GOVERNMENT OF THE DISTRICT OF COLUMBIA
DEPARTMENT OF GENERAL SERVICES

MAJOR RENOVATION & MODERNIZATION
OF
FIRE AND EMERGENCY MEDICAL SERVICES DEPARTMENT
ENGINE HOUSE NO. 14

Solicitation No.: DCAM-14-CS-0061

Addendum No. 6
Issued: November 18, 2013

This Addendum No. 6 is issued and hereby published on the DGS website on November 18, 2013. Except as modified hereby, the Request for Proposals ("RFP") remains unmodified.

Item #1 Specification 221319 – Sanitary Waste Piping Specialties

Add

Trench Drains (Apparatus Bay) shall be provided with a removable means for cleanout of material ahead of the Oil Water Separator (OWS). (Example- Sediment Bucket as provided with Zurn Z664 heavy-duty trench drain.)

Item #2 Plumbing Drawing P1.01 – Basement & First Floor Plans (Demolition) and Plumbing Drawing P5.01 - Sanitary Riser Diagram

Add

Provide one (1) Floor Drain and associated components in each Gear Locker Room (Rooms 111 and 112). Connect to below-slab sanitary piping.

Item #3 Plumbing Drawing P0.01 – General Notes, Abbreviations & Symbols Plumbing Drawing P4.01 – Enlarged Partial Floor Plans

Delete

Sheets P0.01 and P4.01, dated 09/13/2013

Add

Revised Sheets P0.01 and P4.01 are provided under Attachment 01.

Item #4 Electrical Drawing E-102 – Lighting New Work and
Electrical Drawing E-103 - Power New Work

Add

The General Contractor shall be responsible for providing the necessary infrastructure for the Fire Alerting System (Purvis FSAS), including installation of 3/4" conduit to service devices as indicated on electrical drawings. Refer to **Attachment-02** layout for locations of the light towers to be installed as part of the FSAS. General Contractor shall coordinate final device locations with system provider and Architectural Engineer (AE) prior to installation.

Item #5 Electrical Drawing E-102 – Lighting New Work

Add

Provide additional lighting and associated components as shown on **Attachment-02** for 'Trip' lighting to be on dedicated circuits and controlled from the App Bay Watch Station. Light fixture Type G1 shall be utilized for trip lighting.

Item #6 Electrical Drawing E-102 – Lighting New Work
Architectural Drawing A-404-Interior Elevations {Drawing 9}

Add

Four (4) Type Q3 lighting fixtures to be added and installed along Corridor 119 wall mounted 12"-18" Above Finish Floor (AFF).

Item #7 Electrical Drawing E-103 - Power New Work

Add

Additional Power and TV connection shall be provided in Exercise Room {Room 116} (Circuit #18).

Item #8 Specification 233440 – Mechanical Exhaust System
Electrical Drawing E-103 - Power New Work
Structural Drawing S3.0 – Roof Plan

Clarification - Engine House 14 and the Temp Facility

1. The General Contractor shall be responsible for providing the necessary coordination for the vehicle exhaust system regarding Engine House 14 and the Temp Facility.

2. The Contractor shall provide the exhaust system equipment, fan, and ductwork.

3. The General Contractor's Electrician shall provide all conduit, and pull wire needed for the system.

4. The basic electrical home runs required are:

a. Panel box to system control panel in Apparatus Bay 3-phase (3 wire) 1- ground and 1- neutral
b. Control panel, to disconnect box, to fan (disconnect located next to fan) 3- phase (3 wire) 1- ground
c. Control panel to junction box(s) located at rear of exhaust rails (12 wire) 1- hot, 1- neutral, and 1-ground. (Junction boxes can be mounted to Hilti brackets once installed)
d. New required openings thru roof or other existing structure to be provided by the General Contractor.

Item #9 Civil Drawing C3.01 – Site Layout & Utility Plan
Electrical Drawing E-001 – Notes, Symbols, & Abbreviations
Specification Division 27 – DC Net Structured Cabling Standards

Clarification - Engine House 14 and the Temp Facility

1. General Contractor shall be responsible for providing the necessary infrastructure for the DC NET communication system as indicated in the Bid documents.

2. The General Contractor shall provide 2" underground conduit from service pole to building per DC Net standards.

3. The Symbol Legend on Electrical Drawing E-001 shall specify 1" EMT conduit in lieu of 3/4" indicated on General Note 17 for Telephone/Data outlet symbol.

4. Specification Division 27 (DC Net Structured Cabling Standards) Chapter 2, Section 270536 'Cable Trays for Communications Systems' and Chapter 6 in its entirety, are not applicable to this project.

Item #10 Architectural Drawing A-103 – Reflected Ceiling Plans
Architectural Drawing A-400 – Enlarged Floor Plans

Add

Additional wall mounted shelving shall be provided above Emergency Medical Storage {EMS}(Room 113). Top of EMS Storage shall be enclosed and framed to receive storage above. Ceiling in Room 114 shall be raised to 11'-0".

Item #11 Architectural Drawing A-600 – Door Schedule, Door, Window and Door Frame Types

Delete

Delete glazing GL-2 for the following doors as specified on Sheet A-600: 100C, 116A, 127B, and 129.

Add

For doors 100C, 116A, 127B, and 129, add Security Polycarbonate Sheet glazing with 1/4" minimum clear security panel. (Use Lexan Sheet by SABIC Innovative Plastics or equivalent)

Item #12 Architectural Drawing A-600 – Door Schedule, Door, Window and Door Frame Types

Add

Doors 100D, 100E, and 100F shall receive 4"x 36" clear vision panel glazing.

Item #13 General Drawing G-02 – General Notes, Abbreviations, and Maps

Clarification – Temp Facility

Upon decommissioning, the trailers for the FEMS living quarters shall be returned to DGS/FEMS possession after project completion. Trailers are not to be leased. Relocation of trailers shall remain in General Contractor's scope.

Item #14 Architectural Drawing FF-101 – Furniture/Signage {Keynote 18}

Delete

Frigidaire Model FFLE2022MW -Electric Washer/Dryer Laundry Center (Energy Star Manufacturer).

Add

Individual stackable front loading washer/dryer units (Frigidaire Affinity or equivalent w/stacking kit).

Clarification

Exercise Equipment selections indicated are based on the brand Cybex International. Cardio equipment shall be Cybex Series 500 or equivalent.

Item #15 Architectural Drawing A-404-Interior Elevations

Delete

Remove Keynotes 18 and 40 from Room 128. The accessories are no longer required for this Toilet Room.

Item #16 Specification102800 – Toilet, Bath, and Laundry Accessories

Delete

Provide Combination Towel Dispenser/Receptacle Unit for H & I.

Add

Provide paper towel dispenser only units (Bobrick B-35903 or equivalent) for H & I.

Item #17 Architectural Drawing AD-101 – Demolition Plan

Clarification

Existing Closet and Toilet enclosures in existing Apparatus Bay are not interior stud partitions to be removed as indicated in Key Note 3. Enclosures are full height brick walls to be removed with brick, and salvaged for reuse.

Item #18 Specification 042113 – Brick Masonry

Clarification

The General Contractor shall provide new matching brick material as necessary to complete specified brickwork if quantities of salvaged reusable brick is insufficient.

Item #19 Architectural Drawing A-504 – Exterior Section Details
Civil Drawing C3.01 – Site Layout & Utility Plan

Clarification

Details for retaining wall railing are as indicated on Engine House 14 Sheet C3.01 provided in this Addendum under Attachment-03.

Item #20 Specification 055213 Steel Railings

Add

New specification Section 055213 Steel Railings is provided under this Addendum for steel hand and guard rails.

Item #21 E.5.6 Project Management Plan & Schedule

Milestone Chart for Engine House 14 Temp Site

Delete

Delete in its entirety

Add

Engine House 14 Temp Site	
Calendar Days from NTP	**Key Milestone**
15	Mobilization and Submittals
30	Pre Engineered Building (PEB) & Trailer Approved shop drawings
45	Utility modifications and SOG
85	PEB Placement
105	Trailer Placement
135	HVAC startup & Commissioning
150	C of O Substantial complete

Engine House 14	
Calendar Days from NTP	**Key Milestone**
15	Move
30	Mobilization & front end Submittals
60	Abatement
90	Selective demolition
140	Exterior renovations
170	Dry-in
210	Interior renovations
245	HVAC Startup
270	Commissioning
300	Site renovations
320	C of O Substantial Completion
335	Move
365	Decommission Trailer at Temp Site

Item #22 Specification 238130 Variable Refrigerant Volume Systems

Delete

Specification 238130 Variable Refrigerant Volume Systems dated September 3, 2013

Add

Specification 238130 Variable Refrigerant Volume Systems dated November 7, 2013.

Item #23 Specification Section 01 3200 - Construction Progress Documentation

Delete

Specification Section 01 3200 Construction Progress Documentation dated September 3, 2013

Add

Specification Section 01 3200 Construction Progress Documentation dated November 7, 2013

Item #24 Section 01 7700 - Closeout Procedures

Delete

Specification Section 01 7700 Closeout Procedures dated September 3, 2013

Add

Specification Section 01 7700 Closeout Procedures dated November 7, 2013

By: _____ **Date:** 11/8/13

JW Lanam
Associate Director/Contracting Officer

- End of Addendum No. 6 –

Attachment 01

DRAIN SCHEDULE

MARK	MANUFACTURER	MODEL NO.	STRAINER SIZE	LOCATION	REMARKS
AD	ZURN	Z507	–	–	[illegible] CAST IRON BODY [illegible] WITH BOTTOM OUTLET
FD-1	J.R. SMITH	2005-P050	8"	TOILET ROOMS	CAST IRON BODY WITH SQUARE NICKEL BRONZE ADJUSTABLE STRAINER HEAD ("B"), FLASHING COLLAR AND TRAP PRIMER CONNECTION. TRAP PRIMER: PPP WITH VALVE MODEL # PR-500 AND DISTRIBUTION UNIT MODEL # DU-U
FD-2	J.R. SMITH	2131	12"	MECH ROOM	CAST IRON BODY WITH FLASHING COLLAR, SOLID FREE STANDING SEDIMENT BUCKET. PROVIDE DEEP SEAL TRAP.
FS-1	ZURN	Z1810-2	6"	KITCHEN	DEEP CAST IRON BODY AND SQUARE MEDIUM DUTY GRATE (HALF)
RD-1 AND ORD-1	JOSAM	22506 (6")	15"	ROOF	COMBINATION ROOFDRAIN AND OVERFLOW DRAIN. CAST IRON ROOF DRAIN & DOME.
TD	POLYCAST	3000	–	GARAGE	–

CLEANOUTS

MARK	DESCRIPTION	LOCATION	SYSTEM	MANUFACTURER	MODEL	AREA TYPE	REMARKS
FCO	FLOOR CLEANOUT	INSIDE BUILDING	SANITARY & STORM	JAY R. SMITH	4240	HARD UNFINISHED FLOORS	CAST IRON BODY, ROUND ADJUSTABLE CAST IRON SCORIATED TRACTOR TOP
FCO	FLOOR CLEANOUT	INSIDE BUILDING	SANITARY & STORM	JAY R. SMITH	4020	HARD FINISHED FLOORS	CAST IRON BODY W/ FLANGE, INSIDE CAULK, ADJUSTABLE HOUSING, SECURED NICKEL BRONZE SCORIATED TOP

PLUMBING SPECIALTIES SCHEDULE

NO.	ITEM	LOCATION	CONNECTION	MANUFACTURER	MODEL PROTOTYPE	REMARKS
HB	HOSE BIBB	INTERIOR WALLS	3/4" CW	WOODFORD	24MC	–
WH-1	NON-FREEZE WALL HYDRANT	EXTERIOR WALLS	3/4" CW	WOODFORD	25	ANTI-SIPHON AUTOMATIC DRAINING FREEZELESS

PUMP SCHEDULE

PUMP NO	LOCATION	SYSTEM	CIRCULATING FLUID: FLUID	GPM	PUMP HEAD	TEMP °F	SP GR	EFF.	TYPE	MOTOR: NOM. HP	VOLTS/PHASE	RPM	REMARKS
SUMP PUMP SP-1	BASEMENT	STORM	H_2O	30	20 PSI	–	–	–	DUPLEX SUBMERSIBLE	2 x 1	208/3	1750	WEL 2427
SEWAGE EJECTOR SE-1	BASEMENT	SEWER	H_2O	30	15 PSI	–	–	–	DUPLEX SUBMERSIBLE	2 x 1	208/3	–	WEL 1601

PLUMBING FIXTURE SCHEDULE

MARK	FIXTURE		MANUFACTURER	MODEL NO.	REMARKS
P-1A	WATER CLOSET	WATER CLOSET	AMERICAN STANDARD	AFWALL 3351.128	WALL MOUNTED WITH MANUAL FLUSH VALVE
		SEAT	AMERICAN STANDARD	5901.110	–
P-1B	WATER CLOSET	WATER CLOSET	AMERICAN STANDARD	"MADERA" 1.128	FLOOR MOUNTED WITH MANUAL FLUSH VALVE
		SEAT	AMERICAN STANDARD	5901.110	–
P-1C	WATER CLOSET (HANDICAPPED)	WATER CLOSET	AMERICAN STANDARD	"MADERA" 3854.128	MOUNT PER A.D.A. AND A.N.S.I. A1 17.1 REQUIREMENTS WITH MANUAL FLUSH VALVE
		SEAT	–	5901.110	–
P-2	URINAL	UNIT	AMERICAN STANDARD	WASH BROOK FLOWISE 6590.501	MOUNT PER A.D.A. AND A.N.S.I. A1 17.1 REQUIREMENTS WITH MANUAL FLUSH VALVE
P-3A	LAVATORY	UNIT	CASTING CONCEPTS	MS-[illegible]	UNDER COUNTER STAINLESS STEEL SINK
		FAUCET	ARTOS-WESTOVER	OPERA F501-7	BRUSHED NICKEL, PROVIDE FAUCET WITH AERATOR TO RESTRICT FLOW TO 0.5 GPM
P-3B	LAVATORY	UNIT	DURAVIT	2ND FLOOR WASHBASIN 046170	
		FAUCET	ARTOS-WESTOVER	OPERA F501-7	BRUSHED NICKEL, PROVIDE FAUCET WITH AERATOR TO RESTRICT FLOW TO 0.5 GPM
P-3C	LAVATORY (RM. 128)	UNIT	DURAVIT	ONTO CONSOLE (32" WIDTH) W/ WASHBASIN #163153	
		FAUCET	ARTOS-WESTOVER	OPERA F501-7	BRUSHED NICKEL, PROVIDE FAUCET WITH AERATOR TO RESTRICT FLOW TO 0.5 GPM
P-4A	SHOWER	UNIT	–	–	–
		FAUCET	SPEAKMAN	NEO COLLECTION S-3010-BN-E2	PRESSURE BALANCE VALVE TRIM- CPT-1000-P-BN
P-4B	SHOWER	UNIT	–	–	–
		FAUCET	SPEAKMAN	NEO COLLECTION S-3010-BN-E2	PRESSURE BALANCE VALVE TRIM- CPT-1000-P-BN
P-4C	WASHDOWN SINK (RM. 116)	UNIT	FAY PRODUCTS	[illegible] MOLDED STONE BASIN	W/ ACCESSORIES- [illegible]
		FAUCET	SPEAKMAN	VS-1230[illegible]	SPRAY UNIT- [illegible] SHOWER COMBINATION UNIT
P-5	[illegible]	UNIT	ADVANCE TABCO	[illegible]	[illegible] COMPARTMENT SINK
		FAUCET	FISHER	34313	PROVIDE FAUCET WITH EMERGENCY EYE WASH AND PEDAL OPERATION
P-6	KITCHEN SINK	UNIT	ADVANCE TABCO	9-2-50	TWO COMPARTMENT SINK
		FAUCET	FISHER	34313	–
P-7	HAND SINK	UNIT	ADVANCE TABCO	7-PS-84	HAND SINK WITH FAUCET AND P-TRAP INCLUDED
	BUILT-IN SINK (RM. 130)	UNIT	SEE ARCH. DWGS	SEE ARCH. DWGS	W/ ACCESSORIES- [illegible]
		FAUCET	–	–	–

ADDENDUM 06- ATTACHMENT 01
1 of 2

GENERAL NOTES

1. SCOPE: FURNISH AND LABOR, MATERIALS, TOOLS, EQUIPMENT, SERVICES AND SKILLED SUPERVISION NECESSARY TO PROVIDE, INSTALL, TEST AD ADJUST PLUMBING SYSTEM AS INDICATED IN THESE DRAWINGS, FOR COMPLETE OPERATIONAL AND READY FOR USE FACILITY.
2. APPLICABLE CODES AND STANDARDS: ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE FOLLOWING CODES AND STANDARDS AND ALL APPLICABLE LOCAL REGULATIONS. ALL CODE CONFLICTS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT FOR RESOLUTION.
   A. DISTRICT OF COLUMBIA LATEST BUILDING CODE SUPPLEMENT.
   B. ICC INTERNATIONAL BUILDING CODE 2006.
   C. ICC INTERNATIONAL MECHANICAL CODE 2006.
   D. ICC INTERNATIONAL PLUMBING CODE 2006.
   E. ICC INTERNATIONAL FUEL GAS CODE 2006
   F. NFPA 70, NATIONAL ELECTRIC CODE
   G. NFPA 72, FIRE ALARM CODE
   H. AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES.
   I. OSHA REGULATIONS.
   J. EPA REGULATIONS.
3. CONTRACTOR SHALL NOTIFY THE ARCHITECT AND ENGINEER FIVE WORKING DAYS PRIOR TO CLOSE-IN OF FLOORS, COLUMNS, WALLS, AND TRENCHES TO PROVIDE ENGINEER OPPORTUNITY FOR VISUAL OBSERVATION OF CONCEALED INSTALLATIONS PRIOR TO CLOSE-IN. CONTRACTORS FAILURE TO PROVIDE REQUIRED NOTIFICATION DOES NOT RELIEVE THE CONTRACTOR OF PROVIDING VISUAL OBSERVATION BY THE ENGINEER, INCLUDING REMOVING AND REPLACING OBSTRUCTIONS, COVERINGS, AND FINISHES AT NO ADDITIONAL COST.
4. ENGINEER MAY CONSIDER DEVIATIONS AND SUBSTITUTIONS WHEN SUBMITTED ITEM IS CLEARLY AND SPECIFICALLY IDENTIFIED IN SUBMITTAL. ENGINEER SHALL NOT BE RESPONSIBLE FOR SUBSTITUTIONS OR DEVIATIONS FROM THE CONSTRUCTION DOCUMENTS, NOT SPECIFICALLY IDENTIFIED AND SUBMITTED.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING, AND PAYMENT FOR, PERMITS, TESTS, TAP FEES, CONNECTION FEES, AND ARRANGEMENTS FOR INSPECTIONS BY AUTHORITIES HAVING JURISDICTION
6. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL LOCATION OF SYSTEMS AND COMPONENTS. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND COORDINATE WITH THE WORK OF ALL TRADES/ DIVISIONS PRIOR TO INSTALLATION.
7. THE WORD "PROVIDE" IDENTIFIES THE REQUIREMENT TO FURNISH AND INSTALL A COMPLETE SYSTEM WITH ALL COMPONENTS, ACCESSORIES, TESTS, AND ADJUSTED AS NECESSARY TO RENDER A FULLY OPERATIONAL AND COMPLETE WORKING SYSTEM. THE WORD "PIPING" IDENTIFIES PIPE, JOINTS, FITTINGS, VALVES, CONTROLS, INSULATION, ADAPTERS, SUPPORT, HANGERS, DEVICES AND ACCESSORIES AS REQUIRED FOR A COMPLETE AND FUNCTIONAL SYSTEM AS REQUIRED BY CODE
8. CONTRACTOR SHALL FIRE SAFE (IN COMPLIANCE WITH AUTHORITY APPROVED UL LISTINGS) AND SEAL ALL PENETRATIONS WATERTIGHT, PRIOR TO CLOSE-IN. FAILURE TO DO SO WILL BE AT CONTRACTOR'S RISK AND EXPENSE SHOULD ANY DAMAGE OCCUR.
9. CONTRACTOR SHALL COORDINATE WORK ALL TRADES, BOTH ABOVE CEILING AND BELOW FLOOR/GRADE. MINOR DEVIATIONS FROM DRAWINGS MAY BE REQUIRED FOR COORDINATION WITH NEW AND EXISTING CONDITIONS.
10. THROUGH-PENETRATIONS OF RATED FIRE RESISTANT ASSEMBLIES/BARRIERS SHALL BE IN COMPLIANCE WITH N.F.P.A. 101 (AND [illegible]), F.M. APPROVED, AND U.L. LISTED. FIRE SAFE ANNULAR SPACE BETWEEN NON-COMBUSTIBLE PENETRATING ITEM (PIPE) AND NON-COMBUSTIBLE SLEEVE WITH F.M. APPROVED AND U.L. LISTED FIRE RATED MATERIAL WITH A RATING EQUAL TO THE BARRIER PENETRATED. THROUGH-PENETRATIONS AND FIRE RATING OF FIRE RATED FLOORS AND WALLS SHALL BE IN COMPLIANCE WITH THE U.L. FIRE RESISTANCE DIRECTORY (LATEST ADOPTED EDITION) AND AS REQUIRED BY THE AUTHORITY HAVING JURISDICTION.
11. PROVIDE DIELECTRIC PIPING UNIONS BETWEEN DISSIMILAR METALS.
12. PIPING SHALL NOT COME INTO DIRECT CONTACT WITH CONCRETE OR STRUCTURE IN ANY LOCATION.
13. CONTRACTOR SHALL THOROUGHLY CLEAN WORK AREA DAILY AND SHALL REMOVE TRASH AND DEBRIS FROM SITE AFTER COMPLETION OF THE CONTRACT.
14. SANITARY, STORM AND VENT PIPING SHALL BE INSTALLED AT A MINIMUM SLOPE OF:(UNLESS OTHERWISE INDICATED)
    1) ⅛" (1%) FOR PIPES 3-INCHES AND LARGER:
    2) ¼" (2%) FOR PIPES SMALLER THAN 3-INCHES.
15. STORAGE TYPE WATER HEATERS SHALL BE PROVIDED WITH CODE APPROVED (24 GAGE GALVANIZED STEEL OR .025 THICK PLASTIC) DRIP PANS. NOT LESS THAN 1-½" DEEP WITH 1" PAN DRAIN EXTEND TO SPILL OVER THE NEAREST DRAIN, AS INDICATED ON DRAWINGS. SEPARATELY, EXTEND TEMPERATURE AND PRESSURE RELIEF VALVE DISCHARGE TO SPILL DIRECTLY OVER THE NEAREST DRAIN.
16. EXTENSIONS OF, AND NEW CONNECTIONS TO, NEW PIPING SYSTEMS SHALL BE MADE WITH MATERIALS OF SAME TYPE, RATING, AND COMPOSITION AS EXISTING PIPING, SHOWN ON CIVIL DRAWINGS 5'-0" FROM BUILDING UNLESS OTHERWISE IDENTIFIED HEREIN.
17. PROVIDE A TRAP PRIMER CONNECTION FOR EACH FLOOR DRAIN. CONNECT TO NEAREST COLD WATER SUPPLY SERVING A FIXTURE. MAINTAIN ACCESSIBILITY TO TRAP PRIMER VALVES.
18. PROVIDE CODE COMPLIANT (ASSE) BACKFLOW PREVENTER WITH SHUT OFF VALVES, UNION, AND ESCUTCHEON AT EACH EQUIPMENT CONNECTION THAT REQUIRES A POTABLE WATER CONNECTION.
19. CONTRACTOR IS PROHIBITED FROM USING LEAD-BASED SOLDER.
20. CONTRACTOR SHALL PURGE NEW POTABLE WATER SYSTEMS OF DELETERIOUS MATTER AND DISINFECT PRIOR TO UTILIZATION. THE METHOD TO BE FOLLOWED SHALL BE IN ACCORDANCE WITH THE HEALTH AUTHORITIES AND OR BY AWWA C651.
21. DO NOT SCALE DRAWINGS. SEE ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS OF PLUMBING FIXTURES, WALLS, CHASES, DOORS, WINDOWS, ETC.
22. EXCEPT WHERE PIPE SPACE IS PROVIDED ALL SUPPLY WATER PIPING, WASTE OR VENTS SHALL BE CONCEALED AND RUN IN CEILING SPACE, WALLS, PARTITIONS OR CHASES.
23. CONTRACTOR OR THEIR REPRESENTATIVES SHALL INSTRUCT OWNER IN THE PROPER OPERATION AND SERVICE OF ALL NEW PLUMBING SYSTEMS AND EQUIPMENT INSTALLED.
24. INSTALLATION OF ALL NEW PLUMBING FIXTURES IN TOILET ROOMS SHALL INCLUDE ALL ACCESSORIES REQUIRED FOR EFFICIENT OPERATION SUCH AS FLUSH VALVES, FAUCETS, DRAINS, VALVES, ETC.
25. NATURAL GAS PIPING SHALL BE SCHEDULE 40 BLACK STEEL PIPE.
26. STORM DRAINS SHALL BE LOCATED HIGH AS POSSIBLE AT CEILING ABOVE FINISHED FLOOR UNLESS NOTED OTHERWISE.
27. ALL FLOOR OR WALL CLEANOUTS SHALL HAVE TOPS OR COVERS SPECIALLY DESIGNED FOR SPECIFIC FLOOR FINISHES SUCH AS CARPET, TILE CONCRETE, ETC. UNLESS NOTED OTHERWISE.
28. ALL VERTICAL STORM SEWERS SHALL HAVE CLEANOUTS AT THEIR BASE 3'-0" ABOVE FINISHED FLOOR BEFORE PENETRATING FIRST FLOOR SLAB.

VALVES AND PIPING ACCESSORIES SHALL BE LINE SIZE. PROVIDE SUPPLY STOP VALVES AT ALL NON-FLUSH VALVE TYPE FIXTURES.

ABBREVIATIONS

AFF	ABOVE [illegible]
ASME	AMERICAN SOC. OF MECHANICAL ENGINEERS
ASTM	AMERICAN SOC. FOR TESTING & MATERIALS
BEL	BELOW
BFP	BACKFLOW PREVENTER
BLDG	BUILDING
℄	CENTER LINE
CLG	CEILING
CO	CLEANOUT
CW	COLD WATER
DFU	DRAINAGE FIXTURE UNIT
DIA	DIAMETER
DN	DOWN
EL	ELEVATION
FCO	FLOOR CLEANOUT
FD	FLOOR DRAIN
FS	FLOOR SINK
G	GAS (NATURAL)
GI	GREASE INTERCEPTOR
GPF	GALLON PER FLUSH
GPM	GALLON PER MINUTE
GV	GAS VENT
GWH	GAS WATER HEATER
HB	HOSE BIBB W/ VACUUM BREAKER
HP	HORSE POWER
HW	HOT WATER
HWR	HOT WATER RETURN
IN	INCHES
INV	INVERT
IW	INDIRECT WASTE
KW	KILOWATTS
MAX	MAXIMUM
MH	MANHOLE
MIN	MINIMUM
NTS	NOT TO SCALE
OI	OIL INTERCEPTOR
ORD	OVERFLOW ROOF DRAIN (SECONDARY)
PSI	POUNDS PER SQUARE INCH
RD	ROOF DRAIN
RPZ	REDUCED PRESSURE BACKFLOW PREVENTER
RPM	REVOLUTIONS PER MINUTE
S OR SAN	SANITARY
SF	SQUARE FOOT
SK	SINK
SP	SUMP PUMP
SS	SERVICE SINK
S.S.	STAINLESS STEEL
ST	STORM
TD	TRENCH DRAIN
T & P	TEMPERATURE & PRESSURE RELIEF VALVE
TMV	TEMPERATURE MIXING VALVE
TP	TRAP PRIMER
TYP	TYPICAL
V	VENT
VTR	VENT THROUGH ROOF
W/	WITH
WCO	WALL CLEANOUT
WH	WALL HYDRANT, NON FREEZE W/ VACUUM BREAKER
WHA	WATER HAMMER ARRESTER
WSFU	WATER SUPPLY FIXTURE UNIT

* NOT ALL SYMBOLS MAY BE APPLICABLE TO THE PROJECT

SYMBOLS

	BALANCING VALVE, CALIBRATED
	BALL VALVE
	BUTTERFLY VALVE
	CAP OR END OF PIPE
	CHECK VALVE
	CLEANOUT
	CIRCULATOR
	CUT LINE
	DIRECTION OF FLOW
	DIRECTION OF SLOPE
	FLOOR DRAIN
	FLOOR CLEANOUT
	FLOOR SINK
	HOSE BIBB
	P TRAP
	PIPE BREAK (SINGLE LINE)
	PIPE FITTING DOWN OR DROP
	PIPE FITTING-TEE DOWN
	PIPE FITTING UP
	PIPE SLEEVE OR BEAM PENETRATION
	PRESSURE GAUGE
	GAS PRESSURE REGULATOR
	GAS COCK VALVE
	ROOF DRAIN (PRIMARY)
	REDUCED PRESSURE BACKFLOW PREVENTER
	DOUBLE CHECK DETECTOR ASSEMBLY BACKFLOW PREVENTER
	STRAINER
	TEMP. & PRESSURE RELIEF VALVE
	TEMP. INDICATOR W/ BALL VALVE
	TRENCH DRAIN
	WALL HYDRANT
	UNION FITTING
	WATER HAMMER ARRESTER
	WATER METER
	EXTENT OF DEMOLITION

PIPE LINETYPES

	NEW COLD WATER PIPE
	NEW HOT WATER PIPE (DOMESTIC)
	NEW HOT WATER RECIRCULATING PIPE (DOMESTIC)
—G—	NEW GAS PIPE
—OF—	NEW OVERFLOW PIPE
—S—	NEW SANITARY PIPE ABOVE FLOOR
—S—	NEW SANITARY PIPE BELOW FLOOR
—ST—	NEW STORM PIPE
—ST—	NEW STORM PIPE BELOW FLOOR
	NEW VENT PIPE
	EXISTING COLD WATER PIPE, TO BE DEMOLISHED
	EXISTING HOT WATER PIPE (DOMESTIC), TO BE DEMOLISHED
	EXISTING HOT WATER RECIRC. PIPE (DOM.) TO BE DEMOLISHED
	EXISTING GAS PIPE, TO BE DEMOLISHED

DOMESTIC WATER HEATER SCHEDULE

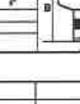
SERVICE	LOCATION	TYPE	BTUH INPUT	KW INPUT	STORAGE GALLONS	RECOVERY: GPH	ΔT °F	REMARKS
GWH-1	BASEMENT	GAS	300,000		100	183	100	[illegible]

RECIRCULATOR PUMP SCHEDULE

ID	SERVICE	LOCATION	LINE SIZE	FLOW GPM	TDH FT	ELECTRICAL CHARACTERISTICS	REFERENCE	REMARKS
RCP-1	HOT WATER	BASEMENT	¾"	3	11	⅙ hp/120V/1ϕ/60Hz	B&G MODEL PR	NSF 61 COMPLIANCE CERTIFICATE

WATER HAMMER ARRESTERS

PDI SYMBOL	FIXTURE UNIT RATING	INCHES	SIZE "B" INCHES
A	1-11	3/4"	4
B	12-32	1"	5"
C	33-60	1"	6"



EXPANSION TANK SCHEDULE

ID	M.W.P. p.s.i.g.	CAPACITY GALLONS: TANK VOLUME	ACCEPT. VOLUME	SYSTEM CONNECTION INCHES	DIMENSIONS: DIAMETER INCHES	HEIGHT INCHES	REFERENCE	REMARKS
ET-1	150	4.8	2.0	¾	10.6	13.7	WESSELS T-12	1. NSF 61 COMPLIANCE CERTIFICATE. 2. COMPLETE WITH DRAINPAN, AIR ELIMINATOR AND AIR VENT.

BACKFLOW PREVENTER

MARK	MANUFACTURER	MODEL NO.	REMARKS
BFP-1	WATTS	007M1QT	VERTICAL INSTALLATION

DESIGNED		09/03/13	ISSUE FOR BID		
DRAWN		11/19/12	PERMIT SUBMISSION		
CHECKED	REVISION	DATE	DESCRIPTION	BY	APP.

CERTIFICATION

GENERAL NOTES, ABBREVIATIONS & SYMBOLS

PLUMBING

DRAWING NO.

MODERNIZATION OF FEMS ENGINE HOUSE 14
4801 NORTH CAPITOL ST. N.E.
WASHINGTON DC, 20011

P0.01

SORG ARCHITECTS
918 U ST. NW, WASHINGTON DC 20001
T: 202.383.8445 F: 202.383.8447

JVP Engineers, P.C.
Consulting Engineers

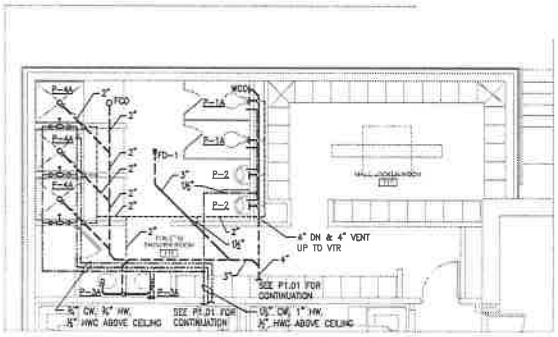
REGISTRATION NO.
DATE

GOVERNMENT OF THE DISTRICT OF COLUMBIA
DEPARTMENT OF GENERAL SERVICES

PROJECT NO. 1204
BLDG. NO.
DATE: SEP 03, 2013
SHEET OF

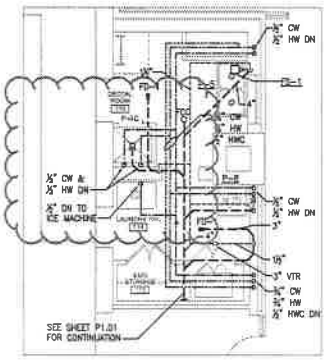
1"=10' 1"=20' 1"=30' 1"=40' 1"=50' 1"=100' 1"=200' 1"=400' 3"=1'-0" 1 1/2"=1'-0" 1"=1'-0" 3/4"=1'-0" 1/2"=1'-0" 3/8"=1'-0" 1/4"=1'-0" 3/16"=1'-0" 1/8"=1'-0" 3/32"=1'-0" 1/16"=1'-0"

ADDENDUM 06- ATTACHMENT 01
2 of 2



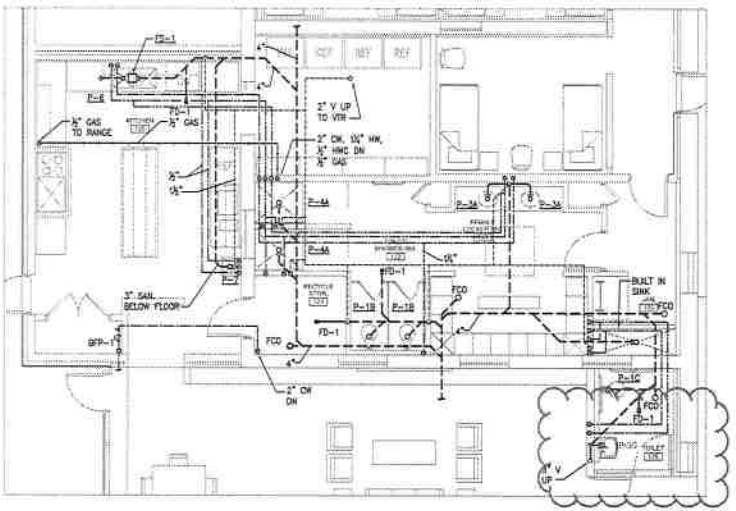
1 P1.01 P4.01 MEN'S TOILET / SHOWERS
SCALE: 1/4" = 1'-0"

NORTH



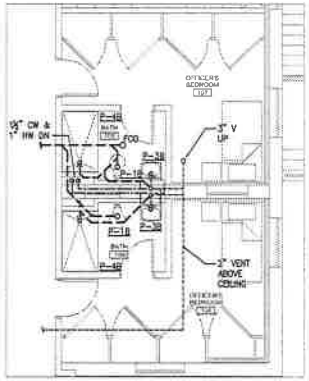
2 P1.01 P4.01 DECON ROOM / LAUNDRY
SCALE: 1/4" = 1'-0"

NORTH



3 P1.01 P4.01 WOMEN'S TOILET / SHOWERS / KITCHEN
SCALE: 1/4" = 1'-0"

NORTH



4 P1.01 P4.01 OFFICER'S TOILETS
SCALE: 1/4" = 1'-0"

NORTH

DESIGNED AA		04/02/13	ISSUE FOR BID		
DRAWN CL		11/16/12	PERMIT SUBMISSION		
CHECKED AA	REVISION	DATE	DESCRIPTION	BY	APP.

CERTIFICATION

ENLARGED PARTIAL FLOOR PLANS

PLUMBING

MODERNIZATION OF FEMS ENGINE HOUSE 14
4801 NORTH CAPITOL ST. N.E.
WASHINGTON DC, 20011

DRAWING NO. P4.01

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816 U ST. NW, WASHINGTON DC 20001
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JVP Engineers, P.C.

REGISTRATION NO.
DATE

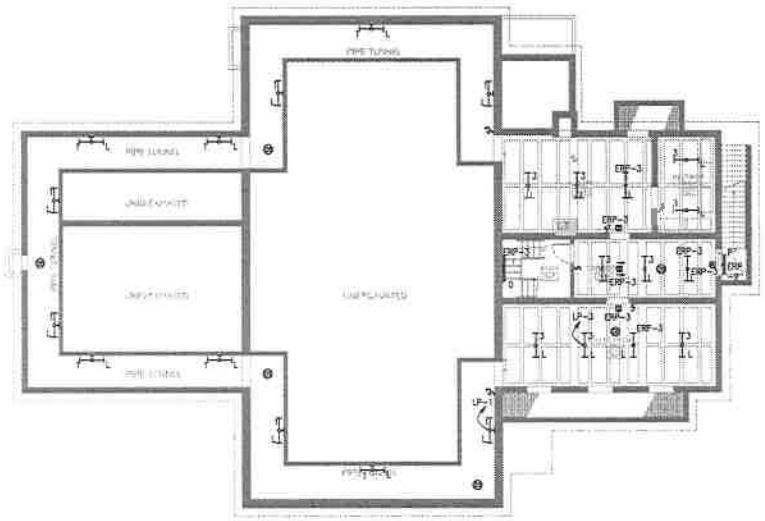
GOVERNMENT OF THE DISTRICT OF COLUMBIA
DEPARTMENT OF GENERAL SERVICES

PROJECT NO. 1209
BLDG. NO.
DATE: SEP 03, 2013
SHEET OF

1"=10' | 1"=20' | 1"=30' | 1"=40' | 1"=50' | 1"=100' | 1"=200' | 1"=400' | 3"=1'-0" | 1 1/2"=1'-0" | 1"=1'-0" | 3/4"=1'-0" | 1/2"=1'-0" | 3/8"=1'-0" | 1/4"=1'-0" | 3/16"=1'-0" | 1/8"=1'-0" | 3/32"=1'-0" | 1/16"=1'-0" | 1/16"=1'-0"

Attachment 02

ADDENDUM 06- ATTACHMENT 02



BASEMENT LIGHTING PLAN - NEW WORK
SCALE: 1/8" = 1'-0"

NORTH

FIRST FLOOR LIGHTING PLAN - NEW WORK
SCALE: 1/8" = 1'-0"

NORTH

GENERAL NOTES:

1. REFER TO ARCHITECTURAL DRAWINGS FOR FIXTURE LOCATIONS.
2. WALL MOUNT LIGHTING FIXTURES IN PIPE TUNNEL. COORDINATE FIXTURE HEIGHT IN THE FIELD BELOW DUCTWORK. SEE MECHANICAL DRAWING M-101.
3. REFER TO DRAWING E-602 FOR LIGHT FIXTURE SCHEDULE.
4. ROUTE LIGHTING CIRCUIT HOME RUNS THROUGH THE PIPE TUNNEL.

NEW WORK KEY NOTES:

① ROUTE HOME RUN TO LIGHTING TIME CLOCK AND CONTACTOR BOX. SEE OUTDOOR LIGHTING CONTROL DETAIL ON DRAWING E-601.

② PROVIDE ECO BALLAST SYSTEM CONNECTED TO THE DAYLIGHT HARVESTING DEVICES AND ASSOCIATED ACCESSORIES TO PROVIDE A MINIMUM OF 20 FOOTCANDLES IN THE APPARATUS BAY.

LT FSAS LIGHT TOWER- FINAL LOCATIONS TBD

TL TRIP LIGHTS (TYPE G1)
NORTH AND SOUTH SIDES ON SEPARATE CIRCUITS CONTROLLED FROM WATCH DESK

	10/15/13	ISSUE FOR BID - ADDENDUM 01	
DESIGNED RH		10/11/13	ISSUE FOR BID	
DRAWN RH		11/19/12	PERMIT SUBMISSION	
CHECKED AL	REVISION	DATE	DESCRIPTION	BY APP.

CERTIFICATION

BASEMENT AND FIRST FLOOR PLANS – LIGHTING NEW WORK

ELECTRICAL

DRAWING NO. E-102

MODERNIZATION OF FEMS ENGINE HOUSE 14
4801 NORTH CAPITOL ST. N.E.
WASHINGTON DC. 20011

SORG ARCHITECTS
918 U ST. NW, WASHINGTON DC 20001
T: 202.363.8445 F: 202.363.6487

REGISTRATION NO. 10904
DATE 09/01/2004

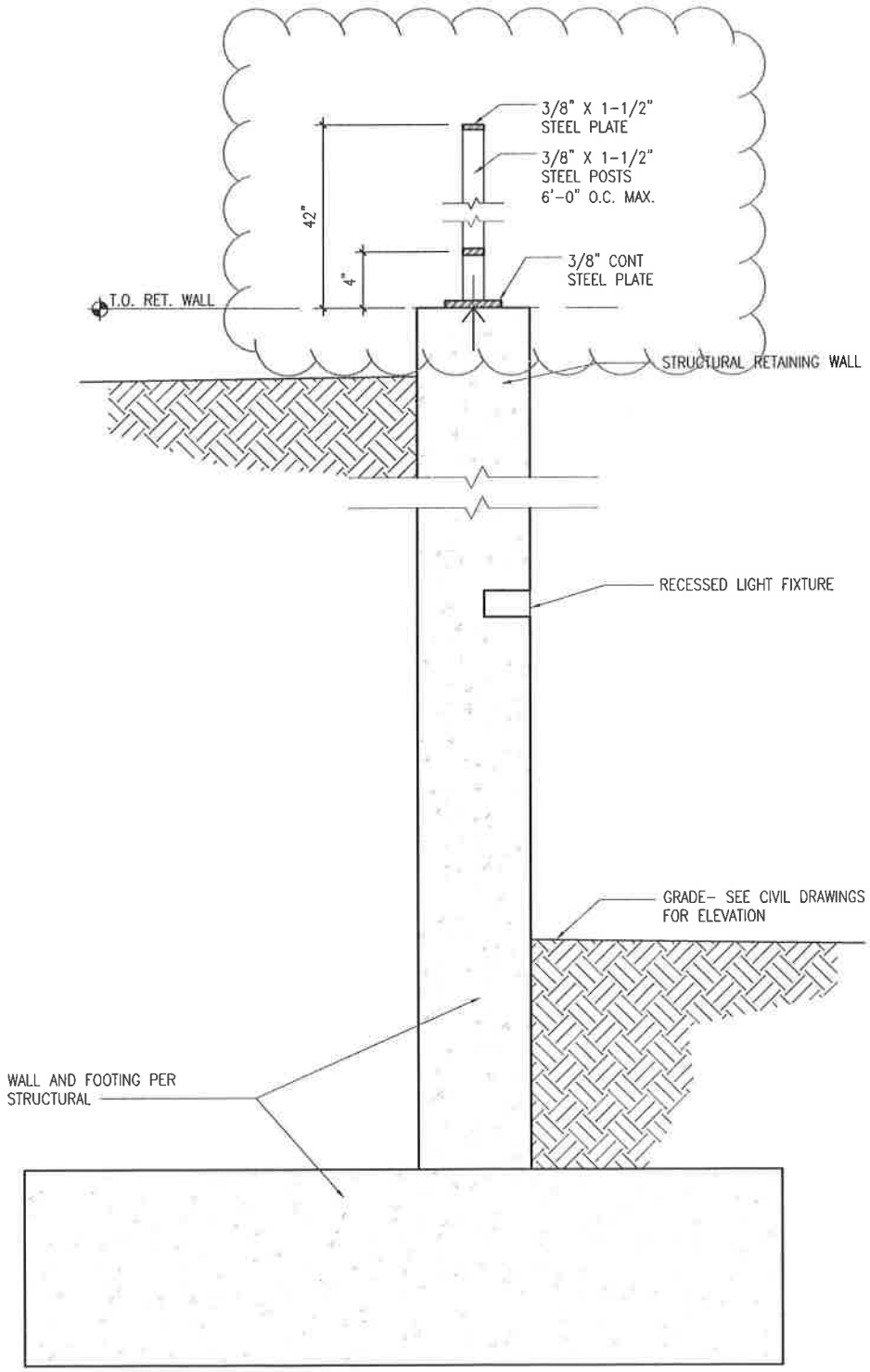
GOVERNMENT OF THE DISTRICT OF COLUMBIA
DEPARTMENT OF GENERAL SERVICES

PROJECT NO. 1208
BLDG. NO.
DATE: SEP. 03, 2013
SHEET XX OF XX

1"=10' 1"=20' 1"=30' 1"=40' 1"=50' 1"=100' 1"=200' 1"=400' 3"=1'-0" 1 1/2"=1'-0" 1"=1'-0" 3/4"=1'-0" 1/2"=1'-0" 3/8"=1'-0" 1/4"=1'-0" 3/16"=1'-0" 1/8"=1'-0" 3/32"=1'-0" 1/16"=1'-0" 1/16"=1'-0"

Attachment 03

ADDENDUM 06- ATTACHMENT 03



11 / A-504 RETAINING WALL SECTION DETAIL-PARKING

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

Specification 055213 Steel Railings

SECTION 055213 - STEEL 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 hand and guard railings.

B. Related Sections:

1. Section 061000 "Rough Carpentry" Section 061053 "Miscellaneous Rough Carpentry" for wood blocking for anchoring railings.
2. Section 092216 "Non-Structural Metal Framing" for metal backing for anchoring railings.

1.3 PERFORMANCE REQUIREMENTS

A. Delegated Design: Design railings, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.

B. General: In engineering railings to withstand structural loads indicated, determine allowable design working stresses of railing materials based on the following:

1. Steel: 72 percent of minimum yield strength.

C. Structural Performance: Railings 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. (0.73 kN/m) applied in any direction.
b. Concentrated load of 200 lbf (0.89 kN) applied in any direction.
c. Uniform and concentrated loads need not be assumed to act concurrently.

2. Infill of Guards:

a. Concentrated load of 50 lbf (0.22 kN) applied horizontally on an area of 1 sq. ft. (0.093 sq. m).

b. Infill load and other loads need not be assumed to act concurrently.

D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on exterior metal fabrications by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects.

1. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

E. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.

1.4 ACTION SUBMITTALS

A. Product Data: For the following:

1. Manufacturer's product lines of mechanically connected railings.
2. Railing brackets.
3. Grout, anchoring cement, and paint products.

B. LEED Submittals:

1. Product Data for Credit MR 4: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content. Include statement indicating cost for each product having recycled content.
2. Laboratory Test Reports for Credit IEQ 4: For primers, documentation indicating that products 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. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.

D. Samples for Initial Selection: For products involving selection of color, texture, or design.

E. Samples for Verification: For each type of exposed finish required.

1. Sections of each distinctly different linear railing member, including handrails, top rails, and posts.
2. Fittings and brackets.
3. Assembled Sample of railing system, made from full-size components, including top rail, post, handrail, and infill. Sample need not be full height.

a. Show method of finishing, connecting members at intersections.

F. Delegated-Design Submittal: For installed products indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified professional engineer.

B. Mill Certificates: Signed by manufacturers of stainless-steel products certifying that products furnished comply with requirements.

C. Welding certificates.

D. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers certifying that shop primers are compatible with topcoats.

E. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, according to ASTM E 894 and ASTM E 935.

1.6 QUALITY ASSURANCE

A. Source Limitations: Obtain each type of railing from single source from single manufacturer.

B. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

C. Welding Qualifications: Qualify procedures and personnel according to the following:

1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."

1.7 PROJECT CONDITIONS

A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication.

1.8 COORDINATION AND SCHEDULING

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.

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. Steel Railings:
   a. Julius Blum and Co or Equal

2.2 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.

2.3 STEEL AND IRON

A. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than **[25]** percent.

B. Plates, Shapes, and Bars: ASTM A 36/A 36M.

2.4 FASTENERS

A. General: Provide the following:

1. Ungalvanized-Steel Railings: Plated steel fasteners complying with ASTM B 633 or ASTM F 1941 (ASTM F 1941M), Class Fe/Zn 5 for zinc coating.
2. Hot-Dip Galvanized Railings: Type 304 stainless-steel or hot-dip zinc-coated steel fasteners complying with ASTM A 153/A 153M or ASTM F 2329 for zinc coating.

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. Post-Installed Anchors: Torque-controlled expansion anchors or chemical anchors capable of sustaining, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing according to ASTM E 488, conducted by a qualified independent testing agency.

1. Material for Interior Locations: Carbon-steel components zinc-plated to comply with ASTM B 633 or ASTM F 1941 (ASTM F 1941M), Class Fe/Zn 5, unless otherwise indicated.

2.5 MISCELLANEOUS MATERIALS

A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

B. Low-Emitting Materials: Paints and coatings 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. Etching Cleaner for Galvanized Metal: Complying with MPI#25.

D. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.

E. Shop Primers: Provide primers that comply with Section 099113 "Exterior Painting" and Section 099123 "Interior Painting."

F. 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.

G. Epoxy Zinc-Rich Primer: Complying with MPI#20 and compatible with topcoat.

H. Shop Primer for Galvanized Steel: Water based galvanized metal primer complying with MPI#134.

I. Intermediate Coats and Topcoats: Provide products that comply with Section 099113 "Exterior Painting" and Section 099123 "Interior Painting."

J. Epoxy Intermediate Coat: Complying with MPI #77 and compatible with primer and topcoat.

K. Polyurethane Topcoat: Complying with MPI #72 and compatible with undercoat.

L. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.

M. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout specifically recommended by manufacturer for interior and exterior applications.

N. Anchoring Cement: Factory-packaged, nonshrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with water at Project site to create pourable anchoring, patching, and grouting compound.

1. Water-Resistant Product: At exterior locations and where indicated provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating and that is recommended by manufacturer for exterior use.

2.6 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. Assemble railings in the shop 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 (1 mm) 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 will be exposed to weather in a manner to exclude 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. Nonwelded Connections: Connect members with concealed mechanical fasteners and fittings. Fabricate members and fittings to produce flush, smooth, rigid, hairline joints.

1. Fabricate splice joints for field connection using an epoxy structural adhesive if this is manufacturer's standard splicing method.

J. Form changes in direction as follows:

1. As detailed.

K. Bend members in jigs to produce uniform curvature for each configuration required; maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.

L. Close exposed ends of railing members with prefabricated end fittings.

M. Provide inserts and other anchorage devices for connecting railings to concrete work. Fabricate anchorage devices capable of withstanding loads imposed by railings. Coordinate anchorage devices with supporting structure.

N. For railing posts set in concrete, provide steel sleeves not less than 6 inches (150 mm) long with inside dimensions not less than 1/2 inch (13 mm) greater than outside dimensions of post, with metal plate forming bottom closure.

2.7 FINISHES, GENERAL

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

D. Provide exposed fasteners with finish matching appearance, including color and texture, of railings.

2.8 STEEL AND IRON FINISHES

A. Galvanized Railings:

1. Hot-dip galvanize exterior steel and iron railings, including hardware, after fabrication.
2. Hot-dip galvanize indicated steel and iron railings, including hardware, after fabrication.
3. Comply with ASTM A 123/A 123M for hot-dip galvanized railings.
4. Comply with ASTM A 153/A 153M for hot-dip galvanized hardware.
5. Do not quench or apply post galvanizing treatments that might interfere with paint adhesion.
6. Fill vent and drain holes that will be exposed in the finished Work, unless indicated to remain as weep holes, by plugging with zinc solder and filing off smooth.

B. For galvanized railings, provide hot-dip galvanized fittings, brackets, fasteners, sleeves, and other ferrous components.

C. Preparing Galvanized Railings for Shop Priming: After galvanizing, thoroughly clean railings of grease, dirt, oil, flux, and other foreign matter, and treat with etching cleaner.

D. For nongalvanized steel railings, provide nongalvanized ferrous-metal fittings, brackets, fasteners, and sleeves, except galvanize anchors to be embedded in exterior concrete or masonry.

E. Preparation for Shop Priming: Prepare uncoated ferrous-metal surfaces to comply with SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning." SSPC-SP 3, "Power Tool Cleaning." requirements indicated below:

1. Exterior Railings: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
2. Railings Indicated to Receive Zinc-Rich Primer: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
3. Railings Indicated to Receive Primers Specified in Section 099600 "High-Performance Coatings": SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
4. Other Railings: SSPC-SP 3, "Power Tool Cleaning."

F. Primer Application: Apply shop primer to prepared surfaces of railings unless otherwise indicated. Comply with requirements in SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting. Primer need not be applied to surfaces to be embedded in concrete or masonry.

1. Shop prime uncoated railings with universal shop primer.
2. Do not apply primer to galvanized surfaces.

G. Shop-Painted Finish: Comply with Section 099113 "Exterior Painting."

1. Color: As selected by Architect from manufacturer's full range.

PART 3 - EXECUTION

3.1 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 have been 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 (2 mm in 1 m).
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 (5 mm in 3 m).

C. Adjust railings before anchoring to ensure matching alignment at abutting joints.

D. Fastening to In-Place Construction: Use anchorage devices and fasteners where necessary for securing railings and for properly transferring loads to in-place construction.

3.2 RAILING CONNECTIONS

A. 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.

B. 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 (50 mm) beyond joint on either side, fasten internal sleeve securely to one side, and locate joint within 6 inches (150 mm) of post.

3.3 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 for touching up shop-painted surfaces.

1. Apply by brush or spray to provide a minimum 2.0-mil (0.05-mm) 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 099113 "Exterior Painting" and Section 099123 "Interior Painting."

C. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780.

3.4 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

Specification 238130

Variable Refrigerant Volume Systems

SECTION 238130 – VARIABLE REFRIGERANT VOLUME SYSTEMS

VRV Size Range: 6 TO 38 TONS NOMINAL

PART 1 - GENERAL

1.1 SYSTEM DESCRIPTION

A. Simultaneous Heating and Cooling Heat Pump

The Variable Refrigerant Volume (VRV) system shall be a simultaneous cooling and heating heat pump. The simultaneous heating and cooling VRV system shall consist of an outdoor unit, high efficiency heat recovery units designed for minimum piping and maximum design flexibility, indoor units, and controls by the equipment manufacturer. Every indoor unit shall be independently capable of operating in either heating or cooling mode regardless of the mode of other indoor units. The system shall be capable of changing mode of individual indoor units (cooling to heating or heating to cooling) within a maximum time of 5 minutes to ensure indoor temperature can be properly maintained.

1.2 QUALITY ASSURANCE

A. The units shall be manufactured in a facility registered to ISO 9001 and ISO14001 which is a set of standards applying to environmental protection set by the International Standard Organization (ISO).

B. All wiring shall be in accordance with the National Electrical Code (NEC).

C. The units shall be listed by Electrical Testing Laboratories (ETL) and bear the ETL label.

1.3 STORAGE AND HANDLING

A. All VRV equipment shall be stored protected from weather, extreme temperature, etc. as suggested by the manufacturer. All VRV equipment shall be moved, lifted, etc. as suggested by the manufacturer.

1.4 WARRANTY

A. VRV equipment shall be warranted by the manufacturer's limited warranty for a period of one year from date **of substantial completion**. An extended warranty including 1 additional year parts and 5 additional years compressor shall be granted upon submission to the manufacturer and acceptance by the manufacturer of proper installation with documentation including:
   1. Selection output and layout of the VRV system.
   2. 60 minutes of operational history upon commissioning from the VRV service tool.
   3. Completed commissioning report as per the VRV equipment manufacturer.

During this period, any part failing to function properly due to faulty workmanship or material shall be repaired or replaced at the VRV equipment manufacturer's discretion and shall not include labor.

1.5 INSTALLATION

A. VRV system shall be installed by a licensed mechanical contractor trained by the VRV equipment manufacturer or certified manufacturer's agent.

1.6 COMMISSIONING

A. **Commissioning shall be performed in accordance with Section 230800.**

PART 2 - PRODUCTS

2.1 SIMULTANEOUS HEATING AND COOLING OUTDOOR UNIT

A. General:
1. The outdoor unit shall be used with VRV components of the same manufacturer consisting of the outdoor unit, high efficiency heat recovery units, indoor units, factory designed and supplied Y-branches, and controls.
2. System components shall be of the same manufacturer or as recommended by the manufacturer of the VRV equipment.
3. Unit control boards shall perform all functions required to effectively and efficiently operate the VRV system and communicate in a daisy chain configuration from outdoor unit to heat recovery and indoor units via RS485.
4. The outdoor unit shall be completely factory assembled, piped and wired. Dual and triple frame outdoor units will be field piped with factory designed and supplied Y-branch kits to manifold them together into a single refrigerant circuit.
5. Each outdoor unit shall be run tested at the factory.
6. The sum of connected nominal capacity of all indoor air handlers shall range from 50% to 130% of outdoor unit nominal capacity to ensure the VRV system will have sufficient capacity to handle the building space loads at peak design.
7. Outdoor unit shall have a tested sound rating no higher than 58 dB(A) per outdoor unit frame tested per KSA0701. The outdoor unit frame shall include three quiet/nighttime operation settings of 47, 44, and 41 dBA.
8. All refrigerant lines from the outdoor unit to the heat recovery unit and from the heat recovery unit to the indoor units shall be field insulated.
9. The outdoor unit shall have an accumulator.
10. The outdoor unit shall have a high pressure safety switch
11. The outdoor unit shall have over-current protection.
12. The outdoor unit shall use a brazed plate subcooling heat exchanger.
13. The outdoor unit shall have the ability to operate with an elevation difference of up to 328 feet above or below the indoor units.
14. The outdoor unit shall allow up to a total equivalent refrigerant piping length of 3280 feet.

15. The maximum length from outdoor unit to indoor unit shall be up to 656 feet without traps.
16. The outdoor unit shall be capable of operating in heating only mode down to -4°F and up to 61°F ambient wet bulb without additional low ambient controls.
17. The outdoor unit shall be capable of operating in cooling only mode down to 21°F and up to 110°F ambient dry bulb.
18. The outdoor unit shall be capable of operating in simultaneous heating and cooling mode down to 14°F and up to 86°F ambient dry bulb.
19. The outdoor unit shall have an oil separator for each compressor and controls to ensure sufficient oil supply is maintained for the compressor.
20. Shall use R410A refrigerant.
21. Each outdoor unit frame shall have a removable inspection panel no greater than 6 inches tall or 12 inches wide to allow access to service tool connection, DIP switches, auto addressing and error codes.

B. Frame:
1. Shall be constructed with galvanized steel, bonderized and be finished with powder coat baked enamel paint.

C. Compressor:
1. All 208/230V 3 phase outdoor unit frames shall be equipped with one hermetic digitally controlled inverter driven scroll compressor and one hermetic constant speed scroll compressor.
2. All 460V 3 phase outdoor unit frames greater than 80MBh nominal capacity shall be equipped with one hermetic digitally controlled inverter driven scroll compressor and one hermetic constant speed scroll compressor.
3. A crankcase heater shall be factory mounted on all compressors.
4. The outdoor unit compressor shall have an inverter to modulate capacity. The frequency of the inverter compressor shall be completely variable from 25 to 105Hz.
5. The compressor shall be equipped with an internal thermal overload.
6. The compressor shall be mounted to avoid the transmission of vibration.

D. Fan:
1. All outdoor unit frames shall be furnished with two direct drive, variable speed propeller type fans.
2. All fan motors shall have inherent protection, have permanently lubricated bearings, and be variable speed with a maximum speed up to 950 rpm.
3. All fans shall be provided with a raised guard to limit contact with moving parts.
4. The outdoor unit shall have vertical discharge airflow.

E. Coil:
1. The outdoor coil shall be of nonferrous construction with louvered fins on copper tubing.
2. The coil fins shall have a factory applied corrosion resistant material with hydrophilic coating.
3. The coil shall be protected with an integral metal guard.
4. Refrigerant flow from the outdoor unit shall be controlled by means of a digitally controlled inverter driven scroll compressor.

F. Electrical:
1. The outdoor unit electrical power shall be 208/230V, 60 Hz, 3 phase.

2. The outdoor unit shall be capable of operation within voltage limits of +/- 10% rated voltage.
3. The outdoor unit shall be controlled by integral microprocessors.
4. The control circuit between the indoor units, heat recovery box and the outdoor unit shall be 24VDC completed using a 2-conductor, stranded, shielded cable for the RS485 daisy chain communication.

2.2 BRANCH SELECTOR BOX UNITS FOR SIMULTANEOUS HEATING AND COOLING SYSTEMS

A. General:
1. Branch selector (BS) boxes shall be designed for use with VRV equipment of the same manufacturer.
2. BS boxes shall have factory installed control boards that interface to the VRV equipment controls system and shall perform all functions to effectively and efficiently control the simultaneous heating and cooling VRV system.
3. BS boxes shall be completely factory assembled, internally piped and wired.
4. BS boxes shall be run tested at the factory.
5. BS boxes shall be designed for indoor installation.
6. Shall use R410A refrigerant.
7. All refrigerant lines from the outdoor unit to the indoor units shall be field insulated.

B. Branch Selector Box Construction:
1. The BS box housing shall be galvanized steel.
2. Each BS box shall contain piping, valves and controls to divert refrigerant for optimum efficiency.
3. BS boxes shall be internally insulated and not require installation of any condensate drain.

C. Refrigerant System
1. R410A refrigerant shall be required for all VRV equipment and components including indoor units, outdoor units, refrigerant piping, valves, Y-branches, heat recovery units, etc. as applicable.

D. Refrigerant valves:
1. Each port shall be circuited with two 2-position solenoid valves to control refrigerant flow path.
2. Isolation valves shall be field supplied and installed for ease of service to the heat recovery unit without evacuating the entire system refrigerant charge. A. Shall be designed for use with R410A

E. Electrical:
1. The BS box electrical power shall be 208/230V, 1 phase, 60 Hz.
2. All units shall be capable of satisfactory operation within +/-10% of nominal voltage.
3. The heat recovery unit shall be controlled by integral microprocessors from the main control in the outdoor unit.
4. The control circuit between the indoor units, heat recovery box and the outdoor unit shall be 24VDC completed using a 2-conductor, stranded and shielded cable for the RS485 daisy chain communication.

PART 3 - INDOOR UNITS

3.1 4-WAY CEILING CASSETTE INDOOR UNIT

A. General:
1. Four-way ceiling cassette indoor units shall recess into the ceiling and mount flush.
2. Shall be designed for use with R410a refrigerant.
3. Shall be installed with heat pump or simultaneous heating and cooling heat pump VRV systems of the same manufacturer.
4. The indoor unit shall communicate with the outdoor unit via RS485 daisy chain communication.
5. Shall be rigidly constructed using a decaweb base plate.

B. Indoor Unit
1. The indoor unit shall be factory assembled, wired and run tested.
2. The indoor unit shall be factory wired and piped with its own electronic expansion device, control circuit board, fan and motor.
3. The indoor unit shall have
   a. self-diagnostic function
   b. auto restart function
4. Indoor unit refrigerant circuit shall be filled with a dry nitrogen gas charge from the factory.

C. Unit Cabinet:
1. The four-way ceiling cassette cabinet shall be designed to recess into the ceiling.
2. The cabinet panel shall have provisions for a field installed, pressurized and filtered outside air intake.
3. Branch ducting shall be allowed from cabinet following manufacturer recommendations.

D. Grille:
1. Four-way grille shall be fixed to bottom of the cabinet and allow two, three or four-way air flow.
2. Grille vane angles shall be individually adjustable from the wired remote controller to customize the airflow pattern for the conditioned space.
3. The indoor unit vanes shall have 6 fixed positions
4. The indoor unit vanes shall be capable of automatically swinging the vanes up and down for uniform air distribution. Vanes shall also be capable of being stopped at any position during swing operation.
5. The indoor unit shall have a setting in the heating or cooling mode that shall cycle the vanes up and down to evenly heat or cool the space.
6. Four-way ceiling cassette grille shall have integral sensor to read wireless handheld remote controller as standard from the factory.

E. Filter:
1. Return air shall be filtered with a removable, washable filter.
2. Shall be furnished as standard with a factory installed plasma filter with no additional external power supply required. -or- The grille shall be remote controlled and capable of being lowered on motorized cables for easy access to the washable filter for cleaning on ceiling cassettes 24MBh and larger when installed in ceilings 10 ft. or higher.

F. Fan:
1. The indoor fan shall be an assembly with one turbo fan direct driven by a single motor.
2. The indoor fan shall be statically and dynamically balanced.
3. Motor shall have permanently lubricated bearings.
4. In cooling mode, the indoor fan shall have the following settings; Super Low, Low, Med, High, Power Cool, and Auto.
5. In heating mode, the indoor fan shall have the following settings; Super Low, Low, Med, High, and Auto.
6. The fan shall have a selectable Auto fan setting that will adjust the fan speed based on the difference between controller set-point and space temperature.
7. The indoor unit shall have DIP switches that can be set to provide optimum airflow based on ceiling height.

G. Coil:
1. The indoor unit coil shall be nonferrous with louvered fins on copper tubing for maximum efficiency.
2. The tubing shall have inner grooves for high efficiency heat exchange.
3. The coils shall be pressure tested at the factory.
4. A condensate drain pan shall be factory installed below the coil.
5. All refrigerant lines to the indoor units shall be field insulated.

H. Condensate Pump:
1. The unit shall include a factory installed condensate pump that will be able to raise drain water 27 inches above the ceiling cassette face.

I. Electrical:
1. The unit electrical power shall be 208/230 volts, 1-phase, 60 Hz.
2. The indoor unit shall be capable of operation within voltage limits of +/-10% rated voltage.

J. Controls:
1. Unit shall use controls provided by the manufacturer to perform all functions necessary to operate the system effectively and efficiently and communicate with the outdoor unit over an RS485 daisy chain.

3.2 CEILING-CONCEALED DUCTED INDOOR UNIT

A. General:
1. Ceiling concealed duct indoor unit shall mount fully concealed within the ceiling.
2. Shall be designed for use with R410a refrigerant.
3. Shall be installed with heat pump or simultaneous heating and cooling heat pump VRF systems of the same manufacturer.
4. The indoor unit shall communicate with the outdoor unit via RS485 daisy chain communication.
5. Field installed ductwork shall not exceed the external static pressure limitation of the high static ducted indoor unit.

B. Indoor Unit:
1. The indoor unit shall be factory assembled, wired and run tested.

2. The indoor unit shall be factory wired and piped with its own electronic expansion device, control circuit board, fan and motor.
3. The indoor unit shall have
   a. self-diagnostic function
   b. auto restart function
4. Indoor unit refrigerant circuit shall be filled with a dry nitrogen gas charge from the factory.

C. Unit Cabinet:
1. The cabinet shall be ceiling-concealed and ducted.

D. Filter:
1. Return air shall be filtered with a factory supplied removable, washable filter.

E. Fan:
1. The indoor unit fan shall be no more than one assembly with two fans direct driven by a single motor.
2. The indoor fan shall be statically and dynamically balanced.
3. Motor shall have permanently lubricated bearings.
4. In cooling mode, the indoor fan shall have the following settings; Low, Med, and High.
5. In heating mode, the indoor fan shall have the following settings; Low, Med, and High.

F. Coil:
1. The indoor unit coil shall be nonferrous with louvered fins on copper tubing for maximum efficiency.
2. The tubing shall have inner grooves for high efficiency heat exchange.
3. The coils shall be pressure tested at the factory.
4. A condensate drain pan shall be factory installed below the coil.
5. All refrigerant lines to the indoor units shall be field insulated.

G. Condensate Pump:
1. The unit shall include a factory installed condensate pump that will be able to raise drain water 27 inches above the bottom of the indoor unit.

H. Electrical:
1. The unit electrical power shall be 208/230 volts, 1-phase, 60 Hz.
2. The indoor unit shall be capable of operation within voltage limits of +/-10% rated voltage.

I. Controls:
1. Unit shall use controls provided by the manufacturer to perform all functions necessary to operate the system effectively and efficiently and communicate with the outdoor unit over an RS485 daisy chain.

END OF SECTION 238130

Specification

Section 01 3200

Construction Progress Documentation

SECTION 01 3200 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

B. Coordinate the Schedule with the Application for Payment; refer to Section 01 29 00 "Payment Procedures."

1.2 SUMMARY

A. Administrative and procedural requirements for schedules and reports required for proper performance of Work.

B. Contractor's Responsibility shall include but not be limited to the following for providing, coordinating, and managing Construction Progress Documents:

1. Ensure timely execution of Work using critical path method schedule, because timely Contractor performance is essential to this Contract.
2. Allow District to monitor Contractor's Contract Schedule continuously so that District may audit Contractor's management of Contract Schedule via comparison to the approved Contract Schedule under District's control.
3. Use approved Contract Schedule for management of entire Work and make no change, modification, or updating of logic and/or durations in Contract Schedule without prior written concurrence from District.
4. Ensure adequate planning, scheduling, and reporting during execution of Work so it may be executed in orderly and expeditious manner within specified time constraints.
5. Ensure coordination of self-performed work with work of:

    a. All of elements of Contractor's organization, including subcontractors.
    b. Between subcontractors and vendors at all tiers.
    c. District personnel and District consultants.
    d. Separate contractors.

C. Required Scheduling Software: District will provide Contractor with one (1) login for District's version of software; additional logins shall be acquired by the Contractor and assigned to the District for the purpose of the Project.

1. Utilize Primavera (P6) Enterprise Project Portfolio Management.

2. Set adjustable settings, including those pertaining to float calculation and progress/logic override, in accordance with District's instructions, which shall require most conservative available settings.

D. At the request of the Project Manager in writing the Contractor shall be required to participate in meetings necessary to reach a mutual agreement and acceptance of the Detailed Construction Schedule (DCS), or the Cash Flow Projections.

1.3 PRE-SCHEDULE MEETING

A. The Contractor and the delegated Scheduler shall meet with the District representatives within 5 days after Notice to Proceed and before the detailed CPM schedule is developed, to address questions regarding this Section and to discuss the District's requirements to facilitate the expeditious preparation, review, and acceptance of the Schedule.

1.4 DEFINTIONS

A. DCS: Detailed Construction Schedule.

B. Data Date: Last Work Day of each month, for months between NTP and Acceptance, in accordance with schedule update requirements of this specification.

C. Work: Entirety of work to be performed by Contractor under this Contract.

D. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.

1. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.
2. Predecessor Activity: An activity that precedes another activity in the network.
3. Successor Activity: An activity that follows another activity in the network.

E. Cost Loading: The allocation of the schedule of values for the completion of an activity as scheduled. The sum of costs for all activities must equal the total Contract Sum unless otherwise approved by Architect.

F. CPM: Critical Path Method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of Project.

G. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.

H. Milestone: The starting or ending point of an activity.

I. Float: The measure of leeway in starting and completing an ac(A document Offerors submit exclusive use or benefit of either District or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.

J. Fragment: A partial or fragmentary network that breaks down activities into smaller activities for greater detail.

K. Major Area: A story of construction, a separate building, or a similar significant construction element.

L. Network Diagram: A graphic diagram of a network schedule, showing activities and activity relationships.

M. Resource Loading: The allocation of manpower and equipment necessary for the completion of an activity as scheduled.

N. Network: A network diagram is a graphic representation showing the relationship of activities and events in the correct sequences required to complete the Project with the Contract Time.

O. Resource Loading: The allocation of manpower and equipment necessary for the completion of an activity as scheduled.

P. Day: Calendar day unless otherwise noted. Contract uses calendar days.

1.5 SUBMITTALS

A. Detailed Construction Schedule (DCS): Submit to District within 5 calendar days following NTP, and editable-electronic copy of detailed time-scaled precedence form at network graphics and reports of proposed DCS in a format and level of detail approved by the Project Manager containing following:

1. Narrative of Contractor's proposed methodology, including proposed general sequencing plan.
2. Activity number, description, duration, cost loading, resource loading, coding structure and total float for each activity.
3. Sequence of operations for Work and order and interdependencies of Work activities. Indicate major points of interface or interrelation of such activities with activities of District and/or other contractors.
4. Conformance with and identification of Milestone durations and/or dates specified.
5. Contractor shall develop and include interim milestones in the CPM.
6. Delivery of District-furnished material and/or equipment, if applicable.
7. Primary, Secondary and Tertiary Critical path (or paths).

B. Two-Week Look-Ahead Schedule.

C. Qualifications: Provide qualifications for Scheduler assigned to the project. Within 5 day s after Award of Contract, provide the following:

1.Name and address of proposed Scheduler.

2. List of prior construction projects and 3 selected Primavera network samples that the proposed scheduler has prepared. The 3 CPM schedules shall be for projects similar in complexity and magnitude of this Project.

D. Daily Construction Reports. As described in this Section.

1.6 QUALITY ASSURANCE

A. Scheduler Qualifications: Experienced in CPM scheduling and reporting, with capability of producing CPM reports and diagrams.

1. Scheduler shall be proficient in scheduling software used by the Contractor and shall have successfully completed a project similar to size and scope of this Project using scheduling software.

B Prescheduling Conference: Conduct conference at Project site to com ply with requirements in Section 01 31 00 "Project Management and Coordination." Review methods and procedures related to Schedules and Reports, including, but not limited to, following:

1. Review software limitations and content and format for reports.
2. Review time required for review of submittals and resubmittals.
3. Review time required for completion and startup procedures.

1.7 COORDINATION

A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.

B. Coordinate Contractor's Construction Schedule with the Schedule of Values, list of subcontracts, Submittals Schedule, progress reports, payment requests, and other required schedules and reports.

1. Secure time commitments for performing critical elements of the Work from parties involved.
2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

1.8 MILESTONES

A. Milestones listed in Contract Documents represent only major items of work or interface dates. Milestones are considered essential to satisfactory performance of this Contract and to coordination of work on Project. Indicate Milestones in Detailed Construction Schedule (DCS) as either start or finish milestones with anticipated finish dates.

B. Milestones represent latest allowable completion durations, measured from Contract's initial District-issued Notice to Proceed (NTP). Unless specifically accepted by Change Order, Alternates, or Options, if any, and if exercised by District, shall be performed by Contractor within durations set out below. Coordinate application of following Milestones with contents of this specification and Work. All milestones will be of zero duration and tied to activities.

Code	Engine House 14 Temp Site Milestone Description	Calendar Days from NTP
1	***Construction NTP***	0
2	Mobilization and Submittals	15
3	Pre Engineered Building (PEB) & Trailer Approved shop drawings	30
4	Utility modifications and SOG	45
5	PEB Placement	85
6	Trailer Placement	105
7	HVAC startup & Commissioning	135
8	C of O Substantial complete	150

Code	Engine House 14 Milestone Description	Calendar Days from NTP
1	***Construction NTP***	0
2	Move	15
3	Mobilization & Submittals	30
4	Abatement	60
5	Selective demolition	90
6	Exterior renovations	140
7	Dry-in	170
8	Interior renovations	210
9	HVAC Startup	245
10	Commissioning	270
11	Site renovations	300
12	C of O Substantial Completion	320
13	Move	335
14	Decommission Trailer at Temp Site	365

1.9 ACTIVITY LEADS AND LAGS

A. The District acknowledges that the establishment of activity "leads" and "lags" might be a useful planning tool in some specific cases. However, the use of "leads" and "lags" shall be limited to the cases where they are necessary. Each "lead" and "lag" shall be justified by the Contractor and accepted by the District as part of the baseline schedule. When justified and approved, activity "leads" and "lags" shall be maintained in the same way activities are maintained. Changes in a "leads" or "lags" shall be identified, justified and accepted in each update.

1.10 WORK DAYS

A. Work Days: Defined as days in calendar during period of Work performance, excluding Saturdays, Sundays and legally-mandated federal employee holidays which apply to area in which Work is performed. Work days are considered fully available for Contractor to perform work indicated in pertinent activities in Contract Schedule, unless, upon Contractor request, authorized District's representative:

1. Contemporaneously annotates Contractor's daily report with acknowledgement that day reported upon was unavailable to Contractor for excusable causes, such as unusual severe weather or immitigable effects thereof.
2. Identifies specific activities by number so affected.
3. Identifies extent of such impact for each affected activity (i.e. percentage reduction of crew or equipment effectiveness and/or progress).

B. Recognized Holidays: New Years Day, Inaugural Day, Martin Luther King's Birthday, President's Day, Memorial Day, Independence Day, Emancipation Day, Labor Day, Columbus Day, Veterans Day, Thanksgiving Day and Christmas Day.

1.11 WEATHER DAYS

A. Weather Day: The table below includes the inclement weather calendar (in work days) for the local region to be utilized for the Project. Non-compensable time extensions shall be granted by the District for days in excess of the day s listed below for each month and only when the schedule critical path is directly impacted by the inclement weather.

Month	Work Days		Month	Work Days
January	4		July	2
February	4		August	3
March	4		September	2
April	5		October	3
May	5		November	4
June	2		December	4

1.12 SCHEDULER RESPONSIBILITIES

A. Contractor shall designate an authorized representative of his firm who shall be responsible for assisting in the preparation of the CPM schedule and review/report progress of the project with Project Manager using scheduling software approved by COTR. The Contractor's representative shall have direct project control and complete authority to act on behalf of the Contractor in fulfilling requirements of this Section and such authority will not be interrupted throughout the duration of the project.

B. Scheduler shall have use of software and computer facilities capable of delivering detailed graphic and tabular printouts, as well as electronic transfer of data. When requested by the Project

Manager, the Scheduler shall be able to produce reports within 48 hours of request.

1.13 DETAILED CONSTRUCTION SCHEDULE (DCS) CRITERIA

A. Contract Schedule: Document that controls Contractor's timely execution of Work. It is initially defined by number of Work Days listed in Contract Documents for completion of each Milestone and for completion (in calendar days) of Work, until District approves Detailed CPM Schedule which will be identified as "Detailed Construction Schedule" or "DCS" by the Project Manager and the District. Upon acceptance of the DSC by the District, the DCS becomes the Contract Schedule.

1. Upon approval by District of mutually agreed Change Orders that amend the DCS, the most current such approved amended version of DCS becomes the Contract Schedule.

B. Special Constraints: Minimize special constraints and add none during execution of Work without District's express approval. Clearly identify and explain proposed special constraints including:

1. Finish-to-finish, start-to-start, start-to-finish, and finish-to-start leads and lags.
2. Starts-on, starts-no-earlier, finishes-on and finishes-no-earlier date constraints.
3. Special calendars, beyond approved standard five day and seven day calendars.
4. Resource caps.

C. Duration and Cost Limits: Ensure that level of detail of Contractor's DCS is function of complexity of work involved. Ensure that activities have duration of not more than 15 Work Days and have value equal or less than $50,000.00, unless District expressly authorizes exception. In assessing proposed exceptions, District will take into account special attributes of Work, such as long-lead equipment with extended engineering, fabrication and delivery schedules.

D. Key Items Procurement Report required during construction phase for "key" (major equipment and materials and long-lead (over eight weeks, from order placement to delivery)) items fabricated or supplied for Work. Include in DCS activities for submittal, submittals review, fabrication, in-plant testing, shipment and delivery, field installation, field testing, com missioning, functional performance testing, acceptance and O&M manuals for key items.

E. Schedule reports indicating activity numbers, description, estimated duration in Work Days, early start and finish dates, late start and finish dates, total and free float available for each and every activity and responsibility code for each activity.

F. Cost reports including following activity information, sorted by labor category:

1. Activity number and appropriate description.
2. Total cost proposed for each activity.
3. Computer-produced cash-flow analysis and graphics generated by both early start and late start activity dates.

G. Labor and Equipment Allocation Report: Narrative report indicating anticipated allocation of labor

and equipment resources and work shifts to be utilized on Work. Identify with particularity equipment that is shared by activities such as hoisting and level of need of each such item of equipment for pertinent activities.

H. Details of Each Calendar. Base schedule on standard workweek consisting of five, 8-hour days (Monday through Friday), subject to Government holidays described above. Contractor may propose working outside of normal work hours, including multiple shifts, working holidays and weekends, and other non-standard calendars, provided Contractor obtains District approval minimum of five work days in advance of proposed occurrence of work outside of normal hours. Contractor's Schedule Calendars: Indicate Government holidays as non-working days, unless District expressly approves otherwise.

I. Activity Details: Incorporate following elements and requirements in proposed DCS:

1. Use clear and concise activity descriptions, designed to ensure that beginning and end of each activity shall be readily observable and verifiable during execution of Work.
2. Restrict each activity to single performing organization including Contractor self-performing work organization(s), subcontractors, manufacturers, fabricators, and time-sensitive suppliers. Involve such performing organizations in development of Contract Schedule and secure their individual and collective express commitment to satisfy requirements of Contract Schedule proposed by Contractor to District. Cause said commitment from said performing organizations to be represented in form of signed acceptance by such parties, included with DCS submittal.
3. Code activities in DCS that are District rresponsibility to execute as District responsibility activities. Include such activities as review and acceptance of documentation (including DCS schedule), submittals, issuance of NTP's and other District activities. Allow adequate duration for District review activities and as noted in other sections of Contract, but never less than seven working days unless District expressly approves otherwise.
4. In addition to identification of responsible organization, each activity shall have codes identifying areas of work. Ensure that areas of work are planned and scheduled in DCS in manageable increments. Code such increments and assign code to each activity.
5. Distribute Contract Price over activities (cost loading). Mobilization, bond and insurance costs may be indicated separately on individual activities; however, prorate other general requirement costs, such as overhead and profit, throughout activities. Divide each activity's cost loading into each of labor, material, and equipment where Contractor desires to receive payment for uninstalled material delivered to project site separate from labor and/or equipment expenditure on activities concerned.
6. Activities for each of perm its, notices, tests and inspections for pertinent activities and phases.
7. Build schedule to reflect incremental completion of project (by floor/by area/by systems/equipment). Include appropriate time for Contractor and District for inspection and development of incomplete and/or deficient work (IDW) lists, as well as correction and verification of IDW. Include time for re-inspection and re-correction where appropriate.
8. Submittals, in coordination with level of detail indicated in key items procurement report.
9. Include adequate activities to allow District to track LEED certification process.

J. Resource Analyses:

1. Prepare manpower leveling analysis, derived directly from proposed DCS. Submit subject analysis with proposed DCS, in graphic format depicting manpower by principal disciplines. Analysis: Span entire Work duration and include separate graphs for each of a) manpower by discipline per Work Day , and b) man-hour usage by discipline or trade in form of cumulative S-curve. Subject Manpower Leveling Analysis: Include discipline-by-discipline manpower leveling using Contractor-imposed caps for each labor category, which coordinator troughs in each discipline manpower usage distribution. Present evidence of leveling iterations to District with DCS submission.
2. Present evidence that Contractor's proposed DCS: Not (a) be controlled by limitations in quantities such resources or (b) propose plan for management by Contractor of each resource type that has potential to control critical path or paths at any time during execution of Work.

K. Acceptance of DCS:

1. District's acceptance of Contractor' s DCS is condition precedent to progress payments to Contractor.
2. Upon District's acceptance of cost-loaded values, use such values as sole basis for determining progress payments.
3. District's acceptance of proposed DCS signifies only that District's summary review of DCS leads the District to believe that Contractor has met general requirements of this specification pertaining to DCS format and content. Acceptance by District of DCS does not relieve Contractor of any of its responsibility whatsoever for accuracy or feasibility of Contractor's plan for execution of Work, or to perform Work within specified time constraints. Such acceptance does not expressly or impliedly warrant, acknowledge or admit reasonableness of activities, logic, durations, manpower, cost or equipment loading of Contractor's proposed or accepted Contract Schedule.
4. District's acceptance in no way makes District or its representatives insurers of success of Contractor's time performance or liable for time or cost overruns flowing from shortcomings of Contractor-authored Contract Schedule. District disclaims and Contractor waives any District obligation or liability by reason of District's active or passive acceptance of or acquiescence to Contractor's schedule submissions.
5. Should Contractor fail to properly define any element of Work, activity or logic and District review does not detect this omission or error, such omission or error, when discovered by Contractor or District, shall be corrected by Contractor before next monthly schedule update and shall not be cause for delay of completion of Work within specified time constraints. Contractor acknowledges that District is not required or otherwise obligated to discover errors or omissions in Contractor's proposed Contract Schedule.

1.14 UPDATES

A. Update Contract Schedule every two weeks and in coordination with Contractor's requests for progress payments.

B. On working day (designated data date) approximately five working days preceding time designated for monthly payment, meet with District for purpose of reviewing Contractor' s report of actual progress. Submit Contractor's up-to-date and accurate progress data as of Data Date.

C. Submit computer reports and network graphics that reflect progress of Work with respect to both cost and time, in accordance with requirements of initial Contractor-proposed DCS. Adjust

selection and sort sequence, format and content of reports as directed by District.
of update is not modification to Contract Schedule's Milestone requirements.

E. Submit progress report indicating activities (and portions of activities by percentage) completed during reporting period, actual start dates for those activities currently in progress, actual finish dates for those activities which were completed since last update, and progress along and deviations from critical path in terms of days ahead or days behind each individual Milestone date.

F. Submit narrative report which includes description of status of schedule, problem areas if any , current and anticipated delaying factors and their known and/or forecast impact, and explanation of corrective actions taken and planned.

1. Submit list of actual number of personnel (or man-hours) by discipline by working day by activity actually engaged on Work during reporting period, with such total stated separately as to on-site office (project work location), administrative management personnel and on-site supervisory personnel.

G. Submit two updated copies of network.

1. First Copy: Updated version of Contract Schedule, excluding Contractor-proposed changes.
2. Second Copy: Updated version of Contract Schedule, including Contractor-proposed changes and any activity logic changes. Submit with second copy list of proposed modifications, additions, deletions and changes in activity logic and/or durations to approved Contract Schedule, including time-recovery steps and actions required by "Responsibility for Completion" provisions of this specification. Include written justification for each such proposal.

H. If, as result of monthly update, it appears Contract Schedule no bnger represents actual prosecution and progress of Work, submit revision to Contract Schedule. Include proposed adjustments in activity durations, logic changes, and resource usage or cost loading. Any negative float indicated in Contractor's proposed updates must be presented to District by Contractor with bona fide Contractor-authored plan for elimination of such negative float.

I. District will respond in writing to each schedule update. District's response may include questions and/or requests for revisions. Respond in writing within seven calendar days, answering questions, and either agreeing with District's proposed revisions and submitting modified update, or setting forth justification why such revisions should not be implemented. If Contractor's justification for not implementing revision is acceptable, in District's sole judgment, such revision will be waived. If District does not accept Contractor' s justification, incorporate District-directed revisions into Contract Schedule, and execute Work accordingly.

1.15 TWO-WEEK LOOK-AHEAD SCHEDULE

A. Contractor shall provide an up to date two-week look-ahead schedule every week at the Weekly Project Meetings. The two-week look-ahead schedule shall include the timeline of activities for be generated form the approved project schedule or be provided in such other form as directed by the COTR.

1.16 PROGRESS PAYMENTS

A. Refer to Section 01 29 00 "Payment Procedures" for coordination of the Application for Payment and this Section.

1.17 REQUESTED TIME ADJUSTMENT SCHEDULE (RTAS)

A. Updated Contract Schedule submitted by Contractor shall not indicate completion date later than specified time constraints, subject to time extensions approved by District. If Contractor believes it is entitled to time extension, submit to District, within deadlines set out herein and with each contemporaneous monthly update, separate schedule analysis entitled Requested Time Adjustment Schedule (RTAS). Indicate, in said analysis, in addition to requirements of General Conditions, proposed adjustments in Contract Schedule which, in opinion of Contractor, should be made due to changes, delays or conditions occurring during past month or previously, or which are expected or contended by Contractor. Time-scale said analysis utilizing computer generated and computer drawn network. This paragraph shall not relieve Contractor of its obligation to provide proper and timely separate written notice of impacts to schedule. Contractor acknowledges that its preparation of RTASs is not extra work to Contract and preparation by Contractor of RTASs shall not be cause for Contractor to receive any additional time for performance of Work or additional compensation.

B. Subject to float sharing requirements defined herein, time extensions will be granted only to extent of equitable and mutually acceptable time adjustments to activity or activities affected by Change Order(s), or where delay consumes total (positive or zero) float of critical activity (or path) and extends Milestone dates, using approved update of Contract Schedule that is current as of issue of District's written request for Contractor proposal connected with potential Change Order or other District-accountability potential schedule effect.

C. Submit RTAS within 20 calendar days after initiation of thing(s) or event(s) which Contractor contends may lead to potential District-accountability delay in performance of Work, or from time of District's issuance of written request for Contractor proposal connected with potential change order (or documents of like effect), even if such issuance precedes notice to proceed for change order(s) concerned, whichever is later. Other District-caused potential impacts of any category shall be considered to have been initiated upon written initial District direction connected therewith, including direction provided through duly recorded meetings.

D. Within 14 calendar days following submittal by Contractor to District of RTAS, in proper format and including specified content, District will meet with Contractor to review submittal. Revise and resubmit RTAS within three working days of such meeting, adjusting RTAS to consider issues raised by District in above meeting. District will respond with written decision within seven calendar days following Contractor resubmittal of RTAS. Upon approval, copy of RTAS signed by District will be returned to Contractor and thereafter incorporated into Contract via Change Order. Incorporate results of each approved RTAS in update of Contract Schedule that immediately follows such approval.

E. Contractor waives its right to submit requests for time extension and to receive time extension unless it meets above requirements for RTASs. Contractor waives any claim for acceleration due to refusal by District to grant time extensions should Contractor fail to comply with submission and justification requirements described herein for RTASs. Contractor's submission of RTASs shall not constitute basis for adjustment in specified time constraints unless approved by District. Actively

pursue timely completion of activities pending such approval.

1.18 RESPONSIBILITY FOR COMPLETION

A. Provide sufficient forces, offices, materials, facilities, plant and equipment, to ensure completion of Work in accordance with most current approved Contract Schedule update. Upon Districts written advice that Contractor is behind schedule, as result of inexcusable causes, immediately remediate such time loss by increasing hours of work, number of shifts, overtime operations and/or amount of plant and equipment, without additional cost to District. Contractor acknowledges that such remedial action by Contractor is not compensable acceleration of performance of Work. Provisions of this paragraph shall not be construed as prohibiting work on Saturdays, Sundays, and holidays, if Contractor so elects and gives written notice to District two working days in advance of it.

1.19 GENERAL CONTRACTOR EVALUATION FORM

A. General Contractor evaluations will be conducted by the Project Manager at each indicated construction completion state. The evaluation forms will be utilized by the Project Manager to determine the performance of the Contractor, including but not limited to, any decision to release partial retention. The General Contractor Evaluation forms may also serve as "Past Performance" reference report on the Contractor for future work sought by the Contractor with the District.

1.20 REQUIRED REPORTS

A. Daily Construction Reports: Prepare daily construction report and submit on internet-based Contract Project Management software. Submit daily construction report by noon of following workday. Required information concerning events at site includes, but is not limited to, following:

1. List of subcontractors at site.
2. List of separate contractors at site.
3. Approximate count of personnel at site.
4. High and low temperatures, general weather conditions.
5. Accidents.
6. Meetings and significant decisions.
7. Unusual events (refer to special reports).
8. Stoppages, delays, shortages, and losses.
9. Meter readings and similar recordings.
10. Emergency procedures.
11. Orders and requests of governing authorities.

12. Change Orders received, implemented.
13. Minor changes received and implemented.
14. Services connected, disconnected.
15. Equipment or system tests and startups.
16. Partial Completions, occupancies.
17. Completions authorized.

B. Special Reports: Submit special reports directly to Project Manager within one day of reported occurrence.

Submit copies to other parties affected by occurrence.

1. Reporting Unusual Events: When event of unusual and significant nature occurs at site, prepare and submit special report. A list of chain of events, persons participating, response by Contractor's personnel, evaluation of results, and/or effects and similar pertinent information shall be included in the report. Advise Project Manager in advance when such events are known or predictable.
2. Submittal of reports is condition precedent to issuance and payment of subsequent Applications for Payment.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 3200

Specification

Section 01 7700

Closeout Procedures

SECTION 01 7700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Administrative and procedural requirements for Final Completion and Final Acceptance.

1. Closeout requirements for specific construction activities are included in appropriate Sections in Divisions 02 through 28.

1.3 ACTION SUBMITTALS

A. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.

1.4 CLOSEOUT SUBMITTALS

A. Certificates of Release: From authorities having jurisdiction.

B. Certificate of Insurance: For continuing coverage.

C. Field Report: For pest control inspection.

D. Elevator Certification: Inspection report and certificate from authorities having jurisdiction.

E. Fire Sprinkler and Fire Alarm Certificate: Inspection report and certificate from authorities having jurisdiction.

F. Warranty Information: Provide product and system warranties in binder. Refer to Section 01 78 00 "Warranties."

G. All Record Drawings, Specifications, and other requirements specified in Section 01 78 39 "Project Record Documents."

H. Mold Prevention Certification: Contractor: Submit letter of certification that Contractor has complied with requirements of Contract Documents for construction operations to prevent growth of mold.

1. Submit certification on letterhead at same time as Application for Final Payment.

1.5 PRELIMINARY PROCEDURES

A. Before requesting inspection for determining date of Substantial Completion, complete following, as appropriate to Project.

1. Advise Contracting Officer of pending insurance changeover requirements.
2. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
3. Obtain and submit releases permitting District unrestricted use of Work and access to services and utilities. Include final inspections, operating certificates, and similar releases.
4. Deliver tools, spare parts, extra materials, and similar items to location designated by Project Manager.
   Label with manufacturer's name and model number where applicable.
5. Complete commissioning of systems, subsystems, and equipment in accordance with Section 01 91 13 "Commissioning.".
6. Advise Project Manager of changeover in HVAC and other utilities.
7. Submit changeover information related to District's occupancy, use, operation, and maintenance.
8. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
9. Submit Project Record Documents in accordance with Section 01 78 39 "Record Documents."
10. Submit final project photographs, dam age or settlement surveys, property surveys, and similar final record information.
11. Submit final meter readings for utilities, measured record of stored fuel, and similar data as of date of Completion or when District took possession of and assumed responsibility for corresponding elements of Work.
12. Submit occupancy permits.
13. Ensure all project communication regarding RFIs, contract modifications, and meeting minutes are contained within internet-based Contract Project Management software system.
14. Fuel: At the time of Final Acceptance, the fuel oil tank for the emergency generator shall be full of fuel, filled by the Contractor.
15. Request a Punch List walk-through meeting with Project Manager.

B. Inspection: Submit written request for inspection for Completion. On receipt of request, Project Manager will either proceed with inspection or notify Contractor of unfulfilled requirements. Project Manager will notify Contractor of Completion after inspection or will notify Contractor of items that must be completed or corrected before Completion can be achieved.

1. Reinspection: Request reinspection when Work identified in previous inspections as incomplete is completed or corrected.

1.6 SUBSTANTIAL COMPLETION PROCEDURES

A. Contractor's List of Incomplete Items: Prepare and submit a list of item s to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.

B. Submittals Prior to Substantial Completion: Complete the following a minimum of **10**days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting District unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
2. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
3. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Project Manager. Label with manufacturer's name and model number where applicable.

    a. Schedule of Maintenance Material Item s: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain Project Manager's signature for receipt of submittals.

4. Submit test/adjust/balance records.
5. Submit sustainable design submittals required in Section 01 81 13 "Sustainable Design." Submit changeover information related to District's occupancy, use, operation, and maintenance.

C. Procedures Prior to Substantial Completion: Complete the following a minimum of **10**days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Advise District of pending insurance changeover requirements.
2. Contact manufacturer to start process of the changeover of permanent locks and request delivery of cores and keys to District. Advise Project Manager in writing.
3. Complete startup and testing of systems and equipment.
4. Perform preventive maintenance on equipment used prior to Substantial Completion.
5. Instruct District's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video recordings specified in Section 01 79 00 "Demonstration and Training."
6. Advise District of changeover in heat and other utilities.
7. Participate with District in conducting inspection and walkthrough with local emergency responders.
8. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of **10** days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Project Manager will either proceed with inspection or notify Contractor of unfulfilled requirements. Project Manager will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Project Manager, that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for final completion.

E. Notwithstanding the above, the Certificate of Substantial Completion shall not be granted until the Certificate of Occupancy is granted by the authority having jurisdiction, the Building Commissioning, including all training and submission of all Operations and Maintenance manuals, is considered complete by the District's Commissioning Agent, and all material punch list items are resolved to the satisfaction of the District.

1.7 FINAL COMPLETION PROCEDURES

A. Submittals Prior to Final Completion: Before requesting final inspection for determining final completion, complete the following:

1. Submit a final Application for Payment according to Section 01 29 00 "Payment Procedures."
2. Submit closeout submittals specified in other Division 01 Sections, including project record documents, final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information.
3. Punch List: Submit certified copy of Project Manager's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Project Manager. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
4. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
5. Submit pest-control final inspection report and warranty.
6. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
7. Complete final cleaning requirements, including touchup painting.
8. Make final changeover of perm anent locks and deliver keys to Project Manager. Label with manufacturer's name and model number where applicable.
9. Complete broken, chipped, dented, or otherwise marred finish surfaces as described in "Repair of the Work" Article of this Section.
10. Submit Contractor's Certificate of Final Completion on form attached to end of this Section.

B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10

days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Project Manager will either proceed with inspection or notify Contractor of unfulfilled requirements. Project Manager will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

D. Final Property Survey: Coordinate with Project Manager for requirements for submitting the Final Property
Survey for zoning approval.

E. Final reports and certificates for systems that need certification by authorities having jurisdiction, including but not limited to:

1. Fire Alarm System.
2. Elevator.
3. LEED documentation for continuing sustainability for the facility operation.

1.8 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.

1. Organize list of spaces in sequential order, [starting with exterior areas first] [and] [proceeding from lowest floor to highest floor].
2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
3. Include the following information at the top of each page:

    a. Project name.
    b. Date.
    c. Name of Architect.
    d. Name of Contractor.
    3. Page number.

4. Submit list of incomplete items in the following format:

    b. PDF electronic file. Architect, through Project Manager, will return annotated file.

1.9 SUBMITTAL OF PROJECT WARRANTIES

A. Refer to Section 01 78 70 "Warranties" for proper procedure for submitting warranties.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 CERTIFICATE OF FINAL COMPLETION

A. Contractor shall complete the "Contractor's Certificate of Final Completion" form found at the end of this Section or if approved by the Contracting Officer, m ay use the Certificate of Final Completion found in the Electronic Project Management system used on the Project.

B. Substantial Completion will be granted when the Certificate of Occupancy is granted by the authority having jurisdiction; the Building Commissioning is considered complete by the District's Commissioning Authority, including training of District's employees and the Operation and Maintenance Manuals are delivered; and all material punch-list items are resolved to the satisfaction of the District.

3.2 REPAIR OF THE WORK

A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.

B. Repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where dam aged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.

1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.
2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that that already show evidence of repair or restoration.

    a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.

3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.
4. Replace burned-out bulbs, bulbs noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to com ply with requirements for new fixtures.

3.3 COMPLETION OF PUNCH LIST

A. Contractor shall begin performance of Punch List corrections immediately after receipt of the notice of

the Punch List Work.

B. Period to complete Punch List Work will be determined by the PROJECT MANAGER. The time period for completion of the Punch List Work begins the first work day after the Punch List is provided to the Contractor. The PROJECT MANAGER may extends the period to complete Punch List Work for specific Work which requires the receipt of long lead-time materials. However, all other Punch List Work shall be completed as required by this Section.

1. Failure of the Contractor to begin the Punch List Work prior to the expiration of 3 calendar days after receipt of Punch List will be construed as failure to prosecute the Work of the Contract and shall be completed within 30 days.

C. Punch List Work shall be continuously prosecuted once begun. Gap of 3 calendar day s during which Punch List Work is not being performed on the job site will be construed as failure to prosecute the Work of the Contract.

3.4 SCHEDULE OF DOCUMENTS NEEDED FOR CLOSE-OUT PROCEEDURE

SPECIFICATION SECTION	TITLE OF DOCUMENT REQUIRED	WHEN TO SUBMIT	RECIPIENT
01 50 00 – Temporary Facilities & Controls	Mold-Free Construction Certificate	Substantial Completion	PROJECT MANAGER
	O&M Manuals	Substantial Completion	PROJECT
	Building Commissioning Completion	Substantial Completion	PROJECT MANAGER
	Punch-List Items Resolved	Substantial Completion	PROJECT
	Certificate of Occupancy	Substantial Completion	PROJECT

END OF SECTION 01 77 00

Contractor's Certificate of Final Completion follows.

CONTRACTOR'S CERTIFICATE OF FINAL COMPLETION

PROJECT: _____

CONTRACT FOR: _____

TO PROJECT MANAGER: _____

CONTRACT DATE: _____

This is to certify that I am an authorized official of the Contractor, and have been properly authorized by said firm or corporation to certify following:

I know of my own personal knowledge, and do hereby certify on behalf of Contractor that the Work has been reviewed and inspected for compliance with Contract Documents, that it has been completed in accordance with Contract Documents, that all equipment and systems have been tested and are operating as required by the contract, that all Contract Closeout requirements have been completed and submitted.
Attached are three copies of the following documents, which are required prior to final payment:

[ ] Certificates of inspections indicating compliance with requirements of Government authorities, including Certificate of Occupancy, have been obtained and are attached hereto.

[ ] Certificate of site conformance by licensed land surveyor.

[ ] List of Subcontractors and equipment suppliers.

I understand that acceptance of final payment by the Contractor, a Subcontractor or material supplier shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at time of final Application for Payment.

CONTRACTOR: _____

BY: _____ Subscribed and sworn to me this

TITLE: _____ ____Day of _____, 20____.

DATE: _____

NOTARY PUBLIC _____

My commission expires: _____

DISTRIBUTION: CONTRACTING OFFICER AND PROJECT MANAGER.