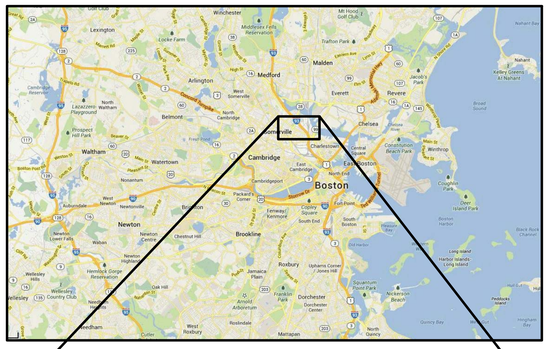
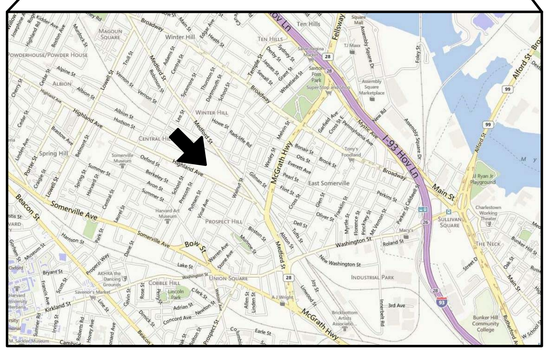
City of Somerville

Somerville High School Renovations to Room 143

81 Highland Avenue, Somerville, MA 02143



VICINITY MAP



LOCUS MAP



OVERVIEW

LIST OF DRAWINGS

GENERAL

- COVERSHEET

ARCHITECTURAL
A001 SYMBOLS, ABBREVIATIONS AND PROJECT NOTES
AD101 DEMOLITION FLOOR PLAN
A101 FIRST FLOOR PART PLAN
A401 ENLARGED TOILET ROOM PLAN AND INTERIOR ELEVATIONS
A402 FIRST FLOOR REFLECTED CEILING PLAN
A510 INTERIOR DETAILS
A601 DOOR SCHEDULE, ELEVATIONS AND DETAILS
A701 INTERIOR ELEVATIONS

PLUMBING
P0.00 PLUMBING NOTES AND DETAILS
P1.00 PLUMBING NOTES AND DETAILS
P2.00 PLUMBING DEMO AND NEW WORK PART PLANS

HEATING VENTILLATION AND AIR CONDITIONING
H0.00 HVAC LEGENDS AND ABBREVIATIONS
H1.00 HVAC NOTES AND SPECIFICATIONS
HD2.00 HVAC DEMOLITION PART FLOOR PLAN
H2.00 HVAC PART FLOOR PLAN

ELECTRICAL
E0.00 ELECTRICAL LEGEND, NOTES, SCHEDULES AND ABBREVIATIONS
E0.01 ELECTRICAL SPECIFICATIONS AND DETAILS
ED3.00 ELECTRICAL POWER DEMOLITION PART FLOOR PLAN
E3.00 ELECTRCIAL POWER AND LIGHTING PART FLOOR PLAN

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Boston, Massachusetts 02110

Somerville Public Schools
Education · Inspiration · Excellence

19431.03 SOMERVILLE HIGH SCHOOL RENOVATIONS TO ROOM 143

ABBREVIATIONS LIST

&,	AND
∠	ANGLE
@	AT
℄, C.L.	CENTERLINE
⊏ , C	CHANNEL
⌀	DIAMETER OR ROUND
⊀	PENNY (NAIL)
℔, PL, PL'S	PLATE(S)
#, NO, NO'S	NUMBER(S)

A

A.B.	ANCHOR BOLT
ABV.	ABOVE
A/C	AIR CONDITIONING
A.C.	ASPHALTIC CONCRETE
ACOUS.	ACOUSTICAL
ACT	ACOUSTICAL CEILING TILE
A.D.	AREA DRAIN
ADDM	ADDENDUM
ADJ.	ADJUSTABLE
ADJA.	ADJACENT
AGGR.	AGGREGATE
A.F.F.	ABOVE FINISH FLOOR
AL.	ALUMINUM
ALT.	ALTERNATE
ANOD.	ANODIZED
A.P.	ACCESS PANEL
APPROX.	APPROXIMATE
ARCH.	ARCHITECT(URAL)
ASPH.	ASPHALT
A.T.	ACOUSTICAL TILE

B

B.C.	BOTTOM OF CURB
BD.	BOARD
BIT.	BITUMINOUS
BLDG.	BUILDING
BLK.	BLOCK
BLKG.	BLOCKING
B.M.	BENCHMARK
BM	BEAM
BOT.	BOTTOM
B.R.	BEDROOM
BRKT.	BRACKET
BRNZ.	BRONZE
B.S.	BOTTOM OF STAIR
BSMT.	BASEMENT
BTWN.	BETWEEN
B.U.R.	BUILT-UP ROOF(ING)
B.W.	BOTTOM OF WALL

C

CAB.	CABINET
CPT	CARPET
C.B.	CATCH BASIN
C.B.B.	CEMENT BACKER BOARD
CEM.	CEMENT
CER.	CERAMIC
CF.	CUBIC FOOT/FEET
CHAM.	CHAMFER
C.I.	CAST IRON
C.J.	CONTROL JOINT
CLF	CHAIN LINK FENCE
CLG.	CEILING
CLKG.	CAULKING
CLO.	CLOSET
CLR.	CLEAR(ANCE)
C.M.U.	CONCRETE MASONRY UNIT(S)
CNTR.	COUNTER
C.O.	CLEAN OUT
COL.	COLUMN
COMB.	COMBINATION
COMP.	COMPRESS(ED), (ION), (IBLE)
CONC.	CONCRETE
COND.	CONDITION
CONN.	CONNECTION
CONST.	CONSTRUCTION
CONT.	CONTINUOUS
CONTR.	CONTRACTOR
CORR.	CORRIDOR, CORRUGATED
C.R.M.	CONCRETE RUBBLE MASONRY
CSMT.	CASEMENT
C.T.	CERAMIC TILE
CTR.	CENTER
CTSK.	COUNTERSUNK, (SINK)
CY	CUBIC YARD(S)

D

D.	DEEP,DEPTH
DBL.	DOUBLE
DEMO.	DEMOLISH, DEMOLITION
DEP.	DEPRESSED
DEPT.	DEPARTMENT
DET.	DETAIL
D.F.	DRINKING FOUNTAIN
DIA.	DIAMETER
DIM.	DIMENSION
DISP.	DISPENSER
D.M.H.	DRAIN MANHOLE
DN.	DOWN
DR.	DOOR
DS.	DOWNSPOUT
D.S.P.	DRY STANDPIPE
DWG.	DRAWING
DWR.	DRAWER

E

E.	EAST
EA.	EACH
E.B.	EXPANSION BOLT
E.F.	EACH FACE
E.J.	EXPANSION JOINT
EL.	ELEVATION
ELEC.	ELECTRICAL
ELEV.	ELEVATOR
EMER.	EMERGENCY
ENCL.	ENCLOSURE
E.P.	ELEC. PANELBOARD
EQ.,	EQUAL
EQPT.	EQUIPMENT
E.S.	ELECTRIC STRIKE
E.T.R	EXISTING TO REMAIN
E.W.	EACH WAY
E.W.C.	ELEC. WATER COOLER
EXH.	EXHAUST
EXP.	EXPOSED, EXPANSION
EXIST.	EXISTING
EXT.	EXTERIOR

F

F.	FEMALE
F.A.	FIRE ALARM, FRESH AIR
F.A.E.M.	FLUID APPLIED ELASTOMERIC MEMBRANE
F.B.	FLAT BAR
F.B.O.	FURNISHED BY OTHERS
F.D.	FLOOR DRAIN
FDN.	FOUNDATION
F.E.	FIRE EXTINGUISHER
F.E.C.	FIRE EXTINGUISHER CABINET
F.F.	FACTORY FINISH
F.H.	FIRE HYDRANT
F.H.C.	FIRE HOSE CABINET
FIN. FL.	FINISH(ED) FLOOR
FL.	FLOOR
FLASH.	FLASHING
FLDG.	FOLDING
FLUOR.	FLUORESCENT
F.O.C.	FACE OF CONCRETE
F.O.S.	FACE OF STUD(S)
FPRF.	FIREPROOF
FR.	FRAME
F.R.P.	FIBERGLASS REINFORCED PANEL
F.S.	FULL SIZE, FLOOR SINK
FT.	FOOT, FEET
F.T.	FIRE TREATED
FTG.	FOOTING
FURR.	FURRED, (ING)
FUT.	FUTURE

G

GA.	GAUGE
GALV.	GALVANIZED
G.B.	GRAB BAR
G.C.	GENERAL CONTRACT(OR)
G.C.M.U.	GLAZED CEMENT MASONRY UNIT
G.F.R.C.	GLASS FIBER REINFORCED CONCRETE
G.I.	GALVANIZED IRON/STEEL
GL.	GLASS
GLB.	GLASS BLOCK
GLU.LAM.	GLUE LAMINATED
GND.	GROUND
GR.	GRADE
G.W.B.	GYPSUM WALL BOARD
GYP. BD.	GYPSUM BOARD

H

H.	HIGH
H.B.	HOSE BIBB
H.C.	HOLLOW CORE
H.D.	HEAVY DUTY, HOT DIPPED
HDBD	HARDBOARD
HDNR	HARDENER
HDR.	HEADER
HDWD.	HARDWOOD
HDWE.	HARDWARE
HGT.	HEIGHT
H.M.	HOLLOW METAL
HORIZ.	HORIZONTAL
H.P.	HIGH POINT
HR.	HOUR
H.V.A.C.	HEATING/VENTILATING AIR CONDITIONING

I

I.D.	INSIDE DIAMETER/DIMENSION
INCL.	INCLUD(ED), (ING), (SIVE)
INSUL.	INSULATION
INT.	INTERIOR
INV.	INVERT

J

JAN.	JANITOR
JST.	JOIST
JT.	JOINT

K

KIT.	KITCHEN
K.J.	KEYED JOINT
K.O.	KNOCK-OUT

L

LAB.	LABORATORY
LAM.	LAMINATE
LAV.	LAVATORY
LKR.	LOCKER
L.P.	LOW POINT
L.R.	LIVING ROOM
LT.	LIGHT
LVR.	LOUVER
LWT.	LIGHTWEIGHT

M

M.	MALE
MAX.	MAXIMUM
M.C.	MEDICINE CABINET
MECH.	MECHANICAL
MEMB.	MEMBRANE
MET.	METAL
MFR.	MANUFACTURER
MH.	MANHOLE
MIN.	MINIMUM
MIR.	MIRROR
MISC.	MISCELLANEOUS
M.O.	MASONRY OPENING
MTD.	MOUNTED
MTG.	MOUNTING
MUL.	MULLION

N

N.	NORTH
N.C.	NONCOMBUSTIBLE
N.I.C.	NOT IN CONTRACT
NO., #	NUMBER
NOM.	NOMINAL
N.T.S.	NOT TO SCALE

O

O.A.	OVERALL
OBS.	OBSCURE
O.C.	ON CENTER
O.D.	OUTSIDE DIAMETER/DIMENSION
OFF.	OFFICE
OPNG.	OPENING
OPP.	OPPOSITE

P

PC.	PIECE
PFND.	PREFINISHED
P.L.	PROPERTY LINE
P.LAM.	PLASTIC LAMINATE
PLAS.	PLASTER
PLBG.	PLUMBING
PL.GL.	PLATE GLASS
PLYWD.	PLYWOOD
PNL.	PANEL
POL.	POLISHED
P.P.	PORCELAIN PAVERS
PR.	PAIR
PRCST.	PRECAST
P.T.	PRESSURE TREATED
PT.	POINT
PTD.,P.	PAINTED
P.T.D.	PAPER TOWEL DISPENSER
P.T.D./R.	COMBINATION PAPER TOWEL DISPENSER AND RECEPTACLE
PTN.	PARTITION
P.T.R.	PAPER TOWEL RECEPTACLE
P.V.C.	POLYVINYL CHLORIDE
PVMT.	PAVEMENT

Q

Q.T.	QUARRY TILE

R

R.	RISER, RADIUS
RAD.	RADIUS
R.A.F.	RAISED ACCESS FLOORING
R.A.R.	RETURN AIR REGISTER
R.B.	REINFORCING BAR(S)
R.D.	ROOF DRAIN
REF.	REFERENCE
REFR.	REFRIGERATOR
REINF.	REINFORCES, REINFORCING
REQD.	REQUIRED
RESIL.	RESILIENT
R.F.	RUBBER FLOORING
R.H.	ROBE HOOK
RM.	ROOM
R.O.	ROUGH OPENING
RUB	RUBBER
RWD.	REDWOOD

S

S.	SOUTH
S.A.R.	SUPPLY AIR REGISTER
S.A.T.	SUSPENDED ACOUSTICAL TILE
S.C.	SOLID CORE
SC.	SCALE
S.C.D.	SEAT COVER DISPENSER
SCHED.	SCHEDULE
SCR.	SCREEN
S.D.	SOAP DISPENSER
SECT.	SECTION
SF., SQ.FT.	SQUARE FOOT (FEET)
S.G.B.	SUSPENDED GYPSUM BOARD
SHR.	SHOWER
SHT.	SHEET
SIM.	SIMILAR
SL.	SLOPE
SLDG.	SLIDING
S.N.D.	SANITARY NAPKIN DISPENSER
S.N.R.	SANITARY NAPKIN RECEPTACLE
S.P.	SUSPENDED PLASTER
SQ.	SQUARE
S.S.	STAINLESS STEEL
S.SK.	SERVICE SINK
STA.	STATION
STD.	STANDARD
STL.	STEEL
STOR.	STORAGE
STRUC	STRUCTURAL
SURR.	SURROUND
SUSP.	SUSPEND(ED)
S.W.C.	SOLID WOOD CORE
SYM.	SYMMETRICAL

T

T.B.	TOWEL BAR
T.C.	TOP OF CURB
TEL.	TELEPHONE
TEMP.	TEMPERED
TER.	TERRAZZO
T.& G.	TONGUE AND GROOVE
T.O.S.	TOP OF STAIR (TOP OF STEEL)
THR.	THRESHOLD
T.P.	TOP OF PAVEMENT
T.P.D.	TOILET PAPER DISPENSER
T.P.H.	TOILET PAPER HOLDER
TRD., T.	TREAD
T.V.	TELEVISION
T.O.W.	TOP OF WALL
TYP.	TYPICAL

U

UNF.	UNFINISHED
U.O.N.	UNLESS OTHERWISE NOTED
UR.	URINAL
U.P.	UTILITY POLE

V

VB	VINYL BASE
V.C.T.	VINYL COMPOSITION TILE
VERT.	VERTICAL
V.I.F.	VERIFY IN FIELD
V.W.C.	VINYL WALL COVERING
VNR.PLAS.	VENEER PLASTER

W

W.	WEST, WIDE, WIDTH
W/	WITH
W.C.	WATER CLOSET,
WD.	WOOD
WDW.	WINDOW
W.F.	WIDE FLANGE
WG	WATER GATE
W.H.	WATER HEATER
W/O	WITHOUT
WP.	WATERPROOF (ING)
W.R.	WATER RESISTANT
WSCT.	WAINSCOT
W.S.P.	WET STAND PIPE
WGT.	WEIGHT
W.W.M.	WELDED WIRE MESH

GENERAL DEMO NOTES

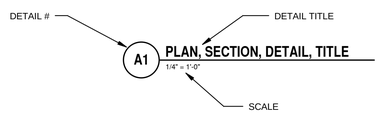
1. REMOVAL OF ANY WORK OR ITEM SHALL INCLUDE LEGAL DISPOSAL OF SAME UNLESS INDICATED TO BE SALVAGED. ALL REMOVAL AND DISPOSAL WORK SHALL BE PERFORMED IN A SAFE AND LEGAL MANNER. DOCUMENTATION OF RECYCLED WASTE IS REQUIRED.
2. CONTRACTOR SHALL VERIFY ALL CONDITIONS IN THE FIELD PRIOR TO COMMENCEMENT OF DEMOLITION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER'S PROJECT MANAGER, ARCHITECT AND CM IN WRITING IMMEDIATELY UPON DISCOVERY.
3. DRAWINGS MAY NOT FULLY SHOW EVERY DETAIL OR CONDITION. CONTRACTOR SHALL COORDINATE WITH NEW CONSTRUCTION WORK TO PROVIDE ALL DEMOLITION WORK REQUIRED TO MEET NEW DESIGN BASED ON ALL INFORMATION PROVIDED AND OBSERVED DURING A THOROUGH SITE VISIT PRIOR TO SUBMISSION OF BID. PROVIDE UNIT PRICES FOR WORK AS REQUIRED.
4. NOT USED.
5. CONTRACTOR SHALL PROTECT ALL ADJACENT CONSTRUCTION THAT IS TO REMAIN AND SHALL REPAIR AND PATCH ANY EXISTING TO REMAIN CONSTRUCTION THAT IS DAMAGED DURING DEMOLITION OPERATIONS. REPAIRS SHALL MATCH EXISTING IN APPEARANCE AND INTEGRITY.
6. REFER TO THE MECHANICAL, PLUMBING AND ELECTRICAL NOTES FOR REMOVAL AND DISPOSAL OF EQUIPMENT, PIPES, CONDUITS, WIRING OR OTHER ITEMS THAT ARE INCLUDED AS PART OF THE SCOPE OF DEMOLITION WORK IN THIS CONTRACT.

GENERAL PLAN NOTES

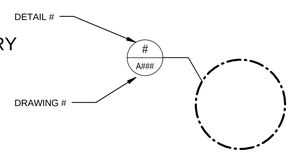
1. COORDINATE ALL NEW WORK WITH STRUCTURAL, PLUMBING, MECHANICAL & ELECTRICAL DRAWINGS. NOTIFY ARCHITECT OF ANY DISCREPANCIES BEFORE PROCEEDING WITH WORK.
2. ALL DIMENSIONS TO NEW CONSTRUCTION ARE TO FACE OF STUD AND FACE OF MASONRY UNLESS NOTED OTHERWISE.
3. ALL DIMENSIONS TO EXISTING CONSTRUCTION ARE TO FACE OF FINISH UNLESS OTHERWISE NOTED.

ARCHITECTURAL SYMBOLS LEGEND

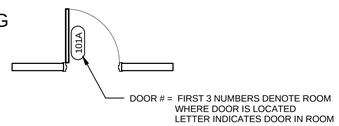
TITLE MARKS



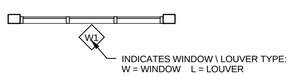
DETAIL BOUNDARY



DOOR TAG



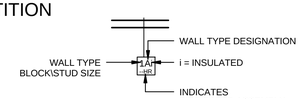
WINDOW TAG



ROOM TAG



INTERIOR PARTITION TAG



FF&E TAG



MATERIAL TAG



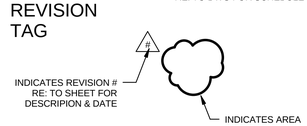
KEYED NOTE



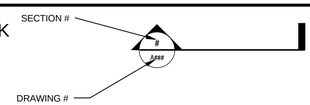
DEMO NOTE



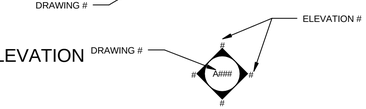
REVISION TAG



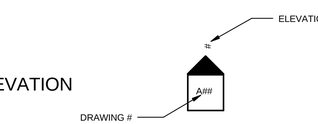
SECTION MARK



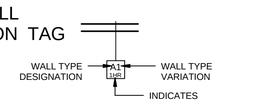
INTERIOR ELEVATION



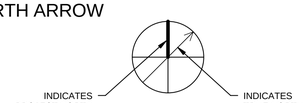
EXTERIOR ELEVATION



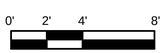
EXTERIOR WALL CONSTRUCTION TAG



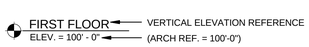
NORTH ARROW



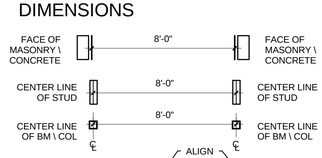
GRAPHIC SCALE



ELEVATION MARK



DIMENSIONS



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www.cdrmaguire.com

REVISIONS		
Number	Description	Date

100% CONSTRUCTION DOCUMENTS

Somerville Public Schools
Education · Inspiration · Excellence

SOMERVILLE HIGH SCHOOL RENOVATIONS TO ROOM 143

81 HIGHLAND AVENUE, SOMERVILLE, MA 02143

SYMBOLS, ABBREVIATIONS AND PROJECT NOTES

PROJECT NUMBER: 19431.03
DESIGNED BY: ER/GH
DRAWN BY: MR
CHECKED BY: FC/GH
DATE: July 24, 2013
SCALE: As indicated

SHEET NUMBER:

A001

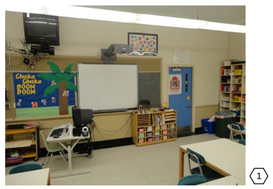
SHEET 1 **OF** 9

ELEC: MECH: FIRE: PLUM: STRU: ARCH: CIVIL:
REVIEWD BY:
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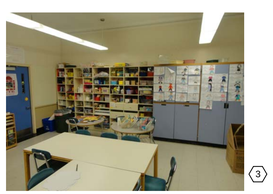
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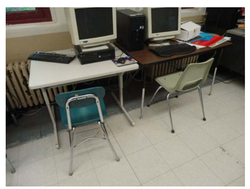
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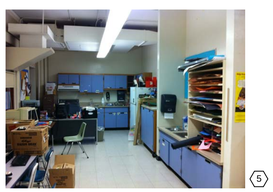
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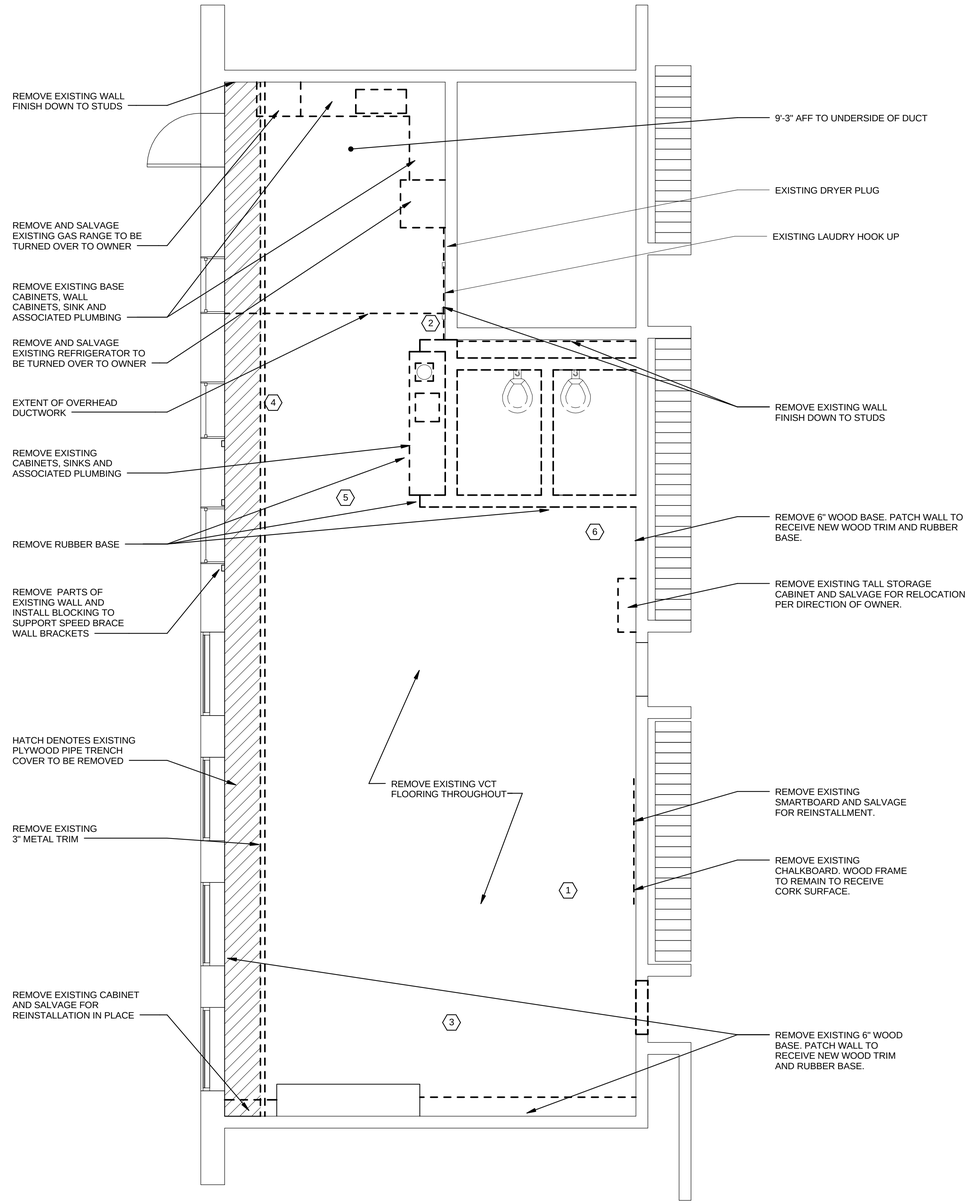

2


3


4


5


6



1 FIRST FLOOR DEMOLITION PART PLAN

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

DEMOLITION SYMBOLS LEGEND

DENOTES EXISTING WALLS TO REMAIN

DENOTES REMOVAL OF EXISTING WALLS, CABINETS AND EQUIPMENT

DENOTES REMOVAL OF EXISTING DOOR AND HARDWARE

GENERAL DEMO NOTES

1. REMOVAL OF ANY WORK OR ITEM SHALL INCLUDE LEGAL DISPOSAL OF SAME UNLESS INDICATED TO BE SALVAGED. ALL REMOVAL AND DISPOSAL WORK SHALL BE PERFORMED IN A SAFE AND LEGAL MANNER. DOCUMENTATION OF RECYCLED WASTE IS REQUIRED.
2. CONTRACTOR SHALL VERIFY ALL CONDITIONS IN THE FIELD PRIOR TO COMMENCEMENT OF DEMOLITION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER'S PROJECT MANAGER, ARCHITECT AND CM IN WRITING IMMEDIATELY UPON DISCOVERY.
3. DRAWINGS MAY NOT FULLY SHOW EVERY DETAIL OR CONDITION. CONTRACTOR SHALL COORDINATE WITH NEW CONSTRUCTION WORK TO PROVIDE ALL DEMOLITION WORK REQUIRED TO MEET NEW DESIGN BASED ON ALL INFORMATION PROVIDED AND OBSERVED DURING A THOROUGH SITE VISIT PRIOR TO SUBMISSION OF BID. PROVIDE UNIT PRICES FOR WORK AS REQUIRED.
4. NOT USED.
5. CONTRACTOR SHALL PROTECT ALL ADJACENT CONSTRUCTION THAT IS TO REMAIN AND SHALL REPAIR AND PATCH ANY EXISTING TO REMAIN CONSTRUCTION THAT IS DAMAGED DURING DEMOLITION OPERATIONS. REPAIRS SHALL MATCH EXISTING IN APPEARANCE AND INTEGRITY.
6. REFER TO THE MECHANICAL, PLUMBING AND ELECTRICAL NOTES FOR REMOVAL AND DISPOSAL OF EQUIPMENT, PIPES, CONDUITS, WIRING OR OTHER ITEMS THAT ARE INCLUDED AS PART OF THE SCOPE OF DEMOLITION WORK IN THIS CONTRACT.

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SOMERVILLE HIGH SCHOOL RENOVATIONS TO ROOM 143

81 HIGHLAND AVENUE, SOMERVILLE, MA 02143

DEMOLITION FLOOR PLAN

PROJECT NUMBER: 19431.03
DESIGNED BY: ER/GH
DRAWN BY: MR
CHECKED BY: FC/GH
DATE: July 24, 2013
SCALE: As indicated

SHEET NUMBER:

AD101

SHEET 3 **OF** 9

REVIEWED BY: CIVIL: ARCH: STRU.: PLUM: FIRE: MECH: ELEC:

PLOTTED: 7/22/2013 5:08:58 PM

PROJECT FILE: C:\Users\GHoffrn\Documents\1913.02 Somerville HS GHoffrn.rvt

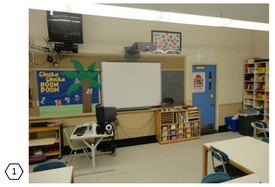
FINISH FLOOR LEGEND

	VCT FLOORING COLOR #1-FIELD
	VCT FLOORING COLOR #2-ACCENT
	EPOXY RESIN FLOORING. EPOXY TO RUN 4" UP WALL. SEE DETAIL #/##.

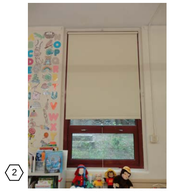
1. FLOORING IS TO EXTEND UNDER DESKS, RADIATORS, ETC.

GENERAL PLAN NOTES

1. COORDINATE ALL WORK w/ STRUCTURAL, PLUMBING, MECHANICAL & ELECTRICAL DRAWINGS. NOTIFY ARCHITECT OF ANY DISCREPANCIES BEFORE PROCEEDING WITH WORK.
2. ALL DIMENSIONS TO CONSTRUCTION ARE TO CENTERLINE OF STUD AND FACE OF MASONRY UNLESS NOTED OTHERWISE.
3. ALL DIMENSIONS TO EXISTING CONSTRUCTION ARE TO FACE OF FINISH U.N.O.



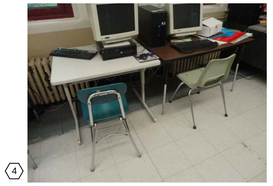
1 TEACHING WALL



2 EXISTING WINDOW AND SHADE



3 EXTERIOR DOOR THRESHOLD



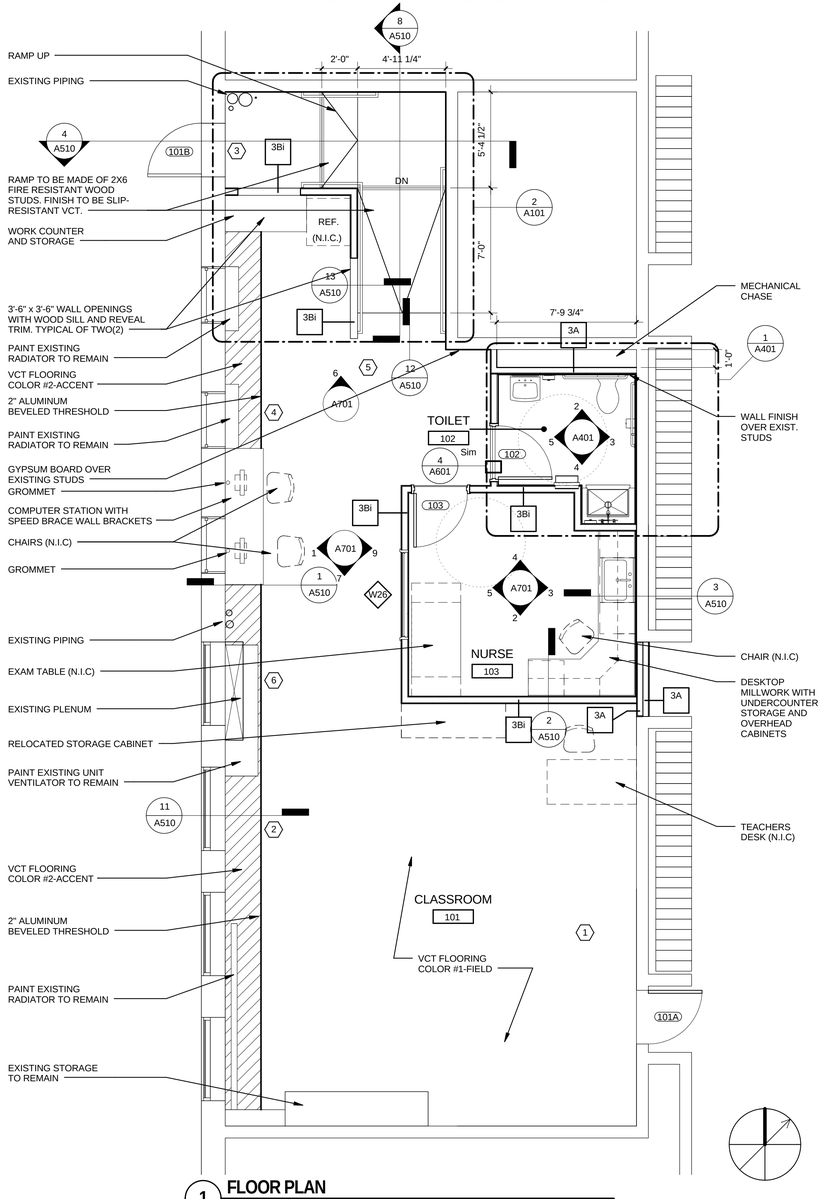
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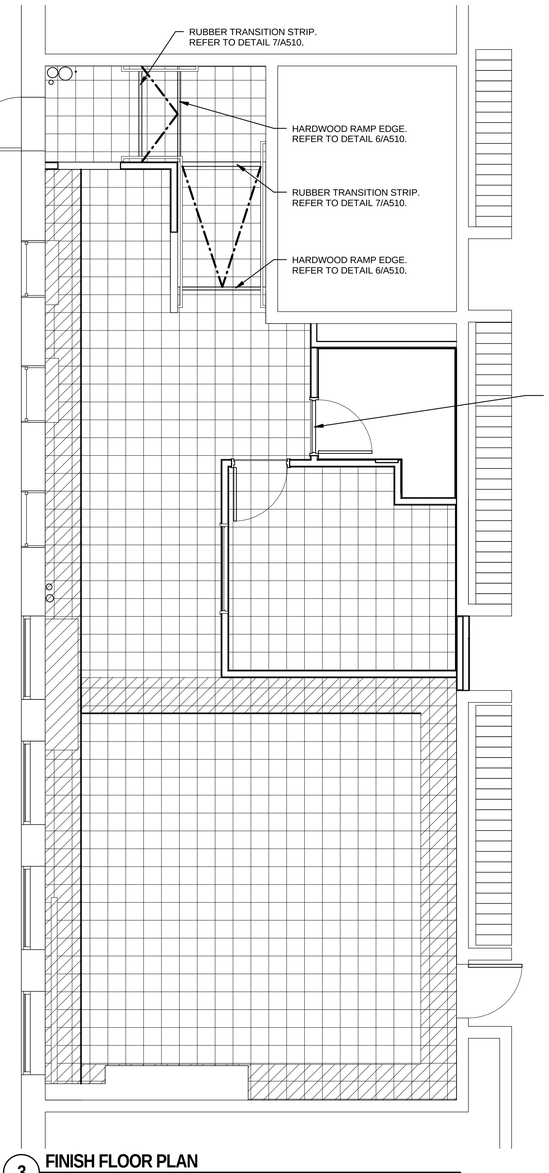
5 EXISTING KITCHEN AREA AND EXPOSED DUCTWORK



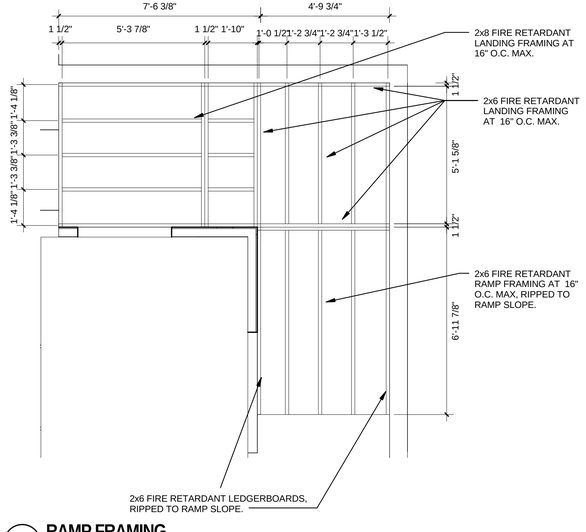
6 EXISTING PLENUM FOR UNIT VENTILATOR



1 **FLOOR PLAN**
SCALE: 1/4" = 1'-0"



3 **FINISH FLOOR PLAN**
SCALE: 1/4" = 1'-0"



2 **RAMP FRAMING**
SCALE: 3/8" = 1'-0"

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SOMERVILLE HIGH SCHOOL RENOVATIONS TO ROOM 143

81 HIGHLAND AVENUE,
SOMERVILLE, MA 02143

FIRST FLOOR PART PLAN

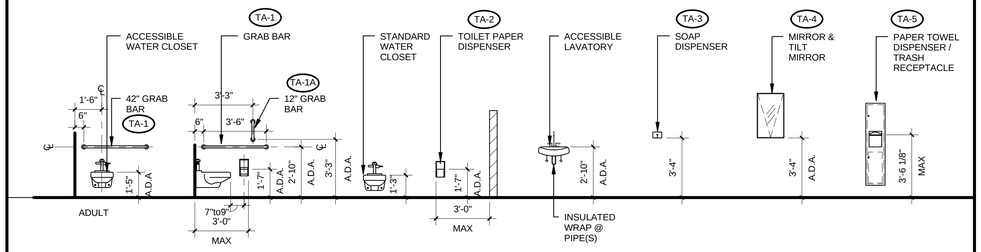
PROJECT NUMBER: 19431.03
DESIGNED BY: ER/GH
DRAWN BY: MR
CHECKED BY: FC/GH
DATE: July 24, 2013
SCALE: As indicated

SHEET NUMBER:

A101

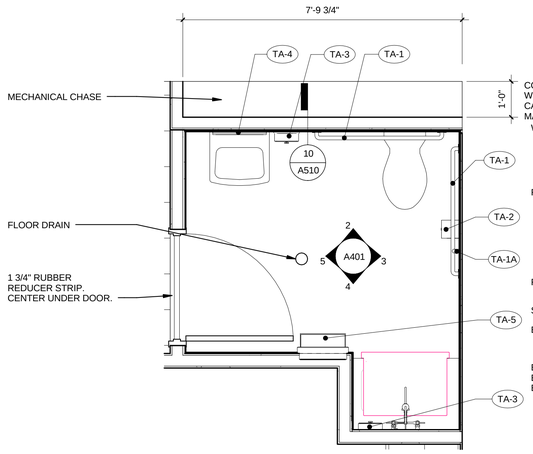
SHEET 4 **OF** 9

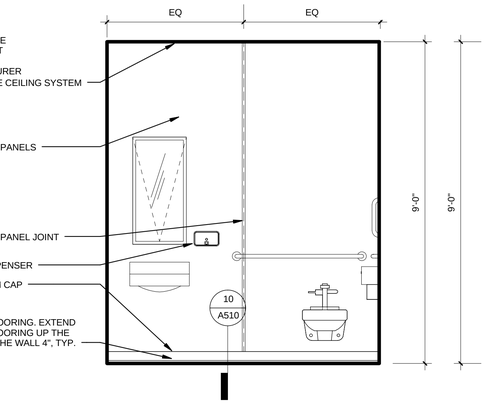
TOILET ROOM ACCESSORY LEGEND & MOUNTING HEIGHTS

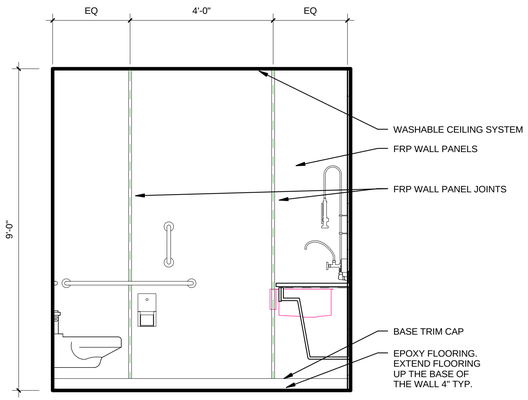


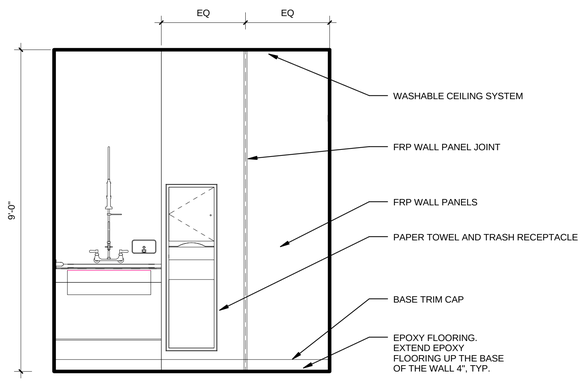
TOILET ROOM ACCESSORY SCHEDULE

Type Mark		BOBRICK MODEL NUMBER	Comments
TA-1	GRAB BAR1	42" GRAB BAR BOBRICK #B6806 SERIES	
TA-1	GRAB BAR1	42" GRAB BAR BOBRICK #B6806 SERIES	
TA-1A	Grab_Bar-Stainless_Steel-Bobrick-B5806	B-5806 Series	
TA-2	TOILET PAPER DISPENSER	TOILET PAPER DISPENSER BOBRICK #B4388	
TA-3	SOAP DISPENSER - WALL MOUNTED	BOBRICK B-2112	
TA-3	SOAP DISPENSER - WALL MOUNTED	BOBRICK B-2112	
TA-4	MIRROR	A.D.A. TILT MIRROR BOBRICK #B294	
TA-5	PAPER TOWEL & TRASH RECEPTICAL	BOBRICK B-43944	







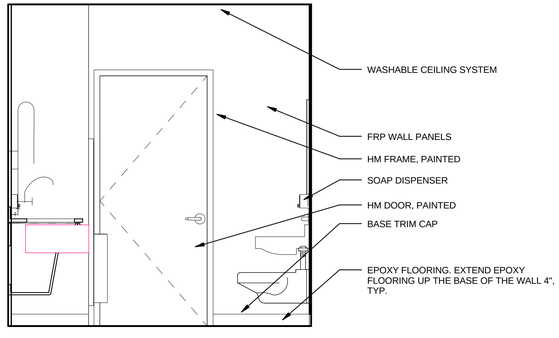


1 ENLARGED TOILET ROOM PART PLAN
SCALE: 1/2" = 1'-0"

2 NORTH WALL ELEVATION AT TOILET ROOM
SCALE: 1/2" = 1'-0"

3 EAST WALL ELEVATION AT TOILET ROOM
SCALE: 1/2" = 1'-0"

4 SOUTH ELEVATION AT TOILET ROOM
SCALE: 1/2" = 1'-0"



5 WEST ELEVATION AT TOILET ROOM
SCALE: 1/2" = 1'-0"

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SOMERVILLE HIGH SCHOOL RENOVATIONS TO ROOM 143

81 HIGHLAND AVENUE, SOMERVILLE, MA 02143

ENLARGED TOILET ROOM PLANS AND INTERIOR ELEVATIONS

PROJECT NUMBER: 19431.03
DESIGNED BY: ER/GH
DRAWN BY: MR
CHECKED BY: FC/GH
DATE: July 24, 2013
SCALE: As indicated

SHEET NUMBER:

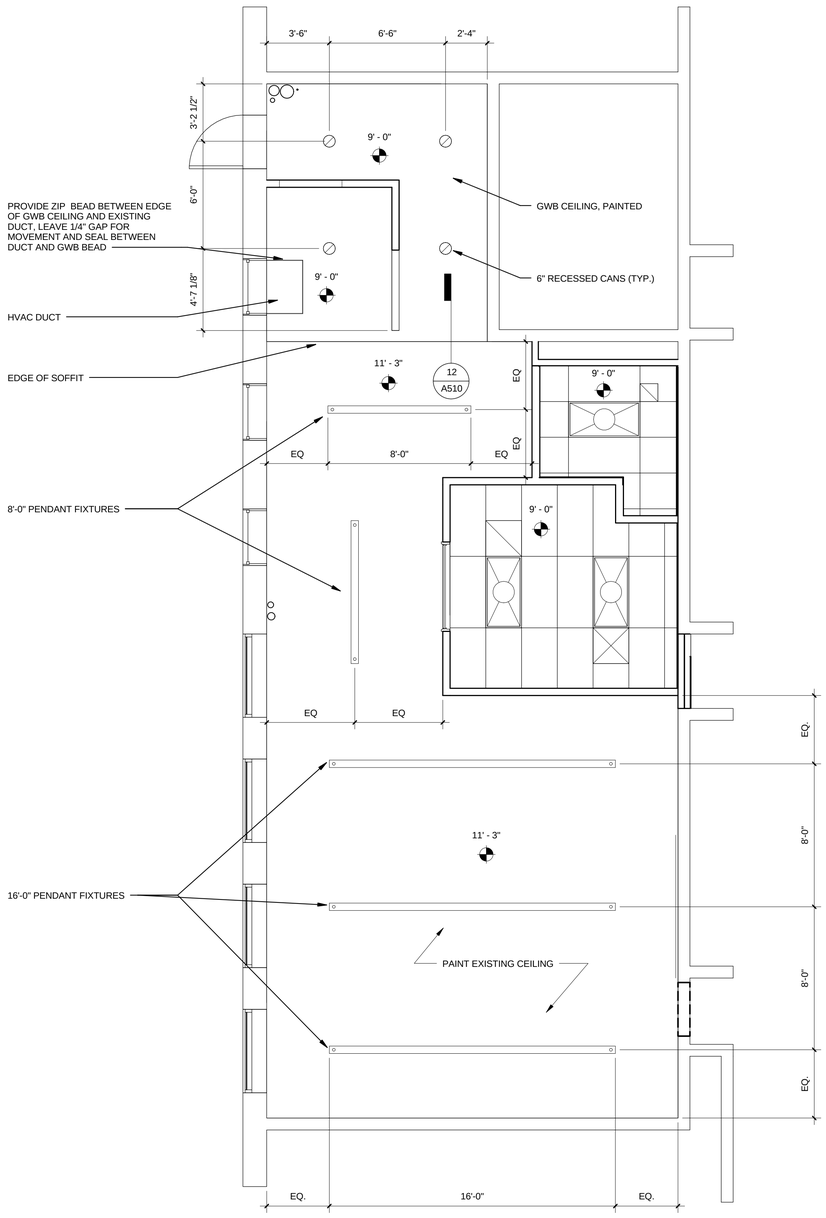
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SHEET 5 **OF** 9

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1 **FIRST FLOOR REFLECTED CEILING PLAN**
SCALE: 1/4" = 1'-0"

CEILING LEGEND

- 2x4 FLUORESCENT LIGHT FIXTURE
- PENDANT LIGHT FIXTURE
- 6" RECESSED CAN LIGHT FIXTURE
- SUPPLY AIR DIFFUSER
- RETURN AIR GRILLE
- CEILING HEIGHT ABOVE FINISHED FLOOR

REVIEWED BY: CIVIL: ARCH: STRU: PLUM: FIRE: MECH: ELEC:

PLOTTED: 7/22/2013 5:09:00 PM

PROJECT FILE: C:\Users\GHoffrm\Documents\19431.03 Somerville HS_GHoffrm.rvt

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SOMERVILLE, MA 02143

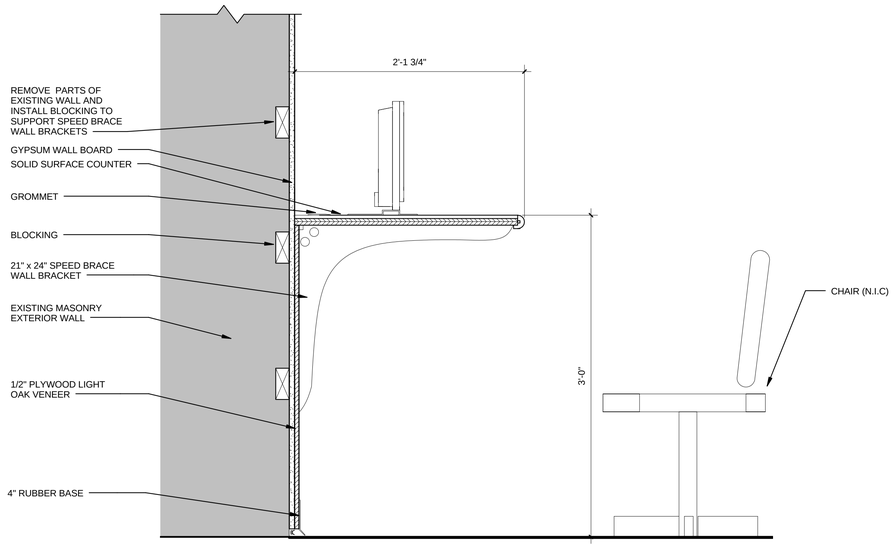
FIRST FLOOR REFLECTED CEILING PLAN

PROJECT NUMBER: 19431.03
DESIGNED BY: ER/GH
DRAWN BY: MR
CHECKED BY: FC/GH
DATE: July 24, 2013
SCALE: 1/4" = 1'-0"

SHEET NUMBER:

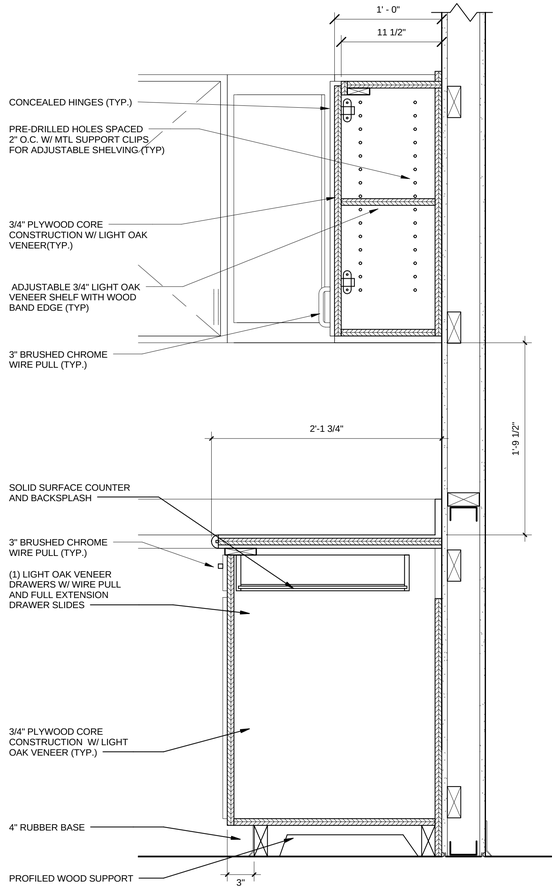
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SHEET 6 **OF** 9



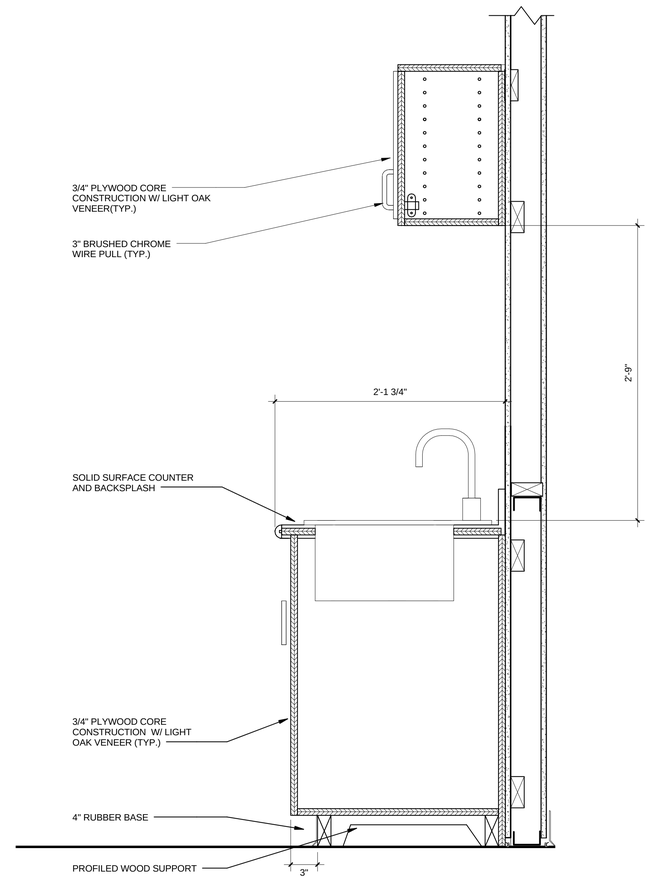
1 COMPUTER STATION DETAIL

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



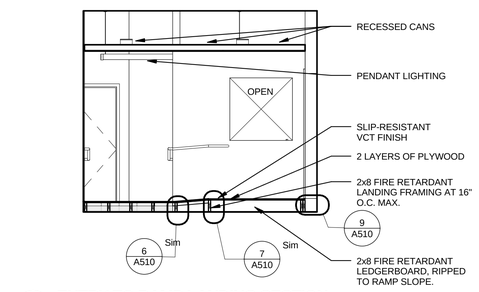
2 NURSE'S OFFICE COUNTERTOP

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



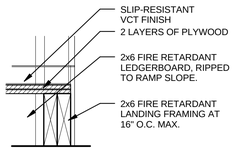
3 NURSE'S OFFICE SINK COUNTERTOP

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



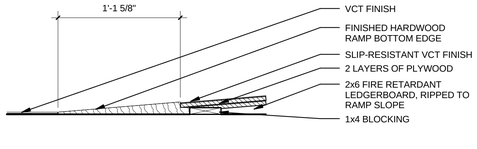
4 ENTRY TO RAMP LANDING SECTION

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



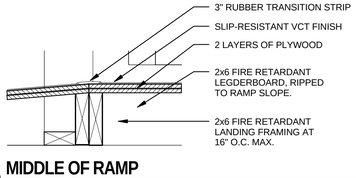
5 EXISTING WALL TO RAMP

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



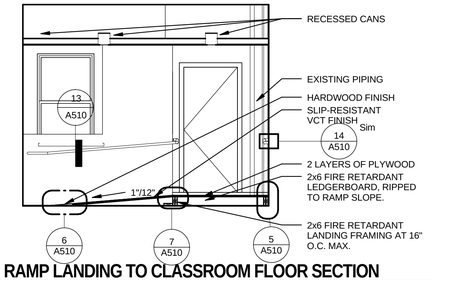
6 FLOOR TO RAMP

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



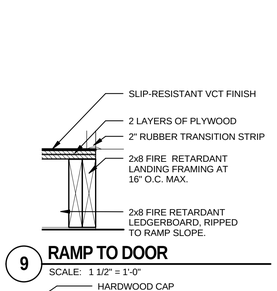
7 MIDDLE OF RAMP

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



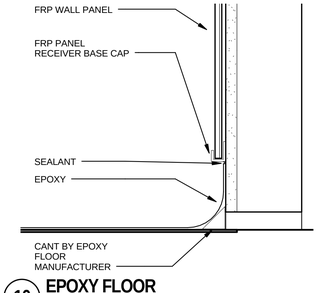
8 RAMP LANDING TO CLASSROOM FLOOR SECTION

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



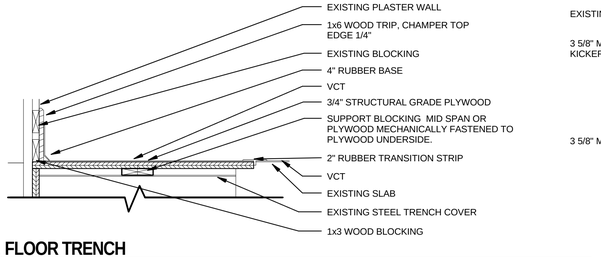
9 RAMP TO DOOR

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



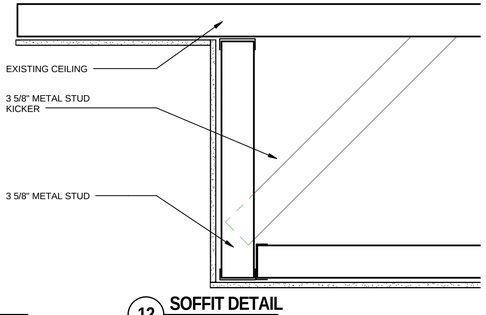
10 EPOXY FLOOR

SCALE: 3" = 1'-0"



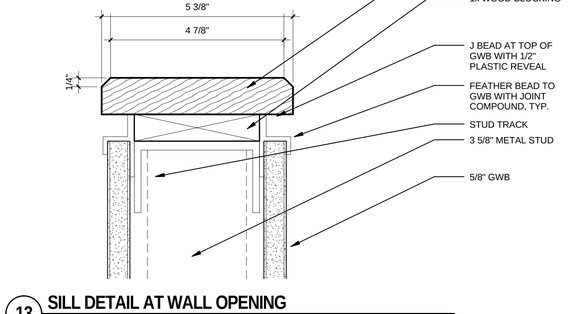
11 FLOOR TRENCH

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



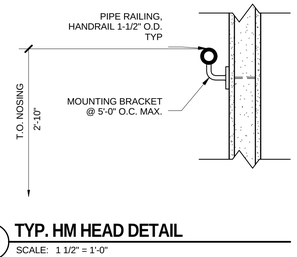
12 SOFFIT DETAIL

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



13 SILL DETAIL AT WALL OPENING

SCALE: 6" = 1'-0"



14 TYP. HM HEAD DETAIL

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

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81 HIGHLAND AVENUE, SOMERVILLE, MA 02143

INTERIOR DETAILS

PROJECT NUMBER: 19431.03
DESIGNED BY: ER/GH
DRAWN BY: MR
CHECKED BY: FC/GH
DATE: July 24, 2013
SCALE: As indicated

SHEET NUMBER:

A510

SHEET 7 **OF** 9

REVIEWED BY: CIVIL: ARCH: STRU: PLUM: FIRE: MECH: ELEC:

PLOTTED: 7/22/2013 5:09:02 PM

PROJECT FILE: C:\Users\GHoffman\Documents\13.02 Somerville HS_GHoffm.rvt

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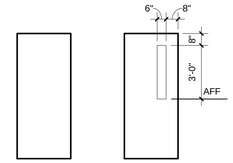
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DOOR AND FRAME SCHEDULE

MARK	DOOR						FRAME						FIRE RATING (MIN.)	HDWRE SET NO.	NOTES
		SIZE								DETAIL					
		WD	HGT	THK	MATL	EL	MATL	EL	FRAME DEPTH	HEAD	JAMB	SILL			
101A		3' - 0"	7' - 0"	2"	HM	D2	HM	F1	5 1/2 VIF	8/A601	7/A601	T1			AUTOMATIC DOOR OPERATOR & HC PUSH BUTTONS, SEE ELEC.
101B		3' - 0"	7' - 0"	2"	ETR	-	ETR	-	ETR	ETR	ETR	ETR	N/A		AUTOMATIC DOOR OPERATOR & HC PUSH BUTTONS, SEE ELEC.
102		3' - 0"	7' - 0"	2"	HM	D1	HM	F1	5 7/8"	2/A601	1/A601	T2			
103		3' - 0"	7' - 0"	2"	HM	D1	HM	F1	5 7/8"	2/A601	1/A601	T1			

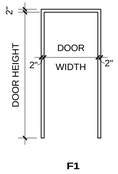
FRAME PROFILE SHALL MATCH EXISTING FRAME AT DOOR 101A.



D1
HOLLOW METAL

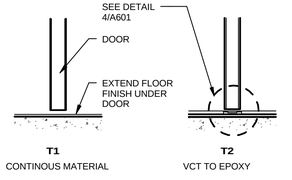
D2
FLUSH w/LITE

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



F1

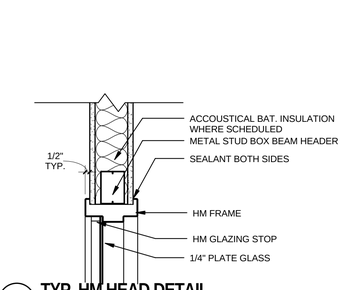
FRAME TYPE ELEVATIONS
1/4" = 1'-0"



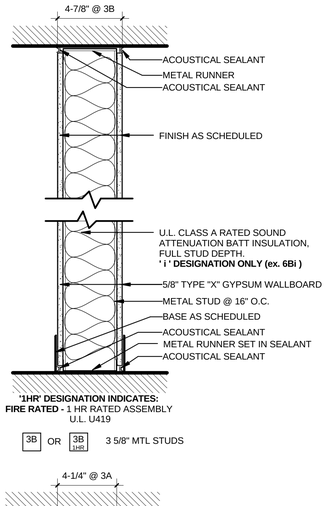
T1
CONTINOUS MATERIAL

T2
VCT TO EPOXY

TYP. INTERIOR THRESHOLD DETAILS
1 1/2" = 1'-0"

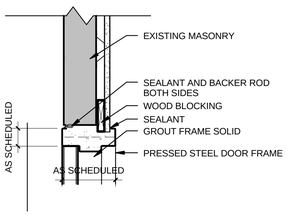


3 **TYP. HM HEAD DETAIL**
SCALE: 1 1/2" = 1'-0"

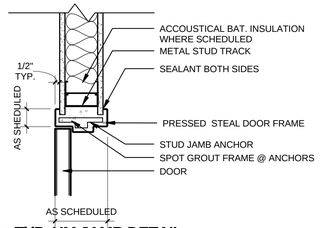


'1HR' DESIGNATION INDICATES:
FIRE RATED - 1 HR RATED ASSEMBLY
U.L. U419

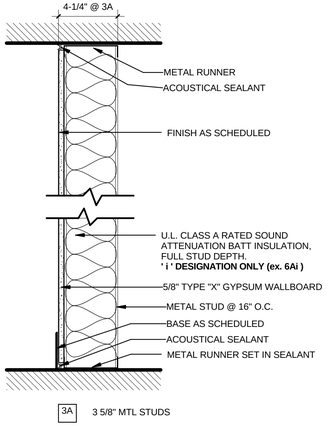
3B OR 3B LHS 3 5/8" MTL STUDS



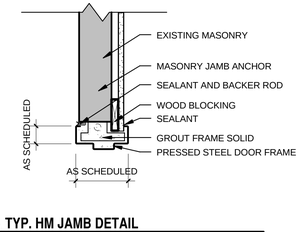
8 A601 **TYP. HM HEAD DETAIL**
1 1/2" = 1'-0"



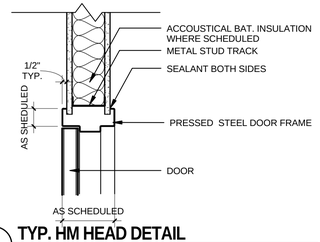
2 **TYP. HM JAMB DETAIL**
SCALE: 1 1/2" = 1'-0"



3A 3 5/8" MTL STUDS

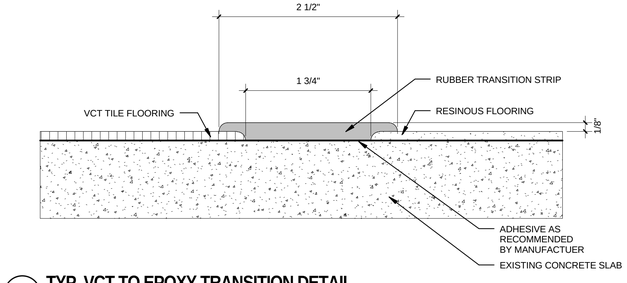


7 A601 **TYP. HM JAMB DETAIL**
1 1/2" = 1'-0"



1 **TYP. HM HEAD DETAIL**
SCALE: 1 1/2" = 1'-0"

TYP. INTERIOR PARTITION TYPES
1 1/2" = 1'-0"



4 **TYP. VCT TO EPOXY TRANSITION DETAIL**
SCALE: 12" = 1'-0"

DETAILS

CDR MAGUIRE
Architects / Engineers / Planners
211 Congress Street, 11th Floor
Boston, Massachusetts 02110
TEL. (617) 778-1440
www.cdrmaguire.com

REVISIONS

Number	Description	Date

100% CONSTRUCTION DOCUMENTS

Somerville Public Schools
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SOMERVILLE HIGH SCHOOL RENOVATIONS TO ROOM 143

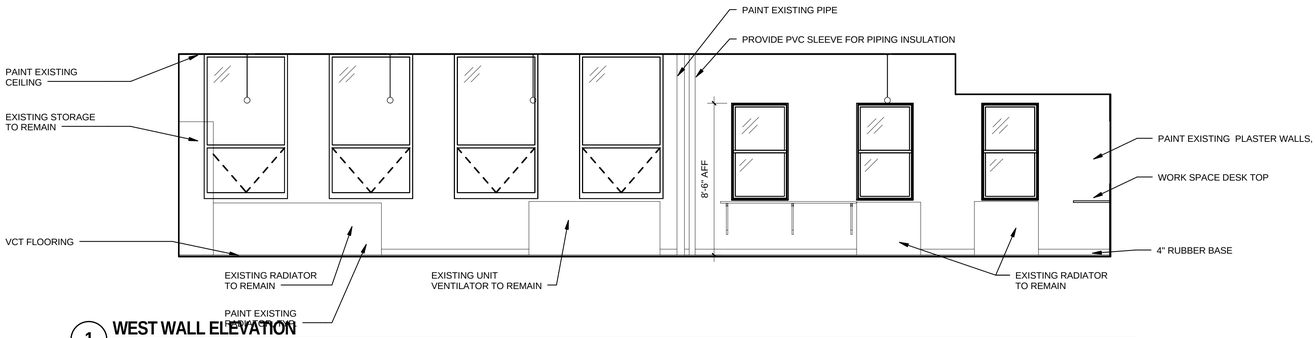
81 HIGHLAND AVENUE,
SOMERVILLE, MA 02143

DOOR SCHEDULE, ELEVATIONS, DETAILS AND WALL TYPES

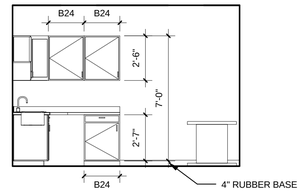
PROJECT NUMBER: 19431.03
DESIGNED BY: ER/GH
DRAWN BY: MR
CHECKED BY: FC
DATE: July 24, 2013
SCALE: As indicated

SHEET NUMBER:

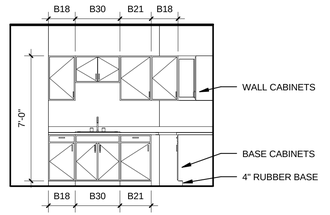
A601



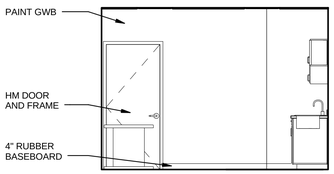
1 WEST WALL ELEVATION
SCALE: 1/4" = 1'-0"



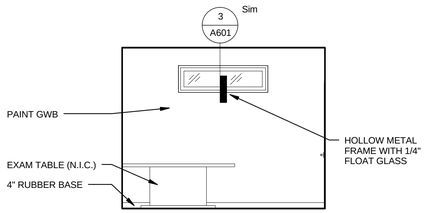
2 SOUTH ELEVATION AT NURSE'S OFFICE
SCALE: 1/4" = 1'-0"



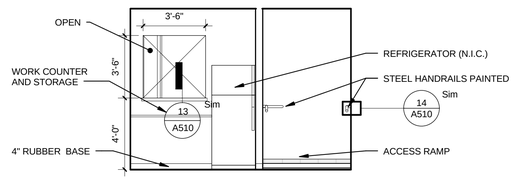
3 EAST ELEVATION AT NURSE'S OFFICE
SCALE: 1/4" = 1'-0"



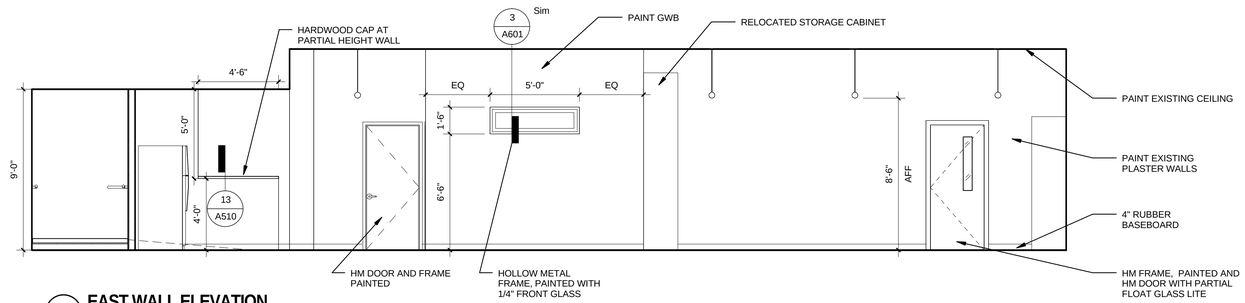
4 NORTH ELEVATION AT NURSE'S OFFICE
SCALE: 1/4" = 1'-0"



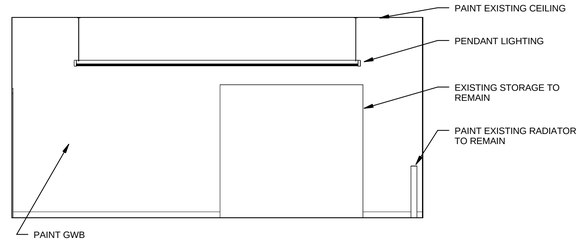
5 WEST ELEVATION AT NURSE'S OFFICE
SCALE: 1/4" = 1'-0"



6 NORTH WALL ELEVATION
SCALE: 1/4" = 1'-0"



9 EAST WALL ELEVATION
SCALE: 1/4" = 1'-0"



7 SOUTH WALL ELEVATION
SCALE: 1/4" = 1'-0"

CDR MAGUIRE
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REVISIONS		
Number	Description	Date

100% CONSTRUCTION DOCUMENTS

Somerville Public Schools
Education · Inspiration · Excellence

SOMERVILLE HIGH SCHOOL RENOVATIONS TO ROOM 143

81 HIGHLAND AVENUE, SOMERVILLE, MA 02143

INTERIOR ELEVATIONS

PROJECT NUMBER: 19431.03
DESIGNED BY: ER/GH
DRAWN BY: MR
CHECKED BY: FC
DATE: July 24, 2013
SCALE: 1/4" = 1'-0"

SHEET NUMBER:

A701

SHEET 10 **OF** 9

REVIEWED BY: CIVIL: ARCH: STRU: PLUM: FIRE: MECH: ELEC:

PLOTTED: 7/22/2013 6:09:05 PM

PROJECT FILE: C:\Users\GHoffman\Documents\19431\23 Somerville HS_GHoffm.rvt

INVITATION FOR BIDS

(IFB # 14-13)

Somerville High School
Renovations to Room 143

Bid Opening: **August 7, 2013 at 11:00 a.m. for Filed Sub-bids**
August 14, 2013 at 11:00 a.m. for General Bids

CITY OF SOMERVILLE, MASSACHUSETTS
Joseph A. Curtatone, Mayor

Purchasing Department
Angela M. Allen, Purchasing Director

Skip Bandini
Capital Projects & Planning
City of Somerville
1 Franey Road
Somerville, MA 02145
P: 617-625-6600
F: 617-625-0999

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000200 Invitation to Bid

Section 2:

002000 Instructions to Bidders

Section 3: Bid Submission Documents:

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003200 Somerville Living Wage Form
003250 Responsible Employer Ordinance
003300 Acknowledgement of Notice to Bidders
003400 Certificate of Non-Collusion & Tax Compliance Statement
003500 Certificate of Signature Authority
003600 Signature Form
003700 Reference Form
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004200 Division of Labor and Industries Statement of Compliance
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- Appendix A – Scope of Work (including Technical Specifications)*
- Appendix B – Contractor's Bid Price; Form for General Bid , Bid Form for Alternates (From Bid Book)
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- Appendix D – Insurance Requirements
- Appendix E – Wage Rates and Living Wage (From Bid Book)
- Appendix F – Certificate of Good Standing (for corporations)
- Appendix G – Procurement documentation (Advertisements and Notice to Bidders)
- Appendix H – Statement of Management
- Appendix I – Performance Bond and Payment Bond, if contract over $2000

*Appendix to be included in contract by reference

*Denotes Filed Sub-Bid Section

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DOCUMENT TITLE **SECTION - PAGES**

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013500 Permits
014500 Sampling & Testing
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015700 Environmental Protection
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DIVISION 5 - Metals
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061600 Sheathing

DIVISION 7 – Thermal & Moisture Protection
079200 Joint Sealants

DIVISION 8 – Openings
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087100 Door Hardware
087113 Automatic Door Operators

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097710 Fiber-Reinforced Plastic (FRP) – Coated Panels
098500 Sound Transmission Control Materials
099123 Interior Painting

*Denotes Filed Sub-Bid Section

DIVISION 10 – Specialties

102800 Toilet, Bath and Laundry Accessories

DIVISION 23 – Heating Ventilating and Air Conditioning

*230000 Heating Ventilating and Air Conditioning (FSB Required)

DIVISION 26 – Electrical

*260000 Electrical (FSB Required)

PART 4: CONSTRUCTION DOCUMENT DRAWING LIST

Drawing Number	Drawing Title
-	Cover Sheet
Architectural	
A001	Symbols, Abbreviations & Project Notes
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A101	First Floor Part Plan
A401	Enlarged Toilet Room Plan and interior Elevations
A402	First Floor Reflected Ceiling Plan
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P1.00	Plumbing Notes and Details
P2.00	Plumbing Demo and New Work Part Plans
P3.00	Plumbing Schedules and Details
Heating, Venting and Air Conditioning	
H0.00	HVAC Legends and Abbreviations
H1.00	HVAC Notes and Specifications
H2.00	HVAC Demolition Part Floor Plan
H3.00	HVAC Part Floor Plan
Electrical	
E0.00	Electrical Legends, Notes, Schedules and Abbreviations
E1.00	Electrical Notes and Details
E2.00	Electrical Demo Demolition Part Floor Plan
E3.00	Electrical Power and Lighting Part Floor Plan

*Denotes Filed Sub-Bid Section

NOTE: Bidders shall check the attached documents with the above list to verify all parts are included before submitting a bid.

PART 1 SECTION 00020:

CITY OF SOMERVILLE MASSACHUSETTS
INVITATION TO BID
SOMERVILLE HIGHSCHOOL
RENOVATIONS TO ROOM 143
Bid No. IFB #14-13

Enclosed you will find an invitation to bid for: **Somerville High School Renovations to Room 143, 81 Highland Avenue, Somerville, MA 02143.**

Plans and specifications will be available online from the City's Purchasing Department web page: http://www.somervillema.gov/departments/finance/purchasing/bids and via email by request to odeluca@somervillema.gov. Bid documents may be printed upon request upon deposit of $ 50.00 for each set in the form of a check made payable to the City of Somerville. **The deposit will be refundable, upon return of the plans and specifications in good condition.** Any person requesting additional sets will be required to pay an additional fee, for each additional set, in the amount of $ 50.00 per set. Bidders must allow up to three business days from time of request before printed documents will be available.

A Pre-Bid Conference and site visit, will be held on Tuesday, July 30, 2013 at 11:00 AM, Somerville High School, 81 Highland Avenue Somerville, MA 02143. Participants shall convene at the main entrance at this address, located on the concourse.

Sealed Filed Sub-Bids for:

230000 – Heating, Ventilation and Air Conditioning
260000 – Electrical Work

will be received at the Purchasing Department, 1st Floor, City Hall, 93 Highland Avenue, Somerville, MA 02143 until **Wednesday, August 7, 2013 at 11:00 a.m.** at which time all filed sub-bids will be publicly opened and read aloud.

Sealed general bids will be received at the Purchasing Department, 1st Floor, City Hall, 93 Highland Avenue, Somerville, MA 02143 until **Wednesday, August 14, 2013 at 11:00 a.m.** at which time all general bids will be publicly opened and read aloud.

Please mark the outside of all sealed bid envelopes (for filed sub-bids and general bids) with the following: **"IFB #14-13." Filed sub-bidders shall also indicate on the envelope which trade(s) are included in the enclosed bid(s).**

BIDS SUBMITTED MUST BE AN ORIGINAL.

The completion of the forms provided and listed in Part 1, Section 3 is necessary for consideration of a potential contract award. When submitting bid documents, please refer to the Bidder's Checklist and retain the order of documents as originally provided.

All general bids and filed sub-bids shall be accompanied by a bid deposit in the form of a certified, cashier's or treasurer's check issued by a responsible bank or trust company made payable to the

City of Somerville, or a bid bond, in an amount not less than five percent (5%) of the value of the bid. The City of Somerville's Responsible Employer Ordinance, and the Massachusetts Prevailing Wage Rates apply to this procurement.

CITY HALL HOURS: WE ARE OPEN MONDAY THROUGH WEDNESDAY, 8:30AM THROUGH 4:30PM, UNTIL 7:30 P.M. ON THURSDAYS, AND CLOSE ON FRIDAYS AT 12:30 P.M.

PART 1, SECTION 2:

INSTRUCTIONS TO BIDDERS

(Chapter 149M – Construction- Competitive Sealed Bids)

1. **NAME OF PROJECT**

Somerville High School Renovations to Room 143

2. **AWARDING AUTHORITY**

The City of Somerville (City), acting by and through the Purchasing Department, invites sealed bids for the complete renovation of an existing classroom at the Somerville High School in accordance with the Contract Documents.

Contact:

Angela M. Allen
Director, Capital Projects & Planning

City of Somerville
93 Highland Avenue
Somerville, MA 02143
Phone (617) 625-6600 x3400

Skip Bandini, Director, Purchasing Department

City of Somerville
One Franey Road
Somerville, MA 02145
Phone (617) 625-6600 x5123

3. ARCHITECT:

CDR Maguire, Inc.
211 Congress Street, 11th Floor
Boston, MA 02110

Contact: Fabrizio Caruso, Project Manager
Phone: (617) 778 - 1464
Fax: (617) 348 - 2413

4. **LOCATION OF PROJECT**

The location of the Somerville High School is at 81 Highland Avenue, Somerville, MA.

5. BRIEF DESCRIPTION OF WORK MORE PARTICULARLY DESCRIBED IN THE PLANS AND SPECIFICATIONS INCLUDED AS PART OF THIS BID PACKAGE.

The City seeks construction services for the renovation to Room 143 at the Somerville High School, located at 81 Highland Street, Somerville, MA 02143. The project consists of a complete renovation of approximately 1,180 square feet of an existing class room. The renovation includes a new toilet room, flooring, casework, acoustical ceiling and light fixtures.

6. ESTIMATED CONSTRUCTION COST OF THE PROJECT

The estimated cost for the project is $149,700

7. PROJECT SCHEDULE:

Construction Start:	August 12, 2013
Date of Substantial Completion:	December 27, 2013
Date of Final Completion: 100% completion of all work.	January 9, 2014

Bidders are instructed to note the firmness of the dates of: Substantial Completion, and Final Completion. For the purpose of meeting these deadlines, the City may be prepared to authorize extended work hours beyond those prescribed by City ordinance, to include work on Sundays with the prior permission of the City.

Contractor submission of all paperwork required for the Construction Contract, including but not limited to insurance certificates, performance and payment bonds, a certificate of good standing from the Secretary of Corporations, and signature pages shall be submitted to the Purchasing Director no later than 5 working days from award of the contract.

The successful bidder shall be required to submit a preliminary construction schedule within 10 days of the established date of award of the Contract and a more detailed Gantt-type construction schedule within 15 days of the established award of the contract, which shows the dates of substantial and final completion.

8. GOVERNING LAW

Massachusetts General Laws, c. 149M.

9. SALES TAX EXEMPTION

Materials, equipment, and supplies for this project are exempt from sales tax in accordance with M.G.L. Chapter 64H, Section 6 (d). The city will furnish the successful bidder with its sales tax exemption number.

10. PERMIT FEES

Contractor is responsible for all permits. Fees for City of Somerville permits are waived.

11. MINIMUM BID CRITERIA

- All bidders must have been conducting business, in this specified field, for a minimum of five (5) years.

- All bidders must have successfully constructed a minimum of three projects similar in magnitude within the last six (6) years.

12. PRE-BID CONFERENCE QUESTIONS AND INFORMATION

A Pre-Bid Conference and site visit, will be held on Tuesday, July 30 at 11:00 a.m., Somerville High School, 81 Highland Avenue, Somerville MA 02143.

All questions regarding the project and this Invitation to Bid should be in writing, submitted to Angela M. Allen, Purchasing Director, Purchasing Department, Somerville City Hall, First Floor, 93 Highland Avenue, Somerville, Massachusetts, 02143. Questions may be submitted either by mail, or email to amallen@somervillema.gov.

Questions must be submitted in writing **by 4:30 pm, Wednesday, July 31st,** and they will be answered in writing to all holders of the bid proposals. Bidders must submit e-mail address (preferred) or a fax number with their inquiries. If any bidders contact any other person or department outside of Purchasing with inquiries, they may be disqualified from the bidding process.

Key Dates

Pre-bid Conference	11:00 a.m.	July 30
Deadline for Questions	4:30 p.m.	July 31
Filed Sub-bids Due and Opened	11:00 a.m.	August 7
Filed Sub-bids Distributed to Prospective Bidders on Record with the City	4:30 p.m.	August 8
General Bids Due and Opened	11:00 a.m.	August 14
Evaluation of Bid Documentation Begins		August 14
Anticipated Contract Award		August 8
Anticipated Notice to Proceed		August 9
Commencement of Work		August 12

13. BID SUBMISSION TIME AND PLACE OF BID OPENING

Sealed bids (clearly identified as a bid and endorsed with the name and address of the bidder) must be received **no later than 11:00 a.m.** by the Purchasing Department, first floor, City Hall, 93 Highland Avenue, Somerville, MA, 02143 on or before **August 7, 2013 for Filed Sub-bids and August 14, 2013 for general bids**, at which time they will be publicly opened and read aloud. In the event City Hall is closed, the deadline shall be 11:00 a.m**.** on the next day City Hall is open for business.

ADDITIONAL REQUIREMENTS: PLEASE READ CAREFULLY, FAILURE TO MEET THESE REQUIREMENTS COULD RESULT IN REJECTION OF A BID.

14. BID SUBMISSION REQUIREMENTS

Bid Signature

A bid must be signed as follows: 1) if the bidder is an individual, by her/him personally; 2) if the bidder is a partnership, by the name of the partnership, followed by the signature of each general partner; and 3) if the bidder is a corporation or limited liability company (LLC), by the

authorized officer, whose signature must be a person named on the Corporate Secretary's Certificate of Authority or Certificate of Authority for an LLC (see required forms in this bid package).

Changes and Addenda

If any changes are made to this IFB, an addendum will be issued. Addenda will be mailed or faxed to all bidders on record as having picked up the IFB. No changes may be made to the bid documents, except as authorized in an addendum from the Purchasing Department.

Modification or Withdrawal of Bids, Mistakes, and Minor Informalities

A bidder may correct, modify, or withdraw a bid by written notice received by the City of Somerville prior to the time and date set for the bid opening. Bid modifications must be submitted in a sealed envelope clearly labeled "Modification No.__" to the address listed in part one of this section. Each modification must be numbered in sequence, and must reference the original IFB.

After the bid opening, a bidder may not change any provision of the bid in a manner prejudicial to the interests of the City or fair competition. Minor informalities will be waived or the bidder will be allowed to correct them. If a mistake and the intended correct bid are clearly evident on the face of the bid document, the mistake will be corrected to reflect the intended correct bid, and the bidder will be notified in writing; the bidder may not withdraw the bid. A bidder may withdraw a bid if a mistake is clearly evident on the face of the bid document, but the intended correct bid is not similarly evident.

Right to Cancel/Reject Bids

The City of Somerville may cancel this IFB, or reject in whole or in part any and all bids, if the City determines that cancellation or rejection serves the best interests of the City.

Bid Prices to Remain Firm

All bid prices submitted in response to this IFB must remain firm for 60 days following the bid opening.

Unbalanced Bids

The City reserves the right to reject unbalanced, front loaded, and conditional bids.

Documents to be Submitted as part of Bid:

The following documents must be submitted with the complete signed bid package:

Bid Submission Documents (Section 003000)

Form for General Bid (Section 003050)

Living Wage Form (Section 003200)

Responsible Employer Ordinance (Section 003250)

Acknowledgement of Notice to Bidders (Section 003300)

Quality Requirements Form (Section 003350)

Certificate of Non-Collusion and Tax Compliance (Section 003400)

Certificate of Signature Authority (Section 003500)

Signature Form (Section 003600)

Reference Form (Section 003700)

Schedule of Values. Bidders do not need to include a Schedule of Values with their bid package. The successful bidder will be required to submit a refined and detailed schedule of values for review and approval by the design professional prior to signing the construction contract.

5% Statutory Bid Guaranty. All bids shall be accompanied by a bid bond or bank certified check or bank treasurer's check in the amount of 5% of the bid price, which shall become the property of the City of Somerville if the bid is accepted and the bidder neglects or refuses to comply with the terms of the bid.

For successful bidder: Certificate of Good Standing: If the bidder is a corporation, a Certificate of Good Standing should accompany the signed contract. Certificate available online at:http://corp.sec.state.ma.us/corp/Certificates/Certificate_Request.asp
or call Tel: (617) 727-9640 for more information.

QUALITY REQUIREMENTS

Please respond to the following questions. A negative response to any of the first three questions will automatically disqualify the Bidder. A negative response to the fourth question about SOMWBA will not disqualify the Bidder.

	Yes	No
Has the contractor been established in this specified field for at least 5 years?		
Has the contractor successfully completed a minimum of three (3) similar projects within the past six (6) years?		
Can the contractor certify that all employees to be provided have successfully completed at least 10 hours of OSHA		

approved training in Construction Safety and Health?		
Optional: Vendor: Are you a State Office for Minority and Women Owned Business Assistance (SOMWBA) certified minority- or woman- owned business?		

15. APPLICABLE WAGE RATES:

The contractor shall pay State prevailing wage rates. The applicable wage rates are attached as part of this bid package and will be included as Appendix J in the contract. A signed Compliance Form must be included with the bid package, Form included.

16. SAMPLE CONSTRUCTION CONTRACT

The successful bidder shall execute with the City of Somerville a Contract ("Contract") in substantially the same form as the sample contract included in this bid package. In addition to the items submitted with the bid, the contract includes certain other documents which may be executed by the Bidder selected as contractor and which are included as Appendices to the Sample Construction Contract (see Part 2) include:

Certificate of Authority (for corporations and LLC's if the contract is signed by other than the President, there must be a current Certificate of Vote signed by the corporate clerk or secretary stating who is authorized to sign contracts on the Corporations or LLC's behalf)

Appendix D: Insurance Certificates– evidencing minimum coverage as follows:
General Liability - $1,000,000 per occurrence, $2,000,000 aggregate
Automobile Liability: $500,000 per occurrence, $1,000,000 aggregate
Workman's Compensation: statutory coverage

Appendix F: Certificate of Good Standing: Certificate available online at
http://corp.sec.state.ma.us/corp/Certificates/Certificate_Request.asp
or call Tel: (617) 727-9640 for more information.

Appendix H: Statement of Management (for contracts over $100,000.00)

Appendix I: Performance and Payment Bonds for 100% of the contract sum

All paperwork required for the contract shall be completed and delivered to the Purchasing Department no later than five (5) working days after the Award of the Contract.

ITEMS OF SPECIAL CONSIDERATION

The Contractor's attention is specifically drawn to the following items of special consideration relative to this project, most of which are also addressed in the Technical Specifications.

a. The Contractor must provide police details at the Contractor's expense.

b. The Contractor must obtain all permits as necessary.

19. RESERVATION OF RIGHTS

The City reserves the right to extend the deadline for submission of bids, to request supplemental information, to waive minor informalities, and reserves the right to reject any and all bids, if in its sole judgment, the best interests of the City of Somerville would be served by doing so.

20. RULE FOR AWARD

A contract will be awarded to the lowest responsible and eligible bidder. All required bid documents must be provided to be deemed responsive and eligible.

PART 1 SECTION 3

Somerville High School
Renovations to Room 143
(IFB # 14-13)

BID SUBMISSION DOCUMENTS

BIDDERS NAME: _____

This Bid Submission includes the following:

____ Form for General Bid

____ Quality Requirements

____ Somerville Living Wage Form

____ Responsible Employer Ordinance Form

____ Acknowledgement of Notice to Bidders

____ Certificate of Non-Collusion and Tax Compliance

_____Certificate of Signature Authority

_____Signature Form

_____Reference Form

_____5% Statutory Bid Bond or Guaranty

_____Prevailing Wage Compliance Form

_____DCAMM Certificate of Eligibility and Update Statement

Part 1 Section 003050: FORM FOR GENERAL BID
FOR CONSTRUCTION CONTRACT

To the Awarding Authority:

A. The undersigned proposes to furnish all labor and materials required for:

Somerville High School Renovations to Room 143

in accordance with the accompanying plans and specifications prepared by

CDR Maguire, Inc.
211 Congress Street, 11th Floor
Boston, MA 02110

Contact: Fabrizio Caruso, Project Manager
Phone: (617) 778 - 1440
Fax: (617) 348 - 2143

specified below, subject to additions and deductions according to the terms of the specifications.

B. This bid includes addenda #1_____, #2 _____, #3 _____, #4 _____.

C. The proposed contract price is:

$_____.
(total bid in figures)

_____DOLLARS
(total bid in words)

D. While the proposed contract price does not include the items listed on the attached "Bid Form for Alternates," the bidder understands that the project construction cost estimate provided by the city is inclusive of all the work described in this form.

E. The Undersigned Bidder agrees that, if it is selected as general contractor, it will within five working days, Saturdays, Sundays and legal holidays excluded, after

presentation thereof by the Awarding Authority, execute a contract in accordance with the terms of this bid, including furnishing a 100% performance bond and a 100% labor and materials or payment bond, each of a surety company qualified to do business under the laws of the Commonwealth of Massachusetts and satisfactory to the Awarding Authority and each in the sum of the contract price, the premiums for which are to be paid by the general contractor and are included in the contract price; and, in addition, furnishing a certificate of good standing and insurance certificates as required by the bid documents.

F. The Undersigned Bidder hereby certifies that it is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the Project and that it will comply fully with all laws and regulations applicable to this Award, including applicable provisions of MGL Chapter 30, ss. 39M et seq.

G. The Undersigned Bidder further certifies under the penalties of perjury that this bid is in all respects bona fide, fair and made without collusion or fraud with any other person. As used in this certification, the word "person" shall mean any natural person, business, partnership, corporation, union, committee, club, or other organization, entity, or group of individuals.

H. The Undersigned Bidder certifies under the penalties of perjury that:

(1) Pursuant to M.G.L. c. 62C, §49A, to the best of the signatories knowledge and belief, that the Undersigned Bidder is in compliance with all laws of the Commonwealth relating to taxes, reporting of employees and contractors, and withholding and remitting child support, as well as paid all contributions and payments in lieu of contributions pursuant to MGL 151A, §19A(b), and

(2) the Federal Employer Identification Number (EIN) of the Bidder is # _____, and that it is in compliance with all federal, state, and local laws regarding taxation.

I. The Undersigned Bidder certifies under penalties of perjury that the Bidder is not presently debarred from doing federal or state public construction work, that the Bidder has not had its low bid rejected by any municipality in the previous two years, except

_____

in which case the reasons for rejection were as follows:

_____

J. The Undersigned Bidder has submitted the information on the Reference Form:

- (00370-1), requesting three references for municipal park projects completed during the previous six (6) years. The Undersigned Bidder understands that the contractor and subcontractors will be required to pay prevailing wages to laborers and mechanics, and that if the Undersigned's bid is significantly below the

average bid, the Awarding Authority may require the Bidder to substantiate that the bid is based on payment of wages at prevailing rates.

M. The Undersigned Bidder certifies that it can achieve substantial completion by: December 27, 2013 and achieve Final Completion by: January 9, 2014

N. Unit Price Form

1. Should certain additional work be required, or should the quantities of certain classes of work be increased or decreased from those required by the Contract Documents, by authorization of the City, unit prices listed on the attached "Unit Price Form" shall at the option of the City be the basis of payment to the Contractor or credit to the City, for such increase or decrease in the work. The unit prices shall represent the exact net amount per unit to be paid the Contractor (in the case of addition or increase) or to be refunded the City (in the case of decrease). Contractually noted adjustments will be allowed for overhead, profit, insurance or other direct or indirect expenses of the Contractor or Subcontractors.

2. The unit prices shall include cost of fuel, all labor, materials, equipment, overhead, profit, insurance, etc. to cover the finished work of the several kinds called for. Changes shall be processed in accordance with the provisions of the General Conditions governing changes in the work.

Executed this _____ day of _____ 20 .

On behalf of :

_____
(Undersigned Bidder Business Name)

_____

_____
(Business Address) and (Telephone)

By:

_____
(Name and Address of Person Signing Bid)

_____
(Title of Person Signing bid)

SOMERVILLE LIVING WAGE ORDINANCE CERTIFICATION FORM

CITY OF SOMERVILLE CODE OF ORDINANCES SECTION 2-397 et seq[1].

Instructions: This form shall be included in all Invitations for Bids and Requests for Proposals which involve the furnishing of labor, time or effort (with no end product other than reports) by vendors contracting or subcontracting with the City of Somerville, where the contract price meets or exceeds the following dollar threshold: $10,000. If the undersigned is selected, this form will be attached to the contract or subcontract and the certifications made herein shall be incorporated as part of such contract or subcontract. **Complete this form and sign and date where indicated below on page 2.**

Purpose: The purpose of this form is to ensure that such vendors pay a "Living Wage" (defined below) to all covered employees (i.e., all employees except individuals in a city, state or federally funded youth program). In the case of bids, the City will award the contract to the lowest responsive and responsible bidder paying a Living Wage. In the case of RFP's, the City will select the most advantageous proposal from a responsive and responsible offeror paying a Living Wage. In neither case, however, shall the City be under any obligation to select a bid or proposal that exceeds the funds available for the contract.

Definition of "Living Wage": For this contract or subcontract, as of **7/1/2013** "Living Wage" shall be deemed to be an hourly wage of no less than **$11.89** per hour. From time to time, the Living Wage may be upwardly adjusted and amendments, if any, to the contract or subcontract may require the payment of a higher hourly rate if a higher rate is then in effect.

CERTIFICATIONS

1. The undersigned shall pay no less than the Living Wage to all covered employees who directly expend their time on the contract or subcontract with the City of Somerville.

2. The undersigned shall post a notice, (copy enclosed), to be furnished by the contracting City Department, informing covered employees of the protections and obligations provided for in the Somerville Living Wage Ordinance, and that for assistance and information, including copies of the Ordinance, employees should contact the contracting City Department. Such notice shall be posted in each location where services are performed by covered employees, in a conspicuous place where notices to employees are customarily posted.

3. The undersigned shall maintain payrolls for all covered employees and basic records relating hereto and shall preserve them for a period of three years. The records shall contain the name and address of each employee, the number of hours worked, the gross wages, a copy of the social

[1]Copies of the Ordinance are available upon request to the Purchasing Department.

security returns, and evidence of payment thereof and such other data as may be required by the contracting City Department from time to time.

4. The undersigned shall submit payroll records to the City upon request and, if the City receives information of possible noncompliance with the provisions the Somerville Living Wage Ordinance, the undersigned shall permit City representatives to observe work being performed at the work site, to interview employees, and to examine the books and records relating to the payrolls being investigated to determine payment of wages.

5. The undersigned shall not fund wage increases required by the Somerville Living Wage Ordinance by reducing the health insurance benefits of any of its employees.

6. The undersigned agrees that the penalties and relief set forth in the Somerville Living Wage Ordinance shall be in addition to the rights and remedies set forth in the contract and/or subcontract.

CERTIFIED BY:

Signature: _____
(Duly Authorized Representative of Vendor)

Title: _____

Name of Vendor:_____

Date: _____

INSTRUCTIONS: PLEASE POST

NOTICE TO ALL EMPLOYEES REGARDING PAYMENT OF LIVING WAGE

Under the Somerville, Massachusetts' Living Wage Ordinance (Ordinance No. 1999-1), any person or entity who has entered into a contract with the City of Somerville is required to pay its employees who are involved in providing services to the City of Somerville no less than a "Living Wage".

The Living Wage as of **7/1/2013** is **$11.89** per hour. The only employees who are not covered by the Living Wage Ordinance are individuals in a Youth Program. "Youth Program" as defined in the Ordinance, "means any city, state or federally funded program which employs youth, as defined by city, state or federal guidelines, during the summer, or as part of a school to work program, or in any other related seasonal or part-time program."

For assistance and information regarding the protections and obligations provided for in the Living Wage Ordinance and/or a copy of the Living Wage Ordinance, all employees should contact the City of Somerville's Purchasing Department directly

CITY OF SOMERVILLE
ORDINANCE NO. 2008-08
IN THE BOARD OF ALDERMEN: June 12, 2008

Be it ordained by the Board of Aldermen, in session assembled, that the Code of Ordinances of the City of Somerville, is hereby amended by adding a new Section 2-355 as follows:

Sec. 2-355. Responsible Employer Ordinance.

(a) The Board of Aldermen hereby finds and determines that the failure of certain construction firms awarded contracts funded by the City to include and enforce provisions requiring compliance with state laws governing the payment of prevailing wages, the provision of workers compensation coverage, and the proper classification of individuals as employees and not as independent contractors, as well as provisions concerning health insurance coverage and state-certified apprenticeship programs, is injurious to the life, health and happiness of individuals employed by such firms and is deleterious to the quality of life in the City where most of such individuals reside.

(b) Every contract awarded by the City under G. L. c. 149, § 44A (2) where the amount of the contract is more than one-hundred thousand dollars, and any subcontract awarded in connection with any such general contract where the amount of such subcontract is more than twenty-five thousand dollars, shall be deemed to incorporate by reference the provisions of sub-parts (1) through (5) of this subsection together with the provisions of subsections (c), (d) and (e) of this section.

1. The bidder and all subcontractors under the bidder shall comply with the requirements of G. L. c. 149 concerning the payment of prevailing wage rates to their employees;
2. The bidder and all subcontractors under the bidder must maintain and participate in a bona fide apprentice training program as defined by G. L. c. 23, §§ 11H & 11I for each apprenticeable trade or occupation represented in its workforce that is approved by the division of apprentice training of the department of labor and workforce development of the Commonwealth and must abide by the apprentice to journeymen ratio for each trade prescribed therein in the performance of the contract;
3. The bidder and all subcontractors under the bidder must offer, at its expense, hospitalization and medical benefits for all individuals employed on the project or coverage which is comparable to the hospitalization and medical benefits provided by the health and welfare plans in the applicable craft recognized by G. L. c. 149, § 26, in establishing minimum wage rates. All such plans shall meet or exceed state requirements for such plans.
4. The bidder and all subcontractors under the bidder must maintain appropriate industrial accident insurance coverage in accordance with G. L. c. 152 for all individuals employed on the project;
5. The bidder and all subcontractors under the bidder must properly classify individuals employed on the project as employees rather than independent contractors and comply with all laws concerning workers' compensation insurance coverage, unemployment taxes, social security taxes and income taxes as respects all such employees.

(c) All bidders and all subcontractors under such bidders who are awarded, or otherwise obtain, contracts from the city on projects governed by G. L. c. 149, § 44A (2), shall comply with the obligations described in sub-parts (1) through (5) of subsection (b) of this section for the entire duration of their work on the project, and an officer of each such bidder or subcontractor under the bidder shall certify under oath and in writing on a weekly basis that they are in compliance with these obligations.

(d) Any bidder or subcontractor under the bidder who fails to comply with any of the obligations described in sub-parts (1) through (5) of subsection (b) of this section for any period of time, or fails to comply with the weekly certification obligations described in subsection (c) of this subsection shall be subject to any or all of the following sanctions:

1. temporary suspension of work on the project until compliance is obtained; or,
2. withholding by the City of payment due under the contract until compliance is obtained; or,
3. permanent removal from any further work on the project; or,
4. recovery by the city from the general contractor of 1/10 of 1% of the general contract or $ 1,000.00, whichever sum is greater, in the nature of liquidated damages assessed for each week that the general contractor is in non-compliance or, if a subcontractor is in non-compliance, the recovery by the city from the general contractor as a back charge against the subcontractor of 1/10 of 1% of the subcontract price, or $ 400.00, whichever sum is greater, in the nature of liquidated damages assessed for each week that the subcontractor is in non-compliance.

(e) In addition to these sanctions a general bidder or contractor shall be equally liable for any violation of the obligations described in sub-parts (l) through (5) of subsection (b) of this section committed by any of its subcontractors or sub bidders, excepting only those violations which arise from work performed by subcontractors with subcontracts governed by G. L. c. 149, § 44F. Any contractor or subcontractor who has been determined to have violated any of the provisions of subsections (b) or (c) of this section shall be barred from performing any work on any future contracts awarded by the City for six months for the first violation, three years for the second violation, and permanently for a third violation.

(f) The provisions of this section shall not apply to construction projects for which the low general bid was less than one-hundred thousand dollars, or to work performed pursuant to subcontracts governed by G. L. 149, § 44F where the bid for such subcontract was less than twenty-five thousand dollars.

Receipt Acknowledged _____ *day of* _____, *20*___.

_____
Name of Vendor

By: _____
Name

Its: _____
Title

_____
Signature

CITY OF SOMERVILLE
Responsible Employer Ordinance

WEEKLY COMPLIANCE FORM

In accordance with the Code of Ordinances of the City of Somerville, Section 2-355, all general contractors and all subcontractors under such general contractors who are awarded, or otherwise obtain, contracts from the city on projects governed by G. L. c. 149, § 44A (2), shall comply with the obligations described in sub-parts (1) through (5) of subsection (b) of this section for the entire duration of their work on the project, and an officer of each such general contractor or subcontractor under the general contractor where the amount of such subcontract is more than $25,000.00, shall certify under oath and in writing on a weekly basis that they are in compliance with these obligations.

NOTICE TO BIDDERS
IFB #14-13

All bids must be in accordance with terms and conditions set forth herein as stated.

SECTION A. **Sealed filed sub-bids** for **Somerville High School Renovations to Room 143** shall be received by the Purchasing Department no later than **August 7, 2013 at 11:00 a.m. Sealed general bids** will be received at the office of the Purchasing Director, Somerville City Hall, 93 Highland Avenue, Somerville, MA. 02143 no later than **August 14, 2013 at 11:00 a.m..** at which time and place they will be publicly opened and read.

A Pre-Bid Conference and site visit, will be held on July 30, 2013 at 11:00 a.m., Somerville High School, 81 Highland Avenue, Somerville, MA 02143.

SECTION B. Forms of price bid, specifications and terms of contract can be obtained at the Purchasing Department office on or after **July 24, 2013.**

SECTION C. Bid envelopes shall be clearly marked as follows: **"IFB #14-13, Bid for Somerville High School Renovations to Room 143".**

SECTION D. If **awarded** vendor is a Corporation, vendor must comply with request for "Certificate of Good Standing". See attached instructions.

SECTION E. **INSURANCE: Awarded Vendor** must comply with insurance requirements as stated in the bid package.

SECTION F. Living Wage - see Somerville Living Wage Form (00320)
Prevailing Wage Rates
Responsible Employer Ordinance

SECTION G. The requirements in Section **E or F** will be waived if the words "Non-Applicable" **(N/A)** are inserted in the space designated.

SECTION H. The copy of the bid deposited with the City will be accompanied by a bid guarantee in the amount of 5% of the proposed bid amount. The estimated contract amount is $149,700.00. A Bid bond, Certified Check, Treasurer's Check, or Cashier's Check made payable to the City must be submitted with each bid. Said bid guarantee will become the property of the City of Somerville if the proposal is accepted and the bidder either neglects or refuses to comply with the terms of the proposal. Bid guarantee will be returned within 30 days to all unsuccessful bidders.

SECTION I. A Performance Bond and a Labor and Materials Bond in the amount of 100% of the total contract price will be required by the City.

SECTION J. The Purchasing Director reserves the right to accept or reject any or all bids, to waive any minor informalities, if in her sole judgment, the best interest of the City of Somerville would be served by so doing.

SECTION K. The City reserves the right to cancel a contract, if awarded bidder does not respond to all necessary documents and required signature forms within ten (10) working days of receipt of contract.

SECTION L. The Vendor must certify that all employees to be provided have successfully completed at least ten (10) hours of OSHA approved training in Construction Safety and Health.

Signature:_____

Company:_____

By: _____ Title:_____

Date:_____ Tel. No: _____Fax:_____

Applicable to Corporations:

I hereby attest that the signatory to this bid has the authority to sign and submit bids for the Corporation.

ATTEST: _____
Secretary

Non-Collusion Form and Tax Compliance Certification

Instructions: Complete each part of this two-part form and sign and date where indicated below.

A. NON-COLLUSION FORM

I, the undersigned, hereby certify under penalties of perjury that this bid or proposal has been made and submitted in good faith and without collusion or fraud with any other person.

As used in this certification, the word "person" shall mean any natural person, business, partnership, corporation, union, committee, club, or other organization, entity, or group of individuals.

Signature: _____
(**Individual Submitted Bid or Proposal)**
Duly Authorized

Name of Business or Entity:_____

Date: _____

B. TAX COMPLIANCE CERTIFICATION

Pursuant to M.G.L. c. 62C, §49A, I certify under the penalties of perjury that, to the best of my knowledge and belief, I am in compliance with all laws of the Commonwealth relating to taxes, reporting of employees and contractors, and withholding and remitting child support, as well as paid all contributions and payments in lieu of contributions pursuant to MGL 151A, §19A(b).

Signature: _____
(Duly Authorized Representative of Vendor)

Name of Business or Entity:_____

Social Security Number or Federal Tax ID#:_____

Date: _____

Certificate of Authority
(Corporations Only)

Instructions: Complete this form and sign and date where indicated below.

1. I hereby certify that I, the undersigned, am the duly elected Clerk/Secretary of

_____.
(Insert Full Name of Corporation)

2. I hereby certify that the following individual _____
(Insert the Name of Officer who Signed the Contract and Bonds)

is the duly elected_____ of said Corporation.
(Insert the Title of the Officer in Line 2)

3. I hereby certify that on _____
(Insert Date: Must be *on or before* Date Officer Signed Contract/Bonds)

at a duly authorized meeting of the Board of Directors of said corporation, at which a quorum was present, it was voted that

_____ _____
(Insert Name of Officer from Line 2) (Insert Title of Officer from Line 2)

of this corporation be and hereby is authorized to make, enter into, execute, and deliver contracts and bonds in the name and on behalf of said corporation, and affix its Corporate Seal thereto, and such execution of any contract of obligation in this corporation's name and on its behalf, with or without the Corporate Seal, shall be valid and binding upon this corporation; and that the above vote has not been amended or rescinded and remains in full force and effect as of the date set forth below.

4. **ATTEST**:
Signature: _____ ***AFFIX CORPORATE SEAL HERE***
(**Clerk or Secretary)**
Printed Name: _____

Printed Title:_____

Date: _____
(Date Must Be *on or after* Date Officer Signed Contract/Bonds)

Certificate of Authority
(Limited Liability Companies Only)

Instructions: Complete this form and sign and date where indicated below.

1. I, the undersigned, being a member or manager of

_____,

(Complete Name of Limited Liability Company)

a limited liability company (LLC) hereby certify as to the contents of this form for the purpose of contracting with the City of Somerville.

2. The LLC is organized under the laws of the state of: _____.

3. The LLC is managed by **(check one)** a Manager or by its Members.

4. I hereby certify that each of the following individual(s) is:
   - a member/manager of the LLC;
   - duly authorized to execute and deliver this contract, agreement, and/or other legally binding documents relating to any contract and/or agreement on behalf of the LLC;
   - duly authorized to do and perform all acts and things necessary or appropriate to carry out the terms of this contract or agreement on behalf of the LLC; and
   - that no resolution, vote, or other document or action is necessary to establish such authority.

Name	Title

5. **Signature**:_____

   Printed Name: _____

   Printed Title:_____

   Date: _____

CITY OF SOMERVILLE

SIGNATURE FORM

NAME OF COMPANY: _____

ADDRESS: _____

TELEPHONE #:_____ FAX #: _____

DATE: _____ EMAIL: _____

SIGNATURE OF AUTHORIZED CONTRACTING OFFICIAL:

_____

TITLE: _____

RESIDENCE: _____

IF COMPANY IS A PARTNERSHIP:

FULL NAME AND RESIDENCE OF EACH PARTNER:

_____

_____

IF COMPANY IS A CORPORATION:

THE CORPORATE NAME IS: _____

THE CORPORATION IS ORGANIZED UNDER THE LAWS OF: _____

THE PRESIDENT IS: _____

THE TREASURER IS: _____

THE CLERK/SECRETARY OR ASSISTANT CLERK/SECRETARY WHO WILL EXECUTE THE CONTRACT AND SIGN THE CERTIFICATE OF AUTHORITY IS:

_____

NAME OF CORPORATION THAT WILL APPEAR ON A POTENTIAL CONTRACTUAL AGREEMENT IF DIFFERENT FROM ABOVE:_____.

NAME AND TITLE OF PERSON WHO WILL BE THE PRINCIPAL SIGNATORY ON THE CONTRACT IF OTHER THAN THE PRESIDENT:

NAME:_____TITLE: _____

REFERENCE FORM

Bidder:_____

IFB Title: **Somerville High School Renovations to Room 143**
Bidder must provide references from three municipalities for similar projects completed during the previous six (6) years.

Reference:_____ Contact:_____

Address:_____ Phone:_____

_____ Fax:_____

Description and date(s) of supplies or services provided:_____

_____

_____

Reference:_____ Contact:_____

Address:_____ Phone:_____

_____ Fax:_____

Description and date(s) of supplies or services provided:_____

_____

_____

Reference:_____ Contact:_____

Address:_____ Phone:_____

_____ Fax:_____

Description and date(s) of supplies or services provided:_____

_____

BID BOND OR GUARANTY

BIDDER TO INSERT HERE

Division of Labor and Industries Wage Rates

THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF LABOR AND WORKFORCE DEVELOPMENT
DEPARTMENT OF LABOR STANDARDS

Prevailing Wage Rates

DEVAL L. PATRICK
Governor
TIMOTHY P. MURRAY
Lt. Governor

As determined by the Director under the provisions of the Massachusetts General Laws, Chapter 149, Sections 26 to 27H

JOANNE F. GOLDSTEIN
Secretary
HEATHER E. ROWE
Director

Awarding Authority: City of Somerville

Contract Number: **City/Town:** SOMERVILLE

Description of Work: Somerville High School Room 143 Renovation - Complete renovation of approx. 1800 ft2 of an existing classroom. Work includes new toilet room, flooring, casework, acoustical ceiling and light fixtures.

Job Location: 81 Highland Avenue,Somerville, MA 02143

Information about Prevailing Wage Schedules for Awarding Authorities and Contractors

- This wage schedule applies only to the specific project referenced at the top of this page and uniquely identified by the "Wage Request Number" on all pages of this schedule.
- Awarding authorities must request an updated wage schedule from the Department of Labor Standards ("DLS") if it has not opened bids or selected a contractor within 90 days of the date of issuance of the wage schedule.
- The wage schedule shall be incorporated in any advertisement or call for bids for the project as required by M.G.L. c. 149, § 27. Once a contractor has been selected by the awarding authority, the wage schedule shall be made a part of the contract for that project. The wage schedule must be posted in a conspicuous place at the work site during the life of the project in accordance with M.G.L. c. 149, § 27. The wages listed on the wage schedule must be paid to employees performing construction work on the project regardless of whether they are employed by the prime contractor, a filed sub-bidder, or any sub-contractor.
- All apprentices working on the project are required to be registered with the Massachusetts Division of Apprentice Training (DAT). Apprentices must keep his/her apprentice identification card on his/her person during all work hours on the project. If an apprentice rate is listed on the prevailing wage schedule for the trade in which an apprentice is registered with the DAT, the apprentice may be paid the lower apprentice wage rate at the applicable step as provided on the prevailing wage schedule. **If an apprentice rate is not listed on the prevailing wage schedule for the trade in which an apprentice is registered with the DAT, the apprentice must be paid the journeyworker's rate for the trade.**
- The wage rates will remain in effect for the duration of the project, except in the case of multi-year public construction projects. For construction projects lasting longer than one year, awarding authorities must request an updated wage schedule. Awarding authorities are required to request these updates no later than two weeks before the anniversary of the date the contract was executed by the awarding authority and the general contractor. Contractors are required to obtain the wage schedules from awarding authorities, and to pay no less than these rates to covered workers. The annual update requirement is not applicable to 27F "rental of equipment" contracts.
- Every contractor or subcontractor which performs construction work on the project is required to submit weekly payroll reports directly to the awarding authority and keep them on file for three years. Each weekly payroll report must contain: the employee's name, address, occupational classification, hours worked, and wages paid. Do not submit weekly payroll reports to DLS. A sample of a payroll reporting form may be obtained at http://www.mass.gov/dols/pw.
- Contractors with questions about the wage rates or classifications included on the wage schedule have an affirmative obligation to inquire with DLS at (617) 626-6953.
- Employees not receiving the prevailing wage rate set forth on the wage schedule may report the violation to the Fair Labor Division of the office of the Attorney General at (617) 727-3465.
- Failure of a contractor or subcontractor to pay the prevailing wage rates listed on the wage schedule to all employees who perform construction work on the project is a violation of the law and subjects the contractor or subcontractor to civil and criminal penalties.

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
Construction						
(2 AXLE) DRIVER - EQUIPMENT *TEAMSTERS JOINT COUNCIL NO. 10 ZONE A*	12/01/2012	$31.55	$8.91	$8.00	$0.00	$48.46
(3 AXLE) DRIVER - EQUIPMENT *TEAMSTERS JOINT COUNCIL NO. 10 ZONE A*	12/01/2012	$31.62	$8.91	$8.00	$0.00	$48.53
(4 & 5 AXLE) DRIVER - EQUIPMENT *TEAMSTERS JOINT COUNCIL NO. 10 ZONE A*	12/01/2012	$31.74	$8.91	$8.00	$0.00	$48.65
ADS/SUBMERSIBLE PILOT *PILE DRIVER LOCAL 56 (ZONE 1)*	08/01/2012	$82.32	$9.80	$17.67	$0.00	$109.79
	08/01/2013	$85.47	$9.80	$17.67	$0.00	$112.94
	08/01/2014	$88.62	$9.80	$17.67	$0.00	$116.09
	08/01/2015	$91.77	$9.80	$17.67	$0.00	$119.24
AIR TRACK OPERATOR *LABORERS - ZONE 1*	06/01/2013	$33.80	$7.10	$12.45	$0.00	$53.35
	12/01/2013	$34.55	$7.10	$12.45	$0.00	$54.10
	06/01/2014	$35.30	$7.10	$12.45	$0.00	$54.85
	12/01/2014	$36.05	$7.10	$12.45	$0.00	$55.60
	06/01/2015	$36.80	$7.10	$12.45	$0.00	$56.35
	12/01/2015	$37.55	$7.10	$12.45	$0.00	$57.10
	06/01/2016	$38.30	$7.10	$12.45	$0.00	$57.85
	12/01/2016	$39.30	$7.10	$12.45	$0.00	$58.85
For apprentice rates see "Apprentice- LABORER"						
ASBESTOS REMOVER - PIPE / MECH. EQUIPT. *HEAT & FROST INSULATORS LOCAL 6 (BOSTON)*	06/01/2013	$29.88	$10.40	$5.95	$0.00	$46.23
	12/01/2013	$30.68	$10.40	$5.95	$0.00	$47.03
	06/01/2014	$31.58	$10.40	$5.95	$0.00	$47.93
	12/01/2014	$32.48	$10.40	$5.95	$0.00	$48.83
	06/01/2015	$33.43	$10.40	$5.95	$0.00	$49.78
	12/01/2015	$34.38	$10.40	$5.95	$0.00	$50.73
ASPHALT RAKER *LABORERS - ZONE 1*	06/01/2013	$33.30	$7.10	$12.45	$0.00	$52.85
	12/01/2013	$34.05	$7.10	$12.45	$0.00	$53.60
	06/01/2014	$34.80	$7.10	$12.45	$0.00	$54.35
	12/01/2014	$35.55	$7.10	$12.45	$0.00	$55.10
	06/01/2015	$36.30	$7.10	$12.45	$0.00	$55.85
	12/01/2015	$37.05	$7.10	$12.45	$0.00	$56.60
	06/01/2016	$37.80	$7.10	$12.45	$0.00	$57.35
	12/01/2016	$38.80	$7.10	$12.45	$0.00	$58.35
For apprentice rates see "Apprentice- LABORER"						
ASPHALT/CONCRETE/CRUSHER PLANT-ON SITE *OPERATING ENGINEERS LOCAL 4*	06/01/2013	$40.34	$10.00	$13.55	$0.00	$63.89
	12/01/2013	$41.12	$10.00	$13.55	$0.00	$64.67
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BACKHOE/FRONT-END LOADER *OPERATING ENGINEERS LOCAL 4*	06/01/2013	$40.34	$10.00	$13.55	$0.00	$63.89
	12/01/2013	$41.12	$10.00	$13.55	$0.00	$64.67
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
BARCO-TYPE JUMPING TAMPER *LABORERS - ZONE 1*	06/01/2013	$33.30	$7.10	$12.45	$0.00	$52.85
	12/01/2013	$34.05	$7.10	$12.45	$0.00	$53.60
	06/01/2014	$34.80	$7.10	$12.45	$0.00	$54.35
	12/01/2014	$35.55	$7.10	$12.45	$0.00	$55.10
	06/01/2015	$36.30	$7.10	$12.45	$0.00	$55.85
	12/01/2015	$37.05	$7.10	$12.45	$0.00	$56.60
	06/01/2016	$37.80	$7.10	$12.45	$0.00	$57.35
	12/01/2016	$38.80	$7.10	$12.45	$0.00	$58.35
For apprentice rates see "Apprentice- LABORER"						
BLOCK PAVER, RAMMER / CURB SETTER *LABORERS - ZONE 1*	06/01/2013	$33.80	$7.10	$12.45	$0.00	$53.35
	12/01/2013	$34.55	$7.10	$12.45	$0.00	$54.10
	06/01/2014	$35.30	$7.10	$12.45	$0.00	$54.85
	12/01/2014	$36.05	$7.10	$12.45	$0.00	$55.60
	06/01/2015	$36.80	$7.10	$12.45	$0.00	$56.35
	12/01/2015	$37.55	$7.10	$12.45	$0.00	$57.10
	06/01/2016	$38.30	$7.10	$12.45	$0.00	$57.85
	12/01/2016	$39.30	$7.10	$12.45	$0.00	$58.85
For apprentice rates see "Apprentice- LABORER"						
BOILER MAKER *BOILERMAKERS LOCAL 29*	01/01/2010	$37.70	$6.97	$11.18	$0.00	$55.85

Apprentice - *BOILERMAKER - Local 29*

Effective Date - 01/01/2010

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	65	$24.51	$6.97	$11.18	$0.00	$42.66
2	65	$24.51	$6.97	$11.18	$0.00	$42.66
3	70	$26.39	$6.97	$11.18	$0.00	$44.54
4	75	$28.28	$6.97	$11.18	$0.00	$46.43
5	80	$30.16	$6.97	$11.18	$0.00	$48.31
6	85	$32.05	$6.97	$11.18	$0.00	$50.20
7	90	$33.93	$6.97	$11.18	$0.00	$52.08
8	95	$35.82	$6.97	$11.18	$0.00	$53.97

Notes:

Apprentice to Journeyworker Ratio:1:5

BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING) *BRICKLAYERS LOCAL 3 (BOSTON)*	02/01/2013	$47.41	$10.18	$17.83	$0.00	$75.42
	08/01/2013	$48.06	$10.18	$18.15	$0.00	$76.39
	02/01/2014	$48.62	$10.18	$18.15	$0.00	$76.95
	08/01/2014	$49.52	$10.18	$18.22	$0.00	$77.92
	02/01/2015	$50.08	$10.18	$18.22	$0.00	$78.48
	08/01/2015	$50.98	$10.18	$18.29	$0.00	$79.45
	02/01/2016	$51.55	$10.18	$18.29	$0.00	$80.02
	08/01/2016	$52.45	$10.18	$18.37	$0.00	$81.00
	02/01/2017	$53.02	$10.18	$18.37	$0.00	$81.57

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *BRICK/PLASTER/CEMENT MASON - Local 3 Boston*

Effective Date - 02/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$23.71	$10.18	$17.83	$0.00	$51.72
2	60	$28.45	$10.18	$17.83	$0.00	$56.46
3	70	$33.19	$10.18	$17.83	$0.00	$61.20
4	80	$37.93	$10.18	$17.83	$0.00	$65.94
5	90	$42.67	$10.18	$17.83	$0.00	$70.68

Effective Date - 08/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$24.03	$10.18	$18.15	$0.00	$52.36
2	60	$28.84	$10.18	$18.15	$0.00	$57.17
3	70	$33.64	$10.18	$18.15	$0.00	$61.97
4	80	$38.45	$10.18	$18.15	$0.00	$66.78
5	90	$43.25	$10.18	$18.15	$0.00	$71.58

Notes:

Apprentice to Journeyworker Ratio:1:5

BULLDOZER/GRADER/SCRAPER *OPERATING ENGINEERS LOCAL 4*	06/01/2013	$39.96	$10.00	$13.55	$0.00	$63.51
	12/01/2013	$40.74	$10.00	$13.55	$0.00	$64.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
CAISSON & UNDERPINNING BOTTOM MAN *LABORERS - FOUNDATION AND MARINE*	06/01/2013	$34.20	$7.10	$12.60	$0.00	$53.90
	12/01/2013	$34.95	$7.10	$12.60	$0.00	$54.65
	06/01/2014	$35.70	$7.10	$12.60	$0.00	$55.40
	12/01/2014	$36.45	$7.10	$12.60	$0.00	$56.15
	06/01/2015	$37.20	$7.10	$12.60	$0.00	$56.90
	12/01/2015	$37.95	$7.10	$12.60	$0.00	$57.65
	06/01/2016	$38.70	$7.10	$12.60	$0.00	$58.40
	12/01/2016	$39.70	$7.10	$12.60	$0.00	$59.40
For apprentice rates see "Apprentice- LABORER"						
CAISSON & UNDERPINNING LABORER *LABORERS - FOUNDATION AND MARINE*	06/01/2013	$33.05	$7.10	$12.60	$0.00	$52.75
	12/01/2013	$33.80	$7.10	$12.60	$0.00	$53.50
	06/01/2014	$34.55	$7.10	$12.60	$0.00	$54.25
	12/01/2014	$35.30	$7.10	$12.60	$0.00	$55.00
	06/01/2015	$36.05	$7.10	$12.60	$0.00	$55.75
	12/01/2015	$36.80	$7.10	$12.60	$0.00	$56.50
	06/01/2016	$37.55	$7.10	$12.60	$0.00	$57.25
	12/01/2016	$38.55	$7.10	$12.60	$0.00	$58.25
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
CAISSON & UNDERPINNING TOP MAN *LABORERS - FOUNDATION AND MARINE*	06/01/2013	$33.05	$7.10	$12.60	$0.00	$52.75
	12/01/2013	$33.80	$7.10	$12.60	$0.00	$53.50
	06/01/2014	$34.55	$7.10	$12.60	$0.00	$54.25
	12/01/2014	$35.30	$7.10	$12.60	$0.00	$55.00
	06/01/2015	$36.05	$7.10	$12.60	$0.00	$55.75
	12/01/2015	$36.80	$7.10	$12.60	$0.00	$56.50
	06/01/2016	$37.55	$7.10	$12.60	$0.00	$57.25
	12/01/2016	$38.55	$7.10	$12.60	$0.00	$58.25
For apprentice rates see "Apprentice- LABORER"						
CARBIDE CORE DRILL OPERATOR *LABORERS - ZONE 1*	06/01/2013	$33.30	$7.10	$12.45	$0.00	$52.85
	12/01/2013	$34.05	$7.10	$12.45	$0.00	$53.60
	06/01/2014	$34.80	$7.10	$12.45	$0.00	$54.35
	12/01/2014	$35.55	$7.10	$12.45	$0.00	$55.10
	06/01/2015	$36.30	$7.10	$12.45	$0.00	$55.85
	12/01/2015	$37.05	$7.10	$12.45	$0.00	$56.60
	06/01/2016	$37.80	$7.10	$12.45	$0.00	$57.35
	12/01/2016	$38.80	$7.10	$12.45	$0.00	$58.35
For apprentice rates see "Apprentice- LABORER"						
CARPENTER *CARPENTERS -ZONE 1 (Metro Boston)*	03/01/2013	$39.52	$9.80	$15.61	$0.00	$64.93
	09/01/2013	$40.35	$9.80	$15.61	$0.00	$65.76
	03/01/2014	$41.18	$9.80	$15.61	$0.00	$66.59
	09/01/2014	$42.20	$9.80	$15.61	$0.00	$67.61
	03/01/2015	$43.22	$9.80	$15.61	$0.00	$68.63

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *CARPENTER - Zone 1 Metro Boston*

Effective Date - 03/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$19.76	$9.80	$1.57	$0.00	$31.13
2	60	$23.71	$9.80	$1.57	$0.00	$35.08
3	70	$27.66	$9.80	$10.90	$0.00	$48.36
4	75	$29.64	$9.80	$10.90	$0.00	$50.34
5	80	$31.62	$9.80	$12.47	$0.00	$53.89
6	80	$31.62	$9.80	$12.47	$0.00	$53.89
7	90	$35.57	$9.80	$14.04	$0.00	$59.41
8	90	$35.57	$9.80	$14.04	$0.00	$59.41

Effective Date - 09/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$20.18	$9.80	$1.57	$0.00	$31.55
2	60	$24.21	$9.80	$1.57	$0.00	$35.58
3	70	$28.25	$9.80	$10.90	$0.00	$48.95
4	75	$30.26	$9.80	$10.90	$0.00	$50.96
5	80	$32.28	$9.80	$12.47	$0.00	$54.55
6	80	$32.28	$9.80	$12.47	$0.00	$54.55
7	90	$36.32	$9.80	$14.04	$0.00	$60.16
8	90	$36.32	$9.80	$14.04	$0.00	$60.16

Notes:

Apprentice to Journeyworker Ratio:1:5

CEMENT MASONRY/PLASTERING *BRICKLAYERS LOCAL 3 (BOSTON)*	07/01/2013	$42.68	$10.90	$18.71	$1.30	$73.59
	01/01/2014	$43.60	$10.90	$18.71	$1.30	$74.51
	07/01/2014	$44.20	$10.90	$18.71	$1.30	$75.11
	01/01/2015	$45.14	$10.90	$18.71	$1.30	$76.05
	07/01/2015	$45.72	$10.90	$18.71	$1.30	$76.63
	01/01/2016	$46.64	$10.90	$18.71	$1.30	$77.55

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *CEMENT MASONRY/PLASTERING - Eastern Mass (Boston)*

Effective Date - 07/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$21.34	$10.90	$12.21	$1.30	$45.75
2	60	$25.61	$10.90	$13.71	$1.30	$51.52
3	65	$27.74	$10.90	$14.71	$1.30	$54.65
4	70	$29.88	$10.90	$15.71	$1.30	$57.79
5	75	$32.01	$10.90	$16.71	$1.30	$60.92
6	80	$34.14	$10.90	$17.71	$1.30	$64.05
7	90	$38.41	$10.90	$18.71	$1.30	$69.32

Effective Date - 01/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$21.80	$10.90	$12.21	$1.30	$46.21
2	60	$26.16	$10.90	$13.71	$1.30	$52.07
3	65	$28.34	$10.90	$14.71	$1.30	$55.25
4	70	$30.52	$10.90	$15.71	$1.30	$58.43
5	75	$32.70	$10.90	$16.71	$1.30	$61.61
6	80	$34.88	$10.90	$17.71	$1.30	$64.79
7	90	$39.24	$10.90	$18.71	$1.30	$70.15

Notes:

Steps 3,4 are 500 hrs. All other steps are 1,000 hrs.

Apprentice to Journeyworker Ratio:1:3

CHAIN SAW OPERATOR *LABORERS - ZONE 1*	06/01/2013	$33.30	$7.10	$12.45	$0.00	$52.85
	12/01/2013	$34.05	$7.10	$12.45	$0.00	$53.60
	06/01/2014	$34.80	$7.10	$12.45	$0.00	$54.35
	12/01/2014	$35.55	$7.10	$12.45	$0.00	$55.10
	06/01/2015	$36.30	$7.10	$12.45	$0.00	$55.85
	12/01/2015	$37.05	$7.10	$12.45	$0.00	$56.60
	06/01/2016	$37.80	$7.10	$12.45	$0.00	$57.35
	12/01/2016	$38.80	$7.10	$12.45	$0.00	$58.35
For apprentice rates see "Apprentice- LABORER"						
CLAM SHELLS/SLURRY BUCKETS/HEADING MACHINES *OPERATING ENGINEERS LOCAL 4*	06/01/2013	$41.34	$10.00	$13.55	$0.00	$64.89
	12/01/2013	$42.12	$10.00	$13.55	$0.00	$65.67
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
COMPRESSOR OPERATOR *OPERATING ENGINEERS LOCAL 4*	06/01/2013	$28.19	$10.00	$13.55	$0.00	$51.74
	12/01/2013	$28.74	$10.00	$13.55	$0.00	$52.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
DELEADER (BRIDGE) *PAINTERS LOCAL 35 - ZONE 1*	01/01/2013	$45.01	$7.80	$15.60	$0.00	$68.41

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *PAINTER Local 35 - BRIDGES/TANKS*

Effective Date - 01/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$22.51	$7.80	$0.00	$0.00	$30.31
2	55	$24.76	$7.80	$3.52	$0.00	$36.08
3	60	$27.01	$7.80	$3.84	$0.00	$38.65
4	65	$29.26	$7.80	$4.16	$0.00	$41.22
5	70	$31.51	$7.80	$13.68	$0.00	$52.99
6	75	$33.76	$7.80	$14.00	$0.00	$55.56
7	80	$36.01	$7.80	$14.32	$0.00	$58.13
8	90	$40.51	$7.80	$14.96	$0.00	$63.27

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

DEMO: ADZEMAN *LABORERS - ZONE 1* For apprentice rates see "Apprentice- LABORER"	12/01/2011	$31.80	$7.10	$12.45	$0.00	$51.35
DEMO: BACKHOE/LOADER/HAMMER OPERATOR *LABORERS - ZONE 1* For apprentice rates see "Apprentice- LABORER"	12/01/2011	$32.80	$7.10	$12.45	$0.00	$52.35
DEMO: BURNERS *LABORERS - ZONE 1* For apprentice rates see "Apprentice- LABORER"	12/01/2011	$32.55	$7.10	$12.45	$0.00	$52.10
DEMO: CONCRETE CUTTER/SAWYER *LABORERS - ZONE 1* For apprentice rates see "Apprentice- LABORER"	12/01/2011	$32.80	$7.10	$12.45	$0.00	$52.35
DEMO: JACKHAMMER OPERATOR *LABORERS - ZONE 1* For apprentice rates see "Apprentice- LABORER"	12/01/2011	$32.55	$7.10	$12.45	$0.00	$52.10
DEMO: WRECKING LABORER *LABORERS - ZONE 1* For apprentice rates see "Apprentice- LABORER"	12/01/2011	$31.80	$7.10	$12.45	$0.00	$51.35
DIRECTIONAL DRILL MACHINE OPERATOR *OPERATING ENGINEERS LOCAL 4* For apprentice rates see "Apprentice- OPERATING ENGINEERS"	06/01/2013	$39.96	$10.00	$13.55	$0.00	$63.51
	12/01/2013	$40.74	$10.00	$13.55	$0.00	$64.29
DIVER *PILE DRIVER LOCAL 56 (ZONE 1)*	08/01/2012	$54.88	$9.80	$17.67	$0.00	$82.35
	08/01/2013	$56.98	$9.80	$17.67	$0.00	$84.45
	08/01/2014	$59.08	$9.80	$17.67	$0.00	$86.55
	08/01/2015	$61.18	$9.80	$17.67	$0.00	$88.65
DIVER TENDER *PILE DRIVER LOCAL 56 (ZONE 1)*	08/01/2012	$54.88	$9.80	$17.67	$0.00	$82.35
	08/01/2013	$56.98	$9.80	$17.67	$0.00	$84.45
	08/01/2014	$59.08	$9.80	$17.67	$0.00	$86.55
	08/01/2015	$61.18	$9.80	$17.67	$0.00	$88.65

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
DIVER TENDER (EFFLUENT) *PILE DRIVER LOCAL 56 (ZONE 1)*	08/01/2012	$58.80	$9.80	$17.67	$0.00	$86.27
	08/01/2013	$61.05	$9.80	$17.67	$0.00	$88.52
	08/01/2014	$63.30	$9.80	$17.67	$0.00	$90.77
	08/01/2015	$65.55	$9.80	$17.67	$0.00	$93.02
DIVER/SLURRY (EFFLUENT) *PILE DRIVER LOCAL 56 (ZONE 1)*	08/01/2012	$82.32	$9.80	$17.67	$0.00	$109.79
	08/01/2013	$85.47	$9.80	$17.67	$0.00	$112.94
	08/01/2014	$88.62	$9.80	$17.67	$0.00	$116.09
	08/01/2015	$91.77	$9.80	$17.67	$0.00	$119.24
DRAWBRIDGE OPERATOR (Construction) *ELECTRICIANS LOCAL 103*	03/01/2013	$43.52	$13.00	$14.16	$0.00	$70.68
	09/01/2013	$44.20	$13.00	$14.18	$0.00	$71.38
	03/01/2014	$44.92	$13.00	$14.20	$0.00	$72.12
	09/01/2014	$45.60	$13.00	$14.22	$0.00	$72.82
	03/01/2015	$46.32	$13.00	$14.24	$0.00	$73.56
	09/01/2015	$47.27	$13.00	$14.27	$0.00	$74.54
	03/01/2016	$48.23	$13.00	$14.30	$0.00	$75.53
For apprentice rates see "Apprentice- ELECTRICIAN"						
ELECTRICIAN *ELECTRICIANS LOCAL 103*	03/01/2013	$43.52	$13.00	$14.16	$0.00	$70.68
	09/01/2013	$44.20	$13.00	$14.18	$0.00	$71.38
	03/01/2014	$44.92	$13.00	$14.20	$0.00	$72.12
	09/01/2014	$45.60	$13.00	$14.22	$0.00	$72.82
	03/01/2015	$46.32	$13.00	$14.24	$0.00	$73.56
	09/01/2015	$47.27	$13.00	$14.27	$0.00	$74.54
	03/01/2016	$48.23	$13.00	$14.30	$0.00	$75.53

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *ELECTRICIAN - Local 103*

Effective Date - 03/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	$17.41	$13.00	$0.52	$0.00	$30.93
2	40	$17.41	$13.00	$0.52	$0.00	$30.93
3	45	$19.58	$13.00	$10.53	$0.00	$43.11
4	45	$19.58	$13.00	$10.53	$0.00	$43.11
5	50	$21.76	$13.00	$10.85	$0.00	$45.61
6	55	$23.94	$13.00	$11.19	$0.00	$48.13
7	60	$26.11	$13.00	$11.51	$0.00	$50.62
8	65	$28.29	$13.00	$11.85	$0.00	$53.14
9	70	$30.46	$13.00	$12.17	$0.00	$55.63
10	75	$32.64	$13.00	$12.51	$0.00	$58.15

Effective Date - 09/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	$17.68	$13.00	$0.53	$0.00	$31.21
2	40	$17.68	$13.00	$0.53	$0.00	$31.21
3	45	$19.89	$13.00	$10.54	$0.00	$43.43
4	45	$19.89	$13.00	$10.54	$0.00	$43.43
5	50	$22.10	$13.00	$10.86	$0.00	$45.96
6	55	$24.31	$13.00	$11.20	$0.00	$48.51
7	60	$26.52	$13.00	$11.53	$0.00	$51.05
8	65	$28.73	$13.00	$11.86	$0.00	$53.59
9	70	$30.94	$13.00	$12.19	$0.00	$56.13
10	75	$33.15	$13.00	$12.53	$0.00	$58.68

Notes: :
App Prior 1/1/03; 30/35/40/45/50/55/65/70/75/80

Apprentice to Journeyworker Ratio:2:3***

ELEVATOR CONSTRUCTOR *ELEVATOR CONSTRUCTORS LOCAL 4*	01/01/2012	$52.45	$8.78	$6.96	$0.00	$68.19

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *ELEVATOR CONSTRUCTOR - Local 4*

Effective Date - 01/01/2012

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$26.23	$8.78	$0.00	$0.00	$35.01
2	55	$28.85	$8.78	$6.96	$0.00	$44.59
3	65	$34.09	$8.78	$6.96	$0.00	$49.83
4	70	$36.72	$8.78	$6.96	$0.00	$52.46
5	80	$41.96	$8.78	$6.96	$0.00	$57.70

Notes:
Steps 1-2 are 6 mos.; Steps 3-5 are 1 year

Apprentice to Journeyworker Ratio:1:1

ELEVATOR CONSTRUCTOR HELPER *ELEVATOR CONSTRUCTORS LOCAL 4*	01/01/2012	$38.59	$8.78	$6.96	$0.00	$54.33
FENCE & GUARD RAIL ERECTOR *LABORERS - ZONE 1*	06/01/2013	$33.30	$7.10	$12.45	$0.00	$52.85
	12/01/2013	$34.05	$7.10	$12.45	$0.00	$53.60
	06/01/2014	$34.80	$7.10	$12.45	$0.00	$54.35
	12/01/2014	$35.55	$7.10	$12.45	$0.00	$55.10
	06/01/2015	$36.30	$7.10	$12.45	$0.00	$55.85
	12/01/2015	$37.05	$7.10	$12.45	$0.00	$56.60
	06/01/2016	$37.80	$7.10	$12.45	$0.00	$57.35
	12/01/2016	$38.80	$7.10	$12.45	$0.00	$58.35
For apprentice rates see "Apprentice- LABORER"						
FIELD ENG.INST.PERSON-BLDG,SITE,HVY/HWY *OPERATING ENGINEERS LOCAL 4*	05/01/2013	$38.50	$10.00	$13.02	$0.00	$61.52
	11/01/2013	$39.26	$10.00	$13.02	$0.00	$62.28
	05/01/2014	$40.03	$10.00	$13.02	$0.00	$63.05
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIELD ENG.PARTY CHIEF-BLDG,SITE,HVY/HWY *OPERATING ENGINEERS LOCAL 4*	05/01/2013	$39.91	$10.00	$13.02	$0.00	$62.93
	11/01/2013	$40.68	$10.00	$13.02	$0.00	$63.70
	05/01/2014	$41.45	$10.00	$13.02	$0.00	$64.47
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIELD ENG.ROD PERSON-BLDG,SITE,HVY/HWY *OPERATING ENGINEERS LOCAL 4*	05/01/2013	$21.17	$10.00	$13.02	$0.00	$44.19
	11/01/2013	$21.63	$10.00	$13.02	$0.00	$44.65
	05/01/2014	$22.08	$10.00	$13.02	$0.00	$45.10
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIRE ALARM INSTALLER *ELECTRICIANS LOCAL 103*	03/01/2013	$43.52	$13.00	$14.16	$0.00	$70.68
	09/01/2013	$44.20	$13.00	$14.18	$0.00	$71.38
	03/01/2014	$44.92	$13.00	$14.20	$0.00	$72.12
	09/01/2014	$45.60	$13.00	$14.22	$0.00	$72.82
	03/01/2015	$46.32	$13.00	$14.24	$0.00	$73.56
	09/01/2015	$47.27	$13.00	$14.27	$0.00	$74.54
	03/01/2016	$48.23	$13.00	$14.30	$0.00	$75.53
For apprentice rates see "Apprentice- ELECTRICIAN"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
FIRE ALARM REPAIR / MAINTENANCE / COMMISSIONING *ELECTRICIANS LOCAL 103*	03/01/2013	$32.64	$13.00	$12.51	$0.00	$58.15
	09/01/2013	$33.15	$13.00	$12.52	$0.00	$58.67
	03/01/2014	$33.69	$13.00	$12.54	$0.00	$59.23
	09/01/2014	$34.20	$13.00	$12.56	$0.00	$59.76
	03/01/2015	$34.74	$13.00	$12.57	$0.00	$60.31
	09/01/2015	$35.45	$13.00	$12.59	$0.00	$61.04
	03/01/2016	$36.17	$13.00	$12.62	$0.00	$61.79
For apprentice rates see "Apprentice- TELECOMMUNICATIONS TECHNICIAN"						
FIREMAN (ASST. ENGINEER) *OPERATING ENGINEERS LOCAL 4*	06/01/2013	$33.73	$10.00	$13.55	$0.00	$57.28
	12/01/2013	$34.39	$10.00	$13.55	$0.00	$57.94
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FLAGGER & SIGNALER *LABORERS - ZONE 1*	06/01/2013	$20.50	$7.10	$12.45	$0.00	$40.05
	12/01/2013	$20.50	$7.10	$12.45	$0.00	$40.05
	06/01/2014	$20.50	$7.10	$12.45	$0.00	$40.05
	12/01/2014	$20.50	$7.10	$12.45	$0.00	$40.05
	06/01/2015	$20.50	$7.10	$12.45	$0.00	$40.05
	12/01/2015	$20.50	$7.10	$12.45	$0.00	$40.05
	06/01/2016	$20.50	$7.10	$12.45	$0.00	$40.05
	12/01/2016	$20.50	$7.10	$12.45	$0.00	$40.05
For apprentice rates see "Apprentice- LABORER"						
FLOORCOVERER *FLOORCOVERERS LOCAL 2168 ZONE I*	03/01/2013	$38.61	$9.80	$16.71	$0.00	$65.12
	09/01/2013	$38.61	$9.80	$16.71	$0.00	$65.12
	03/01/2014	$38.61	$9.80	$16.71	$0.00	$65.12

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *FLOORCOVERER - Local 2168 Zone I*

Effective Date - 03/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$19.31	$9.80	$1.79	$0.00	$30.90
2	55	$21.24	$9.80	$1.79	$0.00	$32.83
3	60	$23.17	$9.80	$11.34	$0.00	$44.31
4	65	$25.10	$9.80	$11.34	$0.00	$46.24
5	70	$27.03	$9.80	$13.13	$0.00	$49.96
6	75	$28.96	$9.80	$13.13	$0.00	$51.89
7	80	$30.89	$9.80	$14.92	$0.00	$55.61
8	85	$32.82	$9.80	$14.92	$0.00	$57.54

Effective Date - 09/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$19.31	$9.80	$1.79	$0.00	$30.90
2	55	$21.24	$9.80	$1.79	$0.00	$32.83
3	60	$23.17	$9.80	$11.34	$0.00	$44.31
4	65	$25.10	$9.80	$11.34	$0.00	$46.24
5	70	$27.03	$9.80	$13.13	$0.00	$49.96
6	75	$28.96	$9.80	$13.13	$0.00	$51.89
7	80	$30.89	$9.80	$14.92	$0.00	$55.61
8	85	$32.82	$9.80	$14.92	$0.00	$57.54

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

FORK LIFT/CHERRY PICKER *OPERATING ENGINEERS LOCAL 4*	06/01/2013	$40.34	$10.00	$13.55	$0.00	$63.89
	12/01/2013	$41.12	$10.00	$13.55	$0.00	$64.67
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
GENERATOR/LIGHTING PLANT/HEATERS *OPERATING ENGINEERS LOCAL 4*	06/01/2013	$28.19	$10.00	$13.55	$0.00	$51.74
	12/01/2013	$28.74	$10.00	$13.55	$0.00	$52.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS) *GLAZIERS LOCAL 35 (ZONE 1)*	01/01/2013	$41.40	$7.80	$14.60	$0.00	$63.80

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *GLAZIER - Local 35 Zone 1*

Effective Date - 01/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$20.70	$7.80	$0.00	$0.00	$28.50
2	55	$22.77	$7.80	$3.25	$0.00	$33.82
3	60	$24.84	$7.80	$3.54	$0.00	$36.18
4	65	$26.91	$7.80	$3.84	$0.00	$38.55
5	70	$28.98	$7.80	$12.83	$0.00	$49.61
6	75	$31.05	$7.80	$13.13	$0.00	$51.98
7	80	$33.12	$7.80	$13.42	$0.00	$54.34
8	90	$37.26	$7.80	$14.01	$0.00	$59.07

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

HOISTING ENGINEER/CRANES/GRADALLS *OPERATING ENGINEERS LOCAL 4*	06/01/2013	$40.34	$10.00	$13.55	$0.00	$63.89
	12/01/2013	$41.12	$10.00	$13.55	$0.00	$64.67

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *OPERATING ENGINEERS - Local 4*

Effective Date - 06/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	$22.19	$10.00	$0.00	$0.00	$32.19
2	60	$24.20	$10.00	$13.55	$0.00	$47.75
3	65	$26.22	$10.00	$13.55	$0.00	$49.77
4	70	$28.24	$10.00	$13.55	$0.00	$51.79
5	75	$30.26	$10.00	$13.55	$0.00	$53.81
6	80	$32.27	$10.00	$13.55	$0.00	$55.82
7	85	$34.29	$10.00	$13.55	$0.00	$57.84
8	90	$36.31	$10.00	$13.55	$0.00	$59.86

Effective Date - 12/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	$22.62	$10.00	$0.00	$0.00	$32.62
2	60	$24.67	$10.00	$13.55	$0.00	$48.22
3	65	$26.73	$10.00	$13.55	$0.00	$50.28
4	70	$28.78	$10.00	$13.55	$0.00	$52.33
5	75	$30.84	$10.00	$13.55	$0.00	$54.39
6	80	$32.90	$10.00	$13.55	$0.00	$56.45
7	85	$34.95	$10.00	$13.55	$0.00	$58.50
8	90	$37.01	$10.00	$13.55	$0.00	$60.56

Notes:

Apprentice to Journeyworker Ratio:1:6

HVAC (DUCTWORK) *SHEETMETAL WORKERS LOCAL 17 - A*	02/01/2013	$42.32	$9.82	$18.24	$2.11	$72.49
For apprentice rates see "Apprentice- SHEET METAL WORKER"						
HVAC (ELECTRICAL CONTROLS) *ELECTRICIANS LOCAL 103*	03/01/2013	$43.52	$13.00	$14.16	$0.00	$70.68
	09/01/2013	$44.20	$13.00	$14.18	$0.00	$71.38
	03/01/2014	$44.92	$13.00	$14.20	$0.00	$72.12
	09/01/2014	$45.60	$13.00	$14.22	$0.00	$72.82
	03/01/2015	$46.32	$13.00	$14.24	$0.00	$73.56
	09/01/2015	$47.27	$13.00	$14.27	$0.00	$74.54
	03/01/2016	$48.23	$13.00	$14.30	$0.00	$75.53
For apprentice rates see "Apprentice- ELECTRICIAN"						
HVAC (TESTING AND BALANCING - AIR) *SHEETMETAL WORKERS LOCAL 17 - A*	02/01/2013	$42.32	$9.82	$18.24	$2.11	$72.49
For apprentice rates see "Apprentice- SHEET METAL WORKER"						
HVAC (TESTING AND BALANCING -WATER) *PIPEFITTERS LOCAL 537*	03/01/2013	$49.34	$8.75	$14.39	$0.00	$72.48
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HVAC MECHANIC *PIPEFITTERS LOCAL 537*	03/01/2013	$49.34	$8.75	$14.39	$0.00	$72.48

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HYDRAULIC DRILLS *LABORERS - ZONE 1*	06/01/2013	$33.80	$7.10	$12.45	$0.00	$53.35
	12/01/2013	$34.55	$7.10	$12.45	$0.00	$54.10
	06/01/2014	$35.30	$7.10	$12.45	$0.00	$54.85
	12/01/2014	$36.05	$7.10	$12.45	$0.00	$55.60
	06/01/2015	$36.80	$7.10	$12.45	$0.00	$56.35
	12/01/2015	$37.55	$7.10	$12.45	$0.00	$57.10
	06/01/2016	$38.30	$7.10	$12.45	$0.00	$57.85
	12/01/2016	$39.30	$7.10	$12.45	$0.00	$58.85
For apprentice rates see "Apprentice- LABORER"						
INSULATOR (PIPES & TANKS) *HEAT & FROST INSULATORS LOCAL 6 (BOSTON)*	09/01/2012	$41.46	$10.65	$11.50	$0.00	$63.61
	09/01/2013	$43.06	$10.65	$11.50	$0.00	$65.21
	09/01/2014	$45.06	$10.65	$11.50	$0.00	$67.21

Apprentice - *ASBESTOS INSULATOR (Pipes & Tanks) - Local 6 Boston*

Effective Date - 09/01/2012

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$20.73	$10.65	$8.60	$0.00	$39.98
2	60	$24.88	$10.65	$9.18	$0.00	$44.71
3	70	$29.02	$10.65	$9.76	$0.00	$49.43
4	80	$33.17	$10.65	$10.34	$0.00	$54.16

Effective Date - 09/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$21.53	$10.65	$8.60	$0.00	$40.78
2	60	$25.84	$10.65	$9.18	$0.00	$45.67
3	70	$30.14	$10.65	$9.76	$0.00	$50.55
4	80	$34.45	$10.65	$10.34	$0.00	$55.44

Notes:
Steps are 1 year

Apprentice to Journeyworker Ratio:1:4

IRONWORKER/WELDER *IRONWORKERS LOCAL 7 (BOSTON AREA)*	03/16/2013	$40.23	$7.70	$18.35	$0.00	$66.28

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *IRONWORKER - Local 7 Boston*

Effective Date - 03/16/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	$24.14	$7.70	$18.35	$0.00	$50.19
2	70	$28.16	$7.70	$18.35	$0.00	$54.21
3	75	$30.17	$7.70	$18.35	$0.00	$56.22
4	80	$32.18	$7.70	$18.35	$0.00	$58.23
5	85	$34.20	$7.70	$18.35	$0.00	$60.25
6	90	$36.21	$7.70	$18.35	$0.00	$62.26

Notes:

** Structural 1:6; Ornamental 1:4

Apprentice to Journeyworker Ratio:**

JACKHAMMER & PAVING BREAKER OPERATOR *LABORERS - ZONE 1*	06/01/2013	$33.30	$7.10	$12.45	$0.00	$52.85
	12/01/2013	$34.05	$7.10	$12.45	$0.00	$53.60
	06/01/2014	$34.80	$7.10	$12.45	$0.00	$54.35
	12/01/2014	$35.55	$7.10	$12.45	$0.00	$55.10
	06/01/2015	$36.30	$7.10	$12.45	$0.00	$55.85
	12/01/2015	$37.05	$7.10	$12.45	$0.00	$56.60
	06/01/2016	$37.80	$7.10	$12.45	$0.00	$57.35
	12/01/2016	$38.80	$7.10	$12.45	$0.00	$58.35
For apprentice rates see "Apprentice- LABORER"						
LABORER *LABORERS - ZONE 1*	06/01/2013	$33.05	$7.10	$12.45	$0.00	$52.60
	12/01/2013	$33.80	$7.10	$12.45	$0.00	$53.35
	06/01/2014	$34.55	$7.10	$12.45	$0.00	$54.10
	12/01/2014	$35.30	$7.10	$12.45	$0.00	$54.85
	06/01/2015	$36.05	$7.10	$12.45	$0.00	$55.60
	12/01/2015	$36.80	$7.10	$12.45	$0.00	$56.35
	06/01/2016	$37.55	$7.10	$12.45	$0.00	$57.10
	12/01/2016	$38.55	$7.10	$12.45	$0.00	$58.10

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *LABORER - Zone 1*

Effective Date - 06/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	$19.83	$7.10	$12.45	$0.00	$39.38
2	70	$23.14	$7.10	$12.45	$0.00	$42.69
3	80	$26.44	$7.10	$12.45	$0.00	$45.99
4	90	$29.75	$7.10	$12.45	$0.00	$49.30

Effective Date - 12/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	$20.28	$7.10	$12.45	$0.00	$39.83
2	70	$23.66	$7.10	$12.45	$0.00	$43.21
3	80	$27.04	$7.10	$12.45	$0.00	$46.59
4	90	$30.42	$7.10	$12.45	$0.00	$49.97

Notes:

Apprentice to Journeyworker Ratio:1:5

LABORER: CARPENTER TENDER *LABORERS - ZONE 1*	06/01/2013	$33.05	$7.10	$12.45	$0.00	$52.60
	12/01/2013	$33.80	$7.10	$12.45	$0.00	$53.35
	06/01/2014	$34.55	$7.10	$12.45	$0.00	$54.10
	12/01/2014	$35.30	$7.10	$12.45	$0.00	$54.85
	06/01/2015	$36.05	$7.10	$12.45	$0.00	$55.60
	12/01/2015	$36.80	$7.10	$12.45	$0.00	$56.35
	06/01/2016	$37.55	$7.10	$12.45	$0.00	$57.10
	12/01/2016	$38.55	$7.10	$12.45	$0.00	$58.10
For apprentice rates see "Apprentice- LABORER"						
LABORER: CEMENT FINISHER TENDER *LABORERS - ZONE 1*	06/01/2013	$33.05	$7.10	$12.45	$0.00	$52.60
	12/01/2013	$33.80	$7.10	$12.45	$0.00	$53.35
	06/01/2014	$34.55	$7.10	$12.45	$0.00	$54.10
	12/01/2014	$35.30	$7.10	$12.45	$0.00	$54.85
	06/01/2015	$36.05	$7.10	$12.45	$0.00	$55.60
	12/01/2015	$36.80	$7.10	$12.45	$0.00	$56.35
	06/01/2016	$37.55	$7.10	$12.45	$0.00	$57.10
	12/01/2016	$38.55	$7.10	$12.45	$0.00	$58.10
For apprentice rates see "Apprentice- LABORER"						
LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER *LABORERS - ZONE 1*	12/01/2011	$31.80	$7.10	$12.45	$0.00	$51.35
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
LABORER: MASON TENDER *LABORERS - ZONE 1*	06/01/2013	$33.30	$7.10	$12.45	$0.00	$52.85
	12/01/2013	$34.05	$7.10	$12.45	$0.00	$53.60
	06/01/2014	$34.80	$7.10	$12.45	$0.00	$54.35
	12/01/2014	$35.55	$7.10	$12.45	$0.00	$55.10
	06/01/2015	$36.30	$7.10	$12.45	$0.00	$55.85
	12/01/2015	$37.05	$7.10	$12.45	$0.00	$56.60
	06/01/2016	$37.80	$7.10	$12.45	$0.00	$57.35
	12/01/2016	$38.80	$7.10	$12.45	$0.00	$58.35
For apprentice rates see "Apprentice- LABORER"						
LABORER: MULTI-TRADE TENDER *LABORERS - ZONE 1*	06/01/2013	$33.05	$7.10	$12.45	$0.00	$52.60
	12/01/2013	$33.80	$7.10	$12.45	$0.00	$53.35
	06/01/2014	$34.55	$7.10	$12.45	$0.00	$54.10
	12/01/2014	$35.30	$7.10	$12.45	$0.00	$54.85
	06/01/2015	$36.05	$7.10	$12.45	$0.00	$55.60
	12/01/2015	$36.80	$7.10	$12.45	$0.00	$56.35
	06/01/2016	$37.55	$7.10	$12.45	$0.00	$57.10
	12/01/2016	$38.55	$7.10	$12.45	$0.00	$58.10
For apprentice rates see "Apprentice- LABORER"						
LABORER: TREE REMOVER *LABORERS - ZONE 1*	06/01/2013	$33.05	$7.10	$12.45	$0.00	$52.60
	12/01/2013	$33.80	$7.10	$12.45	$0.00	$53.35
	06/01/2014	$34.55	$7.10	$12.45	$0.00	$54.10
	12/01/2014	$35.30	$7.10	$12.45	$0.00	$54.85
	06/01/2015	$36.05	$7.10	$12.45	$0.00	$55.60
	12/01/2015	$36.80	$7.10	$12.45	$0.00	$56.35
	06/01/2016	$37.55	$7.10	$12.45	$0.00	$57.10
	12/01/2016	$38.55	$7.10	$12.45	$0.00	$58.10
This classification applies to the wholesale removal of standing trees including all associated trimming of branches and limbs, and applies to the removal of branches at locations not on or around utility lines. For apprentice rates see "Apprentice- LABORER"						
LASER BEAM OPERATOR *LABORERS - ZONE 1*	06/01/2013	$33.30	$7.10	$12.45	$0.00	$52.85
	12/01/2013	$34.05	$7.10	$12.45	$0.00	$53.60
	06/01/2014	$34.80	$7.10	$12.45	$0.00	$54.35
	12/01/2014	$35.55	$7.10	$12.45	$0.00	$55.10
	06/01/2015	$36.30	$7.10	$12.45	$0.00	$55.85
	12/01/2015	$37.05	$7.10	$12.45	$0.00	$56.60
	06/01/2016	$37.80	$7.10	$12.45	$0.00	$57.35
	12/01/2016	$38.80	$7.10	$12.45	$0.00	$58.35
For apprentice rates see "Apprentice- LABORER"						
MARBLE & TILE FINISHERS *BRICKLAYERS LOCAL 3 - MARBLE & TILE*	02/01/2013	$36.20	$10.18	$16.51	$0.00	$62.89
	08/01/2013	$36.66	$10.18	$16.83	$0.00	$63.67
	02/01/2014	$37.11	$10.18	$16.83	$0.00	$64.12
	08/01/2014	$37.82	$10.18	$16.90	$0.00	$64.90
	02/01/2015	$38.27	$10.18	$16.90	$0.00	$65.35
	08/01/2015	$38.98	$10.18	$16.97	$0.00	$66.13
	02/01/2016	$39.43	$10.18	$16.97	$0.00	$66.58
	08/01/2016	$40.13	$10.18	$17.05	$0.00	$67.36
	02/01/2017	$40.59	$10.18	$17.05	$0.00	$67.82

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *MARBLE & TILE FINISHER - Local 3 Marble & Tile*

Effective Date - 02/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$18.10	$10.18	$16.51	$0.00	$44.79
2	60	$21.72	$10.18	$16.51	$0.00	$48.41
3	70	$25.34	$10.18	$16.51	$0.00	$52.03
4	80	$28.96	$10.18	$16.51	$0.00	$55.65
5	90	$32.58	$10.18	$16.51	$0.00	$59.27

Effective Date - 08/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$18.33	$10.18	$16.83	$0.00	$45.34
2	60	$22.00	$10.18	$16.83	$0.00	$49.01
3	70	$25.66	$10.18	$16.83	$0.00	$52.67
4	80	$29.33	$10.18	$16.83	$0.00	$56.34
5	90	$32.99	$10.18	$16.83	$0.00	$60.00

Notes:

Apprentice to Journeyworker Ratio:1:3

MARBLE MASONS,TILELAYERS & TERRAZZO MECH *BRICKLAYERS LOCAL 3 - MARBLE & TILE*	02/01/2013	$47.45	$10.18	$17.83	$0.00	$75.46
	08/01/2013	$48.10	$10.18	$18.15	$0.00	$76.43
	02/01/2014	$48.66	$10.18	$18.15	$0.00	$76.99
	08/01/2014	$49.56	$10.18	$18.22	$0.00	$77.96
	02/01/2015	$50.12	$10.18	$18.22	$0.00	$78.52
	08/01/2015	$51.02	$10.18	$18.29	$0.00	$79.49
	02/01/2016	$51.59	$10.18	$18.29	$0.00	$80.06
	08/01/2016	$52.49	$10.18	$18.37	$0.00	$81.04
	02/01/2017	$53.06	$10.18	$18.37	$0.00	$81.61

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *MARBLE-TILE-TERRAZZO MECHANIC - Local 3 Marble & Tile*

Effective Date - 02/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$23.73	$10.18	$17.83	$0.00	$51.74
2	60	$28.47	$10.18	$17.83	$0.00	$56.48
3	70	$33.22	$10.18	$17.83	$0.00	$61.23
4	80	$37.96	$10.18	$17.83	$0.00	$65.97
5	90	$42.71	$10.18	$17.83	$0.00	$70.72

Effective Date - 08/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$24.05	$10.18	$18.15	$0.00	$52.38
2	60	$28.86	$10.18	$18.15	$0.00	$57.19
3	70	$33.67	$10.18	$18.15	$0.00	$62.00
4	80	$38.48	$10.18	$18.15	$0.00	$66.81
5	90	$43.29	$10.18	$18.15	$0.00	$71.62

Notes:

Apprentice to Journeyworker Ratio:1:5

MECH. SWEEPER OPERATOR (ON CONST. SITES) *OPERATING ENGINEERS LOCAL 4* For apprentice rates see "Apprentice- OPERATING ENGINEERS"	06/01/2013	$39.96	$10.00	$13.55	$0.00	$63.51
	12/01/2013	$40.74	$10.00	$13.55	$0.00	$64.29
MECHANICS MAINTENANCE *OPERATING ENGINEERS LOCAL 4* For apprentice rates see "Apprentice- OPERATING ENGINEERS"	06/01/2013	$39.96	$10.00	$13.55	$0.00	$63.51
	12/01/2013	$40.74	$10.00	$13.55	$0.00	$64.29
MILLWRIGHT (Zone 1) *MILLWRIGHTS LOCAL 1121 - Zone 1*	04/01/2013	$34.68	$9.80	$15.76	$0.00	$60.24
	10/01/2013	$35.45	$9.80	$15.76	$0.00	$61.01
	04/01/2014	$36.23	$9.80	$15.76	$0.00	$61.79
	10/01/2014	$37.18	$9.80	$15.76	$0.00	$62.74
	04/01/2015	$38.14	$9.80	$15.76	$0.00	$63.70

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *MILLWRIGHT - Local 1121 Zone 1*

Effective Date - 04/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	$19.07	$9.80	$4.32	$0.00	$33.19
2	65	$22.54	$9.80	$13.01	$0.00	$45.35
3	75	$26.01	$9.80	$13.80	$0.00	$49.61
4	85	$29.48	$9.80	$14.58	$0.00	$53.86

Effective Date - 10/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	$19.50	$9.80	$4.32	$0.00	$33.62
2	65	$23.04	$9.80	$13.01	$0.00	$45.85
3	75	$26.59	$9.80	$13.80	$0.00	$50.19
4	85	$30.13	$9.80	$14.58	$0.00	$54.51

Notes:

Steps are 2,000 hours

Apprentice to Journeyworker Ratio:1:5

MORTAR MIXER *LABORERS - ZONE 1*	06/01/2013	$33.30	$7.10	$12.45	$0.00	$52.85
	12/01/2013	$34.05	$7.10	$12.45	$0.00	$53.60
	06/01/2014	$34.80	$7.10	$12.45	$0.00	$54.35
	12/01/2014	$35.55	$7.10	$12.45	$0.00	$55.10
	06/01/2015	$36.30	$7.10	$12.45	$0.00	$55.85
	12/01/2015	$37.05	$7.10	$12.45	$0.00	$56.60
	06/01/2016	$37.80	$7.10	$12.45	$0.00	$57.35
	12/01/2016	$38.80	$7.10	$12.45	$0.00	$58.35
For apprentice rates see "Apprentice- LABORER"						
OILER (OTHER THAN TRUCK CRANES,GRADALLS) *OPERATING ENGINEERS LOCAL 4*	06/01/2013	$21.17	$10.00	$13.55	$0.00	$44.72
	12/01/2013	$21.59	$10.00	$13.55	$0.00	$45.14
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
OILER (TRUCK CRANES, GRADALLS) *OPERATING ENGINEERS LOCAL 4*	06/01/2013	$24.57	$10.00	$13.55	$0.00	$48.12
	12/01/2013	$25.06	$10.00	$13.55	$0.00	$48.61
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
OTHER POWER DRIVEN EQUIPMENT - CLASS II *OPERATING ENGINEERS LOCAL 4*	06/01/2013	$39.96	$10.00	$13.55	$0.00	$63.51
	12/01/2013	$40.74	$10.00	$13.55	$0.00	$64.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PAINTER (BRIDGES/TANKS) *PAINTERS LOCAL 35 - ZONE 1*	01/01/2013	$45.01	$7.80	$15.60	$0.00	$68.41

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *PAINTER Local 35 - BRIDGES/TANKS*

Effective Date - 01/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$22.51	$7.80	$0.00	$0.00	$30.31
2	55	$24.76	$7.80	$3.52	$0.00	$36.08
3	60	$27.01	$7.80	$3.84	$0.00	$38.65
4	65	$29.26	$7.80	$4.16	$0.00	$41.22
5	70	$31.51	$7.80	$13.68	$0.00	$52.99
6	75	$33.76	$7.80	$14.00	$0.00	$55.56
7	80	$36.01	$7.80	$14.32	$0.00	$58.13
8	90	$40.51	$7.80	$14.96	$0.00	$63.27

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER (SPRAY OR SANDBLAST, NEW) *	01/01/2013	$41.70	$7.80	$15.60	$0.00	$65.10

* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used.*PAINTERS LOCAL 35 - ZONE 1*

Apprentice - *PAINTER Local 35 Zone 1 - Spray/Sandblast - New*

Effective Date - 01/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$20.85	$7.80	$0.00	$0.00	$28.65
2	55	$22.94	$7.80	$3.52	$0.00	$34.26
3	60	$25.02	$7.80	$3.84	$0.00	$36.66
4	65	$27.11	$7.80	$4.16	$0.00	$39.07
5	70	$29.19	$7.80	$13.68	$0.00	$50.67
6	75	$31.28	$7.80	$14.00	$0.00	$53.08
7	80	$33.36	$7.80	$14.32	$0.00	$55.48
8	90	$37.53	$7.80	$14.96	$0.00	$60.29

Notes:

Apprentice to Journeyworker Ratio:1:1

PAINTER (SPRAY OR SANDBLAST, REPAINT) *PAINTERS LOCAL 35 - ZONE 1*	01/01/2013	$39.76	$7.80	$15.60	$0.00	$63.16

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *PAINTER Local 35 Zone 1 - Spray/Sandblast - Repaint*

Effective Date - 01/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$19.88	$7.80	$0.00	$0.00	$27.68
2	55	$21.87	$7.80	$3.52	$0.00	$33.19
3	60	$23.86	$7.80	$3.84	$0.00	$35.50
4	65	$25.84	$7.80	$4.16	$0.00	$37.80
5	70	$27.83	$7.80	$13.68	$0.00	$49.31
6	75	$29.82	$7.80	$14.00	$0.00	$51.62
7	80	$31.81	$7.80	$14.32	$0.00	$53.93
8	90	$35.78	$7.80	$14.96	$0.00	$58.54

Notes:

Apprentice to Journeyworker Ratio:1:1

PAINTER (TRAFFIC MARKINGS) *LABORERS - ZONE 1*	06/01/2013	$33.05	$7.10	$12.45	$0.00	$52.60
	12/01/2013	$33.80	$7.10	$12.45	$0.00	$53.35
	06/01/2014	$34.55	$7.10	$12.45	$0.00	$54.10
	12/01/2014	$35.30	$7.10	$12.45	$0.00	$54.85
	06/01/2015	$36.05	$7.10	$12.45	$0.00	$55.60
	12/01/2015	$36.80	$7.10	$12.45	$0.00	$56.35
	06/01/2016	$37.55	$7.10	$12.45	$0.00	$57.10
	12/01/2016	$38.55	$7.10	$12.45	$0.00	$58.10
For Apprentice rates see "Apprentice- LABORER"						
PAINTER / TAPER (BRUSH, NEW) * * If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used.*PAINTERS LOCAL 35 - ZONE 1*	01/01/2013	$40.30	$7.80	$15.60	$0.00	$63.70

Apprentice - *PAINTER - Local 35 Zone 1 - BRUSH NEW*

Effective Date - 01/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$20.15	$7.80	$0.00	$0.00	$27.95
2	55	$22.17	$7.80	$3.52	$0.00	$33.49
3	60	$24.18	$7.80	$3.84	$0.00	$35.82
4	65	$26.20	$7.80	$4.16	$0.00	$38.16
5	70	$28.21	$7.80	$13.68	$0.00	$49.69
6	75	$30.23	$7.80	$14.00	$0.00	$52.03
7	80	$32.24	$7.80	$14.32	$0.00	$54.36
8	90	$36.27	$7.80	$14.96	$0.00	$59.03

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
PAINTER / TAPER (BRUSH, REPAINT) *PAINTERS LOCAL 35 - ZONE 1*	01/01/2013	$38.36	$7.80	$15.60	$0.00	$61.76

Apprentice - *PAINTER Local 35 Zone 1 - BRUSH REPAINT*

Effective Date - 01/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$19.18	$7.80	$0.00	$0.00	$26.98
2	55	$21.10	$7.80	$3.52	$0.00	$32.42
3	60	$23.02	$7.80	$3.84	$0.00	$34.66
4	65	$24.93	$7.80	$4.16	$0.00	$36.89
5	70	$26.85	$7.80	$13.68	$0.00	$48.33
6	75	$28.77	$7.80	$14.00	$0.00	$50.57
7	80	$30.69	$7.80	$14.32	$0.00	$52.81
8	90	$34.52	$7.80	$14.96	$0.00	$57.28

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PANEL & PICKUP TRUCKS DRIVER *TEAMSTERS JOINT COUNCIL NO. 10 ZONE A*	12/01/2012	$31.38	$8.91	$8.00	$0.00	$48.29
PIER AND DOCK CONSTRUCTOR (UNDERPINNING AND DECK) *PILE DRIVER LOCAL 56 (ZONE 1)*	08/01/2012	$39.20	$9.80	$17.67	$0.00	$66.67
	08/01/2013	$40.70	$9.80	$17.67	$0.00	$68.17
	08/01/2014	$42.20	$9.80	$17.67	$0.00	$69.67
	08/01/2015	$43.70	$9.80	$17.67	$0.00	$71.17
PILE DRIVER *PILE DRIVER LOCAL 56 (ZONE 1)*	08/01/2012	$39.20	$9.80	$17.67	$0.00	$66.67
	08/01/2013	$40.70	$9.80	$17.67	$0.00	$68.17
	08/01/2014	$42.20	$9.80	$17.67	$0.00	$69.67
	08/01/2015	$43.70	$9.80	$17.67	$0.00	$71.17

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *PILE DRIVER - Local 56 Zone 1*

Effective Date - 08/01/2012

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$19.60	$9.80	$17.67	$0.00	$47.07
2	60	$23.52	$9.80	$17.67	$0.00	$50.99
3	70	$27.44	$9.80	$17.67	$0.00	$54.91
4	75	$29.40	$9.80	$17.67	$0.00	$56.87
5	80	$31.36	$9.80	$17.67	$0.00	$58.83
6	80	$31.36	$9.80	$17.67	$0.00	$58.83
7	90	$35.28	$9.80	$17.67	$0.00	$62.75
8	90	$35.28	$9.80	$17.67	$0.00	$62.75

Effective Date - 08/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$20.35	$9.80	$17.67	$0.00	$47.82
2	60	$24.42	$9.80	$17.67	$0.00	$51.89
3	70	$28.49	$9.80	$17.67	$0.00	$55.96
4	75	$30.53	$9.80	$17.67	$0.00	$58.00
5	80	$32.56	$9.80	$17.67	$0.00	$60.03
6	80	$32.56	$9.80	$17.67	$0.00	$60.03
7	90	$36.63	$9.80	$17.67	$0.00	$64.10
8	90	$36.63	$9.80	$17.67	$0.00	$64.10

Notes:

Apprentice to Journeyworker Ratio:1:3

PIPEFITTER & STEAMFITTER *PIPEFITTERS LOCAL 537*	03/01/2013	$49.34	$8.75	$14.39	$0.00	$72.48

Apprentice - *PIPEFITTER - Local 537*

Effective Date - 03/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	$19.74	$8.75	$6.50	$0.00	$34.99
2	45	$22.20	$8.75	$14.39	$0.00	$45.34
3	60	$29.60	$8.75	$14.39	$0.00	$52.74
4	70	$34.54	$8.75	$14.39	$0.00	$57.68
5	80	$39.47	$8.75	$14.39	$0.00	$62.61

Notes:

** 1:3; 3:15; 1:10 thereafter / Steps are 1 yr.
Refrig/AC Mechanic **1:1;1:2;2:4;3:6;4:8;5:10;6:12;7:14;8:17;9:20;10:23(Max)

Apprentice to Journeyworker Ratio:**

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
PIPELAYER *LABORERS - ZONE 1*	06/01/2013	$33.30	$7.10	$12.45	$0.00	$52.85
	12/01/2013	$34.05	$7.10	$12.45	$0.00	$53.60
	06/01/2014	$34.80	$7.10	$12.45	$0.00	$54.35
	12/01/2014	$35.55	$7.10	$12.45	$0.00	$55.10
	06/01/2015	$36.30	$7.10	$12.45	$0.00	$55.85
	12/01/2015	$37.05	$7.10	$12.45	$0.00	$56.60
	06/01/2016	$37.80	$7.10	$12.45	$0.00	$57.35
	12/01/2016	$38.80	$7.10	$12.45	$0.00	$58.35
For apprentice rates see "Apprentice- LABORER"						
PLUMBERS & GASFITTERS *PLUMBERS & GASFITTERS LOCAL 12*	03/01/2013	$49.31	$9.32	$13.29	$0.00	$71.92

Apprentice - *PLUMBER/GASFITTER - Local 12*

Effective Date - 03/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	$17.26	$9.32	$4.97	$0.00	$31.55
2	40	$19.72	$9.32	$5.61	$0.00	$34.65
3	55	$27.12	$9.32	$7.53	$0.00	$43.97
4	65	$32.05	$9.32	$8.81	$0.00	$50.18
5	75	$36.98	$9.32	$10.09	$0.00	$56.39

Notes:
** 1:2; 2:6; 3:10; 4:14; 5:19/Steps are 1 yr
Step4 with lic$53.29 Step5 with lic$59.49

Apprentice to Journeyworker Ratio:**

PNEUMATIC CONTROLS (TEMP.) *PIPEFITTERS LOCAL 537*	03/01/2013	$49.34	$8.75	$14.39	$0.00	$72.48
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
PNEUMATIC DRILL/TOOL OPERATOR *LABORERS - ZONE 1*	06/01/2013	$33.30	$7.10	$12.45	$0.00	$52.85
	12/01/2013	$34.05	$7.10	$12.45	$0.00	$53.60
	06/01/2014	$34.80	$7.10	$12.45	$0.00	$54.35
	12/01/2014	$35.55	$7.10	$12.45	$0.00	$55.10
	06/01/2015	$36.30	$7.10	$12.45	$0.00	$55.85
	12/01/2015	$37.05	$7.10	$12.45	$0.00	$56.60
	06/01/2016	$37.80	$7.10	$12.45	$0.00	$57.35
	12/01/2016	$38.80	$7.10	$12.45	$0.00	$58.35
For apprentice rates see "Apprentice- LABORER"						
POWDERMAN & BLASTER *LABORERS - ZONE 1*	06/01/2013	$34.05	$7.10	$12.45	$0.00	$53.60
	12/01/2013	$34.80	$7.10	$12.45	$0.00	$54.35
	06/01/2014	$35.55	$7.10	$12.45	$0.00	$55.10
	12/01/2014	$36.30	$7.10	$12.45	$0.00	$55.85
	06/01/2015	$37.05	$7.10	$12.45	$0.00	$56.60
	12/01/2015	$37.80	$7.10	$12.45	$0.00	$57.35
	06/01/2016	$38.55	$7.10	$12.45	$0.00	$58.10
	12/01/2016	$39.55	$7.10	$12.45	$0.00	$59.10
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
POWER SHOVEL/DERRICK/TRENCHING MACHINE *OPERATING ENGINEERS LOCAL 4* For apprentice rates see "Apprentice- OPERATING ENGINEERS"	06/01/2013	$40.34	$10.00	$13.55	$0.00	$63.89
	12/01/2013	$41.12	$10.00	$13.55	$0.00	$64.67
PUMP OPERATOR (CONCRETE) *OPERATING ENGINEERS LOCAL 4* For apprentice rates see "Apprentice- OPERATING ENGINEERS"	06/01/2013	$40.34	$10.00	$13.55	$0.00	$63.89
	12/01/2013	$41.12	$10.00	$13.55	$0.00	$64.67
PUMP OPERATOR (DEWATERING, OTHER) *OPERATING ENGINEERS LOCAL 4* For apprentice rates see "Apprentice- OPERATING ENGINEERS"	06/01/2013	$28.19	$10.00	$13.55	$0.00	$51.74
	12/01/2013	$28.74	$10.00	$13.55	$0.00	$52.29
READY-MIX CONCRETE DRIVER *TEAMSTERS LOCAL 25a*	05/01/2011	$29.99	$7.75	$5.91	$0.00	$43.65
RECLAIMERS *OPERATING ENGINEERS LOCAL 4* For apprentice rates see "Apprentice- OPERATING ENGINEERS"	06/01/2013	$39.96	$10.00	$13.55	$0.00	$63.51
	12/01/2013	$40.74	$10.00	$13.55	$0.00	$64.29
RESIDENTIAL WOOD FRAME (All Other Work) *CARPENTERS -ZONE 1 (Residential Wood)*	04/01/2011	$37.25	$8.67	$15.51	$0.00	$61.43
RESIDENTIAL WOOD FRAME CARPENTER ** ** The Residential Wood Frame Carpenter classification applies only to the construction of new, wood frame residences that do not exceed four stories including the basement.*CARPENTERS -ZONE 1 (Residential Wood)* As of 9/1/09 Carpentry work on wood-frame residential WEATHERIZATION projects shall be paid the RESIDENTIAL WOOD FRAME CARPENTER rate.	05/01/2011	$27.49	$6.34	$6.23	$0.00	$40.06
RIDE-ON MOTORIZED BUGGY OPERATOR *LABORERS - ZONE 1* For apprentice rates see "Apprentice- LABORER"	06/01/2013	$33.30	$7.10	$12.45	$0.00	$52.85
	12/01/2013	$34.05	$7.10	$12.45	$0.00	$53.60
	06/01/2014	$34.80	$7.10	$12.45	$0.00	$54.35
	12/01/2014	$35.55	$7.10	$12.45	$0.00	$55.10
	06/01/2015	$36.30	$7.10	$12.45	$0.00	$55.85
	12/01/2015	$37.05	$7.10	$12.45	$0.00	$56.60
	06/01/2016	$37.80	$7.10	$12.45	$0.00	$57.35
	12/01/2016	$38.80	$7.10	$12.45	$0.00	$58.35
ROLLER/SPREADER/MULCHING MACHINE *OPERATING ENGINEERS LOCAL 4* For apprentice rates see "Apprentice- OPERATING ENGINEERS"	06/01/2013	$39.96	$10.00	$13.55	$0.00	$63.51
	12/01/2013	$40.74	$10.00	$13.55	$0.00	$64.29
ROOFER (Inc.Roofer Waterproofng &Roofer Damproofg) *ROOFERS LOCAL 33*	02/01/2013	$37.41	$10.50	$10.70	$0.00	$58.61

Apprentice - *ROOFER - Local 33*

Effective Date - 02/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$18.71	$10.50	$3.38	$0.00	$32.59
2	60	$22.45	$10.50	$10.70	$0.00	$43.65
3	65	$24.32	$10.50	$10.70	$0.00	$45.52
4	75	$28.06	$10.50	$10.70	$0.00	$49.26
5	85	$31.80	$10.50	$10.70	$0.00	$53.00

Notes: ** 1:5, 2:6-10, the 1:10; Reroofing: 1:4, then 1:1
Step 1 is 2000 hrs.; Steps 2-5 are 1000 hrs.

Apprentice to Journeyworker Ratio:**

ROOFER SLATE / TILE / PRECAST CONCRETE *ROOFERS LOCAL 33*	02/01/2013	$37.66	$10.50	$10.70	$0.00	$58.86

For apprentice rates see "Apprentice- ROOFER"

SHEETMETAL WORKER *SHEETMETAL WORKERS LOCAL 17 - A*	02/01/2013	$42.32	$9.82	$18.24	$2.11	$72.49

Apprentice - *SHEET METAL WORKER - Local 17-A*

Effective Date - 02/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	$16.93	$9.82	$4.00	$0.00	$30.75
2	40	$16.93	$9.82	$4.00	$0.00	$30.75
3	45	$19.04	$9.82	$8.00	$1.11	$37.97
4	45	$19.04	$9.82	$8.00	$1.11	$37.97
5	50	$21.16	$9.82	$8.75	$1.19	$40.92
6	50	$21.16	$9.82	$9.00	$1.20	$41.18
7	60	$25.39	$9.82	$10.24	$1.36	$46.81
8	65	$27.51	$9.82	$10.99	$1.45	$49.77
9	75	$31.74	$9.82	$12.49	$1.62	$55.67
10	85	$35.97	$9.82	$13.49	$1.78	$61.06

Notes:
Steps are 6 mos.

Apprentice to Journeyworker Ratio:1:4

SIGN ERECTOR *PAINTERS LOCAL 35 - ZONE 1*	06/01/2013	$25.81	$7.07	$7.05	$0.00	$39.93

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *SIGN ERECTOR - Local 35 Zone 1*

Effective Date - 06/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$12.91	$7.07	$0.00	$0.00	$19.98
2	55	$14.20	$7.07	$2.45	$0.00	$23.72
3	60	$15.49	$7.07	$2.45	$0.00	$25.01
4	65	$16.78	$7.07	$2.45	$0.00	$26.30
5	70	$18.07	$7.07	$7.05	$0.00	$32.19
6	75	$19.36	$7.07	$7.05	$0.00	$33.48
7	80	$20.65	$7.07	$7.05	$0.00	$34.77
8	85	$21.94	$7.07	$7.05	$0.00	$36.06
9	90	$23.23	$7.07	$7.05	$0.00	$37.35

Notes:
Steps are 4 mos.

Apprentice to Journeyworker Ratio:1:1

SPECIALIZED EARTH MOVING EQUIP < 35 TONS *TEAMSTERS JOINT COUNCIL NO. 10 ZONE A*	12/01/2012	$31.84	$8.91	$8.00	$0.00	$48.75
SPECIALIZED EARTH MOVING EQUIP > 35 TONS *TEAMSTERS JOINT COUNCIL NO. 10 ZONE A*	12/01/2012	$32.13	$8.91	$8.00	$0.00	$49.04
SPRINKLER FITTER *SPRINKLER FITTERS LOCAL 550 - (Section A)*	03/01/2013	$52.58	$8.42	$12.60	$0.00	$73.60

Apprentice - *SPRINKLER FITTER - Local 550*

Effective Date - 03/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	$18.40	$8.42	$8.00	$0.00	$34.82
2	40	$21.03	$8.42	$8.00	$0.00	$37.45
3	45	$23.66	$8.42	$8.00	$0.00	$40.08
4	50	$26.29	$8.42	$8.00	$0.00	$42.71
5	55	$28.92	$8.42	$8.00	$0.00	$45.34
6	60	$31.55	$8.42	$8.00	$0.00	$47.97
7	65	$34.18	$8.42	$8.00	$0.00	$50.60
8	70	$36.81	$8.42	$8.00	$0.00	$53.23
9	75	$39.44	$8.42	$8.00	$0.00	$55.86
10	80	$42.06	$8.42	$8.00	$0.00	$58.48

Notes:
Steps are 850 hours

Apprentice to Journeyworker Ratio:1:1

STEAM BOILER OPERATOR *OPERATING ENGINEERS LOCAL 4*	06/01/2013	$39.96	$10.00	$13.55	$0.00	$63.51
	12/01/2013	$40.74	$10.00	$13.55	$0.00	$64.29

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TAMPERS, SELF-PROPELLED OR TRACTOR DRAWN *OPERATING ENGINEERS LOCAL 4* For apprentice rates see "Apprentice- OPERATING ENGINEERS"	06/01/2013	$39.96	$10.00	$13.55	$0.00	$63.51
	12/01/2013	$40.74	$10.00	$13.55	$0.00	$64.29
TELECOMMUNICATION TECHNICIAN *ELECTRICIANS LOCAL 103*	03/01/2013	$32.64	$13.00	$12.51	$0.00	$58.15
	09/01/2013	$33.15	$13.00	$12.52	$0.00	$58.67
	03/01/2014	$33.69	$13.00	$12.54	$0.00	$59.23
	09/01/2014	$34.20	$13.00	$12.56	$0.00	$59.76
	03/01/2015	$34.74	$13.00	$12.57	$0.00	$60.31
	09/01/2015	$35.45	$13.00	$12.59	$0.00	$61.04
	03/01/2016	$36.17	$13.00	$12.62	$0.00	$61.79

Apprentice - *TELECOMMUNICATION TECHNICIAN - Local 103*

Effective Date - 03/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	$13.06	$13.00	$0.39	$0.00	$26.45
2	40	$13.06	$13.00	$0.39	$0.00	$26.45
3	45	$14.69	$13.00	$10.77	$0.00	$38.46
4	45	$14.69	$13.00	$10.77	$0.00	$38.46
5	50	$16.32	$13.00	$11.02	$0.00	$40.34
6	55	$17.95	$13.00	$11.27	$0.00	$42.22
7	60	$19.58	$13.00	$11.52	$0.00	$44.10
8	65	$21.22	$13.00	$11.77	$0.00	$45.99
9	70	$22.85	$13.00	$12.02	$0.00	$47.87
10	75	$24.48	$13.00	$12.26	$0.00	$49.74

Effective Date - 09/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	$13.26	$13.00	$0.40	$0.00	$26.66
2	40	$13.26	$13.00	$0.40	$0.00	$26.66
3	45	$14.92	$13.00	$9.79	$0.00	$37.71
4	45	$14.92	$13.00	$9.79	$0.00	$37.71
5	50	$16.58	$13.00	$10.04	$0.00	$39.62
6	55	$18.23	$13.00	$10.29	$0.00	$41.52
7	60	$19.89	$13.00	$10.54	$0.00	$43.43
8	65	$21.55	$13.00	$10.79	$0.00	$45.34
9	70	$23.21	$13.00	$11.04	$0.00	$47.25
10	75	$24.86	$13.00	$11.29	$0.00	$49.15

Notes:

Apprentice to Journeyworker Ratio:1:1

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TERRAZZO FINISHERS *BRICKLAYERS LOCAL 3 - MARBLE & TILE*	02/01/2013	$46.35	$10.18	$17.83	$0.00	$74.36
	08/01/2013	$47.00	$10.18	$18.15	$0.00	$75.33
	02/01/2014	$47.56	$10.18	$18.15	$0.00	$75.89
	08/01/2014	$48.46	$10.18	$18.22	$0.00	$76.86
	02/01/2015	$49.02	$10.18	$18.22	$0.00	$77.42
	08/01/2015	$49.92	$10.18	$18.29	$0.00	$78.39
	02/01/2016	$50.49	$10.18	$18.29	$0.00	$78.96
	08/01/2016	$51.39	$10.18	$18.37	$0.00	$79.94
	02/01/2017	$51.96	$10.18	$18.37	$0.00	$80.51

Apprentice - *TERRAZZO FINISHER - Local 3 Marble & Tile*

Effective Date - 02/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$23.18	$10.18	$17.83	$0.00	$51.19
2	60	$27.81	$10.18	$17.83	$0.00	$55.82
3	70	$32.45	$10.18	$17.83	$0.00	$60.46
4	80	$37.08	$10.18	$17.83	$0.00	$65.09
5	90	$41.72	$10.18	$17.83	$0.00	$69.73

Effective Date - 08/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$23.50	$10.18	$18.15	$0.00	$51.83
2	60	$28.20	$10.18	$18.15	$0.00	$56.53
3	70	$32.90	$10.18	$18.15	$0.00	$61.23
4	80	$37.60	$10.18	$18.15	$0.00	$65.93
5	90	$42.30	$10.18	$18.15	$0.00	$70.63

Notes:

Apprentice to Journeyworker Ratio:1:3

TEST BORING DRILLER *LABORERS - FOUNDATION AND MARINE*	06/01/2013	$34.45	$7.10	$12.60	$0.00	$54.15
	12/01/2013	$35.20	$7.10	$12.60	$0.00	$54.90
	06/01/2014	$35.95	$7.10	$12.60	$0.00	$55.65
	12/01/2014	$36.70	$7.10	$12.60	$0.00	$56.40
	06/01/2015	$37.45	$7.10	$12.60	$0.00	$57.15
	12/01/2015	$38.20	$7.10	$12.60	$0.00	$57.90
	06/01/2016	$38.95	$7.10	$12.60	$0.00	$58.65
	12/01/2016	$39.95	$7.10	$12.60	$0.00	$59.65

For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TEST BORING DRILLER HELPER *LABORERS - FOUNDATION AND MARINE*	06/01/2013	$33.17	$7.10	$12.60	$0.00	$52.87
	12/01/2013	$33.92	$7.10	$12.60	$0.00	$53.62
	06/01/2014	$34.67	$7.10	$12.60	$0.00	$54.37
	12/01/2014	$35.42	$7.10	$12.60	$0.00	$55.12
	06/01/2015	$36.17	$7.10	$12.60	$0.00	$55.87
	12/01/2015	$36.92	$7.10	$12.60	$0.00	$56.62
	06/01/2016	$37.67	$7.10	$12.60	$0.00	$57.37
	12/01/2016	$38.67	$7.10	$12.60	$0.00	$58.37
For apprentice rates see "Apprentice- LABORER"						
TEST BORING LABORER *LABORERS - FOUNDATION AND MARINE*	06/01/2013	$33.05	$7.10	$12.60	$0.00	$52.75
	12/01/2013	$33.80	$7.10	$12.60	$0.00	$53.50
	06/01/2014	$34.55	$7.10	$12.60	$0.00	$54.25
	12/01/2014	$35.30	$7.10	$12.60	$0.00	$55.00
	06/01/2015	$36.05	$7.10	$12.60	$0.00	$55.75
	12/01/2015	$36.80	$7.10	$12.60	$0.00	$56.50
	06/01/2016	$37.55	$7.10	$12.60	$0.00	$57.25
	12/01/2016	$38.55	$7.10	$12.60	$0.00	$58.25
For apprentice rates see "Apprentice- LABORER"						
TRACTORS/PORTABLE STEAM GENERATORS *OPERATING ENGINEERS LOCAL 4*	06/01/2013	$39.96	$10.00	$13.55	$0.00	$63.51
	12/01/2013	$40.74	$10.00	$13.55	$0.00	$64.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TRAILERS FOR EARTH MOVING EQUIPMENT *TEAMSTERS JOINT COUNCIL NO. 10 ZONE A*	12/01/2012	$32.42	$9.07	$8.00	$0.00	$49.49
TUNNEL WORK - COMPRESSED AIR *LABORERS (COMPRESSED AIR)*	06/01/2013	$45.33	$7.10	$13.00	$0.00	$65.43
	12/01/2013	$46.08	$7.10	$13.00	$0.00	$66.18
	06/01/2014	$46.83	$7.10	$13.00	$0.00	$66.93
	12/01/2014	$47.58	$7.10	$13.00	$0.00	$67.68
	06/01/2015	$48.33	$7.10	$13.00	$0.00	$68.43
	12/01/2015	$49.08	$7.10	$13.00	$0.00	$69.18
	06/01/2016	$49.83	$7.10	$13.00	$0.00	$69.93
	12/01/2016	$50.83	$7.10	$13.00	$0.00	$70.93
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - COMPRESSED AIR (HAZ. WASTE) *LABORERS (COMPRESSED AIR)*	06/01/2013	$47.33	$7.10	$13.00	$0.00	$67.43
	12/01/2013	$48.08	$7.10	$13.00	$0.00	$68.18
	06/01/2014	$48.83	$7.10	$13.00	$0.00	$68.93
	12/01/2014	$49.58	$7.10	$13.00	$0.00	$69.68
	06/01/2015	$50.33	$7.10	$13.00	$0.00	$70.43
	12/01/2015	$51.08	$7.10	$13.00	$0.00	$71.18
	06/01/2016	$51.83	$7.10	$13.00	$0.00	$71.93
	12/01/2016	$52.83	$7.10	$13.00	$0.00	$72.93
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TUNNEL WORK - FREE AIR *LABORERS (FREE AIR TUNNEL)*	06/01/2013	$37.40	$7.10	$13.00	$0.00	$57.50
	12/01/2013	$38.15	$7.10	$13.00	$0.00	$58.25
	06/01/2014	$38.90	$7.10	$13.00	$0.00	$59.00
	12/01/2014	$39.65	$7.10	$13.00	$0.00	$59.75
	06/01/2015	$40.40	$7.10	$13.00	$0.00	$60.50
	12/01/2015	$41.15	$7.10	$13.00	$0.00	$61.25
	06/01/2016	$41.90	$7.10	$13.00	$0.00	$62.00
	12/01/2016	$42.90	$7.10	$13.00	$0.00	$63.00
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - FREE AIR (HAZ. WASTE) *LABORERS (FREE AIR TUNNEL)*	06/01/2013	$39.40	$7.10	$13.00	$0.00	$59.50
	12/01/2013	$40.15	$7.10	$13.00	$0.00	$60.25
	06/01/2014	$40.90	$7.10	$13.00	$0.00	$61.00
	12/01/2014	$41.65	$7.10	$13.00	$0.00	$61.75
	06/01/2015	$42.40	$7.10	$13.00	$0.00	$62.50
	12/01/2015	$43.15	$7.10	$13.00	$0.00	$63.25
	06/01/2016	$43.90	$7.10	$13.00	$0.00	$64.00
	12/01/2016	$44.90	$7.10	$13.00	$0.00	$65.00
For apprentice rates see "Apprentice- LABORER"						
VAC-HAUL *TEAMSTERS JOINT COUNCIL NO. 10 ZONE A*	12/01/2012	$31.84	$8.91	$8.00	$0.00	$48.75
WAGON DRILL OPERATOR *LABORERS - ZONE 1*	06/01/2013	$33.30	$7.10	$12.45	$0.00	$52.85
	12/01/2013	$34.05	$7.10	$12.45	$0.00	$53.60
	06/01/2014	$34.80	$7.10	$12.45	$0.00	$54.35
	12/01/2014	$35.55	$7.10	$12.45	$0.00	$55.10
	06/01/2015	$36.30	$7.10	$12.45	$0.00	$55.85
	12/01/2015	$37.05	$7.10	$12.45	$0.00	$56.60
	06/01/2016	$37.80	$7.10	$12.45	$0.00	$57.35
	12/01/2016	$38.80	$7.10	$12.45	$0.00	$58.35
For apprentice rates see "Apprentice- LABORER"						
WASTE WATER PUMP OPERATOR *OPERATING ENGINEERS LOCAL 4*	06/01/2013	$40.34	$10.00	$13.55	$0.00	$63.89
	12/01/2013	$41.12	$10.00	$13.55	$0.00	$64.67
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
WATER METER INSTALLER *PLUMBERS & GASFITTERS LOCAL 12*	03/01/2013	$49.31	$9.32	$13.29	$0.00	$71.92
For apprentice rates see "Apprentice- PLUMBER/PIPEFITTER" or "PLUMBER/GASFITTER"						
Outside Electrical - East						
CABLE TECHNICIAN (Power Zone) *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104*	03/03/2013	$25.18	$8.20	$4.17	$0.00	$37.55
	09/01/2013	$25.66	$8.70	$4.48	$0.00	$38.84
For apprentice rates see "Apprentice- LINEMAN"						
CABLEMAN (Underground Ducts & Cables) *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104*	03/03/2013	$35.67	$8.20	$4.98	$0.00	$48.85
	09/01/2013	$36.55	$8.70	$6.58	$0.00	$51.83
For apprentice rates see "Apprentice- LINEMAN"						
DRIVER / GROUNDMAN CDL *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104*	03/03/2013	$29.38	$8.20	$5.68	$0.00	$43.26
	09/01/2013	$29.94	$8.70	$6.05	$0.00	$44.69
For apprentice rates see "Apprentice- LINEMAN"						
DRIVER / GROUNDMAN -Inexperienced (<2000 Hrs) *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104*	03/03/2013	$23.08	$8.20	$3.94	$0.00	$35.22
	09/01/2013	$23.52	$8.70	$5.24	$0.00	$37.46
For apprentice rates see "Apprentice- LINEMAN"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
EQUIPMENT OPERATOR (Class A CDL) *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104* For apprentice rates see "Apprentice- LINEMAN"	03/03/2013	$35.67	$8.20	$8.98	$0.00	$52.85
	09/01/2013	$36.35	$8.70	$9.43	$0.00	$54.48
EQUIPMENT OPERATOR (Class B CDL) *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104* For apprentice rates see "Apprentice- LINEMAN"	03/03/2013	$31.48	$8.20	$6.19	$0.00	$45.87
	09/01/2013	$32.08	$8.70	$6.59	$0.00	$47.37
GROUNDMAN *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104* For apprentice rates see "Apprentice- LINEMAN"	03/03/2013	$23.08	$8.20	$3.42	$0.00	$34.70
	09/01/2013	$23.52	$8.70	$3.72	$0.00	$35.94
GROUNDMAN -Inexperienced (<2000 Hrs.) *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104* For apprentice rates see "Apprentice- LINEMAN"	03/03/2013	$18.89	$8.20	$2.61	$0.00	$29.70
	09/01/2013	$19.25	$8.70	$2.85	$0.00	$30.80
JOURNEYMAN LINEMAN *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104*	03/03/2013	$41.97	$8.20	$11.26	$0.00	$61.43
	09/01/2013	$42.77	$8.70	$11.78	$0.00	$63.25

Apprentice - *LINEMAN (Outside Electrical) - East Local 104*

Effective Date - 03/03/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	$25.18	$8.20	$3.92	$0.00	$37.30
2	65	$27.28	$8.20	$4.36	$0.00	$39.84
3	70	$29.38	$8.20	$5.06	$0.00	$42.64
4	75	$31.48	$8.20	$5.76	$0.00	$45.44
5	80	$33.58	$8.20	$6.46	$0.00	$48.24
6	85	$35.67	$8.20	$7.17	$0.00	$51.04
7	90	$37.77	$8.20	$8.36	$0.00	$54.33

Effective Date - 09/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	$25.66	$8.70	$4.24	$0.00	$38.60
2	65	$27.80	$8.70	$4.71	$0.00	$41.21
3	70	$29.94	$8.70	$5.43	$0.00	$44.07
4	75	$32.08	$8.70	$6.16	$0.00	$46.94
5	80	$34.22	$8.70	$6.88	$0.00	$49.80
6	85	$36.35	$8.70	$7.62	$0.00	$52.67
7	90	$38.49	$8.70	$8.83	$0.00	$56.02

Notes:

Apprentice to Journeyworker Ratio:1:2

TELEDATA CABLE SPLICER *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104*	07/16/2012	$26.33	$4.18	$2.79	$0.00	$33.30
TELEDATA LINEMAN/EQUIPMENT OPERATOR *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104*	07/16/2012	$24.78	$4.18	$2.74	$0.00	$31.70
TELEDATA WIREMAN/INSTALLER/TECHNICIAN *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104*	07/16/2012	$24.78	$4.18	$2.74	$0.00	$31.70

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TREE TRIMMER *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104* This classification applies only to the trimming of branches on and around utility lines.	01/29/2012	$17.18	$3.37	$0.00	$0.00	$20.55
TREE TRIMMER GROUNDMAN *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104* This classification applies only to the trimming of branches on and around utility lines.	01/29/2012	$15.15	$3.37	$0.00	$0.00	$18.52

Additional Apprentice Information:

Minimum wage rates for apprentices employed on public works projects are listed above as a percentage of the pre-determined hourly wage rate established by the Commissioner under the provisions of the M.G.L. c. 149, ss. 26-27D. Apprentice ratios are established by the Division of Apprenticeship Training pursuant to M.G.L. c. 23, ss. 11E-11L.

All apprentices must be registered with the Division of Apprenticeship Training in accordance with M.G.L. c. 23, ss. 11E-11L.

All steps are six months (1000 hours) unless otherwise specified.

* Ratios are expressed in allowable number of apprentices to journeymen or fraction thereof.
** Multiple ratios are listed in the comment field.
*** APP to JM; 1:1, 2:2, 2:3, 3:4, 4:4, 4:5, 4:6, 5:7, 6:7, 6:8, 6:9, 7:10, 8:10, 8:11, 8:12, 9:13, 10:13, 10:14, etc.
**** APP to JM; 1:1, 1:2, 2:3, 2:4, 3:5, 4:6, 4:7, 5:8, 6:9, 6:10, 7:11, 8:12, 8:13, 9:14, 10:15, 10:16, etc.

Division of Labor and Industries Statement of Compliance

GENERAL TERMS & CONDITIONS

APPENDIX C
General Conditions

GENERAL TERMS AND CONDITIONS OF THE CONTRACT FOR CONSTRUCTION, RECONSTRUCTION, ALTERATION, REMODELING, OR REPAIR OF ANY PUBLIC BUILDING OR PUBLIC WORK IN THE CITY OF SOMERVILLE

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GENERAL TERMS AND CONDITIONS OF THE CONTRACT FOR CONSTRUCTION, RECONSTRUCTION, INSTALLATION, DEMOLITION, MAINTENANCE, OR REPAIR OF ANY PUBLIC BUILDING OR PUBLIC WORK IN THE CITY OF SOMERVILLE

ARTICLE 1: DEFINITIONS

1.1. In General.

1.1.1. Well-known meanings. When words or phrases that have a well-known technical, or construction industry, or trade meaning are used in the Contract Documents, such words or phrases shall be interpreted in accordance with that meaning, unless otherwise stated.

1.1.2. Capitalization. The words and terms defined in this Article are capitalized in these General Terms and Conditions of the Contract. Other capitalized words may refer to a specific document found in the Contract Documents.

1.1.3. Persons. Whenever the word person or persons is used, it includes, unless otherwise stated, entity or entities, respectively, including, but not limited to, corporations, partnerships, and joint venturers.

1.1.4. Singular and Plural. The following terms have the meanings indicated which are applicable to both the singular and the plural thereof.

1.2. Definitions.

1.2.1. Agreement. The Agreement is the written document between the **City** and the **Contractor** which is titled: Agreement between the City of Somerville and the Contractor, which is the executed portion of the Contract, and which forms a part of the Contract. The Agreement also includes all documents required to be attached thereto, including, but not limited to, the performance bond, the labor and materials or payment bonds, certificates of insurance, and all Modifications of the Agreement.

1.2.2. Change Order. A Change Order is a document which is signed by the **Contractor**, the **Design Professional**, and the **City;** which is directed to the **Contractor;** which authorizes the **Contractor** to make an addition to, a deletion from or a revision in the Work, or an adjustment in the Contract Sum or in the Contract Time; and which is issued on or after the date of the Agreement between the **Contractor** and the **City.**

1.2.3. City. The **City** refers to the City of Somerville, which is the owner of the Project and is the public awarding authority with whom the **Contractor** has entered into the

Contract and for whom the Work is to be provided.

1.2.4. Claim. A Claim is a dispute, demand, or assertion by one of the parties arising out of or relating to the Contract for which such party is seeking relief.

1.2.5. Contract. The Contract consists of all the Contract Documents. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations**,** representations, or agreements, either written or oral. The Contract may be amended or modified only by a Modification to the Contract signed by both parties.

1.2.6. Contract Documents. The Contract Documents consist of the Agreement; the notice of award of the Contract; the Notice to Proceed; the entire Project Manual; Change Orders; Construction Change Directives; the **Contractor's** Bid and all accompanying documents; and the **Design Professional's** written interpretations and clarifications issued on or after the issuance of the Notice to Proceed. Shop Drawing submittals and reports or drawings utilized by the **Design Professional** in preparing the Contract Documents are not Contract Documents.

1.2.7. Contractor. The **Contractor** is the person who is awarded the Contract for the Project herein pursuant to M.G.L. c. 149, §44A or M.G.L. c. 39, §39M; and is identified in the Agreement as such. The term "**Contractor**" is intended to include the **Contractor** as well as its authorized representative(s).

1.2.8. Contract Sum. The Contract Sum is the total amount stated in the Agreement payable by the **City** to the **Contractor** for the completion of the Work in accordance with the Contract Documents.

1.2.9. Contract Time. Unless otherwise provided, the Contract Time is the number of days allotted in the Contract Documents or the dates stated in the Agreement, including authorized adjustments, for Substantial Completion. We usually put a contract end date that is beyond the date of substantial completion.

1.2.10. Coordination Drawings. Coordination Drawings are those drawings, which are prepared by the **Contractor** or a Subcontractor that show the exact alignment, physical locations, and configuration of the mechanical, electrical, and fire protection installations.

1.2.11. Day. The term "day" shall mean calendar day unless otherwise stated.

1.2.12. Design Professional. The **Design Professional** is the person lawfully licensed to practice architecture, engineering, or landscape architecture and has been selected by the **City** to administer the Contract. The term "**Design Professional**," while referred to in the singular, means the **Design Professional** and/or the **Design Professional's** representative. For the purposes of this project, **Design Professional** shall mean the firm of Weston Sampson Engineers and appropriate consultants.

1.2.13. Field Order. A Field Order is a written order issued by the **Design Professional** which orders minor changes in the Work, but which does not involve a change in the Contract Sum or the Contract Time.

1.2.14. Final Completion. Final Completion is the point in time when the Design Professional finds that the Work has been fully completed in accordance with the Contract Documents. Final Completion shall be no later than thirty (30) days after Substantial Completion.

1.2.15. General Requirements. General Requirements refer to Sections of Division 1 of the Specifications.

1.2.16. Modification. A Modification is a written instrument that amends the Contract after execution of the Agreement.

1.2.17. Notice to Proceed. A Notice to Proceed is a written notice given by the **City,** or the **Design Professional**, to the **Contractor** fixing the date on which the Contract Time will begin to run and on which the **Contractor** shall start to perform its obligations under the Contract Documents.

1.2.18. Plans. The Plans are the drawings which are the graphic and pictorial portions of the Contract Documents, wherever located and whenever issued, showing the design, location, dimensions, scope, extent, and character of the Work to be furnished and performed by the **Contractor** and which have been prepared or approved by the **Design Professional**.

1.2.19. Product Data. Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the **Contractor** to illustrate materials or equipment for some portion of the Work. Product Data are not considered part of the Contract Documents.

1.2.20. Project. The Project is the total Work to be provided under the Contract Documents and may be the whole or a part as indicated elsewhere in the Contract Documents and may include construction by the **City** or by separate contractors. The Project is the Work described in the invitation to bid (advertisement) and Specifications and illustrated by the Plans, including any Modifications.

1.2.21. Project Manual. The Project Manual is the entire set of bidding documents which includes, but is not limited to, the invitation to bid (advertisement), the instructions to bidders, all of the forms, the wage rates, all City and state requirements, the General Terms and Conditions of the Contract, any supplementary conditions thereto, the Plans, the Specifications, and all addenda.

1.2.22. Proposed Change Order. A Proposed Change Order is a Change Order that has been submitted by the **Contractor** to the **Design Professional,** is under review, and has

not been approved by the **City**.

1.2.23. Samples. Samples are physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged. Samples are not considered part of the Contract Documents.

1.2.24. Shop Drawings. Shop Drawings are all drawings, diagrams, illustrations, schedules, and other information that are specifically prepared or assembled by or for the **Contractor** and submitted by the **Contractor** to illustrate some portion of the Work. Shop Drawings are not considered part of the Contract Documents.

1.2.25. Site. The Site is the location of the Project and of the Work.

1.2.26. Specifications. Specifications are those portions of the Contract Documents consisting of written technical descriptions of materials, equipment, construction systems, standards, and workmanship as applied to the Work and certain administrative details applicable thereto.

1.2.27. Subcontractor. A Subcontractor is a person who contracts directly with the **Contractor**, unless otherwise stated.

1.2.28. Submittals. Submittals are those Shop Drawings, Product Data, Samples, or any other required document that are provided to the Design Professional for review and approval.

1.2.29. Substantial Completion. Substantial Completion means that the Work has been completed and the Site or the facility is opened for full and intended public use, except for minor incomplete or unsatisfactory items that do not materially impair the usefulness of the Work. The **Design Professional** shall decide what constitutes “minor,” “incomplete,” “unsatisfactory,” and “materially” and the **Design Professional's** decision shall be final.

1.2.30. Sub-subcontractor. A Sub-subcontractor is a person who has contracted directly with a Subcontractor.

1.2.31. Supplier. A Supplier is a manufacturer, fabricator, distributor, material person, or vendor having a direct contract with the Contractor or with any Subcontractor to furnish materials or equipment to be incorporated into the Work by the Contractor or any Subcontractor.

1.2.32. Work. Work refers to the services and the entire completed construction or the various separately identifiable parts thereof required by the Contract Documents, including all labor, materials, and equipment furnished, furnished and incorporated into the Project, or to be provided by the **Contractor** to fulfill the **Contractor's** obligations. The Work may constitute the whole or a part of the Project.

1.2.33. Construction Change Directive. A **Construction Change** Directive is a written directive to the **Contractor** ordering an addition to, a deletion from, or a revision to the Work issued on or after the date of the Agreement, signed by the **City**, and recommended by the **Design Professional**.

ARTICLE 2: ABOUT THE CONTRACT DOCUMENTS

2.1. Priority/Conflict.

2.1.1. Priority Among Contract Documents. In the event of conflict among the Contract Documents, the Contract Documents shall be construed according to the following priorities:

Highest Priority:	Modifications
Second Priority:	Agreement
Third Priority:	Addenda-later date to take precedence
Fourth Priority:	Supplementary General Conditions
Fifth Priority:	General Conditions
Sixth Priority:	Plans and Specifications

2.1.1.1. If there is a conflict between the Plans and Specifications, the figured dimensions shall govern over the scaled dimensions. Detailed Plans shall govern over the general Plans. Larger scale Plans shall take precedence over smaller scale Plans. Plans shall govern over Shop Drawings. Whenever notes, specifications, dimensions, details, or schedules in the Specifications or in the Plans, or between the Specifications and the Plans, or in all other instances not specifically noted above, the **Contractor** shall provide, unless otherwise directed by a Modification of the Contract, the better quality or greater quantity of Work at no increase in the Contract Sum or in the Contract Time.

2.1.1.2. Compliance with these priority conditions shall not justify any changes in the Work or any increase in the Contract Sum or Contract Time, unless any such compliance results in Work that may not be reasonably inferred from the Contract Documents as being required to produce the intended result as determined by the **Design Professional**.

2.1.2. Review of the Contract Documents and Field Conditions and Discovery of Conflict, Error, Ambiguity, or Discrepancy. Before starting the Work, and during the progress thereof, the **Contractor** shall carefully study and compare the Contract Documents with each other and with the information furnished by the **City** pursuant to Article 3 and shall at once report to the **Design Professional** any error, inconsistency, or omission the **Contractor** may discover. Any necessary change shall be ordered as provided in Article 11, subject to the requirements of any other provisions of the Contract Documents. The

Contractor shall not proceed with the Work affected thereby (except in an emergency) until a Modification has been issued. If the **Contractor** proceeds with the Work having discovered such errors, inconsistencies, or omissions contrary to the provisions contained herein, or if by reasonable study of the Contract Documents the **Contractor** could have discovered such, the **Contractor** shall bear all costs arising therefrom. The **Contractor** shall be liable to the **City** for failure to report any conflict, error, ambiguity, or discrepancy of which it knew or should have known.

2.1.3. Field Measurements. The **Contractor** shall take field measurements and verify field conditions and shall carefully compare such field measurements and conditions and other information known to the **Contractor** with the Contract Documents before commencing activities. Errors, inconsistencies, or omissions discovered shall be reported to the **Design Professional** at once.

2.1.4. Statutory Provisions. The **City** and the **Contractor** recognize that other rights duties and obligations with respect to public construction contracts are provided for by statute, notwithstanding the fact that they may not be provided for in the Contract Documents. In case of conflict between the statutory provisions and other provisions of the Contract Documents and the provisions of any applicable statute, the statutory provisions shall govern.

2.1.5. Voided or Unlawful Provisions. In the event any provision in the Contract is voided or deemed unlawful, such provision shall be deleted without affecting the remainder of the Contract.

2.2. Execution.

2.2.1. Execution of the Agreement by the **Contractor** is a representation that the **Contractor** has visited the Site, become familiar with local conditions under which the Work is to be performed, and correlated personal observations with requirements of the Contract Documents.

2.3. Intent.

2.3.1. Entire Agreement. The Contract Documents comprise the entire agreement between the **City** and the **Contractor** concerning the Work**.** The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the **Contractor**. The Contract Documents are complementary; what is required by one shall be as binding as if required by all. Performance by the **Contractor** shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the intended results. All Work mentioned or indicated in the Contract Documents shall be performed by the **Contractor** as part of this Contract unless it is specifically indicated in the Contract Documents that such Work is to be done by others.

2.3.2. Statutory Provisions. Each and every provision of law, code, and regulation, required by law to be inserted in these Contract Documents shall be deemed to be inserted herein, and they shall be read and enforced as though it were included herein, and if through mistake or otherwise, any such provision is not inserted, or if not correctly inserted, then upon the application of either party, the Contract Documents shall forthwith be physically amended to make such insertion.

2.3.3. Functionally Complete Project. It is the intent of the Contract Documents to describe a functionally complete Project. The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the **Contractor**. Any Work, materials, or equipment that may be reasonably inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the intended result will be furnished and performed by the **Contractor** whether or not specifically called for in the Contract Documents.

2.3.4. Indications or Notations. All indications or notations which apply to one of a number of similar situations, materials, or processes shall be deemed to apply to all such situations, materials, or processes wherever they appear in the Work, except where a contrary result is clearly indicated by the Contract Documents.

2.3.5. Standards or Quality of Materials or Workmanship. Where no explicit quality or standards for materials or workmanship are established for Work, such Work is to be of good quality for the intended use and consistent with the quality of the surrounding Work and of the construction of the Project generally.

2.3.6. Manufactured Products. All manufactured articles, materials, and equipment shall be applied, installed, connected, erected, used, cleaned, and conditioned in accordance with the manufacturer’s written or printed directions and instructions unless otherwise indicated in the Contract Documents.

2.3.7. Mechanical, Electrical, and Fire Protection Plans. The mechanical, electrical, and fire protection Plans are diagrammatic only and are not intended to show the alignment, physical locations, or configurations of such Work. Such Work shall be installed without additional cost to the **City** to clear all obstructions, permit proper clearances for the Work of other trades, and present an orderly appearance where exposed. Prior to beginning such Work, the **Contractor** shall prepare Coordination Drawings and demonstrate to the **Design Professional's** satisfaction that the installations will comply with the preceding sentence. The **Contractor** shall be solely liable and responsible for any costs and/or delays resulting from the **Contractor's** failure to prepare such Coordination Drawings.

2.3.8. Locations of Fixtures and Outlets. Exact locations of fixtures and outlets shall be obtained from the **Design Professional** as provided in Article 5 before the Work is roughed in. Work installed without such information from the **Design Professional** shall be relocated at the **Contractor's** expense.

2.3.9. Tests. When test boring or soil test information are included with the Contract Documents or otherwise made available to the **Contractor** and such test boring or soil test information was obtained by the **City** for use by the **Design Professional** in the design of the Project or Work, the **City** does not hold out such information to the **Contractor** as an accurate or approximate indication of subsurface conditions, and no claim for extra cost of extension of time resulting from a reliance by the **Contractor** on such information shall be allowed except as otherwise provided herein. Any such reports are not part of the Contract Documents.

2.3.10. Joining Work. Where the Work is to fit with existing conditions or work to be performed by others, the **Contractor** shall fully and completely join the Work with such conditions or work, unless otherwise specified.

2.4. Organization.

2.4.1. Except as provided in M.G.L. c. 149, §44F, the organization of the Specifications into divisions, sections, and articles, and the arrangement of Plans shall not control the **Contractor** in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

2.5. References.

2.5.1. Where codes, manuals, specifications, standards, requirements and publications of public and private bodies are referred to in the Contract Documents whether specifically or by implication, references shall be understood to be to the latest revision prior to the date of receiving bids, except where otherwise indicated. Where statutes are referred to in the Contract Documents whether specifically or by implication, references shall be understood to be to the latest revision.

2.5.2. References herein to particular paragraphs or Articles are solely to facilitate finding additional information with regard to the specific matters and are not to be construed in any way as limiting the possible paragraphs and Articles in which such matters may be found elsewhere in this document.

2.6. Reuse of Design Professional's Written Instruments.

2.6.1. Neither the **Contractor** nor any Subcontractor or Supplier shall have or acquire any title to or ownership rights in any of the Plans, Specifications, or other documents prepared by the **Design Professional** and shall not reuse any of such Plans, Specifications, or other documents without prior written consent of the **City** and the **Design Professional**.

2.7. Written Material of the Contractor.

2.7.1. All written material prepared or collected by the **Contractor** in the course of completing the Work shall be the exclusive property of the **City** and shall not be used by the **Contractor** for any purpose other than the purpose of this Contract.

2.8. Modifying Words.

2.8.1. In the interest of simplicity, modifying words such as "all" and "any" may be omitted, but the fact that such words may be absent from one sentence and appear in another is not intended to affect the interpretation of either statement.

2.9. Use of Certain Words and Terms.

2.9.1. Whenever in the Contract Documents the terms "as ordered," "as directed," "as required," "as allowed," "as approved," or terms of like effect or import are used, or the adjectives "reasonable," "suitable," "acceptable," "proper," "satisfactory," or adjectives of like effect or import are used to describe a requirement, direction, review, or judgment of the **City** or of the **Design Professional** as to the Work, it is intended that such requirement, direction, review, or judgment will be solely to evaluate, in general, the completed Work for compliance with the requirements of and information in the Contract Documents and conformance with the design concept of the completed Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise).

2.9.2. The use of any such term or adjective shall not be effective to change the duties and responsibilities of the **City** or the **Design Professional** from those assigned in the Contract Documents or to assign any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of the Contract Documents.

2.9.3. When the words "Contractor," "Subcontractor," Sub-subcontractor," and "Supplier" are used, they are intended to include their employees and agents, unless otherwise specified.

2.10. Modification of the Contract Documents.

2.10.1. Major Modifications . Major Modifications may affect the Contract Sum or the Contract Time. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof in one or more of the following ways, all of which must contain a written endorsement by the **City**:

2.10.1.1. a formal written amendment;

2.10.1.2. a Change Order;

2.10.1.3. a **Construction Change** Directive; or

2.10.1.4. the **Design Professional's** written interpretation, clarification, or decision.

2.10.2. Minor Modifications. Minor modifications do not affect the Contract Sum or the Contract Time. The requirements of the Contract Documents may be supplemented and minor variations and deviations of the Work may be authorized in one or more of the following ways:

2.10.2.1. a Field Order; or

2.10.2.2. the **Design Professional's** approval of a Shop Drawing or Sample.

ARTICLE 3: THE CITY

3.1. Signatory.

3.1.1. All documents which require a signature or an endorsement by the **City** must be signed by the Mayor in order to be deemed ratified by the **City**.

3.2. Requirements to Provide Documents.

3.2.1. To the extent they are available, the **City** shall furnish surveys describing physical characteristics, legal limitations, and utility locations for the site of the Project, and a legal description of the Site.

3.2.2. The **City** shall obtain and pay for necessary approvals, easements, assessments, and charges that are customarily secured prior to the execution of the Contract.

3.2.3. The **City** shall furnish information or services required of the **City** hereunder with reasonable promptness after receipt from the **Contractor** of a written request for such information or services.

3.2.4. The **City** shall provide the **Contractor**, at no charge, such copies of the Project Manual as are reasonably necessary for the execution of the Work.

3.3. Clerk of the Works.

3.3.1. The **City** may engage a Clerk of the Works for this Project, in which case the **City** shall, upon request of the **Contractor**, provide the **Contractor** with a written statement of the duties, responsibilities, and limitations of authority of such Clerk of the Works. Except as expressly set forth in such written statement, the Clerk of the Works shall have no authority to approve Work, to approve Change Orders, or to exercise any of the power and authority of the

City or the **Design Professional**. The Clerk of the Works shall observe the **Contractor's** operations and construction activities for compliance with the Plans and Specifications. The Clerk of the Works shall have access to all areas of the Project at all times. The **Contractor** shall fully cooperate with the Clerk of the Works in the performance of the Clerk's duties.

3.4. City's Right to Perform Construction and to Award Separate Contracts.

3.4.1. The **City** reserves the right to perform construction or operations at the Site with its own forces or others. If the **Contractor** claims that a delay or additional cost is involved because of such action by the **City**, the **Contractor** shall make such Claim as provided elsewhere in the Contract Documents.

3.4.2. When the separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "**Contractor**" in the Contract Documents in each case shall mean the **Contractor** who executes each separate City-Contractor Agreement.

3.4.3. The **City** shall provide for coordination of the activities of the **City's** own forces and of each separate contractor with the Work of the **Contractor**, who shall cooperate with them. The **Contractor** shall afford each other person access to the Site and shall properly coordinate its Work with that of the persons performing other work. The **Contractor** shall participate with other separate contractors and the **City** in reviewing their construction schedules when directed to do so. The **Contractor** shall make any revisions to the construction schedules deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the **Contractor**, separate contractors, and the **City** until subsequently revised.

3.5. Limitations on the City's Responsibilities.

3.5.1. The **City** shall not supervise, direct, or have control or authority over, nor be responsible for the **Contractor's** means, methods, techniques, sequences, or procedures of construction or the safety precautions and programs incident thereto, or for any failure of the **Contractor** to comply with laws, codes and regulations applicable to the furnishing or performance of the Work. The **City** will not be responsible for the **Contractor's** failure to perform or furnish the Work in accordance with the Contract Documents. The **City** is not responsible for the acts or omissions of the **Contractor**, any Subcontractor, Supplier, or anyone for whose acts the **Contractor**, any Subcontractor or Suppliers may be liable.

3.5.2. The **City's** authority to review any of the **Contractor's** progress schedules, or its decision to raise or not to raise any objections about such schedules shall not impose on the **City** any responsibility for the timing, planning, scheduling, or execution of the Work, nor in any way give rise to any duty or responsibility on the part of the **City** to exercise this authority for the benefit of the **Contractor**, any Subcontractor or Supplier or any other party.

3.5.3. The **City's** decision to raise or not to raise objections with regard to any aspects of the **Contractor's** insurance shall in no way give rise to any duty or responsibility on the part of

the **City** to or for the benefit of the **Contractor**, any Subcontractor, any Supplier, or any other party.

3.6. Reservation of Rights .

3.6.1. The **City** reserves the right to correct at any time any error in any progress payment that may have been made.

3.6.2. Should defective Work be discovered subsequent to final payment, the **City** reserves the right to make a claim and recover all costs and professional fees associated therewith, including the cost of removing and/or replacing the defective Work.

3.7. Waivers .

3.7.1. All waivers by the **City** are valid only to the extent that they are signed by the **City**. Any such waivers pertain only to the specific matter contained in the waiver and not to any similar, subsequent matters.

ARTICLE 4: THE DESIGN PROFESSIONAL

4.1. City's Representative.

4.1.1. The **Design Professional** is the **City's** representative (1) during construction, (2) until final payment is due, and (3) with the **City's** concurrence, from time to time during the correction period described in Article 10. The **Design Professional** will advise and consult with the **City**. The **Design Professional** will have authority to act on behalf of the **City** only to the extent provided in the Contract Documents, unless otherwise modified by a written instrument in accordance with other provisions of the Contract.

4.1.2. The duties, responsibilities, and the limitations of authority of the **Design Professional** as the **City's** representative during construction are set forth in the Contract Documents and shall not be extended without the written consent of the **City** and the **Design Professional**.

4.2. Administration of the Contract .

4.2.1. The **Design Professional** will provide administration of the Contract as described in the Contract Documents, unless the **City** has engaged a construction manager.

4.3. Visits to the Site.

4.3.1. The **Design Professional** will visit the site at intervals appropriate to the stage of construction to become generally familiar with the progress and quality of the completed Work and to determine in general if the Work is being performed in a manner indicating that the Work,

when completed, will be in accordance with the Contract Documents. However, the **Design Professional** will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. On the basis of on-site observations as an architect, engineer, or landscape architect, the **Design Professional** will keep the **City** informed of progress of the Work in writing and will endeavor to guard the **City** against defects and deficiencies in the Work.

4.4. Communications Facilitating Contract Administration.

4.4.1. Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized, the **City** and the **Contractor** shall endeavor to communicate through the **Design Professional**. Communications by and with the **Design Professional's** consultants shall be through the **Design Professional**. Communications by and with Subcontractors and Suppliers shall be through the **Contractor**. Communications by and with **City** employees and separate contractors shall be through the **City**.

4.4.2. When it deems it necessary or expedient, the **City** may communicate directly with the **Contractor**, any Subcontractors, Suppliers, or consultants.

4.5. Certification of Applications for Payment.

4.5.1. Based on the **Design Professional's** observations and evaluations of the **Contractor's** applications for payment, the **Design Professional** will review and certify the amounts due the **Contractor** and will issue certificates for payment in such amounts.

4.6. Rejection of Work.

4.6.1. The **Design Professional** will have authority to reject or disapprove Work (1) that does not conform to the Contract Documents; (2) that the **Design Professional** believes to be defective; and (3) that the **Design Professional** believes will not produce a completed Project conforming to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Whenever the **Design Professional** considers it necessary or advisable for implementation of the intent of the Contract Documents, the **Design Professional** will have authority to require additional inspection or testing of the Work in accordance with Article 9, whether or not such Work is fabricated, installed, or completed. However, neither this authority of the **Design Professional** nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the **Design Professional** to the **Contractor**, Subcontractors, Suppliers, or other persons performing portions of the Work.

4.7. Review of Submittals.

4.7.1. The **Design Professional** will review or take other appropriate action upon the **Contractor's** submittals such as Shop Drawings, Product Data, and Samples, but only for the

limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents and only to the extent that the **Design Professional** believes desirable to protect the **City's** interest. The **Design Professional's** action will be taken with reasonable promptness, while allowing sufficient time in the **Design Professional's** professional judgment to permit adequate review, taking into account the time periods set forth in the latest schedule prepared by the **Contractor** and approved by the **Design Professional**. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the **Contractor** as required by the Contract Documents. The **Design Professional's** review of the **Contractor's** submittals shall not relieve the **Contractor** of the obligations under Article 5. The **Design Professional's** review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences, or procedures. The **Design Professional's** approval of a specific item shall not indicate approval of an assembly of which the item is a component. After the rejection of the second resubmittal of any one Submittal, the **Contractor** shall bear the cost of the review of each subsequent resubmittal.

4.8. Preparation of Change Orders and Construction Change Directives.

4.8.1. The **Design Professional** will prepare Change Orders and **Construction Change** Directives and may authorize minor Modifications in the Work as provided in Article 11.

4.9. Inspections.

4.9.1. The **Design Professional** will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; will receive and forward to the **City** for the **City's** review and records written warranties and related documents required by the Contract and assembled by the **Contractor**; and will issue a final certificate for payment upon the **Contractor's** compliance with all of the requirements of the Contract Documents.

4.10. Interpretations, Clarifications, and Decisions.

4.10.1. The **Design Professional** will interpret and decide matters concerning performance under and requirements of the Contract Documents on written request of either the **City** or the **Contractor**. The **Design Professional's** response to such requests will be made with reasonable promptness and within the time set forth in the Agreement between the **City** and the **Design Professional**. Any such written interpretations, clarifications, and decisions shall be binding on the **Contractor**.

4.10.2. Interpretations, clarifications, and decisions of the **Design Professional** will be consistent with the intent of and reasonably inferable from the Contract Documents and will be in writing or in the form of drawings. The **Design Professional** will not be liable to the **Contractor**, any Subcontractor, or Supplier for results of interpretations, clarifications, or decisions so rendered in good faith.

4.10.3. The **Design Professional** may, as the **Design Professional** judges desirable, issue additional drawings or instructions indicating in greater detail the construction or design of the various parts of the Work; such drawings or instructions may be effected by a Field Order or other notice to the **Contractor**, and provided such drawings or instructions are reasonably consistent with the previously existing Contract Documents, the Work shall be executed in accordance with such additional drawings or instructions without any additional cost or an extension of the Contract Time.

4.10.4. The **Design Professional's** decisions on matters relating to aesthetic effect must be consistent with the **City's** and will be final.

4.11. Limitation on the Design Professional's Responsibilities.

4.11.1. Neither the **Design Professional's** authority to act under the provisions of the Contract Documents nor any decision made by the **Design Professional** in good faith to exercise or not to exercise such authority shall give rise to any duty or responsibility of the **Design Professional** to the **Contractor**, any Subcontractor, any Supplier, any surety for any of them or any other person.

4.11.2. The **Design Professional** will not have control over or charge of and will not be responsible for construction means, methods, techniques, sequences, or procedures, or for safety precautions and programs in connection with the Work, since these are solely the **Contractor's** responsibility as provided in Article 5. The **Design Professional** will not be responsible for the **Contractor's** failure to carry out the Work in accordance with the Contract Documents. The **Design Professional** will not have control over or charge of and will not be responsible for acts or omissions of the **Contractor**, Subcontractors, Suppliers, or of any other persons performing portions of the Work.

ARTICLE 5: THE CONTRACTOR

5.1. Relationship with the City.

5.1.1. The **Contractor** is an independent contractor and not an employee of the **City.** The **Contractor** is engaged by virtue of the Contract to perform only those services contained therein. The **Contractor** is not authorized to contract on behalf of the **City** or to incur any liability on the part of the **City**.

5.2. Code of Conduct.

5.2.1. M.G.L. c. 268A establishes standards of conduct for officials and employees of the **City**. The **Contractor** shall familiarize itself with the statute and act accordingly.

5.3. Quality Assurance.

5.3.1. The **Contractor** shall be responsible for ensuring that it, all Subcontractors, Suppliers, and all persons employed to do the Work under the Contract Documents perform in a professional manner, provide a high quality of service and Work, and perform in accordance with the Contract Documents.

5.4. Supervision.

5.4.1. Competence and Efficiency. The **Contractor** shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills, attention and expertise as may be necessary to perform the Work in accordance with the Contract Documents.

5.4.2. Construction Means, Methods, Techniques, Etc. The **Contractor** shall be solely responsible for and have control over construction means, methods, techniques, sequences, and procedures and for coordinating all portions of the Work under the Contract. Where the Contract Documents refer to particular construction means, methods, techniques, sequences, or procedures or indicate or imply that such are to be used in the Work, such mention is intended only to indicate that the operations of the **Contractor** shall be such as to produce at least the quality of Work implied by the operations described. The actual determination of whether or not the described operations may be safely and suitably employed on the Work shall be the responsibility of the **Contractor**, who shall notify the **Design Professional** in writing, prior to implementation, of the actual means, methods, techniques, sequences, or procedures which will be employed on the Work, if these differ from those mentioned in the Contract Documents. All loss, damage, liability or cost of correcting defective work arising from the employment of any construction means, methods, techniques, sequences, or procedures shall be borne by the **Contractor**, notwithstanding that such construction means, methods, techniques, sequences, or procedures are referred to, indicated or implied by the Contract Documents, unless the **Contractor** has given timely notice to the **City** and the **Design Professional** in writing that such means, methods, techniques, sequences, or procedures are not safe or suitable, and the **City** has then instructed the **Contractor** in writing to proceed at the **City's** risk.

5.4.3. Variance between the Contract Documents and Statutes, Ordinances, Codes, Rules, and Regulations. The **Contractor** shall promptly notify the **Design Professional** and the **City** in writing of any variances between the Contract Documents and statutes, ordinances, codes, rules, and regulations. If the **Contractor,** without written notice to the **Design Professional** and the **City,** performs Work knowing that it is contrary to statutes, ordinances, codes, rules, and regulations, the **Contractor** shall assume full responsibility for such Work and shall bear the costs associated therewith, i.e., replacement, repairs, removal, and fines.

5.4.4. Acts and Omissions. The **Contractor** shall be responsible to the **City** for the acts and omissions of all persons performing or supplying the Work.

5.4.5. Inspections. The **Contractor** shall be responsible for inspection of portions of Work already performed under this Contract to determine whether such portions are in proper

condition to receive subsequent Work.

5.5. Personnel.

5.5.1. Suitability. The **Contractor** shall provide competent, properly licensed and/or certified, suitably qualified, and reliable personnel to perform the Work required by the Contract Documents. The **Contractor** shall enforce strict discipline and maintain good order at the site at all times. The **Contractor** shall not employ any Subcontractor, Supplier, or other person, whether initially or as a substitute, against whom the **City** may have reasonable objection. Acceptance of any Subcontractor or other person by the **City** shall not constitute a waiver of any right of the **City** to reject defective Work.

5.5.2. Sexual Harassment. Sexual harassment is an unlawful practice under M.G.L. c. 151B. The **Contractor**, Subcontractors, and all other persons responsible for any portion of the Work shall refrain from engaging in sexual harassment. The **Contractor** shall be responsible for any acts of sexual harassment committed by any persons responsible for any portion of the Work. The **Contractor** shall take appropriate action against any such individuals.

5.5.3. Weapons and Illegal Drugs. No weapons or illegal drugs are permitted on the Site. It is the responsibility of the **Contractor** to ensure that no weapons or illegal drugs are brought to the Site.

5.5.4. Maximum Work Day and Work Week. (*Reference:* M.G.L. c. 149, §§30 and 34;). No laborer, worker, mechanic, foreperson or inspector working within this Commonwealth in the employ of the **Contractor**, Subcontractor or other person doing or contracting to do the whole or part of the work contemplated by the Contract, shall be required or permitted to work more than eight (8) hours in any one day or more than forty-eight (48) hours in any one week, or more than six (6) days in any one week, except in cases of emergency.

5.5.5. Lodging. (*Reference:* M.G.L. c. 149, §25;). Every employee under this Contract shall lodge, board and trade where and with whom he or she elects, and neither the **Contractor** nor its agents or employees shall, either directly or indirectly, require as a condition of the employment of any person that the employee shall lodge, board or trade at a particular place or with a particular person.

5.5.6. Wage Rates. (*Reference:* M.G.L. c. 149, §27). Mechanics and apprentices, teamsters, chauffeurs and laborers performing Work shall be paid no less than the minimum rate of wages included in the bid documents and the Project Manual and which are made part of the Contract. They shall continue to be the minimum rate of wages for said employees during the life of the Contract. The **Contractor** shall keep a legible copy of the wage rates posted in a conspicuous place at the site during the life of the Contract. These rates of wages shall include payments by employers to health and welfare plans, pension plans and supplementary unemployment benefit plans as provided in M.G.L. c. 149, §26;, and such payments shall be considered as payments to persons under M.G.L. c. 149, §27 performing work as therein provided. If the **Contractor** does not make payments to a health and welfare plan, a pension

plan and a supplementary unemployment benefit plan, where such payments are included in the rates of wages, the **Contractor** shall pay the amount of said payments directly to each employee engaged in the Work. If the **Contractor** pays less than the rate of wages, including payments to health and welfare funds and pension funds, or the equivalent payments in wages to any person performing Work within the classifications as determined by the Commissioner of Labor and Industries, and if the **Contractor** takes or receives for its own use or the use of any other person, as a rebate, refund or gratuity, or in any other guise, any part or portion of the wages, including payments to health and welfare funds and pension funds, or the equivalent payment in wages, paid to such person for Work done or service rendered on the Project, the **Contractor** will be subject to the penalties set forth in M.G.L. c. 149, §27. Notwithstanding the foregoing and the requirements of 5.5.7.1 and 5.5.7.2 below, if the Contract is federally funded, federal labor standards apply, including Davis Bacon minimum wage rates and payroll reporting requirements. See the "Federal Requirements" section at the end of these contract documents.

5.5.7. Payroll Records of Employees. (*Reference:* M.G.L. c. 149, §27B;). The **Contractor** and all Subcontractors who are subject to M.G.L. c. 149, §§27 and 27A shall keep a true and accurate record of all mechanics and apprentices, teamsters, chauffeurs, and laborers performing Work showing the name, address and occupational classification of each such employee, the hours worked by and the wages paid to all such employees. The **Contractor** and the Subcontractors shall submit a copy of said record to the **City** on a weekly basis.

5.5.7.1. (*Reference:* M.G.L. c. 149, §27B;). The **Contractor** and all Subcontractors who are subject to M.G.L. c. 149, §§27 and 27A shall preserve their payroll records for a period of three (3) years from the date of completion of the Contract.

5.5.7.2. (*Reference:* M.G.L. c. 149, §27B). The **Contractor** and all Subcontractors who are subject to M.G.L. c. 149, §§27 and 27A shall furnish to the Commissioner of Labor and Industries and the **City** within fifteen (15) days after completion of their portion of the Work a statement executed by the **Contractor** or Subcontractor or by any authorized officer or employee of the **Contractor** or Subcontractor who supervises the payment of wages in the form found in M.G.L. c.149, §27B.

5.6. Superintendence.

5.6.1. Employment of a Superintendent. The **Contractor** shall employ a competent, properly licensed superintendent, reasonably acceptable to the **City**, and necessary assistants who shall be in attendance at the Site full time during the progress of the Work until the date of Substantial Completion and for such additional time thereafter as the **Design Professional** or the **City** may determine to be necessary for the expeditious completion of the Work, including final completion. If continually in the employ of the Contractor, the same Superintendent shall be assigned to this project.

5.6.2. Removal/Replacement of a Superintendent. The **Contractor** shall remove the superintendent if requested to do so in writing by the **City** and shall promptly replace such

superintendent with a competent person reasonably acceptable to the **City**. The superintendent shall represent the **Contractor**, and communications given to the superintendent shall be as binding as if given to the **Contractor**. The **Contractor** shall not replace the superintendent without written notice to the **City** and the **Design Professional**.

5.6.3. Registered Professional Engineer or Registered Land Surveyor. The **Contractor** shall retain a competent Registered Professional Engineer or Registered Land Surveyor, acceptable to the **Engineer**, who shall establish the exterior lines and required elevations of all buildings and structures to be erected on the site and shall establish sufficient lines and grades for the construction of associated Work such as, but not limited to, roads, utilities, and site grading. The Engineer or Land Surveyor shall certify as to the actual location of the constructed facilities in relation to property lines, building lines, easements, and other restrictive boundaries.

5.6.4. Building Grades, Lines, Etc.; The **Contractor** shall establish the building grades; lines; levels; and column, wall and partition lines required by the various Subcontractors in laying out their Work.

5.6.5. Coordination and Supervision. The **Contractor** shall coordinate and supervise the Work performed by Subcontractors to the end that the Work is carried out without conflict between trades and so that no trade, at any time, causes delay to the general progress of the Work. The **Contractor** and all Subcontractors shall at all times afford each trade, any separate contractor, or the **City**, every reasonable opportunity for the installation of Work and the storage of materials.

5.6.6. Job Meetings. There shall be job meetings held on a weekly basis, or more often if required by the **City**. The **Contractor** shall arrange for and attend weekly job meetings with the **Design Professional** and such other persons as the **Design Professional** may from time to time wish to have present. The **Contractor** shall be represented by a principal, project manager, general superintendent or other authorized main office representative, as well as by the **Contractor's** own superintendent. An authorized representative of any Subcontractor or Sub-subcontractor shall attend such meetings if the representative's presence is requested by the **Design Professional**. Such representatives shall be empowered to make binding commitments on all matters to be discussed at such meetings, including costs, payments, Change Orders, time schedules and workforce power. Any notices required under the Contract may be served on such representatives.

5.7. Materials, Labor, Equipment, Etc.

5.7.1. Provision of. Unless otherwise provided in the Contract Documents, the **Contractor** shall furnish and assume full responsibility for all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the furnishing, performance, testing, start-up, and completion of the Work.

5.7.2. Quality and Use of. All materials and equipment shall be of good quality and new, except as otherwise provided in the Contract Documents. If required by the **Design Professional**, the **Contractor** shall furnish satisfactory evidence (including reports of required tests) as to the kind and quality of materials and equipment. All materials and equipment shall be applied, installed, connected, erected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise provided in the Contract Documents.

5.7.3. Discrepancies or Defects. If the **Contractor** is unable to perform its Work because of discrepancies or defects in the work of the **City's** own forces or of a separate contractor, the **Contractor** shall immediately notify the **Design Professional** and the **City** in writing of the conditions that render unable to so perform. Failure to notify the **Design Professional** constitutes an acknowledgment and acceptance of the other work as being fit and proper for integration with the **Contractor's** Work except for latent or non-apparent defects and deficiencies in the other work.

5.8. Contractor's Management and Financial Statement Requirements. (*Reference:* M.G.L. c. 30, §39R)

5.8.1. The words defined herein shall have the meaning stated below whenever they appear in this Paragraph:

5.8.1.1. "Contractor" means any person, corporation, partnership, joint venture, sole proprietorship, or other entity awarded a contract pursuant to M.G.L. c.149, §44A-H or M.G.L. c. 30, §39M, inclusive.

5.8.1.2. "Contract" means any contract awarded or executed pursuant to M.G.L. c. 149, §44A-H or M.G.L. c. 30, §39M, which is for an amount or estimate amount that exceed the dollar amount set forth in M.G.L. c. 30, §39R.

5.8.1.3. "Records" means books of original entry, accounts, checks, bank statements and all other banking documents, correspondence, memoranda, invoices, computer printouts, tapes, discs, papers and other documents or transcribed information of any type, whether expressed in ordinary or machine language.

5.8.1.4. "Independent Certified Public Accountant" means a person duly registered in good standing and entitled to practice as a certified public accountant under the laws of the place of his/her residence or principal office and who is in fact independent. In determining whether an accountant is independent with respect to a particular person, appropriate consideration should be given to all relationships between the accountant and that person or any affiliate thereof. Determination of an accountant's independence shall not be confined to the relationships existing in connection with the filing of reports with the **City**.

5.8.1.5. "Audit," when used in regard to financial statement, means an examination of records by an independent certified public accountant in accordance with

generally accepted accounting principles and auditing standards for the purpose of expressing a certified opinion thereon, or, in the alternative, a qualified opinion or a declination to express an opinion for stated reasons.

5.8.1.6. "Accountant's Report," when used in regard to financial statements, means a document in which an independent certified accountant indicates the scope of the audit which s/he has made and sets forth his/her opinion regarding the financial statements taken as a whole with listing of noted exceptions and qualifications, or an assertion to the effect that an overall opinion cannot be expressed. When an overall opinion cannot be expressed the reason therefore shall be stated. An accountant's report shall include as part thereof a signed statement by the responsible corporate officer attesting that management has fully disclosed all material facts to the independent certified public accountant, and that the audited financial statement is a true and complete statement of the financial condition of the contractor.

5.8.1.7. "Management," when used herein, means the chief executive officers, partners, principals or other person or persons primarily responsible for the financial and operational policies and practices of the Contractor.

5.8.1.8. Accounting terms, unless otherwise defined herein shall have a meaning in accordance with generally accepted accounting principles and auditing standards.

5.8.2. The Contractor shall make, and keep for at least six (6) years after final payment, books, Records, and accounts that in reasonable detail accurately and fairly reflect the transactions and dispositions of the Contractor.

5.8.3. Until the expiration of six (6) years after final payment, the Office of the Inspector General, and the Deputy Commissioner of the Division of Capital Asset Management shall have the right to examine any books, documents, papers or Records of the Contractor or of its Subcontractors that directly pertain to, and involve transactions relating to, the Contractor or its Subcontractors.

5.8.4. The Contractor shall describe any change in the method of maintaining Records or recording transactions which materially affect any statements filed with the **City**, including in its description the date of the change and reasons therefore, and shall accompany said description with a letter from the Contractor's Independent Certified Public Accountant approving or otherwise commenting on the changes.

5.8.5. The Contractor shall file a Statement of Management on internal accounting controls as set forth below prior to the execution of the Contract.

5.8.6. The Contractor shall file prior to the execution of the contract and shall continue to file annually, an Audited Financial Statement for the most recent completed fiscal year as set forth below.

5.8.7. The Contractor shall file with the **City** a Statement of Management as to whether the system of internal accounting controls of the Contractor and its subsidiaries reasonably assures that:

5.8.7.1. transactions are executed in accordance with Management's general and specific authorization;

5.8.7.2. transactions are recorded as necessary to permit preparation of financial statements in conformity with generally accepted accounting principles, and to maintain accountability for assets;

5.8.7.3. access to assets is permitted only in accordance with Management's general or specific authorization; and

5.8.7.4. the recorded accountability for assets is compared with the existing assets at reasonable intervals and appropriate action is taken with respect to any difference.

5.8.7.5. The Contractor shall also file with the **City** a statement prepared and signed by an Independent Certified Public Accountant stating that s/he has examined the Statement of Management on internal accounting controls, and expressing an opinion as to:

5.8.7.5.1. whether the representation of Management in response to this paragraph and paragraphs 5.8.2. through 5.8.6 above are consistent with the result of Management's evaluation of the system of internal accounting controls; and

5.8.7.5.2. whether such representations of Management are, in addition, reasonable with respect to transactions and assets in amounts which would be material when measured in relation to the applicant's financial statements.

5.8.8. The Contractor shall annually file with the Commissioner of the Division of Capital Asset Management during the term of the contract a financial statement prepared by an Independent Certified Public Accountant on the basis of an Audit by such accountant. The final statement filed shall include the date of final payment. All statements shall be accompanied by an accountant's report. Such statements shall be made available to the **City** upon request.

5.9. Taxes.

5.9.1 The **Contractor** shall pay all sales, consumer, use, and other similar taxes for the Work or portions thereof which are provided by the **Contractor** which are legally enacted when bids are received, whether or not yet effective or merely scheduled to go into effect. However,

the **Contractor** shall not pay, and the **City** shall not reimburse or pay the **Contractor** for, any sales taxes for building supplies or materials for which an exemption is provided in M.G.L. c. 64H, §6(f). The **City's** tax exemption number to be used by the **Contractor** in this regard is E04-600-1414.

5.10. Permits, Licenses, and Fees.

5.10.1 Unless otherwise provided, the **Contractor** shall obtain and pay the fees for all permits, licenses, and inspections that are necessary for the proper execution and completion of the Work and which are customarily secured after execution of the Contract and which are legally required. All fees for permits, licenses, and inspections required by any **City** department shall be waived.

5.11. Notices Required By Statutes, Ordinances, Codes, Rules, Regulations, and Orders of the City.

5.11.1 The **Contractor** shall give notices required by statutes, ordinances, codes, rules, regulations, and orders of the **City** bearing on performance of the Work.

5.12. Additional Information from Design Professional.

5.12.1. The **Contractor** shall perform the Work in accordance with the Contract Documents and submittals approved pursuant to Article 4.

5.12.2. The **Contractor** shall give the **Design Professional** timely notice of any additional Plans, Specifications, or instructions required to define the Work in greater detail, or to permit the proper progress of the Work.

5.12.3. The **Contractor** shall not proceed with any Work not clearly and consistently defined in detail in the Contract Documents, but shall request additional drawings or instructions from the **Design Professional** as provided in the previous Paragraph. If the **Contractor** proceeds with such Work without obtaining further drawings, Specifications, or instructions, the **Contractor** shall correct Work incorrectly done at the **Contractor's** own expense.

5.13. "Or equal."

5.13.1. Requirements for Substitutions. (*Reference:* M.G.L. c. 30, §39M(b).) Where products or materials are prescribed by manufacturer name, trade name, or catalog reference, the words "or approved equal" shall be understood to follow. An item shall be considered equal to the item so named or described if, in the opinion of the **Design Professional**:

5.13.1.1. it is at least equal in quality, durability, appearance, strength, and design;

5.13.1.2. it performs at least equally the function imposed by the general

design for the Work;

5.13.1.3. it conforms substantially, even with deviations, to the detailed requirements for the items as indicated by the Specifications.

5.13.2. Net Savings. No proposed substitution will be permitted unless the **Contractor** certifies that the proposed substitution will yield a net savings to the **City** and will not extend the Contract Time.

5.13.3. Contractor's Expense. Any structural or mechanical changes made necessary to accommodate substituted equipment under this paragraph (including but not limited to engineering fees) shall be at the expense of the **Contractor** or **Subcontractor** responsible for the Work item.

5.13.3.1. Any additional cost, or any loss or damage arising from the substitution of any material or any method for those originally specified shall be borne by the **Contractor**, notwithstanding approval or acceptance of such substitution by the **City** or the **Design Professional**, unless such substitution was made at the written request or direction of the **City** or the **Design Professional**.

5.13.3.2. All data to be provided by the **Contractor** in support of any proposed "or equal" or substitute item will be at the **Contractor's** expense.

5.13.4. Meeting Requirements. The **Contractor** shall be responsible for determining that all materials furnished for the Work meet all requirements of the Contract Documents. The **Design Professional** may require the **Contractor** to produce reasonable evidence that a material meets such requirements, such as certified reports of past tests by qualified testing laboratories, reports of studies by qualified experts, or other evidence which, in the opinion of the **Design Professional,** would lead to a reasonable certainty that any material used, or proposed to be used, in the Work meets the requirements of the Contract Documents. All such data shall be furnished at the **Contractor's** expense. This provision shall not require the **Contractor** to pay for periodic testing of different batches of the same material, unless such testing is specifically required by the Contract Documents to be performed at the **Contractor's** expense.

5.13.5. Named Manufacturer's Product. In all cases in which a manufacturer's name, trade name, or other proprietary designation is used in connection with materials or articles to be furnished under this Contract, whether or not the phrase "or equal" is used after such name, the **Contractor** shall furnish the product of the name manufacturer(s) without substitution, unless a written request for a substitute has been submitted by the **Contractor** and approved in writing by the **Design Professional** as provided in the following paragraph.

5.13.6. Deviations. If the **Contractor** proposes to use a material which while suitable for the intended use, deviates in any way from the detailed requirements of the Contract Documents, the **Contractor** shall inform the **Design Professional** in writing of the nature of such deviations at the time the material is submitted for approval and shall request written approval of the

deviation from the requirements of the Contract Documents.

5.13.7. Rejection of Deviations. In requesting approval of deviations or substitutions, the **Contractor** shall provide, upon request, evidence leading to a reasonable certainty that the proposed substitution or deviation will provide a quality of result at least equal to that otherwise attainable. If, in the opinion of the **Design Professional**, the evidence presented by the **Contractor** does not provide a sufficient basis for such reasonable certainty, the **Design Professional** may reject such substitution or deviation without further investigation.

5.13.8. Consistent Character and Quality of Design. The Contract Documents are intended to produce a building of consistent character and quality of design. All components of the building including visible items of mechanical and electrical equipment have been selected to have a coordinated design in relation to the overall appearance of the Project. The **Design Professional** shall judge the design and appearance of proposed substitutes on the basis of their suitability in relation to the overall design of the Project, as well as for their intrinsic merits. The **Design Professional** will not approve as equal to materials specified proposed substitutes that, in the **Design Professional's** opinion, would be out of character, obtrusive, or otherwise inconsistent with the character or quality of design of the Project. In order to permit coordinated design of color and finishes the **Contractor** shall, if required by the **Design Professional**, furnish the substituted material in any color, finish, texture, or pattern which would have been available from the manufacturer originally specified, at no additional cost to the **City**.

5.13.9. Warranty. The warranties provided herein shall be in addition to and not in limitation of any other warranty required by the Contract Documents or otherwise prescribed by law.

5.13.10. Design Professional's Approval. The **Design Professional** will be the sole judge of acceptability. No "or equal" or substitute will be ordered, installed, or utilized without the **Design Professional's** prior written acceptance which will be evidenced by either a Change Order or an approved Shop Drawing. The **City** may require the **Contractor** to furnish at the **Contractor's** expense a special performance guarantee or other surety with respect to any "or equal" or substitute. The **Design Professional** will record the time required by the **Design Professional** and its consultants in evaluating substitutes proposed or submitted by the **Contractor** and in making changes in the Contract Documents (or in the provisions of any other direct contract with the **City** for work on the Project) occasioned thereby. Whether or not the **Design Professional** accepts a substitute item so proposed or submitted by the **Contractor**, the **Contractor** shall reimburse the **City** for the charges of the **Design Professional** and its consultants for evaluating each such proposed substitute item.

5.14. Substitute Construction Methods or Procedures.

5.14.1 If a specific means, method, technique, sequence, or procedure of construction is shown or indicated in and expressly required by the Contract Documents, the **Contractor** may furnish or utilize a substitute means, method, technique, sequence or procedure of construction acceptable to the **Design Professional**. The **Contractor** shall submit sufficient information to allow the **Design Professional**, in the **Design Professional's** sole discretion, to determine

whether the substitute proposed is equivalent to that expressly called for by the Contract Documents.

5.15. Contractor's Progress Schedule.

5.15.1. Before Starting Construction. Within ten (10) days after the date of the Notice to Proceed, the **Contractor** shall submit to the **Design Professional** for review:

5.15.1.1. a preliminary progress schedule indicating the times (number of days or dates) for starting and completing the various stages of the Work;

5.15.1.2. a preliminary schedule of Shop Drawing and Sample submittals which will list each required submittal and the times for submitting, reviewing, and processing such submittal; and

5.15.1.3. a refined schedule of values for all of the Work which will include quantities and prices of items aggregating the Contract Sum and will subdivide the Work into component parts in sufficient detail to serve as the basis for progress payments during construction. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

5.15.2. Review of Progress Schedule. At least ten (10) days prior to the commencement of construction, the **Design Professional**, the **Contractor,** and any other appropriate persons will meet to review and discuss the acceptability to the **Design Professional** of the progress schedule. The **Contractor** will have an additional ten (10) days to make corrections and adjustments and to complete and resubmit the schedule. No progress payment shall be made to the **Contractor** until the schedule is submitted to and found acceptable by the **Design Professional** as provided below.

5.15.3. Acceptability of Progress Schedule. The progress schedule will be acceptable to the **Design Professional** if, according to the **Design Professional**, it provides an orderly progression of the Work to completion within any specified time frame, but such acceptance will neither impose on the **Design Professional** responsibility for the sequencing, scheduling, or progress of the Work nor interfere with or relieve the **Contractor** from the **Contractor's** full responsibility therefore. The **Contractor's** schedule of Submittals must be acceptable to the **Design Professional** in providing a workable arrangement for reviewing and processing the required Submittals. The **Contractor's** schedule of values must be acceptable to the **Design Professional** as to form and substance.

5.15.4. Sepia and Copies. After the **Design Professional** has approved the schedule, the **Contractor** shall submit to the **Design Professional** one (1) sepia and four (4) copies bearing the **Contractor's** stamp of approval as a representation to the **City** that the **Contractor** has determined or verified all data on that progress schedule and that the **Contractor**, the Subcontractors and Suppliers have reviewed and coordinated the sequences in that progress schedule with the requirements of the Work.

5.15.5. Adjustment of Schedule. The **Contractor** shall adhere to the established progress schedule which may be adjusted from time to time as follows: the **Contractor** shall submit to the **Design Professional** for acceptance proposed adjustments in the progress schedule that will not change the Contract Time. Such adjustments will conform generally to the progress schedule then in effect and will comply with any provisions of the requirements applicable thereto.

5.15.6. During Construction. The **Contractor** shall submit monthly progress schedules to the **Design Professional**. The schedules shall stay current with the **Contractor's** approach to the Work remaining.

5.15.7. Schedule of Submittals . The **Contractor** shall prepare and keep current, for the **Design Professional's** approval, a schedule of Submittals that is coordinated with the **Contractor's** construction schedule and allows the **Design Professional** reasonable time to review Submittals.

5.16. Project Coordination.

5.16.1. In General. The **Contractor** shall be responsible for the proper coordination of the Work of all of the trades.

5.16.2. Coordination with Subcontractors. The **Contractor** shall coordinate the work of each Subcontractor with the Work of every other Subcontractor whose Work affects the other.

5.16.3. Coordination with the City's Own Forces or Separate Contractors. The **Contractor** shall coordinate its operations with those of the **City's** own forces or separate contractors. The **Contractor** shall provide the **City's** own forces and separate contractors a reasonable opportunity for the handling, unloading and storage of their materials and equipment and execution of their work. The **Contractor** shall connect and coordinate its Work with theirs.

5.16.4. Coordination with Utility Companies. The **Contractor** shall coordinate its operations with all the appropriate utility companies to assure that the utilities required on the Project are available and functioning properly pursuant to the requirements of the Contract Documents.

5.17. Project Photographs.

5.17.1. In General. The **Contractor** shall take, at its own expense, interior and exterior photographs at the site, from different vantages as directed by the **Design Professional** or the **City**, before beginning any Work and thereafter, at a minimum, on the first work day of each month until final completion of the Work, including final Site photos. Photos shall be taken of any Work that will be buried or concealed while the Work is still exposed. The photographs shall be taken by a skilled commercial photographer. The number of photographs required shall be at the discretion of the **City** or the **Design Professional**. One aerial photo shall be required a)

prior to commencement of the work and b) at the completion of the work. See Section 01320 – Construction Progress Documentation.

5.17.2. Prints and Digital Media. Within fourteen (14) days after the photographs have been taken, the **Contractor** shall cause prints to be made and delivered to the **City** and the **Design Professional**. All photographs shall be 8" x 10". Each print shall state the date of the photograph, the name of the Project, the description of the view and the name and address of the photographer. The **City** shall receive one glossy print of each photo as well as all prints in digital form on compact disc. The **Design Professional** shall receive one glossy print.

5.17.3. Failure to Comply. Should the **Contractor** fail to adhere to any requirement set forth in the previous two paragraphs, the **City** may have the photographs taken at the **Contractor's** expense or receive a set-off against the **Contractor's** next application for payment.

5.18. Record Documents and Samples at the Site.

5.18.1 The **Contractor** shall maintain in a safe place at the site one record copy of all Plans, Specifications, Modifications, Change Orders, **Construction Change** Directives, Field Orders and written interpretations and clarifications in good order and annotated to show all changes made during construction. These record documents together with all approved Samples and a counterpart of all approved Shop Drawings will be available to the **Design Professional** for reference. Upon completion of the Work, these record documents, Samples and Shop Drawings will be delivered by the **Contractor** to the **Design Professional** for the **City**.

5.19. Submittals.

5.19.1. Purpose. The purpose of Submittals is to demonstrate for those portions of the Work for which Submittals are required the way the **Contractor** proposes to conform to the information given and the design concept expressed in the Contract Documents.

5.19.2. Submittal Procedure. Within ten (10) days from the Notice to Proceed, the **Contractor** shall submit to the **Design Professional** a completed Submittals schedule. The **Contractor** shall review, approve, and submit to the **Design Professional** Submittals required by the Contract Documents with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the **City** or of separate contractors. Submittals made by the **Contractor** that are not required by the Contract Documents may be returned without action. The schedules shall be updated and resubmitted each month. All Submittals will be identified as the **Design Professional** may require and in the number specified in the General Requirements. The data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show the **Design Professional** the materials and equipment that the **Contractor** proposes to provide and to enable the **Design Professional** to review the information for the limited purposes stated below.

5.19.3. Samples. The **Contractor** shall also submit Samples to the **Design Professional** for review and approval in accordance with said accepted schedule of Submittals. Each Sample

will be identified clearly as to material, Supplier, pertinent data such as catalog numbers and the use for which it is intended and otherwise as the **Design Professional** may require to enable the **Design Professional** to review the Submittal for the limited purposed stated below. The numbers of each Sample to be submitted will be as specified in the Specifications. Unless otherwise specified in the Specifications, three (3) specimens of each Sample shall be submitted.

5.19.3.1. The Samples shall be of sufficient size to permit proper evaluation of material. Where variations in color or other characteristics are to be expected, samples showing the minimum range of variation shall be submitted. Materials exceeding the range of variation of the approved Samples will not be approved on the Work.

5.19.3.2. All costs associated with delivery of Samples will be paid by the **Contractor**.

5.19.4. Contractor's Verifications. Before submitting each Submittal, the **Contractor** shall have determined and verified:

5.19.4.1. all field measurements, quantities, dimensions specified performance criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;

5.19.4.2. all materials with respect to intended use, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and

5.19.4.3. all information relative to the **Contractor's** sole responsibilities in respect of means, methods, techniques, sequences, and procedures of construction and safety precautions and programs incident thereto.

5.19.5. Contractor's Representations. By approving and providing Submittals, the **Contractor** thereby represents that the **Contractor** has determined and verified all dimensions, quantities, field dimensions, relations to existing Work, coordination with Work to be installed later, coordination with information on previously accepted Submittals and verification of compliance with all the requirements of the Contract Documents. The accuracy of all such information is the responsibility of the **Contractor**. In reviewing Submittals, the **Design Professional** shall be entitled to rely upon the **Contractor's** representation that such information is correct and accurate.

5.19.6. Coordination. The **Contractor** shall also have reviewed and coordinated each Submittal with other Submittals and with the requirements of the Work and the Contract Documents.

5.19.7. Stamp or Specific Written Indication. Each Submittal will bear a stamp or specific written indication that the **Contractor** has satisfied the **Contractor's** obligations under the Contract Documents with respect to the **Contractor's** review and approval of that Submittal.

5.19.8. Written Notice of Variations. At the time of each Submittal, the **Contractor** shall give the **Design Professional** specific written notice of such variations, if any, that the Submittal may have from the requirements of the Contract Documents. Such notice is to be in a written communication separate from the Submittal. Moreover, the **Contractor** shall make a specific notation on each Submittal to the **Design Professional** for review and approval of each such variation.

5.19.9. Review and Approval by the Design Professional. The **Contractor** shall perform no portion of the Work requiring a Submittal until the respective Submittal has been approved by the **Design Professional**. Such Work shall be in accordance with approved Submittals.

5.19.9.1. The **Design Professional** will review and approve Submittals in accordance with the schedule of Submittals accepted by the **Design Professional** as required above. The **Design Professional's** review and approval will be only to determine if the items covered by the Submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated in the Contract Documents. The **Design Professional's** review and approval will not extend to means, method, technique, sequences, or procedures of construction (except where a particular means, method, technique, sequences or procedures of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

5.19.10. Deviations. The **Contractor** shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the **Design Professional's** approval of Submittals unless the **Contractor** has specifically informed the **Design Professional** in writing of such deviation at the time of Submittal and the **Design Professional** has given written approval to the specific deviation. The **Contractor** shall not be relieved of responsibility for errors or omissions in Submittals by the **Design Professional's** approval thereof.

5.19.11. Revisions. The **Contractor** shall make corrections required by the **Design Professional** and shall return the required number of corrected copies of Submittals and submit as required new Submittals for review and approval. The **Contractor** shall direct specific attention, in writing or on resubmitted Submittals, to revisions other than those requested by the **Design Professional** on previous Submittals. Unless such written notice has been given, the **Design Professional's** approval of a resubmitted Submittal shall not constitute approval of any changes not requested on the prior Submittal.

5.19.12. Related Work. Where a Submittal is required by the Contract Documents or the schedule of Submittals accepted by the **Design Professional**, any related Work performed prior to the **Design Professional's** review and approval of the pertinent Submittal will be at the sole expense and responsibility of the **Contractor**.

5.19.13. Informational Submittals. Informational Submittals upon which the **Design Professional** is not expected to take responsive action may be so identified in the Contract Documents.

5.19.14. Certification. When professional certification of performance criteria of materials, systems or equipment is required by the Contract Documents, the **City** shall be entitled to rely upon such certifications, and neither the **City** nor the **Design Professional** shall be expected to make any independent examination with respect thereto.

5.20. Continuing the Work.

5.20.1. The **Contractor** shall carry on the Work and adhere to the progress schedule during all disputes or disagreements with the **City**. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as otherwise provided herein or as the **City** and the **Contractor** may agree in writing.

5.21. Use of Site; **Access to Work.**

5.21.1. The right of possession of the premises and the improvements made thereon by the **Contractor** shall remain at all times in the **City**. The **Contractor's** right to entry and use thereof arises solely from the permission granted by the **City** under the Contract Documents. The **Contractor** shall confine the **Contractor's** apparatus, the storage of materials, and the operations of the **Contractor's** workers to limits indicated by law, ordinance, the Contract Documents and permits and/or directions of the **Design Professional** and shall not unreasonably encumber the premises with the **Contractor's** materials. The **City** shall not be liable to the **Contractor**, the Subcontractors, Suppliers, or anyone else with respect to the conditions of the premises, except for a condition caused directly and solely by the negligence of the **City**.

5.21.2. At all times, the **City** and the **Design Professional** shall have access to the Work.

5.22. Protection of Persons and Property.

5.22.1. In General. The **Contractor** shall be responsible for initiating, maintaining, and supervising all health and safety precautions and programs in connection with the performance of the Contract. The **Contractor** is responsible for the implementation of all Federal, State, and local health and safety requirements.

5.22.2. The **Contractor** shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury, or loss to:

5.22.2.1. employees on the site and other persons who may be affected thereby;

5.22.2.2. the Work, materials, and equipment to be incorporated therein, whether in storage on or off the site, under the care, custody or control of the

Contractor, Subcontractors, or Sub-subcontractors;

5.22.2.3. other property at the site or adjacent or in close proximity thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction; and

5.22.2.4. any other property of the **City**, whether or not forming part of the Work, located at the site or adjacent thereto in areas to which the **Contractor** has access.

5.22.3. Notices and Compliance. The **Contractor** shall give notices and comply in all other respects with applicable laws, ordinances, rules, regulations, codes, and lawful orders of public authorities bearing on the safety of persons or property or their protection from damage, injury, or loss. The **Contractor** shall notify owners of adjacent and nearby properties of underground facilities and utility owners when prosecution of the Work may affect them and shall cooperate with them in the protection, removal, relocation, and replacement of their property.

5.22.4. Erection and Maintenance of Safeguards. The **Contractor** shall erect and maintain, as required by existing conditions and the terms of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations, and notifying owners and users of adjacent and nearby sites and utilities.

5.22.5. Hazardous Materials and Equipment. When use or storage of explosives or other hazardous materials or equipment or unusual methods are necessary for execution of the Work, the **Contractor** shall exercise utmost care and carry on such activities under the supervision of properly qualified personnel.

5.22.6. Damage to Property. The **Contractor** shall promptly remedy damage and loss to property referred to above. If the damage or loss is due in whole or in part to the **Contractor's** failure to take the precautions required herein, the **Contractor** shall bear the cost, subject to any reimbursement to which the **Contractor** is entitled under property insurance required by the Contract Documents. The **Contractor** shall be fully and solely responsible for all Work and other operations carried out on adjacent properties. The insurance required under Article 8 shall cover such Work or operations, and the **Contractor** shall indemnify and defend the **City**, the **Design Professional**, and the owners of such adjacent or nearby properties from and against all claims, suits, losses, or costs arising out of such Work or operations.

5.22.7. Fire Protection Equipment and Services. The **Contractor** shall provide and maintain in good operating condition suitable and adequate fire protection equipment and services and shall comply with all reasonable recommendations regarding fire protection made by the representatives of the fire insurance company carrying insurance on the Work or by the local fire chief or fire marshal. The area within the site limits shall be kept orderly and clean and all combustible rubbish shall be promptly removed from the site.

5.22.8. Protection of Excavations, Trenches, etc. The **Contractor** shall at all times protect excavations, trenches, buildings and materials from rain water, ground water, backup or leakage of sewers, drains and other piping, and from water of any other origin and shall remove promptly any accumulation of water. The **Contractor** shall provide and operate all pumps, piping, and other equipment necessary to this end.

5.22.9. Snow and Ice Removal. The **Contractor** shall remove snow and ice that might result in damage or delay.

5.22.10. Safety Representative. The **Contractor** shall designate a qualified and experienced safety representative at the site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

5.22.11. Weather Protection. (*Reference:* M.G.L. c. 149, §44F(1).) The **Contractor** shall install weather protection and furnish adequate heat in the protected area from November 1 through March 31.

5.22.12. Security. The **Contractor** shall provide, within the Contract Sum, a sufficient number of security personnel at the Site at all times when the **Contractor's** personnel are not present, from commencement of the Work until Substantial Completion to assure that the Site, the facility, and the Work, and all materials and equipment stored at the Site are fully and completely protected against loss or damage due to vandalism, theft, or malicious mischief. If the **Contractor** elects, in addition, to use guard dogs for this purpose, each dog shall at all times be accompanied by an adult handler. If the **Contractor** fails to comply with the requirements of this paragraph, then the **City** may provide appropriate security and charge the cost thereof to the **Contractor**. The **City's** provision of such security, or failure to do so, shall not relieve the **Contractor** of its responsibility to pay for loss or damage due to vandalism, theft, or malicious mischief at the Site.

5.22.13. Hazard Communication Programs. The **Contractor** shall be responsible for coordinating any exchange of material safety data sheets or other hazard communications information required to be made available to or exchanged between or among employers at the site in accordance with laws, codes and regulations.

5.22.14. Noise Pollution Control. The **Contractor** shall comply with all applicable provisions of Somerville Municipal Code §9-109.

5.23. Cutting and Patching.

5.23.1. In General. Unless otherwise provided in the Contract Documents, the **Contractor** shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly, including the work of the City or of separate contractors.

5.23.2. Damage to Work of City or of Separate Contractor. The **Contractor** shall

not damage or endanger a portion of the Work or fully or partially completed construction of the **City** or separate contractors by cutting, patching, or otherwise altering such construction, or by excavation. The **Contractor** shall not cut or otherwise alter such construction by the **City** or a separate contractor except with prior written consent of the **City** and of such separate contractor; such consent shall not be unreasonably withheld. The **Contractor** shall not unreasonably withhold from the **City** or a separate contractor the **Contractor's** consent to cutting or otherwise altering the Work.

5.23.3. Damage Caused by Contractor. Should the **Contractor** cause damage to the work or property of any separate contractor at the Site, or should any claim arising out of the **Contractor's** performance of Work at the Site be made by any separate contractor against the **Contractor**, the **City**, the **Design Professional**, or any of the **Design Professional's** consultants, the **Contractor** shall promptly attempt to settle with such other contractor by agreement, or to otherwise resolve the dispute by arbitration or at law. The **Contractor** shall, to the fullest extent permitted by laws and regulations, indemnify and hold harmless the **City**, the **Design Professional**, and the **Design Professional's** consultants from and against all claims, damages, losses and expenses (including, but not limited to, fees of the Design Professional, the Design Professional's consultants, attorneys, and other professionals, and court and arbitration or mediation costs) arising directly, indirectly or consequentially out of any action, legal or equitable, brought by any separate contractor against the **City**, the **Design Professional**, or any of the **Design Professional's** consultants, to the extent based on a claim arising out of the **Contractor's** performance of the Work. Should a separate contractor cause damage to the Work or property of the **Contractor** or should the performance of work by any separate contractor at the site give rise to any other claim, the **Contractor** shall not institute any action, legal or equitable, against the **City**, the **Design Professional**, or any of the **Design Professional's** consultants, or permit any action against any of them to be maintained and continued in its name or for its benefit in any court or before any arbiter which seeks to impose liability on or to recover damages from the **City**, the **Design Professional**, or any of the **Design Professional's** consultants, on account of any such damage or claim. If the **Contractor** delays at any time in performing or furnishing Work by any act or neglect of a separate contractor and the City and the Contractor are unable to agree as to the extent of any adjustment in the Contract Time attributable thereto, the **Contractor** may make a claim for an extension of time in accordance with Article 16. An extension of the Contract Time shall be the **Contractor's** exclusive remedy with respect to the **City**, the **Design Professional**, and the **Design Professional's** consultants, for any delay, disruption, interference, or hindrance caused by any separate contractor.

5.24. Cleaning Up.

5.24.1. During the progress of the Work, the **Contractor** shall keep the premises and surrounding area free from accumulation of waste materials and rubbish caused by operations under the Contract or other debris. At the completion of the Work, the **Contractor** shall remove from and about the Project all waste materials, rubbish, and debris, and the **Contractor's** tools, construction equipment, machinery, and surplus materials. Surplus materials to be provided to the **City** by specifications shall be stored in a clean, safe and secure area as directed by the **City**. The **Contractor** shall leave the site clean and ready for occupancy by the **City** at Substantial

Completion of the Work. Immediately prior to the **Design Professional's** inspection for Substantial Completion, the **Contractor** shall completely clean the premises. Concrete and ceramic surfaces shall be cleaned and washed. Resilient coverings shall be cleaned, waxed and buffed. Woodwork shall be dusted and cleaned. Sash, fixtures and equipment shall be thoroughly cleaned. Stains, spots, dust, marks and smears shall be removed from all surfaces. Hardware and all metal surfaces shall be cleaned and polished. Glass and plastic surfaces shall be thoroughly cleaned by professional window cleaners. All damaged, broken or scratched glass or plastic shall be replaced by the **Contractor** at the **Contractor's** expense. The **Contractor** shall restore to original condition all property not designated for alteration by the Contract Documents.

5.24.2. If the **Contractor** fails to clean up as provided herein, the **City** may do so and charge the cost thereof to the **Contractor**.

5.25. Royalties and Patents.

5.25.1 The **Contractor** shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. To the fullest extent permitted by law, the **Contractor** shall indemnify and hold harmless the **City** and the **Design Professional** from and against all claims, costs, losses, and damages arising out of or resulting from any infringement of patent rights or copyrights incident to the use in the performance of the work or resulting from the incorporation in the work of any invention, design, process, product, or device not specified in the Contract Documents.

5.26. Contractor's Obligation to Perform.

5.26.1. The **Contractor's** obligation to perform and complete the Work in accordance with the Contract Documents is absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of the **Contractor's** obligation to perform the Work in accordance with the Contract Documents:

5.26.1.1. observations by the **Design Professional**;

5.26.1.2. recommendation of any progress or final payment by the **Design Professional**;

5.26.1.3. the issuance of a certificate of Substantial Completion or any payment by the **City** to the **Contractor** under the Contract Documents;

5.26.1.4. use or occupancy of the Work, Project, or Site, or any part thereof, by the **City**;

5.26.1.5. any acceptance by the **City** or any failure to do so;

5.26.1.6. any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptance by the **Design Professional**;

5.26.1.7. any inspection, test, or approval by others; or

5.26.1.8. any correction of defective Work by the **City**.

5.27. Indemnification; **and Covenant Not To Sue.**

5.27.1. To the fullest extent permitted by law, the **Contractor** shall assume the defense of, indemnify and hold harmless the **City**, the **Design Professional**, the **Design Professional's** consultants, and agents and employees of any of them, from and against claims, damages, losses, and expenses, including, but not limited, to attorneys' fee, arising out of or resulting from performance of the Work, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself) including loss of use resulting there from, caused in whole or in part by alleged negligent acts or omissions of the **Contractor**, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss, or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity which would otherwise exist as to a party or person described in this paragraph.

5.27.2. In claims against any person or entity indemnified under the foregoing paragraph by an employee of the **Contractor**, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation under the foregoing paragraph shall not be limited by a limitation on the amount or type of damages, compensation or benefits payable by or for the **Contractor** or a Subcontractor under Workers' Compensation laws, disability benefit acts or other employee benefit acts.

5.27.3. The obligations of the **Contractor** in this Article shall not extend to the liability of the **Design Professional**, the **Design Professional's** consultants, and agents or employees of any of them arising out of (1) the preparation of maps, Plans, opinions, reports, surveys, Change Orders, designs, or Specifications, or (2) directions or instructions given by the **Design Professional**, the **Design Professional's** consultants and agents or employees of any of them, provided such instructions or directions are the primary cause of the injury or damage.

5.27.4. The **Contractor**, or any successor, assign, or subrogee of the **Contractor** agrees not to bring any civil suit, action, or other proceeding in law, equity or arbitration against the **Design Professional**, or the officers, employees, agents, or consultants of the **Design Professional**, for the enforcement of any action which the **Contractor** may have arising out of or in any manner connected with the Work. The **Contractor** shall assure that this covenant not to sue is contained in all subcontracts and sub-subcontracts of every tier and shall assure its enforcement. The **Design Professional**, its officers, employees, agents, and consultants are intended third-party beneficiaries of this covenant not to sue, and are entitled to enforce this covenant in law or equity.

5.28. Survival of Obligations.

5.28.1 All representations, indemnifications, warranties, and guarantees made in, required by or given in accordance with the Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion and acceptance of the Work and termination or completion of the Contract.

ARTICLE 6: SUBCONTRACTORS

6.1 Use of Subcontractors.

6.1.1 The **Contractor** shall use the Subcontractors named in the **Contractor's** Bid.

6.2 Substitution of Subcontractors.

6.2.1 The **Contractor** shall not substitute another Subcontractor therefore without notice to the **City** and the **City's** prior written consent of such substitution.

6.3 Names of Subcontractors.

6.3.1 Upon execution of the Contract with the **City**, the **Contractor** shall provide in writing to the **City**, through the **Design Professional,** the names, addresses, telephone numbers, and fax numbers of all persons proposed for each principal portion of the Work.

6.4. Objections to Subcontractors.

6.4.1 The **Contractor** shall not use any Subcontractor against whom the **City** has a reasonable objection. The **Contractor** shall not be required to contract with any person or entity against whom it has a reasonable objection.

6.5. Form of the Subcontract.

6.5.1 All Work performed by a Subcontractor shall be through an appropriate subcontract. The form of subcontract shall be submitted to the **City's Law Department for its** approval, which shall not be unreasonably withheld or delayed.

6.6. Content of the Subcontract.

6.6.1. In addition to all statutorily mandated provisions and provisions required elsewhere in the Contract Documents, each subcontract shall expressly provide that:

6.6.1.1. Each subcontract agreement for a portion of the Work is assigned by the **Contractor** to the **City** provided that:

6.6.1.1.1. the assignment is effective only after termination of the

Contract by the **City** or the **Contractor** and only for those subcontract agreements which the **City** accepts by notifying the Subcontractor in writing; and

6.6.1.1.2. the assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

6.6.1.2. Each Subcontractor is bound by the requirements of the Contract Documents for the express benefit of the **City.**

6.6.1.3. Each Subcontractor shall assume toward the **Contractor** all the obligations that the **Contractor** assumes toward the **City** and the **Design Professional**, unless otherwise provided by law.

ARTICLE 7: PERFORMANCE AND PAYMENT BONDS

7.1. Form of Bonds.

7.1.1 The performance and labor and material or payment bonds shall be in the form required by the **City**, copies of which are included in the Project Manual. The **City** reserves the right to reject any bond that does not conform to the **City's** requirements.

7.2. Furnished by the Contractor. (*Reference:* M.G.L. c. 30, §39M(c);, M.G.L. c. 149, §29).

7.2.1 The **Contractor** shall furnish a performance bond and a labor and materials or payment bond, each with a surety company qualified to do business under the laws of the Commonwealth and satisfactory to the **City** and each in the sum of the Contract Sum, the premiums for which are to be paid by the **Contractor** and are included in the Contract Sum. The bonds shall remain in effect until final payment is made. The sum of the performance bond shall increase each time the Contract Sum is increased as a result of a Change Order.

7.3. Submission to the City.

7.3.1 The **Contractor** must submit the performance and a labor and materials or payment bonds to the **City** upon the **Contractor's** execution of the Agreement.

ARTICLE 8: INSURANCE REQUIREMENTS

8.1 Insurance Certificates.

8.1.1 Prior to starting work on this project, the contractor shall deposit with the **City**, certificates from insurers clearly stating that the required insurance policies have been issued to

the **Contractor** and will remain in effect during the time period required to complete this contract. ACCORD forms will not be accepted. The certificates must be in a form satisfactory to the **City**. The insurance shall include all major divisions of coverage, and shall be on a comprehensive general basis including: Premises and Operations (including X-C-U), Owners and Contractors Protective, Products and Completed Operations, Owned, Non-owned or Hired and/or Leased Motor Vehicles. Such insurance shall be written for not less than any limits of liability, required by law or the following limits, whichever are greater.

8.2 Minimum Coverages. The **Contractor** shall possess and maintain throughout the contract period/project, insurance in the kinds and amounts as provided in Appendix D.
The **Contractor** may purchase and maintain excess liability insurance in the in the umbrella form in order to satisfy the limits of liability required for the insurance to be purchased and maintained in accordance with the required requirements set forth above (in addition to the umbrella limits required). Evidence of such excess liability shall be delivered to the **City** in the form of a certificate and the certificate indicating the policy numbers and limits of liability of all underlying insurance.

8.3 Additional Insured. The **City** shall be named as an additional insured on each certificate, and the certificate must have the endorsement of the insurance agency.

8.4 Notice. Each certificate shall contain a notation that the insurer will give 30 days notice to the **City** prior to cancellation, change or non-renewal of policy.

8.5 Carrier Rating. Insurance carriers MUST have an A.M. Best rating of "A" or better.

8.6 Material Breach. Failure of the contractor to provide and continue in force such insurance shall be deemed a material breech of contract and shall operate as immediate termination thereof.

ARTICLE 9: TESTS AND INSPECTIONS

9.1. Access.

9.1.1 The **City**, the **Design Professional**, and all other persons designated by the **City** shall have access to the Work at reasonable times for observing, inspecting, and testing. The **Contractor** shall provide them with proper and safe conditions for such access and advise them of the **Contractor's** site safety procedures and programs so that they may comply therewith as applicable.

9.2. Tests and Inspections.

9.2.1. The **Contractor** shall give the **Design Professional** timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.

9.2.2. Unless otherwise provided, the **Contractor** shall make arrangements for such tests, inspections, and approvals with an independent testing laboratory or entity acceptable to the **City**, or with the appropriate public authority and shall bear all related costs of tests, inspections, and approvals. If the laws or regulations of any public body having jurisdiction require any Work or part thereof specifically to be inspected, tested, or approved by an employee or other representative of such public body, the **Contractor** shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith and furnish the **Design Professional** with the required certificates of inspection, testing, or approval.

9.2.3. The **Contractor** shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for the **Design Professional's** acceptance of materials or equipment to be incorporated into the Work, or of materials, mix designs, or equipment submitted for approval prior to the **Contractor's** purchase thereof for incorporation into the Work.

9.2.4. If any Work that is to be inspected, tested, or approved is covered by the **Contractor**, Subcontractor, or Sub-subcontractor without the prior written consent of the **Design Professional**, it must be uncovered for observation, inspection, testing, or approval, if requested by the **Design Professional**. The **Contractor** must recover the Work at its own expense.

9.2.5. The **Contractor** shall not be relieved of obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the **Design Professional** in the **Design Professional's** administration of the Contract or by tests, inspections, or approvals required or performed by persons other than the **Contractor**.

ARTICLE 10

UNCOVERING AND CORRECTING WORK

10.1. Uncovering Work.

10.1.1. If a portion of the Work is covered contrary to the **Design Professional's** request or to requirements specifically expressed in the Contract Documents, it must, if required in writing by the **Design Professional**, be uncovered for the **Design Professional's** observation and be replaced, both at the **Contractor's** expense and without change in the Contract Time.

10.1.2. If a portion of the Work has been covered which the **Design Professional** has not specifically requested to observe prior to its being covered, the **Design Professional** may request to see such Work, and it shall be uncovered by the **Contractor**. If it is found that such Work is in accordance with the Contract Documents, costs of uncovering and replacing shall, by appropriate Change Order, be charged to the **City**. If it is found that such Work is defective or

not in accordance with the Contract Documents, the **Contractor** shall pay all claims, costs, losses, and damages caused by, arising out of or resulting from such uncovering, exposure, observation, inspection, and testing and of satisfactory replacement of reconstruction (including, but not limited to, all costs of repair or replacement of work of others); and the **City** shall be entitled to an appropriate decrease in the Contract Sum. The **City** may take such decrease by reducing the then current application for payment accordingly or subsequent applications, if necessary, until the decrease is paid in full.

10.2. Correcting Work.

10.2.1. The **Contractor** shall promptly correct Work rejected by the **Design Professional** or failing to conform to the requirements of the Contract Documents, whether observed before or after Substantial Completion and whether or not fabricated, installed, or completed. The **Contractor** shall bear all costs of correcting such rejected Work including additional testing and inspections and compensation for the **Design Professional's** services and expenses made necessary thereby and any cost, loss, or damages to the **City** resulting from such failure or defect.

10.2.2. If, within one (1) year after the date of Substantial Completion of the Work or designated portion thereof, or after the date for commencement of warranties established in Article 15, or by terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the **City** to do so, unless the **City** has previously given the **Contractor** a written acceptance of such condition. This period of one (1) year shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual performance of the Work. This obligation to correct under this paragraph shall survive acceptance of the Work under the Contract and termination of the Contract. The **City** shall give such notice promptly after discovery of the condition.

10.2.3. The **Contractor** shall correct, remove, or replace portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the **Contractor** nor accepted by the **City**.

10.2.4. If the **Contractor** fails within a reasonable time to correct nonconforming Work, or to remove and replace rejected Work, or fails to perform the Work in accordance with the Contract Documents, the **City** may correct it in accordance with the provisions herein. If the **Contractor** does not proceed with correction, removal, or replacement of such nonconforming Work within seven (7) days from the date of written notice from the **Design Professional**, the **City** may correct it and store any salvageable materials or equipment at the **Contractor's** expense. If the **Contractor** does not pay costs of any such removal and storage within ten (10) days after written notice, the **City** may upon ten (10) additional days' written notice sell such materials and equipment at auction or at private sale and shall account for the proceeds thereof, after deducting costs and damages that should have been borne by the **Contractor**, including compensation for the **Design Professional's** services and expenses made necessary thereby. If

such proceeds of sale do not cover all the costs that the **Contractor** should have born, the Contract Sum shall be reduced by the deficiency. If payments then or thereafter due the **Contractor** are not sufficient to cover such amount, the **Contractor** shall pay the difference to the **City**.

10.2.5. The **Contractor** shall bear the cost of correcting destroyed or damaged construction, whether completed or partially completed, of the **City** or separate contractors caused by the **Contractor's** correction or removal of Work which is not in accordance with the requirements of the Contract Documents.

10.2.6. Nothing contained in this paragraph shall be construed to establish a period of limitation with respect to other obligations that the **Contractor** might have under the Contract Documents. Establishment of the time period of one (1) year as described in the above paragraph related only to the specific obligation of the **Contractor** to correct the Work and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced nor to the time within which proceedings may be commenced to establish the **Contractor's** liability with respect to the **Contractor's** obligations other than specifically to correct the Work.

10.3. Acceptance of Nonconforming Work.

10.3.1 If, instead of requiring correction or removal and replacement of defective or nonconforming Work, the **City** prefers to accept Work which is not in accordance with the requirements of the Contract Documents, the **City** may do so instead of requiring its removal and correction, in which case the **Contractor** shall pay all claims, costs, losses, and damages attributable to the **City's** evaluation of and determination to accept such defective or non-conforming Work. The Contract Sum will be reduced as appropriate. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 11:CHANGES IN THE WORK

11.1. In General.

11.1.1. The Contract Sum constitutes the total compensation (subject to authorized adjustments) payable to the **Contractor** for performing the Work. All duties, responsibilities and obligations assigned to or undertaken by the **Contractor** shall be at the **Contractor's** expense without any change in the Contract Sum.

11.1.2. Without invalidating the Contract and without notice to any surety, the **City** may, at any time or from time to time, order additions to, deletions from, or revisions in the Work. Such additions, deletions, or revisions will be authorized by a Change Order, a Modification or a **Construction Change** Directive. Upon receipt of any such document, the **Contractor** shall promptly proceed with the Work involved that will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).

11.1.3. The **Contractor** shall not be entitled to an increase in the Contract Sum or an extension of the Contract Time with respect to any Work performed that is not required by the Contract Documents as amended, modified, or supplemented, except as otherwise provided herein.

11.2. Change Orders.

11.2.1. (*Reference:* M.G.L. c. 30, §39I;). The **Contractor** shall perform all the Work required by this Contract in conformity with the Plans and Specifications contained herein. No willful and substantial deviation from said Plans and Specifications shall be made unless authorized in writing by the **City** and the **Design Professional** in charge of the Work who is duly authorized by the **City** to approve such deviations. In order to avoid delays in the prosecution of the Work required by such Contract, such deviation from the Plans or Specifications may be authorized by a written order of the **City** or the **Design Professional** so authorized to approve such deviation. Within thirty (30) days thereafter, such written order shall be confirmed by a certificate of the **City** stating: (1) If such deviation involves any substitution or elimination of materials, fixtures or equipment, the reasons why such materials, fixtures, or equipment were included in the first instance and the reasons for substitution or elimination, and, if the deviation is of any other nature, the reasons for such deviation, giving justification therefore; (2) that the specified deviation does not materially injure the Project as a whole; (3) that either the work substituted for the Work specified is of the same cost and quality, or that an equitable adjustment has been agreed upon between the **City** and the **Contractor** and the amount in dollars of said adjustment; and (4) that the deviation is in the best interest of the **City**.

11.3. Construction Change Directive.

11.3.1. A **Construction Change** Directive shall be used in the absence of total agreement on the terms of a Change Order.

11.3.2. Upon request of the **City** or the **Design Professional**, the **Contractor** shall without cost to the **City** submit to the **Design Professional** in such form as the **Design Professional** may require, an accurate written estimate of the cost of any proposed extra work or change. The estimate shall indicate the quantity and unit cost of each item of materials, and the number of hours of work and hourly rate for each class of labor, as well as the description and amounts of all other costs chargeable under the terms of this Article. Unit labor costs for the installation of each item of materials shall be shown if required by the **Design Professional**. If required by the **Design Professional**, in order to establish the exact cost of new Work added or of previously required Work omitted, the **Contractor** shall obtain and furnish to the **Design Professional** bona fide proposals from recognized Suppliers for furnishing any material included in such Work. Such estimates shall be furnished promptly so as to occasion no delay in the Work, and shall be furnished at the **Contractor's** expense.

11.3.3. The **Contractor** shall state in the estimate any extension of time required for the completion of the Work if the change or extra Work is ordered. The **Contractor** shall document, through a critical path analysis, or some other clearly delineated explanation, how the proposed

change affects other aspects of the Work, and why it would require an extension of time. The **Contractor** shall promptly revise and resubmit such estimate if the **Design Professional** determines that it is not in compliance with the requirements of this Article, or that it contains errors of fact or mathematical errors.

11.3.4. If the **Construction Change** Directive provides for an adjustment to the Contract Sum**,** the adjustment shall be based on one of the following methods, as selected by the **City**, selection of which does not require the consent of the **Contractor**:

11.3.4.1. by unit prices stated in the Contract Documents or otherwise mutually agreed upon; or

11.3.4.2. by Cost and Percentages estimated by the **Contractor** as provided herein and accepted by the **City**, whereupon the **Contractor's** estimate shall become a fixed price which shall not be changed by any variation in the actual cost of executing the Work covered by the change; or

11.3.4.3. by actual Cost determined after the Work covered by the change is completed, plus Percentage; or

11.3.4.4. by submission to arbitration or a court, which shall determine the fair value of the Work covered by the change.

11.3.5. "Cost" shall mean the estimated or actual net increase or decrease in cost to the **Contractor**, Subcontractor, or Sub-subcontractor for performing the Work covered by the change, including actual payments for materials, equipment rentals, expendable items, wages, and associated benefits to the workers and to supervisors employed full time at the Site, insurance, bonds, and other provable direct costs, but not including any administrative, accounting or expediting costs, or other indirect or overhead costs, or any wages or benefits of supervisory personnel not assigned full time to the Site, or any amount for profit or fee to the **Contractor**, Subcontractor, or Sub-subcontractor.

11.3.6. "Percentage" shall mean an allowance to be added to or subtracted from the Cost in lieu of overhead and profit and of any other expense that is not included in the Cost of the Work covered by the change, as defined above. Percentage for a Sub-subcontractor shall be 8% of any net increase or decrease of Cost of any Work performed by the Sub-subcontractor's own forces plus 4% of any net increase or decrease in Cost of any Work performed for the Sub-subcontractor by lower tier Sub-subcontractors. Percentage for a Subcontractor shall be 12% of any net increase or decrease of Cost of any Work performed by the Subcontractor's own forces plus 4% of the Cost of Work performed by Sub-subcontractors. Percentage for the **Contractor** shall be 15% of any net increase or decrease of Cost of any Work performed by the **Contractor's** own forces plus 5% of any net increase or decrease in the Cost for all other Work covered by the change. When the **Contractor** is also performing Work as a Subcontractor or Sub-subcontractor, the **Contractor** shall only be entitled to a total of no more than 15% of any net increase or decrease of Cost of any Work.

11.3.7. When in the reasonable judgment of the **Design Professional** a series of **Construction Change** Directives or Change Orders effect a single change, Percentage shall be calculated on the cumulative net increase or decrease in Cost, if any.

11.3.8. If unit prices are stated in the Contract Documents or are subsequently agreed upon, and if quantities originally contemplated are so changed in a Proposed Change Order or **Construction Change** Directive that the application of such unit prices to quantities of Work proposed will cause substantial inequity to the **City** or the **Contractor**, the applicable unit prices shall be equitably adjusted.

11.3.9. If the **City** elects to determine the Cost of the Work as provided in method (11.3.4.1) using unit prices stated in the Contract Documents or subsequently agreed upon, the unit prices shall be subject to the prior paragraph. Notwithstanding the inclusion of unit prices in the Contract Documents, it shall be the **City's** option to require the Cost of any given change to be determined by one of the other methods stated in 11.3.4. If the **City** elected to determine the Cost of the change by unit prices and the nature of the work is such that its extent cannot readily be measured after the completion of such work or any subsequent Work, the **Contractor** shall keep daily records, available at all times to the **Design Professional** for inspection, of the actual quantities of such Work put in place, and delivery receipts or other adequate evidence, acceptable to the **Design Professional**, indicating the quantities of materials delivered to the Site for use in such unit price Work, and distinguishing such from other similar material delivered for use in Work include in the base Contract Sum. If so required by the **Design Professional**, materials for use in unit price Work shall be stored apart from all other materials on the Project.

11.3.10. If the **City** elects to determine the Cost of the Work as provided in methods 11.3.4.3. or 11.3.4.4. or if the method of determining the Cost has not been established before the Work is begun, the **Contractor** shall keep detailed daily records of labor and material costs applicable to the Work.

11.3.11. Upon receipt of a **Construction Change** Directive, the **Contractor** shall promptly proceed with the change in the Work involved and advise the **Design Professional** in writing of the **Contractor's** agreement or disagreement with the method, if any, provided in the **Construction Change** Directive for determining the proposed adjustment in the Contract Time.

11.3.12. A **Construction Change** Directive signed by the **Contractor** indicates the agreement of the **Contractor** therewith, including adjustment in the Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

11.3.13. If the **Design Professional** and the **Contractor** do not agree with the adjustment in the Contract Time or the method for determining it, the adjustment or the method shall be referred to the **Design Professional** for determination.

11.4. Minor Changes in the Work.

11.4.1. The **Design Professional** has the authority to order minor changes in the Work. "Minor changes" as used in this paragraph mean changes which are so insignificant as to not affect the Contract Sum or the Contract Time and which are not inconsistent with the intent of the Contract Documents. Any minor change shall be committed to a written order which shall be binding on both the **City** and the **Contractor** and which shall be promptly carried out by the **Contractor**.

11.5. Certificate of Appropriations. (*Reference:* M.G.L. c. 44, §31C;). This Contract shall not be deemed to have been made until the **City's** auditor has certified thereon that an appropriation in the amount of this Contract is available therefor and that an officer or agent of the **City** has been authorized to execute said Contract and approve all requisitions and change orders. No order to the **Contractor** for a change in or addition to the Work, whether in the form of a drawing, plan, detail or any other written instruction, unless it is an order which the **Contractor** is willing to perform without any increase to the Contract price, shall be deemed to be given until the auditor has certified thereon that an appropriation in the amount of such order is available therefore; but such certificate shall not be construed as an admission by the **City** of its liability to pay for such work. The certificate of the auditor that an appropriation in the amount of this Contract or in the amount of such order is available shall bar any defense by the **City** on the grounds of insufficient appropriation.

ARTICLE 12: CHANGE IN THE CONTRACT TIME

12.1. Date of Commencement.

12.1.1 The date of commencement of the Work is the date established in the Notice to Proceed. The date shall not be postponed by the failure to act of the **Contractor** or persons or entities for whom the **Contractor** is responsible.

12.2. Progress and Completion.

12.2.1. Time is of the essence; all time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement, the **Contractor** confirms that the Contract Time is a reasonable period for performing the Work.

12.2.2. The **Contractor** shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

12.2.3. Within five (5) working days of award of contract, the **Contractor** shall submit to the **Design Professional** a progress schedule showing for each class of Work included in the schedule of values, the percentage of completion to be obtained and the total dollar value of Work to be completed as of the first of each month until Substantial Completion. All calculations shall be on the basis of Work in place, but may include, at the **Design**

Professional's discretion, the value of materials delivered but not in place.

12.2.4. The progress schedule shall be based on an orderly progression of the Work, allowing adequate time for each operation (including adequate time for submission and review of submittals), and leading to a reasonable certainty of Substantial Completion by the date established in the Agreement. The progress schedule will be reviewed by the **Design Professional** for compliance with the requirements of this Article and will be accepted by the **Design Professional** or returned to the **Contractor** for revision and resubmittal. Unless specifically required by law, no payment under this Contract shall be due until the progress schedule has been approved by the **Design Professional**. The **Design Professional's** review of the progress schedule shall not impose any duty on the **Design Professional** or the **City** with respect to the timing, planning, scheduling, or execution of the Work. In particular, if the **Contractor** proposes a progress schedule indicating a date of Substantial Completion which is earlier than the Contract Time, the **Contractor** shall not be entitled to additional payment or compensation of any kind if, for any reason, the full Contract Time is required to achieve Substantial Completion of the Work.

12.2.5. If in any Application for Payment, the total value of the completed Work in place, as certified by the **Design Professional**, is less than 90% of the total value of the Work in place estimated in the progress schedule, the **City** may, at the **City's** option, require the **Contractor** to accelerate the progress of the Work without cost to the **City** by increasing the workforce or hours or Work or by other reasonable means approved by the **Design Professional**.

12.2.6. If each of three successive applications, as certified by the **Design Professional**, indicate that the actual Work completed is less than 90% of the values estimated in the progress schedule to be completed by the respective dates, the **City** may at the **City's** option, treat the **Contractor's** delinquency as a default justifying the action permitted under Article 18.

12.2.7. If the **Design Professional** has determined that the **Contractor** should be permitted to extend the time for completion as provided below, the calendar dates in the progress schedule shall be adjusted accordingly to retain their same relationship to the adjusted date of Substantial Completion, and the dollar value of the Work to be completed as of the first of each month shall be adjusted pro rata.

12.2.8. If the **Contractor** fails to submit any application for payment in any month, the **Design Professional** shall, for the purpose of this evaluation of progress, certify separately to the actual value of the Work in place completed as of the first of the month to the best of the **Design Professional's** knowledge.

12.2.9. Nothing herein shall limit the **City's** right to liquidated or other damages for delays by the **Contractor** or to any other remedy which the **City** may be entitled or may possess under other provisions of the Contract Documents or by law.

12.3. Delays and Extensions of Time.

12.3.1. If the **Contractor** is delayed at any time in the progress of the Work by an act or neglect of the **City** or the **Design Professional**, or of an employee of either, or of a separate contractor employed by the **City**, or by changes ordered in the Work, or by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, or other causes (except weather) beyond the **Contractor's** control, or by delay authorized by the **City**, or by other causes which the **Design Professional** determines may justify delay, then the Contract Time shall be extended by Change Order or **Construction Change** Directive for such reasonable time as the **Design Professional** may determine.

12.3.2. Claims relating to time shall be made in accordance with applicable provisions of Article 16.

12.3.3. No claim for extension of time shall be allowed on account of failure of the **Design Professional** to furnish Plans, Specifications or instructions or to return Shop Drawings or Samples until fifteen (15) days after receipt by the **Design Professional** by registered or certified mail of written demand for such instructions, Plans, Specifications, or Samples, and then not unless such claim is reasonable.

12.3.4. No extensions of time shall be granted because of seasonal or abnormal variations in temperature, humidity or precipitation, which conditions shall be wholly at the risk of the **Contractor**, whether occurring within the time originally scheduled for completion or within the period of any extension granted. There shall be no increase in the Contract Sum on account of any additional costs of operations or conditions resulting therefrom.

12.3.5. The **Contractor** hereby agrees that the **Contractor** shall have no claim for damages of any kind against the **City** or the **Design Professional** on account of any delay in the commencement of the Work and/or any hindrance, delay, or suspension of any portion of the Work, whether such delay is caused by the **City**, the **Design Professional**, or otherwise, except as and to the extent expressly provided under M.G.L. c. 30, §39O, in the case of written orders by the **City**. The **Contractor** acknowledges that the **Contractor's** sole remedy for any such delay and/or suspension will be an extension of time as provided in this Article.

12.3.6. (*Reference:* M.G.L. c. 30, §39O;). (a) The **City** may order the **Contractor** in writing to suspend, delay, or interrupt all or any part of the Work for such period of time as it may determine to be appropriate for the convenience of the **City**, provided however that if there is a suspension, delay, or interruption for fifteen (15) days or more due to a failure of the **City** to act within the time specified in this Contract, the **City** shall make an adjustment in the Contract prices for any increase in the cost of performance of this Contract under this provision for any suspension, delay, interruption, or failure to act to the extent that such is due to any cause for which this Contract provides for an equitable adjustment of the Contract price under any other Contract provisions.

(b) The **Contractor** must submit the amount of a claim under provision (a) to the **City** in writing as soon as practicable after the end of the suspension, delay, interruption, or failure to act and, in any event, not later than the date of final payment under this Contract and, except for

costs due to a suspension order, the **City** shall not approve any costs in the claim incurred more than twenty (20) days before the **Contractor** notified the **City** in writing of the act or a failure to act involved in the Claim.

In the event a suspension, delay, interruption, or failure to act of the **City** increases the cost of performance to any Subcontractor, that Subcontractor shall have the same rights against the **Contractor** for payment for an increase in the cost of its performance as provisions (a) and (b) give the **Contractor** against the **City**, but nothing in provisions (a) and (b) shall in any way change, modify, or alter any other rights which the **Contractor** or the Subcontractor may have against each other.

12.4. Liquidated Damages.

12.4.1. If the **Contractor** shall fail to achieve Substantial Completion within the Contract Time, it shall be liable to pay the **City** the daily amount specified in the Agreement, not as a penalty, but as a fixed and agreed upon damages for breach of contract. The said amount is fixed and agreed upon because of the difficulty of ascertaining the **City's** actual damages. It is mutually understood that the said amount is a reasonable approximation or estimate thereof as of the date of the Agreement. The **City** may elect to withhold said amount from periodic or final payments due to the **Contractor**, in addition to retainage and other back charges.

12.5. Changes in the Contract Time.

12.5.1. In Writing. The Contract Time may only be changed by a Change Order or a Modification. Any claim for an adjustment of the Contract Time shall be based on a written notice delivered to the party making the claim to the other party and to the **Design Professional** promptly (but in no event later that seven (7) days) after the occurrence of the event giving rise to the claim and stating the general nature of the claim. Notice of the extent of the claim with supporting data shall be delivered within thirty (30) days after such occurrence and shall be accompanied by the claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant has reason to believe it is entitled as a result of the occurrence of said event. All claims for adjustment in the Contract Time shall be determined by the **Design Professional** in accordance with Article 16. No claim for an adjustment in the Contract Time will be valid if not submitted in accordance with the requirements of this paragraph.

12.5.2. Early Completion. The Contract Time shall not be changed due to a delay in the **Contractor's** early completion date.

ARTICLE 13: PAYMENTS

13.1. Schedule of Values.

13.1.1. The **Contractor** shall submit to the **Design Professional** a schedule of values which shall subdivide the Work into its component parts and shall include quantities, direct craft labor worker hours, labor cost and material/equipment cost. Labor cost shall include an

appropriate amount of construction equipment costs, supplemental costs, administrative expenses, contingencies, and profit. The **Contractor** shall prepare the schedule of values in such form and supported by such data to substantiate its accuracy as the **Design Professional** may require and shall be revised if later found by the **Design Professional** to be inaccurate. This schedule, unless objected to by the **Design Professional**, shall be used as a basis for reviewing the **Contractor's** applications for payment.

13.2. Content and Submission of Applications for Payment.

13.2.1. At least ten (10) days before the date established for each progress payment, the **Contractor** shall submit to the **Design Professional** six (6) copies of an itemized application for payment for Work completed in accordance with the schedule of values. Such application shall be in a form or format established or approved by the **Design Professional** and shall be supported by documentation substantiating the **Contractor's** right to payment.

13.2.2. When **Construction Change** Directives have set forth an adjustment to the Contract Sum but have not yet been included in Change Orders, the value established by the **City** may be included in the application.

13.2.3. Applications covering Work of Subcontractors or Suppliers shall not include requests for payments of amounts the **Contractor** does not intend to pay to a Subcontractor or Supplier because of a dispute or other reason. The **Contractor** shall not be paid for any Work performed by a Subcontractor unless and until the **City** receives for that Subcontractor a certificate of insurance that conforms to the requirements of the Contract Documents .

13.2.4. Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the Site for subsequent incorporation in the Work. If approved in advance by the **City**, payment may similarly be made for materials and equipment suitably stored off the Site at a location agreed upon in writing. Payment for materials and equipment stored on or off the Site shall be conditioned upon the application for payment being accompanied by a bill of sale, an invoice, or other documentation warranting that the **City** has received the materials and equipment free and clear of all liens, claims, security interests, or encumbrances, hereinafter collectively referred to as "liens," and evidence that the materials and equipment are covered by appropriate insurance and other arrangements to protect the **City's** interest therein.

13.2.5. Each application for payment or periodic estimate requesting payment shall be accompanied by, at the **City's** option, a certificate from each Subcontractor stating that the Subcontractor has been paid all amounts due the Subcontractor on the basis of the previous periodic payment to the **Contractor**, or else stating the amount not so paid and the reason for the discrepancy. In the event of any such discrepancy, the **Contractor** shall furnish the **Contractor's** own written explanation to the **City** through the **Design Professional**. Such waiver or certificate shall be in a form acceptable to the **City**.

13.3. False Applications for Payment .

13.3.1. (*Reference:* M.G.L. c. 266, §§67B). Any person who makes or presents to any claim upon or against any employee or department of the **City**, knowing such claim to be false, fictitious, or fraudulent shall be punished by a fine or not ore than ten thousand dollars ($10,000) or by imprisonment in the state prison for not more than five (5) years, or in the house of correction for not more than two and one-half years, or both.

13.4. Review of Applications for Payment.

13.4.1. The **Design Professional** shall review each application for payment and will reject any application that (1) is not accompanied by the required documentation or (2) contains errors, mathematical or otherwise.

13.4.2. Within five (5) business days after receipt of an application for payment, the **Design Professional** will either (1) return the application to the **Contractor** with a written explanation as to why it was rejected or (2) issue to the **City** a certificate for payment, with a copy to the **Contractor**, for such amount as the **Design Professional** determines is properly due. In the event an application is returned to the **Contractor**, the date of receipt of the application shall be the date of receipt of the corrected application.

13.4.3. The **Design Professional** or the **City** may make changes to any application submitted by the **Contractor**.

13.4.4. By recommending any payment, the **Design Professional** will not thereby be deemed to have represented that: (1) exhaustive or continuous on-site inspections have been made to check the quality or the quantity of the Work beyond the responsibilities specifically assigned to the **Design Professional** in the Contract Documents or (2) that there may not be other matters or issues between the parties that might entitle the **Contractor** to be paid additionally by the **City** or entitle the **City** to withhold payment to the **Contractor**. The **Design Professional's** approval of the application for payment and the accompanying documentation shall indicate that to the best of the **Design Professional's** knowledge, information, and belief, the Work has progressed to the point indicated by the **Contractor**, and that the quality of the Work is in accordance with the Contract Documents, subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests specified in the Contract Documents, final determination of quantities and classifications for unit price work and any other qualifications so stated.

13.4.5. The **Design Professional's** recommendation of any payment shall not mean that the **Design Professional** is responsible for the **Contractor's** means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of the **Contractor** to comply with laws and regulations applicable to the furnishing or performance of Work, of for any failure of the **Contractor** to perform or furnish Work in accordance with the Contract Documents.

13.4.6. No certificate given or payment made shall be evidence of the performance of this Contract, either wholly or in part and no payment, whether made upon the final certificate or otherwise, shall be construed as an acceptance of defective work or materials.

13.5. Decisions to Withhold Certification.

13.5.1. The **Design Professional** may refuse to recommend the whole or any part of any payment if, in the **Design Professional's** opinion, it would be incorrect to make the representations to the **City** referred to above.

13.5.2. If the **Contractor** and the **Design Professional** cannot agree on a revised amount, the **Design Professional** will promptly approve a certificate for payment for the amount for which the **Design Professional** is able to make such representations to the **City**. The **Design Professional** may also decide not to certify payment or, because of subsequently discovered evidence or subsequent observations, may nullify the whole or a part of a certificate for payment previously issued, to such extent as may be necessary in the **Design Professional's** opinion to protect the **City** from loss because of:

13.5.2.1. defective Work not remedied;

13.5.2.2. third party claims filed or reasonable evidence indicating probable filing of such claims;

13.5.2.3. failure of the **Contractor** to make payments properly to Subcontractors or for labor, materials or equipment;

13.5.2.4. reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;

13.5.2.5. damage to the **City** or another contractor;

13.5.2.6. reasonable evidence that the Work will not be completed within the Contract Time, and that retainage currently held by the **City** would not be adequate to cover actual or liquidated damage for the anticipated delay;

13.5.2.7. persistent failure to carry out the Work in accordance with the Contract Documents; or

13.5.2.8. failure of mechanical trade or electrical trade subcontractors to comply with mandatory requirements for maintaining record drawings. The **Contractor** shall check record drawings each month. Written confirmation that the record drawings are current will be required by the **Design Professional** before approval of the **Contractor's** monthly payment requisition.

13.5.3. When the above reasons for withholding certification are removed, certification

will be made for amounts previously withheld.

13.6. Progress Payments.

13.6.1. After the **Design Professional** has issued a certificate for payment, the **City** shall make payment in the manner and within the time provided in the Contract Documents.

13.6.2. (*Reference:* M.G.L. c. 30, §39G;). The **City** shall pay the amount due pursuant to any periodic, Substantial Completion or final estimate within thirty-five (35) days after receipt of written acceptance for such estimate from the **Contractor**. In the case of periodic payments, the **City** may deduct from its payment a retention based on its estimate of the fair value of its claims against the **Contractor**, a retention for direct payments to Subcontractors based on demands for same in accordance with M.G.L. c. 30, §39F; and a retention to secure satisfactory performance of the contractual work, not exceeding five percent (5%) of the approved amount of any periodic payment, and the same right to retention shall apply to bonded Subcontractors entitled to direct payment under M.G.L. c. 30, §39F; provided, that a five percent (5%) value of all items that are planted in the ground shall be deducted from the periodic payments until final acceptance.

13.6.3. No periodic, Substantial Completion or final estimate or acceptance or payment thereof shall bar the **Contractor** from reserving all rights to dispute the quantity and amount of, or the failure of the **City** to approve a quantity and amount of, all or part of any Work item or extra Work item.

13.7. Final Payment.

13.7.1. After final inspection and after the **Contractor** has completed all the required corrections to the satisfaction of the **Design Professional** and the **City** and delivered in accordance with the Contract Documents all maintenance and operating instructions, schedules, guarantees, bonds, certificates, or other evidence of insurance, certificates of inspection, marked-up record documents, and all other documents called for in the Contract Documents, as well as any surplus materials requested by the **City,** the **Contractor** may make an application for final payment as provided below.

13.7.2. (*Reference:* M.G.L. c. 30, §39G;). Within thirty (30) days after receipt by the **City** of a notice from the **Contractor** stating that all of the Work required by the Contract has been completed, the **City** shall prepare and forthwith send to the **Contractor** for acceptance a final estimate for the quantity and price of the Work done and all retainage on the Work less all payments made to date, unless the **City's** inspection shows that Work required by the Contract remains incomplete or unsatisfactory, or that documentation required by the Contract has not been completed.

13.7.3. The making and acceptance of final payment will constitute a waiver of all claims by the **Contractor** against the **City** other than those previously made in writing and still unsettled.

13.8. Payments to Subcontractors.

13.8.1. Neither the **City** nor the **Design Professional** shall have an obligation to pay or see to the payment of money to a Subcontractor, Sub-subcontractor, or Supplier except as may otherwise be required by law.

13.8.2. (*Reference:* M.G.L. c. 30, §39F;) (1)(a) Forthwith after the **Contractor** receives payment on account of a periodic estimate, the **Contractor** shall pay to each Subcontractor the amount paid for the labor performed and the materials furnished by that Subcontractor, less any amount specified in any court proceedings barring such payment and also less any amount claimed due from the Subcontractor by the **Contractor**.

(b) Not later than the sixty-fifth day after each Subcontractor substantially completes its Work in accordance with the Plans and Specifications, the entire balance due under the subcontract, less amounts retained by the **City** as the estimated cost of completing the incomplete and unsatisfactory items of Work, shall be due the Subcontractor; and the **City** shall pay that amount to the **Contractor**. The **Contractor** shall forthwith pay to the Subcontractor the full amount received from the **City** less any amount specified in any court proceeding barring such payment and also less any amount claimed due from the Subcontractor by the **Contractor**.

(c) Each payment made by the **City** to the **Contractor** pursuant to paragraphs (a) and (b) of M.G.L. c. 30, §39F(1);, for the labor performed and the materials furnished by a Subcontractor shall be made to the **Contractor** for the account of that Subcontractor; and the **City** shall take reasonable steps to compel the **Contractor** to make each such payment to each such Subcontractor. If the **City** has received a demand for direct payment from a Subcontractor for any amount which has already been included in a payment to the **Contractor** or which is to be include in a payment to the **Contractor** for payment to the Subcontractor as provided in paragraphs (a) and (b) of M.G.L. c. 30, §39F(1), the **City** shall act upon the demand as provided in M.G.L. c. 30, §39F.

(d) If, within seventy (70) days after the Subcontractor has substantially completed the subcontract Work, the Subcontractor has not received from the **Contractor** the balance due under the subcontract including any amount due for extra labor and materials furnished to the **Contractor**, less any amount retained by the **City** as the estimated cost of completing the incomplete and unsatisfactory items of Work, the Subcontractor may demand direct payment of that balance from the **City**. The demand shall be by a sworn statement delivered to or sent by certified mail to the **City**, and a copy shall be delivered to or sent by certified mail to the **Contractor** at the same time. The demand shall contain a detailed breakdown of the balance due under the subcontract and also a statement of the status of completion of the subcontract Work. [The demand letter shall indicate the certified mail number assigned by the postal service or the date of delivery to the **Contractor**.] Any demand made after substantial completion of the subcontract Work shall be valid even if delivered or mailed prior to the seventieth day

after the Subcontractor has substantially completed the subcontract Work. Within ten (10) days after the Subcontractor has delivered or so mailed the demand to the **City** and delivered or so mailed a copy to the **Contractor**, the **Contractor** may reply to the demand. The reply shall be by a sworn statement delivered to or sent by certified mail to the **City**, and a copy shall be delivered to or sent by certified mail to the Subcontractor at the same time. The reply shall contain a detailed breakdown of the balance due under the subcontract, including any amount due for extra labor and materials furnished to the **Contractor** and of the amount due for each claim made by the **Contractor** against the Subcontractor.

(e) Within fifteen (15) days after receipt of the demand by the **City**, but in no event prior to the seventieth day after substantial completion of the subcontract Work, the **City** shall make direct payment to the Subcontractor of the balance due under the subcontract, including any amount due for extra labor and materials furnished to the **Contractor**, less any amount (i) retained by the **City** as the estimated cost of completing the incomplete or unsatisfactory items of Work, (ii) specified in any court proceedings barring such payment, or (iii) disputed by the **Contractor** in the sworn reply; provided that the **City** shall not deduct from a direct payment any amount as provided in part (iii) if the reply is not sworn to or for which the sworn reply does not contain the detailed breakdown required by the previous paragraph. The **City** shall make further direct payments to the Subcontractor forthwith after the removal of the basis for deductions from direct payments made as provided in parts (i) and (ii) of this paragraph.

(f) The **City** shall forthwith deposit the amount deducted from a direct payment as provided in part (iii) of the previous paragraph in an interest-bearing joint account in the names of the **Contractor** and the Subcontractor in a bank in Massachusetts selected by the **City** or agreed upon by the **Contractor** and the Subcontractor and shall notify the **Contractor** and the Subcontractor of the date of the deposit and the bank receiving the deposit. The bank shall pay the amount in the account, including accrued interest, as provided in an agreement between the **Contractor** and the Subcontractor or as determined by decree of a court of competent jurisdiction.

(g) All direct payments and all deductions from demands for direct payments deposited in an interest-bearing account or accounts in a bank pursuant to the previous paragraph shall be made out of amounts payable to the **Contractor** at the time of receipt of a demand for direct payment from a Subcontractor and out of amounts which later become payable to the **Contractor** and in the order of receipt of such demands from Subcontractors. All direct payments shall discharge the obligation of the **City** to the **Contractor** to the extent of such payment.

(h) The **City** shall deduct from payments to a **Contractor** amounts that, together with the deposits in interest-bearing accounts pursuant to paragraph (f), are sufficient to satisfy all unpaid balances of demands for direct payment received from Subcontractors. All such amounts shall be earmarked for such direct payments, and the Subcontractors shall have a right in such deductions prior to any claims against such

amounts by creditors of the **Contractor**.

(i) If the Subcontractor does not receive payment as provided in paragraph (a) or if the **Contractor** does not submit a periodic estimate for the value of the labor or materials performed or furnished by the Subcontractor and the Subcontractor does not receive payment for same when due less the deductions provided for in paragraph (a), the Subcontractor may demand direct payment by following the procedure in paragraph (d) and the **Contractor** may file a sworn reply as provided in that same paragraph. A demand made after the first day of the month following that for which the Subcontractor performed or furnished the labor and materials for which the Subcontractor seeks payment shall be valid even if delivered or mailed prior to the time payment was due on a periodic estimate from the **Contractor**. Thereafter the **City** shall proceed as provided in paragraphs (e), (f), (g), and (h). "Subcontractor" as used in this paragraph (1)(i) shall mean a person approved by the **City** in writing as a person performing labor or both performing labor and furnishing materials pursuant to a contract with the **Contractor**.

(2) Any assignment by a Subcontractor of the rights under this section to a surety company furnishing a bond under the provisions of M.G.L. c. 149, §29; shall be invalid. The assignment and subrogation rights of the surety to amounts included in a demand for direct payment which are in the possession of the **City** or which are on deposit pursuant to paragraph (g) shall be subordinate to the rights of all Subcontractors who are entitled to be paid under this section and who have not been paid in full.

(3) A **Contractor** or a Subcontractor shall enforce a claim to any portion of the amount of a demand for direct payment deposited as provided in herein by a petition in equity in the superior court against the other and the bank shall not be a necessary party. A Subcontractor shall enforce a claim for direct payment or a right to require a deposit as provided in paragraph (f) by a petition in equity in the superior court against the **City** and the **Contractor** shall not be a necessary party. Upon motion of any party the court shall advance for speedy trial any petition filed as provided in this paragraph. M.G.L. c. 231, §§59 and 59B shall apply to such petitions. The court shall enter an interlocutory decree upon which execution shall issue for any part of a claim found due pursuant to §§59 and 59B and, upon motion of any party, shall advance for speedy trial the petition to collect the remainder of the claim. Any party aggrieved by such interlocutory decree shall have the right to appeal therefrom as from a final decree. The court shall not consolidate for trial the petition of any Subcontractor with the petition of one or more Subcontractors or the same general contract unless the court finds that a substantial portion of the evidence of the same events during the course of construction (other that the fact that the claims sought to be consolidated arise under the same general contract) is applicable to the petitions sought to be consolidated and that such consolidation will present unnecessary duplication of evidence. A decree in any such proceeding shall not include interest on the disputed amount deposited in excess of the interest earned for the period of any such deposit. No person except a Subcontractor filing a demand for direct payment for which no funds due the **Contractor** are available for direct payment shall have a right to file a petition in court of equity against the **City**

claiming a demand for direct payment is premature, and such Subcontractor must file the petition before the **City** has made a direct payment to the Subcontractor and has made a deposit of the disputed portion as provided in part (iii) of paragraph (e) and in paragraph (f).

(4) In any petition to collect any claim for which a Subcontractor has filed a demand for direct payment the court shall, upon motion of the **Contractor**, reduce by the amount of any deposit of a disputed amount by the **City** as provided in part (iii) of paragraph (e) and in paragraph (f) any amount held under a trustee writ or pursuant to a restraining order or injunction.

ARTICLE 14: SUBSTANTIAL COMPLETION

14.1. Substantial Completion.

14.1.1. Upon Substantial Completion of the Work, the **Contractor** shall present in writing to the **City** its certification that the Work has been substantially completed and include in its certification (1) a list of items to be completed or corrected, (2) all special warranties required by the Contract Documents, endorsed by the **Contractor** and in a form reasonably acceptable to the **Design Professional** and (3) the permits and certificates referred to in 13.7.1., or elsewhere. The failure to include any item on the list mentioned in the preceding sentence does not alter the responsibility of the **Contractor** to complete all Work in accordance with the Contract Documents. When the **Design Professional** on the basis of an inspection determines that the Work or designed portion thereof is substantially complete and the other conditions have been met, the **Design Professional** will then prepare a certificate of Substantial Completion which shall establish the date of Substantial Completion, shall state the responsibilities of the **City** and the **Contractor** for security, maintenance, heat, utilities, damage to the Work, and insurance, and shall fix the time within which the **Contractor** shall complete the items listed therein. The certificate of Substantial Completion shall be submitted to the **City** and the **Contractor** for their written acceptance of the responsibilities assigned to them in such certificate.

14.1.2. Within twenty-one (21) days after receipt of the certification from the **Contractor**, the **City** shall present to the **Contractor** either a written declaration that the Work has been substantially completed or an itemized list of incomplete or unsatisfactory work items required by the Contract sufficient to demonstrate that the Work has not been substantially completed. The **City** may include with such list a notice setting forth a reasonable time within which the **Contractor** must achieve Substantial Completion of the Work. If the **City** fails to respond, by presentation of a written declaration or itemized list as aforesaid, to the **Contractor's** certification within the twenty-one (21) day period, the **Contractor's** certification shall take effect as the **City's** declaration that the Work has been substantially completed.

14.2. Partial Use or Occupancy of the Premises.

14.2.1. The **City** may occupy or use any completed or partially completed portion of the Work at any stage. Such partial occupancy or use may begin whether or not the portion is

substantially complete, provided that the respective responsibilities of the **City** and the **Contractor** with respect to payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work, insurance, correction of the Work, and warranties shall be established by agreement of the **City** and the **Contractor** or, absent such agreement, shall be determined by the **Design Professional** subject to the right of either party to contest such determination as provided in Article 16.

14.2.2. Immediately prior to such partial occupancy or use, the **City**, the **Contractor** and the **Design Professional** shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

14.2.3. Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

14.2.4. (*Reference:* M.G.L. c. 30, §39G;). Within sixty-five (65) days after the effective date of a declaration of Substantial Completion, the **City** shall prepare and send to the **Contractor** for acceptance a Substantial Completion estimate for the quantity and price of the Work done and all but one percent (1%) retainage on that Work, including the quantity, price and all but one percent (1%) retainage for the undisputed part of each item and extra work item in dispute, but excluding the disputed part thereof, less the estimated cost of completing all incomplete and unsatisfactory items and less the total periodic payments made to date for the Work. The **City** shall also deduct from the Substantial Completion estimate an amount equal to the sum of all demands for direct payment filed by Subcontractors and not yet paid to Subcontractors or deposited in joint accounts pursuant to M.G.L. c. 30, §39F.

14.2.5. (*Reference:* M.G.L. c. 30, §39G). If the **City** fails to prepare and send to the **Contractor** any Substantial Completion estimate required by the provisions herein on or before the date specified, the **City** shall pay to the **Contractor** interest on the amount which would have been due to the **Contractor** pursuant to such Substantial Completion estimate at the rate of three (3) percentage points above the rediscount rate then charged by the Federal Reserve Bank of Boston from such date to the date on which the **City** sends that Substantial Completion estimate to the **Contractor** for acceptance or to the date of payment therefor, whichever occurs first. The **City** shall include the amount of such interest in the Substantial Completion estimate.

14.2.6. (*Reference:* M.G.L. c. 30, §39G). Within fifteen (15) days after the effective date of the declaration of Substantial Completion, the **City** shall send to the **Contractor** by certified mail, return receipt requested, a complete list of all incomplete or unsatisfactory items, and unless delayed by causes beyond its control, the **Contractor** shall complete all such items within forty-five (45) days after the receipt of such list or before the date for final payment and acceptance, whichever is later. If the **Contractor** fails to complete such Work within such time, the **City** may, subsequent to seven (7) days' written notice to the **Contractor** by certified mail, return receipt requested, terminate the Contract and complete the incomplete or unsatisfactory items and charge the cost of same to the **Contractor**.

14.3. Final Inspection.

14.3.1. Upon written notice from the **Contractor** that the entire Work or an agreed portion thereof is complete, the **Design Professional** will make a final inspection with the **City** and the **Contractor** and will notify the **Contractor** in writing of all particulars which this inspection reveals that the Work is incomplete or defective. The **Contractor** shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

ARTICLE 15: GUARANTEES AND WARRANTIES

15.1. In General.

15.1.1. All guarantees and warranties specifically called for by the Specifications shall expressly run to the benefit of the **City**.

15.2. Warranties.

15.2.1. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof, unless otherwise provided in the certificate of Substantial Completion.

15.2.2. The **Contractor** warrants that the materials and equipment furnished under the Contract will be new and of recent manufacture unless otherwise specified, and that all Work will be of good quality, free from faults and defects, and in conformance with the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. The **Contractor's** warranty excludes remedy for damage or defect caused by abuse, Modifications not executed by the **Contractor**, improper or insufficient maintenance, improper operation, or normal wear and tear under normal usage. If required by the **Design Professional**, the **Contractor** shall furnish satisfactory evidence as to the kind and quality of material and equipment.

15.2.3. The **Contractor** warrants that title to all Work covered by an application for payment will pass to the **City** either by incorporation in the construction or upon the receipt of payment by the **Contractor**, whichever occurs first, free and clear of all liens. The **Contractor** further agrees that the submission of any application for payment shall conclusively be deemed to waive all liens with respect to said Work to which the **Contractor** may then be entitled, provided that such waiver of the lien rights shall not waive the **Contractor's** right to payment for such Work.

15.2.4. The **Contractor** warrants and guarantees that title to all Work, materials, and equipment covered by any application for payment, whether incorporated in the Project or not, will pass to the **City** no later than the time of payment free and clear of all liens.

15.2.5. No materials or supplies for the Work shall be purchased by the **Contractor** or Subcontractor subject to any chattel mortgage or under a conditional sale contract or other

agreement by which an interest is retained by the seller. The **Contractor** warrants that it has good title to all materials and supplies used by it in the Work, free from all liens.

15.2.6. The **Contractor** shall indemnify and hold the **City** harmless from all claims growing out of the lawful demands of Subcontractors, laborers, workers, mechanics, material persons, and furnishers of machinery and parts thereof, equipment, power tools, and all supplies, including commissary, incurred in the furtherance of the performance of this Contract. The **Contractor** shall at the **City's** request, furnish satisfactory evidence that all obligations of the nature hereinabove designated have been paid, discharged, or waived. If the **Contractor** fails to do so, then the **City** may, after having served written notice on the **Contractor** either pay unpaid bills, of which the **City** has written notice, direct, or withhold from the **Contractor's** unpaid compensation a sum of money deemed reasonably sufficient to pay any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged whereupon payment to the **Contractor** shall be resumed, in accordance with the terms of this

Contract, but in no event shall the provisions of this sentence be construed to impose any obligations on the **City** to either the **Contractor** or its surety. In paying any unpaid bills of the **Contractor**, the **City** shall be deemed the agent of the **Contractor** and any payment so made by the **City** shall be considered as payment made under the Contract by the **City** to the **Contractor** and the **City** shall not be liable to the **Contractor** for any such payment made in good faith.

15.3. Extended Warranties and Guarantees.

15.3.1. Any defective Work that is either corrected or replaced will be warranted and guaranteed for a period of three (3) years from the date of such correction or replacement.

ARTICLE 16: CLAIMS

16.1. In General.

16.1.1. Written Notice. A Claim must be made by written notice to the other party.
16.1.2. Content of Notice. The notice must include all written supporting data.
16.1.3. Burden of Proof. The party making the Claim must substantiate the Claim.

16.2. Time Limits on Claims.

16.2.1. Unless otherwise provided, all Claims must be made within twenty-one (21) days after the occurrence of the event giving rise to such Claim or within twenty-one (21) days after the claimant first recognizes the condition giving rise to the Claim, whichever is later. Any change or addition to a previously made Claim shall be made by a written notice within the twenty-one-day period in order to be valid.

16.3. Continuing Contract Performance.

16.3.1. Pending final resolution of a Claim including arbitration, unless otherwise agreed

in writing, the **Contractor** shall proceed diligently with performance of the Contract and the **City** shall continue to make payments in accordance with the Contract Documents.

16.4. Types of Claims.

16.4.1. Claims for Differing Subsurface or Latent Physical Conditions. (*Reference:* M.G.L. c. 30, §39N;). If, during the progress of the Work, the **Contractor** or the **City** discovers that the actual subsurface or latent physical conditions encountered at the Site differ substantially or materially from those shown on the Plans or indicated in the Contract Documents, either the **Contractor** or the **City** may request an equitable adjustment in the Contract Sum of the Contract applying to Work affected by the differing Site conditions. A request for such an adjustment shall be in writing and shall be delivered by the party making such claim to the other party as soon as possible after such conditions are discovered. Upon receipt of such a claim from a **Contractor**, or upon its own initiative, the **City** shall make an investigation of such physical conditions, and if they differ substantially or materially from those shown on the Plans or indicated in the Contract Documents or from those ordinarily encountered and generally recognized as inherent in Work of the character provided for in the Plans and Contract Documents and are of such a nature as to cause an increase or decrease in the cost of performance of the Work or a change in the construction methods required for the performance of the Work which results in an increase or decrease in the cost of the Work, the **City** shall make an equitable adjustment in the Contract Sum and the Contract shall be modified in writing accordingly.

16.4.2. Claims for Additional Cost. If the **Contractor** claims that any acts or omissions of the **City** or the **Design Professional**, including any instructions or orders, whether oral, written, by drawings, or otherwise, involve extra cost or time, and the **Contractor** has not received a written acknowledgment by the **City** or the **Design Professional** that extra payment will be made or time extended on account thereof, the **Contractor** shall promptly so notify the **Design Professional** in writing of such Claim and shall proceed with the Work relating to such Claim and all rights of both parties with respect to such Claim shall be deemed to have been reserved. No Claim by the **Contractor** on account of such acts, omissions, instructions, or orders shall be valid unless the **Contractor** has so notified the **Design Professional** before proceeding.

16.4.2.1. Under no circumstances shall a Claim be made for additional cost where adverse weather conditions are the basis for the Claim.

16.4.3. Claims for Additional Time. If the **Contractor** wishes to make a Claim for an increase in the Contract Time, written notice as provided herein shall be given. The **Contractor** shall have the burden of demonstrating the effect of the claimed delay on the Contract Time and shall furnish the **Design Professional** with such documentation relating thereto as the **Design Professional** may reasonably require. Under no circumstances shall the **Contractor** make a Claim for an increase in the Contract Time due to a change in the **Contractor's** early completion date. If the increase in the Contract Time extends beyond the Contract Time established by the **City**, only the time that so extends beyond the Contract Time shall be reviewed and considered.

In the case of a continuing delay, only one Claim is necessary.

16.4.3.1. Under no circumstances shall a Claim be made for additional time where adverse weather conditions are the basis for the Claim.

16.4.4. Claims for Injury to Person or Damage to Property. Should either party to the Contract suffer injury to person or damage to property because of any error, omission, or act of the other party or of any of the other party's employees or agents or others for whose acts the other party is legally liable, a Claim will be made in writing to the other party within twenty-one (21) days of the occurrence of the act giving rise to the injury or damage.

16.5. Review of Claims.

16.5.1. Initial Referral. All Claims, the bases of which arise prior to final payment or the earlier termination of the Contract, shall be referred initially to the **Design Professional** for action as provided herein.

16.5.2. Time Period and Action. The **Design Professional** shall review Claims and shall do one of the following within fourteen (14) days of receipt of the Claim:

16.5.2.1. defer any action with respect to all or any part of a Claim for the purpose of requesting and receiving additional information from either party;

16.5.2.2. decline in writing to render a decision for any reason which it deems appropriate (including, but not limited to, the fact that the Claim involves allegations of fault on the part of the **Design Professional**); or

16.5.2.3. render a decision on all or a part of the Claim.

16.5.3. If the **Design Professional** requests additional information, the **Design Professional** shall take action with respect to the Claim no later than fourteen (14) days after receipt of the additional information. The **Design Professional** shall notify the parties in writing of its disposition of such Claim. If the **Design Professional** renders a decision or declines to render a decision, either party may proceed in accordance with paragraph 16.7.

16.6. Decisions.

16.6.1. Decisions by the City or the Design Professional. (*Reference:* M.G.L. c. 30, §39P;). In every case in which this Contract requires the **City**, any official, or its **Design Professional** to make a decision on interpretation of the Specifications, approval of equipment, material or any other approval, or progress of the Work, the decision shall be made promptly and, in any event, no later than fourteen (14) days after the written submission for decision; but if such decision requires extended investigation and study, the **City**, the official, or the **Design Professional** shall, within fourteen (14) days after the receipt of the submission, give the party making the submission written notice of the reasons why the decision cannot be made within the

thirty-day period and the date by which the decision will be made.

16.6.2. When Decision of the Design Professional is Final and Binding. The decision of the **Design Professional** shall be final and binding on the parties, unless a party files suit or a demand for arbitration within thirty (30) days after the date of the decision.

16.6.3. When Decision of the Design Professional is Not Final and Binding. (*Reference:* M.G.L. c. 30, §39J). Notwithstanding any contrary provision of this Contract, no decision by the **City** or by the **Design Professional** on a dispute, whether of fact or of law, arising under said Contract shall be final or conclusive if such decision is made in bad faith, fraudulently, capriciously, arbitrarily, is unsupported by substantial evidence, or is based upon error of law.

16.6.4. Resolved Claims. If a Claim is resolved, the **Design Professional** shall obtain or prepare the appropriate documentation and provide the **City** and the **Contractor** with a copy of same.

16.7. Arbitration.

16.7.1. Controversies and Claims Subject to Arbitration. Any controversy or Claim arising out of or related to the Contract, or the breach thereof, shall be settled by arbitration in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association, and judgment upon the award rendered by the arbitrator or arbitrators may be entered in any court having jurisdiction thereof, except controversies or Claims relating to aesthetic effect, subject to the provisions of paragraph 16.7.7. In any such arbitration in which the amount stated in the demand is $100,000 or less, the American Arbitration Association shall appoint a single arbitrator in accordance with such Rules, who shall be a lawyer. In any such arbitration in which the amount stated in the demand is in excess of $100,000, the demand shall include the name of an arbitrator appointed by the claimant. The respondent shall appoint a second arbitrator and shall notify the claimant in writing of such appointment within thirty (30) days of receipt of the demand, failing which the matter shall be decided by the arbitrator named in the claimant's demand. Within thirty (30) days after the claimant's receipt of notice of the appointment of the second arbitrator, the two arbitrators shall appoint a neutral arbitrator and shall notify the parties in writing of such appointment, failing which either party may apply to the American Arbitration Association to appoint such neutral arbitrator. If such neutral arbitrator is appointed by the American Arbitration Association, he or she shall be a lawyer.

16.7.2. Rules for Arbitration. If the neutral arbitrator is appointed by the American Arbitration Association, the said Association shall administer the arbitration and its Construction Industry Arbitration Rules shall govern all aspects of the proceeding including the enforcement of any award. If the neutral arbitrator is not appointed by the American Arbitration Association, then the panel of arbitrators shall act as the administrator of the arbitration but the Construction Industry Arbitration Rules of the Association shall nonetheless govern all aspects of the proceeding, including the enforcement of any award, provided however that the arbitration panel shall have all of the powers and duties conferred on the Association pursuant to said rules. In

addition, the following rules shall govern the selection of arbitrators and the proceedings:

16.7.2.1. Neither party may appoint as arbitrator an employee or an owner of that party, nor the parent, spouse, or child of an employee or owner of that party.

16.7.2.2. After the neutral arbitrator has been appointed, neither party may engage in *ex parte* communication with any arbitrator.

16.7.3. When Arbitration May Be Demanded. Demand for arbitration of any Claim, the basis of which arises prior to final payment or the earlier termination of the Contract may not be made before the earlier of (1) the date on which the **Design Professional** has rendered a written decision on the Claim or has notified the parties in writing that such decision will not be rendered or (2) forty-five (45) days following receipt by the **Design Professional** of a written request for a decision sent by registered or certified mail to both the **Design Professional** and the other party to this Contract.

16.7.3.1. In no event shall a demand for arbitration be made after the date when the institution of legal or equitable proceedings based on such Claim would be barred by the applicable statute of limitations.

16.7.4. Limitation on Consolidation or Joinder. No arbitration arising out of or relating to the Contract Documents shall include, by consolidation or joinder or in any other manner, the **Design Professional**, the **Design Professional's** employees or consultants, except by written consent containing specific reference to the Contract and signed by the **Design Professional**, the **City**, the **Contractor,** and any other person or entity sought to be joined. No arbitration shall include, by consolidation or joinder or in any other manner, parties other than the **City**, the **Contractor**, a separate contractor, and other persons substantially involved in a common question of fact or law whose presence is required if complete relief is to be accorded in arbitration. No person or entity other than the **City**, the **Contractor,** or a separate contractor shall be included as an original third party or additional third party to an arbitration whose interest or responsibility is insubstantial. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of a dispute not described therein or with a person or entity so named or described herein. The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Contract shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

16.7.5. Claims and Timely Assertion of Claims. A party who files a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded. When a party fails to include a Claim through oversight, inadvertence, or excusable neglect, or when a Claim has matured or been acquired subsequently, the arbitrator or arbitrators may permit amendment.

16.7.6. Award Final. The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having

jurisdiction thereof.

16.7.7. The City's Reservation of Rights. Notwithstanding any provision contained in this Article 16 or elsewhere in the Contract Documents, the **City** reserves the following rights in connection with Claims between the **City** and the **Contractor**, which rights may be exercised by the **City** unilaterally, in the **City's** sole discretion, and without the consent of the **Contractor**:

16.7.7.1. the right to institute legal action against the **Contractor** in any court of competent jurisdiction in lieu of demanding arbitration, in which case the dispute or disputes which are the subject of such action shall be decided by such court, and not by arbitration;

16.7.7.2. the right to obtain from any court of competent jurisdiction a stay of any arbitration instituted by the **Contractor**, provided that the application for such stay is made before the appointment of the neutral arbitrator in such arbitration, in which case the dispute or disputes which are the subject of such arbitration shall be decided by such court and not by arbitration;

16.7.7.3. the right to require the **Contractor** to join as a party in any arbitration between the **City** and the **Design Professional** relating to the Project, in which case the **Contractor** agrees to be bound by the decision of the arbitrator or arbitrators in such arbitration.

16.7.8. In case the **City** elects to proceed in accordance with 16.7.7.1. or 16.7.7.2. above, the word "litigation" shall be deemed to replace the word "arbitration" wherever the latter word appears in the Contract Documents.

ARTICLE 17: EMERGENCIES

17.1. In an emergency affecting the health and safety of persons or property, the **Contractor** shall act to prevent threatened damage, injury, or loss.

17.2. In emergencies affecting the health, safety, or protection of persons, the Work or property at the Site or adjacent thereto, the **Contractor**, without special instruction or authorization from the **City** or the **Design Professional**, is obligated to act to prevent threatened damage, injury, or loss. The **Contractor** shall give the **Design Professional** prompt written notice if the **Contractor** believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby. If the **Design Professional** determines that a change in the Contract Documents is required because of the action taken by the **Contractor** in response to such an emergency, a **Construction Change** Directive or Change Order will be issued to document the consequences of such action.

ARTICLE 18: TERMINATION OR SUSPENSION OF THE CONTRACT

18.1. Suspension by the City.

18.1.1. At any time and without cause, the **City** may suspend the Work or any portion thereof for a period of not more than ninety (90) days by notice in writing to the **Contractor** and the **Design Professional** that will fix the date on which Work will be resumed. The **Contractor** shall resume Work on the date so fixed. The **Contractor** shall be allowed an adjustment in the Contract Sum or an extension of the Contract Time, or both, directly attributable to any such suspension if the **Contractor** makes an approved Claim therefor.

18.1.2. If the Work is defective, if the **Contractor** fails to provide a sufficient number of skilled workers or suitable materials or equipment, or if the **Contractor** defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a seven-day period after receipt of written notice from the **City** to begin and prosecute correction of such default or neglect with diligence and promptness, the **City** may correct such deficiencies, without prejudice to other remedies the **City** may have. In such case, an appropriate **Construction Change** Directive shall be issued deducting from payments then or thereafter due to the **Contractor** the cost of correcting such deficiencies including compensation for the **Design Professional's** additional services and expenses made necessary by such default, neglect, or failure and any and all direct, indirect, or consequential costs associated with the order to stop the Work. If such payments then or thereafter due the **Contractor** are not sufficient to cover such amounts, the **Contractor** shall immediately pay the difference to the **City**. The **Contractor** shall remain responsible for maintaining progress and shall not be entitled to any increase in the Contract Time or the Contract Sum.

18.2. Termination by the Contractor.

18.2.1. If, through no act or fault of the **Contractor**, a Subcontractor, or a Sub-subcontractor, the Work is suspended for a period of more than ninety (90) days by the **City**, or under an order of court or other public authority, or the **Design Professional** fails to act on any application for payment within thirty (30) days after it is submitted in proper form and content or the **City** fails for thirty (30) days to pay the **Contractor** any sum finally determined to be due, then the **Contractor** may terminate the Contract upon seven (7) days' written notice to the **City**, provided that the **City** does not remedy such suspension or failure within that time.

18.3. Termination by the City.

18.3.1. If the **Contractor** is adjudged a bankrupt, or if the **Contractor** makes a general assignment for the benefit of the **Contractor's** creditors, or if a receiver is appointed on account of the **Contractor's** insolvency, or if the **Contractor** persistently or repeatedly refuses or fails, except in cases for which extension of time is provided, to supply enough properly skilled workers or proper materials, or if the **Contractor** fails to make prompt payment to Subcontractors or for materials or labor, or persistently disregards laws, ordinances, rules, regulations, or orders of any public authority having jurisdiction or disregards an instruction, order, or decision of the **Design Professional**, or otherwise is guilty of substantial violation of any provision of the Contract, then the **Contractor** shall be in default, and the **City** may, without prejudice to any other right or remedy and upon written notice to the **Contractor**, take

possession of all materials, tools, appliances, equipment, construction equipment and machinery and vehicles, offices and other facilities on the Project Site, and all materials intended for the Work, wherever stored, and, seven (7) days after such notice, may terminate the employment of the **Contractor**, accept assignment of any or all subcontracts pursuant to Paragraph __, and finish the Work by whatever method the **City** may deem expedient. The **City** shall be entitled to collect from the **Contractor** all direct, indirect, and consequential damages suffered by the **City** on account of the **Contractor's** default, including without limitation additional services and expenses of the **Design Professional** made necessary thereby. The **City** shall be entitled to hold all amounts due to the **Contractor** at the date of termination until all of the **City's** damages have been established, and to apply such amounts to such damages.

18.3.2. (*Reference:* Somerville Municipal Code Chapter 2.117, Section 2.117.110C). In the event the **Contractor** or any of its agents or employees violates any provision of Somerville Municipal Code Chapter 2.117 that is applicable to **City** contractors in connection with the awarding, administration, or performance of the Contract, the **City** may terminate the Contract.

ARTICLE 19: AMERICANS WITH DISABILITIES ACT; (42 U.S. 12131)

19.1. On July 26, 1994, the Americans with Disabilities Act ("the Act") became effective for employers of fifteen or more employees.

19.2. The Act protects against discrimination of the basis of "disability," which is defined as a physical or mental impairment that substantially limits at least one "major life activity;" or discrimination against an individual who has a record of such impairment; or discrimination against an individual being regarded - even if inaccurately - as having such impairment. The Act also expressly prohibits job discrimination that is based on any individual's relationship or association with a disabled person.

19.3. If the **Contractor** is subject to the Act, it must comply with its provisions.

ARTICLE 20: WRITTEN NOTICE TO THE PARTIES

20.1. In General.

20.1.1. All written communications from the **Design Professional** to the **Contractor** shall be copied to the **City**. All written communications from the **Contractor** to the **Design Professional** shall be copied to the **City**. All written communications from the **Contractor** to the **City** shall be copied to the **Design Professional**.

20.2. Addresses.

20.2.1. To the City. Written notice to the **City** shall be sent or hand-delivered to:

Purchasing Director
City of Somerville
93 Highland Avenue
Somerville, MA 02143

City Solicitor
Law Department
93 Highland Avenue
Somerville, MA 02143

20.2.2. To the Contractor. Both the address given on the bid form upon which the Agreement is founded and the **Contractor's** office at or near the Site of the Work are hereby designated as places to either of which notices, letters, and other communications to the **Contractor** shall be certified, mailed, or delivered. Delivery of any notice, letter, or other communication to the **Contractor** at or depositing same in a postpaid wrapper directed to either place shall be deemed sufficient service thereof upon the **Contractor**. Written notice shall be deemed to have been duly served on the **Contractor** if it is sent or hand-delivered to any member or officer of the **Contractor**. The date of said service shall be the date of such delivery or mailing. The address may be changed at any time by an instrument in writing, executed and acknowledged by the **Contractor** and delivered to the **City** and to the **Design Professional**. Nothing herein contained shall be deemed to preclude or render inoperative the service of any notice, letter. or other communication upon the **Contractor** personally. Moreover, any notice, letter, or other communication required under the Contract may be served on the **Contractor's** representative at job meetings. The **Contractor** shall provide the **City** with its change of address seven (7) days prior to its effective date.

20.2.3. To the Design Professional. Written notice to the **Design Professional** shall be sent or hand-delivered to the address appearing on the Project Manual. Written notice shall be deemed to have been duly served on the **Design Professional** if it is sent or hand-delivered to any member or officer of the **Design Professional**.

ARTICLE 21: MISCELLANEOUS PROVISIONS

21.1. Governing Law.

21.1.1. This Contract shall be governed by the laws of the Commonwealth of Massachusetts.

21.2. Venue.

21.2.1. Venue for any court action or proceeding shall be Middlesex County in the Commonwealth of Massachusetts only. The **Contractor**, all Subcontractors, and Suppliers waive any and all jurisdictional and venue defenses.

21.3. Successors and Assigns.

21.3.1. The **Contractor** shall not assign, in whole or in part, its rights and obligations under the Contract Documents without prior written consent of the **City**. An assignment without the prior written consent of the **City** shall not relieve the **Contractor** of its obligations thereunder.

21.3.2. The **City** and the **Contractor** respectively bind themselves, their partners, successors, assigns, and legal representatives to the other party hereto and to partners, successors, assigns, and legal representatives of such other party in respect to covenants, agreements, and obligations contained in the Contract Documents.

21.4. Statutory Limitation Period.

21.4.1. It is expressly agreed that the obligations of the **Contractor** hereunder arise out of contractual duties, and that the failure of the **Contractor** to comply with the requirements of the Contract Documents shall constitute a breach of contract, not a tort, for the purpose of applicable statutes of limitations and repose. Any cause of action which the **City** may have on account of such failure shall be deemed to accrue only when the **City** has obtained actual knowledge of such failure, not before.

21.5. Rights and Remedies.

21.5.1. Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law.

21.5.2. No action or failure to act by the **City**, the **Design Professional,** or the **Contractor** shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed in writing.

PART 2 - SAMPLE CONSTRUCTION CONTRACT

- Sample Contract
- Certificate of Authority
- Appendix A – Scope of Work (including Technical Specifications)
- Appendix B – Contractor's Bid Price; Form for General Bid (From Bid Book)
- Appendix C – General Terms and Conditions
- Appendix D – Insurance Requirements
- Appendix E – Wage Rates and Living Wage (From Bid Book)
- Appendix F – Certificate of Good Standing (for corporations; from Bid Book)
- Appendix G – Procurement documentation (Advertisements and Notice to Bidders)
- Appendix H – Statement of Management
- Appendix I – Performance Bond and Payment Bond, if contract over $2000

S A M P L E C O N T R A C T

CONTRACT NUMBER

A-
PURCHASE ORDER # AND AMOUNT

BID NUMBER

Department of Capital Projects and Planning
ISSUING DEPARTMENT

XXXXX xx , 20XX – YYYYY yy, 20XX
CONTRACT PERIOD

CITY OF SOMERVILLE

PUBLIC CONSTRUCTION CONTRACT

CONTRACTOR: Vendor
Address
Townname, MA, Zip Code

FOR: **SOMERVILLE HIGH SCHOOL**
RENOVATIONS TO ROOM 143

ACCORDING TO SPECIFICATIONS CONTAINED HEREIN

CITY OF SOMERVILLE
OWNER-CONTRACTOR PUBLIC CONSTRUCTION AGREEMENT

AGREEMENT made this _____day of _____, 2013, by and between the City of Somerville, a Massachusetts municipal corporation, acting by and through its Purchasing Department, with a usual address of 93 Highland Ave., Somerville, MA 02143 ("City", "Owner" or "Awarding Authority") and the following General Contractor ("Contractor" or "General Contractor"):

GENERAL CONTRACTOR:
Name:
Address:
Telephone: Fax:
E-Mail:

PROJECT:

PROJECT MANAGER:
Name: Skip Bandini, Capital Projects & Planning
Address: One Franey Road, Somerville, MA 02145
Telephone: (617) 625 - 6660
E-Mail**: sbandini@somervillema.gov**

DESIGN PROFESSIONAL:

Contact: Fabrizio Caruso, Project Manager
CDR Maguire, Inc.
211 Congress Street, 11th Floor
Boston, MA 02110
Phone: (617) 778 - 1440
Fax; (617) 348 - 2143

Profession: Architect [X] Landscape Architect [ ] Engineer [ ]

THIS CONTRACT IS A:

___ Public Works Contract estimated to cost more than $10,000 subject to the bidding requirements of G.L. c. 30, § 39M

___ Public Building Contract estimated to cost under $10,000, subject to the price quote requirements of G.L. c. 149 §44A (2)(A)

___ Public Building Contract estimated to cost more than $10,000 but less than $25,000, subject to the written response requirements of G.L. c. 149, §44A(2)(B) of the General Laws

___ Public Building Contract estimated to cost more than $25,000 but less than $100,000, subject to the bidding requirements of G.L. c. 149, §44A(2)(C) and G.L. c. 30, § 39M

_X_ Public Building Contract estimated to cost more than $100,000, subject to the bidding requirements of G.L. c. 149, §44A(D).

Section 1: CONTRACT DOCUMENTS/APPENDICES

The Contract Documents consist of this Agreement; the notice of award of the Contract; the Notice to Proceed; the entire Project Manual; Change Orders; Construction Change Directives; the Contractor's Bid and all accompanying documents; and the Design Professional's written interpretations and clarifications issued on or after the issuance of the Notice to Proceed. Shop Drawing submittals and reports or drawings utilized by the Design Professional in preparing the Contract Documents are not Contract Documents.

The following Appendices are hereby attached or incorporated by reference as part of this Agreement.

_X_ Certificate of Authority

_*_ Appendix A - Scope of Services - Misc. Bid Documents: includes a brief description of the Project, the Plans and Technical Specifications (Plans on File) and Addenda issued during the bid process

_X_ Appendix B - Contractor's Bid Price; Form for General Bid

_X**_ Appendix C - General Conditions

_X**_ Appendix D - Insurance Requirements with Contractor's Insurance Certificate(s)

__X__ Appendix E - Wage Rates; Living Wage

__X__ Appendix F - Certificate of Good Standing (for corporations)

__X__ Appendix G - Procurement Documentation (includes Advertisement; Notice to Bidders)

__X__ Appendix H - Statement of Management (over $100,000)

__X__ Appendix I - Performance Bond and Payment Bond, if contract is over $2,000

X = Attached
* = Included in the Project Manual and incorporated herein by reference
** = Attached and also duplicated in the Project Manual

Section 2: THE CONTRACTOR'S WORK.

The Contractor's "Work" refers to the services and the entire completed construction or the various separately identifiable parts thereof required by the Contract Documents, including all labor, materials, and equipment furnished, furnished and incorporated into the Project, or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

Section 3: PROJECT DATES.

(a) Contract Period: The Contract shall begin on:

(b) Date of Commencement of Work: The Date of Commencement of the Work shall be stipulated by a written Notice to Proceed given by the City to the Contractor on or before

(c) Date of Substantial Completion: The Contractor shall achieve Substantial Completion of the Work on or before _____, time being of the essence. Substantial Completion means that the Work has been completed and the Site or the facility is opened for full and intended public use, except for minor incomplete or unsatisfactory items that do not materially impair the usefulness of the Work. The Design Professional shall decide what constitutes "minor," "incomplete," "unsatisfactory," and "materially" and the Design Professional's decision shall be final.

(d) Dates of Final Completion:

The Date of Final Completion shall be;

Section 4. CONTRACT SUM/LIQUIDATED DAMAGES

(a) Contract Sum: The Contract Sum shall be $_____ .

(b) Liquidated Damages: The Contractor and the City agree to a Liquidated Damages sum of $500.00 per calendar day for failure to meet the deadlines set forth in Sections 3(c), or (d).

SIGNATURE PAGE FOLLOWS

IN WITNESS WHEREOF, the City and the Contractor have executed this Contract as a sealed instrument as of the date first written above.

CITY OF SOMERVILLE

I hereby certify that the total contract amount is $_____, and that an unencumbered balance of $_____ is available for the first fiscal year of this contract. I further certify that a sum of $_____ is hereby encumbered against the appropriate account for the purposes of this contract. Further, I certify that as funds become available, I will encumber additional sums as are required under this contract.

_____
Edward Bean, City Auditor

_____
Joseph A. Curtatone
Mayor

_____
Skip Bandini
Director, Capital Projects & Planning

.
_____
Angela M. Allen, Purchasing Director

Approved as to form:

_____
Francis X. Wright, Jr., City Solicitor

VENDOR:

_____
Signature of Authorized Agent of Vendor

Printed Name:
Title:

Vendor Address:

Federal Tax ID: #_____

FOR CORPORATIONS ONLY:

_____
Clerk's Signature

_____
Clerk's Name

APPENDIX A

Scope of Services – Miscellaneous Bid Documents

Includes a brief description of the project
The Plans and Technical Specifications (Plans on File)
And addenda issued during the bid process.

APPENDIX B
Contractor's Bid Price - Form for General Bid
(From Bid Book)

APPENDIX C
General Terms and Conditions
(From Bid Manual)

APPENDIX D

INSURANCE REQUIREMENTS

APPENDIX D - INSURANCE REQUIREMENTS
INSURANCE SPECIFICATIONS
INSURANCE REQUIREMENTS FOR AWARDED VENDOR ONLY:

Prior to commencing performance of any work or supplying materials or equipment covered by these specifications, the contractor shall furnish to the Office of the Purchasing Director a Certificate of Insurance evidencing the following:

A. GENERAL LIABILITY - Comprehensive Form

Bodily Injury Liability.....….....$ One Million
Property Damage Liability.....$ Two Million

B. COVERAGE FOR PAYMENT OF WORKER'S COMPENSATION BENEFIT PURSUANT TO CHAPTER 152 OF THE MASSACHUSETTS GENERAL LAWS IN THE AMOUNT AS LISTED BELOW:

Workers Compensation.….....$Statutory
Employer's Liability..….....…….$ Statutory

C. AUTOMOBILE LIABILITY INSURANCE AS LISTED BELOW:

Bodily Injury Liability...…….....$ Statutory

l. A contract will not be executed unless a certificate (s) of insurance evidencing above-described coverage is attached.

2. Failure to have the above-described coverage in effect during the entire period of the contract shall be deemed to be a breach of the contract.

3. All applicable insurance policies shall read:
"CITY OF SOMERVILLE" as a certificate holder and as an additional insured for general liability only along with a description of operation in the space provided on the certificate.

4. Please comply with our requirement of a **thirty (30) day** notice of cancellation and note on certificate.

Certificate Should Be Made Out To:
City Of Somerville
Purchasing Department
93 Highland Avenue
Somerville, MA 02143

Note: If your insurance expires during the life of this contract, you shall be responsible to submit a new certificate(s) covering the period of the contract. No payment will be made on a contract with an expired insurance certificate.

APPENDIX E
WAGE RATES AND LIVING WAGE FORM

STATE PREVAILING WAGE RATES
SOMERVILLE LIVING WAGE RATES FORM
RESPONSIBLE EMPLOYER ORDINANCE

INSERT MANUALLY

APPENDIX F

CERTIFICATE OF GOOD STANDING (FOR CORPORATIONS)

INSERT DOCUMENT FROM BID MANUAL HERE

Certificate of Good Standing: If the bidder is a corporation, a Certificate of Good Standing shall be provided with executed contracts. Certificate of Good Standing available online at: http://corp.sec.state.ma.us/corp/Certificates/Certificate_Request.asp or call Tel: (617) 727-9640 for more information.

APPENDIX G

PROCUREMENT DOCUMENTATION

ADVERTISEMENTS, NOTICE TO BIDDERS, ETC.

APPENDIX H

STATEMENT OF MANAGEMENT FOR CONTRACTS OVER $100,000

STATEMENT OF MANAGEMENT

In accordance with M.G.L. Chapter 30, Section 39R, the undersigned successful bidder states that its system of internal accounting controls and that of its subsidiaries reasonably assure (1) that transactions are executed in accordance with management's general and specific authorization; (2) that transactions are recorded as necessary to permit preparation of financial statements in conformity with generally accepted accounting principles, and to maintain accountability for assets; (3) that access to assets is permitted only in accordance with management's general or specific authorization, and (4) that the recorded accountability for assets is compared with the existing assets at reasonable intervals and appropriate action was taken with respect to any difference.

Executed this _____day of _____

On behalf of _____
(Successful bidder name)

_____
(Address and telephone of successful bidder)

_____
(Name and title of person signing statement)

By:_____
(Signature)

CERTIFIED PUBLIC ACCOUNTANT STATEMENT

In accordance with M.G.L. 30, Section 39R I, _____
a certified public accountant, state that I have examined the above Statement of Management on internal accounting controls, and that in my opinion (1) the representations of management are consistent with the result of management's evaluation of the system of internal accounting controls; and (2) that such representations of management are, in addition, reasonable with respect to transactions and assets in amounts which would be material when measured in relation to the above referenced successful bidder's financial statements.

_____
(Signature)

_____

(Business name, address and telephone number)

APPENDIX I

PERFORMANCE BOND AND PAYMENT BOND

FOR CONTRACTS OVER $2000

PERFORMANCE BOND

We, the undersigned,

_____,
(Name of Contractor)

_____,
(Address of Contractor)

_____, hereinafter called Principal, and
(Corporation, Partnership, or Individual)

_____,
(Name of Surety)

_____, (Address of Surety)

hereinafter called Surety, are held and firmly bound unto CITY OF SOMERVILLE, 93 Highland Avenue, Somerville, MA 02143, hereinafter called Owner, in the penal sum of Dollars

($_____) in lawful money of the United States, for the payment of which sum well and truly to be made. We hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors, and assigns.

The condition of this obligation is such that the Principal entered into a certain contract with the Owner, dated the _____ day of _____, 20____, a copy of which is attached hereto and made a part hereof, for the project known as Somerville High School Renovations to Room 143 and the Principal and Surety bind themselves to the Owner for the performance of the contract.

Now, therefore, if the Principal shall well, truly and faithfully perform its duties, all the undertakings, covenants, terms, conditions, and agreements of said contract during the

original term thereof, and any extensions thereof which may be granted by the Owner, with or without notice to the Surety and during the guaranty period set forth in the contract, and if it shall satisfy all claims and demands incurred under such contract, and shall fully indemnify and save harmless the Owner from all costs and damages which it may suffer by a reason of failure to do so, and shall reimburse and repay the Owner all outlay and expenses which the Owner may incur in making good any default, then this obligation shall be void; otherwise, this bond shall remain in full force and effect; provided, further, that the said Surety for value received hereby agrees that no change, extension of time, alteration or addition to the terms of the contract or to the work to be performed thereunder of the specifications accompanying the same shall in any wise affect its obligation on this Bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the work or to the specifications. Provided, further, that no final settlement between the Owner and the Contractor shall abridge the right of any beneficiary hereunder whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed on this _____day of , 20____.

CONTRACTOR AS PRINCIPAL	SURETY
_____	_____
(Signature)	(Signature)
Name and Title:	Name and Title:
SEAL	SEAL

Payment Bond

We, the undersigned,

_____,
(Name of Contractor)

_____,
(Address of Contractor)

_____, hereinafter called Principal, and
(Corporation, Partnership, or Individual)

_____,
(Name of Surety)

_____, (Address of Surety)

hereinafter called Surety, are held and firmly bound unto CITY OF SOMERVILLE, 93 Highland Avenue, Somerville, MA 02143, hereinafter called Owner, in the penal sum of Dollars

($_____) in lawful money of the United States, for the payment of which sum well and truly to be made. We hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors, and assigns.

The condition of this obligation is such that the Principal entered into a certain contract with the Owner, dated the _____ day of _____, 20___, a copy of which is attached hereto and made a part hereof, for the project known as Somerville High School Renovations to Room 143.

Now, therefore, if the Principal shall promptly make payment to all persons, firms, subcontractors, and corporations furnishing materials for or performing labor in the prosecution of the work provided for in such contract, and any authorized extension or

modification thereof, including all amounts due for materials used in connection with the work, and all insurance premiums on said work, and for all labor, performed in such work whether by subcontractor or otherwise, then this obligation shall be void; otherwise this bond is remain in full force and effect. Provided, further, that the said Surety for value received hereby agrees that no change, extension of time, alteration or addition to the terms of the contract or to the work to be performed thereunder of the Specifications accompanying the same shall in any wise affect its obligation on this Bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the work or to the specifications.

Provided, further, that no final settlement between the Owner and the Contractor shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed on this _____day of , 20___.

CONTRACTOR AS PRINCIPAL	SURETY
----------	----------
(Signature)	(Signature)
Name and Title:	Name and Title:
SEAL	SEAL

PART III TECHNICAL SPECIFICATIONS – DIVISIONS 1 AND 2

SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.

B. Related Sections include the following:

1. Division 01 Section "Payment Procedures" for submitting Applications for Payment.
2. Division 01 Section "Project Management and Coordination" for submitting Coordination Drawings.
3. Division 01 Section "Construction Progress Documentation" for submitting schedules and reports, including Contractor's Construction Schedule and the Submittals Schedule and construction photographs.
4. Division 01 Section "Quality Requirements" for submitting test and inspection reports and Delegated-Design Submittals and for erecting mockups.
5. Division 01 Section "Closeout Procedures" for submitting warranties Project Record Documents and operation and maintenance manuals.

1.2 DEFINITIONS

A. Action Submittals: Written and graphic information and physical samples that require Architect's responsive action.

B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's responsive action. Submittals may be rejected for not complying with requirements.

1.3 ACTION SUBMITTALS

A. Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or modifications to submittals noted by the Architect and additional time for handling and reviewing submittals required by those corrections.

1.4 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

A. Architect's Digital Data Files: Electronic copies of CAD Drawings of the Contract Drawings will be provided if needed by Architect for General Contractor's use in preparing submittals.

1. Architect will furnish General Contractor one set of digital data drawing files of the Contract Drawings for use in preparing Shop Drawings.

a. Architect makes no representations as to the accuracy or completeness of digital data drawing files as they relate to the Contract Drawings.

b. General Contractor shall execute a data licensing agreement in the form of an Agreement form acceptable to the Architect.

B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate each submittal, other submittals, requirements and related activities that require sequential activity.
2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.

a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

C. Processing Time: Allow time for submittal review, including time for re-submittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including re-submittals.

1. Initial Review: Allow 14 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise General Contractor when a submittal being processed must be delayed for coordination.
2. Concurrent Review: Where concurrent review of submittals by Architect's consultants, Owner, or other parties is required, allow 21 days for initial review of each submittal.
3. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
4. Re-submittal Review: Allow 14 days for review of each re-submittal.
5. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing.

D. Identification and Information: Place a permanent label or title block on each paper copy submittal item for identification.

1. Indicate name of firm or entity that prepared each submittal on label or title block.
2. Provide a space approximately 6 by 6 inches on label or beside title block to record Construction Manager's review and approval markings and action taken by Architect.
3. Include the following information for processing and recording action taken:

a. Project name.
b. Date.
c. Name and address of Architect.
d. Name and address of General Contractor.
e. Name and address of subcontractor.
f. Name and address of supplier.
g. Name of manufacturer.
h. Submittal number or other unique identifier, including revision identifier.

1) Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 061000.01). Resubmittals

shall include an alphabetic suffix after another decimal point (e.g., 061000.01.A).

2) Include specification section page number and paragraph number on each hard copy submittal with separate transmittals for each trade.

i. Number and title of appropriate Specification Section.
j. Drawing number and detail references, as appropriate.
k. Location(s) where product is to be installed, as appropriate.
l. Other necessary identification.

E. Identification and Information: Identify and incorporate information in each electronic submittal file as follows:

1. Assemble complete submittal package into a single indexed file with links enabling navigation to each item.
2. Name file with transmittal, submittal number, specification number and including revision identifier and general topic as follows.

a. Example of Electronic File Name: 001-005-013300-01 Submittal Name.

3. Provide means for insertion to permanently record Construction Manager's review and approval markings and action taken by Architect.
4. Include the following information on an necessary inserted sheet:

a. Project name.
b. Date.
c. Name and address of Architect.
d. Name and address of General Contractor.
e. Name and address of firm or entity that prepared submittal.
f. Name and address of subcontractor.
g. Name and address of supplier.
h. Name of manufacturer.
i. Number and title of appropriate Specification Section.
j. Drawing number and detail references, as appropriate.
k. Location(s) where product is to be installed, as appropriate.
l. Related physical samples submitted directly.
m. Other necessary identification.
n. Include specification section page number and paragraph number on each hard copy submittal with separate transmittals for each trade.

F. Options: Identify options requiring selection by the Architect.

G. Deviations: Identify deviations from the Contract Documents on submittals.

1. All substitutions must be accompanied by a filled out Substitution Request Form included in the Project Manual. NO REVIEW OF SUBSTITUTIONS WILL BE PROCESSED WITHOUT THIS FORM ATTACHED.

H. Unless additional copies are required.

1. Submit submittals via email as PDF electronic files to Architect. Submittal will be reviewed and scanned to an electronic file for Construction Manager to make as many

copies as General Contractor requires. A hard copy will be provided to OPM by the General Contractor. See Section 2.1.

I. Transmittal: Assemble each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form.

1. Transmittal Form: Use any.
2. On an attached separate sheet, prepared on General Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Architect on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same identification information as related submittal.

J. Resubmittals: Make resubmittals in same form as initial submittal.

1. Note date and content of previous submittal.
2. Note date and content of revision in label or title block and clearly indicate extent of revision.
3. Resubmit submittals until they are marked with approval notation from Architect's action stamp.

K. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

L. Use for Construction: Use only final submittals that are marked with approval notation from Architect's action stamp.

M. CPM Schedule:

1. Maintain CPM system using automated methods to involve following activities:

   a. Long-lead purchases and deliveries of critical materials.
   b. Fabrication, installation, and testing of critical equipment.
   c. Submittal and approval of material samples and shop drawings, coordinated with Division 01 Section ‘Product Requirements” for product list submittal and schedule.
   d. All activities that affect job progress, including on-site regulatory inspections.
   e. Required dates of completion for all activities.

2. Submit summary diagram consisting of network of 50 to 150 activities, fully based on detailed diagrams of project tasks.

3. Include following information for each activity for mathematical analysis of CPM network diagram:

   a. Preceding and following event numbers.
   b. Activity description.
   c. Estimated activity duration.
   d. Earliest start date (calendar date).
   e. Earliest finish date (calendar date).

f. Scheduled or actual start date.
g. Scheduled or actual finish date.
h. Latest start date (calendar date).
I. Latest finish date (calendar date).
j. Monetary value of activity.
k. Responsibility for activity (prime; subcontractors, suppliers, etc.).
l. Personnel required.
m. Percentage of activity completed as of each report.
n. Contractor's earnings based on portion of work completed.
o. Bid item of which activity is part.

4. In addition to activity tabulation, include identification of planned expedited activities using overtime or double shifts, including possible Saturday, Sunday, or Holiday work.
5. Provide on-site manpower loading schedule and description of major construction equipment planned for Project operations.
6. Generate computer printout sorting certain classes of frequently used data into groups as follows:

   a. By preceding event number, from lowest to highest, and then in order of following event number.
   b. By amount of slack, then in order to earliest allowable start date.
   c. In order of latest allowable start date, then in order of preceding event numbers, then in order of succeeding event numbers.

7. Distribution:

   a. Following response to initial submittal, print and distribute copies to Architect, Owner, subcontractors, and other parties required to comply with scheduled dates.
   b. Post copies in Project Meeting Room and Temporary Field Office.
   c. When revisions are made, distribute to same parties and post in same locations.
   d. Delete parties from distribution when they have completed their assigned portion of work and are no longer involved in construction activities.

8. Schedule Updating:

   a. Revise Schedule after each meeting or activity, where revisions have been recognized or made.
   b. Issue updated Schedule concurrently with report of each meeting.

N. Updating and Reviewing Schedule:

1. Submit first Schedule minimum 15 days before first Request for Payment; payments will not be processed or approved without receipt and acceptance of Schedule.
2. At each Request for Progress Payment, submit updated Schedule, clearly identifying changes from previous Schedule; payments will not be processed or approved without receipt and acceptance of updated Schedule.

PART 2 - PRODUCTS

2.1 SUBMITTAL PROCEDURES

A. General Submittal Procedure Requirements:

1. Submit electronic submittals via email as PDF electronic files.

    a. Architect, will return annotated file. Retain one copy of file as an electronic Project record document file.

2. Informational Submittals: Submit electronic copy of each submittal, unless otherwise indicated.
3. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Division 01 Section "Closeout Procedures."
4. Certificates and Certifications Submittals: Provide a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.

    a. Provide a digital signature with digital certificate on electronically-submitted certificates and certifications where indicated.
    b. Provide a notarized statement on original paper copy certificates and certifications where indicated.

5. Test and Inspection Reports Submittals: Comply with requirements specified in Division 01 Section "Quality Requirements."

B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
2. Mark each copy of each submittal to show which products and options are applicable.
3. Include the following information, as applicable:

    a. Manufacturer's catalog cuts.
    b. Manufacturer's product specifications.
    c. Standard color charts.
    d. Statement of compliance with specified referenced standards.
    e. Testing by recognized testing agency.
    f. Application of testing agency labels and seals.
    g. Notation of coordination requirements.
    h. Availability and delivery time information.
    i. Manufacturer's written recommendations.
    j. Manufacturer's installation instructions.
    k. Wiring diagrams showing factory-installed wiring.
    l. Printed performance curves.
    m. Operational range diagrams
    n. Mill reports.
    o. Standard product operating and maintenance manuals.

4. Submit Product Data concurrent with Samples.
5. Submit Product Data in the following format:

a. PDF electronic file and physical sample.

C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data, unless submittal based upon Architect's digital data drawing files is permitted by the Architect.

1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:

a. Dimensions.
b. Identification of products.
c. Fabrication and installation drawings.
d. Roughing-in and setting diagrams.
e. Wiring diagrams showing field-installed wiring, including power, signal, and control wiring.
f. Shop work manufacturing instructions.
g. Templates and patterns.
h. Design calculations.
i. Schedules.
j. Compliance with specified standards.
k. Notation of coordination requirements.
l. Notation of dimensions established by field measurement.
m. Relationship and attachment to adjoining construction clearly indicated.
n. Seal and signature of professional engineer if specified.

2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches but no larger than 24 by 36 inches.
3. Submit Shop Drawings in the following format:

a. PDF electronic file.

4. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring.

D. Coordination Drawings: Comply with requirements in Division 01 Section "Project Management and Coordination."

E. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.

1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
2. If variation in color, pattern, texture, or other characteristic is inherent in the product represented by a Sample, submit at least three sets of paired units that show approximate limits of the variations.
3. Refer to individual Specification Sections for requirements for Samples that illustrate workmanship, fabrication techniques, details of assembly, connections, operation, and similar construction characteristics.
4. Comply with requirements in Division 01 Section "Quality Requirements" for mockups.

5. Preparation: Mount, display, or package Samples in manner specified to facilitate review of qualities indicated. Prepare Samples to match Architect's sample where so indicated. Attach label on unexposed side that includes the following:

    a. Generic description of Sample.
    b. Product name or name of manufacturer.
    c. Sample source.

6. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
7. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from the same material to be used for the Work, cured and finished in manner specified, and physically identical with the product proposed for use, and that show full range of color and texture variations
8. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
9. Identification: Attach label on unexposed side of Samples that includes the following:

    a. Generic description of Sample.
    b. Product name and name of manufacturer.
    c. Sample source.
    d. Number and title of applicable Specification Section.

10. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

    a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
    b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.

F. Field Samples:

1. Specified in individual Sections are special types of samples.
2. Field samples are full-size examples erected on site to illustrate finishes, coatings, or finish materials and to establish standard by which work will be judged.
3. Comply with submittal requirements to fullest extent possible.
4. Process Transmittal Forms to provide record of activity.

G. Delegated-Design Submittal: Comply with requirements in Division 01 Section "Quality Requirements."

H. Submittals Schedule: Comply with requirements in Division 01 Section "Construction Progress Documentation."

I. Application for Payment: Comply with requirements specified in Division 01 Section "Payment Procedures."

J. Schedule of Values: Comply with requirements specified in Division 01 Section "Payment Procedures."

K. Subcontractor's List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Use CSI Form 1.5A. Include the following information in tabular form:

1. Name, address, and telephone number of entity performing subcontract or supplying products.
2. Number and title of related Specification Section(s) covered by subcontract.
3. Drawing number and detail references, as appropriate, covered by subcontract.
4. Submit subcontractor's list in the following format:

a. PDF electronic file.

L. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.

M. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.

2.2 INFORMATIONAL SUBMITTALS

A. General: Prepare and submit Informational Submittals required by other Specification Sections.

1. Number of Copies: Submit four copies of each submittal, unless otherwise indicated. Architect will not return copies.
2. Certificates and Certifications: Provide a notarized statement that includes signature of Contractor, testing agency, or design professional responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of the company.
3. Test and Inspection Reports: Comply with requirements in Division 01 Section "Quality Requirements."

B. Contractor's Construction Schedule: Comply with requirements in Division 01 Section "Construction Progress Documentation."

C. Informational Logs:

1. Shop Drawing Log.
2. Long Lead Item Log.
3. Pre-purchase Log.

D. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

E. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements.

F. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements. Submit record of Welding Procedure Specification (WPS) and Procedure Qualification Record (PQR) on AWS forms. Include names of firms and personnel certified.

G. Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements and, where required, is authorized for this specific Project.

H. Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements. Include evidence of manufacturing experience where required.

I. Material Certificates: Prepare written statements on manufacturer's letterhead certifying that material complies with requirements.

J. Material Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements.

K. Preconstruction Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements.

L. Compatibility Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.

M. Field Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements.

N. Product Test Reports: Prepare written reports indicating current product produced by manufacturer complies with requirements. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.

O. Research/Evaluation Reports: Prepare written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:

1. Name of evaluation organization.
2. Date of evaluation.
3. Time period when report is in effect.
4. Product and manufacturers' names.
5. Description of product.
6. Test procedures and results.
7. Limitations of use.

P. Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment. Comply with requirements in Division 01 Section "Closeout Procedures."

Q. Design Data: Prepare written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

R. Manufacturer's Instructions: Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer. Include the following, as applicable:

1. Preparation of substrates.
2. Required substrate tolerances.
3. Sequence of installation or erection.
4. Required installation tolerances.
5. Required adjustments.
6. Recommendations for cleaning and protection.

S. Manufacturer's Field Reports: Prepare written information documenting factory-authorized service representative's tests and inspections. Include the following, as applicable:

1. Name, address, and telephone number of factory-authorized service representative making report.
2. Statement on condition of substrates and their acceptability for installation of product.
3. Statement that products at Project site comply with requirements.
4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
6. Statement whether conditions, products, and installation will affect warranty.
7. Other required items indicated in individual Specification Sections.

T. Insurance Certificates and Bonds: Prepare written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of the coverage.

U. Material Safety Data Sheets:

1. Submit three copies of MSDS for all products scheduled or planned for use on Project.
2. Notate in Submittal Schedule submission sequence for submission of MSDS.
3. Do not purchase any products until MSDS have been submitted to Architect and reviewed.
4. Label MSDS with Project Manual Section Number.

PART 3 - EXECUTION

3.1 GENERAL CONTRACTOR'S REVIEW

A. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.

B. Project Closeout and Maintenance/Material Submittals: Refer to requirements in Division 01 Section "Closeout Procedures."

C. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Construction Manager's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 ARCHITECT'S ACTION

A. General: Architect will not review submittals that do not bear General Contractor 's approval stamp and will return them without action.

B. Action Submittals: Architect will review each submittal, make marks to indicate corrections or modifications required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action. On advice of counsel, select appropriate terms for action stamp and insert term and explanation of each action taken in subparagraph below. See Evaluations.

C. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.

D. Incomplete submittals are not acceptable, will be considered nonresponsive, and will be returned without review.

E. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

END OF SECTION

SECTION 017329 - CUTTING AND PATCHING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes procedural requirements for cutting and patching.

B. See other Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.

C. Construction Manager to include cutting, coring, drilling, and patching of holes and openings for the work of all subtrades unless specifically noted otherwise.

1.2 QUALITY ASSURANCE

A. General Scope: The Construction Manager and subcontractors shall examine and study the existing construction and conditions to fully understand the extent of cutting required. The work includes, but is not limited to, selective demolition and cutting required to perform demolition work, patching/repairing existing to remain construction is required if damaged during selective demolition.

B. Structural Work: Do not cut and patch structural elements in a manner that would reduce the load-carrying capacity or load deflection ratio. Obtain approval of the cutting and patching proposal before cutting and patching structural elements.

C. Operational and Safety Limitations: Do not cut and patch operating elements or safety components in a manner that would reduce their capacity to perform as intended, or would increase maintenance, or decrease operational life or safety. Obtain approval of the cutting and patching proposal before cutting and patching operating elements or safety related systems.

D. Visual Requirements: Remove and replace Work cut and patched in a visually unsatisfactory manner if Work is to remain exposed.

PART 2 PRODUCTS

2.1 MATERIALS

A. Use materials identical to existing materials. If identical materials are not available or cannot be used where exposed surfaces are involved, use materials that match existing adjacent surfaces to the fullest extent possible. Use materials whose performance will equal or surpass existing materials.

B. Comply with requirements in other Sections.

PART 3 EXECUTION

3.1 INSPECTION

A. Before cutting, examine surfaces to be cut and patched and conditions under which cutting and patching is to be performed. Take corrective action before proceeding, if unsafe or unsatisfactory conditions are encountered.

3.2 PREPARATION

A. Temporary Support: Provide temporary support of Work to be cut. See structural requirements.

B. Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions that might be exposed during cutting and patching operations.

3.3 PERFORMANCE

A. Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time and complete without delay.

1. Cut existing construction to provide for the installation of other components or the performance of other construction activities and the subsequent fitting and patching required to restore surfaces to their original condition.

B. Cutting: Cut existing construction using methods least likely to damage elements to be retained or adjoining construction. Where possible, review procedures with the original installer; comply with the original installer's recommendations.

1. Where cutting is required, use hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut holes and slots to size required with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces.
2. Cut through concrete and masonry using a cutting machine such as a carborundum saw or diamond core drill.
3. By-pass utility services such as pipe or conduit before cutting, where services are shown or required to be removed, relocated or abandoned. Cut-off pipe as noted. Cap, or plug and seal the remaining portion of pipe or conduit as noted on demolition drawings.

C. Patching: Patch with durable seams that which are as invisible as possible. Comply with specified tolerances.

1. Where feasible, inspect and test patched areas to demonstrate integrity of the installation.
2. Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing if finish is to remain exposed.

D. Cleaning: Thoroughly clean areas and spaces where cutting and patching is performed.

END OF SECTION

SECTION 033053 - MISCELLANEOUS CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes cast-in-place concrete, including reinforcement, concrete materials, mixture design, placement procedures, and finishes.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Other Action Submittal:

1. Design Mixtures: For each concrete mixture.

1.4 QUALITY ASSURANCE

A. Ready-Mix-Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.

B. Comply with the following sections of ACI 301, unless modified by requirements in the Contract Documents:

1. "General Requirements."
2. "Formwork and Formwork Accessories."
3. "Reinforcement and Reinforcement Supports."
4. "Concrete Mixtures."
5. "Handling, Placing, and Constructing."
6. "Lightweight Concrete."

C. Comply with ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."

PART 2 - PRODUCTS

2.1 FORMWORK

A. Furnish formwork and formwork accessories according to ACI 301.

2.2 STEEL REINFORCEMENT

A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.

B. Plain-Steel Wire: ASTM A 82/A 82M, as drawn.

C. Plain-Steel Welded Wire Reinforcement: ASTM A 185/A 185M, fabricated from as-drawn steel wire into flat sheets.

D. Deformed-Steel Welded Wire Reinforcement: ASTM A 497/A 497M, flat sheet.

2.3 CONCRETE MATERIALS

A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source throughout Project:

1. Portland Cement: ASTM C 150, Type I/II Retain one or both of first two subparagraphs below if supplementary materials are permitted. Ready-mix-concrete manufacturer blends these materials with portland cement. Fly ash, slag, or pozzolanic materials may slow rate of concrete strengthening and affect color uniformity.

B. Normal-Weight Aggregate: ASTM C 33, graded, 1-1/2-inch nominal maximum aggregate size.

C. Water: ASTM C 94/C 94M.

2.4 ADMIXTURES

A. Air-Entraining Admixture: ASTM C 260.

B. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.

1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
2. Retarding Admixture: ASTM C 494/C 494M, Type B.
3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

2.5 RELATED MATERIALS

A. Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber, or ASTM D 1752, cork or self-expanding cork.

2.6 CURING MATERIALS

A. Evaporation Retarder: Waterborne, monomolecular film forming; manufactured for application to fresh concrete.

B. Absorptive Cover: AASHTO M 182, Class 3, burlap cloth or cotton mats.

C. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.

D. Water: Potable.

E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B.

2.7 CONCRETE MIXTURES

A. Comply with ACI 301 requirements for concrete mixtures.

B. Normal-Weight Concrete: Prepare design mixes, proportioned according to ACI 301, as follows:

1. Minimum Compressive Strength: 4000 psi at 28 days.
2. Maximum Water-Cementitious Materials Ratio: 0.45.
3. Cementitious Materials: Use fly ash, pozzolan, ground granulated blast-furnace slag, and silica fume as needed to reduce the total amount of portland cement, which would otherwise be used, by not less than 40 percent.
4. Slump Limit: 4 inches, plus or minus 1 inch.
5. Air Content: Maintain within range permitted by ACI 301. Do not allow air content of trowel-finished floor slabs to exceed 3 percent.

2.8 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M, and furnish batch ticket information.

1. When air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

B. Project-Site Mixing: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M. Mix concrete materials in appropriate drum-type batch machine mixer.

1. For mixer capacity of 1 cu. yd. or smaller, continue mixing at least 1-1/2 minutes, but not more than 5 minutes after ingredients are in mixer, before any part of batch is released.
2. For mixer capacity larger than 1 cu. yd., increase mixing time by 15 seconds for each additional 1 cu. yd..

3. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mix type, mix time, quantity, and amount of water added. Record approximate location of final deposit in structure.

PART 3 - EXECUTION

3.1 FORMWORK

A. Design, construct, erect, brace, and maintain formwork according to ACI 301.

3.2 EMBEDDED ITEMS

A. Place and secure anchorage devices and other embedded items required for adjoining work attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

3.3 STEEL REINFORCEMENT

A. Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

3.4 JOINTS

A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.

3.5 CONCRETE PLACEMENT

A. Comply with ACI 301 for placing concrete.

B. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301.

C. Do not add water to concrete during delivery, at Project site, or during placement.

D. Consolidate concrete with mechanical vibrating equipment.

3.6 FINISHING UNFORMED SURFACES

A. General: Comply with ACI 302.1R for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

B. Screed surfaces with a straightedge and strike off. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane before excess moisture or bleedwater appears on surface.

1. Do not further disturb surfaces before starting finishing operations.

C. Scratch Finish: Apply scratch finish to surfaces indicated and surfaces to receive concrete floor topping or mortar setting beds for ceramic or quarry tile, portland cement terrazzo, and other bonded cementitious floor finishes, unless otherwise indicated.

D. Float Finish: Apply float finish to surfaces indicated, to surfaces to receive trowel finish, and to floor and slab surfaces to be covered with fluid-applied or sheet waterproofing, fluid-applied or direct-to-deck-applied membrane roofing, or sand-bed terrazzo.

E. Trowel Finish: Apply a hard trowel finish to surfaces indicated and to floor and slab surfaces exposed to view or to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin film-finish coating system.

F. Trowel and Fine-Broom Finish: Apply a partial trowel finish, stopping after second troweling, to surfaces indicated and to surfaces where ceramic or quarry tile is to be installed by either thickset or thin-set methods. Immediately after second troweling, and when concrete is still plastic, slightly scarify surface with a fine broom.

G. Nonslip Broom Finish: Apply a nonslip broom finish to surfaces indicated and to exterior concrete platforms, steps, and ramps. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route.

3.7 CONCRETE PROTECTING AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and with ACI 301 for hot-weather protection during curing.

B. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

C. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.

D. Curing Methods: Cure formed and unformed concrete for at least seven days by one or a combination of the following methods:

1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:

a. Water.
b. Continuous water-fog spray.

c. Absorptive cover, water saturated and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.

2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.
4. Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.

3.8 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

B. Tests: Perform according to ACI 301.

1. Testing Frequency: One composite sample shall be obtained for each day's pour of each concrete mix exceeding 5 cu. yd. but less than 25 cu. yd., plus one set for each additional 50 cu. yd. or fraction thereof.
2. Testing Frequency: One composite sample shall be obtained for each 100 cu. yd. or fraction thereof of each concrete mix placed each day.

3.9 REPAIRS

A. Remove and replace concrete that does not comply with requirements in this Section.

END OF SECTION 033053

SECTION 055213 - PIPE AND TUBE RAILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Steel pipe railings.

1.3 COORDINATION

A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.

B. Coordinate installation of anchorages for railings. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

C. Schedule installation so wall attachments are made only to completed walls. Do not support railings temporarily by any means that do not satisfy structural performance requirements.

1.4 ACTION SUBMITTALS

A. Product Data: For the following:

1. Manufacturer's product lines of mechanically connected railings.
2. Railing brackets.
3. Paint products.

B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.

C. Samples: For each type of exposed finish required.

1. Sections of each distinctly different linear railing member, including handrails, top rails, posts, and balusters.
2. Fittings and brackets.

D. Delegated-Design Submittal: For railings, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.5 INFORMATIONAL SUBMITTALS

A. Product Test Reports: For pipe and tube railings, for tests performed by a qualified testing agency, according to ASTM E 894 and ASTM E 935.

B. Evaluation Reports: For post-installed anchors , from ICC-ES.

1.6 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel according to the following:

1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."

1.7 DELIVERY, STORAGE, AND HANDLING

A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

1.8 FIELD CONDITIONS

A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Steel Pipe and Tube Railings:

1. Manufacturers: Subject to compliance with requirements, Steel pipe railings are generally fabricated by local ironworks.

B. Source Limitations: Obtain each type of railing from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design railings, including attachment to building construction.

B. Structural Performance: Railings, including attachment to building construction, shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:

1. Handrails and Top Rails of Guards:

    a. Uniform load of 50 lbf/ ft. applied in any direction.
    b. Concentrated load of 200 lbf applied in any direction.
    c. Uniform and concentrated loads need not be assumed to act concurrently.

2.3 METALS, GENERAL

A. Metal Surfaces, General: Provide materials with smooth surfaces, without seam marks, roller marks, rolled trade names, stains, discolorations, or blemishes.

B. Brackets, Flanges, and Anchors: Cast or formed metal of same type of material and finish as supported rails unless otherwise indicated.

1. Provide type of bracket with predrilled hole for exposed bolt anchorage and that provides 1-1/2-inch clearance from inside face of handrail to finished wall surface.

2.4 STEEL AND IRON

A. Tubing: ASTM A 500 (cold formed) or ASTM A 513.

B. Pipe: Type S, Grade A, Standard Weight (Schedule 40), unless another grade and weight are required by structural loads.

C. Plates, Shapes, and Bars: ASTM A 36/A 36M.

2.5 FASTENERS

A. General: Provide the following:

1. Ungalvanized-Steel Railings: Plated steel fasteners complying with ASTM B 633 or ASTM F 1941, Class Fe/Zn 5 for zinc coating.
2. Provide exposed fasteners with finish matching appearance, including color and texture, of railings.

B. Fasteners for Anchoring Railings to Other Construction: Select fasteners of type, grade, and class required to produce connections suitable for anchoring railings to other types of construction indicated and capable of withstanding design loads.

C. Fasteners for Interconnecting Railing Components:

1. Provide concealed fasteners for interconnecting railing components and for attaching them to other work, unless otherwise indicated.
2. Provide concealed fasteners for interconnecting railing components and for attaching them to other work, unless exposed fasteners are unavoidable or are the standard fastening method for railings indicated.
3. Provide square or hex socket flat-head machine screws for exposed fasteners unless otherwise indicated.

2.6 MISCELLANEOUS MATERIALS

A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

B. Shop Primers: Provide primers that comply with Section 099123 "Interior Painting" Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79 and compatible with topcoat.

1. Use primer containing pigments that make it easily distinguishable from zinc-rich primer.

2.7 FABRICATION

A. General: Fabricate railings to comply with requirements indicated for design, dimensions, member sizes and spacing, details, finish, and anchorage**,** but not less than that required to support structural loads.

B. Shop assemble railings to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation. Use connections that maintain structural value of joined pieces.

C. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

D. Form work true to line and level with accurate angles and surfaces.

E. Fabricate connections that are exposed to weather in a manner that excludes water. Provide weep holes where water may accumulate.

F. Cut, reinforce, drill, and tap as indicated to receive finish hardware, screws, and similar items.

G. Connections: Fabricate railings with welded connections unless otherwise indicated.

H. Welded Connections: Cope components at connections to provide close fit, or use fittings designed for this purpose. Weld all around at connections, including at fittings.

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove flux immediately.
4. At exposed connections, finish exposed surfaces smooth and blended so no roughness shows after finishing and welded surface matches contours of adjoining surfaces.

I. Form Changes in Direction as Follows:

1. By bending or by inserting prefabricated elbow fittings.

J. For changes in direction made by bending, use jigs to produce uniform curvature for each repetitive configuration required. Maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.

K. Close exposed ends of railing members with prefabricated end fittings.

L. Provide wall returns at ends of wall-mounted handrails unless otherwise indicated. Close ends of returns unless clearance between end of rail and wall is 1/4 inch or less.

M. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, flanges, miscellaneous fittings, and anchors to interconnect railing members to other work unless otherwise indicated.

1. At brackets and fittings fastened to plaster or gypsum board partitions, provide crush-resistant fillers or other means to transfer loads through wall finishes to structural supports and prevent bracket or fitting rotation and crushing of substrate.

N. Provide inserts and other anchorage devices for connecting railings to concrete or masonry work. Fabricate anchorage devices capable of withstanding loads imposed by railings. Coordinate anchorage devices with supporting structure.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine plaster and gypsum board assemblies, where reinforced to receive anchors, to verify that locations of concealed reinforcements are clearly marked for Installer. Locate reinforcements and mark locations if not already done.

3.2 INSTALLATION, GENERAL

A. Fit exposed connections together to form tight, hairline joints.

B. Perform cutting, drilling, and fitting required for installing railings. Set railings accurately in location, alignment, and elevation; measured from established lines and levels and free of rack.

1. Do not weld, cut, or abrade surfaces of railing components that are coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.
2. Set posts plumb within a tolerance of 1/16 inch in 3 feet.
3. Align rails so variations from level for horizontal members and variations from parallel with rake of steps and ramps for sloping members do not exceed 1/4 inch in 12 feet.

C. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.

1. Coat, with a heavy coat of bituminous paint, concealed surfaces of aluminum that are in contact with grout, concrete, masonry, wood, or dissimilar metals.

D. Adjust railings before anchoring to ensure matching alignment at abutting joints.

E. Fastening to In-Place Construction: Use anchorage devices and fasteners where necessary for securing railings and for properly transferring loads to in-place construction.

3.3 RAILING CONNECTIONS

A. Nonwelded Connections: Use mechanical or adhesive joints for permanently connecting railing components. Seal recessed holes of exposed locking screws using plastic cement filler colored to match finish of railings.

B. Welded Connections: Use fully welded joints for permanently connecting railing components. Comply with requirements for welded connections in "Fabrication" Article whether welding is performed in the shop or in the field.

C. Expansion Joints: Install expansion joints at locations indicated but not farther apart than required to accommodate thermal movement. Provide slip-joint internal sleeve extending 2 inches beyond joint on either side, fasten internal sleeve securely to one side, and locate joint within 6 inches of post.

3.4 ATTACHING RAILINGS

A. Anchor railing ends at walls with round flanges anchored to wall construction and welded to railing ends.

B. Attach railings to wall with wall brackets, except where end flanges are used. Locate brackets as indicated or, if not indicated, at spacing required to support structural loads.

C. Secure wall brackets and railing end flanges to building construction as follows:
   1. For steel-framed partitions, use hanger or lag bolts set into fire-retardant-treated wood backing between studs. Coordinate with stud installation to locate backing members.
   2. For steel-framed partitions, use toggle bolts installed through flanges of steel framing or through concealed steel reinforcements.

3.5 ADJUSTING AND CLEANING

A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop painting to comply with SSPC-PA 1 requirements for touching up shop-painted surfaces.

   1. Apply by brush or spray to provide a minimum 2.0-mil dry film thickness.

B. Touchup Painting: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint are specified in Section 099123 "Interior Painting."

3.6 PROTECTION

A. Protect finishes of railings from damage during construction period with temporary protective coverings approved by railing manufacturer. Remove protective coverings at time of Substantial Completion.

END OF SECTION 055213

SECTION 061053 - MISCELLANEOUS ROUGH CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Framing with dimension lumber.
2. Wood blocking and nailers.
3. Wood furring.
4. Wood sleepers.

B. Related Requirements:

1. Section 061600 "Sheathing."
2. Section 092216 “Non – Structural Metal Framing”

1.3 DEFINITIONS

A. Dimension Lumber: Lumber of 2 inches nominal or greater but less than 5 inches nominal in least dimension.

B. Lumber grading agencies, and the abbreviations used to reference them, include the following:

1. NeLMA: Northeastern Lumber Manufacturers' Association.
2. NHLA: National Hardwood Lumber Association.
3. NLGA: National Lumber Grades Authority.
4. SPIB: The Southern Pine Inspection Bureau.
5. WCLIB: West Coast Lumber Inspection Bureau.
6. WWPA: Western Wood Products Association.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.

2. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Include physical properties of treated materials based on testing by a qualified independent testing agency.
3. For fire-retardant treatments, include physical properties of treated lumber both before and after exposure to elevated temperatures, based on testing by a qualified independent testing agency according to ASTM D 5664.
4. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.
5. Include copies of warranties from chemical treatment manufacturers for each type of treatment.

1.5 INFORMATIONAL SUBMITTALS

A. Evaluation Reports: For the following, from ICC-ES:

1. Fire-retardant-treated wood.
2. Power-driven fasteners.
3. Powder-actuated fasteners.
4. Expansion anchors.
5. Metal framing anchors.

1.6 QUALITY ASSURANCE

A. Testing Agency Qualifications: For testing agency providing classification marking for fire-retardant treated material, an inspection agency acceptable to authorities having jurisdiction that periodically performs inspections to verify that the material bearing the classification marking is representative of the material tested.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Stack lumber flat with spacers beneath and between each bundle to provide air circulation. Protect lumber from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.

1. Factory mark each piece of lumber with grade stamp of grading agency.

B. Maximum Moisture Content of Lumber: 15 percent

2.2 FIRE-RETARDANT-TREATED MATERIALS

A. General: Where fire-retardant-treated materials are indicated, use materials complying with requirements in this article, that are acceptable to authorities having jurisdiction, and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.

B. Fire-Retardant-Treated Lumber and Plywood by Pressure Process: Products with a flame spread index of 25 or less when tested according to ASTM E 84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet beyond the centerline of the burners at any time during the test.

1. Use treatment that does not promote corrosion of metal fasteners.
2. Interior Type A: Treated materials shall have a moisture content of 28 percent or less when tested according to ASTM D 3201 at 92 percent relative humidity. Use where exterior type is not indicated.
3. Design Value Adjustment Factors: Treated lumber shall be tested according ASTM D 5664, and design value adjustment factors shall be calculated according to ASTM D 6841. Retain option in first paragraph below if required for plywood backing panels.

C. Kiln-dry plywood after treatment to a maximum moisture content of 15 percent.

D. Identify fire-retardant-treated wood with appropriate classification marking of testing and inspecting agency acceptable to authorities having jurisdiction.

E. Application: Treat all miscellaneous carpentry and sheathing unless otherwise indicated.

1. Framing for raised platforms.
2. Concealed blocking.

2.3 DIMENSION LUMBER FRAMING

A. Non-Load-Bearing Interior Partitions and Ramp Framing: Construction or No. 2and any of the following species:

1. Hem-fir (north); NLGA.
2. Mixed southern pine; SPIB.
3. Spruce-pine-fir; NLGA.
4. Hem-fir; WCLIB or WWPA.
5. Spruce-pine-fir (south); NeLMA, WCLIB, or WWPA.
6. Northern species; NLGA.
7. Eastern softwoods; NeLMA.
8. Western woods; WCLIB or WWPA.

2.4 MISCELLANEOUS LUMBER

A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:

1. Blocking.
2. Nailers.

B. For items of dimension lumber size, provide Construction or No. 2 and any of the following species:

1. Hem-fir (north); NLGA.
2. Mixed southern pine; SPIB.
3. Spruce-pine-fir; NLGA.
4. Hem-fir; WCLIB or WWPA.
5. Spruce-pine-fir (south); NeLMA, WCLIB, or WWPA.
6. Western woods; WCLIB or WWPA.
7. Northern species; NLGA.
8. Eastern softwoods; NeLMA.

C. For concealed boards, provide lumber with 15 percent maximum moisture content and any of the following species and grades:

1. Mixed southern pine, No. 2 grade; SPIB.
2. Hem-fir or hem-fir (north), Construction or No. 2 Common grade; NLGA, WCLIB, or WWPA.
3. Spruce-pine-fir (south) or spruce-pine-fir, Construction or No. 2 Common grade; NeLMA, NLGA, WCLIB, or WWPA.

D. For blocking not used for attachment of other construction, Utility, Stud, or No. 3 grade lumber of any species may be used provided that it is cut and selected to eliminate defects that will interfere with its attachment and purpose.

E. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.

F. For furring strips for installing plywood or hardboard paneling, select boards with no knots capable of producing bent-over nails and damage to paneling.

2.5 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.

B. Nails, Brads, and Staples: ASTM F 1667.

C. Power-Driven Fasteners: NES NER-272.

D. Wood Screws: ASME B18.6.1.

E. Screws for Fastening to Metal Framing: ASTM C 1002, length as recommended by screw manufacturer for material being fastened.

F. Lag Bolts: ASME B18.2.1

G. Bolts: Steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and, where indicated, flat washers.

H. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to 6 times the load imposed when installed in unit masonry assemblies and equal to 4 times the load imposed when installed in concrete as determined by testing per ASTM E 488 conducted by a qualified independent testing and inspecting agency.

1. Material: Carbon-steel components, zinc plated to comply with ASTM B 633, Class Fe/Zn 5.
2. Material: Stainless steel with bolts and nuts complying with ASTM F 593 and ASTM F 594, Alloy Group 1 or 2.

2.6 METAL FRAMING ANCHORS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Cleveland Steel Specialty Co.
2. KC Metals Products, Inc.
3. Phoenix Metal Products, Inc.
4. Simpson Strong-Tie Co., Inc.
5. USP Structural Connectors.
6. Or Approved Equal.

B. Galvanized-Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A 653/A 653M, G60 coating designation.

1. Use for interior locations unless otherwise indicated.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Set carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit carpentry to other construction; scribe and cope as needed for accurate fit. Locate[**furring,**] nailers, blocking, and similar supports to comply with requirements for attaching other construction.

B. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.

C. Install plywood backing panels by fastening to studs; coordinate locations with utilities requiring backing panels. Install fire-retardant treated plywood backing panels with classification marking of testing agency exposed to view.

D. Metal Framing Anchors: Install metal framing anchors to comply with manufacturer's written instructions. Install fasteners through each fastener hole.

E. Do not splice structural members between supports unless otherwise indicated.

F. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.

1. Provide metal clips for fastening gypsum board or lath at corners and intersections where framing or blocking does not provide a surface for fastening edges of panels. Space clips not more than 16 inches o.c.

G. Provide fire blocking in furred spaces, stud spaces, and other concealed cavities as indicated and as follows:

1. Fire block furred spaces of walls, at each floor level, at ceiling, and at not more than 96 inches o.c. with solid wood blocking or noncombustible materials accurately fitted to close furred spaces.
2. Fire block concealed spaces of wood-framed walls and partitions at each floor level, at ceiling line of top story, and at not more than 96 inches o.c. Where fire blocking is not inherent in framing system used, provide closely fitted solid wood blocks of same width as framing members and 2-inch nominal thickness.
3. Fire block concealed spaces between floor sleepers with same material as sleepers to limit concealed spaces to not more than 100 sq. ft. and to solidly fill space below partitions.
4. Fire block concealed spaces behind combustible cornices and exterior trim at not more than 20 feet o.c.

H. Sort and select lumber so that natural characteristics will not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.

I. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.

1. Use inorganic boron for items that are continuously protected from liquid water.
2. Use copper naphthenate for items not continuously protected from liquid water.

J. Securely attach carpentry work to substrate by anchoring and fastening as indicated, complying with the following:

1. NES NER-272 for power-driven fasteners.
2. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code.
3. Table R602.3(1), "Fastener Schedule for Structural Members," and Table R602.3(2), "Alternate Attachments," in ICC's International Residential Code for One- and Two-Family Dwellings.

K. Use steel common nails unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood. Drive nails snug but do not countersink nail heads unless otherwise indicated.

3.2 WOOD BLOCKING, AND NAILER INSTALLATION

A. Install where indicated and where required for attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.

B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces unless otherwise indicated.

C. Provide permanent grounds of dressed, pressure-preservative-treated, key-beveled lumber not less than 1-1/2 inches wide and of thickness required to bring face of ground to exact thickness of finish material. Remove temporary grounds when no longer required.

3.3 PROTECTION

A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

B. Protect miscellaneous rough carpentry from weather. If, despite protection, miscellaneous rough carpentry becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION 061053

SECTION 061600 - SHEATHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

B. Related Requirements:

1.3 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated plywood complies with requirements. Indicate type of preservative used and net amount of preservative retained.
2. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated plywood complies with requirements. Include physical properties of treated materials.
3. For fire-retardant treatments, include physical properties of treated plywood both before and after exposure to elevated temperatures, based on testing by a qualified independent testing agency according to ASTM D 5516.
4. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.
5. Include copies of warranties from chemical treatment manufacturers for each type of treatment.

1.4 INFORMATIONAL SUBMITTALS

A. Evaluation Reports: For following products, from ICC-ES:

1. Fire-retardant-treated plywood.

1.5 QUALITY ASSURANCE

A. Testing Agency Qualifications: For testing agency providing classification marking for fire-retardant-treated material, an inspection agency acceptable to authorities having jurisdiction that

periodically performs inspections to verify that the material bearing the classification marking is representative of the material tested.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Stack panels flat with spacers beneath and between each bundle to provide air circulation. Protect sheathing from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Test-Response Characteristics: For assemblies with fire-resistance ratings, provide materials and construction identical to those of assemblies tested for fire resistance per ASTM E 119 by a testing and inspecting agency acceptable to authorities having jurisdiction.

1. Fire-Resistance Ratings: Indicated by design designations from UL's "Fire Resistance Directory."

2.2 WOOD PANEL PRODUCTS

A. Plywood: Either DOC PS 1 or DOC PS 2 unless otherwise indicated.

B. Thickness: As needed to comply with requirements specified, but not less than thickness indicated.

C. Factory mark panels to indicate compliance with applicable standard.

2.3 FIRE-RETARDANT-TREATED PLYWOOD

A. General: Where fire-retardant-treated materials are indicated, use materials complying with requirements in this article that are acceptable to authorities having jurisdiction and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.

B. Fire-Retardant-Treated Plywood by Pressure Process: Products with a flame-spread index of 25 or less when tested according to ASTM E 84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet beyond the centerline of the burners at any time during the test.

1. Use treatment that does not promote corrosion of metal fasteners.
2. Exterior Type: Treated materials shall comply with requirements specified above for fire-retardant-treated plywood by pressure process after being subjected to accelerated weathering according to ASTM D 2898. Use for exterior locations and where indicated.

3. Interior Type A: Treated materials shall have a moisture content of 28 percent or less when tested according to ASTM D 3201 at 92 percent relative humidity. Use where exterior type is not indicated.
4. Design Value Adjustment Factors: Treated lumber plywood shall be tested according ASTM D 5516 and design value adjustment factors shall be calculated according to ASTM D 6305. Span ratings after treatment shall be not less than span ratings specified.

C. Kiln-dry material after treatment to a maximum moisture content of 15 percent. Do not use material that is warped or does not comply with requirements for untreated material.

D. Identify fire-retardant-treated plywood with appropriate classification marking of qualified testing agency.

E. Application: Treat all plywood unless otherwise indicated.

F. Plywood Subflooring: Exposure 1, Structural I single-floor panels or sheathing.

1. Span Rating: Not less than 16.
2. Nominal Thickness: Not less than 23/32 inch.

G. Underlayment, General: Provide underlayment in nominal thicknesses indicated. See Evaluations for information about durability classifications of plywood.

H. Plywood Underlayment for Resilient Flooring: DOC PS 1, Exposure 1 Underlayment with fully sanded face.

2.4 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.

B. Nails, Brads, and Staples: ASTM F 1667.

C. Power-Driven Fasteners: NES NER-272.

D. Wood Screws: ASME B18.6.1.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Do not use materials with defects that impair quality of sheathing or pieces that are too small to use with minimum number of joints or optimum joint arrangement. Arrange joints so that pieces do not span between fewer than three support members.

B. Cut panels at penetrations, edges, and other obstructions of work; fit tightly against abutting construction unless otherwise indicated.

C. Securely attach to substrate by fastening as indicated, complying with the following:

1. NES NER-272 for power-driven fasteners.
2. Table 2304.9.1, "Fastening Schedule," in ICC's "International Building Code."
3. Table R602.3(1), "Fastener Schedule for Structural Members," and Table R602.3(2), "Alternate Attachments," in ICC's "International Residential Code for One- and Two-Family Dwellings."

D. Use common wire nails unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections. Install fasteners without splitting wood.

3.2 WOOD STRUCTURAL PANEL INSTALLATION

A. General: Comply with applicable recommendations in APA Form No. E30, "Engineered Wood Construction Guide," for types of structural-use panels and applications indicated.

B. Fastening Methods: Fasten panels as indicated below:

1. Subflooring:

   a. Glue and nail to wood framing.
   b. Screw to cold-formed metal framing.
   c. Space panels 1/8 inch apart at edges and ends.

2. Underlayment:

   a. Nail to subflooring.
   b. Space panels 1/32 inch apart at edges and ends.
   c. Fill and sand edge joints of underlayment receiving resilient flooring immediately before installing flooring.

C. Foam-Plastic Wall Sheathing: Install vapor-relief strips or equivalent for permitting escape of moisture vapor that otherwise would be trapped in stud cavity behind sheathing.

D. Apply sheathing tape to joints between foam-plastic sheathing panels and at items penetrating sheathing. Apply at upstanding flashing to overlap both flashing and sheathing.

END OF SECTION 061600

SECTION 079200 - JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Silicone joint sealants.

B. Related Sections:

1. Section 088000 “Glazing” for glazing sealants
2. Section 092900 "Gypsum Board" for sealing perimeter joints.

1.3 PRECONSTRUCTION TESTING

A. Preconstruction Compatibility and Adhesion Testing: Submit to joint-sealant manufacturers, for testing indicated below, samples of materials that will contact or affect joint sealants.

1. Use ASTM C 1087 to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.
2. Submit not fewer than eight pieces of each kind of material, including joint substrates, shims, joint-sealant backings, secondary seals, and miscellaneous materials.
3. Schedule sufficient time for testing and analyzing results to prevent delaying the Work.
4. For materials failing tests, obtain joint-sealant manufacturer's written instructions for corrective measures including use of specially formulated primers.
5. Testing will not be required if joint-sealant manufacturers submit joint preparation data that are based on previous testing, not older than 24 months, of sealant products for adhesion to, and compatibility with, joint substrates and other materials matching those submitted.

B. Preconstruction Field-Adhesion Testing: Before installing sealants, field test their adhesion to Project joint substrates as follows:

1. Locate test joints where indicated on Project or, if not indicated, as directed by Architect.
2. Conduct field tests for each application indicated below:

    a. Each kind of sealant and joint substrate indicated.

3. Notify Architect seven days in advance of dates and times when test joints will be erected.
4. Arrange for tests to take place with joint-sealant manufacturer's technical representative present.

a. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.

1) For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.

5. Report whether sealant failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. For sealants that fail adhesively, retest until satisfactory adhesion is obtained.
6. Evaluation of Preconstruction Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing, in absence of other indications of noncompliance with requirements, will be considered satisfactory. Do not use sealants that fail to adhere to joint substrates during testing.

1.4 ACTION SUBMITTALS

A. Product Data: For each joint-sealant product indicated.

B. Samples for Verification: For each kind and color of joint sealant required, provide Samples with joint sealants in 1/2-inch- wide joints formed between two 6-inch- long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.

C. Joint-Sealant Schedule: Include the following information:

1. Joint-sealant application, joint location, and designation.
2. Joint-sealant manufacturer and product name.
3. Joint-sealant formulation.
4. Joint-sealant color.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified Installer.

B. Product Certificates: For each kind of joint sealant and accessory, from manufacturer.

C. Sealant, Waterproofing, and Restoration Institute (SWRI) Validation Certificate: For each sealant specified to be validated by SWRI's Sealant Validation Program.

D. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, indicating that sealants comply with requirements.

E. Preconstruction Compatibility and Adhesion Test Reports: From sealant manufacturer, indicating the following:

1. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.
2. Interpretation of test results and written recommendations for primers and substrate preparation needed for adhesion.

F. Preconstruction Field-Adhesion Test Reports: Indicate which sealants and joint preparation methods resulted in optimum adhesion to joint substrates based on testing specified in "Preconstruction Testing" Article.

G. Field-Adhesion Test Reports: For each sealant application tested.

H. Warranties: Sample of special warranties.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.

B. Source Limitations: Obtain each kind of joint sealant from single source from single manufacturer.

C. Product Testing: Test joint sealants using a qualified testing agency.

1. Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 to conduct the testing indicated.
2. Test according to SWRI's Sealant Validation Program for compliance with requirements specified by reference to ASTM C 920 for adhesion and cohesion under cyclic movement, adhesion-in-peel, and indentation hardness.

1.7 PROJECT CONDITIONS

A. Do not proceed with installation of joint sealants under the following conditions:

1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F.
2. When joint substrates are wet.
3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.8 WARRANTY

A. Special Installer's Warranty: Manufacturer's standard form in which Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Five (5) years from date of Substantial Completion.

B. Special Manufacturer's Warranty: Manufacturer's standard form in which joint-sealant manufacturer agrees to furnish joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Twenty (20) years from date of Substantial Completion.

C. Special warranties specified in this article exclude deterioration or failure of joint sealants from the following:

1. Movement of the structure caused by structural settlement or errors attributable to design or construction resulting in stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression.
2. Disintegration of joint substrates from natural causes exceeding design specifications.
3. Mechanical damage caused by individuals, tools, or other outside agents.
4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.

B. VOC Content of Interior Sealants: Sealants and sealant primers used inside the weatherproofing system shall comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):

1. Architectural Sealants: 250 g/L.
2. Sealant Primers for Nonporous Substrates: 250 g/L.
3. Sealant Primers for Porous Substrates: 775 g/L.

C. Stain-Test-Response Characteristics: Where sealants are specified to be nonstaining to porous substrates, provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project.

D. Suitability for Contact with Food: Where sealants are indicated for joints that will come in repeated contact with food, provide products that comply with 21 CFR 177.2600.

E. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

2.2 SILICONE JOINT SEALANTS

A. Single-Component, Nonsag, Neutral-Curing Silicone Joint Sealant: ASTM C 920, Type S, Grade NS, Class 100/50, for Use NT.

1. Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

a. Dow Corning Corporation; 790 NS.
b. GE Advanced Materials - Silicones; SilPruf LM SCS2700.
c. May National Associates, Inc.; Bondaflex Sil 290.
d. Pecora Corporation; 301 NS.
e. Sika Corporation, Construction Products Division; SikaSil-C990.
f. Tremco Incorporated; Spectrem 1.

B. Single-Component, Nonsag, Traffic-Grade, Neutral-Curing Silicone Joint Sealant: ASTM C 920, Type S, Grade NS, Class 100/50, for Use T.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Dow Corning Corporation; 790 NS.
b. May National Associates, Inc.; Bondaflex Sil 728 NS.
c. Pecora Corporation; 301 NS.
d. Tremco Incorporated; Spectrem 800.

C. Mildew-Resistant, Single-Component, Nonsag, Neutral-Curing Silicone Joint Sealant: ASTM C 920, Type S, Grade NS, Class 25, for Use NT.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Pecora Corporation; 898.

2.3 LATEX JOINT SEALANTS

A. Latex Joint Sealant: Acrylic latex or siliconized acrylic latex, ASTM C 834, Type OP, Grade NF.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. BASF Building Systems; Sonolac.
b. Bostik, Inc.; Chem-Calk 600.
c. May National Associates, Inc.; Bondaflex 600.
d. Pecora Corporation; AC-20+.
e. Schnee-Morehead, Inc.; SM 8200.
f. Tremco Incorporated; Tremflex 834.

2.4 JOINT SEALANT BACKING

A. General: Provide sealant backings of material that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

B. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin) and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint. Provide self-adhesive tape where applicable.

2.5 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.

C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:

1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
2. Clean porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:

    a. Concrete.
    b. Masonry.

3. Remove laitance and form-release agents from concrete.
4. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:

    a. Metal.
    b. Glass.

B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

C. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

1. Do not leave gaps between ends of sealant backings.
2. Do not stretch, twist, puncture, or tear sealant backings.
3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.

D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:

1. Place sealants so they directly contact and fully wet joint substrates.
2. Completely fill recesses in each joint configuration.
3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.

1. Remove excess sealant from surfaces adjacent to joints.
2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
3. Provide concave joint profile per Figure 8A in ASTM C 1193, unless otherwise indicated.
4. Provide flush joint profile where indicated per Figure 8B in ASTM C 1193.
5. Provide recessed joint configuration of recess depth and at locations indicated per Figure 8C in ASTM C 1193.

a. Use masking tape to protect surfaces adjacent to recessed tooled joints.

G. Installation of Preformed Silicone-Sealant System: Comply with the following requirements:

1. Apply masking tape to each side of joint, outside of area to be covered by sealant system.
2. Apply silicone sealant to each side of joint to produce a bead of size complying with preformed silicone-sealant system manufacturer's written instructions and covering a bonding area of not less than 3/8 inch. Hold edge of sealant bead 1/4 inch inside masking tape.
3. Within 10 minutes of sealant application, press silicone extrusion into sealant to wet extrusion and substrate. Use a roller to apply consistent pressure and ensure uniform contact between sealant and both extrusion and substrate.
4. Complete installation of sealant system in horizontal joints before installing in vertical joints. Lap vertical joints over horizontal joints. At ends of joints, cut silicone extrusion with a razor knife.

3.4 FIELD QUALITY CONTROL

A. Field-Adhesion Testing: Field test joint-sealant adhesion to joint substrates as follows:

1. Extent of Testing: Test completed and cured sealant joints as follows:

a. Perform 10 tests for the first 1000 feet of joint length for each kind of sealant and joint substrate.
b. Perform 1 test for each 1000 feet of joint length thereafter or 1 test per each floor per elevation.

2. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.

a. For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.

3. Inspect tested joints and report on the following:

a. Whether sealants filled joint cavities and are free of voids.
b. Whether sealant dimensions and configurations comply with specified requirements.
c. Whether sealants in joints connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. Compare these results to determine if adhesion passes sealant manufacturer's field-adhesion hand-pull test criteria.

4. Record test results in a field-adhesion-test log. Include dates when sealants were installed, names of persons who installed sealants, test dates, test locations, whether joints were primed, adhesion results and percent elongations, sealant fill, sealant configuration, and sealant dimensions.

5. Repair sealants pulled from test area by applying new sealants following same procedures used originally to seal joints. Ensure that original sealant surfaces are clean and that new sealant contacts original sealant.

B. Evaluation of Field-Adhesion Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

3.5 CLEANING

A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.6 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

3.7 JOINT-SEALANT SCHEDULE

A. Joint-Sealant Application: Exterior joints in horizontal traffic surfaces.

1. Joint Locations:

   a. Isolation and contraction joints in cast-in-place concrete slabs.
   b. Joints between different materials listed above.
   c. Other joints as indicated.

2. Silicone Joint Sealant: Single component, nonsag, traffic grade.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

B. Joint-Sealant Application: Exterior joints in vertical surfaces and horizontal nontraffic surfaces.

1. Joint Locations:

   a. Construction joints in cast-in-place concrete.
   b. Joints between plant-precast architectural concrete units.
   c. Control and expansion joints in unit masonry.
   d. Joints between metal panels.
   e. Joints between different materials listed above.
   f. Perimeter joints between materials listed above and frames of doors windows and louvers.
   g. Other joints as indicated.

2. Silicone Joint Sealant: Single component, nonsag, neutral curing, Class 100/50.

3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

C. Joint-Sealant Application: Interior joints in horizontal traffic surfaces.

1. Joint Locations:

a. Isolation joints in cast-in-place concrete slabs.
b. Control and expansion joints in tile flooring.
c. Other joints as indicated.

2. Silicone Joint Sealant: Single component, nonsag, traffic grade, neutral curing.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

D. Joint-Sealant Application: Interior joints in vertical surfaces and horizontal nontraffic surfaces.

1. Joint Locations:

a. Control and expansion joints on exposed interior surfaces of exterior walls.
b. Perimeter joints of exterior openings where indicated.
c. Tile control and expansion joints.
d. Vertical joints on exposed surfaces of interior unit masonry concrete walls and partitions.
e. Perimeter joints between interior wall surfaces and frames of interior doors windows.
f. Other joints as indicated.

2. Joint Sealant: Latex.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

E. Joint-Sealant Application: Mildew-resistant interior joints in vertical surfaces and horizontal nontraffic surfaces.

1. Joint Sealant Location:

a. Joints between plumbing fixtures and adjoining walls, floors, and counters.
b. Tile control and expansion joints where indicated.
c. Other joints as indicated.

2. Joint Sealant: Mildew-resistant.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

END OF SECTION 079200

SECTION 081113 - HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes hollow-metal work.

B. Related Requirements:

1. Section 002216 – "Non-Structural Metal Framing"

2. Section 092900 – "Gypsum Board"

1.3 DEFINITIONS

A. Minimum Thickness: Minimum thickness of base metal without coatings according to NAAMM-HMMA 803 or SDI A250.8.

1.4 COORDINATION

A. Coordinate anchorage installation for hollow-metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, core descriptions and finishes.

B. Shop Drawings: Include the following:

1. Elevations of each door type.
2. Details of doors, including vertical- and horizontal-edge details and metal thicknesses.
3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
4. Locations of reinforcement and preparations for hardware.
5. Details of each different wall opening condition.
6. Details of anchorages, joints, field splices, and connections.
7. Details of accessories.
8. Details of moldings, removable stops, and glazing.

C. Samples for Initial Selection: For units with factory-applied color finishes.

D. Samples for Verification:

1. For each type of exposed finish required, prepared on Samples of not less than 3 by 5 inches.

E. Schedule: Provide a schedule of hollow-metal work prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with final Door Hardware Schedule.

1.6 INFORMATIONAL SUBMITTALS

A. Product Test Reports: For each type of hollow-metal door and frame assembly, for tests performed by a qualified testing agency.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver hollow-metal work palletized, packaged, or crated to provide protection during transit and Project-site storage. Do not use nonvented plastic.

1. Provide additional protection to prevent damage to factory-finished units.

B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.

C. Store hollow-metal work vertically under cover at Project site with head up. Place on minimum 4-inch- high wood blocking. Provide minimum 1/4-inch space between each stacked door to permit air circulation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Apex Industries, Inc.
2. Ceco Door Products; an Assa Abloy Group company.
3. Curries Company; an Assa Abloy Group company.
4. L.I.F. Industries, Inc.
5. Republic Doors and Frames.
6. Steelcraft; an Ingersoll-Rand company.
7. Or approved equal.

2.2 REGULATORY REQUIREMENTS

A. Fire-Rated Assemblies: Complying with NFPA 80 and listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction for fire-protection ratings and temperature-rise limits indicated, based on testing at positive pressure according to NFPA 252 or UL 10C.

2.3 INTERIOR DOORS AND FRAMES

A. Construct interior doors and frames to comply with the standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.

B. Standard-Duty Doors and Frames: SDI A250.8, Level 1. At locations indicated in the Door and Frame Schedule.

1. Physical Performance: Level C according to SDI A250.4.
2. Doors:

a. Type: As indicated in the Door and Frame Schedule.
b. Thickness: 1-3/4 inches.
c. Face: Cold-rolled steel sheet, minimum thickness of 0.032 inch.
d. Edge Construction: Full Flush.
e. Core: Manufacturer's standard kraft-paper honeycomb, polystyrene, polyurethane, polyisocyanurate, mineral-board, or vertical steel-stiffener core at manufacturer's discretion.

3. Frames:

a. Materials: Cold-rolled steel sheet, minimum thickness of 0.042 inch.
b. Construction: Full profile welded.

4. Exposed Finish: Prime Factory.

2.4 EXTERIOR HOLLOW-METAL DOORS AND FRAMES

A. Construct exterior doors and frames to comply with the standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.

B. Heavy-Duty Doors and Frames: SDI A250.8, Level 2. At locations indicated in the Door and Frame Schedule.

1. Physical Performance: Level B according to SDI A250.4.
2. Doors:

a. Type: As indicated in the Door and Frame Schedule.
b. Thickness: 1-3/4 inches
c. Face: Metallic-coated steel sheet, minimum thickness of 0.042 inch, with minimum A40 coating.
d. Edge Construction: Full Flush.
e. Core: Manufacturer's standard kraft-paper honeycomb, polystyrene, polyurethane, polyisocyanurate, mineral-board, or vertical steel-stiffener core at manufacturer's discretion.

1) Thermal-Rated Doors: Provide doors fabricated with thermal-resistance value (R-value) of not less than 2.1 deg F x h x sq. ft./Btu when tested according to ASTM C 1363.

3. Frames:

   a. Materials: Metallic-coated steel sheet, minimum thickness of 0.053 inch, with minimum A40 coating.
   b. Construction: Full profile welded.

4. Exposed Finish: Prime Factory.

2.5 FRAME ANCHORS

A. Jamb Anchors:

1. Masonry Type: Adjustable strap-and-stirrup or T-shaped anchors to suit frame size, not less than 0.042 inch thick, with corrugated or perforated straps not less than 2 inches wide by 10 inches long; or wire anchors not less than 0.177 inch thick.
2. Postinstalled Expansion Type for In-Place Concrete or Masonry: Minimum 3/8-inch-diameter bolts with expansion shields or inserts. Provide pipe spacer from frame to wall, with throat reinforcement plate, welded to frame at each anchor location.

2.6 MATERIALS

A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable for exposed applications.

B. Hot-Rolled Steel Sheet: ASTM A 1011/A 1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.

C. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B.

D. Frame Anchors: ASTM A 879/A 879M, Commercial Steel (CS), 04Z coating designation; mill phosphatized.

1. For anchors built into exterior walls, steel sheet complying with ASTM A 1008/A 1008M or ASTM A 1011/A 1011M, hot-dip galvanized according to ASTM A 153/A 153M, Class B.

E. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A 153/A 153M.

F. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hollow-metal frames of type indicated.

G. Grout: ASTM C 476, except with a maximum slump of 4 inches, as measured according to ASTM C 143/C 143M.

H. Mineral-Fiber Insulation: ASTM C 665, Type I (blankets without membrane facing); consisting of fibers manufactured from slag or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively; passing ASTM E 136 for combustion characteristics.

I. Bituminous Coating: Cold-applied asphalt mastic, compounded for 15-mil dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

2.7 FABRICATION

A. Fabricate hollow-metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for metal thickness. Where practical, fit and assemble units in manufacturer's plant. To ensure proper assembly at Project site, clearly identify work that cannot be permanently factory assembled before shipment.

B. Hollow-Metal Doors:

1. Steel-Stiffened Door Cores: Provide minimum thickness 0.026 inch, steel vertical stiffeners of same material as face sheets extending full-door height, with vertical webs spaced not more than 6 inches apart. Spot weld to face sheets no more than 5 inches o.c. Fill spaces between stiffeners with glass- or mineral-fiber insulation.
2. Fire Door Cores: As required to provide fire-protection and temperature rise ratings indicated.
3. Vertical Edges for Single-Acting Doors: Bevel edges 1/8 inch in 2 inches.
4. Top Edge Closures: Close top edges of doors with inverted closures, except provide flush closures at exterior doors of same material as face sheets.
5. Bottom Edge Closures: Close bottom edges of doors where required for attachment of weather stripping with end closures or channels of same material as face sheets.
6. Exterior Doors: Provide weep-hole openings in bottoms of exterior doors to permit moisture to escape. Seal joints in top edges of doors against water penetration.
7. Astragals: Provide overlapping astragal on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated. Extend minimum 3/4 inch beyond edge of door on which astragal is mounted or as required to comply with published listing of qualified testing agency.

C. Hollow-Metal Frames: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.

1. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
2. Grout Guards: Weld guards to frame at back of hardware mortises in frames to be grouted.
3. Floor Anchors: Weld anchors to bottoms of jambs with at least four spot welds per anchor; however, for slip-on drywall frames, provide anchor clips or countersunk holes at bottoms of jambs.
4. Jamb Anchors: Provide number and spacing of anchors as follows:

    a. Masonry Type: Locate anchors not more than 16 inches from top and bottom of frame. Space anchors not more than 32 inches o.c., to match coursing, and as follows:

        1) Two anchors per jamb up to 60 inches high.
        2) Three anchors per jamb from 60 to 90 inches high.
        3) Four anchors per jamb from 90 to 120 inches high.

4) Four anchors per jamb plus one additional anchor per jamb for each 24 inches or fraction thereof above 120 inches high.

b. Compression Type: Not less than two anchors in each frame.
c. Postinstalled Expansion Type: Locate anchors not more than 6 inches from top and bottom of frame. Space anchors not more than 26 inches o.c.

5. Door Silencers: Except on weather-stripped frames, drill stops to receive door silencers as follows. Keep holes clear during construction.

a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
b. Double-Door Frames: Drill stop in head jamb to receive two door silencers.

D. Fabricate concealed stiffeners and edge channels from either cold- or hot-rolled steel sheet.

E. Hardware Preparation: Factory prepare hollow-metal work to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to SDI A250.6, the Door Hardware Schedule, and templates.

1. Reinforce doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.
2. Comply with applicable requirements in SDI A250.6 and BHMA A156.115 for preparation of hollow-metal work for hardware.

2.8 STEEL FINISHES

A. Prime Finish: Clean, pretreat, and apply manufacturer's standard primer.

1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with SDI A250.10; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.

2.9 ACCESSORIES

A. Louvers: Provide louvers for interior doors, where indicated, which comply with SDI 111C, with blades or baffles formed of 0.020-inch- thick, cold-rolled steel sheet set into 0.032-inch-thick steel frame.

1. Sightproof Louver: Stationary louvers constructed with inverted-V or inverted-Y blades.

B. Mullions and Transom Bars: Join to adjacent members by welding or rigid mechanical anchors.

C. Grout Guards: Formed from same material as frames, not less than 0.016 inch thick.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Examine roughing-in for embedded and built-in anchors to verify actual locations before frame installation.

C. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces.

B. Drill and tap doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.

3.3 INSTALLATION

A. General: Install hollow-metal work plumb, rigid, properly aligned, and securely fastened in place. Comply with Drawings and manufacturer's written instructions.

B. Hollow-Metal Frames: Install hollow-metal frames of size and profile indicated. Comply with SDI A250.11 or NAAMM-HMMA 840 as required by standards specified.

1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.

    a. At fire rated openings, install frames according to NFPA 80.
    b. Where frames are fabricated in sections because of shipping or handling limitations, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces.
    c. Install frames with removable stops located on secure side of opening.
    d. Install door silencers in frames before grouting.
    e. Remove temporary braces necessary for installation only after frames have been properly set and secured.
    f. Check plumb, square, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.
    g. Field apply bituminous coating to backs of frames that will be filled with grout containing antifreezing agents.

2. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with grout.
3. In-Place Concrete or Masonry Construction: Secure frames in place with postinstalled expansion anchors. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
4. Installation Tolerances: Adjust hollow-metal door frames for squareness, alignment, twist, and plumb to the following tolerances:

a. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
d. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.

C. Hollow-Metal Doors: Fit hollow-metal doors accurately in frames, within clearances specified below. Shim as necessary.

1. Non-Fire-Rated Steel Doors:

a. Between Door and Frame Jambs and Head: 1/8 inch plus or minus 1/16 inch.
b. Between Edges of Pairs of Doors: 1/8 inch plus or minus 1/16 inch.
c. At Bottom of Door: Maximum 3/8 inch.
d. Between Door Face and Stop: 1/16 inch plus or minus 1/16 inch.

2. Fire Rated Doors: Install doors with clearances according to NFPA 80.

3.4 ADJUSTING AND CLEANING

A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow-metal work that is warped, bowed, or otherwise unacceptable.

B. Remove grout and other bonding material from hollow-metal work immediately after installation.

C. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.

END OF SECTION 081113

SECTION 092216 - NON-STRUCTURAL METAL FRAMING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Non-load-bearing steel framing systems for interior gypsum board assemblies.

B. Related Requirements:

1. None.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Test-Response Characteristics: For fire-resistance-rated assemblies that incorporate non-load-bearing steel framing, provide materials and construction identical to those tested in assembly indicated, according to ASTM E 119 by an independent testing agency.

B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated, according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.

2.2 FRAMING SYSTEMS

A. Framing Members, General: Comply with ASTM C 754 for conditions indicated.

1. Steel Sheet Components: Comply with ASTM C 645 requirements for metal unless otherwise indicated.
2. Protective Coating: ASTM A 653/A 653M, G40, hot-dip galvanized unless otherwise indicated.

B. Studs and Runners: ASTM C 645.

1. Steel Studs and Runners:

a. Minimum Base-Metal Thickness: 0.033 inch.

b. Depth: As indicated on Drawings.

C. Slip-Type Head Joints: Where indicated, provide one of the following:

1. Deflection Track: Steel sheet top runner manufactured to prevent cracking of finishes applied to interior partition framing resulting from deflection of structure above; in thickness not less than indicated for studs and in width to accommodate depth of studs.

a. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

1) Dietrich Metal Framing; SLP-TRK Slotted Deflection Track.
2) MBA Building Supplies.
3) Steel Network Inc. (The).
4) Superior Metal Trim; Superior Flex Track System (SFT).
5) Telling Industries.

D. Hat-Shaped, Rigid Furring Channels: ASTM C 645.

1. Minimum Base-Metal Thickness: 0.018 inch .
2. Depth: As indicated on Drawings.

2.3 AUXILIARY MATERIALS

A. General: Provide auxiliary materials that comply with referenced installation standards.

1. Fasteners for Metal Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames, cast-in anchors, and structural framing, for compliance with requirements and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

A. Installation Standard: ASTM C 754.

1. Gypsum Board Assemblies: Also comply with requirements in ASTM C 840 that apply to framing installation.

B. Install supplementary framing, and blocking to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction.

C. Install bracing at terminations in assemblies.

D. Do not bridge building control and expansion joints with non-load-bearing steel framing members. Frame both sides of joints independently.

3.3 INSTALLING FRAMED ASSEMBLIES

A. Install framing system components according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.

1. Single-Layer Application: 16 inches o.c. unless otherwise indicated.
2. Multilayer Application: 16 inches o.c. unless otherwise indicated.
3. Tile Backing Panels: 16 inches o.c. unless otherwise indicated.

B. Where studs are installed directly against exterior masonry walls or dissimilar metals at exterior walls, install isolation strip between studs and exterior wall.

C. Install studs so flanges within framing system point in same direction.

D. Install tracks (runners) at floors and overhead supports. Extend framing full height to structural supports or substrates above suspended ceilings except where partitions are indicated to terminate at suspended ceilings. Continue framing around ducts penetrating partitions above ceiling.

1. Slip-Type Head Joints: Where framing extends to overhead structural supports, install to produce joints at tops of framing systems that prevent axial loading of finished assemblies.
2. Door Openings: Screw vertical studs at jambs to jamb anchor clips on door frames; install runner track section (for cripple studs) at head and secure to jamb studs.

    a. Install two studs at each jamb unless otherwise indicated.
    b. Install cripple studs at head adjacent to each jamb stud, with a minimum 1/2-inch clearance from jamb stud to allow for installation of control joint in finished assembly.
    c. Extend jamb studs through suspended ceilings and attach to underside of overhead structure.

3. Other Framed Openings: Frame openings other than door openings the same as required for door openings unless otherwise indicated. Install framing below sills of openings to match framing required above door heads.
4. Fire-Resistance-Rated Partitions: Install framing to comply with fire-resistance-rated assembly indicated and support closures and to make partitions continuous from floor to underside of solid structure.

    a. Firestop Track: Where indicated, install to maintain continuity of fire-resistance-rated assembly indicated.

E. Direct Furring:

1. Screw to wood framing.
2. Attach to concrete or masonry with stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches o.c.

F. Installation Tolerance: Install each framing member so fastening surfaces vary not more than 1/8 inch from the plane formed by faces of adjacent framing.

END OF SECTION 092216

SECTION 092900 - GYPSUM BOARD

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Interior gypsum board.

2. Sound attenuation batts.

B. Related Requirements:

1. Section 092216 "Non-Structural Metal Framing" for non-structural framing and suspension systems that support gypsum board panels.

2. Section 098500 “Sound Transmission Control Materials” for acoustic insulation and acoustic sealant.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.4 DELIVERY, STORAGE AND HANDLING

A. Store materials inside under cover and keep them dry and protected against weather, condensation, direct sunlight, construction traffic, and other potential causes of damage. Stack panels flat and supported on risers on a flat platform to prevent sagging.

1.5 FIELD CONDITIONS

A. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent.

B. Do not install paper-faced gypsum panels until installation areas are enclosed and conditioned.

C. Do not install panels that are wet, those that are moisture damaged, and those that are mold damaged.

1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.

B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.

C. Low-Emitting Materials: For ceiling and wall assemblies, provide materials and construction identical to those tested in assembly and complying with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.2 GYPSUM BOARD, GENERAL

A. Size: Provide maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

2.3 INTERIOR GYPSUM BOARD

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. American Gypsum.
2. CertainTeed Corp.
3. Georgia-Pacific Gypsum LLC.
4. Lafarge North America Inc.
5. National Gypsum Company.
6. PABCO Gypsum.
7. Temple-Inland.
8. USG Corporation.

B. Gypsum Wallboard: ASTM C 1396/C 1396M.

1. Thickness: 5/8 inch.
2. Long Edges: Tapered.

C. Gypsum Board, Type X: ASTM C 1396/C 1396M.

1. Thickness: 5/8 inch.
2. Long Edges: Tapered.

2.4 TRIM ACCESSORIES

A. Interior Trim: ASTM C 1047.

1. Material: Galvanized or aluminum-coated steel sheet, rolled zinc.

2. Shapes:

    a. Cornerbead.
    b. Bullnose bead.
    c. U-Bead: J-shaped; exposed short flange does not receive joint compound.

2.5 JOINT TREATMENT MATERIALS

A. General: Comply with ASTM C 475/C 475M.

B. Joint Tape:

1. Interior Gypsum Board: Paper.

C. Joint Compound for Interior Gypsum Board: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.

1. Prefilling: At open joints, beveled panel edges, and damaged surface areas, use setting-type taping compound.
2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use setting-type taping compound.

    a. Use setting-type compound for installing paper-faced metal trim accessories.

3. Fill Coat: For second coat, use setting-type, sandable topping compound.
4. Finish Coat: For third coat, use setting-type, sandable topping compound.
5. Skim Coat: For final coat of Level 5 finish, use setting-type, sandable topping compound.

2.6 AUXILIARY MATERIALS

A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written recommendations.

B. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.

1. Laminating adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
2. Laminating adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

C. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.

1. Use screws complying with ASTM C 954 for fastening panels to steel members from 0.033 to 0.112 inch thick.

2.7 SOUND ATTENUATION BATTS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Owens Corning
2. CertainTeed Corp.
3. Johns Manville
4. Or Approved Equal

B. Type: Unfaced glass fiber acoustical insulation complying with ASTMN C665, Type I.

C. Size: Thickness 3 ½ Width 15" Length 8'- 0" or standard rolls cut to fit.

D. Surface Burning Characteristics:
1. Maximum flame spread: 10
2. Maximum smoke developed: 10
When tested in accordance with ASTM 84.

E. Combustion Characteristics:
Passes ASTM E 136.

F. Fire Resistance Ratings:
Passes ASTM E 119 as part of a complete fire tested wall assembly.

G. Sound Transmission Class: STC 49min. (full with construction)

H. Dimensional Stability:
Linear Shrinkage less than 0.1%

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and substrates including welded hollow-metal frames and framing, with Installer present, for compliance with requirements and other conditions affecting performance.

B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION OF SOUND ATTENUATION BATTS

A. Comply with manufacturers for particular conditions of installation in each case.

B. Batts may be friction-fit in place until the interior finish is applied. Install batts to fill entire stud cavity. If stud cavity is less than 96" in height, cut lengths to friction-fit against floor and ceiling

tracks. Walls with penetrations require that insulation be carefully cut to fit around outlets, junction boxes and other irregularities.

C. Where walls are not finished on both sides or insulation does not fill the cavity depth, supplementary support must be provided to hold product in place.

D. Where insulation must extend higher than 8 feet, temporary support can be provided to hold product in place until the finish material is applied.

3.3 APPLYING AND FINISHING PANELS, GENERAL

A. Comply with ASTM C 840.

B. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.

C. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.

D. Form control and expansion joints with space between edges of adjoining gypsum panels.

E. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.

1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. in area.
2. Fit gypsum panels around ducts, pipes, and conduits.
3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8-inch- wide joints to install sealant.

F. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. Provide 1/4- to 1/2-inch- wide spaces at these locations and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.

G. Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first. Retain "Wood Framing" Paragraph below for wood framing where fire ratings are not required.

3.4 APPLYING INTERIOR GYPSUM BOARD

A. Install interior gypsum board in the following locations:

1. Wallboard Type: As indicated on Drawings.
2. Type X: As indicated on Drawings.

B. Single-Layer Application:

1. On partitions/walls, apply gypsum panels horizontally (perpendicular to framing) unless otherwise indicated or required by fire-resistance-rated assembly, and minimize end joints.

    a. Stagger abutting end joints not less than one framing member in alternate courses of panels.

2. On Z-furring members, apply gypsum panels vertically (parallel to framing) with no end joints. Locate edge joints over furring members.
3. Fastening Methods: Apply gypsum panels to supports with steel drill screws.

3.5 INSTALLING TRIM ACCESSORIES

A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.

B. Control Joints: Install control joints according to ASTM C 840 and in specific locations approved by Architect for visual effect.

C. Interior Trim: Install in the following locations:

1. Cornerbead: Use at outside corners unless otherwise indicated.
2. Bullnose Bead: Use at outside corners where indicated.
3. U-Bead: Use at exposed panel edges where indicated.

3.6 FINISHING GYPSUM BOARD

A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.

B. Prefill open joints, beveled edges, and damaged surface areas.

C. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.

D. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C 840:

1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
2. Level 5: At panel surfaces that will be exposed to view unless otherwise indicated.

    a. Primer and its application to surfaces are specified in other Section 099123 "Interior Painting."

3.7 PROTECTION

E. Protect adjacent surfaces from drywall compound and promptly remove from floors and other non-drywall surfaces. Repair surfaces stained, marred, or otherwise damaged during drywall application.

F. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.

G. Remove and replace panels that are wet, moisture damaged, and mold damaged.

1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 092900

SECTION 095113 - ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. All of the Contract Documents, including General and Supplementary Conditions and Division 00 - Bidding Documents, Contract Forms, and Conditions of the Contract and Division 01 - General Requirements, apply to work of this Section.

B. Carefully examine all of the Contract Documents for requirements which affect the work of this Section. The exact scope of work of this Section cannot be determined without a thorough review of all Specification Sections and other Contract Documents.

1.2 SUMMARY

A. This Section includes:

1. Acoustical panel ceilings units.
2. Grid suspension systems.
3. Wire hangars, fasteners, main runners, cross tees, wall angle moldings, hold down clips and accessories.

B. Related Sections: The following sections contain requirements that relate to this section:

1. Division 23 grilles, registers, and diffusers in acoustical ceilings.
2. Division 26 for lighting fixtures in acoustical ceilings, some of which may require additional or larger size wire for proper support.
3. Division 09 Section “Gypsum Board Assemblies” for gypsum board soffits.

1.3 REFERENCES

A. ASTM A 366 “Standard Specification for Steel, Carbon Cold-Rolled Sheet, Commercial Quality.”

B. ASTM A 641 “Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.”

C. ASTM C 423 “Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.”

C. ASTM C 635 “Standard Specification for Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.”

D. ASTM C 636 “Recommended Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels.”

E. ASTM E 84 “Standard Test Method for Surface Burning Characteristics of Building Materials.”

F. ASTM E 1414 “Standard Test Method for Airborne Sound Attenuation Between Rooms Sharing a Common Ceiling Plenum.”

G. ASTM E1111 “Standard Test Method for Measuring the Interzone Attenuation of Ceiling Systems.”

H. ASTM E 1264 “Classification for Acoustical Ceiling Products.”

1.4 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 01 Specification Sections.

1. Product data for each type of product specified.
2. Samples for verification purposes of each type of exposed finish required, prepared on samples of size indicated below and of same thickness and material indicated for final unit of Work. Where finishes involve normal color and texture variations, include sample sets showing full range of variations expected.

a. 6-inch-square samples of each acoustical panel type, pattern, and color.
b. Set of 12-inch-long samples of exposed suspension system members, including moldings, for each color and system type required.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced Installer who has successfully completed acoustical ceilings similar in material, design, and extent to those indicated for Project.

B. Fire-Performance Characteristics: Provide acoustical ceilings that are identical to those tested for the following fire-performance characteristics, per ASTM test method indicated below, by UL or other testing and inspecting organizations acceptable to authorities having jurisdiction. Identify acoustical ceiling components with appropriate markings of applicable testing and inspecting organization.

1. Surface Burning Characteristics: As follows, tested per ASTM E 84 and complying with ASTM E 1264 for Class A products.

a. Flame Spread: 25 or less.
b. Smoke Developed: 50 or less.

C. Single-Source Responsibility for Ceiling Units: Obtain each type of acoustical ceiling unit from a single source with resources to provide products of consistent quality in appearance and physical properties without delaying progress of the Work.

D. Single-Source Responsibility for Suspension System: Obtain each type of suspension system from a single source with resources to provide products of consistent quality in appearance and physical properties without delaying progress of the Work.

1. Obtain suspension system from same manufacturer that produces acoustical ceiling units.

E. Coordination of Work: Coordinate layout and installation of acoustical ceiling units and suspension system components with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, fire-suppression system components.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver acoustical ceiling units to project site in original, unopened packages and store them in a fully enclosed space where they will be protected against damage from moisture, direct sunlight, surface contamination, and other causes.

B. Before installing acoustical ceiling units, permit them to reach room temperature and a stabilized moisture content.

C. Handle acoustical ceiling units carefully to avoid chipping edges or damaging units in any way. Replace any damaged units.

1.7 PROJECT CONDITIONS

A. Space Enclosure: Do not install interior acoustical ceilings until space is enclosed and weatherproof, wet-work in space is completed and nominally dry, work above ceilings is complete, and ambient conditions of temperature and humidity will be continuously maintained at values near those indicated for final occupancy.

1.8 EXTRA MATERIALS

A. Deliver extra materials to Owner. Furnish extra materials described below that match products installed, are packaged with protective covering for storage, and are identified with appropriate labels.

1. Acoustical Ceiling Units: Furnish quantity of full-size units equal to 2.0 percent of amount installed.
2. Exposed Suspension System Components: Furnish quantity of each exposed component equal to 2.0 percent of amount installed.

1.9 WARRANTY

A. Acoustical Panel System: Submit a written warranty executed by the manufacturer, agreeing to repair or replacement of acoustical panels and/or grids that fails within the warranty period. Failures include, but are not limited to:

1. Acoustical Panels: Sagging or warping.
2. Grid System: Rusting and manufacturing defects.

B. Warranty period for acoustical panels is ten (10) years from the date of substantial completion.

C. Warranty period for acoustical grid system is ten (10) years from the date of substantial completion.

D. Warranty period for acoustical panels and grid systems supplied by one source manufacturer is fifteen (15) years from the date of substantial completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Ceiling Panel Products: Subject to compliance with the requirements, provide products by one of the following:

1. Armstrong World Industries, Inc.
2. USG Interiors.
3. CertainTeed.
4. Or equal.

B. Ceiling Grid Products: Subject to compliance with the requirements, provide products by one of the following:

1. Armstrong World Industries, Inc.
2. USG Interiors.
3. Chicago Metallic Corp.
4. Or equal.

2.2 GENERAL AND SUSTAINABILITY

A. Acoustical Panel Standard: Provide manufacturer's standard panels of configuration indicated that comply with ASTM E 1264 classifications as designated by types, patterns, acoustical ratings, and light reflectances unless otherwise indicated.

B. Mounting Method for Measuring NRC: Type E-400; plenum mounting in which face of test specimen is 15-3/4 inches (400 mm) away from test surface according to ASTM E 795.

C. Acoustical Panel Colors and Patterns: Match appearance characteristics indicated for each product type.

1. Where appearance characteristics of acoustical panels are indicated by referencing pattern designations in ASTM E 1264 and not manufacturers' proprietary product designations, provide products selected by Architect from each manufacturer's full range that comply with requirements indicated for type, pattern, color, light reflectance, acoustical performance, edge detail, and size.

2.3 MATERIALS

A. Ceiling Panel Products: Subject to compliance with requirements, provide one of the following:

4. Ceiling Type ACT-1: 24” x 48” x 3/4" for 9/16” grid, Beveled/Tegular Edge, Armstrong Health Zone Ultima HumiGuard Max #1936 or USG Mars Healthcare ClimaPlus Panels Superior Performance #86985, UL Classified min. NRC .70 and CAC 35, LR 86%. (2’ x 2’ Narrow Grid at Health Areas) or equal.

B. Ceiling Grid Products: Subject to compliance with requirements, provide products by one of the following:

1. Suspension System: Grid Type G-1: Used at Public Spaces, Classrooms, Media Center and Corridors as noted:

a. Armstrong Suprafine XL 9/16” Aluminum Capped (WA).
b. Chicago Metallic Sierra M 9/16”.
c. USG Centricitee DXT 9/16”.
d. Or equal.

C. Ceiling Grid colors: All ceiling grids shall be white unless otherwise indicated:

2.4 ACOUSTICAL CEILING UNITS, GENERAL

A. Standard for Acoustical Ceiling Units: Provide manufacturers' standard units of configuration indicated that comply with ASTM E 1264 classifications as designated by reference to types, patterns, acoustical ratings, and light reflectances, unless otherwise indicated.

1. Mounting Method for Measuring NRC: Type E-400 (plenum mounting in which face of test specimen is 15-3/4 inches [400 mm] away from the test surface) per ASTM E 795.
2. Colors and Patterns: Provide products to match appearance characteristics indicated under each product type.

2.5 METAL SUSPENSION SYSTEMS, GENERAL

A. Standard for Metal Suspension Systems: Provide manufacturer's standard metal suspension systems of types, structural classifications, and finishes indicated that comply with applicable ASTM C 635 requirements.

B. Components: All main beams and cross tees shall be commercial-quality hot dipped galvanized steel coating as per ASTM A 635. Exposed surfaces chemically cleansed, capping prefinished galvanized steel in baked polyester paint. Main Beams and Cross Tees are double-web steel construction with 15/16” type exposed flange design. Light gauge steel Cross Tees shall have rotary stitching to improve column strength and staked-on end detail allowing easy cross tee removal and remounting.

1. Structural Classification: Intermediate duty.
2. Exposed bottom flange shall be continuous with unbroken roll-formed cap, made from steel, running the length of the member.

a. Main Beam: Web height shall be 1-1/2”.
b. 4’ Cross Tee: Web height shall be 1-3/8”.
c. 2’ Cross Tee: Web height shall be 1-3/8”.
d. End condition of Cross Runners: Override.

C. Finishes and Colors: Provide manufacturer's standard factory-applied finish for type of system indicated.

D. Attachment Devices: Size for 5 times design load indicated in ASTM C 635, Table 1, Direct Hung unless otherwise indicated.

E. Wire for Hangers and Ties: Galvanized carbon steel per ASTM A 641, Class 1, soft temper, prestretched.

1. Gage: Provide wire sized so that stress at 3 times hanger design load (ASTM C 635, Table 1, Direct-Hung), will be less than yield stress of wire, but provide not less than 0.106-inch diameter (12 gage).
2. For ACT-10 and other types where hanger wire will be exposed, use 1/16-inch stainless steel rope wire attached per manufacturer's installation guide: Exposed Hanger Solutions (IC453/rev 3-08).

F. Edge Moldings and Trim: Metal of manufacturer's standard moldings for edges and penetrations that fit type of edge detail and suspension system indicated.

1. For lay-in panels with reveal edge details, provide stepped edge molding that forms reveal of same depth and width as that formed between edge of panel and flange at exposed suspension member.

G. Hold-Down Clips for Non-Fire-Resistance-Rated Ceilings: For interior ceilings composed of lay-in panels weighing less than 1 lb per sq. ft., and ceiling designated as Type C-2, and C-6, provide hold-down clips spaced 2'-0" o.c. on all cross-tees.

H. Seismic Stabilizer Bars: Manufacturer's standard perimeter stabilizers designed to accommodate seismic forces.

I. Seismic Struts: Manufacturer's standard compression struts designed to accommodate seismic forces.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and structural framing to which ceiling system attaches or abuts, with Installer present, for compliance with requirements specified in this and other sections that affect installation and anchorage of ceiling system. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Measure each ceiling area and establish layout of acoustical units to balance border widths at opposite edges of each ceiling. Avoid use of less-than-half-width units at borders, and comply with reflected ceiling plans.

3.3 INSTALLATION

A. General: Install acoustical ceiling systems to comply with installation standard referenced below, per manufacturer's instructions and CISCA "Ceiling Systems Handbook."

1. Standards for Installation of Ceiling Suspension Systems: Comply with ASTM C 636 and ASTM E 580 for areas requiring seismic restraint.

B. Arrange acoustical units and orient directionally patterned units in a manner shown by reflected ceiling plans.

C. Suspend ceiling hangers from building structural members and as follows:

1. Install hangers plumb and free from contact with insulation or other objects within ceiling space that are not part of supporting structural or ceiling suspension system. Splay hangers only where required to miss obstructions and offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
2. Where width of ducts and other construction within ceiling space produces hanger spacings that interfere with the location of hangers at spacings required to support standard suspension system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards.
3. Secure wire hangers by looping and wire-tying, either directly to structures or to inserts, eyescrews, or other devices that are secure and appropriate for substrate, and in a manner that will not cause them to deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
4. Do not attach hangers to steel roof deck. Attach hangers to structural members.
5. Space hangers not more than 4'-0" o.c. along each member supported directly from hangers, unless otherwise shown, and provide hangers not more than 8 inches from ends of each member.

D. Install edge moldings of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical units. Set edge in a bead of acoustical seal before anchoring. Clean excess caulk.

1. Miter corners where intersect or install corner caps.
2. Provide radiused edge moldings at curved surfaces. Do not kerf angles exposing panel or voids.

E. Install acoustical panels in coordination with suspension system, with edges concealed by support of suspension members. Scribe and cut panels to fit accurately at borders and at penetrations.

1. Install hold-down clips in areas indicated and in areas where required by governing regulations or for fire-resistance ratings; space as recommended by panel manufacturer, unless otherwise indicated or required.
2. For tegular or reveal edge panels: Cut and reveal or rabbet edges of ceiling tiles at all border areas and exposed surfaces.

F. Install ceiling expansion joint cover assemblies at all seismic joint locations and in locations indicated.

3.4 FIELD QUALITY CONTROL

A. Deflection of and grid components shall not exceed 1/540 of the span.

3.5 CLEANING

A. Clean exposed surfaces of acoustical ceilings, including trim, edge moldings, and suspension members. Comply with manufacturer's instructions for cleaning and touch-up of minor finish damage. Remove and replace work that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 095113

SECTION 096513 - RESILIENT BASE AND ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Resilient base.
2. Resilient molding accessories.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples: For each exposed product and for each color and texture specified, not less than 12 inches long.

C. Samples for Initial Selection: For each type of product indicated.

D. Samples for Verification: For each type of product indicated and for each color, texture, and pattern required in manufacturer's standard-size Samples, but not less than 12 inches long.

E. Product Schedule: For resilient base and accessory products.

1.4 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Furnish not less than 10 linear feet for every 500 linear feet or fraction thereof, of each type, color, pattern, and size of resilient product installed.

1.5 QUALITY ASSURANCE

A. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Coordinate mockups in this Section with mockups specified in other Sections.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F or more than 90 deg F.

1.7 FIELD CONDITIONS

A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F or more than 95 deg F, in spaces to receive resilient products during the following time periods:

1. 48 hours before installation.
2. During installation.
3. 48 hours after installation.

B. After installation and until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F or more than 95 deg F. Install resilient products after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

2.2 THERMOPLASTIC-RUBBER BASE

2.3 Copy this article and re-edit for each thermoplastic-rubber base product if more than one is required.

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Armstrong World Industries, Inc.
2. Burke Mercer Flooring Products, Division of Burke Industries Inc.
3. Flexco.
4. Johnsonite; A Tarkett Company.
5. Roppe Corporation, USA.
6. Or approved Equal.

B. Product Standard: ASTM F 1861, Type TP (rubber, thermoplastic).

1. Group: I (solid, homogeneous).
2. Style and Location:

a. Style B, Cove: Provide in areas with resilient flooring

1) Profile: As indicated.

C. Thickness: 0.125 inch

D. Height: 4 inches.

E. Lengths: Coils in manufacturer's standard length

F. Coordinate "Outside Corners" and "Inside Corners" paragraphs below with "Resilient Base Installation" Article.

G. Outside Corners: Job formed or preformed.

H. Inside Corners: Job formed or preformed.

I. Colors: As selected by Architect from full range of industry colors.

2.4 RUBBER MOLDING ACCESSORY

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Armstrong World Industries, Inc.

2. Burke Mercer Flooring Products, Division of Burke Industries Inc.

3. Flexco

4. Johnsonite; A Tarkett Company

5. Roppe Corporation, USA

6. VPI, LLC, Floor Products Division

B. Description: Rubber nosing for resilient flooring, reducer strips for resilient flooring, and transition strips.

C. Profile and Dimensions: As indicated.

D. Locations: Provide rubber molding accessories in areas indicated.

E. Colors and Patterns: As selected by Architect from full range of industry colors.

2.5 INSTALLATION MATERIALS

A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic-cement-based formulation provided or approved by resilient-product manufacturer for applications indicated.

B. Adhesives: Water-resistant type recommended by resilient-product manufacturer for resilient products and substrate conditions indicated.

C. Metal Edge Strips: Extruded aluminum with mill finish of width shown, of height required to protect exposed edges of flooring, and in maximum available lengths to minimize running joints.

D. Floor Polish: Provide protective, liquid floor-polish products recommended by resilient stair-tread manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

1. Installation of resilient products indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.

B. Do not install resilient products until they are the same temperature as the space where they are to be installed.

1. At least 48 hours in advance of installation, move resilient products and installation materials into spaces where they will be installed.

C. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient products.

3.3 RESILIENT BASE INSTALLATION

A. Comply with manufacturer's written instructions for installing resilient base.

B. Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.

C. Install resilient base in lengths as long as practical without gaps at seams and with tops of adjacent pieces aligned.

D. Tightly adhere resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.

E. Do not stretch resilient base during installation.

F. On masonry surfaces or other similar irregular substrates, fill voids along top edge of resilient base with manufacturer's recommended adhesive filler material.

G. Preformed Corners: Install preformed corners before installing straight pieces.

H. Job-Formed Corners:

1. Outside Corners: Use straight pieces of maximum lengths possible and form with returns not less than 3 inches in length.

    a. Form without producing discoloration (whitening) at bends.

2. Inside Corners: Use straight pieces of maximum lengths possible and form with returns not less than 3 inches in length.

    a. Miter or cope corners to minimize open joints.

3.4 RESILIENT ACCESSORY INSTALLATION

A. Comply with manufacturer's written instructions for installing resilient accessories.

B. Resilient Molding Accessories: Butt to adjacent materials and tightly adhere to substrates throughout length of each piece. Install reducer strips at edges of floor covering that would otherwise be exposed.

3.5 CLEANING AND PROTECTION

A. Comply with manufacturer's written instructions for cleaning and protecting resilient products.

B. Perform the following operations immediately after completing resilient-product installation:

1. Remove adhesive and other blemishes from exposed surfaces.
2. Sweep and vacuum horizontal surfaces thoroughly.
3. Damp-mop horizontal surfaces to remove marks and soil.

C. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.

D. Cover resilient products subject to wear and foot traffic until Substantial Completion.

END OF SECTION 096513

SECTION 096519 - RESILIENT TILE FLOORING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Vinyl composition floor tile.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For each type of floor tile. Include floor tile layouts, edges, columns, doorways, enclosing partitions, built-in furniture, cabinets, and cutouts.

1. Show details of special patterns.

C. Samples: Full-size units of each color and pattern of floor tile required.

1. For heat-welding bead, manufacturer's standard-size Samples, but not less than 9 inches long, of each color required.

D. Samples for Initial Selection: For each type of floor tile indicated.

E. Samples for Verification: Full-size units of each color and pattern of floor tile required.

1. For heat-welding bead, manufacturer's standard-size Samples, but not less than 9 inches long, of each color required.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For each type of floor tile to include in maintenance manuals.

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Floor Tile: Furnish one box for every [**50**] boxes or fraction thereof, of each type, color, and pattern of floor tile installed.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: A qualified installer who employs workers for this Project who are competent in techniques required by manufacturer for floor tile installation and seaming method indicated.

1. Engage an installer who employs workers for this Project who are trained or certified by floor tile manufacturer for installation techniques required.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Store floor tile and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F or more than 90 deg F. Store floor tiles on flat surfaces.

1.9 FIELD CONDITIONS

A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F or more than 95 deg F, in spaces to receive floor tile during the following time periods:

1. 48 hours before installation.
2. During installation.
3. 48 hours after installation.

B. After installation and until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F or more than 95 deg F Close spaces to traffic during floor tile installation.

C. Close spaces to traffic for 48 hours after floor tile installation.

D. Install floor tile after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 VINYL COMPOSITION FLOOR TILE

Copy this article and re-edit for each vinyl composition product.

A. Products: Subject to compliance with requirements, provide one of the following:

1. AB; American Biltrite;
2. Armstrong World Industries, Inc;
3. Congoleum Corporation;
4. Mannington Mills, Inc;

B. Tile Standard: ASTM F 1066, Class 2, through-pattern tile.

C. Wearing Surface: Smooth, embossed at accessible ramp.

D. Thickness: 0.125 inch.

E. Size: 12 by 12 inches.

F. Colors and Patterns: As selected by Architect from full range of industry color from all of the submitted manufactures price grabs. Floor patterns shall be as indicated on floor plans.

2.2 INSTALLATION MATERIALS

A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic-cement-based formulation provided or approved by floor tile manufacturer for applications indicated.

B. Adhesives: Water-resistant type recommended by floor tile and adhesive manufacturers to suit floor tile and substrate conditions indicated.

C. Floor Polish: Provide protective, liquid floor-polish products recommended by floor tile manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of floor tile.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Prepare substrates according to floor tile manufacturer's written instructions to ensure adhesion of resilient products.

B. Concrete Substrates: Prepare according to ASTM F 710.

1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by floor tile manufacturer. Do not use solvents.
3. Alkalinity and Adhesion Testing: Perform tests recommended by floor tile manufacturer. Proceed with installation only after substrate alkalinity falls within range on pH scale recommended by manufacturer in writing, but not less than 5 or more than 10 pH.
4. Moisture Testing: Proceed with installation only after substrates pass testing according to floor tile manufacturer's written recommendations, but not less stringent than the following:

    a. Perform anhydrous calcium chloride test according to ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. in 24 hours.
    b. Perform relative humidity test using in situ probes according to ASTM F 2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level.

C. Access Flooring Panels: Remove protective film of oil or other coating using method recommended by access flooring manufacturer.

D. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.

E. Do not install floor tiles until they are the same temperature as the space where they are to be installed.

1. At least 48 hours in advance of installation, move resilient floor tile and installation materials into spaces where they will be installed.

F. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient floor tile.

3.3 FLOOR TILE INSTALLATION

A. Comply with manufacturer's written instructions for installing floor tile.

B. Lay out floor tiles from center marks established with principal walls, discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half tile at perimeter.

1. Lay tiles in pattern indicated.

C. Match floor tiles for color and pattern by selecting tiles from cartons in the same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed tiles.

1. Lay tiles in pattern of colors and sizes indicated.

D. Scribe, cut, and fit floor tiles to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, and door frames.

E. Extend floor tiles into toe spaces, door reveals, closets, and similar openings. Extend floor tiles to center of door openings.

F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on floor tiles as marked on substrates. Use chalk or other nonpermanent marking device.

G. Install floor tiles on covers for telephone and electrical ducts, building expansion-joint covers, and similar items in finished floor areas. Maintain overall continuity of color and pattern between pieces of tile installed on covers and adjoining tiles. Tightly adhere tile edges to substrates that abut covers and to cover perimeters.

H. Adhere floor tiles to flooring substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

3.4 CLEANING AND PROTECTION

A. Comply with manufacturer's written instructions for cleaning and protecting floor tile.

B. Perform the following operations immediately after completing floor tile installation:

1. Remove adhesive and other blemishes from exposed surfaces.
2. Sweep and vacuum surfaces thoroughly.
3. Damp-mop surfaces to remove marks and soil.

C. Protect floor tile from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.

D. Floor Polish: Remove soil, adhesive, and blemishes from floor tile surfaces before applying liquid floor polish.

1. Apply three coat(s).

E. Sealers and Finish Coats: Remove soil, visible adhesive, and surface blemishes from resilient terrazzo floor tile surfaces before applying liquid cleaners, sealers, and finish products.

1. Sealer: Apply two base coats of liquid sealer.
2. Finish: Apply three coats of liquid floor finish.

F. Cover floor tile until Substantial Completion.

END OF SECTION 096519

SECTION 096723 - RESINOUS FLOORING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Contractor, Subcontractors, and/or suppliers providing goods and services referenced in or related to this Section shall also be bound by the Related Documents identified in Division 01 Section “Summary.”

1.2 SUMMARY

A. This Section includes the following:

1. High-performance resinous flooring systems.

B. Related Sections include the following:

1. Division 07 Section "Joint Sealants" for sealants installed at joints in resinous flooring systems.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated. Include manufacturer's technical data, application instructions, and recommendations for each resinous flooring component required.

B. Samples for Initial Selection: For each type of exposed finish required.

C. Samples for Verification: For each resinous flooring system required, 6 inches square, applied to a rigid backing by Installer for this Project.

D. Product Schedule: Use resinous flooring designations indicated in Part 2 and room designations indicated on Drawings in product schedule.

E. Installer Certificates: Signed by manufacturer certifying that installers comply with specified requirements.

F. Material Test Reports: For each resinous flooring component.

G. Material Certificates: For each resinous flooring component, signed by manufacturer.

H. Maintenance Data: For resinous flooring to include in maintenance manuals.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced installer (applicator) who is experienced in applying resinous flooring systems similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance, and who is acceptable to resinous flooring manufacturer.

1. Engage an installer who is certified in writing by resinous flooring manufacturer as qualified to apply resinous flooring systems indicated.

B. Source Limitations: Obtain primary resinous flooring materials, including primers, resins, hardening agents, grouting coats, and topcoats, through one source from a single manufacturer. Provide secondary materials, including patching and fill material, joint sealant, and repair materials, of type and from source recommended by manufacturer of primary materials.

C. Federal Agency Approvals: Where indicated, provide resinous flooring systems approved by the FDA for use indicated.

D. Preconstruction Testing Service: The Owner will engage a qualified independent testing agency to perform moisture vapor emission testing indicated below.

1. ASTM F 1869 – Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.

E. Preinstallation Conference: Before installation of resinous floor and wall systems conduct preinstallation meeting at Project site in accordance with Division 01 Section “Project Management and Coordination.”

1. Meet with Architect and Project Manager.
2. Review substrate conditions, manufacturer’s installation instructions, and warranty requirements.
3. Document proceedings, including corrective measures or actions required, and furnish copy to each participant.

F. Mockups: Apply mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Apply full-thickness mockups on 48-inch-square floor and wall area selected by Architect.

a. Include 48-inch-length of integral cove base.

2. Simulate finished lighting conditions for Architect's review of mockups.
3. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in original packages and containers, with seals unbroken, bearing manufacturer's labels indicating brand name and directions for storage and mixing with other components.

B. Store materials to prevent deterioration from moisture, heat, cold, direct sunlight, or other detrimental effects.

1.6 PROJECT CONDITIONS

A. Environmental Limitations: Comply with resinous flooring manufacturer's written instructions for substrate temperature, ambient temperature, moisture, ventilation, and other conditions affecting resinous flooring application.

B. Lighting: Provide permanent lighting or, if permanent lighting is not in place, simulate permanent lighting conditions during resinous flooring application.

C. Close spaces to traffic during resinous flooring application and for not less than 24 hours after application, unless manufacturer recommends a longer period.

PART 2 - PRODUCTS

2.1 RESINOUS FLOORING

A. General: Provide resinous flooring systems as indicated over new substrates.

B. System Chemical Resistance: Test specimens of cured resinous flooring system are unaffected when tested according to ASTM C 267 for immersion in the following reagents for not less than 7 days:

1. Acetic Acid 5 percent
2. Acetone
3. Amonimum Hydroxide 10 percent
4. Citric Acid 10 percent
5. Cola
6. Ethylene Glycol
7. Formaldehyde 10 percent
8. Gasoline
9. Hydrochloric Acid 10 percent and 20 percent
10. Lactic Acid 10-50 percent
11. Mineral Spirits
12. Nitric Acid 10 percent
13. Phosphoric Acid 10-80 percent
14. Salad Oil
15. Sodium Carbonate 2 percent and 20 percent
16. Sodium Chloride 10 percent
17. Syrup
18. Urine
19. Xylene

2.2 MATERIALS

A. VOC Content of Liquid-Applied Flooring Components: Mot more than 100 g/L when calculated according to 40 CFR 59, Subpart D (EPA Method 24):

B. Low-Emitting Materials: Flooring system shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the

Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.3 RESINOUS FLOORING

A. Basis of Design Product: The design of resinous flooring is based on Dur-A-Flex, Inc; Dur-A-Quartz. Subject to compliance with requirements, provide the named product or comparable product by one of the following:

1. General Polymers Corporation, a division of the Sherwin-Williams Company; Ceramic Carpet #400.
2. Tnemec Company, Inc.; Series 224, Deco-Fleck.

B. Application Method: Double broadcast and two topcoats.

C. System Characteristics:

1. Color and Pattern: Custom three (3) color to match Architect's sample.
2. Wearing Surface: Textured for slip resistance.
3. Overall System Thickness: 1/8 inch.
4. Federal Agency Approvals: FDA approved for food-processing environments.

D. System Components: Manufacturer's standard components that are compatible with each other and as follows:

1. Body Coat(s):

a. Resin: Epoxy.
b. Application Method: Double broadcast.

1) Thickness of Coats: 1/16 inch.
2) Number of Coats: Two.

c. Aggregates: Colored quartz (ceramic-coated silica).

2. Primer: Type recommended by manufacturer for substrate and body coat(s) indicated.
3. Waterproofing Membrane: Type recommended by manufacturer for substrate and primer and body coat(s) indicated.
4. Reinforcing Membrane: Flexible resin formulation that is recommended by manufacturer for substrate and primer and body coat(s) indicated and that prevents substrate cracks from reflecting through resinous flooring.

a. Provide fiberglass scrim embedded in reinforcing membrane for cracks.

5. Topcoat: Manufacturer’s standard clear sealing or finish coat(s).

a. Type: Clear.
b. Finish: Gloss.
c. Number of Coats: Two, 15 mil total thickness.

1) First coat: 10 mil, epoxy.
2) Second coat: 5 mil, aliphatic urethane.

E. System Physical Properties: Provide resinous flooring system with the following minimum physical property requirements when tested according to test methods indicated:

1. Compressive Strength: 12,500 psi per ASTM C 579.
2. Tensile Strength: 2,600 psi per ASTM C 307.
3. Flexural Modulus of Elasticity: 6.2×10^5 per ASTM D-790.
4. Water Absorption: 0.04% per ASTM D-570.
5. Indentation: .025 percent maximum per MIL-D-3134.
6. Impact Resistance: No chipping, cracking, or delamination and not more than 1/16-inch permanent indentation per MIL-D-3134.
7. Resistance to Elevated Temperature: No slip or flow of more than 1/16 inch (1.6 mm) per MIL-D-3134.
8. Abrasion Resistance: 35 mg maximum weight loss per ASTM C-501.
9. Flammability: Self-extinguishing per ASTM D 570.
10. Hardness: 75-80 Shore D per ASTM D 2240.
11. Bond Strength: 400 psi 100 percent concrete failure per ACI 503R.

2.4 ACCESSORY MATERIALS

A. Patching and Fill Material: Resinous product of or approved by resinous flooring manufacturer and recommended by manufacturer for application indicated.

B. Epoxy Mortar: Manufacturer's standard heavy-duty, trowel applied, multi-component, epoxy mortar, as required to achieve sloped floor in configuration indicated.

C. Joint Sealant: Type recommended or produced by resinous flooring manufacturer for type of service and joint condition indicated.

PART 3 - EXECUTION

3.1 PREPARATION

A. General: Prepare and clean substrates according to resinous flooring manufacturer's written instructions for substrate indicated. Provide clean, dry, and neutral Ph substrate for resinous flooring application.

B. Concrete Substrates: Provide sound concrete surfaces free of laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants incompatible with resinous flooring.

1. Roughen concrete substrates as follows:

a. Shot-blast surfaces with an apparatus that abrades the concrete, contains the dispensed shot within the apparatus, and recirculates the shot by vacuum pickup.

2. Repair damaged and deteriorated concrete according to resinous flooring manufacturer's written recommendations.
3. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
4. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.

    a. Surface pH not to exceed 9.

1. Moisture Testing: The Owner’s testing agency will perform the following tests. Proceed with installation only after substrates pass testing.

    a. Perform relative humidity test using in situ probes, ASTM F 2170. Proceed with installation only after substrates have a maximum 75% relative humidity level measurement.
    b. Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. in 24 hours.

2. Moisture Testing for new concrete slabs which contain integral waterproofing:

    a. Perform relative humidity test using in situ probes, ASTM F 2170. Proceed with installation only after substrates have a maximum 75% relative humidity level measurement.
    b. For interior concrete slabs on grade that contain integral waterproofing in accordance with Division 03 Section “Cast-in-Place Concrete”, drilled sample cores of concrete slabs will be tested for permeability. Results of these tests will be provided by the integral waterproofing manufacturer.

C. Resinous Materials: Mix components and prepare materials according to resinous flooring manufacturer's written instructions.

D. Use patching and fill material to fill holes and depressions in substrates according to manufacturer's written instructions.

E. Treat control joints and other nonmoving substrate cracks to prevent cracks from reflecting through resinous flooring according to manufacturer's written recommendations.

3.2 FLOORING APPLICATION

A. General: Apply components of resinous flooring system according to manufacturer's written instructions to produce a uniform, monolithic wearing surface of thickness indicated.

1. Coordinate application of components to provide optimum adhesion of resinous flooring system to substrate, and optimum intercoat adhesion.
2. Cure resinous flooring components according to manufacturer's written instructions. Prevent contamination during application and curing processes.
3. At substrate expansion and isolation joints, provide joint in resinous flooring to comply with resinous flooring manufacturer's written recommendations.

    a. Apply joint sealant to comply with manufacturer's written recommendations.

B. Apply primer over prepared substrate at manufacturer's recommended spreading rate.

C. Apply waterproofing membrane, where indicated, in manufacturer's recommended thickness.

1. Apply waterproofing membrane to integral cove base substrates.

D. Apply reinforcing membrane to substrate cracks.

E. Install epoxy mortar to achieve sloped floor in configuration indicated.

F. Integral Cove Base: Apply cove base mix to wall surfaces before applying flooring. Apply according to manufacturer's written instructions and details including those for taping, mixing, priming, troweling, sanding, and topcoating of cove base. Round internal and external corners.

1. Integral Cove Base: 6 inches (152 mm) high, terminated with manufacturers standard metal cove strip.

G. Apply double broadcast in thickness indicated for flooring system.

1. Broadcast and, after resin is cured, remove excess aggregates to provide surface texture indicated.

H. Apply topcoats indicated for flooring system and at spreading rates recommended in writing by manufacturer.

3.3 FIELD QUALITY CONTROL

A. Core Sampling: At the direction of Owner and at locations designated by Owner, take 1 core sample per 1000 sq. ft. of resinous flooring, or portion of, to verify thickness. For each sample that fails to comply with requirements, take two additional samples. Repair damage caused by coring and correct deficiencies.

B. Material Sampling: Owner may at any time and any number of times during resinous flooring application require material samples for testing for compliance with requirements.

1. Owner will engage an independent testing agency to take samples of materials being used. Material samples will be taken, identified, sealed, and certified in presence of Contractor.
2. Testing agency will test samples for compliance with requirements, using applicable referenced testing procedures or, if not referenced, using testing procedures listed in manufacturer's product data.
3. If test results show applied materials do not comply with specified requirements, pay for testing, remove noncomplying materials, prepare surfaces coated with unacceptable materials, and reapply flooring materials to comply with requirements.

3.4 CLEANING AND PROTECTING

A. Protect resinous flooring from damage and wear during the remainder of construction period. Use protective methods and materials, including temporary covering, recommended in writing by resinous flooring manufacturer.

END OF SECTION 096723

SECTION 097710 - FIBER-REINFORCED PLASTIC (FRP)-COATED PANELS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes: Work of this Section consists of installing all materials furnished under this Section, including all equipment, labor, services, and incidental items required to complete work as shown on Drawings and specified in this Section.

1. FRP wall panels and molding trim for adhesive- mounting directly to substrate.
2. Accessory materials.

B. Related Sections:

1. 079200 “Joint Sealers” for sanitary silicone sealant to seal FRP wall panel system perimeter to adjoining materials.
2. 092900 “Gypsum Board” for moisture-resistant gypsum board substrate.

1.3 SUBMITTALS

A. Product Data: Submit manufacturer's technical data for each type of component and accessory.

B. Samples for Verification Purposes: Submit following samples of each type and color, showing full-range of color and pattern variations.

1. FRP Panels: 6 in. sq.
2. Molding Trim Components: 12 in. length.

C. Maintenance Instructions: Submit 2 copies of manufacturer's recommended maintenance practices for FRP panels and each type of required accessory.

1.4 QUALITY ASSURANCE

A. Qualifications:

1. Installer: Engage experienced installer who has completed FRP panel and ceiling systems similar in material, design, and extent to those indicated for Project.

B. Fire Performance Characteristics: Provide FRP panels complying with following requirements:

1. Fire Response Tests:

    a. Performed by qualified testing and inspecting agency.
    b. Qualified testing and inspecting agencies include UL, Warnock Hersey, or other agency that performs testing and follow-up services acceptable to authorities having jurisdiction.

2. Surface Burning Characteristics of FRP Panels: Comply with ASTM E84 for Class A materials.

C. Single-Source Responsibility:

1. FRP Panels and Molding Trim Units: Obtain each type of FRP panels and molding trim units from single source with resources to provide products of consistent quality in appearance and physical properties without delaying progress of work.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver FRP panels and molding trim units to Project site in original, unopened packages and store them in fully enclosed space where they will be protected against damage from moisture, direct sunlight, surface contamination, or other causes.

B. Before installing FRP panels and molding trim units, permit them to reach room temperature and stabilized moisture content.

C. Handle FRP panels and molding trim units carefully to avoid chipping edges or damaging units in any way.

1.6 PROJECT CONDITIONS

A. Space Enclosure: Do not install FRP panels and molding trim units until space is enclosed and weatherproof, wet work in space is completed and nominally dry, work above ceilings is complete, and ambient conditions of temperature and humidity will be continuously maintained at values near those indicated for final occupancy.

B. Work Coordination: Coordinate layout and installation of FRP panel ceiling units and suspension system components with other construction penetrating ceiling or supported by ceiling, including light fixtures, HVAC equipment, fire-suppression system components, and partition system.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. FRP Wall Panels: Kemlite Company Inc., Glasteel Tennessee Inc., Sequentia Inc., BP Chemicals Inc., Reichhold Reinforced Plastics Div., Chicago Metallic Corp.

2.2 MATERIALS

A. Fire Retardant FRP Panels: UL Classified Class A per ASTM E84 for max. 20 flame spread and max. 200 smoke developed; USDA compliant.

1. FRP consisting of random chopped fiberglass roving with modified polyester copolymer, inorganic fillers, and pigments; durable, flexible building interior panel; mildew-resistant, rot-resistant, noncorrodible, and resistant to mild chemicals and moisture.
2. Surface Texture: Pebble-like embossed finish with integral color throughout material.
3. Color: As selected by Architect.
4. Panel Size: 48 in. wide, continuous length to 12 ft., 0.09 in. thick.

PHYSICAL PROPERTIES		
PROPERTY	TYPICAL VALUE	TEST METHOD
Flexural Strength	14,000 psi	ASTM D790
Flexural Modulus	800,000 psi	ASTM D790
Tensile Strength	5,500 psi	ASTM D638
Tensile Modulus	1,300,000 psi	ASTM D638
Barcol Hardness	55	ASTM D2583
Gardner Impact Strength	22 in. per lb.	ASTM D3029
Coefficient of Linear Thermal Expansion	1.7 x 10-5 in. per in. per deg. F	ASTM D570
Water Absorption	0.16 per 24 hrs @ 77 deg. F	ASTM D570
Abrasion Resistance	0.038 percent weight loss	Taber (25 cycles)

B. Molding Trim for Wall Panels:

1. Extruded, polyvinyl chloride components with integral color throughout extrusion.
2. Types: Division bar, inside corner, outside corner, ceiling trim, and cap.
3. Color: As selected by Architect.

C. Adhesive: Nonflammable construction adhesive compatible with FRP panels and recommended by panel manufacturer for type of substrate.

PART 3 - EXECUTION

3.1 INSTALLATION

A. FRP Wall Panels - Adhered Mounting:

1. Comply with manufacturer's instructions for type of substrate receiving FRP wall panels and molding trim.
2. Apply adhesive to clean and dry walls with notched trowel (1/4 in. x 1/4 in. x 3/4 in.) for 100 percent adhesive coverage using crosshatch-type pattern.
3. Before adhesive skins over, set panel in position and press against wall, using adequate pressure to ensure full contact between panel and wall.
4. Apply side bracing to panel until adhesive is fully cured.
5. Apply molding trim components as panel installation work progresses, leaving expansion and contraction gap between panel and interior of molding channels to comply with manufacturer's expansion joint chart.
6. Apply bead of sanitary sealant with molding trim components as work progresses.

END OF SECTION 09540

SECTION 098500 – SOUND TRANSMISSION CONTROL MATERIALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Acoustical insulation.

2. Acoustical sealant

B. Related Requirements:

1. Section 061600 "Sheathing" for gypsum sheathing for exterior walls.
2. Section 092216 "Non-Structural Metal Framing" for non-structural framing and suspension systems that support gypsum board panels.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.4 DELIVERY, STORAGE AND HANDLING

A. Protect insulation from physical damage and from becoming wet, soiled or covered with ice or snow. Comply with manufacturer’s recommendations for handling, storage and protection during installation.

B. Label for insulation packages to include material name, production date and/or product code.

PART 2 - PRODUCTS

2.1 Acoustic Batt Insulation

A. Type I: Unfaced glass fiber insulation complying with ASTM C 665 ans ASTM E 136

B. Maximum flame spread: 10

Maximum smoke developed: 10

Combustion characteristics: Unfaced insulation passes ASTM E 136 test

Dimensional stability: Linear stability less than 0.1%

C. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Owens Corning.
2. CertainTeed Corp.
3. Johns Manville.
4. or approved equal.

2.2 Acoustic Sealant

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Owens Corning
2. CertainTeed Corp.
3. Johns Manville.
4. Or approved equal.

PART 3 - EXECUTION

3.1 INSPECTION

A. Examine the areas and conditions under which work of this section will be installed. Verify that adjacent materials are dry and ready. Verify that electrical and mechanical services within walls have been inspected and tested. Verify that project drawings comply with installation requirements.

B. Provide written report listing conditions detrimental to the performance of work in this section. Do not proceed with installation until unsatisfactory conditions have been resolved.

3.2 INSTALLATION

A. Comply with manufacturer’s instruction for particular conditions of installation in each case.

B. Between wall studs, friction-fit unfaced insulation between studs after cover material has been installed on one side of the cavity.

3.3 MATERIAL STORAGE AND PROTECTION

A. Protect insulation from damage and from becoming wet before, during and after installation.

END OF SECTION 098500

SECTION 102800 – TOILET, BATH AND LAUNDRY ACCESORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes: Work of this Section consists of installing all materials furnished under this Section, including all equipment, labor, services, and incidental items required to complete work as shown on Drawings and specified in this Section.

1. Toilet and bath accessories, consisting of:

a. Grab bars.
b. Paper towel and trash receptacle.
c. Soap dispensers.
d. Mirror.
e. Toilet paper dispenser.

1.3 SUBMITTALS

A. Product Data: Submit manufacturer's detailed technical data for materials, fabrication, and installation, including catalog cuts of anchors, hardware, fastenings, and accessories.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Toilet Accessories:

1. Model numbers listed are those of Bobrick Washroom Equipment Co. that are used to establish quality, type, and size of each item.
2. Provide accessories manufactured by Bobrick Washroom equipment Co., or equal.
3. Refer to Schedule on Drawings.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Specialties:

1. Install specialties to manufacturer's recommendations.
2. Do not install before completion by other trades on adjacent surfaces.

3.2 ADJUSTING AND CLEANING

A. Clean all surfaces at time of installation and before Final Acceptance by Owner.

B. Repair all surfaces damaged during installation.

END OF SECTION 102800

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SECTION 15500

HEATING, VENTILATING AND AIR CONDITIONING

(FILED SUB-BID REQUIRED)

PART 1 - GENERAL 1

1.00 FILED SUB BID 1

1.01 GENERAL PROVISIONS 2

1.02 SCOPE OF WORK 2

SECTION 230000

HEATING, VENTILATING AND AIR CONDITIONING

(FILED SUB-BID REQUIRED)

PART 1 - GENERAL

1.00 FILED SUB BID

A. Bidding procedures shall be in accordance with latest edition of Massachusetts General Laws, Chapter 149, Section 44, including provisions for pre-qualification; and Chapter 30, Section 39M. Time and place for submission of sub-bids is given in Advertisement for Bids.

B. Sub-bids for work under this Section shall be for complete work of this Section and shall be filed in a sealed envelope with Awarding Authority, at time and place specified in Advertisement for Bids. The following shall appear on the face of the envelope:

SOMERVILLE HIGH SCHOOL RENOVATIONS TO ROOM 143

[NAME OF BIDDER]

SUB-BID FOR SECTION 230000, HEATING, VENTILATING AND AIR CONDITIONING

C. Every sub-bid submitted for work under this Section shall be on forms furnished by awarding authority, as required by Section 44 of Mass. General Laws, and specified in Advertisement for Bids.

D. Sub-bids filed with the Awarding Authority shall be as accompanied by bid deposits in form of a bid bond, or cash, or a certified check on, or a treasurer's or cashier's check issued by, a responsible bank or trust company, payable to the City of Somerville, in compliance with Chapter 149, Section 44 B. Amount of bid deposit shall be 5 percent of value of bid.

E. Additional Requirements:

1. Sub-bidder's attention is directed to Massachusetts G.L. Chapter 149 §44H, as amended, which provides in part as follows:

a. Each sub-bidder shall list in Paragraph E of the "Form for Sub-bids" the name and bid price of each person, firm or corporation performing each class of work or part thereof for which the Section of the Specifications for that subtrade requires such listing, provided that, in the absence of a contrary provision in the Specifications, any sub-bidder may, without listing any bid price, list his own name or part thereof and perform that work with persons on his own payroll, if such sub-bidders, after sub-bid openings, shows to the satisfaction of the Awarding Authority that he does customarily perform such class of work with persons on his own payroll and is qualified to do so. This Section of the Specifications

requires that the following classes of work shall be listed in Paragraph E under the conditions indicated herein.

Classes of Work	Reference Specification	Paragraphs
(1) Heating, Ventilating and Air Conditioning		15500

F. The work to be done under this section is generally shown on Drawings H0.0, H1.1, H2.0, and HD2.0.

1.01 GENERAL PROVISIONS

A. The GENERAL REQUIREMENTS, DIVISION 1, and BIDDING AND CONTRACT REQUIREMENTS, and DIVISION 0 are hereby made a part of this Specification Section.

B. Examine all Drawings and all Sections of the Specifications and requirements and provisions affecting the work of this Section.

1.02 SCOPE OF WORK

A. See drawings H0.0 HVAC Legend and Abbreviations; H1.0 HVAC Notes and Specifications; H2.0 HVAC Floor Plan; and HVAC HD2.0 Floor Demolition Plans for Scope of Work, Notes and Specifications.

END OF SECTION

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SECTION 16000

ELECTRICAL

(FILED SUB-BID REQUIRED)

PART 1 - GENERAL 2

1.00 FILED SUB BID 2

1.01 GENERAL PROVISIONS 3

1.02 SCOPE OF WORK 3

SECTION 16000

ELECTRICAL

(FILED SUB-BID REQUIRED)

PART 1 - GENERAL

1.00 FILED SUB BID

A. Bidding procedures shall be in accordance with latest edition of Massachusetts General Laws, Chapter 149, Section 44, including provisions for pre-qualification; and Chapter 30, Section 39M. Time and place for submission of sub-bids is given in Advertisement for Bids.

B. Sub-bids for work under this Section shall be for complete work of this Section and shall be filed in a sealed envelope with Awarding Owner, at time and place specified in Advertisement for Bids. The following shall appear on the face of the envelope:

SOMERVILLE HIGH SCHOOL RENOVATIONS TO ROOM 143

[NAME OF BIDDER]

SUB-BID FOR SECTION 260000, ELECTRICAL

C. Every sub-bid submitted for work under this Section shall be on forms furnished by awarding Owner, as required by Section 44 of Mass. General Laws, and specified in Advertisement for Bids.

D. Sub-bids filed with the Awarding Owner shall be as accompanied by bid deposits in form of a bid bond, or cash, or a certified check on, or a treasurer's or cashier's check issued by, a responsible bank or trust company, payable to the City of Somerville, in compliance with Chapter 149, Section 44 B. Amount of bid deposit shall be 5 percent of value of bid.

E. Additional Requirements:

1. Sub-bidder's attention is directed to Massachusetts G.L. Chapter 149 §44H, as amended, which provides in part as follows:

a. Each sub-bidder shall list in Paragraph E of the "Form for Sub-bids" the name and bid price of each person, firm or corporation performing each class of work or part thereof for which the Section of the Specifications for that subtrade requires such listing, provided that, in the absence of a contrary provision in the Specifications, any sub-bidder may, without listing any bid price, list his own name or part thereof and perform that work with persons on his own payroll, if such sub-bidders, after sub-bid openings, shows to the satisfaction of the Awarding Owner that he does customarily perform such class of work with persons on his own payroll and is qualified to do so. This Section of the Specifications requires that the following classes of work shall be listed in Paragraph E under the conditions indicated herein.

Classes of Work	Reference Specification	Paragraphs
Electrical	260000	

F. The work to be done under this section is generally shown on Drawings E0.0, E1.0, E2.0 and ED2.0.

1.01 GENERAL PROVISIONS

A. The GENERAL REQUIREMENTS, DIVISION 1, and BIDDING AND CONTRACT REQUIREMENTS, DIVISION 0, are hereby made a part of this Specification Section.

B. Examine all Drawings and all Sections of the Specifications and requirements and provisions affecting the work of this Section.

1.02 SCOPE OF WORK

A. See drawings E0.0 Electrical Legend, Notes, Schedules and Abbreviations; E1.0 Electrical Specifications and Details; E2.0 Electrical Power and Lighting Part Floor Plan; and ED2.0 Electrical Demolition Part Floor Plan for Scope of Work, Notes and Specifications.

END OF SECTION

GENERAL NOTES

1. PLUMBING WORK SHALL BE DONE IN ACCORDANCE WITH THE LATEST EDITION OF THE STATE PLUMBING AND GAS CODE INCLUDING ALL LOCAL AMENDMENTS.
2. OBTAIN ALL PERMITS AND PAY ALL FEES ASSOCIATED WITH THIS WORK PRIOR TO COMMENCEMENT.
3. PIPING AND EQUIPMENT IS SHOWN DIAGRAMMATICALLY. THE ACTUAL ROUTING OF PIPING AND EXACT LOCATION OF EQUIPMENT SHALL BE DETERMINED IN THE FIELD.
4. IN ADDITION TO REVIEWING AND COORDINATING WITH THE OTHER TRADES (STRUCTURAL, ARCHITECTURAL, HVAC, AND ELECTRICAL) THE CONTRACTOR SHALL VISIT THE SITE AND FAMILIARIZE HIMSELF WITH DETAILS OF CONSTRUCTION.
5. FURNISH AND INSTALL ALL NECESSARY PIPING, EQUIPMENT SUPPORTS AND ANY EQUIPMENT NOT SHOWN ON DRAWINGS OR CALLED FOR IN THE SPECIFICATIONS BUT NECESSARY TO PROVIDE A COMPLETE AND WORKABLE SYSTEM.
6. PROVIDE ACCESSIBLE SHUTOFF VALVES ON ALL BRANCH PIPING AND ON ALL SUPPLY PIPING TO INDIVIDUAL FIXTURES AND EQUIPMENT.
7. PROVIDE ACCESS TO ALL EQUIPMENT REQUIRING PERIODIC SERVICE AND MAINTENANCE.
8. FURNISH ACCESS PANELS TO THE GENERAL CONTRACTOR FOR INSTALLATION UNDER THE RELATED TRADES.
9. PITCH ALL WATER LINES TO DRAIN.
10. INSTALL HORIZONTAL RUNS OF WATER PIPING AS HIGH AS POSSIBLE AND PROVIDE DRAIN-OFFS AT ALL LOW POINTS.
11. HOT WATER TAKEOFFS SHALL HAVE NOT LESS THAN THREE ELBOW SWINGS.
12. PIPING SHALL RUN CONCEALED IN ALL AREAS WITH THE EXCEPTION OF MECHANICAL ROOMS, AREAS WHERE NO CEILING EXISTS OR WHERE NOTED ON THE PLANS.
13. INSTALL DIELECTRIC COUPLINGS BETWEEN DISSIMILAR MATERIALS.
14. REQUIRED FIRE RESISTANCE RATING OF FLOORS, WALLS AND CEILINGS SHALL BE MAINTAINED WHEN PIPE PENETRATIONS ARE MADE.
15. REFER TO RISER DIAGRAMS AND DETAILS FOR PIPE AND EQUIPMENT SIZES NOT SHOWN ON THE PLANS.
16. ALL WORK SHOWN ON RISER DIAGRAMS BUT NOT ON PLANS OR VICE VERSA SHALL BE INCLUDED AS IF SHOWN ON BOTH.
17. SEE SPECIFICATIONS FOR OTHER REQUIREMENTS.

DEMO NOTES

DEMOLITION NOTES

1. DEMOLISH AND REMOVE SELECTED PORTIONS OF THE PLUMBING SYSTEMS AS REQUIRED FOR NEW WORK. REFER TO THE DRAWINGS FOR GENERAL DESCRIPTION AND ADDITIONAL REQUIREMENTS. DEMOLITION AND REMOVAL WORK SHALL PROPERLY PREPARE FOR ALTERATION WORK AND NEW CONSTRUCTION TO BE PROVIDED UNDER THE CONTRACT.
2. DEMOLITION PLANS HAVE BEEN PREPARED UTILIZING OWNER PROVIDED RECORD DRAWINGS. NO WARRANTEE OF ACCURACY OR THOROUGHNESS IS EXPRESSED OR IMPLIED. THE CONTRACTOR SHALL VERIFY FIELD CONDITIONS AND EXERCISE CAUTION DUE TO DISCREPANCIES AND/OR HIDDEN CONDITIONS.
3. REFER TO OWNERS INSTRUCTIONS AND SALVAGE ALL EXISTING EQUIPMENT AND MATERIALS THAT SHALL REMAIN THE PROPERTY OF THE OWNER. REMOVE AND PROPERLY DISPOSE OF DEMOLISHED MATERIALS OFF SITE.
4. EXCEPT THOSE ITEMS SPECIFICALLY DESIGNATED TO BE RELOCATED, REUSED, OR TURNED OVER TO THE FACILITY, ALL EXISTING REMOVED MATERIALS, ITEMS, TRASH AND DEBRIS SHALL BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE COMPLETELY REMOVED FROM THE SITE AND LEGALLY DISPOSED OF AT HER/HIS EXPENSE. SALVAGE VALUE BELONGS TO THE CONTRACTOR. ON-SITE SALE OF MATERIALS IS NOT PERMITTED.
5. REMOVAL OR ABATEMENT OF HAZARDOUS MATERIALS IS EXCLUDED FROM THIS WORK SCOPE. REPORT THE DISCOVERY OF ANY HAZARDOUS MATERIAL TO THE OWNER.
6. PROTECTION: ENSURE THE SAFE PASSAGE OF PERSONS IN AND AROUND THE BUILDING DURING DEMOLITION. PREVENT INJURY TO PERSONS AND DAMAGE TO PROPERTY. PROVIDE ADEQUATE SHORING AND BRACING TO PREVENT COLLAPSE. IMMEDIATELY REPAIR DAMAGED PROPERTY TO THE CONDITION BEFORE BEING DAMAGED. TAKE EFFECTIVE MEASURES TO PREVENT WINDBLOWN DUST.
7. UTILITIES: MAINTAIN ALL UTILITIES EXCEPT THOSE REQUIRING REMOVAL OR RELOCATION. KEEP UTILITIES IN SERVICE AND PROTECT FROM DAMAGE. DO NOT INTERRUPT UTILITIES SERVING USED AREAS WITHOUT FIRST OBTAINING PERMISSION FROM THE UTILITY COMPANY AND THE OWNER. PROVIDE TEMPORARY SERVICES AS REQUIRED.
8. HISTORIC ITEMS, RELICS, AND SIMILAR OBJECTS INCLUDING, BUT NOT LIMITED TO, CORNERSTONES AND THEIR CONTENTS, COMMEMORATIVE PLAQUES, ANTIQUES, AND OTHER ITEMS OF INTEREST OR VALUE TO THE OWNER THAT MAY BE ENCOUNTERED DURING SELECTIVE DEMOLITION REMAIN PROPERTY OF THE OWNER. CAREFULLY REMOVE EACH ITEM OR OBJECT IN A MANNER TO PREVENT DAMAGE AND DELIVER PROMPTLY TO A LOCATION ACCEPTABLE TO THE OWNER
9. VERIFY THAT UTILITIES HAVE BEEN DISCONNECTED AND CAPPED.
10. SURVEY EXISTING CONDITIONS AND CORRELATE WITH REQUIREMENTS INDICATED TO DETERMINE EXTENT OF SELECTIVE DEMOLITION REQUIRED.
11. INVENTORY AND RECORD THE CONDITION OF ITEMS TO BE REMOVED AND REINSTALLED AND ITEMS TO BE REMOVED AND SALVAGED.
12. WHEN UNANTICIPATED MECHANICAL, ELECTRICAL, OR STRUCTURAL ELEMENTS THAT CONFLICT WITH INTENDED FUNCTION OR DESIGN ARE ENCOUNTERED, INVESTIGATE AND MEASURE THE NATURE AND EXTENT OF CONFLICT. PROMPTLY SUBMIT A WRITTEN REPORT TO THE ENGINEER.
13. REMOVE TEMPORARY SHORING, BRACING AND STRUCTURAL SUPPORTS WHEN NO LONGER REQUIRED. STRENGTHEN OR ADD NEW SUPPORTS WHEN REQUIRED DURING PROGRESS OF SELECTIVE DEMOLITION.
14. DRAIN, PURGE, OR OTHERWISE REMOVE, COLLECT, AND DISPOSE OF CHEMICALS, GASES, EXPLOSIVES, ACIDS, FLAMMABLES, OR OTHER DANGEROUS MATERIALS BEFORE PROCEEDING WITH DEMOLITION OPERATIONS.
15. DO NOT USE CUTTING TORCHES UNTIL WORK AREA IS CLEARED OF FLAMMABLE MATERIALS. AT CONCEALED SPACES, SUCH AS DUCT AND PIPE INTERIORS, VERIFY CONDITION AND CONTENTS OF HIDDEN SPACE BEFORE STARTING FLAME-CUTTING OPERATIONS. MAINTAIN FIRE WATCH AND PORTABLE FIRE-SUPPRESSION DEVICES DURING FLAME-CUTTING OPERATIONS. MAINTAIN ADEQUATE VENTILATION WHEN USING CUTTING TORCHES.

ABBREVIATIONS

ACT	ACOUSTICAL TILE
AFF	ABOVE FINISH FLOOR
AP	ACCESS PANEL
ARCH	ARCHITECT
BT	BATH TUB
BLDG	BUILDING
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CI	CAST IRON
CLG	CEILING
CLDI	CEMENT LINED DUCTILE IRON
CO	CLEANOUT
CONC	CONCRETE
CONT	CONTINUATION
CONTR	CONTRACTOR
CP	CHROME PLATED
CTE	CONNECT TO EXISTING
CW	COLD WATER
DCVA	DOUBLE CHECK VALVE ASSEMBLY
DF	DRINKING FOUNTAIN-FIXTURE IDENTIFICATION
DIA	DIAMETER
DN	DOWN
DWG	DRAWING
EC	ELECTRICAL CONTRACTOR
EL/ELEV	ELEVATION
EWC	ELECTRIC WATER COOLER-FIXTURE IDENTIFICATION
EX	EXISTING
FCO	FLOOR CLEANOUT
FFE	FINISH FLOOR ELEVATION
P-#	FIXTURE NUMBER
FLR	FLOOR
FP	FIRE PROTECTION
FS	FLOW SWITCH
FT	FOOT
FV	FLUSH VALVE
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GI	GREASE INTERCEPTOR
GPF	GALLON PER FLUSH
GPM	GALLONS PER MINUTE
HC	HANDICAPPED
HW	HOT WATER
HWR	HOT WATER RETURN
ID	INSIDE DIAMETER
INV	INVERT
IW	INDIRECT WASTE
LPC	LIMIT OF PLUMBING CONTRACTOR
MECH	MECHANICAL
MSB	MOP SERVICE BASIN-FIXTURE IDENTIFICATION
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NTS	NOT TO SCALE
NIC	NOT IN CONTRACT
OD	OUTSIDE DIAMETER
OED	OPEN END DRAIN
PC	PLUMBING CONTRACTOR
PLBG	PLUMBING
PSI	POUNDS PER SQUARE INCH
RPBP	REDUCED PRESSURE BACKFLOW PREVENTER
SA	SHOCK ABSORBER
SH	SHOWER-FIXTURE IDENTIFICATION
SK	SINK-FIXTURE IDENTIFICATION
SPEC	SPECIFICATION
SS	SOIL STACK
ST.ST.	STAINLESS STEEL
TW	TEMPERED WATER
TYP	TYPICAL
U	URINAL-FIXTURE IDENTIFICATION
V	VENT
VB	VACUUM BREAKER
VIF	VERIFY IN FIELD
VS	VENT STACK
VTR	VENT THRU ROOF
W	WASTE
WC	WATER CLOSET-FIXTURE IDENTIFICATION

GENERAL

FD	FLOOR DRAIN
CO	CLEANOUT
FCO	FLOOR CLEANOUT
	P-TRAP
	ELBOW UP OR RISE
	ELBOW DOWN OR DROP
	CAP OR END OF PIPE
	TEE LOOKING UP
	TEE LOOKING DOWN
	UNION
VIV	VALVE IN VERTICAL
WHA/SA	WATER HAMMER ARRESTOR/SHOCK ABSORBER
CTE	CONNECT TO EXISTING
ETR	EXISTING TO REMAIN
ETBR	EXISTING TO BE REMOVED
	FLOW IN DIRECTION OF ARROW
	DIRECTION OF SLOPE
ECC	ECCENTRIC REDUCER
HC	HANDICAPPED ACCESSIBLE
TP	TRAP PRIMER

VALVE LEGEND

	BALL VALVE
	BALL VALVE (GAS)

PIPING LEGEND

CW	COLD WATER
HW	HOT WATER
HWR	HOT WATER RETURN
S or W	SOIL OR WASTE ABOVE GROUND
S or W	SOIL OR WASTE BELOW SLAB
V	VENT ABOVE GROUND
V	VENT BELOW SLAB
RL	RAIN LEADER ABOVE GROUND
RL	RAIN LEADER BELOW SLAB
G	NATURAL GAS PIPING
TP	TRAP PRIMER
TP	TRAP PRIMER BELOW SLAB

DESIGNATION INDICATOR

1	DETAIL DESIGNATION NUMBER
P-1	DETAIL DESIGNATION DRAWING

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REVISIONS		
Number	**Description**	**Date**

100% CONSTRUCTION DOCUMENTS

Somerville Public Schools
Education · Inspiration · Excellence

Somerville High School Renovations to Room 143

81 Highland Avenue,
Somerville, MA 02143

PLUMBING LEGENDS, NOTES & ABBREVIATIONS

PROJECT NUMBER: 19431.03
DESIGNED BY: NW
DRAWN BY: NW
CHECKED BY: RB
DATE: JULY 3, 2013
SCALE: NONE

SHEET NUMBER:

P0.00

SHEET **OF**

Q:\2013\20130373 - Somerville High School Room 143\1200 Drawings\1202 Plumbing\Plot Files\20130373 P0.0 PLUMBING LEGENDS, NOTES, & ABBREVIATIONS.dwg [Work], July 02, 2013 - 3:40pm toarman

SPECIFICATIONS

PART 1 - GENERAL

1. GENERAL PROVISIONS: DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF WORK IN CONTRACT.

2. SCOPE: PERFORM WORK AND PROVIDE NEW MATERIAL AND EQUIPMENT AS SHOWN ON DRAWINGS AND AS SPECIFIED IN THIS SECTION OF THE SPECIFICATIONS. PROVIDE ALL COMPONENTS AND MATERIALS, WHETHER SPECIFICALLY SHOWN OR NOT, THAT ARE NECESSARY TO MAKE THE SYSTEMS COMPLETE AND FULLY OPERATIONAL AS INTENDED IN THE CONSTRUCTION DOCUMENTS. WORK SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING:
   a) THE DESIGN INTENT AS ILLUSTRATED ON THESE DRAWING
   b) ALL TESTING AND CERTIFICATIONS NECESSARY FOR COMPLIANCE AND ANY REQUIRED REMEDIAL ACTIONS AND RETESTING DUE TO FAILURE.

3. SITE VISIT: VISIT AND CAREFULLY EXAMINE SITE TO IDENTIFY EXISTING CONDITIONS THAT MAY AFFECT WORK OF THIS SECTION BEFORE SUBMITTING BID. NO EXTRA PAYMENT WILL BE ALLOWED FOR ADDITIONAL WORK CAUSED BY UNFAMILIARITY WITH SITE CONDITIONS THAT ARE VISIBLE OR READILY DISCERNED BY AN EXPERIENCED OBSERVER.

4. RELATED WORK: THE FOLLOWING WORK IS NOT INCLUDED IN THIS SECTION AND WILL BE PROVIDED UNDER OTHER SECTIONS:
   a) PAINTING, EXCEPT AS SPECIFIED.
   b) TEMPORARY LIGHT, POWER, WATER, HEAT, GAS AND SANITARY FACILITIES FOR USE DURING CONSTRUCTION.
   c) ELECTRICAL POWER WIRING TO ALL EQUIPMENT.

5. CODES, STANDARDS, AUTHORITIES AND PERMITS: CODES, LAWS AND ORDINANCES PROVIDE A BASIS FOR THE MINIMUM INSTALLATION CRITERIA. THESE DRAWINGS AND SPECIFICATIONS ILLUSTRATE THE SCOPE REQUIRED FOR THIS PROJECT, WHICH MAY EXCEED MINIMUM CODE, LAW AND STANDARDS CRITERIA. GIVE NOTICES, FILE PLANS, OBTAIN PERMITS AND LICENSES, PAY FEES AND BACKCHARGES AND OBTAIN NECESSARY APPROVALS FROM AUTHORITIES HAVING JURISDICTION AS REQUIRED FOR THE EXECUTION OF ALL WORK ASSOCIATED WITH THIS PROJECT. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST EDITIONS OF:
   a) THE STATE BUILDING CODE
   b) THE STATE PLUMBING AND FUEL GAS CODE
   c) THE STATE ELECTRICAL CODE
   d) NFPA
   e) DEPARTMENT OF ENVIRONMENTAL PROTECTION
   f) DEPARTMENT OF PUBLIC SAFETY CODES
   g) ARCHITECTURAL ACCESS BOARD
   h) ALL OTHER APPLICABLE CODES, REGULATIONS, STANDARDS AND LAWS OF LOCAL, STATE AND FEDERAL GOVERNMENT AND OTHER AUTHORITIES HAVING JURISDICTION.
   I) APPLICABLE BASE BUILDING STANDARDS AND SPECIFICATIONS.

6. INTERPRETATIONS OF DOCUMENTS: WHERE DRAWINGS OR SPECIFICATIONS DO NOT COINCIDE WITH MANUFACTURER'S RECOMMENDATIONS, OR ARE UNCLEAR AS TO INTENT, OR REQUIRED MATERIAL QUALITY, ADVISE THE ENGINEER IN WRITING BEFORE PROCEDING WITH THE WORK. ALL COST FOR REWORK NECESSARY TO RESOLVE DISCREPANCIES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

7. REQUESTS FOR INFORMATION: ANY RFI FOR RESOLVING AN APPARENT CONFLICT OR UNCLARITY, OR A REQUEST FOR AN ADDITIONAL DETAIL, SHALL INCLUDE A SKETCH OR EQUIVALENT DESCRIPTION OF CONTRACTOR'S PROPOSED SOLUTION.

8. SUBMITTALS: PROVIDE SPECIFIED ITEMS AND EQUIPMENT UNLESS "EQUAL" OR "APPROVED EQUAL" IS EXPLICITLY INDICATED ON THE DRAWINGS. DEVIATIONS TO SPECIFIED ITEMS SHALL BE AT THE SOLE RISK OF THE CONTRACTOR, WHO SHALL BE RESPONSIBLE FOR ALL ASSOCIATED CHANGES TO THIS AND OTHER TRADES. REVIEW OF THE SHOP DRAWINGS BY THE ENGINEER SHALL NOT ABSOLVE THE CONTRACTOR FROM MEETING THE FULL DESIGN INTENT OF THE ASSOCIATED SYSTEM(S). SUBMITTALS SHALL INDICATE PRIOR REVIEW AND APPROVAL BY THE RESPONSIBLE CONTRACTOR. SUBMIT FOR REVIEW (6) SETS OF MANUFACTURER'S PRODUCT DATA FOR THE FOLLOWING ITEMS:
   a) FIXTURES
   b) PIPE MATERIALS
   c) FITTINGS
   d) VALVES
   e) DRAINS
   f) INSULATION
   g) HANGERS
   h) TEST REPORTS
   i) ALL CERTIFICATES
   ALLOW ENGINEER A MINIMUM OF 10 WORKING DAYS FOR PROCESSING AND REVIEW OF EACH SUBMISSION.

9. OPERATION AND MAINTENANCE DATA: SUBMIT (3) SETS OF OPERATING AND MAINTENANCE MANUALS PRIOR TO THE COMPLETION OF THE PROJECT. O&M MANUALS SHALL INCLUDE SYSTEM DESCRIPTIONS, WIRING DIAGRAMS, WRITTEN WARRANTEES, RECOMMENDED SPARE PARTS AND ROUTINE MAINTENANCE REQUIREMENTS WITH RECOMMENDED INTERVALS FOR ALL THE FOLLOWING:
   a) FIXTURES

10. RECORD DRAWINGS: CAD RECORD DRAWING FILES SHALL BE SUBMITTED AT THE COMPLETION OF THE PROJECT SHOWING THE "AS-BUILT" CONDITION INCLUDING WORK INSTALLED AND ALL MODIFICATIONS OR ADDITIONS TO ORIGINAL DESIGN. OBTAIN THE AUTOCAD FILES FOR PREPARATION OF AS-BUILT DRAWINGS FROM THE ARCHITECT. THE ARCHITECT AND ENGINEER ARE NOT GRANTING ANY OWNERSHIP OR PROPERTY INTEREST IN THE CAD DRAWINGS BY THE DELIVERY OF THE CAD FILES. THE USE OF THE CAD FILES AND DRAWINGS ARE LIMITED FOR THE SOLE PURPOSE OF ASSISTING IN THE CONTRACTOR'S PERFORMANCE IN ITS CONTRACTURAL OBLIGATIONS WITH RESPECT TO THIS PROJECT. ANY REUSE AND/OR OTHER USE BY THE CONTRACTOR WILL BE AT THE CONTRACTOR'S SOLE RISK AND WITHOUT LIABILITY TO THE ARCHITECT AND ENGINEER.

11. WARRANTIES: WARRANTY INSTALLATION IN WRITING FOR ONE YEAR FROM DATE OF OWNER'S ACCEPTANCE OF CERTIFICATE OF SUBSTANTIAL COMPLETION. WHERE INDIVIDUAL EQUIPMENT SECTIONS SPECIFY LONGER WARRANTEES, PROVIDE THE LONGER WARRANTEE. REPAIR, REPLACE OR PROVIDE TEMPORARY ACCOMMODATIONS FOR DEFECTIVE MATERIALS, EQUIPMENT, WORKMANSHIP AND INSTALLATION THAT DEVELOP WITHIN 24 HOURS OF NOTIFICATION. WARRANTY SHALL INCLUDE A CONTACT PERSON (NAME AND 24 HOUR TELEPHONE NUMBER) FOR SERVICE REQUESTS. CORRECT DAMAGE CAUSED WHILE MAKING NECESSARY REPAIRS AND REPLACEMENTS UNDER WARRANTY PERIOD AT NO ADDITIONAL COST.

12. COORDINATION: CONFER WITH ALL OTHER TRADES RELATIVE TO LOCATION OF ALL APPARATUS AND EQUIPMENT TO BE INSTALLED AND SELECT LOCATIONS SO AS NOT TO CONFLICT WITH OR HINDER THE PROGRESS OF THE WORK OF OTHER SECTIONS. WORK INSTALLED THAT CREATES INTERFERENCE OR RESTRICTS ACCESS REQUIRED BY CODE OR MAINTENANCE AND/OR ADJUSTMENTS SHALL BE MODIFIED AT NO ADDITIONAL COST TO THE OWNER.

13. SUPPORTS: INCLUDE ALL STRUCTURAL STEEL SUPPORTS, HANGER BRACKETS, ETC., REQUIRED FOR THE EXECUTION OF THE WORK OF THIS SECTION. THE WELDS AND EDGES OF ALL BRACKETS SHALL BE FILED OR GROUND SMOOTH FOR PAINTING.

14. CUTTING AND PATCHING: INCLUDE ALL CORING, CUTTING, PATCHING AND FIREPROOFING NECESSARY FOR THE EXECUTION OF THE WORK OF THIS SECTION. STRUCTURAL ELEMENTS SHALL NOT BE CUT WITHOUT WRITTEN APPROVAL OF THE ARCHITECT. REPAIR AND PATCH AROUND THE WORK SPECIFIED HEREIN TO MATCH THE EXISTING ADJACENT SURFACES TO THE SATISFACTION OF THE ARCHITECT. FILL AND PATCH ALL OPENINGS OR HOLES LEFT IN THE EXISTING STRUCTURES BY THE REMOVAL OF EXISTING EQUIPMENT THAT IS PART OF THIS SECTION OF THE SPECIFICATIONS. PROVIDE FIRE STOPPING TO MAINTAIN THE FIRE RATING OF THE FIRE RESISTANCE RATED ASSEMBLY. ALL PENETRATIONS AND ASSOCIATED FIRE STOPPINGS SHALL BE INSTALLED IN ACCORDANCE WITH THE FIRE STOPPING MANUFACTURER'S LISTED INSTALLATION DETAILS AND BE LISTED BY UL OR FM.

15. HOISTING, SCAFFOLDING AND PLANKING: INCLUDE THE FURNISHING, SET-UP AND MAINTENANCE OF ALL HOISTING MACHINERY, CRANES, SCAFFOLDS, STAGING AND PLANKING AS REQUIRED FOR THE EXECUTION OF WORK FOR THIS SECTION.

16. SAFETY PRECAUTIONS: LIFE SAFETY AND ACCIDENT PREVENTION SHALL BE A PRIMARY CONSIDERATION. COMPLY WITH ALL OF THE SAFETY REQUIREMENTS OF THE OWNER AND OSHA THROUGHOUT THE ENTIRE CONSTRUCTION PERIOD OF THE PROJECT. FURNISH, PLACE AND MAINTAIN PROPER GUARDS AND ANY OTHER NECESSARY CONSTRUCTION REQUIRED TO SECURE SAFETY OF LIFE AND PROPERTY.

17. ACCESSIBILITY: ALL WORK PROVIDED UNDER THIS SECTION OF THE SPECIFICATION SHALL BE INSTALLED SO THAT PARTS REQUIRING PERIODIC INSPECTION, MAINTENANCE AND REPAIR ARE READILY ACCESSIBLE. WORK OF THIS TRADE SHALL NOT INFRINGE UPON CLEARANCES REQUIRED BY EQUIPMENT OF OTHER TRADES, ESPECIALLY CODE REQUIRED CLEARANCES TO ELECTRICAL EQUIPMENT.

18. PROTECTION OF WORK AND PROPERTY: THIS CONTRACTOR SHALL BE RESPONSIBLE FOR THE CARE AND PROTECTION OF ALL WORK INCLUDED UNDER THIS SECTION UNTIL THE COMPLETION AND FINAL ACCEPTANCE OF THIS PROJECT. PROTECT ALL EQUIPMENT AND MATERIALS FROM DAMAGE FROM ALL CAUSES INCLUDING, BUT NOT LIMITED TO, FIRE, VANDALISM AND THEFT. ALL MATERIALS AND EQUIPMENT DAMAGED OR STOLEN SHALL BE REPAIRED OR REPLACED WITH EQUAL MATERIAL OR EQUIPMENT AT NO ADDITIONAL COST TO THE OWNER. PROTECT ALL EQUIPMENT, OUTLETS AND OPENINGS, AND ROOF PENETRATIONS WITH TEMPORARY PLUGS, CAPS AND COVERS. PROTECT WORK AND MATERIALS OF OTHER TRADES FROM DAMAGE THAT MIGHT BE CAUSED BY WORK OR WORKMEN UNDER THIS SECTION AND MAKE GOOD DAMAGE THUS CAUSED. DAMAGED MATERIALS ARE TO BE REMOVED FROM THE SITE; NO SITE STORAGE OF DAMAGED MATERIALS WILL BE ALLOWED. ANY DAMAGE TO EXISTING SYSTEMS AND EQUIPMENT CAUSED BY THIS CONTRACTOR DURING INSTALLATION SHALL BE REPAIRED AND/OR REPLACED AT THIS CONTRACTOR'S EXPENSE TO THE COMPLETE SATISFACTION OF THE BUILDING OWNER.

19. PROJECT CLOSEOUT: A CERTIFICATE OF COMPLETION SHALL BE ISSUED BY THE CONTRACTOR INDICATING THAT THE INSTALLATION IS IN CONFORMANCE WITH THE CONSTRUCTION DOCUMENTS AND ALL APPLICABLE LOCAL, STATE AND FEDERAL STATUTES AND CODES. ALL SUBMITTALS, AS-BUILTS, O&M MANUALS, AND TESTING AND BALANCING REPORTS ARE TO BE PROVIDED, FOR ENGINEER'S REVIEW, PRIOR TO REQUEST FOR COMPLETION CERTIFICATES. IN ADDITION, AND ALSO PRIOR TO REQUEST FOR COMPLETION CERTIFICATES, ALL PUNCH LIST ITEMS MUST BE COMPLETED TO THE SATISFACTION OF THE ENGINEER. THE CONTRACTOR MUST VERIFY THAT ALL SEQUENCES OF OPERATIONS AND CONTROLS HAVE BEEN INCORPORATED AND ALL SYSTEMS AND EQUIPMENT ARE WORKING PER THE SPECIFIED SEQUENCES OF OPERATIONS. A BLANK CONTRACTOR'S CERTIFICATE FORM CAN BE FURNISHED BY RDK ENGINEERS UPON REQUEST. FINAL INSPECTION BY THE ENGINEER SHALL BE CONDUCTED AFTER RECEIPT OF THE CERTIFICATE OF COMPLETION. PREMATURE REQUESTS FOR FINAL INSPECTIONS THAT REQUIRE REINSPECTION OF DEFICIENT ITEMS WILL RESULT IN BACK CHARGES OF THE COSTS ASSOCIATED WITH THE REINSPECTION.

20. ELECTRICAL WORK: ALL ELECTRICAL APPARATUS AND CONTROLS FURNISHED AND THE INSTALLATION THERE OF, AS A PART OF PLUMBING WORK, SHALL CONFORM TO APPLICABLE REQUIREMENTS UNDER THE ELECTRICAL DRAWINGS AND SPECIFICATION.

PART 2 - PRODUCTS

1. PLUMBING FIXTURES AND TRIM: REFER TO ARCHITECTURAL AND PLUMBING DRAWINGS FOR TYPE, QUANTITIES, LOCATIONS AND MOUNTING HEIGHTS OF FIXTURES PROVIDED UNDER THIS SECTION. FIXTURE TRIM, TRAPS, FAUCETS, ESCUTCHEONS AND WASTE PIPES EXPOSED TO VIEW IN THE FINISHED SPACES SHALL BE I.P.S. BRASS WITH POLISHED CHROMIUM PLATING OVER NICKEL FINISH.

2. PIPE MATERIALS (RESERVED):

   A. REFER TO SHEET P3.00 FOR PIPE MATERIAL SPECIFICATION SCHEDULE.

3. VALVES (DOMESTIC WATER SYSTEMS):

   A. GENERAL - VALVES IN THE INTERIOR DOMESTIC WATER PIPING SYSTEMS (COLD WATER, HOT WATER, AND HOT WATER RETURN) SHALL BE AS MANUFACTURED BY APOLLO, MILWAUKEE, NIBCO OR CONBRACO. MANUFACTURER'S MODEL NUMBERS USED HEREIN ARE INTENDED AS A GUIDE TO QUALITY AND TYPE OF VALVE TO BE PROVIDED.

1. VALVES USED FOR THROTTLING OF FLOW SHALL BE BUTTERFLY TYPE WITH MEMORY STOP.
2. VALVES SHALL BE PROVIDED WITH BUNA-N, TFE OR EPDM SEATS SUITABLE FOR THE SERVICE INTENDED.
3. THE PRESSURE CLASSIFICATION FOR VALVES SPECIFIED HEREIN ARE WORKING STEAM OR WATER, OIL, GAS (WOG) PRESSURE RATINGS.
4. LEVER HANDLES ON ALL VALVES SHALL BE COLOR CODED IN CONFORMANCE WITH ANSI STANDARD A-13.1.

   B. BALL VALVES (2" AND SMALLER) SHALL HAVE THREADED OR SOLDER ENDS WITH A BRONZE BODY, FULL PORT STAINLESS STEEL BALL AND STEM, RPTFE SEATS, A LEVER HANDLE WITH A 1 ¼ INCH ZINC PLATED CARBON STEEL STEM EXTENSION ASSEMBLY AND BE RATED FOR 600 PSI WOG. BALL VALVES SHALL BE EQUAL TO APOLLO SERIES 77-140-03 / 77-240-03.

   C. DRAIN VALVES: APOLLO 78-100 SERIES ¾ INCH ALL BRONZE HOSE END BALL VALVE WITH CAP AND CHAIN, PROVIDE HOSE END VACUUM BREAKER.

5. VALVES (NATURAL GAS)
   A. GENERAL - VALVES IN THE GAS PIPING SYSTEM SHALL BE AS MANUFACTURED BY APOLLO, MILWAUKEE, NIBCO, WALWORTH MILLIKEN OR NORDSTROM.
   B. FOR PIPE SIZES 2-INCH AND SMALLER: VALVES SHALL BE BRONZE BODY, UL LISTED GAS SERVICE BALL VALVE WITH SCREWED END T-HANDLE, AND RATED FOR 250 PSIG LP-GAS. GAS VALVE SHALL BE EQUAL TO APOLLO 80 - 100 SERIES.

5. INSULATION:

   A. ALL INTERIOR COLD WATER AND HOT WATER PIPING SHALL BE INSULATED WITH A PREFORMED FIBERGLASS INSULATION WHICH MEETS THE PROPERTY REQUIREMENTS OF ASTM C547, "STANDARD SPECIFICATION FOR MINERAL FIBER PIPE INSULATION". PIPE INSULATION SHALL HAVE A WHITE, FACTORY APPLIED, FIRE RETARDANT, REINFORCED VAPOR BARRIER JACKET.

1. INSULATION SHALL BE CONTINUOUS THROUGH SLEEVES AND HAVE A THICKNESS OF 1-INCH.
2. ENDS OF INSULATION AT TERMINATION POINTS SHALL BE SEALED TO THE PIPE WITH A PRE-MOLDED PVC TYPE FITTING. PIPE FITTINGS AND VALVES SHALL BE PROVIDED WITH PRE-MOLDED PVC COVERS WITH FIBERGLASS INSERTS.
3. PIPE INSULATION WITHIN 6'-0" OF FINISHED FLOOR, IN EXPOSED INSTALLATIONS, SHALL BE PROVIDED WITH 20 MIL. PVC CONTINUOUS COVERS IN ADDITION TO THE VAPOR BARRIER JACKET. FITTINGS AND SEAMS SHALL BE SOLVENT WELDED.
4. INSULATION SHALL BE MANUFACTURED BY OWENS-CORNING FIBER GLASS CORP., KNAUF FIBERGLASS, CERTAINTEED OR EQUAL.

   B. HANDICAPPED ACCESSIBLE LAVATORIES AND SINKS

1. INSULATION OF WASTE, TRAP, HOT AND COLD AND TEMPERED WATER SUPPLIES AT ALL HANDICAPPED ACCESSIBLE LAVATORIES AND SINKS SHALL BE FULLY MOLDED, PAINTABLE AND FLEXIBLE VINYL INSULATION SYSTEM.

5. HANGERS, ANCHORS, CLAMPS AND INSERTS:

   a) HANGERS SHALL BE INSTALLED, AS REQUIRED, TO MEET CODE COMPLIANCE AS TO LOCATION/SPACING AND MANUFACTURER'S STANDARDIZATION SOCIETY (MSS), STANDARD PRACTICE BULLETINS SP-58 & 69.
   b) HANGER MATERIAL SHALL BE COMPATIBLE WITH PIPING MATERIALS WITH WHICH IT COMES INTO CONTACT.
   c) HANGERS SHALL BE INSTALLED, IN ADDITION TO THE ABOVE, AT ALL CHANGES OF DIRECTION (HORIZONTAL AND VERTICAL), VALVES AND EQUIPMENT CONNECTIONS. HANGERS SHALL BE LOCATED SO THAT THEIR REMOVAL IS NOT REQUIRED TO SERVICE, ASSEMBLE OR REMOVE EQUIPMENT.
   d) VERTICAL SUPPORT SHALL BE BY MEANS OF RISER CLAMPS (ANCHORS WITH SPLIT RING TYPE ALLOWABLE UP TO 2" SIZE ONLY) AND ADJUSTABLE PIPE SUPPORT WITH FLANGE ANCHORED TO FLOOR.
   e) PROVIDE STEEL BAND HANGERS FOR PIPING 4" AND SMALLER. SUPPORT PIPING FROM BUILDING STRUCTURE TO MAINTAIN REQUIRED GRADE AND PITCH OF PIPE LINES, PREVENT VIBRATION, SECURE PIPING IN PLACE. SECURE HANGERS TO INSERTS WHERE PRACTICAL. HANGER RODS SHALL HAVE MACHINE THREADS.
   f) HANGER RODS SHALL BE CONNECTED TO BEAM CLAMP, UL-APPROVED CONCRETE INSERTS OR PHILLIPS OR APPROVED EQUAL EXPANSION SHIELDS. RAMSET OR POWER DRIVEN INSERTS WILL NOT BE ALLOWED.
   g) ALL HANGERS, RODS AND CLAMPS INSTALLED IN EXTERIOR LOCATIONS OR SUBJECT TO A CORROSIVE ATMOSPHERE SHALL BE ELECTRO-GALVANIZED COATED.
   h) INSULATION PROTECTORS (SHIELDS) FOR HORIZONTAL PIPING SHALL BE CONSTRUCTED OF GALVANIZED STEEL FORMED TO A 180 DEGREE ARC AND 12 INCHES LONG, 18 GAUGE FOR HANGERS 5 INCHES IN SIZE AND SMALLER, 16 GAUGE FOR HANGERS LARGER THAN 5 INCHES IN SIZE.

6. SLEEVES AND PENETRATIONS:

   a) PIPE SLEEVES THROUGH FIRE-RATED CONSTRUCTION SHALL BE SCHEDULE 40 STEEL. SLEEVES THROUGH PARTITIONS AND NON-FIRE-RATED CONSTRUCTION SHALL BE 22 GAUGE GALVANIZED STEEL WITH LOCK LONGITUDINAL SEAMS.
   b) FIRE STOP PENETRATION SEALS IN FIRE-RATED CONSTRUCTION SHALL BE CERAMIC FIBRE, MINERAL FIBRE, OR SILICONE FOAM. PROVIDE MINERAL FIBRE BOARD, MATTING OR PUTTY FOR DAMMING AND FORMING. FINISH SEALS FLUSH TO WALL SURFACE AND FILL GAPS WITH SILICONE ADHESIVE SEALANT CAULKING.
   c) PACKING FOR SLEEVES THAT DO NOT REQUIRE MAINTENANCE OF FIRE RATING SHALL BE OAKUM, SILICATE FOAM, CERAMIC FIBRE OR MINERAL FIBRE WITH APPROVED SEALANT. PACK OR FOAM TO WITHIN ONE INCH OF BOTH WALL SURFACES. SEAL PENETRATION PACKING WITH APPROVED CAULKING AND PAINTABLE WATER-PROOF MASTIC SURFACE FINISH OR SILICONE CAULKING.

7. WATER HAMMER ARRESTORS: STAINLESS STEEL WATER HAMMER ARRESTORS SHALL BE INSTALLED ON WATER SUPPLY LINES TO PLUMBING FIXTURES TO CONTROL WATER HAMMER. WATER HAMMER ARRESTORS SHALL BE SIZED AND SELECTED IN ACCORDANCE WITH P.D.I. STANDARD WH201. WATER HAMMER ARRESTORS SHALL BE ZURN Z1700, JAY R. SMITH, JOSAM OR APPROVED EQUAL. PROVIDE ACCESS PANEL AT WATER HAMMER ARRESTORS, WHERE REQUIRED.

PART 3 - EXECUTION

1. IDENTIFICATION:
   a) FURNISH AND AFFIX APPROVED ADHESIVE BANDS IDENTIFYING THE SERVICE AND DIRECTION OF FLOW OF EACH PIPING SYSTEM INSTALLED UNDER THIS WORK.
   b) PROVIDE VALVE TAGS ON ALL VALVES. VALVE NUMBERS AND LEGEND ON VALVE TAGS SHALL CORRESPOND TO NUMBERS INDICATED ON RECORD DRAWINGS AND VALVE LIST.

2. TESTING: THE PLUMBING SYSTEMS SHALL BE TESTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE PLUMBING CODE AND FUEL GAS CODE.

3. MATERIALS AND WORKMANSHIP: MAINTAIN MAXIMUM HEADROOM AT ALL TIMES. DO NOT RUN PIPES EXPOSED UNLESS SHOWN EXPOSED ON DRAWINGS. MATERIAL AND EQUIPMENT SHALL BE NEW AND INSTALLED ACCORDING TO MANUFACTURER'S RECOMMENDED BEST PRACTICE SO THAT COMPLETED INSTALLATION SHALL OPERATE SAFELY AND EFFICIENTLY.

4. CONTINUITY OF SERVICES: DO NOT INTERRUPT EXISTING SERVICES WITHOUT OWNER'S APPROVAL.

5. ACCESS: PROVIDE PROPER ACCESS TO EQUIPMENT THAT REQUIRE INSPECTION, REPLACEMENT OR REPAIR. ACCESS PANELS SHALL BE A MINIMUM OF 12" X 12".

6. CLEANING:
   a) CLEAN SYSTEMS THOROUGHLY BEFORE TESTING. FIXTURES, EQUIPMENT, PIPE, VALVES AND FITTINGS SHALL BE FREE OF GREASE, METAL CUTTINGS, DIRT AND OTHER FOREIGN MATERIAL.
   b) REPAIR DISCOLORATION AND DAMAGE TO PARTS OF BUILDING FINISH AND FURNISHINGS DUE TO FAILURE TO PROPERLY CLEAN PIPING SYSTEM.

7. DISINFECTION OF WATER SYSTEMS: WATER PIPING SYSTEMS SHALL BE THOROUGHLY DISINFECTED WITH A SOLUTION CONTAINING NO LESS THAN 50 PARTS PER MILLION OF AVAILABLE CHLORINE. CHLORINATING MATERIALS SHALL BE EITHER LIQUID CHLORINE OR SODIUM HYPOCHLORITE SOLUTION, SHALL BE INTRODUCED INTO THE SYSTEM AND DRAWN TO ALL POINTS IN THE SYSTEM. DISINFECTION SOLUTION SHALL BE ALLOWED TO REMAIN IN SYSTEM FOR 24 HOURS, DURING THIS TIME, VALVES AND FAUCETS SHALL BE OPENED AND CLOSED SEVERAL TIMES. AFTER DISINFECTION, SOLUTION SHALL BE FLUSHED FROM THE SYSTEM WITH CLEAR WATER UNTIL RESIDUAL CHLORINE CONTENT IS NO GREATER THAN 0.2 PARTS PER MILLION.

PART 4 - PROJECT CLOSEOUT

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ITEMS ASSOCIATED WITH PROJECT CLOSEOUT. ALLOW SUFFICIENT TIME IN THE CONSTRUCTION SCHEDULE TO ENSURE THAT THE INSTALLATION IS SUBSTANTIALLY COMPLETE AND ALL REQUIRED TESTING AND ACCURATELY COMPLETED DOCUMENTATION IS DELIVERED TO THE ENGINEER AT LEAST TWO WEEKS PRIOR TO ENGINEER'S SUBSTANTIAL COMPLETION SITE VISIT. FAILURE TO ADEQUATELY PLAN OR SUBMISSION OF INCOMPLETE/INCORRECT DOCUMENTATION WILL RESULT IN BACK CHARGES OF ALL COSTS ASSOCIATED WITH ADDED WORK PERFORMED BY RDK ENGINEERS.

2. PROVIDE THE CONTRACTOR CERTIFICATE OF COMPLETION IN ACCORDANCE WITH 780CMR 107.6.3 INDICATING THAT THE INSTALLATION IS IN CONFORMANCE WITH THE CONSTRUCTION DOCUMENTS AND ALL APPLICABLE LOCAL, STATE AND FEDERAL STATUTES AND CODES. PROVIDE CERTIFICATION FROM BOTH THE GENERAL CONTRACTOR AND ASSOCIATED TRADE CONTRACTOR FOR COMPLIANCE WITH 780CMR CHAPTERS 1, 9 & 13.

3. THE WATER SYSTEM SHALL NOT BE PERMITTED FOR USE UNTIL FULL DISINFECTION OF THE ADDED PIPING IS PERFORMED. PROVIDE DOCUMENTATION TO THE ARCHITECT/ENGINEER REGARDING CERTIFICATION OF PERFORMANCE.

4. SUBSTANTIAL COMPLETION SITE VISIT BY THE ENGINEER SHALL BE CONDUCTED AFTER RECEIPT AND REVIEW OF THE CONTRACTORS CERTIFICATE OF COMPLETION AND ALL CODE MANDATED TEST REPORTS AND SUBMISSIONS LISTED ABOVE. SUBSTANTIAL COMPLETION SITE VISITS SHALL NOT BE REQUESTED UNTIL THE PROJECT IS SUBSTANTIALLY COMPLETE.

5. PREMATURE REQUESTS THAT REQUIRE ADDITIONAL/FOLLOW UP SITE VISITS BY THE ENGINEER OF DEFICIENT ITEMS (AREAS INCOMPLETE, SYSTEMS NOT OPERATIONAL, ETC.) WILL RESULT IN BACK CHARGES OF THE COSTS ASSOCIATED WITH ANY ADDED VISITS.

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REVISIONS		
Number	Description	Date

100% CONSTRUCTION DOCUMENTS

Somerville Public Schools
Education · Inspiration · Excellence

Somerville High School Renovations to Room 143

81 Highland Avenue,
Somerville, MA 02143

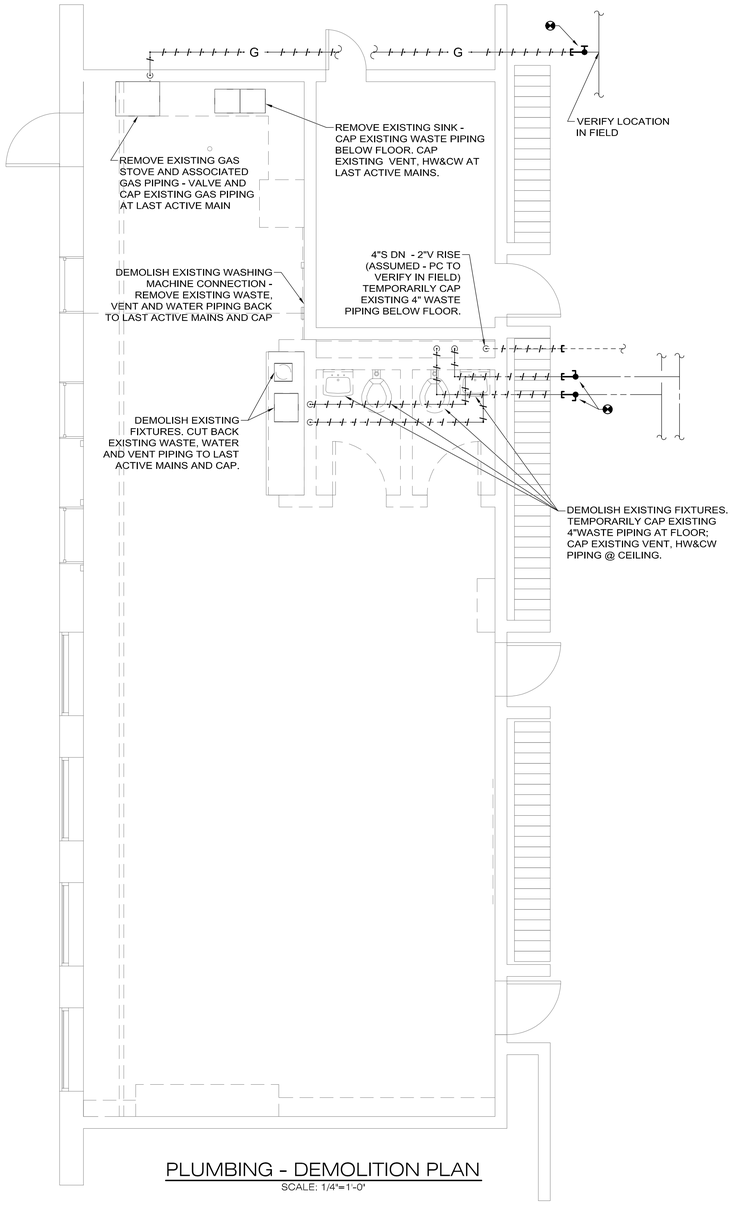
PLUMBING NOTES AND DETAILS

PROJECT NUMBER: 19431.03
DESIGNED BY: NW
DRAWN BY: NW
CHECKED BY: RB
DATE: JULY 3, 2013
SCALE: NONE

SHEET NUMBER:

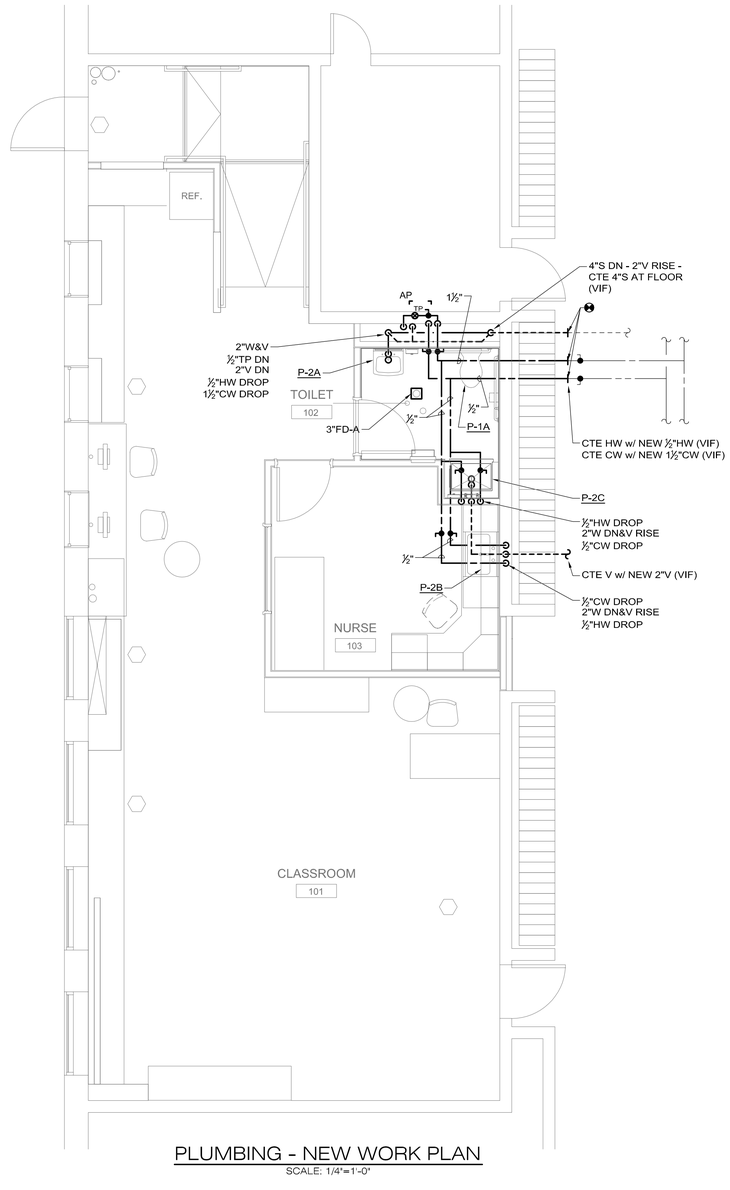
P1.00

SHEET **OF**



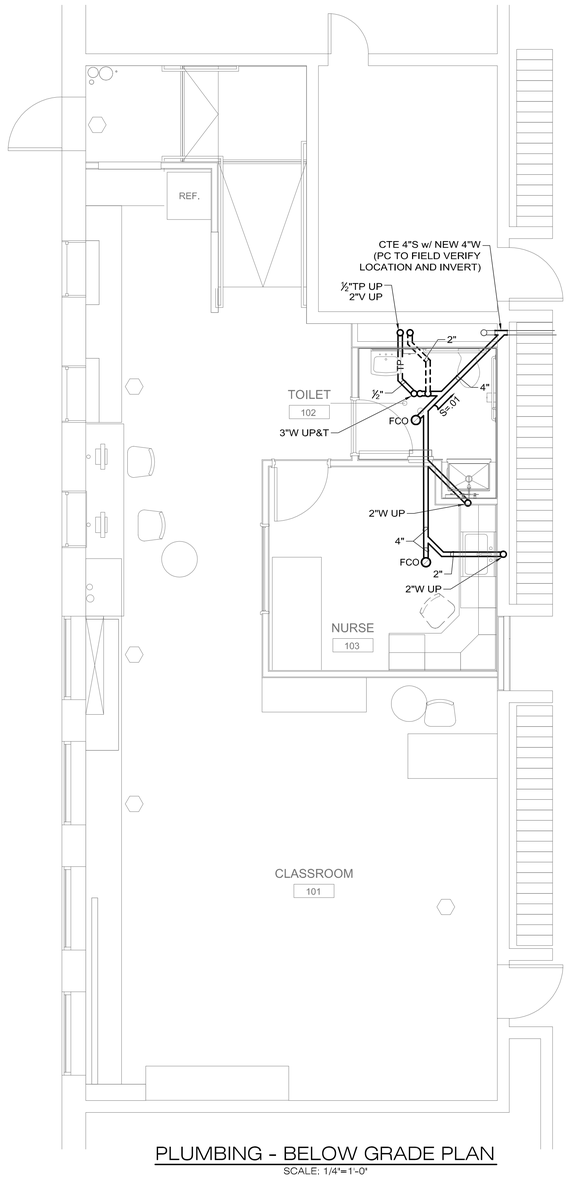
PLUMBING - DEMOLITION PLAN

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



PLUMBING - NEW WORK PLAN

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



PLUMBING - BELOW GRADE PLAN

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

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REVISIONS		
Number	Description	Date

100% CONSTRUCTION DOCUMENTS

Somerville Public Schools
Education - Inspiration - Excellence

Somerville High School Renovations to Room 143

81 Highland Avenue, Somerville, MA 02143

PLUMBING DEMO & NEW WORK PART PLANS

PROJECT NUMBER: 19431.03
DESIGNED BY: NW
DRAWN BY: NW
CHECKED BY: RB
DATE: JULY 3, 2013
SCALE: AS NOTED

SHEET NUMBER:

P2.00

SHEET **OF**

G:\2013\20130373 - Somerville High School Room 143\1200 Drawings\1202 Plumbing\Plot Files\20130373 P2.0 PLUMBING DEMO & NEW WORK PART PLANS.dwg [Work] July 02, 2013 - 3:40pm toothman

PLUMBING FIXTURE SCHEDULE

TAG NO.	FIXTURE				FITTING				TRAP	REMARKS
	TYPE	MANUFACTURER	MODEL	SIZE	TYPE	MANUFACTURER	MODEL	SUPPLY		
P-1A	WATER CLOSET WALL HUNG, ELONGATED VITREOUS CHINA, SIPHON JET, TOP SPUD 1.6 GPF	AMERICAN STANDARD	AFWALL 2257.001		MANUAL FLUSH VALVE	SLOAN	111	1½"CW	INTEGRAL	PROVIDE CARRIER SYSTEM EQUAL TO ZURN SERIES 1200, SPECIFIC MODEL AS REQUIRED FOR INSTALLATION ORIENTATION. PROVIDE OLSONITE MODEL 95 OPEN FRONT SEAT
P-2A	LAVATORY WALL HUNG VITREOUS CHINA, CONCEALED ARM SUPPORT	AMERICAN STANDARD	LUCERNE 0355.012	20 1/4" X 18 1/4"	SINGLE HANDLE METERING / TEMPERATURE LIMIT AND ADJUSTABLE FLOW TIME, 4 INCH CENTERS LEAD FREE w/GRID STRAINER	CHICAGO FAUCET	3300AB-CP w/ 327A	1/2" SWEAT X 3/8" COMP. LEAD FREE CHICAGO STC-51-11-PR-AB	1 1/4" X 1 1/2" 17 GA CAST BRASS CHROME PLATED P TRAP W/CO PLUG EQUAL TO MCGUIRE MCT150090B	WHEN REQUIRED PROVIDE CARRIER SYSTEM EQUAL TO ZURN MODEL NO. 1231
P-2B	ADA SINK (NURSE)	JUST	SL-ADA-17519-A-GR	17½"X19"X5"DEEP		CHICAGO FAUCET	786-GN8AE29VPABCP	1/2" SWEAT X 3/8" COMP. LEAD FREE CHICAGO STC-51-11-PR-AB	1 1/2" X 1 1/2" 17 GA CAST BRASS CHROME PLATED P TRAP W/CO PLUG EQUAL TO MCGUIRE MCT150090B	PROVIDE BASKET STRAINER AND 1/1/2" OD 17 GA CHROME PLATED BRASS OFFSET TAILPIECE EQUAL TO JUST J-ADA-35
P-2C	FARMER'S SINK (WALL HUNG)	KOHLER	VAULT K-3936	29½"X21¼"		ZURN	Z842X1-AF	1/2" SWEAT X 3/8" COMP. LEAD FREE CHICAGO STC-51-11-PR-AB	1 1/2" X 1 1/2" 17 GA CAST BRASS CHROME PLATED P TRAP W/CO PLUG EQUAL TO MCGUIRE MCT150090B	PROVIDE BASKET STRAINER TO SUIT

SERVICE	MAXIMUM SERVICE OPERATING LIMITS			PIPE CLASS	PIPE SIZE RANGE						
					½" TO 3"				4" AND LARGER		
	LEGEND	PRESS. (PSIG)	TEMP (°F)		PIPE	FITTINGS	JOINTS	MECHANICAL JOINTS	PIPE	FITTINGS	JOINTS
DOMESTIC COLD WATER	CW	100	250	A10	Seamless copper water tube, drawn temper, Type L or K. ASTM B-88.	Wrought copper, solder-joint. ASME B16.22	ASTM B-32 solder filler material, Alloy Sb5 "95/5." ASTM B-813 liquid or paste flux. Soldering procedures shall comply with ASTM B-828.	Cast copper alloy unions, hexagonal stock with ball-and-socket joint, solder joint ends. ASME B16.18.	Cement Lined Ductile Iron Class 52. Seamless copper water tube, drawn temper, Type L or K. ASTM B-88.	Cement Lined Ductile Iron. Ductile iron coupling with copper alkyd enamel paint coating, ASTM A-536. Grade "E" EPDM elastomer gasket, ASTM D-2000. Equal to Victaulic Style 606 coupling. ASTM B-75 copper alloy fittings. ASTM B-584 grooved end cast bronze fittings for 6" pipe size.	Mechanical Joints with retainer glands. Rolled groove prepared and assembled in accordance with manufacturer instructions.
DOMESTIC HOT WATER	HW	100	250	A10							

Notes:
1. Below grade water piping 3" and smaller shall be Type K copper with bituminous coating and copper brazed joints, BcuP filler alloy. ANSI/AWS A5.8. procedures shall be per ANSI/AWS B2.2.
2. Contact between dissimilar metals shall be made with di-electric couplings or di-electric flanges. Contact between ferrous and stud bolts and bronze flanges shall be electrically insulated with non-metallic washers.
3. Provide mechanical joint connections to all equipment such as water heaters, pumps, compressors, etc.

SERVICE	MAXIMUM SERVICE OPERATING LIMITS			PIPE CLASS	PIPE SIZE RANGE					
					½" TO 2"			2½" AND LARGER		
	LEGEND	PRESS. (PSIG)	TEMP (°F)		PIPE	FITTINGS	UNIONS	PIPE	FITTINGS	UNIONS
GAS (NATURAL)	G	50	70	A11	Schedule 40 Carbon Steel ASTM A53 Grade B, A106 Grade A Or A120.	Screwed Malleable Iron 125 PSI.	Screwed 150# Malleable Iron A105 Grade Ii.	Schedule 40 Carbon Steel ASTM A53 Grade B, A106 Grade A Or A120.	Butt Weld Carbon Steel Schedule 40, A 234.	Use Flanges.

SERVICE	MAXIMUM SERVICE OPERATING LIMITS			PIPE CLASS	ABOVE GRADE			BELOW GRADE		
	LEGEND	PRESS. (PSIG)	TEMP (°F)		PIPE	FITTINGS	JOINTS	PIPE	FITTINGS	JOINTS
SANITARY WASTE & VENT	S, W, V	GRAVITY	120	D10	3" And Larger: Hubless Cast Iron Soil Pipe, Service Weight. ASTM-A-888, CISPI 301. 2½" And Smaller: Hubless Cast Iron Soil Pipe, Service Weight. ASTM A-888, CISPI 301 Or Type L Copper Tubing. ASTM B8872.	3" And Larger: Hubless Cast Iron Fittings, Service Weight. ASTM-A-888, CISPI 801. 2½" And Smaller: Hubless Cast Iron Fittings, Service Weight. ASTM A-888, CISPI 301 Or Wrought Copper DWV Fittings.	Hubless Cast Iron: Heavy Duty Stainless Steel Band Coupling With Neoprene Gasket. Bank Torque Of 80 Foot-Pounds. 15 PSIg Pressure Rating. Husky SD 4000 Or Clamp-All Hi-Torq 80. Copper: 95/5 Solder.	2" And Larger: Hub And Spigot Cast Iron Soil Pipe, Extra Heavy. ASTM A-74 Or Service Weight If Code Approved. Piping Shall Be Asphalt Or Coal Tar Pitch Coated.	2" And Larger: Hub And Spigot Cast Iron Fittings, Extra Heavy. ASTM A-74. Asphalt Or Coal Tar Pitch Coated. DWV Pattern.	Neoprene Compression Gaskets Conforming To ASTM C-564.

Notes:
1. CISPI 310 No-Hub Couplings Will Not Be Accepted As Equal To Manufacturers Listed.
3. Piping through electric rooms: sanitary, storm, and vent piping through electric rooms shall be sleeved through a sufficiently sized schedule 10 galvanized sleeve piping with Grooved style fittings and couplings. Extend dual wall piping to a distance of 1 foot beyond the exterior on each side of the electric room. Terminate with a closure method comprised of a caulked joint at each end with a closed ¾" ball valve available to monitor the containment area of the piping system

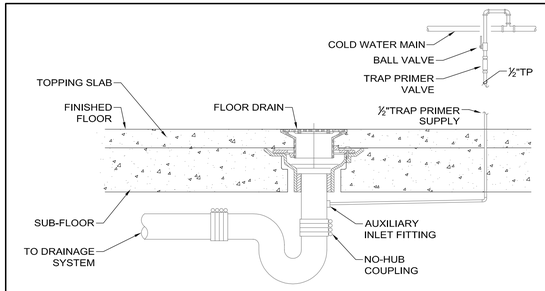
DRAIN SCHEDULE

TAG NO.	TYPE	MANUFACTURER	MODEL NO.	OUTLET	STRAINER	REMARKS
FD-A	FLOOR DRAIN	JR SMITH	2005-B	3"	6"	LOCATED IN TOILET ROOMS. DRAINS TO BE PROVIDED WITH "PRECISION PLUMBING PRODUCTS" TRAP PRIMER TO SUIT

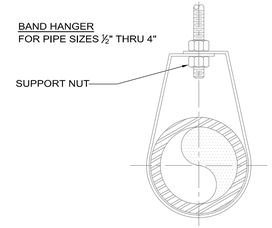
NOTES: CONTRACTOR SHALL INCLUDE ALL ACCESSORIES, ETC FOR A COMPLETE INSTALLATION.

WATER HAMMER ARRESTER SCHEDULE

TYPE	FIXTURE UNIT RATING	MODEL
SA "A"	1-11	JAY R. SMITH 5005
SA "B"	12-32	JAY R. SMITH 5010
SA "C"	33-60	JAY R. SMITH 5020
SA "D"	61-113	JAY R. SMITH 5030
SA "E"	114-154	JAY R. SMITH 5040
SA "F"	155-330	JAY R. SMITH 5050

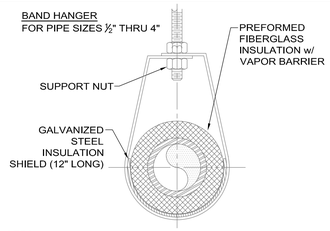


RDK TRAP PRIMER CONNECTION P602



NOTES:
1. SEE SPECIFICATION FOR HANGER SIZES AND MATERIAL.
2. DISTANCE BETWEEN HANGERS SHALL BE IN ACCORDANCE WITH THE APPLICABLE PLUMBING CODE.
3. HANGER ROD SHALL BE PER MANUFACTURER'S RECOMMENDATIONS.

RDK BAND HANGER P800



NOTES:
1. SEE SPECIFICATION FOR HANGER SIZES AND MATERIAL.
2. DISTANCE BETWEEN HANGERS SHALL BE IN ACCORDANCE WITH THE APPLICABLE PLUMBING CODE.
3. HANGER ROD SHALL BE PER MANUFACTURER'S RECOMMENDATIONS.

RDK BAND HANGER WITH INSULATED PIPE P801

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REVISIONS		
Number	Description	Date

100% CONSTRUCTION DOCUMENTS

Somerville Public Schools
Education · Inspiration · Excellence

Somerville High School Renovations to Room 143

81 Highland Avenue,
Somerville, MA 02143

PLUMBING SCHEDULES & DETAILS

PROJECT NUMBER: 19431.03
DESIGNED BY: NW
DRAWN BY: NW
CHECKED BY: RB
DATE: JULY 3, 2013
SCALE: NONE

SHEET NUMBER:

P3.00

SHEET **OF**

Q:\2013\20130373 - Somerville High School Room 143\1200 Drawings\1202 Plumbing\Plot Files\20130373 P3.0 PLUMBING SCHEDULES & DETAILS.dwg [Work] July 02, 2013 - 3:40pm tcraftman

ABBREVIATIONS

GENERAL

A	COMPRESSED AIR
AD	ACCESS DOOR
ADD'L	ADDITIONAL
AF	AIR FOIL
AFF	ABOVE FINISHED FLOOR
AFR	ABOVE FINISHED ROOF
ALT	ALTITUDE OR ALTERNATE
AMP	AMPERE
AP	ACCESS PANEL
APD	AIR PRESSURE DROP
ARCH	ARCHITECT
AS	AIR STREAM
ATC	AUTOMATIC TEMPERATURE CONTROL
ATM	ATMOSPHERE
AVE	AVERAGE
BHP	BRAKE HORSEPOWER
BI	BACKWARDS INCLINED
BLDG	BUILDING
BOD	BOTTOM OF DUCT
BSMT	BASEMENT
BTU	BRITISH THERMAL UNIT
BTUH	BTU PER HOUR
C TO C	CENTER TO CENTER
CENT	CENTRIFUGAL
CF	CUBIC FEET
CFM	CUBIC FEET PER MINUTE
CL	CENTERLINE
CLG	CEILING OR COOLING
CO	CARBON MONOXIDE
COL	COLUMN
CONC	CONCRETE
CONN	CONNECTION
CONTR	CONTRACTOR
D	DRAIN OR DEPTH
DB	DRY BULB TEMPERATURE
DEG	DEGREE
DDC	DIRECT DIGITAL CONTROL
DIA	DIAMETER
DIM	DIMENSION
DN	DOWN
DP	DIFFERENTIAL PRESSURE
EA	EACH OR EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EFF	EFFICIENCY
ELEC	ELECTRICAL
ELEV	ELEVATION
EMER	EMERGENCY
EMS	ENERGY MANAGEMENT SYSTEM
ENT	ENTER
ESP	EXTERNAL STATIC PRESSURE
EWT	ENTERING WATER TEMPERATURE
EXH	EXHAUST
EXIST.	EXISTING
EXT	EXTERNAL
EXP	EXPANSION
F	FAHRENHEIT
FA	FREE AREA
FC	FLEXIBLE CONNECTION
FLA	FULL LOAD AMPS
FLEX	FLEXIBLE
FLRDR	FLOOR DRAIN
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
FRP	FIBERGLASS REINFORCED PLASTIC
FS	FLOW SWITCH
FT	FEET
G	GAS
GA	GAUGE
GAL	GALLONS
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GFU	GLYCOL FEED UNIT
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GRD	GRADE
GWB	GYPSUM WALL BOARD
HB	HOSE BIBB CONN.
HD	HEAD
HGT	HEIGHT
HP	HORSEPOWER OR HIGH POINT
HR	HOUR
HTG	HEATING
HZ	HERTZ (FREQUENCY, CYCLES PER SECOND)
ID	INSIDE DIAMETER
IN	INCHES
KW	KILOWATT
L	LENGTH
LAT	LEAVING AIR TEMPERATURE
LB	POUND
LF	LINEAR FEET
LP	LOW POINT
LRA	LOCKED ROTOR AMPS
LUVR	LOUVER
LVDR	LOUVERED DOOR
LVG	LEAVING
LWT	LEAVING WATER TEMPERATURE
MAX	MAXIMUM
MBH	THOUSAND BTUH
MCA	MINIMUM CIRCUIT AMPS
MECH	MECHANICAL
MEZZ	MEZZANINE
MFR	MANUFACTURER
MIN	MINIMUM
MU	MAKE-UP WATER
N/A	NOT APPLICABLE
NC	NORMALLY CLOSED OR NOISE CRITERIA
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
No.	NUMBER
NOM	NOMINAL
NTS	NOT TO SCALE
OA	OUTSIDE AIR
OAI	OUTSIDE AIR INTAKE
OC	ON CENTER
OD	OUTSIDE DIAMETER
ODP	OPEN DRIP PROOF
OV	OUTLET VELOCITY
PCF	POUNDS PER CUBIC FOOT
PD	PRESSURE DROP
PH	PHASE
PBG	PLUMBING
POS	PROVIDED BY OTHER SECTION
PPM	PARTS PER MILLION
PSI	POUNDS PER SQUARE INCH
PSIA	POUNDS PER SQUARE INCH ABSOLUTE
PSID	POUNDS PER SQUARE INCH DIFFERENTIAL
PSIG	POUNDS PER SQUARE INCH GAUGE
PVC	POLYVINYL CHLORIDE
QTY	QUANTITY
R	RADIUS
RA	RETURN AIR
RET	RETURN
REQ'D	REQUIRED
RH	RELATIVE HUMIDITY
RLA	RUNNING LOAD AMPS
RLF	RELIEF
RM	ROOM
RPM	REVOLUTIONS PER MINUTE
SCH	SCHEDULE
SCR	SCREEN
SCT	SATURATED CONDENSING TEMPERATURE
SDET	SMOKE DETECTOR
SEN	SENSIBLE
SHC	SENSIBLE HEAT CAPACITY
SP	STATIC PRESSURE
SPECS	SPECIFICATIONS
SQ	SQUARE
SF	SQUARE FEET
SS	STAINLESS STEEL
STL	STEEL
SUP	SUPPLY
T	TEMPERATURE
TA	THROWAWAY
TEL	TELEPHONE
TEFC	TOTALLY ENCLOSED FAN COOLED
TEMP	TEMPERATURE
TSTAT	THERMOSTAT
TON	12,000 BTUH COOLING CAPACITY
TOT	TOTAL
TYP	TYPICAL
UC	UNDERCUT DOOR
V	VOLTS (ELECTRICAL)
VEL	VELOCITY
W	WIDTH OR WATT
W/	WITH
WB	WET BULB TEMPERATURE
WC	WATER COLUMN
WG	WATER GAUGE
W/O	WITHOUT
WPD	WATER PRESSURE DROP
WTD	WATER TEMPERATURE DIFFERENCE
X	EXISTING EQUIPMENT TO BE REMOVED
XM	EXISTING EQUIPMENT TO REMAIN
XN	NEW LOCATION OF RELOCATED EQUIPMENT
XR	EXISTING EQUIPMENT TO BE RELOCATED

DUCT

ACD	AUTOMATIC CONTROL DAMPER
AFMS	AIR FLOW MEASURING STATION
AL	ACOUSTICAL DUCT LINER
BDD	BACKDRAFT DAMPER
BOD	BOTTOM OF DUCT
CD	CEILING DIFFUSER
CV	CONSTANT VOLUME SUPPLY AIR TERMINAL
CVE	CONSTANT VOLUME EXHAUST AIR TERMINAL
DD	DUAL DUCT SUPPLY AIR TERMINAL
DIFF	DIFFUSER
EA	EXHAUST AIR
EG	EXHAUST GRILLE
ER	EXHAUST REGISTER
FBD	FLAT BOTTOM DUCT
FD	FIRE DAMPER (W/ ACCESS DOOR)
LD	LINEAR DIFFUSER
MD	MOTOR OPERATED DAMPER
MUA	MAKE-UP AIR
OA	OUTSIDE AIR
OAI	OUTSIDE AIR INTAKE
OED	OPEN END DUCT
PAD	PRIMARY AIR DAMPER
RA	RETURN AIR
RG	RETURN GRILLE
RR	RETURN REGISTER
SA	SUPPLY AIR
SD	SMOKE DAMPER
SE	SMOKE EXHAUST
SFD	COMBINATION AUTOMATIC SMOKE/FIRE DAMPER WITH ACCESS DOOR
SG	SUPPLY GRILLE
SGD	SLIDE GATE DAMPER
SR	SUPPLY REGISTER
TA	THROW AWAY OR TRANSFER AIR
TG	TRANSFER GRILLE
TOD	TOP OF DUCT
TR	TRANSFER
TSP	TOTAL STATIC PRESSURE (IN. WG)
TV	TURNING VANES
VD	VOLUME DAMPER
VAV	VARIABLE AIR VOLUME SUPPLY AIR TERMINAL
VVE	VARIABLE AIR VOLUME EXHAUST AIR TERMINAL
WMS	WIRE MESH SCREEN

EQUIPMENT

AF	AIR FILTER OR AIR FOIL
CDP	CONDENSATE DRAIN PUMP
CUH	CABINET UNIT HEATER
DDC	DIRECT DIGITAL CONTROL
DDCFP	DIRECT DIGITAL CONTROL FIELD PANEL
EF	EXHAUST FAN
FTR	FINNED TUBE RADIATION
HC	HEATING COIL
HV	HEATING & VENTILATING UNIT
MCC	MOTOR CONTROL CENTER
RHC	REHEAT COIL
UH	UNIT HEATER
UV	UNIT VENTILATOR

PIPING

AAV	AUTOMATIC AIR VENT
ACV	AUTOMATIC CONTROL VALVE
AS	AIR SEPARATOR
ATV	ATMOSPHERIC VENT
BOP	BOTTOM OF PIPE
CO	CLEAN-OUT
DOV	DRAIN-OFF VALVE
FOB	FLAT ON BOTTOM REDUCER
FOT	FLAT ON TOP REDUCER
FCV	FLOW CONTROL VALVE
MAV	MANUAL AIR VENT
MU	MAKE-UP WATER
TOP	TOP OF PIPE
V	VENT

STEAM

CP	CONDENSATE PUMP
C(X)	STEAM CONDENSATE (X=PSIG)
S(X)	STEAM (X=PSIG)
PC	PUMPED CONDENSATE
ST	STEAM TRAP
STM	STEAM
TAV	THERMOTSTATIC AIR VENT
VB	VACUUM BREAKER

PIPING LEGEND

- GATE VALVE (OUTSIDE SCREW & YOKE UNLESS SPECIFIED OTHERWISE)
- GLOBE VALVE (OUTSIDE SCREW & YOKE UNLESS SPECIFIED OTHERWISE)
- BALL VALVE
- BUTTERFLY VALVE
- HOSE END BALL VALVE WITH CAP AND CHAIN
- PLUG VALVE
- PRESSURE REDUCING VALVE
- ANGLE VALVE (SECTION VIEW)
- ANGLE VALVE (PLAN VIEW)
- GLOBE ANGLE VALVE
- CHECK VALVE (SILENT CHECK TYPE ON PUMP DISCHARGE)
- STRAINER WITH HOSE END BLOWOFF VALVE, CAP AND CHAIN
- SUCTION DIFFUSER/STRAINER (NON-REDUCING) WITH BLOWOFF
- STRAINER, BASKET TYPE WITH DRAIN VALVE, HOSE BIBB & CAP
- STRAINER, DUPLEX BASKET
- SOLENOID VALVE
- 2-WAY MODULATING PRESSURE INDEPENDENT ACV
- 2-WAY AUTOMATIC CONTROL VALVE (MODULATING)
- 2-WAY AUTOMATIC CONTROL VALVE (TWO POSITION)
- 3-WAY AUTOMATIC CONTROL VALVE (MODULATING)
- 3-WAY AUTOMATIC CONTROL VALVE (TWO POSITION)
- AUTOMATIC FLOW LIMITING VALVE (PRESSURE INDEPENDENT)
- COMBINATION FLOW METER/SHUT-OFF/BALANCING VALVE (CIRCUIT SETTER)
- TRIPLE DUTY PUMP VALVE, CHECK, BALANCING (FLOW METER), SHUT-OFF
- BTU METER (HOT TAP TYPE WITH VALVE)
- FLOW METER/TRANSMITTER (HOT TAP TYPE WITH VALVE)
- VENTURI FLOW METER
- ORIFICE FLOW METER
- FLOW SWITCH
- RELIEF/SAFETY VALVE
- THERMOSTATIC RADIATOR VALVE
- UNION
- BLIND FLANGE
- PIPE - CAPPED
- PRESSURE GAUGE (W/ BALL VALVE(S), SNUBBER, AND FOR STEAM, SIPHON)
- PRESSURE SWITCH
- THERMOMETER
- STEAM TRAP (INDICATE TYPE)
- FLOAT & THERMOSTATIC STEAM TRAP
- INVERTED BUCKET STEAM TRAP
- THERMOSTATIC STEAM TRAP
- THERMODYNAMIC STEAM TRAP
- VACUUM BREAKER
- PRESSURE/THERMOMETER WELL
- AIR VENT - AUTOMATIC
- AIR VENT - MANUAL
- THERMOSTATIC AIR VENT (STEAM ONLY)
- DIRECTION OF FLOW
- EXPANSION LOOP
- EXPANSION JOINT
- FLEXIBLE CONNECTOR
- PIPE ANCHOR
- PIPE GUIDE
- PIPE CONNECTION - TOP
- PIPE CONNECTION - BOTTOM
- PIPE - DOWN
- PIPE - UP
- PITCH OF PIPE - (R) RISE OR (D) DROP
- REDUCER - CONCENTRIC
- REDUCER - ECCENTRIC
- QUICK CLOSING VALVE, FUSIBLE LINK (USED WITH FUELS)
- CLEANOUT FOR CONDENSATE DRAIN
- DIRT LEG
- RISE (DOUBLE LINE - PLAN VIEW)
- DROP (DOUBLE LINE - PLAN VIEW)
- PIPE BREAK (DOUBLE LINE)
- PIPE BREAK (SINGLE LINE)

DUCTWORK

SINGLE LINE	DOUBLE LINE
RECTANGULAR SUPPLY DUCT W=WIDTH, D=DEPTH (INCHES UNLESS NOTED OTHERWISE) AS VIEWED	10x6
ROUND SUPPLY DUCT (DIA=INSIDE DIAMETER)	10"Ø
ROUND SUPPLY DUCT UP	
ROUND SUPPLY DUCT DOWN	
SUPPLY DUCT UP	
SUPPLY DUCT DOWN	
ROUND RETURN DUCT UP	
ROUND RETURN DUCT DOWN	
RETURN DUCT UP	
RETURN DUCT DOWN	
ROUND EXHAUST DUCT UP	
ROUND EXHAUST DUCT DOWN	
EXHAUST DUCT UP	
EXHAUST DUCT DOWN	
RECTANGULAR DUCT TO ROUND SUPPLY/RETURN/ EXHAUST	6"Ø
CEILING DUCT MOUNTED DIFFUSER/GRILLE	VD
TAKE-OFF TO DIFFUSER/GRILLE	HARD ELBOW, VD
CEILING DUCT MOUNTED DIFFUSER/GRILLE	VD
ACOUSTICALLY LINED DUCT	
FLEXIBLE DUCT	

SINGLE LINE	DOUBLE LINE
RECTANGULAR RETURN/EXHAUST DUCT W=WIDTH, D=DEPTH (INCHES UNLESS NOTED OTHERWISE) AS VIEWED	10x6
ROUND RETURN/EXHAUST DUCT (DIA=INSIDE DIAMETER)	10"Ø
STANDARD RADIUS ELBOW (R = W) SUPPLY/RETURN/EXHAUST	R
FULL LENGTH SPLITTER VANES (R < W) SUPPLY/RETURN/ EXHAUST	R
SPLIT TAKE-OFF	
RECTANGULAR WYE SUPPLY	
HORIZONTAL OFFSET SUPPLY/RETURN/EXHAUST	
CHANGE OF ELEVATION (R)RISE OR (D)DROP SUPPLY/RETURN/ EXHAUST	R/D
45° TAP TAKE-OFF	
45° TAKEOFF, 45° TAKE-OFF TRANSITION TO ROUND, 90° TAP TAKE-OFF, SQUARE TO ROUND CONNECTION, BELLMOUTH CONNECTION	
CONVERGE RETURN/EXHAUST W/45° TAKE-OFFS	
SIDEWALL DUCT MOUNTED REGISTER/GRILLE	
SUPPLY SIDEWALL LINEAR DIFFUSER (W/ SHEETMETAL PLENUM, LINING & BRANCH CONN. FOR EVERY 4' OF LINEAR,)	VD, VD, VD
SUPPLY CEILING LINEAR DIFFUSER (W/SHEETMETAL PLENUM, LINING & BRANCH CONN. FOR EVERY 4' OF LINEAR,)	VD, VD, VD, PLENUM BY LD MFR
OPEN END DUCT W/ 1/2"x1/2" WMS	

- ACD — AUTOMATIC CONTROL DAMPER W/ ACCESS DOOR
- VD — MANUAL VOLUME DAMPER
- BDD — BACKDRAFT DAMPER
- STANDARD 4-WAY BLOW SUPPLY DIFFUSER
- 3-WAY BLOW SUPPLY DIFFUSER
- OR — 2-WAY BLOW SUPPLY DIFFUSER
- ONE-WAY BLOW SUPPLY DIFFUSER
- RETURN/EXHAUST GRILLE OR REGISTER
- UC 1/2" — UNDERCUT DOOR
- RETURN OR EXHAUST AIR FLOW
- SUPPLY AIR FLOW

CONTROL POINT DESCRIPTOR LEGEND

- TAG — ATC CONTRACTOR PROVIDED DDC POINT AND HARDWARE
- TAG, ELEC PLBG — CONTROL DEVICE FURNISHED BY ELECTRICAL OR PLUMBING CONTRACTOR BUT INTERFACED TO DDC SYSTEM BY ATC CONTRACTOR
- TAG — ATC CONTRACTOR INTERFACE TO EQUIPMENT MANUFACTURER'S HARDWARE
- TAG — ATC CONTRACTOR PROVIDED LOCAL CONTROL POINT

CONTROL ABBREVIATIONS

ACD	AUTOMATIC CONTROL DAMPER
ACV	AUTOMATIC CONTROL VALVE
AFMS	AIR FLOW MEASURING STATION
ALM	ALARM
ATC	AUTOMATIC TEMPERATURE CONTROL
BCV	BASEBOARD CONTROL VALVE
BDD	BACKDRAFT DAMPER (ADJUSTABLE COUNTERWEIGHT)
BIBO	BAG-IN BAG-OUT
BV	BYPASS VALVE
C	CARBON DIOXIDE SENSOR
CAP	CAPACITY CONTROL
%CAP	PERCENT OF FULL LOAD CAPACITY
CCLT	COOLING COIL LEAVING AIR TEMPERATURE SENSOR
CHRT	CHILLED WATER RETURN TEMPERATURE SENSOR
CHST	CHILLED WATER SUPPLY TEMPERATURE SENSOR
CHWRT	CHILLED WATER RESET TEMPERATURE
CO	CARBON MONOXIDE SENSOR
CRT	CONDENSER WATER RETURN TEMPERATURE SENSOR
CST	CONDENSER WATER SUPPLY TEMPERATURE SENSOR
CT	CURRENT TRANSFORMER (STATUS FEEDBACK)
CV	COOLING COIL CONTROL VALVE
DAT	DISCHARGE AIR TEMPERATURE SENSOR
DDC	DIRECT DIGITAL CONTROL
DDCFP	DIRECT DIGITAL CONTROL FIELD PANEL
DL	DEMAND LIMIT
DPS	DIFFERENTIAL PRESSURE SWITCH
DPT	DIFFERENTIAL PRESSURE SENSOR/TRANSMITTER
DPV	DIFFERENTIAL PRESSURE BYPASS VALVE
DSP	DISCHARGE STATIC PRESSURE SENSOR
DWDI	DOUBLE WIDTH DOUBLE INLET
EAD	EXHAUST AIR DAMPER
EHRET	EXHAUST HEAT RECOVERY COIL ENTERING AIR TEMPERATURE SENSOR
EHRLT	EXHAUST HEAT RECOVERY COIL LEAVING AIR TEMPERATURE SENSOR
EHRV	EXHAUST HEAT RECOVERY COIL CONTROL VALVE
ES	END SWITCH
FA	FAULT ALARM
FID	FAN ISOLATION DAMPER
FMT	FLOW METER/TRANSMITTER
FS	FLOW SWITCH
FZ	FREEZESTAT
H	HUMIDITY SENSOR
HALM	HOOD ALARM
HCLT	HEATING COIL LEAVING AIR TEMPERATURE SENSOR
HEGA	HIGH EFFICIENCY GAS ABSORBER FILTER
HEPA	HIGH EFFICIENCY PARTICULATE AIR FILTER
HGB	HOT GAS BYPASS
HHL	HIGH HUMIDITY LIMIT SENSOR
HIV	HUMIDIFIER ISOLATION VALVE
HLH	HIGH/LOW HUMIDITY LIMIT SENSOR
HOA	HANDS-OFF AUTOMATIC SWITCH
HR	HUMIDITY SENSOR (ROOM)
HRET	HEAT RECOVERY COIL ENTERING AIR TEMPERATURE SENSOR
HRLT	HEAT RECOVERY COIL LEAVING AIR TEMPERATURE SENSOR
HRT	HEAT RECOVERY LOOP TEMPERATURE SENSOR
HRCV	HEAT RECOVERY COIL CONTROL VALVE
HRV	HEAT RECOVERY LOOP CONTROL VALVE
HS	HAND SWITCH
HSPS	HIGH STATIC PRESSURE SWITCH
HSS	HOOD SASH SWITCH
HUV	HUMIDIFIER CONTROL VALVE
HV	HEATING COIL CONTROL VALVE
HWRT	HOT WATER RETURN TEMPERATURE SENSOR
HWST	HOT WATER SUPPLY TEMPERATURE SENSOR
IFBD	INTEGRAL FACE & BYPASS DAMPER
IGV	INLET GUIDE VANES
LAT	LEAVING AIR TEMPERATURE SENSOR
LSPS	LOW STATIC PRESSURE SWITCH
LS	LEVEL SENSOR OR LIGHT SWITCH INTERFACE
LSHA	LEVEL SENSOR HIGH ALARM
LSHS	LEVEL SENSOR HIGH SWITCH
LSLA	LEVEL SENSOR LOW ALARM
LSLS	LEVEL SENSOR LOW SWITCH
MAT	MIXED AIR TEMPERATURE SENSOR
MUWV	MAKE-UP WATER VALVE
MD	MOTION DETECTOR
NC	NORMALLY CLOSED (ON LOSS OF POWER)
NO	NORMALLY OPEN (ON LOSS OF POWER)
OAD	OUTSIDE AIR DAMPER
OAH	OUTSIDE AIR HUMIDITY SENSOR (FOR WET BULB READING)
OAT	OUTSIDE AIR TEMPERATURE SENSOR (DRY BULB)
PAD	PRIMARY AIR DAMPER
PCHRT	PRIMARY CHILLED WATER RETURN TEMPERATURE SENSOR
PCHST	PRIMARY CHILLED WATER SUPPLY TEMPERATURE SENSOR
PR	PRESSURE SENSOR (ROOM)
RAD	RETURN AIR DAMPER
RAH	RETURN AIR HUMIDITY SENSOR
RAT	RETURN AIR TEMPERATURE SENSOR
RV	REHEAT CONTROL VALVE
RH	RELATIVE HUMIDITY
RI	RUN INDICATOR
RSID	RETURN SMOKE ISOLATION DAMPER
S	SWITCH
SAD	SUPPLY AIR DAMPER
SCHRT	SECONDARY CHILLED WATER RETURN TEMPERATURE
SCHST	SECONDARY CHILLED WATER SUPPLY TEMPERATURE
SCLAT	STEAM COIL LEAVING AIR TEMPERATURE SENSOR
SCV	STEAM COIL VALVE
SD	SMOKE DAMPER
SDET	SMOKE DETECTOR
SFD	SMOKE/FIRE DETECTOR
SP	STATIC PRESSURE SENSOR
SPD	SPEED CONTROL
S/S	START/STOP
S/S H	START/STOP HIGH SPEED/CAPACITY
S/S L	START/STOP LOW SPEED/CAPACITY
SSID	SUPPLY SMOKE ISOLATION DAMPER
SSP	SUCTION STATIC PRESSURE SENSOR
T	TEMPERATURE SENSOR/THERMOSTAT
TR	TEMPERATURE SENSOR/THERMOSTAT (ROOM)
VFDS	VARIABLE FREQUENCY DRIVE SPEED
VFDO	VARIABLE FREQUENCY DRIVE SPEED OUTPUT (FEEDBACK)
VS	VIBRATION SWITCH
WC	WATER COLUMN
X	REMOVE EXISTING ITEM

DIAGRAM EQUIPMENT SYMBOLS

- CABINET HEATER
- STARTER (S/S, CT)
- PARALLEL BLADE DAMPER W/ TWO POSITION ACTUATOR
- 2-WAY AUTOMATIC CONTROL VALVE (MODULATING)
- 2-WAY AUTOMATIC CONTROL VALVE (TWO POSITION)
- FINNED TUBE RADIATION

PIPING ABBREVIATIONS

A	COMPRESSED AIR
ATV	ATMOSPHERIC VENT
B	BRINE SUPPLY
BR	BRINE RETURN
BRD	BOILER BLOWDOWN
BF	BOILER FEED WATER
CHEM	CHEMICAL FEED
CTBD	COOLING TOWER BLOW DOWN
C(X)	STEAM CONDENSATE (X=PSIG)
CWR	CONDENSER WATER RETURN
CWS	CONDENSER WATER SUPPLY
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
D	DRAIN
FOG	FUEL OIL GAUGE
FOR	FUEL OIL RETURN
FOS	FUEL OIL SUPPLY
FOV	FUEL OIL TANK VENT
GMU	GLYCOL MAKE-UP
GR	GLYCOL RETURN
GS	GLYCOL SUPPLY
HCR	HOT/COLD WATER RETURN
HCS	HOT COLD WATER SUPPLY
HPWR	HEAT PUMP WATER RETURN
HPWS	HEAT PUMP WATER SUPPLY
HTWR	HIGH TEMPERATURE HOT WATER RETURN
HTWS	HIGH TEMPERATURE HOT WATER SUPPLY
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
LPC	LOW PRESSURE CONDENSATE
LPS	LOW PRESSURE STEAM
MU	MAKE-UP WATER
PC	PUMPED CONDENSATE
PCHWR	PRIMARY CHILLED WATER RETURN
PCHWS	PRIMARY CHILLED WATER SUPPLY
PRCHWR	PROCESSED CHILLED WATER RETURN
PRCHWS	PROCESSED CHILLED WATER SUPPLY
RD	REFRIGERANT DISCHARGE
RG	REFRIGERANT GAS
RHGB	REFRIGERANT HOT GAS BYPASS
RL	REFRIGERANT LIQUID
RS	REFRIGERANT SUCTION
S(X)	STEAM (X=PSIG)
SCHWR	SECONDARY CHILLED WATER RETURN
SCHWS	SECONDARY CHILLED WATER SUPPLY
TCHWR	TERTIARY CHILLED WATER RETURN
TCHWS	TERTIARY CHILLLED WATER SUPPLY
V	VENT
(NAME)	REMOVE EXISTING PIPING

CALLOUT SYMBOLS

- CONNECT NEW TO EXISTING
- LIMIT OF DEMOLITION
- A / H2.0 — SECTION DESIGNATION / SHEET NUMBER
- REVISION NUMBER
- TEMPERATURE SENSOR OR THERMOSTAT
- SPEED CONTROL SWITCH
- REMOVE EXISTING ITEM
- SA(100) — S = SUPPLY A = SCHEDULED DIFFUSER, (100) = CFM TO BALANCE TO
- RA(100) — R = RETURN A = SCHEDULED GRILLE, (100) = CFM TO BALANCED TO
- EA(100) — E = EXHAUST A = SCHEDULED REGISTER/GRILLE (100) = CFM TO BALANCED TO
- TA(100) — T = TRANSFER A = SCHEDULED REGISTER/GRILLE (100) = CFM TO BALANCED TO

EQUIPMENT REQUIRING ELECTRICAL SERVICE.
SEE SCHEDULE FOR PERFORMANCE REQUIREMENTS:

TAG 3.1 (XXX, XXX, XXX)

- SCHEDULED EQUIPMENT UNIT NUMBER
- FIRST DIGIT(S) = LEVEL WHERE UNIT IS LOCATED:
  - SB = SUB-BASEMENT
  - B = BASEMENT
  - LL = LOWER LEVEL
  - G = GROUND FLOOR
  - 1 = FIRST FLOOR
  - 2 = SECOND FLOOR
  - 3 = THIRD FLOOR, ETC
  - M = MEZZANINE
  - A = ATTIC
  - PH = PENTHOUSE
  - R = ROOF
- SECOND DIGIT(S):
  - 1 = FIRST UNIT OF THIS EQUIPMENT TYPE ON THIS LEVEL,
  - 2 = SECOND UNIT OF THIS EQUIPMENT TYPE ON THIS LEVEL,
  - 3 = THIRD UNIT OF THIS EQUIPMENT TYPE ON THIS LEVEL, ETC.
  - (DUE TO EDITING NOT ALL NUMBERS MAY BE USED)
- UNIT CAPACITY INFORMATION (IF APPLICABLE-DATA VARIES DEPENDING ON TYPE OF EQUIPMENT)
  - i.e. FOR FAN POWERED VAV BOXES:
    - FIRST NUMBER = MAX. CFM
    - SECOND NUMBER = MIN. CFM OR PERCENT OF MAX. CFM
    - THIRD NUMBER = COIL GPM OR KW

EQUIPMENT NOT REQUIRING ELECTRICAL SERVICE,
SEE SCHEDULE FOR PERFORMANCE REQUIREMENTS:

TAG 3.1 (XXX, XXX, XXX) — REFER TO EQUIPMENT REQUIRING ELECTRICAL SERVICE SYMBOL ABOVE FOR TAG AND DATA INFORMATION.

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REVISIONS		
Number	Description	Date

100% CONSTRUCTION DOCUMENTS

Somerville Public Schools — Education • Inspiration • Excellence

Somerville High School Renovations to Room 143

81 Highland Avenue, Somerville, MA 02143

HVAC LEGENDS AND ABBREVIATIONS

PROJECT NUMBER: 19431.03
DESIGNED BY: TC
DRAWN BY: TC
CHECKED BY: BO
DATE: JULY 3, 2013
SCALE: NTS

SHEET NUMBER:

H0.00

SHEET **OF**

Q:\2013\20130373 - Somerville High School Room 143\1200 Drawings\1203 HVAC\Plot Files\20130373 H0.00 HVAC LEGENDS AND ABBREVIATIONS.dwg [Web] July 02, 2013 - 3:39pm toadman

HVAC GENERAL NOTES

1. GENERAL NOTES APPLY TO ALL DRAWINGS.
2. THIS PROJECT INVOLVES CONSTRUCTION INSIDE AN EXISTING STRUCTURE. CONTRACTORS, BY SUBMITTING A BID, ARE DEEMED TO BE COMPLETELY FAMILIAR WITH THE EXISTING CONDITION OF THE BUILDING AS IT INFLUENCES THE WORK DESCRIBED. ABSOLUTES," NO CLAIMS FOR EXTRA COMPENSATION WILL BE CONSIDERED FOR EXISTING CONDITIONS VISIBLE OR REASONABLY INFERABLE FROM A CAREFUL EXAMINATION OF THE EXISTING BUILDING.
3. THIS CONTRACTOR SHALL INSPECT THE EXISTING FIELD CONDITIONS AT THE SITE AND THE "AS-BUILT" BASE BUILDING CONTRACT DOCUMENTS PRIOR TO THE START OF ANY WORK TO DETERMINE WHAT EFFECT THE EXISTING CONDITIONS WILL HAVE ON HIS WORK. POTENTIAL PROBLEM AREAS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AND/OR ENGINEER IMMEDIATELY.
4. THIS CONTRACTOR SHALL CONNECT HIS WORK TO VARIOUS EXISTING PIPING, DUCTWORK, AND CONTROL SYSTEMS IN THE BASE BUILDING. THE NEW WORK SHALL BE COMPATIBLE WITH THE EXISTING SYSTEMS. LOCATION OF EQUIPMENT OR THE ROUTING OF THE VARIOUS SYSTEMS AS WELL AS OPENINGS IN FLOOR SLABS OR WALLS SHALL BE GOVERNED BY THE EXISTING CONDITIONS AS THEY APPEAR IN THE FIELD OR ON THE "AS-BUILT" DRAWINGS.
5. CARE SHALL BE TAKEN DURING THE INSTALLATION TO NOT DAMAGE OR INTERRUPT BUILDING SYSTEMS AND SERVICES THAT ARE ALREADY INSTALLED. DAMAGE TO SUCH SYSTEMS OR EQUIPMENT CAUSED BY THIS CONTRACTOR DURING INSTALLATION SHALL BE REPAIRED AND/OR REPLACED AT THIS CONTRACTOR'S EXPENSE TO THE COMPLETE SATISFACTION OF THE BUILDING OWNER.
6. SHUTDOWN OF EXISTING SYSTEMS FOR CONNECTION TO EXISTING SERVICES SHALL BE COORDINATED WITH THE GENERAL CONTRACTOR AND BUILDING OWNER. THIS CONTRACTOR SHALL SUBMIT REQUESTS, WHERE THEY AFFECT THE OPERATION OF THE BUILDING SYSTEMS, AT LEAST ONE WEEK IN ADVANCE OF ANY REQUIRED SHUTDOWN. THE ACTUAL SHUTDOWN PERIOD SHALL BE AS SHORT AS POSSIBLE AND AT A TIME MUTUALLY AGREEABLE TO THE BUILDING OWNER AND THE GENERAL CONTRACTOR.
7. DRAWINGS ARE DIAGRAMMATIC, THEREFORE DETERMINE EXACT LOCATIONS OF SYSTEMS AND COMPONENTS IN FIELD.
8. ALL WORK SHALL BE COORDINATED WITH ALL TRADES INVOLVED. OFFSETS IN PIPING AND DUCTS (INCLUDING DIVIDED DUCTS) AND TRANSITIONS AROUND OBSTRUCTIONS SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.
9. VERIFY ALL EQUIPMENT CONNECTIONS WITH MANUFACTURER'S CERTIFIED DRAWINGS. VERIFY AND PROVIDE DUCT AND/OR PIPE TRANSITIONS TO FURNISHED EQUIPMENT. FIELD VERIFY AND COORDINATE ALL DIMENSIONS BEFORE FABRICATION.
10. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF AIR TERMINAL DEVICES.
11. ALL MATERIALS AND EQUIPMENT UNLESS SPECIFICALLY INDICATED AS REUSED, SHALL BE NEW,
12. DUCTWORK SHALL NOT RUN ALONG FULL HEIGHT PARTITIONS.
13. ACCESS PANELS SHALL BE PROVIDED TO ALLOW FOR CLEANING OF COILS AND SERVICING OF DAMPERS, HEATERS, VALVES, AND ALL CONCEALED MECHANICAL EQUIPMENT.
14. THE INSIDE OF ALL DUCTWORK VISIBLE THROUGH A GRILLE OR DIFFUSER SHALL BE PAINTED FLAT BLACK.
15. EXISTING ROOM THERMOSTATS AND SENSORS SHALL BE PROTECTED DURING CONSTRUCTION AND RELOCATED AS INDICATED ON THE DRAWINGS. INSTALL NEW AND RELOCATED ROOM THERMOSTATS AND SENSORS 4 FEET AFF OR AS DIRECTED OTHERWISE BY ARCHITECT.
16. WHEN SECTION OF DUCTWORK IS NOT LABELED FOR SIZE, THE LARGER SIZE INDICATED ON THE CONNECTED DUCT SHALL PREVAIL. SIZE OF DUCT RUN-OUTS TO DIFFUSER SHALL EQUAL DIFFUSER NECK SIZE,
17. CONTRACTOR SHALL PROVIDE THE FOLLOWING SERVICES, AS APPLICABLE, ON ALL EXISTING HVAC EQUIPMENT INDICATED TO BE REUSED: 1) FILTER CHANGES, 2) BALANCING, 3) LUBRICATION CONTRACTOR SHALL REPORT ANY EQUIPMENT DEFICIENCIES FOUND TO THE ARCHITECT AND/OR ENGINEER.
18. THE FIRE PROOFING OF THE BUILDING STRUCTURE IS NOT TO BE REMOVED FOR THE INSTALLATION OF HANGERS, SUPPORTS, DUCTWORK, ETC. IF FIRE PROOFING IS DAMAGED, IT SHALL BE REPAIRED AT THE EXPENSE OF THE TRADE.
19. CONTRACTOR SHALL TEST AND CALIBRATE ALL CONTROLS AND VERIFY ALL ARE FULLY FUNCTIONAL AND SUBMIT DOCUMENTATION. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
20. CONTRACTOR SHALL PROVIDE AND SUBMIT DOCUMENTATION FOR TESTING AND BALANCING OF ALL AIR SYSTEMS, PIPING PRESSURE AND LEAKAGE TESTS, OPERATING AND MAINTENANCE MANUALS, AND AS BUILT DRAWINGS. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
21. REFER TO THE PROJECT SPECIFICATIONS FOR FURTHER REQUIREMENTS.
22. MANY EQUIPMENT SCHEDULES DO NOT LIST QUANTITIES. CONTRACTOR SHALL REFER TO ALL DRAWINGS AND PROVIDE THE REQUIRED QUANTITIES FOR ALL COMPONENTS.

HVAC SPECIFICATIONS

HVAC SPECIFICATIONS

PART 1 - GENERAL

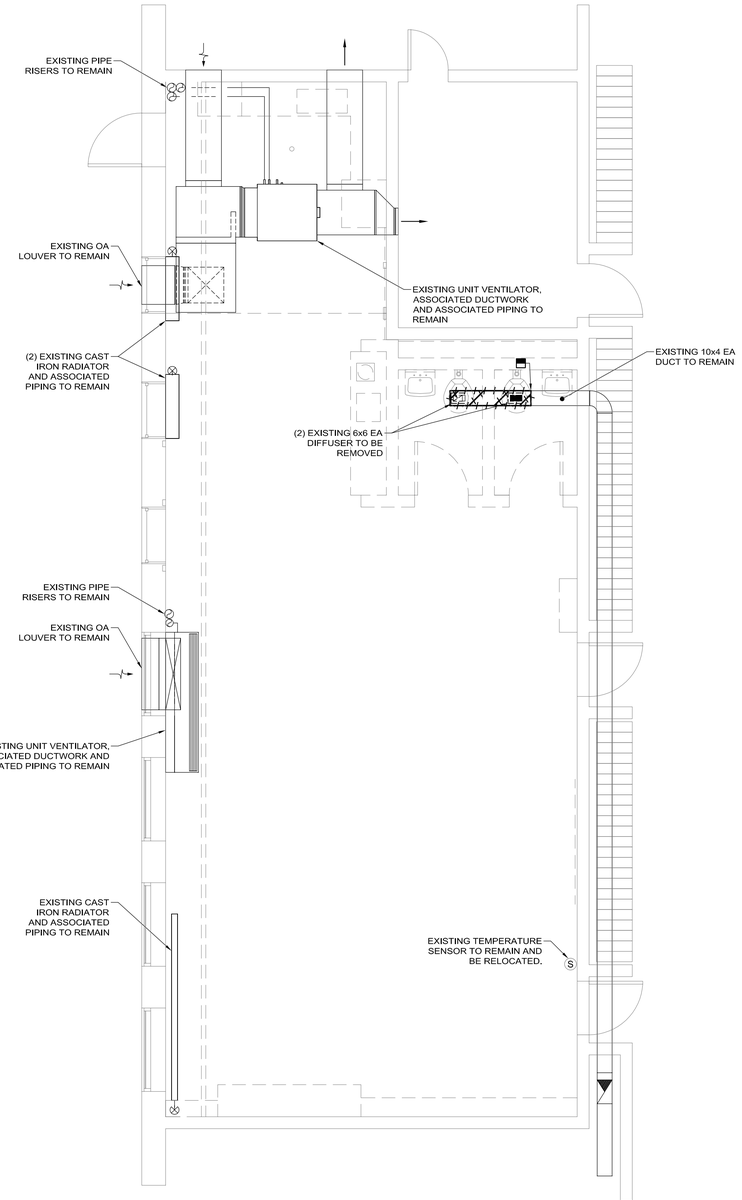
1. GENERAL PROVISIONS: DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF WORK IN CONTRACT.
2. SCOPE: PERFORM WORK AND PROVIDE NEW MATERIAL AND EQUIPMENT AS SHOWN ON DRAWINGS AND AS SPECIFIED IN THIS SECTION OF THE SPECIFICATIONS. PROVIDE ALL COMPONENTS AND MATERIALS, WHETHER SPECIFICALLY SHOWN OR NOT, THAT ARE NECESSARY TO MAKE THE SYSTEMS COMPLETE AND FULLY OPERATIONAL AS INTENDED IN THE CONSTRUCTION DOCUMENTS. WORK SHALL INCLUDE, BUT NOT BE LIMITED TO: 1) THE DESIGN INTENT AS ILLUSTRATED ON THESE DRAWINGS, 2) REQUIREMENTS INCLUDED IN THE "NARRATIVE REPORT FOR COMPLIANCE WITH THE ENERGY CONSERVATION SECTION OF THE MASSACHUSETTS STATE BUILDING CODE (780CMR) - APPROVAL AND ACCEPTANCE", AND 3) ALL TESTING AND CERTIFICATIONS NECESSARY FOR COMPLIANCE INCLUDING ANY REQUIRED REMEDIAL ACTIONS AND RETESTING DUE TO FAILURE.
3. SITE VISIT: VISIT AND CAREFULLY EXAMINE SITE TO IDENTIFY EXISTING CONDITIONS THAT MAY AFFECT WORK OF THIS SECTION BEFORE SUBMITTING BID. NO EXTRA PAYMENT WILL BE ALLOWED FOR ADDITIONAL WORK CAUSED BY UNFAMILIARITY WITH SITE CONDITIONS THAT ARE VISIBLE OR READILY DISCERNED BY AN EXPERIENCED OBSERVER.
4. RELATED WORK: THE FOLLOWING WORK IS NOT INCLUDED IN THIS SECTION AND WILL BE PROVIDED UNDER OTHER SECTIONS: 1) TEMPORARY HEAT FOR USE DURING CONSTRUCTION AND TESTING UNLESS SPECIFICALLY NOTED IN OTHER SPECIFICATION SECTIONS, 2) PAINTING, EXCEPT AS SPECIFIED, AND 3) ELECTRICAL POWER WIRING TO ALL EQUIPMENT OTHER THAN AUTOMATIC TEMPERATURE CONTROL PANELS AND COMPONENTS.
5. CODES, STANDARDS, AUTHORITIES AND PERMITS: CODES, LAWS AND ORDINANCES PROVIDE A BASIS FOR THE MINIMUM INSTALLATION CRITERIA. THESE DRAWINGS AND SPECIFICATIONS ILLUSTRATE THE SCOPE REQUIRED FOR THIS PROJECT, WHICH MAY EXCEED MINIMUM CODE, LAW AND STANDARDS CRITERIA. GIVE NOTICES, FILE PLANS, OBTAIN PERMITS AND LICENSES, PAY FEES AND BACKCHARGES AND OBTAIN NECESSARY APPROVALS FROM AUTHORITIES HAVING JURISDICTION AS REQUIRED FOR THE EXECUTION OF ALL WORK ASSOCIATED WITH THIS PROJECT. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST EDITIONS OF: 1) THE STATE BUILDING, ELECTRICAL, MECHANICAL, AND ENERGY CODES, 2) SMACNA, NFPA, ANSI/ASHRAE, ASME, UL, AND NEMA STANDARDS, 3) ALL OTHER APPLICABLE CODES, REGULATIONS, STANDARDS AND LAWS OF LOCAL, STATE AND FEDERAL GOVERNMENT AND OTHER AUTHORITIES HAVING JURISDICTION, AND 4) APPLICABLE BASE BUILDING STANDARDS AND SPECIFICATIONS.
6. INTERPRETATIONS OF DOCUMENTS: WHERE DRAWINGS OR SPECIFICATIONS DO NOT COINCIDE WITH MANUFACTURER'S RECOMMENDATIONS, OR ARE UNCLEAR AS TO INTENT, OR REQUIRED MATERIAL QUALITY, ADVISE THE ENGINEER IN WRITING BEFORE PROCEDING WITH THE WORK. ALL COST FOR REWORK NECESSARY TO RESOLVE DISCREPANCIES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
7. REQUESTS FOR INFORMATION: ANY RFI FOR RESOLVING AN APPARENT CONFLICT OR UNCLARITY, OR A REQUEST FOR ADDITIONAL DETAIL, SHALL INCLUDE A SKETCH OR EQUIVALENT DESCRIPTION OF CONTRACTOR'S PROPOSED SOLUTION.
8. SUBMITTALS: PROVIDE SPECIFIED ITEMS AND EQUIPMENT UNLESS "EQUAL" OR "APPROVED EQUAL" IS EXPLICITLY INDICATED ON THE DRAWINGS. DEVIATIONS TO SPECIFIED ITEMS SHALL BE AT THE SOLE RISK OF THE CONTRACTOR, WHO SHALL BE RESPONSIBLE FOR ALL ASSOCIATED CHANGES TO THIS AND OTHER TRADES. REVIEW OF THE SHOP DRAWINGS BY THE ENGINEER SHALL NOT ABSOLVE THE CONTRACTOR FROM MEETING THE FULL DESIGN INTENT OF THE ASSOCIATED SYSTEM(S). SUBMITTALS SHALL INDICATE PRIOR REVIEW AND APPROVAL BY THE RESPONSIBLE CONTRACTOR. SUBMIT FOR REVIEW (6) SETS OF MANUFACTURER'S PRODUCT DATA FOR THE FOLLOWING ITEMS: 1) AIR DISTRIBUTION LAYOUT DRAWINGS AND DETAIL, 2) PIPING DISTRIBUTION LAYOUT DRAWINGS, COMPONENTS, AND DETAILS, 3) ALL EQUIPMENT, 4) CONTROL SCHEMATICS, COMPONENTS, AND SEQUENCES, INCLUDING TIE-IN TO THE EXISTING BUILDING CONTROL OR MANAGEMENT SYSTEM, 5) BALANCING REPORTS, 6) ALL TEST REPORTS, AND 7) ALL CERTIFICATES. ALLOW ENGINEER A MINIMUM OF 10 WORKING DAYS FOR PROCESSING AND REVIEW OF EACH SUBMISSION.
9. OPERATION AND MAINTENANCE DATA: SUBMIT (3) SETS OF OPERATING AND MAINTENANCE MANUALS PRIOR TO THE COMPLETION OF THE PROJECT. PROVIDE ON-SITE DEMONSTRATION OF ALL SYSTEMS TO OWNER AFTER SYSTEMS ARE FULLY OPERATIONAL. O&M MANUALS SHALL INCLUDE ALL COMPONENTS (DIFFUSERS, VALVES, ETC.) AS WELL AS SYSTEM DESCRIPTIONS OF ALL SYSTEMS WITH FLOW DIAGRAMS, WIRING DIAGRAMS, WRITTEN WARRANTIES, RECOMMENDED SPARE PARTS AND ROUTINE MAINTENANCE REQUIREMENTS WITH RECOMMENDED INTERVALS FOR ALL MOVING EQUIPMENT AND CONTROLS.
10. RECORD DRAWINGS: CAD RECORD DRAWING FILES SHALL BE SUBMITTED AT THE COMPLETION OF THE PROJECT SHOWING THE "AS-BUILT" CONDITION INCLUDING WORK INSTALLED AND ALL MODIFICATONS OR ADDITIONS TO ORIGINAL DESIGN. OBTAIN THE AUTOCAD FILES FOR PREPARATION OF AS-BUILT DRAWINGS FROM THE ARCHITECT. THE ARCHITECT AND ENGINEER ARE NOT GRANTING ANY OWNERSHIP OR PROPERTY INTEREST IN THE CAD DRAWINGS BY THE DELIVERY OF THE CAD FILES, THE USE OF THE CAD FILES AND DRAWINGS ARE LIMITED FOR THE SOLE PURPOSE OF ASSISTING IN THE CONTRACTOR'S PERFORMANCE IN ITS CONTRACTUAL OBLIGATIONS WITH RESPECT TO THIS PROJECT. ANY REUSE AND/OR OTHER USE BY THE CONTRACTOR WILL BE AT THE CONTRACTOR'S SOLE RISK AND WITHOUT LIABILITY TO THE ARCHITECT AND ENGINEER.
11. WARRANTIES: WARRANTY INSTALLATION IN WRITING FOR ONE YEAR FROM DATE OF OWNER'S ACCEPTANCE OF CERTIFICATE OF SUBSTANTIAL COMPLETION, WHERE INDIVIDUAL EQUIPMENT SECTIONS SPECIFY LONGER WARRANTEES, PROVIDE THE LONGER WARRANTEE. REPAIR, REPLACE OR PROVIDE TEMPORARY ACCOMMODATIONS FOR DEFECTIVE MATERIALS, EQUIPMENT, WORKMANSHIP AND INSTALLATION THAT DEVELOP WITHIN 24 HOURS OF NOTIFICATION. WARRANTY SHALL INCLUDE A CONTACT PERSON (NAME AND 24 HOUR TELEPHONE NUMBER) FOR SERVICE REQUESTS. CORRECT DAMAGE CAUSED WHILE MAKING NECESSARY REPAIRS AND REPLACEMENTS UNDER WARRANTY PERIOD AT NO ADDITIONAL COST.
12. COORDINATION: CONFER WITH ALL OTHER TRADES RELATIVE TO LOCATION OF ALL APPARATUS AND EQUIPMENT TO BE INSTALLED AND SELECT LOCATIONS SO AS NOT TO CONFLICT WITH OR HINDER THE PROGRESS OF THE WORK OF OTHER SECTIONS. WORK INSTALLED THAT CREATES INTERFERENCE OR RESTRICTS ACCESS REQUIRED BY CODE (INCLUDING CLEARANCES TO ELECTRICAL COMPONENTS) OR TO CONDUCT MAINTENANCE AND/OR ADJUSTMENTS SHALL BE MODIFIED AT NO ADDITIONAL COST TO THE OWNER.
13. SUPPORTS: INCLUDE ALL STRUCTURAL STEEL SUPPORTS, HANGER BRACKETS, ETC., REQUIRED FOR THE EXECUTION OF THE WORK OF THIS SECTION. THE WELDS AND EDGES OF ALL BRACKETS SHALL BE FILED OR GROUND SMOOTH FOR PAINTING. HANGERS SHALL BE STEEL ANGLE IRON, CHANNEL OR STEEL ROD USED WITH APPROVED CLAMPS, INSERTS, ETC. ALL HANGERS SHALL BE GALVANIZED OR PAINTED WITH TWO COATS OF RUSTOLEUM PAINT BEFORE INSTALLATION. APPLY TOUCH-UP PAINT (ZINC GALVANIZING FOR GALVANIZED STEEL) AFTER INSTALLATION. SUPPORTS INSTALLED IN EXTERIOR LOCATIONS SHALL BE PVC COATED STEEL, GALVANIZED STEEL, OR STAINLESS STEEL WITH STAINLESS STEEL HARDWARE.
14. CUTTING AND PATCHING: INCLUDE ALL CORING, CUTTING, PATCHING AND FIREPROOFING NECESSARY FOR THE EXECUTION OF THE WORK OF THIS SECTION. STRUCTURAL ELEMENTS SHALL NOT BE CUT WITHOUT WRITTEN APPROVAL OF THE ARCHITECT. REPAIR AND PATCH AROUND THE WORK SPECIFIED HEREIN TO MATCH THE EXISTING ADJACENT SURFACES TO THE SATISFACTION OF THE ARCHITECT. FILL AND PATCH ALL OPENINGS OR HOLES LEFT IN THE EXISTING STRUCTURES BY THE REMOVAL OF EXISTING EQUIPMENT THAT IS PART OF THIS SECTION OF THE SPECIFICATIONS. PATCH AND SEAL ALL EXISTING OPENINGS IN DUCTWORK AND PIPING NOT UTILIZED FOR NEW LAYOUT. PROVIDE FIRE STOPPING TO MAINTAIN THE FIRE RATING OF THE FIRE RESISTANCE-RATED ASSEMBLY. ALL PENETRATIONS AND ASSOCIATED FIRE STOPPING SHALL BE INSTALLED IN ACCORDANCE WITH THE FIRE STOPPING MANUFACTURER'S LISTED INSTALLATION DETAILS AND BE LISTED BY UL OR FM.
15. HOISTING, SCAFFOLDING AND PLANKING: INCLUDE THE FURNISHING, SET-UP AND MAINTENANCE OF ALL HOISTING MACHINERY, CRANES, SCAFFOLDS, STAGING AND PLANKING AS REQUIRED FOR THE EXECUTION OF WORK FOR THIS SECTION.
16. SAFETY PRECAUTIONS: LIFE SAFETY AND ACCIDENT PREVENTION SHALL BE A PRIMARY CONSIDERATION. COMPLY WITH ALL OF THE SAFETY REQUIREMENTS OF THE OWNER AND OSHA THROUGHOUT THE ENTIRE CONSTRUCTION PERIOD OF THE PROJECT. FURNISH, PLACE AND MAINTAIN PROPER GUARDS AND ANY OTHER NECESSARY CONSTRUCTION REQUIRED TO SECURE SAFETY OF LIFE AND PROPERTY.
17. ACCESSIBILITY: ALL WORK PROVIDED UNDER THIS SECTION OF THE SPECIFICATION SHALL BE INSTALLED SO THAT PARTS REQUIRING PERIODIC INSPECTION, MAINTENANCE AND REPAIR ARE READILY ACCESSIBLE. WORK OF THIS TRADE SHALL NOT INFRINGE UPON CLEARANCES REQUIRED BY EQUIPMENT OF OTHER TRADES.
18. PROTECTION OF WORK AND PROPERTY: THIS CONTRACTOR SHALL BE RESPONSIBLE FOR THE CARE AND PROTECTION OF ALL WORK INCLUDED UNDER THIS SECTION UNTIL THE COMPLETION AND FINAL ACCEPTANCE OF THIS PROJECT. PROTECT ALL EQUIPMENT AND MATERIALS FROM DAMAGE FROM ALL CAUSES INCLUDING, BUT NOT LIMITED TO, FIRE, VANDALISM AND THEFT. ALL MATERIALS AND EQUIPMENT DAMAGED OR STOLEN SHALL BE REPAIRED OR REPLACED WITH EQUAL MATERIAL OR EQUIPMENT AT NO ADDITIONAL COST TO THE OWNER. PROTECT ALL EQUIPMENT, OUTLETS AND OPENINGS, AND ROOF PENETRATIONS WITH TEMPORARY PLUGS, CAPS AND COVERS. PROTECT WORK AND MATERIALS OF OTHER TRADES FROM DAMAGE THAT MIGHT BE CAUSED BY WORK OR WORKMEN UNDER THIS SECTION AND MAKE GOOD DAMAGE THUS CAUSED. DAMAGED MATERIALS ARE TO BE REMOVED FROM THE SITE; NO SITE STORAGE OF DAMAGED MATERIALS WILL BE ALLOWED. ANY DAMAGE TO EXISTING SYSTEMS AND EQUIPMENT CAUSED BY THIS CONTRACTOR DURING INSTALLATION SHALL BE REPAIRED AND/OR REPLACED AT THIS CONTRACTOR'S EXPENSE TO THE COMPLETE SATISFACTION OF THE BUILDING OWNER.
19. SEISMIC RESTRAINT REQUIREMENTS: PROVIDE SEISMIC RESTRAINTS AS REQUIRED IN ACCORDANCE WITH THE STATE BUILDING CODE. A REGISTERED PROFESSIONAL STRUCTURAL ENGINEER, LICENSED IN THE APPLICABLE STATE FOR THE PROJECT LOCATION, SHALL PREPARE THE SEISMIC RESTRAINT DESIGN AND CERTIFY THAT THE DESIGN IS IN COMPLIANCE WITH THE STATE BUILDING CODE REQUIREMENTS.

PART 2 - PRODUCTS

1. DUCTWORK: MATERIAL, CONSTRUCTION, AND INSTALLATION SHALL MEET REQUIREMENTS OF MOST RECENT EDITIONS OF SMACNA HVAC DUCT CONSTRUCTION STANDARDS, EXCEPT FOR MORE STRINGENT REQUIREMENTS SPECIFIED OR SHOWN ON DRAWINGS, SEE "DUCTWORK PRESSURE CLASS AND SEAL CLASS" DETAIL FOR CONSTRUCTION REQUIREMENTS. PROVIDE FLEXIBLE CONNECTION ON ALL DUCTS CONNECTING TO FANS AND ROTATING EQUIPMENT. ALL DUCTS SHALL BE GROUNDED ACROSS FLEXIBLE CONNECTION WITH FLEXIBLE COPPER GROUNDING STRAPS. MAXIMUM LENGTH OF FLEXIBLE RUN-OUT TO DIFFUSERS SHALL BE 6 FEET. FOR LONGER RUN-OUTS, ADD RIGID DUCT. DUCTS SHALL BE CONSTRUCTED OF HOT DIPPED GALVANIZED STEEL UNLESS OTHERWISE NOTED.
2. VOLUME DAMPERS: PROVIDE MANUAL ADJUSTABLE VOLUME DAMPERS, WITH EXTENDED MOUNT, INDICATING AND LOCKING QUADRANTS AS SHOWN ON DRAWINGS.
3. DIFFUSERS, REGISTERS, AND GRILLES: PROVIDE DIFFUSERS, REGISTERS AND GRILLES FOR SUPPLY, RETURN, AND EXHAUST OUTLETS OF SIZE, TYPE, AND DESIGN SHOWN ON DRAWINGS. DIFFUSER SIZES SHOWN ARE NECK SIZES; REGISTER AND GRILLE SIZE ARE NOMINAL. ACCEPTABLE MANUFACTURERS; TITUS, ANEMOSTAT, KRUEGER, TUTTLE & BAILEY, PRICE, OR METALAIRE. SOUND PRESSURE LEVELS ARE NOT TO EXCEED NC 30.
4. DUCT INSULATION (EXTERNAL): INSULATION SHALL BE CERTAIN-TEED KNAUF, MANVILLE, OR OWENS CORNING. MATERIALS SHALL MEET REQUIREMENTS OF ADHESIVE AND SEALANT COUNCIL STANDARDS AND SMACNA. MINIMUM DUCTWORK INSULATION THICKNESS SHALL BE AS REQUIRED TO MEET THE R-VALUES LISTED IN THE "DUCT INSULATION R-VALUES" DETAIL. FOR CONCEALED INSULATION, USE FIBROUS GLASS DUCT WRAP, WITH FOIL-KRAFT FLAME RESISTANT VAPOR BARRIER. EXPOSED INSULATION SHALL BE RIGID FIBERGLASS INSULATION WITH ALUMINUM VAPOR BARRIER.
5. STEAM AND STEAM CONDENSATE PIPING AND VALVES: STEAM PIPING 2" AND SMALLER SHALL BE SCREWED SCHEDULE 40 STEEL. STEAM CONDENSATE PIPING SHALL BE THREADED SCHEDULE 80 STEEL. VALVES SHALL HAVE NAME OF MANUFACTURER AND GUARANTEED WORKING PRESSURE CAST OR STAMPED ON BODIES. VALVES AND STRAINERS SHALL BE AS MANUFACTURED BY CRANE, HAMMOND, JENKINS, STOCKHOLM, MUELLER, WATTS OR MILWAUKEE. GATE VALVES SHALL BE USED FOR STEAM AND CONDENSATE PIPING. STRAINERS SHALL BE "Y" TYPE, FULL SIZE OF ENTERING PIPE SIZE AND HAVE A MAXIMUM CLEAN PRESSURE DROP OF ONE PSID. STRAINERS SHALL INCLUDE BLOW DOWN VALVE. CHECK VALVES SHALL BE SWING TYPE. BALANCED PRESSURE THERMOSTATIC TRAPS/AIRVENTS SHALL BE DESIGNED FOR STEAM WORKING PRESSURES UP TO 125 PSIG. TRAPS SHALL HAVE BRASS BODIES AND CAPS WITH NATURAL BRASS FINISH, BELLOWS, VALVE HEAD AND RENEWABLE VALVE SEAT SHALL BE STAINLESS STEEL. FLOAT-AND-THERMOSTATIC TRAPS SHALL BE DESIGNED FOR A STEAM WORKING PRESSURE OF 30 PSIG, BUT SHALL OPERATE WITH A SUPPLY PRESSURE OF BETWEEN ¼ AND 15 PSIG. THE CAPACITY OF THE TRAPS SHALL BE SIZED FOR 2 TIMES THE EQUIPMENT CAPACITY. WHERE MODULATING CONTROL VALVES ARE USED, TRAP CAPACITY SHALL BE BASED ON A PRESSURE DIFFERENTIAL OF 1/4 PSI. EACH FLOAT-AND-THERMOSTATIC TRAP SHALL BE PROVIDED WITH A HARD BRONZE, MONEL, OR STAINLESS STEEL VALVE SEAT AND MECHANISM AND BRASS FLOAT, ALL OF WHICH CAN BE REMOVED EASILY FOR INSPECTION OR REPLACEMENT WITHOUT DISTURBING THE PIPING CONNECTIONS. INLET TO EACH TRAP SHALL HAVE A CAST IRON STRAINER, EITHER AN INTEGRAL PART OF THE TRAP OR A SEPARATE ITEM OF EQUIPMENT. THERMODYNAMIC TRAPS SHALL BE DISC TYPE WITH INTEGRAL OR SEPARATE STRAINER AND BE OF STAINLESS STEEL OR CAST STEEL CONSTRUCTION. TRAPS SHALL BE DESIGNED FOR EASY REPLACEMENT OF OPERATING SECTION WITHOUT REMOVAL FROM PIPE LINE, AND FOR STEAM WORKING PRESSURES OF BETWEEN 4 TO 450 PSIG, AND SHALL OPERATE WITH UP TO 80% BACK-PRESSURE. PROVIDE POSITIVE MEANS OF AIR VENTING WITHOUT AIR BINDING, IF NOT AVAILABLE INTERNALLY, PROVIDE EXTERNAL THERMOSTATIC AIR VENT. PROVIDE INSULATED JACKET FOR THE PRESSURE CHAMBER TO SAVE STEAM AND REDUCE WEAR, TRAPS SHALL BE BY TLV, GESTRA, SPIRAX-SARCO, HOFFMAN, ILLINOIS, BARNES & JONES, OR APPROVED EQUAL. INSTALL STEAM SUPPLY PIPING AT A MINIMUM UNIFORM GRADE OF 0.2 PERCENT DOWNWARD IN DIRECTION OF STEAM FLOW. INSTALL CONDENSATE RETURN PIPING AT A MINIMUM UNIFORM GRADE OF 0.4 PERCENT DOWNWARD IN DIRECTION OF CONDENSATE FLOW.
6. REFRIGERANT PIPING: REFRIGERANT PIPING SHALL BE BRAZED ACR COPPER TUBING WITH WROUGHT COPPER FITTINGS. PROVIDE ALL REQUIRED ACCESSORIES PER MANUFACTURER'S BEST RECOMMENDATIONS. PIPE SIZES SHOWN ARE APPROXIMATE, CONFIRM AND PROVIDE ALL PIPE SIZING (BASED ON ACTUAL FIELD ROUTING), INCLUDING ANY REQUIRED DOUBLE SUCTION RISERS AND ALL VALVES AND APPURTENANCES, AS RECOMMENDED BY UNIT MANUFACTURER. SUBMIT SIZING CALCULATIONS IF ANY MANUFACTURER'S RECOMMENDATION DIFFERS FROM WHAT IS SHOWN ON THE DRAWINGS
7. PIPE INSULATION: INSULATION SHALL BE FIBROUS GLASS INSULATION WITH FACTORY-APPLIED FIRE RETARDANT VAPOR BARRIER JACKET WITH K FACTOR OF AT LEAST 0.23 AT 75 DEG. F MEAN TEMPERATURE BY OWENS CORNING, CERTAIN-TEED, MANVILLE, OR KNAUF. ASTM E-84 FIRE HAZARD RATINGS SHALL BE 25 FLAME SPREAD, 50 SMOKE DEVELOPED AND 50 FUEL CONTRIBUTED. INSULATION THICKNESS SHALL BE AS LISTED IN THE "PIPE INSULATION" DETAIL.
8. PIPE HANGERS AND SUPPORTS: PROVIDE PIPE STANDS, SUPPORTS, HANGERS, AND OTHER SUPPORTING APPLIANCES AS NECESSARY TO SUPPORT WORK REQUIRED BY CONTRACT DOCUMENTS. SPACING OF HANGERS SHALL BE INSTRUCTED IN ACCORDANCE WITH APPLICABLE BUILDING AND MECHANICAL CODES. SIZE OF HANGERS SHALL INCLUDE THE PIPE INSULATION WITH SHIELD.
9. MOTORS, STARTERS, AND WIRING: PROVIDE PREMIUM EFFICIENCY MOTORS. STARTERS AND/OR VFD'S SHALL BE PROVIDED BY DIVISION 16 UNLESS PART OF PACKAGED EQUIPMENT. PROVIDE CONTROL AND OTHER RELATED WIRING INCLUDING INTERLOCKS. MOTORS FOR USE WITH VARIABLE FREQUENCY DRIVES (VFD) SHALL BE INVERTER DUTY RATED, AND SHALL HAVE AEGIS OR APPROVED EQUAL SHAFT GROUND RINGS (TO PREVENT ELECTRICAL BEARING DAMAGE FROM CAPACITIVELY COUPLED SHAFT VOLTAGES) INSTALLED AND REGISTERED PER MANUFACTURERS REQUIREMENTS FOR 15 YEAR BEARING WARRANTEE.
10. VIBRATION ISOLATION: PROVIDE VIBRATION ISOLATION FOR EACH PIECE OF ROTATING OR PISTON DRIVEN HVAC EQUIPMENT SHOWN ON THE DRAWINGS. ISOLATION MAY BE INTERNAL OR EXTERNAL TO THE EQUIPMENT AND SHALL PROVIDE AT LEAST 90% ISOLATION EFFICIENCY. ISOLATE THE FIRST THREE PIPE HANGER LOCATIONS FROM EQUIPMENT WITH 1" DEFLECTION COMBINATION SPRING AND NEOPRENE. NAI (NOVIA ASSOCIATION) MODEL "SNH" OR EQUIVALENT BY MASON INDUSTRIES OR KINETICS. INSTALLATION PRACTICES SHALL BE IN STRICT ACCORDANCE WITH THE RECOMMENDATIONS OF THE VIBRATION ISOLATION MANUFACTURER.
11. CABINET UNIT HEATERS: PROVIDE CABINET UNIT HEATERS OF THE TYPE AND CAPACITY SHOWN ON THE DRAWINGS. ACCEPTABLE MANUFACTURERS ARE TRANE, MODINE, QMARK, AAF, Q-MARK, BRASCH, RITTLING, OR STERLING. PROVIDE UNIT MOUNTED SPEED CONTROL SWITCH, AND ALL OPERATING AND SAFETY CONTROLS.
12. DUCTLESS SPLIT AC UNITS: PROVIDE UNITS OF CAPACITIES AND TYPE AS SHOWN ON DRAWINGS BY MITSUBISHI, SANYO, TOSHIBA, FUJITSU, DAIKIN, CARRIER OR SAMSUNG. UNITS SHALL HAVE WIRED MICROPROCESSOR CONTROLS WITH PROGRAMMABLE TIMER AND TEMPERATURES. INDOOR UNITS SHALL HAVE CLEANABLE FILTERS AND ADJUSTABLE FAN SPEEDS AND LOUVERS. OUTDOOR UNITS SHALL BE LOW NOISE AND HAVE LOW AMBIENT OPERATION TO 0 DEG, F FOR COOLING. INSTALL WITH PRECHARGED INSULATED REFRIGERANT LINES SIZED FOR THE INSTALLATION CONDITIONS BY THE MANUFACTURER.
13. AUTOMATIC TEMPERATURE CONTROLS: PROVIDE COMPLETE SYSTEM OF AUTOMATIC TEMPERATURE CONTROLS BY HONEYWELL OR APPROVED EQUAL. CONTROL SYSTEM SHALL BE CAPABLE OF PERFORMING ALL SEQUENCES OF OPERATION SHOWN ON THE DRAWINGS OR DESCRIBED IN THESE SPECIFICATIONS. INDIVIDUAL CONTROL COMPONENTS MAY NOT BE SHOWN ON CONTRACT DOCUMENTS, BUT ATC CONTRACTOR SHALL SUPPLY ALL COMPONENTS, AND CONTROL WIRING (INCLUDING POWER WIRING TO ALL PANELS, CONTROLLERS, TRANSFORMERS, ACTUATORS, VALVES, ETC.), NECESSARY FOR A COMPLETE OPERABLE SYSTEM. COORDINATE WITH ELECTRICAL CONTRACTOR FOR LOCATION OF LINE VOLTAGE JUNCTION BOX IN EACH MECHANICAL AREA. ATC CONTRACTOR SHALL EXTEND WIRING FROM THESE BOX(ES) TO ALL CONTROL COMPONENTS AND SHALL BE RESPONSIBLE FOR ALL SYSTEM COMPONENTS, WHETHER HE SUBCONTRACTS ELECTRICAL AND OTHER WORK OR NOT. ALL WIRING SHALL COMPLY WITH THE REQUIREMENTS OF THE ELECTRICAL SECTION OF THESE SPECIFICATIONS.
14. PROVIDE AUTOMATIC CONTROL VALVES SUITABLE FOR THE SPECIFIED CONTROLLED MEDIA (STEAM), PROVIDE VALVES THAT MATE AND MATCH THE MATERIAL OF THE CONNECTED PIPING. EQUIP CONTROL VALVES WITH MATCHING ACTUATORS OF REQUIRED INPUT POWER TYPE AND CONTROL SIGNAL TYPE TO ACCURATELY POSITION THE FLOW CONTROL ELEMENT AND PROVIDE SUFFICIENT FORCE TO CLOSE AGAINST THE MAXIMUM ANTICIPATED PRESSURE. CONTROL VALVES SHALL BE GLOBE, BUTTERFLY (OPEN-CLOSED ONLY), HIGH PERFORMANCE BUTTERFLY (OPEN-CLOSED OR MODULATING WITH CV AT 2/3 OPEN), OR CHARACTERIZED BALL TYPE CONSTRUCTED FOR THE SYSTEM'S FLUID AND TEMPERATURE/ PRESSURE LIMITS. VALVES SHALL BE MANUFACTURED BY ONE OF THE LISTED MANUFACTURERS PROVIDING THEY MEET ALL SPECIFIED REQUIREMENTS; BELIMO, BRAY, DELTA P VALVE, GRISWOLD, BELL & GOSSETT, FISHER, HONEYWELL, OR SIEMENS/STAEFA.

PART 3 - EXECUTION

1. DEMOLITION: THE EXISTING FACILITY WILL CONTINUE TO OPERATE DURING ALL PHASES OF THE DEMOLITION WORK AND SUBSEQUENT CONSTRUCTION. NO INTERRUPTION OF THE SYSTEMS WILL BE PERMITTED WITHOUT PRIOR APPROVAL OF THE OWNER'S REPRESENTATIVE. SUBMIT



HVAC - DEMOLITION PLAN

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

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REVISIONS		
Number	**Description**	**Date**

100% CONSTRUCTION DOCUMENTS

Somerville Public Schools
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Somerville High School Renovations to Room 143

81 Highland Avenue,
Somerville, MA 02143

HVAC DEMOLITION PART FLOOR PLAN

PROJECT NUMBER: 19431.03
DESIGNED BY: TC
DRAWN BY: TC
CHECKED BY: BO
DATE: JULY 3, 2013
SCALE: 1/4"=1'-0"

SHEET NUMBER:

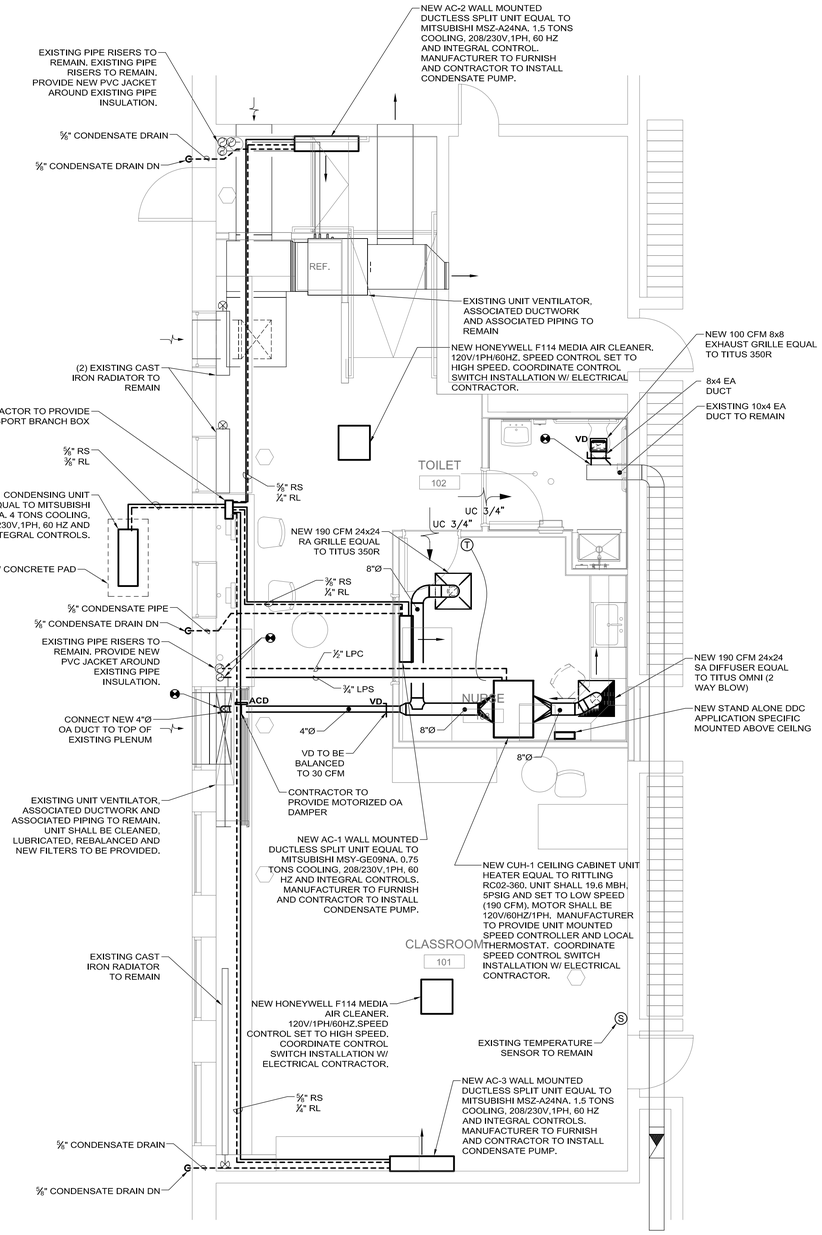
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SHEET **OF**

Q:\2013\20130373 - Somerville High School Room 143\1200 Drawings\1203 HVAC\Plot Files\20130373 HD2.00 HVAC FLOOR DEMOLITION PLAN.dwg [Work], July 02, 2013 - 3:40pm toarman

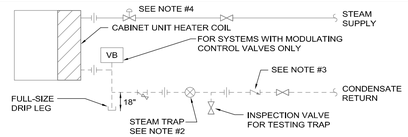
GENERAL NOTES:

1. CONTRACTOR TO PROVIDE PIPE INSULATION AND JACKETING ON ALL EXPOSED PIPING



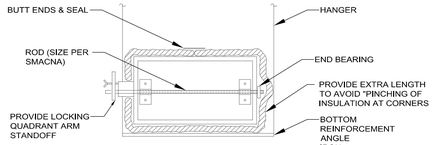
HVAC - NEW WORK PLAN

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



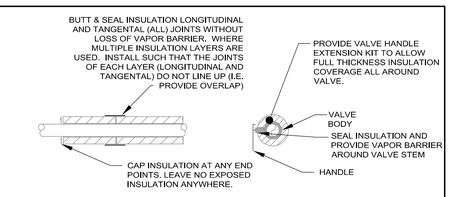
NOTES:
1. HORIZONTAL DISCHARGE SHOWN; CONNECTIONS FOR VERTICAL DISCHARGE ARE SIMILAR.
2. TRAP SHALL BE FLOAT-AND-THERMOSTATIC TYPE FOR LOW-PRESSURE AND THERMODYNAMIC TRAP FOR MEDIUM- AND HIGH-PRESSURE SYSTEMS.
3. INSTALL CHECK VALVE FOR MEDIUM- AND HIGH-PRESSURE SYSTEMS OR WHEN CONNECTING TO AN ELEVATED CONDENSATE-RETURN LINE (WITHOUT A MODULATING CONTROL VALVE).
4. REFER TO AUTOMATIC CONTROL DRAWINGS AND SPECIFICATIONS FOR CONTROL REQUIREMENTS.

RDK STEAM CABINET UNIT HEATER — H217

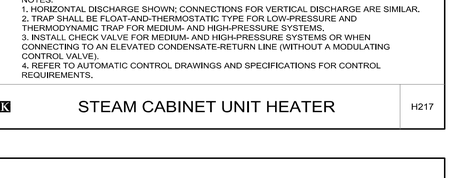


NOTE:
FOR HANGING DUCT: TRAPEZE DUCT OR STRAP HANGER AROUND DUCT COMPLETELY. DO NOT USE ANY SCREWS, BECAUSE THEY INTERFERE WITH DAMPER BLADE(S).

RDK TYPICAL DUCT INSTALLATION & SUPPORT NEAR VOLUME DAMPERS — H1509



RDK TYPICAL PIPE INSULATION & VALVE HANDLE EXTENSION — H1106



GENERAL:

1. THE HEATER SHALL BE CONTROLLED BY A SPACE THERMOSTAT AND STAND ALONE DDC PROGRAMMABLE APPLICATION SPECIFIC CONTROLLER (ASC) (WHERE INDICATED ON PLANS). ASC SHALL INCLUDE 5/2 DAY WITH NIGHT SETBACK CAPABILITY. COORDINATE OCCUPIED AND UNOCCUPIED SCHEDULES WITH OWNER. ALL SETPOINTS SHALL BE ADJUSTABLE.
2. PROVIDE ASC, SENSORS, CONDUIT, THERMOSTAT, WIRING, PROGRAMMING, ETC TO MAKE A FULLY FUNCTIONING CONTROL SYSTEM.
3. CONTRACTOR SHALL PROVIDE ALL REQUIRED WIRING AND CONDUIT. WIRE PROGRAMMABLE THERMOSTAT AND ALL OTHER SENSORS TO THE UNIT AND PROGRAM THE CONTROLLER.
4. ALL TEMPERATURES LISTED ARE FAHRENHEIT.

SEQUENCE:

FAN CONTROL

1. WHILE IN UNOCCUPIED MODE (OR OFF ON SAFETY OR MANUAL DISCONNECT) THE SUPPLY FAN SHALL BE OFF WITH THE OUTSIDE AIR DAMPER (OAD) CLOSED.
2. WHEN STARTED IN OCCUPIED MODE, THE SUPPLY FAN SHALL START, AND THE OAD SHALL OPEN TO THE BALANCED OA POSITION. WHILE IN THE OCCUPIED MODE, THE SUPPLY AIR FAN SHALL RUN CONTINUOUSLY..

OCCUPIED HEATING CONTROL

1. UPON A DROP IN ROOM TEMPERATURE BELOW THE ROOM HEATING SETPOINT OF 70°F (ADJUSTABLE), HV SHALL MODULATE TO MAINTAIN THE SPACE TEMPERATURE SETPOINT. THE REVERSE SHALL OCCUR ON A RISE IN SPACE TEMPERATURE.

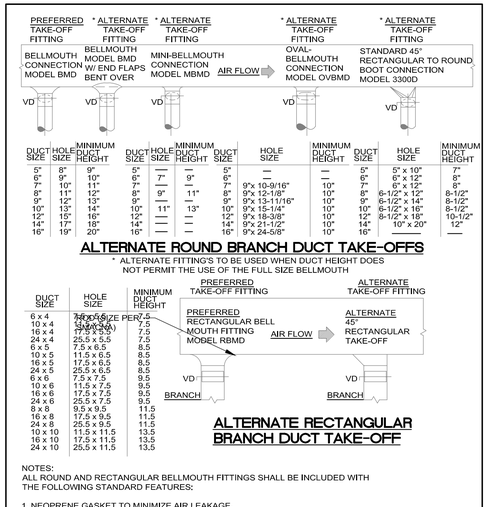
UNOCCUPIED HEATING CONTROL

1. IF, WHEN THE UNIT IS OFF, THE ROOM TEMPERATURE FALLS BELOW 55°F, THE CUH SHALL START WITH OAD CLOSED AND HV SHALL OPEN. WHEN ROOM TEMPERATURE RISES ABOVE 60°F, THE UNIT SHALL SHUT DOWN.
2. BUTTON ON TR SHALL ALLOW TEMPERATURE OVERRIDE (+/- 3°F).

SAFETIES

1. THE FREEZESTAT SHALL SHUTDOWN THE CUH UPON SENSING A MIXED AIR TEMPERATURE OF 37°F OR LESS (ADJ).

RDK HEATER (CUH) SEQUENCE OF OPERATION — HC801



DUCT SIZE	HOLE SIZE	MINIMUM DUCT HEIGHT	DUCT SIZE	HOLE SIZE	MINIMUM DUCT HEIGHT	DUCT SIZE	HOLE SIZE	MINIMUM DUCT HEIGHT	DUCT SIZE	HOLE SIZE	MINIMUM DUCT HEIGHT
5"	8"	9"	5"	—	—	5"	—	—	5"	5" x 10"	7"
6"	9"	10"	6"	7"	9"	6"	—	—	6"	6" x 12"	8"
7"	10"	11"	7"	—	—	7"	9"x 10-9/16"	10"	7"	6" x 12"	8"
8"	11"	12"	8"	9"	11"	8"	9"x 12-1/8"	10"	8"	6-1/2" x 12"	8-1/2"
9"	12"	13"	9"	—	—	9"	9"x 13-11/16"	10"	9"	6-1/2" x 14"	8-1/2"
10"	13"	14"	10"	11"	13"	10"	9"x 15-1/4"	10"	10"	6-1/2" x 16"	8-1/2"
12"	15"	16"	12"	—	—	12"	9"x 18-3/8"	10"	12"	6-1/2" x 18"	10-1/2"
14"	17"	18"	14"	—	—	14"	9"x 21-1/2"	10"	14"	10" x 20"	12"
16"	19"	20"	16"	—	—	16"	9"x 24-5/8"	10"	16"	———	———

ALTERNATE ROUND BRANCH DUCT TAKE-OFFS

* ALTERNATE FITTING'S TO BE USED WHEN DUCT HEIGHT DOES NOT PERMIT THE USE OF THE FULL SIZE BELLMOUTH

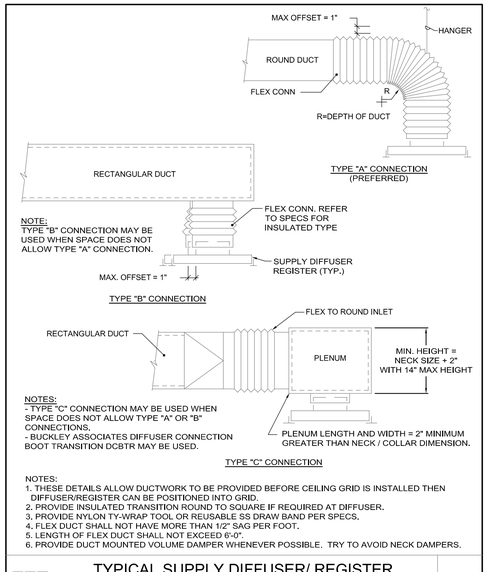
DUCT SIZE	HOLE SIZE	MINIMUM DUCT HEIGHT
6 x 4	7-1/2 x 5-1/2	7.5
10 x 4	11-1/2 x 5-1/2	7.5
16 x 4	17-1/2 x 5-1/2	7.5
24 x 4	25.5 x 5.5	7.5
6 x 5	7.5 x 6.5	8.5
10 x 5	11.5 x 6.5	8.5
16 x 5	17.5 x 6.5	8.5
24 x 5	25.5 x 6.5	8.5
6 x 6	7.5 x 7.5	9.5
10 x 6	11.5 x 7.5	9.5
16 x 6	17.5 x 7.5	9.5
24 x 6	25.5 x 7.5	9.5
8 x 8	9.5 x 9.5	11.5
16 x 8	17.5 x 9.5	11.5
24 x 8	25.5 x 9.5	11.5
10 x 10	11.5 x 11.5	13.5
16 x 10	17.5 x 11.5	13.5
24 x 10	25.5 x 11.5	13.5

ALTERNATE RECTANGULAR BRANCH DUCT TAKE-OFF

NOTES:
ALL ROUND AND RECTANGULAR BELLMOUTH FITTINGS SHALL BE INCLUDED WITH THE FOLLOWING STANDARD FEATURES:

1. NEOPRENE GASKET TO MINIMIZE AIR LEAKAGE.
2. PRE-DRILLED HOLES FOR QUICK MOUNTING.
3. CONSTRUCTED OF HEAVY GALVANIZED STEEL.
4. 26 GAUGE GALV. QUADRANT VOLUME DAMPER W/ TIGHT FITTING GASKETING TO MINIMIZE LEAKAGE AT DAMPER PIVOT POINTS. (FOR LOW PRESSURE DUCTWORK)

RDK TYPICAL DUCT TAKE-OFF — H1521



NOTES:
1. THESE DETAILS ALLOW DUCTWORK TO BE PROVIDED BEFORE CEILING GRID IS INSTALLED THEN DIFFUSER/REGISTER CAN BE POSITIONED INTO GRID.
2. PROVIDE INSULATED TRANSITION ROUND TO SQUARE IF REQUIRED AT DIFFUSER.
3. PROVIDE NYLON TY-WRAP TOOL OR REUSABLE SS DRAW BAND PER SPECS.
4. FLEX DUCT SHALL NOT HAVE MORE THAN 1/2" SAG PER FOOT.
5. LENGTH OF FLEX DUCT SHALL NOT EXCEED 6'-0".
6. PROVIDE DUCT MOUNTED VOLUME DAMPER WHENEVER POSSIBLE. TRY TO AVOID NECK DAMPERS.

RDK TYPICAL SUPPLY DIFFUSER/ REGISTER DUCTWORK & CONNECTION — H1517

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REVISIONS		
Number	Description	Date

100% CONSTRUCTION DOCUMENTS

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Somerville High School Renovations to Room 143

81 Highland Avenue, Somerville, MA 02143

HVAC PART FLOOR PLAN

PROJECT NUMBER: 19431.03
DESIGNED BY: TC
DRAWN BY: TC
CHECKED BY: BO
DATE: JULY 3, 2013
SCALE: 1/4"=1'-0"

SHEET NUMBER:

H2.00

SHEET **OF**

Q:\2013\2013037\3 - Somerville High School Room 143\1200 Drawings\1203 HVAC\Plot Files\2013037\3 H2.00 HVAC FLOOR PLAN.dwg [Work], July 02, 2013 - 3:40pm tcwilman

LIGHTING FIXTURE SCHEDULE

TYPE	MANUFACTURERS	CATALOG NUMBER	DESCRIPTION	LAMPS				BALLAST				INPUT		REMARKS
				QTY	TYPE	COLOR	CRI	QTY	BF	LUMENS	TYPE	WATTS	VOLTS	
LR1	LITHONIA	2ALL4 49L D50	RECESSED 2' x 4' LED GRID TROFFER	NA	LED	35K	82	NA	NA	4900	NA	50	120	
	COOPER - METALUX													
	COLUMBIA													
LR2	LITHONIA	6BPMW LED	RECESSED 6 INCH APERTURE OPEN LED DOWNLIGHT WITH CLEAR DIFFUSED REFLECTOR.	NA	LED	35K	82	NA	NA	620	NA	9.3	120	PROVIDE TRIM AS REQUIRED
	COOPER - HALO													
	KRAMER													
LP1	LIGHTOLIER	STL4 40L D40 LP840 NX	4' LED PENDANT FIXTURE WITH STEEL HOUSING. FIXTURE IS CABLE SUSPENDED.	NA	LED	40K	82	NA	NA	4018	NA	58	120	PROVIDE WITH CONTINUOUS ROW CONNECTORS AND ADJUSTABLE AIRCRAFT CABLE KIT
	DAY-BRIGHT													
	LITECONTROL													
LS1	CHLORIDE	SLN1RW	CEILING OR WALL MOUNTED, UL 924 LISTED, SINGLE FACE LED EXIT SIGN WITH CANOPY. SELF POWERED WITH SELF DIAGNOSTICS. MAINTENANCE FREE SEALED NICKLE CADMIUM	NA	LED	NA	NA	NA	NA	NA	NA	3.6	120/277	
	SURE-LITES	AP70R												
	LIGHTALARMS	QLXN500R												
EB1	LITHONIA	ELM2 LED HO SD	3.6VOLT 12 WATT CAPACITY CONTEMPORARY DESIGN EMERGENCY LED LIGHTING UNIT WITH ADJUSTABLE HEADS, SELF DIAGNOSTICS AND NICKLE CADMIUM BATTERY IN WHITE THERMOPLASTIC HOUSING, UL924 LISTED.	NA	LED	NA	NA	NA	NA	NA	NA	1.44	120/277	
	DUAL-LITE	EV4-I W												
	COOPER - SURE-LITES	LEM2 SD												
EB1R	LITHONIA	ELA QWP L0304 SD	REMOTE DUAL HEAD WEATHERPROOF, LED EMERGENCY LIGHTING FIXTURE	2	LED	NA	NA	NA	NA	NA	NA	3	3.6	
	DUAL-LITE	EVO D W												
	COOPER - SURE-LITES	LEMWR2												
A1	HUBBELL	NV2FG18BHG	WALL MOUNTED NON-METALIC GLOBE AND GUARD FLUORESCENT WEATHERPROOF LIGHTING FIXTURE	1	CFL	35K	82	1	1	1150	ELECT	20	120	
	RIGALITE	CVPD18-F-12-GG-W												
	CANLET	02 F W R 11 OG 11												

NOTES:
1. NOTES 2-10 APPLY TO ALL APPLICABLE LIGHTING FIXTURES. THE REMARKS COLUMN SHALL NOTE ADDITIONAL REQUIREMENTS.
2. FIXTURES SPECIFIED WITH CATALOG NUMBERS ESTABLISH QUALITY LEVEL FOR EQUAL FIXTURES FROM MANUFACTURERS LISTED WITHOUT CATALOG NUMBERS. WHERE ONLY ONE MANUFACTURER LISTED, THERE SHALL BE NO SUBSTITUTION.
3. VERIFY EXACT MOUNTING CONDITIONS AND PROVIDE APPROPRIATE ACCESSORIES AND HARDWARE TO ACCOMMODATE REQUIREMENTS.
4. FIXTURE TYPE INDICATED ONCE ON A CONTINUOUS ROW SHALL BE TYPICAL OF ALL FIXTURES IN THE ROW UNLESS NOTED OTHERWISE.
5. CONTINUOUS ROWS OF FIXTURES SHALL BE PROVIDED WITH ALL NECESSARY HARDWARE AND FILLERS TO PROVIDE THE EXACT LENGTHS AS INDICATED ON THE PLANS. FIXTURES IN SOFFITS SHALL BE CONTINUOUS END TO END.
6. PROVIDE ALL FLUORESCENT FIXTURES WITH ELECTRONIC BALLASTS WITH MAXIMUM THD OF 10%, PF GREATER THAN 97% AND BF GREATER THAN 0.88. BALLASTS SHALL BE PROGRAMMED RAPID START WITH END-OF-LAMP-LIFE PROTECTION UNLESS NOTED OTHERWISE. BALLASTS SHALL BE UL LISTED AND MANUFACTURED BY ADVANCE ELECTRIC, GE, OSRAM SYLVANIA OR UNIVERSAL.
7. BALLAST EFFICIENCY SHALL BE GREATER THAN THAT REQUIRED TO ENSURE THAT THE VALUE LISTED FOR INPUT WATTS IS NOT EXCEEDED.
8. FLUORESCENT LAMPS SHALL HAVE A MINIMUM CRI OF 82. LAMP SHALL BE MANUFACTURED BY OSRAM SYLVANIA, GE OR PHILLIPS.
9. PROVIDE LINE SIDE PLUG TYPE DISCONNECTING MEANS WITHIN LIGHTING FIXTURE BALLAST COMPARTMENT FOR ALL LINEAR FLUORESCENT BALLASTS.
10. PROVIDE EXIT SIGNS WITH ARROWS AND MOUNTING ACCESSORIES AS INDICATED ON THE PLANS.
11. FLUORESCENT DIMMING BALLAST SHALL HAVE FULL RANGE ENERGY MANAGEMENT CAPABILITIES FROM 10% TO 100% EQUAL TO LUTRON ECO-10 SERIES. COORDINATE SPECIFIED DIMMER CONTROL TO MATCH REQUIREMENTS FOR OPTIMAL CONTROL OF THE SUPPLIED SYSTEM.
12. FLUORESCENT DIMMING BALLAST SHALL HAVE FULL RANGE ARCHITECTURAL CAPABILITIES FROM 1% TO 100% EQUAL TO LUTRON

KEY:
BF: BALLAST FACTOR
COLOR: TEMPERATURE IN °K
CRI: COLOR RENDERING INDEX
CWA: CONSTANT WATTAGE AUTO TRANSFORMER
DIM: DIMMABLE OVER THE SPECIFIED RANGE
HPF: HIGH POWER FACTOR
ECO: TCLP COMPLIANT LOW MERCURY CONTENT
HX-HPF: HIGH REACTANCE AUTO TRANSFORMER HPF
IS: INSTANT START
MV: MULTI-VOLT
PF: POWER FACTOR
PRS: PROGRAM RAPID START
PS: PULSE START
THD: TOTAL HARMONIC DISTORTION

MECHANICAL EQUIPMENT SCHEDULE

LOAD TAG	STARTER LOCATION	LOAD					STARTER											POWER SOURCE		CONNECTION						BRANCH CIRCUIT	REMARKS	LOAD TAG
									OVERCURRENT					INDICATING LIGHTS			AUXILIARY					DISC					
		HP	FLA	KVA	VOLT	PH	NEMA SIZE	TYPE	CB	RK1 FUSE	MCP	PB	HOA	R	G	A	CPT	CONTACTS NO	CONTACTS NC	PANEL	C/B	FLEX	JB	REC	AS	AF	NEMA			
CUH-1	OFFICE	1/40	0.55	0.07	120	1		MMS/CNTCR	-	-	-	-	-	-	-	-	-	-	-	LGGA-33	20A-1P	X	-	-	-	-	-	(2)#12 & (1)#12G - 3/4"C		CUH-1
ATC-1	OFFICE	-	4.20	0.50	120	1		-	-	-	-	-	-	-	-	-	-	-	-	LGGA-35	15A-1P	-	X	-	-	-	-	(2)#12 & (1)#12G - 3/4"C		ATC-1
ACCU-1	EXTERIOR				208	1		-	-	-	-	-	-	-	-	-	-	-	-	LGGA-18,20	50A-2P	X	-	-	60A	50A	3R	(2)#8 & (1)#10G - 3/4"C		ACCU-1
ACU-1	OFFICE		0.76		208	1		-	-	-	-	-	-	-	-	-	-	-	-	LGGA-18,20	VIA ACCU-1	X	-	-	30A	-	1	(3)#12 & (1)#12G - 3/4"C		ACU-1
ACU-2	CLASSROOM		0.76		208	1		-	-	-	-	-	-	-	-	-	-	-	-			X	-	-	30A	-	1	(3)#12 & (1)#12G - 3/4"C		ACU-2
ACU-3	CLASSROOM		0.76		208	1		-	-	-	-	-	-	-	-	-	-	-	-			X	-	-	30A	-	1	(3)#12 & (1)#12G - 3/4"C		ACU-3
MAC-1	CLASSROOM		3.60		120	1		-	-	-	-	-	-	-	-	-	-	-	-	LGGA-22	20A-1P	X	-	-	-	-	-	(2)#12 & (1)#12G - 3/4"C		MAC-1
MAC-2	CLASSROOM		3.60		120	1		-	-	-	-	-	-	-	-	-	-	-	-			X	-	-	-	-	-	(2)#12 & (1)#12G - 3/4"C		MAC-2

NOTES
1. NOTES 2-6 APPLY TO ALL APPLICABLE LOADS.
2. PROVIDE THERMAL OVERLOAD UNITS FOR ALL STARTERS SIZED TO MATCH LOAD NAMEPLATE AND NEC REQUIREMENTS .
3. BRANCH CIRCUIT WIRING METHODS SHALL BE AS NOTED ON THE DRAWINGS AND/OR SPECIFICATIONS FOR THE APPLICABLE LOCATION. THE FINAL THREE FEET (MAXIMUM) SHALL BE FLEXIBLE METAL OR LIQUIDTIGHT FLEXIBLE METAL CONDUIT.
4. COPPER BRANCH CIRCUIT CONDUCTOR SIZING BASED UPON NEC TABLE 310.15(B)(16). MAKE ADJUSTMENTS TO CONDUCTORS FOR TEMPERATURE OR VOLTAGE DROP THAT EXCEED NEC AND SPECIFICATION CRITERIA.
5. RACEWAY SIZES ARE BASED UPON GRSC AND LFMC WITH THWN CONDUCTORS.
6. VFD SHALL BE CONTROLLED VIA REMOTE 4-20mA OR 0-5V SIGNAL PROVIDED BY THE HVAC ATC CONTRACTOR.
7. REQUIRED DISCONNECT IS PROVIDED INTEGRAL/PREWIRED TO MECHANICAL EQUIPMENT.
8. REQUIRED STARTER IS PROVIDED INTEGRAL/PREWIRED TO MECHANICAL EQUIPMENT.
9. DISCONNECT FOR 2S1W AND 2S2W MOTORS SHALL BE SIX POLE.
10. PROVIDE NEUTRAL FROM SOURCE TO STARTER ONLY FOR 120V CONTROL POWER OF 208V 3PH UNITS.
11. FUSES FOR DISCONNECT SWITCHES SHALL BE CLASS RK5

KEY:
FVNR FULL VOLTAGE NON-REVERSING
FVR FULL VOLTAGE REVERSING
2S1W TWO SPEED SINGLE WINDING
2S2W TWO SPEED TWO WINDING
RVAT REDUCED VOLTAGE AUTOTRANSFORMER
RVPW REDUCED VOLTAGE PART WINDING
RVYDOT REDUCED VOLTAGE WYE DELTA OPEN TRANSITION
RVYDCT REDUCED VOLTAGE WYE DELTA CLOSED TRANSITION
MMS MANUAL MOTOR STARTER
CB CIRCUIT BREAKER
MCP MOTOR CIRCUIT PROTECTOR
PB START AND STOP PUSH BUTTON
HOA HAND-OFF-AUTOMATIC SELECTOR SWITCH
CPT CONTROL POWER TRANSFORMER
VFD VARIABLE FREQUENCY DRIVE W/O BYPASS
VFD/B VARIABLE FREQUENCY DRIVE W/ BYPASS
CNTCR CONTACTOR - NO THERMAL OVERLOAD

TELECOMMUNICATIONS LEGEND

- COMBINATION TELEPHONE/DATA OUTLET
- COMBINATION CLOCK & SPEAKER UNIT

WIRING DEVICE LEGEND

- 5 GFI — DUPLEX RECEPTACLE, GROUNDING TYPE, RATED 20A, 125V
  "5"- INDICATES CIRCUIT NUMBER
  "GFI"- INDICATES INTEGRAL GROUND FAULT CIRCUIT INTERRUPTER
  "IG"- INDICATES ISOLATED GROUND TYPE
  "WP" - INDICATES WEATHERPROOF
  "SP" - INDICATES SURGE PROTECTION
  "T" - INDICATES TAMPER RESISTANT SAFETY
  "C" - INDICATES COUNTER HEIGHT
- DOUBLE DUPLEX RECEPTACLE, GROUNDING TYPE, RATED 20A, 125V
- 15 — SPECIAL PURPOSE RECEPTACLE,
- J — JUNCTION BOX

EXISTING EQUIPMENT LEGEND

- XM — EXISTING EQUIPMENT TO REMAIN
- X — EXISTING EQUIPMENT TO BE REMOVED
- XR — EXISTING EQUIPMENT TO BE RELOCATED
- XN — NEW LOCATION OF EXISTING RELOCATED EQUIPMENT
- NR — EXISTING EQUIPMENT TO BE REMOVED AND NEW EQUIPMENT TO BE INSTALLED ON EXISTING BRANCH/FEEDER
- EXISTING EQUIPMENT FOR INFORMATION ONLY- INDICATED BY SYMBOL WITH LIGHT AND OUT OF FUNCTION LINE TYPE
- EXISTING EQUIPMENT TO BE REWORKED- INDICATED BY SYMBOL WITH DASHED AND IN FUNCTION LINE TYPE

POWER DISTRIBUTION

- 208Y/120 VOLT PANELBOARD, SURFACE MOUNTED
- 208Y/120 VOLT PANELBOARD, RECESSED MOUNTED

BRANCH CIRCUIT & FEEDER LEGEND

- BRANCH CIRCUIT OR FEEDER CONCEALED IN FINISHED AREAS
- BRANCH CIRCUIT OR FEEDER, CONCEALED IN OR UNDER FLOOR SLAB
- BRANCH CIRCUIT OR FEEDER TURNING UP TOWARDS OBSERVER
- BRANCH CIRCUIT OR FEEDER TURNING DOWN AWAY FROM OBSERVER
- CONDUIT STUBBED ABOVE CEILING
- R22A-1,3,5 — BRANCH CIRCUIT HOME RUN TICKS INDICATE QUANTITY OF CONDUCTORS, GROUND CONDUCTORS ARE NOT INDICATED. NO TICKS INDICATES 2#12 & 1#12G IN 3/4"C MINIMUM. R22A-1,3,5 INDICATES PANEL AND CIRCUIT DESIGNATION FROM WHICH HOMERUN SHALL ORIGINATE. EACH CIRCUIT SHALL BE 20A-1P (20AMP SINGLE POLE) UNLESS NOTED OTHERWISE.
- H42B-1 100A-3P — FEEDER HOMERUN. REFER TO LEGEND OF FEEDER SIZES FOR CONDUCTOR AND RACEWAY REQUIREMENTS DESIGNATED INSIDE TAG. H42B-1 INDICATES PANEL AND CIRCUIT NUMBER DESIGNATION FROM WHICH HOME RUN SHALL ORIGINATE, 100A-3P INDICATES 100 AMPERE, 3 POLE CIRCUIT BREAKER.
- 6 — FLEXIBLE CONNECTION TO EQUIPMENT, RACEWAY AND CONDUCTOR RATING TO MATCH ASSOCIATED BRANCH CIRCUIT OR FEEDER
- E — BRANCH CIRCUIT FOR EMERGENCY BATTERY DC CIRCUIT, MINIMUM 2#10 IN 3/4"C. UNLESS OTHERWISE NOTED

LIGHTING FIXTURE LEGEND

- LR2 / 2,a — LIGHTING FIXTURE (SEE LIGHTING FIXTURE SCHEDULE)
  "LR2" - INDICATES LIGHTING FIXTURE TYPE
  "2" - INDICATES CIRCUIT NUMBER
  "a" - INDICATES SWITCH CONTROL
- EW1 — EXIT SIGN LIGHTING FIXTURE, WALL MOUNTED, ARROWS AND EXIT FACE AS (SHADED) AS INDICATED.
- DW2 — LED EMERGENCY LIGHTING REMOTE LAMP HEADS, SINGLE OR DOUBLE
- EB1 — LED EMERGENCY LIGHTING BATTERY UNIT WITH DOUBLE LAMP HEADS

SWITCH LEGEND

- Sa — SINGLE POLE SWITCH, RATED 20A, 120/277V
  "a" LOWER CASE LETTER INDICATES FIXTURE SWITCH CONTROL
- S O1 a — OCCUPANCY SENSOR, RECESS WALL MOUNTED
  "O1" INDICATES SINGLE CIRCUIT OUTPUT
- 01 a,b — OCCUPANCY SENSOR, CEILING MOUNTED
  "O1"-INDICATES TYPE AS DEFINED IN NOTES/SCHEDULES.
- HP — ADA COMPLIANT HANDICAP PUSH PLATE ACTUATOR
  "WP" INDICATES WEATHER PROOF
- EDO — ADA COMPLIANT ELECTROMECHANICAL DOOR OPENER
- PS — DOOR OPENER POWER SUPPLY

ABBREVIATIONS

A/AMP	AMPERE	KWH	KILOWATT HOURS
AC	ALTERNATION CURRENT	LTG	LIGHTING
ADA	AMERICAN WITH DISABILITIES ACT	MCB	MAIN CIRCUIT BREAKER
AF	AMPERE FRAME	MEC	MASSACHUSETTS ELECTRICAL CODE
AFF	ABOVE FINISHED FLOOR	M/G	MOTOR/GENERATOR SET
AFG	ABOVE FINISHED GRADE	MH	MANHOLE
AIC	AMPERE INTERRUPTING CAPACITY	MLO	MAIN LUGS ONLY
AL	ALUMINUM	MTD	MOUNTED
AT	AMPERE TRIP	MTG	MOUNTING
ATS	AUTOMATIC TRANSFER SWITCH	NC	NORMALLY CLOSED CONTACT
AWG	AMERICAN WIRE GAUGE	NEC	NATIONAL ELECTRICAL CODE
B	BURIED	NO	NORMALLY OPEN CONTACT
C	CONDUIT	NTS	NOT TO SCALE
CA	CABLE	#	NUMBER
CATV	CABLE TELEVISION	OPD	OVER CURRENT PROTECTION DEVICE
CCTV	CLOSED CIRCUIT TELEVISION SYSTEM	POS	PROVIDED UNDER OTHER SECTIONS
CB	CIRCUIT BREAKER	PVC	POLYVINYL CHLORIDE
CKT	CIRCUITS	PWR	POWER
CPU	CENTRAL PROCESSING UNIT	RGS	RIGID GALVANIZED STEEL
℄	CENTERLINE	RMS	ROOT MEAN SQUARE VALUE
dB	DECIBEL	RPM	REVOLUTIONS PER MINUTE
DC	DIRECT CURRENT	SN	SOLID NEUTRAL
DWG	DRAWING	SWBD	SWITCHBOARD
EC	ELECTRICAL CONTRACTOR	TB	TERMINAL BLOCK
EMT	ELECTRIC METALLIC TUBING	TEL	TELEPHONE
FDR	FEEDER	TERMN	TERMINAL
FLMT	FLEXIBLE LIQUID TIGHT METALLIC TUBING	TSP	TWISTED SHIELDED-PAIR
FREQ	FREQUENCY	TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSER
GEC	GROUNDING ELECTRODE CONDUCTOR	TYP	TYPICAL
GFI	GROUND FAULT INTERRUPTING	UG	UNDERGROUND
GND	GROUND	UNO	UNLESS NOTED OTHERWISE
HH	HANDHOLE	UPS	UNINTERRUPTIBLE POWER SUPPLY
HP	HORSEPOWER	UTP	UNSHIELDED TWISTED-PAIR
HVAC	HEATING, VENTILATING AND AIR CONDITIONING	V	VOLTS
HZ	HERTZ	VA	VOLT-AMPERE
IG	ISOLATED GROUND	VSD	VARIABLE SPEED DRIVE
JB	JUNCTION BOX	W	WATTS
KVA	KILOVOLT-AMPERE	WP	WEATHERPROOF
KW	KILOWATT		

LEGEND NOTES:
1. REFER TO SPECIFICATIONS, ARCHITECTURAL DRAWINGS, APPLICABLE SCHEDULES AND DETAILS FOR ADDITIONAL INFORMATION ASSOCIATED WITH EACH DEVICE ILLUSTRATED ON THIS LEGEND.
2. SUBSCRIPTS ILLUSTRATED ON THE LEGEND WITH ONE SYMBOL ONLY TO MINIMIZE SPACE. ANY SUBSCRIPT INDICATED WITHIN A LEGEND FAMILY MAY BE APPLIED TO A CORRESPONDING SYMBOL.
3. ABBREVIATIONS SUCH AS "WP" MAY BE APPLIED TO ANY SYMBOL.

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REVISIONS		
Number	Description	Date

100% CONSTRUCTION DOCUMENTS

Somerville Public Schools — Education · Inspiration · Excellence

Somerville High School Renovations to Room 143

81 Highland Avenue, Somerville, MA 02143

ELECTRICAL LEGEND, NOTES, SCHEDULES AND ABBREVIATIONS

PROJECT NUMBER: 19431.03
DESIGNED BY: DGM
DRAWN BY: DGM
CHECKED BY: GM
DATE: JULY 3, 2013
SCALE: NONE

SHEET NUMBER:

E0.0

SHEET **OF**

Q:\2013\2013073 - Somerville High School Room 143\1200 Drawings\1204 ElectricalPlot Files\20130373 E0.0 ELECTRICAL LEGEND NOTES SCHEDULES AND ABBREVIATIONS.dwg [Work] July 02, 2013 - 3:39pm tcaffrain

ELECTRICAL SPECIFICATIONS

PART 1 - GENERAL

1. GENERAL PROVISIONS: DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF WORK IN CONTRACT. REFER TO ALL DRAWINGS ASSOCIATED WITH THIS PROJECT (EACH TRADE) FOR EXACT LOCATION OF ALL EQUIPMENT AND REQUIRED MOUNTING HEIGHTS.

2. SCOPE: PERFORM WORK AND PROVIDE NEW MATERIAL AND EQUIPMENT AS SHOWN ON DRAWINGS AND AS SPECIFIED IN THIS SECTION OF THE SPECIFICATIONS. PROVIDE ALL COMPONENTS AND MATERIALS, WHETHER SPECIFICALLY SHOWN OR NOT, THAT ARE NECESSARY TO MAKE THE SYSTEMS COMPLETE AND FULLY OPERATIONAL. WORK SHALL INCLUDE, BUT NOT BE LIMITED TO: 1) THE DESIGN INTENT AS ILLUSTRATED ON THESE DRAWINGS, 2) ALL TESTING AND CERTIFICATIONS NECESSARY FOR COMPLIANCE AND ANY REQUIRED REMEDIAL ACTIONS AND RETESTING DUE TO FAILURE.

3. SITE VISIT: VISIT AND CAREFULLY EXAMINE SITE TO IDENTIFY EXISTING CONDITIONS THAT MAY AFFECT WORK OF THIS SECTION BEFORE SUBMITTING BID. NO EXTRA PAYMENT WILL BE ALLOWED FOR ADDITIONAL WORK CAUSED BY UNFAMILIARITY WITH SITE CONDITIONS THAT ARE VISIBLE OR READILY DISCERNED.

4. RELATED WORK: THE FOLLOWING WORK IS NOT INCLUDED IN THIS SECTION AND WILL BE PROVIDED UNDER OTHER SECTIONS: 1) TEMPORARY LIGHTING AND POWER FOR USE DURING CONSTRUCTION AND TESTING UNLESS SPECIFICALLY NOTED IN OTHER SPECIFICATION SECTIONS, 2) TELECOMMUNICATIONS WIRING AND DEVICES UNLESS SPECIFICALLY NOTED ON THE DRAWINGS 3) AUTOMATIC TEMPERATURE CONTROL AND DIRECT DIGITAL COMMUNICATIONS WIRING UNLESS SPECIFICALLY NOTED ON THE DRAWINGS AND 4) PAINTING.

5. CODES, STANDARDS, AUTHORITIES AND PERMITS: ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST EDITIONS OF THE STATE BUILDING CODE, THE STATE ELECTRICAL CODE, NFPA, ANSI/NECA INSTALLATION STANDARDS AND OTHER APPLICABLE CODES, REGULATIONS AND LAWS OF LOCAL, STATE AND FEDERAL GOVERNMENT, OTHER AUTHORITIES HAVING JURISDICTION AND APPLICABLE BASE BUILDING STANDARDS AND SPECIFICATIONS. CODES, LAWS AND ORDINANCES PROVIDE A BASIS FOR THE MINIMUM INSTALLATION CRITERIA. THESE DRAWINGS AND SPECIFICATIONS ILLUSTRATE THE SCOPE REQUIRED FOR THIS PROJECT, WHICH MAY EXCEED MINIMUM CODE, LAW AND STANDARDS CRITERIA. GIVE NOTICES, FILE PLANS, OBTAIN PERMITS AND LICENSES, PAY BACKCHARGES AND OBTAIN NECESSARY APPROVALS FROM UTILITY COMPANIES AND AUTHORITIES HAVING JURISDICTION AS REQUIRED FOR THE EXECUTION OF ALL WORK ASSOCIATED WITH THIS PROJECT.

6. INTERPRETATION OF DOCUMENTS: ADVISE THE ENGINEER IN WRITING (RFI) PRIOR TO PROCEEDING WITH PROCUREMENT OR INSTALLATION THAT THE DESIGN INTENT IS UNCLEAR OR THAT CONSTRUCTION DOCUMENTS DO NOT COINCIDE WITH MANUFACTURER'S RECOMMENDATIONS. ALL COSTS FOR REWORK NECESSARY TO RESOLVE DISCREPANCIES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

7. REQUEST FOR INFORMATION: RFI ISSUED TO RESOLVE A CONFLICT OR DISCREPANCY SHALL BE PROVIDED WITH THE PREFERRED SOLUTION VIA WRITTEN DESCRIPTION OR SKETCH.

8. SUBMITTALS: PROVIDE SPECIFIED MATERIALS AND EQUIPMENT UNLESS "EQUAL" OR "APPROVED EQUAL" IS EXPLICITLY INDICATED ON THE DRAWINGS. DEVIATIONS TO SPECIFIED MATERIALS SHALL BE AT THE SOLE RISK OF THE CONTRACTOR, WHO SHALL BE RESPONSIBLE FOR ALL ASSOCIATED CHANGES TO THIS AND OTHER TRADES. SUBMITTALS SHALL INDICATE REVIEW AND APPROVAL BY THE RESPONSIBLE CONTRACTOR. SUBMIT FOR REVIEW (6) SETS OF MANUFACTURER'S PRODUCT DATA FOR ALL LIGHTING, LAMPS, BALLASTS AND CONTROLS; DEVICES (RECEPTACLES AND SWITCHES) AND PLATES; AND DISCONNECT SWITCHES AND STARTERS. ALLOW ENGINEER A MINIMUM OF 10 WORKING DAYS FOR PROCESSING AND REVIEW OF EACH SUBMISSION.

9. OPERATION AND MAINTENANCE DATA: SUBMIT (3) SETS OF OPERATING AND MAINTENANCE MANUALS INCLUDING SYSTEM DESCRIPTION, WIRING DIAGRAMS, WRITTEN WARRANTY, RECOMMENDED SPARE PARTS AND ROUTINE MAINTENANCE REQUIREMENTS WITH RECOMMENDED INTERVALS FOR ALL SUPPLIED EQUIPMENT.

10. RECORD DRAWINGS: CAD RECORD DRAWING FILES SHALL BE SUBMITTED AT THE COMPLETION OF THE PROJECT SHOWING THE "AS-BUILT" CONDITION INCLUDING WORK INSTALLED AND ALL MODIFICATONS OR ADDITIONS TO ORIGINAL DESIGN. OBTAIN THE AUTOCAD FILES FOR PREPARATION OF AS-BUILT DRAWINGS FROM THE ARCHITECT. THE ARCHITECT AND ENGINEER ARE NOT GRANTING ANY OWNERSHIP OR PROPERTY INTEREST IN THE CAD DRAWINGS BY THE DELIVERY OF THE CAD FILES. THE RIGHTS TO USE THE CAD FILES AND DRAWINGS ARE LIMITED TO USE FOR THE SOLE PURPOSE OF ASSISTING IN THE PERFORMANCE OF CONTRACTUAL OBLIGATIONS WITH RESPECT TO THIS PROJECT. ANY REUSE AND/OR OTHER USE WILL BE AT THE CONTRACTOR'S SOLE RISK AND WITHOUT LIABILITY TO THE ARCHITECT AND ENGINEER.

11. WARRANTIES: WARRANTY INSTALLATION IN WRITING FOR ONE YEAR FROM DATE OF OWNER'S ACCEPTANCE OF CERTIFICATE OF SUBSTANTIAL COMPLETION. REPAIR, REPLACE OR PROVIDE TEMPORARY ACCOMMODATIONS FOR DEFECTIVE MATERIALS, EQUIPMENT, WORKMANSHIP AND INSTALLATION THAT DEVELOP WITHIN 24 HOURS OF NOTIFICATION. WARRANTY SHALL INCLUDE A CONTACT PERSON (NAME AND 24 HOUR TELEPHONE NUMBER) FOR SERVICE REQUESTS. CORRECT DAMAGE CAUSED WHILE MAKING NECESSARY REPAIRS AND REPLACEMENTS UNDER WARRANTY PERIOD AT NO ADDITIONAL COST.

12. COORDINATION: CONFER WITH ALL OTHER TRADES RELATIVE TO LOCATION OF ALL APPARATUS AND EQUIPMENT TO BE INSTALLED AND SELECT LOCATIONS SO AS NOT TO CONFLICT WITH OR HINDER PROGRESS OF WORK OF OTHER SECTIONS. WORK INSTALLED THAT CREATES INTERFERENCE OR RESTRICTS ACCESS REQUIRED BY CODE OR TO CONDUCT MAINTENANCE AND/OR ADJUSTMENTS SHALL BE MODIFIED AT NO ADDITIONAL COST TO THE OWNER.

13. SUPPORTS: INCLUDE ALL STRUCTURAL STEEL SUPPORTS, HANGER BRACKETS, ETC., REQUIRED FOR THE EXECUTION OF THE WORK OF THIS SECTION. HANGERS SHALL BE PREFINISHED CHANNEL AND THREADED ROD USED WITH APPROVED CLAMPS, HARDWARE, ETC. CHANNEL INSTALLED IN EXTERIOR LOCATIONS SHALL BE GALVANIZED STEEL WITH STAINLESS STEEL HARDWARE.

14. CUTTING AND PATCHING: INCLUDE ALL CORING, CUTTING, PATCHING AND FIREPROOFING NECESSARY FOR THE EXECUTION OF THE WORK OF THIS SECTION. STRUCTURAL ELEMENTS SHALL NOT BE CUT WITHOUT WRITTEN APPROVAL OF THE ARCHITECT. PROVIDE FIRE STOPPING TO MAINTAIN THE FIRE RATING OF THE FIRE RESISTANCE-RATED ASSEMBLY. ALL PENETRATIONS AND ASSOCIATED FIRE STOPPING SHALL BE INSTALLED IN ACCORDANCE WITH THE FIRE STOPPING MANUFACTURER'S LISTED INSTALLATION DETAILS AND BE LISTED BY UL OR FM.

15. HOISTING, SCAFFOLDING AND PLANKING: INCLUDE THE FURNISHING, SET-UP AND MAINTENANCE OF ALL HOISTING MACHINERY, CRANES, SCAFFOLDS, STAGING AND PLANKING AS REQUIRED FOR THE EXECUTION OF WORK FOR THIS SECTION.

16. SAFETY PRECAUTIONS: LIFE SAFETY AND ACCIDENT PREVENTION SHALL BE A PRIMARY CONSIDERATION. COMPLY WITH ALL OF THE SAFETY REQUIREMENTS OF THE OWNER AND OSHA THROUGHOUT THE ENTIRE CONSTRUCTION PERIOD OF THE PROJECT. FURNISH, PLACE AND MAINTAIN PROPER GUARDS AND ANY OTHER NECESSARY CONSTRUCTION REQUIRED TO SECURE SAFETY OF LIFE AND PROPERTY.

17. ACCESSIBILITY: ALL WORK PROVIDED UNDER THIS SECTION OF THE SPECIFICATION SHALL BE INSTALLED SO THAT PARTS REQUIRING PERIODIC INSPECTION, MAINTENANCE AND REPAIR ARE READILY ACCESSIBLE. WORK OF THIS TRADE SHALL NOT INFRINGE UPON CLEARANCES REQUIRED BY EQUIPMENT OF OTHER TRADES.

18. PROTECTION OF WORK AND PROPERTY: THIS CONTRACTOR SHALL BE RESPONSIBLE FOR THE CARE AND PROTECTION OF ALL WORK INCLUDED UNDER THIS SECTION UNTIL THE COMPLETION AND FINAL ACCEPTANCE OF THIS PROJECT. PROTECT ALL EQUIPMENT AND MATERIALS FROM DAMAGE FROM ALL CAUSES INCLUDING, BUT NOT LIMITED TO FIRE, VANDALISM AND THEFT. ALL MATERIALS AND EQUIPMENT DAMAGED OR STOLEN SHALL BE REPAIRED OR REPLACED WITH EQUAL MATERIAL OR EQUIPMENT AT NO ADDITIONAL COST TO THE OWNER. PROTECT ALL EQUIPMENT, OUTLETS AND OPENINGS, AND ROOF PENETRATIONS WITH TEMPORARY PLUGS, CAPS AND COVERS. PROTECT WORK AND MATERIALS OF OTHER TRADES FROM DAMAGE THAT MIGHT BE CAUSED BY WORK OR WORKMEN UNDER THIS SECTION AND MAKE GOOD DAMAGE THUS CAUSED. DAMAGED MATERIALS ARE TO BE REMOVED FROM THE SITE; NO SITE STORAGE OF DAMAGED MATERIALS WILL BE ALLOWED. ANY DAMAGE TO EXISTING SYSTEMS AND EQUIPMENT CAUSED BY THIS CONTRACTOR DURING INSTALLATION SHALL BE REPAIRED AND/OR REPLACED AT THIS CONTRACTOR'S EXPENSE TO THE COMPLETE SATISFACTION OF THE BUILDING OWNER.

19. SEISMIC RESTRAINT REQUIREMENTS: PROVIDE SEISMIC RESTRAINTS AS REQUIRED IN ACCORDANCE WITH THE STATE BUILDING CODE. A REGISTERED PROFESSIONAL STRUCTURAL ENGINEER, LICENSED IN THE APPLICABLE STATE FOR THE PROJECT LOCATION, SHALL PREPARE THE SEISMIC RESTRAINT DESIGN AND CERTIFY THAT THE DESIGN IS IN COMPLIANCE WITH THE STATE BUILDING CODE REQUIREMENTS.

PART 2 - PRODUCTS

1. IDENTIFICATION: NAMEPLATES SHALL INDICATE EQUIPMENT TAG, VOLTAGE CHARACTERISTICS AND SOURCE OF POWER. REFER TO NAMEPLATE DETAIL FOR ADDITIONAL INFORMATION.

2. RACEWAYS AND CONDUIT: RIGID GALVANIZED STEEL CONDUIT (RGS) SHALL BE UTILIZED WITH THREADED FITTINGS ONLY. ELECTRICAL METALLIC TUBING (EMT) SHALL BE UTILIZED WITH SET SCREW TYPE FITTINGS. PROVIDE CONDUIT EXPANSION FITTINGS WITH EXTERNAL BONDING JUMPERS EQUAL TO OZ GEDNEY TYPE EX FOR RGS AND TYPE TX FOR EMT WHEN CROSSING EXPANSION JOINTS. UL LISTED LIQUID TIGHT FLEXIBLE METAL CONDUIT (LFMC) AND FLEXIBLE METAL CONDUIT (FMC) SHALL BE USED FOR FINAL CONNECTIONS TO EQUIPMENT WHERE FLEXIBILITY OR VIBRATION ISOLATION ARE REQUIRED. LFMC SHALL BE UV RESISTANT WHEN INSTALLED IN AN EXTERIOR LOCATION.

3. WIRE AND CABLE: ALL CONDUCTORS SHALL BE TYPE THHN/THWN OR XHHW, COPPER, RATED 75°/90°C, 600 VOLT INSULATION UNLESS OTHERWISE NOTED. MINIMUM SIZE CONDUCTOR SHALL BE #12 AWG COPPER. CONDUCTORS #10 AWG AND LARGER SHALL BE STRANDED; #12 AWG AND SMALLER SHALL BE SOLID. EACH BRANCH CIRCUIT AND FEEDER SHALL BE PROVIDED WITH AN INSULATED GROUNDING CONDUCTOR SIZED IN ACCORDANCE WITH NEC TABLE 250.122. CONDUCTOR COLOR CODING SHALL BE IN ACCORDANCE WITH THE DETAILS ON THESE DRAWINGS. COLOR CODING SHALL BE CONSISTENT THROUGHOUT INCLUDING CONDUCTORS INSTALLED IN RACEWAYS AND IN ALL CABLE ASSEMBLIES (MC AND/OR AC). FLEXIBLE METAL CLAD (MC) CABLE SHALL BE UL LISTED WITH INSULATED THHN PHASE AND GROUND CONDUCTORS WITHIN A GALVANIZED STEEL OR ALUMINUM INTERLOCKING ARMOR.

4. WIRING DEVICES AND PLATES: ALL DEVICES SHALL BE SPECIFICATION GRADE WITH NYLON PLATE, COLOR AS SPECIFIED BY THE ARCHITECT OR TO MATCH EXISTING. ALL DEVICES SHALL HAVE A GREEN GROUNDING TERMINAL ON THE YOKE. RECEPTACLES SHALL BE UL FEDERAL SPECIFICATION WC-596 EXTRA HEAVY DUTY 20A 125V EQUAL TO COOPER 5362. GFCI RECEPTACLES SHALL BE COMMERCIAL SPECIFICATION GRADE 20A 125V EQUAL TO COOPER VGF20. SWITCHES SHALL BE INDUSTRIAL-INSTITUTIONAL HEAVY DUTY SPECIFICATION GRADE 20A 120/277V EQUAL TO COOPER 1200 SERIES. DEVICES MOUTED IN EXTERIOR APPLICATIONS SHALL BE WR LISTED.

5. SAFETY DISCONNECT SWITCHES: DISCONNECT SWITCHES SHALL BE THREE-POLE HEAVY DUTY TYPE RATED FOR 600 VOLT IN NEMA 1 (INTERIOR DRY APPLICATIONS) AND NEMA 3R (EXTERIOR APPLICATIONS) ENCLOSURES UNLESS NOTED OTHERWISE ON THE DRAWINGS. ALL SWITCHES SHALL BE HORSEPOWER RATED AND SUITABLE FOR SERVICE ENTRANCE USE WHERE INDICATED ON THE DRAWINGS. PROVIDE WITH SOLID NEUTRAL WHERE FOUR WIRE CIRCUITS ARE ILLUSTRATED. MANUAL MOTOR STARTERS SHALL HAVE QUICK MAKE, QUICK BREAK TOGGLE MECHANISMS WITH ALLOWANCE FOR UP TO 10% FIELD ADJUSTMENT TO NOMINAL OVERLOAD HEATER VALUES. MANUAL MOTOR STARTERS SHALL BE SINGLE PHASE AND MAY BE USED FOR APPLICATIONS UP TO 1 HP AT 277 VOLT. ACCEPTABLE MANUFACTURERS SHALL BE SQUARE D, GE, SIEMENS OR EATON CUTLER-HAMMER.

6. LIGHTING: LIGHT EMITTING DIODE (LED) LAMPS AND FIXTURES
   a. ALL LED LAMPS AND FIXTURES, WHETHER SCREW-IN OR HARDWIRED, SHALL MEET THE FOLLOWING CRITERIA:
      - THE RATED DRIVER INPUT WATTAGE AND TOTAL NUMBER OF LEDS SHALL BE PUBLISHED BY THE MANUFACTURER FOR EACH SPECIFIED FIXTURE UNIT (DRIVER AND LED COMBINATION). AND SHALL BE THE SAME WATTAGES IN THE FIXTURE SCHEDULE.
      - ALL EQUIPMENT MUST HAVE MODEL-IDENTIFICATION THAT IS SPECIFIC AND CLEAR ENOUGH TO ACCURATELY MATCH INSTALLED EQUIPMENT WITH EQUIPMENT SUBMITTALS. .

7. DOOR CONTROLS: PROVIDE DOOR OPERATOR AND POWER SUPPLIES FOR DOOR CONTROL AS MANUFACTURED BY FALCON (INGERSOL RAND) 8200 SERIES AND WALL MOUNTED ACTUATORS AS MANUFACTURED BY LCN (INGERSOL RAND) 8310 SERIES OR APPROVED EQUAL.
   a. DOOR OPERATOR SHALL BE AN ADA COMPLIANT AUTOMATIC ELECTROMECHANICAL SWING DOOR OPERATOR FOR USE ON HINGED, CENTER PIVOTED AND OFFSET PIVOTED DOORS. WHEN ACTIVATED THE DOOR OPENER SHALL DRIVE THE DOOR TO FULL OPEN POSITION, THEN ELECTRICAL POWER IS TURNED OFF AND THE DOOR IS CLOSED BY SPRING FORCE. THE ACTIVATING CIRCUIT SHALL OPEN DOOR FROM ANY POSITION IN THE CLOSING SWING. DURING A POWER FAILURE THE DOOR OPERATOR SHALL ACT AS A MANUAL DOOR CLOSER. DOOR OPENING AND CLOSING CYCLES, INCLUDING OPENING SPEED, BACK CHECK SPEED, HOLD OPEN TIME DELAY, CLOSING SPEED, LATCH POSITION AND BACK CHECK POSITION SHALL BE ADJUSTABLE.
   b. WALL MOUNTED ACTUATOR SHALL BE LISTED TO BE COMPATIBLE WITH APPROVED DOOR OPENER. PROVIDE ACTUATOR WITH REQUIRED ACCESSORIES FOR A COMPLETE AND OPERATIONAL INSTALLATION.

PART 3 EXECUTION

1. GENERAL: ALL INTERRUPTIONS AND SHUTDOWNS OF EXISTING ELECTRICAL SYSTEMS AND SERVICES SHALL BE AS SHORT AS POSSIBLE AND AT A TIME AND DURATION APPROVED BY THE OWNER AND ENGINEER. THE CONTRACTOR SHALL INCLUDE ALL PREMIUM TIME ASSOCIATED WITH THE SYSTEM AND SERVICE INTERRUPTIONS AND SHUTDOWNS.

2. IDENTIFICATION: FURNISH AND INSTALL NAMEPLATES ON ALL ELECTRICAL EQUIPMENT INCLUDING PANELS, JUNCTION BOXES, DISCONNECT SWITCHES, TRANSFORMERS AND STARTERS.

3. RACEWAYS AND CONDUIT: REFER TO POWER, LIGHTING AND FIRE ALARM DRAWINGS FOR ALLOWABLE WIRING METHODS. EMT MAY BE USED WITH SET SCREW FITTINGS IN CONCEALED AND EXPOSED LOCATIONS WHERE NOT EXPOSED TO PHYSICAL DAMAGE OR MOISTURE. USE RIGID GALVANIZED STEEL WITH THREADED FITTINGS WHERE EMT PROHIBITED. ALL RACEWAYS, WHICH PASS THROUGH BUILDING EXPANSION JOINTS, SHALL BE EQUIPPED WITH EXPANSION FITTINGS. ALL CONDUITS SHALL BE SUPPORTED IN AN APPROVED MANNER TO THE BUILDING STRUCTURE. SUPPORT FROM CONDUITS, DUCTWORK, PIPING, ETC. WILL NOT BE PERMITTED. RACEWAYS SHALL BE RUN CONCEALED UNLESS NOTED OTHERWISE, PERPENDICULAR AND/OR PARALLEL TO THE BUILDING STRUCTURE. NECA STANDARDS SHALL DEFINE MINIMUM QUALITY LEVEL FOR INSTALLATION WHERE APPLICABLE.

4. WIRE AND CABLE: BRANCH CIRCUIT WIRING IS NOT ILLUSTRATED ON THE DRAWINGS AND IS INDICATED BY CIRCUIT NUMBERS NEXT TO FIXTURES, EQUIPMENT AND DEVICES. PROVIDE COMPLETE WIRING SYSTEM TO MEET ILLUSTRATED INTENT. CONDUIT HOMERUNS SHOWN ON THE DRAWINGS WITH MORE THAN 3 CURRENT CARRYING CONDUCTORS ARE SHOWN DIAGRAMMATICALLY. THE INSTALLATION OF MORE THAN 3 CURRENT CARRYING CONDUCTORS IN A COMMON RACEWAY SHALL REQUIRE THE DERATING OF ALL ASSOCIATED CONDUCTORS. ALL CIRCUITS SHALL CONTAIN A FULL SIZE, INSULATED GROUND CONDUCTOR.

5. WIRING DEVICES AND PLATES: ALL DEVICES OTHER THAN 20A 120V SHALL BE CLEARLY LABELED WITH PERMANENTLY APPLIED NAMEPLATES (OR ENGRAVED FACEPLATES) DETAILING THE VOLTAGE CHARACTERISTICS AND CIRCUIT NUMBER.

6. SAFETY DISCONNECT SWITCHES: FUSES SHALL BE CLASS RK-1 SIZED PER DRAWING AND NAMEPLATE REQUIREMENTS. INSTALL REJECTION CLIPS TO PROHIBIT INSTALLATION OF OTHER THAN CURRENT LIMITING FUSES.

7. LIGHTING: ALL LIGHT FIXTURES SHALL BE SUPPORTED IN AN APPROVED MANNER TO THE BUILDING STRUCTURE WITH A MINIMUM OF TWO SAFETY CHAINS, CONNECTED AT OPPOSITE ENDS OF THE FIXTURE. SUPPORT FROM CONDUITS, DUCTWORK, PIPING, ETC. WILL NOT BE PERMITTED.

PART 4 PROJECT CLOSEOUT

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ITEMS ASSOCIATED WITH PROJECT CLOSEOUT. ALLOW SUFFICIENT TIME IN THE CONSTRUCTION SCHEDULE TO ENSURE THAT THE INSTALLATION IS SUBSTANTIALLY COMPLETE AND ALL REQUIRED TESTING AND ACCURATELY COMPLETED DOCUMENTATION IS DELIVERED TO THE ENGINEER AT LEAST TWO WEEKS PRIOR TO ENGINEER'S SUBSTANTIAL COMPLETION SITE VISIT. FAILURE TO ADEQUATELY PLAN OR SUBMISSION OF INCOMPLETE/INCORRECT DOCUMENTATION WILL RESULT IN BACK CHARGES OF ALL COSTS ASSOCIATED WITH ADDED WORK PERFORMED BY RDK ENGINEERS.

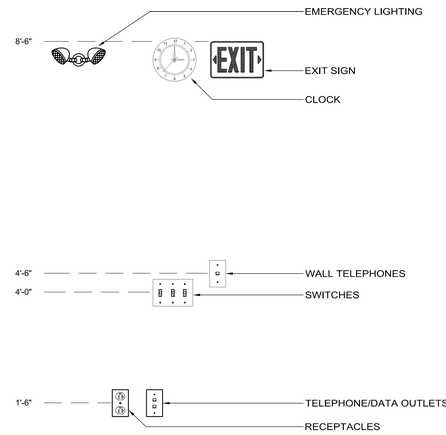
2. PROVIDE THE CONTRACTOR CERTIFICATE OF COMPLETION IN ACCORDANCE WITH 780CMR 107.6.3 INDICATING THAT THE INSTALLATION IS IN CONFORMANCE WITH THE CONSTRUCTION DOCUMENTS AND ALL APPLICABLE LOCAL, STATE AND FEDERAL STATUTES AND CODES. PROVIDE CERTIFICATION FROM BOTH THE GENERAL CONTRACTOR AND ASSOCIATED TRADE CONTRACTOR FOR COMPLIANCE WITH 780CMR CHAPTERS 1, 9 & 13.

3. CORRECTION BY THE CONTRACTOR. THE ADDITIONAL TIME INCURRED BY RDK TO RE-REVIEW THE RECORD DRAWINGS WILL RESULT IN BACK CHARGES.

4. NO FUNCTIONAL DEFICIENCIES IN THE EGRESS OR EXIT LIGHTING SYSTEMS, FIRE ALARM SYSTEM OR THE EMERGENCY POWER SYSTEM SHALL BE PRESENT WHEN REQUESTING SUBSTANTIAL COMPLETION SITE VISIT.

5. SUBSTANTIAL COMPLETION SITE VISIT BY THE ENGINEER SHALL BE CONDUCTED AFTER RECEIPT AND REVIEW OF THE CONTRACTOR'S CERTIFICATE OF COMPLETION AND ALL CODE MANDATED TEST REPORTS AND SUBMISSIONS LISTED ABOVE. SUBSTANTIAL COMPLETION SITE VISITS SHALL NOT BE REQUESTED UNTIL THE PROJECT IS SUBSTANTIALLY COMPLETE.

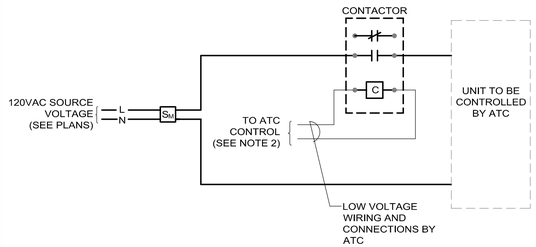
6. PREMATURE REQUESTS THAT REQUIRE ADDITIONAL/FOLLOW UP SITE VISITS BY THE ENGINEER OF DEFICIENT ITEMS (AREAS INCOMPLETE, SYSTEMS NOT OPERATIONAL, ETC.) WILL RESULT IN BACK CHARGES OF THE COSTS ASSOCIATED WITH ANY ADDED VISITS.



NOTES:

1. ALL MOUNTING HEIGHTS SHALL BE MEASURED FROM FINISHED FLOOR TO CENTERLINE OF DEVICE EXCEPT EXIT SIGNS, CLOCKS AND EMERGENCY LIGHTING.
2. DEVICES SHALL BE INSTALLED ON A COMMON VERTICAL CENTERLINE WHEREVER POSSIBLE.
3. ALL DEVICES SHALL BE INSTALLED AT MOUNTING HEIGHTS AS INDICATED ON THIS DETAIL UNLESS OTHERWISE NOTED.

RDK — TYPICAL DEVICE MOUNTING HEIGHTS DETAIL — E201



NOTES:

1. PROVIDE 2-POLE MANUAL MOTOR STARTER WITH OVERLOADS AND CONTACTOR AT ALL UNIT HEATERS AND EXHAUST FANS THAT REQUIRES ATC CONTROL AS INDICATED ON PLANS. PROVIDE MANUAL MOTOR STARTER AND CONTACTOR WITH A NEMA 3R ENCLOSURES.
2. COORDINATE CONTACTOR COIL VOLTAGE WITH ATC CONTRACTOR.
3. MOUNT THE CONTACTOR IN LINE OF SIGHT WITHIN 3'-0" OF THE UNIT CONTROLS.
4. CONTACTOR SHALL BE A 1-POLE, SINGLE PHASE WITH MOTOR RATED CONTACTS, FULL VOLTAGE WITH NEMA RATING EQUAL TO SQUARE-D CLASS 8502 TYPE "SBA5" IN NEMA 3R ENCLOSED.

RDK — ATC INTERFACE FOR UNIT CONTROL (120V SOURCE)

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ELECTRICAL SPECIFICATIONS AND DETAILS

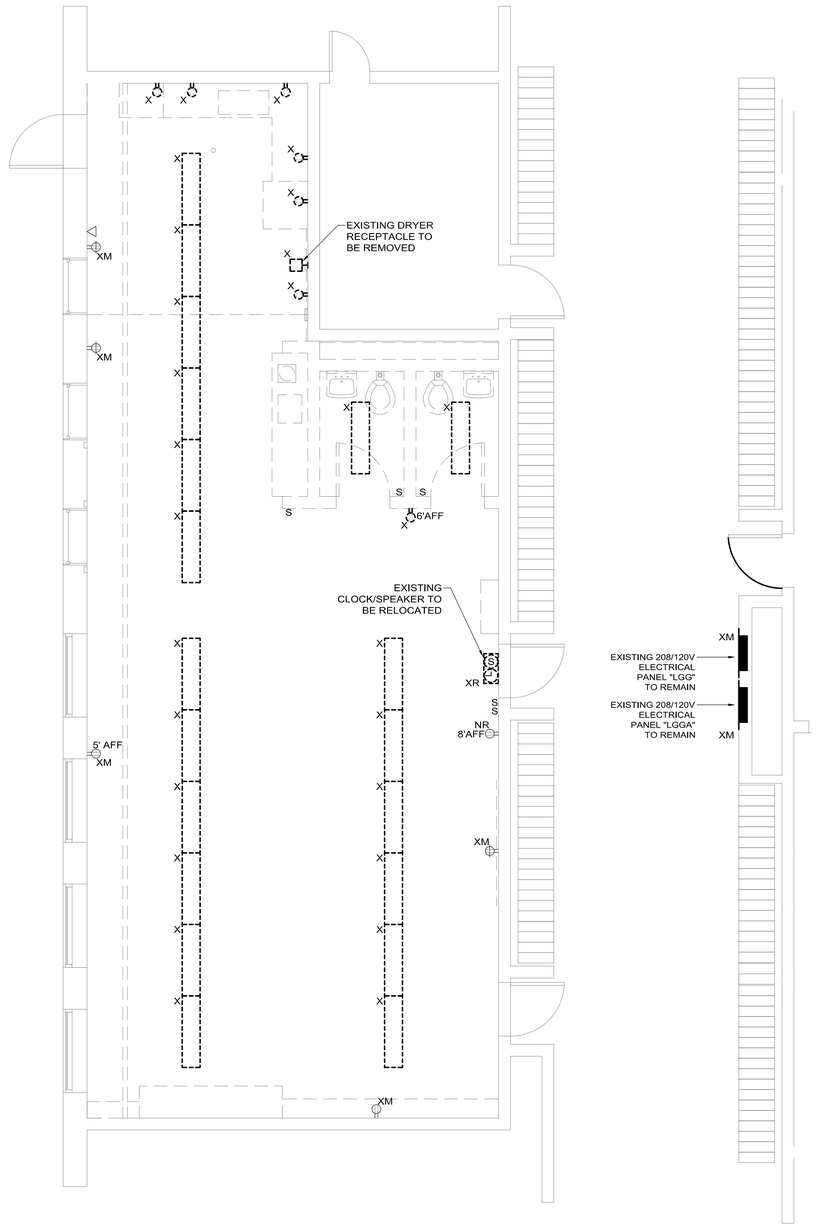
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DESIGNED BY: DGM
DRAWN BY: DGM
CHECKED BY: GM
DATE: JULY 3, 2013
SCALE: NONE

SHEET NUMBER:

E1.0

SHEET OF

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ELECTRICAL DEMOLITION PART FLOOR PLAN

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

DEMOLITION NOTES:

1. REFER TO DRAWING E0.00 FOR LEGEND, SYMBOLS AND GENERAL NOTES.
2. REFER TO THE ARCHITECTURAL DRAWINGS FOR THE FULL EXTENT OF THE SCOPE OF DEMOLITION. DISCONNECT AND MAKE SAFE ALL ELECTRICAL EQUIPMENT IDENTIFIED FOR REMOVAL ON THE HVAC, PLUMBING AND FIRE PROTECTION PLANS. THE ELECTRICAL SCOPE MAY EXTEND BEYOND THE AREA DEFINED BY THE ARCHITECTURAL DEMOLITION LIMITS TO FULLY COMPLY WITH VARIOUS REQUIREMENTS DEFINED BY THESE NOTES.
3. THE ELECTRICAL DEMOLITION PLANS AND DETAILS INDICATE THE GENERAL INTENT AND ARE NOT INTENDED TO SHOW ALL ITEMS TO BE REMOVED OR RETAINED. THE ELECTRICAL CONTRACTOR SHALL VISIT THE SITE PRIOR TO THE SUBMISSION OF BIDS TO BECOME FAMILIAR WITH THE ACTUAL CONDITIONS AND EXTENT OF WORK. DEVICES AND EQUIPMENT LOCATED ON WALLS AND/OR CEILINGS TO BE REMOVED SHALL BE DISCONNECTED AND MADE SAFE. THE ELECTRICAL CONTRACTOR SHALL NOTIFY THE OWNER'S REPRESENTATIVE OF ANY UNANTICIPATED HIDDEN CONDITIONS ENCOUNTERED DURING DEMOLITION.
4. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OF ALL SYSTEMS OR BUILDING COMPONENTS DAMAGED DURING THE EXECUTION OF THE WORK. DAMAGE SHALL INCLUDE BUT NOT BE LIMITED TO DESTRUCTION OR DISPOSAL OF ITEMS INTENDED TO REMAIN OR TO BE SALVAGED.
5. THE ELECTRICAL CONTRACTOR SHALL CIRCUIT TRACE AND LABEL ALL EXISTING BRANCH CIRCUITS AND FEEDERS WITHIN THE AREA OF DEMOLITION SCOPE PRIOR TO DE-ENERGIZING AND DISCONNECTION. ALL CIRCUITS WITHIN PANELBOARDS IDENTIFIED FOR REMOVAL SHALL BE TRACED AND LABELED TO ENSURE THAT NO AREA OUTSIDE THE DEMOLITION SCOPE LIMIT IS AFFECTED.
6. THE ELECTRICAL CONTRACTOR SHALL IDENTIFY ALL BRANCH CIRCUITS, FEEDERS AND SYSTEM COMPONENTS, WHICH ARE TO REMAIN WITHIN THE AREA OF DEMOLITION SCOPE. THERE SHALL BE NO INTERRUPTION OF SERVICE TO ANY AREA OUTSIDE THE SCOPE LIMITS WITHOUT APPROVAL FROM THE OWNER'S REPRESENTATIVE. EXISTING EQUIPMENT TO REMAIN SHALL BE LEFT IN A CODE COMPLIANT MANNER.
7. THE ELECTRICAL CONTRACTOR SHALL DE-ENERGIZE AND REMOVE ALL CONDUCTORS AND RACEWAYS TO THEIR POINTS OF ORIGIN WITHIN THE AREA OF DEMOLITION SCOPE. ITEMS IDENTIFIED FOR DEMOLITION SHALL NOT BE ABANDONED IN PLACE. RACEWAYS THAT ENTER MASONRY WALLS AND FLOORS SHALL BE CUT FLUSH AT THE SURFACE FOR PATCHING BY OTHERS. ALL CIRCUIT BREAKERS ASSOCIATED WITH THE DEMOLITION SCOPE SHALL BE DE-ENERGIZED AND LABELED SPARE.
8. THE ELECTRICAL CONTRACTOR SHALL TEMPORARILY SUPPORT ALL ITEMS TO REMAIN THAT ARE AFFECTED BY THE DEMOLITION OF BUILDING STRUCTURAL COMPONENTS (WALLS, CEILINGS, ETC.). TEMPORARILY SUPPORTED ITEMS SHALL BE PERMANENTLY SUPPORTED AND INSTALLED WHEN FINALIZED STRUCTURES ARE IN PLACE.
9. ALL REMOVED ITEMS SHALL BE LEGALLY DISPOSED OF UNLESS IDENTIFIED FOR REUSE. THE OWNER'S REPRESENTATIVE SHALL INSPECT ALL RETAINED ITEMS PRIOR TO PLACEMENT IN THE IDENTIFIED STORAGE LOCATION BY THE ELECTRICAL CONTRACTOR.
10. ALL DEMOLITION SCOPE ASSOCIATED WITH LOW VOLTAGE SYSTEMS INCLUDING BUT NOT LIMITED TO TELEPHONE, DATA, SECURITY, PAGING, CCTV, ETC. SHALL BE INCLUDED IN THIS CONTRACT.
11. REMOVED FLUORESCENT AND HID LAMPS AND BATTERIES SHALL BE RECYCLED BY A FACILITY APPROVED BY THE OWNER'S REPRESENTATIVE. A UNIFORM HAZARDOUS WASTE MANIFEST SHALL BE PREPARED FOR ALL DISPOSALS AND RETURNED WITH ALL APPLICABLE SIGN OFF'S PRIOR TO APPLICATION FOR FINAL PAYMENT.
12. ALL BALLAST IN LIGHTING FIXTURES TO BE DISPOSED SHALL BE VERIFIED TO BE PCB FREE. ALL BALLAST MANUFACTURED PRIOR TO 1979 AND NOT LABELED AS PCB FREE SHALL BE CONSIDERED TO CONTAIN PCBs. PROVIDE WRITTEN VERIFICATION TO THE OWNER'S REPRESENTATIVE THAT CONFIRMS PCB FREE WASTE. WHERE PCB FREE WASTE CANNOT BE VERIFIED, BALLAST SHALL BE RECYCLED BY A FACILITY APPROVED BY THE OWNER'S REPRESENTATIVE, WITH PCB COMPONENTS ELIMINATED BY A HIGH TEMPERATURE INCINERATION. A UNIFORM HAZARDOUS WASTE MANIFEST SHALL BE PREPARED FOR ALL DISPOSALS AND RETURNED WITH ALL APPLICABLE SIGN OFF'S PRIOR TO APPLICATION FOR FINAL PAYMENT. ALL HANDLING SHALL CONFORM TO EPA REQUIREMENTS. PROVIDE BREAKOUT COST FOR THIS SCOPE.

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ELECTRICAL DEMOLITION PART FLOOR PLAN

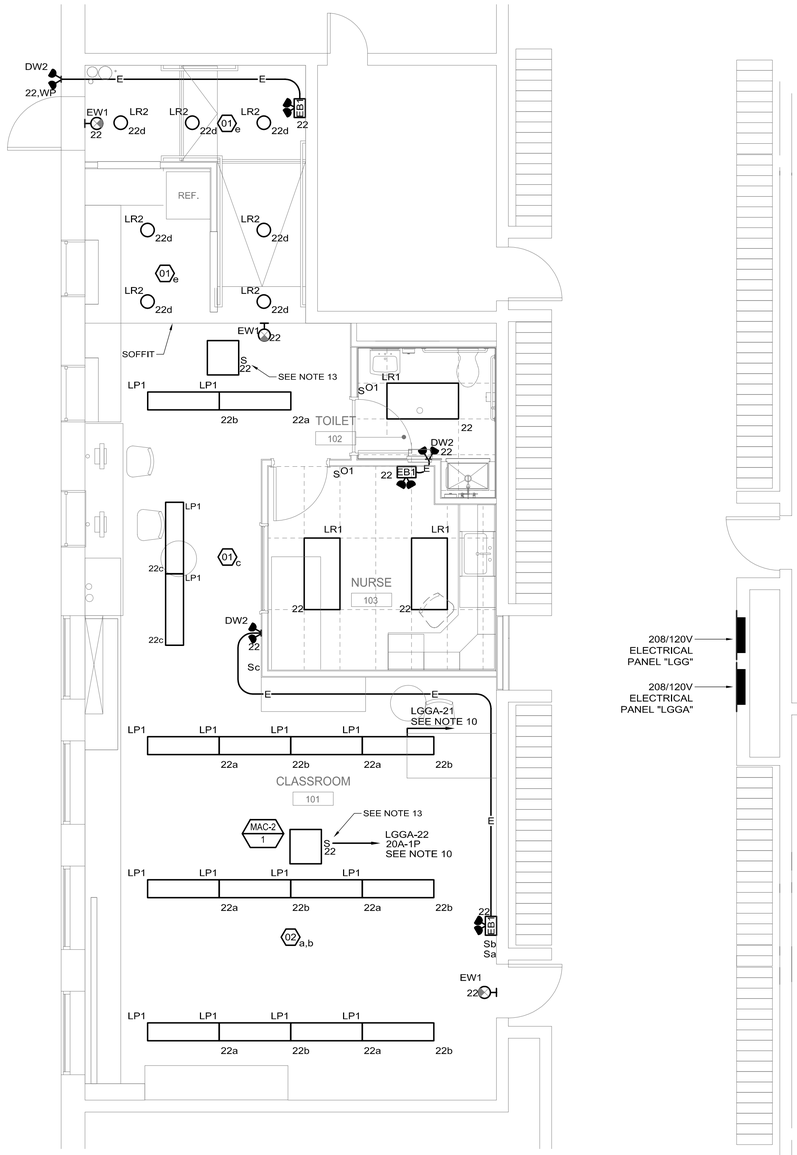
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DRAWN BY: DGM
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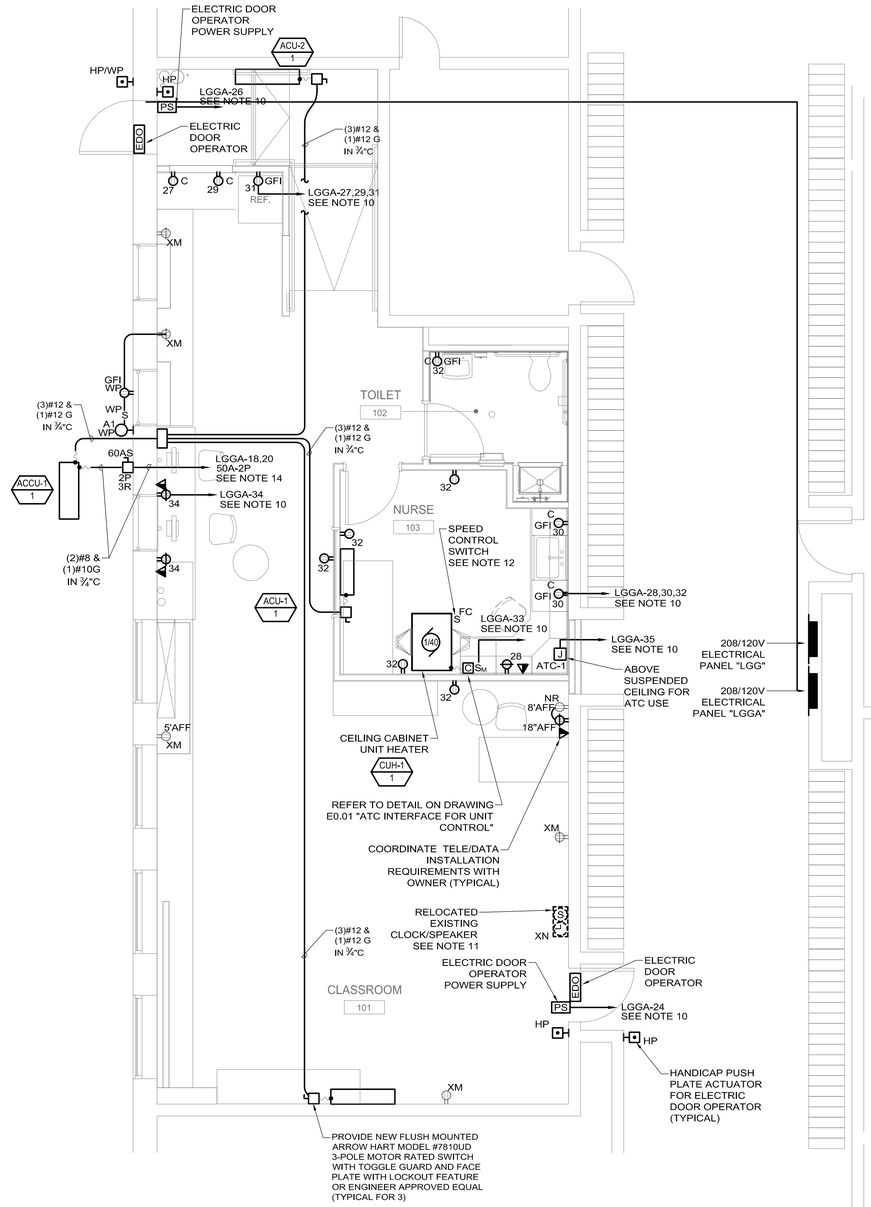
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ELECTRICAL LIGHTING NEW WORK PART PLAN

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



ELECTRICAL POWER NEW WORK PART PLAN

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

NOTES:

1. REFER TO DRAWING E0.00 FOR LEGEND, SYMBOLS AND GENERAL NOTES.
2. REFER TO ARCHITECTURAL DRAWINGS FOR ASSOCIATED NOTES, MOUNTING DETAILS, HEIGHTS AND EXACT LOCATIONS OF ALL DEVICES.
3. CIRCUIT NUMBERS ARE DIAGRAMMATIC. EXACT NUMBERS SHALL BE DETERMINED IN THE FIELD AND REFLECTED ON AS-BUILT DOCUMENTATION BY THE ELECTRICAL CONTRACTOR. THE ASSOCIATED CIRCUIT NUMBERS THAT ARE APPLIED TO EACH DEVICE AND PIECE OF EQUIPMENT INFERS INTERCONNECTING BRANCH CIRCUITRY. INTERCONNECTING BRANCH WIRING SHALL BE SIZED EQUAL TO THE HOMERUN UNLESS NOTED OTHERWISE.
4. VOLTAGE DROP HAS BEEN CONSIDERED IN THE DESIGN OF ALL BRANCH CIRCUITRY AND FEEDER SIZES BASED UPON THE ILLUSTRATED EQUIPMENT LAYOUTS AND SHORTEST CONDUCTOR/RACEWAY ROUTING. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR DEVIATIONS TAKEN THAT WILL INCREASE CONDUCTOR/RACEWAY ROUTING LENGTHS. BRANCH CIRCUITS LONGER THAN 75' FOR 120V FROM PANEL TO LAST OUTLET SHALL BE INCREASED A MINIMUM OF ONE SIZE ABOVE THAT SPECIFIED TO LIMIT VOLTAGE DROP TO LESS THAN 3%. FEEDERS SHALL FOLLOW SIMILAR GUIDELINES AND BE LIMITED TO 2% DROP.
5. POWER BRANCH CIRCUITRY SHALL BE INSTALLED IN CONDUIT FROM THE PANEL TO THE FIRST DEVICE AND/OR WHERE EXPOSED. POWER BRANCH CIRCUITRY MAY BE TYPE MC CABLE WHERE CONCEALED ABOVE SUSPENDED CEILINGS AND IN METAL STUD WALLS.
6. LIGHTING BRANCH CIRCUITRY SHALL BE INSTALLED IN CONDUIT FROM THE PANELBOARD TO THE FIRST OUTLET AND/OR WHERE EXPOSED. LIGHTING BRANCH CIRCUITRY MAY BE TYPE MC CABLE WHERE CONCEALED ABOVE SUSPENDED CEILINGS OR IN METAL STUD WALLS.
7. MAINTAIN CONTINUITY OF BRANCH CIRCUITRY ASSOCIATED WITH ALL EXISTING POWER DEVICES AND LIGHTING TO REMAIN.
8. COORDINATE THE PLACEMENT OF ALL PENDENT, SURFACE OR SEMI-FLUSH FIXTURES AND DEVICES WITH THE FIRE PROTECTION CONTRACTOR TO MAINTAIN NFPA 13 REQUIRED SEPARATION BETWEEN SPRINKLER HEADS AND OBSTRUCTIONS.
9. PROVIDE CONSTANTLY ENERGIZED (UNSWITCHED) BRANCH CIRCUIT TO ALL EXIT SIGNS AND EGRESS LIGHTS FROM THE DESIGNATED SOURCE.
10. WHERE PRACTICABLE UTILIZE EXISTING SPARE CIRCUIT BREAKER TO SERVICE THE NEW LOADS AS ILLUSTRATED. PROVIDE LUGS SIZED TO ACCOMMODATE CONDUCTOR SIZES SPECIFIED. IF NEW CIRCUIT BREAKER TO BE ADDED TO EXISTING PANEL NEW CIRCUIT BREAKER SHALL MATCH EXISTING FRAME AND AIC RATING.MODIFY CIRCUIT DIRECTORY TO REFLECT THE CHANGE.
11. RELOCATE EXISTING CLOCK/SPEAKER AS INDICATED, COORDINATE EXACT LOCATION WITH ARCHITECT. EXTEND EXISTING CLOCK/SPEAKER CIRCUITRY FROM EXISTING LOCATION TO NEW LOCATION. ALL NEW CIRCUITRY SHALL MATCH EXISTING IN SIZE AND TYPE.
12. SPEED CONTROL SWITCH IS FURNISHED BY DIV 15 AND IS INSTALLED AND WIRED BY DIV 16.
13. PROVIDE MOTOR RATED POWER RELAY TO OPERATE MAC-1 AND MAC-2 UTILIZING OCCUPANCY SENSOR CONTROLLING LIGHTING IN THE CLASSROOM AREA.
14. REMOVE (2) EXISTING1-POLE SPARE CIRCUIT BREAKER AND PROVIDE (1) NEW HACR RATED 50A 2-POLE CIRCUIT BREAKER, FOR THE NEW ACCU. NEW CIRCUIT BREAKER TO BE ADDED TO EXISTING PANEL SHALL MATCH EXISTING FRAME AND AIC RATING. MODIFY CIRCUIT DIRECTORY TO REFLECT THE CHANGES.
15. CONDUIT PENETRATIONS THROUGH MASONRY WALL TO BE SEALED WATER TIGHT AND SEALED INTERIOR (PER NEC 300.7) TO MINIMIZE INTERNAL CONDENSATION OF RACEWAY. PROVIDE CORING AS REQUIRED (TYP.)

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ELECTRICAL POWER & LIGHTING PART FLOOR PLAN

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