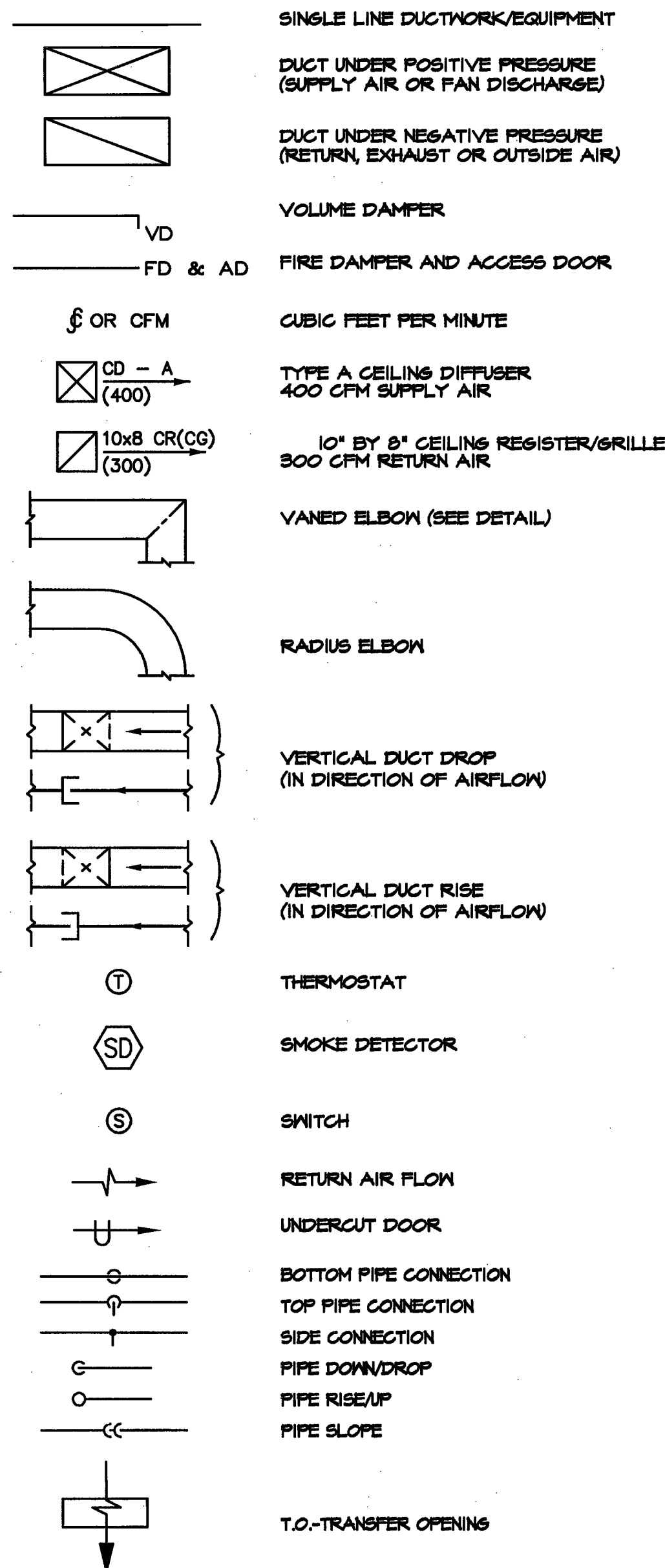


HVAC SYMBOLS



HVAC ABBREVIATIONS

A	AMPERES
AC	AIR CONDITIONING
AD	ACCESS DOOR
AL	ALUMINUM
BDD	BACK DRAFT DAMPER
BTU	BRITISH THERMAL UNIT
BTUH	BTU PER HOUR
CD	CEILING DIFFUSER
COD	CORD OPERATED DAMPER
CFM	CUBIC FEET PER MINUTE
CG	CEILING GRILLE
CP	CONDENSATE PUMP
DH	DUCT HEATER
EF	EXHAUST FAN
EDH	ELECTRIC DUCT HEATER
E	EXISTING
FC	FLEXIBLE CONNECTION
FD	FIRE DAMPER
FSD	FIRE SMOKE DAMPER
FLA	FULL LOAD AMPERES
HD	HEAD
HR	HOUR
HZ	FREQUENCY
LD	LEAK DETECTOR
MBH	THOUSAND BTU PER HOUR
MHP	MOTOR HORSEPOWER
N	NEW
OA	OUTSIDE AIR
PD	PRESSURE DROP
RA	RETURN AIR
RLA	RUNNING LOAD AMPS
RPM	REVOLUTIONS PER MINUTE
SX	SMOKE EXHAUST
TYP	TYPICAL
TX	TOILET EXHAUST
TR	TOP REGISTER
V	VOLTS
VD	VOLUME DAMPER
W	WITH
WO	WITHOUT
WMS	WIRE MESH SCREEN

BUILDING DEPARTMENT NOTES

2014 - NYC BUILDING CODE

ALL WORK SHALL COMPLY WITH THE APPLICABLE SECTIONS OF THE BUILDING CODE, CITY OF NEW YORK, EFFECTIVE DECEMBER 31, 2014 AND ALL AMENDMENTS AND RULES AND REGULATIONS OF THE DEPARTMENT OF BUILDINGS TO DATE. INSPECTIONS AND SIGN-OFF OF COMPLETED WORK SHALL BE MADE AS PER ARTICLE 28-116 OF THE GENERAL ADMINISTRATIVE PROVISIONS.

- THE FOLLOWING SPECIAL INSPECTIONS ARE REQUIRED BY THE NYC BUILDING CODE FOR HVAC SYSTEMS:
 - MECHANICAL SYSTEMS - BC 1704.16
- THE FOLLOWING PERIODIC SPECIAL INSPECTIONS ARE REQUIRED BY THE NYC BUILDING CODE FOR HVAC SYSTEMS:
 - THROUGH-PENETRATION FIRESTOP SYSTEMS - BC 1704.27
- TESTS OF MECHANICAL SYSTEMS SHALL BE PERFORMED IN ACCORDANCE WITH SECTION MC 107 AND THE FOLLOWING SECTIONS OF THE NEW YORK CITY MECHANICAL CODE:
 - VENTILATION SYSTEM BALANCING - 403.8
- THE CONTRACTOR SHALL ENGAGE THE SERVICES OF A PROFESSIONAL ENGINEER TO PROVIDE THE REQUIRED SPECIAL INSPECTIONS AND TESTS.
 - UPON COMPLETION OF THE VENTILATION SYSTEM:
 - A TEST SHALL BE CONDUCTED IN THE PRESENCE OF AND UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER QUALIFIED TO CONDUCT SUCH TESTS. THE TESTS SHALL SHOW COMPLIANCE WITH THE CODE REQUIREMENTS FOR VENTILATION AND THE PROPER FUNCTIONING OF ALL SMOKE DETECTION, FIRE PROTECTION AND OPERATING DEVICES BEFORE THE SYSTEM IS APPROVED.
 - THE LICENSED PROFESSIONAL ENGINEER WHO CONDUCTS THE TESTS SHALL FILE A CERTIFICATE AS TO WHETHER THE SYSTEM COMPLIES WITH THE APPLICABLE LAWS. THEY SHALL ALSO FILE WITH THIS CERTIFICATION A REPORT OF THE TEST. THE TEST AND REPORT SHALL BE MADE IN A MANNER SATISFACTORY TO THE OWNER.
- THE FOLLOWING WORK ITEMS, COMPONENTS, MATERIALS, CAPACITIES, ETC. SHALL COMPLY WITH THE REFERENCED CODE OR STANDARD AS PER CHART BELOW.
- MINIMUM TEMPERATURE TO BE MAINTAINED IN OCCUPIED SPACES DURING HEATING SEASON: 68 DEG F
- VENTILATION FOR ALL AREAS SHALL COMPLY WITH MC 401.
- A STATEMENT SHALL BE FILED BY THE OWNER OR TENANT IN POSSESSION THAT THE VENTILATING SYSTEM WILL BE KEPT IN CONTINUOUS OPERATION AT ALL TIMES DURING THE NORMAL OCCUPANCY OF THE STRUCTURE AS REQUIRED BY CODE MC 403.3
- ALL FIRE DAMPERS SHALL BE ACCEPTED FOR USE BY THE NEW YORK CITY DEPARTMENT OF BUILDINGS SHALL BE MANUFACTURED AND INSTALLED IN ACCORDANCE WITH UL 555, STANDARD FOR FIRE DAMPERS AND CEILING DAMPERS.
- COMBINATION FIRE/SMOKE DAMPERS AND SMOKE DAMPERS SHALL BE ACCEPTED FOR USE BY THE NEW YORK CITY DEPARTMENT OF BUILDINGS SHALL BE MANUFACTURED AND INSTALLED IN ACCORDANCE WITH UL 555S.
- SMOKE DETECTORS, COMBINATION FIRE/SMOKE DAMPERS AND SMOKE DAMPERS SHALL BE INSTALLED AS REQUIRED TO CLOSE DAMPERS AND AUTOMATICALLY STOP THE FAN - MC 608
- REFER TO ARCHITECTURAL DRAWINGS FOR REQUIRED FIRE RATED WALL AND SMOKE WALL CONSTRUCTION AND LOCATION.
- THESE PLANS ARE APPROVED ONLY FOR THE WORK INDICATED ON THE APPLICATION SPECIFICATION SHEET. ALL OTHER MATTERS SHOWN ARE NOT TO BE RELIED UPON OR TO BE CONSIDERED AS EITHER BEING APPROVED OR IN ACCORDANCE WITH APPLICABLE CODES.
- TO THE BEST OF THE APPLICANT'S KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGEMENT, THESE PLANS ARE IN COMPLIANCE WITH THE ENERGY CONSERVATION CONSTRUCTION CODE OF NEW YORK STATE.
- TESTS OF SOUND POWER LEVEL OF MECHANICAL EQUIPMENT SHALL BE CONDUCTED AND RESULTS SUBMITTED WHERE WINDOWS OF A DWELLING UNIT ARE WITHIN 100 FEET OF EQUIPMENT. THE SOUND PRESSURE LEVEL SHALL NOT EXCEED THE LEVELS GIVEN IN MC 928.

NOTES

- ALL WORK SHALL COMPLY WITH APPLICABLE SECTIONS OF THE LATEST LOCAL AND STATE CODE HAVING JURISDICTION.
- THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY AND ALL DISCREPANCIES BETWEEN FIELD CONDITIONS AND THE CONTRACT DOCUMENTS BEFORE PROCEEDING WITH THAT PORTION OF THE WORK. FAILURE TO NOTIFY THE ENGINEER DOES NOT RELIEVE THE CONTRACTOR FROM SUCH FAILURE TO COORDINATE DISCREPANCIES TO THE SATISFACTION OF THE ENGINEER WITHOUT ADDITIONAL COST TO THE OWNER.
- THE CONTRACTOR SHALL OBTAIN PERMITS REQUIRED FOR THE PERFORMANCE OF HIS WORK AND PAY FEES IN CONNECTION THEREWITH.
- THE CONTRACTOR SHALL VERIFY DIMENSIONS IN THE FIELD PRIOR TO FABRICATION AND INSTALLATION.
- DUCT SIZES SHOWN ON DRAWINGS ARE INSIDE DIMENSIONS.
- ALL WORK AND MATERIALS SHALL BE GUARANTEED, FOR A PERIOD OF ONE YEAR.
- PROTECT ALL EXISTING SURFACES, UTILITIES, MECHANICAL SYSTEMS, REPAIR DAMAGES SUSTAINED BY SAME DURING THE COURSE OF THIS CONTRACTOR'S WORK AT NO ADDITIONAL COST TO THE OWNER.
- THE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE HVAC WORK WITH WORK OF OTHER TRADES.
- REFER TO SPECIFICATIONS FOR DUCT PRESSURE CONSTRUCTION REQUIREMENTS.
- ALL TOILET EXHAUST DUCTS TO BE CONSTRUCTED TO 3 IN WS.
- CONNECTIONS OF EXISTING DUCTS TO NEW DUCTS SHALL BE "DUCT MATE"
- CONTRACTOR SHALL FURNISH AND INSTALL ACCESS DOORS (GASKETED) IN DUCTWORK FOR THE FOLLOWING DEVICES:
AUTOMATIC FIRE/SMOKE DAMPERS (ACCESSIBLE SIDE)
FIRE DAMPERS (ACCESSIBLE SIDE)
- PROVIDE ALL THE ACTUATORS AND WIRING FOR FIRE/SMOKE DAMPERS
- TRANSITIONS SHALL BE MADE SO THAT BOTTOMS OF DUCTS ARE HOLD CONSTANT, WHERE POSSIBLE.
- PROVIDE SLEEVES ON ALL PIPES PENETRATING WALLS AND FLOORS PER SPECIFICATIONS AND DETAILS.
- THERMOSTATS AND LOCAL INDICATING PANELS LOCATIONS ARE APPROXIMATE AND SHALL BE COORDINATED TO SUIT FIELD CONDITIONS.
- ALL SUPPORTS FOR MECHANICAL EQUIPMENT ARE BASED ON PRELIMINARY INFORMATION FROM ONE SPECIFIED MANUFACTURER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CHECKING SIZES FROM CERTIFIED DRAWINGS OF THE EQUIPMENT AND SHALL MAKE ANY MODIFICATIONS REQUIRED WITHOUT ANY ADDITIONAL COST TO THE OWNER.
- EACH EQUIPMENT SHOWN IS BASED ON THE DESIGN OF ONE MANUFACTURER. IF AN ALTERNATE MANUFACTURER IS SELECTED, THE CONTRACTOR MUST COORDINATE ALL THE MODIFICATIONS REQUIRED TO ACCOMMODATE THE EQUIPMENT INSTALLATION AND OPERATION. A/E TO VERIFY AND APPROVE ALL EQUIPMENT SELECTIONS.
- ELECTRICAL POWER PROVISIONS FOR MECHANICAL EQUIPMENT ARE BASED ON PRELIMINARY INFORMATION FROM ONE SPECIFIED MANUFACTURER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CHECKING ELECTRICAL RATINGS FROM CERTIFIED DRAWINGS OF THE EQUIPMENT AND SHALL MAKE ANY BRANCH CIRCUIT AND DISTRIBUTION MODIFICATIONS REQUIRED WITHOUT ANY ADDITIONAL COST TO THE OWNER. HE SHALL SUBMIT A SCHEDULE OF SUCH CHANGES FOR APPROVAL BY THE ENGINEER. ALL APPROVED CHANGES SHALL BE RECORDED ON "AS BUILT" DRAWINGS.
- SEAL ALL PENETRATIONS PROVIDE ESCUTCHEON PLATE ON EACH SIDE OF WALL
- CONTRACTOR SHALL ADJUST LOCATIONS AND ELEVATION OF NEW WORK TO PREVENT INTERFERENCE WITH EXISTING CONDITIONS
- ALL EXISTING EQUIPMENT AND MATERIALS BEING REMOVED SHALL BE DISPOSED OF AS DIRECTED BY THE OWNER/CM

HVAC DRAWING INDEX

DRAWING NO.	DRAWING TITLE
M-101	MECHANICAL COVER SHEET
M-201	CELLAR LEVEL MECHANICAL INSTALLATION PLAN
M-202	1ST FLOOR MECHANICAL INSTALLATION PLAN
M-203	2ND FLOOR MECHANICAL INSTALLATION PLAN
M-204	3RD FLOOR MECHANICAL INSTALLATION PLAN
M-205	ROOF LEVEL MECHANICAL INSTALLATION PLAN
M-301	MECHANICAL EQUIPMENT SCHEDULES
M-401	MECHANICAL DETAILS (SHEET 1 OF 1)
M-402	MECHANICAL DETAILS (SHEET 2 OF 2)
M-501	MECHANICAL SPECIFICATIONS (SHEET 1 OF 2)
M-502	MECHANICAL SPECIFICATIONS (SHEET 2 OF 2)

ENERGY CONSERVATION CODE OF 2016 NYC

"TO THE BEST OF MY KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGEMENT, THESE PLANS AND SPECIFICATIONS ARE IN COMPLIANCE WITH THE 2016 NYC ENERGY CONSERVATION CODE."

CX MH12 OF 2016 NYC ECC NOTE

TOTAL PROPOSED MECHANICAL & WATER-HEATING EQUIPMENT CAPACITY:
291,500 BTU/H < 480,000 BTU/H COOLING & 619,500 BTU/H > 600,000 BTU/H HEATING.
SYSTEM COMMISSIONING IS NOT EXEMPT PER 2016 NYC ECC SECTION C408.

PROGRESS INSPECTIONS FOR ENERGY CODE COMPLIANCE
(COMMERCIAL BUILDINGS)

TABLE REFERENCE	PROGRESS INSPECTION	CODE SECTION (2016 NYCECC)
IB	MECHANICAL AND PLUMBING INSPECTIONS	
IIB3	HVAC AND SERVICE WATER HEATING EQUIPMENT	C403.2, C404.2, C404.7, C406.2
IIB4	HVAC AND SERVICE WATER HEATING SYSTEM CONTROLS	C403.2.4, C403.2.5.1, C403.2.11, C403.3, C403.4, C404.3, C404.6, C404.7
IIB5	HVAC INSULATION AND SEALING	C403.2.7, C403.2.8, C404.5
IC	ELECTRICAL ENERGY CONSUMPTION	
IIC3	INTERIOR LIGHTING POWER	C405.5, C406.3
IIC4	LIGHTING CONTROLS	C405.2
IDD1	MAINTENANCE INFORMATION	C303.3, C408.2.5.2

N.Y.C. SPECIAL & PROGRESS INSPECTIONS

EXCEPT FOR FINAL INSPECTION (BY ARCHITECT), ALL SPECIAL AND PROGRESS INSPECTIONS LISTED BELOW, INCLUDING ANY OTHER INSPECTIONS CALLED ON ENGINEER'S DRAWINGS AND REQUIRED BY THIS BUILDING DEPARTMENT AND ALL AGENCIES HAVING JURISDICTION, ARE TO BE PERFORMED BY INDEPENDENT AGENCIES WORKING UNDER THE DIRECTION OF THE OWNER.

THE CONTRACTOR MUST NOTIFY THE SPECIAL INSPECTION AGENCY AT LEAST 72 HOURS BEFORE THEY ARE READY FOR INSPECTION TO BE PERFORMED.
SPECIAL INSPECTIONS AND PROGRESS INSPECTIONS ARE REQUIRED IN ACCORDANCE WITH APPLICABLE SECTIONS OF THE BUILDING CODE ARE LISTED IN THE FOLLOWING TABLES.

- MECHANICAL SYSTEMS
- FIRE RESISTANT PENETRATIONS AND JOINTS

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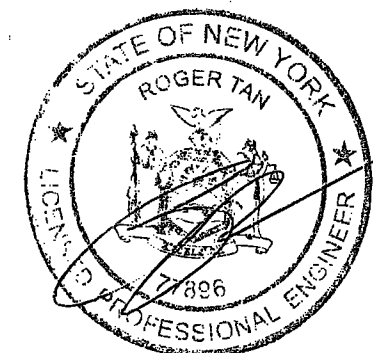
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No.	Revision	Date	Description
1	09/23/16	ISSUED FOR REVIEW	
2	11/02/16	ISSUED FOR REVIEW	
3	11/22/16	ISSUED FOR REVIEW	
4	12/19/16	DOB FILING	
5	01/31/17	FOR PERMIT 2	
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FEB 13 2017
ROBERT GOVIL, R.E.

DEPT BLDGS Job No. 321499918
Scan Code ESHS8831119



MECHANICAL
COVER SHEET

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Project No.
106003-RN

01 OF 11

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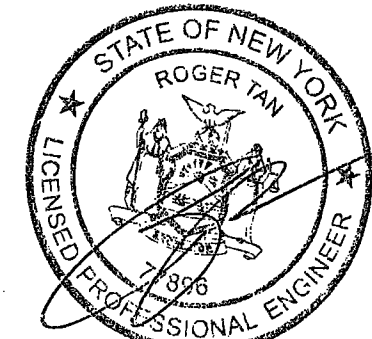
EXAMINED FOR ZONING, DEPRESS AND FIRE PREVENTION
 FEB 03 2017
 Robert G. Grogan, P.E.

DEPT. RECORDS Job No. 321499918
 Scale Date ESHS1094457

CELLAR LEVEL MECHANICAL INSTALLATION PLAN

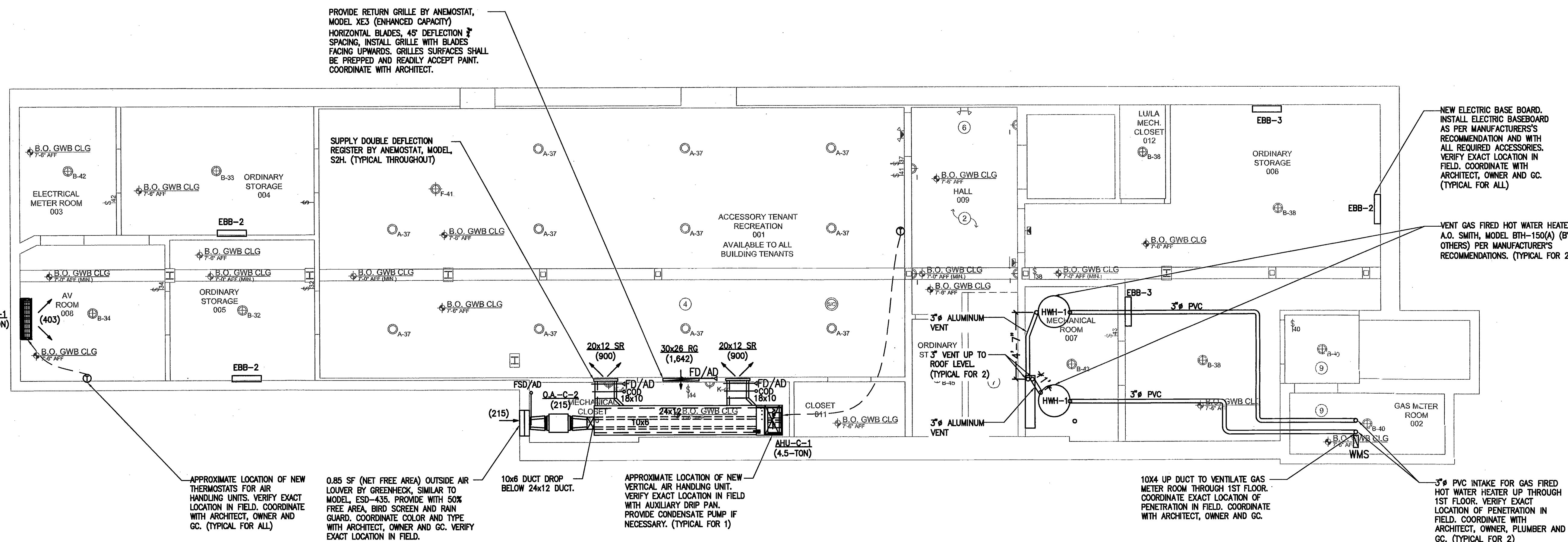
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Project No. 160803-KN



PROVIDE RETURN GRILLE BY ANEMOSTAT, MODEL XE3 (ENHANCED CAPACITY) HORIZONTAL BLADES, 45° DEFLECTION 7\"/>

SUPPLY DOUBLE DEFLECTION REGISTER BY ANEMOSTAT, MODEL SZH. (TYPICAL THROUGHOUT)

NEW ELECTRIC BASE BOARD. INSTALL ELECTRIC BASEBOARD AS PER MANUFACTURER'S RECOMMENDATION AND WITH ALL REQUIRED ACCESSORIES. VERIFY EXACT LOCATION IN FIELD. COORDINATE WITH ARCHITECT, OWNER AND GC. (TYPICAL FOR ALL)

VENT GAS FIRED HOT WATER HEATER A.O. SMITH, MODEL BTH-150(A) (BY OTHERS) PER MANUFACTURER'S RECOMMENDATIONS. (TYPICAL FOR 2)

APPROXIMATE LOCATION OF NEW THERMOSTATS FOR AIR HANDLING UNITS. VERIFY EXACT LOCATION IN FIELD. COORDINATE WITH ARCHITECT, OWNER AND GC. (TYPICAL FOR ALL)

0.85 SF (NET FREE AREA) OUTSIDE AIR LOUVER BY GREENHECK, SIMILAR TO MODEL ESD-435. PROVIDE WITH 50% FREE AREA, BIRD SCREEN AND RAIN GUARD. COORDINATE COLOR AND TYPE WITH ARCHITECT, OWNER AND GC. VERIFY EXACT LOCATION IN FIELD.

10x6 DUCT DROP BELOW 24x12 DUCT.

APPROXIMATE LOCATION OF NEW VERTICAL AIR HANDLING UNIT. VERIFY EXACT LOCATION IN FIELD WITH AUXILIARY DRIP PAN. PROVIDE CONDENSATE PUMP IF NECESSARY. (TYPICAL FOR 1)

10x4 UP DUCT TO VENTILATE GAS METER ROOM THROUGH 1ST FLOOR. COORDINATE EXACT LOCATION OF PENETRATION IN FIELD. COORDINATE WITH ARCHITECT, OWNER AND GC.

3\"/>

1 CELLAR LEVEL MECHANICAL INSTALLATION PLAN
 SCALE: 1/4\"/>

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FEB 03 2017
Rudolf Govic, P.E.

DEPT. BLDG. JOB NO. 321499918
SEAL CODE ESHS3856448

1ST FLOOR MECHANICAL INSTALLATION PLAN

03 OF 11

M-202.00

HVAC INSTALLATION NOTES

APPROXIMATE LOCATION OF AC UNIT/CONDENSOR TO BE INSTALLED AS PER MANUFACTURER'S RECOMMENDATIONS. ENSURE PROPER MAINTENANCE ACCESS AND DRAINAGE; PROVIDE CONDENSATE PUMP IF NECESSARY. VERIFY/COORDINATE ALL WORK IN FIELD AND WITH ARCHITECT, OWNER AND BUILDING MANAGEMENT. (TYPICAL FOR ALL)

PROVIDE SOUND LINING THROUGH OUT DUCT RUN. (TYPICAL FOR ALL)

PROVIDE TURNING VANES AT ALL ANGLES AND BENDS (TYPICAL FOR ALL)

PROVIDE NEW 7-DAY PROGRAMMABLE THERMOSTAT. COORDINATE EXACT LOCATION IN FIELD (TYPICAL).

PROVIDE WIRE MESH SCREEN AT END OF RETURN DUCT. ENSURE PROPER RETURN AIR TO INDOOR UNIT, PROVIDE UNDERCUTS AND TRANSFER OPENINGS WHERE NEEDED. VERIFY/COORDINATE IN FIELD. (TYPICAL FOR ALL)

CONNECT NEW REFRIGERANT PIPING FROM AIR HANDLING UNITS TO CONDENSING UNITS. COORDINATE EXACT ROUTE IN FIELD. (TYPICAL FOR ALL)

ALL WORK MUST BE VERIFIED AND COORDINATED IN FIELD WITH BUILDING MANAGEMENT, ARCHITECT, AND ALL TRADES.

GENERAL NOTES:

1) CONTRACTOR SHALL VISIT PREMISES PRIOR TO BID TO VERIFY EXISTING CONDITIONS AND DETERMINE IF THERE ARE ANY OBSTRUCTIONS OR ISSUES THAT MAY IMPEDE ON THE CONSTRUCTION OF PROPOSED WORK.

2) ANY ROOM ENCLOSED WITH FULL HEIGHT PARTITIONS SHALL BE PROVIDED WITH AN WALL OPENING WITH SHEET METAL SLEEVED AND WMS, SIZED AT 300 FEET PER MINUTE.

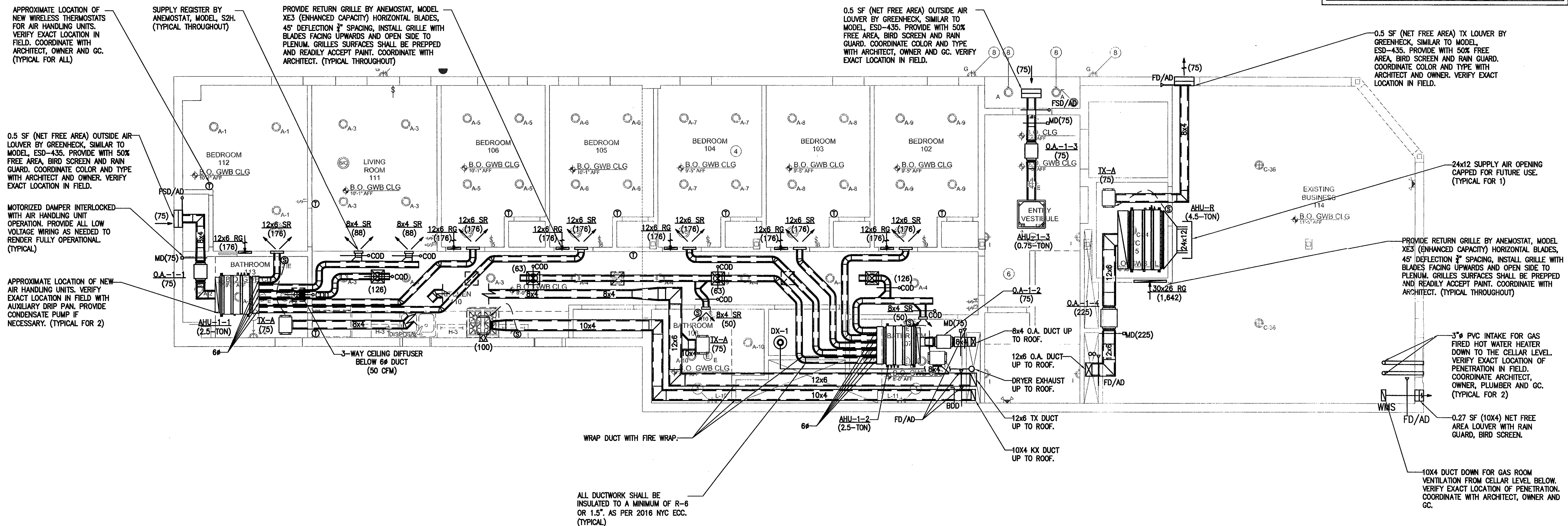
3) ALL DUCT SPLITS AND TAKE-OFFS SHALL BE PROVIDED WITH VOLUME DAMPERS. PROVIDE CABLE OPERATED VOLUME DAMPERS FOR ALL DAMPERS ABOVE INACCESSIBLE CEILINGS. VOLUME DAMPERS IN BRANCH DUCTS SHALL BE LOCATED AS FAR AS POSSIBLE FROM AIR OUTLET OR INLET IN ORDER TO REDUCE NOISE AND TURBULENCE AT AIR OUTLETS.

4) CONTRACTOR SHALL INSPECT ALL EXISTING PERIMETER BASEBOARDS AND VALVES. REPORT ANY LEAKS OR INOPERABLE VALVES TO BUILDING AND DESIGN ENGINEER.

5) MAINTAIN A MINIMUM OF 12" ACCESS IN FRONT OF ALL PERIMETER HVAC APPARATUS FOR SERVICE.

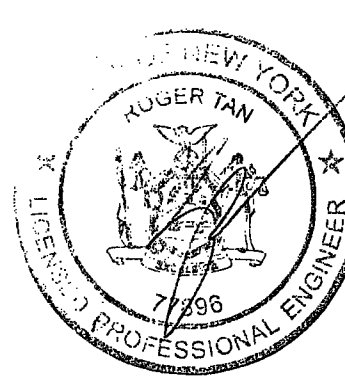
6) KEEP ALL DUCTWORK TIGHT TO UNDERSIDE OF TYPICAL BEAMS AS NECESSARY. CROSS DUCTWORK BETWEEN BEAMS WHEREVER POSSIBLE, AND AVOID CROSSING DUCTWORK ABOVE RECESSED LIGHT FIXTURES TO PROVIDED MAXIMUM CLEARANCES.

7) ALL DUCTWORK SHALL BE INSULATED AND SEALED PER ASHRAE 90.1-2010/2016 NYC ECC STANDARDS. DUCT INSULATION AND SEALING REQUIREMENTS IN COMMERCIAL BUILDINGS

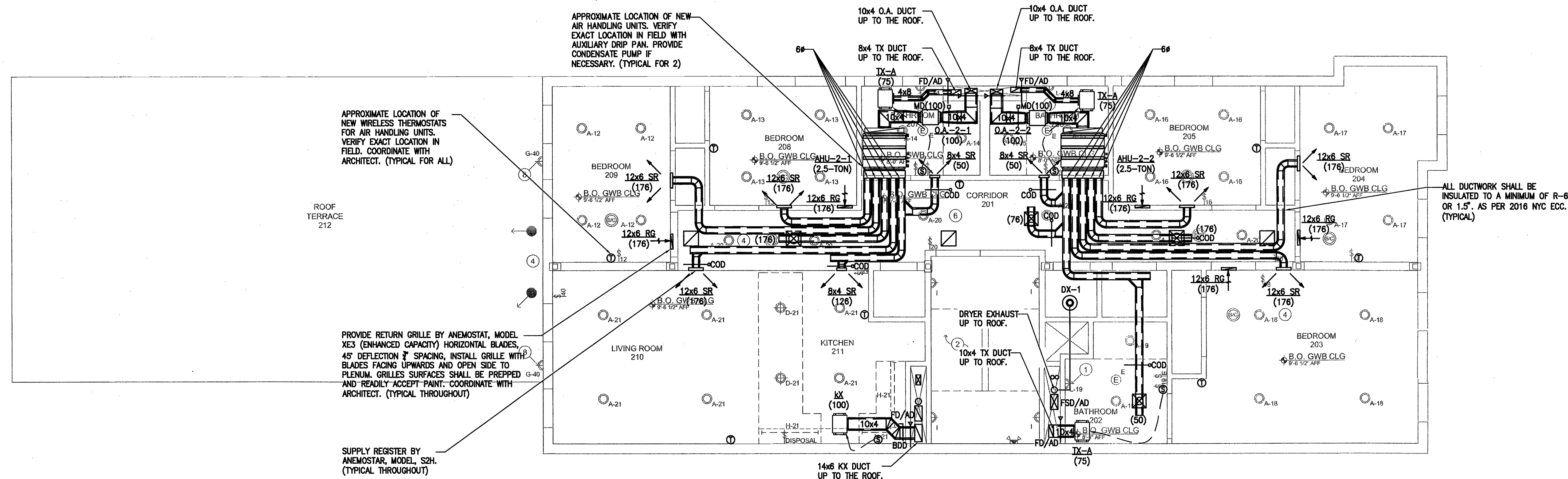


1 1ST FLOOR MECHANICAL INSTALLATION PLAN
SCALE: 1/4" = 1'-0"

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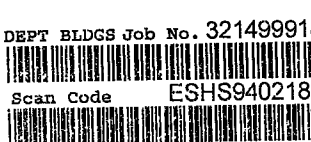
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FEB 03 2017
Rudolf Govic, P.E.



2ND FLOOR MECHANICAL
INSTALLATION PLAN

04 OF 11

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1 2ND FLOOR MECHANICAL INSTALLATION PLAN
SCALE: 1/4" = 1'-0"

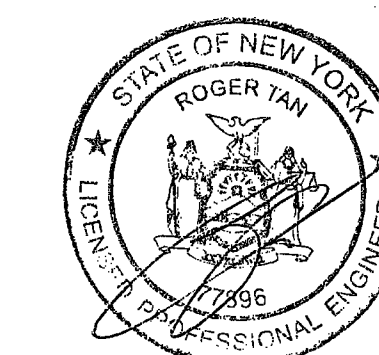
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05 OF 11

Project No.



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3RD FLOOR MECHANICAL INSTALLATION PLAN
SCALE: 1/4" = 1'-0"

ARCH STAMP / SIGNATURES

108-18 Queens Blvd., Suite 1A
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KNICKERBOCKER RENOVATION

628 KNICKERBOCKER AVE.
BROOKLYN, NY 11221

No.	Revision	Date	Description
1	.	09/23/16	ISSUED FOR REVIEW
2	.	11/02/16	ISSUED FOR REVIEW
3	.	11/22/16	ISSUED FOR REVIEW
4	.	12/19/16	DOB FILING
5	.	01/31/17	 FOR PERMIT 2

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PROTECTION ONLY AS PER DIR. 275

FEB 03 2017

Rudolf Govik, P.E.

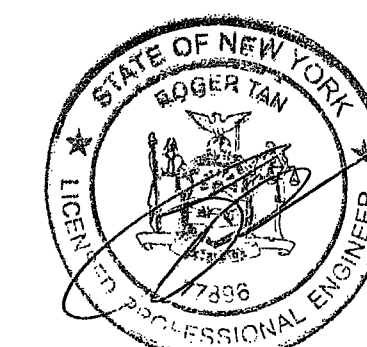
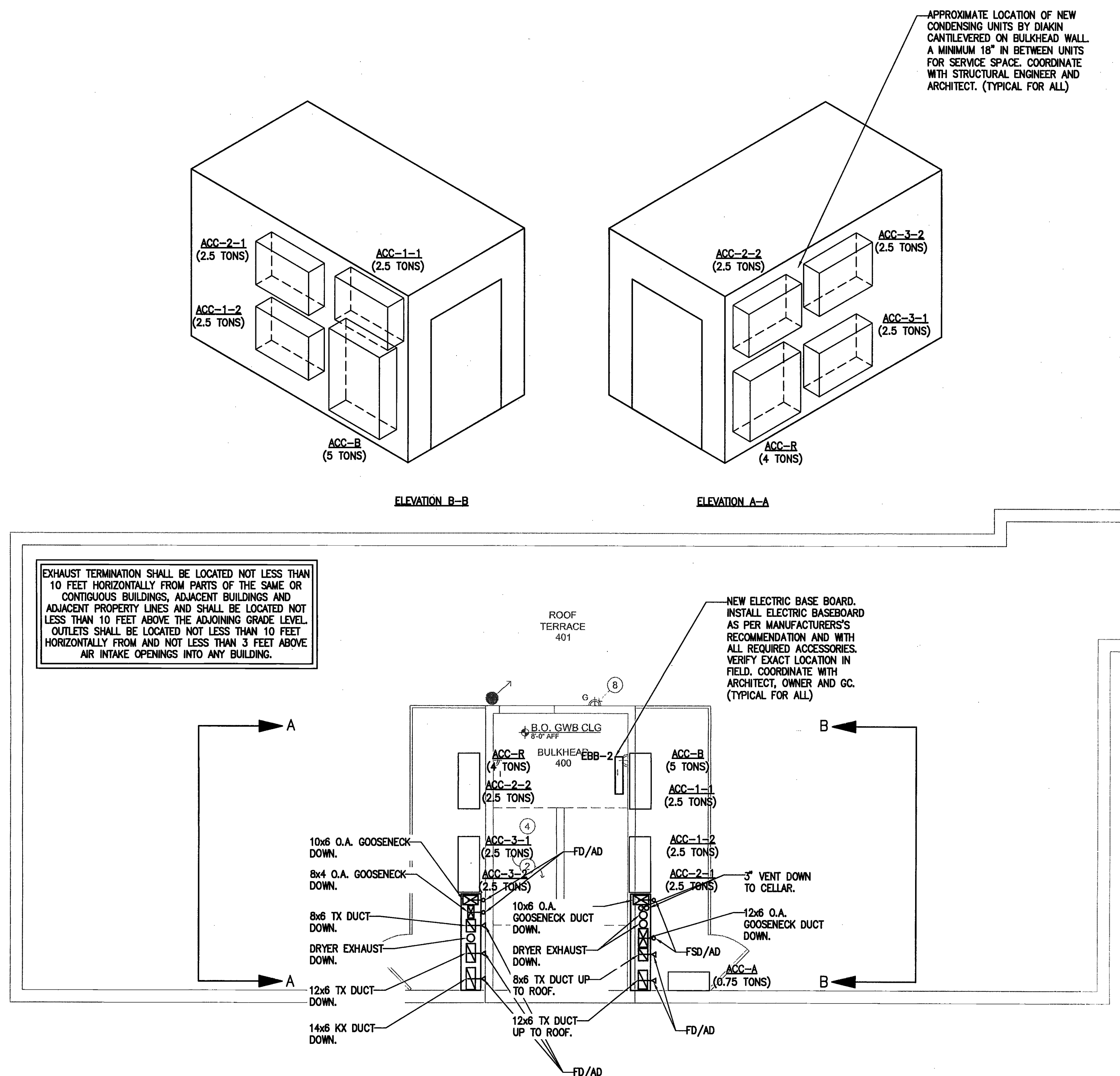
DEPT BLDGS Job No. 321499918

Scan Code ESHS6467783

ROOF LEVEL
MECHANICAL
INSTALLATION PLAN

06 OF 11

M-205.00



NEW YORK CITY BUILDING DEPARTMENT NOTE

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ROOF LEVEL MECHANICAL INSTALLATION PLAN

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

Project No.
60603-KNI

AIR CONDITIONING UNIT SCHEDULE

INDOOR AIR HANDLING UNIT (DAIKIN)										ELECTRICAL DATA (AHU)			OUTDOOR AIR COOLED CONDENSING UNIT										ELECTRICAL DATA (ACC)									
UNIT TAG	LOCATION	SERVICE	EVAP. FAN DATA	TOTAL COOLING (BTUH)	SENSIBLE COOLING (BTUH)	TOTAL HEATING (BTUH)	DIMENSIONS (H x W x D) (INCHES)	WEIGHT (LBS.)	MODEL NUMBER	V/PH/HZ	MCA	MOP	UNIT NUMBER	LOCATION	SERVICE	TOTAL COOLING (BTUH)	TOTAL HEATING (BTUH)	CONDENSER FAN DATA			EFFICIENCY		COMP. DATA			DIMENSIONS (H x W x D)	WEIGHT (LBS)	MODEL NUMBER	V/PH/HZ	MCA	MOP	UL#
			CFM (H)															AMBIENT (°F)	CFM	QTY	SEER	HSPF	QTY	RLA	-							
AHU-C-1	CELLAR	IT ROOM	403	9,000	8,010	9,000	12x31x9	18	FXTN09NMVJU	208/1/60	-	-	ACC-C-1	ROOF	AHU-C-1	9,000	9,000	95	1,243	1	15.0	8.2	1	8.5	-	22x27x12	55	RXN09NMVJU	208/1/60	10.10	15	-
AHU-C-2	CELLAR	CELLAR	1,800	54,000	35,419	60,000	54x22x24	167	FXTQ54PAVJU	208/1/60	3.40	15	ACC-B	ROOF	AHU-C-2 AHU-1-3	57,000	57,000	95	-	2	15.50	10.5	1	23.2	-	53x36x13	225	RXTQ60TAVJU	208/1/60	29.10	35	-
AHU-1-3	1ST FLR	1ST FLR	460	9,500	9,500	10,500	10x34x34	43	FXFQ09PVJU	208/1/60	0.30	-																				
AHU-R	1ST FLR	1ST FLR	1,624	54,000	40,300	60,000	12x56x28	104	FXMQ54PBVJU	208/1/60	3.40	15	ACC-R	ROOF	AHU-R	45,500	49,500	95	-	1	16.0	9.0	1	19.0	-	39x37x13	176	RXTQ48TAVJU	208/1/60	29.10	35	-
AHU-1-1	1ST FLR	1ST FLR	882	30,000	30,000	34,000	12x40x28	80	FBQ30PVJU	208/1/60	2.30	15	ACC-1-1	ROOF	AHU-1-1	30,000	34,000	95	-	1	16.0	9.2	1	16.0	-	31x36x13	150	RZQ30PVJU	208/1/60	16.5	20	-
AHU-1-2	1ST FLR	1ST FLR	882	30,000	30,000	34,000	12x40x28	80	FBQ30PVJU	208/1/60	2.30	15	ACC-1-2	ROOF	AHU-1-2	30,000	34,000	95	-	1	16.0	9.2	1	16.0	-	31x36x13	150	RZQ30PVJU	208/1/60	16.5	20	-
AHU-2-1	2ND FLR	2ND FLR	882	30,000	30,000	34,000	12x40x28	80	FBQ30PVJU	208/1/60	2.30	15	ACC-2-1	ROOF	AHU-2-1	30,000	34,000	95	-	1	16.0	9.2	1	16.0	-	31x36x13	150	RZQ30PVJU	208/1/60	16.5	20	-
AHU-2-2	2ND FLR	2ND FLR	882	30,000	30,000	34,000	12x40x28	80	FBQ30PVJU	208/1/60	2.30	15	ACC-2-2	ROOF	AHU-2-2	30,000	34,000	95	-	1	16.0	9.2	1	16.0	-	31x36x13	150	RZQ30PVJU	208/1/60	16.5	20	-
AHU-3-1	3RD FLR	3RD FLR	882	30,000	30,000	34,000	12x40x28	80	FBQ30PVJU	208/1/60	2.30	15	ACC-3-1	ROOF	AHU-3-1	30,000	34,000	95	-	1	16.0	9.2	1	16.0	-	31x36x13	150	RZQ30PVJU	208/1/60	16.5	20	-
AHU-3-2	4TH FLR	4TH FLR	882	30,000	30,000	34,000	12x40x28	80	FBQ30PVJU	208/1/60	2.30	15	ACC-3-2	ROOF	AHU-3-2	30,000	34,000	95	-	1	16.0	9.2	1	16.0	-	31x36x13	150	RZQ30PVJU	208/1/60	16.5	20	-
NOTES: 1. PROVIDE MANUFACTURER'S RECOMMENDED SERVICE CLEARANCE AROUND ALL UNITS. 2. PROVIDE UNITS WITH THE FOLLOWING ACCESSORIES: A. CONDENSATE PUMP B. LEAK DETECTOR C. DRIP PAN D. DISCONNECT SWITCH E. FILTER BOX F. ALL INDOOR UNITS SHALL BE PROVIDED WITH DZK (DAIKIN ZONING KIT) BY DAIKIN; ZONING BOX WITH CONTROL BOX, MODEL DZK030E5. PROVIDE ALL OTHER ACCESSORIES RECOMMENDED BY MANUFACTURER. COORDINATE WITH MANUFACTURER. G. PROVIDE WIRELESS T-STAT BY DAIKIN, DZK-ZTS-1-W. PROVIDE ALL OTHER ACCESSORIES RECOMMENDED BY MANUFACTURER. COORDINATE WITH MANUFACTURER. H. ALL INDOOR UNITS SHALL BE PROVIDED WITH NAVIGATION REMOTE CONTROLLER BY DAIKIN. PROVIDE ALL OTHER ACCESSORIES RECOMMENDED BY MANUFACTURER. COORDINATE WITH MANUFACTURER. I. PROVIDE DAIKIN VRF CONTROLS AND ALL OTHER ACCESSORIES RECOMMENDED BY MANUFACTURER. COORDINATE WITH MANUFACTURER. 3. PROVIDE ALL OTHER ACCESSORIES RECOMMENDED BY MANUFACTURER.																																

FAN SCHEDULE

FAN TAG NO.	LOCATION	SERVICE	FAN DATA				MOTOR DATA					DIMENSIONS (L" x W" x H")	OPERATING WEIGHT (LBS.)	MANUFACTURER	MODEL NO.
			CFM	FAN SPEED (RPM)	EXTERNAL STATIC (IN. H2O)	BHP/WATTS	MOTOR SPEED (RPM)	V/PH/HZ	STARTER	HP	FLA				
Q.A.-C-1	CEILING CELLAR	FRESH AIR	215	1,573	0.5	-	1,725	115/1/60	AC UNIT	0.1	2.6	16x15x12	49	GREENHECK	SQ-80-VG
Q.A.-1-1	CEILING 1ST FLR	FRESH AIR	75	1,725	0.5	-	1,725	115/1/60	AC UNIT	0.1	2.6	13x12x12	34	GREENHECK	SQ-70-VG
Q.A.-1,2,3-2	CEILING 1ST, 2ND & 3RD FLR	FRESH AIR	50	1,725	0.5	-	1,725	115/1/60	AC UNIT	0.1	2.6	13x12x12	34	GREENHECK	SQ-65-VG
Q.A.-2-1,2	CEILING 2ND & 3RD FLR	FRESH AIR	100	1,272	0.5	-	1,725	115/1/60	AC UNIT	-	-	21x15x15	49	GREENHECK	SQ-97-VG
TX-A	BATHROOMS	BATHROOM	75	800	0.75	-	950	115/1/60	PILOT LIGHT	-	-	24x12x12	12	GREENHECK	SP-B110
KX	KITCHEN	KITCHEN	100	1050	0.75	128 W	1050	115/1/60	PILOT LIGHT	-	-	24x12x12	12	GREENHECK	SP-B150
1. EACH FAN SUSPENDED FROM THE BUILDING STRUCTURE SHALL BE SUSPENDED VIA SPRING VIBRATION ISOLATORS PER MANUFACTURER'S INSTRUCTIONS. SEE SPECIFICATIONS. 2. PROVIDE FACTORY MOUNTED SPEED CONTROLLER. 3. PROVIDE WITH DESIGNER GRILLE. 4. PROVIDE STARTER TYPE INDICATED. 5. PROVIDE EACH FAN WITH DISCONNECT SWITCH.															

DRYER EXHAUST FAN SCHEDULE

FAN NO.	LOCATION	SERVICE	PERFORMANCE DATA		ELECTRICAL DATA			MOTOR DATA	REMARKS
			CFM	EXT. SP (IN. WG)	VOLTS	PHASE	HZ		
DX-1	LAUNDRY	EXHAUST	140	0.5	115	1	60	83 WATTS	SIMILAR TO FANTECH DBF4XLT WITH FANTECH DBLTH SECONDARY LINT TRAP w/ ALL REQUIRED ACCESSORIES

NOTE: PROVIDE WITH FIRESTAT, DISCONNECT SWITCH AND ALL REQUIRED ACCESSORIES

DIFFUSER/GRILLE SCHEDULE

FUNCTION	RANGE	NECK SIZE (IN)/ NO. OF SLOTS	NOMINAL OVERALL DIMEN. WxL (IN.)	REMARKS
SUPPLY	0-75	8"	12x12	
SUPPLY	76-150	10"	24x24	
SUPPLY	151-300	12"	24x24	
SUPPLY	301-500	14"	24x24	
SUPPLY	501-800	16"	24x24	
SUPPLY	AS SHOWN	AS SHOWN	24x24	
CD RETURN	ALL	AS SHOWN	AS SHOWN	
TR SUPPLY	ALL	AS SHOWN	AS SHOWN	
TR RETURN	ALL	AS SHOWN	AS SHOWN	
NOTES:				
1. DIFFUSER AND GRILLE BORDERS SHALL BE COMPATIBLE WITH CEILING TYPE SPECIFIED BY ARCHITECT.				
2. ALL CEILING DIFFUSERS ARE BASED ON ANEMOSTAT EPL-D UNLESS OTHERWISE NOTED.				
3. ALL RETURN AIR GRILLES SHALL BE BASED ON ANEMOSTAT SAC3LD-D WITH CURVED BLADES WITH PERFORATED LIGHT SHIELD.				
4. ALL EXHAUST AIR GRILLES SHALL BE BASED ON ANEMOSTAT S30HD.				

ELECTRIC HEATING ELEMENT SCHEDULE

TYPE	PERFORMANCE DATA			ELECTRICAL DATA				DIMENSIONS		REMARKS
	RM. AIR (°F) DB	LENGTH (FT-IN)	OUTPUT	VOLTS	PHASE	HZ	AMPERES	HEIGHT	DEPTH	
			BTU/H							
EBB-2	65	2'-4"	3,413	208	1	60	4.8	7"	5"	SIMILAR TO BERKO MODEL CPLAM2 w/ ON BOARD THERMOSTAT & ALL REQUIRED ACCESSORIES
EBB-3	65	3'-0"	5,120	208	1	60	7.2	7"	5"	SIMILAR TO BERKO MODEL CPLAM3 w/ ON BOARD THERMOSTAT & ALL REQUIRED ACCESSORIES
EBB-4	65	4'-0"	6,826	208	1	60	9.6	7"	5"	SIMILAR TO BERKO MODEL CPLAM4 w/ ON BOARD THERMOSTAT & ALL REQUIRED ACCESSORIES

NOTE: PROVIDE HEATING ELEMENT ONLY IN SIZE AS SHOWN. PROVIDE ALL ACCESSORIES AS REQUIRED. COORDINATE INSTALLATION WITH ARCHITECT AND GENERAL CONTRACTOR.

BRANCH DUCT SCHEDULE

DUCT SIZE	CFM RANGE
12X6	UP TO 175
14X6	180-245
16X6, 12X8	250-285
18X6	290-335
20X6, 14X8	340-375
16X8	380-435
18X8, 14X10	440-515
20X8, 16X10	520-585
22X8	590-645
24X8, 18X10	650-715
26X8, 20X10	720-825
28X8, 22X10	830-895
32X8, 24X10, 20X12	900-1005
NOTE: THIS SCHEDULE APPLIES TO BRANCH DUCTS TO INDIVIDUAL DIFFERS THAT ARE NOT SIZED ON PLANS.	

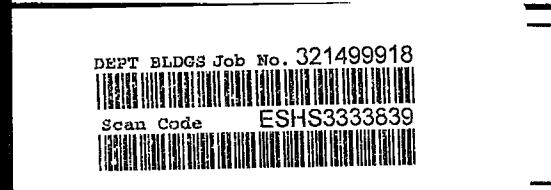
ARCH STAMP / SIGNATURES

KNICKERBOCKER RENOVATION
628 KNICKERBOCKER AVE.
BROOKLYN, NY 11221

No.	Revision	Date	Description
1	-	09/23/16	ISSUED FOR REVIEW
2	-	11/02/16	ISSUED FOR REVIEW
3	-	11/22/16	ISSUED FOR REVIEW
4	-	12/19/16	DOB FILING
5	-	01/31/17	FOR PERMIT 2
-	-	-	-
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EXAMINED FOR ZONING EGRESS AND FIRE PREVENTION ONLY AS PER D.R. 216
FEB 03 2017
Rudolf Garcia, P.E.



MECHANICAL EQUIPMENT SCHEDULES

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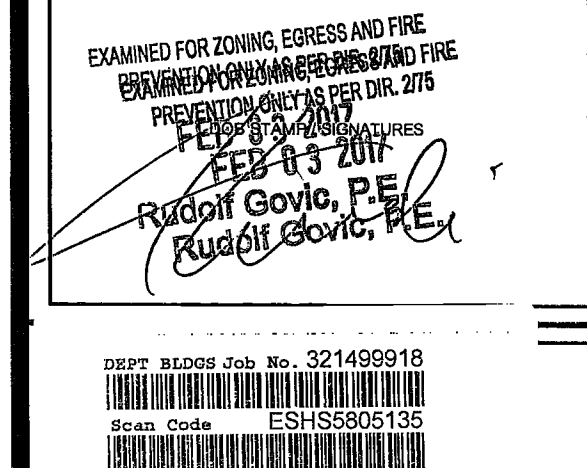
Project No. 160603-KN

ARCH STAMP / SIGNATURES

KNICKERBOCKER
RENOVATION
628 KNICKERBOCKER AVE.
BROOKLYN, NY 11221

No.	Revision	Date	Description
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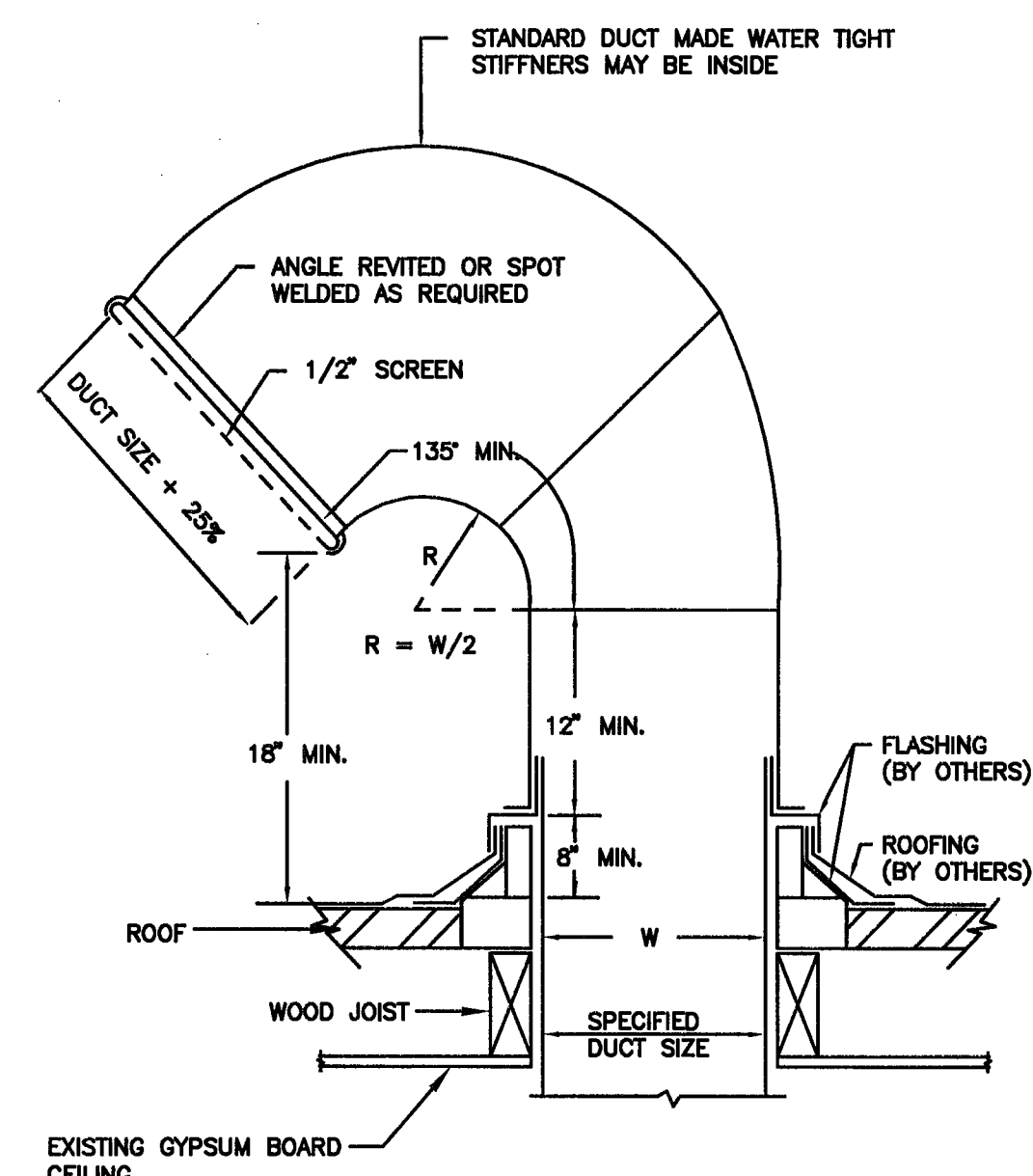
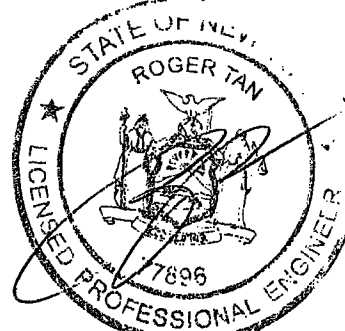
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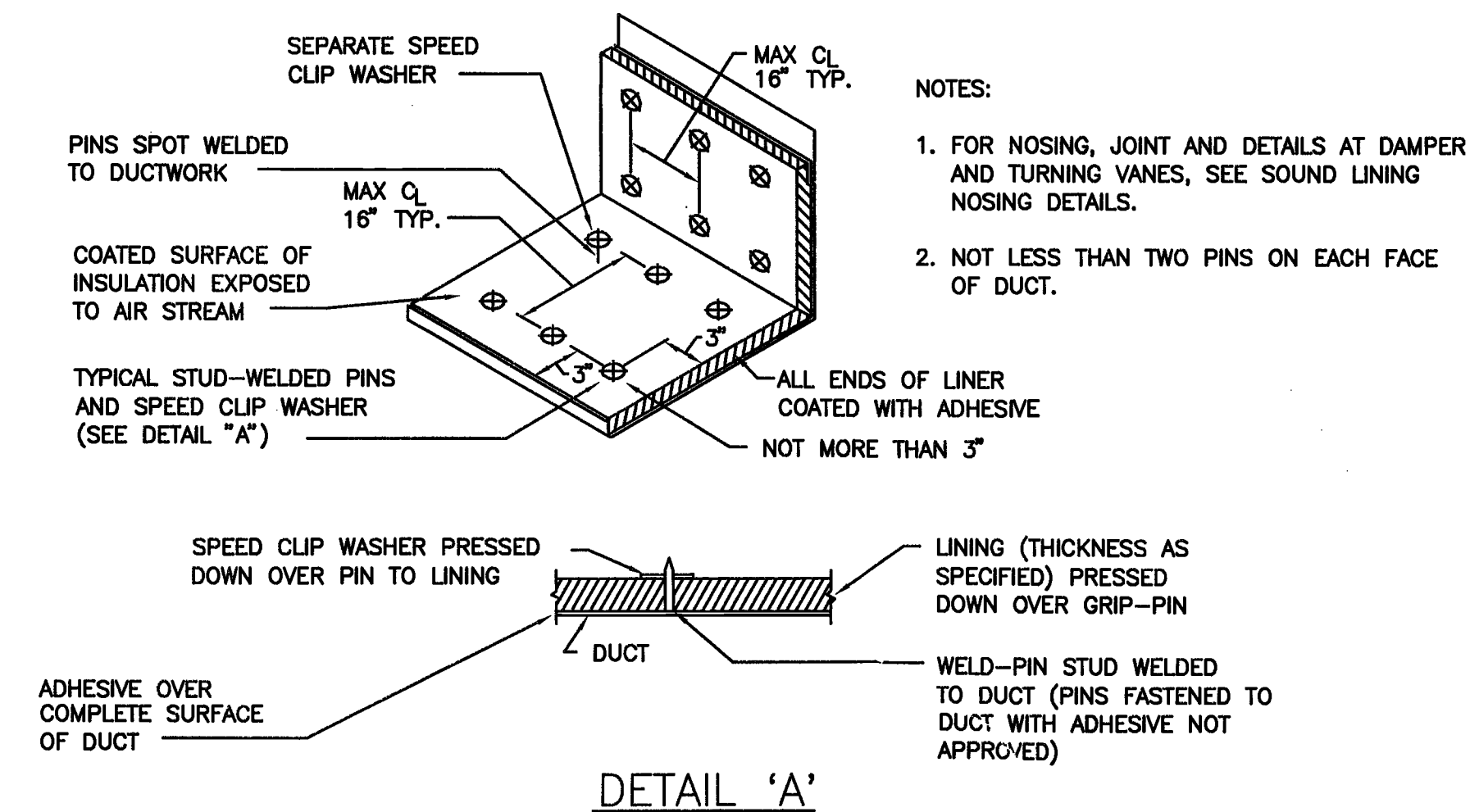
MECHANICAL DETAILS
(SHEET 1 OF 2)

Project No. 1600152-KN
08 OF 11
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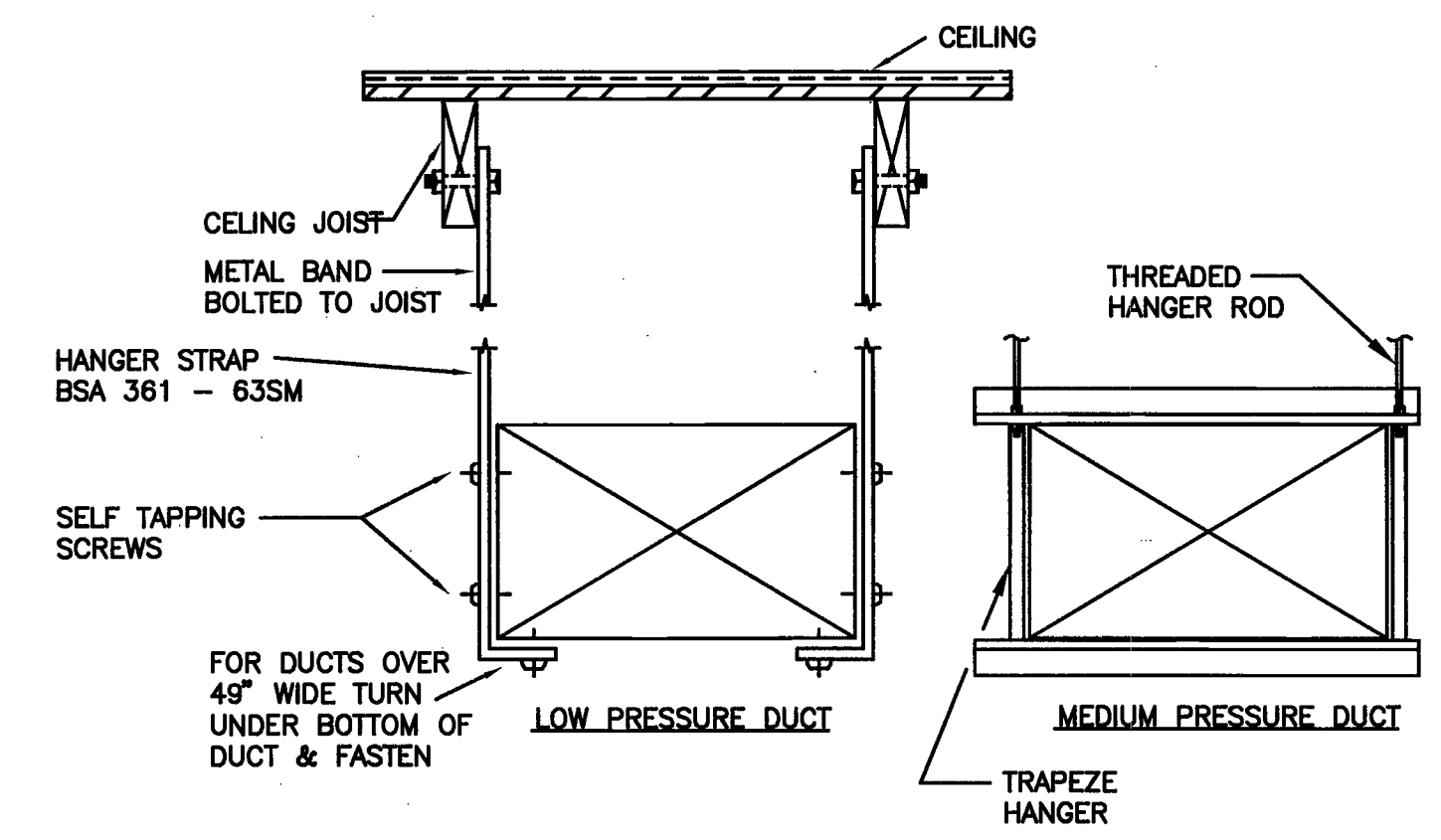
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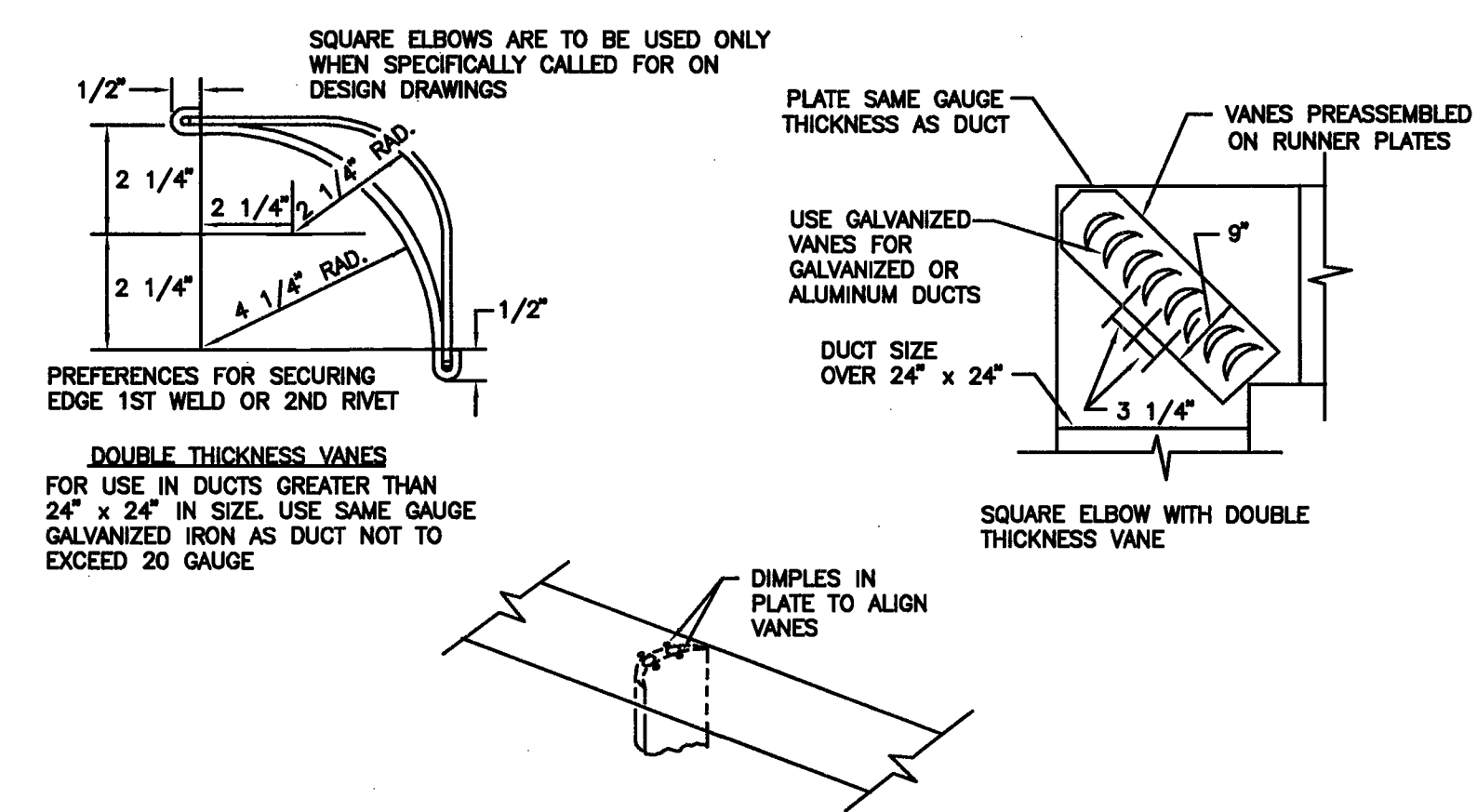
GOOSENECK DETAIL



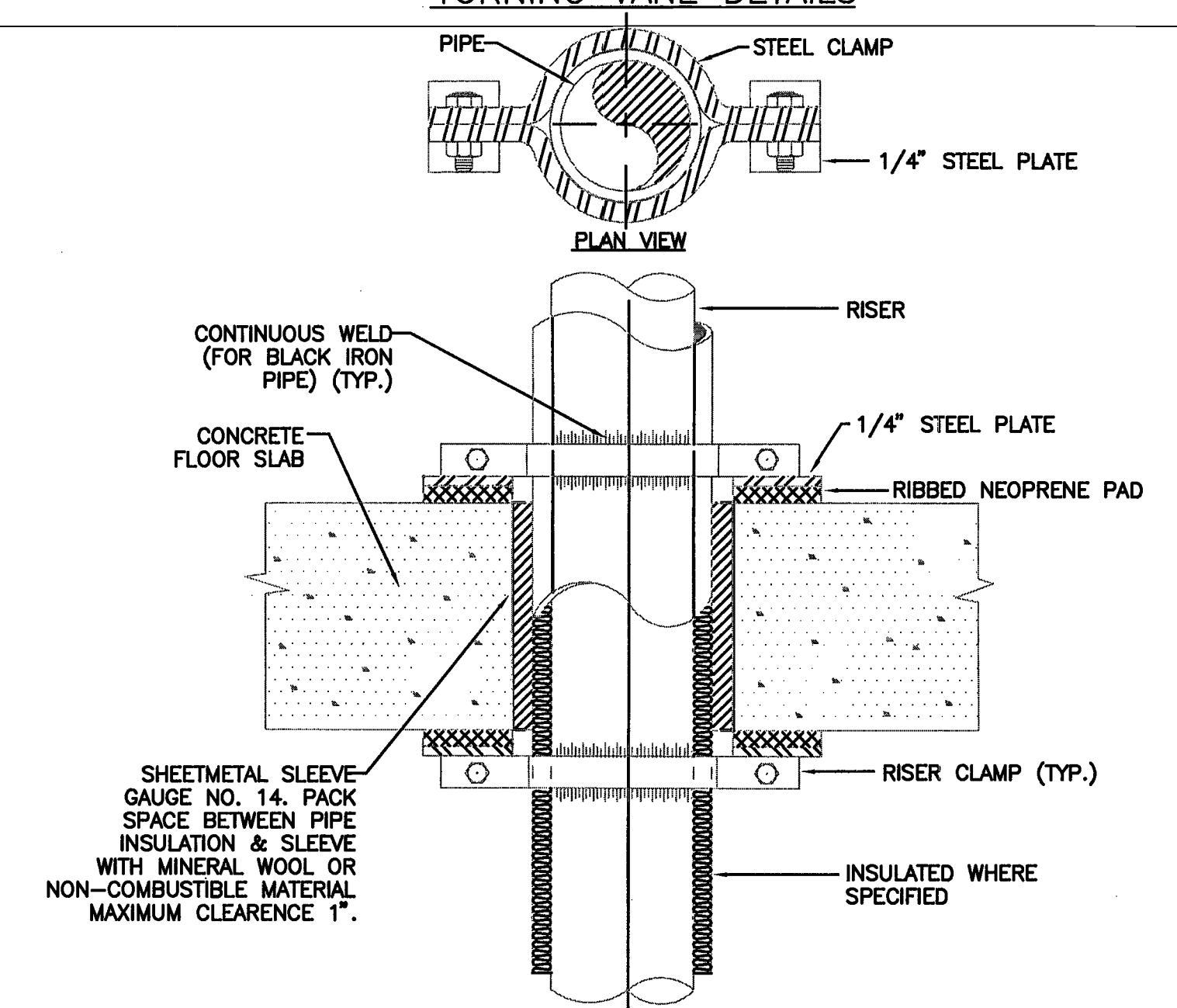
SOUND LINING INSTALLATION DETAIL



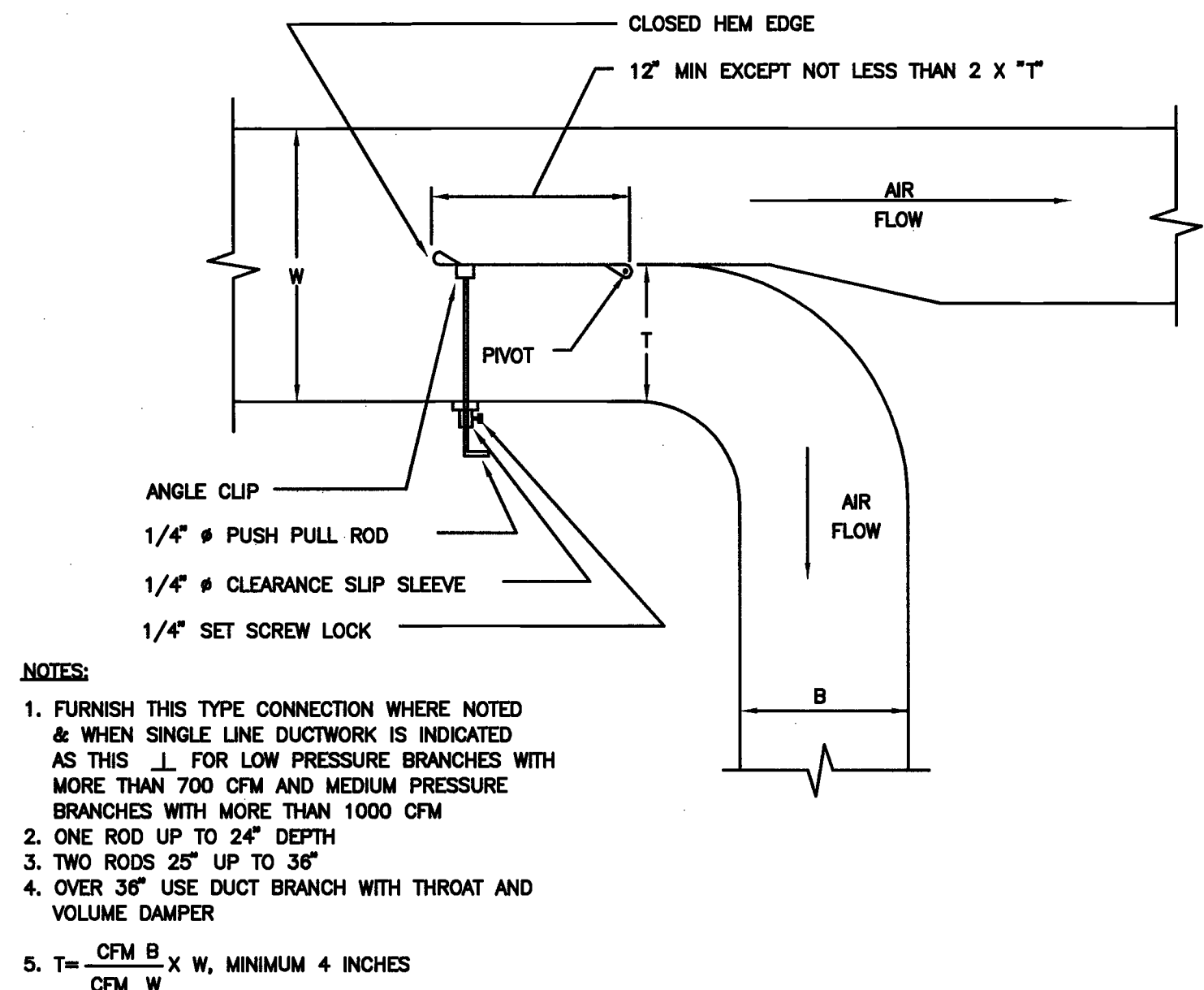
DUCT SUPPORT DETAIL FROM WOOD JOIST



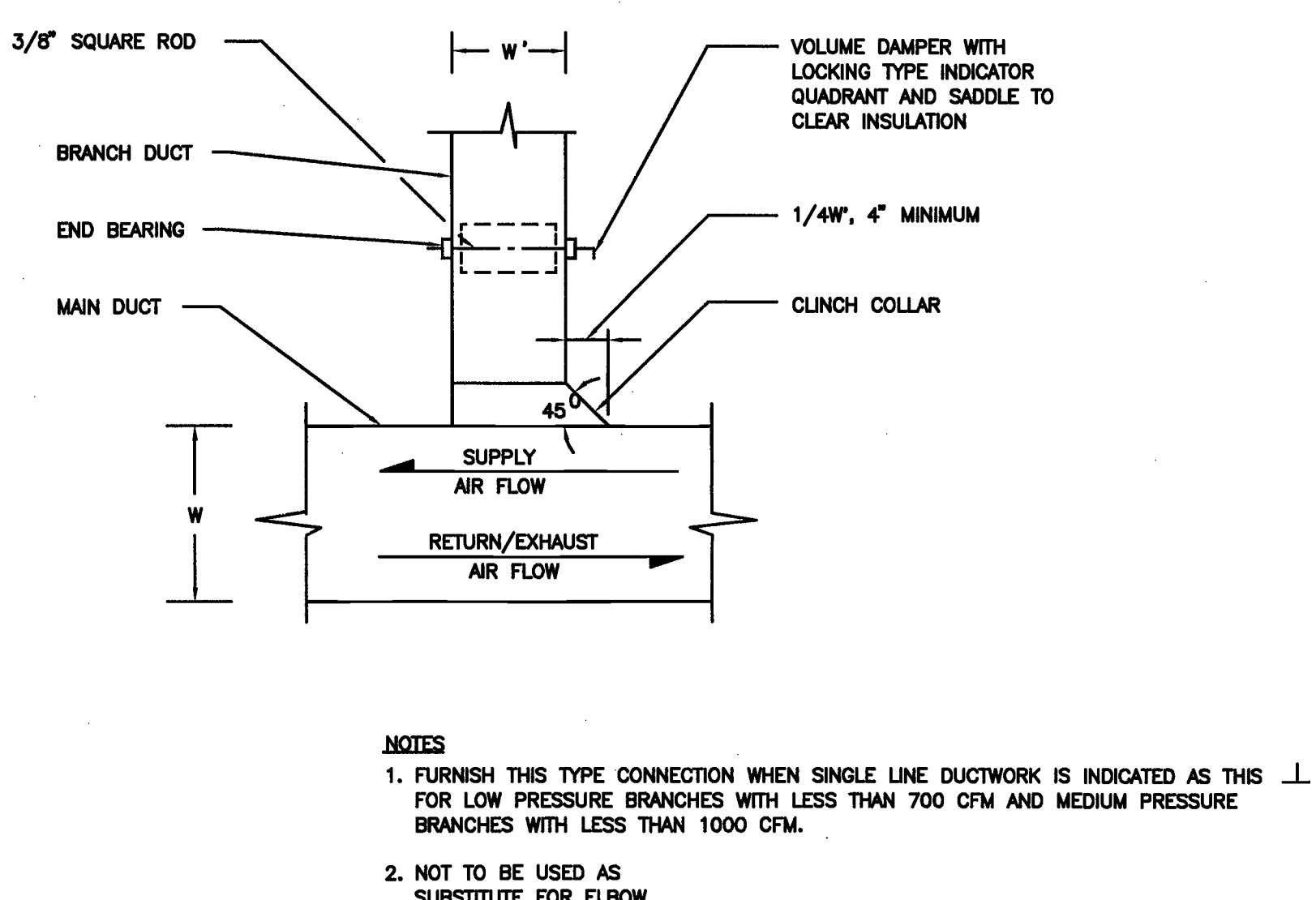
TURNING VANE DETAILS



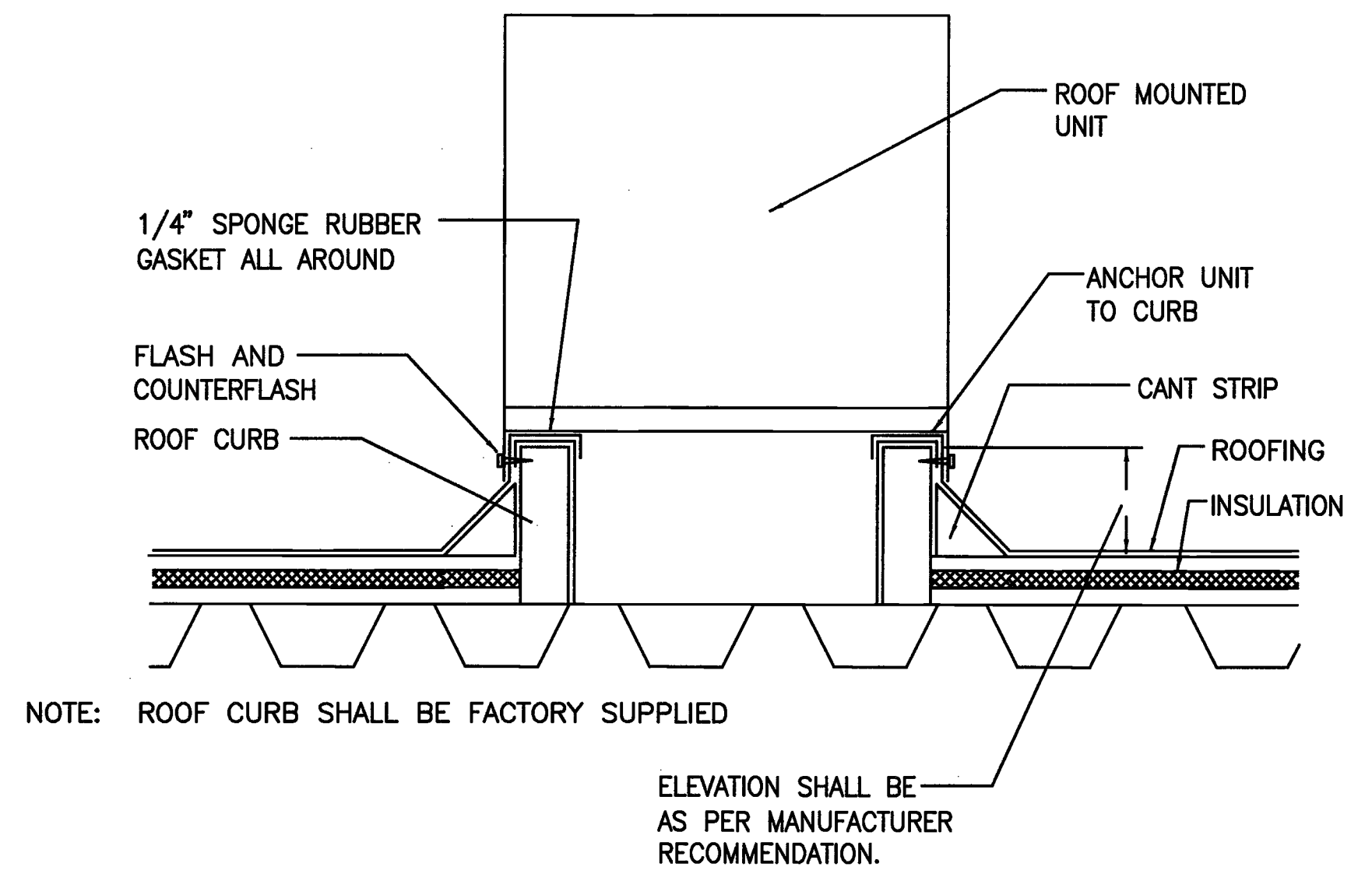
PIPE ANCHOR - (3" & BELOW)



RECTANGULAR DUCT BRANCH WITH THROAT & SPLITTER DAMPER



RECTANGULAR DUCT ANGULAR TAP WITH VOLUME DAMPER



ROOF CURB DETAIL

1. GENERAL

A. THE "GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION," AIA DOCUMENT A201, LATEST EDITION, AND THESE SPECIFICATIONS ARE APPLICABLE ARE PART OF THIS CONTRACT.

B. ALL APPLICABLE CODES, LAWS AND REGULATIONS GOVERNING OR RELATING TO ANY PORTION OF THIS WORK ARE HEREBY INCORPORATED INTO AND MADE A PART OF THESE SPECIFICATIONS, AND THEIR PROVISIONS SHALL BE CARRIED OUT BY THE CONTRACTOR WHO SHALL INFORM THE OWNER, PRIOR TO SUBMITTING A PROPOSAL, OF ANY WORK OR MATERIALS WHICH VIOLATE ANY OF THE ABOVE LAWS AND REGULATIONS. ANY WORK DONE BY THE CONTRACTOR CAUSING SUCH VIOLATION SHALL BE CORRECTED BY THE CONTRACTOR.

C. INVESTIGATE EACH SPACE THROUGH WITH EQUIPMENT MUST BE MOVED. WHERE NECESSARY, EQUIPMENT SHALL BE SHIPPED FROM MANUFACTURER IN SECTIONS OF SIZE SUITABLE FOR MOVING THROUGH AVAILABLE RESTRICTIVE SPACES. ASCERTAIN FROM BUILDING OWNER AT WHAT TIMES OF DAY EQUIPMENT MAY BE MOVED THROUGH ALL AREAS.

D. DUCTWORK AND PIPING IS SHOWN DIAGRAMMATICALLY AND DOES NOT SHOW ALL OFFSETS, DROPS AND RISES OF RUNS. THE CONTRACTOR SHALL ALLOW IN HIS PRICE FOR ROUTING OF DUCTWORK AND PIPING TO AVOID OBSTRUCTIONS. EXACT LOCATIONS ARE SUBJECT TO APPROVAL OF ARCHITECT. COORDINATION WITH THE EXISTING SERVICES, INCLUDING THOSE OF OTHER TRADES IS REQUIRED.

E. SUPPORT ALL DUCTWORK AND PIPING FROM BUILDING STRUCTURE AND/OR FRAMING IN AN APPROVED MANNER. WHERE OVERHEAD CONSTRUCTION DOES NOT PERMIT FASTENING OR SUPPORTS FOR EQUIPMENT, FURNISH ADDITIONAL FRAMING. INSERTS SHALL BE STEEL, SLOTTED TYPE AND FACTORY PAINTED. SINGLE ROD SHALL BE SIMILAR TO GRINNELL FIG. 281. MULTI-ROD SHALL BE SIMILAR TO FEE & MASON SERIES 9000 WITH END CAPS AND CLOSURE STRIPS. MAXIMUM LOADING INCLUDING PIPES, DUCTWORK CONTENTS AND COVERING SHALL NOT EXCEED 75% OF RATED INSERT CAPABILITY. WHEN SUPPORTING FROM BUILDING USE BEAM CLAMPS IN APPROVED MANNER.

F. INSTALL WORK SO AS TO BE READILY ACCESSIBLE FOR OPERATION, MAINTENANCE AND REPAIR. MINOR DEVIATIONS FROM DRAWINGS MAY BE MADE TO ACCOMPLISH THIS, BUT CHANGES WHICH INVOLVE EXTRA COST SHALL NOT BE MADE WITHOUT APPROVAL.

G. REMOVAL AND RELOCATION OF CERTAIN EXISTING WORK WILL BE NECESSARY FOR THE PERFORMANCE OF THE GENERAL WORK. ALL EXISTING CONDITIONS CANNOT BE COMPLETELY DETAILED ON THE DRAWINGS. THE CONTRACTOR SHALL SURVEY THE SITE AND INCLUDE ALL CHANGES IN MAKING UP THE WORK PROPOSAL.

H. PLAN INSTALLATION OF NEW WORK AND CONNECTIONS TO EXISTING WORK TO INSURE MINIMUM INTERFERENCE WITH REGULAR OPERATION OF EXISTING FACILITIES. ALL SYSTEM SHUTDOWNS AFFECTING OTHER AREAS SHALL BE COORDINATED WITH BUILDING OWNER. INSTALL ISOLATION VALVES AT POINT OF CONNECTION TO THE EXISTING PIPING. PROVIDE TEMPORARY DUCT CAPS AND/OR CONNECTIONS TO MINIMIZE SHUTDOWN TIME.

I. CONNECT NEW WORK TO EXISTING WORK IN NEAT AND APPROVED MANNER. RESTORE EXISTING WORK DISTURBED WHILE INSTALLING NEW WORK TO ACCEPTABLE CONDITION AS DETERMINED BY ARCHITECT.

J. DISCONNECT, REMOVE AND/OR RELOCATE EXISTING MATERIAL, EQUIPMENT AND OTHER WORK AS NOTED OR REQUIRED FOR PROPER INSTALLATION OF NEW SYSTEM.

K. THE CONTRACTOR SHALL KEEP ALL EQUIPMENT AND MATERIALS, AND ALL PARTS OF THE BUILDING, EXTERIOR SPACES AND ADJACENT STREETS, SIDEWALKS AND PAVEMENTS, FREE FROM MATERIAL AND DEBRIS RESULTING FROM THE EXECUTION OF THIS WORK. EXCESS MATERIALS WILL NOT BE PERMITTED TO ACCUMULATE EITHER ON THE INTERIOR OR THE EXTERIOR.

L. SEAL OPENINGS AROUND DUCTS AND PIPING THROUGH PARTITIONS, WALLS AND FLOORS (NOT IN SHAFTS) WITH MINERAL WOOL OR OTHER NONCOMBUSTIBLE MATERIAL.

M. PROVIDE ALL NECESSARY FLASHING AND COUNTERFLASHING TO MAINTAIN THE WATERPROOFING INTEGRITY OF THIS BUILDING AS REQUIRED BY THE INSTALLATION OR REMOVAL OF PIPES, DUCTS, LOUVERS, CONDUIT, AND EQUIPMENT. PROVIDE EQUIPMENT CURBS AND DUNNAGE STEEL AS REQUIRED.

N. ALL PRESENT MATERIAL, EQUIPMENT AND CONSTRUCTION DEBRIS TO BE REMOVED UNDER THIS CONTRACT SHALL BECOME THE PROPERTY OF THE CONTRACTOR WITH THE EXCEPTION OF SPECIFIC EQUIPMENT AND APPARATUS REQUESTED BY THE BUILDING REPRESENTATIVE, ARCHITECT OR AS NOTED TO BE RELOCATED ON THE DRAWINGS SHALL BE PROPERLY DISPOSED OF BY THIS CONTRACTOR.

O. MATERIALS AND WORKMANSHIP, UNLESS OTHERWISE NOTED, SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.

P. THE WORK IN THE BUILDING SHALL BE DONE WHEN AND AS DIRECTED, AND IN A MANNER SATISFACTORY TO THE OWNER. THE WORK SHALL BE PERFORMED SO AS TO CAUSE THE LEAST POSSIBLE INCONVENIENCE AND DISTURBANCE TO THE PRESENT OCCUPANTS.

Q. THE CONTRACTOR'S PROPOSAL FOR ALL WORK SHALL BE PREDICATED ON THE PERFORMANCE OF THE WORK DURING REGULAR WORKING HOURS. WHEN SO DIRECTED, HOWEVER, THE CONTRACTOR SHALL INSTALL WORK IN OVERTIME AND THE ADDITIONAL COST TO BE CHARGED THEREFORE SHALL BE ONLY THE "PREMIUM" PORTION OF THE WAGES PAID.

R. UNLESS OTHERWISE SPECIFICALLY SPECIFIED, INCLUDE ALL CUTTING AND PATCHING OF EXISTING FLOORS, WALLS, PARTITIONS AND OTHER MATERIALS IN THE EXISTING BUILDING. THE CONTRACTOR SHALL RESTORE THESE AREAS TO ORIGINAL CONDITION.

S. REMOVABLE ACCESS TILE AND/OR ACCESS DOOR ARE REQUIRED IN HUNG CEILINGS, SHAFTS AND WALLS FOR ALL VOLUME AND FIRE DAMPERS, AUTOMATIC DAMPERS AND ALL OTHER MECHANICAL EQUIPMENT AND DEVICES. HVAC CONTRACTOR TO FURNISH ACCESS LOCATION REQUIREMENTS TO GENERAL CONTRACTOR. ACCESS TILE IDENTIFICATION: PROVIDE BUTTONS, TABS, AND MARKERS TO IDENTIFY LOCATION OF CONCEALED VALVES, DAMPERS AND EQUIPMENT.

T. ALL EQUIPMENT SHALL HAVE AN UL AND/OR BSA NUMBER. THIS INFORMATION MUST BE INCLUDED IN THE SUBMITTAL PACKAGE.

U. ALL MATERIAL AND EQUIPMENT TO BE NEW UNLESS OTHERWISE NOTED AND SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.

V. SUBMISSION OF A PROPOSAL SHALL BE CONSTRUED AS EVIDENCE THAT A CAREFUL EXAMINATION OF THE PORTIONS OF THE EXISTING BUILDING, EQUIPMENT, ETC., WHICH AFFECT THIS WORK, AND THE ACCESS TO SUCH SPACES, HAS BEEN MADE AND THAT THE CONTRACTOR IS FAMILIAR WITH EXISTING CONDITIONS AND DIFFICULTIES THAT WILL AFFECT THE EXECUTION OF THE WORK. LATER CLAIMS SHALL NOT BE MADE FOR LABOR, EQUIPMENT OR MATERIALS REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN DURING SUCH AN EXAMINATION. THE ON-SITE INSPECTION SHALL VERIFY EXISTING DUCTWORK, PIPING (SIZES, CLEARANCES, ETC) AND CONDITIONS.

W. INSURANCE: IN ACCORDANCE WITH BUILDING REQUIREMENTS AND SHALL INCLUDE A HOLD HARMLESS CLAUSE FOR OWNER AND ENGINEER.

X. THE FINAL ACCEPTANCE WILL BE MADE AFTER THE CONTRACTOR HAS ADJUSTED HIS EQUIPMENT, BALANCED THE VARIOUS SYSTEMS, DEMONSTRATED THAT IT FULFILLS THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS AND HAS FURNISHED ALL THE REQUIRED CERTIFICATES OF INSPECTION AND APPROVAL.

Y. SPECIFICATIONS ARE OF SIMPLIFIED FORM AND INCLUDE INCOMPLETE SENTENCES. WORDS OR PHRASES SUCH AS "THE CONTRACTOR SHALL," "SHALL BE," "FURNISH," "PROVIDE," "A," "THE," AND "ALL" HAVE BEEN OMITTED FOR BREVITY.

2. DEFINITIONS:

1) "PROVIDE": TO SUPPLY, INSTALL AND CONNECT UP COMPLETE AND READY FOR SAFE AND REGULAR OPERATION THE PARTICULAR WORK REFERRED TO UNLESS SPECIFICALLY OTHERWISE NOTED.

2) "INSTALL": TO ERECT, MOUNT AND CONNECT COMPLETE WITH RELATED ACCESSORIES.

3) "FURNISH" OR "SUPPLY": TO PURCHASE, PROCURE, ACQUIRE AND DELIVER COMPLETE WITH RELATED ACCESSORIES.

4) "WORK": LABOR, MATERIALS, EQUIPMENT, APPARATUS, CONTROLS, ACCESSORIES AND OTHER ITEMS REQUIRED FOR PROPER AND COMPLETE INSTALLATION.

5) "CONCEALED": EMBEDDED IN MASONRY OR OTHER CONSTRUCTION, INSTALLED IN FURRED SPACES, WITHIN DOUBLE PARTITIONS OR HUNG CEILINGS, IN TRENCHES, IN CRAWL SPACES, OR IN ENCLOSURES.

6) "EXPOSED": NOT INSTALLED UNDERGROUND OR "CONCEALED" AS DEFINED ABOVE.

7) "SIMILAR" OR "EQUAL": EQUAL IN MATERIALS, WEIGHT, SIZE, DESIGN AND EFFICIENCY OF SPECIFIED PRODUCT.

2. SCOPE OF WORK

A. THE WORK UNDER CONTRACT INCLUDES ALL LABOR, MATERIALS AND APPLIANCES NECESSARY FOR THE FURNISHING, INSTALLING AND TESTING, COMPLETE AND READY FOR SAFE OPERATION OF THE SYSTEMS. WORK SHALL BE INSTALLED IN A NEAT, WORKMANLIKE MANNER.

B. THE CONTRACTOR SHALL GIVE NECESSARY NOTICE, FILE DRAWINGS AND SPECIFICATIONS WITH THE DEPARTMENT HAVING JURISDICTION, OBTAIN PERMITS OR LICENSES NECESSARY TO CARRY OUT THIS WORK AND PAY ALL FEES THEREFORE. THE CONTRACTOR SHALL ARRANGE FOR INSPECTION AND TESTS OF ANY OR ALL PARTS OF THE WORK IF SO REQUIRED BY AUTHORITIES AND PAY ALL CHARGES FOR SAME. THE CONTRACTOR SHALL PAY ALL COSTS FOR, AND FURNISH TO THE OWNER BEFORE FINAL BILLING, ALL CERTIFICATES NECESSARY AS EVIDENCE THAT THE WORK INSTALLED CONFORMS WITH ALL REGULATIONS WHERE THEY APPLY TO THIS WORK.

C. THE CONTRACTOR SHALL FURNISH A WRITTEN GUARANTEE TO REPLACE OR REPAIR PROMPTLY AND ASSUME RESPONSIBILITY FOR ALL EXPENSES INCURRED FOR ANY WORKMANSHIP AND EQUIPMENT IN WHICH DEFECTS DEVELOP WITHIN ONE YEAR FROM THE DATE OF FINAL CERTIFICATE FOR PAYMENT AND/OR FROM DATE OR ACTUAL USE OF EQUIPMENT OR OCCUPANCY OF SPACES, BY OWNER, INCLUDED UNDER THE VARIOUS PARTS OF THE WORK, WHICHEVER DATE IS EARLIER. THIS WORK SHALL BE DONE AS DIRECTED BY THE OWNER. THIS GUARANTEE SHALL ALSO PROVIDE THAT WHERE DEFECTS OCCUR, THE CONTRACTOR WILL ASSUME RESPONSIBILITY FOR ALL EXPENSES INCURRED IN REPAIRING AND REPLACING WORK OF OTHER TRADES AFFECTED BY DEFECTS, REPAIRS OR REPLACEMENTS IN EQUIPMENT SUPPLIED BY THE CONTRACTOR.

D. CONTROLLED INSPECTION BY A LICENSED PROFESSIONAL ENGINEER TO BE HIRED BY THIS CONTRACTOR.

E. PRIOR TO THE INSTALLATION OF ANY WORK AND PROCUREMENT OF EQUIPMENT PROVIDE COMPLETE SET OF COORDINATED SHOP DRAWINGS OF ALL NEW AND EXISTING EQUIPMENT, DUCTWORK, PIPING AND CONTROL SYSTEMS INDICATING CAPACITY DIMENSIONS AND SEQUENCE OF OPERATION FOR WRITTEN APPROVAL BY THE ARCHITECT AND ENGINEER.

3. SHOP DRAWINGS

A. INDICATE ON EACH SUBMISSION: PROJECT NAME AND LOCATION, ARCHITECT AND ENGINEER, ITEM IDENTIFICATION AND APPROVAL STAMP OF PRIME CONTRACTOR.

B. SUBMISSIONS:

1) SUBMISSIONS 11 IN. X 17 IN. OR SMALLER: IF THE SUBMISSION IS A CATALOG CUT, THEN THE CONTRACTOR SHALL SUBMIT ONE ORIGINAL AND TWO COPIES. OTHERWISE, HE SHALL SUBMIT THREE COPIES. THE ARCHITECT WILL FORWARD THE ORIGINAL AND ONE COPY (TWO COPIES WHEN NO ORIGINAL IS RECEIVED) TO THE ENGINEER. ALL CATALOG CUTS SHALL BE COMPLETE.

2) SUBMISSIONS LARGER THAN 11 IN. X 17 IN.: SUBMIT TWO PRINTS AND ONE PAPER SEPA TO THE ARCHITECT. THE ARCHITECT WILL FORWARD ONE PRINT AND THE PAPER SEPA TO THE ENGINEER.

C. SUBMIT SHOP DRAWINGS FOR THE FOLLOWING:

- 1) DUCTWORK LAYOUT AND SHEET METAL DESIGNS.
- 2) AIR OUTLETS.
- 3) AIR BALANCE REPORT.
- 4) AC UNITS AND FANS.
- 5) PIPING LAYOUT.
- 6) OPERATING SEQUENCES.
- 7) VIBRATION ISOLATION.
- 8) ELECTRIC DAMPER MOTORS.
- 9) AUTOMATIC CONTROL SYSTEMS AND DEVICES.
- 10) PUMPS.
- 12) EXHAUST FANS

4. AS-BUILTS AND EQUIPMENT OPERATION INSTRUCTIONS

A. ON COMPLETION AND ACCEPTANCE OF WORK, THIS CONTRACTOR SHALL FURNISH WRITTEN INSTRUCTIONS, EQUIPMENT MANUALS AND DEMONSTRATE TO THE OWNER THE PROPER OPERATION AND MAINTENANCE OF ALL EQUIPMENT AND APPARATUS FURNISHED UNDER THIS CONTRACT.

B. THESE INSTRUCTIONS SHALL BE TYPED ON 8-1/2 IN. X 11 IN. PAPER AND BOUND IN THREE-RING BINDERS WITH CLEAR ACETATE COVERS. THE CONTRACTOR SHALL GIVE THREE COPIES OF THE INSTRUCTIONS TO THE OWNER AND ONE COPY TO THE ENGINEER.

C. THE INSTRUCTION BOOKLET SHALL BE ORGANIZED IN SECTIONS, WITH ONE SECTION PER SYSTEM. THE COVER OF THE INSTRUCTION BOOKLET SHALL BEAR THE NAME, ADDRESS AND PHONE NUMBER OF THE PROJECT, ARCHITECT, ENGINEER, MECHANICAL CONTRACTOR AND SUBCONTRACTORS.

D. REPRODUCIBLE "AS-BUILT" DRAWINGS INDICATING AS INSTALLED CONDITIONS SHALL BE PROVIDED TO THE ARCHITECT AFTER COMPLETION OF THE INSTALLATION.

5. SHEET METAL WORK

A. EXCEPT AS OTHERWISE SHOWN OR NOTED, ALL DUCTWORK AND OTHER SHEET METAL WORK SHALL BE GALVANIZED SHEET STEEL AND SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION, INC. DUCT CONSTRUCTION STANDARDS, PRESSURE CLASSIFICATION 2 IN. W.G.

B. VOLUME DAMPERS: GALVANIZED STEEL, PER SMACNA "LOW VELOCITY MANUAL," EXCEPT PROVIDE BEARING AT ONE END OF DAMPER ROD AND QUADRANT, WITH LEVER AND LOCKSCREW AT OTHER END. FOR INSULATED DUCTS, QUADRANTS MOUNTED ON COLLAR TO CLEAR INSULATION. INSTALL WITH LEVERS ACCESSIBLE.

C. ACCESS DOORS: INSULATED OR UNINSULATED, SAME AS DUCT.

1) PROVIDE MINIMUM 20 IN. X 14 IN. ON MAIN DUCTS, AND 12 IN. X 6 IN. ON BRANCH DUCTS, UNLESS OTHERWISE APPROVED, AT FIRE DAMPERS, AND AT ALL DUCT ACCESSORIES SUCH AS HUMIDIFIERS, DUCT SMOKE DETECTORS, AUTO DAMPERS, AND LOUVERS.

2) ALL ACCESS DOORS TO BE HINGED, WITH LATCH SIMILAR TO VENTLOCK NO. 100.

D. FLEXIBLE CONNECTIONS: NEOPRENE-COATED GLASS FABRIC, 30 OZ PER SQ YD, YD WITH SEWED AND CEMENTED SEAMS, SIMILAR TO VENT FABRICS. PROVIDE WITH METAL COLLARS. ALLOW MINIMUM MOVEMENT OF 1 IN.

E. TURNING VANES: GALVANIZED STEEL SMALL DOUBLE-THICKNESS VANES WITH 2 IN. INSIDE RADIUS.

F. FIRE DAMPERS: UL LISTED, GALVANIZED STEEL CONSTRUCTION, MULTIBLADED TYPE, SPRING LOADED, EQUIPPED WITH FUSIBLE LINK, CONFORMING TO NFPA STANDARD 90A AND APPROVED BY NEW YORK CITY BOARD OF STANDARDS AND APPEALS FOR NYC CAL-100-65-SM. SIMILAR TO AIR BALANCE MODEL 319-P, RATED AS REQUIRED. SEE INSTALLATION ON DRAWING.

G. ALL DUCT DIMENSIONS INDICATED ON PLANS ARE INSIDE CLEAR DIMENSIONS.

H. AUTOMATIC DAMPERS: COMPLETE WITH LINKAGE AND ELECTRIC OPERATOR, OPPOSED BLADE DAMPER OR GALVANIZED STEEL MIN. 4 IN., MAX. 8 IN. WIDE WITH COMPRESSIBLE EDGE SEALS TO PREVENT LEAKAGE, FACTORY-ASSEMBLED STEEL LINKAGE AND SHAFT WITH NYLON OR OIL-IMPREGNATED BRONZE BEARINGS. MOTOR WITH SUFFICIENT POWER TO LIMIT LEAKAGE TO 10 CFM PER SQ FT. LINKAGE TO WITHSTAND LOAD EQUAL TO TWICE MAXIMUM OPERATING FORCE WITHOUT DEFLECTION. DAMPER MOUNTED IN WELDED STEEL CHANNEL FRAME.

I. EXTERIOR LOUVERS: 4 IN. WIDE STATIONARY LOUVER, EXTRUDED ALUMINUM, 0.081 IN. WALL THICKNESS, 6063T5 ALLOY BLADES AND FRAME WITH STAINLESS STEEL OR ALUMINUM FASTENERS. LOUVER TO INCORPORATE STRUCTURAL SUPPORT TO WITHSTAND WIND LOAD OF 20 LBS PER SQ FT. PROVIDE REMOVABLE 3/4 IN. X 3/4 IN. ALUMINUM BIRDSCREEN IN AN ALUMINUM FRAME. AIR PERFORMANCE AND WATER PENETRATION LESS THAN OR EQUAL TO RUSKIN MODEL ELF-375 (TO BE APPROVED BY BUILDING MANAGEMENT).

J. ALUMINUM DUCTWORK: ALL OUTSIDE AIR, EXHAUST, AND RELIEF DUCTWORK WITHIN 5 FT OF LOUVERS SHALL BE ALUMINUM WITH SEAMS SEALED WATERTIGHT WITH ALCOA ALUMINASTIC TYPE C SEAM SEALER OR SOLDER. PITCH DUCTWORK TOWARDS LOUVER.

K. WIRE MESH SCREEN (WMS): NO. 16 USSG, 3/4 SQUARE MESH, IN 1 IN. WIDE GALVANIZED STEEL ENCLOSING FRAME. FLANGED DUCT OPENING TO RECEIVE FRAME.

L. LOW PRESSURE FLEXIBLE DUCT: SHALL BE A FACTORY FABRICATED HIGH TEMPERATURE COPOLYMER IMPREGNATED GLASS FABRIC, LOCKED TO COLD ROLLED FLAT STEEL SPIRAL. SIMILAR TO WIREMOLD 57. MAXIMUM INSTALLED LENGTH SHALL NOT EXCEED 18 IN.

M. COMBINATION FIRE AND SMOKE DAMPERS: UL LISTED, GALVANIZED STEEL CONSTRUCTION MULTI-BLADED TYPE. EQUIPPED WITH FUSIBLE LINK CONFORMING TO NFPA STANDARD 90A. SIMILAR TO RUSKIN MODEL FSD 60.

6. AIR OUTLETS

A. GENERAL:

1) MARGIN TYPES, COLORS, FINISH AND METHODS OF ATTACHMENT FOR ALL DIFFUSERS, GRILLES AND REGISTERS SHALL BE COORDINATED WITH ARCHITECTURAL CEILING AND WALL DETAILS AND SPECIFICATIONS.

2) FRAME TYPE SUITABLE FOR MOUNTING IN CEILING OR WALL CONSTRUCTION AS INDICATED ON ARCHITECTURAL PLANS.

3) EXACT LOCATION OF ALL AIR OUTLETS AS PER ARCHITECTURAL PLANS.

4) SUITABLE FOR OPERATION AT 20% EXCESS AND 20% LESS THAN NOTED CAPACITY FOR CONSTANT VOLUME SYSTEMS AND AT 20% EXCESS AND 20% LESS THAN NOTED CAPACITY FOR VARIABLE VOLUME SYSTEMS. MANUFACTURER RESPONSIBLE FOR EXAMINING APPLICATION OF EACH OUTLET AND GUARANTEE THAT EACH WILL PROVIDE REQUIRED NC LEVELS AND COMFORT SPACE CONDITIONS WITHOUT DRAFTS THROUGHOUT OPERATING RANGE.

5) ALL REGISTERS AND DIFFUSERS SHALL BE PROVIDED WITH OPPOSED BLADE VOLUME DAMPERS. DAMPER OPERATING LEVERS SHALL BE ACCESSIBLE AT THE FACE OF AIR OUTLETS.

B. SQUARE DIFFUSERS: DIFFUSERS SHALL BE STEEL CONSTRUCTION PAINTED WHITE SIMILAR TO ANEMOSTAT EPL-D SUITABLE FOR THE TYPE OF CEILING.

C. REGISTERS AND GRILLES:

1) RETURN AND EXHAUST REGISTERS: STEEL CONSTRUCTION WITH VOLUME DAMPER. SIMILAR TO ANEMOSTAT S30HD.

2) SUPPLY REGISTERS: ALUMINUM CONSTRUCTION ADJUSTABLE DOUBLE DEFLECTION ALUMINUM AIRFOIL LOUVERS, WITH VOLUME DAMPER. SIMILAR TO ANEMOSTAT S2H. PROVIDE AIR EQUALIZING DEFLECTOR WHERE REGISTER COLLAR DUCT IS LESS THAN 2 FT LONG.

3) TRANSFER GRILLES: STEEL CONSTRUCTION WITHOUT VOLUME DAMPER. SIMILAR TO ANEMOSTAT S30HD.

7. NOISE CONTROL

A. ALL ROOM NC LEVELS SHALL BE 35 OR LESS.

B. PROVIDE SOUNDLINING FOR THE FOLLOWING DUCTWORK:

1) ALL DUCTWORK WITHIN MECHANICAL ROOMS AND NOT LESS THAN 20 FT ON EACH SIDE OF ALL FANS AND AC UNITS.

2) AIR TRANSFER DUCTS.

3) DOWNSTREAM OF ALL VARIABLE AIR VOLUME AND CONSTANT VOLUME BOXES FOR A MINIMUM OF 10 FT.

4) ALL MIXED AIR PLENUMS, EXCEPT WHERE MOISTURE CARRYOVER FROM OUTDOOR AIR LOUVER WILL OCCUR.

5) ALSO WHERE NOTED ON A DRAWING.

C. SOUNDLINING IN DUCTWORK: FIBROUS GLASS, MINIMUM 3 LB DENSITY, 1 IN. THICKNESS, MAXIMUM 0.25 K FACTOR AT 75 DEG F MEAN TEMPERATURE WITH ACRYLIC COATED FINISH FACTORY APPLIED EDGE COATING AND STENCILED IN ACCORDANCE WITH NFPA 90. FLAMESPRAD SHALL BE A MAXIMUM OF 25. LINING SHALL NOT SUPPORT MICROBIAL GROWTH AND SHALL BE TESTED IN ACCORDANCE WITH ASTM C 1071 AND ASTM G21/G22. SIMILAR TO MANVILLE PERMACOTE LINA COUSTIC.

D. ALL SOUNDLINING, ADHESIVES, FACES AND ACCESSORIES TO BE APPLIED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, EXCEPT AS OTHERWISE NOTED.

8. TESTING AND BALANCING

A. AIR BALANCING SHALL BE ACCOMPLISHED BY ADJUSTMENT OF FANS AND BRANCH DAMPERS FOR MAJOR ADJUSTMENTS. ADJUSTMENT OF TERMINAL DAMPERS AND DEVICES SHALL BE FOR TUNE OR MINOR ADJUSTMENT ONLY. THIS SHALL BE DONE TO PERMIT THE LEAST NOISE GENERATION IN THE TERMINAL AREAS AND UTILIZE MINIMUM FAN ENERGY.

B. UPON COMPLETION OF THE INSTALLATION, THE CONTRACTOR SHALL REBALANCE ANY EXISTING PORTIONS OF AIR DISTRIBUTION SYSTEM AND WATER DISTRIBUTION SYSTEM AFFECTED BY THE RENOVATION AND ALSO BALANCE ALL NEW WORK.

C. THE CONTRACTOR SHALL PROVIDE ALL LABOR, PRESSURE GAUGES, FLOW METERS, SHEAVES, AND BELTS REQUIRED TO BALANCE SYSTEMS.

D. BALANCING REPORT SHALL BE PROVIDED ON AABC-TYPE FORMS.

E. FANS, AIR HANDLING UNITS, PUMPS, CHILLERS, HEAT EXCHANGERS AND COILS SHALL BE BALANCED TO WITHIN +5% OF THEIR DESIGN CAPACITIES. ALL OTHER AIR AND WATER QUANTITIES SHALL BE BALANCED TO WITHIN +10% OF THE DESIGN QUANTITIES.

F. BALANCING AND TESTING SHALL BE PERFORMED AND SUPERVISED BY ONE OF THE FOLLOWING INDEPENDENT FIRMS SPECIALIZING IN TESTING AND BALANCING:

1) PRECISION TESTING AND BALANCING, INC.

2) AIR CONDITIONING TEST AND BALANCING CORP.

3) CFM TESTING AND BALANCING CO.

G. THE PERFORMANCE AND CAPACITY OF ALL SYSTEMS AND EQUIPMENT TO BE DEMONSTRATED BY THE CONTRACTOR.

9. INSULATION - GENERAL REQUIREMENTS

A. ALL INSULATION MATERIALS, INCLUDING JACKETS, FACING, ADHESIVE, COATINGS, AND ACCESSORIES ARE TO BE FIRE HAZARD RATED AND LISTED BY UNDERWRITERS LABORATORIES, INC. USING STEINER TUNNEL TEST METHOD FOR FIRE HAZARD. CLASSIFICATION OF BUILDING MATERIALS, STANDARD UL 723 (ASTM E-84), (ASA A2.5-1983). FLAMESPRAD: MAXIMUM 25. FUEL CONTRIBUTED AND SMOKE DEVELOPED: MAXIMUM 50. FLAMEPROOFING TREATMENTS SUBJECT TO DETEIORATION FROM MOISTURE OR HUMIDITY ARE NOT ACCEPTABLE.

B. DEFINITIONS:

1) EXPOSED: INDOOR DUCTS, PIPING OR EQUIPMENT LOCATED IN MECHANICAL EQUIPMENT ROOMS AND IN AREAS WHICH WILL BE VISIBLE WITHOUT REMOVING CEILINGS OR OPENING ACCESS PANELS.

2) CONCEALED: INDOOR DUCTS, PIPING OR EQUIPMENT WHICH IS NOT EXPOSED.

3) OUTDOOR: DUCTS, PIPING OR EQUIPMENT WHICH IS EXPOSED TO THE WEATHER.

10. DUCTWORK INSULATION

A. INSULATE ALL DUCTWORK IN ACCORDANCE WITH INSULATION SCHEDULE EXCEPT AS OTHERWISE NOTED.

INSULATION SCHEDULE - DUCTWORK

SERVICE	LOCATION	THICKNESS	MATERIAL	FINISH
SUPPLY/RETURN	CONCEALED	1.5"	D-1	VAPORSEAL
INTAKE	ALL	2"	D-3	VAPORSEAL
SUPPLY/RETURN	CONCEALED	1.5"	D-1	VAPORSEAL
SUPPLY/RETURN	EXPOSED	1.5"	D-2	VAPORSEAL
EXHAUST	MER EXPOSED	2"	D-3	VAPORSEAL

B. REINSULATE ALL DUCTWORK AND PIPING WHICH IS EXISTING AND DAMAGED DURING CONSTRUCTION OR SHOWN OR REQUIRED TO BE RELOCATED. INSULATE WITH SAME MATERIAL AND THICKNESS.

C. NON-INSULATED DUCTWORK:

1) WHERE SOUNDLINING IS OF MINIMUM THICKNESS SPECIFIED FOR INSULATION, MINIMUM OF R-6 PER 2014 NYC ECC.

2) AIR CONDITIONING SUPPLY AIR DUCTWORK EXPOSED ON GROUND FLOOR, MEZZANINE LEVEL AND CONCOURSE LEVEL, SALES AREA ONLY.

3) AIR CONDITIONING RETURN AIR DUCTWORK EXPOSED IN AIR CONDITIONED SPACES AND INSTALLED IN HUNG CEILINGS WHERE SPACE IMMEDIATELY ABOVE AND BELOW ARE BOTH AIR CONDITIONED.

D. MATERIAL:

1) TYPE D-1: MINIMUM 1-LB DENSITY FIBERGLASS BLANKET, MAXIMUM 0.28 K-FACTOR AT 75 DEG F MEAN TEMPERATURE WITH FACTORY-APPLIED FOIL-SKRIM-KRAFT FACING SIMILAR TO MANVILLE MICROLITE.

2) TYPE D-2: 3 LB. FIBERGLASS BOARD. THE MAXIMUM K FACTOR SHALL BE 0.23 AT 75 DEG F MEAN TEMPERATURE WITH A MINIMUM DENSITY OF 3 LB. THE INSULATION SHALL BE PROVIDED WITH A FACTORY-APPLIED ALL PURPOSE OR ALL SERVICE FACING. THE INSULATION SHALL BE EQUAL TO MANVILLE TYPE 814 SPIN-GLAS AP.

3) TYPE D-3: MINIMUM 6 LB FIBERGLASS BOARD. MAXIMUM 0.22 K-FACTOR AT 75 DEG F MEAN TEMPERATURE WITH FACTORY APPLIED ALL PURPOSE OR ALL SERVICE FACING. SIMILAR TO MANVILLE 817 SPIN-GLAS AP.

E. INSTALLATION:

1) FIBERGLASS BLANKET: 2 IN. LAP STRIPS AT ALL SEAMS. SECURE BOTTOM OF ALL DUCTS OVER 24 IN. WIDE WITH MIN. 2 ROWS OF WELD PINS 12 IN. ON CENTER. SECURE ALL SEAMS WITH FOIL VAPOR BARRIER TAPE AND VAPORSEAL ADHESIVE.

2) FIBERGLASS BOARD: SEAL JOINTS AND BREAKS IN FACING WITH 3 IN. WIDE TAPE TO MATCH FACING AND ADHERE WITH VAPOR SEAL ADHESIVE. APPLY 5 IN. WIDE TAPE AT CORNERS, WELD PINS ON TOP, SIDES AND BOTTOM.

11. PIPING INSULATION

A. INSULATE ALL PIPING IN ACCORDANCE WITH INSULATION SCHEDULE EXCEPT AS OTHERWISE NOTED.

INSULATION SCHEDULE - PIPING

SERVICE	SIZE	THICKNESS	MATERIAL	FINISH
LOW TEMP 40 TO 100 DEG F	UP TO 4"	1"	P-1	VAPORSEAL
REFRIGERANT LIQUID & SUCTION LINES	ALL	1/2"	P-6	VAPORSEAL
FITTINGS & VALVES LOW TEMP 40 TO 100 DEG F	UP TO 4"	1"	P-4	VAPORSEAL F-1
HOT 100 TO 250 DEG F	UP TO 2"	1-1/2"	P-1	---
FITTINGS & VALVES HOT 100 TO 250 DEG F	UP TO 2"	1-1/2"	P-4	F-1

B. PIPING, VALVES AND FITTINGS TO BE INSULATED:

1) LOW TEMPERATURE PIPING SYSTEMS - 40 TO 100 DEG F INCLUDING:

A. CONDENSATE DRAIN PIPING.

2) LOW TEMPERATURE HOT PIPING SYSTEMS - 100 TO 250 DEG F INCLUDING:

A. LOW PRESSURE CONDENSATE RETURN, EXCEPT STEAM TRAPS AND TRAP ASSEMBLY AND RADIATION RUNOUTS CONCEALED IN RADIATION ENCLOSURES.

B. PUMPED CONDENSATE DISCHARGE.

C. MATERIAL:

1) TYPE P-1: MINIMUM 4 LB DENSITY MOLDED FIBERGLASS, MAXIMUM 0.23 K-FACTOR AT 75 DEG F MEAN TEMPERATURE WITH FACTORY-APPLIED FIRE-RETARDANT FOIL-SKRIM-KRAFT FACING. ALL SERVICE JACKET. SIMILAR TO OWENS-CORNING 650 ASJ.

2) TYPE P-3: MINIMUM 4 LB DENSITY MOLDED FIBERGLASS FITTING, MAXIMUM 0.23 K-FACTOR AT 75 DEG F MEAN TEMPERATURE SIMILAR TO EPOLOX HAMFAB MOLDED FITTINGS.

3) TYPE P-4: MINIMUM 1 LB DENSITY FIBERGLASS FITTING INSERTS, MAXIMUM 0.28 K-FACTOR AT 75 DEG F MEAN TEMPERATURE SIMILAR TO MANVILLE HI-LO TEMP INSULATION INSERTS.

4) TYPE P-6: MINIMUM 6 LB MOLDED FOAMED PLASTIC. MAXIMUM 0.27 K-FACTOR AT 75 DEG F MEAN TEMPERATURE. MAXIMUM 0.17 PERMEANCE. SIMILAR TO ARMSTRONG ARMAFLEX II.

D. FINISH:

1) TYPE F-1: FITTING COVER, MOLDED WHITE PVC JACKET, UL CLASS 1, MAXIMUM PERMEANCE 0.05 SIMILAR TO MANVILLE ZESTRON.

2) TYPE F-2: WHITE VAPOR BARRIER COATING WITH 10X10 OR 20X20 MESH WHITE GLASS, POLYESTER OR NYLON CLOTH REINFORCING MEMBRANE, MINIMUM 31 MIL DRY FILM THICKNESS, SIMILAR TO FOSTER TITE-FIT, UL LABEL.

3) TYPE F-4: ALUMINUM JACKETING WITH MINIMUM 0.016 IN. WALL THICKNESS AND LONGITUDINAL JOINTS WITH LOCK SEAMS.

4) TYPE F-6: WHITE FINISHING AND INSULATING CEMENT APPLIED OVER HEXAGONAL WIRE MESH. CEMENT SIMILAR TO KEENE SUPERSLUCK.

E. OUTDOOR PIPING:

1) FOR ALL PIPING, FITTINGS AND VALVES LOCATED OUTDOORS, INCREASE SCHEDULED INSULATION THICKNESS BY A MINIMUM OF 1 IN. AND PROVIDE F-4 FINISH. PROVIDE VAPORSEAL ON ALL OUTDOOR PIPES, VALVES AND FITTINGS SUBJECT TO CONDENSATION.

F. INSTALLATION:

1) BEFORE APPLYING INSULATION ALL PRESSURE AND LEAK TESTS SHALL BE COMPLETED AND APPROVED.

2) ALL INSULATION SHALL BE BUTTED FIRMLY TOGETHER. PROVIDE 2 IN. LAMP STRIPS AT ALL SEAMS SECURED WITH ADHESIVE. USE VAPOR BARRIER TAPE AND VAPORSEAL ADHESIVE WHERE REQUIRED. STAPLES NOT PERMITTED. REFRIGERANT

13. PIPING – GENERAL REQUIREMENTS

A. COMPLETE WITH: PIPE, FITTINGS, VALVES, STRAINERS, MOTORIZED VALVE OPERATORS, STRAINERS, HANGERS, SUPPORTS, GUIDE, SLEEVES, AND ACCESSORIES.

B. ALL ITEMS SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH THE LATEST EDITIONS OF THE FOLLOWING CODES AND STANDARDS:

- 1) AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME).
- 2) AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM).
- 3) AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI).
- 4) MANUFACTURERS STANDARDIZATION SOCIETY OF THE VALVE AND FITTING INDUSTRY (MSS).

C. ALL PRESSURIZED PIPING TO BE TESTED HYDROSTATICALLY TO 150 PSI OR 150% OF OPERATING PRESSURE, WHICHEVER IS GREATER, BUT NEVER EXCEED TEST PRESSURE ANSI B16.1 BASIS. TEST DURATION TO BE 2 HOURS WITH NO PRESSURE CHANGE CORRECTED FOR TEMPERATURE CHANGE. REPAIR OR REPLACE LEAKS OR DEFECTS WITHOUT ADDITIONAL COST.

D. PROVIDE DIELECTRIC FITTINGS WHERE DISSIMILAR METALS ARE TO BE JOINED.

E. PIPE SUPPORTS:

1) PROVIDE ADEQUATE SUPPORT FOR PIPE AND CONTENTS TO PREVENT SAGGING, VIBRATION, OR SWAYING AND ALLOW FOR EXPANSION AND CONTRACTION. PROVIDE SUPPLEMENTAL STEEL AS REQUIRED WHERE STRUCTURE CANNOT SUPPORT POINT LOADS.

2) HORIZONTAL PIPING TO BE SUPPORTED BY FORGED STEEL ADJUSTABLE CLEVIS TYPE HANGER. MAXIMUM SPACING AS FOLLOWS:

A. STEEL 1 IN. AND SMALLER: 7 FT.

B. STEEL 1-1/4 IN. AND LARGER: 10 FT.

C. COPPER 3 IN. AND SMALLER: 7 FT.

D. ADDITIONAL SUPPORTS AT CHANGES IN DIRECTION, RUNOUTS, AND CONCENTRATED LOADS DUE TO VALVES, ETC.

3) VERTICAL PIPING:

A. BASE ELBOW SUPPORT WITH BEARING PLATE ON STRUCTURAL SUPPORT.

B. GUIDES AT EVERY SECOND FLOOR (SPACING NOT TO EXCEED 25 FT).

C. TOP SUPPORT HANGER OR SADDLE IN HORIZONTAL CONNECTION WITH PROVISIONS FOR EXPANSION.

D. INTERMEDIATE STEEL RISER CLAMP SUPPORT BOLTED AND WELDED TO PIPE BEARING ON STRUCTURAL STEEL OR BEARING PLATE AT FLOOR.

14. CONDENSATE DRAIN PIPING

A. PIPE: ASTM B88, HARD DRAWN COPPER TUBING TYPE "L".

B. FITTINGS: SOLDERED JOINT FITTINGS, 95/5 SOLDER.

C. PITCH, EXCEPT AS NOTED:

1) 1 IN. IN 4 FT PREFERRED.

2) 1 IN. IN 8 FT MINIMUM.

D. SWING CHECK VALVES: AT CONDENSATE PUMP DISCHARGE. 300 LB WOG, BRONZE BODY. SOLDER ENDS, REGROUND BRONZE DISC TO BE USED WITH COPPER TUBING. JENKINS FIG. 1222.

15. MOTORS:

A. MOTORS (UNDER HVAC WORK): IN ACCORDANCE WITH NEMA, IEEE AND ANSI C50 STANDARDS:

1) STANDARD EFFICIENCY UNLESS OTHERWISE NOTED.

2) 1.15 SERVICE FACTOR.

3) SQUIRREL CAGE INDUCTION, OPEN DRIPPROOF TYPE, 1750 RPM, NEMA TYPE B INSULATION CLASS, CONTINUOUS DUTY, EXCEPT AS NOTED.

16. MOTOR CONTROLLERS

A. PROVIDED BY HVAC CONTRACTOR AND INSTALLED AND WIRED BY ELECTRICAL CONTRACTOR.

B. NEMA ENCLOSURE, WEATHERPROOF WHERE MOUNTED OUTDOORS.

C. WITH OVERLOAD PROTECTION. COORDINATE ALL MOTOR CONTROLLER TYPES AND SIZES WITH MOTOR TYPES AND SIZES.

D. 1/3 HP AND SMALLER: PROVIDE MANUAL STARTER EXCEPT USE MAGNETIC TYPE WHERE AUTOMATICALLY CONTROLLED.

1) MANUAL TYPE: 2-POLE TOGGLE SWITCH WITH OVERLOAD PROTECTION AND PILOT LIGHT.

E. 1/2 HP AND LARGER: PROVIDE MAGNETIC STARTER:

1) COMBINATION UNFUSED DISCONNECT SWITCH AND MAGNETIC STARTER EXCEPT AS NOTED.

2) OVERLOAD PROTECTION IN EACH PHASE LEG WITH RESET IN ENCLOSURE.

3) HOA SELECTOR SWITCH FOR AUTOMATICALLY OPERATED MOTORS. SAFETY CONTROLS COMMON TO BOTH CONTROLS.

4) RED, GREEN AND AMBER PILOT LIGHTS.

5) SWITCHES: HORSE-POWER-RATED, EXTERNAL PADLOCKING TYPE.

6) HOLDING COILS: 10 WATT, 120 VOLT.

7) CONTACTS: MAIN LINE AND MINIMUM (2) – NORMALLY OPEN, (2) – NORMALLY CLOSED 10 AMP AUXILIARIES, IN ADDITION TO CONTACTS REQUIRED FOR CONTROLS SPECIFIED.

8) CONTROL TRANSFORMER: FOR MOTORS OVER 120 VOLTS, TO STEP DOWN CONTROL VOLTAGE TO 120 VOLTS; OF THE REQUIRED CAPACITY WITH FUSE AND GROUND CONNECTION ON VOLTAGE SIDE.

9) FUSES: SIMILAR TO BUSSMAN.

10) RELAYS: TO SUPPLEMENT AUXILIARY CONTACTS IN CONTROLLER. MINIMUM 10 WATT COIL AND TWO 10 AMP CONTACTS.

11) TERMINALS: SUITABLE FOR CONDUCTORS NOTED AND AS APPROVED.

F. ACCEPTABLE MANUFACTURERS:

1) CUTLER-HAMMER.

2) SQUARE D.

3) ALLEN BRADLEY.

17. SMOKE DETECTORS

A. THE ELECTRICAL CONTRACTOR SHALL SUPPLY DUCT MOUNTED IONIZATION-TYPE SMOKE DETECTORS AND PROVIDE ALL WIRING.

B. THIS CONTRACTOR SHALL INSTALL THE SMOKE DETECTOR IN THE DUCT AS SHOWN ON THE PLANS. THE CONTRACTOR SHALL NOT INSTALL A SMOKE DETECTOR IN A LOCATION WHERE ITS OPERATING RANGE (TYPICALLY 32-100 DEG F) WILL BE EXCEEDED.

C. THE SUPPLY FAN AND ALL ASSOCIATED EQUIPMENT SHALL STOP AND ALL DAMPERS SHALL RETURN TO THEIR "NORMAL" POSITIONS IF PRODUCTS OF COMBUSTION ARE DETECTED. RESET FOR THE SMOKE DETECTOR SHALL BE AT THE FIRE ALARM PANEL (OR FIRE COMMAND STATION).

D. THIS CONTRACTOR SHALL ASSIST THE ELECTRICAL CONTRACTOR IN TESTING THE DUCT-MOUNTED SMOKE DETECTION SYSTEM.

18. EQUIPMENT

A. FANS:

1) GENERAL (APPLIES TO ALL FAN TYPES EXCEPT AS NOTED):

A. PROVIDE CENTRIFUGAL TYPE, NON-OVERLOADING DESIGN EXCEPT AS NOTED WITH MINIMUM CAPACITIES AS NOTED AND WITH CERTIFIED RATINGS BY AMCA. WHEEL SHALL BE FACTORY BALANCED STATICALLY AND DYNAMICALLY. BRAKE HORSEPOWER RATINGS SHALL NOT BE MORE THAN 5 PERCENT ABOVE WHAT IS NOTED ON DRAWINGS. DRIVES SHALL BE MATCHED, MULTIPLE V-BELT DRIVE UNLESS OTHERWISE NOTED WITH MINIMUM CAPACITY OF 1.4 TIMES RATED MOTOR HP. PULLEYS SHALL BE CAST IRON.

B. MOTOR PULLEY SHALL BE VARIABLE PITCH DIAMETER EXCEPT FANS WITH VARIABLE INLET VANES. SUPPLY AND INSTALL ONE FIXED PITCH PULLEY CHARGE AS REQUIRED PER FAN TO BALANCE SYSTEMS. COMPANION SHEAVES SHALL MAINTAIN BELTS PARALLEL. BELT GUARDS SHALL BE IN COMPLIANCE WITH OSHA REGULATIONS AND WITH TACHOMETER OPENING FOR FAN SPEED MEASUREMENTS. MANUFACTURER SHALL PROVIDE REPLACEMENT FIXED PITCHED SHEAVES WHERE NEEDED TO BALANCE SYSTEM.

C. PROVIDE REMOVABLE FLANGED SCREENS AT INLETS OR OUTLETS WHERE NO CONNECTING DUCTWORK IS INDICATED.

D. BEARINGS BALL ROLLER OR TAPER. PROVIDE PRESSURE TYPE LUBRICATING FITTINGS WITH PRESSURE RELIEF FITTINGS EXTENDED TO ACCESSIBLE LOCATIONS. MINIMUM L-10 LIFE RATING; 50,000 HOURS PER AFBMA STANDARD B-10 OR 250,00 HOURS AVERAGE (B-50) LIFE AT MAXIMUM CATALOG RATING.

2) IN-LINE CENTRIFUGAL FANS (ILCF): SHALL HAVE FULL WELDED HOUSING WITH CAM TYPE LEVER ACCESS DOOR, ADJUSTABLE MOTOR BASE, INLET AND OUTLET FLANGES AND BEARINGS OUT OF THE AIR STREAM. SIMILAR TO BARRY BLOWER TUBULAR 8000.

B. AIR HANDLING UNITS:

1) FACTORY FABRICATED VERTICAL DRAW THROUGH AIR HANDLING UNITS SHIPPED IN SIZES SUITABLE FOR MOVING THROUGH AVAILABLE RESTRICTIVE SPACES.

19. AUTOMATIC CONTROLS – GENERAL REQUIREMENTS

A. FURNISH AND INSTALL A COMPLETE ELECTRIC OR ELECTRONIC CONTROL SYSTEM TO PROVIDE TEMPERATURE CONTROL AS SPECIFIED UNDER DESCRIPTION OF OPERATION.

B. WORK SHALL INCLUDE ALL WIRING, CONTROL EQUIPMENT, AND ACCESSORIES NECESSARY TO MAKE THIS SYSTEM COMPLETE. ALL WIRING SHALL BE 24 VOLT. COORDINATE WITH MANUFACTURER FOR INTERCONNECTION WITH CONTROLS INCLUDED IN EQUIPMENT. ALL CONTROL WORK SHALL BE INSTALLED BY HVAC CONTRACTOR.

C. ACCEPTABLE MANUFACTURERS:

1) JOHNSON SERVICE CO.

2) HONEYWELL, INC.

D. OPERATION OF TYPICAL CONTROL SAFETY DEVICES.

1) HOA SUPPLY FAN SWITCHES: SAFETY DEVICES SHALL BE INTERLOCKED WITH "HAND" AND "AUTOMATIC" POSITIONS IN SERIES WITH MOTOR CONTROLLER HOLDING COIL CIRCUIT. INTERLOCKING WITH OTHER FANS AND EQUIPMENT OF SYSTEM SHALL BE THROUGH "AUTOMATIC" POSITION ONLY. "HAND" POSITION SHALL BE FOR MAINTENANCE ONLY.

2) RETURN FAN, TRANSFER FAN, EXHAUST FAN HOA SWITCHES (INTERLOCKED WITH SUPPLY FANS): REMOTE STARTING SHALL BE FROM SUPPLY FAN THROUGH "AUTOMATIC" POSITION ONLY. "HAND" POSITION SHALL BE FOR MAINTENANCE OPERATION ONLY. INTERLOCK THROUGH AUXILIARY CONTACT OF LEAD EQUIPMENT MOTOR CONTROLLER.

3) EXHAUST FANS, SUCH AS GENERAL OR TOILET (OPERATING INDEPENDENTLY): ALL SAFETY DEVICES SHALL BE INTERLOCKED WITH "HAND" AND "AUTOMATIC" POSITIONS IN SERIES WITH MOTOR CONTROLLER HOLDING COIL CIRCUIT. REMOTE STARTING SHALL BE THROUGH AUTOMATIC POSITION ONLY. "HAND" POSITION SHALL BE FOR MAINTENANCE OPERATION ONLY.

4) SAFETY DEVICES FOR ALL SYSTEMS, EXCEPT AS OTHERWISE NOTED BELOW:

A. ONE FREEZE PROTECTION THERMOSTAT PER COIL SECTION, WIRED TO STOP SUPPLY FAN. THERMOSTAT SHALL BE AUTOMATIC RESET TYPE.

B. FOR SYSTEMS OVER 2,000 CFM, A DUCT MOUNTED SMOKE DETECTOR OF THE IONIZATION TYPE LOCATED IN THE SUPPLY DUCT SHALL STOP THE SUPPLY FAN AND ASSOCIATED INTERLOCKED EQUIPMENT SHOULD PRODUCTS OF COMBUSTION BE SENSED.

C. LOW STATIC PRESSURE LIMIT SWITCHES WITH MANUAL RESET SHALL STOP ASSOCIATED SUPPLY FANS WHEN STATIC PRESSURE AT SUPPLY FOR INLET SECTIONS FALLS TO ITS SETTING.

D. DAMPER END SWITCHES SHALL PREVENT OPERATION OF FANS UNTIL DAMPER IS FULLY OPEN. PROVIDE RELAYS SO IT WILL NOT BE NECESSARY TO HOLD START BUTTON UNTIL DAMPER IS FULLY OPEN. PROVIDE DAMPER END SWITCHES ON ALL AUTOMATIC DAMPERS.

E. SEQUENCE:

1) CONSTANT VOLUME SYSTEM:

A. FAN OFF: 7-DAY PROGRAMMABLE T-STAT SIGNALS SUPPLY FANS TO SHUT OFF. INTERLOCKED FANS AND MOTORIZED DAMPERS TO SHUT OFF. OUTSIDE AIR AND RELIEF AIR DAMPERS TO CLOSE AND RETURN AIR DAMPER TO GO TO MAXIMUM OPEN POSITION. COOLING COIL VALVES TO CLOSE (IF APPLICABLE).

B. SUMMER/WINTER OPERATION DETERMINED BY RESETTABLE OUTSIDE AIR THERMOSTAT INITIALLY SET AT 60 DEG F.

C. FAN ON (SUMMER): 7-DAY PROGRAMMABLE T-STAT SIGNALS FANS TO START, CIRCUITS ARE ENERGIZED, MINIMUM OUTSIDE AIR DAMPERS TO OPEN AND RELIEF AIR DAMPERS (IF APPLICABLE) TO OPEN TO MINIMUM POSITION. AFTER DAMPERS ARE FULLY OPEN DAMPER END SWITCHES SHALL START SUPPLY FANS AND THROUGH INTERLOCK FANS TO START.

(1) AS RETURN AIR TEMPERATURE RISES TO THE MAXIMUM OUTDOOR AIR DAMPERS SHALL MODULATE CLOSED TO MAINTAIN SETPOINT. AS RETURN AIR TEMPERATURE RISES COOLING COIL VALVES TO MODULATE OPEN TO MAINTAIN SETPOINT.

D. FAN ON (WINTER): 7-DAY PROGRAMMABLE T-STAT SIGNALS FANS TO START, CIRCUITS ARE ENERGIZED, MINIMUM AND MAXIMUM OUTDOOR AIR DAMPERS TO REMAIN CLOSED. END SWITCHES SHALL START SUPPLY FANS AND THROUGH INTERLOCKS TO START.

(1) AIR TO RECIRCULATE FOR WARM-UP CYCLE.

2) AHU HEATING (UNOCCUPIED):

A. HEATER SHALL BE STARTED AND STOPPED VIA 7-DAY PROGRAMMABLE THERMOSTAT LOCATED ON GROUND LEVEL. UPON DETECTION OF SPACE TEMPERATURE OF 55F AND BELOW (ADJUSTABLE), T-STAT SHALL SIGNAL EVAPORATOR FAN TO START AND ENERGIZE HEAT PUMP. ONCE SPACE TEMPERATURE REACHES 56F AND ABOVE (ADJUSTABLE), T-STAT SHALL DE-ENERGIZE ELECTRIC DUCT HEATER AND EVAPORATOR FAN.

3) OUTSIDE AIR FAN:

A. FAN OPERATION SHALL BE INTERLOCKED WITH EVAPORATOR / COMPRESSOR FANS.

END OF SECTION

ARCH STAMP / SIGNATURES

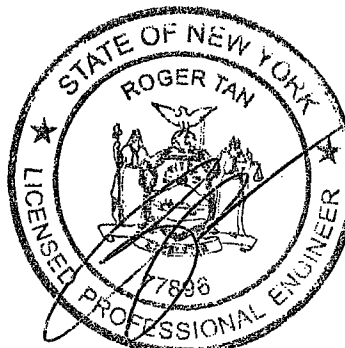
**KNICKERBOCKER
RENOVATION**

628 KNICKERBOCKER AVE.
BROOKLYN, NY 11221

No.	Revision	Date	Description
1	.	09/23/16	ISSUED FOR REVIEW
2	.	11/02/16	ISSUED FOR REVIEW
3	.	11/22/16	ISSUED FOR REVIEW
4	.	12/19/16	DOB FILING
5	.	01/31/17	Δ FOR PERMIT 2
-	-	-	-
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EXAMINED FOR ZONING, EGRESS AND FIRE PREVENTION ONLY AS PER D.B. 2016
DOB STAMP / SIGNATURE
FEB 13 2017
Buddy Govee P.E.
DEPT BLDG&DOB Job No. 3214999-18
Scan Code ESHS17548594



MECHANICAL
SPECIFICATIONS
(SHEET 2 OF 2)

NEW YORK CITY BUILDING DEPARTMENT NOTE
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Project No.
160803-KN1

PLUMBING BASIC SYMBOLS

(NOT ALL SYMBOLS ARE NECESSARILY USED ON THIS PROJECT)

	EXISTING PIPING
	EXISTING PIPING TO BE REMOVED
	PIPING TO BE ABANDONED
	NEW SOIL, WASTE OR SANITARY PIPING
	VENT PIPING (SANITARY)
	PIPING BELOW SLAB (UNDERGROUND/FLOOR BELOW)
	DOMESTIC COLD WATER PIPING
	DOMESTIC HOT WATER PIPING (120°)
	DOMESTIC HOT WATER CIRCULATION PIPING
	PIPING W/FREEZE PROTECTION CABLE & INSULATION
	ARROW INDICATES DIRECTION OF FLOW
	GAS PIPING
	EJECTOR DISCHARGE PIPING
	INDIRECT WASTE PIPING
	SUMP PUMP DISCHARGE PIPING
	STORM WATER DRAINAGE PIPING
	DISCONNECT FROM EXISTING
	CONNECT TO EXISTING
	SHOCK ARRESTOR
	HOSE BIBB
	CLEAN OUT/PLUGGED OUTLET
	CAPPED OUTLET
	CLEAN-OUT DECK PLATE
	P-TRAP
	VACUUM BREAKER
	BOTTOM PIPE CONNECTION
	TOP PIPE CONNECTION
	SIDE CONNECTION
	PIPE DOWN/DROP
	PIPE RISE/UP
	PIPE SLOPE
	VALVE IN VERTICAL
	UNION
	REDUCER
	WATER PROOF SLEEVE
	SLEEVE
	PRESSURE GAUGE W/GAUGE COCK
	TEMPERATURE GAUGE
	FLOOR DRAIN
	PUMP
	METER
	VENT THRU ROOF
	TRAP
	TEMPERATURE AND PRESSURE RELIEF VALVE
	PLUG VALVE
	MIXING VALVE
	RELIEF VALVE
	BALL VALVE
	BALL VALVE W/LOCK SHIELD
	CONTROL VALVE
	GLOBE VALVE
	OUTSIDE SCREW & YOKE (OS & Y) VALVE
	CHECK VALVE
	PRESSURE REDUCING VALVE (PRV)
	SOLENOID VALVE
	Y STRAINER W/BLOW-OFF VALVE
	REDUCED PRESSURE ZONE BACKFLOW PREVENTER ASSEMBLY
	DETECTOR CHECK VALVE ASSEMBLY

PLUMBING ABBREVIATIONS

(NOT ALL ABBREV. ARE NECESSARILY USED ON THIS PROJECT)

AD	AREA DRAIN	IW	INDIRECT WASTE
AFF	ABOVE FINISHED FLOOR	IN	INCH
BLDG	BUILDING	JS	JANITOR'S SINK
BOP	BOTTOM OF PIPE	LAV	LAVATORY
CO	CLEANOUT	MAX	MAXIMUM
CODP	CLEANOUT DECK PLATE	MIN	MINIMUM
CM	COFFEE MAKER	MR	MOP RECEPTOR
CV	CHECK VALVE	(N)	NEW
CVO	CAPPED AND VALVED OUTLET	NC	NORMALLY CLOSED
CW	COLD WATER	NIC	NOT IN THIS CONTRACT
CLG	CEILING	NO	NORMALLY OPEN
CONN	CONNECT	NTS	NOT TO SCALE
CONT	CONTINUATION	OD	OUTSIDE DIAMETER
DIA	DIAMETER	OS&Y	OUTSIDE SCREW & YOKE GATE VALVE
DN	DOWN (PENETRATES FLOOR SLAB)	PC	PLUMBING CONTRACTOR
DR	DRAIN	PD	PUMP DISCHARGE
DWG	DRAWING	PO	PLUGGED OUTLET
(E)	EXISTING	PRV	PRESSURE REDUCING VALVE
EJ DIS	EJECTOR DISCHARGE	PSI	POUNDS PER SQUARE INCH (GAUGE)
EL	ELEVATION	SA	SHOCK ABSORBER
FAI	FRESH AIR INLET	SAN	SANITARY
FD	FLOOR DRAIN	SD	SUMP PUMP DISCHARGE
FU	FIXTURE UNIT	SK	SINK
FL	FLOOR	SQ FT	SQUARE FOOT
FT	FEET	TYP	TYPICAL
GAL	GALLONS	UON	UNLESS OTHERWISE NOTED
GC	GENERAL CONTRACTOR	UP	UP (PENETRATES FLOOR SLAB)
GI	GREASE INTERCEPTOR	UR	URINAL
GPM	GALLONS PER MINUTE	V	VENT
HB	HOSE BIBB	VB	VACUUM BREAKER
HCLG	HUNG CEILING	W	WASTE
HW	HOT WATER	WC	WATER CLOSET
HWR	HOT WATER RETURN	WCO	WALL CLEANOUT
ID	INSIDE DIAMETER		

GENERAL PLUMBING NOTES:

- EACH BIDDER SHALL VISIT THE SITE AND BECOME INFORMED AS TO THE CONDITION OF THE PREMISES AND THE EXTENT AND CHARACTER OF WORK REQUIRED. NO ADDITIONAL COMPENSATION WILL BE APPROVED DUE TO THE FIELD CONDITIONS.
- ALL EXISTING SYSTEM SHALL BE LEFT IN PERFECT WORKING ORDER UPON COMPLETION OF ALL NEW WORK.
- EXACT SIZES AND LOCATIONS OF ALL EXISTING PIPING SHALL BE VERIFIED ON THE SITE.
- NO REMOVED EXISTING PIPING SHALL BE REUSED UNLESS OTHERWISE INDICATED.
- THIS CONTRACTOR SHALL NOT INTERRUPT ANY OF THE SERVICES OF THE EXISTING BUILDING NOR INTERFERE WITH THE SERVICES IN ANY WAY WITHOUT THE EXPRESSED PERMISSION OF THE OWNER. SUCH INTERRUPTIONS AND INTERFERENCES SHALL BE MADE AS BRIEF AS POSSIBLE AND ONLY AT THE SUITED BY THE OWNER.
- UNDER NO CIRCUMSTANCES WILL THIS CONTRACTOR OR HIS WORKMEN BE PERMITTED TO USE ANY PART OF THE BUILDING AS A SHOP, EXCEPT PART DESIGNATED BY THE OWNER FOR SUCH PURPOSES.
- UNNECESSARY NOISE SHALL BE AVOIDED AT ALL TIMES AND NECESSARY NOISE SHALL BE REDUCED TO A MINIMUM.
- WHERE THE WORK MAKES TEMPORARY SHUT DOWN OF SERVICES UNAVOIDABLE, THEY SHALL BE MADE AT NIGHT OR AT TIMES AS THIS WILL CAUSE THE LEAST INTERFERENCE WITH THE ESTABLISHED OPERATING ROUTINE OF THE BUILDING.
- THIS CONTRACTOR SHALL ARRANGE THE WORK CONTINUOUSLY, INCLUDING APPROVED BY THE ARCHITECT OVERTIME, IF REQUIRED, TO ASSURE THAT SERVICES WILL BE SHUT DOWN AND CUT-INS ONLY DURING THE TIME ACTUALLY REQUIRED TO MAKE THE NECESSARY CONNECTION TO EXISTING WORK.
- THIS CONTRACTOR SHALL GIVE AMPLE WRITTEN NOTICE IN ADVANCE TO THE OWNER OF ANY REQUIRED SHUT DOWNS.
- ANY AND ALL REQUIRED DEMOLITION WORK TO BE PERFORMED ABOVE EXISTING SUSPENDED CEILINGS AND FURRED OUT WALLS SHALL BE DONE AT THE TIME WHEN THE EXISTING CEILINGS AND FURRED OUT WALLS ARE REMOVED BY THE GENERAL CONTRACTOR.
- TO ENSURE CONTINUOUS OPERATION, MAKE ALL NECESSARY TEMPORARY CONNECTIONS BETWEEN NEW AND EXISTING WORK. ALL COST RESULTING FROM TEMPORARY SHUTDOWNS SHALL BE BORNE BY THIS CONTRACTOR.
- PROVIDE DRAIN BIB AT THE BASE OF EACH HOT AND COLD WATER RISER.
- ALL GAS, VENT, HOT WATER CIRCULATION, HOT AND COLD WATER PIPING ARE AT CEILING OR IN HUNG CEILING. EXCEPT IN PIPE SPACES OR OTHERWISE NOTED.
- NO GAS VALVE SHALL BE LOCATED IN HUNG CEILING.
- CONTRACTOR SHALL CHECK AND VERIFY THE EXACT LOCATION OF ALL PIPE PENETRATIONS AND PIPE ELEVATIONS.
- ACCESS DOORS SHALL BE PROVIDED FOR ALL CLEANOUTS, VALVES, FLUSH VALVES, AND ANY OTHER EQUIPMENT AND ACCESSORIES THAT MAY REQUIRED ACCESS FOR MAINTENANCE OR OPERATION WHICH ARE LOCATED BEHIND WALLS AND PARTITIONS OR CONCEALED IN HUNG CEILINGS.
- CONTRACTOR SHALL REFER TO AND COORDINATE WITH OTHER TRADES DRAWINGS FOR WORK OF CONCRETE PADS, HOUSE TRAP PIT AND GREASE TRAP PITS.
- ALL PLUMBING WORK SHALL MEET THE REQUIREMENT OF NYC PLUMBING CODE, AND OTHER AGENCIES AND AUTHORITIES HAVING JURISDICTION.

NEW YORK CITY BUILDING DEPARTMENT PLUMBING NOTES

- PLUMBING SYSTEM AND EQUIPMENT SHALL BE CONSTRUCTED, INSTALLED, AND MAINTAINED IN ACCORDANCE WITH THE 2014 NEW YORK CITY BUILDING CODE.
- ALL PLUMBING WORK SHALL COMPLY WITH CHAPTER 4 OF THE 2014 NEW YORK CITY BUILDING CODE, AND CHAPTERS 1 THROUGH 13 OF THE NEW YORK CITY PLUMBING CODE.
- PROTECTION OF PIPING AS OUTLINED IN SECTION PC305 SHALL BE PROVIDED AS REQUIRED.
- IN GENERAL, PIPING MATERIALS SHALL BE AS PER SECTION PC303.
- CONSTRUCTION AND SPACING OF HANGERS AND SUPPORTS SHALL BE AS DIRECTED IN SECTION PC308.
- WATER SUPPLY SYSTEM SHALL BE AS DIRECTED IN SECTIONS PC801 THROUGH PC 613. VALVES SHALL BE PROVIDED AT RISERS AND ELSEWHERE AS PER SECTION PC806.
- SANITARY MATERIALS, DRAINAGE, SIZING, GRADING, AND OFFSETS SHALL BE AS OUTLINED IN SECTIONS PC701 THROUGH PC715.
- CLEAN-OUTS SHALL BE AS PER SECTION PC708.
- TRAPS SHALL BE AS PER SECTION PC1002.
- VENT MATERIALS, SIZING, GRADING, CONNECTIONS, LOCATIONS AND OFFSETS SHALL BE AS DIRECTED IN SECTIONS PC901 THROUGH PC919.
- SPECIAL AND MISCELLANEOUS PIPING SHALL BE AS DIRECTED IN SECTION PC1201 THROUGH PC1203.

PLUMBING DRAWING INDEX

DRAWING NO.	DRAWING TITLE
P-101.00	PLUMBING COVER SHEET
P-201.00	CELLAR LEVEL & FIRST FLOOR PLUMBING INSTALLATION PLAN
P-202.00	SECOND & THIRD FLOOR PLUMBING INSTALLATION PLAN
P-203.00	ROOF LEVEL PLUMBING INSTALLATION PLAN
P-301.00	DOMESTIC COLD WATER RISER DIAGRAM
P-302.00	SANITARY RISER DIAGRAM
P-303.00	GAS & STORM RISER DIAGRAM
P-401.00	PLUMBING DETAILS (SHEET 1 OF 1)
P-501.00	PLUMBING SPECIFICATIONS (SHEET 1 OF 1)

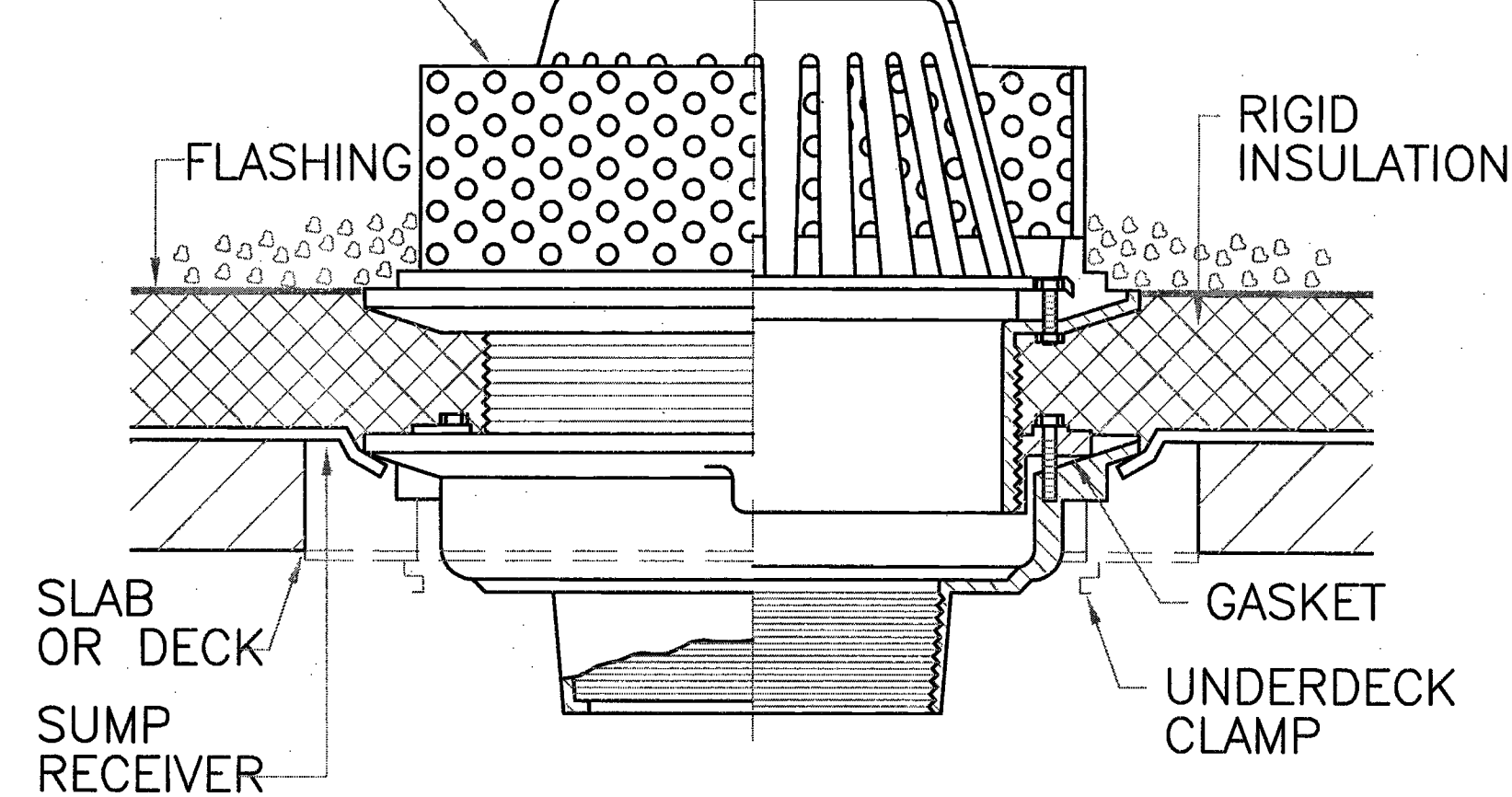
PRESSURE VESSEL AND HEATER SCHEDULE

DESIGNATION	NO. REQUIRED	MANUFACTURER AND MODEL NUMBER	DEFAULT TEMPERATURE (DEG.F)	VOLUME/HEATER (GALS.)	RECOVERY/HEATER (GPH)	TEMPERATURE RISE (DEG.F)	MINIMUM WATER FLOW (G.P.M.)	MIN./MAX. WATER PRESSURE (PSI)	TEST PRESSURE (PSIG.)	DIAMETER (INCHES)	HEIGHT (INCHES)	ELECTRIC/GAS			REMARKS	DRAWING NO.	EFFICIENCY	STAND BY LOSS BTU/HR
												LOAD	PHASE	VOLT				
HWH-1	2	A.O. SMITH BTH-150(A)	140	100	178	100	---	150	---	27 1/2	75 1/2	150 CFH	1	120	PROVIDE EXPANSION TANK SIMILAR TO AMTROL MODEL ST-5		98%	1000
EWH	1	SIMILAR TO A.O. SMITH DEL-6	120	6.0	20	100	---	30/150	---	15	16	5KW	1	208	PROVIDE EXPANSION TANK SIMILAR TO AMTROL MODEL ST-5		98%	

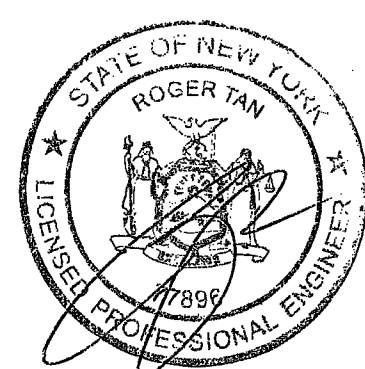
NOTES

- PLUMBING CONTRACTOR SHALL COORDINATE WORK WITH OTHER TRADES.
- VERIFY ALL NEW CONNECTIONS WITH EXISTING.
- CONTRACTOR SHALL COORDINATE DRAINAGE PIPING WITH BASE BUILDING, (UNDERSLAB) WASTE DRAINAGE PIPE WORK AND SLAB WORK.
- CONTRACTOR IS RESPONSIBLE FOR ALL WORK INCLUDED IN CONSTRUCTION DOCUMENTS.
- PROVIDE SHOCK ARRESTOR ON ALL WATER CONNECTION TO ALL APPLIANCES WASHING MACHINES AND FLUSH VALVE WATER CLOSETS.
- PROVIDE APPROVED VACUUM BREAKER AND CONNECTION TO ALL APPLIANCES SUBJECT TO BACKFLOW OR BACK SIPHONING.
- PROVIDE THERMOSTATIC MIXING VALVE WITH INTEGRAL MIXING VALVE WITH INTEGRAL CHECK VALVES SIMILAR TO LEONARD MODEL 220 (1/2") FOR HAND SINKS AND LAVS.
- ALL BRANCH PIPING AND BRANCH VALVES EXPOSED DURING THE PROJECT SHALL BE REPLACED WITH NEW.
- ALL NEW GAS PIPING SHALL BE PRESSURE TESTED.
- ALL WORK SHALL BE PERFORMED BY A LICENSED PLUMBER WHO SHALL SUBMIT PROOF OF LICENSING AND SHALL SECURE ALL PERMITS AND APPROVALS.
- ALL BRANCH WATER, DRAIN AND PLUMBING VENT PIPING SHALL BE REPLACED BACK TO THE RISERS AND WASTE/VENT STACKS. INSTALL NEW ACCESSIBLE BALL SHUT-OFF VALVES AND SWING CHECK VALVES IN HOT AND COLD WATER BRANCH PIPING.
- ALL NEW HOT WATER PIPING ON THIS LEVEL SHALL BE HEAT TRACED AND INSULATED. HEAT TRACING AND WRAP BY OTHERS. INSULATION BY THIS CONTRACTOR. COORDINATE ALL WORK WITH OTHERS.
- COORDINATE ALL SERVICE SHUT DOWNS OF BASE BUILDING SERVICES WITH BUILDING MANAGEMENT.

STAINLESS STEEL PERFORATED GRAVEL STOP WITH 3/8" DIA. OPENINGS



ROOF DRAIN DETAIL
NO SCALE



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BROOKLYN, NY 11221

No.	Revision	Date	Description
1	09/23/16	ISSUED FOR REVIEW	
2	11/02/16	ISSUED FOR REVIEW	
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4	12/19/16	DOB FILING	
5	01/31/17	FOR PERMIT 2	

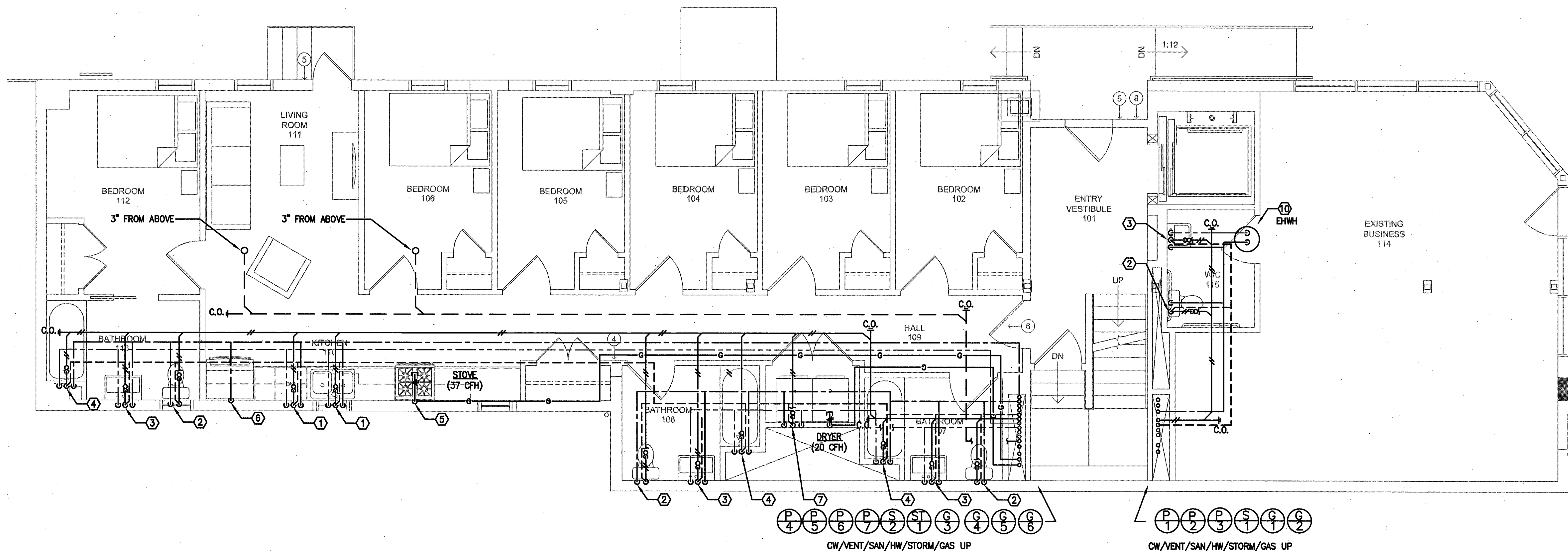
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FEB 03 2017
RUDOLPH GONIG, R.E.

DEPT. BUILDING JOB NO. 321499918
Scan Code 23HS2745873

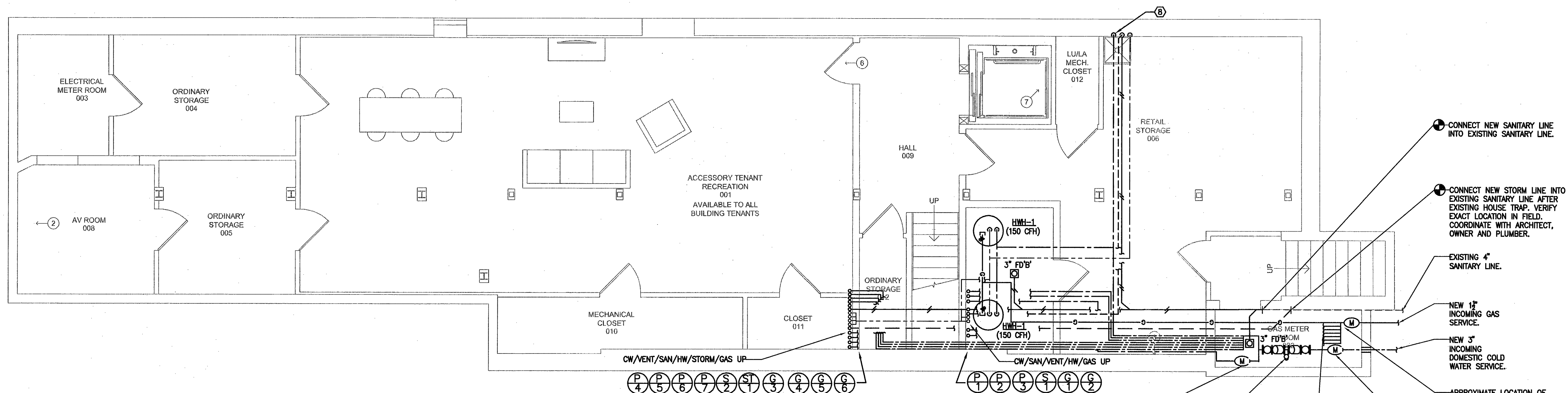
PLUMBING COVER SHEET

Project No. 160603-KN1
P-101.00
01 OF 09



- PLUMBING INSTALLATION SCHEDULE**
1. PROVIDE NEW PIPING FOR SINK & DW (1/2" CW, 1/2" HW, 2" VENT AND 2" WASTE, 3/4" CW/HW FOR DW). PROVIDE SHUTOFF VALVES AS REQUIRED.
 2. PROVIDE NEW PIPING FOR WATER CLOSET (1/2" CW, 2" VENT AND 4" SANITARY). PROVIDE SHUTOFF VALVES AS REQUIRED.
 3. PROVIDE NEW PIPING FOR LAVATORY (1/2" CW, 1/2" HW, 2" VENT AND 2" WASTE). PROVIDE SHUTOFF VALVES AS REQUIRED.
 4. PROVIDE NEW PIPING FOR SHOWER/TUB (1/2" CW, 1/2" HW, 2" VENT AND 2" WASTE). PROVIDE SHUTOFF VALVES AS REQUIRED.
 5. PROVIDE NEW GAS PIPING TO NEW GAS RANGE AND OVEN. PROVIDE FLEXIBLE PIPE AS REQUIRED. CONTRACTOR TO NOTIFY DOB TO INSPECT ALL ALTERED GAS PIPING PRIOR TO CLOSING WALLS AND/OR CEILINGS.
 6. PROVIDE NEW PIPING FOR REFRIGERATOR/ICE MAKER (1/2" CW). PROVIDE SHUTOFF VALVES AND DOUBLE CHECK VALVE BACKFLOW PREVENTER.
 7. PROVIDE NEW PIPING FOR WASHER/DRYER (1/2" CW, 1/2" HW, 2" VENT AND 2" WASTE). PROVIDE SHUTOFF VALVES AND SHOCK SUPPRESSORS AS REQUIRED. PROVIDE CONTAINMENT PAN AND OUTFLOW SENSOR AS PER DETAIL. INSTALL NEW WATER-PROOFING MEMBRANE IN LAUNDRY AREA AS REQUIRED.
 8. PROVIDE NEW PIPING FOR MOP SINK (1/2" CW, 1/2" HW, 2" VENT AND 2" WASTE). PROVIDE SHUTOFF VALVES AS REQUIRED.
 9. PROVIDE NEW PIPING FOR HOSE BIB (1/2" CW). PROVIDE SHUTOFF VALVE AS REQUIRED.
 10. PROVIDE NEW PIPING TO ELECTRIC HOT WATER HEATER (1/2" CW) SIMILAR TO A.O. SMITH MODEL, DEL-6 KW.

2 FIRST FLOOR PLUMBING INSTALLATION PLAN
SCALE: 1/4" = 1'-0"



- 1. CONNECT NEW SANITARY LINE INTO EXISTING SANITARY LINE.
- 2. CONNECT NEW STORM LINE INTO EXISTING SANITARY LINE AFTER EXISTING HOUSE TRAP. VERIFY EXACT LOCATION IN FIELD. COORDINATE WITH ARCHITECT, OWNER AND PLUMBER.
- 3. EXISTING 4" SANITARY LINE.
- 4. NEW 12" INCOMING GAS SERVICE.
- 5. NEW 3" INCOMING DOMESTIC COLD WATER SERVICE.
- 6. APPROXIMATE LOCATION OF NEW GAS METER. VERIFY EXACT LOCATION IN FIELD. COORDINATE WITH ARCHITECT, OWNER AND UTILITY COMPANY.
- 7. APPROXIMATE LOCATION OF MASTER WATER METER. VERIFY EXACT LOCATION IN FIELD. COORDINATE WITH ARCHITECT, OWNER AND UTILITY COMPANY.
- 8. REFER TO GAS RISER DIAGRAM SHEET P-303.00 FOR MORE INFORMATION.

1 CELLAR LEVEL PLUMBING INSTALLATION PLAN
SCALE: 1/4" = 1'-0"

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ARCH STAMP / SIGNATURES

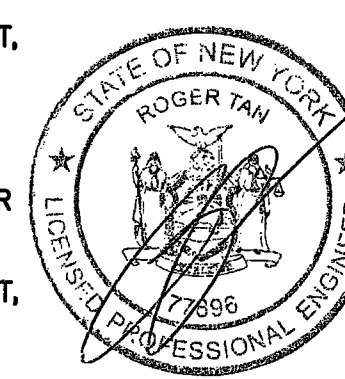
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e: project no. 160132
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KNICKERBOCKER RENOVATION
628 KNICKERBOCKER AVE.
BROOKLYN, NY 11221

No.	Revision	Date	Description
1	09/23/16	ISSUED FOR REVIEW	
2	11/02/16	ISSUED FOR REVIEW	
3	11/22/16	ISSUED FOR REVIEW	
4	12/19/16	DOB FILING	
5	01/31/17	FOR PERMIT 2	

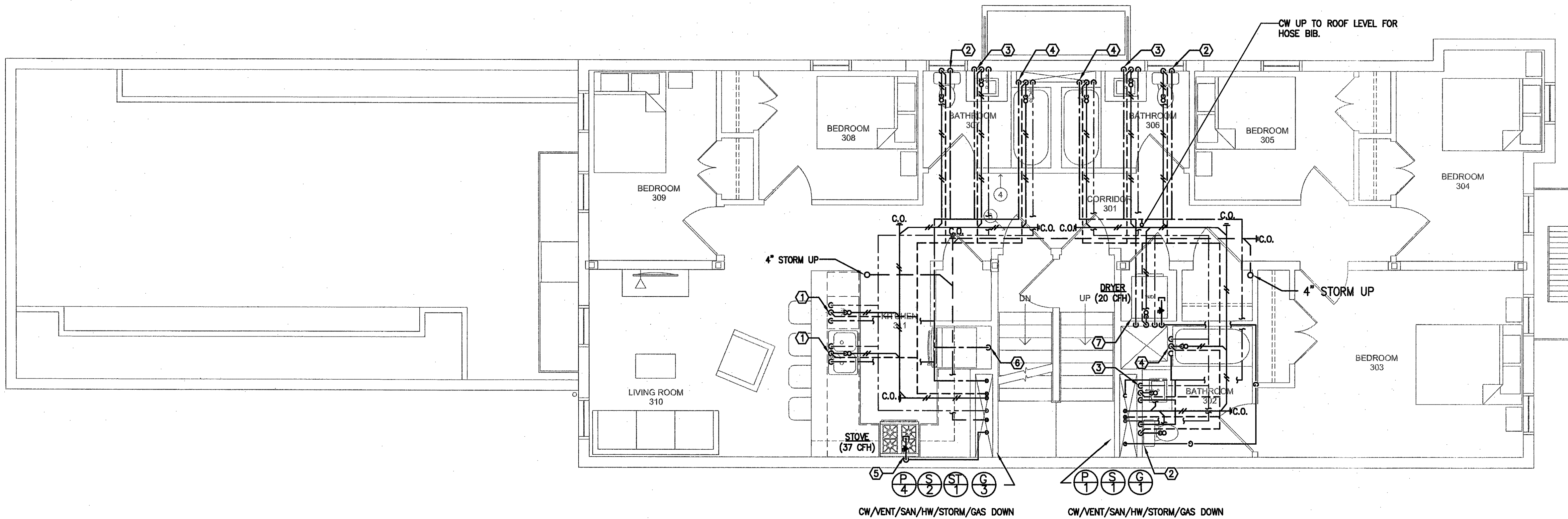
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EXAMINED FOR ZONING, EGRESS AND FIRE PREVENTION ONLY AS PER DIR. 2076
DATE: 01/20/2017
SIGNATURE: *[Signature]*
Rudolf Boyce, P.E.



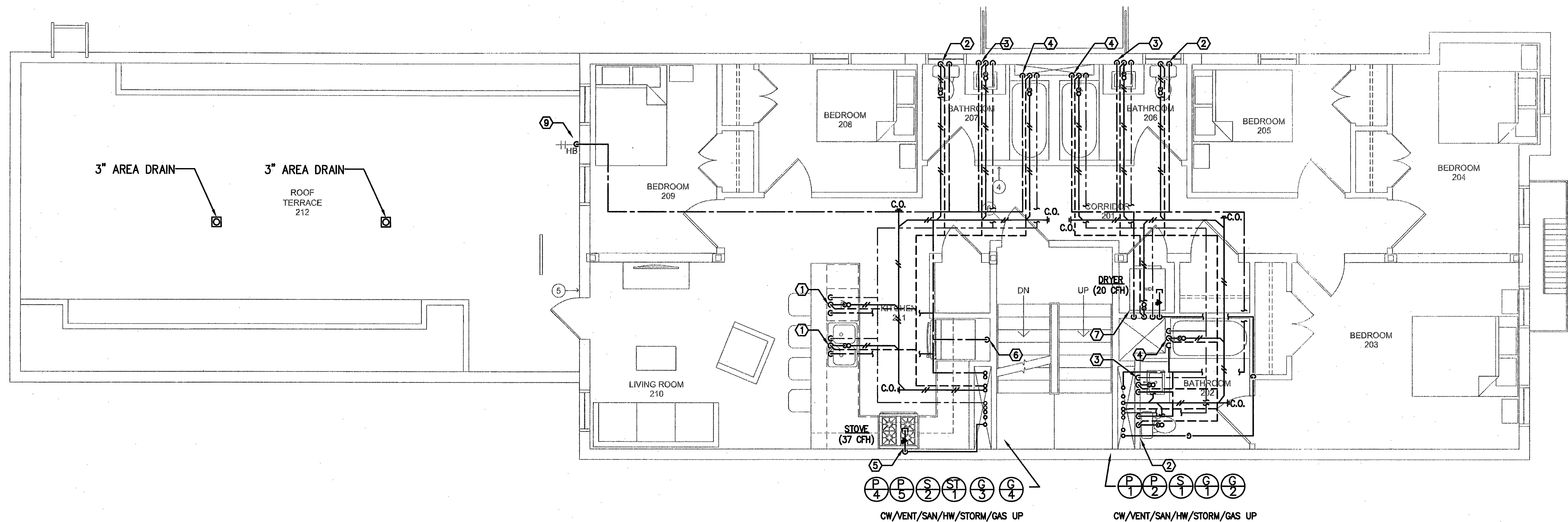
CELLAR LEVEL & FIRST FLOOR PLUMBING INSTALLATION PLAN

Project No. 160603-KN
P-201.00
02 OF 09



2 THIRD FLOOR PLUMBING INSTALLATION PLAN
SCALE: 1/4" = 1'-0"

- PLUMBING INSTALLATION SCHEDULE**
- ① PROVIDE NEW PIPING FOR SINK & DW (1/2" CW, 1/2" HW, 2" VENT AND 2" WASTE, 3/4" CW/HW FOR DW). PROVIDE SHUTOFF VALVES AS REQUIRED.
 - ② PROVIDE NEW PIPING FOR WATER CLOSET (1/2" CW, 2" VENT AND 4" SANITARY). PROVIDE SHUTOFF VALVES AS REQUIRED.
 - ③ PROVIDE NEW PIPING FOR LAVATORY (1/2" CW, 1/2" HW, 2" VENT AND 2" WASTE). PROVIDE SHUTOFF VALVES AS REQUIRED.
 - ④ PROVIDE NEW PIPING FOR SHOWER/TUB (1/2" CW, 1/2" HW, 2" VENT AND 2" WASTE). PROVIDE SHUTOFF VALVES AS REQUIRED.
 - ⑤ PROVIDE NEW GAS PIPING TO NEW GAS RANGE AND OVEN. PROVIDE FLEXIBLE PIPE AS REQUIRED. CONTRACTOR TO NOTIFY DOB TO INSPECT ALL ALTERED GAS PIPING PRIOR TO CLOSING WALLS AND/OR CEILINGS.
 - ⑥ PROVIDE NEW PIPING FOR REFRIGERATOR/ICE MAKER (1/2" CW). PROVIDE SHUTOFF VALVES AND DOUBLE CHECK VALVE BACKFLOW PREVENTER.
 - ⑦ PROVIDE NEW PIPING FOR WASHER/DRYER (1/2" CW, 1/2" HW, 2" VENT AND 2" WASTE). PROVIDE SHUTOFF VALVES AND SHOCK SUPPRESSORS AS REQUIRED. PROVIDE CONTAINMENT PAN AND CUTOFF SENSOR AS PER DETAIL. INSTALL NEW WATERPROOFING MEMBRANE IN LAUNDRY AREA AS REQUIRED.
 - ⑧ PROVIDE NEW PIPING FOR MOP SINK (1/2" CW, 1/2" HW, 2" VENT AND 2" WASTE). PROVIDE SHUTOFF VALVES AS REQUIRED.
 - ⑨ PROVIDE NEW PIPING FOR HOSE BIB (1/2" CW). PROVIDE SHUTOFF VALVE AS REQUIRED.
 - ⑩ PROVIDE NEW PIPING TO ELECTRIC HOT WATER HEATER (1/2" CW) SIMILAR TO A.O. SMITH MODEL, DEL-6 SKW.



1 SECOND FLOOR PLUMBING INSTALLATION PLAN
SCALE: 1/4" = 1'-0"

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www.te-engineering.com

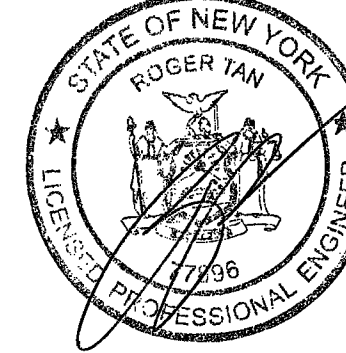
KNICKERBOCKER RENOVATION
628 KNICKERBOCKER AVE.
BROOKLYN, NY 11221

No.	Revision	Date	Description
1		09/23/16	ISSUED FOR REVIEW
2		11/02/16	ISSUED FOR REVIEW
3		11/22/16	ISSUED FOR REVIEW
4		12/19/16	DOB FILING
5		01/31/17	△ FOR PERMIT 2

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EXAMINED FOR ZONING, EGRESS AND FIRE
PROJECT NO. 160603-KN
FEB 03 2017
Gordon Givock, P.E.

DEPT. 212.008 Job No. 321499918
Scan Code ESHS0439736



SECOND & THIRD FLOOR PLUMBING INSTALLATION PLAN

Project No. 160603-KN
P-202.00
03 OF 09

ARCH STAMP / SIGNATURES

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KNICKERBOCKER
RENOVATION

628 KNICKERBOCKER AVE.
BROOKLYN, NY 11221

No.	Revision	Date	Description
1		09/23/16	ISSUED FOR REVIEW
2		11/02/16	ISSUED FOR REVIEW
3		11/22/16	ISSUED FOR REVIEW
4		12/19/16	DOB FILING
5		01/31/17	FOR PERMIT 2
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FEB 03 2017

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DEPT. RECORD Job No. 321499918

ES:150412546

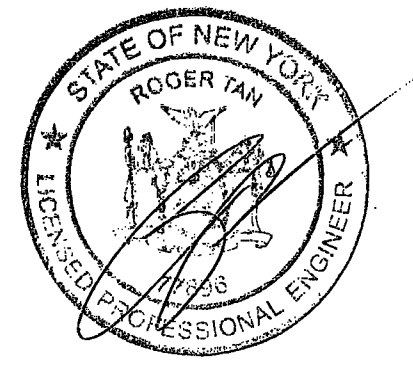
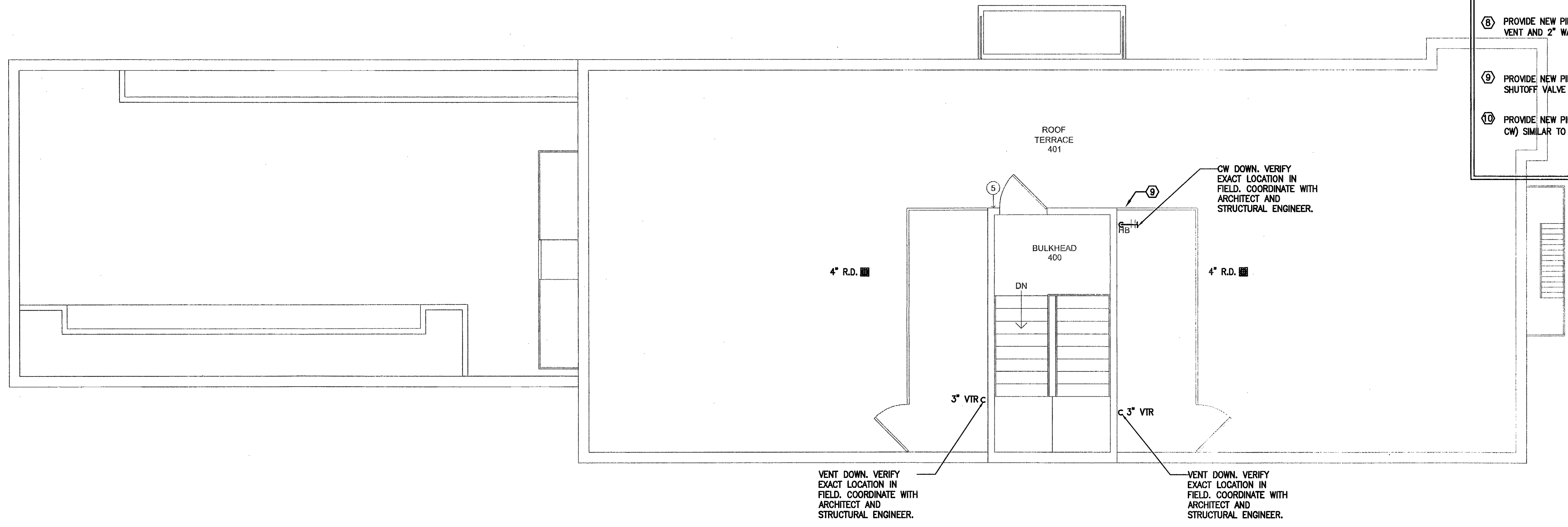
ROOF LEVEL
FLOOR PLUMBING
INSTALLATION PLAN

04 OF 09

Project No.
160603-KN1

P-203.00

- PLUMBING INSTALLATION SCHEDULE
- 1 PROVIDE NEW PIPING FOR SINK & DW (1/2" CW, 1/2" HW, 2" VENT AND 2" WASTE, 3/4" CW/HW FOR DW). PROVIDE SHUTOFF VALVES AS REQUIRED.
 - 2 PROVIDE NEW PIPING FOR WATER CLOSET (1/2" CW, 2" VENT AND 4" SANITARY). PROVIDE SHUTOFF VALVES AS REQUIRED.
 - 3 PROVIDE NEW PIPING FOR LAVATORY (1/2" CW, 1/2" HW, 2" VENT AND 2" WASTE). PROVIDE SHUTOFF VALVES AS REQUIRED.
 - 4 PROVIDE NEW PIPING FOR SHOWER/TUB (1/2" CW, 1/2" HW, 2" VENT AND 2" WASTE). PROVIDE SHUTOFF VALVES AS REQUIRED.
 - 5 PROVIDE NEW GAS PIPING TO NEW GAS RANGE AND OVEN. PROVIDE FLEXIBLE PIPE AS REQUIRED. CONTRACTOR TO NOTIFY DOB TO INSPECT ALL ALTERED GAS PIPING PRIOR TO CLOSING WALLS AND/OR CEILINGS.
 - 6 PROVIDE NEW PIPING FOR REFRIGERATOR/ICE MAKER (1/2" CW). PROVIDE SHUTOFF VALVES AND DOUBLE CHECK VALVE BACKFLOW PREVENTER.
 - 7 PROVIDE NEW PIPING FOR WASHER/DRYER (1/2" CW, 1/2" HW, 2" VENT AND 2" WASTE). PROVIDE SHUTOFF VALVES AND SHOCK SUPPRESSORS AS REQUIRED. PROVIDE CONTAINMENT PAN AND CUTOFF SENSOR AS PER DETAIL. INSTALL NEW WATERPROOFING MEMBRANE IN LAUNDRY AREA AS REQUIRED.
 - 8 PROVIDE NEW PIPING FOR MOP SINK (1/2" CW, 1/2" HW, 2" VENT AND 2" WASTE). PROVIDE SHUTOFF VALVES AS REQUIRED.
 - 9 PROVIDE NEW PIPING FOR HOSE BIB (1/2" CW). PROVIDE SHUTOFF VALVE AS REQUIRED.
 - 10 PROVIDE NEW PIPING TO ELECTRIC HOT WATER HEATER (1/2" CW) SIMILAR TO A.O. SMITH MODEL, DEL-6 5KW.



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**KNICKERBOCKER
RENOVATION**
628 KNICKERBOCKER AVE.
BROOKLYN, NY 11221

No.	Revision	Date	Description
1		09/23/16	ISSUED FOR REVIEW
2		11/02/16	ISSUED FOR REVIEW
3		11/22/16	ISSUED FOR REVIEW
4		12/19/16	DOB FILING
5		01/31/17	FOR PERMIT 2
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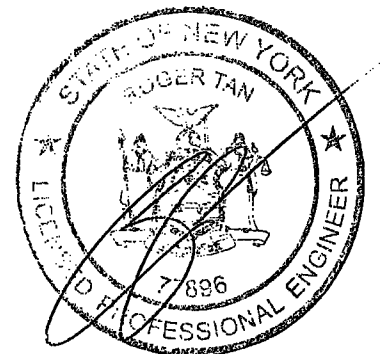
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FEB 24 2017
FREDERICK G. COOPER, P.E.
SEAL

DEPT. RECORDS Job No. 321499918
ESHS9244802
Seal Code

**DOMESTIC COLD
WATER
RISER DIAGRAMS**

Project No. 160603-INT
P-301.00
05 OF 09



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PLUMBING INSTALLATION SCHEDULE	
①	PROVIDE NEW PIPING FOR SINK & DW (1/2" CW, 1/2" HW, 2" VENT AND 2" WASTE, 3" CW/HW FOR DW). PROVIDE SHUTOFF VALVES AS REQUIRED.
②	PROVIDE NEW PIPING FOR WATER CLOSET (1/2" CW, 2" VENT AND 4" SANITARY). PROVIDE SHUTOFF VALVES AS REQUIRED.
③	PROVIDE NEW PIPING FOR LAVATORY (1/2" CW, 1/2" HW, 2" VENT AND 2" WASTE). PROVIDE SHUTOFF VALVES AS REQUIRED.
④	PROVIDE NEW PIPING FOR SHOWER/TUB (1/2" CW, 1/2" HW, 2" VENT AND 2" WASTE). PROVIDE SHUTOFF VALVES AS REQUIRED.
⑤	PROVIDE NEW GAS PIPING TO NEW GAS RANGE AND OVEN. PROVIDE FLEXIBLE PIPE AS REQUIRED. CONTRACTOR TO NOTIFY DOB TO INSPECT ALL ALTERED GAS PIPING PRIOR TO CLOSING WALLS AND/OR CEILINGS.
⑥	PROVIDE NEW PIPING FOR REFRIGERATOR/ICE MAKER (1/2" CW). PROVIDE SHUTOFF VALVES AND DOUBLE CHECK VALVE BACKFLOW PREVENTER.
⑦	PROVIDE NEW PIPING FOR WASHER/DRYER (1/2" CW, 1/2" HW, 2" VENT AND 2" WASTE). PROVIDE SHUTOFF VALVES AND SHOCK SUPPRESSORS AS REQUIRED. PROVIDE CONTAINMENT FAN AND CUTOFF SENSOR AS PER DETAIL. INSTALL NEW WATERPROOFING MEMBRANE IN LAUNDRY AREA AS REQUIRED.
⑧	PROVIDE NEW PIPING FOR MOP SINK (1/2" CW, 1/2" HW, 2" VENT AND 2" WASTE). PROVIDE SHUTOFF VALVES AS REQUIRED.
⑨	PROVIDE NEW PIPING FOR HOSE BIB (1/2" CW). PROVIDE SHUTOFF VALVE AS REQUIRED.
⑩	PROVIDE NEW PIPING TO ELECTRIC HOT WATER HEATER (1/2" CW) SIMILAR TO A.O. SMITH MODEL, DEL-6 SKW.

GC SHALL PROVIDE MIXING VALVES FOR ALL HAND WASHING SINKS AND LAVS.

HEAT TRACE DIGITAL THERMOSTAT SIMILAR TO CHROMALOX, MODEL DTS-HAZ. PROVIDE ALL NECESSARY CONTROL WIRING TO RENDER FULLY OPERATIONAL (TYPICAL THROUGHOUT)

APPROXIMATE LOCATION OF CURB VALVE. CURB VALVE SHALL BE WITHIN 2 FT. OF BUILDING WALL OR STREET LINE. VERIFY EXACT LOCATION IN FIELD. COORDINATE WITH ARCHITECT, OWNER, PLUMBER AND UTILITY COMPANY.

EXIST MAIN V.I.F.

NEW INCOMING 3" DOMESTIC CW SERVICE.

DOMESTIC WATER RISER DIAGRAM
NOT TO SCALE

- NOTE:
1. INSTALL DRAINS AT BOTTOM OF ALL RISERS.
 2. INSTALL AIR CHAMBERS BEHIND EACH FIXTURE (TYP.).
 3. CONTRACTOR SHALL PROVIDE BACKFLOW PREVENTER DRAWINGS AND LAYOUT AND SUBMIT DRAWINGS AND APPLICATION TO THE DEPARTMENT OF ENVIRONMENTAL PROTECTION (DEP) CROSS CONNECTION PROTECTION UNIT FOR APPROVAL. CONTRACTOR SHALL BE RESPONSIBLE TO OBTAIN ALL APPROVALS, COORDINATE ALL WORK, FILE APPLICATIONS AND PAY ALL FEES. THE BACKFLOW PREVENTER DRAWINGS SHALL BE GENERATED BY A LICENSED ENGINEER OR ARCHITECT. CONTRACTOR SHALL PAY ALL REQUIRED DESIGN FEES AND COORDINATE ALL WORK WITH THE LICENSED ENGINEER/ARCHITECT.
 4. SEE PLUMBING INSTALLATION SCHEDULE FOR BRANCH SIZES (CW/HW/GAS/SANITARY/VENT)

ARCH STAMP / SIGNATURES

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L.E. Project No. 1600132

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No.	Revision	Date	Description
1	09/23/16	ISSUED FOR REVIEW	
2	11/02/16	ISSUED FOR REVIEW	
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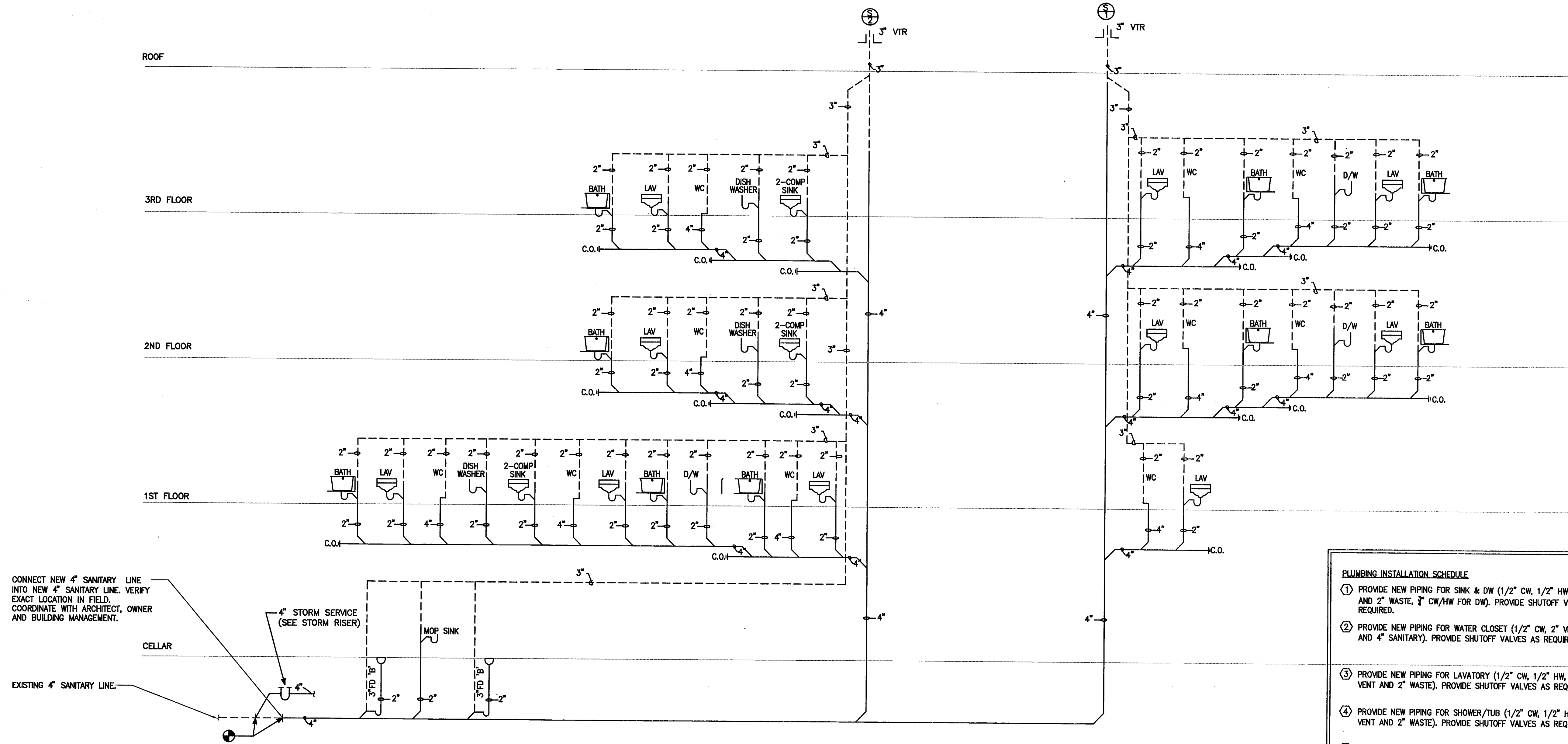
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DOB STAMP / SIGNATURES
ROGER TAN, P.E.

DEPT. ADDRESS Sub No. 321499918
ESHS02263681
Scale Code

SANITARY RISER DIAGRAMS

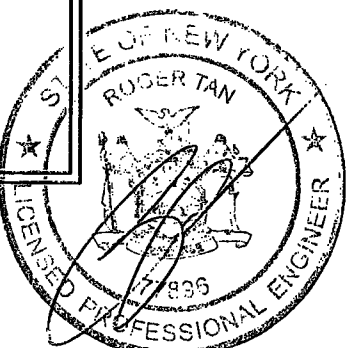
Project No. 160603-KNT
06 OF 09
P-302.00



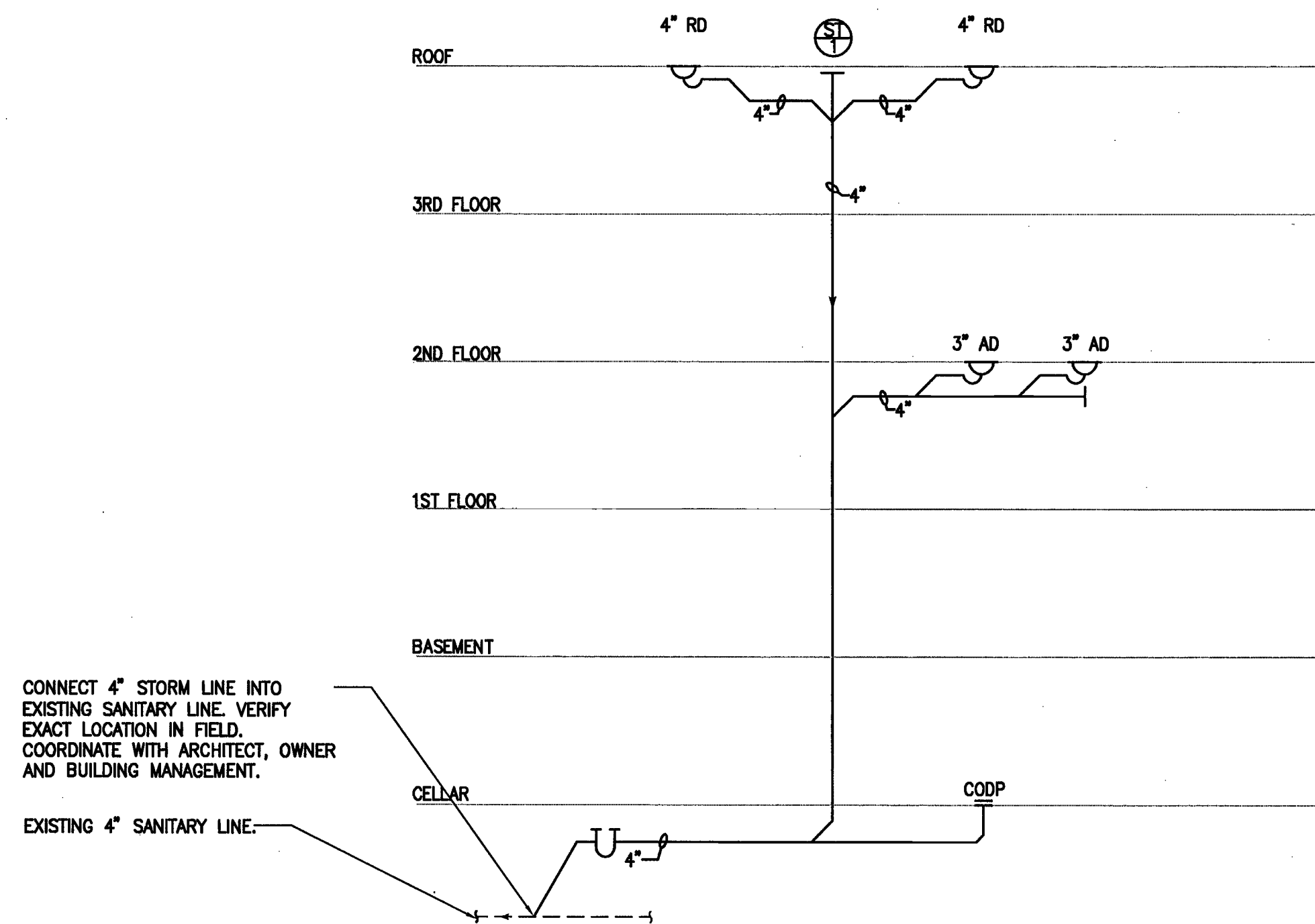
SANITARY RISER DIAGRAM
NOT TO SCALE

- NOTE:
1. CONTRACTOR SHALL OBTAIN SITE SURVEY PLAN INDICATING ALL UTILITY SIZES, LOCATIONS, INVERTS, ROUTING, ETC. THE SITE SURVEY PLAN SHALL BE GENERATED BY A LICENSED LAND SURVEYOR OR ENGINEER.
 2. CONTRACTOR TO COORDINATE ELEVATIONS, INVERTS AND ROUTING OF ALL NEW INCOMING SERVICES WITH THE INVERTS, LOCATIONS, ELEVATIONS AND ROUTING OF THE EXISTING UTILITY MAIN STREET SERVICES SHOWN ON THE SITE SURVEY PLAN. ADJUST INVERTS, ELEVATIONS AND ROUTING TO ALLOW FOR THE CONNECTION OF THE NEW SERVICES TO THE EXISTING UTILITY MAINS/STREET SERVICES.
 4. SEE PLUMBING INSTALLATION SCHEDULE FOR BRANCH SIZES (CW/HW/GAS/SANITARY/VENT)

- PLUMBING INSTALLATION SCHEDULE**
1. PROVIDE NEW PIPING FOR SINK & DW (1/2" CW, 1/2" HW, 2" VENT AND 2" WASTE, 3/4" CW/HW FOR DW). PROVIDE SHUTOFF VALVES AS REQUIRED.
 2. PROVIDE NEW PIPING FOR WATER CLOSET (1/2" CW, 2" VENT AND 4" SANITARY). PROVIDE SHUTOFF VALVES AS REQUIRED.
 3. PROVIDE NEW PIPING FOR LAVATORY (1/2" CW, 1/2" HW, 2" VENT AND 2" WASTE). PROVIDE SHUTOFF VALVES AS REQUIRED.
 4. PROVIDE NEW PIPING FOR SHOWER/TUB (1/2" CW, 1/2" HW, 2" VENT AND 2" WASTE). PROVIDE SHUTOFF VALVES AS REQUIRED.
 5. PROVIDE NEW GAS PIPING TO NEW GAS RANGE AND OVEN. PROVIDE FLEXIBLE PIPE AS REQUIRED. CONTRACTOR TO NOTIFY DOB TO INSPECT ALL ALTERED GAS PIPING PRIOR TO CLOSING WALLS AND/OR CEILINGS.
 6. PROVIDE NEW PIPING FOR REFRIGERATOR/ICE MAKER (1/2" CW). PROVIDE SHUTOFF VALVES AND DOUBLE CHECK VALVE BACKFLOW PREVENTER.
 7. PROVIDE NEW PIPING FOR WASHER/DRYER (1/2" CW, 1/2" HW, 2" VENT AND 2" WASTE). PROVIDE SHUTOFF VALVES AND SHOCK SUPPRESSORS AS REQUIRED. PROVIDE CONTAINMENT PAN AND CUTOFF SENSOR AS PER DETAIL. INSTALL NEW WATERPROOFING MEMBRANE IN LAUNDRY AREA AS REQUIRED.
 8. PROVIDE NEW PIPING FOR MOP SINK (1/2" CW, 1/2" HW, 2" VENT AND 2" WASTE). PROVIDE SHUTOFF VALVES AS REQUIRED.
 9. PROVIDE NEW PIPING FOR HOSE BIB (1/2" CW). PROVIDE SHUTOFF VALVE AS REQUIRED.
 10. PROVIDE NEW PIPING TO ELECTRIC HOT WATER HEATER (1/2" CW) SIMILAR TO A.O. SMITH MODEL, DEL-6 5KW.



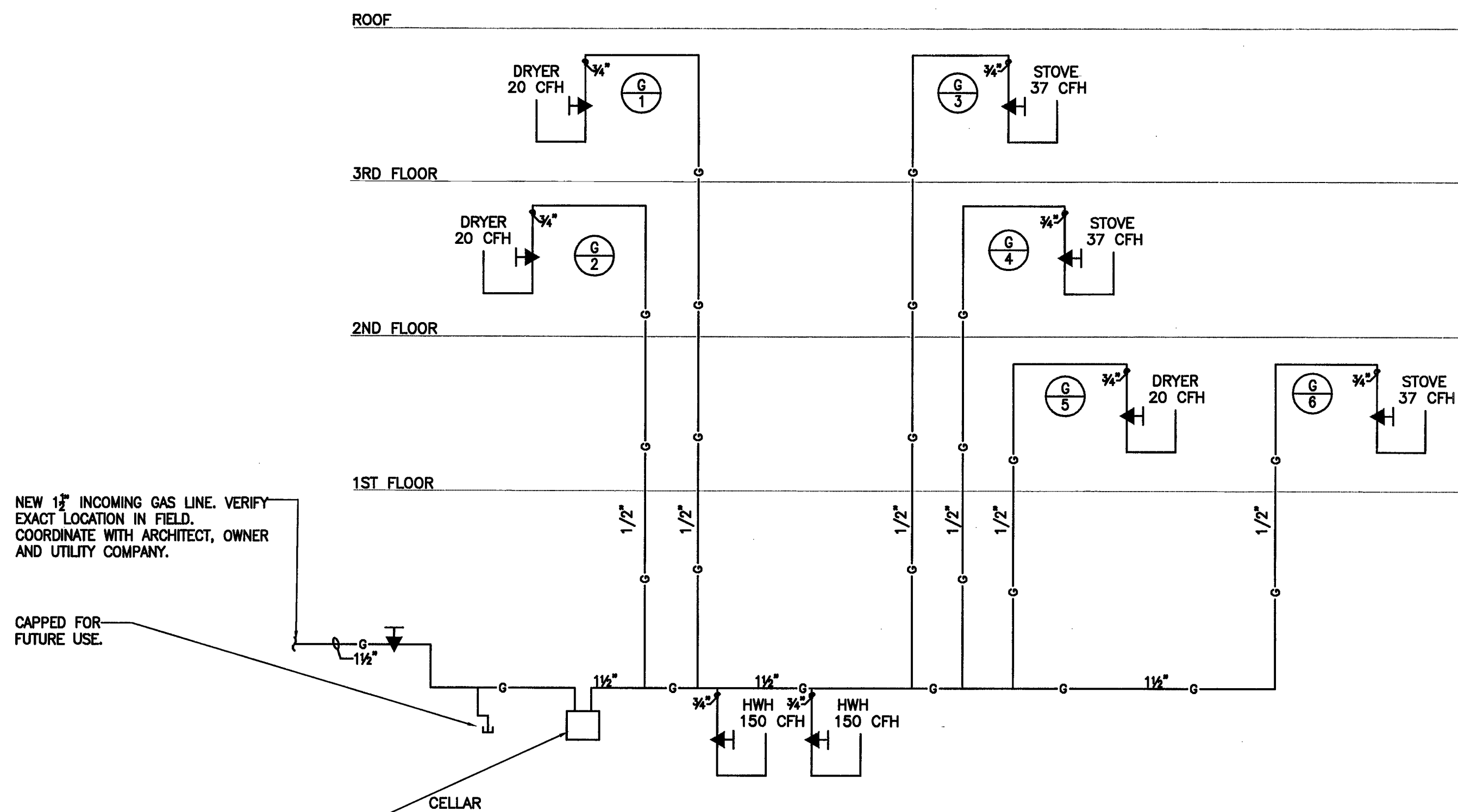
NEW YORK CITY BUILDING DEPARTMENT NOTE
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STORM RISER DIAGRAM
NOT TO SCALE

NOTE:

1. CONTRACTOR SHALL OBTAIN SITE SURVEY PLAN INDICATING ALL UTILITY SIZES, LOCATIONS, INVERTS, ROUTING, ETC. THE SITE SURVEY PLAN SHALL BE GENERATED BY A LICENSED LAND SURVEYOR OR ENGINEER.
2. CONTRACTOR TO COORDINATE ELEVATIONS, INVERTS AND ROUTING OF ALL NEW INCOMING SERVICES WITH THE INVERTS, LOCATIONS, ELEVATIONS AND ROUTING OF THE EXISTING UTILITY MAIN STREET SERVICES SHOWN ON THE SITE SURVEY PLAN. ADJUST INVERTS, ELEVATIONS AND ROUTING TO ALLOW FOR THE CONNECTION OF THE NEW SERVICES TO THE EXISTING UTILITY MAINS/STREET SERVICES.



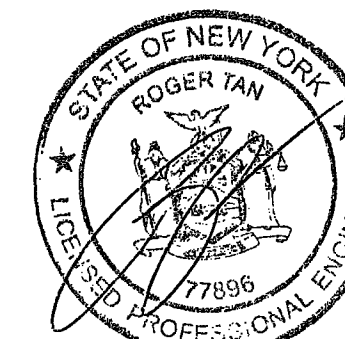
GAS RISER DIAGRAM
NOT TO SCALE

NOTE:

1. VENT ALL GAS PRESSURE REGULATING VALVES AND PRESSURE SWITCHES TO OUTDOORS.
2. PLUMBER SHALL VERIFY EXACT LOCATION OF INCOMING GAS SERVICE AND METER WITH CON EDISON PRIOR TO INSTALLATION OF SERVICE AND METER BARS.
2. PLUMBER SHALL COORDINATE AND INSTALL ALL WORK ACCORDING TO CON EDISON SPECIFICATIONS AND STANDARDS.
4. INSTALL APPROVED SHUT-OFF COCKS TO EACH STOVE AND AT ALL EQUIPMENT CONNECTIONS.
5. SEE PLUMBING INSTALLATION SCHEDULE FOR BRANCH SIZES (CW/HW/GAS/SANITARY/VENT)

PLUMBING INSTALLATION SCHEDULE

- ① PROVIDE NEW PIPING FOR SINK & DW (1/2" CW, 1/2" HW, 2" VENT AND 2" WASTE, 1/2" CW/HW FOR DW). PROVIDE SHUTOFF VALVES AS REQUIRED.
- ② PROVIDE NEW PIPING FOR WATER CLOSET (1/2" CW, 2" VENT AND 4" SANITARY). PROVIDE SHUTOFF VALVES AS REQUIRED.
- ③ PROVIDE NEW PIPING FOR LAVATORY (1/2" CW, 1/2" HW, 2" VENT AND 2" WASTE). PROVIDE SHUTOFF VALVES AS REQUIRED.
- ④ PROVIDE NEW PIPING FOR SHOWER/TUB (1/2" CW, 1/2" HW, 2" VENT AND 2" WASTE). PROVIDE SHUTOFF VALVES AS REQUIRED.
- ⑤ PROVIDE NEW GAS PIPING TO NEW GAS RANGE AND OVEN. PROVIDE FLEXIBLE PIPE AS REQUIRED. CONTRACTOR TO NOTIFY DOB TO INSPECT ALL ALTERED GAS PIPING PRIOR TO CLOSING WALLS AND/OR CEILINGS.
- ⑥ PROVIDE NEW PIPING FOR REFRIGERATOR/ICE MAKER (1/2" CW). PROVIDE SHUTOFF VALVES AND DOUBLE CHECK VALVE BACKFLOW PREVENTER.
- ⑦ PROVIDE NEW PIPING FOR WASHER/DRYER (1/2" CW, 1/2" HW, 2" VENT AND 2" WASTE). PROVIDE SHUTOFF VALVES AND SHOCK SUPPRESSORS AS REQUIRED. PROVIDE CONTAINMENT PAN AND CUTOFF SENSOR AS PER DETAIL. INSTALL NEW WATERPROOFING MEMBRANE IN LAUNDRY AREA AS REQUIRED.
- ⑧ PROVIDE NEW PIPING FOR MOP SINK (1/2" CW, 1/2" HW, 2" VENT AND 2" WASTE). PROVIDE SHUTOFF VALVES AS REQUIRED.
- ⑨ PROVIDE NEW PIPING FOR HOSE BIB (1/2" CW). PROVIDE SHUTOFF VALVE AS REQUIRED.
- ⑩ PROVIDE NEW PIPING TO ELECTRIC HOT WATER HEATER (1/2" CW) SIMILAR TO A.O. SMITH MODEL, DEL-6 5KW.



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BROOKLYN, NY 11221

No.	Revision	Date	Description
1	09/23/16	ISSUED FOR REVIEW	
2	11/02/16	ISSUED FOR REVIEW	
3	11/22/16	ISSUED FOR REVIEW	
4	12/19/16	DOB FILING	
5	01/31/17	FOR PERMIT 2	
-	-	-	-
-	-	-	-
-	-	-	-
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EXAMINED FOR BUILDING DEPARTMENT
PREPARED BY: RUGBY GONZALEZ
DATE: FEB 03 2017
RUGBY GONZALEZ

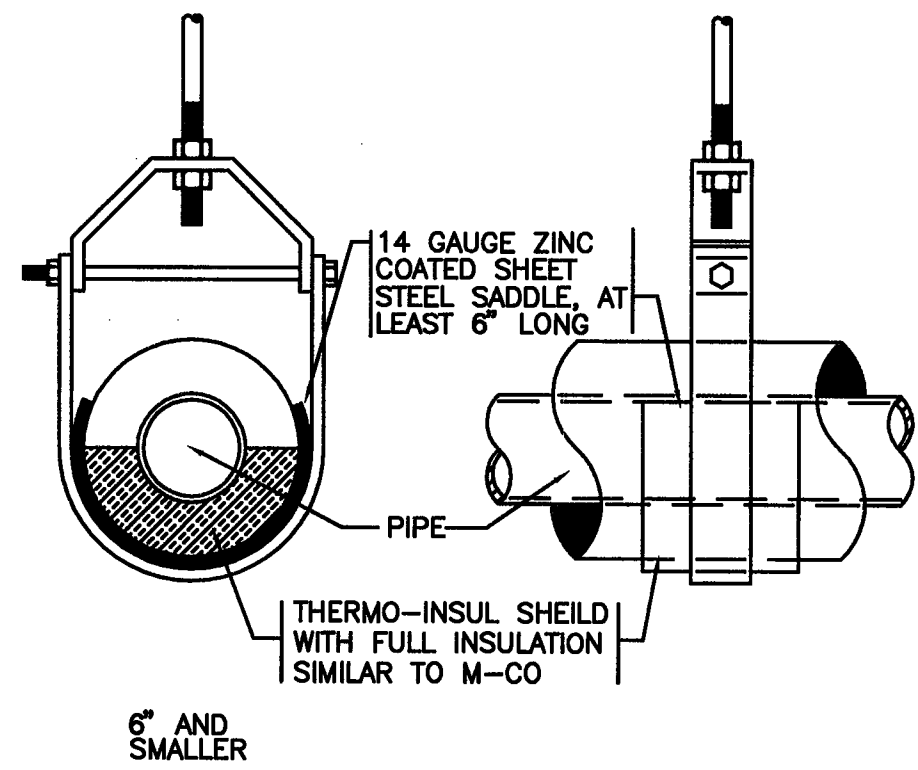
DEPT. BUILDING DOB No. 321499918
Scan Code ESHS9148882

GAS & STORM
RISER DIAGRAMS

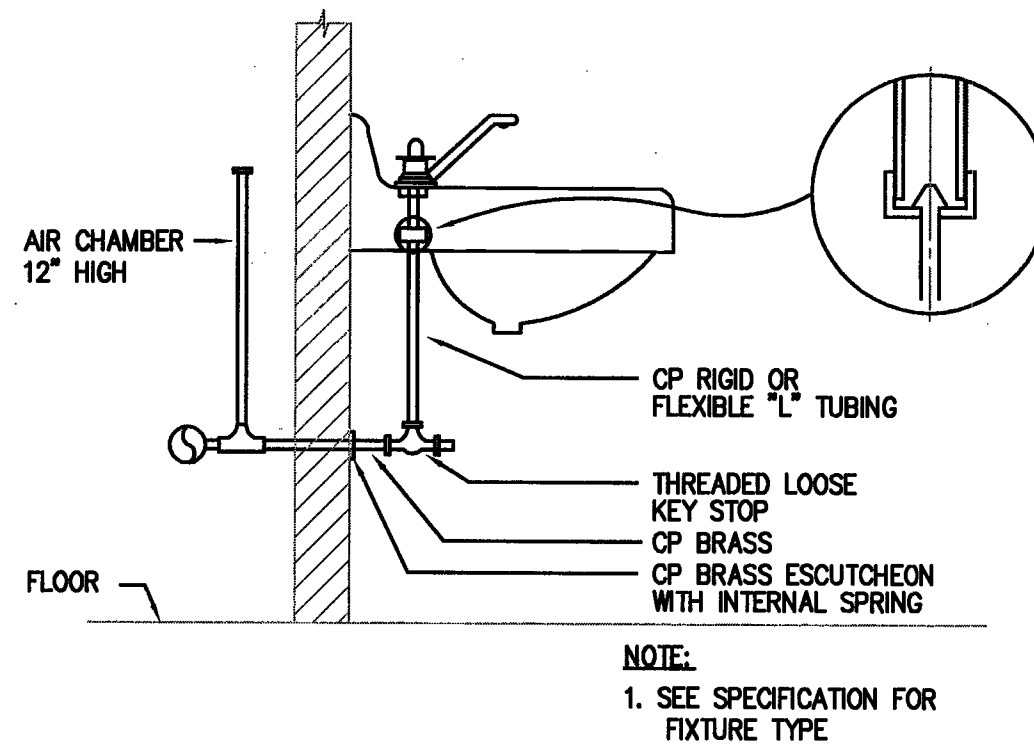
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160603-KN1

P-303.00

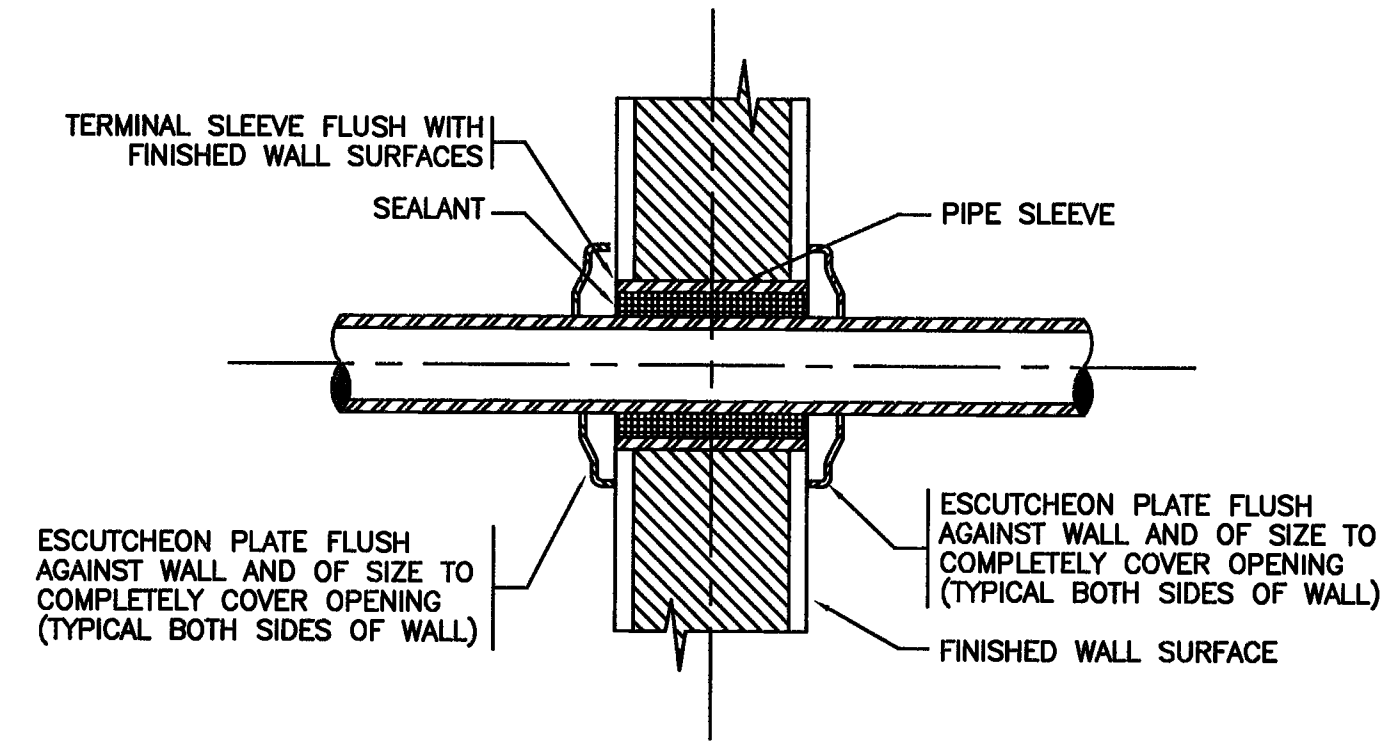
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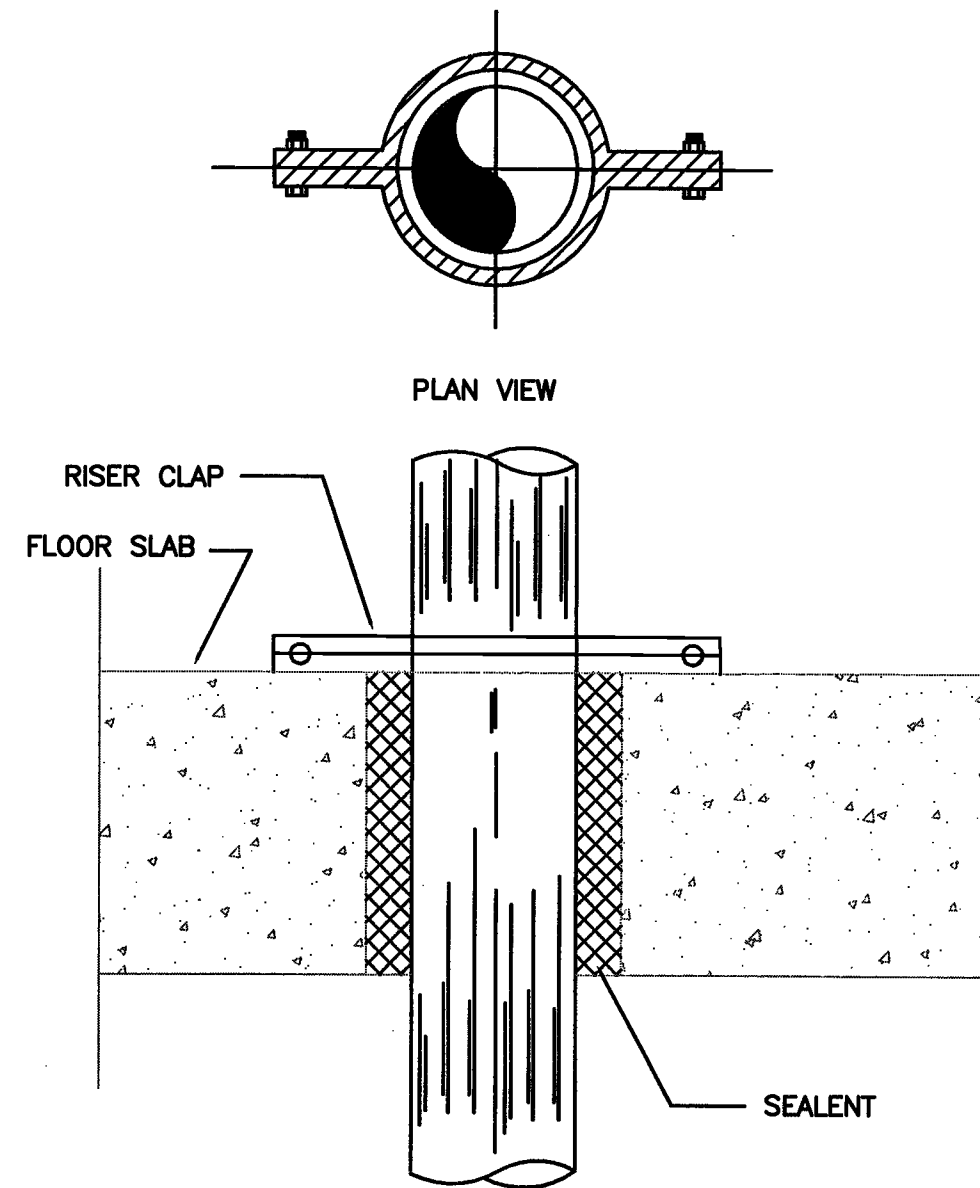
INSTALLATION DETAIL AT HANGER



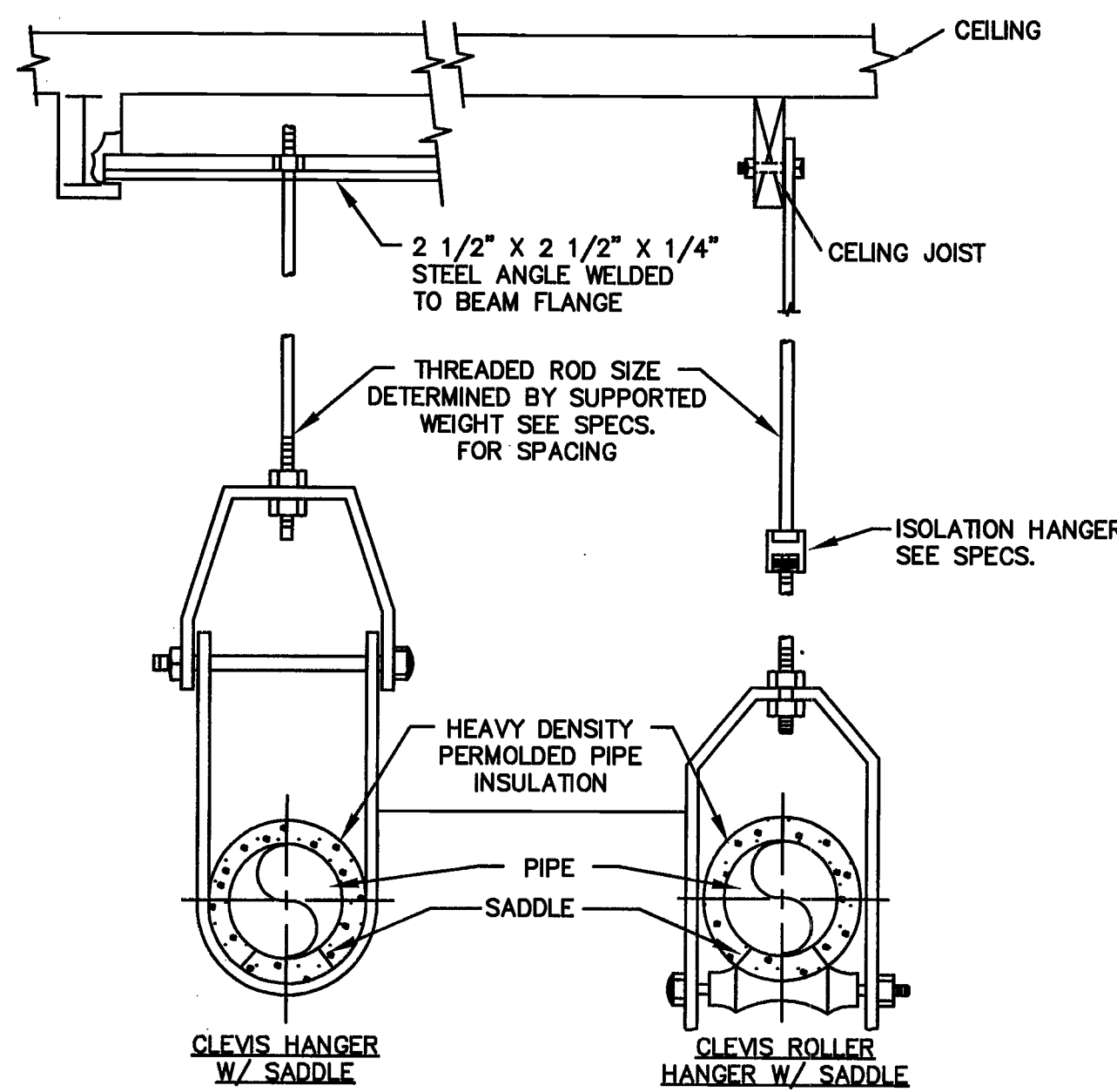
HOT & COLD WATER SUPPLY



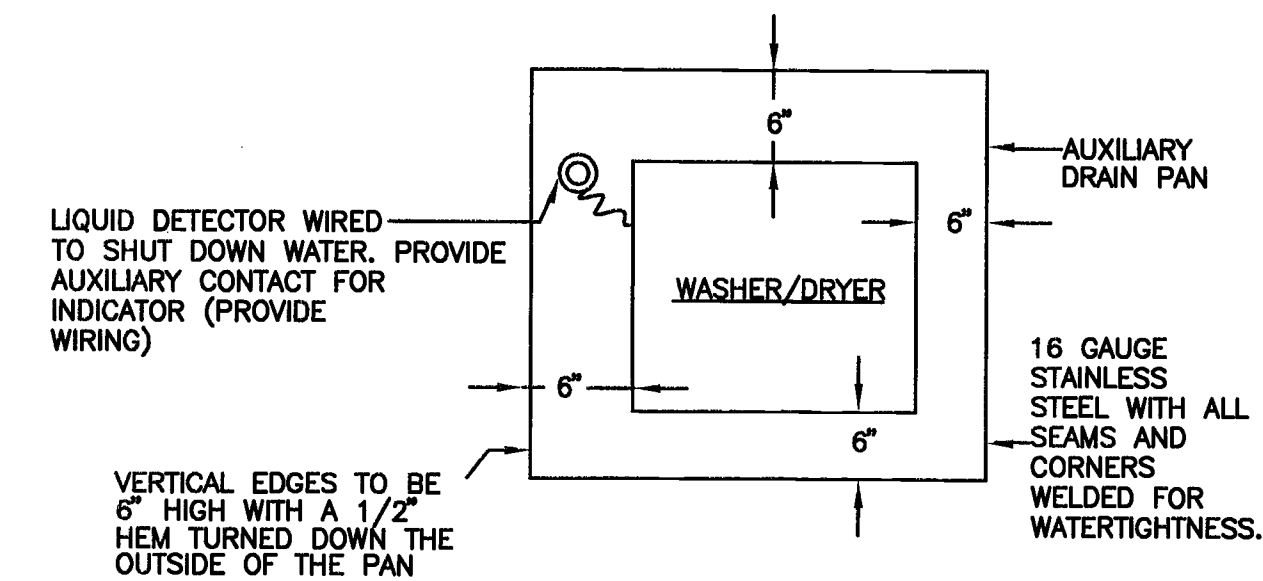
PIPE PENETRATION WITHOUT INSULATION



PIPE SLEEVE THRU FLOOR SLAB

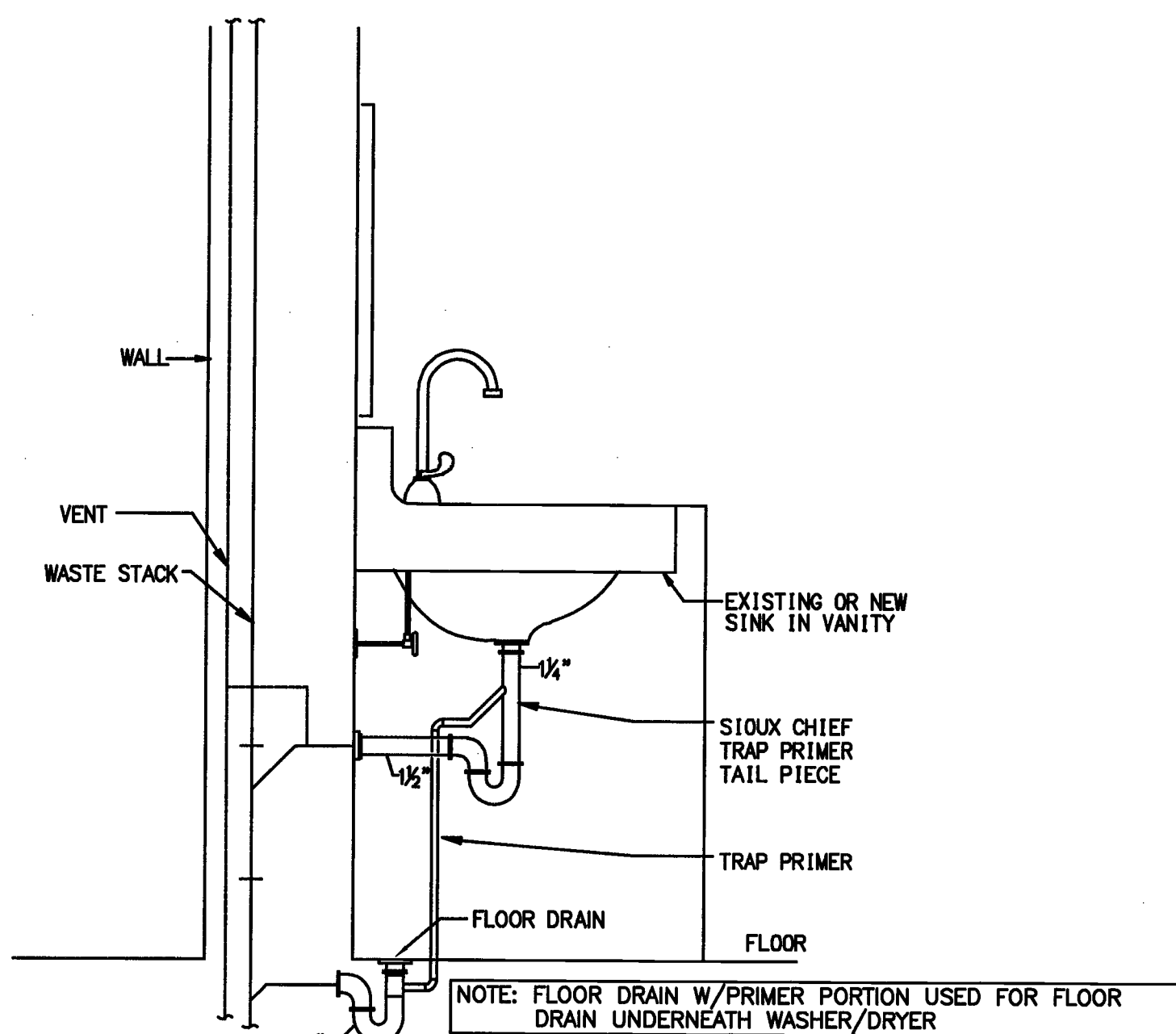


PIPE HANGING DETAIL FROM WOOD JOIST

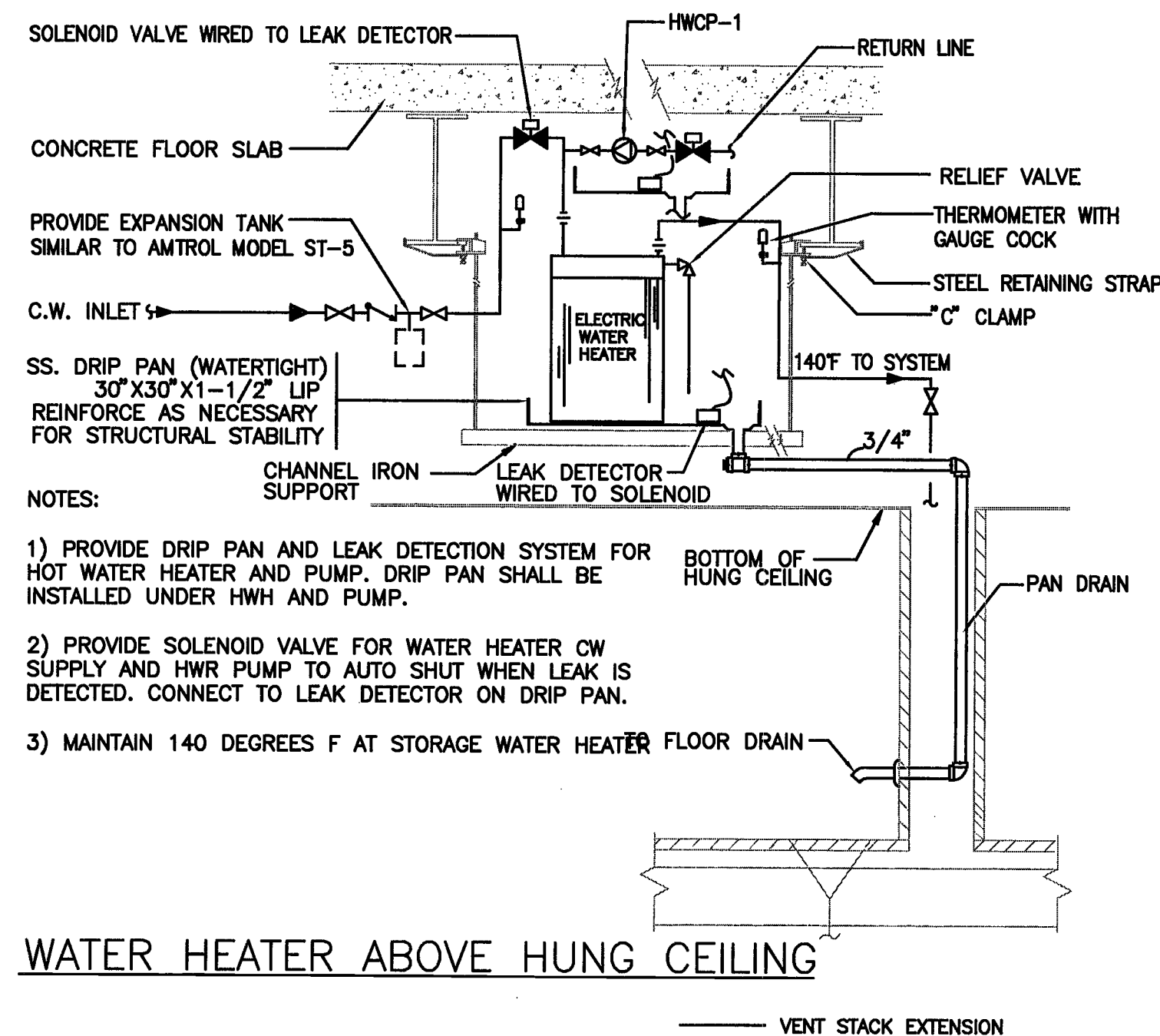


- NOTES:
1. PITCH DRAIN PAN TO LIQUID DETECTOR. PROVIDE 3/4" PLUGGED DRAIN AT LOW POINT.

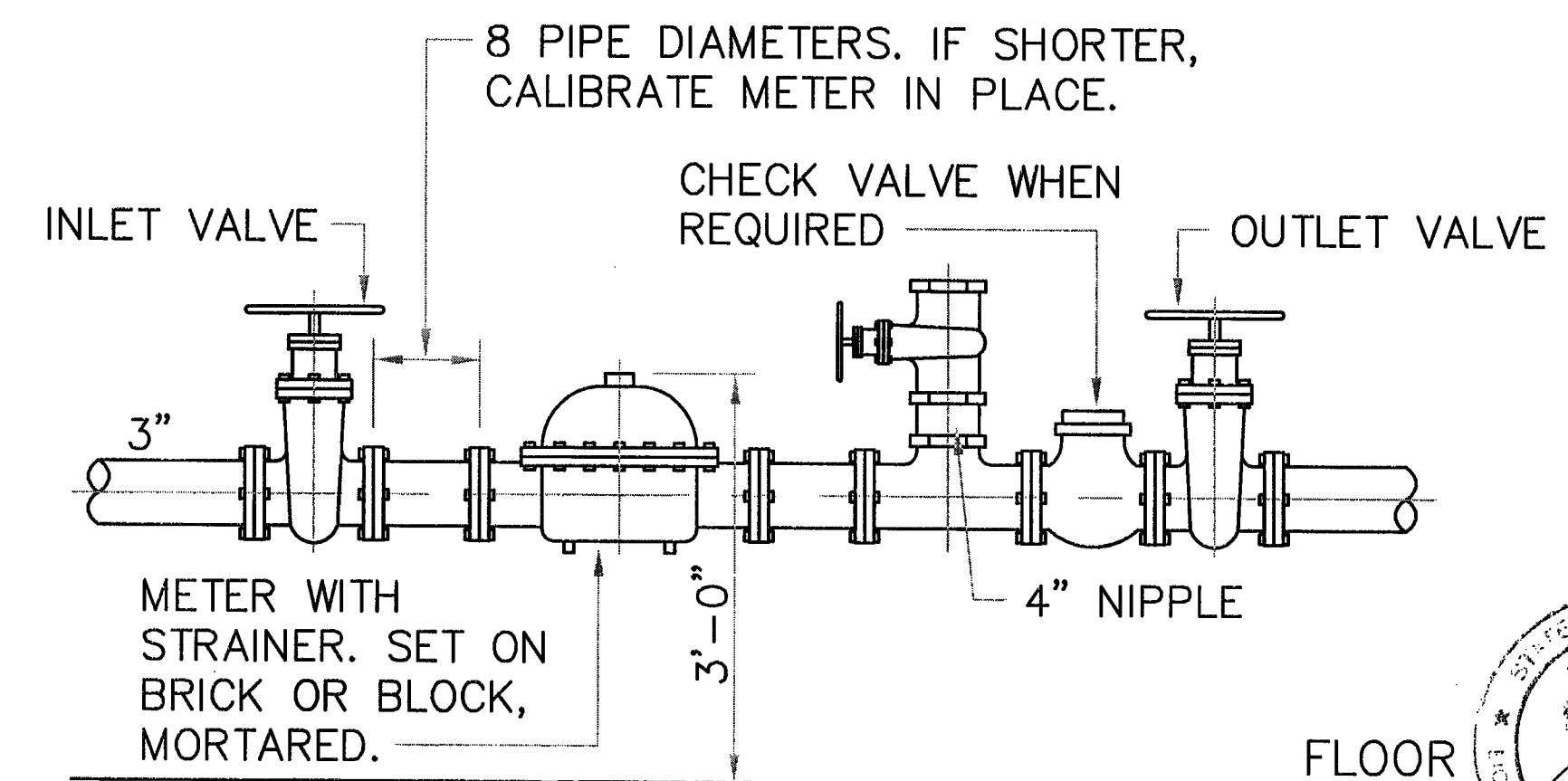
TYPICAL DETAIL OF DRAIN PAN FOR WASHER/DRYER



TRAP PRIMER FOR FLOOR DRAIN



WATER HEATER ABOVE HUNG CEILING



WATER METER DETAIL
NO SCALE

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FEB 03 2017
JULY 2017
FLOOR 3017

DEPT. 31 JOB NO. 321499918
Scan Code ESHS2329220

PLUMBING DETAILS
(SHEET 1 OF 1)

Project No. 186605-KN
P-401.00
08 OF 09

1. GENERAL:

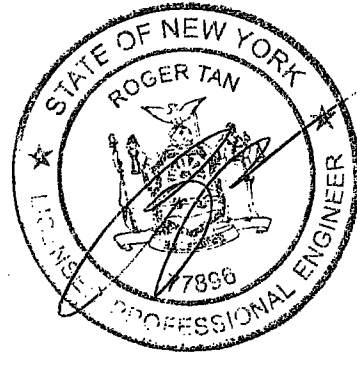
- A. THE "GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION," AIA DOCUMENT A201, LATEST EDITION, AND THESE SPECIFICATIONS AS APPLICABLE ARE PART OF THIS CONTRACT.
- B. ALL APPLICABLE CODES, LAWS AND REGULATIONS GOVERNING OR RELATING TO ANY PORTION OF THIS WORK ARE HEREBY INCORPORATED INTO AND MADE A PART OF THESE SPECIFICATIONS, AND THEIR PROVISIONS SHALL BE CARRIED OUT BY THE CONTRACTOR WHO SHALL INFORM THE OWNER, PRIOR TO SUBMITTING A PROPOSAL, OF ANY WORK OR MATERIAL WHICH VIOLATES ANY OF THE ABOVE LAWS AND REGULATIONS. ANY WORK DONE BY THE CONTRACTOR CAUSING SUCH VIOLATION SHALL BE CORRECTED BY THE CONTRACTOR.
- C. INVESTIGATE EACH SPACE THROUGH WHICH EQUIPMENT MUST BE MOVED. WHERE NECESSARY, EQUIPMENT SHALL BE SHIPPED FROM MANUFACTURER IN SECTIONS OF SIZE SUITABLE FOR MOVING THROUGH AVAILABLE RESTRICTIVE SPACES. ASCERTAIN FROM BUILDING OWNER AND TENANT AT WHAT TIMES OF DAY EQUIPMENT MAY BE MOVED THROUGH ALL AREAS.
- D. DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF SYSTEMS AND WORK. PIPE ROUTING IS SHOWN DIAGRAMMATICALLY AND DOES NOT SHOW ALL OFFSETS, DROPS AND RISES OF RUNS. THE CONTRACTOR SHALL ALLOW IN HIS PRICE FOR ROUTING OF PIPE TO AVOID OBSTRUCTIONS. COORDINATION WITH THE EXISTING SERVICES, INCLUDING THOSE OF OTHER TRADES IS REQUIRED. MAINTAIN HEADROOM AND SPACE CONDITIONS.
- E. INSTALL WORK SO AS TO BE READILY ACCESSIBLE FOR OPERATION, MAINTENANCE AND REPAIR. MINOR DEVIATIONS FROM DRAWINGS MAY BE MADE TO ACCOMPLISH THIS, BUT CHANGES WHICH INVOLVE EXTRA COST SHALL NOT BE MADE WITHOUT APPROVAL.
- F. REMOVAL AND RELOCATION OF CERTAIN EXISTING WORK WILL BE NECESSARY FOR THE PERFORMANCE OF THE GENERAL WORK. ALL EXISTING CONDITIONS CANNOT BE COMPLETELY DETAILED ON THE DRAWINGS. THE CONTRACTOR SHALL SURVEY THE SITE AND INCLUDE ALL CHANGES IN MAKING UP THE WORK PROPOSAL.
- G. CONNECTIONS TO EXISTING WORK: INSTALL NEW WORK AND CONNECT TO EXISTING WORK WITH MINIMUM INTERFERENCE TO EXISTING FACILITIES. TEMPORARY SHUTDOWNS OF EXISTING SERVICES SHALL BE PERFORMED AT NO ADDITIONAL CHARGES, AT TIMES NOT TO INTERFERE WITH NORMAL OPERATION OF EXISTING FACILITIES AND ONLY WITH WRITTEN CONSENT OF OWNER. MAINTAIN CONTINUOUS OPERATION OF EXISTING FACILITIES AS REQUIRED WITH NECESSARY TEMPORARY CONNECTIONS BETWEEN NEW AND EXISTING WORK. CONNECT NEW WORK TO EXISTING WORK IN NEAT AND ACCEPTABLE MANNER. RESTORE EXISTING DISTURBED WORK TO ORIGINAL CONDITION.
- H. DISCONNECT, REMOVE AND/OR RELOCATE EXISTING MATERIAL, EQUIPMENT AND OTHER WORK AS NOTED OR REQUIRED FOR PROPER INSTALLATION OF NEW WORK.
- I. THE CONTRACTOR SHALL KEEP ALL EQUIPMENT AND MATERIALS, AND ALL PARTS OF THE BUILDING, EXTERIOR SPACES AND ADJACENT STREETS, SIDEWALKS AND PAVEMENTS, FREE FROM MATERIAL AND DEBRIS RESULTING FROM THE EXECUTION OF THIS WORK. EXCESS MATERIALS WILL NOT BE PERMITTED TO ACCUMULATE EITHER ON THE INTERIOR OR THE EXTERIOR.
- J. THE LOCATIONS OF THE EXISTING SERVICES ARE BELIEVED TO BE AS INDICATED ON THE DRAWINGS. THE CONTRACTOR SHALL VERIFY THE ACTUAL LOCATION OF THESE SERVICES AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO COMMENCING ANY WORK.
- K. SEAL OPENINGS THROUGH PARTITIONS, WALLS AND FLOORS WITH A UL-LISTED FIRESTOPPING ASSEMBLY MATCHED TO THE RATING OF THE PENETRATED ELEMENT.
- L. PROVIDE ALL NECESSARY FLASHING AND COUNTERFLASHING TO MAINTAIN THE WATERPROOFING INTEGRITY OF THIS BUILDING AS REQUIRED BY THE INSTALLATION OR REMOVAL OF PIPING AND EQUIPMENT. PROVIDE EQUIPMENT CURBS AS REQUIRED.
- M. ALL PRESENT MATERIAL, EQUIPMENT AND CONSTRUCTION DEBRIS TO BE REMOVED UNDER THIS CONTRACT SHALL BECOME THE PROPERTY OF THE CONTRACTOR WITH THE EXCEPTION OF SPECIFIC EQUIPMENT AND APPARATUS REQUESTED BY THE BUILDING REPRESENTATIVE, ARCHITECT OR AS NOTED TO BE RELOCATED ON THE DRAWINGS. REMOVED EQUIPMENT SHALL BE PROPERLY DISPOSED OF BY THIS CONTRACTOR, OR AS DIRECTED BY THE OWNER.
- N. MATERIALS AND WORKMANSHIP, UNLESS OTHERWISE NOTED, SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.
- O. THE WORK IN THE BUILDING SHALL BE DONE WHEN AND AS DIRECTED, AND IN A MANNER SATISFACTORY TO THE OWNER. THE WORK SHALL BE PERFORMED SO AS TO CAUSE THE LEAST POSSIBLE INCONVENIENCE AND DISTURBANCE TO THE PRESENT OCCUPANTS.
- P. THE CONTRACTOR'S PROPOSAL FOR ALL WORK SHALL BE PREDICATED ON THE PERFORMANCE OF THE WORK DURING REGULAR WORKING HOURS. WHEN SO DIRECTED, HOWEVER, THE CONTRACTOR SHALL INSTALL WORK IN OVERTIME AND THE ADDITIONAL COST TO BE CHARGED THEREFORE SHALL BE ONLY THE "PREMIUM" PORTION OF THE WAGES PAID.
- Q. UNLESS OTHERWISE SPECIFICALLY SPECIFIED, INCLUDE ALL CUTTING AND PATCHING OF EXISTING FLOORS, WALLS, PARTITIONS AND OTHER MATERIALS IN THE EXISTING BUILDING. THE CONTRACTOR SHALL RESTORE THESE AREAS TO ORIGINAL CONDITION.
- R. ALL MATERIAL AND EQUIPMENT TO BE NEW UNLESS OTHERWISE NOTED AND SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.
- 1) ALL MATERIAL AND EQUIPMENT ON SITE SHALL BE PROPERLY STORED SUCH THAT IT IS PROTECTED FROM DAMAGE AND EXPOSURE TO THE OUTSIDE ELEMENTS.
- S. SUBMISSION OF A PROPOSAL SHALL BE CONSTRUED AS EVIDENCE THAT A CAREFUL EXAMINATION OF THE PORTIONS OF THE EXISTING BUILDING, EQUIPMENT, ETC., WHICH AFFECT THIS WORK, AND THE ACCESS TO SUCH SPACES, HAS BEEN MADE AND THAT THE CONTRACTOR IS FAMILIAR WITH EXISTING CONDITIONS AND DIFFICULTIES THAT WILL AFFECT THE EXECUTION OF THE WORK. THE CONTRACTOR IS RESPONSIBLE TO INDICATE ANY DISCREPANCIES BETWEEN THE CONTRACT DRAWINGS AND ACTUAL FIELD CONDITIONS PRIOR TO SUBMITTAL OF BID. SUBMISSION OF A PROPOSAL WILL BE CONSTRUED AS EVIDENCE THAT SUCH AN EXAMINATION HAS BEEN MADE. LATER CLAIMS SHALL NOT BE MADE FOR LABOR, EQUIPMENT OR MATERIALS REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN DURING SUCH AN EXAMINATION. THE ON-SITE INSPECTION SHALL VERIFY EXISTING PIPE SIZES, CLEARANCES, ETC. AND CONDITIONS.
- T. INSURANCE: PROVIDE IN ACCORDANCE WITH BUILDING REQUIREMENTS AND POLICY SHALL INCLUDE A HOLD HARMLESS CLAUSE FOR OWNER AND ENGINEER.
- U. THE FINAL ACCEPTANCE WILL BE MADE AFTER THE CONTRACTOR HAS ADJUSTED HIS EQUIPMENT, TESTED THE VARIOUS SYSTEMS, DEMONSTRATED THAT IT FULFILLS THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS AND HAS FURNISHED ALL THE REQUIRED CERTIFICATES OF INSPECTION AND APPROVAL.
- V. WORK TO OFFSET EXISTING PLUMBING VENTS SHALL BE PERFORMED BY THE BUILDING'S PLUMBER. VENT OFFSETS SHALL HAVE PROPER PITCH AS PER PLUMBING CODE.

2. SCOPE OF WORK:

- A. SCOPE OF WORK SHALL CONSIST OF PROVIDING LABOR, MATERIALS, EQUIPMENT, SERVICES AND FEES NECESSARY FOR COMPLETE AND SAFE INSTALLATION IN CONFORMITY WITH THE NEW YORK CITY BUILDING AND ALL OTHER APPLICABLE INDUSTRY, NATIONAL AND LOCAL CODES AND AUTHORITIES HAVING JURISDICTION, AS INDICATED ON DRAWINGS AND HEREIN SPECIFIED.
- B. 1) MODIFY AND EXTEND EXISTING BASE BUILDING SANITARY, VENT, HOT AND COLD WATER PIPING FROM EXISTING RISERS TO SERVE NEW FIXTURES EQUIPMENT. PROVIDE NEW ACCESSIBLE VALVES FOR EACH WATER LINE.
- 2) REMOVE EXISTING PLUMBING FIXTURES AND TRIM; INSTALL NEW FIXTURES ON EXISTING ROUGHING. MODIFY PIPING AS REQUIRED.
- C. THE BASE BUILDING DRAWINGS, PLANS, DETAILS, SPECIFICATIONS AND SPECIFICATION ADDENDA ARE MADE PART OF THIS CONTRACT AND SHALL APPLY TO ALL WORK UNDER THE CONTRACT UNLESS OTHERWISE AMENDED, MODIFIED, SUPPLEMENTED OR SPECIFIED HEREIN.
- D. THE CONTRACTOR SHALL FURNISH A WRITTEN GUARANTEE TO REPLACE OR REPAIR PROMPTLY AND ASSUME RESPONSIBILITY FOR ALL EXPENSES INCURRED FOR ANY WORKMANSHIP AND EQUIPMENT IN WHICH DEFECTS DEVELOP WITHIN ONE YEAR FROM THE DATE OF FINAL CERTIFICATE FOR PAYMENT AND/OR FROM DATE OF ACTUAL USE OF EQUIPMENT OR BENEFICIAL OCCUPANCY OF SPACES BY OWNER INCLUDED UNDER THE VARIOUS PARTS OF THE WORK, WHICHEVER DATE IS EARLIER. THIS WORK SHALL BE DONE AS DIRECTED BY THE OWNER. THIS GUARANTEE SHALL ALSO PROVIDE THAT WHERE DEFECTS OCCUR, THE CONTRACTOR WILL ASSUME RESPONSIBILITY FOR ALL EXPENSES INCURRED IN REPAIRING AND REPLACING WORK OF OTHER TRADES AFFECTED BY DEFECTS, REPAIRS OR REPLACEMENTS IN EQUIPMENT SUPPLIED BY THE CONTRACTOR.
- E. THE CONTRACTOR SHALL GIVE NECESSARY NOTICE, FILE DRAWINGS AND SPECIFICATIONS WITH THE DEPARTMENT HAVING JURISDICTION, OBTAIN PERMITS OR LICENSES NECESSARY TO CARRY OUT THIS WORK AND PAY ALL FEES THEREFORE. THE CONTRACTOR SHALL ARRANGE FOR INSPECTION AND TESTS OF ANY OR ALL PARTS OF THE WORK IF SO REQUIRED BY AUTHORITIES AND PAY ALL CHARGES FOR SAME. THE CONTRACTOR SHALL PAY ALL COSTS FOR AND FURNISH TO THE OWNER BEFORE FINAL BILLING, ALL CERTIFICATES NECESSARY AS EVIDENCE THAT THE WORK INSTALLED CONFORMS WITH ALL REGULATIONS WHERE THEY APPLY TO THIS WORK. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY AND REQUIRED SIGN-OFFS AND APPROVALS FOR THE WORK INSTALLED.
3. SHOP DRAWINGS:
- A. PRIOR TO THE INSTALLATION OF ANY WORK AND PROCUREMENT OF EQUIPMENT PROVIDE COMPLETE SET OF COORDINATED SHOP DRAWINGS OF ALL NEW AND EXISTING EQUIPMENT, INDICATING CAPACITY DIMENSIONS AND SEQUENCE OF OPERATION FOR WRITTEN APPROVAL BY THE ARCHITECT AND ENGINEER.
- B. INDICATE ON EACH SHOP DRAWINGS SUBMITTED:
- 1) PROJECT NAME AND LOCATION.
- 2) NAME OF ARCHITECT AND ENGINEER.
- 3) ITEM IDENTIFICATION.
- 4) APPROVAL STAMP OF PRIME CONTRACTOR.
- C. SUBMISSIONS:
- 1) SUBMISSIONS 11 IN. X 17 IN. OR SMALLER: IF THE SUBMISSION IS A CATALOG CUT, THEN THE CONTRACTOR SHALL SUBMIT ONE ORIGINAL AND TWO COPIES. OTHERWISE, HE SHALL SUBMIT THREE COPIES. THE ARCHITECT WILL FORWARD THE ORIGINAL AND ONE COPY (TWO COPIES WHEN NO ORIGINAL IS RECEIVED) TO THE ENGINEER. ALL CATALOG CUTS SHALL BE COMPLETE.
- 2) SUBMISSIONS LARGER THAN 11 IN. X 17 IN.: SUBMIT TWO PRINTS AND ONE PAPER SEPIA TO THE ARCHITECT. THE ARCHITECT WILL FORWARD ONE PRINT AND THE PAPER SEPIA TO THE ENGINEER.
- D. SUBMIT SHOP DRAWINGS FOR THE FOLLOWING:
- 1) PIPE AND FITTINGS.
- 2) VALVES.
- 3) PLUMBING FIXTURES AND TRIM.
- 4) PIPING LAYOUTS.
- 5) SUPPORTS, HANGERS AND GUIDES.
- 6) INSULATION.
4. AS-BUILT DRAWINGS AND EQUIPMENT OPERATIONAL INSTRUCTIONS:
- A. UPON COMPLETION AND ACCEPTANCE OF WORK, CONTRACTOR SHALL FURNISH WRITTEN INSTRUCTIONS AND EQUIPMENT MANUALS AND DEMONSTRATE TO THE OWNER THE PROPER OPERATION AND MAINTENANCE OF ALL EQUIPMENT AND APPARATUS FURNISHED UNDER THIS CONTRACT.
- B. THESE INSTRUCTIONS SHALL BE TYPED ON 8-1/2 IN. X 11 IN. PAPER AND BOUND IN THREE RING BINDERS WITH CLEAR ACETATE COVERS. CONTRACTOR SHALL GIVE THREE COPIES OF THE INSTRUCTIONS TO THE OWNER AND ONE COPY TO THE ENGINEER.
- C. THE INSTRUCTION BOOKLET SHALL BEAR THE NAME, ADDRESS AND TELEPHONE NUMBER OF THE PROJECT, ARCHITECT AND ENGINEER.
- D. REPRODUCIBLE "AS-BUILT" DRAWINGS SHALL BE PROVIDED INDICATING THE AS INSTALLED CONDITIONS OF THE WORK. "AS-BUILT" DRAWINGS SHALL BE PROVIDED TO THE ARCHITECT AFTER COMPLETION OF THE INSTALLATION.
5. GENERAL PROVISIONS FOR PLUMBING WORK:
- A. SPECIFICATIONS ARE OF SIMPLIFIED FORM AND INCLUDE INCOMPLETE SENTENCES. WORDS OR PHRASES SUCH AS "THE CONTRACTOR SHALL," "SHALL BE," "FURNISH," "PROVIDE," "A," "THE," AND "ALL" HAVE BEEN OMITTED FOR BREVITY.
- B. DEFINITIONS:
- 1) "PROVIDE": TO SUPPLY, INSTALL AND CONNECT UP COMPLETE AND READY FOR SAFE AND REGULAR OPERATION THE PARTICULAR WORK REFERRED TO UNLESS SPECIFICALLY OTHERWISE NOTED.
- 2) "INSTALL": TO ERECT, MOUNT AND CONNECT COMPLETE WITH RELATED ACCESSORIES.
- 3) "FURNISH" OR "SUPPLY": TO PURCHASE, PROCURE, ACQUIRE AND DELIVER COMPLETE WITH RELATED ACCESSORIES.
- 4) "WORK": LABOR, MATERIALS, EQUIPMENT, APPARATUS, CONTROLS, ACCESSORIES AND OTHER ITEMS REQUIRED FOR PROPER AND COMPLETE INSTALLATION.
- 5) "CONCEALED": EMBEDDED IN MASONRY OR OTHER CONSTRUCTION, INSTALLED IN FURRED SPACES, WITHIN DOUBLE PARTITIONS OR HUNG CEILINGS, IN TRENCHES, IN CRAWL SPACES, OR IN ENCLOSURES.

- 6) "EXPOSED": NOT INSTALLED UNDERGROUND OR "CONCEALED" AS DEFINED ABOVE.
- 7) "SIMILAR" OR "EQUAL": EQUAL IN MATERIALS, WEIGHT, SIZE, DESIGN, PERFORMANCE AND EFFICIENCY OF SPECIFIED PRODUCT.
- C. QUALITY ASSURANCE:
- 1) QUALITY AND GAUGE OF MATERIALS: NEW, BEST OF THEIR RESPECTIVE KINDS, AND FREE FROM DEFECTS. MATERIALS AND EQUIPMENT OF SIMILAR APPLICATION SHALL BE OF SAME MANUFACTURER, EXCEPT AS NOTED.
- 2) GUARANTEE: ALL MATERIALS AND WORKMANSHIP SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR FROM DATE OF ACCEPTANCE OF WORK.
- D. PRODUCT DELIVERY, STORAGE AND HANDLING:
- 1) MOVING OF EQUIPMENT: WHERE NECESSARY, SHIP IN CARTED SECTIONS OF SIZE TO PERMIT PASSING THROUGH AVAILABLE SPACES.
- 2) ACCESSIBILITY: FOR OPERATION, MAINTENANCE AND REPAIR, MINOR DEVIATIONS SHALL BE PERMITTED. CHANGES OF MAGNITUDE OR INVOLVING EXTRA COST ARE NOT PERMISSIBLE WITHOUT REVIEW.
- E. BRUSH AND CLEAN WORK PRIOR TO CONCEALING, PAINTING AND ACCEPTANCE. PAINTED EXPOSED WORK THAT IS SOILED OR DAMAGED. CLEAN AND REPAIR TO MATCH ADJOINING WORK BEFORE FINAL ACCEPTANCE. REMOVE DEBRIS FROM INSIDE AND OUTSIDE OF MATERIAL AND EQUIPMENT.
- F. FINAL LOCATIONS AND MOUNTING ORIENTATIONS OF ALL PLUMBING FIXTURES SHALL BE VERIFIED BY ARCHITECT.
- G. ALL ACCESS DOOR LOCATIONS SHALL BE REVIEWED BY ARCHITECT PRIOR TO INSTALLATION.
6. PIPE AND FITTINGS:
- A. SANITARY DRAINAGE AND VENT:
- 1) HUBLESS CAST IRON SOIL PIPE AND FITTINGS WITH ANCON FOUNDRY HUSKY SERIES 4000 EXTRA WIDE HEAVY DUTY GASKETED HUBLESS COUPLINGS.
- 2) HUB AND SPIGOT CAST IRON PIPE AND FITTINGS WITH NEOPRENE GASKETED JOINTS.
- B. DOMESTIC WATER:
- 1) TYPE "L" HARD COPPER TUBING WITH CAST BRONZE OR WROUGHT COPPER FITTINGS AND LEAD-FREE SOLDER JOINTS.
- 2) STANDARD WEIGHT RED BRASS PIPE WITH STANDARD WEIGHT CAST BRONZE THREADED FITTINGS.
- C. NATURAL GAS:
- 1) SCHEDULE 40 BLACK STEEL PIPE WITH THREADED MALLEABLE IRON FITTINGS FOR PRESSURES BELOW 2 PSI AND WELDED FITTINGS FOR PRESSURES 2 PSI AND ABOVE.
- 2) PIPING 4 INCHES DIAMETER AND LARGER SHALL HAVE WELDED FITTINGS.
- C. ALL EXPOSED PIPE AND FITTINGS SHALL BE CHROME PLATED BRASS.
- D. ALL EXPOSED PIPING PASSING THROUGH WALLS, FLOORS, CEILINGS, AND PARTITIONS SHALL BE PROVIDED WITH CHROME PLATED CAST BRASS ESCUTCHEONS HELD IN PLACE WITH SET SCREWS.
7. VALVES:
- A. GATE VALVES:
- 1) BRONZE RISING STEM, 200 PSI SIMILAR TO NIBCO T-111 (THREADED), S-111 (SWEAT).
- B. BALL VALVES:
- 1) TWO-PIECE, BRONZE, END ENTRY, 600 PSI WWP; SIMILAR TO NIBCO T-585-70 (THREADED), S585-70 (SWEAT).
- C. CHECK VALVES:
- 1) BRONZE, THREADED CAP, TEFLON DISC; SIMILAR TO NIBCO T-433 (THREADED), S-433 (SWEAT).
8. INSULATION:
- A. ALL INSULATION (INCLUDING JACKET, FACING AND ADHESIVE) SHALL HAVE COMPOSITE FIRE AND SMOKE HAZARD RATINGS AS TESTED BY PROCEDURES LISTED IN ASTM E-84, NFPA 264 AND UL 273; NOT EXCEEDING A FLAME SPREAD OF 25 AND A SMOKE DEVELOPED OF 50.
- B. PROVIDE PVC SHIELDED PREMOLDED FIBERGLASS INSULATION FITTINGS ON ALL VALVES AND PIPE FITTINGS.
- 1) PROVIDE VAPOR BARRIER ON ALL COLD WATER VALVES AND FITTINGS.
- C. PIPE INSULATION SHALL BE SECTIONAL COVERED FIBERGLASS SECURED IN PLACE WITH ADHESIVE TAPE BANDS 1 INCH WIDE.
- 1) INSULATION SHALL NOT BE SECURED WITH STAPLES.
- D. PROVIDE 1/2 INCH THICK INSULATION WITH VAPOR BARRIER ON ALL COLD WATER PIPING.
- E. PROVIDE 1 INCH THICK INSULATION ON ALL HOT WATER PIPING.
9. PLUMBING FIXTURES:
- A. PROVIDE ALL FIXTURES WITH STOP VALVES AND SUPPLIES AND FIXTURE TRAPS AS REQUIRED.
- B. ALL FIXTURES SHALL BE AS SCHEDULED ON THE DOCUMENTS.
- C. REFER TO ARCHITECTURAL DOCUMENTS FOR EXACT LOCATIONS AND MOUNTING HEIGHTS OF ALL PLUMBING FIXTURES.
10. PIPING SUPPORTS:
- A. SUPPORT ALL PIPING FROM BUILDING CONSTRUCTION BY PROVIDING INSERTS, BEAM CLAMPS, STEEL FISH-PLATES (IN CONCRETE FILL ONLY), AND ACCEPTABLE BRACKETS. SUBMIT ALL METHODS FOR REVIEW.
- B. PROVIDE TRAPEZE HANGERS OF BOLTED ANGLES OR CHANNELS FOR GROUPED LINES AND SERVICES.
- C. PROVIDE ADDITIONAL FRAMING WHERE BUILDING CONSTRUCTION IS INADEQUATE. SUBMIT FOR REVIEW.
- D. SUSPENDED HORIZONTAL PIPING:
- 1) SUPPORT ALL PIPING INDEPENDENTLY FROM STRUCTURE USING HEAVY IRON-HINGED TYPE HANGERS, SIMILAR TO GRINNELL CLEVIS NO. 260.
- 2) PROVIDE ELECTROPLATED SOLID-BAND HANGERS SIMILAR TO AUTO-GRIP, FOR TWO-INCH AND SMALLER PIPE.
- 3) PROVIDE WALL BRACKETS FOR WALL-SUPPORTED PIPING, AND PROVIDE PIPE SADDLES FOR FLOOR-MOUNTED PIPING.
- 4) PROVIDE SUPPORTS WITH COPPER LINING FOR UNINSULATED COPPER PIPING.

- 5) SUSPEND PIPING FROM INSERTS, USING BEAM CLAMPS WITH RETAINING CLAMP OR LOCKNUT, STEEL FISH PLATES, CANTILEVER BRACKETS OR OTHER ACCEPTED MEANS. BEAM CLAMPS SHALL BE SIMILAR TO GRINNELL FIGURES 61, 87, 131, OR 225.
- 6) SUSPEND PIPING BY RODS WITH DOUBLE NUTS.
- 7) PROVIDE ADDITIONAL STEEL FRAMING AS REQUIRED AND ACCEPTED WHERE OVERHEAD CONSTRUCTION DOES NOT PERMIT FASTENING HANGER RODS IN REQUIRED LOCATIONS.
- 8) SUPPORT BRANCH FIXTURE WATER PIPING IN CHASES WITH COPPER-PLATED METAL BRACKETS, SECURED TO STUDS, SIMILAR TO HOLDRITE NOS. 102-18, 107-18, 102-26, OR 101-26.
- E. PROVIDE 180 DEGREE ARC GALVANIZED METAL COVERING SHIELDS ON HANGERS FOR INSULATED PIPING WITHOUT INCOMPRESSIBLE INSULATING BLOCK IN INSULATION AT HANGERS.
- F. MAXIMUM HANGER SPACING AS INDICATED.
- 1) PIPE 1 INCH AND SMALLER SHALL BE EVERY 8 FEET.
- 2) PIPE 1-1/4 INCH AND LARGER SHALL BE EVERY 10 FEET.
- 3) COPPER TUBING 1-1/4 INCH AND SMALLER SHALL BE EVERY 6 FEET.
- 4) COPPER TUBING 1-1/2 INCH AND LARGER SHALL BE EVERY 10 FEET.
- 5) CAST IRON: EVERY 5 FEET AND AT EVERY FITTING OR JOINT.
- G. VERTICAL PIPING:
- 1) PROVIDE EXTENSION PIPE CLAMPS BOLTED TO BARE PIPE ON EACH SIDE AND BEARING EQUALLY ON STRUCTURE OR WELDED TO BEAM.
- 2) PROVIDE SPACING AS INDICATED:
- A. THREADED PIPING SHALL BE EVERY OTHER FLOOR LEVEL, AT A MAXIMUM OF 25 FEET ON CENTERS.
- B. CAST IRON PIPING SHALL BE EVERY FLOOR LEVEL, MAXIMUM 20 FEET ON CENTERS; HUBLESS PIPE IS THE EXCEPTION, REQUIRING A MAXIMUM OF 10 FEET ON CENTERS.
- C. TUBING SHALL BE EVERY FLOOR LEVEL MAXIMUM 10 FEET ON CENTERS.
- H. EXPANSION ANCHORS:
- 1) PROVIDE SMOOTH WALL, NON-SELF-DRILLING INTERNAL PLUG EXPANSION TYPE ANCHORS CONSTRUCTED OF AISC 12L14 STEEL AND ZINC PLATED IN ACCORDANCE WITH FED. SPEC. QQ-A-325 TYPE 1, CLASS 3.
- 2) DO NOT EXCEED 1/4 OF AVERAGE VALVES FOR A SPECIFIC ANCHOR SIZE USING 2000 PSIG (13,800 KPA) CONCRETE ONLY, FOR MAXIMUM WORKING LOADS.
- 3) PROVIDE SPACING AND INSTALL ANCHORS IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
- 4) EXPANSION ANCHORS SHALL BE UL LISTED AND SIMILAR TO HILTI HDI.
11. TESTS:
- A. ALL PLUMBING SYSTEMS SHALL BE TESTED FOR CONTINUITY AND PROPER OPERATION.
- B. DOMESTIC WATER PIPING:
- 1) TEST PIPING HYDROSTATICALLY AT A PRESSURE OF 125 PSI.
- 2) DURATION OF TEST SHALL BE 2 HOURS WITHOUT A LOSS IN PRESSURE.
- C. DRAINAGE AND VENT PIPING:
- 1) CAP ALL OUTLETS AND FILL PIPING SYSTEM TO OVERFLOWING FROM A POINT AT LEAST 10 FEET ABOVE THE FLOOR.
- 2) THE WATER LEVEL SHALL REMAIN CONSTANT THROUGHOUT THE TEST DURATION OF 2 HOURS.
- D. NATURAL GAS PIPING:
- 1) THE PIPING SHALL BE TESTED WITH AIR AT 1.5 TIMES THE WORKING PRESSURE OF THE SYSTEM FOR A DURATION OF 4 HOURS.
- E. ARRANGE AND COORDINATE TESTS WITH OWNER 48 HOURS IN ADVANCE. NOTIFY ENGINEER AND ARCHITECT OF TEST DATE AND TIME.
- F. DEFECTS DISCLOSED BY THE TESTS SHALL BE REPAIRED OR REPLACED. TESTS SHALL BE REPEATED AS DIRECTED UNTIL ALL WORK IS PROVEN SATISFACTORY.
- G. TAKE ALL PRECAUTIONS NECESSARY TO PREVENT DAMAGE TO THE BUILDING AND ITS CONTENTS AS A RESULT OF SUCH TESTS. REPAIR ANY DAMAGE CAUSED.



NEW YORK CITY BUILDING DEPARTMENT NOTE
THIS PLAN IS APPROVED ONLY FOR WORK INDICATED ON THE APPLICATION SPECIFICATION SHEET. ALL OTHER MATTERS SHOWN ARE NOT TO BE RELIED UPON, OR TO BE CONSIDERED AS EITHER BEING APPROVED OR IN ACCORDANCE WITH APPLICABLE CODES.

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RENOVATION**
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BROOKLYN, NY 11221

No. Revision	Date	Description
1	09/23/16	ISSUED FOR REVIEW
2	11/02/16	ISSUED FOR REVIEW
3	11/22/16	ISSUED FOR REVIEW
4	12/19/16	DOB FILING
5	01/31/17	FOR PERMIT 2

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R. T. T. P.E.

SHEET: 160603 Job No.: 321489918
Scale: Code: ES-585620258
160603

PLUMBING
SPECIFICATIONS
(SHEET 1 OF 1)

Project: KN

09 OF 09

P-501.00

GENERAL

- THESE DRAWINGS MAY ONLY BE USED FOR CONSTRUCTION IF PILLORI ASSOCIATES, P.A. IS THE SPECIAL INSPECTION AGENCY.
- IF PILLORI ASSOCIATES, P.A. IS RELEASED OR WITHDRAWS ITS SPECIAL INSPECTION RESPONSIBILITY AND ANOTHER FIRM IS ENGAGED FOR SPECIAL INSPECTION OF THE DESIGN SHOWN ON THESE DRAWINGS, THEN WE REQUIRE THAT PILLORI ASSOCIATES, P.A. BE RETAINED TO REVIEW THE INSPECTION AGENCY'S FIELD REPORTS AND VISIT THE SITE FOR RELEVANT CONSTRUCTION ACTIVITIES.
- ALL DEPTHS SHOWN ARE BASED FROM LOCAL SIDEWALK ELEVATION.
- BASE PLANS WERE DEVELOPED FROM DRAWING FO-100.00 DATED 12-16-2016 BY THE HARMON GROUP.
- LOCATION OF EXISTING AND PROPOSED CONDITIONS INCLUDING BUT NOT LIMITED TO FOUNDATION ELEMENTS AND ELEVATIONS SHALL BE TAKEN FROM STRUCTURAL AND ARCHITECTURAL DRAWINGS.
- LOCATIONS AND ELEVATIONS OF ALL STRUCTURAL BUILDING ELEMENTS SHOWN ON THIS DRAWING MAY BE APPROXIMATE AND SHALL BE SUPERSEDED BY APPROVED STRUCTURAL AND ARCHITECTURAL DRAWINGS.
- ELEMENTS REQUIRED FOR SUPPORT OF EXCAVATION MAY BE INSTALLED OUTSIDE THE PROPERTY LINE PROVIDED THAT ALL NECESSARY PERMITS, EASEMENTS, AND AUTHORIZATIONS ARE OBTAINED IN ACCORDANCE WITH NEW YORK CITY BUILDING DEPARTMENT AND OTHER APPLICABLE LAWS.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE UTILITIES AND SUBSURFACE STRUCTURES PRIOR TO COMMENCING WORK.
- THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL DIMENSIONS IN THE FIELD. IF CONDITIONS OBSERVED IN THE FIELD DIFFER FROM THESE DRAWINGS, THE CONTRACTOR SHALL NOTIFY THE ENGINEER, AND MODIFICATION OF THESE DRAWINGS MAY BE NECESSARY.
- A SITE SAFETY PLAN CONFORMING TO OSHA AND APPLICABLE LAWS SHALL BE THE RESPONSIBILITY OF OTHERS.
- OBSERVED MOVEMENTS OF THE SUPPORT OF EXCAVATION OR OTHER STRUCTURES SHALL BE BROUGHT TO THE ATTENTION OF THE CONSTRUCTION MANAGER AND ENGINEER.
- ANY EXISTING FOUNDATION ELEMENTS THAT BECOME DAMAGED OR LOOSE SHOULD BE BROUGHT TO THE ATTENTION OF THE ENGINEER FOR EVALUATION AND REMEDIATION.
- PINS, WIRE MESH, AND PARGING MAY BE REQUIRED TO STABILIZE ADJACENT FOUNDATION ELEMENTS.
- DEWATERING WILL NOT BE REQUIRED TO COMPLETE THE EXCAVATION.
- THE DESIGNS ON THIS DRAWING ARE INTENDED FOR TEMPORARY SUPPORT OF EXCAVATION ONLY.
- NOTIFY NEW YORK CITY DEPARTMENT OF BUILDINGS 24 TO 48 HOURS PRIOR TO EXCAVATION (RULE 52).
- THE CONTRACTOR SHALL OBTAIN CONSENT LETTERS FROM ADJACENT PROPERTY OWNERS BEFORE INSTALLING TIE-BACKS, UNDERPINNING, OR OTHER MEANS OF SUPPORTING THE EXCAVATION THAT EXTEND BEYOND THE PROPERTY LINES BEFORE INSTALLING OR CONSTRUCTING SUCH MEANS OF SUPPORTING THE EXCAVATION.
- A BOND BREAKER AND A WATERPROOFING LAYER SHALL BE PLACED AGAINST THE FOUNDATION WALL WHEREVER THE FOUNDATION WALL IS POURED DIRECTLY AGAINST A SOLDIER OR TANGENT PILE.

EARTHWORK

- ALLOW SUFFICIENT ROOM FOR LAGGING AND BRACING DURING EXCAVATION. ALL EXCAVATION IN SOIL SHALL BE LAGGED AND SHORED OR SAFELY SLOPED TO MAINTAIN STABILITY.
- REPAIR OR REPLACE ANY EXISTING UNDERPINNING AS DETERMINED IN THE FIELD BY THE GEOTECHNICAL ENGINEER.
- BACKFILL EXCAVATIONS WITH APPROVED MATERIAL IN LAYERS NOT MORE THAN 12 INCHES IN LOOSE DEPTH.
- COMPACT EACH LIFT OF BACKFILL TO 93% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D 1557 PRIOR TO PLACING SUCCESSIVE LIFTS OF MATERIAL.
- WHERE SUBGRADE OR LAYER OF SOIL IS TOO DRY TO BE SATISFACTORY COMPACTED, EITHER SUFFICIENT WATER SHALL BE MIXED WITH THE FILL TO PERMIT PROPER COMPACTION OR THE DRY MATERIAL SHALL BE REPLACED WITH SATISFACTORY FILL MATERIALS.
- ALL UNUSED EXCAVATED MATERIALS SHALL BE REMOVED FROM THE SITE AND DISPOSED OF IN A LEGAL MANNER AT NO ADDITIONAL COST TO THE OWNER.

MATERIALS

- CONCRETE USED FOR HEEL BLOCKS, BUTTON PIERS, AND UNDERPINNING SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI WITHIN 28 DAYS. THE ENGINEER MAY DIRECT THAT CONCRETE CYLINDERS BE TAKEN EVEN WHEN THE VOLUME OF CONCRETE POURED IS LESS THAN 50 CUBIC YARDS.
- STEEL REBARS SHALL CONFORM TO ASTM A615 GRADE 60, $F_y = 60$ KSI.
- THREADED BARS SHALL CONFORM TO ASTM A615 GRADE 75, $F_y = 75$ KSI.
- MECHANICAL CONNECTORS FOR REBARS SHALL BE ABLE TO DEVELOP THE FULL STRENGTH OF THE REBAR.
- CEMENT GROUT USED TO GROUT DOWELS INSERTED INTO BEDROCK SHALL HAVE A MINIMUM STRENGTH OF 5,000 PSI WITHIN 28 DAYS.
- WELDING SHALL BE PERFORMED ACCORDING TO AWS D1.1 USING E70XX ELECTRODES BY CERTIFIED WELDERS.
- ALL STRUCTURAL STEEL, EITHER HOT-ROLLED OR BUILT-UP WELDED SECTIONS SHALL BE DESIGNED, FABRICATED AND INSTALLED IN ACCORDANCE WITH AISC'S LATEST EDITION "SPECIFICATIONS FOR THE DESIGN, FABRICATION, AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS".
- WIDE-FLANGED BEAMS AND WT SHAPES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A992, $F_y = 50$ KSI.
- HP SOLDIER PILES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A572 GRADE 50, $F_y = 50$ KSI.
- DRILLED SOLDIER PILES SHALL CONFORM TO THE REQUIREMENTS OF API 5LX80, $F_y = 80$ KSI. DRILLED SOLDIER PILE SIZES SHOWN ON THE DRAWINGS MAY NOT BE AVAILABLE FROM ALL SUPPLIERS.
- STEEL CHANNELS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A36, $F_y = 36$ KSI.
- RECTANGULAR AND SQUARE HSS TUBING SHALL CONFORM TO THE REQUIREMENTS OF ASTM A500 GRADE B, $F_y = 46$ KSI.
- STEEL BOLTS SHALL BE A325 BOLTS.
- SHEET PILES SHALL HAVE A MINIMUM YIELD STRENGTH OF 39 KSI.
- ALL OTHER STEEL SHAPES SHALL HAVE A MINIMUM YIELD STRENGTH OF 36 KSI.
- STEEL FILLER PLATES AND WEDGES SHALL BE PLACED TO PROVIDE FULL BEARING BETWEEN STEEL PLATES AND WALES.
- SPLICES SHALL DEVELOP THE FULL STRENGTH OF THE STRUCTURAL STEEL MEMBER.
- CCA PRESSURE TREATED LUMBER SHALL BE USED FOR LAGGING WHEN THE LAGGING WILL NOT BE REMOVED.
- LUMBER, DEFINED AS WOOD WHOSE SMALLEST NOMINAL DIMENSION IS LESS THAN 5 INCHES, SHALL BE NUMBER 2 OR STANDARD GRADE DOUGLAS FIR-LARCH OR EQUIVALENT. TIMBER, DEFINED AS WOOD WHOSE SMALLEST NOMINAL DIMENSION IS AT LEAST 5 INCHES, SHALL BE NUMBER 2 GRADE DOUGLAS FIR-LARCH OR EQUIVALENT.
- RECYCLED PLASTIC LAGGING SHALL BE STRUCTURAL GRADE PLASTIC LUMBER.
- MEMBER SIZES SHOWN ON THE DRAWING ARE THE MINIMUM ALLOWED. SUBSTITUTION WITH LARGER MEMBERS OR OF SIMILAR SIZED MEMBERS WITH HIGHER MATERIAL STRENGTH IS PERMITTED.

PRE-CONSTRUCTION SEQUENCE

- ERECT BARRICADE AND SAFETY FENCE AROUND THE PERIMETER OF THE SITE IN ACCORDANCE WITH THE NYC BUILDING CODE, TRAFFIC CONTROL PLANS, AND ALL PERMIT REQUIREMENTS.
- LOCATE ALL UTILITIES AND CLEAR ANY UTILITIES THAT MAY INTERFERE WITH WORK. CAP AND ABANDON UTILITY CONNECTIONS OF EXISTING OR FORMER BUILDINGS AT THE CURB LINE IN ACCORDANCE WITH BUILDING CODE AND UTILITY COMPANY REQUIREMENTS. CLEAR AND CLOSE UTILITIES PRIOR TO SOLDIER PILE INSTALLATION, DRILLING, OR OTHER HEAVY CONSTRUCTION.
- DEMOLISH EXISTING STRUCTURES, SURFACE ASPHALT, AND CONCRETE.

UNDERPINNING CONSTRUCTION SEQUENCE

- UNDERPINNING PITS SHALL EXTEND AT LEAST ONE FOOT BELOW THE NEW SUBGRADE OR UNTIL CLASS 1b OR BETTER BEDROCK IS ENCOUNTERED, WHICHEVER COMES FIRST.
- WHERE EXISTING FOOTINGS ARE FOUNDED ON CLASS 1b OR BETTER ROCK, UNDERPINNING WILL NOT BE REQUIRED.
- THE MAXIMUM UNSUPPORTED HEIGHT OF UNDERPINNING AS MEASURED FROM THE BOTTOM OF THE FOOTING TO THE BOTTOM OF THE EXCAVATION SHALL BE 5 FEET.
- IF UNDERPINNING PITS EXTEND TO WITHIN ONE FOOT OF THE GROUNDWATER TABLE, THE UNDERPINNING PITS SHOULD BE POURED ON 6 INCHES OF CRUSHED STONE, UNLESS THE UNDERPINNING PITS BEAR ON ROCK OR DECOMPOSED ROCK.
- IF DEWATERING IS REQUIRED, THE GROUNDWATER TABLE SHOULD BE LOWERED TO THE REQUIRED ELEVATION BEFORE UNDERPINNING COMMENCES.
- WHERE NEEDED, PARGE ALL EXPOSED FOUNDATION WALLS AND FOOTINGS WITH MORTAR AND W4.0X4.0 WELDED WIRE FABRIC CONFORMING TO ASTM A165.
- DIG UNDERPINNING PITS LABELED NO. 1 AT A MAXIMUM WIDTH OF 4 FEET (3 FEET FOR UNDERPINNING PITS BENEATH RUBBLE STONE WALLS). UNDERPINNING PITS SHOULD BE SHEETED AND SHORED. THE UNDERPINNING PIT SHOULD EXTEND TO THE BOTTOM OF UNDERPINNING ELEVATION.
- CLEAN BOTTOM OF EXISTING FOUNDATION. REMOVE DISTURBED SUBGRADE MATERIAL. THE ENGINEER WILL INSPECT AND APPROVE SUBGRADE. PLACE ANY REQUIRED REBARS IN THE UNDERPINNING PIT.
- POUR NEW CONCRETE IN UNDERPINNING PITS LABELED NO. 1. UNDERPINNING PITS WITHOUT CONTINUOUS VERTICAL REINFORCEMENT SHALL BE POURED IN A SINGLE POUR. AFTER A MINIMUM PERIOD OF 24 HOURS, INSTALL STEEL WEDGES AND PLATES AND PACK 2" DRYPACK (A MIXTURE OF 1 PART CEMENT TO 2 PARTS DAMP SAND, WITH 0" SLUMP) INTO SPACE BETWEEN TOP OF UNDERPINNING PITS AND BOTTOM OF EXISTING FOOTINGS TO TRANSFER LOAD.
- BACKFILL APPROACH PIT IN 2 FT. COMPACTED LAYERS TO INTERMEDIATE EXCAVATION LEVEL IF BRACES OR ANCHORS ARE INSTALLED.
- REPEAT STEPS 6 THROUGH 9 AT ALL REMAINING SERIES OF PITS IN SEQUENCE SHOWN ON THESE PLANS.
- IF THE UNDERPINNING PITS ARE BRACED OR ANCHORED, DO NOT EXCAVATE MORE THAN 2 FEET BELOW THE BRACE OR ANCHOR ELEVATION BEFORE INSTALLING THE BRACES OR ANCHORS. IF ANCHORS ARE USED, DO NOT CONTINUE THE EXCAVATION UNTIL THE ANCHORS HAVE BEEN TESTED AND LOCKED OFF AS DESCRIBED IN THE TIEBACK ANCHOR SECTION OF THE GENERAL NOTES. HEEL BLOCKS NEAR EXISTING FOOTINGS SHALL BE CONSTRUCTED IN SHEETED PITS. IF HEEL BLOCKS ARE USED, DO NOT CONTINUE THE EXCAVATION UNTIL THE HEEL BLOCKS HAVE REACHED 75% OF THE DESIGN STRENGTH.
- EXCAVATE TO THE BOTTOM OF EXCAVATION ELEVATION.
- COMPLETE CONSTRUCTION OF CONCRETE FOUNDATION ELEMENTS.
- UNDERPINNING SHOWN ON THE PLANS IS THE MINIMUM THAT IS EXPECTED. ADDITIONAL UNDERPINNING NOT SHOWN ON THESE PLANS MAY ALSO BE REQUIRED.

SURVEY AND MONITORING

- MONITORING PLAN AND SURVEY AND MONITORING NOTES SHOWN ON DRAWING X-001.

SPECIAL INSPECTION

PROVIDE SPECIAL INSPECTION FOR THE FOLLOWING AS NEEDED:

- SUBGRADE INSPECTION - BC 1704.7.1
- EXCAVATIONS - SHEETING, SHORING, AND BRACING - BC 1704.20.2
- UNDERPINNING - BC 1704.20.3 AND 1814

LIST OF DRAWINGS

SHEET	DRAWING NO.	DRAWING TITLE
1	SOE-001	GENERAL NOTES
2	SOE-002	PLAN VIEW
3	SOE-003	ELEVATION 1, SECTION 1, AND DETAILS

PROJECT NAME:

636 KNICKERBOCKER AVENUE
BROOKLYN, NEW YORK

CLIENT NAME:

WINCHESTER EQUITIES
333 7TH AVENUE - 3RD FLOOR
NEW YORK, NEW YORK 10001

GEOTECHNICAL ENGINEER:

PILLORI ASSOCIATES, P.A.
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No. DRAWINGS/REVISIONS DATE

DRAWING TITLE:

UNDERPINNING
GENERAL NOTES

DRAWN: EV CHECKED: GP REVIEWED: GP

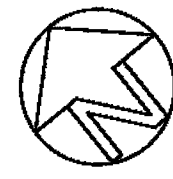
DATE: 01/20/2017

SCALE: AS NOTED

JOB NO.: 181010

DRAWING NO. SOE-001.00

SHEET 1 OF 3



KNICKERBOCKER AVENUE (70'-0" WIDE)

STONE CURB

CONCRETE SIDEWALK

PROPERTY LINE

636 KNICKERBOCKER AVENUE
3 STORY MASONRY BUILDING WITH CELLAR
EXISTING CELLAR EL. -8.67 ±

3X12 LAGGING BOARDS
BEHIND FOUNDATION WALL
FOR EXCAVATION OF NEW
COLUMN

SURVEY MONITORING
POINT (TYP)

1
SOE-3

PROPERTY LINE

CONCRETE SIDEWALK

STONE CURB

MADISON STREET (60'-0" WIDE)

WOODEN FENCE ALONG LINE

PROPERTY LINE

1285 MADISON STREET
2 STORY BRICK AND FRAME BUILDING WITH
BASEMENT

YARD

280 WOODBINE STREET
REAR 2 STORY BRICK GARAGE

CONCRETE BLOCK WALL

YARD

PLAN VIEW OF UNDERPINNING

SCALE: 1" = 5'

NOTE: REBARS NOT SHOWN.

PROJECT NAME:

636 KNICKERBOCKER AVENUE
BROOKLYN, NEW YORK

CLIENT NAME:

WINCHESTER EQUITIES
333 7TH AVENUE - 3RD FLOOR
NEW YORK, NEW YORK 10001

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No.	DRAWINGS/REVISIONS	DATE
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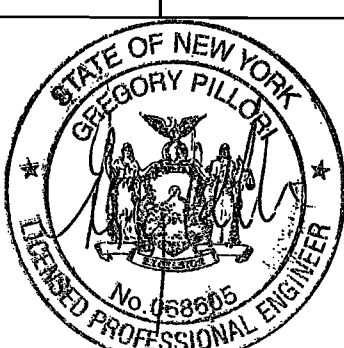
FEB 03 2017
Robert G. Pillori, P.E.

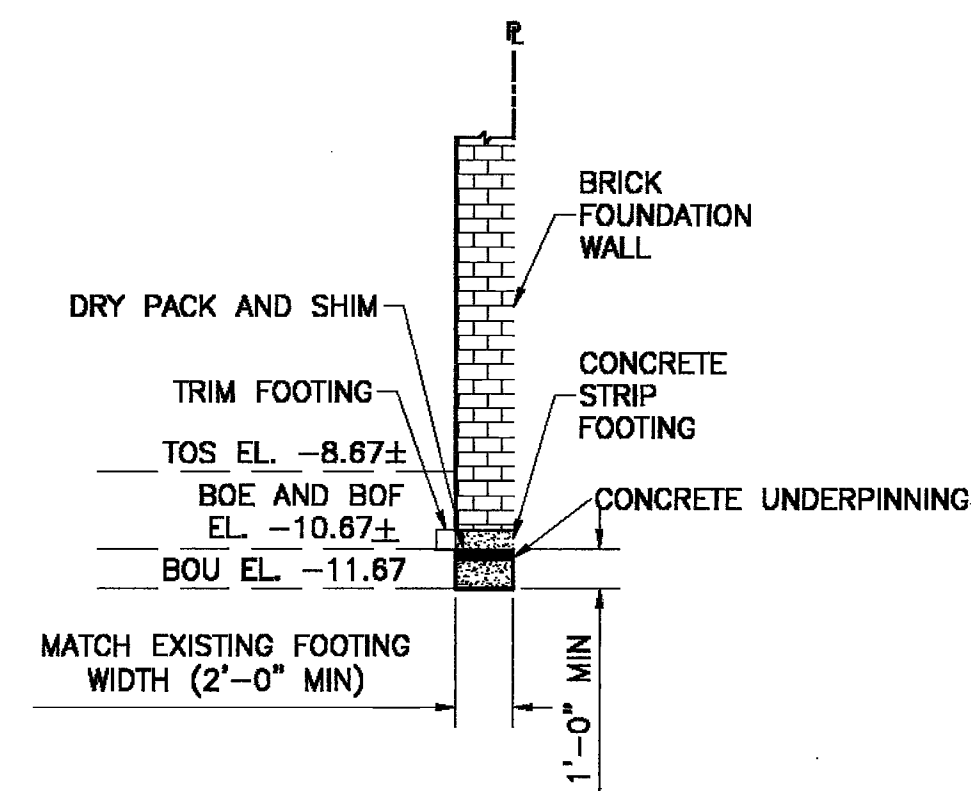
DEPT. 16008 Job No. 321499918
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DRAWING TITLE:
**UNDERPINNING
PLAN VIEW**

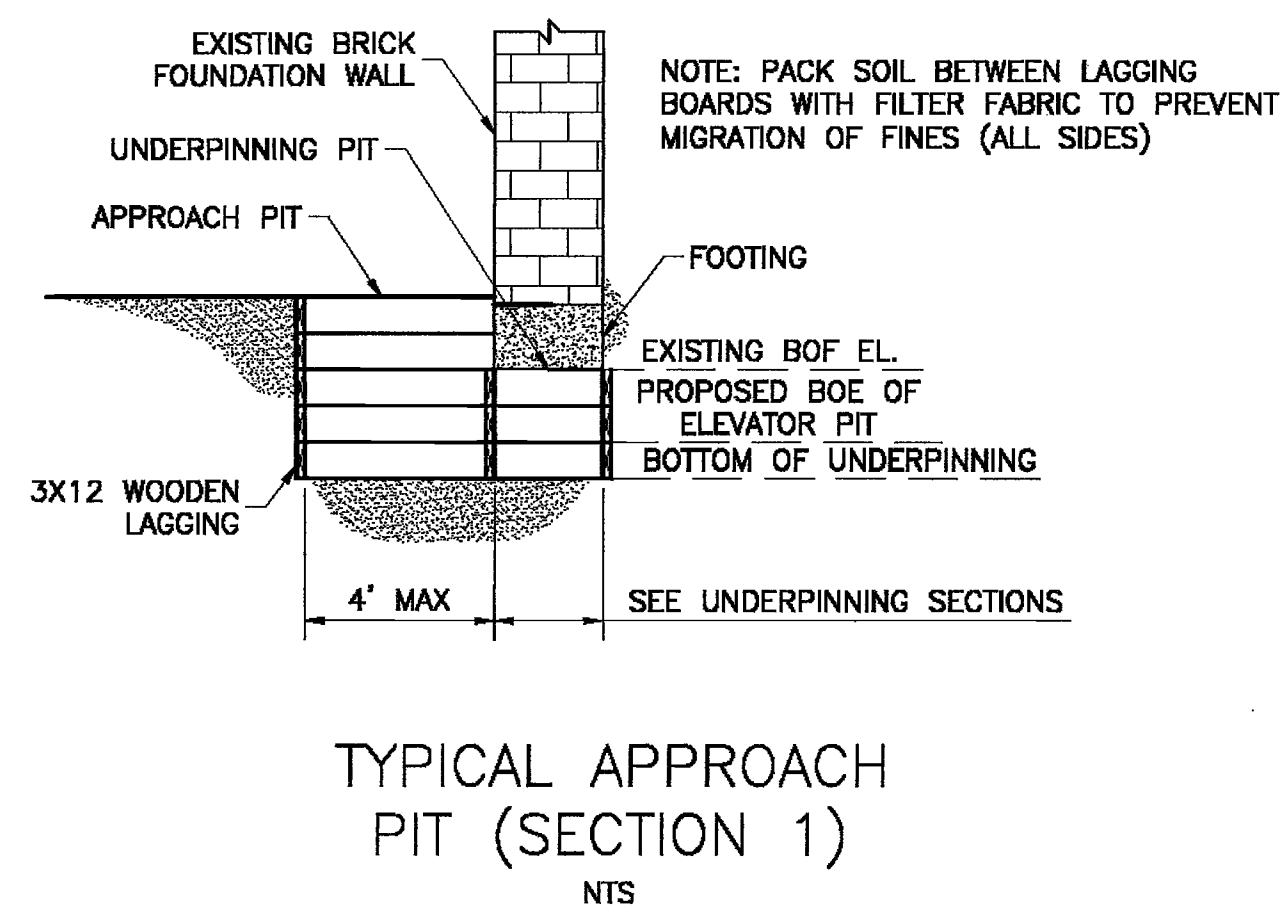
DRAWN:	CHECKED:	REVIEWED:
EV	GP	GP

DATE:	01/20/2017
SCALE:	AS NOTED
JOB NO.:	161010
DRAWING NO.:	SOE-002.00
SHEET	2 OF 3

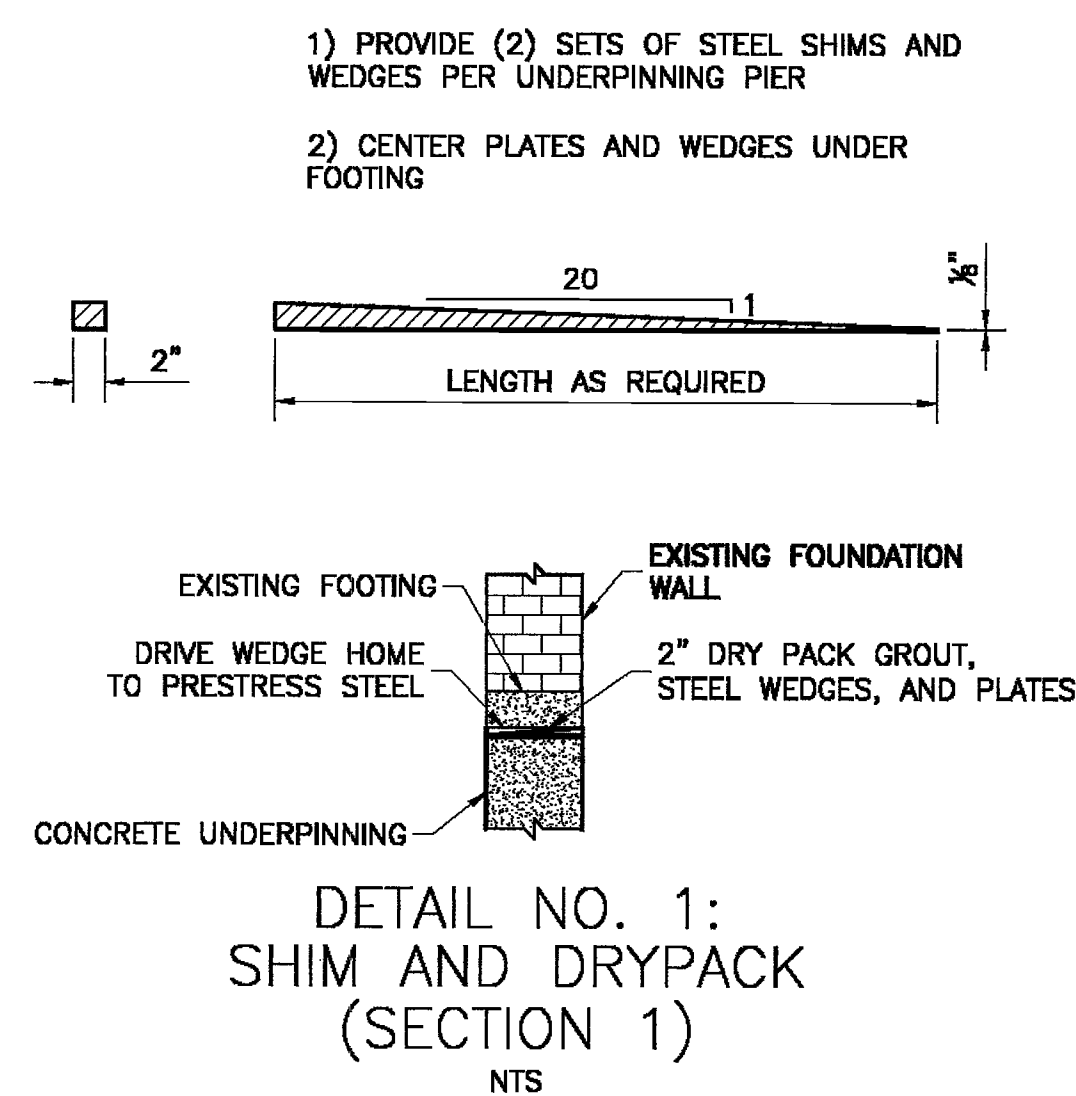




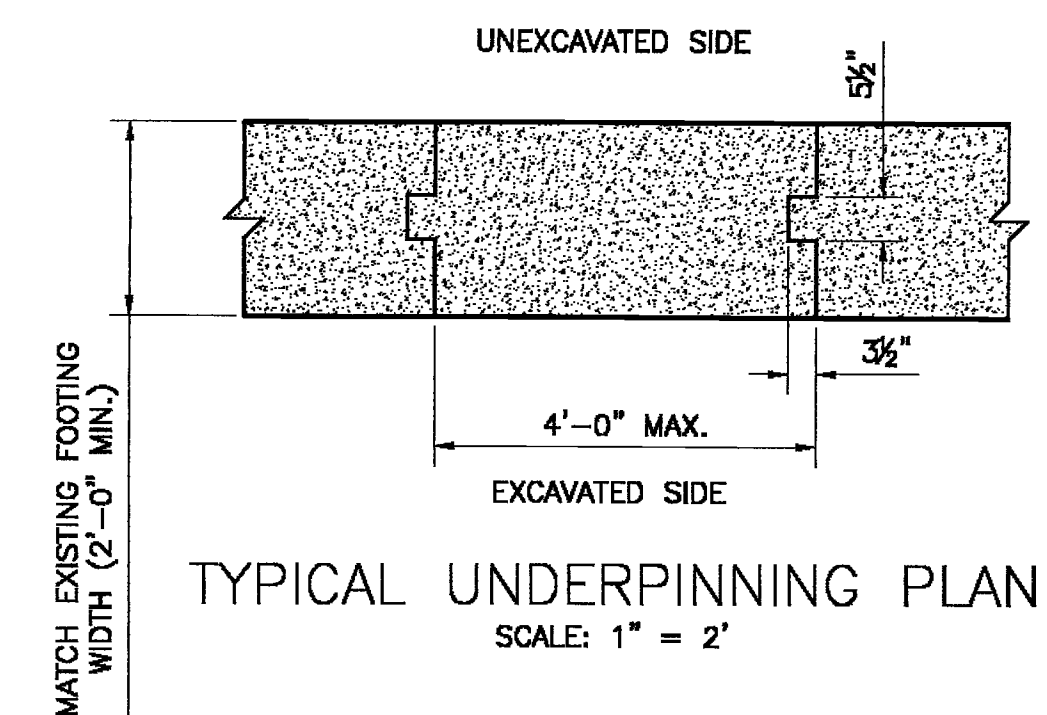
ELEVATION 1
SCALE: 1" = 5'



TYPICAL APPROACH
PIT (SECTION 1)
NTS



DETAIL NO. 1:
SHIM AND DRYPACK
(SECTION 1)
NTS



TYPICAL UNDERPINNING PLAN
SCALE: 1" = 2'


SOE-003.00
 SHEET 3 OF 3

NOTES:

1. A PRE-CONSTRUCTION (PRE-CONDITION) SURVEY SHALL BE PERFORMED FOR ALL STRUCTURES ADJACENT TO THE CONSTRUCTION SITE PRIOR TO THE START OF WORK. THE PRE-CONSTRUCTION SURVEYS SHALL INCLUDE A PHOTOGRAPHIC RECORD OF EXTERIOR BUILDING SURFACES.
2. ALL INSTRUMENT LOCATIONS SHOWN ARE APPROXIMATE AND FOR PLANNING PURPOSES. ACTUAL LOCATIONS WILL BE DETERMINED IN THE FIELD.
3. CRACK GAGE LOCATIONS ARE NOT SHOWN AND WILL BE SELECTED BASED ON THE PRE-CONSTRUCTION CONDITION SURVEY. CRACK GAGES SHALL BE INSTALLED ON CRACKS GREATER THAN 1/8-INCH IN WIDTH.
4. THE OWNER WILL PERFORM A PRE-CONSTRUCTION (PRE-CONDITION) SURVEY OF ADJACENT BUILDINGS PRIOR TO UNDERPINNING INSTALLATION AND EXCAVATION. THE RESULTS OF THESE SURVEYS WILL BE AVAILABLE FOR THE CONTRACTOR'S INFORMATION (N.I.C.).
5. OPTICAL SURVEY (N.I.C., WORK DESCRIBED IN THIS SECTION SHALL BE PERFORMED BY LICENSED SURVEYOR RETAINED BY THE OWNER):

A. ADJACENT BUILDINGS SHALL BE OPTICALLY MONITORED FOR LATERAL AND VERTICAL MOVEMENT. PROVIDE MONITORING POINTS AT LOCATIONS SHOWN ON THE CONTRACT DRAWINGS. OPTICAL SURVEY POINTS ON MULTI-STORY BUILDINGS REPRESENTS TWO POINTS INSTALLED AT MID-LEVEL OF THE FIRST FLOOR AND ANOTHER AT THE PARAPET DIRECTLY ABOVE.

B. DURING EXCAVATION AND UNDERPINNING INSTALLATION, AND UPON COMPLETION OF EXCAVATION, PERFORM OPTICAL MONITORING OF ALL THE POINTS AT THE FREQUENCY SHOWN ON TABLE 1. INCREASED FREQUENCY OF READINGS MAY BE REQUIRED DEPENDING ON DATA TRENDS AND CONSTRUCTION ACTIVITIES.

C. PROVIDE A PLOT (GRAPH) OF MOVEMENT AGAINST TIME FOR ALL READINGS TO THE ENGINEER WITHIN 24 HOURS OF THE READINGS.

7. CRACK GAGE MONITORING (N.I.C., WORK DESCRIBED IN THIS SECTION SHALL BE PERFORMED BY INSTRUMENTATION ENGINEER RETAINED BY THE OWNER):

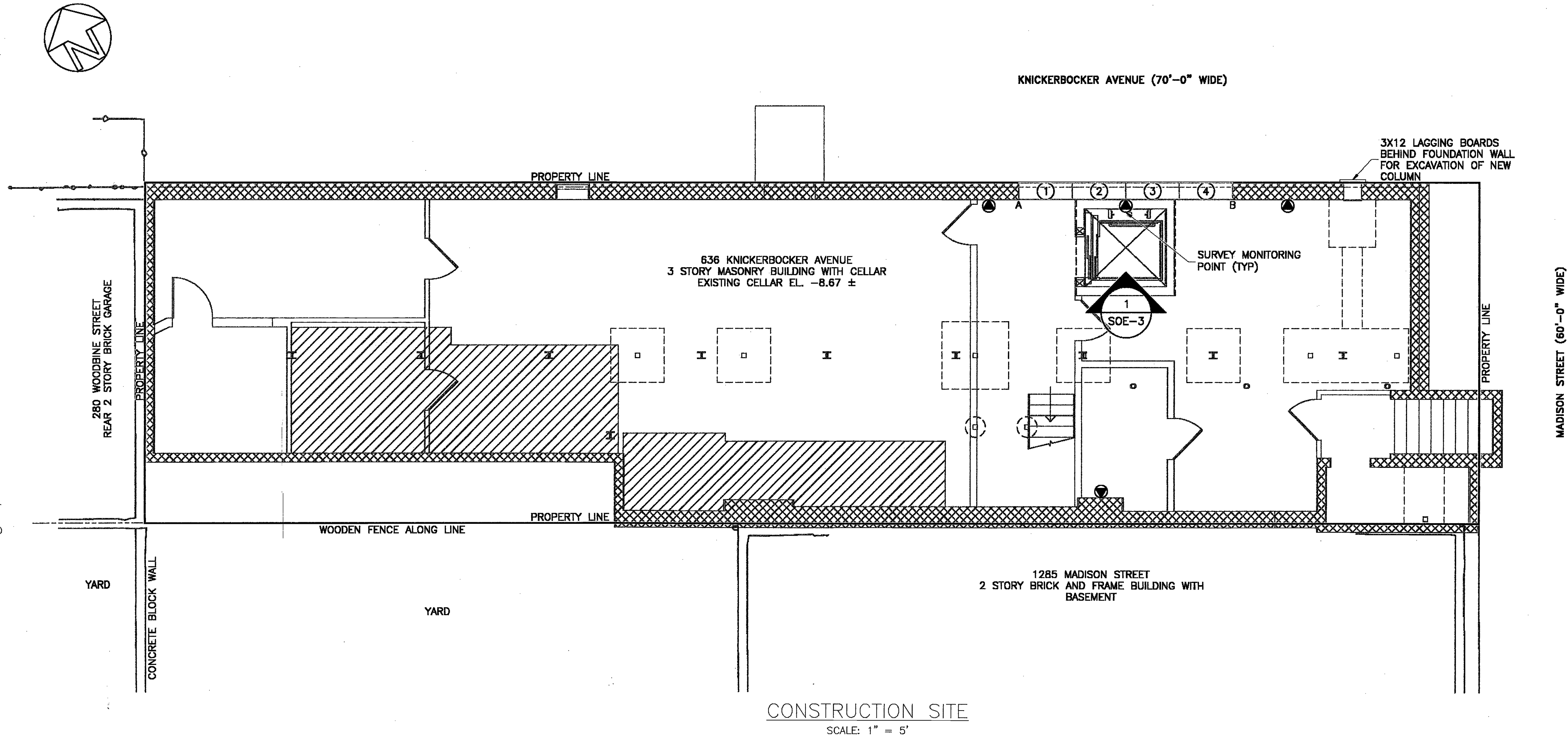
A. INSTALL CRACK GAGES ON EXISTING BUILDINGS AT LOCATIONS IDENTIFIED AFTER PERFORMING PRE-CONSTRUCTION CONDITION SURVEYS.

B. READ CRACK GAGES DURING EXCAVATION AND UNDERPINNING INSTALLATION UNTIL THE GROUND FLOOR SLAB IS CONSTRUCTED, AT THE FREQUENCY SHOWN ON TABLE 1.

8. BUILDING THRESHOLD AND LIMITING CRITERIA:

A. IF THE BUILDING MOVEMENT REACHES THE THRESHOLD CRITERIA SHOWN ON TABLE 1, IMMEDIATELY INFORM THE ENGINEER.

9. ALL MONITORING DATA WILL BE AVAILABLE TO THE CONTRACTOR. IF MOVEMENTS EXCEED THE LIMITING VALUE SPECIFIED, THEN THE CONTRACTOR SHALL REVISE THE WORK PROCEDURES AS APPROVED BY THE ENGINEER.



SYMB.	INSTRUMENTS	BASELINE	READING FREQUENCY	THRESHOLD CRITERIA	LIMITING CRITERIA
N/A	PRE-CONDITION SURVEY	EXTERIOR SURVEY OF ADJACENT BUILDINGS: 1285 MADISON STREET, 280 WOODBINE STREET	N/A	N/A	N/A
	OPTICAL MONITORING POINT	PROVIDE THREE INDEPENDENT READING SETS OF X, Y, Z POSITION TWO WEEKS PRIOR TO UNDERPINNING INSTALLATION AND/OR EXCAVATION.	MONITOR ALL OPTICAL POINTS	0.25 INCHES	0.5 INCHES
N/A	CRACK GAGES	THREE READINGS PRIOR TO EXCAVATION AND SOE CONSTRUCTION	ONCE PER WEEK	0.125 INCHES	0.25 INCHES

PROJECT NAME:

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CLIENT NAME:

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GEOTECHNICAL ENGINEER:

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No. DRAWINGS/REVISIONS DATE

EXAMINED FOR JOURNAL, EGRESS AND FIRE
PREVENTION ONLY AS PER D.O.R. 276

FEB 03 2017

Rudolf Goy, P.E.



DRAWING TITLE:

MONITORING PLAN

DRAWN: EV CHECKED: GP REVIEWED: GP

DATE: 01/20/2017

SCALE: AS NOTED

JOB NO.: 161010

DRAWING NO. X-001.00

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