NYC Buildings

Do not submit separately. Must be incorporated in the drawing set

EN1: Energy Cost Budget Worksheet

Must be typewritten

1	Location Information			
House No(s) 125	Street Name Greenwich Street			
Borough Manhattan (1)	Block 51	Lot 14	BIN 1001034	CB No. 101
Work on Floor(s) All			Apt/Condos No(s) N/A	

2	Applicant Information	
Last Name Maybaum	First Name Michael	Middle Initial W
Business Name Cosentini Associates	Business Telephone 212.615.3600	
Business Address Two Penn Plaza Third Floor	Business Fax 212.616.3700	
City New York, State NY, Zip 10121	Mobile Telephone N/A	
Email nycdob@cosentini.com	License Number 59357	

3 Energy Modeling Information FILED UNDER 2011 NYCECC

Energy Modeling Protocol (check one): ☒Section 11 ECB ☐Appendix G PRM

Modeling Software & version: eQUEST v3.65 Weather File: New York, NY

Total Modeled Square Feet: 467307 Conditioned Square Feet: 326728

Proposed Unmet Load Hours: 93 Baseline Unmet Load Hours: 134

Proposed Site EUI (kBtu/sf): 52.8 Baseline Site EUI (kBtu/sf): 62.4

4 Purchased Energy Rates

Fuel	Utility Rate Provider/ Rate Structure (i.e ConEd)	Virtual Utility Rate ($/unit)	Baseline Design Total Charge ($)	Virtual Utility Rate ($/unit)	Proposed Design Total Charge ($)	Supporting Doc. Location	Model Output Report
Electric	ConED	$0.20/kWh	$600,340	$0.20/kWh	$658,346	ES-D	ES-D
Gas	National Grid	$1.20/therm	$226,820	$1.20/therm	$161,405	ES-D	ES-D
Steam	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other:	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TOTAL		N/A	$827,160	N/A	$819,751	N/A	ES-D

☐This project contains on-site generation.

eQuest reports boiler elec energy for DHW as Misc Energy

5 Energy Modeling Usage Summary

	Baseline Model: Electric Usage (kwh)	Baseline: Gas/Steam Usage (MMBTU)	Baseline: Other Usage (i.e. chilled water) (indicate units)	Proposed Model: Electric Usage (kwh)	Proposed: Gas/Steam Usage (MMBTU)	Proposed: Other Usage (i.e. chilled water) (indicate units)	Model Output Location (Report)
Interior Lighting	965,248	N/A	N/A	965,248	N/A	N/A	BEPS/BEPU
Misc. Equip.	1,071,085	N/A	N/A	1,081,226	N/A	N/A	BEPS/BEPU
Space Heat	N/A	14,479	N/A	7,754	8,990	N/A	BEPS/BEPU
Space Cool	518,475	N/A	N/A	417,949	N/A	N/A	BEPS/BEPU
Heat Rejection	1,623	N/A	N/A	11,159	N/A	N/A	BEPS/BEPU
Pumps & Misc	146,702	N/A	N/A	147,098	N/A	N/A	BEPS/BEPU
Vent Fans	298,525	N/A	N/A	661,295	N/A	N/A	BEPS/BEPU
Dom. Hot Water	N/A	4,423	N/A	N/A	4,459	N/A	BEPS/BEPU
Exterior Lighting	N/A	N/A	N/A	N/A	N/A	N/A	BEPS/BEPU
Exterior Misc.	N/A	N/A	N/A	N/A	N/A	N/A	BEPS/BEPU
TOTAL	3,001,699	18,902	N/A	3291728	13,451	N/A	BEPS/BEPU

6 Energy Inputs and Supporting Documentation Index

a Above-Grade Wall & Fenestration Areas

	Orientation	Baseline: Window + Wall Area (ft²)	Baseline: Vertical Glazing Area (ft²)	Baseline: (%)	Proposed: Window + Wall Area (ft²)	Proposed: Vertical Glazing Area (ft²)	Proposed: (%)	Supporting Doc. Location	Model Output Report
Above-Grade Wall & Vertical Glazing Area by Orientation	North	90,137	32,477	36.0	90,137	44,658	49.5	A-201	LV-D
	East	56,400	24,353	43.2	56,400	33,488	59.4	A-201	LV-D
	South	77,408	21,884	28.3	77,408	30,088	38.9	A-201	LV-D
	West	54,434	32,639	60.0	54,434	44,879	82.4	A-201	LV-D
	Total	278,380	111,353	40.0	278,380	153,112	58.6	A-201	LV-D

		Baseline: Roof + Skylight Area (ft²)	Baseline: Skylight Area (ft²)	Baseline: (%)	Proposed: Roof + Skylight Area (ft²)	Proposed: Skylight Area (ft²)	Proposed: (%)	Supporting Doc. Location	Model Output Report
Roof & Skylight Area	**Total**	10,696	N/A	N/A	10,696	N/A	N/A	N/A	N/A

b Vertical Fenestration

Model Input Parameter	Category (Res/Non-Res)	Item #	Baseline: Description (from ASHRAE)	Baseline: Ass'y U-factor	Baseline: SHGC	Baseline: VLT	Proposed: Description (from design)	Proposed: Ass'y U-factor	Proposed: SHGC	Proposed: VLT	Supporting Doc. Location	Model Output Report
Vertical Glazing	Res/Non Re	1	Curtain Wall	0.50	0.40	0.51	IGU	0.44	0.29	0.40	A-201	LV-D
Vertical Glazing	N/A	2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Vertical Glazing	N/A	3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Vertical Glazing	N/A	4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Vertical Glazing	N/A	5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Vertical Glazing	N/A	6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Vertical Glazing	N/A	7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Skylights	N/A	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Skylights	N/A	2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Shading Devices	N/A		☒No shading projections, manual shading devices, or self-shading have been modeled. ☐Any shading by adjacent structures has been modeled identically to the proposed case.				List any permanent or auto-controlled shading devices:				N/A	N/A

How were the Proposed case framed assembly fenestration U-factors determined? (Choose one)

- ☐NFRC testing for site-assembled fenestration
- ☒NFRC testing for manufactured fenestration assemblies
- ☐Table A8.2 (windows) and Table A8.1 (skylights)
- ☐LBNL Window 5 or Window 6 calculations
- ☐Energy simulation includes separate frame and glazing
- ☐Other (Describe)________________________

c Envelope Assembly

☐Check if additional envelope descriptions are attached (Please use the EN-1c).

☒All proposed roofs, above-grade exterior walls, below-grade exterior walls, exposed floors, slab-on-grade floors, and opaque doors were modeled as-designed and with assembly U-factors/C-factors/F-factors consistent with ASHRAES 90.1 Appendix A values.

WT_# refers to wall types in model

Model Input Parameter	Space-Conditioning Category (Res/Non-Res)	Item #	Baseline: Description	Baseline: Assembly U-factor/ C-factor/ F-factor	Proposed: Description	Proposed: Assembly U-factor/ C-factor/ F-factor	Supporting Doc Location	Model Output Report
Roof Construction	Residential	1	Insulation Above Deck, R20	U-0.048	Continuous Insulation R-17.06	0.059	A-399	LV-D
			Solar Reflectance	SR = 0.3	Solar Reflectance	SR = 0.3		
	N/A	2	N/A	N/A	N/A	N/A	N/A	N/A
			Solar Reflectance	SR = N/A	Solar Reflectance	SR = N/A		
Above-Grade Exterior Wall Construction	Section B WT_6,7,9	1	Steel Framed R-13 + R-7.5 ci	U-0.064	Insulated Shadow Box	U-0.08	A-399	LV-D
	Section C	2	Mass Floor R-8.3 ci	U-0.074	Insulated Soffit	U-0.10	A-399	LV-D
	Section D WT-10,11	3	Steel Framed R-13 + R-7.5 ci	U-0.064	Insulated spandrel at mechanical floor	U-0.29	A-399	LV-D
	Section E WT_5	4	Steel Framed R-13 + R-7.5 ci	U-0.064	Exposed Concrete with insulation	U-0.09	A-399	LV-D
	Section F WT_12	5	Steel Framed R-13 + R-7.5 ci	U-0.064	CMU/DEFS	U-0.10	A-399	LV-D
	N/A	6	N/A	N/A	N/A	N/A	N/A	N/A
Input to Energy Model	Weighted Average	7	Steel Framed R-13 + R-7.5 c.i.	U-0.064	Weighted Average for Opaque Wall	U-0.13	A-201	LV-D
	N/A	8	N/A	N/A	N/A	N/A	N/A	N/A
Below-Grade Exterior Wall Construction	N/A	1	Below Grade Wall R-7.5 ci	C-0.133	Poured Concrete 14"-16" w/Ins	C-0.133	N/A	LV-D
	N/A	2	N/A	N/A	N/A	N/A	N/A	N/A
Exposed Floor Construction	Section C	1	Mass Floor R-10.4 ci	U-0.096	Insulated Soffit	U-0.10	A-399	LV-D
Slab-On-Grade Floors	N/A	1	N/A	N/A	N/A	N/A	N/A	N/A
Opaque Doors	N/A	1	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	2	N/A	N/A	N/A	N/A	N/A	N/A

d Interior Lighting Power

☐Check if additional lighting power forms are attached (Please use the EN-1d).

The lighting power is calculated using the (check one) ☒space by space method or ☐building area method.

Space Type (Table 9.6.1) or Building Area Type (Table 9.5.1)	Total Area Space/Blg Type (ft²)	Baseline: Auto. Controls (Yes/No)	Baseline: Daylight Ctrls (Yes/No)	Baseline: Modeled LPD (W/ft2)	Proposed: Auto. Controls (Yes/No)	Proposed: Daylight Ctrls (Yes/No)	Proposed: Modeled LPD (W/ft2)	Supporting Doc. Location	Model Output Report
Corridor	19,363	No	No	0.7	No	No	0.7	Notes	LV-B
Residential	273,654	No	No	0.7	No	No	0.7	Notes	LV-B
Retail	16,315	Yes	No	0.7	Yes	No	0.7	Notes	LV-B
Amenity	14,698	Yes	Yes	0.7	Yes	Yes	0.7	Notes	LV-B
Mechanical	48,906	No	No	0.7	No	No	0.7	Notes	LV-B
Stairwell	17,917	Yes	No	0.7	Yes	No	0.7	Notes	LV-B
Trash	8,975	Yes	No	0.7	Yes	No	0.7	Notes	LV-B
Unconditioned	66,871	No	No	0	No	No	0	Notes	LV-B
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	466,699	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

e Exterior Lighting Power

	Baseline Design (Watts)	Proposed Design (Watts)	Supporting Doc. Location	Model Output Report
Tradable Lighting Power	N/A	N/A	N/A	N/A
Non-Tradable Lighting Power	N/A	N/A	N/A	N/A
5% Allowance	N/A		N/A	N/A
Total Lighting Power	N/A	N/A	N/A	N/A

f Process/Receptacle Equipment

Space Type (or Equipment Type)	Space Area (or # Equip.)	Equipment Power Density (W/SF) or (Equip Demand)	Modeling Parameters/ Schedule	Baseline Modeled Identically? (Yes/No)	Supporting Doc. Location	Model Output Report
Corridor	19,363	0	Circulation Schedule	Yes	LV-B	LV-B
Residential	273,654	1.0	Residential Schedule	Yes	LV-B	LV-B
Retail	16,315	1.35	Retail Schedule	Yes	LV-B	LV-B
Amenity	14,698	1.0	Amenity Schedule	Yes	LV-B	LV-B
Mechanical	48,906	0.2	Circulation Schedule	Yes	LV-B	LV-B
Stairwell	17,917	0	Circulation Schedule	Yes	LV-B	LV-B
Trash	8,975	0.2	Circulation Schedule	Yes	LV-B	LV-B
Unconditioned	66,871	0	No Schedule	Yes	LV-B	LV-B
N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A
TOTAL	466,699	N/A	N/A	N/A	N/A	N/A

g Service Hot Water Systems

Model Input Parameter	Baseline Design	Units	Proposed Design	Units	Supporting Doc Location	Model Output Report
System Type & Fuel	Natural Gas Fired		Boiler Feed		N/A	PV-A
Input Rating	N/A		N/A		N/A	PV-A
Efficiency	80%		92%		N/A	PV-A
Storage Volume	N/A	Gal	N/A	Gal	N/A	PV-A
Storage Temperature	120F	°F	120F	°F	N/A	PV-A
Peak HW Demand	40 GPM	GPM	40 GPM	GPM	N/A	PV-A
Number of Primary DHW pumps	N/A	#	N/A	#	N/A	PV-A
Primary DHW Pump Power	N/A	KW	N/A	KW	N/A	PV-A
Primary DHW Pump Control	N/A		N/A		N/A	PV-A

h HVAC Narrative. Please provide a brief narrative of the building's HVAC systems.

Variable speed centrifugal chillers serve the 4 pipe fan coils which condition the residential units. Condensing boilers supply the hot water plant. A parallel system delivers ventilation air directly to the units, and includes heat recovery. These units are also chilled water. A waterside economizer provides free cooling when the outdoor air temperature permits. VFDs are included on all pumps, large fan systems, and cooling towers.

The baseline includes 4 pipe fan coil units which supply ventilation air directly to the residential space.

i Air-Side HVAC

Each individual system may be entered separately, or multiple systems may be grouped together if all input parameters identified with an (*) are similar.

☐Check if additional Air-Side HVAC forms are attached (Please use the EN-1i).

Model Input Parameter	Baseline: Description	Baseline: Units	Proposed: Description	Proposed: Units	Supporting Doc. Location	Model Output Report
System Description	Baseline System Description & System #: System 7 - Four Pipe Fan coil		4 Pipe Fan Coil Units, Chilled Water Air Handlers		M-401,402	SV-A
System Designation(s)	SYS_B, C, D, etc...		SYS_B, C, D, etc...		M-401,402	SV-A
# of Similar Systems	N/A		N/A		M-401,402	SV-A
Total Cooling Capacity	13,991,795 BTU/HR		16,885,788 BTU/HR		M-401,402	SV-A
*Table 6.8.1 Unitary Cooling Capacity Range	N/A		0.5 ton to 2 ton fan coils		M-401,402	SV-A
*Unitary Cooling Eff. (EER or SEER)	N/A		N/A		M-401,402	SV-A
*Unitary Cooling Part-load Eff. (if applicable)	N/A		N/A		M-401,402	SV-A
Total Heating Capacity	17,367,693	BTU/HR	22,680,000	BTU/Hr	M-401,402	SV-A
*Table 6.8.1 Unitary Heating Capacity Range	N/A		N/A		M-401,402	SV-A
*Unitary Heating Efficiency	N/A		N/A		M-401,402	SV-A
*Fan Control	Constant Volume		Constant Volume, VAV		M-401,402	SV-A
Supply Airflow	397,543	cfm	301,748	cfm	M-401,402	SV-A
Outdoor Airflow	67,487 CFM	cfm	67,487CFM	cfm	M-401,402	SV-A
*Demand Control Ventilation	N/A		N/A		M-401,402	SV-A
*Economizer High-Limit Shutoff (°F)	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A
Exhaust Air Energy Recovery Systems	Yes, AHU-7-1, 37-1, 67-1		Yes, ERU-7-1, 37-1, 67-1		M-401,402	SV-A
*Exhaust Air Energy Recovery Effectiveness	50%		75%		M-401,402	SV-A
Supply Fan Power	174.2	kW	79.6	kW	M-401,402	SV-A
Return/Relief Fan Power	20.8	kW	24.1	kW	M-401,402	SV-A
Exhaust Fan Power	N/A - included in tally above	kW	N/A - included in tally above	kW	M-401,402	SV-A
System Fan Power	195	kW	103.7	kW	M-401,402	SV-A
Allowed Fan Power:		kW		kW		
Other (describe)	N/A	N/A	N/A	N/A	N/A	N/A
Other (describe)	N/A	N/A	N/A	N/A	N/A	N/A
Other (describe)	N/A	N/A	N/A	N/A	N/A	N/A
Other (describe)	N/A	N/A	N/A	N/A	N/A	N/A

j Water-Side HVAC – Chilled Water

☐Check if additional Chiller HVAC forms are attached (Please use the EN-1j).

Model Input Parameter	Baseline: Description	Baseline: Units	Proposed: Description	Proposed: Units	Supporting Doc. Location	Model Output Report
# and Type of Chillers (and capacity of chiller if more than 1 type or size)	2 Centrifugal Chillers		2 Centrifugal Chillers w/VFD		M-401,402	PV-A
Total Chiller Capacity	563 tons each		550 tons each		M-401,402	PV-A
Chiller Efficiency - Full Load	0.57	kW/ton	0.547 kW/ton		M-401,402	PV-A
Chiller Efficiency - Part Load	Constant Speed	N/A	eQUEST VFD curve		M-401,402	PV-A
Chilled Water (CHW) Supply Temp	44	°F	42F	°F	M-401,402	PV-A
CHW ΔT	56	°F	12F	°F	M-401,402	PV-A
CHW Supply Temp Reset Parameters	Outdoor Air Reset Linearly	N/A	Outdoor Air Reset		M-401,402	PV-A
CHW Loop Configuration	Primary Variable	N/A	Primary Variable w/press. br		M-401,402	PV-A
Number of Primary CHW Pumps	2	#	2	#	M-401,402	PV-A
Primary CHW Pump Power	30 W/GPM	N/A	30 W/GPM		M-401,402	PV-A
Primary CHW Pump Flow	2,196	gpm	2,200	gpm	M-401,402	PV-A
Primary CHW Pump Control	Variable	N/A	Variable		M-401,402	PV-A
Number of Secondary CHW Pumps	N/A	#	2	#	M-401,402	PV-A
Secondary CHW Pump Power	N/A	N/A	31.5 W/GPM		M-401,402	PV-A
Secondary CHW Pump Flow	N/A	gpm	1,200	gpm	M-401,402	PV-A
Secondary CHW Pump Control	N/A	N/A	Variable		M-401,402	PV-A
Water-Side Economizer	N/A	N/A	Yes, PHX-68-1		M-401,402	PV-A
Water-Side Energy Recovery	N/A	N/A	N/A	N/A	N/A	N/A
Other (describe)	N/A	N/A	N/A	N/A	N/A	N/A
Other (describe)	N/A	N/A	N/A	N/A	N/A	N/A
Other (describe)	N/A	N/A	N/A	N/A	N/A	N/A
Other (describe)	N/A	N/A	N/A	N/A	N/A	N/A

k Water-Side HVAC – Cooling Tower & Condenser Water

☐Check if additional Cooling Tower & Condenser Water forms are attached (Please use the EN-1k).

Model Input Parameter	Baseline: Description	Baseline: Units	Proposed: Description	Proposed: Units	Supporting Doc. Location	Model Output Report
Number of Cooling Towers / Fluid Coolers	1 Tower/2 Cells		1 Tower/2 Cells		M-401,402	PV-A
Cooling Tower Fan Power	N/A	N/A	30 HP/cell		M-401,402	PV-A
Cooling Tower Fan Control	Two Speed	N/A	Variable Speed		M-401,402	PV-A
Condenser Water (CW) Leaving Temp	85	°F	85F	°F	M-401,402	PV-A
CW ΔT	10	°F	12F	°F	M-401,402	PV-A
CW Loop Temp Reset Parameters	Load Reset down to 70F	N/A	Load Reset down to 70F		M-401,402	PV-A
Number of CW Pumps	2	#	2	#	M-401,402	PV-A
CW Pump Power	21 W/GPM	N/A	21 W/GPM		M-401,402	PV-A
CW Pump Flow	3,114	gpm	2,750	gpm	M-401,402	PV-A
CW Pump Control	Constant Speed		Variable Speed		M-401,402	PV-A
Other (describe)	N/A		N/A		N/A	N/A
Other (describe)	N/A		N/A		N/A	N/A
Other (describe)	N/A		N/A		N/A	N/A
Other (describe)	N/A		N/A		N/A	N/A

l Water-Side HVAC – Hot Water/Steam

☐Check if additional Hot Water/Steam forms are attached (Please use the EN-1l).

Model Input Parameter	Baseline: Description	Baseline: Units	Proposed: Description	Proposed: Units	Supporting Doc. Location	Model Output Report
Number and Type of Boilers	Two Natural Draft Boilers		Four Condensing Boilers		M-401,402	PV-A
Total Boiler Capacity	7050 MBH per boiler		6000 MBH per boiler		M-401,402	PV-A
Boiler Efficiency	82% Thermal (80% Combustion)		94.5% Thermal		M-401,402	PV-A
Hot Water or Steam (HHW) Supply Temp	180F	°F	160F	°F	M-401,402	PV-A
HHW ΔT	50F	°F	40F	°F	M-401,402	PV-A
HHW Temp Reset Parameters	Outdoor Air Reset b/t 130F & 180F		OA linear reset b/t 120F&160F		M-401,402	PV-A
HHW Loop Configuration	Primary Variable		Primary Variable w/press. break		M-401,402	PV-A
Number of Primary HHW Pumps	2	#	2	#	M-401,402	PV-A
Primary HHW Pump Power	19 W/GPM		32 W/GPM		M-401,402	PV-A
Primary HHW Pump Flow	564	gpm	1,080	gpm	M-401,402	PV-A
Primary HHW Pump Control	Variable Speed		Variable Speed		M-401,402	PV-A
Number of Secondary HHW Pumps	N/A	#	2	#	M-401,402	PV-A
Secondary HHW Pump Power	N/A		32 W/GPM		M-401,402	PV-A
Secondary HHW Pump Flow	N/A	gpm	600	gpm	M-401,402	PV-A
Secondary HHW Pump Control	N/A		Variable Speed		M-401,402	PV-A
Other (describe)	N/A		N/A		N/A	N/A
Other (describe)	N/A		N/A		N/A	N/A
Other (describe)	N/A		N/A		N/A	N/A
Other (describe)	N/A		N/A		N/A	N/A

m Geothermal System

Model Input Parameter	Baseline: Description	Proposed: Description	Proposed: Units	Supporting Doc. Location	Model Output Report
Type of Geothermal system	N/A	N/A	N/A	N/A	N/A
Soil Conductivity (if applicable)	N/A	N/A	N/A	N/A	N/A
Geothermal source design temperature - summer	N/A	N/A	°F	N/A	N/A
Geothermal source design temperature - winter	N/A	N/A	°F	N/A	N/A
Geoexchange loop design fluid supply temperature - cooling	N/A	N/A	°F	N/A	N/A
Geoexchange loop design fluid supply temperature -heating	N/A	N/A	°F	N/A	N/A
Geoexchange loop - operating temperature	N/A	N/A	N/A	N/A	N/A
Geothermal energy transfer effect	N/A	N/A	N/A	N/A	N/A
Geothermal Loop Pumping Configuration	N/A	N/A	N/A	N/A	N/A
Number of Geothermal Loop Pumps	N/A	N/A	#	N/A	N/A
Geothermal Loop Pump Control	N/A	N/A	N/A	N/A	N/A
Geothermal Pump Power	N/A	N/A	W/gpm	N/A	N/A
Geothermal Loop Flow	N/A	N/A	gpm	N/A	N/A
Geothermal Air-side Efficiency curves	N/A	N/A		N/A	N/A
Other (describe)	N/A	N/A		N/A	N/A
Other (describe)	N/A	N/A		N/A	N/A
Other (describe)	N/A	N/A		N/A	N/A
Other (describe)	N/A	N/A		N/A	N/A

n Combined Heat & Power Systems

Model Input Parameters	Baseline: Description	Proposed: Description	Units	Supporting Doc. Location	Model Output Report
CHP: Type of generator	N/A	N/A	N/A	N/A	N/A
Quantity of CHP generators	N/A	N/A	N/A	N/A	N/A
Total capacity of CHP generators (kW) at design conditions	N/A	N/A	kW	N/A	N/A
CHP: Thermal efficiency (%) at design conditions	N/A	N/A	%	N/A	N/A
CHP: Electrical efficiency (%) at design conditions	N/A	N/A	%	N/A	N/A
CHP: Controls / Schedule	N/A	N/A	N/A	N/A	N/A
CHP: Fuel Source	N/A	N/A	N/A	N/A	N/A
CHP: Where is the recovered heat used? (e.g. gas absorption chillers, hot water distribution loop, etc.)	N/A	N/A	N/A	N/A	N/A
CHP: Backup heat source when waste heat from CHP is unavailable? (e.g. fossil fuel boilers)	N/A	N/A	N/A	N/A	N/A
CHP: Parasitic losses (e.g. air handling unit to cool the intake air)	N/A	N/A	N/A	N/A	N/A
Other (describe)	N/A	N/A	N/A	N/A	N/A
Other (describe)	N/A	N/A	N/A	N/A	N/A
Other (describe)	N/A	N/A	N/A	N/A	N/A
Other (describe)	N/A	N/A	N/A	N/A	N/A

Falsification of any statement is a misdemeanor under the NYC Administrative Building Code and is punishable by a fine or imprisonment, or both. It is unlawful to give to a city employee, or for a city employee to accept, any benefit, monetary or otherwise, either as a gratuity for properly performing the job or in exchange for special consideration. Violation is punishable by imprisonment or fine or both.

Name (please print): Michael W. Maybaum

Signature / Date: 08-09-2016

STATE OF NEW YORK · MICHAEL W. MAYBAUM · No. 059357 P.E. · LICENSED PROFESSIONAL ENGINEER

P.E. / R.A. Seal (apply seal, then sign and date over seal)

Damian Titus · NYC Buildings · APPROVED · Under Directive 2 of 1975 · Date: 09/27/2016 · NYC Development Hub

DEPT OF BLDGS · Job Number · ES105238622 Scan Code

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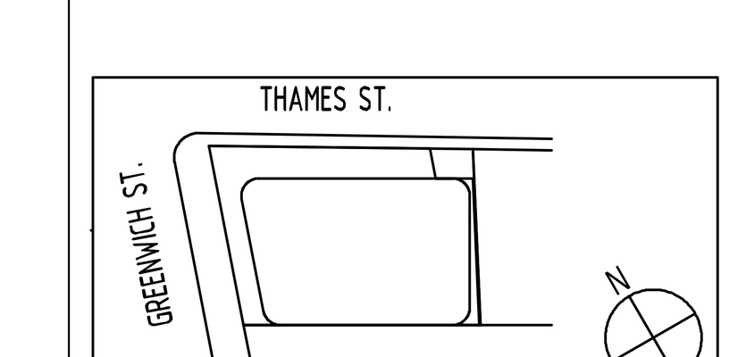
ARCHITECT'S SEAL

ISSUE NO.	ISSUE DATE	DESCRIPTION
03	01/30/16	EARLY MEP BID PACKAGE
02	10/31/15	DESIGN DEVELOPMENT
01	9/30/15	DOB SUBMITTAL



KEY PLAN AND NORTH SIGN

IF THIS DRAWING IS NOT 36" X 48" IT IS A REDUCED PRINT; REFER TO GRAPHIC SCALE

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SCALE NTS

NYS ENERGY CONSERVATION COMPLIANCE CALCULATION SHEET 1

SHEET TITLE:

EN-001.00

SHEET NUMBER:

	Inspection/Test	Periodic (minimum)	Reference Standard (See ECC Chapter 6) or Other Criteria	ECC or Other Citation
IIA	**Envelope Inspections**			
IIA1	**Protection of exposed foundation insulation:** Insulation shall be visually inspected to verify proper protection where applied to the exterior of basement or cellar walls, crawl-space walls and/or the perimeter of slab-on-grade floors.	As required during foundation work and prior to backfill	Approved construction documents	303.2.1; ASHRAE 90.1 – 5.8.1.7
IIA2	**Insulation placement and R-values:** Installed insulation for each component of the conditioned space envelope and at junctions between components shall be visually inspected to ensure that the R-values are marked, that such R-values conform to the R-values identified in the construction documents and that the insulation is properly installed. Certifications for unmarked insulation shall be similarly visually inspected.	As required to verify continuous enclosure while walls, ceilings and floors are open	Approved construction documents	303.1, 303.1.1, 303.1.2, 502.1, 502.2; ASHRAE 90.1 –5.5, 5.6 or 11; 5.8.1
IIA3	**Fenestration thermal values and product ratings:** U-factors and SHGC values of installed fenestration shall be visually inspected for conformance with the U-factors and SHGC values identified in the construction drawings by verifying the manufacturer's NFRC labels or, where not labeled, using the ratings in ECC Tables 303.1.3(1), (2) and (3). Where ASHRAE 90.1 is used, visible light transmittance values shall also be verified.	As required during installation	Approved construction documents; NFRC 100, NFRC 200	303.1, 303.1.3, 502.3; ASHRAE 90.1 –5.5; 5.6 or 11; 5.8.2
IIA4	**Fenestration and door assembly product ratings for air leakage:** Windows and sliding or swinging door assemblies, except site-built windows and/or doors, shall be visually inspected to verify that installed assemblies are listed and labeled by the manufacturer to the referenced standard. For curtain wall, storefront glazing, commercial entrance doors and revolving doors, the testing reports shall be reviewed to verify that the installed assembly complies with the standard cited in the approved plans.	As required during installation; prior to final construction inspection	NFRC 400, AAMA/WDMA/CSA 101/I.S.2/A440 ASTM E283; ANSI/DASMA 105	502.4; ASHRAE 90.1 –5.4.3.2
IIA5	**Fenestration areas:** Dimensions of windows, doors and skylights shall be verified by visual inspection.	Prior to final construction inspection	Approved construction documents	502.3; ASHRAE 90.1 – 5.5.4, 5.6 or 11
IIA6	**Sealing:** Openings and penetrations in the building envelope, including site-built fenestration and doors, shall be visually inspected to verify that a continuous air barrier around the envelope forms an air-tight enclosure. The progress inspector shall visually inspect to verify that materials and/or assemblies have been tested and meet the requirements of the respective standards, or that the building is tested and meets the requirements of the standard, in accordance with the standard(s) cited in the approved plans.	As required during construction	Approved construction documents; ASTM E2178, ASTM E2357, ASTM E1677, ASTM E779, ASTM E283.	502.4.3, 502.4.7; ASHRAE 90.1 – 5.4.3.1
IIA7	**Projection factors:** Where the energy analysis utilized a projection factor > 0, the projection dimensions of overhangs, eaves or permanently attached shading devices shall be verified for conformance with approved plans by visual inspection.	Prior to final construction inspection	Approved construction documents, including energy analysis	502.3; ASHRAE 90.1 – 5.5.4, 5.6 or 11
IIA8	**Loading dock weatherseals:** Weatherseals at loading docks shall be visually verified.	Prior to final construction inspection	Approved construction documents	502.4.5; ASHRAE 90.1 – 5.4.3.3
IIA9	**Building entrance vestibules**: Required entrance vestibules shall be visually inspected for proper operation.	Prior to final construction inspection	Approved construction documents	502.4.6; ASHRAE 90.1 – 5.4.3.4
IIB	**Mechanical and Service Water Heating Inspections**			
IIB1	**Fireplaces:** Provision of combustion air and tight-fitting fireplace doors shall be verified by visual inspection.	Prior to final construction inspection	Approved construction documents; ANSI Z21.60 (see also MC 904), ANSI Z21.50	303.1.5; BC 2111; MC Chapters 7, 9; FGC Chapter 6
IIB2	**Outdoor air intakes and exhaust openings**: Dampers for stair and elevator shaft vents and other outdoor air intakes and exhaust openings integral to the building envelope shall be visually inspected to verify that such dampers, except where permitted to be gravity dampers, comply with approved construction drawings. Manufacturer's literature shall be reviewed to verify that the product has been tested and found to meet the standard.	As required during installation	Approved construction documents; AMCA 500D	502.4.4; ASHRAE 90.1 – 6.4.3.4
IIB3	**HVAC, service water heating and pool equipment sizing and performance:** Equipment sizing, efficiencies and other performance factors of all major equipment units, as determined by the applicant of record, and no less than 15% of minor equipment units, shall be verified by visual inspection and, where necessary, review of manufacturer's data. Pool heaters and covers shall be verified by visual inspection.	Prior to final plumbing and construction inspection	Approved construction documents	503.2, 504.2, 504.7; ASHRAE 90.1 – 6.3, 6.4.1, 6.4.2, 6.8; 7.4, 7.8
IIB4	**HVAC system controls and economizers and service hot water system controls:** No less than 20% of each type of required controls and economizers shall be verified by visual inspection and tested for functionality and proper operation. Such controls shall include, but are not limited to: ▪ Thermostatic ▪ Set point overlap restriction ▪ Off-hour ▪ Shutoff damper ▪ Snow-melt system ▪ Demand control systems ▪ Outdoor heating systems ▪ Zones ▪ Economizers ▪ Air systems ▪ Variable air volume fan ▪ Hydronic systems ▪ Heat rejection equipment fan speed ▪ Complex mechanical systems serving multiple zones ▪ Ventilation ▪ Energy recovery systems ▪ Hot gas bypass limitation ▪ Temperature ▪ Service water heating ▪ Hot water system ▪ Pool heater and time switches ▪ Exhaust hoods ▪ Radiant heating systems. **Controls with seasonally dependent functionality:** Controls whose complete operation cannot be demonstrated due to prevailing weather conditions typical of the season during which progress inspections will be performed shall be permitted to be signed off for the purpose of a Temporary Certificate of Occupancy with only a visual inspection, provided, however, that the progress inspector shall perform a supplemental inspection where the controls are visually inspected and tested for functionality and proper operation during the next immediate season thereafter. The owner shall provide full access to the progress inspector within two weeks of the progress inspector's request for such access to perform the progress inspection. For such supplemental inspections, the Department shall be notified by the approved progress inspection agency of any unresolved deficiencies in the installed work within 180 days of such supplemental inspection.	After installation and prior to final electrical and construction inspection, except that for controls with seasonally dependent functionality, such testing shall be performed before sign-off for issuance of a Final Certificate of Occupancy	Approved construction documents, including control system narratives; ASHRAE Guideline 1: The HVAC Commissioning Process where applicable	503.2.4, 503.2.5.1, 503.2.11, 503.3, 503.4, 504.3, 504.6, 504.7; ASHRAE 90.1 – 6.3, 6.4, 6.5, 6.7.2.4, 7.4.4, 7.4.5
IIB5	**Duct, plenum and piping insulation and sealing:** Installed duct and piping insulation shall be visually inspected to verify proper insulation placement and values. Joints, longitudinal and transverse seams and connections in ductwork shall be visually inspected for proper sealing.	After installation and prior to closing shafts, ceilings and walls	Approved construction documents; SMACNA Duct Construction Standards, Metal and Flexible	503.2.7, 503.2.8, 504.5; ASHRAE 90.1 – 6.3, 6.4.4.2, 6.8.2, 6.8.3; 7.4.3
IIB6	**Air leakage testing for high-pressure duct systems:** For duct systems designed to operate at static pressures in excess of 3 inches w.g. (746 Pa), representative sections, as determined by the progress inspector, totaling at least 25% of the duct area, per ECC 503.2.7.1.3, shall be tested to verify that actual air leakage is below allowable amounts.	After installation and sealing and prior to closing shafts, ceilings and walls	Approved construction documents; SMACNA HVAC Air Duct Leakage Test Manual	503.2.7.1.3; ASHRAE 90.1 – 6.4.4.2
IIC	**Electrical Power and Lighting Systems**			
IIC1	**Electrical metering:** The presence and operation of individual meters or other means of monitoring individual apartments shall be verified by visual inspection for all apartments.	Prior to final electrical and construction inspection	Approved construction documents	505.7
IIC2	**Lighting in dwelling units:** Lamps in permanently installed lighting fixtures shall be visually inspected to verify compliance with high-efficacy requirements.	Prior to final electrical and construction inspection	Approved construction documents	505.5.3
IIC3	**Interior lighting power:** Installed lighting shall be verified for compliance with the lighting power allowance by visual inspection of fixtures, lamps, ballasts and transformers.	Prior to final electrical and construction inspection	Approved construction documents	505.5; ASHRAE 90.1 –9.1, 9.2, 9.5, 9.6; 1RCNY §101-07(c)(3)(v)(C)4
IIC4	**Exterior lighting:** Installed lighting shall be verified for compliance with source efficacy and/or the lighting power allowance by visual inspection of fixtures, lamps, ballasts and relevant transformers.	Prior to final electrical and construction inspection	Approved construction documents	505.6; ASHRAE 90.1 – 9.4.4, 9.4.5; 1RCNY §101-07(c)(3)(v)(C)4
IIC5	**Lighting controls**: Each type of required lighting controls, including: ▪ occupant sensors ▪ manual interior lighting controls ▪ light-reduction controls ▪ automatic lighting shut-off ▪ daylight zone controls ▪ sleeping unit controls ▪ exterior lighting controls shall be verified by visual inspection and tested for functionality and proper operation.	Prior to final electrical and construction inspection	Approved construction documents, including control system narratives	505.2, 505.2.2.2; ASHRAE 90.1 – 9.4.1, 9.4.1.2 (as modified by section ECC A102)
IIC6	**Exit signs:** Installed exit signs shall be visually inspected to verify that the label indicates that they do not exceed maximum permitted wattage.	Prior to final electrical and construction inspection	Approved construction documents	505.4; ASHRAE 90.1 – 9.4.3
IIC7	**Tandem wiring:** Tandem wiring shall be tested for functionality.	Prior to final electrical and construction inspection	Approved construction documents	505.3; ASHRAE 90.1 – 9.4.2
IIC8	**Electric motors (including but not limited to fan motors):** Where required by the construction documents for energy code compliance, motor listing or labels shall be visually inspected to verify that they comply with the respective energy requirements in the construction documents.	Prior to final electrical and construction inspection	Approved construction documents	503.2.10; ASHRAE 90.1 – 10.4
IID	**Other**			
IID1	**Maintenance information:** Maintenance manuals for mechanical, service hot water and electrical equipment and systems requiring preventive maintenance shall be reviewed for applicability to installed equipment and systems before such manuals are provided to the owner. Labels required for such equipment or systems shall be inspected for accuracy and completeness.	Prior to sign-off or issuance of Final Certificate of Occupancy	Approved construction documents, including electrical drawings where applicable; ASHRAE Guideline 4: Preparation of Operating and Maintenance Documentation for Building Systems	303.3, 503.2.9.3; ASHRAE 90.1 – 4.2.2.3, 6.7.2.2, 8.7.2

2011 NYC ENERGY CONSERVATION CODE NOTES:

STATEMENT OF COMPLIANCE:

TO THE BEST OF MY KNOWLEDGE, BELIEF, AND PERSONAL JUDGEMENT, THESE PLANS AND SPECIFICATIONS ARE IN COMPLIANCE WITH THE 2011 NEW YORK CITY ENERGY CONSERVATION CODE.

MANDATORY PROVISIONS:

1. AS PER 503.2.1, DESIGN LOADS SHALL BE DETERMINED IN ACCORDANCE WITH THE PROCEDURES DESCRIBED IN THE ASHRAE/ACCA 183. HEATING AND COOLING LOADS SHALL BE ADJUSTED TO ACOOUNT FOR LOAD REDUCTIONS THAT ARE ACHIEVED WHEN ENERGY RECOVERY SYSTEMS ARE UTILIZED IN THE HVAC SYSTEM IN ACCORDANCE WITH THE ASHRAE HVAC SYSTEMS AND EQUIPMENT HANDBOOK.HEATING AND COOLING LOADS HAVE BEEN CALCULATED IN ACCORDANCE WITH THE PROCEDURES DESCRIBED IN ASHRAE/ACCA 183. (NYC ECC 503.2.1)
2. EQUIPMENT AND SYSTEMS HAVE BEEN SIZED TO NOT EXCEED THE CALCULATED HEATING AND COOLING LOADS. STANDBY EQUIPMENT SHALL HAVE CONTROLS TO OPERATE ONLY WHEN THE PRIMARY EQUIPMENT IS NOT OPERATING. MULTIPLE UNITS OF THE SAME TYPE WITH COMBINED CAPACITY EXCEEDING THE DESIGN LOAD SHALL BE PROVIDED WITH CONTROLS TO SEQUENCE OPERATION BASED ON LOAD. (NYC ECC 503.2.2)
3. EQUIPMENT SHALL MEET THE MINIMUM EFFICIENCY REQUIREMENTS OF TABLES 503.2.3(1), 503.2.3(2), 503.2.3(3), 503.2.3(4), 503.2.3(5), 503.2.3(6), 503.2.3(7).
4. HEATING AND COOLING ENERGY SUPPLIED TO EACH ZONE SHALL BE CONTROLLED BY THERMOSTATS LOCATED IN THE ZONE SERVED. HUMIDIFICATION AND DEHUMIDIFICATION SYSTEMS SHALL BE CONTROLLED BY HUMIDITY SENSORS LOCATED IN THE ZONE SERVED. (NYC ECC 503.2.4.1)
5. THERMOSTATS USED FOR BOTH HEATING AND COOLING SHALL PROVIDE A TEMPERATURE DEADBAND OF AT LEAST 5 DEGREES F, EXCEPT FOR THERMOSTATS REQUIRING MANUAL CHANGEOVER. (NYC ECC 503.2.4.2)
6. THERMOSTATS SHALL BE PROVIDED WITH AUTOMATIC TIME CLOCKS OR PROGRAMMABLE SETBACK CONTROLS EXCEPT FOR ZONES WHICH OPERATE CONTINUOUSLY. SETBACK CONTROLS SHALL BE CAPABLE OF TEMPORARILY OPERATING THE SYSTEM TO MAINTAIN ZONE TEMPERATURES DOWN TO 55 DEGREES F OR UP TO 85 DEGREES F. AUTOMATIC TIME CLOCKS OR PROGRAMMABLE CONTROLS SHALL BE CAPABLE OF STARTING AND STOPPING THE SYSTEM FOR SEVEN DAILY SCHEDULES PER WEEK AND RETAINING PROGRAMMING DURING A POWER LOSS OF AT LEAST 10 HOURS. CONTROLS SHALL HAVE A MANUAL OVERRIDE CAPABILITY FOR UP TO 2 HOURS, MANUAL TIMER FOR UP TO 2 HOURS, OR AN OCCUPANCY SENSOR. (NYC ECC 503.2.4.3)
7. AS PER ECC 502.4.4 STAIR AND ELEVATOR SHAFT VENTS AND OTHER AIR INTAKES AND EXHAUST OPENINGS INTEGRAL TO THE BUILDING ENVELOPE SHALL BE EQUIPPED WITH NOT LESS THAN A CLASS I MOTORIZED, LEAKAGE RATED DAMPER WITH A MAXIMUM LEAKAGE RATE OF 4 CFM PER SQUARE FOOT AT 1.0 INCH WATER GAUGE WHEN TESTED IN ACCORDANCE WITH AMCA 500D.
8. OCCUPIED SPACES ARE PROVIDED WITH MECHANICAL VENTILATION IN ACCORDANCE WITH THE NEW YORK CITY MECHANICAL CODE. DEMAND CONTROL VENTILATION SHALL BE PROVIDED AS REQUIRED. (NYC ECC 503.2.5)
9. ENERGY RECOVERY SYSTEMS ARE PROVIDED FOR OUTSIDE AIR SYSTEMS WITH A SUPPLY AIR CAPACITY OF 5,000 CFM OR GREATER AND A MININUM OUTSIDE AIR SUPPLY OF 70 PERCENT OR GREATER OF THE DESIGN AIR QUANTITY. (NYC ECC 503.2.6)
10. ALL SUPPLY AND RETURN AIR DUCTS SHALL BE INSULATED WITH A MINIMUM OF R-5 INSULATION WHEN LOCATED IN UNCONDITIONED SPACES AND A MINIMUM OF R-8 INSULATION WHEN LOCATED OUTSIDE THE BUILDING. WHEN LOCATED WITHIN A BUILDING ENVELOPE ASSEMBLY, THE DUCT OR PLENUM SHALL BE SEPERATED FROM THE BUILDING EXTERIOR OR UNCONDITIONED OR EXEMPT SPACES BY A MINIMUM OF R-8 INSULATION. ALL DUCTS, AIR HANDLERS, AND FILTER BOXES SHALL BE SEALED PER SECTION 603.9 OF THE NYC CONSTRUCTION CODES. (NYC ECC 503.2.7)
11. ALL DUCTWORK SHALL BE CONSTRUCTED AND ERECTED IN ACCORDANCE WITH THE NYC CONSTRUCTION CODES. FOR LOW PRESSURE DUCTWORK, LONGITUDINAL AND TRANSVERSE JOINTS, SEAMS AND CONNECTIONS OF SUPPLY AND RETURN DUCTS OPERATING AT A STATIC PRESSURE OF LESS THAN OR EQUAL TO 2 INCHES W.G. SHALL BE SECURELY FASTENED AND SEALED WITH WELDS, GASKETS, MASTICS, MASTIC-PLUS-EMBEDDED-FABRIC SYSTEMS OR TAPES INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. ALL MEDIUM PRESSURE DUCTS DESIGNED TO OPERATE AT A STATIC PRESSURE GREATER THAN 2 INCHES W.G. BUT LESS THAN 3 INCHES W.G. SHALL BE INSULATED AND SEALED PER #10 ABOVE. THIS PROJECT CONTAINS NO HIGH PRESSURE DUCTWORK. (NYC ECC 503.2.7.1)
12. ALL PIPING SERVING AS PART OF A HEATING OR COOLING SYSTEM SHALL BE THERMALLY INSULATED IN ACCORDANCE WITH THE FOLLOWING TABLE OR SPECIFICATION SECTION 23 07 19, WHICHEVER IS GREATER:

MINIMUM PIPE INSULATION (THICKNESS IN INCHES)		
FLUID	NOMINAL PIPE DIAMETER	
	</= 1.5"	> 1.5"
HOT WATER	1-1/2	2
CHILLED WATER, BRINE, OR REFRIGERANT	1-1/2	1-1/2

13. EACH SUPPLY AIR OUTLET AND ZONE TERMINAL DEVICE SHALL BE EQUIPPED WITH A VOLUME DAMPER OR SIMILAR DEVICE FOR AIR BALANCING. CONSTANT VOLUME FANS AND VAV FANS LARGER THAN 10 HP SHALL NOT HAVE DISCHARGE DAMPERS. (NYC ECC 503.2.9.1)
14. ALL INDIVIDUAL HEATING AND COOLING COILS SHALL BE EQUIPPED WITH BALANCING VALVES AND PRESSURE TEST CONNECTION PORTS. (NYC ECC 503.2.9.2)
15. AS PER ECC 503.2.9.3, THE MECHANICAL CONTRACTOR SHALL PROVIDE OPERATING AND MAINTENANCE MANUALS TO THE BUILDING OWNER. THE MANUALS SHALL CONTAIN THE FOLLOWING AT A MINIMUM:
   - A. EQUIPMENT INPUT AND OUTPUT CAPACITY AND MAINTENANCE REQUIREMENTS.
   - B. EQUIPMENT OPERATION AND MAINTENANCE MANUALS.
   - C. HVAC SYSTEM CONTROL MAINTENANCE AND CALIBRATION INFORMATION INCLUDING WIRING DIAGRAMS, SCHEMATICS, CONTROL SEQUENCES, AND DESIRED SET POINTS.
   - D. A WRITTEN NARRATIVE EXPLAINING HOW EACH SYSTEM IS INTENDED TO OPERATE. (NYC ECC 503.2.9.3)
16. EACH HVAC SYSTEM WITH A TOTAL FAN SYSTEM NAMEPLATE HORSEPOWER EXCEEDING 5 HP HAS BEEN SELECTED TO MEET THE ALLOWABLE FAN HORSEPOWER REQUIREMENTS OF NYC ECC 503.2.10.1.
17. EACH FAN MOTOR HAS BEEN SELECTED SO THAT THE MOTOR SIZE IS THE FIRST AVAILABLE SIZE GREATER THAN THE BRAKE HORSEPOWER. IF THE FAN IS LESS THAN 6 BHP AND THE FIRST AVAILABLE MOTOR LARGER THAN THE BRAKE HORSEPOWER HAS A NAMEPLATE RATING WITHIN 50 PERCENT OF THE BHP, THE NEXT LARGER NAMEPLATE MOTOR SIZE MAY BE SELECTED. IF THE FAN IS 6 BHP OR LARGER AND THE FIRST AVAILABLE MOTOR LARGER THAN THE BHP HAS A NAMEPLATE RATING WITHIN 30 PERCENT OF THE BHP, THE NEXT LARGER NAMEPLATE MOTOR SIZE MAY BE SELECTED. (NYC ECC 503.2.10.2)
18. THIS PROJECT DOES NOT CONTAIN ANY SYSTEMS INSTALLED TO PROVIDE HEATING OUTSIDE OF THE BUILDING. (NYC ECC 503.2.11)
19. THE POOL HEATERS SHALL BE EQUIPPED WITH AN ON-OFF SWITCH THAT ALLOWS SHUTTING OFF THE HEATER WITHOUT ADJUSTING THE THERMOSTAT SETTING. GAS FIRED POOL HEATERS SHALL NOT HAVE A CONTINUOUSLY BURNING PILOT LIGHT. (NYC ECC C404.7.1)
20. THE POOL HEATERS SHALL BE EQUIPPED WITH TIME SWITCHES. THE POOL PUMPS ARE NOT PROVIDED WITH TIME SWITCHES. THESE PUMPS OPERATE ON A 24/7 BASIS AS REQUIRED BY NYC HEALTH CODE ARTICLE 165 - BATHING ESTABLISHMENTS. (NYC ECC C404.7.2)
21. A VAPOR-RETARDANT POOL COVER AT THE WATER SURFACE SHALL BE PROVIDED. (NYC ECC C404.7.3)
22. AS PER ECC 505.2.4 , LIGHTING NOT DESIGNATED FOR DUSK–TO–DAWN OPERATION SHALL BE CONTROLLED BY EITHER A COMBINATION OF A PHOTOSENSOR AND A TIMESWITCH, OR AN ASTRONOMICAL TIME SWITCH.
23. AS PER ECC 505.4, INTERNALLY ILLUMINATED EXIT SIGNS SHALL NOT EXCEED 5 WATTS PER SIDE
24. AS PER 503.4.3.3.2.1 CLIMATE ZONE 4, IF AN OPEN– OR CLOSED–CIRCUIT TOWER IS USED IN CONJUNCTION WITH A SEPARATE HEAT EXCHANGER TO ISOLATE THE COOLING TOWER FROM THE HEAT PUMP LOOP, THEN HEAT LOSS SHALL BE CONTROLLED BY SHUTTING DOWN THE CIRCULATION PUMP ON COOLING TOWER LOOP.
25. AS PER 503.4.4, EACH FAN POWERED BY A MOTOR OF 7.5 HP OR LARGER SHALL HAVE THE CAPABILITY TO OPERATE THAT FAN AT TWO–THIRDS OF FULL SPEED OR LESS, AND SHALL HAVE CONTROLS THAT AUTOMATICALLY CHANGE THE FAN SPEED TO CONTROL THE LEAVING FLUID TEMPERATURE OR CONDENSING TEMPERATURE/PRESSURE OF THE HEAT REJECTION DEVICE.
26. AS PER 503.2.4 EACH HEATING AND COOLING SYSTEM SHALL BE PROVIDED WITH THERMOSTATIC CONTROLS AS REQUIRED IN SECTION 503.2.4.1, 503.2.4.2, 503.2.4.3, 503.2.4.4, 503.4.1, 503.4.2, 503.4.3 OR 503.4.4.

HVAC LOAD CALCULATIONS – PER 503.2.1:

1. AS PER 503.2.1 HEATING AND COOLING SYSTEM DESIGN LOADS FOR THE PURPOSE OF SIZING SYSTEMS AND EQUIPMENT HAVE BEEN DONE IN ACCORDANCE WITH GENERALLY ACCEPTED ENGINEERING STANDARDS.

ZONE THERMOSTATIC CONTROLS – PER 503.2.1

MECHANICAL EQUIPMENT CONTROLS:

1. ALL AC UNITS SHALL HAVE 7 DAY PROGRAMMABLE 24 HR THERMOSTATS WITH NIGHT SET BACK CONTROLS SETTINGS. OCCUPIED TEMPERATURE SETTING – 78 DEG. f SUMMER–, 70 DEG. f WINTER OPERATION. UN OCCUPIED SET BACK TEMPERATURES – 80 DEG F. SUMMER, 68 DEG. F WINTER.

2. HOT WATER HEATING SYSTEMS SHALL BE CONTROLLED BY OUTDOOR RESET SCHEDULE BASED ON HOT WATER TEMPERATURE MAX OF 180 DEG. F WHEN OA IS 15 DEG. F OR LOWER, AND BE RESET DOWN TO 140 DEG. F MINIMUM WHEN OA. IS 55 DEG. F, TO ALSO PERMIT INDIRECT DOMESTIC HW HEATING AT CELLAR INDIRECT HEATERS.

3. INDIVIDUAL APARTMENT FAN COIL UNITS SHALL HAVE PROGRAMMABLE 24 HR THERMOSTATS WITH NIGHT SET BACK CONTROLS.

ES340896418 Scan Code

125 GREENWICH
NEW YORK, NY

OWNER :
VS 125 LLC
55 EAST 59TH STREET, 24TH FLOOR
NEW YORK, NY 10022
TEL: 212 616 0400

ARCHITECT :
RAFAEL VIÑOLY ARCHITECTS PC
50 VANDAM STREET
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STRUCTURAL ENGINEER :
DESIMONE CONSULTING ENGINEERS
18 WEST 18TH STREET, 10TH FLOOR
NEW YORK, NY 10011
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MEP / FP / IT ENGINEER :
COSENTINI ASSOCIATES - A TETRA TECH COMPANY
2 PENNSYLVANIA PLAZA, 3RD FLOOR
NEW YORK, NY 10121
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GEOTECH CONSULTANT :
LANGAN ENGINEERING
619 RIVER DRIVE CENTER 1
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VERTICAL TRANSPORTATION CONSULTANT :
VAN DEUSEN & ASSOCIATES
120 EAGLE ROCK AVENUE, SUITE 310
EAST HANOVER, NJ 07936
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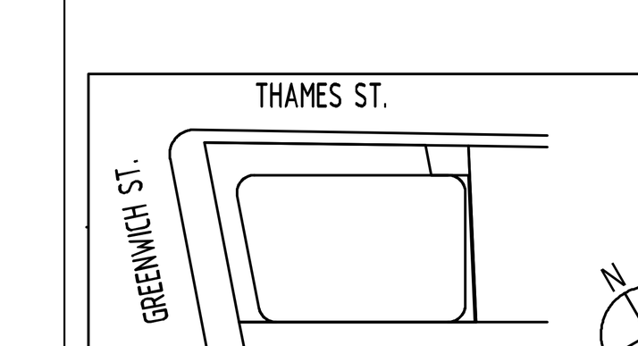
PHASE : DOB SUBMITTAL

ARCHITECT'S SEAL

ISSUE NO.	ISSUE DATE	DESCRIPTION
03	01/30/16	EARLY MEP BID PACKAGE
02	10/31/15	DESIGN DEVELOPMENT
01	9/30/15	DOB SUBMITTAL



KEY PLAN AND NORTH SIGN

IF THIS DRAWING IS NOT 36" X 48" IT IS A REDUCED PRINT; REFER TO GRAPHIC SCALE

SCALE NTS

NYS ENERGY CONSERVATION COMPLIANCE CALCULATION SHEET 2

SHEET TITLE :

EN-002.00

SHEET NUMBER :

Damian Titus
NYC Buildings APPROVED
Under Directive 2 of 1975
Date: 09/27/2016
NYC Development Hub

FILE NAME I:\140294\MECH\DOB resubmission\EN-1\EN-002.dwg SAVED ON 6/20/2016 2:58 PM PLOTTED ON 9/6/2016 3:37 PM PLOTTED BY PASTOR, RYAN

LIGHTING CONTROLS:

EXTERIOR LIGHTING CONTROLS:

- ON/OFF WITH ASTRONOMICAL TIMECLOCK PROGRAMMED TO COMPLY WITH DEPARTMENT OF CITY PLANNING PUBLIC PLAZA REGULATIONS: ON, 1 HOUR BEFORE SUNSET, OFF, 1 HOUR AFTER SUNRISE.

INTERIOR LIGHTING CONTROLS:

GENERAL:

- EGRESS STAIRS: BI–LEVEL LIGHTING, 50% ON 24/7, 100% ON ACTIVATED WITH OCCUPANCY SENSORS
- PUBLIC CORRIDORS: ON 24/7

SUBCELLAR:

- ENCLOSED SPACES: LOCAL TOGGLE SWITCHES EXCEPT IN ROOMS THAT REQUIRE OCCUPANCY SENSORS AND TOGGLE SWITCHES IN ACCORDANCE WITH NYC LOCAL LAW 48
- RESTROOMS/LOCKER ROOMS: LOCAL TOGGLE SWITCHES

CELLAR:

- ENCLOSED SPACES: LOCAL TOGGLE SWITCHES EXCEPT IN ROOMS THAT REQUIRE OCCUPANCY SENSORS AND TOGGLE SWITCHES IN ACCORDANCE WITH NYC LOCAL LAW 48
- RESTROOMS/LOCKER ROOMS: LOCAL TOGGLE SWITCHES
- RETAIL SPACES FOR FUTURE TENANT FIT–OUT: LOCAL TOGGLE SWITCHES

GROUND FLOOR:

- LOBBY, ELEVATOR LOBBY, MAILROOM: CONTROLLED BY DIMMING SYSTEM WITH MULTI–SCENE AND ASTRONOMICAL TIMECLOCK CAPABILITIES
- ENCLOSED SPACES: LOCAL TOGGLE SWITCHES
- RETAIL SPACES FOR FUTURE TENANT FIT–OUT: LOCAL TOGGLE SWITCHES

RETAIL SPACES:

- RETAIL SPACES FOR FUTURE TENANT FIT–OUT: LOCAL TOGGLE SWITCHES

RESIDENTIAL FLOORS:

- EGRESS STAIRS: BI–LEVEL LIGHTING, 50% ON 24/7, 100% ON ACTIVATED WITH OCCUPANCY SENSORS
- PUBLIC CORRIDORS: ON 24/7
- PRIVATE APARTMENT UNITS: LOCAL ON/OFF SWITCHES AT EACH ROOM, SWITCHED OUTLETS IN LIVING ROOMS AND BEDROOMS AND DOOR JAMB ON/OFF SWITCHES IN CLOSETS WITH INTEGRAL LIGHTING

RESIDENTIAL AMENITY:

- RESIDENTIAL AMENITY: CONTROLLED BY DIMMING SYSTEM WITH MULTI–SCENE AND ASTRONOMICAL TIMECLOCK CAPABILITIES
- PANTRY: LOCAL DIMMER SWITCHES
- RESTROOMS: LOCAL TOGGLE SWITCHES
- ENCLOSED SPACES: LOCAL TOGGLE SWITCHES

Space Type	LPD [W/SF]	Area [SF]	Allowance [W]
Condo	0.70	273,660	191,562
Lobby	0.70	3,589	2,513
Stairs	0.70	17,811	12,467
Mech	0.70	48,906	34,234
Corridor	0.70	21,372	14,960
Fitness	0.70	1,414	990
Storage	0.70	8,975	6,283
Lounge	0.70	4,397	3,078
Locker	0.70	1,045	731
Office-Opn	0.70	4,632	3,243
Restroom	0.70	671	469
Retail	0.70	14,817	10,372
Conf/multi	0.70	441	309

NOTES:
1. ONCE A DESIGNER IS SELECTED, LIGHTING WILL BE SPECIFIED TO NOT EXCEED THE ALLOWANCES PROVIDED IN THE TABLE.
2. EXIT SIGNS NOT TO EXCEED 5W PER 505.4
3. EXTERIOR LIGHTING NOT TO EXCEED ALLOWANCE PER 505.6

Damian Titus
Buildings
APPROVED
Under Directive 2 of 1975
Date: 09/27/2016:
NYC Development Hub

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PHASE : DOB SUBMITTAL

STATE OF NEW YORK
MICHAEL W. MAYBAUM
No. 059357 P.E.
LICENSED PROFESSIONAL ENGINEER

ARCHITECT'S SEAL

ISSUE NO.	ISSUE DATE	DESCRIPTION
03	01/30/16	EARLY MEP BID PACKAGE
02	10/31/15	DESIGN DEVELOPMENT
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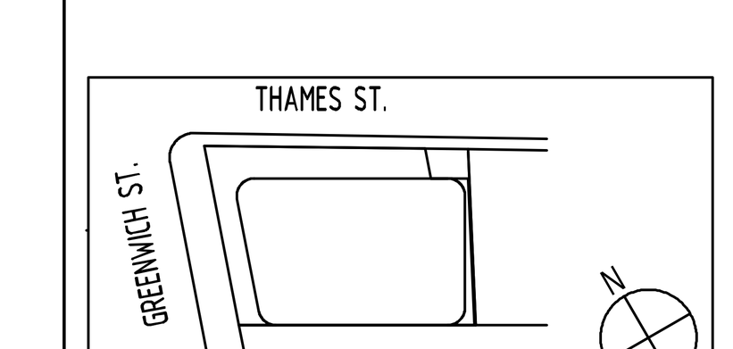

KEY PLAN AND NORTH SIGN

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SCALE NTS

LIGHTING CONTROLS AND LIGHTING POWER DENSITY

SHEET TITLE :

EN-003.00

SHEET NUMBER :

SECTION 230993 - SEQUENCE OF OPERATIONS FOR HVAC CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes control sequences for HVAC systems, subsystems, and equipment.

B. All set points referenced in this section are subject to change and shall be adjustable from the BMS Operator Workstation and from a Portable Operators Terminal.

C. Related Sections include the following:

1. Division 230900 Section "HVAC Instrumentation and Controls" for control equipment and devices and submittal requirements.

1.3 DEFINITIONS

A. AI -Analog Input

B. ANSI-American National Standards Institute

C. AO-Analog Output

D. ASCII-American Standard Code for Information Interchange

E. AWG-American Wire Gauge

F. BMS - Building Management System

G. CPU-Central Processing Unit

H. DDC-Direct Digital Control

I. DI -Digital Input

J. DO-Digital Output

K. FAS-Fire Alarm Detection and Annunciation System

L. HOA-Hand-Off-Auto

M. I/O-Input/Output

N. LAN-Local Area Network

O. LCD-Liquid Crystal Display

P. LED-Light Emitting Diode

Q. MCC-Motor Control Center

R. NC-Normally Closed

S. NO-Normally Open

T. OWS- Operator Workstation

U. OAT-Outdoor Air Temperature

V. PC-Personal Computer

W. RAM-Random Access Memory

X. RH-Relative Humidity

Y. RTD-Resistance Temperature Detector

Z. TCP/IP-Transmission Control Protocol/Internet Protocol

AA. UPS-Uninterruptible Power Supply

BB. VAC-Volts, Alternating Current

CC. VAV-Variable Air Volume

DD. VDC-Volts, Direct Current

EE. WAN-Wide Area Network

1.4 GLOBAL SYSTEM POINTS

A. BMS contractor to provide the following global points to be available to all DDC controllers on the BMS.

1. DDC Points:

a. Outdoor Air Temperature
b. Outdoor Air Humidity
c. Fire Alarm Active Alarm

1.5 HOT WATER SYSTEM

A. Primary Hot Water System

1. The hot water boilers and flow control valves shall be controlled by the boiler manufacturer supplied master control panel. The boiler flow control valves shall be provided by the BMS contractor. The BMS shall control the hot water pumps and shall interface to the master boiler panel for monitoring and control of the hot water system through a BACnet interface. All available points shall be mapped to the BMS. Boiler enable/disable and status shall be hardwired points from the boiler to the BMS DDC controller.
2. The BMS contractor shall provide BACnet DDC controls for complete stand-alone operation of the primary hot water system. The BMS contractor shall connect the DDC controller to the BMS network for point monitoring and control.
3. The BMS contractor shall install all field wiring required for hot water system operation that can't be factory installed including but not limited to pump control, flow control valves, temperature and pressure sensors, etc.
4. The primary hot water system shall start automatically through an outside air temperature interlock, a time schedule or manual command from the BMS.
5. When the primary hot water system is enabled both duty primary hot water pump shall start and shall slowly ramp up to speed control set point. The boiler isolation valve shall be interlocked to the boiler control panel so when a boiler is enabled the isolation valve opens and when the boiler is disabled the isolation valve closes.
6. A differential pressure sensors shall be located just prior to the last load on the farthest circuit. The sensor shall be wired to the same controller that controls the pump VFD and minimum flow differential pressure bypass valve. The hot water pump variable frequency drive shall modulate as necessary to maintain the loop differential pressure set point. When one pump is running at over 85% speed (adj.) for more than 3 minutes (adj.) the second duty pump shall start. When more than one pump is running both enabled pumps shall run at the same speed control set point. When 2 pumps are running at less than 40% speed (adj.) for a period of 3 minutes (adj.) the lead pump shall stop. When one pump is running at minimum speed and the differential pressure is still above set point, the differential pressure bypass valve shall modulate to maintain the pressure setting.
7. There are two duty pumps and one standby pump. Provide staging control of the pumps so if a duty pump fails, the BMS controls shall lock it out and start the standby pump. An alarm shall be annunciated to the BMS. Rotate the duty and stand-by pumps on a regular schedule (adj.) to equalize runtime.
8. DDC Points:

a. Boiler Enable/Disable
b. Boiler Status
c. Boiler Common Alarm
d. All Boiler Points through BACnet Serial Interface
e. Hot Water Pump Start/Stop
f. Hot Water Pump Status
g. Hot Water Pump VFD Speed Control
h. Hot Water Pump VFD Malfunction
i. Hot Water Pump Fail Alarm
j. Hot Water Supply Temperature w/ High/Low Alarm
k. Hot Water Return Temperature w/ High/Low Alarm
l. Hot Water Supply Flow
m. Expansion Tank High/Low Pressure Alarm
n. Differential Pressure Bypass Valve Control

B. Secondary Hot Water System

1. The BMS contractor shall provide BACnet DDC controls for complete stand-alone operation of the secondary hot water system. The BMS contractor shall connect the DDC controller to the BMS network for point monitoring and control.
2. The secondary hot water system shall start automatically through an outside air temperature interlock, a time schedule or manual command from the BMS.
3. When the secondary hot water system is enabled the lead heat exchanger primary and secondary hot water isolation valves shall open and prove open via operator mounted end switch. Once the valve is open the lead duty secondary hot water pump shall start and shall slowly ramp up to speed control set point. Provide individual open and close limit switches to provide positive valve position indication.
4. A differential pressure sensors shall be located just prior to the last load on the farthest circuit. The sensor shall be wired to the same controller that controls the pump VFD and minimum flow differential pressure bypass valve. The hot water pump variable frequency drive shall modulate as necessary to maintain the loop differential pressure set point. When one pump is running at over 85% speed (adj.) for more than 3 minutes (adj.) the second duty pump shall start. When more than one pump is running both enabled pumps shall run at the same speed control set point. When 2 pumps are running at less than 40% speed (adj.) for a period of 3 minutes (adj.) the lead pump shall stop. When one pump is running at minimum speed and the differential pressure is still above set point, the differential pressure bypass valve shall modulate to maintain the pressure setting.
5. There are two duty pumps and one standby pump. Provide staging control of the pumps so if a duty pump fails, the BMS controls shall lock it out and start the standby pump. An alarm shall be annunciated to the BMS. Rotate the duty and stand-by pumps on a regular schedule (adj.) to equalize runtime.
6. DDC Points:

a. Secondary Hot Water Pump Start/Stop
b. Secondary Hot Water Pump Status
c. Secondary Hot Water Pump VFD Speed Control
d. Secondary Hot Water Pump VFD Malfunction
e. Secondary Hot Water Pump Fail Alarm
f. Heat Exchanger Primary Hot Water Isolation Valve Open/Close Control
g. Heat Exchanger Primary Hot Water Isolation Valve Open/Close Status
h. Heat Exchanger Secondary Hot Water Isolation Valve Open/Close Control
i. Heat Exchanger Secondary Hot Water Isolation Valve Open/Close Status
j. Secondary Hot Water Differential Pressure w/ High/Low Alarm
k. Secondary Hot Water Supply Temperature w/ High/Low Alarm
l. Secondary Hot Water Return Temperature w/ High/Low Alarm
m. Differential Pressure Bypass Valve Control
n. Expansion Tank High/Low Pressure Alarm

C. Boiler Room

1. Combustion supply air fan shall be hardwired interlocked to the boiler/burner control so that ventilation is proven prior to firing any burners. BMS contractor shall be responsible for control wiring associated with the combustion fan.
2. All associated dampers shall be interlocked to open/close with fan operation.
3. BMS contractor shall provide carbon monoxide (CO) and natural gas (CH4) sensors that shall control the boiler room exhaust fan to maintain a maximum CO/CH4 set point. Sensor quantity and location shall provide full area coverage for the approved CO/CH4 sensor as recommended by the sensor manufacturer. When preset limits of natural gas (CH4) or carbon monoxide (CO) are exceeded, the following shall occur.
4. CO - When any CO sensor detects a low limit level of 25 PPM (adj.), the exhaust fan shall start and run after associated dampers open. The fan shall run for a minimum time of 5 minutes (adj.) after the CO level falls below the low limit set point to prevent excessive cycling of the fan. If the CO level exceeds the high alarm limit set point of 200 PPM (adj.) a local alarm shall annunciate the condition (audible and visual alarms) and an alarm shall be annunciated to the BMS.
5. CH4 - When the space CH4 level reaches the low limit set point of 25% LEL (adj.), the exhaust fan shall start and run and a local alarm shall annunciate the condition (audible and visual alarms) and an alarm shall be annunciated to the BMS. The fan shall run for a minimum time of 5 minutes (adj.) after the CH4 level falls below the low limit set point to prevent excessive cycling of the fan. If the CH4 level exceeds the high alarm limit set point of 50% LEL (adj.) a local alarm shall annunciate the condition (audible and visual alarms), a second alarm shall be annunciated to the BMS and a relay output of the condition and shall simultaneously initiate the following:

a. Shutdown all equipment including boilers and burners irrespective of mode of operation.
b. Close the gas safety shut off valve feeding the, boilers and domestic hot water heaters.

6. Break glass switches shall be wired such that all boilers and domestic hot water heaters shall be shut down when glass is broken. The BMS will monitor break glass switch position. If an emergency occurs, the boiler control panel will initiate a shutdown for the boiler plant: shutting down all pumps and closing all isolation valves. A critical alarm will be issued to the BMS.
7. Provide an alarm horn, strobe light and silence switch at each entrance to the boiler room, above the break glass switch. Alarm to activate when gas leak occurs. Horn shall be silenced from switch and strobe shall continue to operate until condition is cleared.
8. DDC Points:

a. CO level w/ Low/High Alarm for each sensor
b. CH4 level w/ Low/High Alarm for each sensor
c. Break Glass Switch Status

1.6 CHILLED WATER SYSTEM

A. Primary Chilled Water System

1. The BMS contractor shall provide BACnet DDC controls for complete stand-alone operation of the primary chilled water system. The BMS contractor shall connect the DDC controller to the BMS network for point monitoring and control.
2. The controls provided by the manufacturer of the chillers shall operate to maintain its programmed chilled water set point. The chiller control panel shall be furnished with a BACnet interface for communication to the BMS. The BMS contractor shall provide an interface and all programming to monitor and control all points from the chillers to the BMS.
3. Chillers shall start via a manual command from the BMS. The chiller shall be enabled through the BMS after the lead chilled water and condenser water pumps are started and the necessary valves have been properly positioned. Individual open and close limit switches shall provide positive valve position indication to the BMS prior to pump starting.
4. Refer to the Condenser Water System for further detail on condenser water control. When the chilled water system is enabled, the chilled water pump shall start and slowly ramp up to speed control set point. Once started, the chiller shall stay on for a minimum time, determined by the chiller manufacturer. The controls provided by the manufacturer of the chiller shall operate to maintain its programmed chilled water supply or return set point.
5. The pump VFD and bypass valve shall be controlled to maintain the minimum chilled water system differential pressure set point and minimum chiller chilled water flow requirements. If the VFD speed is at minimum speed and the differential pressure is above set point, the differential pressure bypass valve shall modulate open to maintain set point.
6. Differential Pressure sensor shall be located at furthest point to ensure proper operation of pumping system and shall be hard-wired to Chiller Plant Controller for optimal performance. If the distance is too long to hard-wire the differential pressure sensor to chiller plant controller, BMS contractor shall provide two differential pressure sensors. One differential pressure sensor shall be located at chiller plant room and hardwired to chiller plant system controller and the second differential pressure sensor shall be located at furthest point and the data shall be transmitted through the network which will be analyzed by BMS and reset differential pressure setpoint in order to ensure proper water flow.
7. There are two duty pumps and one standby pump. Provide staging control of the pumps so if a duty pump fails, the BMS controls shall lock it out and start the standby pump. An alarm shall be annunciated to the BMS. Rotate the duty and stand-by pumps on a regular schedule (adj.) to equalize runtime.
8. The BMS contractor shall furnish, install, and wire all devices necessary for a complete operational chilled water system including but not limited to miscellaneous interlock and control wiring for chillers, refrigerant compressors, pumps, flow switches, etc. The BMS contractor shall mount and wire all components furnished by the chiller manufacturer which are not factory installed. Coordinate requirements with the chiller manufacturer.
9. DDC Points:

a. Chiller Enable/Disable
b. Chiller Status
c. Chilled Water Supply Temperature Reset
d. All Chiller Points through BACnet Serial Interface
e. Chilled Water Pump Start/Stop
f. Chilled Water Pump Status
g. Chilled Water Pump VFD Speed Control
h. Chilled Water Pump VFD Malfunction
i. Chilled Water Pump Fail Alarm
j. Chilled Water Differential Pressure w/ High/Low Alarm
k. Chilled Water Supply Temperature w/ High/Low Alarm
l. Chilled Water Return Temperature w/ High/Low Alarm
m. Chilled Water Low Flow Bypass Valve Control
n. Chiller Chilled and Condenser Water isolation Valve Open/Close
o. Chiller Chilled and Condenser Water isolation Valve Status
p. Expansion Tank High/Low Pressure Alarm

B. Secondary Chilled Water System

1. The BMS contractor shall provide BACnet DDC controls for complete stand-alone operation of the secondary chilled water system. The BMS contractor shall connect the DDC controller to the BMS network for point monitoring and control.
2. The secondary chilled water system shall start automatically through an outside air temperature interlock, a time schedule or manual command from the BMS. When the secondary chilled water system is enabled, the secondary chilled water system primary pump shall start and slowly ramp up to speed control set point.
3. When the secondary chilled water system is enabled the lead heat exchanger primary and secondary chilled water isolation valves shall open and prove open via operator mounted end switch. Once the valve is open the lead duty secondary chilled water pump shall start and shall slowly ramp up to speed control set point. Provide individual open and close limit switches to provide positive valve position indication
4. A differential pressure sensors shall be located just prior to the last load on the farthest circuit. The sensor shall be wired to the same controller that controls the pump VFD and minimum flow differential pressure bypass valve. The chilled water pump variable frequency drive shall modulate as necessary to maintain the loop differential pressure set point. When one pump is running at over 85% speed (adj.) for more than 3 minutes (adj.) the second duty pump shall start. When more than one pump is running both enabled pumps shall run at the same speed control set point. When 2 pumps are running at less than 40% speed (adj.) for a period of 3 minutes (adj.) the lead pump shall stop. When one pump is running at minimum speed and the differential pressure is still above set point, the differential pressure bypass valve shall modulate to maintain the pressure setting.
5. There are two duty pumps and one standby pump. Provide staging control of the pumps so if a duty pump fails, the BMS controls shall lock it out and start the standby pump. An alarm shall be annunciated to the BMS. Rotate the duty and stand-by pumps on a regular schedule (adj.) to equalize runtime.
6. DDC Points:

a. Secondary Chilled Water Pump Start/Stop
b. Secondary Chilled Water Pump Status
c. Secondary Chilled Water Pump VFD Speed Control
d. Secondary Chilled Water Pump VFD Malfunction
e. Secondary Chilled Water Pump Fail Alarm
f. Secondary Chilled Water Differential Pressure w/ High/Low Alarm
g. Secondary Chilled Water Supply Temperature w/ High/Low Alarm
h. Secondary Chilled Water Low Flow Bypass Valve Control
i. Heat Exchanger Primary Chilled Water Control Valve Modulating Control
j. Secondary Chilled Water Heat Exchanger Isolation Valve Open/Close
k. Secondary Chilled Water Heat Exchanger Isolation Valve Status
l. Secondary Chilled Water Expansion Tank High/Low Pressure Alarm

1.7 CONDENSER WATER SYSTEM

A. Condenser Water System

1. The BMS contractor shall provide BACnet DDC controls for complete stand-alone operation of the condenser water system. The BMS contractor shall connect the DDC controller to the BMS network for point monitoring and control.
2. The condenser water system shall be enabled whenever there is a call for chilled water or free cooling. When enabled the lead primary CW pump shall start and shall slowly ramp up to speed control set point.
3. The pump VFD shall be controlled to maintain the condenser water flow through the enabled chillers. As an additional chiller is enabled the pump speed shall increase to maintain the higher flow. The number of pumps and speed set point of the enabled pumps shall be set up with the Water Balancing contractor. When more than one pump is running the speed of all enabled pumps shall match.
4. There are two duty pumps and one standby pump. Provide staging control of the pumps so if a duty pump fails, the BMS controls shall lock it out and start the standby pump. An alarm shall be annunciated to the BMS. Rotate the duty and stand-by pumps on a regular schedule (adj.) to equalize runtime.
5. The primary condenser water system temperature shall be controlled by controlling the temperature bypass valve, staging the cooling tower cells and cooling tower fans to maintain the condenser water supply temperature at set point.
6. Initially on start-up the temperature bypass valve shall be open and when the CW supply temperature approaches the high limit set point, one cooling tower cell shall be enabled and the bypass valve shall close. When the cooling tower is enabled the spray and sump isolation valves shall open and the fan shall be commanded off with its speed commanded to 0%. When further cooling is needed to maintain the condenser water supply temperature at set point the second tower cell shall be enabled by opening the spray and sump isolation valves. When an additional tower cell is enabled, an additional primary condenser water pump shall be enabled. As its condenser water supply temperatures rises above the condenser water supply temperature set point, the lead tower fan shall be commanded on and ramp to its minimum speed as defined at the VFD control panel. If the condenser water supply temperature continues to rise, the second tower cell fan shall start in the same fashion. All enabled fans shall run in unison to maintain CW supply water temperature set point.
7. If enabled cooling tower fans are operating at less than 40% (adj.) speed for a period of 3 minutes (adj.), the lead fan shall be shut down. As the temperature drops further, the next fan shall be shut down. When all fans are off and the condenser water temperature continues to fall below the set point the lead tower shall be disabled by closing the spray and sump isolation valves. Provide lead/lag and staging control of the tower fans and cooling towers to equalize run time.
8. Make-up Water Control: The cooling tower shall be furnished with a water level control system that shall control the water level in the tower basin. Wire high and low water level switches and solenoid valves for make-up water control of each tower. The high and low water level switches shall maintain cooling tower basin water level by cycling the solenoid valve.
9. For each tower provide all low voltage control electrical installation and wiring for makeup water system, sand filtration system, low water alarm, high water alarm, pan heater and low temperature controls, vibration controls, water treatment system, etc. Refer to the cooling tower specifications for details.
10. Freeze: Basin heaters shall cycle as required to maintain a minimum water temperature and to prevent freezing. Under no load conditions, the system pumps shall de-energize and the starter interlock shall energize the heater circuit. All active fans shall be cycled during cold weather operation to avoid long periods of idle operation, and subsequent possibility of ice build-up. Basin heaters shall be inhibited when a low water condition exists. A low or high water temperature condition shall be annunciated.
11. Vibration: Cooling tower vibration switches shall stop the fan when vibration exceeds set point. Monitor each switch and annunciate alarm at operator's workstation.
12. Condenser Water Filter:
13. Centrifugal Separator:
14. DDC Points (For each Unit/System):

a. CW Pump Start/Stop
b. CW Pump Status
c. CW Pump VFD Speed Control
d. CW Pump VFD Malfunction
e. CW Pump Fail Alarm
f. CW Supply Temperature w/ High/Low Alarm
g. CW Return Temperature w/ High/Low Alarm
h. CT Fan Start/Stop
i. CT Fan Status
j. CT Fan VFD Speed Control
k. CT Fan VFD Malfunction
l. CT Fan Fail Alarm
m. CT Spray Isolation Valve Open/Close
n. CT Spray Isolation Valve Status
o. CT Sump Isolation Valve Open/Close Control
p. CT Sump Isolation Valve Open/Close Status
q. CT Basin Water Levels w/ High/Low Alarm
r. CT Basin Water Temperature w/ High/Low Alarm
s. CT Vibration Alarm
t. Sand Filter Dirty Alarm
u. Centrifugal Separator Common Alarm
v. CW Temperature Bypass Valve Open/Close Control
w. Make-up Water Flow (Totalizing)

B. Economizer Heat Exchanger

1. The economizer heat exchanger (HX) shall be used for free cooling and shall be activated whenever any mechanical equipment requiring chilled water is operating and outside wet bulb temperature is below set point.
2. When the HX is enabled through the BMS, the chillers shall stop. The heat exchanger isolation valves (chilled water and condenser water) shall open allowing flow to the heat exchanger and the chiller isolation valves (chilled water and condenser water) shall close. The timing of the automatic control valves shall take into consideration the proper shut down of the chillers and sufficient water flow through the chillers until they can be cycled off. Coordinate with chiller manufacturer. Individual open and close limit switches shall provide positive valve position indication to the BMS.
3. When the HX is disabled, the valves shall close to the heat exchanger and open to the chillers.
4. Control cooling towers to maintain set point. The calculated set point shall be the sum of the tower approach temperature and outside wet bulb. If the calculated set point is above chilled water temperature requirements, the chillers shall be activated and HX shall be off. If the calculated set point is equal to or below the chilled water temperature requirements, the HX shall be activated.
5. In the switch over from free cooling to mechanical cooling, the condenser water supply temperature shall be allowed to reach a minimum temperature of 60° F (adj.) prior to enabling mechanical cooling by opening bypass valve and closing tower valves.
6. The BMS shall track the run time of the free cooling heat exchanger and shall totalize the time on a monthly basis. The run time shall be based on the time the isolation valves are open to the heat exchanger.
7. DDC Points:

a. HX Chilled Water Isolation Valve Open/Close
b. HX Chilled Water Isolation Valve Open/Close
c. HX Condenser Water Isolation Valve Open/Close Status
d. HX Condenser Water Isolation Valve Open/Close Status
e. Economizer Heat Exchanger Run Time

1.8 SUPPLY AIR SYSTEMS

A. General

1. Interlock all associated dampers to open/close with fan start/stop.
2. BMS shall monitor the fan status via a current switch and shall track run times when fan is in operation. If the fan fails to operate an alarm shall be annunciated at the BMS and dampers shall be indexed to their normal off positions.
3. For fans greater than 2,000 CFM, provide a high discharge static pressure switch if dampers are located upstream of the fan and/or a low static pressure switch if dampers are located downstream of the fan to prevent mechanical damage if a damper fails to open. The switch shall stop the fan when duct pressure exceeds design. The fan shall remain off until the pressure switch is reset.
4. Where required, the duct smoke detector shall stop the fan upon the presence of smoke through a signal from the fire alarm system. The Fire Alarm System shall signal the BMS when a fire alarm is present.
5. BMS Contractor shall provide a lockable cover for the space temperature sensor if the sensor is located in a public area where it is subject to tampering or damage.
6. All freeze protection pumps shall be commanded on through the BMS when the outdoor air temperature falls below 40°F (adj.) and shall be commanded off when the outdoor air temperature rises 2°F above the on setpoint. If the pump fails to operate an alarm shall be annunciated at the BMS.

B. Energy Recovery Unit

1. The BMS contractor shall furnish BACnet DDC controls for complete stand-alone operation of the Energy Recovery Unit (ERU). The BMS Contractor shall provide all required field wiring of controls that cannot be factory installed for proper ERU operation. The BMS contractor shall connect the DDC controller to the BMS network for point monitoring and control.
2. Freeze Protection – BMS contractor shall furnish and install low temperature detectors (freeze stats), mounted upstream of the cooling CHW coil. When the entering air temperature falls below 38 °F (adj.) the AC unit shall stop, the outdoor air damper shall close, the freeze protection circulator pump shall start if not already on and the heating coil shall be controlled to maintain 100°F.
3. The ERU shall be started through the BMS by a manual command.
4. The ERU outside air and exhaust air dampers shall be hard wired interlocked to the ERU and shall open 100% and prove open through damper end switch prior to starting the supply and exhaust fans.
5. The supply and exhaust fans shall start and shall slowly ramp up to speed control set point and run continuously. The supply fan variable speed drive shall be controlled to maintain the supply air static pressure set point, as sensed by a sensor located on the mechanical drawings. The exhaust fan variable speed drive shall be controlled to maintain the exhaust air static pressure set point, as sensed by a sensor located on the mechanical drawings.
6. The heating coil control valve shall be controlled in sequence with the cooling coil control valve and energy recovery wheel to maintain discharge air set point as reset by average space temperature. Refer to plans for locations. The space temperature sensors shall have no set point adjust or display.
7. Energy Wheel Operation: The controller shall modulate the heat recovery wheel for energy recovery as follows;
   a. Cooling Recovery Mode: The controller shall measure the heat wheel discharge air temperature and modulate the heat wheel speed to maintain a set point 2°F (adj.) less than the zone cooling unit supply air temperature set point. The heat wheel shall run for cool recovery whenever the units return air temperature is 5°F (adj.) or more below the outside air temperature, and the unit is in cooling mode, and the economizer is off.
   b. Heating Recovery Mode: The controller shall measure the heat wheel discharge air temperature and modulate the heat wheel speed to maintain a set point 2°F (adj.) greater than the zone heating unit supply air temperature set point. The heat wheel shall run for heat recovery whenever the economizer mode is off and the units return air temperature is 5°F (adj.) or more above the outside air temperature, and the unit is in heating mode.
   c. Economizer Mode: When the unit is in this mode, the heat wheel shall stop and the bypass dampers, if so equipped, shall open.
   d. Periodic Self-Cleaning: The heat wheel shall run at 5% speed (adj.) for 10sec (adj.) every 4hr (adj.) the unit runs.
   e. Frost Protection: The heat wheel shall run at 5% speed (adj.) whenever the outside air temperature drops below 15°F (adj.) or the exhaust air temperature drops below 20°F (adj.).
8. When the unit is indexed off, the outdoor air and exhaust air dampers shall close, the energy recovery wheel shall stop, the cooling coil control valve shall close and the hot water heating coil shall modulate to maintain the heating coil discharge air temperature at 45 F°. The supply and exhaust fans shall stop.
9. Monitor differential pressures across filter and annunciate alarm when differential pressure set point is exceeded.
10. If the supply or exhaust fans fail to operate an alarm shall be annunciated at the BMS and dampers shall be indexed to their normal off positions.
11. The fire alarm system shall signal the BMS when a fire alarm is present.
12. DDC points:

a. Supply Fan Start/Stop
b. Supply Fan Status
c. Supply Fan VFD Speed Control
d. Supply Fan VFD Malfunction
e. Supply Fan Fail
f. Exhaust Fan Start/Stop
g. Exhaust Fan Status
h. Exhaust Fan VFD Speed Control
i. Exhaust Fan VFD Malfunction
j. Exhaust Fan Fail
k. Freeze Protection Pump Start/Stop
l. Freeze Protection Pump Status
m. Freeze Protection Pump Fail Alarm
n. Low Temperature Alarm
o. High/Low Static Pressure Alarm
p. Dirty Filter Alarm
q. Space Temperature W/ High/Low Alarm
r. Space Temperature Setpoint
s. Space Humidity W/ Low Alarm
t. Discharge Temperature W/ High/Low Alarm
u. Discharge Air Temperature Setpoint
v. Discharge Humidity w/ High Alarm
w. Discharge Humidity Setpoint
x. Supply Air Static Pressure w/ High/Low Alarm
y. Exhaust Air Static Pressure w/ High/Low Alarm
z. Heating Coil Discharge Temperature
aa. Heating Coil Valve Control
bb. Cooling Coil Valve Control
cc. Humidifier Valve Control
dd. Heat Recovery Wheel Start/Stop
ee. Heat Recovery Wheel Status
ff. Heat Recovery Wheel VFD Speed Control
gg. Heat Recovery Wheel VFD Malfunction
hh. Heat Recovery Wheel Fail Alarm
ii. Heat Recovery Wheel Supply Air Leaving Temperature
jj. Heat Recovery Wheel Exhaust Air Leaving Temperature

C. 100% OA Air Handling Unit Serving Corridors

1. The BMS contractor shall furnish BACnet DDC controls for complete stand-alone operation of the Air Handing Unit (AHU). The BMS Contractor shall provide all required field wiring of controls that cannot be factory installed for proper AHU operation. The BMS contractor shall connect the DDC controller to the BMS network for point monitoring and control.
2. Freeze Protection – BMS contractor shall furnish and install low temperature detectors (freeze stats), mounted downstream of the cooling coil. When the entering air temperature falls below 38 °F (adj.) the AHU shall stop, the outdoor air damper shall close, the freeze protection circulator pump shall start if not already on and the heating coil shall be controlled to maintain 100°F.
3. The AHU shall be started by the BMS based upon a start time optimization program, time of day schedule or manual command. Upon a command to start, all associated outside air, discharge air, smoke and fire/smoke dampers shall open. The hard wired end switches on the OA damper shall start the fan and the fan shall slowly ramp up to speed control set point.
4. The supply fan variable speed drive shall be controlled to maintain the supply static pressure set point, as sensed by a sensor located on the mechanical drawings.
5. The heating coil control valve shall be controlled to maintain discharge air set point as reset by the space temperature.
6. When the AHU is indexed off, the outdoor air damper shall close and the hot water heating coil shall modulate to maintain the heating coil discharge air temperature at 45 F°. The supply fan shall stop.
7. Monitor differential pressures across filter and annunciate alarm when differential pressure set point is exceeded.
8. If the supply fan fails to operate an alarm shall be annunciated at the BMS and dampers shall be indexed to their normal off positions.
9. The Fire Alarm System shall signal the BMS when a fire alarm is present. When the floor/area the fans serves is in alarm, the FAS shall shut down the fan and close all associated dampers.
10. DDC Points:

a. Supply Fan Start/Stop
b. Supply Fan Status
c. Supply Fan VFD Speed Control
d. Supply Fan VFD Malfunction
e. Supply Fan Fail
f. Freeze Protection Pump Start/Stop
g. Freeze Protection Pump Status
h. Freeze Protection Pump Fail Alarm
i. Low Temperature Alarm
j. High/Low Static Pressure Alarm
k. Dirty Filter Alarm
l. Space Temperature w/ High/Low Alarm
m. Discharge Temperature w/ High/Low Alarm
n. Heating Coil Discharge Temperature
o. Supply Air Static Pressure W/ High/Low Alarm
p. Heating Coil Valve Control
q. Cooling Coil Valve Control
r. Outdoor Air Damper Open/Close Control

D. Air Handling Unit Serving Lobby

1. The BMS contractor shall furnish BACnet DDC controls for complete stand-alone operation of the Air Handing Unit (AHU). The BMS Contractor shall provide all required field wiring of controls that cannot be factory installed for proper AHU operation. The BMS contractor shall connect the DDC controller to the BMS network for point monitoring and control.
2. Freeze Protection – BMS contractor shall furnish and install low temperature detectors (freeze stats), mounted downstream of the heating coil. When the entering air temperature falls below 38 °F (adj.) the AHU and return air fan shall stop, the outdoor air damper shall close, the freeze protection circulator pump shall start if not already on and the heating coil shall be controlled to maintain 100°F.
3. The AHU shall be started by the BMS based on a manual command and shall run continuously. On a command to start the outdoor air damper shall be opened to the minimum outdoor airflow set point and all associated discharge air, smoke and fire/smoke dampers shall open. The AHU supply fan and the associated return fan shall start and shall slowly ramp up to speed control set point. The supply fan VFD speed shall ramp up to maintain the supply air static pressure setpoint. The return fan VFD speed shall track the speed of the supply fan with a set differential.
4. The BMS contractor shall provide a space static pressure sensor in the lobby that measures the lobby pressure as referenced to outdoor air. Lobby space pressure shall be controlled by controlling the volume of outdoor air to the space from minimum to maximum setpoint. The minimum level shall be set by the Air Balancing contractor. The maximum level shall change based on summer/winter season. The summer/winter switch shall be based on outdoor air temperature. When the outdoor air temperature is ≥ 55ºF (adj.) the system shall be indexed to summer and when the outdoor air temperature is < 55ºF (adj.) the system shall be indexed to winter. Incorporate a 2 ºF dead band on switchover. The maximum winter outdoor airflow shall be 2,500 cfm (adj.).
5. The heating coil control valve shall be controlled to maintain discharge air set point (55ºF adj.) as reset by the space temperature.
6. When the AHU is indexed off the supply and return fans shall stop, the outdoor air damper shall close and the hot water heating coil shall modulate to maintain the heating coil discharge air temperature at 45 Fº.
7. Monitor differential pressures across filter and annunciate alarm when differential pressure set point is exceeded.
8. If the supply or return fan fails to operate an alarm shall be annunciated at the BMS and dampers shall be indexed to their normal off positions.
9. The Fire Alarm System shall signal the BMS when a fire alarm is present. When the floor/area the fans serves is in alarm, the FAS shall shut down the fan and close all associated dampers.

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Buildings
APPROVED
Under Directive 2 of 1975
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02	10/31/15	DESIGN DEVELOPMENT
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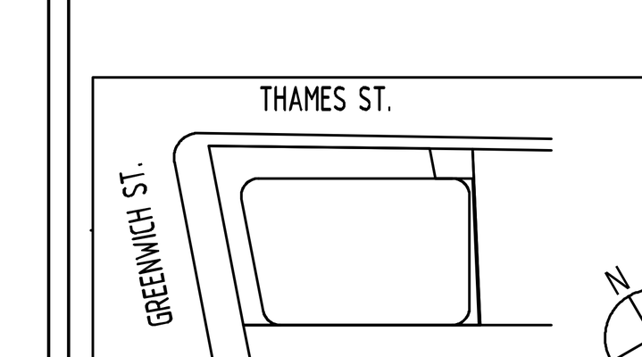

KEY PLAN AND NORTH SIGN

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SCALE NTS

HVAC SEQUENCE OF OPERATIONS SHEET 1

SHEET TITLE :

EN-004.00

SHEET NUMBER :

10. DDC Points:

a. Supply Fan Start/Stop
b. Supply Fan Status
c. Supply Fan VFD Speed Control
d. Supply Fan VFD Malfunction
e. Supply Fan Fail
f. Return Fan Start/Stop
g. Return Fan Status
h. Return Fan VFD Speed Control
i. Return Fan VFD Malfunction
j. Return Fan Fail
k. Freeze Protection Pump Start/Stop
l. Freeze Protection Pump Status
m. Freeze Protection Pump Fail Alarm
n. Low Temperature Alarm
o. High/Low Static Pressure Alarm
p. Dirty Filter Alarm
q. Outdoor Airflow
r. Lobby Space Pressure w/ High/Low Alarm
s. Lobby Space Temperature w/ High/Low Alarm
t. Heating Coil Discharge Temperature
u. Supply Air Static Pressure w/ High/Low Alarm
v. Discharge Temperature W/ High/Low Alarm
w. Supply Air Static Pressure W/ High/Low Alarm
x. Heating Coil Valve Control
y. Cooling Coil Valve Control
z. Mixed Air Damper Control

E. Air Handling Unit Serving Amenity

1. The BMS contractor shall furnish BACnet DDC controls for complete stand-alone operation of the Air Handling Unit (AHU). The BMS Contractor shall provide all required field wiring of controls that cannot be factory installed for proper HVU operation. The BMS contractor shall connect the DDC controller to the BMS network for point monitoring and control.
2. Freeze Protection – BMS contractor shall furnish and install low temperature detectors (freeze stats), mounted downstream of the heating coil. When the entering air temperature falls below 38 °F (adj.) the supply and return air fans shall stop, the outdoor air damper shall close if not already on and the heating coil shall be controlled to maintain 100°F.
3. The AHU shall be started by the BMS based on a manual command and shall run continuously. On a command to start the outdoor air damper shall be opened to the minimum outdoor airflow set point and all associated discharge air, smoke and fire/smoke dampers shall open. The AHU supply fan and the associated return fan shall start and shall slowly ramp up to speed control set point. The supply fan VFD speed shall ramp up to maintain the supply air static pressure setpoint. The return fan VFD speed shall track the speed of the supply fan with a set differential.
4. The heating coil control valve shall be controlled to maintain discharge air set point (55ºF adj.) as reset by the space temperature.
5. When the AHU is indexed off the supply and return fans shall stop, the outdoor air damper shall close and the hot water heating coil shall modulate to maintain the heating coil discharge air temperature at 45 Fº.
6. Monitor differential pressures across filter and annunciate alarm when differential pressure set point is exceeded.
7. If the supply or return fan fails to operate an alarm shall be annunciated at the BMS and dampers shall be indexed to their normal off positions.

8. The Fire Alarm System shall signal the BMS when a fire alarm is present. When the floor/area the fans serves is in alarm, the FAS shall shut down the fan and close all associated dampers.
9. DDC Points:

a. Supply Fan Start/Stop
b. Supply Fan Status
c. Supply Fan VFD Speed Control
d. Supply Fan VFD Malfunction
e. Supply Fan Fail
f. Return Fan Start/Stop
g. Return Fan Status
h. Return Fan VFD Speed Control
i. Return Fan VFD Malfunction
j. Return Fan Fail
k. Low Temperature Alarm
l. High/Low Static Pressure Alarm
m. Dirty Filter Alarm
n. Outdoor Airflow
o. Lobby Space Pressure w/ High/Low Alarm
p. Lobby Space Temperature w/ High/Low Alarm
q. Heating Coil Discharge Temperature
r. Supply Air Static Pressure w/ High/Low Alarm
s. Discharge Temperature W/ High/Low Alarm
t. Supply Air Static Pressure W/ High/Low Alarm
u. Heating Coil Valve Control
v. Cooling Coil Valve Control
w. Mixed Air Damper Control

F. Heating & Ventilating Unit

1. The BMS contractor shall furnish BACnet DDC controls for complete stand-alone operation of the HV Unit (HVU). The BMS Contractor shall provide all required field wiring of controls that cannot be factory installed for proper HVU operation. The BMS contractor shall connect the DDC controller to the BMS network for point monitoring and control.
2. Freeze Protection – BMS contractor shall furnish and install low temperature detectors (freeze stats), mounted downstream of the heating coil. When the entering air temperature falls below 38 °F (adj.) the HV unit shall stop, the outdoor air damper shall close, the freeze protection circulator pump shall start if not already on and the heating coil shall be controlled to maintain 100°F.
3. The HVU shall be started by the BMS based upon a start time optimization program, time of day schedule or manual command. Upon a command to start, all associated outside air, discharge air, smoke and fire/smoke dampers shall open. The hard wired end switches on the OA damper shall start the fan and the fan shall slowly ramp up to speed control set point.
4. H&V unit for dryer makeup air shall be interlocked to start/stop with drier exhaust fan.
5. H&V unit for mechanical room makeup air shall be interlocked to start/stop with mechanical room exhaust fan.
6. The heating coil control valve shall be controlled to maintain discharge air set point as reset by space temperature.
7. When the HV unit is indexed off the outdoor air damper shall close and the hot water heating coil shall modulate to maintain the heating coil discharge air temperature at 45 Fº. The supply fan shall stop.
8. Monitor differential pressures across filter and annunciate alarm when differential pressure set point is exceeded.
9. If the supply fan fails to operate an alarm shall be annunciated at the BMS and dampers shall be indexed to their normal off positions.

10. The Fire Alarm System shall signal the BMS when a fire alarm is present. When the floor/area the fans serves is in alarm, the FAS shall shut down the fan and close all associated dampers.
11. DDC Points:

a. Supply Fan Start/Stop
b. Supply Fan Status
c. Supply Fan Fail
d. Freeze Protection Pump Start/Stop
e. Freeze Protection Pump Status
f. Freeze Protection Pump Fail Alarm
g. Low Temperature Alarm
h. High/Low Static Pressure Alarm
i. Dirty Filter Alarm
j. Space Temperature w/ High/Low Alarm
k. Discharge Temperature w/ High/Low Alarm
l. Supply Air Static Pressure W/ High/Low Alarm
m. Heating Coil Valve Control
n. Outdoor Air Damper Open/Close Control

G. Fan Coil Unit Serving Back of House – Cooling Only

1. The BMS contractor shall furnish BACnet DDC controls for complete stand-alone operation of the Fan Coil Unit (FCU). The BMS Contractor shall provide all required field wiring of controls that cannot be factory installed for proper FCU operation. The BMS contractor shall connect the DDC controller to the BMS network for point monitoring and control
2. The FCU shall be controlled to maintain space temperature cooling set point. When the temperature rises above the temperature setpoint, the fan shall start and the cooling coil control valve shall open. The fan shall continue to run until the space temperature falls below setpoint then the fan shall stop and the cooling coil control valve shall close.
3. Monitor differential pressures across filter and annunciate alarm when differential pressure set point is exceeded.
4. The BMS contractor shall furnish and install a leak detector that shall be located in the unit's drip pan. When water is detected an alarm shall be annunciated to the BMS.
5. DDC Points:

a. Supply Fan Start/Stop
b. Supply Fan Status
c. Supply Fan Fail
d. Dirty Filter Alarm
e. Space Temperature w/ High Alarm
f. Supply Air Static Pressure W/ High/Low Alarm
g. Cooling Coil Valve Control
h. Leak Alarm

H. Pool AC Unit and Pool Return Fan

1. Packaged Pool AC Unit shall be furnished with factory DDC controls for complete stand-alone operation. The BMS Contractor shall provide all required field wiring of controls that cannot be factory installed for proper AC Unit operation.
2. This unit serves the pool area and shall also include a self-contained control system for de-humidification of the supply air based on return and space humidity conditions.
3. The sequence of operations shall be as described in the specification for the Pool Air Conditioning Unit.
4. The pool return air fan shall be interlocked to operate with the Pool AC unit. BMS contractor shall provide additional controls for return fan operation.

5. This contractor shall be responsible for ensuring that all associated dampers are open when there is a call for the unit and exhaust fan to operate.
6. Dampers shall be commanded closed when unit and exhaust fan are shut off.
7. DDC Points:

a. All AC Unit Points via BACnet Network Interface
b. Return Fan Start/Stop
c. Return Fan Status
d. Return Fan Fail

I. Split AC Unit Serving Elevator Machine Room

1. The AC shall be furnished with local controls for stand-alone operation.
2. The BMS Contractor shall provide all required field wiring of controls that cannot be factory installed for proper AC Unit operation including space thermostats and interface to remote air cooled condensing unit.
3. An independent temperature sensor shall monitor the EMR space temperature and annunciate an alarm to the BMS if the high alarm limit temperature is reached.
4. All interlocked dampers shall open and close with fan operation.
5. DDC Points:

a. Space Temperature w/ High Alarm

J. Fan Coil Unit w/ Outdoor Air Serving Common Areas

1. The BMS contractor shall provide controls and all field wiring for local control of the fan coil unit.
2. The fan coil unit shall be controlled by a programmable space thermostat to maintain occupied/unoccupied space temperature set points.
3. Occupied – During the occupied period the fan shall start and run continuously. The outdoor air damper shall open. The heating coil control valve shall be opened/closed in sequence with the cooling coil control valve to maintain the occupied space temperature set point.
4. Unoccupied – During the unoccupied period the fan shall cycle on/off to maintain the space set-up or set back temperature set point. The outdoor air damper shall remain closed.
5. Where required, dampers shall be commanded open when there is a call for cooling or heating and commanded closed when the fan is commanded off.
6. Off – When the unit is off both heating and cooling valves shall be closed. The outdoor air damper shall be closed.

K. Fan Coil Unit Serving Elevator Machine Rooms

1. The BMS contractor shall provide controls and all field wiring for local control of the fan coil unit.
2. The fan coil unit shall be controlled by a space thermostat to maintain space temperature set point.
3. The fan shall cycle on/off to maintain the space cooling set point. When the unit is off the cooling valve shall be closed.
4. BMS contractor shall furnish and install a leak detector located in the drain pan of the fan coil unit and if a high water condition is detected shall shut down the fan coil unit and annunciate an alarm to the BMS.
5. DDC Points:

a. Leak Alarm to BMS

1.9 VENTILATION SYSTEMS

A. General

1. Interlock all associated dampers to open/close with fan start/stop.
2. BMS shall monitor the fan status via a current switch and shall track run times when fan is in operation. If the fan fails to operate an alarm shall be annunciated at the BMS and dampers shall be indexed to their normal off positions.
3. For fans greater than 2,000 CFM, provide a high discharge static pressure switch if dampers are located upstream of the fan and/or a low static pressure switch if dampers are located downstream of the fan to prevent mechanical damage if a damper fails to open. The switch shall stop the fan when duct pressure exceeds design. The fan shall remain off until the pressure switch is reset.
4. Where required, the duct smoke detector shall stop the fan upon the presence of smoke through a signal from the fire alarm system. The Fire Alarm System shall signal the BMS when a fire alarm is present.

B. Trash Room Exhaust

1. The exhaust fan shall be started locally and shall operate continuously.
2. The BMS shall monitor the fan status and shall annunciate an alarm to the BMS if the fan is off for any reason.
3. DDC Points:

a. Exhaust Fan Status
b. Exhaust Fan Off Alarm

C. Toilet Exhaust

1. Exhaust fan shall start/stop through the BMS based on occupancy schedule.
2. DDC Points:

a. Exhaust Fan Start/Stop
b. Exhaust Fan Status
c. Exhaust Fan Fail Alarm

D. Kitchen Exhaust

1. The BMS contractor shall provide control of the kitchen hood exhaust fan. The fan shall be started through the BMS and shall run continuously.
2. When indexed on the exhaust fan shall start and slowly ramp up to speed control set point after all associated dampers have opened. The kitchen exhaust fan speed shall be controlled to maintain the duct static pressure set point as sensed by the pressure sensor located in the duct work approximately 2/3 upstream from the exhaust fan. The static pressure set point shall be determined by the Air Balancing Contractor.
3. DDC Points:

a. EF Start/Stop
b. EF Status
c. EF VFD Speed Control
d. EF VFD Malfunction
e. EF Fail Alarm
f. Duct Static Pressure

E. Laundry Exhaust

1. The BMS contractor shall provide control of the laundry exhaust fan. The fan shall be started through the BMS and shall run continuously.
2. When indexed on the exhaust fan shall start and slowly ramp up to speed control set point after all associated dampers have opened. The laundry exhaust fan speed shall be controlled to maintain the duct static pressure set point as sensed by the pressure sensor located in the duct work approximately 2/3 upstream from the exhaust fan. The static pressure set point shall be determined by the Air Balancing Contractor.
3. DDC Points:

a. EF Start/Stop
b. EF Status
c. EF VFD Speed Control
d. EF VFD Malfunction
e. EF Fail Alarm
f. Duct Static Pressure

F. Exhaust Fan

1. Exhaust fan shall start/stop through the BMS based on occupancy schedule.
2. DDC Points:

a. Exhaust Fan Start/Stop
b. Exhaust Fan Status
c. Exhaust Fan Fail Alarm

G. Mechanical Room Exhaust

1. Provide a space temperature sensor for on/off control of the exhaust fan based on space temperature.
2. When the space temperature rises above the space temperature set point the exhaust fan shall start after the associated damper has opened.
3. An alarm shall be annunciated to the BMS when the space temperature high limit has been exceeded.
4. DDC Points:

a. Exhaust Fan Start/Stop
b. Exhaust Fan Status
c. Exhaust Fan Fail
d. Space Temperature w/ High Alarm

H. Chiller Room Ventilation

1. BMS contractor shall provide a space thermostat and wiring for local control of the exhaust fan which shall cycle on and off to maintain the space temperature at or below 80°F (adj.).
2. Whenever the fan is called to start, the damper on the make-up air duct shall be opened.
3. BMS contractor shall provide complete installation of the refrigerant leak detection system furnished with the chiller package. This system shall be stand-alone.
4. If the refrigerant exhaust system is called to start when the outdoor air temperature is below 40 deg F (adj.) the hot water valve shall be opened. Refer to hot water coil sequence of operation.
5. When a refrigerant leak is detected, the exhaust fan shall start and the leak detection system shall activate the local alarm. Provide an alarm horn, strobe light and silence switch for local annunciation at each entrance to the chiller room, above the break glass switch.
6. A break-glass switch shall be located at each entrance to the chiller room and shall initiate a shutdown for the chiller plant: shutting down all chillers, pumps, cooling towers and closing all isolation valves.

I. Electrical Room Exhaust

1. Provide a space temperature sensor for on/off control of the exhaust fan based on space temperature.
2. When the space temperature rises above the space temperature set point the exhaust fan shall start after the associated damper has opened.
3. An alarm shall be annunciated to the BMS when the space temperature high limit has been exceeded.
4. DDC Points:

a. Exhaust Fan Start/Stop
b. Exhaust Fan Status
c. Exhaust Fan Fail
d. Space Temperature w/ High Alarm

J. Stair Smoke Purge Fan

1. Stair smoke purge fan shall be started and stopped through a signal from the Fire Alarm System (FAS). The BMS shall control the fan speed based on the signal from the FAS.
2. The BMS contractor shall furnish BACnet DDC controls for stand-alone operation of the stair pressurization fan. The BMS contractor shall furnish all damper actuators for all non-fire/smoke dampers.

1.10 MISCELLANEOUS

A. Residential Fan Coil Units

1. BMS contractor shall install and wire the remote programmable thermostat that is factory furnished with the fan coil unit for local stand-alone operation.

B. Residential Kitchen Exhaust & Make-up Air

1. BMS contractor shall furnish controls and interlock wiring for the residential kitchen exhaust and make-up air systems.
2. Furnish and install transformer and current switches as outlined on the mechanical drawing details.
3. The current sensors shall be installed on the power feed to the kitchen exhaust fan. One current switch shall be wired to open the kitchen exhaust ZRT damper when the preset current setting is reached and the second current switch shall be wired to open the make-up outdoor air ZRT damper when the preset current setting is reached.
4. Both ZRT dampers shall close when the fan is indexed off.

C. Residential Kitchen Hood

1. BMS contractor shall furnish interlock wiring and controls for local control of the kitchen hood exhaust and associated makeup air.
2. BMS shall furnish and install a CT switch that monitors the kitchen hood exhaust fan status. When the exhaust fan is off the outdoor air supply constant airflow regulator and the hood exhaust constant airflow regulator shall both be at minimum airflow positions. When the exhaust fan is indexed on the supply air and hood exhaust constant airflow regulators shall be indexed to the maximum airflow positions.
3. All interlock wiring between the CT switch and the constant airflow regulators shall be by BMS contractor. 120 VAC power source shall be coordinated with base electrical contractor.

D. Series Fan Powered VAV Box with Reheat

1. Provide one DDC controller and at least one temperature sensor for each FPVAV box. Coordinate factory mounting and wiring of controller, actuator, and transformer with the FPVAV box manufacturer. The BMS contractor shall be responsible for furnishing, installing, and wiring any controls not furnished, installed, or wired by others that are required for an operational system.
2. When the unit is off the fan shall stop, the heating valve shall close, and the supply air damper shall close.
3. The FPVAV box fan shall be indexed on when the associated Air Handling Unit serving it starts.
4. The FPVAV box shall be programmed for occupied and unoccupied settings. The space temperature sensor shall have a push-button override to index the space to the occupied mode for a timed period.
5. Occupied: The FPVAV box damper shall modulate to maintain the occupied space temperature set point. Upon a rise in space temperature above set point the hot water valve shall be closed, the DDC controller shall then modulate the VAV box damper open from the minimum supply CFM setting to the maximum supply CFM setting as necessary to maintain the space temperature at set point. As the space temperature falls below the space temperature set point, the DDC controller shall modulate the VAV box damper to the minimum CFM set point and upon a further fall in space temperature, the reheat valve shall modulate open as necessary to maintain space temperature at set point.
6. Unoccupied: During unoccupied periods when the main AHU serving the box is off, the box shall cycle on to maintain the unoccupied set point. When the FPVAV box is indexed on during unoccupied, the supply damper shall be closed and the bypass damper shall be open and the heating coil shall be full open.
7. DDC Points:

a. Supply fan start/stop
b. Supply fan status
c. Supply fan fail
d. Supply and bypass damper position
e. Supply air flow w/ high/low alarms
f. Space temperature w/ high/low alarms
g. Space temperature set point
h. Supply and bypass damper control
i. Reheat valve control

E. VAV Box

1. Provide one DDC controller and at least one temperature sensor for each VAV box. Coordinate factory mounting and wiring of controller, actuator, and transformer with the VAV box manufacturer. The BMS contractor shall be responsible for furnishing, installing, and wiring any controls not furnished, installed, or wired by others that are required for an operational system.
2. The VAV box and shall be indexed on when the associated supply air system serving it starts. The VAV box damper shall modulate to maintain the space temperature. As the space temperature rises above the space temperature set point, the DDC controller shall modulate the VAV box damper from the minimum to the maximum CFM setting as necessary to maintain the space temperature at set point. As the space temperature falls below the space temperature set point, the DDC controller shall modulate the VAV box damper to the minimum CFM set point
3. The VAV box shall be programmed for occupied and unoccupied settings. The space temperature sensor shall have a push-button override to index the space to the occupied mode for a timed period.
4. DDC Points:

a. Supply Damper Control
b. Supply Damper Position
c. Supply Airflow w/ High/Low Alarms
d. Space Temperature w/ High/Low Alarms
e. Space Temperature Set Poin

F. CV Box with Reheat

1. Provide one DDC controller and at least one temperature sensor for each CV box. Coordinate factory mounting and wiring of controller, actuator, and transformer with the box manufacturer. The BMS contractor shall be responsible for furnishing, installing, and wiring any controls not furnished, installed, or wired by others that are required for an operational system.
2. The CV box shall be indexed on when the associated Air Handling Unit serving it starts. The CV box damper shall modulate to maintain the flow setpoint. Modulate the reheat coil valve to maintain space temperature setpoint. As the space temperature falls below the space temperature setpoint, the reheat valve shall modulate open as necessary to maintain space temperature at setpoint.
3. The CV box shall be programmed for occupied and unoccupied settings. The space temperature sensor shall have a push-button override to index the space to the occupied mode for a timed period.
4. DDC Points:

a. Supply damper control
b. Supply damper position
c. Supply air flow w/ high/low alarms
d. Reheat coil valve control
e. Space temperature w/ high/low alarms

G. Elevator Hoist Way and Stair Vents

1. Top of elevator shaft smoke detector provided by others shall activate and open ALD to relieve smoke, or in the case of lower elevator machine room or stairs as noted in documents, start fan and open motorized damper. FAS will provide automatic override as needed.

H. Hot Water Unit Heater/Cabinet Unit Heater

1. The BMS contractor shall furnish, install, and wire a thermostat and control valve to control the unit heater. On a fall in space temperature below set point, the thermostat shall open the valve and energize the unit fan. On a rise in space temperature, the fan shall be de-energized and the valve shall close.
2. An aqua-stat on the return line of each unit shall stop the fan when hot water is not available The UH shall be furnished with local controls for stand-alone operation.

I. Generator Room

1. When preset limits of natural gas or carbon monoxide are exceeded, the gas detection system shall go into alarm.
2. The system shall provide an audible and visual alarm at the preset low limit. At the high limit, the system shall provide audible, visual and relay output of the condition and shall simultaneously initiate the following:
3. Shutdown all equipment including boilers and burners irrespective of mode of operation.
4. Initiate alarm condition to BMS.
5. Close the gas safety shut off valve feeding the boilers/generator.

6. Provide a break glass switch at each entrance to the boiler room. The break glass switches shall be wired such that all equipment shall be shut down when glass is broken. The BMS will monitor all break glass switch positions. If an emergency occurs, the control panels will initiate a shutdown for the plant: shutting down all pumps and closing all isolation valves. A critical alarm will be issued to the BMS.
7. Provide an alarm horn, strobe light and silence switch at each entrance to the boiler room, above the break glass switch. Alarm to activate when gas leak occurs. Horn shall be silenced from switch and strobe shall continue to operate until condition is cleared.
8. DDC Points:

a. Gas level w/ High Alarm for each sensor
b. Gas Detector Low Level Alarm
c. Gas Detector High Level Alarm
d. Break Glass Switch Status

J. Miscellaneous Alarm Point Summary

1. The following points shall be indicated/annunciated at the operator workstation:
2. DDC Points (For Each Item):

a. Domestic Gravity Water Tank - High water (Each Tank)
b. Domestic Gravity Water Tank - Low water (Each Tank)
c. Domestic Water Low Pressure Alarm
d. Domestic Water Pressure Booster Common Alarm
e. Sewerage Ejector Common Alarm
f. Elevator Sump Pump Common Alarm
g. Heat Tracing Cable Failure Alarm
h. Sump Pump Common Alarm
i. Hot Water Circulation Pump Failure Alarm
j. Domestic Water Pressure Reduction Station Failure (Two In Total)
k. Elevator Machine Room - High Temperature
l. Fire Signaling Systems Power Supply - Failure of normal power
m. Main Electric Service - System ground fault
n. Main switchboard - High Temperature
o. Aircraft Warning Light Bulb Burn-out Alarm
p. IT Closet High Temperature Alarm
q. IT Room High Temperature Alarm
r. Automatic Transfer Switch Status

PART 2 - PRODUCTS

(Not Applicable)

PART 3 - EXECUTION

(Not Applicable)

END OF SECTION 230993

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PHASE: DOB SUBMITTAL

ARCHITECT'S SEAL

ISSUE NO.	ISSUE DATE	DESCRIPTION
03	01/30/16	EARLY MEP BID PACKAGE
02	10/31/15	DESIGN DEVELOPMENT
01	9/30/15	DOB SUBMITTAL

THAMES ST.
GREENWICH ST.

KEY PLAN AND NORTH SIGN

IF THIS DRAWING IS NOT 36" X 48" IT IS A REDUCED PRINT; REFER TO GRAPHIC SCALE

SCALE: NTS

Damian Titus
APPROVED
Under Directive 2 of 1975
Date: 09/27/2016
NYC Development Hub

HVAC SEQUENCE OF OPERATIONS SHEET 2

SHEET TITLE:

EN-005.00

SHEET NUMBER:

KEY OF SYMBOLS AND ABBREVIATIONS

NOTE: THE KEY OF SYMBOLS INDICATED IS FOR CONVENIENCE ONLY AND ITEMS INDICATED ARE NOT NECESSARILY WITHIN THE SCOPE OF THE WORK.

AC	AIR CONDITIONING
ACU	AIR CONDITIONING UNIT
AD	ACCESS DOOR
AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
AL	ACOUSTICAL LINING
ALD	AUTOMATIC LOUVERED DAMPER
ALWS	ALUMINUM LOUVER AND ALUMINUM WIRE MESH SCREEN
AP	ACCESS PANEL
BD	BACK-DRAFT DAMPER
BF	BLIND FLANGE
BG	BOTTOM GRILLE
BHP	BREAK HORSEPOWER
BI	BLACK IRON
BO	BLANK OFF
BR	BOTTOM REGISTER
BTU	BRITISH THERMAL UNIT
CC	COOLING COIL
CD	CEILING DIFFUSER
CDI	THERMA-FUSER TYPE CEILING DIFFUSER
CFM	CUBIC FEET PER MINUTE
CG	CEILING GRILLE
CO	CAPPED OUTLET
COD	CORD OPERATED DAMPER
CP	CONDENSATE PUMP
CR	CEILING REGISTER
DN	DOWN
EAT	ENTERING AIR TEMPERATURE
EE	ELEVATOR EXHAUST
EF	EXHAUST FAN
EWT	ENTERING WATER TEMPERATURE
F	FILTER
FA	FACE AREA
FC	FLEXIBLE CONNECTION
FLD	FUSIBLE LINK FIRE DAMPER W/ACCESS DOOR
FLT	FLUSH TANK
FPB	FAN POWERED BOX
FSD	FIRE/SMOKE DAMPER W/FUSIBLE LINK AND ACCESS DOOR
FSD-HS	FIRE/SMOKE DAMPER (RESETTABLE TYPE) W/HEAT SENSOR & ACCESS DOOR
FSM	FIRE/SMOKE DAMPER W/FUSIBLE LINK AND ACCESS DOOR
FSM-HS	FIRE/SMOKE DAMPER (RESETTABLE TYPE) W/HEAT SENSOR & ACCESS DOOR
GC	GENERAL CONTRACTOR
GE	GENERAL EXHAUST
GI	GALVANIZED IRON
GP	GLYCOL PUMP
GPM	GALLONS PER MINUTE
HC	HEATING COIL
HP	HORSEPOWER
H&V	HEATING & VENTILATION UNIT
KE/KX	KITCHEN EXHAUST
KW	KILOWATT
LAT	LEAVING AIR TEMPERATURE
LWT	LEAVING WATER TEMPERATURE
MBH	1000 BTU PER HOUR
MCC	MOTOR CONTROL CENTER
MER	MECHANICAL EQUIPMENT ROOM
N.C.	NORMALLY CLOSED
NFA	NET FREE AREA
NIC	NOT IN CONTRACT
N.O.	NORMALLY OPEN
OA	OUTSIDE AIR
OAI	OUTSIDE AIR INTAKE
OV	OUTLET VELOCITY
PH	PRE-HEAT COIL
PIM	PRESSURE INDEPENDENT MODULE
PO	PLUGGED OUTLET
RA	RETURN AIR
RF	RETURN FAN
RF	RETURN FAN
RG	RETURN GRILLE
RHC	RE-HEAT COIL
SD	SMOKE DETECTOR
SM	SMOKE DAMPER W/ACCESS DOOR
SQ	SQUARE
SQ. FT	SQUARE FEET
SSO	SAFETY SHUT-OFF VALVE
ST	SOUND TRAP
TE/TX	TOILET EXHAUST
TRF	TRANSFER FAN
TR	TOP REGISTER
TRX	TRASH ROOM EXHAUST
UFAD	UNDER FLOOR AIR DISTRIBUTION
U.O.N	UNLESS OTHERWISE NOTED
VAV	VARIABLE AIR VOLUME
VD	VOLUME DAMPER
VFD	VARIABLE FREQUENCY DRIVE
VSC	VARIABLE SPEED CONTROLLER
WMS	WIRE MESH SCREEN

DWG NO.	DRAWING TITLE	SCALE
EN-001.00	NYS ENERGY CONSERVATION COMPLIANCE CALCULATION SHEET#1	NTS
EN-002.00	NYS ENERGY CONSERVATION COMPLIANCE CALCULATION SHEET#2	NTS
M-001.00	MECHANICAL SYMBOLS,NOTES & ABBREVIATIONS	NTS
M-099.00	SUB-CELLAR MECHANCIAL PLAN	1/4" = 1'-0"
M-100.00	CELLAR MECHANCIAL PLAN	1/4" = 1'-0"
M-101.00	GROUND LEVEL MECHANCIAL PLAN	1/4" = 1'-0"
M-102.00	LEVEL 02 MECHANCIAL PLAN	1/4" = 1'-0"
M-103.00	LEVEL 03 MECHANCIAL PLAN	1/4" = 1'-0"
M-104.00	LEVEL 03 MEZZANINE MECHANCIAL PLAN	1/4" = 1'-0"
M-105.00	LEVEL 04 MECHANCIAL PLAN	1/4" = 1'-0"
M-106.00	LEVEL 05 MECHANCIAL PLAN	1/4" = 1'-0"
M-107.00	LEVEL 06 MECHANCIAL PLAN	1/4" = 1'-0"
M-108.00	LEVEL 07 MECHANCIAL PLAN	1/4" = 1'-0"
M-109.00	LEVEL 08 MECHANCIAL PLAN	1/4" = 1'-0"
M-110.00	LEVEL 09 & 10 MECHANCIAL PLAN	1/4" = 1'-0"
M-111.00	LEVEL 11 TO 20 MECHANCIAL PLAN	1/4" = 1'-0"
M-121.00	LEVELS 21 & 22 MECHANICAL PLAN	1/4" = 1'-0"
M-123.00	LEVEL 23 TO 36 MECHANCIAL PLAN	1/4" = 1'-0"
M-137.00	LEVEL 37 MECHANICAL PLAN	1/4" = 1'-0"
M-138.00	LEVEL 38 MECHANICAL PLAN	1/4" = 1'-0"
M-139.00	LEVEL 39 TO 43 MECHANCIAL PLAN	1/4" = 1'-0"
M-144.00	LEVEL 44 MECHANICAL PLAN	1/4" = 1'-0"
M-145.00	LEVEL 45 TO 52 MECHANCIAL PLAN	1/4" = 1'-0"
M-153.00	LEVEL 53 TO 56 MECHANCIAL PLAN	1/4" = 1'-0"
M-157.00	LEVEL 57 TO 59 MECHANCIAL PLAN	1/4" = 1'-0"
M-160.00	LEVEL 60 MECHANICAL PLAN	1/4" = 1'-0"
M-161.00	LEVEL 61 MECHANICAL PLAN	1/4" = 1'-0"
M-162.00	LEVEL 62 TO 64 MECHANICAL PLAN	1/4" = 1'-0"
M-165.00	LEVELS 65 & 66 MECHANICALPLAN	1/4" = 1'-0"
M-167.00	LEVEL 67 MECHANICAL PLAN	1/4" = 1'-0"
M-168.00	LEVEL 68 MECHANICAL PLAN	1/4" = 1'-0"
M-169.00	LEVEL 69 MECHANICAL PLAN	1/4" = 1'-0"
M-170.00	ROOF MECHANICAL PLAN	
M-301.00	MECHANICAL CHILLED & HOT WATER FLOW DIAGRAM	NTS
M-302.00	MECHANICAL CHILLED & HOT WATER RISER DIAGRAM SHEET #1	NTS
M-303.00	MECHANICAL CHILLED & HOT WATER RISER DIAGRAM SHEET #2	NTS
M-304.00	MECHANICAL AIR RISER DIAGRAM SHEET #1	NTS
M-305.00	MECHANICAL AIR RISER DIAGRAM SHEET #2	NTS
M-306.00	MECHANICAL AIR RISER DIAGRAM SHEET #3	NTS
M-307.00	MECHANICAL AIR RISER DIAGRAM SHEET #4	NTS
M-401.00	MECHANICAL SCHEDULE SHEET #1	NTS
M-402.00	MECHANICAL SCHEDULE SHEET #2	NTS
M-501.00	MECHANICAL DETAIL SHEET #1	NTS
M-502.00	MECHANICAL DETAIL SHEET #2	NTS
M-503.00	MECHANICAL DETAIL SHEET #3	NTS
M-504.00	MECHANICAL DETAIL SHEET #4	NTS
M-505.00	MECHANICAL DETAIL SHEET #5	NTS
M-506.00	MECHANICAL DETAIL SHEET #6	NTS

GENERAL NOTES

1. ALL DUCTWORK INDICATED ON DRAWINGS IS SCHEMATIC. THEREFORE, CHANGES IN DUCT SIZES AND/OR LOCATIONS SHOULD BE MADE WHERE NECESSARY TO CONFORM TO SPACE CONDITIONS.

2. ALL DUCTWORK TO BE KEPT AS HIGH AS POSSIBLE SO AS TO MAINTAIN CEILING HEIGHTS SHOWN ON ARCHITECTURAL DRAWINGS.

3. WHERE PIPING. LIGHTS AND DUCTWORK CONFLICT, DUCTWORK SHALL BE SET UP AND DOWN.

4. ACCESS IS REQUIRED BELOW ALL DAMPERS, AC UNITS, VALVES AND TERMINAL BOXES.

5. FOR EXACT LOCATION OF CEILING DIFFUSERS AND REGISTERS, REFER TO ARCHITECT'S REFLECTED CEILING PLAN.

6. CONTRACTOR SHALL REVIEW ARCHITECTURAL PLANS AND SHALL BE RESPONSIBLE FOR FURNISHING ALL AIR OUTLETS WITH FRAMES AND BORDER COMPATIBLE WITH CEILING CONSTRUCTION.

7. FOR EXACT LOCATIONS OF THERMOSTATS, HUMIDISTATS AND SWITCHES, REFER TO ARCHITECTURAL DRAWINGS.

8. PROVIDE COMBINATION FIRE/SMOKE DAMPERS (WITH ACCESS DOORS) WHERE SHOWN ON DRAWINGS.

a. POINT OF PASSING THROUGH SHAFT WALLS TO CONNECT TO VERTICAL RISERS.

b. WHERE PASSING THROUGH FLOOR OR CEILING CONSTRUCTION (NOT IN AIR SHAFTS).

c. WHERE PASSING THROUGH FIRE RATED PARTITIONS (REFER TO ARCHITECTURAL DRAWINGS FOR LOCATION OF FIRE RATED PARTITION).

d. WHERE INDICATED OR REQUIRED BY CODE.

e. PROVIDE FSD/HS IN ALL DUCTS ASSOCIATED WITH SMOKE PURGE SYSTEM.

9. ACCESS IS REQUIRED BELOW ALL DAMPERS, VALVES, EXPANSION JOINTS, AIR TERMINAL BOXES, ACCESS DOORS IN DUCTWORK AND OTHER MECHANICAL EQUIPMENT.

10. PROVIDE DRAIN VALVES AT ALL LOW POINTS OF ALL WATER SYSTEMS.

11. PROVIDE AUTOMATIC VENTS AT ALL HIGH POINTS OF ALL WATER SYSTEMS.

12. PROVIDE ON ALL MAIN BRANCH PIPING ONE (1) SHUT-OFF VALVE ON THE SUPPLY PIPE AND ONE (1) COMBINATION SHUT-OFF/BALANCING VALVE WITH PRESSURE TAPS AND MEMORY STOP ON THE RETURN PIPE.

13. PROVIDE VOLUME DAMPERS (VD) AT EVERY DUCTWORK BRANCH, TAP AND SPLIT. DO NOT INSTALL VOLUME DAMPERS ON MEDIUM PRESSURE DUCTWORK.

14. PROVIDE ACCESS DOORS IN DUCTWORK OR PLENUMS WHERE INDICATED OR REQUIRED FOR ACCESS TO SYSTEM COMPONENTS INCLUDING, BUT NOT LIMITED TO THE FOLLOWING:

a. AUTOMATIC DAMPERS.
b. FILTER BANKS
c. FIRE DAMPERS.
d. COMBINATION FIRE SMOKE DAMPERS.

15. FOR AREAS WITH INACCESSIBLE CEILINGS, VOLUME DAMPERS SHALL BE PROVIDED WITH METAL FLEXIBLE CORD OPERATORS FOR REMOTE OPERATION OF DAMPERS.

16. WATER PIPING:

a. PROVIDE MINIMUM PITCH TO INSURE ADEQUATE VENTING AND DRAINAGE.
b. PROVIDE AS REQUIRED, AUTOMATIC AIR VENTS, MANUAL AIR VENTS AND RELIEF VALVES.

17. FOR PIPE CONNECTIONS DETAILS FOR EQUIPMENT, SEE DETAIL SHEET DRAWINGS AND SPECIFICATIONS.

18. ALL MOTOR STARTERS LOCATED OUTDOORS OR EXPOSED TO WET OR DAMP CONDITIONS SHALL BE NEMA TYPE 4.

19. NO PIPING SHALL BE SMALLER THAN 3/4 INCH UNLESS OTHERWISE NOTED.

20. FOR PIPE SIZES NOT INDICATED ON PLANS, SEE EQUIPMENT CONNECTION DETAILS.

21. PROVIDE FITTINGS FOR CHANGE IN PIPE SIZES FOR FINAL CONNECTIONS AS REQUIRED.

22. PROVIDE UNION OR FLANGED CONNECTIONS AT EACH PIECE OF EQUIPMENT AND ON BOTH SIDES OF CONTROL VALVES.

23. DRAINAGE PIPING PITCH NOT LESS THAN 1/8 PER FOOT.

24. ALL DUCT DIMENSIONS ARE CLEAR INSIDE DUCT DIMENSIONS

25. PROVIDE A MINIMUM OF 4 X INLET DIAMETER STRAIGHT DUCT LENGTH UPSTREAM OF ALL AIR TERMINAL BOXES AS PER DETAILS AND SPECIFICATIONS.

26. THE MINIMUM EXTERNAL STATIC PRESSURE NOTED ON THE AHU AND AC UNIT SCHEDULES IS EXCLUSIVE OF COMPONENTS FURNISHED BY THE UNIT MANUFACTURER AS PART OF THE UNIT INLCUDING, BUT NOT LIMITED TO, ALL COILS, ALL FILTERS (UNIT CASING, DISCHARGE PLENUM, DIFFUSION SECTION, HUMIDIFIER, SOUND ATTENUATOR, DAMPERS (INLET AND DISCHARGE),

27. ALL DUCTS ELBOW SHALL BE ROUND ELBOW EXCEPT WHERE THERE IS A SPACE CONDITION.

28. PROVIDE A SELF-CONTAINED HOT WATER CONTROL VALVE ON EACH PERIMETER HEATING (PER BAY) SIMILAR TO DANFOSS VALVE.

29. PROVIDE DRIP PAN UNDER PIPING SERVING IDF, SECURITY, AUDIO VISUAL ROOMS, EMR.

30. ALL DUCTS SERVING ELEVATOR HOISTWAY FOR SMOKE VENTING SHALL BE PROVIDED WITH TWO (2) HOUR RATED ENCLOSURE.

31. MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR CONTROLLED INSPECTION AS PART OF THIS CONTRACT. MECHANICAL CONTRACTOR SHALL PROVIDE THE NAME OF A LICENSED PROFESSIONAL ENGINEER TO ARCHITECT WHEN AWARDED THE CONTRACT.

32. PROVIDE SMOKE DETECTOR AT SUPPLY MAIN DUCT FOR A.C. UNIT WITH AIR CAPACITY MORE THAN 2000 CFM AND PROVIDE SMOKE DETECTOR FOR BOTH SUPPLY AND RETURN MAIN DUCT FOR A.C. UNIT WITH AIR CAPACITY MORE THAN 15,000 CFM.

33. ALL METAL LOUVERS, AND ALL BLANK OFF PANELS (INSULATED OR NOT INSULATED, ACTIVE OR INACTIVE) FOR LOUVERS SHALL BE PROVIDED UNDER ANOTHER SECTION OF THE SPECIFICATIONS. WIRE MESH SCREENS FOR LOUVERS SHALL BE PROVIDED BY THE LOUVER MANUFACTURER. ALL OTHER WIRE MESH SCREENS SHALL BE PROVIDED UNDER THIS SECTION OF THE SPECIFICATIONS.

34. ALL VALVES FOR THE PERIMETER RADIATION PIPING, SHALL BE LOCATED BEHIND ACCESSIBLE PORTIONS OF THE CONVECTOR ENCLOSURE.

35. ALL LINEAR DIFFUSERS ARE TO BE COORDINATED WITH ARCHITECTURAL PLANS FOR EXACT LENGTHS AND LOCATIONS. ACTIVE PLENUM SECTIONS SHALL BE OF THE SIZES AS SHOWN ON PLANS. EACH BRANCH TAP SERVING THE LINEAR DIFFUSER SHALL BE PROVIDED WITH A VOLUME DAMPER WHICH SHALL BE OPERABLE THROUGH THE ROOM SIDE FACE OF THE DIFFUSER. ACTIVE SUPPLY SECTIONS OF THE LINEAR DIFFUSER SHALL BE PROVIDED WITH PATTERN CONTROL DEVICES AND EQUALIZING GRIDS. ACTIVE OR INACTIVE RETURN SECTIONS SHALL NOT BE FURNISHED WITH PATTERN CONTROL OR EQUALIZING GRIDS. REFER TO SPECIFICATIONS FOR MODEL NUMBERS. ALL FINISH COLORS AND TYPES SHALL BE AS PER ARCHITECTURAL DRAWINGS AND SPECIFICATIONS.

37. THERMOSTAT SHOULD BE LOCATED 5'-0" A.F.F. AND 9" FROM EDGE OF DOOR EXCEPT IN ROOMS THAT ARE DESIGNATED AS ADA. THE THERMOSTAT SHALL BE MOUNTED 4'-0" A.F.F. IN THESE ADA ROOMS.
U.O.N. FINAL LOCATIONS TO BE VERIFIED WITH THE ARCHITECT. FINISHED PAINT COLOR TO BE SELECTED BY THE OWNER. WHIPS FOR THERMOSTAT TO BE 30' OR 50' IN LENGTH.

38. WHERE PIPING CONNECTIONS FOR EQUIPMENT SUCH AS PUMPS, HEAT EXCHANGERS, ETC. DIFFER FROM THE LINE SIZE PIPING, IT SHALL BE THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR TO FURNISH AND INSTALL THE NECESSARY REDUCER/EXPANDER FITTINGS TO ENABLE CONNECTION BETWEEN THE PIPING SYSTEM AND EQUIPMENT.

39. PROVIDE VIBRATION ISOLATION FOR ALL MECHANICAL EQUIPMENT TO PREVENT TRANSMISSION OF VIBRATION TO BUILDING STRUCTURE (REF. TO SPECIFICATION).

40. PROVIDE VIBRATION ISOLATORS FOR ALL PIPING SUPPORTS CONNECTED TO AND WITHIN 50 FEET OF ISOLATED EQUIPMENT (EXCEPT AT BASE ELBOW AND ANCHOR POINTS) THROUGHOUT MECHANICAL EQUIPMENT ROOMS.

41. LOCATE ALL TEMPERATURE, PRESSURE, AND FLOW MEASURING DEVICES IN ACCESSIBLE LOCATIONS WITH STRAIGHT SECTION OF PIPE OR DUCT UP-AND DOWNSTREAM AS RECOMMEND BY THE MANUFACTURER FOR GOOD ACCURACY.

42. CONCRETE HOUSE KEEPING PADS TO SUIT MECHANICAL EQUIPMENT SHALL BE SIZED AND LOCATED BY THE MECHANICAL CONTRACTOR. MINIMUM CONCRETE PAD THICKNESS SHALL BE 4". PAD SHALL EXTEND BEYOND THE EQUIPMENT A MINIMUM OF 6" ON EACH SIDE. CONCRETE HOUSEKEEPING PADS SHALL BE PROVIDED BY THE GENERAL CONTRACTOR. IT SHALL BE THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR TO COORDINATE SIZE AND LOCATION OF CONCRETE HOUSEKEEPING PADS WITH GENERAL CONTRACTOR.

43. ALL MISCELLANEOUS STEEL REQUIRED TO ENSURE PROPER INSTALLATION AND AS SHOWN IN DETAILS FOR PIPING, DUCTWORK, AND EQUIPMENT (UNLESS OTHERWISE NOTED) SHALL BE FURNISHED AND INSTALLED BY THE MECHANICAL CONTRACTOR.

44. PROVIDE ACCESS PANELS FOR INSTALLATION IN WALLS AND CEILINGS, WHERE REQUIRED, TO SERVICE DAMPERS, VALVES, SMOKE DETECTORS, STATIC PRESSURE SENSORS, AND OTHER CONCEALED MECHANICAL EQUIPMENT. ACCESS PANELS SHALL BE TURNED OVER TO GENERAL CONTRACTOR FOR INSTALLATION.

45. ALL AIR CONDITIONING CONDENSATE DRAIN LINES FROM EACH AIR HANDLING UNIT SHALL BE PIPED FULL SIZE OF THE UNIT DRAIN OUTLET, WITH "P" TRAP, AND PIPED TO NEAREST DRAIN. SEE DETAILS SHOWN ON THE DRAWINGS OR THE CORRECT SPECIFICATIONS FOR DEPTH OF AIR CONDITIONING CONDENSATE TRAP.

45. UNLESS OTHERWISE NOTED, ALL PIPING IS OVERHEAD, TIGHT TO UNDERSIDE OF STRUCTURE OR SLAB, WITH SPACE FOR INSULATION REQUIRED.

47. INSTALL PIPING SO THAT ALL VALVES, STRAINERS, UNIONS, TRAPS, FLANGES, AND OTHER APPURTENANCES REQUIRING ACCESS ARE ACCESSIBLE.

48. ALL VALVES SHALL BE INSTALLED SO THAT VALVE REMAINS IN SERVICE WHEN EQUIPMENT OR PIPING ON EQUIPMENT SIDE OF VALVE IS REMOVED.

49. ALL BALANCING VALVES AND BUTTERFLY VALVES SHALL BE PROVIDED WITH POSITION INDICATORS AND MAXIMUM ADJUSTABLE STOPS (MEMORY STOPS).

50. PROVIDE CHAINWHEEL OPERATORS FOR ALL VALVES IN EQUIPMENT ROOMS MOUNTED GREATER THAN 7'-0" ABOVE THE FLOOR LEVEL; CHAIN SHALL EXTEND 7'-0" ABOVE FLOOR LEVEL.

51. UNIONS AND/OR FLANGES SHALL BE INSTALLED AT EACH PIECE OF EQUIPMENT IN BYPASSES, AND IN LONG PIPING RUNS (100 FEET OR MORE) TO PERMIT DISASSEMBLY FOR ALTERATION AND REPAIRS.

52. ALL PIPING WORK SHALL BE COORDINATED WITH ALL TRADES INVOLVED. OFFSETS IN PIPING AROUND OBSTRUCTIONS SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.

53. FINNED TUBE RADIATION ENCLOSURES SHALL BE WALL TO WALL UNLESS OTHERWISE INDICATED.

54. PROVIDE FLEXIBLE CONNECTIONS IN ALL DUCTWORK SYSTEMS (SUPPLY, RETURN, AND EXHAUST) CONNECTED TO AIR HANDLING UNITS, FANS, AND OTHER EQUIPMENT WHICH REQUIRE VIBRATION ISOLATION. FLEXIBLE CONNECTIONS SHALL BE PROVIDED AT THE POINT OF CONNECTION TO THE EQUIPMENT UNLESS OTHERWISE INDICATED.

55. UNLESS OTHERWISE NOTED, ALL DUCTWORK IS OVERHEAD, TIGHT TO THE UNDERSIDE OF THE STRUCTURE, WITH SPACE FOR INSULATION REQUIRED.

56. ALL DUCTWORK SHALL BE COORDINATED WITH ALL TRADES INVOLVED. OFFSETS IN DUCTS, INCLUDING DIVIDED DUCTS AND TRANSITIONS AROUND OBSTRUCTIONS, SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.

57. PROVIDE AIR VENTS AT THE HIGH POINT OF PIPING. RUN OFF DRAINS SHOULD BE PROVIDED AT EACH VENT TO CARRY WATER TO DRAIN LINE.

58. ALL WORK AND MATERIAL TO BE IN ACCORDANCE WITH BASE BUILDING SPECIFICATIONS UNLESS NOTED OTHERWISE ON PLANS.

59. WHERE PIPING, LIGHTS AND DUCTWORK CONFLICT, DUCTWORK SHALL BE COORDINATED TO SUIT CONDITIONS.

60. ALL DUCTWORK TO BE KEPT AS HIGH AS POSSIBLE SO AS TO MAINTAIN CEILING HEIGHTS SHOWN ON ARCHITECTURAL DRAWINGS.

61. PROVIDE VOLUME DAMPERS ON ALL SPLITS AND TAPS FOR ALL DUCTWORK.

62. ACCESS IS REQUIRED BELOW ALL AUTOMATIC DAMPERS AND AC UNITS.

63. FOR EXACT LOCATION OF CEILING DIFFUSERS AND REGISTERS REFER TO ARCHITECT'S REFLECTED CEILING PLAN.

GENERAL NOTES

64. FOR EXACT LOCATION AND ARRANGEMENT OF ROOM THERMOSTATS SEE ARCHITECT'S DRAWINGS. FINAL LOCATION OF THERMOSTATS MUST BE COORDINATED WITH FURNITURE LAYOUT.
FOR COMMON AREAS OF BUILDING OR MEP ROOMS WHERE THERMOSTATS COULD NOT BE LOCATED ON ARCHITECTURAL ELEVATIONS THE THERMOSTAT SHOULD BE INSTALLED 48" ABOVE FINISHED FLOOR.

65. CONTRACTOR SHALL BALANCE ENTIRE SYSTEM TO CONFORM TO AIR QUANTITIES SHOWN.

66. MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR CONTROLLED INSPECTION AS PART OF THIS CONTRACT. MECHANICAL CONTRACTOR SHALL PROVIDE THE NAME OF A LICENSED PROFESSIONAL ENGINEER TO ARCHITECT WHEN AWARDED CONTRACT.

67. PROVIDE SMOKE DETECTOR AT SUPPLY MAIN DUCT FOR A.C. UNITS WITH AIR CAPACITY MORE THAN 2000 CFM.

68. REFER TO MECHANICAL SPECIFICATIONS FOR ADDITIONAL INFORMATION.

69. PROVIDE DUCT SMOKE DETECOTRS AS REQUIRED BY CODE WITHIN 5FT OF ANY FSD.

70. POST FIRE SMOKE PURGE SYSTEM TO BE COORDINATED WITH ARCHITECT.

71. ALL CORD OPERATED DAMPERS AND REQUIRED ACCESS DOORS FOR LINEAR DIFFUSERS IN GYP BOARD CEILINGS TO BE COORDINATED WITH ARCHITECT.

72. PROVIDE DUCT SMOKE DETECTORS WITHIN 5 FT OF ANY FSD AS REQUIRED BY CODE. REFER TO MECHANICAL DETAILS.

73. ALL INSTALLED EQUIPMENT SHALL BE TESTED AND CERTIFIED BY A NATIONALLY RECOGNIZED TESTING LABORATORY PROGRAM.

NEW YORK CITY GENERAL NOTES

1. ALL WORK AND COMPONENTS SHOWN ON THESE PLANS COMPLY WITH THE NEW YORK BUILDING LAWS (2008) AS AMENDED TO THIS DATE.

2. NEW YORK CITY ENERGY CONSERVATION (2010) RULES AND REGULATIONS HAVE BEEN FOLLOWED.

3. THE MECHANICAL SYSTEMS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE NEW YORK CITY MECHANICAL CODE 2008.

4. THE HEATING AND AIR CONDITIONING SYSTEMS HAVE BEEN DESIGNED TO MAINTAIN A MAXIMUM TEMPERATURE 68'F, AND A MINIMUM TEMPERATURE OF 76 F (WINTER-SUMMER).

5. TEMPERATURES VARYING FROM THESE POINTS WILL BE ACCOMPLISHED WITHOUT THE USE OF ADDITIONAL FUEL.

6. THE FOLLOWING U FACTORS HAVE BEEN USED IN THE CALCULATIONS:

ROOF 0.05 WALLS 0.08 WINDOWS 0.33 FLOOR SLAB _

7. OUTSIDE AIR DURING HEATING AND/OR COOLING PERIODS FOR WHICH FUEL FOR MAINTAINING TEMPERATURES IS REQUIRED, IS LIMITED TO 0.15 CFM/SQFT.

8. INSPECTIONS AND TESTING AS PER SECTION MC 107 OF NYC BUILDING CODE 2008 SHALL BE PERFORMED BY SPECIAL INSPECTORS AS RETAINED BY THE CONTRACTOR.

9. TO THE BEST OF MY KNOWLEDGE, BELIEF AND PERSONAL JUDGEMENT, THESE PLANS AND SPECIFICATIONS ARE IN COMPLIANCE WITH THE NEW YORK CITY ENERGY CONSERVATION CODE.

SPECIFIC NOTES

1. THE DUCT SYSTEMS AND ALL COMPONENTS THERETO COMPLY WITH SEC. RS 13.
A. SEE DETAIL SHEETS FOR SPECIFIC DETAILS.

2. REFRIGERATION (AIR CONDITIONING) SYSTEMS COMPLY WITH RS 13-6.

3. LIGHT, HEAT, VENTILATION AND NOISE CONTROL COMPLY WITH ARTICLE 12.

NOTE:

POST FIRE SMOKE PURGE WILL BE ACHIEVE BY STAIR VENTILATION AS PER NYC BC 2008 912.

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MECHANICAL SYMBOLS, NOTES & ABBREVIATIONS

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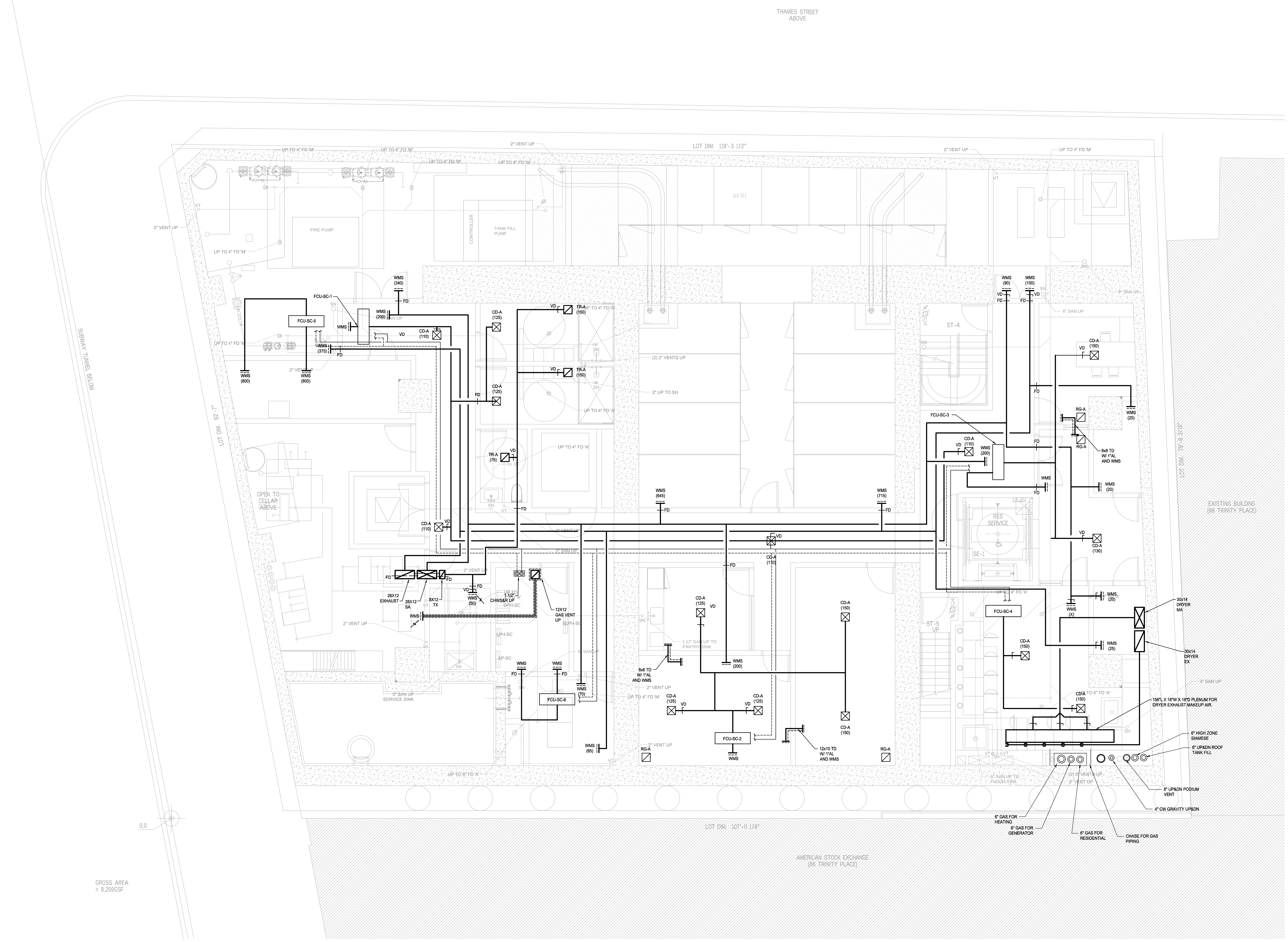

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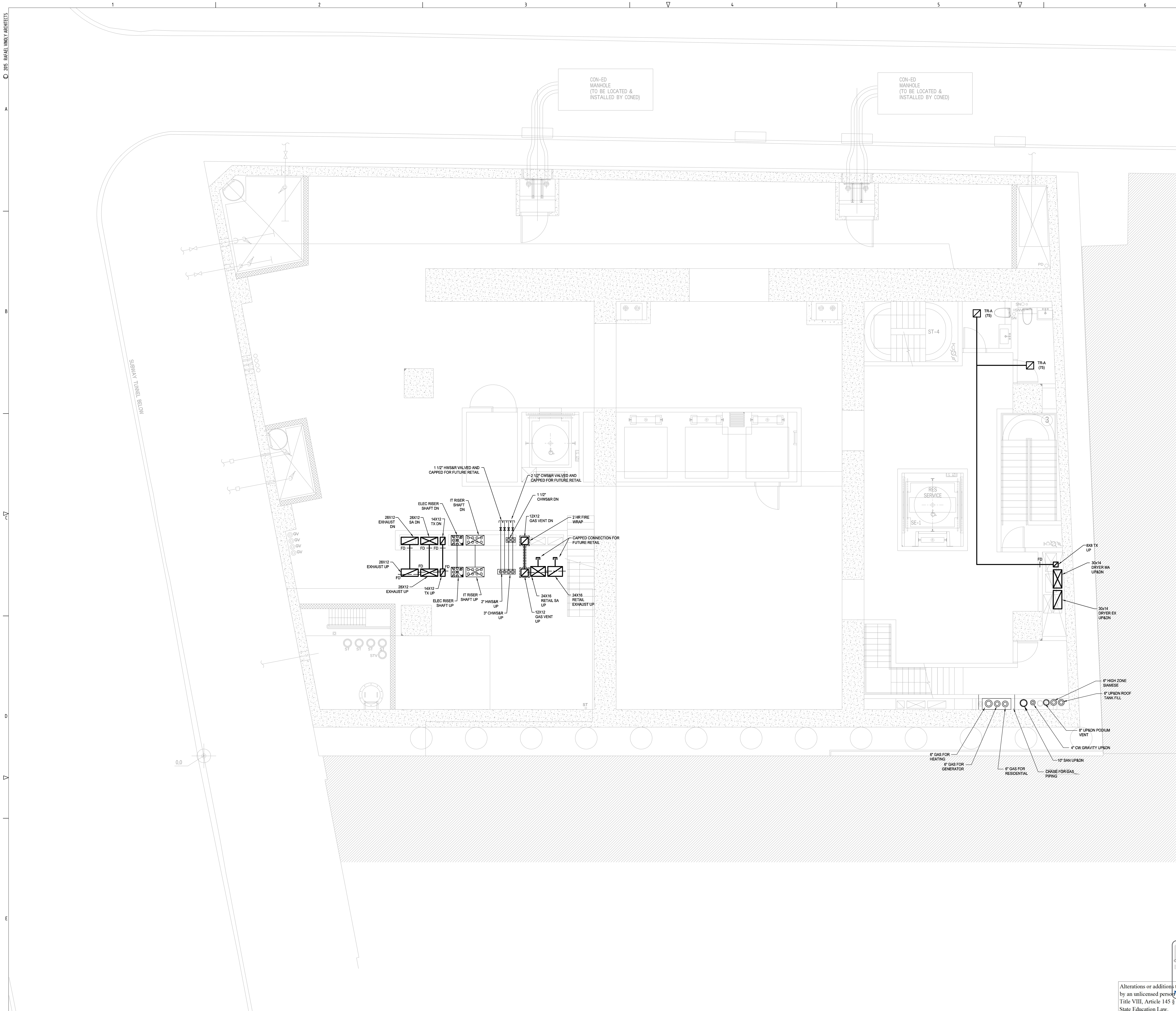
M-099.00

SHEET NUMBER :



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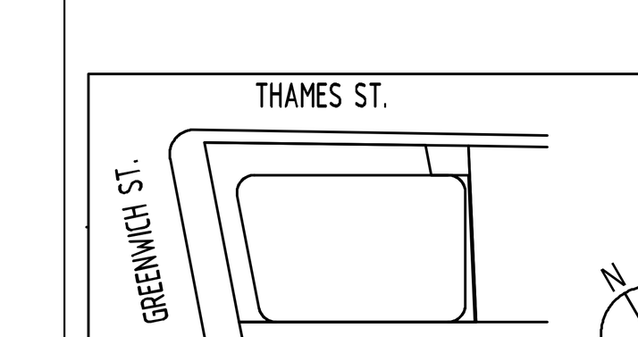

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MECHANICAL PLANS

SHEET TITLE :

M-100.00

SHEET NUMBER :

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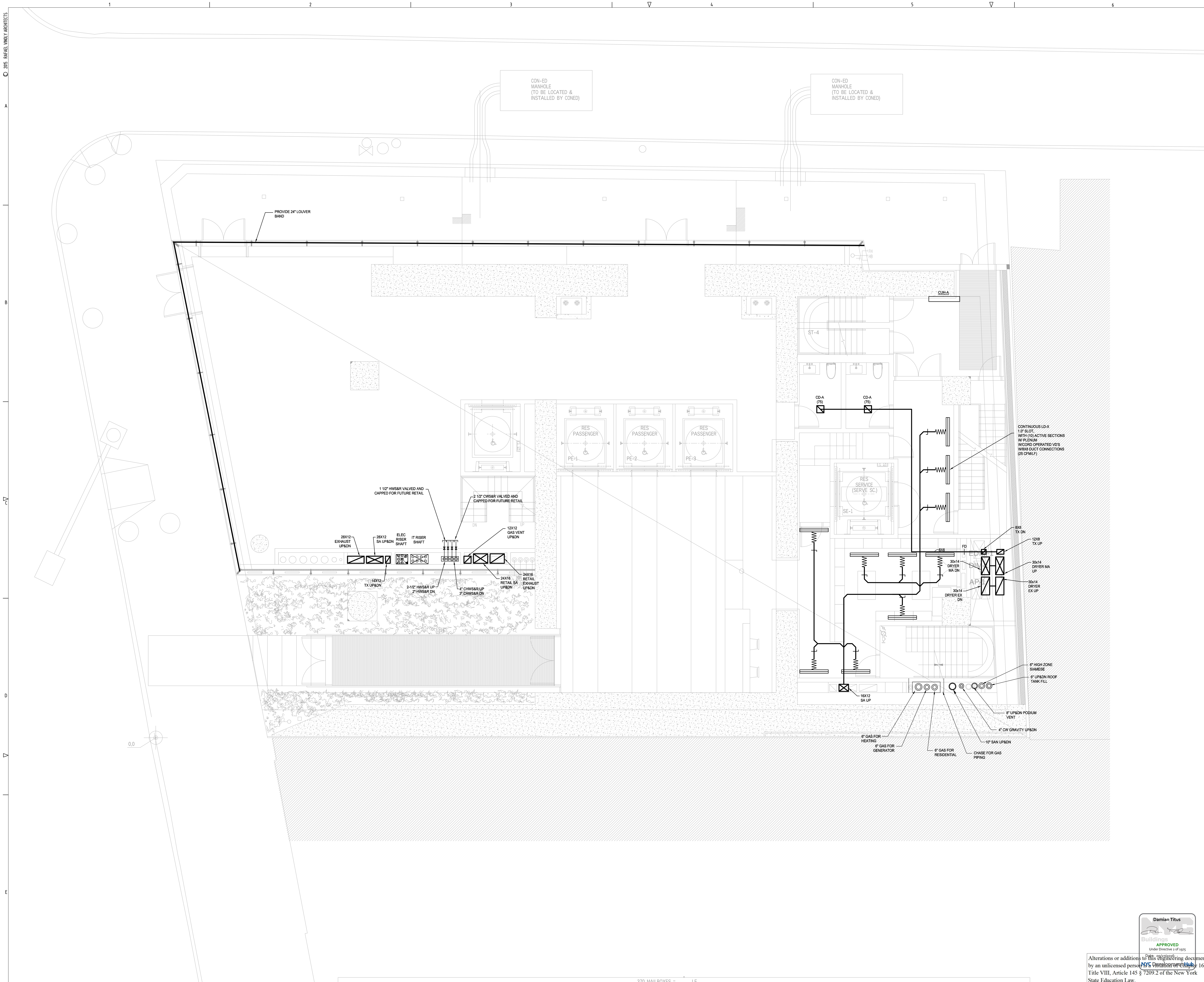

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GROUND LEVEL MECHANICAL PLAN

SHEET TITLE :

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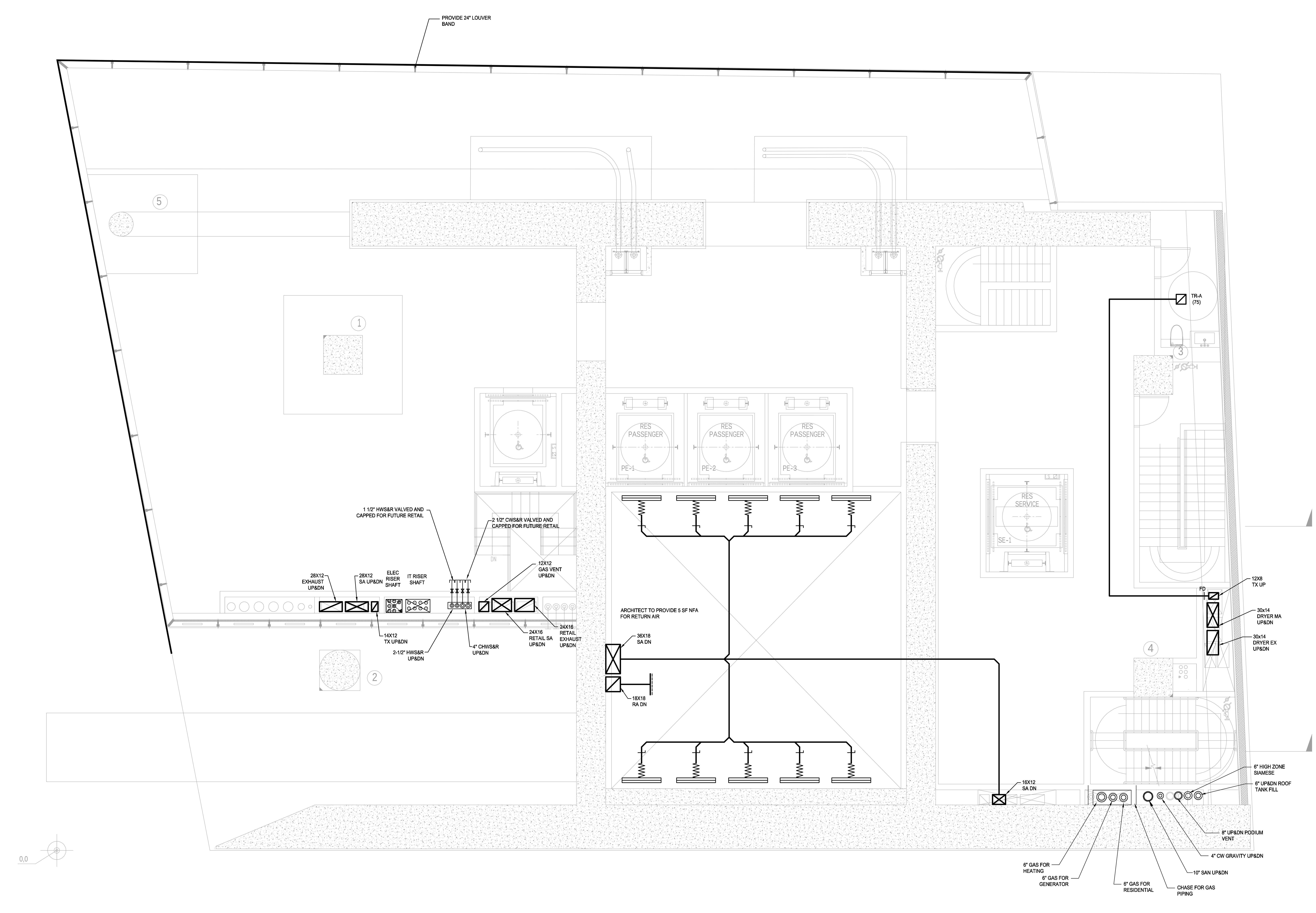

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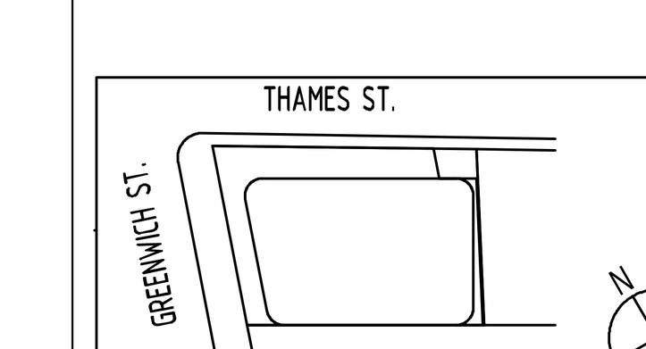

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LEVEL 02 MECHANICAL PLANS

SHEET TITLE :

M-102.00

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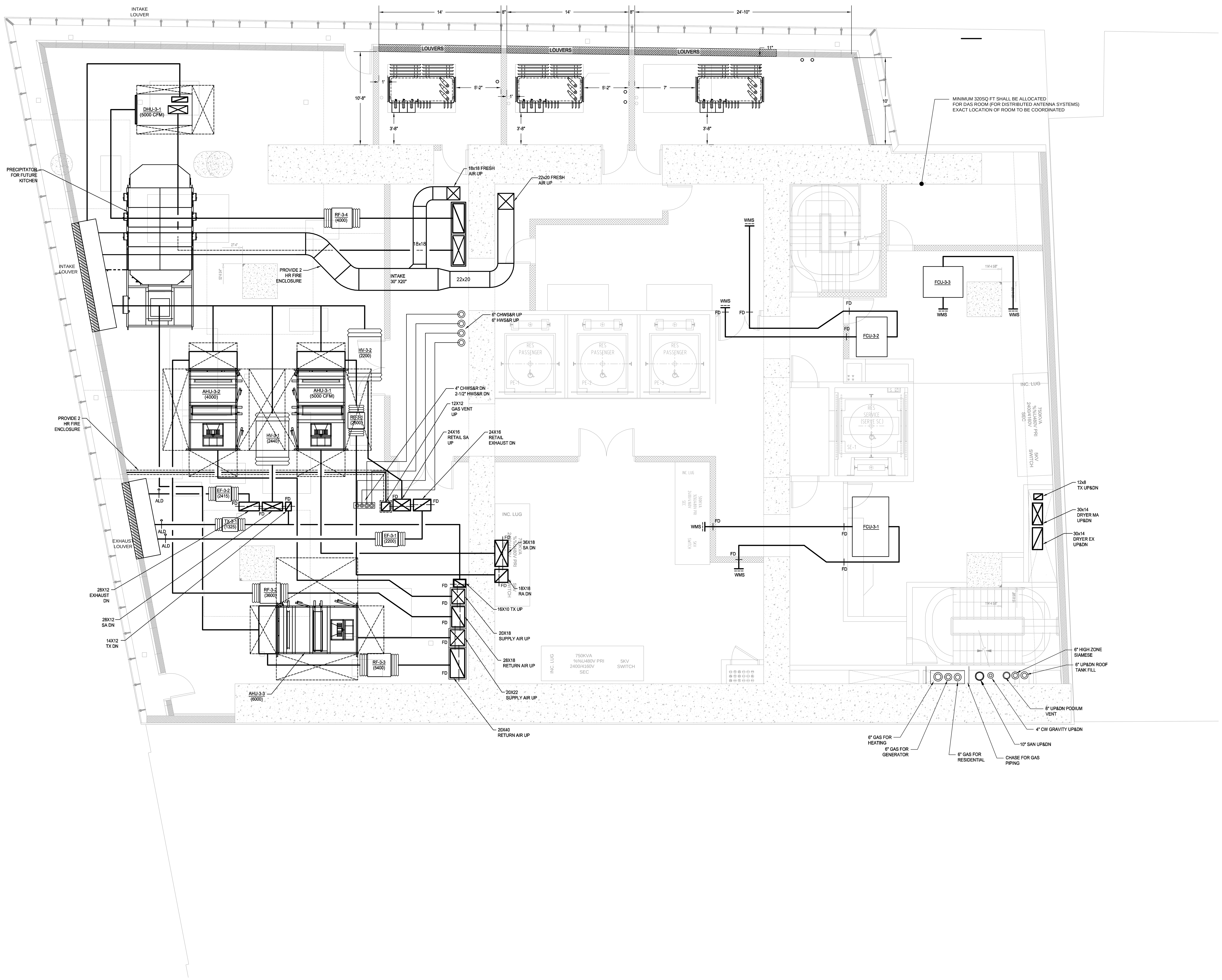

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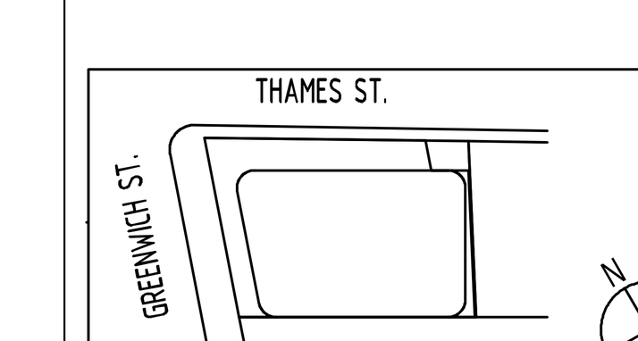

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LEVEL 03
MECHANICAL PLAN

SHEET TITLE :

M-103.00

SHEET NUMBER :

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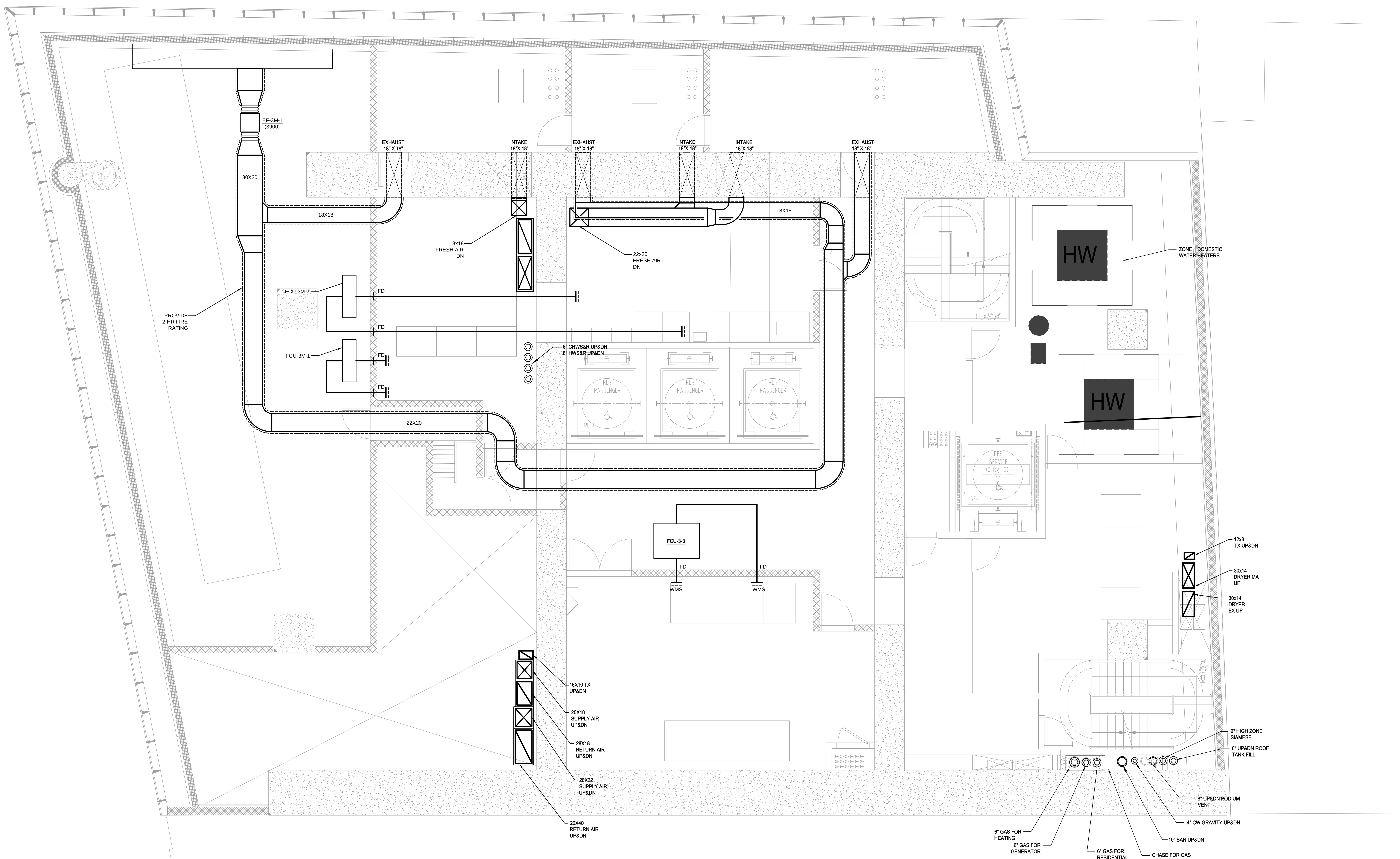

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MEZZANINE LEVEL
MECHANICAL PLAN

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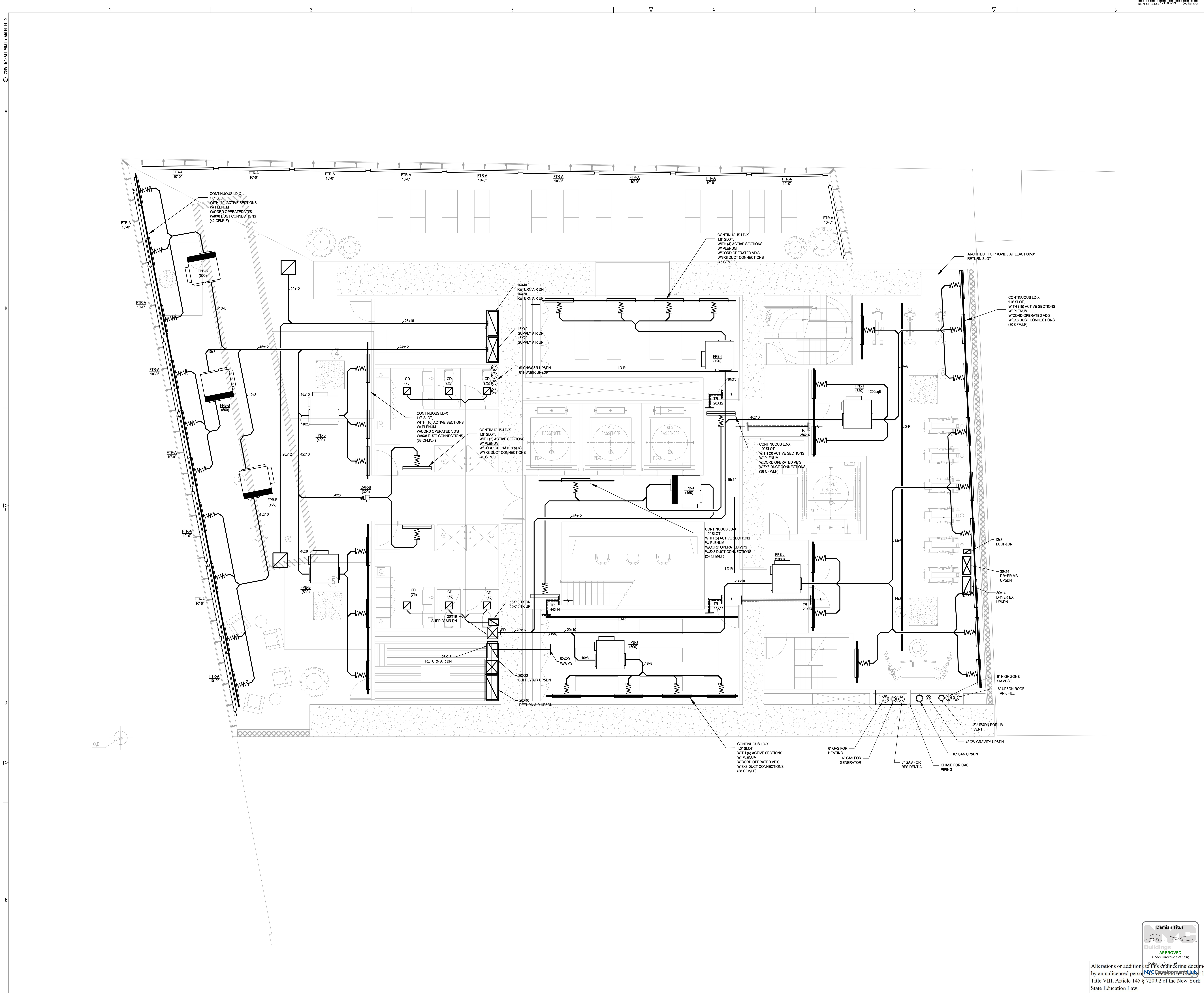

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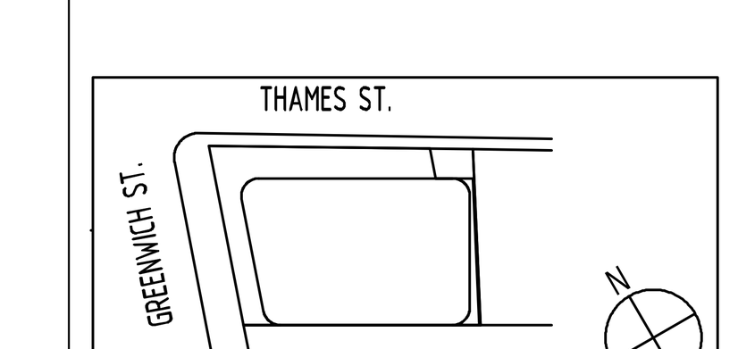
02	05/15/15	SD UPDATE
01	03/06/15	SCHEMATIC DESIGN



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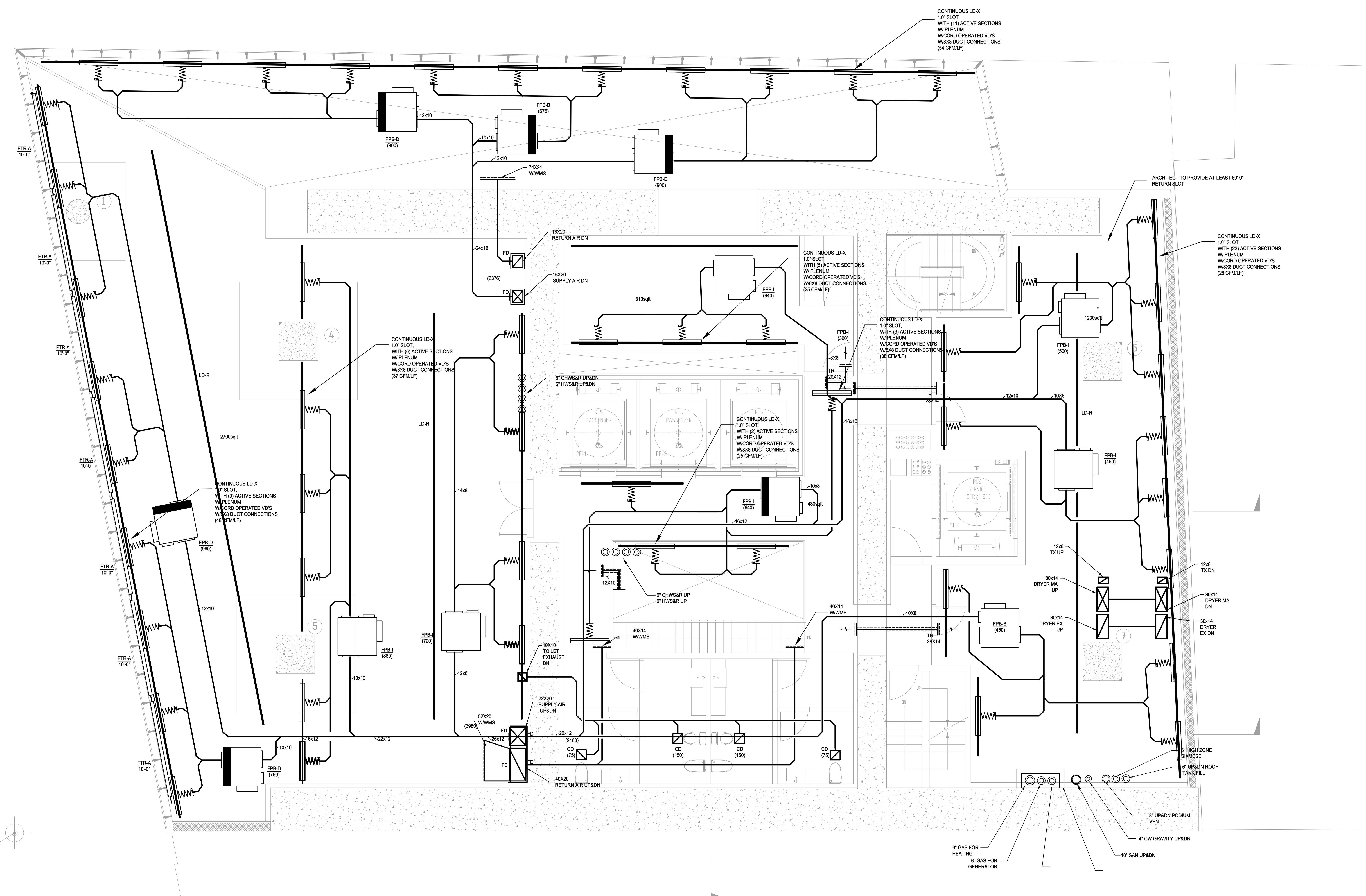

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VAN DEUSEN & ASSOCIATES
120 EAGLE ROCK AVENUE, SUITE 310
EAST HANOVER, NJ 07936
TEL: 973 994 9220

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STATE OF NEW YORK MICHAEL W. MAYBAUM No. 059357 P.E. LICENSED PROFESSIONAL ENGINEER

ARCHITECT'S SEAL

ISSUE NO.	ISSUE DATE	DESCRIPTION
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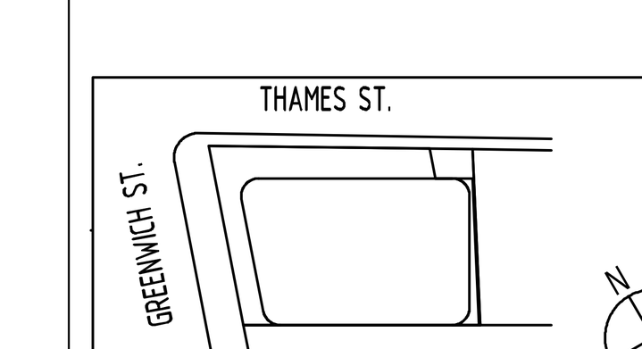
02	05/15/15	SD UPDATE
01	03/06/15	SCHEMATIC DESIGN



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SCALE

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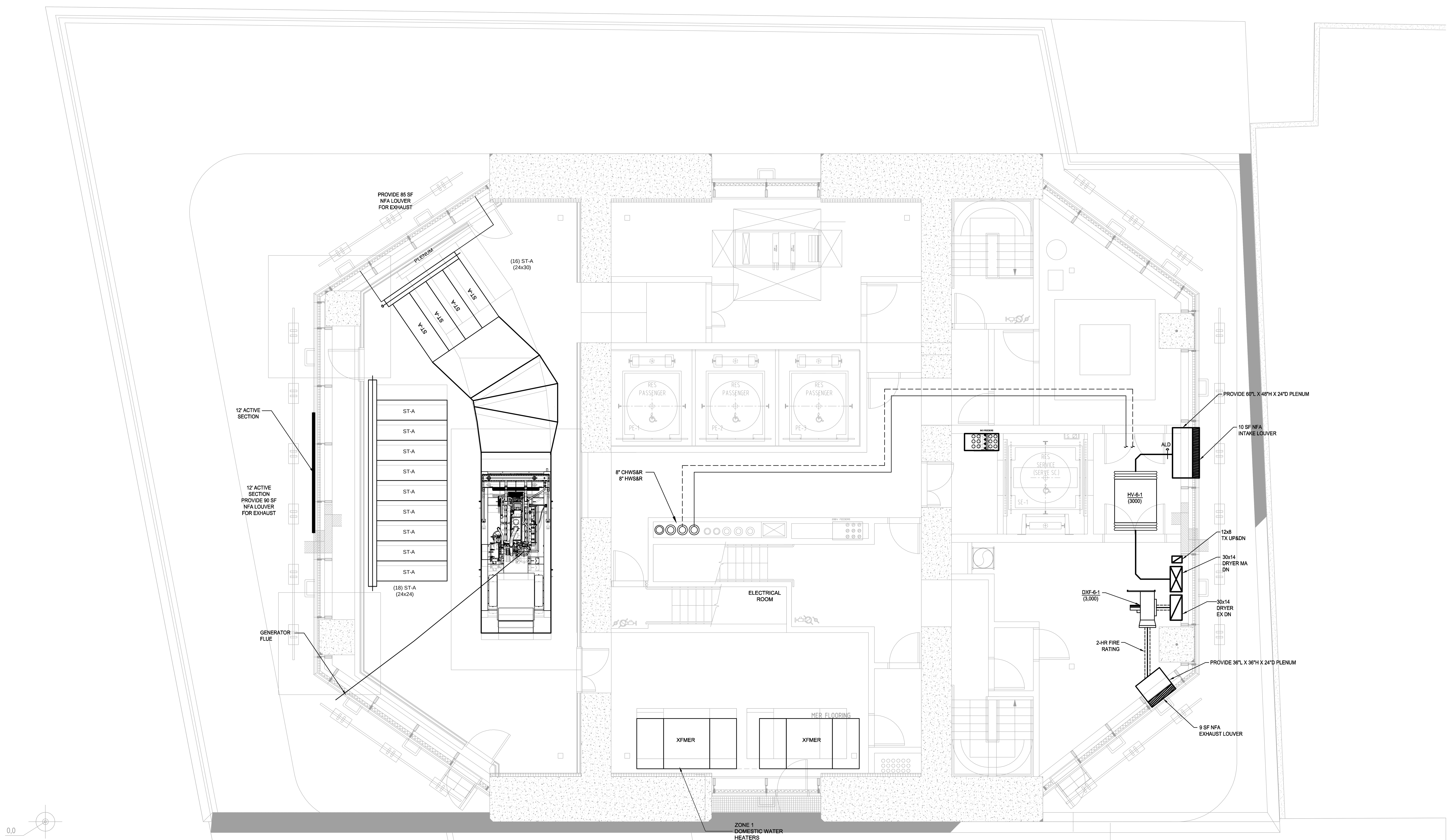
LEVEL 05
MECHANICAL PLAN

SHEET TITLE :

M-106.00

SHEET NUMBER :



125 GREENWICH
NEW YORK, NY

OWNER :
VS 125 LLC
55 EAST 59TH STREET, 24TH FLOOR
NEW YORK, NY 10022
TEL: 212 616 0400

ARCHITECT :
RAFAEL VIÑOLY ARCHITECTS PC
50 VANDAM STREET
NEW YORK, NY 10013
TEL: 212 924 5060 FAX: 212 924 5858

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DESIMONE CONSULTING ENGINEERS
18 WEST 18TH STREET, 10TH FLOOR
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TEL: 212 615 3606

GEOTECH CONSULTANT :
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619 RIVER DRIVE CENTER 1
ELMWOOD PARK, NJ 07407
TEL: 201 794 6900

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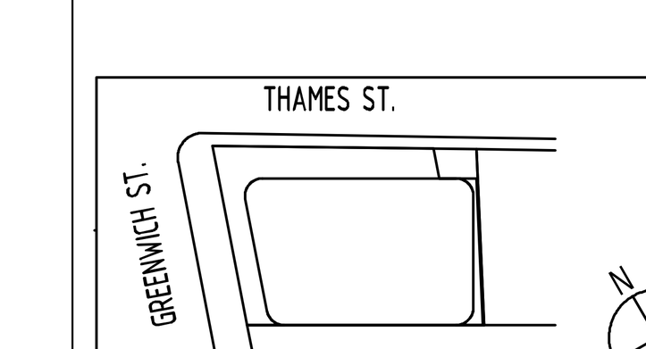
ARCHITECT'S SEAL

ISSUE NO.	ISSUE DATE	DESCRIPTION
01	9/30/15	DOB SUBMITTAL



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LEVEL 06
MECHANICAL PLAN

SHEET TITLE :

M-107.00

SHEET NUMBER :

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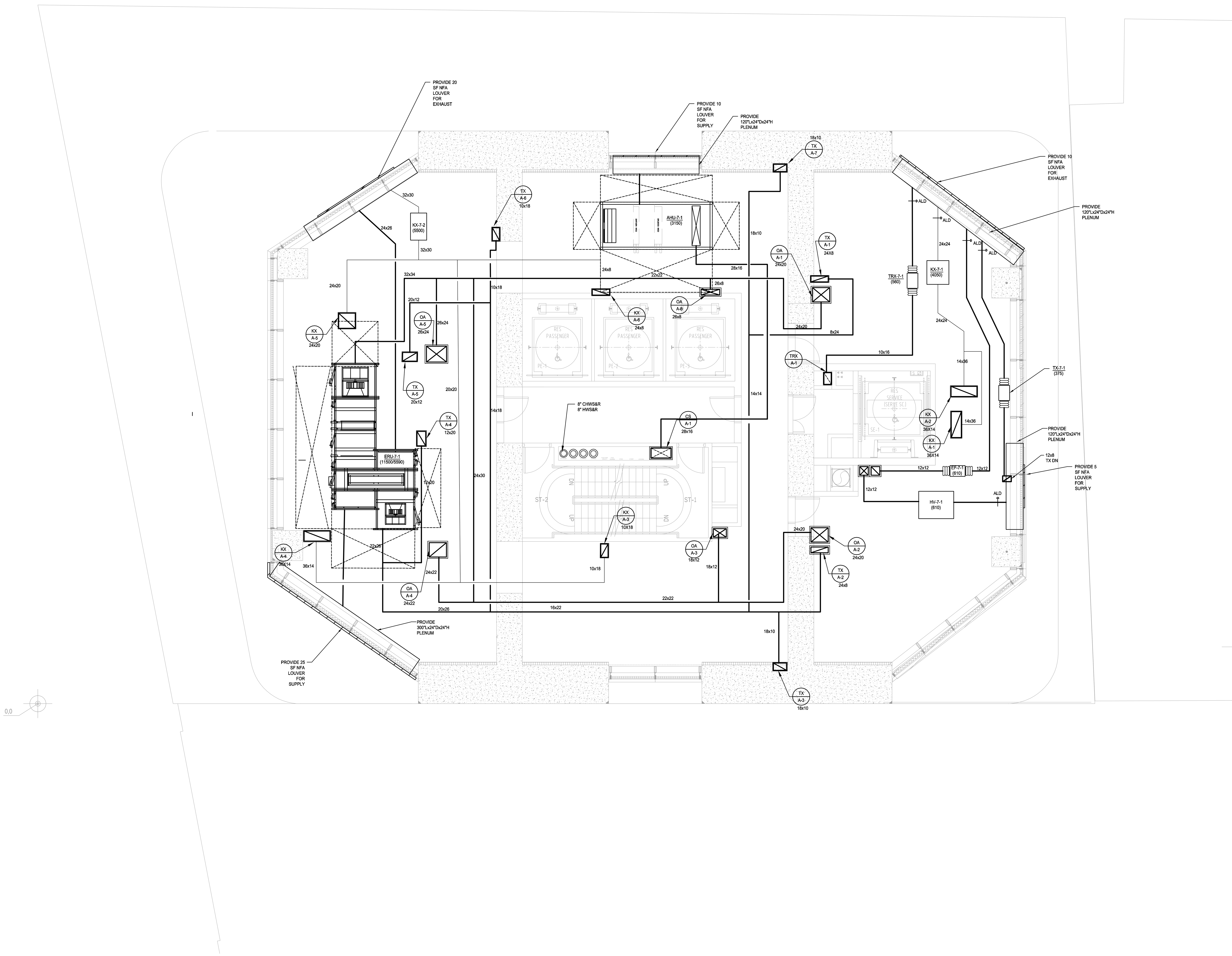

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TEL: 212 532 2211

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TEL: 212 615 3606

GEOTECH CONSULTANT :
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TEL: 201 794 6900

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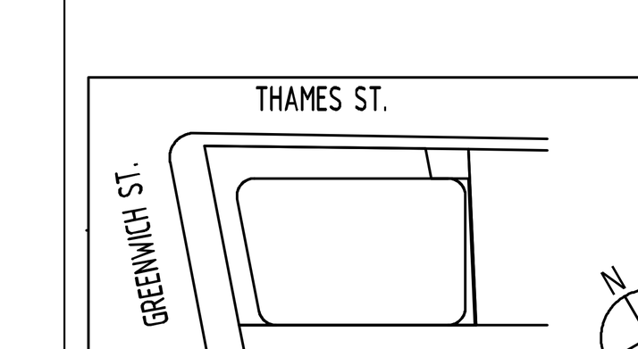
ISSUE NO.	ISSUE DATE	DESCRIPTION
01	9/30/15	DOB SUBMITTAL



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SCALE 1/4" = 1'-0"

LEVEL 07
MECHANICAL PLAN

SHEET TITLE :

M-108.00

SHEET NUMBER :

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ES583637963 Scan Code

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Job Number
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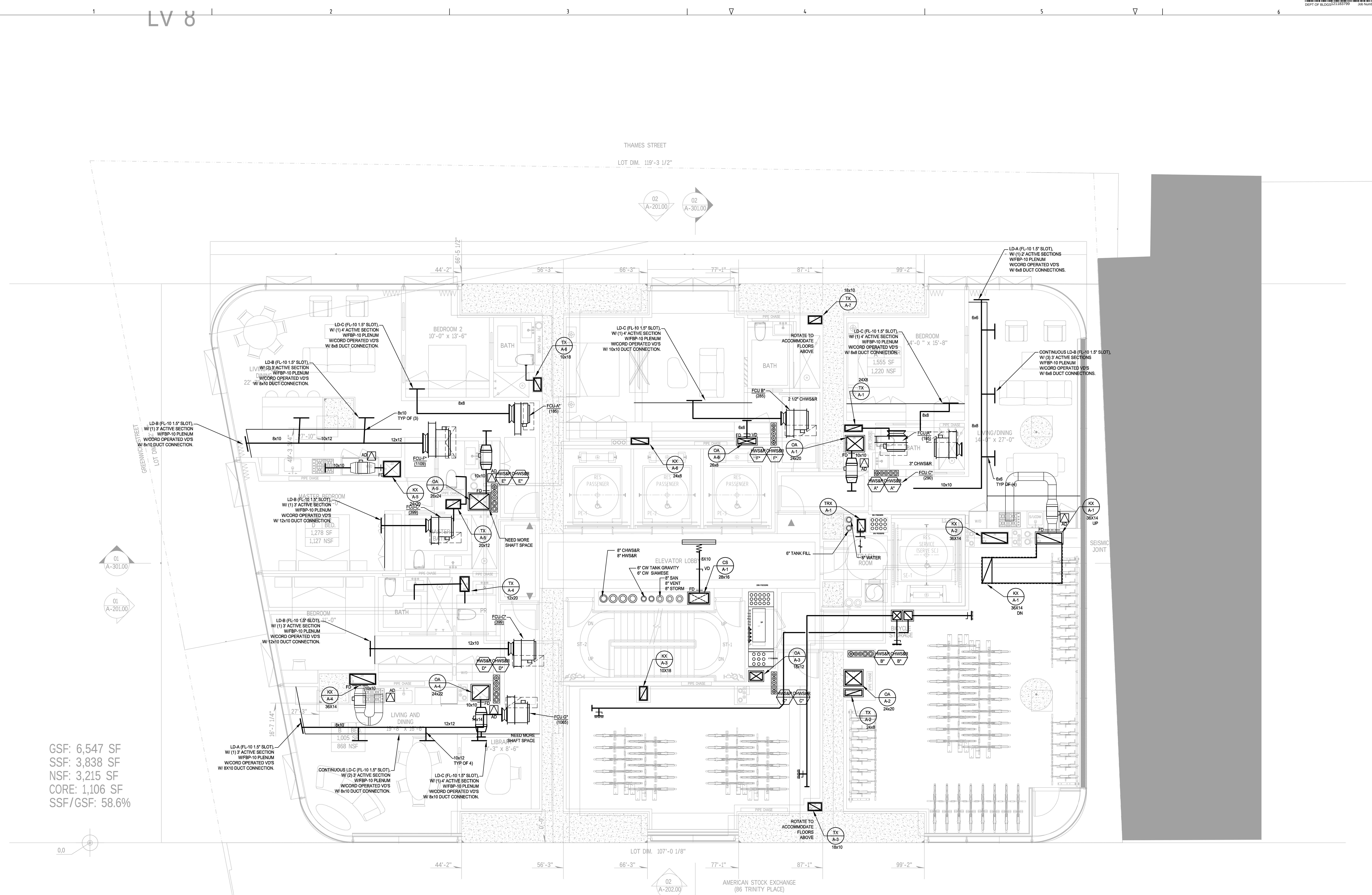

125 GREENWICH
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OWNER :
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ARCHITECT :
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TEL: 212 924 5060 FAX: 212 924 5858

STRUCTURAL ENGINEER :
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TEL: 212 532 2211

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ARCHITECT'S SEAL

ISSUE NO.	ISSUE DATE	DESCRIPTION
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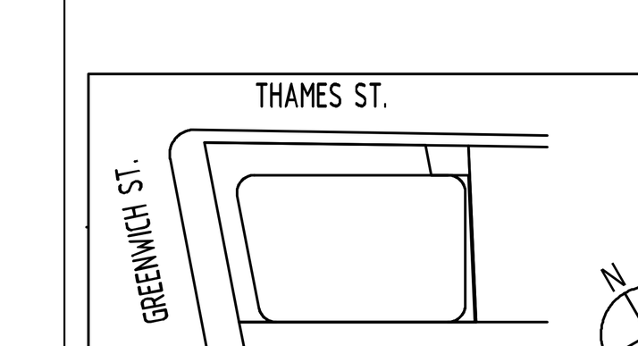

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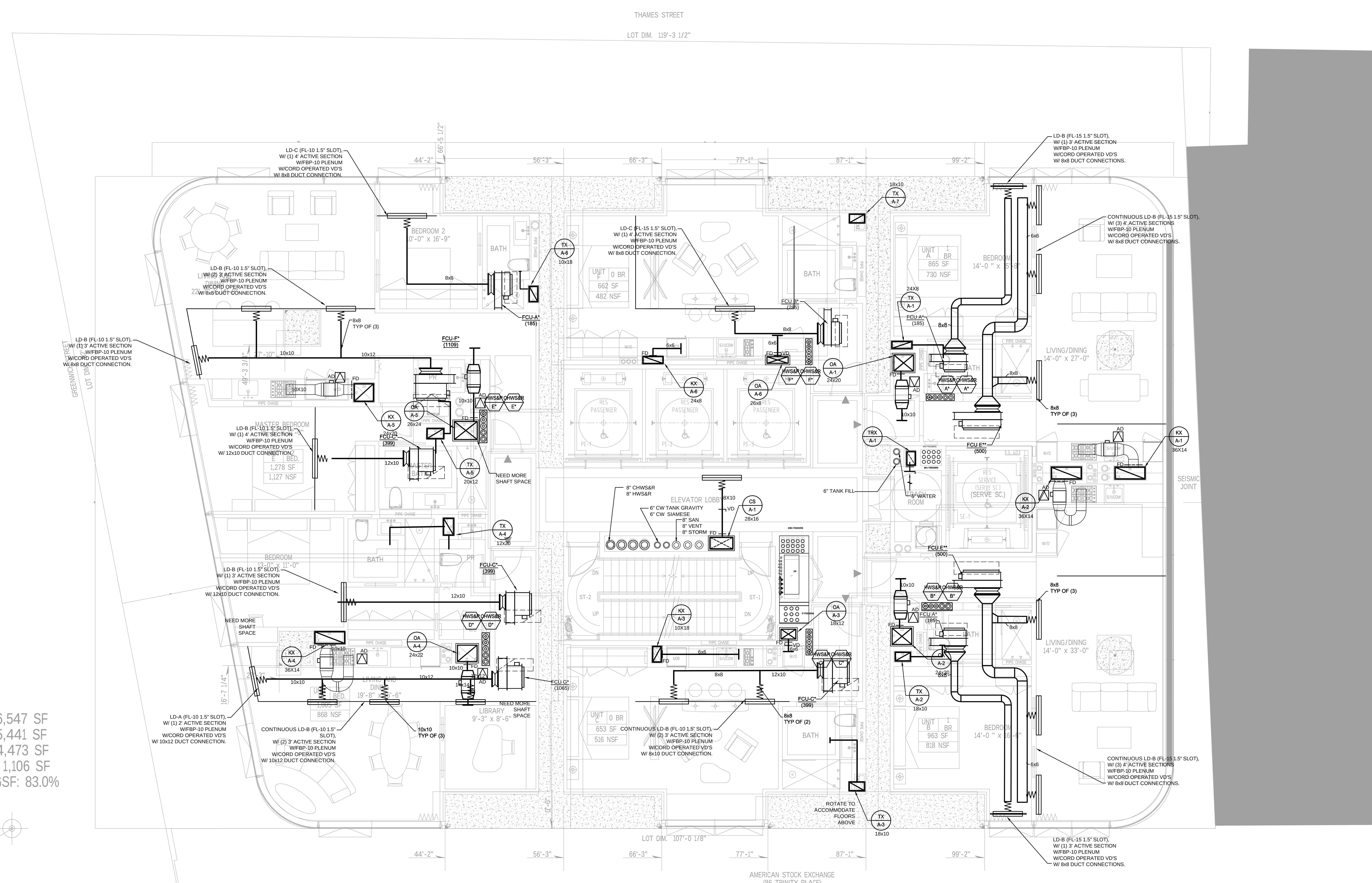
LEVEL 08
MECHANICAL PLAN

SHEET TITLE :

M-109.00

SHEET NUMBER :



GSF: 6,547 SF
SSF: 5,441 SF
NSF: 4,473 SF
CORE: 1,106 SF
SSF/GSF: 83.0%

125 GREENWICH
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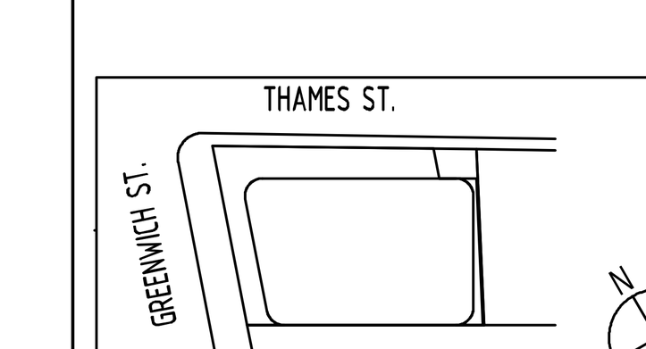

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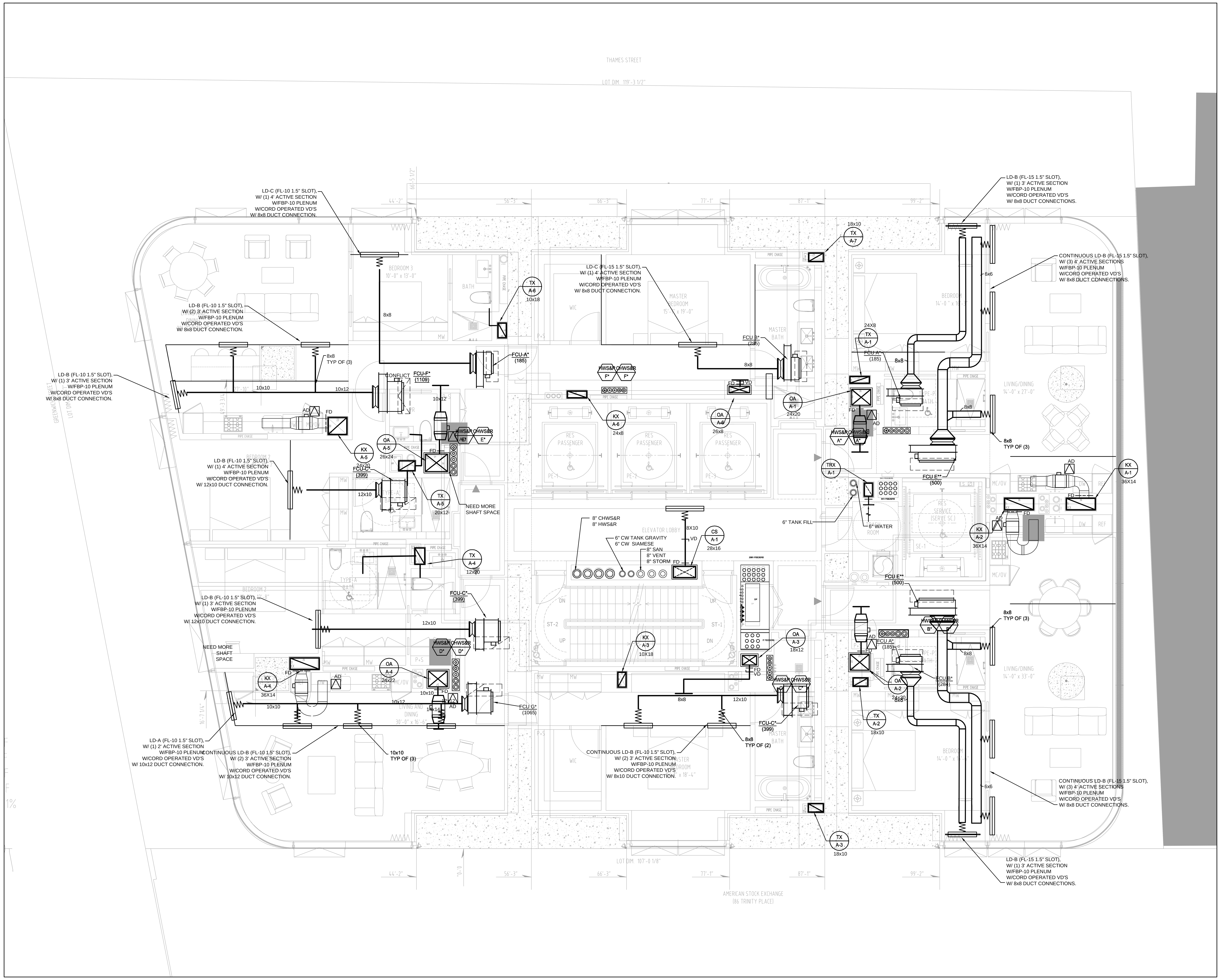
LEVEL 9 & 10 MECHANICAL PLAN

SHEET TITLE :

M-110.00

SHEET NUMBER :



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ISSUE NO.	ISSUE DATE	DESCRIPTION
01	9/30/15	DOB SUBMITTAL

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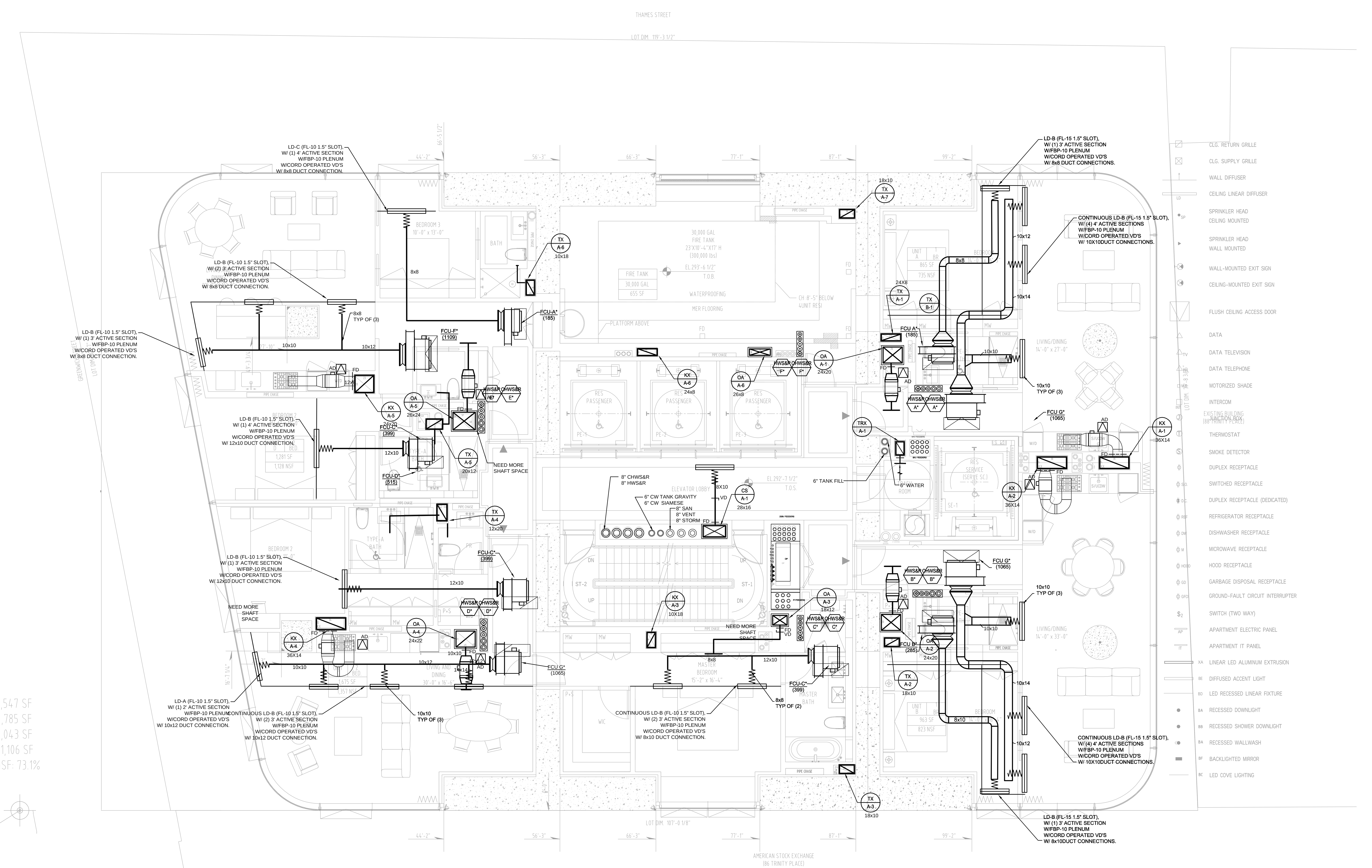
LEVEL 11 TO 20
MECHANICAL PLAN

SHEET TITLE :

M-111.00

SHEET NUMBER :



ES272832098 Scan Code

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NEW YORK, NY 10011
TEL: 212 532 2211

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TEL: 212 615 3606

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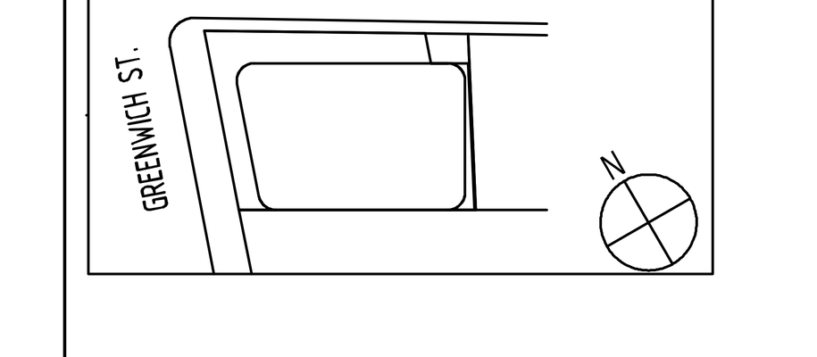

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LEVELS 21 & 22
MECHANICAL PLAN

SHEET TITLE :

M-121.00

SHEET NUMBER :

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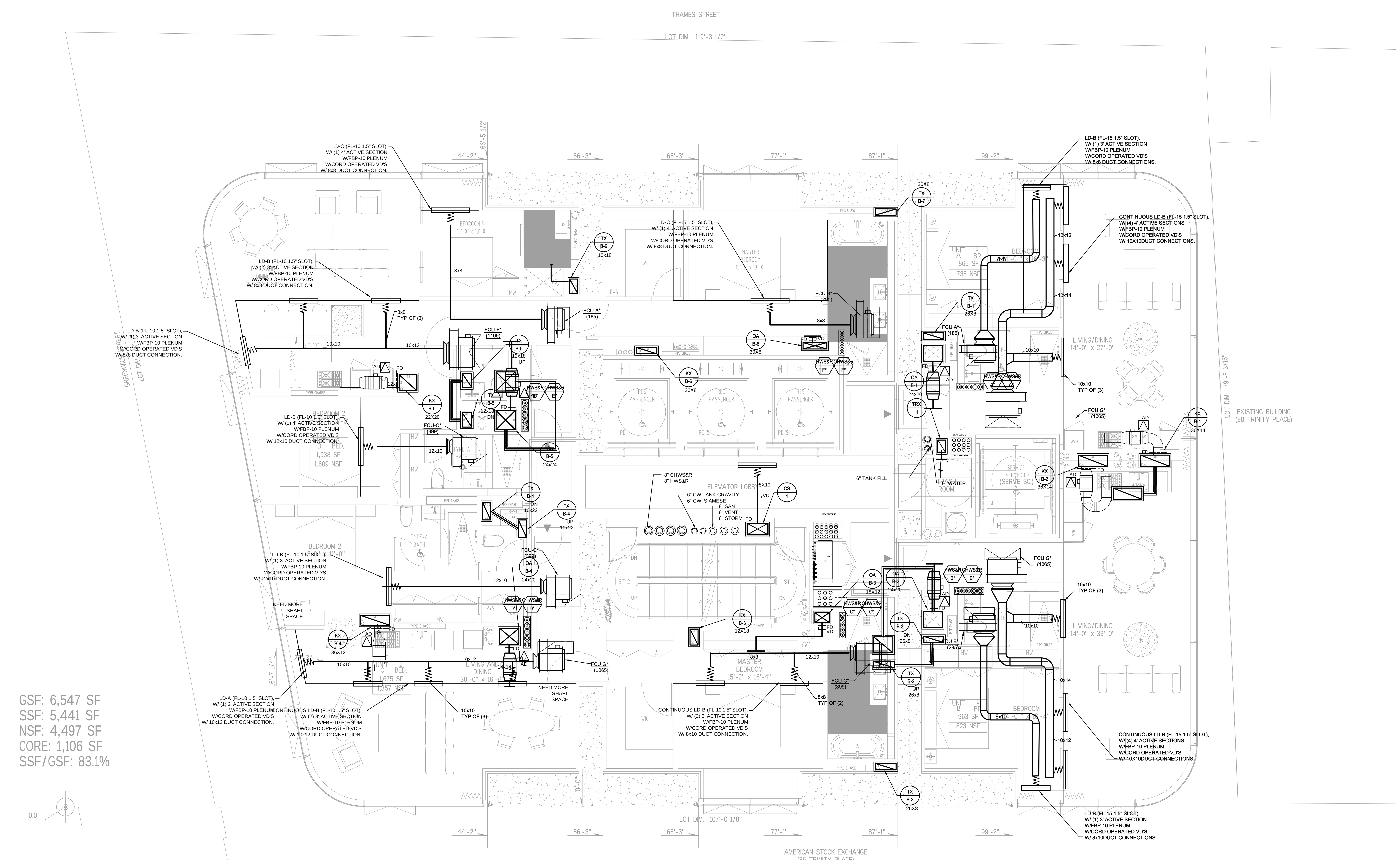

125 GREENWICH
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STRUCTURAL ENGINEER :
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18 WEST 18TH STREET, 10TH FLOOR
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TEL: 212 615 3606

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ISSUE NO.	ISSUE DATE	DESCRIPTION
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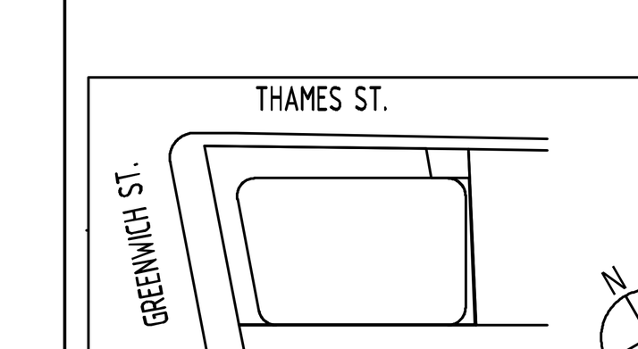

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LEVEL 23 TO 36
MECHANICAL PLAN

SHEET TITLE :

M-123.00

SHEET NUMBER :

ES747818353 Scan Code

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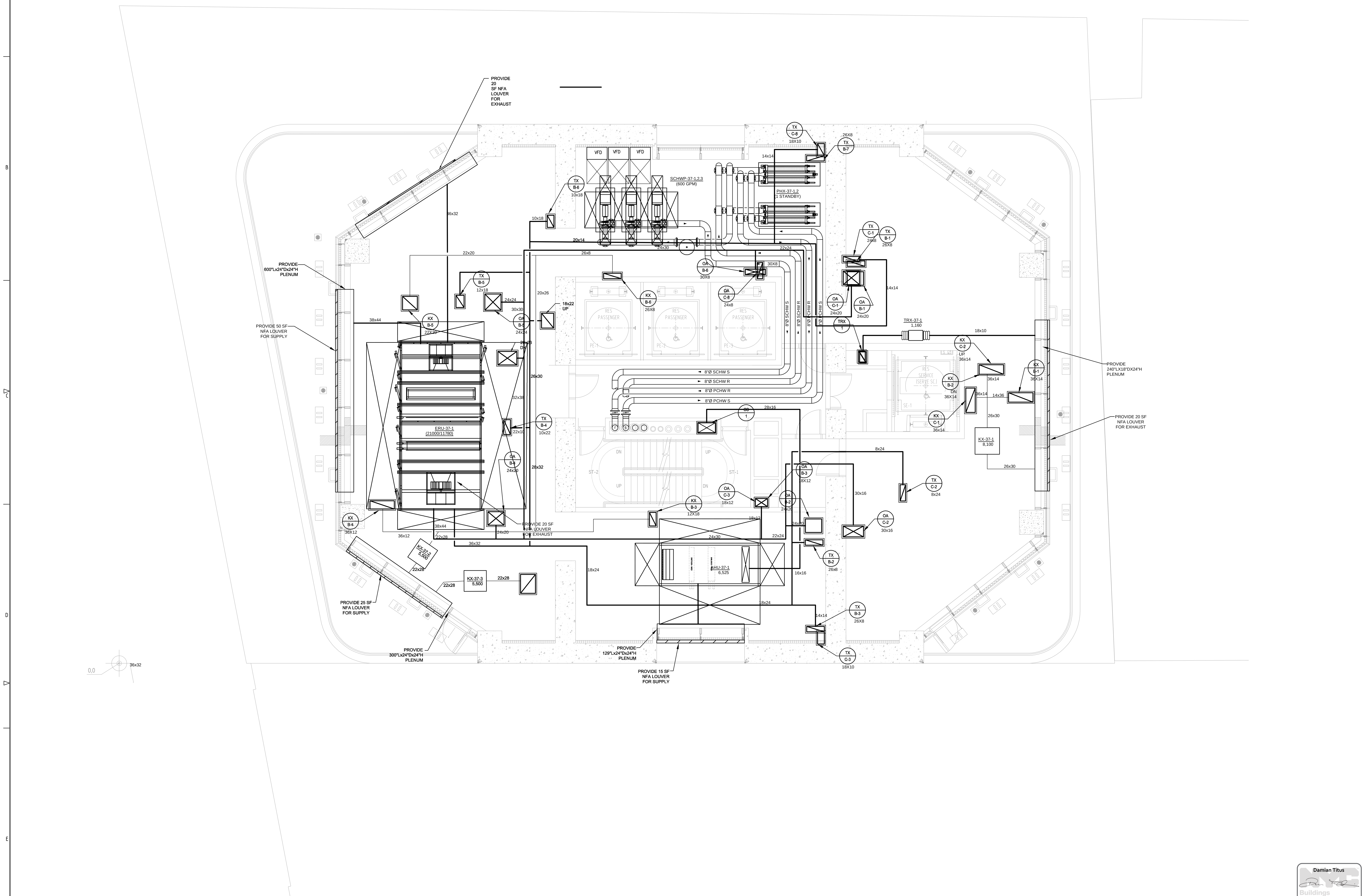

125 GREENWICH

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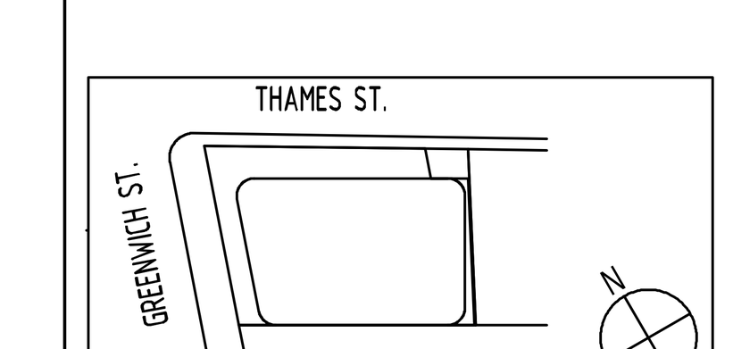

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LEVEL 37 MECHANICAL PLANS

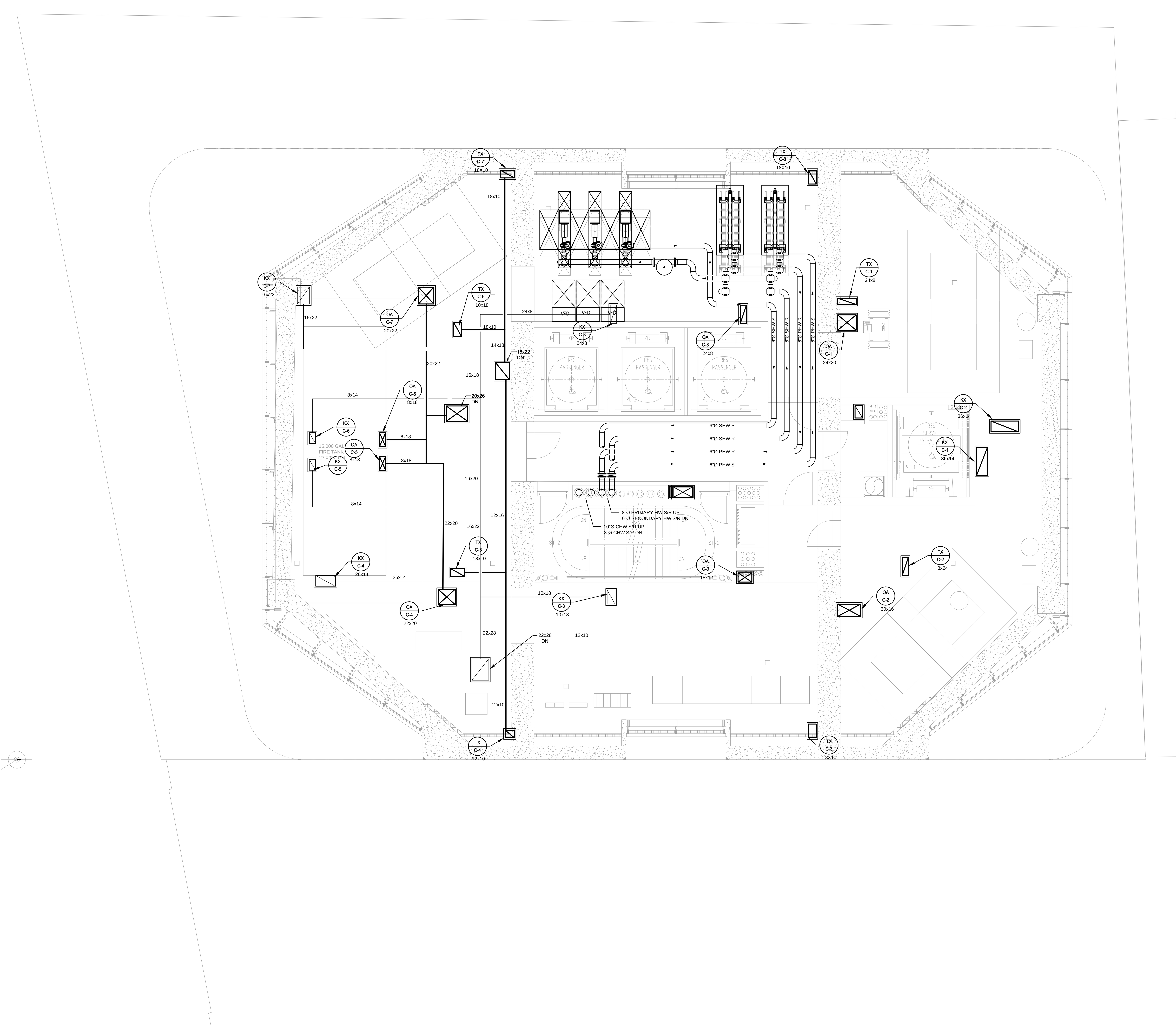
SHEET TITLE :

M-137.00

SHEET NUMBER :

DEPT OF BLDGS 121183799 Job Number

ES276266365 Scan Code



125 GREENWICH
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VS 125 LLC
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TEL: 212 924 5060 FAX: 212 924 5858

STRUCTURAL ENGINEER :
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TEL: 212 532 2211

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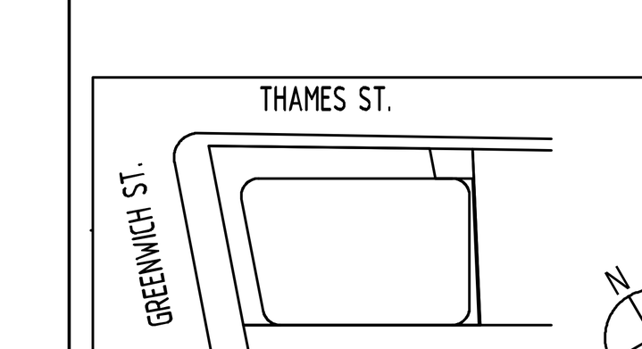

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Damian Titus
NYC Buildings
APPROVED
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LEVEL 38 MECHANICAL PLAN

SHEET TITLE :

M-138.00

SHEET NUMBER :

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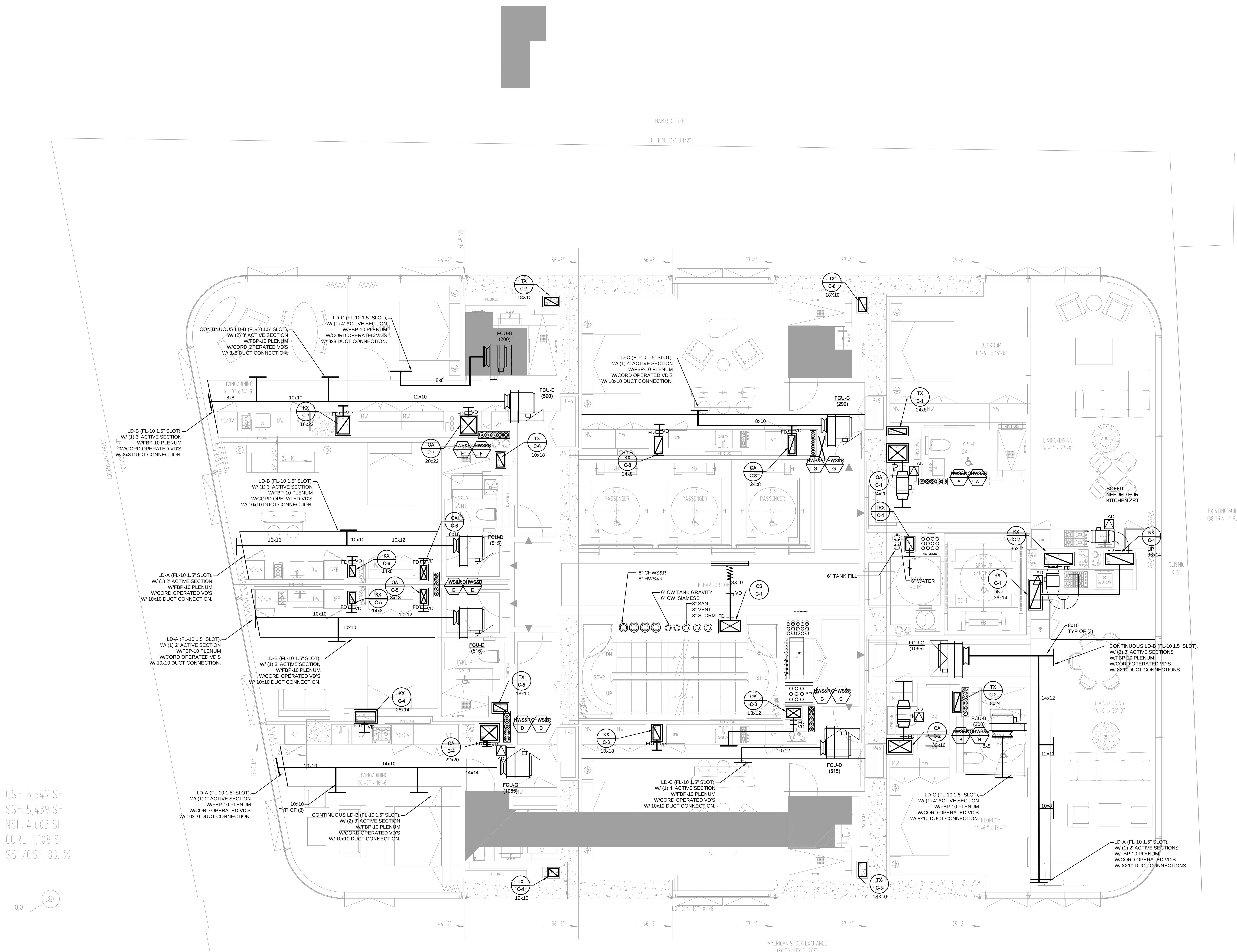
ES422143724 Scan Code



125 GREENWICH
NEW YORK, NY

OWNER :
VS 125 LLC
55 EAST 59TH STREET, 24TH FLOOR
NEW YORK, NY 10022
TEL: 212 616 0400

ARCHITECT :
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TEL: 212 924 5060 FAX: 212 924 5858

STRUCTURAL ENGINEER :
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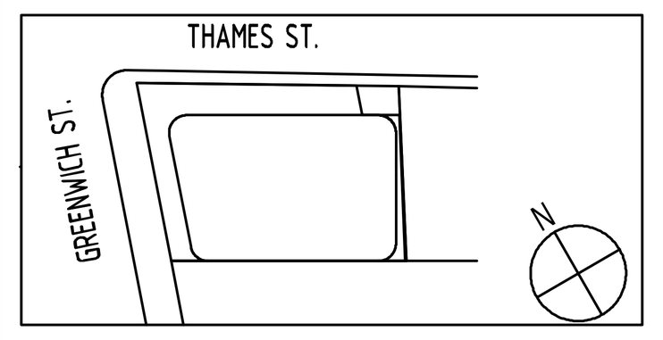

KEY PLAN AND NORTH SIGN

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39-43 FLOOR MECHANICAL PLAN

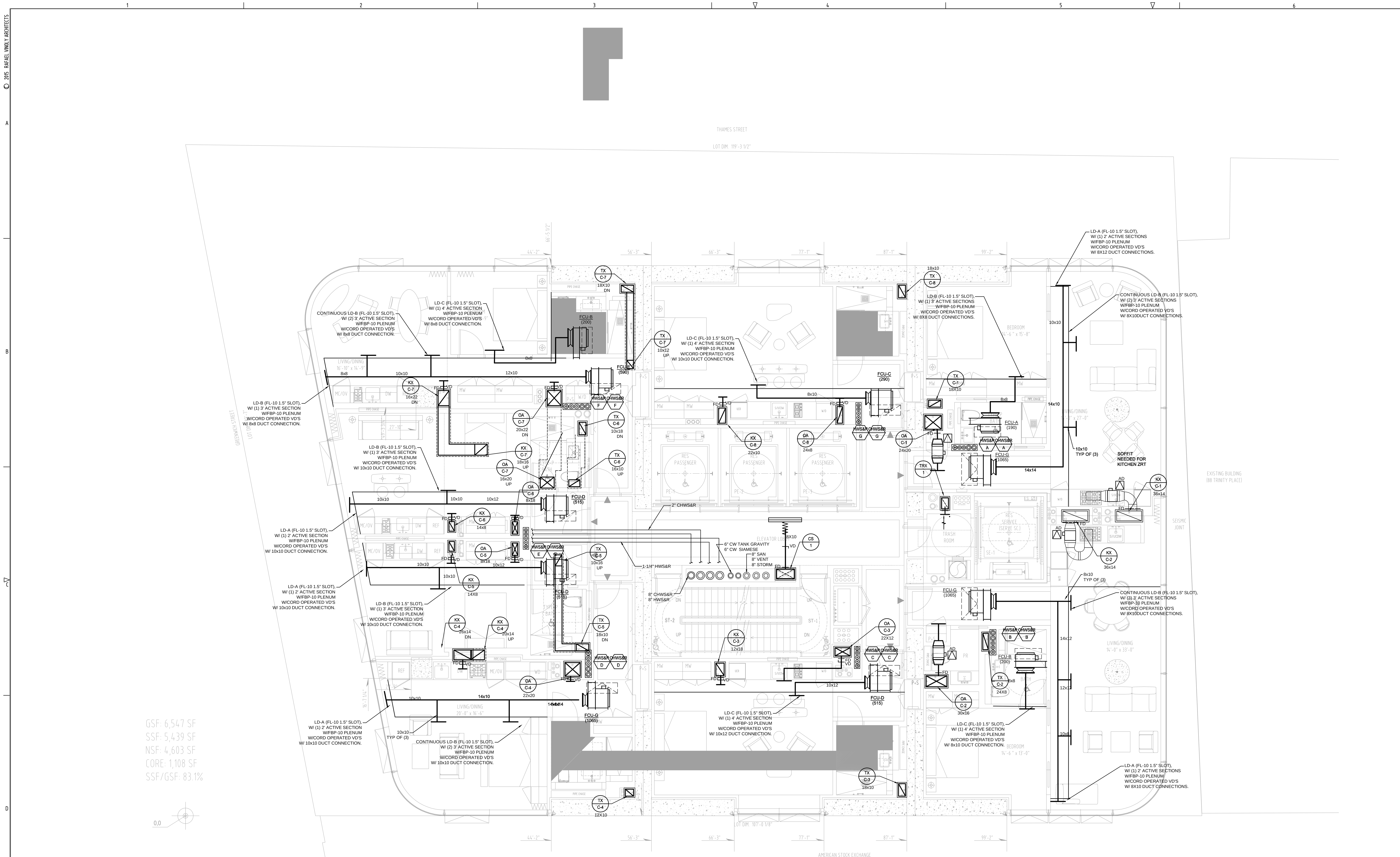
SHEET TITLE :

M-139.00

SHEET NUMBER :

FILE NAME I:\140294\MECH\M-139 39-43rd Floors.dwg SAVED ON 9/30/2015 8:32 PM PLOTTED ON 9/30/2015 8:49 PM PLOTTED BY PASTOR, RYAN

ES166026887 Scan Code
Job Number



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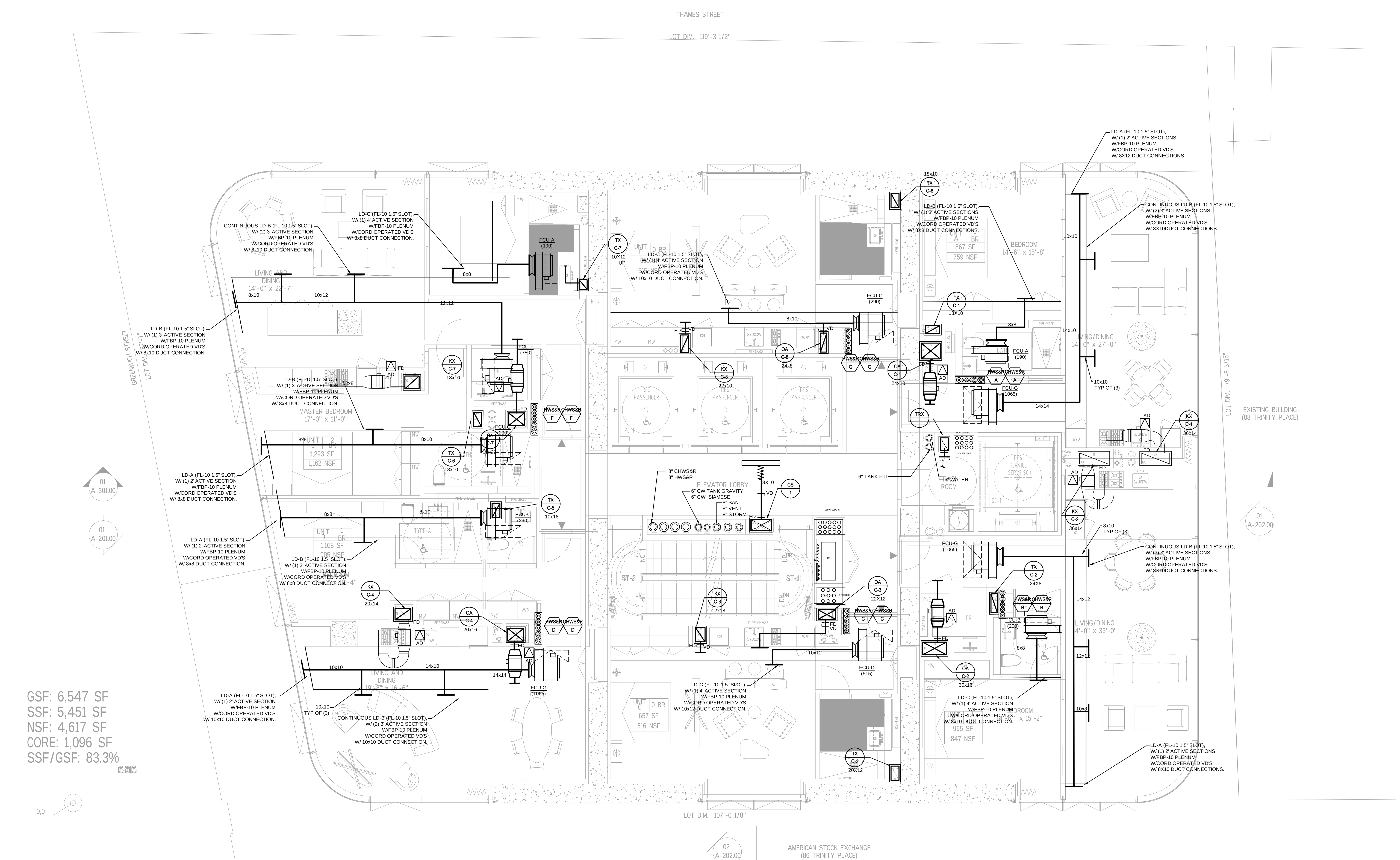
LEVEL 44 MECHANICAL PLAN

SHEET TITLE :

M-144.00

SHEET NUMBER :

FILE NAME I:\140294\MECH\M-144 44th Floor.dwg SAVED ON 9/30/2015 7:42 PM PLOTTED ON 9/30/2015 8:01 PM PLOTTED BY PASTOR, RYAN



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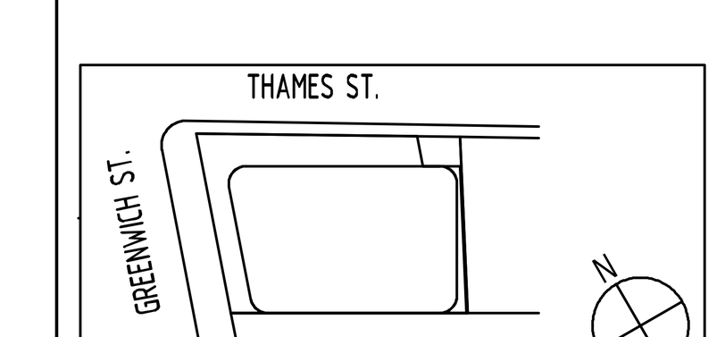

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LEVEL 45 TO 52
MECHANICAL PLAN

SHEET TITLE :

M-145.00

SHEET NUMBER :

ES091416933 Scan Code

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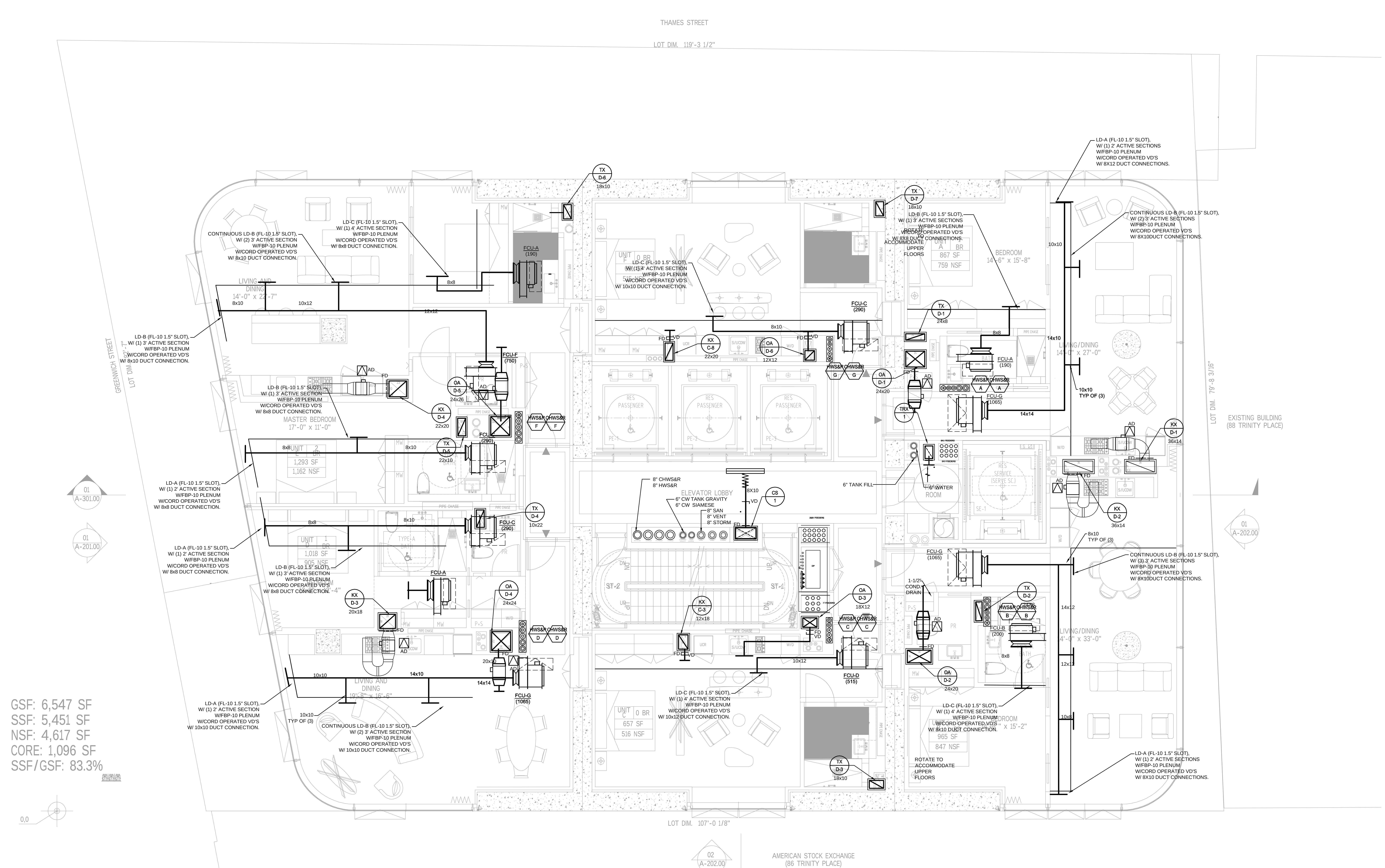
DEPT OF BLDGS 121183799 Job Number

ES790472694 Scan Code



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SHEET TITLE : LEVEL 53 TO 56 MECHANICAL PLAN

SHEET NUMBER : M-153.00

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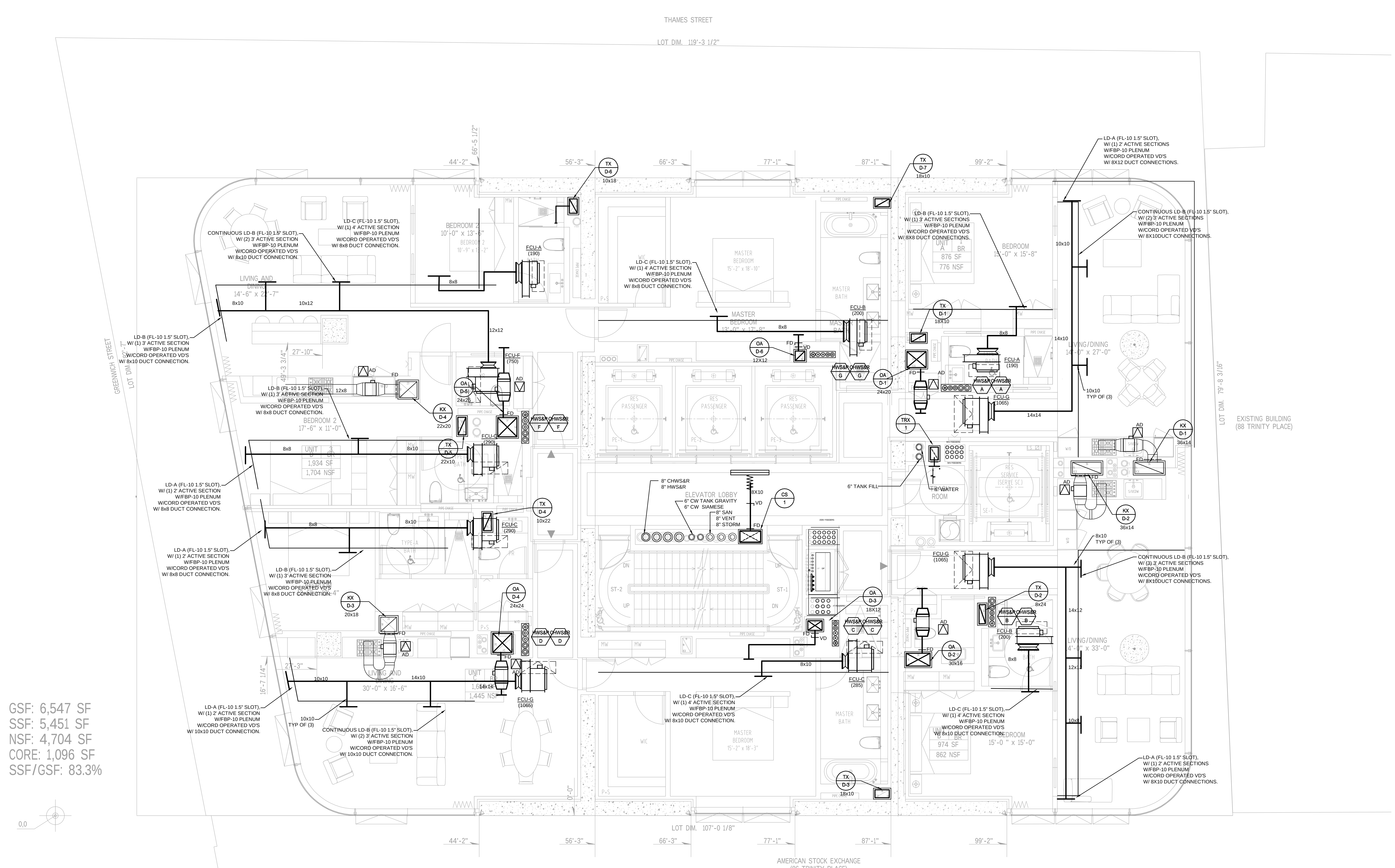

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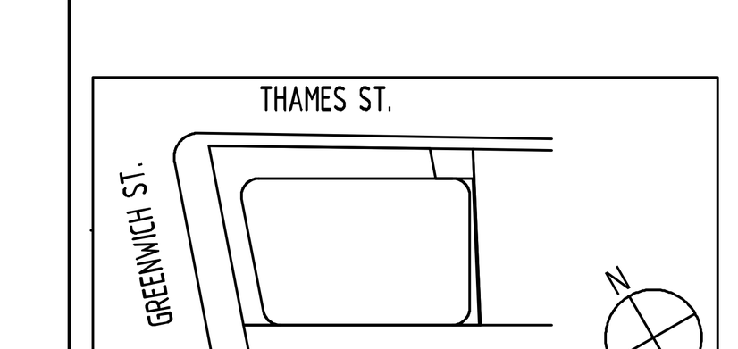

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LEVEL 57 TO 59 MECHANICAL PLAN

SHEET TITLE :

M-157.00

SHEET NUMBER :

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ES588067150 Scan Code
Job Number
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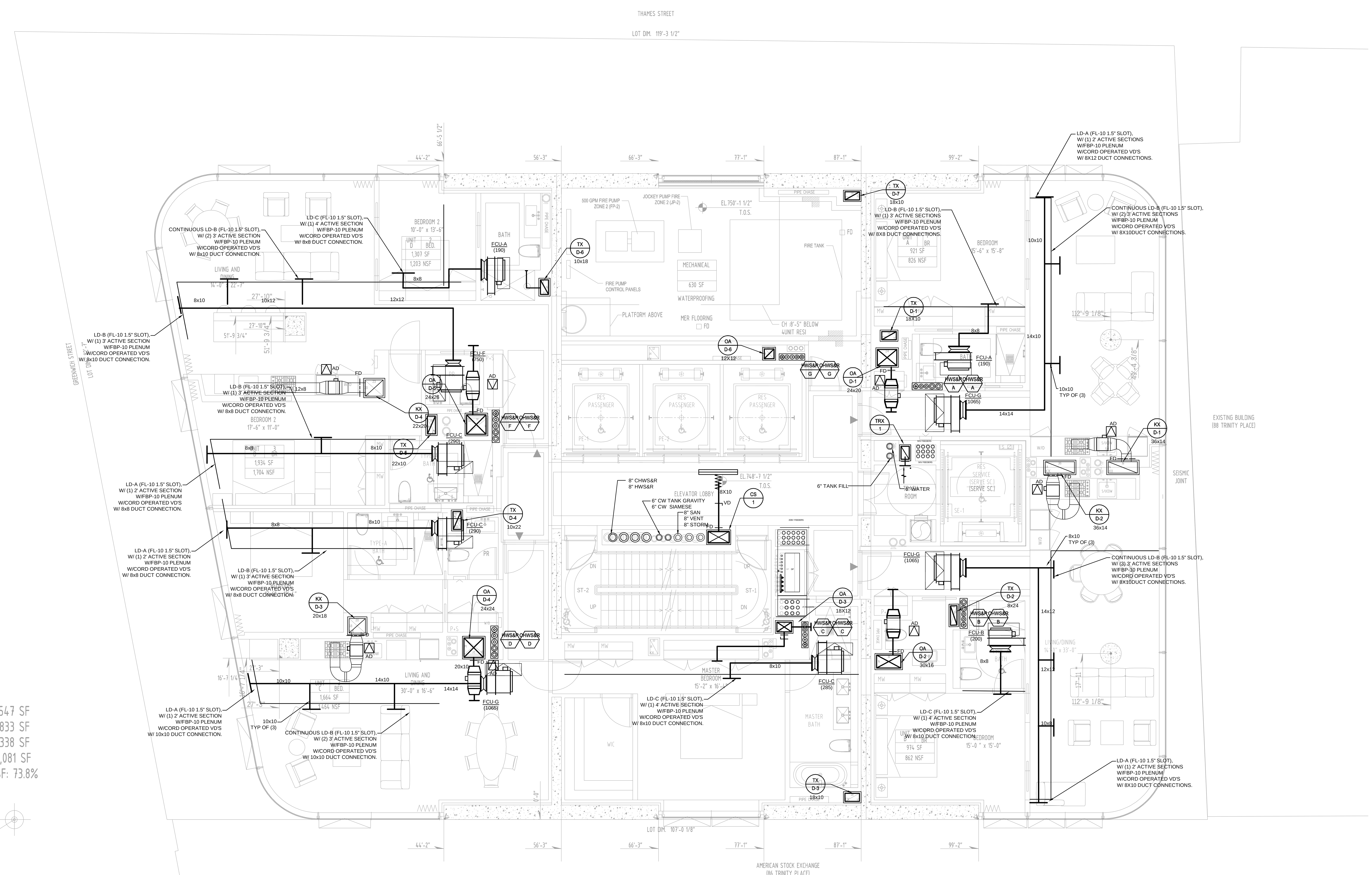

GSF: 6,547 SF
SSF: 4,833 SF
NSF: 4,338 SF
CORE: 1,081 SF
SSF/GSF: 73.8%

FILE NAME 1\W1402949\MECH\M-160 60th Floor.dwg SAVED ON 10/1/2015 8:39 AM PLOTTED ON 10/1/2015 8:56 AM PLOTTED BY HELLER, CHRISTINE

DEPT OF BLDGS 121183789 Job Number
ES069023858 Scan Code

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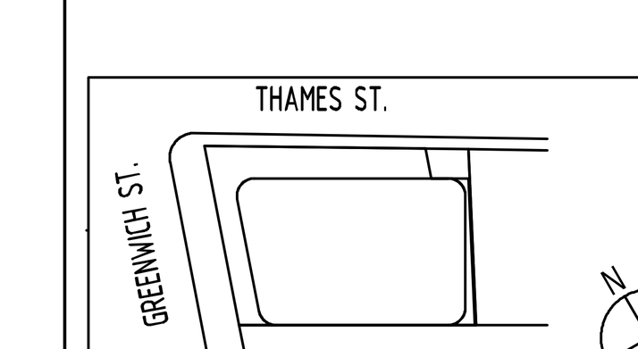

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LEVEL 60
MECHANICAL PLAN

SHEET TITLE :

M-160.00

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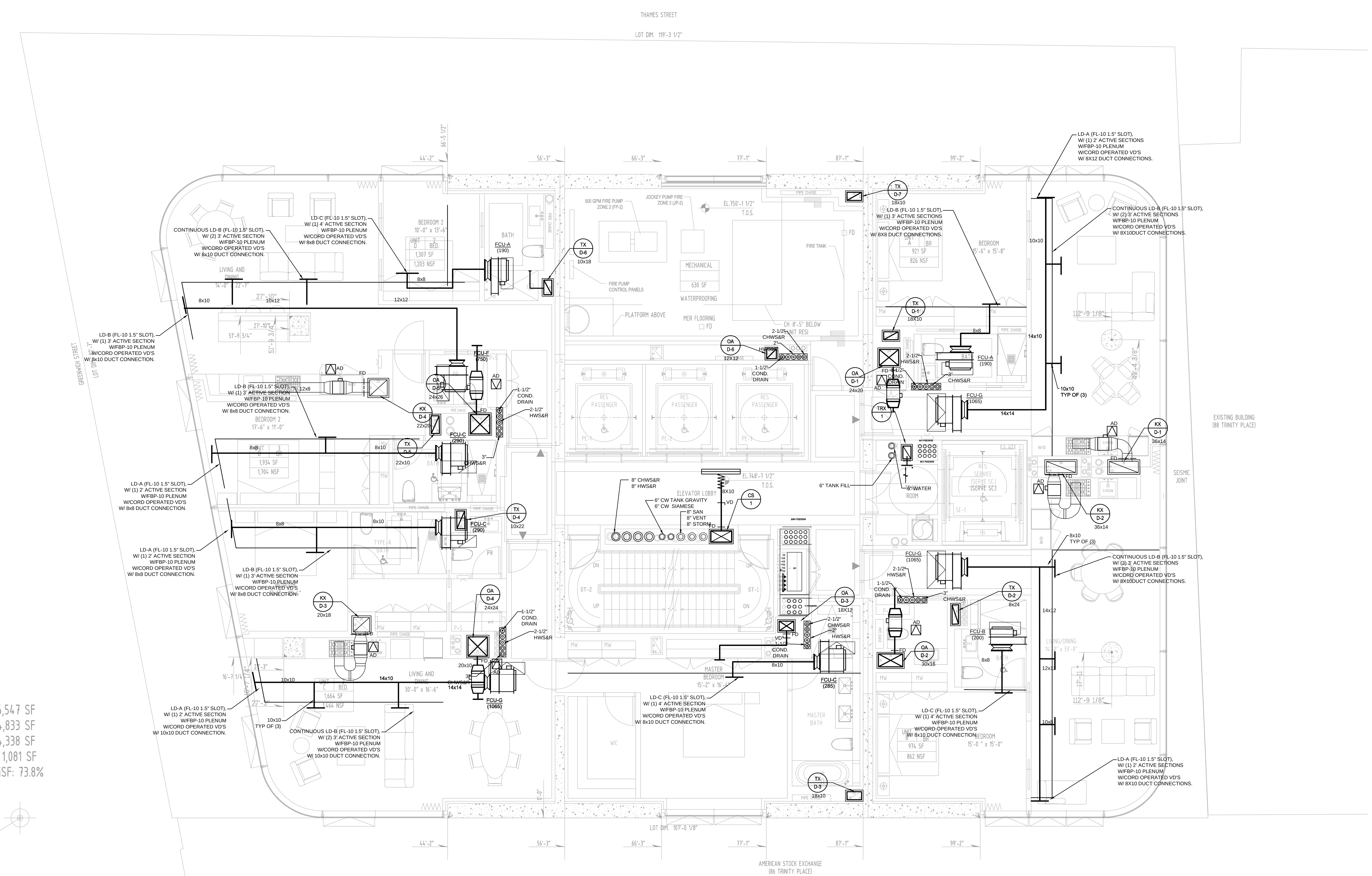

GSF: 6,547 SF
SSF: 4,833 SF
NSF: 4,338 SF
CORE: 1,081 SF
SSF/GSF: 73.8%

ES024969152 Scan Code

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LEVEL 61 MECHANICAL PLAN

SHEET TITLE :

M-161.00

SHEET NUMBER :

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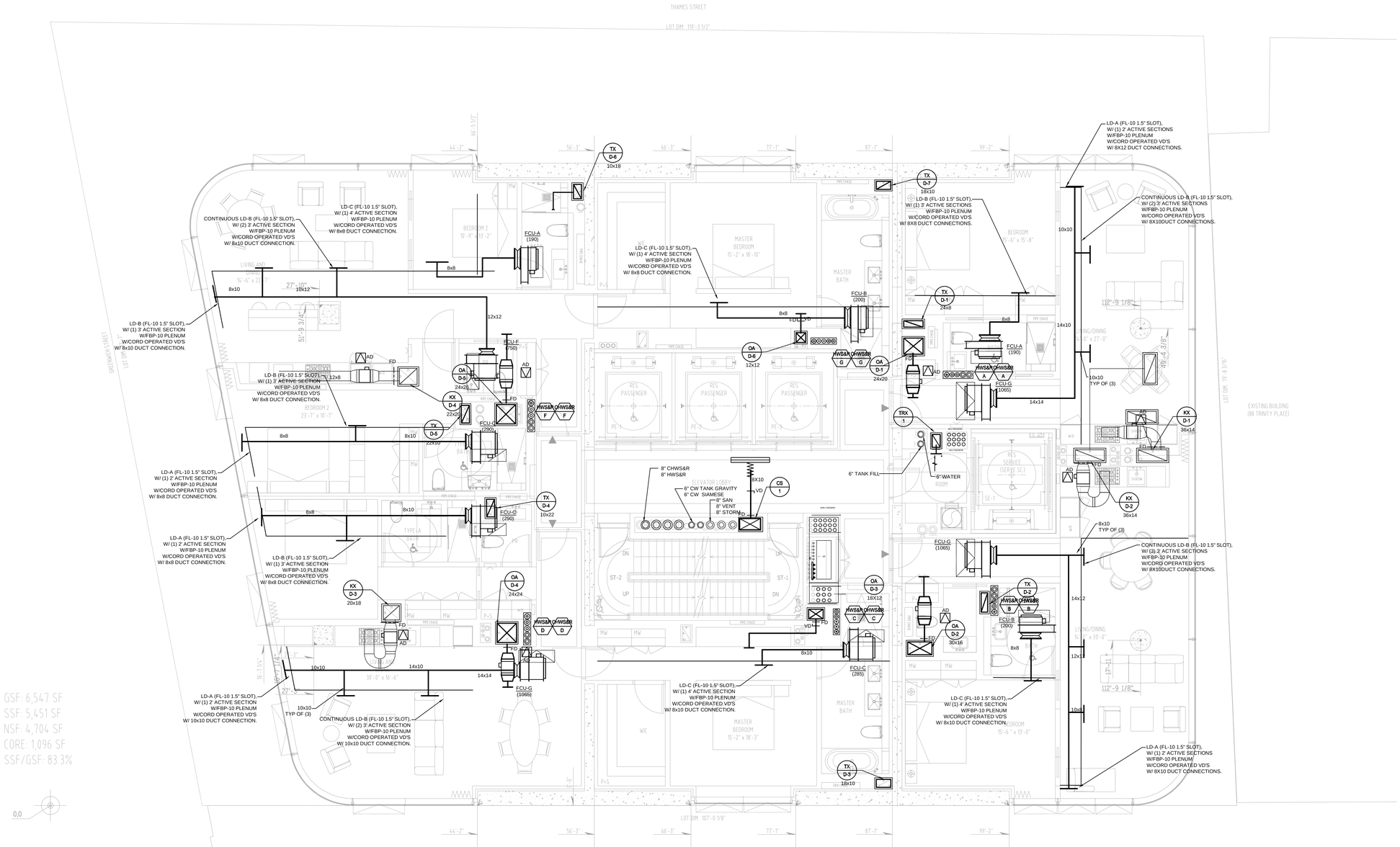

125
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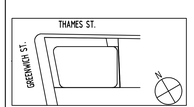

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LEVEL 62 TO 64
MECHANICAL PLAN

SHEET TITLE :

M-162.00

SHEET NUMBER :

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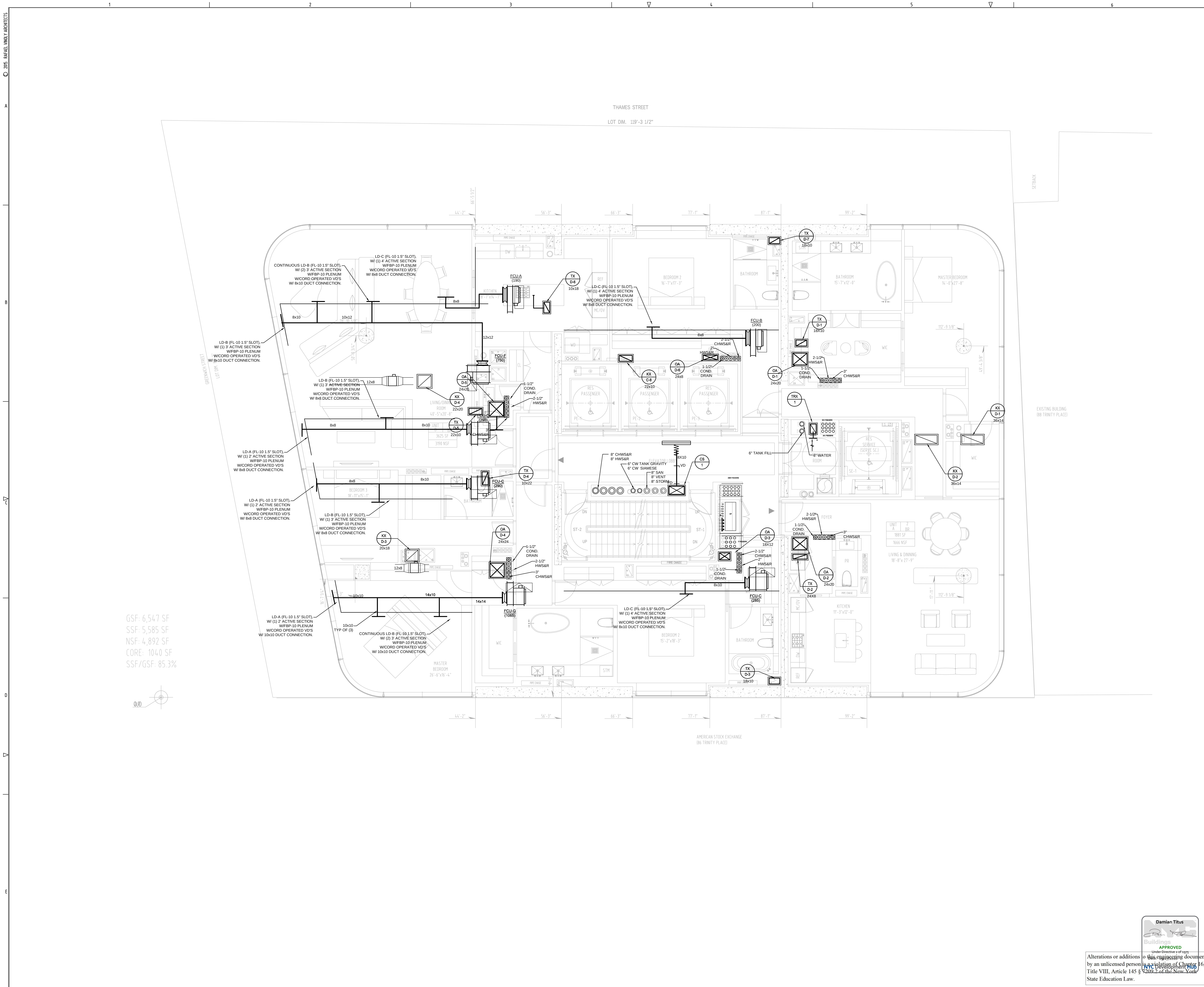
NYC Department of Buildings

ES126379192 Scan Code



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FILE NAME I:\140294\MECH\M-165 65-66th Floor.dwg SAVED ON 9/30/2015 8:33 PM PLOTTED ON 9/30/2015 8:49 PM PLOTTED BY PASTOR, RYAN

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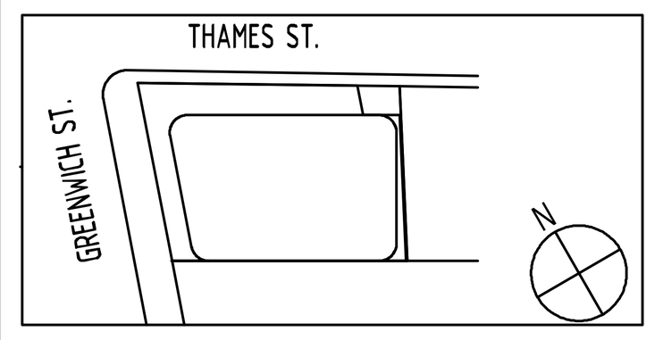

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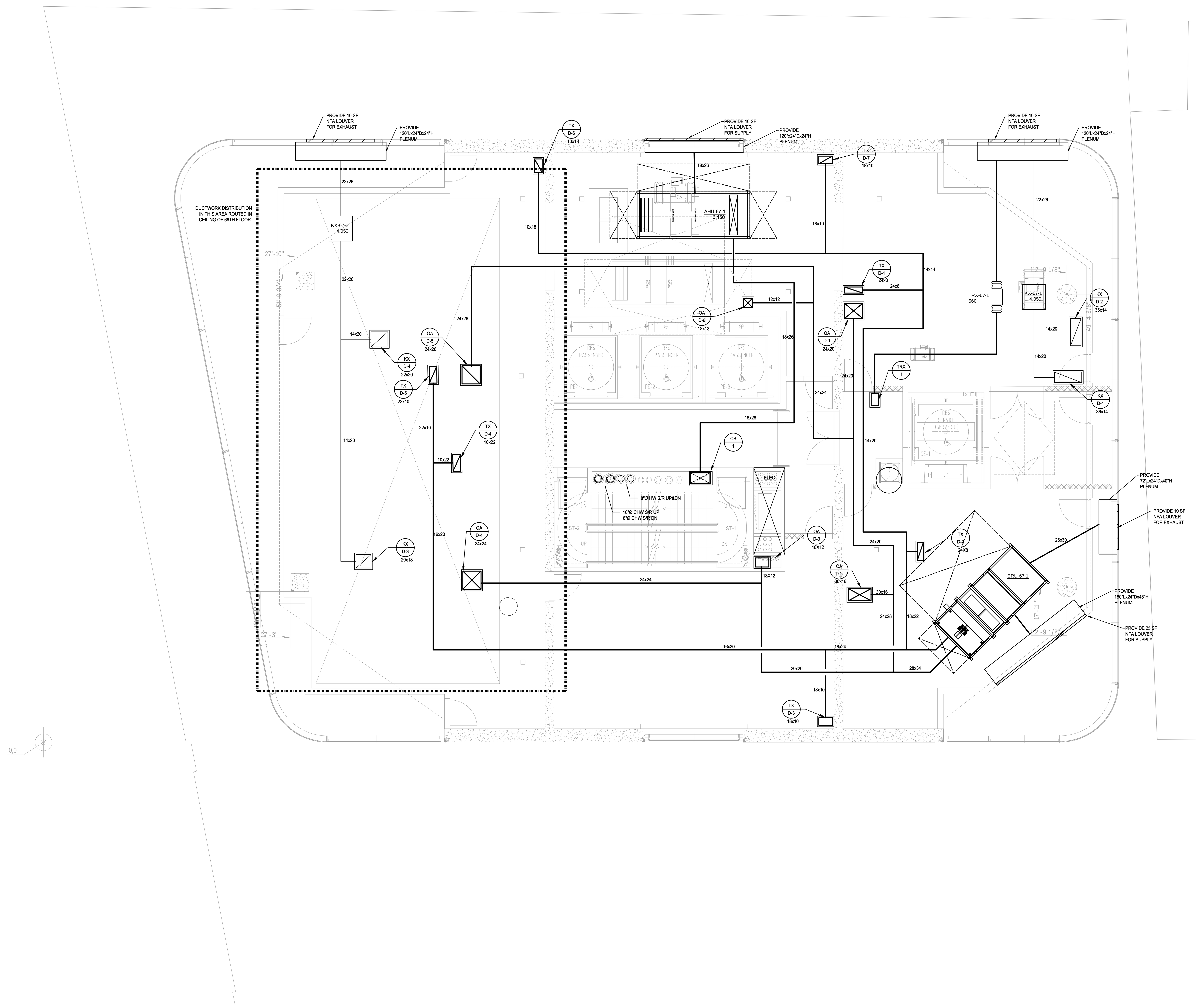
LEVEL 65 & 66 MECHANICAL PLAN

SHEET TITLE :

M-165.00

SHEET NUMBER :



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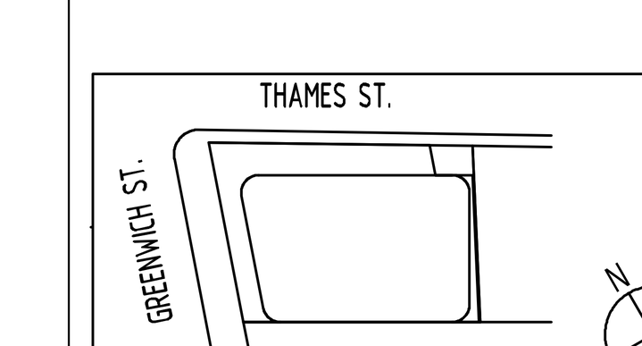

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LEVEL 67
MECHANICAL PLANS

SHEET TITLE :

M-167.00

SHEET NUMBER :

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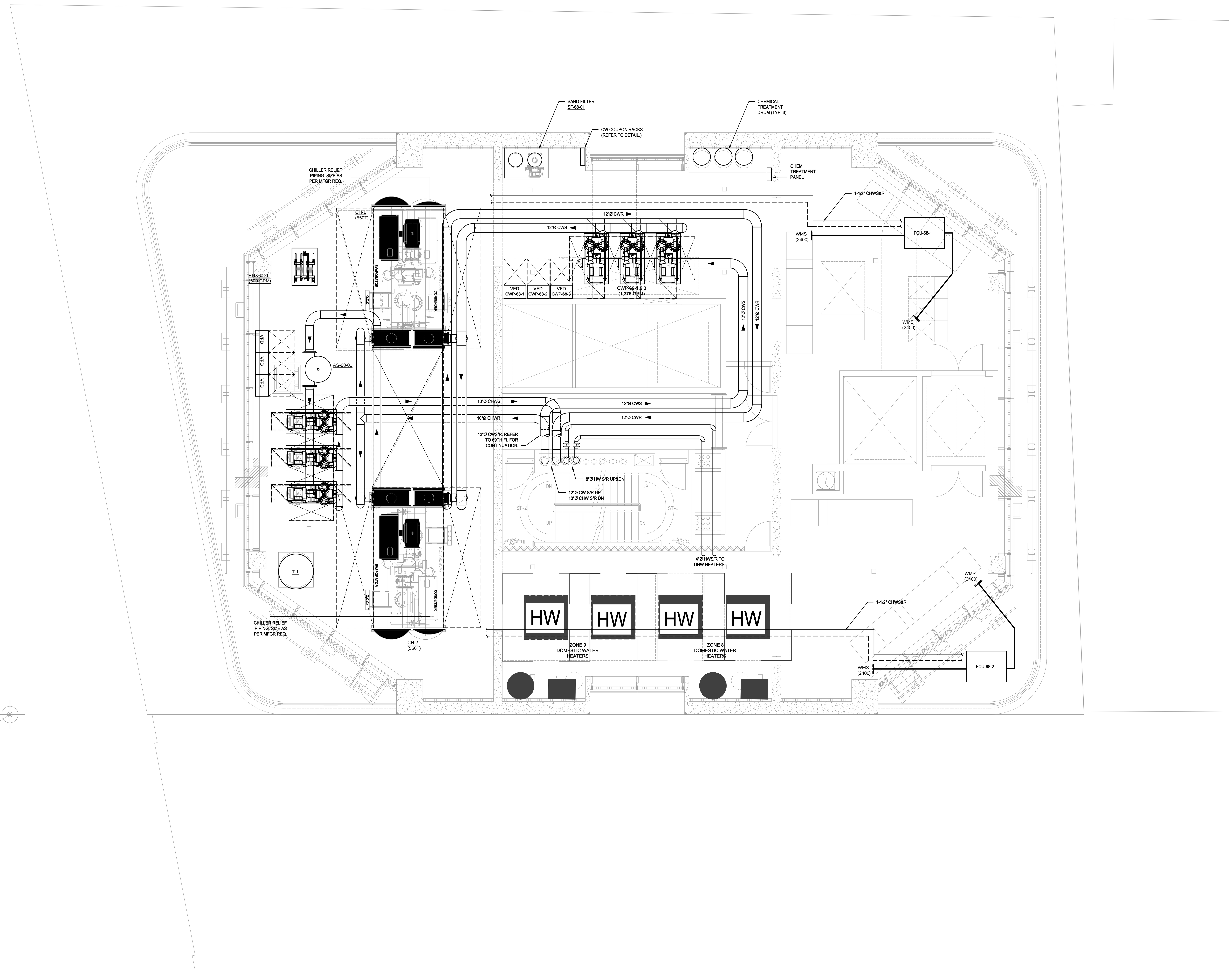

125 GREENWICH
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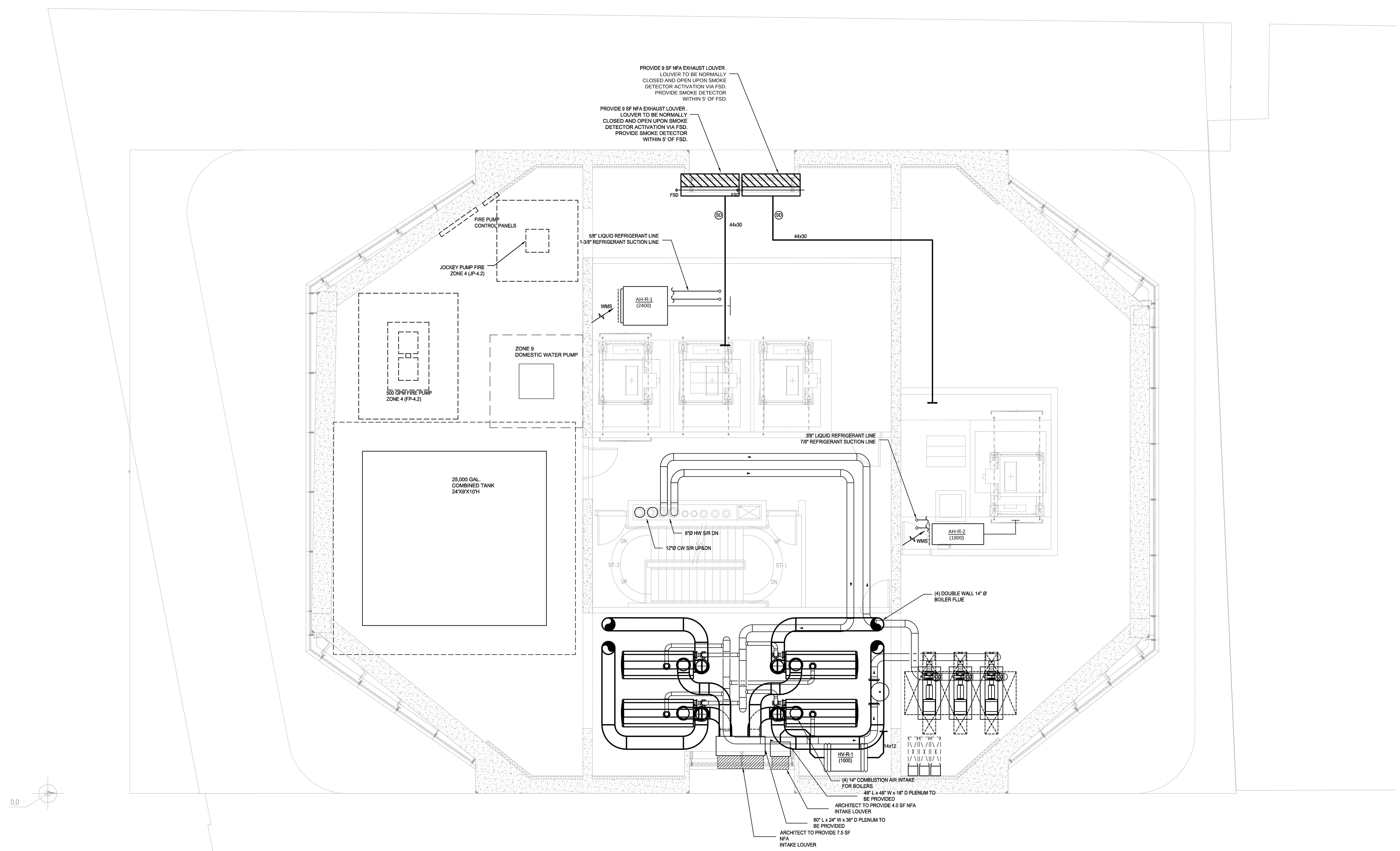
LEVEL 68
MECHANICAL PLANS

SHEET TITLE :

M-168.00

SHEET NUMBER :



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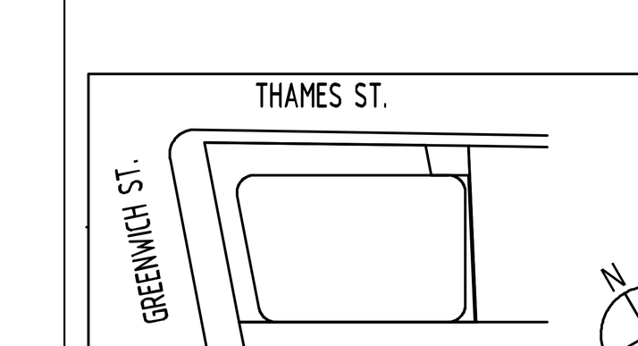

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LEVEL 69
MECHANICAL PLANS

SHEET TITLE :

M-169.00

SHEET NUMBER :

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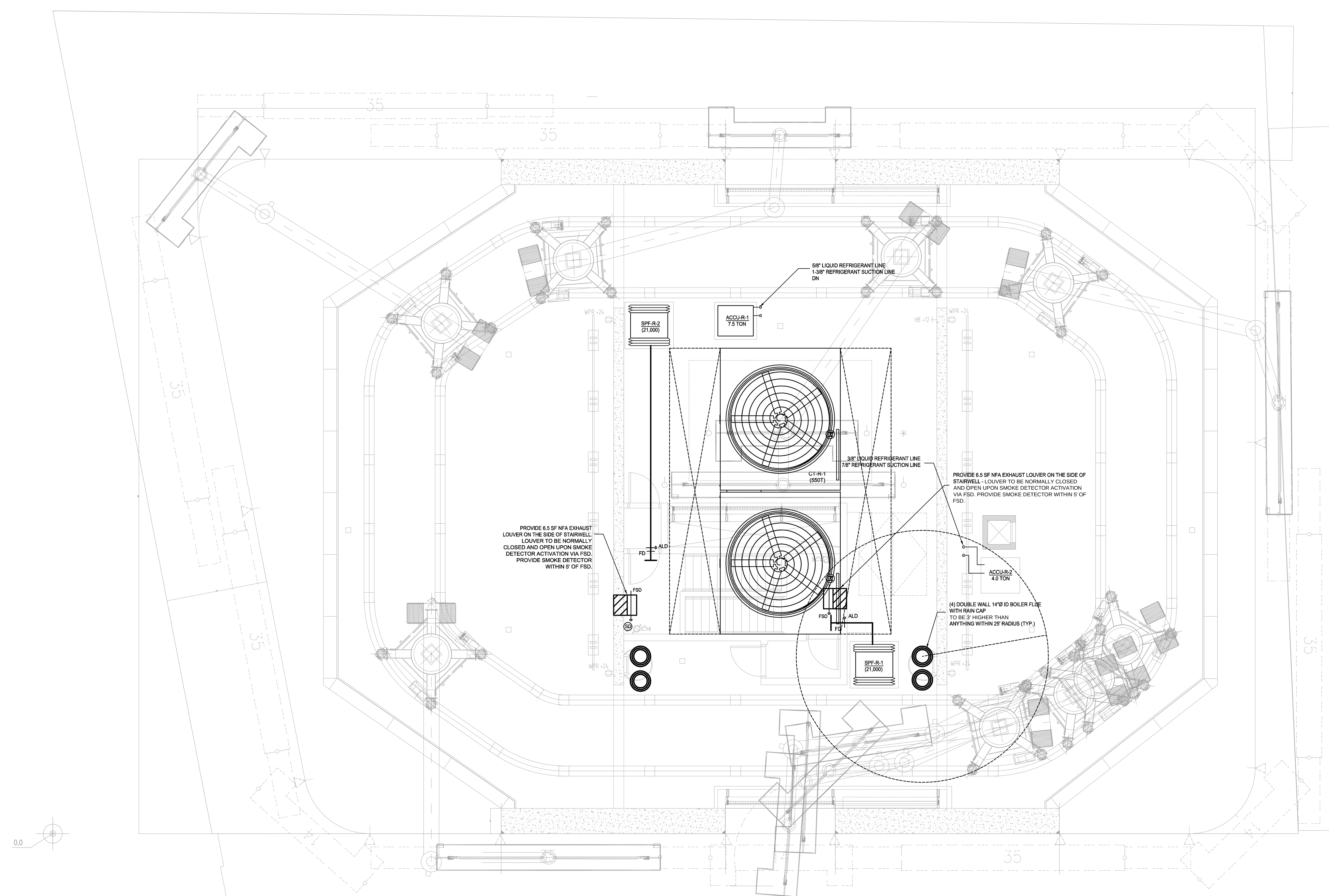

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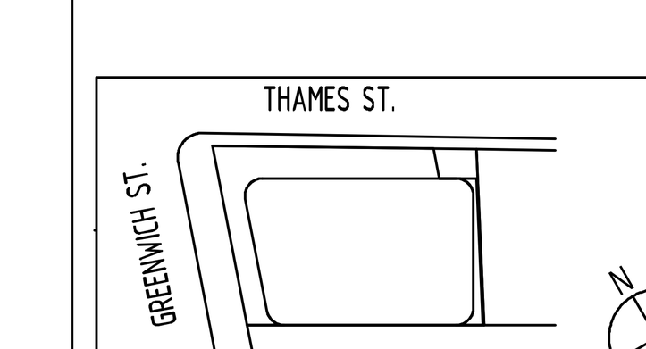

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ROOF
MECHANICAL PLANS

SHEET TITLE :

M-170.00

SHEET NUMBER :

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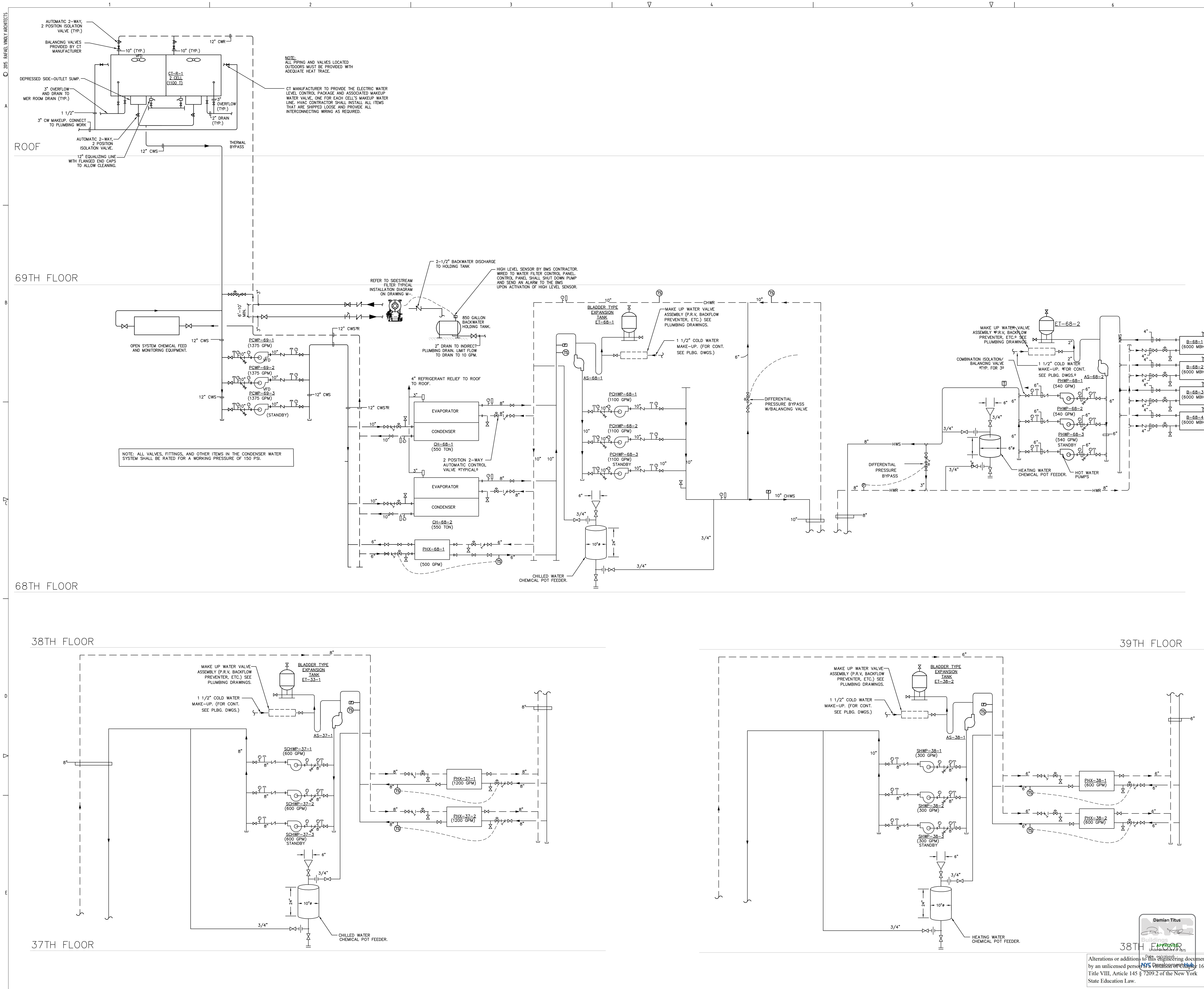

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ES087896843 Scan Code

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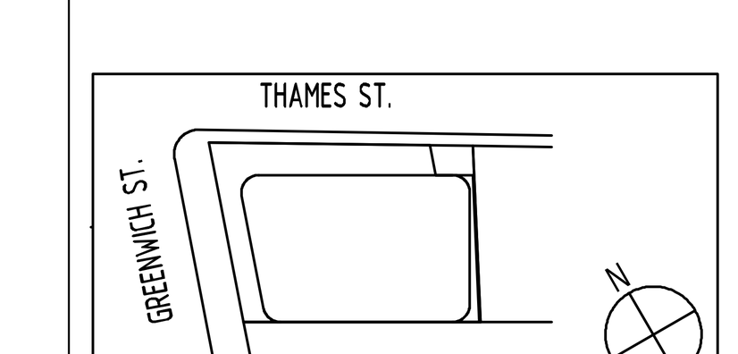

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SCALE NTS

MECHANICAL
CHILLED & HOT WATER
FLOW DIAGRAM

SHEET TITLE :

M-301.00

SHEET NUMBER :

ROOF

69 MECHANICAL

68 MECHANICAL

NOTES:

1. ALL HORIZONTAL AND VERTICAL WATER RISERS TO BE PROVIDED WITH ANCHORS, GUIDES AND EXPANSION PROVISIONS SHOWN ON THESE DOCUMENTS AND AS PER THE SPECIFICATIONS AND SCHEDULE DICTATE.
2. SPRING HANGERS ARE TO BE PROVIDED FOR THE FIRST 35 FEET OF HORIZONTAL RUN AT THE BASE OF THE RISERS

4" CHWS&R — 2-1/2" HWS&R — 4" CHWS&R — 2-1/2" HWS&R — 2 1/2" CHWS&R — 1-1/2" HWS&R — 4" CHWS&R — 3" HWS&R — 4" CHWS&R — 3" HWS&R — 2" CHWS&R — 1-1/4" HWS&R

67 MECHANICAL

66 RESIDENTIAL

65 RESIDENTIAL

64 RESIDENTIAL

63 RESIDENTIAL

62 RESIDENTIAL

61 RESIDENTIAL

60 RESIDENTIAL

59 RESIDENTIAL

58 RESIDENTIAL

57 RESIDENTIAL

56 RESIDENTIAL

55 RESIDENTIAL

54 RESIDENTIAL

53 RESIDENTIAL

52 RESIDENTIAL

51 RESIDENTIAL

50 RESIDENTIAL

49 RESIDENTIAL

48 RESIDENTIAL

47 RESIDENTIAL

46 RESIDENTIAL

45 RESIDENTIAL

44 RESIDENTIAL

43 RESIDENTIAL

42 RESIDENTIAL

41 RESIDENTIAL

40 RESIDENTIAL

39 RESIDENTIAL

PROVIDE DRAIN W/ SHUT-OFF VALVE AND THREADED CAPPED CONNECTION AT EACH RISER SUPPLY AND RETURN

2" COND. DRAIN

CONDENSATE LINE TO FLOOR DRAIN. TYPICAL FOR ALL.

2" COND. DRAIN

1-1/4" COND. DRAIN

2" COND. DRAIN

TO MAIN BRANCH

1-1/4" COND. DRAIN

2" COND. DRAIN

1-1/4" COND. DRAIN

PROVIDE MANUAL AIR VENTS AT HIGH POINTS OF SYSTEM

M-302
M-303

4" CHWS&R — 4" HWS&R — 2 1/2" CHWS&R — 2" HWS&R

38 MECHANICAL

6" HWS&R — 8" HWS&R

SCW 1

SHW 1

HOT WATER PLANT SEE FLOW DIAGRAM M-301

CONDENSER WATER PLANT SEE FLOW DIAGRAM M-301

PROVIDE MANUAL AIR VENTS AT HIGH POINTS OF SYSTEM

8" HWS&R

10" CHWS&R

8" CHWS&R

1-1/2" HWS&R

ZONE 9 DOMESTIC HWH

2-1/2" HWS&R

ZONE 8 DOMESTIC HWH

6" CHWS&R

6" HWS&R

3" CHWS&R

2-1/2" HWS&R

ERU-67-1

AHU-67-1

2" CHWS&R

8" CHWS&R

1-1/4" HWS&R

6" HWS&R

2" CHWS&R

TO

1-1/4" HWS&R

2-1/2" HWS&R

ZONE 7 DOMESTIC HWH

2-1/2" HWS&R

ZONE 6 DOMESTIC HWH

4" HWS&R

8" CHWS&R

6" HWS&R

M-302
M-303

HOW WATER PRESSURE BREAK

SEE FLOW DIAGRAM M-301

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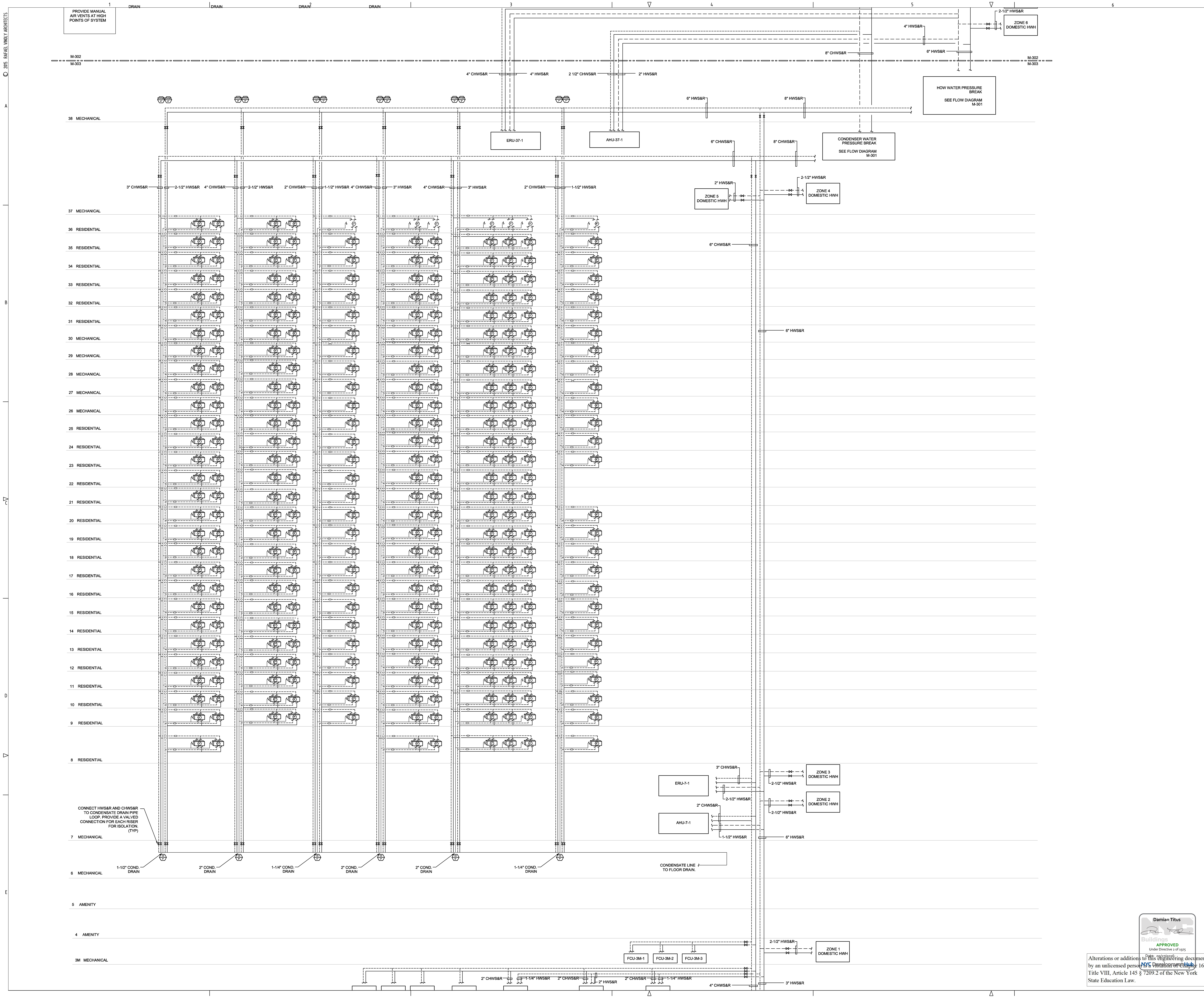
SCALE NTS

MECHANICAL
CHILLED & HOT WATER
RISER DIAGRAM
SHEET #1

SHEET TITLE :

M-302.00

SHEET NUMBER :



PROVIDE MANUAL AIR VENTS AT HIGH POINTS OF SYSTEM
DRAIN
M-302
M-303
4" CHWS&R
4" HWS&R
2 1/2" CHWS&R
2" HWS&R
2-1/2" HWS&R
ZONE 6 DOMESTIC HWH
4" HWS&R
8" CHWS&R
6" HWS&R
HOW WATER PRESSURE BREAK
SEE FLOW DIAGRAM M-301
6" HWS&R
8" HWS&R
ERU-37-1
AHU-37-1
6" CHWS&R
8" CHWS&R
CONDENSER WATER PRESSURE BREAK
SEE FLOW DIAGRAM M-301
3" CHWS&R
2-1/2" HWS&R
4" CHWS&R
2-1/2" HWS&R
2" CHWS&R
1-1/2" HWS&R
4" CHWS&R
3" HWS&R
4" CHWS&R
3" HWS&R
2" CHWS&R
1-1/2" HWS&R
2" HWS&R
ZONE 5 DOMESTIC HWH
2-1/2" HWS&R
ZONE 4 DOMESTIC HWH
6" CHWS&R
6" HWS&R
38 MECHANICAL
37 MECHANICAL
36 RESIDENTIAL
35 RESIDENTIAL
34 RESIDENTIAL
33 RESIDENTIAL
32 RESIDENTIAL
31 RESIDENTIAL
30 MECHANICAL
29 MECHANICAL
28 MECHANICAL
27 MECHANICAL
26 MECHANICAL
25 RESIDENTIAL
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15 RESIDENTIAL
14 RESIDENTIAL
13 RESIDENTIAL
12 RESIDENTIAL
11 RESIDENTIAL
10 RESIDENTIAL
9 RESIDENTIAL
8 RESIDENTIAL
7 MECHANICAL
6 MECHANICAL
5 AMENITY
4 AMENITY
3M MECHANICAL
3" CHWS&R
ZONE 3 DOMESTIC HWH
ERU-7-1
2-1/2" HWS&R
2-1/2" HWS&R
ZONE 2 DOMESTIC HWH
2" CHWS&R
2-1/2" HWS&R
AHU-7-1
1-1/2" HWS&R
6" HWS&R
CONNECT HWS&R AND CHWS&R TO CONDENSATE DRAIN PIPE LOOP. PROVIDE A VALVED CONNECTION FOR EACH RISER FOR ISOLATION. (TYP)
1-1/2" COND. DRAIN
2" COND. DRAIN
1-1/4" COND. DRAIN
2" COND. DRAIN
2" COND. DRAIN
1-1/4" COND. DRAIN
CONDENSATE LINE TO FLOOR DRAIN.
2-1/2" HWS&R
ZONE 1 DOMESTIC HWH
FCU-3M-1
FCU-3M-2
FCU-3M-3
2" CHWS&R
1-1/4" HWS&R
2" CHWS&R
2" HWS&R
2" CHWS&R
1-1/4" HWS&R
4" CHWS&R
3" HWS&R

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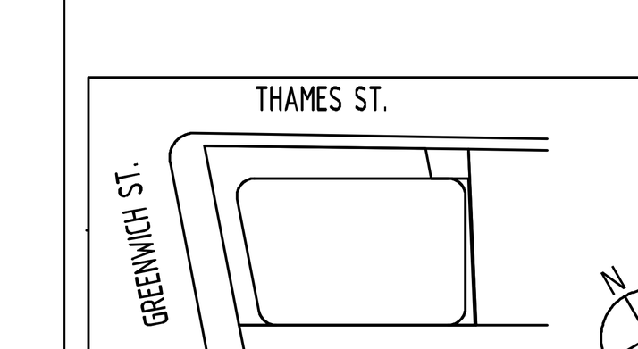

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SCALE NTS

MECHANICAL
CHILLED & HOT WATER
RISER DIAGRAM
SHEET #2

SHEET TITLE :

M-303.00

SHEET NUMBER :

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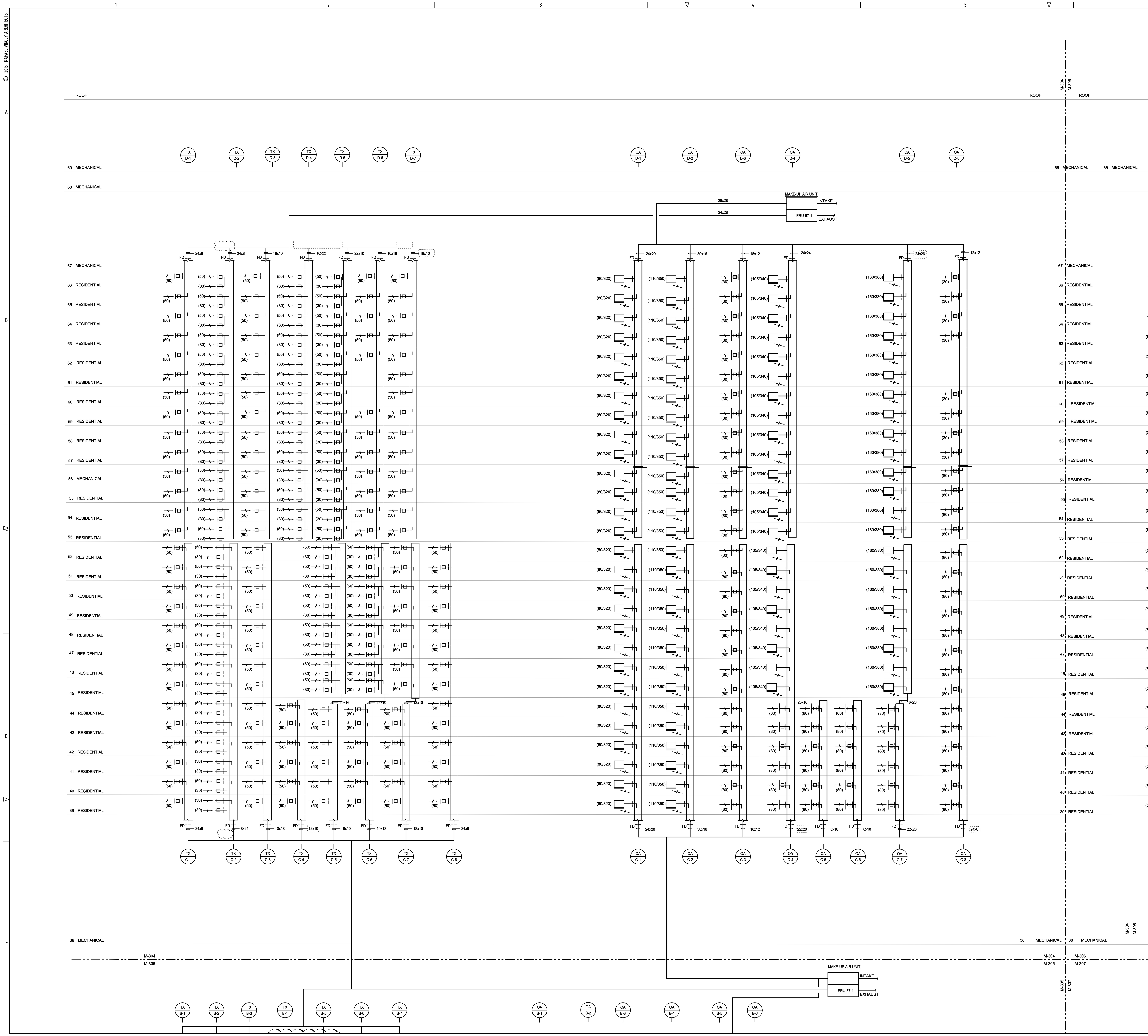

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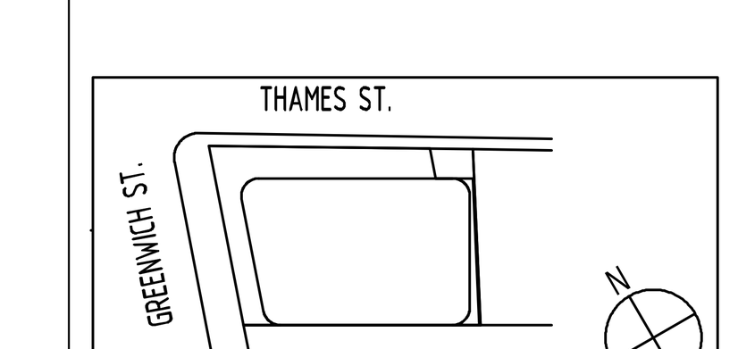

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MECHANICAL
AIR RISER DIAGRAM
SHEET #1

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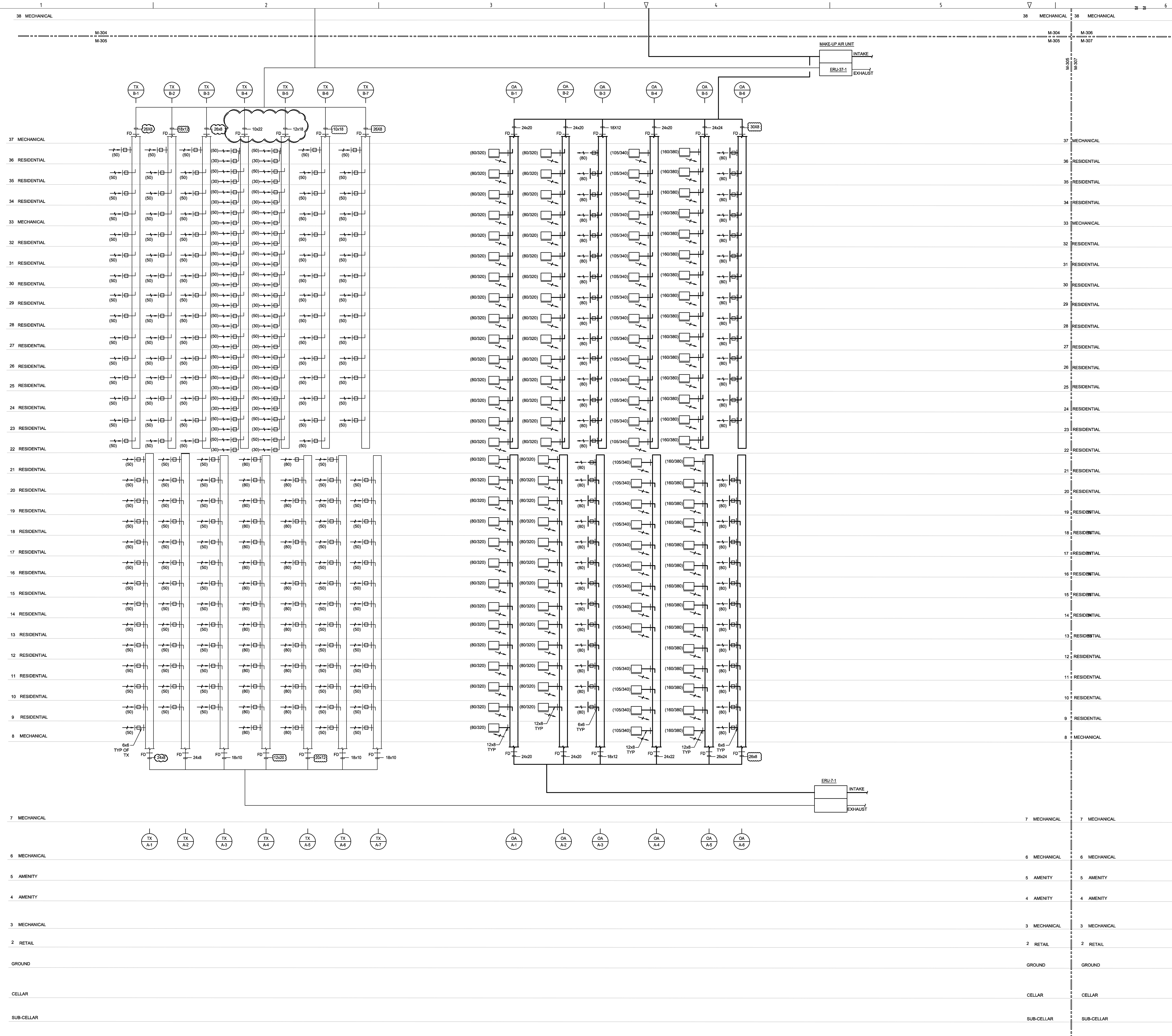

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SHEET #2

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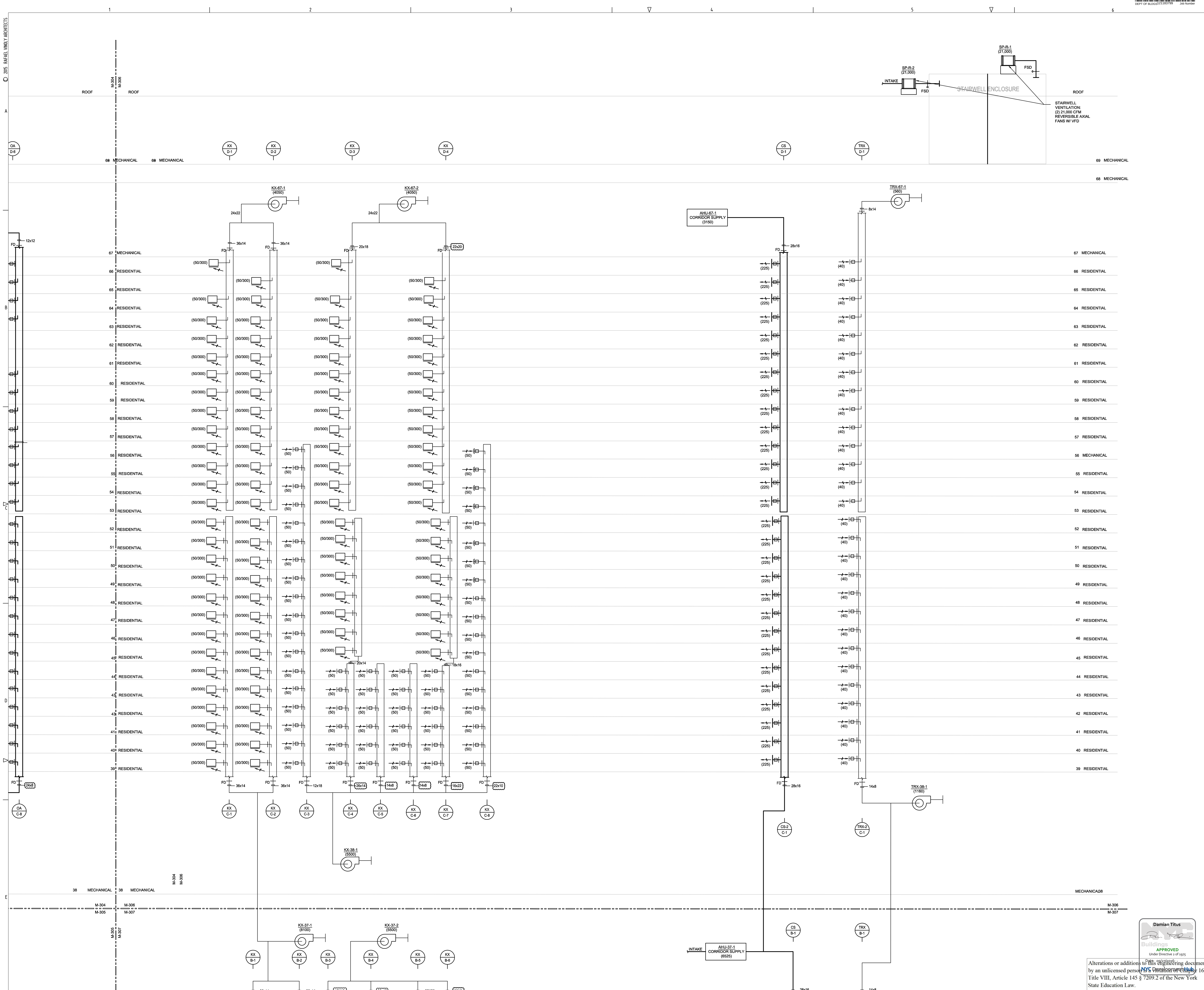

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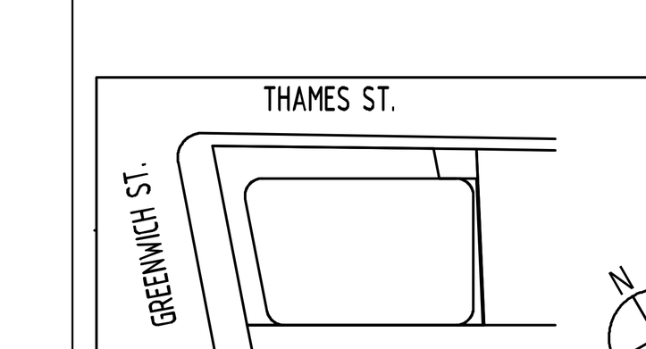

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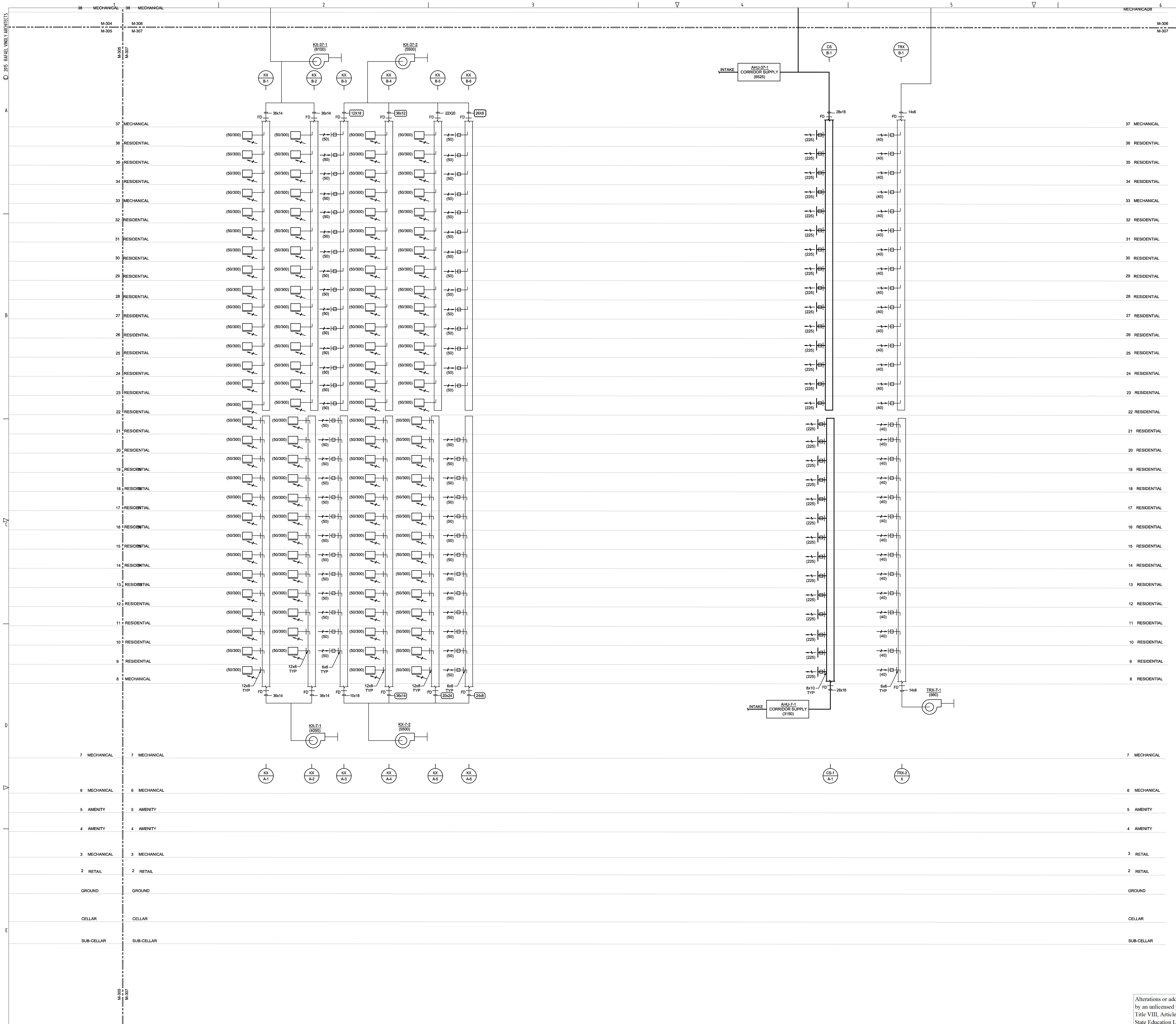
MECHANICAL
AIR RISER DIAGRAM
SHEET #3

SHEET TITLE :

M-306.00

SHEET NUMBER :



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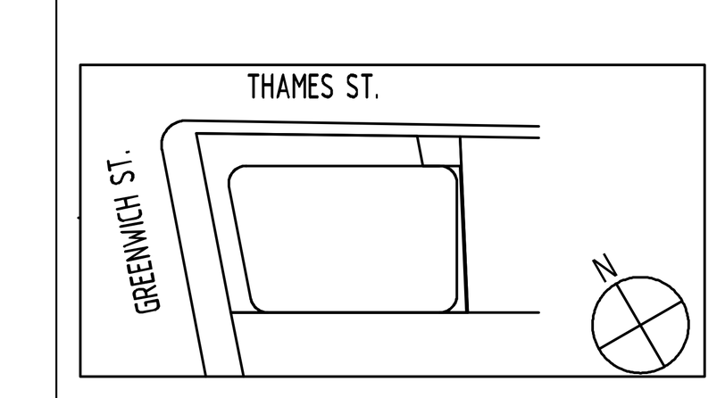
01	9/30/15	DOB SUBMITTAL



KEY PLAN AND NORTH SIGN

IF THIS DRAWING IS NOT 36" X 48" IT IS A REDUCED PRINT; REFER TO GRAPHIC SCALE

SCALE NTS

MECHANICAL
AIR RISER DIAGRAM
SHEET #4

SHEET TITLE :

M-307.00

SHEET NUMBER :

DEPT OF BLDGS 121183799 Job Number

ES277793573 Scan Code

AIR HANDLING UNIT SCHEDULE (DAIKIN AS STANDARD)

Unit Tag	Unit Service	Unit Location	Unit Model	Airflow (CFM)	OA (CFM)	Supply Fan – Fan Type	Fan RPM	Fan E.S.P. (in H2O)	Fan T.S.P. (in H2O)	Motor Voltage	Motor Power (BHP)	Motor Power (HP)	Motor RPM	Max allowable HP	Pass Y/N
AHU-7-1	FLOORS 8-21 CORRIDOR SUPPLY	7TH FLOOR	CAH006GDGC	3150	3150	DDPL15-9BL	2986	1.5	3.48	480/60/3	2.89	5	3500		
AHU-37-1	FLOORS 22-36 & 38-51 CORRIDOR SUPPLY	37TH FLOOR	CAH012GDGC	6525	6525	DDPL18-12BL	2255	1.25	3.01	480/60/3	4.32	5	1750	7.2	
AHU-67-1	FLOORS 52-66 CORRIDOR SUPPLY	67TH FLOOR	CAH006GDGC	3150	3150	DDPL15-9BL	2986	1.5	3.48	480/60/3	2.89	5	3500		
AHU-3-1	1ST FLOOR LOBBY SUPPLY	3RD FLOOR	CAH010GDGC	5000	2500	DDPL18-9BL	2146	1.5	3.66	460/60/3	4.2	7.5	1750	7.5	
AHU-3-2	4TH FLOOR AMENITY	3RD FLOOR	CAH010GDGC	4000	1200	DDPL18-9BL	1830	1.5	2.92	460/60/3	2.64	5	1750		
AHU-3-3	5TH FLOOR AMENITY	3RD FLOOR	CAH010GDGC	6000	1800	DDPL18-9BL	2267	1.5	3.08	460/60/3	4.2	7.5	1750	9	

Tag	Chilled Water Coil – Sensible Capacity (Btu/hr)	Total Capacity (Btu/hr)	EAT-DB °F	EAT-WB °F	LAT-DB °F	LAT-WB °F	EWT °F	LWT °F	Flow Rate (GPM)	W.P.D. (ftH2O)	Hot Water Coil – Total Capacity (Btu/hr)	EAT-DB °F	LAT-DB °F	EWT °F	LWT °F	Flow Rate (GPM)	W.P.D. (ftH2O)	Type	Filter Qty - Sizes	Depth	VFD YES/NO	Efficiency	Clean PD (inH2O)	Dirty PD (inH2O)	Mean PD (inH2O)
AHU-7-1	125101	200026	95	75	54.1	53.9	44	56.1	33	6.5	252903	0	82.6	160	129	16.3	1.4	AmAir (MERV 13)	2 - 24.00 x 24.00	2	N	90	0.23	1	0.62
AHU-37-1	252238	406371	95	75	53.8	53.4	44	56.3	66.1	12.7	490847	0	80.2	160	129.9	32.7	3.6	AmAir (MERV 13)	2 - 12.00 x 24.00 2 - 24.00 x 20.00 1 - 24.00 x 24.00	2	N	90	0.26	1	0.63
AHU-67-1	125101	200026	95	75	54.1	53.9	44	56.1	33	6.5	252903	0	82.6	160	129	16.3	1.4	AmAir (MERV 13)	1 - 24.00 x 12.00 1 - 24.00 x 20.00 1 - 24.00 x 24.00	2	N	90	0.23	1	0.62
AHU-3-1	158212	241371	80	67	51.1	50.9	44	56.1	40	8.8	223792	50	90.9	160	129.3	14.6	0.8	AmAir (MERV 13)	3 - 24.00 x 20.00	2	N	90	0.38	1	0.69
AHU-3-2	120975	180528	80	67	52.3	52.1	44	56	30	10.6	182291	50	91.7	160	128.7	11.7	0.6	AmAir (MERV 13)	3 - 24.00 x 20.00	2	Y	90	0.28	1	0.64
AHU-3-3	167423	242255	80	67	54.5	53.9	44	56.2	39.8	13.5	274260	50	91.8	160	128.6	17.5	1	AmAir (MERV 13)	2 - 12.00 x 24.00 2 - 24.00 x 20.00 1 - 24.00 x 24.00	2	Y	90	0.29	1	0.64

ENERGY RECOVERY UNITS (DAIKIN AS STANDARD)

Unit Tag	Unit Model	Weight (lb)	SUPPLY FAN Source	Airflow (CFM)	RPM	BHP	E.S.P. (inH2O)	T.S.P. (inH2O)	Motor Voltage	Power (HP)	RPM	VFD (Y/N)	Max allowable HP	Pass Y/N	EXHAUST FAN Source	Airflow (CFM)	RPM	BHP	E.S.P. (inH2O)	T.S.P. (inH2O)	Motor Voltage	Power (HP)	RPM	VFD (Y/N)	Max allowable HP	Pass Y/N
ERU-7-1	CAH026GDGM	7300	OA	11500	1855	11.76	1.5	4.3	460/60/3	15	1750	Y	17.5	Y	TX	5590	2067	3.45	1.5	2.41	460/60/3	5	1750	Y	8.4	Y
ERU-37-1	CAH044GDGM	11900	OA	21000	1707	23.23	1.5	4.21	460/60/3	25	1750	Y	31.5	Y	TX	11780	2152	9.26	1.5	2.5	460/60/3	15	1750	Y	17.67	Y
ERU-67-1	CAH022GDGM	6400	OA	10500	2142	10.37	1.5	3.85	460/60/3	15	1750	Y	15.75	Y	TX	5640	2081	3.51	1.5	2.42	460/60/3	5	1750	Y	8.46	Y

Tag	Chilled Water Coil – Sensible Capacity (Btu/hr)	Total Capacity (Btu/hr)	EAT-DB °F	EAT-WB °F	LAT-DB °F	LAT-WB °F	EWT °F	LWT °F	Flow Rate (GPM)	W.P.D. (ftH2O)	Hot Water Coil – Total Capacity (Btu/hr)	EAT-DB °F	LAT-DB °F	EWT °F	LWT °F	Flow Rate (GPM)	W.P.D. (ftH2O)	Heat Wheel – Model	Manuf.	Voltage	Wheel Dia. (in)	Supply Airflow (CFM)
ERU-7-1	401560	600715	86.1	70.3	54.2	54	46	58.1	99.4	12.3	460782	32.9	70	160	129.2	30.7	5.7	ECW 7212	NovelAire	115/60/1	72	11500
ERU-37-1	702222	1052131	85.2	69.8	54.6	54.1	44	56	174.9	9.4	762048	36.4	70	160	129.3	50.8	4.9	ECW 9612	NovelAire	115/60/1	96	21000
ERU-67-1	354475	530073	85.3	69.8	54.4	53.9	44	56.2	86.9	14	385560	36	70	160	129.6	25.7	8.9	ECW 7212	NovelAire	115/60/1	72	10500

ENERGY RECOVERY UNITS (DAIKIN AS STANDARD) (CONT.)

Heat Wheel Cont. – Outside Air Summer DB °F	Summer WB °F	Winter DB °F	Winter WB °F	Airflow (CFM)	Return Air Summer DB °F	Summer WB °F	Winter DB °F	Winter WB °F	Airflow (CFM)	Supply Air Summer DB °F	Summer WB °F	Winter DB °F	Winter WB °F	Exhaust Air Summer DB °F	Summer WB °F	Winter DB °F	Winter WB °F	Eff. Total %	Total Energy Recovered (Btu/hr)	Eff. Total %	Total Energy Recovered (Btu/hr)	Type	Depth	Type	Depth	Efficiency	Clean PD (inH2O)	Dirty PD (inH2O)	Mean PD (inH2O)
95	75	0	0	11500	75	62.5	73	53	5590	86.1	70.3	32.9	28.5	93.3	74.1	5.9	5.9	89.42	232791	91.87	489396	AmAir (MERV 13)	2	Pleated (MERV 8)	2	30	0.09	1	0.55
95	75	0	0	21000	75	62.5	73	53	11780	85.2	69.8	36.4	30.9	92.4	73.6	8.6	8.6	84.86	465561	87.99	987804	AmAir (MERV 13)	2	Pleated (MERV 8)	2	30	0.14	1	0.57
95	75	0	0	10500	75	62.5	73	53	5640	85.3	69.8	36	30.7	93	74	6.6	6.6	88.32	231997	90.89	488509	AmAir (MERV 13)	2	Pleated (MERV 8)	2	30	0.11	1	0.56

ERU NOTES:
1. ALL UNITS PROVIDED WITH CONTROL PANEL FOR FIELD MOUNTING.
2. ALL UNITS TO BE MOUNTED ON 6" CONCRETE PAD AND PROVIDED WITH VIBRATION ISOLATION PER SPEC.
3. PROVIDE UNIT WITH DISCONNECT SWITCH.
4. MIXED AIR PLENUMS PROVIDED BY UNIT MANUFACTURER.
5. PROVIDE AIR FLOW METERS FOR O.A. MONITORING & SUPPLY AIR.
6. PROVIDE FREEZE PROTECTION PUMP.
7. ENERGY RECOVERY UNIT TO COMPLY WITH REQUIREMENTS IN UL-1812 OR CERTIFIED BY A NRTL PROGRAM.

CENTRIFUGAL PUMP SCHEDULE (BELL & GOSSETT AS STANDARD)

PUMP NO.	SERVICE	LOCATION	TYPE	GPM	TOTAL DYNAM. HEAD (FT.)	MIN. DESIGN WORKING PRESS. (P.S.I.G.)	MODEL NO.	FRAME SIZE	SELECTED IMP. DIAM. (IN.)	PUMP MAX IMP. DIAM. (IN.)	EFFICIENCY	MOTOR BHP	HP	RPM	CONTROLLER TYPE	V/Ph/Hz	OPERATING WEIGHT (LBS.)	REMARKS
SCHWP-37-1, 2, 3	37th FLOOR	37th FLOOR	INLINE MOUNTED	600	120	300	Series 80 4x4x7	21x39 1/2x12 1/4	6.75	7	75.85	24.07	25	3600	VFD	480/3/60	585	1 STANDBY
SHWP-38-1, 2, 3	38th FLOOR	38th FLOOR	INLINE MOUNTED	300	120	300	Series 80 3x3x7B	19x33 1/2x11 1/2	6	7	75.46	12.47	15	3600	VFD	480/3/60	435	1 STANDBY
PCHWP-68-1, 2, 3	68th FLOOR	68th FLOOR	DOUBLE SUCTION SPLIT CASE	1100	120	300	VSC 5x6x13 1/2A	61x37 3/4x25.4	11.5	13.5	80.3	42.14	50	1800	VFD	480/3/60	2950	1 STANDBY
PHWP-68-1, 2, 3	68th FLOOR	68th FLOOR	INLINE MOUNTED	540	120	300	Series 80 4x4x7	21x39 1/2x12 1/4	6.625	7	75.13	22.15	25	3600	VFD	480/3/60	585	1 STANDBY
PCWP-69-1, 2, 3	69th FLOOR	69th FLOOR	DOUBLE SUCTION SPLIT CASE	1375	90	250	VSC 5x6x10 1/2A	57x25x33	9.875	10.5	83.93	36.91	50	1800	VFD	480/3/60	1950	1 STANDBY

NOTES:
1. PUMP TO BE PROVIDED WITH VFD.
2. ALL PUMPS TO BE MOUNTED ON 6 INCH CONCRETE PAD AND PROVIDED WITH VIBRATION ISOLATION
3. ALL PUMPS TO COMPLY WITH REQUIREMENTS IN UL-778 OR CERTIFIED BY A NRTL PROGRAM.

PLATE AND FRAME HEAT EXCHANGER SCHEDULE

UNIT NO.	LOCATION	SERVICE	PRIMARY WATER GPM	EWT (F)	LWT (F)	PD (PSI)	SECONDARY WATER GPM	EWT (F)	LWT (F)	PD (PSI)	DESIGN PRESSURE (PSI)	TEST PRESSURE (PSI)	NO. OF PLATES	MODEL NO.	MIN SURFACE AREA SQ. FT.	OPERATING WEIGHT (LBS.)	REMARKS
PHX-68-1	68th FLOOR	FREE COOLING	500	66	54	9.18	500	52	64	9.53	150	195	164	AP86	1569.38	5100	1
PHX-37-1,2	37th FLOOR	CHILLED WATER	1200	58	46	9.97	1200	44	56	9.95	300	390	321	AP110	4120.43	1100	1 STAND BY
PHX-38-1,2	38th FLOOR	HOT WATER	600	160	130	9.98	600	128	158	9.97	300	390	255	AP110	3267.92	9800	1 STAND BY

NOTES:
1. PROVIDE VIBRATION ISOLATION TYPE VIII WITH 1" DEFLECTION.
2. ALL PHX TO BE MOUNTED ON 6 INCH CONCRETE PAD
3. PHX'S ARE TO BE ARI CERTIFIED.
4. UNIT TO HAVE MIN. SURFACE AREA AS PER SCHEDULE WITHOUT EXCEPTION.
5. CARRY BAR TO HAVE SUFFICIENT LENGTH TO ADD 10% MORE PLATES IN FUTURE IF NEEDED.

LINEAR DIFFUSER SCHEDULE

TITUS AS STANDARD

SYMBOL	TYPE	ACTIVE LENGTH	AIR DEFLECTION	MAX DIFFUSER NC	MAXIMUM AIRFLOW PER FOOT OF ACTIVE LENGTH	SIZE OF DUCT CONNECTION	FRAME AND BORDER	NO. & SIZE	MANUF. MODEL NO.	REMARKS
LD-A (CFM/LF)	LINEAR FLOW-BAR DIFFUSER	2'-0"	ADJUSTABLE	26	55	SEE PLANS	SEE ARCH DETAIL	1 SLOT 1.0" EACH	TITUS FL-10-HT HIGH THROW	PROVIDE PLENUM FBPI-10
LD-B (CFM/LF)	LINEAR FLOW-BAR DIFFUSER	3'-0"	ADJUSTABLE	26	55	SEE PLANS	SEE ARCH DETAIL	1 SLOT 1.0" EACH	TITUS FL-10-HT HIGH THROW	PROVIDE PLENUM FBPI-10
LD-C (CFM/LF)	LINEAR FLOW-BAR DIFFUSER	4'-0"	ADJUSTABLE	26	55	SEE PLANS	SEE ARCH DETAIL	1 SLOT 1.0" EACH	TITUS FL-10-HT HIGH THROW	PROVIDE PLENUM FBPI-10

NOTES :
1. SEE PLANS FOR EXACT ACTIVE LENGTHS, PLENUM SIZES & AIR FLOW QUANTITIES.
2. TRIM VOLUME DAMPERS ARE UNACCEPTABLE.
3. ALL CUSTOM COLORS & BORDER TYPES SHALL BE APPROVED BY ARCHITECT PRIOR TO ORDER.
4. SEE ARCHITECTURAL PLANS FOR EXACT LENGTHS & LOCATIONS.
5. PROVIDE SAMPLES FOR ARCHITECTURAL REVIEW.
6. ALL DIFFUSERS IN TOILET ROOMS AND POOL ROOM TO BE ALUMINUM.

SELF CONTAINED POOL AIR CONDITIONING UNIT SCHEDULE (SERESCO AS STANDARD)

TAG	LOCATION	SERVICE	SUPPLY FAN AIRFLOW (CFM)	ESP (inH2O)	HP	FLA	DIRECT EXPANSION COOLING COIL – AIR TEMP (°F) SPACE TEMP DB	RH	POOL WATER TEMP WB (°F)	SENS. MBH	TOTAL MBH	EER	HOT WATER COIL – WATER TEMP ENT. (°F)	LVG. (°F)	MBH	GPM	WATER P.D. (PSI)	WORK. PRESS. (PSIG)	COMPRESSOR NO.	TYPE OF COMP	LRA PER COMP	RLA PER COMP	CONDENSER GPM	EWT	LWT	P.D. (PSI)	REFRIGERANT TYPE	MIN OA (CFM)	ELECTRICAL MCA	MOP	MODEL NO.	REMARKS
DHU-3-1	3RD FLOOR	4TH FLOOR POOL	6600	0.75	2.5	5.6			80	96.9	137.9		160	66	200	8.5	5.5		2	SCROLL	164	23.2					R410A	330	64	80		

NOTES:
1. ALL AIR CONDITIONING UNITS TO COMPLY WITH REQUIREMENTS IN UL-1995 OR CERTIFIED BY A NRTL PROGRAM.
2. PROVIDE 4" CONCRETE PAD.

COOLING TOWER SCHEDULE (EVAPCO AS STANDARD)

UNIT NO.	MODEL	SERVICE	LOCATION	NO. OF CELLS	GPM PER CELL	WATER TEMPERATURE ENT. (°F)	WATER TEMPERATURE LVG. (°F)	AMBIENT TEMP. (°F WB)	INLET PRESSURE DROP (PSI)	FAN HP PER CELL	CFM (TOTAL)	ELECTRIC BASIN HEATERS NO./CELL	ELECTRIC BASIN HEATERS kW/HEATER	V/PH/HZ	CONTROLLER TYPE	OPERATING WEIGHT (LBS, TOTAL)	DIMENSIONS WITH LADDER (L x W x H)	REMARKS
CT-R-1	AT-212-728	ROOF	ROOF	2	1375	97	85	78	2.9	30	213200	2	7	460/3/60	VFD	35000	28'2"X11'10"X17'7"	

NOTES:
1. PROVIDE WITH BOTTOM OUTLET EXTERNAL EQUALIZING CONNECTIONS.
2. PROVIDE MANUFACTURER MADE LADDER ACCESS TO CELL BASIN, EXTEND TO ROOF LEVEL.
3. PROVIDE VIBRATION ISOLATORS TYPE XVI W/2" DEFLECTION ON CT-1.
4. PROVIDE TWO WAY AUTOMATIC MOTORIZED CONTROL DRAIN DOWN VALVES FOR EACH CELL BASIN.
5. PROVIDE TWO WAY AUTOMATIC MOTORIZED CONTROL VALVES ON CWS & CWR PIPE FOR EACH CELL.
6. PROVIDE HEAT TRACING ON ALL EXPOSED PIPING.
7. PROVIDE VFD WITH CIRCUIT BREAKER DISCONNECT, 3 CONTRACTOR BYPASS AND CONTROL POWER TRANSFORMER IN VENTILATED NEMA 3R ENCLOSURE.
8. PROVIDE LOW SOUND FANS.
9. PROVIDE 36" WIDE HEAVY DUTY PLATFORM WALKWAY WITH PERIMETER HAND RAIL (REF. TO SPEC)
10. PROVIDE SOUND ATTENUATION PACKAGE WITH COOLING TOWER.

CAR DAMPER SCHEDULE

TAG	SERVICE	CFM (MAX/MIN)	TYPE	MODEL	CAR DIMENSIONS	BALANCING TOLERANCE	DIFFERENTIAL PRESSURE RANGE (IN. WG)	ELECTRICAL	REMARKS
CAR-A	TX	30	CONSTANT	CER-SE-II	4"	+/-15%	0.2-0.8	N/A	
CAR-B	KX	50	CONSTANT	CER-SE-II	4"	+/-15%	0.2-0.8	N/A	
CAR-C	OA	80	CONSTANT	CER-SE-II	5"	+/-15%	0.2-0.8	N/A	
CAR-D	SA	225	CONSTANT	CER-SE-II	8"	+/-15%	0.2-0.8	N/A	
CAR-E	TRX	40	CONSTANT	CER-SE-II	4"	+/-15%	0.2-0.8	N/A	

NOTES:
1. PROVIDE CER WITH INTEGRAL FIRE DAMPER FOR SQUARE OR RECTANGULAR DUCTING.
2. CAR DAMPERS TO BE UL 2043 CLASSIFIED AND LABELED FOR FLAME AND SMOKE GENERATION.
3. FIRE DAMPERS TO BE LISTED PER UL 555

HOT WATER CONDENSING BOILER SCHEDULE (AERCO AS STANDARD)

UNIT NO.	SERVICE	LOCATION	MODEL NUMBER	INPUT MBH	OUTPUT MBH	ENT. WATER TEMP (F)	LVG. WATER TEMP (F)	GAS CONNECT. SIZE (IN)	WATER CONNECTION SIZE (IN)	MAX WORKING PRESSURE (PSI)	MAX/MIN WATER FLOW (GPM)	WTR. PRESS. DROP (psig)	TEMP. CONTROL RANGE (F)	WATER VOLUME (GAL.)	NATURAL GAS FUEL CONSUMPTION (CU.FT. PER HR)	REQUIRED GAS PRESSURE	ELECTRICAL V/PH/HZ	FLA	CONTROLLER TYPE	EFF (%)	AIR INLET DIAMETER (IN)	VENT DIAMETER (IN)	OPERATING WEIGHT (LBS)	DIM (H x W x D) (INCHES)	NOTES
B-68-1,2,3,4	VARIES	68th FLOOR	BMK6000	6000	5670	120	160	2 " NPT	6"	150	75/600	4	50-190	110		14	480/3/60			94.50%	14	12	4000	79.75x34x108.3	

NOTES:
1. COORDINATE WITH CONTRACTOR FOR CONCRETE PAD
2. PROVIDE FACTORY MOUNTED CONTROLS WITH BACNET PROCESSOR FOR BMS INTERFACE
3. PROVIDE STARTER DISCONNECT FOR EACH BOILER
4. MFG. SUPPLIED FLUE & INLET PIPING
5. PROVIDE ACID NEUTRALIZATION DEVICE FOR CONDENSATE DRAIN. REFER TO M-504 FOR PIPING DETAILS.
6. CONTRACTOR TO PROVIDE ALTERNATE PRICE FOR (3) FBN-4000 BOILERS.
7. PROVIDE LOCHINVAR BACKFLOW PREVENTER FOR EACH BOILER.
8. PROVIDE CASCADE SEQUENCER BUILT INTO CREST SMART TOUCH CONTROL
9. ALL TEES FOR FLUE CONNECTION SHALL BE LATERAL (45 DEGREE) TEES. 90 DEGREE TEES AND BOOTS ARE NOT ACCEPTABLE.
10. FOR ALTERNATE PRODUCTS, PROVIDE FACTORY CALCULATIONS FOR CHIMNEY DESIGN.
11. ALL BOILERS TO COMPLY WITH REQUIREMENTS IN UL-795 OR CERTIFIED BY A NRTL PROGRAM.
12. ALL BOILERS TO MEET THE REQUIREMENTS OF CSA 4.9-2013.

AIR SEPARATOR SCHEDULE (B&G AS STANDARD)

UNIT NO.	MODEL NO.	SYSTEM	MAX FLOW (GPM)	LINE SIZE (IN.)	OPERATING WEIGHT (LBS.)	MAX WORKING PRESSURE (PSIG.)	REMARKS
AS-37-1	ROLAIRTROL	SECONDARY CHILLED WATER	1900	8	1200		
AS-38-1	ROLAIRTROL	SECONDARY HOT WATER	850	6	600		
AS-68-1	ROLAIRTROL	PRIMARY CHILLED WATER	3600	10	2100		
AS-68-2	ROLAIRTROL	PRIMARY HOT WATER	1900	8	1200		

BOH FAN COIL UNIT SCHEDULE (IEC AS STANDARD)

TAG	MODEL NO.	SERVICE	LOCATION	CFM	E.S.P. REQUESTED/ SELECTED	MOTOR DATA MOTOR TYPE	HP	FLA	V/PH/HZ	CONTROL VALVE TYPE	E.A.T. (°F) DB	E.A.T. (°F) WB	L.A.T. (°F) DB	L.A.T. (°F) WB	BTUH Total	BTUH Sensible	GPM	COIL ROWS	SUMMER E.W.T. (°F)	SUMMER L.W.T. (°F)	PD FT W.C.	HEATING CAPACITY E.A.T. (°F) DB	L.A.T.	BTUH	GPM	COIL ROWS	E.W.T. (°F)	L.W.T. (°F)	PD FT W.C.	REMARKS
FCU-SC-1	FCHH108	CORRIDOR	SUB-CELLAR	770	1	ECM	1/3	4.6	115/60/1	2 POSITION	80	67	57.1	56.4	25786	19245	4.3	4	46	58	9.4	-	-	-	-	-	-	-	-	COOLING ONLY
FCU-SC-2	FCHH108	WORKSHOP/STORAGE	SUB-CELLAR	770	0.5	ECM	1/3	4.6	115/60/1	2 POSITION	80	67	57.1	56.4	25786	19245	4.3	4	46	58	9.4	-	-	-	-	-	-	-	-	COOLING ONLY
FCU-SC-3	FCHH108	BUILDING MANAGER	SUB-CELLAR	770	0.5	ECM	1/3	4.6	115/60/1	2 POSITION	80	67	57.1	56.4	25786	19245	4.3	4	46	58	9.4	-	-	-	-	-	-	-	-	COOLING ONLY
FCU-SC-4	FCHH108	LAUNDRY ROOM	SUB-CELLAR	770	0.5	ECM	1/3	4.6	115/60/1	2 POSITION	80	67	57.1	56.4	25786	19245	4.3	4	46	58	9.4	-	-	-	-	-	-	-	-	COOLING ONLY
FCU-SC-5	FCHH108	TELECOM ROOM	SUB-CELLAR	770	0.5	ECM	1/3	4.6	115/60/1	2 POSITION	80	67	57.1	56.4	25786	19245	4.3	4	46	58	9.4	-	-	-	-	-	-	-	-	COOLING ONLY
FCU-SC-6	FCHH108	TELECOM ROOM	SUB-CELLAR	770	0.5	ECM	1/3	4.6	115/60/1	2 POSITION	80	67	57.1	56.4	25786	19245	4.3	4	46	58	9.4	-	-	-	-	-	-	-	-	COOLING ONLY
FCU-3-1		ELECTRICAL ROOM	3RD FLOOR	4800	0.5	-			460/60/3	2 POSITION	80	67	56.5	55.6								-	-	-	-	-	-	-	-	COOLING ONLY
FCU-3-2	LAH005A	ELECTRICAL ROOM	3RD FLOOR	1600	0.5	-	3/4	5.7	208/60/1	2 POSITION	80	67	56.5	55.6	57071	41192	10.7	4	46	56.7	6.5	-	-	-	-	-	-	-	-	COOLING ONLY
FCU-3-3	LAH005A	SECURITY ROOM	3RD FLOOR	1600	0.5	-	3/4	5.7	208/60/1	2 POSITION	80	67	56.5	55.6	57071	41192	10.7	4	46	56.7	6.5	-	-	-	-	-	-	-	-	COOLING ONLY
FCU-3M-1	FCHH108	ELECTRICAL ROOM	3RD FLOOR MEZZ	770	1	ECM	1/3	4.6	115/60/1	2 POSITION	80	67	57.1	56.4	25786	19245	4.3	4	46	58	9.4	-	-	-	-	-	-	-	-	COOLING ONLY
FCU-3M-2	FCHH108	ELECTRICAL ROOM	3RD FLOOR MEZZ	770	1	ECM	1/3	4.6	115/60/1	2 POSITION	80	67	57.1	56.4	25786	19245	4.3	4	46	58	9.4	-	-	-	-	-	-	-	-	COOLING ONLY
FCU-3M-3	LAH005A	ELECTRICAL ROOM	3RD FLOOR MEZZ	1600	0.5	-	3/4	5.7	208/60/1	2 POSITION	80	67	56.5	55.6	57071	41192	10.7	4	46	56.7	6.5	-	-	-	-	-	-	-	-	COOLING ONLY

AIR OUTLET & INLET SCHEDULE

(TITUS AS STANDARD)

TAG	SERVICE	MIN CFM	MAX CFM	SIZE FACE	SIZE NECK	SIZE SLOT	MODEL	REMARKS	NOTES
CD-1	SUPPLY DIFFUSER	50	170	12x12	6"Ø	-	OMNI	FOR SHEETROCK CEILINGS	SEE NOTES
CD-2	SUPPLY DIFFUSER	171	300	12x12	8"Ø	-	OMNI	FOR SHEETROCK CEILINGS	SEE NOTES
CD-3	SUPPLY DIFFUSER	100	175	24x24	8"Ø	-	OMNI	FOR LAY-IN CEILINGS	SEE NOTES
TR-A	SUPPLY GRILLE	150	350	14x14	12x12	_	300 FS	FOR WALL SUPPLY	SEE NOTES
TR-B	RETURN GRILLE	20	100	10x10	8x8	-	350 RL	FOR WALL RETURN	SEE NOTES
TR-C	RETURN GRILLE	150	300	14x10	12x8	-	350 RL		SEE NOTES
TR-D	SUPPLY GRILLE	150	250	12x8	10x6	-	300 RL		SEE NOTES
TR-E	SUPPLY GRILLE	150	250	10x10	8x8	_	300 RL		SEE NOTES
TR-F	SUPPLY GRILLE	50	150	8x8	6x6	_	300 RL		SEE NOTES
TR-G	SUPPLY GRILLE	-	-	18x10	16x8	_	300 RL		SEE NOTES

NOTES:
1. TRIM VOLUME DAMPERS ARE UNACCEPTABLE.
2. ALL CUSTOM COLORS AND BORDER TYPES SHALL BE APPROVED BY ARCHITECT PRIOR TO ORDER.
3. REFER TO ARCHITECTURAL PLANS FOR EXACT LENGTHS AND LOCATIONS.
4. PROVIDE PXP LIGHT SHIELD FOR NON-DUCTED APPLICATION ON RETURN AIR GRILLE.
5. ALL VOLUME DAMPERS IN NON-ACCESSIBLE CEILING TO BE PROVIDED WITH REMOTE ACTUATORS OR CORD OPERATED DAMPER THRU FACE OF DIFFUSER.
6. ALL DIFFUSERS IN TOILET ROOMS AND POOL ROOM TO BE ALUMINUM.

Damian Titus
Buildings
APPROVED
Under Directive 2 of 1975
Date: 09/27/2016:
NYC Development Hub

125
GREENWICH
NEW YORK, NY

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VS 125 LLC
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ARCHITECT :
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STRUCTURAL ENGINEER :
DESIMONE CONSULTING ENGINEERS
18 WEST 18TH STREET, 10TH FLOOR
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GEOTECH CONSULTANT :
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SCALE NTS

SHEET TITLE :
MECHANICAL
SCHEULE
SHEET #1

SHEET NUMBER :
M-401.00

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FAN SCHEDULE (GREENHECK AS STANDARD)

FAN NO.	LOCATION	SERVICE	CFM	STATIC PRESS. IN.W.G.	TYPE	MODEL NO.	BHP	MOTOR HP	STATIC EFFICIENCY (%)	VFD (Y/N)	VOLT/PH/HZ	RPM	WEIGHT (LBS.)	NOTES
EF-3-1	3RD FLOOR	RETAIL EXHAUST	2200	1.5	SQUARE INLINE, BACKWARD INCLINED	BSQ-130	1.32	1.5	42	N	460/3/60	2189	120	
EF-3-2	3RD FLOOR	SUB-CELLAR EXHAUST	2415	1.5	SQUARE INLINE, BACKWARD INCLINED	BSQ-130	1.24	1.5	43	N	460/3/60	2146	120	
RF-3-1	3RD FLOOR	AHU-3-1	2500	1	SQUARE INLINE, BACKWARD INCLINED	BSQ-140	1.01	1.5	41	N	460/3/60	1653	130	
RF-3-2	3RD FLOOR	AHU-3-2 RETURN	3600	1.25	SQUARE INLINE, BACKWARD INCLINED	BSQ-180	1.5	2	50	Y	460/3/60	1265	160	
RF-3-3	3RD FLOOR	AHU-3-3 RETURN	5400	1.25	SQUARE INLINE, BACKWARD INCLINED	BSQ-200	2.62	3	42	Y	460/3/60	1376	230	
RF-3-4	3RD FLOOR	POOL DHU	4000	1.25	SQUARE INLINE, BACKWARD INCLINED	BSQ-180	1.72	2	48	Y	460/3/60	1324	155	
TX-3-1	3RD FLOOR	TOILET EXHAUST	1325	1.25	SQUARE INLINE, BACKWARD INCLINED	BSQ-120	0.61	0.75	46	N	460/3/60	1770	100	
EF-3M-1	3RD MEZZ	ELECTRICAL ROOMS	3800	1.25	SQUARE INLINE, BACKWARD INCLINED	BSQ-160	1.76	2	45	N	460/3/60	1672	149	
DXF-6-1	6TH FLOOR	DRYER EXHASUT FAN	3000	1.5	BOX VENTILATOR	BESB 400	-	2	-	Y	460/3/60	1720	170	
EF-7-1	7TH FLOOR	BIKE ROOM	610	1.25	SQUARE INLINE, BACKWARD INCLINED	BSQ-80	0.53	0.75	-	N	460/3/60	2259	90	
KX-7-1	7TH FLOOR	KITCHEN EXHAUST	4,050	0.8	MIXED FLOW INLINE	EQB-18	0.85	1.5	64	Y	460/3/60	1146	230	
KX-7-2	7TH FLOOR	KITCHEN EXHAUST	5,500	1	MIXED FLOW INLINE	EQB-20	1.42	2	65	Y	460/3/60	1165	330	
TRX-7-1	7TH FLOOR	TRASH ROOM EXHAUST	560	1.5	SQUARE INLINE, BACKWARD INCLINED	BSQ-80	0.55	3/4	-	N	460/3/60	2306	100	
TX-7-1	7TH FLOOR	TOILET EXHAUST	375	1.25	SQUARE INLINE, BACKWARD INCLINED	BSQ-80	0.32	.5	26	N	460/3/60	1952	85	
KX-37-1	37TH FLOOR	KITCHEN EXHAUST	8,100	0.8	MIXED FLOW INLINE	EQB-22	1.9	3	56	Y	460/3/60	1117	370	
KX-37-2,3	37TH FLOOR	KITCHEN EXHAUST	5,500	1	MIXED FLOW INLINE	EQB-18	1.58	2	58	Y	460/3/60	1448	250	
TRX-38-1	37TH FLOOR	TRASH ROOM EXHAUST	1,160	1.5	SQUARE INLINE, BACKWARD INCLINED	BSQ-90	1.07	1.5	-	N	460/3/60	2660	110	
KX-67-1	67TH FLOOR	KITCHEN EXHAUST	4050	0.8	MIXED FLOW INLINE	EQB-18	0.85	1.5	64	Y	460/3/60	1146	230	
KX-67-2	67TH FLOOR	KITCHEN EXHAUST	4,050	1	MIXED FLOW INLINE	EQB-18	1.02	1.5	67	Y	460/3/60	1206	230	
TRX-67-1	67TH FLOOR	TRASH ROOM EXHAUST	560	1.5	SQUARE INLINE, BACKWARD INCLINED	BSQ-80	0.55	3/4	-	N	460/3/60	2306	100	
SPF-R-1,2	ROOF	SMOKE PURGE FAN	21000	0.5	AXIAL, REVERSIBLE	100JMTR	6.51	7	-	N	460/3/60	1170	810	

NOTES:
1. PROVIDE VFD
2. WEATHER PROOF MOTOR
3. FAN, MOTOR, AND SUPPORT TO BE TREATED FOR EXPOSURE TO OUTSIDE.
4. CONNECT TO EMERGENCY POWER
5. PROVIDE ALUMINUM FAN CONSTRUCTION W/ GREENHECK HI-PRO POLYESTER COATING OR EQUIVALENT.
6. ALL FANS TO COMPLY WITH REQUIREMENTS IN UL-705 OR CERTIFIED BY A NRTL PROGRAM.

VAV BOX SCHEDULE (TITUS AS STANDARD)

SYMBOL	MODEL NO.	INLET DIAM. (IN.)	NC AT INLET @1"SP	CFM MAX CAPACITY	CFM MAX SETTING	CFM MIN SETTING	REHEAT COIL TOTAL MBH	AIR TEMP.°F ENT.	AIR TEMP.°F LVG.	GPM	MAX.COIL PRESS.DROP (IN WG)	REMARKS
VAV-"A"	DESV	6	30	360	300	0	–	–	–	–	–	SEE NOTES
VAV-"B"	DESV	8	30	640	450	301	–	–	–	–	–	
VAV-"C"	DESV	10	30	1120	900	451	–	–	–	–	–	
VAV-"D"	DESV	12	30	1750	1745	901	–	–	–	–	–	
CV-"AH"	DESV	10	30	1120	700	700	35.5	55	90	4.0	0.5	
CV-"B"	DESV	6	30	360	225	225	–	–	–	–	–	
CV-"C"	DESV	6	30	360	250	250	–	–	–	–	–	
VAV-"E"	DESV	8	30	640	450	301	17.0	55	90	2	0.5	

NOTES:
1. MIN. CFM SHOWN IS THE LOWEST MFG'S RECOMMENDED SET-POINT.
2. REFER TO PLANS FOR LEFT HANDED OR RIGHT HANDED CONNECTIONS.
3. PROVIDE 15'-0" OF 1" THICK ACOUSTICAL LINING DOWNSTREAM OF VAV BOX
4. FOR CONTROL SEQUENCE, SEE SPECIFICATIONS.
5. PROVIDE FIBRE-FREE LINING IN THE BOX.
6. PROVIDE 24 VAC TRANSFORMER.
7. CV = CONSTANT AIR VOLUME TERMINAL UNIT. ALL CAV'S SHALL BE VAV UNITS WITH MIN./MAX. CFM SETTING AT THE SAME VALUE.
8. ELECTRONIC DIGITAL CONTROLLER, MULTI-POINT CENTER AVERAGING SENSOR, OUTPUTS TO BMS FOR DAMPER ADJUSTMENT AND MONITORING.
9. ALL VAV BOXES TO BE UL LISTED OR CERTIFIED BY A NRTL PROGRAM.

H&V SCHEDULE GREENHECK AS STANDARD

SYMBOL	TYPE	MODEL NO.	CFM	EXT. S.P. (IN.W.G.)	FAN SPEED	E.A.T. (°F)	L.A.T.	MBH	GPM	E.W.T. (°F)	L.W.T.	ROWS COIL	HP	V/HZ/PH	FLA	REMARKS
HV-3-1		LFC-45-FC	2440	1.25	1833	0	64	196.4	13.3	160	130	2	3	460/60/3	4.8	
HV-3-2		LFC-45-FC	2200	1.25	1728	0	67	184.7	12.5	160	130	2	3	460/60/3	4.8	
HV-6-1		LFC-65-FC	3000	1.25	1165	0	70	261.5	17.7	160	130	2	2	460/60/3	3.4	INTERLOCK WITH DXF-6-1
HV-7-1		LFC-20-FC	610	1	2202	0	66	50	2.5	160	130	2	1/2	208/60/3	2.4	

(HEATING CAPACITY / HOT WATER COIL: E.A.T. through ROWS COIL; MOTOR: HP, V/HZ/PH, FLA)

FAN POWERED TERMINAL UNIT SCHEDULE (TITUS AS STANDARD)

TAG	MODEL NO.	UNIT SIZE	INLET DIAMETER (IN.)	OUTLET SIZE	MIN-MAX PRIMARY AIR CAPACITY (CFM)	MIN. STATIC PRESSURE (IN.)	NC LEVEL @ 1"SP (AT INLET)	EAT (°F)	LAT (°F)	BTU/HR	APd (IN.)	EWT (°F)	LWT (°F)	GPM	WPd (IN.)	ROWS	FAN CFM (MAX)	FAN ESP (IN.)	FAN HP	ELEC. (V/P/HZ)	VIBRATION ISOLATION TYPE	DEFLECTION (INCHES)	REMARKS
FPB-A	DTQS	2	6	17x15	80-400	0.16	28	65	104	17,000	0.02	160	140	2	0.2	1	400	0.27	0.17	120/1/60	MASON HD	0.2	SEE NOTES
FPB-B	DTQS	2	8	17x15	145-600	0.15	33	65	97	20,500	0.04	160	140	2	0.3	1	600	0.29	0.17	120/1/60	MASON HD	0.2	
FPB-C	DTQS	3	10	17x15	230-1000	0.20	33	65	90	27,000	0.09	160	140	3	0.6	1	1000	0.34	0.25	120/1/60	MASON HD	0.2	
FPB-D	DTQS	3	12	17x15	230-1200	0.18	34	65	88	30,700	0.13	160	140	3	0.6	1	1200	0.38	0.25	120/1/60			

(HOT WATER HEATING COIL: EAT through ROWS; FAN: CFM, ESP, HP)

FPB NOTES:
1. MIN. CFM SHOWN IS THE LOWEST MFG'S RECOMMENDED SET-POINT.
2. REFER TO PLANS FOR LEFT HANDED OR RIGHT HANDED CONNECTIONS.
3. PROVIDE FIBRE-FREE LINING IN THE BOX.
4. PROVIDE 24 VAC TRANSFORMER.
5. FOR CONTROL SEE SPECS
6. PROVIDE 15'-0" OF 1" THICK ACOUSTICAL LINING DOWNSTREAM OF FPB BOX
7. ELECTRONIC DIGITAL CONTROLLER, MULTI-POINT CENTER AVERAGING SENSOR, OUTPUTS TO BMS FOR DAMPER ADJUSTMENT AND MONITORING.
8. ALL FAN POWERED TERMINAL UNITS TO BE UL LISTED OR CERTIFIED BY A NRTL PROGRAM.

WATER FILTER SCHEDULE

UNIT NO.	SERVICE	LOCATION	PUMP HP	FILTER EFF.	DELTA T	BACKWASH GPM	BACKWASH GAL (TOTAL)	V/PH/HZ	PRESSURE RATING (PSIG)	OPER. WT. (LBS)	MODEL NO.	REMARKS
WF-68-1	COOLING TOWER	68TH FLOOR	1	0.5	12	15	75	460/3/60	-	1050	CW116	

CENTRIFUGAL CHILLER SCHEDULE (JOHNSON CONTROLS AS STANDARD)

UNIT No.	SERVICE	LOCATION	CAPACITY (TONS)	EVAP. TOTAL GPM	EVAP. EWT (°F)	EVAP. LWT (°F)	EVAP. PRESSURE DROP (FT)	NO. OF PASSES	EVAP. FOULING FACTOR (SQ FT-°F-HR/BTU)	EVAP. KW/TON	COND. TOTAL GPM	COND. EWT (°F)	COND. LWT (°F)	COND. PRESSURE DROP (FT)	COND. FOULING FACTOR (SQ FT-F-HR/BTU)	COND. KW/TON	FLA	MCA	MAX FUSE	V/PH/HZ	REFRIGERANT TYPE	LBS OF REFRIGERANT	OPEARTING WEIGHT (LBS)	DIMENSIONS (LxWxH)	REMARKS
CH-68-1,2	CHILLED WATER	68TH FLOOR	550	1096.2	54	42	12.5	2	0.0001		1300.2	85	97	9.7	0.00025		434	544	800	460/3/60	R134a	1298	2550	12'-6"x6'-7"x7'-4"	

(EVAPORATOR DATA; CONDENSER DATA; ELECTRICAL DATA: FLA, MCA, MAX FUSE, V/PH/HZ; REFRIGERANT: TYPE, LBS)

NOTES
1. CHILLER IS DESIGNED FOR VARIABLE PRIMARY FLOW CAPABLE OF WITHSTANDING 30% OF FLOW PER MINUTE.
2. COMPLIANT WITH AHRI STANDARD 550/590.

FAN COIL UNIT SCHEDULE (IEC AS STANDARD)

TAG	MODEL NO.	SERVICE	LOCATION	CFM	FAN SPEED	E.S.P. REQUESTED/ SELECTED	MOTOR TYPE	WATTS	FLA	V/PH/HZ	CONTROL VALVE TYPE	E.A.T. (°F) DB	E.A.T. (°F) WB	L.A.T. (°F) DB	L.A.T. (°F) WB	BTUH Total	BTUH Sensible	GPM	COIL ROWS	SUMMER E.W.T. (°F)	SUMMER L.W.T. (°F)	PD FT W.C.	HTG E.A.T. (°F) DB	HTG L.A.T.	HTG BTUH	HTG GPM	HTG COIL ROWS	HTG E.W.T. (°F)	HTG L.W.T. (°F)	HTG PD FT W.C.	REMARKS
FCU-A	CPY-02	VARIES	VARIES	185	MED	0.12	ECM	58	0.53	115/1/60	MODULATING	75	63	55	54	4751	3909	0.8	4	44	56	2.5	70	94.3	4920	0.3	1	160	130	0.1	
FCU-B	CPY-03	VARIES	VARIES	200	MED	0.12	ECM	62	0.83	115/1/61	MODULATING	75	63	55	54	5567	4453	0.9	4	44	56	3.6	70	97.1	6027	0.4	1	160	130	0.2	
FCU-C	CPY-06	VARIES	VARIES	290	MED	0.12	ECM	86	1.4	115/1/62	MODULATING	75	63	55	54	7925	6407	1.3	4	44	56	1.6	70	101.7	10160	0.7	1	160	130	0.6	
FCU-D	CPY-08	VARIES	VARIES	550	MED	0.12	ECM	166	2.5	115/1/63	MODULATING	75	63	55	54	12342	10558	2	4	44	56	2.6	70	97.8	16903	1.1	1	160	130	1.4	
FCU-E	CPY-10	VARIES	VARIES	585	MED	0.12	ECM	184	2.8	115/1/64	MODULATING	75	63	55	54	14365	12228	2.4	4	44	56	1	70	101.3	20335	1.4	1	160	130	2.4	
FCU-F	HPY-12	VARIES	VARIES	1110	MED	0.12	ECM	390	6.2	115/1/65	MODULATING	75	63	55	54	22268	19788	3.7	4	44	56	3.5	70	94.5	30200	2	1	160	130	6.1	
FCU-G	HPY-12	VARIES	VARIES	1065	MED	0.12	ECM	390	6.2	115/1/66	MODULATING	75	63	55	54	24774	21299	4.1	4	44	56	2.7	70	94.9	29426	2	1	160	130	5.8	
FCU-A*	CPY-02	VARIES	VARIES	185	MED	0.12	ECM	58	0.53	115/1/67	MODULATING	75	63	55	54	4310	3727	0.7	4	46	58	2.2	70	91.3	4920	0.3	1	160	130	0.1	
FCU-B*	CPY-04	VARIES	VARIES	285	MED	0.12	ECM	91	1.4	115/1/68	MODULATING	75	63	55	54	7361	6082	1.2	4	46	58	6.6	70	97.8	8767	0.6	1	160	130	0.4	
FCU-C*	CPY-06	VARIES	VARIES	290	MED	0.12	ECM	86	1.4	115/1/69	MODULATING	75	63	55	54	7153	6086	1.2	4	46	58	1.4	70	101.7	10160	0.7	1	160	130	0.6	
FCU-C**	CPY-04	VARIES	VARIES	330	HIGH	0.25	ECM	144	1.4	115/1/70	MODULATING	75	63	55	54	8329	6948	1.4	4	46	58	8	70	96.3	9644	0.7	1	160	130	0.5	
FCU-D*	CPY-08	VARIES	VARIES	515	MED	0.12	ECM	166	2.5	115/1/71	MODULATING	75	63	55	54	12779	10747	2.1	4	46	58	3.9	70	98.5	16214	1.1	1	160	130	1.3	
FCU-E*	CPY-10	VARIES	VARIES	585	MED	0.12	ECM	184	2.8	115/1/72	MODULATING	75	63	55	54	12997	11670	2.1	4	46	58	0.8	70	101.8	20335	2.1	1	160	130	2.4	
FCU-E**	CPY-08	VARIES	VARIES	500	HIGH	0.25	ECM	223	2.5	115/1/73	MODULATING	75	63	55	54	12426	10440	2.1	4	46	58	3.7	70	98.8	15891	1.1	1	160	130	1.3	
FCU-F*	HPY-12	VARIES	VARIES	1110	MED	0.12	ECM	390	6.2	115/1/74	MODULATING	75	63	55	54	20509	19083	3.4	4	46	58	3.1	70	94.5	30200	2	1	160	130	6.1	
FCU-G*	HPY-12	VARIES	VARIES	1065	MED	0.12	ECM	390	6.2	115/1/75	MODULATING	75	63	55	54	22700	20458	3.8	4	46	58	2.3	70	94.9	29426	2	1	160	130	5.8	

(MOTOR DATA: MOTOR TYPE, WATTS, FLA, V/PH/HZ; HEATING CAPACITY: HTG columns)

NOTES
1. ALL FAN COIL UNITS SHALL BE PROVIDED WITH HIGH LEVEL CONDENSATE SWITCH. SWITCHES SHALL BE WIRED TO SHUT DOWN THE COOLING OPERATION.

ZONE CONTROL TERMINALS SCHEDULE

TAG.	SERVICE	TYPE	MODEL	EXHAUST BOX DIMENSIONS L x W x H	DUCT SIZE	NO. OF CARS IN ASSEMBLY	CAR DIMENSIONS	CAR FLOW SETTINGS	AIRFLOW RANGE	BALANCING TOLERANCE	DIFFERENTIAL PRESSURE RANGE	ELECTRICAL	SEQUENCE OF OPERATION	REMARKS
ZRT-A	APARTMENTS	INLINE ZRT	ZRT-PDIL	14x20x10	20x10	2	8" / 8"	75 / 235	75 / 310	+/-10%	0.2-0.8	24V OR 120V		
ZRT-B	APARTMENTS	INLINE ZRT	ZRT-PDIL	14x16x8	16x8	2	6" / 6"	105 / 235	105 / 340	+/-10%	0.2-0.8	24V OR 120V		
ZRT-C	APARTMENTS	INLINE ZRT	ZRT-PDIL	14x20x10	20x10	2	8" / 8"	160 / 205	160 / 365	+/-10%	0.2-0.8	24V OR 120V		
ZRT-D	APARTMENTS	INLINE ZRT	ZRT-PDIL	14x20x10	20x10	2	8" / 8"	175 / 205	175 / 205	+/-10%	0.2-0.8	24V OR 120V		

NOTES
1. ALL DUCTWORK AND ASSOCIATED RISERS CONTAINING CONSTANT AIR REGULATING DEVICES SHALL BE CONSTRUCTED AND SEALED TO MINIMIZE LEAKAGE TO NO GREATER THAN 5%. DUCT LEAKAGE TESTING SHALL BE CONDUCTED DURING PHASE OF CONSTRUCTION WHERE FULL ACCESS TO RISERS ARE AVAILABLE AND LEAKAGE TESTING CAN BE 100% COMPLETED PRIOR TO SHEETROCKING THE WALLS. ZRT ASSEMBLIES SHALL BE PROVIDED WITH 1/4" INSULATION FOR ACOUSTICAL NOISE REDUCTION.
2. ZRT SHALL BE PROVIDED WITH LINE VOLTAGE SPRING RETURN ACTUATOR. UPON POWERING UP VIA LIGHT SWITCH OR OTHER POWER SOURCE THE ACTUATOR SHALL MODULATE THE MINIMUM CAR-II OUT OF THE AIRSTREAM ALLOWING THE MAXIMUM CAR-II TO BALANCE TO MAXIMUM CFM. UPON LOSS OF POWER OR THE LIGHT SWITCH TURNING OFF THE DAMPER SPRING RETURN SHALL CLOSE THE DAMPER ALLOWING THE MINUMUM CAR-II TO MAINTAIN MINUMUM CFM SETPOINT.
3. ZRT ASSEMBLIES SHALL BE CAPABLE OF POWERING UP TRACKING DEVICES SUCH AS ZRT'S USED ON THE SUPPLY FOR MAKE UP AIR APPLICATIONS.
4. SUBMIT DIFFUSER AND GRILLES NC RATINGS FOR APPROVAL
5. COORDINATE FINISH WITH ARCHITECT

EXPANSION TANK SCHEDULE (BELL & GOSSETT AS STANDARD)

UNIT NO.	MODEL NO.	SERVICE	LOCATION	HEIGHT (IN.)	DIAM. (IN.)	ACCEPTANCE VOLUME (GAL.)	TOTAL VOLUME (GAL.)	WORK. PRESS. (PSIG.)	CHARGE PRESSURE (PSIG.)	OPERATING WEIGHT (IN.)	REMARKS
ET-37-1	B-300		38th FLOOR	50.875	24	80	80	12	45	270	
ET-38-1	B-200		38th FLOOR	36.875	24	53	53	12	45	200	
ET-68-1	B-600		67th FLOOR	63.75	30	158	158	12	45	550	
ET-68-2	B-5000		68th FLOOR	128	60	1321	1321	12	45	2500	

NOTES
1) EXPANSION TANKS WILL ARRIVE ON SITE FACTORY CHARGED TO AN UNKNOWN PRESSURE. CONNECTING THE EXPANSION TANK TO THE SYSTEM WITHOUT SETTING THE PRESSURE COULD RESULT IN SIGNIFICANT DAMAGE TO BUILDING SYSTEMS. CONTRACTOR TO CHARGE EXPANSION TANKS TO THE SPECIFIED PRESSURE PRIOR TO CONNECTING TO THE SYSTEM.

AIR COOLED SPLIT DX AIR CONDITIONING UNIT SCHEDULE

UNIT NO.	AREA SERVED	LOCATION	MANUFACTURER & MODEL NO.	AIR QTY (CFM)	STATIC PRESSURE (IN)	AIR TEMP. (°F) ENT.	AIR TEMP. (°F) LVG.	TOTAL CAPACITY (MBH)	SENSIBLE CAPACITY (MBH)	FAN MOTOR HP	FAN MOTOR RPM	ELEC. DATA V/PH/HZ	ELEC. DATA MCA	DIMENSION LxWxH INCHES	EER	UNIT WEIGHT LBS	REMARKS
AHU-R-1	EMR	ELEVATOR MACHINE ROOM	TRANE TWE090	2400	.25	90	60.2	94.1	79.2	1.5	1725	460/3/60	3.1	48x26x55	11.2	323	
AHU-R-2	EMR	ELEVATOR MACHINE ROOM	TRANE GAM5A0C48M41SA	1834	.2					1.75	1050	208/1/60	-	63x27.5x25.75	11.2	166	

AIR COOLED CONDENSER SPLIT DX UNIT SCHEDULE

UNIT NO	AREA SERVED	LOCATION	MANUFACTURER & MODEL NO.	COMPRESSOR NUMBER	COMPRESSOR REFRIG. TYPE	CONDENSER FAN NO.	CONDENSER FAN HP	UNIT WEIGHT LBS	MCA	ELEC V/HZ/PH	DIMENSION LxWxH INCHES	REMARKS
ACCU-1	EMR	ROOF	TRANE TTA090D4	1	R410A	1	.5	298	17.7	460/60/3	42X34X40	
ACCU-1	EMR	ROOF	TRANE 4TTA3048D	1	R410A	1	1.5	203		460/60/3	38.7X35.1X34.4	

(CONDSENSER SECTION: COMPRESSOR, CONDENSER FAN)

1. PROVIDE SOLENOID VALVE INSTALLED IN THE LIQUID LINE AT THE INDOOR UNIT.
2. PROVIDE SUCTION ACCUMULATOR.
3. PROVIDE CONDENSER FANS TO BE "QUIET CONDENSER FAN" TYPE.
4. PROVIDE LOW AMBIENT CONTROL
5. PROVIDE 4" CONCRETE PAD.
6. AC UNIT TO COMPLY WITH REQUIREMENTS IN UL-1995 OR CERTIFIED BY A NRTL PROGRAM.

Damian Titus
NYC Buildings APPROVED Under Directive 2 of 1975
Date: 09/27/2016
NYC Development Hub

ES465978925 Scan Code
Job Number

125 GREENWICH
NEW YORK, NY

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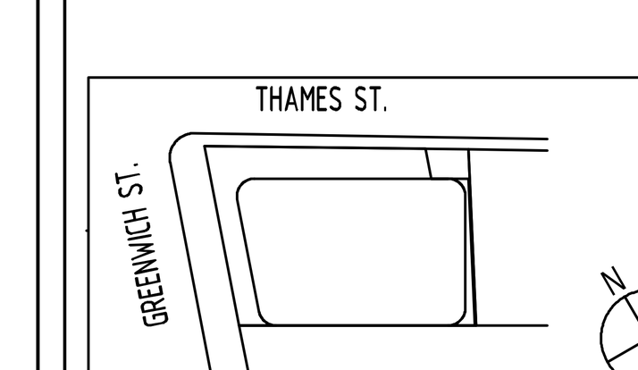
ISSUE NO.	ISSUE DATE	DESCRIPTION
01	9/30/15	DOB SUBMITTAL

KEY PLAN AND NORTH SIGN



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SCALE NTS

MECHANICAL SCHEDULE SHEET #2

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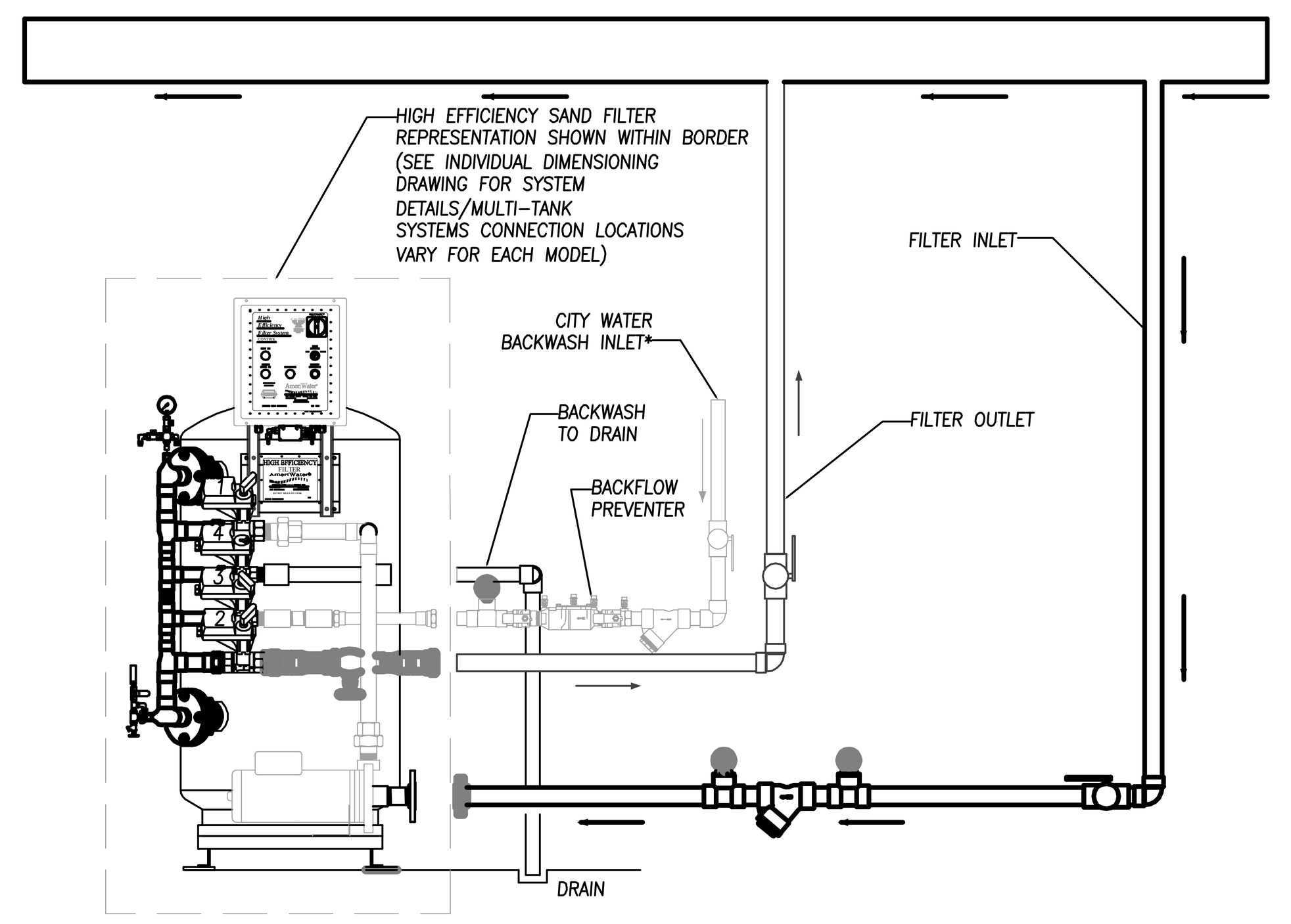
M-402.00

SHEET NUMBER :

FILE NAME I:\140294\MECH\DOB resubmission\M-402 SCHEDULE.dwg SAVED ON 10/1/2015 5:12 PM PLOTTED ON 6/20/2016 2:51 PM PLOTTED BY PASTOR, RYAN

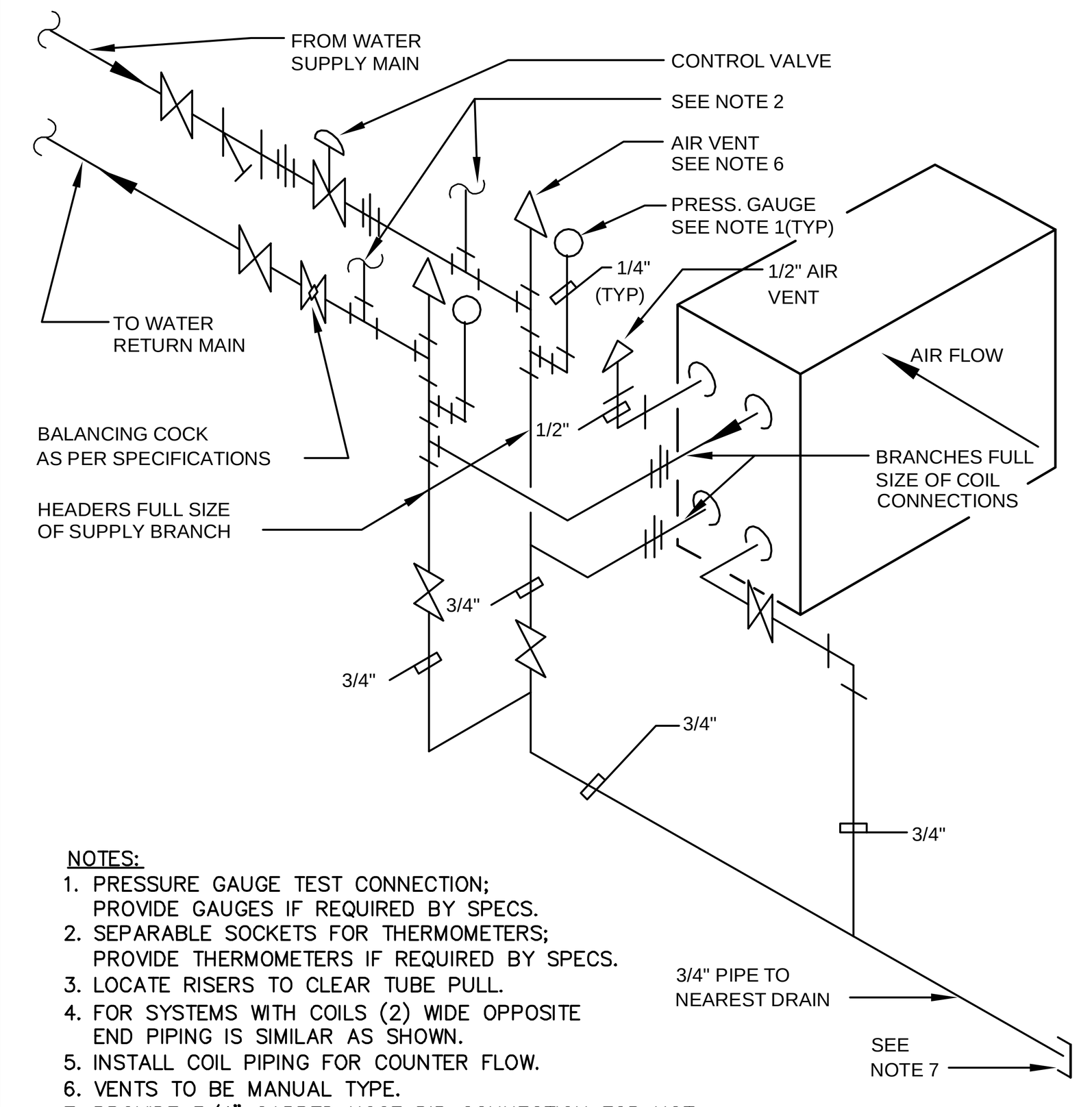
AMERIWATER
SIDE STREAM FILTER
TYPICAL SINGLE TANK INSTALLATION DIAGRAM

INLET AND OUTLET OF FILTER MUST CONNECT TO SAME COMMON COOLING WATER HEADER



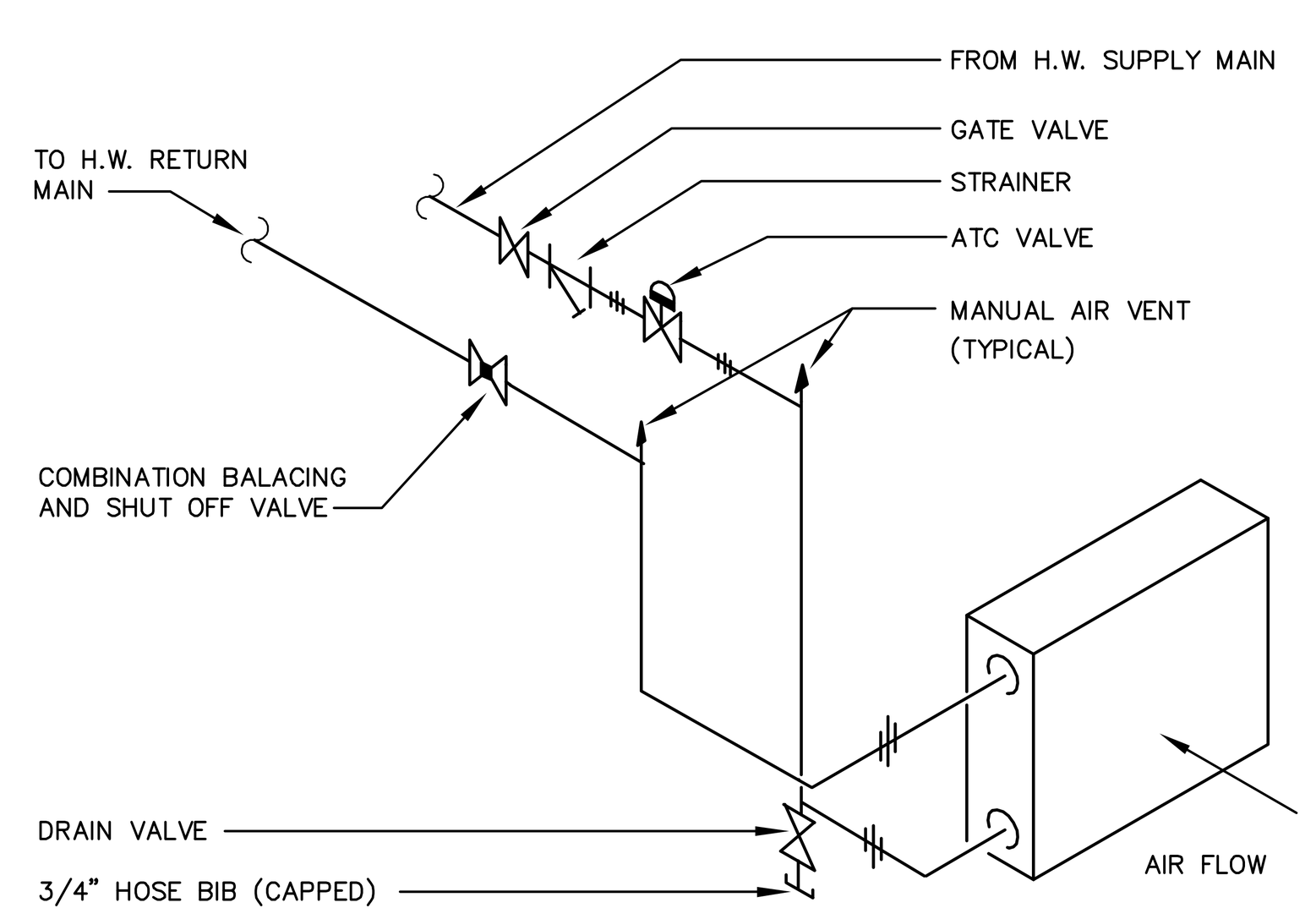
* CITY WATER OR ALTERNATE CLEAN WATER SOURCE. NOT REQUIRED FOR FILTERS USING OPTIONAL TOWER BACKWASH.

INSTALLATION NOTES:
1) CITY WATER PRESSURE MUST BE BETWEEN 30 AND 100 PSIG AND MAXIMUM BACKWASH WATER TEMPERATURE IS 100°F (CONSULT CHEMWORKS).
2) CONSULT CHEMWORKS FOR PIPE RUNS GREATER THAN 20' FROM FILTER.
3) ISOLATION VALVES ARE NEEDED IN EACH LINE.
4) ALL PIPING MUST MEET STATE AND LOCAL PLUMBING CODES.
5) SINGLE POINT ELECTRICAL CONNECTION TO CONTROL PANEL.
6) CONSULT CHEMWORKS FOR VERTICAL DRAIN PIPE INSTALLATIONS GREATER THAN 8' IN HEIGHT.



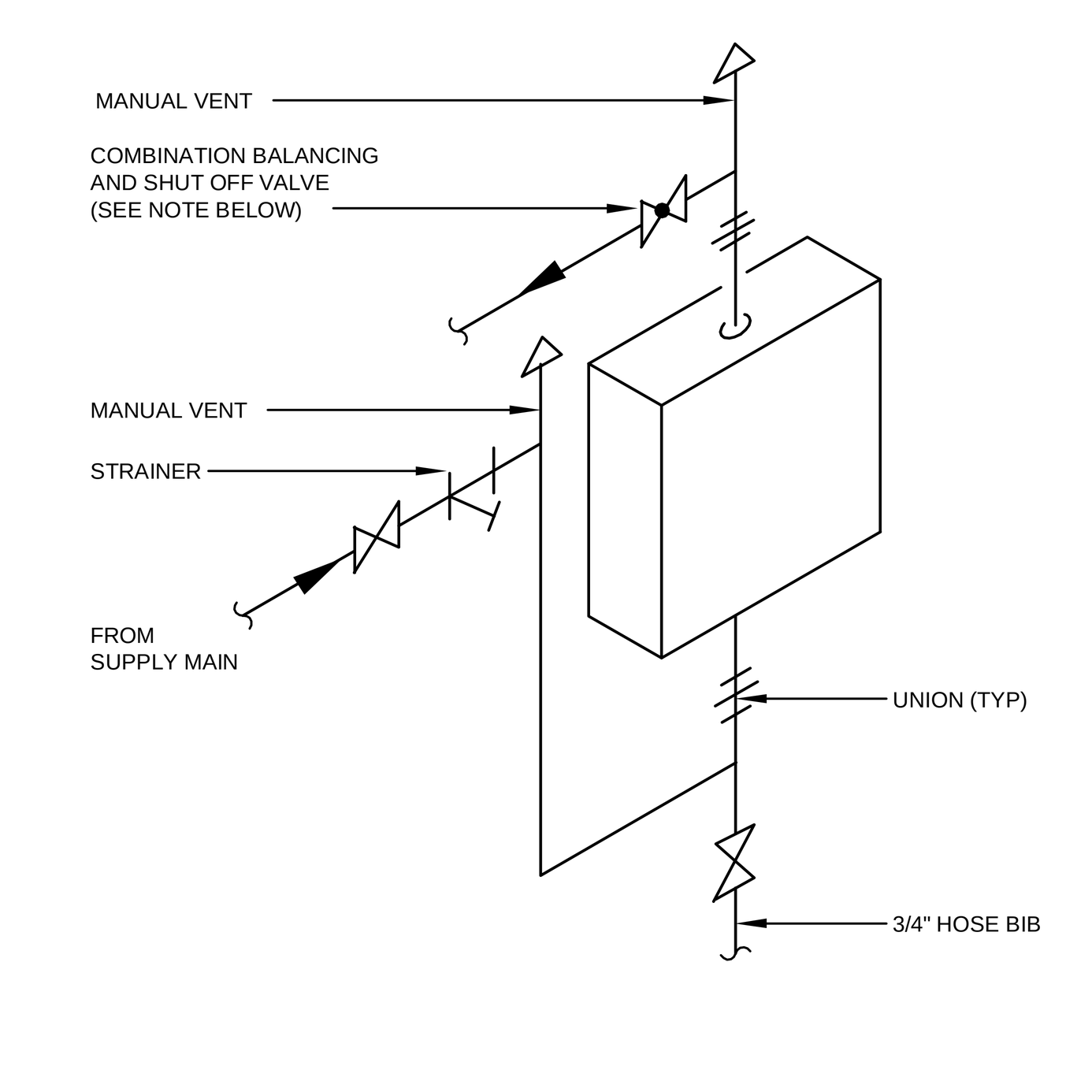
NOTES:
1. PRESSURE GAUGE TEST CONNECTION; PROVIDE GAUGES IF REQUIRED BY SPECS.
2. SEPARABLE SOCKETS FOR THERMOMETERS; PROVIDE THERMOMETERS IF REQUIRED BY SPECS.
3. LOCATE RISERS TO CLEAR TUBE PULL.
4. FOR SYSTEMS WITH COILS (2) WIDE OPPOSITE END PIPING IS SIMILAR AS SHOWN.
5. INSTALL COIL PIPING FOR COUNTER FLOW.
6. VENTS TO BE MANUAL TYPE.
7. PROVIDE 3/4" CAPPED HOSE BIB CONNECTION FOR HOT WATER COILS ONLY THAT ARE LOCATED ABOVE HUNG CEILING.
8. PROVIDE GALVANIZED STEEL DRAIN PAN UNDER ALL COOLING COILS SEE SPECIFICATIONS FOR ADDITIONAL DETAILS.

ONE HIGH VERT. WATER COIL PIPING (THROTTLING CONTROL VALVE)



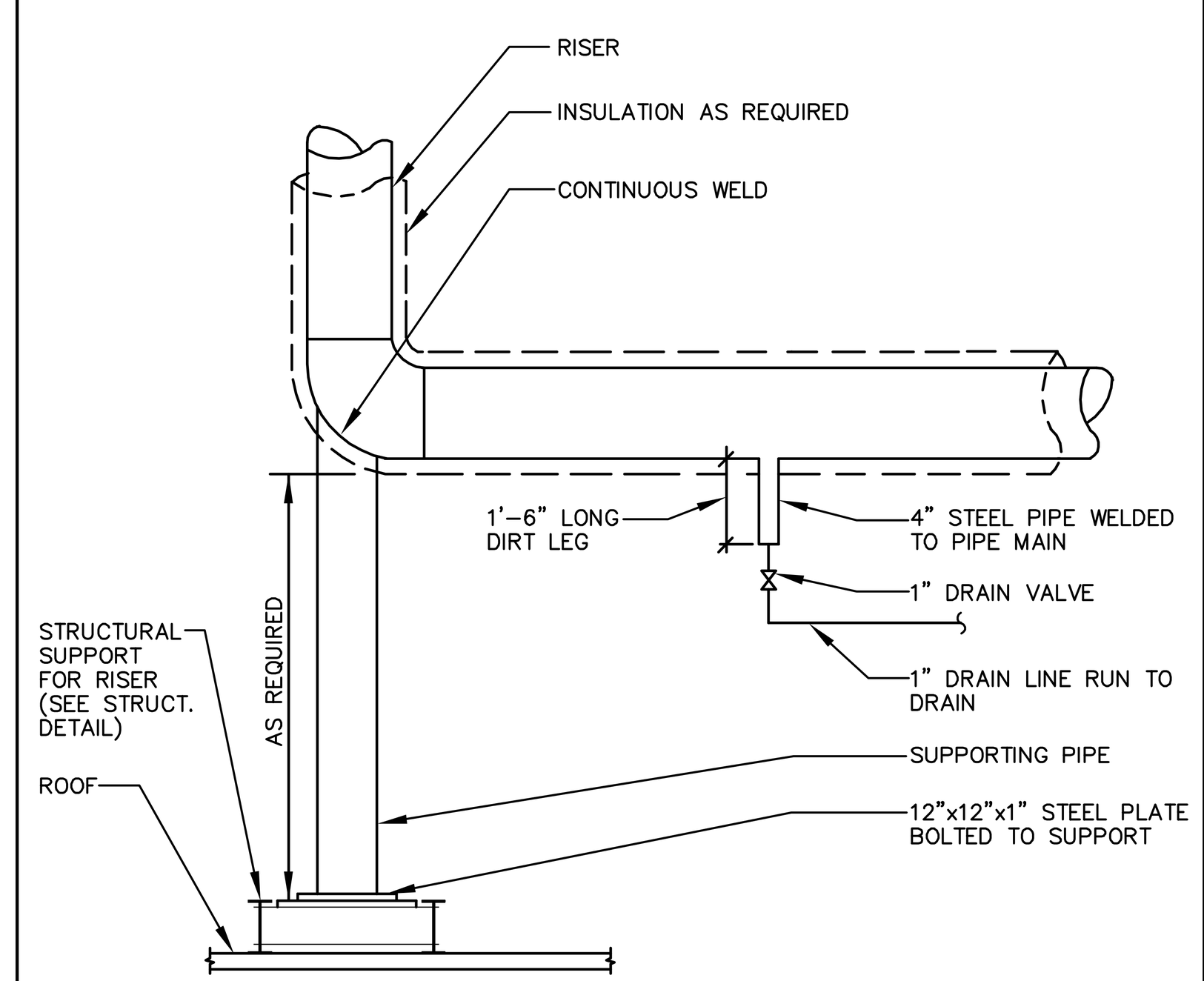
NOTES:
1. INSTALL COIL PIPING FOR COUNTERFLOW.
2. FOR ACCESS TO VALVES, STRAINERS, ETC., COMPLY WITH "ACCESS DOORS" IN SPECS.
3. PROVIDE ACCESS DOOR IN SHEET METAL FOR CLEANING OF COIL SURFACES.
4. FOR REHEAT COILS IN AIR SUPPLY UNITS REFER TO STANDARD DETAIL.
5. SHUT OFF GATE VALVES MUST BE SCREWED OR FLANGED (NOT SWEAT).
6. LOCATE PIPE UNIONS & ARRANGE PIPING TO FACILITATE REMOVAL.

REHEAT COIL WATER PIPING FOR COILS LOCATED IN DUCTWORK
(THROTTLING CONTROL VALVE)

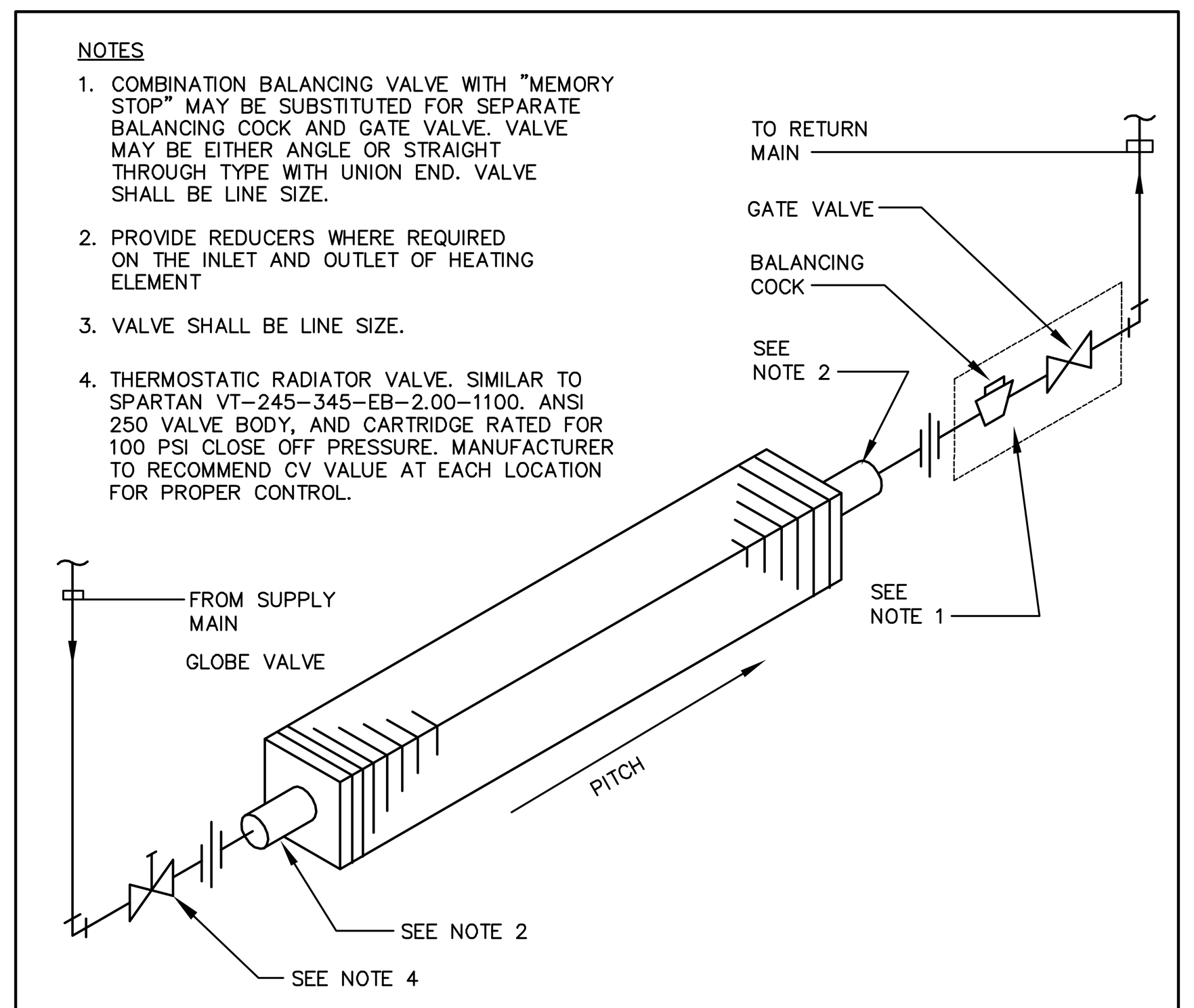


NOTE:
COMBINATION BALANCING VALVE WITH "MEMORY STOP" MAY BE SUBSTITUTED FOR SEPARATE BALANCING VALVE AND GATE VALVE.

UNIT HEATER HOT WATER PIPING



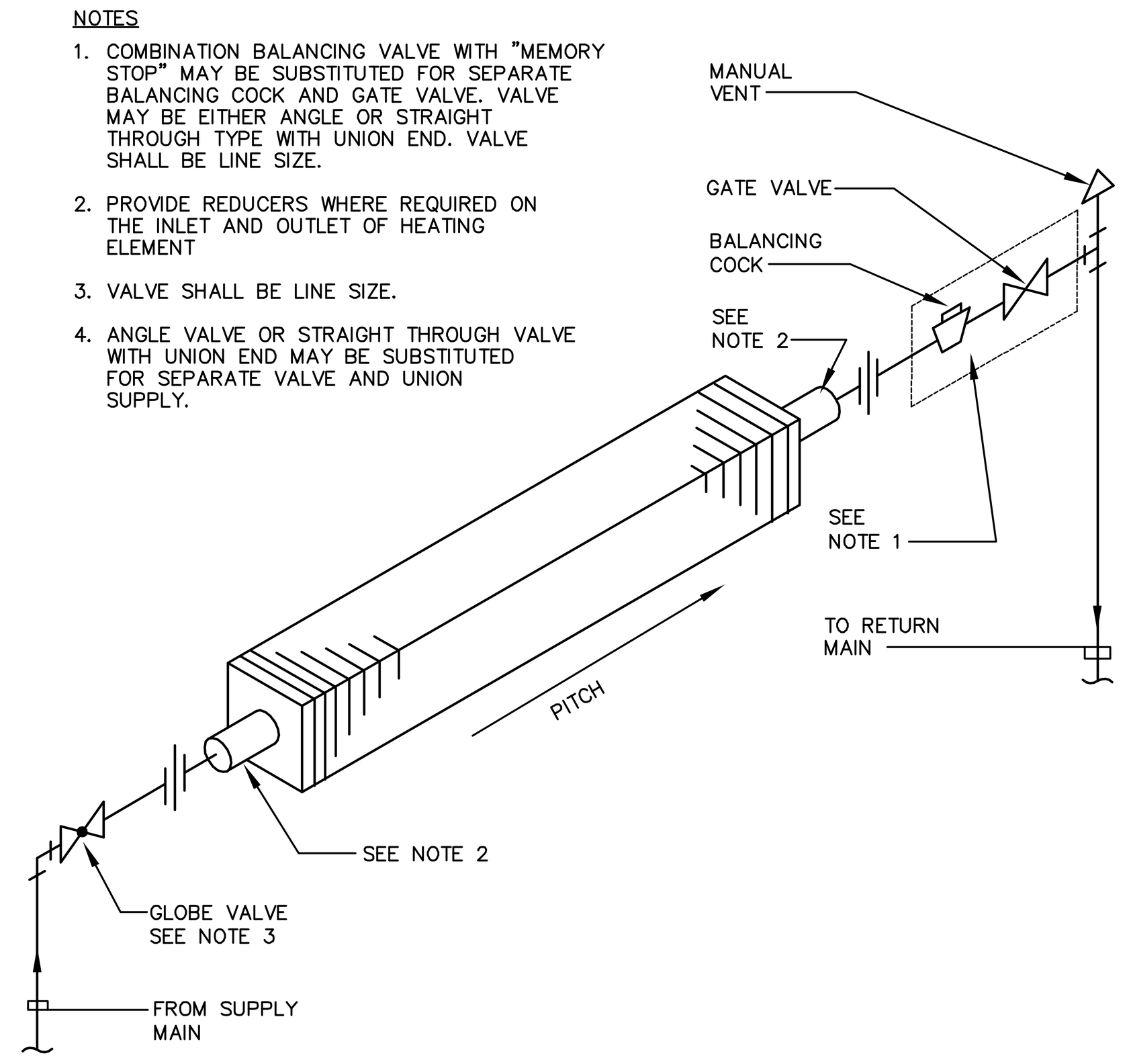
PIPE RISER BASE ELBOW SUPPORT DETAIL



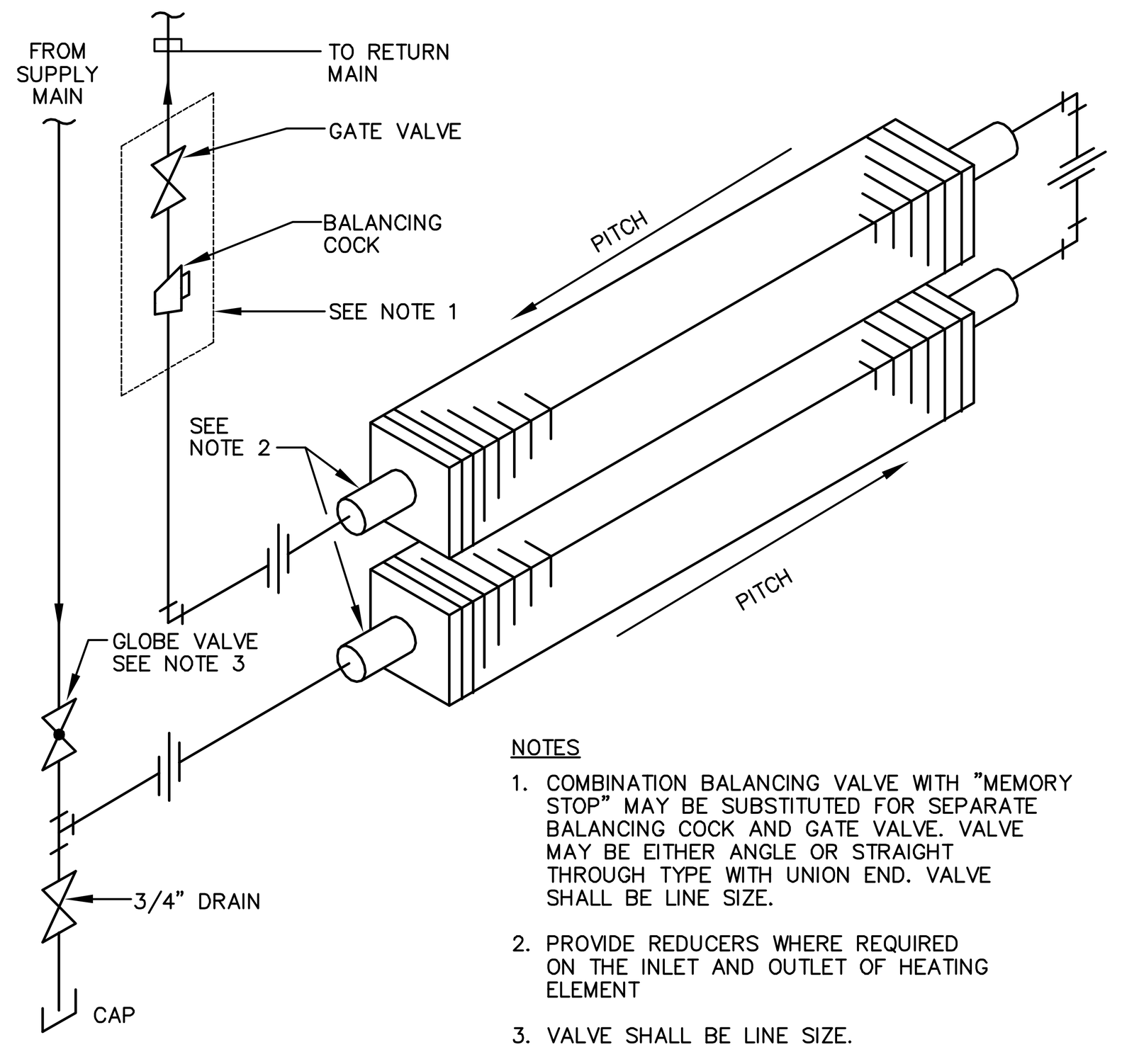
NOTES
1. COMBINATION BALANCING VALVE WITH "MEMORY STOP" MAY BE SUBSTITUTED FOR SEPARATE BALANCING COCK AND GATE VALVE. VALVE MAY BE EITHER ANGLE OR STRAIGHT THROUGH TYPE WITH UNION END. VALVE SHALL BE LINE SIZE.
2. PROVIDE REDUCERS WHERE REQUIRED ON THE INLET AND OUTLET OF HEATING ELEMENT
3. VALVE SHALL BE LINE SIZE.
4. THERMOSTATIC RADIATOR VALVE, SIMILAR TO SPARTAN VT-245-345-EB-2.00-1100. ANSI 250 VALVE BODY, AND CARTRIDGE RATED FOR 100 PSI CLOSE OFF PRESSURE. MANUFACTURER TO RECOMMEND CV VALUE AT EACH LOCATION FOR PROPER CONTROL.

ONE (1) HIGH HOT WATER FIN TUBE RADIATION DOWN FEED PIPING

NOTES
1. COMBINATION BALANCING VALVE WITH "MEMORY STOP" MAY BE SUBSTITUTED FOR SEPARATE BALANCING COCK AND GATE VALVE. VALVE MAY BE EITHER ANGLE OR STRAIGHT THROUGH TYPE WITH UNION END. VALVE SHALL BE LINE SIZE.
2. PROVIDE REDUCERS WHERE REQUIRED ON THE INLET AND OUTLET OF HEATING ELEMENT
3. VALVE SHALL BE LINE SIZE.
4. ANGLE VALVE OR STRAIGHT THROUGH VALVE WITH UNION END MAY BE SUBSTITUTED FOR SEPARATE VALVE AND UNION SUPPLY.

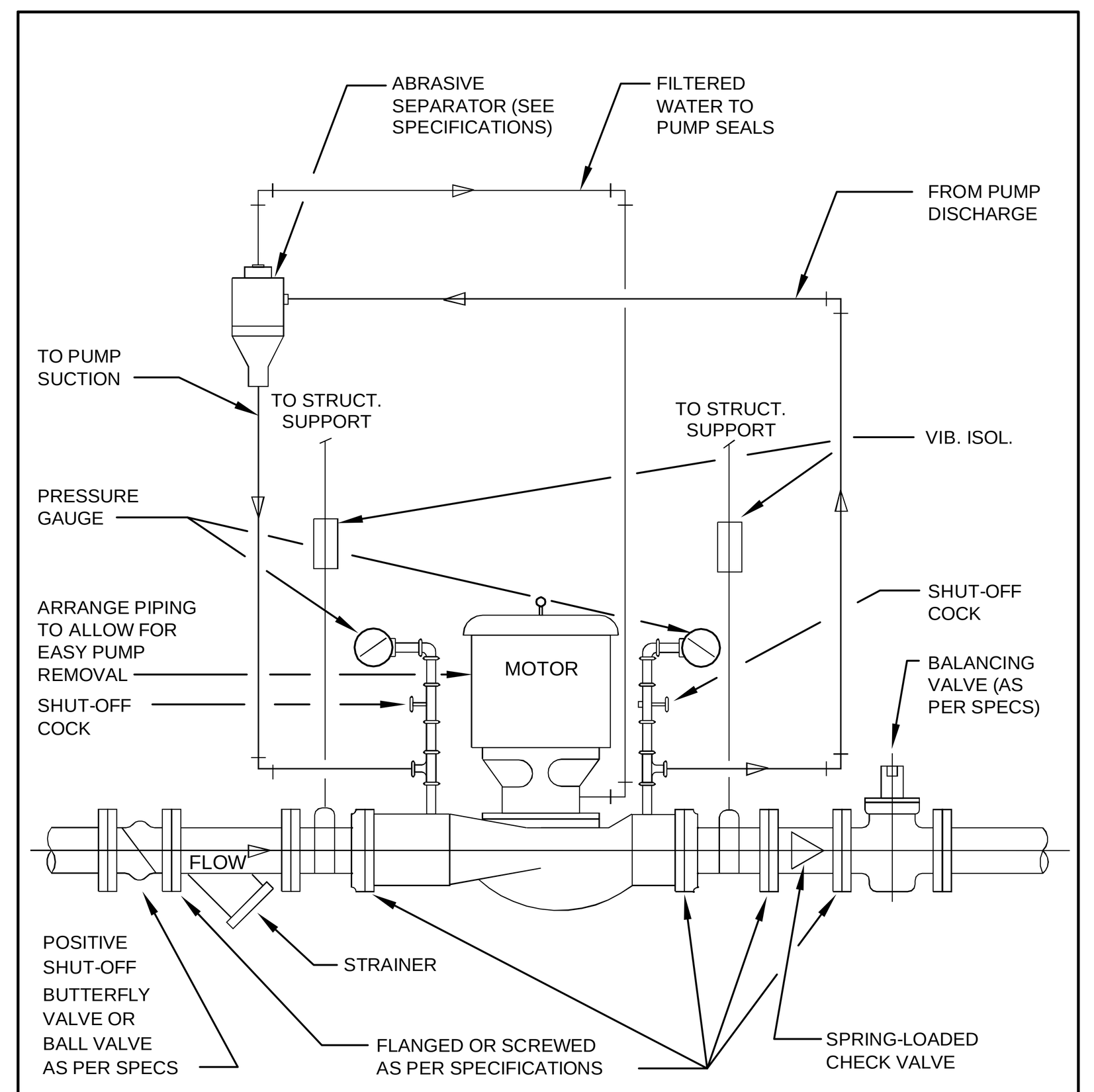


ONE (1) HIGH HOT WATER FIN TUBE RADIATION UP FEED PIPING



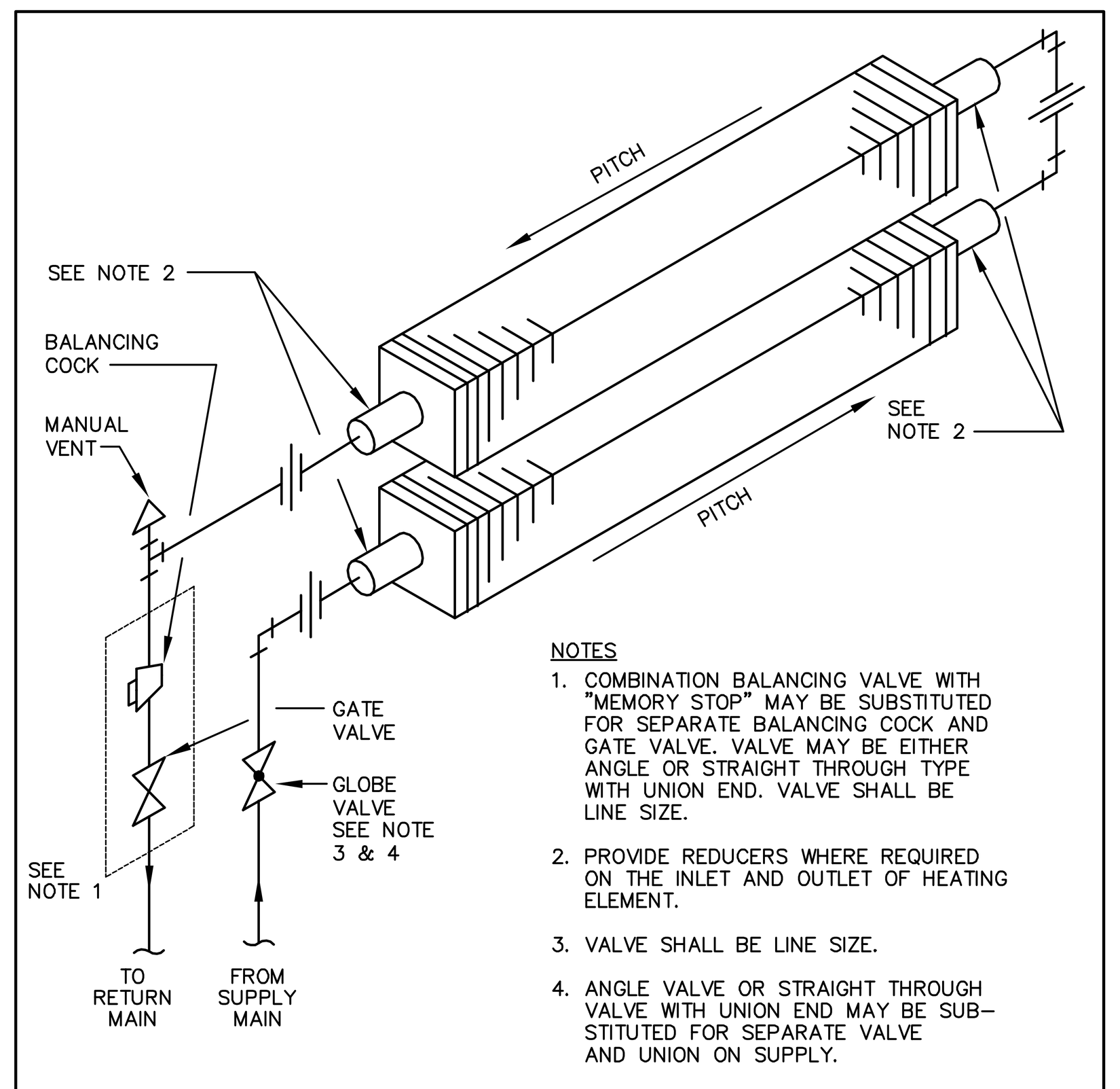
NOTES
1. COMBINATION BALANCING VALVE WITH "MEMORY STOP" MAY BE SUBSTITUTED FOR SEPARATE BALANCING COCK AND GATE VALVE. VALVE MAY BE EITHER ANGLE OR STRAIGHT THROUGH TYPE WITH UNION END. VALVE SHALL BE LINE SIZE.
2. PROVIDE REDUCERS WHERE REQUIRED ON THE INLET AND OUTLET OF HEATING ELEMENT
3. VALVE SHALL BE LINE SIZE.

TWO (2) HIGH HOT WATER FIN TUBE RADIATION DOWN FEED PIPING
(ROWS IN SERIES)



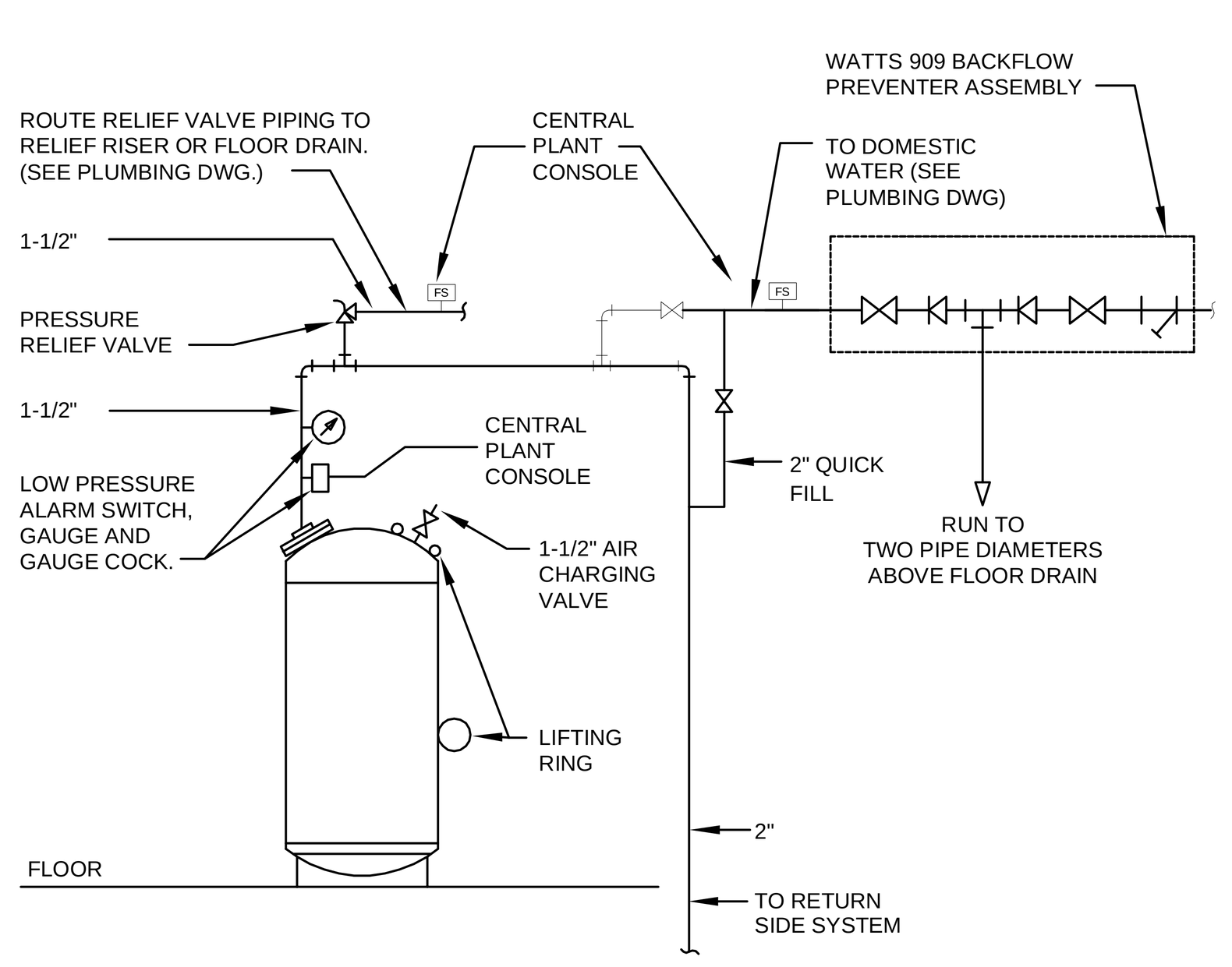
NOTES:
1. IF MOTOR IS IN HORIZONTAL POSITION PROVIDE SEPARATEHANGER FOR MOTOR.
2. PRESSURE GUAGE SHALL BE RATED FOR 150% OF WORKING PRESSURE.

IN LINE PUMP DETAIL
(W/ABRASIVE SEPARATOR PIPING)

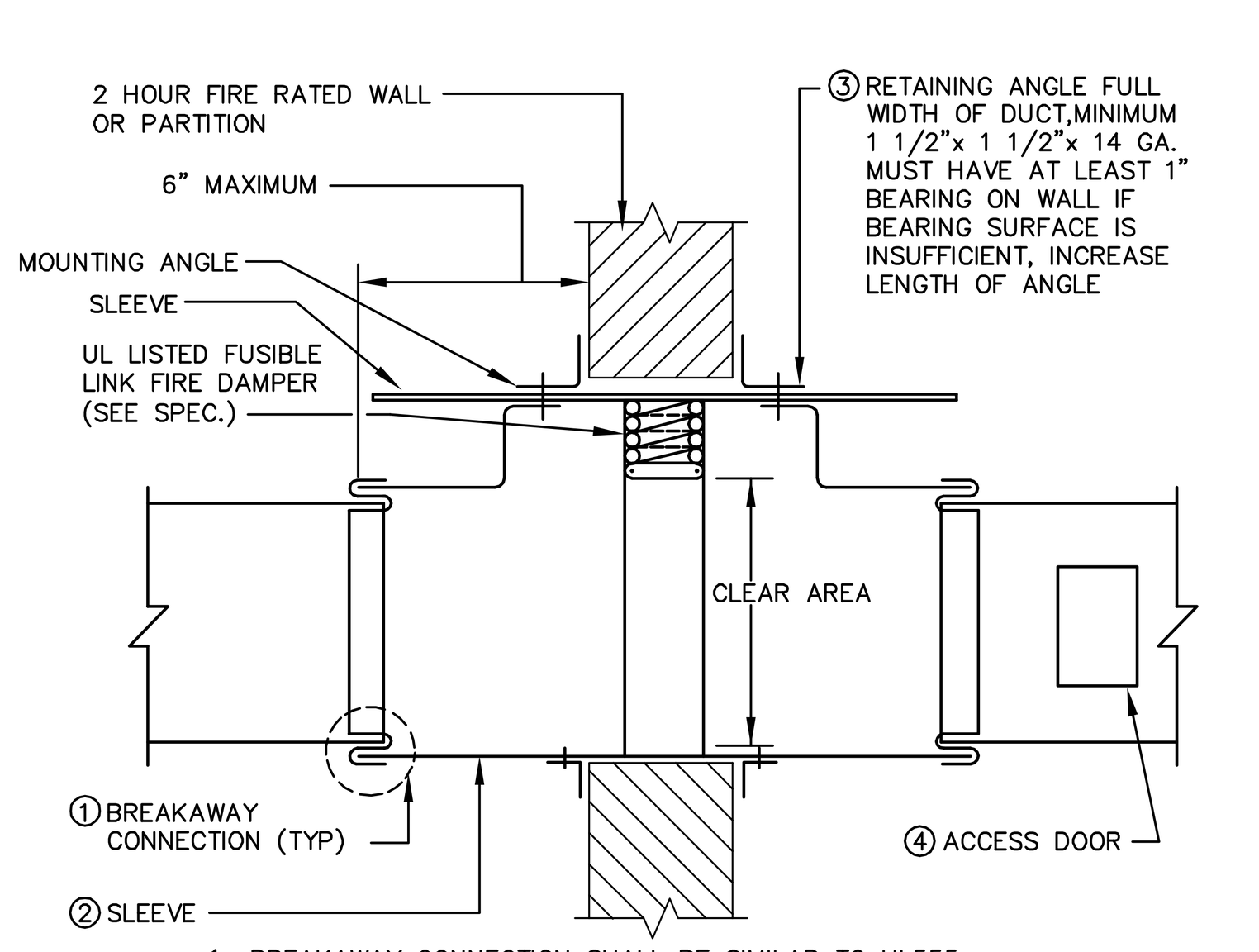


NOTES
1. COMBINATION BALANCING VALVE WITH "MEMORY STOP" MAY BE SUBSTITUTED FOR SEPARATE BALANCING COCK AND GATE VALVE. VALVE MAY BE EITHER ANGLE OR STRAIGHT THROUGH TYPE WITH UNION END. VALVE SHALL BE LINE SIZE.
2. PROVIDE REDUCERS WHERE REQUIRED ON THE INLET AND OUTLET OF HEATING ELEMENT.
3. VALVE SHALL BE LINE SIZE.
4. ANGLE VALVE OR STRAIGHT THROUGH VALVE WITH UNION END MAY BE SUBSTITUTED FOR SEPARATE VALVE AND UNION ON SUPPLY.

TWO (2) HIGH HOT WATER FIN TUBE RADIATION UP FEED PIPING
(ROWS IN SERIES)

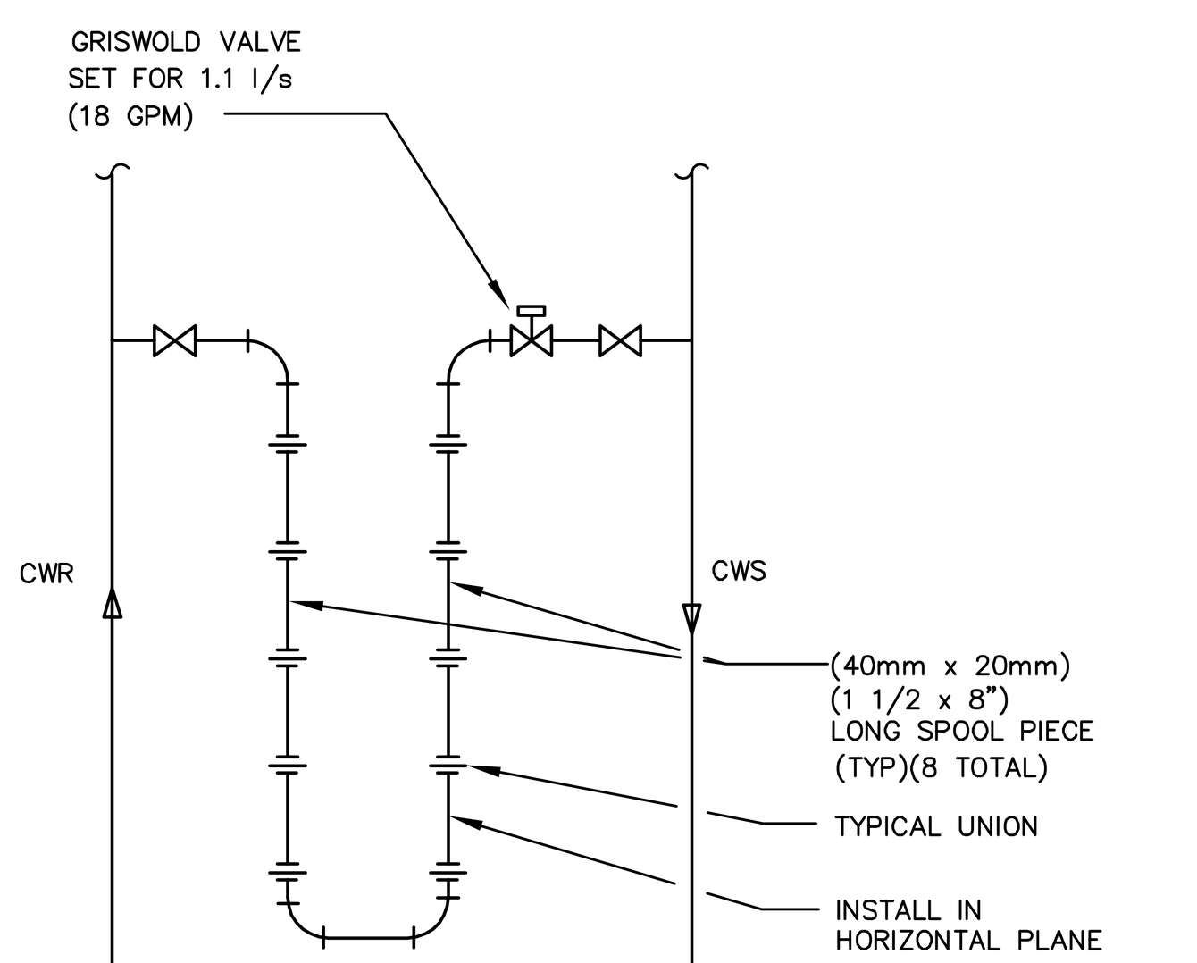


DIAPHRAGM TYPE EXPANSION TANK DETAIL



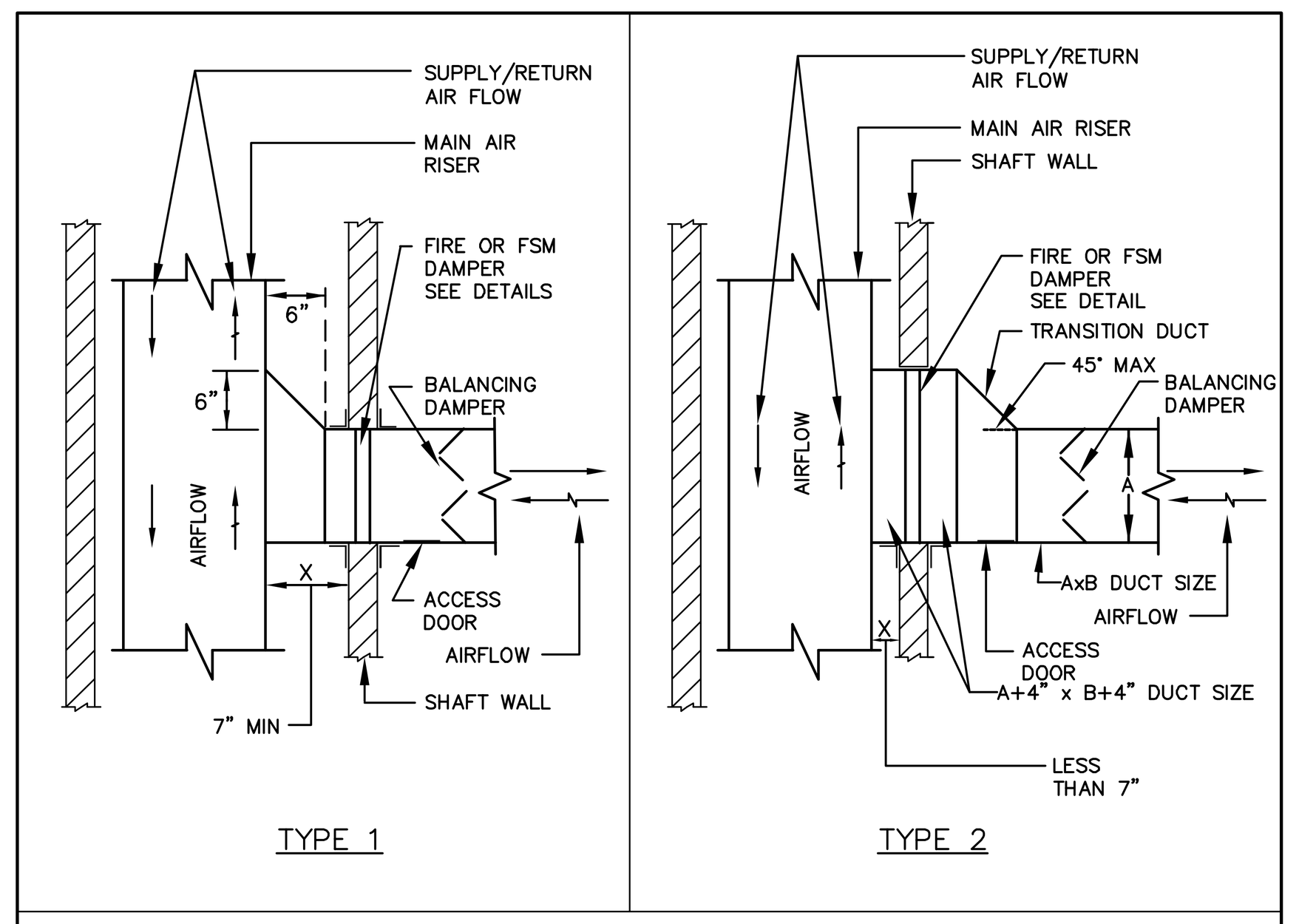
1 BREAKAWAY CONNECTION SHALL BE SIMILAR TO UL555 SEC. 14.4 APPROVED TYPES, AND NFPA 90A.
2 SLEEVE MAY BE DUCT GAUGE IF UL555 CONNECTIONS ARE USED. SLEEVE SHALL BE 16 GA. UP TO 36"Wx24"H OR 14 GA. FOR LARGER SIZES.
3 SHEET METAL CONTRACTOR SHALL FURNISH CONSTRUCTION CONTRACTOR WITH OPENING SIZES. ALL OPENINGS SHALL BE PACKED WITH SUITABLE FIRE RETARDANT MATERIAL.
4 ACCESS DOOR MUST BE LOCATED AS REQUIRED TO ENABLE RESETTING OF DAMPER. MORE THAN ONE DOOR MAY BE REQUIRED ON LARGE DUCTS.
5 DAMPER CLEAR OPEN AREA SHALL BE EQUAL TO INSIDE CLEAR DUCT DIMENSION OF CONNECTING DUCTS OR TRANSFER OPENING.
6 TYPE "B" OR "C" MOUNTING SHALL BE USED FOR ALL DAMPERS. TYPE "A" MOUNTING IS NOT PERMITTED.

AUTOMATIC FIRE DAMPERS (F.L.D.)



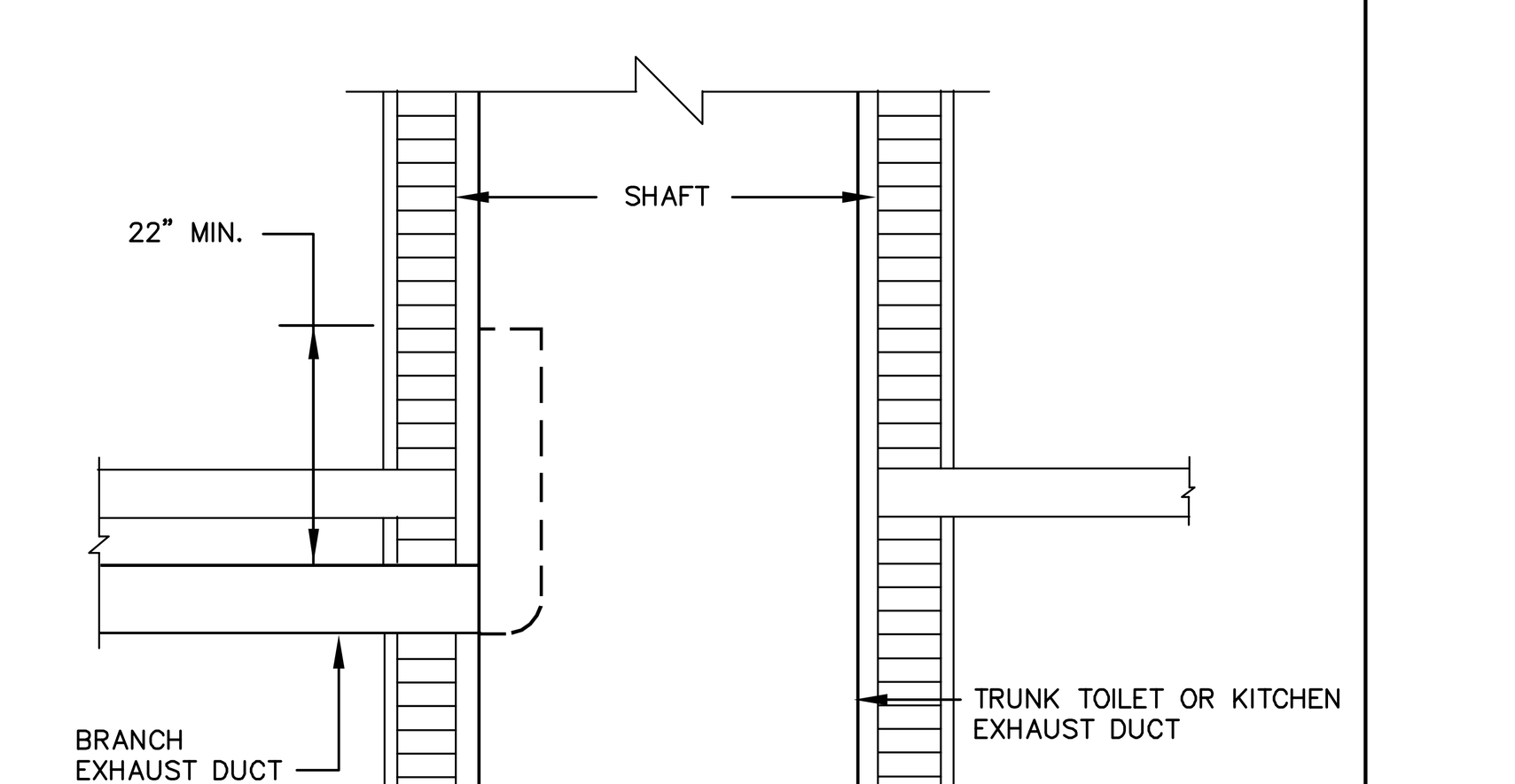
NOTE: LOCATE SPOOL PIECE ASSEMBLY AT LOW POINT OF THE SYSTEM

DETAIL OF CONDENSER WATER CORROSION TESTING SPOOL PIECES



NOTES:
1. FOR UPWARD SUPPLY OR DOWNWARD RETURN AIR FLOW, REVERSE DIRECTION OF FLARE TRANSITION.
2. USE TYPE 1 IF "X" DIMENSION IS 7" OR GREATER.
3. USE TYPE 2 IF "X" DIMENSION IS LESS THAN 7".
4. FOR ROUND DUCTWORK-USE CONCENTRIC CONICAL CONNECTION FITTING.

FLARE TRANSITION FOR CONNECTION OF DUCT BRANCHES TO DUCT RISER THRU RATED WALLS
(TYPICAL FOR ALL BRANCHES)



NOTE:
A) BOOT CONNECTIONS SHALL MEET ALL APPLICABLE CODE REQUIREMENTS.
B) EXHAUST FAN MUST RUN 24/7

EXHAUST BOOT CONNECTION DETAIL IN LIEU OF FIRE DAMPER

BRANCH DUCT SIZE SCHEDULE	
DUCT SIZE	MAXIMUM CFM
14 x 4	200
14 x 6	400
16 x 6	450
18 x 6	525

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VS 125 LLC
55 EAST 59TH STREET, 24TH FLOOR
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ARCHITECT :
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STRUCTURAL ENGINEER :
DESIMONE CONSULTING ENGINEERS
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MEP / FP / IT ENGINEER :
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GEOTECH CONSULTANT :
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VERTICAL TRANSPORTATION CONSULTANT :
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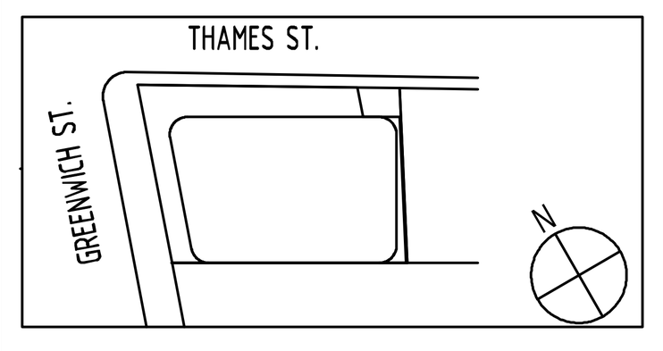
ARCHITECT'S SEAL

ISSUE NO.	ISSUE DATE	DESCRIPTION
01	9/30/15	DOB SUBMITTAL



KEY PLAN AND NORTH SIGN

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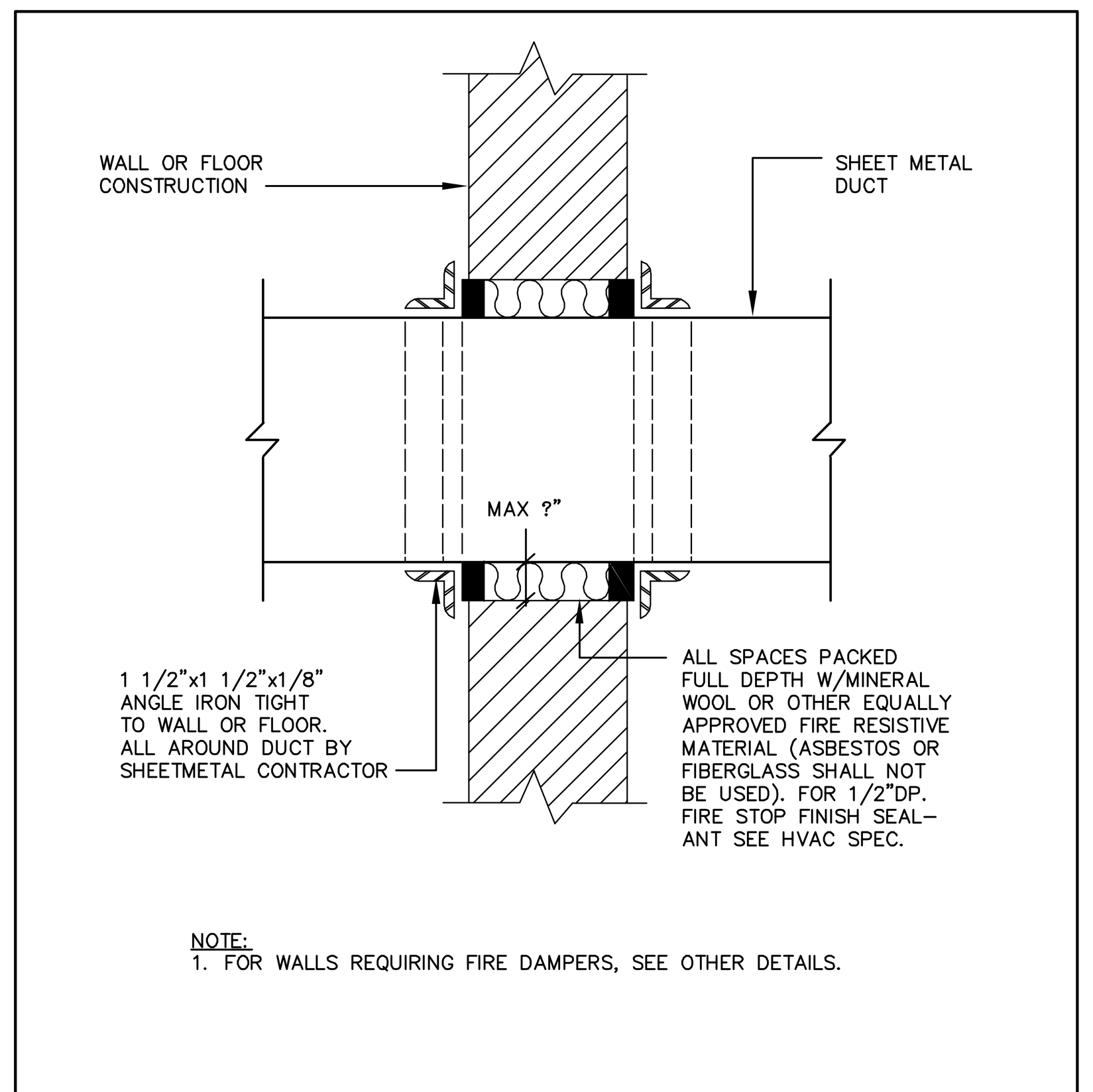
MECHANICAL DETAIL SHEET #1

SHEET TITLE :

M-501.00

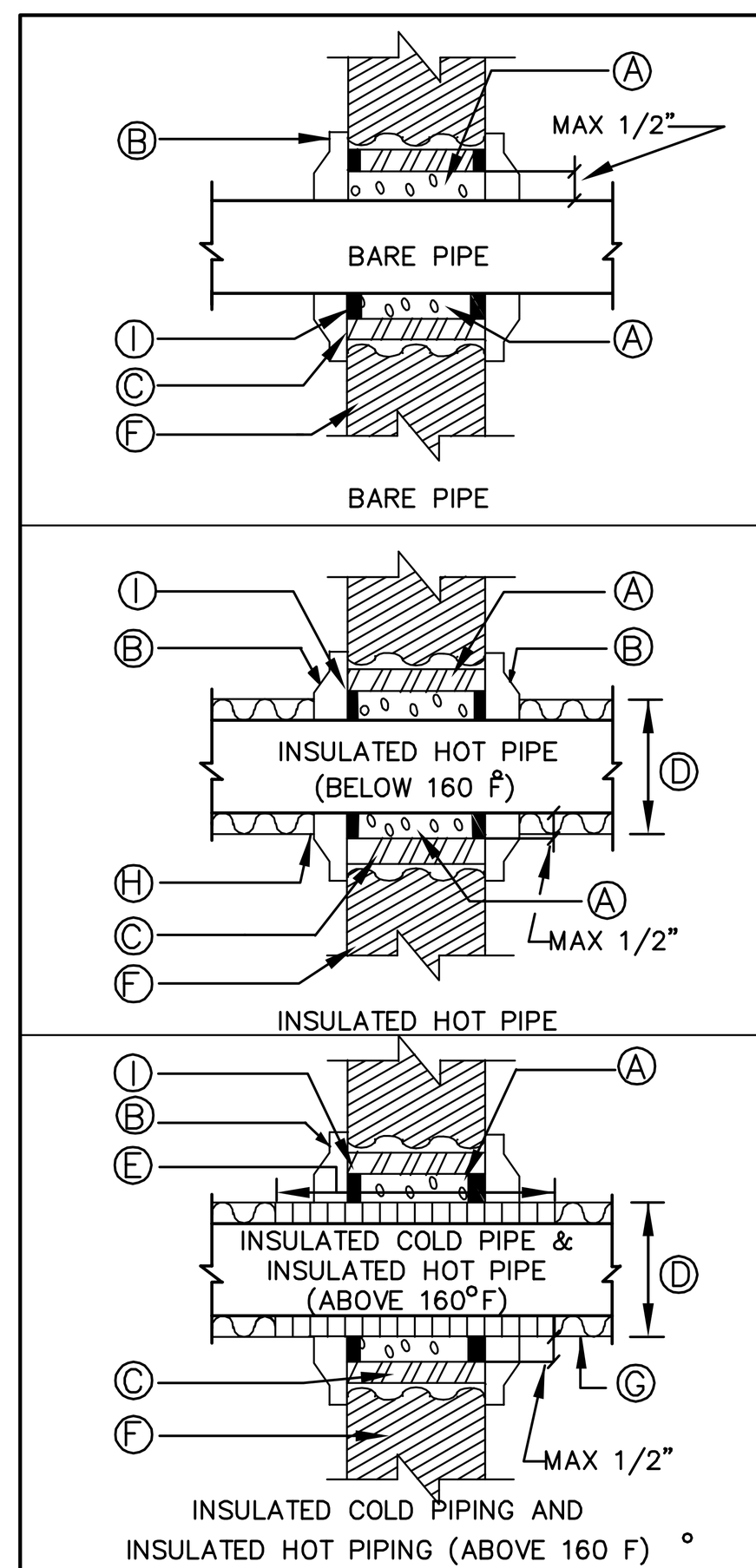
SHEET NUMBER :

Damian Titus
APPROVED



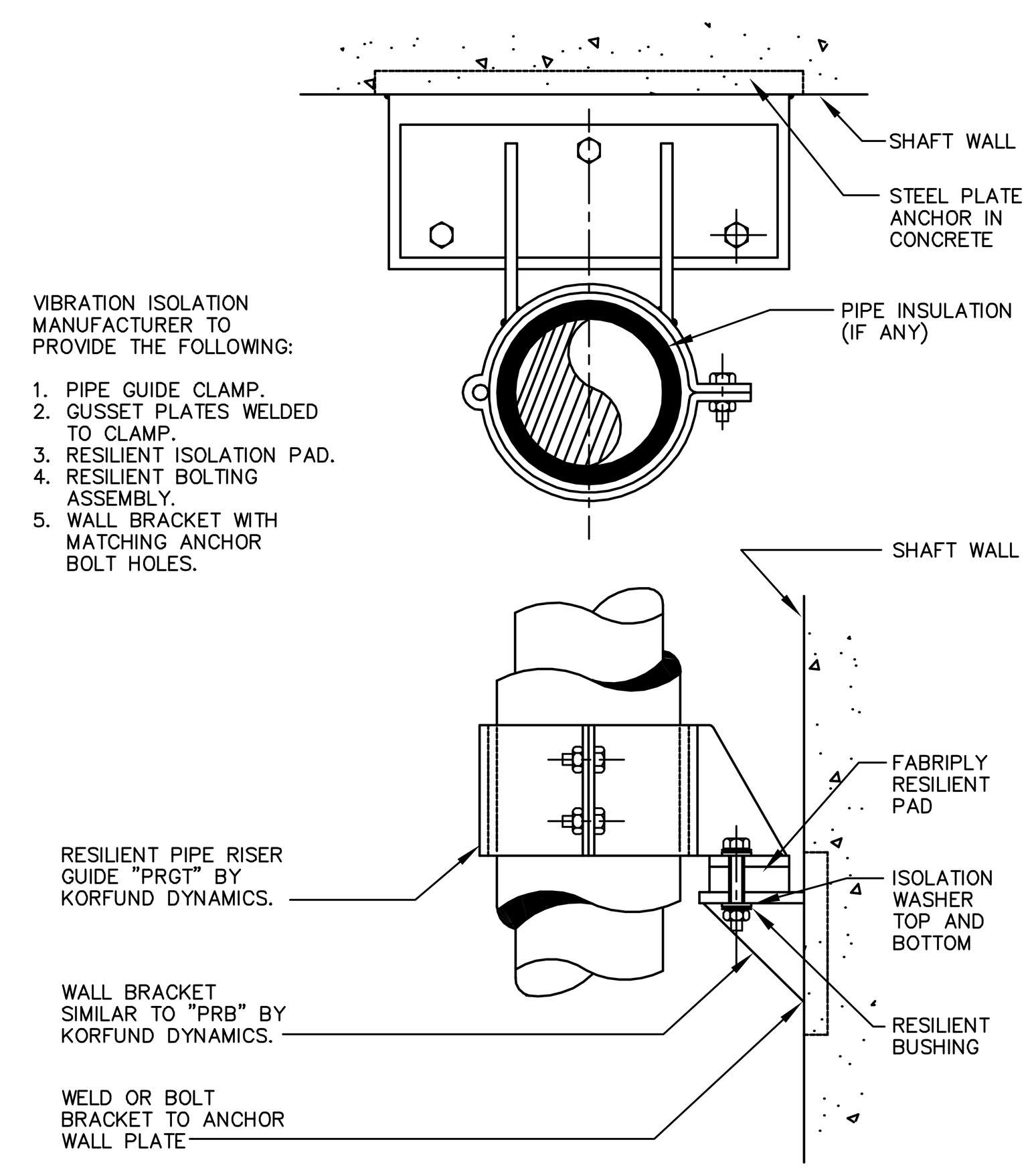
NOTE:
1. FOR WALLS REQUIRING FIRE DAMPERS, SEE OTHER DETAILS.

DETAIL OF CAULKING OF DUCT PIERCING WALLS OR FLOORS WHERE FIRE DAMPERS ARE NOT REQUIRED



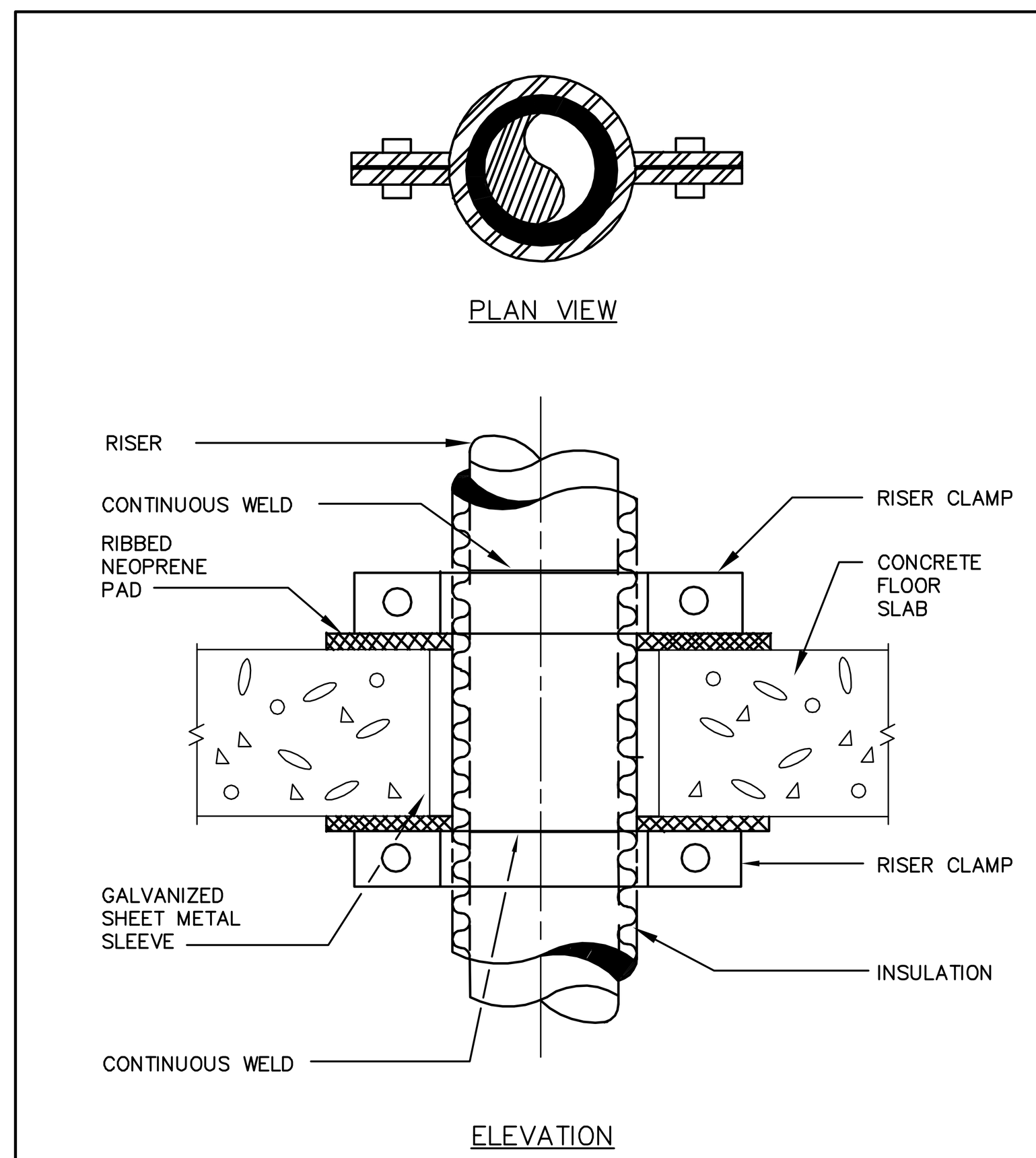
Ⓐ ALL SPACES PACKED FULL DEPTH WITH MINERAL WOOL OR OTHER EQUALLY APPROVED FIRE RESISTIVE MATERIAL (ASBESTOS OR FIBERGLASS SHALL NOT BE USED)
FIRE RESISTANT FOAM SEAL ANT CHASE FOAM CTC P2-855 (NYC MEA#58-79 M#1&11 MAY BE USED. INSTALLATION AS PER MANUFACTURER.
Ⓑ ESCUTCHEON BOTH SIDES
Ⓒ SLEEVE
Ⓓ DIAMETER OF INSULATED PIPE
Ⓔ ANHYDROUS CALCIUM SILICATE INSULATION THRU SLEEVE
Ⓕ FIRE RATED PARTITION WALL OR FLOOR
Ⓖ FIBERGLASS INSULATION
Ⓗ TERMINATE INSULATION AT ESCUTCHEON
Ⓘ 1/2" DEPTH FIRE STOP FINISH SEALANT (SEE HVAC SPEC)

DETAIL OF PIPING PIERCING FIRE RATED PARTITIONS, WALLS AND FLOORS

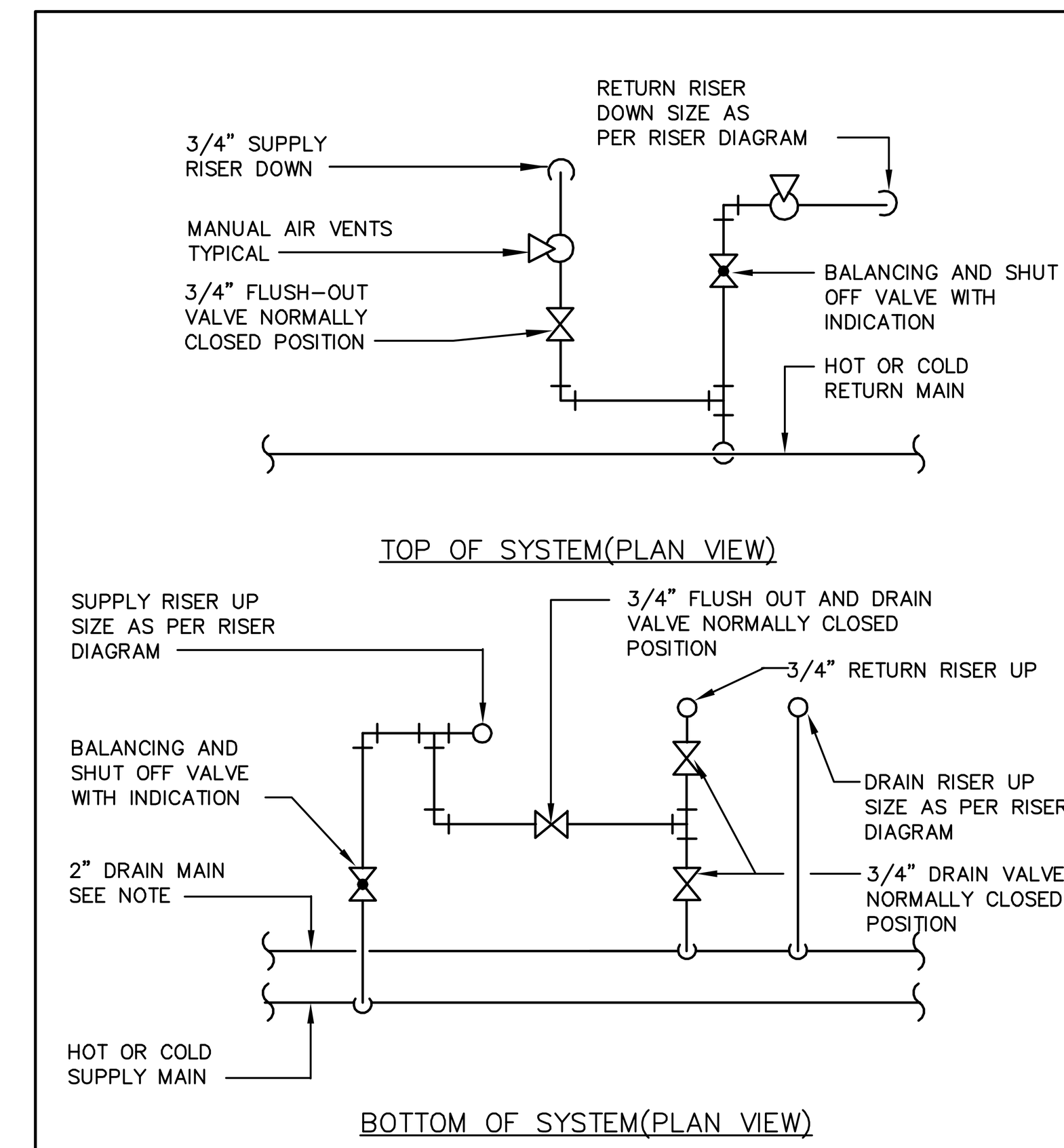


RESILIENT PIPE RISER GUIDE

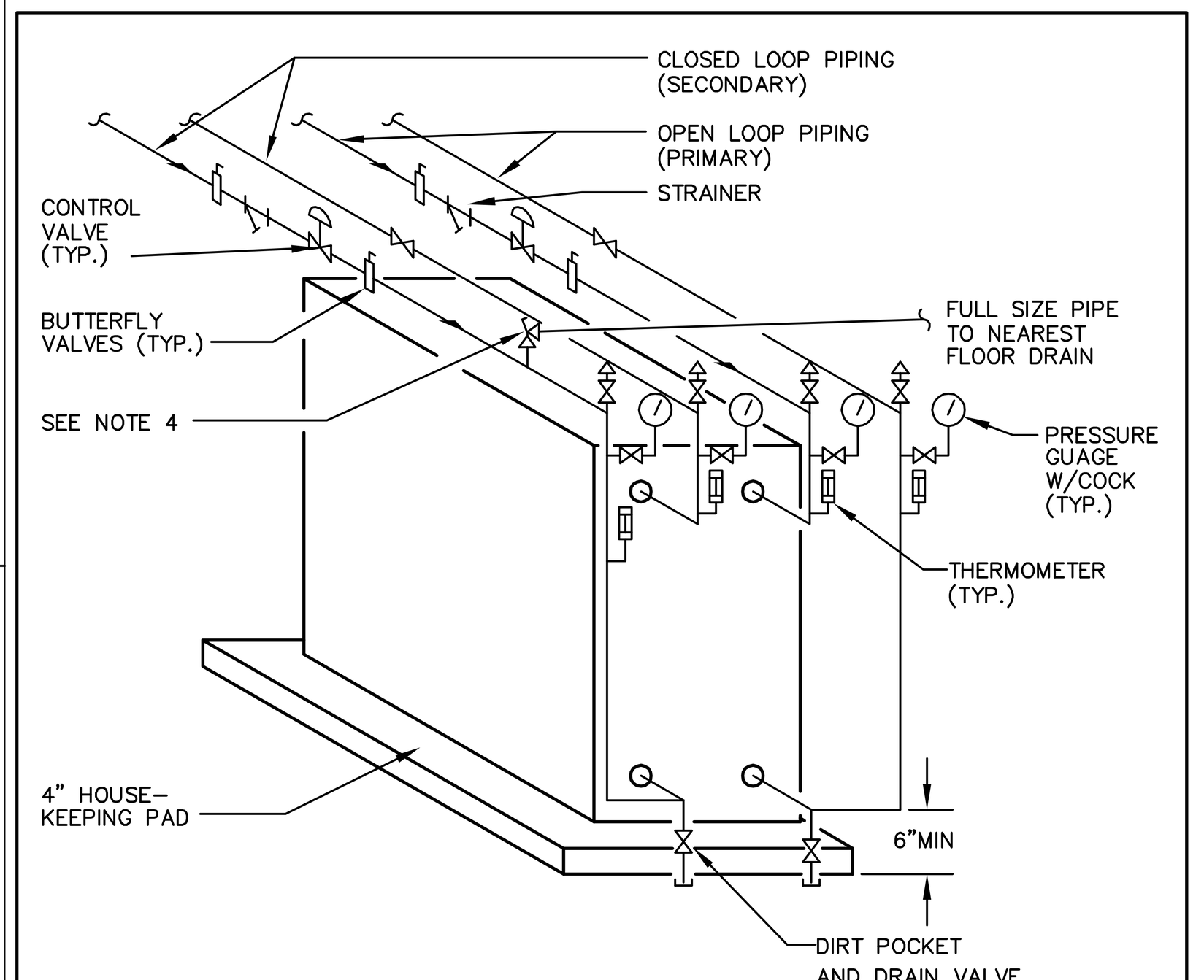
(FOR PIPE DIAMETERS 6" AND SMALLER)



TYPICAL RISER ANCHOR DETAIL

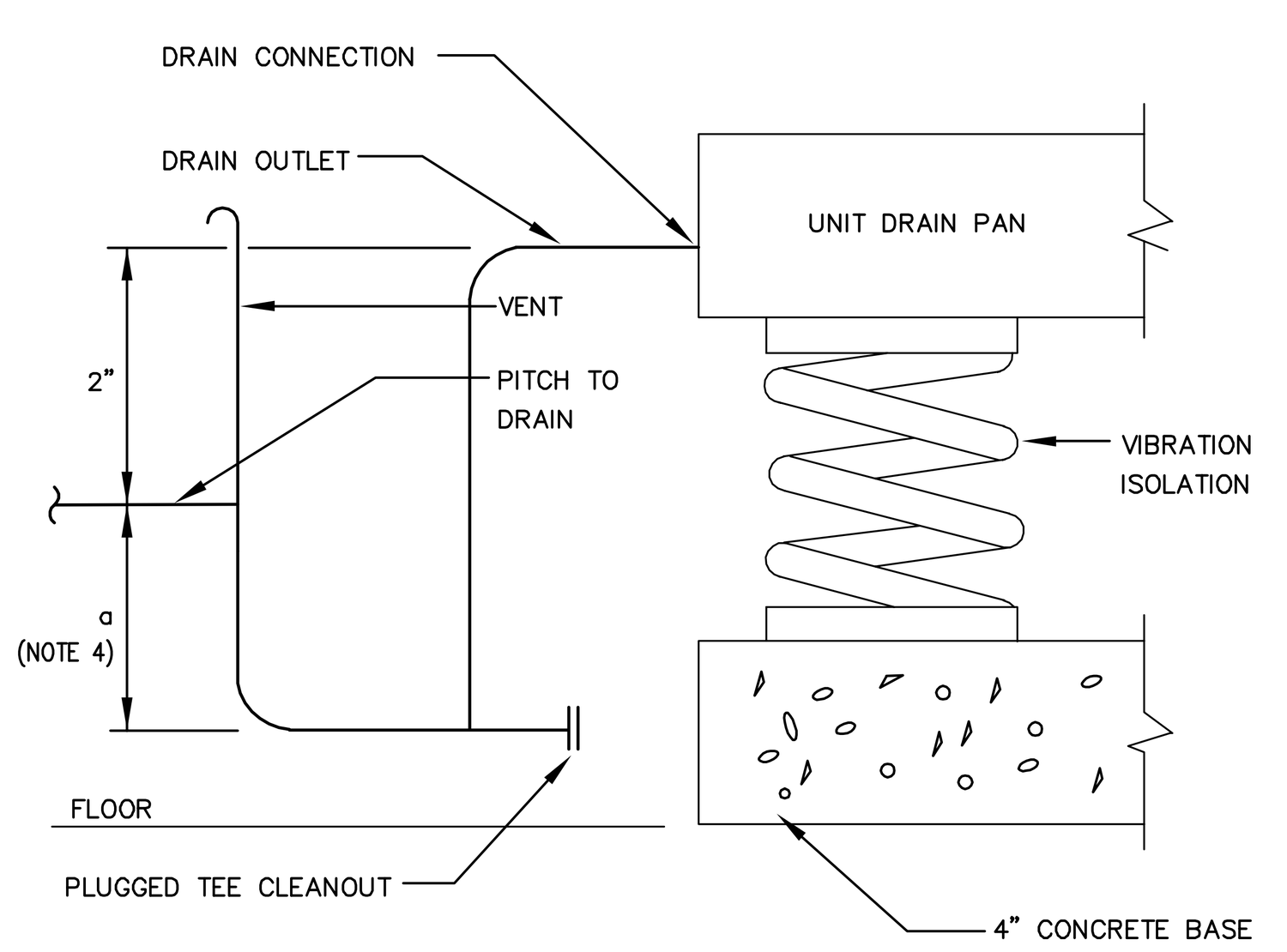


PERIMETER FAN COIL UNIT RISER PIPING CONNECTIONS



NOTES:
1. PROVIDE THERMOMETERS AND SEPARABLE SOCKETS FOR THERMOMETERS.
2. PROVIDE PRESSURE GUAGES AND GUAGE TEST CONNECTIONS.
3. ALL PIPING SHALL BE ARRANGED TO ALLOW REMOVAL OF PLATE FIN SECTIONS FOR CLEANING W/MIN. DISTURBANCE TO PIPING.
4. RELIEF VALVE SETTING SHALL BE 10 PSI BELOW RATING OF PIPING SYSTEM OF HEAT EXCHANGER.

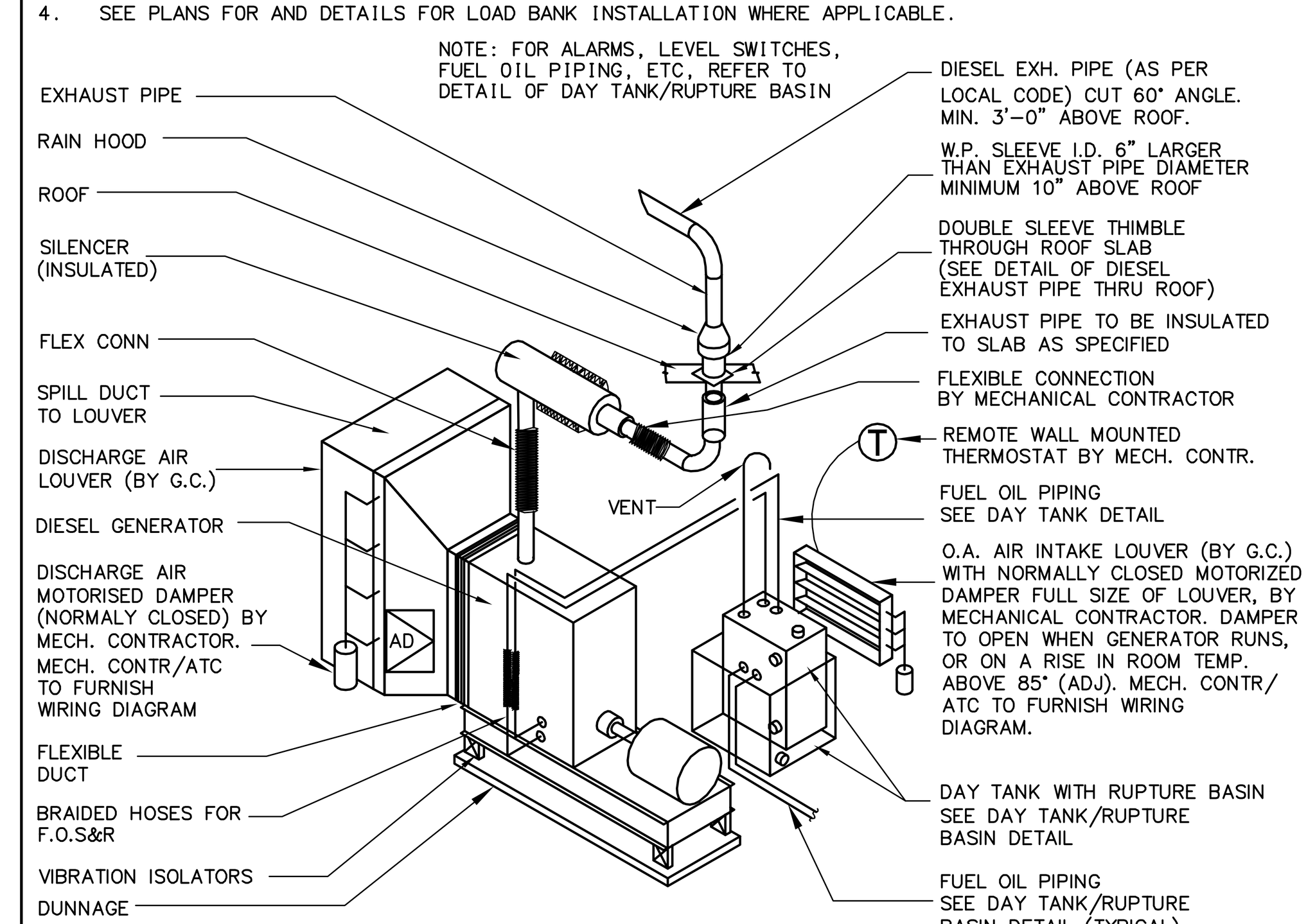
PLATE FIN HEAT EXCHANGER



NOTES:
1. ALL DRAIN PIPING TO BE DRAIN PAN OUTLET SIZE 1-1/2" MINIMUM.
2. SUPPORT DRAIN LINES TO PREVENT SAG.
3. INSULATE DRAIN LINES AS PER SPECIFICATIONS.
4. MIN. DIMENSION FOR DRAW THRU UNITS a = 1.0 x S.P." FOR BLOW THRU UNITS a = 1.5 x S.P."

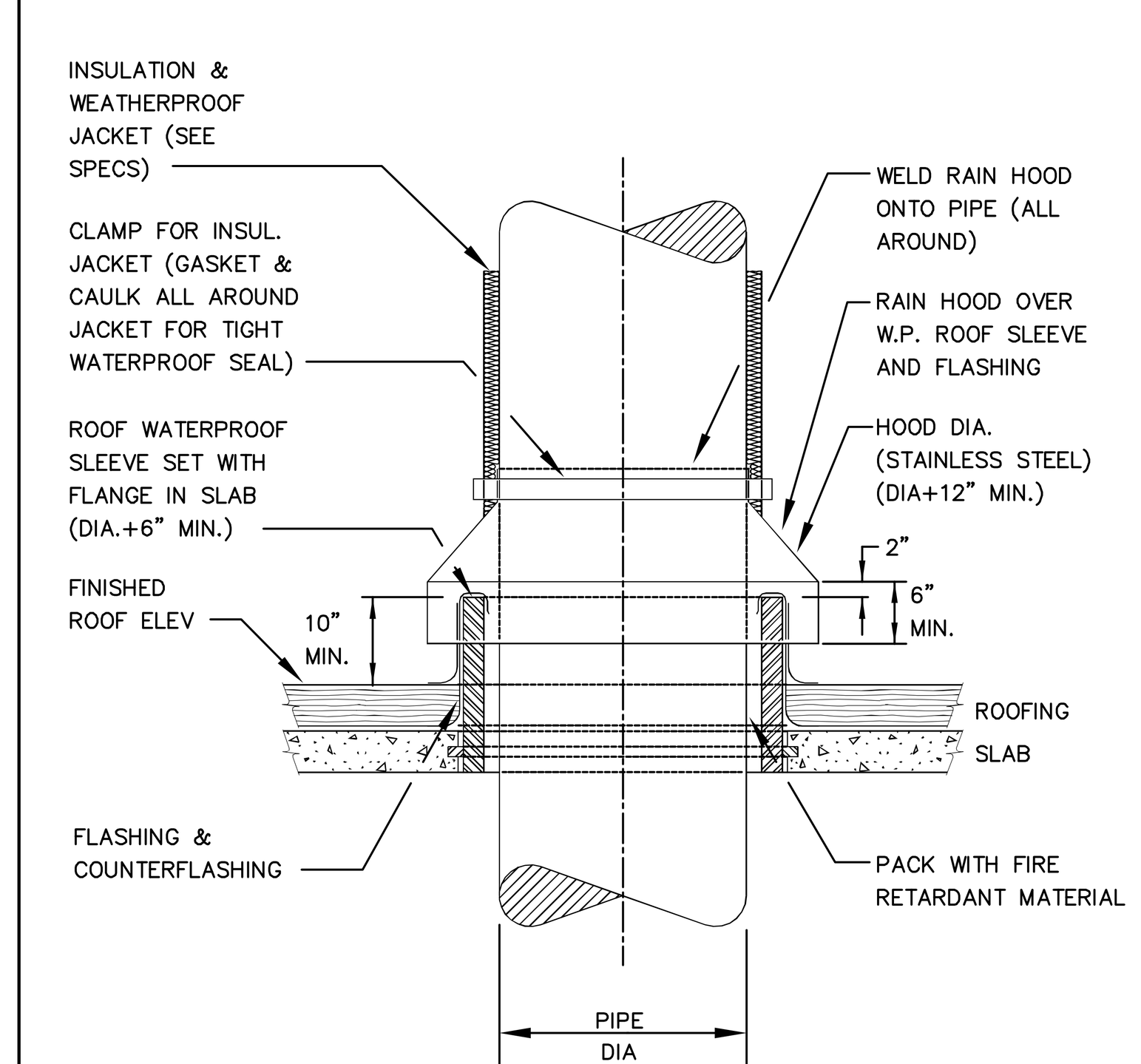
AIR HANDLING UNIT COOLING COIL DRAIN DETAIL

NOTES:
1. DIESEL GENERATOR UNIT AND CONTROLS AND WIRING LOCAL TO THE GENERATOR SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR UNDER ANOTHER DIVISION OF THIS WORK (SEE ELECTRICAL DRAWINGS AND SPECIFICATIONS). SILENCER AND FLEXIBLE EXHAUST PIPE CONNECTIONS TO BE FURNISHED BY ELECTRICAL CONTRACTOR AND INSTALLED BY THE MECHANICAL CONTRACTOR. ALL APPURTENANCES NECESSARY FOR A COMPLETE FUNCTIONING SYSTEM SHALL BE FURNISHED AND INSTALLED BY THE MECHANICAL CONTRACTOR, INCLUDING DIESEL EXHAUST THROUGH ROOF, DUCT CONNECTIONS TO RADIATOR, MAKEUP AIR AND EXHAUST LOUVERS, FUEL OIL PIPING, VENT PIPING, ETC. SEE DAY TANK DETAILS FOR ADDITIONAL REQUIREMENTS. SILENCER TO BE INSTALLED ON STEEL SADDLES.
1. EQUIPMENT AND PANEL LOCATIONS IN GENERATOR ROOM/VICINITY SHALL BE COORDINATED BY THE ELECTRICAL AND MECHANICAL CONTRACTORS TO RETAIN ACCESS FOR OPERATION, MAINTENANCE, AND CODE REQUIREMENTS.
3. DIESEL GENERATOR MANUFACTURER & ELECTRICAL CONTRACTOR TO CHECK AND VERIFY THAT ALL EQUIPMENT, INCLUDING ITEMS DUCTED, WIRED, PIPED, ETC BY OTHERS, WILL SUIT THE SAFE OPERATION OF THE GENERATOR EQUIPMENT AT FULL LOAD, AND CONFIRM THIS IN WRITING WITH THE SHOP DRAWING SUBMITTALS.
4. SEE PLANS FOR AND DETAILS FOR LOAD BANK INSTALLATION WHERE APPLICABLE.

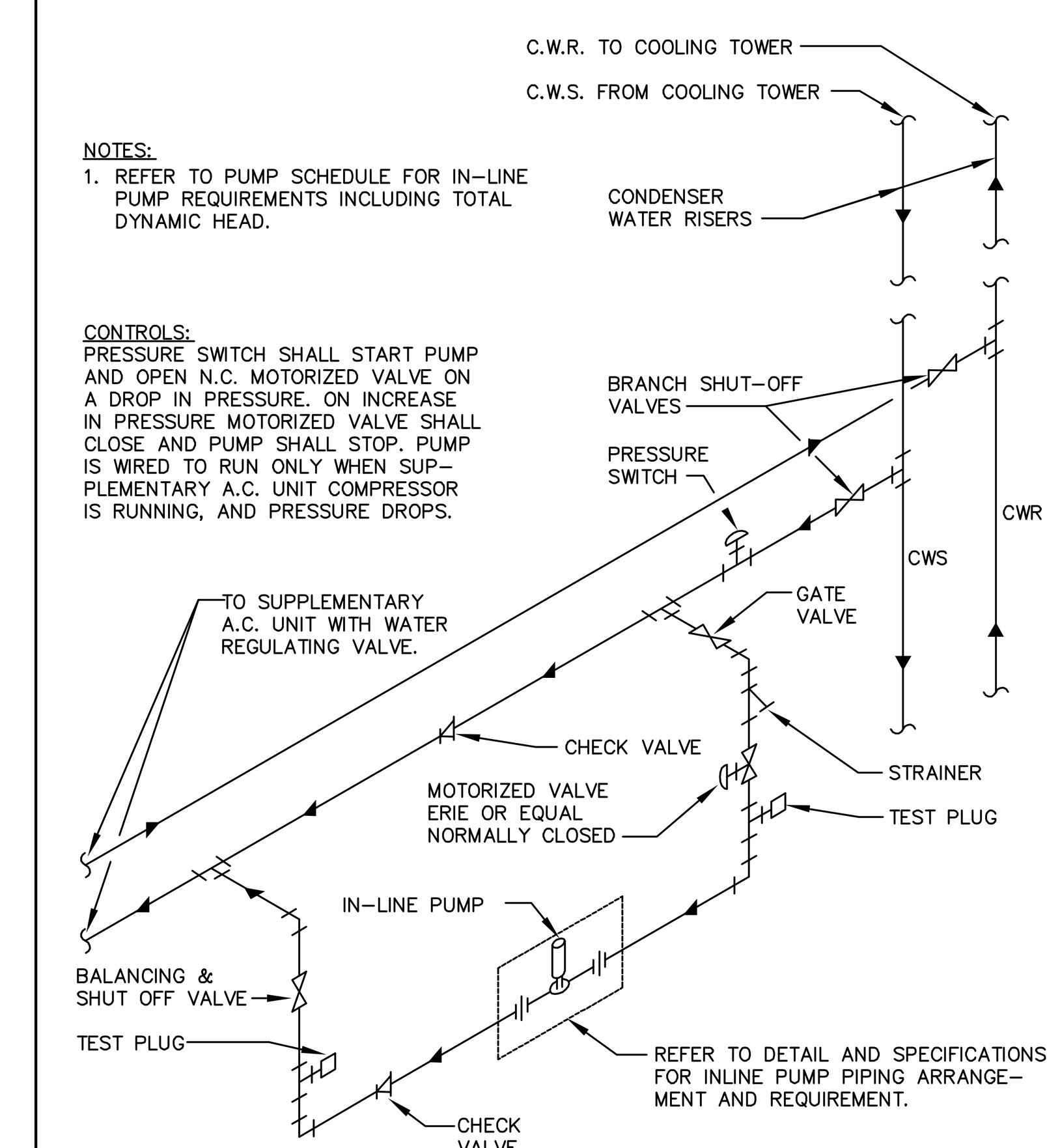


EMERGENCY GENERATOR SCHEMATIC DIAGRAM DIESEL FIRED, INDOOR INSTALLATION

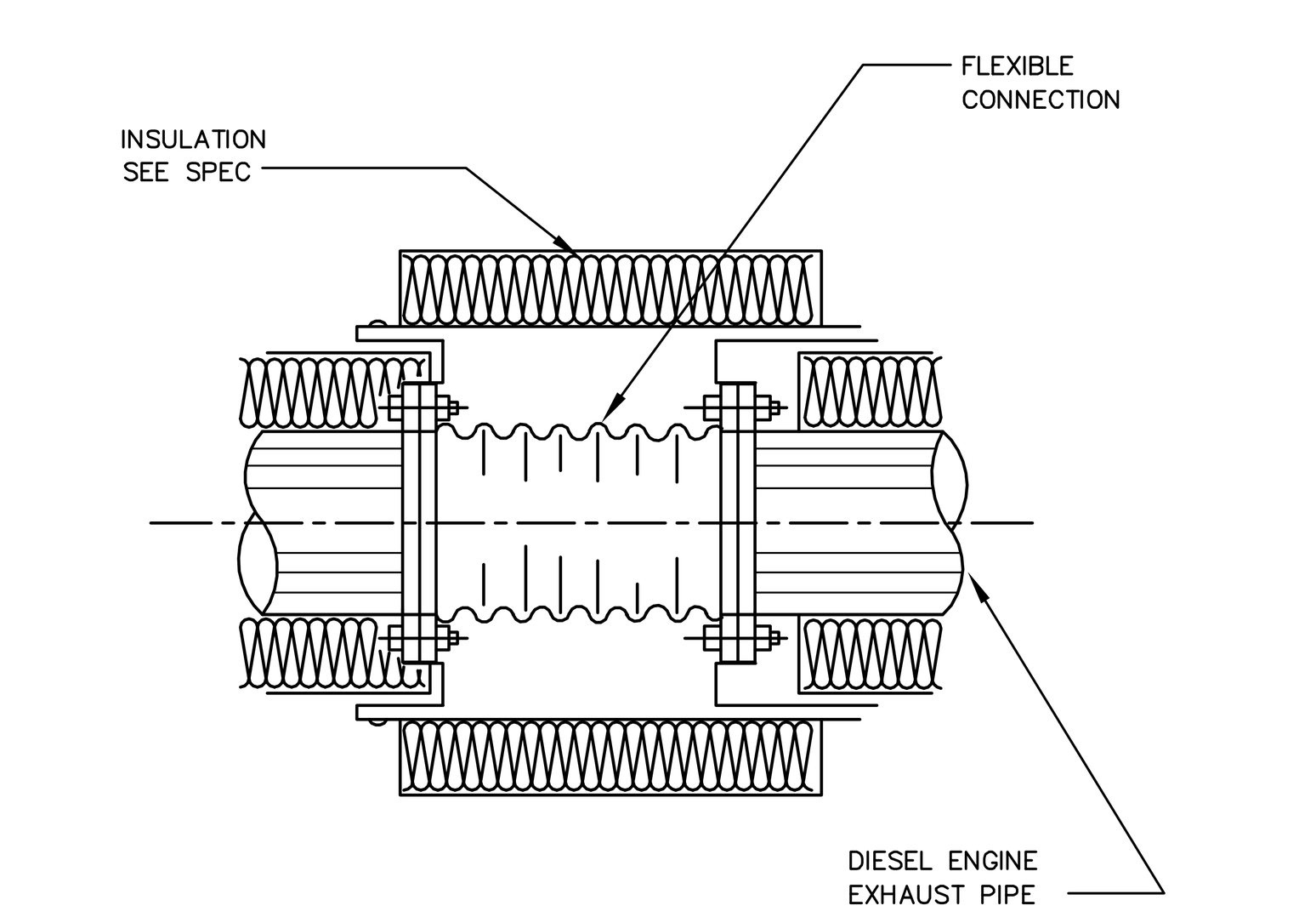
(NOT TO SCALE)



PIPE PENETRATION THRU ROOF SLAB

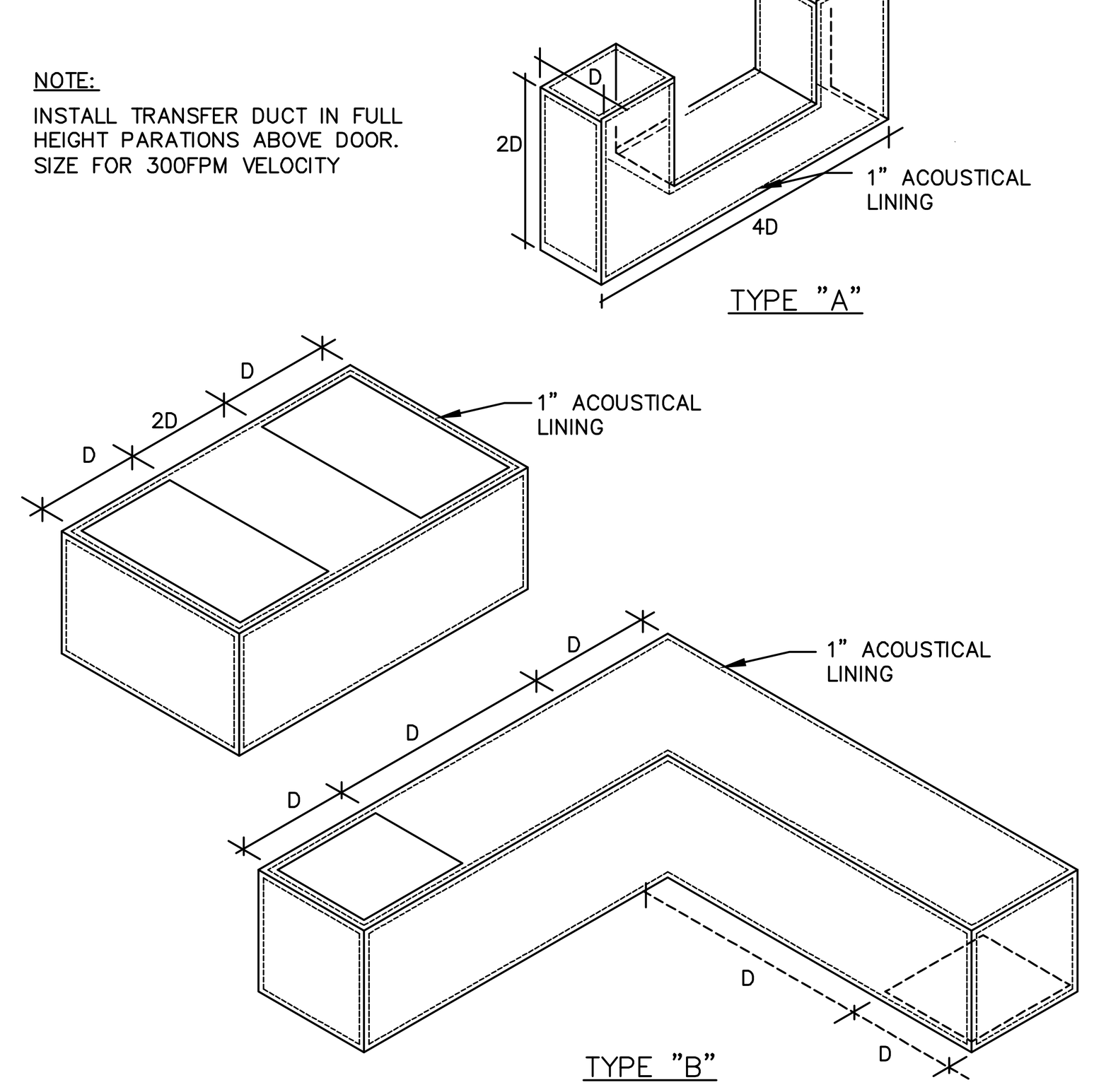


INLINE PUMP WITH BY-PASS SYSTEM

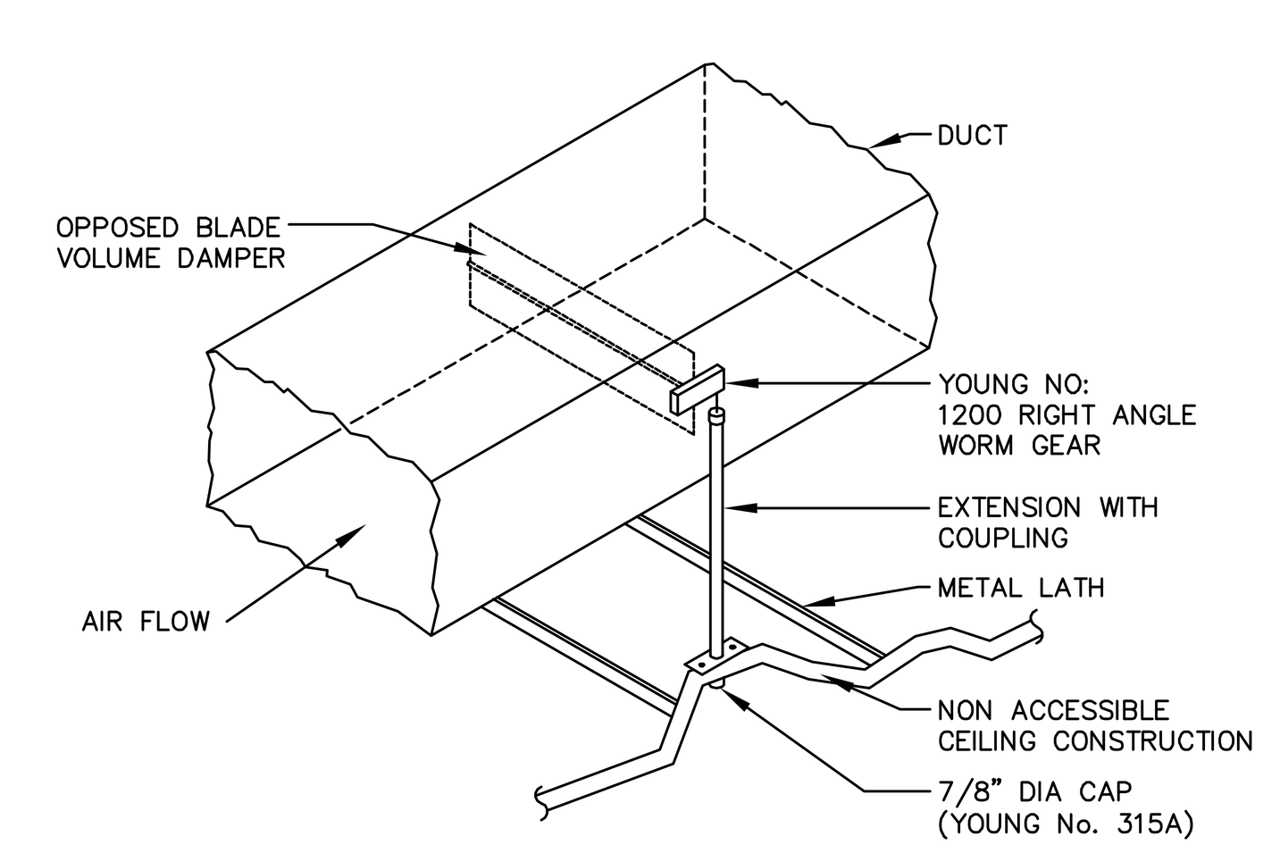


DIESEL EXHAUST PIPE FLEXIBLE CONNECTION DETAIL

NOTE:
INSTALL TRANSFER DUCT IN FULL HEIGHT PARATIONS ABOVE DOOR. SIZE FOR 300FPM VELOCITY



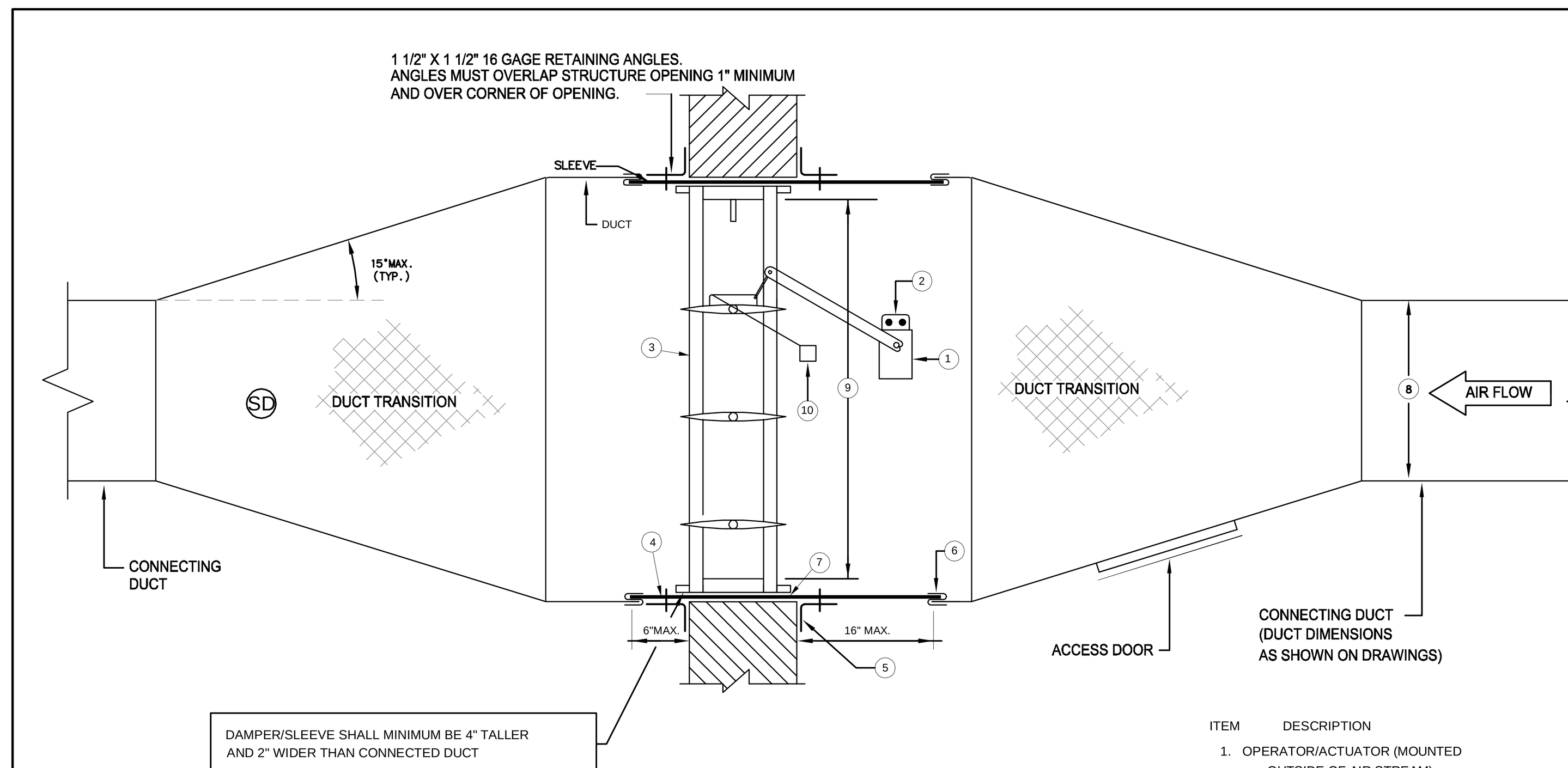
TRANSFER (JUMPER) DUCT TYPES



NOTES:
1. WHEN DAMPER IS LOCATED WITHIN 10' OF A DIFFUSER, OR WITHIN A LOBBY OR SPECIALTY SPACE (COORDINATE WITH ARCHITECT), VOLUME DAMPER ASSEMBLY SHALL BE OPERABLE THROUGH FACE OF NEAREST DIFFUSER, BY MEANS OF FLEXIBLE-CABLE BASED ON BOWDEN REMOTE CABLE CONTROL SYSTEM WITH YOUNG REGULATOR.
2. ALL OTHER NON-ACCESIBLE CEILING AREAS SHALL BE AS INDICATED.

VOLUME CONTROL DAMPER

FOR NON ACCESSIBLE CEILINGS ONLY



ITEM DESCRIPTION
1. OPERATOR/ACTUATOR (MOUNTED OUTSIDE OF AIR STREAM)
2. HEAT RESPONSIVE DEVICE (PRIMARY AND SECONDARY)
3. DAMPER FRAME
4. SLEEVE
5. MOUNTING ANGLES
6. UL LISTED BREAKAWAY CONNECTION
7. CAULKING MATERIAL
8. CONNECTING DUCT OPEN AREA
9. DAMPER CLEAR OPEN AREA
10. DAMPER END SWITCH

NOTES:
A. COMBINATION FIRE AND SMOKE RATED DAMPERS ARE DESIGNED TO OPERATE WITH BLADES RUNNING HORIZONTALLY AND MUST BE INSTALLED WITHIN THE FIRE WALL DUCT OPENING.
B. DAMPERS SHALL BE INSTALLED PER THE CONDITION OF THEIR UL LISTING AND THE MANUFACTURER'S INSTALLATION INSTRUCTION.
C. DAMPER SHALL BE IN ACCORDANCE, UL 555S (LATEST EDITION) AND ALL REQUIREMENTS OF LOCAL AUTHORITIES HAVING JURISDICTION AND SHALL HAVE UL LABEL.
D. DAMPER ACTUATOR SHALL BE UL RATED FOR 350°F. DAMPER SLEEVE SHALL NOT EXTEND MORE THAN 8" BEYOND THE FIRE WALL OR PARTITION AND NOT MORE THAN 16" ON THE OPERATOR/ACTUATOR SIDE.
E. CONTRACTOR SHALL SUBMIT STATIC PRESSURE LOSS THRU DAMPER AT OPERATING DUCT VELOCITIES.
F. PROVIDE ACCESS DOORS AS PER CODE AND SPECIFICATIONS.
G. THE MAXIMUM SINGLE DAMPER ASSEMBLY WHETHER SINGLE OR MULTI-SECTION MAY NOT EXCEED THE LIMIT AS CERTIFIED BY UL WHERE MULTIPLE ASSEMBLIES ARE REQUIRED PROVIDE AN APPROVED MULLIONS (FOR MASONRY WALL APPLICATION ONLY)
H. SEE SPECS FOR ADDITIONAL REQUIREMENTS.
I. PROVIDE PRIMARY HEAT RESPONSIVE DEVICE. FOR SMOKE MANAGEMENT SYSTEM, PROVIDE PRIMARY AND SECONDARY HEAT RESPONSIVE DEVICES.

CONTROLS
A. NON SMOKE MANAGEMENT SYSTEM
WHERE F/SM DAMPERS ARE PART OF A FLOOR-BY-FLOOR AIR HANDLING OR FAN SYSTEM, DAMPERS SHALL BE INTERLOCKED WITH AIR HANDLING UNIT OPERATION. EACH DAMPER SHALL BE PROVIDED WITH END SWITCHES WHICH SHALL BE HARD WIRED AND STATUS CONFIRMED PRIOR TO MOTOR START OF AIR HANDLING UNIT.
WHERE F/SM DAMPERS ARE PART OF A CENTRAL AIR HANDLING OR FAN SYSTEM, DAMPER SHALL BE INTERLOCKED WITH AIR HANDLING UNIT OPERATION. EACH DAMPER SHALL BE PROVIDED WITH END SWITCHES WHICH SHALL BE HARD WIRED AND STATUS CONFIRMED PRIOR TO MOTOR START OF AIR HANDLING UNIT.
REFER TO SPECIFICATIONS FOR ADDITIONAL SYSTEM SEQUENCES.
B. SMOKE MANAGEMENT
SAME AS ABOVE EXCEPT PROVIDE OVERRIDE CONTROL OF DAMPER THRU CENTRAL SMOKE MANAGEMENT OR FIRE ALARM SYSTEM. INCLUDE OVERRIDE OF LOW TEMPERATURE HEAT SENSOR FOR REOPENING DAMPER.
REFER TO SPECIFICATIONS FOR ADDITIONAL SYSTEM SEQUENCES.

FIRE/SMOKE DAMPER INSTALLATION DETAIL

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VS 125 LLC
55 EAST 59TH STREET, 24TH FLOOR
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ARCHITECT :
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STRUCTURAL ENGINEER :
DESIMONE CONSULTING ENGINEERS
18 WEST 18TH STREET, 10TH FLOOR
NEW YORK, NY 10011
TEL: 212 532 2211

MEP / FP / IT ENGINEER :
COSENTINI ASSOCIATES - A TETRA TECH COMPANY
2 PENNSYLVANIA PLAZA, 3RD FLOOR
NEW YORK, NY 10121
TEL: 212 615 3600

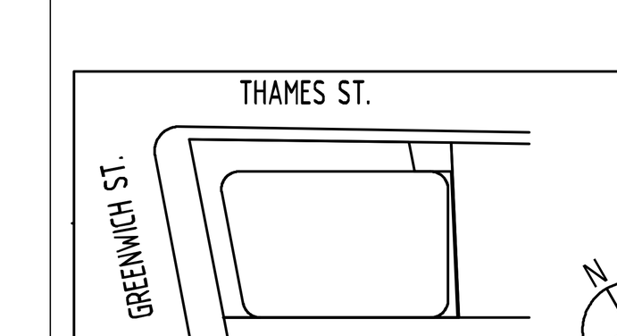
GEOTECH CONSULTANT :
LANGAN ENGINEERING
619 RIVER DRIVE CENTER 1
ELMWOOD PARK, NJ 07407
TEL: 201 794 6900

VERTICAL TRANSPORTATION CONSULTANT :
VAN DEUSEN & ASSOCIATES
120 EAGLE ROCK AVENUE, SUITE 310
EAST HANOVER, NJ 07936
TEL: 973 994 9220

PHASE : DOB SUBMITTAL

ARCHITECT'S SEAL

ISSUE NO.	ISSUE DATE	DESCRIPTION
01	9/30/15	DOB SUBMITTAL



KEY PLAN AND NORTH SIGN

IF THIS DRAWING IS NOT 36" X 48" IT IS A REDUCED PRINT, REFER TO GRAPHIC SCALE

SCALE NTS

MECHANICAL DETAIL SHEET #2

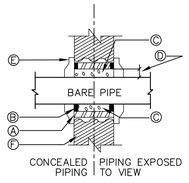
SHEET TITLE :

M-502.00

SHEET NUMBER :

Damian Titus
APPROVED

Alterations or additions to this engineering document by an unlicensed person is a violation of Chapter 16, Title VIII, Article 145 § 7209.2 of the New York State Education Law.



(A) STANDARD WEIGHT STEEL PIPE SLEEVE TO PASS PIPE

(B) TERMINATE SLEEVE FLUSH WITH FINISHED WALL SURFACES.

(C) SEAL OR CAULK SLEEVES THRU FIRE WALLS IN A SMOKE TIGHT MANNER. REFER TO SPECIFICATIONS.

(D) 1/2" CLEAR MAXIMUM.

(E) FINISHED ESCUTCHEON PLATE FLUSH AGAINST WALL AND OF SIZE TO COMPLETELY COVER OPENING (TYP FOR EACH SIDE)

(F) FINISHED WALL SURFACE.

TYPICAL DETAIL OF PIPE INSTALLATION THRU RATED WALL

SLEEVES AND ESCUTCHEONS

A. SLEEVES FOR PIPING THROUGH MASONRY WALL SHALL BE SCHEDULE 40, STANDARD GALVANIZED STEEL PIPE; IN FRAMED PARTITIONS SHALL BE 20 GAUGE SHEET METAL. THE SPACE BETWEEN THE PIPE AND ITS SLEEVE SHALL NOT EXCEED ONEHALF INCH. THE SLEEVE SHALL HAVE A SUFFICIENT LENGTH TO BE FLUSH WITH THE FINISHED WALL SURFACES.

B. EXPOSED PIPING PASSING THROUGH WALLS, FLOORS, OR CEILINGS SHALL BE FITTED WITH CHROMIUM-PLATED CAST BRASS ESCUTCHEONS WITH FASTENING SET SCREWS

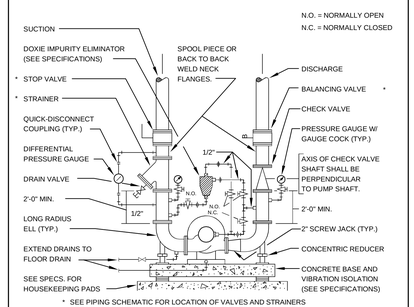
CUTTING AND PATCHING

A. PIPING PASSING THROUGH WALLS SHALL HAVE A TRIM OPENING CUT NO GREATER THAN NECESSARY FOR THE INSTALLATION OF A SLEEVE SECURED THEREIN.

B. PIPING PASSING THROUGH CONCRETE FLOORS SHALL HAVE AN OPENING CORE DRILLED SO THAT THE SPACE BETWEEN THE OPENING AND THE PIPE SHALL NOT EXCEED ONE-HALF INCH.

C. ANNULAR SPACES BETWEEN PIPING AND SLEEVES OR CORE DRILLED FLOOR OPENINGS SHALL BE PACKED WITH MINERAL WOOL AND SEALED, TO RETAIN THE FIRE INTEGRITY OF THE WALLS AND FLOOR, WITH A NON-HARDENING COMPOUND SIMILAR OR EQUAL TO DUXSEAL AS MANUFACTURED BY THE JM CLIPPER CORP.

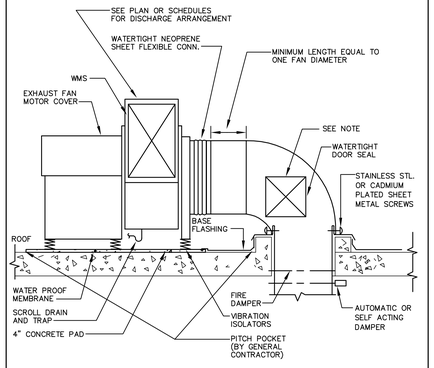
D. FOR DETAILS OF FLOOR CORING RESTRICTIONS IN TOWER BUILDING, SEE DRAWING S-C1



* SEE PIPING SCHEMATIC FOR LOCATION OF VALVES AND STRAINERS

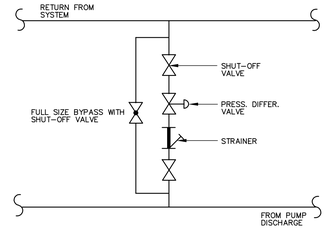
TYPICAL PIPING ARRANGEMENT FOR DOUBLE SUCTION PUMP

NO SCALE

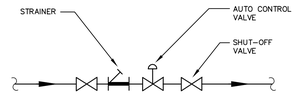


NOTE:
FOR FANS OVER 500 CFM A VANE MUST BE ADDED IN CENTER LINE OF ELBOW

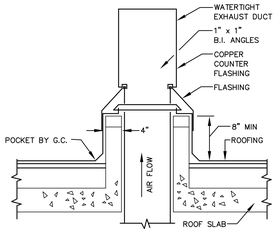
ROOF MOUNTED UTILITY FAN DETAIL



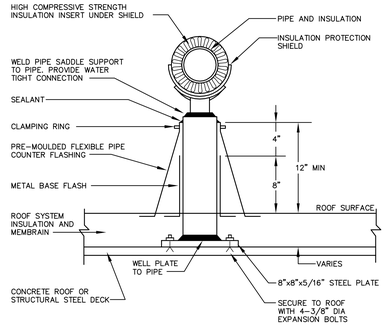
PRESSURE DIFFERENTIAL VALVE STATION DETAIL



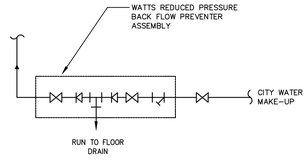
AUTOMATIC CONTROL VALVE STATION DETAIL



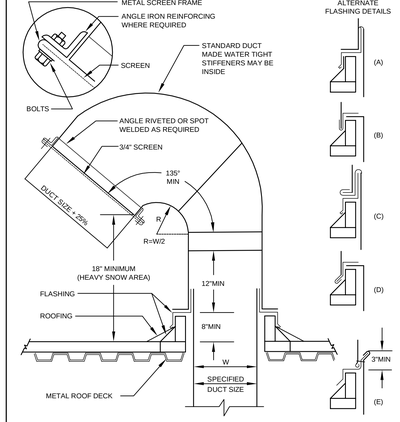
DUCT PENETRATION THRU ROOF



PIPE SUPPORT ON ROOF DETAIL

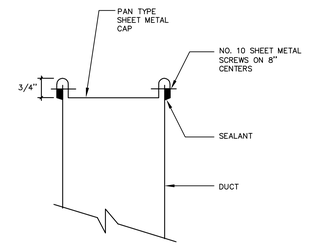


DOMESTIC WATER CONNECTION TO HVAC EQUIPMENT



RECTANGULAR GOOSENECK

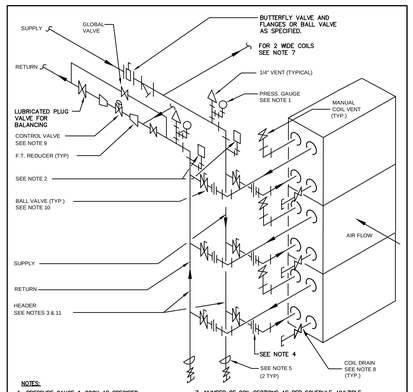
NO SCALE



NOTES.

1. EXTEND AND PATCH INSULATION TO COVER CAP ON EXISTING INSULATED DUCTS
2. PROVIDE DUCT LINING ON CAP ON EXISTING LINED DUCTS.

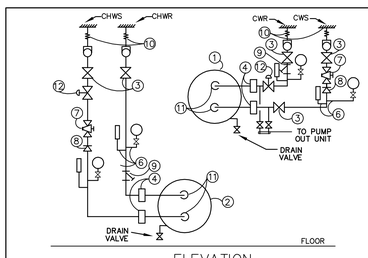
DUCT CAPPING DETAIL



NOTES:

1. PRESSURE GAUGE & COCK AS SPECIFIED
2. THERMOMETER WELL OR SOCKET & THERMOMETER.
3. SUPPORT VERTICAL HEADERS (NO STRESS ON COIL NOZZLES) AT LOCATION TO CLEAR ACCESS DOOR, HUMIDIFIER ETC. HEADER & BRANCH UNION TO BE CLEAR OF COIL PULL OUT SPACE.
4. COIL BRANCHES TO BE FULL SIZE AS COIL COUPLING.
5. PROVIDE 3/4" BALL DRAIN VALVE WITH CAP & CHAIN DIRT LEG.
6. COIL HOOK UP MUST BE COUNTER TO AIR FLOW. (AS SHOWN)
7. NUMBER OF COIL SECTIONS AS PER SCHEDULE, MULTIPLE VERTICAL COIL BANKS SHALL BE PIPED SIMILAR. (AS SHOWN)
8. PROVIDE 3/4" COIL BALL DRAIN VALVE W/ CAP & CHAIN.
9. CONTROL VALVE SIZE & TYPE AS PER SPECIFICATIONS VALVE SCHEDULE. (USE F.T. REDUCERS @ VA.) FOR SCREWED CONTROL VALVE PROVIDE F.T. REDUCERS & UNIONS.
10. ALL BALANCING VALVES SHALL BE PROVIDED WITH MEMORY STOPS.
11. SUPPLY & RETURN HEADERS SHALL BE FULL SIZE OF SUPPLY & RETURN FROM MAINS.
12. PROVIDE STAINLESS STEEL DRAIN PAN UNDER ALL COOLING COILS.

MULTI-TIER CHILLED WATER COIL PIPING DETAIL



ELEVATION

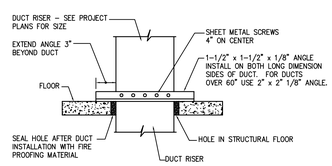
NOTES:

1. LOCATE PIPING AND VALVES TO PERMIT TUBE SERVICE
2. ONE PASS AND THREE PASS PIPING IS SIMILAR EXCEPT THAT INLET PIPING IS LOCATED AT OPPOSITE END FROM DISCHARGE PIPING.
3. PROVIDE PIPING TO AUXILIARIES SUCH AS OIL COOLER, PUMP OUT UNIT AND PURGE CONDENSER AS PER MANUFACTURERS RECOMMENDATIONS.
4. PROVIDE REFRIGERANT RELIEF PIPING TO ATMOSPHERE SIZED AS PER MANUFACTURERS RECOMMENDATIONS AND ASHRAE 15 CODE.
5. PROVIDE COOLING WATER AND ALL NECESSARY PIPING TO PUMP OUT UNIT AND CONDENSERS.

LEGEND:

1. CONDENSER
2. EVAPORATOR
3. FLANGED VALVES
4. FLANGED CONNECTION
5. FLANGES
6. THERMOMETERS & GAUGES
7. LUBRICATED PLUG VALVE
8. SPRING LOADED CHECK VALVE
9. STRAINER
10. VIBRATION ISOLATOR SUPPORT
11. PROVIDE FLANGED ELBOW CONNECTION
12. AUTOMATIC ISOLATION VALVE

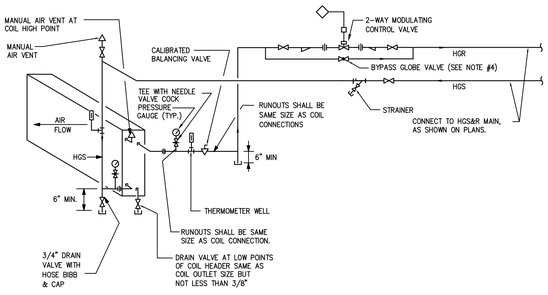
REFRIGERATION MACHINE PIPING



NOTES:

1. ALL DUCTWORK RISERS WHICH ARE RUN EXPOSED, SUCH AS THROUGH MEZZANINE FLOORS AND FAN ROOM FLOORS, SHALL BE PROVIDED WITH A 3" HIGH CONCRETE CURB AROUND OPENING FOR DUCT.
2. LOW PRESSURE DUCTWORK SHALL INCLIDE DUCTWORK OPERATING AT 2 INCHES W.G. OR LESS.

LOW PRESSURE DUCT RISER SUPPORT



HOT GLYCOL/WATER HEATING COIL PIPING CONNECTION DETAIL

SCALE: N.T.S.

NOTES:

1. LOCATE PIPE UNIONS AND ARRANGE PIPING TO FACILITATE COIL REMOVAL.
2. UNIONS REQUIRED TO PERMIT REMOVAL OF CONTROL VALVES.
3. LOCATE THERMOMETER WELLS IN PIPE ELBOW.
4. MANUAL BYPASS PIPING AND VALVE SHALL BE SAME SIZE AS CONTROL VALVE SIZE.

125
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PHASE : DOB SUBMITTAL

ARCHITECT'S SEAL

ISSUE NO.	ISSUE DATE	DESCRIPTION
01	9/30/15	DOB SUBMITTAL

THAMES ST.
GREENWICH ST.

KEY PLAN AND NORTH SIGN

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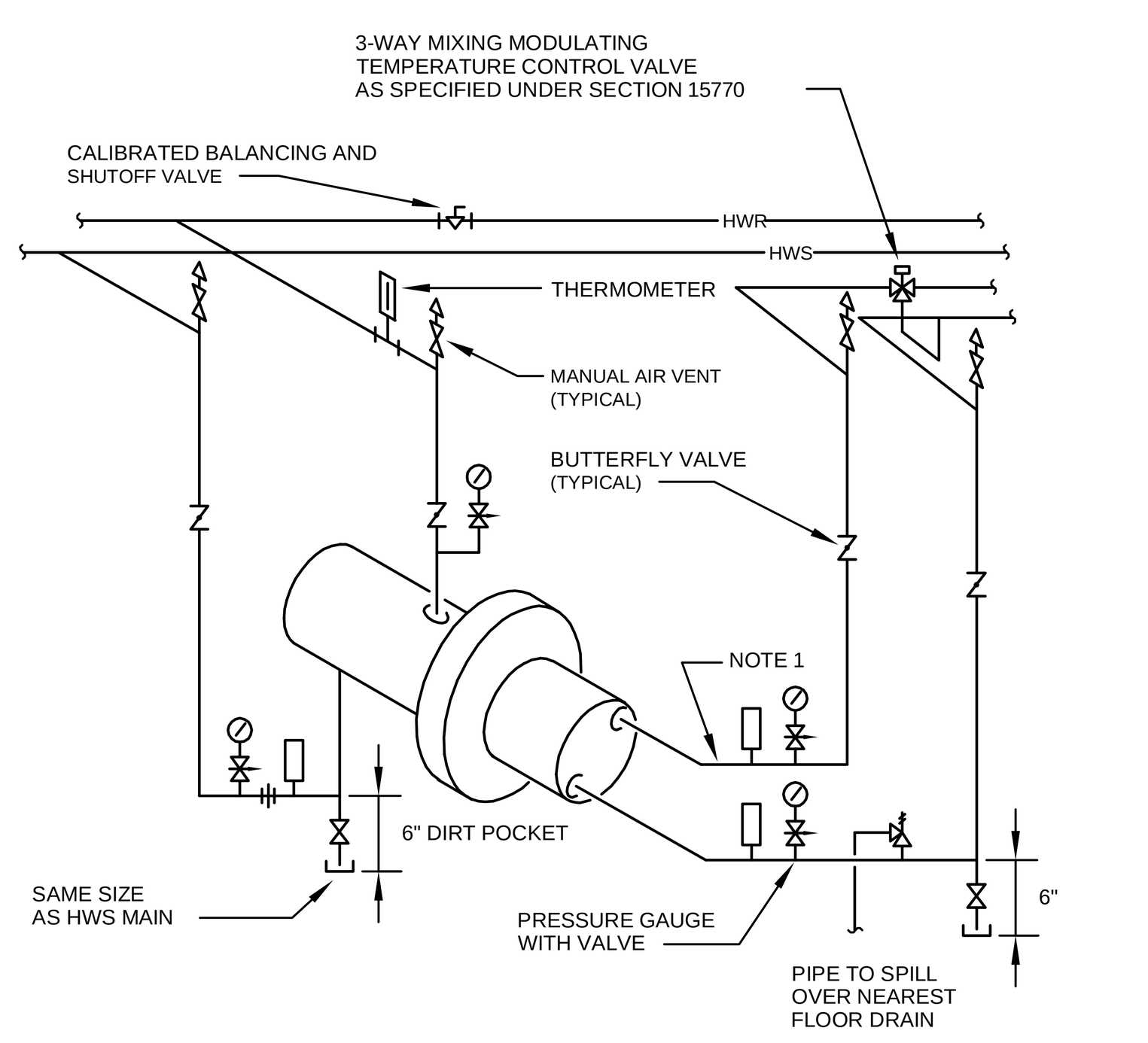
SCALE NTS

MECHANICAL
DETAIL SHEET #3

SHEET TITLE :

M-503.00

SHEET NUMBER :

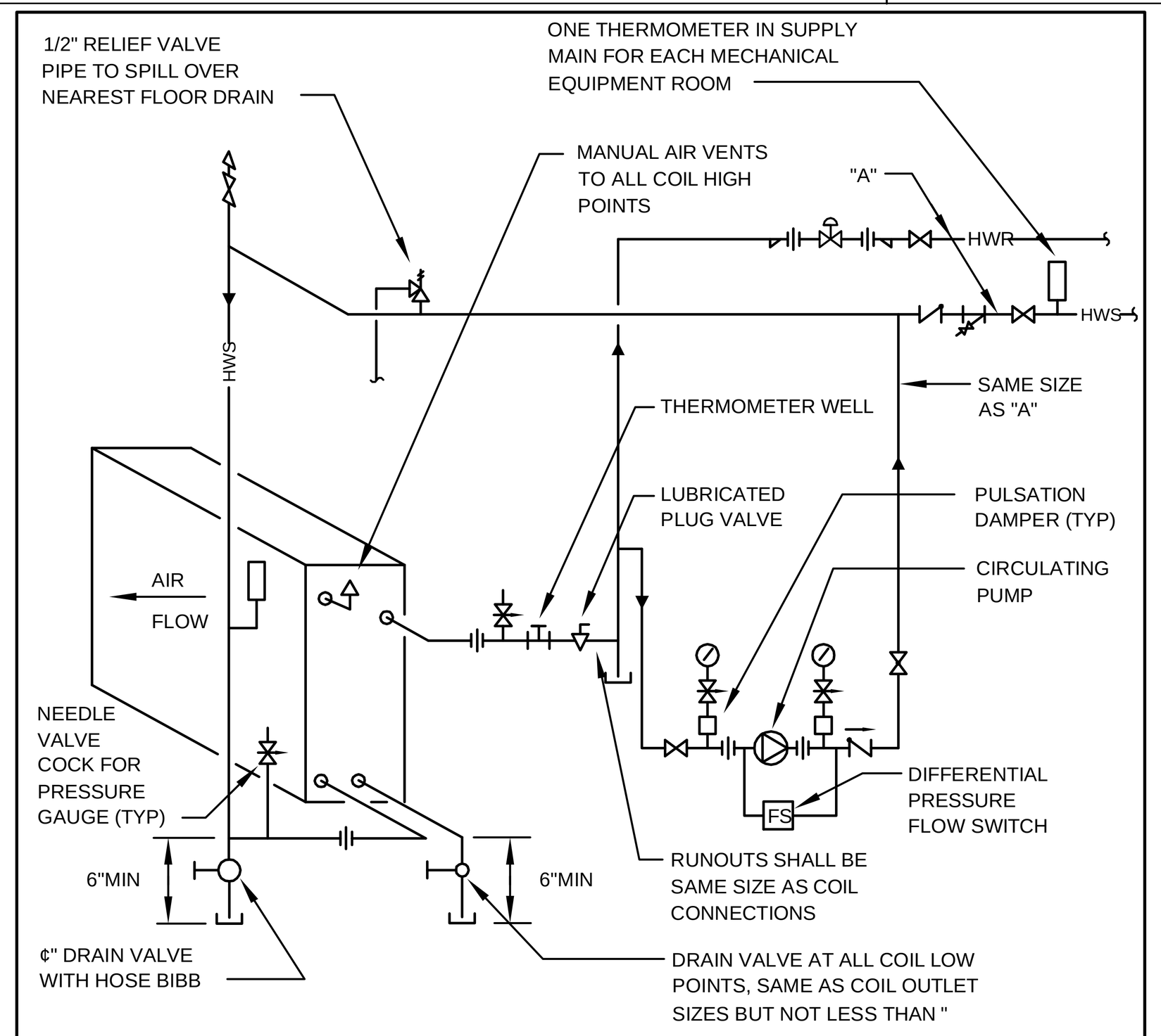


HOT WATER-TO-GLYCOL HEAT EXCHANGER PIPING DETAIL

SCALE : N.T.S.

NOTES:

1. ALL PIPING SHALL BE ARRANGED TO ALLOW REMOVAL OF TUBE BUNDLE WITH MINIMUM DISTURBANCE TO PIPING.
2. PRESSURE RELIEF VALVES SET 20% OVER WORKING PRESSURE.

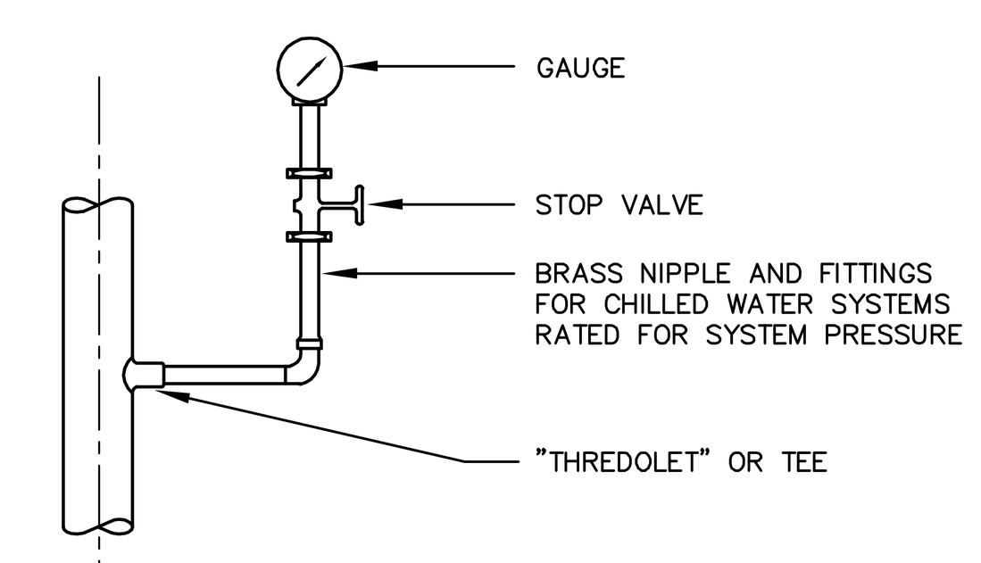


HOT WATER PREHEAT COIL CONNECTIONS-ONE HIGH

SCALE : N.T.S.

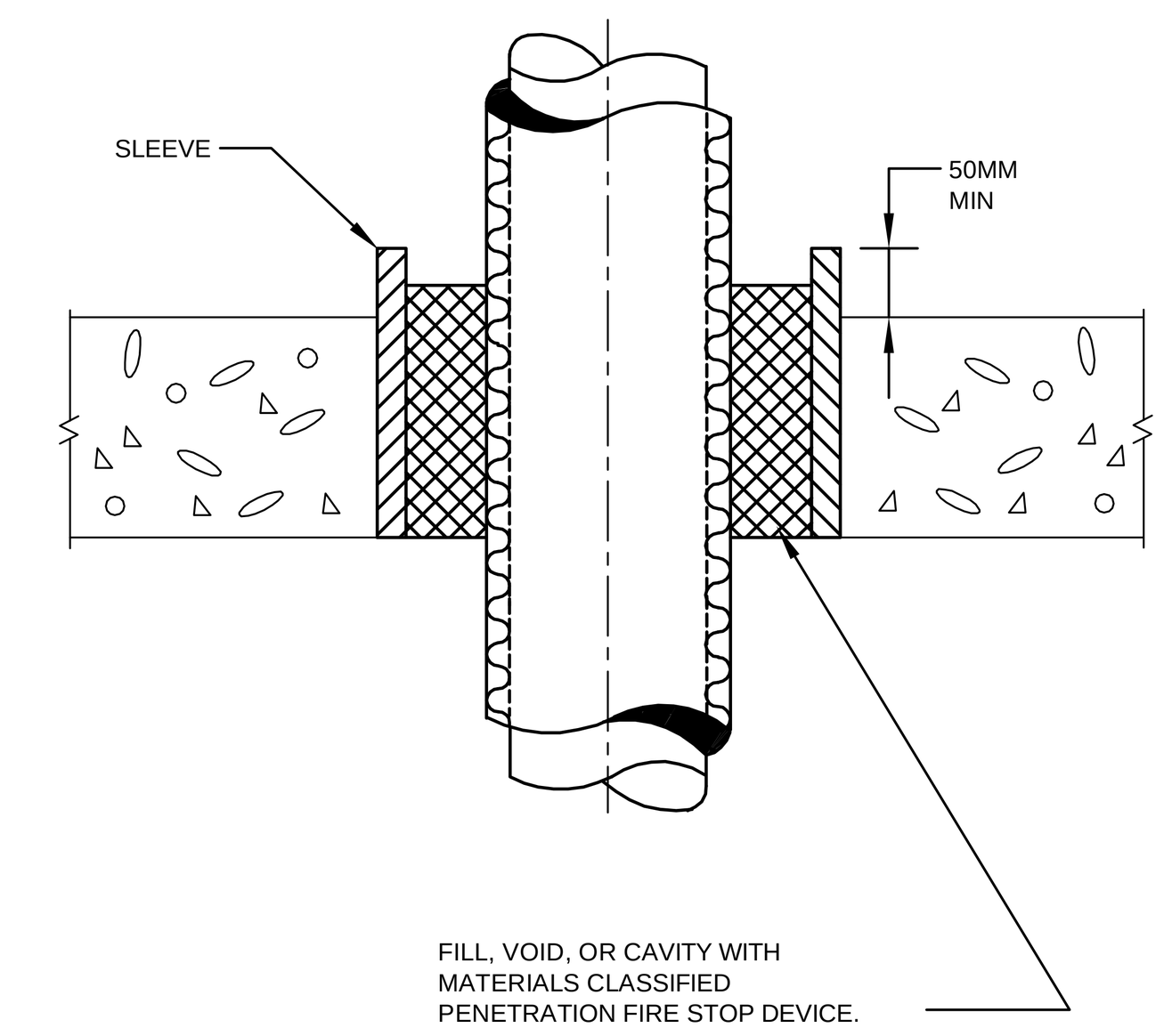
NOTES:

1. LOCATE PIPE UNIONS AND ARRANGE PIPING TO FACILITATE COIL REMOVAL.
2. PROVIDE SIMILAR PIPING ARRANGEMENTS ON EACH SIDE FOR TWO SECTION WIDE COIL ASSEMBLY.
3. FOR PIPE SIZES 'A' SEE PLANS.
4. ON LINES 2" AND SMALLER LOCATE THERMOMETER WELLS IN PIPE ELBOW.

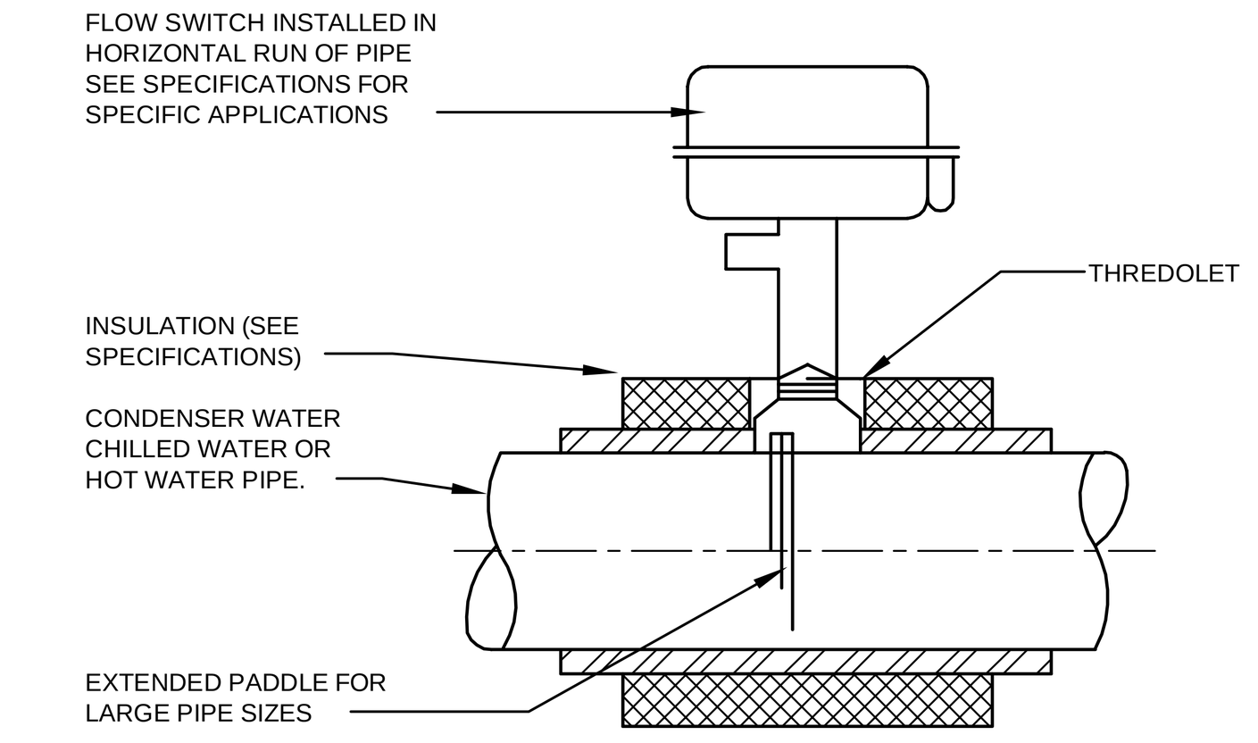


NOTE:
HEATING WATERS AND CONDENSER WATER SYSTEMS SHALL USE STEEL NIPPLES AND FITTINGS.

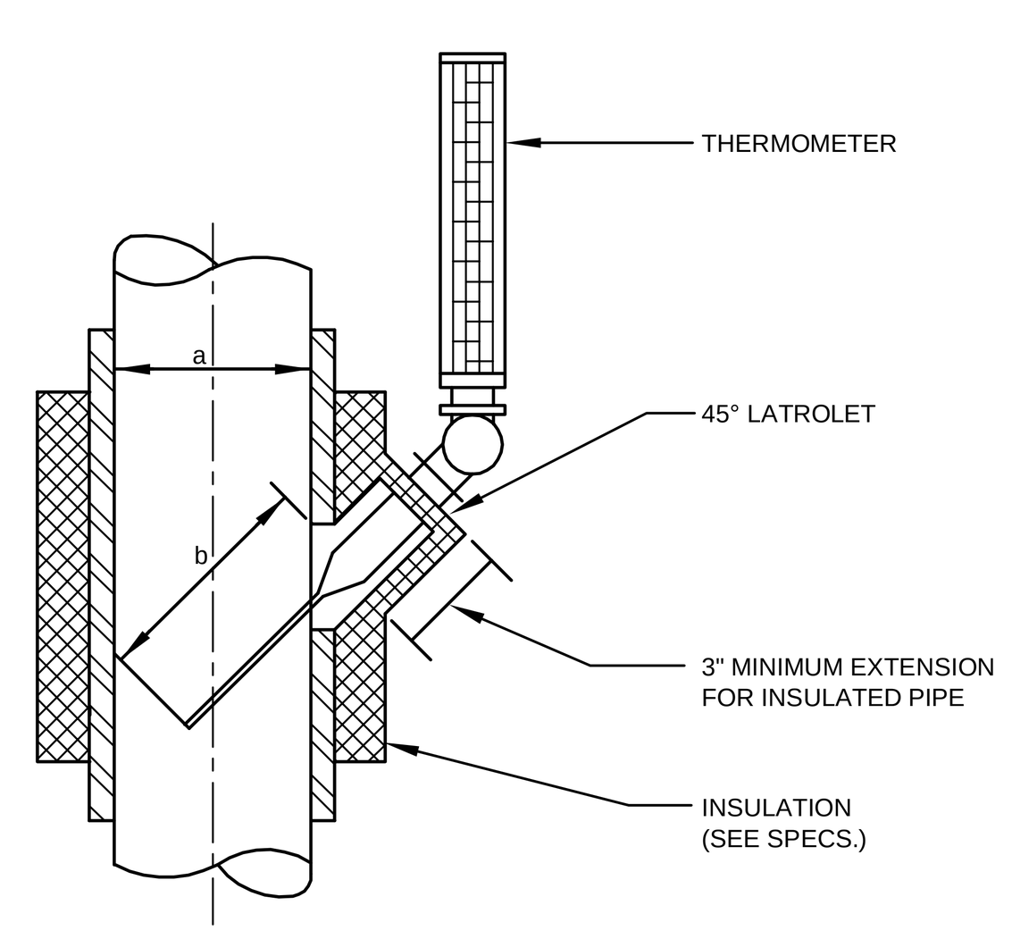
TYPICAL GAUGE PIPING DETAIL



TYPICAL PIPE AND/OR CONDUIT FLOOR PENETRATION

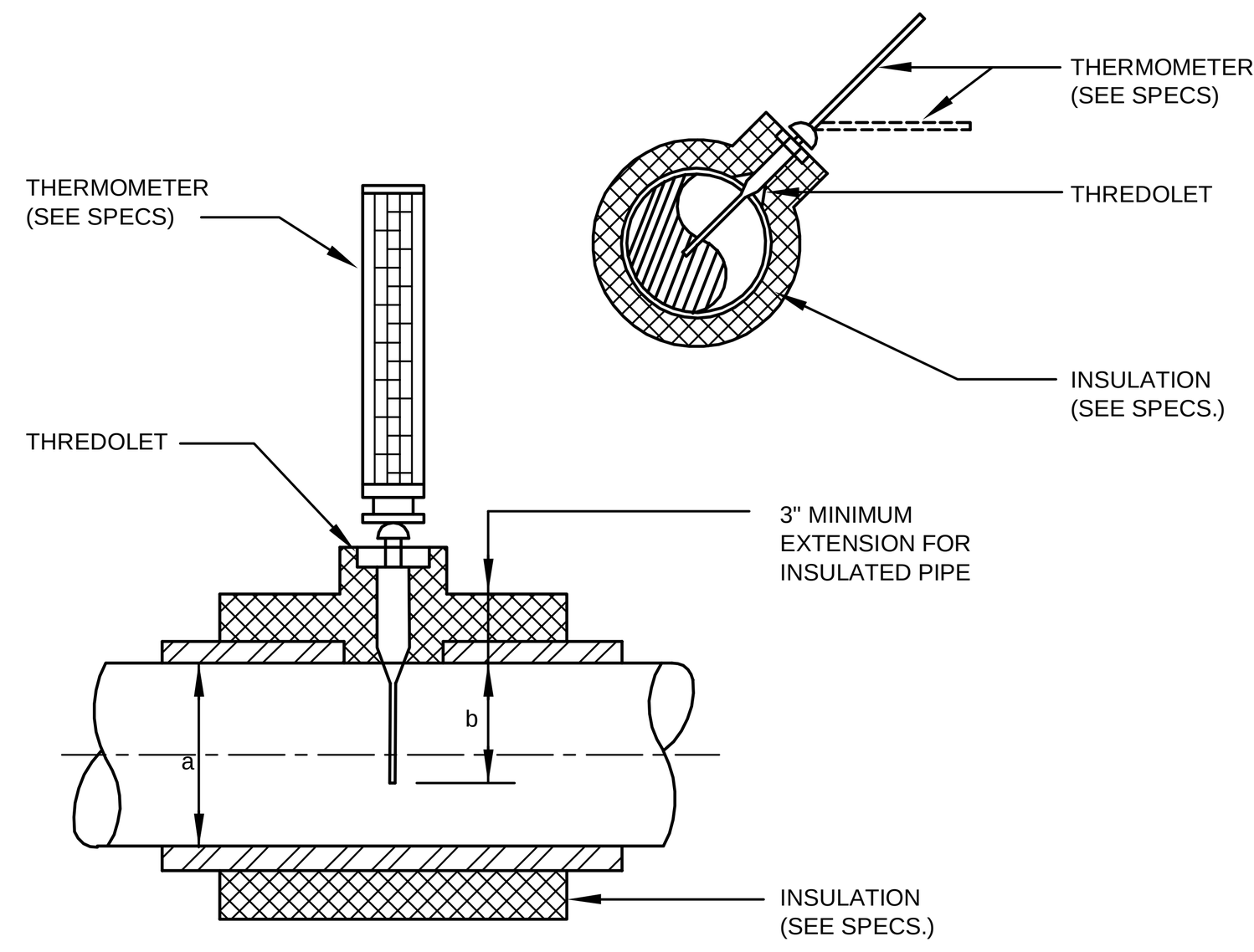


FLOW SWITCH DETAIL



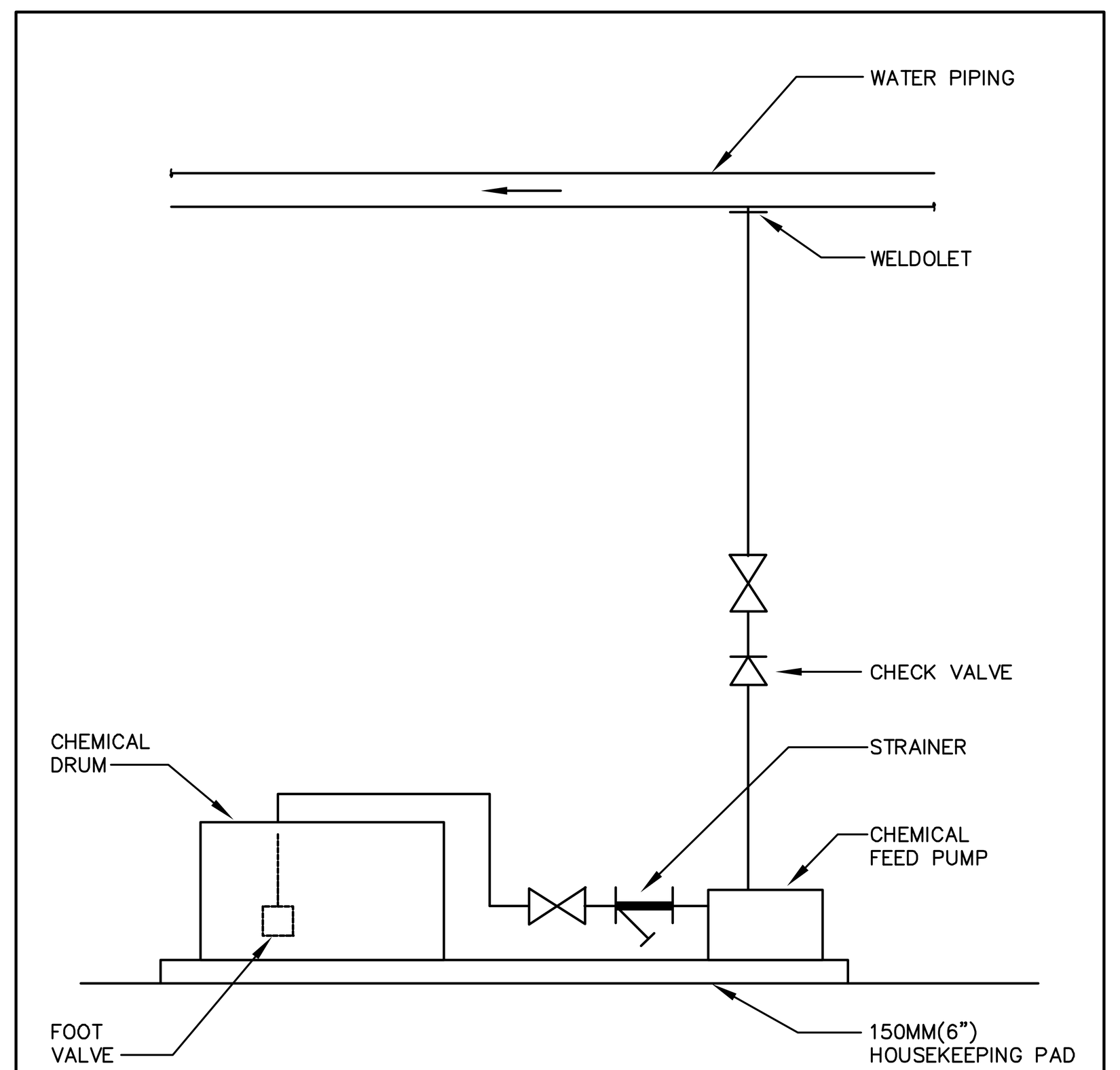
INSERTION LENGTH SCHEDULE	
a = PIPE DIAMETER	b = INSERTION LENGTH
UP TO 6"	6"
8" AND 10"	8"
12" AND LARGER	14"

THERMOMETER WELL LOCATED IN VERTICAL PIPE

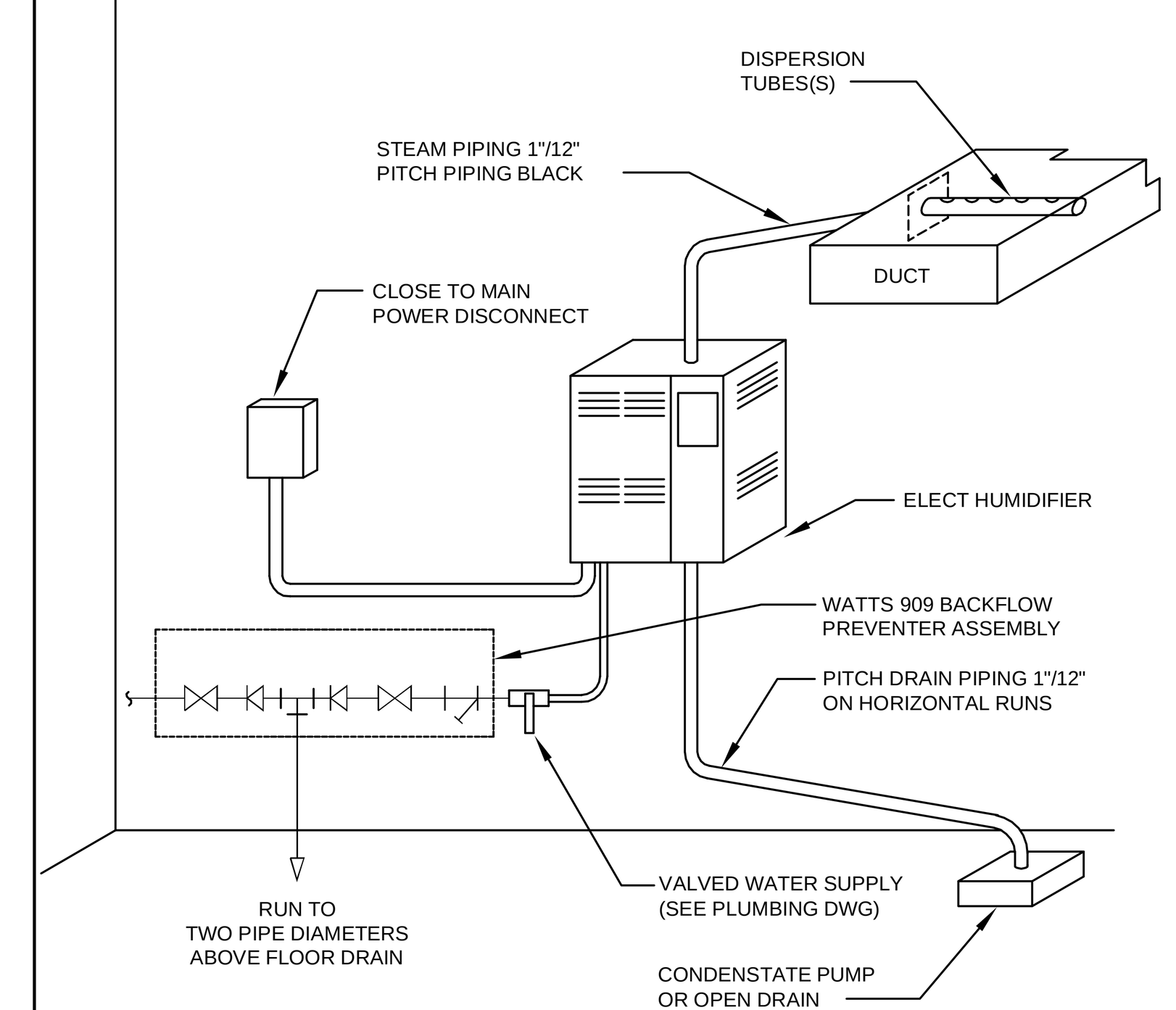


INSERTION LENGTH SCHEDULE	
a = PIPE DIAMETER	b = INSERTION LENGTH
UP TO 4"	3"
6" TO 8"	6"
10" AND LARGER	8"

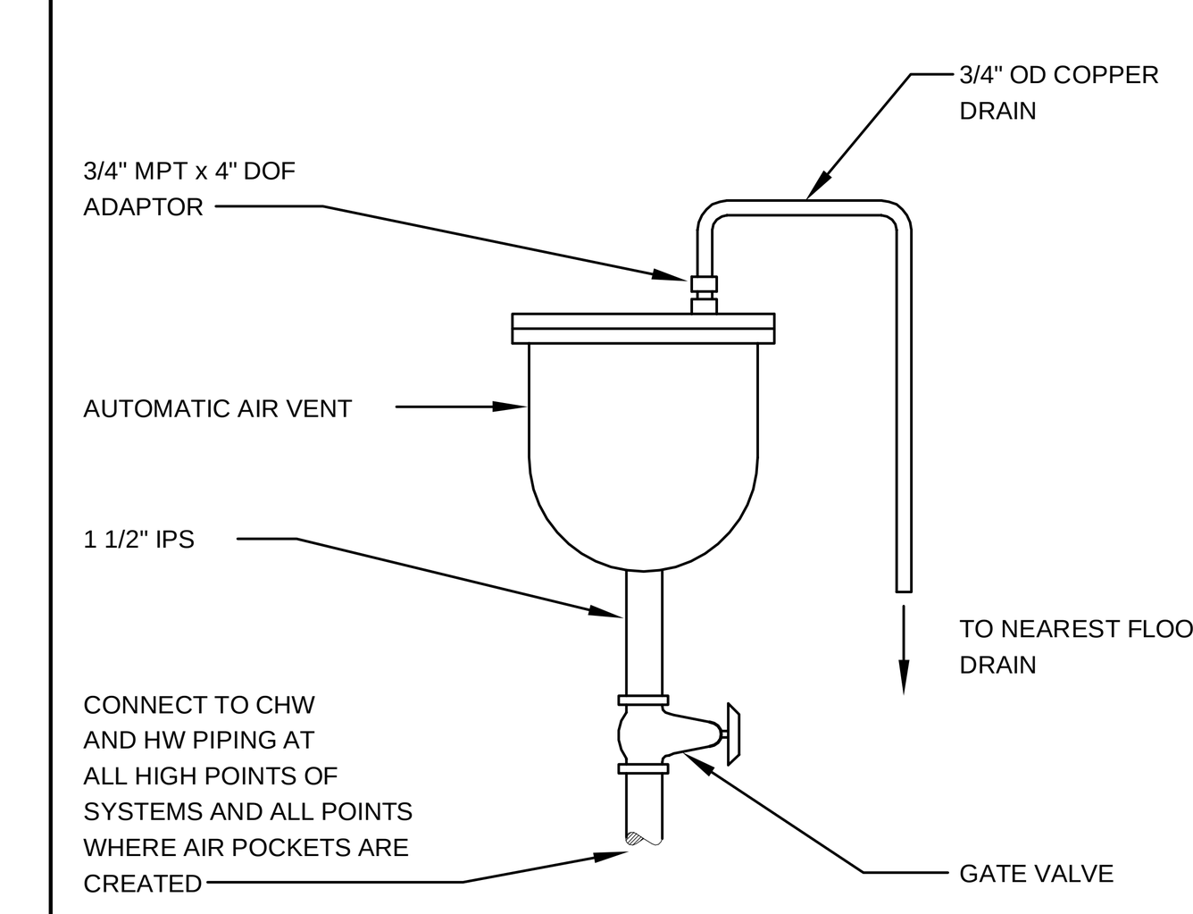
THERMOMETER WELL LOCATED IN HORIZONTAL PIPE



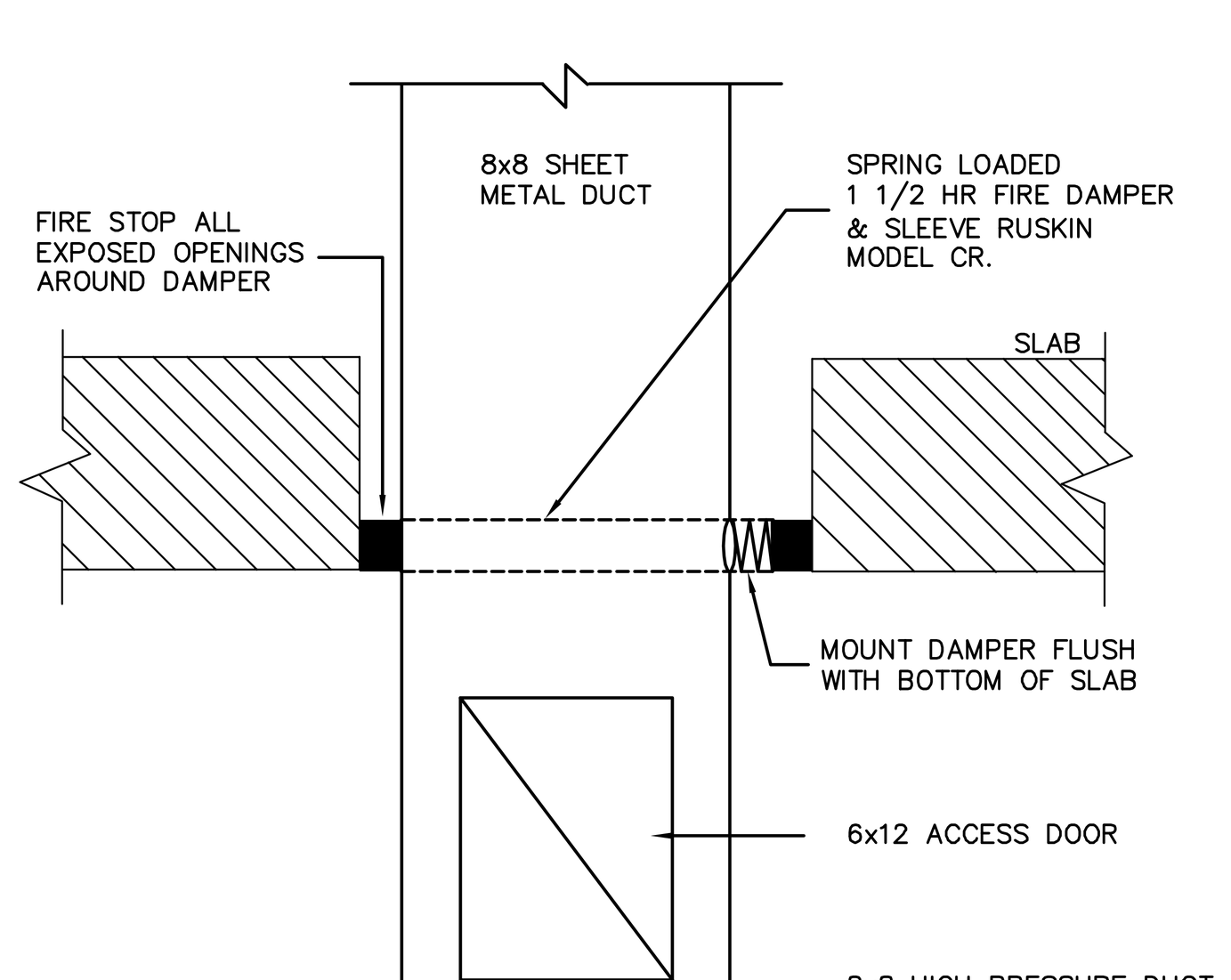
CHEMICAL TREATMENT SYSTEM



ELECTRIC HUMIDIFIER PIPING DETAIL



AUTOMATIC AIR VENT DETAIL

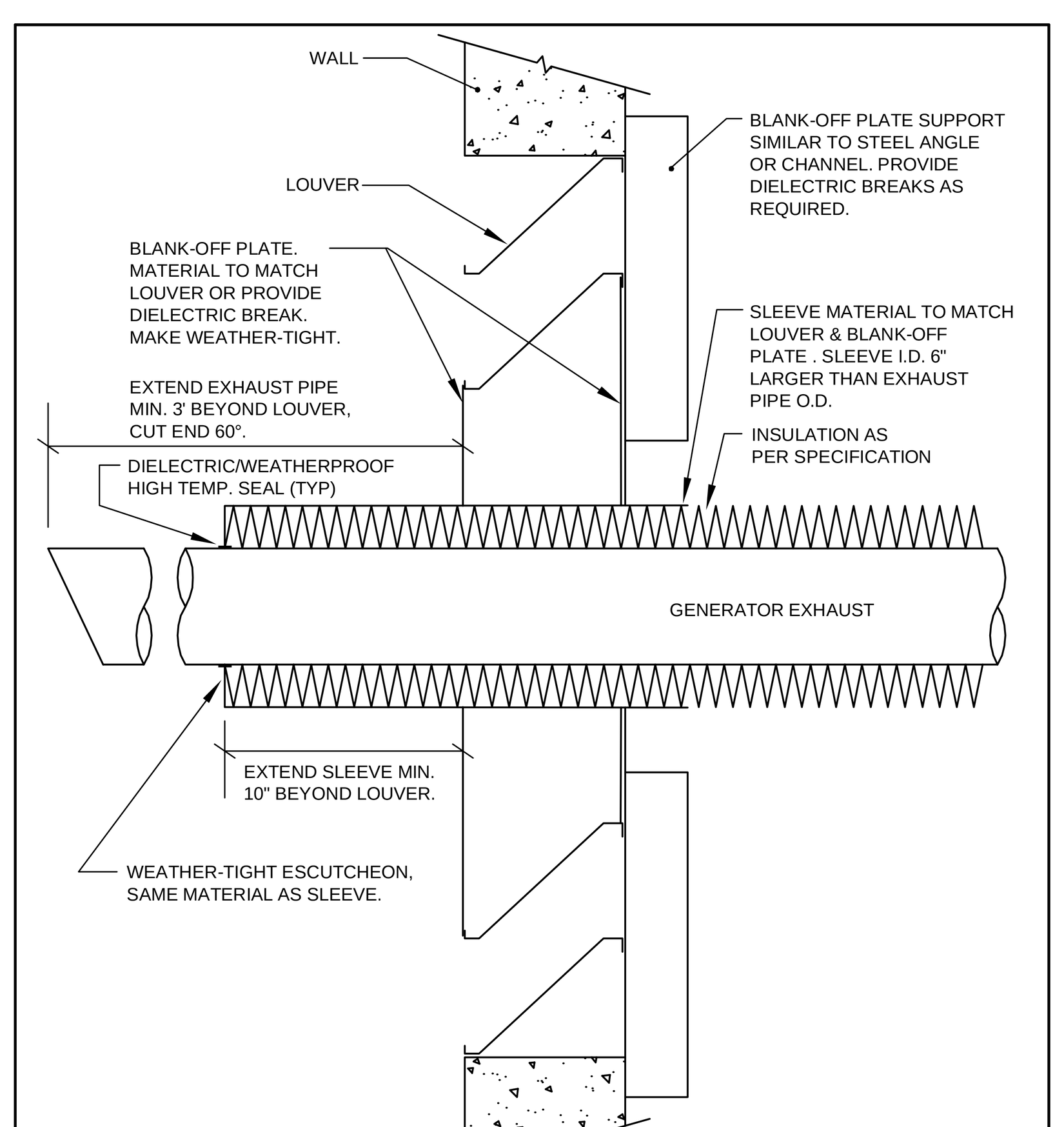


NOTES:

1. POSITION DAMPER WITH RELEASE AT BOTTOM OF SLAB.
2. ALL PRIMARY AIR DUCTWORK TO BE CONSTRUCTED FOR 10"WG IN ACCORDANCE WITH SMACNA STANDARDS.
3. GENERAL CONTRACTOR TO PROVIDE ACCESS DOOR IN SHAFT ENCLOSURE.
4. SHEET METAL CONTRACTOR SHALL FURNISH CONSTRUCTION CONTRACTOR WITH OPENING SIZES. ALL OPENINGS SHALL BE PACKED WITH SUITABLE FIRE RETARDANT MATERIAL.
5. ACCESS DOOR MUST BE LOCATED AS REQUIRED TO ENABLE RESETTING OF DAMPER. MORE THAN ONE DOOR MAY BE REQUIRED ON LARGE DUCTS.
6. FIRE DAMPER SHALL BE MOUNTED OUTSIDE OF AIR STREAM, SEE FLD DETAIL.

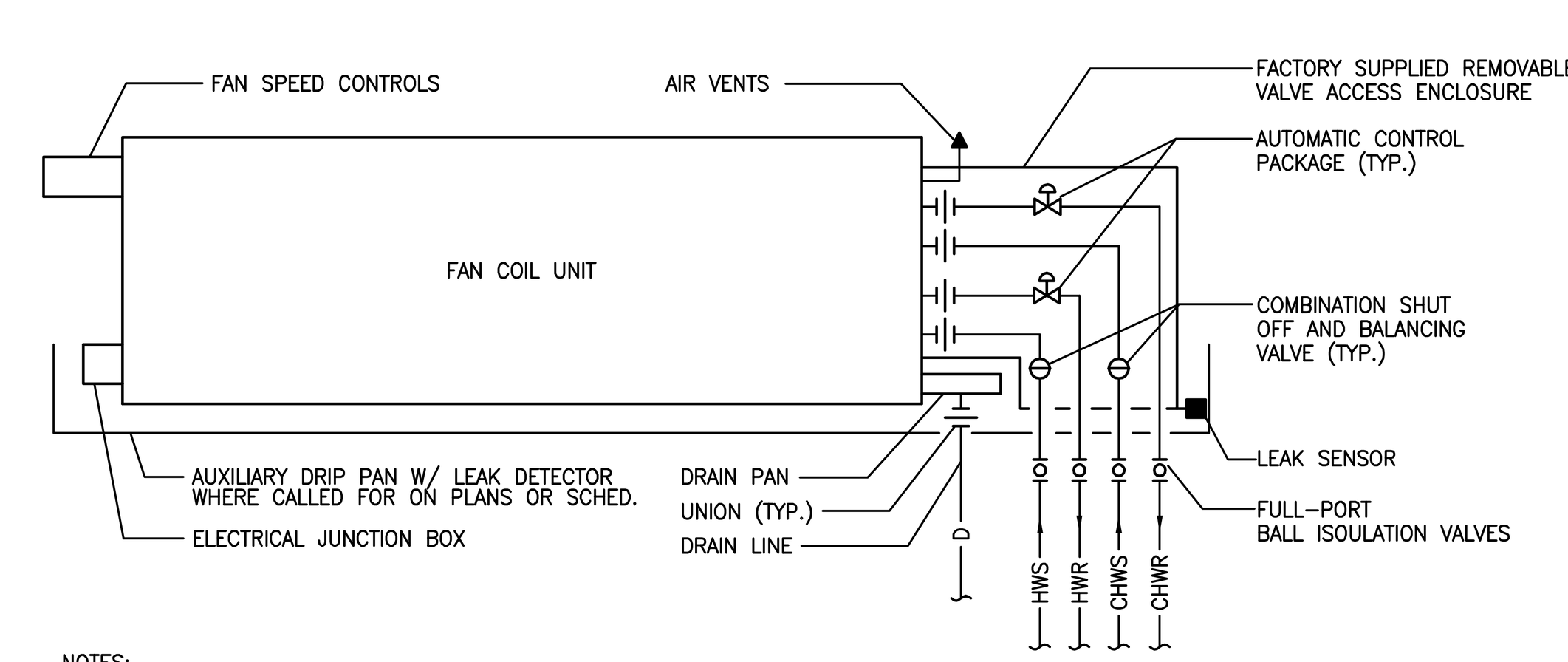
DETAIL TYPICAL PRIMARY AIR DUCT THROUGH SLAB

(NOT TO SCALE)



GENERATOR EXHAUST LOUVER PENETRATION DETAIL

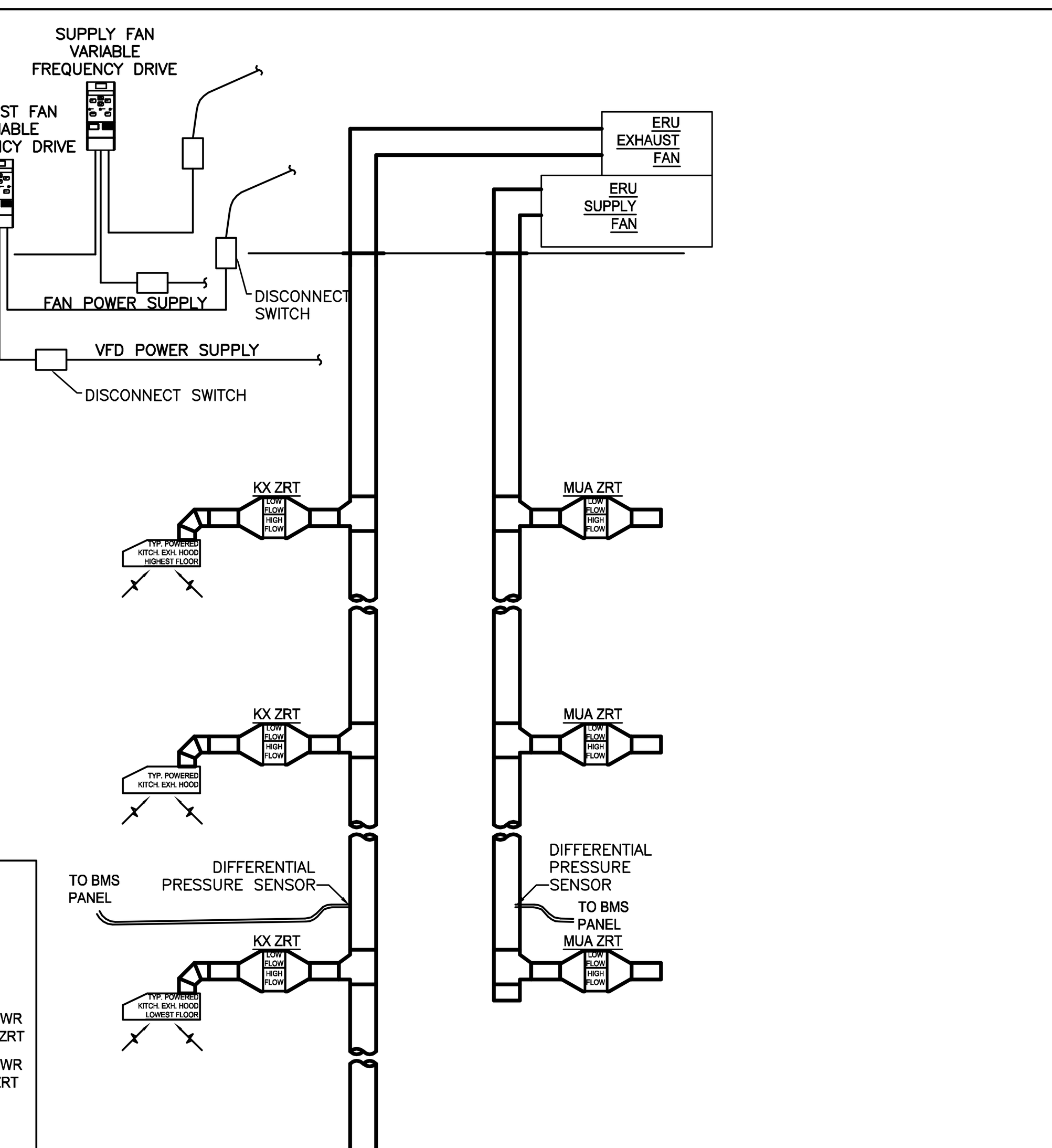
(NOT TO SCALE)

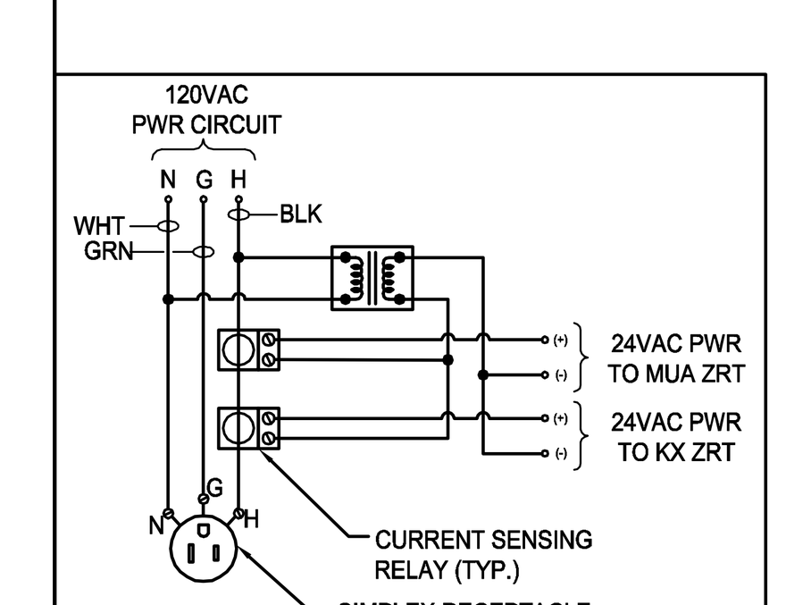


NOTES:

1. FOR A CONCEALED UNIT, CONTROLS SHALL BE MOUNTED IN AN ACCESSIBLE LOCATION.
2. ELECTRICAL JUCTION BOX AND CONTROLS TO BE LOCATED ON OPPOSED SIDE AS PIPING CONECTIONS.
3. DRIP UNDER PIPING CONNECTIONS WITH LEAK DETECTOR TO BE PROVIDED. (LOCAL ALARM)
4. CONTRACTOR SHALL COORDINATE COIL CONNECTION HAND POSITION.
5. FCU MFGR TO PROVIDE HYDRONIC PIPING PACKAGE CONSISTING OF BALL VALVES, STRAINER CONTROL VALVES & BALANCING VALVE PREPPED IN FACTORY SUPPLIED VALVE PACKAGE ENCLOSURE.

FAN COIL UNIT PIPING DETAIL





KX HOOD RECEPTACLE WIRING DIAGRAM

DRAWING NOTES

1. DIFFERENTIAL PRESSURE SENSOR SHALL MEASURE THE PRESSURE DIFFERENTIAL BETWEEN THE DUCT'S PRESSURE AND THE BUILDING'S PRESSURE.
2. THE KITCHEN EXHAUST (KX) AND MAKE-UP-AIR (MUA) ZONE REGISTER TERMINALS (ZRT'S), SHALL CONTAIN TWO (2) CONSTANT AIR REGULATORS (CAR'S).
3. WHEN THE HOOD IS OFF, THE LOW FLOW CAR IN BOTH ZRT'S SHALL BE NORMALLY OPEN.
4. WHEN THE HOOD IS TURNED ON TO THE DEFAULT EXHAUST SPEED, THE EXHAUST AND MAKE UP AIR ZRT'S HIGH-FLOW DAMPERS SHALL OPEN BY WAY OF CURRENT SENSING RELAYS. THE EXHAUST SYSTEM'S CURRENT SENSING RELAY SHALL BE SET TO THE LOW-SPEED AMP DRAW OF THE HOOD TO AVOID THE DAMPER CLOSING WHEN THE HOOD IS TURNED TO A LOWER SPEED. THE MAKE-UP AIR SYSTEM'S CURRENT SENSING RELAY SHALL BE SET TO THE DEFAULT SPEED AMP DRAW OF THE HOOD.
5. WHEN THE HOOD IS SET TO ITS LOW SPEED, THE HIGH DAMPER ON THE KX ZRT BOX SHALL REMAIN OPEN, BUT THE HIGH DAMPER IN THE OA ZRT BOX CLOSES.
6. WHEN THE HOOD IS SET TO ITS HIGH SPEED, BOTH HIGH DAMPERS, ON THE KX ZRT BOX AND OA ZRT BOX, OPEN.
7. SAME FOR WHEN THE HOOD IS SET TO ITS MAX SPEED.
8. REFER TO MECHANICAL AIR RISER DIAGRAMS FOR MIN/MAX AIR FLOW SETTINGS.
9. FOLLOW DUCT MANUFACTURER'S RECOMMENDATIONS FOR CORRECT INSTALLATION METHODS.
10. REFER TO MECHANICAL PLANS AND DETAILS FOR LOCATION OF RATED SHAFTS, SUB-DUCT "BOOT" CONNECTIONS, FUSIBILE LINK FIRE DAMPERS, ETC.
11. FOLLOW ALL PERTINENT NATIONAL, STATE, AND LOCAL CODES FOR PROPER INSTALLATION OF EQUIPMENT AND MATERIALS.

DEPT OF BLDGS 121183799 Job Number
ES753697307 Scan Code

125 GREENWICH
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GEOTECH CONSULTANT :
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STATE OF NEW YORK · MICHAEL W. MAYBAUM · No. 059357 P.E. · LICENSED PROFESSIONAL ENGINEER

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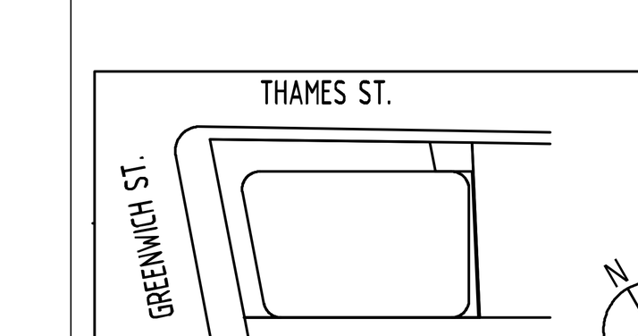

KEY PLAN AND NORTH SIGN

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SCALE NTS

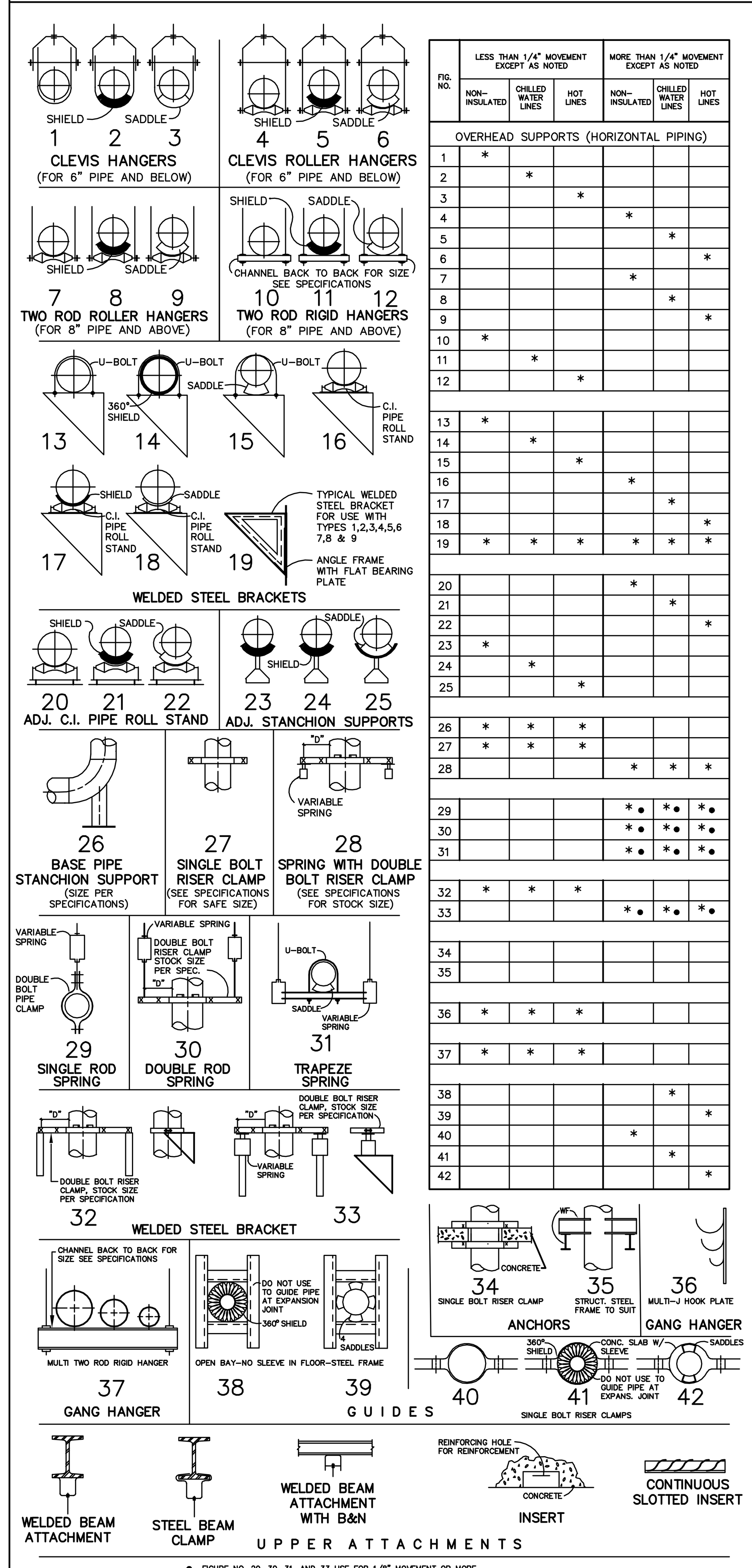
MECHANICAL
DETAIL SHEET #4

SHEET TITLE :

M-504.00

SHEET NUMBER :

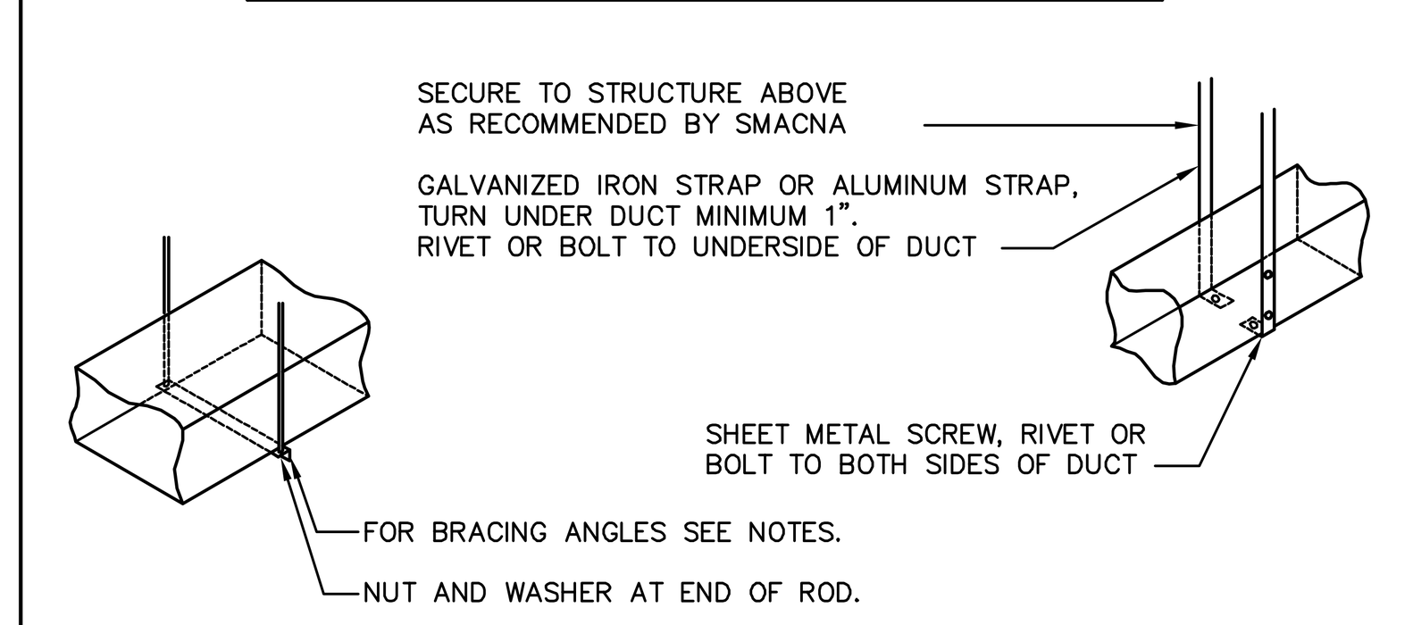
PIPE HANGER & SUPPORT SCHEDULE



RECTANGULAR DUCT HANGER SCHEDULE (MINIMUM SIZES)

HALF DUCT PERIMETER RANGE	PAIR AT 10' SPACING		PAIR AT 8' SPACING	
	STRAP	WIRE/ROD	STRAP	WIRE/ROD
P/2 < 30'	1"x 22 GA.	10 GA. (0.135")	1"x 22 GA.	10 GA. (0.135")
P/2 < 72"	1"x 18 GA.	3/8"	1"x 20 GA.	1/4"
P/2 < 96"	1"x 16 GA.	3/8"	1"x 18 GA.	3/8"
P/2 < 120"	1–1/2"x 16 GA.	1/2"	1"x 16 GA.	3/8"
P/2 < 168"	1–1/2"x 16 GA.	1/2"	1"x 16 GA.	1/2"
P/2 < 192"	–	1/2"	1–1/2"x 16 GA.	1/2"

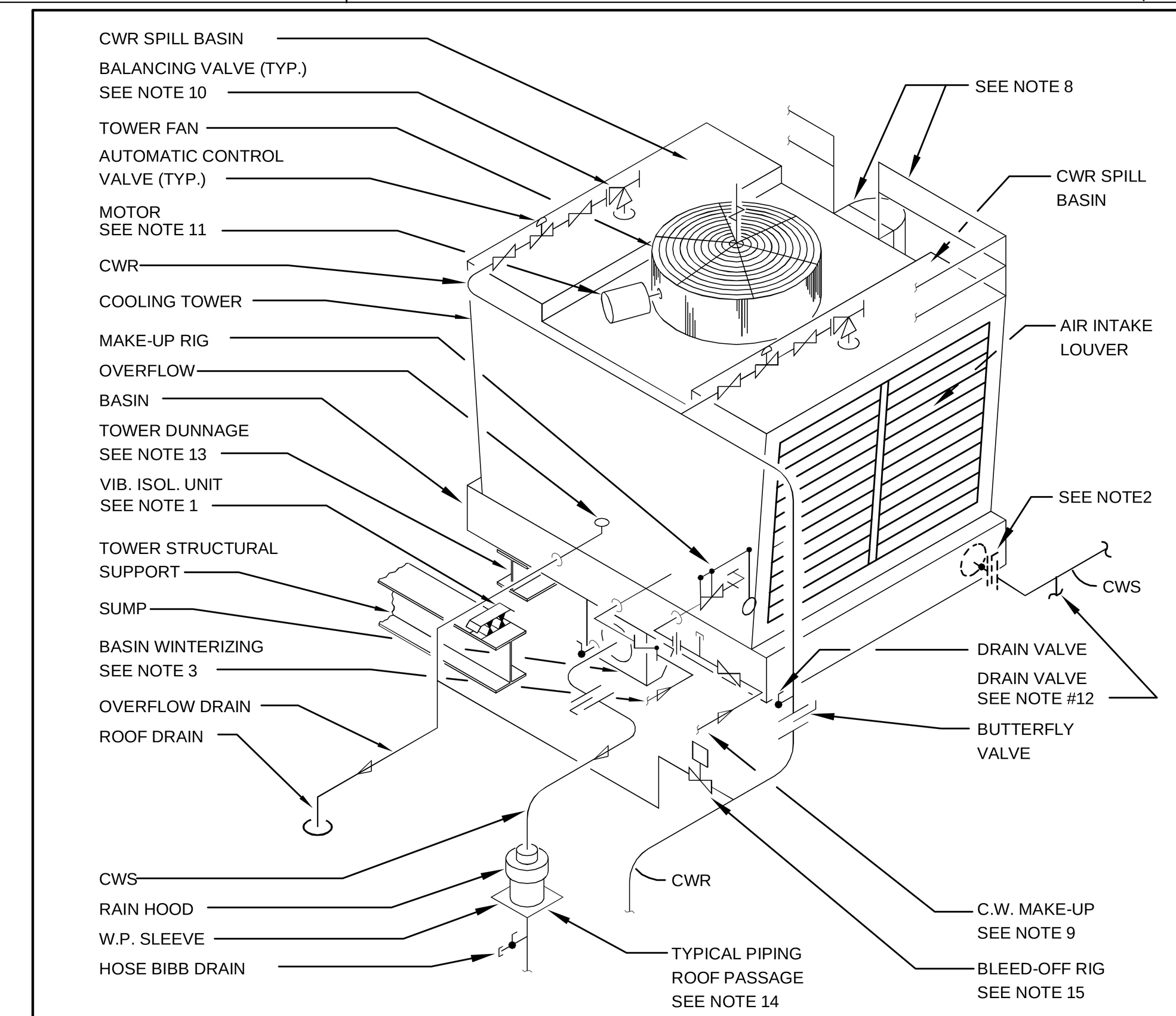
HALF DUCT PERIMETER RANGE	PAIR AT 5' SPACING		PAIR AT 4' SPACING	
	STRAP	WIRE/ROD	STRAP	WIRE/ROD
P/2 < 30'	1"x 22 GA.	12 GA. (0.106")	1"x 22 GA.	12 GA. (0.106")
P/2 < 72"	1"x 22 GA.	1/4"	1"x 22 GA.	1/4"
P/2 < 96"	1"x 20 GA.	3/8"	1"x 22 GA.	1/4"
P/2 < 120"	1"x 18 GA.	3/8"	1"x 20 GA.	1/4"
P/2 < 168"	1"x 16 GA.	3/8"	1"x 18 GA.	3/8"
P/2 < 192"	1"x 16 GA.	3/8"	1"x 16 GA.	3/8"



DUCT HANGER DETAILS

TABLE OF GUIDE SPACINGS

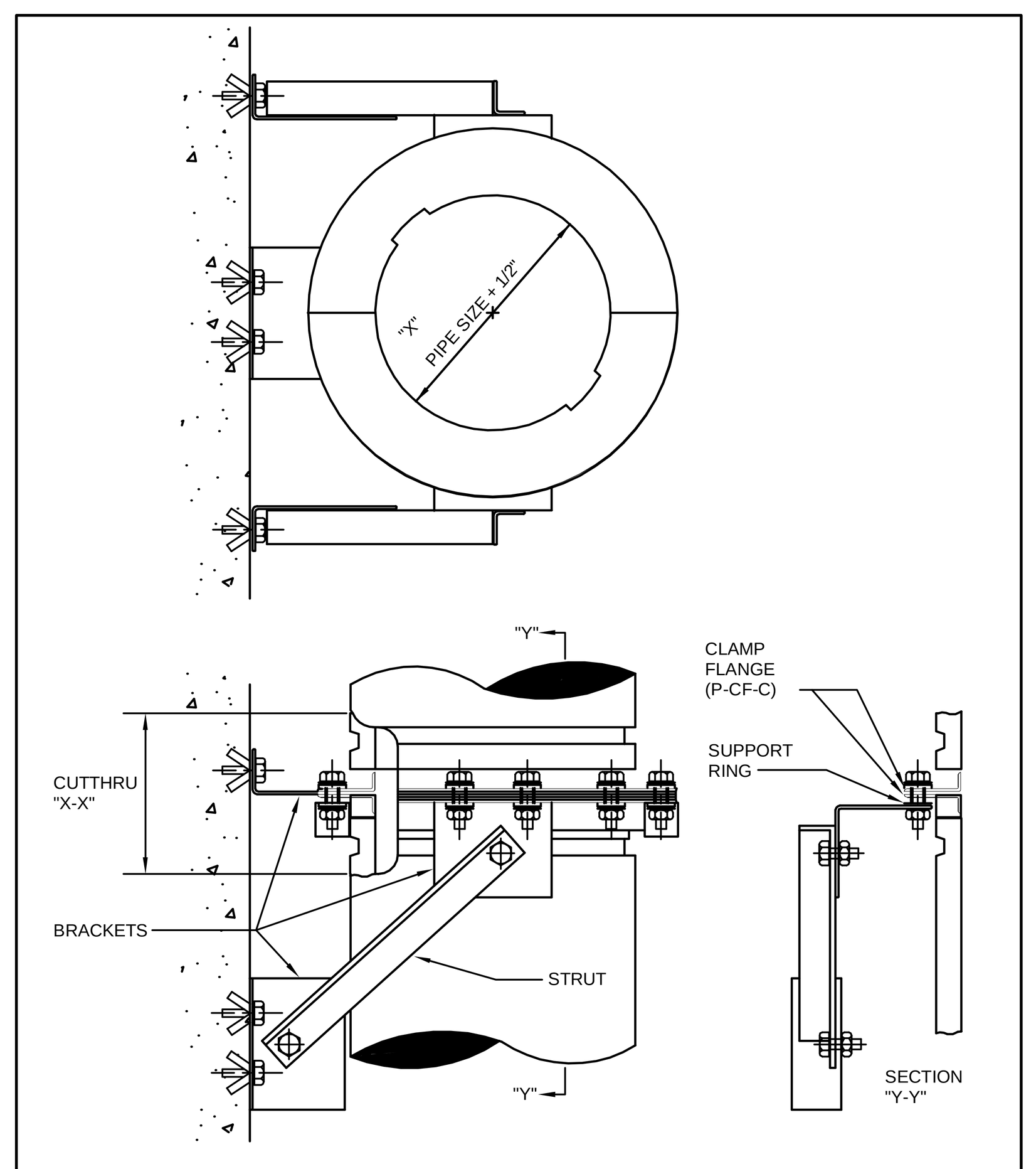
NOMINAL PIPE SIZE	MAXIMUM DISTANCE		MAXIMUM DISTANCE BETWEEN INTERMEDIATE GUIDES (FT) FOR PRESSURES (PSIG) SHOWN BELOW							
(IN)	EXPANSION JOINT TO FIRST GUIDE	FIRST TO SECOND GUIDE	50	100	150	200	250	300	350	400
3	1'–0"	3'–6"	21	19	17	16	15	14	13	13
4	1'–4"	4'–8"	35	29	25	22	20	19	18	17
6	2'–0"	7'–0"	57	44	37	32	29	27	25	23
8	2'–8"	9'–4"	66	52	45	40	36	33	31	29
10	3'–4"	11'–8"	91	69	58	51	46	42	39	36
12	4'–0"	14'–0"	107	79	66	58	52	48	44	41
14	4'–8"	16'–4"	115	85	71	62	56	51	47	
16	5'–4"	18'–8"	127	94	78	68	61	56	52	
18	6'–0"	21'–0"	139	102	85	74	67	61	56	
20	6'–8"	23'–4"	151	110	91	80	71			
24	8'–0"	28'–0"	172	125	103	89	80			
30	10'–0"	35'–0"	200	144	118	103	92			



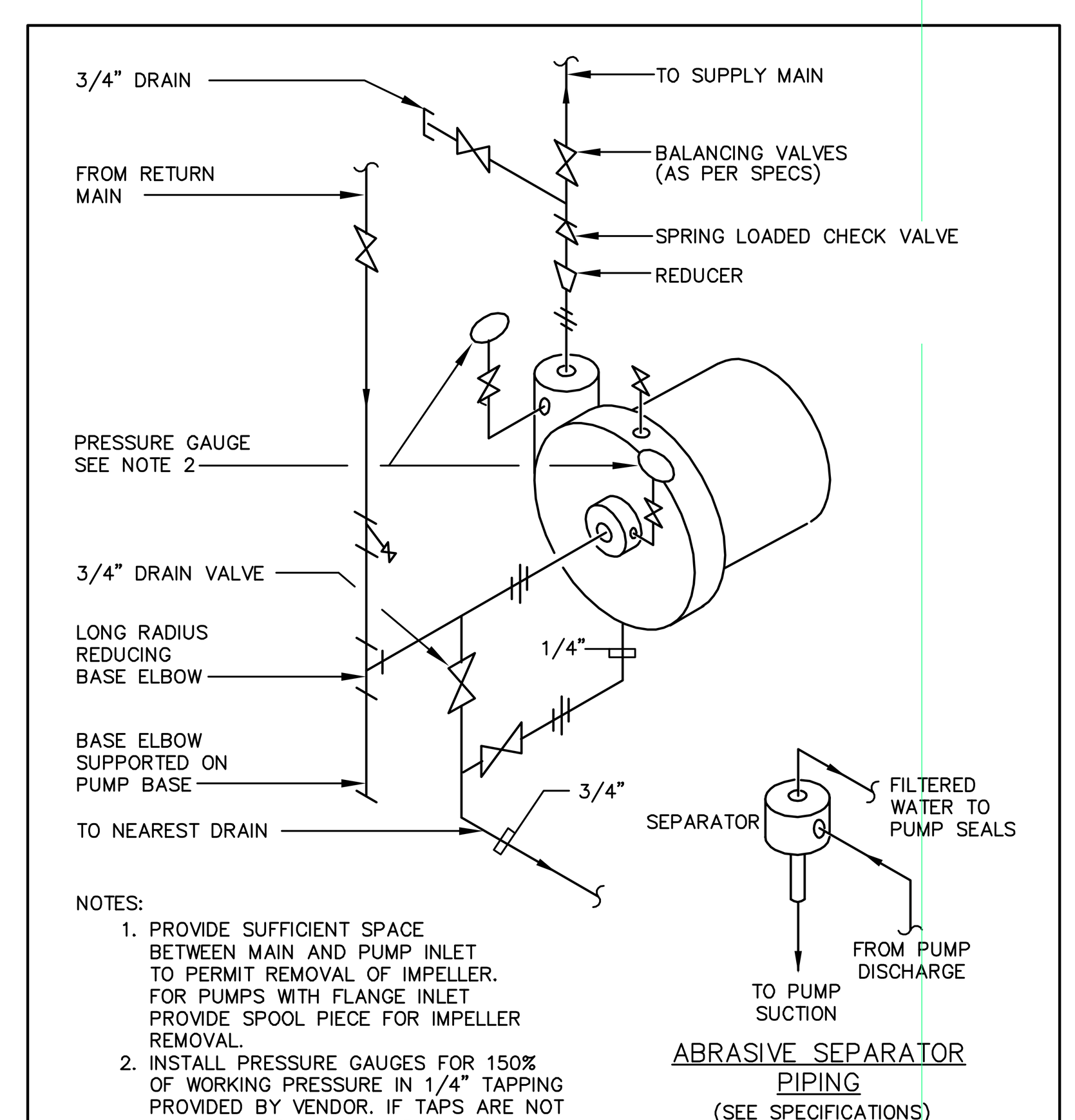
NOTES:

1. PROVIDE VIBRATION ISOLATION UNITS AS SPECIFIED.
2. FOR MULTI-CELL TOWER PROVIDE FULL SIZE EQUALIZING LINE WITH AUTOMATIC ISOLATION VALVE FOR EACH CELL.
3. PROVIDE BASIN FREEZE PROTECTION AS SPECIFIED,
4. PROVIDE STAINLESS STEEL SUMP SCREEN OR VORTEX PLATE (WITH TOWER).
5. SEE SPEC. FOR TWO SPEED FAN WIRING, VIB. LIMIT SWITCH ETC.
6. PIPING ABOVE ROOF CAN BE INSTALLED WITH "VICTAULIC" COUPLINGS (USE SPEC. PIPE SCH.).
7. FOR ROOF PIPING WINTERIZING SEE SPEC.
8. PROVIDE PERIMETER RAILING, LADDER AND SAFETY CAGE AS PER OSHA.
9. MAKE-UP WATER RUN OUT TO HAVE A BACKFLOW PREVENTER "WATTS" # 909 (OR EQUAL) PLUS VALVE, STRAINER ETC. (AS REQUIRED)
10. BALANCING VALVES BY TOWER VENDOR.
11. KEEP ACCESS TO MOTOR CLEAR OF PIPING FOR MOTOR REMOVAL.
12. DRAIN VALVES @ ALL LOW POINTS TO BE PIPED WITH SHORT NIPPLE AND INCORPORATED INTO WEATHERPROOF INSULATION (IF APPLIED, SEE SPEC.).
13. TOWER DUNNAGE TO SUIT TOWER DATA (FOR LOAD & LOCATION). FOR TOWER DUNNAGE, SEE STRUCTURAL DRAWINGS.
14. ALL ROOF PASSAGE OF PIPING TO BE PROVIDED WITH W.P. SLEEVE (TO BE WATERPROOFED & FLASHED BY ROOFER) AND RAIN HOOD, SLEEVE TO EXTEND 12" ABOVE ROOFING.
15. BLEED-OFF RIG. SOLENOID, VALVES, STRAINER AND UNIONS, PLUS WIRING ALL IN HVAC DIVISION. (SEE WATER TREATMENT ITEM IN SPEC.)
16. PROVIDE TAPPING IN PIPING (COUPLINGS) AT LOCATION & SIZE REQUIRED BY TEMP. CONTROL CONTRACTOR.
17. ALL PIPING ON ROOF LEVEL (EXPOSED TO AMBIENT CONDITIONS) TO BE HEAT TRACED.
18. PROVIDE BUTTERFLY VALVE IN ADDITION TO BALANCING VALVE.

COOLING TOWER PIPING DETAIL



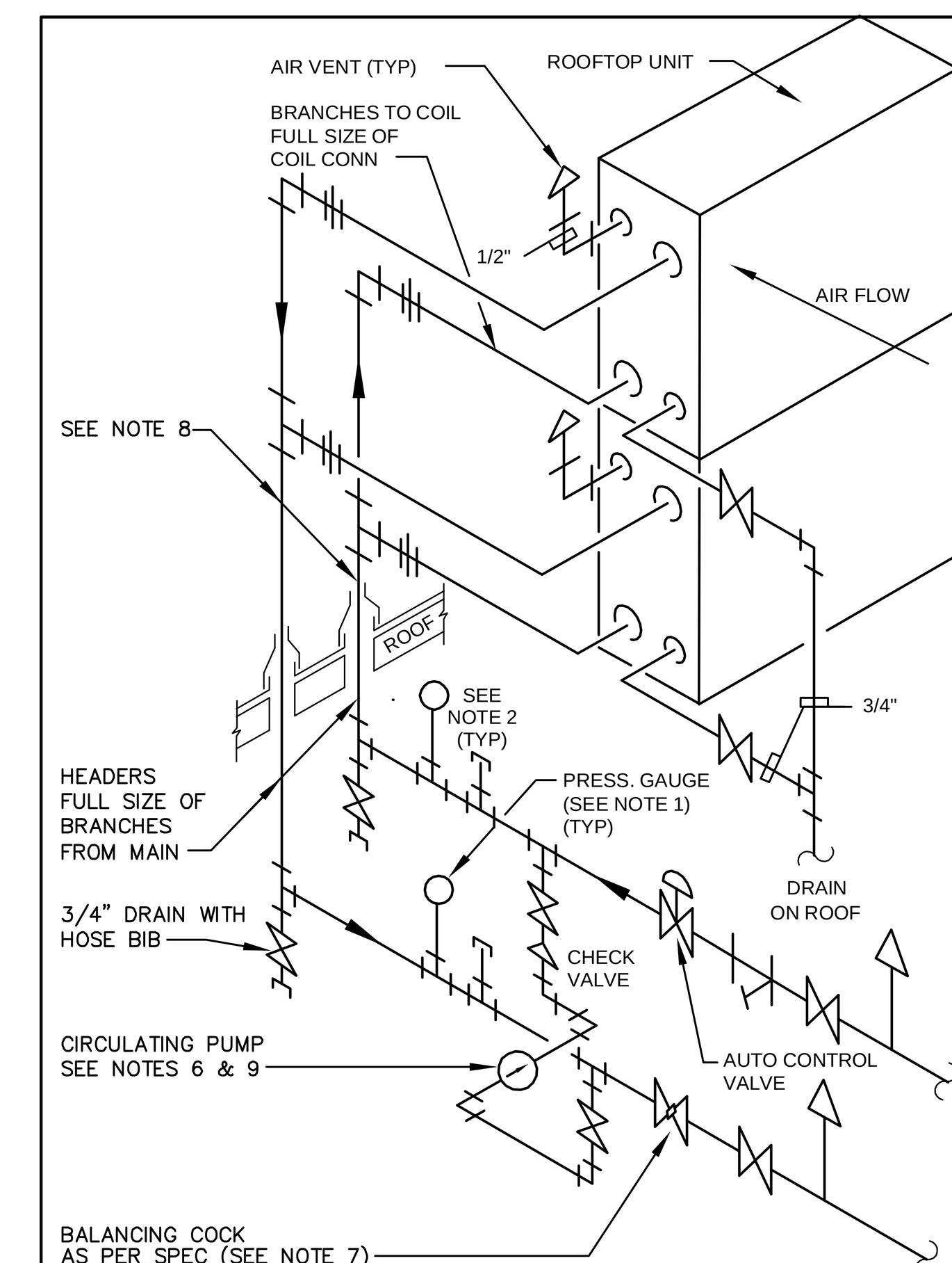
EXHAUST FLUE RISER HANGER DETAIL



NOTES:

1. PROVIDE SUFFICIENT SPACE BETWEEN MAIN AND PUMP INLET TO PERMIT REMOVAL OF IMPELLER. FOR PUMPS WITH FLANGE INLET PROVIDE SPOOL PIECE FOR IMPELLER REMOVAL.
2. INSTALL PRESSURE GAUGES FOR 150% OF WORKING PRESSURE IN 1/4" TAPPING PROVIDED BY VENDOR. IF TAPS ARE NOT PROVIDED, PROVIDE IN PIPING.

WATER PUMP PIPING END SUCTION PUMP



NOTES:

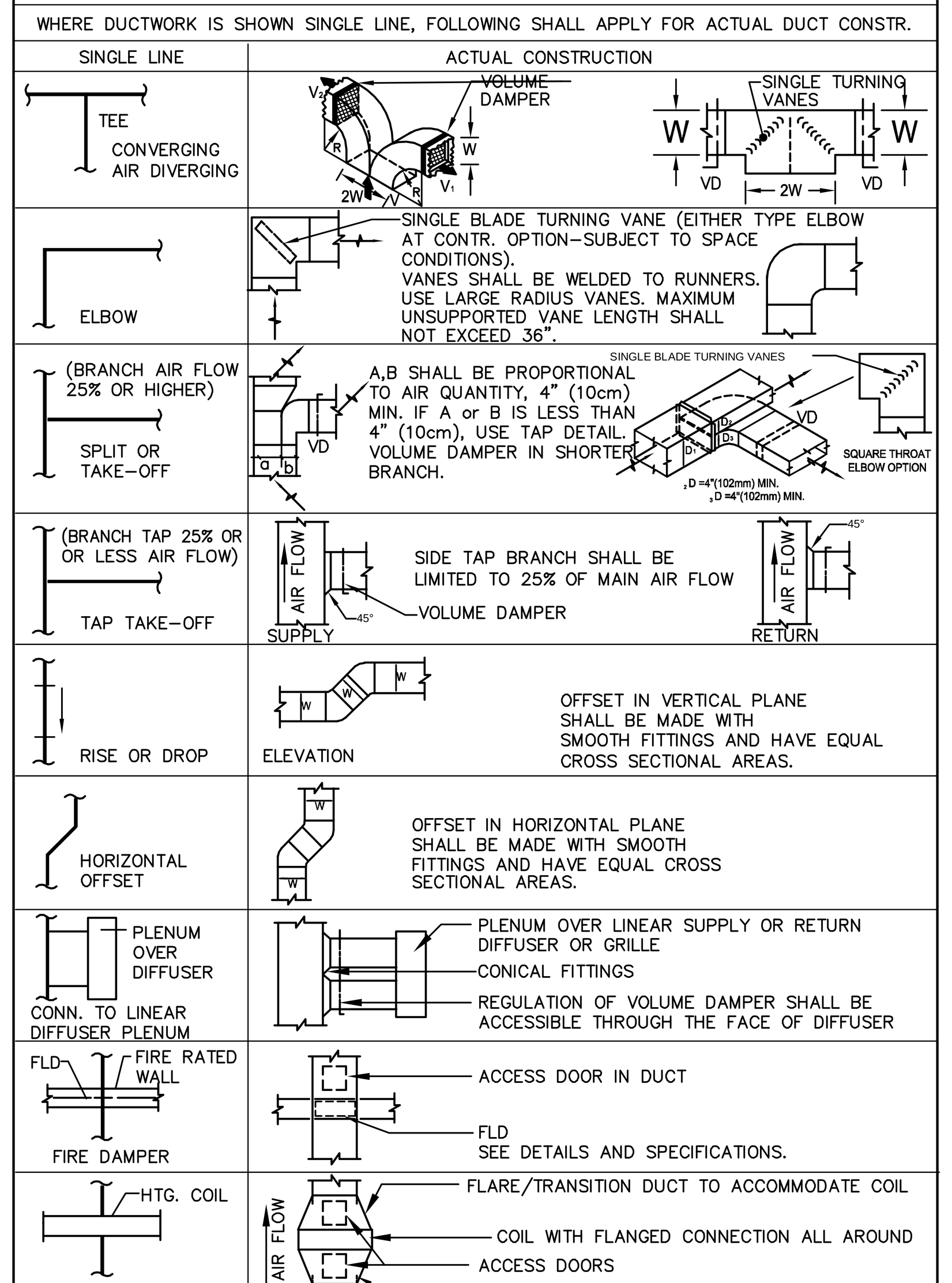
1. PRESSURE GAUGE TEST CONNECTION PROVIDE GAUGES IF REQUIRED BY SPECS.
2. SEPARABLE SOCKETS FOR THERMOMETERS PROVIDE THERMOMETERS IF REQUIRED BY SPECS.
3. LOCATE RISERS TO CLEAR TUBE PULL
4. FOR SYSTEMS WITH COILS (2) WIDE OPPOSITE END PIPING IS SIMILAR AS SHOWN
5. INSTALL COIL PIPING FOR COUNTER FLOW.
6. FREEZE PROTECTION PUMP DETAIL APPLIES TO ALL WATER COILS REGARDLESS OF QUANTITIES.
7. PROVIDE ALL BALANCING VALVES WITH MEMORY STOPS.
8. ALL PIPING ABOVE ROOF SHALL BE FREEZE PROTECTED AS SPECIFIED.
9. REFER TO DETAIL FOR TYPICAL PIPING AND VALVE REQUIREMENTS FOR CIRCULATING PUMP.
10. SUPPLY AND RETURN HEADERS SHALL BE FULL SIZE OF SUPPLY AND RETURN PIPING FROM MAINS.
11. PROVIDE GALVANIZED STEEL DRAIN PAN UNDER ALL COOLING COILS SEE SPECIFICATIONS FOR ADDITIONAL DETAILS.

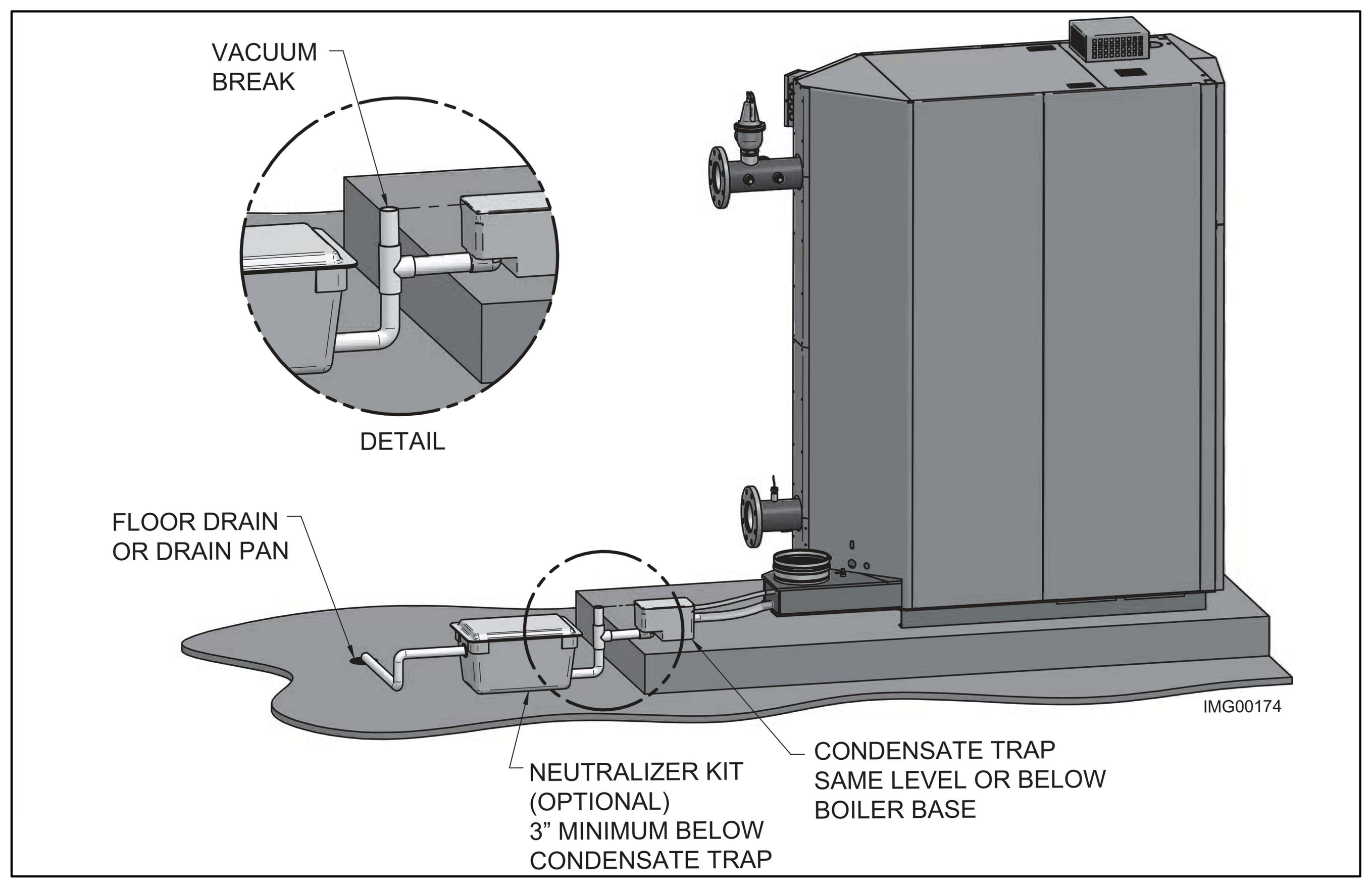
MULTIPLE VERT. WATER COIL PIPING

(ROOF MOUNTED)

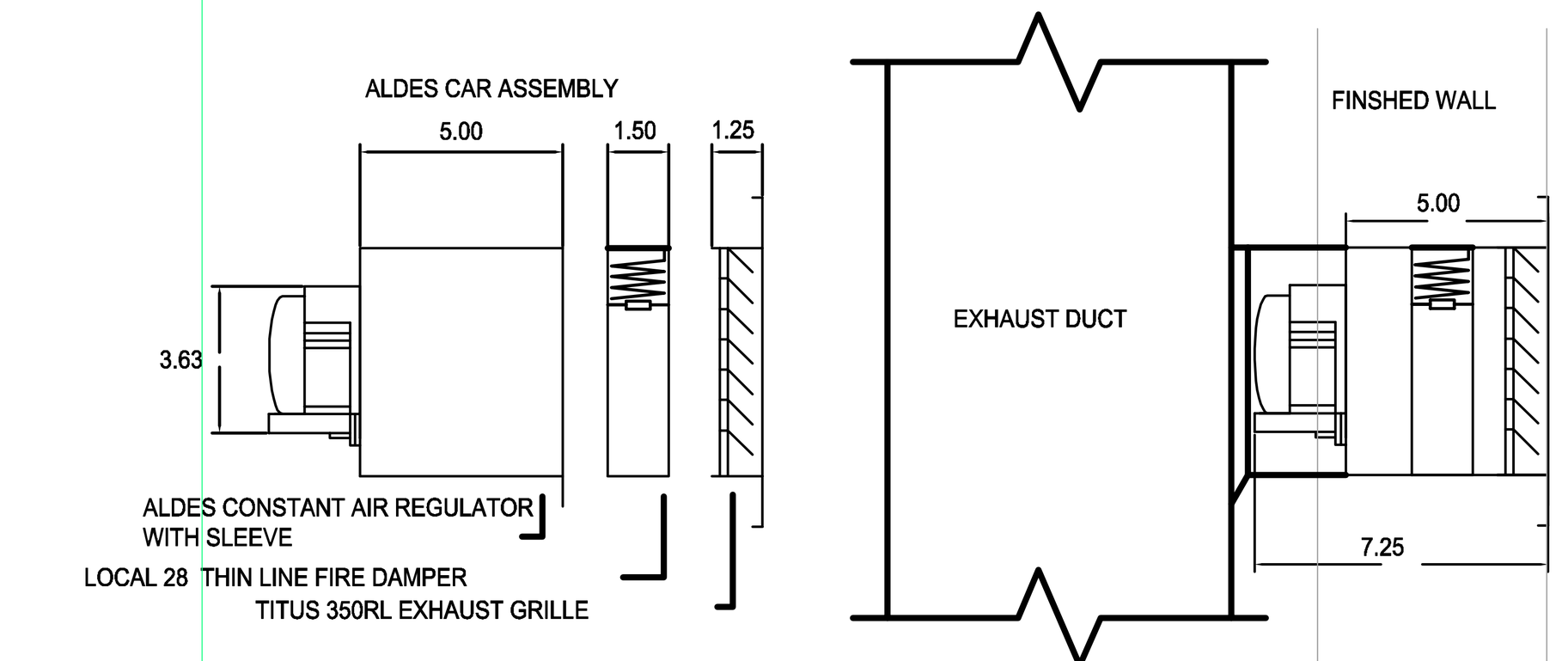
INTERPRETATION OF SINGLE LINE DUCTWORK

WHERE DUCTWORK IS SHOWN SINGLE LINE, FOLLOWING SHALL APPLY FOR ACTUAL DUCT CONSTR.





BOILER CONDENSATE NEUTRALIZER KIT

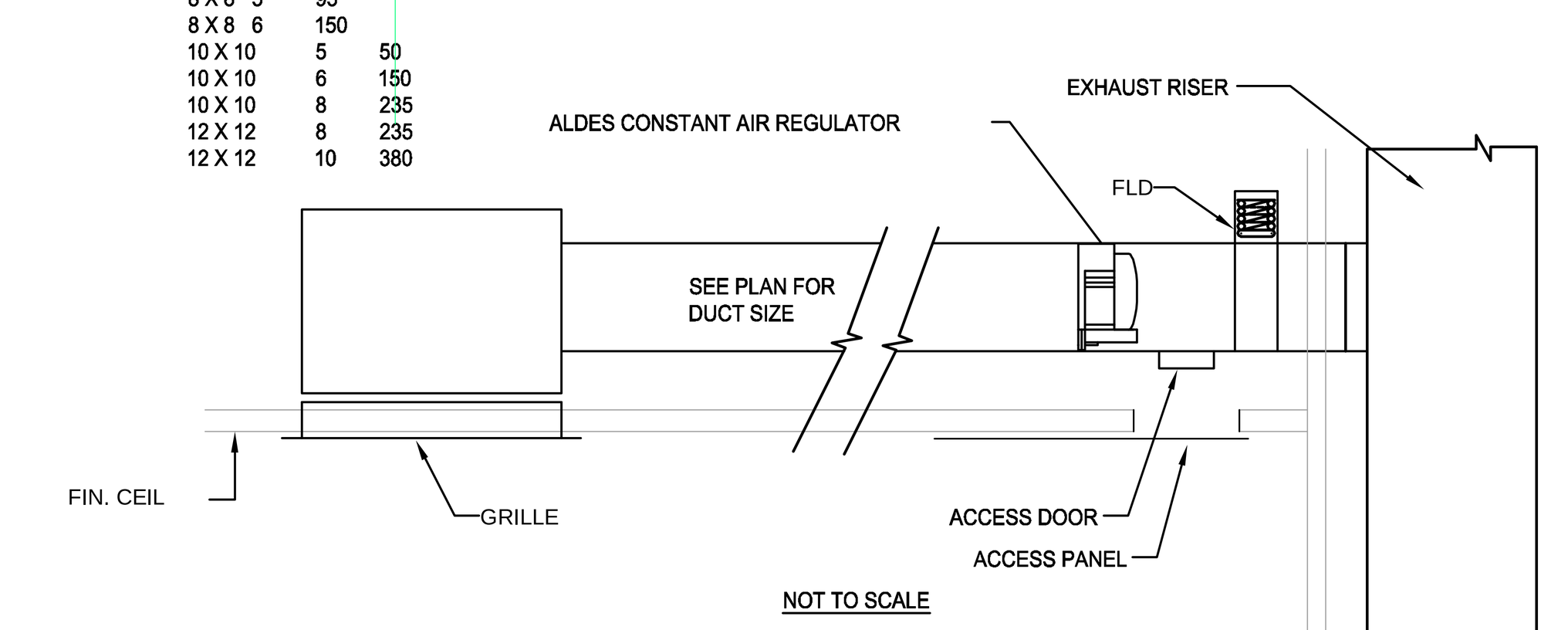


CONSTANT AIR REGULATOR ASSEMBLY SHALL BE CAPABLE OF MAINTAINING CONSTANT CFM WITHTIN STATIC PRESSURE FLUCTUATIONS BETWEEN .2 AND .8 REGARDLESS CHANGES IN STATIC PRESSURE DUE TO SEASONAL STACK EFFECT CHANGES.
FIXED MANUAL VOLUME DAMPER IS NOT ACCEPTABLE.

ALL PARTS SHALL BE ASSEMBLED TOGETHER AT ADE AND SHALL BE IDENTIFIED AS ALDES CAR ASSEMBLY.

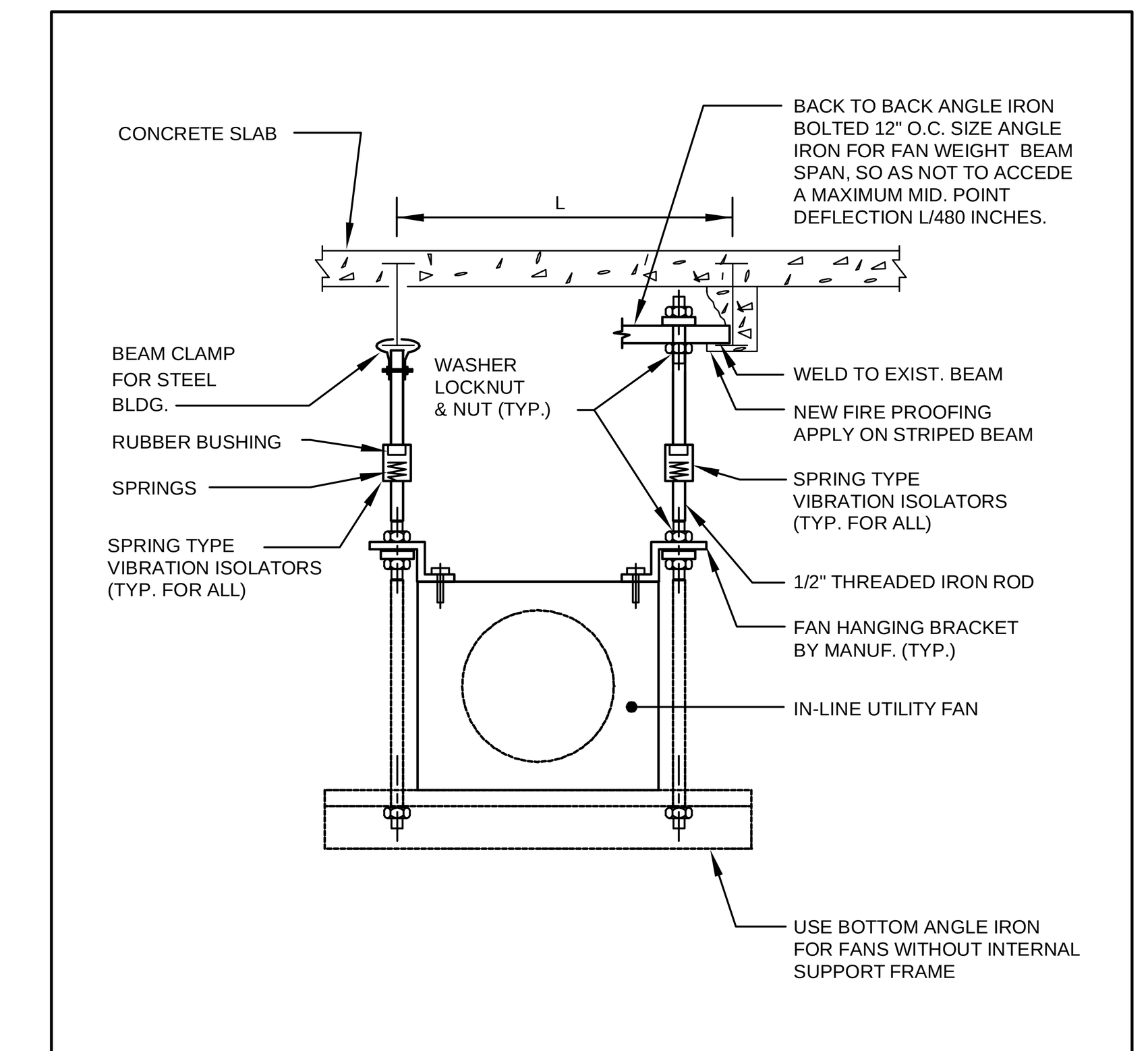
CONTACT ADE 516-568-6500 FOR ORDERING INFORMATION.

GRILLE	CAR	CFM
6 X 6	4	50
6 X 6	5	95
8 X 8	4	50
8 X 8	5	95
8 X 8	6	150
10 X 10	5	50
10 X 10	6	150
10 X 10	8	235
12 X 12	8	235
12 X 12	10	380



1. PROVIDE MIN. 7 FEET OF DUCTWORK AND (1) ELBOW FROM RISER TO TERMINAL.
2. IN LIEU OF MIN. 7 FEET OF DUCT AND ELBOW PROVIDE INTERNAL BOOT AT RISER

FLD @ SHAFT EXHAUST TERMINAL DETAIL



NOTES:
METHOD OF HANGING, TYPE OR INSERT, BEAM CLAMP, ROD, ETC., MUST BE APPROVED BY STRUCTURAL ENGINEER.

IN–LINE FAN SUPPORT DETAIL

125 GREENWICH
NEW YORK, NY

OWNER :
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GEOTECH CONSULTANT :
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VERTICAL TRANSPORTATION CONSULTANT :
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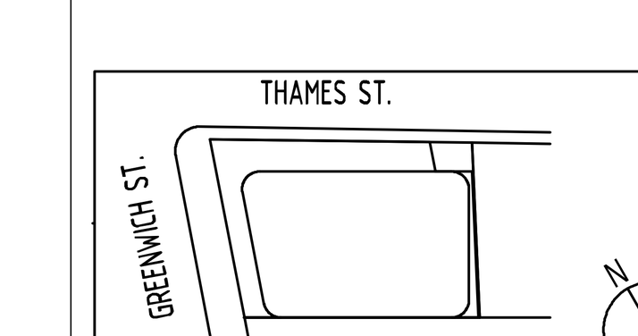
PHASE : DOB SUBMITTAL

ARCHITECT'S SEAL

ISSUE NO.	ISSUE DATE	DESCRIPTION
01	9/30/15	DOB SUBMITTAL



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MECHANICAL DETAIL SHEET #5

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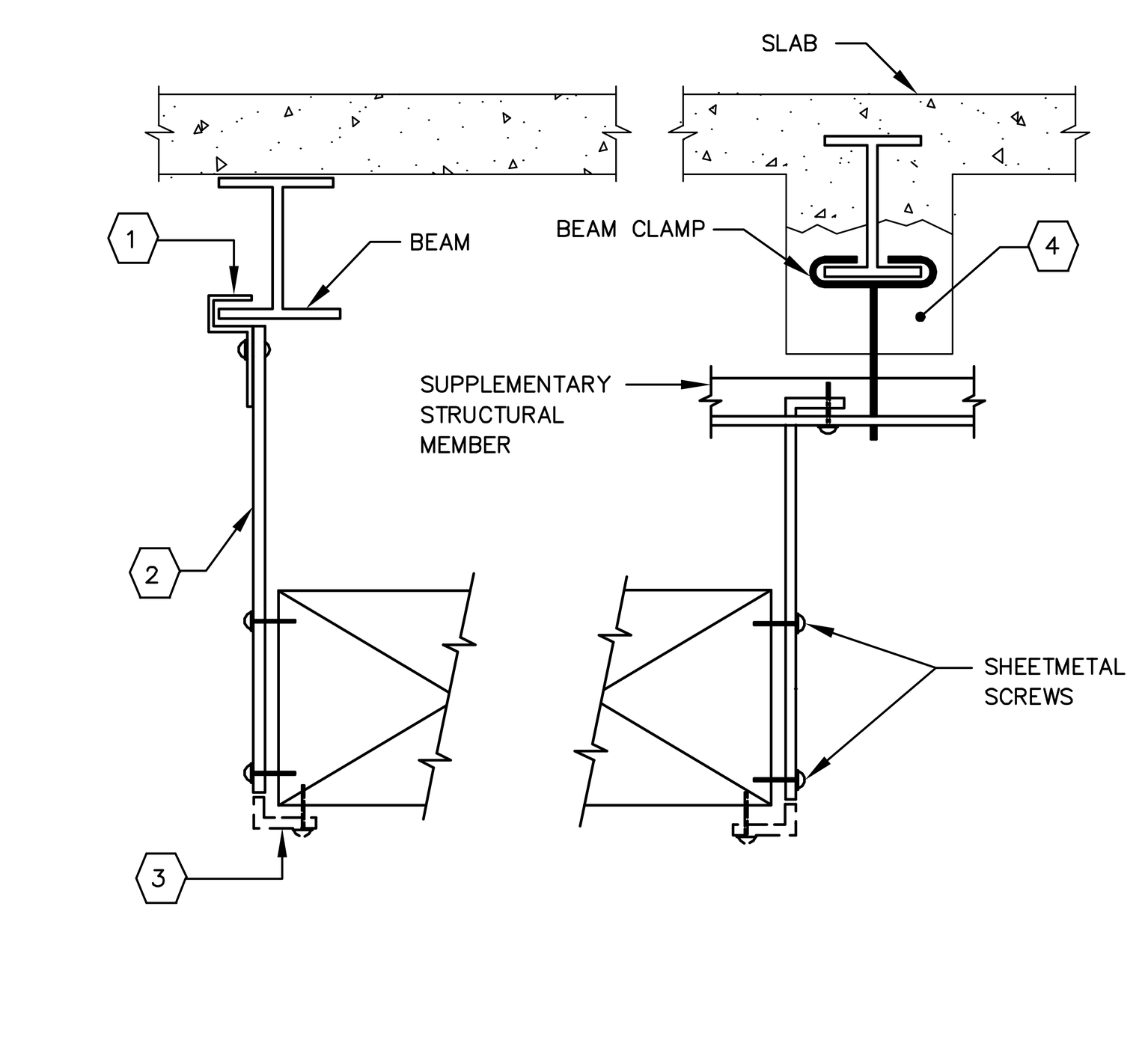
M-505.00

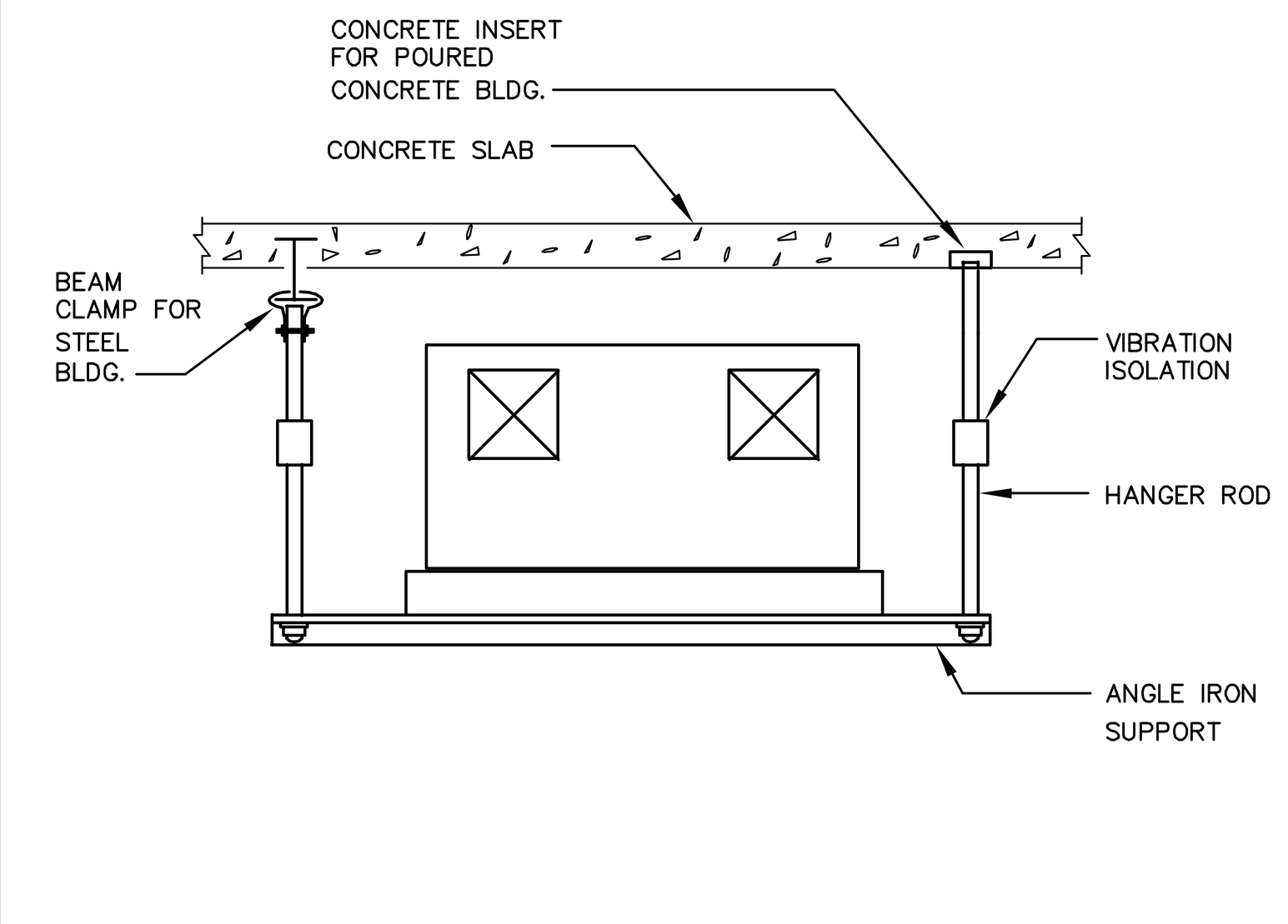
SHEET NUMBER :



NOTES:

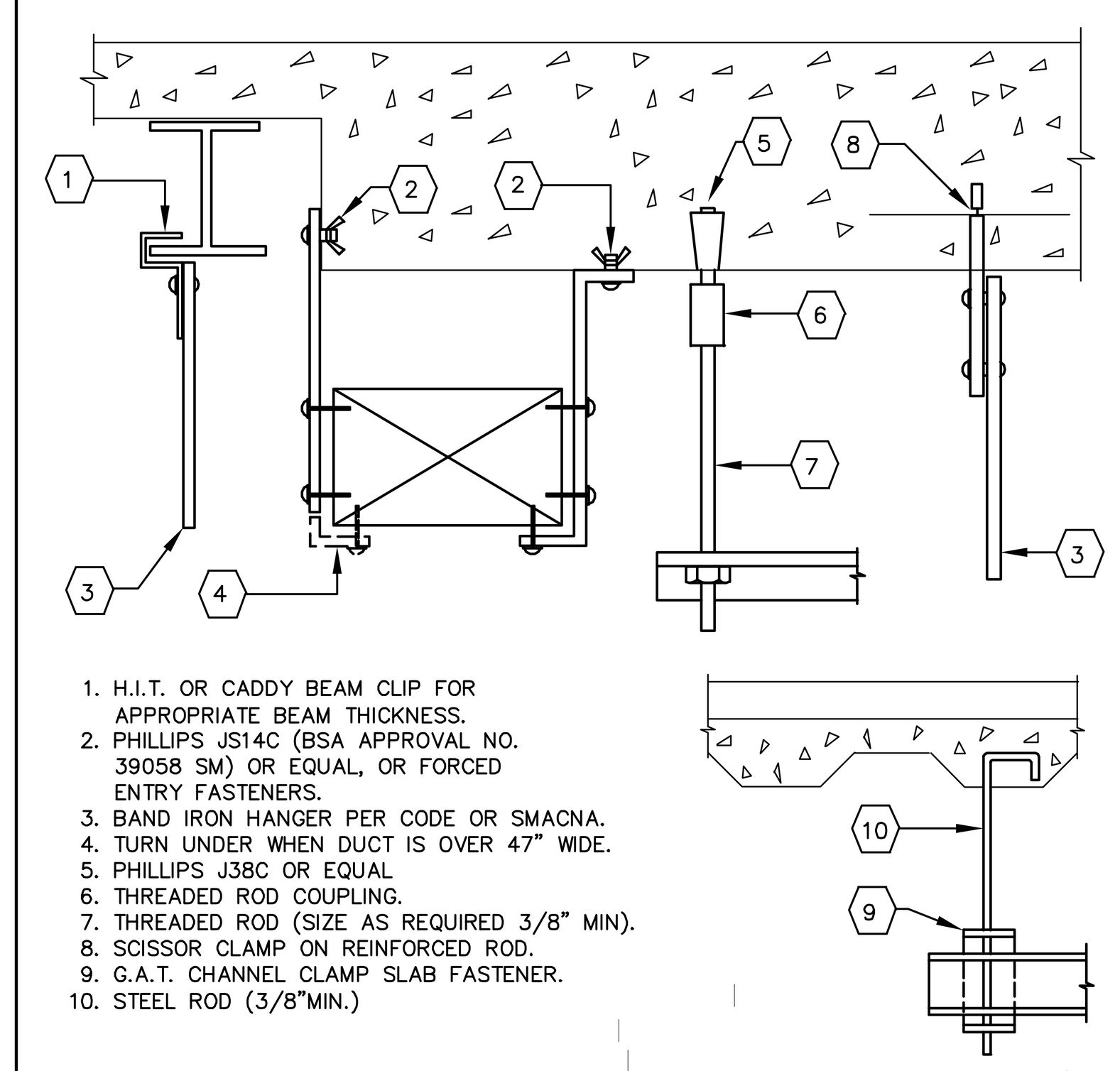
1. H.I.T. OR CADDY BEAM CLIP FOR APPROPRIATE BEAM THICKNESS.
2. BAND IRON HANGER PER CODE OR SMACNA.
3. TURN UNDER WHEN DUCT IS OVER 47" WIDE.
4. TO BE REPLACED WITH METAL LATH & FIREPROOF PLASTER TO ACHIEVE ORIGINAL FIRE RATING.

METHOD OF HANGING DUCTWORK



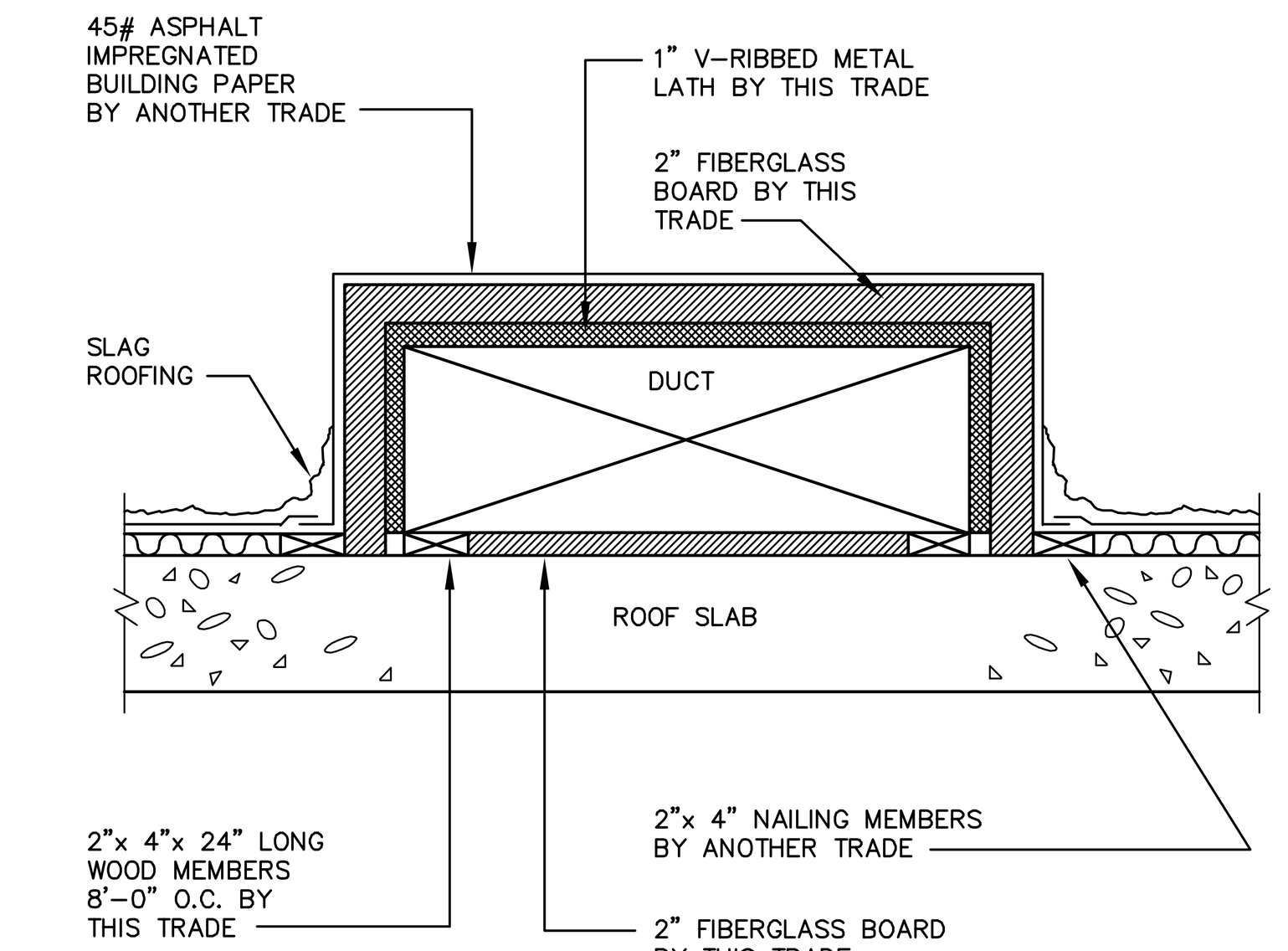
NOTES:
METHOD OF HANGING, TYPE OR INSERT, BEAM CLAMP, ROD, ETC., MUST BE APPROVED BY STRUCTURAL ENGINEER.

TYPICAL FAN EQUIPMENT HANGING DETAIL

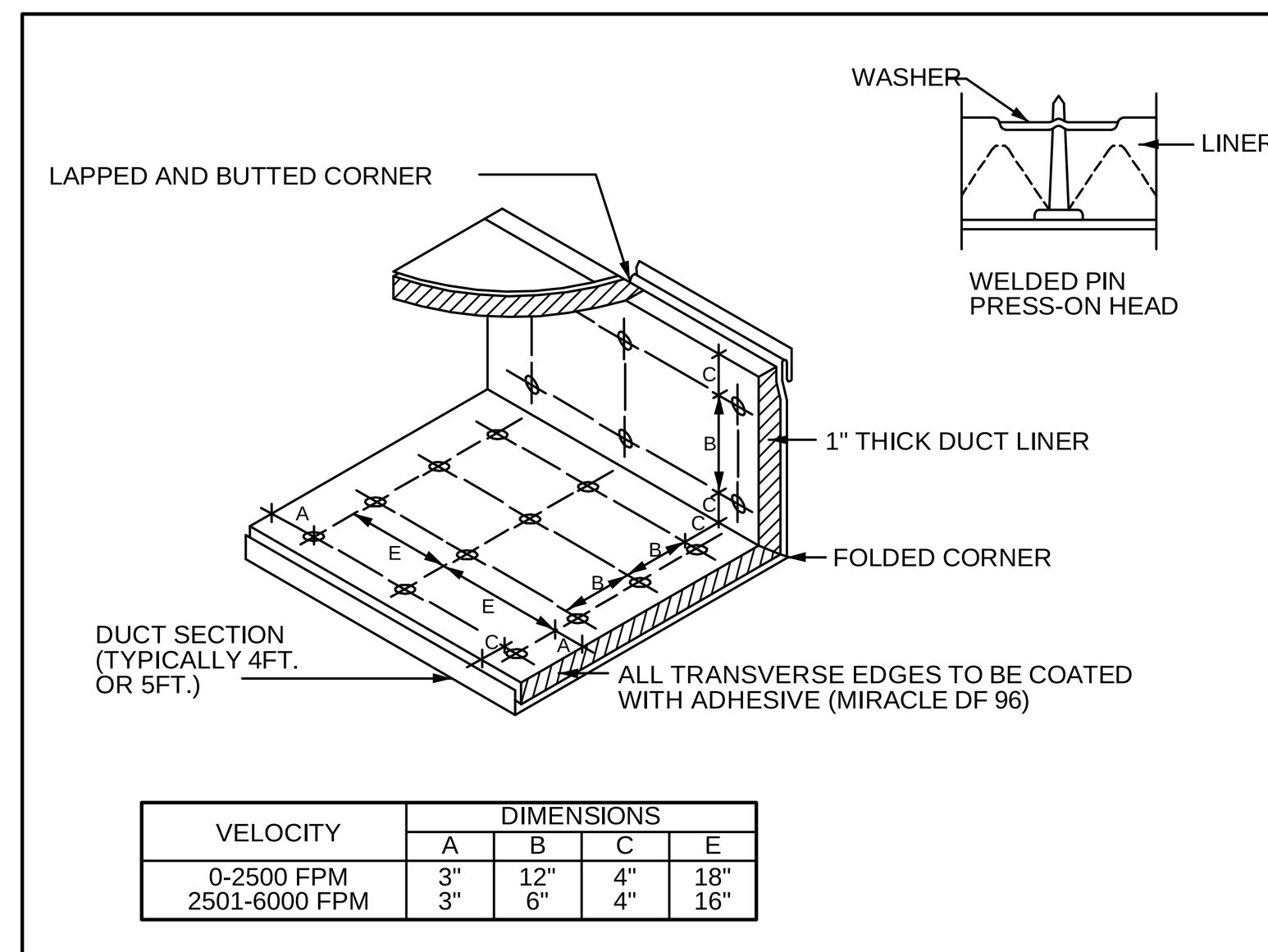


1. H.I.T. OR CADDY BEAM CLIP FOR APPROPRIATE BEAM THICKNESS.
2. PHILLIPS JS14C (BSA APPROVAL NO. 39058 SM) OR EQUAL, OR FORCED ENTRY FASTENERS.
3. BAND IRON HANGER PER CODE OR SMACNA.
4. TURN UNDER WHEN DUCT IS OVER 47" WIDE.
5. PHILLIPS J38C OR EQUAL.
6. THREADED ROD COUPLING.
7. THREADED ROD (SIZE AS REQUIRED 3/8" MIN).
8. SCISSOR CLAMP ON REINFORCED ROD.
9. G.A.T. CHANNEL CLAMP SLAB FASTENER.
10. STEEL ROD (3/8"MIN.)

METHOD OF HANGING DUCTWORK



DETAIL OF INSULATED DUCTS ON ROOF

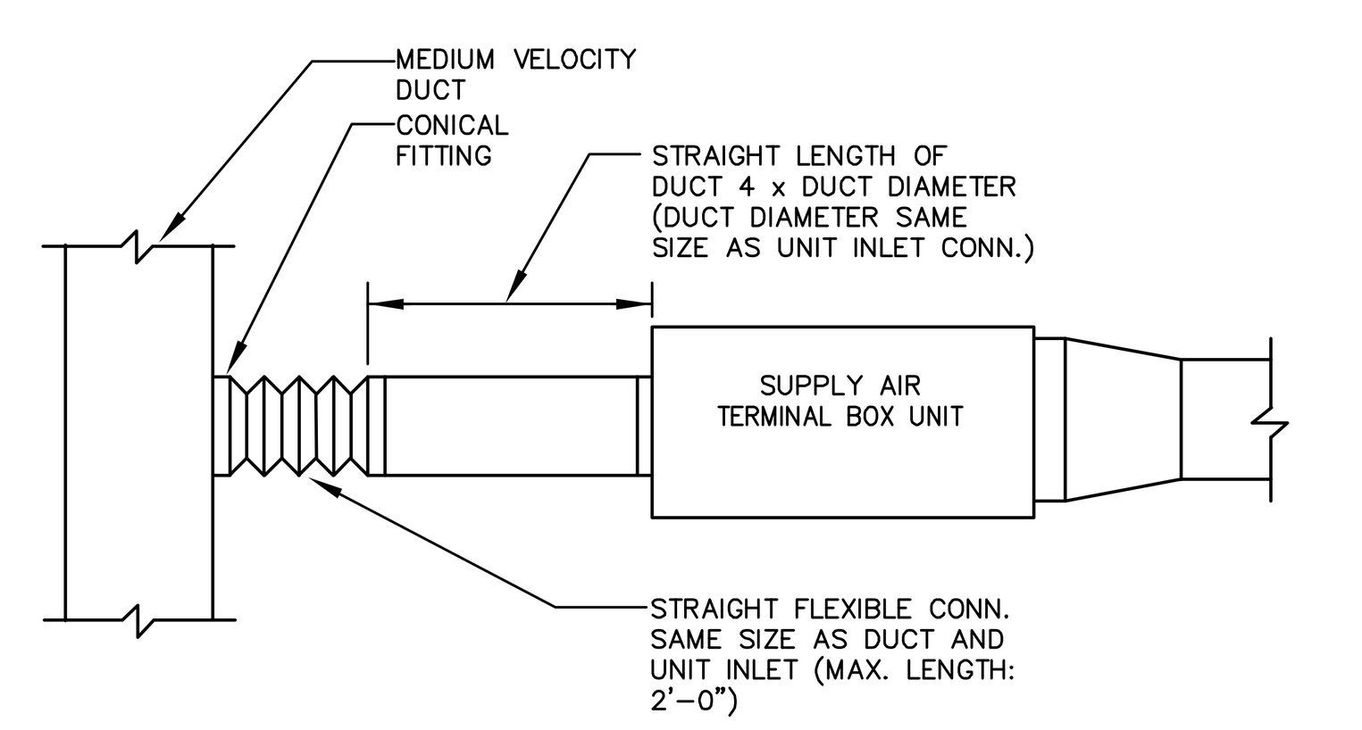


VELOCITY	DIMENSIONS A	B	C	E
0-2500 FPM	3"	12"	4"	18"
2501-6000 FPM	3"	6"	4"	16"

NOTES:

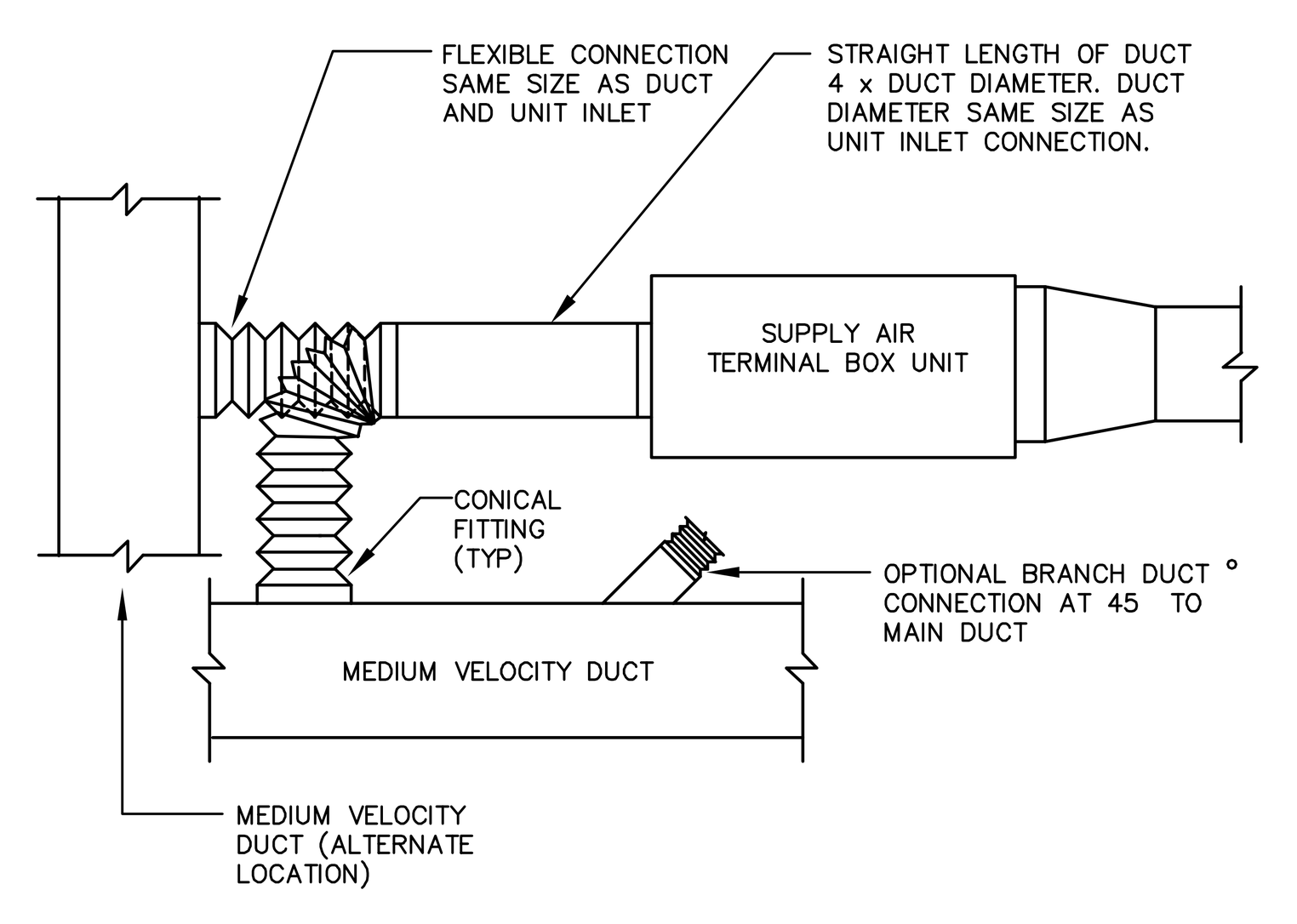
1. MAXIMUM SPACING FOR FASTENERS. ACTUAL INTERVALS ARE APPROXIMATE.
2. THE VELOCITY RATED SIDE OF LINER MUST FACE THE AIR FLOW.
3. LINER ADHERED TO THE DUCT WITH 90% MINIMUM AREA COVERAGE OF ADHESIVE.

DUCT LINER INSTALLATION DETAIL



PLAN VIEW

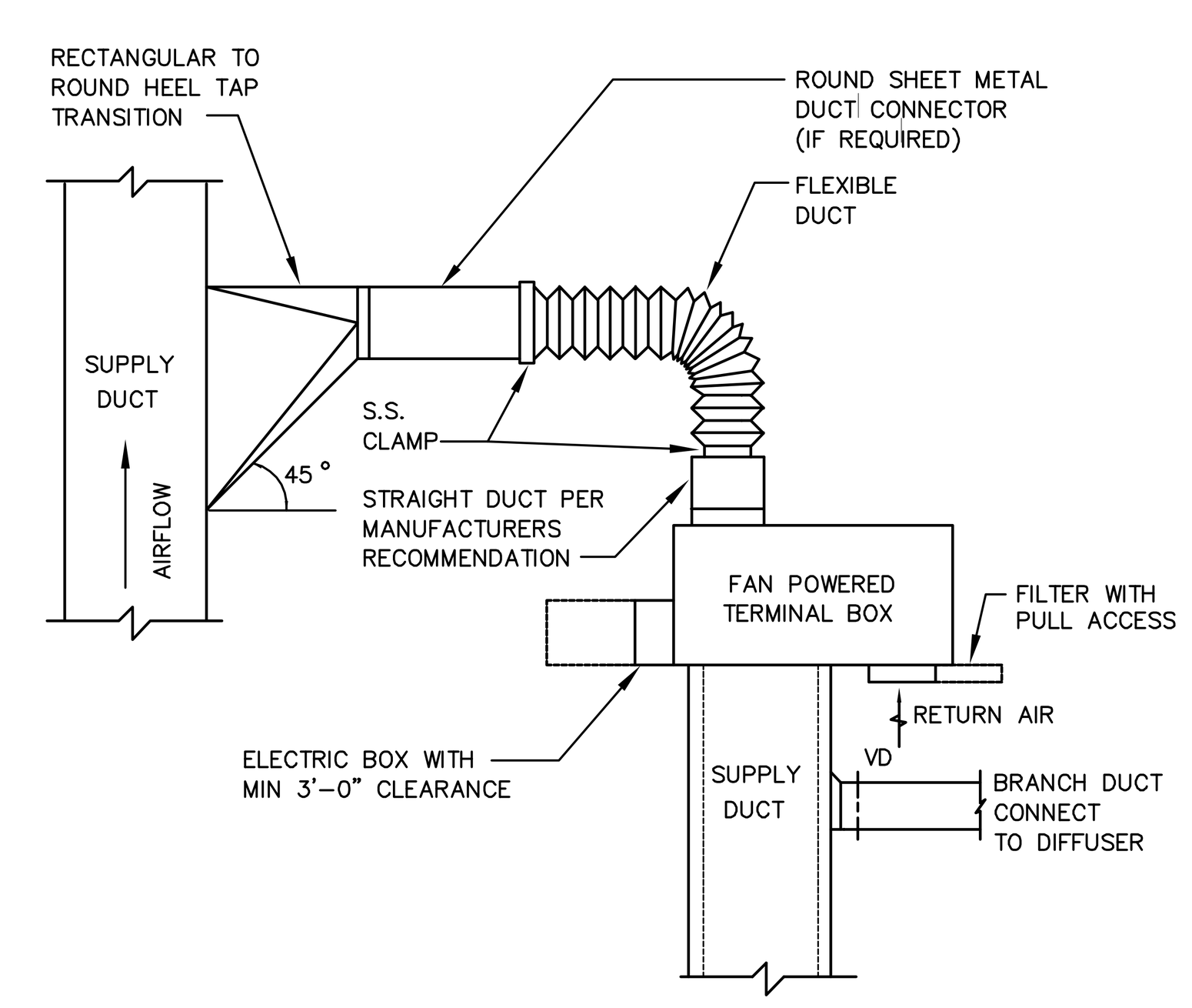
N.Y.C. TYPICAL AIR TERMINAL BOX UNIT INLET DUCT CONNECTION DETAIL



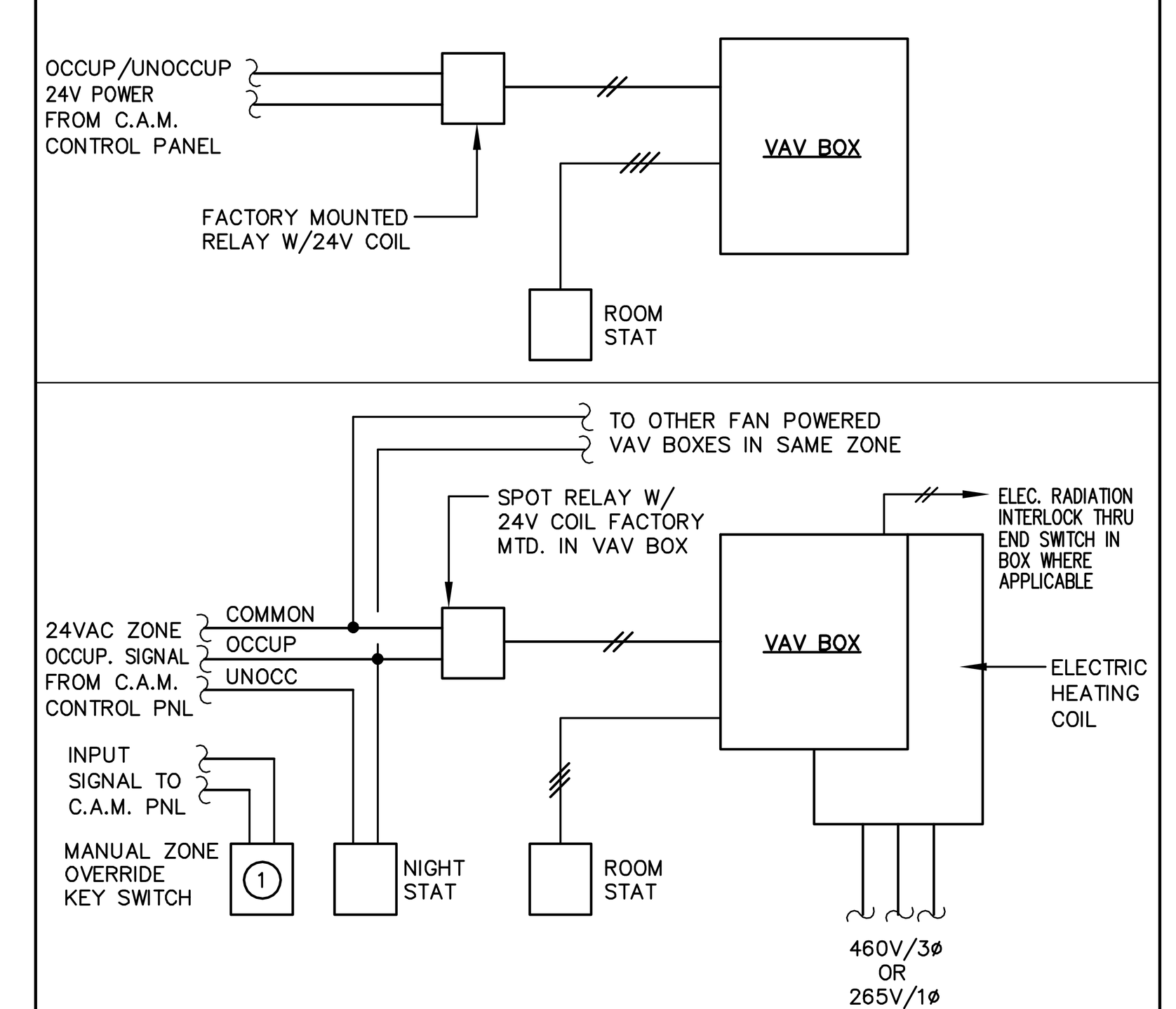
PLAN VIEW

NOTE:
MAXIMUM LENGTH OF FLEXIBLE CONNECTION WILL NOT EXCEED 2'-0" AND SHALL CONFORM TO LOCAL UNION REQUIREMENTS.

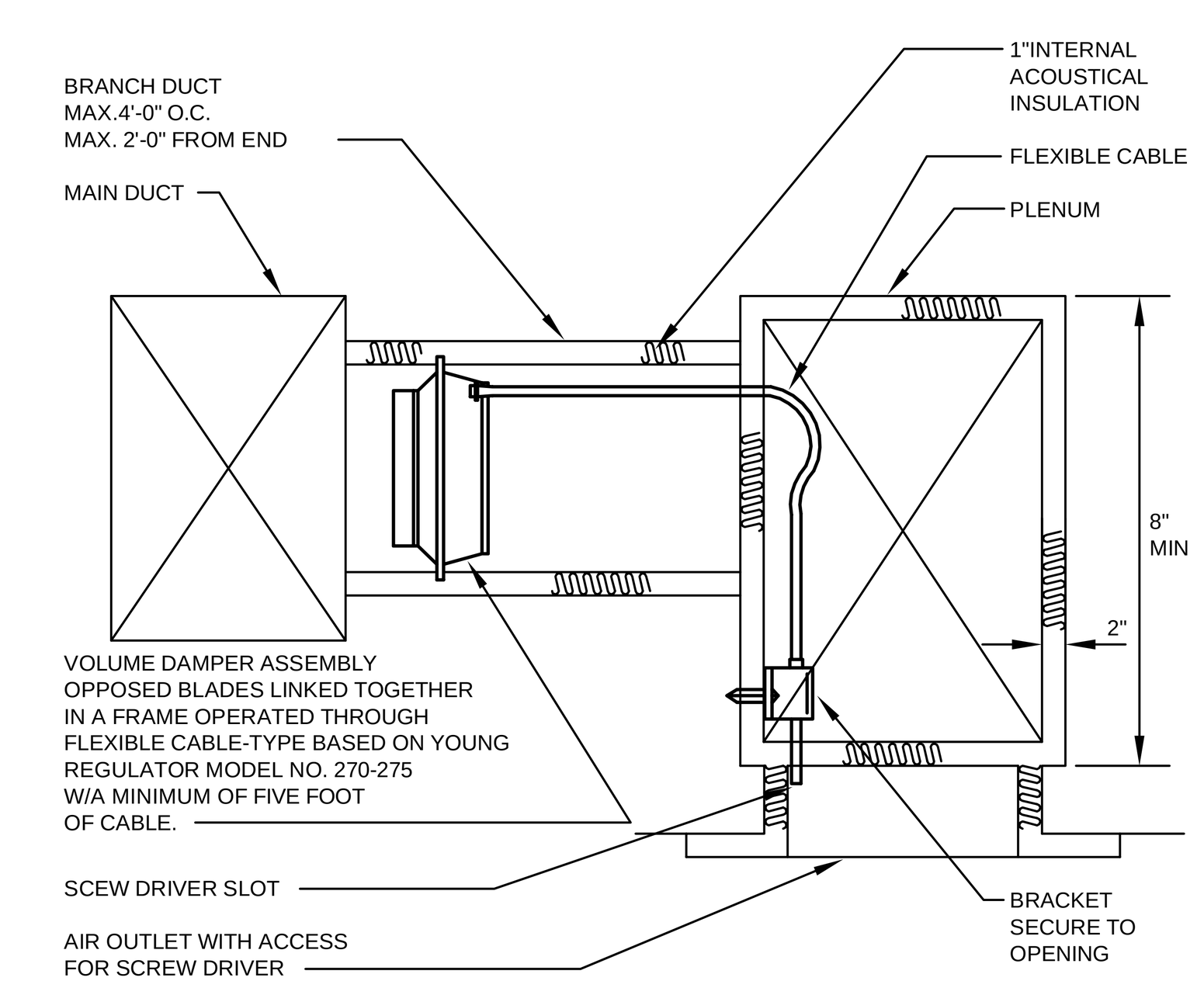
TYPICAL AIR TERMINAL BOX UNIT INLET DUCT CONNECTION DETAIL



TYPICAL FAN-POWERED TERMINAL UNIT CONNECTION DETAIL

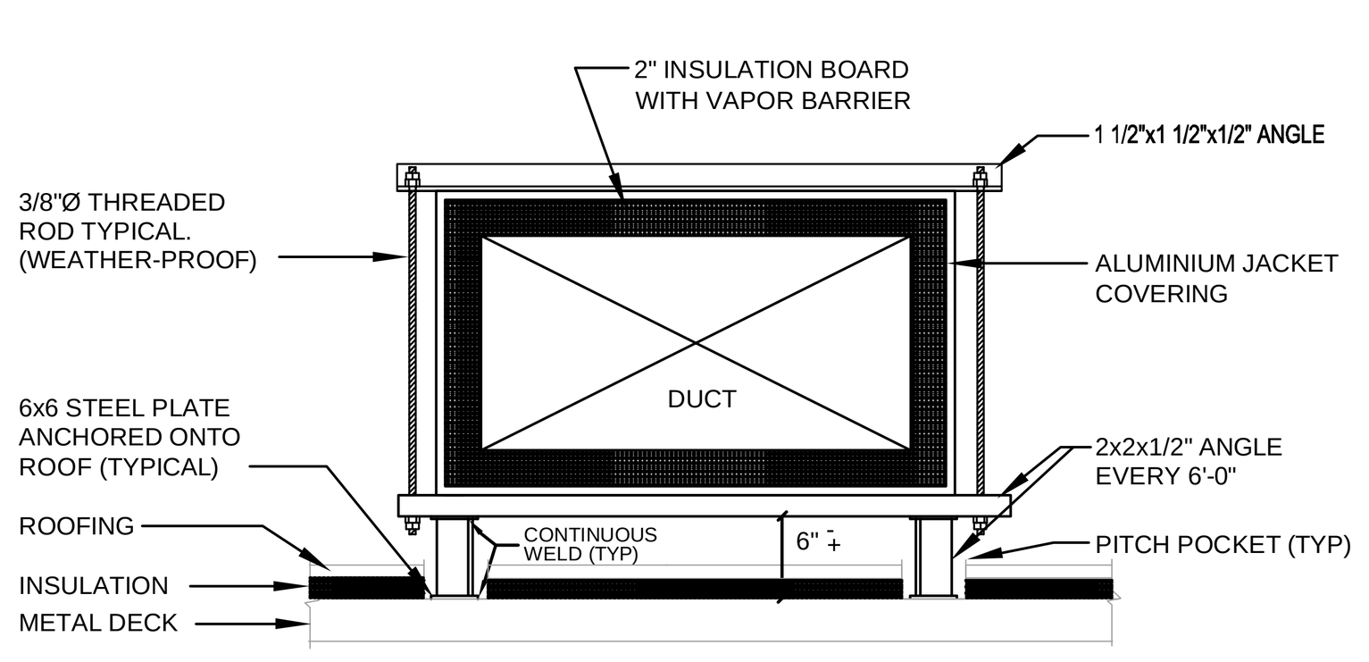


VAV BOX CONTROL DIAGRAM



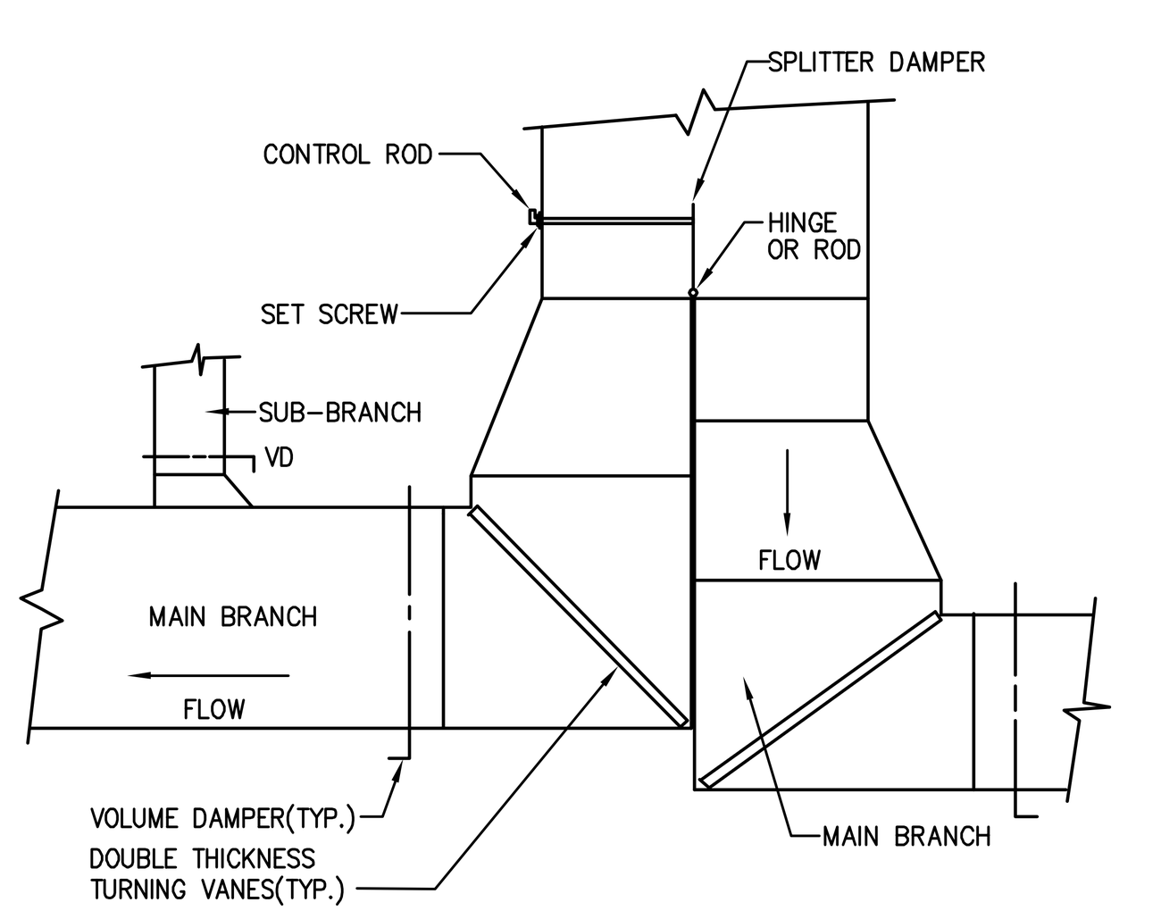
NOTE:
TYPICAL BRANCH DUCT TO BE MIN. 6"x6" UNLESS NOTED.

LINEAR DIFFUSER DETAIL



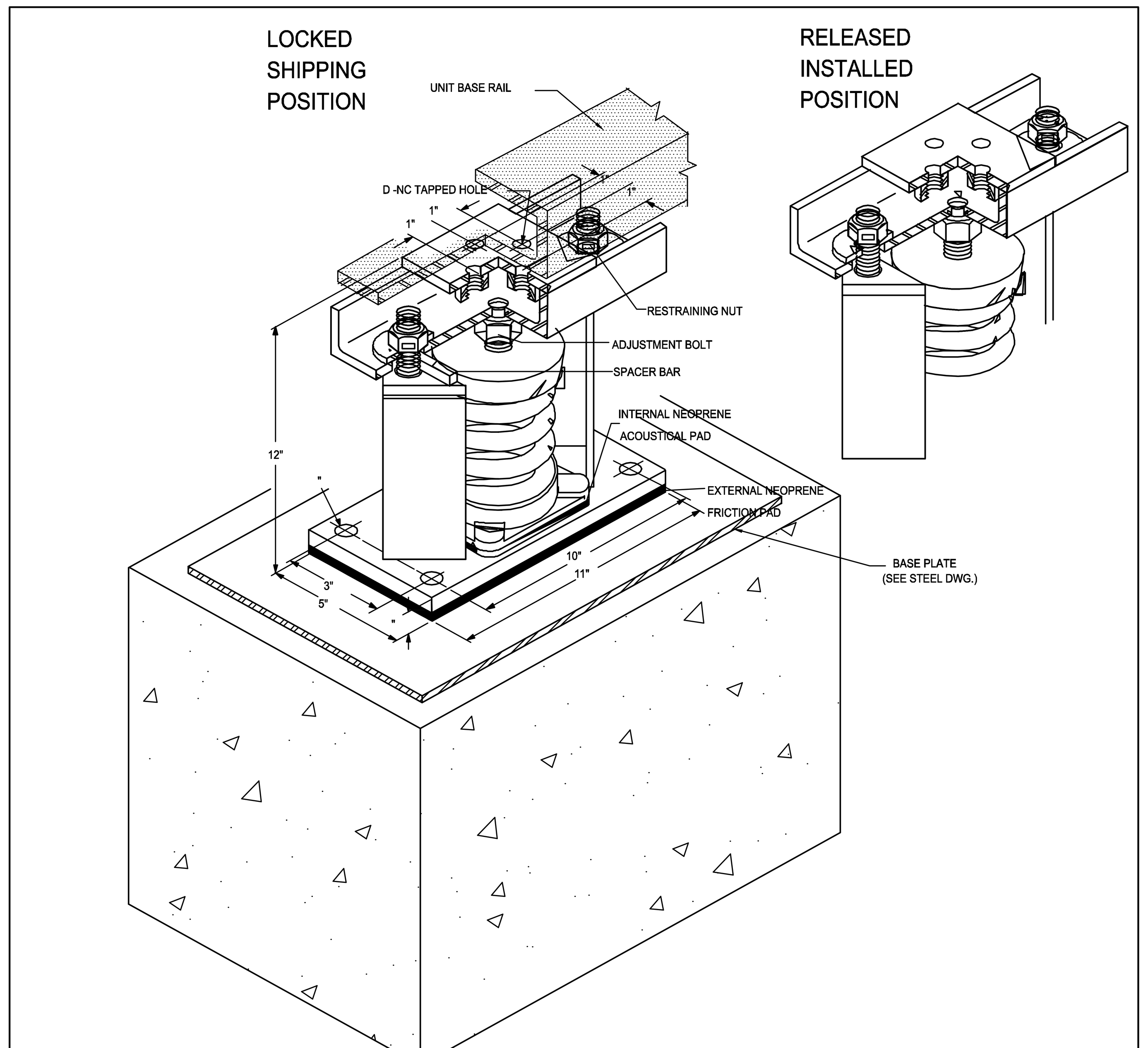
INSTALLATION DETAIL OF ROOF MOUNTED DUCT

(NOT TO SCALE)

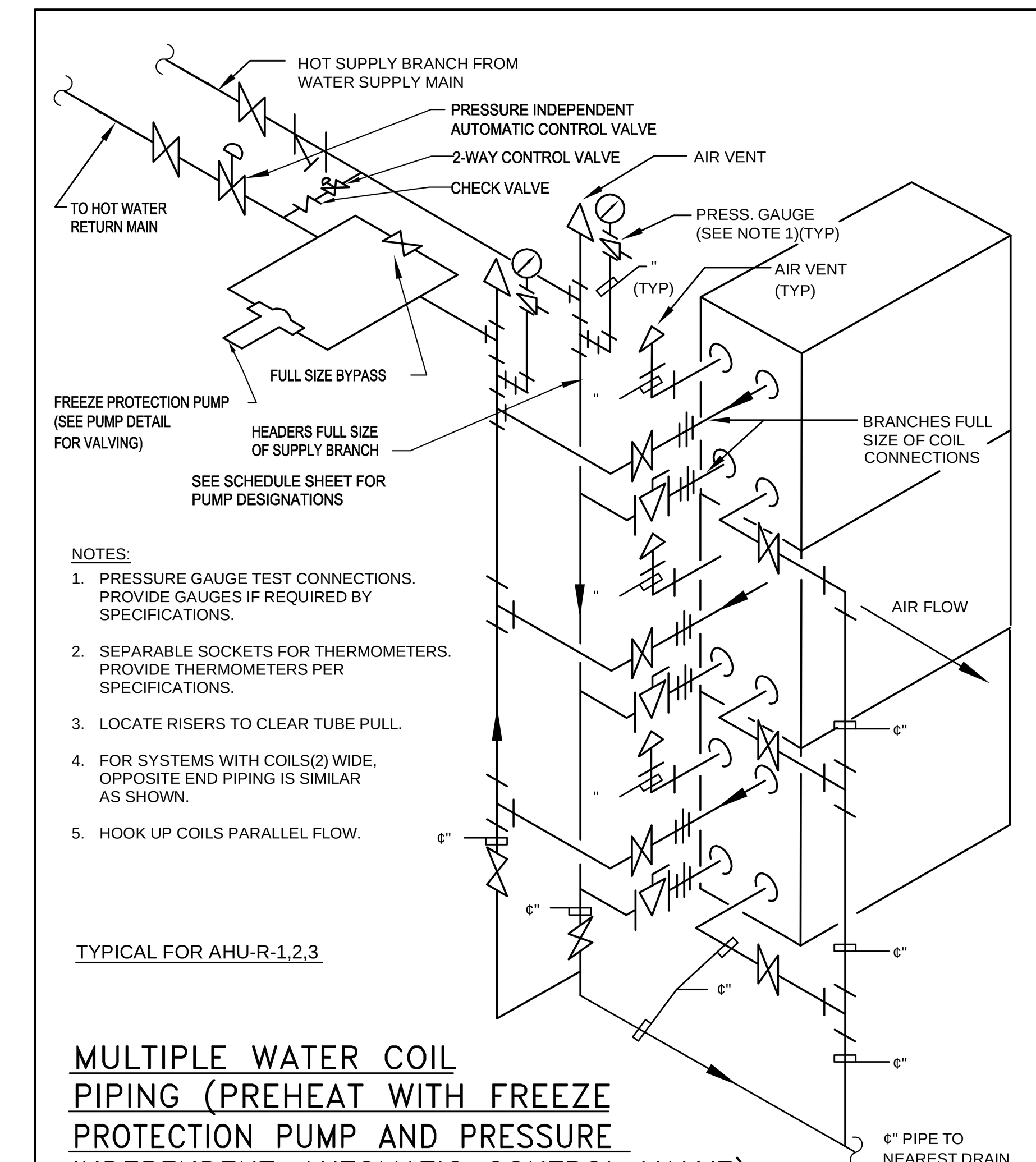


DUCT CONNECTION DETAIL

SCALE : N.T.S.



COOLING TOWER SUPPORT DETAIL



NOTES:

1. PRESSURE GAUGE TEST CONNECTIONS. PROVIDE GAUGES IF REQUIRED BY SPECIFICATIONS.
2. SEPARABLE SOCKETS FOR THERMOMETERS. PROVIDE THERMOMETERS PER SPECIFICATIONS.
3. LOCATE RISERS TO CLEAR TUBE PULL.
4. FOR SYSTEMS WITH COILS(2) WIDE, OPPOSITE END PIPING IS SIMILAR AS SHOWN.
5. HOOK UP COILS PARALLEL FLOW.

TYPICAL FOR AHU-R-1,2,3

MULTIPLE WATER COIL PIPING (PREHEAT WITH FREEZE PROTECTION PUMP AND PRESSURE INDEPENDENT-AUTOMATIC CONTROL VALVE)

NOTE:(SINGLE & DOUBLE COIL UNITS SIMILAR)

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ISSUE NO.	ISSUE DATE	DESCRIPTION
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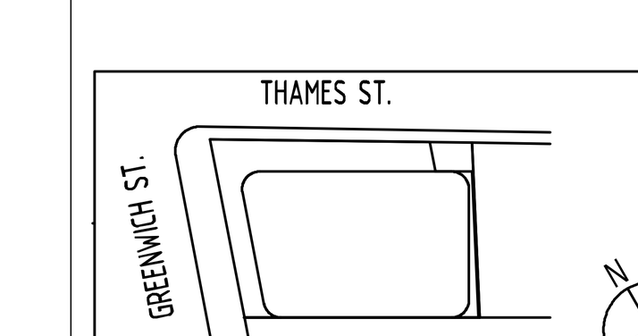

KEY PLAN AND NORTH SIGN

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SCALE NTS

MECHANICAL DETAIL SHEET #6

SHEET TITLE :

M-506.00

SHEET NUMBER :

NEW YORK CITY BUILDING DEPARTMENT PLUMBING NOTES

THE PLUMBING SYSTEMS (SANITARY, WASTE, VENT, WATER DISTRIBUTION, AND GAS) AND ALL ASSOCIATED EQUIPMENT WILL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE FULL REQUIREMENTS OF THE NEW YORK CITY PLUMBING CODE. COMPLIANCE WITH THE FULL PROVISIONS OF ALL NEW YORK CITY BUILDING AND PLUMBING CODE ACCESSIBILITY REQUIREMENTS AND PLUMBING FIXTURE FLOW REQUIREMENTS OF THE NEW YORK CITY PLUMBING CODE.

1. THE SANITARY SYSTEM SHALL BE PROVIDED IN FULL ACCORDANCE WITH THE GENERAL PROVISIONS OF SECTION PC3O1.
2. THE MATERIALS USED IN THE PLUMBING SYSTEMS WILL BE PROVIDED IN FULL ACCORDANCE WITH SECTIONS PC3O2 AND PC303.
3. EQUIPMENT HOOK-UP AND THE JOINING WILL BE FULL COMPLIANCE WITH SECTIONS PC605 AND PC705.
4. THE INSTALLATION OF FIXTURES WILL BE IN FULL ACCORDANCE WITH PC CHAPTER 4.
5. TRAPS FOR FIXTURES AND DRAIN LINES WILL BE PROVIDED AND CLEANOUTS INSTALLED IN FULL COMPLIANCE WITH SECTIONS PC412, PC708 AND PC CHAPTER 10.
6. VERTICAL AND HORIZONTAL PIPING WILL BE HUNG AND SUPPORTED AS DIRECTED IN SPECIFICATIONS AND WITH THE FULL COMPLIANCE WITH SECTION PC3O8.
7. THE WATER SUPPLY SYSTEMS OF THE SUBJECT BUILDING SHALL BE INSTALLED AND MAINTAINED IN FULL COMPLIANCE WITH PC CHAPTER 6.
8. THE SANITARY DRAINAGE SYSTEM WILL BE SIZED AND INSTALLED IN FULL COMPLIANCE WITH PC CHAPTER 7.
9. THE VENT PIPING FOR THE SANITARY DRAINAGE SYSTEM OF THE SUBJECT BUILDING WILL BE INSTALLED IN FULL COMPLIANCE WITH SECTION PC702 & PC CHAPTER 9.
10. THE STORM DRAINAGE SYSTEM AND PIPING WILL BE INSTALLED IN FULL COMPLIANCE WITH PC CHAPTER 11.
11. GAS PIPING AND EQUIPMENT WILL BE INSTALLED IN FULL COMPLIANCE WITH THE NEW YORK CITY FUEL GAS CODE.
12. ALL TRENCHING SHALL BE DONE IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION PC306.
13. RAT PROOFING SHALL BE IN ACCORDANCE WITH SECTION PC304.
14. TEMPORARY TOILET FACILITIES SHALL BE PROVIDED FOR CONSTRUCTION PERSONNEL AS PER SECTION PC311.

PLUMBING INSTALLATION CRITERIA

EACH BIDDER SHALL VISIT THE SITE AND BECOME INFORMED AS TO THE CONDITION OF THE PREMISES AND THE EXTENT AND CHARACTER OF WORK REQUIRED. NO ADDITIONAL COMPENSATION WILL BE APPROVED DUE TO FIELD CONDITIONS.

1. PROVIDE ROUGH-IN AND FINAL CONNECTIONS FOR ALL PLUMBING FIXTURES INCLUDING WASTE, VENTS, HOT AND COLD WATER, AND PROVIDE ALL PLUMBING WORK NECESSARY TO MAKE THE PANTRY, ELECTRIC WATER COOLER(S) BATH, ETC. ENTIRELY OPERABLE AND ACCEPTABLE TO LOCAL HEALTH AND BUILDING OFFICIALS.
2. PLUMBING CONTRACTOR SHALL LOCATE ALL PIPING AND PLUMBING ROUGH-IN FOR PLUMBING FIXTURES IN ACCORDANCE WITH ROUGH-IN DRAWINGS PROVIDED BY EQUIPMENT MANUFACTURERS.
3. ALL VISIBLY EXPOSED PIPE TO EQUIPMENT SHALL BE CHROME PLATED BRASS.
4. PROVIDE SHUT-OFF VALVES FOR EACH PLUMBING FIXTURE AND PIECE OF EQUIPMENT.
5. PROVIDE TRAPS ON ALL WASTE PIPING FROM PLUMBING FIXTURES AND PIECE OF EQUIPMENT.
6. COORDINATE POSITION OF SLEEVES AND OPENINGS THROUGH FLOOR WITH THE GENERAL CONTRACTOR.
7. PROVIDE VACUUM BREAKERS AND CHECK VALVES FOR THE PLUMBING FIXTURES WHERE AND WHEN REQUIRED BY CODE.
8. ALL PIPING AND EQUIPMENT SHALL BE SUBSTANTIALLY SUPPORTED FROM THE BUILDING STRUCTURE. HANGER AND SUPPORTS SHALL BE SPECIFICALLY APPROVED FOR USE IN PLUMBING SYSTEMS.
   A. WHERE OVERHEAD CONSTRUCTION DOES NOT PERMIT FASTENING OF HANGER RODS IN REQUIRED LOCATIONS, PROVIDE ADDITIONAL STEEL FRAMING AS REQUIRED AND APPROVED.
   B. NO PLUMBING PIPING SHALL BE HUNG FROM THE PIPING OF OTHER TRADES OR DUCTWORK. HANGERS SHALL BE OF HEAVY CONSTRUCTION, SUITABLE FOR THE SIZE OF PIPE TO BE SUPPORTED.
9. PLUMBING FIXTURES TO BE APPROVED BY THE GENERAL CONTRACTOR AND INSTALLED BY THE PLUMBING CONTRACTOR.
10. PLUMBING FIXTURES SHALL BE AS SPECIFIED BY ARCHITECT WHERE INDICATED.

PLUMBING SPECIFICATIONS FOR UNDERGROUND WORK

1. REFERENCE TO GENERAL CONDITIONS
   A. PERFORM THE WORK IN ACCORDANCE WITH THE REQUIREMENTS OF THE GENERAL CONDITIONS.
2. GENERAL
   A. COORDINATE WORK WITH ALL OTHER TRADES AND EXISTING CONDITIONS OF THE JOB SITE AND MAINTAIN REQUIRED CEILING HEIGHTS AND SPACE CONDITIONS.
   B. PROVIDE ALL MATERIAL, EQUIPMENT, SERVICES, LABOR AND TESTS NECESSARY FOR COMPLETE EXECUTION OF THE PLUMBING WORK IN ACCORDANCE WITH THE GOVERNING CODES AND AUTHORITIES.
3. CODES, PERMITS AND INSPECTIONS
   A. ALL WORK SHALL MEET OR EXCEED THE LATEST REQUIREMENTS OF ALL NATIONAL, STATE, COUNTY, MUNICIPAL AND OTHER AUTHORITIES EXERCISING JURISDICTION OVER CONSTRUCTION WORK AT THE PROJECT.
   B. ALL REQUIRED PERMITS AND INSPECTION CERTIFICATES SHALL BE OBTAINS, PAID FOR, AND MADE AVAILABLE AT THE COMPLETION OF THE WORK.
4. TESTS
   A. BEFORE AN APPLICATION FOR FINAL ACCEPTANCE OF THE WORK WILL BE CONSIDERED, ALL TESTS DEEMED NECESSARY TO SHOW PROPER EXECUTION OF THE WORK SHALL HAVE BEEN PERFORMED AND COMPLETED IN THE PRESENCE OF AN ARCHITECT'S/OWNER'S REPRESENTATIVE, SCHEDULING OF ALL TESTING PROCEDURES SHALL BE ARRANGED TO SUIT THE CONVENIENCE OF THE ARCHITECT AND/OR OWNERS REPRESENTATIVE.
5. GUARANTEES AND CERTIFICATES
   A. ALL WORK SHALL BE GUARANTEED TO BE FREE FROM LEAKS OR DEFECTS. ANY DEFECTIVE MATERIALS OR WORKMANSHIP AS WELL AS DAMAGE TO THE WORK OF ALL TRADES RESULTING FROM SAME SHALL BE REPLACED OR REPAIRED AS DIRECTED FOR THE DURATION OF STIPULATED GUARANTEED PERIODS. THE DURATION OF GUARANTEE PERIODS SHALL BE ONE YEAR.
6. MISCELLANEOUS

   PROVIDE THE FOLLOWING:

   - SCAFFOLDING, RIGGING, HOISTING.
   - CUTTING AND PATCHING.
   - RUBBISH REMOVAL.
   - SLEEVES AND OPENINGS
   - CAULKING, PACKING AND FILLING OF SLEEVES & OPENINGS.
   - OBTAINING ALL REQUIRED PERMITS, APPROVALS AND INSPECTION CERTIFICATES.
   - GUARANTEE ALL WORK, LABOR AND MATERIALS FOR ONE YEAR FOLLOWING DATE OF ACCEPTANCE.
   - OPERATING AND MAINTENANCE INSTRUCTIONS.
   - VERIFYING EXISTING CONDITIONS AT THE PROJECT SITE.
   - SPARE PARTS AND TOOLS.
   - TEST: OPERATING, PERFORMANCE AND CODE REQUIRED TESTS.
   - PROTECTION OF WORK DURING CONSTRUCTION.
   - COORDINATION WITH OTHER TRADES.
   - CLEANING.
   - HANGER AND SUPPORTS FOR PIPING AND EQUIPMENT.
   - COMPLIANCE WITH MATERIALS AND EQUIPMENT DIVISION (M.E.A.) OF N.Y.C.
7. PIPING MATERIALS

SYSTEM	PIPING	FITTING	MISC.
UNDERSLAB SOIL, WASTE, VENT & DRAINS	HUB & PLAIN END, CAST IRON SOIL PIPE	GASKETED ELASTO-MERIC NEOPRENE JOINTS CAST IRON SOIL HUB & PLAIN END	HUNG FROM STRUCTURAL SLAB

8. INSTALLATION
   A. INSTALL UNDERGROUND PIPING WITH THE FOLLOWING SLOPES:
      i. 1/8" PER FT. FOR PIPING 3" AND LARGER.
      ii. 1/4" PER FT. FOR PIPING 2" AND SMALLER.

NOTES:

1. PROVIDE TRAP PRIMERS FOR ALL FLOOR DRAINS THAT ARE NOT CONSTANTLY RECEIVING WASTE WATER AS REQUIRED BY CODE
2. PROVIDE SHOCK ABSORBERS FOR ALL FAST CLOSING VALVES.
3. ALL COMPONENTS OF THE STORM DRAINAGE SYSTEM LOCATED BELOW THE SECOND FLOOR (PIPING, TANKS, PUMPS) SHALL BE CAPABLE OF WITHSTANDING MINIMUM 25PSI OF HYDROSTATIC PRESSURE. ALL ACCESS TO THE TANKS TO BE PROVIDED VIA PRESSURE MANHOLES RATED FOR MINIMUM 30PSI.
4. PROVIDE LOCKABLE RISER VALVE AND TEST TEE ON ALL GAS RISERS IN ACCORDANCE WITH THE CON-ED REQUIREMENTS
5. PROVIDE BALANCING RIGS ON ALL HWR LINES

KEY OF SYMBOLS

NOTE: THE KEY OF SYMBOLS INDICATED IS FOR CONVENIENCE ONLY AND ITEMS INDICATED ARE NOT NECESSARILY WITHIN THE SCOPE OF THE WORK.

SOIL OR WASTE PIPING (S) (W)	
SOIL OR WASTE PIPING BELOW GROUND	
LEADER (L) (LDR)	
INDIRECT WASTE	
VENT PIPING	
EXISTING PIPING TO BE REMOVED	
EXISTING PIPING TO REMAIN	
COLD WATER PIPING (C.W.)	
HOT WATER PIPING (H.W.)	
HOT WATER CIRCULATING PIPING (H.W.C./H.W.R.)	
GAS PIPING (G)	
FIRE STANDPIPE PIPING (F) (FSP)	
PUMP DISCHARGE PIPING (P.D.)	
SPRINKLER PIPING (SP.)	
GATE VALVE (G.V.)	
LOCKSHIELD VALVE (GLOBE VALVE)	
PLUG COCK	
CHECK VALVE (C.V.)	
HOSE BIBB (H.B.) SILL COCK (S.C.)	
VACUUM BREAKER (V.B.)	
PRESSURE RELIEF VALVE PRESS. & TEMP. RELIEF VALVE	
PRESSURE REGULATING VALVE	
STRAINER	
"P" TRAP FOR LAV., SINK, ETC.	
CLEANOUT DECK PLATE (C.O.D.P.)	
SHOCK ABSORBER	
ANCHOR	
GUIDE	
PRESSURE GAUGE	
THERMOMETER	
TEMPERATURE REGULATOR	
WALL HYDRANT (W.H.)	
YARD HYDRANT (Y.H.) (D.H.)	
PIPING COVERED WITH ELECTRIC HEAT TRACING CABLE AND INSULATION	
UNION CONNECTION	
EXPANSION JOINT	
AUTOMATIC AIR VENT VALVE	

STACK & RISER SYMBOLS

Symbol	Description
P / X	WATER RISERS
ST / X	SOIL WASTE & VENT STACKS
L / X	STORM LEADER
G / X	GAS RISER

Abbreviation	Meaning
A.B.D.	AUTOMATIC BALL DRIP
A.D.	ACCESS DOOR
A. DR.	AREA DRAIN
B.T.	BATH TUB
C.D.	CANOPY DRAIN
C.F.H.	CUBIC FEET PER HOUR
C.F.M.	CUBIC FEET PER MINUTE
C.F.S.	CUBIC FEET PER SECOND
CLG.	CEILING
C.O.	CLEANOUT
C.O.D.P.	CLEAN OUT DECK PLATE
C.V.	CHECK VALVE
C.V.B.	CHECK VALVE BOX
D.I.	DROP INLET
D.F.	DRINKING FOUNTAIN
DN.	DOWN
EL.	ELEVATION
E.W.C.	ELECTRIC WATER COOLER
F.A.I.	FRESH AIR INLET
F.D. FL. DR.	FLOOR DRAIN
FL.	FLOOR
F.O.	FLOOR OUTLET
F.U.	FIXTURE UNITS
FUN. DR.	FUNNEL DRAIN
F.V.	FLUSH VALVE FLUSHOMETER
G.C.	GENERAL CONTRACTOR
G.V.	GATE VALVE
H.C.	HUNG CEILING
H.R.	HOSE RACK
INV.	INVERT
LAV.	LAVATORY
MH.	MANHOLE
M.S.	MOP SINK
N.I.C.	NOT IN CONTRACT
O.S.&Y.	OUTSIDE SCREW & YOKE
P.C.	PLUG COCK
P.O.	PLUGGED OUTLET
R.P.B. F.P.	REDUCED PRESSURE BACKFLOW PREVENTER
R.D.	ROOF DRAIN
R.T.	RUNNING TRAP
R.C.V.	RISER CONTROL VALVE
S.P.O.	SOIL PLUGGED OUTLET
S.H.	SHOWER HEAD
SH.- SHWR.	SHOWER
SK.	SINK
S.S.	SERVICE SINK
S.E.	SEWAGE EJECTOR
T.D.	TERRACE DRAIN
T.E.	TERRACE ELEVATION
T.S.	TAMPER SWITCH
UR.	URINAL
U.O.S.W.	UNDER ANOTHER SECTION OF THE WORK
VAL. O. V.O.	VALVED OUTLET
V.T.R.	VENT THRU ROOF
V.P.O.	VENT PLUGGED OUTLET
W.C.	WATER CLOSET

PLUMBING		
P-001.00	PLUMBING NOTES AND SYMBOLS	NTS
P-098.00	UNDERGROUND PLUMBING FLOOR PLAN	1/4" = 1'-0"
P-099.00	SUBCELLAR LEVEL PLUMBING FLOOR PLAN	1/4" = 1'-0"
P-100.00	CELLAR LEVEL PLUMBING FLOOR PLAN	1/4" = 1'-0"
P-101.00	GROUND LEVEL PLUMBING FLOOR PLAN	1/4" = 1'-0"
P-102.00	LEVEL 2 PLUMBING PLAN	1/4" = 1'-0"
P-103.00	LEVEL 3 PLUMBING PLAN	1/4" = 1'-0"
P-104.00	LEVEL 3 MEZZANINE PLUMBING PLAN	1/4" = 1'-0"
P-105.00	LEVEL 4 PLUMBING PLAN	1/4" = 1'-0"
P-106.00	LEVEL 5 PLUMBING PLAN	1/4" = 1'-0"
P-107.00	LEVEL 6 PLUMBING PLAN	1/4" = 1'-0"
P-108.00	LEVEL 7 PLUMBING PLAN	1/4" = 1'-0"
P-109.00	LEVEL 8 PLUMBING PLAN	1/4" = 1'-0"
P-110.00	LEVELS 9 & 10 PLUMBING PLAN	1/4" = 1'-0"
P-111.00	LEVEL 11 TO 20 PLUMBING PLAN	1/4" = 1'-0"
P-121.00	LEVEL 21 PLUMBING PLAN	1/4" = 1'-0"
P-122.00	LEVEL 22 PLUMBING PLAN	1/4" = 1'-0"
P-123.00	LEVEL 23 TO 36 PLUMBING PLAN	1/4" = 1'-0"
P-137.00	LEVEL 37 PLUMBING PLAN	1/4" = 1'-0"
P-138.00	LEVEL 38 PLUMBING PLAN	1/4" = 1'-0"
P-139.00	LEVEL 39 TO 44 PLUMBING PLAN	1/4" = 1'-0"
P-145.00	LEVEL 45 TO 56 PLUMBING PLAN	1/4" = 1'-0"
P-157.00	LEVEL 57 TO 59 PLUMBING PLAN	1/4" = 1'-0"
P-160.00	LEVEL 60 PLUMBING PLAN	1/4" = 1'-0"
P-161.00	LEVEL 61 PLUMBING PLAN	1/4" = 1'-0"
P-162.00	LEVEL 62 TO 64 PLUMBING PLAN	1/4" = 1'-0"
P-165.00	LEVEL 65 & 66 PLUMBING PLAN	1/4" = 1'-0"
P-167.00	LEVEL 67 PLUMBING PLAN	1/4" = 1'-0"
P-168.00	LEVEL 68 PLUMBING PLAN	1/4" = 1'-0"
P-169.00	LEVEL 69 PLUMBING PLAN	1/4" = 1'-0"
P-170.00	LEVEL 70 PLUMBING PLAN	1/4" = 1'-0"
P-301.00	PLUMBING STORM RISER DIAGRAM	NTS
P-302A.00	PLUMBING GAS RISER DIAGRAM SHEET #1	NTS
P-302B.00	PLUMBING GAS RISER DIAGRAM SHEET #2	NTS
P-303A.00	PLUMBING DOMESTIC WATER RISER DIAGRAM SHEET #1	NTS
P-303B.00	PLUMBING DOMESTIC WATER RISER DIAGRAM SHEET #2	NTS
P-303C.00	PLUMBING DOMESTIC WATER RISER DIAGRAM SHEET #3	NTS
P-303D.00	PLUMBING DOMESTIC WATER RISER DIAGRAM SHEET #4	NTS
P-303E.00	PLUMBING DOMESTIC WATER RISER DIAGRAM SHEET #5	NTS
P-303F.00	PLUMBING DOMESTIC WATER RISER DIAGRAM SHEET #6	NTS
P-304A.00	PLUMBING SANITARY RISER DIAGRAM SHEET #1	NTS
P-304B.00	PLUMBING SANITARY RISER DIAGRAM SHEET #2	NTS
P-304C.00	PLUMBING SANITARY RISER DIAGRAM SHEET #3	NTS
P-304D.00	PLUMBING SANITARY RISER DIAGRAM SHEET #4	NTS
P-304E.00	PLUMBING SANITARY RISER DIAGRAM SHEET #5	NTS
P-304F.00	PLUMBING SANITARY RISER DIAGRAM SHEET #6	NTS
P-401.00	PLUMBING SCHEDULES	NTS
P-501.00	PLUMBING DETAILS SHEET #1	NTS
P-502.00	PLUMBING DETAILS SHEET #2	NTS
P-601.00	PLUMBING APPROVALS	NTS

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ISSUE NO.	ISSUE DATE	DESCRIPTION
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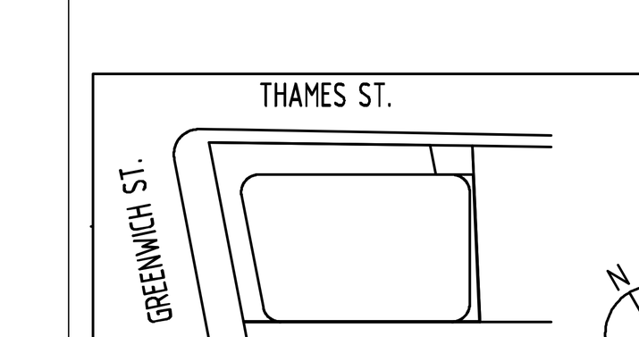

KEY PLAN AND NORTH SIGN

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Damian Titus
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Date: 09/27/2016:
NYC Development Hub

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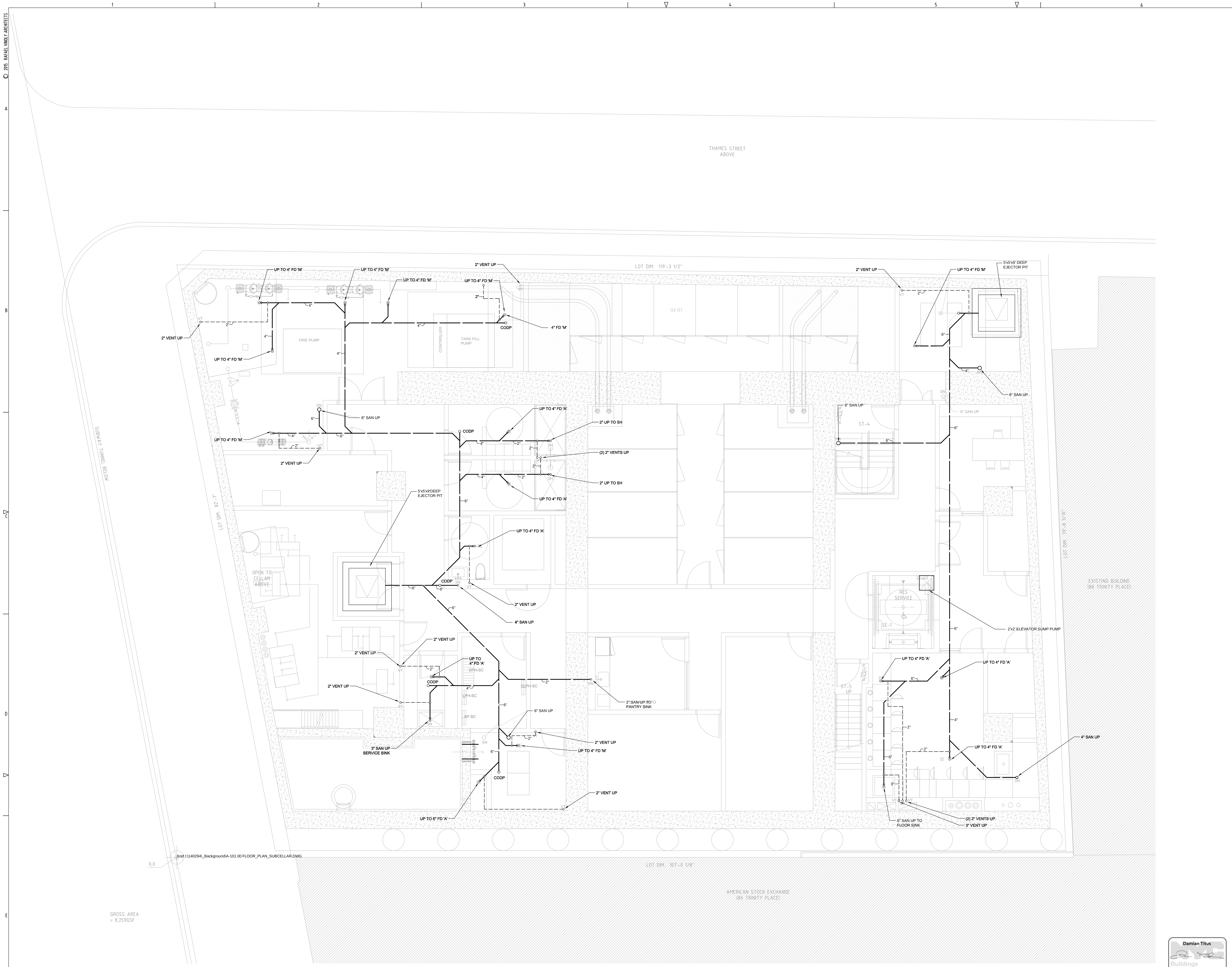
PLUMBING NOTES AND SYMBOLS

SHEET TITLE :

P-001.00

SHEET NUMBER :



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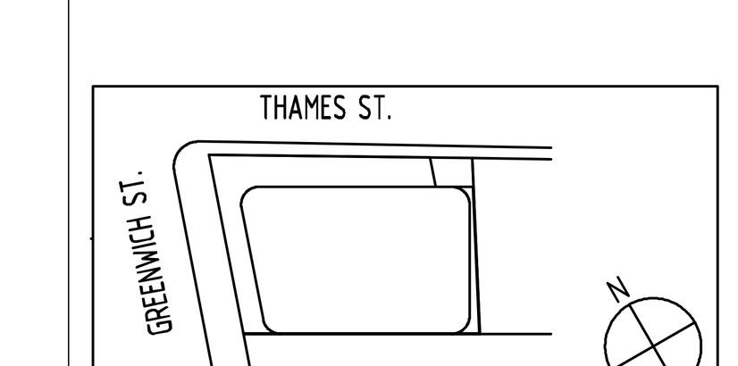

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UNDERGROUND PLUMBING FLOOR PLAN

SHEET TITLE :

P-098.00

SHEET NUMBER :

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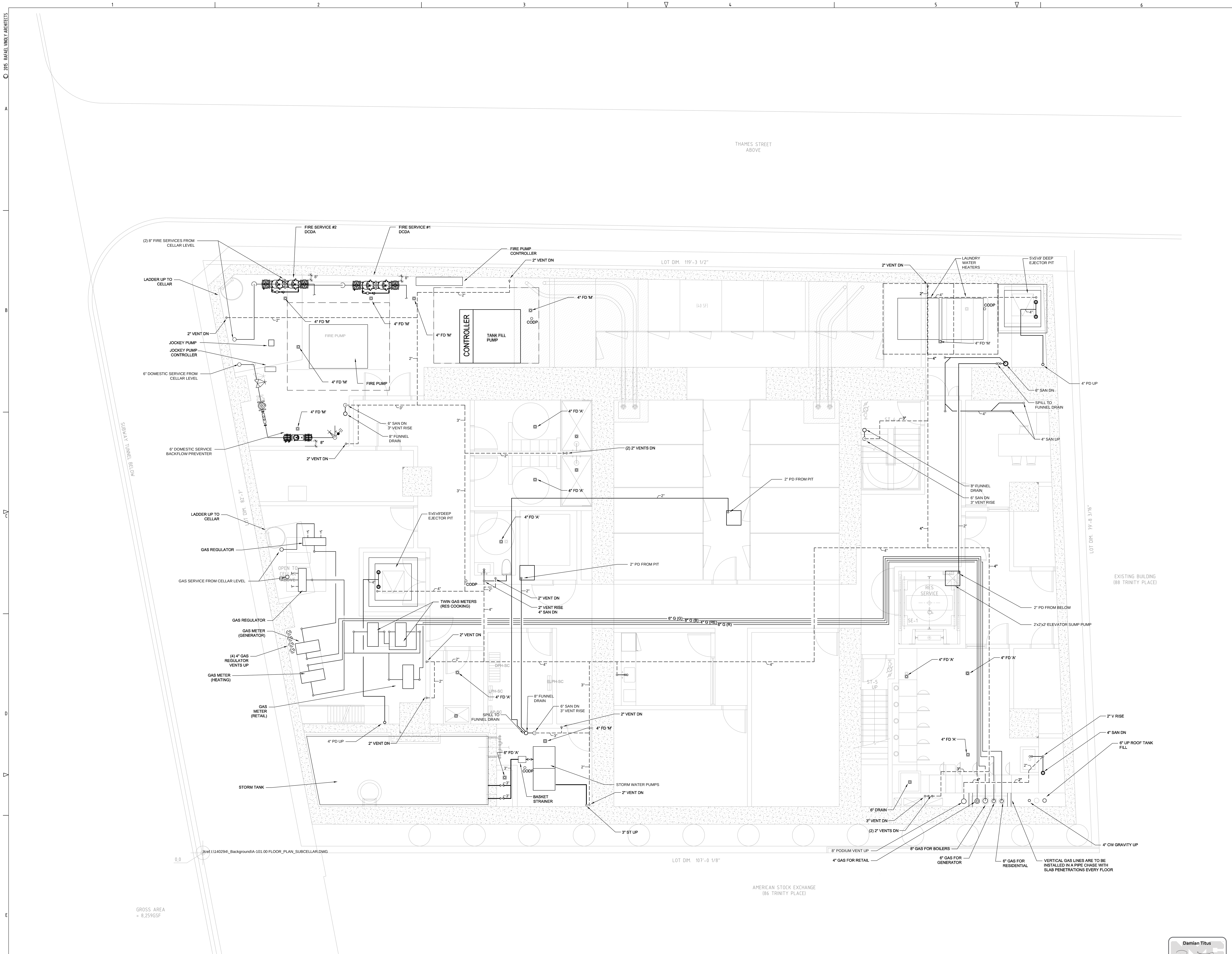

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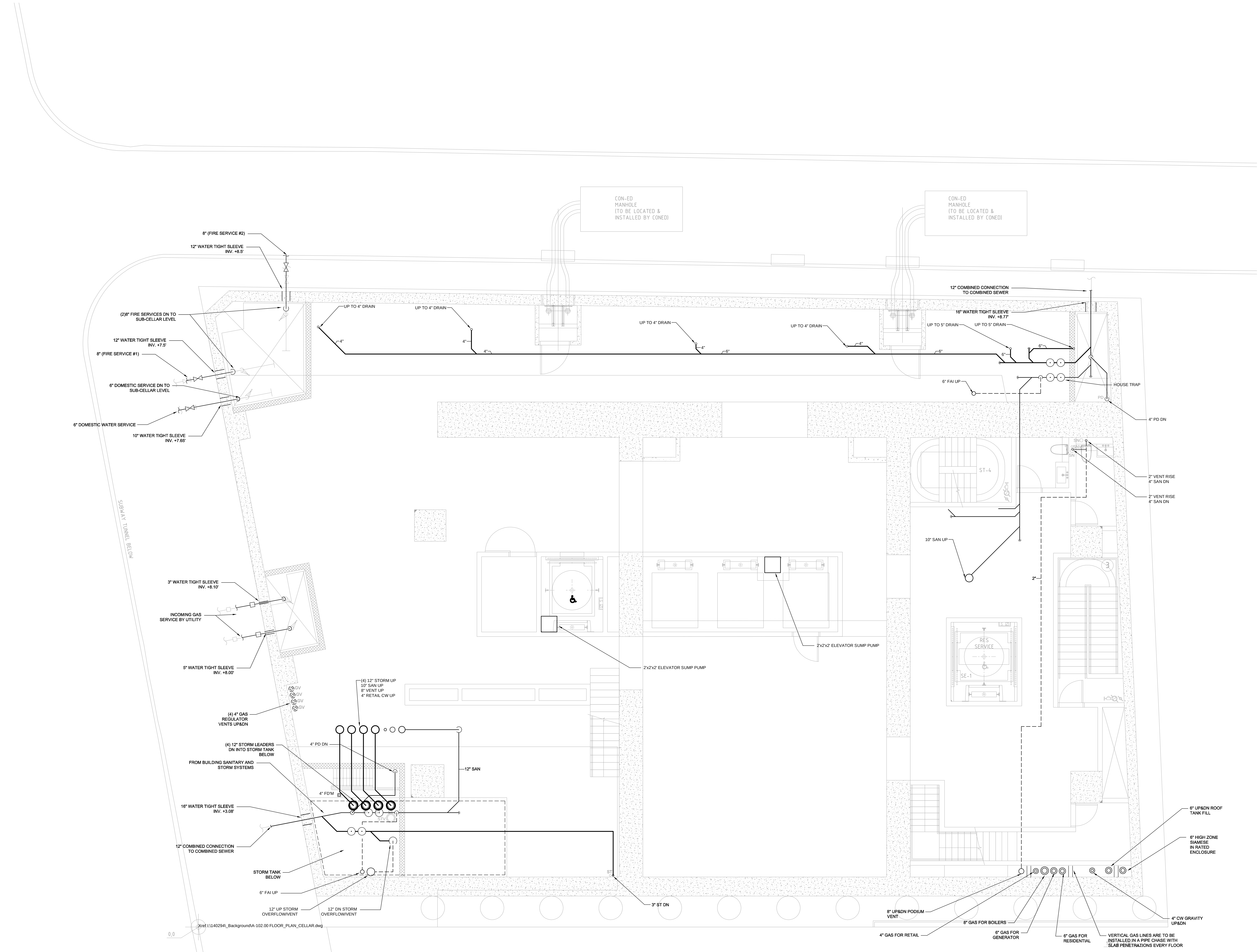
SHEET NUMBER :



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ES626493201 Scan Code

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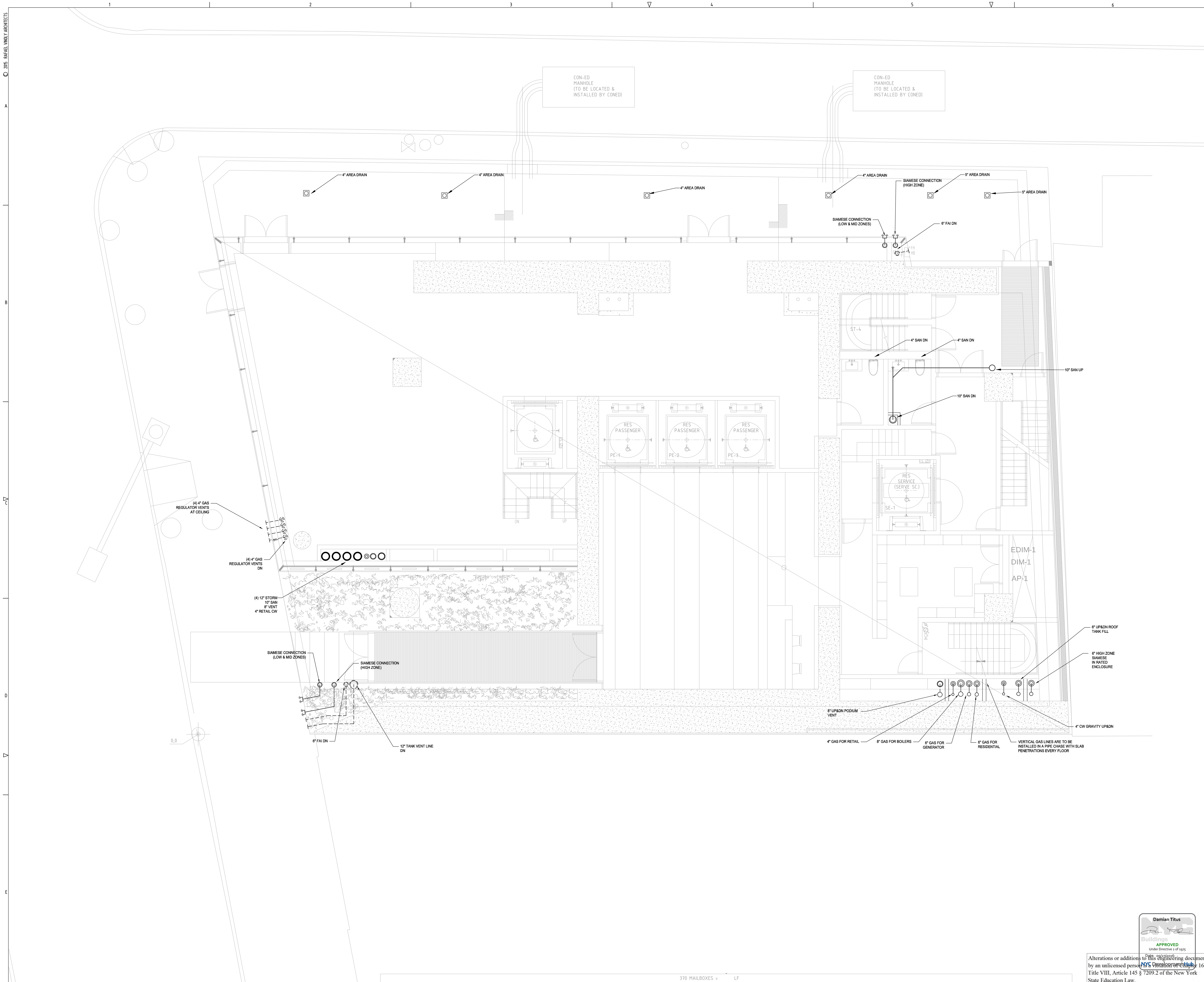

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GROUND LEVEL PLUMBING PLAN

SHEET TITLE :

P-101.00

SHEET NUMBER :

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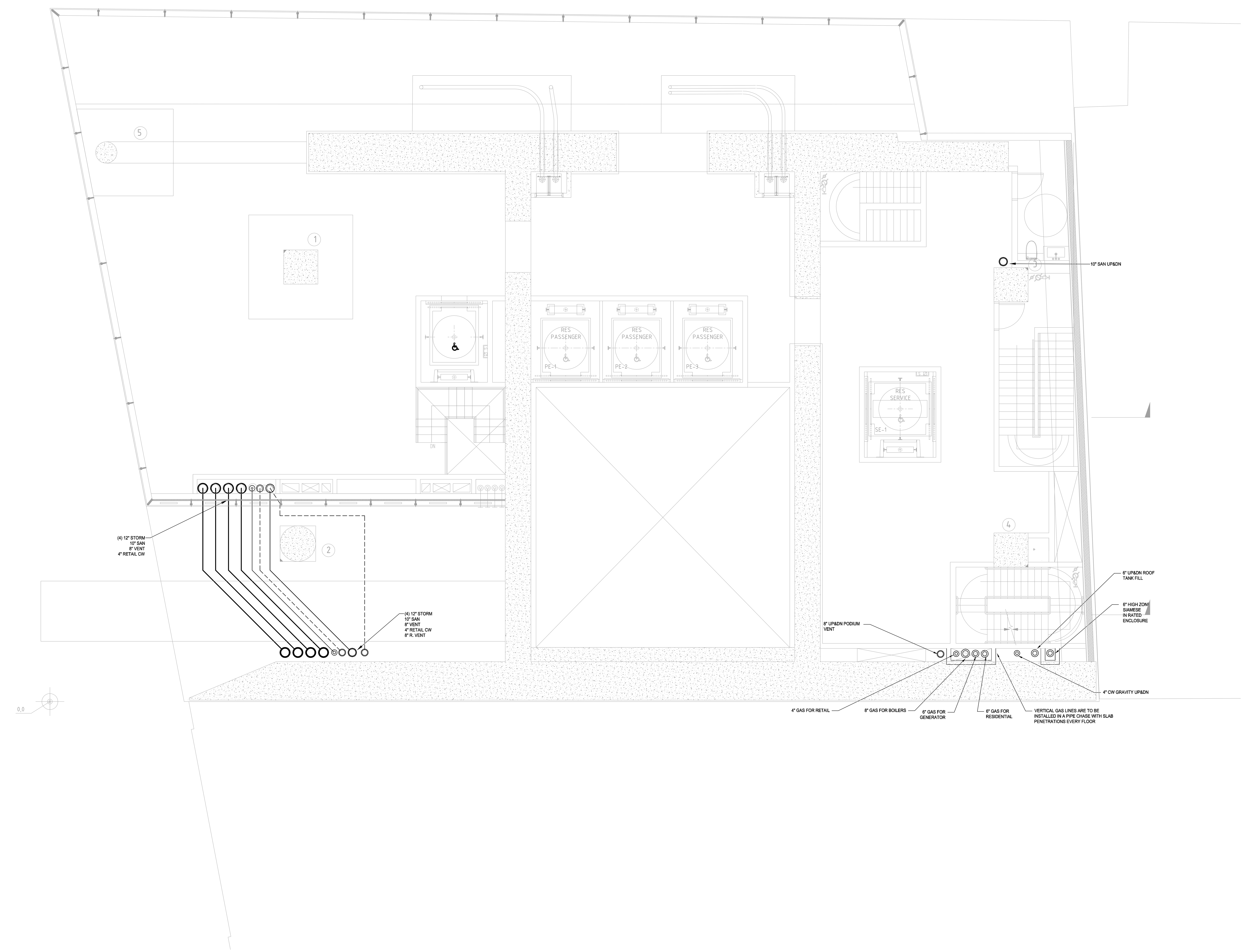

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LEVEL 02 PLUMBING PLAN

SHEET TITLE :

P-102.00

SHEET NUMBER :

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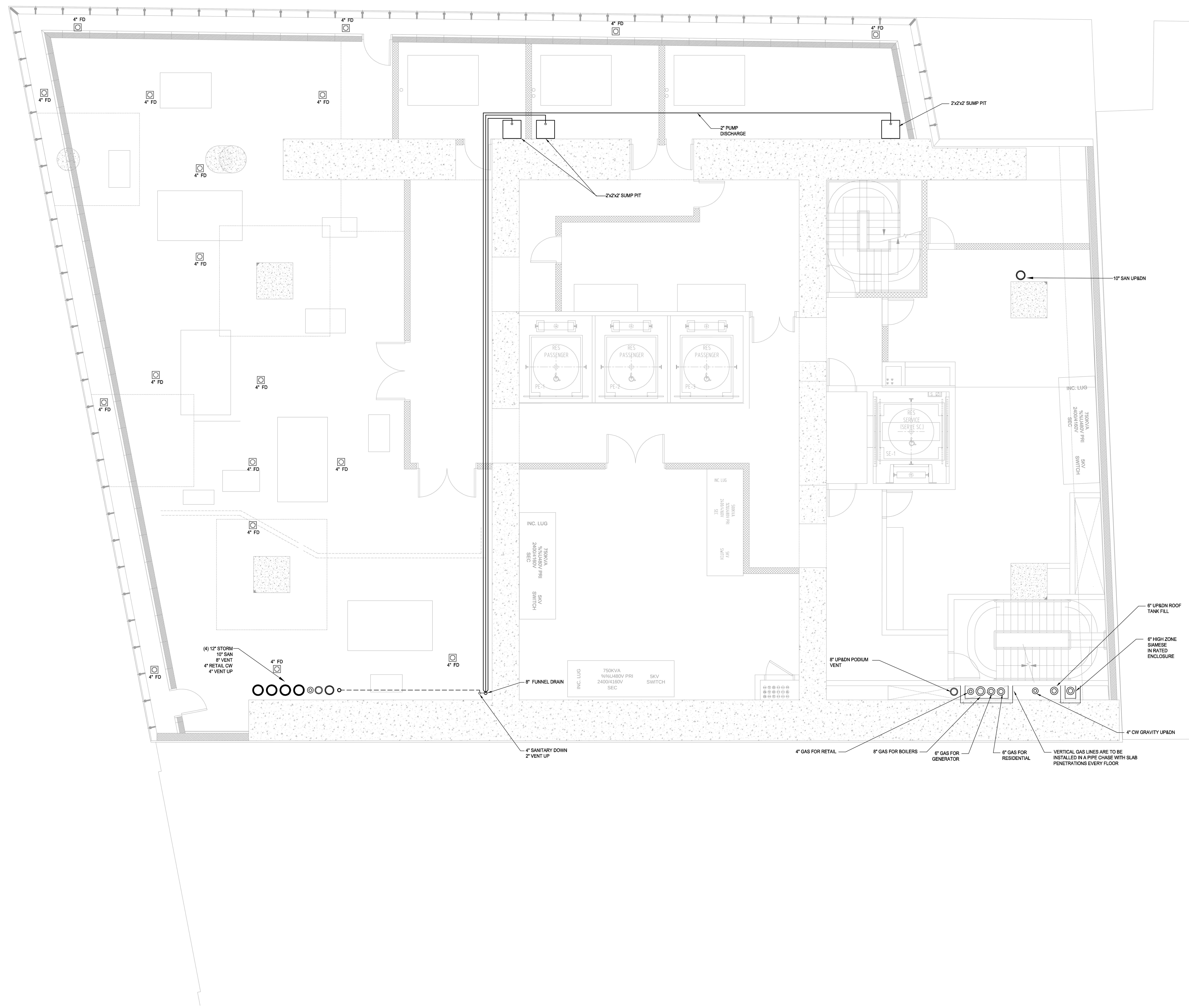

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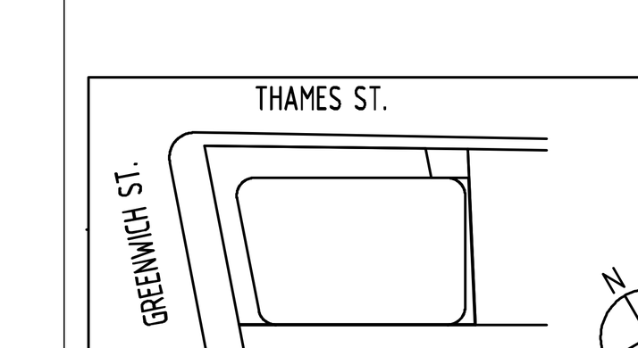

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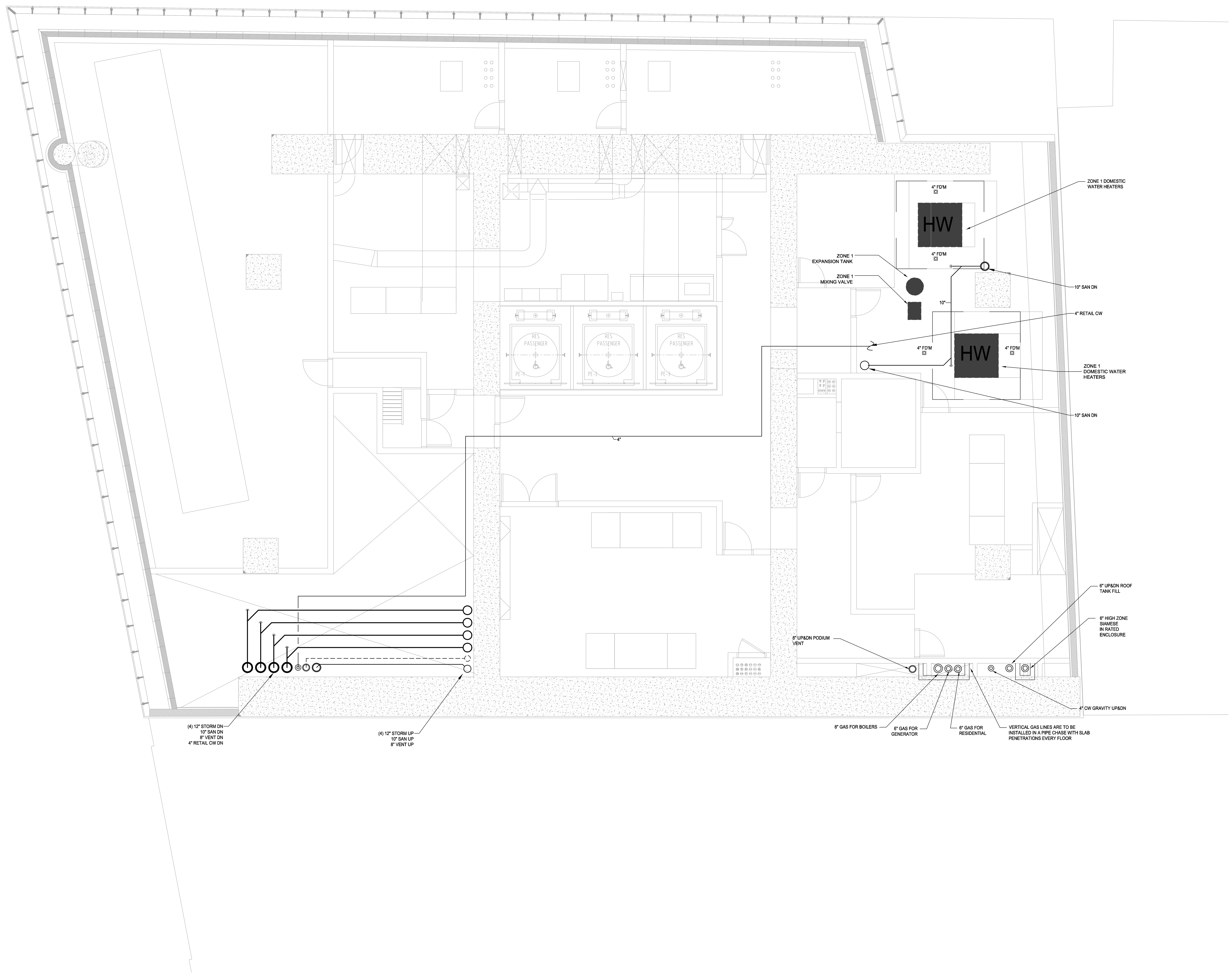

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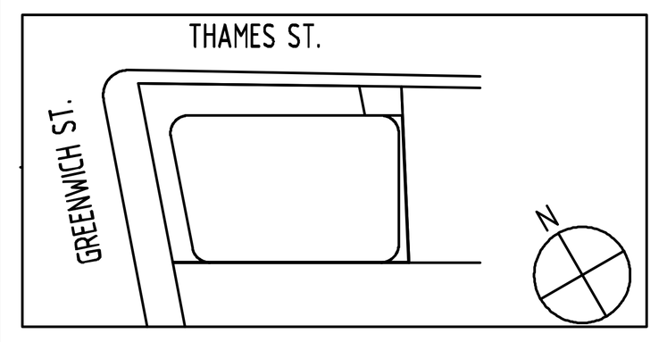

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LEVEL 03
MEZZANINE
PLUMBING PLAN

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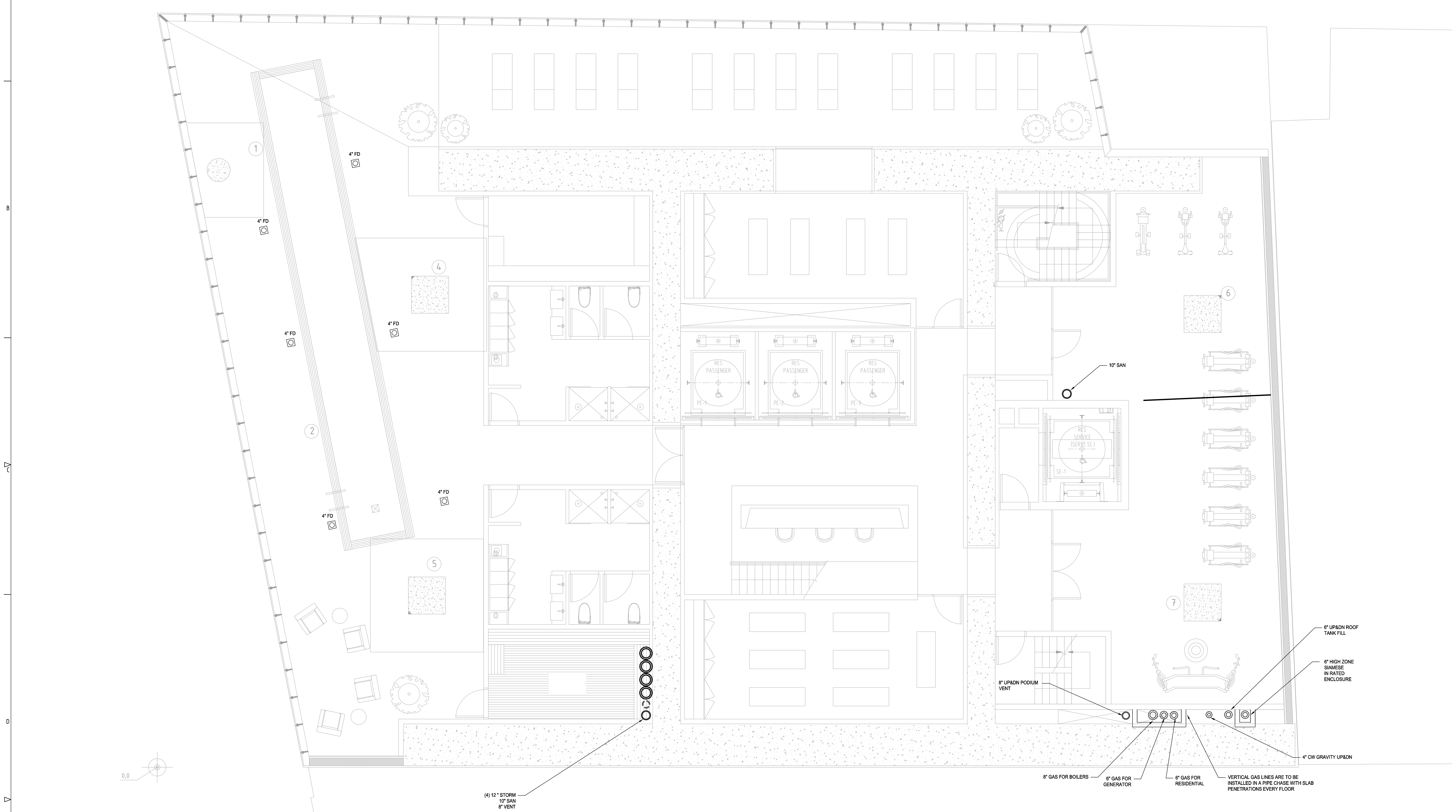

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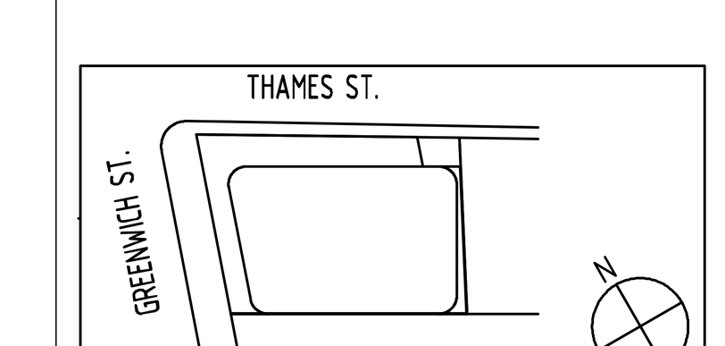

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LEVEL 04
PLUMBING PLAN

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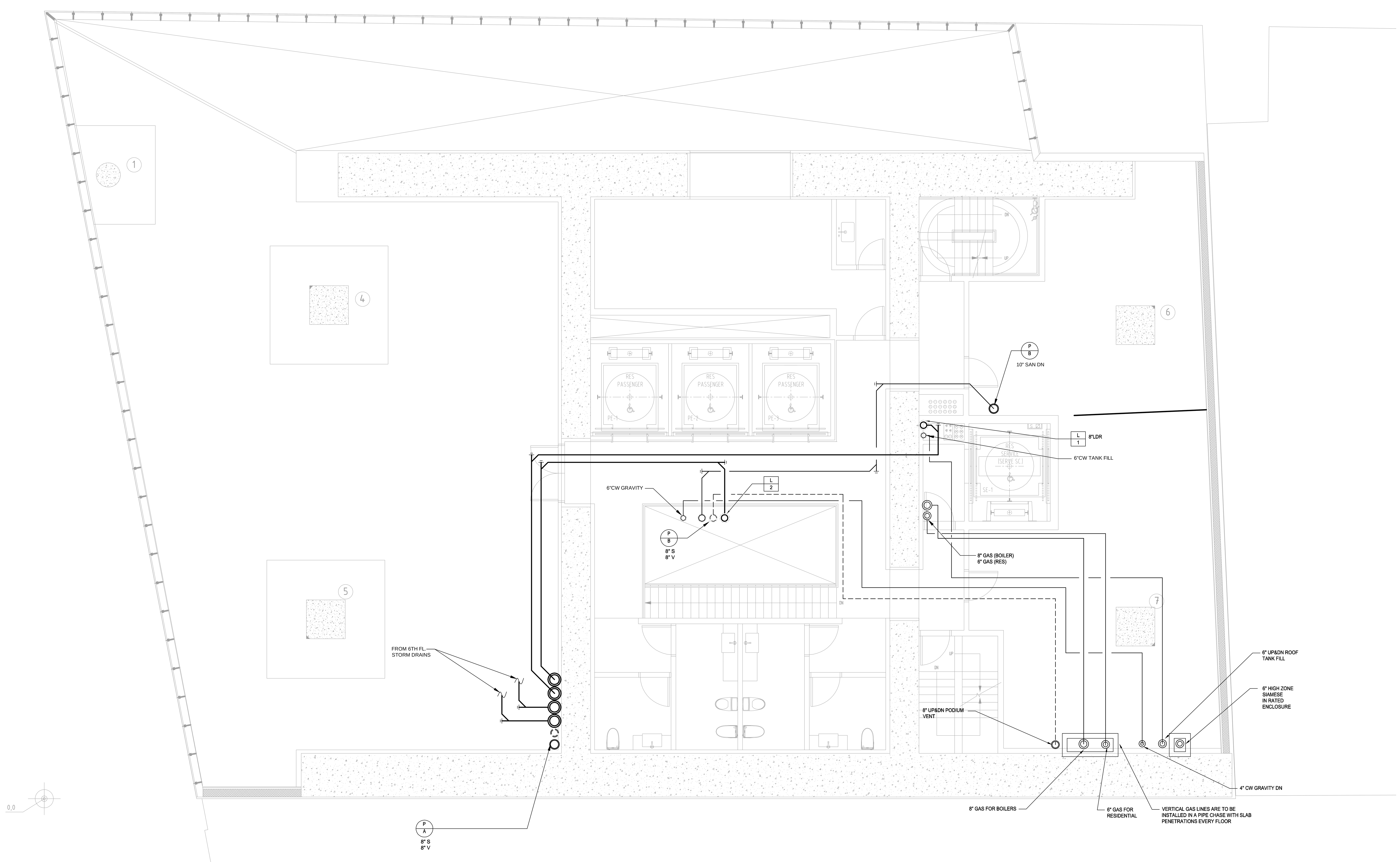

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LEVEL 05
PLUMBING PLAN

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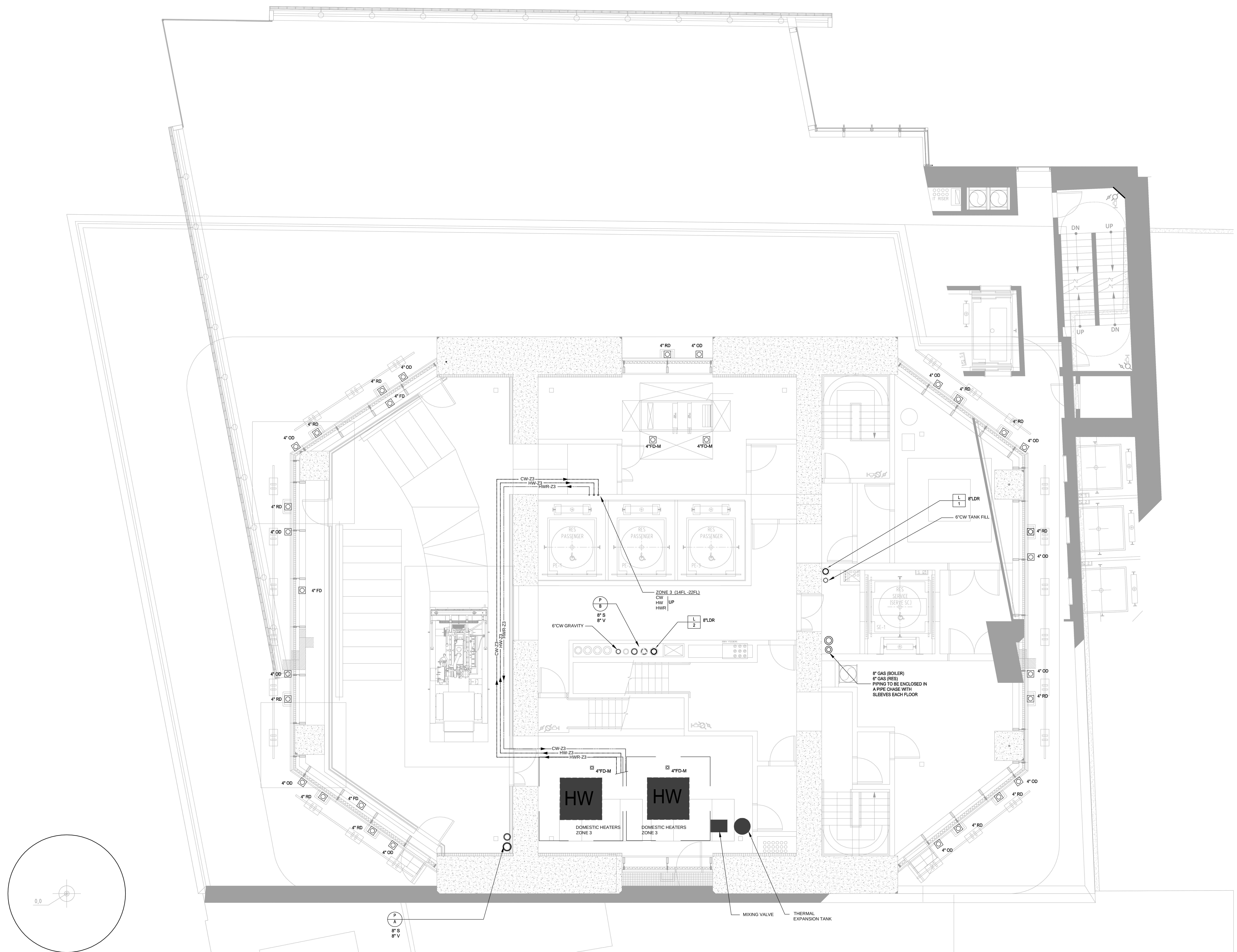

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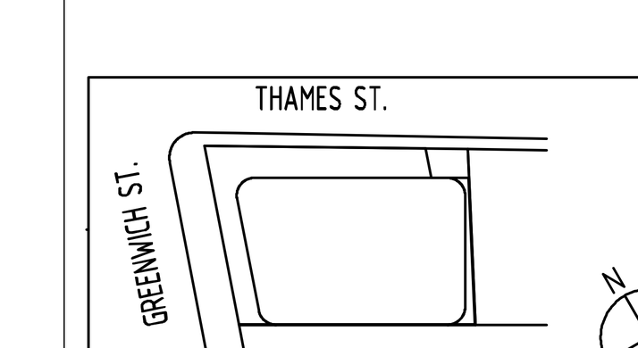

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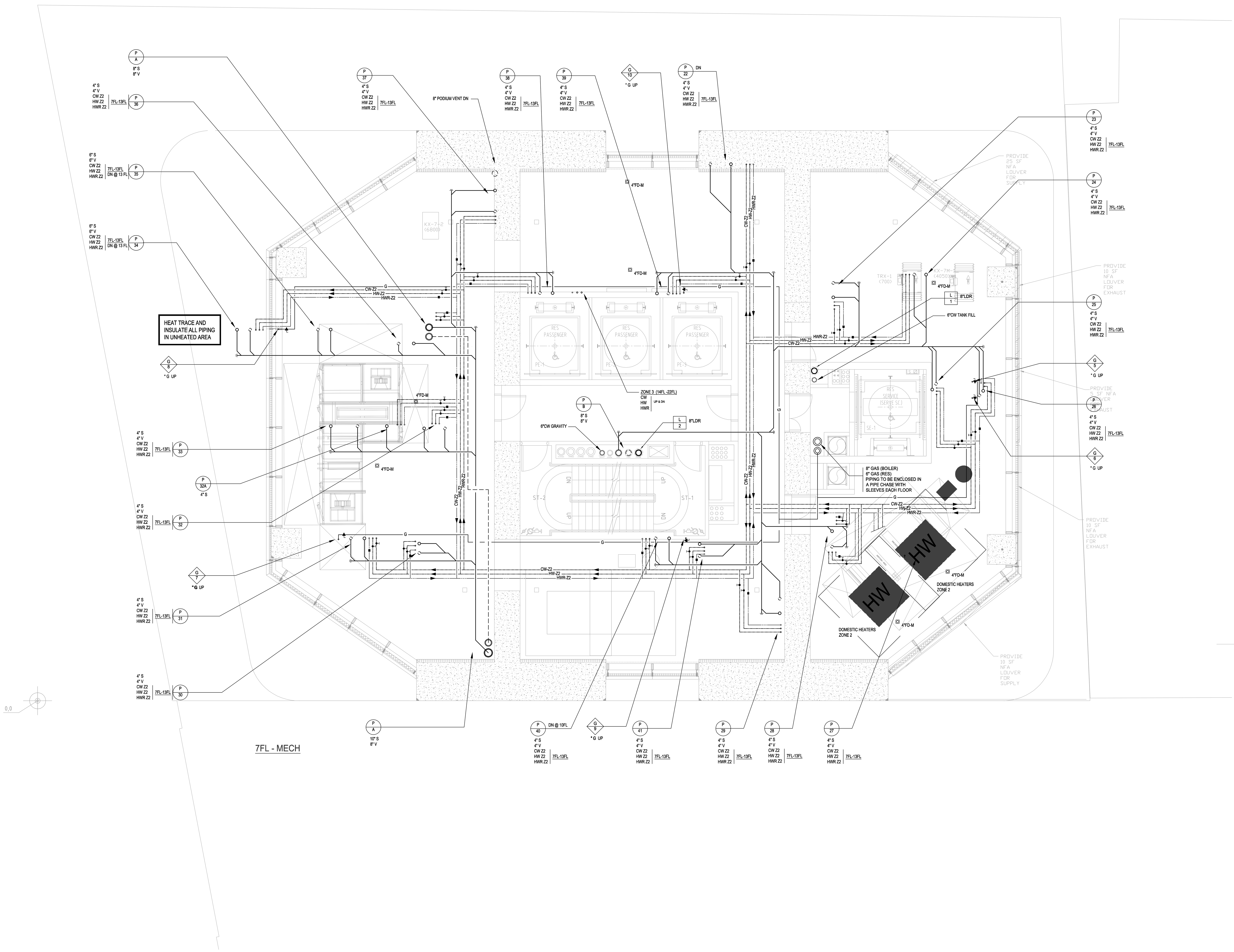
LEVEL 06 PLUMBING PLAN

SHEET TITLE :

P-107.00

SHEET NUMBER :



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50 VANDAM STREET
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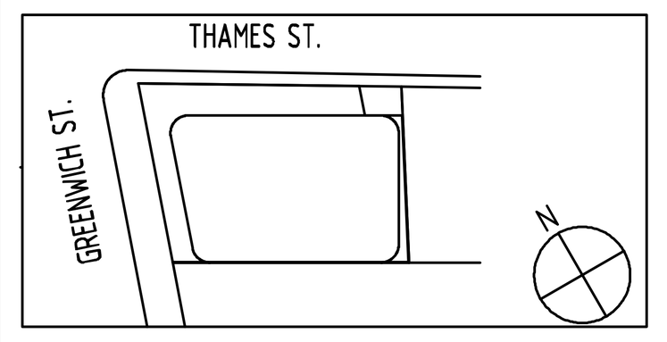

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LEVEL 07 PLUMBING PLAN

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Date: 09/27/2016
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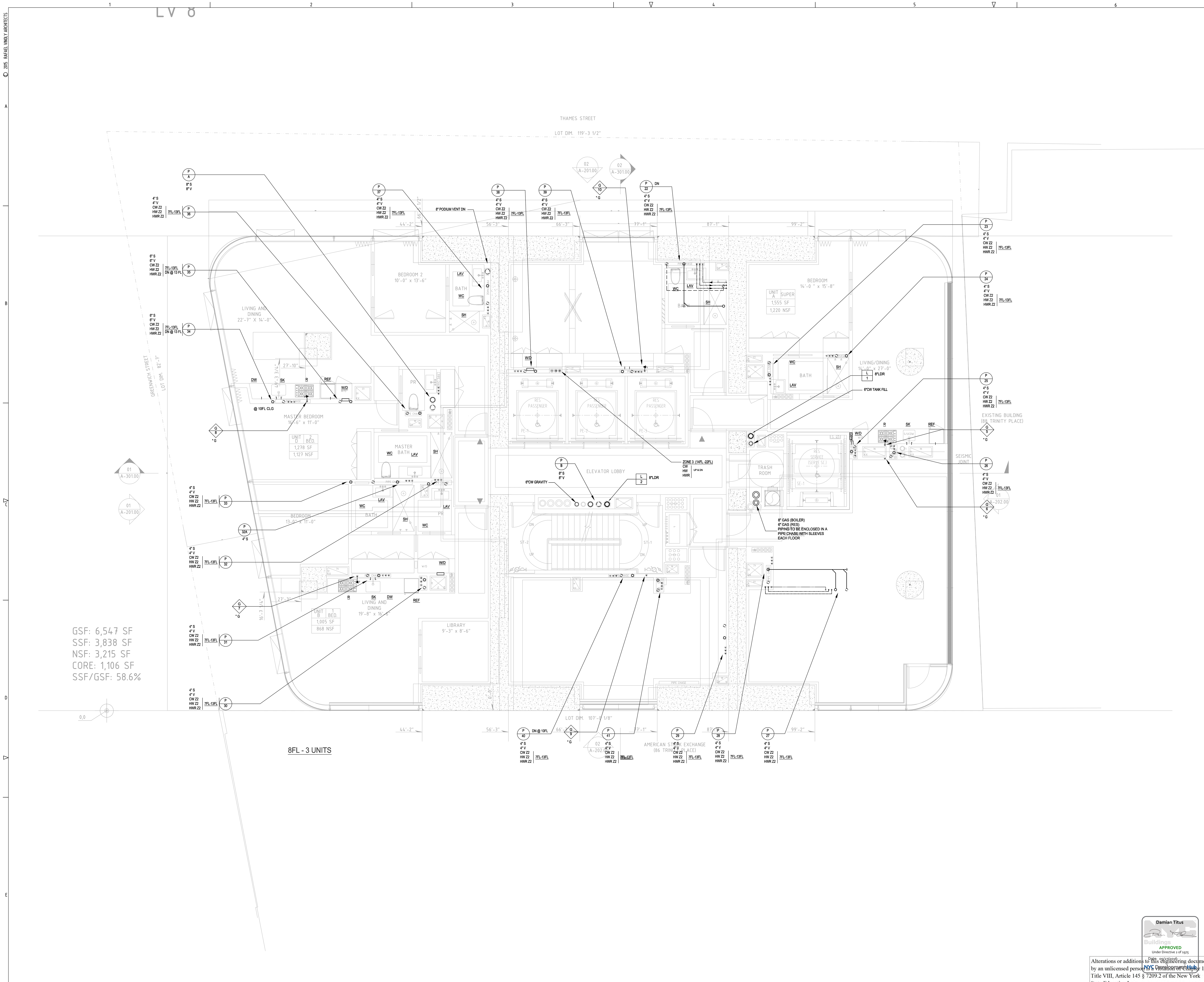

GSF: 6,547 SF
SSF: 3,838 SF
NSF: 3,215 SF
CORE: 1,106 SF
SSF/GSF: 58.6%

8FL - 3 UNITS

125 GREENWICH
NEW YORK, NY

OWNER :
VS 125 LLC
55 EAST 59TH STREET, 24TH FLOOR
NEW YORK, NY 10022
TEL: 212 616 0400

ARCHITECT :
RAFAEL VIÑOLY ARCHITECTS PC
50 VANDAM STREET
NEW YORK, NY 10013
TEL: 212 924 5060 FAX: 212 924 5858

STRUCTURAL ENGINEER :
DESIMONE CONSULTING ENGINEERS
18 WEST 18TH STREET, 10TH FLOOR
NEW YORK, NY 10011
TEL: 212 532 2211

MEP / FP / IT ENGINEER :
COSENTINI ASSOCIATES – A TETRA TECH COMPANY
2 PENNSYLVANIA PLAZA, 3RD FLOOR
NEW YORK, NY 10121
TEL: 212 615 3606

GEOTECH CONSULTANT :
LANGAN ENGINEERING
619 RIVER DRIVE CENTER 1
ELMWOOD PARK, NJ 07407
TEL: 201 794 6900

VERTICAL TRANSPORTATION CONSULTANT :
VAN DEUSEN & ASSOCIATES
120 EAGLE ROCK AVENUE, SUITE 310
EAST HANOVER, NJ 07936
TEL: 973 994 9220

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ISSUE NO.	ISSUE DATE	DESCRIPTION
01	9/30/15	DOB SUBMITTAL

THAMES ST.
GREENWICH ST.
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KEY PLAN AND NORTH SIGN

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SCALE 1/4" = 1'-0"

Damian Titus
NYC Buildings
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Under Directive 2 of 1975
Date: 09/27/2016
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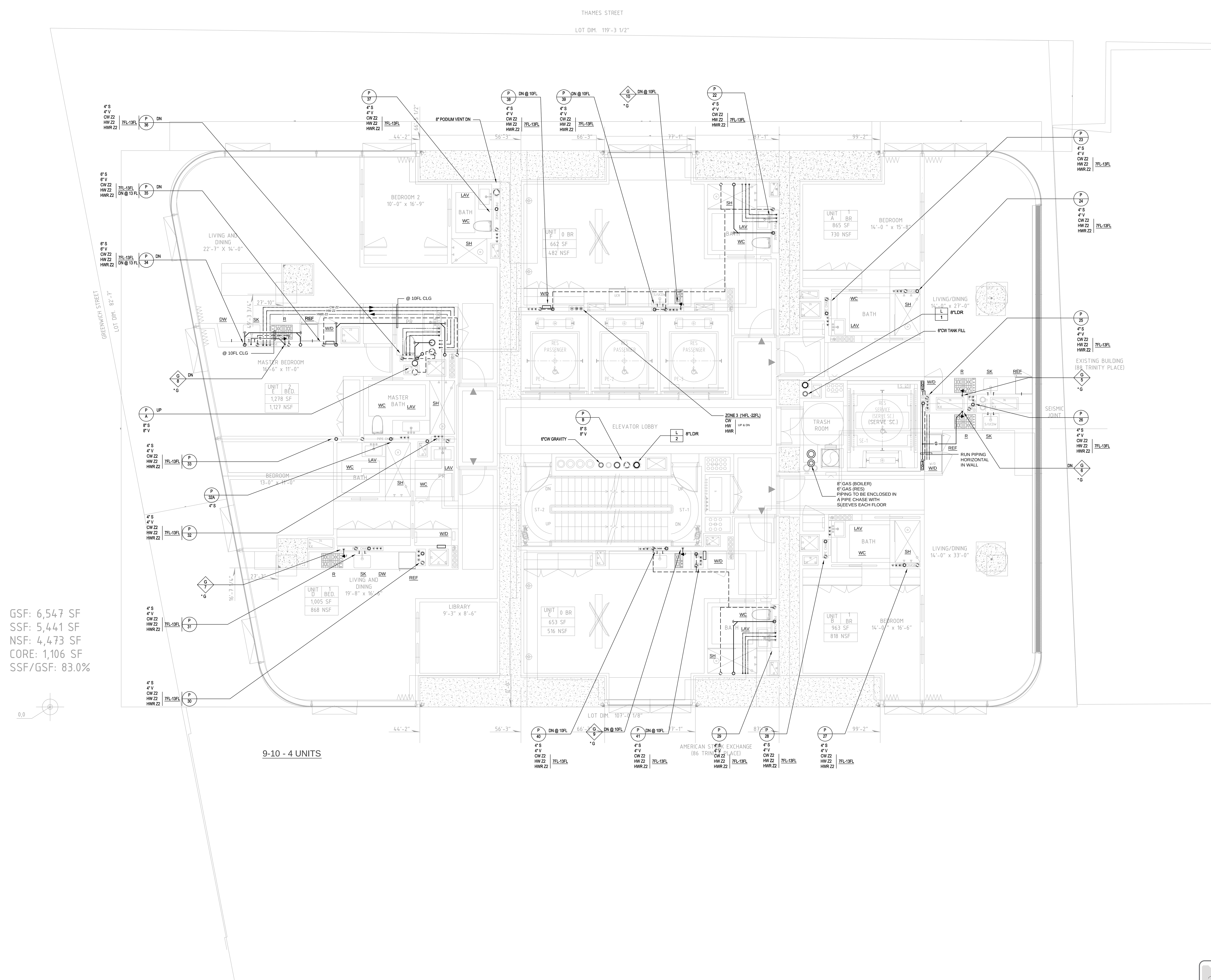
LEVEL 08
PLUMBING PLAN

SHEET TITLE :

P-109.00

SHEET NUMBER :



9-10 - 4 UNITS

GSF: 6,547 SF
SSF: 5,441 SF
NSF: 4,473 SF
CORE: 1,106 SF
SSF/GSF: 83.0%

125 GREENWICH
NEW YORK, NY

OWNER :
VS 125 LLC
55 EAST 59TH STREET, 24TH FLOOR
NEW YORK, NY 10022
TEL: 212 616 0400

ARCHITECT :
RAFAEL VIÑOLY ARCHITECTS PC
50 VANDAM STREET
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STRUCTURAL ENGINEER :
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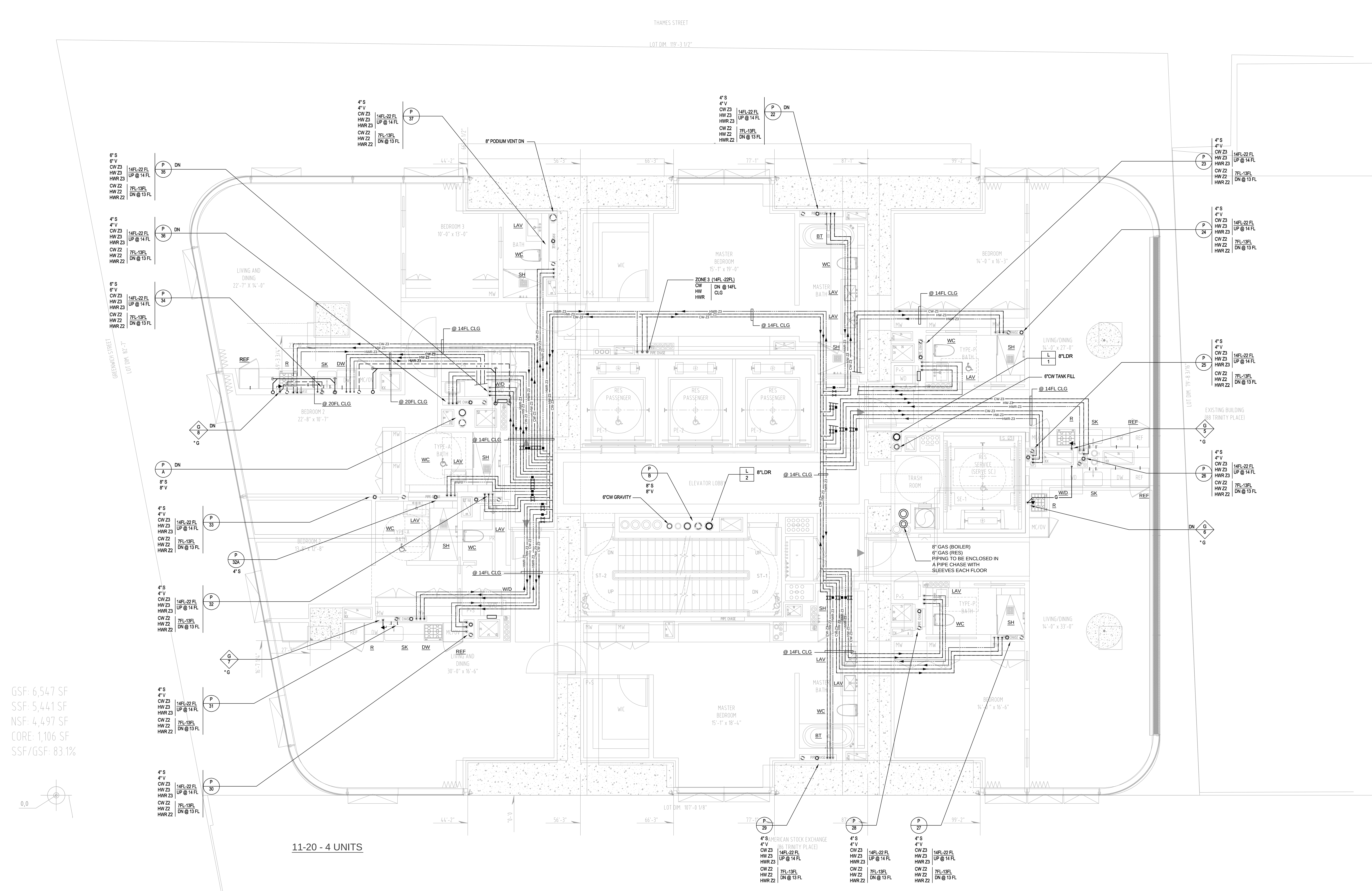
NYC Development Hub

LEVELS 9 & 10
PLUMBING PLAN

SHEET TITLE :

P-110.00

SHEET NUMBER :



11-20 - 4 UNITS

125 GREENWICH

NEW YORK, NY

OWNER :
VS 125 LLC
55 EAST 59TH STREET, 24TH FLOOR
NEW YORK, NY 10022
TEL: 212 616 0400

ARCHITECT :
RAFAEL VIÑOLY ARCHITECTS PC
50 VANDAM STREET
NEW YORK, NY 10013
TEL: 212 924 5060 FAX: 212 924 5858

STRUCTURAL ENGINEER :
DESIMONE CONSULTING ENGINEERS
18 WEST 18TH STREET, 10TH FLOOR
NEW YORK, NY 10011
TEL: 212 532 2211

MEP / FP / IT ENGINEER :
COSENTINI ASSOCIATES - A TETRA TECH COMPANY
2 PENNSYLVANIA PLAZA, 3RD FLOOR
NEW YORK, NY 10121
TEL: 212 615 3606

GEOTECH CONSULTANT :
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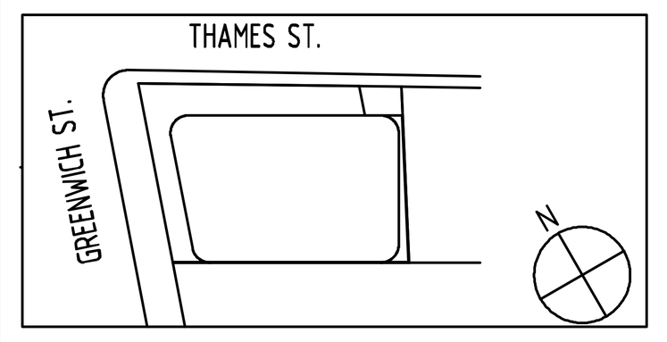

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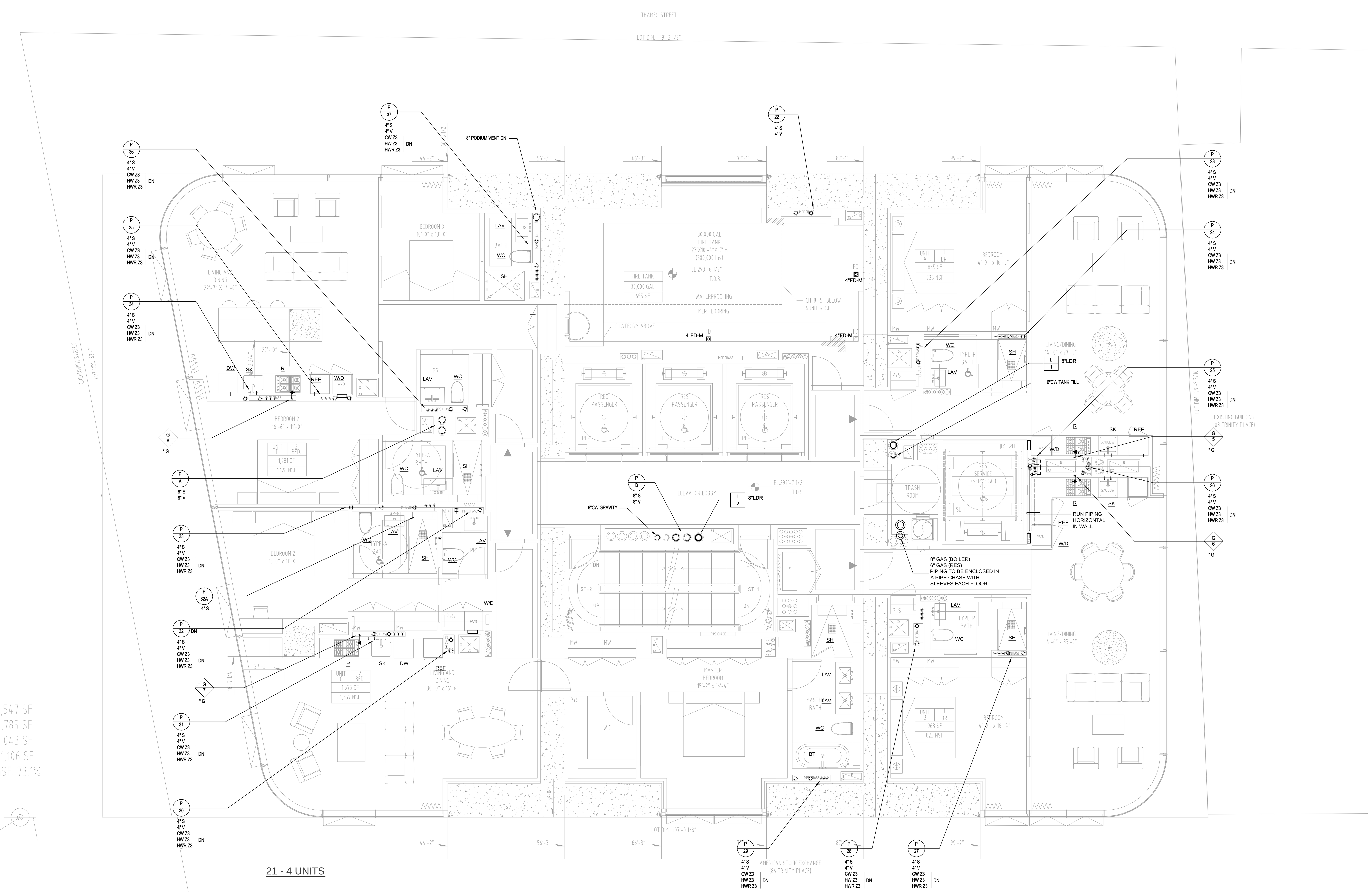
LEVEL 11 TO 20
PLUMBING PLAN

SHEET TITLE :

P-111.00

SHEET NUMBER :



21 - 4 UNITS

125 GREENWICH
NEW YORK, NY

ES917404050 Scan Code

OWNER :
VS 125 LLC
55 EAST 59TH STREET, 24TH FLOOR
NEW YORK, NY 10022
TEL: 212 616 0400

ARCHITECT :
RAFAEL VIÑOLY ARCHITECTS PC
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TEL: 212 924 5060 FAX: 212 924 5858

STRUCTURAL ENGINEER :
DESIMONE CONSULTING ENGINEERS
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NEW YORK, NY 10011
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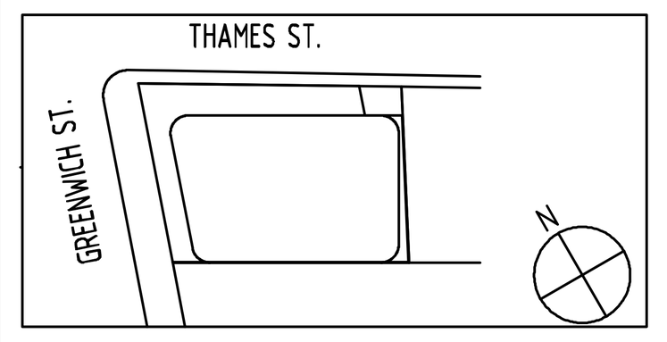

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Buildings
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Under Directive 2 of 1975
Date: 09/27/2016
NYC Development Hub

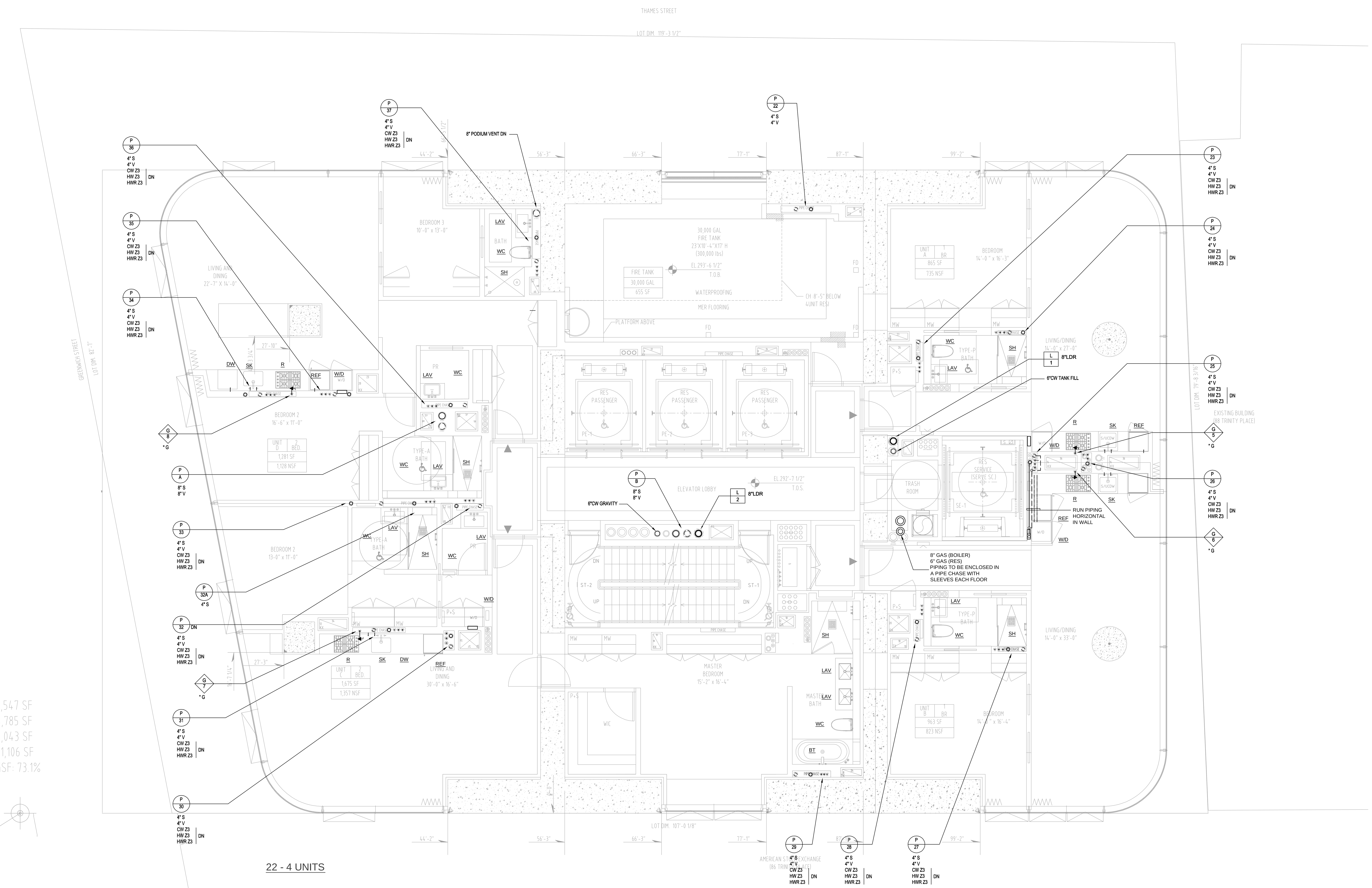
LEVEL 21
PLUMBING PLAN

SHEET TITLE :

P-121.00

SHEET NUMBER :

FILE NAME I:\140294\PLUM\P-121 21 Floor.dwg SAVED ON 9/30/2015 2:31 PM PLOTTED ON 9/30/2015 4:11 PM PLOTTED BY CLIFFORD, THOMAS



22 - 4 UNITS

125 GREENWICH

NEW YORK, NY

OWNER :
VS 125 LLC
55 EAST 59TH STREET, 24TH FLOOR
NEW YORK, NY 10022
TEL: 212 616 0400

ARCHITECT :
RAFAEL VIÑOLY ARCHITECTS PC
50 VANDAM STREET
NEW YORK, NY 10013
TEL: 212 924 5060 FAX: 212 924 5858

STRUCTURAL ENGINEER :
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18 WEST 18TH STREET, 10TH FLOOR
NEW YORK, NY 10011
TEL: 212 532 2211

MEP / FP / IT ENGINEER :
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2 PENNSYLVANIA PLAZA, 3RD FLOOR
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TEL: 212 615 3606

GEOTECH CONSULTANT :
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TEL: 201 794 6900

VERTICAL TRANSPORTATION CONSULTANT :
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EAST HANOVER, NJ 07936
TEL: 973 994 9220

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ARCHITECT'S SEAL

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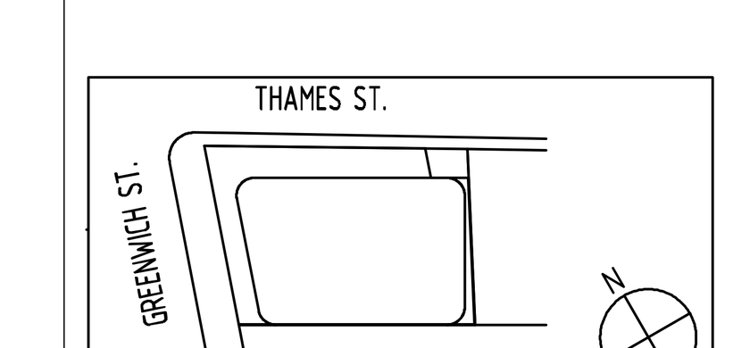

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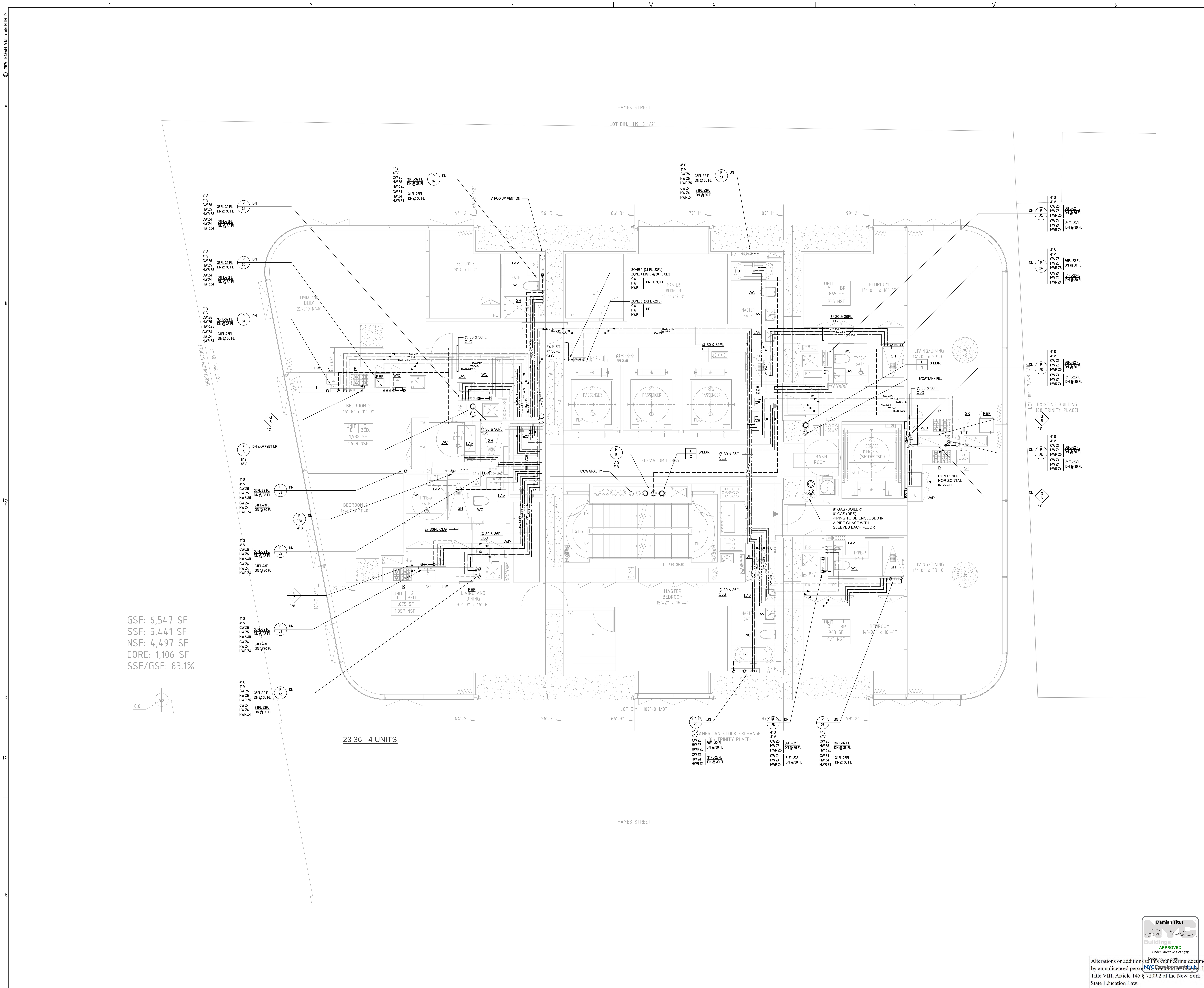
LEVEL 22
PLUMBING PLAN

SHEET TITLE :

P-122.00

SHEET NUMBER :



125 GREENWICH

NEW YORK, NY

OWNER :
VS 125 LLC
55 EAST 59TH STREET, 24TH FLOOR
NEW YORK, NY 10022
TEL: 212 616 0400

ARCHITECT :
RAFAEL VIÑOLY ARCHITECTS PC
50 VANDAM STREET
NEW YORK, NY 10013
TEL: 212 924 5060 FAX: 212 924 5858

STRUCTURAL ENGINEER :
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18 WEST 18TH STREET, 10TH FLOOR
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TEL: 212 532 2211

MEP / FP / IT ENGINEER :
COSENTINI ASSOCIATES - A TETRA TECH COMPANY
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TEL: 201 794 6900

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Buildings
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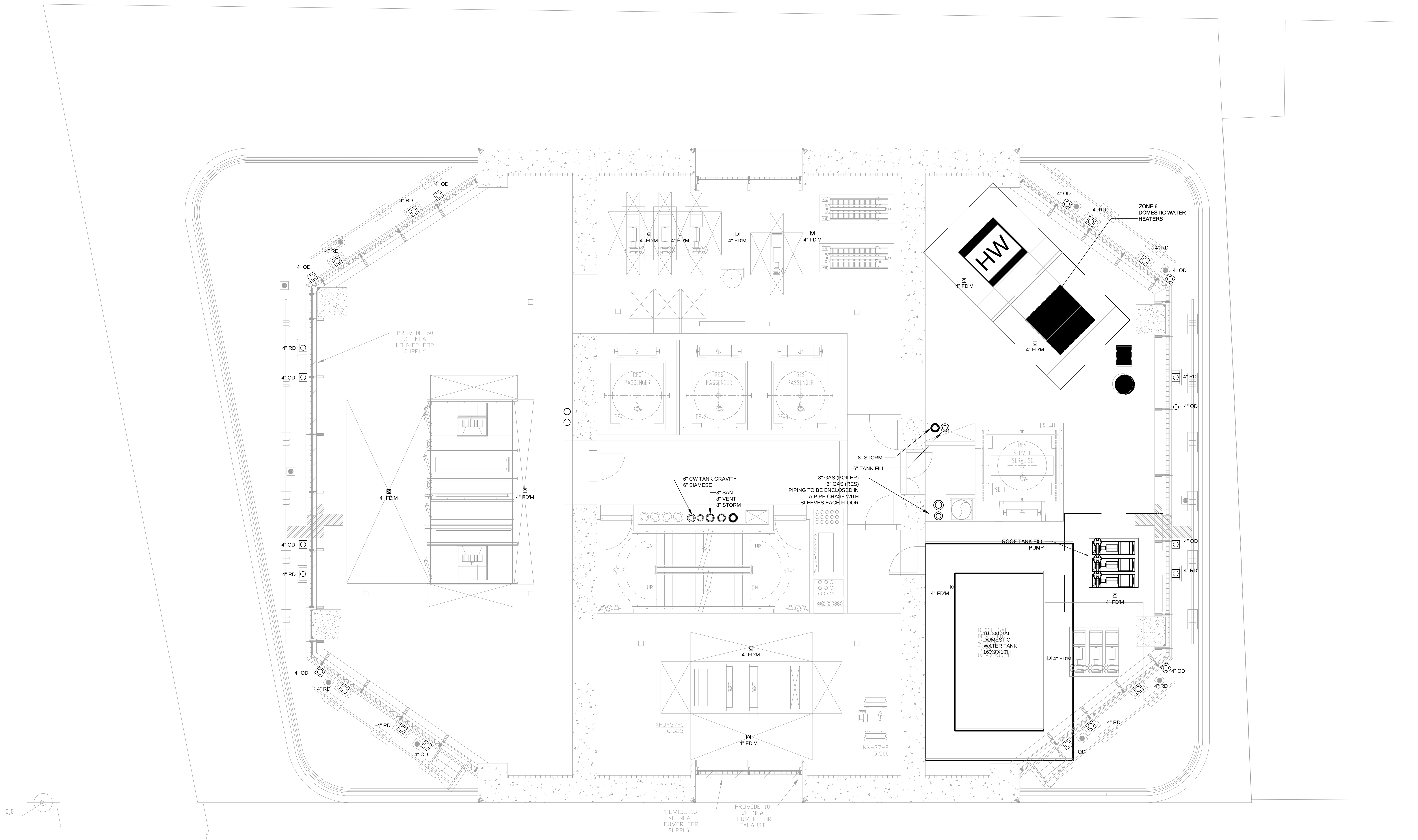
LEVEL 23 TO 36
PLUMBING PLAN

SHEET TITLE :

P-123.00

SHEET NUMBER :



125 GREENWICH
NEW YORK, NY

OWNER :
VS 125 LLC
55 EAST 59TH STREET, 24TH FLOOR
NEW YORK, NY 10022
TEL: 212 616 0400

ARCHITECT :
RAFAEL VIÑOLY ARCHITECTS PC
50 VANDAM STREET
NEW YORK, NY 10013
TEL: 212 924 5060 FAX: 212 924 5858

STRUCTURAL ENGINEER :
DESIMONE CONSULTING ENGINEERS
18 WEST 18TH STREET, 10TH FLOOR
NEW YORK, NY 10011
TEL: 212 532 2211

MEP / FP / IT ENGINEER :
COSENTINI ASSOCIATES - A TETRA TECH COMPANY
2 PENNSYLVANIA PLAZA, 3RD FLOOR
NEW YORK, NY 10121
TEL: 212 615 3606

GEOTECH CONSULTANT :
LANGAN ENGINEERING
619 RIVER DRIVE CENTER 1
ELMWOOD PARK, NJ 07407
TEL: 201 794 6900

VERTICAL TRANSPORTATION CONSULTANT :
VAN DEUSEN & ASSOCIATES
120 EAGLE ROCK AVENUE, SUITE 310
EAST HANOVER, NJ 07936
TEL: 973 994 9220

PHASE : DOB SUBMITTAL

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ISSUE NO.	ISSUE DATE	DESCRIPTION
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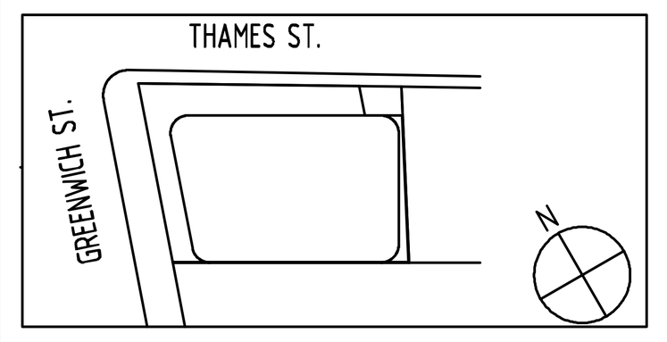

KEY PLAN AND NORTH SIGN

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Buildings
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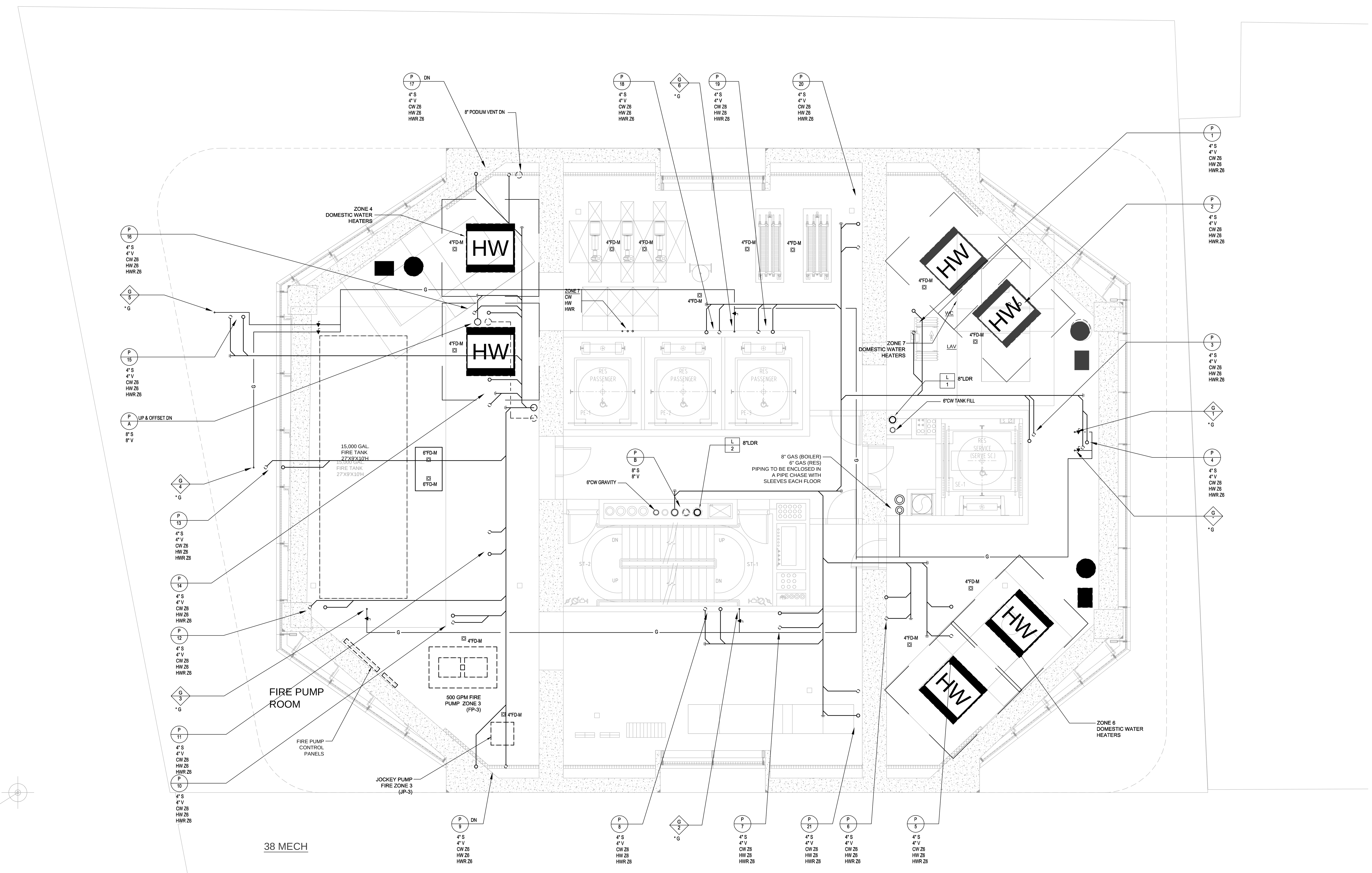
LEVEL 37 PLUMBING PLANS

SHEET TITLE :

P-137.00

SHEET NUMBER :



125 GREENWICH

NEW YORK, NY

OWNER :
VS 125 LLC
55 EAST 59TH STREET, 24TH FLOOR
NEW YORK, NY 10022
TEL: 212 616 0400

ARCHITECT :
RAFAEL VIÑOLY ARCHITECTS PC
50 VANDAM STREET
NEW YORK, NY 10013
TEL: 212 924 5060 FAX: 212 924 5858

STRUCTURAL ENGINEER :
DESIMONE CONSULTING ENGINEERS
18 WEST 18TH STREET, 10TH FLOOR
NEW YORK, NY 10011
TEL: 212 532 2211

MEP / FP / IT ENGINEER :
COSENTINI ASSOCIATES - A TETRA TECH COMPANY
2 PENNSYLVANIA PLAZA, 3RD FLOOR
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TEL: 212 615 3606

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619 RIVER DRIVE CENTER 1
ELMWOOD PARK, NJ 07407
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EAST HANOVER, NJ 07936
TEL: 973 994 9220

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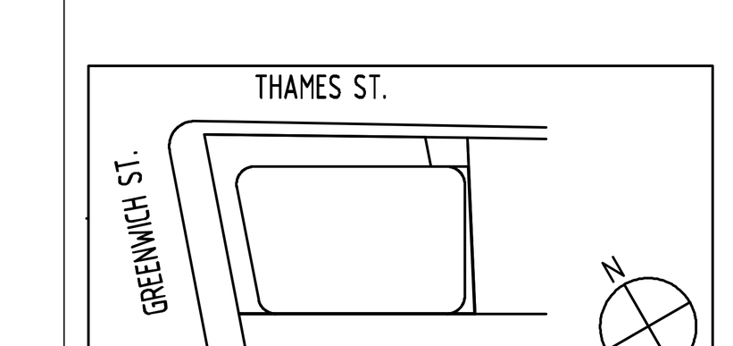

KEY PLAN AND NORTH SIGN

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Buildings
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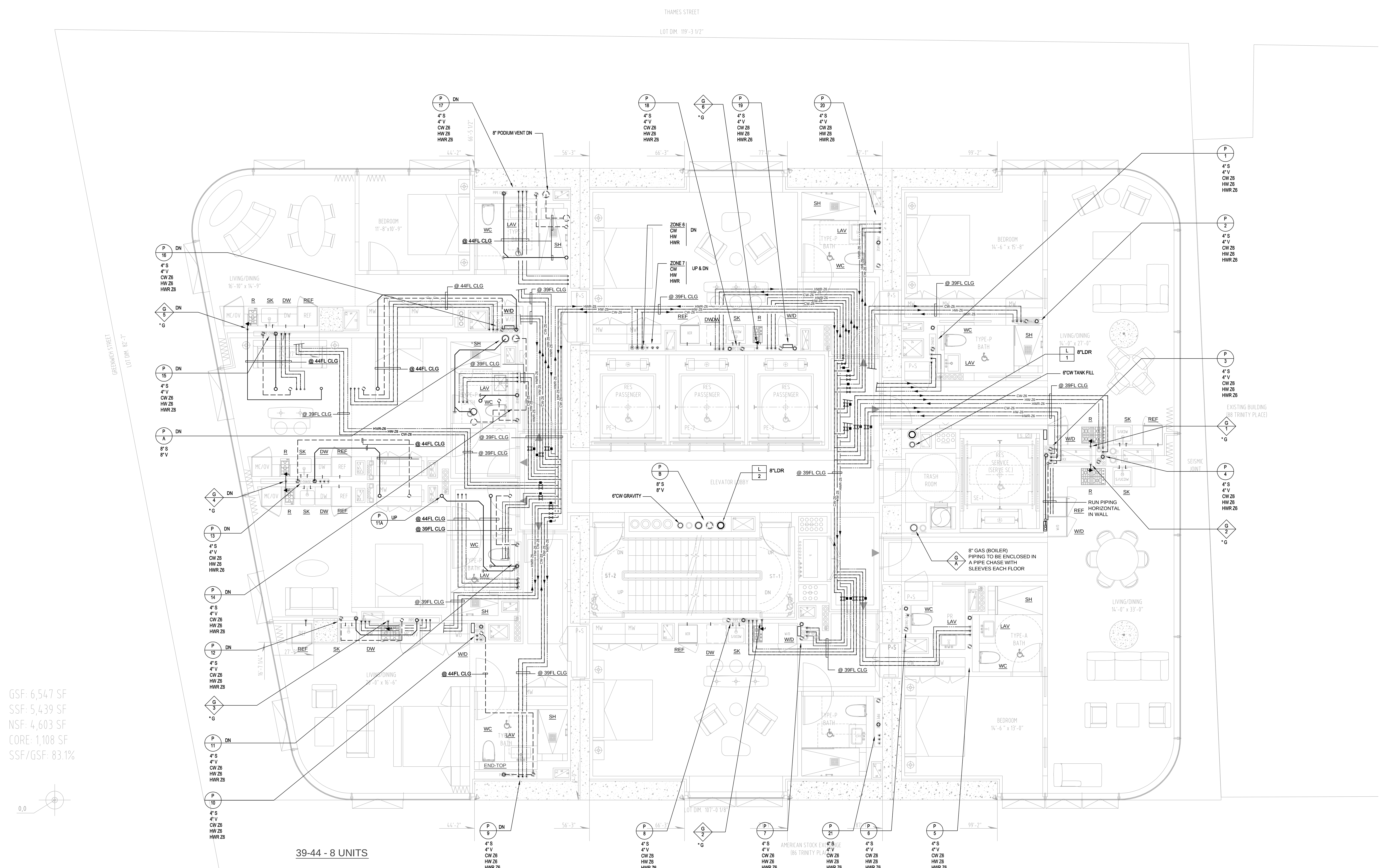
LEVEL 38
PLUMBING PLAN

SHEET TITLE :

P-138.00

SHEET NUMBER :



125 GREENWICH
NEW YORK, NY

OWNER :
VS 125 LLC
55 EAST 59TH STREET, 24TH FLOOR
NEW YORK, NY 10022
TEL: 212 616 0400

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ARCHITECT'S SEAL

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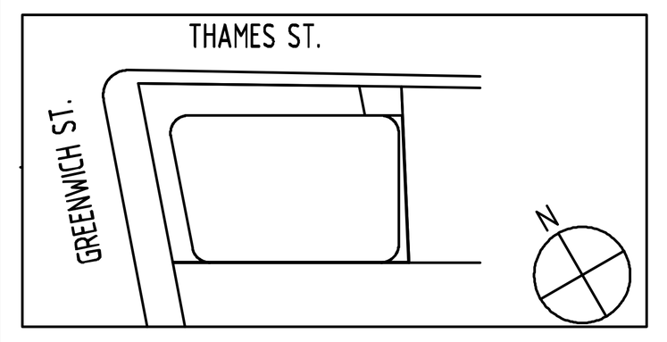

KEY PLAN AND NORTH SIGN

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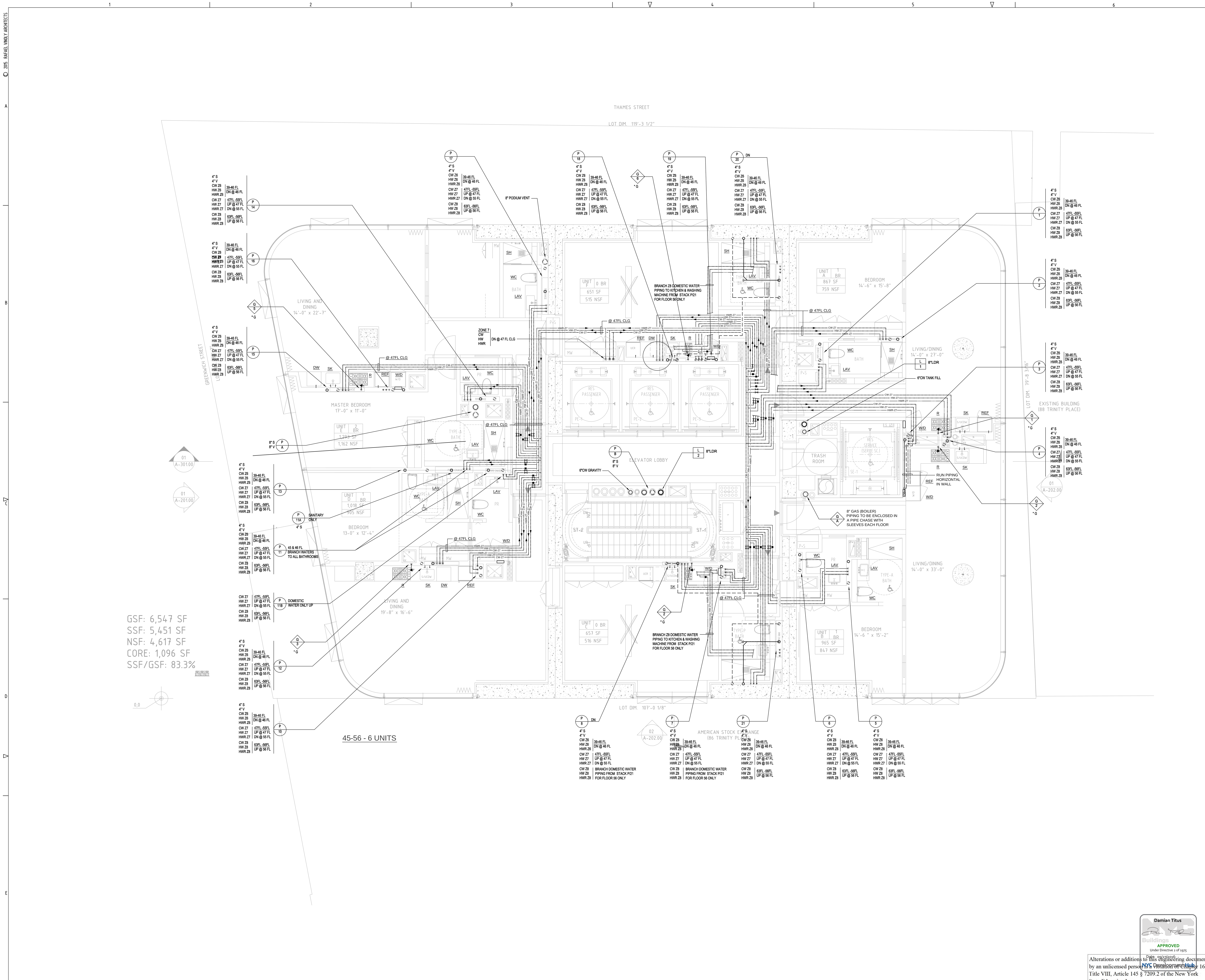
APPROVED
Under Directive 2 of 1975

39-44 FLOOR PLUMBING PLAN

SHEET TITLE :

P-139.00

SHEET NUMBER :



125 GREENWICH
NEW YORK, NY

OWNER :
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EAST HANOVER, NJ 07936
TEL: 973 994 9220

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STATE OF NEW YORK · MICHAEL W. MAYBAUM · No. 059357 P.E. · LICENSED PROFESSIONAL ENGINEER

ARCHITECT'S SEAL

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KEY PLAN AND NORTH SIGN

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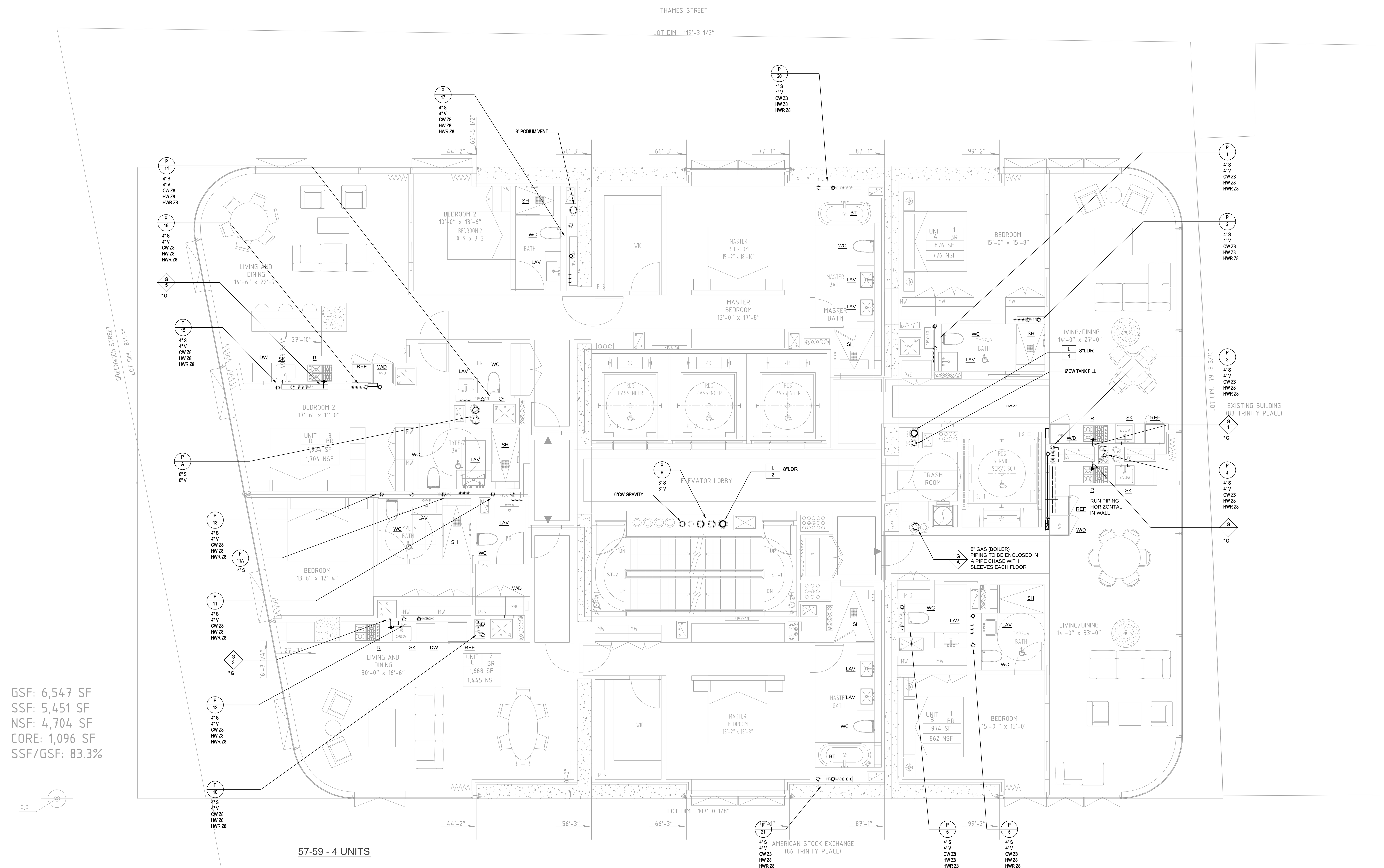
LEVEL 45 TO 56
PLUMBING PLAN

SHEET TITLE :

P-145.00

SHEET NUMBER :



125 GREENWICH
NEW YORK, NY

OWNER :
VS 125 LLC
55 EAST 59TH STREET, 24TH FLOOR
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TEL: 212 616 0400

ARCHITECT :
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120 EAGLE ROCK AVENUE, SUITE 310
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STATE OF NEW YORK · MICHAEL W. MAYBAUM · No. 059357 P.E. · LICENSED PROFESSIONAL ENGINEER

ARCHITECT'S SEAL

ISSUE NO.	ISSUE DATE	DESCRIPTION
01	9/30/15	DOB SUBMITTAL

THAMES ST.
GREENWICH ST.
N

KEY PLAN AND NORTH SIGN

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SCALE 1/4" = 1'-0"

LEVEL 57 TO 59
PLUMBING PLAN

SHEET TITLE :

P-157.00

SHEET NUMBER :

Damian Titus
Buildings
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Under Directive 2 of 1975

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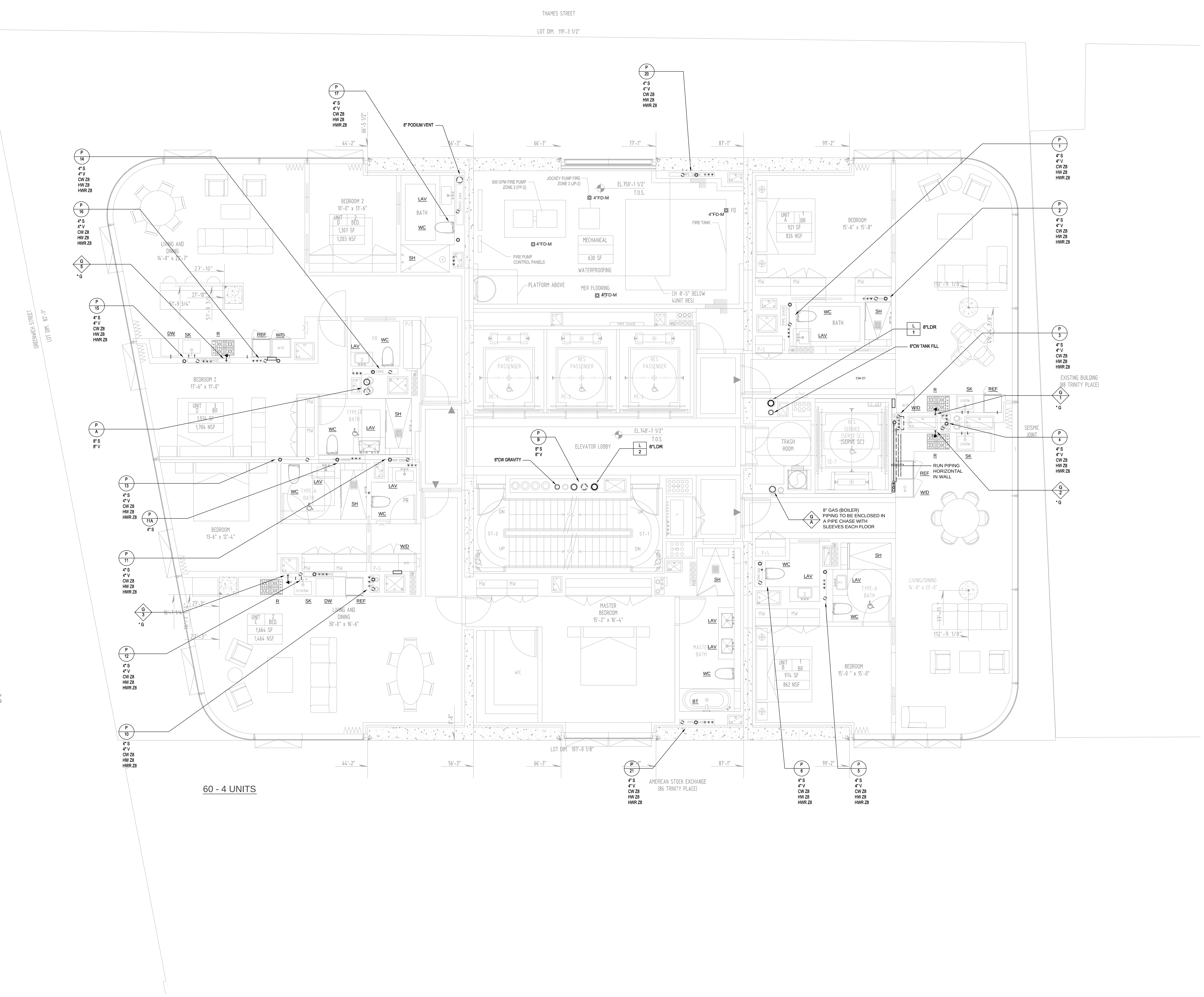

GSF: 6,547 SF
SSF: 4,833 SF
NSF: 4,338 SF
CORE: 1,081 SF
SSF/GSF: 73.8%

60 - 4 UNITS

125 GREENWICH
NEW YORK, NY

OWNER :
VS 125 LLC
55 EAST 59TH STREET, 24TH FLOOR
NEW YORK, NY 10022
TEL: 212 616 0400

ARCHITECT :
RAFAEL VIÑOLY ARCHITECTS PC
50 VANDAM STREET
NEW YORK, NY 10013
TEL: 212 924 5060 FAX: 212 924 5858

STRUCTURAL ENGINEER :
DESIMONE CONSULTING ENGINEERS
18 WEST 18TH STREET, 10TH FLOOR
NEW YORK, NY 10011
TEL: 212 532 2211

MEP / FP / IT ENGINEER :
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2 PENNSYLVANIA PLAZA, 3RD FLOOR
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TEL: 212 615 3606

GEOTECH CONSULTANT :
LANGAN ENGINEERING
619 RIVER DRIVE CENTER 1
ELMWOOD PARK, NJ 07407
TEL: 201 794 6900

VERTICAL TRANSPORTATION CONSULTANT :
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ARCHITECT'S SEAL

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THAMES ST.
GREENWICH ST.

KEY PLAN AND NORTH SIGN

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LEVEL 60
PLUMBING PLAN

SHEET TITLE :

P-160.00

SHEET NUMBER :

Damian Titus
Buildings
APPROVED
Under Directive 2 of 1975
Date: 09/27/2016
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ES401326216 Scan Code

Job Number ES771753318 Scan Code

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NEW YORK, NY 10022
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50 VANDAM STREET
NEW YORK, NY 10013
TEL: 212 924 5060 FAX: 212 924 5858

STRUCTURAL ENGINEER :
DESIMONE CONSULTING ENGINEERS
18 WEST 18TH STREET, 10TH FLOOR
NEW YORK, NY 10011
TEL: 212 532 2211

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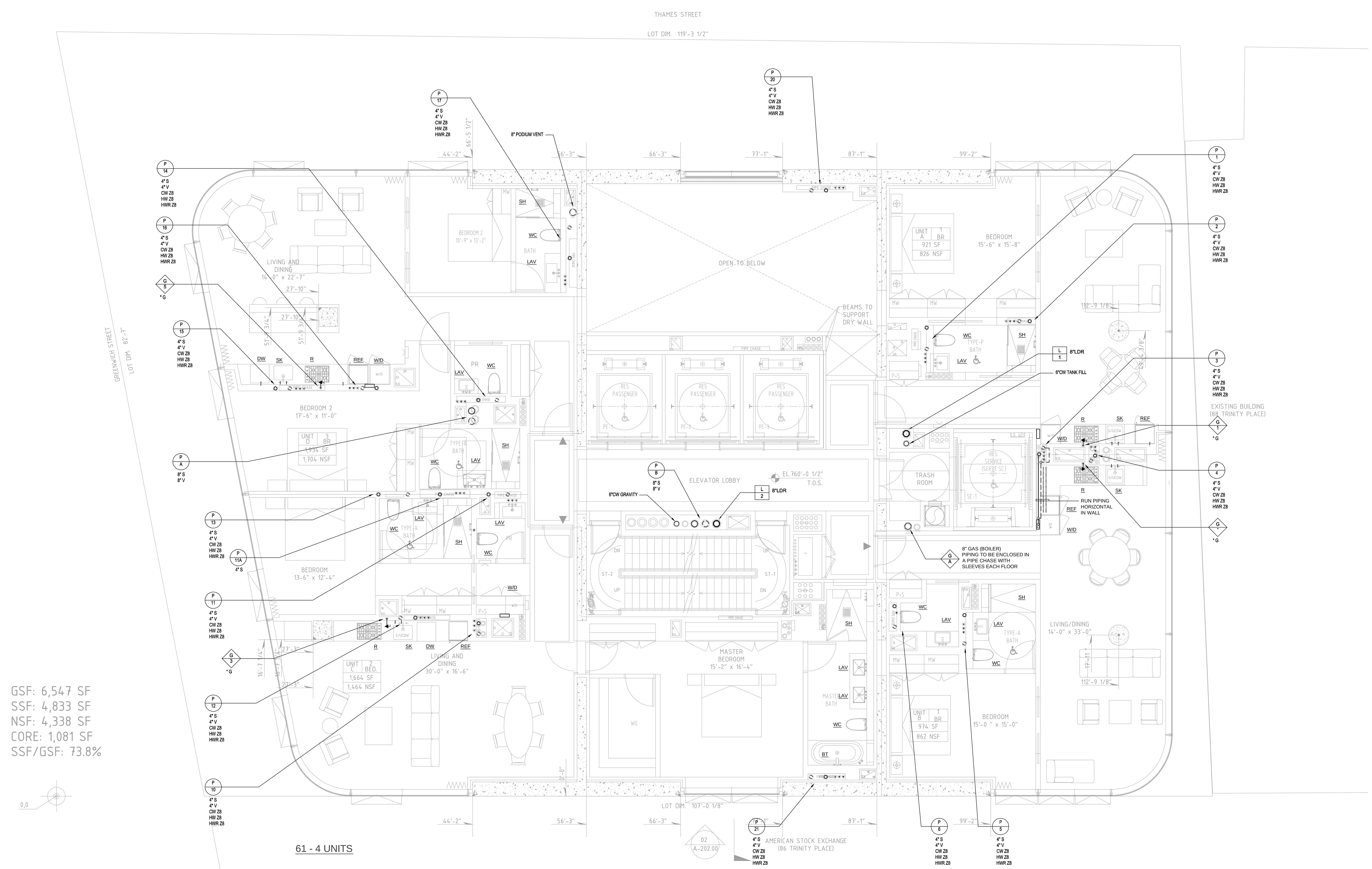

61 - 4 UNITS

PHASE : DOB SUBMITTAL

ARCHITECT'S SEAL

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LEVEL 61 PLUMBING PLAN

SHEET TITLE :

P-161.00

SHEET NUMBER :

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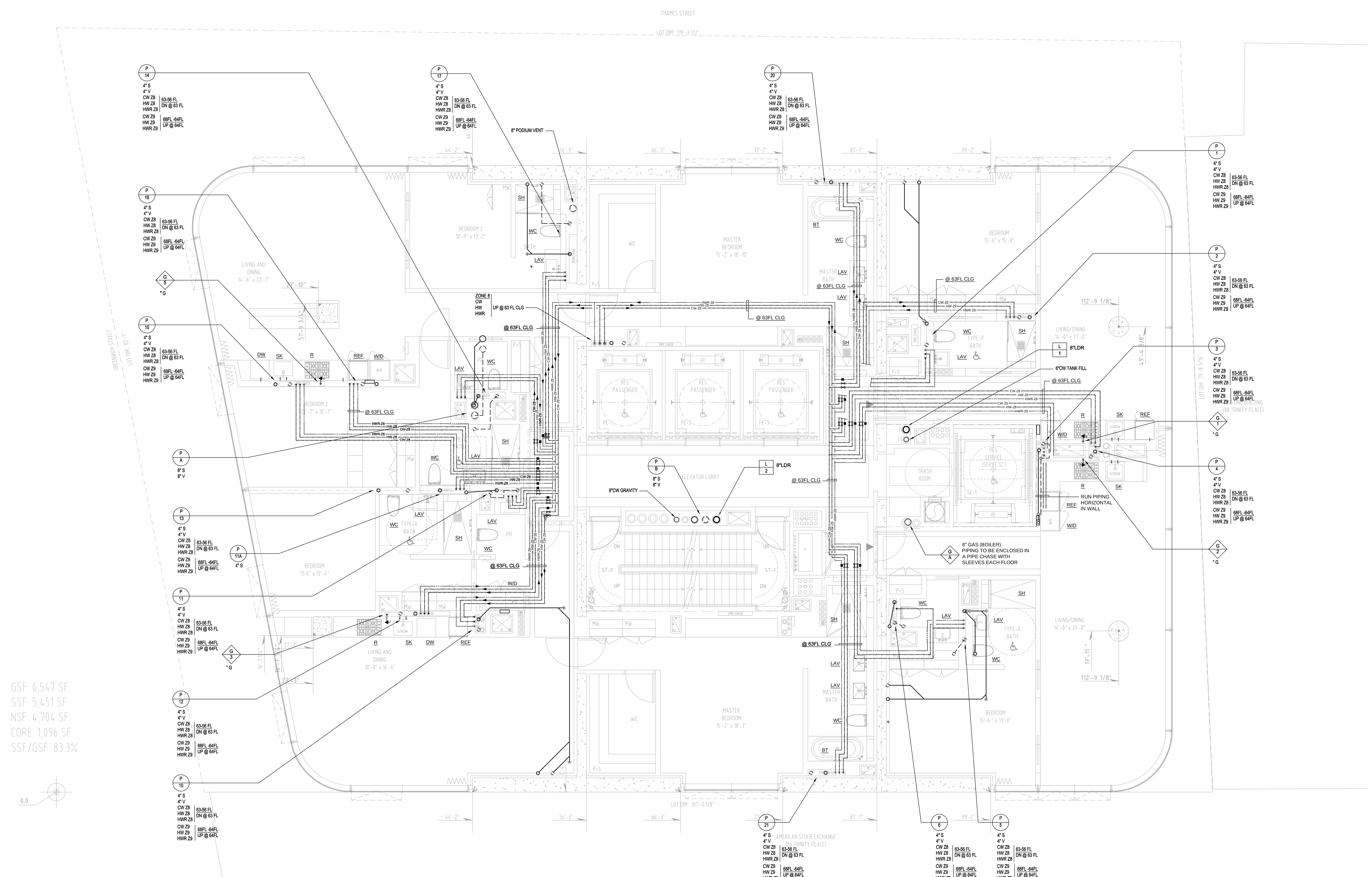

125 GREENWICH
NEW YORK, NY

OWNER :
VS 125 LLC
55 EAST 59TH STREET, 24TH FLOOR
NEW YORK, NY 10022
TEL: 212 616 0400

ARCHITECT :
RAFAEL VIÑOLY ARCHITECTS PC
50 VANDAM STREET
NEW YORK, NY 10013
TEL: 212 924 5060 FAX: 212 924 5858

STRUCTURAL ENGINEER :
DESIMONE CONSULTING ENGINEERS
18 WEST 18TH STREET, 10TH FLOOR
NEW YORK, NY 10011
TEL: 212 532 2211

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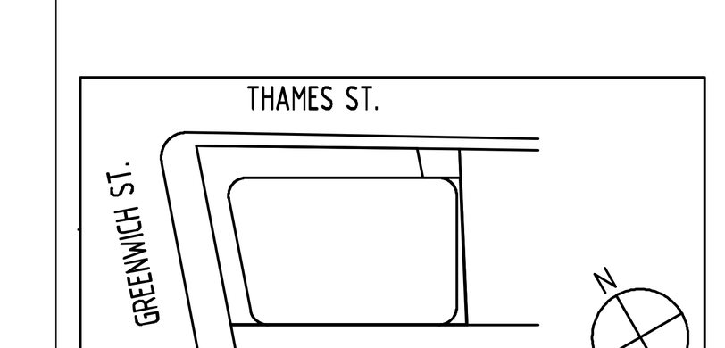
01	9/30/15	DOB SUBMITTAL



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SCALE 1/4" = 1'-0"

LEVEL 62 TO 64
PLUMBING PLAN

SHEET TITLE :

P-162.00

SHEET NUMBER :

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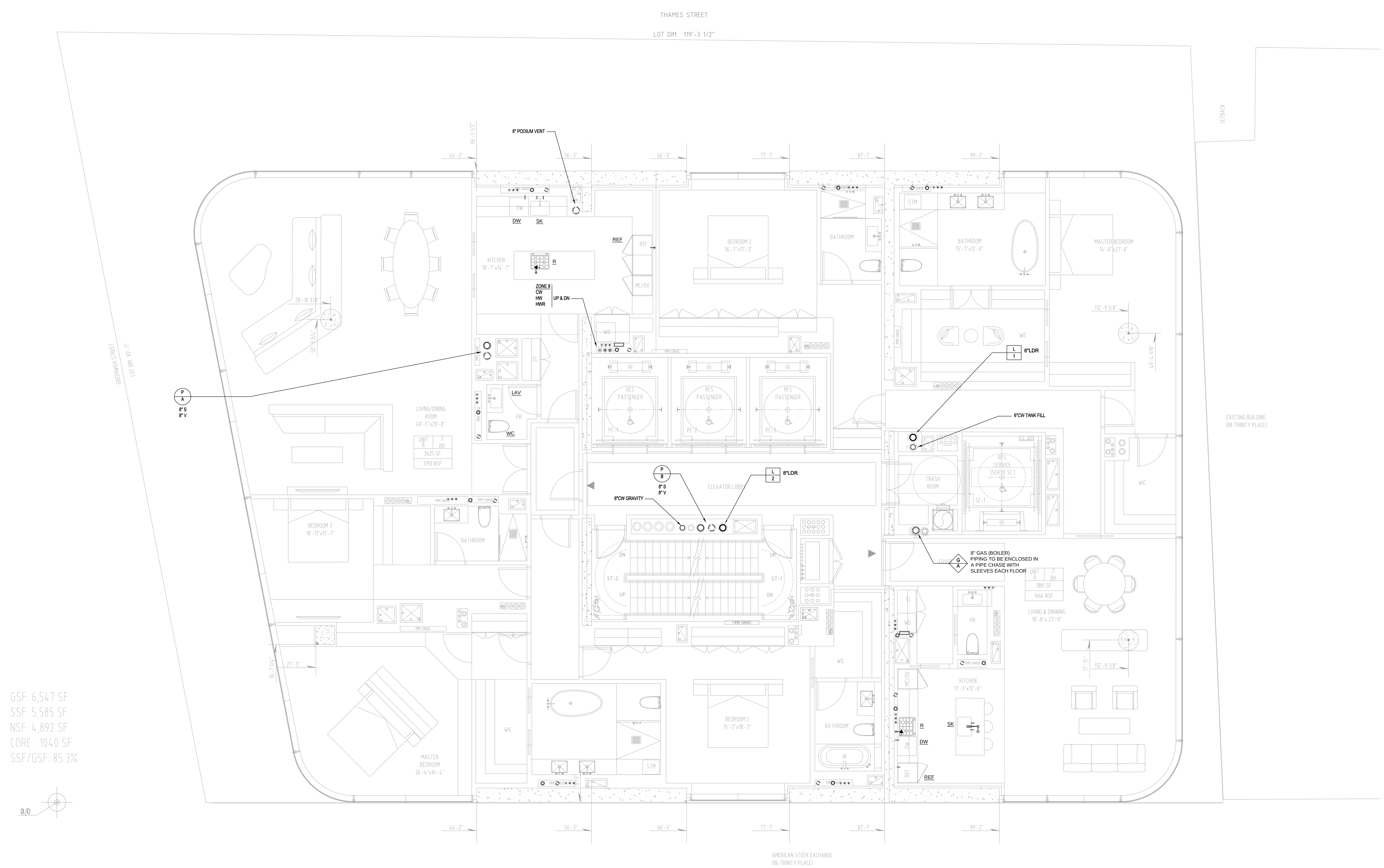

125 GREENWICH
NEW YORK, NY

OWNER :
VS 125 LLC
55 EAST 59TH STREET, 24TH FLOOR
NEW YORK, NY 10022
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ARCHITECT :
RAFAEL VIÑOLY ARCHITECTS PC
50 VANDAM STREET
NEW YORK, NY 10013
TEL: 212 924 5060 FAX: 212 924 5858

STRUCTURAL ENGINEER :
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TEL: 212 532 2211

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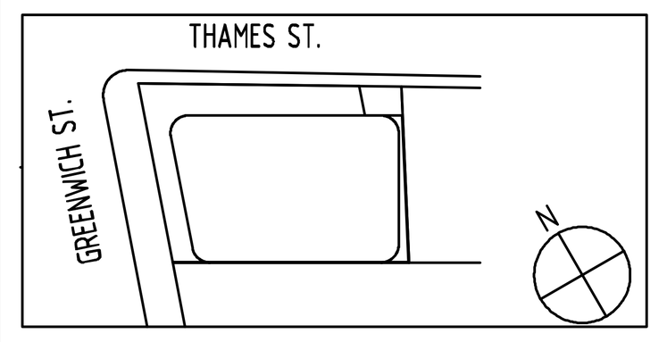

KEY PLAN AND NORTH SIGN

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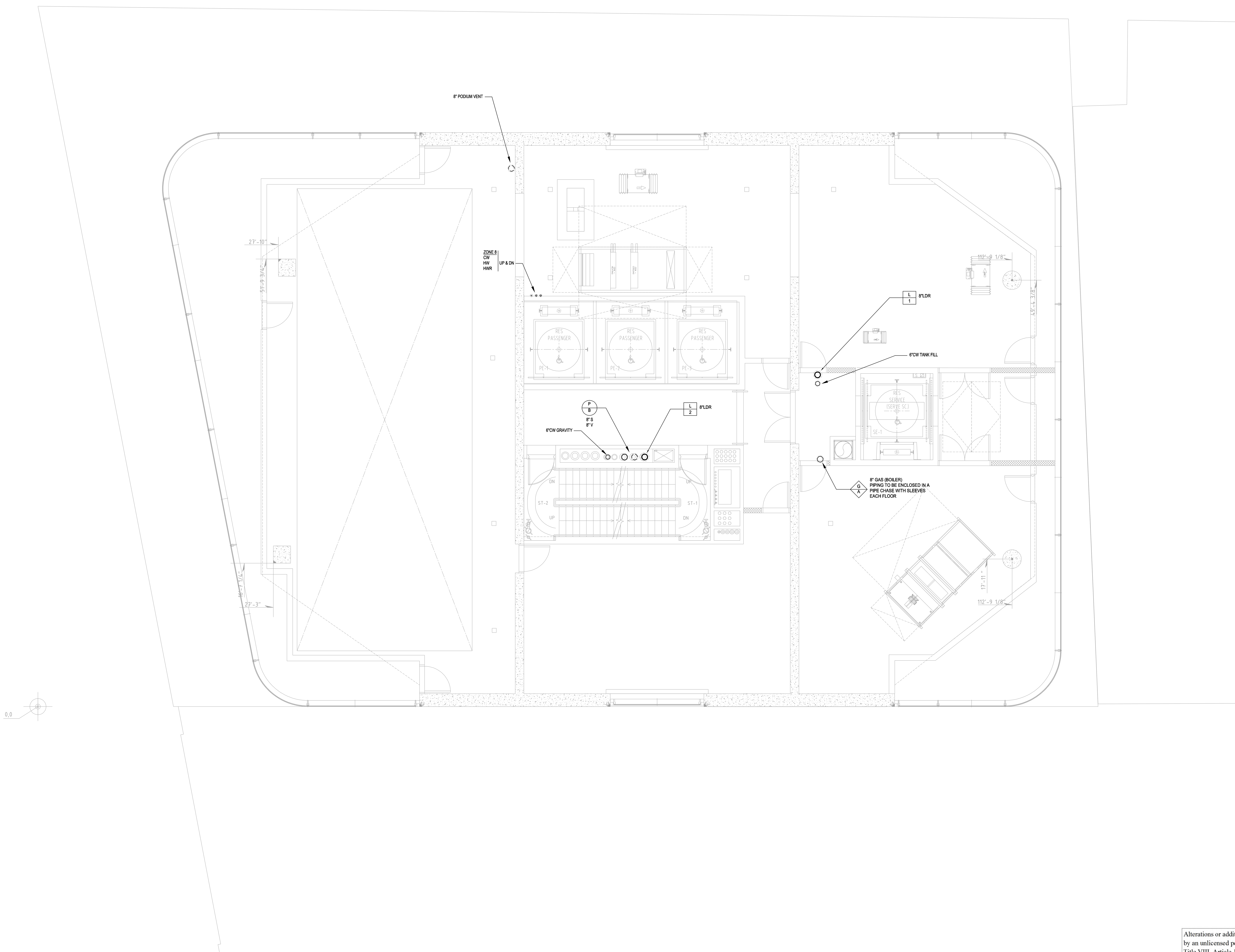
LEVEL 65 & 66
PLUMBING PLAN

SHEET TITLE :

P-165.00

SHEET NUMBER :



125 GREENWICH

NEW YORK, NY

OWNER :
VS 125 LLC
55 EAST 59TH STREET, 24TH FLOOR
NEW YORK, NY 10022
TEL: 212 616 0400

ARCHITECT :
RAFAEL VIÑOLY ARCHITECTS PC
50 VANDAM STREET
NEW YORK, NY 10013
TEL: 212 924 5060 FAX: 212 924 5858

STRUCTURAL ENGINEER :
DESIMONE CONSULTING ENGINEERS
18 WEST 18TH STREET, 10TH FLOOR
NEW YORK, NY 10011
TEL: 212 532 2211

MEP / FP / IT ENGINEER :
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TEL: 201 794 6900

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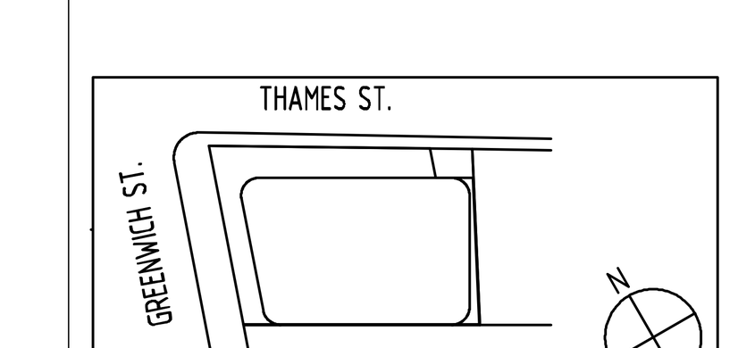

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Buildings
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Under Directive 2 of 1975
Date: 09/27/2016:
NYC Development Hub

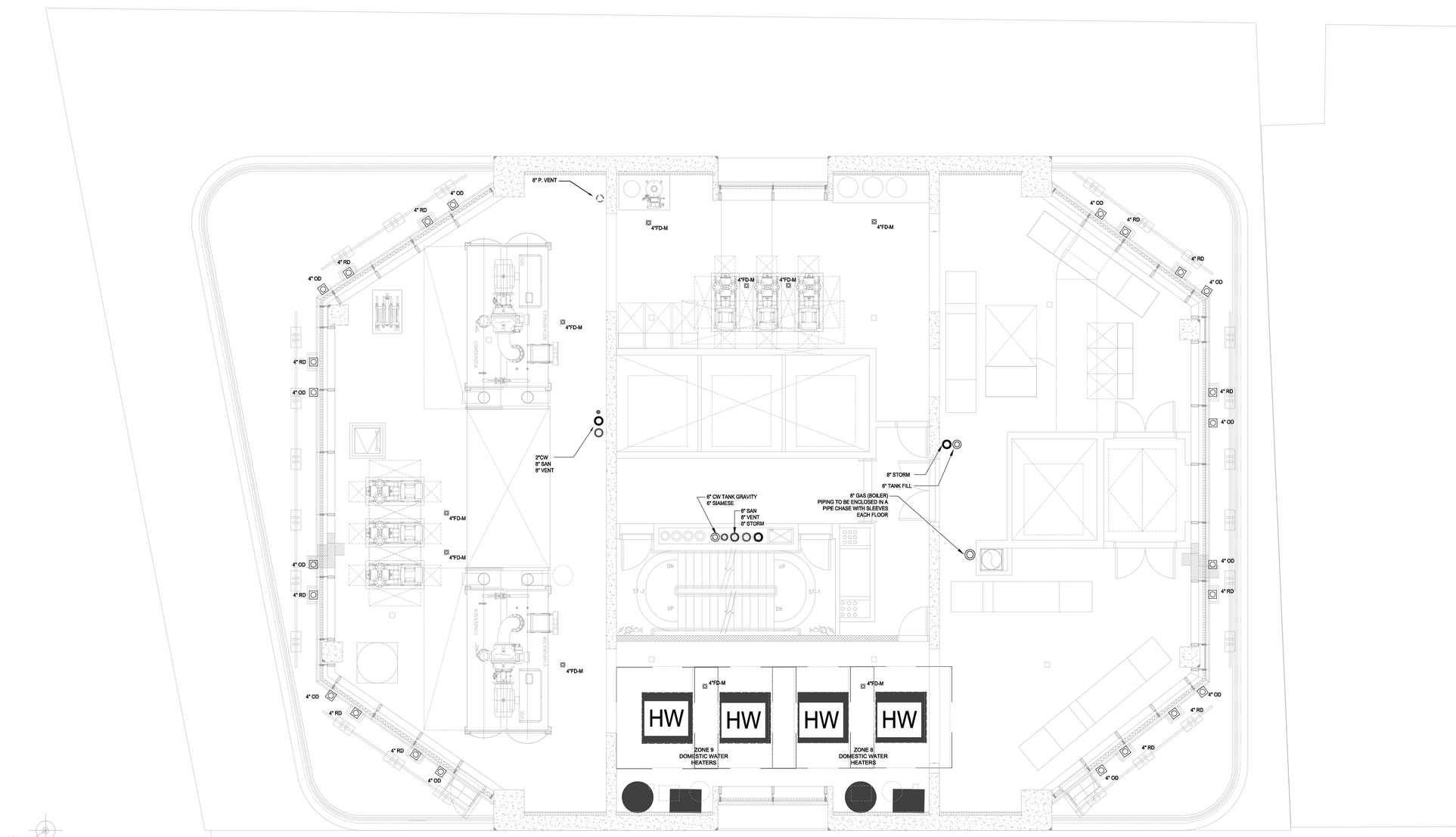
LEVEL 67
PLUMBING PLANS

SHEET TITLE :

P-167.00

SHEET NUMBER :

FILE NAME I:\140294\PLUM\P-167 67th floor.dwg SAVED ON 9/30/2015 2:58 PM PLOTTED ON 9/30/2015 4:15 PM PLOTTED BY CLIFFORD, THOMAS



DEPT OF BLDGS 121183799 Job Number

ES084033640 Scan Code

125
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MICHAEL W. MAYBAUM
No. 059357 P.E.

ARCHITECT'S SEAL

ISSUE NO.	ISSUE DATE	DESCRIPTION
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Buildings
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Under Directive 2 of 1975
Date: 09/27/2016:
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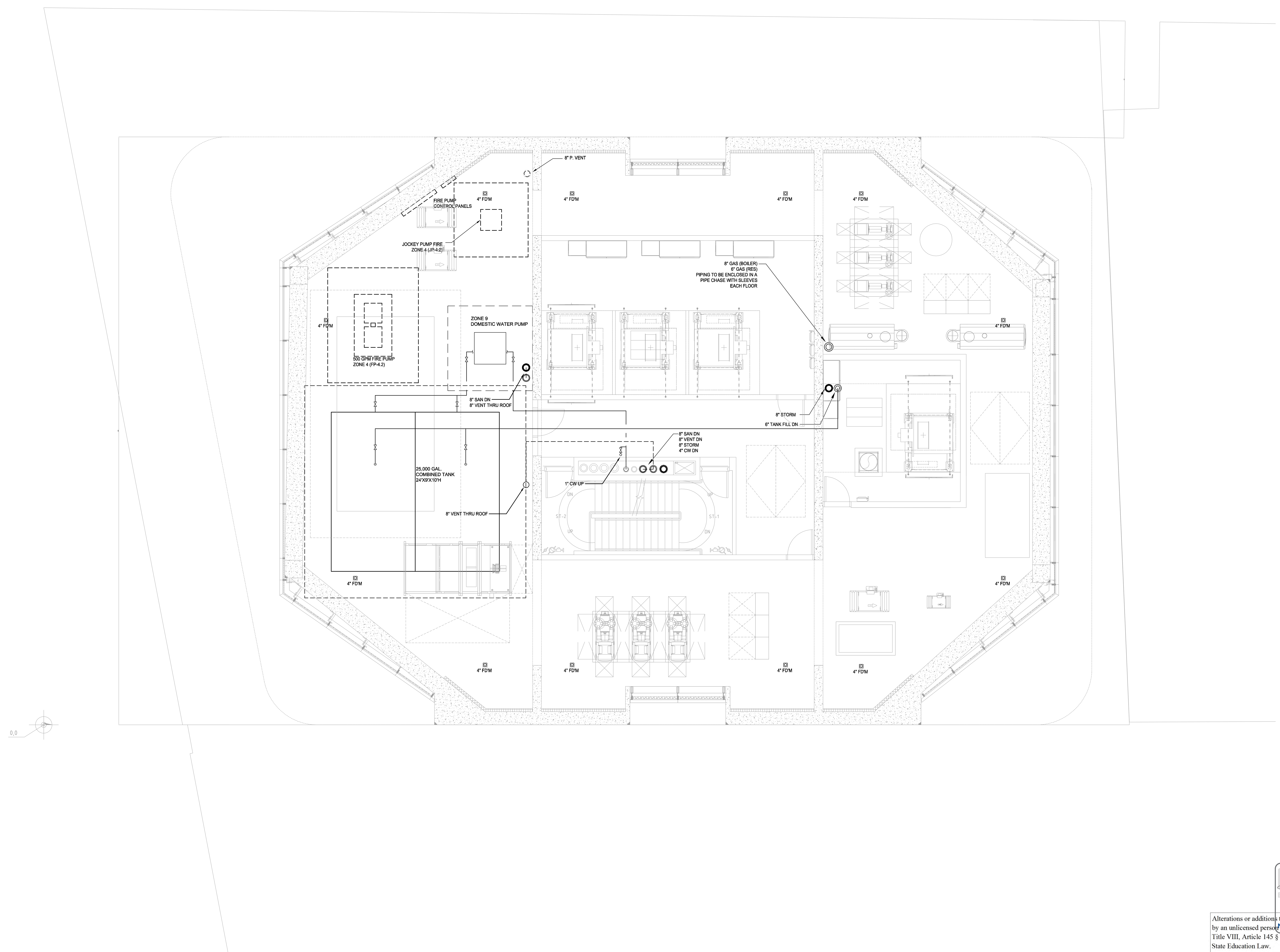
LEVEL 68
PLUMBING PLANS

SHEET TITLE :

P-168.00

SHEET NUMBER :



125 GREENWICH
NEW YORK, NY

OWNER :
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55 EAST 59TH STREET, 24TH FLOOR
NEW YORK, NY 10022
TEL: 212 616 0400

ARCHITECT :
RAFAEL VIÑOLY ARCHITECTS PC
50 VANDAM STREET
NEW YORK, NY 10013
TEL: 212 924 5060 FAX: 212 924 5858

STRUCTURAL ENGINEER :
DESIMONE CONSULTING ENGINEERS
18 WEST 18TH STREET, 10TH FLOOR
NEW YORK, NY 10011
TEL: 212 532 2211

MEP / FP / IT ENGINEER :
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NEW YORK, NY 10121
TEL: 212 615 3606

GEOTECH CONSULTANT :
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619 RIVER DRIVE CENTER 1
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VERTICAL TRANSPORTATION CONSULTANT :
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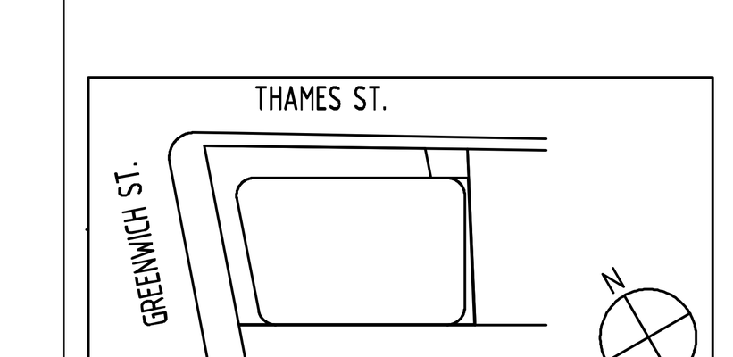

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LEVEL 69
PLUMBING PLANS

SHEET TITLE :

P-169.00

SHEET NUMBER :

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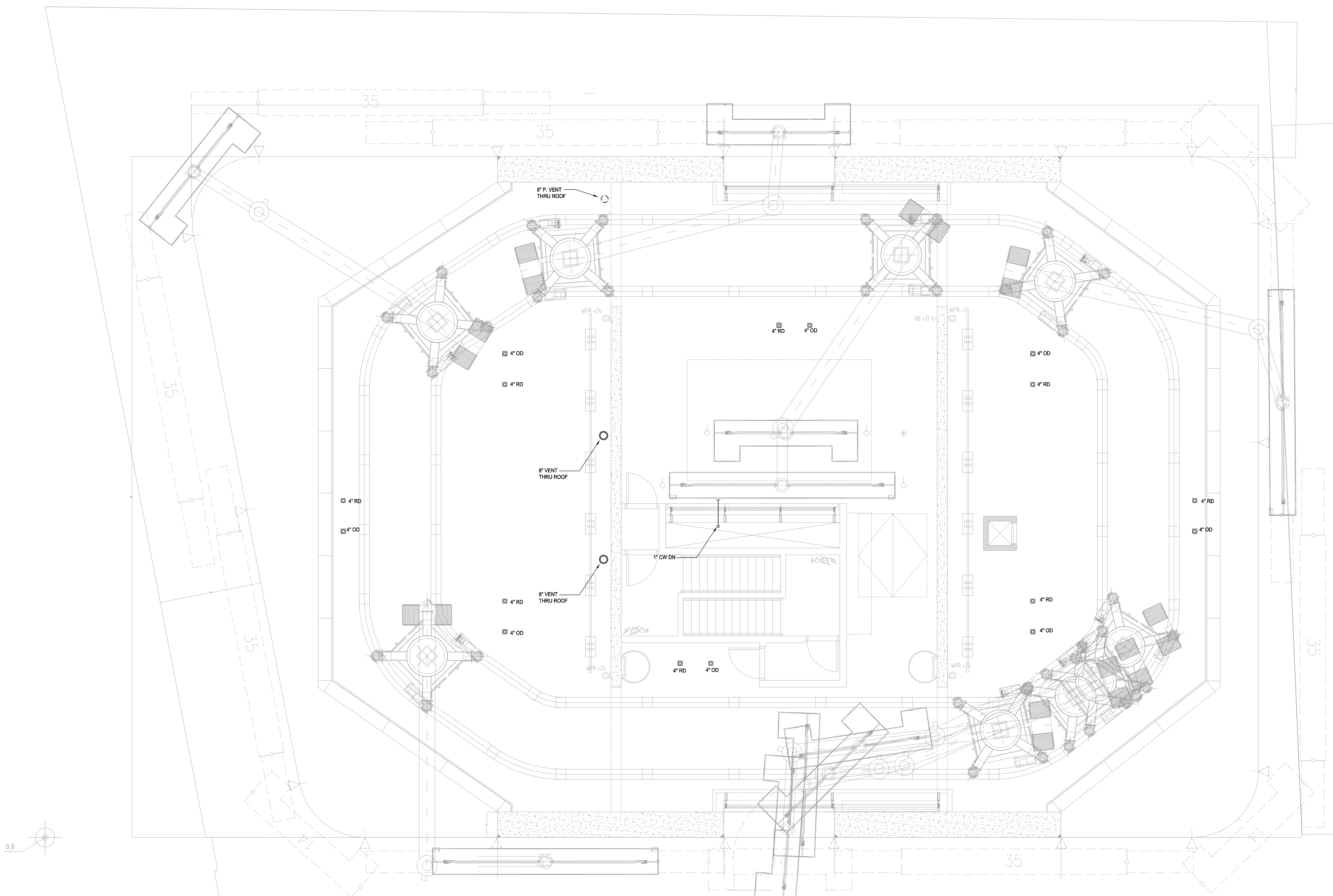

125 GREENWICH
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55 EAST 59TH STREET, 24TH FLOOR
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TEL: 212 924 5060 FAX: 212 924 5858

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MICHAEL W. MAYBAUM
No. 059357 P.E.
LICENSED PROFESSIONAL ENGINEER

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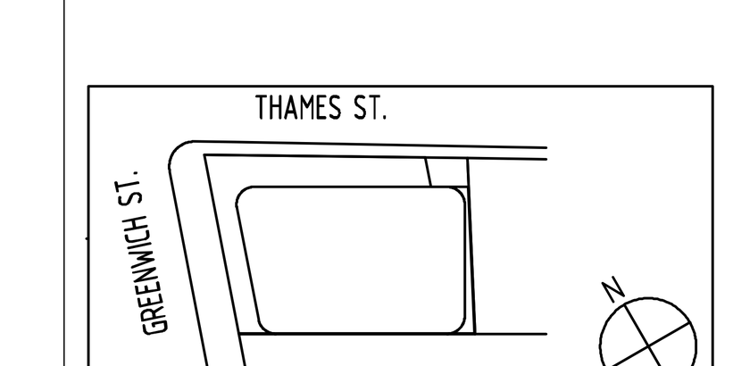

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Buildings
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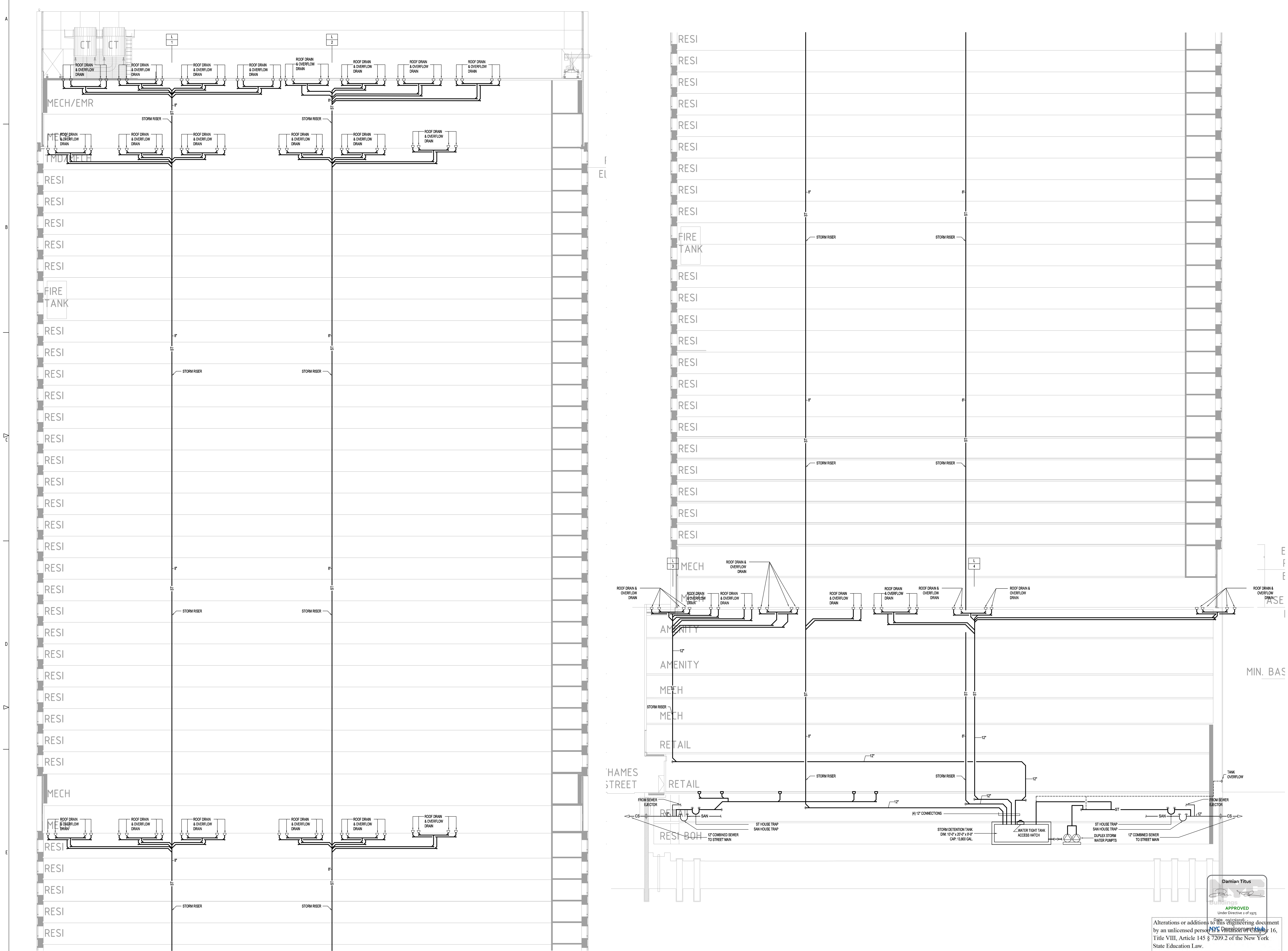
ROOF
PLUMBING PLANS

SHEET TITLE :

P-170.00

SHEET NUMBER :



125 GREENWICH
NEW YORK, NY

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TEL: 201 794 6900

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THAMES ST.
GREENWICH ST.
N

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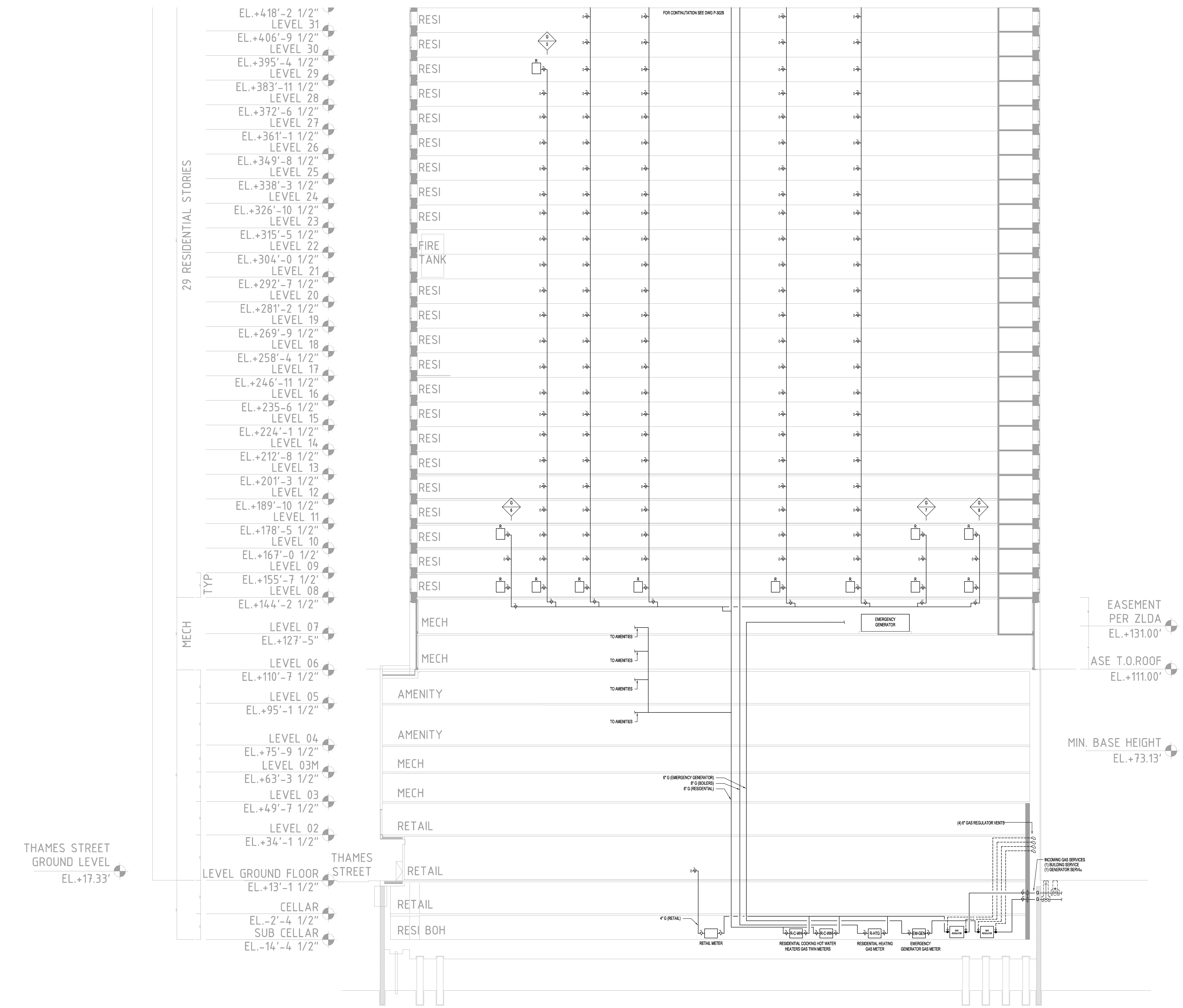
PLUMBING STORM RISER DIAGRAM

SHEET TITLE :

P-301.00

SHEET NUMBER :



125 GREENWICH
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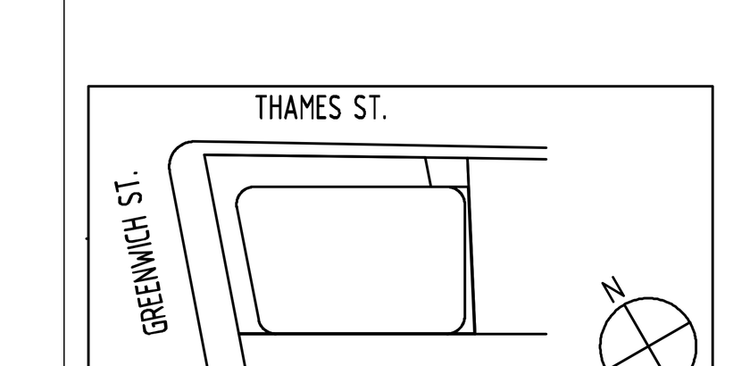

KEY PLAN AND NORTH SIGN

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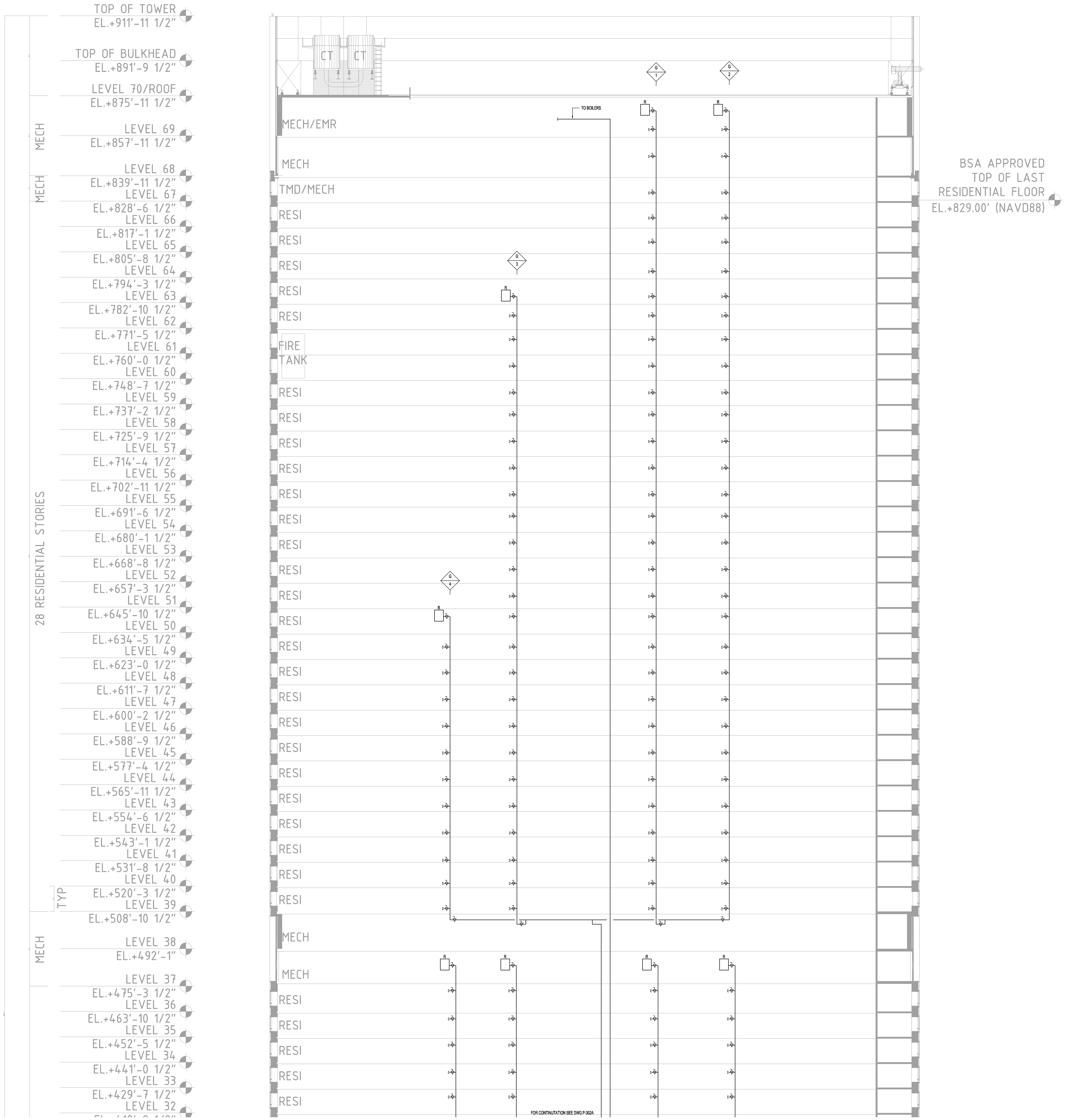
PLUMBING GAS RISER DIAGRAM SHEET #1

SHEET TITLE :

P-302A.00

SHEET NUMBER :



125 GREENWICH

NEW YORK, NY

OWNER :
VS 125 LLC
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NEW YORK, NY 10022
TEL: 212 616 0400

ARCHITECT :
RAFAEL VIÑOLY ARCHITECTS PC
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LICENSED PROFESSIONAL ENGINEER

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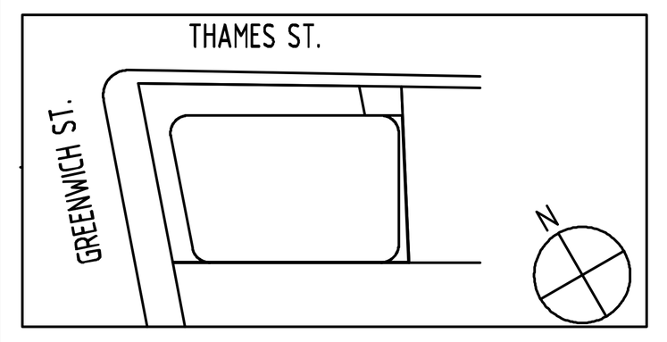

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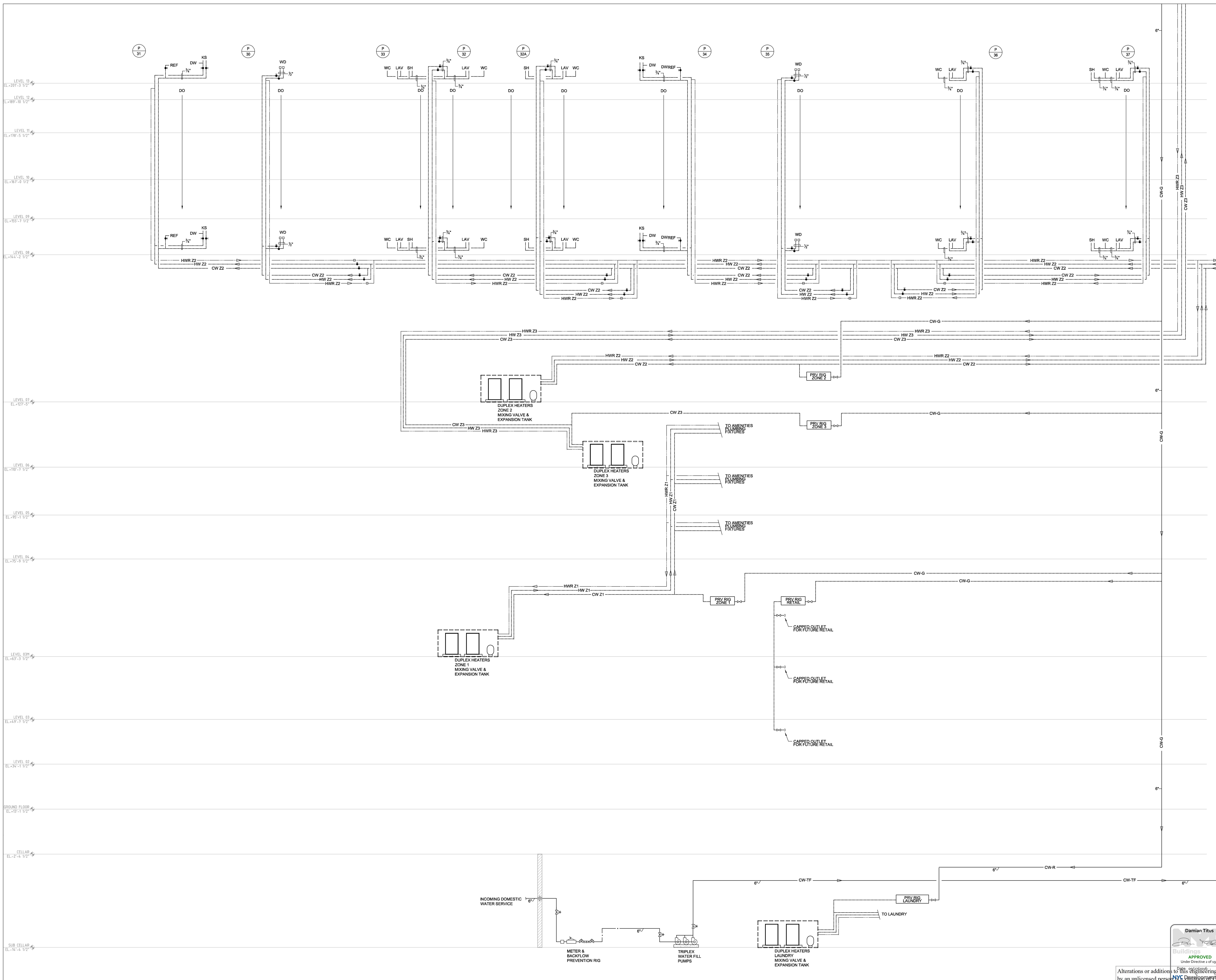

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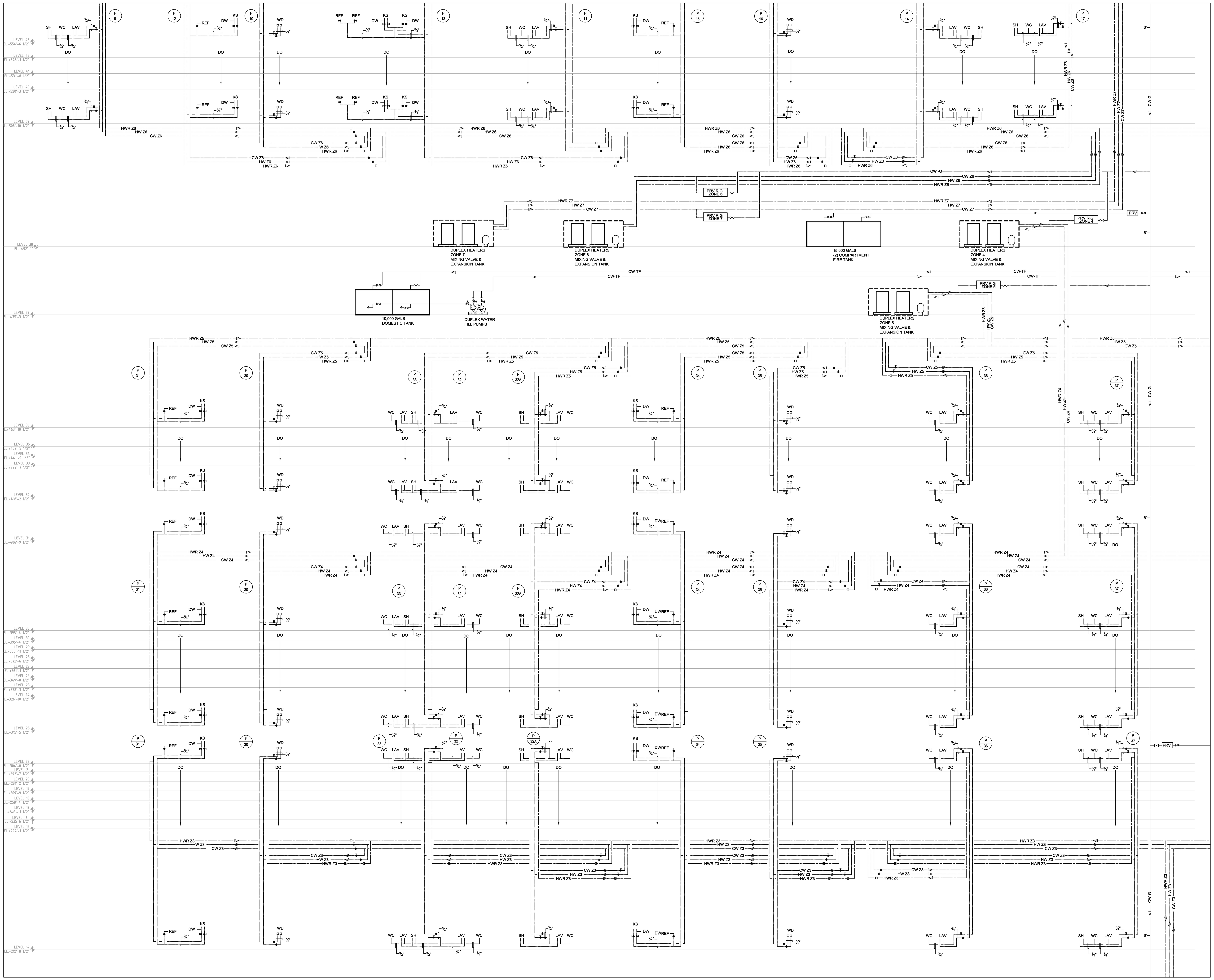

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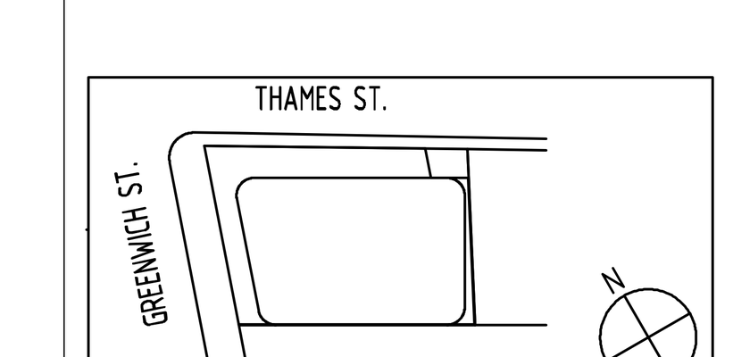

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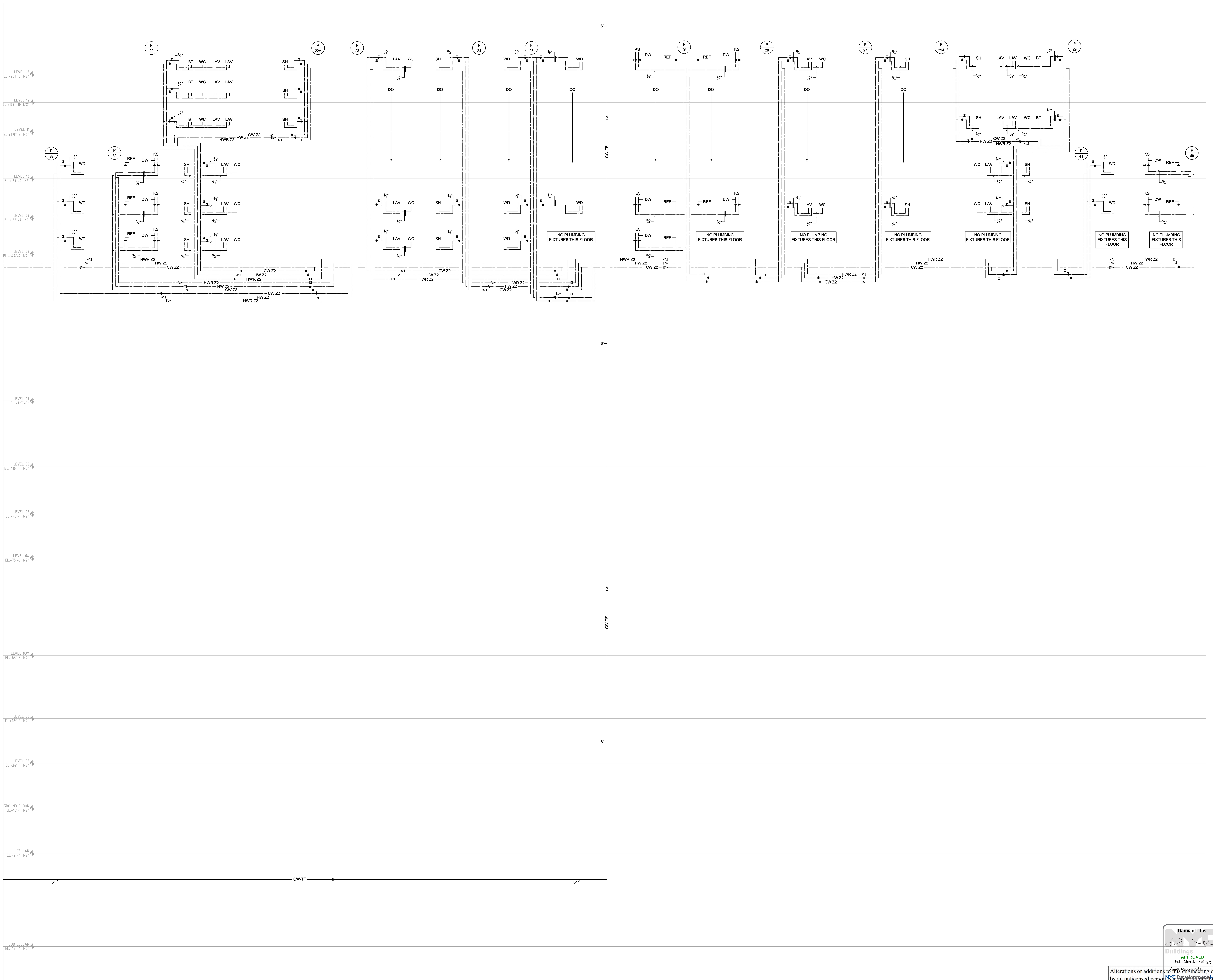

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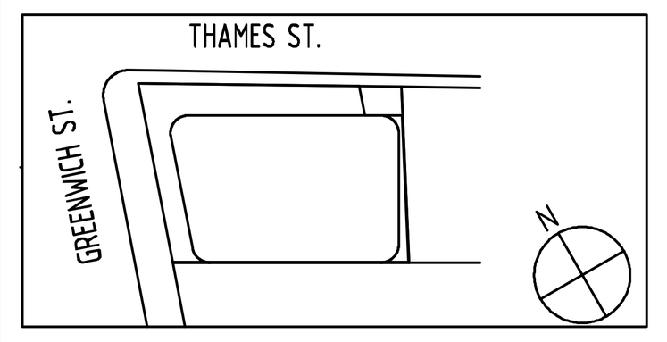

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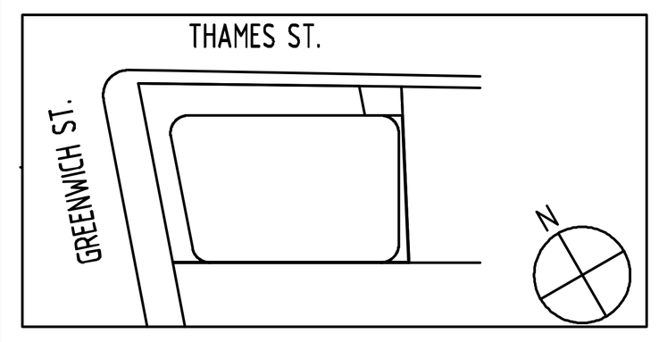

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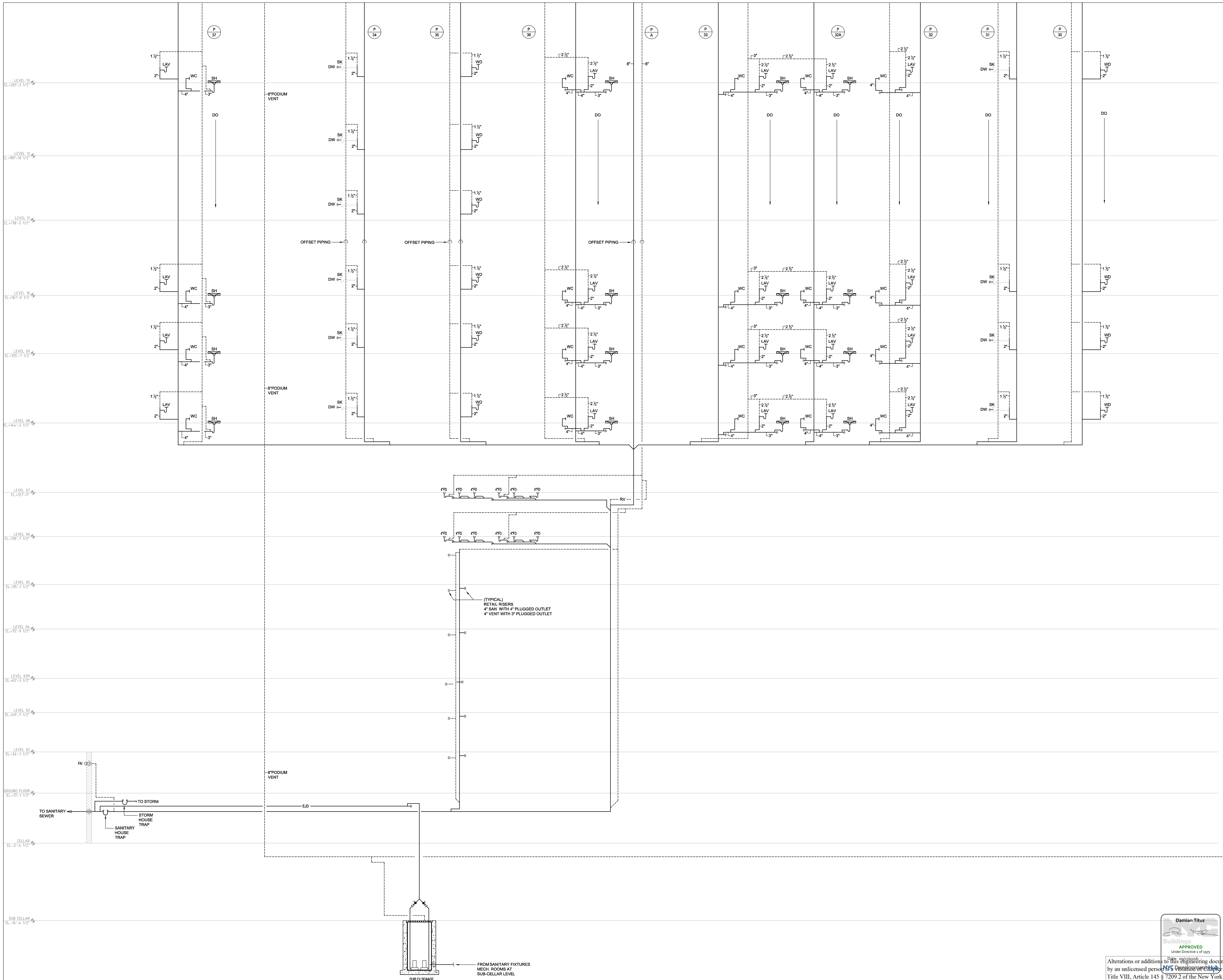

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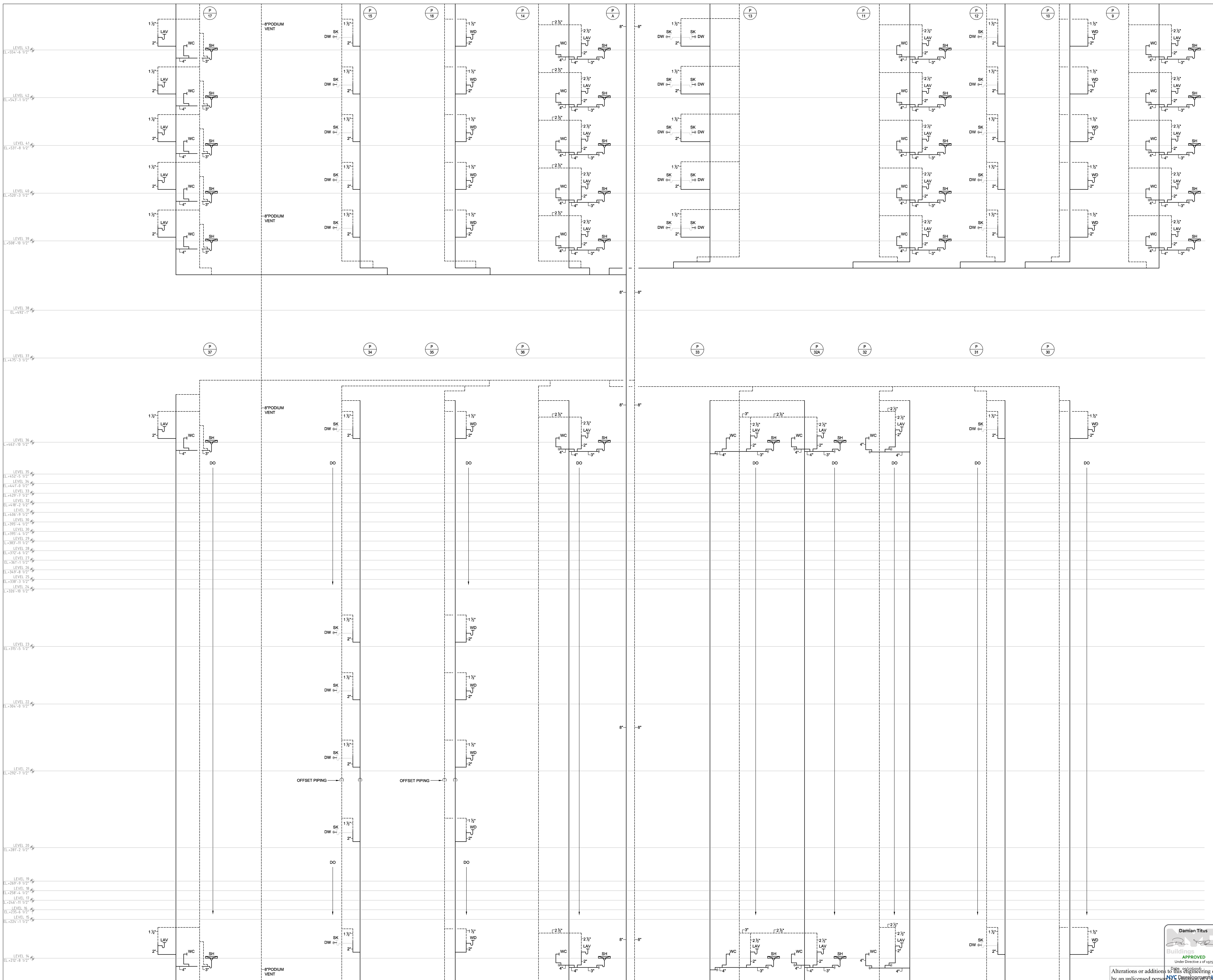

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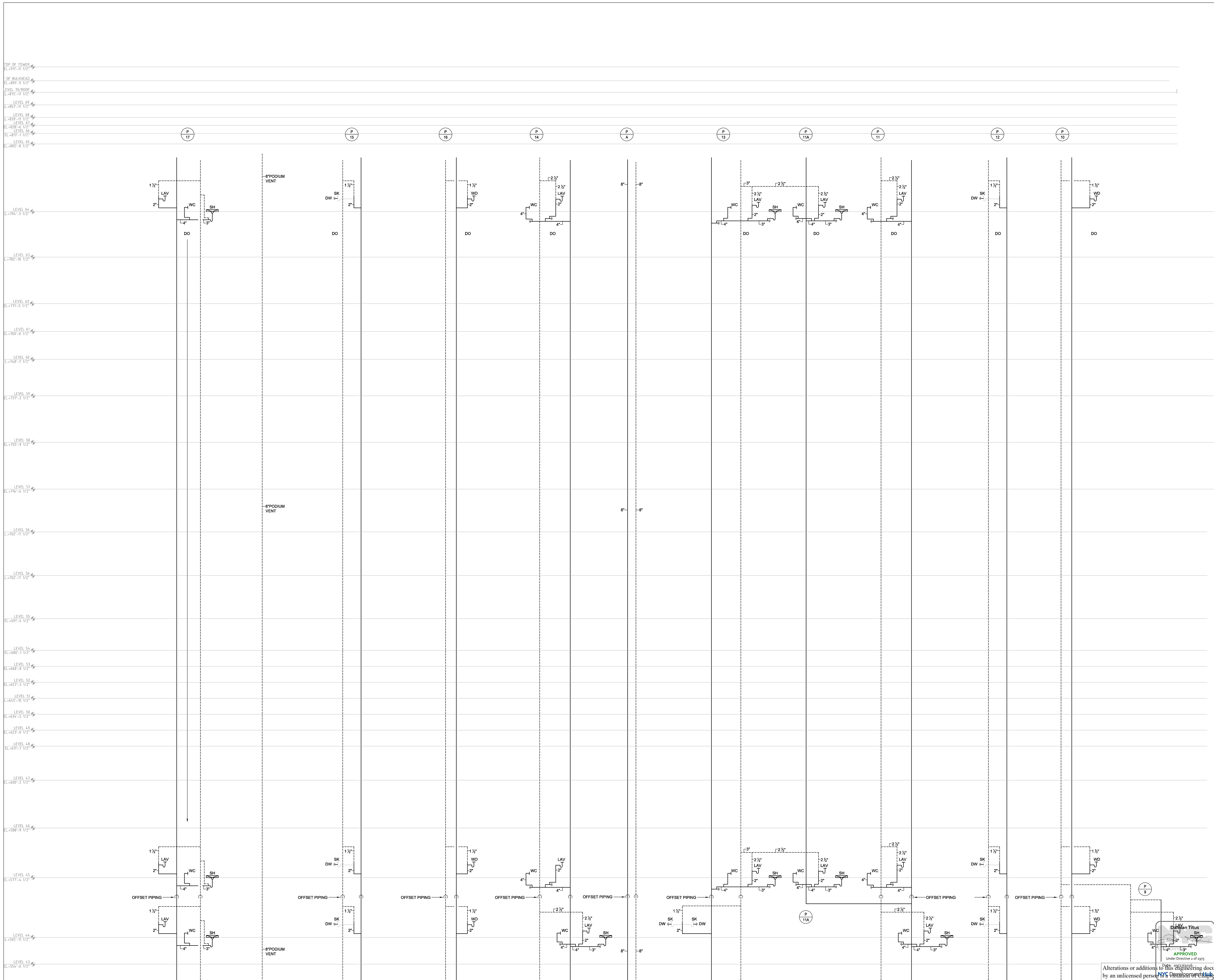

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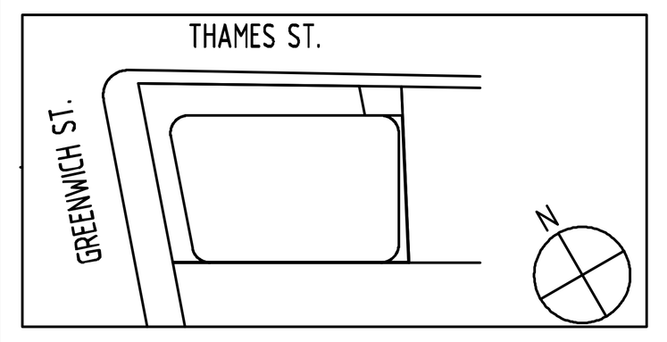

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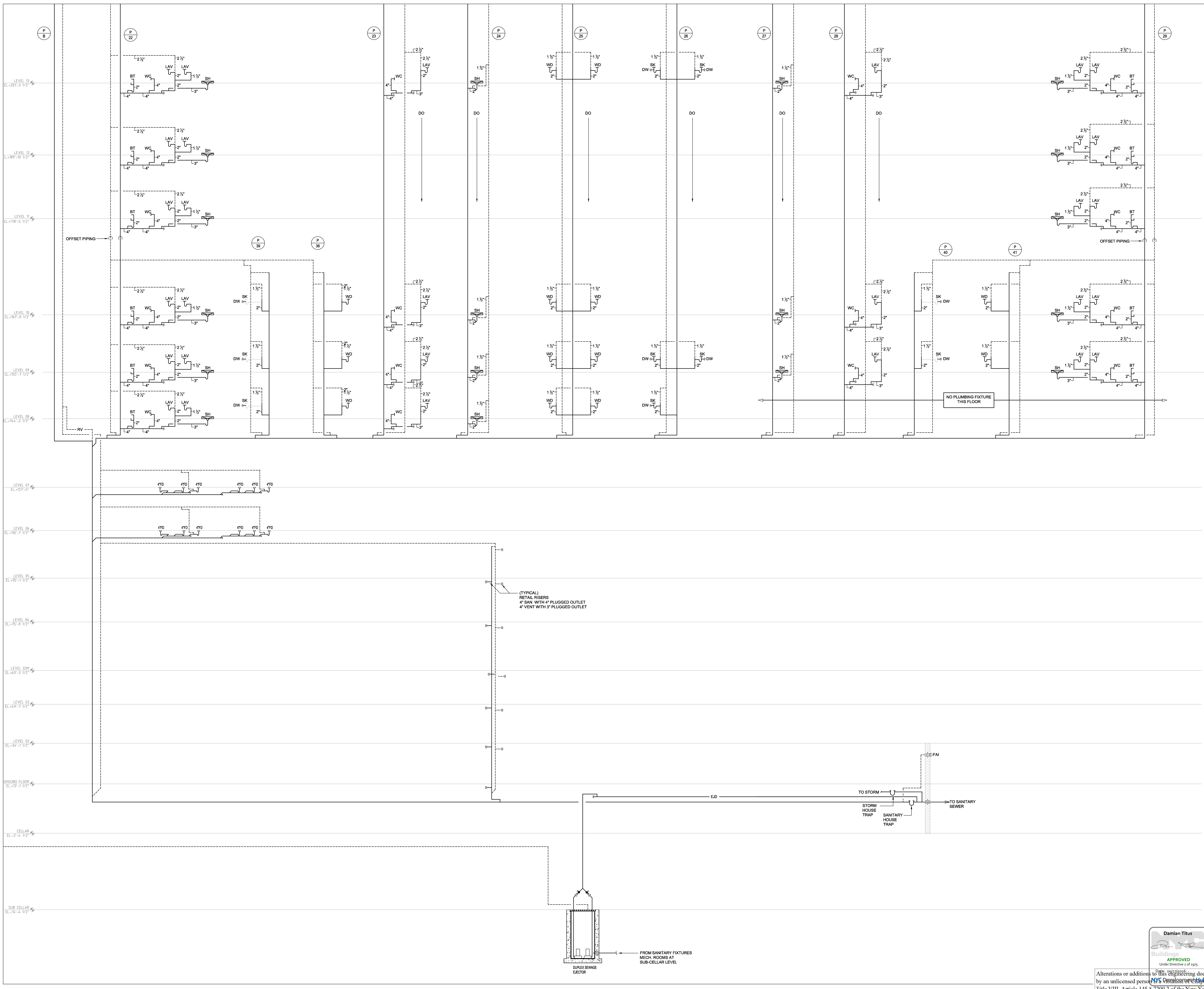

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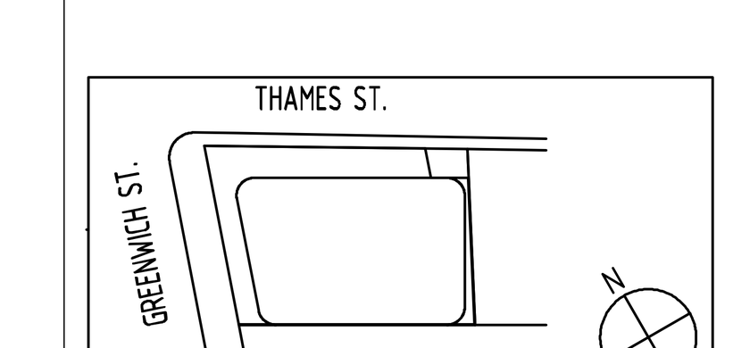

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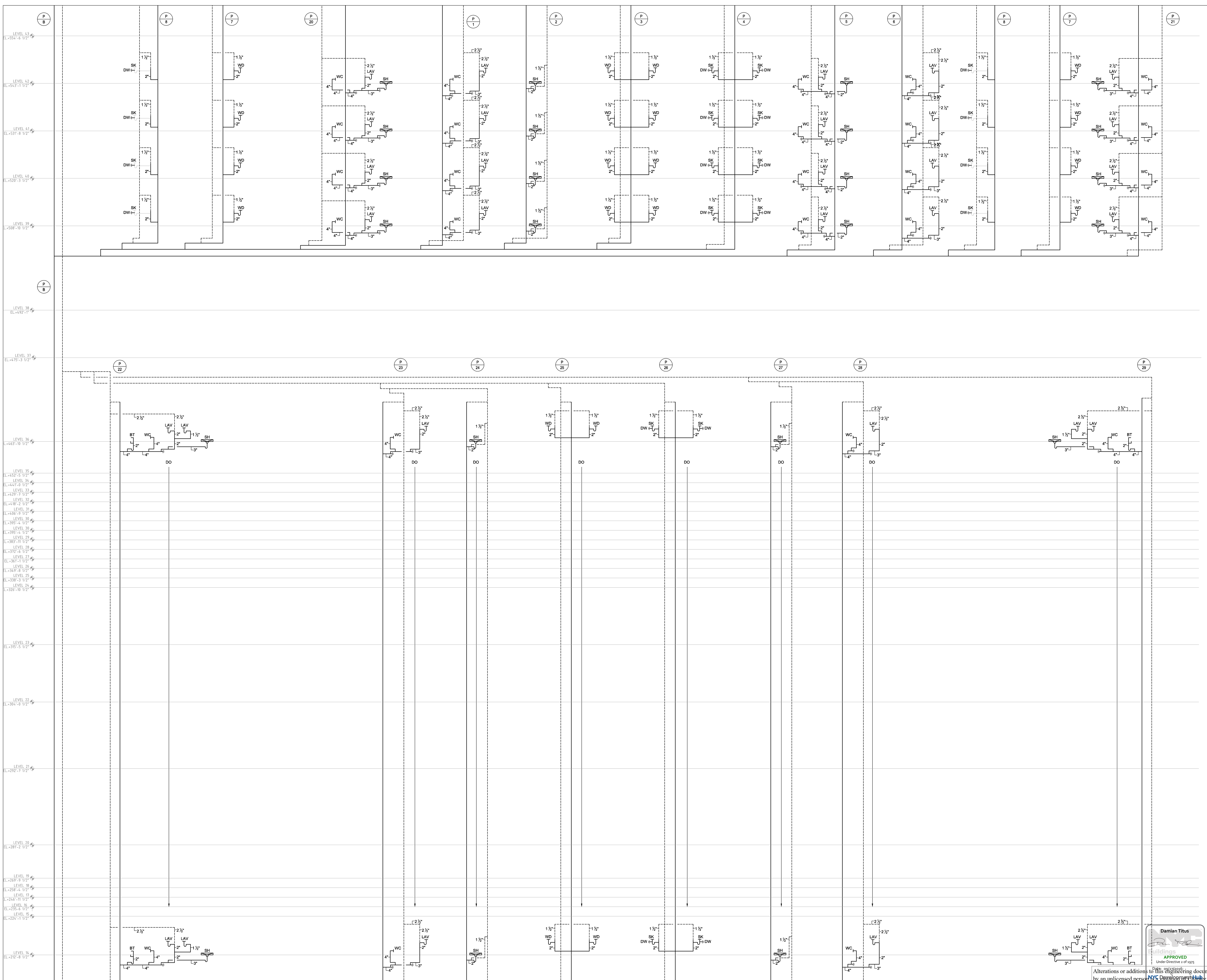

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GREENWICH ST.

KEY PLAN AND NORTH SIGN

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SCALE NTS

PLUMBING SANITARY RISER DIAGRAM SHEET #5

SHEET TITLE :

P-304E.00

SHEET NUMBER :

Damian Titus
Buildings
APPROVED
Under Directive 2 of 1975
Date: 09/27/2016
NYC Development Hub

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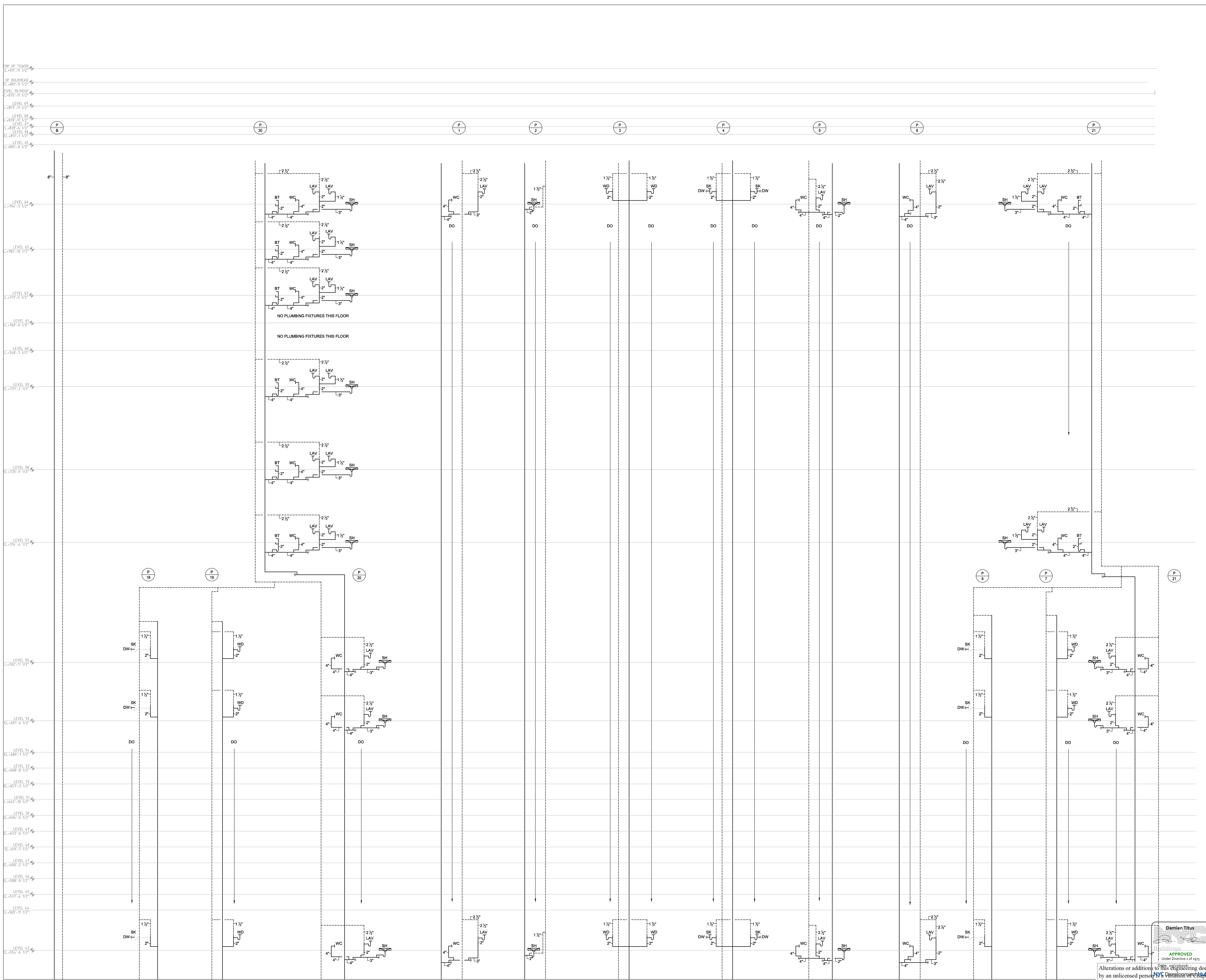

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Job Number

ES293470455 Scan Code

125 GREENWICH

NEW YORK, NY

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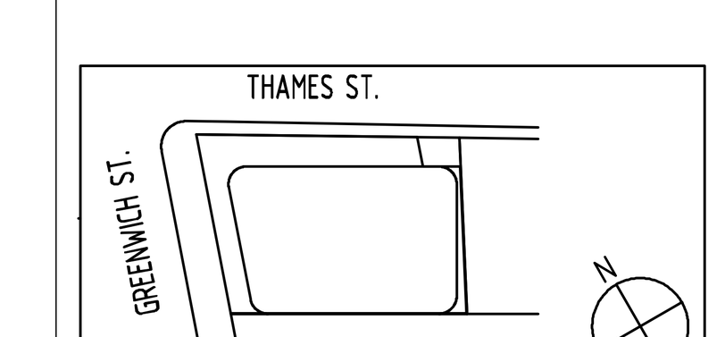
PHASE : DOB SUBMITTAL

STATE OF NEW YORK MICHAEL W. MAYBAUM No. 059357 P.E. LICENSED PROFESSIONAL ENGINEER

ARCHITECT'S SEAL

ISSUE NO.	ISSUE DATE	DESCRIPTION
01	9/30/15	DOB SUBMITTAL



KEY PLAN AND NORTH SIGN

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PLUMBING SANITARY RISER DIAGRAM SHEET #6

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DRAINS

DESIGNATION	REQUIRED	MODEL NO.	BODY: CAST IRON	BODY: GALVANIZED	BODY: ALL BRONZE	BODY: POLYMER CONCRETE	BODY: CLAMPING DEVICE	BODY: DECK CLAMP	BODY: BACK WATER VALVE	BODY: ROOF SUMP RECEIVER	BODY: BRONZE PLUG	BODY: TRENCH	BODY:	STRAINER: CAST IRON	STRAINER: GALVANIZED	STRAINER: STAINLESS STEEL	STRAINER: NICKEL BRONZE	STRAINER: CHROME PLATED	STRAINER: SEDIMENT BUCKET	STRAINER: SECONDARY STRAINER	STRAINER: POLISHED FINISH	STRAINER: SATIN FINISH	STRAINER: TRACTOR GRATE	STRAINER: BRONZE MESH SCREEN	STRAINER: FUNNEL TOP	STRAINER: FLAT TOP	STRAINER: SQUARE TOP	STRAINER: DOME	STRAINER: RAISED LIP	STRAINER: EXTENSION	STRAINER: VANDAL PROOF	REMARKS: LOCATION
FD–A	●	ZURN ZN-415B-Y-P	●				●										●				●											FINISHED AREAS
FD–B	●	ZURN ZN-150-C-VP	●				●	●		●							●									●				●		ACCESSIBLE PAVED AREAS
FD–M	●	ZURN Z-675-C-VP	●				●							●																	●	MECHANICAL ROOMS
FD–R	●	ZURN Z-100-C-R	●				●	●		●																		●		●		ROOF DRAIN
FD–S	●	ZURN Z-100-C-R-W3	●				●	●		●																		●	●	●		OVERFLOW ROOF DRAIN

PLUMBING PUMPS

PUMP COMP. PEERLESS BELL & GOSSETT FLYGHT SYNCROFLOW GOULDS (ITT) PUMPS STANCOR	ABBREV. (P) (B&G) (F) (S) (ITT) (ST)	No REQUIRED	G.P.M. EACH PUMP	G.P.M. PER SET	PUMP HEAD (PSI)	MODEL No.	MECH. SEAL	STAGES	VERTICAL SPLIT	HORIZONTAL SPLIT	WORKING PRESS.	H.P. (INDIVIDUAL PUMP)	H.P. (TOTAL PUMP SET)	R.P.M.	VOLTS	PHASE	CYCLE	MANUAL CONTROL	STARTING STEPS	AUTO CONTROL	PLOT LIGHT	PRESSURE GAUGE RANGE	CONTROL CENTER	EMERGENCY POWER	WX-451C-CUSHION TANK	OIL MINDER CONTROLS	NOTES
HP-1 HOUSE PUMPS SUBCELLAR		3																									
BP-1 BOOSTER PUMPS (ZONE 9) 69TH FLOOR		2																									
ST-1 STORM PUMPS		2	98	98	11	(F) CZ 3085 MT-183	●	1		●	–	2.3	4.6	1730	208	3	60			●	●		●	●			PROVIDE VFD
SE-1 SEWAGE EJECTOR		2																									
SE-2 SEWAGE EJECTOR		2																									
ESP-1 ELEVATOR SUMP PUMP		1																									
ESP-2 ELEVATOR SUMP PUMP		1																									
ESP-3 ELEVATOR SUMP PUMP		1																									

• PLUMBING MATERIAL SCHEDULE

NOTES:

1. FOR REQUIRED PRESSURE RATINGS SEE RISER DIAGRAM.
2. INSTALL IN TRENCH OR SPLIT TILE CONDUIT.
3. ALL MATERIALS SELECTED ON THIS SCHEDULE MUST BE APPROVED BY THE LOCAL AUTHORITIES.

PIPE

SYSTEM	REQUIRED	CAST IRON SOIL PIPE	CAST IRON WTR PIPE	DUCTILE IRON	STEEL SCHED 10	STEEL SCHED 30	STEEL SCHED 40	TYPE "K" OR "L" MEDICAL GAS TUBE	TYPE "L" COPPER TUBING	TYPE "K" COPPER TUBING	RED BRASS PIPE	DWV COPPER DRAINAGE	BLACK	GALVANIZED	CEMENT LINED	STAINLESS STEEL	MILL WRAPPED	UNPIGMENTED NATURAL POLYPROPYLENE	ACID RESIST. C.I. – SILICONE	POLYPROPYLENE – FIRE RETARDANT	BOROSILICATE GLASS	304 STAINLESS STEEL CUT GROOVE
DRAINAGE BURIED	●	●																				
VENTS BURIED	●	●																				
HOUSE DRAINS – INSIDE OF BLDG. WALL		●																				
HOUSE SEWERS – OUTSIDE OF BLDG. WALL TO PUBLIC SEWER	●			●																		
SANITARY STACKS	●	●																				
SANITARY BRANCHES	●	●					●															
LEADERS & STORM DRAINAGE SYSTEM ABOVE THE GROUND FLOOR	●	●					●															
LEADERS & STORM DRAINAGE SYSTEM BELOW THE GROUND FLOOR (PRESSURE PIPE–25 PSI)	●													●		●						
EJECTOR DISCHARGE	●						●							●								
VENTS	●	●					●							●								
PUMP DISCHARGE OR GRAVITY LINE 0 TO 250 PSI	●								●													●
PUMP DISCHARGE OR GRAVITY LINE 251 TO 290 PSI	●								●													●
PUMP DISCHARGE OR GRAVITY LINE 291 TO 400 PSI																						●
PUMP DISCHARGE FROM PUMPS AND ALL HORIZONTAL FROM PUMPS AND 50' 0" OF VERTICAL PIPE	●															●						
FIXTURE CONNECTIONS–WATER	●								●													
C.W. – 4" & SMALLER	●								●													
C.W. – 5" & LARGER	●								●							●						●
C.W. – BURIED BUILDING SERVICE	●		●	●											●		●					
C.W. – BURIED INSIDE BUILDING	●								●													
H.W.	●								●													
GAS SERVICE	●						●						●				●					
GAS (3" AND SMALLER)	●						●						●									
GAS (4" AND LARGER)	●						●						●									

FITTINGS

SYSTEM	CAST IRON NO–HUB	C.I.HUB & SPIGOT	DRAINAGE PATTERN	CAST IRON	MALLEABLE IRON	EX.H.MALLEABLE IRON	CAST BRONZE	WROUGHT COPPER	CLASS D	STAINLESS STEEL	BLACK	GALVANIZED	VICTAULIC	DUCTILE IRON	WELDED	MILL WRAPPED	UNPIGMENTED NATURAL POLYPROPYLENE	POLYPROPYLENE – DRAINAGE	BOROSILICATE GLASS	GROOVED	C.I.HUB & SPIGOT	THREADED	THREADLESS BRONZE
DRAINAGE BURIED		●																					
VENTS BURIED		●																					
HOUSE DRAINS – INSIDE OF BLDG. WALL		●																					
HOUSE SEWERS – OUTSIDE OF BLDG. WALL TO PUBLIC SEWER														●									
SANITARY STACKS	●	●																					
SANITARY BRANCHES	●		●																				
LEADERS & STORM DRAINAGE SYSTEM ABOVE THE GROUND FLOOR		●	●																				
LEADERS & STORM DRAINAGE SYSTEM BELOW THE GROUND FLOOR (PRESSURE PIPE–25 PSI)			●									●	●									●	
EJECTOR DISCHARGE			●									●	●										
VENTS	●											●											
PUMP DISCHARGE OR GRAVITY LINE 0 TO 250 PSI							●	●		●													●
PUMP DISCHARGE OR GRAVITY LINE 251 TO 290 PSI							●	●		●													●
PUMP DISCHARGE OR GRAVITY LINE 291 TO 400 PSI																							
PUMP DISCHARGE FROM PUMPS AND ALL HORIZONTAL FROM PUMPS AND 50' 0" OF VERTICAL PIPE										●													
FIXTURE CONNECTIONS–WATER							●	●															
C.W. – 4" & SMALLER							●	●															
C.W. – 5" & LARGER										●													
C.W. – BURIED BUILDING SERVICE									●														
C.W. – BURIED INSIDE BUILDING							●	●															
H.W.							●	●															
GAS SERVICE					●						●					●							
GAS (3" AND SMALLER)					●						●												
GAS (4" AND LARGER)											●				●								

JOINTS

SYSTEM	CAULKED	THREADED	SOLDERED	WELDED	BRAZED	MECH.JOINT–NO HUB	MECH.JOINT–GASKET	MECH.JOINT–FLANGED	VICTAULIC GALVANIZED	HEAT SOCKET FUSION	FUSION RESISTANCE WIRE	MECHANICAL JOINT	SS VICTAULIC FLEXIBLE COUPLING 475 & 77S AS REQUIRED
DRAINAGE BURIED	●						●						
VENTS BURIED	●						●						
HOUSE DRAINS – INSIDE OF BLDG. WALL							●						
HOUSE SEWERS – OUTSIDE OF BLDG. WALL TO PUBLIC SEWER							●						
SANITARY STACKS						●	●						
SANITARY BRANCHES						●							
LEADERS & STORM DRAINAGE SYSTEM ABOVE THE GROUND FLOOR		●					●						
LEADERS & STORM DRAINAGE SYSTEM BELOW THE GROUND FLOOR (PRESSURE PIPE–25 PSI)		●							●				●
EJECTOR DISCHARGE		●							●				
VENTS						●							
PUMP DISCHARGE OR GRAVITY LINE 0 TO 250 PSI				●	●								●
PUMP DISCHARGE OR GRAVITY LINE 251 TO 290 PSI				●	●								●
PUMP DISCHARGE OR GRAVITY LINE 291 TO 400 PSI													●
PUMP DISCHARGE FROM PUMPS AND ALL HORIZONTAL FROM PUMPS AND 50' 0" OF VERTICAL PIPE				●									
FIXTURE CONNECTIONS–WATER			●		●								
C.W. – 4" & SMALLER		●			●			●					
C.W. – 5" & LARGER				●	●								●
C.W. – BURIED BUILDING SERVICE	●		●									●	
C.W. – BURIED INSIDE BUILDING			●										
H.W.			●		●								
GAS SERVICE		●		●									
GAS (3" AND SMALLER)		●											
GAS (4" AND LARGER)				●									

NOTE: THIS VALVE SCHEDULE IS BASED ON MILWAUKEE VALVES

PLUMBING VALVE SCHEDULE

TYPE	MILWAUKEE FIG. NO.	SIZE	FLANGED	SCREWED	SOLDER	SOCKET	BRASS	W/ADAPTER	O.S.&Y.	N.R.S.	BRONZE	I.B.B.M.	ALL IRON	CAST STEEL	HOSE END	175# WWP	200# WWP	250# WWP	300# WWP	400# WWP	500# WWP	600# WWP	960# WWP	1440# WWP	BURIED SERV.	REQ.AT EQUIP.	SUMP DISCH.	EJECT.DISCH.	GAS	C.W.SERVICE	C.W. 4"& UP	C.W. 3"& DN	HW HWC 4"&UP	HW HWC 3"&DN	D.W. D.W.C.	C.W. 2"& DN	HW HWC 2"&DN
GATE VALVES	115	3/8"–3"			●					●	●						●															●		●	●		
	105	1/4"–3"		●						●	●						●															●					
	F–2885	2"–12"	●						●			●					●									●	●	●			●		●				
	F–2882	2"–12"	●							●		●					●																				
	G–743**	2"–16"						●		●		●					●								●					●							
BALL VALVES	BA–125	1/4"–2"		●			●															●														●	●
	BA–155	1/4"–2"			●		●															●														●	●
CHECK VALVES	F–2974	2"–12"	●									●					●														●		●				
	G927**	2"–6"		●								●					●																				
	2974	2"–12"	●									●					●										●	●									
	510T	1/4"–2"		●							●								●																		
	1509	3/8"–3"			●						●						●															●		●	●		
GLOBE & ANGLE VALVES	502	1/8"–3"		●							●																					●		●			
	1590T	3/8"–3"			●						●								●															●	●		
	595T	1/8"–3"		●							●								●																		
	F–2981	2"–10"	●						●			●					●																				
	24***	3/4"–3"		●						●	●				●		●															●		●	●		
	F–541**	3'–8"	●									●									●					●											
PLUG VALVES	611*	1/2"–6"		●									●				●												●								
	611*	1"–4"		●									●			●													●								
	612*	1"–8"	●										●				●												●								

* HOMESTEAD FIGURE NUMBERS
** STOCKHAM FIGURE NUMBERS

125
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No. 059357 P.E.

ARCHITECT'S SEAL

ISSUE NO.	ISSUE DATE	DESCRIPTION
01	9/30/15	DOB SUBMITTAL

KEY PLAN AND NORTH SIGN

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Damian Titus
Buildings
APPROVED
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PLUMBING SCHEDULES

SHEET TITLE :

P-401.00

SHEET NUMBER :

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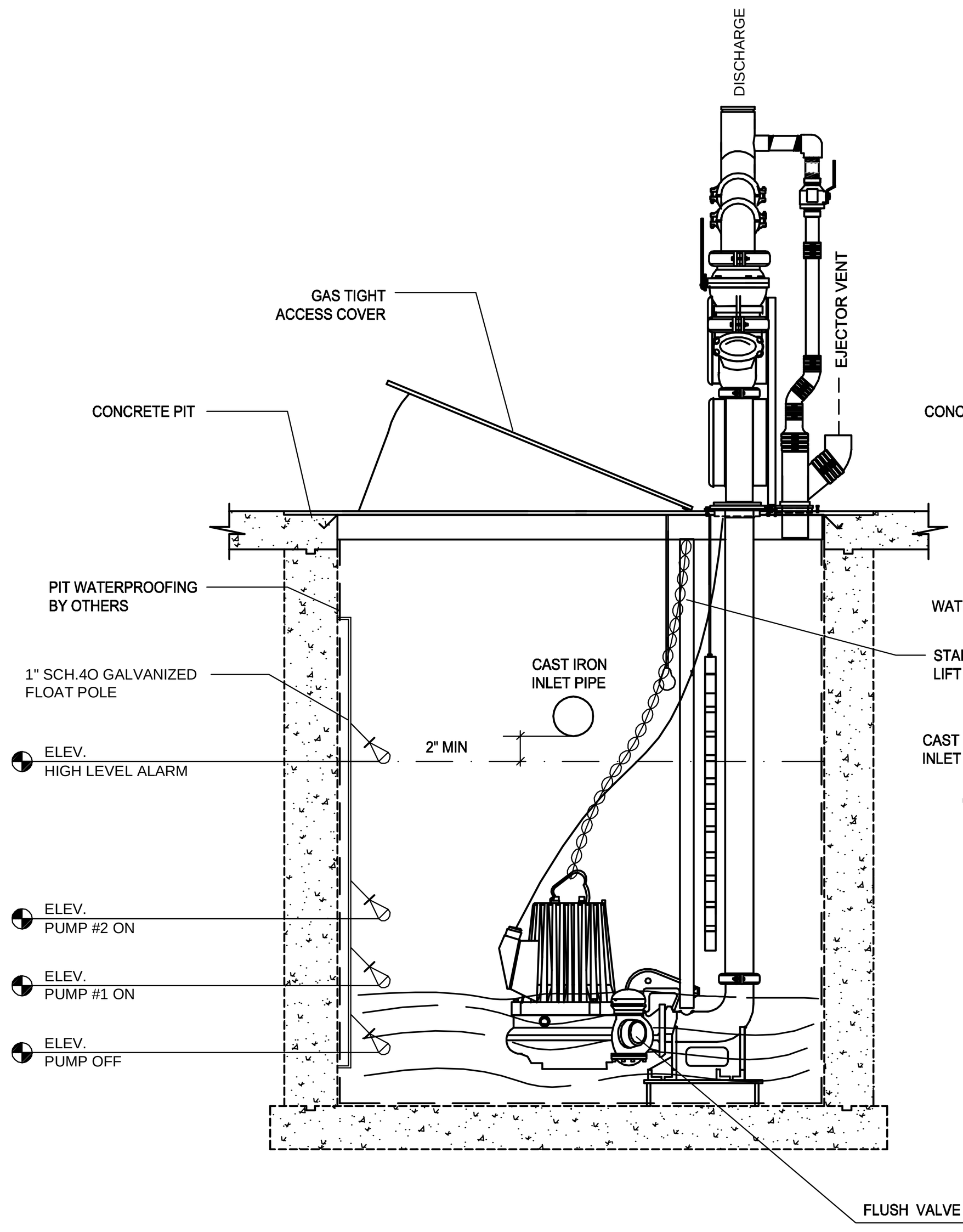
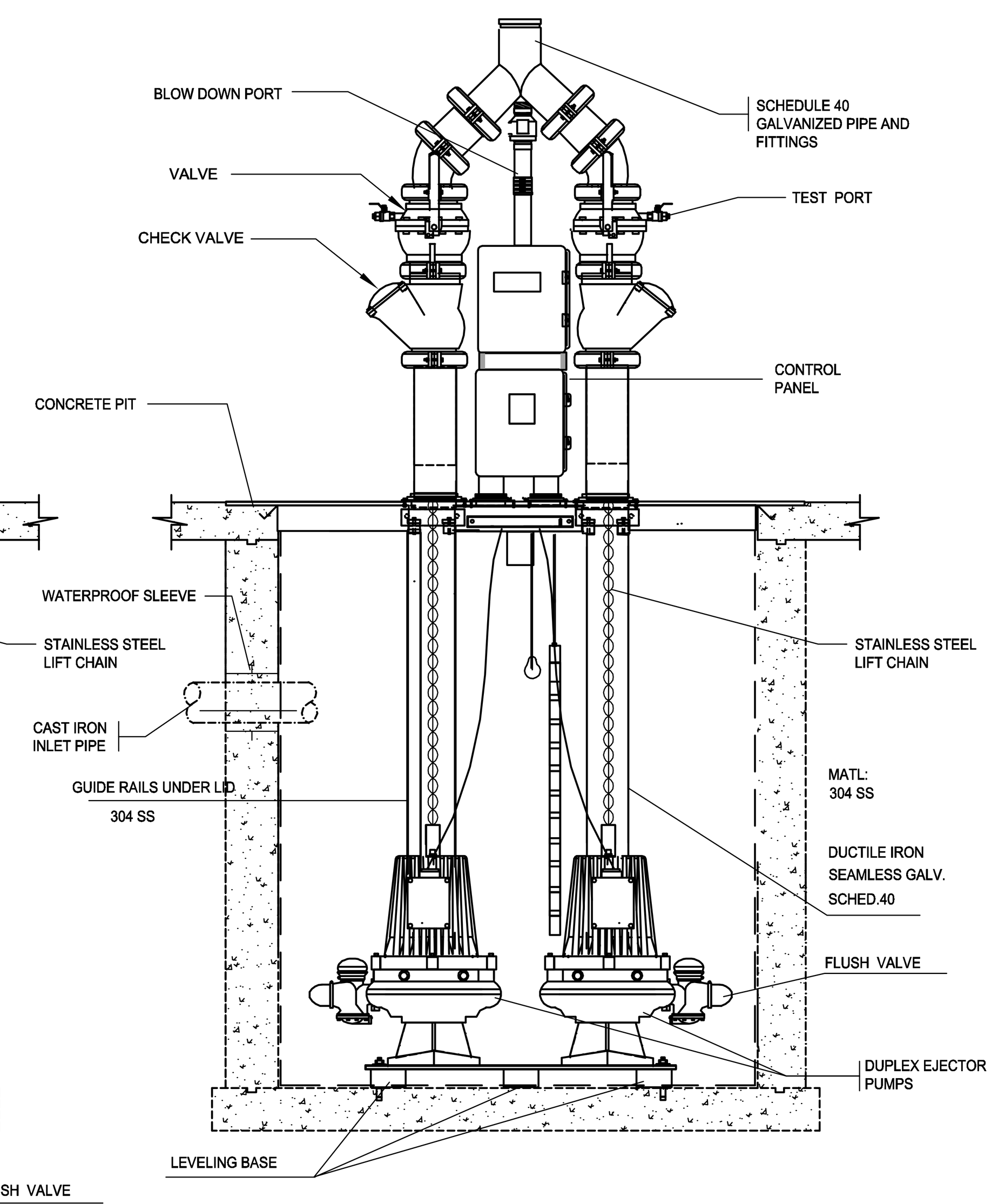


DUPLEX SEWAGE EJECTOR
DETAIL SIDE VIEW SECTION A–A
NO SCALE



DUPLEX SEWAGE EJECTOR
DETAIL FRONT VIEW SECTION B–B
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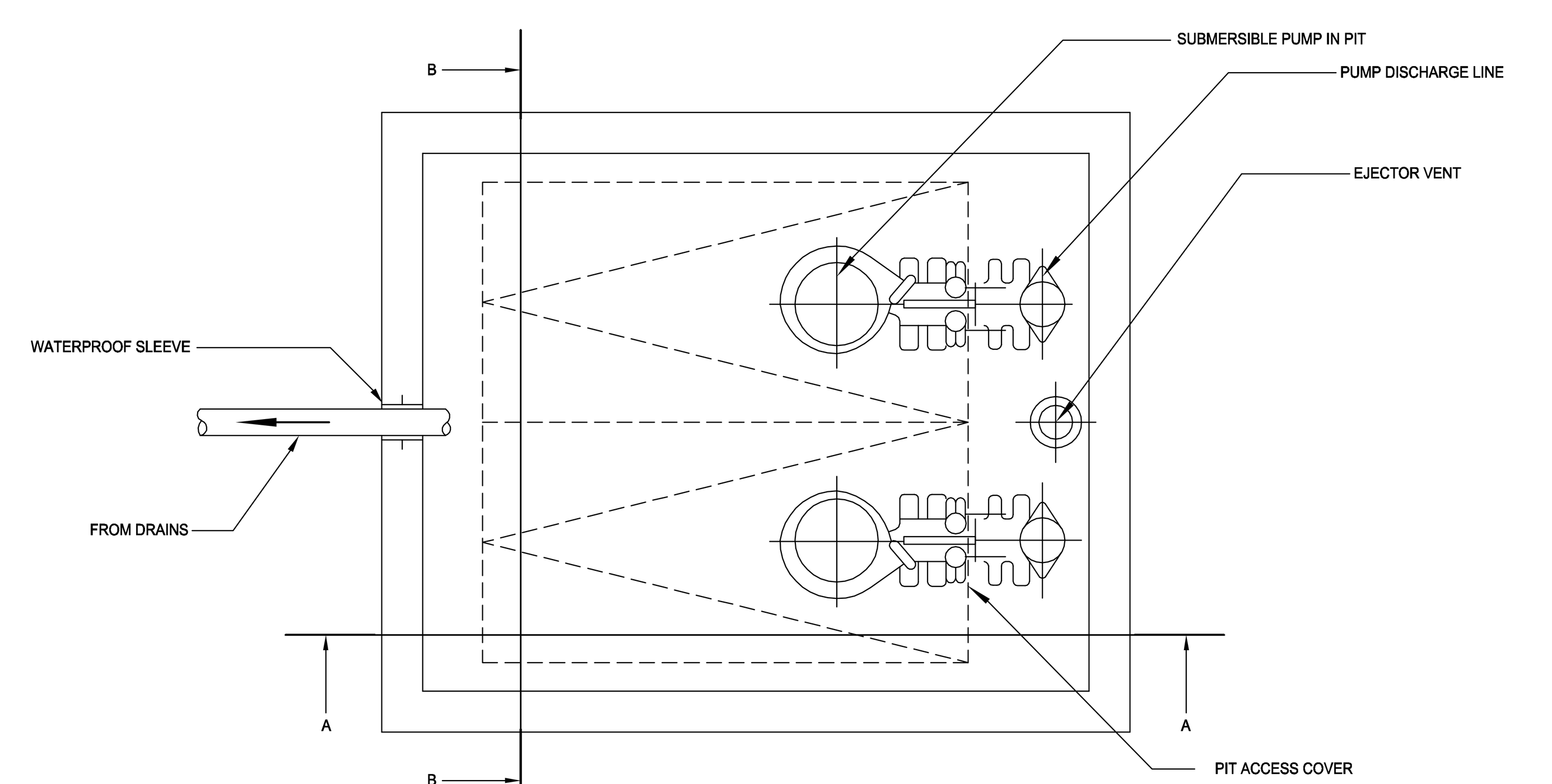
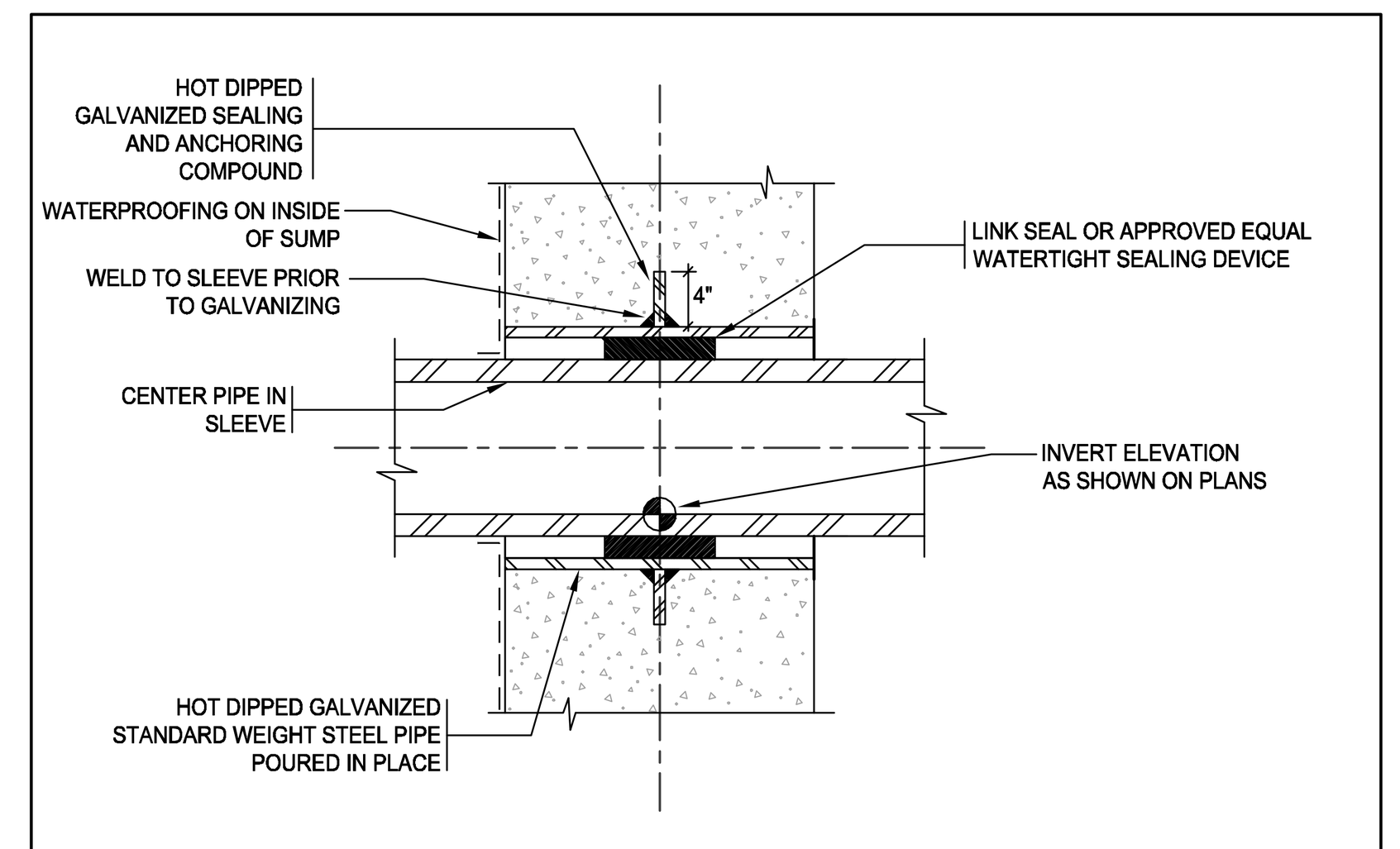
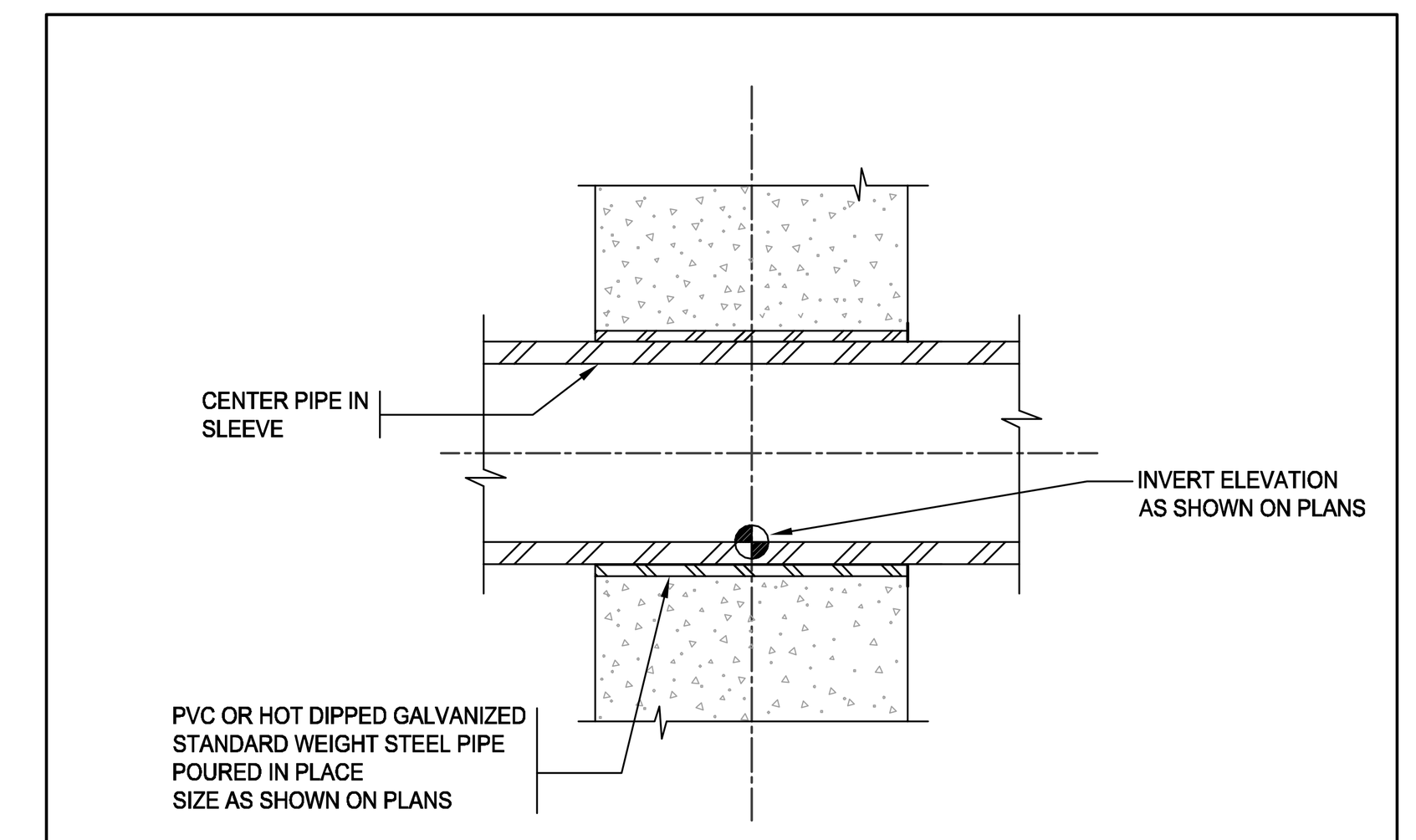


NOTE:
SEE PLANS FOR EXACT PIT DIMENSIONS AND LOCATIONS.

EJECTOR PUMP PLAN DETAIL
SCALE: NONE



WATERTIGHT SLEEVES (WT SLV) THRU CONCRETE SUMP WALLS
NO SCALE



SLEEVE THRU CONCRETE FOUNDATION WALLS
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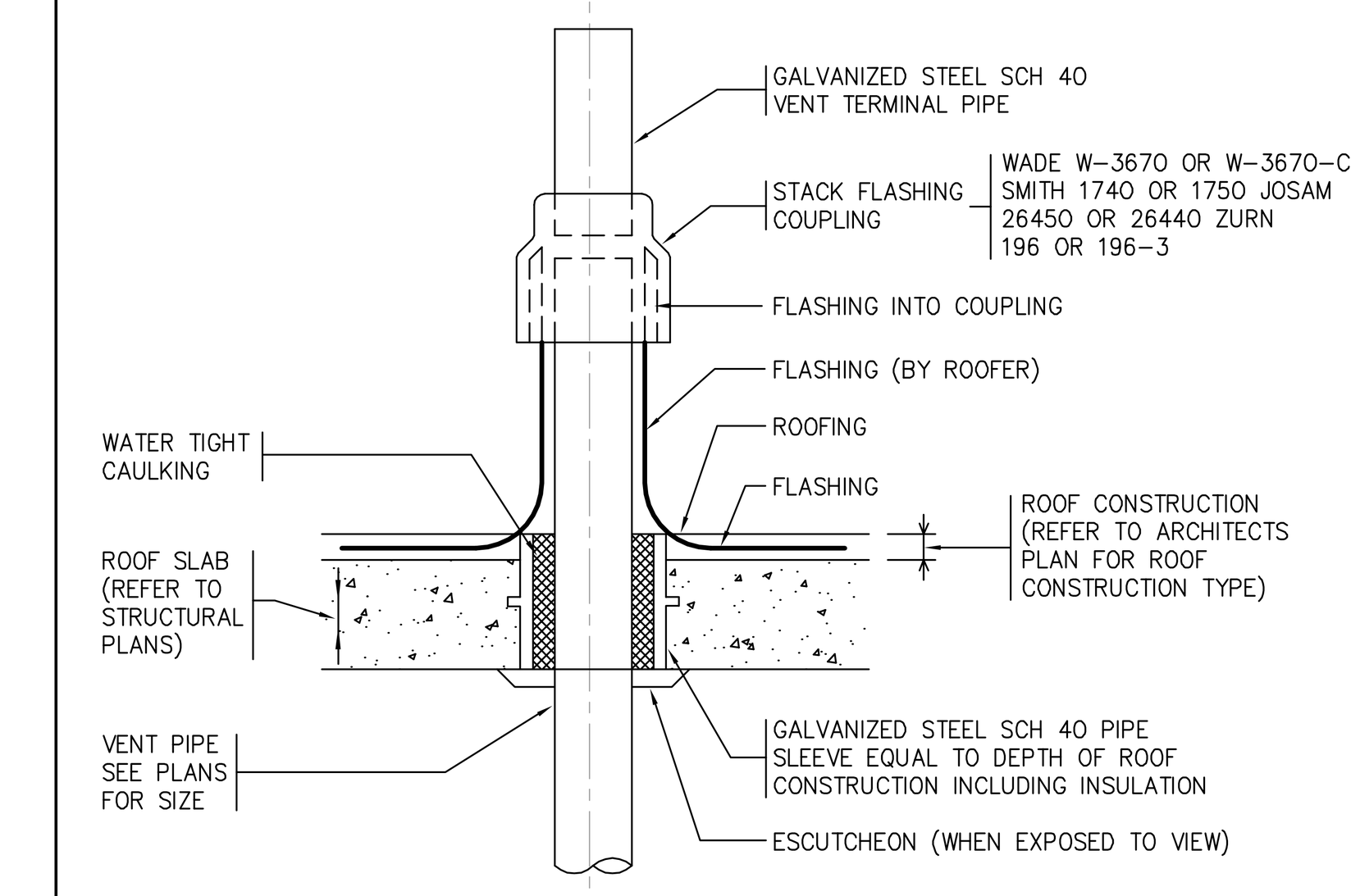

VENT THRU ROOF – FLASHING
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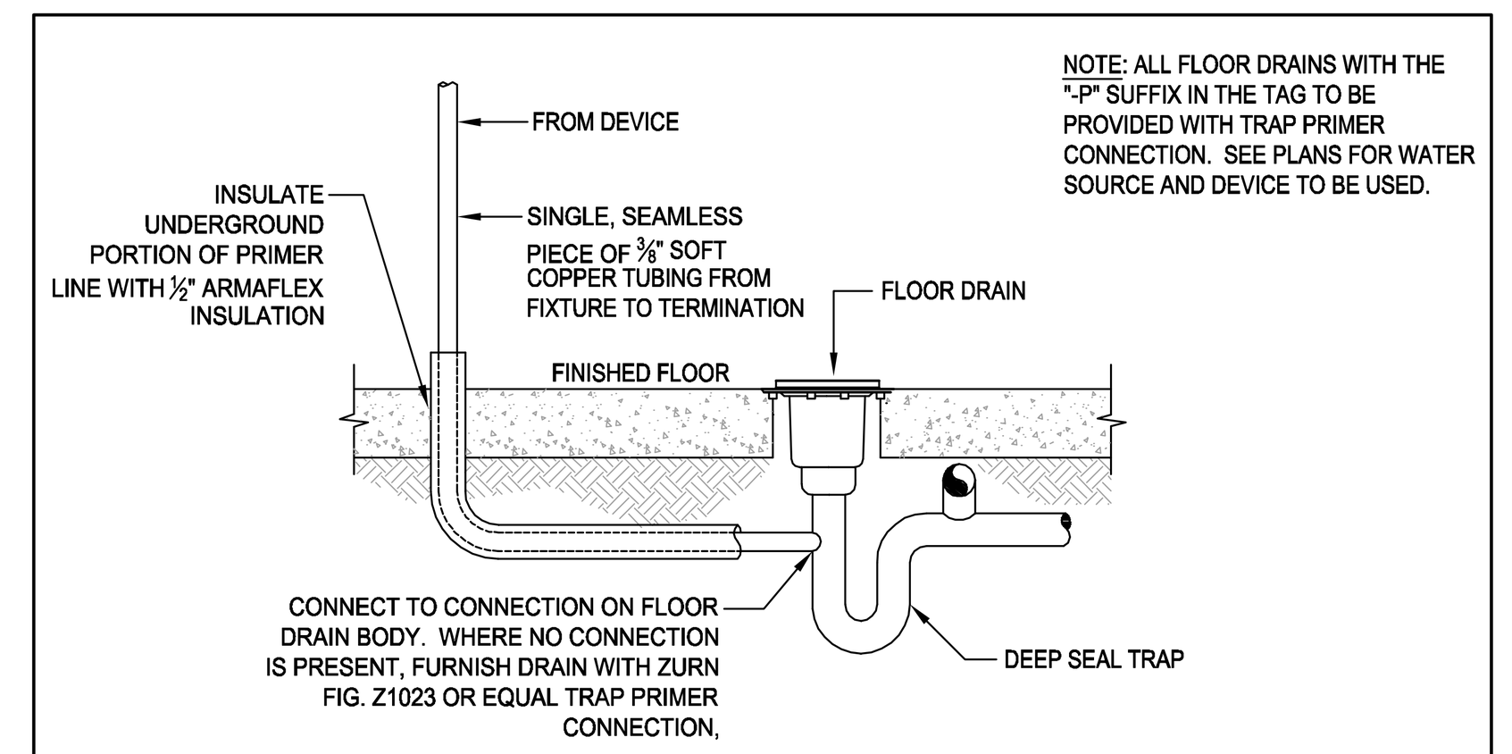
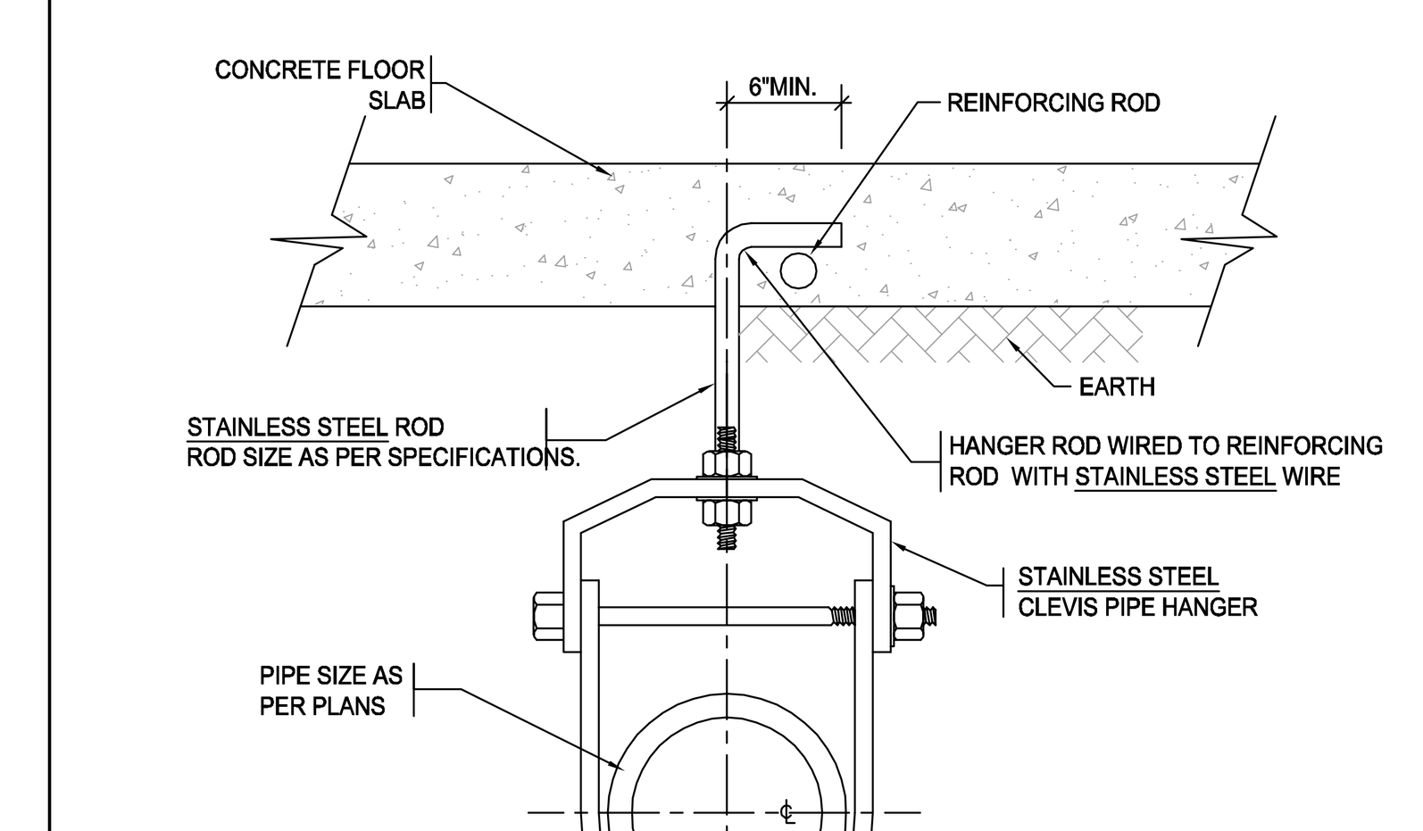


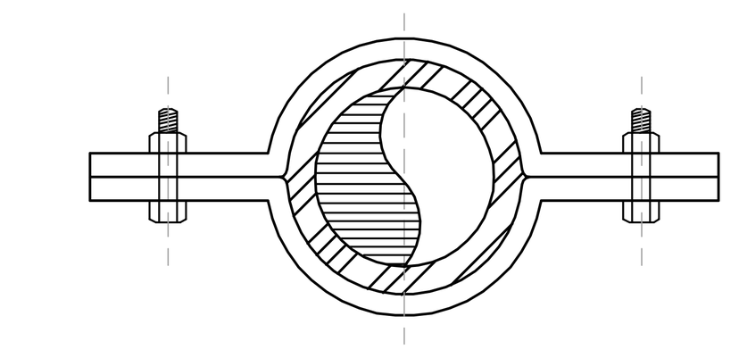
NOTE: ALL FLOOR DRAINS WITH THE "-P" SUFFIX IN THE TAG TO BE PROVIDED WITH TRAP PRIMER CONNECTION. SEE PLANS FOR WATER SOURCE AND DEVICE TO BE USED.

FLOOR DRAIN TRAP SEAL PROTECTION
NOT TO SCALE

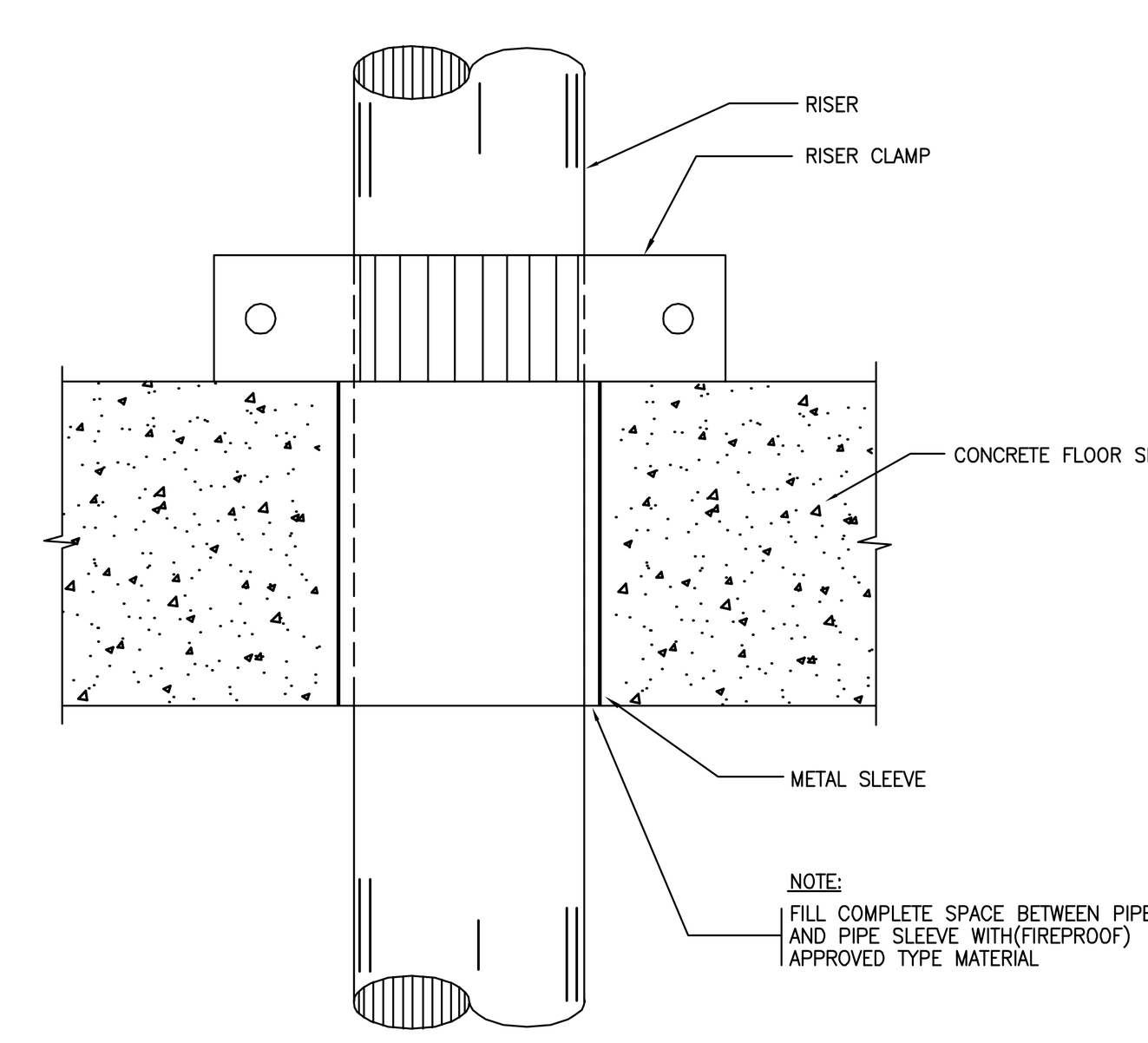


NOTES
1. ALL BURIED HANGER RODS, UNDERGROUND, SHALL BE COATED w/BITUMASTIC/ASPHALT-MINIMUM TWO COATS
2. ALL HANGERS, RODS, NUTS, BOLTS & ACCESSORIES OF STAINLESS STEEL.

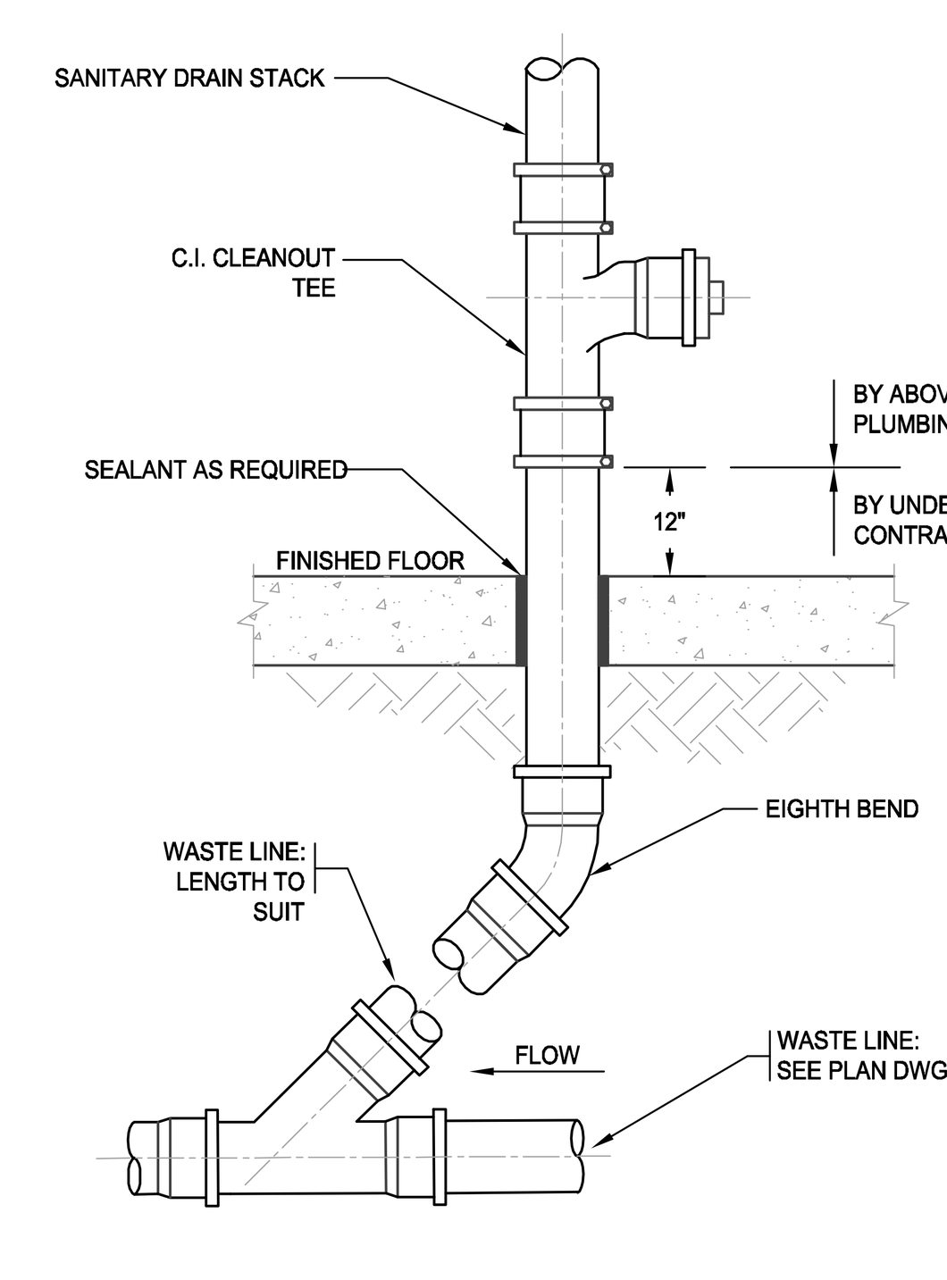
PIPE SUPPORT FOR UNDERGROUND DRAINAGE PIPING
NO SCALE



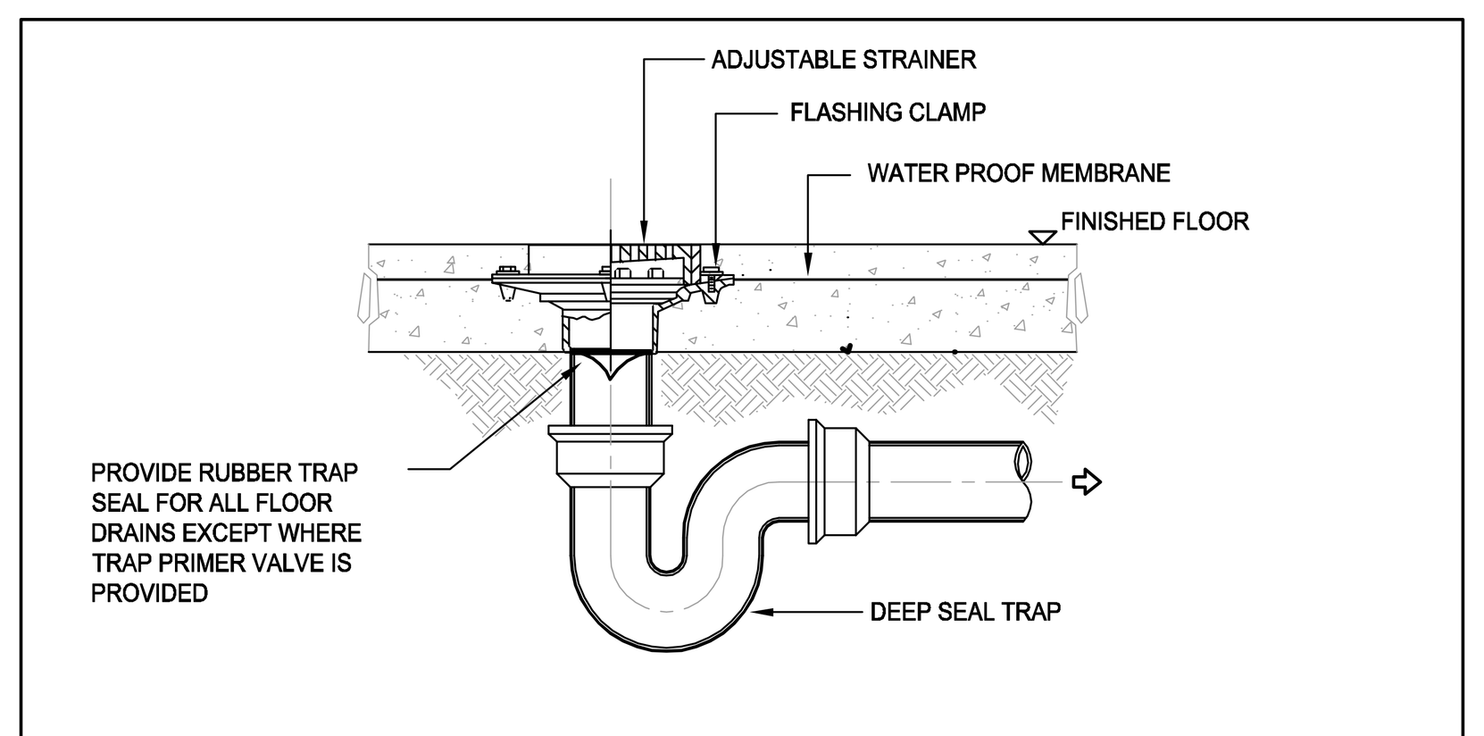
PLAN VIEW



TYPICAL RISER ANCHOR DETAIL
NO SCALE



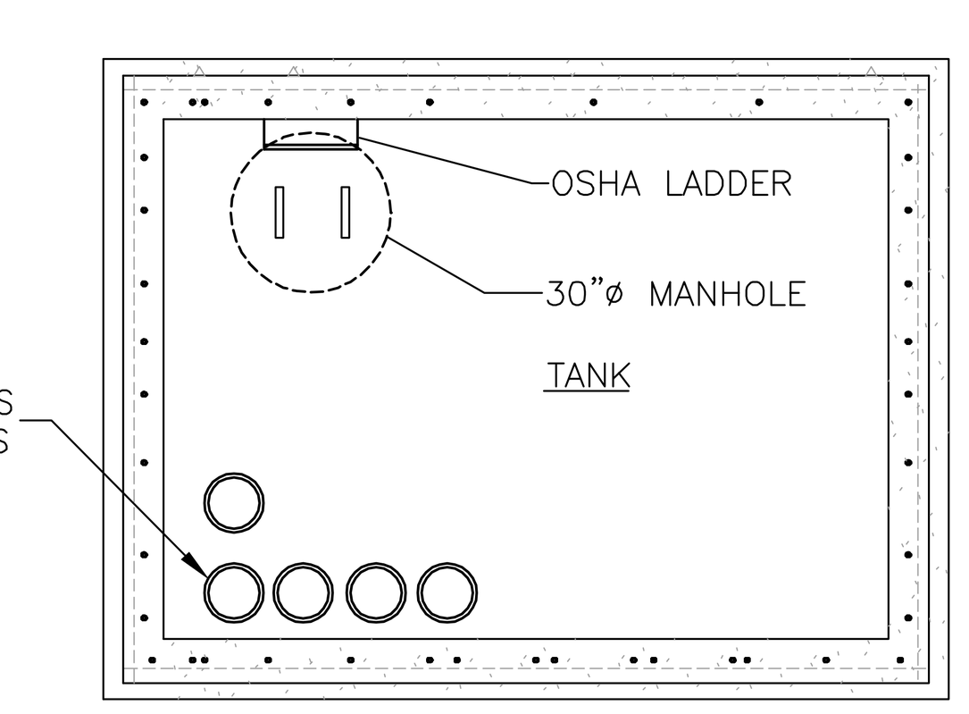
BASE-OF-STACK CLEANOUT
NO SCALE



FLOOR DRAIN
NO SCALE

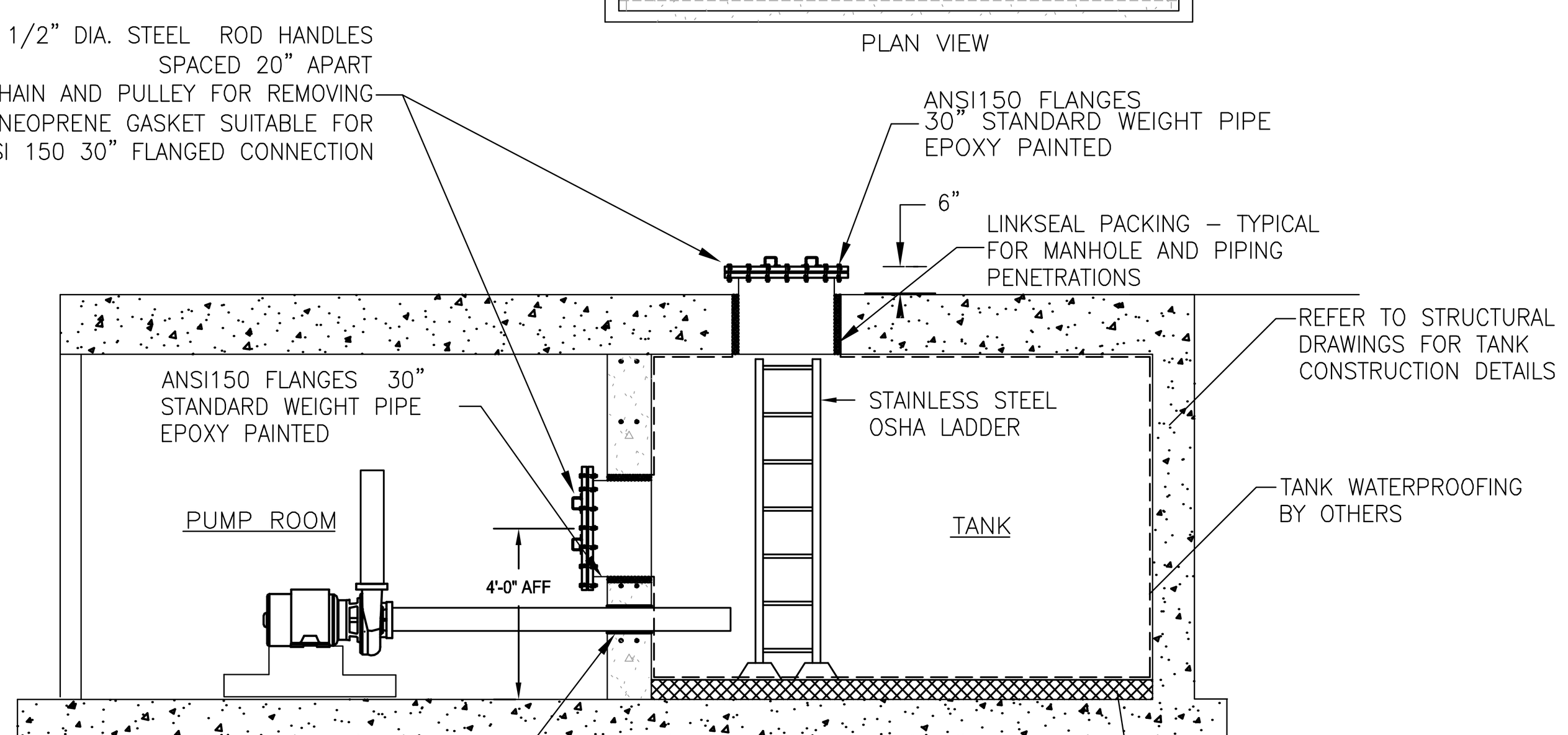
FOR ACTUAL MANHOLE LOCATION REFER TO FLOOR PLANS

PROVIDE WATER TIGHT SLEEVES FOR ALL PIPING PENETRATIONS



PLAN VIEW

COVER WITH TWO 1/2" DIA. STEEL ROD HANDLES SPACED 20" APART
PROVIDE CHAIN AND PULLEY FOR REMOVING
PROVIDE ⅛" NEOPRENE GASKET SUITABLE FOR ANSI 150 30" FLANGED CONNECTION

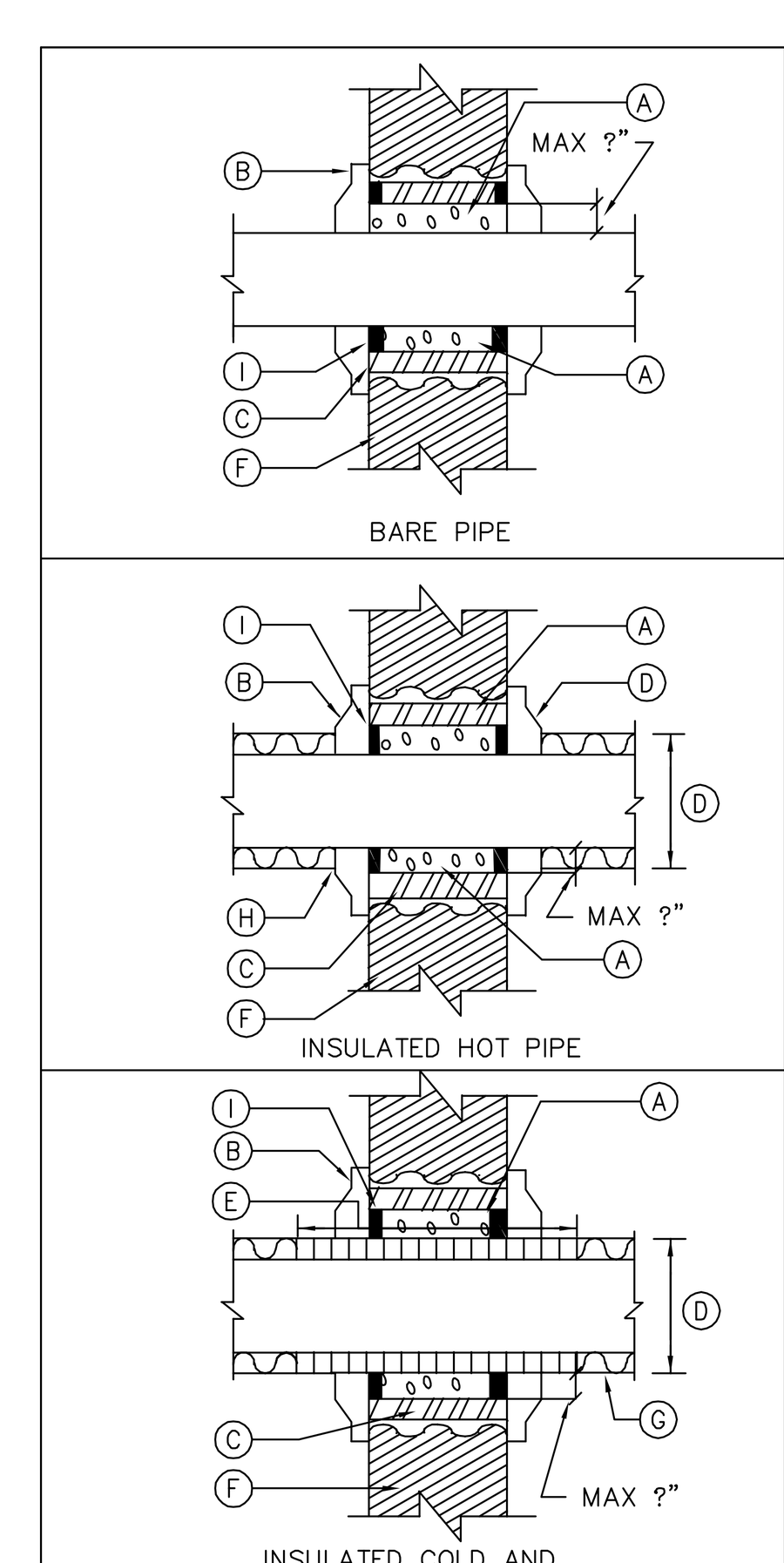


ELEVATION VIEW

PROVIDE WATER TIGHT SLEEVES FOR ALL PIPING PENETRATIONS

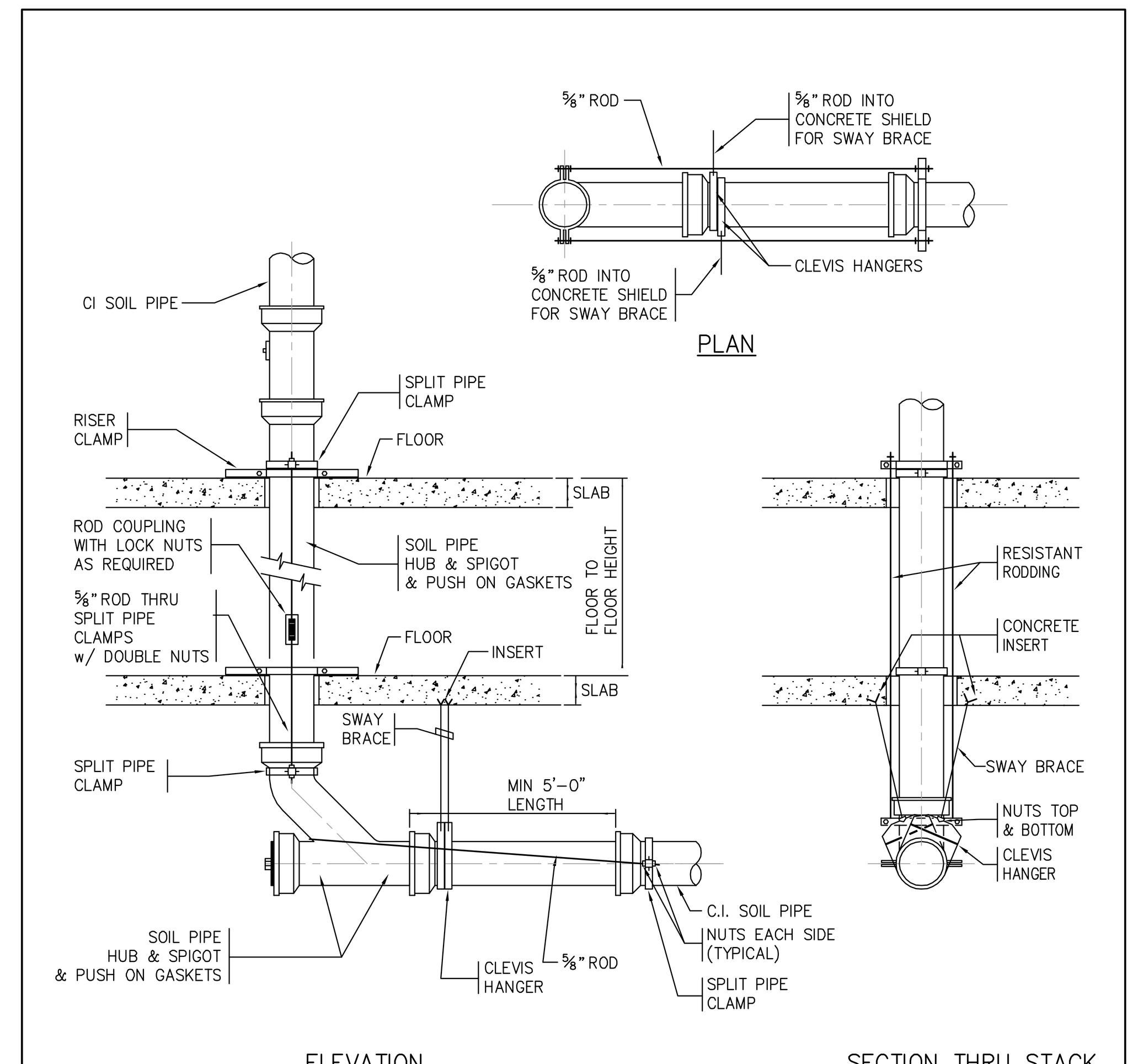
CONCRETE FILL
SEE ELEVATIONS ON DRAWING P-601 AND SECTIONS ON DRAWING A-303 FOR ADDITIONAL INFORMATION

STORM RETENTION TANK DETAIL
N.T.S.



Ⓐ ALL SPACES PACKED FULL DEPTH WITH MINERAL WOOL OR OTHER EQUALLY APPROVED FIRE RESISTIVE MATERIAL (ASBESTOS OR FIBERGLASS SHALL NOT BE USED)
FIRE RESISTANT FOAM SEALANT CHASE FOAM CTC P2-855 INSTALLATION AS PER MANUFACTURER.
Ⓑ ESCUTCHEON BOTH SIDES
Ⓒ SLEEVE
Ⓓ DIAMETER OF INSULATED PIPE
Ⓔ ANHYDROUS CALCIUM SILICATE INSULATION THRU SLEEVE
Ⓕ FIRE RATED PARTITION WALL OR FLOOR
Ⓖ FIBERGLASS INSULATION
Ⓗ TERMINATE INSULATION AT ESCUTCHEON
Ⓘ 1/2" DEPTH FIRE STOP FINISH SEALANT

DETAIL OF PIPING PIERCING FIRE RATED PARTITIONS, WALLS AND FLOORS
NO SCALE



THIS DETAIL USED @ BASE OF HIGH RISE BUILDINGS STACKS (WHERE HIGH HEAD CONDITIONS MIGHT OCCUR DUE TO LINE BLOCKAGES, HIGH STATIC HEADS, ETC).

DETAIL OF PIPING AT BASE OF STACKS
BASE OF LEADERS SIMILAR
NO SCALE

Alterations or additions to this engineering document by an unlicensed person is a violation of Chapter 16, Title VIII, Article 145 § 7209.2 of the New York State Education Law.

Damian Titus
NYC Buildings
APPROVED
Under Directive 2 of 1975

125 GREENWICH
NEW YORK, NY

OWNER :
VS 125 LLC
55 EAST 59TH STREET, 24TH FLOOR
NEW YORK, NY 10022
TEL: 212 616 0400

ARCHITECT :
RAFAEL VIÑOLY ARCHITECTS PC
50 VANDAM STREET
NEW YORK, NY 10013
TEL: 212 924 5060 FAX: 212 924 5858

STRUCTURAL ENGINEER :
DESIMONE CONSULTING ENGINEERS
18 WEST 18TH STREET, 10TH FLOOR
NEW YORK, NY 10011
TEL: 212 532 2211

MEP / FP / IT ENGINEER :
COSENTINI ASSOCIATES - A TETRA TECH COMPANY
2 PENNSYLVANIA PLAZA, 3RD FLOOR
NEW YORK, NY 10121
TEL: 212 615 3606

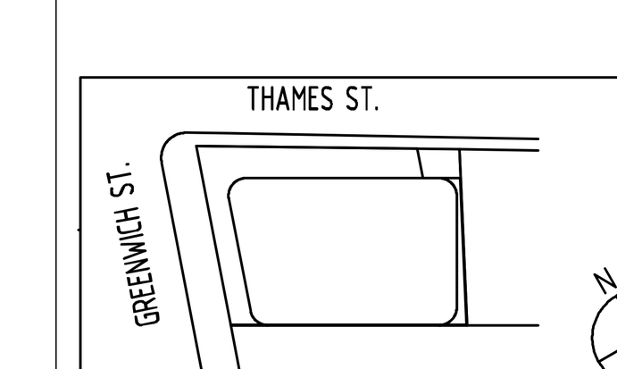
GEOTECH CONSULTANT :
LANGAN ENGINEERING
619 RIVER DRIVE CENTER 1
ELMWOOD PARK, NJ 07407
TEL: 201 794 6900

VERTICAL TRANSPORTATION CONSULTANT :
VAN DEUSEN & ASSOCIATES
120 EAGLE ROCK AVENUE, SUITE 310
EAST HANOVER, NJ 07936
TEL: 973 994 9220

PHASE : DOB SUBMITTAL

ARCHITECT'S SEAL

ISSUE NO.	ISSUE DATE	DESCRIPTION
01	9/30/15	DOB SUBMITTAL



KEY PLAN AND NORTH SIGN

IF THIS DRAWING IS NOT 36" X 48" IT IS A REDUCED PRINT; REFER TO GRAPHIC SCALE

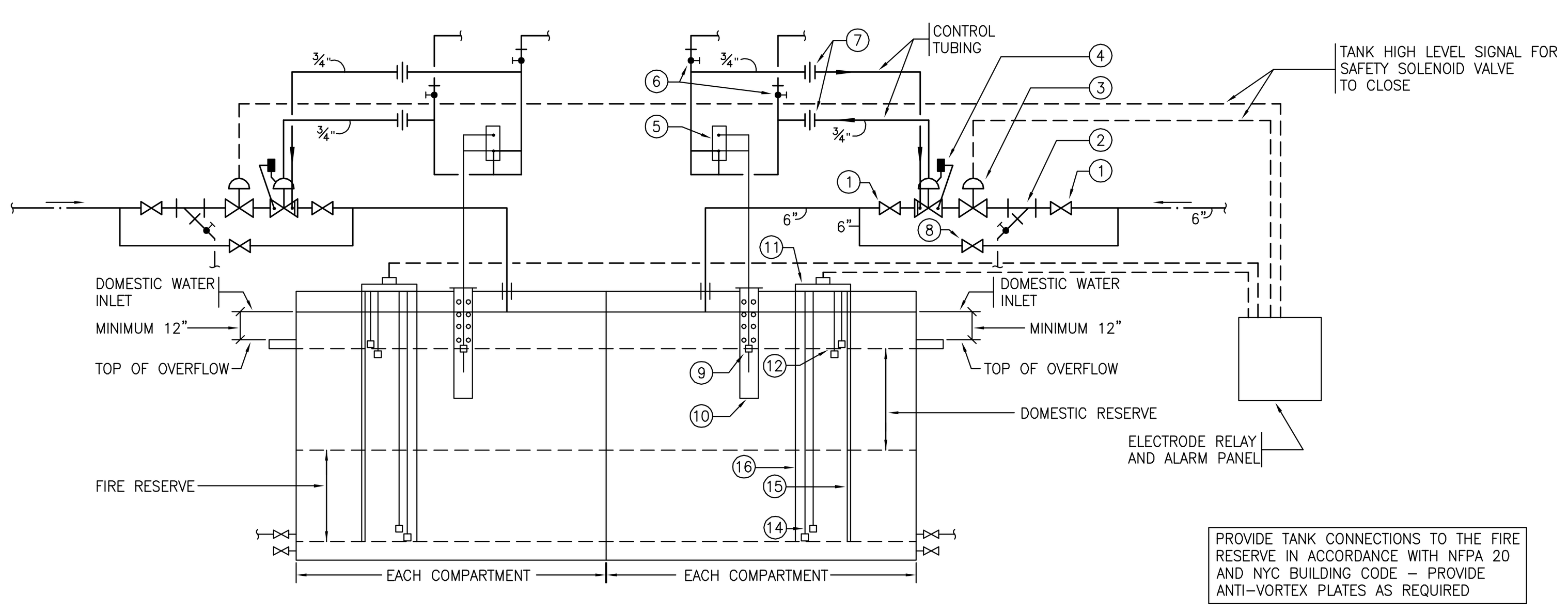
SCALE NO SCALE

PLUMBING DETAILS
SHEET #1

SHEET TITLE :

P-501.00

SHEET NUMBER :



PROVIDE TANK CONNECTIONS TO THE FIRE RESERVE IN ACCORDANCE WITH NFPA 20 AND NYC BUILDING CODE – PROVIDE ANTI–VORTEX PLATES AS REQUIRED

EQUIPMENT KEY

(1) – GATE VALVE

(2) – CAST BRONZE STRAINER MUELLER NO.851 OR 852 FITTED W/BLOW OFF BALL VALVE AND PIPED TO OVER–FLOW BASIN.

(3) – SAFETY SOLENOID SHUT–OFF VALVE – CLA–VAL CO. 536DG–01AK, 150F, CS3SM, 120/60.

(4) – SUPPLY FILL VALVE – COMBINATION SUCTION TANK MODULATING FLOAT AND FLOW LIMITING CONTROL VALVE. CLA–VAL CO. NO.524G–01KXHI/1130 W/ORFICE PLATE AND FLOW LIMITING PILOT, 150F, BBSST.

(5) – FLOAT CONTROL – CLA VAL CO. NO.CFM9 PIPED IN SERIES. IF ONE COMPARTMENT IS BEING CLEANED THE OTHER COMPARTMENT WILL CONTROL THE WATER LEVEL.

(6) – AT ALL HIGH POINTS INSTALL A PIPE TEE WITH SIDE OUTLET FACING UP WITH BALL VALVES PIPED TO OVERFLOW BASIN.

(7) – UNION

(8) – FULL SIZED VALVED BY–PASS(NORMALLY CLOSED) FOR EMERGENCY FILL.

(9) – STAINLESS STEEL FLOAT & ROD. PROVIDE FLOAT ROD COUNTER WEIGHT IF REQUIRED.

(10) – STILLING WELL – STAINLESS STEEL, BRASS OR COPPER W/ VENT HOLES LOCATED ABOVE HIGH WATER LEVEL. 10" DIAMETER SET PLUMB. INSURE THAT ROD HAS FREE PLAY FOR HORIZONTAL MOVEMENT AND STILLING WELL IS LONG ENOUGH TO AVOID CATCHING FLOAT ON LOWER RIM.

(11) – ELECTRODE HOLDER

(12) – TANK HIGH LEVEL & TANK HIGH LEVEL RESET

(13) – NOT USED

(14) – CW LOW LEVEL & CW LOW LEVEL RESET

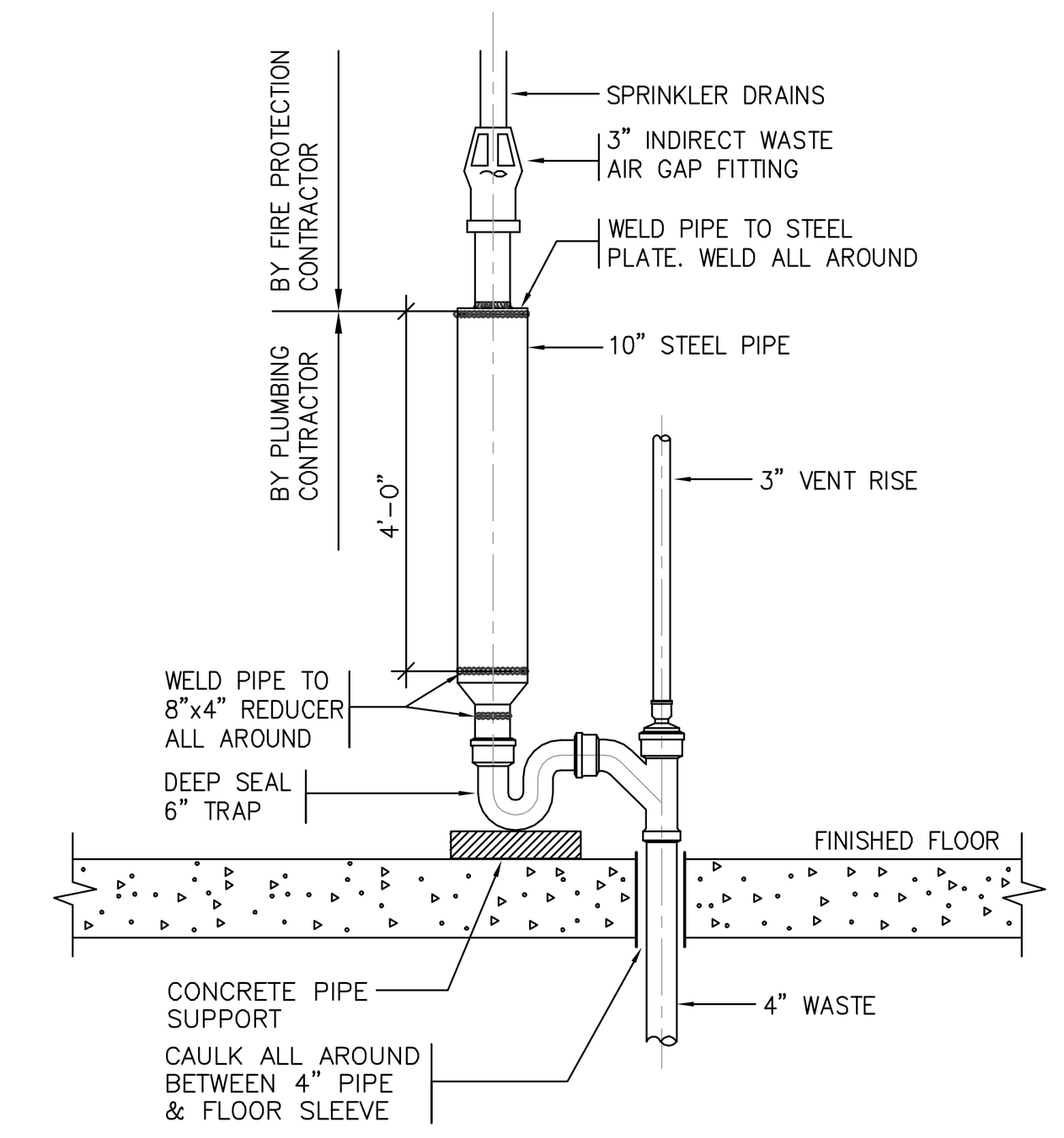
(15) – GROUND

(16) – ELECTRODE STILLING WELL

(11)–(16): REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.

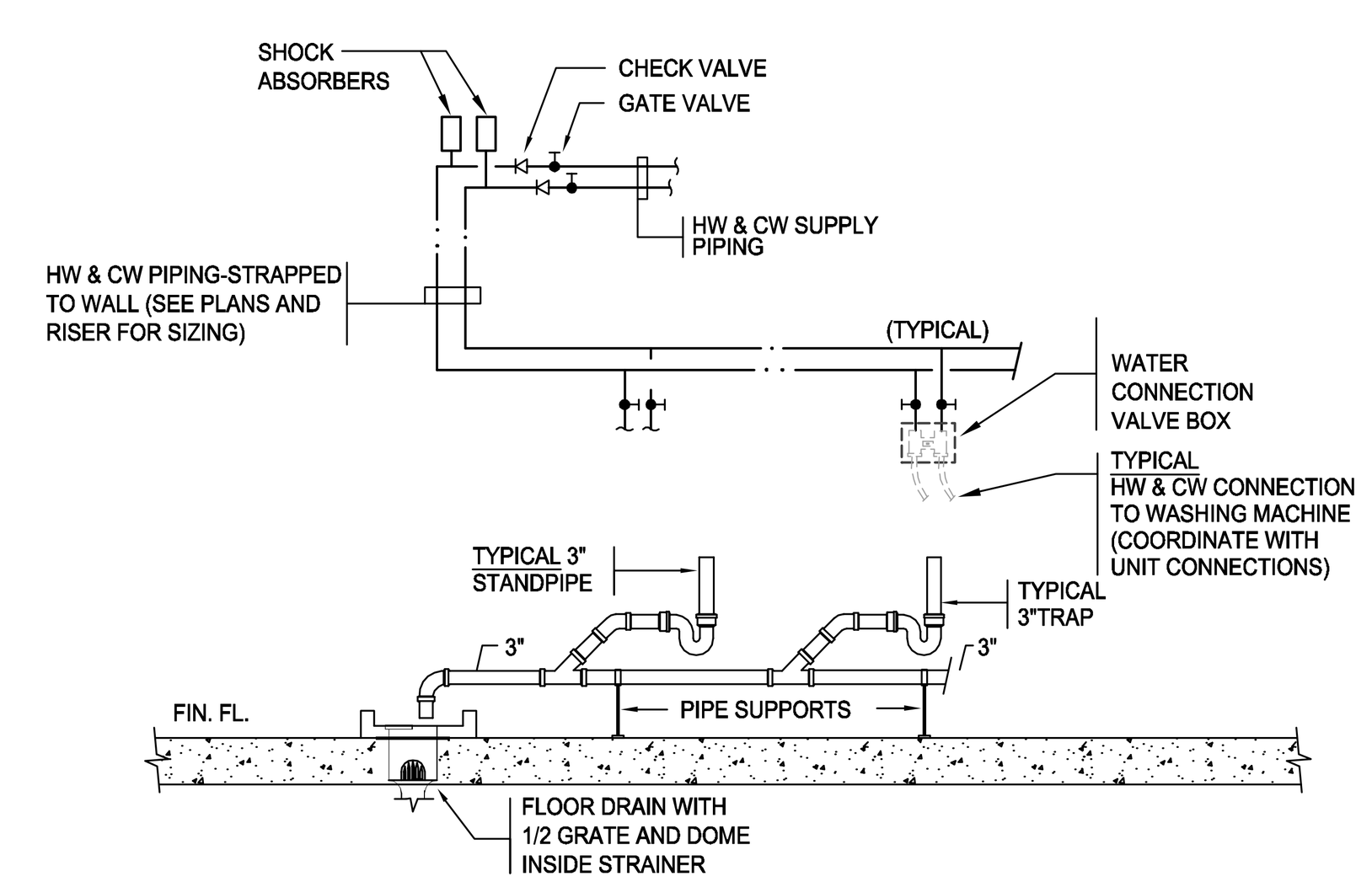
2 / P-502 SCHEMATIC DIAGRAM OF SUPPLY PIPING AND CONTROLS FOR A WATER SUCTION TANK

NOT TO SCALE



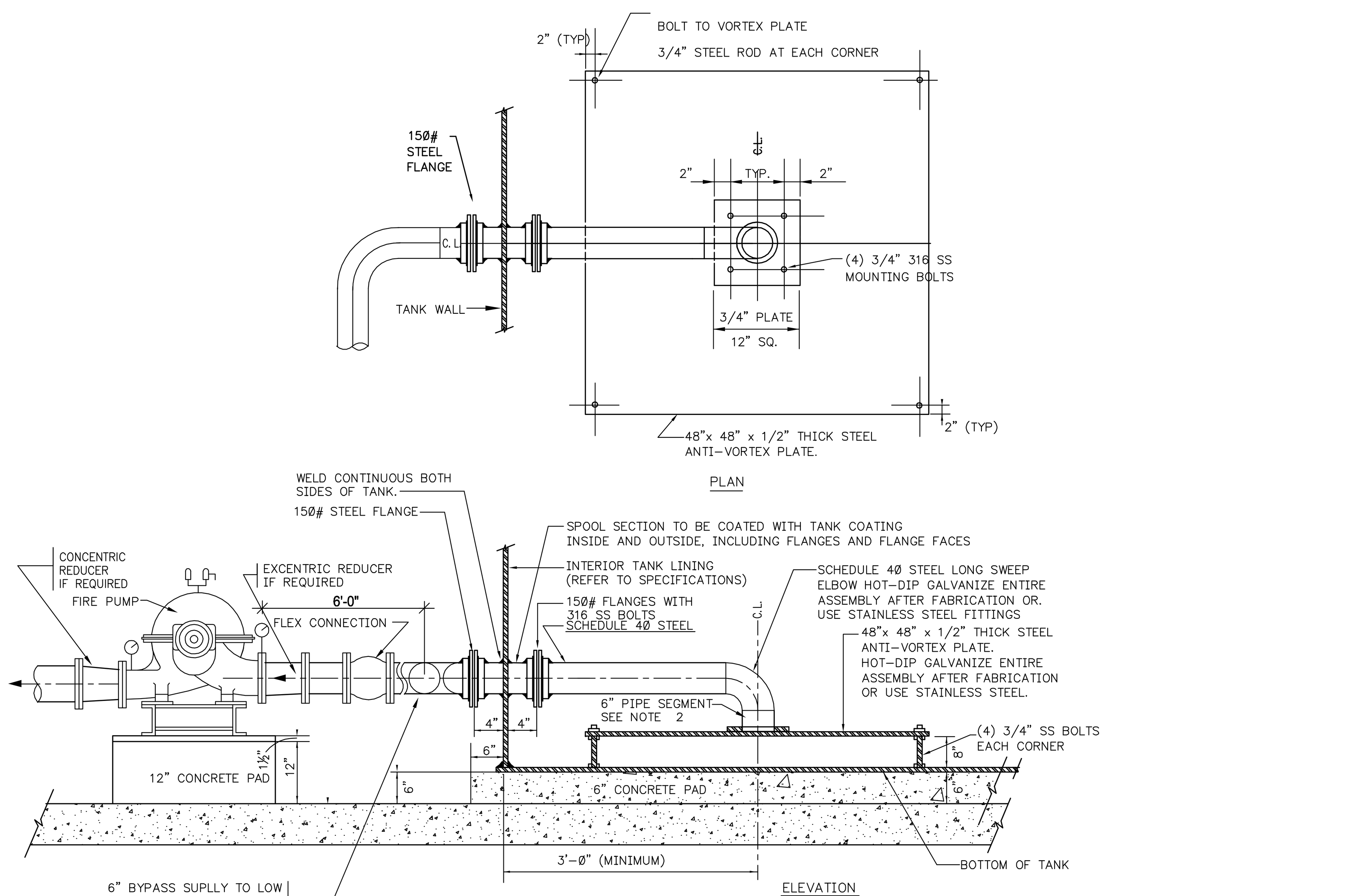
TYPICAL SPRINKLER FUNNEL DRAIN

NO SCALE



3 / P-502 WASHING MACHINE DRAIN-WITH STANDPIPE

NO SCALE

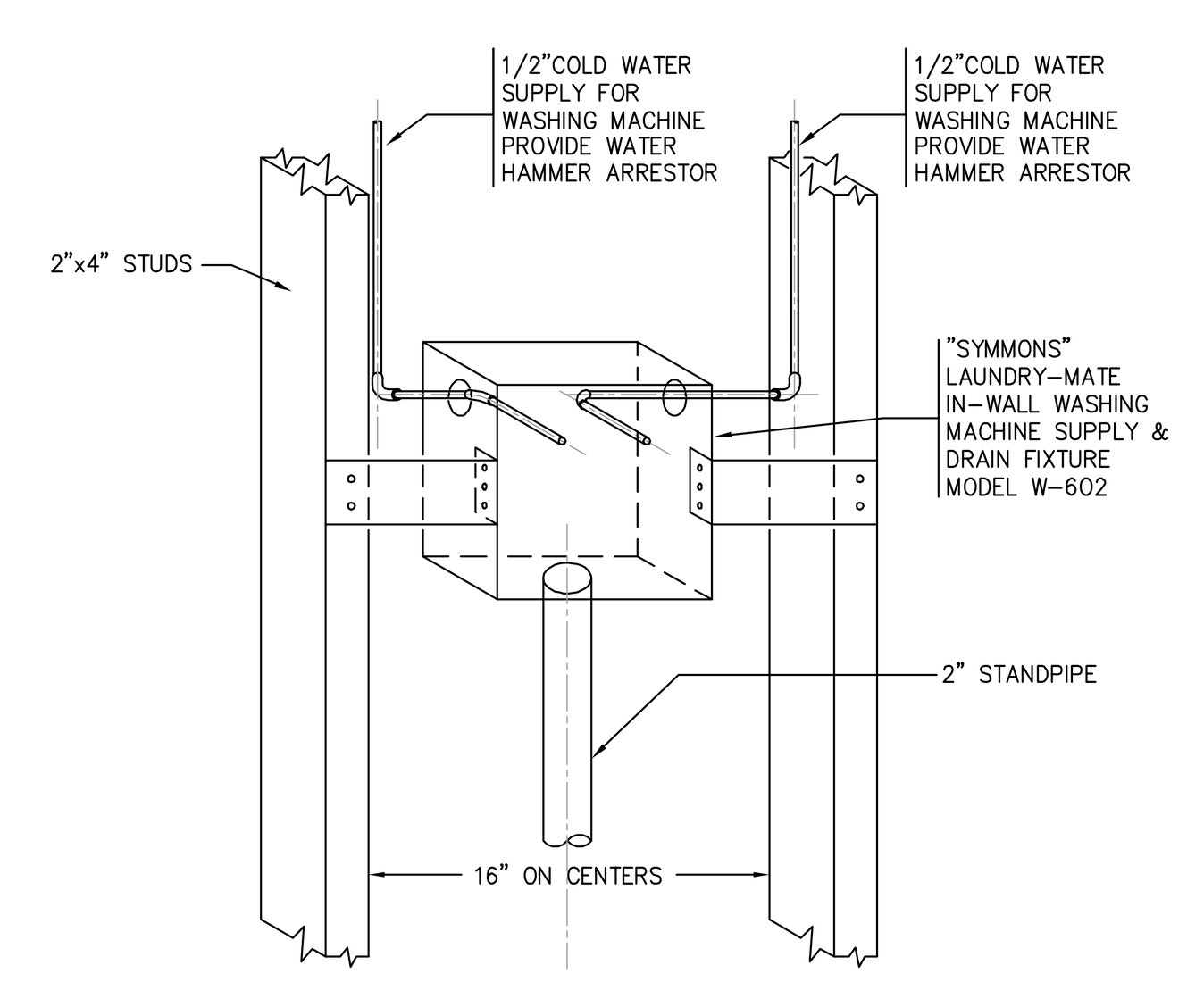


NOTES:

1. ALL TRIM (NUTS, BOLTS, WASHERS, ETC.) INSIDE TANK SHALL BE 316 STAINLESS STEEL PROVIDE DIELECTRIC INSULATORS (RUBBER) BETWEEN SS TRIM AND GALVANIZED TANK ELEMENTS OR USE ALL STAINLESS STEEL ELEMENTS.
2. LENGTH OF VERTICAL PIPE SUCTION SEGMENT IN THE TANK TO BE DETERMINED BASED ON ACTUAL SELECTED PUMP HEIGHT
3. FOR CONCRETE TANKS, ALL PIPING PENETRATING THE TANK WALL TO BE INSTALLED WITH WATER TIGHT SLEEVES

ANTI–VORTEX FIRE PUMP SUCTION DETAIL

NO SCALE



TYPICAL INSTALLATION DETAIL OF WASHING MACHINE SUPPLY & DRAIN

NOT TO SCALE

PROVIDE ADD ALTERNATE PRICING FOR INTELLIFLOW AUTOMATIC WASHING MACHINE BOX WATTS A2C–WB WITH LEAK SENSOR AND PAN

Damian Titus
Buildings
APPROVED
Under Directive 2 of 1975
Date: 09/27/2016
NYC Development Hub

Job Number
ES694191786 Scan Code

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NEW YORK, NY

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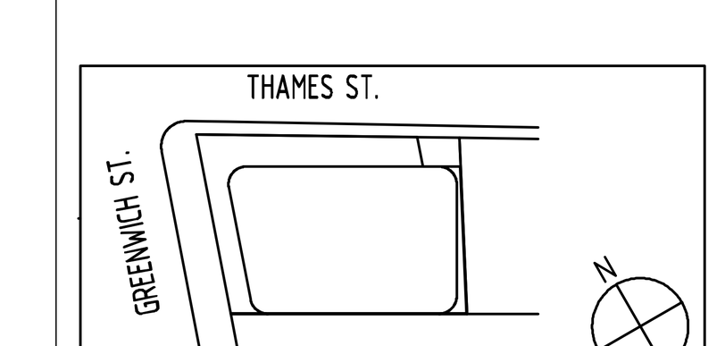
TEL: 973 994 9220

PHASE : DOB SUBMITTAL

STATE OF NEW YORK MICHAEL W. MAYBAUM No. 059357 P.E. LICENSED PROFESSIONAL ENGINEER

ARCHITECT'S SEAL

ISSUE NO.	ISSUE DATE	DESCRIPTION
01	9/30/15	DOB SUBMITTAL



KEY PLAN AND NORTH SIGN

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SCALE NO SCALE

PLUMBING DETAILS SHEET #2

SHEET TITLE :

P-502.00

SHEET NUMBER :

FILE NAME I:\140294\PLUM\P-502.dwg SAVED ON 9/30/2015 2:36 PM PLOTTED ON 9/30/2015 4:23 PM PLOTTED BY CLIFFORD, THOMAS

DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER AND SEWER OPERATIONS
SITE PLAN - SITE CONNECTION PROPOSAL
SCM - 585/13

LEGEND

SYMBOL	DEFINITION
	EXISTING SANITARY PIPE
	EXISTING SEWER STRUCTURE
	EXISTING LIGHT POLE
	EXISTING FIRE HYDRANT
	EXISTING WATER VALVE
	PROPOSED SEWER PIPE
	PROPOSED SEWER MANHOLE
	ALLOWABLE AREA
	BUILDING AREA
	CANOPY AREA (UNDETAINED)

DESIGN CALCULATIONS
SITE CONNECTION PROPOSAL AREA = 9,083 SQ. FT. = 0.209 ACRES
DESIGN CALCULATIONS FOR ALLOWABLE SANITARY AND STORM FLOWS ARE PER CHAPTER 31 OF TITLE 15 OF THE RULES OF THE CITY OF NEW YORK. REQUIRED VOLUME FOR THE UNDERGROUND STORM WATER DETENTION BASIN WAS CALCULATED PER NYCDEP "GUIDELINES FOR THE DESIGN AND CONSTRUCTION OF STORMWATER MANAGEMENT SYSTEMS".

SANITARY SEWER FLOWS

PROJECT SITE IS LOCATED IN THE C5-5 ZONING DISTRICT OR R10 EQUIVALENT DISTRICT. PER TITLE 10 SECTION IIIB, THE SEWAGE FLOW IS CALCULATED USING 150 GALLONS PER DAY PER PERSON WITH AN R10 ZONE POPULATION DENSITY OF 785 PERSONS PER ACRE AND A PEAK FACTOR OF 4.

$$Q_{san} = \frac{150\ (\text{GALLONS/DAY/PERSON}) \times \text{POPULATION DENSITY} \times \text{AREA (ACRES)}}{7.48 \times 86{,}400}$$

$$Q_{san} = \frac{150 \times 785 \times 0.209}{7.48 \times 86{,}400}$$

$Q_{san} = 0.038 \times 4 = 0.152$ CFS

STORM FLOW

ALLOWABLE STORM FLOW, $Q_{all} = C \times I \times A$
INTENSITY IS 5.95 IN/HR. BASED ON 6 MINUTES TIME OF CONCENTRATION FOR THE 5 YEAR STORM EVENT. FOR THE BOROUGH OF MANHATTAN THE ALLOWABLE STORM INTENSITY IS 5.95 IN/HR AND THE RUNOFF COEFFICIENT IS 0.60.

$Q_{all} = 0.60 \times 5.95$ IN/HR $\times$ A (ACRES)

A = TRIBUTARY AREA PER ABOVE REFERENCE.

Q_{all} (Greenwich St.) = $0.60 \times 5.95 \times 0.074 = 0.26$ CFS
Q_{all} (Thames St.) = $0.60 \times 5.95 \times 0.128 = 0.46$ CFS
Q_{all} (Trinity Place) = $0.60 \times 5.95 \times 0.007 = 0.03$ CFS
Q_{all} (total) = $0.60 \times 5.95 \times 0.209 = 0.75$ CFS

DEVELOPED CONDITIONS
ROOF AREA = 8,841 SQ. FT. = 0.203 ACRES
CANOPY/PAVEMENT AREA (UNRESTRICTED) = 242 SQ. FT. = 0.006 ACRES
ROOF C = 0.95
PAVEMENT C = 0.95
WEIGHTED $C_w = 0.95$

DEVELOPED STORM FLOW, $Q_{dev} = A \times I \times C_w$

Q_{dev} ROOF = $0.203 \times 5.95 \times 0.95 = 1.15$ CFS
Q_{dev} CANOPY/PAVEMENT AREA (UNRESTRICTED) = $0.006 \times 5.95 \times 0.95 = 0.03$ CFS
$Q_{dev} = 0.209 \times 5.95 \times 0.95 = 1.18$ CFS

DETENTION CALCULATIONS
A DETENTION TANK AND PUMPS LOCATED IN THE BUILDING BASEMENT WILL BE USED TO LIMIT THE DEVELOPED STORM FLOW OF 1.18 CFS TO THE GREATER OF 0.25 CFS OR 10% OF THE NYCDEP MAXIMUM ALLOWABLE FLOW (Q_{max}), UNLESS THE ALLOWABLE FLOW IS LESS THAN 0.25 CFS.

$0.75 \times 0.10 = 0.075$ CFS
0.075 CFS < 0.25 CFS
THEREFORE, USE 0.25 CFS

REQUIRED DETENTION VOLUME
Q_{all} FROM DETENTION = 0.25 CFS

PAVEMENT AREA WILL CONVEY 0.03 CFS OF UNRESTRICTED RUNOFF TO A PROPOSED THAMES STREET CONNECTION.

Q_{all} FROM DETENTION = 0.25 CFS − 0.03 = 0.22 CFS

THE DETENTION TANK AND PUMPS WILL BE LOCATED ALONG GREENWICH STREET, WHICH HAS AN ALLOWABLE FLOW OF 0.26 CFS. THEREFORE, $Q_{rr} = 0.22$ CFS.

STORM DURATION FOR DETENTION FACILITIES WITH A CONSTANT OUTFLOW
$T = 0.23 \cdot ((C_w \cdot A)/Q_{rr})^{(0.5)} - 15$
$= 0.23 \cdot ((0.95 \cdot 8{,}841)/0.22)^{(0.5)} - 15$
$= 29.94$ MINUTES

REQUIRED STORAGE VOLUME FOR DETENTION FACILITIES WITH A CONSTANT OUTFLOW
$V = [((0.19 \cdot C_w \cdot A)/(T+15)) - (57 \cdot Q_{rr})] \cdot T$
$= [((0.19 \cdot 0.95 \cdot 8{,}841)/(29.94+15)) - (57 \cdot 0.22)] \cdot 29.94$
$= 688$ CF (MIN.)

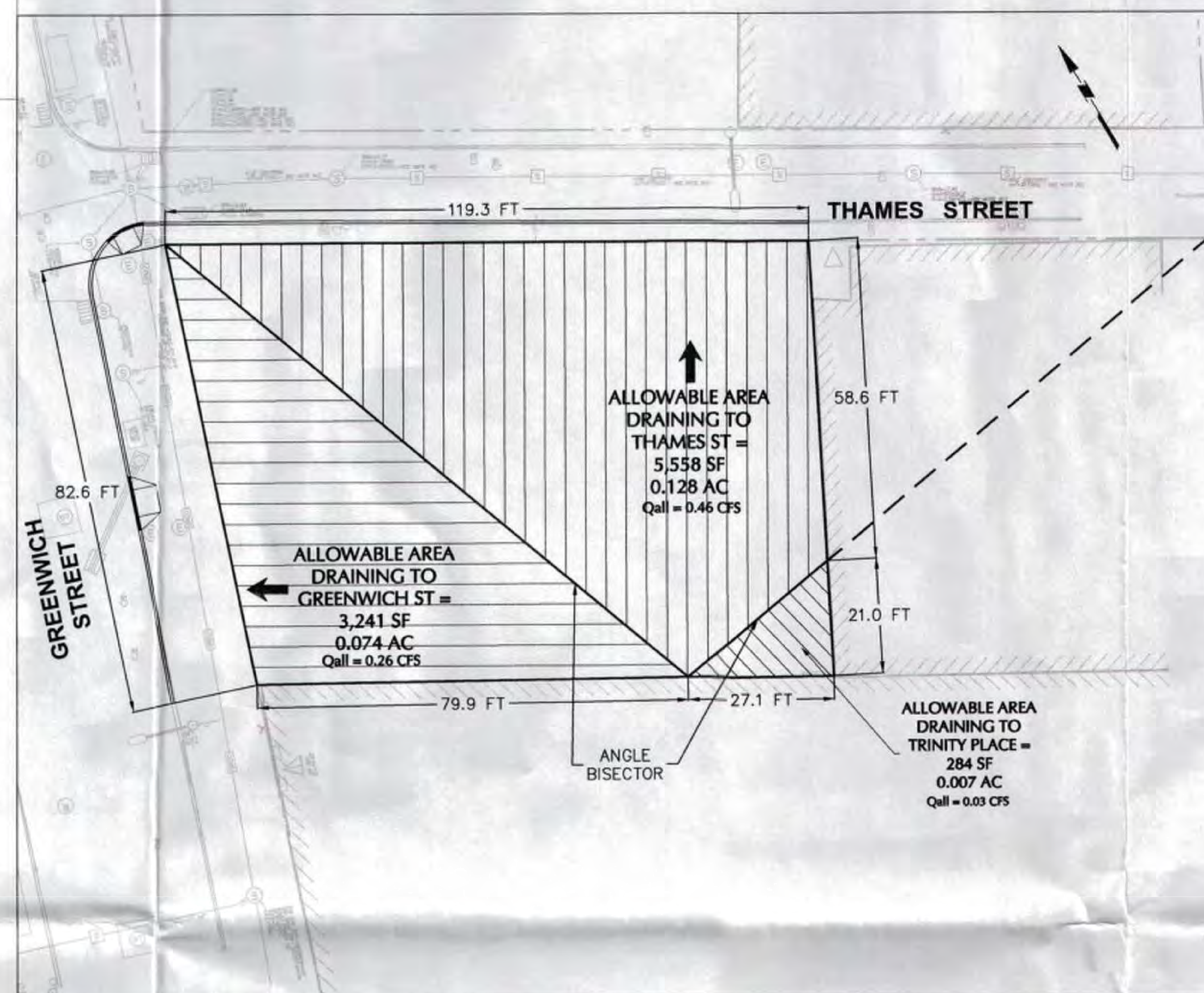
PROPOSED STORAGE VOLUME:
GREENWICH STREET DETENTION TANK = 1,950 CF > 688 CF
TOTAL STORAGE VOLUME = 1,950 CF

ROOF FLOW OF 1.15 CFS WILL BE RESTRICTED TO 0.22 CFS ON GREENWICH STREET BY MEANS OF DETENTION FACILITIES AND PUMPS. PAVEMENT AREA WILL CONVEY 0.03 CFS OF UNRESTRICTED RUNOFF TO A PROPOSED THAMES STREET CONNECTION.

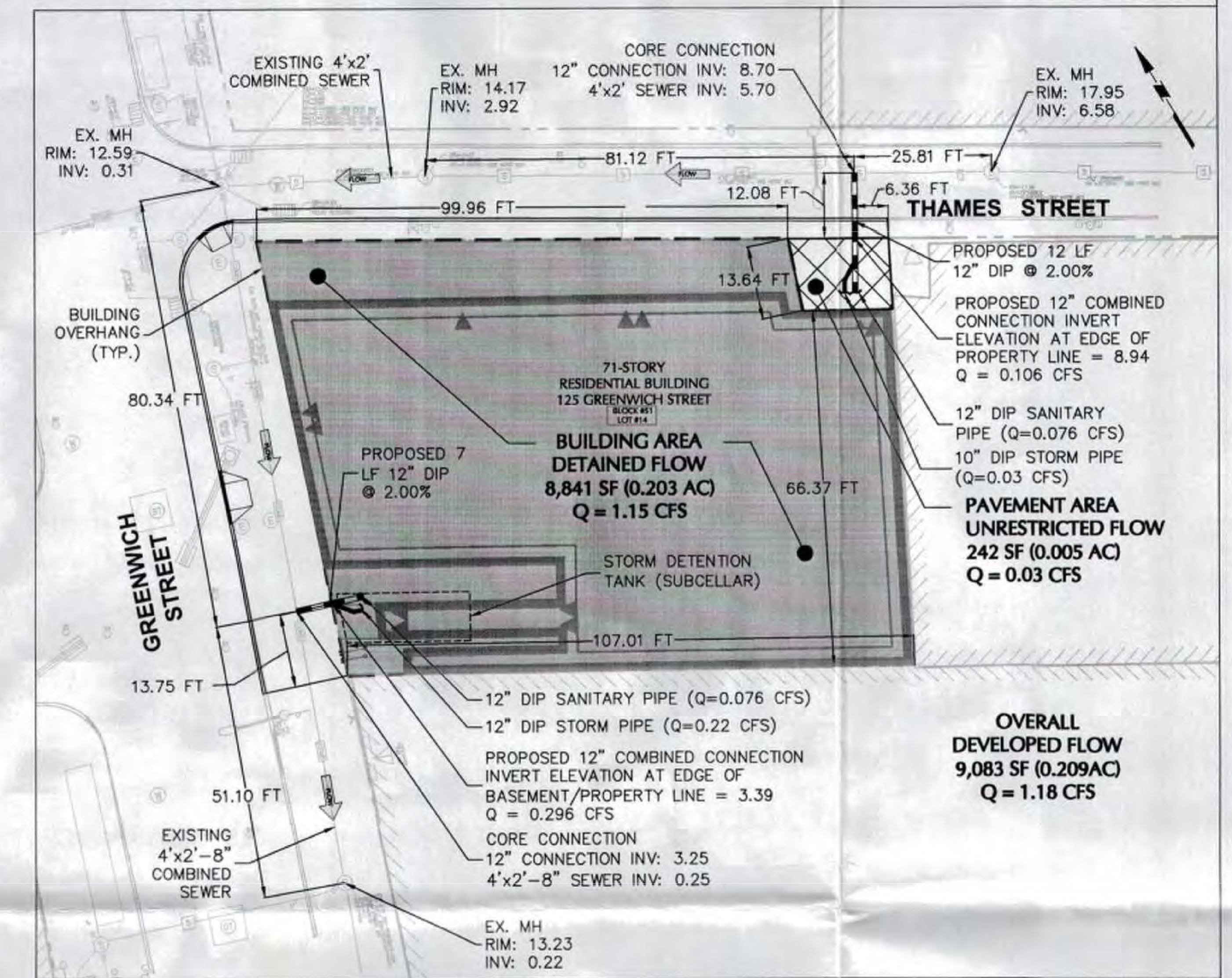
I, RICHARD BURROW, A LICENSED PROFESSIONAL ENGINEER (NUMBER 082168) IN THE STATE OF NEW YORK, DO HEREBY CERTIFY THAT THE SURVEY, FIELD AND OFFICE WORK REQUIRED IN AND SHOWN ON THIS PLAN WAS DONE BY ME OR UNDER MY DIRECT SUPERVISION AND NO PART OF SAID WORK WAS DONE BY ANY EMPLOYEE OF THE CITY OF NEW YORK.

SEAL & SIGNATURE 5/21/15

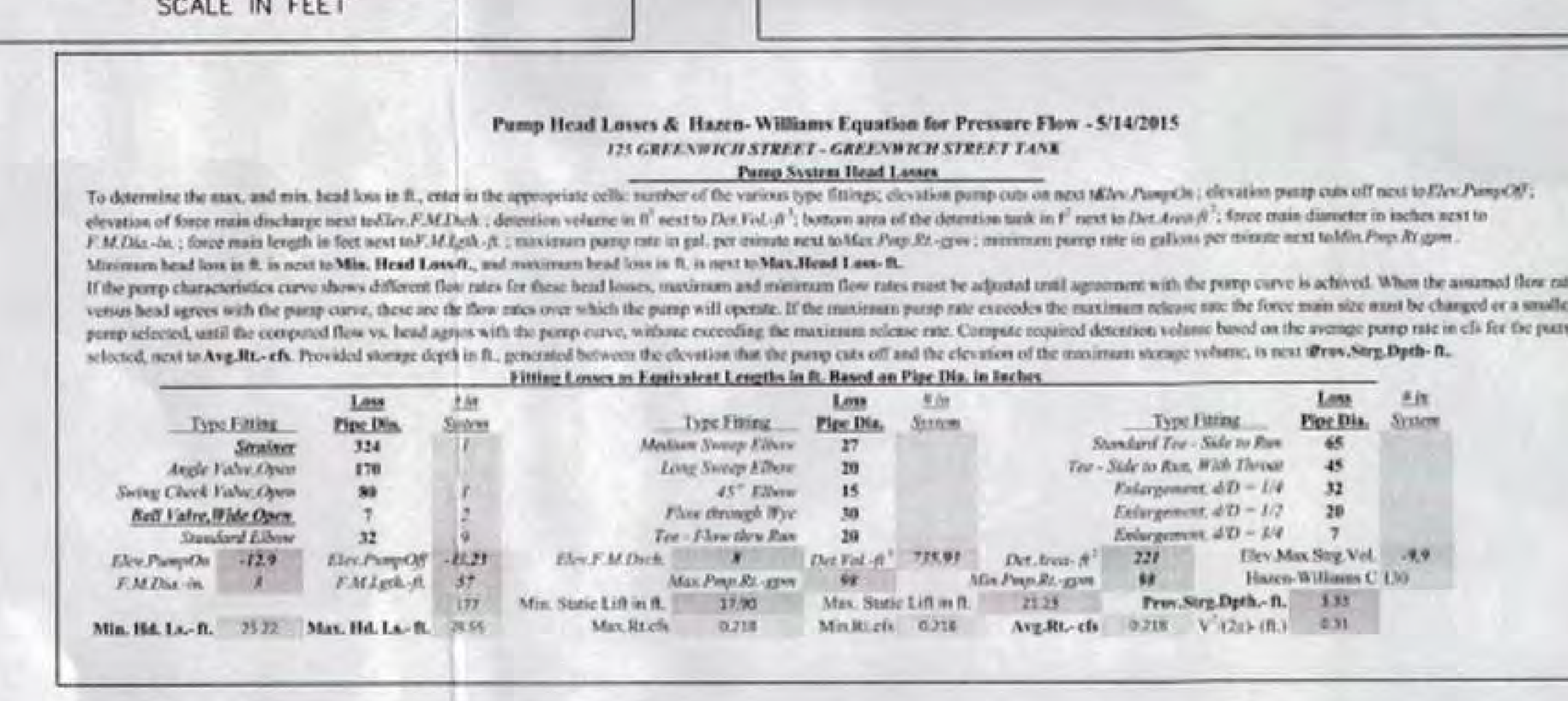
NYS LICENSED PROFESSIONAL ENGINEER/REGISTERED ARCHITECT
NAME: RICHARD BURROW
COMPANY: LANGAN ENGINEERING, ENVIRONMENTAL, SURVEYING, AND LANDSCAPE ARCHITECTURE, D.P.C.
ADDRESS: 619 RIVER DRIVE ELMWOOD PARK, NJ 07407
TELEPHONE NUMBER: 201.398.4595



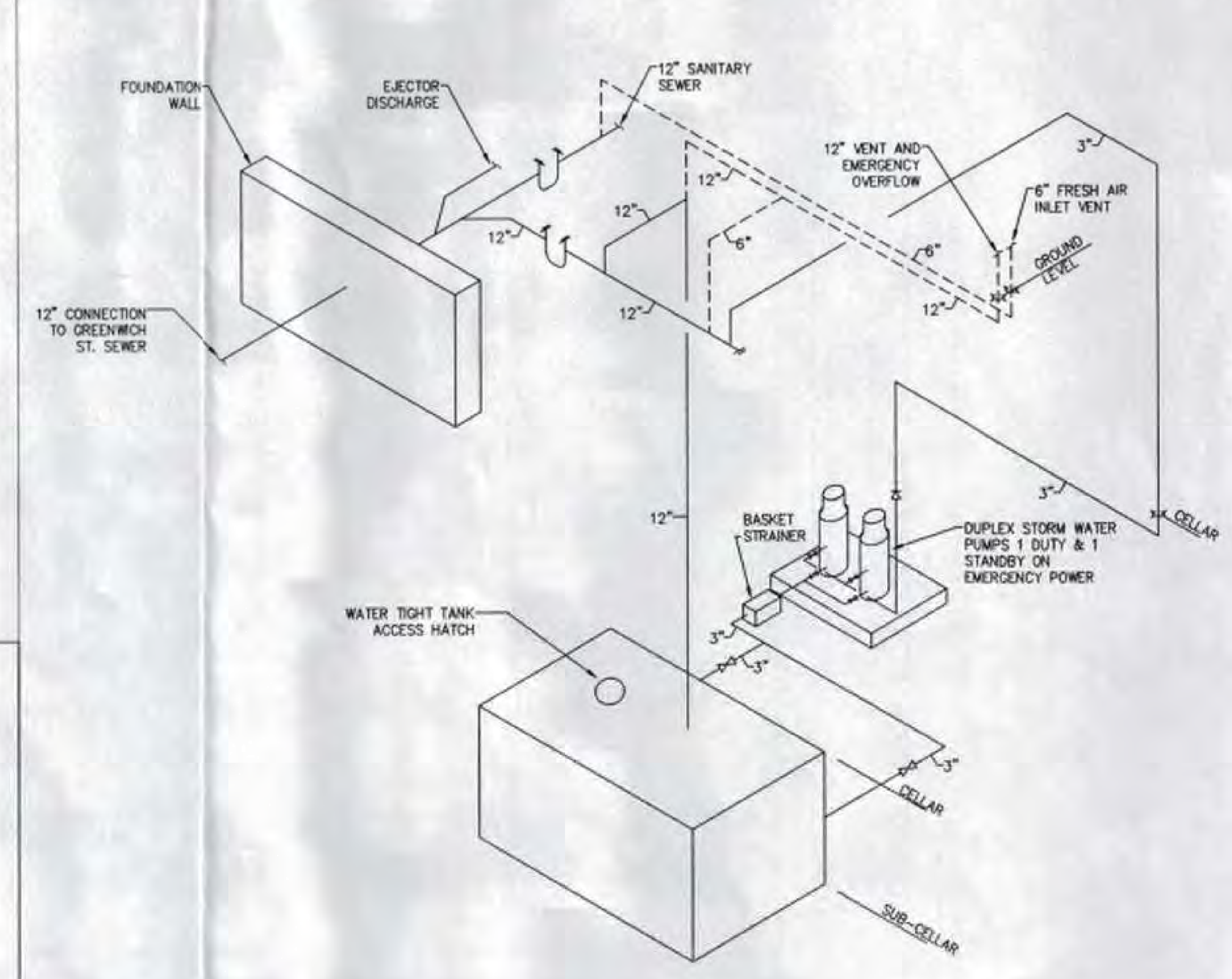
ALLOWABLE AREA PLAN
SCALE IN FEET 0 5 10 20



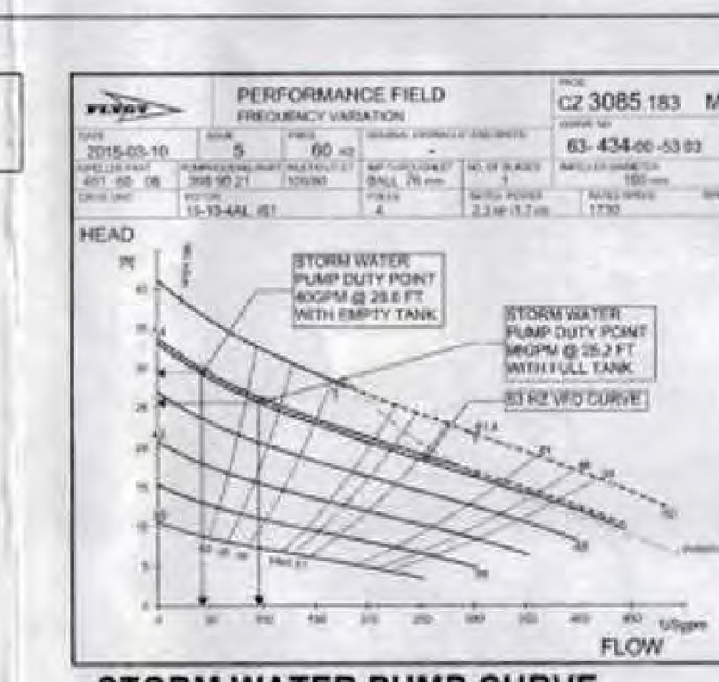
DEVELOPED AREA PLAN
SCALE IN FEET 0 5 10 20



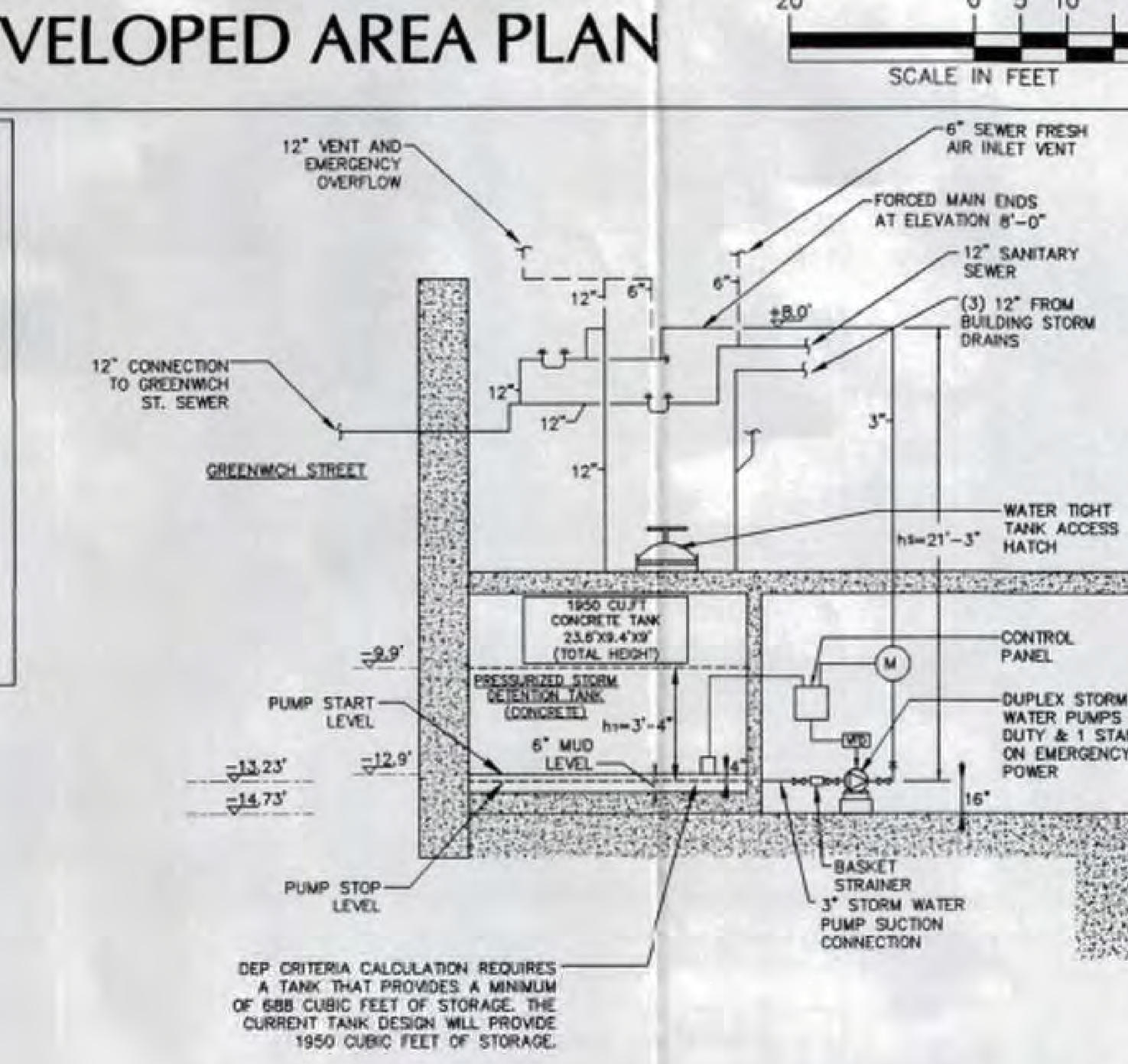
NO SUBSTITUTION OF MATERIAL OR EQUIPMENT IS PERMITTED.



STORM TANK SYSTEM ISOMETRIC RISER



STORM WATER PUMP CURVE
(MODEL FLYGT CZ 3085 187 MT)



STORM TANK SYSTEM DETAIL

BUREAU OF WATER & SEWER OPERATIONS DIVISION OF REVIEW & CONSTRUCTION COMPLIANCE
SEWER INFORMATION CERTIFIED
6/5/15
This Certification Expires on: 5/19/2016

NOTES:

1. REQUIRED DETENTION TO BE IN BASEMENT OF BUILDING.
2. EXISTING TOPOGRAPHIC INFORMATION, ELECTRICAL, GAS, TELEPHONE, WATER AND SEWER LINES SHOWN ARE PROVIDED BY LANGAN ENGINEERING, ENVIRONMENTAL, SURVEYING AND LANDSCAPE ARCHITECTURE, D.P.C. FROM A SURVEY DATED MARCH 30, 2015.
3. PIPE LATERALS SHALL BE DUCTILE IRON PIPE (DIP) AS INDICATED ON THE PLAN.
4. CONTRACTOR SHALL REFER TO ARCHITECTURAL AND MECHANICAL DRAWINGS FOR EXACT LOCATIONS AND INVERTS OF BUILDING CONNECTIONS. THIS PLAN SHALL BE USED TO CONSTRUCT UTILITY CONNECTIONS TO WITHIN 5 FEET OF THE BUILDING. REFER TO MEP DRAWINGS FOR CONNECTIONS BETWEEN BUILDING LATERAL AND SITE UTILITY.
5. CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS, UTILITY LOCATIONS, AND INVERTS PRIOR TO CONSTRUCTION. ANY CONDITIONS FOUND TO DIFFER FROM THOSE SHOWN ON THE DRAWING SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ENGINEER.
6. ADJUST ALL EXISTING AND PROPOSED UTILITY FRAMES, GRATES, MANHOLE COVERS, VALVE BOXES, ETC. TO BE FLUSH WITH THE PROPOSED SURFACE ELEVATIONS WITHIN THE LIMITS OF CONSTRUCTION.
7. ELEVATION SHOWN REFER TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
8. EXISTING SEWERS SHOWN ON THIS PLAN ARE TRIBUTARY TO THE NEWTOWN CREEK WWTP.
9. THE CONTRACTOR IS RESPONSIBLE FOR NYCDOT STREET OPENING AND TEMPORARY TRAFFIC DIVERSION/OBSTRUCTION PERMITS.
10. STORM TANK SYSTEM ISOMETRIC RISER DETAIL, CEILING HUNG PRESSURE RELIEF TANK DETAIL, TANK PUMP HEAD CALCULATION, STORMWATER PUMP CURVE, AND STORM TANK SYSTEM DETAIL PROVIDED BY COSENTINI ENGINEERS ON MAY 15TH, 2015, AND ARE PROVIDED ON THIS PLAN FOR REFERENCE ONLY.

PROJECT INFORMATION

BOROUGH: MANHATTAN
ADDRESS: 125 GREENWICH STREET
DOB NUMBER: 140151555
BLOCK: 51
PRESENT LOTS: 14
TENTATIVE LOTS: N/A
EXISTING ZONING: C5-5
PROPOSED ZONING: N/A
DEVELOPMENT TYPE: RESIDENTIAL
OWNERSHIP TYPE: CORPORATION
STORM FLOW DETENTION NOTES (IF APPLICABLE): NOT APPLICABLE
SANITARY FLOW: 0.152 CFS
NAME OF CITY TREATMENT PLANT: NEWTOWN CREEK
DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988
OWNER'S NAME AND ADDRESS:
VS 125 LLC
C/O BIZZI & PARTNERS DEVELOPMENT LLC
55 EAST 59TH STREET, 24TH FLOOR
NEW YORK, NY 10022

APPLICANT INFORMATION

NAME: RICHARD BURROW
FIRM/ORGANIZATION: LANGAN ENGINEERING, ENVIRONMENTAL, SURVEYING, AND LANDSCAPE ARCHITECTURE, D.P.C.
ADDRESS: 619 RIVER DRIVE
ELMWOOD PARK, NJ 07407
TELEPHONE: 201.398.4595

REVISIONS

6TH SUBMISSION
5TH SUBMISSION
4TH SUBMISSION 2015-05-21
3RD SUBMISSION 2014-04-25
2ND SUBMISSION 2014-01-31
1ST SUBMISSION 2013-11-22

CERTIFICATION BOX
(DEP USE ONLY)

SCM-585/13

SHEET 1 OF 1 | SCM-585/13

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PHASE: DOB SUBMITTAL

ARCHITECT'S SEAL

ISSUE NO.	ISSUE DATE	DESCRIPTION
01	9/30/15	DOB SUBMITTAL

THAMES ST.
GREENWICH ST.

KEY PLAN AND NORTH SIGN
IF THIS DRAWING IS NOT 36" X 48" IT IS A REDUCED PRINT; REFER TO GRAPHIC SCALE

SCALE: NO SCALE

Damian Titus
NYC Buildings APPROVED Under Directive 2 of 1975

Alterations or additions to this engineering document by an unlicensed person is a violation of Chapter 16, Title VIII, Article 145 § 7209.2 of the New York State Education Law.

PLUMBING APPROVALS
SHEET TITLE:

P-601.00
SHEET NUMBER:

GENERAL NOTES:

FL70/ROOF AT 840', T.O. BLDG AT 912', FL. TO FL. = 11'-5"

I - CODES

1. 2008 BUILDING CODE OF THE CITY OF NEW YORK, INCLUDING LATEST AMENDMENTS ("N.Y.C. CODE").
2. AMERICAN INSTITUTE OF STEEL CONSTRUCTION "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS - ALLOWABLE STRESS DESIGN AND PLASTIC DESIGN", JUNE 1, 1989 ("AISC SPECIFICATION"). AS MODIFIED BY SUBCHAPTER 10 ARTICLE 6 OF THE N.Y.C. BUILDING CODE.
3. AMERICAN CONCRETE INSTITUTE "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE" ACI 318-99 ("ACI") AS MODIFIED BY SUBCHAPTER 10 ARTICLE 5 OF THE N.Y.C. BUILDING CODE.

II - MATERIALS

UNLESS OTHERWISE SHOWN OR NOTED ON DRAWINGS:

1. STRUCTURAL STEEL:

ALL ROLLED SHAPES:	ASTM A572 OR A992 OR A913, GRADE 65
ALL BUILT-UP PLATE SHAPES:	ASTM A572 OR A529, GRADE 50
ALL PLATES AND CONNECTION MATERIAL:	ASTM A36
ALL TUBULAR SECTIONS:	ASTM A500, GRADE B
ALL PIPE SECTIONS:	ASTM A53, GRADE B
ANCHOR BOLTS, U.O.N.:	ASTM F1554

2. METAL DECK:

FABRICATE FROM ASTM A611 OR ASTM A653 STEEL WITH ASTM A653 G60 GALVANIZING. SIZE AND GAGE AS NOTED ON DRAWINGS. U.O.N., FLOOR DECKING SHALL BE COMPOSITE DECK WITH CONFIGURATION THAT PERMITS FULL AISC SHEAR CONNECTOR VALUE.

3. SHEAR CONNECTORS:

¾" DIAMETER x 8" HEADED STUDS, U.O.N.

4. CAST-IN-PLACE CONCRETE, CONCRETE COMPRESSIVE STRENGTH:

FOUNDATIONS:	SEE FOUNDATION PLAN
FORMED SLABS:	SEE PLANS
COLUMNS AND WALLS:	AS NOTED ON DRAWINGS
HOUSEKEEPING PADS, CURBS & PARAPETS:	4000 PSI CONCRETE

5. CAST-IN-PLACE CONCRETE (Ec), MODULUS OF ELASTICITY:

CONCRETE FOR SHEAR WALLS, COLUMNS AND LINK BEAMS:

THE MODULUS OF ELASTICITY (Ec) OF CAST-IN-PLACE CONCRETE AT 56 DAYS SHALL AT A MINIMUM MEET OR EXCEED THE VALUES PROVIDED BELOW. THE CONCRETE POURED SHALL BE TESTED EVERY 150 CYD TO ASCERTAIN THE Ec VALUES BELOW ARE ATTAINED.

14,000 PSI CONCRETE:	Ec ≥ 7,400 KSI
12,000 PSI CONCRETE:	Ec ≥ 7,000 KSI
10,000 PSI CONCRETE:	Ec ≥ 6,500 KSI

CONCRETE FOR FLOOR SLABS, FOUNDATION WALLS, AND FOUNDATION MAT:

THE MODULUS OF ELASTICITY (Ec) OF CAST-IN-PLACE CONCRETE AT 28 DAYS SHALL AT A MINIMUM MEET OR EXCEED THE VALUES PROVIDED BELOW. THE CONCRETE POURED SHALL BE TESTED EVERY 150 CYD TO ASCERTAIN THE Ec VALUES BELOW ARE ATTAINED.

10,000 PSI CONCRETE:	Ec ≥ 5,700 KSI
8,600 PSI CONCRETE:	Ec ≥ 5,300 KSI
8,000 PSI CONCRETE:	Ec ≥ 5,100 KSI
7,200 PSI CONCRETE:	Ec ≥ 4,850 KSI

6. REINFORCEMENT:

DEFORMED BARS: (**SEE PLAN FOR EXTENTS OF REINFORCEMENT**)	ASTM A615, GR 60 FOR #8 AND SMALLER; ASTM A615, GR 75 FOR #9, #10 AND #11
WELDED WIRE FABRIC:	ASTM A185.
WELDED DEFORMED WIRE FABRIC:	ASTM A467, GRADE 60.

7. WELDING ELECTRODES:	E70XX LOW HYDROGEN.
8. BOLTING MATERIALS:	ASTM A325 OR F1852 (TWIST-OFF TYPE), OR A490, U.O.N.
9. LIGHT GAGE FRAMING:	ASTM A653; GRADE 50 FOR 16 GAGE AND HEAVIER, GRADE 33 FOR 18 GAGE AND LIGHTER; WITH G60 GALVANIZING

III - GENERAL

1. NOTES,TYPICAL DETAILS AND SCHEDULES APPLY TO ALL STRUCTURAL WORK UNLESS OTHERWISE NOTED FOR CONDITIONS NOT SPECIFICALLY SHOWN, PROVIDE DETAILS OF A SIMILAR NATURE. VERIFY APPLICABILITY BY SUBMITTING SHOP DRAWINGS FOR REVIEW.
2. STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH THE ARCHITECTURAL AND MECHANICAL DRAWINGS. IF THERE IS A DISCREPANCY BETWEEN DRAWINGS IT IS THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE ENGINEER PRIOR TO PERFORMING WORK.
3. DO NOT SCALE DRAWINGS TO OBTAIN DIMENSIONAL INFORMATION.
4. SEE ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR WATER/DAMPROOFING AND FIREPROOFING DETAILS AND REQUIREMENTS.
5. THESE DRAWINGS DO NOT DEFINE SCOPE OF CONTRACTS. SEE CONSTRUCTION MANAGER'S DOCUMENTS.
6. CONSTRUCTION MANAGER SHALL COORDINATE THE WORK AND SEQUENCE OF VARIOUS TRADES.
7. SHOP DRAWINGS SHALL BE SUBMITTED, FOR ITEMS NOTED HEREIN, TO THE ENGINEER FOR REVIEW AND ACCEPTANCE PRIOR TO THE START OF WORK ON SUCH ITEMS. RESUBMITTED SHOP DRAWINGS SHALL HAVE ALL CHANGES CLOUDED AND IDENTIFIED. DRAWING RESUBMITTED WITHOUT CLOUDS WILL NOT BE REVIEWED.
8. DEVIATIONS FROM CONTRACT DOCUMENTS ARE ONLY PERMITTED WHEN ACCEPTED BY ENGINEER IN WRITING. REQUESTS FOR DEVIATIONS MUST BE SUBMITTED IN WRITING ON CONTRACTOR'S LETTERHEAD. ACCEPTANCE OF SHOP DRAWINGS WHICH INCLUDE DEVIATIONS NOT DETECTED DURING REVIEW DOES NOT RELIEVE CONTRACTOR OF RESPONSIBILITY TO CONFORM STRICTLY TO THE CONTRACT DOCUMENTS.
9. AT ALL TIMES THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE CONDITIONS OF THE JOBSITE INCLUDING SAFETY OF PERSONS AND PROPERTY. THE ARCHITECT'S OR ENGINEER'S PRESENCE OR REVIEW OF WORK DOES NOT INCLUDE THE ADEQUACY OF THE CONTRACTOR'S MEANS OR METHODS OF CONSTRUCTION.
10. SHORING, BRACING AND PROTECTION OF EXISTING AND ADJACENT STRUCTURES DURING CONSTRUCTION IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR. PROTECT AND MAINTAIN THE INTEGRITY OF ADJACENT STREETS, BUILDINGS AND STRUCTURES.
11. ALL EXISTING DIMENSIONS AND LOCATIONS OF EXISTING STRUCTURES SHOWN ON THE DRAWINGS SHALL BE VERIFIED BY FIELD MEASUREMENTS PRIOR TO DETAILING OF SHOP DRAWINGS. FIELD-VERIFIED DIMENSIONS ONLY ARE TO BE USED FOR PREPARING SHOP DRAWINGS. ANY DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER.
12. DRAWINGS HAVE BEEN PREPARED BASED ON AVAILABLE KNOWLEDGE OF EXISTING CONDITIONS. PRIOR TO PREPARATION OF SHOP DRAWINGS, CONTRACTOR SHALL VERIFY AND/OR DETERMINE SIZE, LOCATION, CONFIGURATION, ETC. OF EXISTING STRUCTURE EVERY PLACE WHERE NEW WORK IS TO ABUT, ATTACH, CLEAR, ETC. NOTIFY ENGINEER IN WRITING OF ANY AND ALL CONDITIONS WHICH DIFFER FROM THOSE SHOWN ON DRAWINGS.
13. DO NOT CUT OR ALTER ANY EXISTING STRUCTURAL MEMBERS WITHOUT WRITTEN AUTHORIZATION OF THE ENGINEER.
14. REUSE OF SALVAGED MATERIALS IS NOT PERMITTED UNLESS SPECIFICALLY APPROVED BY ENGINEER IN WRITING.
15. DEFICIENT WORK SHALL BE REPLACED OR REPAIRED, AS DETERMINED BY THE ENGINEER, AT NO COST TO OWNER, INCLUDING ENGINEERING COSTS INCURRED.

IV - FOUNDATION NOTES

1. REFER TO GEO-TECHNICAL REPORT PREPARED BY LANGAN ENGINEERING AND ENVIRONMENTAL DATED OCTOBER 25, 2013.
2. NO BACKFILL SHALL BE PLACED AGAINST FOUNDATION WALLS UNLESS SUPPORTING SLABS ARE IN PLACE AND SET OR THE WALLS ARE ADEQUATELY BRACED.
3. DEWATERING OF THE SITE DURING CONSTRUCTION IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR. PRECAUTIONS SHALL BE TAKEN BY THE CONTRACTOR NOT TO UNDERMINE EXISTING FOUNDATIONS. METHOD OF DEWATERING AND CALCULATIONS FOR THE APPROPRIATE SYSTEM ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
4. ALL PIERS ARE TO BE CENTERED ON COLUMNS ABOVE, U.O.N.
5. PROVIDE DOWELS IN FOUNDATIONS FOR ALL WALLS, COLUMNS, AND SHEAR WALLS OF SAME NUMBER AND SIZE AS THE VERTICAL REINFORCEMENT ABOVE, U.O.N.
6. PROVIDE WATERSTOPS IN ALL VERTICAL CONSTRUCTION JOINTS IN BASEMENT WALLS.
7. SLABS ON GROUND SHALL BE PLACED ON SELECT GRANULAR FILL COMPACTED TO 95 PERCENT MAXIMUM MODIFIED DRY DENSITY PER ASTM D1557. SEE TYPICAL DETAIL.

V - CONCRETE NOTES

1. ALL CONCRETE WORK, INCLUDING CONCRETE SHOWN ON ARCHITECTURAL AND MECHANICAL DRAWINGS, SHALL COMPLY WITH ACI 301-99 "SPECIFICATIONS FOR STRUCTURAL CONCRETE".
2. WORK SHALL ALSO CONFORM TO THE REQUIREMENTS AND RECOMMENDATIONS OF THE FOLLOWING ACI DOCUMENTS: 305R, 306.1, 306R, 211.1, 211.2, 214, 304R, 304.2R, 304.5R, 309R, 308, 302.1R, SP-66, 117, 347R.
3. SHOP DRAWINGS, PREPARED IN ACCORDANCE WITH THE ACI DETAILING MANUAL, SHALL BE SUBMITTED FOR ALL REINFORCING STEEL.
4. CONCRETE DESIGN MIXES SHALL BE PREPARED IN ACCORDANCE WITH ACI 318 ARTICLE 5.3 OR 5.4 AND SUBMITTED FOR REVIEW AT LEAST 7 DAYS PRIOR TO THE START OF CONCRETE WORK. MAXIMUM WATER/CEMENT RATIOS BY WEIGHT: 0.50 FOR NORMAL WEIGHT, 0.55 FOR LIGHTWEIGHT. EXPOSED CONCRETE SHALL BE AIR ENTRAINED. CONCRETE MIX DESIGNS MUST SPECIFY THE MODULUS OF ELASTICITY OF CONCRETE (Ec).
5. REINFORCING STEEL SHALL HAVE A MINIMUM CLEAR COVER AS FOLLOWS, U.O.N. IN DRAWINGS:

CONCRETE POURED AGAINST EARTH.. 3"

CONCRETE EXPOSED TO EARTH OR WEATHER:
#5 OR SMALLER.. 1½
#6 OR LARGER.. 2"

CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND:
COLUMNS (TIES AND MAIN REINFORCING).. 1½"
SLABS, WALLS, JOISTS.. ¾"
BEAMS (STIRRUPS AND MAIN REINF.).. 1½"

CLEAR COVER SHALL BE CLEARLY SHOWN ON ALL REBAR DETAIL DRAWINGS.

6. ALL REINFORCEMENT SHALL BE SECURELY HELD IN POSITION WHILE PLACING CONCRETE. IF NECESSARY, ADDITIONAL BARS SHALL BE PROVIDED BY THE CONTRACTOR TO FURNISH SUPPORT.
7. THE CONTRACTOR SHALL VERIFY THE DIMENSIONS AND LOCATIONS OF ALL OPENINGS, PIPE SLEEVES, ETC. AS REQUIRED BY ALL TRADES, BEFORE THE CONCRETE IS POURED. THE CONTRACTOR SHALL CONSULT THE ARCHITECTURAL, MECHANICAL, AND ELECTRICAL DRAWINGS, AS WELL AS THE STRUCTURAL DRAWINGS FOR THE LOCATION, NUMBER, AND SIZE OF ALL OPENINGS, SLEEVES, ETC. HOWEVER, OPENINGS NOT SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE INSTALLED ONLY AFTER APPROVAL BY THE STRUCTURAL ENGINEER IS OBTAINED.
8. LOCATION OF ALL CONSTRUCTION JOINTS NOT SHOWN IN DRAWINGS SHALL BE SUBMITTED TO ENGINEER FOR APPROVAL PRIOR TO DETAILING OF REINFORCING. ALL CONSTRUCTION JOINTS TO BE CLEARLY SHOWN IN REBAR DETAIL DRAWINGS. ENGINEER MAY REQUIRE ADDITIONAL REINFORCING AT CONSTRUCTION JOINTS.
9. DIMENSIONS "Ld" AS NOTED ON DRAWINGS SHALL CORRESPOND TO THE FOLLOWING LENGTHS IN INCHES AS SHOWN IN THE TABLES BELOW.

BEAMS

BAR SIZE	BOTTOM BARS	OTHER BARS
#3	13	17
#4	17	23
#5	22	28
#6	26	34
#7	38	49
#8	43	56
#9	48	63
#10	54	71
#11	60	78

COLUMNS

BAR SIZE	Ld
#3	13
#4	17
#5	22
#6	26
#7	38
#8	43
#9	48
#10	54
#11	60

TABLE ASSUMPTIONS:

1. f'c = 5 ksi
2. A MINIMUM CLEAR COVER AS SHOWN IN NOTE 1 ABOVE
3. A MINIMUM CLEAR SPACING OF 3" BETWEEN ANY BARS
4. fy = 60 ksi
5. NORMAL WEIGHT CONCRETE
6. FOR WALLS:
   CASE 1 = CLEAR SPACING ≥ 2 db
   AND CLEAR COVER ≥ db
   CASE 2 = OTHER THAN CASE 1

WALLS

BAR SIZE	VERTICAL BARS		HORIZONTAL BARS	
	CASE 1	CASE 2	CASE 1	CASE 2
#3	13	20	17	25
#4	17	26	23	34
#5	22	32	28	42
#6	26	39	34	50
#7	38	56	49	73
#8	43	64	56	83
#9	48	72	63	94
#10	54	81	70	106
#11	60	90	78	117

SLABS / MATS

BAR SIZE	THICKNESS 12" OR LESS	THICKNESS GREATER THEN 12"	
	ALL BARS	BOTTOM BARS	OTHER BARS
#3	13	13	17
#4	17	17	23
#5	22	22	28
#6	26	26	34
#7	56	56	73
#8	64	64	83
#9	72	72	94
#10	81	81	106
#11	90	90	117

FOR: f'c = 3 ksi Ld = 1.29 x TABLE VALUE
f'c = 4 ksi Ld = 1.12 x TABLE VALUE
f'c = 6 ksi Ld = 0.91 x TABLE VALUE
f'c = 8 ksi Ld = 0.79 x TABLE VALUE
f'c = 10 ksi Ld = 0.71 x TABLE VALUE
f'c = 12 ksi Ld = 0.71 x TABLE VALUE
f'c = 14 ksi Ld = 0.71 x TABLE VALUE

FOR: FOR GRADE STEEL (fy) OTHER THAN GRADE 60
Ld = fy/60 x TABLE VALUE

10. ALL LAP SPLICES SHALL BE 1.3 Ld UNLESS NOTED OTHERWISE ON DRAWINGS.
11. FOR LIGHTWEIGHT AGGREGATE CONCRETE, MULTIPLY THE TABULATED VALUES BY 1.3.
12. FOR EPOXY-COATED BARS, MULTIPLY THE TABULATED VALUES BY 1.5.
13. COMBINATIONS OF EFFECTS DUE TO CONCRETE STRENGTH, CONCRETE WEIGHT, AND EPOXY BARS ARE CUMULATIVE. Ld SHALL BE MULTIPLIED BY EACH FACTOR TO FIND THE CORRECT VALUE.
14. ACI DOES NOT PERMIT LAP SPLICES OF #14 OR #18 BARS. BARS OF THIS SIZE SHALL BE COUPLED BY ACCEPTABLE MECHANICAL MEANS.
15. DOWEL BAR SUBSTITUTIONS SHALL BE PERMITTED PROVIDED THAT MANUFACTURER'S DATA SUPPORTS FULL TENSION SPLICES.
16. ALL SLEEVES AND PENETRATIONS SHALL BE PROVIDED BY THE SUB-CONTRACTOR REQUIRING THE OPENING.
17. CONCRETE COLUMN LENGTH ADJUSTMENT FOR ELASTIC SHORTENING, SHRINKAGE AND CREEP EFFECTS SHALL BE DISCUSSED WITH THE CONCRETE CONTRACTOR.
18. ALL SLABS SHALL BE FINISHED PER ACI 301 UNLESS OTHERWISE NOTED ON THE ARCHITECTURAL DRAWINGS.
19. CONDUIT PLACED IN CONCRETE SLABS MUST BE PLACED IN ACCORDANCE WITH THE FOLLOWING GUIDELINES:
    a. CONTRACTOR SHALL NOT INSTALL CONDUIT THAT IS NOT SHOWN ON MECHANICAL DRAWINGS.
    b. DO NOT CROSS MORE THAN ONE LAYER OF CONDUIT OVER ANOTHER IN ANY GIVEN AREA.
    c. PLACE CENTROID OF CONDUIT OR CONDUIT GROUP AT THE MID-HEIGHT OF THE SLAB.
    d. CONDUIT OR CONDUIT GROUP CAN NOT EXTEND OUTSIDE THE MIDDLE ⅓ OF THE SLAB.
    e. MAINTAIN A MINIMUM CLEAR SPACING BETWEEN THE CONDUIT OF 3 DIAMETERS. THIS REQUIREMENT APPLIES EXCEPT WHERE CONDUITS ACCUMULATE AT "TURN DOWNS". THE CONDITIONS AT "TURN DOWN" LOCATIONS MUST BE EVALUATED AT EACH LOCATION BY THE STRUCTURAL ENGINEER. "TURN DOWNS" CAN NOT OCCUR AT COLUMN OR BUTTRESS LOCATIONS.
    f. DO NOT PLACE ANY CONDUIT IN THE SLAB WITHIN 36" FROM THE EDGE OF ANY COLUMN OR WALL ABOVE OR BELOW THE SLAB.
    g. SLAB REINFORCEMENT MUST NOT BE MOVED, CUT, OR BENT TO ACCOMMODATE CONDUIT PLACEMENT.
    h. CONDUIT IS NOT TO RUN THROUGH OR WITHIN A COLUMN OR WALL.
    i. ALUMINUM CONDUIT SHALL NOT BE EMBEDDED IN A SLAB UNLESS IT IS EFFECTIVELY COATED.

IF THE ABOVE REQUIREMENTS ARE ALL MET, CONDUIT LOCATIONS NEED NOT BE REVIEWED BY THE STRUCTURAL ENGINEER. ANY DEVIATIONS MUST BE SUBMITTED ON A SHOP DRAWING FOR APPROVAL BY THE STRUCTURAL ENGINEER PRIOR TO CONDUIT PLACEMENT.

THE FOLLOWING CASES MUST BE SUBMITTED FOR REVIEW BY THE STRUCTURAL ENGINEER:
a. LOCATIONS OF ANY CONDUIT LARGER THAN 2" IN OUTSIDE DIAMETER.
b. LOCATIONS OF ANY BUNDLED CONDUITS.

VI – STEEL NOTES

1. ALL STEEL WORK, INCLUDING STRUCTURAL STEEL SHOWN ON ARCHITECTURAL AND MECHANICAL DRAWINGS, SHALL COMPLY WITH THE "AISC SPECIFICATION".
2. WORK SHALL ALSO COMPLY WITH THE AISC CODE OF STANDARD PRACTICE, MARCH 7, 2000; SECTIONS 6, 7 AND 10 APPLY, THE REMAINDER IS SPECIFICALLY EXCLUDED.
3. FOR FIREPROOFING REQUIREMENTS AND ASSEMBLIES SEE ARCHITECTURAL DRAWINGS AND SPECIFICATIONS.
4. SHOP DRAWINGS, PREPARED IN ACCORDANCE WITH AISC "DETAILING FOR STEEL CONSTRUCTION" UNDER THE SUPERVISION OF A REGISTERED PROFESSIONAL ENGINEER, SHALL BE SUBMITTED FOR ALL STRUCTURAL STEEL WORK.
5. BOLTED CONNECTIONS:
   BOLTS ARE TO BE A325 OR A490 SLIP CRITICAL, CLASS A, "TWIST-OFF" TYPE. FLOOR BEAM CONNECTIONS TO OTHER BEAMS OR GIRDERS CAN BE MADE WITH BEARING CONNECTIONS. MINIMUM DIAMETER OF ALL BOLTS SHALL BE ¾", MAX. DIA. 1". PROVIDE AT LEAST 2 BOLTS PER CONNECTION.

UNLESS OTHERWISE NOTED IN PLAN, DETAIL FLOOR MEMBER CONNECTIONS FOR THE FOLLOWING VERTICAL REACTIONS:

SHAPE	MINIMUM REACTIONS (KIPS)		MINIMUM NUMBER OF ROWS
	TO COLUMNS	TO GIRDERS	
W8,C8	12	17	2
W10,C10	15	20	2
W12,C12	20	25	2
W14	25	30	3
W16	30	38	3
W18	36	46	3
W21	46	58	4
W24	57	72	4
W27	70	85	5
W30	85	100	6
W33	100	120	7
W36	115	135	8

6. COPED OR CUT ENDS OF MEMBERS SHALL BE REINFORCED WHERE REQUIRED TO SUSTAIN THE SPECIFIED REACTIONS.
7. FABRICATE AND ERECT FLOOR MEMBERS WITH NATURAL CAMBER UP.
8. SHORING OF FLOOR MEMBERS TO CONTROL SLAB THICKNESS, FLOOR LEVEL AND OTHER TOLERANCES, AND CONCRETE PONDING IS THE CONTRACTOR'S OPTION. FLOORS TO BE POURED SO AS TO MAINTAIN UNIFORM SLAB THICKNESS ACROSS TOP OF STEEL MEMBERS.
9. STRUCTURAL STEEL CONTRACTOR TO PROVIDE DECK SUPPORT ANGLES AS REQUIRED.
10. UNLESS OTHERWISE SHOWN ON DRAWINGS, SIZE OF WELDS SHALL NOT BE SMALLER THAN ¼".
11. PROVIDE GALVANIZED BOLTS FOR STEEL PERMANENTLY EXPOSED TO WEATHER. GALVANIZING SHALL BE DONE BY BOLT MANUFACTURER. INSTALL WITH DIRECT TENSION INDICATORS.
12. THE CONTRACTOR SHALL PROVIDE, AT NO ADDITIONAL COST, ALL ADDITIONAL STEEL, CONNECTIONS, GUYING, ETC. REQUIRED FOR ERECTION. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE STABILITY AND SAFETY OF THE WORK DURING CONSTRUCTION.
13. UNLESS SPECIFICALLY NOTED, STEEL DETAILS SHOWN ON THE DRAWINGS ARE FOR CONCEPT ONLY AND DO NOT INDICATE REQUIRED NUMBER OF BOLTS, SIZE OF WELDS, ETC.
14. ALL PIPES AND TUBES SHALL BE COMPLETELY SEALED WITH CAP PLATES.
15. WELDERS SHALL BE CERTIFIED BY THE BUILDING DEPARTMENT AND/OR AWS AS REQUIRED. SLAG SHALL BE REMOVED FROM ALL WELDS FOR INSPECTION.
16. MEMBERS MAY ONLY BE SPLICED WHERE SPECIFICALLY DETAILED ON ACCEPTED SHOP DRAWINGS.
17. FIELD CUTTING OF STRUCTURAL STEEL IS NOT PERMITTED EXCEPT WHERE ACCEPTED BY THE ENGINEER IN REVIEW OF DRAWINGS SUBMITTED BY CONTRACTOR. CUTTING OR ENLARGEMENT OF BOLT HOLES WITH TORCHES IS STRICTLY PROHIBITED.
18. OBTAIN ALL FIELD MEASUREMENTS REQUIRED FOR PROPER FABRICATION AND INSTALLATION OF WORK PRIOR TO DETAILING. PRECISE MEASUREMENTS ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
19. STEEL DETAILER TO VISIT THE JOB SITE AS MANY TIMES AS NECESSARY TO FAMILIARIZE HIMSELF WITH THE EXISTING FIELD CONDITIONS AND OBTAIN ALL NECESSARY INFORMATION NEEDED TO COMPLETE THE JOB.
20. STEEL TO BE ENCLOSED BUT NOT SPRAY FIREPROOFED SHALL BE CLEANED TO SSPC SP-3 AND SHOP PAINTED WITH ALKYD PRIMER.
21. STEEL TO BE PERMANENTLY EXPOSED TO WEATHER SHALL BE BLAST CLEANED TO SSPC SP-6, SHOP PAINTED WITH ZINC-RICH PRIMER AND TOP COATED WITH EPOXY-BASED PAINT.

VII - SURVEYING

1. PRIOR TO REMOVING RESHORES THE UNDERSIDE OF THE SLAB SHALL BE SURVEYED TO DETERMINE THE RELATIVE ELEVATION OF THE SLAB. AT A MINIMUM, SURVEY POINTS ARE TO BE LOCATED NEXT TO COLUMNS AND AT CENTER OF COLUMN STRIPS AND MIDDLE STRIPS. SLAB EDGES AND CANTILEVERS ARE TO BE SURVEYED AT POINTS OF THEORETICAL MAXIMUM AND MINIMUM DEFLECTIONS WITHIN EACH SPAN. SURVEYOR IS TO SUBMIT A GENERAL LAYOUT OF POINTS TO ENGINEER FOR APPROVAL PRIOR TO SURVEYING THE SLABS. ADDITIONAL POINTS MAY BE REQUIRED AT ENGINEER'S DISCRETION. THE C.M. IS TO CONTRACT OUT THE SURVEYING SERVICE TO A SURVEYOR NOT AFFILIATED WITH THE CONCRETE CONTRACTOR. THE COST OF THIS SURVEY IS TO BE INCLUDED IN THE CONSTRUCTION COST.

VIII - SPECIAL INSPECTIONS

OWNER WILL ENGAGE AND PAY FOR A SPECIAL INSPECTOR AND AN INDEPENDENT TESTING AGENCY TO PERFORM THE FOLLOWING SPECIAL INSPECTION AND TESTING AS SPECIFIED ON THE APPLICABLE SECTIONS OF THE NEW YORK CITY BUILDING CODE, CHAPTER 17, SECTION 1704. TECHNICAL REPORT STATEMENT OF RESPONSIBILITY TR-1 FORM SHALL BE FILLED WITH THE BUILDING DEPARTMENT FOR APPROVAL OF SPECIAL INSPECTOR. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE ADEQUATE PRIOR NOTICE FOR COMPLETION OF INSPECTIONS.

1. CONCRETE:
   ALL CONCRETE WORK SHALL BE SUBJECT TO SPECIAL INSPECTION BY OR UNDER THE DIRECT SUPERVISION OF A LICENSED PROFESSIONAL ENGINEER AS REQUIRED BY SUBCHAPTERS 1704.4 AND 1905.3 AND TABLE 1704.4 OF THE N.Y.C. BUILDING CODE.
   A. THE OWNER SHALL ENGAGE A LICENSED PROFESSIONAL ENGINEER, APPROVED BY THE ENGINEER OF RECORD, TO SUPERVISE THE TESTING OF THE MATERIALS AND THE INSPECTION OF CONCRETE CONSTRUCTION.
   B. THE PRELIMINARY TEST FOR CONTROLLED CONCRETE SHALL BE MADE IN ACCORDANCE WITH SUBCHAPTER 1905.3 OF SECTION 1905 OF THE N.Y.C. BUILDING CODE AND THE APPROVED DESIGN MIXES FILED ON TECHNICAL REPORT TR-3. NO CONCRETE SHALL BE PLACED BEFORE ACCEPTANCE BY ENGINEER.
   C. QUALITY CONTROL AND INSPECTION OF MATERIALS AND OF BATCHING SHALL BE MADE IN ACCORDANCE WITH SUBCHAPTER 1905.3 OF SECTION 1905 OF THE N.Y.C. BUILDING CODE.
   D. ALL FIELD TESTS AND INSPECTIONS SHALL BE PERFORMED AS REQUIRED BY SUBCHAPTER 1905.6 OF SECTION 1905 OF THE N.Y.C. BUILDING CODE. CONCRETE TEST CYLINDER RESULTS SHALL BE FILED ON TECHNICAL REPORT TR-2.
   E. PRIOR TO PERMIT OWNER TO ENGAGE CONCRETE TESTING AGENCY FOR TR-2 AND TR-3 FORMS.
2. SOILS:
   INSPECT SUBGRADE FOR FOUNDATIONS, PIERS AND WALLS PER SECTION 1704.7.1 OF THE N.Y.C. BUILDING CODE.
3. STEEL:
   INSPECT WELDING OPERATIONS AND TENSIONING OF HIGH STRENGTH BOLTS PER SECTIONS 1704.3.1 THROUGH 1704.3.3 AND SECTION 1715 OF THE N.Y.C. BUILDING CODE.
4. PILING:
   INSPECT PILE DRIVING AND TESTING OPERATIONS PER SUBCHAPTER 1704.8 OF THE N.Y.C. BUILDING CODE.

BUILDING FLOOR LOADING SCHEDULE (PSF)

LOCATION	STRUCTURE	DL	SDL	LL	TOTAL
SUB-CELLAR - GRAVITY	20" SLAB	250	25	100	375
SUB-CELLAR - HYDROSTATIC (UPLIFT) @ BOTTOM OF SLAB	---	---	---	-1690	-1690
CELLAR	12" SLAB	150	25	100	275
GROUND FLOOR	14"/12" SLAB	175/150	50	400*/150	625*/600* 375/350
2ND-5TH FLOOR	14" SLAB	175	50	100	325
6TH FLOOR MECHANICAL	14" SLAB	175	50	100	325
7TH FLOOR MECHANICAL	16" SLAB	200	50	100	350
8TH-36TH FLOORS	14"/9" SLAB	175/112.5	20	40	235/172.5
37TH-38TH FLOOR MECHANICAL	16" SLAB	200	50	100	350
39TH-66TH FLOORS	14"/9" SLAB	175/112.5	20	40	235/172.5
67TH FLOOR MECHANICAL	16" SLAB	200	150	100	450
68TH-69TH FLOOR MECHANICAL	16" SLAB	200	50	100	350
70TH FLOOR	14" SLAB	175	50	50	275

FACADE LOAD = 185 PLF PER 11'-5" FLOOR TO FLOOR HEIGHT

ALL LOADS DEVELOPED IN ACCORDANCE WITH CHAPTER 16 OF THE NEW YORK CITY BUILDING CODE.

SEE PLANS FOR ALL OTHER FLOOR LOADINGS NOT LISTED.

*GROUND FLOOR DESIGNED FOR CONSTRUCTION TRAFFIC

SEISMIC DESIGN CRITERIA

THE DESIGN, DETAILS, AND NOTES HEREIN ARE IN COMPLIANCE WITH CHAPTER 16 OF THE 2008 NYC BUILDING CODE.

OCCUPANCY CATEGORY: II (TABLE 1604.5 NYC. CODE 2008)

SEISMIC IMPORTANCE FACTOR, Ie = 1.00 (TABLE 1604.5 NYC. CODE 2008) BASED ON O.C. II

SEISMIC USE GROUP: I (SECTION 1616.2 NYC. CODE 2008)

Ss = 0.365g (MAPPED MCE SPECTRAL RESP. ACCEL. - SHORT PERIODS
- SECTION 1615.1 NYC. CODE)

S1 = 0.071g (MAPPED MCE SPECTRAL RESP. ACCEL. - 1-SECOND PERIOD
- SECTION 1615.1 NYC. CODE)

SITE CLASS: D - FROM GEOTECHNICAL REPORT (BASED ON TABLE 1615.1.1 NYC. CODE 2008)

Fa = 1.51 (SHORT PERIODS SITE COEFF. - TABLE 1615.1.2(1) NYC. CODE 2008)- BASED ON S.C. "D"

Fv = 2.4 (1-SECOND PERIOD SITE COEFF.-TABLE 1615.1.2(2) NYC. CODE 2008)- BASED ON S.C. "D"

MCE SPECTRAL RESPONSE ACCELERATION FOR SHORT PERIODS: SMS = FaSs = 0.551g
(EQUATION 16-38 NYC. CODE 2008)

MCE SPECTRAL RESPONSE ACCELERATION AT 1-SECOND PERIOD: SM1 = FvS1 = 0.170g
(EQUATION 16-39 NYC. CODE 2008)

DESIGN SPECTRAL ACCELERATION PARAMETER - SHORT PERIODS: SDS = 2/3 SMS = 0.367g
(EQUATION 16-40 NYC. CODE 2008)

DESIGN SPECTRAL ACCELERATION PARAMETER - 1-SECOND PERIOD: SD1 = 2/3 SM1 = 0.114g
(EQUATION 16-41 NYC. CODE 2008)

SEISMIC DESIGN CATEGORY C (TABLE 1616.3 NYC. CODE 2008)

BASIC SEISMIC FORCE RESISTING SYSTEM: ORDINARY REINFORCED CONCRETE SHEAR WALLS

RESPONSE MODIFICATION COEFFICIENT, R = 4.00 (TABLE 1617.6.2 NYC. CODE 2008)

BASE BUILDING HEIGHT: hn = 898'-10"

APPROXIMATE FUNDAMENTAL PERIOD, Ta = (Ct)x(hn)^x =(0.02)x(943.83')^0.75 = 3.41s
(EQUATION 12.8.7 ASCE7-05)

UPPER LIMIT ON CALCULATED PERIOD: Cu = 1.67, CuTa = 5.49s (SECTION 12.8.2 ASCE7-05)

CALCULATED FUNDAMENTAL PERIOD, T = 3.41s
PERIOD USED FOR SEISMIC FORCE CALCULATION, T = 6.16s (BASED ON ETABS MODEL)

SEISMIC RESPONSE COEFFICIENT, Cs = SDS/(R/I) = 0.367g/(4.00/1.00) = 0.092g
Cs(min) = 0.044*(SDS)*(I) = 0.044*0.367g*1.00 = 0.016g
Cs(max) = SD1/((T)*(R/I) = 0.114g/(6.16sec*(4.00/1.00)) = 0.0046g

Cs(min) CONTROLS = 0.016g (ASCE7-05 SECTION 9.5.5.2.1)

TOTAL EFFECTIVE SEISMIC WEIGHT, W = 146,800 KIPS

TOTAL DESIGN LATERAL BASE SHEAR, V=(Cs)x(W)=(0.016)x(146,800 KIPS) = 2350 KIPS
(EQUATION 12.8-2 ASCE7-05)

DESIGN OVERTURNING MOMENTS: M = 1,620,000 k-ft IN BOTH DIRECTIONS

ANALYSIS PROCEDURE USED: EQUIVALENT LATERAL FORCE PROCEDURE (ASCE7-05 SECTION 12.8)

WIND LOADS PER ASCE 7-05

WIND LOADS FROM ASCE 7-05 SHOWN FOR COMPARISON PURPOSES ONLY.

BASE SHEARS:

EAST-WEST DIRECTION:	2,450 KIPS
NORTH-SOUTH DIRECTION:	4,070 KIPS

OVERTURNING MOMENTS:

EAST-WEST DIRECTION:	1,260,000 KIP-FT
NORTH-SOUTH DIRECTION:	2,060,000 KIP-FT

WIND LOADS PER WIND TUNNEL

STRUCTRUAL DESIGN BASED OF WIND LOADS OBTAINED FROM WIND TUNNEL TESTING. LOADS SHOWN HAVE A 50 YEAR RETURN PERIOD.

BASE SHEARS:

EAST-WEST DIRECTION:	3,000 KIPS
NORTH-SOUTH DIRECTION:	4,050 KIPS
OVERALL MAXIMUM RESULTANT:	4,200 KIPS

OVERTURNING MOMENTS:

EAST-WEST DIRECTION:	1,875,000 KIP-FT
NORTH-SOUTH DIRECTION:	2,300,000 KIP-FT

WIND CONTROLS

FOUNDATION NOTES:

1. THE PROJECT SITE WAS PREVIOUSLY OCCUPIED BY BUILDINGS THAT HAVE SINCE BEEN DEMOLISHED. THOSE BUILDINGS WERE SUPPORTED BY FOUNDATIONS THAT MAY STILL EXIST BELOW-GRADE. EXTENSIVE ARCHIVAL DRAWINGS OF THE EXISTING AND SURROUNDING BUILDINGS HAVE BEEN LOCATED AND ARE AVAILABLE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE APPROPRIATE MEANS AND METHODS TO ADEQUATELY WORK AROUND EXISTING OBSTRUCTIONS TO CONSTRUCT THE NEW FOUNDATIONS INDICATED ON THE STRUCTURAL DRAWINGS.

Damian Titus
Buildings
APPROVED
Under Directive 2 of 1975
Date: 09/27/2016:
NYC Development Hub

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NEW YORK, NY

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PHASE DOB SUBMITTAL

ARCHITECT'S SEAL

ISSUE NO.	ISSUE DATE	DESCRIPTION
	09/30/2015	DOB SUBMITTAL
	08/07/2015	SUPERSTRUCTURE BID
	07/27/2015	FDN. DOC. UPD. REV. 2
	07/10/2015	PROGRESS DD
	06/26/2015	REV. FOUND. DOC. UPD.
	06/19/2015	FOUNDATION. DOC. UPD.
	06/15/2015	SS PRE-BID
	06/01/2015	FOUNDATION CD DRAFT
	05/15/2015	SD FOR 944'
	03/06/2015	SCHEMATIC DESIGN

KEY PLAN AND NORTH SIGN

IF THIS DRAWING IS NOT 36" X 48" IT IS A REDUCED PRINT; REFER TO GRAPHIC SCALE

1 0 2 4 8

SCALE AS NOTED

GENERAL NOTES AND INDEX OF DRAWINGS

SHEET TITLE :

S-001.00

SHEET NUMBER : 01

14218.00-001-S-001.01.dwg

FL70/ROOF AT 840', T.O. BLDG AT 912', FL. TO FL. = 11'-5"

GENERAL NOTES:

DRAWING NUMBER	DRAWING NAME	JAN 09 2015 TA FILING (01)	JAN 09 2015 FOUNDATION PAA (01)	JAN 09 2015 FOUNDATION BID (01)	JAN 23 2015 UPDATED FOUNDATION BID (02)	FEB 10 2015 REVISED TA FILING (03)	MAR 11 2015 DOB FILING FOR 937.5' STRUCTURE (04)	MAY 15 2015 SCHEMATIC DESIGN FOR 944' STRUCTURE	JUN 01 2015 FOUNDATION CD DRAFT FOR 944' STRUC.	JUN 15 2015 SUPERSTRUC. PRE-BID FOR 944' STRUC.	JUN 19 2015 FOUNDATION DOCUMENT UPDATE	JUN 26 2015 REVISED FOUNDATION DOCUMENT UPDATE	JUL 10 2015 PROGRESS DESIGN DEVELOPMENT	JUL 27 2015 FOUNDATION DOCUMENT UPDATE REV. 2	AUG 07 2015 SUPERSTRUCTURE BID	AUG 10 2015 SUPERSTRUCTURE BID REVISION 1	AUG 14 2015 SUPERSTRUCTURE BID - CCD1 ALT. BID PKG.	SEP 30 2015 DOB SUBMITTAL
GENERAL NOTES																		
S-001	INDEX OF DWGS & GENERAL NOTES	●	●	●	●	●	●	●	●	●	●	●	●	●	●			●
S-002	INDEX OF DWGS & GENERAL NOTES	●	●	●		●	●		●	●	●	●	●	●	●	●	●	●
S-003	NYCTA GENERAL NOTES AND CLAUSES	●				●												
FOUNDATION PLANS, SECTIONS AND DETAILS																		
FO-100	FOUNDATION/SUB CELLAR FLOOR FRAMING PLAN	●	●	●	●	●	●	●	●	●	●	●	●	●	●			●
FO-101	CELLAR FLOOR FRAMING PLAN	●	●	●	●	●	●	●	●	●	●	●	●	●	●			●
FO-102	TYPICAL FOUNDATION DETAILS	●	●	●		●	●	●	●	●	●	●	●	●	●			●
FO-103	TYPICAL FOUNDATION DETAILS	●	●	●		●	●	●	●	●	●	●	●	●	●			●
FO-104	FOUNDATION SECTIONS AND DETAILS	●	●	●			●	●	●	●	●	●	●	●	●			●
FO-105	FOUNDATION SECTIONS AND DETAILS	●	●	●		●	●	●	●	●	●	●	●	●	●			●
FO-106	FOUNDATION SECTIONS AND DETAILS							●	●	●	●	●	●	●	●			●
FO-107	FOUNDATION SECTIONS AND DETAILS	●	●	●		●	●	●	●	●	●	●	●	●	●			●
FO-111	MAT REINFORCING PART PLAN	●	●	●	●	●	●	●	●	●	●	●	●	●	●			●
FO-112	CAISSON AND MAT COORDINATES							●	●	●	●	●	●	●	●			●
SUPERSTRUCTURE PLANS																		
S-201	GROUND FLOOR FRAMING PLAN	●	●	●	●	●		●	●	●	●	●	●	●	●			●
S-202	2ND FLOOR FRAMING PLAN							●		●			●		●			●
S-203	3RD FLOOR FRAMING PLAN									●			●		●			●
S-203M	3RD FLOOR MEZZANINE PLAN									●			●		●			●
S-204	4TH FLOOR FRAMING PLAN									●			●		●			●
S-205	5TH FLOOR FRAMING PLAN									●			●		●			●
S-206	6TH FLOOR FRAMING PLAN									●			●		●			●
S-207	7TH FLOOR FRAMING PLAN									●			●		●			●
S-208	8TH FLOOR FRAMING FRAMING PLAN									●			●		●			●
S-209	9TH THRU 10TH FLOOR FRAMING PLAN							●		●			●		●			●
S-212	11TH THRU 24TH FLOOR FRAMING PLANS (EXCEPT FL21-22)									●			●		●			●
S-219	19TH THRU 24TH FLOOR FRAMING PLANS							●										
S-221	21ST FLOOR FRAMING PLANS									●			●		●			●
S-222	22ND FLOOR FRAMING PLAN														●			●
S-225	25TH FLOOR FRAMING PLAN							●		●			●		●			●
S-226	26TH THRU 36TH FLOOR FRAMING PLANS									●			●		●			●
S-229	29TH THRU 36TH FLOOR FRAMING PLANS							●										
S-237	37TH FLOOR FRAMING PLAN									●			●		●			●
S-238	38TH FLOOR FRAMING PLAN							●		●			●		●			●
S-239	39TH FLOOR FRAMING PLAN							●		●			●		●			●
S-240	40TH THRU 49TH FLOOR FRAMING PLANS									●			●		●			●
S-250	50TH FLOOR FRAMING PLAN							●					●		●			●
S-251	51ST THRU 59TH FLOOR FRAMING PLANS									●			●		●			●
S-260	60TH FLOOR FRAMING PLAN							●					●		●			●
S-261	61ST FLOOR FRAMING PLANS									●			●		●			●
S-262	62ND THRU 67TH FLOOR FRAMING PLANS														●			●
S-267	67TH FLOOR FRAMING PLAN							●		●			●		●			●
S-268	68TH FLOOR FRAMING PLAN									●			●		●			●
S-269	69TH FLOOR FRAMING PLAN									●			●		●			●
S-270	70TH FLOOR FRAMING PLAN									●			●		●			●
S-271	71ST FLOOR FRAMING PLAN									●			●		●			●
S-272	72ND FLOOR FRAMING PLAN									●			●		●			●
COLUMN SCHEDULE AND SHEAR WALL REINFORCEMENT PLANS AND DETAILS																		
S-301	COLUMN SCHEDULE AND DETAILS	●	●	●		●			●	●	●	●	●	●	●			●
S-311	SHEAR WALL REINF. PLAN SUPPORTING CELLAR LEVEL	●	●	●		●			●	●	●	●	●	●	●	●	●	●
S-312	SHEAR WALL REINF. PLAN SUPPORTING GROUND FLOOR								●	●	●	●	●	●	●	●	●	●
S-313	SHEAR WALL REINF. PLAN SUPPORTING FL 2 - 3M	●	●	●		●			●	●	●	●	●	●	●	●	●	●
S-314	TYPICAL SHEAR WALL REINF. FOR PODIUM LEVELS							●										
S-316	SHEAR WALL REINF. PLAN SUPPORTING FL 4 - 6														●	●	●	●
S-319	SHEAR WALL REINF. PLAN SUPPORTING FL 7 - 8														●	●	●	●
S-322	SHEAR WALL REINF. PLAN SUPPORTING FL 9 - FL 25							●		●			●		●	●	●	●
S-323	SHEAR WALL REINF. PLAN SUPPORTING FL 26 - FL 39									●			●		●	●	●	●
S-326	SHEAR WALL REINF. PLAN SUPPORTING FL 40 - FL 50									●			●		●		●	●
S-327	SHEAR WALL REINF. PLAN SUPPORTING FL 51 - FL 60									●			●		●		●	●
S-328	SHEAR WALL REINF. PLAN SUPPORTING FL 61 - ROOF									●			●		●	●	●	●
S-351	LINK BEAM SCHEDULE									●			●		●		●	●
S-352	LINK BEAM DETAILS AND SECTIONS												●		●			●
CONCRETE SECTIONS AND DETAILS																		
S-401	TYPICAL CONCRETE DETAILS							●	●	●	●	●	●	●	●			●
S-402	TYPICAL CONCRETE DETAILS							●	●	●	●	●	●	●	●			●
S-403	TYPICAL CONCRETE DETAILS	●	●	●				●	●	●	●	●	●	●	●			●
S-404	CONCRETE SECTIONS AND DETAILS							●	●	●	●	●	●	●	●			●
S-405	CONCRETE SECTIONS AND DETAILS									●			●		●			●
STRUCTURAL STEEL SECTIONS AND DETAILS																		
S-501	TYPICAL STEEL SECTIONS AND DETAILS																	
S-510	STEEL SECTIONS AND DETAILS																	
S-511	STEEL SECTIONS AND DETAILS																	
MASONRY SECTIONS AND DETAILS																		
S-601	TYPICAL MASONRY SECTIONS AND DETAILS																	

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PHASE DOB SUBMITTAL

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	08/07/2015	SUPERSTRUCTURE BID
	07/27/2015	FDN. DOC. UPD. REV. 2
	07/10/2015	PROGRESS DD
	06/26/2015	REV. FOUND. DOC. UPD.
	06/19/2015	FOUNDATION DOC. UPD.
	06/15/2015	SS PRE-BID
	06/01/2015	FOUNDATION CD DRAFT
	03/06/2015	SCHEMATIC DESIGN

THAMES ST.
GREENWICH ST.

KEY PLAN AND NORTH SIGN
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1 0 2 4 8
SCALE AS NOTED

Damian Titus
Buildings APPROVED
Under Directive 2 of 1975
Date: 09/27/2016
NYC Development Hub

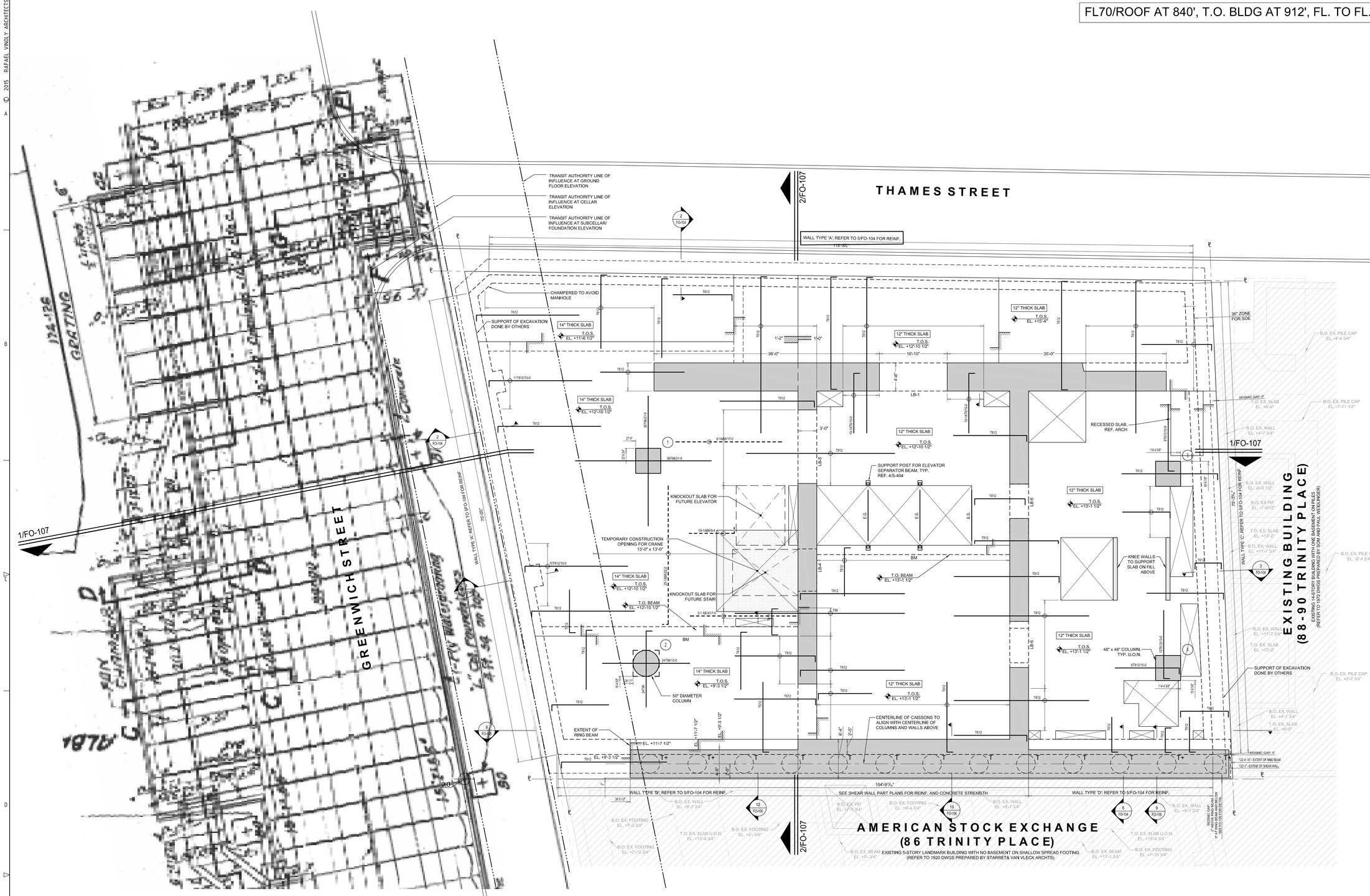
GENERAL NOTES AND INDEX OF DRAWINGS

SHEET TITLE

S-002.00
SHEET NUMBER 02

DEPT OF BLDGS 421183799 Job Number
ES-0001299560 Scan Code

FL70/ROOF AT 840', T.O. BLDG AT 912', FL. TO FL. = 11'-5"



GROUND FLOOR PLAN

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

NORTH

FOR CONDUIT TYPICAL DETAILS REFER TO 4/S-405

REFER TO ARCH. DWG. FOR VERTICAL AND HORIZONTAL LOCATIONS

STRUCTURAL NARRATIVE FOR 912 FT

1. 74 FLOORS; BUILDING HEIGHT ABOVE GRADE: TOP OF TOWER = 911'-11 1/2"
   FL70/TOP OF ROOF = 875'-11 1/2"
2. TYPICAL FLOOR-TO-FLOOR HEIGHT = 11'-5".
3. ESTIMATED TOTAL REBAR TONNAGE FOR SUPERSTRUCTURE = 15 PSF WITH THE USE OF GRADE 60 AND GRADE 75 REBAR.
4. CONCRETE VOLUMES ESTIMATED AT:
   16,500 CU. YD. FOR WALLS
   17,500 CU. YD. FOR SLABS + BEAMS
   1,300 CU. YD. FOR COLUMNS
5. MINIMUM CONCRETE COMPRESSIVE STRENGTH (f'c) AT 28 DAYS AND CORRESPONDING MODULUS OF ELASTICITY (Ec) FOR ALL COLUMNS, WALLS, AND LINK BEAMS SHALL BE AS FOLLOWS:

FLOOR	f'c	Ec
FDN TO 38TH:	14 KSI	7,400 KSI
39TH TO 49TH:	12 KSI	7,000 KSI
50TH TO ROOF:	10 KSI	6,500 KSI

6. MINIMUM CONCRETE COMPRESSIVE STRENGTH (f'c) AT 28 DAYS FOR SLABS AND BEAMS SHALL BE AS FOLLOWS:

FLOOR	f'c
FDN TO 38TH:	10 KSI
39TH TO 49TH:	8.6 KSI
50TH TO ROOF:	7.2 KSI

7. PROVIDE ALLOWANCE FOR ONE 250 TON TUNED MASS DAMPER WITH MAX DIMESNIONS OF 10' DEEP 19'-8"x53'-4" FOR SUPPLEMENTAL DAMPING SYSTEM (SEE TUNED MASS DAMPER SPECIFICATIONS, REVISION 1 SENT ON 06/08/2015).
8. SEE PLAN FOR SHEAR WALL SIZES & SLAB THICKNESSES.

TOP OF SLAB ELEVATION U.O.N.:	SEE PLAN
SLAB THICKNESS U.O.N.:	SEE PLAN
SLAB CONCRETE STRENGTH:	f'c = 10,000 PSI
SLAB BASIC BOTTOM BARS (U.O.N.):	#6@12" O.C. E.W.
MID STRIP TOP BARS (U.O.N.):	SEE PLAN

LEGEND:

- DENOTES CONCRETE COLUMN
- DENOTES SLAB OPENING
- T — DENOTES 36" DIA CAISSON DESIGNED FOR: 4,000 TON COMPRESSION, 825 TON TENSION, 25 TON LATERAL LOAD (SERVICE, UNFACTORED)
- T+ — DENOTES 36" DIA CAISSON DESIGNED FOR: 4,000 TON COMPRESSION, 1,150 TON TENSION, 25 TON LATERAL LOAD (SERVICE, UNFACTORED)

DRAWING NOTES:

1. FOR GENERAL NOTES SEE DRAWING S-001
2. ALL ELEVATIONS SHOWN ARE BASED ON NAVD-88 DATUM.
3. FOR TYPICAL FOUNDATION AND DETAILS, SEE FO SERIES DRAWINGS.
4. DETAILER TO CHECK ALL BAR CLEARANCES
5. OUTERMOST REINFORCING RUNS EAST-WEST U.O.N.
6. CONTRACTOR TO LOCATE / VERIFY ALL THE OPENINGS THROUGH THE SLAB FROM ARCHITECTURAL AND MEP DRAWINGS.
7. CONTRACTOR TO PROVIDE FOR SOE OPENINGS FOR P.O.Es.
8. CONCRETE COMPRESSIVE STRENGTHS SEE STRUCTURAL NARRATIVE ON FO-100
9. FOR COLUM SCHEDULE SEE S-301.
10. FOR SHEARWALL PART PLANS SEE S-311.
11. FOR CONCRETE TYPICAL DETAILS SEE S-401 TO S-405.

Damian Titus
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PHASE DOB SUBMITTAL

ARCHITECT'S SEAL

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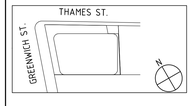
05	06/19/2015	FOUNDATION DOC. UPD.
04	06/15/2015	SS PRE-BID
03	06/01/2015	FOUNDATION CD DRAFT
02	05/15/2015	SD FOR 944'
01	03/06/2015	SCHEMATIC DESIGN
1	02/10/2015	REVISED TA FILING



KEY PLAN AND NORTH SIGN

IF THIS DRAWING IS NOT 36" X 48" IT IS A REDUCED PRINT; REFER TO GRAPHIC SCALE

1 0 2 4 8

SCALE AS NOTED

GROUND FLOOR PLAN
FRAMING PLAN

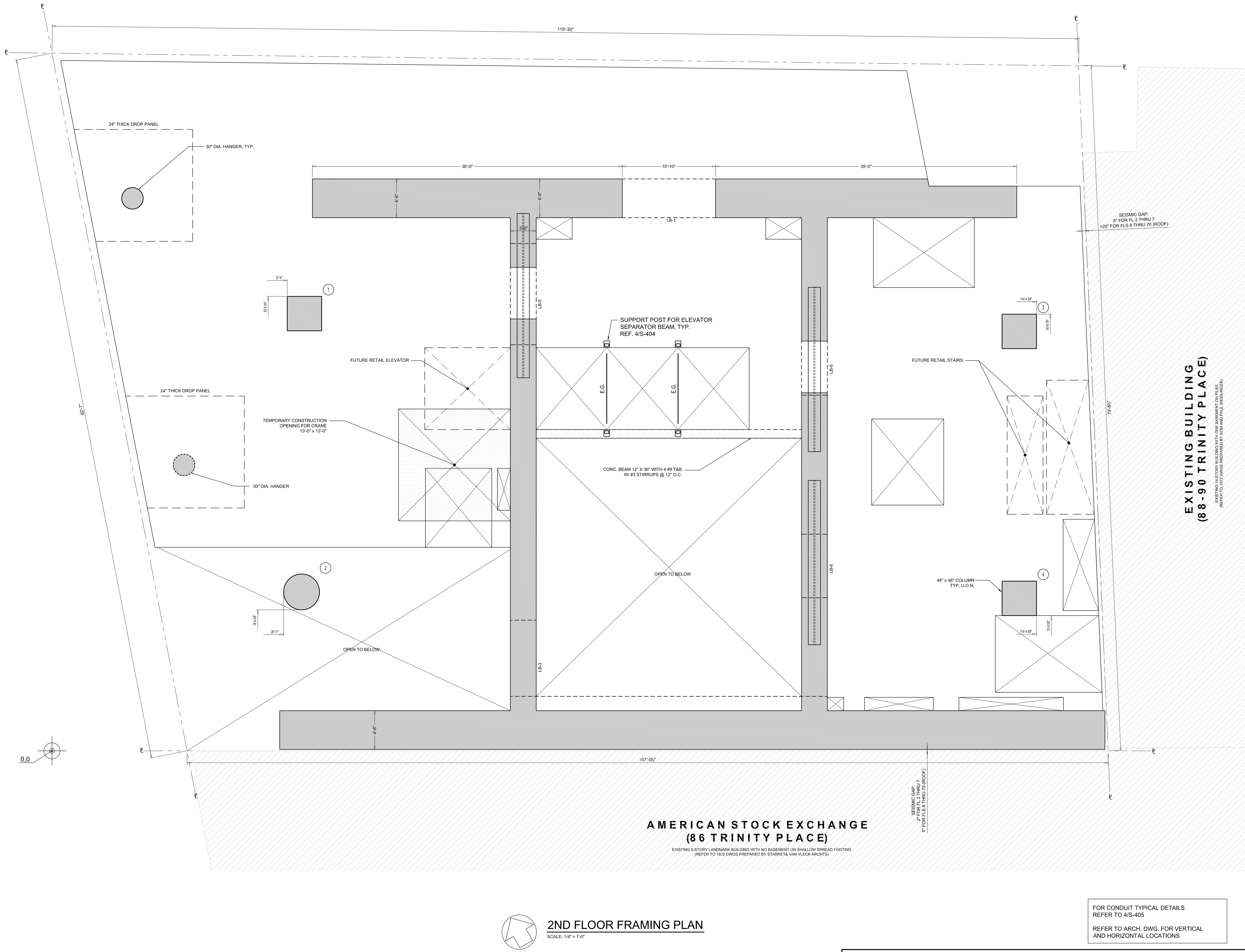
SHEET TITLE

S-201.01

SHEET NUMBER 03

14218.00-001-S-201.01.dwg

FL70/ROOF AT 840', T.O. BLDG AT 912', FL. TO FL. = 11'-5"



2ND FLOOR FRAMING PLAN

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

FOR CONDUIT TYPICAL DETAILS REFER TO 4/S-405

REFER TO ARCH. DWG. FOR VERTICAL AND HORIZONTAL LOCATIONS

TOP OF SLAB ELEVATION U.O.N.:	SEE PLAN
SLAB THICKNESS U.O.N.:	14"
SLAB CONCRETE STRENGTH:	f'c = 10,000 PSI
SLAB BASIC BOTTOM BARS (U.O.N.):	REF S-201, SIM.
MID STRIP TOP BARS (U.O.N.):	REF S-201, SIM.

LEGEND:

(solid circle)	DENOTES CONCRETE COLUMN
(dashed circle)	DENOTES CONCRETE COLUMN BELOW
(crossed box)	DENOTES SLAB OPENING
E.G.	HSS 6x4x¼ TUBE ELEVATOR GUIDE BEAM
SB	8" WIDE BY SLAB DEPTH BEAM WITH 1 #8 T&B, 1 LEG #3 STIRRUPS AT 6" O.C. SPACING

DRAWING NOTES:

1. FOR GENERAL NOTES SEE DRAWING S-001
2. ALL ELEVATIONS SHOWN ARE BASED ON NAVD-88.
3. FOR COLUMN SCHEDULE, SEE S-301.
4. FOR SHEARWALL PART PLANS, SEE S-311.
5. FOR CONCRETE TYPICAL DETAILS, SEE S-401 TO S-405.
6. DETAILER TO CHECK ALL BAR CLEARANCES.
7. OUTERMOST REINFORCING RUNS EAST-WEST.
8. CONTRACTOR TO LOCATE / VERIFY ALL THE OPENINGS THROUGH THE SLAB FROM ARCHITECTURAL AND MEP DRAWINGS.
9. CONTRACTOR TO PROVIDE FOR SOE OPENINGS FOR P.O.Es.
10. CONCRETE COMPRESSIVE STRENGTHS SEE STRUCTURAL NARRATIVE ON S-201

Damian Titus
Buildings
APPROVED
Under Directive 2 of 1975
Date: 09/27/2016:
NYC Development Hub

ES309653371 Scan Code
Job Number

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NEW YORK, NY

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PHASE: DOB SUBMITTAL

ARCHITECT'S SEAL

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	05/15/2015	SD FOR 944'
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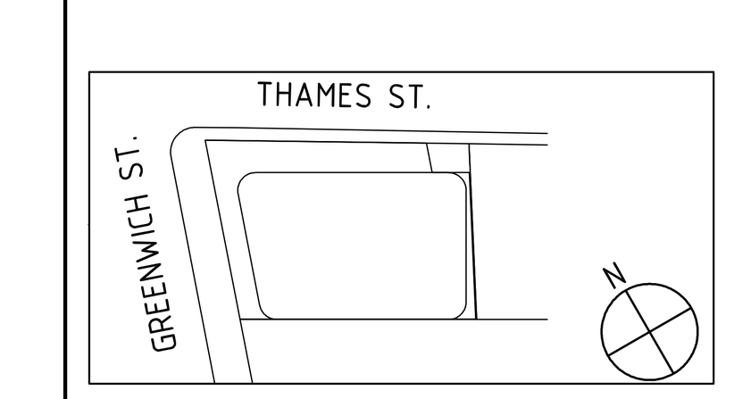

KEY PLAN AND NORTH SIGN

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1 0 2 4 8

SCALE AS NOTED

2ND FLOOR FRAMING PLAN

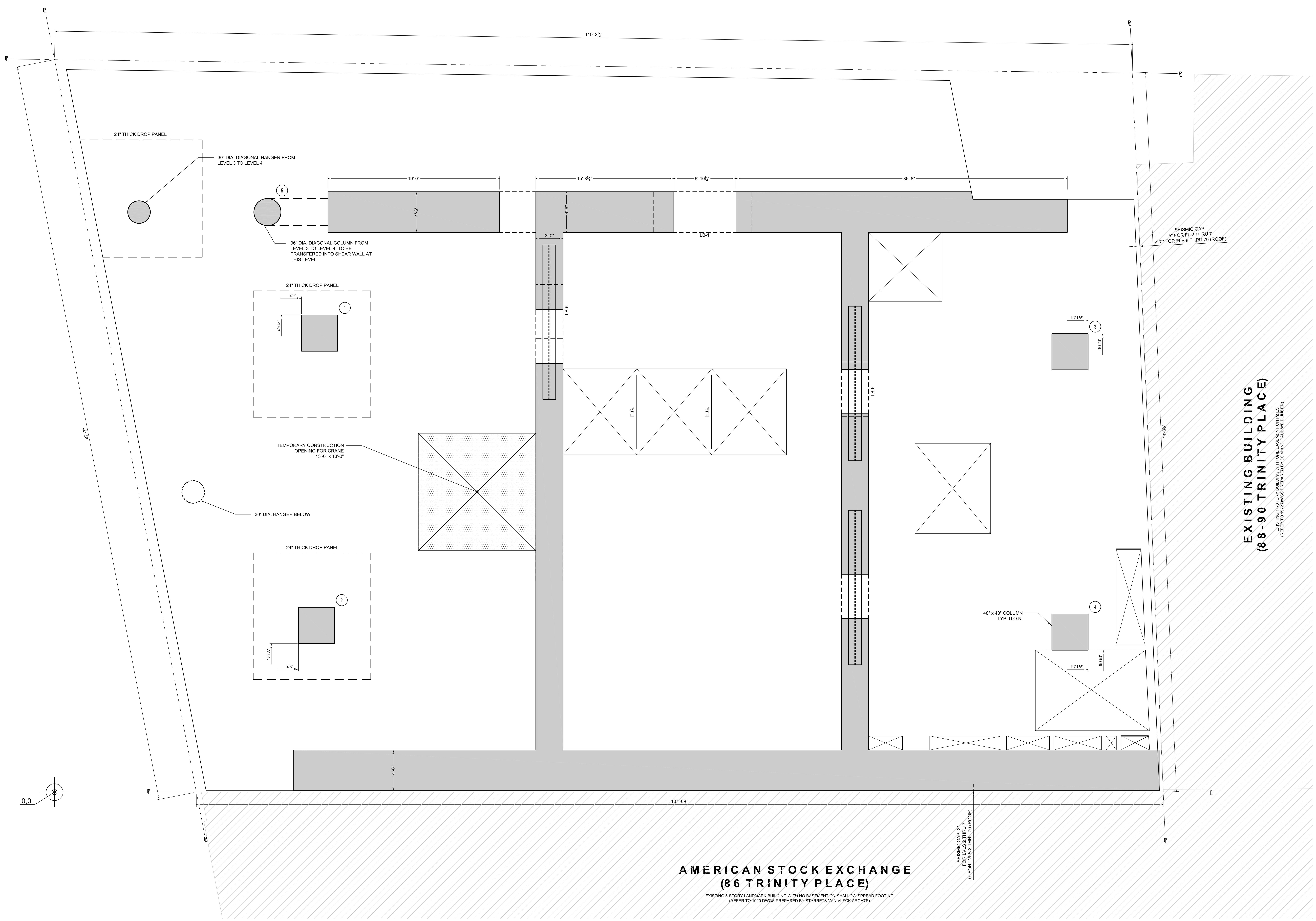
SHEET TITLE:

S-202.00

SHEET NUMBER: 03

14218.00-007-S-202.00.dwg

FL70/ROOF AT 840', T.O. BLDG AT 912', FL. TO FL. = 11'-5"



3RD FLOOR FRAMING PLAN

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

NORTH

FOR MEP EQUIPMENT, SEE MEP DWGS.
REF TYP CONC. PAD DETAIL 5/S-401

FOR CONDUIT TYPICAL DETAILS
REFER TO 4/S-405

REFER TO ARCH. DWG. FOR VERTICAL
AND HORIZONTAL LOCATIONS

TOP OF SLAB ELEVATION U.O.N.:	SEE PLAN
SLAB THICKNESS U.O.N.:	14"
SLAB CONCRETE STRENGTH:	f'c = 10,000 PSI
SLAB BASIC BOTTOM BARS (U.O.N.):	REF. S-201, SIM.
MID STRIP TOP BARS (U.O.N.):	REF. S-201, SIM.

LEGEND:

- (solid circle) DENOTES CONCRETE COLUMN
- (dashed circle) DENOTES CONCRETE COLUMN BELOW
- (crossed box) DENOTES SLAB OPENING
- E.G. HSS 6x4x$\frac{1}{4}$ TUBE ELEVATOR GUIDE BEAM
- SB 8" WIDE BY SLAB DEPTH BEAM WITH 1 #8 T&B, 1 LEG #3 STIRRUPS AT 6" O.C. SPACING

DRAWING NOTES:

1. FOR GENERAL NOTES SEE DRAWING S-001
2. ALL ELEVATIONS SHOWN ARE BASED ON NAVD-88.
3. FOR COLUMN SCHEDULE, SEE S-301.
4. FOR SHEARWALL PART PLANS, SEE S-311.
5. FOR CONCRETE TYPICAL DETAILS, SEE S-401 TO S-405.
6. DETAILER TO CHECK ALL BAR CLEARANCES.
7. OUTERMOST REINFORCING RUNS EAST-WEST.
8. CONTRACTOR TO LOCATE / VERIFY ALL THE OPENINGS THROUGH THE SLAB FROM ARCHITECTURAL AND MEP DRAWINGS.
9. CONTRACTOR TO PROVIDE FOR SOE OPENINGS FOR P.O.Es.
10. CONCRETE COMPRESSIVE STRENGTHS SEE STRUCTURAL NARRATIVE ON S-201

Damian Titus
Buildings
APPROVED
Under Directive 2 of 1975
Date: 09/27/2016:
NYC Development Hub

125 GREENWICH
NEW YORK, NY

OWNER:
VS 125 LLC
55 EAST 59TH STREET, 24TH FLOOR
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TEL: 212 616 0400

ARCHITECT:
RAFAEL VIÑOLY ARCHITECTS PC
50 VANDAM STREET
NEW YORK, NY 10013
TEL: 212 924 5060 FAX: 212 924 5858

STRUCTURAL ENGINEER:
DESIMONE CONSULTING ENGINEERS
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NEW YORK, NY 10011
TEL: 212 532 2211

MEP / FP / IT ENGINEER:
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NEW YORK, NY 10121
TEL: 212 615 3606

GEOTECH CONSULTANT:
LANGAN ENGINEERING
619 RIVER DRIVE CENTER 1
ELMWOOD PARK, NJ 07407
TEL: 201 794 6900

VERTICAL TRANSPORTATION CONSULTANT:
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ARCHITECT'S SEAL

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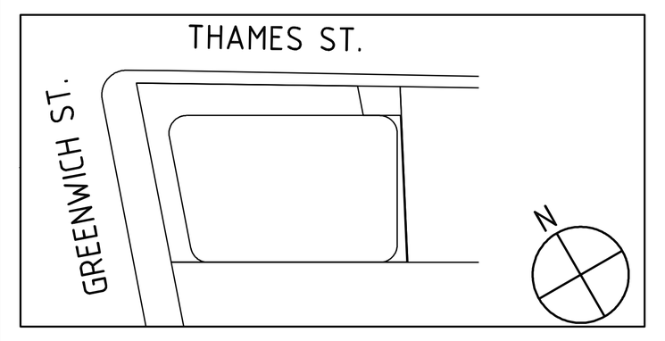


KEY PLAN AND NORTH SIGN

IF THIS DRAWING IS NOT 36" X 48" IT IS A REDUCED PRINT; REFER TO GRAPHIC SCALE

1 0 2 4 8

SCALE AS NOTED

3RD FLOOR FRAMING PLAN

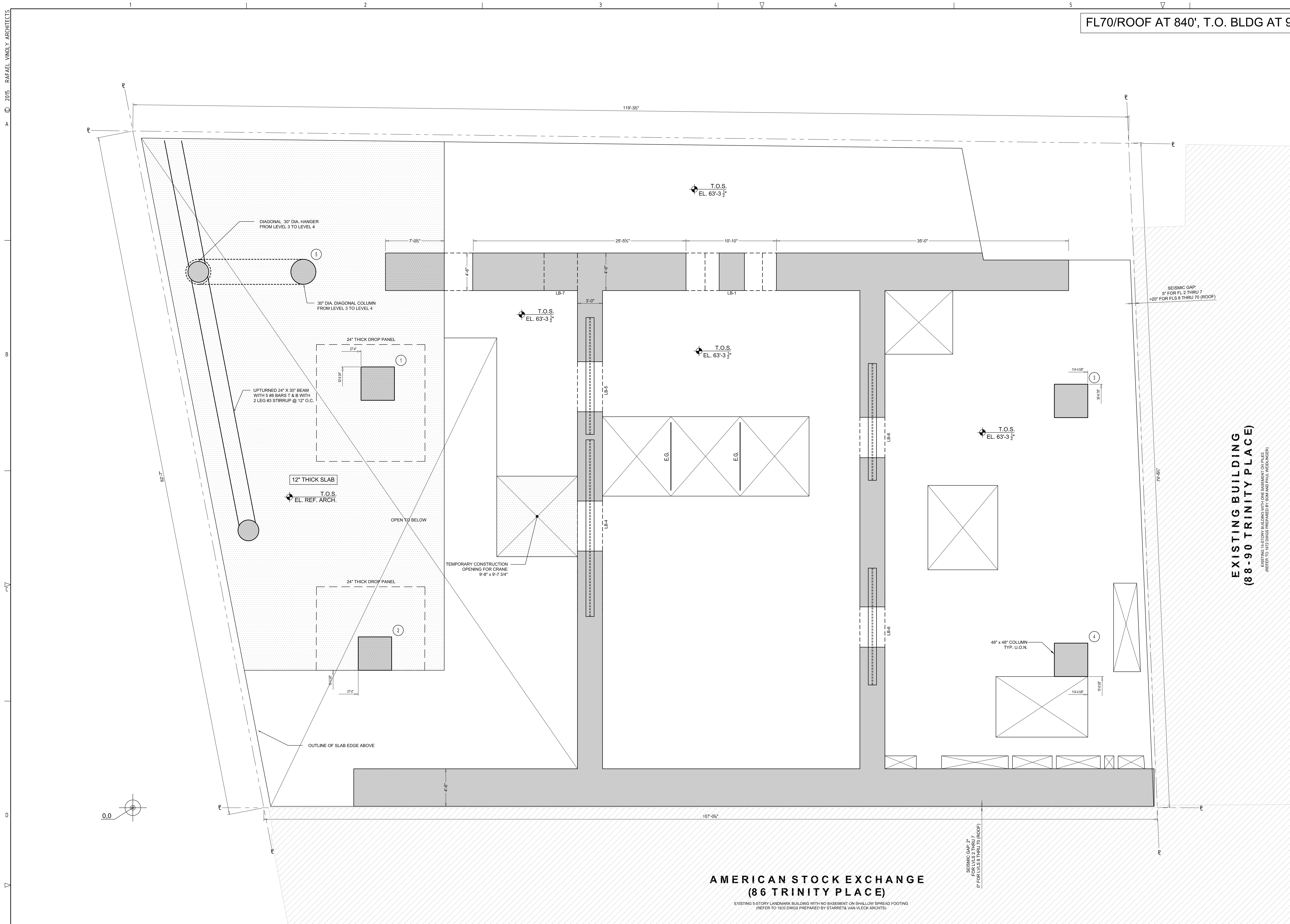
SHEET TITLE:

S-203.00

SHEET NUMBER: 03

14218.00-007-S-203.00.dwg

FL70/ROOF AT 840', T.O. BLDG AT 912', FL. TO FL. = 11'-5"



3RD FLOOR MEZZANINE FRAMING PLAN

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

NORTH

FOR MEP EQUIPMENT, SEE MEP DWGS.
REF TYP CONC. PAD DETAIL 5/S-401

FOR CONDUIT TYPICAL DETAILS
REFER TO 4/S-405

REFER TO ARCH. DWG. FOR VERTICAL
AND HORIZONTAL LOCATIONS

TOP OF SLAB ELEVATION U.O.N.:	SEE PLAN
SLAB THICKNESS U.O.N.:	14"
SLAB CONCRETE STRENGTH:	f'c = 10,000 PSI
SLAB BASIC BOTTOM BARS (U.O.N.):	REF. S-201, SIM.
MID STRIP TOP BARS (U.O.N.):	REF. S-201, SIM.

LEGEND:

- DENOTES CONCRETE COLUMN
- DENOTES CONCRETE COLUMN BELOW
- DENOTES SLAB OPENING
- E.G. — HSS 6x4x$\frac{1}{4}$ TUBE ELEVATOR GUIDE BEAM
- SB — 8" WIDE BY SLAB DEPTH BEAM WITH 1 #8 T&B, 1 LEG #3 STIRRUPS AT 6" O.C. SPACING

DRAWING NOTES:

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4. FOR SHEARWALL PART PLANS, SEE S-311.
5. FOR CONCRETE TYPICAL DETAILS, SEE S-401 TO S-405.
6. DETAILER TO CHECK ALL BAR CLEARANCES.
7. OUTERMOST REINFORCING RUNS EAST-WEST.
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9. CONTRACTOR TO PROVIDE FOR SOE OPENINGS FOR P.O.Es.
10. CONCRETE COMPRESSIVE STRENGTHS SEE STRUCTURAL NARRATIVE ON S-201

Damian Titus
Buildings
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Under Directive 2 of 1975
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18 WEST 18TH STREET, 10TH FLOOR
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MEP / FP / IT ENGINEER :
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VERTICAL TRANSPORTATION CONSULTANT :
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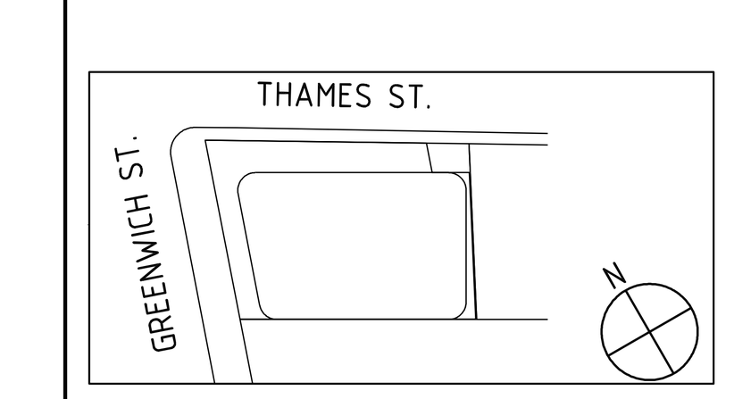

KEY PLAN AND NORTH SIGN

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SCALE AS NOTED

3RD FLOOR MEZZANINE FRAMING PLAN

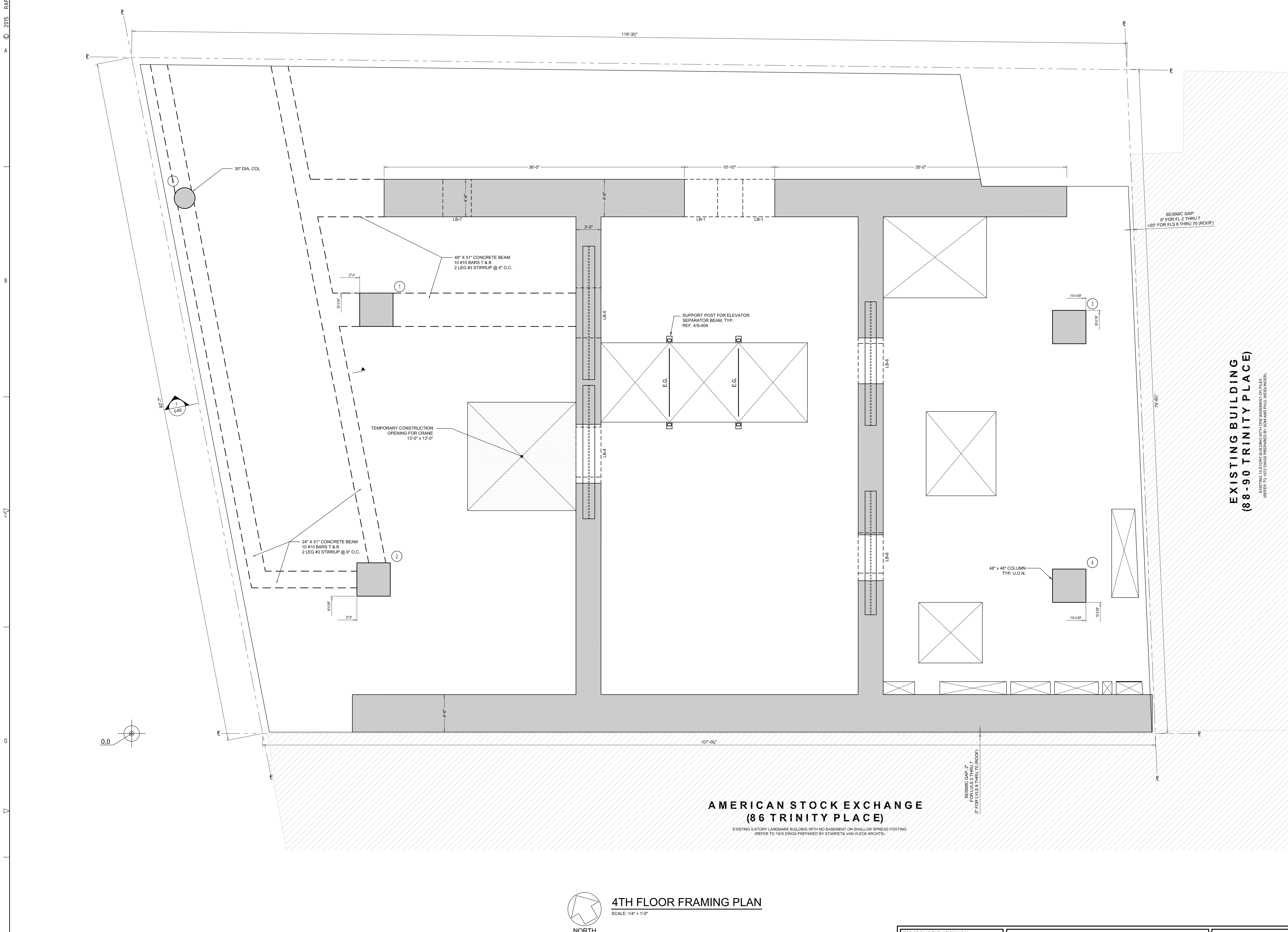
SHEET TITLE :

S-203.00M

SHEET NUMBER : 03

14218.00-007-S-203.00M.dwg

FL70/ROOF AT 840', T.O. BLDG AT 912', FL. TO FL. = 11'-5"



4TH FLOOR FRAMING PLAN

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

TOP OF SLAB ELEVATION U.O.N.:	SEE PLAN
SLAB THICKNESS U.O.N.:	14"
SLAB CONCRETE STRENGTH:	f'c = 10,000 PSI
SLAB BASIC BOTTOM BARS (U.O.N.):	REF. S-201, SIM.
MID STRIP TOP BARS (U.O.N.):	REF. S-201, SIM.

LEGEND:

(filled circle)	DENOTES CONCRETE COLUMN
(dashed circle)	DENOTES CONCRETE COLUMN BELOW
(crossed box)	DENOTES SLAB OPENING
E.G.	HSS 6x4x¼ TUBE ELEVATOR GUIDE BEAM
SB	8" WIDE BY SLAB DEPTH BEAM WITH 1 #8 T&B, 1 LEG #3 STIRRUPS AT 6" O.C. SPACING

DRAWING NOTES:

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10. CONCRETE COMPRESSIVE STRENGTHS SEE STRUCTURAL NARRATIVE ON S-201

Damian Titus
NYC Buildings
APPROVED
Under Directive 2 of 1975
Date: 09/27/2016:
NYC Development Hub

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125 GREENWICH
NEW YORK, NY

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MEP / FP / IT ENGINEER :
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VAN DEUSEN & ASSOCIATES
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EAST HANOVER, NJ 07936
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PHASE: DOB SUBMITTAL

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	08/07/2015	SUPERSTRUCTURE BID
	07/10/2015	PROGRESS DD
	06/15/2015	SS PRE-BID

THAMES ST.
GREENWICH ST.

KEY PLAN AND NORTH SIGN

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SCALE AS NOTED

4TH FLOOR
FRAMING PLAN

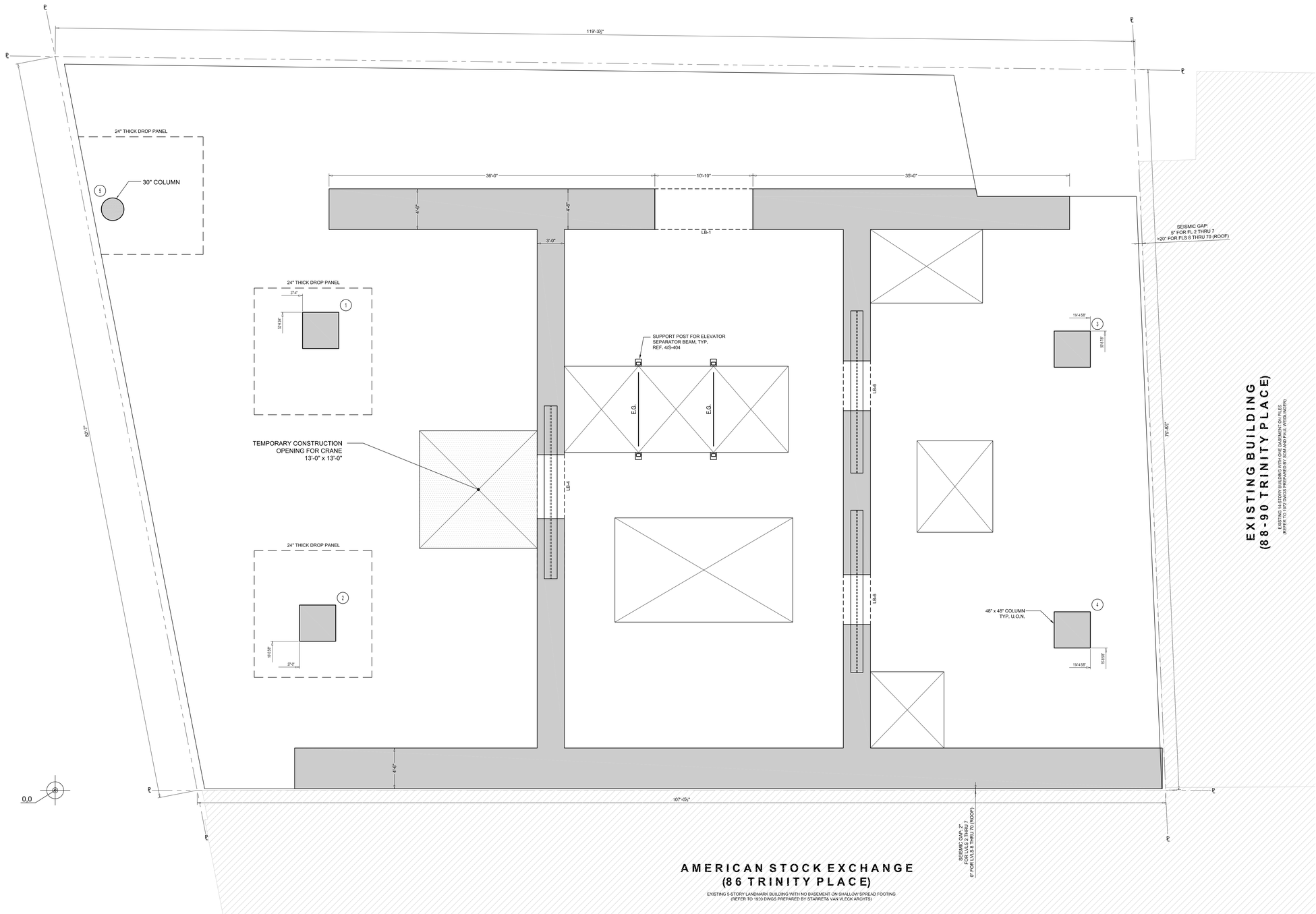
SHEET TITLE :

S-204.00

SHEET NUMBER : 03

14218.00-007-S-204.00.dwg

FL70/ROOF AT 840', T.O. BLDG AT 912', FL. TO FL. = 11'-5"



NORTH

5TH FLOOR FRAMING PLAN

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

TOP OF SLAB ELEVATION U.O.N.:	SEE PLAN
SLAB THICKNESS U.O.N.:	14"
SLAB CONCRETE STRENGTH:	f'c = 10,000 PSI
SLAB BASIC BOTTOM BARS (U.O.N.):	REF. S-201, SIM.
MID STRIP TOP BARS (U.O.N.):	REF. S-201, SIM.

LEGEND:

- DENOTES CONCRETE COLUMN
- DENOTES CONCRETE COLUMN BELOW
- DENOTES SLAB OPENING
- **E.G.** HSS 6x4x¼ TUBE ELEVATOR GUIDE BEAM
- SB 8" WIDE BY SLAB DEPTH BEAM WITH 1 #8 T&B, 1 LEG #3 STIRRUPS AT 6" O.C. SPACING

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Damian Titus
Buildings
APPROVED
Work Permit Directive 2 of 1975
Date: 09/27/2016.
NYC Development Hub

125
GREENWICH
NEW YORK, NY

OWNER:
VS 125 LLC
55 EAST 59TH STREET, 24TH FLOOR
NEW YORK, NY 10022
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50 VANDAM STREET
NEW YORK, NY 10013
TEL: 212 924 5960 FAX: 212 924 5858

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DESIMONE CONSULTING ENGINEERS
18 WEST 18TH STREET, 10TH FLOOR
NEW YORK, NY 10011
TEL: 212 532 2211

MEP / FP / IT ENGINEER:
COSENTINI ASSOCIATES - A TETRA TECH COMPANY
2 PENNSYLVANIA PLAZA, 3RD FLOOR
NEW YORK, NY 10121
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GEOTECH CONSULTANT:
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619 RIVER DRIVE CENTER 1
ELMWOOD PARK, NJ 07407
TEL: 201 794 6900

VERTICAL TRANSPORTATION CONSULTANT:
VAN DEUSEN & ASSOCIATES
120 EAGLE ROCK AVENUE, SUITE 310
EAST HANOVER, NJ 07936
TEL: 973 994 9228

PHASE DOB SUBMITTAL

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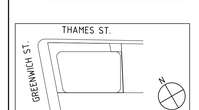

KEY PLAN AND NORTH SIGN

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SCALE AS NOTED

5TH FLOOR FRAMING PLAN

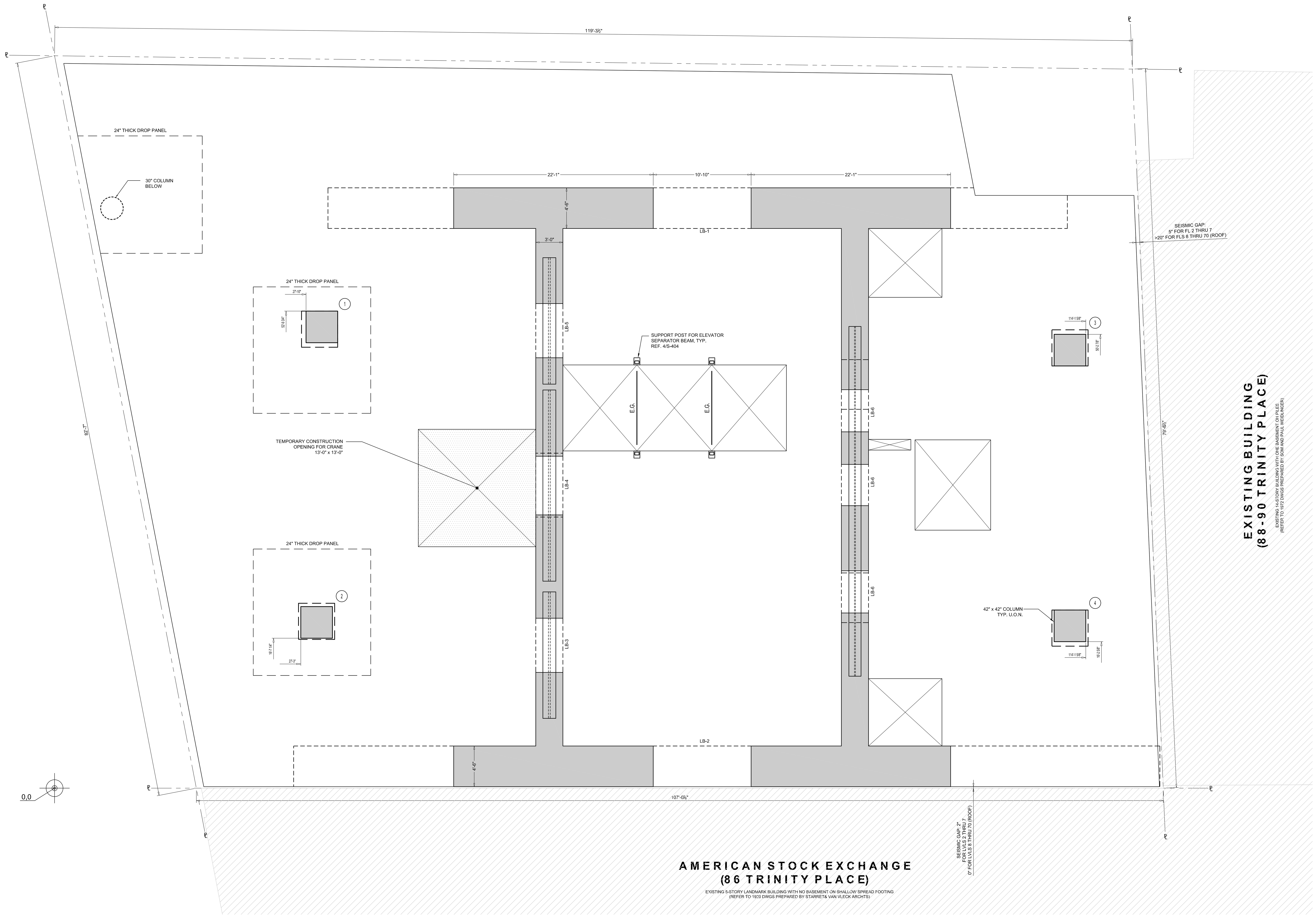
SHEET TITLE

S-205.00

SHEET NUMBER 03

14218.00-007I-S-205.00.dwg

FL70/ROOF AT 840', T.O. BLDG AT 912', FL. TO FL. = 11'-5"



NORTH

6TH FLOOR FRAMING PLAN

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

FOR MEP EQUIPMENT, SEE MEP DWGS.
REF TYP CONC. PAD DETAIL 5/S-401

TOP OF SLAB ELEVATION U.O.N.:	SEE PLAN
SLAB THICKNESS U.O.N.:	14"
SLAB CONCRETE STRENGTH:	f'c = 10,000 PSI
SLAB BASIC BOTTOM BARS (U.O.N.):	REF. S-201, SIM.
MID STRIP TOP BARS (U.O.N.):	REF. S-201, SIM.

LEGEND:

(solid circle)	DENOTES CONCRETE COLUMN
(dashed circle)	DENOTES CONCRETE COLUMN BELOW
(crossed box)	DENOTES SLAB OPENING
E.G.	HSS 6x4x¼ TUBE ELEVATOR GUIDE BEAM
SB	8" WIDE BY SLAB DEPTH BEAM WITH 1 #8 T&B, 1 LEG #3 STIRRUPS AT 6" O.C. SPACING

DRAWING NOTES:

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4. FOR SHEARWALL PART PLANS, SEE S-311.
5. FOR CONCRETE TYPICAL DETAILS, SEE S-401 TO S-405.
6. DETAILER TO CHECK ALL BAR CLEARANCES.
7. OUTERMOST REINFORCING RUNS EAST-WEST.
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Damian Titus
Buildings
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Under Directive 2 of 1975
Date: 09/27/2016:
NYC Development Hub

125 GREENWICH
NEW YORK, NY

OWNER:
VS 125 LLC
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NEW YORK, NY 10022
TEL: 212 616 0400

ARCHITECT:
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50 VANDAM STREET
NEW YORK, NY 10013
TEL: 212 924 5060 FAX: 212 924 5858

STRUCTURAL ENGINEER:
DESIMONE CONSULTING ENGINEERS
18 WEST 18TH STREET, 10TH FLOOR
NEW YORK, NY 10011
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PHASE: DOB SUBMITTAL

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THAMES ST.
GREENWICH ST.

KEY PLAN AND NORTH SIGN

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SCALE AS NOTED

6TH FLOOR FRAMING PLAN

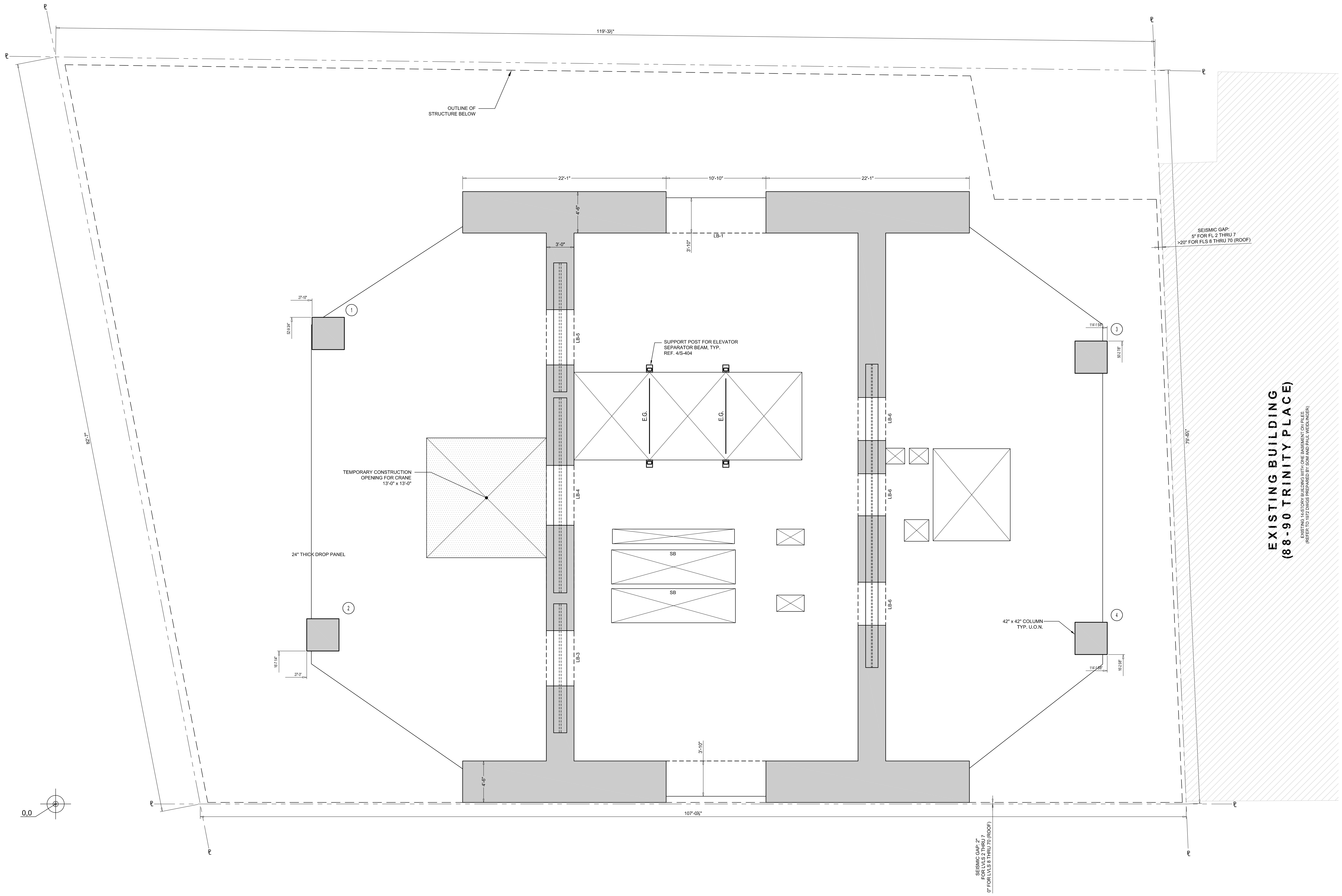
SHEET TITLE:

S-206.00

SHEET NUMBER: 03

14218.00-007-S-206.00.dwg

FL70/ROOF AT 840', T.O. BLDG AT 912', FL. TO FL. = 11'-5"



7TH FLOOR FRAMING PLAN

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

NORTH

FOR MEP EQUIPMENT, SEE MEP DWGS.
REF TYP CONC. PAD DETAIL 5/S-401

TOP OF SLAB ELEVATION U.O.N.:	SEE PLAN
SLAB THICKNESS U.O.N.:	16"
SLAB CONCRETE STRENGTH:	f'c = 10,000 PSI
SLAB BASIC BOTTOM BARS (U.O.N.):	REF. S-201, SIM.
MID STRIP TOP BARS (U.O.N.):	REF. S-201, SIM.

LEGEND:

(circle, shaded)	DENOTES CONCRETE COLUMN
(circle, dashed)	DENOTES CONCRETE COLUMN BELOW
(box with X)	DENOTES SLAB OPENING
E.G.	HSS 6x4x¼ TUBE ELEVATOR GUIDE BEAM
SB	8" WIDE BY SLAB DEPTH BEAM WITH 1 #8 T&B, 1 LEG #3 STIRRUPS AT 6" O.C. SPACING

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Buildings
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Date: 09/27/2016:
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NEW YORK, NY

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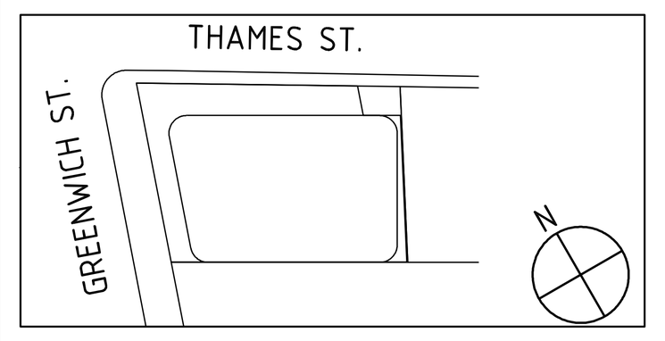

KEY PLAN AND NORTH SIGN

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SCALE AS NOTED

7TH FLOOR FRAMING PLAN

SHEET TITLE :

S-207.00

SHEET NUMBER : 03

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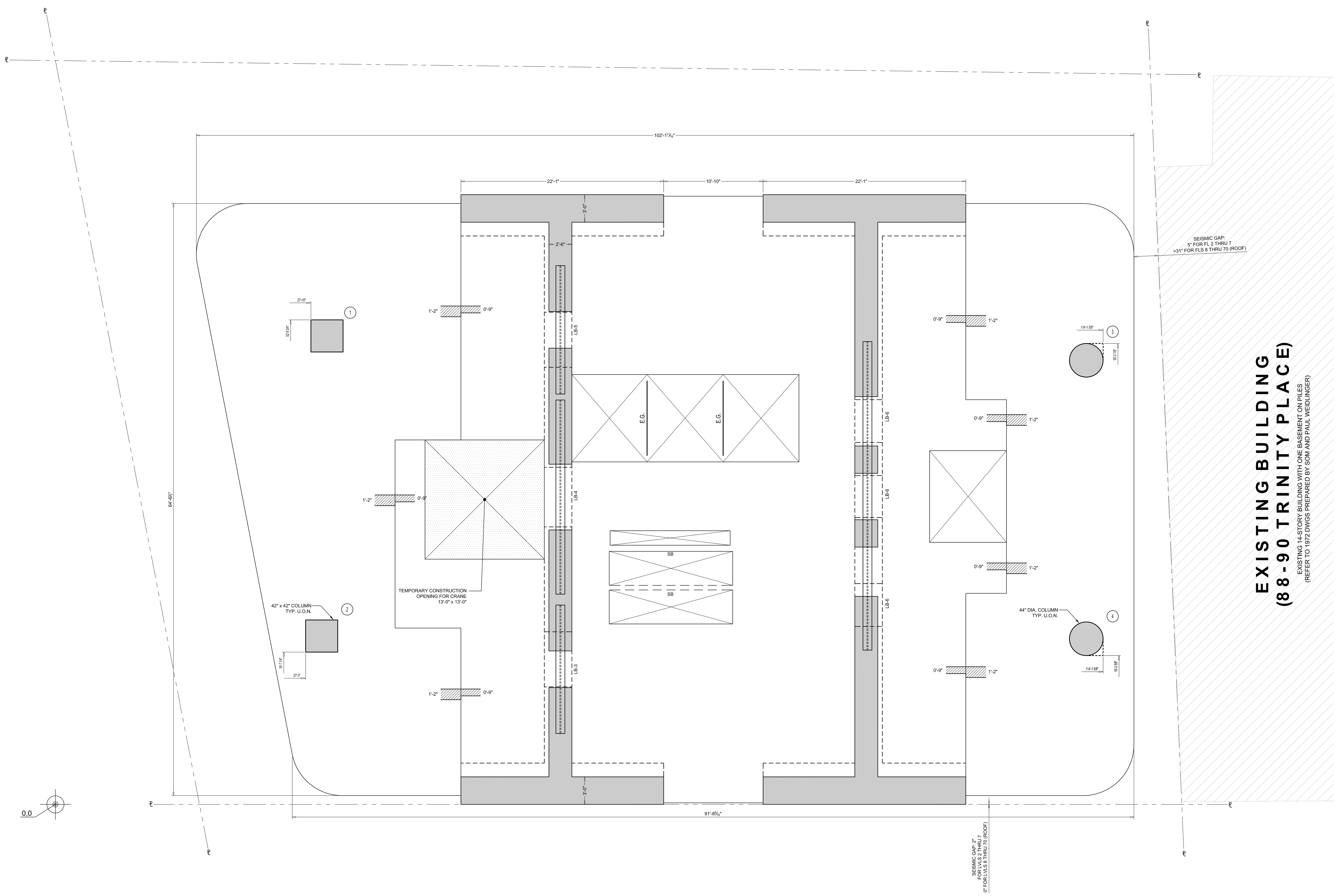


8TH FLOOR FRAMING PLAN

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

NORTH

TOP OF SLAB ELEVATION U.O.N.:	SEE PLAN
SLAB THICKNESS U.O.N.:	9"
SLAB CONCRETE STRENGTH:	f'c = 10,000 PSI
SLAB BASIC BOTTOM BARS (U.O.N.):	#5@12" O.C. E.W.
MID STRIP TOP BARS (U.O.N.):	SEE PLAN

LEGEND:

- DENOTES CONCRETE COLUMN
- DENOTES CONCRETE COLUMN BELOW
- DENOTES SLAB OPENING
- E.G. — HSS 6x4x¼ TUBE ELEVATOR GUIDE BEAM
- SB — 8" WIDE BY SLAB DEPTH BEAM WITH 1 #8 T&B, 1 LEG #3 STIRRUPS AT 6" O.C. SPACING

DRAWING NOTES:

1. FOR GENERAL NOTES SEE DRAWING S-001
2. ALL ELEVATIONS SHOWN ARE BASED ON NAVD-88.
3. FOR COLUMN SCHEDULE, SEE S-301.
4. FOR SHEARWALL PART PLANS, SEE S-311.
5. FOR CONCRETE TYPICAL DETAILS, SEE S-401 TO S-405.
6. DETAILER TO CHECK ALL BAR CLEARANCES.
7. OUTERMOST REINFORCING RUNS EAST-WEST.
8. CONTRACTOR TO LOCATE / VERIFY ALL THE OPENINGS THROUGH THE SLAB FROM ARCHITECTURAL AND MEP DRAWINGS.
9. CONTRACTOR TO PROVIDE FOR SOE OPENINGS FOR P.O.Es.
10. CONCRETE COMPRESSIVE STRENGTHS SEE STRUCTURAL NARRATIVE ON S-201

Damian Titus
Buildings
APPROVED
Under Directive 2 of 1975
Date: 09/27/2016:
NYC Development Hub

125 GREENWICH
NEW YORK, NY

OWNER:
VS 125 LLC
55 EAST 59TH STREET, 24TH FLOOR
NEW YORK, NY 10022
TEL: 212 616 0400

ARCHITECT:
RAFAEL VIÑOLY ARCHITECTS PC
50 VANDAM STREET
NEW YORK, NY 10013
TEL: 212 924 5060 FAX: 212 924 5858

STRUCTURAL ENGINEER:
DESIMONE CONSULTING ENGINEERS
18 WEST 18TH STREET, 10TH FLOOR
NEW YORK, NY 10011
TEL: 212 532 2211

MEP / FP / IT ENGINEER:
COSENTINI ASSOCIATES - A TETRA TECH COMPANY
2 PENNSYLVANIA PLAZA, 3RD FLOOR
NEW YORK, NY 10121
TEL: 212 615 3606

GEOTECH CONSULTANT:
LANGAN ENGINEERING
619 RIVER DRIVE CENTER 1
ELMWOOD PARK, NJ 07407
TEL: 201 794 6900

VERTICAL TRANSPORTATION CONSULTANT:
VAN DEUSEN & ASSOCIATES
120 EAGLE ROCK AVENUE, SUITE 310
EAST HANOVER, NJ 07936
TEL: 973 994 9220

PHASE: DOB SUBMITTAL

ARCHITECT'S SEAL

ISSUE NO.	ISSUE DATE	DESCRIPTION
	09/30/2015	DOB SUBMITTAL
	08/07/2015	SUPERSTRUCTURE BID
	07/10/2015	PROGRESS DD
	06/15/2015	SS PRE-BID

THAMES ST.
GREENWICH ST.

KEY PLAN AND NORTH SIGN

IF THIS DRAWING IS NOT 36" X 48" IT IS A REDUCED PRINT; REFER TO GRAPHIC SCALE

1 0 2 4 8

SCALE AS NOTED

8TH FLOOR FRAMING PLAN

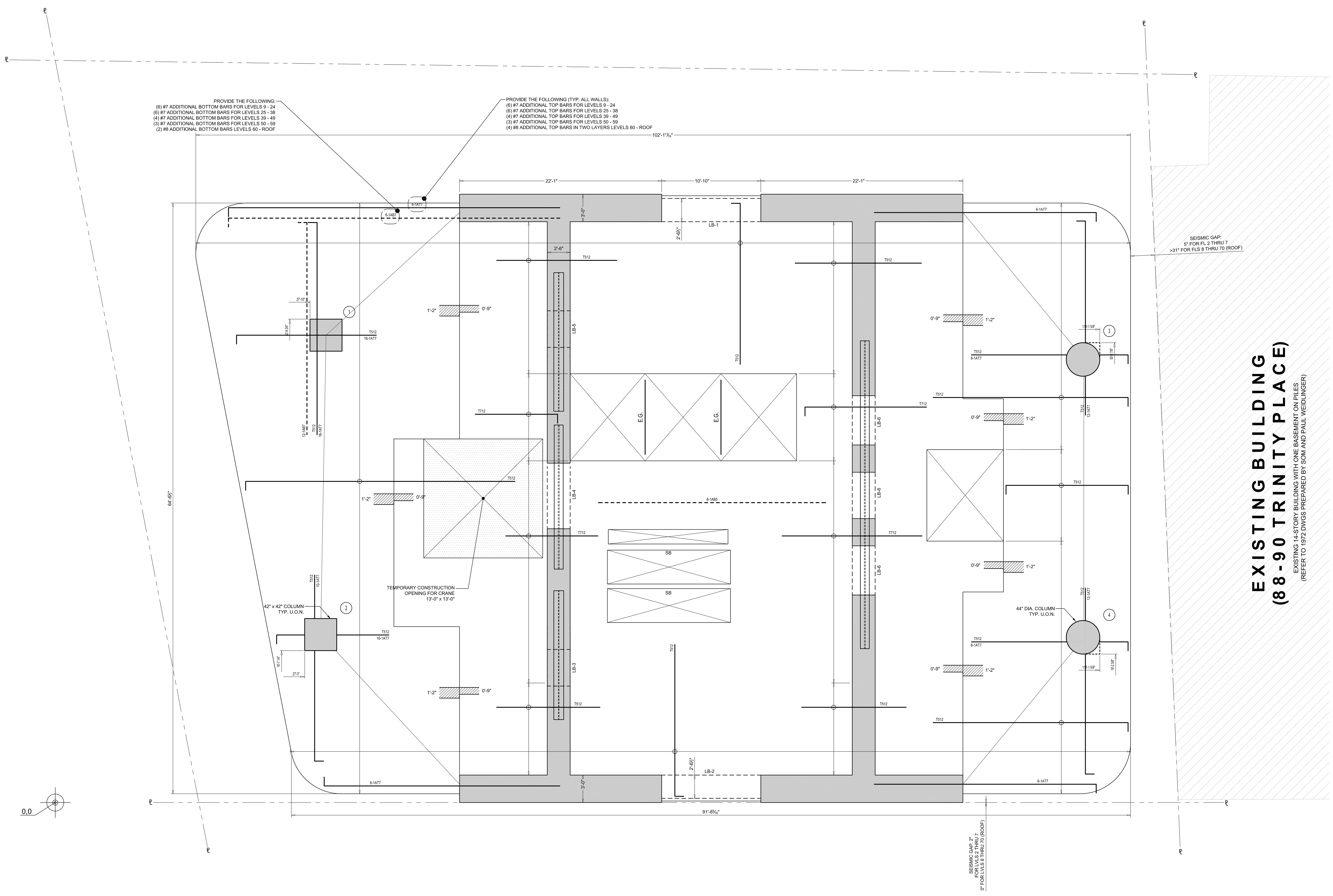
SHEET TITLE:

S-208.00

SHEET NUMBER: 03

14218.00-007-S-208.00.dwg

FL70/ROOF AT 840', T.O. BLDG AT 912', FL. TO FL. = 11'-5"



9TH AND 10TH FLOOR FRAMING PLAN

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

NORTH

TOP OF SLAB ELEVATION U.O.N.:	SEE PLAN
SLAB THICKNESS U.O.N.:	9"
SLAB CONCRETE STRENGTH:	f'c = 10,000 PSI
SLAB BASIC BOTTOM BARS (U.O.N.):	#5@12" O.C. E.W.
MID STRIP TOP BARS (U.O.N.):	SEE PLAN

LEGEND:

- (filled circle) DENOTES CONCRETE COLUMN
- (dashed circle) DENOTES CONCRETE COLUMN BELOW
- (crossed box) DENOTES SLAB OPENING
- E.G. HSS 6x4x¼ TUBE ELEVATOR GUIDE BEAM
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Damian Titus
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Date: 09/27/2016:
NYC Development Hub

ES480334178 Scan Code

125 GREENWICH

NEW YORK, NY

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ARCHITECT:
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STRUCTURAL ENGINEER:
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18 WEST 18TH STREET, 10TH FLOOR
NEW YORK, NY 10011
TEL: 212 532 2211

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	07/10/2015	PROGRESS DD
	06/15/2015	SS PRE-BID
	05/15/2015	SD FOR 944'
	03/06/2015	SCHEMATIC DESIGN

THAMES ST.
GREENWICH ST.

KEY PLAN AND NORTH SIGN

IF THIS DRAWING IS NOT 36" X 48" IT IS A REDUCED PRINT; REFER TO GRAPHIC SCALE

1 0 2 4 8

SCALE AS NOTED

9TH AND 10TH FLOOR FRAMING PLAN

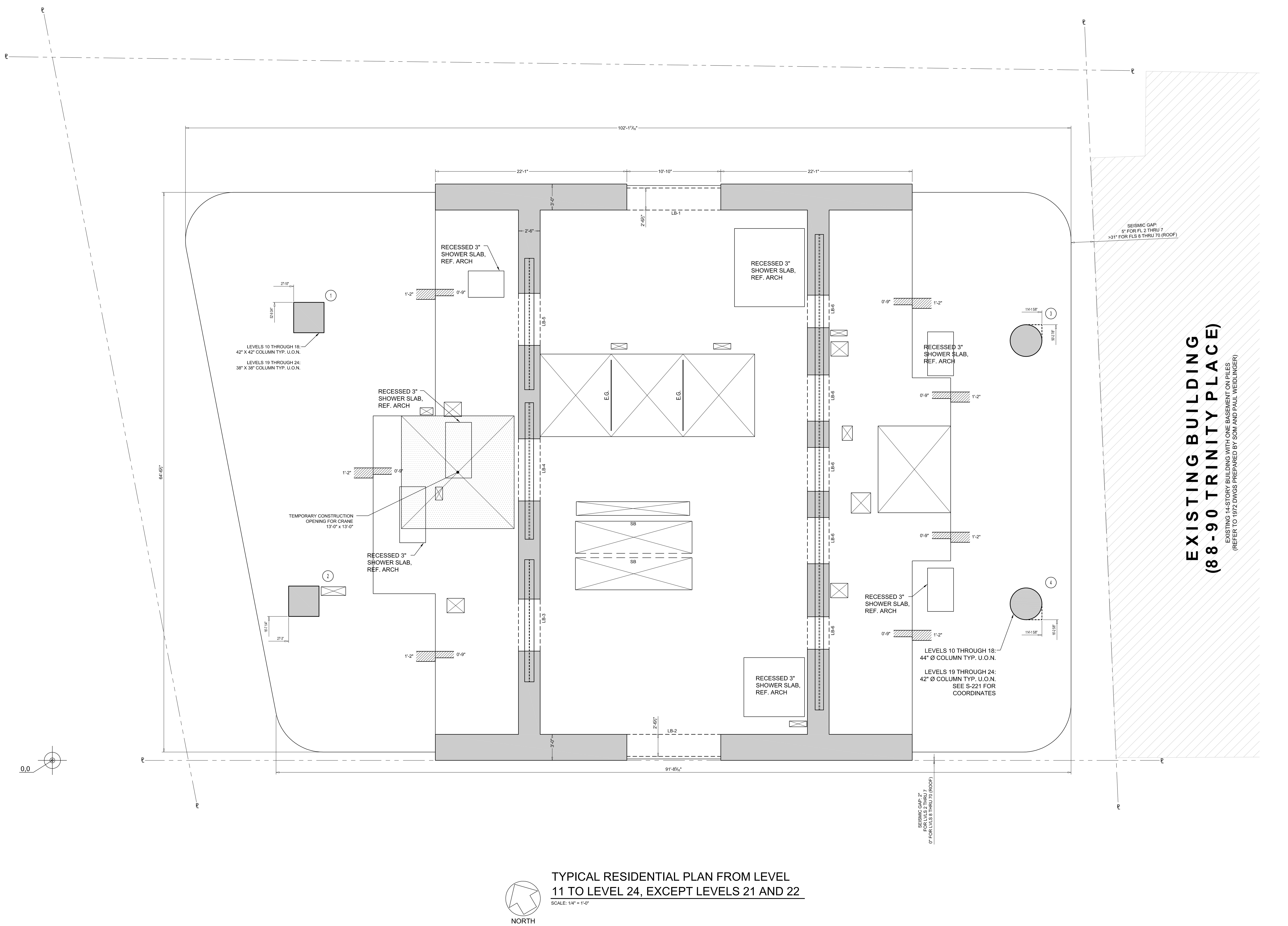
SHEET TITLE:

S-209.00

SHEET NUMBER: 03

14218.00-007-S-209.00.dwg

FL70/ROOF AT 840', T.O. BLDG AT 912', FL. TO FL. = 11'-5"



TYPICAL RESIDENTIAL PLAN FROM LEVEL 11 TO LEVEL 24, EXCEPT LEVELS 21 AND 22

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

TOP OF SLAB ELEVATION U.O.N.:	SEE PLAN
SLAB THICKNESS U.O.N.:	9"
SLAB CONCRETE STRENGTH:	f'c = 10,000 PSI
SLAB BASIC BOTTOM BARS (U.O.N.):	REF. S-209
MID STRIP TOP BARS (U.O.N.):	REF. S-209

LEGEND:

Symbol	Description
(filled circle)	DENOTES CONCRETE COLUMN
(dashed circle)	DENOTES CONCRETE COLUMN BELOW
(crossed box)	DENOTES SLAB OPENING
E.G.	HSS 6x4x¼ TUBE ELEVATOR GUIDE BEAM
SB	8" WIDE BY SLAB DEPTH BEAM WITH 1 #8 T&B, 1 LEG #3 STIRRUPS AT 6" O.C. SPACING

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Damian Titus
Buildings
APPROVED
Under Directive 2 of 1975
Date: 09/27/2016:
NYC Development Hub

Job Number
ES626759533 Scan Code

125 GREENWICH
NEW YORK, NY

OWNER:
VS 125 LLC
55 EAST 59TH STREET, 24TH FLOOR
NEW YORK, NY 10022
TEL: 212 616 0400

ARCHITECT:
RAFAEL VINOLY ARCHITECTS PC
50 VANDAM STREET
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TEL: 212 924 5060 FAX: 212 924 5858

STRUCTURAL ENGINEER:
DESIMONE CONSULTING ENGINEERS
18 WEST 18TH STREET, 10TH FLOOR
NEW YORK, NY 10011
TEL: 212 532 2211

MEP / FP / IT ENGINEER:
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2 PENNSYLVANIA PLAZA, 3RD FLOOR
NEW YORK, NY 10121
TEL: 212 615 3606

GEOTECH CONSULTANT:
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619 RIVER DRIVE CENTER 1
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VERTICAL TRANSPORTATION CONSULTANT:
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PHASE: DOB SUBMITTAL

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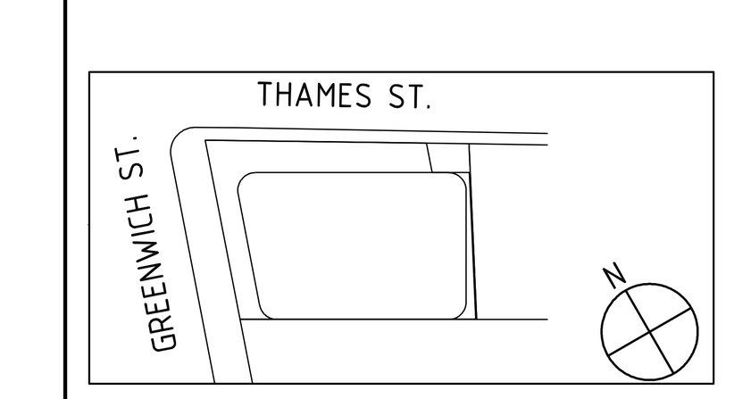
	05/15/2015	SD FOR 944'
	03/06/2015	SCHEMATIC DESIGN



KEY PLAN AND NORTH SIGN

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1 0 2 4 8

SCALE AS NOTED

11TH THROUGH 24TH FLOOR FRAMING PLAN, EXCEPT LEVELS 21 AND 22

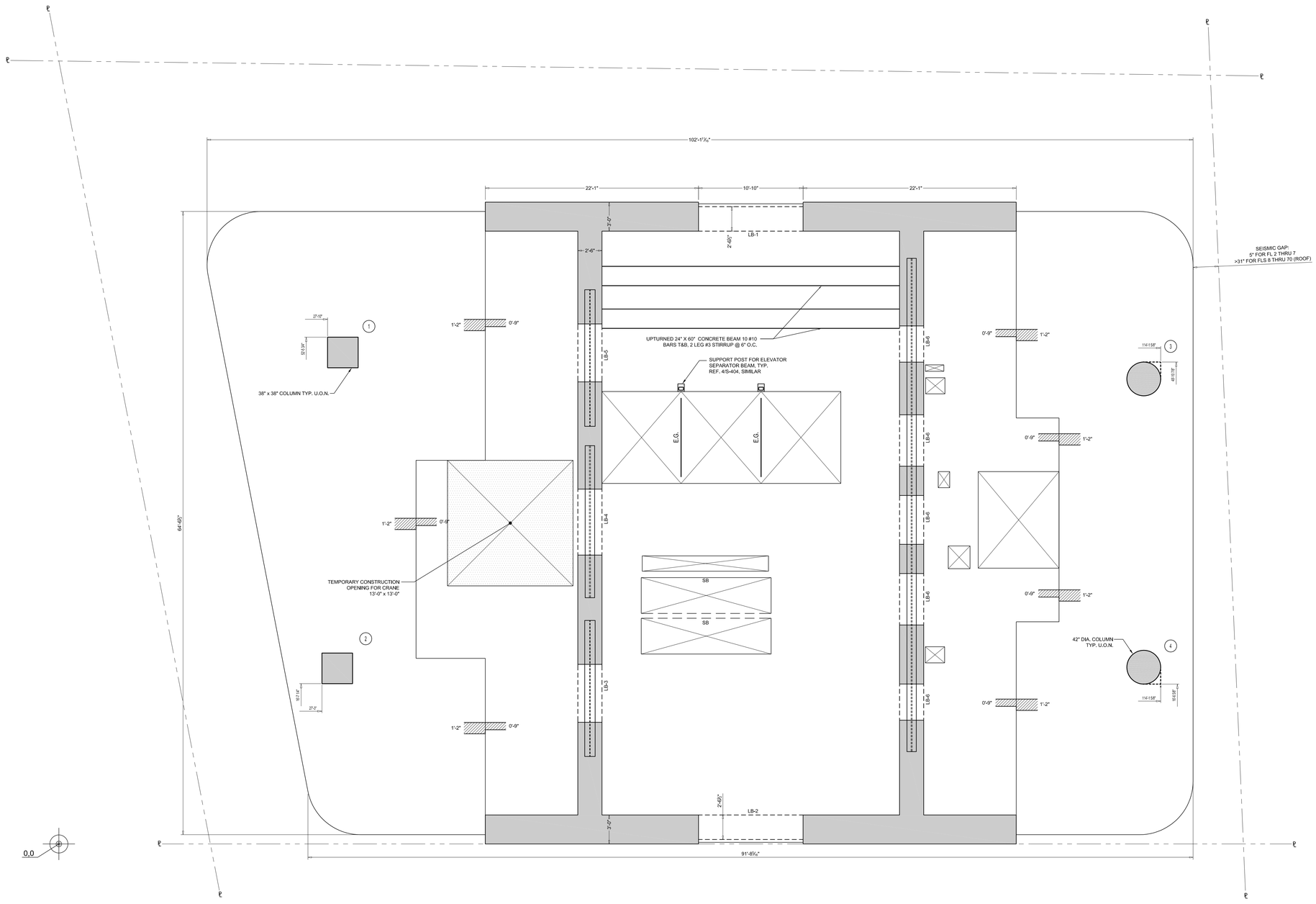
SHEET TITLE:

S-212.00

SHEET NUMBER: 03

14218.00-007-S-212.00.dwg

FL70/ROOF AT 840', T.O. BLDG AT 912', FL. TO FL. = 11'-5"



NORTH

RESIDENTIAL PLAN FOR 21ST FLOOR

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

FOR MEP EQUIPMENT, SEE MEP DWGS.
REF TYP CONC. PAD DETAIL 5/S-401

TOP OF SLAB ELEVATION U.O.N.:	SEE PLAN
SLAB THICKNESS U.O.N.:	9"
SLAB CONCRETE STRENGTH:	f'c = 10,000 PSI
SLAB BASIC BOTTOM BARS (U.O.N.):	REF. S-209
MID STRIP TOP BARS (U.O.N.):	REF. S-209

LEGEND:

- DENOTES CONCRETE COLUMN
- DENOTES CONCRETE COLUMN BELOW
- DENOTES SLAB OPENING
- E.G. — HSS 6x4x¼ TUBE ELEVATOR GUIDE BEAM
- SB — 8" WIDE BY SLAB DEPTH BEAM WITH 1 #8 T&B, 1 LEG #3 STIRRUPS AT 6" O.C. SPACING

DRAWING NOTES:

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5. FOR CONCRETE TYPICAL DETAILS, SEE S-401 TO S-405.
6. DETAILER TO CHECK ALL BAR CLEARANCES.
7. OUTERMOST REINFORCING RUNS EAST-WEST.
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9. CONTRACTOR TO PROVIDE FOR SOE OPENINGS FOR P.O.Es.
10. CONCRETE COMPRESSIVE STRENGTHS SEE STRUCTURAL NARRATIVE ON DRAWING S-001.

Damian Titus
Buildings
APPROVED
Under Directive 2 of 1975
Date: 09/27/2016
NYC Development Hub

125
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NEW YORK, NY

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VS 125 LLC
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NEW YORK, NY 10022
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ARCHITECT:
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ELMWOOD PARK, NJ 07407
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120 EAGLE ROCK AVENUE, SUITE 310
EAST HANOVER, NJ 07936
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PHASE DOB SUBMITTAL

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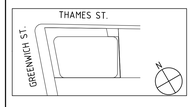


KEY PLAN AND NORTH SIGN

IF THIS DRAWING IS NOT 36" X 48" IT IS A REDUCED PRINT, REFER TO GRAPHIC SCALE

1 0 2 4 8

SCALE AS NOTED

RESIDENTIAL PLAN
FOR 21ST FLOOR

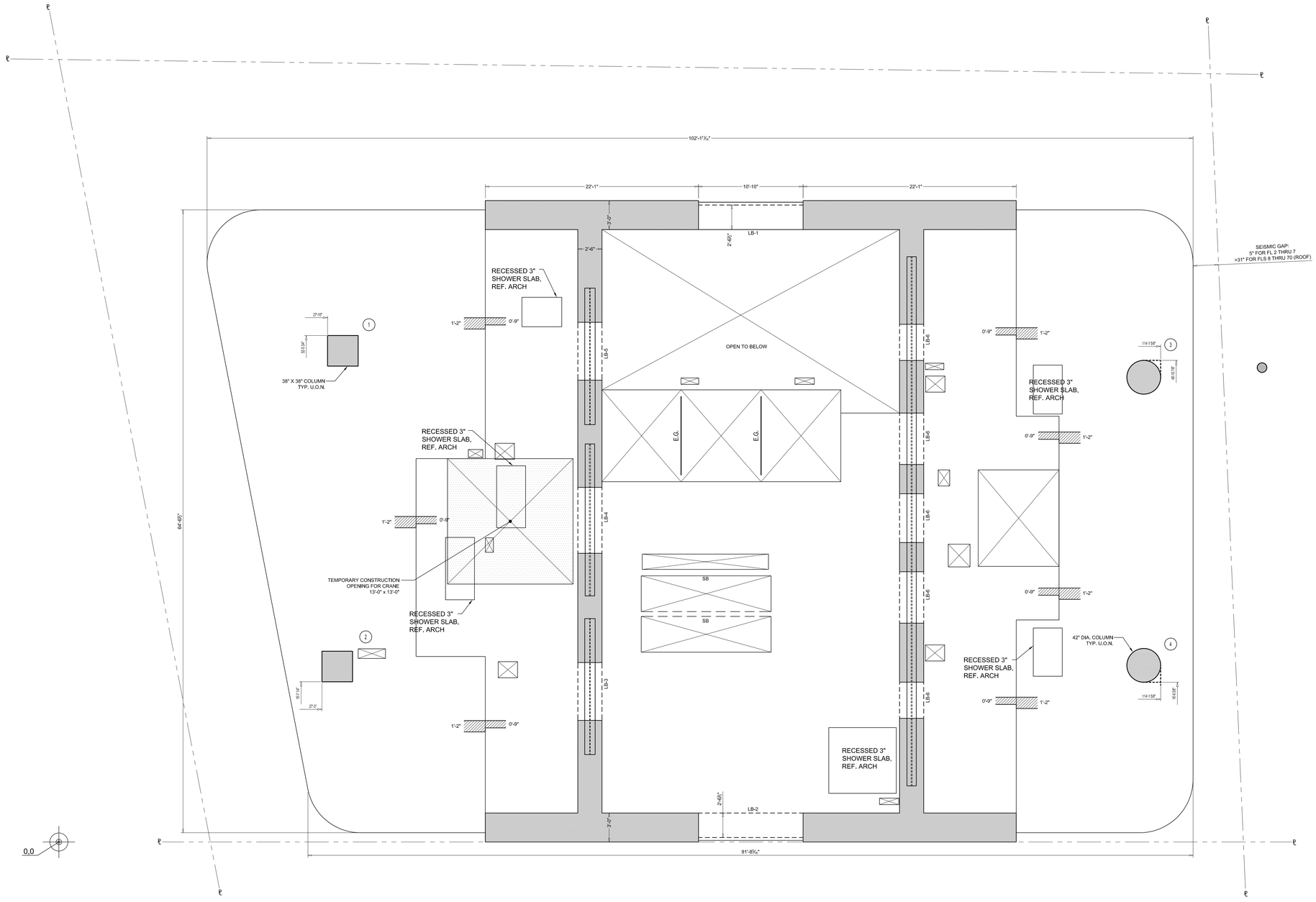
SHEET TITLE:

S-221.00

SHEET NUMBER 03

14218.00-007-S-221.00.dwg

FL70/ROOF AT 840', T.O. BLDG AT 912', FL. TO FL. = 11'-5"



RESIDENTIAL PLAN FOR 22ST FLOOR

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

NORTH

FOR MEP EQUIPMENT, SEE MEP DWGS.
REF TYP CONC. PAD DETAIL 5/S-401

TOP OF SLAB ELEVATION U.O.N.:	SEE PLAN
SLAB THICKNESS U.O.N.:	9"
SLAB CONCRETE STRENGTH:	f'c = 10,000 PSI
SLAB BASIC BOTTOM BARS (U.O.N.):	REF. S-209
MID STRIP TOP BARS (U.O.N.):	REF. S-209

LEGEND:

- DENOTES CONCRETE COLUMN
- DENOTES CONCRETE COLUMN BELOW
- DENOTES SLAB OPENING
- **E.G.** HSS 6x4x¼ TUBE ELEVATOR GUIDE BEAM
- SB 8" WIDE BY SLAB DEPTH BEAM WITH 1 #8 T&B, 1 LEG #3 STIRRUPS AT 6" O.C. SPACING

DRAWING NOTES:

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4. FOR SHEARWALL PART PLANS, SEE S-311.
5. FOR CONCRETE TYPICAL DETAILS, SEE S-401 TO S-405.
6. DETAILER TO CHECK ALL BAR CLEARANCES.
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10. CONCRETE COMPRESSIVE STRENGTHS SEE STRUCTURAL NARRATIVE ON S-001

Damian Titus
Buildings
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125
GREENWICH
NEW YORK, NY

OWNER:
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ARCHITECT:
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50 VANDAM STREET
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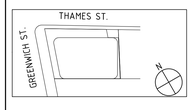

KEY PLAN AND NORTH SIGN

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1 0 2 4 8

SCALE AS NOTED

RESIDENTIAL PLAN FOR 22ND FLOOR

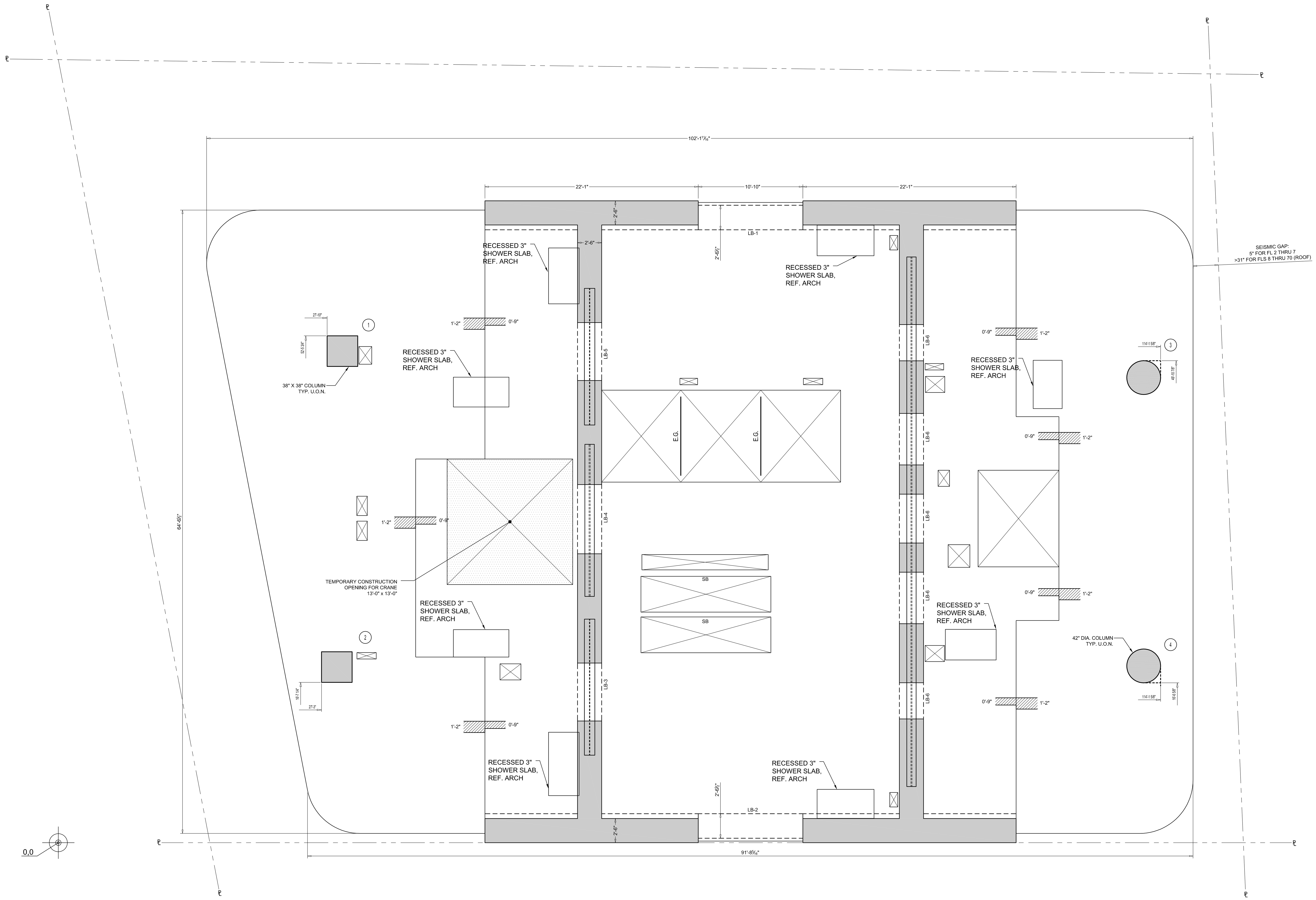
SHEET TITLE:

S-222.00

SHEET NUMBER 03

14218.00-007-S-222.00.dwg

FL70/ROOF AT 840', T.O. BLDG AT 912', FL. TO FL. = 11'-5"



25TH FLOOR FRAMING PLAN

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

NORTH

TOP OF SLAB ELEVATION U.O.N.:	SEE PLAN
SLAB THICKNESS U.O.N.:	9"
SLAB CONCRETE STRENGTH:	f'c = 10,000 PSI
SLAB BASIC BOTTOM BARS (U.O.N.):	REF. S-209
MID STRIP TOP BARS (U.O.N.):	REF. S-209

LEGEND:

(circle, shaded)	DENOTES CONCRETE COLUMN
(circle, dashed)	DENOTES CONCRETE COLUMN BELOW
(box with X)	DENOTES SLAB OPENING
E.G.	HSS 6x4x¼ TUBE ELEVATOR GUIDE BEAM
SB	8" WIDE BY SLAB DEPTH BEAM WITH 1 #8 T&B, 1 LEG #3 STIRRUPS AT 6" O.C. SPACING

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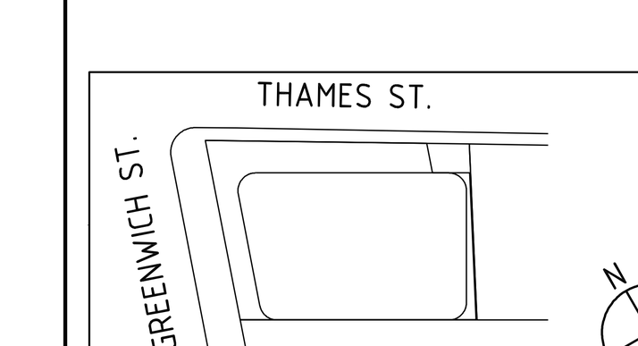

KEY PLAN AND NORTH SIGN

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1 0 2 4 8

SCALE AS NOTED

25TH FLOOR FRAMING PLAN

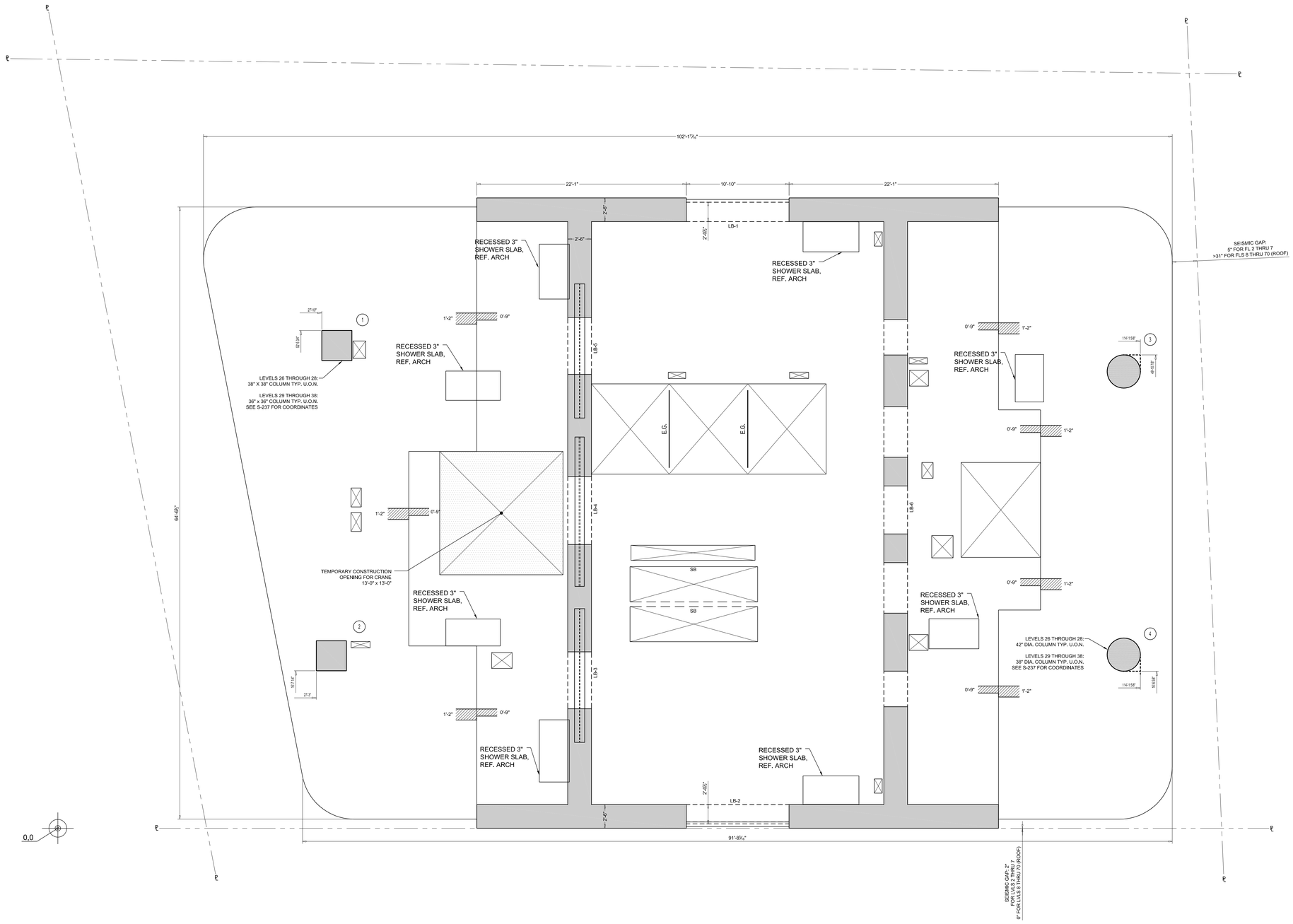
SHEET TITLE:

S-225.00

SHEET NUMBER: 03

14218.00-007-S-225.00.dwg

FL70/ROOF AT 840', T.O. BLDG AT 912', FL. TO FL. = 11'-5"



TYPICAL RESIDENTIAL PLAN FROM LEVEL 26 TO LEVEL 36

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

NORTH

TOP OF SLAB ELEVATION U.O.N.:	SEE PLAN
SLAB THICKNESS U.O.N.:	9"
SLAB CONCRETE STRENGTH:	f'c = 10,000 PSI
SLAB BASIC BOTTOM BARS (U.O.N.):	REF. S-209
MID STRIP TOP BARS (U.O.N.):	REF. S-209

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- DENOTES SLAB OPENING
- E.G. — HSS 6x4x¼ TUBE ELEVATOR GUIDE BEAM
- SB — 8" WIDE BY SLAB DEPTH BEAM WITH 1 #8 T&B, 1 LEG #3 STIRRUPS AT 6" O.C. SPACING

DRAWING NOTES:

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2. ALL ELEVATIONS SHOWN ARE BASED ON NAVD-88.
3. FOR COLUMN SCHEDULE, SEE S-301.
4. FOR SHEARWALL PART PLANS, SEE S-311.
5. FOR CONCRETE TYPICAL DETAILS, SEE S-401 TO S-405.
6. DETAILER TO CHECK ALL BAR CLEARANCES.
7. OUTERMOST REINFORCING RUNS EAST-WEST.
8. CONTRACTOR TO LOCATE / VERIFY ALL THE OPENINGS THROUGH THE SLAB FROM ARCHITECTURAL AND MEP DRAWINGS.
9. CONTRACTOR TO PROVIDE FOR SOE OPENINGS FOR P.O.Es.
10. CONCRETE COMPRESSIVE STRENGTHS SEE STRUCTURAL NARRATIVE ON S-001

Damian Titus
Buildings
APPROVED
Policy Directive 2 of 1975
Date: 09/27/2016:
NYC Development Hub

125 GREENWICH

NEW YORK, NY

OWNER:
VS 125 LLC
55 EAST 59TH STREET, 24TH FLOOR
NEW YORK, NY 10022
TEL: 212.616.0400

ARCHITECT:
RAFAEL VINOLY ARCHITECTS PC
50 VANDAM STREET
NEW YORK, NY 10013
TEL: 212 924 5960 FAX: 212 924 5858

STRUCTURAL ENGINEER:
DESIMONE CONSULTING ENGINEERS
18 WEST 18TH STREET, 10TH FLOOR
NEW YORK, NY 10011
TEL: 212 532 2211

MEP / FP / IT ENGINEER:
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TEL: 212 615 3606

GEOTECH CONSULTANT:
LANGAN ENGINEERING
619 RIVER DRIVE CENTER 1
ELMWOOD PARK, NJ 07407
TEL: 201 794 6900

VERTICAL TRANSPORTATION CONSULTANT:
VAN DEUSEN & ASSOCIATES
120 EAGLE ROCK AVENUE, SUITE 310
EAST HANOVER, NJ 07936
TEL: 973 994 9228

PHASE: DOB SUBMITTAL

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5	09/30/2015	DOB SUBMITTAL
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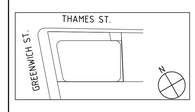


KEY PLAN AND NORTH SIGN

IF THIS DRAWING IS NOT 36" X 48" IT IS A REDUCED PRINT; REFER TO GRAPHIC SCALE

1 0 2 4 8

SCALE: AS NOTED

26TH THROUGH 36TH FLOOR FRAMING PLAN

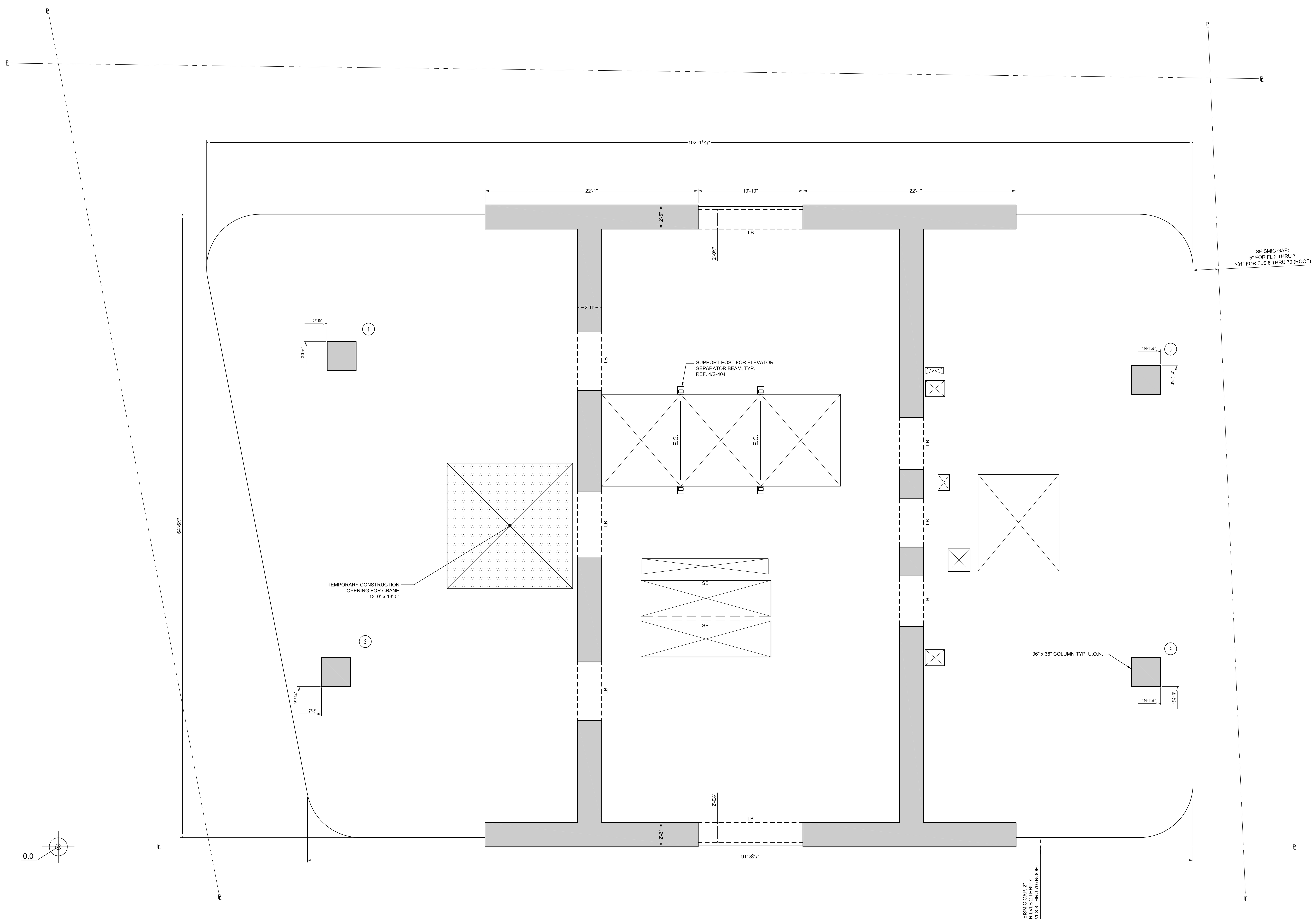
SHEET TITLE:

S-226.00

SHEET NUMBER: 03

14218 00-001-S-226.00.dwg

FL70/ROOF AT 840', T.O. BLDG AT 912', FL. TO FL. = 11'-5"



37TH FLOOR FRAMING PLAN (MECHANICAL LEVEL)

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

NORTH

FOR MEP EQUIPMENT, SEE MEP DWGS.
REF TYP CONC. PAD DETAIL 5/S-401

TOP OF SLAB ELEVATION U.O.N.:	SEE PLAN
SLAB THICKNESS U.O.N.:	16"
SLAB CONCRETE STRENGTH:	f'c = 10,000 PSI
SLAB BASIC BOTTOM BARS (U.O.N.):	REF. S-209
MID STRIP TOP BARS (U.O.N.):	REF. S-209

LEGEND:

(solid circle)	DENOTES CONCRETE COLUMN
(dashed circle)	DENOTES CONCRETE COLUMN BELOW
(crossed box)	DENOTES SLAB OPENING
E.G.	HSS 6x4x1/4 TUBE ELEVATOR GUIDE BEAM
SB	8" WIDE BY SLAB DEPTH BEAM WITH 1 #8 T&B, 1 LEG #3 STIRRUPS AT 6" O.C. SPACING

DRAWING NOTES:

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5. FOR CONCRETE TYPICAL DETAILS, SEE S-401 TO S-405.
6. DETAILER TO CHECK ALL BAR CLEARANCES.
7. OUTERMOST REINFORCING RUNS EAST-WEST.
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Damian Titus
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VERTICAL TRANSPORTATION CONSULTANT:
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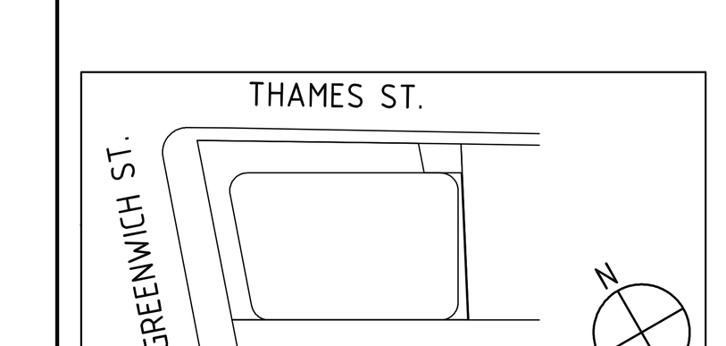
	05/15/2015	SD FOR 944'



KEY PLAN AND NORTH SIGN

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1 0 2 4 8

SCALE AS NOTED

37TH FLOOR FRAMING PLAN (MECHANICAL LEVEL)

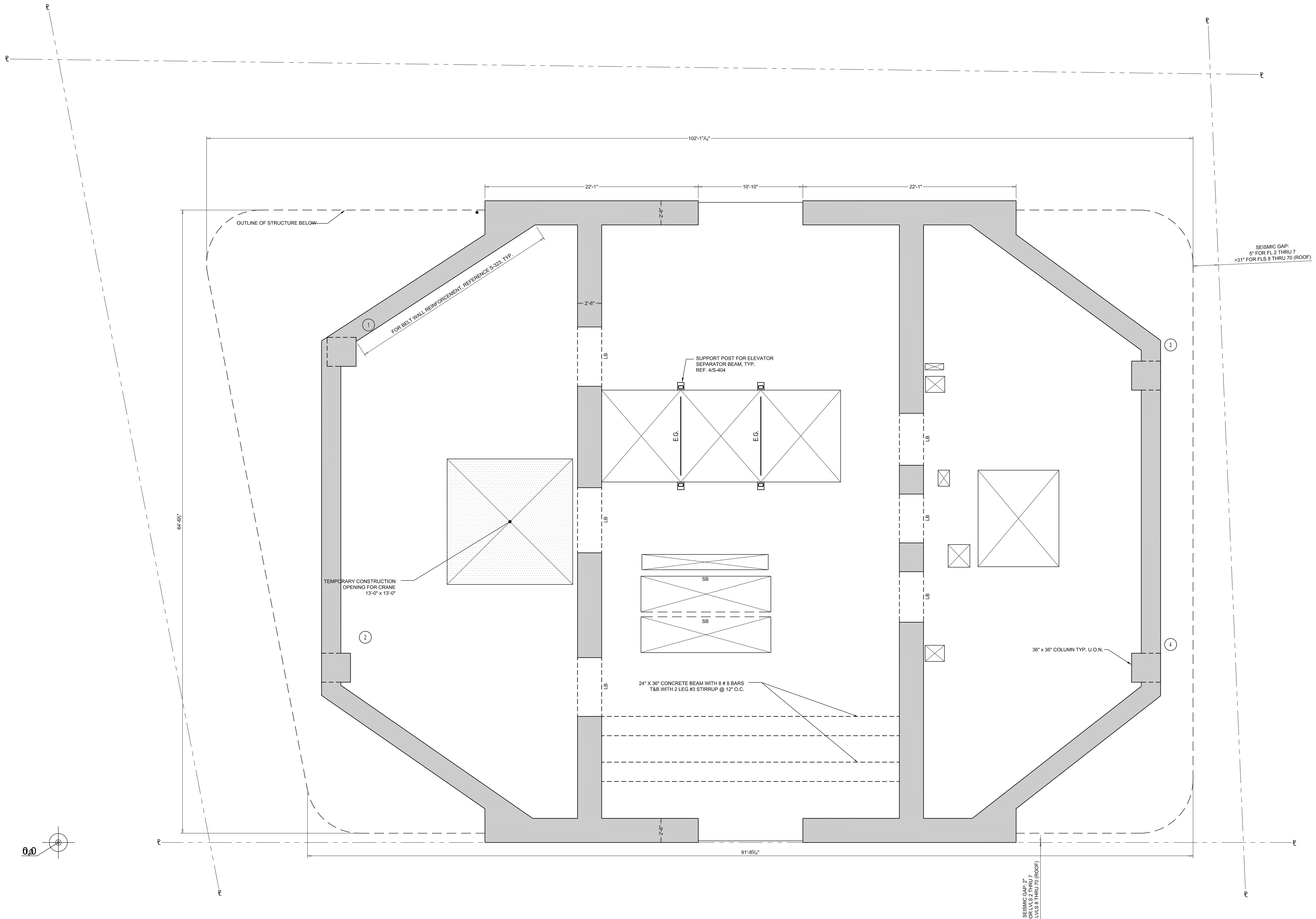
SHEET TITLE:

S-237.00

SHEET NUMBER: 03

14218.00-007-S-237.00.dwg

FL70/ROOF AT 840', T.O. BLDG AT 912', FL. TO FL. = 11'-5"



38TH FLOOR FRAMING PLAN (MECHANICAL LEVEL)

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

NORTH

FOR MEP EQUIPMENT, SEE MEP DWGS.
REF TYP CONC. PAD DETAIL 5/S-401

TOP OF SLAB ELEVATION U.O.N.:	SEE PLAN
SLAB THICKNESS U.O.N.:	16"
SLAB CONCRETE STRENGTH:	f'c = 10,000 PSI
SLAB BASIC BOTTOM BARS (U.O.N.):	REF. S-209
MID STRIP TOP BARS (U.O.N.):	REF. S-209

LEGEND:

(filled circle)	DENOTES CONCRETE COLUMN
(dashed circle)	DENOTES CONCRETE COLUMN BELOW
(crossed box)	DENOTES SLAB OPENING
E.G.	HSS 6x4x$\frac{1}{4}$ TUBE ELEVATOR GUIDE BEAM
SB	8" WIDE BY SLAB DEPTH BEAM WITH 1 #8 T&B, 1 LEG #3 STIRRUPS AT 6" O.C. SPACING

DRAWING NOTES:

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Damian Titus
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ARCHITECT:
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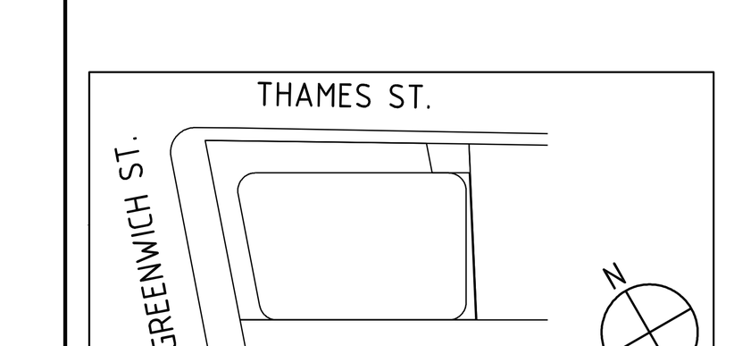

KEY PLAN AND NORTH SIGN

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1 0 2 4 8

SCALE AS NOTED

38TH FLOOR FRAMING PLAN (MECHANICAL LEVEL)

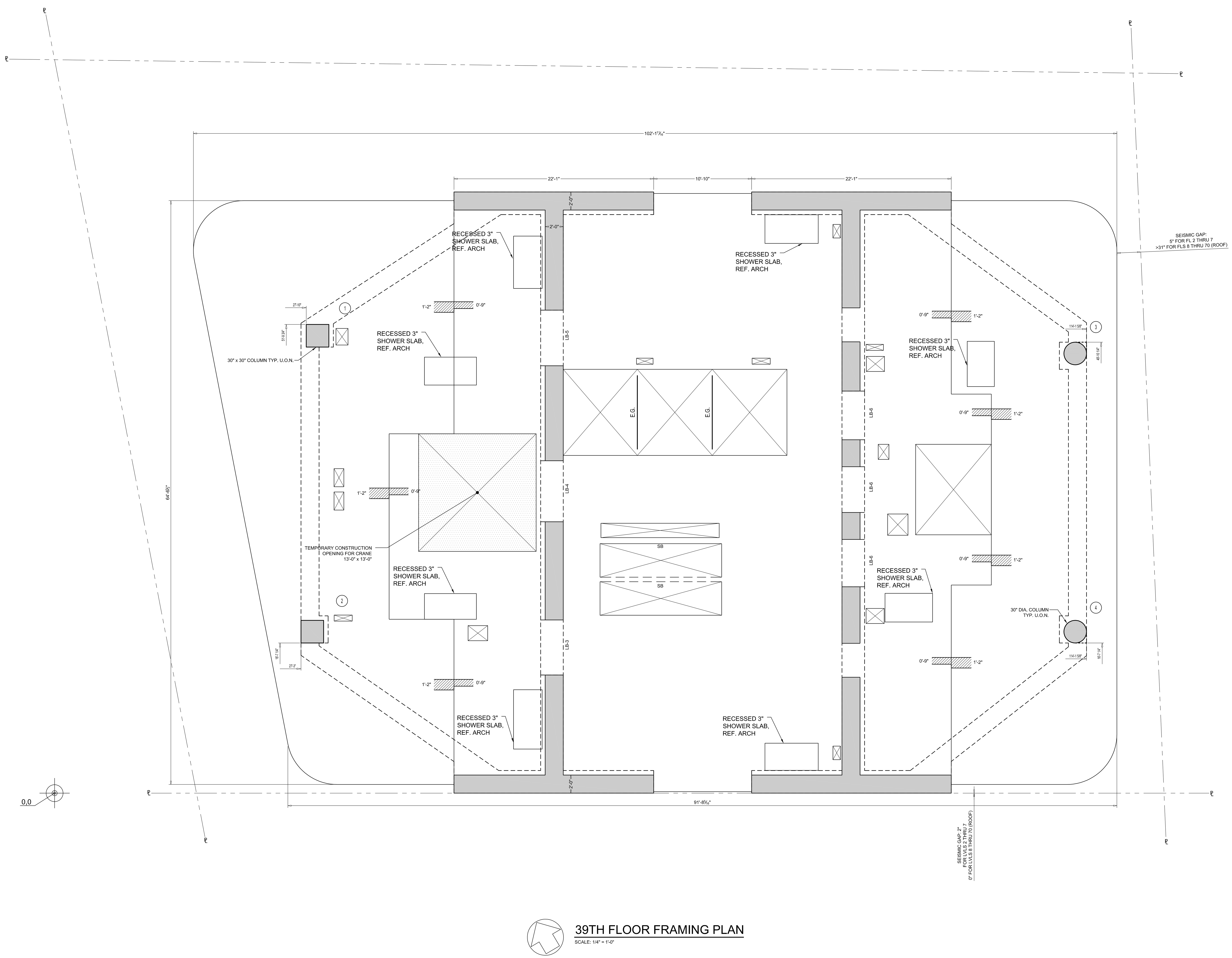
SHEET TITLE:

S-238.00

SHEET NUMBER: 03

14218.00-007-S-238.00.dwg

FL70/ROOF AT 840', T.O. BLDG AT 912', FL. TO FL. = 11'-5"



39TH FLOOR FRAMING PLAN

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

TOP OF SLAB ELEVATION U.O.N.:	SEE PLAN
SLAB THICKNESS U.O.N.:	9"
SLAB CONCRETE STRENGTH:	f'c = 8,600 PSI
SLAB BASIC BOTTOM BARS (U.O.N.):	REF. S-209
MID STRIP TOP BARS (U.O.N.):	REF. S-209

LEGEND:

- DENOTES CONCRETE COLUMN
- DENOTES CONCRETE COLUMN BELOW
- DENOTES SLAB OPENING
- E.G. — HSS 6x4x¼ TUBE ELEVATOR GUIDE BEAM
- SB — 8" WIDE BY SLAB DEPTH BEAM WITH 1 #8 T&B, 1 LEG #3 STIRRUPS AT 6" O.C. SPACING

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Damian Titus
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NEW YORK, NY

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ARCHITECT:
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NEW YORK, NY 10013
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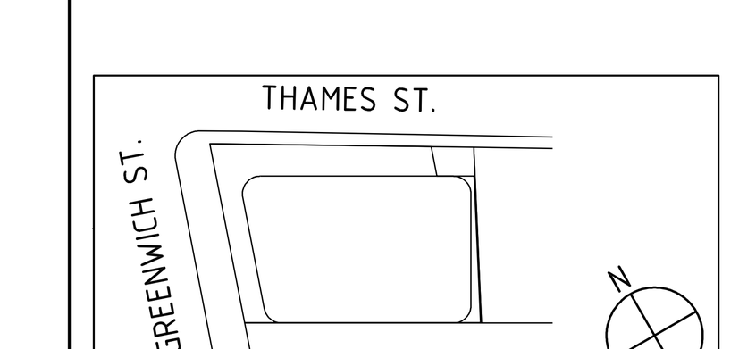

KEY PLAN AND NORTH SIGN

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1 0 2 4 8

SCALE AS NOTED

39TH FLOOR FRAMING PLAN

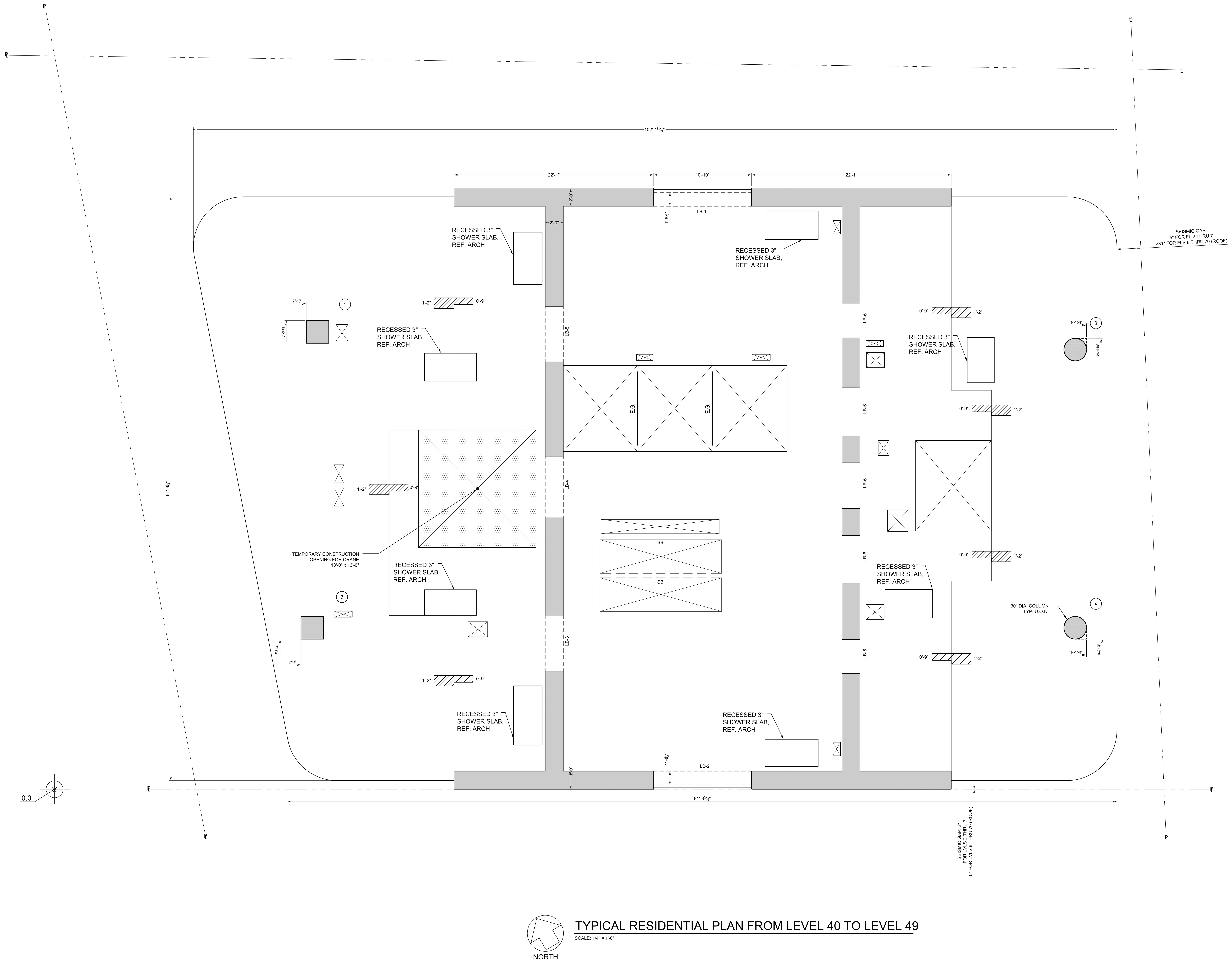
SHEET TITLE:

S-239.00

SHEET NUMBER: 03

14218.00-007-S-239.00.dwg

FL70/ROOF AT 840', T.O. BLDG AT 912', FL. TO FL. = 11'-5"



TYPICAL RESIDENTIAL PLAN FROM LEVEL 40 TO LEVEL 49

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

TOP OF SLAB ELEVATION U.O.N.:	SEE PLAN
SLAB THICKNESS U.O.N.:	9"
SLAB CONCRETE STRENGTH:	f'c = 8,600 PSI
SLAB BASIC BOTTOM BARS (U.O.N.):	REF. S-209
MID STRIP TOP BARS (U.O.N.):	REF. S-209

LEGEND:

(circle)	DENOTES CONCRETE COLUMN
(dashed circle)	DENOTES CONCRETE COLUMN BELOW
(crossed box)	DENOTES SLAB OPENING
E.G.	HSS 6x4x¼ TUBE ELEVATOR GUIDE BEAM
SB	8" WIDE BY SLAB DEPTH BEAM WITH 1 #8 T&B, 1 LEG #3 STIRRUPS AT 6" O.C. SPACING

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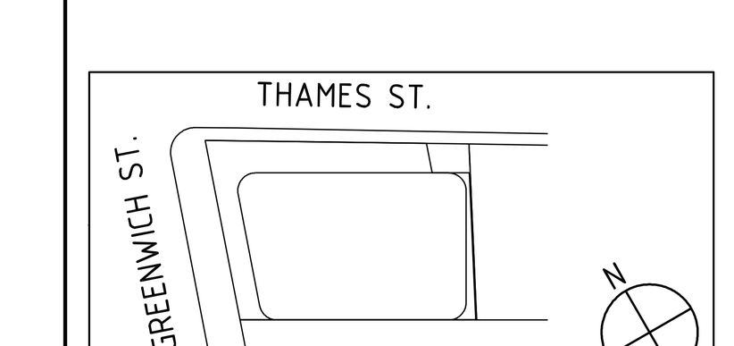

KEY PLAN AND NORTH SIGN

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1 0 2 4 8

SCALE AS NOTED

40TH THROUGH 49TH FLOOR FRAMING PLAN

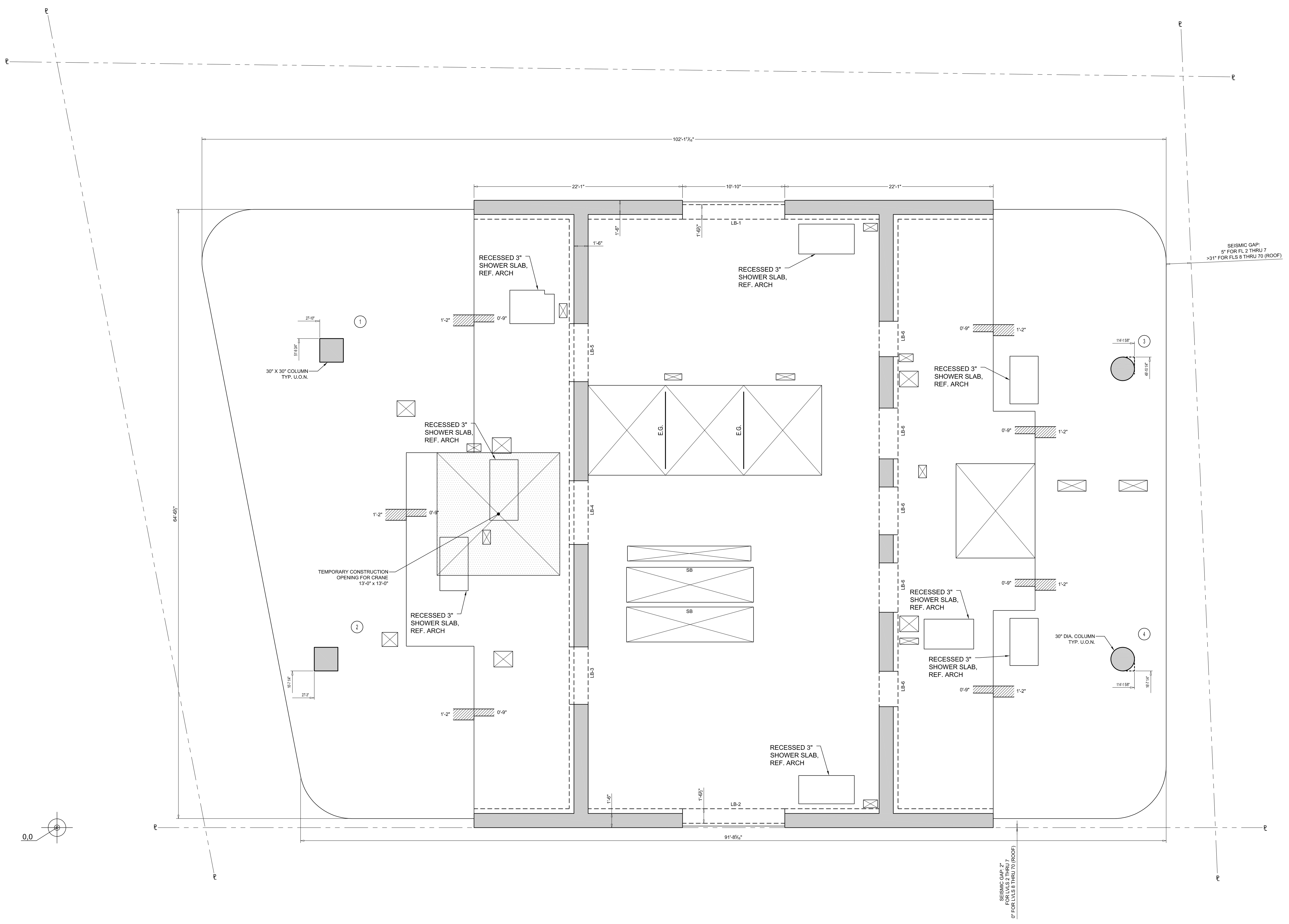
SHEET TITLE:

S-240.00

SHEET NUMBER: 03

14218.00-007-S-240.00.dwg

FL70/ROOF AT 840', T.O. BLDG AT 912', FL. TO FL. = 11'-5"



TYPICAL RESIDENTIAL PLAN FOR LEVEL 50

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

TOP OF SLAB ELEVATION U.O.N.:	SEE PLAN
SLAB THICKNESS U.O.N.:	9"
SLAB CONCRETE STRENGTH:	f'c = 7,200 PSI
SLAB BASIC BOTTOM BARS (U.O.N.):	REF. S-209
MID STRIP TOP BARS (U.O.N.):	REF. S-209

LEGEND:

- (solid circle) DENOTES CONCRETE COLUMN
- (dashed circle) DENOTES CONCRETE COLUMN BELOW
- (crossed box) DENOTES SLAB OPENING
- E.G. HSS 6x4x1/4 TUBE ELEVATOR GUIDE BEAM
- SB 8" WIDE BY SLAB DEPTH BEAM WITH 1 #8 T&B, 1 LEG #3 STIRRUPS AT 6" O.C. SPACING

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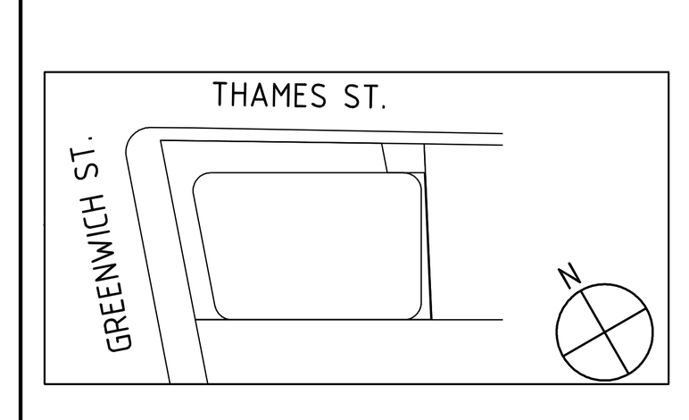

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1 0 2 4 8

SCALE AS NOTED

50TH THROUGH 59TH FLOOR FRAMING PLAN

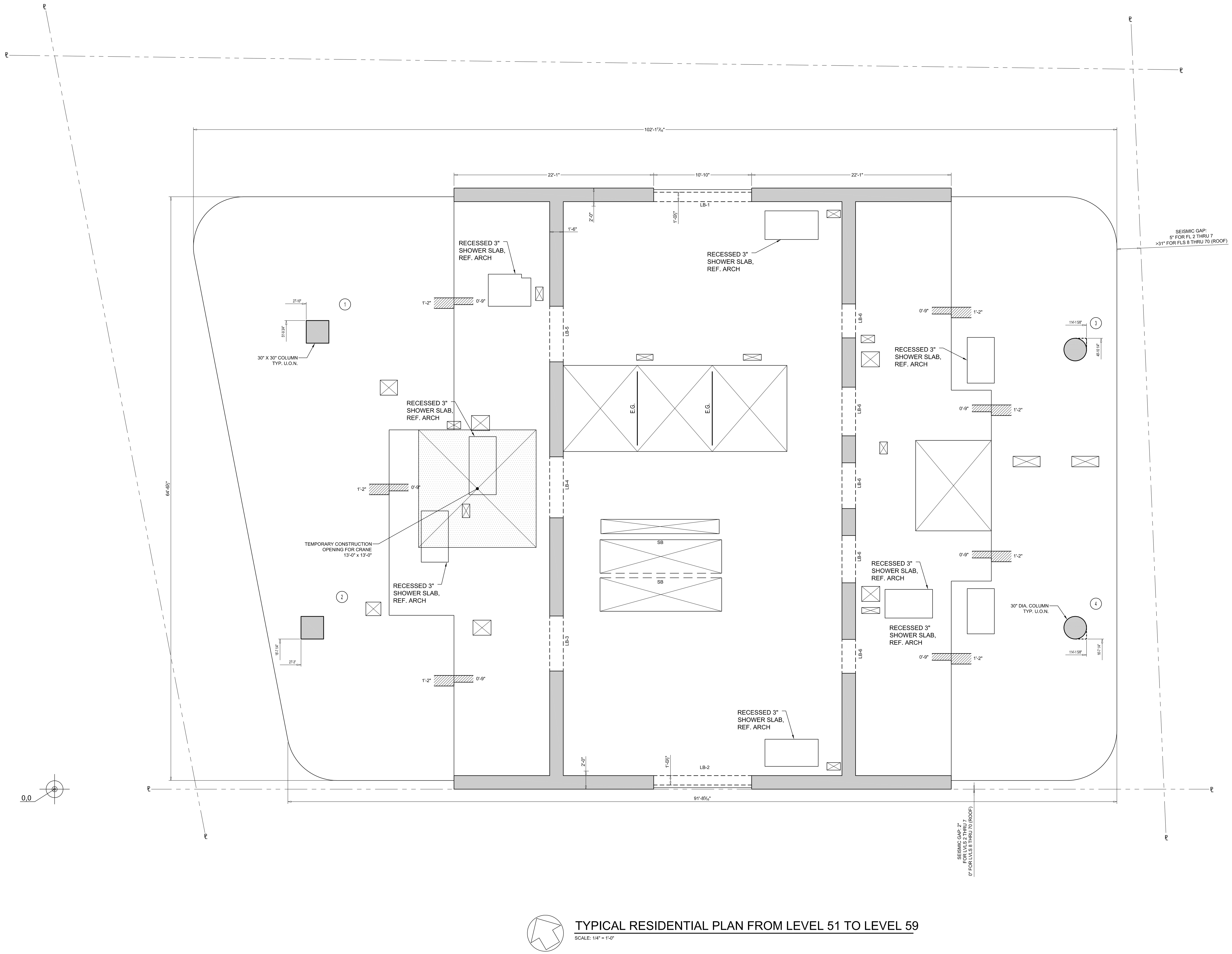
SHEET TITLE:

S-250.00

SHEET NUMBER: 03

14218.00-007-S-250.00.dwg

FL70/ROOF AT 840', T.O. BLDG AT 912', FL. TO FL. = 11'-5"



TYPICAL RESIDENTIAL PLAN FROM LEVEL 51 TO LEVEL 59

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

TOP OF SLAB ELEVATION U.O.N.:	SEE PLAN
SLAB THICKNESS U.O.N.:	9"
SLAB CONCRETE STRENGTH:	f'c = 7,200 PSI
SLAB BASIC BOTTOM BARS (U.O.N.):	REF. S-209
MID STRIP TOP BARS (U.O.N.):	REF. S-209

LEGEND:

(solid circle)	DENOTES CONCRETE COLUMN
(dashed circle)	DENOTES CONCRETE COLUMN BELOW
(crossed box)	DENOTES SLAB OPENING
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SB	8" WIDE BY SLAB DEPTH BEAM WITH 1 #8 T&B, 1 LEG #3 STIRRUPS AT 6" O.C. SPACING

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8. CONTRACTOR TO LOCATE / VERIFY ALL THE OPENINGS THROUGH THE SLAB FROM ARCHITECTURAL AND MEP DRAWINGS.
9. CONTRACTOR TO PROVIDE FOR SOE OPENINGS FOR P.O.Es.
10. CONCRETE COMPRESSIVE STRENGTHS SEE STRUCTURAL NARRATIVE ON S-201

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Date: 09/27/2016:
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OWNER:
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55 EAST 59TH STREET, 24TH FLOOR
NEW YORK, NY 10022
TEL: 212 616 0400

ARCHITECT:
RAFAEL VIÑOLY ARCHITECTS PC
50 VANDAM STREET
NEW YORK, NY 10013
TEL: 212 924 5060 FAX: 212 924 5858

STRUCTURAL ENGINEER:
DESIMONE CONSULTING ENGINEERS
18 WEST 18TH STREET, 10TH FLOOR
NEW YORK, NY 10011
TEL: 212 532 2211

MEP / FP / IT ENGINEER:
COSENTINI ASSOCIATES - A TETRA TECH COMPANY
2 PENNSYLVANIA PLAZA, 3RD FLOOR
NEW YORK, NY 10121
TEL: 212 615 3606

GEOTECH CONSULTANT:
LANGAN ENGINEERING
619 RIVER DRIVE CENTER 1
ELMWOOD PARK, NJ 07407
TEL: 201 794 6900

VERTICAL TRANSPORTATION CONSULTANT:
VAN DEUSEN & ASSOCIATES
120 EAGLE ROCK AVENUE, SUITE 310
EAST HANOVER, NJ 07936
TEL: 973 994 9220

PHASE: DOB SUBMITTAL

ARCHITECT'S SEAL

ISSUE NO.	ISSUE DATE	DESCRIPTION
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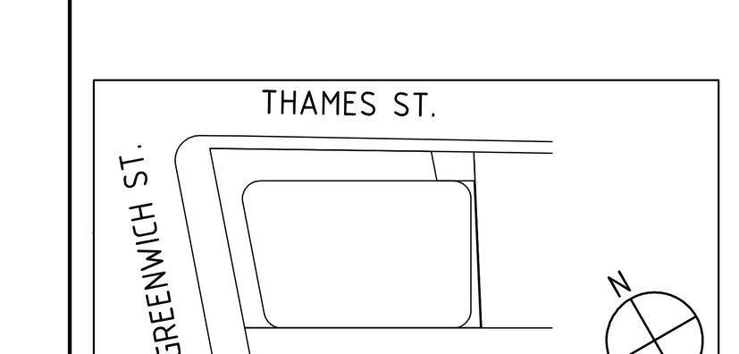


KEY PLAN AND NORTH SIGN

IF THIS DRAWING IS NOT 36" X 48" IT IS A REDUCED PRINT; REFER TO GRAPHIC SCALE

1 0 2 4 8

SCALE AS NOTED

51TH THROUGH 59TH FLOOR FRAMING PLAN

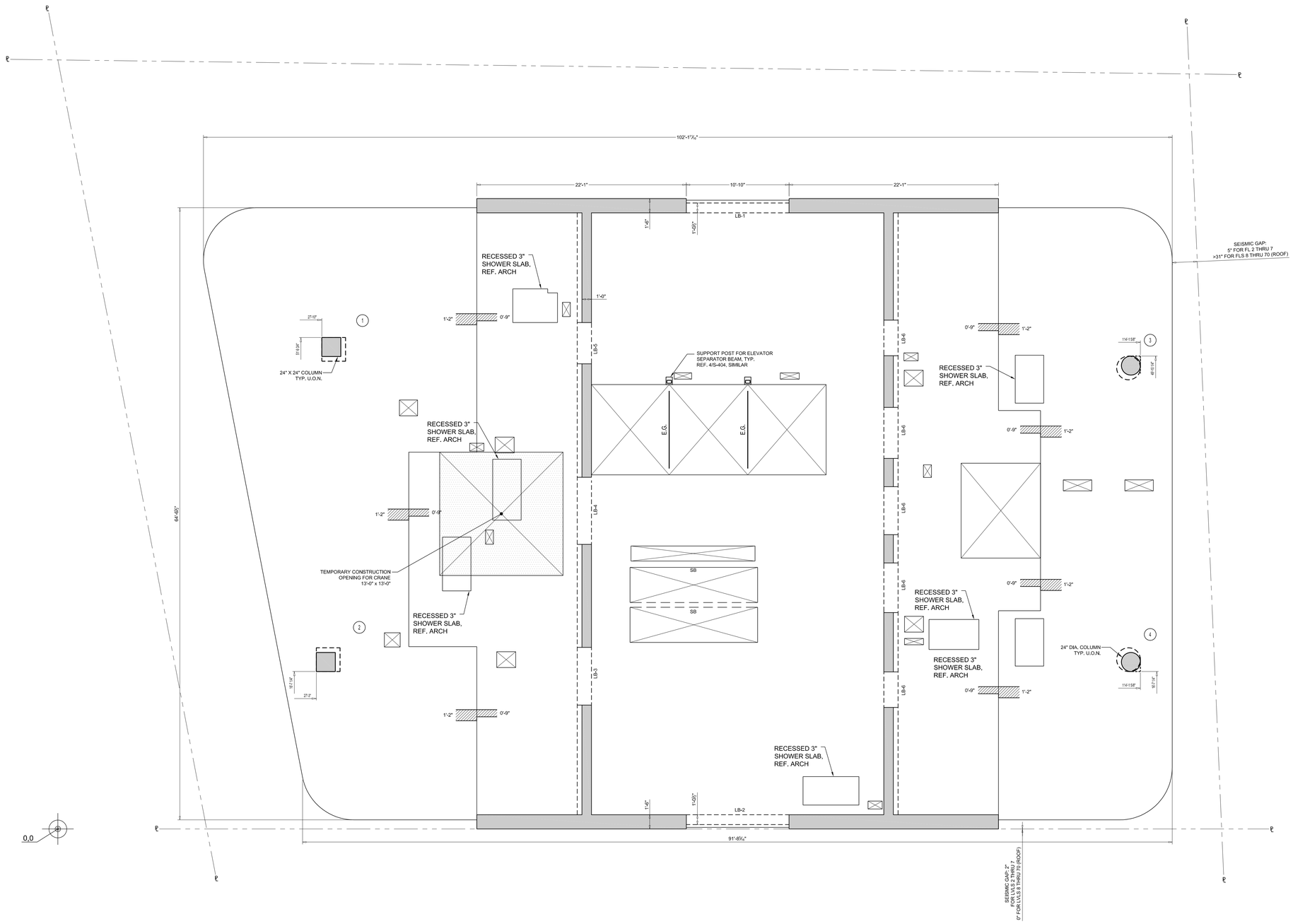
SHEET TITLE:

S-251.00

SHEET NUMBER: 03

14218.00-007-S-251.00.dwg

FL70/ROOF AT 840', T.O. BLDG AT 912', FL. TO FL. = 11'-5"



60TH FLOOR FRAMING PLAN

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

NORTH

FOR MEP EQUIPMENT, SEE MEP DWGS.
REF TYP CONC. PAD DETAIL 5/S-401

TOP OF SLAB ELEVATION U.O.N.:	SEE PLAN
SLAB THICKNESS U.O.N.:	9"
SLAB CONCRETE STRENGTH:	f'c = 7,200 PSI
SLAB BASIC BOTTOM BARS (U.O.N.):	REF. S-209
MID STRIP TOP BARS (U.O.N.):	REF. S-209

LEGEND:

- DENOTES CONCRETE COLUMN
- DENOTES CONCRETE COLUMN BELOW
- DENOTES SLAB OPENING
- E.G. — HSS 6x4x¼ TUBE ELEVATOR GUIDE BEAM
- SB — 8" WIDE BY SLAB DEPTH BEAM WITH 1 #8 T&B, 1 LEG #3 STIRRUPS AT 6" O.C. SPACING

DRAWING NOTES:

1. FOR GENERAL NOTES SEE DRAWING S-001
2. ALL ELEVATIONS SHOWN ARE BASED ON NAVD-88.
3. FOR COLUMN SCHEDULE, SEE S-301.
4. FOR SHEARWALL PART PLANS, SEE S-311.
5. FOR CONCRETE TYPICAL DETAILS, SEE S-401 TO S-405.
6. DETAILER TO CHECK ALL BAR CLEARANCES.
7. OUTERMOST REINFORCING RUNS EAST-WEST.
8. CONTRACTOR TO LOCATE / VERIFY ALL THE OPENINGS THROUGH THE SLAB FROM ARCHITECTURAL AND MEP DRAWINGS.
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10. CONCRETE COMPRESSIVE STRENGTHS SEE STRUCTURAL NARRATIVE ON S-001

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DESIMONE CONSULTING ENGINEERS
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TEL: 973 994 9228

STATE OF NEW YORK — STEVEN V. DESIMONE — 074923 — LICENSED PROFESSIONAL ENGINEER

PHASE DOB SUBMITTAL

ARCHITECT'S SEAL

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	08/07/2015	SUPERSTRUCTURE BID
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	06/15/2015	SS PRE-BID
	05/15/2015	SD FOR 944'

KEY PLAN AND NORTH SIGN

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1 0 2 4 8

SCALE AS NOTED

60TH FLOOR FRAMING PLAN

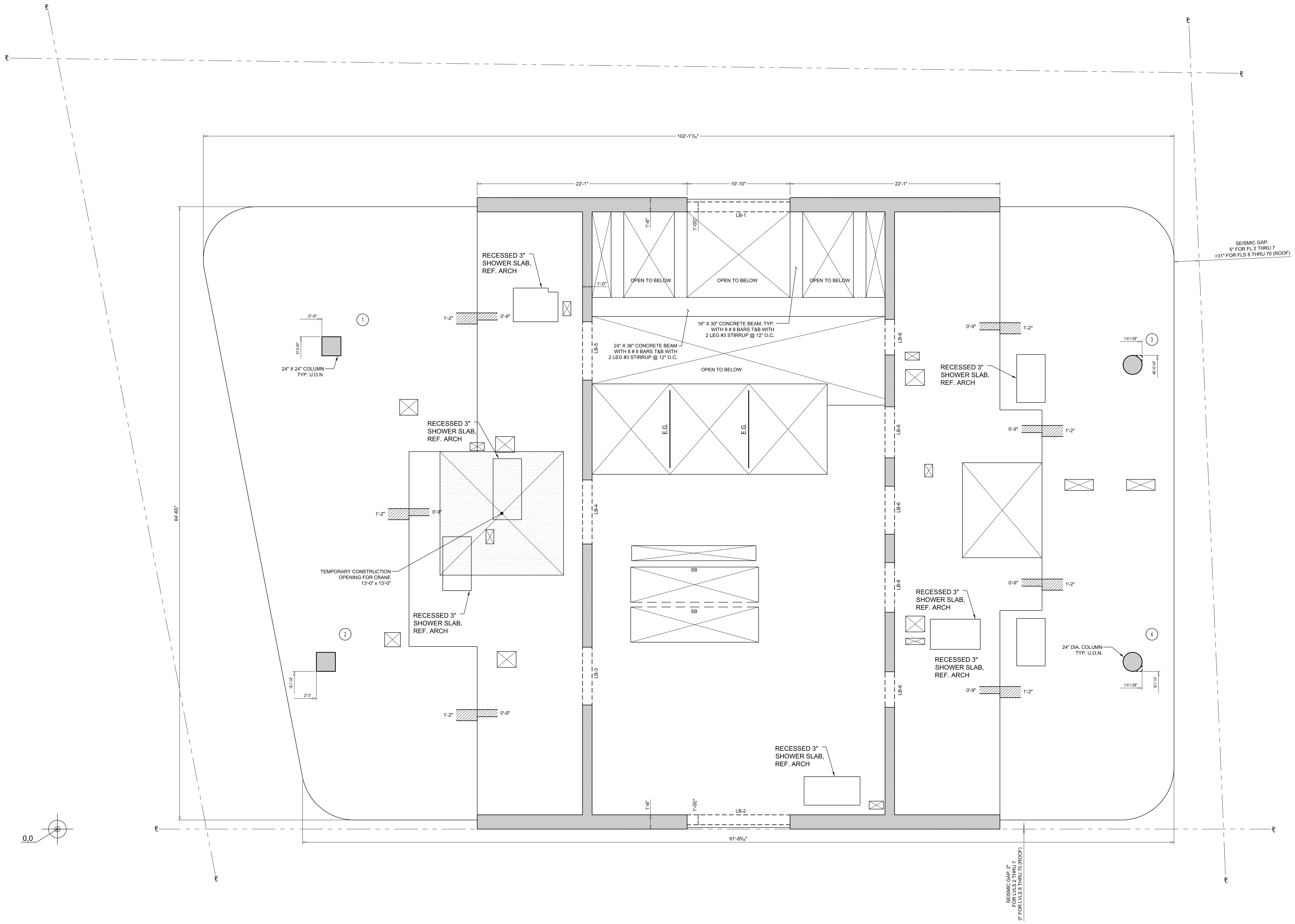
SHEET TITLE

S-260.00

SHEET NUMBER 03

14218.00-007-S-260.00.dwg

FL70/ROOF AT 840', T.O. BLDG AT 912', FL. TO FL. = 11'-5"



RESIDENTIAL PLAN FOR LEVEL 61

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

NORTH

FOR MEP EQUIPMENT, SEE MEP DWGS.
REF TYP CONC. PAD DETAIL 5/S-401

TOP OF SLAB ELEVATION U.O.N.:	SEE PLAN
SLAB THICKNESS U.O.N.:	9"
SLAB CONCRETE STRENGTH:	f'c = 7,200 PSI
SLAB BASIC BOTTOM BARS (U.O.N.):	REF. S-209
MID STRIP TOP BARS (U.O.N.):	REF. S-209

LEGEND:

(filled circle)	DENOTES CONCRETE COLUMN
(dashed circle)	DENOTES CONCRETE COLUMN BELOW
(crossed box)	DENOTES SLAB OPENING
E.G.	HSS 6x4x$\frac{1}{4}$ TUBE ELEVATOR GUIDE BEAM
SB	8" WIDE BY SLAB DEPTH BEAM WITH 1 #8 T&B, 1 LEG #3 STIRRUPS AT 6" O.C. SPACING

DRAWING NOTES:

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4. FOR SHEARWALL PART PLANS, SEE S-311.
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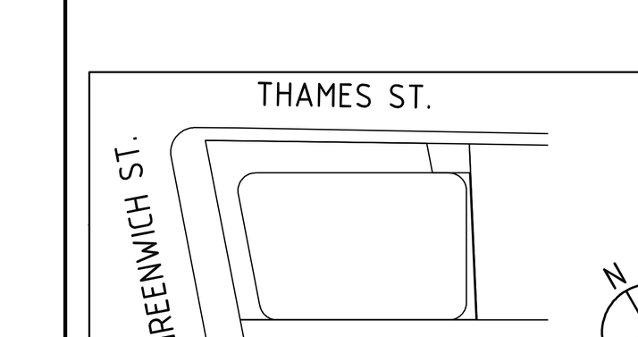

KEY PLAN AND NORTH SIGN

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1 0 2 4 8

SCALE AS NOTED

FRAMING PLAN FOR LEVEL 61

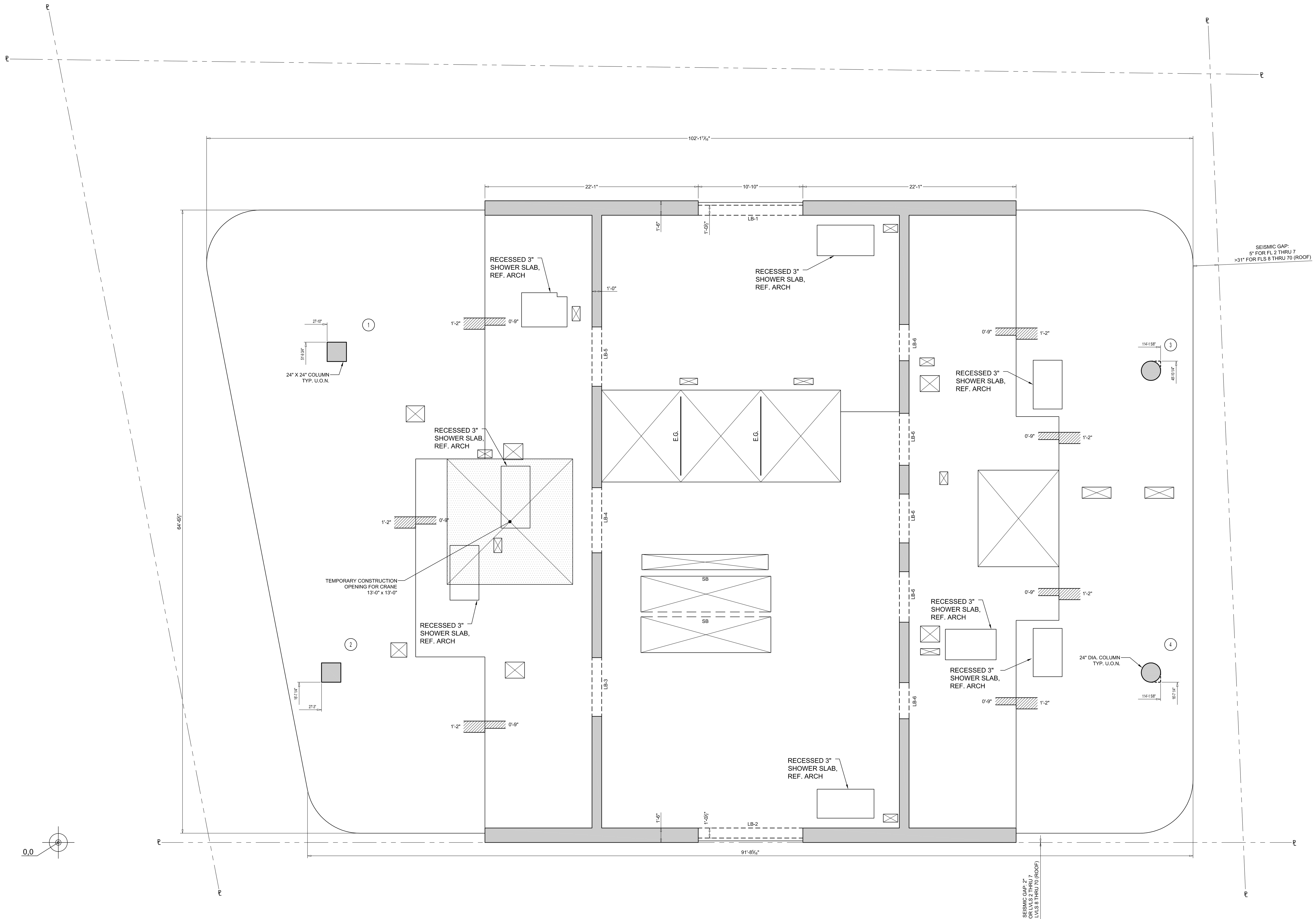
SHEET TITLE :

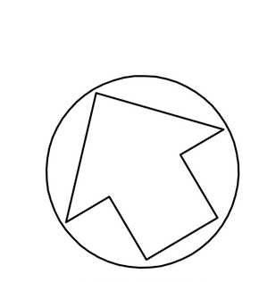
S-261.00

SHEET NUMBER : 03

14218.00-007-S-261.00.dwg

FL70/ROOF AT 840', T.O. BLDG AT 912', FL. TO FL. = 11'-5"





NORTH

TYPICAL RESIDENTIAL PLAN FROM LEVEL 62 TO LEVEL 66

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

FOR MEP EQUIPMENT, SEE MEP DWGS.
REF TYP CONC. PAD DETAIL 5/S-401

TOP OF SLAB ELEVATION U.O.N.:	SEE PLAN
SLAB THICKNESS U.O.N.:	9"
SLAB CONCRETE STRENGTH:	f'c = 7,200 PSI
SLAB BASIC BOTTOM BARS (U.O.N.):	REF. S-209
MID STRIP TOP BARS (U.O.N.):	REF. S-209

LEGEND:

(circle, shaded)	DENOTES CONCRETE COLUMN
(circle, dashed)	DENOTES CONCRETE COLUMN BELOW
(box with X)	DENOTES SLAB OPENING
E.G.	HSS 6x4x¼ TUBE ELEVATOR GUIDE BEAM
SB	8" WIDE BY SLAB DEPTH BEAM WITH 1 #8 T&B, 1 LEG #3 STIRRUPS AT 6" O.C. SPACING

DRAWING NOTES:

1. FOR GENERAL NOTES SEE DRAWING S-001
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3. FOR COLUMN SCHEDULE, SEE S-301.
4. FOR SHEARWALL PART PLANS, SEE S-311.
5. FOR CONCRETE TYPICAL DETAILS, SEE S-401 TO S-405.
6. DETAILER TO CHECK ALL BAR CLEARANCES.
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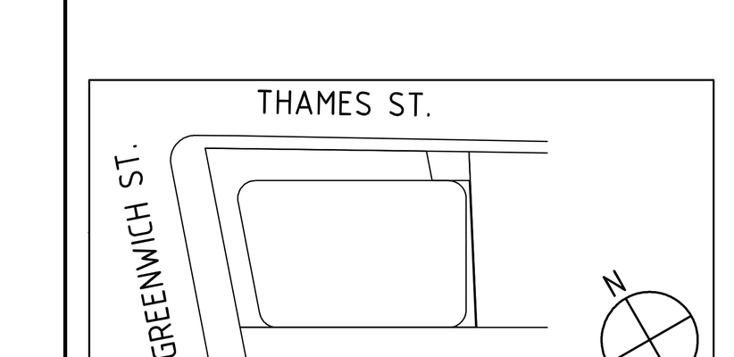

KEY PLAN AND NORTH SIGN

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SCALE AS NOTED

62TH THROUGH 66TH FLOOR FRAMING PLAN

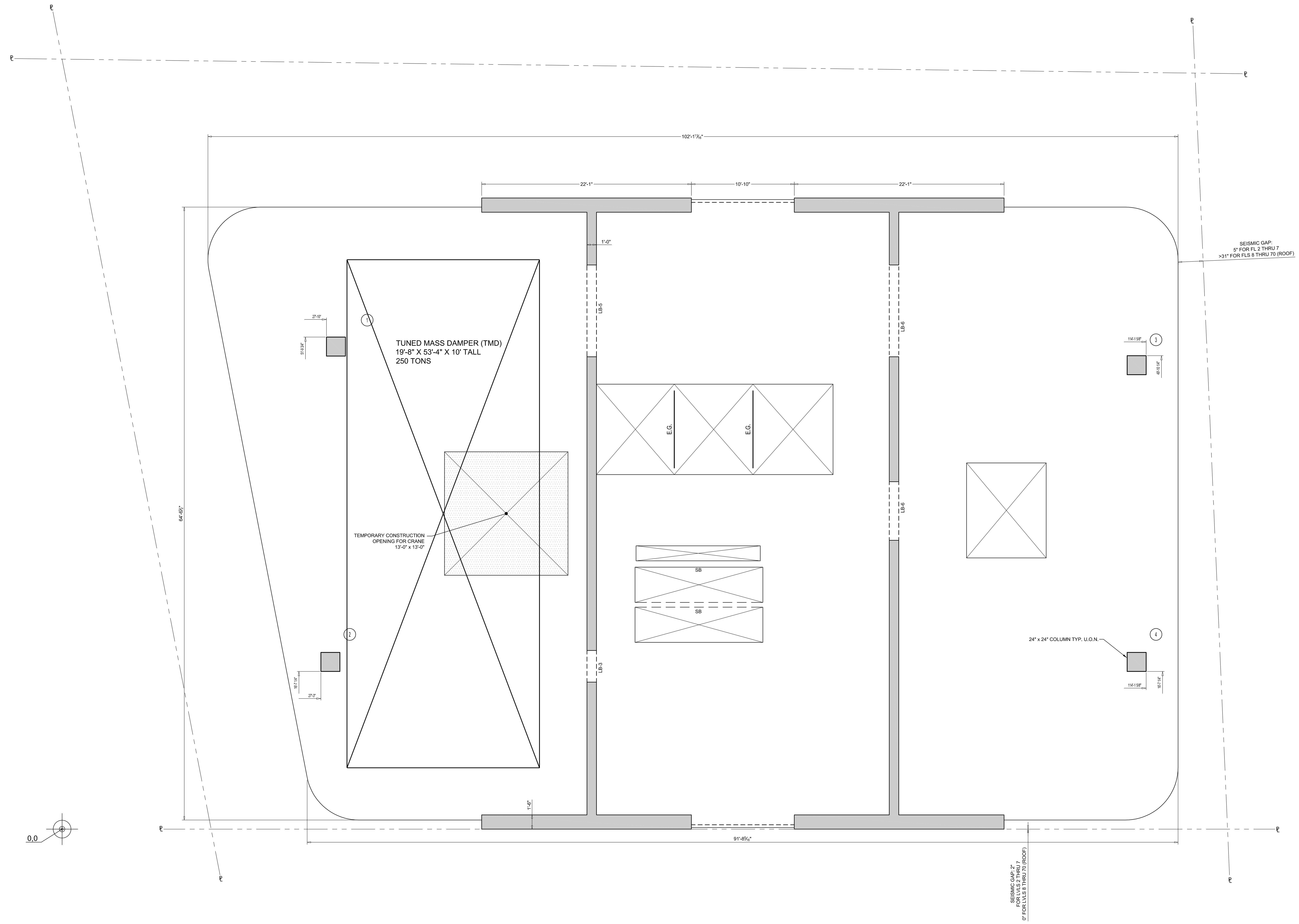
SHEET TITLE:

S-262.00

SHEET NUMBER: 03

14218.00-007-S-262.00.dwg

FL70/ROOF AT 840', T.O. BLDG AT 912', FL. TO FL. = 11'-5"



67TH FLOOR FRAMING PLAN

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

NORTH

FOR MEP EQUIPMENT, SEE MEP DWGS.
REF TYP CONC. PAD DETAIL 5/S-401

TOP OF SLAB ELEVATION U.O.N.:	SEE PLAN
SLAB THICKNESS U.O.N.:	16"
SLAB CONCRETE STRENGTH:	f'c = 7,200 PSI
SLAB BASIC BOTTOM BARS (U.O.N.):	REF. S-209
MID STRIP TOP BARS (U.O.N.):	REF. S-209

LEGEND:

(solid circle)	DENOTES CONCRETE COLUMN
(dashed circle)	DENOTES CONCRETE COLUMN BELOW
(crossed box)	DENOTES SLAB OPENING
E.G.	HSS 6x4x¹⁄₄ TUBE ELEVATOR GUIDE BEAM
SB	8" WIDE BY SLAB DEPTH BEAM WITH 1 #8 T&B, 1 LEG #3 STIRRUPS AT 6" O.C. SPACING

DRAWING NOTES:

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4. FOR SHEARWALL PART PLANS, SEE S-311.
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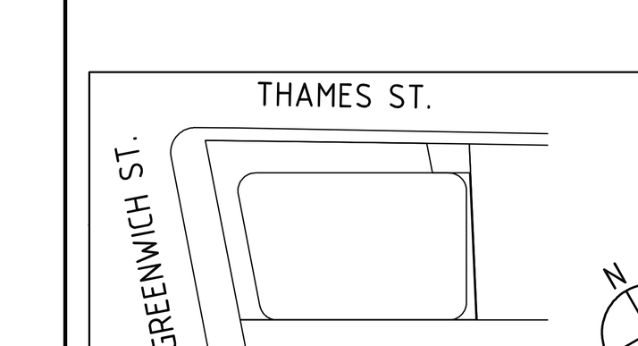

KEY PLAN AND NORTH SIGN

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SCALE AS NOTED

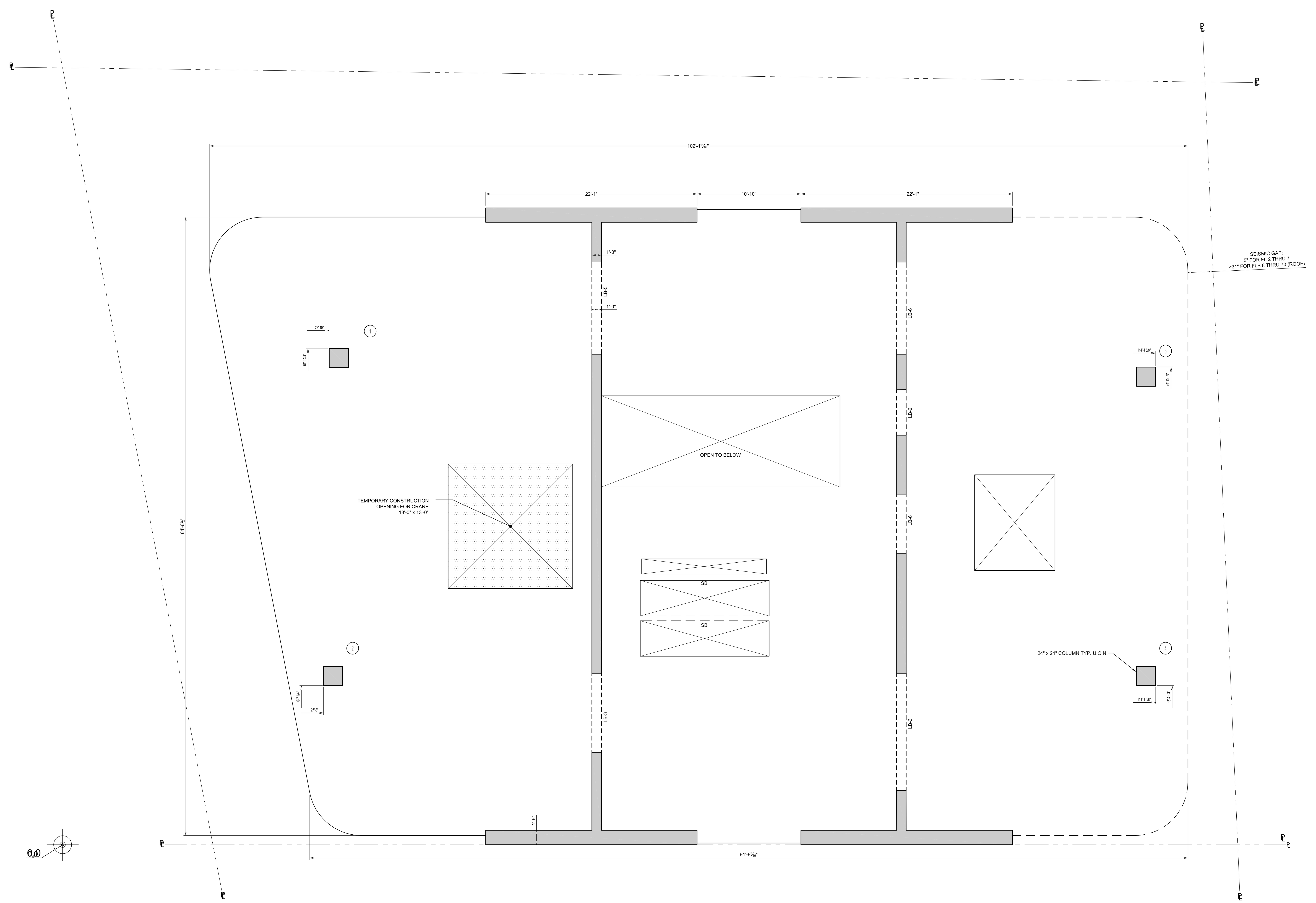
67TH FLOOR
FRAMING PLAN

SHEET TITLE :

S-267.00
SHEET NUMBER : 03

14218.00-007-S-267.00.dwg

FL70/ROOF AT 840', T.O. BLDG AT 912', FL. TO FL. = 11'-5"



68TH FLOOR FRAMING PLAN

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

NORTH

FOR MEP EQUIPMENT, SEE MEP DWGS.
REF TYP CONC. PAD DETAIL 5/S-401

TOP OF SLAB ELEVATION U.O.N.:	SEE PLAN
SLAB THICKNESS U.O.N.:	16"
SLAB CONCRETE STRENGTH:	f'c = 7,200 PSI
SLAB BASIC BOTTOM BARS (U.O.N.):	REF. S-209
MID STRIP TOP BARS (U.O.N.):	REF. S-209

LEGEND:

(filled circle)	DENOTES CONCRETE COLUMN
(dashed circle)	DENOTES CONCRETE COLUMN BELOW
(crossed box)	DENOTES SLAB OPENING
E.G.	HSS 6x4x¼ TUBE ELEVATOR GUIDE BEAM
SB	8" WIDE BY SLAB DEPTH BEAM WITH 1 #8 T&B, 1 LEG #3 STIRRUPS AT 6" O.C. SPACING

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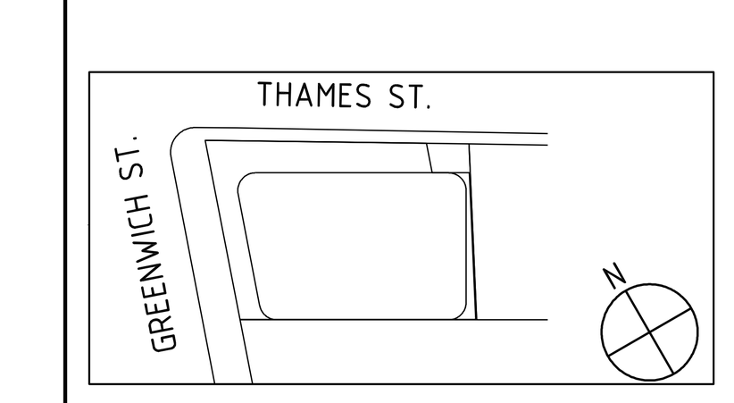

KEY PLAN AND NORTH SIGN

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1 0 2 4 8

SCALE AS NOTED

68TH FLOOR
FRAMING PLAN

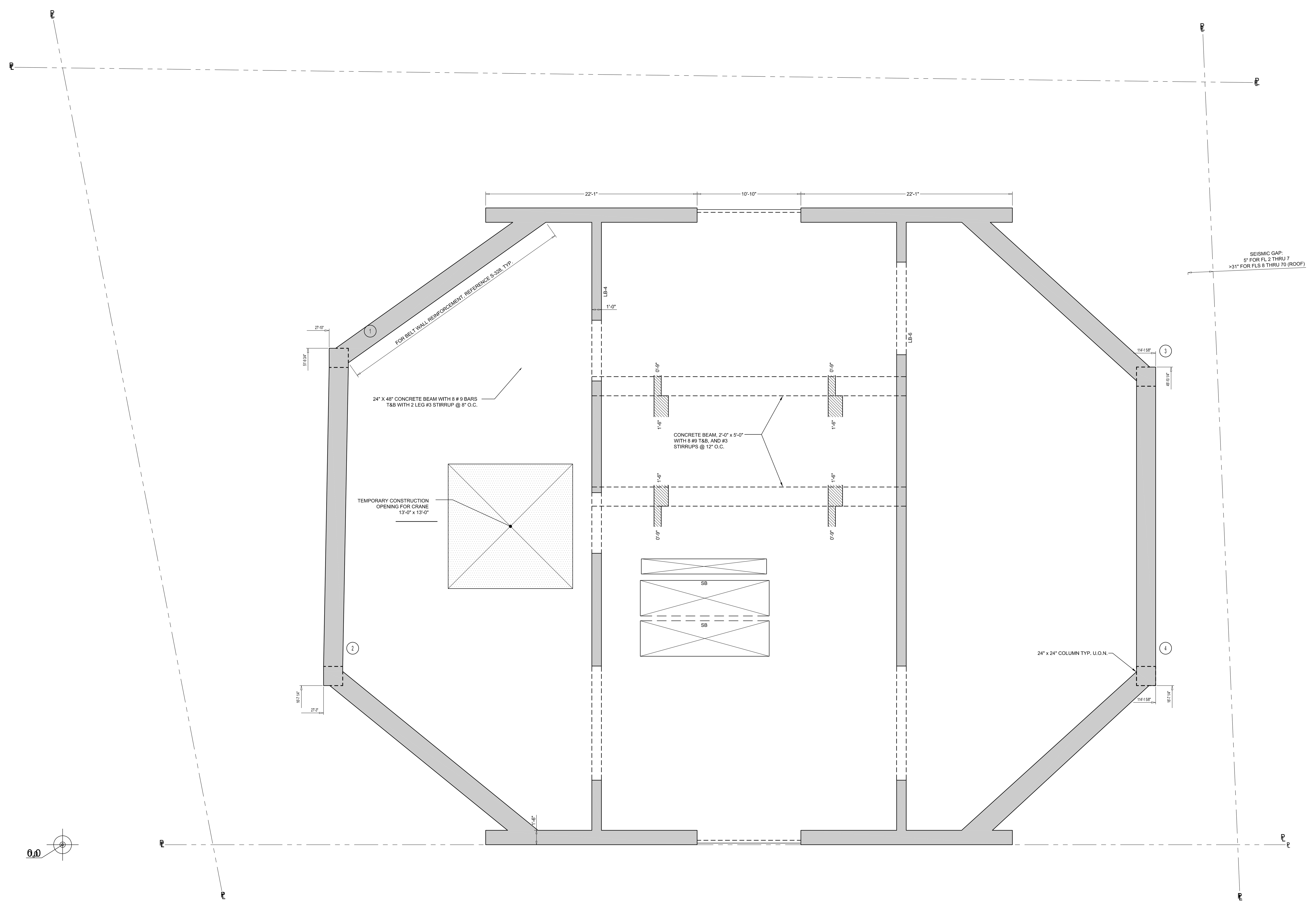
SHEET TITLE:

S-268.00

SHEET NUMBER: 03

14218.00-007-S-268.00.dwg

FL70/ROOF AT 840', T.O. BLDG AT 912', FL. TO FL. = 11'-5"



NORTH

69TH FLOOR FRAMING PLAN

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

FOR MEP EQUIPMENT, SEE MEP DWGS.
REF TYP CONC. PAD DETAIL 5/S-401

TOP OF SLAB ELEVATION U.O.N.:	SEE PLAN
SLAB THICKNESS U.O.N.:	16"
SLAB CONCRETE STRENGTH:	f'c = 7,200 PSI
SLAB BASIC BOTTOM BARS (U.O.N.):	SEE PLAN
MID STRIP TOP BARS (U.O.N.):	SEE PLAN

LEGEND:

(solid circle)	DENOTES CONCRETE COLUMN
(dashed circle)	DENOTES CONCRETE COLUMN BELOW
(crossed box)	DENOTES SLAB OPENING
E.G.	HSS 6x4x$\frac{1}{4}$ TUBE ELEVATOR GUIDE BEAM
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6. DETAILER TO CHECK ALL BAR CLEARANCES.
7. OUTERMOST REINFORCING RUNS EAST-WEST.
8. CONTRACTOR TO LOCATE / VERIFY ALL THE OPENINGS THROUGH THE SLAB FROM ARCHITECTURAL AND MEP DRAWINGS.
9. CONTRACTOR TO PROVIDE FOR SOE OPENINGS FOR P.O.Es.
10. CONCRETE COMPRESSIVE STRENGTHS SEE STRUCTURAL NARRATIVE ON S-201

Damian Titus
NYC Buildings
APPROVED
Under Directive 2 of 1975
Date: 09/27/2016:
NYC Development Hub

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NEW YORK, NY

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VS 125 LLC
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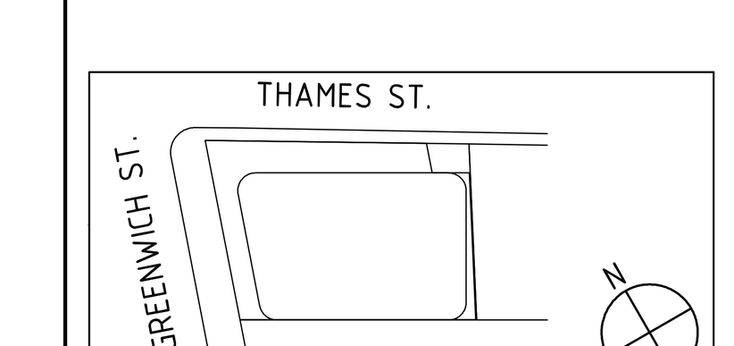

KEY PLAN AND NORTH SIGN

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1 0 2 4 8

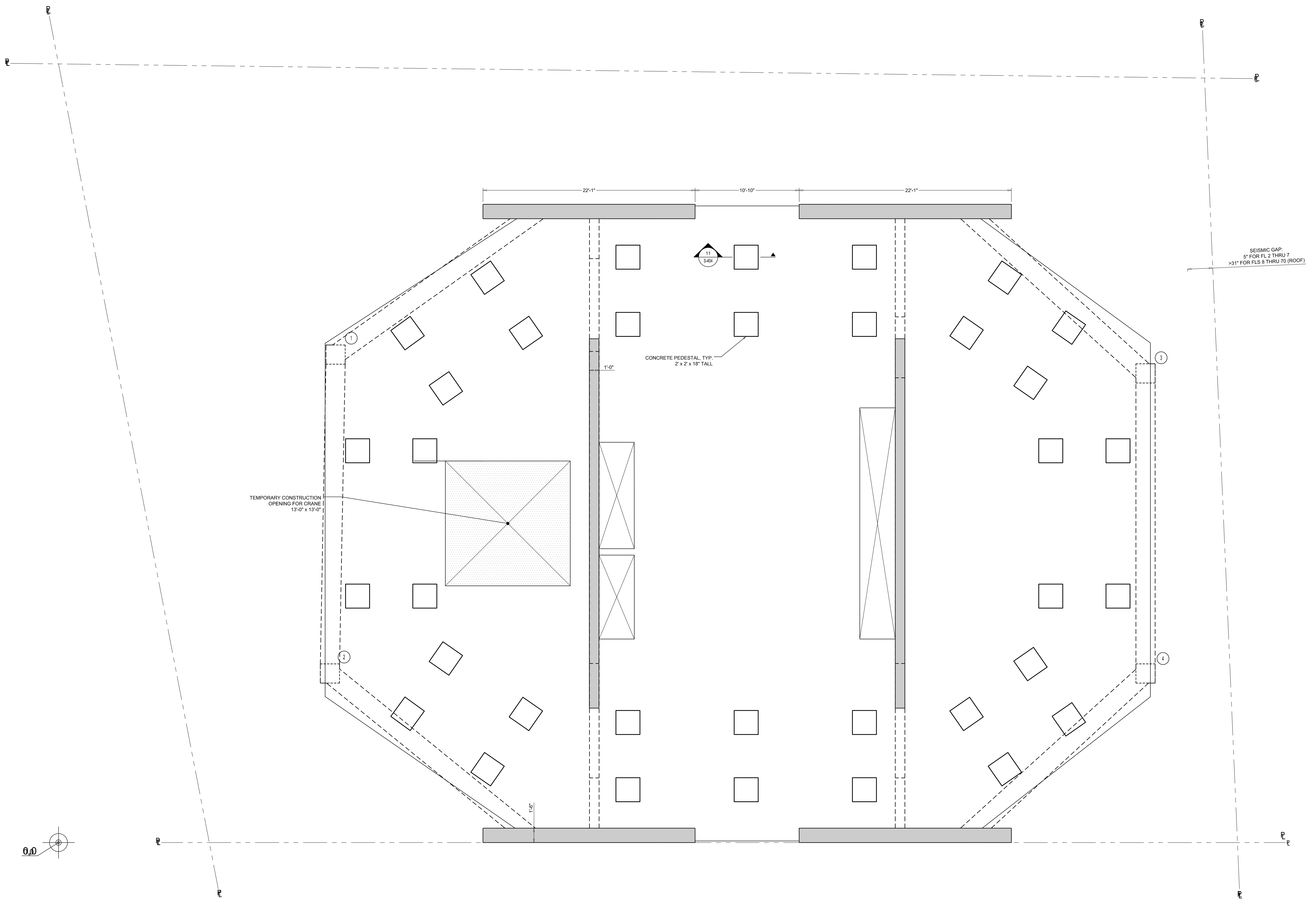
SCALE AS NOTED

SHEET TITLE: 69TH FLOOR FRAMING PLAN

SHEET NUMBER: S-269.00 03

14218.00-007-S-269.00.dwg

FL70/ROOF AT 840', T.O. BLDG AT 912', FL. TO FL. = 11'-5"



70TH FLOOR FRAMING PLAN

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

NORTH

FOR MEP EQUIPMENT, SEE MEP DWGS.
REF TYP CONC. PAD DETAIL 5/S-401

TOP OF SLAB ELEVATION U.O.N.:	SEE PLAN
SLAB THICKNESS U.O.N.:	14"
SLAB CONCRETE STRENGTH:	f'c = 7,200 PSI
SLAB BASIC BOTTOM BARS (U.O.N.):	#5 @ 12"
MID STRIP TOP BARS (U.O.N.):	SEE PLAN

LEGEND:

(solid circle)	DENOTES CONCRETE COLUMN
(dashed circle)	DENOTES CONCRETE COLUMN BELOW
(crossed box)	DENOTES SLAB OPENING
E.G.	HSS 6x4x$\frac{1}{4}$ TUBE ELEVATOR GUIDE BEAM
SB	8" WIDE BY SLAB DEPTH BEAM WITH 1 #8 T&B, 1 LEG #3 STIRRUPS AT 6" O.C. SPACING

DRAWING NOTES:

1. FOR GENERAL NOTES SEE DRAWING S-001
2. ALL ELEVATIONS SHOWN ARE BASED ON NAVD-88.
3. FOR COLUMN SCHEDULE, SEE S-301.
4. FOR SHEARWALL PART PLANS, SEE S-311.
5. FOR CONCRETE TYPICAL DETAILS, SEE S-401 TO S-405.
6. DETAILER TO CHECK ALL BAR CLEARANCES.
7. OUTERMOST REINFORCING RUNS EAST-WEST.
8. CONTRACTOR TO LOCATE / VERIFY ALL THE OPENINGS THROUGH THE SLAB FROM ARCHITECTURAL AND MEP DRAWINGS.
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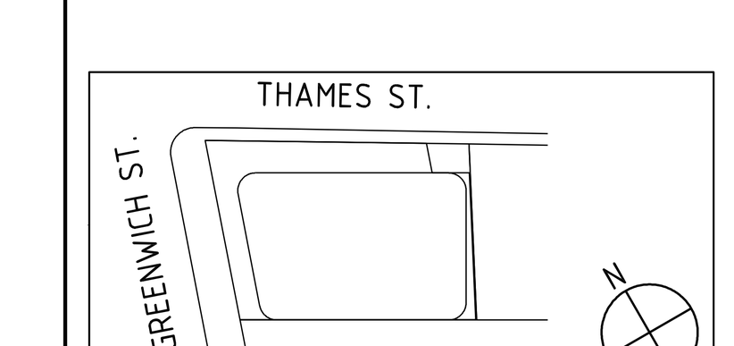

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SCALE AS NOTED

70TH FLOOR
FRAMING PLAN

SHEET TITLE:

S-270.00

SHEET NUMBER: 03

14218.00-007-S-270.00.dwg

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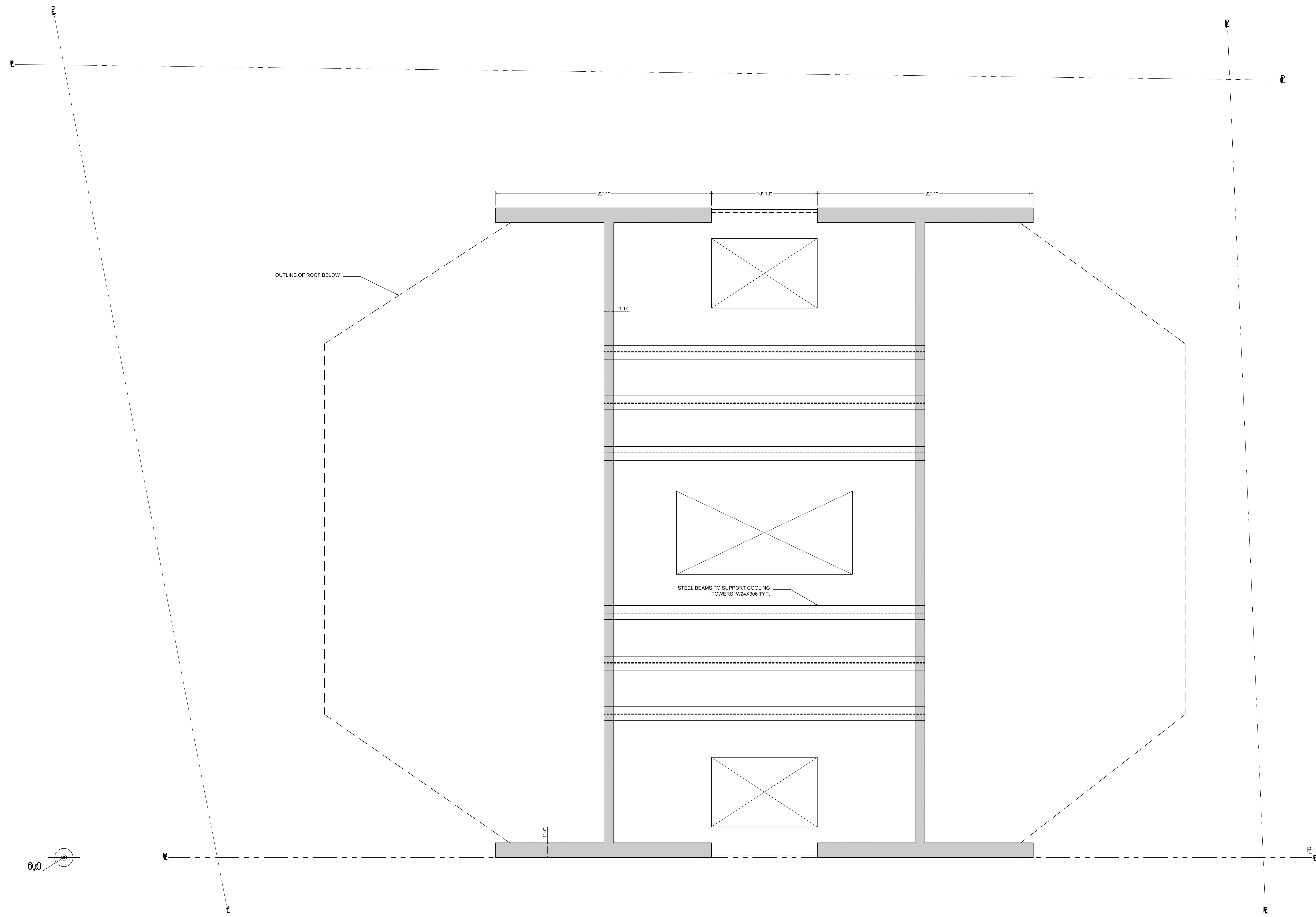
FL70/ROOF AT 840', T.O. BLDG AT 912', FL. TO FL. = 11'-5"



NORTH

TOP OF BULKHEAD

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

TOP OF SLAB ELEVATION U.O.N.:	SEE PLAN
SLAB THICKNESS U.O.N.:	14"
SLAB CONCRETE STRENGTH:	f'c = 7,200 PSI
SLAB BASIC BOTTOM BARS (U.O.N.):	REF. S-209
MID STRIP TOP BARS (U.O.N.):	REF. S-209

LEGEND:

(circle)	DENOTES CONCRETE COLUMN
(dashed circle)	DENOTES CONCRETE COLUMN BELOW
(box with X)	DENOTES SLAB OPENING
E.G.	HSS 6x4x$\frac{1}{4}$ TUBE ELEVATOR GUIDE BEAM
SB	8" WIDE BY SLAB DEPTH BEAM WITH 1 #8 T&B, 1 LEG #3 STIRRUPS AT 6" O.C. SPACING

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4. FOR SHEARWALL PART PLANS, SEE S-311.
5. FOR CONCRETE TYPICAL DETAILS, SEE S-401 TO S-405.
6. DETAILER TO CHECK ALL BAR CLEARANCES.
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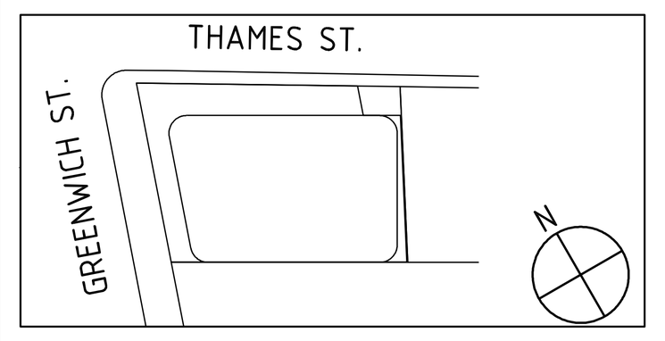

KEY PLAN AND NORTH SIGN

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SCALE AS NOTED

TOP OF BULKHEAD FRAMING PLAN

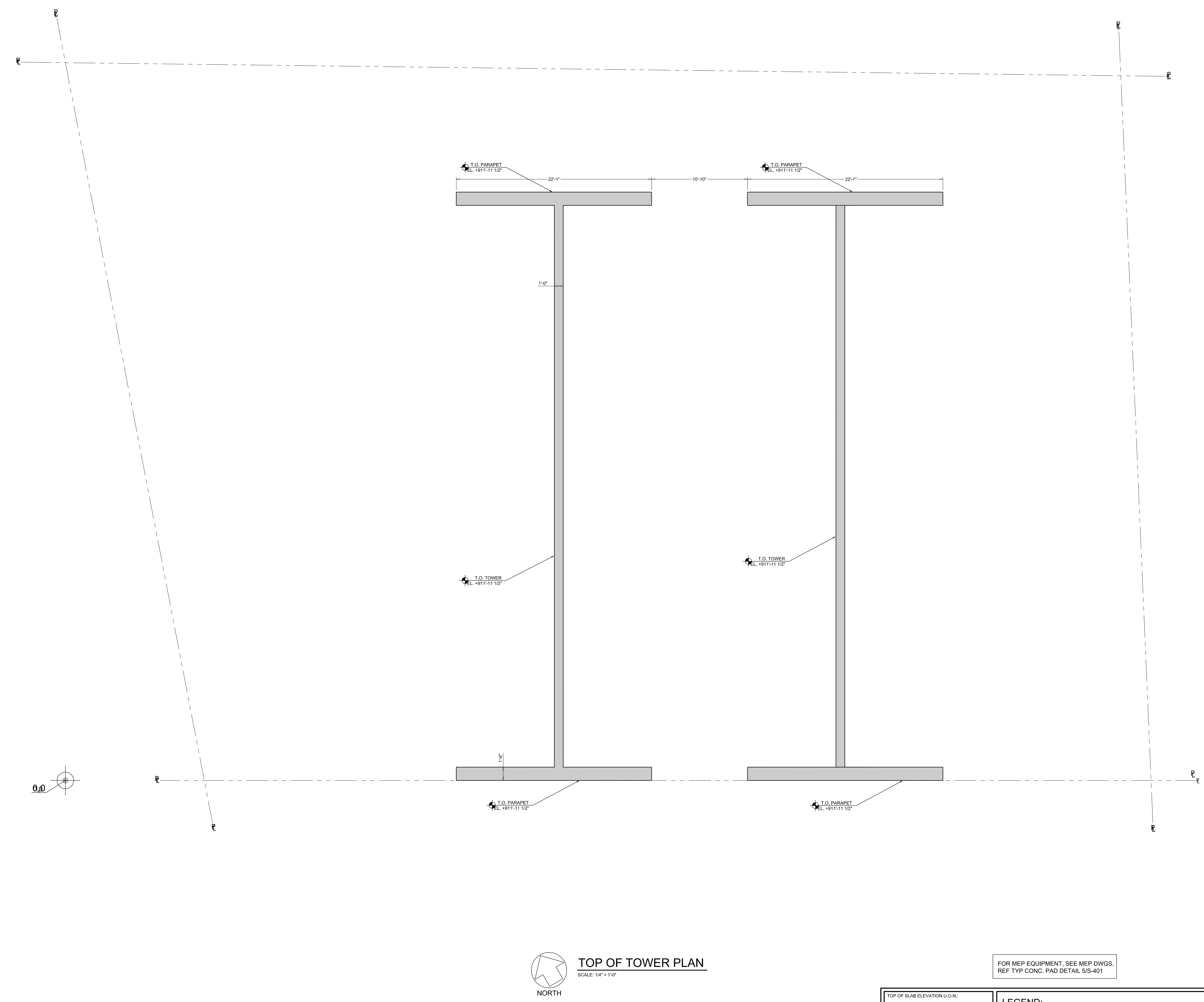
SHEET TITLE :

S-271.00

SHEET NUMBER : 03

14218.00-007-S-271.00.dwg

FL70/ROOF AT 840', T.O. BLDG AT 912', FL. TO FL. = 11'-5"



TOP OF TOWER PLAN

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

FOR MEP EQUIPMENT, SEE MEP DWGS.
REF TYP CONC. PAD DETAIL 5/S-401

TOP OF SLAB ELEVATION U.O.N.:	--
SLAB THICKNESS U.O.N.:	--
SLAB CONCRETE STRENGTH:	--
SLAB BASIC BOTTOM BARS (U.O.N.):	--
MID STRIP TOP BARS (U.O.N.):	--

LEGEND:

(solid circle)	DENOTES CONCRETE COLUMN
(dashed circle)	DENOTES CONCRETE COLUMN BELOW
(crossed box)	DENOTES SLAB OPENING
E.G.	HSS 6x4x$\frac{1}{4}$ TUBE ELEVATOR GUIDE BEAM
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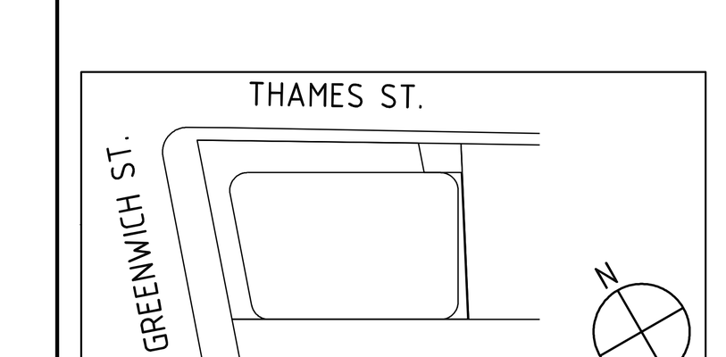

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SCALE AS NOTED

TOP OF TOWER

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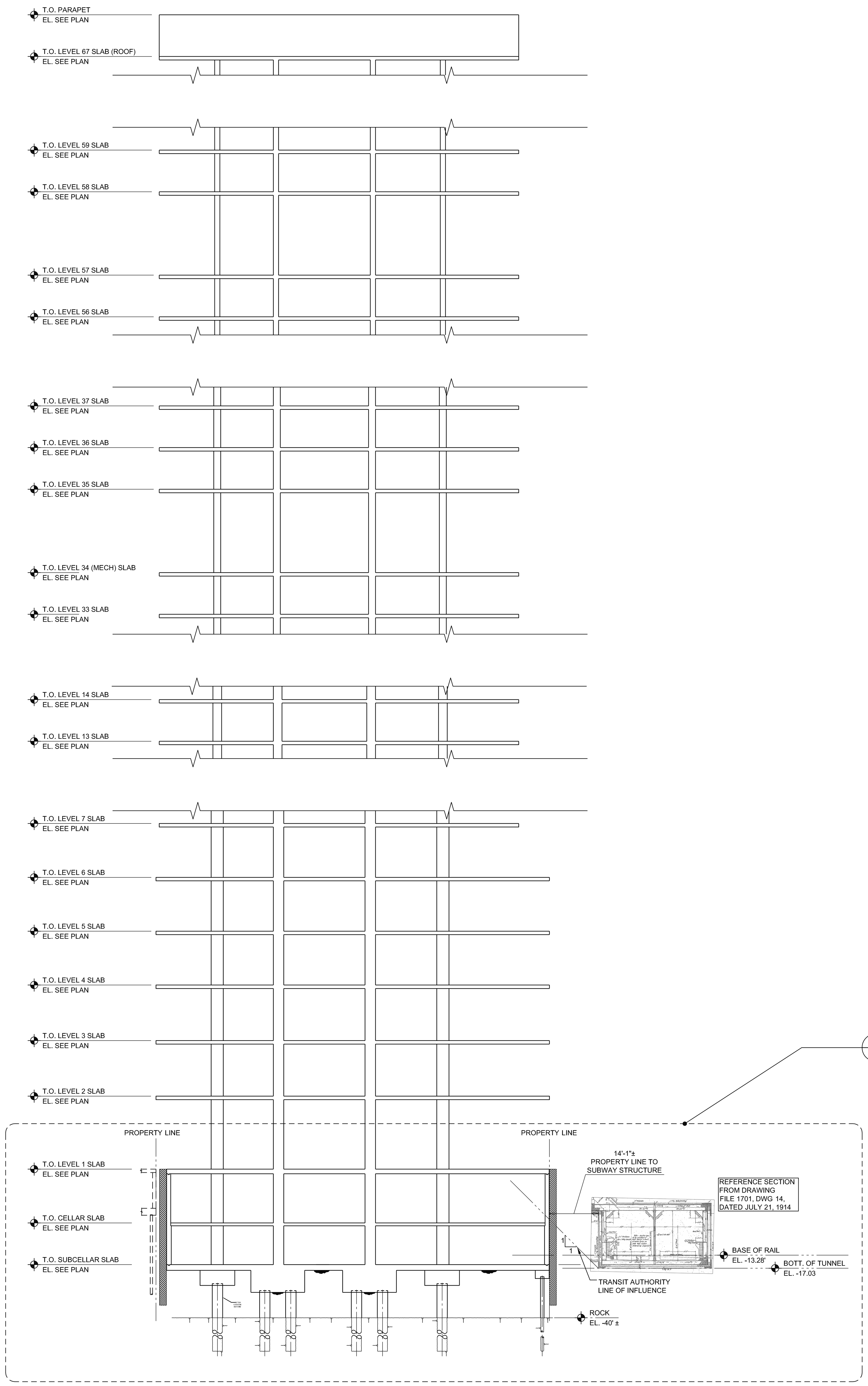
S-272.00

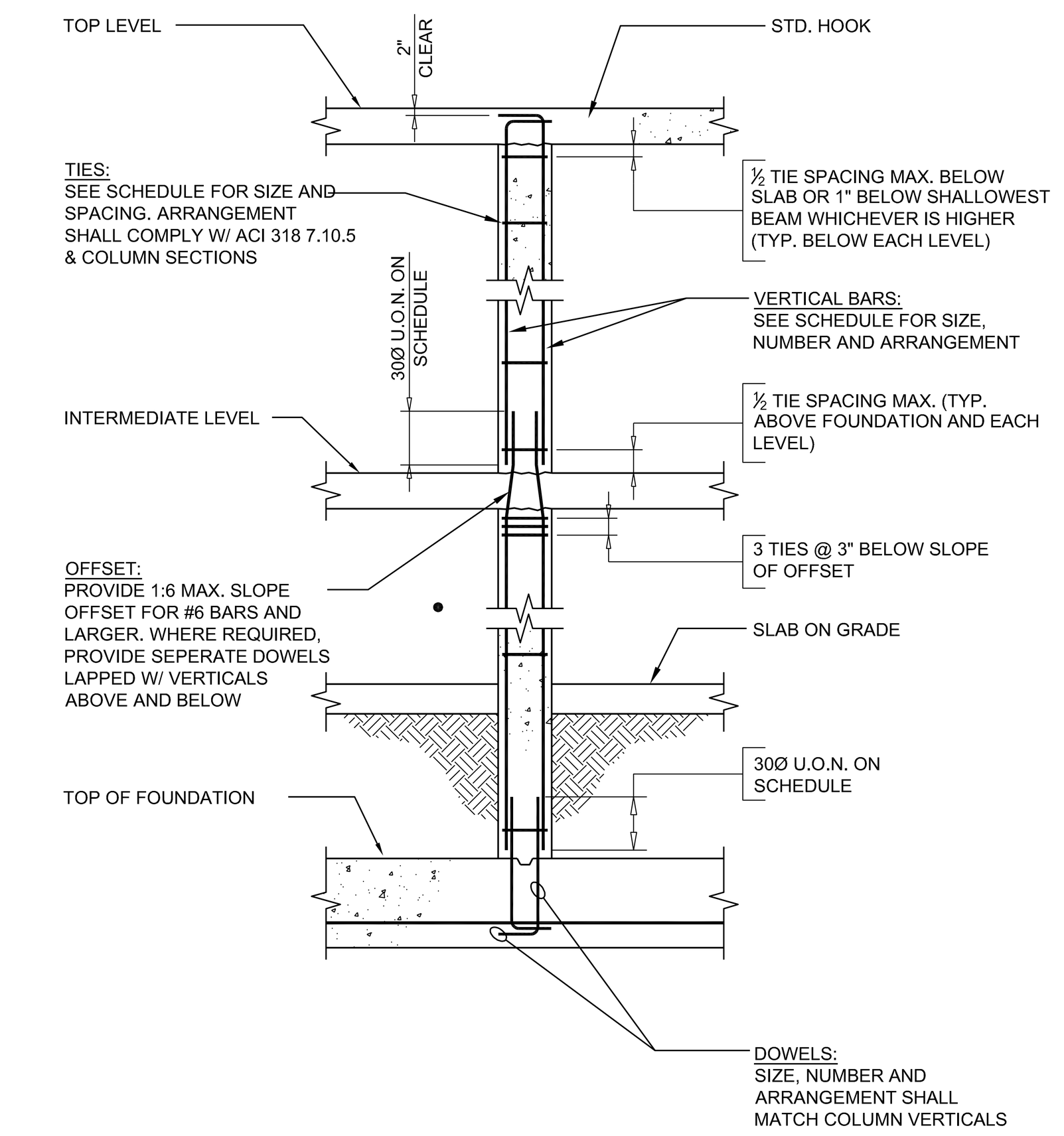
SHEET NUMBER: 03

14218.00-007-S-272.00.dwg

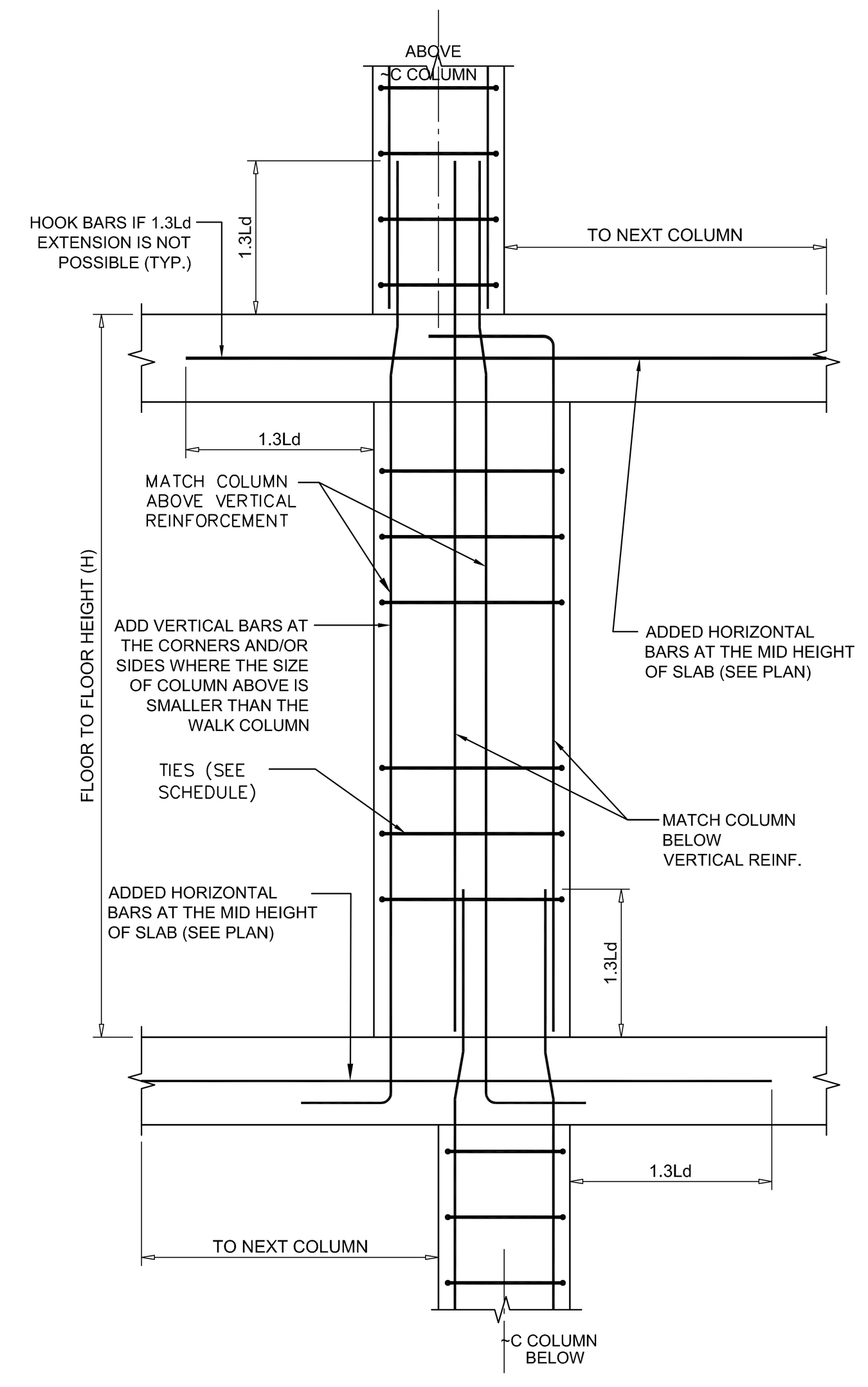
FL70/ROOF AT 840', T.O. BLDG AT 912', FL. TO FL. = 11'-5"



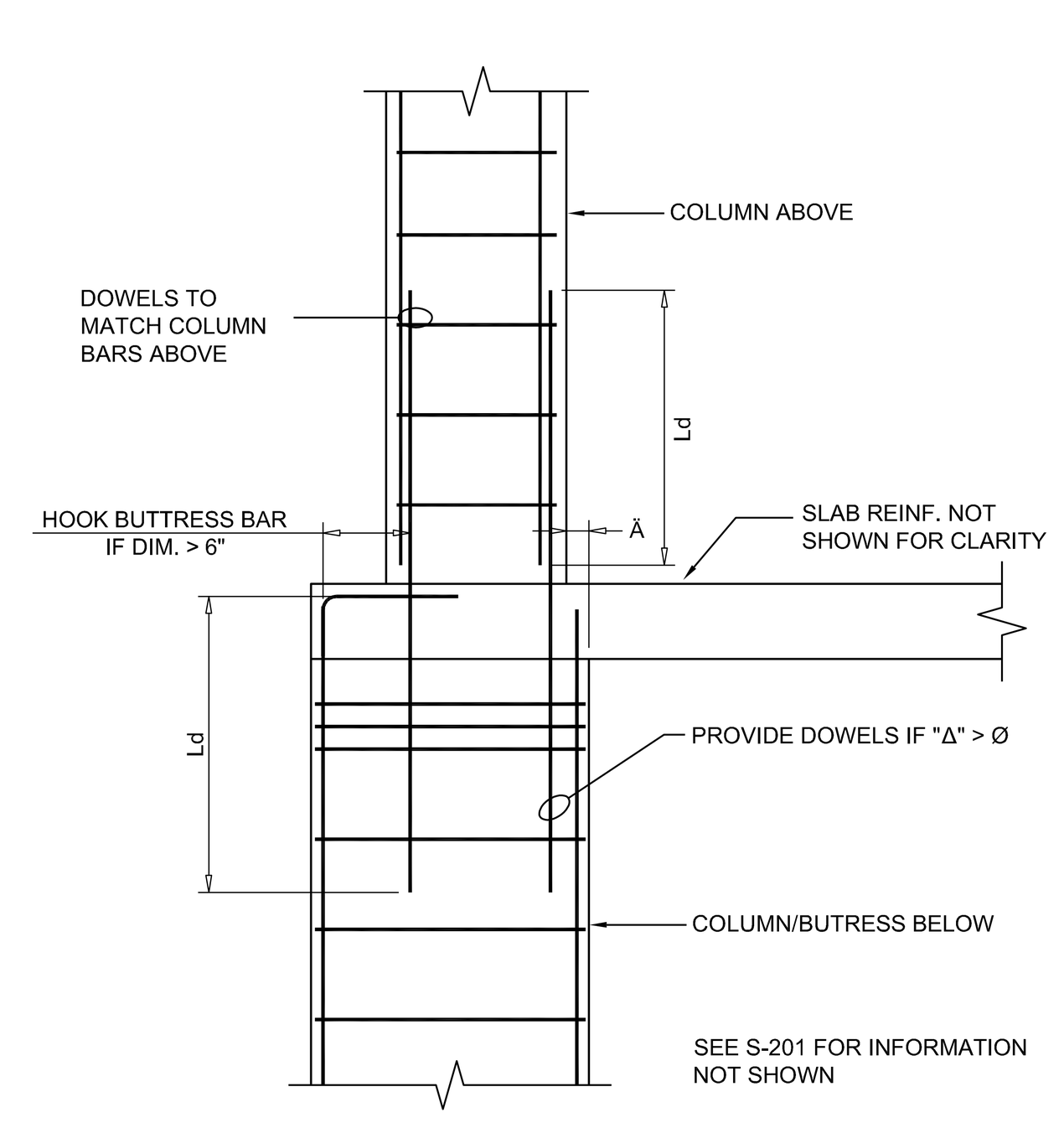
12 BUILDING SECTION LOOKING SOUTH
SCALE: 1/16" = 1'-0"



2 TYPICAL CONCRETE COLUMN DETAIL
GRAVITY COLUMNS ONLY
SCALE: 1/2"=1'-0"



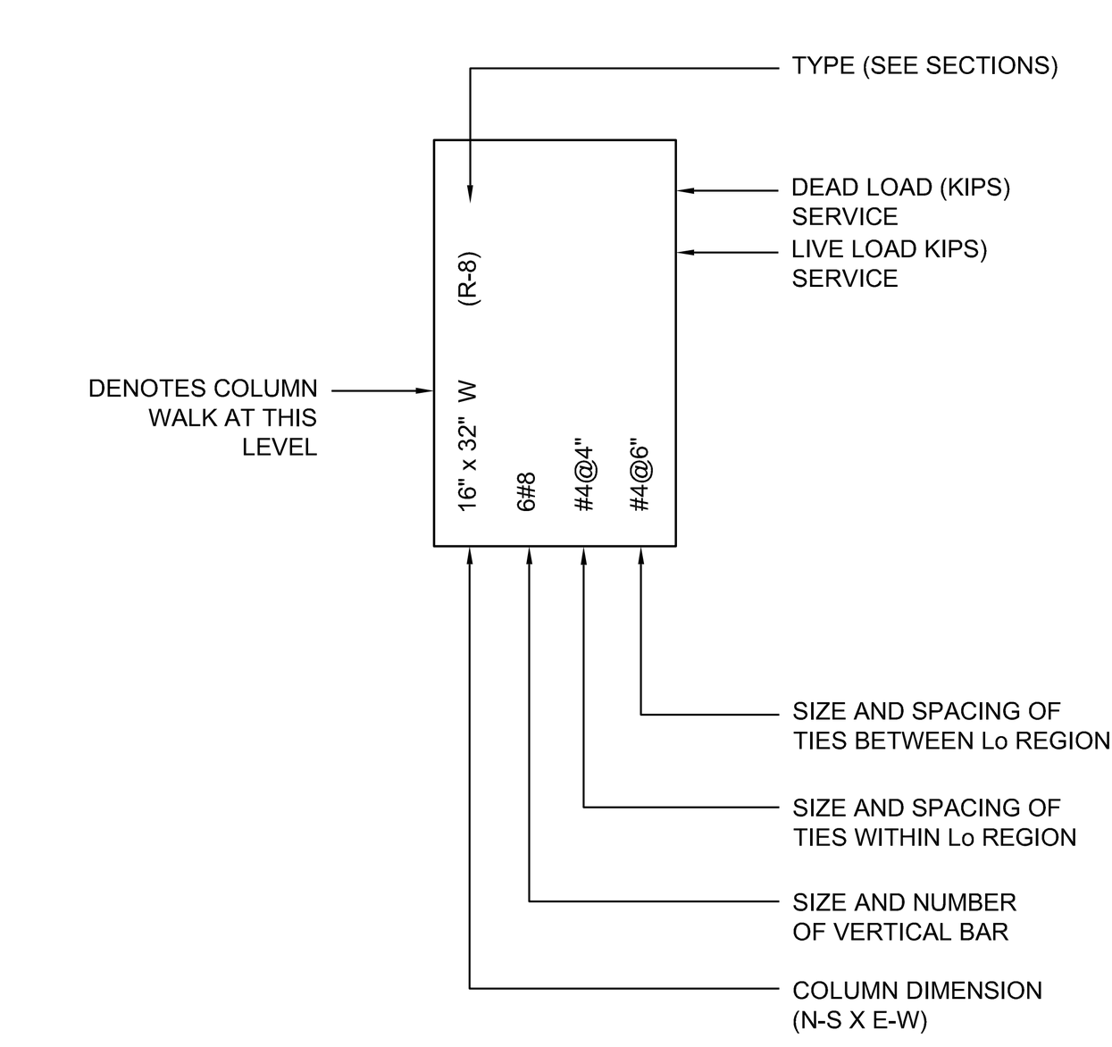
6 TYPICAL COLUMN OFFSET DETAIL
SCALE: 1/2"=1'-0"



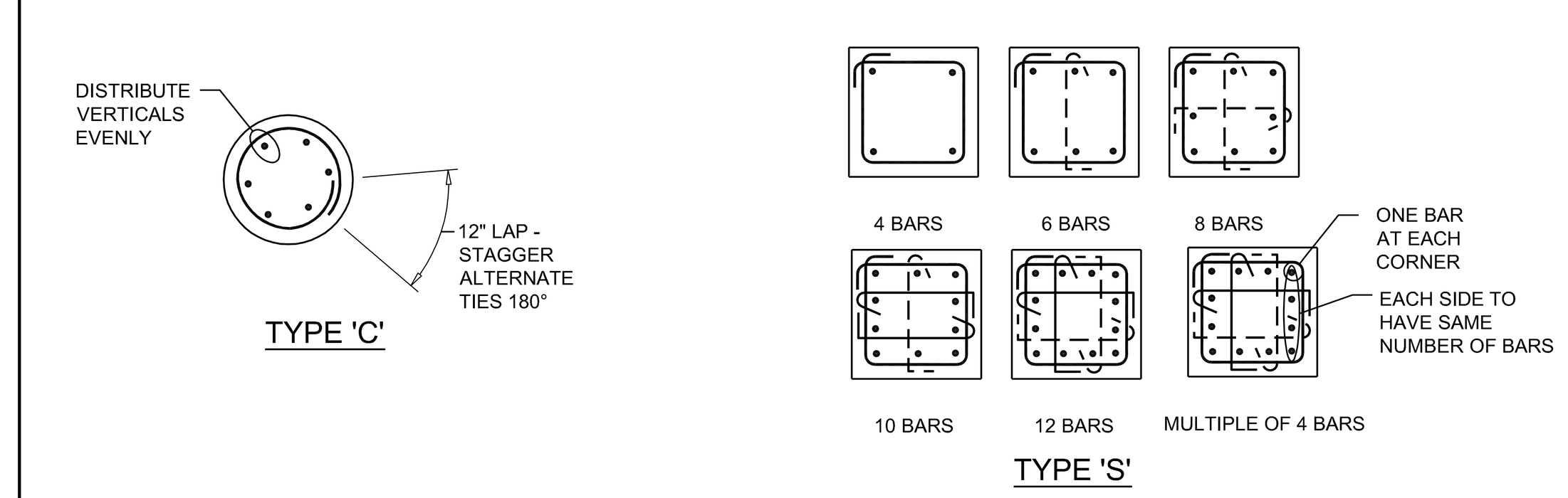
10 TYPICAL COLUMN/BUTTRESS DETAIL
SCALE: 1/2"=1'-0"

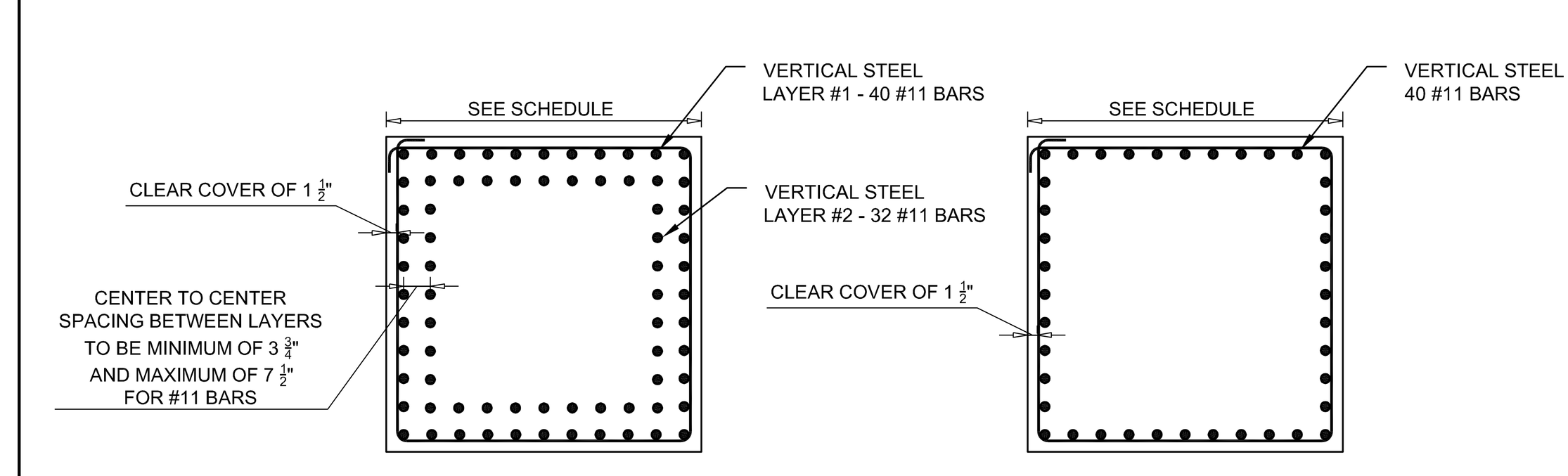
LEVEL \ COLUMN	Concrete strength	01	02	03	04	05
FL60 TO FL69	COLUMNS: f'c = 10,000 PSI; SHEAR WALLS: f'c = 10,000 PSI	S 24" 14#9 #4@12"	S 24" 12#9 #4@12"	C 24" 12#9 #4@12"	C 24" 12#9 #4@12"	
EL. SEE PLAN / FL50 TO FL59		S 30" 20#10 #4@12"	S 30" 16#10 #4@12"	C 30" 16#10 #4@12"	C 30" 16#10 #4@12"	
EL. SEE PLAN / FL39 TO FL49	COLUMNS: f'c = 12,000 PSI; SHEAR WALLS: f'c = 12,000 PSI	S 30" 20#10 #4@12"	S 30" 18#10 #4@12"	C 30" 18#10 #4@12"	C 30" 18#10 #4@12"	
EL. SEE PLAN / FL29 TO FL38	COLUMNS: f'c = 14,000 PSI; SHEAR WALLS: f'c = 14,000 PSI	S 36" 28#11 #4@12"	S 36" 24#11 #4@12"	C 38" 24#11 #4@12"	C 38" 24#11 #4@12"	
EL. SEE PLAN / FL19 TO FL28		S 38" 28#11 #4@12"	S 38" 24#11 #4@12"	C 42" 24#11 #4@12"	C 42" 24#11 #4@12"	
EL. SEE PLAN / FL8 TO FL18		S 42" 32#11 #4@12"	S 42" 28#11 #4@12"	C 44" 28#11 #4@12"	C 44" 28#11 #4@12"	
EL. SEE PLAN / 2ND FL TO FL7		S 48" 37#11 #4@12"	S 48" 37#11 #4@12"	S 48" 40#11 #4@12"	S 48" 40#11 #4@12"	C 36" 8#11 #4@12"
EL. SEE PLAN / GR FL TO FL2		S 50" 37#11 #4@12"	C 50" 37#11 #4@12"	S 48" 40#11 #4@12"	S 48" 40#11 #4@12"	
EL. SEE PLAN / SUBCELLAR TO CELLAR	COLUMNS: f'c = 14,000 PSI; SHEAR WALLS: SEE S-311 AND S-312	S 13000 4000 48" 72#11 #4@12"	S 13000 4000 50" 40#11 #4@12"	S 12500 3750 48" 40#11 #4@12"	S 12500 3750 48" 40#11 #4@12"	
EL. SEE PLAN						
LEVEL \ COLUMN		01	02	03	04	05

NOTES:
1. REFER TO GENERAL NOTES FOR REINFORCEMENT GRADES.
2. REFER TO 2/S-405 AND 6/S-405 FOR SPLICING DETAILS



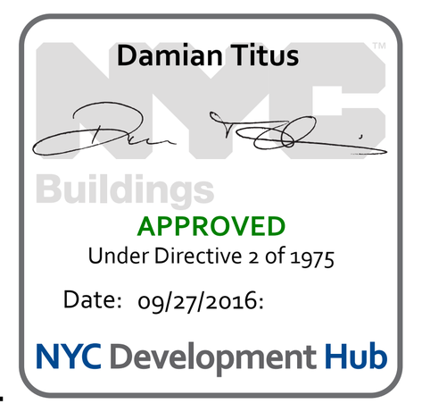
CONCRETE COLUMN SCHEDULE LEGEND





NOTES:
1. DASHED TIES MAY BE OMITTED IF CLEAR DISTANCE BETWEEN ADJACENT VERTICALS < 6".
2. ALTERNATE POSITION OF 90° HOOKS ON SINGLE TIES.

9 COLUMN SCHEDULE AND TYPICAL COLUMN DETAILS
SCALE: 1/2"=1'-0"



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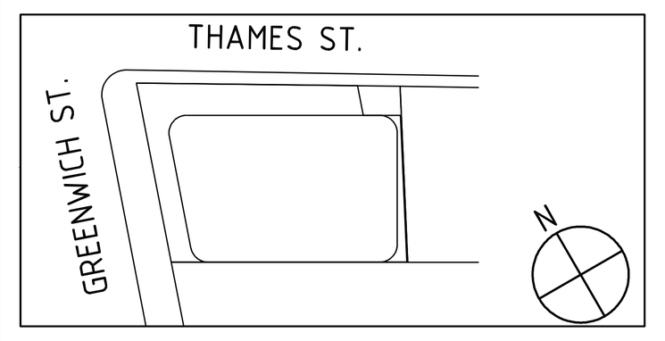
	06/26/2015	REV. FOUND. DOC. UPD.
	06/19/2015	FOUNDATION DOC. UPD.
	06/15/2015	SS PRE-BID
	06/01/2015	FOUNDATION CD DRAFT
	03/06/2015	SCHEMATIC DESIGN
01	01/09/2015	FOUNDATION BID
01	01/09/2015	FOUNDATION PAA



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COLUMN SCHEDULE AND DETAILS

SHEET TITLE

S-301.01
SHEET NUMBER 01

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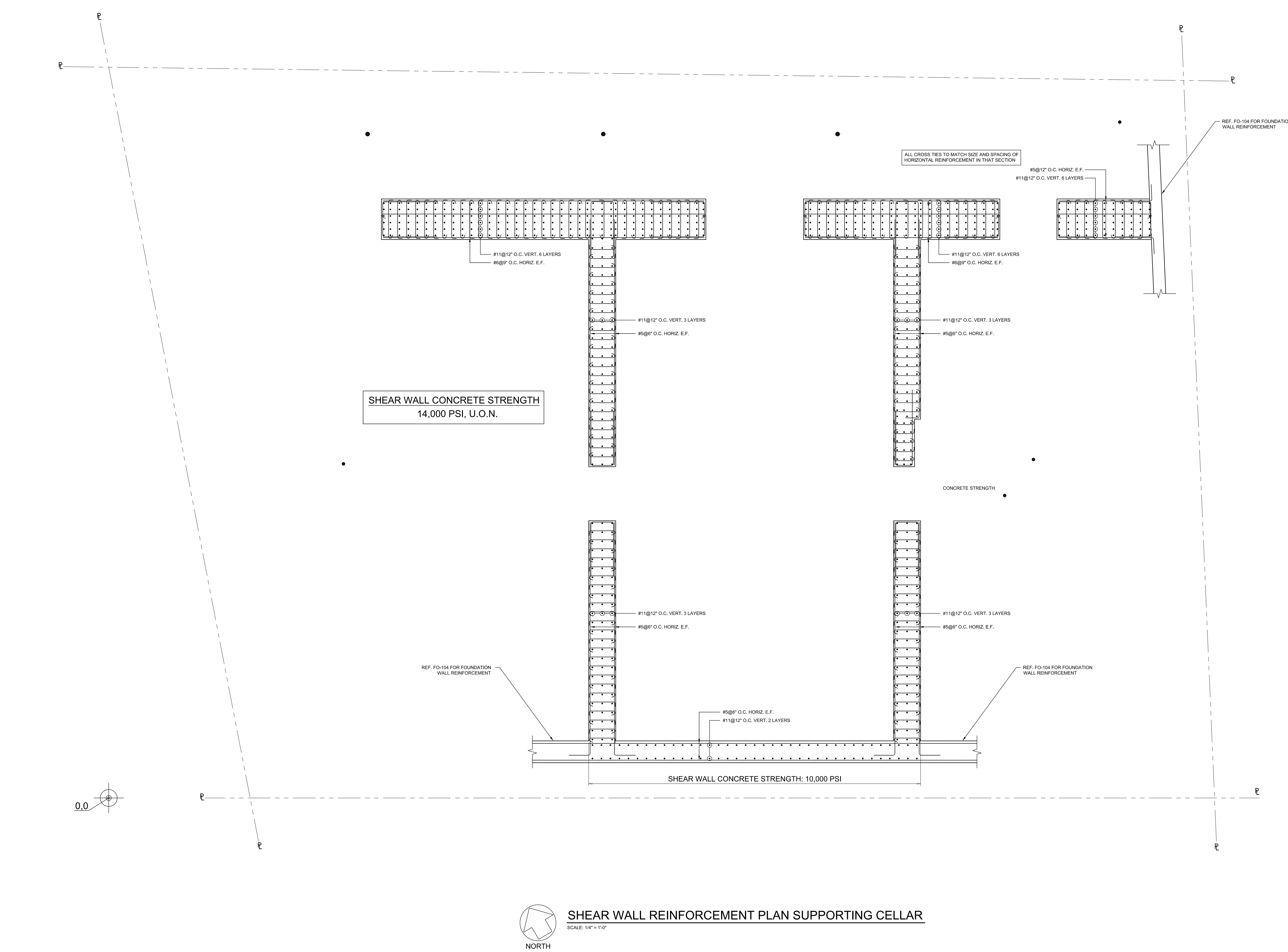

SHEAR WALL REINFORCEMENT PLAN SUPPORTING CELLAR

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

PLAN NOTES:

1. SEE S-001 FOR GENERAL NOTES, DRAWING INDEX, AND DESIGN CRITERIA/LOADS AND REINFORCEMENT GRADES.
2. SEE FO-100 SERIES DRAWINGS FOR FOUNDATIONS.
3. SEE S-301 FOR COLUMN SCHEDULE AND DETAILS.
4. SEE S-400 FOR TYPICAL CONCRETE SECTIONS AND DETAILS.
5. SEE S-405 FOR SPLICING DETAILS
6. ALL LEVELS ARE INDICATED AS SUPPORT FLOOR CONVENTION
7. ALL CROSSTIES ( ) MAY HAVE 135° / 90° HOOKS ( ) PROVIDED POSITION OF 90° HOOKS IS ALTERNATED.
8. U-BARS AT END OF WALLS SHALL BE SPLICED 1.3 LD WITH HORIZONTAL REINFORCEMENT
9. DETAILER TO CHECK ALL BAR CLEARANCES.
10. TOP OF LINK BEAM TO MATCH TOP OF FLOOR SLAB ELEVATION U.O.N.
11. SEE PLAN FOR SLAB ELEVATIONS AND DETAILS.
12. CONTRACTOR TO LOCATE/VERIFY ALL OPENINGS THROUGH SHEAR WALLS FROM ARCH. AND MEP DRAWINGS.
13. ALL REINFORCING CORRESPONDS TO:
    ASTM A615, GR60 FOR #8 & SMALLER
    ASTM A615, GR75 FOR #9 & LARGER

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TEL: 212 615 3606

GEOTECH CONSULTANT:
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ELMWOOD PARK, NJ 07407
TEL: 201 794 6900

VERTICAL TRANSPORTATION CONSULTANT:
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120 EAGLE ROCK AVENUE, SUITE 310
EAST HANOVER, NJ 07936
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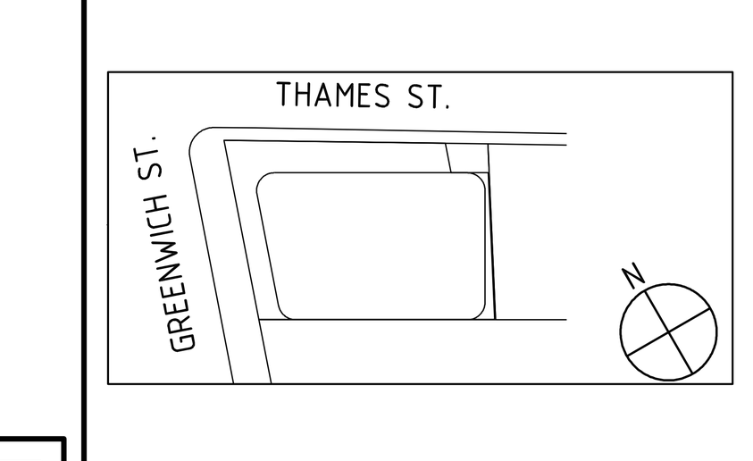
	06/15/2015	SS PRE-BID
	06/01/2015	FOUNDATION CD DRAFT
03	02/10/2015	REVISED TA FILING
01	01/09/2015	FOUNDATION BID
01	01/09/2015	FOUNDATION PAA
01	01/09/2015	TA FILING



KEY PLAN AND NORTH SIGN

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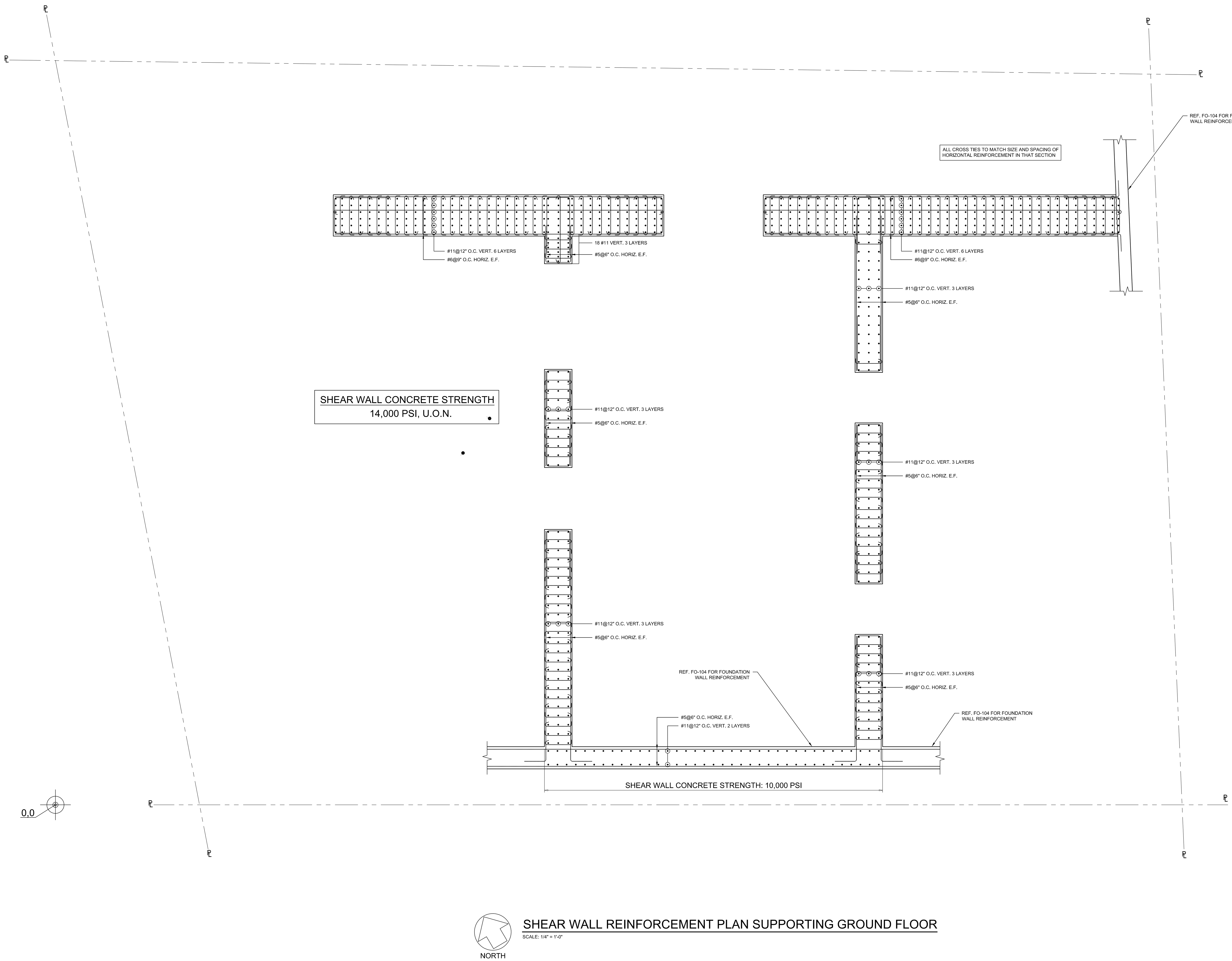
SCALE AS NOTED

SHEET TITLE: SHEAR WALL PLAN

SHEET NUMBER: S-311.00 00

14218.00-012-S-311.01.dwg



SHEAR WALL REINFORCEMENT PLAN SUPPORTING GROUND FLOOR

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

PLAN NOTES:

1. SEE S-001 FOR GENERAL NOTES, DRAWING INDEX, AND DESIGN CRITERIA/LOADS AND REINFORCEMENT GRADES.
2. SEE FO-100 SERIES DRAWINGS FOR FOUNDATIONS.
3. SEE S-301 FOR COLUMN SCHEDULE AND DETAILS.
4. SEE S-400 FOR TYPICAL CONCRETE SECTIONS AND DETAILS.
5. SEE S-405 FOR SPLICING DETAILS
6. ALL LEVELS ARE INDICATED AS SUPPORT FLOOR CONVENTION
7. ALL CROSSTIES ( ) MAY HAVE 135° / 90° HOOKS ( ) PROVIDED POSITION OF 90° HOOKS IS ALTERNATED.
8. U-BARS AT END OF WALLS SHALL BE SPLICED 1.3 LD WITH HORIZONTAL REINFORCEMENT
9. DETAILER TO CHECK ALL BAR CLEARANCES.
10. TOP OF LINK BEAM TO MATCH TOP OF FLOOR SLAB ELEVATION U.O.N.
11. SEE PLAN FOR SLAB ELEVATIONS AND DETAILS.
12. CONTRACTOR TO LOCATE/VERIFY ALL OPENINGS THROUGH SHEAR WALLS FROM ARCH. AND MEP DRAWINGS.
13. ALL REINFORCING CORRESPONDS TO:
    ASTM A615, GR60 FOR #8 & SMALLER
    ASTM A615, GR75 FOR #9 & LARGER

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NYC Buildings
APPROVED
Under Directive 2 of 1975
Date: 09/27/2016
NYC Development Hub

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NEW YORK, NY

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ARCHITECT:
RAFAEL VIÑOLY ARCHITECTS PC
50 VANDAM STREET
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TEL: 212 924 5060 FAX: 212 924 5858

STRUCTURAL ENGINEER:
DESIMONE CONSULTING ENGINEERS
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VERTICAL TRANSPORTATION CONSULTANT:
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03	02/10/2015	REVISED TA FILING
01	01/09/2015	FOUNDATION BID
01	01/09/2015	FOUNDATION PAA
01	01/09/2015	TA FILING

THAMES ST.
GREENWICH ST.

KEY PLAN AND NORTH SIGN

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SCALE: AS NOTED

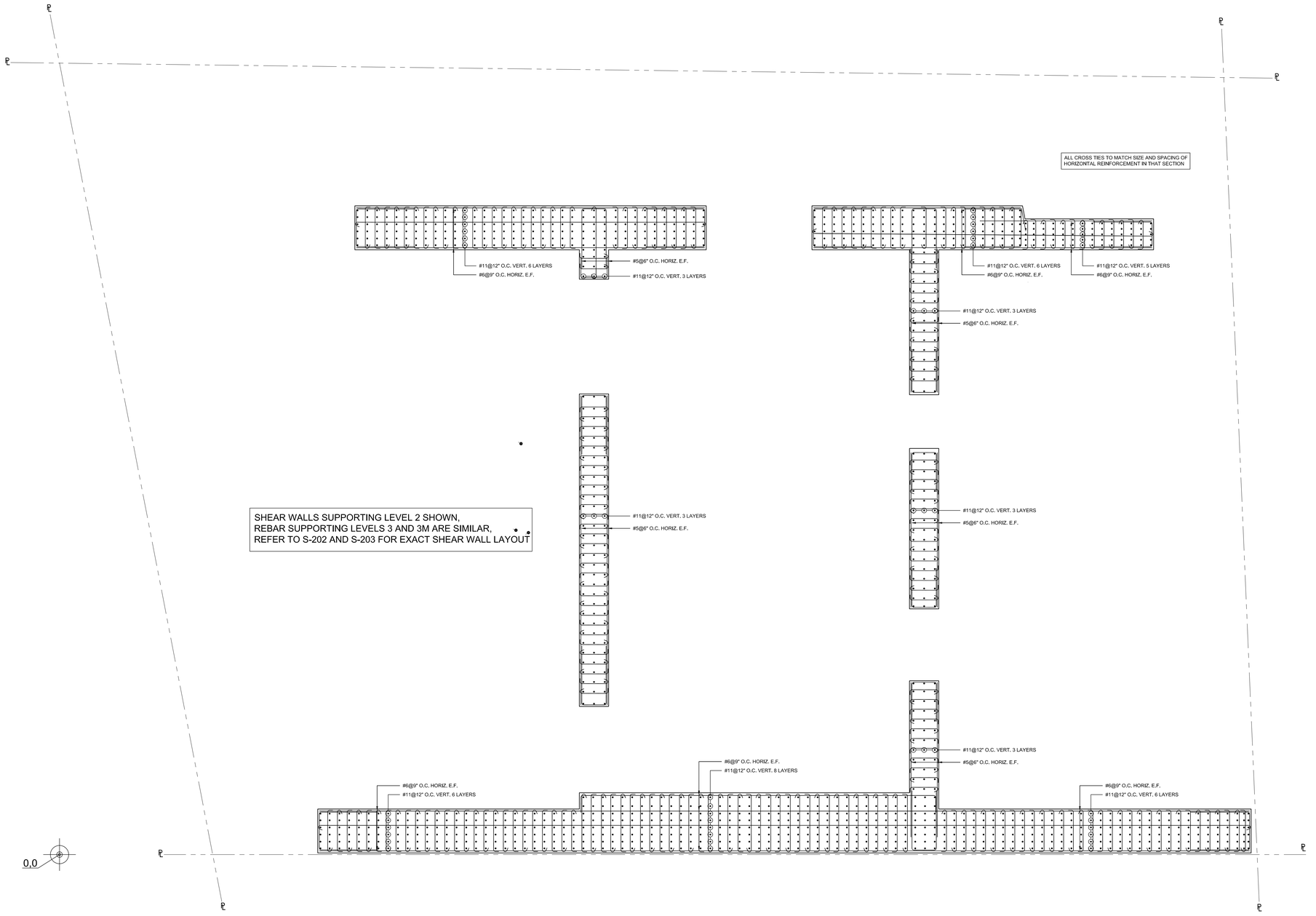
SHEAR WALL PLAN

SHEET TITLE

S-312.00

SHEET NUMBER 00

FL70/ROOF AT 840', T.O. BLDG AT 912', FL. TO FL. = 11'-5"



SHEAR WALL REINFORCEMENT PLAN SUPPORTING LEVEL 2 THRU LEVEL 3M

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

NORTH

PLAN NOTES:

1. SEE S-001 FOR GENERAL NOTES, DRAWING INDEX, AND DESIGN CRITERIA/LOADS AND REINFORCEMENT GRADES.
2. SEE FO-100 SERIES DRAWINGS FOR FOUNDATIONS.
3. SEE S-301 FOR COLUMN SCHEDULE AND DETAILS.
4. SEE S-400 FOR TYPICAL CONCRETE SECTIONS AND DETAILS.
5. SEE S-405 FOR SPLICING DETAILS
6. ALL LEVELS ARE INDICATED AS SUPPORT FLOOR CONVENTION
7. ALL CROSSTIES (<—>) MAY HAVE 135° / 90° HOOKS (┌—┐) PROVIDED POSITION OF 90° HOOKS IS ALTERNATED.
8. U-BARS AT END OF WALLS SHALL BE SPLICED 1.3 LD WITH HORIZONTAL REINFORCEMENT
9. DETAILER TO CHECK ALL BAR CLEARANCES.
10. TOP OF LINK BEAM TO MATCH TOP OF FLOOR SLAB ELEVATION U.O.N.
11. SEE PLAN FOR SLAB ELEVATIONS AND DETAILS.
12. CONTRACTOR TO LOCATE/VERIFY ALL OPENINGS THROUGH SHEAR WALLS FROM ARCH. AND MEP DRAWINGS.
13. ALL REINFORCING CORRESPONDS TO:
    ASTM A615, GR60 FOR #6 & SMALLER
    ASTM A615, GR75 FOR #9 & LARGER

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DATE: 09/7/2015
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STATE OF NEW YORK — STEVEN V. DESIMONE — 074923 — LICENSED PROFESSIONAL ENGINEER

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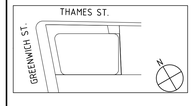
1	03/06/2015	SCHEMATIC DESIGN
2	02/10/2015	REVISED TA FILING
3	01/09/2015	FOUNDATION BID
4	01/09/2015	FOUNDATION PAA



KEY PLAN AND NORTH SIGN

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SCALE AS NOTED

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SHEET TITLE

S-313.00

SHEET NUMBER 00

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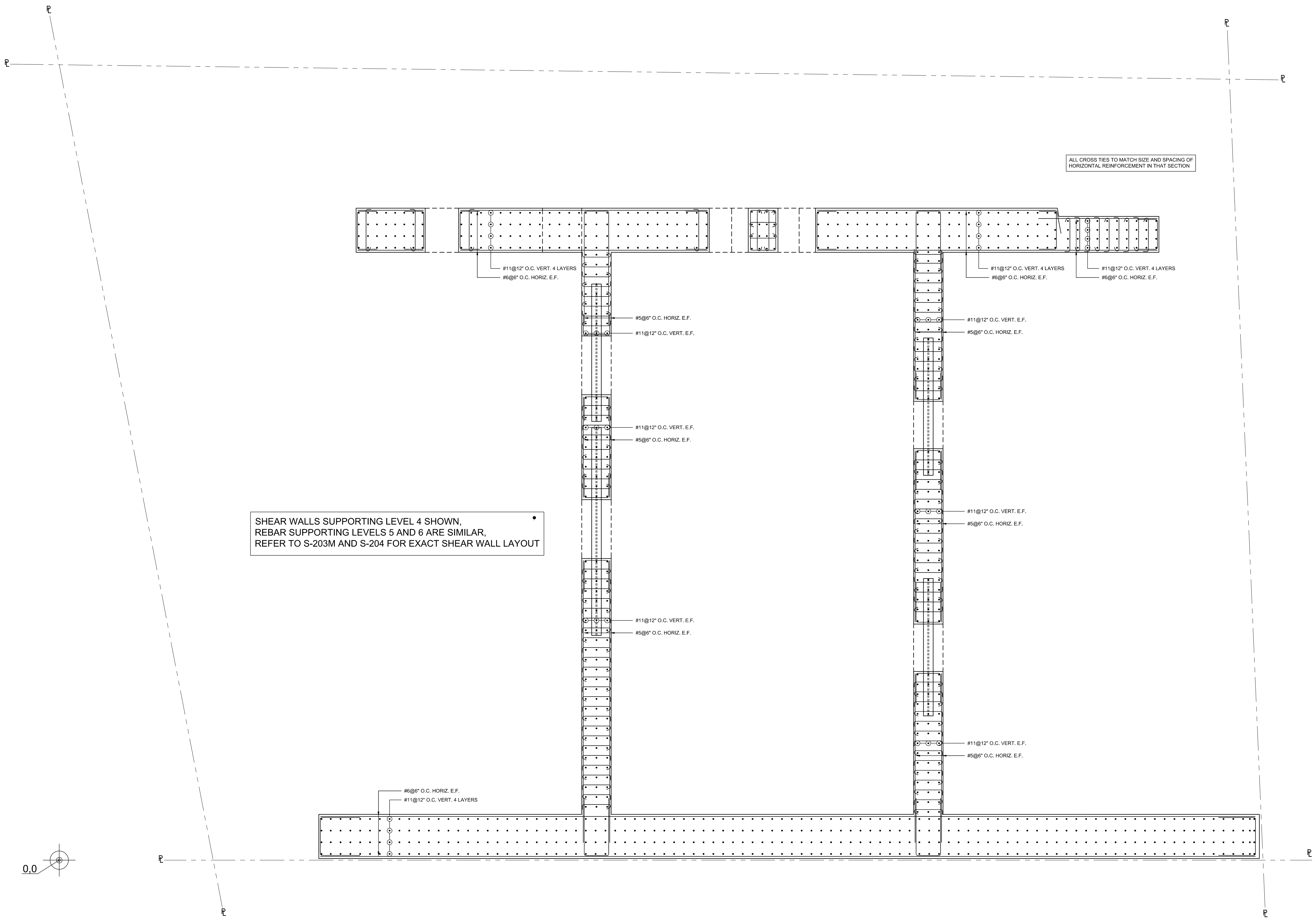
FL70/ROOF AT 840', T.O. BLDG AT 912', FL. TO FL. = 11'-5"



NORTH

SHEAR WALL REINFORCEMENT PLAN SUPPORTING LEVEL 4 THRU LEVEL 6

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

PLAN NOTES:

1. SEE S-001 FOR GENERAL NOTES, DRAWING INDEX, AND DESIGN CRITERIA/LOADS AND REINFORCEMENT GRADES.
2. SEE FO-100 SERIES DRAWINGS FOR FOUNDATIONS.
3. SEE S-301 FOR COLUMN SCHEDULE AND DETAILS.
4. SEE S-400 FOR TYPICAL CONCRETE SECTIONS AND DETAILS.
5. SEE S-405 FOR SPLICING DETAILS
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9. DETAILER TO CHECK ALL BAR CLEARANCES.
10. TOP OF LINK BEAM TO MATCH TOP OF FLOOR SLAB ELEVATION U.O.N.
11. SEE PLAN FOR SLAB ELEVATIONS AND DETAILS.
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    ASTM A615, GR75 FOR #9 & LARGER

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125 GREENWICH

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GREENWICH ST.

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SCALE AS NOTED

SHEAR WALL PLAN

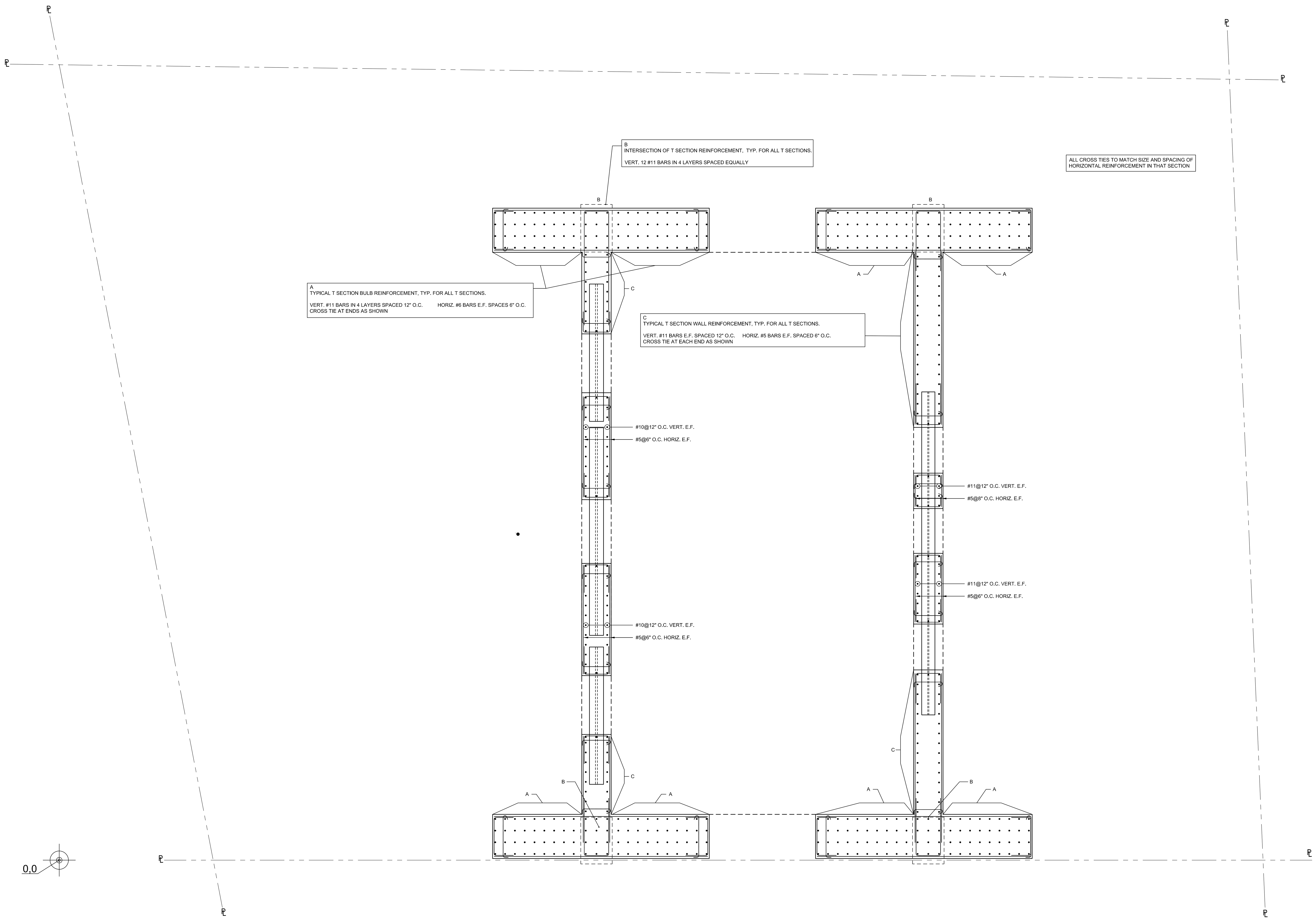
SHEET TITLE:

S-316.00

SHEET NUMBER: 00

14218.00-013-S-316.00.dwg

FL70/ROOF AT 840', T.O. BLDG AT 912', FL. TO FL. = 11'-5"



NORTH

SHEAR WALL REINFORCEMENT PLAN SUPPORTING LEVEL 7 THRU LEVEL 8

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

PLAN NOTES:

1. SEE S-001 FOR GENERAL NOTES, DRAWING INDEX, AND DESIGN CRITERIA/LOADS AND REINFORCEMENT GRADES.
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3. SEE S-301 FOR COLUMN SCHEDULE AND DETAILS.
4. SEE S-400 FOR TYPICAL CONCRETE SECTIONS AND DETAILS.
5. SEE S-405 FOR SPLICING DETAILS
6. ALL LEVELS ARE INDICATED AS SUPPORT FLOOR CONVENTION
7. ALL CROSSTIES ( ) MAY HAVE 135° / 90° HOOKS ( ) PROVIDED POSITION OF 90° HOOKS IS ALTERNATED.
8. U-BARS AT END OF WALLS SHALL BE SPLICED 1.3 LD WITH HORIZONTAL REINFORCEMENT
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    ASTM A615, GR75 FOR #9 & LARGER

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Date: 09/27/2016
NYC Development Hub

125 GREENWICH

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TEL: 212 924 5060 FAX: 212 924 5858

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VERTICAL TRANSPORTATION CONSULTANT:
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EAST HANOVER, NJ 07936
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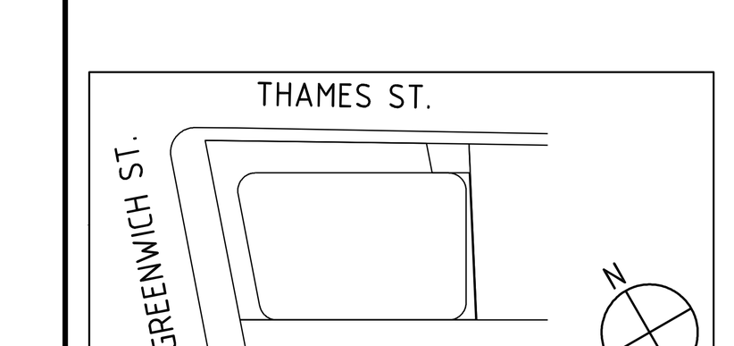

KEY PLAN AND NORTH SIGN

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SCALE AS NOTED

SHEAR WALL PLAN

SHEET TITLE:

S-319.00

SHEET NUMBER: 00

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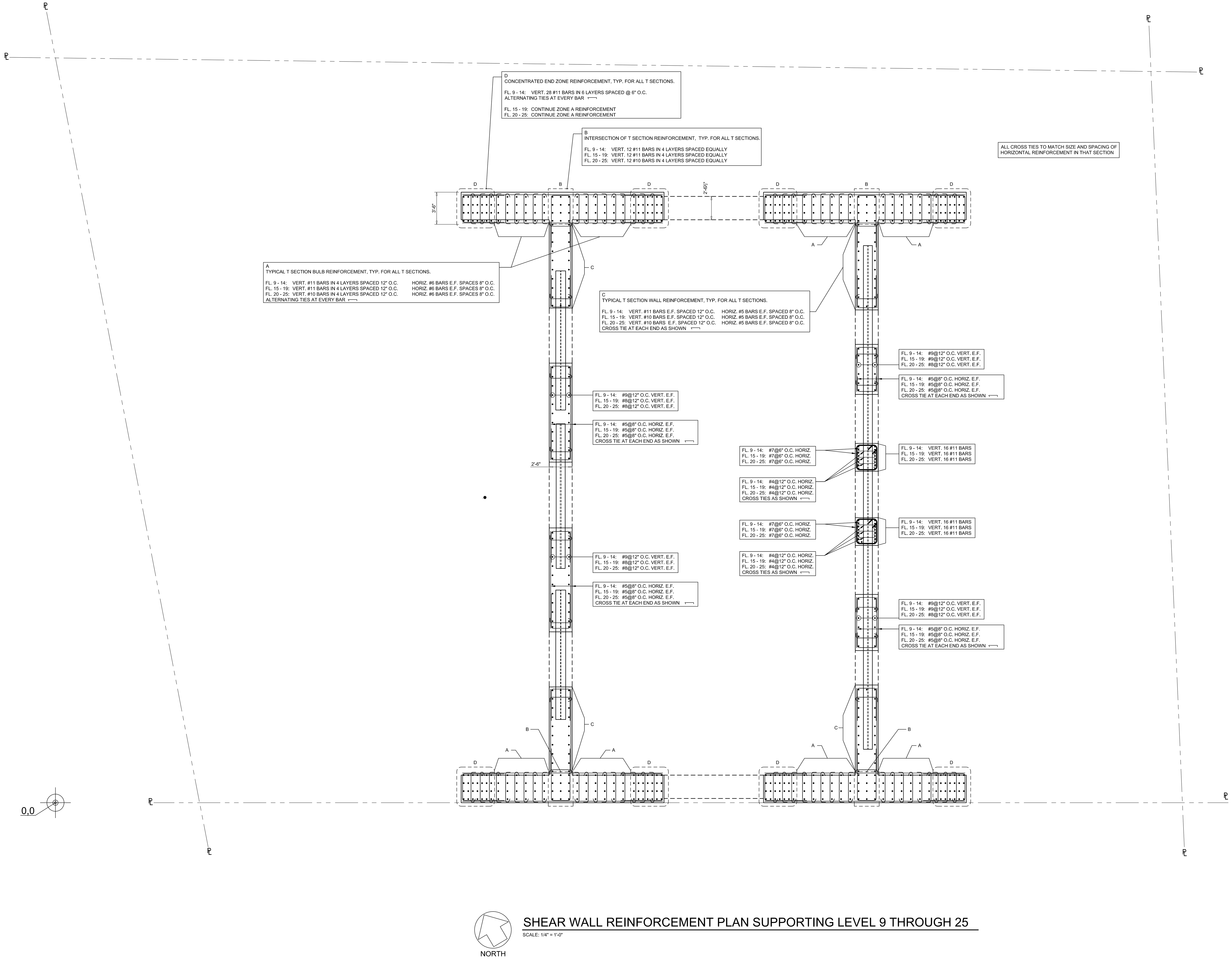

SHEAR WALL REINFORCEMENT PLAN SUPPORTING LEVEL 9 THROUGH 25

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

PLAN NOTES:

1. SEE S-001 FOR GENERAL NOTES, DRAWING INDEX, AND DESIGN CRITERIA/LOADS AND REINFORCEMENT GRADES.
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4. SEE S-400 FOR TYPICAL CONCRETE SECTIONS AND DETAILS.
5. SEE S-405 FOR SPLICING DETAILS
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9. DETAILER TO CHECK ALL BAR CLEARANCES.
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11. SEE PLAN FOR SLAB ELEVATIONS AND DETAILS.
12. CONTRACTOR TO LOCATE/VERIFY ALL OPENINGS THROUGH SHEAR WALLS FROM ARCH. AND MEP DRAWINGS.
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    ASTM A615, GR75 FOR #9 & LARGER

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	06/15/2015	SS PRE-BID

THAMES ST.
GREENWICH ST.

KEY PLAN AND NORTH SIGN

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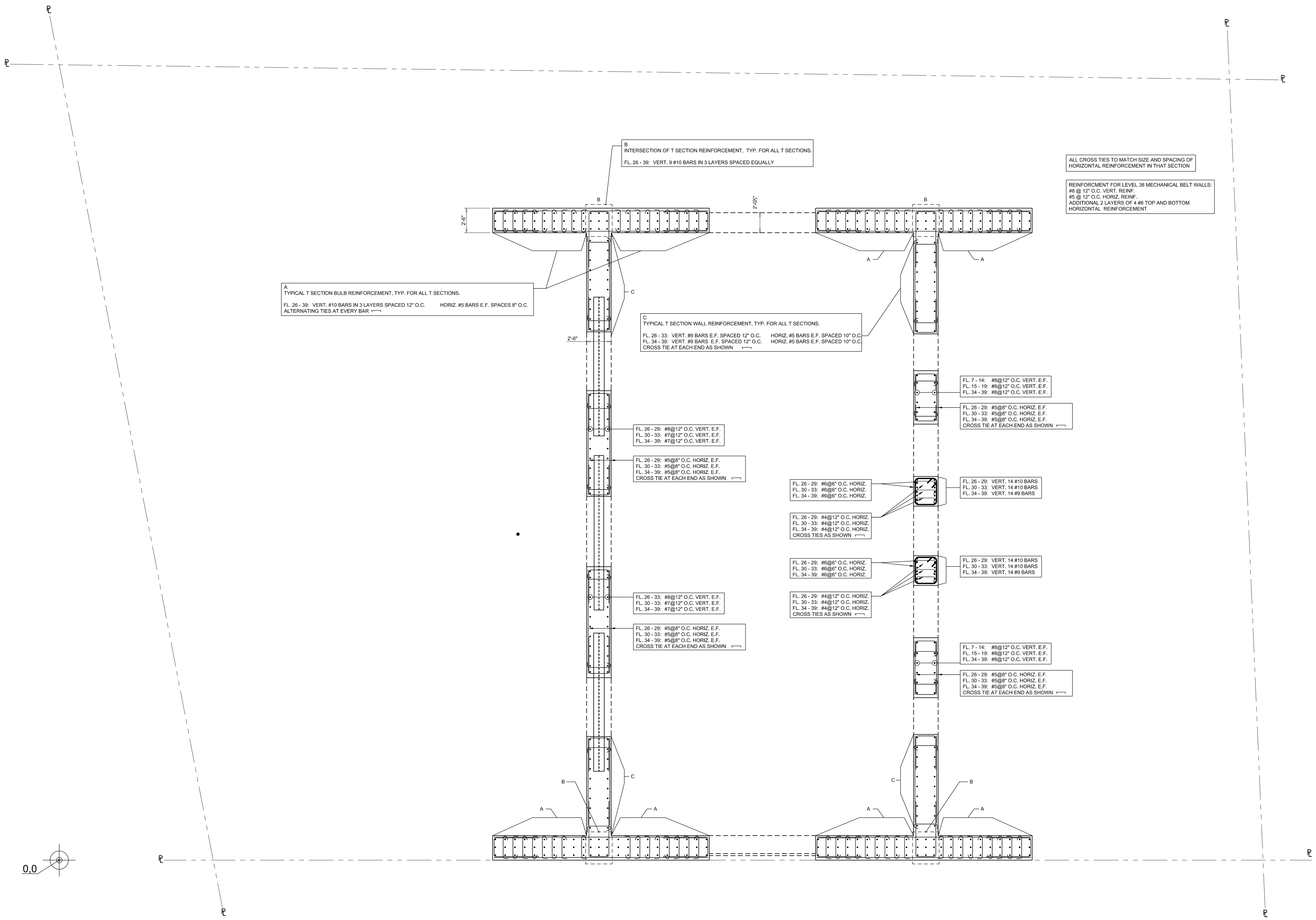
SCALE AS NOTED

SHEET TITLE: SHEAR WALL PLAN

SHEET NUMBER: S-322.00 00

14218.00-013-S-322.00.dwg

FL70/ROOF AT 840', T.O. BLDG AT 912', FL. TO FL. = 11'-5"



SHEAR WALL REINFORCEMENT PLAN SUPPORTING LEVEL 26 THROUGH 39

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

NORTH

PLAN NOTES:

1. SEE S-001 FOR GENERAL NOTES, DRAWING INDEX, AND DESIGN CRITERIA/LOADS AND REINFORCEMENT GRADES.
2. SEE FO-100 SERIES DRAWINGS FOR FOUNDATIONS.
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4. SEE S-400 FOR TYPICAL CONCRETE SECTIONS AND DETAILS.
5. SEE S-405 FOR SPLICING DETAILS
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7. ALL CROSSTIES ( ) MAY HAVE 135° / 90° HOOKS ( ) PROVIDED POSITION OF 90° HOOKS IS ALTERNATED.
8. U-BARS AT END OF WALLS SHALL BE SPLICED 1.3 LD WITH HORIZONTAL REINFORCEMENT
9. DETAILER TO CHECK ALL BAR CLEARANCES.
10. TOP OF LINK BEAM TO MATCH TOP OF FLOOR SLAB ELEVATION U.O.N.
11. SEE PLAN FOR SLAB ELEVATIONS AND DETAILS.
12. CONTRACTOR TO LOCATE/VERIFY ALL OPENINGS THROUGH SHEAR WALLS FROM ARCH. AND MEP DRAWINGS.
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    ASTM A615, GR75 FOR #9 & LARGER

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Date: 09/27/2016
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125 GREENWICH

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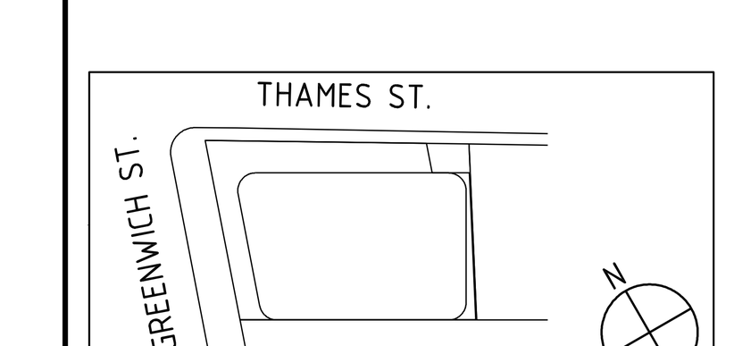

KEY PLAN AND NORTH SIGN

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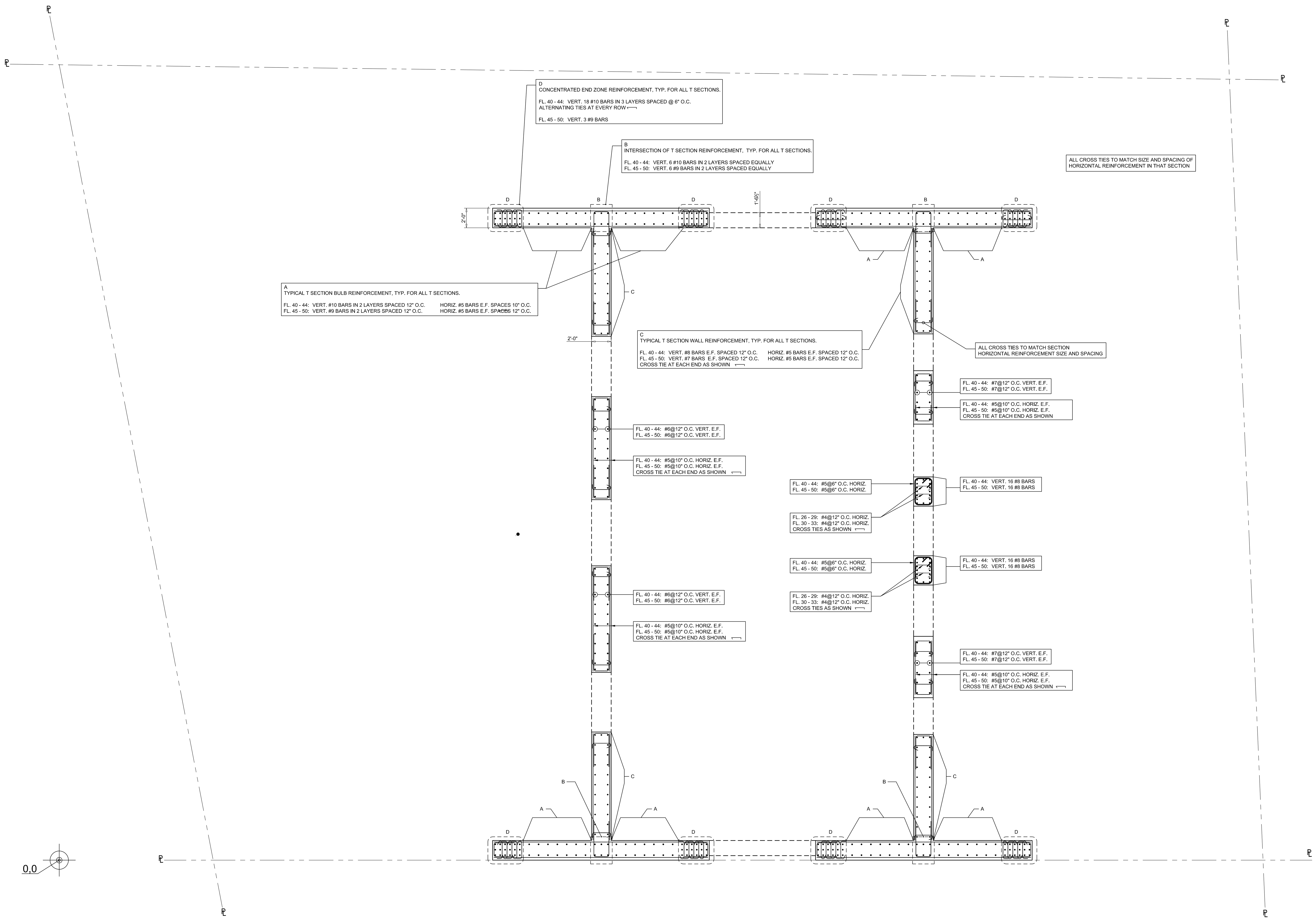
SCALE AS NOTED

SHEET TITLE: SHEAR WALL PLAN

SHEET NUMBER: S-323.00 00

14218.00-013-S-323.00.dwg

FL70/ROOF AT 840', T.O. BLDG AT 912', FL. TO FL. = 11'-5"



SHEAR WALL REINFORCEMENT PLAN SUPPORTING LEVEL 40 THROUGH 50

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

NORTH

PLAN NOTES:

1. SEE S-001 FOR GENERAL NOTES, DRAWING INDEX, AND DESIGN CRITERIA/LOADS AND REINFORCEMENT GRADES.
2. SEE FO-100 SERIES DRAWINGS FOR FOUNDATIONS.
3. SEE S-301 FOR COLUMN SCHEDULE AND DETAILS.
4. SEE S-400 FOR TYPICAL CONCRETE SECTIONS AND DETAILS.
5. SEE S-405 FOR SPLICING DETAILS
6. ALL LEVELS ARE INDICATED AS SUPPORT FLOOR CONVENTION
7. ALL CROSSTIES MAY HAVE 135° / 90° HOOKS PROVIDED POSITION OF 90° HOOKS IS ALTERNATED.
8. U-BARS AT END OF WALLS SHALL BE SPLICED 1.3 LD WITH HORIZONTAL REINFORCEMENT
9. DETAILER TO CHECK ALL BAR CLEARANCES.
10. TOP OF LINK BEAM TO MATCH TOP OF FLOOR SLAB ELEVATION U.O.N.
11. SEE PLAN FOR SLAB ELEVATIONS AND DETAILS.
12. CONTRACTOR TO LOCATE/VERIFY ALL OPENINGS THROUGH SHEAR WALLS FROM ARCH. AND MEP DRAWINGS.
13. ALL REINFORCING CORRESPONDS TO:
    ASTM A615, GR60 FOR #8 & SMALLER
    ASTM A615, GR75 FOR #9 & LARGER

Damian Titus
Buildings
APPROVED
Under Directive 2 of 1975
Date: 09/27/2016
NYC Development Hub

125 GREENWICH

NEW YORK, NY

OWNER:
VS 125 LLC
55 EAST 59TH STREET, 24TH FLOOR
NEW YORK, NY 10022
TEL: 212 616 0400

ARCHITECT:
RAFAEL VINOLY ARCHITECTS PC
50 VANDAM STREET
NEW YORK, NY 10013
TEL: 212 924 5060 FAX: 212 924 5858

STRUCTURAL ENGINEER:
DESIMONE CONSULTING ENGINEERS
18 WEST 18TH STREET, 10TH FLOOR
NEW YORK, NY 10011
TEL: 212 532 2211

MEP / FP / IT ENGINEER:
COSENTINI ASSOCIATES - A TETRA TECH COMPANY
2 PENNSYLVANIA PLAZA, 3RD FLOOR
NEW YORK, NY 10121
TEL: 212 615 3606

GEOTECH CONSULTANT:
LANGAN ENGINEERING
619 RIVER DRIVE CENTER 1
ELMWOOD PARK, NJ 07407
TEL: 201 794 6900

VERTICAL TRANSPORTATION CONSULTANT:
VAN DEUSEN & ASSOCIATES
120 EAGLE ROCK AVENUE, SUITE 310
EAST HANOVER, NJ 07936
TEL: 973 994 9220

PHASE: DOB SUBMITTAL

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	07/10/2015	PROGRESS DD
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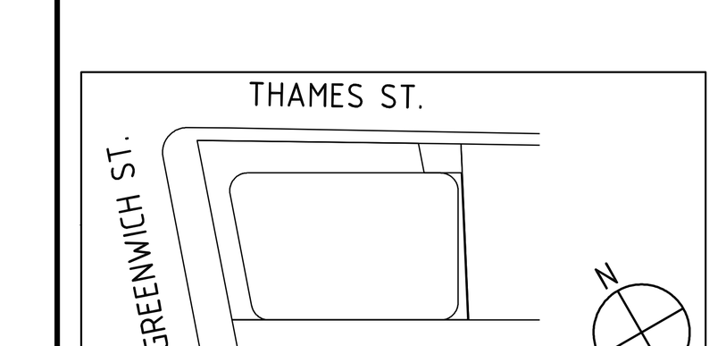


KEY PLAN AND NORTH SIGN

IF THIS DRAWING IS NOT 36" X 48" IT IS A REDUCED PRINT; REFER TO GRAPHIC SCALE

1 0 2 4 8

SCALE AS NOTED

SHEET TITLE: SHEAR WALL PLAN

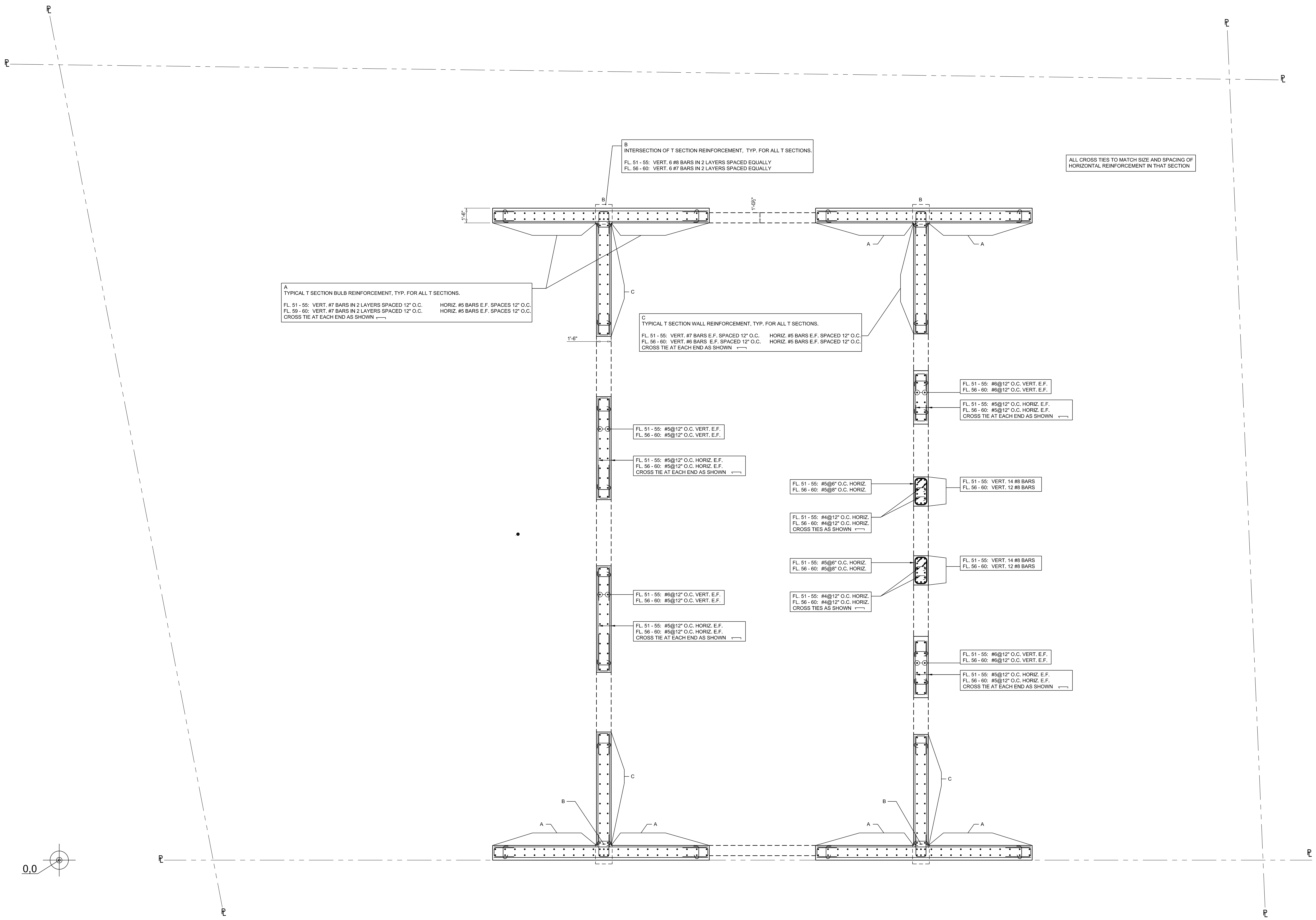
SHEET NUMBER: S-326.00 00

14218.00-013-S-326.00.dwg

ES829812143 Scan Code

Job Number

FL70/ROOF AT 840', T.O. BLDG AT 912', FL. TO FL. = 11'-5"



SHEAR WALL REINFORCEMENT PLAN SUPPORTING LEVEL 51 THROUGH 60

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

NORTH

PLAN NOTES:

1. SEE S-001 FOR GENERAL NOTES, DRAWING INDEX, AND DESIGN CRITERIA/LOADS AND REINFORCEMENT GRADES.
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9. DETAILER TO CHECK ALL BAR CLEARANCES.
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11. SEE PLAN FOR SLAB ELEVATIONS AND DETAILS.
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13. ALL REINFORCING CORRESPONDS TO:
    ASTM A615, GR60 FOR #8 & SMALLER
    ASTM A615, GR75 FOR #9 & LARGER

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125 GREENWICH

NEW YORK, NY

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TEL: 212 532 2211

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619 RIVER DRIVE CENTER 1
ELMWOOD PARK, NJ 07407
TEL: 201 794 6900

VERTICAL TRANSPORTATION CONSULTANT :
VAN DEUSEN & ASSOCIATES
120 EAGLE ROCK AVENUE, SUITE 310
EAST HANOVER, NJ 07936
TEL: 973 994 9220

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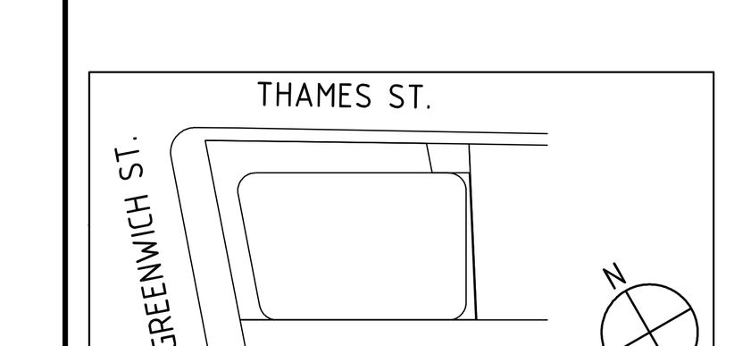

KEY PLAN AND NORTH SIGN

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1 0 2 4 8

SCALE AS NOTED

SHEAR WALL PLAN

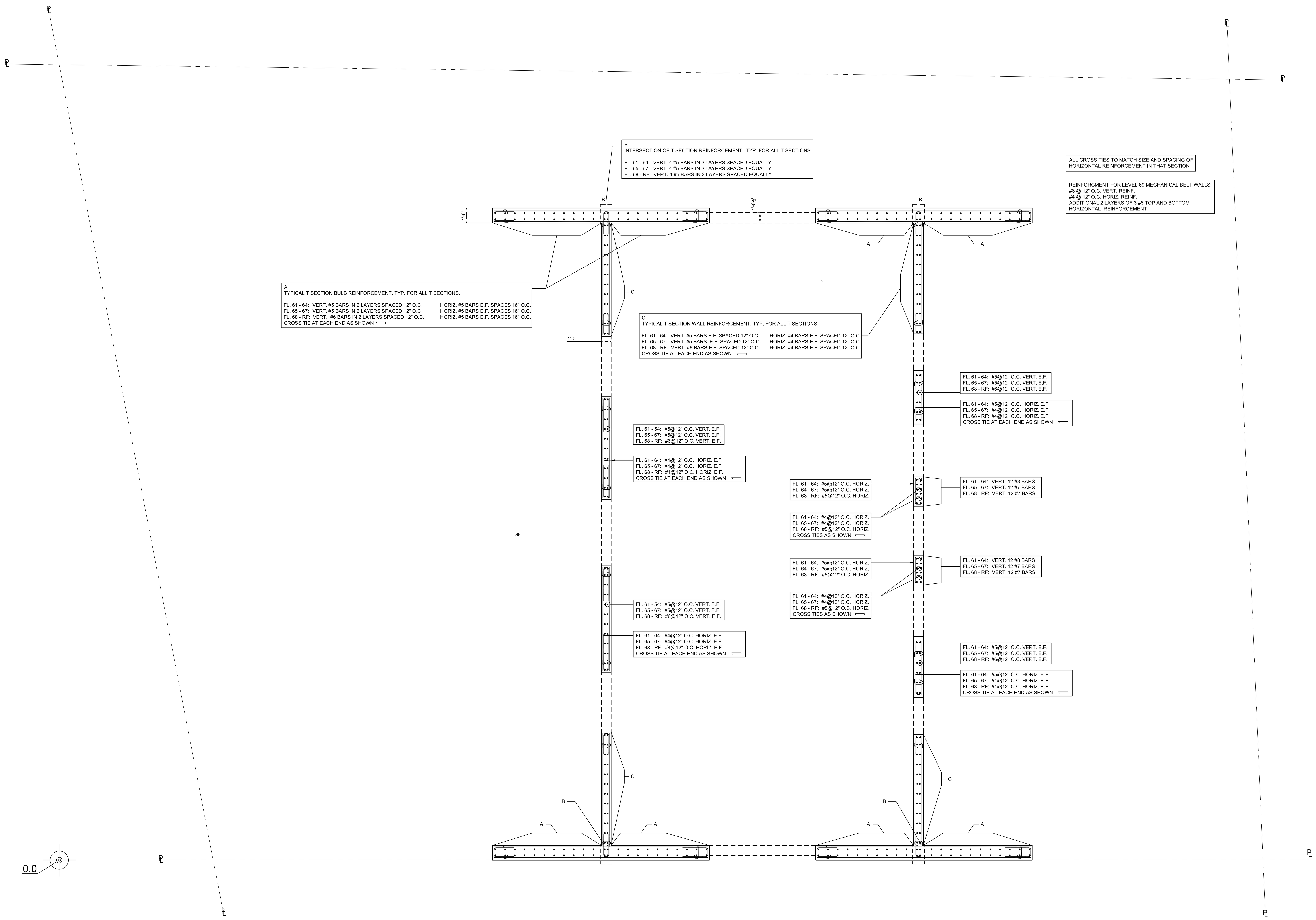
SHEET TITLE :

S-327.00

SHEET NUMBER : 00

14218.00-013-S-327.00.dwg

FL70/ROOF AT 840', T.O. BLDG AT 912', FL. TO FL. = 11'-5"



NORTH

SHEAR WALL REINFORCEMENT PLAN SUPPORTING LEVEL 61 THROUGH ROOF

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

PLAN NOTES:

1. SEE S-001 FOR GENERAL NOTES, DRAWING INDEX, AND DESIGN CRITERIA/LOADS AND REINFORCEMENT GRADES.
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11. SEE PLAN FOR SLAB ELEVATIONS AND DETAILS.
12. CONTRACTOR TO LOCATE/VERIFY ALL OPENINGS THROUGH SHEAR WALLS FROM ARCH. AND MEP DRAWINGS.
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THAMES ST.
GREENWICH ST.

KEY PLAN AND NORTH SIGN

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SCALE AS NOTED

SHEAR WALL PLAN

SHEET TITLE:

S-328.00

SHEET NUMBER: 00

14218.00-013-S-328.00.dwg

FL70/ROOF AT 840', T.O. BLDG AT 912', FL. TO FL. = 11'-5"

LINK BEAM LB-1

LOCATION	CONCRETE BEAM SIZE (W x H)	LONGITUDINAL REINFORCEMENT TOP	LONGITUDINAL REINFORCEMENT BOTTOM	LONGITUDINAL REINFORCEMENT SIDE	STIRRUPS SIZE	STIRRUPS SPACING	EMBEDDED STRUCTURAL STEEL SHAPE	STRUCTURAL STEEL SHAPE EMBEDMENT LENGTH INTO WALL (Le)	SHEAR STUDS AT EACH END # OF 3/4" DIA STUDS WITHIN EMBEDMENT (Le)	SHEAR STUDS AT EACH END # OF ROWS	REMARKS
FLOORS 61 - 68	12x48	4 - #11	4 - #11	-	2L - #5	6" O.C.	-	-	-	-	LONG. REINF. IN 2 ROWS
FLOORS 51 - 60	12x48	12 - #8	12 - #8	-	3L - #5	6" O.C.	-	-	-	-	LONG. REINF. IN 4 ROWS
FLOORS 40 - 50	18x48	12 - #10	12 - #10	-	4L - #5	6" O.C.	-	-	-	-	LONG. REINF. IN 2 ROWS
FLOORS 26 - 37	24x48	15 - #10	15 - #10	-	5L - #5	6" O.C.	-	-	-	-	LONG. REINF. IN 2 ROWS
FLOORS 9 - 25	30x48	12 - #11	12 - #11	-	5L - #5	6" O.C.	-	-	-	-	LONG. REINF. IN 2 ROWS
FLOORS 7	36x48	10 - #11	10 - #11	-	5L - #5	6" O.C.	-	-	-	-	LONG. REINF. IN 2 ROWS
FLOORS 2 - 6	54x72	16 - #11	16 - #11	-	6L - #5	6" O.C.	-	-	-	-	LONG. REINF. IN 2 ROWS
FLOORS CELLAR - GRD	54x36	10 - #10	10 - #10	-	4L - #5	6" O.C.	-	-	-	-	-

LINK BEAM LB-2

LOCATION	CONCRETE BEAM SIZE (W x H)	LONGITUDINAL REINFORCEMENT TOP	LONGITUDINAL REINFORCEMENT BOTTOM	LONGITUDINAL REINFORCEMENT SIDE	STIRRUPS SIZE	STIRRUPS SPACING	EMBEDDED STRUCTURAL STEEL SHAPE	STRUCTURAL STEEL SHAPE EMBEDMENT LENGTH INTO WALL (Le)	SHEAR STUDS AT EACH END # OF 3/4" DIA STUDS WITHIN EMBEDMENT (Le)	SHEAR STUDS AT EACH END # OF ROWS	REMARKS
FLOORS 61 - 68	12x48	4 - #11	4 - #11	-	2L - #5	6" O.C.	-	-	-	-	LONG. REINF. IN 2 ROWS
FLOORS 51 - 60	12x48	12 - #8	12 - #8	-	3L - #5	6" O.C.	-	-	-	-	LONG. REINF. IN 4 ROWS
FLOORS 40 - 50	18x48	12 - #10	12 - #10	-	4L - #5	6" O.C.	-	-	-	-	LONG. REINF. IN 3 ROWS
FLOORS 26 - 37	24x48	15 - #10	15 - #10	-	5L - #5	6" O.C.	-	-	-	-	LONG. REINF. IN 3 ROWS
FLOORS 9 - 25	30x48	12 - #11	12 - #11	-	5L - #5	6" O.C.	-	-	-	-	LONG. REINF. IN 2 ROWS
FLOORS 7	36x48	10 - #11	10 - #11	-	5L - #5	6" O.C.	-	-	-	-	LONG. REINF. IN 2 ROWS
FLOORS 4 - 6	54x72	16 - #11	16 - #11	-	6L - #5	6" O.C.	-	-	-	-	LONG. REINF. IN 2 ROWS

LINK BEAM LB-3

LOCATION	CONCRETE BEAM SIZE (W x H)	LONGITUDINAL REINFORCEMENT TOP	LONGITUDINAL REINFORCEMENT BOTTOM	LONGITUDINAL REINFORCEMENT SIDE	STIRRUPS SIZE	STIRRUPS SPACING	EMBEDDED STRUCTURAL STEEL SHAPE	STRUCTURAL STEEL SHAPE EMBEDMENT LENGTH INTO WALL (Le)	SHEAR STUDS AT EACH END # OF 3/4" DIA STUDS WITHIN EMBEDMENT (Le)	SHEAR STUDS AT EACH END # OF ROWS	REMARKS
FLOORS 69 - ROOF	12x72	4 - #10	4 - #10	-	2L - #4	12" O.C.	-	-	-	-	LONG. REINF. IN 2 ROWS
FLOORS 61 - 68	12x33.5	2 - #10	2 - #10	-	2L - #5	6" O.C.	-	-	-	-	-
FLOORS 51 - 60	18x33.5	6 - #9	6 - #9	-	3L - #5	6" O.C.	-	-	-	-	LONG. REINF. IN 2 ROWS
FLOORS 40 - 50	24x33.5	4 - #11	4 - #11	-	4L - #5	6" O.C.	-	-	-	-	-
FLOORS 38- 39 (MECH)	30x72	10 - #11	10 - #11	-	3L - #5	6" O.C.	-	-	-	-	LONG. REINF. IN 2 ROWS
FLOORS 26 - 37	30x33.5	4 - #11	4 - #11	-	2L - #5	12" O.C.	W24X192	5'-0"	20 T&B	2	SEE S-352 FOR DETAIL
FLOORS 10 - 25	30x33.5	4 - #11	4 - #11	-	2L - #5	12" O.C.	W24X192	5'-0"	27 T&B	3	SEE S-352 FOR DETAIL
FLOORS 7, 8	36x72	6 - #10	6 - #10	-	2L - #5	6" O.C.	W14X550	5'-0"	20 T&B	2	SEE S-352 FOR DETAIL
FLOORS 2	36x72	10 - #11	10 - #11	-	3L - #5	6" O.C.	-	-	-	-	LONG. REINF. IN 2 ROWS

LINK BEAM LB-4

LOCATION	CONCRETE BEAM SIZE (W x H)	LONGITUDINAL REINFORCEMENT TOP	LONGITUDINAL REINFORCEMENT BOTTOM	LONGITUDINAL REINFORCEMENT SIDE	STIRRUPS SIZE	STIRRUPS SPACING	EMBEDDED STRUCTURAL STEEL SHAPE	STRUCTURAL STEEL SHAPE EMBEDMENT LENGTH INTO WALL (Le)	SHEAR STUDS AT EACH END # OF 3/4" DIA STUDS WITHIN EMBEDMENT (Le)	SHEAR STUDS AT EACH END # OF ROWS	REMARKS
FLOORS 69 - ROOF	12x72	4 - #10	4 - #10	-	2L - #4	12" O.C.	-	-	-	-	LONG. REINF. IN 2 ROWS
FLOORS 61 - 68	12x33.5	4 - #10	4 - #10	-	2L - #5	6" O.C.	-	-	-	-	LONG. REINF. IN 2 ROWS
FLOORS 51 - 60	18x33.5	8 - #10	8 - #10	-	4L - #5	6" O.C.	-	-	-	-	LONG. REINF. IN 2 ROWS
FLOORS 40 - 50	24x33.5	10 - #10	10 - #10	-	5L - #5	6" O.C.	-	-	-	-	LONG. REINF. IN 2 ROWS
FLOORS 38 - 39 (MECH)	30x72	10 - #11	10 - #11	-	4L - #5	6" O.C.	-	-	-	-	LONG. REINF. IN 2 ROWS
FLOORS 26 - 37	30x33.5	4 - #11	4 - #11	-	2L - #5	12" O.C.	W24X192	5'-0"	20 T&B	2	SEE S-352 FOR DETAIL
FLOORS 9 - 25	30x33.5	4 - #11	4 - #11	-	2L - #5	12" O.C.	W24X192	6'-0"	18 T&B	2	SEE S-352 FOR DETAIL
FLOORS 3M - 8	36x72	6 - #10	6 - #10	-	2L - #5	6" O.C.	W14X550	7'-0"	26 T&B	2	SEE S-352 FOR DETAIL
FLOORS B1 - GRD	36x33.5	6 - #10	6 - #10	-	3L - #5	6" O.C.	-	-	-	-	LONG. REINF. IN 2 ROWS

SHEAR WALL LINK BEAM SIZES AND REINFORCEMENT INFORMATION

LINK BEAM LB-5

LOCATION	CONCRETE BEAM SIZE (W x H)	LONGITUDINAL REINFORCEMENT TOP	LONGITUDINAL REINFORCEMENT BOTTOM	LONGITUDINAL REINFORCEMENT SIDE	STIRRUPS SIZE	STIRRUPS SPACING	EMBEDDED STRUCTURAL STEEL SHAPE	STRUCTURAL STEEL SHAPE EMBEDMENT LENGTH INTO WALL (Le)	SHEAR STUDS AT EACH END # OF 3/4" DIA STUDS WITHIN EMBEDMENT (Le)	SHEAR STUDS AT EACH END # OF ROWS	REMARKS
FLOORS 69 - ROOF	12x72	4 - #10	4 - #10	-	2L - #4	12" O.C.	-	-	-	-	LONG. REINF. IN 2 ROWS
FLOORS 61 - 68	12x33.5	2 - #10	2 - #10	-	2L - #5	6" O.C.	-	-	-	-	-
FLOORS 51 - 60	18x33.5	6 - #9	6 - #9	-	3L - #5	6" O.C.	-	-	-	-	LONG. REINF. IN 2 ROWS
FLOORS 40 - 50	24x33.5	4 - #11	4 - #11	-	4L - #5	6" O.C.	-	-	-	-	-
FLOORS 38- 39 (MECH)	30x72	10 - #11	10 - #11	-	4L - #5	6" O.C.	-	-	-	-	LONG. REINF. IN 2 ROWS
FLOORS 26 - 37	30x33.5	4 - #11	4 - #11	-	2L - #5	12" O.C.	W24X192	5'-0"	20 T&B	2	SEE S-352 FOR DETAIL
FLOORS 10 - 25	30x33.5	4 - #11	4 - #11	-	2L - #5	12" O.C.	W24X192	5'-0"	27 T&B	3	SEE S-352 FOR DETAIL
FLOORS 2 - 4, 7, 8	36x72	6 - #10	6 - #10	-	2L - #5	6" O.C.	W14X550	5'-0"	20 T&B	2	SEE S-352 FOR DETAIL
FLOORS GRD	36x33.5	6 - #10	6 - #10	-	3L - #5	6" O.C.	-	-	-	-	LONG. REINF. IN 2 ROWS

LINK BEAM LB-6

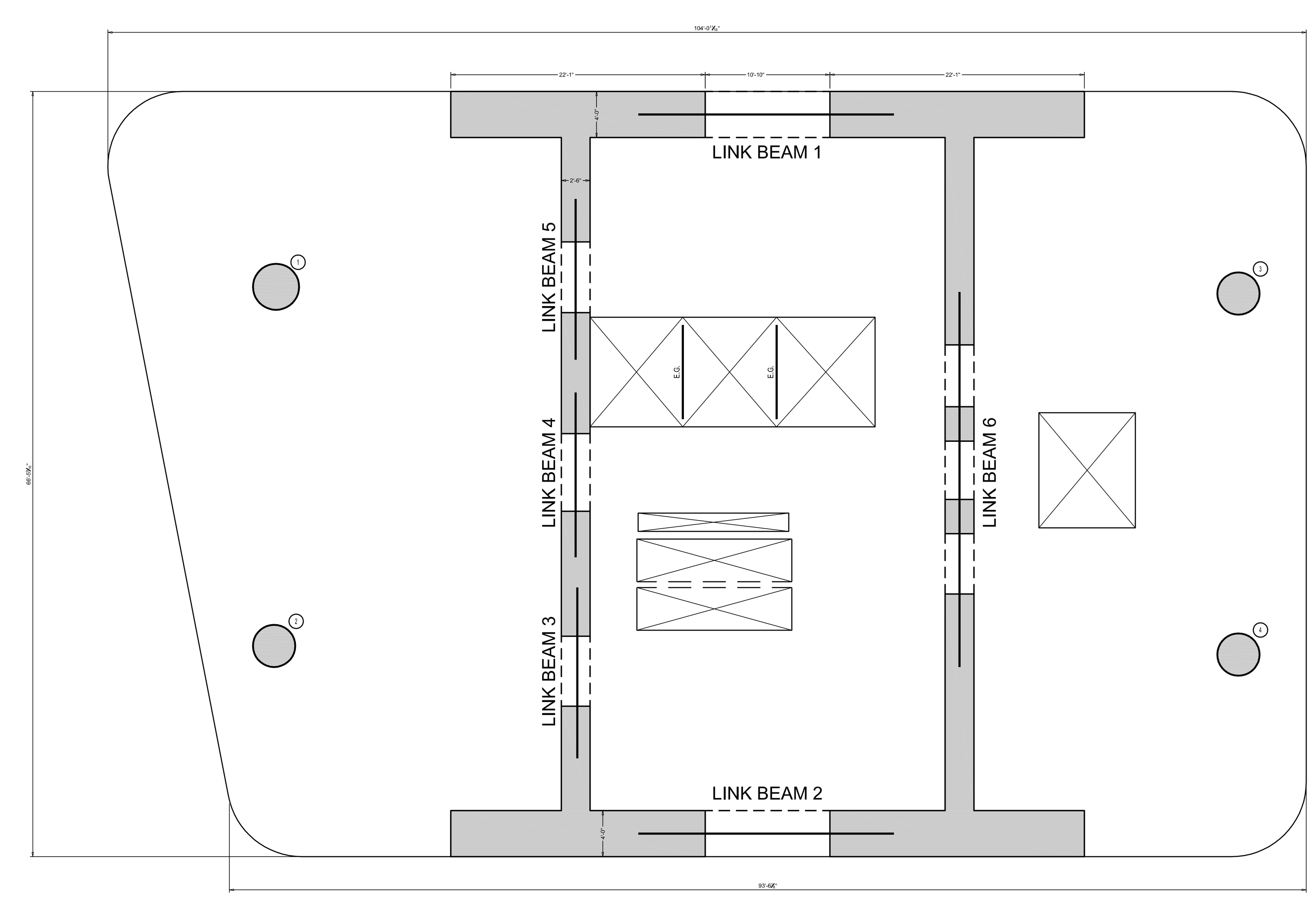
LOCATION	CONCRETE BEAM SIZE (W x H)	LONGITUDINAL REINFORCEMENT TOP	LONGITUDINAL REINFORCEMENT BOTTOM	LONGITUDINAL REINFORCEMENT SIDE	STIRRUPS SIZE	STIRRUPS SPACING	EMBEDDED STRUCTURAL STEEL SHAPE	STRUCTURAL STEEL SHAPE EMBEDMENT LENGTH INTO WALL (Le)	SHEAR STUDS AT EACH END # OF 3/4" DIA STUDS WITHIN EMBEDMENT (Le)	SHEAR STUDS AT EACH END # OF ROWS	REMARKS
FLOORS 69 - ROOF	12x33.5	2 - #11	2 - #11	-	2L - #5	6" O.C.	-	-	-	-	-
FLOORS 61 - 68	12x33.5	2 - #11	2 - #11	-	2L - #5	6" O.C.	-	-	-	-	-
FLOORS 51 - 60	18x33.5	6 - #9	6 - #9	-	3L - #5	6" O.C.	-	-	-	-	LONG. REINF. IN 2 ROWS
FLOORS 40 - 50	24x33.5	5 - #10	5 - #10	-	5L - #5	6" O.C.	-	-	-	-	-
FLOORS 38 - 39 (MECH)	30x72	10 - #11	10 - #11	-	3L - #5	6" O.C.	-	-	-	-	LONG. REINF. IN 2 ROWS
FLOORS 26 - 37	30x33.5	6 - #11	6 - #11	-	6L - #5	6" O.C.	-	-	-	-	-
FLOORS 12 - 25	30x33.5	4 - #11	4 - #11	-	2L - #5	6" O.C	W24X192	6'-0"	22 T&B	2	SEE S-352 FOR DETAIL
FLOORS 9 - 11	30x33.5	4 - #11	4 - #11	-	2L - #5	6" O.C	W24X192	6'-0"	22 T&B	2	SEE S-352 FOR DETAIL
FLOORS 8	36x72	10 - #11	10 - #11	-	2L - #5	6" O.C	W36X800	7'-0"	27 T&B	3	SEE S-352 FOR DETAIL
FLOORS 2, 3M - 7	36x72	10 - #11	10 - #11	-	2L - #5	6" O.C	W36X800	7'-0"	27 T&B	3	LONG. REINF. IN 2 ROWS
FLOORS GRD	36x33.5	5 - #11	5 - #11	-	2L - #5	6" O.C.	-	-	-	-	-

LINK BEAM LB-7

LOCATION	CONCRETE BEAM SIZE (W x H)	LONGITUDINAL REINFORCEMENT TOP	LONGITUDINAL REINFORCEMENT BOTTOM	LONGITUDINAL REINFORCEMENT SIDE	STIRRUPS SIZE	STIRRUPS SPACING	EMBEDDED STRUCTURAL STEEL SHAPE	STRUCTURAL STEEL SHAPE EMBEDMENT LENGTH INTO WALL (Le)	SHEAR STUDS AT EACH END # OF 3/4" DIA STUDS WITHIN EMBEDMENT (Le)	SHEAR STUDS AT EACH END # OF ROWS	REMARKS
FLOORS 3M - 4	54x72	15 - #11	15 - #11	-	4L - #5	6" O.C.	-	-	-	-	LONG. REINF. IN 3 ROWS

LINK BEAM LB-8

LOCATION	CONCRETE BEAM SIZE (W x H)	LONGITUDINAL REINFORCEMENT TOP	LONGITUDINAL REINFORCEMENT BOTTOM	LONGITUDINAL REINFORCEMENT SIDE	STIRRUPS SIZE	STIRRUPS SPACING	EMBEDDED STRUCTURAL STEEL SHAPE	STRUCTURAL STEEL SHAPE EMBEDMENT LENGTH INTO WALL (Le)	SHEAR STUDS AT EACH END # OF 3/4" DIA STUDS WITHIN EMBEDMENT (Le)	SHEAR STUDS AT EACH END # OF ROWS	REMARKS
FLOORS CELLAR	54x36	8 - #11	8 - #11	-	3L - #5	6" O.C.	-	-	-	-	-



SHEARWALL KEY PLAN

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

NOTES:

1. SEE FO-100 - FO-101 & S-201 - S-272 FOR LINK BEAM LOCATIONS.
2. SEE S-352 FOR LINK BEAM DETAILS

ES103526283 Scan Code

125 GREENWICH

NEW YORK, NY

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GEOTECH CONSULTANT:
LANGAN ENGINEERING
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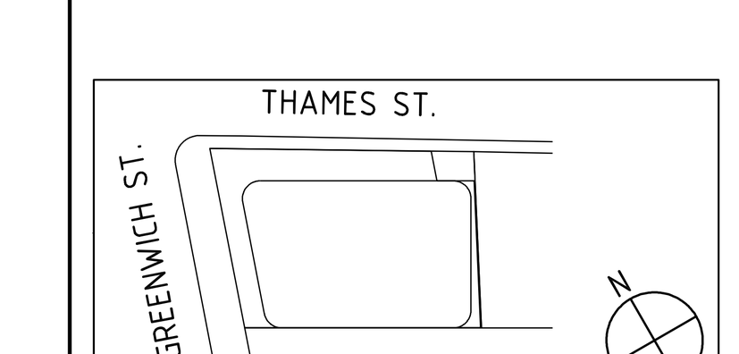
ELMWOOD PARK, NJ 07407
TEL: 201 794 6900

VERTICAL TRANSPORTATION CONSULTANT:
VAN DEUSEN & ASSOCIATES
120 EAGLE ROCK AVENUE, SUITE 310
EAST HANOVER, NJ 07936
TEL: 973 994 9220

PHASE DOB SUBMITTAL

ARCHITECT'S SEAL

ISSUE NO.	ISSUE DATE	DESCRIPTION
	09/30/2015	DOB SUBMITTAL
	08/07/2015	SUPERSTRUCTURE BID
	06/15/2015	SS PRE-BID



KEY PLAN AND NORTH SIGN

IF THIS DRAWING IS NOT 36" X 48" IT IS A REDUCED PRINT; REFER TO GRAPHIC SCALE

1 0 2 4 8

SCALE AS NOTED

LINK BEAM SCHEDULES

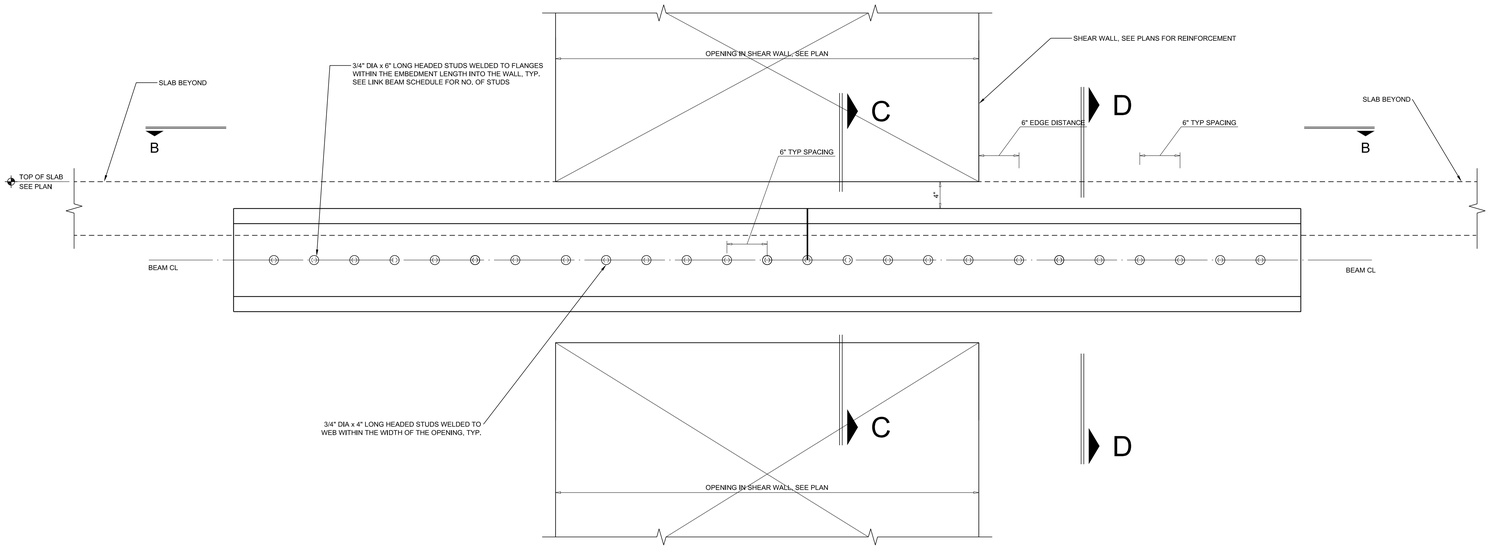
SHEET TITLE:

S-351.00

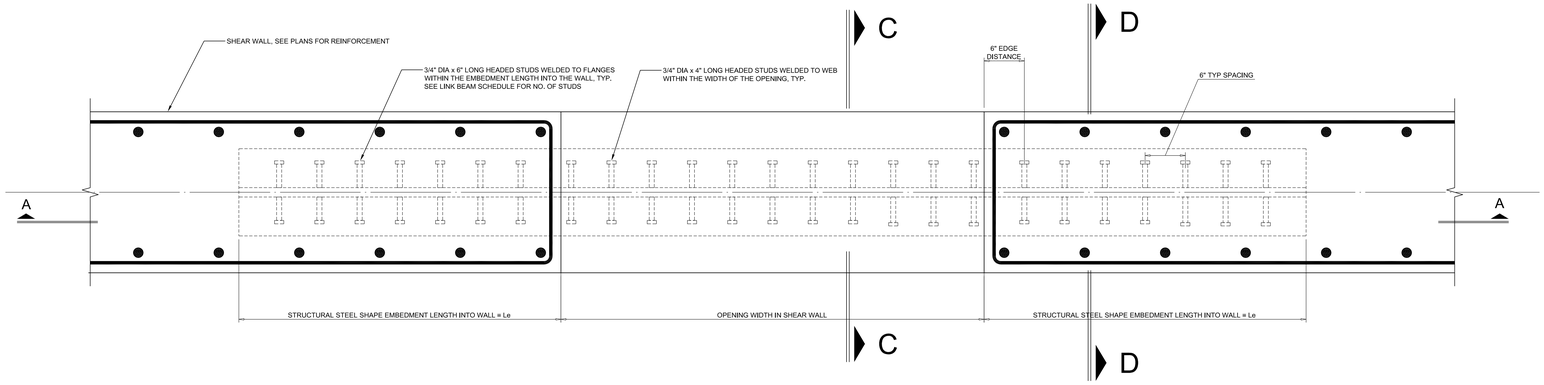
SHEET NUMBER: 03

14218.00-014-S-351.00.dwg

FL70/ROOF AT 840', T.O. BLDG AT 912', FL. TO FL. = 11'-5"



SECTION A-A: PART ELEVATION VIEW OF STEEL EMBEDDED CONCRETE LINK BEAM



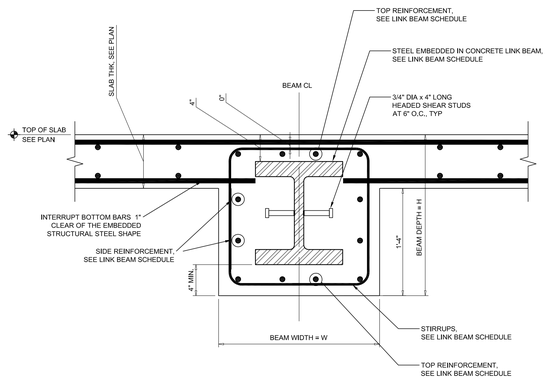
SECTION B-B: PART PLAN VIEW OF STEEL EMBEDDED CONCRETE LINK BEAM

NOTES:

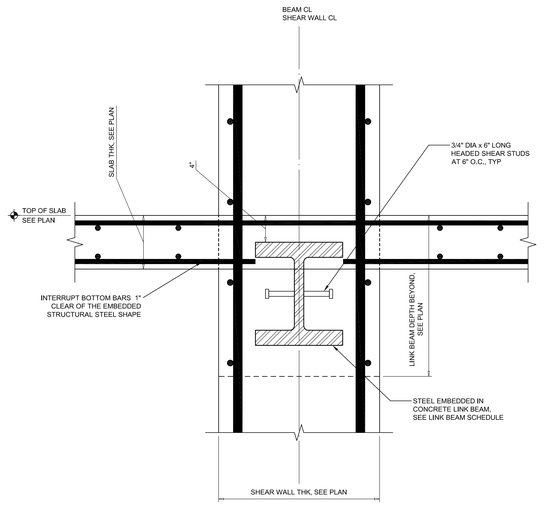
1. ALL ROLLED STRUCTURAL SHAPES SHALL CONFORM TO ASTM A572 GR 65 OR ASTM A913 GR 65.
2. ALL PLATES USED FOR BUILT-UP STRUCTURAL SHAPES SHALL CONFORM TO ASTM A572 GR 50 OR A529 GR 50. REFER TO 9/S-352 FOR MORE INFO.
3. PART REINFORCEMENT NOT SHOWN FOR CLARITY.
4. REFER TO LINK BEAM SCHEDULE FOR ADDITIONAL INFO NOT SHOWN HERE.

8 TYPICAL DETAILS OF CONCRETE ENCASED STEEL LINK BEAM

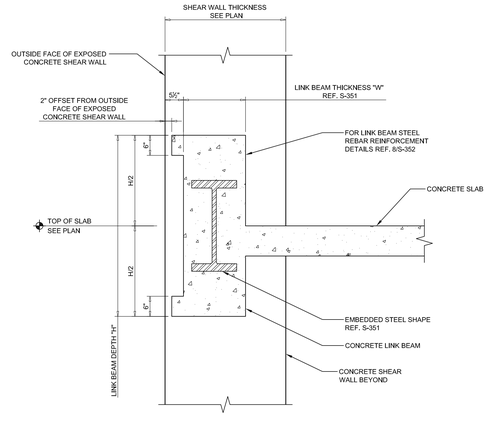
SCALE: 1 1/2"=1'-0"



SECTION C-C: SECTION THRU CONCRETE ENCASED STEEL LINK BEAM

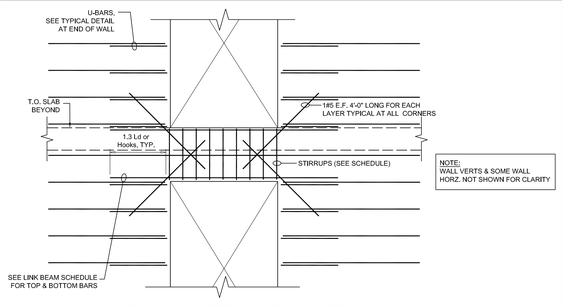


SECTION D-D: SECTION THRU CONCRETE ENCASED STEEL LINK BEAM

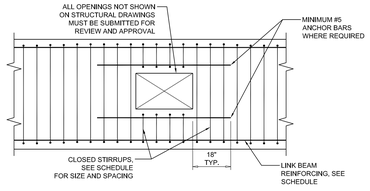


12 LINK BEAM SECTION AT EXPOSED CONCRETE SHEAR WALL

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



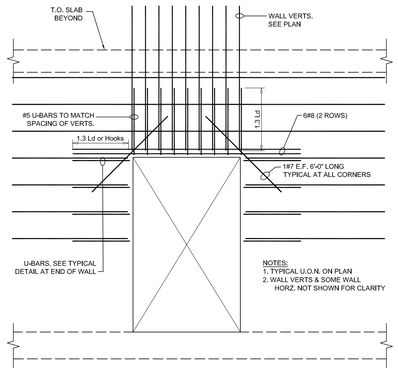
TYP CONCRETE LINK BEAM DETAIL



TYP OPENING THRU CONCRETE LINK BEAM DETAIL

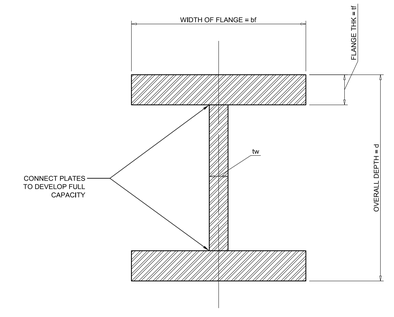
11 TYPICAL CONCRETE LINK BEAM AND OPENING DETAIL

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



10 TYPICAL REINFORCEMENT DETAIL AT SHEAR WALL OPENING

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



NOTE:
1. PLATES USED FOR BUILT-UP STRUCTURAL SHAPES SHALL CONFORM TO ASTM A572 GR 50 OR A529 GR 50.
2. REFER TO LINK BEAM SCHEDULE FOR ADDITIONAL INFO.

9 TYPICAL BUILT-UP STRUCTURAL STEEL SHAPE

SCALE: 3"=1'-0"

Damian Titus
Buildings
APPROVED
Under Directive 2 of 1975
Date: 09/27/2016:
NYC Development Hub

125 GREENWICH

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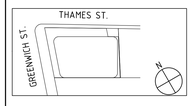
ARCHITECT'S SEAL

ISSUE NO	ISSUE DATE	DESCRIPTION
4	09/30/2015	DOB SUBMITTAL
3	08/07/2015	SUPERSTRUCTURE BID
2	07/10/2015	PROGRESS DD
1		



KEY PLAN AND NORTH SIGN

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1 0 2 4 8

SCALE AS NOTED

TYPICAL CONCRETE DETAILS

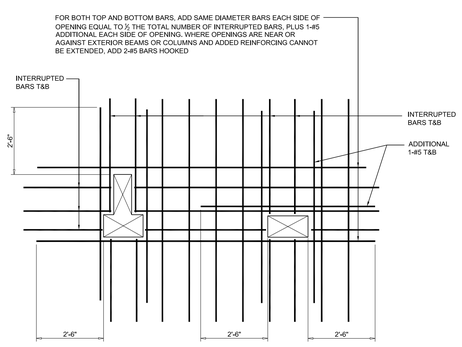
SHEET TITLE

S-352.00

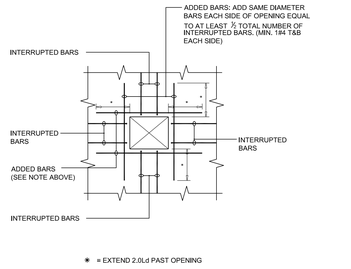
SHEET NUMBER 06

14218.00-014-S-352.00.dwg

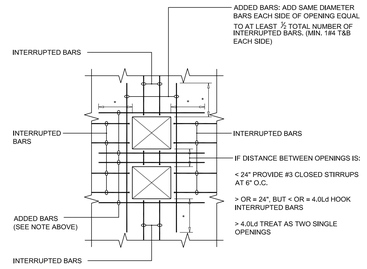
FL70/ROOF AT 840', T.O. BLDG AT 912', FL. TO FL. = 11'-5"



3 TYPICAL BATHROOM OPENING DETAIL



SINGLE OPENING



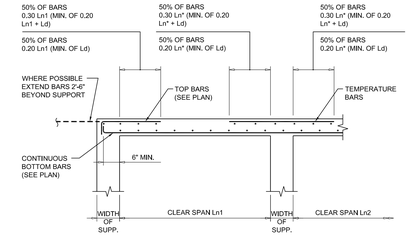
MULTIPLE OPENINGS

NOTES:

1. HOOK ALL INTERRUPTED BARS.
2. OMIT ADDED BARS IF STANDARD BAR SPACING CAN BE PLACE D ON EITHER SIDE OF THE OPENING.
3. WHERE OPENINGS ARE NEAR OR AGAINST EXTERIOR BEAMS OR COLUMNS AND ADDED REINFORCEMENT CANNOT BE EXTENDED 2.0Ld, HOOK ADDED BARS.

TYPICAL DETAIL OF REINFORCEMENT AT OPENING IN SLAB
TYPICAL UNLESS SHOWN OTHERWISE OTHERWISE ON PLANS

2



Ln* = THE GREATER OF Ln1 OR Ln2

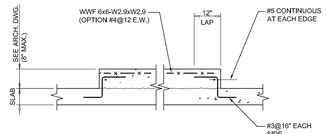
NOTES:

1. Ld = DEVELOPMENT LENGTH - SEE GENERAL NOTES.
2. CONTINUOUS BOTTOM BARS MAY HAVE A CLASS A LAP SPLICE AT OR NEAR SUPPORT

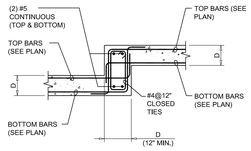
NOTE:
TEMPERATURE REINFORCEMENT MAY BE SPLICED AT ANY LOCATION 1.3Ld.

TEMPERATURE REINFORCEMENT SCHEDULE
4" SLAB = #3@12"
5" SLAB = #3@12"
6" SLAB = #4@18"
7" SLAB = #4@16"
8" SLAB = #4@13"
9" SLAB = #5@18"
10" SLAB = #5@16"
11" SLAB = #5@15"
12" SLAB = #5@14"

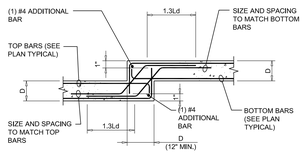
1 TYPICAL ONE-WAY CONCRETE SLAB DETAIL



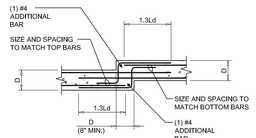
5 TYPICAL HOUSEKEEPING PAD DETAIL



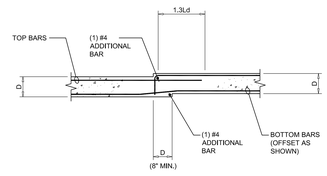
TOP BARS PRESENT



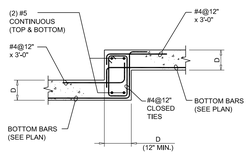
TOP BARS PRESENT



TOP BARS PRESENT

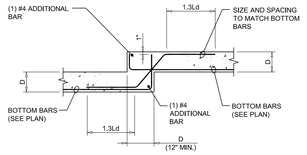


(DROP < 1½")



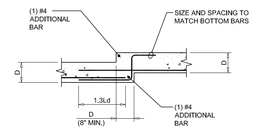
TOP BARS NOT PRESENT

(DROP ≤ D+2")



TOP BARS NOT PRESENT

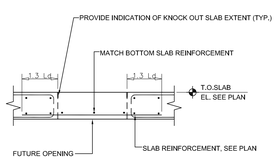
(D-2" ≤ DROP < D+2")



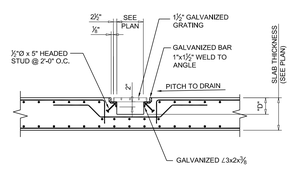
TOP BARS NOT PRESENT

(1½" ≤ DROP < D-2")

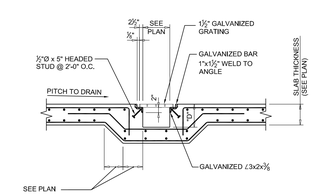
4 TYPICAL SLAB DROP DETAILS



9 TYPICAL KNOCK-OUT SLAB DETAIL

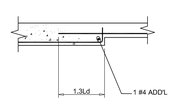


D ≤ T/2

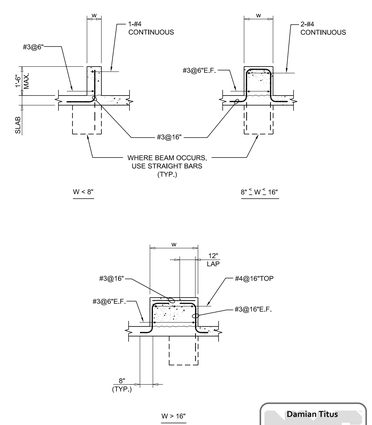


D ≥ T/2

8 TYPICAL SECTION AT TRENCH DRAIN



7 TYPICAL DETAIL OF CHANGE IN SLAB THICKNESS



6 TYPICAL CONCRETE CURB DETAILS

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APPROVED
Under Directive 2 of 1975
Date: 09/27/2016
NYC Development Hub

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NEW YORK, NY

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VS 125 LLC
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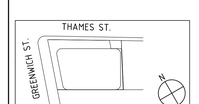
PHASE DOB SUBMITTAL

ARCHITECT'S SEAL

ISSUE NO	ISSUE DATE	DESCRIPTION
	09/30/2015	DOB SUBMITTAL
	08/07/2015	SUPERSTRUCTURE BID
	07/10/2015	PROGRESS DD
	06/19/2015	FOUNDATION DOC. UPD.
	06/15/2015	SS PRE-BID
	06/01/2015	FOUNDATION CD DRAFT
	05/15/2015	SD FOR 944'
	03/06/2015	SCHEMATIC DESIGN



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SCALE AS NOTED

TYPICAL CONCRETE DETAILS

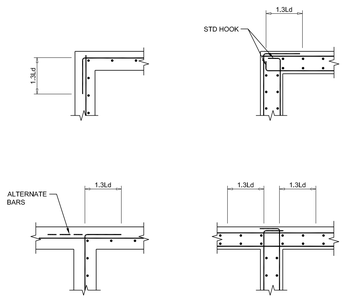
SHEET TITLE

S-401.00

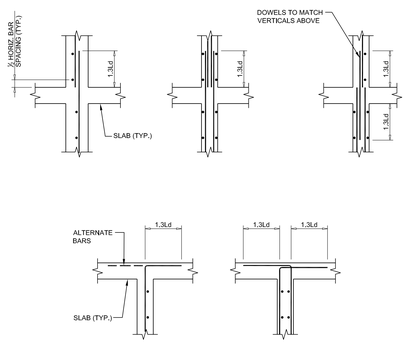
SHEET NUMBER 00

14218.00-017-S-401.00.dwg

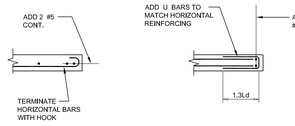
FL70/ROOF AT 840', T.O. BLDG AT 912', FL. TO FL. = 11'-5"



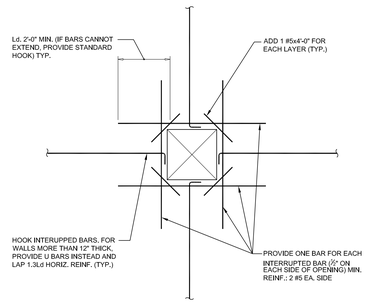
5 TYPICAL WALL INTERSECTION DETAILS



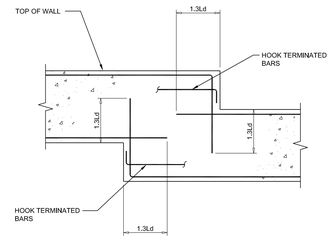
4 TYPICAL WALL-SLAB INTERSECTION DETAILS



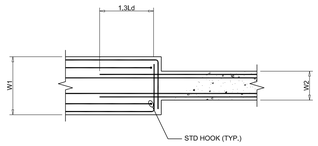
3 TYPICAL WALL END DETAILS



2 TYPICAL REINFORCEMENT AT WALL OPENING

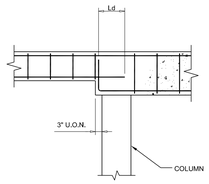


1 TYPICAL REINFORCEMENT DETAILS AT STEPS IN TOP OR BOTTOM OF WALL

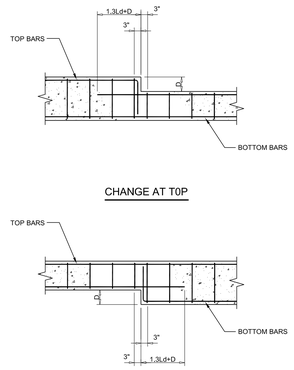


PLAN AT TOP OR BOTTOM BARS

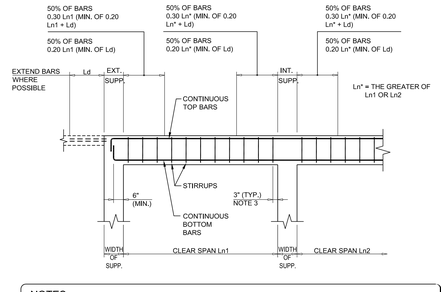
9 TYPICAL DETAIL OF CHANGE OF BEAM WIDTH



8 TYPICAL DETAIL OF CHANGE IN BEAM DEPTH AT COLUMN



7 TYPICAL DETAIL OF CHANGE IN BEAM DEPTH BETWEEN SUPPORTS

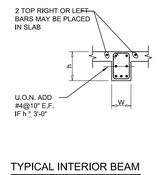


NOTES:

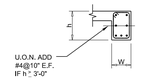
1. Ld = DEVELOPMENT LENGTH - SEE GENERAL NOTES.
2. SEE BEAM SCHEDULE FOR SIZE AND NUMBER OF TOP BARS, BOTTOM BARS AND STIRRUPS.
3. IF STIRRUP SPACING IS LESS THAN 6", PLACE FIRST STIRRUP ½ SPACING FROM FACE OF SUPPORT. IF BEAM IS MORE THAN 6" WIDER THAN COLUMN ON EITHER SIDE, PROVIDE STIRRUPS OVER COLUMN.
4. NOT MORE THAN 50% OF BOTTOM BARS MAY BE TERMINATED 0.125L FROM FACE OF EACH SUPPORT. PROVIDE MINIMUM OF 2 BARS OR 25% CONTINUOUS.
5. LONGITUDINAL BARS MAY ONLY BE PLACED IN MULTIPLE LAYERS IF NOTED IN SCHEDULE. PROVIDE 1" CLEAR BETWEEN LAYERS.
6. ½ OF THE GREATER OF THE TOP LEFT OR TOP RIGHT BARS, BUT A MINIMUM OF2 BARS, MUST BE CONTINUOUS.
7. CONTINUOUS TOP BARS MAY HAVE A CLASS A LAP SPLICE AT MID SPAN OF BEAM. CONTINUOUS BOTTOM BARS MAY HAVE A CLASS A LAP SPLICE AT OR NEAR THE SUPPORT.

(NOT PART OF LATERAL FRAME)

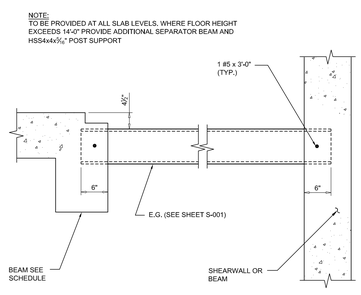
6 TYPICAL CONCRETE BEAM DETAIL



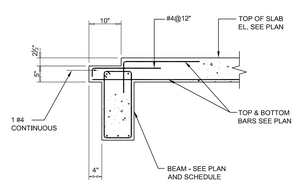
TYPICAL INTERIOR BEAM



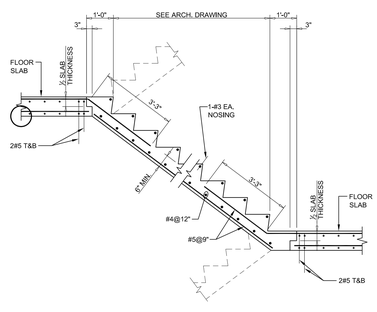
TYPICAL PERIMETER BEAM



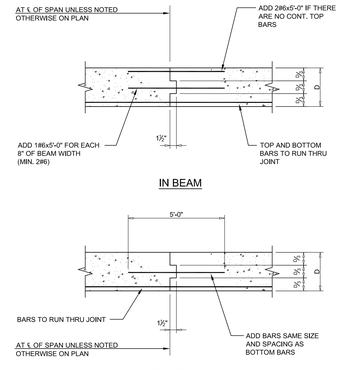
14 TYPICAL ELEVATOR SEPARATOR BEAM DETAIL



13 TYPICAL ELEVATOR OPENING EDGE DETAIL



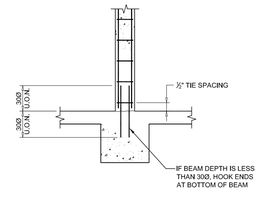
12 TYPICAL STAIR DETAIL



IN BEAM

IN FRAMED SLAB

11 TYPICAL CONSTRUCTION JOINT DETAILS



NOTE:
SEE TYPICAL COLUMN DETAIL FOR ADDITIONAL INFORMATION.

10 TYPICAL DETAIL COLUMN SUPPORTED BY CONCRETE BEAM

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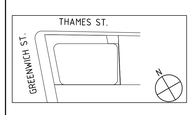
	03/06/2015	SCHEMATIC DESIGN



KEY PLAN AND NORTH SIGN

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TYPICAL CONCRETE DETAILS

SHEET TITLE

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SHEET NUMBER 00

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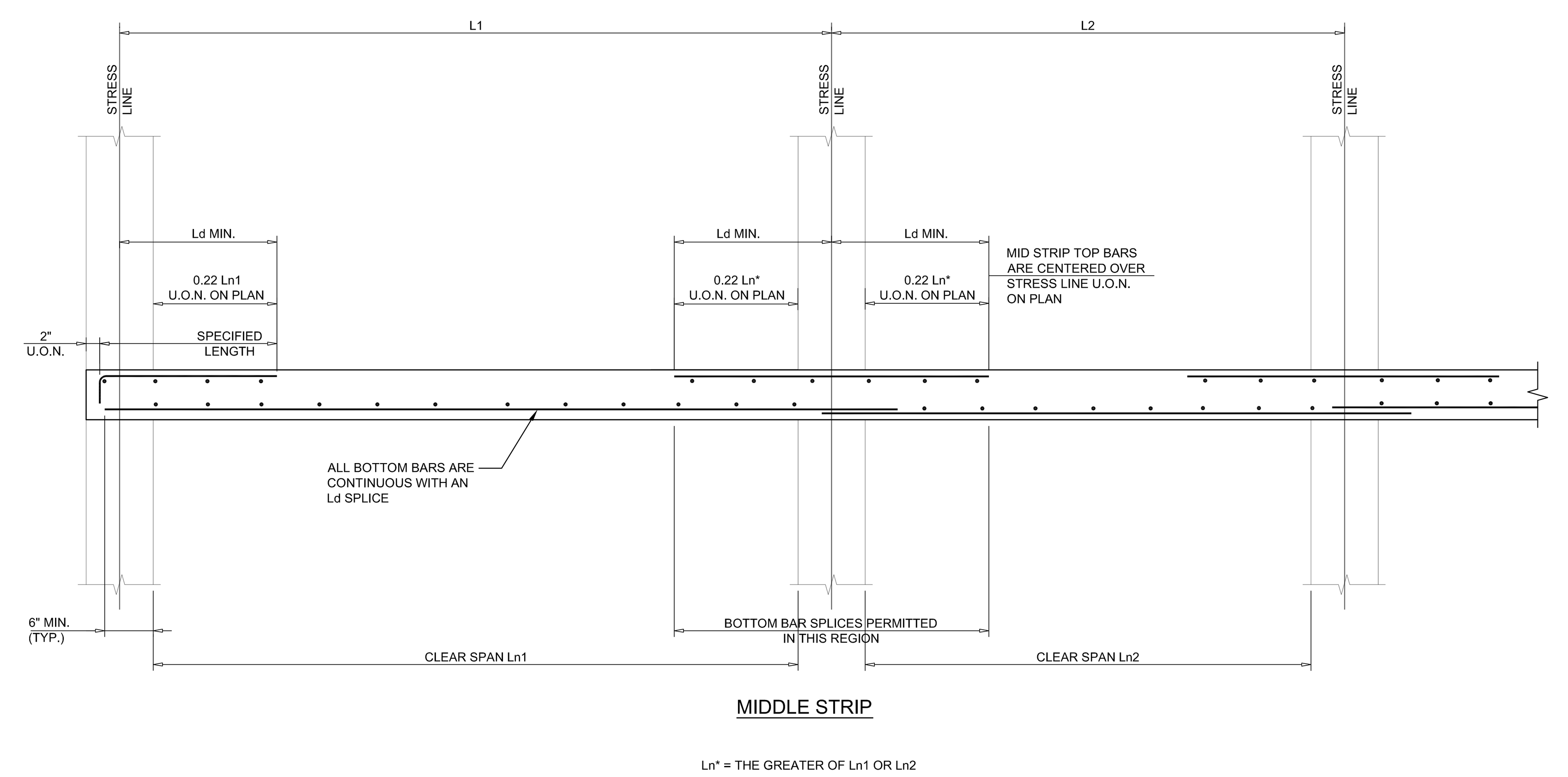
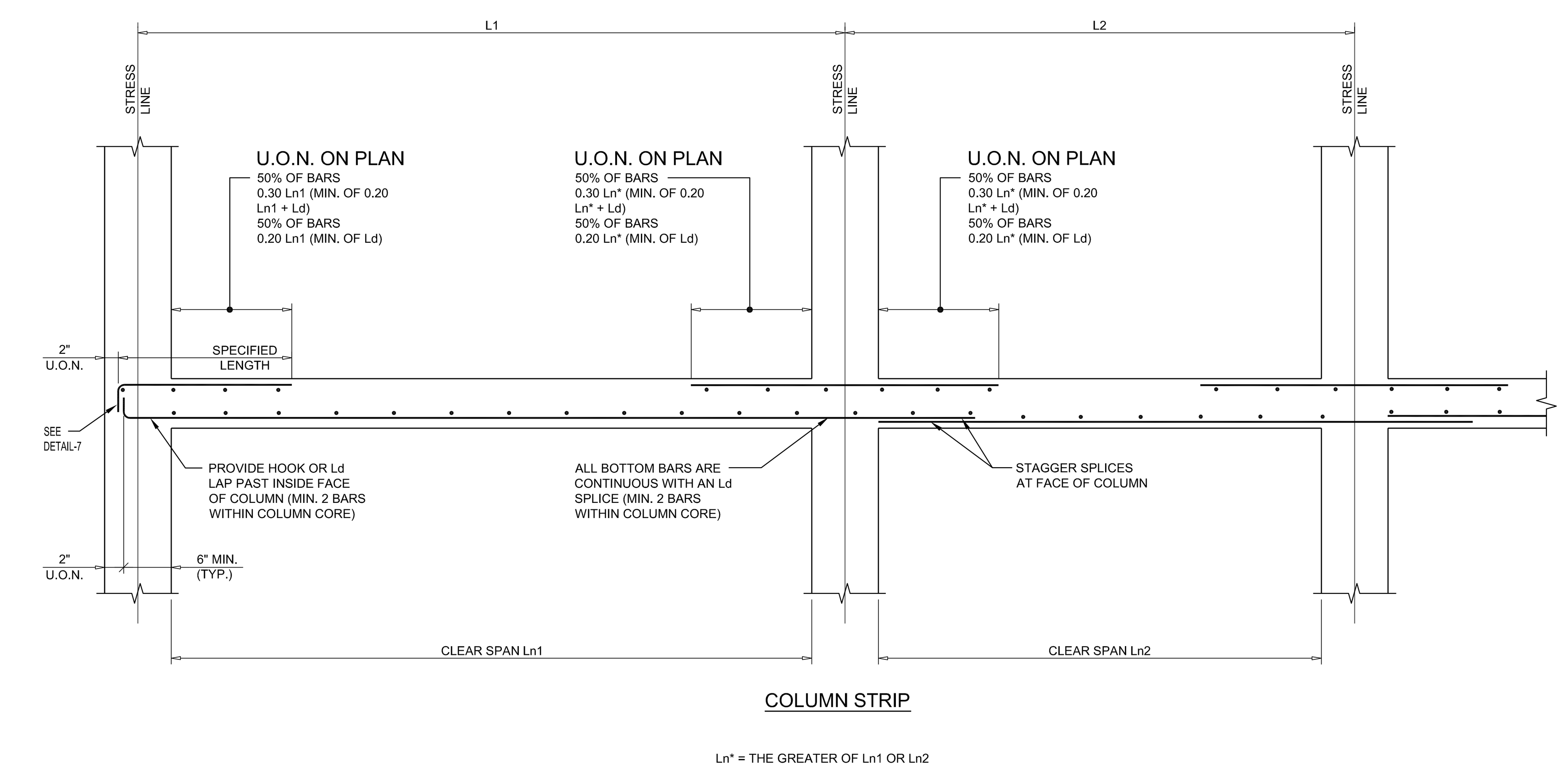
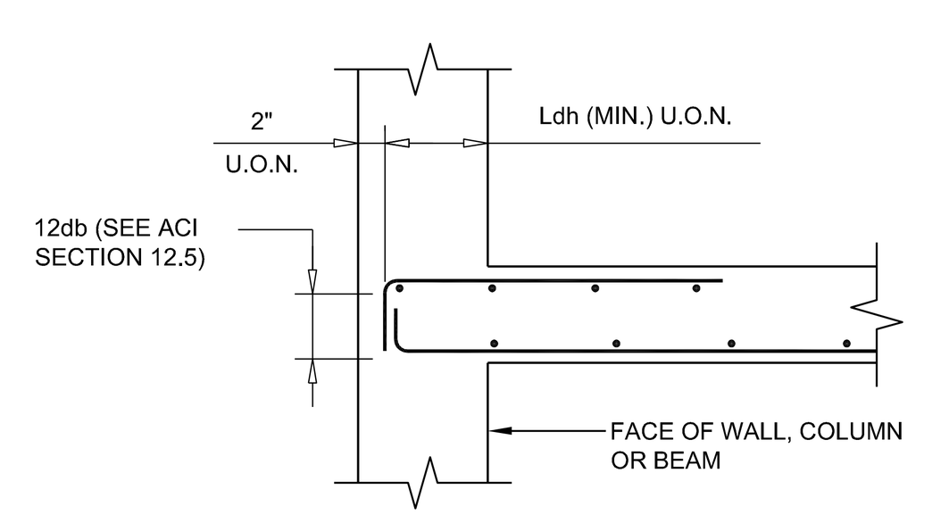
FL70/ROOF AT 840', T.O. BLDG AT 912', FL. TO FL. = 11'-5"



2 TYPICAL CONCRETE FLAT SLAB DETAIL



1 TYPICAL CONCRETE FLAT SLAB DETAIL



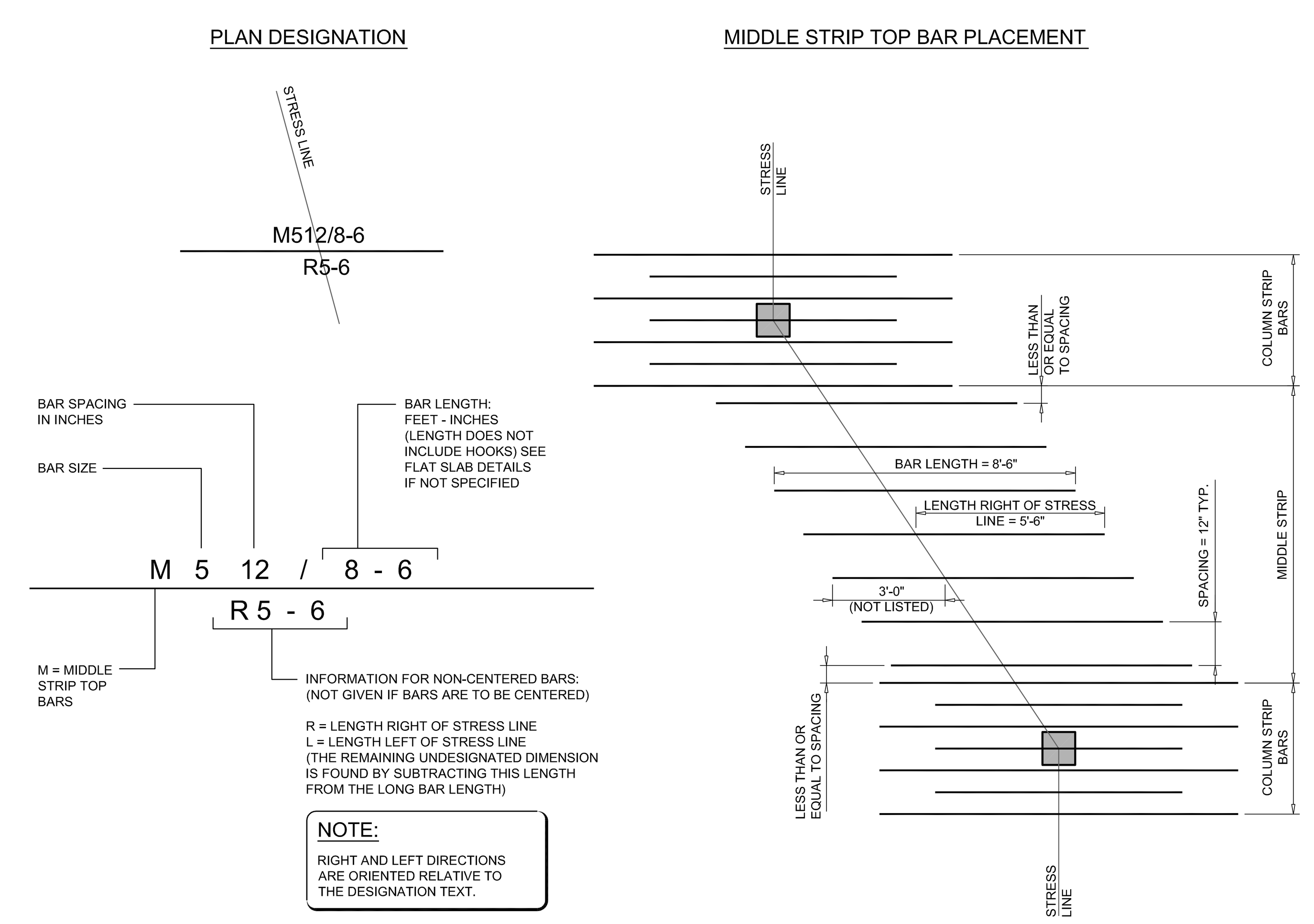
Ldh (IN INCHES)

BAR #	f'c						
	4000 psi	5000 psi	6000 psi	7000 psi	8000 psi	10000 psi	12000 psi
3	7	6	6	6	6	6	6
4	7	6	6	6	6	6	6
5	10	8	7	7	6	6	6
6	11	9	8	8	7	6	6
7	13	11	10	9	9	8	7
8	14	12	11	10	10	8	8
9	17	14	13	12	11	10	9
10	19	16	15	14	13	11	10
11	20	17	16	15	14	12	11

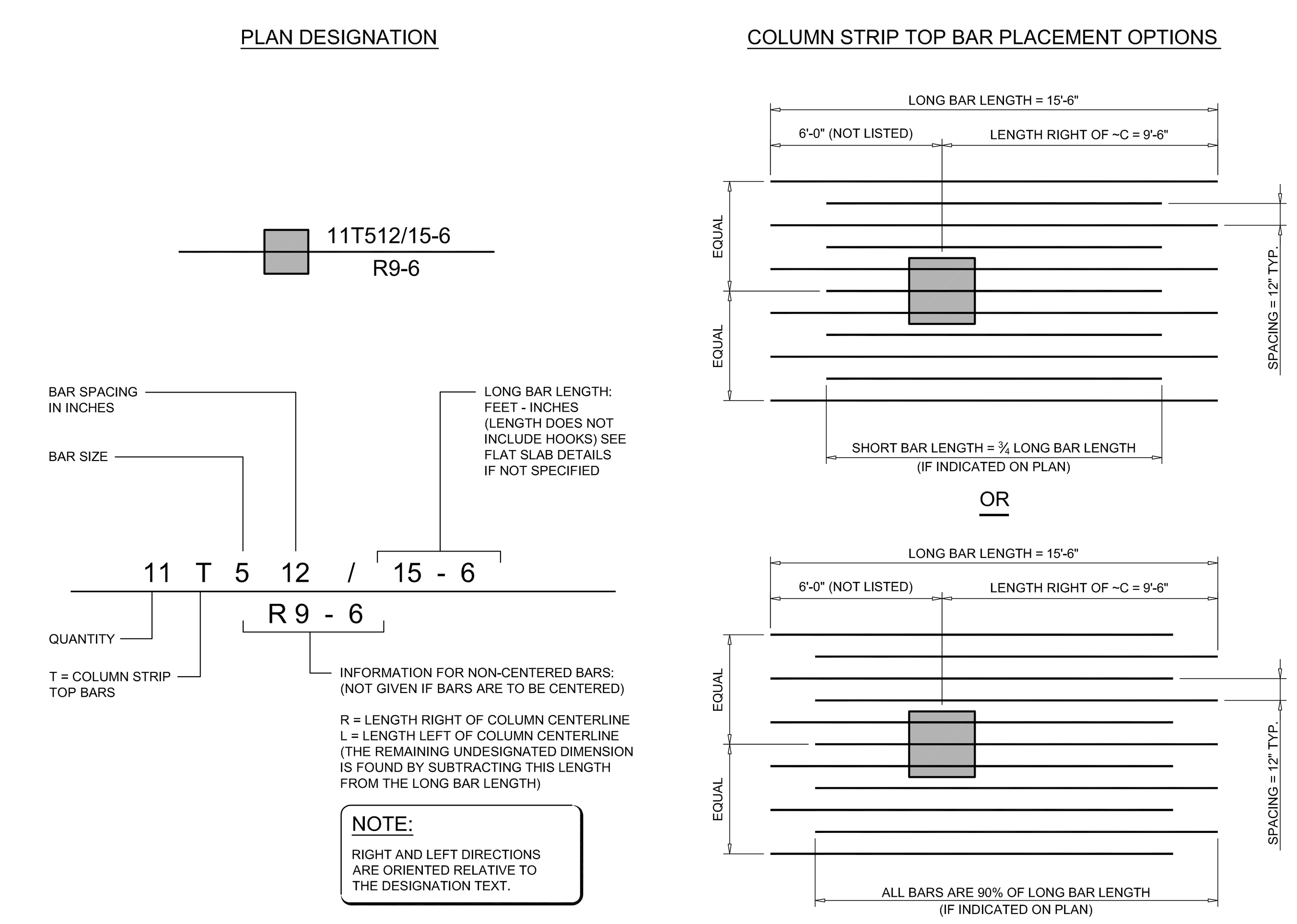
* ASSUMES Fy = 60 ksi

NOTES:
FOR LIGHT WEIGHT AGGREGATE MULTIPLY TABLE VALUES BY 1.3
FOR EPOXY COATED REBAR MULTIPLY TABLE VALUES BY 1.2
FOR Fy = 75 ksi MULTIPLY TABLE VALUES BY 1.25
COMBINATIONS OF EFFECTS DUE TO CONCRETE DENSITY AND EPOXY COATING ARE CUMULATIVE

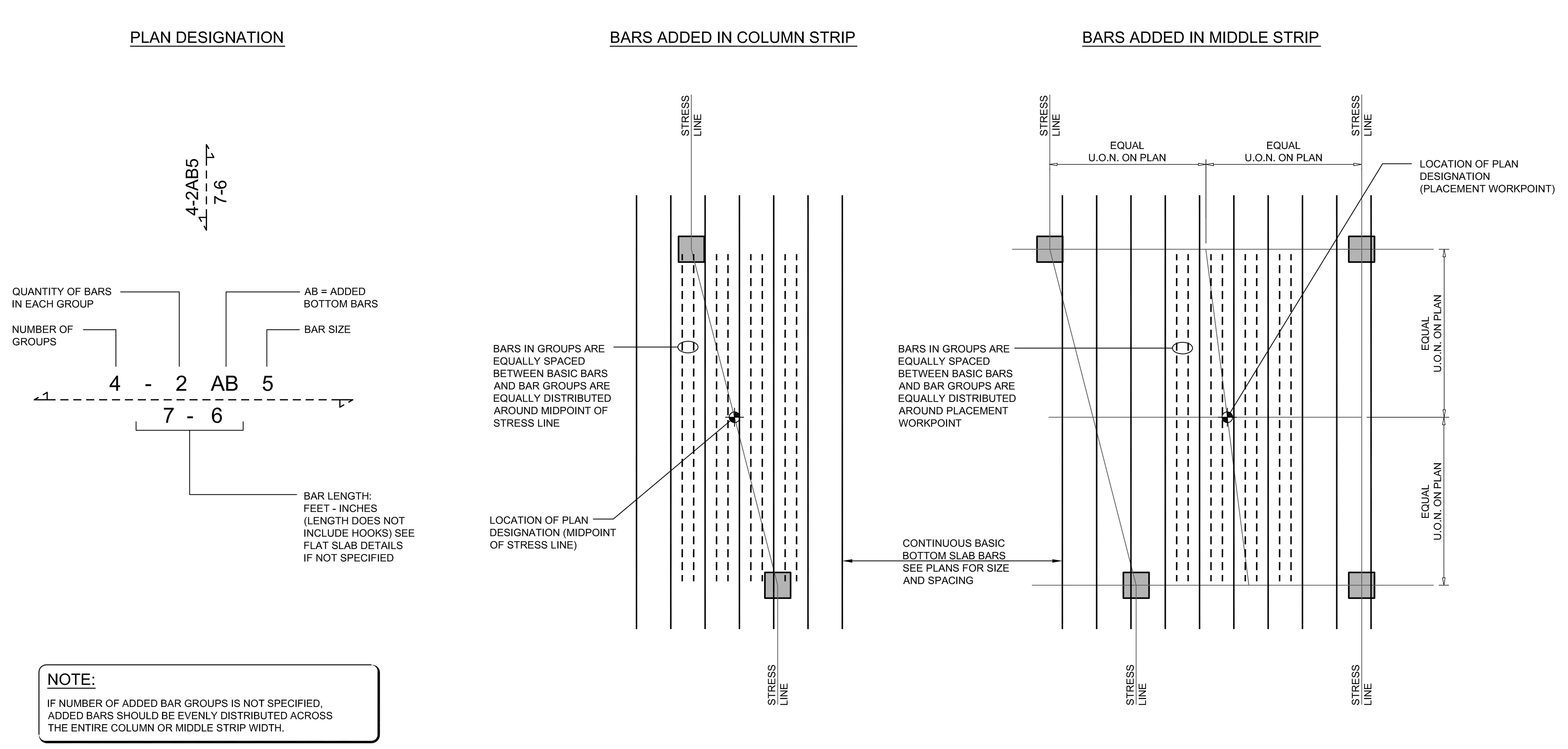
5 HOOK LENGTHS FOR CONNECTIONS



4 MIDDLE STRIP TOP BAR PLACEMENT

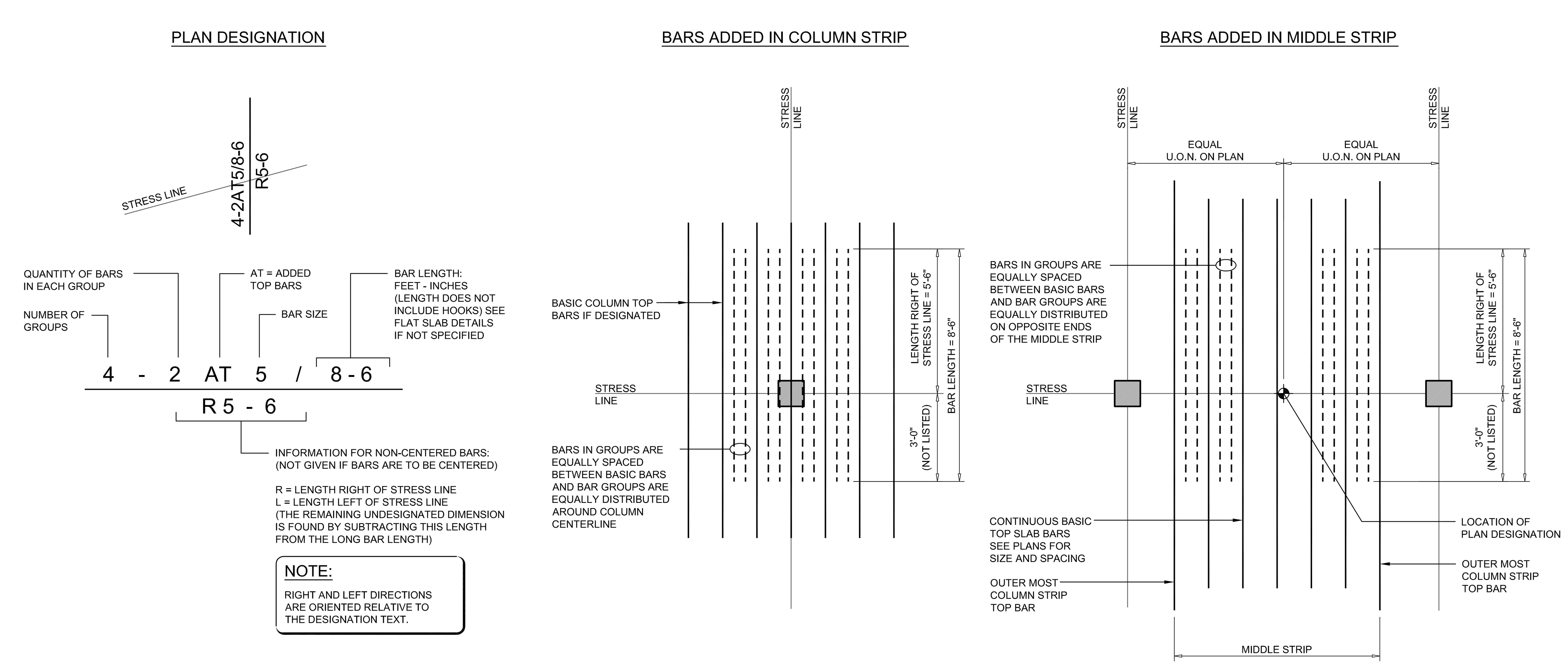


3 COLUMN STRIP TOP BAR PLACEMENT



NOTE:
IF NUMBER OF ADDED BAR GROUPS IS NOT SPECIFIED, ADDED BARS SHOULD BE EVENLY DISTRIBUTED ACROSS THE ENTIRE COLUMN OR MIDDLE STRIP WIDTH.

7 ADDED BOTTOM BAR PLACEMENT



NOTE:
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6 ADDED TOP BAR PLACEMENT

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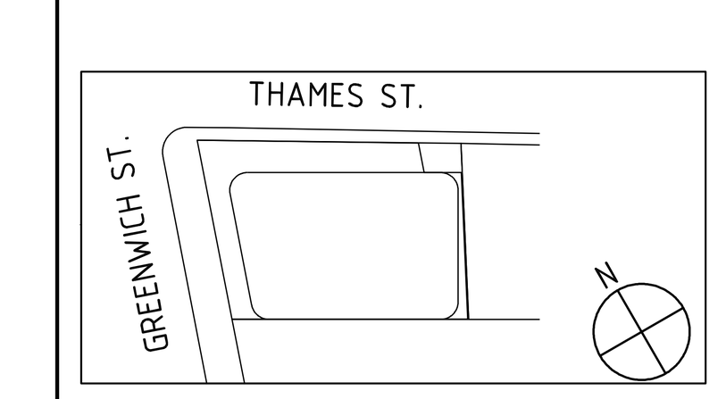
	03/06/2015	SCHEMATIC DESIGN
01	01/09/2015	FOUNDATION BID
01	01/09/2015	FOUNDATION PAA
01	01/09/2015	TA FILING



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TYPICAL CONCRETE DETAILS
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SHEET NUMBER : 05

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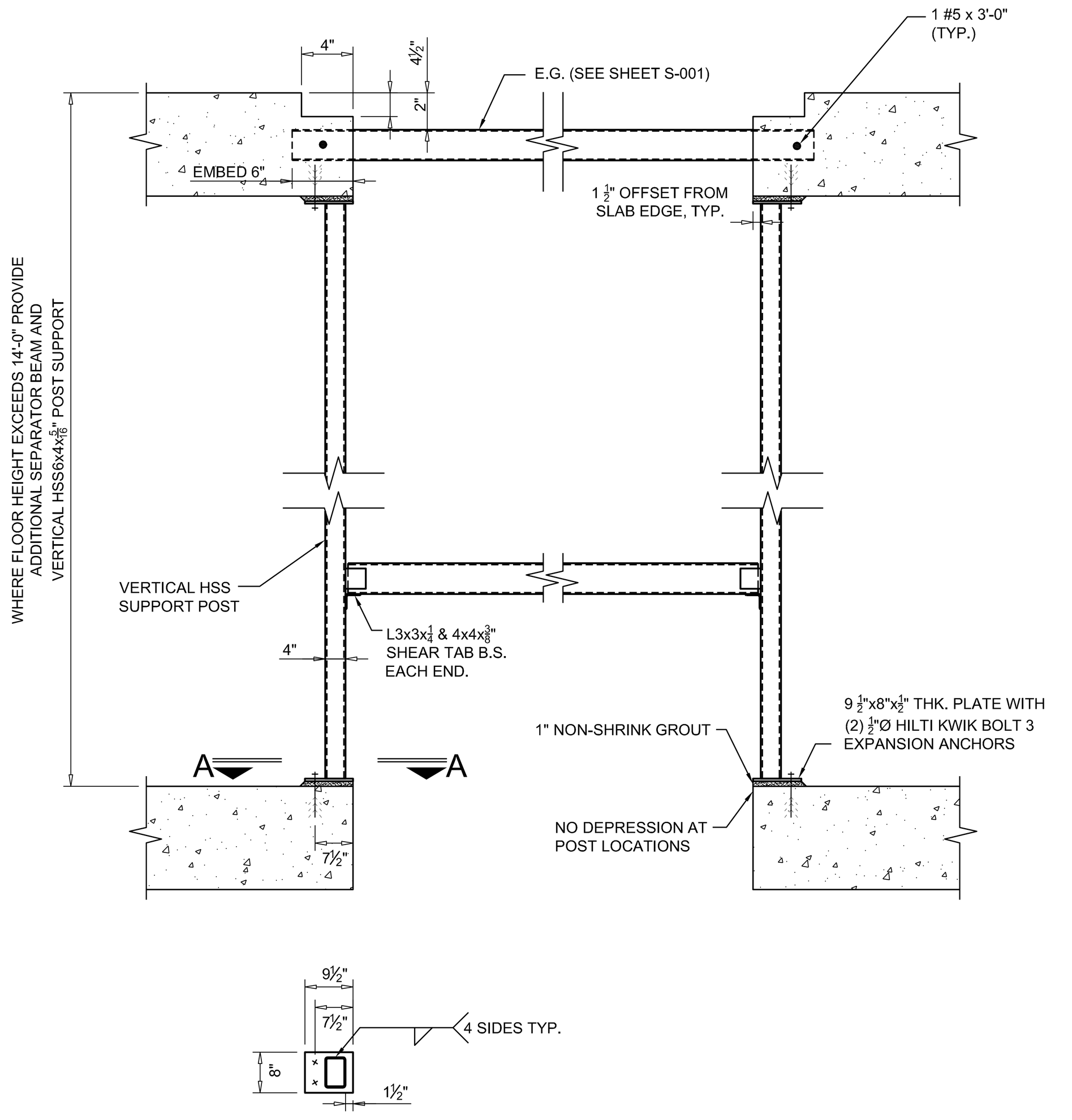
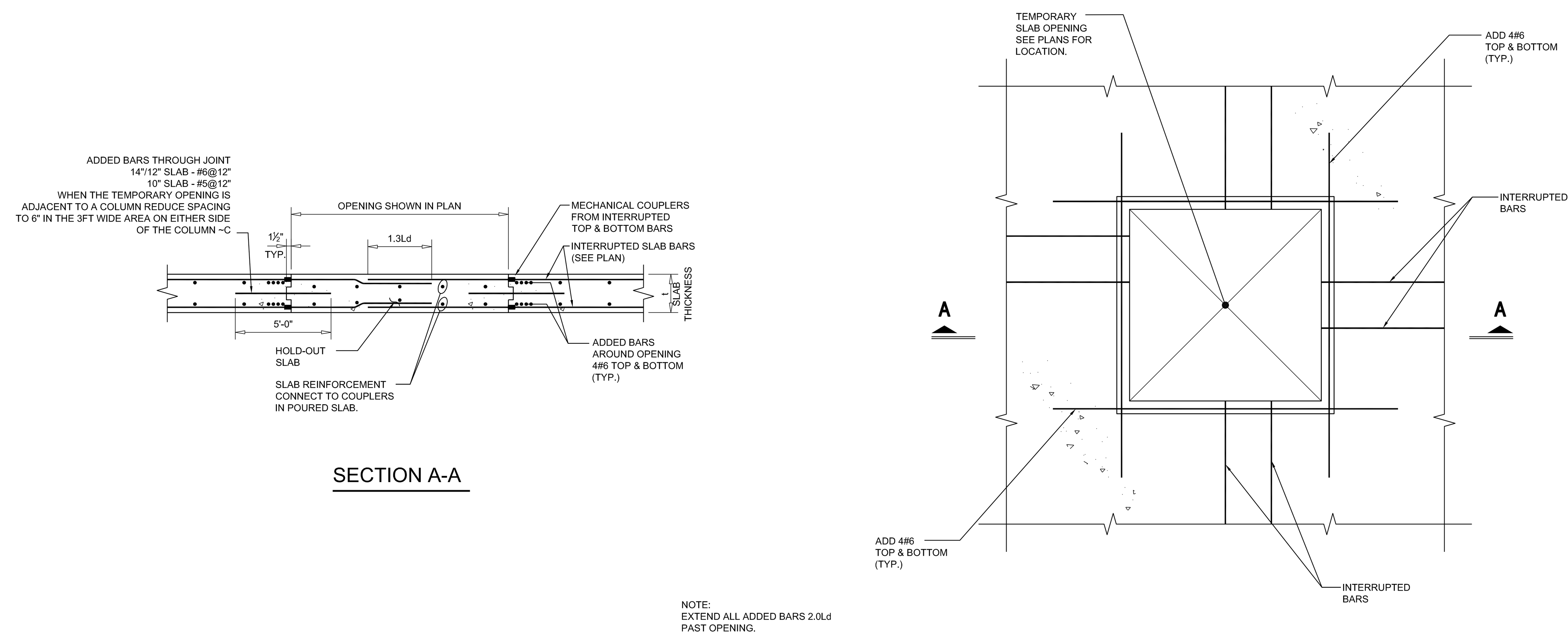
FL70/ROOF AT 840', T.O. BLDG AT 912', FL. TO FL. = 11'-5"

NOTE:
ELEVATOR GUIDERAIL SUPPORT BEAM TO BE PROVIDED AT ALL SLAB LEVELS.

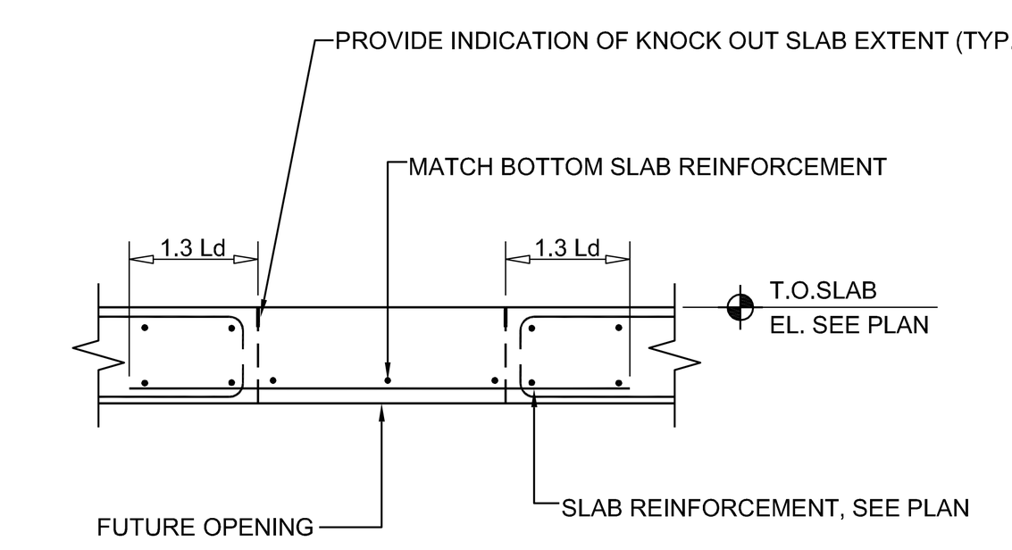


SECTION A-A

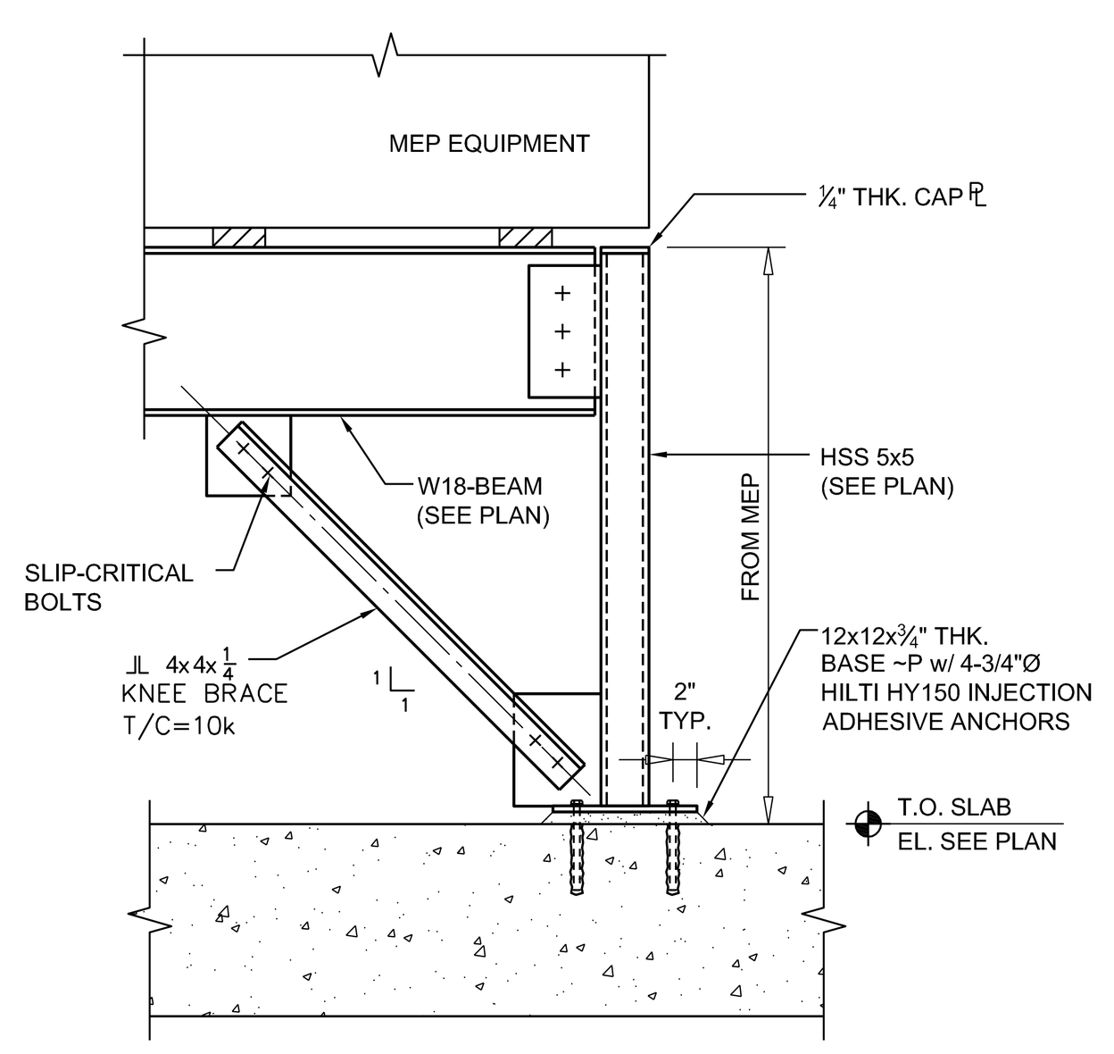
4 TYPICAL ELEVATOR SEPERATOR BEAM DETAIL
SCALE: 1/2"=1'-0"



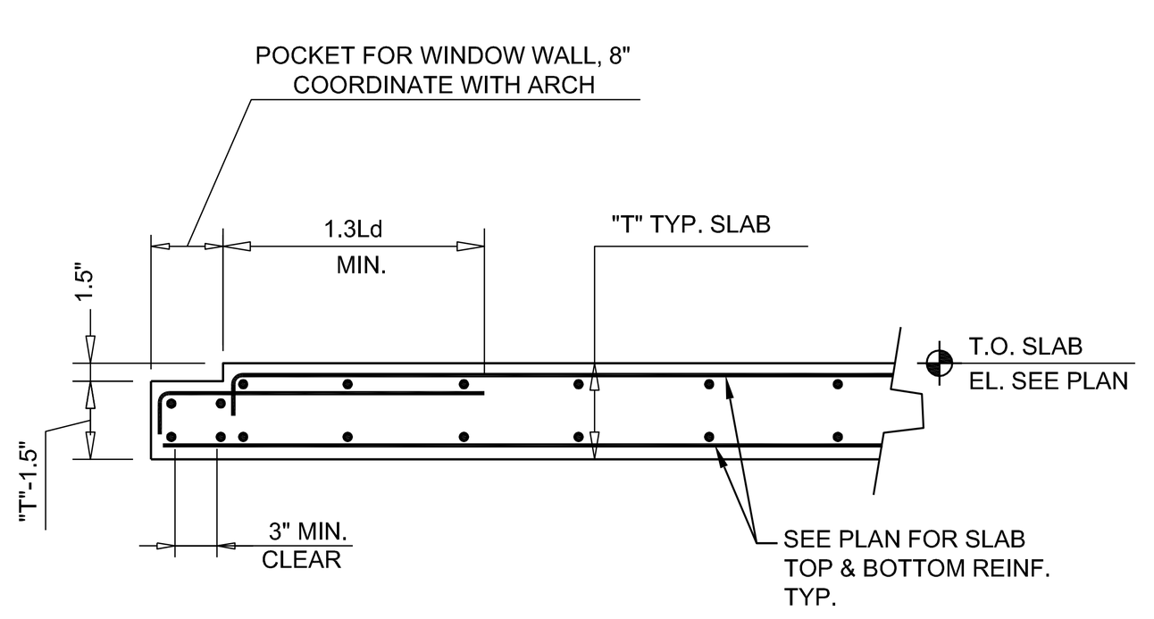
3 DETAIL AT TEMPORARY OPENING FOR HOIST
SCALE: 1/2"=1'-0"



1 TYPICAL FUTURE KNOCKOUT SLAB
SCALE: 1/2"=1'-0"



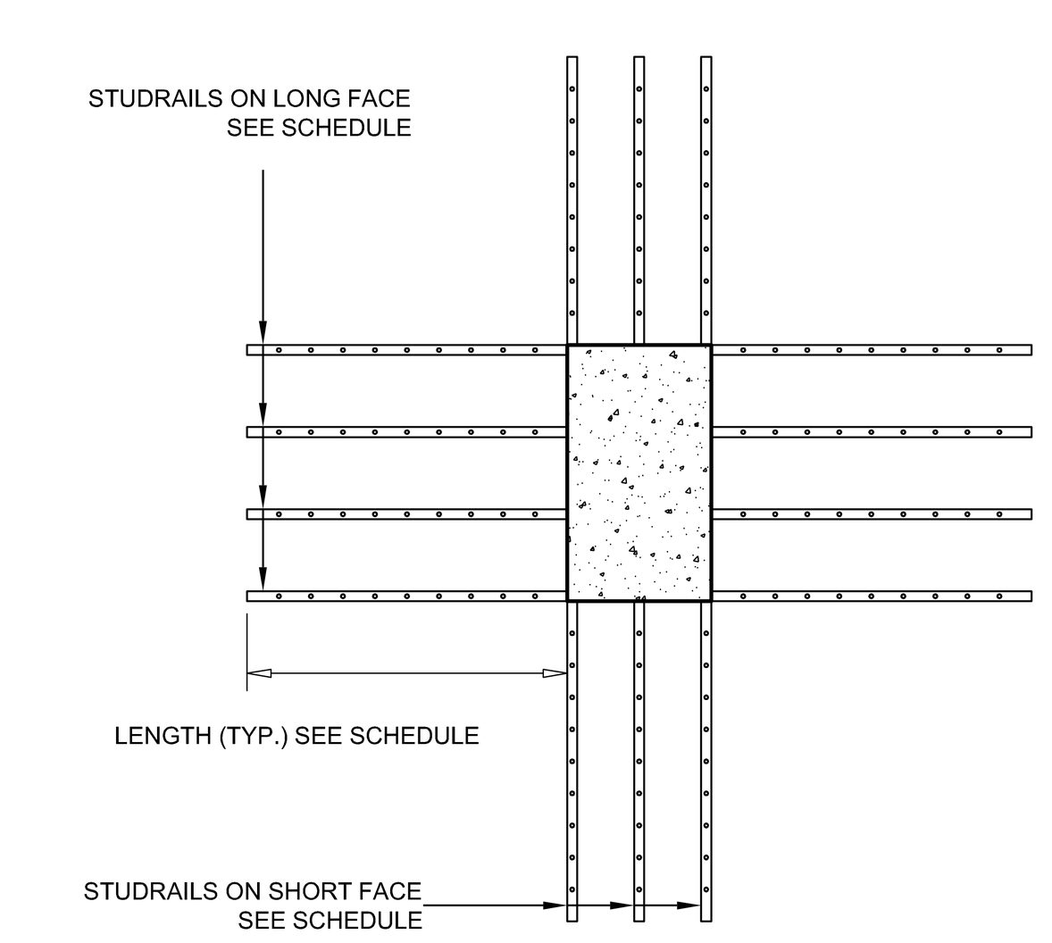
8 TYPICAL DUNNAGE PLATFORM
SCALE: 3/4"=1'-0"



7 SECTION THRU EXTERIOR EDGE OF SLAB AT GLASS FACADE
SCALE: 3/4"=1'-0"

STRUDRAIL SCHEDULE						
TYPE	DIAMETER	HEIGHT	SPACING	# OF RAILS LONG FACE	# OF RAILS SHORT FACE	LENGTH
SR-1	3/4"	7"	3"	3 RAILS	3 RAILS	48"
SR-2	3/4"	8"	3"	3 RAILS	3 RAILS	48"
SR-3	3/4"	11"	3"	3 RAILS	3 RAILS	48"

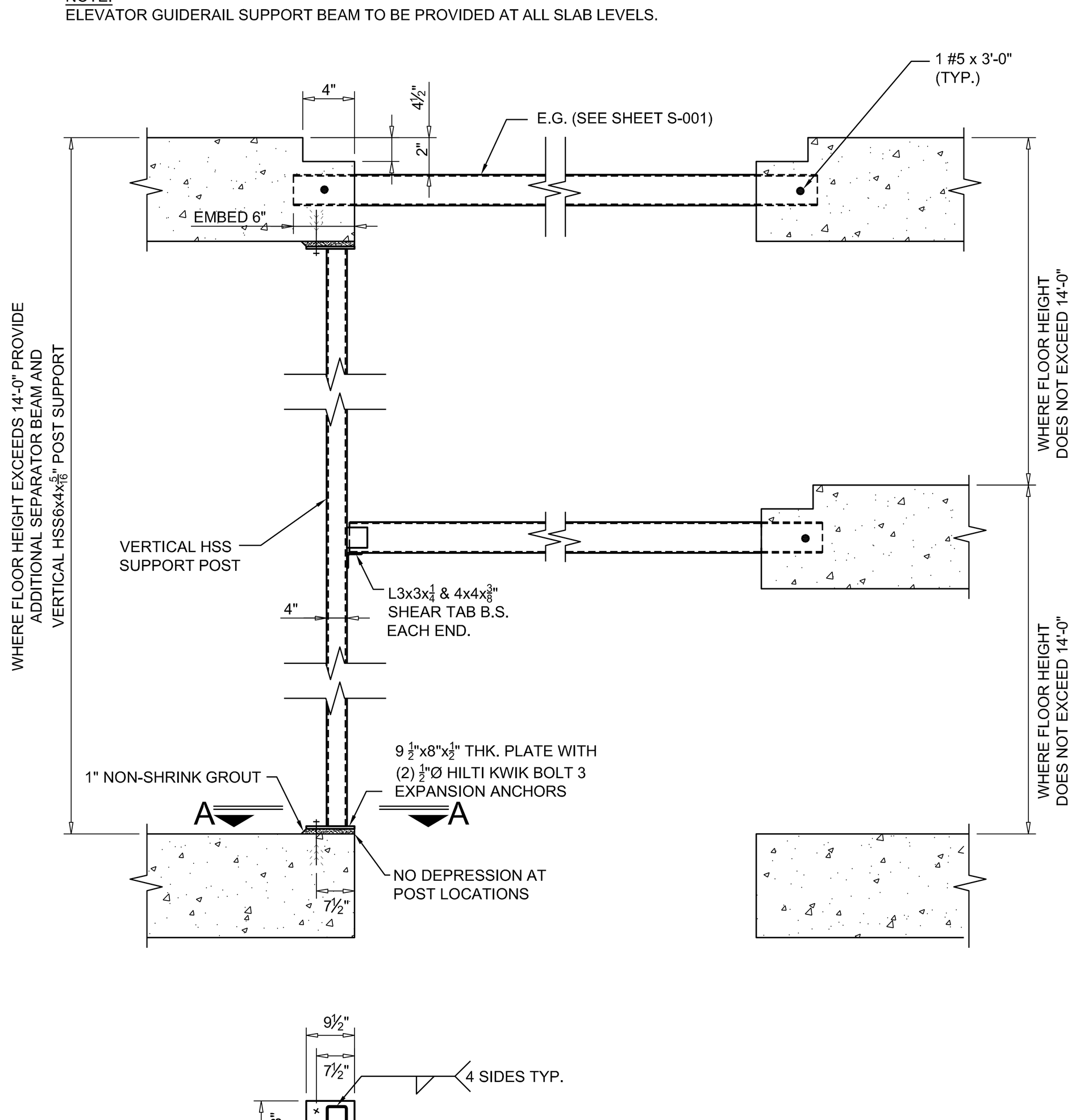
NOTE: RELOCATE STUDRAILS THRU OPENING TO OTHER FACE OF THE COLUMN



TYPICAL RAIL LAYOUT

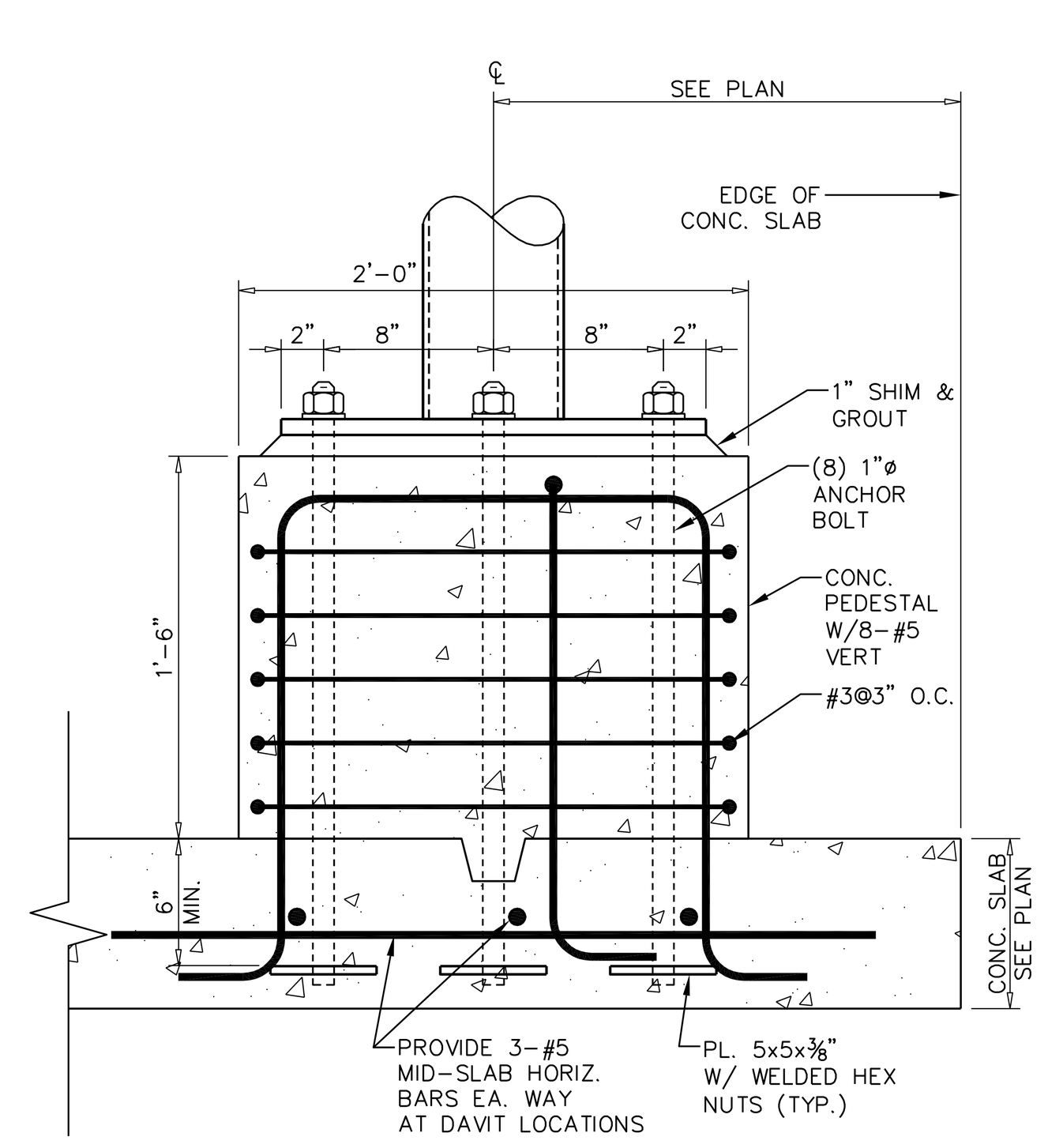
6 TYPICAL STUDRAIL DETAIL AT COLUMN
SCALE: 1/2"=1'-0"

NOTE:
ELEVATOR GUIDERAIL SUPPORT BEAM TO BE PROVIDED AT ALL SLAB LEVELS.

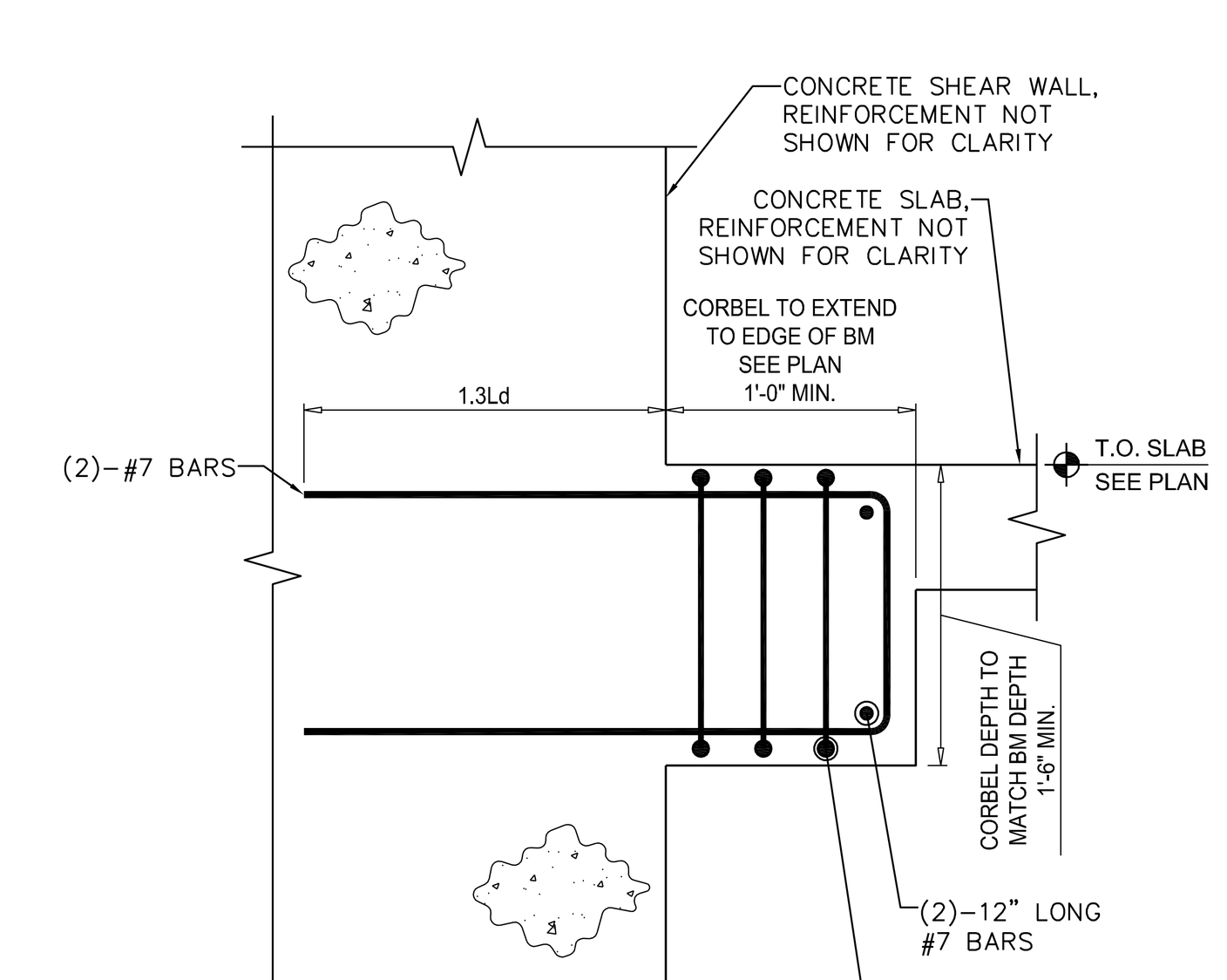


SECTION A-A

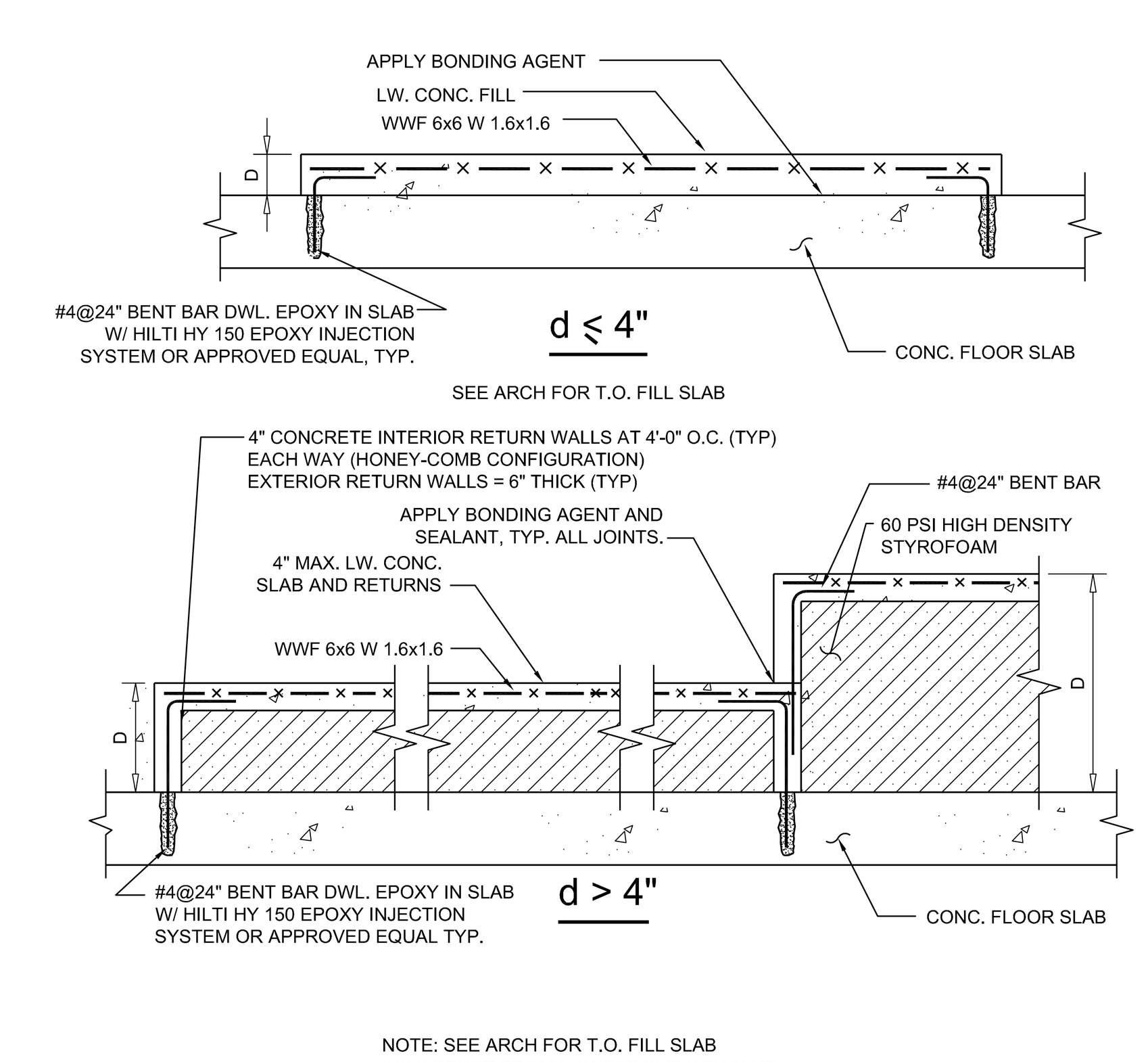
12 ALTERNATIVE ELEVATOR SEPERATOR BEAM DETAIL
SCALE: 1/2"=1'-0"



11 TYPICAL DAVIT ANCHOR DETAIL
SCALE: 1"=1'-0"



10 TYPICAL CONCRETE CORBEL DETAIL
SCALE: 1"=1'-0"



NOTE: SEE ARCH FOR T.O. FILL SLAB CONSTRUCT FROM LOWEST ELEVATION UP.

9 TYPICAL CONCRETE SLAB ON FILL DETAIL
SCALE: 3/4"=1'-0"

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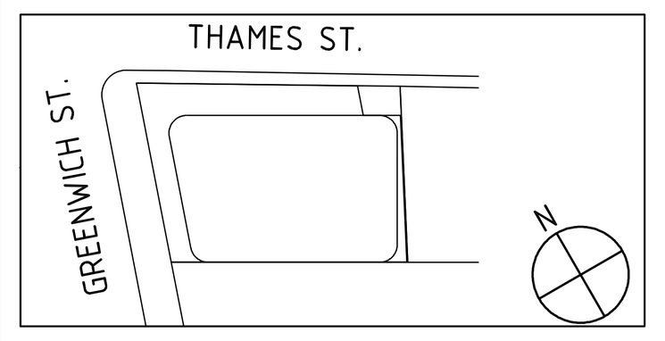

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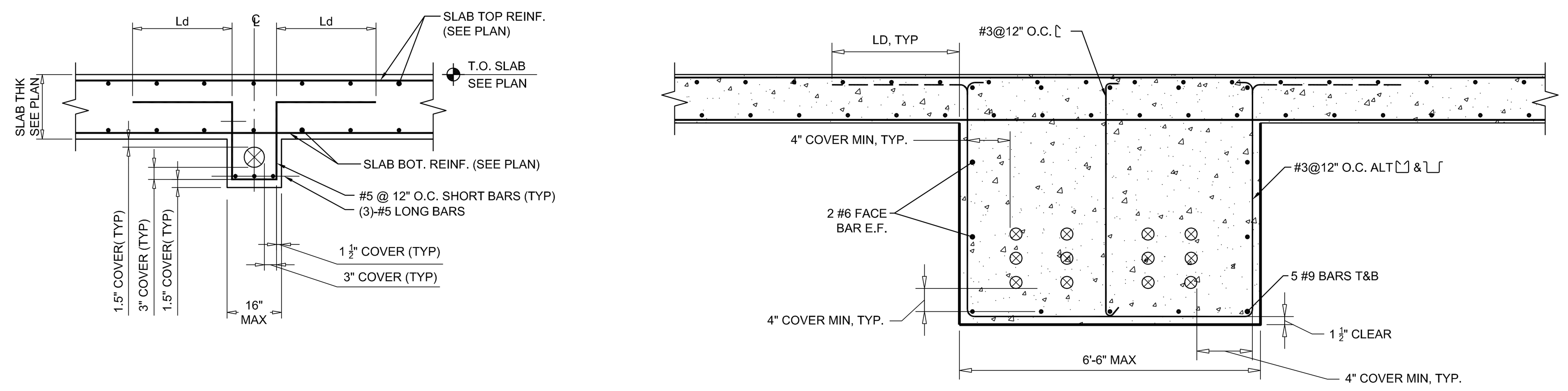
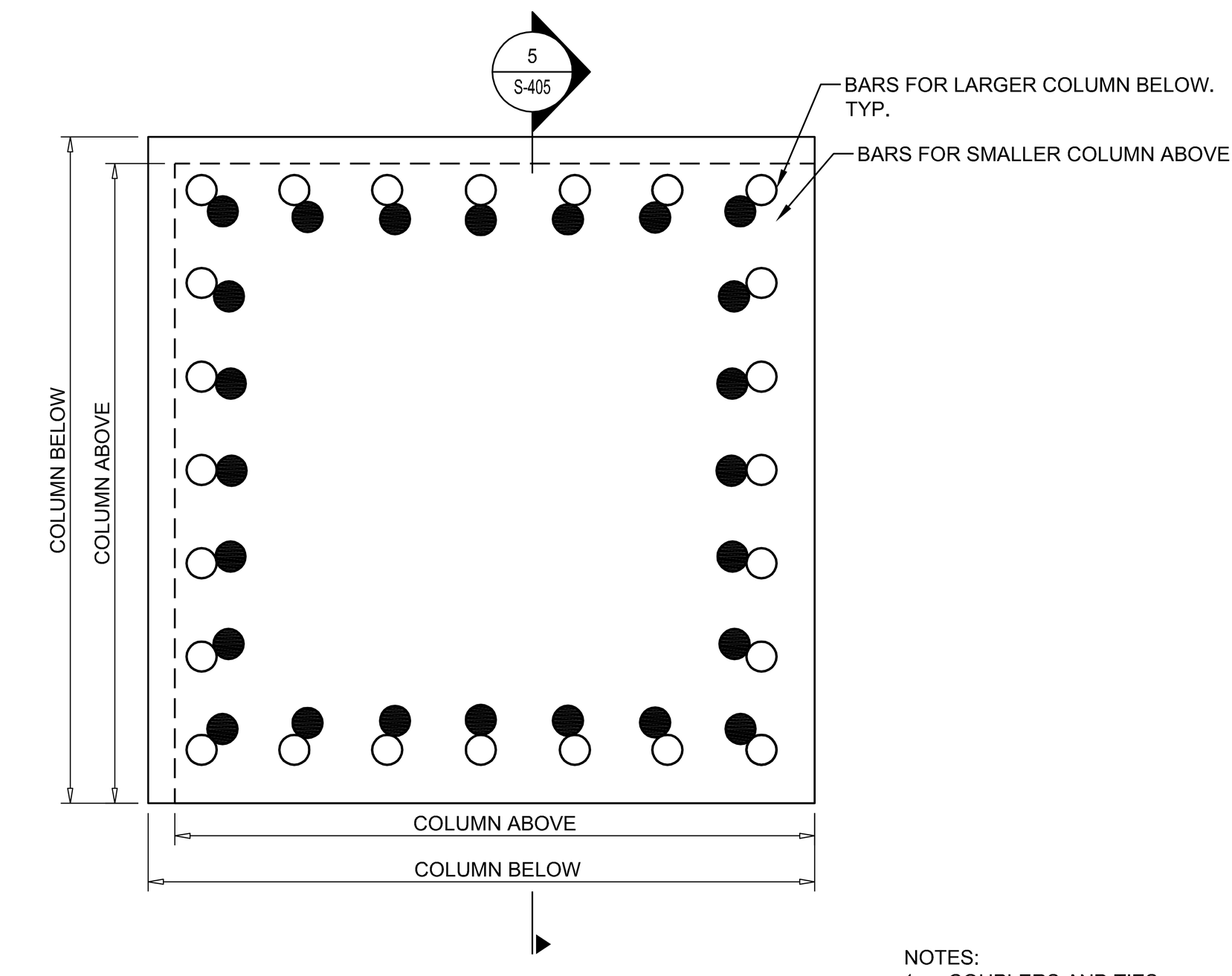


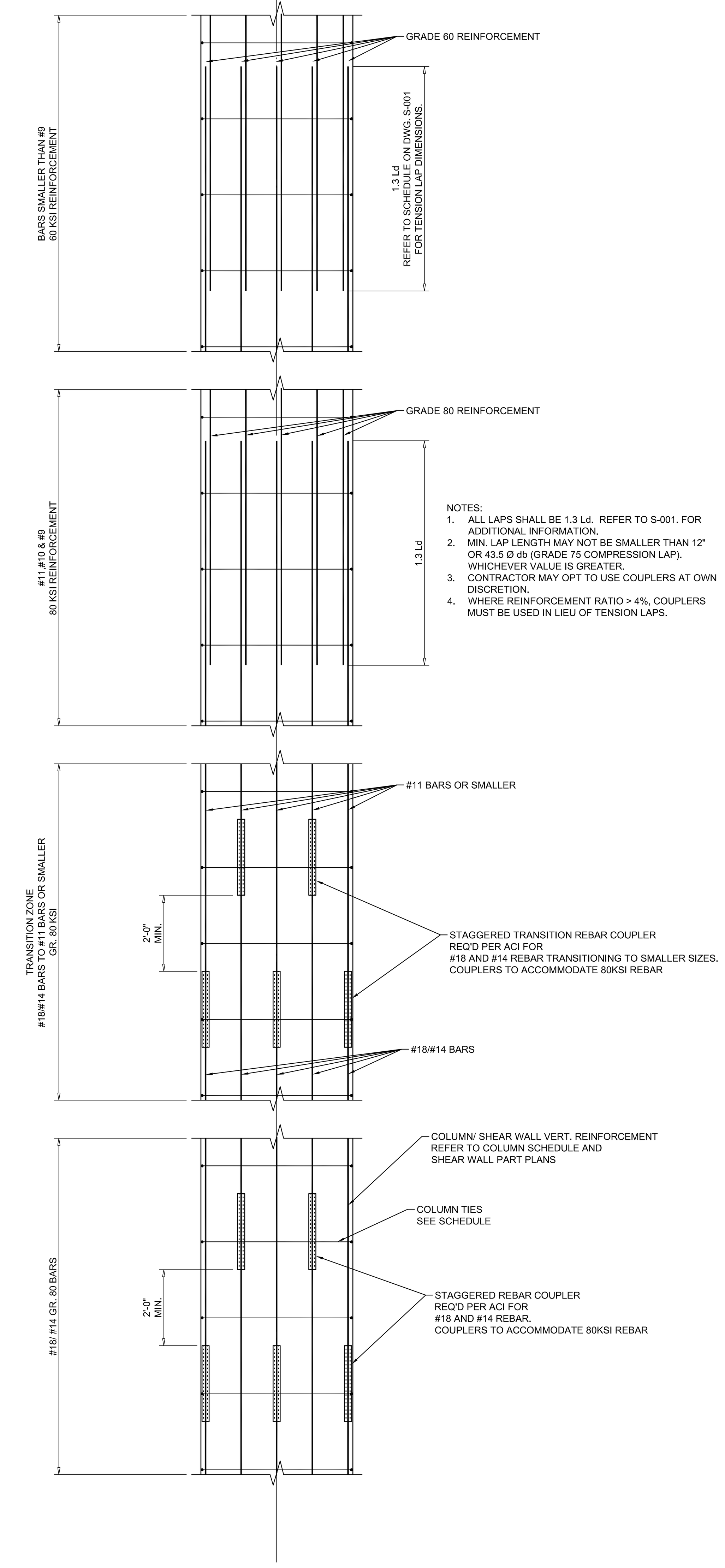
CONCRETE ENCASEMENT AT CONCRETE SLAB

4 DETAIL AT CONC. ENCASEMENT AT CONCRETE SLAB
SCALE: 1/2"=1'-0"

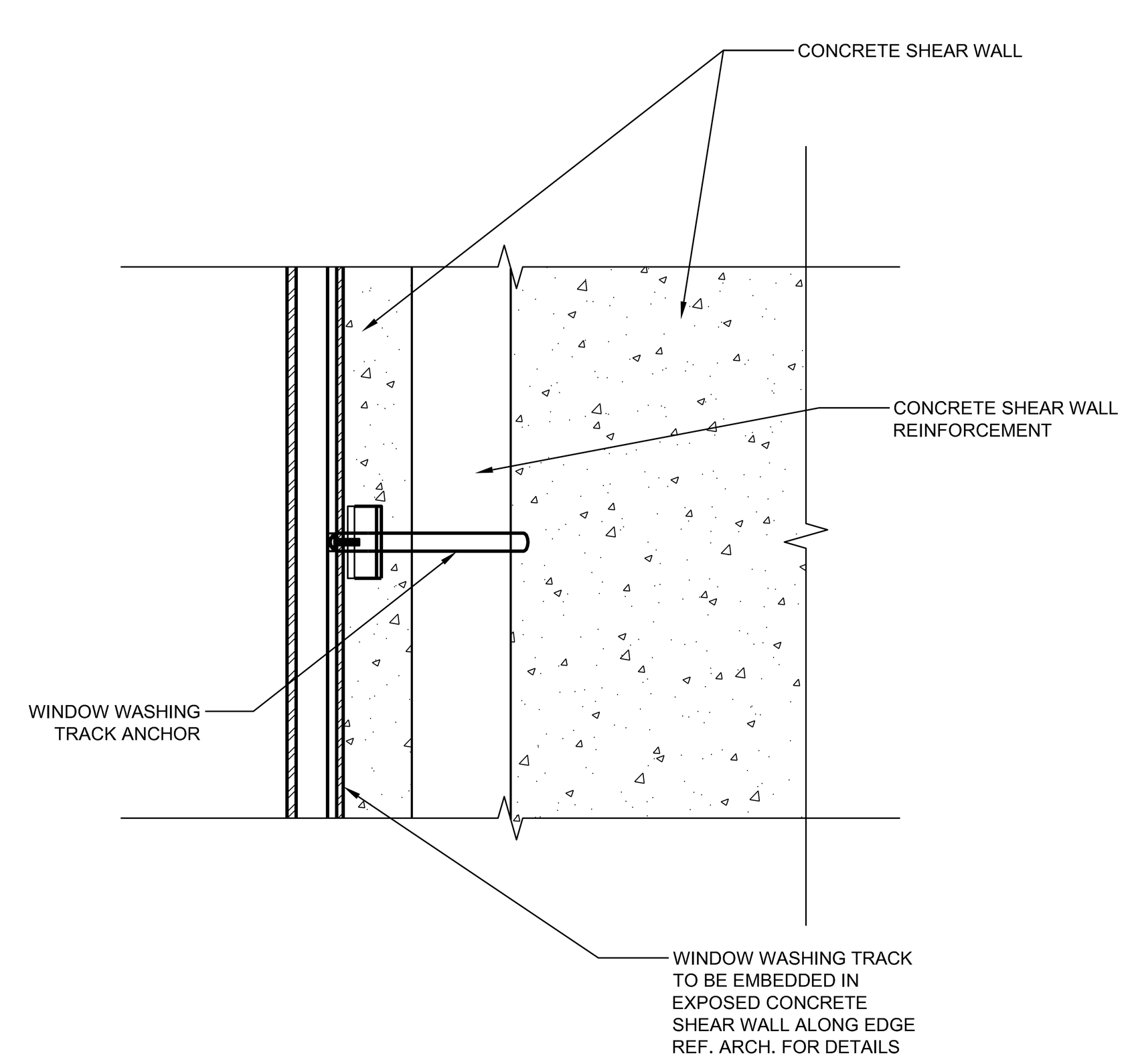


NOTES:
1. COUPLERS AND TIES NOT SHOWN FOR CLARITY.

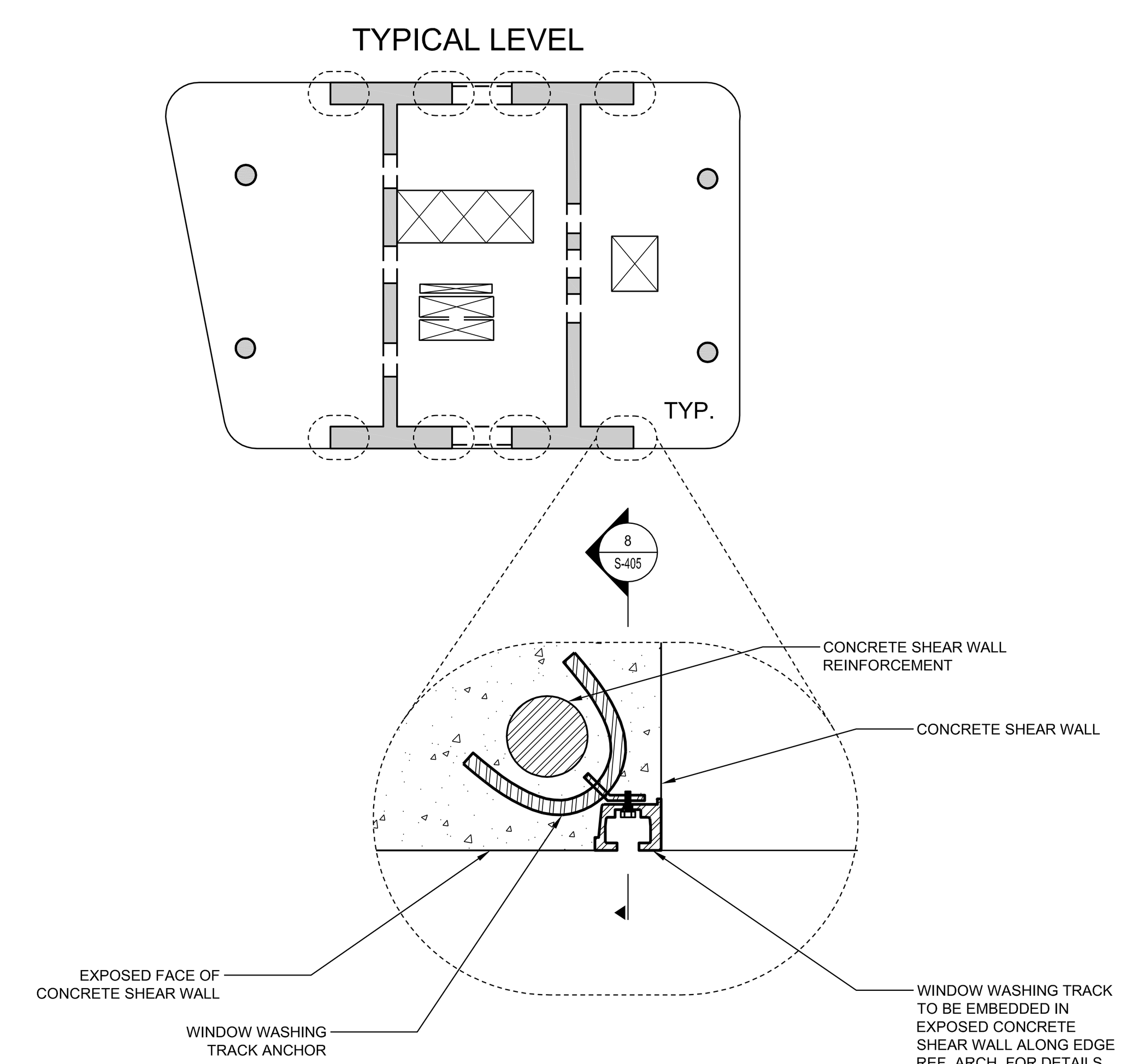
2 COLUMN REINFORCEMENT DETAIL
SCALE: 1/4"=1'-0"



NOTES:
1. ALL LAPS SHALL BE 1.3 Ld. REFER TO S-001. FOR ADDITIONAL INFORMATION.
2. MIN. LAP LENGTH MAY NOT BE SMALLER THAN 12" OR 43.5 Ø db (GRADE 75 COMPRESSION LAP), WHICHEVER VALUE IS GREATER.
3. CONTRACTOR MAY OPT TO USE COUPLERS AT OWN DISCRETION.
4. WHERE REINFORCEMENT RATIO > 4%, COUPLERS MUST BE USED IN LIEU OF TENSION LAPS.

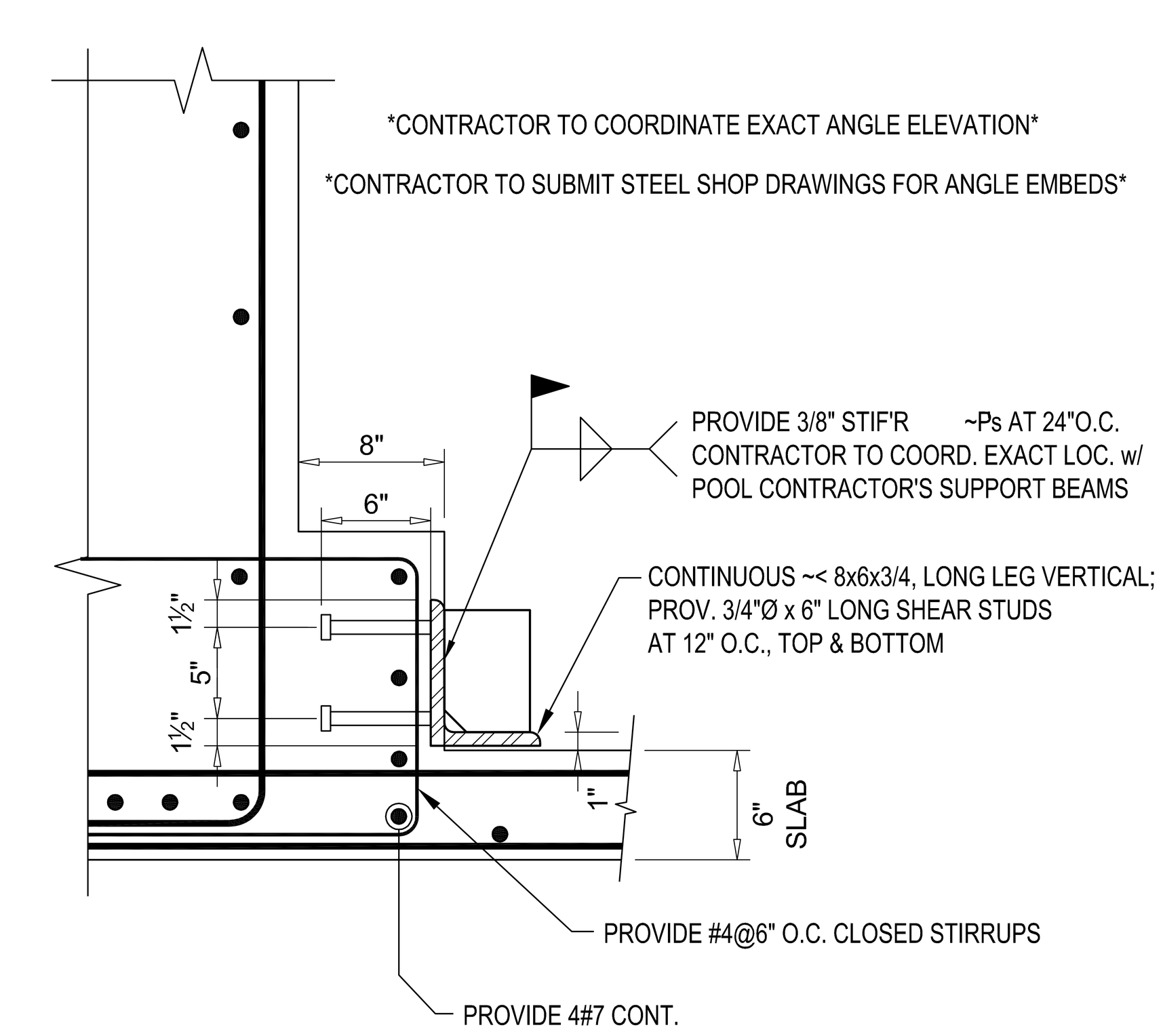


8 WINDOW WASHING TRACK DETAIL
SCALE: 3"=1'-0"

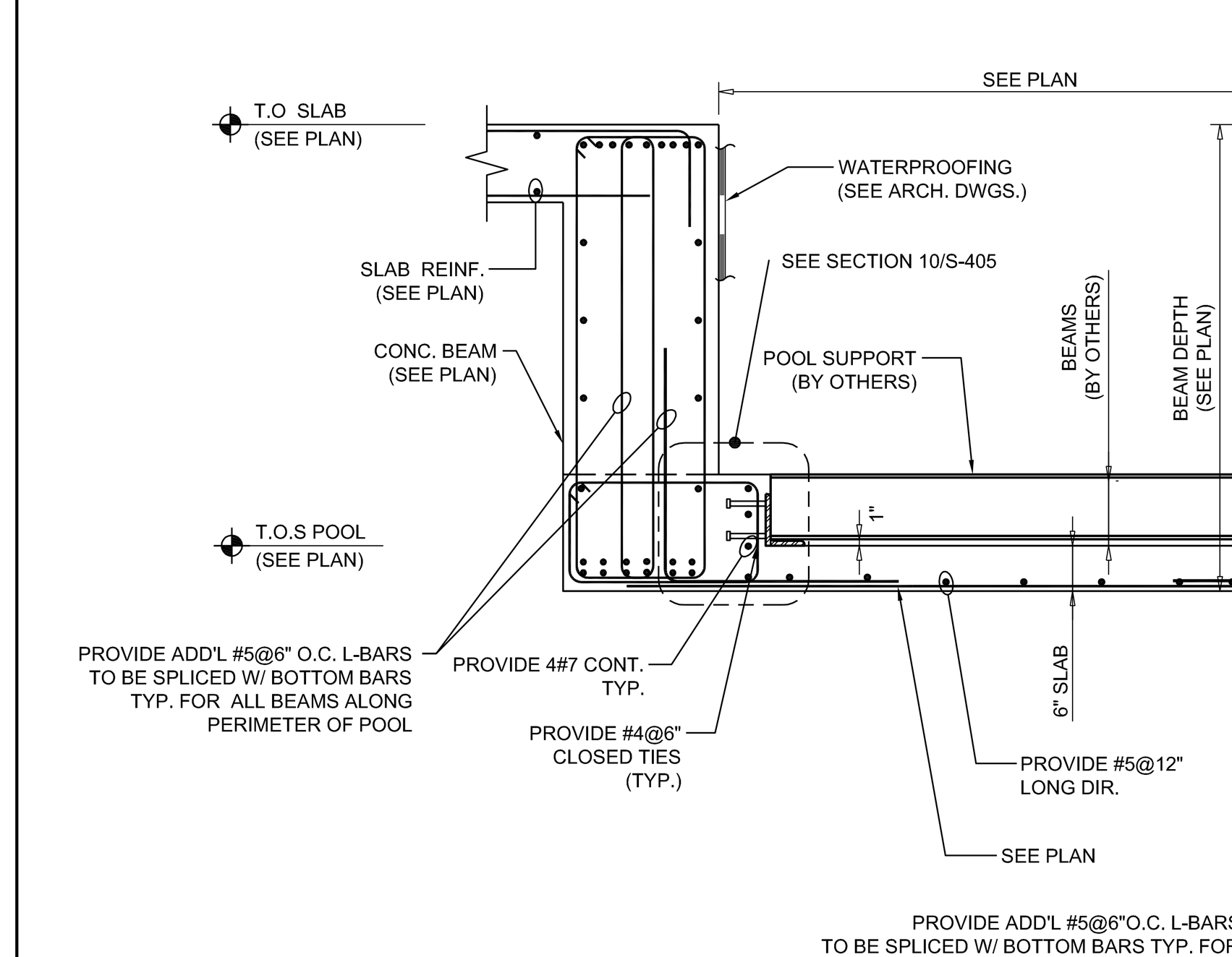


7 WINDOW WASHING TRACK DETAIL
SCALE: 3"=1'-0"

5 COLUMN/WALL REINFORCEMENT LAP DETAIL
SCALE: 1"=1'-0"



10 POOL DETAIL
SCALE: 1-1/2"=1'-0"



9 SECTION AT POOL
SCALE: 1/2"=1'-0"

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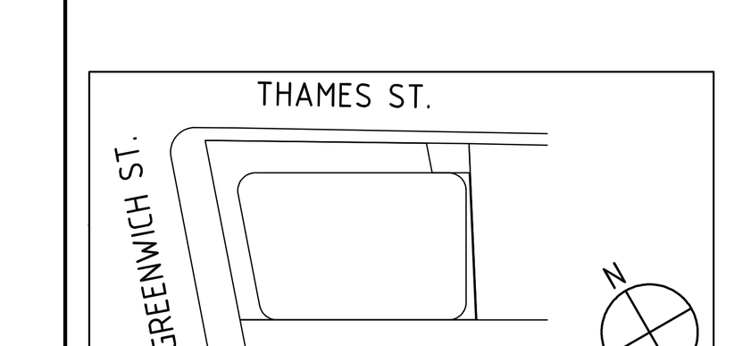

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