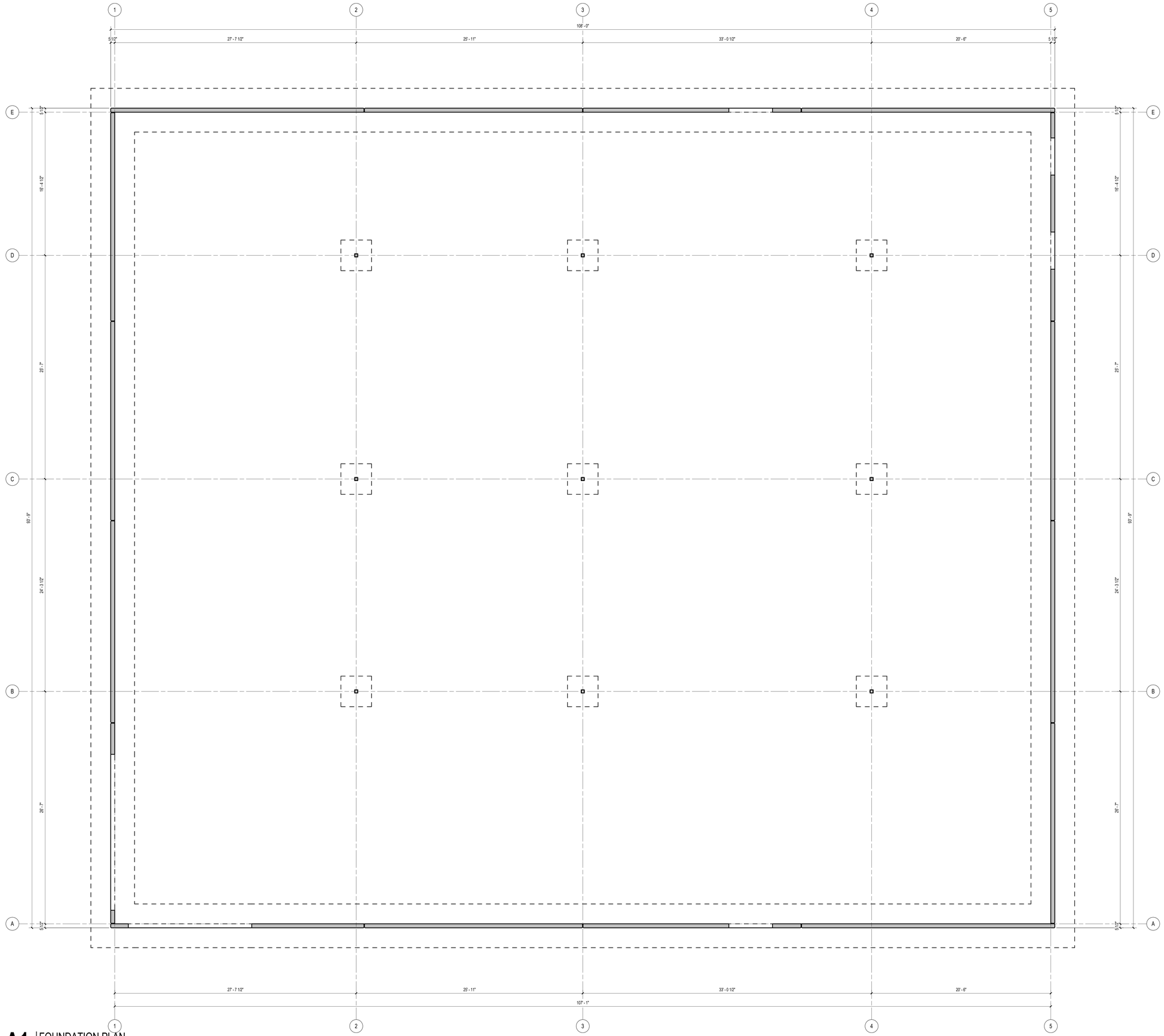
Sheet Number

SG012

Project Status:

100% SCHEMATIC DESIGN

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COLUMN BASE PLATE SCHEDULE

MARK	COLUMN SHAPE	BASE PLATE		HEADED STUD ANCHORS					REMARKS
		THICKNESS	LENGTH X WIDTH	NUMBER	DIAMETER	EMBEDMENT	ASTM DESIGNATION	TYPE	
BPL-1	HSS4 1/2 X 4 1/2	1"	12" X 12"	4	1"	16"	F1554 GR 55	A	REF A9/SG010
BPL-2	HSS6X6	1"	12" X 12"	4	1"	16"	F1554 GR 55	A	REF A9/SG010

FOUNDATION NOTES:

1. THE FINISH FLOOR ELEVATION (FFE = 100'-0") IS AN ARCHITECTURAL REFERENCE DATUM. ALL ELEVATIONS SHOWN WITHIN THESE CONTRACT STRUCTURAL DRAWINGS ARE WITH RESPECT TO THE ARCHITECTURAL REFERENCE DATUM. THIS IS NOT THE SAME AS THE ABOVE MEAN SEA LEVEL (AMSL) ELEVATION. REFERENCE THE CIVIL DRAWINGS FOR THE FINISH FLOOR ELEVATION IN ABOVE MEAN SEA LEVEL.
2. REFERENCE THE ARCHITECTURAL DRAWINGS FOR ALL FLOOR DEPRESSIONS, FLOOR DRAINS, AND ADDITIONAL DIMENSIONS. COORDINATE ALL DIMENSIONS WITH ARCHITECTURAL DRAWINGS.
3. REFERENCE MECHANICAL, ELECTRICAL, AND PLUMBING DRAWINGS FOR OPENINGS AND PENETRATIONS NOT SHOWN. REFERENCE TYPICAL DETAILS FOR ADDITIONAL STEEL REQUIREMENTS.
4. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL DIMENSIONS WITH ARCHITECTURAL DRAWINGS BEFORE COMMENCING WORK. THE CONTRACTOR SHALL REPORT ANY DISCREPANCIES TO THE ARCHITECT/ENGINEER PRIOR TO COMMENCING WORK.
5. REFERENCE A13/SG002 FOR THE CLASSES OF CONCRETE MATRIX AND ADDITIONAL INFORMATION.
6. PROVIDE A 15 MIL VAPOR RETARDER UNDER ALL FOUNDATIONS (EXCEPT CANOPY FOUNDATIONS) UNLESS NOTED OR DETAILED OTHERWISE. REFERENCE THE GENERAL NOTES FOR ADDITIONAL INFORMATION.
7. REFERENCE SG/007 AND SG/008 FOR TYPICAL FOUNDATION DETAILS.
8. FOR LARGE INSERTS SUCH AS (BUT NOT LIMITED TO): FLOOR BOXES, FLOOR SINKS, ETC., PROVIDE A THICKENED SLAB WITH 3" MINIMUM DEPTH BELOW THE BOTTOM OF THE INSERT AND 3' FROM THE EDGE OF THE INSERT ALL AROUND. PROVIDE 0.18% (PERCENT AREA OF THICKENED CONCRETE SLAB) IN REINFORCING STEEL AT THE BOTTOM EACH WAY. REINFORCE AROUND THE OPENING WITH TYPICAL OPENING REINFORCING. REFERENCE A1/SG010 FOR OPENING REINFORCING. FOR INSERTS GREATER THAN 1'-0" PROVIDE #3 STRRUPS AT 8" ON CENTER WITH 1 - #5 TOP AND BOTTOM AROUND PERIMETER OF INSERT.
9. REFERENCE THE "FOUNDATION SUBGRADE" GENERAL NOTES FOR BUILDING PAD REQUIREMENTS. REFERENCE THE PROJECT GEOTECHNICAL REPORT FOR ADDITIONAL INFORMATION.
10. PROVIDE A SMOOTH FINISH AT ALL EXTERIOR FOUNDATION SURFACES 12"(MINIMUM) BELOW THE FINISH FLOOR ELEVATION (FFE).

SPREAD FOOTING SCHEDULE

MARK	LENGTH X WIDTH	THICKNESS	REINFORCING	REMARKS
S1	3'-0" X 3'-0"	3'-0"	4 - #6 BOT ES EW	
S2	4'-6" X 4'-6"	2'-0"	6 - #6 BOT ES EW	
S3	5'-0" X 5'-0"	2'-0"	6 - #6 BOT ES EW	
S4	5'-6" X 5'-6"	2'-0"	7 - #6 BOT ES EW	
S5	6'-0" X 6'-0"	2'-0"	8 - #6 BOT ES EW	
S6	7'-0" X 7'-0"	2'-0"	9 - #6 BOT ES EW	

WALL FOOTING SCHEDULE

MARK	WIDTH	THICKNESS	REINFORCING	
			TRANSVERSE	LONGITUDINAL
WF-1	7'-0"	16"	#7 @ 16" OC	5 - #7 CONT ES
WF-2	5'-0"	16"	#6 @ 14" OC	5 - #6 CONT ES
WF-3	6'-0"	16"	#6 @14" OC	5 - #6 CONT ES
WF-4	7'-0"	16"	#6 @ 14" OC	6 - #6 CONT ES
WF-5	6'-0"	16"	#7 @ 16" OC	5 - #6 CONT ES
WF-6	13'-0"	16"	#7 @ 16" OC	8 - #7 CONT ES
WF-7	9'-0"	16"	#7 @ 16" OC	8 - #7 CONT ES

A1 | FOUNDATION PLAN

1/4" = 1'-0"

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FOUNDATION PLAN

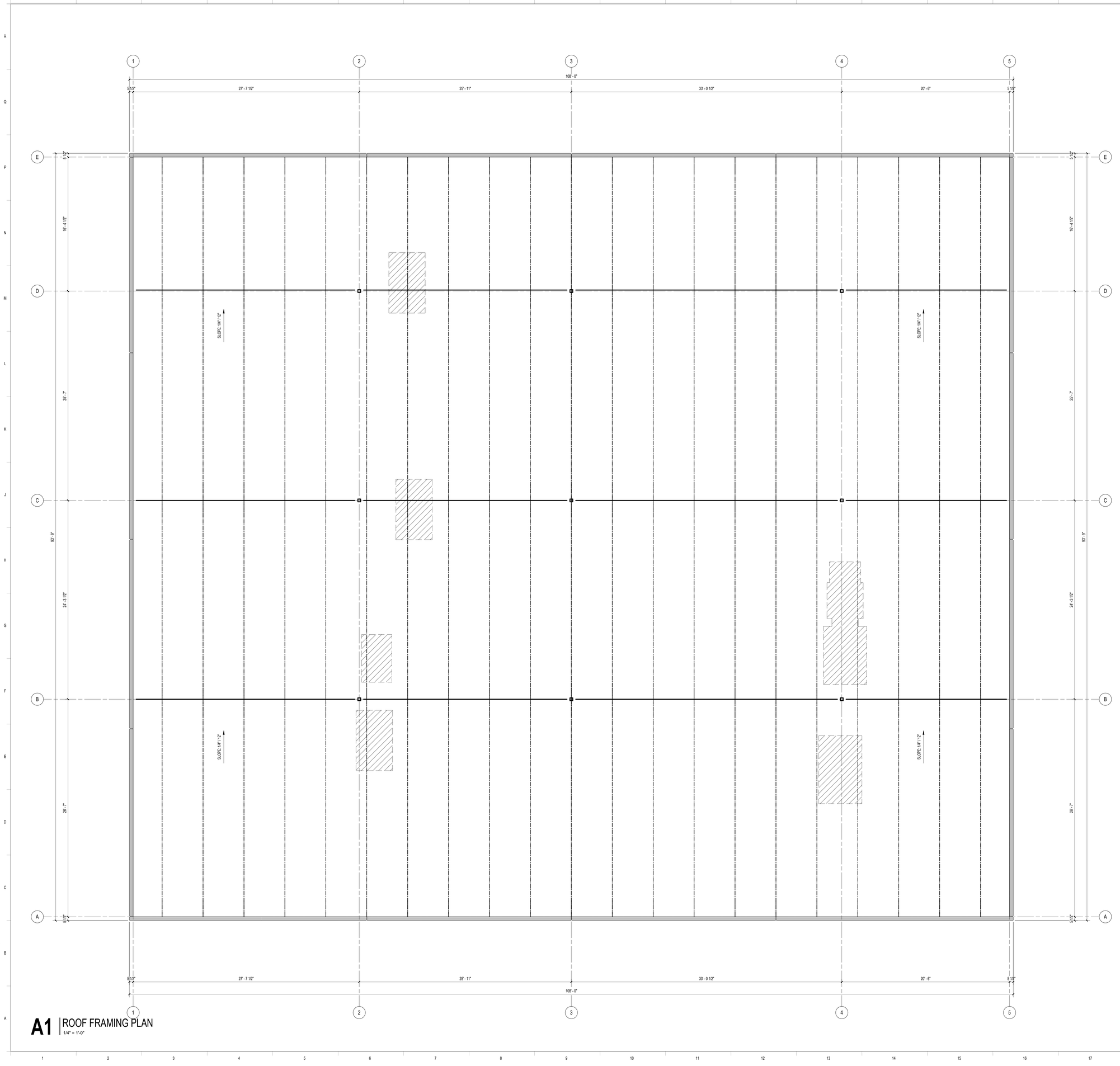
Sheet Number

SB101

Project Status:

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FRAMING NOTES:

1. COORDINATE ALL DIMENSIONS WITH ARCHITECTURAL DRAWINGS.
2. REFERENCE MECHANICAL, ELECTRICAL, AND PLUMBING DRAWINGS FOR OPENINGS AND PENETRATIONS NOT SHOWN. REFERENCE TYPICAL DETAILS FOR ADDITIONAL STEEL REQUIREMENTS.
3. TOP OF STEEL (TOS) ELEVATIONS ARE INDICATED ON THE PLAN.
4. ALL STEEL THAT IS PERMANENTLY EXPOSED TO WEATHER OR IN PERMANENTLY UNCONDITIONED SPACE SHALL BE HOT-DIPPED GALVANIZED. REFERENCE THE GENERAL NOTES FOR ADDITIONAL REQUIREMENTS.
5. ALL EXTERIOR COMPONENT AND CLADDING SYSTEMS (E.G. WINDOWS, CURTAIN WALLS, STOREFRONTS, EXTERIOR DOORS; ARCHITECTURAL SIDINGS, METAL WALL AND ROOF PANELS, ROOFING SYSTEMS, SKYLIGHTS, ROOF TOP EQUIPMENT, ETC.) MUST MEET MINIMUM WIND REQUIREMENTS AS PRESCIBED BY THE INTERNATIONAL BUILDING CODE (IBC), PROJECT EDITION.

A1 | ROOF FRAMING PLAN

1/4" = 1'-0"

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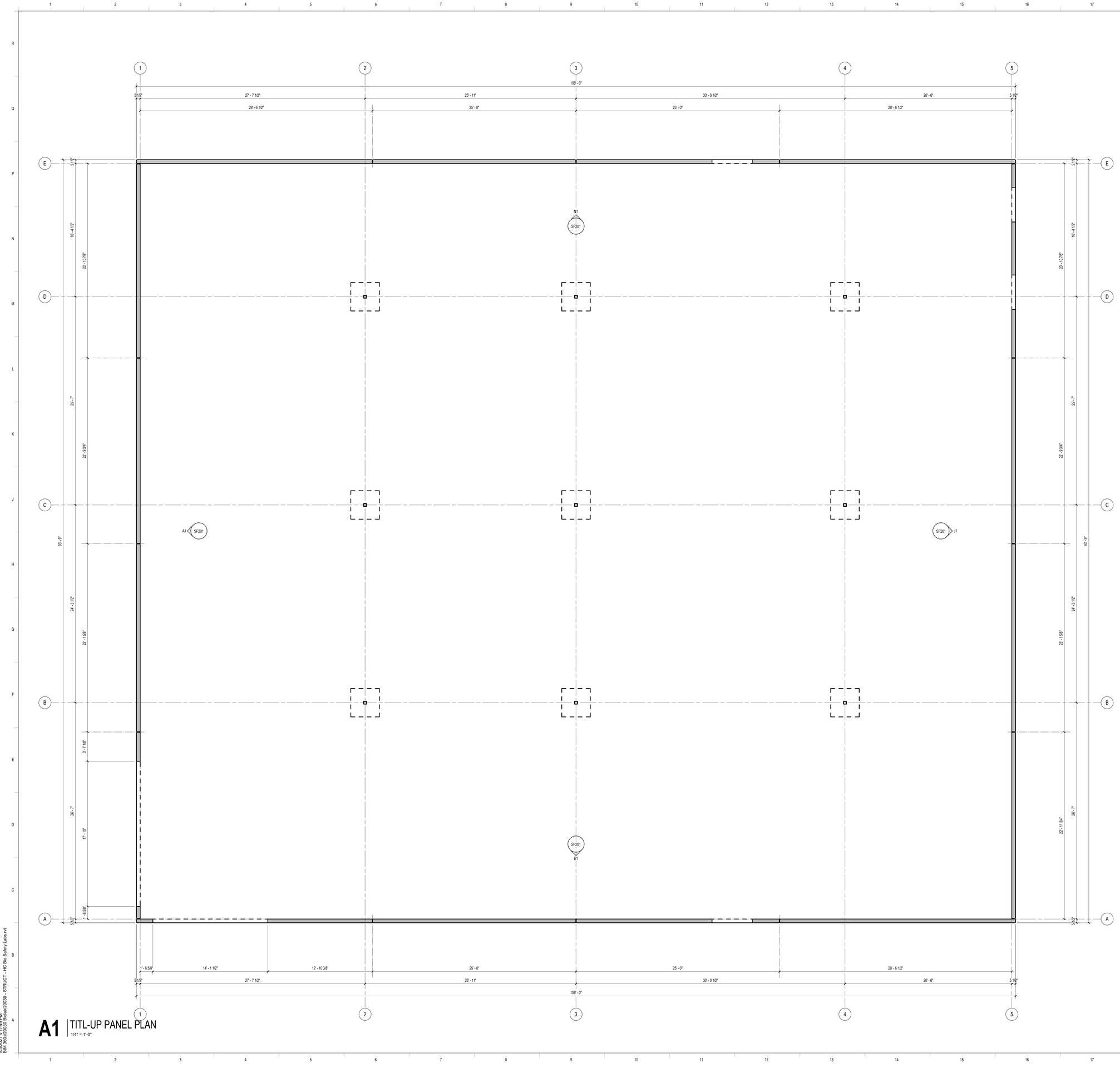
FRAMING PLAN

Sheet Number

SF101

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A1 | TITL-UP PANEL PLAN

1/4" = 1'-0"

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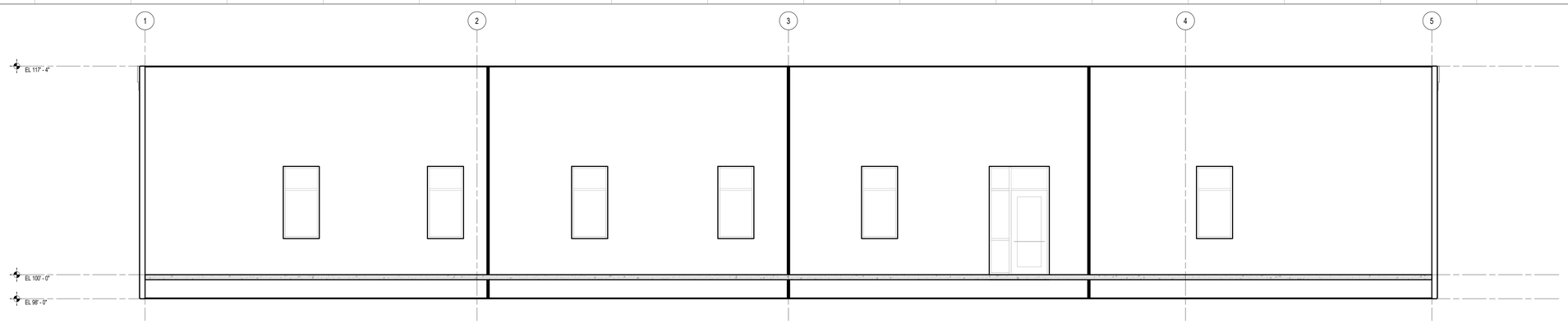
TILT-UP PANEL PLAN

Sheet Number

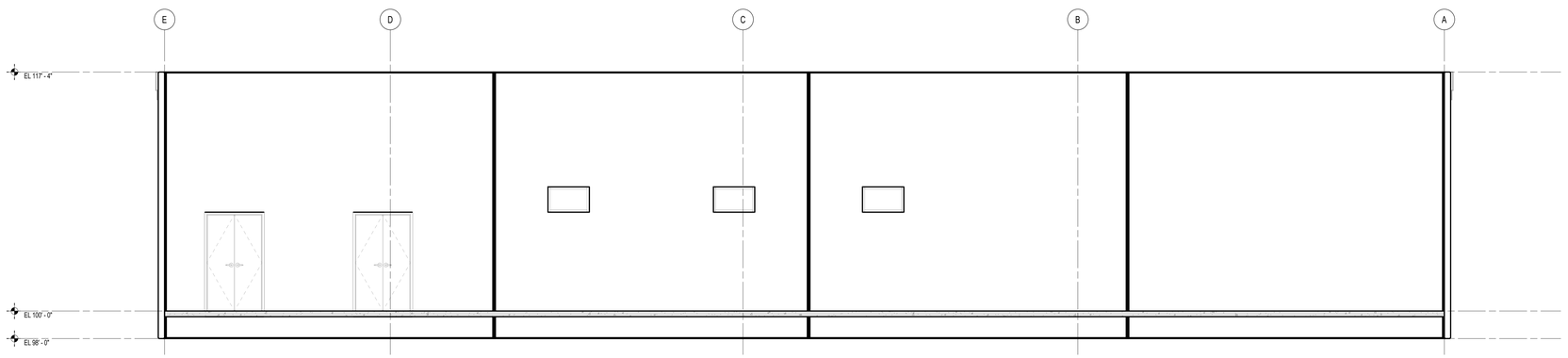
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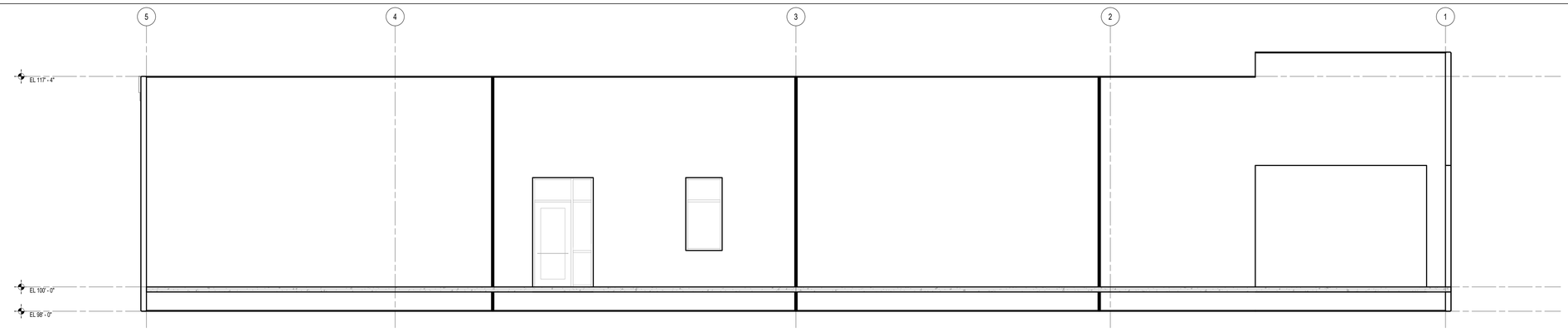
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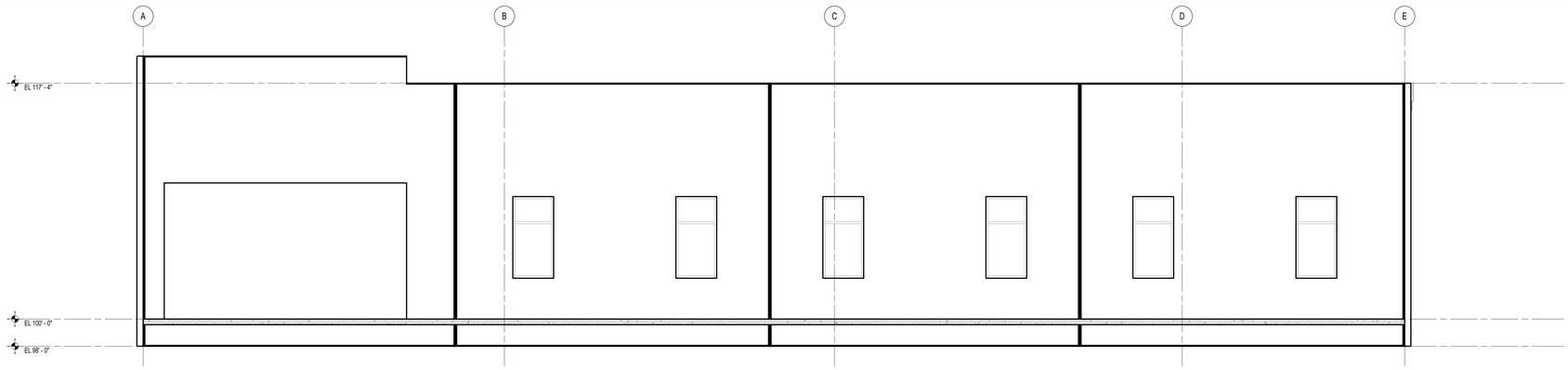
N1 | TITL-UP PANEL ELEVATION - NORTH
1/4" = 1'-0"



J1 | TITL-UP PANEL ELEVATION - EAST
1/4" = 1'-0"



E1 | TITL-UP PANEL ELEVATION - SOUTH
1/4" = 1'-0"



A1 | TITL-UP PANEL ELEVATION - WEST
1/4" = 1'-0"

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TILT-UP PANEL ELEVATIONS

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SF201

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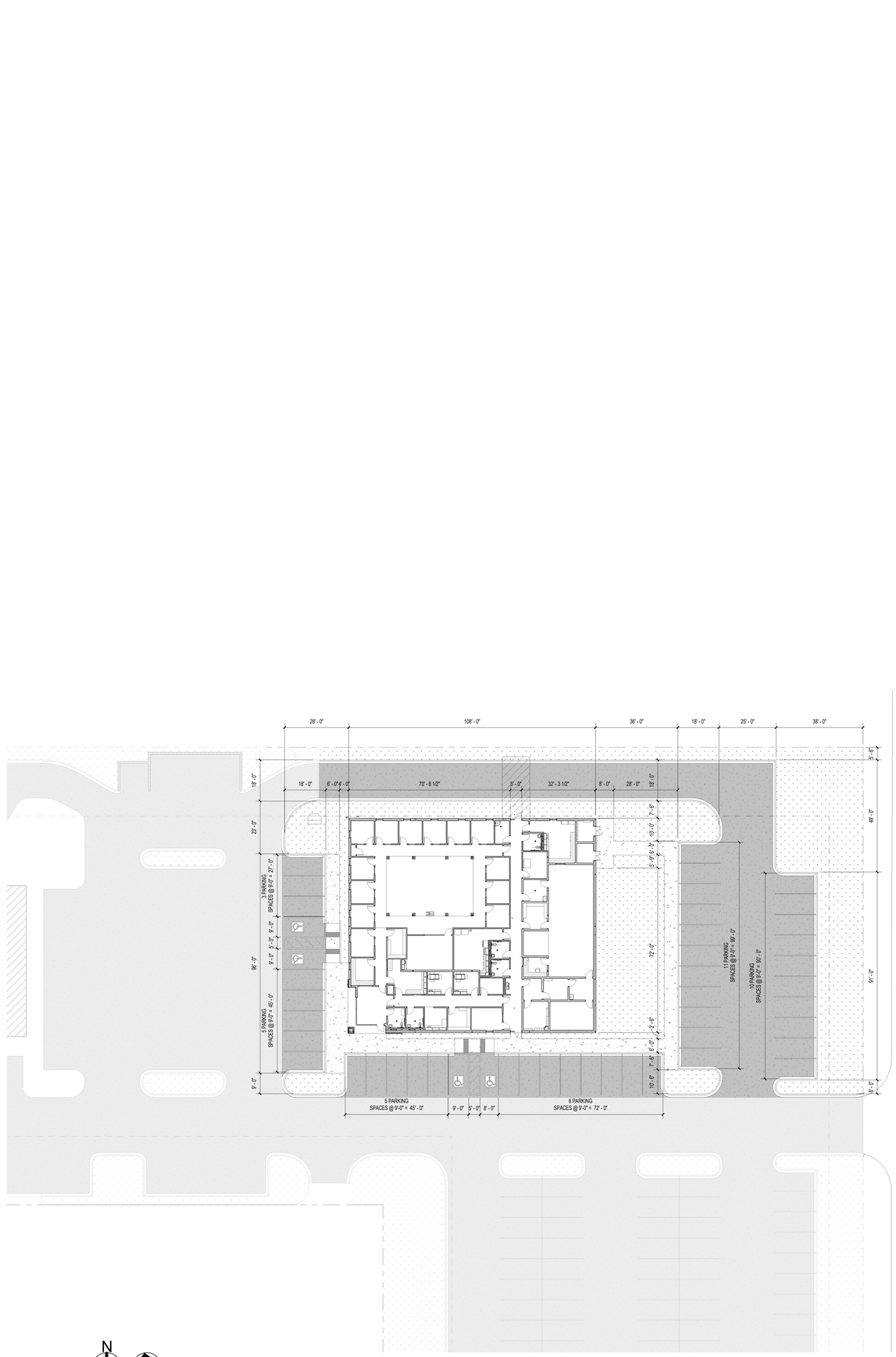
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SITE GENERAL NOTES

1. **CONTRACTOR IS RESPONSIBLE FOR:**
   - A. VERIFYING ALL EXISTING SITE CONDITIONS, DIMENSIONS, UTILITIES, ETC. PRIOR TO COMMENCING WORK. DISCREPANCIES SHALL BE SUBMITTED TO THE ARCHITECT BEFORE PROCEEDING WITH WORK.
   - B. FOR THE DESIGN, ACQUIREMENT OF ALL NECESSARY PERMITS, ETC. AND IMPLEMENTATION OF STORM WATER POLLUTION PREVENTION PLAN WITH THE APPROPRIATE AGENCIES.
   - C. FOR COMPLYING WITH THE AMERICANS WITH DISABILITIES ACT (A.D.A), TEXAS ACCESSIBILITY STANDARDS (T.A.S.) ACCESSIBLE ROUTE REQUIREMENTS,
     1. ACCESSIBLE ROUTE (PARKING LOT AND WALKS)
        - a. SLOPE SHALL NOT EXCEED 5% (5/8" I FT)
        - b. CROSS-SLOPE SHALL NOT EXCEED 2% (1/4" I FT)
     2. ACCESSIBLE APPROACH TO EXTERIOR DOOR(S) IMMEDIATELY OUTSIDE OF DOOR AND FOR A DISTANCE OF 5'-0" MIN. SHALL
        - a. NOT EXCEED A SLOPE OF 2% (1/4" I FT)
        - b. MAX. RISE AT THRESHOLD SHALL NOT EXCEED 1/2"
2. GRADE ALL LANDSCAPE ISLANDS TO AVOID WATER PONDING INSIDE CURBS.
3. REFER TO PAVING SCHEDULE FOR THICKNESS OF SURFACES.
4. **REFER TO CIVIL DRAWINGS:**
   - A. FOR ALL SITE GRADING AND SUB-SURFACE DRAINAGE SYSTEMS AND UTILITIES
   - B. FOR CONNECTION OF DOWNSPOUTS BELOW GRADE
5. **REFER TO MEP DRAWINGS:**
   - A. FOR ASSOCIATED MEP WORK,
6. **REFER TO STRUCTURAL DRAWINGS:**
   - A. FOR SERVICE YARD WALL FOUNDATION, AS/SB103
   - B. FOR MARQUEE SIGN FOUNDATION, DTL A17/SB103
7. FOR FLAGPOLE FOUNDATION, DTL J10/SG007
8. FOR LIGHT STANDARDS FOUNDATION, RE: A17/SG008 WHERE NEW SITE ADJOINS EXISTING/ OLD CONDITION, EXISTING CONDITION SHALL CONTROL. IF MAJOR DISCREPANCIES ARE APPARENT, NOTIFY ARCHITECT BEFORE PROCEEDING WITH THE WORK.
9. **TYPICAL DIMENSIONS/ RADII:**
   - A. ALL CURB RADII ARE 5'-0" UNO
   - B. SIDEWALKS ARE 5'-0" WIDE UNO
10. **EXPANSION JOINTS/ CONTROL JOINTS:**
    - A. PROVIDE EXPANSION JOINTS (E.J.) AT 20'-0" O.C. MAX.
    - B. PROVIDE CONTROL JOINTS (C.J.) AT 5'-0" O.C. MAX. AND EQUAL SPACES.
    - C. VERIFYING JOINT LAYOUT WITH ARCHITECT IN THE FIELD PRIOR TO FORMING.
    - D. PROVIDE EXPANSION JOINTS AT THE PROPERTY LINE OF ALL DRIVES.
11. **IRRIGATION SLEEVES:**
    - A. PROVIDE 6" SCHEDULE 40 PVC IRRIGATIONS SLEEVES AT LOCATION SHOWN ON PLANS
    - B. CONTRACTOR SHALL VERIFY LOCATIONS OF ALL IRRIGATION SLEEVES WITH LANDSCAPING
    - C. SLEEVES SHALL HAVE MARKER TAPE ON UPPER SIDE AND BOTH ENDS FOR FUTURE LOCATES.
    - D. PROVIDE CUSTOM BRONZE MARKER (SLEEVE) AT CURB AT LOCATION OF ALL IRRIGATION SLEEVES. AS AVAILABLE FROM BERNTSEN INTERNATIONAL, "BERNTSEN.COM" MODEL BP2-U
12. ALL DIMENSIONS ARE TO EDGE OF WALK OR PAVING, INSIDE OF CURB (OPPOSITE PAVING), FACE OF BUILDING OR PROPERTY LINE, UNO
13. **PARKING LOT PAINTING STANDARDS:**
    - A. TYPICAL PARKING LINE SHALL BE 4" WIDE X 18'-0" LONG PER STALL, UNO.
    - B. PAINT COLOR - AS SELECTED BY OWNER
14. **FIRE LANES:**
    - A. REFER TO SITE PLAN FOR LOCATIONS
    - B. REFER TO A1/AS104 FOR REQUIREMENTS
15. **SITE SIGNAGE:**
    - A. REFER TO SITE PLAN FOR LOCATIONS.
    - B. REFER TO A10/AS104 FOR SIGN INFORMATION

SITE LEGEND

- ASPHALT PAVEMENT / RE: CIVIL XXX
- CONCRETE PAVEMENT / RE: CIVIL XXX
- HYDROMULCH



A1 SITE PLAN
1" = 20'-0"

N
PLAN NORTH
TRUE NORTH

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SHEET NAME

SITE PLAN

Sheet Number

AS101

Project Status:

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FLOOR PLAN GENERAL NOTES

1. FLOOR PLAN(S) DIMENSIONS ARE TO THE EDGE OF SLAB, FACE OF CONCRETE AND FACE OF METAL STUDS, UNLESS NOTED OTHERWISE
2. REFER TO SHEET G003 FOR ACCESSIBILITY STANDARDS
3. REFER TO SHEETS AE500 FOR PARTITION TYPES & TYPICAL INTERIOR PARTITION & CONTROL JOINT DETAILS
4. REFER TO SHEETS AI100 - AI104 FOR ROOM FINISHES AND PATTERNS
5. PROVIDE BLOCKING AS REQUIRED FOR PROPER SUPPORT OF WALL MOUNTED ITEMS AND CEILING MOUNTED EQUIPMENT
6. F.E.C - FIRE EXTINGUISHER CABINETS TO BE PROVIDED AND FURNISHED BY CONTRACTOR
7. REFER TO MEP FOR ALL ELECTRICAL AND MECHANICAL SYMBOLS
8. ALL RESIDENTIAL EQUIPMENT TO BE CONTRACTOR FURNISHED & INSTALLED
9. PROVIDE EMERGENCY EVACUATION PLAN AT EACH FIRE EXTINGUISHER

FLOOR PLAN GENERAL NOTES

1. **SHEET REFERENCES:**
   - A. ACCESSIBILITY STANDARDS: RE SHG1101.
   - B. CODE/ LIFE SAFETY RE SHT G003
   - C. MOUNTING HEIGHTS: RE SHT AE400
   - D. PARTITION TYPES RE SHT AE501
   - E. DOOR SCHEDULES RE SHT AE601
   - F. REFLECTED CEILING PLAN: RE SHT AE701
   - G. ROOF PLAN RE SHT AE801
   - H. FINISH SCHEDULE: RE SHT AI100
2. **PARTITIONS**
   - A. ALL PARTITION TYPES SHALL BE TYPE "A3I" UNO
   - B. TERMITATE PARTITIONS AS FOLLOWS AT UNDERSIDE OF DECK UNO
   - C. PARTITION RATINGS
     1. ALL SHAFT WALLS TO PROVIDE FOR 2 HRS. FIRE RATING.
     2. ALL SHAFTS SHALL BE SEALED AT BOTTOM & TOP TO PROVIDE 2 HRS. FIRE RATING.
     3. OPENINGS/ PENETRATIONS:
        - a. IN FIRE RATED WALLS SHALL BE PROVIDED WITH FIRE SMOKE SEALS OF THE SAME FIRE RATING AS OF THE PARTITION PENETRATED
3. **DOOR OPENINGS:**
   - A. ALL DOOR OPENINGS ARE DESIGNATED WITH DOOR NUMBERS WHICH ARE REFERENCED IN DOOR SCHEDULE
   - B. ALL INTERIOR DOORS AND FRAMES IN FIRE RATED PARTITIONS SHALL:
     1. HAVE INTEGRAL SMOKE SEALS UNO
     2. HAVE FIRE RATING CORRESPONDING TO FIRE RATING OF PARTITION UNO
        - a. 1 HOUR RATED CORRIDOR PARTITIONS – 20 MINUTE RATED DOOR
        - b. 2 HOUR RATED PARTITIONS – 90 MINUTE RATED DOOR
   - C. REFER TO AE601 FOR TYPICAL DOOR PLACEMENT
4. **BLOCKING:**
   - A. PROVIDE WOOD BLOCKING AND/OR STEEL SUPPORTS AS REQUIRED IN METAL STUD PARTITIONS BEHIND WALL MOUNTED EQUIPMENT, TOILET ACCESSORIES, TOILET PARTITIONS, COUNTERTOPS, CABINETRY & OTHER HEAVY ITEMS TO PROVIDE SUFFICIENT SUPPORT TO PREVENT SAGGING OR OTHER FAILURE.
   - B. REFER TO SPECIFICATION SECTION 06 10 53 MISCELLANEOUS ROUGH CARPENTRY
5. VERIFY & COORDINATE ALL REQUIREMENTS FOR OWNER FURNISHED ITEMS PRIOR TO INSTALLING WORK THAT MIGHT INTERFACE WITH SUCH ITEMS.

FLOOR PLAN KEYNOTES

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SHEET NAME

FLOOR PLAN

Sheet Number

AE101

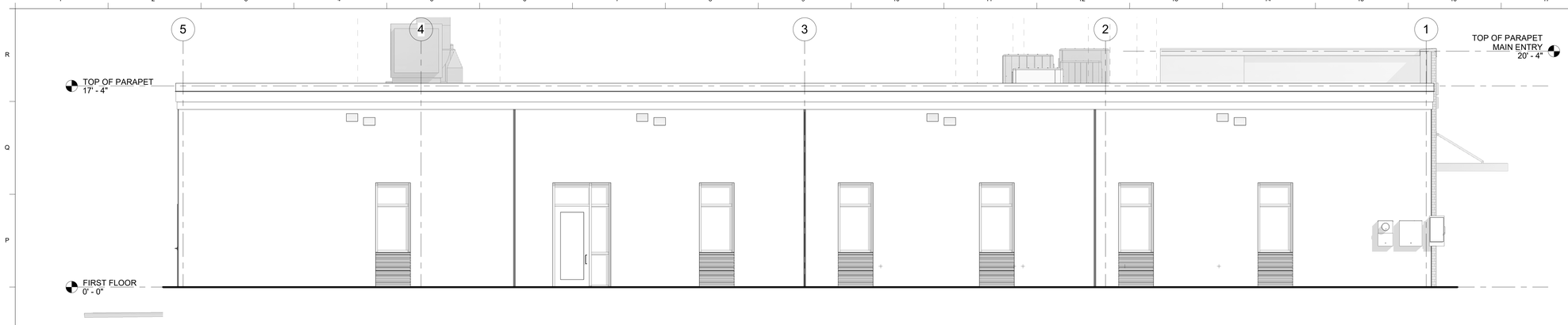
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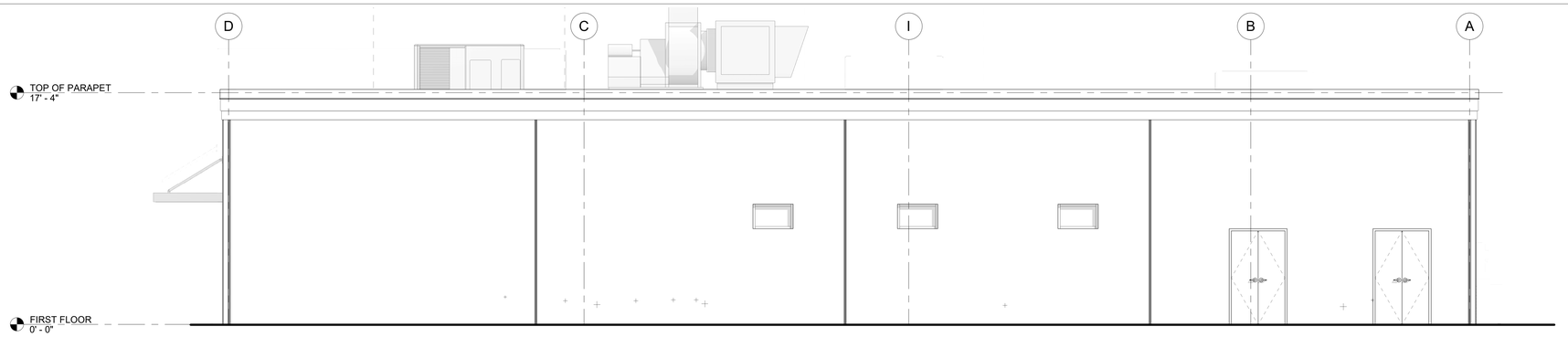
A1 1ST FLOOR COMPOSITE
PLAN
1/4" = 1'-0"

PLAN NORTH / TRUE NORTH

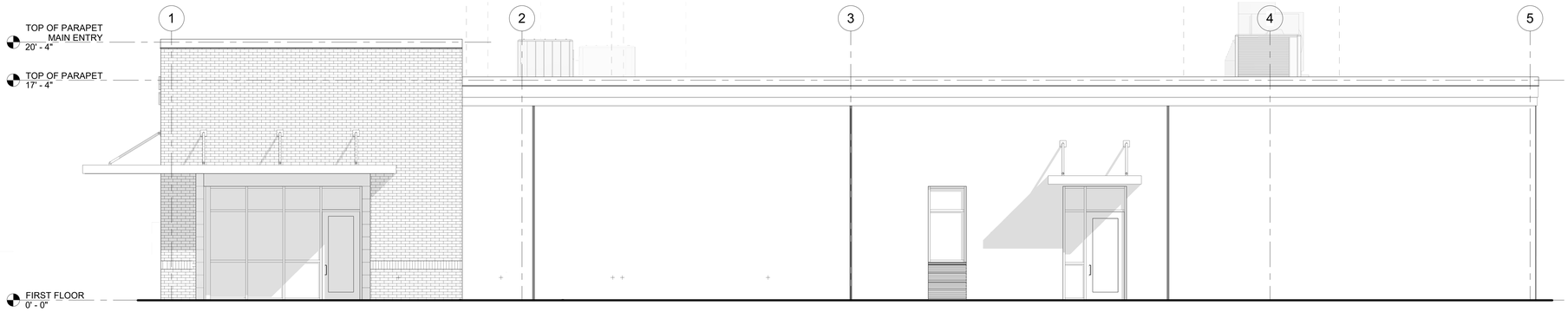
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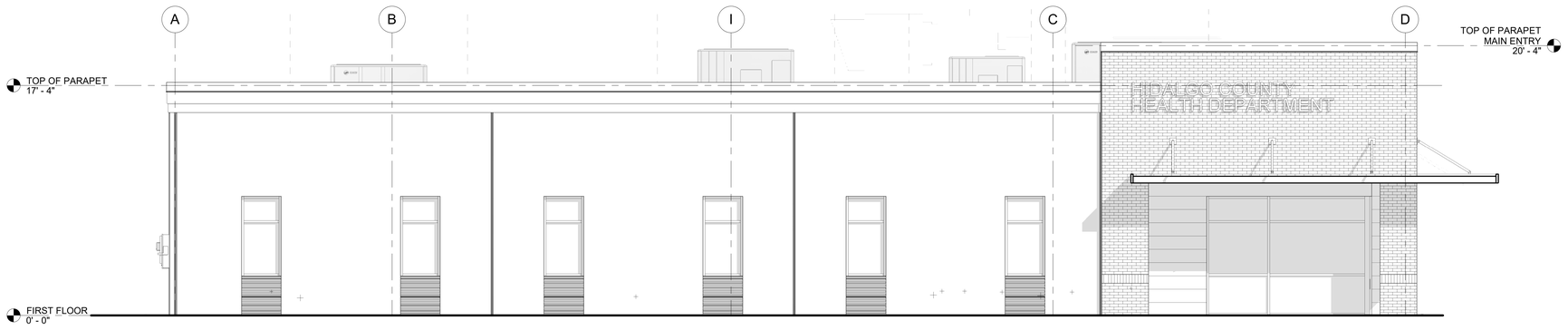
N1 NORTH **ELEVATION**
1/4" = 1'-0"



J1 EAST **ELEVATION**
1/4" = 1'-0"



E1 SOUTH **ELEVATION**
1/4" = 1'-0"



A1 WEST **ELEVATION**
1/4" = 1'-0"

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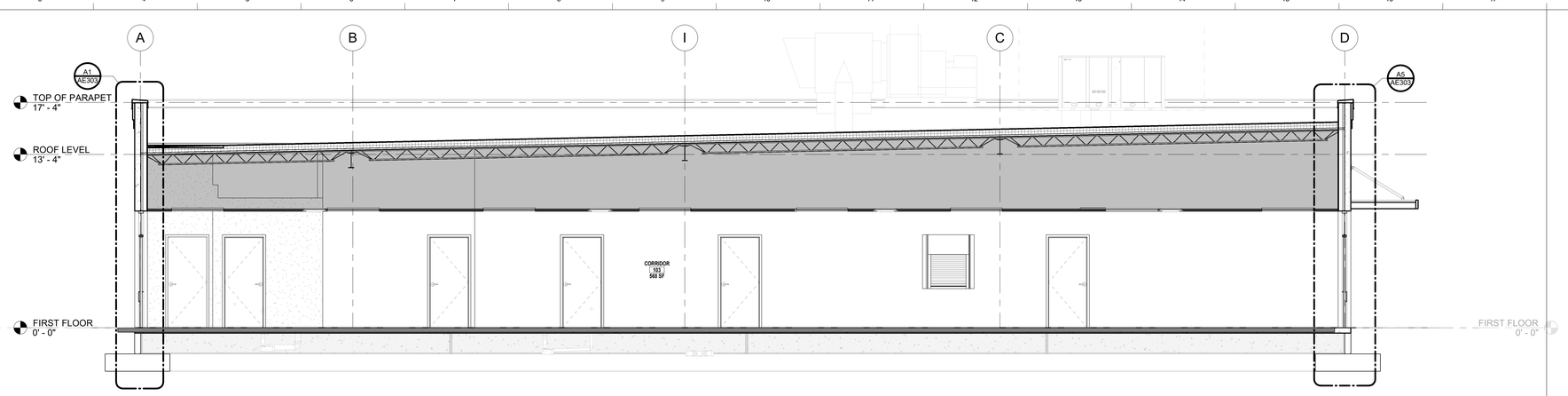
EXTERIOR ELEVATIONS

Sheet Number

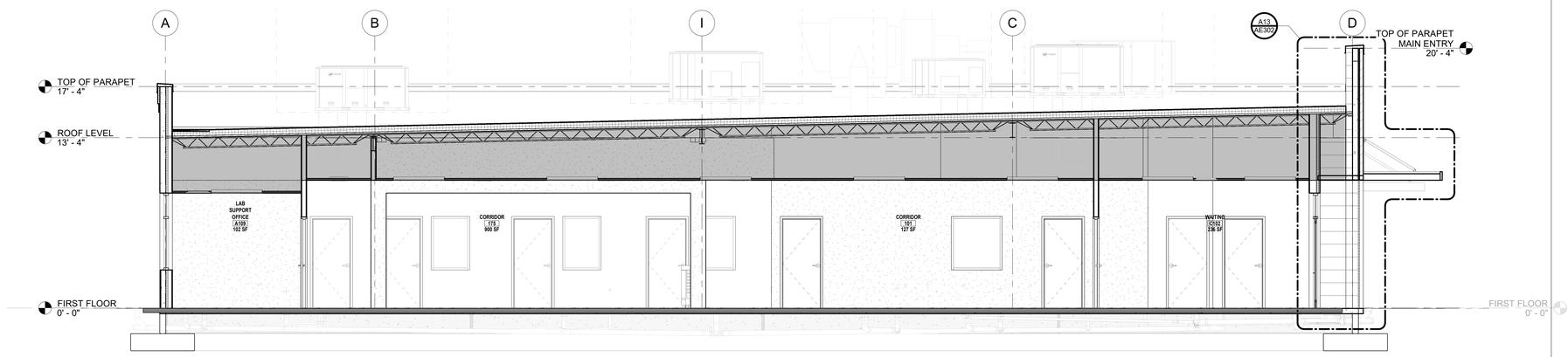
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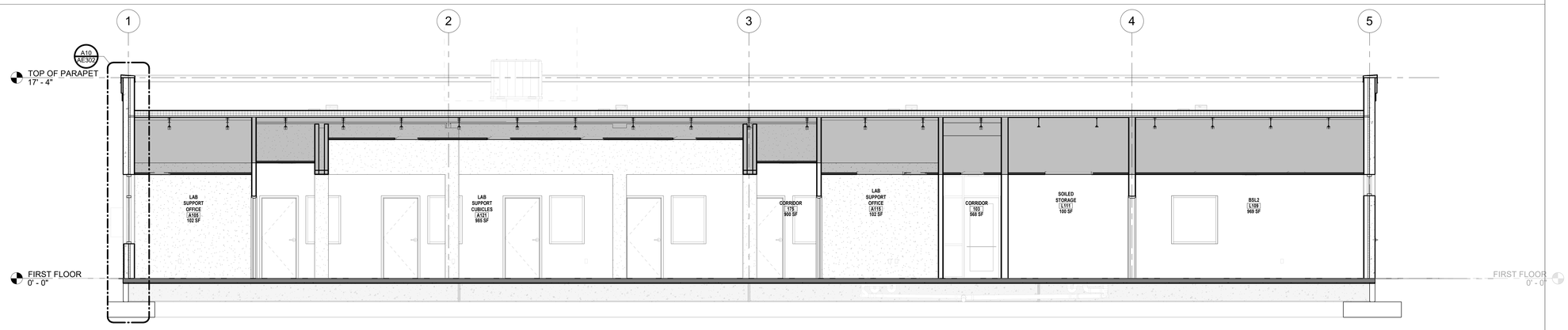
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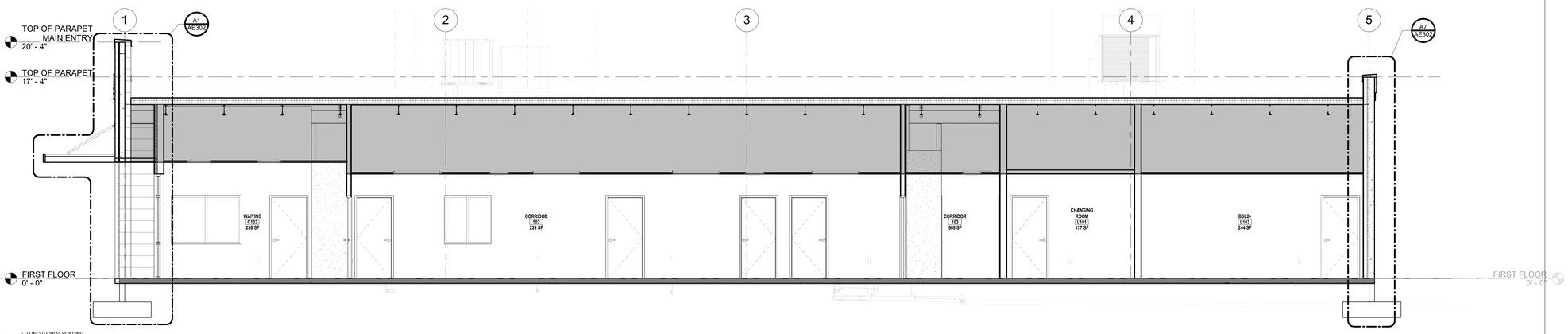
N1 TRANSVERSE BUILDING **SECTION**
1/4" = 1'-0"



J1 TRANSVERSE BUILDING **SECTION**
1/4" = 1'-0"



E1 LONGITUDINAL BUILDING **SECTION**
1/4" = 1'-0"



A1 LONGITUDINAL BUILDING **SECTION**
1/4" = 1'-0"

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ELI R OCHOA, P.E., AIA
TEXAS REGISTRATION NO.
Engineer: 60251
Architect: 19160

HC Biosafety Lab

County of Hidalgo
S 25th Ave, Edinburg, TX 78542

No.	Date	Description

PROJECT NO.: 20030
ISSUE DATE: 05/03/2021
DRAWN BY: Author
CHECKED BY: Checker

SHEET NAME

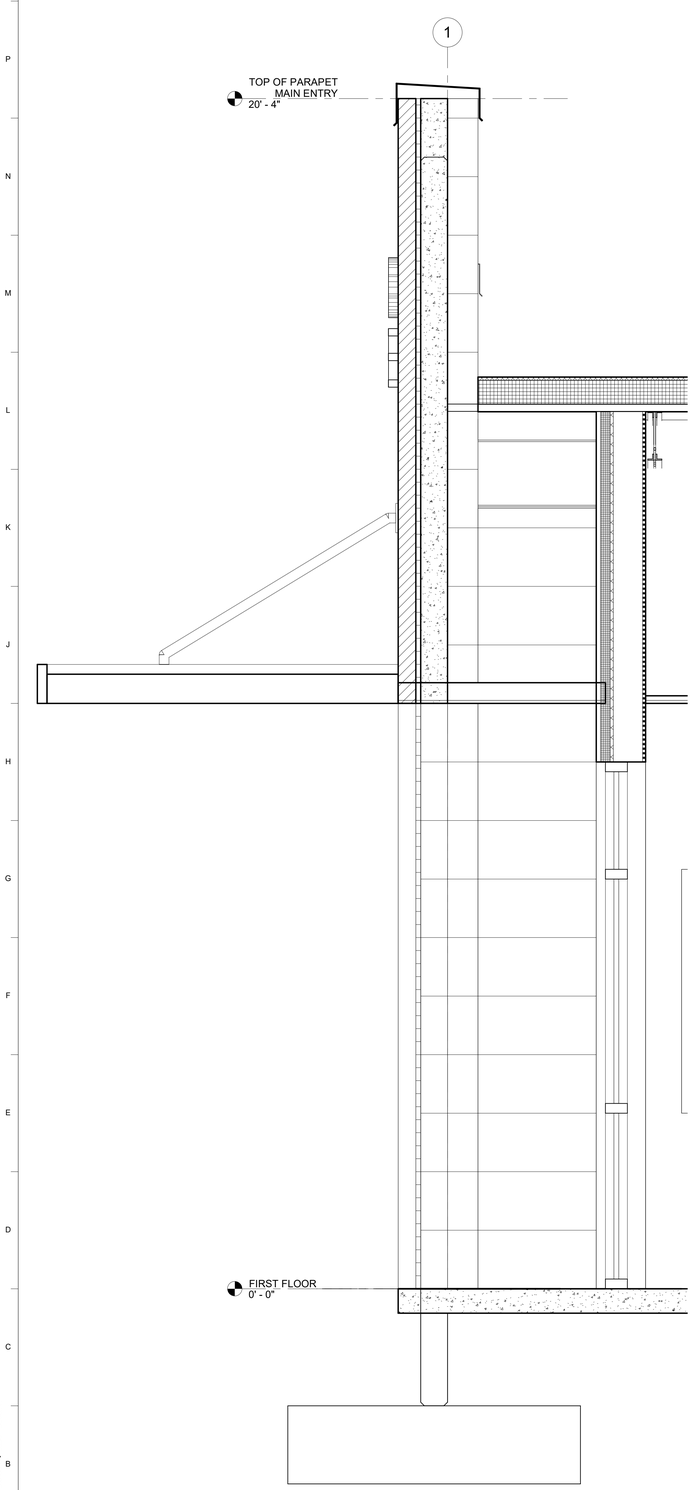
BUILDING SECTIONS

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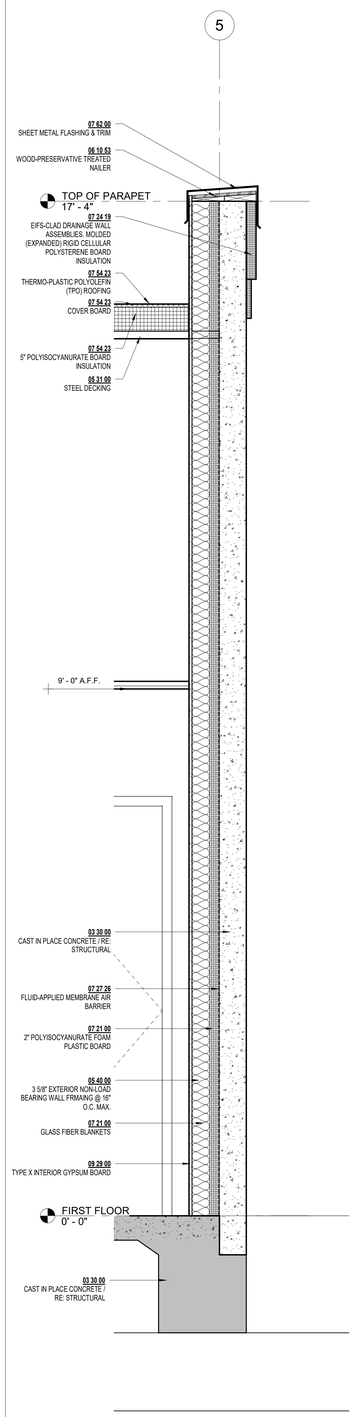
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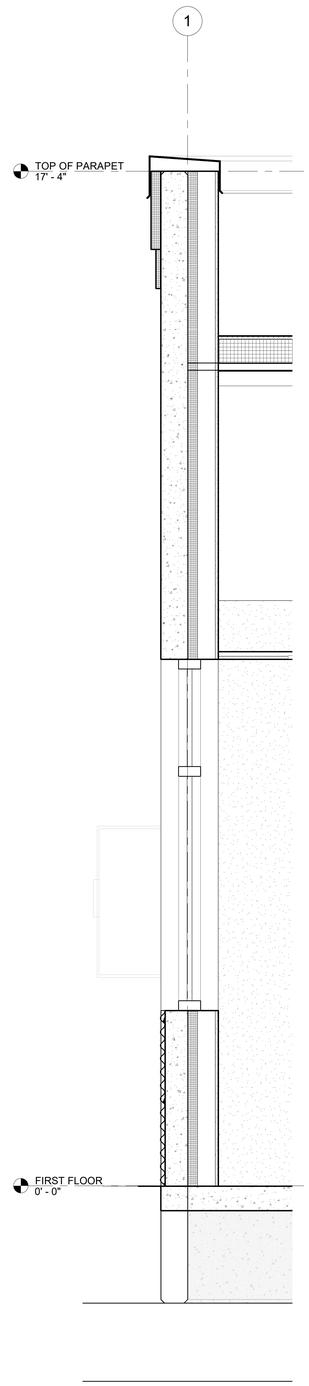
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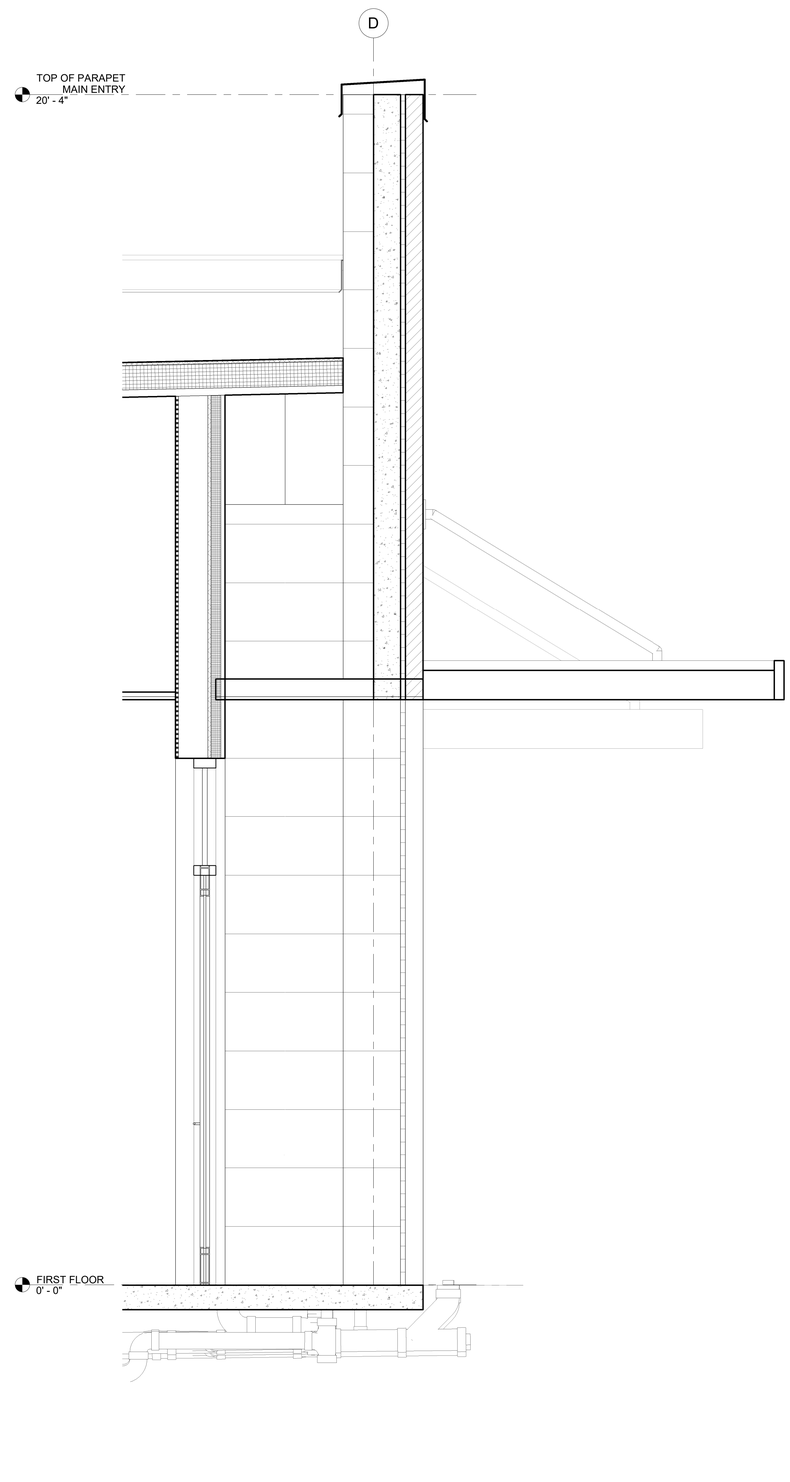
A1 EXTERIOR WALL SECTION
1" = 1'-0"



A7 EXTERIOR WALL SECTION
1" = 1'-0"



A10 EXTERIOR WALL SECTION
1" = 1'-0"



A13 EXTERIOR WALL SECTION
1" = 1'-0"

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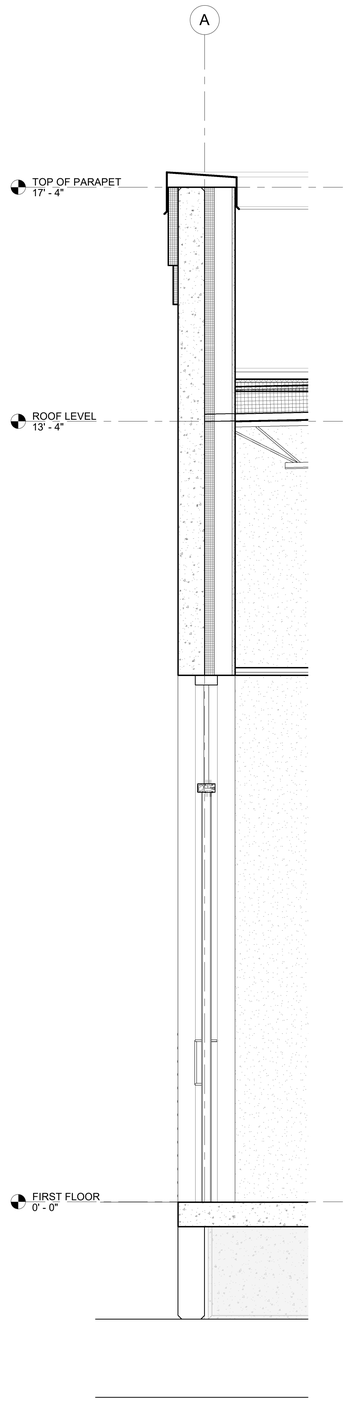
WALL SECTIONS

Sheet Number

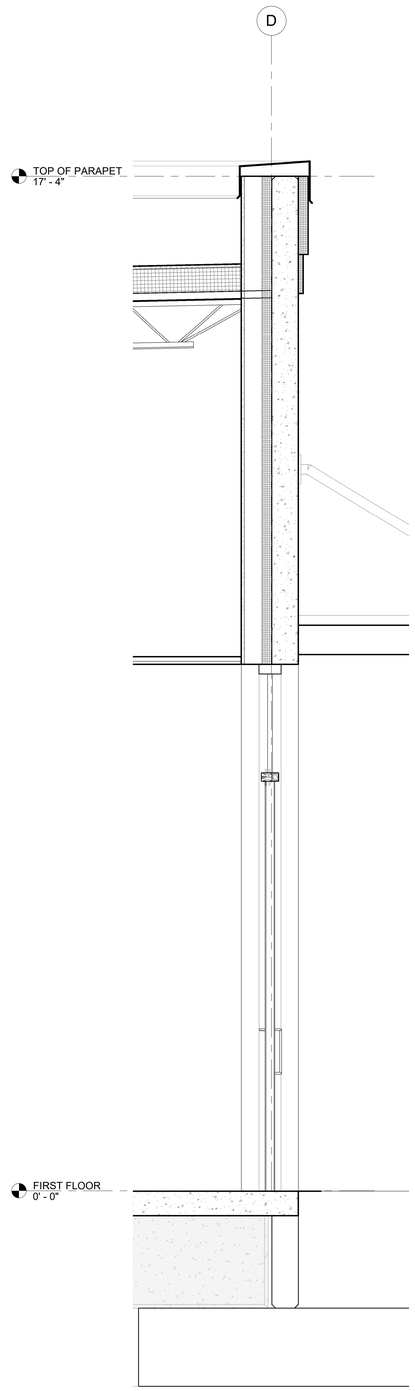
AE302

Project Status:

100% SCHEMATIC DESIGN



A1 EXTERIOR WALL SECTION
1" = 1'-0"



A5 EXTERIOR WALL SECTION
1" = 1'-0"

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HC Biosafety Lab

County of Hidalgo
S 25th Ave, Edinburg, TX 78542

No.	Description	Date

PROJECT NO.: 20030
ISSUE DATE: 05/03/2021
DRAWN BY: Author
CHECKED BY: Checker

SHEET NAME

WALL SECTIONS & DETAILS

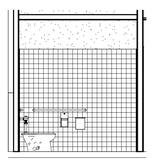
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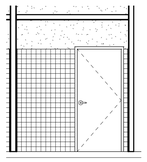
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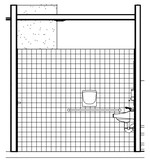
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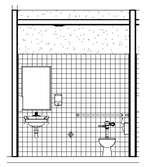
21 R.R.A118 - NORTH
ELEVATION
1/4" = 1'-0"



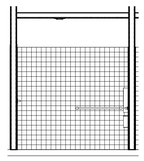
22 R.R.A118 - EAST
ELEVATION
1/4" = 1'-0"



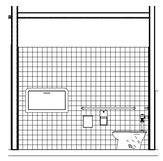
23 R.R.A118 - SOUTH
ELEVATION
1/4" = 1'-0"



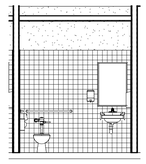
24 R.R.A118 - WEST
ELEVATION
1/4" = 1'-0"



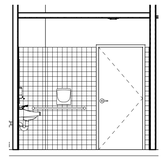
19 PUBLIC R.R. C103 - NORTH
ELEVATION
1/4" = 1'-0"



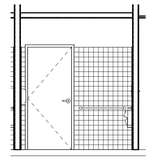
20 PUBLIC R.R. C103 - EAST
ELEVATION
1/4" = 1'-0"



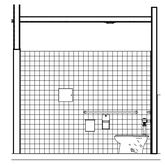
30 PUBLIC R.R. C103 - SOUTH
ELEVATION
1/4" = 1'-0"



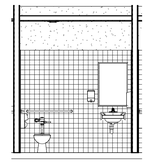
31 PUBLIC R.R. C103 - WEST
ELEVATION
1/4" = 1'-0"



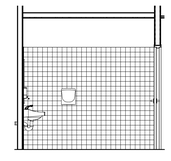
32 CLINICAL R.R. C104 - NORTH
ELEVATION
1/4" = 1'-0"



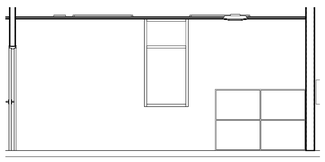
33 CLINICAL R.R. C104 - EAST
ELEVATION
1/4" = 1'-0"



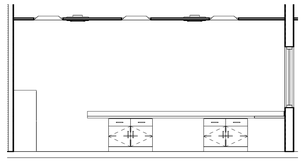
34 CLINICAL R.R. C104 - SOUTH
ELEVATION
1/4" = 1'-0"



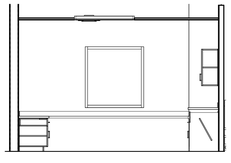
35 CLINICAL R.R. C104 - WEST
ELEVATION
1/4" = 1'-0"



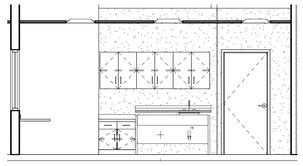
26 MICROSCOPY A124 - NORTH
ELEVATION
1/4" = 1'-0"



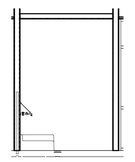
27 MICROSCOPY A124 - EAST
ELEVATION
1/4" = 1'-0"



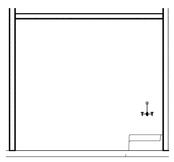
28 MICROSCOPY A124 - SOUTH
ELEVATION
1/4" = 1'-0"



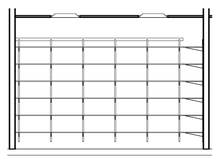
29 MICROSCOPY A124 - WEST
ELEVATION
1/4" = 1'-0"



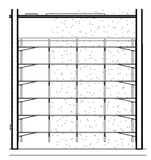
25 JANITOR 104 - NORTH
ELEVATION
1/4" = 1'-0"



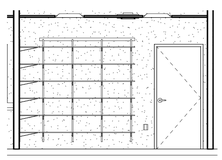
36 JANITOR 104 - WEST
ELEVATION
1/4" = 1'-0"



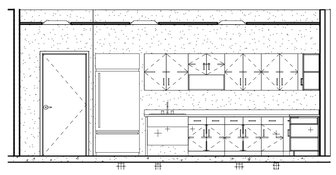
13 STORAGE A102 - EAST
ELEVATION
1/4" = 1'-0"



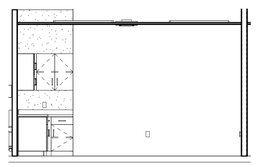
14 STORAGE A102 - SOUTH
ELEVATION
1/4" = 1'-0"



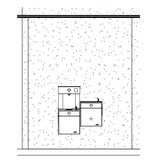
15 STORAGE A102 - WEST
ELEVATION
1/4" = 1'-0"



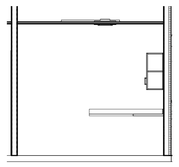
16 BREAKROOM A119 - EAST
ELEVATION
1/4" = 1'-0"



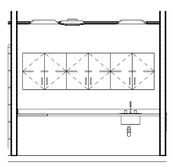
17 BREAKROOM A119 - SOUTH
ELEVATION
1/4" = 1'-0"



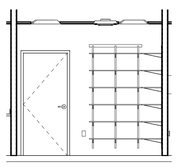
18 DRINKING FOUNTAIN
ELEVATION
1/4" = 1'-0"



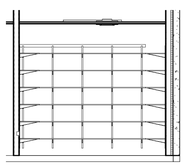
7 VITALS C105 - EAST
ELEVATION
1/4" = 1'-0"



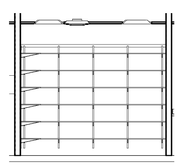
8 VITALS C105 - SOUTH
ELEVATION
1/4" = 1'-0"



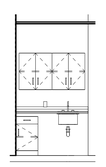
9 STORAGE C106 - NORTH
ELEVATION
1/4" = 1'-0"



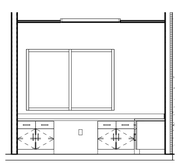
10 STORAGE C106 - EAST
ELEVATION
1/4" = 1'-0"



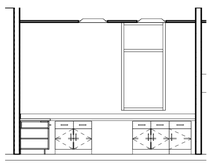
11 STORAGE C106 - SOUTH
ELEVATION
1/4" = 1'-0"



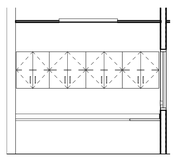
12 CONFERENCE A120 - WEST
ELEVATION
1/4" = 1'-0"



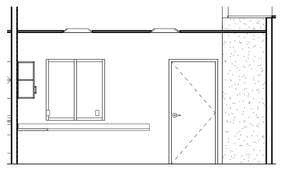
1 RECEPTION C101 - SOUTH
ELEVATION
1/4" = 1'-0"



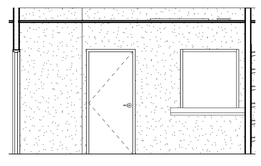
2 RECEPTION C101 - WEST
ELEVATION
1/4" = 1'-0"



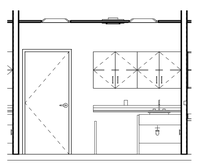
3 NURSING STATION A101 - EAST
ELEVATION
1/4" = 1'-0"



4 NURSING STATION A101 - SOUTH
ELEVATION
1/4" = 1'-0"



5 NURSING STATION A101 - WEST
ELEVATION
1/4" = 1'-0"



6 EXAM 1 C109 - SOUTH
ELEVATION
1/4" = 1'-0"

5/3/2021 4:27:00 PM
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TEXAS REGISTRATION NO.
Engineer: 60251
Architect: 19160

HC Biosafety Lab

County of Hidalgo
S 25th Ave, Edinburg, TX 78542

No.	Description	Date

PROJECT NO.: 20030
ISSUE DATE: 05/03/2021
DRAWN BY: Author
CHECKED BY: Checker

SHEET NAME

INTERIOR ELEVATIONS

Sheet Number

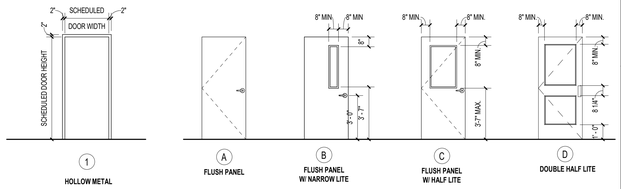
AE401

Project Status:

100% SCHEMATIC DESIGN

Door Schedule

Mark	DOOR SIDE	SIZE Width	SIZE Height	Panel Elevation	Panel Type	Glazing Type	Panel Thickness	Frame Elevation	Frame Finish	Hardware Set	Comments
101A	S	3'-0"	7'-0"	A	SC-PLAM		1 3/4"	1			
101B	S	3'-0"	7'-0"	A	SC-PLAM		1 3/4"	1			
102A	S	3'-0"	7'-0"	A	SC-PLAM		1 3/4"	1			
102B	S	3'-0"	7'-0"	A	SC-PLAM		1 3/4"	1			
103A			7'-0"								
103B			7'-0"								
104	S	3'-0"	7'-0"	A	SC-PLAM		1 3/4"	1			
105	DBL	2'-0"	7'-0"	A	SC-PLAM		1 3/4"	2	Painted		
106	DBL	2'-0"	7'-0"	A	SC-PLAM		1 3/4"	2	Painted		
A101A	S	3'-0"	7'-0"	A	SC-PLAM		1 3/4"	1			
A101B	S	3'-0"	7'-0"	A	SC-PLAM		1 3/4"	1			
A102	S	3'-0"	7'-0"	A	SC-PLAM		1 3/4"	1			
A103	S	3'-0"	7'-0"	A	SC-PLAM		1 3/4"	1			
A104	S	3'-0"	7'-0"	A	SC-PLAM		1 3/4"	1			
A105	S	3'-0"	7'-0"	A	SC-PLAM		1 3/4"	1			
A106	S	3'-0"	7'-0"	A	SC-PLAM		1 3/4"	1			
A107	S	3'-0"	7'-0"	A	SC-PLAM		1 3/4"	1			
A108	S	3'-0"	7'-0"	A	SC-PLAM		1 3/4"	1			
A109	S	3'-0"	7'-0"	A	SC-PLAM		1 3/4"	1			
A110	S	3'-0"	7'-0"	A	SC-PLAM		1 3/4"	1			
A111	S	3'-0"	7'-0"	A	SC-PLAM		1 3/4"	1			
A112	S	3'-0"	7'-0"	A	SC-PLAM		1 3/4"	1			
A113	S	3'-0"	7'-0"	A	SC-PLAM		1 3/4"	1			
A114	S	3'-0"	7'-0"	A	SC-PLAM		1 3/4"	1			
A115	S	3'-0"	7'-0"	A	SC-PLAM		1 3/4"	1			
A116	S	3'-0"	7'-0"	A	SC-PLAM		1 3/4"	1			
A117	S	3'-0"	7'-0"	A	SC-PLAM		1 3/4"	1			
A118	S	3'-0"	7'-0"	A	SC-PLAM		1 3/4"	1			
A119	S	3'-0"	7'-0"	A	SC-PLAM		1 3/4"	1			
A120			7'-0"								
A122	S	3'-0"	7'-0"	A	SC-PLAM		1 3/4"	1			
A123	S	3'-0"	7'-0"	A	SC-PLAM		1 3/4"	1			
A124	S	3'-0"	7'-0"	A	SC-PLAM		1 3/4"	1			
C101	S	3'-0"	7'-0"	A	SC-PLAM		1 3/4"	1			
C102			7'-0"								
C103	S	3'-0"	7'-0"	A	SC-PLAM		1 3/4"	1			
C104	S	3'-0"	7'-0"	A	SC-PLAM		1 3/4"	1			
C105	S	3'-0"	7'-0"	A	SC-PLAM		1 3/4"	1			
C107	S	3'-0"	7'-0"	A	SC-PLAM		1 3/4"	1			
C108	S	3'-0"	7'-0"	A	SC-PLAM		1 3/4"	1			
C109	S	3'-0"	7'-0"	A	SC-PLAM		1 3/4"	1			
L101	S	3'-0"	7'-0"	A	SC-PLAM		1 3/4"	1			
L102	S	3'-0"	7'-0"	A	SC-PLAM		1 3/4"	1			
L103	S	3'-0"	7'-0"	A	SC-PLAM		1 3/4"	1			
L104A	S	3'-0"	7'-0"	A	SC-PLAM		1 3/4"	1			
L105	S	3'-0"	7'-0"	A	SC-PLAM		1 3/4"	1			
L106	S	3'-0"	7'-0"	A	SC-PLAM		1 3/4"	1			
L107A	S	3'-0"	7'-0"	A	SC-PLAM		1 3/4"	1			
L107B			4'-2"								
L109	S	3'-0"	7'-0"	A	SC-PLAM		1 3/4"	1			
L110A	S	3'-0"	7'-0"	A	SC-PLAM		1 3/4"	1			
L110B	S	3'-0"	7'-0"	A	SC-PLAM		1 3/4"	1			
L111A	S	3'-0"	7'-0"	A	SC-PLAM		1 3/4"	1			
L111B	S	3'-0"	7'-0"	A	SC-PLAM		1 3/4"	1			



1 HOLLOW METAL

A FLUSH PANEL

B FLUSH PANEL W/ NARROW LITE

C FLUSH PANEL W/ HALF LITE

D DOUBLE HALF LITE

DOOR FRAME ELEVATION
ELEVATION
1/4" = 1'-0"

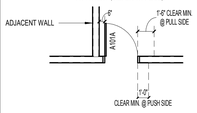
DOOR PANEL ELEVATIONS
ELEVATION
1/4" = 1'-0"

DOOR & WINDOW GENERAL NOTES

1. ALL DOORS TO BE 1 3/4" THICK U.O.N.
2. ALL H.M. FRAME TO HAVE A 2" FACE DIMENSION W/ 5/8" STOP. PROVIDE 3/4" STOP AS REQUIRED FOR FIRE RATED FRAMES
3. REFER TO DOOR SCHEDULE FOR HARDWARE
4. COORD. W/ MECH. DOCS. FOR DOOR UNDERCUTS & DOOR LOUVERS
5. FLOOR MATERIAL TRANSITIONS OCCUR BENEATH DOOR
6. ALL LIGHTS IN DOORS TO HAVE TEMPERED GLAZING, U.O.N.
7. EXTERIOR DOORS TO HAVE TINTED GLAZING & INTERIOR DOORS TO HAVE CLEAR GLAZING, TYP.
8. ALL EXTERIOR H.M. DOORS TO BE INSULATED AND GALVANIZED
9. FIELD VERIFY ALL DIMENSIONS PRIOR TO FABRICATING FRAMES
10. AT DRYWALL PARTITIONS, PROVIDE FR.WD BLKG. ALL WALL BEHIND DOORS SCHEDULED TO HAVE WALLMOUNTED DOOR STOPS (REFER HARDWARE SCHEDULE IN SPECIFICATIONS)
11. IF A DOOR HAS A CLOSER, THEN THE SWEEP PERIOD OF CLOSER SHALL BE ADJUSTED SO THAT FROM AN OPEN POSITION OF 70 DEGREES, TO DOOR WILL TAKE AT LEAST 3 SECONDS TO MOVE TO A POINT 3" FROM THE LATCH, MEASURED TO THE LEADING EDGE OF THE DOOR
12. THE MAXIMUM FORCE FOR PUSHING OR PULLING OPEN A DOOR SHALL BE AS FOLLOWS
    (1) FIRE DOORS SHALL HAVE THE MINIMUM OPENING FORCE ALLOWARE BY THE APPROPRIATE ADMINISTRATIVE AUTHORITY
    (2) OTHER DOORS.
    (a) EXTERIOR HINGED DOOR: (RESERVED)
    (b) INTERIOR HINGED DOORS: 5 lbf (22.2N)
    (c) SLIDING OR FOLDING DOORS: 5 lbf (22.2N)

ALL ALUMINUM STOREFRONT WINDOWS AND DOOR FRAMES TO BE CLEAR ANODIZED ALUMINUM FINISH

TYPICAL DOOR INFORMATION



NOTE:
REFER TO SHEET AE601 FOR DOOR SCHEDULES & FRAME TYPES

GLAZING LEGEND

G1 - TYPE 4 - CLEAR ANNEALED FLOAT GLASS

G2 - TYPE 3 - FULLY TEMPERED FLOAT GLASS

G3 - TYPE 2 - INSULATING-GLASS UNITS

G4 - TYPE 1 - INSULATING-GLASS UNITS WHERE SAFETY GLAZING NOT REQUIRED

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Engineer: 60251
Architect: 19160

HC Biosafety Lab

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No.	Date	Description

PROJECT NO.: 20030
ISSUE DATE: 05/03/2021
DRAWN BY: Author
CHECKED BY: Checker

SHEET NAME

DOOR SCHEDULE

Sheet Number

AE601

Project Status:

100% SCHEMATIC DESIGN

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REFLECTED CEILING GENERAL NOTES

1. ALL CEILINGS ARE 10'-0" AFF UNO COORDINATE CEILING HEIGHT WITH ARCHITECT PRIOR TO INSTALLATION.
2. ALL REFLECTED CEILING PLAN DIMENSIONS ARE FROM FINISHED FACE TO FINISHED FACE
3. ALL CEILING GRIDS ARE CENTERED ON ROOM OR CORRIDOR, UNO
4. ALL FIXTURES SHOWN AT CEILING GRID TO BE CENTERED IN BOTH DIRECTIONS WITHIN THE TILE. CENTER ALL CEILING MOUNTED ITEMS WITH CEILING ELEMENTS, IN GYP. SOFFITS AND BETWEEN OTHER CEILING MOUNTED FIXTURES
5. COORDINATED ACCESS PANEL LOCATIONS WITH LOCATION OF OTHER CEILING MOUNTED ITEMS.
6. REFER TO ELECTRICAL AND MECHANICAL DRAWINGS FOR FIXUTRE TYPES.
7. PARTITION TERMINATION:
   a. REFER FIRST TO SHEET AE500 FOR PARTITION TYPES AND TERMINATIONS
   b. IF NOT INDICATED TERMITATE WALLS AS FOLLOWS:
      1. TERMINATE ALL PARTITIONS AT UNDERSIDE OF DECK.
      2. PARTITIONS WITHOUT ADJACENT CEILINGS SHALL EXTEND TO STRUCTURE UNO
8. ALL AREAS OPEN TO STRUCTURE ARE TO BE PAINTED. COORDINATE PAINT COLOR WITH ARCHITECT.
9. ALL EXPOSED CONDUITS, PIPING, DUCTWORK AND MECHANICAL SYSTEMS TO BE PAINTED TO MATCH THE ADJACENT SURFACE UNO
10. COORDINATE LOCATION OF CAN LIGHTS WITH ARCHITECT PRIOR TO INSTALLATION

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CHECKED BY: Checker

SHEET NAME

REFLECTED CEILING PLAN

Sheet Number

AE701

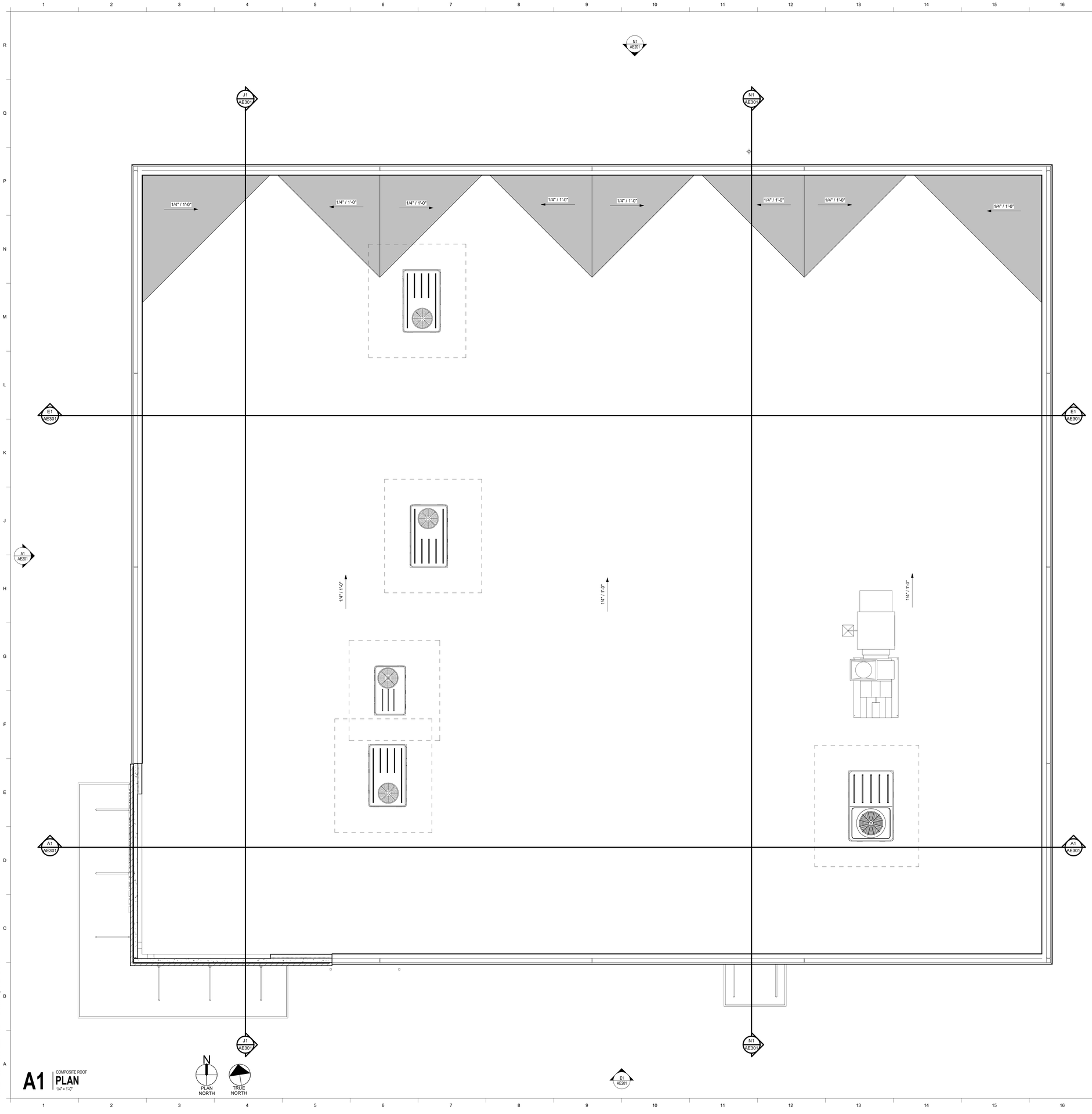
Project Status:

100% SCHEMATIC DESIGN

A1 1ST FLOOR COMPOSITE **PLAN**
1/4" = 1'-0"

PLAN NORTH / TRUE NORTH

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ROOF PLAN GENERAL NOTES

1. PROVIDE ALL REQUIRED UTILITY / STRUCTURAL COMPONENTS AND/OR CONNECTIONS FOR THE FUNCTIONAL USE OF ALL CONTRACTOR SUPPLIED EQUIPMENT OR APPLIANCES, REGARDLESS OF ANY OMISSIONS OR INCONSISTENCIES ENCOUNTERED IN THE CONSTRUCTION DOCUMENTS.

2. THE WORD 'PROVIDE' SHALL MEAN 'FURNISH AND INSTALL COMPLETE AND READY TO USE.'

3. IF DISCREPANCIES APPEAR BETWEEN THE DRAWINGS AND THE SPECIFICATIONS, THE HIGHER QUALITY, QUANTITY, AND PRICE SHALL SUPERSEDE.

4. THE GENERAL CONTRACTOR AND SUBCONTRACTORS SHALL BECOME FAMILIAR WITH THE PROJECT AND THE ON-SITE / OFF-SITE CONDITIONS PRIOR TO BIDDING OR COMMENCING WORK.

5. ROOF SLOPES SHOWN ON DRAWING ARE GENERAL AND CONCEPTUAL ONLY. PROVIDE POSITIVE DRAINAGE TO ALL ROOF DRAINS. VERIFY TAPER IN SHOP DRAWINGS. REFER TO STRUCTURAL DOCUMENTS FOR EXACT TOS/BOD ELEVATIONS.

6. PROVIDE TAPERED INSULATION CRICKETS (1/2"/FT. MIN. SLOPE) AT HIGH SIDE OF ALL MECHANICAL UNITS SMOKE VENTS, ROOF HATCHES & OTHER MISC. ROOF PENETRATIONS, TO SHED WATER AROUND & TO ENSURE POSITIVE ROOF DRAINAGE.

7. PROVIDE ADDITIONAL FULLY ADHERED MEMBRANES AS PROTECTION AT "SERVICE SIDE" OF ALL MECH. EQUIPMENT, AT "ACCESS SIDE" OF ALL ROOF HATCHES AND ROOF ACCESS LADDERS. FIELD VERIFY LOCATIONS.

8. ALL WOOD BLOCKING AT ROOF EDGES ARE TO BE FABRICATED FROM CONT. 2X6 EXTERIOR GRADE WOOD BOARDS. PROVIDE LARGER 2X – EXTERIOR GRADE WOOD AS REQUIRED PER DIMENSIONED DETAILED OR AS FIELD CONDITIONS DICTATE. ALL COPING TO BE SLOPED TOWARD THE INTERIOR.

9. ALL EXPOSED FLASHING, COPING (IF APPLICABLE) AND THEIR ACCESSORIES SHALL BE AS SPECIFIED. PAINT ALL METAL FLASHING THAT IS NOT PRE-FINISHED (TYP.) AND VISIBLE FROM THE GROUND.

10. HEIGHT OF ALL NAILERS SHALL BE FLUSH WITH NEW INSULATION THICKNESS

11. ALL THROUGH WALL FLASHING SYSTEMS TO ACCOMMODATE 8" MINIMUM FLASHING HEIGHT FROM FINISHED ROOF SURFACE. PROVIDE END DAMS AS CONDITIONS ALLOW. ALL FLASHING TO HAVE 4" LAP MINIMUM AND OR STEP.

12. ALL PITCH PANS SHALL BE DOUBLE SOLDERED STAINLESS STEEL AND RECEIVE EITHER MECHANICALLY ATTACHED GOOSENECK OR METAL BONNETS. METAL BONNETS SHALL BE SECURED WITH CLAMPING RING AND SEALANT. SPECIAL CARE GIVEN TO WASH ALL METAL PRIOR TO INSTALLATION.

13. ALL INFIELD EXPANSION JOINTS SHALL HAVE LOW SLOPED STANDING SEAM JOINTS AND SHALL BE CHAMFERED AT TERMINATION AT ROOF EDGE TO MEET PROFILE OF PERIMETER.

14. ANY CRACKS OR VOIDS IN RISE WALLS ABOVE COUNTER FLASHING SHALL BE REPAIRED WITH COMPATIBLE SEALANT.

15. ALL VERTICAL MEMBRANE FLASHING SHALL BE MECHANICALLY FASTENED AND INSTALLED WITH NEW METAL COUNTER FLASHING UTILIZING A CONTINUOUS CLIP. SLIDE METAL COVER PLATE DOWN OVER VERTICAL CLIP AND SEAL.

16. ALL PIPE AND CONDUIT SHALL RECEIVE PIPE SUPPORTS AND RELATED SHIMS, AND SHALL BE PLACED ON AN ADDITIONAL LAYER OF FULLY ADHERED ROOF MEMBRANE. SUPPORTS TO OCCUR AT 10'-0" O.C. AND WITHIN 2'-0" OF ALL SLOPES, TEES AND CORNERS. ALL PIPE TO BE PAINTED PER BUILDING CODE REQUIREMENTS.

17. ALL METAL FLASHING SHALL EXTEND BEYOND ROOF EDGE MIN. 8" WHERE FLASHING ABUTS VERTICAL WALL SURFACE AS DETAILED. ALL FLASHING SHALL BE INSTALLED IN SHINGLE FASHION.

18. AT ALL LOCATIONS WHERE CONVERGENCE OF MULTIPLE PLANES OF ROOFING TO WALL OCCURS, FIELD FABRICATE BOOT TO BE INSTALLED OVER NEW ROOFING, COMPLETELY OVERLAYING THE TRANSITIONS OF ALL ROOF TO WALL ELEVATIONS, INSIDE / OUTSIDE 90'S ETC. PRIOR TO METAL INSTALLATION.

19. ALL EQUIPMENT CURBS TO BE RAISED AS NECESSARY TO MAINTAIN 12" MINIMUM HEIGHT ABOVE FINISHED ROOF SURFACE.

20. MECHANICAL, ELECTRICAL, AND PLUMBING ROOF EQUIPMENT SHOWN ON THIS PLAN IS FOR GENERAL ARCHITECTURAL INFORMATION ONLY. REFER TO MEP DOCUMENTS FOR ROOFTOP EQUIPMENT NOT SHOWN, AND FOR ADDITIONAL REQUIREMENTS AND COORDINATION.

21. FLASHING AND STRIPPING MATERIALS, BASE PLY SHEETS, MEMBRANES, INSULATION, AND ACCESSORIES SHOULD BE RECOMMENDED BY THE ROOFING SYSTEM MANUFACTURER FOR INTENDED USE AND COMPATIBILITY WITH THE MEMBRANE ROOFING SYSTEM.

22. WHERE WOOD BLOCKING EXCEEDS 6" IN VERTICAL THICKNESS AT TAPERED INSULATION, PROVIDE STEM WALL CONSTRUCTED OF 6" GALVANIZED COLD FORMED METAL FRAMING AT 16" O.C. WITH CON. TRACK AT TOP AND BOTTOM AND WITH 3/4" EXT GRADE PLYWOOD AT EACH SIDE. TOP NAILER TO SLOPE WITH TAPERED INSULATION.

23. ALL VERTICAL MEMBRANE FLASHING SHALL BE MECHANICALLY FASTENED AND INSTALLED WITH NEW METAL COUNTER FLASHING UTILIZING A CONTINUOUS CLIP. SLIDE METAL COVER PLATE DOWN OVER VERTICAL CLIP AND SEAL.

24. REFER TO MEP DOCUMENTS FOR THE PIPE SUPPORT LOCATIONS, TYPE, AND DETAILS. PAD SHALL BE MIN 2" WIDER THAN SUPPORT IN ALL DIRECTIONS.

25. GUTTERS SHALL BE PRE-FINISHED GALVANIZED STEEL, SIZE PER ROOF PLAN, UNO.

26. DOWNSPOUTS SHALL BE PRE-FINISHED GALVANIZED STEEL UNO AS INDICATED ON SITE DETAILS. PROVIDE PRE-FINISHED 2" GALVANIZED STEEL HANGERS AT 36" O.C. PROVIDE VANDAL PROOF STAINLESS STEEL STRAINERS AT EACH OUTLET. COORDINATE LOCATION WITH ARCHITECT PRIOR TO INSTALLATION.

27. PROVIDE SPLASH BLOCKS AT ALL ROOF LEADER NOZZLES THAT SPILL ONTO GROUND.

28. VERIFY ELEVATION OF ROOF DRAIN RELATIVE TO OVERFLOW SCUPPER PRIOR TO INSTALLATION OF SCUPPERS.

29. LOCATE SCUPPERS AS INDICATED ON ELEVATIONS, UNO. ADJUST PLACEMENT TO MEET MASONRY COURSING MODULES.

30. ROOF PLAN SHOWS TAPERED INSULATION CONCEPTUALLY AND FOR INTENT ONLY. TAPERED INSULATION IS NOT SHOWN TO SCALE AND IS SHOWN AS GRAPHIC REPRESENTATION ONLY IN ORDER TO SHOW SLOPE AND APPROXIMATE LOCATIONS OF MATERIAL. VERIFY INSULATION REQUIRED TO MAINTAIN SLOPE PRIOR TO INSTALLATION. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.

31. ALL GENERAL ROOF NOTES AND SPECIFIC ROOF NOTES SHALL APPLY. ALL NOTES MAY OR MAY NOT BE SPECIFICALLY KEYED TO PLANS. THIS SHALL NOT RELIEVE THE CONTRACTOR FROM PERFORMING WORK ACCORDING TO THE DESIGN INTENT AS INTERPRETED BY THE ARCHITECT. CONTRACTOR IS RESPONSIBLE TO VERIFY ALL CONDITIONS WITH THE PROJECT INCLUDING ALL PROJECT DOCUMENTS PRIOR TO BIDDING OR COMMENCING WORK.

32. PROVIDE ROOF HATCH AS SPECIFIED.

33. PROVIDE METAL END CAP WHERE PARAPET TERMINATES.

34. PROVIDE VERTICAL FLEXIBLE EMBED FLASHING IN WALL SUBSTRATE WHERE EXTERIOR VENEERS CHANGE MATERIAL.

35. RAISE ROOF HATCH AS REQUIRED TO MAINTAIN 8" HEIGHT ABOVE ROOF SURFACE.

36. PROVIDE TAPERED INSULATION AS SPECIFIED TO PROVIDE POSITIVE DRAINAGE TOWARDS ROOF DRAINS 1/4" PER FOOT SLOP.

37. PROVIDE 1/2" PER FOOT TAPERED CRICKETS.

38. ROOF DRAIN AND OVERFLOW DRAIN (RD/OD TYP.) AS SPEC. REFER TO PLUMBING DRAWINGS FOR SIZE AND LEADER INFORMATION.

A1 COMPOSITE ROOF **PLAN**
1/4" = 1'-0"

PLAN NORTH / TRUE NORTH

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SHEET NAME
ROOF PLAN

Sheet Number
AE801

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GENERAL NOTES - MECHANICAL:

(1) THE MECHANICAL CONTRACTOR IS FULLY RESPONSIBLE FOR PERFORMING THE WORK IN FULL COMPLIANCE WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL CODES UNDER THIS SECTION OF THE CONTRACT. IF THE CONTRACTOR DETERMINES THAT THE CONTRACT DOCUMENTS AND PLANS ARE NOT IN COMPLIANCE WITH THE APPLICABLE LOCAL CODES, HE/SHE SHALL INFORM THE ARCHITECT PRIOR TO CONSTRUCTION START FOR DIRECTION. FAILURE TO DO SO SHALL NOT RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITY TO MEET APPLICABLE LOCAL CODES, AND RE-WORK SHALL BE AT CONTRACTOR'S EXPENSE.

(2) CONTRACTOR SHALL HANG AND INSTALL ALL DUCTWORK FLUSH WITH THE BUILDING STRUCTURE TO ACCOMMODATE NEW CEILINGS. CONTRACTOR SHALL COORDINATE ALL INSTALLATION WORK WITH ARCHITECTURAL AND ELECTRICAL DESIGN. ALL DUCTWORK SHALL BE MODIFIED AS NECESSARY AND REQUIRED TO FIT AROUND BUILDING STRUCTURES, ARCHITECTURAL BUILD-OUT AND ELECTRICAL CABLE TRAY INSTALLATIONS. MECHANICAL CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH THE WORK SCOPE OF OTHER TRADES AND PARTICIPATE IN COORDINATING ALL CONSTRUCTION EFFORTS.

(3) CONNECT EACH DIFFUSER TO THE MAIN DISTRIBUTION DUCTS WITH A FLEX-DUCT SECTION; CONNECTIONS SHALL BE COMPLETED IN ACCORDANCE WITH THE DETAIL. EACH FLEX-DUCT CONNECTION SHALL INCLUDE A BUTTERFLY DAMPER TO BE INSTALLED AT THE TRUNK DUCT.

(4) CONTRACTOR SHALL PROVIDE ALL DUCTWORK REQUIRED TO COMPLETE THE HVAC SYSTEM. TIE IN BRANCH DUCTS TO MAIN DUCTS WITH SHEET METAL FLANGES. FLANGE CONNECTION SHALL BE FASTENED WITH CRIMPED SHEET METAL STRIPS AND SEALED WITH SILICONE CAULK.

(5) CONTRACTOR SHALL SUPPLY AND INSTALL FIRE DAMPERS AND ACCESS DOORS IN THE HORIZONTAL DUCTS WHERE THEY PENETRATE FIRE WALLS & BARRIERS.

(6) ALL OPENINGS CUT IN MASONRY AND PLASTER WALLS OR CONCRETE FLOORS SHALL BE CORE DRILLED OR SAWED WHEN POSSIBLE. CONTRACTOR SHALL CHECK BUILDING CONSTRUCTION BEFORE MAKING PENETRATIONS TO AVOID CUTTING THROUGH STRUCTURAL BEAMS AND REINFORCING. CONTRACTOR SHALL INFORM THE ENGINEER IF REINFORCING IS CUT OR DAMAGED WHILE MAKING OPENINGS. CONTRACTOR SHALL REINFORCE ALL OPENINGS AS REQUIRED BY DRAWINGS AND SPECIFICATIONS. PATCH AND SEAL OPENINGS WITH 8000 PSI CEMENT GROUT. INSTALL DECORATIVE TRIM (EQUIPMENT FLANGES, FRAMING OR ESCUTCHEONS) AROUND OPENINGS IN FINISHED AREAS. COORDINATE ALL CUTTING AND PATCHING WITH THE OTHER TRADES

(7) ON ANY WORK SHOWN ON MECHANICAL DRAWINGS REQUIRING DEMOLITION OF EXISTING OR NEW BUILDING STRUCTURES AND FINISHES, IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO COMPLETE THE NECESSARY DEMOLITION. CONTRACTOR SHALL PATCH AND REPAIR ALL DEMOLITION WORK. PATCHING SHALL BE COMPLETED WITH THE SAME MATERIALS AS THE SURROUNDING AREAS, OR WITH ARCHITECT-APPROVED PATCHING MATERIALS. REPAIRS SHALL BE COMPLETED ACCORDING TO ARCHITECTURAL SPECIFICATIONS, ALL REFINISHING SHALL BE APPROVED BY THE ARCHITECT.

(8) CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLETING THE INSTALLATION OF THE AIR DISTRIBUTION SYSTEM SHOWN. DUCTWORK, DUCT ACCESSORIES AND CONTROLS SHOWN AND REQUIRED SHALL BE SUPPLIED AND INSTALLED. ALL INSTALLATION WORK SHALL BE DONE IN ACCORDANCE WITH APPLICABLE CODES, INCLUDING NFPA 90A AND 90B.[NFPA 90A: STANDARD FOR THE INSTALLATION OF AIR-CONDITIONING AND VENTILATING SYSTEMS][NFPA 90B: STANDARD FOR THE INSTALLATION OF WARM AIR HEATING AND AIR-CONDITIONING SYSTEMS]

(9) CONTRACTOR SHALL BALANCE ALL AIR DISTRIBUTION SYSTEMS TO ACHIEVE THE AIR VOLUME REQUIREMENTS INDICATED. BALANCING SHALL INCLUDE ADJUSTMENT OF ALL MANUAL VOLUME DAMPERS, SHUTTER DAMPERS, ZONE DAMPERS (IF REQUIRED), BUTTERFLY DAMPERS AND INDIVIDUAL DIFFUSER VOLUME DAMPERS (FINAL BALANCING ONLY). CONTRACTOR SHALL SUPPLY THE ENGINEER WITH A COMPLETE BALANCING REPORT WHICH INCLUDES, VOLUME, ROOM REFERENCE AND ZONE VOLUME TOTALS.

(10) MOUNT ALL THERMOSTATS (SENSORS) 48" ABOVE THE FINISHED FLOOR LEVEL. THERMOSTATS SHOWN SHALL BE IN CONTROL OF THE ZONE SYSTEM WHICH IS SUPPLYING AIR TO THE AREA WHERE THE THERMOSTAT IS LOCATED. CONTRACTOR SHALL SUPPLY AND INSTALL ALL CONTROL VOLTAGE WIRING AND CONDUIT FOR THERMOSTAT (DDC CONTROL) INSTALLATION.

(11) CONTRACTOR SHALL INSTALL NEW REFRIGERANT PIPING FLUSH WITH THE BUILDING STRUCTURE AND MECHANICAL ROOM BOUNDARIES AS SHOWN. CONTRACTOR SHALL COORDINATE ALL INSTALLATION WORK WITH DUCTS AND ELECTRICAL CONDUIT. MECHANICAL CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH THE WORK SCOPE OF OTHER TRADES AND PARTICIPATE IN COORDINATING ALL CONSTRUCTION EFFORTS.

(12) ALL PIPING SHALL BE INSULATED AND JACKETED. REFER TO THE SPECIFICATIONS. THE CONDENSING AND ROOF TOP CONDENSER COILS ARE TO BE COATED IN ACCORDANCE WITH THE SPECIFICATIONS.

(13) PROVIDE EACH HVAC SYSTEM OF 2000 CFM & GREATER W/ DUCT SMOKE DETECTOR(S) IN COMPLIANCE WITH IBC 907.2.13.1.2 & 907.3.1 IN RETURN AIR DUCTWORK TO SHUTDOWN CONTROLS ON AIR HANDLERS AND SUPPLY FANS. SMOKE DETECTORS SHALL BE PROVIDED BY MECHANICAL & INSTALLED BY ELECTRICAL (OR REGISTERED FIRE ALARM COMPANY WHERE APPLICABLE). COORDINATE W/ EQUIPMENT MANUFACTURER & AUTHORITY HAVING JURISDICTION FOR RECOMMENDED MOUNTING LOCATION AND METHOD. COORDINATE TO PROVIDE A COMPLETE SYSTEM. PROVIDE BOTH SUPPLY AND RETURN SIDE DEVICES.

(14) PROVIDE SEVEN DAY PROGRAMMABLE THERMOSTAT, 24 HOUR SINGLE/MULTI STAGE COMMERCIAL THERMOSTAT, DUAL SET POINTS, OCCUPIED AND UNOCCUPIED PERIODS, UNIT OPTIMIZATION, AUTO HEATING/COOLING AND AUTO CHANGE OVER, SUB-BASE BACK-UP BATTERY AND TEMPORARY OVER-RIDE. 24 VAC CONTROL VOLTAGE. PROVIDE PLASTIC SEE THRU PROTECTIVE COVER WITH KEY LOCK.

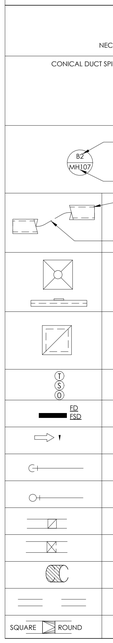
(15) **FILTER INSTALLATION AND REPLACEMENT**

A. INSTALL CONSTRUCTION RETURN FILTER AT EACH RETURN GRILLE BEFORE OPERATING PERMANENT AIR HANDLERS DURING CONSTRUCTION.

B. REPLACE FILTERS AFTER COMPLETING CONSTRUCTION AND BEFORE CONDUCTING BUILDING FLUSH-OUT.

1. REPLACE CONSTRUCTION RETURN FILTERS WITH FLUSH-OUT RETURN FILTERS.
2. REPLACE SUPPLY FILTERS.

MECHANICAL SYMBOL LEGEND



MECHANICAL ABBREVIATIONS

A/C	AIR CONDITIONED	MAX	MAXIMUM
AD	ACCESS DOOR	MBD	MANUAL BALANCING DAMPER
AFF	ABOVE FINISHED FLOOR	MD	MOTORIZED DAMPER
AHU	AIR HANDLING UNIT	MECH	MECHANICAL
APPROX	APPROXIMATE	MIN	MINIMUM
ARCH	ARCHITECTURAL	MS	MOTOR STARTER
BDD	BACK DRAFT DAMPER	NA	NOT APPLICABLE
BHP	BRAKE HORSEPOWER	NC	NORMALLY CLOSED
BTU	BRITISH THERMAL UNIT	NIC	NOT IN CONTRACT
CFM	CUBIC FEET PER MINUTE	NO	NORMALLY OPEN
CH	CHILLER	NTS	NOT TO SCALE
CHP	CHILLED WATER PUMP		
CLG	CEILING	OA	OUTSIDE AIR
CWP	CONDENSER WATER PUMP	OAH	OUTSIDE AIR INTAKE HOOD
CO	CLEANOUT	OBD	OPPOSED BLADE DAMPER
CT	COOLING TOWER	OC	ON CENTER
CU	CONDENSING UNIT		
CW	COLD WATER	P	PUMP
CL	CENTER LINE	PBD	PARALLEL BLADE DAMPER
		PP	PRIMARY CHILLED WATER PUMP
DB	DRY BULB	PRESS	PRESSURE
DIA	DIAMETER	PRV	PRESSURE REDUCING VALVE
DN	DOWN	PSIG	POUNDS PER SQUARE INCH (GAUGE)
DWG	DRAWING		
DX	DIRECT EXPANSION	R	RETURN (AIR DEVICE)
EAT	ENTERING AIR TEMPERATURE	RA	RETURN AIR
EDH	ELECTRIC DUCT HEATER	RE: 4M7.01	REFER TO DETAIL 4, SHEET M7.01
EF	EXHAUST FAN	RET	RETURN
ELEC	ELECTRICAL	RH	RELATIVE HUMIDITY
ELEV	ELEVATION	RHD	RELIEF HOOD
		RPM	REVOLUTIONS PER MINUTE
F	DEGREES FAHRENHEIT	RTU	ROOF TOP UNIT
FC	FAN COIL		
FD	FIRE DAMPER W/ DUCT ACCESS DOOR		
FLEX	FLEXIBLE	S	SUPPLY (AIR DEVICE)
FLG	FLANGE	SA	SUPPLY AIR
FLR	FLOOR	SCH	SCHEDULE
FPM	FEET PER MINUTE	SCHP	SECONDARY CHILLED WATER PUMP
FT	FEET, FOOT	SD	SMOKE DAMPER
FS	FLOW SWITCH	SEC	SECOND
		SF	SUPPLY FAN
GAL	GALLON	SMACNA	SHEET METAL AND AIR CONDITIONING
GALV	GALVANIZED		CONTRACTORS NATIONAL ASSOCIATION
GPM	GALLONS PER MINUTE	SP	STATIC PRESSURE
HB	HOSE BIBB	SPEC	SPECIFICATION
HP	HORSEPOWER	SF	SQUARE FOOT
HR	HEAT PUMP (WATER SOURCE)	STD	STANDARD
HR	HOUR	TEMP	TEMPERATURE
HVAC	HEATING/VENTILATING/ AIR CONDITIONING	TSTAT	THERMOSTAT
HWP	HOT WATER PUMP	TYP	TYPICAL
HZ	HERTZ	UF	UNDER FLOOR
		UH	UNIT HEATER
ID	INSIDE DIAMETER	UL	UNDERWRITERS LABORATORIES
IE	INVERT ELEVATION (FLOW LINE)		
IN	INCHES	VEL	VELOCITY
INSUL	INSULATION	VENT	VENTILATE
IN WG	INCHES OF WATER	VF	VENTILATION FAN
		VOL	VOLUME
KW	KILOWATT(S)	VOLT	VOLTAGE
LAT	LEAVING AIR TEMPERATURE	W	WIDE, WIDTH
LB	POUND	W/	WITH
L	LOUVER	WB	WET BULB
		W/O	WITHOUT

TESTING, ADJUSTING & BALANCING

A.	Air Handlers & Roof Top Units:	
	1.	Test Data: Include design and actual values for the following:
	a.	Total airflow rate in CFM.
	b.	Total system static pressure in inches w.c.
	c.	Discharge static pressure in inches w.c.
	d.	Outside airflow in CFM.
	e.	Return airflow in CFM.
	f.	Outside-air damper position. Damper Position shall be marked with oil-based paint marker
B.	Fan Test:	
	1.	Test Data: Include design and actual values for the following:
	a.	Total airflow rate in CFM.
	b.	Total system static pressure in inches w.c.
	c.	Discharge static pressure in inches w.c.
	d.	Suction static pressure in inches w.c.
C.	Room Grilles, Registers, or Diffusers:	
	1.	Test Data: Include design and actual values for the following:
	a.	Total airflow rate in CFM.
	b.	Damper Position shall be marked with oil-based paint marker.

H.V.A.C. SYSTEM — SECTION 15500

THE WORK INCLUDES PROVIDING THE HVAC SYSTEMS, INCLUDING DUCTWORK, DIFFUSERS AND GRILLES, INSULATION, CONTROLS, AND ALL OTHER EQUIPMENT NECESSARY FOR A COMPLETE FUNCTIONING SYSTEM. HVAC SYSTEM SHALL INCLUDE BUT IS NOT LIMITED TO THE FOLLOWING:

- HEATING, VENTILATION, AND AIR CONDITIONING (HVAC) UNITS.
- SUPPLY AND RETURN DUCTWORK SYSTEMS WITH GRILLES, DIFFUSERS, FILTERS, AND DAMPERS.
- TEMPERATURE CONTROL SYSTEM INCLUDING LOW VOLTAGE WIRING AND CONDUIT.
- DUCT, PIPING, AND EQUIPMENT INSULATION, WHERE INDICATED HEREIN.
- CONTROLS AND WIRING FOR CONNECTION TO LANDLORD'S FIRE-SMOKE ALARM SYSTEM (WHERE APPLICABLE).

THE CONTRACTOR SHALL COORDINATE ALL NEW DUCTWORK INCLUDING DUCTWORK INSULATION AND REINFORCING WITH EXISTING DUCTWORK AND DUCTWORK ANGLE BRACING SUCH THAT THE NEW DUCTWORK WILL FIT WITHIN THE SPACE LIMITATIONS OF THE PROJECT.

CONDENSATE PIPING: CONDENSATE PIPING SHALL BE A MINIMUM OF 3/4" COPPER TYPE "L" PIPE. ALL CONDENSATE DRAINS SHALL BE INSULATED WITH 1/2" THICK CLOSED CELL INSULATION SIMILAR TO ARMAFLEX 2000.

THE DESIGN, SELECTION, SPACING AND APPLICATION OF HORIZONTAL PIPE HANGERS, SUPPORTS, RESTRAINTS, ANCHORS AND GUIDES SHALL BE IN ACCORDANCE WITH THE STANDARD CODE FOR PRESSURE PIPING ANSI B31.1 AND THE LATEST EDITION OF THE MANUFACTURERS' STANDARDIZATION SOCIETY STANDARDS MSS SP- 69, "PIPE HANGERS AND SUPPORTS--SELECTION AND APPLICATION".

PROVIDE PIPE COVERING PROTECTION SHIELDS AND SADDLES FOR ALL INSULATED PIPING AT THE LOCATIONS OF ALL SUPPORTS. THE PROTECTION SHIELD LENGTH AND GAUGE THICKNESS FOR USE AT EACH CLEVIS HANGER SHALL BE AS SPECIFIED FOR TYPE 40 PROTECTION SHIELDS IN THE CURRENT EDITION OF MSS SP-69. PROTECTION SHIELDS SHALL BE GALVANIZED AND SHALL BE ARRANGED TO COVER ONE-HALF OF THE CIRCUMFERENCE OF THE INSULATION AND SHALL BE MOUNTED ON THE OUTSIDE OF THE INSULATION WITH INSULATION BLOCKING BETWEEN THE PIPE AND SADDLE TO PREVENT CRUSHING OF THE INSULATION. INSULATION BLOCKING SHALL BE UP JOHN 2 POUND HIGH DENSITY MOLDED URETHANE OR SEGMENTED MACHINERY CORK DIPPED IN HOT ASPHALT VAPOR SEAL OF NOT LESS THAN THE SAME LENGTH AND CIRCUMFERENCE AS THE PIPE PROTECTION SHIELD.

ALL HANGERS, HARDWARE, RODS, CLAMPS, CHANNELS, BASE PLATES, ANGLES, BOLTS, NUTS AND OTHER FACTORY-BUILT OR SHOP FABRICATED PIPE SUPPORT DEVICES SHALL BE GALVANIZED OR CADMIUM PLATED UNLESS NOTED OTHERWISE ON THE DRAWINGS. ALL SHOP FABRICATED AND WELDED STEEL SUPPORTS SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION.

ALL CONCRETE INSERTS FOR HANGER RODS SHALL BE NATIONAL PIPE HANGERS CORPORATION FIGURE 606 WITH FIGURE 607, OR GRINNELL FIGURE 282; FIGURE 152, OR APPROVED EQUAL. METAL DECK CONCRETE INSERT SHALL BE F & S MANUFACTURING CORPORATION FIGURE 282, GALVANIZED FABRICATED STEEL METAL DECK CEILING BOLT, PHILLIPS RED HEAD, OR APPROVED EQUAL. HANGER RODS, INSERTS, ETC., SHALL BE SIZED AND INSTALLED AS RECOMMENDED BY THE HANGER MANUFACTURER FOR THE SERVICE INTENDED.

FIELD VERIFY THE EXACT SIZES AND LOCATIONS OF ALL EXISTING DUCTWORK AND PIPING PRIOR TO DEMOLITION OF ANY EXISTING WORK. THE DEMOLITION WORK SHALL BE COORDINATED WITH THE NEW WORK TO ASSURE PROPER LIMITS OF DEMOLITION.

WARRANTY: PROVIDE LABOR AND MATERIALS TO REPAIR OR REPLACE DEFECTIVE PARTS AND MATERIALS AS REQUIRED FOR ONE YEAR AFTER SUBSTANTIAL COMPLETION OR OWNER ACCEPTANCE OF THE COMPLETED PROJECT. PROVIDE A SEPARATE LINE ITEM DEDUCT AMOUNT ON THE PROPOSAL FORM TO DELETE WARRANTY SERVICE, AT THE OWNER'S OPTION.

DRAWINGS FOR HVAC WORK ARE DIAGRAMMATIC, SHOWING THE GENERAL LOCATION, TYPE, LAYOUT, AND EQUIPMENT REQUIRED. THE DRAWINGS SHALL NOT BE SCALED FOR EXACT MEASUREMENTS. REFER TO MANUFACTURER'S STANDARD INSTALLATION DRAWINGS FOR EQUIPMENT CONNECTIONS AND INSTALLATION REQUIREMENTS, AS REQUIRED. PROVIDE ALL DUCTWORK, CONNECTIONS, ACCESSORIES, OFFSETS, AND MATERIALS NECESSARY TO FACILITATE THE SYSTEM FUNCTIONING AS INDICATED BY THE DESIGN AND THE EQUIPMENT INDICATED. THE WORK SHALL BE IN ACCORDANCE WITH LOCAL CODES OR ORDINANCES AND SUBJECT TO INSPECTION.

COORDINATE WITH THE WORK OF OTHER SECTIONS. EQUIPMENT FURNISHED BY OTHERS, REQUIREMENTS OF THE LANDLORD, AND WITH THE CONSTRAINTS OF THE EXISTING CONDITIONS OF THE PROJECT SITE.

EXTRA STOCK: PROVIDE TWO SETS OF REPLACEMENT FILTERS PER EACH INSTALLED FOR ALL THE ROOFTOP UNITS, AND OTHER EQUIPMENT AND DEVICES, AND PROVIDE AN ITEMIZED LIST OF THE NUMBER, TYPE REQUIRED, AND WHERE USED. OBTAIN RECEIPT FROM OWNER THAT THESE ITEMS HAVE BEEN DELIVERED AND ACCEPTED BY THE OWNER'S REPRESENTATIVE.

DUCT DIMENSIONS: UNLESS OTHERWISE NOTED, DUCT DIMENSIONS ON DRAWING ARE SHEET METAL DIMENSIONS ON UNLINED DUCTS (INTERIOR DIMENSIONS).

SHEET METAL DUCTWORK: SHEET METAL DUCTWORK SHALL BE FABRICATED AND INSTALLED TO MEET ASHRAE AND SMACNA STANDARDS, FOR 1" W.G. PRESSURE CLASS. SHEET METAL SHALL BE GALVANIZED SHEET STEEL OF LOCK FORMING QUALITY, ASTM A-525. ALL ANGLE IRON USED FOR SUPPORT SHALL BE GALVANIZED. CONNECTIONS TO WALLS OR FLOOR SHALL BE AIR TIGHT WITH ANGLE IRON AND CAULKING. SEAL ALL DUCT SEAMS, TRANSVERSE AND LONGITUDINAL, AIR TIGHT. PROVIDE TURNING VANES AT ALL ELBOWS OR OFFSETS EXCEEDING 30°.

DUCT SHALL BE EXTERNALLY WRAPPED W/ 2" FIBERGLASS BLANKET INSULATION.

RIGID ROUND GALVANIZED DUCT SHALL BE SPIRAL OR SNAP LOCK GALVANIZED SHEETMETAL COMPLYING WITH SMACNA.

FIBERGLASS DUCT BOARD IS AN ACCEPTABLE W/ PRIOR WRITTEN OWNER PERMISSION. MINIMUM R-VALUE OF 5 REQUIRED FOR CONDITIONED SPACES AND MINIMUM R-VALUE OF 8 FOR UNCONDITIONED SPACES.

FLEXIBLE DUCT CONNECTOR: WHERE INDICATED PROVIDE U.L. LABELED 30oz. NEOPRENE COATED FIBERGLASS FABRIC DUCT CONNECTORS.

GRILLES AND DIFFUSERS: PROVIDE GRILLES, DIFFUSERS, AND DAMPERS IN SIZES, CAPACITIES, MATERIALS, AND PATTERN INDICATED ON THE DRAWINGS.

ACCESS PANELS: PROVIDE HINGED ACCESS PANELS IN DUCTWORK WHERE REQUIRED FOR ACCESS TO EQUIPMENT. PROVIDE INSULATED ACCESS DOORS IN INSULATED DUCTWORK.

PROVIDE WHERE APPLICABLE, DUCT MOUNTED SUPPLY AND/OR RETURN AIR PHOTOELECTRIC TYPE UL LISTED SMOKE DETECTORS. DETECTORS SHALL BE LISTED FOR THE AIR VELOCITIES ENCOUNTERED. PROVIDE INTERLOCK WIRING AND RELAYS FOR UNIT SHUT DOWN. ON ACTIVATION OF ANY DETECTOR, ALL HVAC UNIT FANS SHALL STOP.

TEST AND ADJUST EACH PIECE OF EQUIPMENT AND EACH SYSTEM AS REQUIRED TO ASSURE PROPER BALANCE AND OPERATION. TEST AND BALANCE SHALL BE PERFORMED BY AN INDEPENDENT NEBB OR AABC REGISTERED CONTRACTOR. ELIMINATE NOISE AND VIBRATION, AND ASSURE PROPER FUNCTION OF ALL CONTROLS. MAINTENANCE OF TEMPERATURE, AND OPERATION. BALANCE MECHANICAL SYSTEM, AND SUBMIT COMPLETED TEST

EXPOSED ROUND (SPIRAL) DUCT TO BE INTERNALLY LINED. SUPPLY DUCTWORK SHALL BE LINED W/1" INSULATION. RETURN/EXHAUST/VENTILATION DUCT TO BE LINED W/1/2" INSULATION. CONCEALED ROUND DUCT TO BE EXTERNALLY INSULATED. USING R-5 INSULATION MIN FOR CONDITIONED SPACES (WHERE PLENUM RETURN IS USED) OR R-8 INSULATION MIN FOR UNCONDITIONED SPACES.

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Architect: 18160

HC Biosafety Lab

Hidalgo County Health Department
S 25th Ave, Edinburg, TX 78542

No.	Date	Description

PROJECT NO.: 20030
ISSUE DATE: 05/03/2021
DRAWN BY: Author
CHECKED BY: Checker

SHEET NAME

MECHANICAL LEGEND

Sheet Number

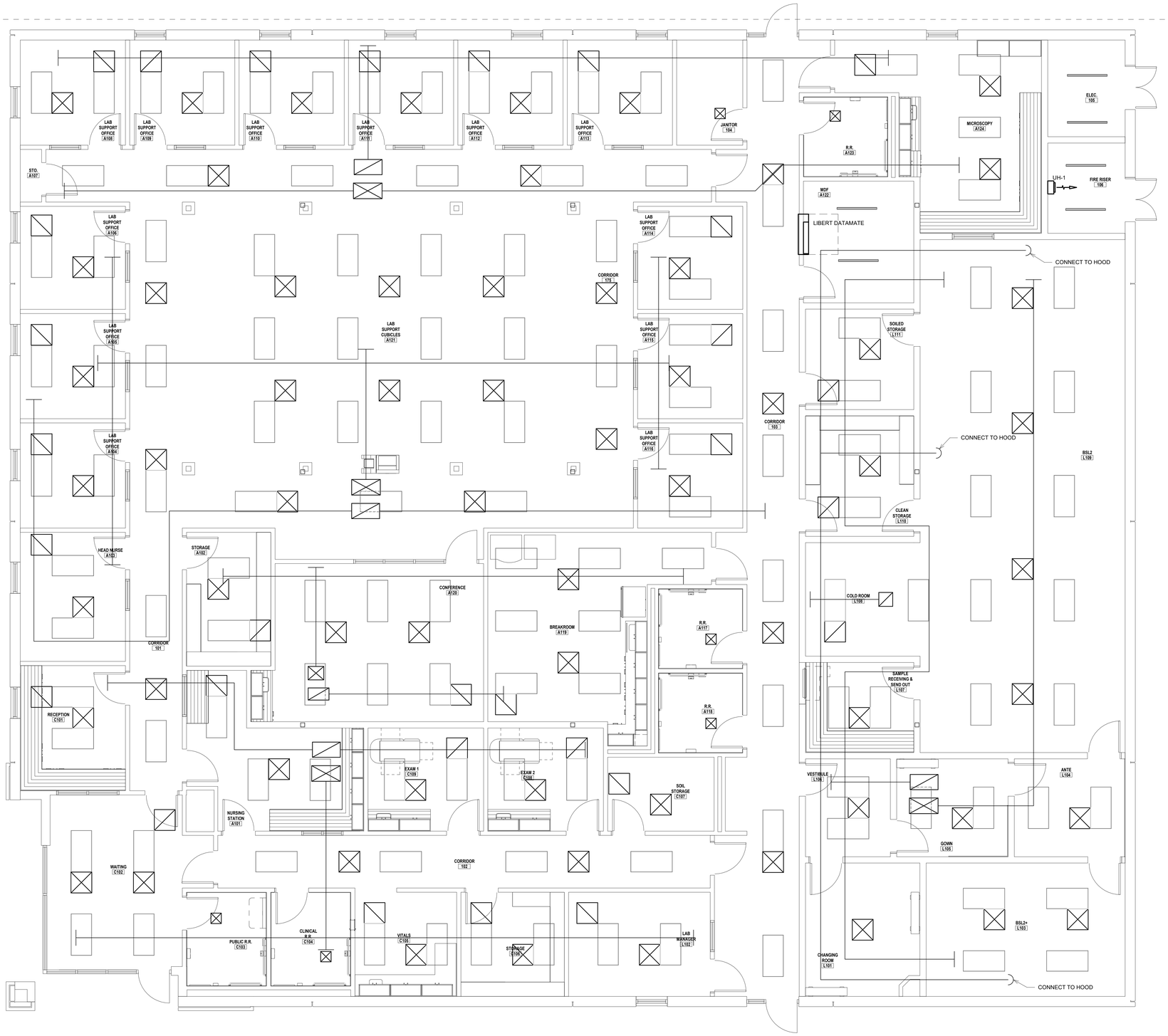
MG01

Project Status:

100% SCHEMATIC DESIGN

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MECHANICAL KEYED NOTES



1 MECHANICAL FLOOR PLAN - FIRST FLOOR
1/4" = 1'-0"

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MECHANICAL FLOOR PLAN

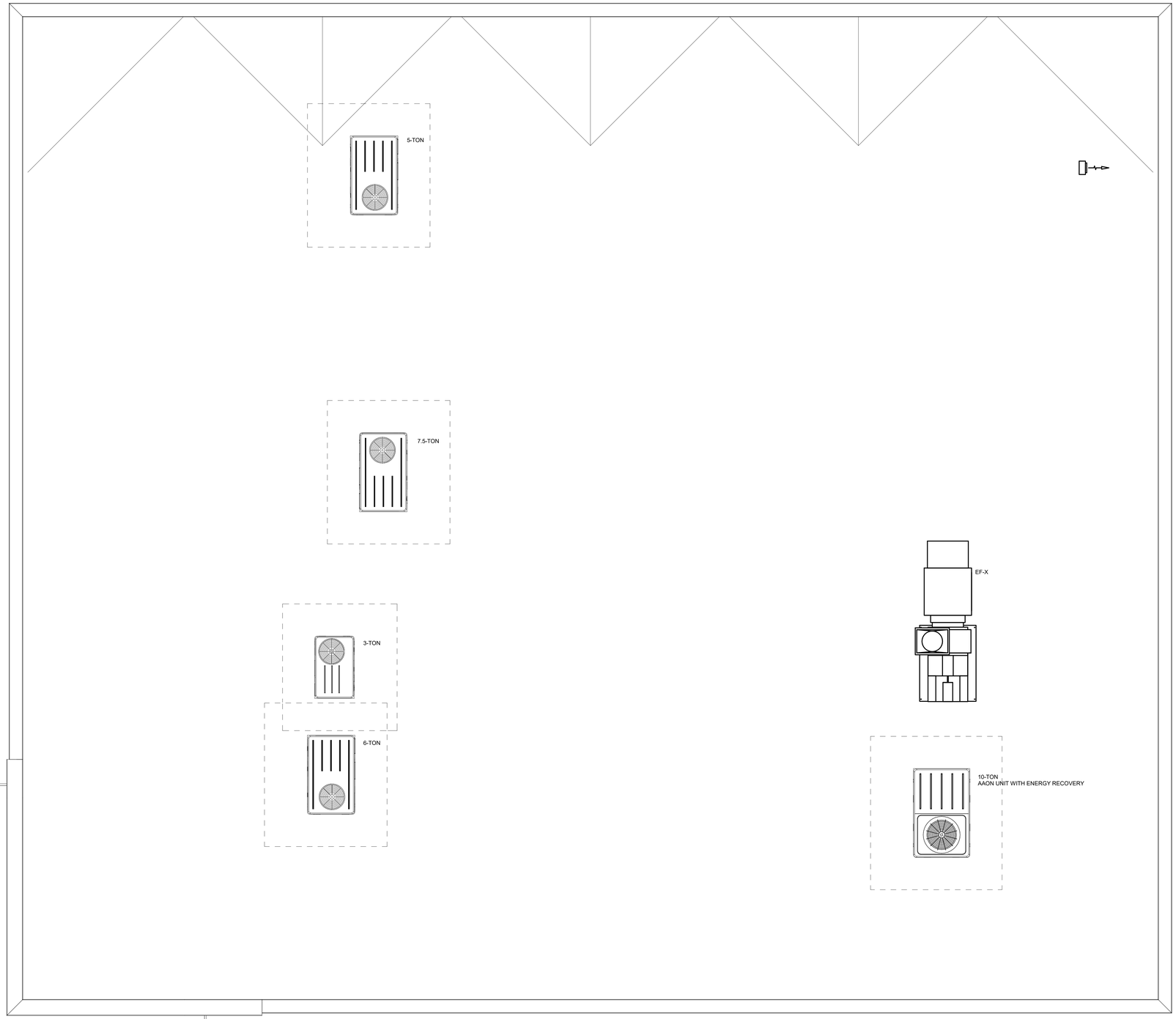
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MP01

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1 MECHANICAL ROOF PLAN
1/4" = 1'-0"

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MECHANICAL ROOF PLAN

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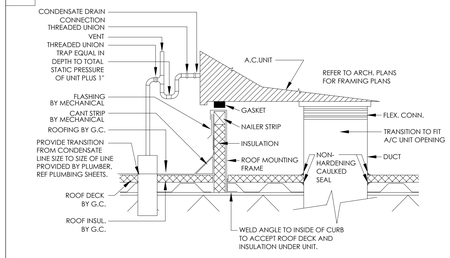
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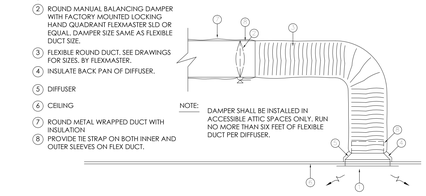
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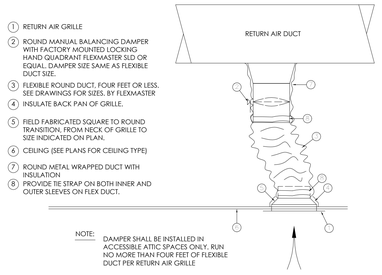
ROOF TOP UNIT DETAIL
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02



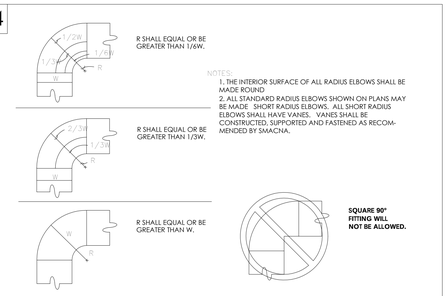
DIFFUSER RUN OUT DETAIL
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03



RETURN AIR GRILLE ATTACHMENT DETAIL
NO SCALE

04

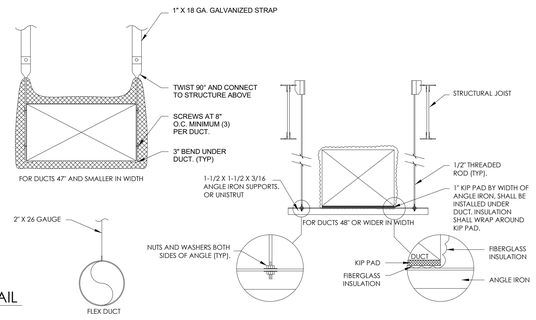


RADIUS DUCT ELBOW DETAIL
NO SCALE

05

DUCT SUPPORT:

1. HANGER ATTACHMENTS TO STRUCTURE: SEE DIVISION 23 SECTION "HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT". MINIMUM ROD OR BOLT SIZE ⅜(9MM).
2. SUSPEND HORIZONTAL GALVANIZED RECTANGULAR DUCTWORK 47" (1220MM) OR LESS IN LARGEST DIMENSION FROM CONSTRUCTION BY 1 INCH BY 18 GAUGE (25MM X 1.3MM) GALVANIZED STRAP HANGERS SCREWED 8 INCHES (200MM) O.C. TO DUCTS. USE THREE (3) SCREWS MINIMUM PER STRAP. BEND STRAP UNDER DUCT AND SCREW INTO BOTTOM OF DUCT.
3. SUSPEND HORIZONTAL RECTANGULAR STAINLESS STEEL AND COATED DUCTWORK 48" (1220MM) OR LESS IN LARGEST DIMENSION FROM CONSTRUCTION BY 1 INCH BY 18 GAUGE (25MM BY 1.3MM) GALVANIZED STEEL STRAP HANGERS BOLTED TO MATING FLANGES AT MINIMUM OF THREE LOCATIONS. (TOP,MIDDLE,BOTTOM).
4. DUCTS OVER 48" (1220MM) IN LARGEST DIMENSION SUPPORT FROM UNISTRUT, SUPERSTRUT, OR EQUAL, TRAPEZE HANGERS SIZED FOR THE LOAD, PER SMACNA STANDARDS.
5. SUPPORT ROUND STEEL DUCTWORK FROM CONSTRUCTION BY 1 INCH BY 18 GUAGE (25MM BY 1.3MM) GALVANIZED STRAP HANGERS WITH INSIDE RADIUS OF LOOP HANGER EQUAL TO OUTSIDE RADIUS OF DUCT. FOR DUCTS UNDER 12" DIAMETER, PROVIDE SUPPORTS 10 FEET (3CM) O.C. 12 FEET (3.6M) AND OVER, 6 FEET (1.8M) O.C. PROVIDE NOT LESS THAN ONE HANGER PER BRANCH AND AT EACH CHANGE OF DIRECTION.
6. SUPPORT ROUND FLEXIBLE DUCTWORK FROM CONSTRUCTION BY 2 INCHES BY 26 GAUGE (50 MM BY 0.55MM) GALVANIZED STRAP HANGERS WITH INSIDE RADIUS OF LOOP HANGER EQUAL TO OUTSIDE RADIUS OF DUCT. LOCATE SUPPORTS TO AVOID KINKS AND SHARP BENDS.
7. DOUBLE FOLD STRAPS AT ATTACHMENTS TO STRUCTURE.
8. SPACE HANGERS NOT OVER 96 INCHES (2440MM) ON CENTER FOR DUCTS SMALLER THAN 18 INCHES (457MM) IN LARGEST DIMENSION; 60 INCHES (1524MM) O.C. FOR DUCTS 18 INCHES (457MM) AND OVER.



DUCT HANGER DETAIL
NO SCALE

06

07

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MD01

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ELECTRICAL LEGEND-LIGHTING

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

SYMBOL	DESCRIPTION
	2'x4' LIGHT FIXTURE, REFER TO LUMINAIRE SCHEDULE
	2'X4' LIGHT FIXTURE W/EMERGENCY BATTERY PACK, REFER TO LUMINAIRE SCHEDULE
	2'x2' LIGHT FIXTURE, REFER TO LUMINAIRE SCHEDULE
	2'X2' LIGHT FIXTURE W/EMERGENCY BATTERY PACK, REFER TO LUMINAIRE SCHEDULE
	1'X4' LIGHT FIXTURE, REFER TO LUMINAIRE SCHEDULE
	TRACK LIGHT WITH HEADS AS INDICATED
	INCANDESCENT, LED, FLUORESCENT, OR HID WALL WASHER LIGHT FIXTURE CEILING MTD, REFER TO LUMINAIRE SCHEDULE
	INCANDESCENT, LED, FLUORESCENT, OR HID FIXTURE CLG. OR WALL MTD, REFER TO LUMINAIRE SCHEDULE
	LED, FLUORESCENT, OR HID FIXTURE WITH EMERGENCY BATTERY PACK, CLG. OR WALL MTD, REFER TO LUMINAIRE SCHEDULE
	EXIT LIGHT, CEILING OR WALL MOUNTED - SHADING INDICATING SINGLE OR DOUBLE FACE: DIRECTIONAL ARROWS AS INDICATED REFER TO LUMINAIRE SCHEDULE
	EXIT LIGHT SAME AS ABOVE, EXCEPT WITH AN EMERGENCY UNIT AS A COMBO, REFER TO LUMINAIRE SCHEDULE
	CEILING FAN
	STRIP UTILITY LIGHT FIXTURE, REFER TO LUMINAIRE SCHEDULE
	STRIP UTILITY STRIP LIGHT WITH EMERGENCY BATTERY PACK, REFER TO LUMINAIRE SCHEDULE

ELECTRICAL LEGEND-SPECIAL SYSTEMS

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

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

ELECTRICAL LEGEND-FIRE ALARM

—ALL SYMBOLS SHOWN MAY NOT APPEAR IN ALL DRAWINGS.
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SYMBOL	DESCRIPTION
F	FIRE ALARM PULL STATION: STUB 3/4"C ABOVE CEILING FROM J-BOX
AVH	FIRE ALARM AUDIBLE/VISUAL SIGNAL: STUB 3/4"C ABOVE CEILING FROM J-BOX
V	FIRE ALARM VISUAL SIGNAL: STUB 3/4"C ABOVE CEILING FROM J-BOX
V S	FIRE ALARM CEILING MOUNT SPEAKER STROBE, UL LISTED. ; J-BOX WITH 3/4"C
VS	FIRE ALARM CEILING WALL MOUNT OUTDOOR SPEAKER STROBE. UL LISTED. ; J-BOX WITH 3/4"C
SD SD	FIRE ALARM SMOKE DETECTOR CEILING OR WALL MOUNTED: STUB 3/4"C ABOVE CEILING FROM J-BOX
H	HEAT DETECTOR CEILING OR WALL MOUNTED: STUB 3/4"C ABOVE CEILING FROM J-BOX
SD	DUCT SMOKE DETECTOR: STUB 3/4"C ABOVE CEILING FROM J-BOX
SD	SMOKE DETECTOR WITH AN AUDIBLE BASE: STUB 3/4"C ABOVE CEILING FROM J-BOX
FACP	FIRE ALARM CONTROL PANEL, ADDRESSABLE, SURFACE MTD UNO, INCLUDE A FIRE DOCUMENT BOX EQUAL TO MFR. SPACE AGE ELECTRONICS #FDB-ACE-11.
FACP-EVS	FIRE ALARM CONTROL PANEL WITH EMERGENCY VOICE SYSTEM, ADDRESSABLE, FLUSH MTD UNO, INCLUDE A FIRE DOCUMENT BOX EQUAL TO MFR. SPACE AGE ELECTRONICS #FDB-ACE-11.
EVES	FIRE ALARM EMERGENCY VOICE EVACUATION SYSTEM, FLUSH OR SURFACE.
FAAP	FIRE ALARM REMOTE ANNUNCIATOR PANEL, FLUSH MOUNTED UNO
PAD-X	POWER SUPPLY, DEDICATED 110V
DH	DOOR HOLDER DEVICE: STUB 3/4"C ABOVE CEILING FROM J-BOX
TS	TAMPER SWITCH: STUB 3/4"C ABOVE CEILING FROM J-BOX
FS	FLOW SWITCH: STUB 3/4"C ABOVE CEILING FROM J-BOX
F	FIRE ALARM OUTDOOR SPEAKER, WEATHER PROOF: STUB 3/4"C ABOVE CEILING FROM J-BOX

ELECTRICAL LEGEND-GENERAL

—ALL SYMBOLS SHOWN MAY NOT APPEAR IN ALL DRAWINGS.
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SYMBOL	DESCRIPTION
J	HEAVY DUTY DISCONNECT SWITCH FUSED
J	HEAVY DUTY DISCONNECT SWITCH NONFUSED
J	HEAVY DUTY COMBINATION DISCONNECT/MOTOR STARTER
	HEAVY DUTY MOTOR STARTER
	ENCLOSED BREAKER, RE: TO SCH. FOR MORE INFO.
R	ROTARY TYPE DISCONNECT SWITCH
M	120/277-208/480V.20AMP. MOTOR RATED SWITCH. NEMA-1(INTERIOR) ENCLOSURE, NEMA-3R(EXTERIOR) ENCLOSURE. VOLTAGE TO BE SELECTED PER EQUIPMENT CIRCUIT REQUIREMENTS.
	MOTOR
	PANELBOARD, CLEARANCE AS PER LATEST NEC
	SWITCH LEG
	ELECTRICAL CONDUIT
	UNDERGROUND ELECTRICAL CONDUIT
C	COMMUNICATION CONDUIT AND WIRING
X, X, X X/X/X	MULTI-POLE DEVICE CIRCUIT NUMBERS THREE SINGLE POLE DEVICE CIRCUIT NUMBERS
A-1	CONDUIT AND WIRE HOMERUN TO PANEL, SHORT HATCH INDICATES NEUTRAL CONDUCTOR, LONG HATCHES INDICATE PHASE CONDUCTORS, AND LONG HATCH WITH CIRCLE INDICATES ISOLATES OR INSULATED GROUND. ALPHANUMERIC DESCRIPTION INDICATES PANEL AND BREAKER.
A-1	UNDERGROUND CONDUIT AND WIRE HOMERUN TO PANEL, SHORT HATCH INDICATES NEUTRAL CONDUCTOR, LONG HATCHES INDICATE PHASE CONDUCTORS, AND LONG HATCH WITH CIRCLE INDICATES ISOLATED OR INSULATED GROUND, ALPHANUMERIC DESCRIPTION INDICATES PANEL AND BREAKER.
	DETAIL NUMBER
	SHEET NUMBER
	THERMOSTAT WALL MOUNTED - STUB 1/2"C ABOVE CEILING FROM OUTLET BOX. COORDINATE EXACT LOCATION AND HEIGHT WITH MECHANICAL DIVISION.
J	JUNCTION BOX - SIZE & MOUNTING AS REQUIRED MINIMUM OF 4" SQUARE
	PHOTO CELL(MFR.INTERMATIC #K4136M)
	LIGHTING CONTACTOR, NEMA-1, W/H.O.A. SWITCH
	TIME CLOCK (MFR.TORK#7202Z)
CP-1	CIRCULATING PUMP
	ELECTRICAL DEVICE AS SHOWN ON PLANS SURFACE MOUNT RACEWAY. SURFACE MOUNT RACEWAY SHALL BE WIREMOLD #V700 SERIES. PROVIDE ALL RELATED #V700 SERIES ACCESSORIES FOR AN OPERABLE SYSTEM.

ELECTRICAL ABBREVIATIONS:

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

NOTES:

1.) 48" AFF INDICATES TO TOP OF DEVICE;
15" AFF INDICATES TO BOTTOM OF DEVICE;
ALL OTHER MOUNTING HEIGHTS REFER TO CENTERLINE OF DEVICE.
AC INDICATES 6" ABOVE COUNTER TO BOTTOM OF DEVICE.

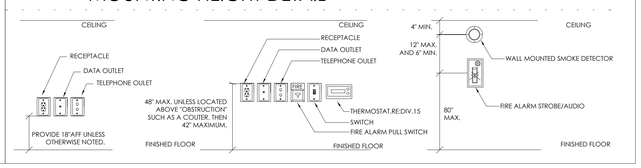
ELECTRICAL LEGEND - WIRING DEVICES

—ALL SYMBOLS SHOWN MAY NOT APPEAR IN ALL DRAWINGS.
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	SINGLE RECEPTACLE - 20A/125V/2P/3W/G NEMA 5-20R
	DUPLEX RECEPTACLE - 20A/125V/2P/3W/G NEMA 5-20R
T	DUPLEX RECEPTACLE TAMPER RESISTANT - 20A/125V/2P/3W/G NEMA 5-20R
H F H	HOSPITAL GRADE DUPLEX RECEPTACLE/GFI - 20A/125V/2P/3W/G NEMA 5-20R
	DUPLEX RCPT. GFI - 20A/125V/2P/3W/G NEMA 5-20R
WP/ "IN-USE"	DUPLEX RCPT.,WEATHER RESISTANT "WR", GFI INSTALLED IN A "IN-USE" WEATHER PROOF STEEL ENCLOSURE- 20A/125V/2P/3W/G NEMA 5-20R WP/"IN-USE" SHALL BE EQUAL TO MFR. CARLON METALLIC SERIES SINGLE GANG, VERTICAL MOUNT #MEPUVMG DOUBLE GANG, VERTICAL MOUNT #MEPU2VMG
	QUADRAPLEX RECEPTACLE
	ISOLATED GROUND QUADPLEX RECEPTACLE
	ISOLATED GROUND DUPLEX RECEPTACLE - 20A/125V NEMA 5-20R
	208V RECEPTACLE, VERIFY NEMA NO. WITH EQUIPMENT SUPPLIER
	SPECIAL PURPOSE RECEPTACLE (NEMA NO. AS INDICATED)
HD	J-BOX - AIR HAND DRYER: (RECESSED HAND DRYERS TO BE PROVIDED BY DIVISION 16. ELECTRICAL)#8-750 AUTOMATIC HANDCRAFT AS MANUFACTURER BY BOBRICK, (COLOR WHITE) QUANTITY: REFER TO DRAWINGS (MIN. ONE PER LAV. COMPLETE W/ ELE. CONNECTIONS TYP.)
4G	4-GANG FLOOR MOUNTED BOX, 2-DUPLEX RECEPTACLE(INCLUDE RECEPTACLE WITH COVER PLATE)/2-GANG FOR DATA - FLUSH MOUNTED UNO FLOOR BOX = MFR.-HUBBELL MODEL#CFB4G30RCR-CFRS1R8CVRNKL(COVER)-(2)FBMPDUP-FBMPAKS -CFRHB2(MULTISERVICE STEEL RECESSED FLOOR BOX -VERIFY FLOOR FINISH PRIOR TO ORDER SAME BOX FOR DATA OUTLETS.
6G	6-GANG FLOOR MOUNTED BOX, 2-DUPLEX RECEPTACLE(INCLUDE RECEPTACLE WITH COVER PLATE)/2-GANG FOR DATA - FLUSH MOUNTED UNO FLOOR BOX = MFR.-HUBBELL MODEL#CFB6G30RCR-CFRS1R8CVRNKL(COVER)-(3)FBMPDUP-FBMP6KS -CFBHB2(MULTISERVICE STEEL RECESSED FLOOR BOX-VERIFY FLOOR FINISH PRIOR TO ORDER SAME BOX FOR DATA OUTLETS.
6P	6" FIRE RATED POKE-TRHOUGHS BOX, 2-DUPLEX RECEPTACLE(INCLUDE RECEPTACLE WITH COVER PLATE)- MFR.-HUBBELL MODEL#S1R6PTFIT-S1R6SPE-S1R6SPL-S1R6SPH(50/50 DEVICE PLATE COMBINATION)-S1R6CVR4LU(COVER) -VERIFY FLOOR FINISH PRIOR TO ORDER SAME BOX FOR DATA OUTLETS.
6JP	6" FIRE RATED POKE-TRHOUGHS BOX, FURNITURE FEED,- MFR.-HUBBELL MODEL#S1R6PTFFALU(ALUMINUM COVER) -VERIFY FLOOR FINISH PRIOR TO ORDER.
8P	8" FIRE RATED POKE-TRHOUGHS BOX, 2-DUPLEX RECEPTACLE(INCLUDE RECEPTACLE WITH COVER PLATE)- MFR.-HUBBELL MODEL#S1R8PTFIT-S1R8CSPK-S1R8CSPK-S1R8PSP2(50/50 DEVICE PLATE COMBINATION)-S1R8CVR4LU(COVER) -VERIFY FLOOR FINISH PRIOR TO ORDER SAME BOX FOR DATA OUTLETS.

MOUNTING HEIGHT DETAIL

NOTE: VERIFY WITH ARCHITECTURAL FOR **ADA REQUIREMENTS.**



GENERAL ELECTRICAL NOTES

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

ELECTRICAL - LIGHTING FUNCTIONAL TESTING / COMMISSIONING PLAN:

CONTRACTOR SHALL PERFORM THE TASK BELOW TO COMMISSION THE LIGHTING CONTROL SYSTEM. CONTRACTOR SHALL SUBMIT A DOCUMENTATION DETAILING THE LIGHTING CONTROL SYSTEM, SETTING/CONDITION, ACTIONS PERFORMED AND FINAL SETTING CONDITION. SUBMIT DOCUMENTATION AT OR BEFORE SUBSTANTIAL COMPLETION TO FACILITATE OBTAINING THE CERTIFICATE OF OCCUPANCY.

A. ENSURE ALL LIGHTING FIXTURES FIXTURES HAVE LAMPS INSTALLED AND ARE FUNCTIONAL.
B. TEST ALL EXIT SIGNS, EMERGENCY LIGHTING FIXTURES, AND EMERGENCY BALLASTS FURNISHED INTEGRAL TO FIXTURES.
C. ENSURE ALL OCCUPANCY SENSORS HAVE BEEN INSTALLED AND ARE OPERATIONAL.
D. VERIFY ALL WALLBOX AND SCENE CONTROLLERS ARE INSTALLED AND OPERATIONAL.
E. TEST EACH INDIVIDUAL DEVICE FOR OCCUPANCY SENSOR TYPES OS1, OS2 AND TEST THE LIGHTING CONTROL RELAY PANEL SYSTEM.
F. TEST 10% OF ALL THE DEVICES FOR OCCUPANCY SENSOR TYPE: WSX-PDT-5A.
G. VERIFY THE FOLLOWING:
1. ALL SENSORS ARE LOCATED AND AIMED PER THE MANUFACTURER'S RECOMMENDATIONS.
2. STATUS INDICATORS ON DEVICES ARE OPERATIONAL AND CORRECT.
3. DEVICES CONTROL LIGHTING FIXTURES AS INDICATED ON DRAWINGS.
4. TIME DELAYS HAVE BEEN SET AS PER CODE AND PER OWNERS DIRECTIONS.
5. MOVEMENT IN ADJACENT AREAS AND/ CYCLING OF HVAC SYSTEMS DOES NOT FALSE TRIGGER SENSORS.
6. PHOTOCELL LOCATION AND AIMED PER MANUFACTURERS RECOMMENDATIONS.
7. PROGRAM INTERIOR RELAYS WITH A TIME FUNCTION ACCEPTABLE TO OWNER.
8. PROGRAM INTERIOR OVERRIDE SWITCH WITH A TIME FUNCTIONAL ACCEPTABLE BY OWNER.

ELECTRICAL SYSTEM — SECTION 16000

THE ELECTRICAL WORK INCLUDES PROVIDING NEW MATERIALS, FIXTURES, DEVICES AND ACCESSORIES NECESSARY FOR A COMPLETE FUNCTIONING ELECTRICAL SYSTEM. THE WORK ALSO INCLUDES FINAL CONNECTIONS TO EQUIPMENT ITEMS PROVIDED BY OTHERS. ALL WORK SHALL BE IN ACCORDANCE WITH LOCAL CODES OR ORDINANCES AND SUBJECT TO INSPECTION.

THE INTENT OF THE DRAWINGS IS TO INDICATE THE GENERAL EXTENT OF WORK REQUIRED FOR THE PROJECT. THE DRAWINGS FOR ELECTRICAL WORK ARE DIAGRAMMATIC, SHOWING THE LOCATION, TYPE DEVICES AND EQUIPMENT REQUIRED. THE DRAWINGS SHALL NOT BE SCALED FOR EXACT MEASUREMENTS. PROVIDE ALL FIXTURES, LAMPS, DEVICES, ACCESSORIES, OFFSETS AND MATERIALS NECESSARY TO FACILITATE THE SYSTEM'S FUNCTIONING AS INDICATED BY THE DESIGN AND THE EQUIPMENT INDICATED.

PROVIDE A $5,000 ELECTRICAL CONTINGENCY.

COORDINATE WITH THE WORK OF OTHER SECTIONS. VERIFY EXISTING SITE CONDITIONS BEFORE BIDDING. MAKE ALL CONNECTIONS TO EQUIPMENT FURNISHED BY OTHERS. COMPLY WITH THE CONSTRAINTS OF THE EXISTING CONDITIONS OF THE PROJECT SITE. REFER TO KITCHEN EQUIPMENT DRAWINGS FOR ADDITIONAL INFORMATION REGARDING KITCHEN EQUIPMENT, CASEWORK, AND REQUIRED ELECTRICAL CONNECTIONS.
ALL WORK SHALL COMPLY WITH LOCAL LAWS GOVERNING ELECTRICAL INSTALLATIONS, AND THE MOST RECENT EDITION OF THE "NATIONAL ELECTRIC CODE", REFER TO REFERENCE STANDARDS. PROVIDE CODE REQUIRED CLEARANCES AROUND ALL ELECTRICAL EQUIPMENT. OBTAIN ALL PERMITS RELATING TO ELECTRICAL WORK.
1.1 REFERENCE STANDARDS

A. Materials, equipment, devices and workmanship shall comply with applicable local, county, state and national codes, laws and ordinances, utility company regulations and industry standards.
B. In case of differences between building codes, state laws, local ordinances, industry standards, utility company regulations and the Contract Documents, the most stringent shall govern. The Contractor shall promptly notify the Owner's Representative in writing of any such difference. Should the Contractor perform any work that does not comply with local codes, laws and ordinances, industry standards or other governing regulations, the work shall be corrected of noncompliance deficiencies with the Contractor bearing all costs.
C. In addition to the aforementioned ordinances, industry standards published by the following organizations shall apply:

AABM - American Association of Battery Manufacturers
ADA - American's with Disabilities Act
AIA - American Institute of Architects
ANSI - American National Standards Institute
ASTM - American Society for Testing and Materials
CBM - Certified Ballast Manufacturers Association
ETL - Electrical Testing Laboratories
FM - Factory Mutual
ICEA - Insulated Cable Engineers Associated
IEEE - Institute of Electrical and Electronic Engineers
IES - Illuminating Engineering Society
IRI - Industrial Risk Insurance
NBS - National Bureau of Standards
NEC - National Electrical Code
NECA - National Electrical Contractors Association
NEMA - National Electrical Manufacturers Association
NESC - National Electrical Safety Code
NETA - National Electrical Testing Association
NFPA - National Fire Protection Association
UL - Underwriters Laboratories
IECC - International Energy Code
VERIFY VOLTAGE DROPS AND A.I.C. RATINGS FOR ALL EQUIPMENT CONNECTED, AND VERIFY SIZE OF ELECTRICAL SYSTEM BREAKERS, CONDUITS, ETC. REFER TO NEC 2011 FOR VOLTAGE DROP REQUIREMENTS.

ROOF PENETRATIONS SHALL COMPLY WITH "SMACNA" AND "NRCA" STANDARDS, AND WITH THE REQUIREMENTS OF THE EXISTING ROOFING WARRANTY, IF APPLICABLE. DO NOT PERFORM ROOFING PENETRATIONS IN A MANNER WHICH WOULD VOID OR OTHERWISE LIMIT THE EXISTING ROOFING WARRANTY.

TEMPORARY SERVICES: ARRANGE FOR SOURCES OF TEMPORARY CONSTRUCTION SERVICES. SUCH SERVICES SHALL BE NOMINALLY 120/208 VOLT, 1-PHASE, 3-WIRE FROM WHICH A COMPLETE SYSTEM OF TEMPORARY POWER AND LIGHTING SHALL BE PROVIDED FOR ALL CONSTRUCTION NEEDS.

CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EQUIPMENT AND SYSTEMS AGAINST HARMFUL EXPOSURE, OR ACCUMULATION OF DUST OR MOISTURE, FLOODING, CORROSION, AND ALL OTHER FORMS OF DAMAGE. CLEAN AND RESTORE DAMAGED FINISHES AND EQUIPMENT TO "LIKE-NEW" CONDITION.

ALL ELECTRICAL EQUIPMENT SHALL BE ADJUSTED AND TESTED FOR PROPER OPERATION. AFTER WIRES ARE IN PLACE AND CONNECTED TO DEVICES AND EQUIPMENT, THE SYSTEM SHALL BE TESTED FOR SHORTS AND GROUNDS. ALL HOT AND NEUTRAL CONDUCTORS, IF SHORTED OR GROUNDED, SHALL BE REMOVED AND REPLACED. ALL METERS, INSTRUMENTS, CABLE CONNECTIONS, EQUIPMENT, OR APPARATUS NECESSARY FOR MAKING ALL TESTS SHALL BE FURNISHED BY THIS CONTRACTOR.

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ELI R OCHOA, P.E., AIA
TEXAS REGISTRATION NO.
Engineer: 60251
Architect: 18160

HC Biosafety Lab

Hidalgo County Health Department
S 25th Ave, Edinburg, TX 78542

No.	Date	Description

PROJECT NO.: 20030
ISSUE DATE: 05/03/2021
DRAWN BY: Author
CHECKED BY: Checker

SHEET NAME

ELECTRICAL LEGEND

Sheet Number

EG01

Project Status:

100% SCHEMATIC DESIGN

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GENERAL NOTES- LIGHTING

A. ALL EXIT FIXTURES/EMERGENCY BATTERY PACK LIGHT FIXTURE SHALL BE CONNECTED TO UNSWITCHED OR NON-DIMMING HOT LEG OF SAME VOLTAGE/PHASE OF LOCAL LIGHTING CIRCUIT IN SPACE.
A.ALL EXIT FIXTURES/EMERGENCY BATTERY PACK LIGHT FIXTURE SHALL BE CONNECTED TO UNSWITCHED OR NON-DIMMING HOT LEG OF SAME VOLTAGE/PHASE OF LOCAL LIGHTING CIRCUIT IN SPACE.

B. VERIFY CEILING TYPES AND COORDINATE WITH FIXTURE TYPE LIGHT FIXTURE SHALL BE COMPATIBLE WITH CEILING TYPE AS INDICATED ON THE ARCHITECTURAL DOCUMENTS. NOTIFY ENGINEER IF DISCREPANCIES EXIST PRIOR TO ORDERING FIXTURES.

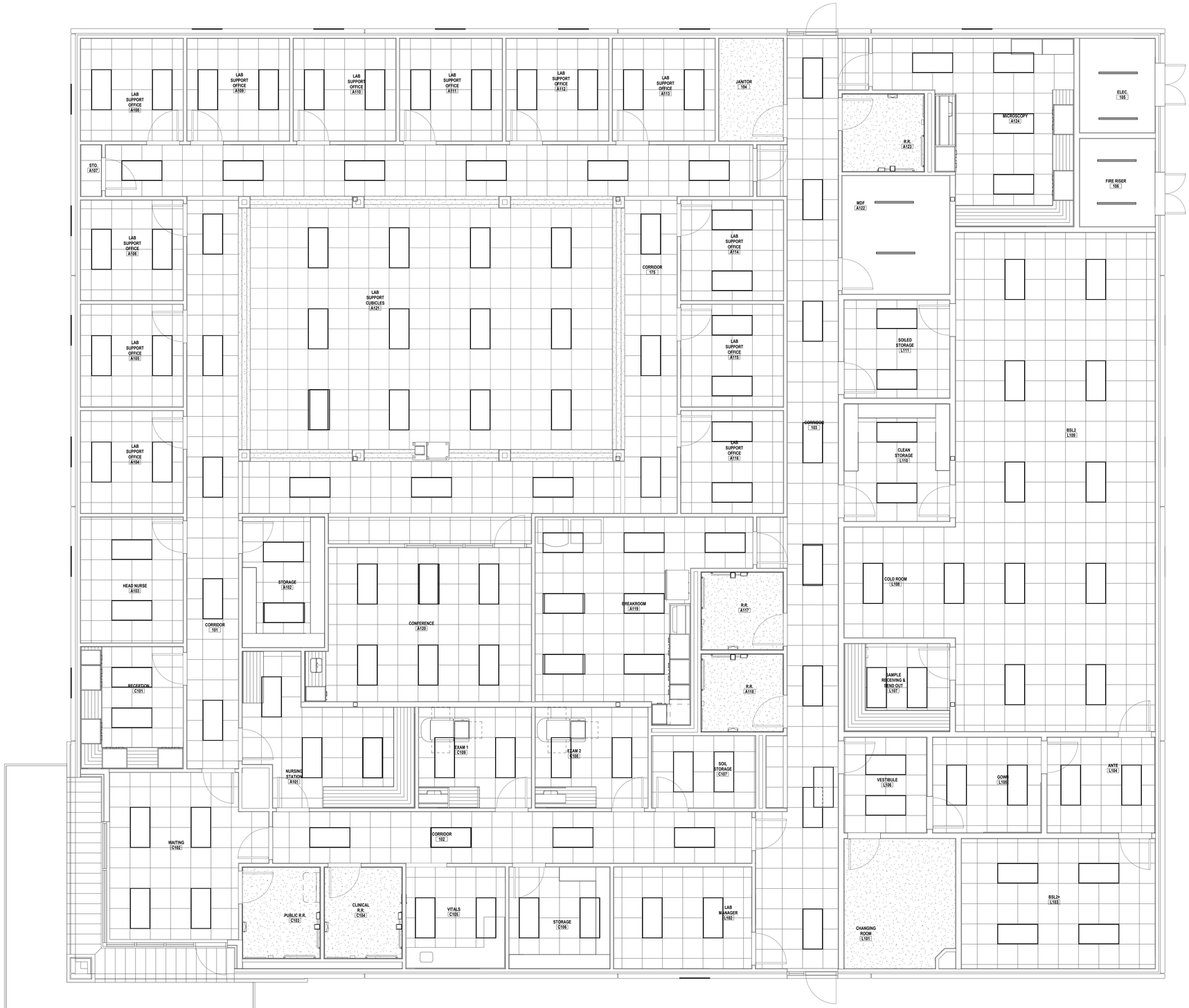
C. COORDINATE EXACT ROUTING OF ALL CONDUIT ABOVE CEILING IN BUILDING. TYPICAL FOR ALL BUILDING EXTERIOR LIGHTING.

D. COORDINATE LOCATION OF LIGHTS WITH DIFFUSERS AND GRILLES.

E. SWITCH LEGS ARE NOT SHOWN WHERE SWITCHING SCHEME IS OBVIOUS.

F. ALL EXIT FIXTURES TYPE-"X1 & X2", EMERGENCY LIGHT FIXTURE TYPE-"E" AND ALL EMERGENCY BALLAST SHALL BE ON CIRCUIT "DPEL-38", FIXTURE TYPE LABEL WITH AN "_E" ARE LIGHT FIXTURES WITH EMERGENCY BALLAST. REFER TO LIGHT FIXTURE SCHEDULE.

ELECTRICAL KEYNOTES



1 ELECTRICAL LIGHTING PLAN - FIRST FLOOR
1/4" = 1'-0"

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Architect: 19160

HC Biosafety Lab

Hidalgo County Health Department
S 25th Ave, Edinburg, TX 78542

No.	Date	Description

PROJECT NO.: 20030
ISSUE DATE: 05/03/2021
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SHEET NAME

ELECTRICAL LIGHTING FLOOR PLAN

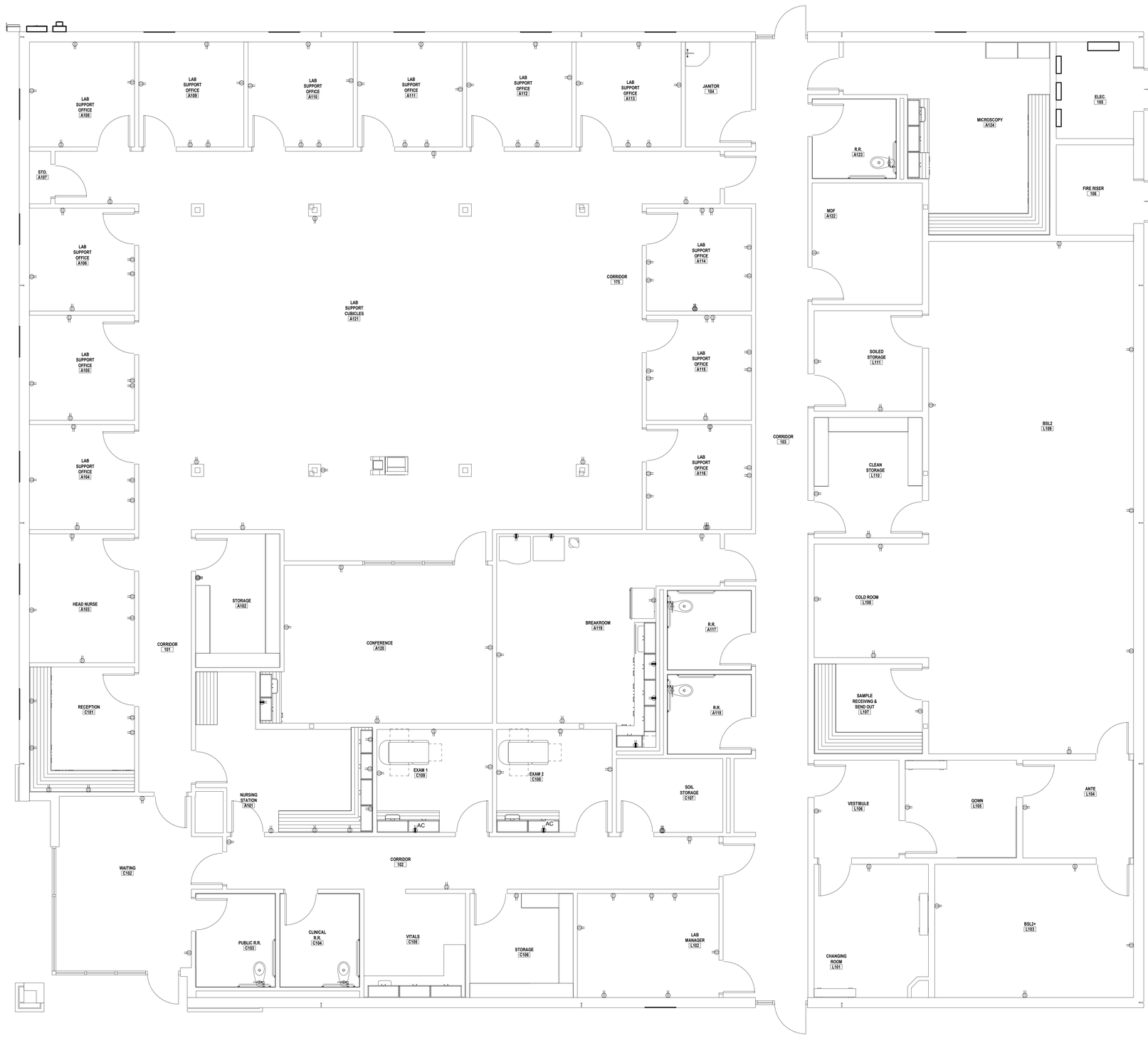
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EL01

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1 ELECTRICAL POWER FLOOR PLAN - FIRST FLOOR

1/4" = 1'-0"

GENERAL NOTES- POWER

A. COORDINATE EXACT LOCATION AND MOUNTING HEIGHT OF ALL POWER SOURCE WIRING IN ACCORDANCE WITH ARCHITECTURAL MILLWORK.

B. ELECTRICAL CONTRACTOR SHALL MAKE FINAL CONNECTION TO H.V.A.C EQUIPMENT, PLUMBING EQUIPMENT, REFER TO PANEL SCHEDULE FOR WIRE SIZE.

C. ELECTRICAL CONTRACTOR SHALL PROVIDE STARTERS, RELAYS, CONTACTORS AND THE REQUIRED ELECTRICAL ACCESSORIES FOR MECHANICAL SYSTEM AS REQUIRED.

D. COORDINATE EXACT LOCATION OF ALL MECHANICAL EQUIPMENT IN ACCORDANCE W/MECHANICAL DRAWINGS TO MEET ELECTRICAL AND MECHANICAL REQUIRED CLEARANCE BY THE LATEST CODE.

E. COORDINATE EXACT LOCATION OF ISOLATED OUTLETS FOR COMPUTERS WITH OWNER.

F. ELECTRICAL CONTRACTOR SHALL PROVIDE J-BOX AND CONDUIT FOR H.V.A.C. CONTROLS AND THERMOSTATS. COORDINATE EXACT LOCATION WITH MECHANICAL CONTRACTOR.

G. NEMA RATED OUTLETS, REFER TO BREAKER SIZE AND COORDINATE WITH EQUIPMENT REQUIREMENTS PRIOR TO BID.

ELECTRICAL KEYNOTES

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ELECTRICAL POWER FLOOR PLAN

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1 ELECTRICAL SPECIAL SYSTEMS FLOOR PLAN - FIRST FLOOR
1/4" = 1'-0"

GENERAL NOTES - SPECIAL SYSTEMS

A. COORDINATE EXACT LOCATION AND MOUNTING HEIGHT OF ALL POWER SOURCE WIRING IN ACCORDANCE WITH ARCHITECTURAL MILLWORK.
B. PROVIDE CLEAR VANDAL COVER WITH STOPPER II OPTION FOR ALL FIRE ALARM PULL STATIONS.
C. EQUIPMENT AS FURNISHED OF A SINGLE MANUFACTURER.
D. COORDINATE EXACT LOCATION OF ALL MECHANICAL EQUIPMENT IN ACCORDANCE MECHANICAL DRAWINGS.
E. ALL CONDITS SHALL REAMED AND COMPLETE WITH CONNECTORS AND INSULATED BUSHINGS AT BOTH ENDS.
F. ALL DEVICES SHOWN ON DRAWINGS ARE SYMBOLIC ONLY. THE ENTIRE FIRE ALARM SYSTEM, SHALL BE IN FULL COMPLIANCE AND MEET ALL CODES AND EQUIREMENTS OF THE LOCAL ADMINISTRATIVE AUTHORITY. ANY MODIFICATIONS REQUIRED TO PROVIDE COMPLIANCE SHALL BE MADE AT NO ADDITIONAL COST TO THE OWNER OR ARCHITECT/ ENGINEER.
G. FIRE ALARM LICENSE HOLDER SHALL ASSUME ALL RESPONSIBILITY FOR DESIGN AND SUBMIT DRAWINGS TO JURISDICTION HAVING AUTHORITY AND ABIDE BY ALL OTHER REQUIREMENTS PER NFPA.
H. ALL SPECIAL SYSTEM CONDUITS SHALL BE STUBBED UP ABOVE THE CEILING LEVEL. IF CABLE TRAY IS PRESENT, STUBBED CONDUITS TO CABLE TRAY.

ELECTRICAL KEYNOTES

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SPECIAL SYSTEMS FLOOR PLAN

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EP02

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ABBREV.	DESCRIPTION
AC	ABOVE CEILING
AFF	ABOVE FINISHED FLOOR
ASA	AMERICAN STANDARDS ASSOCIATION
ASME	AMERICAN SOICIETY OF MECHANICAL ENGINEERS
ASTM	AMERICAN SOCIETY FOR TESTING MATERIALS
AW	ACID WASTE
AWWA	AMERICAN WATER WORKS ASSOCIATION
AV	ACID VENT
BTUH	BRITISH THERMAL UNIT PER HOUR
CA	COMPRESSED AIR
CI	CAST IRON
CO	CLEANOUT
CU	COPPER
DN	DOWN
EQ	EQUAL
FCO	FLOOR CLEANOUT
FF	FINISH FLOOR
FG	FINISH GRADE
FH	FIRE HYDRANT
GAL	GALLON(S)
GALV	GALVANIZED
GW	GREASE WASTE
HB	HOSE BIBB
HP	HORESPOWER
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
OC	ON CENTER
RD	ROOF DRAIN(S)
RE:4/P6	REFER TO DETAIL 4 DRAWING P-6
RO	REVERSE OSMOSIS
SD	STORM DRAIN
SPEC	SPECIFICATION
TYP	TYPICAL
UG	UNDERGROUND
UL	UNDERWRITERS LABORATORIES
VTR	VENT THRU ROOF
V	VACUUM
W/	WITH
WCO	WALL CLEAN OUT
YCO	YARD CLEAN OUT

PLUMBING GENERAL NOTES: (ALL SHEETS)

A. ALL WORK AND MATERIAL SHALL BE IN COMPLIANCE WITH ALL APPLICABLE CODES AS ADAPTED AND AMENDED BY THE INSPECTING AUTHORITIES.

B. ALL PLUMBING WORK SHALL BE INSTALLED SO AS TO AVOID CONFLICT WITH ALL ELECTRICAL WORK, MECH'L WORK AND STRUCTURAL MEMBERS. COORDINATE WITH MECHANICAL, ELEC'L AND STRUCTURAL FOR PROPER CLEARANCES.

C. REFER TO ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR PHASING AND SEQUENCE OF CONSTRUCTION OF WORK.

D. SLEEVE ALL OUTSIDE WALL, FLOOR SLAB, AND GRADE BEAM PENETRATIONS PER DETAILS AND PER CODE.

E. LOCATE ALL PLUMBING VENTS TO ROOF (VTR) SO THAT THEY TERMINATE A MINIMUM OF 1'-0" AWAY FROM ANY VERTICAL SURFACE AND 10'-0" AWAY FROM ANY OUTSIDE AIR INTAKES.

F. RECORD INVERT ELEVATIONS OF ALL YCO'S ON "AS-BUILT" DRAWINGS.

G. MINIMUM 3" WASTE LINE BELOW FLOOR AND MINIMUM 2" WASTE RISER. UNLESS NOTED OTHERWISE (UNO).

H. PLUMBING CONTRACTOR SHALL PAY FOR ALL UTILITY CONNECTIONS FEES, PERMITS, TESTS AND INSPECTIONS. FURNISH 3 COPIES OF INSPECTION CERTIFICATE BEFORE REQUESTING FINAL PAYMENT.

I. PLUMBING CONTRACTOR SHALL BE RESPONSIBLE FOR PATCHING AND REPAIRING ALL AREAS WHICH ARE DAMAGED BY HIS OPERATIONS.

J. CUTTING OF CONCRETE FLOORS SHALL BE BY MACHINE SAW. HOLES FOR PIPES (WALL OR FLOOR) SHALL BE DONE WITH CORE DRILLING EQUIPMENT WITH PRIOR APPROVAL FROM THE STRUCTURAL ENGINEERS.

K. PRESSURE TEST ALL INSTALLATIONS PRIOR TO CONNECTING EQUIPMENTS.

L. LABEL ALL PIPING PER ANSI STANDARD.

M. PROVIDE PROPER INSULATION ON ALL HOT WATER PIPING, STORM PIPING AND CONDENSATE PIPING.

N. PROVIDE SHUT-OFF VALVES (STOPS) ON ALL ROUGH-INS TO FIXTURES AND EQUIPMENTS.

O. PROVIDE ANY BACK FLOW PREVENTION DEVICE REQUIRED BY CODE OR GOVERNING AUTHORITIES. CONTRACTOR SHALL VERIFY THIS WITH CITY OR LOCAL AGENCIES AND INCLUDE COST OF SAME IN BID. CONTRACTOR TO HAVE BACK FLOWS CERTIFIED.

P. PROVIDE WATER HAMMER ARRESTORS AS INDICATED ON THE DRAWINGS. AIR CHAMBERS NOT AN APPROVED SUBSTITUTE.

Q. ALL EXPOSED PIPING FOR DESIGNATED DISABLED ACCESS FIXTURES SHALL BE COVERED OR OTHERWISE WRAPPED IN ACCORDANCE WITH A.D.A. REQUIREMENTS AND LOCAL AUTHORITY.

R. ALTERNATE MATERIALS NOT IDENTIFIED IN SPECIFICATIONS/DRAWINGS BUT APPROVED BY LOCAL AUTHORITY SHALL BE SUBMITTED TO ARCHITECT AND PLUMBING ENGINEER FOR REVIEW PRIOR TO INSTALLATION.

S. ISOMETRIC DIAGRAMS ARE FOR SIZING PURPOSES ONLY AND SHALL NOT BE USED FOR MATERIAL TAKE-OFFS, OR BE CONSTRUED TO INDICATE ACTUAL SITE INSTALLATION.

T. DRAWING IS DIAGRAMMATIC ONLY. CONTRACTOR SHALL COORDINATE EXACT LOCATIONS OF PIPING, DEVICES AND EQUIPMENT WITH BUILDING ELEMENTS AND THE WORK OF OTHER TRADES.

U. EVERY FLOOR DRAIN, FLOOR SINK OR HUB DRAIN SHALL BE SERVED BY AN AUTOMATIC TRAP PRIMER, UNO.

PLUMBING SYMBOL LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	BALL VALVE		DOMESTIC COLD WATER
	CHECK VALVE		DOMESTIC HOT WATER
	GATE VALVE		DOMESTIC HOT WATER RETURN
	UNION		SANITARY SEWER VENT
	DIRECTION OF FLOW		SANITARY WASTE LINE
	WALL CLEANOUT	140°	140° HOT WATER
	FLOOR CLEANOUT YARD CLEANOUT		SANITARY DIRECTION OF FLOW
	FLOOR SINK		BRANCH - TOP CONNECTION
	FLOOR DRAIN		PIPE RISER
	WALL HYDRANT OR HOSE BIBB		PIPE DROP
			POINT OF CONNECTION (APPROXIMATED FIELD VERIFY EXACT POINT OF CONNECTION)

NOTE: 1. NOT ALL SYMBOLS USED ON THIS PROJECT
2. INSTALL WATER CLOSET FLUSH VALVE HANDLE TOWARDS WIDER SIDE OF WATER CLOSET OR DOOR OPENING.
3. INSTALL ADA APPROVED FLUSH VALVE HANDLE FOR ADA PLUMBING FIXTURES.

PLUMBING PIPING MATERIAL:

1. SANITARY DRAIN & VENT INSIDE BUILDING BELOW GRADE: SCHEDULE 40 PVC
2. SANITARY DRAIN OUTSIDE BUILDING: SCHEDULE 40 PVC
3. SANITARY DRAIN & VENT INSIDE BUILDING ABOVE GRADE: SCHEDULE 40 PVC
4. SANITARY DRAIN & VENT IN PLENUM CEILING: NO-HUB CAST IRON
5. ACID WASTE PIPING: FR POLYPROPYLENE
6. ACID VENT IN PLENUM CEILING: FR-PVDF
7. DOMESTIC HOT & COLD WATER: COPPER, TYPE "L" HARD DRAWN
8. DOMESTIC WATER BELOW GRADE: COPPER, TYPE "K" SOFT ANNEALED
8. DOMESTIC WATER BELOW GROUND OUTSIDE OF BUILDING PIPING 2" SIZE AND SMALLER: COPPER, TYPE "L" HARD DRAWN
9. DOMESTIC WATER BELOW GROUND OUTSIDE OF BUILDING PIPING OVER 2" SIZE: SDR 26 CLASS 160 PVC

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PLUMBING LEGEND

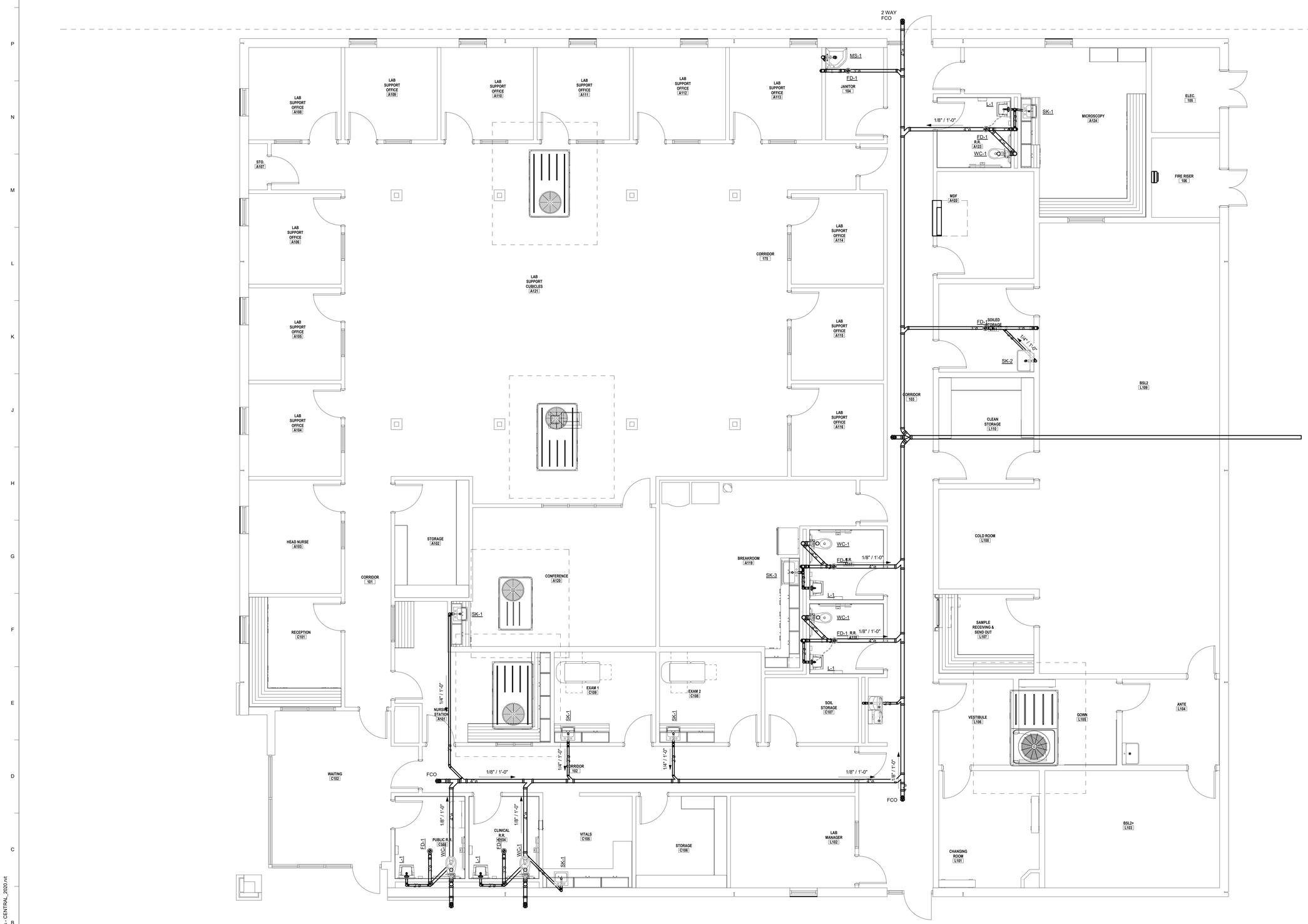
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1 PLUMBING SEWER - FIRST FLOOR
1/4" = 1'-0"

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PLUMBING SEWER & VENT FLOOR PLAN

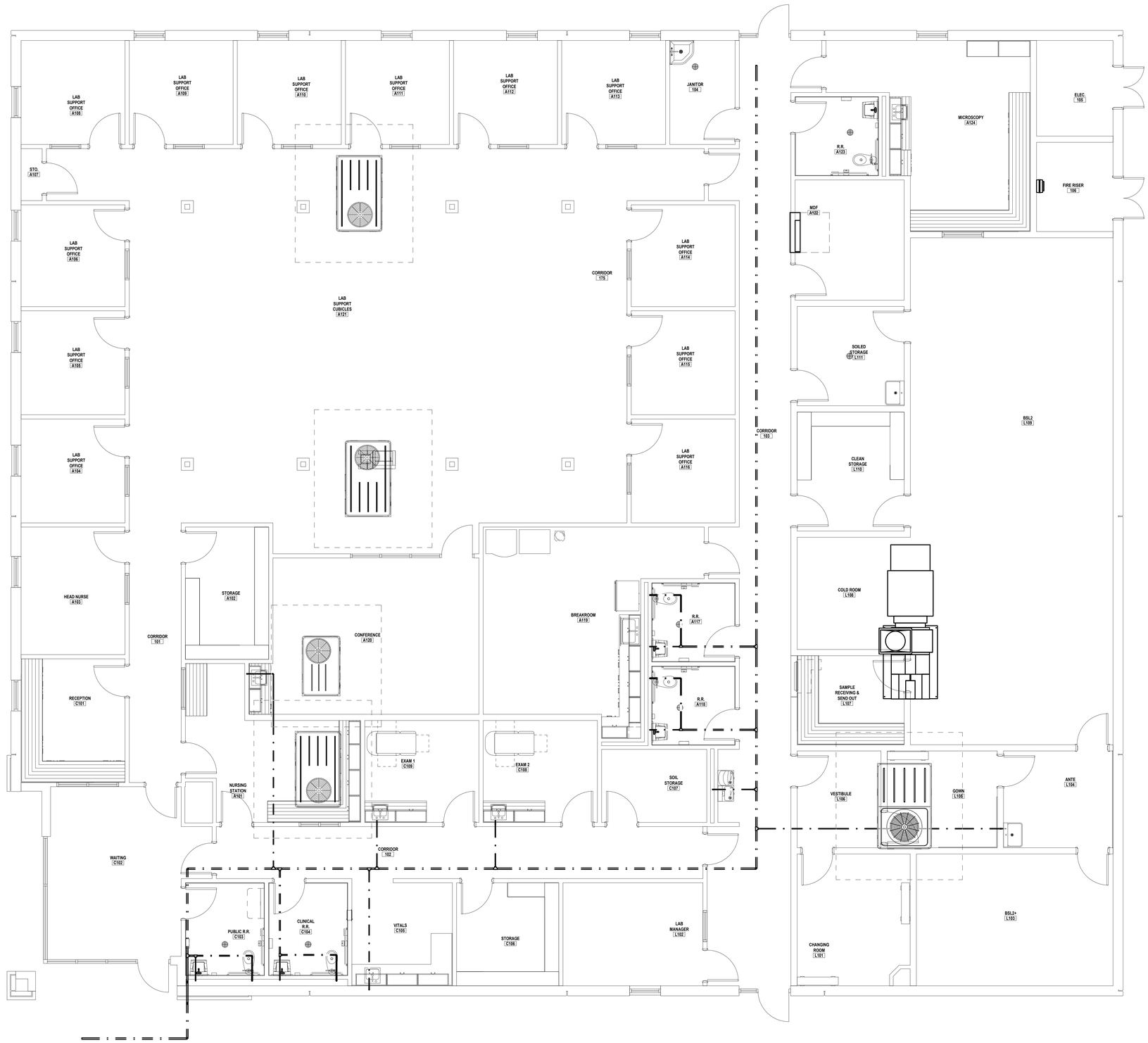
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PP01

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1 PLUMBING DOMESTIC WATER- FIRST FLOOR
1/4" = 1'-0"

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PLUMBING DOMESTIC WATER FLOOR PLAN

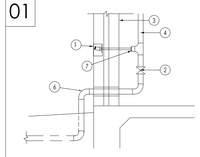
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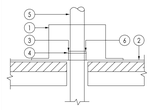
01 WATER SERVICE ENTRANCE DETAIL



1. WALL HYDRANT - INSTALL LOW ENOUGH TO DRAIN RISER.
2. MAIN SHUT-OFF VALVE
3. WALL
4. TYPE "L" COPPER, WATER SUPPLY TO SYSTEM
5. SLEEVE
6. PROVIDE 1" ARMAFLEX INSULATION W/ METAL JACKET ON EXPOSED PIPING.
7. REDUCE PIPE ACCORDINGLY FOR SUPPLY TO HOSE BIBB

NO SCALE

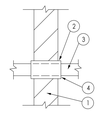
05 VENT THRU ROOF DETAIL



1. PREFABRICATED ROOF CURB. FURNISHED & INSTALLED BY ROOFING CONTR. (COORDINATE)
2. METAL ROOFING
3. STAINLESS STEEL CLAMP
4. SLEEVE PIPE BY ROOFING CONTR.
5. VTR - USE CAST IRON WHERE CEILING IS PLENUM SPACE.
6. PROVIDE CAULKING GROVE
7. LOCATE MIN. 10'-0" FROM A/C AIR INTAKES

NO SCALE

09 WALL SLEEVE DETAIL



1. MASONRY WALL
2. GALVANIZED SCHEDULE 40 STEEL OR COPPER SLEEVE, SIZE TO BE MINIMUM 3/8" LARGER IN DIAMETER THAN PIPE AND INSULATION.
3. PLUMBING PIPE (RELIEF LINES, DOMESTIC WATER, AIR, AND GAS PIPING).
4. FILL VOID WITH MINERAL WOOL AND CAULK VERMIN TIGHT.

NO SCALE

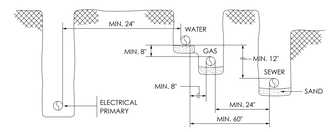
02 TRENCHING DETAIL

CLEAR TRENCH OF ALL ROCKS AND DEBRIS BEFORE ADDING SAND CUSHION.

COMPACT TRENCH FILL TO 95% PROCTOR DENSITY.

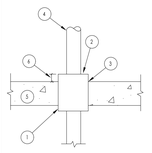
MAINTAIN A MINIMUM OF 60 INCHES UNDISTURBED EARTH BETWEEN PARALLEL WATER AND SEWER LINES OR SUPPORT WATER LINE ON SEPARATE SHELF A MINIMUM OF 12" ABOVE SEWER LINE.

MAINTAIN A MINIMUM OF 24" HORIZONTALLY BETWEEN ELECTRICAL PRIMARY AND SEWER. MAINTAIN A MINIM OF 12" VERTICALLY OR 24" HORIZONTALLY BETWEEN ELECTRICAL PRIMARY AND WATER LINES, GAS LINES, TELEPHONE RACEWAYS AND CABLE RACEWAYS.



NO SCALE

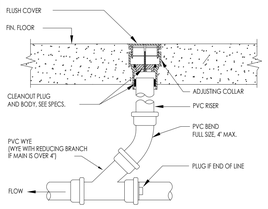
06 FLOOR PENETRATION DETAIL



1. METAL SLEEVE TWO SIZES LARGER THAN PIPE
2. FILL VOID WITH NON-SHRINKING WATERPROOF, VERMIN PROOF MATERIAL
3. ALL PLUMBING PIPE PENETRATIONS THROUGH GROUND FLOOR, AND GRADE BEAMS SHALL BE SLEEVED
4. PIPE
5. CONCRETE SLAB
6. MINIMUM 2"

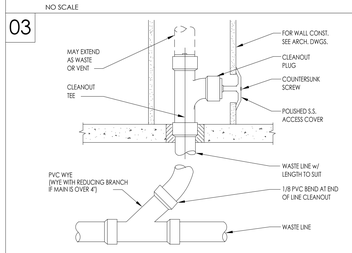
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10 FLOOR CLEANOUT DETAIL



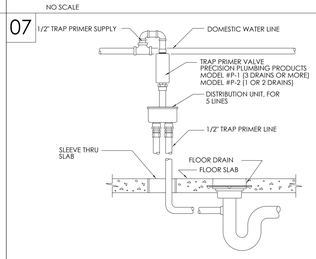
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03 WALL CLEANOUT DETAIL



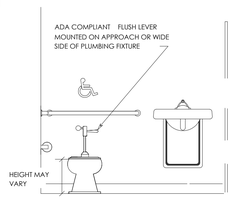
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07 TRAP SEAL PRIMER DETAIL



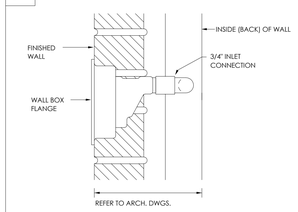
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11 ADA WATER CLOSET DETAIL



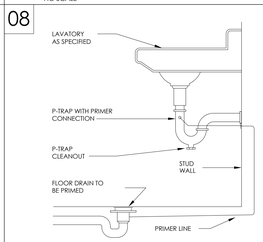
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04 WALL HYDRANT DETAIL



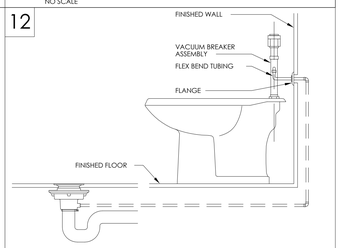
NO SCALE

08 TRAP SEAL PRIMER INSTALLATION DETAIL



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12 FLUSH VALVE TRAP SEAL PRIMER



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PLUMBING DETAILS

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PD01

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