

HEATING, VENTILATING & AIR CONDITIONING SYMBOL LIST

DUCTWORK LEGEND	
	CEILING DIFFUSER (4-WAY)
	CEILING DIFFUSER (3-WAY)
	CEILING DIFFUSER (2-WAY)
	CEILING DIFFUSER (1-WAY)
	DOUBLE-SIDED AIR LIGHT TROFFER
	SINGLE-SIDED AIR LIGHT TROFFER
	LINEAR DIFFUSER
	ACTIVE SECTION (SUPPLY)
	INACTIVE SECTION (RETURN)
	RETURN REGISTER OR GRILLE
	DIFFUSER TAG (CFM)
	SUPPLY ARROW
	RETURN OR EXISTING ARROW
	SUPPLY TOP REGISTER
	RETURN OR EXHAUST TOP REGISTER OR GRILLE
	ELBOW WITH TURNING VANES
	DUCT SPLIT
	BRANCH TAKEOFF
	RADIUS ELBOW (LONG RADIUS UNLESS OTHERWISE NOTED)
	FIRE RATED ENCASED DUCT
	SUPPLY DUCT UP (DISCHARGE SIDE OF FAN)
	SUPPLY AIR RISER UP AND DOWN
	SUPPLY DUCT DOWN (DISCHARGE SIDE OF FAN)
	RETURN OR EXHAUST DUCT UP (SUCTION SIDE OF FAN)
	RETURN OR EXHAUST AIR RISER UP AND DOWN
	RETURN OR EXHAUST DUCT DOWN (SUCTION SIDE OF FAN)
	SUPPLY ROUND DUCT SECTION UP
	SUPPLY ROUND DUCT SECTION DN
	RETURN/EXHAUST ROUND DUCT SECTION UP
	RETURN/EXHAUST ROUND DUCT SECTION DN
	RETURN/EXHAUST ROUND DUCT SECTION UP AND DOWN
	SLOPING RISE IN DUCTWORK
	SLOPING DROP IN DUCTWORK
	ACCESS DOOR IN DUCT
	DUCT SIZE (CLEAR INSIDE DIMENSION) FIRST FIGURE INDICATES PLAN SIZE
	ROUND DUCT DIAMETER SIZE (CLEAR INSIDE DIMENSION)
	ACOUSTIC LINING IN DUCT (DUCT SIZE NOTED INDICATES INSIDE DIMENSIONS)
	FIRE RATED DUCT (DUCT SIZE NOTED INDICATES INSIDE DIMENSIONS)
	FLEXIBLE CONNECTION
	VOLUME DAMPER
	FUSIBLE LINK FIRE DAMPER W/DUCT ACCESS DOOR (SMOKE DAMPER) (COMBINATION FIRE/SMOKE DAMPER)
	IN-LINE FAN
	PROPELLER FAN
	ROOF VENTILATOR
	ROOF VENTILATOR

DUCTWORK LEGEND (CONTINUED)	
	VERTICAL UNIT HEATER
	HORIZONTAL UNIT HEATER
	CABINET UNIT HEATER
	AUTOMATIC LOUVER DAMPER (MOTORIZED)
	MANUAL LOUVER DAMPER
	COIL HC = HEATING COIL CC = COOLING COIL PHC = PREHEAT COIL EHC = ELECTRICAL HEATING COIL
	VAV BOX VAV "DESIGNATION" (MAX. CFM/MIN. CFM)
	VAV BOX WITH HOT WATER REHEAT
	VAV BOX WITH ELECTRICAL REHEAT "S KW" = SIZE OF REHEAT COIL
	FAN POWERED BOX FAN "DESIGNATION" (TOTAL CFM/MAX. CFM/MIN. CFM)
	FAN POWERED VAV BOX WITH HOT WATER REHEAT
	FAN POWERED VAV BOX WITH ELECTRICAL REHEAT "S KW" = SIZE OF REHEAT COIL
	TRANSFER GRILLES ON BOTH SIDES OF PARTITION OR WALL
	OPENING IN WALL ABOVE HUNG CEILING (SIZE)
	DUCT BREAK (SQUARE)
	DUCT BREAK (ROUND)/PIPE BREAK
	DOOR LOUVER (SIZE)
	UNDERCUT DOOR
	SQUARE FEET
	DIAMETER

PIPING LEGEND (CONTINUED)	
	ANGLE RELIEF VALVE
	PRESSURE REDUCING VALVE (PRV)
	BALANCING VALVES (SEE SPEC)
	AUTOMATIC ISOLATION VALVE
	BUTTERFLY VALVE (MANUAL)
	BUTTERFLY VALVE (MOTORIZED)
	BALL VALVE
	NEEDLE VALVE
	REFRIGERANT EXPANSION VALVE
	ANGLED GATE VALVE
	ANGLED GLOBE VALVE
	PRESSURE REDUCER - SELF CONTAINED
	PRESSURE REDUCER - EXTERNAL
	PRESSURE REDUCER - DIFFERENTIAL
	QUICK OPENING
	STRAINER WITH BLOW-OFF
	WATER TRAP
	Y-PATTERN GLOBE STYLE BALANCING VALVE WITH PRESSURE DIFFERENTIAL METERING PORTS (SEE SPECIFICATIONS)
	PUMP
	REFRIGERANT EXPANSION VALVE
	SIGHT GLASS
	HOSE BIBB
	MANUAL AIR VENT
	AUTOMATIC AIR VENT
	THERMOMETER
	PIPE WELL
	PRESSURE GAUGE AND COOK
	FLOW BALANCING STATION
	NATURAL GAS
	COMPRESSED AIR
	INSULATED HEAT TRACED PIPING
	SLEEVE
	AUTO FLOW CONTROL VALVE (SEE SPECIFICATIONS)

PIPING LEGEND	
	CONDENSER WATER SUPPLY
	CONDENSER WATER RETURN
	CHILLED WATER SUPPLY
	CHILLED WATER RETURN
	GLYCOL SUPPLY
	GLYCOL RETURN
	HIGH TEMPERATURE HOT WATER SUPPLY
	HIGH TEMPERATURE HOT WATER RETURN
	MEDIUM TEMPERATURE HOT WATER SUPPLY
	MEDIUM TEMPERATURE HOT WATER RETURN
	HOT WATER SUPPLY
	HOT WATER RETURN
	SECONDARY WATER SUPPLY (ZONE)
	SECONDARY WATER RETURN (ZONE)
	REFRIGERANT LIQUID PIPING
	REFRIGERANT SUCTION PIPING
	REFRIGERANT-SAFETY VALVE RELIEF LINE
	HOT GAS PIPING
	FUEL OIL VENT
	FUEL OIL SUPPLY
	FUEL OIL RETURN
	FUEL OIL-GAUGE LINE
	FUEL OIL FILL
	DOMESTIC COLD WATER MAKE-UP
	DRAIN LINE
	PUMP DISCHARGE
	ARROW INDICATES DIRECTION OF FLOW
	PITCH PIPE DOWN IN DIRECTION OF ARROW
	VENT LINE
	PIPE ANCHOR
	PIPE GUIDE
	EXPANSION COMPENSATOR
	EXPANSION LOOP (SIZE W x H)
	FLEXIBLE BALL JOINT EXPANSION COMPENSATOR
	CONCENTRIC REDUCER (INCREASE)
	ECCENTRIC REDUCER (INCREASE)
	UNION
	CAPPED PIPE
	DIRT POCKET
	"Y" TYPE STRAINER
	BASKET TYPE STRAINER
	DUPLEX STRAINER
	ELBOW TURNED UP
	ELBOW TURNED DOWN
	BOTTOM PIPE CONNECTION
	TOP PIPE CONNECTION
	SLOPED CHANGE IN PIPE ELEVATION
	FLEXIBLE CONNECTION
	ISOLATION VALVE (SEE SPECIFICATION)
	BALANCING VALVE (SEE SPECIFICATION)
	CHECK VALVE
	AUTOMATIC THREE WAY CONTROL VALVE
	AUTOMATIC TWO-WAY CONTROL VALVE
	RELIEF VALVE

ABBREVIATIONS	
ABV	ABOVE
AC	AIR CONDITIONING
ACS	AIR CONDITIONING SUPPLY
AD	ACCESS DOOR
AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
AL	ACOUSTICAL LINING
ALD	AUTOMATIC LOUVER DAMPER (MOTORIZED)
ATC	AUTOMATIC TEMPERATURE CONTROL
AV	APARTMENT VENTILATION
B	BOILER
B.D.D.	BACK DRAFT DAMPER
B.G.	BOTTOM GRILLE
BMS	BUILDING MANAGEMENT SYSTEM
BO	BLANK OFF
B.R.	BOTTOM REGISTER
B.H.P.	BRAKE HORSE POWER
BTU	BRITISH THERMAL UNIT
CC	CEILING COIL
CD	CEILING DIFFUSER
CFM	CUBIC FEET PER MINUTE
C.G.	CEILING GRILLE
CH	CABINET HEATER
CL	CLEAN OUT
CONV.	CONVECTOR
C.R.	CEILING REGISTER
CT	COOLING TOWER
CV	COORDINATOR VENTILATION
DN	DOWN
DX	DIRECT EXPANSION
E.A.T.	ENTERING AIR TEMPERATURE
E.C.H.	ELECTRIC CABINET HEATER
E.C.X.	ELECTRIC CLOSET EXHAUST
EF	EXHAUST FAN
EH	ENTRANCE HEATER
EHC	ELECTRIC HEATING COIL
ES	EQUAL SPLIT
EUH	ELECTRIC UNIT HEATER
E.W.T.	ENTERING WATER TEMPERATURE
FC	FLEXIBLE CONNECTION
FCC	FIRE COMMAND CENTER
FCL	FAN COIL UNIT
FD	1 1/2 HR FUSIBLE LINK FIRE DAMPER W/DUCT ACCESS DOOR
FD-3	3 HR FUSIBLE LINK FIRE DAMPER
FDC	CEILING RADIATION DAMPER
FDH	1 1/2 HR FIRE DAMPER WITH HEAT SENSOR
FDH-3	3 HR FIRE DAMPER WITH HEAT SENSOR
FDH	FUME HOOD EXHAUST
FL	FLOOR
F.L.A.	FULL LOAD AMPS
FLR	FUSIBLE LINK REGISTER
FPB	FAN POWERED BOX
FPB	FANS PER INCH
FSD-FL	COMBINATION FIRE/SMOKE DAMPER WITH FUSIBLE LINK
FSD	1 1/2 HR COMB. FIRE/SMOKE DAMPER SINGLE HEAT SENSOR
FSD-3	3 HR COMB. FIRE/SMOKE DAMPER SINGLE HEAT SENSOR
FSD-HS	1 1/2 HR COMB. FIRE/SMOKE DAMPER DUAL HEAT SENSOR
FSD-HS3	3 HR COMB. FIRE/SMOKE DAMPER DUAL HEAT SENSOR
FSD-RA	COMBINATION FIRE/SMOKE DAMPER (REVERSE ACTING)
FTR	FIN TUBE RADIATOR
GPM	GALLONS PER MINUTE
GH	GENERAL EXHAUST
HC	HEATING COIL
HDP	HEAT PUMP
HP	HORSE POWER
HSD	COMBINATION HEAT/SMOKE DAMPER
HX	HEAT EXCHANGER (SHELL & TUBE)
I.D.	INSIDE DIMENSION
KW	KILOWATT
KWH	KILOWATT HOURS
KX	KITCHEN EXHAUST
KRXH	KITCHEN RANGE HOOD EXHAUST
L.A.T.	LEAVING AIR TEMPERATURE
LD	LOCK ROTOR AMPS
L.R.A.	LOCK ROTOR AMPS
LWS	LOUVER WITH WIRE SCREEN
L.W.T.	LEAVING WATER TEMPERATURE
M.A.T.	MIXED AIR TEMPERATURE
MAX	MAXIMUM
MDH	THOUSAND BTU PER HOUR
MIN	MINIMUM
MLD	MANUAL LOUVER DAMPER
MO (WO)	MASONRY OPENING (WALL OPENING)
N.C.	NORMALLY CLOSED
NFA	NET FREE AREA
N.I.C.	NOT IN THIS CONTRACT
NK	NECK
N.O.	NORMALLY OPEN
N.T.S.	NOT TO SCALE
OA	OUTSIDE AIR
ORD	OPPOSED BLADE DAMPER
O.D.	OUTSIDE DIMENSION
P	PUMP
P.A.	PRIMARY AIR
PD	PUMPED DISCHARGE
PHC	PRE-HEAT COIL
PHX	PLATE HEAT EXCHANGER
P.R.V.	PRESSURE REDUCING VALVE
PSI	POUNDS PER SQUARE INCH (GAUGE)
PSIA	POUNDS PER SQUARE INCH ABSOLUTE
RA	RETURN AIR
RF	RETURN FAN
RHC	REHEAT COIL
RM	REFRIGERATION MACHINE
RPM	REVOLUTIONS PER MINUTE
SA	SUPPLY AIR
SD	SMOKE DAMPER
SM	SUPPLY FAN
SM	SHEET METAL
SP	STATIC PRESSURE
ST	SOUND TRAP
SK	SMOKE EXHAUST
TF	TRANSFER FAN
T.G.	TOP GRILLE
T.R.	TOP REGISTER
TR.D.	TRANSFER DUCT
TR.G.	TRANSFER GRILLE
TX	TOILET EXHAUST
UH	UNIT HEATER
UHE	UNIT HEATER (ELECTRIC)
U.O.N.	UNLESS OTHERWISE NOTED
VAR.	VARIABLE
VAV	VARIABLE AIR VOLUME
VD	VOLUME DAMPER
WC	WATER CHILLER
WMS	WIRE MESH SCREEN
(300)	CUBIC FEET OF AIR PER MINUTE OR GALLONS PER MINUTE

MECHANICAL DRAWING LIST											
DRAWING NUMBER	DRAWING TITLE	SCALE	DESIGN DEVELOPMENT	SELF CONSTRUCTION	85% CONSTRUCTION	ISSUED TO DOB	PROGRESS SET	85% O' SET	AMTRAK SUBMISSION		
			07.15.11	09.15.11	12.08.11	07.02.12	08.22.12	09.28.12	04.19.13		
1	M-000.00	HVAC DRAWING LIST, SYMBOLS AND ABBREVIATIONS	NTS								
2	M-001.00	HVAC SCOPE OF WORK	NONE								
3	M-300.00	HVAC CELLAR PLAN	1/8"=1'-0"								
4	M-3M0.00	HVAC CELLAR MEZZANINE PLAN	1/8"=1'-0"								
5	M-301.00	HVAC 1ST FLOOR PLAN	1/8"=1'-0"								
6	M-3M1.00	HVAC 1ST FLOOR MEZZANINE PLAN	1/8"=1'-0"								
7	M-302.00	HVAC 2ND FLOOR PLAN	1/8"=1'-0"								
8	M-303.00	HVAC 3RD FLOOR PLAN	1/8"=1'-0"								
9	M-304.00	HVAC 4TH FLOOR PLAN	1/8"=1'-0"								
10	M-305.00	HVAC 5TH FLOOR PLAN	1/8"=1'-0"								
11	M-305P.00	HVAC 5TH FLOOR PIPING PLAN	1/8"=1'-0"								
12	M-306.00	HVAC 6TH TO 11TH FLOOR PLAN	1/8"=1'-0"								
13	M-312.00	HVAC 12TH TO 20TH FLOOR PLAN	1/8"=1'-0"								
14	M-321.00	HVAC 21ST TO 31ST FLOOR PLAN	1/8"=1'-0"								
15	M-332.00	HVAC 32ND TO 42ND FLOOR PLAN	1/8"=1'-0"								
16	M-343.00	HVAC 43TH FLOOR PLAN	1/8"=1'-0"								
17	M-343P.00	HVAC 43TH FLOOR PIPING PLAN	1/8"=1'-0"								
18	M-344.00	HVAC MAIN ROOF PLAN	1/8"=1'-0"								
19	M-345.00	HVAC EMR PLAN	1/8"=1'-0"								
20	M-346.00	HVAC UPPER ROOF PLAN	1/8"=1'-0"								
21	M-400.00	HVAC SECTION PLANS SHEET NO. 1	AS NOTED								
22	M-500.00	HVAC AIR RISER DIAGRAM SHEET NO. 1	NONE								
23	M-501.00	HVAC AIR RISER DIAGRAM SHEET NO. 2	NONE								
24	M-502.00	HVAC AIR RISER DIAGRAM SHEET NO. 3	NONE								
25	M-503.00	HVAC WATER RISER DIAGRAM SHEET NO. 1	NONE								
26	M-504.00	HVAC WATER RISER DIAGRAM SHEET NO. 2	NONE								
27	M-505.00	HVAC FUEL OIL RISER DIAGRAM	NONE								
28	M-506.00	HVAC STAIR VENTILATION/SMOKE EXHAUST DIAGRAM	NONE								
29	M-601.00	HVAC SCHEDULES SHEET NO. 1	NONE								
30	M-602.00	HVAC SCHEDULES SHEET NO. 2	NONE								
31	M-701.00	HVAC DETAILS SHEET NO. 1	NONE								
32	M-702.00	HVAC DETAILS SHEET NO. 2	NONE								
33	M-703.00	HVAC DETAILS SHEET NO. 3	NONE								
34	M-704.00	HVAC DETAILS SHEET NO. 4	NONE								
35	M-705.00	HVAC DETAILS SHEET NO. 5	NONE								
36	M-706.00	HVAC DETAILS SHEET NO. 6	NONE								
37	M-707.00	HVAC DETAILS SHEET NO. 7	NONE								
38	M-801.00	HVAC CONTROLS DIAGRAMS SHEET NO. 1	NONE								
39	M-802.00	HVAC CONTROLS DIAGRAMS SHEET NO. 2	NONE								

CONTROLS LEGEND	
	THERMOSTAT
	HUMIDISTAT
	SMOKE DETECTOR
	EMERGENCY BREAK GLASS SWITCH FOR EQUIP. SHUT-DOWN
	TEMPERATURE SENSOR
	HUMIDITY SENSOR
	CARBON MONOXIDE SENSOR
	CARBONE DIOXIDE SENSOR
MISCELLANEOUS	
	NEW WORK
	EXISTING WORK
	EXISTING WORK TO BE REMOVED
	POINT OF NEW CONNECTION TO EXISTING WORK
	DETAIL NO. DRAWING NO.
	DETAIL NO. DESIGNATION
	SECTION NUMBER DRAWING NUMBER
	REFER TO NOTES ON DRAWING
	CENTER LINE
	DISCONNECT SWITCH
	BEAM PENETRATION (SIZE)

STEAM PIPING LEGEND	
	HIGH PRESSURE STEAM SUPPLY
	MEDIUM PRESSURE STEAM SUPPLY
	HIGH PRESSURE STEAM RETURN
	MEDIUM PRESSURE STEAM RETURN
	LOW PRESSURE STEAM SUPPLY
	LOW PRESSURE STEAM RETURN
	STEAM TRAP - FLOAT AND THERMOSTATIC
	STEAM TRAP - INVERTED BUCKET
	LOW PRESSURE STEAM TRAP RIG
	MEDIUM OR HIGH PRESSURE STEAM TRAP RIG
	THERMOSTATIC TRAP
	THERMO DYNAMIC TRAP
	HEAVY DUTY FLOAT TRAP

SCOPE OF WORK – RIVERSIDE BUILDING 2			
PROJECT OVERVIEW:			
THIS DESIGN IS FOR THE HVAC INFRASTRUCTURE AND INTERIOR FIT OUT FOR THE RIVERSIDE CENTER BUILDING 2 LOCATED IN THE RIVERSIDE SOUTH SECTION OF MANHATTAN. THE PROJECT IS DEFINED AS A NEW 750,000 GROSS SQUARE FOOT 43 STORY RESIDENTIAL RENTAL BUILDING. ALSO INCLUDED IN THE BUILDING'S PROGRAM WILL BE A 100,000 SF PUBLIC SCHOOL ALONG WITH A HEALTH CLUB AMENITIES THAT WILL INCLUDE A SWIMMING POOL ON THE CELLAR LEVEL. THE SCHOOL WILL OCCUPY SPACE ON THE FIRST FIVE (5) LEVELS OF THE BUILDING. THE CELLAR LEVEL WILL ALSO INCLUDE A 56,000 SQ FT AMENITEITE SPACING INCLUDING GYM, POOL, HOBBY, DOG PLAY AREA, PARLOR, ELECTRICAL, UTILITY ROOMS AND BUILDING BACK OF HOUSE SPACES. FIRST LEVEL OF THE BUILDING WILL CONSIST OF RETAIL, SCHOOL AND RESIDENTIAL FACILITIES. THE RETAIL FACILITIES WILL BE PROVIDED WITH VALVED AND CAPPED SERVICES FOR FUTURE HEATING AND COOLING, AND ACCESS TO OUTDOOR AIR THROUGH PERIMETER LOUVERS. THE RETAIL SPACES WILL ALSO BE PROVIDED WITH A BLACK IRON EXHAUST LOUVER FOR COMMERCIAL GRADE GREASE COOKING EXHAUST. LEVELS 6 THRU 43 ARE PURELY RESIDENTIAL RANGING FROM STUDIOS TO MULTIPLE BEDROOM APARTMENTS. THE RETINAL APARTMENTS WILL BE FITTED OUT WITH VERTICAL STACKED PERIMETER HEAT PUMP UNITS FOR HEATING AND COOLING. TOILET AND KITCHEN EXHAUST ARE ALSO BEING PROVIDED FOR THE RESIDENCES. VENTILATION IS PROVIDED VIA OPERABLE WINDOWS AND ENERGY RECOVERY AC UNITS. IN ADDITION CONDITIONED OUTSIDE AIR WILL BE PROVIDED TO THE RESIDENTIAL CORRIDORS.			
SCOPE	SCOPE	SCOPE ITEMS NOT SHOWN	SCOPE ITEMS REQUIRING ADDITIONAL COORDINATION
<p>1.0 DESCRIPTION OF SYSTEMS</p> <p>A. BUILDING COOLING SYSTEM</p> <p>A CONDENSER WATER SYSTEM SHALL BE PROVIDED TO SERVE THE COOLING NEEDS OF THE BUILDING. THE SYSTEM SHALL CONSIST OF THE FOLLOWING:</p> <ul style="list-style-type: none">TWO (2) 750 TON COOLING TOWERS LOCATED ON THE ROOF.THREE (3) 750 TON PLATE AND FRAME HEAT EXCHANGERS LOCATED IN THE PUMP ROOM ON THE CELLAR LEVEL.THREE (3) 1500 GPM CONSTANT VOLUME PRIMARY CONDENSER WATER PUMPS (1 AS STANDBY) LOCATED IN THE CELLAR PUMP ROOM.THREE (3) 1500 GPM VARIABLE SPEED SECONDARY CONDENSER WATER PUMPS (1 AS STANDBY) LOCATED IN THE CELLAR PUMP ROOM.AUTOMATIC CHEMICAL FREE WATER TREATMENT SYSTEM (PRIMARY SIDE). SHOT FEEDER FOR THE SECONDARY SIDE.ASSOCIATED EQUIPMENT SUCH AS SIDE STREAM WATER FILTER, AIR SEPARATOR AND EXPANSION TANK <p>COOLING WILL BE GENERATED BY TWO (2) 750 TON INDUCED DRAFT COOLING TOWERS LOCATED ON THE ROOF OF THE BUILDING. THE SYSTEM WILL BE DESIGNED FOR A 15 °F DIFFERENTIAL TEMPERATURE (85 °F /700 °F ON PRIMARY SIDE AND 87 DEG/102 DEG. SECONDARY SIDE) THREE CONSTANT VOLUME PUMPS (1 AS STAND BY) RATED AT 1500 GPM EACH WILL DISTRIBUTE PRIMARY CONDENSER WATER FROM THE COOLING TOWER TO THE PLATE AND FRAME HEAT EXCHANGERS. ON THE SECONDARY SIDE OF THE PLATE AND FRAME HEAT EXCHANGERS THREE (3) VARIABLE SPEED PUMPS (1 AS STAND BY) RATED AT 1500 GPM EACH WILL DISTRIBUTE SECONDARY CONDENSER WATER TO THE PERIMETER HEAT PUMP UNITS AND VARIOUS WATER COOLED DX UNITS. DURING THE HEATING SEASON AUTOMATIC ISOLATION VALVES WILL BE USED TO SHUNT THE SECONDARY CONDENSER WATER FROM THE COOLING TOWER PLATE AND FRAME HEAT EXCHANGERS TO THE HEATING SHELL AND TUBE HEAT EXCHANGER IN ORDER TO MAINTAIN THE CONDENSER WATER LOOP AT HEATING SETPOINT.</p> <p>THE COOLING TOWERS SHALL BE PROVIDED WITH VARIABLE SPEED FANS. THE FANS SHALL MODULATE TO MAINTAIN CONDENSER WATER AT SETPOINT. IF CONDENSER WATER RETURN TEMPERATURES DROP TO BELOW 40°F, THE CONDENSER WATER BYPASS VALVE SHALL OPEN TO BYPASS THE CONDENSER WATER AND AVOID FREEZING.</p> <p>B. BUILDING HEATING SYSTEM</p> <p>UTILITY STEAM SHALL BE PROVIDED TO SERVE THE HEATING NEEDS OF THE PROJECT. THE SYSTEM SHALL CONSIST OF THE FOLLOWING:</p> <ul style="list-style-type: none">TWO (2) STEAM METER AND PRV STATION RATED FOR 40,000 LBS/HR AND 5,000 LBS/HR RESPECTIVELY.TWO (2) 20,700 LBS/HR SHELL AND TUBE HEAT EXCHANGERS (1 AS STANDBY) LOCATED AT THE CELLAR PUMP ROOM TO PROVIDE BUILDING HEAT.ASSOCIATED EQUIPMENT SUCH AS FLASH TANKS AND CONDENSATE COOLERS, ETC. <p>HIGH PRESSURE STEAM WILL BE PURCHASED FROM THE LOCAL UTILITY COMPANY. THE STEAM WILL BE METERED AND ITS PRESSURE REDUCED TO 15 PSIG VIA THE STEAM PRV STATION. LOW PRESSURE STEAM WILL THEN BE DISTRIBUTED TO THE PRIMARY SIDE OF THE SHELL AND TUBE HEAT EXCHANGER FOR HEAT INJECTION TO THE SECONDARY CONDENSER WATER LOOP OR STEAM HEATING COILS THROUGHOUT THE BUILDING. 1 ADDITION LOW PRESSURE STEAM WILL BE PROVIDED TO THE DOMESTIC HOT WATER STORAGE TANKS IN THE CELLAR AND MAIN ROOF. STEAM CONDENSATE WILL BE REUSED TO PREHEAT DOMESTIC WATER AT THESE TWO LOCATIONS VIA A CONDENSATE TANK HEAT EXCHANGER.</p> <p>C. CORRIDOR VENTILATION HEAT PUMP UNITS (AC-4-1, AC-5-1, AC-R-1)</p> <p>THE CORRIDOR VENTILATION SYSTEM IS SPLIT INTO TWO ZONES TO SERVE THE UPPER AND LOWER LEVELS OF THE BUILDING. THESE SYSTEMS SHALL CONSIST OF:</p> <ul style="list-style-type: none">ONE (1) 8 TON, 1050 CFM CONSTANT VOLUME WATER COOLED HEAT PUMP UNIT LOCATED ON THE 12TH FLOOR ROOF.ONE (1) 60 TON, 7,700 CFM CONSTANT VOLUME WATER COOLED HEAT PUMP UNIT LOCATED ON THE 5TH FLOOR MECHANICAL ROOM.ONE (1) 60 TON, 7,820 CFM CONSTANT VOLUME PACKAGED ROOF TOP UNIT LOCATED AT THE ROOF LEVEL. <p>THE WATER COOLED HEAT PUMP UNITS WILL SERVE THE LOWER LEVELS OF THE BUILDING. EACH OF THE WATER COOLED HEAT PUMP UNITS WILL BE LOCATED ON THE 4TH FLOOR MECHANICAL ROOM WILL INTAKE OUTSIDE AIR AT THE PERIMETER VIA THE AIR INTAKE LOUVERS. EACH UNIT WILL BE PROVIDED WITH SUPPLY FANS, MERV 8 PRE FILTER AND MERV 13 FINAL FILTERS. SUPPLY AIR FROM THE CONSTANT VOLUME HEAT PUMP UNIT WILL BE DISTRIBUTED VIA LOW PRESSURE DUCT RISERS. HORIZONTAL TAPS ARE PROVIDED ON EVERY FLOOR FROM THE RISER AND TERMINATE FLUSH AT THE WALL WILL WITH A FIRE DAMPER AND GRILLE. THE PACKAGED ROOF TOP UNIT WILL SERVE THE UPPER LEVELS OF THE BUILDING. THIS UNIT WILL BE PROVIDED WITH SUPPLY FANS, MERV 8 PRE FILTER AND MERV 13 FINAL FILTERS AND STEAM HEATING SECTION. SUPPLY AIR FROM THE PACKAGED AC UNIT WILL BE DISTRIBUTED VIA LOW PRESSURE DUCT RISERS. HORIZONTAL TAPS ARE PROVIDED ON EVERY FLOOR FROM THE RISER AND TERMINATE FLUSH AT THE WALL WILL WITH A FIRE DAMPER AND GRILLE. ALL UNITS WILL BE PROVIDED WITH HOT GAS RE-HEAT AND VARIABLE SPEED COMPRESSORS.</p> <p>D. APARTMENT VENTILATION AC UNITS (AC-ERU-4-1, AC-ERU-5-1, AC-ERU-5-2, AC-ERU-R-1, AC-ERU-R-2)</p> <p>THE APARTMENT VENTILATION SYSTEM IS SPLIT INTO TWO ZONES TO SERVE THE UPPER AND LOWER LEVELS OF THE BUILDING. THESE SYSTEMS SHALL CONSIST OF:</p> <ul style="list-style-type: none">ONE (1) 7 TON, 1,680 CFM CONSTANT VOLUME WATER COOLED HEAT PUMP UNIT LOCATED ON THE 12TH FLOOR ROOF.ONE (1) 25 TON, 5,730 CFM CONSTANT VOLUME WATER COOLED HEAT PUMP UNIT LOCATED ON THE 5TH FLOOR MECHANICAL ROOM.ONE (1) 30 TON, 7,290 CFM CONSTANT VOLUME WATER COOLED HEAT PUMP UNIT LOCATED ON THE 5TH FLOOR MECHANICAL ROOM.ONE (1) 30 TON, 6,785 CFM CONSTANT VOLUME PACKAGED ROOF TOP UNIT LOCATED AT THE ROOF LEVEL.ONE (1) 25 TON, 5,880 CFM CONSTANT VOLUME PACKAGED ROOF TOP UNIT LOCATED AT THE ROOF LEVEL. <p>THE WATER COOLED HEAT PUMP UNITS WILL SERVE THE LOWER LEVELS OF THE BUILDING. EACH OF THE WATER COOLED HEAT PUMP UNITS WILL BE LOCATED ON THE 4TH FLOOR MECHANICAL ROOM WILL INTAKE OUTSIDE AIR AT THE PERIMETER VIA THE AIR INTAKE LOUVERS. EACH UNIT WILL BE PROVIDED WITH SUPPLY FANS, MERV 8 PRE FILTER AND MERV 13 FINAL FILTERS. SUPPLY AIR FROM THE CONSTANT VOLUME HEAT PUMP UNIT WILL BE DISTRIBUTED VIA LOW PRESSURE DUCT RISERS. HORIZONTAL TAPS ARE PROVIDED ON EVERY FLOOR FROM THE RISER AND TERMINATE FLUSH AT THE WALL WILL WITH A FIRE DAMPER AND GRILLE. THE PACKAGED ROOF TOP AC UNIT WILL SERVE THE UPPER LEVELS OF THE BUILDING. THIS UNIT WILL BE PROVIDED WITH SUPPLY FANS, MERV 8 PRE FILTER AND MERV 13 FINAL FILTERS AND STEAM HEATING SECTION. SUPPLY AIR FROM THE PACKAGED AC UNIT WILL BE DISTRIBUTED VIA LOW PRESSURE DUCT RISERS. HORIZONTAL TAPS ARE PROVIDED ON EVERY FLOOR FROM THE RISER AND TERMINATE FLUSH AT THE WALL WILL WITH A FIRE SMOKE DAMPER AND GRILLE. ALL APARTMENT VENTILATION UNITS WILL BE PROVIDED WITH A HEAT RECOVERY SYSTEM THAT UTILIZES AN ENTHALPHY WHEEL TO PRECOOL OR PRE HEAT THE OUTSIDE AIR USING EXHAUST AIR SUCH AS TOILET EXHAUST. IN ADDITION ALL UNITS WILL BE PROVIDED WITH HOT GAS RE-HEAT AND VARIABLE SPEED COMPRESSORS.</p> <p>E. APARTMENTS</p> <p>THE AC AND HEATING SYSTEM FOR THE APARTMENTS WILL BE PROVIDED BY VERTICAL STACKED HEAT PUMP UNITS. THE VERTICAL STACKED HEAT PUMP UNITS SHALL BE LOCATED AT THE PERIMETER FACADE. REMOTE WALL MOUNTED THERMOSTAT SHALL CYCLE THE VERTICAL STACKED HEAT PUMP UNITS TO MAINTAIN THERMOSTAT SETPOINT. CONDENSER WATER RISERS SHALL DISTRIBUTE CONDENSER WATER TO EACH HEAT PUMP UNIT.</p> <p>F. LOBBY AC SYSTEM (AC-1M-1)</p> <p>THE LOBBY AC SYSTEM SYSTEMS SHALL CONSIST OF:</p> <ul style="list-style-type: none">ONE (1) 27 TON, 7,500 CFM VARIABLE VOLUME WATER COOLED HEAT PUMP UNIT LOCATED ON THE GROUND FLOOR MECHANICAL ROOM. <p>THE LOBBY AC UNIT WILL BE SERVED BY ONE (1) WATER COOLED VARIABLE AIR VOLUME HEAT PUMP UNIT LOCATED ON THE GROUND FLOOR MECHANICAL ROOM WITH INTAKE AND EXHAUST LOUVERS AT THE PERIMETER. THE UNIT WILL BE PROVIDED WITH SUPPLY FANS, MERV 8 PRE FILTER AND MERV 13 FINAL FILTERS, AND VARIABLE FREQUENCY DRIVE. AN INDEPENDENT RETURN FAN WITH ASSOCIATED VARIABLE FREQUENCY DRIVE WILL ALSO BE PROVIDED. SUPPLY AIR WILL BE PROVIDED FROM THE UNIT TO THE LOBBY AND OTHER SPACES VIA HORIZONTAL MEDIUM AND LOW PRESSURE DUCTWORK. THIS UNIT WILL BE PROVIDED WITH INTERNAL VAV ZONE DAMPERS. A SPACE TEMPERATURE SENSOR WILL BE USED TO CONTROL THE VOLUME OF AIR SUPPLIED TO EACH ZONE. THE SENSOR SHALL ALSO BE CONNECTED TO THE BMS SYSTEM TO ALLOW FOR THE STATUS AND CONTROL. THIS UNIT WILL ALSO BE CAPABLE OF FREE COOLING VIA OUTSIDE AIR ECONOMIZER.</p> <p>G. RESIDENTIAL AMENITIES AC UNIT (AC-0M-1)</p> <p>THE RESIDENTIAL AMENITIES AC SYSTEM SHALL CONSIST OF:</p> <ul style="list-style-type: none">ONE (1) 37 TON, 6,845 CFM VARIABLE VOLUME WATER COOLED HEAT PUMP UNIT LOCATED ON THE CELLAR LEVEL MECHANICAL ROOM. <p>THE RESIDENTIAL AC UNIT WILL BE SERVED BY ONE (1) WATER COOLED VARIABLE AIR VOLUME HEAT PUMP UNIT LOCATED ON THE GROUND FLOOR MECHANICAL ROOM WITH INTAKE AND EXHAUST LOUVERS AT THE PERIMETER. THE UNIT WILL BE PROVIDED WITH SUPPLY FANS, MERV 8 PRE FILTER AND MERV 13 FINAL FILTERS, VARIABLE FREQUENCY DRIVE AND INTERNAL CONDENSER WATER REHEAT COILS. AN INDEPENDENT RETURN FAN WITH ASSOCIATED VARIABLE FREQUENCY DRIVE WILL ALSO BE PROVIDED. SUPPLY AIR WILL BE PROVIDED FROM THE UNIT TO THE LOBBY AND OTHER SPACES VIA HORIZONTAL MEDIUM AND LOW PRESSURE DUCTWORK. THIS UNIT WILL BE PROVIDED WITH INTERNAL VAV ZONE DAMPERS. A SPACE TEMPERATURE SENSOR WILL BE USED TO CONTROL THE VOLUME OF AIR SUPPLIED TO EACH ZONE. THE SENSOR SHALL ALSO BE CONNECTED TO THE BMS SYSTEM TO ALLOW FOR THE STATUS AND CONTROL. THIS UNIT WILL ALSO BE CAPABLE OF FREE COOLING VIA OUTSIDE AIR ECONOMIZER.</p> <p>H. POOL AC UNIT (AC-C-1)</p> <p>THE POOL AC SYSTEM SHALL CONSIST OF:</p> <ul style="list-style-type: none">ONE (1) 36 TON, 6,845 CFM VARIABLE VOLUME WATER COOLED HEAT PUMP UNIT LOCATED IN THE MECHANICAL ROOM ON THE CELLAR LEVEL. <p>THE POOL AC UNIT WILL BE SERVED BY ONE (1) WATER COOLED CONSTANT VOLUME UNIT LOCATED IN THE MECHANICAL ROOM ON THE CELLAR LEVEL WITH INTAKE AND RISERS THAT WILL CONNECT TO THE GROUND FLOOR LOUVERS. THE UNIT WILL BE PROVIDED WITH SUPPLY FANS, STEAM HEATING COIL, MERV 8 FILTER, AND WASHABLE FILTERS FOR EXHAUST. THE UNIT WILL BE EQUIPPED WITH AN INTERNAL RETURN FAN. SUPPLY AIR WILL BE PROVIDED FROM THE UNIT TO THE POOL AREA VIA LOW PRESSURE DUCTWORK. THIS SYSTEM SHALL BE PROVIDED WITH A DEHUMIDIFICATION AND REHEAT SEQUENCE. THE SYSTEM WILL ALSO REQUIRE AN EXHAUST PURGE OPERATION DURING CLOSING FOR THE POOL TREATMENT FOR THE POOL. THIS UNIT WILL ALSO BE CAPABLE OF FREE COOLING VIA OUTSIDE AIR ECONOMIZER. THE CONTROLS AND SEQUENCE OF OPERATIONS FOR THESE SYSTEMS SHALL BE PROVIDED BY THE AC UNIT MANUFACTURER. SEE SPECIFICATIONS FOR CONTROLS AND SEQUENCE OF OPERATIONS.</p> <p>I. TOILET EXHAUST SYSTEM</p> <p>TOILETS WILL BE EXHAUSTED THROUGH THE HEAT WHEEL OF THE APARTMENT VENTILATION UNITS. FANS WITHIN EACH UNIT WILL DRAW AIR FROM THE TOILETS THROUGH THE HEAT WHEEL TO RECOVER ENERGY AND PRECOOL OR PREHEAT THE INCOMING AIR. LOW PRESSURE TOILET EXHAUST RISERS SHALL RUN VERTICALLY THROUGH EACH FLOOR. HORIZONTAL BRANCH DUCTWORK SHALL CONNECT TO EXHAUST GRILLES IN THE BATHROOMS. SELF-BALANCING DAMPERS SHALL BE INSTALLED IN EACH BATHROOM TO MAINTAIN THE DESIRED EXHAUST RATES.</p> <p>J. KITCHENS EXHAUST SYSTEM</p> <p>KITCHENS WILL BE EXHAUSTED THROUGH A VARIABLE SPEED FAN. LOW PRESSURE KITCHEN EXHAUST RISERS SHALL RUN VERTICALLY THROUGH EACH FLOOR. HORIZONTAL BRANCH DUCTWORK SHALL CONNECT TO EXHAUST GRILLES IN THE KITCHENS. SELF-BALANCING DAMPERS SHALL BE INSTALLED IN EACH BATHROOM TO MAINTAIN THE DESIRED EXHAUST RATES.</p> <p>K. RETAIL</p> <p>THE RETAIL PORTION OF THE BUILDING WILL BE PROVIDED WITH CAPPED HVAC SERVICES AND WILL INCLUDE THE FOLLOWING:</p>	<ul style="list-style-type: none">CONDENSER WATER FOR AIR-CONDITIONINGSTEAM PIPING FOR HEATINGPERIMETER LOUVERS FOR OUTSIDE AIR AND EXHAUST <p>EACH RETAIL TENANT WILL BE RESPONSIBLE FOR CONNECTING AND DISTRIBUTING THE HVAC SERVICES TO THEIR EQUIPMENT. THE CAPPED RETAIL SERVICES WILL BE SIZED BASED ON A RETAIL CRITERIA ESTABLISHED BY THE OWNER.</p> <p>L. FUEL OIL SYSTEMS</p> <p>FUEL OIL SYSTEM WILL CONSIST OF THE FOLLOWING:</p> <ul style="list-style-type: none">ONE (1) 275 GALLON SINGLE WALL FUEL OIL TANK LOCATED ON THE CELLAR LEVEL.ONE (1) DUPLEX FUEL OIL PUMP SET WITH ASSOCIATED CONTROLS. <p>M. AMTRAK SHAFT</p> <p>A TOTAL OF EIGHT (8) 48,930 CFM EXHAUST JET FANS WILL BE PROVIDED INSIDE THE AMTRAK SHAFT WITH ALL REQUIRED MOUNTING, STRUCTURE, AND VIBRATION ISOLATORS REQUIRED BY AMTRAK.</p> <p>N. LEVEL 5 AMENITIES (HP-H, HP-G)</p> <p>THE 5TH FLOOR AMENITY SPACES WILL BE SERVED BY HORIZONTAL WATER SOURCE HEAT PUMP UNITS. VENTILATION AIR WILL BE PROVIDED VIA EXTERIOR AIR INTAKE LOUVERS. LOW PRESSURE DUCT WORK WILL CONNECT TO PERIMETER LOUVER AND DUCT DIRECTLY TO THE AC UNIT RETURN PLENUM. SUPPLY AIR WILL ALSO BE PROVIDED VIA LOW PRESSURE DUCTWORK CONNECTED FROM THE UNIT TO THE SPACE CEILING DIFFUSER. WALL MOUNTED SPACE SENSOR SHALL MODULATE THE UNITS RETERATION CYCLE TO MAINTAIN THE SPACE AT SETPOINT.</p> <p>O. LOCKER ROOMS (HP-L, HP-N)</p> <p>THE LOCKER ROOMS WILL BE SERVED BY HORIZONTAL WATER SOURCE HEAT PUMP UNITS EQUIPPED WITH ENERGY RECOVERY DEVICES. 100% OUTDOOR AIR WILL BE PROVIDED VIA EXTERIOR AIR INTAKE LOUVERS. LOW PRESSURE DUCT WORK WILL CONNECT TO PERIMETER LOUVER AND DUCT DIRECTLY TO THE AC UNIT RETURN PLENUM. SUPPLY AIR WILL ALSO BE PROVIDED VIA LOW PRESSURE DUCTWORK CONNECTED FROM THE UNIT TO THE SPACE CEILING DIFFUSER. WALL MOUNTED SPACE SENSOR SHALL MODULATE THE UNITS RETERATION CYCLE TO MAINTAIN THE SPACE AT SETPOINT.</p> <p>P. STEAM CONDENSATE TANK (SCT-C-1 & SCT-R-1)</p> <p>A 12000 GALLON & 150 GALLON STEAM CONDENSATE TANK WILL BE PROVIDED IN THE CELLAR LEVEL MECHANICAL ROOM AND ROOF INORDER TO PREHEAT DOMESTIC WATER. A STAINLESS STEEL HEAT EXCHANGER TUBE AND TUBE DOMESTIC WATER BUNDLE BE INSTALLED INSIDE THE CONDENSATE TANK TO TRANSFER ENERGY FROM THE STEAM CONDENSATE TO THE DOMESTIC HOT WATER FLOWING THOUGH THE HEAT EXCHANGER. A THREE WAY MIXING VALVE WILL BE USED INORDER TO AVOID OVER HEATING THE DOMESTIC WATER.</p> <p>Q. SMOKE PURGE/VENTILATION FANS SF/SX-12-1, SF/SX-R-1-2)</p> <ul style="list-style-type: none">ONE (1) 8,700 CFM FAN LOCATED AT THE TOP OF THE STAIRCASE OF THE CUBE.TWO (2) 39,200 CFM FANS LOCATED ON THE ROOF <p>ALL POST FIRE SMOKE PURGE FANS SHALL BE MEDIUM PRESSURE DIRECT DRIVE AXIAL FANS. THEY WILL BE EQUIPPED WITH FIRE SMOKE DAMPERS AND TIED BACK TO THE FIRE ALARM SYSTEM. SEE CONTROL SPECIFICATION FOR SEQUENCE OF OPERATION.</p> <p>R. BUILDING MANAGEMENT SYSTEM</p> <p>A BUILDING MANAGEMENT AND CONTROL SYSTEM (BMS) SHALL BE PROVIDED. THE BUILDING MANAGEMENT AND CONTROL SYSTEM (BMS) TO PERFORM BOTH THE MONITORING AND CONTROL OF HVAC AND ELECTRICAL EQUIPMENT FOR BUILDING MANAGEMENT, ENERGY CONSERVATION, AND ENVIRONMENTAL CONTROL. THE BMS CONTROL PHILOSOPHY TO BE DIRECT DIGITAL CONTROL AND BE IMPLEMENTED BY A DISTRIBUTED DIRECT DIGITAL CONTROL SYSTEM. BMS EQUIPMENT OR PLATFORM SHALL BE CAPABLE OF PROVIDING INDUSTRY STANDARD OPEN PROTOCOL COMMUNICATION (BACNET, LONTALK, MODBUS) CAPABILITY TO OTHER BUILDING SYSTEMS. COMMUNICATION NETWORKS SHALL BE DESIGNED BY THE BMS CONTRACTOR AND FULLY COMPLY WITH THE MANUFACTURERS NETWORK TOPOLOGY GUIDELINES. THE DIRECT DIGITAL PROCESSING UNITS (DDPU) TO PERFORM REMOTE DATA ACQUISITIONS AND PROCESS CONTROL. DDPCS SHALL BE LOCALLY MOUNTED COMPLETELY SELF-CONTAINED, FIELD PROGRAMMABLE, REAL-TIME MICROPROCESSOR BASED CONTROLLERS CAPABLE OF STAND-ALONE OPERATION.</p> <ul style="list-style-type: none">APARTMENT AIR CONDITIONING LOCAL CONTROL ONLY WITH REMOTE THERMOSTATSALL EXHAUST FANS (START/STOP/STATUS AND SPEED CONTROL WHERE APPLICABLE)AIR CONDITIONING SYSTEMS SERVING LOBBY AMENITIES CORRIDOR AND APARTMENT VENTILATION TO BE PROVIDED WITH THE FOLLOWING CONTROL POINTS<ol style="list-style-type: none">START/STOPSTATUSTEMPERATURE SENSORS SUPPLY, RETURN SPACE AND OUTDOOR AIROUTDOOR AND RETURN AIR ENTHALPHY (AMENITY AND LOBBY AC UNITS ONLY)AIR FLOW SENSORS WHERE APPLICABLE IN SUPPLY OUTDOOR AIRFILTER DIFFERENTIAL PRESSURE AND HIGH LIMIT ALARMSUPPLY AND RETURN HIGH LIMIT. STATIC PRESSUREFREESTATS AND GENERAL ALARMSCONTROL VALVE POSITIONSGARAGE VENTILATION (SUPPLY AND EXHAUST)<ol style="list-style-type: none">SUPPLY FANS (START/STOP/STATUS)EXHAUST FANS (START/STOP/STATUS)FAN SPEED, SUPPLY FANS AND EXHAUST FANSEXHAUST FANCO SENSORS (ONE PER 1,500 SQ.FT.)FUEL OIL SYSTEM<ol style="list-style-type: none">MAIN TANK LEVEL SENSOR (DISPLAYS QUANTITY OF OIL IN STORAGE)LOW AND HIGH LIMIT SWITCHES DAY TANKPUMP STATUSPUMP START/STOPLEAD PUMP FAILURECOOLING PLANT<ol style="list-style-type: none">COOLING TOWER FAN VFD SPEED CONTROL (EACH)COOLING TOWER FAN VFD MONITORING (EACH)COOLING TOWER VFD START/STOP (EACH)COOLING TOWER SUMP, LEVEL ALARMS (HIGH AND LOW) (EACH)COOLING TOWER SUMP TEMPERATURE (EACH)CONDENSER WATER SUPPLY TEMPERATURECONDENSER WATER RETURN TEMPERATUREPRIMARY CONDENSER WATER PUMPS (START/STOP/STATUS) (EACH)SECONDARY CONDENSER WATER PUMPS (START/STOP/STATUS/SPEED CONTROL) (EACH)CONDENSER WATER BYPASS VALVE CONTROLPLATE AND FRAME HEAT EXCHANGER ISOLATION VALVE STATUS AND CONTROLEXPANSION TANK ALARMSTEAM UTILITY<ol style="list-style-type: none">STEAM UTILITY MONITORING (OPERATIONAL STATUS AND ALARMS)PLATE AND FRAME HEAT EXCHANGER ISOLATION VALVE STATUS AND CONTROLFLASH TANK AND CONDENSATE COOLER TEMPERATURE AND ALARMS	<ol style="list-style-type: none">CONTROL DIAGRAMSACOUSTICAL EQUIPMENT AND DEVICESSTEAM CONDENSATE DOMESTIC HOT WATER HEAT EXCHANGERS AND ASSOCIATED PUMPS, VALVES AND TRIM.FIRE DAMPERS FOR RATED PARTITIONS ON THE CELLAR, GROUND FLOOR, AND 5TH FLOORBLACK IRON EXHAUST FOR 5TH FLOOR KITCHEN.ANCHORS AND EXPANSION JOINTS FOR STEAM PIPING AND RISERS.CONDENSATE DRAIN PIPING ON THE 4TH FLOOR SERVING THE APARTMENT HEAT PUMPS ON THE CUBE IS INCOMPLETE. PIPING TO COLLECT AT THE 4TH FLOOR LEVEL AND BROUGHT DOWN AND DRAINED AT THE CELLAR MECHANICAL ROOM.EMERGENCY PRESSURE RELIEF VENT FOR FUEL OIL STORAGE TANK.	<ol style="list-style-type: none">ALL EQUIPMENT WEIGHTS WITH THE STRUCTURAL ENGINEER.ALL STRUCTURAL PENETRATIONS.DUCT WORK DISTRIBUTION SYSTEM FOR THE GROUND FLOOR LOBBIES AND AMENITY SPACES WITH ARCHITECTURAL PROGRAM AND CEILING HEIGHTS.LOUVER REQUIREMENTS AT THE GROUND FLOOR LEVEL.COORDINATION OF SOUND LEVELS OF THE MECHANICAL EQUIPMENT WITH THE ACOUSTICAL CONSULTANT.MECHANICAL ROOM FLOOR HEIGHTS.ISOLATION VALVES AND AIR VENTS LOCATION WITH ARCHITECTURAL CEILING PLANS.CURTAIN WALL PERFORMANCE COMPLIANCE WITH ENERGY CODE.LOW PRESSURE STEAM AND CONDENSATE RETURN LINE FOR ALL AREAS.FIFTH FLOOR DISTRIBUTION DUCT WORK AND PIPING WITH STRUCTURE.AMTRAK EXHAUST FANS.
ADD ALTERNATE PRICING			
<ol style="list-style-type: none">SINCE ADDITIONAL COORDINATION IS REQUIRED FOR THE AMTRAK EXHAUST FANS, IN THE EVENT THAT THESE FANS REQUIRE EMERGENCY POWER THE CONTRACTOR SHALL PROVIDE ADD ALTERNATE PRICING FOR THE FUEL OIL STORAGE AND DISTRIBUTION SYSTEMS TO INCLUDE THE FOLLOWING EQUIPMENT:<ol style="list-style-type: none">600 GALLON FUEL OIL STORAGE TANK220 GALLON/HR DUPLEX FUEL OIL PUMPSETFUEL OIL PIPING SIZES: 2 1/2" SUPPLY AND 3" RETURNINCREASED VENT, FILL, AND PRESSURE RELIEF PIPING TO SATISFY A SIX HUNDRED GALLON STORAGE REQUIREMENTINCREASE LOUVERS AND DUCT WORK IN THE EMERGENCY GENERATOR ROOM TO ACCOMMODATE 60,000 CFM			
SPECIFICATION ITEMS NOT INCLUDED			
<ol style="list-style-type: none">CONTROL SEQUENCES HAVE NOT BEEN PROVIDED FOR THE CELLAR AND 5TH FLOOR AMENITIES SPACES.LOCKER ROOM AC UNITS.DOMESTIC WATER PRE-HEAT SYSTEM.			
SPECIFICATION ITEMS REQUIRING ADDITIONAL REVISION			
<ol style="list-style-type: none">DUCT SPRAY ON FIRE PROOFING IS NOT PERMITTED BY NYC BUILDING CODE. ALL DUCTS NOTED TO BE FIRE RATED SHALL BE ENCLOSED IN FIRE RATED DRYWALL ENCLOSURE.			
ACOUSTICAL SCOPE OF WORK			
<ol style="list-style-type: none">IAC 5LFM SOUND ATTENUATORS OR EQUAL ON SUPPLY AND RETURN DUCTS OF ALL AC-ERU'S.IAC 3LFL SOUND ATTENUATORS OR EQUAL ON SUPPLY AND RETURN AIR DUCTS OF ALL AC UNITS.IAC CONIC FLOW SOUND ATTENUATORS OR EQUAL ON INLET SIDE OF EXHAUST FANS EF-C-1, RF-C-1, RF-C-2, RF-1-1, TX-1-1, EF-1-1, DX-1-1.IAC MODEL 3S OR EQUAL SOUND ATTENUATORS ON AIR INLET TO EMERGENCY GENERATOR.IAC MODEL SMS OR EQUAL ON RADIATOR OF EMERGENCY GENERATOR.MAXIM M51 HIGH EFFICIENCY MUFFLER OR EQUAL ON EMERGENCY GENERATOR ENGINE.1" THICK JOHNS-MANVILLE ACOUSTIC DUCT LINER OR EQUAL MINIMUM 15FT DOWNSTREAM OF ALL VAV BOXES.1" THICK ACOUSTIC LINED RETURN AIR DUCT FOR ALL APARTMENTS.MODEL EAL6811 RUSKIN STATIONARY ACOUSTICAL LOUVER OR EQUAL AT EMERGENCY GENERATOR AND OUTSIDE AIR INLET TO ALL MACHINE ROOM AC-ERU'S.MASON 30N OR EQUAL SPRING AND NEOPRENE VIBRATION ISOLATION HANGERS ON ALL PIPING MINIMUM 50FT UPSTREAM AND DOWNSTREAM OF PUMPS, HEAT EXCHANGERS, AND COOLING TOWERS.MASON 30N OR EQUAL SPRING AND NEOPRENE VIBRATION ISOLATORS ON ALL CEILING SUSPENDED AC UNITS AND EXHAUST FANS.MASON SLR OR EQUAL SPRING ISOLATORS ON ALL PUMPS, COOLING TOWERS, EXHAUST FANS AND EMERGENCY GENERATOR.ELEVATOR MACHINERY VIBRATION ISOLATORS PER ELEVATOR MANUFACTURER.			

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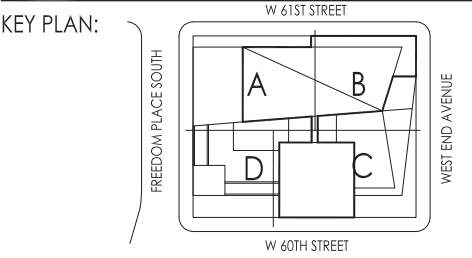
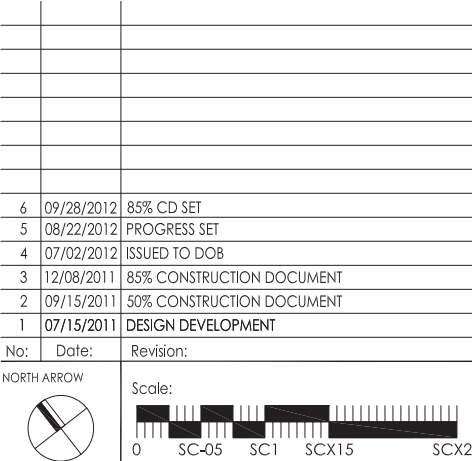
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PROJECT:
**RIVERSIDE CENTER
BUILDING 2**

DRAWING TITLE:
HVAC SCOPE OF WORK

SEAL & SIGNATURE:

DATE: JULY 15, 2011
PROJECT:
DRAWN BY: D.C.
CHECKED BY: T.A.
DRAWING NO.:
M-001.00
CADD FILE NO.:

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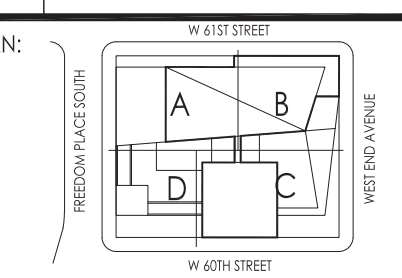
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1	04/19/2013	AMTRAK SUBMISSION
2	09/28/2012	BTS CD SET
3	08/22/2012	PROCESS SET
4	10/02/2012	ISSUED TO JOB
5	12/08/2011	BTS CONSTRUCTION DOCUMENT
6	09/15/2011	BTS CONSTRUCTION DOCUMENT
7	07/16/2011	DESIGN DEVELOPMENT

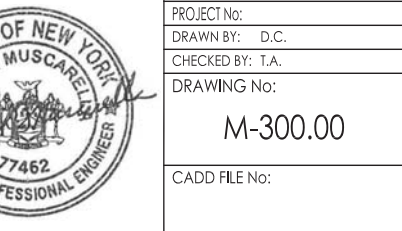
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PROJECT:
RIVERSIDE CENTER
BUILDING 2

DRAWING TITLE:
HVAC CELLAR PLAN

SEAL & SIGNATURE:
DATE: JULY 15, 2011
PROJECT: RIVERSIDE CENTER
DRAWN BY: D.C.
CHECKED BY: F.A.
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CADD FILE NO.:



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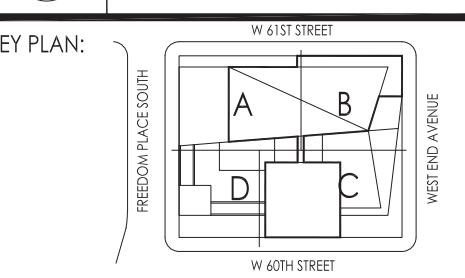
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6	09/28/2012	BAS, CD SET
5	08/22/2012	PROCESS SET
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3	12/08/2011	BAS, CONSTRUCTION DOCUMENT
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Nos.	Date	Revisions
1		
2		
3		
4		
5		
6		



PROJECT:
**RIVERSIDE CENTER
BUILDING 2**

DRAWING TITLE:
HVAC 2ND FLOOR PLAN

SEAL & SIGNATURE:	DATE: JULY 15, 2011
PROJECTING:	DRAWN BY: D.C.
CHECKED BY: E.A.	DRAWING NO: M-302.00
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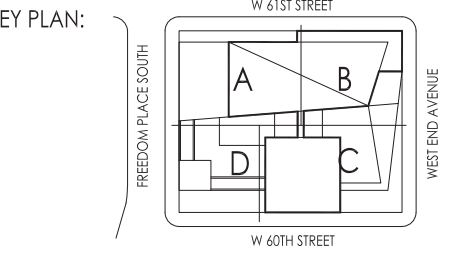
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4	09/28/2012	BAS, CD SET
3	08/22/2012	PROCESS SET
2	07/02/2012	ISSUED TO JOB
1	12/08/2011	BAS, CONSTRUCTION DOCUMENT
1	09/15/2011	BAS, CONSTRUCTION DOCUMENT
1	07/16/2011	DESIGN DEVELOPMENT

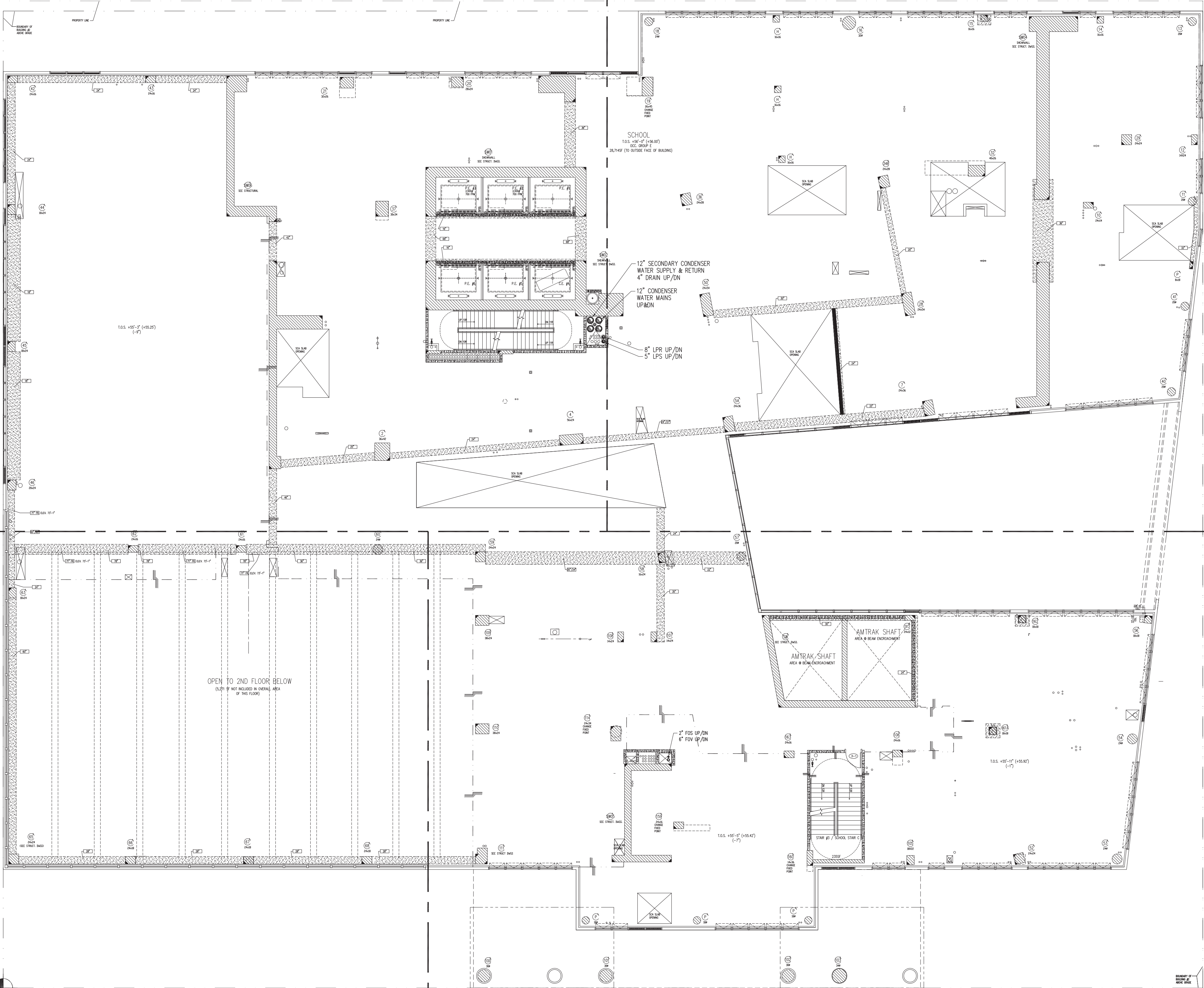
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NORTH ARROW



PROJECT:
**RIVERSIDE CENTER
BUILDING 2**

DRAWING TITLE:
HVAC 3RD FLOOR PLAN

SEAL & SIGNATURE: DATE: JULY 15, 2011
PROJECT NO.:
DRAWN BY: D.C.
CHECKED BY: T.A.
DRAWING NO.: **M-303.00**
CADD FILE NO.:



MATCHLINE A-D
MATCHLINE A-D

MATCHLINE B-C
MATCHLINE B-C

BOUNDARY OF
BUILDING #2
0'-0"

MATCHLINE C-D
MATCHLINE C-D

RIVERSIDE CENTER
BUILDING TWO

NEW YORK, NY

OWNER/DEVELOPER:
EXTELL DEVELOPMENT

433 WEST 49TH STREET
NEW YORK, NY 10049
T: 212.218.4253
F: 212.219.2893

ARCHITECT OF RECORD:
SLCE Architects

841 BROADWAY
NEW YORK, NY 10003
T: 212.979.8400
F: 212.979.8387

STRUCTURAL ENGINEER:
WSP CANTOR SEINUK

228 EAST 45TH STREET, 3RD FLOOR
NEW YORK, NY 10017
T: 212.687.8988
F: 212.687.5501

MECHANICAL ENGINEER:
WSP FLACK+KURTZ

512 SEVENTH AVENUE
NEW YORK, NY 10017
T: 212.532.9600

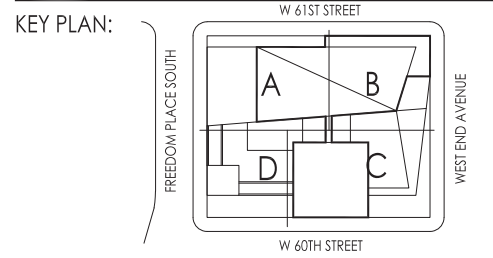


6	09/28/2012	BAS, CD SET
5	08/22/2012	PROGRESS SET
4	09/02/2012	ISSUED TO JOB
3	12/06/2011	BAS, CONSTRUCTION DOCUMENT
2	09/15/2011	BAS, CONSTRUCTION DOCUMENT
1	09/16/2011	DESIGN DEVELOPMENT

Rev: _____
Date: _____
Revised: _____

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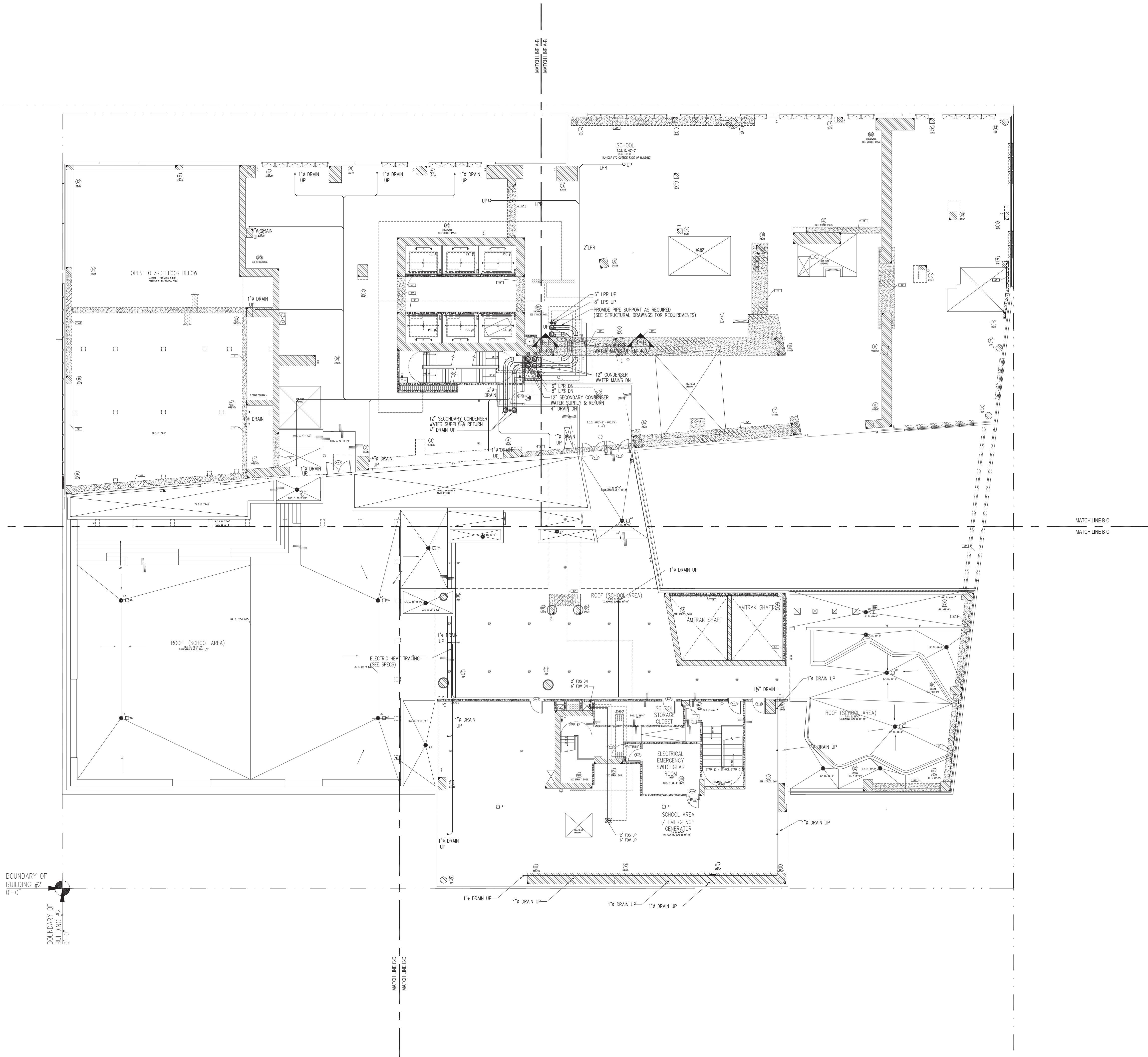
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PROJECT:
**RIVERSIDE CENTER
BUILDING 2**

DRAWING TITLE:
HVAC 4TH FLOOR PLAN

SEAL & SIGNATURE: DATE: JULY 15, 2011
PROJECT NO.: _____
DRAWN BY: D.C.
CHECKED BY: E.A.
DRAWING NO.: **M-304.00**
CADD FILE NO.: _____



RIVERSIDE CENTER
BUILDING TWO

NEW YORK, NY

OWNER/DEVELOPER:
EXTELL DEVELOPMENT

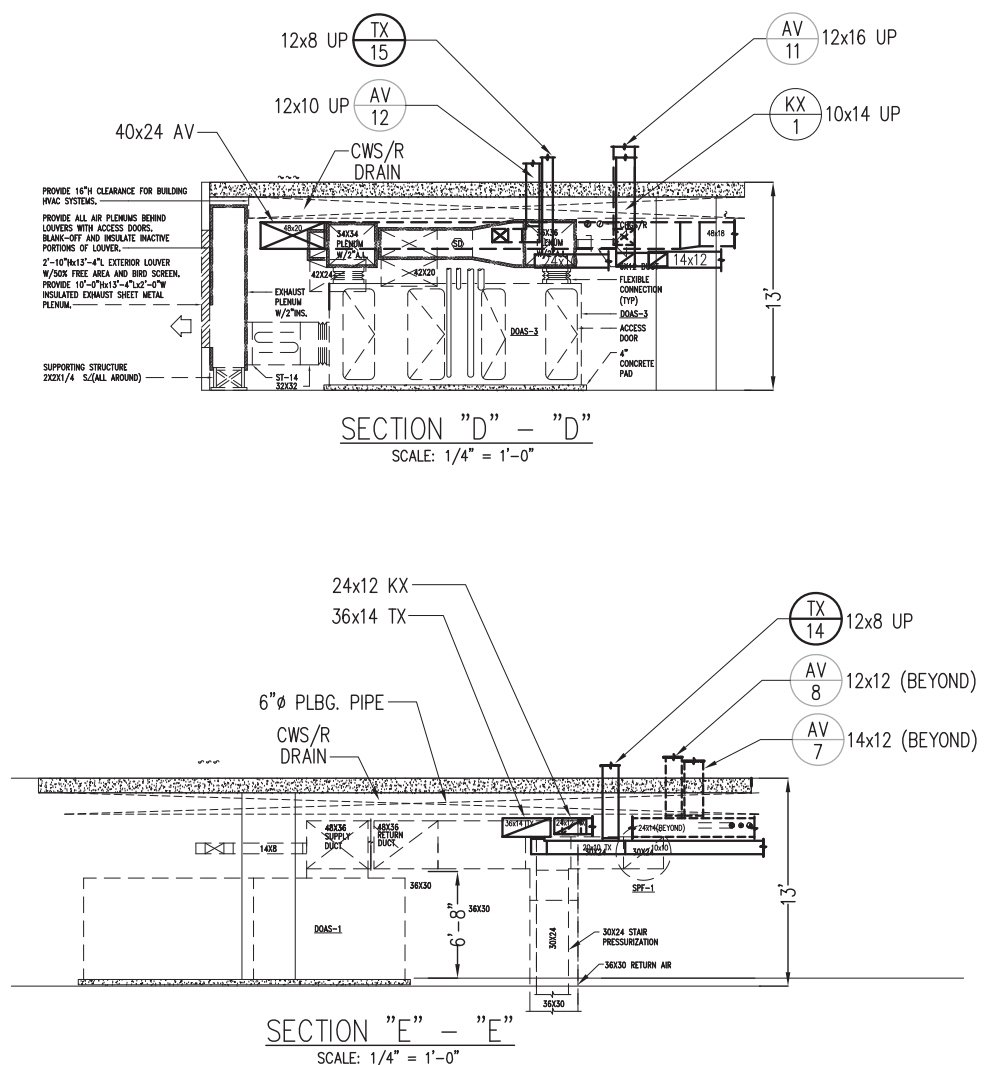
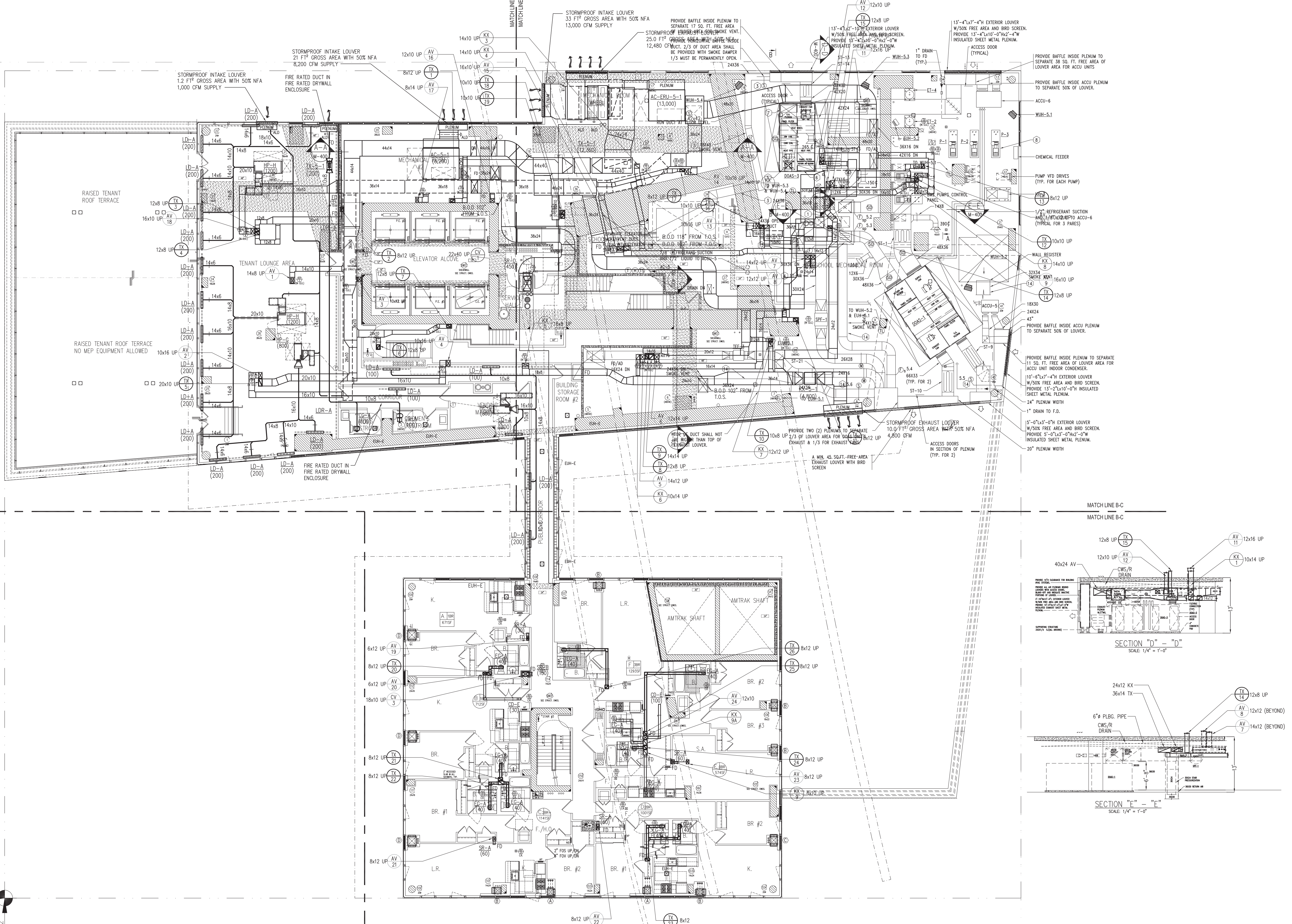
423 WEST 47TH STREET
NEW YORK, NY 10049
T: 212.248.4203
F: 212.249.2093

ARCHITECT OF RECORD:
SLCE Architects

841 BROADWAY
NEW YORK, NY 10003
T: 212.979.8400
F: 212.979.8307

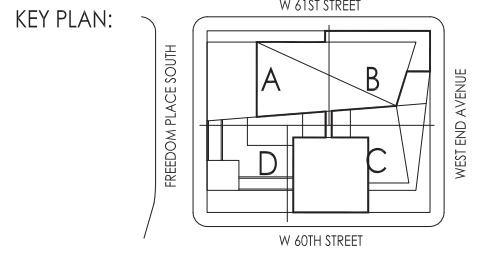
STRUCTURAL ENGINEER:
WSP CANTOR SEINUK
228 EAST 45TH STREET, 3RD FLOOR
NEW YORK, NY 10017
T: 212.687.9888
F: 212.687.5501

MECHANICAL ENGINEER:
WSP FLACK+KURTZ
512 SEVENTH AVENUE
NEW YORK, NY 10017
T: 212.532.9600



4	09/28/2012	BAS CO SET
3	08/22/2012	PROGRESS SET
2	09/02/2012	ISSUED TO JOB
1	12/08/2011	BAS CONSTRUCTION DOCUMENT
2	09/15/2011	BAS CONSTRUCTION DOCUMENT
1	09/16/2011	DESIGN DEVELOPMENT

Rev: _____
Date: _____
Revised: _____



PROJECT:
RIVERSIDE CENTER
BUILDING 2

DRAWING TITLE:
HVAC 5TH FLOOR PLAN

SEAL & SIGNATURE: _____
DATE: JULY 15, 2011
PROJECT: _____
DRAWN BY: D.C.
CHECKED BY: T.A.
DRAWING NO: M-305.00
CADD FILE NO: _____

RIVERSIDE CENTER
BUILDING TWO

NEW YORK, NY

OWNER/DEVELOPER:
EXTELL DEVELOPMENT

433 WEST 40TH STREET
NEW YORK, NY 10019
T: 212.218.4233
F: 212.219.2893

ARCHITECT OF RECORD:
SLCE Architects

841 BROADWAY
NEW YORK, NY 10003
T: 212.979.8400
F: 212.979.8387

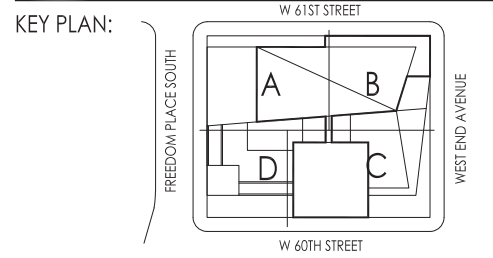
STRUCTURAL ENGINEER:
WSP CANTOR SEINUK
228 EAST 45TH STREET, 3RD FLOOR
NEW YORK, NY 10017
T: 212.687.9888
F: 212.687.5501

MECHANICAL ENGINEER:
WSP FLACK+KURTZ
512 SEVENTH AVENUE
NEW YORK, NY 10017
T: 212.532.9600



4	09/28/2012	BAS CD SET
5	08/22/2012	PROCESS SET
6	10/02/2012	ISSUED TO JOB
3	12/08/2011	BAS CONSTRUCTION DOCUMENT
2	09/15/2011	BAS CONSTRUCTION DOCUMENT
1	09/16/2011	DESIGN DEVELOPMENT

No.	Date	Revisions
1		
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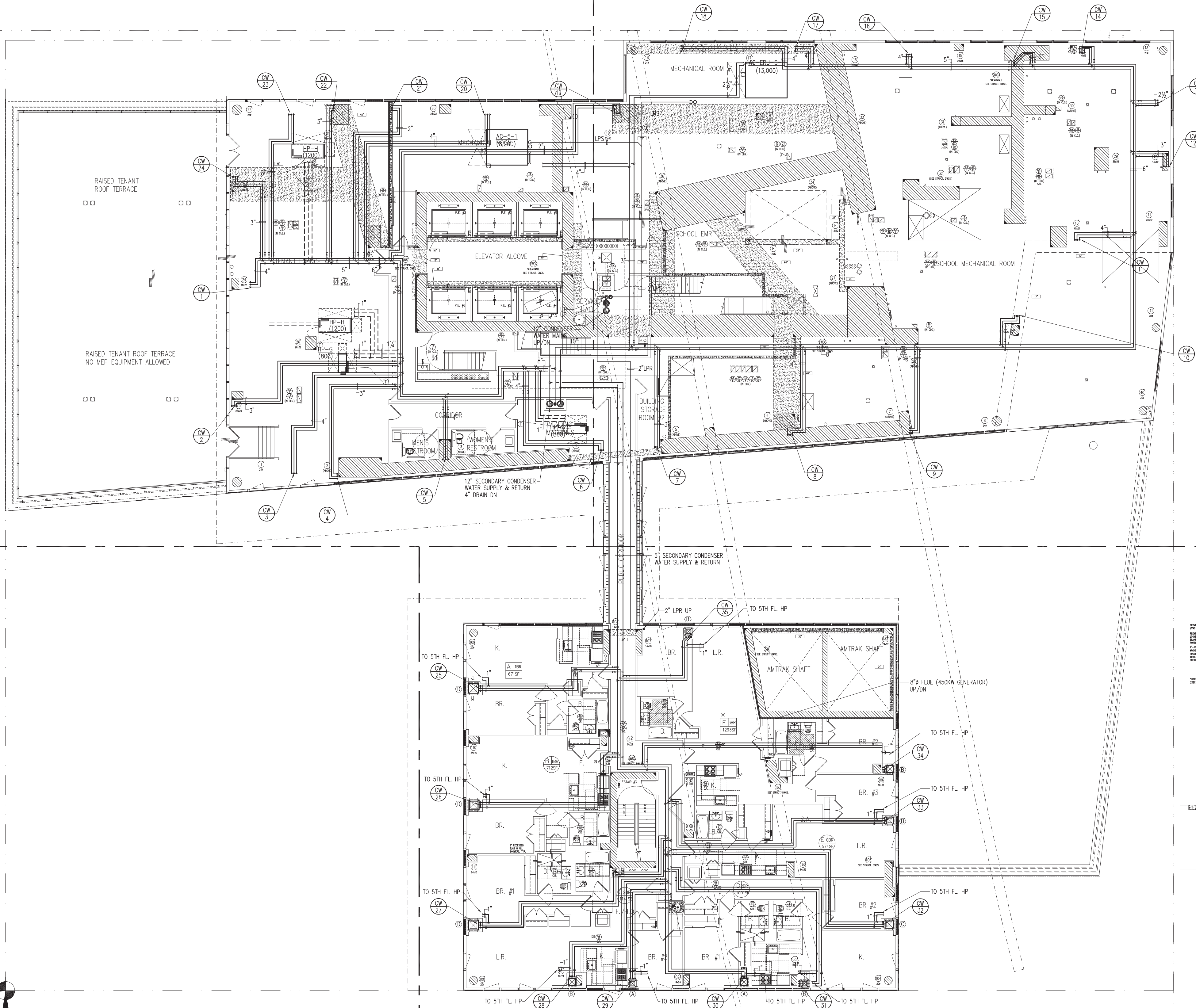


PROJECT:
**RIVERSIDE CENTER
BUILDING 2**

DRAWING TITLE:
HVAC 5TH FLOOR PIPING PLAN

SEAL & SIGNATURE:

DATE: JULY 15, 2011
PROJECT NO.:
DRAWN BY: D.C.
CHECKED BY: T.A.
DRAWING NO.:
M-305P.00
CADD FILE NO.:



MATCH LINE A-D
MATCH LINE A-D

MATCH LINE B-C
MATCH LINE B-C

BOUNDARY OF
BUILDING #2
0'-0"

MATCH LINE C-D
MATCH LINE C-D

RIVERSIDE CENTER
BUILDING TWO

NEW YORK, NY

OWNER/DEVELOPER:
EXTELL DEVELOPMENT

423 WEST 49TH STREET
NEW YORK, NY 10049
T: 212.218.4233
F: 212.219.2993

ARCHITECT OF RECORD:
SLCE Architects
841 BROADWAY
NEW YORK, NY 10003
T: 212.979.8400
F: 212.979.8387

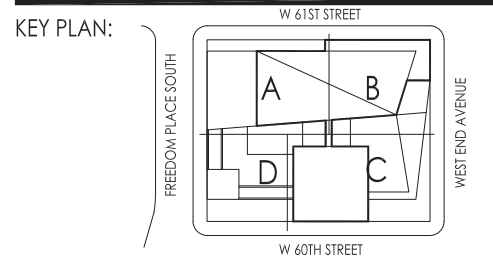
STRUCTURAL ENGINEER:
WSP CANTOR SEINUK
228 EAST 45TH STREET, 3RD FLOOR
NEW YORK, NY 10017
T: 212.687.9888
F: 212.687.5501

MECHANICAL ENGINEER:
WSP FLACK+KURTZ
512 SEVENTH AVENUE
NEW YORK, NY 10017
T: 212.532.9600



No.	Date	Revisions
1	04/19/2013	AMTRAK SUBMISSION
2	09/28/2012	BAS CO SET
3	08/22/2012	PROCESS SET
4	10/02/2012	ISSUED TO JOB
5	12/06/2011	BAS CONSTRUCTION DOCUMENT
6	09/19/2011	BAS CONSTRUCTION DOCUMENT
7	07/16/2011	DESIGN DEVELOPMENT

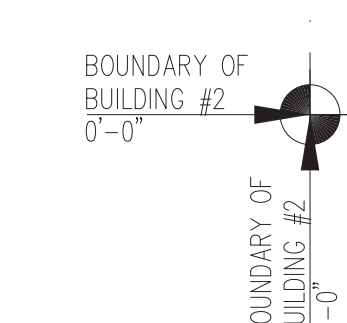
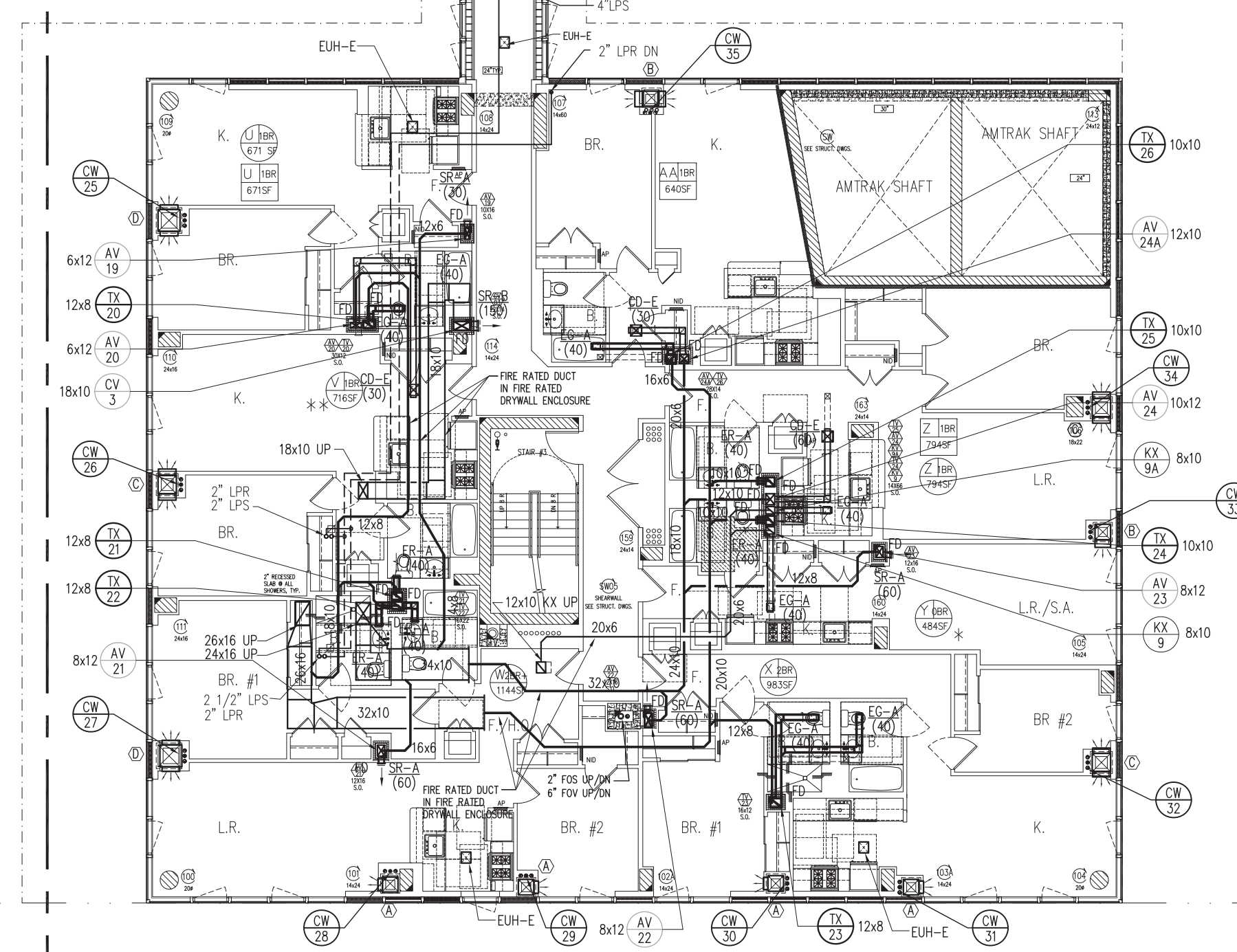
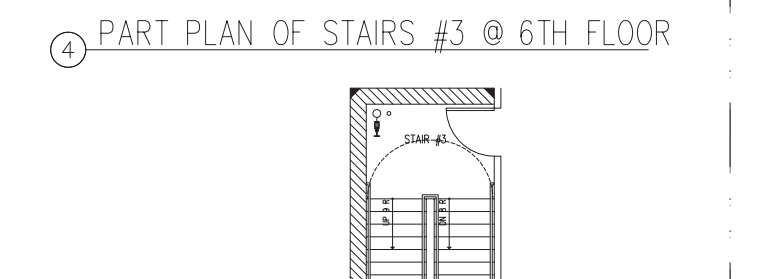
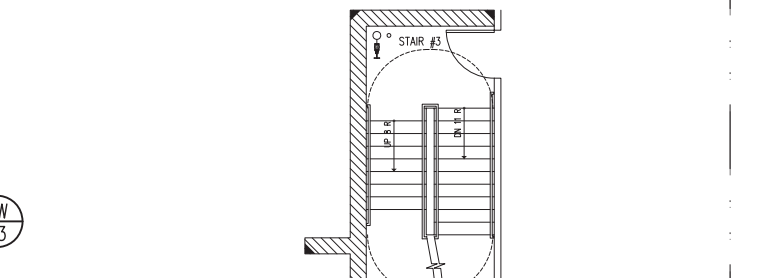
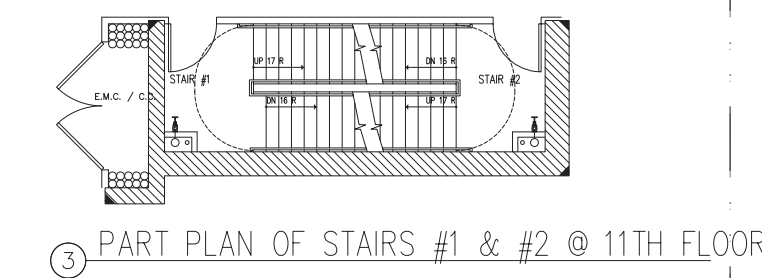
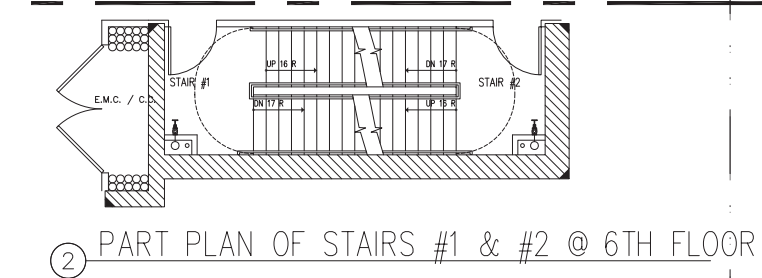
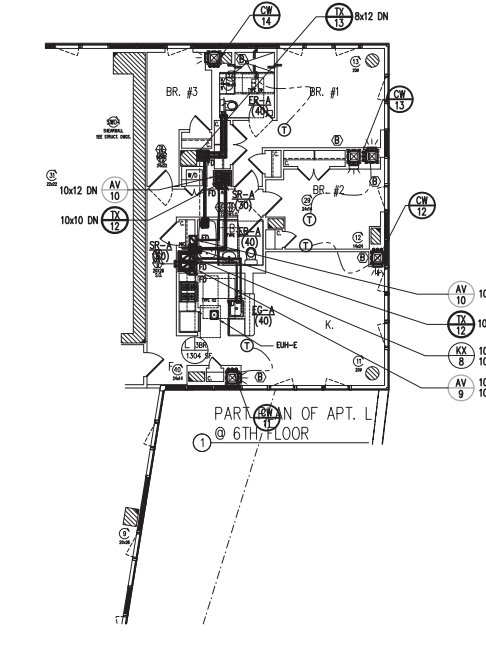
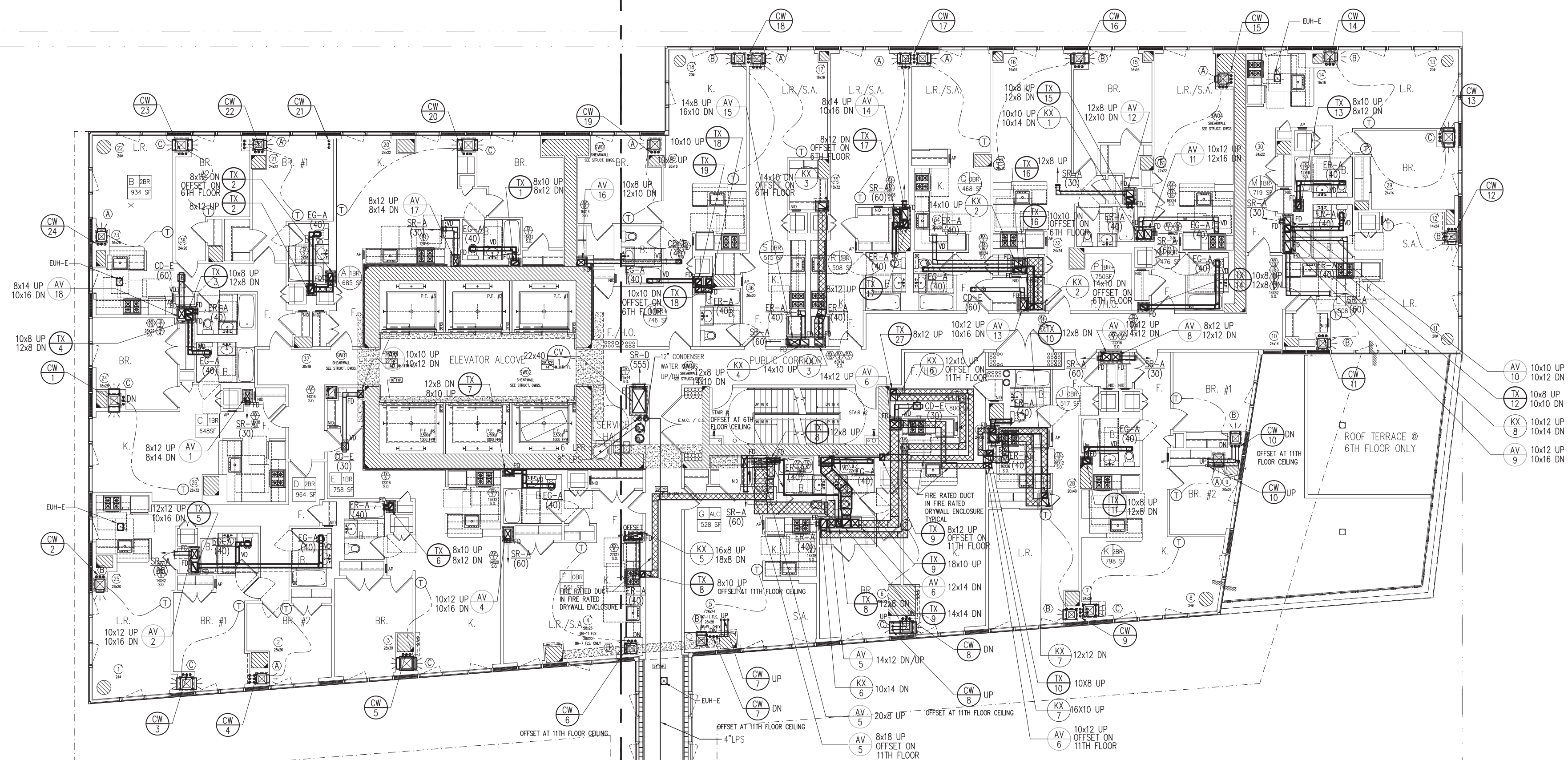
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PROJECT:
**RIVERSIDE CENTER
BUILDING 2**

DRAWING TITLE:
HVAC 6TH TO 11TH FLOOR PLAN

SEAL & SIGNATURE: PROJECT: JULY 15, 2011
DRAWN BY: D.C.
CHECKED BY: T.A.
DRAWING NO: **M-306.00**
CADD FILE NO:



RIVERSIDE CENTER
BUILDING TWO

NEW YORK, NY

OWNER/DEVELOPER:
EXTELL DEVELOPMENT

423 WEST 40TH STREET
NEW YORK, NY 10019
T: 212.218.4233
F: 212.219.2993

ARCHITECT OF RECORD:
SLCE Architects

841 BROADWAY
NEW YORK, NY 10003
T: 212.979.8400
F: 212.979.8387

STRUCTURAL ENGINEER:
WSP CANTOR SEINUK

228 EAST 45TH STREET, 3RD FLOOR
NEW YORK, NY 10017
T: 212.687.8988
F: 212.687.5501

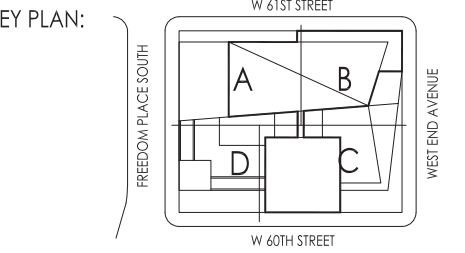
MECHANICAL ENGINEER:
WSP FLACK+KURTZ

512 SEVENTH AVENUE
NEW YORK, NY 10017
T: 212.532.9600



7	04/19/2013	AMTRAK SUBMISSION
6	09/28/2012	BATS CD SET
5	08/22/2012	PROCESS SET
4	10/02/2012	ISSUED TO JOB
3	12/08/2011	BATS CONSTRUCTION DOCUMENT
2	09/15/2011	BATS CONSTRUCTION DOCUMENT
1	07/16/2011	DESIGN DEVELOPMENT

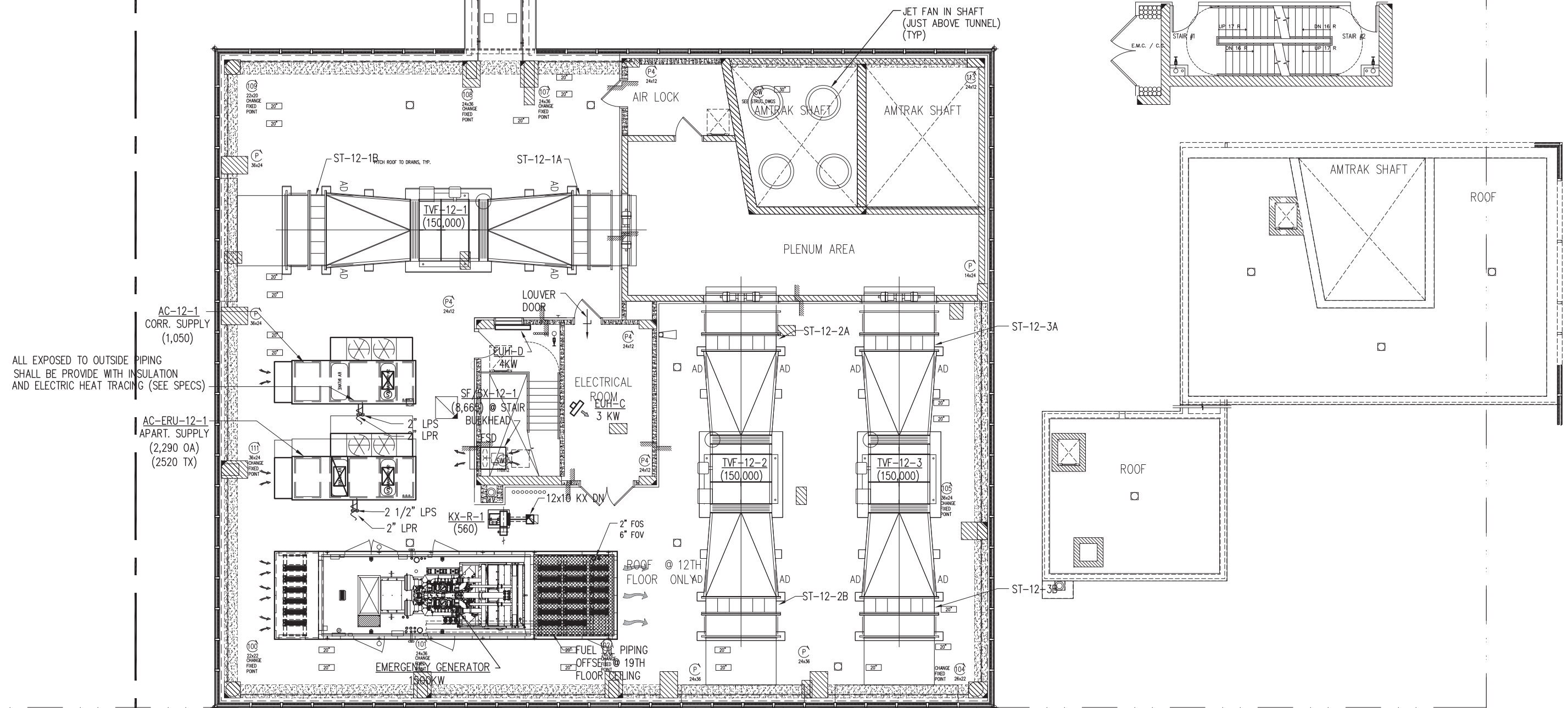
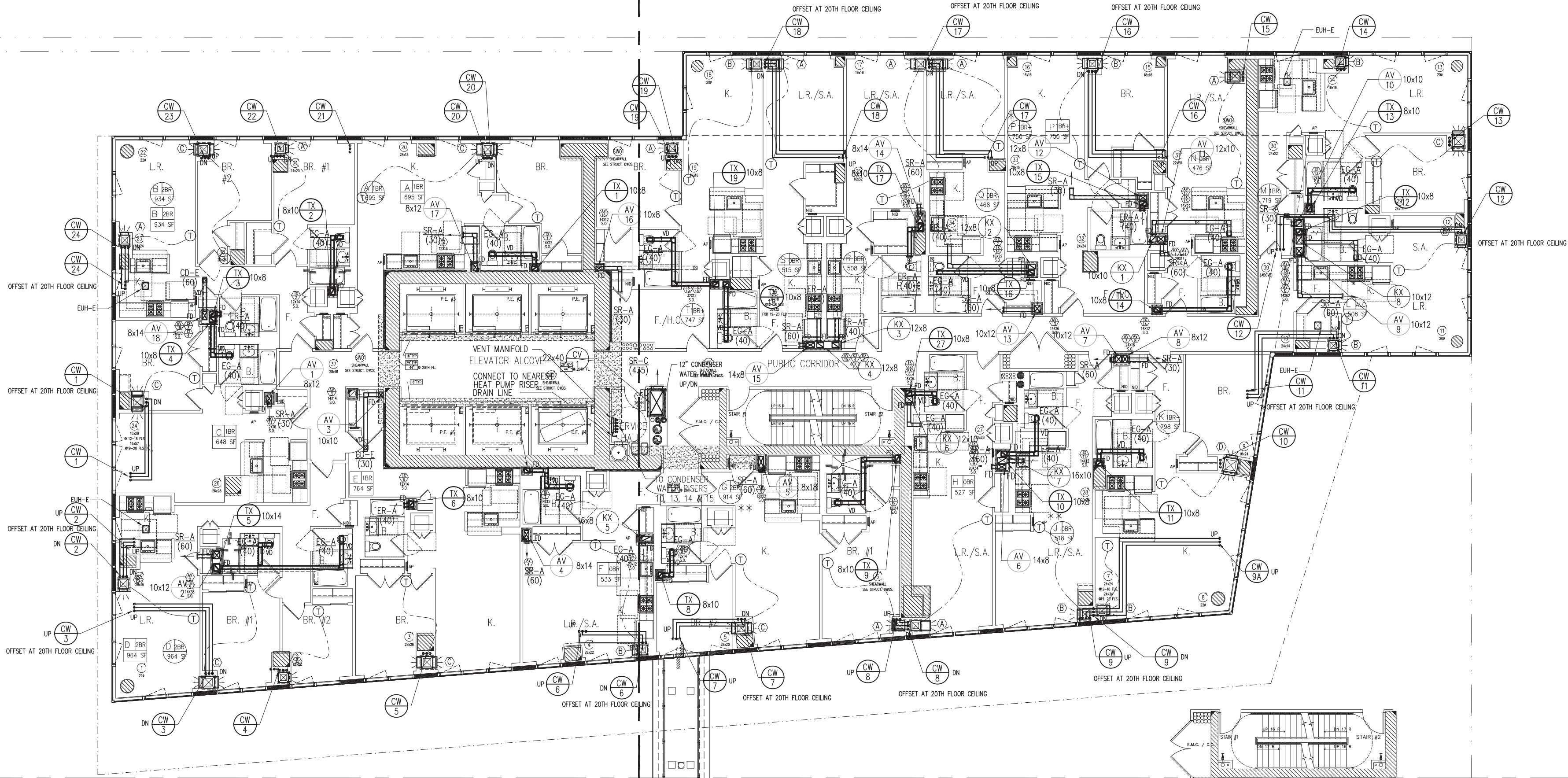
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NORTH ARROW



PROJECT:
**RIVERSIDE CENTER
BUILDING 2**

DRAWING TITLE:
HVAC 12TH TO 20TH FLOOR PLAN

SEAL & SIGNATURE: [Signature] DATE: JULY 15, 2011
PROJECT NO.: [Blank]
DRAWN BY: D.C.
CHECKED BY: F.A.
DRAWING NO.: **M-312.00**
CADD FILE NO.: [Blank]



BOUNDARY OF
BUILDING #2
0'-0"

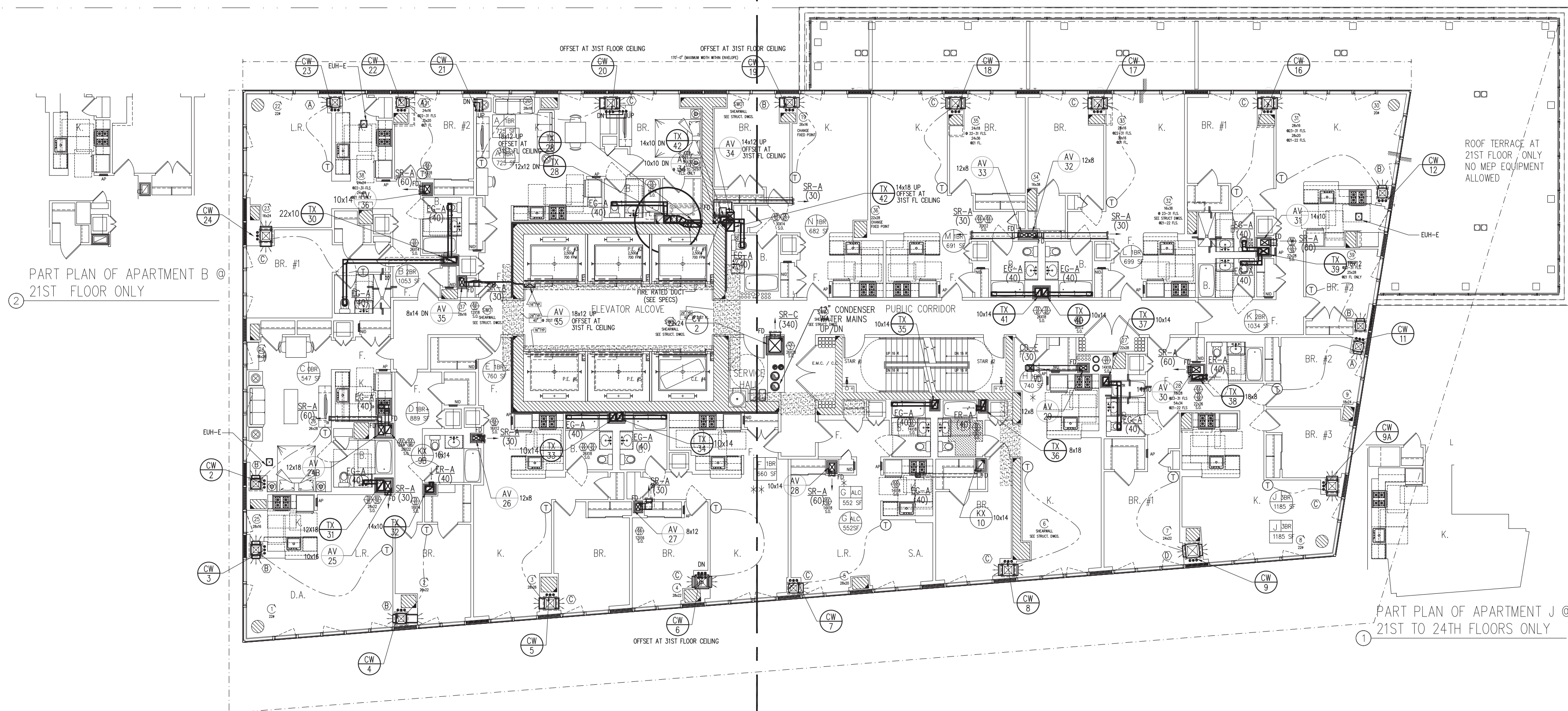
OWNER/DEVELOPER:
EXTELL DEVELOPMENT

423 WEST 69TH STREET
NEW YORK, NY 10069
T. 646.218.4203
F. 212.769.2893

ARCHITECT OF RECORD:
SLCEArchitects
841 BROADWAY
NEW YORK, NY 10003
T. 212.979.8400
F. 212.979.8387

STRUCTURAL ENGINEER:
WSP CANTOR SEINUK
228 EAST 45TH STREET, 3RD FLOOR
NEW YORK, NY 10017
T:212.687.9888
F:646.487.5501

MECHANICAL ENGINEER:
WSP FLACK+KURTZ
512 SEVENTH AVENUE
NEW YORK, NY 10017
T.212.532.9600



PART PLAN OF STAIRS #1 & #2
 @ 21ST FLOOR

PART PLAN OF STAIRS #1 & #2
 @ 31ST FLOOR

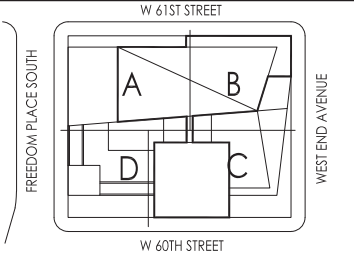


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4	07/02/2012	ISSUED TO DOB
3	12/08/2011	85% CONSTRUCTION DOCUMENT
2	09/15/2011	50% CONSTRUCTION DOCUMENT
1	07/15/2011	DESIGN DEVELOPMENT

Scale:

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KEY PLAN:



PROJECT:

RIVERSIDE CENTER
BUILDING 2

DRAWING TITLE:
HVAC 21ST TO 31ST FLOOR PLAN

SEAL & SIGNATURE:	DATE: JULY 15, 2011
	PROJECT No:
	DRAWN BY: D.C.
	CHECKED BY: T.A.
	DRAWING No:
	M-321.00
	CADD FILE No:

RIVERSIDE CENTER
BUILDING TWO

NEW YORK, NY

OWNER/DEVELOPER:
EXTELL DEVELOPMENT

433 WEST 47TH STREET
NEW YORK, NY 10049
T: 212.218.4233
F: 212.219.2893

ARCHITECT OF RECORD:
SLCE Architects

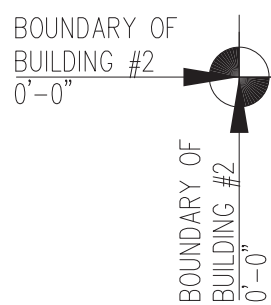
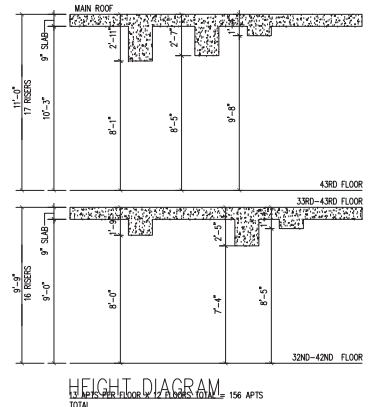
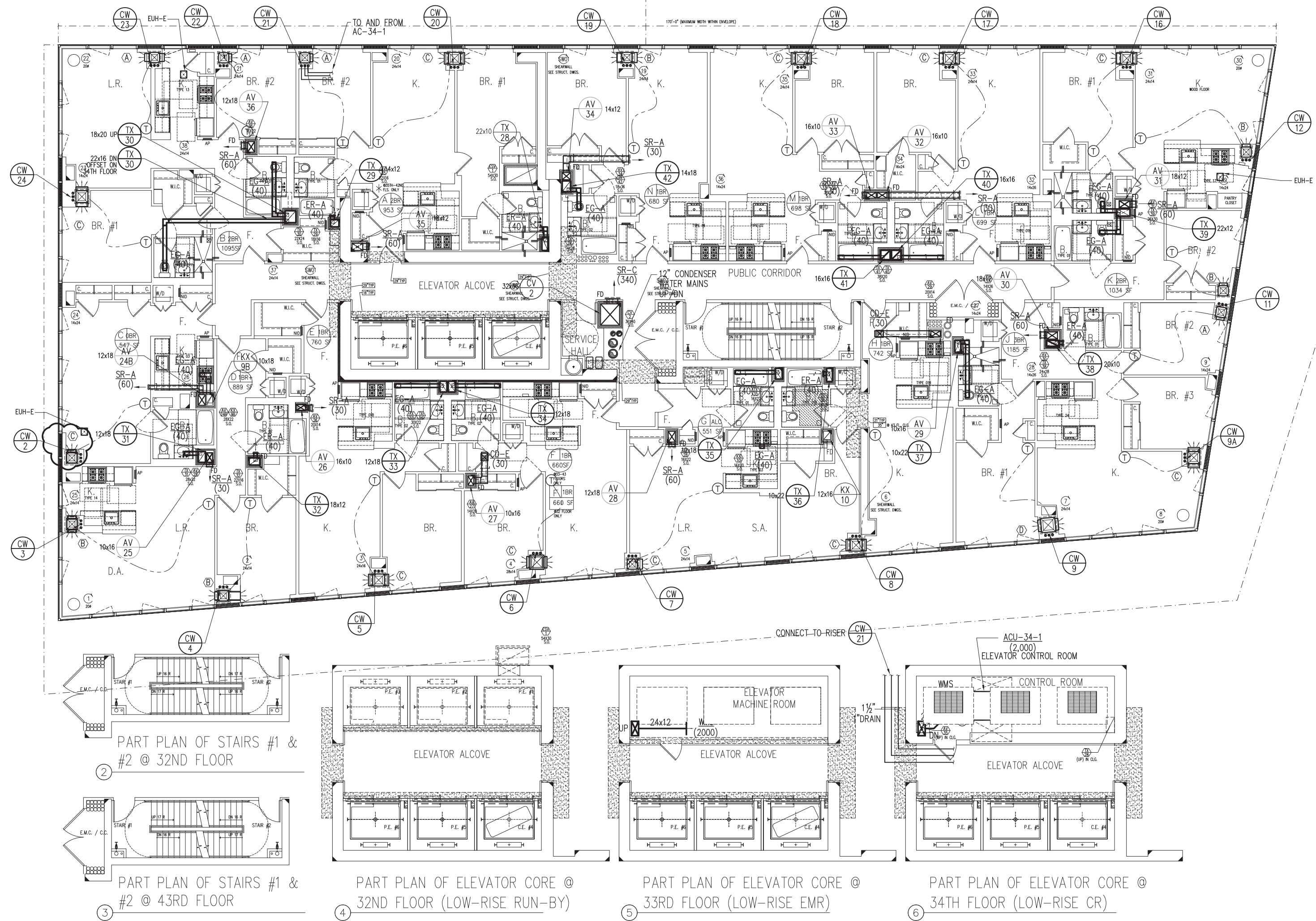
841 BROADWAY
NEW YORK, NY 10003
T: 212.979.8400
F: 212.979.8387

STRUCTURAL ENGINEER:
WSP CANTOR SEINUK

228 EAST 45TH STREET, 3RD FLOOR
NEW YORK, NY 10017
T: 212.687.9888
F: 212.687.5501

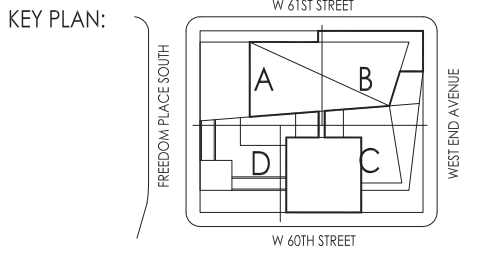
MECHANICAL ENGINEER:
WSP FLACK+KURTZ

512 SEVENTH AVENUE
NEW YORK, NY 10017
T: 212.532.9600



4	09/28/2012	BAS CO SET
3	08/22/2012	PROGRESS SET
2	07/02/2012	ISSUED TO JOB
1	12/08/2011	BAS CONSTRUCTION DOCUMENT
1	09/15/2011	BAS CONSTRUCTION DOCUMENT
1	07/16/2011	DESIGN DEVELOPMENT

No.	Date	Revisions
1	07/16/2011	DESIGN DEVELOPMENT
2	09/15/2011	BAS CONSTRUCTION DOCUMENT
3	12/08/2011	BAS CONSTRUCTION DOCUMENT
4	07/02/2012	ISSUED TO JOB
5	08/22/2012	PROGRESS SET
6	09/28/2012	BAS CO SET



PROJECT:
**RIVERSIDE CENTER
BUILDING 2**

DRAWING TITLE:
HVAC 32ND TO 42ND FLOOR PLAN

SEAL & SIGNATURE:	DATE: JULY 15, 2011
PROJECT NO.:	DRAWN BY: D.C.
CHECKED BY: F.A.	DRAWING NO.:
CADD FILE NO.:	M-332.00



RIVERSIDE CENTER
BUILDING TWO

NEW YORK, NY

OWNER/DEVELOPER:
EXTELL DEVELOPMENT

423 WEST 40TH STREET
NEW YORK, NY 10019
T: 212.218.4233
F: 212.219.2993

ARCHITECT OF RECORD:
SLCE Architects

841 BROADWAY
NEW YORK, NY 10003
T: 212.979.8400
F: 212.979.8387

STRUCTURAL ENGINEER:

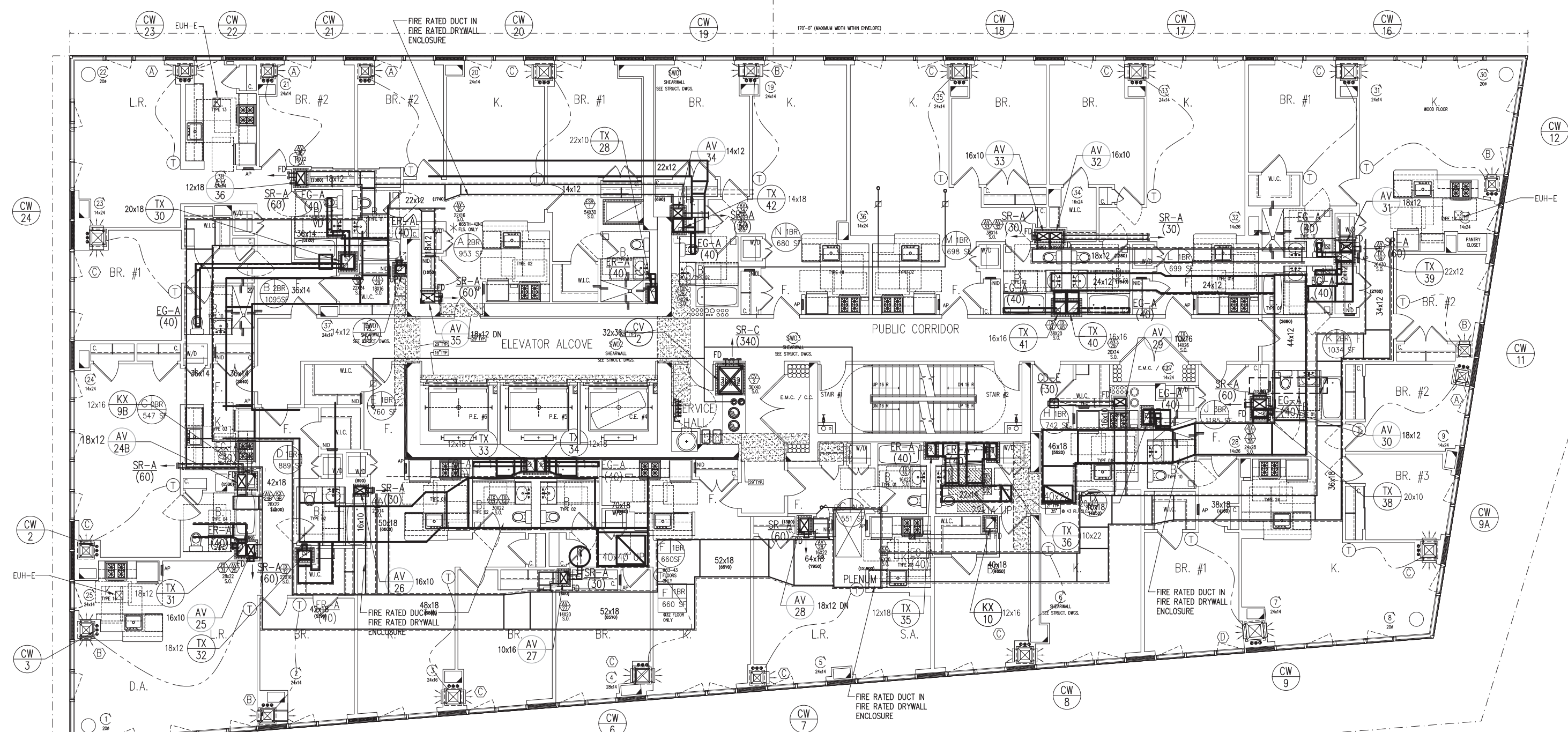
WSP CANTOR SEINUK

228 EAST 45TH STREET, 3RD FLOOR
NEW YORK, NY 10017
T: 212.687.9888
F: 212.487.5501

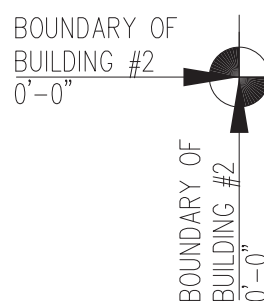
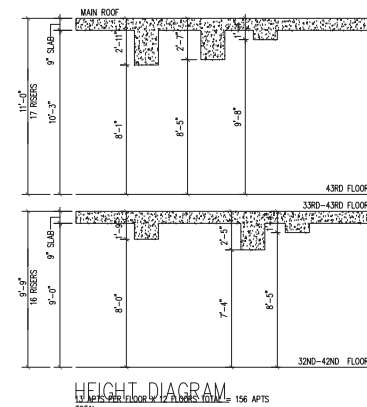
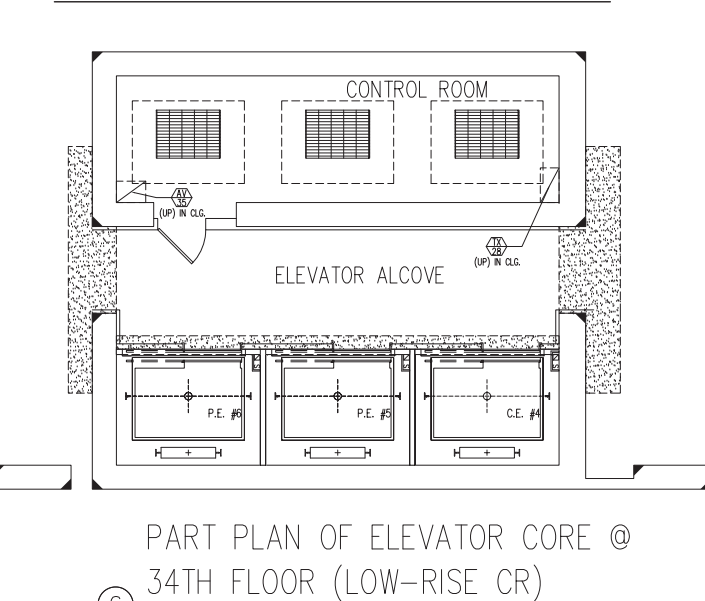
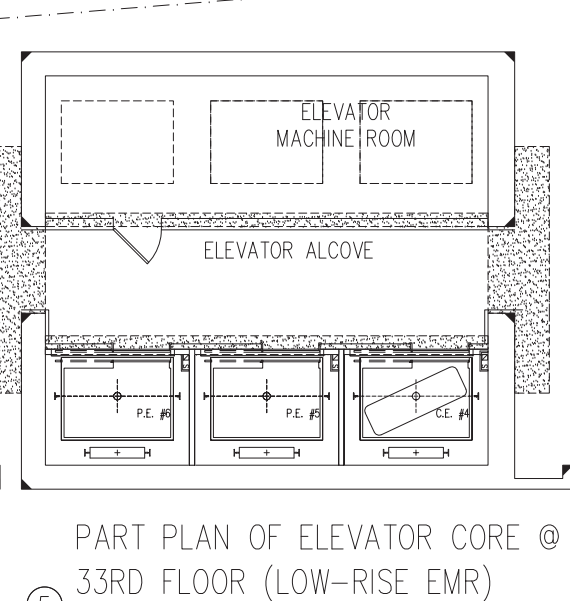
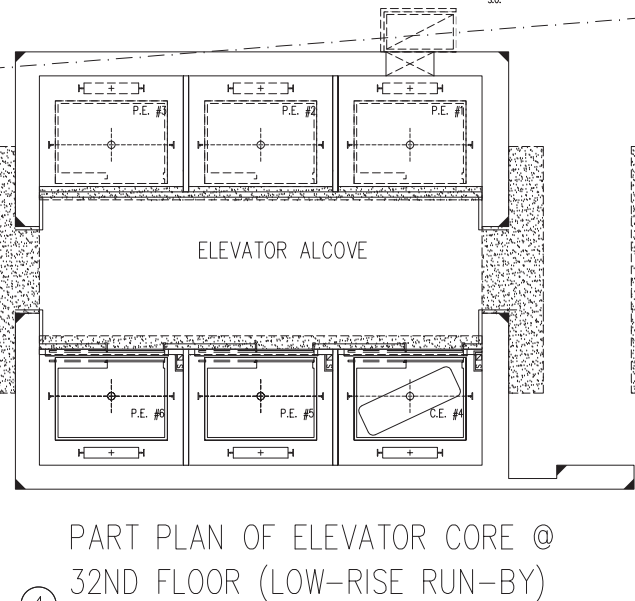
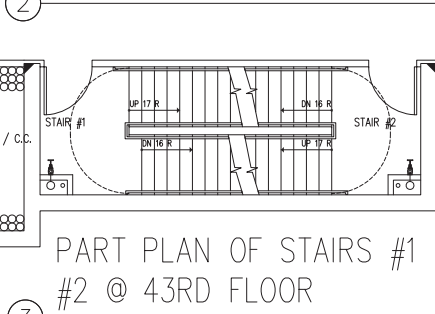
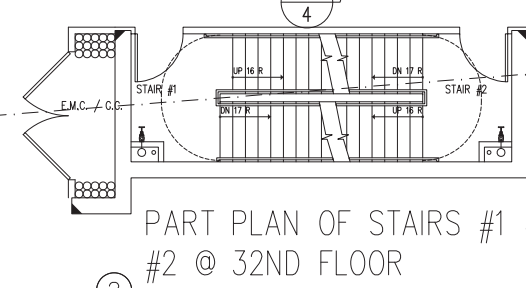
MECHANICAL ENGINEER:

WSP FLACK+KURTZ

512 SEVENTH AVENUE
NEW YORK, NY 10017
T: 212.532.9600

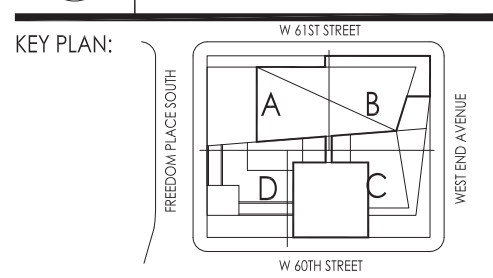


43RD FLOOR - OPTION 2



4	09/28/2012	BAS CO SET
3	08/22/2012	PROCESS SET
2	07/02/2012	ISSUED TO JOB
1	12/08/2011	BAS CONSTRUCTION DOCUMENT
1	09/15/2011	BAS CONSTRUCTION DOCUMENT
1	07/16/2011	DESIGN DEVELOPMENT

No.	Date	Revisions
1	07/16/2011	DESIGN DEVELOPMENT
2	09/15/2011	BAS CONSTRUCTION DOCUMENT
3	12/08/2011	BAS CONSTRUCTION DOCUMENT
4	07/02/2012	ISSUED TO JOB
5	08/22/2012	PROCESS SET
6	09/28/2012	BAS CO SET



PROJECT:
**RIVERSIDE CENTER
BUILDING 2**

DRAWING TITLE:
HVAC 43RD FLOOR PLAN

SEAL & SIGNATURE:	DATE: JULY 15, 2011
PROJECT NO.:	DRAWN BY: D.C.
CHECKED BY: F.A.	DRAWING NO.:
CADD FILE NO.:	M-343.00

RIVERSIDE CENTER
BUILDING TWO

NEW YORK, NY

OWNER/DEVELOPER:
EXTELL DEVELOPMENT

433 WEST 47TH STREET
NEW YORK, NY 10036
T: 212.518.4253
F: 212.519.2593

ARCHITECT OF RECORD:
SLCE Architects

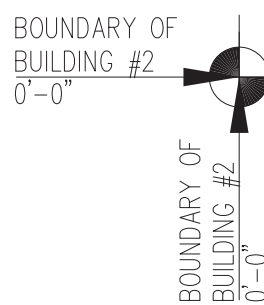
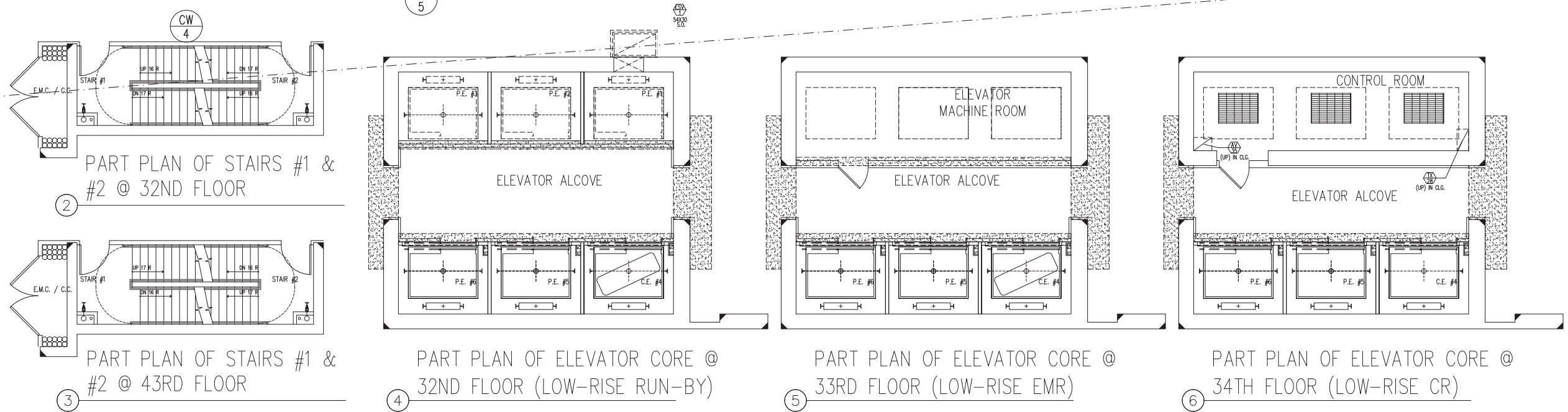
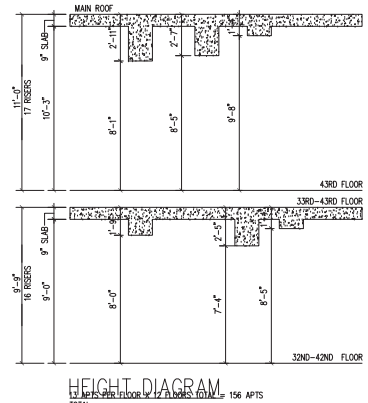
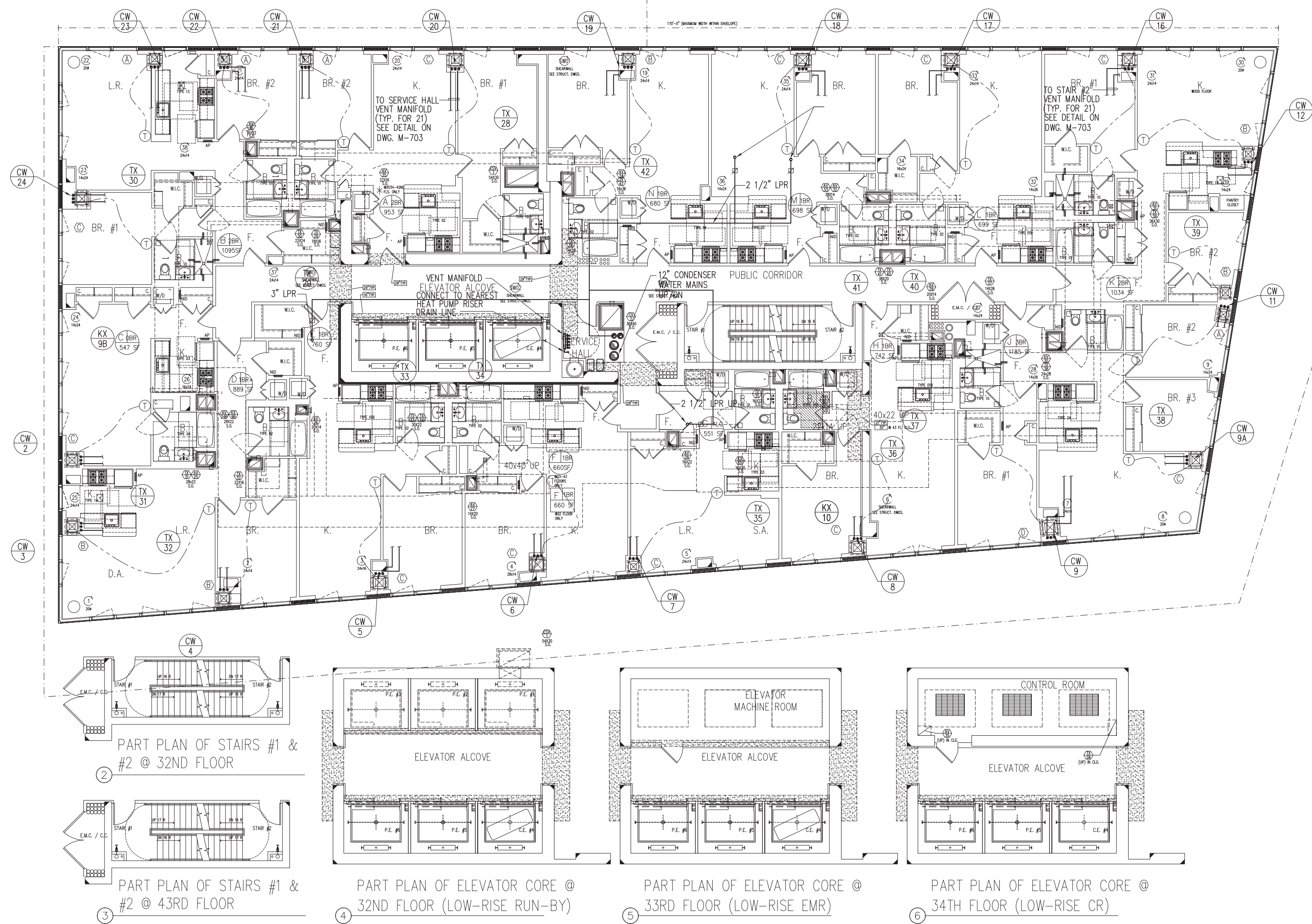
841 BROADWAY
NEW YORK, NY 10003
T: 212.579.8400
F: 212.579.8387

STRUCTURAL ENGINEER:
WSP CANTOR SEINUK

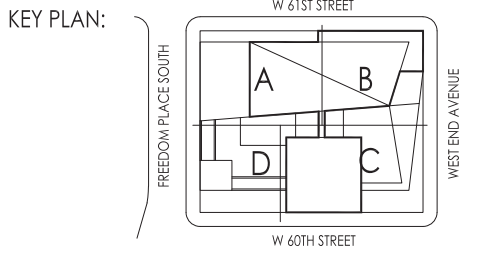
228 EAST 45TH STREET, 3RD FLOOR
NEW YORK, NY 10017
T: 212.687.8988
F: 212.687.5501

MECHANICAL ENGINEER:
WSP FLACK+KURTZ

512 SEVENTH AVENUE
NEW YORK, NY 10017
T: 212.532.9600



No.	Date	Revisions
1	07/15/2011	DESIGN DEVELOPMENT
2	09/15/2011	S&S CONSTRUCTION DOCUMENT
3	12/08/2011	S&S CONSTRUCTION DOCUMENT
4	01/02/2012	ISSUED TO JOB
5	08/22/2012	PROGRESS SET
6	09/28/2012	S&S CD SET



PROJECT:
RIVERSIDE CENTER
BUILDING 2

DRAWING TITLE:
HVAC 43RD FLOOR PIPING PLAN

SEAL & SIGNATURE:
PROJECT NO.:
DRAWN BY: D.C.
CHECKED BY: T.A.
DRAWING NO.:
M-343P.00
CADD FILE NO.:



RIVERSIDE CENTER
BUILDING TWO

NEW YORK, NY

OWNER/DEVELOPER:
EXTELL DEVELOPMENT

423 WEST 47TH STREET
NEW YORK, NY 10049
T: 212.518.4203
F: 212.519.2893

ARCHITECT OF RECORD:
SLCE Architects

841 BROADWAY
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STRUCTURAL ENGINEER:

WSP CANTOR SEINUK

228 EAST 45TH STREET, 3RD FLOOR
NEW YORK, NY 10017
T: 212.687.8988
F: 212.687.5501

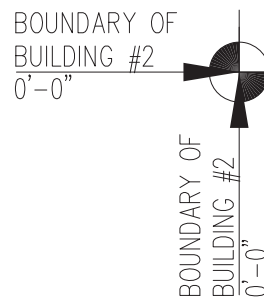
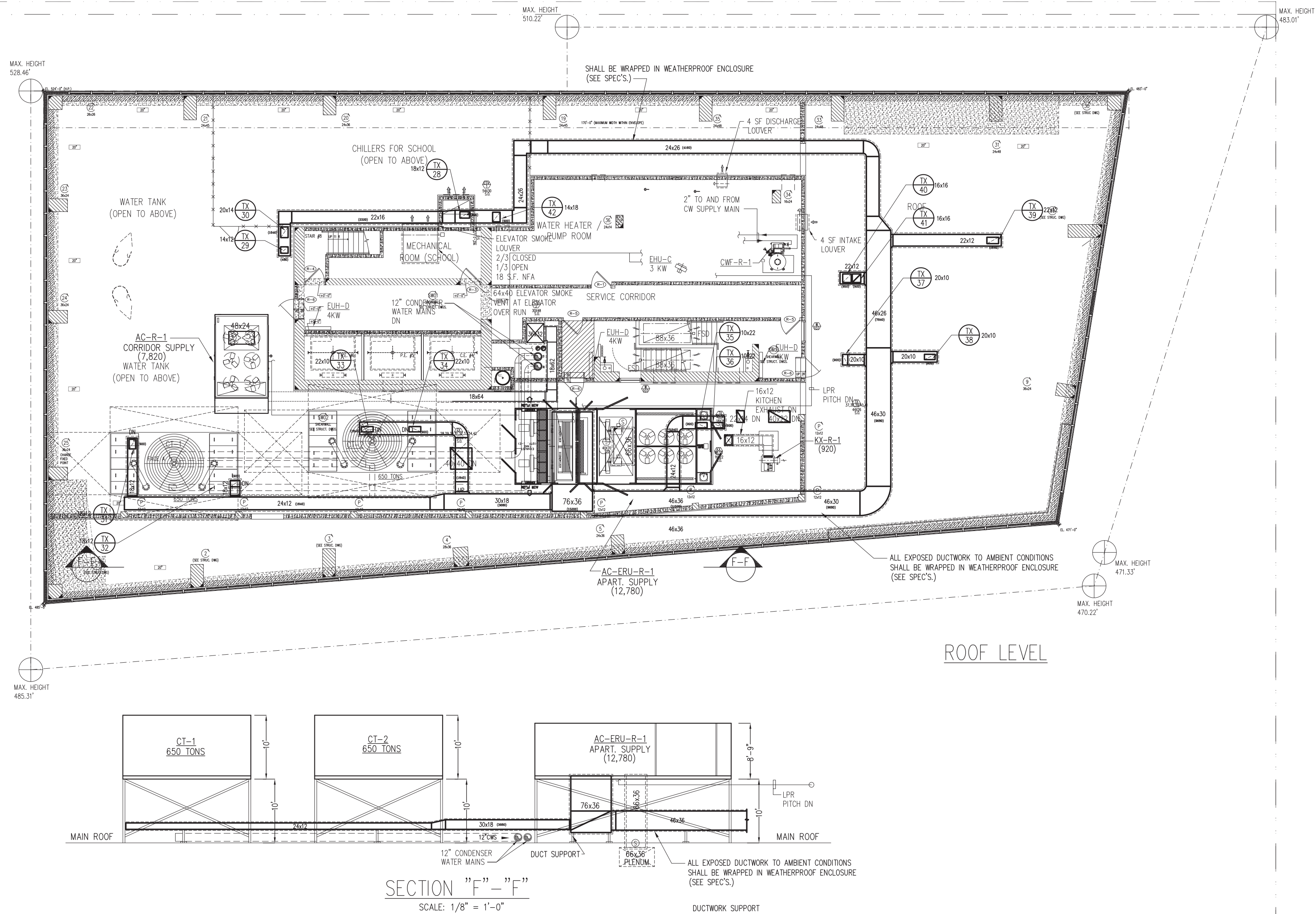
MECHANICAL ENGINEER:

WSP FLACK+KURTZ

512 SEVENTH AVENUE
NEW YORK, NY 10017
T: 212.532.9600

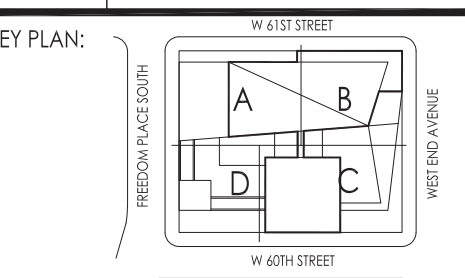


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Date/Time: Jun 26, 2013 - 9:57 AM
NYC Development Hub



6	09/28/2012	BAS, CD SET
5	08/22/2012	PROGRESS SET
4	07/02/2012	ISSUED TO JOB
3	12/08/2011	BAS, CONSTRUCTION DOCUMENT
2	09/15/2011	BAS, CONSTRUCTION DOCUMENT
1	07/16/2011	DESIGN DEVELOPMENT

No.	Date	Revisions
1	07/16/2011	DESIGN DEVELOPMENT
2	09/15/2011	BAS, CONSTRUCTION DOCUMENT
3	12/08/2011	BAS, CONSTRUCTION DOCUMENT
4	07/02/2012	ISSUED TO JOB
5	08/22/2012	PROGRESS SET
6	09/28/2012	BAS, CD SET



PROJECT:
RIVERSIDE CENTER
BUILDING 2

DRAWING TITLE:
HVAC MAIN ROOF PLAN

SEAL & SIGNATURE:
DATE: JULY 15, 2011
PROJECT NO.:
DRAWN BY: D.C.
CHECKED BY: E.A.
DRAWING NO.: M-344.00
CADD FILE NO.:

RIVERSIDE CENTER
BUILDING TWO

NEW YORK, NY

OWNER/DEVELOPER:

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6	09/28/2012	85% CD SET
5	08/22/2012	PROGRESS SET
4	07/02/2012	ISSUED TO DOB
3	12/06/2011	85% CONSTRUCTION DOCUMENT
2	09/15/2011	50% CONSTRUCTION DOCUMENT
1	07/15/2011	DESIGN DEVELOPMENT

No:	Date:	Revision:
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NORTH ARROW



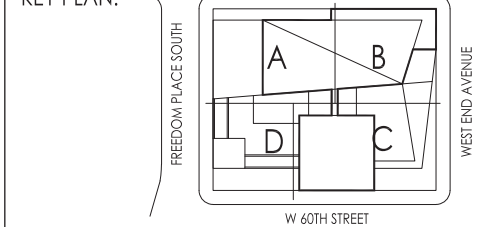
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0 5 10 15 20 25 km

0 5 10 15 miles

KEY PLAN: ~



PROJECT:

RIVERSIDE CENTER
BUILDING 2


DRAWING TITLE:

HVAC EMR PLAN

SEAL & SIGNATURE:

PROJECT No:

STATE OF NEW YORK
COUNTY OF _____
DRAWN BY: D.C.

	CHECKED BY: T.A.
	DATE: 11/11/11

DRAWING No: _____

M-345.00

11-545.00

CADD FILE No:

RIVERSIDE CENTER
BUILDING TWO

NEW YORK, NY

OWNER/DEVELOPER:
EXTELL DEVELOPMENT



ARCHITECT OF RECORD:
SLCEArchitects
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6	09/28/2012	85% CD SET
5	08/22/2012	PROGRESS SET
4	07/02/2012	ISSUED TO DOB
3	12/08/2011	85% CONSTRUCTION DOCUMENT
2	09/15/2011	50% CONSTRUCTION DOCUMENT
1	07/15/2011	DESIGN DEVELOPMENT

No:	Date:	Revision:
NORTH ARROW		Scale:
		

KEY PLAN: -

PROJECT:
RIVERSIDE CENTER
BUILDING 2

DRAWING TITLE:
HVAC CELLAR MEZZANINE PLAN

SEAL & SIGNATURE:	DATE: JULY 15, 2011
	PROJECT No:
	DRAWN BY: D.C.
	CHECKED BY: J.A.
	DRAWING No:
	M-3M0.00
	CADD FILE No:

OWNER/DEVELOPER:
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7	04/19/2013 AMTRAK SUBMISSION
6	09/28/2012 85% CD SET
5	08/22/2012 PROGRESS SET
4	07/02/2012 ISSUED TO DOB
3	12/08/2011 85% CONSTRUCTION DOCUMENT
2	09/15/2011 50% CONSTRUCTION DOCUMENT
1	07/15/2011 DESIGN DEVELOPMENT


Scale:

Grade Level	Number of Students
SC-05	10
SC1	15
SCX15	20
SCX25	25

KEY PLAN:

PROJECT:
RIVERSIDE CENTER
BUILDING 2

DRAWING TITLE:
HVAC 1ST FLOOR MEZZANINE PLAN

SEAL & SIGNATURE:	DATE: JULY 15, 2011
	PROJECT No:
	DRAWN BY: D.C.
	CHECKED BY: T.A.
	DRAWING No:
	M-3M1.00
	CADD FILE No:

RIVERSIDE CENTER
BUILDING TWO

NEW YORK, NY

OWNER/DEVELOPER:

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STRUCTURAL ENGINEER:

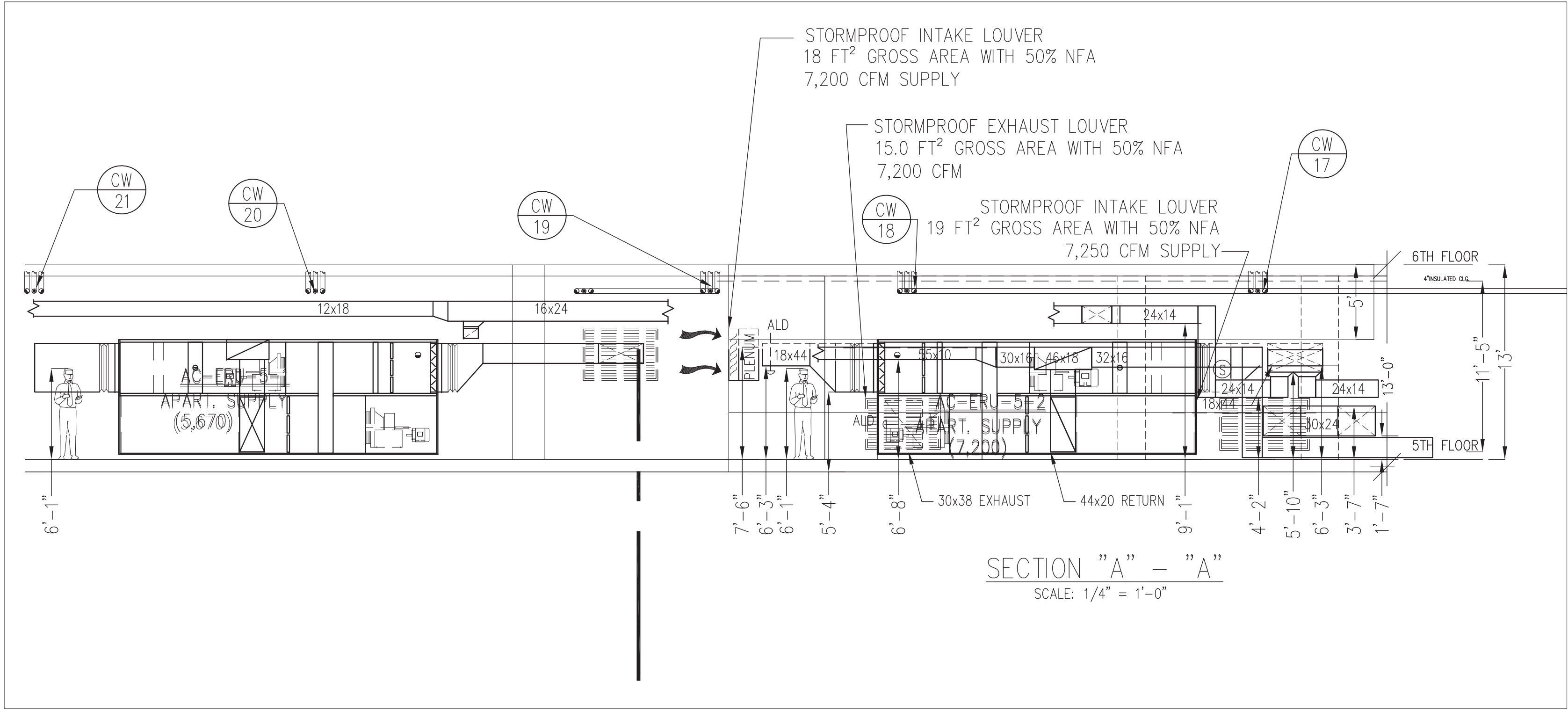
WSP CANTOR SEINUK

228 EAST 45TH STREET, 3RD FLOOR
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F: 212.687.5501

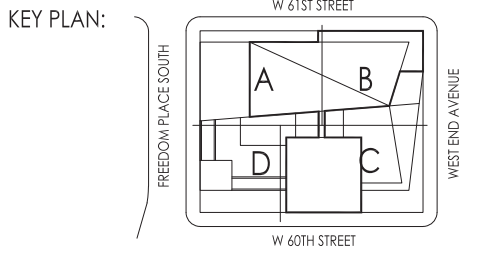
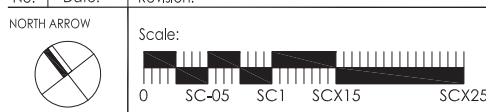
MECHANICAL ENGINEER:

WSP FLACK+KURTZ

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6	09/28/2012	REV. CD SET
5	08/22/2012	PROCESS SET
3	12/08/2011	ISSUE CONSTRUCTION DOCUMENT
No.	Date	Revisions



PROJECT:
RIVERSIDE CENTER
BUILDING 2

DRAWING TITLE:
HVAC SECTION PLANS
SHEET NO.1

SEAL & SIGNATURE:

DATE: JULY 15, 2011

PROJECT NO.:

DRAWN BY: D.C.

CHECKED BY: E.A.

DRAWING NO.:

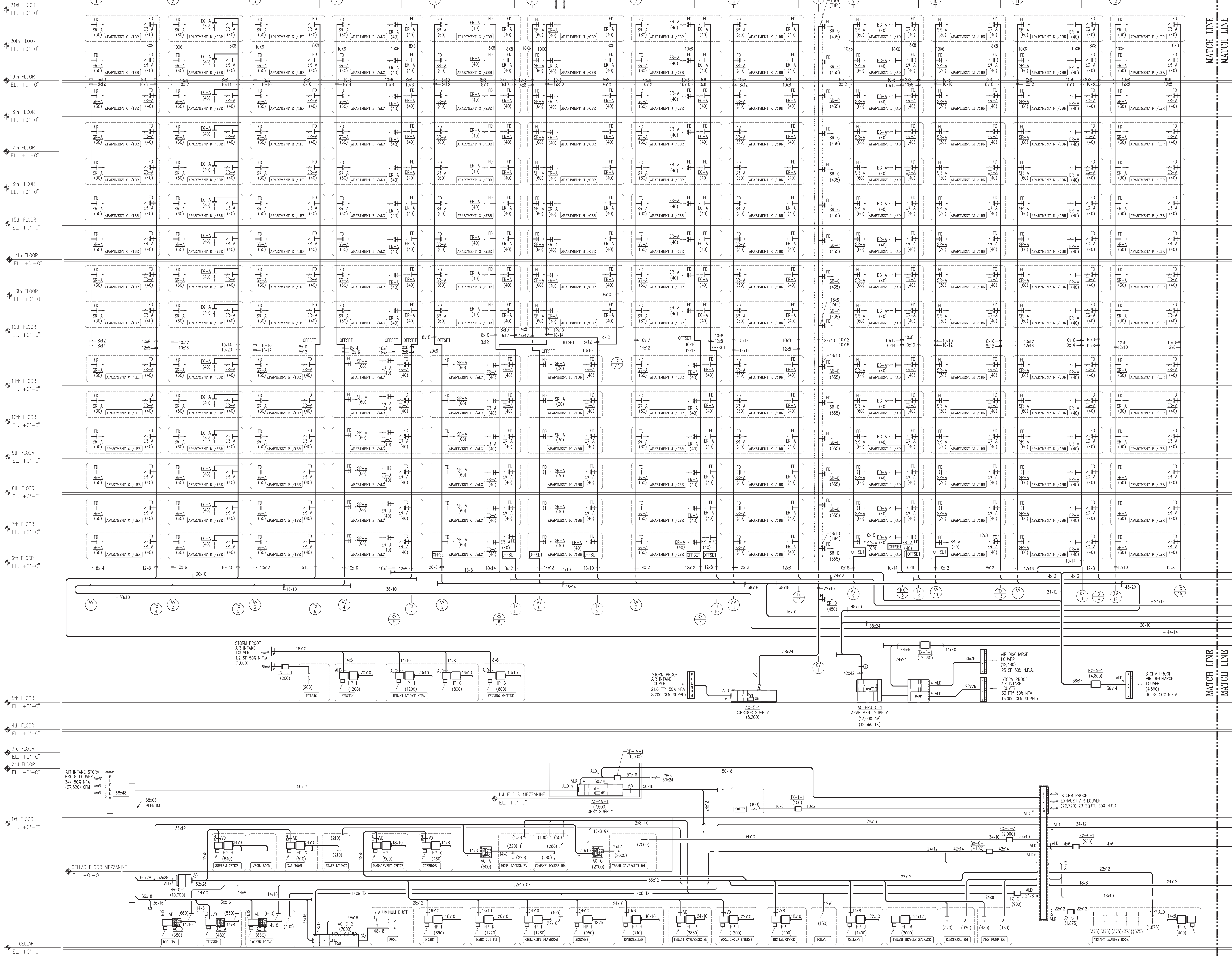
M-400.00

CADD FILE NO.:



MATCH LINE

MATCH LINE



RIVERSIDE CENTER
BUILDING TWO

NEW YORK, NY

OWNER/DEVELOPER:
EXTELL DEVELOPMENT
425 WEST 47TH STREET
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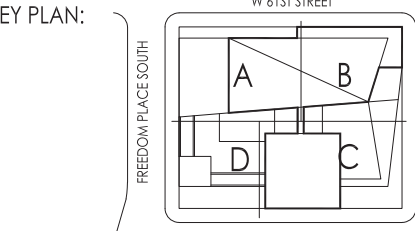
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Cristian Petrescu
Buildings
APPROVED
Under Directive 2 of 1975
Date/Time: Jun 26, 2013 - 9:57 AM
NYC Development Hub

4	09/28/2012	BAS CO SET
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7	12/08/2011	BAS CONSTRUCTION DOCUMENT
8	09/15/2011	BAS CONSTRUCTION DOCUMENT
9	09/15/2011	DESIGN DEVELOPMENT

Rev: 0
Scale: 0 SC-A05 SC-1 SC-K15 SC-K25
KEY PLAN:
NORTH ARROW
Scale: 0 SC-A05 SC-1 SC-K15 SC-K25



PROJECT:
**RIVERSIDE CENTER
BUILDING 2**

DRAWING TITLE:
**HVAC AIR RISER DIAGRAM
SHEET NO. 1**

SEAL & SIGNATURE:
STATE OF NEW YORK
Professional Engineer
No. 10468
Exp. 12/31/2014

DATE: JULY 15, 2011
DRAWN BY: DFC
CHECKED BY: T.A.
DRAWING NO.: M-500.00
CADD FILE NO.:

RIVERSIDE CENTER
BUILDING TWO

NEW YORK, NY

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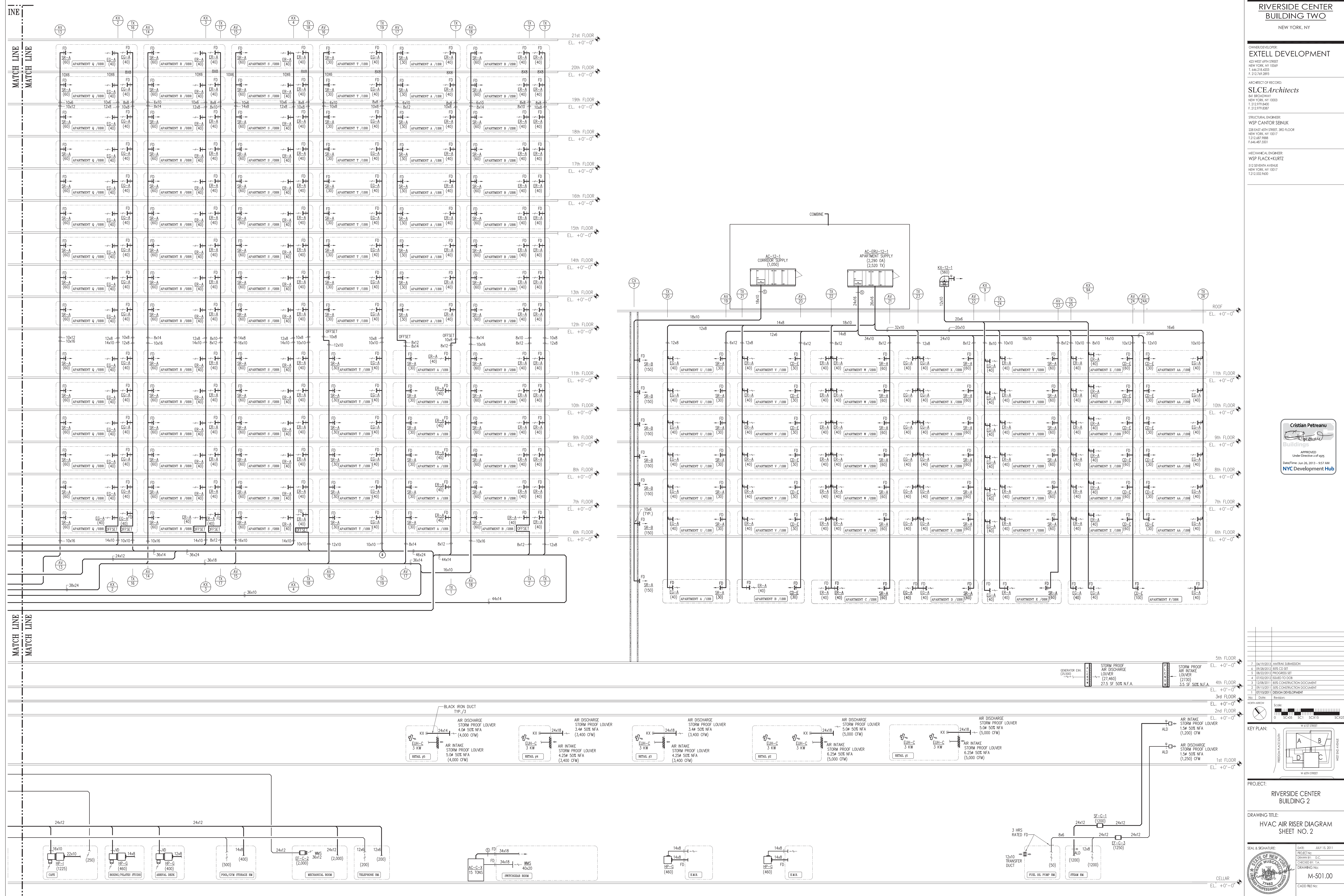
MECHANICAL ENGINEER

WSP FLACK+KURTZ

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Cristian Petreanu

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Date/Time: Jun 26, 2013 - 9:57 AM
NYC Development Hu



RIVERSIDE CENTER
BUILDING TWO

NEW YORK, NY

OWNER/DEVELOPER:
EXTELL DEVELOPMENT

423 WEST 69TH STREET
NEW YORK, NY 10069
T. 646.218.4203
F. 212.769.2893

ARCHITECT OF RECORD:
SLCE*Architects*

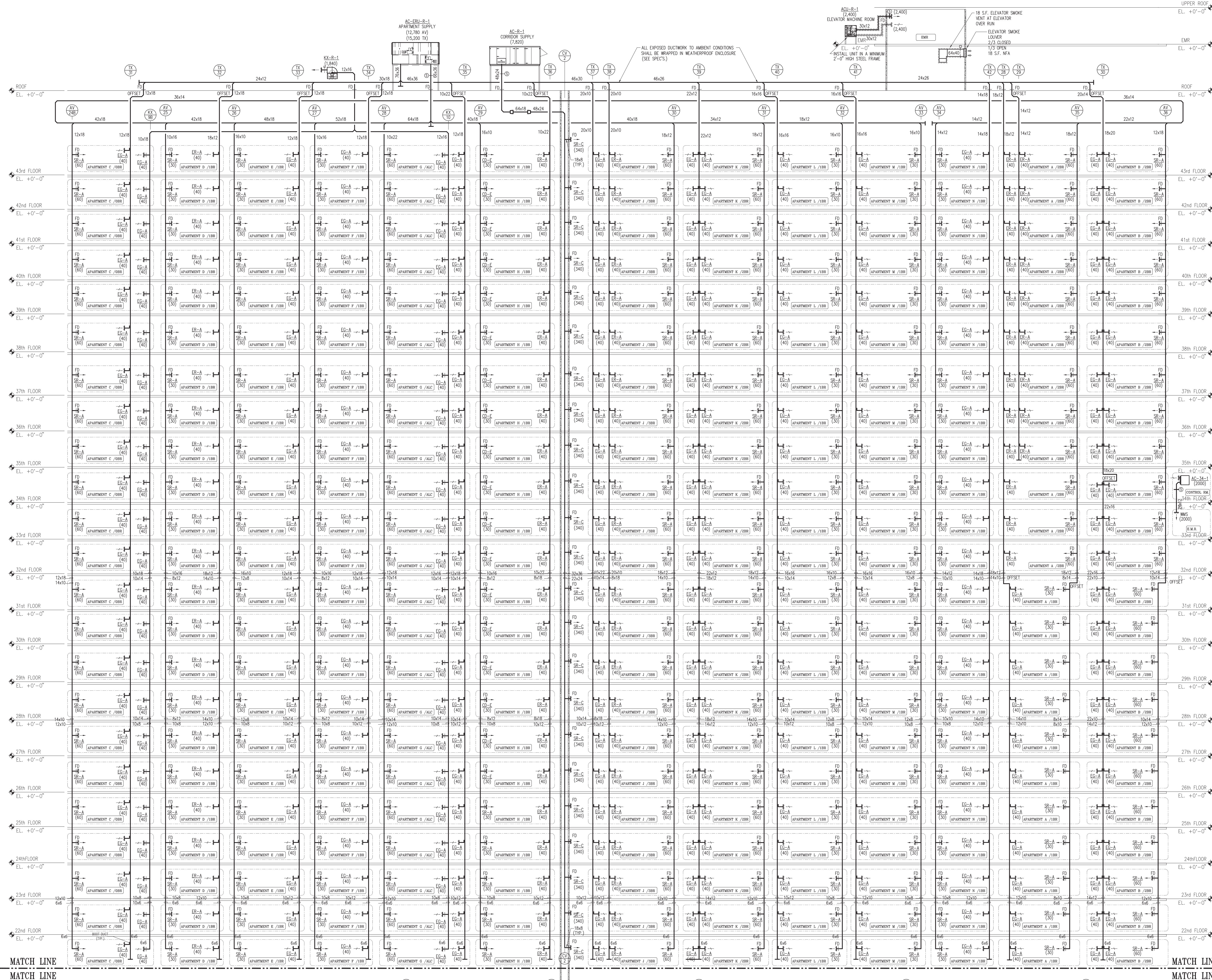
841 BROADWAY
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MECHANICAL ENGINEER:
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RIVERSIDE CENTER
BUILDING TWO

NEW YORK, NY

OWNER/DEVELOPER:
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WSP CANTOR SEINUK
228 EAST 45TH STREET, 3RD FLOOR
NEW YORK, NY 10017
T: 212.687.9888
F: 212.687.5501

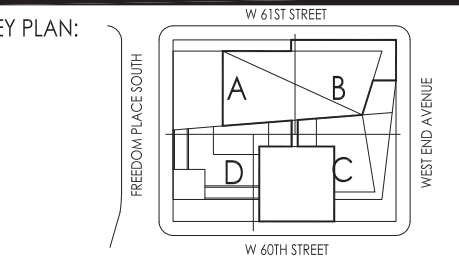
MECHANICAL ENGINEER:

WSP FLACK+KURTZ
512 SEVENTH AVENUE
NEW YORK, NY 10017
T: 212.532.9600



4	09/28/2012	BAS CO SET
3	08/22/2012	PROGRESS SET
2	09/02/2012	ISSUED TO JOB
1	12/08/2011	BAS CONSTRUCTION DOCUMENT
0	09/15/2011	BAS CONSTRUCTION DOCUMENT
0	09/15/2011	DESIGN DEVELOPMENT

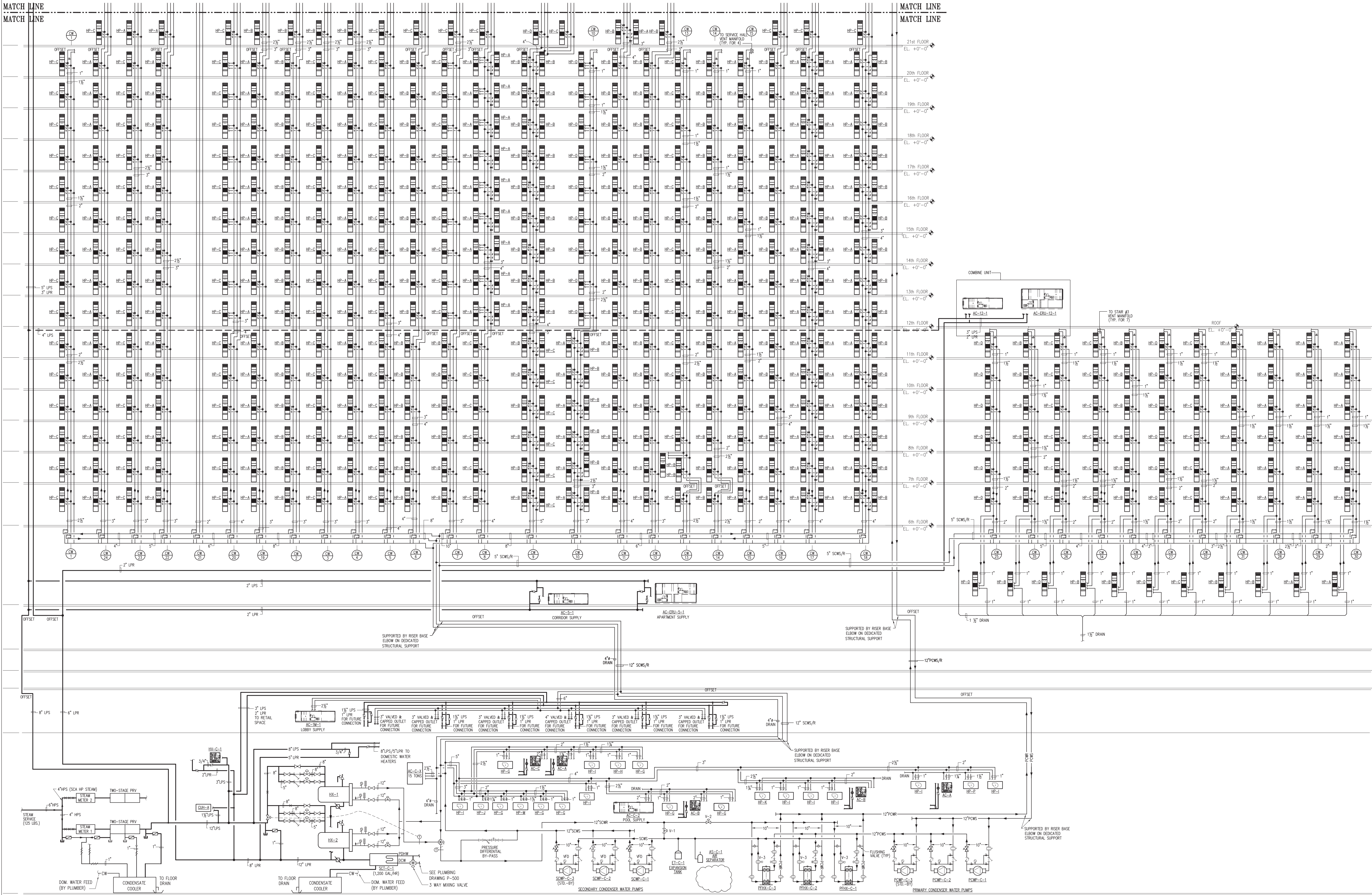
Rev: _____
Scale: _____
0 SC405 SC1 SCX15 SCX25





PROJECT:
RIVERSIDE CENTER
BUILDING 2

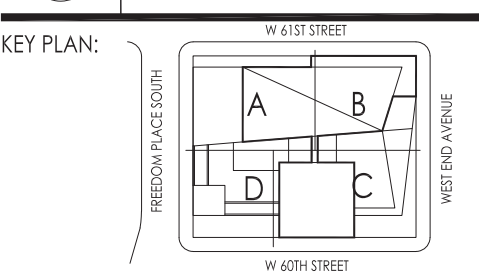
DRAWING TITLE:
HVAC WATER RISER DIAGRAM
SHEET NO. 1


SEAL & SIGNATURE:
DATE: JULY 15, 2011
PROJECT: RIVERSIDE CENTER
DRAWN BY: D.C.
CHECKED BY: T.A.
DRAWING NO.: M-503.00
CADD FILE NO.:





No:	Date:	Revision:
NORTH ARROW 		Scale: 



SEAL & SIGNATURE:	DATE: JULY 15, 2011
	PROJECT No:
	DRAWN BY: D.C.
	CHECKED BY: T.A.
	DRAWING No:
	M-504.00
	CADD FILE No:

RIVERSIDE CENTER
BUILDING TWO

NEW YORK, NY

OWNER/DEVELOPER:

EXTELL DEVELOPMENT

433 WEST 47TH STREET
NEW YORK, NY 10049
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ARCHITECT OF RECORD:

SLCE Architects

841 BROADWAY
NEW YORK, NY 10003
T: 212.579.8400
F: 212.579.8387

STRUCTURAL ENGINEER:

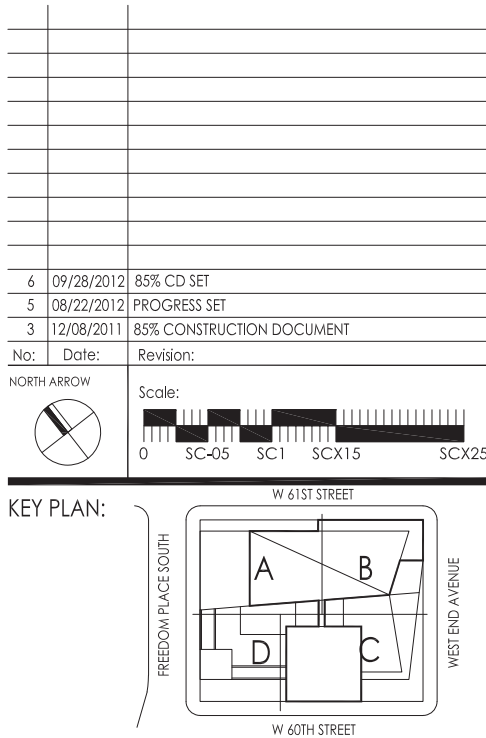
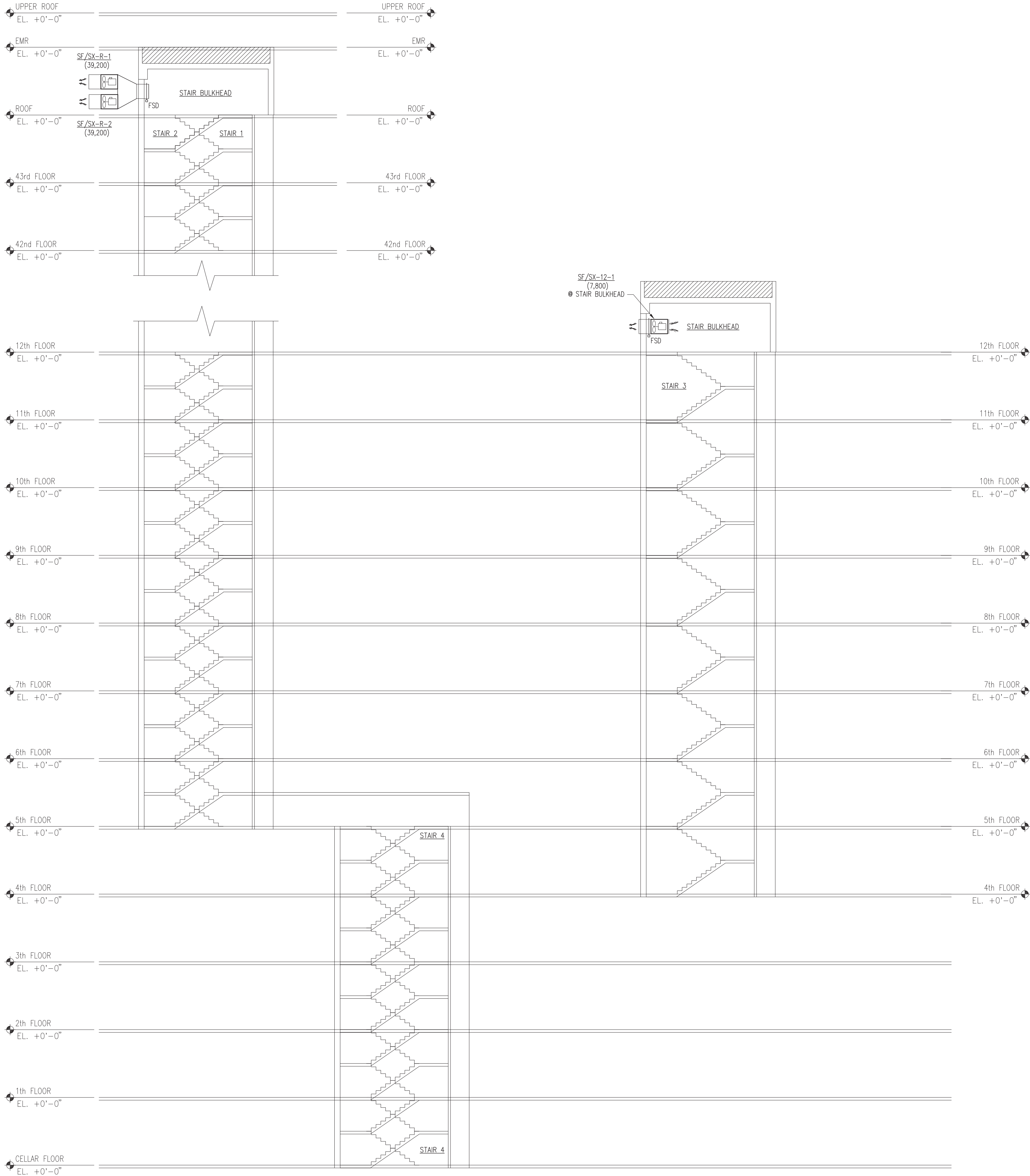
WSP CANTOR SEINUK

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MECHANICAL ENGINEER:

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NEW YORK, NY 10017
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PROJECT:

RIVERSIDE CENTER
BUILDING 2

DRAWING TITLE:

HVAC STAIR VENTILATION/
SMOKE EXHAUST DIAGRAM

SEAL & SIGNATURE:



DATE: JULY 15, 2011

PROJECT NO.

DRAWN BY: D.C.

CHECKED BY: E.A.

DRAWING NO. M-506.00

CADD FILE NO.

MECHANICAL ENGINEER:
WSP FLACK+KURTZ
512 SEVENTH AVENUE
NEW YORK, NY 10017
T.212.532.9600

- NOTES:
- 1. SEE MECHANICAL SPECIFICATION FOR UNIT CONSTRUCTION AND ACCESSORIES
- 2. FULL HEIGHT ACCESS DOORS SHALL CONTAIN WINDOWS.
- 3. REFRIGERATION CIRCUITS TO BE PIPED IN 1/2" MP (MAG) INCREMENTS TO COMPLY WITH NYE FIRE CODE.
- 4. ALL UNITS TO CONTAIN DIGITAL SCROLL COMPRESSORS FOR REFRIGERATION CAPACITY MODULATION.
- 5. HOT-GAS REHEAT COILS PROVIDED FOR BEHIND-ROOF CONTROL ON AC-R-1, AC-ERU-R-1, AND AC-ERU-R-2.
- 6. ALL UNITS TO HAVE REHEAT WHEELS PROVIDED FOR PRE-TEMPERING OF OUTSIDE AIR. FROST PROTECTION VIA VAD.
- 7. ALL UNITS TO CONTAIN FILTER DIFFERENTIAL PRESSURE SWITCHES AND MAGNETIC VALVES.
- 8. ALL UNITS TO HAVE A SYSTEM PROGRAMMED SEQUENCE OF OPERATION.
- 9. ALL ACCESS SECTIONS TO INCLUDE VAPOR-PROOF MARINE LIGHTS. DOORS TO CONTAIN SAFETY KILL SWITCHES TO DE-ENERGIZE THE BLOWER MOTOR IF THE ACCESS DOOR IS OPENED.
- 10. FACTORY-POWERED GUY CONVENIENCE RECEPTACLES PROVIDED BY THE MANUFACTURER.
- 11. ROOF TOP UNITS TO CONTAIN STEAM HEATING.
- 12. AC-1-1 TO CONTAIN VAD FOR SINGLE-ZONE VAV TEMPERATURE CONTROL.
- 13. ALL UNITS TO HAVE REHEAT WHEELS PROVIDED FOR PRE-TEMPERING OF OUTSIDE AIR.
- 14. START-UP AND COMMISSIONING BY UNIT MANUFACTURER.
- 15. ALL UNITS TO CONTAIN THREE SEPARATE SUPPLY TAPS WITH THREE SEPARATE HEATING COILS.
- 16. ALL STEAM HEATING COILS ARE TO HAVE GALVANIZED CASING.

DESIGNATION	AIR QUANTITY (CM ³ /MIN)	CONDENSER HOT WATER HEATING COIL									
		ENT. TEMP.		LVG. TEMP.		AIR FLOW RATE (M ³ /MIN)	HEATING CAPACITY (KCAL/H)	FLOW RATE (CM ³ /MIN)	FACE VELOCITY (M/SEC)	SIZES SURFACE (FP) AND ROWS	FLUID PRESSURE DROP (FT OF WATER)
		AIR (DEGREES F)	WATER (DEGREES F)	AIR (DEGREES F)	WATER (DEGREES F)						
AC-C-1	2500	65	95	74.4	82	0.19	26	4	557	10/2	3.6
AC-C-1	3200	65	95	72.2	86	0.17	24	7	512	10/2	2.6
AC-C-1	3060	55	95	71.4	88	0.17	54	12	525	10/2	2.5

[illegible]

COOLING TOWERS (BAC AS STD)																			
DESIGNATION	LOCATION	TYPE	TOTAL FLOW RATE (GPM)	TEMPERATURE (DEGREES F)	TEMPERATURE (DEGREES F)	AMBIENT AIR TEMP (DEGREES F, A.B.S.)	GPM PER CELL	NUMBER OF CELLS	FAN MOTOR DATA				MODEL NUMBER	OPERATING WEIGHT W/O STEEL SUPPORT (LBS)	BUSH DIAMETER NO. & KW	VIBRATION ISOLATION		REMARKS	DRAWING NO.
									NUMBER OF FAN MOTORS	HP PER FAN MOTOR	RPM	VOLTS/PHASE				SPECIFICATION TYPE	STATIC LOAD (TON INCHES)		
CT-1	ROOF	INDUCED DRAFT	1,500	100	85	78	1,500	1	1	50	1750	460/3	3648C	25,320	14	8	4	PROVIDE WD	
CT-2	ROOF	INDUCED DRAFT	1,500	100	85	78	1,500	1	1	50	1750	460/3	3648C	25,320	14	8	4	PROVIDE WD	

EXPANSION TANKS (ARMSTRONG AS STD)															
DESIGNATION	SERVICE	LOCATION	SYSTEM VOLUME (GALLONS)	TEMPERATURE (DEGREES F)		PRESSURE (PSIG)	TANK VOLUME (GALLONS)	TANK SIZE (INCHES)	MODEL NUMBER	SHIPPING WEIGHT (LBS)	REMARKS	DRAWING NO.			
				COLD TEMP.	HOT TEMP.	FILL OPERATING	ACCEPTANCE	TOTAL					HEIGHT	DIAMETER	
ET-C-1	CONDENSER WATER	CELLAR	4086	87	102	195	215	22	35	71.00	48	130-L	125	-	


KEY PLAN:

W 61ST STREET

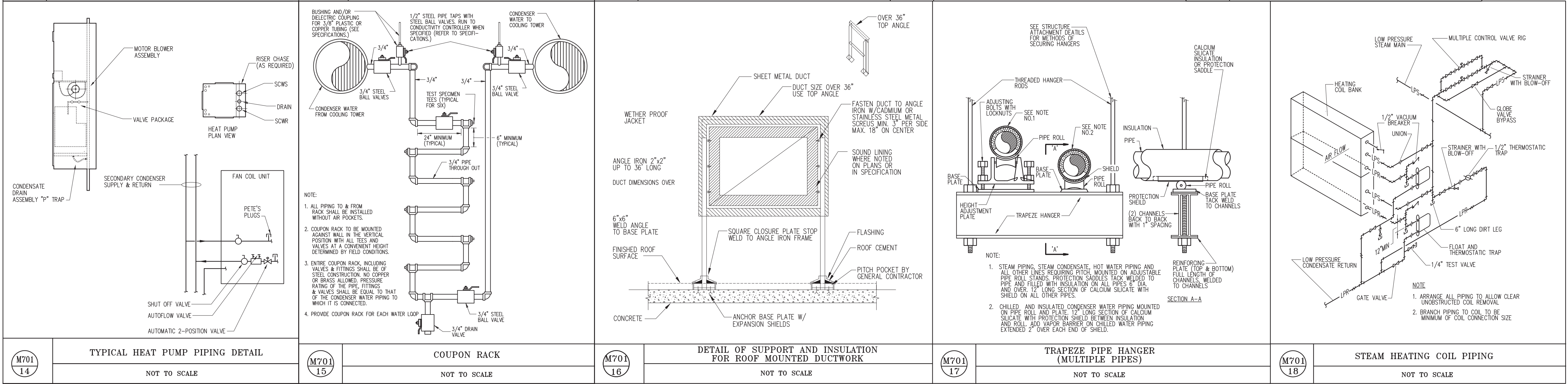
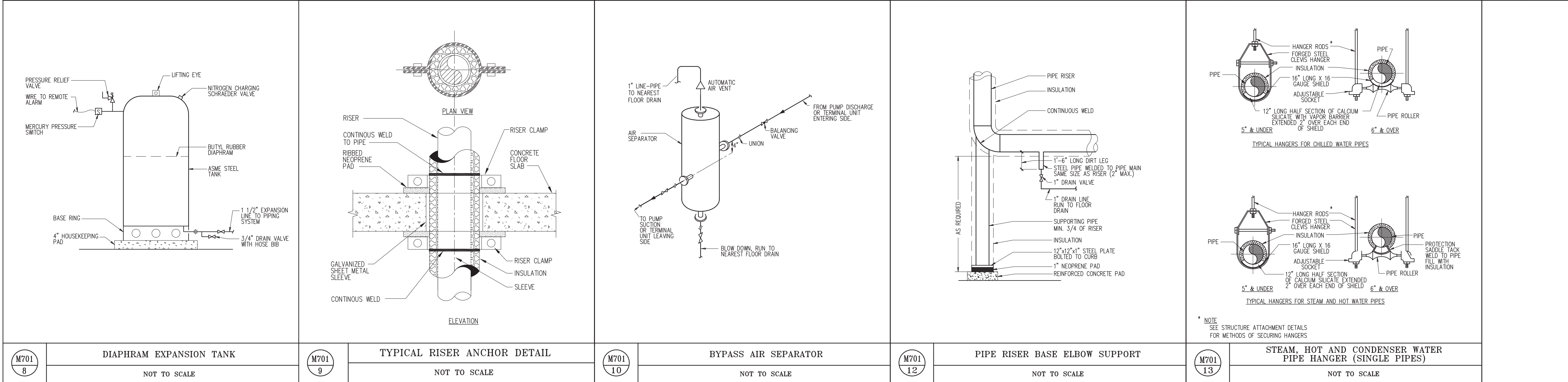
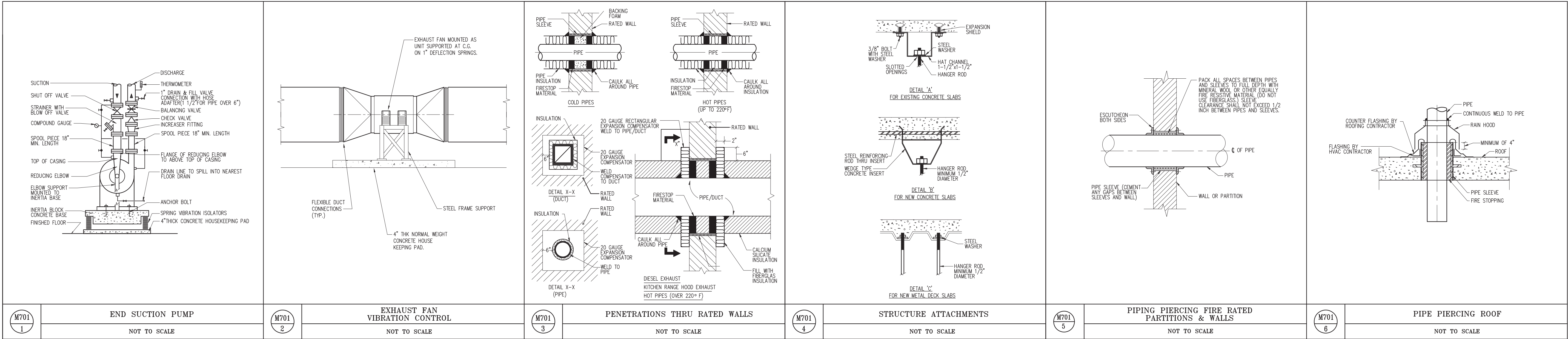
W 60TH STREET

FREEDOM PLACE SOUTH

WEST END AVENUE



CHECKED BY: J.A.
DRAWING No: M-601.00
CADD FILE No:



RIVERSIDE CENTER BUILDING TWO
NEW YORK, NY

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EXTELL DEVELOPMENT
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Cristian Petrescu
Buildings
APPROVED
Under Directive 2 of 1975
Date/Time: Jun 26, 2013 - 9:57 AM
NYC Development Hub

4: 09/28/2012 BBS CD SET
5: 08/22/2012 PROGRESS SET
6: 10/02/2012 ISSUED TO JOB
7: 12/08/2011 BBS CONSTRUCTION DOCUMENT
8: 09/15/2011 BBS CONSTRUCTION DOCUMENT
9: 07/16/2011 DESIGN DEVELOPMENT

Scale: 0 SC405 SC1 SCX15 SCX25

KEY PLAN:
W 47th STREET
W 48th STREET
W 49th STREET
W 50th STREET
W 51st STREET
W 52nd STREET
W 53rd STREET
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W 99th STREET
W 100th STREET

PROJECT:
RIVERSIDE CENTER BUILDING 2

DRAWING TITLE:
HYAC DETAILS SHEET NO. 1

SEAL & SIGNATURE:
DATE: JULY 15, 2011
PROJECT NO.:
DRAWN BY: D.C.
CHECKED BY: T.A.
DRAWING NO.:
M-701.00
CADD FILE NO.:

RIVERSIDE CENTER
BUILDING TWO

NEW YORK, NY

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		<table><tr><th>CROSS SECTIONAL AREA (SQ.FT.)</th><th>MAX. HANGER SPACING (FT.)</th></tr><tr><td>UP TO 4</td><td>8</td></tr><tr><td>OVER 4 NOT TO EXCEED 10</td><td>6</td></tr><tr><td>OVER 10</td><td>4</td></tr></table>	CROSS SECTIONAL AREA (SQ.FT.)	MAX. HANGER SPACING (FT.)	UP TO 4	8	OVER 4 NOT TO EXCEED 10	6	OVER 10	4			
CROSS SECTIONAL AREA (SQ.FT.)	MAX. HANGER SPACING (FT.)												
UP TO 4	8												
OVER 4 NOT TO EXCEED 10	6												
OVER 10	4												
M702-1 EQUIPMENT SUSPENDED FROM CONCRETE SLAB NOT TO SCALE	M702-2 EQUIPMENT SUSPENDED FROM STRUCTURAL STEEL NOT TO SCALE	M702-3 DUCT HANGING DETAIL WITH CONCRETE INSERTS NOT TO SCALE	M702-4 DUCT PIERCING NON-RATED WALLS NOT TO SCALE	M702-5 LOW PRESSURE SUPPLY RISER DUCT CONNECTION (DUCTED RETURN SIMILAR) NOT TO SCALE	M702-6 NON-DUCTED RETURN AIR SHAFT CONNECTION NOT TO SCALE								
M702-7 SQUARE DUCT ELBOWS NOT TO SCALE	M702-8 TRANSFER AIR DUCT ASSEMBLY (ROOM TO CEILING OR ROOM) NOT TO SCALE	M702-9 TRANSFER AIR DUCT (WITHIN HUNG CEILING) NOT TO SCALE	M702-10 DUCT CAP NOT TO SCALE	M702-11 ACOUSTICAL DUCT LINING DETAIL NOT TO SCALE	M702-12 DUCT AT ANGLE THRU RATED WALL NOT TO SCALE								
M702-13 PINCH DOWN VAV TERMINAL NOT TO SCALE	M702-14 SHUTTER TYPE FIRE DAMPER 1 1/2 HOUR RATING LOW PRESSURE SYSTEMS (LESS THAN +/- 2' W.G. S.P.) (FD) NOT TO SCALE	M702-15 DUAL SENSOR OPENABLE COMBINATION FIRE AND SMOKE DAMPER NOT TO SCALE	M702-16 AUTOMATIC SMOKE DAMPER INSTALLATION-ELECTRIC CONTROL NOT TO SCALE	M702-17 HORIZONTAL UTILITY FAN DETAIL NOT TO SCALE	M702-18 ROOF EXHAUST FAN NOT TO SCALE								

4/09/2012	BTS CO SET
5/08/2012	PROGRESS SET
4/10/2012	ISSUED TO JOB
3/12/2011	BTS CONSTRUCTION DOCUMENT
2/09/2011	BTS CONSTRUCTION DOCUMENT
1/07/2011	DESIGN DEVELOPMENT

Rev: _____

Scale: _____

KEY PLAN:

PROJECT:
**RIVERSIDE CENTER
BUILDING 2**

DRAWING TITLE:
**HVAC DETAILS
SHEET NO. 2**

SEAL & SIGNATURE:

DATE: JULY 15, 2011

PROJECT: _____

DRAWN BY: D.C.

CHECKED BY: T.A.

DRAWING NO: _____

M-702.00

CADD FILE NO: _____

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STEAM PRESSURE REDUCING VALVE SCHEDULE)
(WARREN/ORBIT) STANDARD

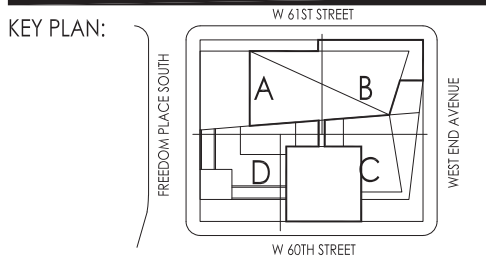
TAG NO.	SERVICE	LOCATION	PRESS (PSIG)		CAPACITY (#/HR)		VALVE DATA			NOISE ATTENUATOR
			INLET	OUTLET	REQ'D	RATED	SIZE	MODEL	END COND.	
SOV-1	BASE BLDG.	-	120/200	120/200/0	N/A	N/A	8"	12F3H	300#/FLG	N/A
SSO-1	BASE BLDG.	-	120/200	120/200/0	36,000	----	8"	1843	300#/FLG	N/A
SOV-2	BASE BLDG.	-	120/200	120/200/0	N/A	N/A	4"	12F3H	300#/FLG	N/A
PRV-1	BASE BLDG.	-	120/200	60	12,000	13,200	2 1/2"	5843 HOD	300#/FLG	LASM 12x42
PRV-1A	BASE BLDG.	-	60	15	12,200	16,000	3"	5843 HOD	300#/FLG	LASM 14x56
SOV-3	BASE BLDG.	-	15	15/0	N/A	N/A	8"	PK300RF	300#/FLG	N/A
SOV-4	BASE BLDG.	-	120/200	120/200/0	N/A	N/A	6"	12F3H	300#/FLG	N/A
PRV-2	BASE BLDG.	-	120/200	60	24,000	40,000	4"	5843 HOD	300#/FLG	LASM 15x56
PRV-2A	BASE BLDG.	-	60	15	24,000	40,000	6"	1843 HOD	300#/FLG	LASM 18x54
SOV-5	BASE BLDG.	-	15	15/0	N/A	N/A	12"	PK300RF	300#/FLG	N/A
-	-	-	-	-	-	-	-	-	-	-
SOV-1	SCHOOL	-	120/200	120/200/0	N/A	N/A	3"	12F3H	300#/FLG	N/A
SSO-1	SCHOOL	-	120/200	120/200/0	5,000	----	3"	58443	300#/FLG	N/A
SOV-2	SCHOOL	-	120/200	120/200/0	N/A	N/A	2"	12F3H	300#/FLG	N/A
PRV-1	SCHOOL	-	120/200	60	3,300	5,000	1 1/2"	5840 HOD	300#/FLG	N/R
PRV-1A	SCHOOL	-	60	15	3,300	5,000	2"	5840 HOD	300#/FLG	N/R
SOV-3	SCHOOL	-	15	15/0	N/A	N/A	5"	PK300RF	300#/FLG	N/A
SOV-4	SCHOOL	-	120/200	120/200/0	N/A	N/A	1 1/2"	12F3H	300#/FLG	N/A
PRV-2	SCHOOL	-	120/200	60	1,700	2,800	1"	5840 HOD	300#/FLG	N/R
PRV-2A	SCHOOL	-	60	15	1,700	3,000	1 1/2"	5840 HOD	300#/FLG	N/R
SOV-4	SCHOOL	-	15	15/0	N/A	N/A	4"	PK300RF	300#/FLG	N/A
SOV-5	SCHOOL	-	15	15/0	N/A	N/A	6"	PK300RF	300#/FLG	N/A
PRV-3	SCHOOL	-	15	5	4,060	4,600	3"	5843 HOD	300#/FLG	N/R
SOV-6	SCHOOL	-	5	5/0	N/A	N/A	6"	PK300RF	300#/FLG	N/A

NOTES:

1. ALL SCHEDULED VALVES SHALL HAVE STAINLESS STEEL TRIM WITH HARD FACING, WELDED OVERLAY ON PLUG AND SEATING SURFACES. HIGH PERFORMANCE BUTTERFLY VALVES AND STANDARD GATE VALVES ARE NOT ACCEPTABLE.
2. SCHEDULED VALVES SHALL HAVE MANUFACTURES 2-YEAR WARRANTY STANDARD.
3. FURNISH ALL REDUCING VALVES WITH SAFETY PILOT SYSTEM SUCH THAT SHOULD THE SECOND STAGE PRV FAIL TO MAINTAIN PROPER PRESSURE, THE FIRST STAGE PRV WILL AUTOMATICALLY RESET TO LOW PRESSURE AND GENERATE AN ALARM TO THE LOCAL ALARM PANEL AND/OR BMS IF AVAILABLE.
4. ALL SCHEDULED VALVES SHALL HAVE CARBON STEEL BODIES ANSI CLASS 300 PSIG MINIMUM PRESSURE RATING. CAST IRON WILL NOT BE CONSIDERED.
5. FURNISH MANUAL HAND-WHEEL OVERRIDE ON PRV FOR EMERGENCY OPERATION ON LOSS OF COMPRESSED AIR SIGNAL. NO HAND-WHEEL PERMITTED ON SAFETY SHUT OFF VALVE (SSO-1).
6. SOURCE OF SUPPLY IS JOHN N. FEHLINGER CO. INC., NEW YORK, NY. 212 233-5656.



4	09/28/2012	BAS CD SET
3	08/22/2012	PROGRESS SET
2	12/08/2011	BSR CONSTRUCTION DOCUMENT
No:	Date:	Revisions:



PROJECT:

RIVERSIDE CENTER
BUILDING 2

DRAWING TITLE:

HVAC DETAILS
SHEET NO. 4

SEAL & SIGNATURE:



DATE:	JULY 15, 2011
PROJECT NO.:	D.C.
DRAWN BY:	T.A.
CHECKED BY:	T.A.
DRAWING NO.:	M-704.00
CADD FILE NO.:	

RIVERSIDE CENTER
BUILDING TWO

NEW YORK, NY

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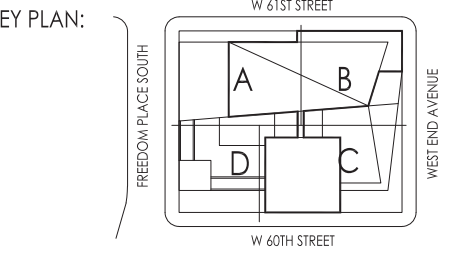


4	10/28/2012	BAS CD SET
3	08/22/2012	PROGRESS SET
3	12/08/2011	BAS CONSTRUCTION DOCUMENT

Rev: _____
No: _____ Date: _____ Revisions: _____

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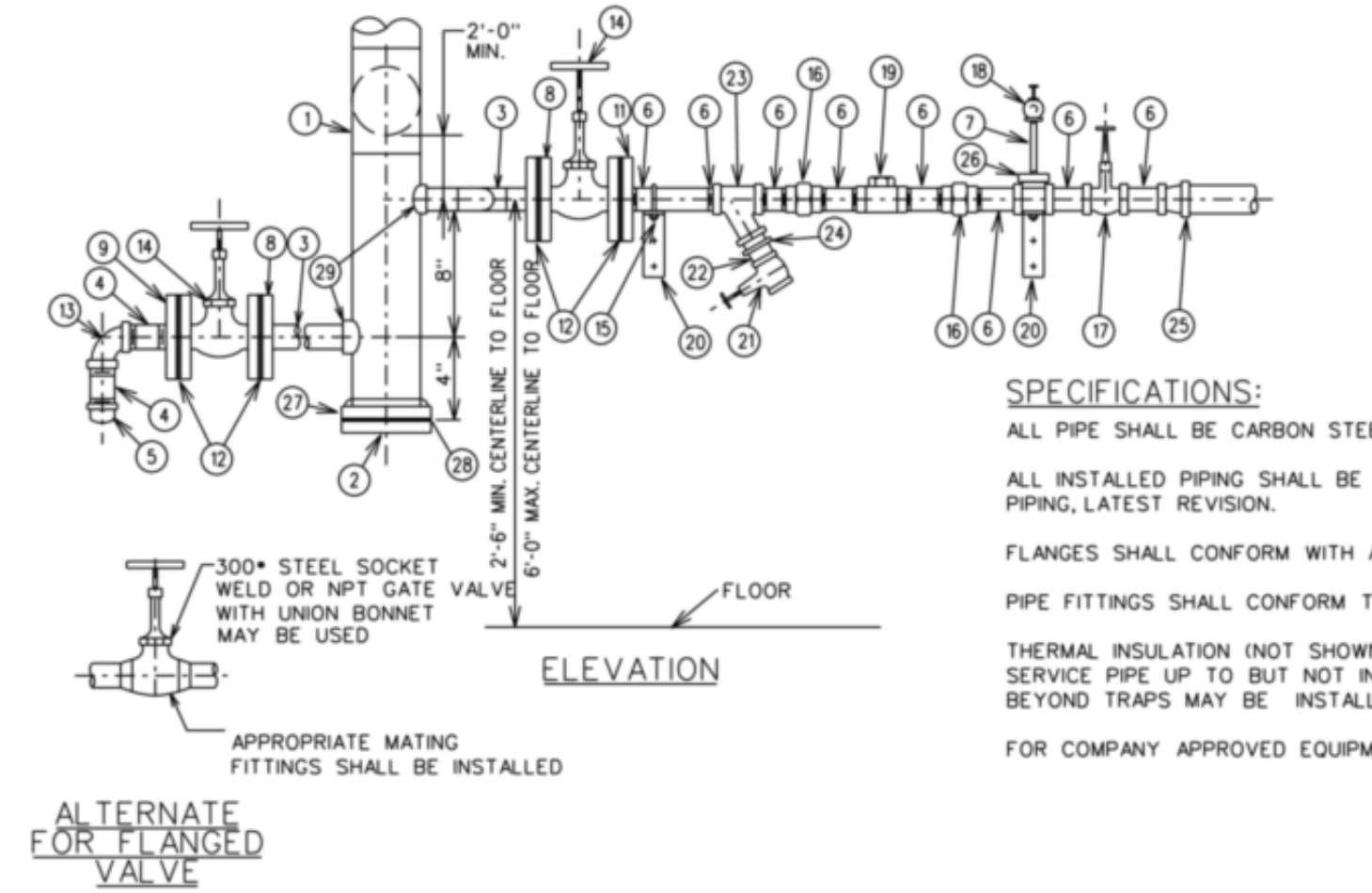
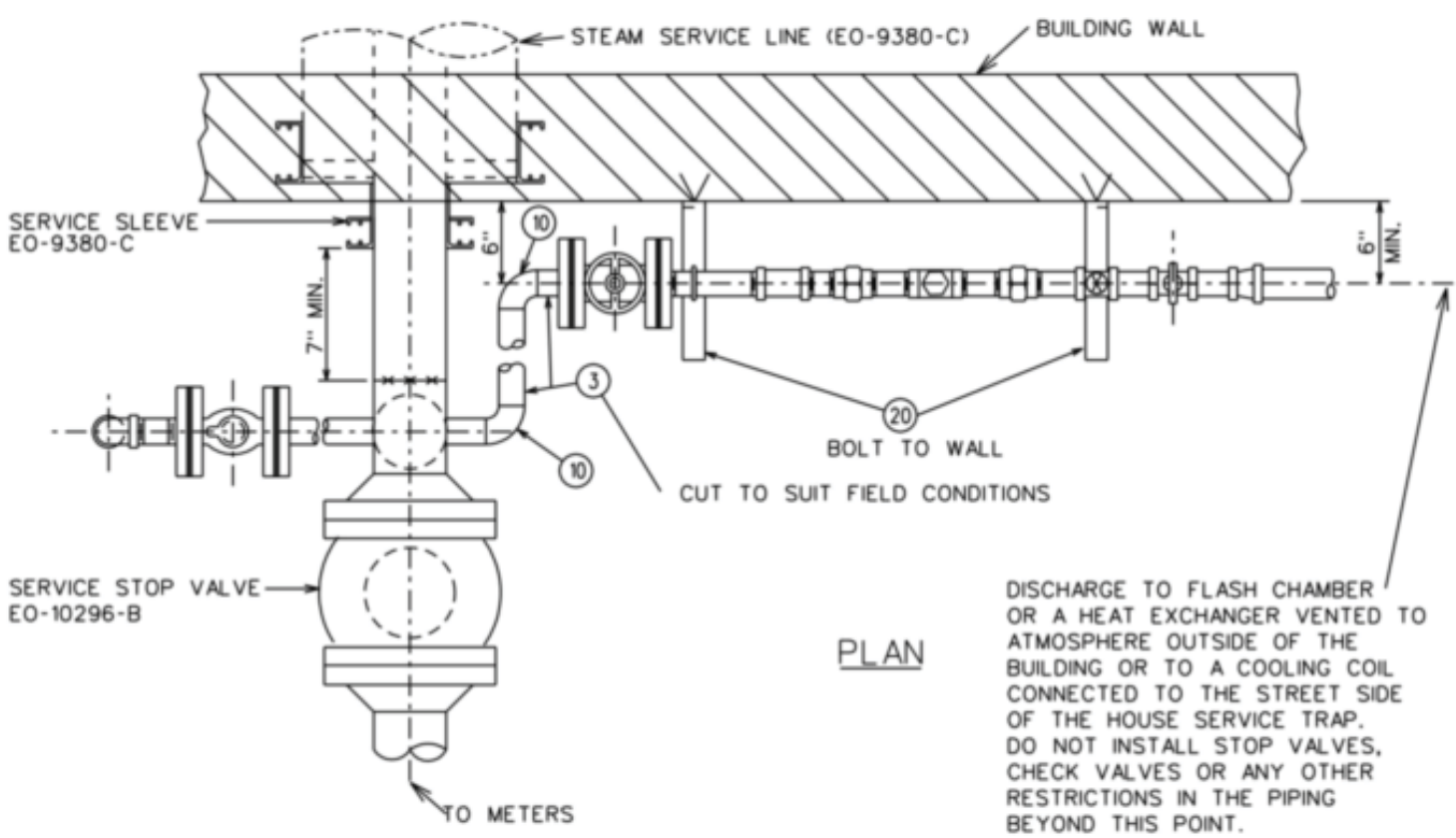
Scale:



PROJECT:
**RIVERSIDE CENTER
BUILDING 2**

DRAWING TITLE:
**HVAC DETAILS
SHEET NO. 5**

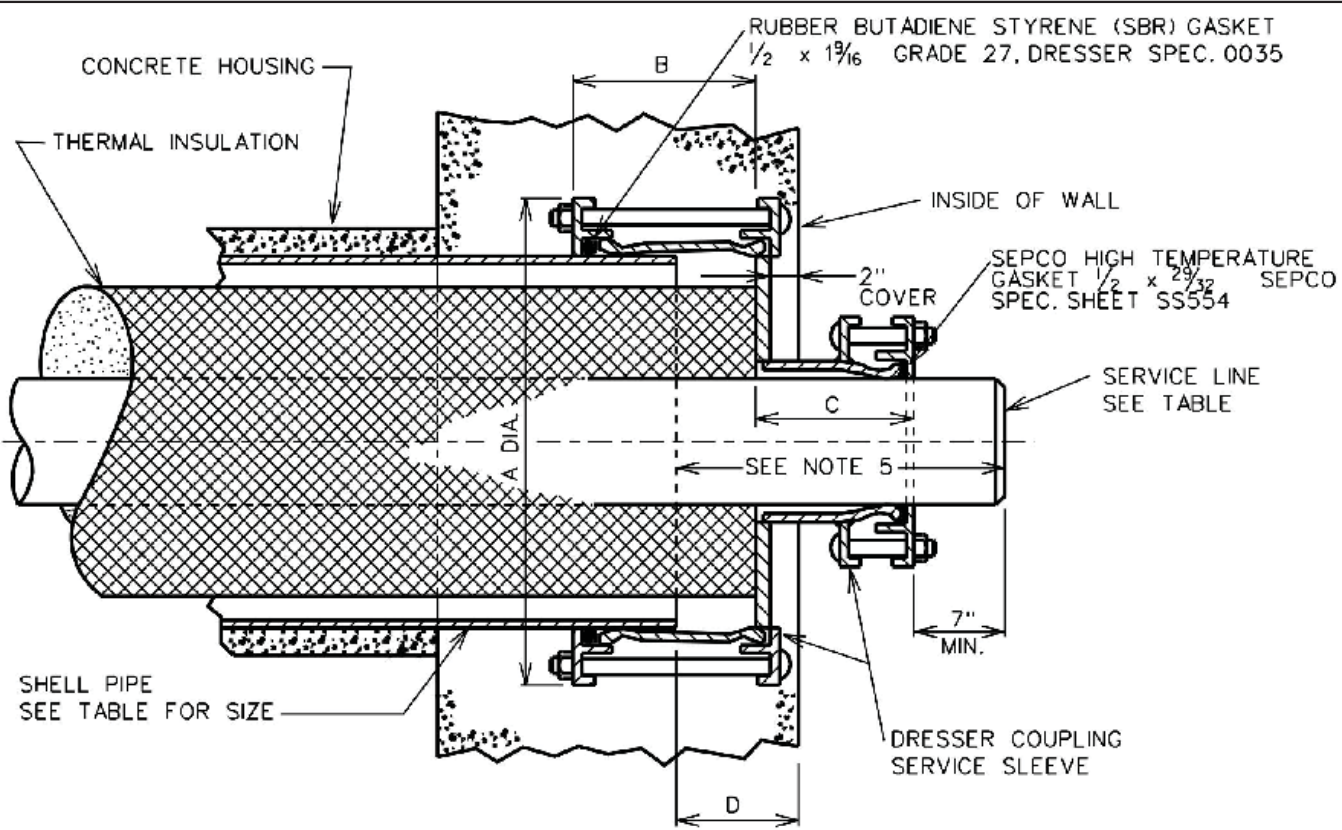
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DATE: JULY 15, 2011
PROJECT NO.: _____
DRAWN BY: D.C.
CHECKED BY: T.A.
DRAWING NO.: **M-705.00**
CADD FILE NO.: _____



BILL OF MATERIAL			
ITEM NUMBER	QUANT.	DESCRIPTION	SIZE
1	AS REQD.	PIPE CUT TO SUIT	FULL SIZE
2	1	300# ANSI BLIND FLANGE	---
3	AS REQD.	1" DIA. PIPE CUT TO SUIT - SCH. 80	---
4	2	1" PIPE NIPPLE - XS	1" x 3" L.G.
5	1	EXTRA STRONG SCREWED PIPE CAP	1"
6	8	THREADED PIPE NIPPLE - XS	1/2" x 3" L.G.
7	1	EXTRA STRONG THREADED PIPE NIPPLE	1/4" x 4"
8	2	SOCKET WELD FLANGE - FLAT FACE - 300#	1"
9	2	SCREWED FLANGE - 300# FLAT FACE	1"
10	2	90° WELDING ELL. - XS	1"
11	1	1/2" x 4 1/2" O.D. REDUCING FLANGE FLAT FACE	---
12	4	1" FULL FACE GASKET 1/16" ASME SIZE	---
13	1	3000# FORGED SCREWED ELBOW	1"
14	2	300# 1" BRONZE GATE VALVE, FLAT FACE FLANGE, WALWORTH FIG. W48FF	---
15	1	"U" BOLT W/ HEX NUTS & WASHERS	1/4"
16	2	300# STEEL UNION	1/2"
17	1	300# GATE VALVE SCREWED ENDS, BRONZE	1/2"
18	1	300# ANGLE GLOBE VALVE, SCREWED ENDS, BRONZE, WALWORTH FIG. W296SC	1/4"
19	1	SARCO T.D. HIGH PRESSURE STEAM TRAP	1/2"
20	2	SUPPORT BRACKET 8" X 1" x 1/2" FLAT STEEL (3 PLATES ONE BRACKET) OR EQUAL	1/4"
21	1	300# GLOBE VALVE SCREWED, BRONZE	1/4"
22	1	EXTRA STRONG THREADED PIPE NIPPLE	1/2" x 4" L.G.
23	1	STRONG STRAINER TYPE "SY" WITH 60-100 MESH MONEL SCREEN	1/2"
24	1	BUSHING, FORGED STEEL	3/8" x 1/4"
25	1	3000# FORGED STEEL REDUCER ASTM A-105	1" x 1/2"
26	1	3000# FORGED STEEL TEE, ASTM A-105	1/2" x 1/2" x 1/2"
27	1	300# SOCKET WELD FLANGE, SIZE 1", 2", 3"	AS REQD.
28	1	300# WELD NECK FLANGE, SIZE 4" AND OVER	AS REQD.
29	2	GASKET 1/16" THICK, ASME SIZE	AS REQD.
30	2	SOCKET - 3000#	1"

* FURNISHED BY CON EDISON

SPECIFICATIONS:
ALL PIPE SHALL BE CARBON STEEL IN ACCORDANCE WITH ASTM A53, GRADE B SEAMLESS.
ALL INSTALLED PIPING SHALL BE IN COMPLIANCE WITH ASME CODE B31.1 FOR PRESSURE PIPING, LATEST REVISION.
FLANGES SHALL CONFORM WITH ASTM A-105 AND ANSI B16.5.
PIPE FITTINGS SHALL CONFORM TO ANSI B16.11 FORGED STEEL FITTING, SOCKET- WELDING AND THREADED ASTM A-105 FORGED 3000# RATINGS.
THERMAL INSULATION (NOT SHOWN) OF AN APPROVED TYPE SHALL BE INSTALLED FROM THE SERVICE PIPE UP TO BUT NOT INCLUDING THE SARCO T.D. H.P. STEAM TRAPS, INSULATION BEYOND TRAPS MAY BE INSTALLED AT CUSTOMER'S OPTION.
FOR COMPANY APPROVED EQUIPMENT, SEE "APPROVED STEAM SERVICE EQUIPMENT" BOOKLET.



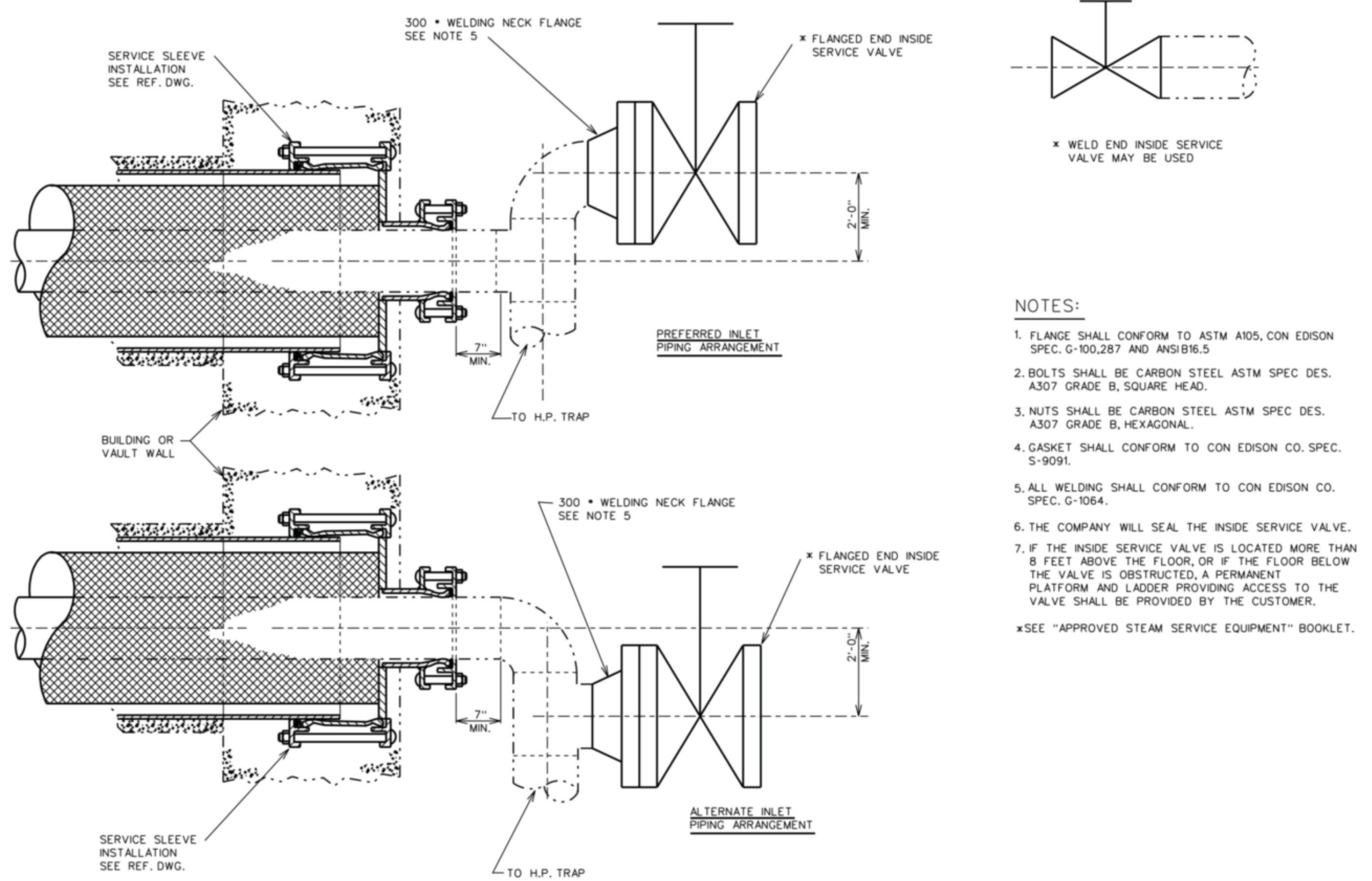
SIZE OF SERVICE LINE (IN)	* DRESSER COUPLING STYLE 62 TYPE 2 NOMINAL SIZE	SHELL PIPE SIZE O.D.	DIMENSIONS IN INCHES			
			A	B	C	D
1	1" x 6"	6 5/8"	10 1/2"	5 1/8"	6 3/16"	4
2	2" x 8"	8 5/8"	12 1/8"	5 1/8"	7 5/8"	4
3	3" x 10"	10 5/8"	14 1/8"	5 1/8"	7 5/8"	4
4	4" x 12"	12 5/8"	16 1/4"	5 1/8"	7 5/8"	4
6	6" x 16"	16"	20	7 1/8"	7 5/8"	5
8	8" x 18"	18"	22	7 1/8"	7 5/8"	5
10	10" x 20"	20"	24 1/8"	7 1/8"	7 5/8"	5
12	12" x 24"	24"	28	7 1/8"	7 5/8"	5
16	16" x 28"	28"	33	7 1/8"	8 1/8"	5

* SEE "APPROVED STEAM SERVICE EQUIPMENT" BOOKLET

- NOTES:**
1. INSTALL AND COMPRESS GASKETS BEFORE THE WALL IS POURED.
 2. MATERIAL FOR SHELL PIPE SHALL BE IN ACCORDANCE WITH CON EDISON SPEC. S-9035.
 3. DURING INSTALLATION, REINFORCING RODS IN THE WALL SHALL CLEAR SHELL PIPE AND DRESSER COUPLING BY 6 INCHES.
 4. DRESSER COUPLING SERVICE SLEEVE FURNISHED AND INSTALLED BY CUSTOMER.
 5. WHEN INSTALLING SERVICE LINE THROUGH WALL, A MINIMUM EXTENSION OF 19 INCHES IS REQUIRED TO ALLOW FOR CUT OFF OF STEEL BLANKS OR END CAPS.
 6. COUPLING BOLTS MAY BE REVERSED TO FACILITATE INSTALLATION.

1 INSTALLATION OF STEAM TRAP FOR 200 PSIG SERVICE

NOT TO SCALE

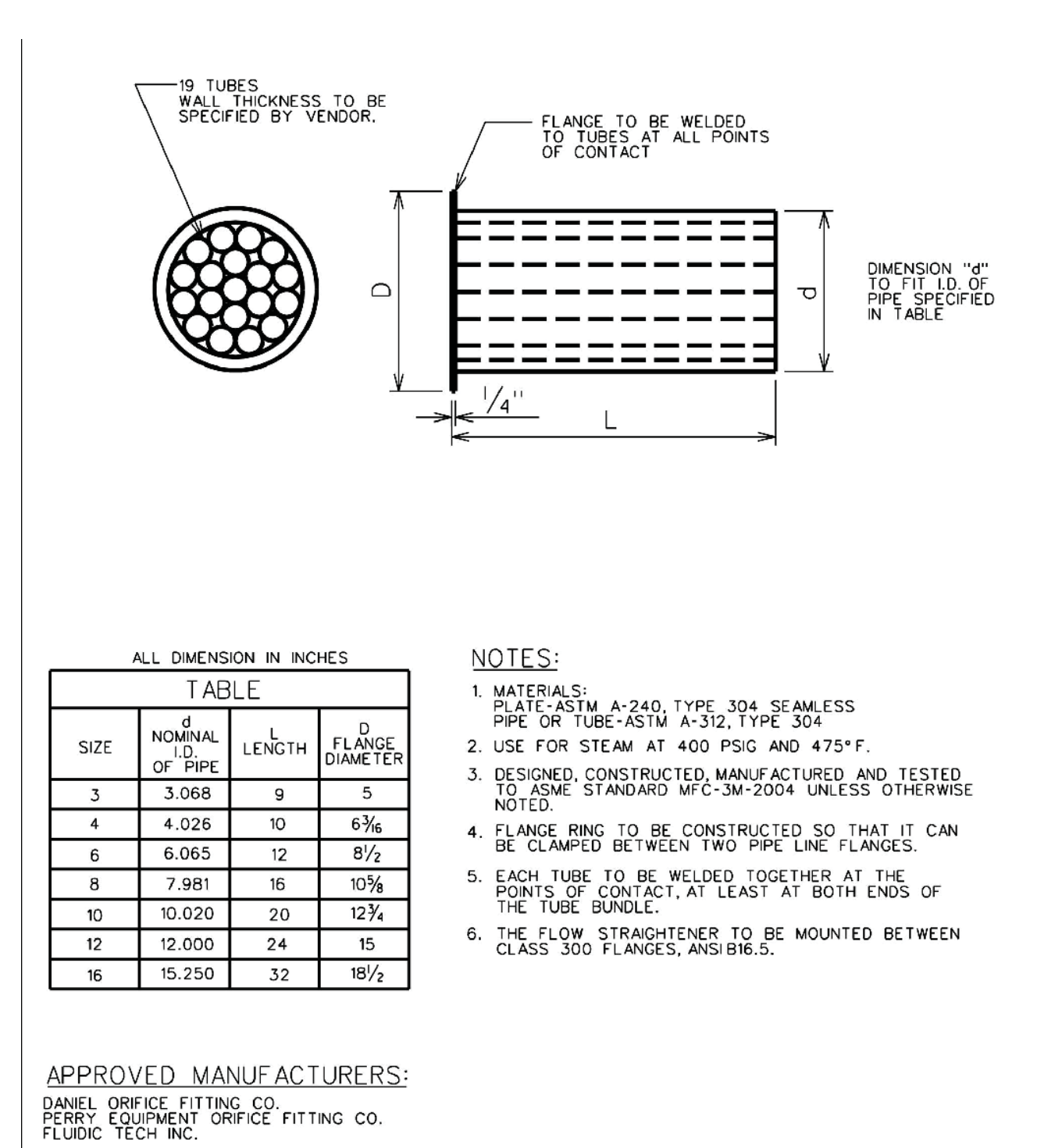


3 INSTALLATION OF STEAM INSIDE SERVICE VALVE FOR 200 PSI SERVICE

NOT TO SCALE

2 INSTALLATION OF DRESSER COUPLING SLEEVE STEAM SERVICES 1" TO 12"

NOT TO SCALE



APPROVED MANUFACTURERS:
DANIEL ORIFICE FITTING CO.
PERRY EQUIPMENT ORIFICE FITTING CO.
FLUIDIC TECH INC.

4 TUBE BUNDLE FLOW STRAIGHTENERS FOR USE WITH STEAM FLOW METER

NOT TO SCALE

RIVERSIDE CENTER
BUILDING TWO

NEW YORK, NY

OWNER/DEVELOPER:
EXTELL DEVELOPMENT

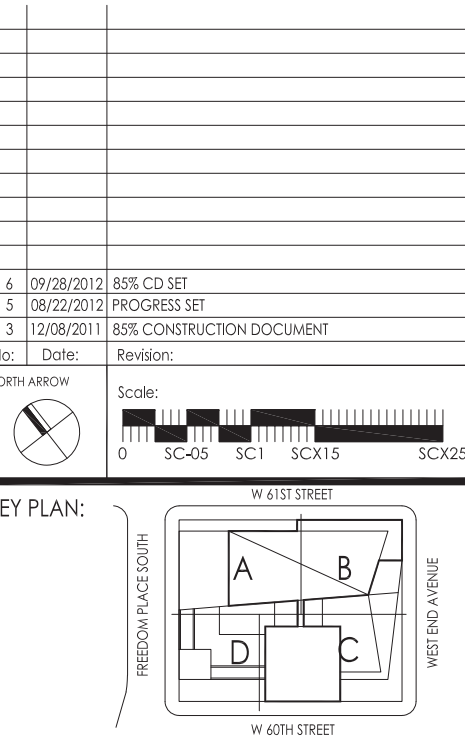
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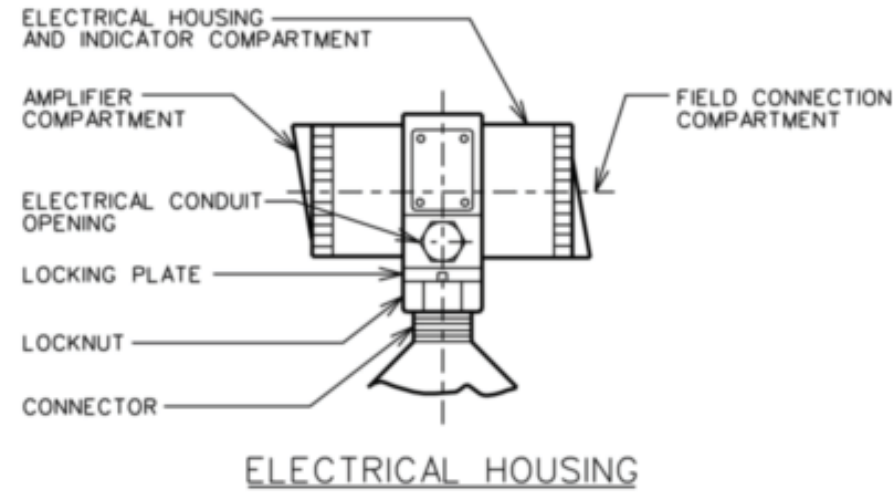
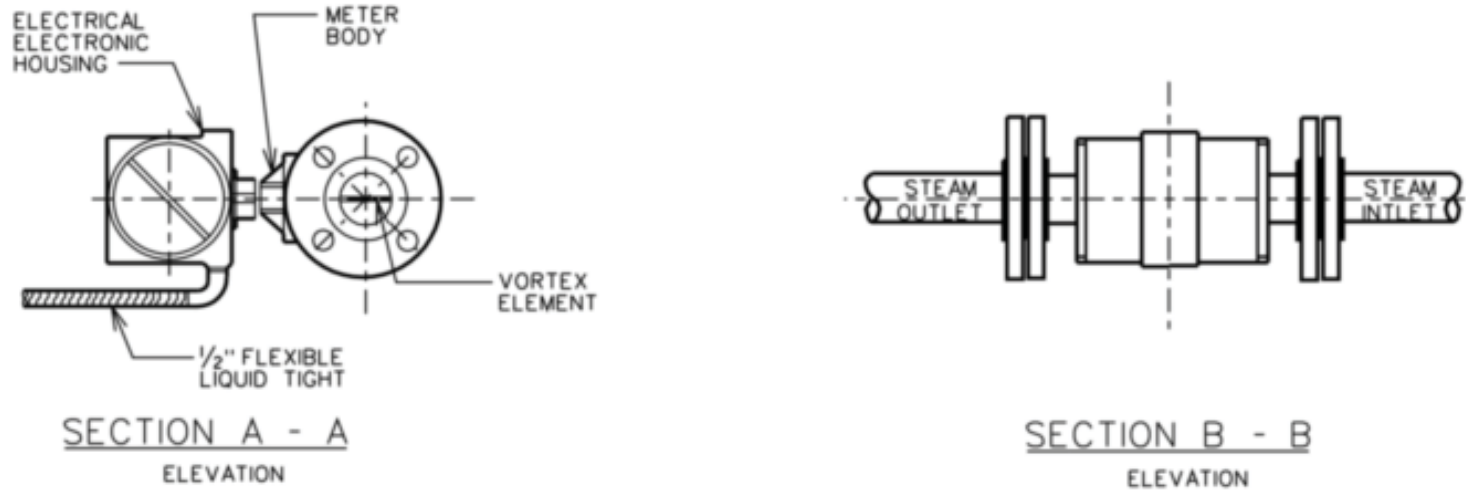
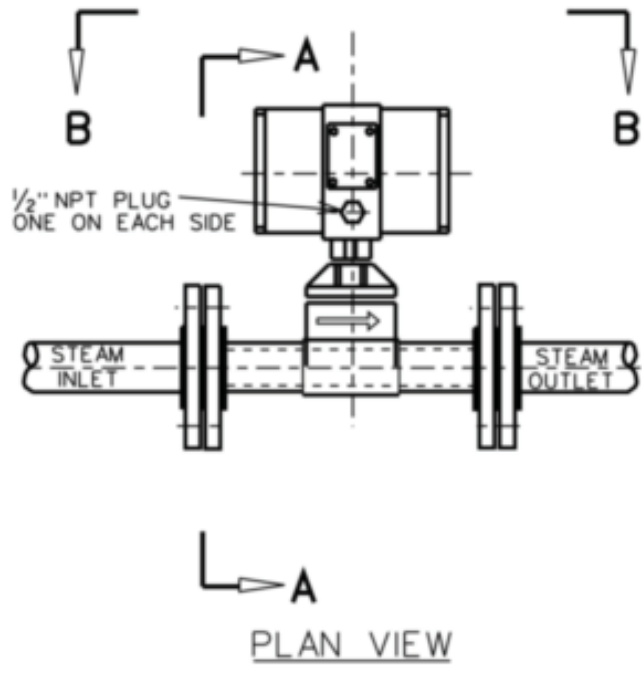
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PROJECT:
RIVERSIDE CENTER
BUILDING 2

DRAWING TITLE:
HVAC DETAILS
SHEET NO. 6

SEAL & SIGNATURE:
PROJECT NO.:
DRAWN BY: D.C.
CHECKED BY: T.A.
DRAWING NO.:
M-706.00
CADD FILE NO.:



S-588 NOTE: TYPICAL ASSEMBLY AND INSTALLATION OF VORTEX FLOWMETER

(a) INSTALLATION POSITION

- (1) THE VORTEX FLOW METER SHOULD BE MOUNTED WITH ELECTRONIC HOUSING LOCATED IN THE 3 O'CLOCK OR 9 O'CLOCK POSITION, EITHER CONDUIT CONNECTION CAN BE USED TO AVOID ACCUMULATION OF MOISTURE AT THE TERMINAL BLOCK. THE REMAINING CONDUIT CONNECTION MUST BE SEALED WITH 1/2" NPT PLUG.
- (2) THE CONDUIT CONNECTED TO THE INSTRUMENT MUST HAVE AN INTERNAL SEAL AND BE CONNECTED TIGHTLY TO EXCLUDE MOISTURE FROM THE TERMINAL BLOCK ENCLOSURE.
- (3) PIPING VIBRATION SHALL BE MINIMIZED.

(b) REPOSITIONING THE ELECTRICAL HOUSING

- THE FLOW METER ELECTRONICS HOUSING MAY BE REPOSITIONED AT 90 DEG. INCREMENTS UP TO 360 DEG. MAXIMUM BY ROTATING ELECTRICAL HOUSING IN A COUNTERCLOCKWISE DIRECTION. DO NOT BACK OFF FLOW METER HOUSING MORE THAN ONE FULL TURN. THIS IS A SAFETY CODE REQUIREMENT FOR THREAD ENGAGEMENT TO MAINTAIN AN EXPLOSION PROOF CONDITION. IF IN DOUBT OF THE PROPER POSITION, THE CONNECTOR AND HOUSING SHOULD BE ROTATED CLOCKWISE UNTIL THE INTERNAL STOP IS ENGAGED, THEN BACK OFF THE REQUIRED AMOUNT OF ALIGNMENT, BUT NOT MORE THAN ONE FULL TURN.
- (1) UNSCREW HOUSING LOCKNUT TO BOTTOM OF THREAD.
 - (2) LOCKING PLATE SHOULD FALL DOWN ON SHAFT. IF IT DOES NOT, PRY OUT WITH SCREWDRIVER.
 - (3) ROTATE ELECTRICAL HOUSING IN A COUNTERCLOCKWISE DIRECTION TO DESIRE POSITION.
 - (4) NOTE RECESS ON BOTTOM OF ELECTRICAL HOUSING WHICH LOCKING PLATE FITS INTO. SCREW THE LOCKING NUT HAND TIGHT MAKING SURE LOCKING PLATE FITS INTO RECESS ON BOTTOM OF ELECTRICAL HOUSING.
 - (5) SCREW THE LOCKNUT FIRMLY.

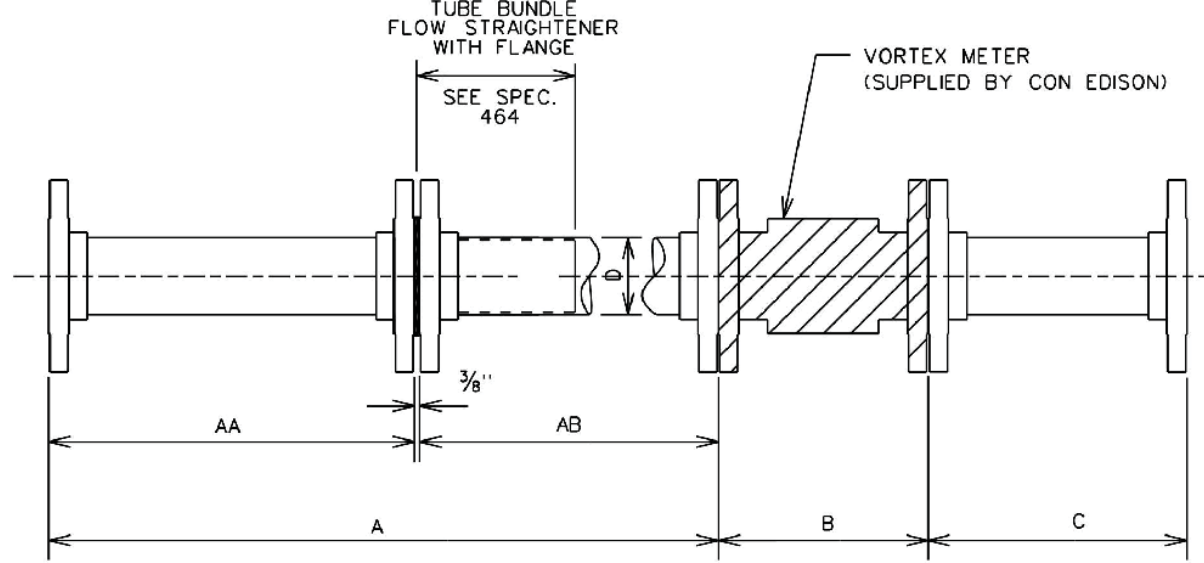
(c) WIRING

- (1) REMOVE ONLY FIELD CONNECTION COMPARTMENT COVER TO MAKE ELECTRICAL CONNECTIONS IN ACCORDANCE WITH SPECIFICATION NO. S-592. KEEP AMPLIFIER COMPARTMENT COVER TIGHTLY CLOSED TO ENSURE MAXIMUM PROTECTION TO THE AMPLIFIER AND TO PREVENT MOISTURE AND ATMOSPHERIC CONTAMINANTS FROM ENTERING THE COMPARTMENT.
- (2) THE ELECTRICAL HOUSING IS PROVIDED WITH TWO ELECTRICAL CONDUIT OPENINGS FOR ACCESS FROM EITHER SIDE OF THE FLOW METER AND FOR EASE IN PULLING WIRING INTO ELECTRICAL CONNECTION COMPARTMENT.
- (3) PLUG UNUSED CONDUIT CONNECTIONS WITH 1/2" NPT PLUG.

(d) INSTALLATION PROCEDURE

- (1) THE FLANGE SIZE OF THE ADJOINING PIPE MUST BE THE SAME NOMINAL SIZE AND RATING AS THE FLOW METER.
- (2) GASKETS ARE REQUIRED AND ARE SUPPLIED BY THE COMPANY. CHECK THAT THE ID OF THE GASKET IS LARGER THAN THAT OF THE FLOW METER AND PIPE AND THAT THEY DO NOT PROTRUDE INTO THE PROCESS PIPING.
- (3) INSERT GASKETS BETWEEN BODY OF FLOW METER AND ADJACENT FLANGES. POSITION GASKETS SO THAT ID OF GASKETS ARE CENTERED ON ID OF FLOW METER AND ADJACENT PIPING.
- (4) VISUALLY INSPECT FOR CONCENTRICITY OF MATING FLANGES.
- (5) TIGHTEN BOLTS ALTERNATELY.

STEAM ENGINEERING DEPT.
SPECIFICATION NO. S-588



PIPE SIZE	D (I.D.)	MIN. DIMENSION (INCHES)		
		A	AA	AB
3	3.068	90 3/4	42	39
4	4.026	120 3/4	58	52
6	6.065	180 3/4	90	78
8	7.981	240 3/4	120	104
10	10.020	300 3/4	150	130
12	12.000	360 3/4	180	156
16	15.250	480 3/4	240	208

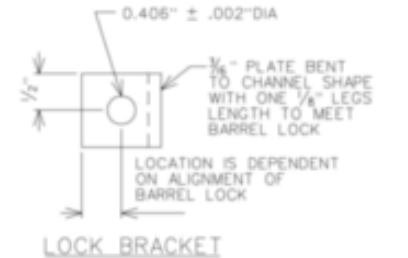
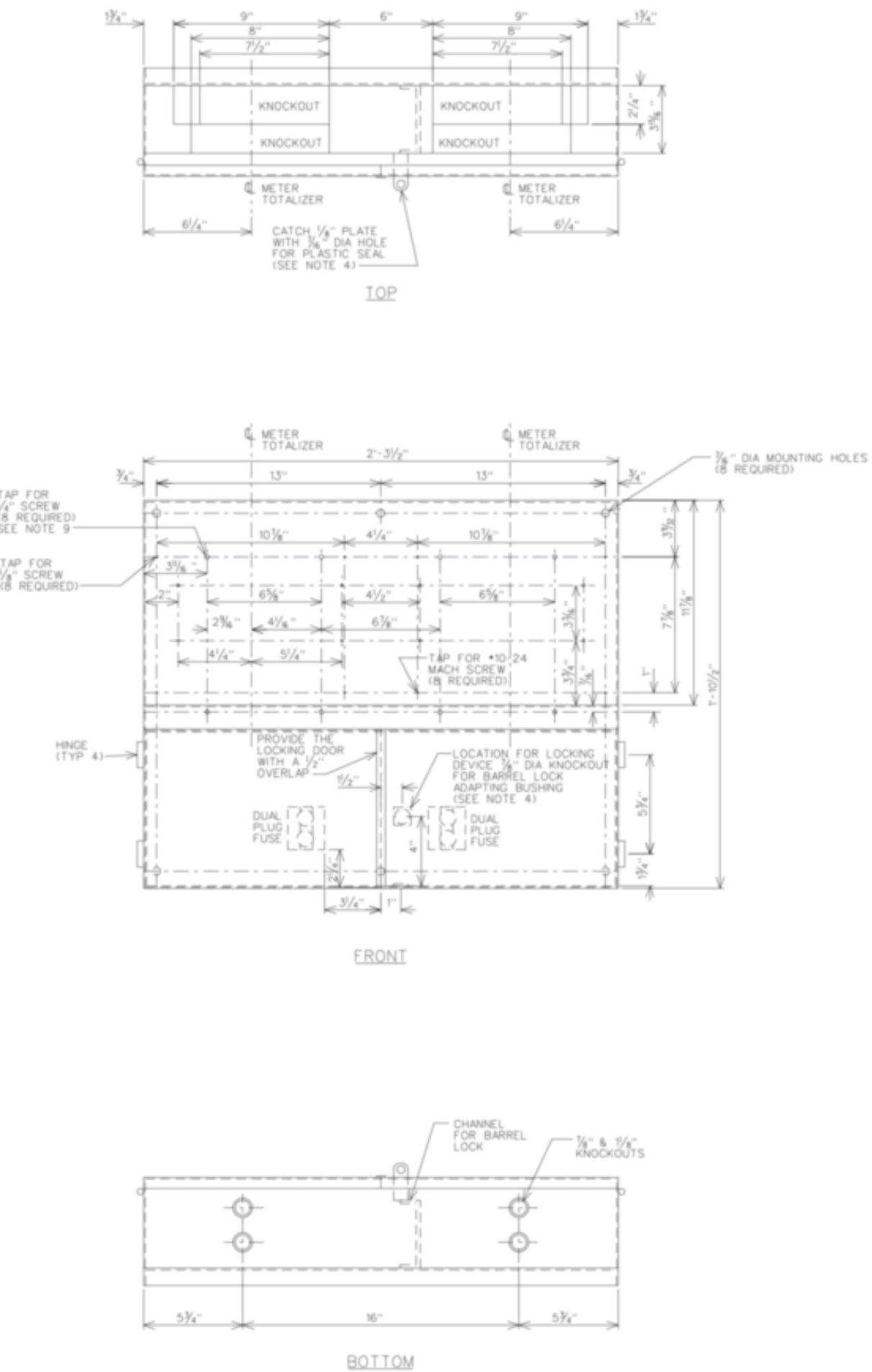
NOTES:

1. DIMENSION A REPLACES DIMENSION A SHOWN ON STEAM ENGINEERING DEPT. SPEC. NOS. S-589, S-590, S-595, S-596, AND S-597 WHEN FLOW STRAIGHTENERS ARE USED. DIMENSIONS B & C REMAIN THE SAME.
2. FLOW STRAIGHTENERS ARE TO BE CONSTRUCTED IN ACCORDANCE WITH STEAM ENGINEERING DEPARTMENT SPEC. NO. S-464.

1

ASSEMBLY AND INSTALLATION OF VORTEX FLOW METER

NOT TO SCALE



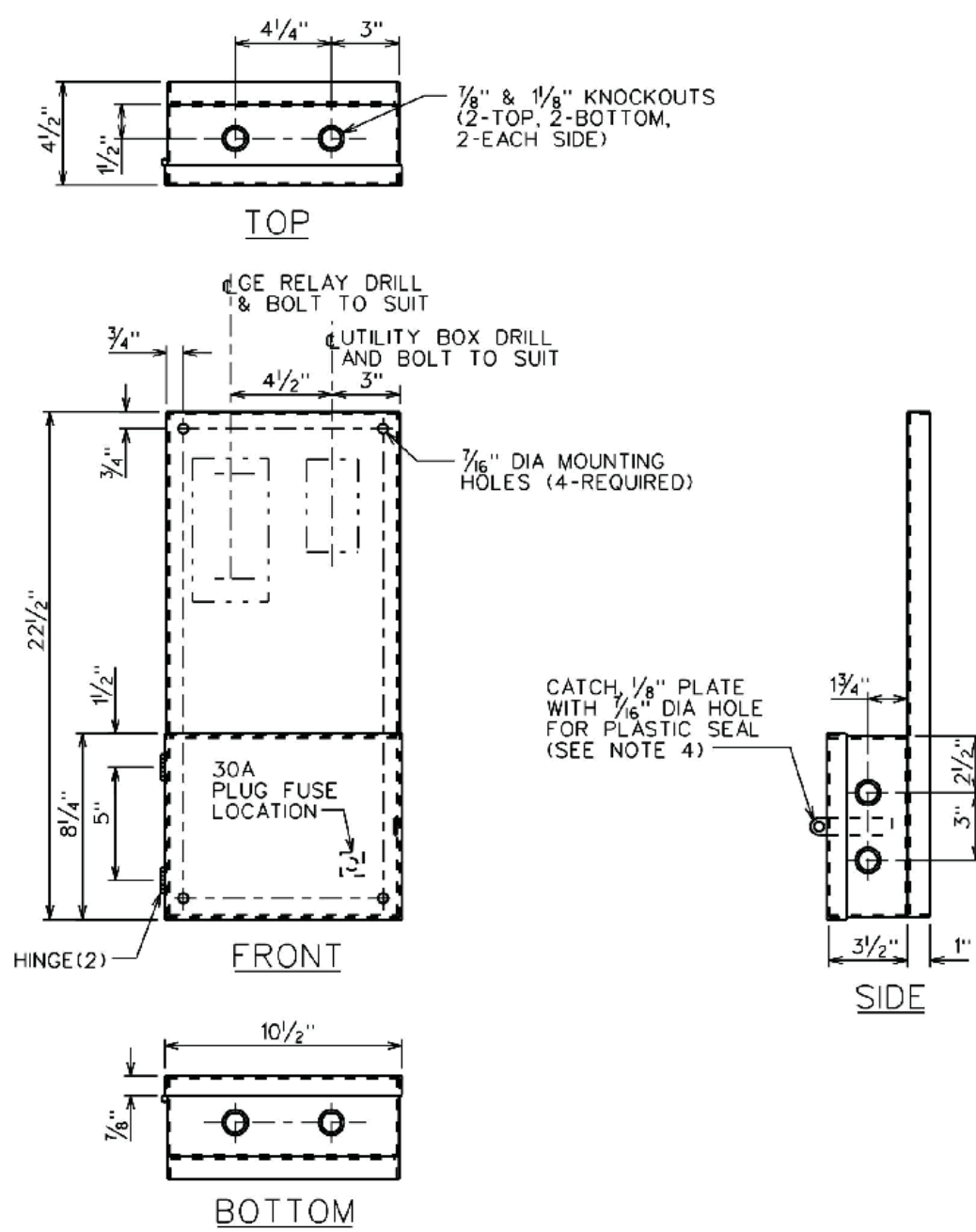
NOTES:

1. THE CABINET SHALL BE OF NO. 14 USS GAUGE AND SHIELD OF NO. 12 USS GAUGE SHEET STEEL.
2. UNLESS OTHERWISE SPECIFIED TOLERANCE ON HORIZONTAL TAPPED HOLES TO BE .010" AND ARE TO HAVE AT LEAST THREE COMPLETE THREADS.
3. ALL STEEL SURFACES SHALL HAVE A PROTECTIVE COATING OF GRAY ENAMEL, A.C. HORN COMPANY NO. 1614, SHERMAN-WILLIAMS CO. NO. 16076 OR DEVCO AND REYNOLDS CO. NO. 21.
4. CABINET DOOR SHALL BE PROVIDED WITH CATCH AND FACILITY TO ACCOMMODATE STANDARD SEALS AND PADLOCK WITH 3/8" DIA. HASP.
5. SAMPLES OF THE EQUIPMENT SHALL BE SUBMITTED TO THE STEAM ENGINEERING DEPARTMENT FOR APPROVAL.
6. HIGHFIELD LOCK RECEPTACLE, HIGHFIELD MFG. CO., BRIDGEPORT, CONN. OR BROOKS BARREL LOCK GUARD NO. 565, E.J. BROOKS, NEWARK, NEW JERSEY. THE LOCKING DEVICE AND LOCK BRACKET SHALL BE PROPERLY ALIGNED TO RECEIVE A UTILITY BARREL LOCK.
7. THE EQUIPMENT SHALL MEET THE REQUIREMENTS OF THE NYS BOARD OF FIRE UNDERWRITERS AND THE DEPT. OF BUILDINGS OF THE CITY OF NEW YORK.
8. NAME PLATE SHALL BE AFFIXED ON THE OUTSIDE OF THE ENCLOSURE INDICATING THE MANUFACTURER'S NAME AND CATALOG NO..
9. THE FOUR LOWER TAPPINGS ARE TO BE PREFITTED WITH 1/2" X 20 X 3/4" STEEL MACHINE SCREWS. THE SCREW HEADS DIAMETERS ARE NOT TO EXCEED 7/16".

2

METER PIPING WITH TUBE BUNDLE FLOW STRAIGHTENERS FOR VORTEX FLOW METER

NOT TO SCALE



NOTES:

1. THE CABINET SHALL BE 14 GAUGE SHEET METAL AND THE BACK PLATE AND SHIELD SHALL BE 12 GAUGE SHEET METAL.
2. UNLESS OTHERWISE SPECIFIED TOLERANCE ON VERTICAL TAPPED HOLE TO BE .010" AND ARE TO HAVE AT LEAST THREE COMPLETE THREADS.
3. ALL STEEL SURFACES SHALL HAVE A PROTECTIVE COATING OF GRAY ENAMEL, A.C. HORN CO. NO. 1614, SHERMAN-WILLIAMS CO. NO. 16076 OR DEVCO & REYNOLDS CO. NO. 21.
4. CABINET DOOR SHALL BE PROVIDED WITH CATCH AND FACILITY TO ACCOMMODATE STANDARD SEALS AND PADLOCK WITH 3/8" DIA. HASP.
5. THE EQUIPMENT SHALL MEET THE REQUIREMENTS OF THE NATIONAL BOARD OF FIRE UNDERWRITERS AND THE DEPARTMENT OF PUBLIC WORKS OF THE CITY OF NEW YORK.
6. SAMPLES OF THE CABINET SHALL BE SUBMITTED TO THE STEAM ENGINEERING DEPARTMENT FOR APPROVAL.
7. A NAME PLATE SHALL BE AFFIXED TO THE OUTSIDE OF THE ENCLOSURE INDICATING THE MANUFACTURER'S NAME AND CATALOG NO.

3

METER PAN FOR TWO VORTEX STEAM METERS

NOT TO SCALE

4

MOUNTING PANEL FOR VORTEX METER RELAY FOR CONTROL OF MOTOR OPERATED BALL VALVE

NOT TO SCALE

RIVERSIDE CENTER
BUILDING TWO

NEW YORK, NY

OWNER/DEVELOPER:
EXTELL DEVELOPMENT

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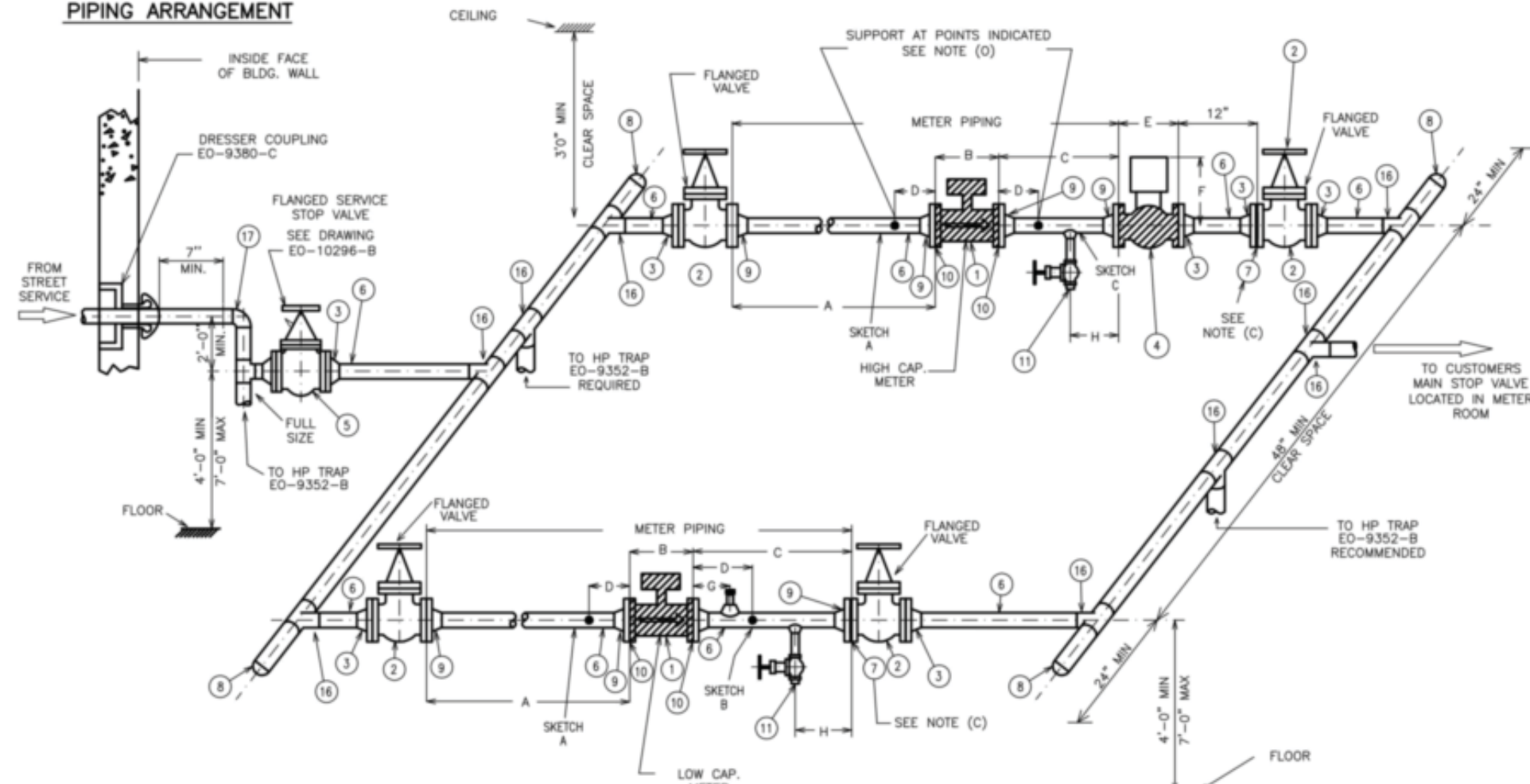
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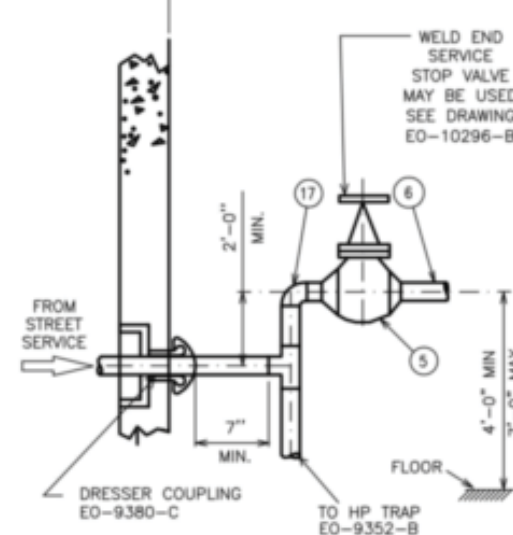
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PREFERRED INLET
PIPING ARRANGEMENT



ALTERNATE INLET
PIPING ARRANGEMENT



SKETCH A

METER INLET SPOOL

SKETCH B

LOW CAPACITY METER

OUTLET SPOOL

SKETCH C

HIGH CAPACITY METER

OUTLET SPOOL

SIZE	DIM "E"	DIM "F"	STOCK No.
2"	8 1/2"	20"	377-3849
2"	11 1/8"	23"	377-3256
4"	12"	24"	377-3264

* SEE APPROVED STEAM SERVICE EQUIPMENT "BOOKLET"

NO. ITEM	DESCRIPTION
1	STEAM METER - SEE NOTES (a) (b) (c) (d) (e) (f) (g) & (h)
2	METER STOP VALVE GATE TYPE, C.S., FLANGED, CLASS 300, RISING STEM
3	WELDING NECK FLANGE, 300# - SEE NOTES (b) (d) (f) (g) & (h)
4	METER REGULATING VALVE BALL TYPE, CLASS 300, MOTOR OPERATED - NOTE (i)
5	INSIDE SERVICE STOP VALVE, CAST STEEL, GATE TYPE, RECOMMENDED TO BE MOTOR OPERATED - SEE NOTE (i)
6	PIPE, CARBON STEEL, ASTM A53, GRADE B, SEAMLESS, AS REQUIRED - SEE NOTE (i)
7	ORIFICE PLATE 1/8" THICK AS REQ'D - SEE NOTES (a) (c) AND TABLE
8	WELDING CAP, CARBON STEEL, BUTTWELD ANSI B16.9, EXTRA STRONG
9	WELDING NECK FLANGE, 300# SIZE 4" - SEE NOTES (b) (d) (f) (g) & (h)
10	WELDING FLANGE SOCKET TYPE 300# SIZE 3" - SEE NOTES b,d,f,h,g
11	WELDING FLANGE SOCKET TYPE 600# SIZE 1 1/2" - SEE NOTES b,d,f,h,g
12	GASKET 1/8" THICK, AMFPLON OR FLEXITALIC - SEE NOTES (c) & (g)
13	PLUG, SOLID STEEL, SIZE AS REQUIRED
14	SOCKET, 1/2" 3000# CARBON STEEL - SEE NOTE (h)
15	1/2" BLEEDOFF GATE VALVE, 300#, BRONZE THREADED ENDS
16	1/2" CAP, THREADED, CARBON STEEL, EXTRA HEAVY
17	1/2" NIPPLE, 4" LONG, CARBON STEEL, ASTM A53 SCHEDULE 80, GRADE B SEAMLESS, THREADED ONE END
18	TEE, CARBON STEEL, FOR EXTRA STRONG PIPE
19	ELBOW, LONG RADIUS, CARBON STEEL, SCHEDULE 40 FOR 3" & LARGER, SCHEDULE 80 FOR 2" AND SMALLER
20	THREADED, 1/2" DIAMETER, 3000#, CARBON STEEL
21	1/2" DIAMETER NIPPLE, 4" LONG, CARBON STEEL
22	1/2" DIAMETER NIPPLE, 4" LONG, CARBON STEEL

REFERENCE NOTE:

METER AND BALL VALVE SHALL BE MOUNTED WITH MOTOR OPERATOR AT 3 O'CLOCK OR 9 O'CLOCK POSITION

METER PIPING DIMENSIONS (INCHES)	METER SIZE
DIM	1 2 3 4
A	45 90 135 180
B	12 12 12 14
C	20 20 20 40
D	9 9 9 15
E	4 8 12 16
F	5 5 5 8

SPACER ORIFICE PLATE ITEM 7	SIZE	STOCK No.
1"	339-0754	
2"	455-1982	
3"	455-1990	
4"	455-2006	

REFERENCE SPEC'S:

- ASST. VORTEX METER - S-588
- WIRING DIAG. F/VORTEX METER - S-592
- WIRING F/RELAY SWITCH - S-631
- MOUNTING PANEL F/RELAY SWITCH - S-599
- FLOW COMPUTER - S-593

SPECIFICATION:

METERS AND SERVICE EQUIPMENT SHALL BE INSTALLED SUBJECT TO RULES AND REGULATIONS AS OUTLINED IN SECTION 9 OF THE CON EDITION CO. STEAM SERVICE RULES BOOK, LATEST REVISION. THE CUSTOMER SHALL PROVIDE AND MAINTAIN CLEAR AREAS ABOVE, BELOW, BEHIND AND IN FRONT OF METERS AND SERVICE EQUIPMENT AS INDICATED ON THIS SPECIFICATION.

S-687 NOTE: TYPICAL INSTALLATION OF TWO VORTEX STEAM METERS WITH ONE MOTOR OPERATED BALL-TYPE METER REG. VALVE.

- (a) ALL MATERIAL SHALL BE FURNISHED AND INSTALLED BY THE CUSTOMER EXCEPT METERS, METER GASKETS, METER REGULATING VALVES, RELAYS, FLOW COMPUTERS AND ORIFICE PLATES WHICH WILL BE FURNISHED BY THE COMPANY FOR INSTALLATION BY THE CUSTOMER. ITEMS SUPPLIED BY THE COMPANY ARE SHOWN CROSS HATCHED OR OTHERWISE MARKED.
- (b) METER SIZE DETERMINES SIZE OF METER PIPING. THE INTERIOR SURFACE OF THE METER PIPING SHALL BE SMOOTH AND ROUND, WITHOUT SHOULDERS. WELDING NECK FLANGES ON METER PIPING SHALL BE INSTALLED WITHOUT SMOKE RINGS. ALL TACKS OF WELDING BEAD OR FLASH INSIDE OF PIPE SHALL BE REMOVED. ALL METER PIPING SHALL BE INSPECTED BY THE COMPANY AFTER ITS FABRICATION AND PRIOR TO ITS ERECTION.

FOR FOUR PIPE DIAMETERS UPSTREAM AND TWO PIPE DIAMETERS DOWNSTREAM OF THE METER THE INTERNAL SURFACE OF THE PIPE SHALL BE:

- ROUGHNESS NO GREATER THAN .0001", .0008", .0061" AND .0080" FOR 1", 2", 3" AND 4" PIPE RESPECTIVELY.
- SURFACE TO BE FREE FROM MILL SCALE, PITTS, HOLES, REAMING SCORES, RIFLING, BUMPS OR OTHER IRREGULARITIES.
- PIPE INSIDE DIAMETER SHALL IN NO WAY DEPART FROM THE NOMINAL PIPE INSIDE DIAMETER BY MORE THAN 0.03%.

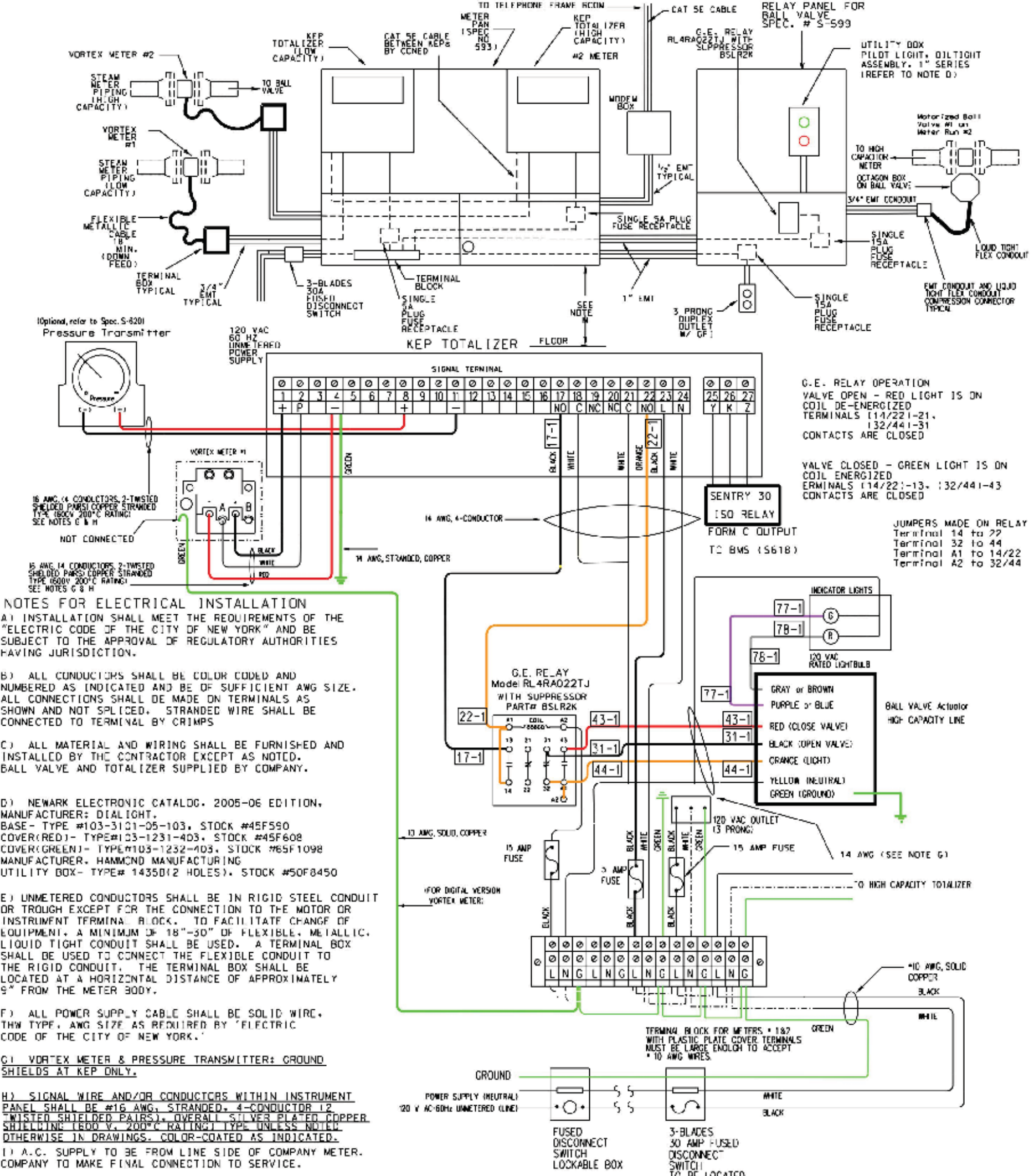
(c) ORIFICE PLATES

LOAD ORIFICE PLATES OR SPACER PLATES WILL BE SUPPLIED BY THE COMPANY AS REQUIRED. PLATES SHALL BE INSTALLED BY THE CUSTOMER, WITH THE IDENTIFICATION DATA ON THE HANDLE FACING THE SERVICE SIDE AND THE HANDLE EXTENDING HORIZONTALLY TO THE RIGHT WHEN VIEWED FROM THE SERVICE SIDE.

- (d) FLANGES SHALL CONFORM TO ASTM SPECIFICATION A105 ANSI 316.3.
- (e) BOLTS SHALL BE CHROME-MOLY CONFORMING TO ASTM SPECIFICATION A193, GRADE B7, HEXAGONAL HEAD.
- (f) NUTS SHALL BE CARBON STEEL CONFORMING TO ASTM SPECIFICATION A194, GRADE 2H, HEXAGONAL.
- (g) GASKETS SHALL CONFORM TO CON EDITION CO. SPECIFICATION S-901. FLANGE GASKETS SHALL BE FIELD COATED WITH HIGH TEMPERATURE ANTI-SEIZE AND LUBRICATING COMPOUND - NEVER SEEZ® OR EQUAL. FLEXITALIC GASKET OF 300# DESIGN IS ACCEPTABLE AS AN ALTERNATE.
- (h) THERMAL INSULATION OF THE PIPING UP TO THE CUSTOMER'S MAIN STOP VALVE SHALL CONFORM TO CON EDITION SPECIFICATION S-902.
- (i) STEEL PIPE SHALL CONFORM TO ASTM SPECIFICATION A53, GRADE B, SEAMLESS, SCHED 40 FOR 4" AND LARGER SIZE, 2" AND SMALLER DIAMETER PIPE SHALL BE SCH 80, 3" AND LARGER DIAMETER PIPE SHALL BE SCH 40.
- (j) ALL CONSTRUCTION BY THE CUSTOMER FROM THE POINT OF SERVICE TERMINATION TO THE CUSTOMER'S SECONDARY PRESSURE REDUCING VALVE STATION SHALL BE SUBJECT TO APPROVAL BY THE COMPANY.

- (k) THE STEAM METER OR BALL VALVE SHALL BE INSTALLED LEVEL WITH ELECTRONIC HOUSING OR MOTOR IN THE HORIZONTAL POSITION (3 O'CLOCK OR 9 O'CLOCK POSITION). THE METER PIPING SHALL BE STRAIGHT, HORIZONTAL AND LEVEL, CLEAR SPACE ABOVE, BELOW, BEHIND & IN FRONT OF THE METERS AND SERVICE EQUIPMENT MUST BE PROVIDED FOR MAINTENANCE.
- (l) THE INSTALLATION OF ALL STEAM PIPING AND EQUIPMENT SHALL CONFORM TO ASME CODE B31.1.
- (m) STEAM TRAPS WILL BE FURNISHED BY THE COMPANY FOR INSTALLATION BY THE CUSTOMER IN ACCORDANCE WITH CON EDITION COMPANY DRAWING ED-9352-B.
- (n) THE COMPANY WILL INSTALL METERS, MAKE FINAL WIRING CONNECTION, AND SEAL METER STOP VALVES.
- (o) METER PIPING SHALL BE ADEQUATELY SUPPORTED AT POINTS INDICATED OR WHERE PIPING SUPPORT DOES NOT INTERFERE WITH THE REMOVAL OF NUTS & BOLTS FROM THE FLANGES OR THE MAINTENANCE & OPERATION OF BLOW DOWN VALVES. PROVISIONS FOR ATTACHING HOUSING EQUIPMENT SHALL BE PROVIDED FOR INSTALLATION AND MAINTENANCE OF 4" MOTORIZED VALVES AND 4" METERS IN A MANNER ACCEPTABLE TO THE COMPANY.
- (p) SEE STEAM ENGINEERING SPECIFICATION NO. S-588 FOR ASSEMBLY OF VORTEX METER.

- (q) STEAM METER ENGINEERING SPECIFICATION NO. S-624 AND S-599 FOR WIRING CONNECTIONS AND RELAY MOUNTING. PANEL FOR CONTROL OF THE METER REGULATING VALVES.
- (r) NO PERMANENT THERMAL INSULATION SHALL BE INSTALLED AT THE FLANGES OF THE ORIFICE PLATE, METER AND METER REGULATING VALVES. REMOVABLE INSULATION JACKETS ARE PERMITTED ON THE METER AND METER REGULATING VALVE MAIN BODY.
- (s) DRILL 1/2" HOLE THROUGH PIPE WALL AT CENTER OF SOCKET. TAP HOLE MUST BE FREE OF BURRS AND OBSTRUCTIONS.
- (t) MOTORIZED INSIDE SERVICE STOP VALVE MUST BE DESIGNED TO CLOSE ELECTRONICALLY AND OPEN MANUALLY. CONTROL SWITCH SHALL BE LOCATED OUTSIDE STEAM ROOM AND IN A SECURE LOCATION SUCH AS OFFICE OF ENG. OR BLDG MGR.



NOTES FOR ELECTRICAL INSTALLATION:
A) INSTALLATION SHALL MEET THE REQUIREMENTS OF THE ELECTRIC CODE OF THE CITY OF NEW YORK AND BE SUBJECT TO THE APPROVAL OF REGULATORY AUTHORITIES HAVING JURISDICTION.

B) ALL CONDUITS SHALL BE RIGID STEEL CONDUIT OR TROUGH EXCEPT FOR THE CONNECTION TO THE MOTOR OR INSTRUMENT TERMINAL BLOCK. TO FACILITATE CHANGE OF EQUIPMENT, A MINIMUM 3" 18"-30" OF FLEXIBLE, METALLIC, LIQUID TIGHT CONDUIT SHALL BE USED. A TERMINAL BOX SHALL BE USED TO CONNECT THE FLEXIBLE CONDUIT TO THE RIGID CONDUIT. THE TERMINAL BOX SHALL BE LOCATED AT A HORIZONTAL DISTANCE OF APPROXIMATELY 5" FROM THE METER BODY.

C) ALL MATERIAL AND WIRING SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR EXCEPT AS NOTED. BALL VALVE AND TOTALIZER SUPPLIED BY COMPANY.

D) NEWARK ELECTRONIC CATALOG, 2006-06 EDITION, MANUFACTURER: OALIGHT. BASE: TYPE #103-3121-05-03, STOCK #45F550 COVER (RED): TYPE #103-1231-003, STOCK #45F608 COVER (GREEN): TYPE #103-1232-003, STOCK #65F1098 MANUFACTURER: HAMMOND MANUFACTURING UTILITY BOX - TYPE # 1435012 HOLES), STOCK #50F0450

E) UNMETERED CONDUCTORS SHALL BE IN RIGID STEEL CONDUIT OR TROUGH EXCEPT FOR THE CONNECTION TO THE MOTOR OR INSTRUMENT TERMINAL BLOCK. TO FACILITATE CHANGE OF EQUIPMENT, A MINIMUM 3" 18"-30" OF FLEXIBLE, METALLIC, LIQUID TIGHT CONDUIT SHALL BE USED. A TERMINAL BOX SHALL BE USED TO CONNECT THE FLEXIBLE CONDUIT TO THE RIGID CONDUIT. THE TERMINAL BOX SHALL BE LOCATED AT A HORIZONTAL DISTANCE OF APPROXIMATELY 5" FROM THE METER BODY.

F) ALL POWER SUPPLY CABLE SHALL BE SOLID WIRE, THW TYPE, AND SIZE AS REQUIRED BY ELECTRIC CODE OF THE CITY OF NEW YORK.

G) VORTEX METER & PRESSURE TRANSMITTER: GROUND SHIELDS AT KEEP ONLY.

H) SIGNAL WIRE AND/OR CONDUCTORS WITHIN INSTRUMENT PANEL SHALL BE #16 AWG, STRANDED, 2-CONDUCTOR 12-2 WIRE, SHIELDED, WITH SUPPRESSOR PARTIAL BSLR. WIRE SHALL BE IDENTIFIED BY COLOR OR BY NUMBER. OTHERWISE IN DRAWINGS, COLOR-CODED AS INDICATED.

I) A.C. SUPPLY TO BE FROM LINE SIDE OF COMPANY METER. COMPANY TO MAKE FINAL CONNECTION TO SERVICE.

J) LEAVE ENOUGH SLACK WIRE AT ALL TERMINAL POINTS, 12" IN MOTOR TERMINAL BOX AND PANEL TROUGH.

K) ALL EQUIPMENT, ENCLOSURE AND CONDUIT FITTINGS PROVIDING ACCESS TO UNMETERED ELECTRIC WIRING SHALL BE SEALABLE.

L) THE METER PAN SHALL BE INSTALLED AT A MINIMUM HEIGHT OF 3'-6" AND A MAXIMUM HEIGHT OF 4'-8" FROM FLOOR TO BOTTOM OF PAN. A HEIGHT OF 4'-0" IS PREFERRED WHERE PRACTICAL. NOTE: THE METER PAN IS LONG LEAD DELIVERY ITEM.

M) AN A.C. POWER OUTLET (3-PRONG DUPLEX OUTLET WITH GFI) SHALL BE INSTALLED AT THE BOTTOM OF THE METER PAN TO PROVIDE ELECTRICITY FOR OPERATION OF PORTABLE EQUIPMENT.

N) 120 V AC HAZED INDICATION LIGHTS

O) THE NEGATIVE LEAD OF THE VORTEX METER SIGNAL CIRCUIT SHALL BE GROUND AT THE EARTH GROUND.

P) THE GROUND TERMINAL OF THE VORTEX METER SHALL BE GROUND AT THE EARTH GROUND WITH A WIRE AWG # 10

GROUNDING PREFERENCE:
1. WATER MAIN SHUT-OFF, STREET SIDE
2. BUILDING STEEL, SCRAPED CLEAN
3. TEST FOR < 1 OHM RESISTANCE TO GROUND

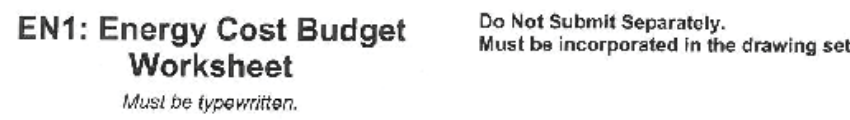
TYPICAL INSTALLATION OF TWO VORTEX STEAM METERS (1" TO 4") WITH ONE MOTOR OPERATED BALL-TYPE METER REG. VALVE

NOT TO SCALE

WIRING DIAGRAM FOR TWO VORTEX METERS (ANALOG VERSION) WITH ONE BALL VALVE/PRESSURE TRANSMITTER AND NEW VERSION OF G.E. RELAY

NOT TO SCALE

MECHANICAL DRAWING LIST					
	DRAWING NUMBER	DRAWING TITLE	SCALE	ENERGY COMPLIANCE	
				10.01.12	
1	EN-000.00	ENERGY COMPLIANCE SHEET 1	NTS	●	
2	EN-001.00	ENERGY COMPLIANCE SHEET 2	NTS	●	
3	EN-002.00	ENERGY COMPLIANCE SHEET 3	NTS	●	
4	EN-003.00	ENERGY COMPLIANCE SHEET 4	NTS	●	
5	EN-004.00	ENERGY COMPLIANCE SHEET 5	NTS	●	



Energy Model Inputs			
NYS approved energy model software			
Envelope	Proposed Design Input	Budget (Standard Design) Input	
Above-grade wall U-factor	0.107	0.085	
Below-grade wall U-factor	1.14	1.14	
Roof construction U-factor	0.046	0.048	
Exterior floor U-factor	na	na	
Slab-on-grade construction (yes/no)	yes	yes	
Window-to-gross wall ratio	17.4%	40%	
Average fenestration assembly U-factor	0.42	0.5	
Average fenestration assembly SHGC	0.26	0.40	
Fixed shading devices (yes/no)	no	no	
Automated movable shading devices (yes/no)	no	no	
Lighting			
Average ambient lighting power density (W/SP)	0.774	0.7	
Lighting occupant sensor controls (yes/no)	yes - stairwells	no	
Automatic daylighting controls (yes/no)	no	no	
Exterior lighting power (tradable surfaces) (kW)	0	0	
Exterior lighting power (non-tradable surfaces) (kW)	0	0	
Heating, Ventilating & Air Conditioning			
Refrigeration equipment type	No central cooling. All cooling via heat pumps and packaged DX units.	No central cooling. All cooling via heat pumps and packaged DX units.	
Heating equipment type	Purchased steam and water-source heat pumps	Purchased steam and water-source heat pumps.	
Demand controlled ventilation (yes/no)	CO sensors in garage	no	
Economizer type (air or water)	no	no	
Domestic hot water heating source	Steam	Steam	

01/11

Unregulated Energy	Proposed Design Input	Budget (Standard Design) Input
Average Receptacle equipment power density (W/SF)	1.966	1.966
Average Unregulated lighting power density (W/SF)	0	0
Other process loads	10 kW elevator x 6	10 kW elevator x 6

PAGE 2

Energy Cost Budget Conformance	Proposed Design Output	Budget (Standard Design) Output
Annual Regulated Energy Cost (\$)	1534807	1644244
Annual Regulated Energy Use (BTU/GSF)	40483	41786
Annual Regulated Energy Cost Per Sq. Ft. (\$/GSF)	2.084	2.232

Energy Use Breakdown:	Proposed Design Output (% BTU/yr)	Budget (Standard Design) Output (% BTU/yr)
Heating	48.4	44.1
Cooling	9.5	11.7
Heat rejection	0.0	0
Fans	10.1	10.3
Pumps	2.7	5.0
Lighting	9.7	9.7
Unregulated loads (e.g., plug loads, elevators, escalators, kitchen, process equipment, exterior lighting)	19.7	19.2
Total	100%	100%

Falsification of any statement is a misdemeanor under § 26-124 of 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 gratuity for properly performing the job or in exchange for special consideration. Violation is punishable by imprisonment or fine or both.

Name (please print)	
Signature	Date
P.E. / R.A. Seal (<i>Apply seal, then sign and date over seal</i>)	

01/11

For:

by:

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Viridian Energy & Environmental (Viridian) analyzed the energy use of the proposed design for Riverside Center Building 2 in New York, NY. The gross area of the building is approximately 760,000 ft² and includes apartments, residential amenity, and mechanical and electrical support areas. The results and conclusions are based upon the information found in the Progress drawings dated August 22, 2012 and the Valent equipment submittal dated September 17, 2012.

Viridian modeled the design case and the 2010 New York State Energy Conservation Construction Code (NYSECCC 2010) case, based on the ECB Method of ASHRAE/IESNA Standard 2007.

Designation	Regulated Utility Cost	Savings Compared to NYSECC Baseline (\$)	Savings Compared to NYSECC C Baseline (%)	NYSECCC 2010 Compliant?
NYSECCC 2010 Baseline	1,644,244			
Building as Designed	1,534,807	109,437	6.65%	Yes

This report is developed for the purpose of calculating NYSECC2010 compliance only. Actual energy use and cost will be greater, since the modeling does not account for many real-life issues, such as quality of construction, equipment functionality, building operation and other factors. Reasons include, but not limited to the following:

- The LEED and EGB baselines assume perfection, as noted in the bullets below, so the design model also must assume perfection:
- The HVAC equipment is manufactured as per standards. The design of the HVAC systems is such that the each individual piece of equipment performs optimally. The installation is flawless, and the operation optimum.
- Lighting and lighting controls are perfectly manufactured/installed, and function as such.
- The insulation is installed perfectly. There are gaps, and no rips caused by pipes and wiring. The windows are put in place with perfect caulking.
- Certain real-life effects are not included in the baseline calculations, and therefore are not included in the design calculations either. For instance, the three-dimensional heat loss effect that occurs at the roof parapet.
- Occupant behavior is idealized
 - Other effects, such as uncertainties in equipment (plug load) operation.

Riverside Center Building 2 NYSECCC2010 Compliance Report 26 September 2012 2



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1 10/01/2012 ENERGY COMPLIANCE

No.: _____ Date: _____ Revisions: _____

Scale: _____

0 SC-4S SC1 SCX1.5 SCX2.5

NORTH ARROW

KEY PLAN:

W 61ST STREET

W 60TH STREET

FREEDOM PLACE SOUTH

WEST END AVENUE

A

B


C

D

PROJECT: RIVERSIDE CENTER
BUILDING 2

DRAWING TITLE:

ENERGY COMPLIANCE
SHEET 1

SEAL & SIGNATURE:	DATE: OCTOBER 01, 2012
	PROJECT No:
	DRAWN BY: J.G.
	CHECKED BY: T.A.
	DRAWING No:
	EN-000.00
	CADD FILE No:

- Energy Efficiency Measures**
- Better Envelope-** The building as designed has mass walls with U = 0.088 Btu/hr-ft2-F instead of U = 0.09 Btu/hr-ft2-F. The building as designed has curtain wall windows with U = 0.45 Btu/hr-ft2-F and SHGC = 0.22-0.28 instead of U=0.5 Btu/hr-ft2-F and SHGC = 0.4. The punched windows in the design have U = 0.45 Btu/hr-ft2-F and SHGC = 0.38 instead of 0.55 Btu/hr-ft2-F and SHGC = 0.4.
 - Lighting occupancy sensors in stairwells-** Bi-level lighting fixtures are installed in the stairwells. The energy for lighting the stairs is reduced by 40% due to the occupancy sensors.
 - Higher efficiency heat pumps in residences-** The heat pumps have average heating COP of 4.65 and average cooling EER of 13.0 instead of average heating COP of 4.2 and average cooling EER of 11.3 per ASHRAE 90.1.
 - Higher efficiency heat pumps and heat recovery on outside air systems-** The heat pumps conditioning the outside air have heating COP of 4.5, cooling EER of 13.5, and 70% effective recovery efficiency instead of heating COP of 4.2, cooling EER of 12.0, and 50% effective recovery efficiency. The design includes heat recovery on all outside air systems instead of just those with more than 5000 cfm of supply air.
 - More efficient heat recovery on outside air DX systems-** The DX units providing the outside air have 60% effective recovery efficiency instead of 50% effective recovery efficiency.
 - Higher efficiency heat pumps on corridor air supply -** The heat pumps serving the corridors have heating COP's ranging from 4.9-5.7 and cooling EER's ranging from 14.8 to 17.7 instead of heating COP of 4.2 and cooling EER of 12.0.
 - Higher efficiency heat pumps systems on BOH and amenity spaces -** The heat pumps serving the back-of-house and amenity spaces have heating COP's ranging from 4.7-5.7 and cooling EER's ranging from 15.0 to 17.7 instead of heating COP of 4.2 and cooling EER of 12.0.
 - Advanced cooling tower controls-** The design has variable speed cooling tower fans and wet bulb reset controls instead of two-speed fans and fixed set point temperature controls.
 - CO sensors in garage-** 25.6 BHP parking garage fans are equipped with CO monitors and VFD fans. Exhaust fans are modulated based on CO readings, reducing overall garage fan energy use by 15%.
 - Condensate heat recovery-** Decrease steam use by 4% by recovering heat from condensate.
 - Higher efficiency packaged DX systems on corridor and outside air-** The DX units handling outside air to the apartments and corridors cooling EER's ranging from 11.0 to 11.5 instead of cooling EER of 9.5 to 11.0.

1. SIDE-BY-SIDE COMPARISON OF DESIGN CASE AND THE NYSECCC 2010 MODEL

The NYS Energy Construction Conservation Code Baseline is identical to the Design Case as described above with the exceptions listed in the table below.

	NYS ECCC Code Model	Design Case	Design Reference
Exterior Walls	Precast Concrete Wall Construction <ul style="list-style-type: none">6" Precast concreteInsulationAir spaceGypsum wallboardU-factor = U-0.09 Spandrel Wall Construction <ul style="list-style-type: none">1" Insulating glazing unitAir spaceInsulationAir spaceGypsum wallboardU-factor = U-0.064	Precast Concrete Wall Construction <ul style="list-style-type: none">6" Precast concreteAir spaceGypsum wallboard (to be installed by Tenant)U-factor = U-0.337 Spandrel Wall Construction <ul style="list-style-type: none">1" Insulating glazing unitAir space2" Mineral fiberboardAir spaceGypsum wallboardU-factor = U-0.083	Precast Concrete Wall Construction <ul style="list-style-type: none">A-305 Detail 3 Spandrel Wall Construction <ul style="list-style-type: none">A-302 Detail 3
Roof	<u>Insulation entirely above deck</u> <ul style="list-style-type: none">2" Concrete paver4" Extruded PolystyreneEPDM2" Leveling concrete9" ConcreteU-factor = U-0.048 (non-residential, residential)	<u>Insulation entirely above deck</u> <ul style="list-style-type: none">2" Concrete paver3.5" Extruded PolystyreneEPDM2" Leveling concrete9" ConcreteU-factor = U-0.045 (non-residential, residential)	A-302 Detail 6
Windows	Type G-1: (aka Glass A) <ul style="list-style-type: none">Metal framed Curtainwall/StorefrontSolar heat gain coefficient (SHGC) = 0.4	Type G-1: (aka Glass A) <ul style="list-style-type: none">Metal framed Curtainwall/StorefrontVRE 1-46 (Viracon);Light Colored Tower Glass	Specs-->00 89 20 Glazed Aluminum Curtain Wall

	<ul style="list-style-type: none">U-assembly = 0.50 <p>Type G-2: (aka Glass B)</p> <ul style="list-style-type: none">Metal framed Curtainwall/StorefrontSolar heat gain coefficient (SHGC) = 0.4U-assembly = 0.50 <p>Type G-3:</p> <ul style="list-style-type: none">Metal framed all otherSolar heat gain coefficient (SHGC) = 0.4U-assembly = 0.55	<ul style="list-style-type: none">U-factor = 0.30 (center of glass)Solar heat gain coefficient (SHGC) = 0.28U-assembly = 0.45 <p>Type G-2: (aka Glass B)</p> <ul style="list-style-type: none">Metal framed Curtainwall/StorefrontVUE 1-40 (Viracon)Dark Colored Tower GlassU-factor = 0.29 (center of glass)Solar heat gain coefficient (SHGC) = 0.22U-assembly = 0.45 <p>Type G-3:</p> <ul style="list-style-type: none">Metal framed all otherVE 1-2M (Viracon)School & Retail Glass, Clear on ClearU-factor = 0.29 (center of glass)Solar heat gain coefficient (SHGC) = 0.38U-assembly = 0.45																									
Lighting	Average LPD = 0.7, whole building only	<table><tr><th>Space Type</th><th>Lighting Power Density</th></tr><tr><td>Apartments</td><td>0.7 W/ft²</td></tr><tr><td>Corridors</td><td>0.5 W/ft²</td></tr><tr><td>Lobby</td><td>1.15 W/ft²</td></tr><tr><td>Stairs</td><td>0.59 W/ft²</td></tr><tr><td>Mechanical/ Electrical</td><td>0.76 W/ft²</td></tr><tr><td>Parking</td><td>0.20 W/ft²</td></tr><tr><td>Office</td><td>1.0 W/ft²</td></tr><tr><td>Fitness</td><td>1.2 W/ft²</td></tr><tr><td>Pool</td><td>1.4 W/ft²</td></tr><tr><td>Function Room</td><td>1.15 W/ft²</td></tr><tr><td>Playroom</td><td>1.15 W/ft²</td></tr></table>	Space Type	Lighting Power Density	Apartments	0.7 W/ft ²	Corridors	0.5 W/ft ²	Lobby	1.15 W/ft ²	Stairs	0.59 W/ft ²	Mechanical/ Electrical	0.76 W/ft ²	Parking	0.20 W/ft ²	Office	1.0 W/ft ²	Fitness	1.2 W/ft ²	Pool	1.4 W/ft ²	Function Room	1.15 W/ft ²	Playroom	1.15 W/ft ²	
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		<table><tr><td>Storage</td><td>0.61 W/ft²</td></tr><tr><td>Workshop</td><td>1.9 W/ft²</td></tr><tr><td>Mailroom</td><td>1.2 W/ft²</td></tr><tr><td>Retail</td><td>1.7 W/ft²</td></tr></table>	Storage	0.61 W/ft²	Workshop	1.9 W/ft²	Mailroom	1.2 W/ft²	Retail	1.7 W/ft²	
Storage	0.61 W/ft²										
Workshop	1.9 W/ft²										
Mailroom	1.2 W/ft²										
Retail	1.7 W/ft²										
		Average LPD = 0.774									
Lighting Controls	Occupancy sensors in conference rooms.	Occupancy sensors in stairwells and conference rooms.	Specs-->26 09 23- Lighting Control Systems.doc								

NYS ECCC Code Model			Design Case				
Apartment Heat Pumps	System 6- Water Source Heat Pump			Residential Water source heat pumps			Apartment Heat Pumps <ul style="list-style-type: none">M-602
	Designation	Cooling EER	Heating COP	Designation	Cooling EER	Heating COP	
	A	11.2	4.2	A	13.0	4.5	
	B	11.2	4.2	B	13.0	4.7	
	C	11.2	4.2	C	13.0	4.7	
	D	12.0	4.2	D	13.0	4.5	
	F	12.0	4.2	F	12.5	4.6	
	Weighted Average	11.3	4.2	Weighted Average	13.0	4.65	
	Outside air delivered directly to apartments via dedicated systems (see below). Heat pumps only run to meet space load. Back up heating provided by purchased steam			Outside air delivered directly to apartments via dedicated systems (see below). Heat pumps only run to meet space load. Back up heating provided by purchased steam			
	Fan power = 0.3 W/cfm Total fan power = 128.8 kW Total cfm = 429.356			Fan power = 0.3 W/cfm Total fan power = 128.8 kW Total cfm = 429.356			
Apartment OA	System 6- Water Source Heat Pump Heating by purchased steam		Water source heat pumps Heating by purchased steam			Apartment OA System, Heat Pumps <ul style="list-style-type: none">M-601	

**RIVERSIDE CENTER
BUILDING TWO**

NEW YORK, NY

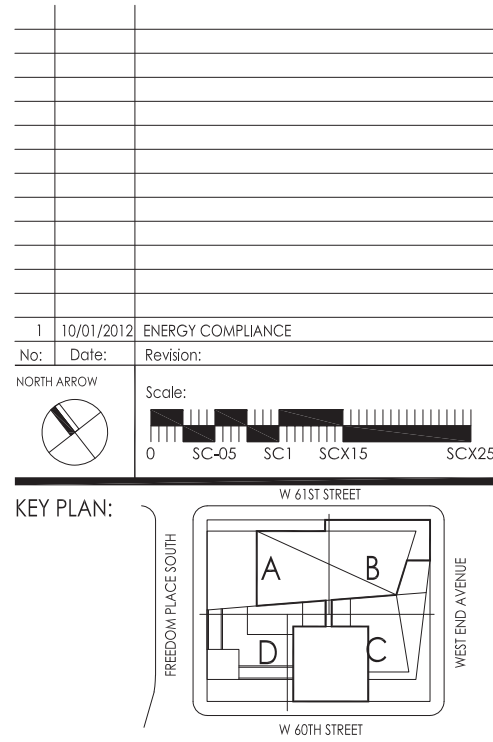
OWNER/DEVELOPER:
EXTELL DEVELOPMENT

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PROJECT:

**RIVERSIDE CENTER
BUILDING 2**

DRAWING TITLE:

**ENERGY COMPLIANCE
SHEET 2**

SEAL & SIGNATURE:



DATE: OCTOBER 01, 2012

PROJECT NO.:

DRAWN BY: JG

CHECKED BY: EA

DRAWING NO.:

EN-001.00

CADD FILE NO.:

RIVERSIDE CENTER
BUILDING TWO

NEW YORK, NY

OWNER/DEVELOPER:
EXTELL DEVELOPMENT

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System, Heat Pumps	Designation	CFM	Supply BHP	Return BHP	Designation	CFM	Supply BHP	Return BHP	CFM from schedules dated 7/2/2012. Fan powers assumed to be minimally compliant with NYSECC 2010. Other values assumed.
	AC-ERU-5-1	5670	6.16		AC-ERU-5-1	5670	6.16	-	
	AC-ERU-5-2	7290	7.92		AC-ERU-5-2	7290	7.92	-	
	Designation	Cooling EER	Heating COP	Recovery Efficiency	Designation	Cooling EER	Heating COP	Recovery Efficiency	
	AC-ERU-5-1	12.0	4.2	50%	AC-ERU-5-1	13.5	4.5	70%	
	AC-ERU-5-2	12.0	4.2	50%	AC-ERU-5-2	13.5	4.5	70%	
Apartment OA System, Packaged DX Units	System 11- Packaged Rooftop air conditioner				Packaged DX units with purchased steam				Valent Submittal
	Designation	CFM	Supply BHP	Return BHP	Designation	CFM	Supply BHP	Return BHP	
	AC-ERU-R-1	5520	5.68	4.28	AC-ERU-R-1	5520	5.68	4.28	
	AC-ERU-R-2	7260	7.32	8.61	AC-ERU-R-2	7260	7.32	8.61	
	AC-ERU-12-1	2290	1.72	1.38	AC-ERU-12-1	2290	1.72	1.38	
	Designation	Cooling EER	Cool Cap (kBtu)	Recovery Efficiency	Designation	Cooling EER	Cool Cap (kBtu)	Recovery Efficiency	
	AC-ERU-R-1	9.8	382	50%	AC-ERU-R-1	11.0	260	66%	
	AC-ERU-R-2	9.8	502	50%	AC-ERU-R-2	11.1	321	66%	
	AC-ERU-12-1	9.5	158	-	AC-ERU-12-1	11.4	94	71%	
	Heat recovery not required on systems < 5000 cfm								
Corridor System, Water Source Heat Pumps	System 6- Water Source Heat Pump Purchased steam back up				Water source heat pumps with purchased steam back up				Corridor System, Water Source Heat Pumps M-601
	Designation	CFM	Supply BHP	Return BHP	Designation	CFM	Supply BHP	Return BHP	
	AC-1-1	5,780	4.21	3.59	AC-1-1	5,745	4.21	3.59	

Riverside Center Building 2 NYSECCC2010 Compliance Report

26 September 2012

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	AC-4-1	1,050	0.48	-	AC-4-1	1,050	0.48	-	
	AC-5-1	7,700	7.0	-	AC-5-1	7,700	7.00	-	
	Designation	OA CFM	Cooling EER	Heating COP	Designation	OA CFM	Cooling EER	Heating COP	
	AC-C-1	4,500	12.0	4.2	AC-C-1	4,500	16.7	4.9	
	AC-C-2	500	12.0	4.2	AC-C-2	500	17.7	5.7	
	AC-1-1	5,745	12.0	4.2	AC-1-1	5,745	17.6	5.6	
	AC-4-1	1,050	12.0	4.2	AC-4-1	1,050	15.9	5.7	
	AC-5-1	7,700	12.0	4.2	AC-5-1	7,700	14.8	5.0	
Corridor Systems, Packaged DX	System 4- Packaged VAV w/ Reheat and steam				Packaged DX w/ steam heat				• Valent Submittal
	Designation	CFM	Supply BHP	Return BHP	Designation	CFM	Supply BHP	Return BHP	
	AC- R-1	7,820	1.46	-	AC- R-1	7,820	1.46	-	
	AC-12-1	1,050	0.36	-	AC-12-1	1,050	0.36	-	
	Designation	Cooling EER	Cooling Cap (kBtu)		Designation	Cooling EER	Cooling Cap (kBtu)		
	AC-R-1	9.8	530		AC-R-1	11.5	683		
	AC-12-1	11.0	70		AC-12-1	11.2	93.1		
Amenity Water source heat pumps	System 6- Water Source Heat Pump Purchased steam back up				Water source heat pumps with purchased steam back up				Amenity Water source heat pumps • M-601
	Designation	CFM	Supply BHP	Return BHP	Designation	CFM	Supply BHP	Return BHP	
	AC-C-1	4,500	2.97	2.81	AC-C-1	4,500	4.06	3.84	
	AC-C-2	1,693	1.15	0.91	AC-C-2	3,000	2.02	1.59	
	Designation	OA CFM	Cooling EER	Heating COP	Designation	OA CFM	Cooling EER	Heating COP	
	AC-C-1	4,500	12.0	4.2	AC-C-1	4,500	16.7	4.9	
	AC-C-2	500	12.0	4.2	AC-C-2	500	17.7	5.7	

Riverside Center Building 2 NYSECCC2010 Compliance Report

26 September 2012

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BOH Water Source Heat Pumps	System 6- Water Source Heat Pump Purchased steam back up				Water source heat pumps with purchased steam back up				BOH Water Source Heat Pumps • M-602
	Designation	CFM	Cooling EER	Heating COP	Designation	CFM	Cooling EER	Heating COP	
	G		12.0	4.2	G	850	15.9	5.3	
	H		12.0	4.2	H	1250	15.6	5.3	
	I		12.0	4.2	I	1550	15.7	5.2	
	J		12.0	4.2	J	1825	15.0	5.0	
	K		12.0	4.2	K	1950	15.0	4.7	
	Weighted Average		12.0	4.2	Weighted Average		15.5	5.05	
BOH HV Unit	System 4- Packaged VAV w/ Reheat								BOH HV Unit • M-601
	Designation	Supply CFM	OA CFM	Supply Fan BHP	Designation	Supply CFM	OA CFM	Supply Fan BHP	
	HV-C-1	5000	5000	1.74	HV-C-1	5000	5000	1.74	
Central Cooling	No central cooling. All cooling via heat pumps and packaged DX units.				No central cooling. All cooling via heat pumps and packaged DX units.				NA
Central Heating	No boiler, all heating via heat pumps and purchased steam.				No boiler, all heating via heat pumps and purchased steam.				NA
	Apartments- Water source heat pumps with purchased steam back up.				Apartments- Water source heat pumps with purchased steam back up.				
	Apartment outside air- mix of water source heat pumps with purchased steam back up.				Apartment outside air- mix of water source heat pumps with purchased steam back up.				
	Corridors- mix of water source heat pumps with purchased steam back up.				Corridors- mix of water source heat pumps with purchased steam back up.				
	Other spaces- Water source heat pumps with purchased steam back up.				Other spaces- Water source heat pumps with purchased steam back up.				
									P-701

Riverside Center Building 2 NYSECCC2010 Compliance Report

26 September 2012

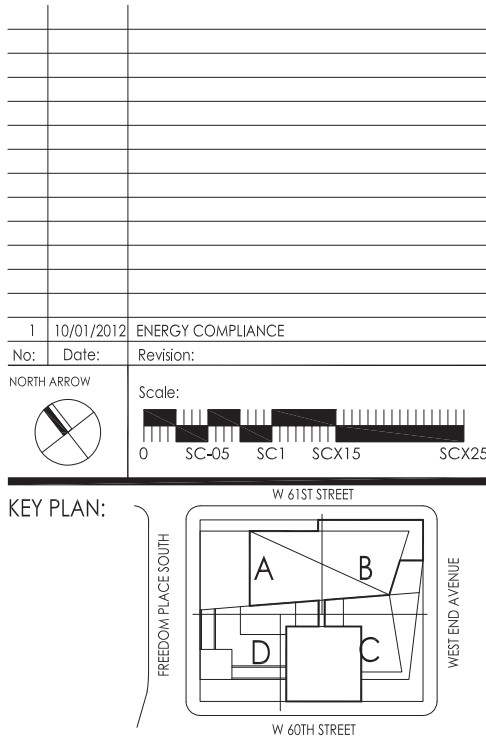
8

DHW Heater	DHW heaters are 80% efficient on/off type. Additional DHW provided by steam		DHW heaters are 80% efficient, on/off type. Additional DHW provided by steam	
Cooling Tower	Fan Motor Type: Two-speed Setpoint Ctrl: Constant Setpoint T: 70 °F Design Approach: 10 °F Low Speed CFM: 67%		Fan Motor Type: Variable Setpoint Ctrl: WB Reset Min WB Reset T: 65 °F Design Approach: 7 °F Min Fan Speed: 30%	Cooling Tower • M-601
Condenser Water Pumps	VFD's on secondary pumps only. The minimum turndown ratio is 50%.		VFD's on primary and secondary pumps. The minimum turndown ratio is 50%.	Condenser Water Pumps • M-601
Ventilation Controls	25.6 BHP, constant volume garage fans run at all hours.		25.6 BHP Parking garage fans are equipped with CO monitors and VFD fans. Exhaust fans are modulated based on CO readings, reducing overall garage fan energy use by 15%.	Ventilation Controls • M-602 • Spec 23.85 20 Carbon monoxide control systems

Riverside Center Building 2 NYSECCC2010 Compliance Report


26 September 2012

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PROJECT:
**RIVERSIDE CENTER
BUILDING 2**

DRAWING TITLE:
**ENERGY COMPLIANCE
SHEET 3**

SEAL & SIGNATURE:  DATE: OCTOBER 01, 2012
PROJECT NO.:
DRAWN BY: JG:
CHECKED BY: EA:
DRAWING NO.: **EN-002.00**
CADD FILE NO:

RIVERSIDE CENTER
BUILDING TWO

NEW YORK, NY

OWNER/DEVELOPER:

EXTELL DEVELOPMENT

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1 DOE 2.1E RIVERSIDE CENTER BUILDING TWO, NYC, NY DOE-2.1E-121 Wed
 Sep 26 12:33:22 2012PDL RUN 1
 Building as Designed SIM: VIRIDIAN ENERGY & ENVIRONMENTAL, L
 REPORT- BEPS BUILDING ENERGY PERFORMANCE SUMMARY WEATHER FILE- NEW YORK CENTRAL NY

ENERGY TYPE: UNITS: MBTU	ELECTRICITY	NATURAL-GAS	FUEL-OIL
CATEGORY OF USE			
AREA LIGHTS	3585.1	0.0	0.0
MISC EQUIPMNT	4920.5	0.0	0.0
SOURCE USES	0.0	1678.2	0.0
SPACE HEAT	2477.9	0.0	11599.4
SPACE COOL	3514.3	0.0	0.0
PUMPS & MISC	1001.9	0.0	0.0
VENT FANS	3758.6	0.0	0.0
DOMHOT WATER	47.5	0.0	3836.6
EXT LIGHTS	143.1	0.0	0.0
EXT MISC	560.6	0.0	0.0
TOTAL	20009.5	1678.2	15436.0

TOTAL SITE ENERGY	37123.76 MBTU	50.3 KBTU/SQFT-YR GROSS-AREA	50.3 KBTU/SQFT-YR NET-AREA
TOTAL SOURCE ENERGY	77148.77 MBTU	104.6 KBTU/SQFT-YR GROSS-AREA	104.6 KBTU/SQFT-YR NET-AREA
PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE =	2.4		
PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED	0.0		

NOTE: ENERGY IS APPORTIONED HOURLY TO ALL END-USE CATEGORIES.

Riverside Center Building 2 NYSECCC2010 Compliance Report 26 September 2012 14

1 DOE 2.1E RIVERSIDE CENTER BUILDING TWO, NYC, NY DOE-2.1E-121 Wed
 Sep 26 12:33:22 2012PDL RUN 1
 Building as Designed SIM: VIRIDIAN ENERGY & ENVIRONMENTAL, L
 REPORT- BEPU BUILDING ENERGY PERFORMANCE SUMMARY (UTILITY UNITS) WEATHER FILE- NEW YORK CENTRAL NY

ENERGY TYPE: SITE UNITS:	ELECTRICITY KWH	NATURAL-GAS THERM	FUEL-OIL MMBTU
CATEGORY OF USE			
AREA LIGHTS	1050433.	0.	0.
MISC EQUIPMNT	1441708.	0.	0.
SOURCE USES	0.	16782.	0.
SPACE HEAT	726018.	0.	11599.
SPACE COOL	1029688.	0.	0.
PUMPS & MISC	293564.	0.	0.
VENT FANS	1101268.	0.	0.
DOMHOT WATER	13925.	0.	3837.
EXT LIGHTS	41930.	0.	0.
EXT MISC	164251.	0.	0.
TOTAL	5862786.	16782.	15436.

TOTAL ELECTRICITY	5862786. KWH	7.951 KWH	/SQFT-YR GROSS-AREA	7.951 KWH	/SQFT-YR NET-AREA
TOTAL NATURAL-GAS	16782. THERM	0.023 THERM	/SQFT-YR GROSS-AREA	0.023 THERM	/SQFT-YR NET-AREA
TOTAL FUEL-OIL	15436. MMBTU	0.021 MMBTU	/SQFT-YR GROSS-AREA	0.021 MMBTU	/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE	=	2.4
PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED	=	0.0

NOTE: ENERGY IS APPORTIONED HOURLY TO ALL END-USE CATEGORIES.

Riverside Center Building 2 NYSECCC2010 Compliance Report 26 September 2012 15

1 DOE 2.1E RIVERSIDE CENTER BUILDING TWO, NYC, NY DOE-2.1E-121 Wed
 Sep 26 12:33:22 2012EDL RUN 1
 Building as Designed SIM: VIRIDIAN ENERGY & ENVIRONMENTAL, L
 REPORT- ES-D ENERGY COST SUMMARY

UTILITY-RATE	RESOURCE	METERS	METERED ENERGY UNITS/YR	TOTAL CHARGE (\$)	VIRTUAL RATE (\$/UNIT)	RATE USED ALL YEAR?
OSCH00L-ELEC-TARI	ELECTRICITY	3	957624. KWH	243614.	0.2544	YES
OSC9-ELEC-TARIFF	ELECTRICITY	1 4 5	2616108. KWH	489007.	0.1869	YES
OSCL1-ELEC-TARIFF	ELECTRICITY	2	2289063. KWH	608124.	0.2657	YES
OSC3-11-5% RATE	FUEL - OIL	1 3	15364. MBTU	570915	36.9858	YES
OSC3-GAS-TARIFF	NATURAL-GAS	2 4	16782. THERM	21708.	1.2935	YES
0				<u>1933368.</u>		

ENERGY COST/GROSS BLDG AREA: 2.62
ENERGY COST/NET BLDG AREA: 2.62

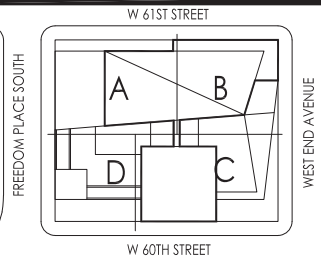
Riverside Center Building 2 NYSECCC2010 Compliance Report 26 September 2012 16

1	10/01/2012	ENERGY COMPLIANCE
---	------------	-------------------

No:	Date:
-----	-------

NORTH ARROW

KEY PLAN: -



PROJECT:

RIVERSIDE CENTER
BUILDING 2

DRAWING TITLE:

ENERGY COMPLIANCE
SHEET 5

SEAL & SIGNATURE:

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