

Jacob K. Javits Convention Center  
Expansion Project - TRANSFORMER BUILDING

## **SPECIFICATIONS**

ISSUE FOR BID - REVISED, 12 August 2016  
VOLUME I

Following listed documents and sections comprise the Project Manual for the Work. Where numerical sequence of documents and sections is interrupted, such interruptions are intentional.

Project Manual for the Work consists of three complete volumes, which shall not be separated for any reason. Owner and Architect disclaim responsibility for any interpretation, assumption or action made because of not receiving a complete Project Manual.

VOLUME 1      PROCUREMENT AND CONTRACTING REQUIREMENTS – DIVISION 00  
SPECIFICATION – DIVISION 01

VOLUME 2      SPECIFICATION – DIVISIONS 02 THRU 19

VOLUME 3      SPECIFICATION – DIVISIONS 20 THRU 48

Section No.	Section Title	Document Released For									
		Date									
		BID - REVISED	PERMIT								
		08/12/21016	08/12/21016								
<b>INTRODUCTORY INFORMATION</b>											
0001C1	PROJECT COVER	•	•								
000107	SEALS PAGE		•								
000110	SPECIFICATION INDEX	•	•								
<b>DIVISION 01 GENERAL REQUIREMENTS</b>											
011000	SUMMARY	•	•								
012500	SUBSTITUTION PROCEDURES	•	•								
012600	CONTRACT MODIFICATION PROCEDURES	•	•								
012900	PAYMENT PROCEDURES	•	•								
013100	PROJECT MANAGEMENT AND COORDINATION	•	•								
013200	CONSTRUCTION PROGRESS DOCUMENTATION	•	•								
013300	SUBMITTAL PROCEDURES	•	•								
013553	ACCESS CONTROL AND SITE SECURITY	•	•								
014000	QUALITY REQUIREMENTS	•	•								
	2014 BUILDING CODE OF NYC STATEMENT OF SPECIAL INSPECTIONS	•	•								
014200	REFERENCES	•	•								
015000	TEMPORARY FACILITIES AND CONTROLS	•	•								

Section No.	Section Title	Date																	
		08/12/2016	08/12/2016																
016000	PRODUCT REQUIREMENTS	•	•																
017300	EXECUTION	•	•																
017419	CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL	•	•																
017700	CLOSEOUT PROCEDURES	•	•																
017823	OPERATION AND MAINTENANCE DATA	•	•																
017839	PROJECT RECORD DOCUMENTS	•	•																
017900	DEMONSTRATION AND TRAINING	•	•																
019113	GENERAL COMMISSIONING REQUIREMENTS	•	•																
<b>DIVISION 02 EXISTING CONDITIONS</b>																			
020110	MAINTENANCE OF EXISTING CONDITIONS	•	•																
021000	PROTECTION OF EXISTING UTILITIES	•	•																
023213	EXPLORATORY BORINGS	•	•																
024116	STRUCTURE DEMOLITION	•	•																
024119	SELECTIVE DEMOLITION	•	•																
<b>DIVISION 03 CONCRETE</b>																			
033000	CAST-IN-PLACE CONCRETE	•	•																
034500	PRECAST ARCHITECTURAL CONCRETE	•	•																
<b>DIVISION 04 MASONRY</b>																			
042000	UNIT MASONRY	•	•																
<b>DIVISION 05 METALS</b>																			
051200	STRUCTURAL STEEL FRAMING	•	•																
053100	STEEL DECKING	•	•																
055000	METAL FABRICATIONS	•	•																
055100	METAL STAIRS	•	•																
055213	PIPE AND TUBE RAILINGS	•	•																
055313	BAR GRATINGS	•	•																
<b>DIVISION 06 WOOD, PLASTIC, AND COMPOSITES</b>																			
061053	MISCELLANEOUS ROUGH CARPENTRY	•	•																
<b>DIVISION 07 THERMAL AND MOISTURE PROTECTION</b>																			
071416	COLD FLUID-APPLIED WATERPROOFING	•	•																
071900	WATER REPELLENTS	•	•																
072100	THERMAL INSULATION	•	•																
074113.13	FORMED METAL ROOF PANELS	•	•																
074213.33	ACOUSTICAL METAL SCREEN PANELS	•	•																

Section No.	Section Title	Date																	
		08/12/2016	08/12/2016																
074213.53	METAL SOFFIT PANELS	•	•																
075323	ETHYLENE-PROPYLENE-DIENE-MONOMER (EPDM) ROOFING	•	•																
076200	SHEET METAL FLASHING AND TRIM	•	•																
077100	ROOF SPECIALTIES	•	•																
078100	APPLIED FIREPROOFING	•	•																
078123	INTUMESCENT FIREPROOFING	•	•																
078400	FIRESTOPPING	•	•																
079200	JOINT SEALANTS	•	•																
<b>DIVISION 08 OPENINGS</b>																			
081113	HOLLOW METAL DOORS AND FRAMES	•	•																
083919	WATERTIGHT DOORS	•	•																
087100	DOOR HARDWARE	•	•																
089119	FIXED LOUVERS	•	•																
<b>DIVISION 09 FINISHES</b>																			
096723	RESINOUS FLOORING	•	•																
099000	PAINTING AND COATING	•	•																
<b>DIVISION 10 SPECIALTIES</b>																			
101423	PANEL SIGNAGE	•	•																
102213	WIRE MESH PARTITIONS	•	•																
104416	FIRE EXTINGUISHERS	•	•																
107316	CANOPIES	•	•																
<b>DIVISION 11 EQUIPMENT</b>																			
112423	WINDOW WASHING SYSTEMS	•	•																
<b>DIVISION 12 FURNISHINGS</b>																			
Not Used																			
<b>DIVISION 13 SPECIAL CONSTRUCTION</b>																			
Not Used																			
<b>DIVISION 14 CONVEYING EQUIPMENT</b>																			
Not Used																			
<b>DIVISION 21 FIRE SUPPRESSION</b>																			
210001	DESIGN DOCUMENTS SEPARATION OF WORK BETWEEN THE TRADES	•	•																
210003	FIRE PROTECTION SCOPE OF WORK	•	•																
210004	FIRE PROTECTION UNIT PRICES	•	•																

Section No.	Section Title	Date									
		08/12/2016	08/12/2016								
210517	SLEEVES AND SLEEVE SEALS FOR FIRE-SUPPRESSION PIPING	•	•								
210518	ESCUTCHEONS FOR FIRE-SUPPRESSION PIPING	•	•								
210519	METERS AND GAUGES FOR FIRE SUPPRESSION SYSTEMS	•	•								
210520	PIPING AND FITTING MATERIALS	•	•								
210523	FIRE SUPPRESSION VALVES	•	•								
210529	HANGERS, SUPPORTS, ANCHORS AND GUIDES	•	•								
210548	VIBRATION AND SEISMIC CONTROLS FOR FIRE-SUPPRESSION PIPING AND EQUIPMENT	•	•								
210553	IDENTIFICATION FOR FIRE-SUPPRESSION PIPING AND EQUIPMENT	•	•								
210580	ACCESS DOORS IN GENERAL CONSTRUCTION	•	•								
210719	INSULATION	•	•								
210750	ELECTRIC HEAT TRACING	•	•								
210800	COMMISSIONING OF FIRE PROTECTION SYSTEMS	•	•								
211119	FIRE-DEPARTMENT CONNECTIONS	•	•								
211200	STANDPIPES AND HOSE SYSTEMS	•	•								
211313	WET-PIPE SPRINKLER SYSTEMS	•	•								
211316	DRY-PIPE SPRINKLER SYSTEMS	•	•								
211318	PRE-ACTION SPRINKLER SYSTEM	•	•								
211339	WET PIPE SPRINKLER AFFF SPRINKLER SYSTEM	•	•								
213113	ELECTRIC DRIVEN CENTRIFUGAL FIRE PUMPS	•	•								

**DIVISION 22 PLUMBING**

220001	DESIGN DOCUMENTS SEPARATION OF WORK BETWEEN TRADES	•	•								
220003	PLUMBING SCOPE OF WORK	•	•								
220004	PLUMBING UNIT PRICES	•	•								
220517	SLEEVES AND SLEEVE SEALS FOR PLUMBING PIPING	•	•								
220518	ESCUTCHEONS FOR PLUMBING PIPING	•	•								
220519	METERS AND GAGES FOR PLUMBING PIPING	•	•								
220523	VALVES	•	•								
220525	PLASTIC PIPING AND FITTING MATERIALS	•	•								
220529	HANGERS, SUPPORTS, ANCHORS, GUIDES, AND SEISMIC RESTRAINT	•	•								
220530	DISINFECTING OF WATER SUPPLY SYSTEM	•	•								
220533	HEAT TRACING FOR PLUMBING PIPING	•	•								

Section No.	Section Title	Date																	
		08/12/2016	08/12/2016																
220534	TEMPERATURE MAINTENANCE CABLE FOR DOMESTIC WATER PIPING	•	•																
220535	BACKFLOW PREVENTION	•	•																
220548	VIBRATION ISOLATION	•	•																
220553	IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT	•	•																
220580	ACCESS DOORS IN GENERAL CONSTRUCTION	•	•																
220590	TESTING	•	•																
220719	INSULATION	•	•																
220800	COMMISSIONING OF PLUMBING SYSTEM	•	•																
221116	DOMESTIC WATER PIPING AND FITTING MATERIALS	•	•																
221119	DOMESTIC WATER PIPING SPECIALTIES	•	•																
221316	SANITARY WASTE AND VENT PIPING AND FITTING MATERIALS	•	•																
221319	SANITARY WASTE PIPING SPECIALTIES	•	•																
221323	SANITARY WASTE INTERCEPTORS	•	•																
221413	STORM DRAINAGE PIPING AND FITTING MATERIALS	•	•																
221423	STORM DRAINAGE SPECIALTIES	•	•																
221429	SUMP PUMPS	•	•																
221690	WATER DETECTION SYSTEM	•	•																
223300	ELECTRIC DOMESTIC-WATER HEATERS	•	•																
224200	COMMERCIAL PLUMBING FIXTURES AND TRIM	•	•																
<b>DIVISION 23</b>	<b>HEATING, VENTILATING, AND AIR CONDITIONING</b>																		
230001	DESIGN DOCUMENTS – SEPARATION OF WORK BETWEEN THE TRADES	•	•																
230003	MECHANICAL SCOPE OF WORK	•	•																
230004	MECHANICAL UNIT PRICES	•	•																
230200	FIRESTOPPING	•	•																
230513	ELECTRIC MOTORS	•	•																
230523	VALVES	•	•																
230529	HANGERS ANCHORS AND SUPPORTS	•	•																
230548	VIBRATION ISOLATION	•	•																
230553	SYSTEM IDENTIFICATION	•	•																
230593	TESTING ADJUSTING AND BALANCING	•	•																
230700	INSULATION	•	•																
230800	COMMISSIONING OF HVAC	•	•																
230900	INSTRUMENTS	•	•																
230923	BUILDING MANAGEMENT AND CONTROL SYSTEM (BMCS)	•	•																
232113	HYDRONIC PIPING	•	•																

Section No.	Section Title	Date										
		08/12/2016	08/12/2016									
232500	PIPE CLEANING AND CHEMICAL WATER TREATMENT	•	•									
233100	HVAC DUCTS AND CASINGS	•	•									
233300	DAMPERS	•	•									
233400	HVAC FANS	•	•									
235300	FUEL HANDLING SYSTEMS	•	•									
236210	AIR COOLED AIR CONDITIONING UNITS	•	•									
238440	SPACE HEATING UNITS	•	•									
238600	ELECTRIC MOTOR CONTROLLERS	•	•									
<b>DIVISION 25 INTEGRATED AUTOMATION</b>												
	Not Used											
<b>DIVISION 26 ELECTRICAL</b>												
260001	SEPARATION OF WORK BETWEEN THE TRADES	•	•									
260003	ELECTRICAL SCOPE OF WORK	•	•									
260004	ELECTRICAL UNIT PRICES	•	•									
260005	ACCESS DOORS IN GENERAL CONSTRUCTION	•	•									
260250	SYSTEMS IDENTIFICATION	•	•									
260265	TESTING, ADJUSTING, AND BALANCING	•	•									
260270	TEMPORARY LIGHTING AND POWER	•	•									
260280	EQUIPMENT CONNECTIONS AND COORDINATION	•	•									
260290	CEILING, FLOOR, AND WALL ELECTRICAL PENETRATION FIRE SEALS	•	•									
260500	BUS DUCT	•	•									
260513	15 KV CABLE	•	•									
260519	600 VOLT WIRE AND CABLE	•	•									
260526	GROUNDING SYSTEMS	•	•									
260533	RACEWAYS AND BOXES	•	•									
260534	MANHOLES AND HANDHOLES	•	•									
260535	UNDERGROUND DUCTS AND RACEWAYS	•	•									
260548	VIBRATION ISOLATION AND SEISMIC RESTRAINTS	•	•									
260573	POWER SYSTEM STUDIES	•	•									
260800	COMMISSIONING OF ELECTRICAL SYSTEMS	•	•									
260913	ELECTRICAL POWER MONITORING SYSTEM (EPMS)	•	•									
260914	BATTERY MONITORING SYSTEM	•	•									
261120	13.2KV/480-277V SUBSTATION	•	•									
261313	13.2 KV SERVICE SWITCHGEAR	•	•									
261315	125 VOLT DC BATTERY SYSTEM	•	•									
261316	13.2 KV OUTDOOR SWITCHES FOR PORTABLE LOAD BANKS	•	•									

Section No.	Section Title	Date									
		08/12/2016	08/12/2016								
262200	LOW-VOLTAGE DISTRIBUTION TRANSFORMERS	•	•								
262216	13.2 KV DELTA/13.2 KV WYE ISOLATION CAST COIL POWER TRANSFORMERS	•	•								
262313	13.2 KV AUTOMATIC PARALLELING-SYNCHRONIZING SWITCHGEAR	•	•								
262416	PANELBOARDS	•	•								
262726	WIRING DEVICES	•	•								
262816	DISCONNECT SWITCHES	•	•								
262913	480-277V SWITCHBOARDS	•	•								
263212	RADIATOR MOUNTED RESISTIVE LOAD BANK (1000 KW)	•	•								
263213	480-277 VOLT LIFE-SAFETY DIESEL ENGINE GENERATOR	•	•								
263214	13.2 KV STANDBY DIESEL ENGINE GENERATORS	•	•								
263623	480-277 VOLT AUTOMATIC TRANSFER SWITCHES	•	•								
263625	13.2 KV AUTOMATIC TRANSFER SWITCHES	•	•								
263628	13.2 KV OUTDOOR RESISTIVE LOAD BANK	•	•								
264000	FIRE ALARM LIFE SAFETY SYSTEM	•	•								
264113	LIGHTNING PROTECTION SYSTEM	•	•								
264313	SURGE PROTECTION DEVICE	•	•								
264314	TWO-WAY RADIO EMERGENCY COMMUNICATION ENHANCEMENT SYSTEMS	•	•								
265000	LUMINAIRES AND ACCESSORIES	•	•								

**DIVISION 27 COMMUNICATIONS**

270800	TESTING OF COMMUNICATIONS SYSTEMS	•	•								
271000	STRUCTURED CABLING	•	•								

**DIVISION 28 ELECTRONIC SAFETY AND SECURITY**

280000	TESTING OF COMMUNICATIONS SYSTEMSCOMMUNICATION	•	•								
280537	FIRESTOPPING FOR -SECURITY SYSTEMS	•	•								
281300	ACCESS CONTROL SYSTEM	•	•								
281301	ACCESS CONTROL AND INTRUSION DETECTION DEVICES	•	•								
282321	VIDEO SURVEILLANCE CAMERAS	•	•								

**DIVISION 31 EARTHWORK**

310000	EARTHWORK	•	•								
310901	MONITORING OF STRUCTURES AND UTILITIES	•	•								
312315	GROUNDWATER CONTROL	•	•								
312500	EROSION AND SEDIMENTATION CONTROLS	•	•								
315000	EXCAVATION SUPPORT AND PROTECTION	•	•								

Section No.	Section Title	Date																	
		08/12/21016	08/12/21016																
316326	DRILLED CAISSONS	•	•																
319000	TRENCH EXCAVATION AND BACKFILL	•	•																
<b>DIVISION 32 EXTERIOR IMPROVEMENTS</b>																			
321216	ON-SITE ASPHALT PAVING	•	•																
321313	ON-SITE CONCRETE PAVING	•	•																
<b>DIVISION 33 UTILITIES</b>																			
333000	SANITARY SEWERAGE UTILITIES	•	•																
334000	STROM DRAINAGE UTILITIES	•	•																
<b>DIVISION 34 TRANSPORTATION</b>																			
	Not Used																		
<b>DIVISION 40 PROCESS INTEGRATION</b>																			
	Not Used																		
<b>DIVISION 41 MATERIAL PROCESSING AND HANDLING EQUIPMENT</b>																			
	Not Used																		
<b>DIVISION 42 PROCESS HEATING, COOLING, AND DRYING EQUIPMENT</b>																			
	Not Used																		

END OF DOCUMENT 000110

## SECTION 011000

### SUMMARY

#### PART 1 - GENERAL

##### 1.1 SUMMARY

###### A. Section Includes:

1. Project information.
2. Work covered by Contract Documents.
3. Work by Owner.
4. Access to site.
5. Coordination with occupants.
6. Work restrictions.
7. Specification and drawing conventions.

###### B. Related Requirements:

1. Section 013553 "Access Control and Site Security" for site security program and service requirements.
2. Section 015000 "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.

##### 1.2 PROJECT INFORMATION

###### A. Project Identification: The Jacob K. Javits Convention Center; Transformer Building.

1. Project Location: 655 W 34th Street, New York, NY 10001.
2. Project Number: 16105.

###### B. Owner: Convention Center Development Corp.; 633 Third Avenue, 37th Floor, New York, NY 10017.

1. Owner's Representative: Kenneth Sanchez.
  - a. Email: ksanchez@javitscenter.com.
  - b. Telephone: 212.216.2118
  - c. Mobile: 347.582.9802

###### C. Architect: FXFOWLE Epstein Javits II Architecture; 22 West 19th Street - 11th Floor, New York, NY 10011.

1. Architect's Representative: Larry Dalziel.
  - a. Email: ldalziel@epsteinglobal.com.
  - b. Telephone: 212.843.1856.
  - c. Mobile: 973.886.1350.

- D. Construction Manager: Tishman Construction; 666 Fifth Ave, New York, New York, 10103.
  - 1. Construction Manager's Representative: Glen Johnson.
    - a. Email: glen.johnson@aecom.com.
    - b. Mobile: 917.468.6202.
  - 2. Construction Manager for this Project is Project's constructor. The terms "Construction Manager" and "Contractor" are synonymous.
- E. Newforma Project Center Site: A Newforma Project Center site will be used for purposes of managing communication and documents during the construction stage.
  - 1. See Section 013100 "Project Management and Coordination" for Newforma Project Center Site requirements.

### 1.3 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Work of Project is defined by the Contract Documents and consists of the following:
  - 1. New, approximately 25,000 sf, two level utility building elevated one level above grade and containing transformers, switchgear, and emergency generators required to power the convention center building.
- B. Type of Contract:
  - 1. Project will be constructed under a single prime contract.
- C. Pay all required fees.

### 1.4 WORK BY OWNER

- A. General: Cooperate fully with Owner so work may be carried out smoothly, without interfering with or delaying work under this Contract or work by Owner. Coordinate the Work of this Contract with work performed by Owner.
- B. Items indicated NIC (Not in Contract) will be furnished and installed by Owner.

### 1.5 ACCESS TO SITE

- A. Use of Site: Limit use of Project site to work in areas indicated on Drawings. Do not disturb portions of Project site beyond indicated work areas.
  - 1. Limits: Limit site disturbance, including earthwork and clearing of vegetation, to 40 feet beyond building perimeter; 10 feet (3 m) beyond surface walkways, patios, surface parking, and utilities less than 12 inches (300 mm) in diameter; 15 feet (4.5 m) beyond primary roadway curbs and main utility branch trenches; and 25 feet (7.6 m) beyond constructed areas with permeable surfaces (such as pervious paving areas, stormwater detention facilities, and playing fields) that require additional staging areas in order to limit compaction in the constructed area.

2. Driveways, Walkways and Entrances: Keep driveways loading areas, and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
  - a. Schedule deliveries to minimize disruption of Owner's normal operations.
  - b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

#### 1.6 COORDINATION WITH OCCUPANTS

- A. Owner Occupancy: Owner will occupy site and adjacent building(s) during entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's normal operations. Maintain existing exits unless otherwise indicated.
  1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and approval of authorities having jurisdiction.
  2. Notify Owner not less than 15 business days in advance of activities that will affect Owner's operations, including freight movement.
  3. Schedule all construction deliveries and collection with the Owner's yard management software not less than 10 business days in advance.

#### 1.7 WORK RESTRICTIONS

- A. Work Restrictions, General: Comply with Owner's restrictions on construction operations.
  1. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.
  2. Use of all area south of 39<sup>th</sup> Street for construction traffic, material storage, vehicle staging, and all construction operations is strictly prohibited without written consent from the Owner.
  3. Construction personnel are prohibited from utilizing all JKCJC toilet rooms, eating areas, and functional spaces.
  4. Immediate access to the site via the 39<sup>th</sup> Street/West Side Highway entrance must be maintained at all times.
- B. On-Site Work Hours: Limit work in the existing building to normal business working hours according to authority having jurisdiction, unless otherwise indicated.
- C. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:
  1. Notify Owner in writing not less than 15 business days in advance of proposed utility interruptions.
  2. Obtain Owner's written permission before proceeding with utility interruptions.
- D. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner.
  1. Notify Owner not less than 5 business days in advance of proposed disruptive operations.
  2. Obtain Owner's written permission before proceeding with disruptive operations.

- E. Nonsmoking Building: Smoking is not permitted within the building or within 25 feet (8 m) of entrances, operable windows, or outdoor-air intakes.
- F. Controlled Substances: Use of tobacco products and other controlled substances on Project site is not permitted.
- G. Employee Identification: Provide identification tags for Contractor personnel working on Project site. Require personnel to use identification tags at all times. Comply with requirements of Section 013553 "Access Control and Site Security."

#### 1.8 SPECIFICATION AND DRAWING CONVENTIONS

- A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
  - 1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
  - 2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.
- B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.
- C. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:
  - 1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
  - 2. Abbreviations: Materials and products are identified by abbreviations scheduled on Drawings.
  - 3. Keynoting: Materials and products are identified by reference keynotes referencing Specification Section numbers found in this Project Manual.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

## SECTION 012500

### SUBSTITUTION PROCEDURES

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. Section Includes:
  - 1. Substitutions.

##### 1.2 ACTION SUBMITTALS

- A. Substitution Requests: Identify product, fabrication, and installation method to be replaced. Include affected Specification Section number and title and Drawing numbers and titles. Indicate specific Drawing detail, where applicable.
  - 1. Submit PDF electronic files of each request for consideration.
  - 2. Substitution Request Form: Use Architect accepted form.
  - 3. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
    - a. Statement indicating why specified product, fabrication, and installation cannot be provided, if applicable.
    - b. Coordination information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner that will be necessary to accommodate proposed substitution.
    - c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified. Indicate modifications to Work in place required to accommodate substitution.
    - d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
    - e. Samples, where applicable or requested.
    - f. Certificates and qualification data, where applicable or requested.
    - g. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
    - h. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with specified requirements.
    - i. Research reports evidencing compliance with building code in effect for Project, from ICC-ES or other organization acceptable to authority having jurisdiction.
    - j. Detailed comparison of Contractor's construction schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
    - k. Cost information, including a proposal of change, if any, in the Contract Sum.

- l. Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.
  - m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
  - n. Draft Change Order documenting substitution acceptance prepared on form specified in Section 012600 "Contract Modification Procedures."
  - o. Draft Change Order documenting substitution acceptance prepared on Architect accepted Change Order form.
- 4. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.
  - a. Forms of Acceptance: Change Order, Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.
  - b. Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.
  - c. Architect will consider only one request for substitution for each product. If substitution request is not accepted, provide specified product.

### 1.3 QUALITY ASSURANCE

- A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

### 1.4 PROCEDURES

- A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

## PART 2 - PRODUCTS

### 2.1 SUBSTITUTIONS

- A. Conditions for Consideration: Architect will consider Contractor's request for substitution when the following conditions are satisfied. When any condition for consideration is not satisfied, Architect will return request without action, except to record noncompliance with these requirements:
  - 1. Requested substitution is consistent with the Contract Documents and will produce indicated results.
  - 2. Substitution request is fully documented and properly submitted.
  - 3. Requested substitution will not adversely affect Contractor's construction schedule.
  - 4. Requested substitution has received necessary approvals of authorities having jurisdiction.

5. Requested substitution is compatible with other portions of the Work.
  6. Requested substitution has been coordinated with other portions of the Work.
  7. Requested substitution provides specified warranty.
  8. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
- B. Substitutions will not be considered:
1. When indicated or implied on Shop Drawing or Product Data submittals, without separate written request.
  2. When acceptance will require Contract Documents revision.
  3. When request is not from Contractor.
- C. Substitutions for Cause: Submit requests for substitution required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
1. Submit requests immediately on discovery of need for change, but not later than 15 days prior to time required for preparation and review of related submittals.
  2. Additional Conditions for Consideration:
    - a. Specified product, through no fault of Contractor, is not available or cannot be delivered in time to meet Project schedule. Failure of Contractor to order specified product in time to meet schedule is not a condition necessitating substitution.
    - b. Specified product, through no fault of Contractor, cannot comply with changed Project conditions.
- D. Substitutions for Convenience: Architect will consider requests for substitution offering advantage to Contractor or Owner.
1. Submit requests within 60 days after the Notice to Proceed. Requests received after that time may be considered or rejected at discretion of Architect.
  2. Additional Conditions for Consideration:
    - a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for evaluation services, increased cost of other construction by Owner, and similar considerations.
    - b. Requested substitution does not require revisions to the Contract Documents.

PART 3 - EXECUTION (Not Used)

END OF SECTION

THIS PAGE INTENTIONALLY LEFT BLANK

## SECTION 012600

### CONTRACT MODIFICATION PROCEDURES

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. Section Includes:
1. Minor changes in the Work.
  2. Proposal requests.
  3. Change Orders.
  4. Construction Change Directives.

##### 1.2 MINOR CHANGES IN THE WORK

- A. Architect will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time.
1. Minor Change Form: AIA Document G710, "Architect's Supplemental Instructions."

##### 1.3 PROPOSAL REQUESTS

- A. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
1. Work Change Proposal Requests are not instructions either to stop work in progress or to execute the proposed change.
  2. Within time specified in Proposal Request or 20 days, when not otherwise specified, after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
    - a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
    - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
    - c. Include costs of labor and supervision directly attributable to the change.
    - d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
    - e. Quotation Form: Use Architect accepted form.
- B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Architect.
1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.

2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
4. Include costs of labor and supervision directly attributable to the change.
5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
6. Comply with requirements in Section 012500 "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.
7. Proposal Request Form: Use Architect accepted form.

#### 1.4 CHANGE ORDER PROCEDURES

- A. On Owner's approval of a Work Change Proposal Request, Architect will issue a Change Order for signatures of Owner and Contractor.
  1. Change Order Form: AIA Document G701 or other Architect accepted form.

#### 1.5 CONSTRUCTION CHANGE DIRECTIVE

- A. Construction Change Directive: Architect may issue a Construction Change Directive. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
  1. Construction Change Directive Form: AIA Document G714 or other Architect accepted form.
  2. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.
- B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.
  1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 012900  
PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Applications for Payment.

1.2 SCHEDULE OF VALUES

- A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule.
1. Coordinate line items in the schedule of values with other required administrative forms and schedules, including the following:
    - a. Application for Payment forms with continuation sheets.
    - b. Submittal schedule.
    - c. Items required to be indicated as separate activities in Contractor's construction schedule.
  2. Submit the schedule of values to Architect at earliest possible date, but no later than seven days before the date scheduled for submittal of initial Applications for Payment.
- B. Format and Content: Use Project Manual table of contents as a guide to establish line items for the schedule of values. Provide at least one line item for each Specification Section.
1. Identification: Include the following Project identification on the schedule of values:
    - a. Project name and location.
    - b. Name of Architect.
    - c. Architect's project number.
    - d. Contractor's name and address.
    - e. Date of submittal.
  2. Arrange schedule of values consistent with format of AIA Document G703 or other Architect accepted form with separate columns to indicate the following for each item listed:
    - a. Related Specification Section or Division.
    - b. Description of the Work.
    - c. Name of subcontractor.
    - d. Name of manufacturer or fabricator.
    - e. Name of supplier.
    - f. Change Orders (numbers) that affect value.
    - g. Dollar value of the following, as a percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.
      - 1) Labor.
      - 2) Materials.
      - 3) Equipment.

3. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Provide multiple line items for principal subcontract amounts in excess of five percent of the Contract Sum.
  - a. Include separate line items for Project closeout requirements in an amount totaling five percent of the Contract Sum and subcontract amount.
4. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
5. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
6. Provide separate line items in the schedule of values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
7. Site Mobilization: Provide a separate line item in the schedule of values for site mobilization including initial installation of temporary facilities and utilities.
8. Insurance and Bonds: Provide a separate line item in the schedule of values for Insurance and bonds, when required.
9. Each item in the schedule of values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.
  - a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the schedule of values or distributed as general overhead expense, at Contractor's option.
10. Schedule Updating: Update and resubmit the schedule of values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

### 1.3 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications and payments as certified by Architect and paid for by Owner.
- B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.
  1. Submit draft copy of Application for Payment seven days prior to due date for review by Architect.
- C. Application for Payment Forms: Use AIA Document G702 and AIA Document G703 or other Architect accepted form as form for Applications for Payment.
- D. Application Preparation: Complete every entry on form. Notarize and execute each copy of application by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.
  1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
  2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.
  3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.

- E. **Stored Materials:** Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed.
1. Differentiate between items stored on-site and items stored off-site.
  2. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment, for stored materials.
  3. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.
  4. Provide summary documentation for stored materials indicating the following:
    - a. Value of materials previously stored and remaining stored as of date of previous Applications for Payment.
    - b. Value of previously stored materials put in place after date of previous Application for Payment and on or before date of current Application for Payment.
    - c. Value of materials stored since date of previous Application for Payment and remaining stored as of date of current Application for Payment.
- F. **Transmittal:** Submit three original copies of each Application for Payment to Architect. One copy shall include waivers of lien and similar attachments if required.
1. Submit one duplicate set of PDF electronic files for each Application for Payment Through Newforma Project Center site.
  2. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.
- G. **Waivers of Mechanic's Lien:** With each Application for Payment, submit waivers of mechanic's lien from entities lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment.
1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
  2. When an application shows completion of an item, submit conditional final or full waivers.
  3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
  4. **Waiver Forms:** Submit executed waivers of lien on forms acceptable to Owner.
- H. **Initial Application for Payment:** Submittals that must precede submittal of first Application for Payment include the following:
1. List of subcontractors.
  2. Schedule of values.
  3. Contractor's construction schedule (preliminary if not final).
  4. Products list (preliminary if not final).
  5. Submittal schedule (preliminary if not final).
  6. List of Contractor's staff assignments.
  7. List of Contractor's principal consultants.
  8. Copies of building permits.
  9. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
  10. Initial progress report.
  11. Report of preconstruction conference.

- I. Application for Payment at Substantial Completion: After Architect issues the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
  - 1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
- J. Final Payment Application: After completing Project closeout requirements, submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
  - 1. Evidence of completion of Project closeout requirements.
  - 2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
  - 3. Updated final statement, accounting for final changes to the Contract Sum.
  - 4. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
  - 5. AIA Document G706A, "Contractor's Affidavit of Release of Liens."
  - 6. AIA Document G707, "Consent of Surety to Final Payment" When bonds are required.
  - 7. Evidence that claims have been settled.
  - 8. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
  - 9. Final liquidated damages settlement statement when liquidated damages are required.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 013100

PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
1. General coordination procedures.
  2. Coordination drawings.
  3. Key personnel
  4. Requests for Interpretation (RFIs).
  5. Newforma Project Center site.
  6. Project meetings.

1.2 INFORMATIONAL SUBMITTALS

- A. Submittals: Make initial submittals within 15 days of starting construction operations and before first Application for Payment. Update list and resubmit when information changes and when new information becomes available.
1. Submit PDF electronic files of each list.
- B. Subcontract List: Submit list of individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design
1. Subcontract List Form: Use Architect accepted form.
  2. Include the following information in tabular form:
    - a. Name, address, and telephone number of entity performing subcontract or supplying products.
    - b. Number and title of related Specification Section(s) covered by subcontract.
    - c. Drawing number and detail references, as appropriate, covered by subcontract.
- C. Key Personnel Names: Submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home, office, and cellular telephone numbers and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.
1. Post copies of list in project meeting room, in temporary field office, on Newforma Project Center site, and by each temporary telephone. Keep list current at all times.

### 1.3 GENERAL COORDINATION PROCEDURES

- A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations that depend on each other for proper installation, connection, and operation.
  - 1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
  - 2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
  - 3. Make adequate provisions to accommodate items scheduled for later installation.
- B. The mechanical drawings show the general arrangement of equipment, ductwork, piping and appurtenances. Follow these drawings as closely as the actual construction and the work of other trades will permit. Provide offsets, fittings, and accessories which may be required but not shown on the drawings. Investigate the site, structural and finish ground conditions affecting the work, and arrange the work accordingly. Provide such work and accessories as may be required to meet such conditions, at no additional cost to the project.
- C. Certain materials will be provided by other trades. Examine the Contract Documents to ascertain these requirements.
- D. Carefully check space requirements with other trades to insure that material can be installed in the spaces allotted thereto with sufficient access space, including finished suspended ceilings.
- E. Wherever work interconnects with work of other trades, coordinate with other trades. Insure that they have the information necessary so that they may properly install the necessary connections and equipment. Identify items (valves, dampers, coils, cleanouts, etc.) requiring access in order that the Ceiling Trade will know where to install access doors and panels.
- F. Consult with other trades regarding equipment so that, wherever possible, motors, motor controls, pumps and valves are of the same manufacture.
- G. Furnish and set sleeves for passage of pipes, ducts and conduits through structural masonry and concrete walls and floors and elsewhere as will be required for the proper protection of each pipe and duct passing through building surfaces.
- H. Properly provide firestopping around all pipes, conduits, ducts, sleeves, etc. which pass through rated walls, partitions and floors.
- I. Provide detailed information on openings and holes required in precast members for mechanical work. Cast holes 4 inches and larger in diameter. Field-cut holes smaller than 4 inches.
- J. Provide required supports and hangers for ductwork, piping and equipment, designed so as not to exceed allowable loadings of structures.

- K. Examine and compare the contract drawings and specifications with the drawings and specifications of other trades, and report any discrepancies between them to the Engineer and obtain from him written instructions for changes necessary in the work. Install and coordinate the work in cooperation with other related trades. Before installation, make proper provisions to avoid interferences.
- L. Wherever the work is of sufficient complexity, prepare additional detail drawings to scale similar to that of the design drawings, prepared on tracing medium of the same size as contract drawings. With these layouts, coordinate the work with the work of other trades. Such detailed work to be clearly identified on the drawings as to the area to which it applies. Submit these drawings to the Engineer for review. At completion include a set of such drawings with each set of as-built drawings.
- M. Before commencing work, examine adjoining work on which this work is in any way dependent for perfect workmanship and report conditions which prevent performance of first class work. Become thoroughly familiar with actual existing conditions to which connections must be made or which must be changed or altered.
- N. Adjust location of pipes, ducts, panels, equipment, etc., to accommodate the work to prevent interferences, both anticipated and encountered. Determine the exact route and location of each pipe and duct prior to fabrication.
  - 1. Right-of-Way: Lines which pitch have the right-of-way over those which do not pitch. For example: condensate, steam, and plumbing drains normally have right-of-way. Lines whose elevations cannot be changed have right-of-way over lines whose elevations can be changed.
  - 2. Make offsets, transitions and changes in direction in pipes and ducts as required to maintain proper head room and pitch on sloping lines. Furnish and install traps, air vents, drains, etc., as required to effect these offsets, transitions and changes in direction.
- O. Install mechanical work to permit removal (without damage to other parts) of coils, heat exchanger plates and tube bundles, fan shafts and wheels, filters, belt guards, sheaves and drives, and other parts requiring periodic replacement or maintenance. Arrange pipes, ducts and equipment to permit access to valves, cocks, traps, starters, motors, and control components, and to clear the openings of swinging doors and access panels.
- P. Changes in the cross-sectional dimensions of ductwork are permissible when required to meet job conditions. Maintain at least the same equivalent cross-sectional duct area in accordance with the latest edition of the ASHRAE Guide. Secure the approval of the Architect/Engineer prior to fabrication of ductwork requiring such changes.
- Q. Provide access panels in equipment, ducts, etc., as required for inspection and maintenance of internal equipment, dampers, plenums, etc.
- R. In cases of doubt as to the work intended, or in the event of need for explanation thereof, request supplementary instructions from the Architect and/or Engineer.
- S. Immediately upon the award of this Contract, but prior to commencing any work, confer together with designated major subcontractors, with the Architect and Engineer concerning the work under this Contract.

- T. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
  - 1. Prepare similar memoranda for Owner if coordination of Owner's Work is required.
- U. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and ensure orderly progress of the work. Such administrative activities include, but are not limited to, the following:
  - 1. Preparation of schedules.
  - 2. Installation and removal of temporary facilities.
  - 3. Delivery and processing of submittals.
  - 4. Progress meetings.
  - 5. Project closeout activities.
- V. Conservation: Coordinate construction operations to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.
  - 1. Salvage materials and equipment involved in performance of, but not actually incorporated in, the work.

#### 1.4 KEY PERSONNEL

- A. Key Personnel Names: Within 15 days of commencement of construction operations, submit a list of key personnel assignments with resume and job qualifications, including project manager, project scheduler, commissioning agent, superintendent and other personnel in attendance at the Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home, office, and cellular telephone numbers, and email addresses. Provide names, addresses, and telephone numbers of individuals assigned as standbys in the absence of individuals assigned to the Project.
  - 1. Post copies of the list in the project meeting room, the temporary field office, and each temporary telephone.

#### 1.5 COORDINATION DRAWINGS

- A. Before fabrication or installation of any work, completely coordinate work of all trades and prepare a complete set of Coordination Drawings.
- B. This requirement for Coordination Drawings is not authorization for the Contractor or Subcontractor to make any unauthorized changes to the Contract Drawings. Maintain all Design Drawing space allocations such as ceiling height, eight (8) inch high zone directly above the ceiling for tenant buildout and flexibility, chase walls, equipment room size, etc., unless prior written authorization is received from the Architect to change them.

- C. Coordination Drawings, General: Prepare coordination drawings according to requirements in individual Sections, and additionally where installation is not completely shown on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity.
1. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Include the following information, as applicable:
    - a. Use applicable Drawings as a basis for preparation of coordination drawings. Prepare sections, elevations, and details as needed to describe relationship of various systems and components.
    - b. Coordinate the addition of trade-specific information to the coordination drawings by multiple contractors in a sequence that best provides for coordination of the information and resolution of conflicts between installed components before submitting for review.
    - c. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
    - d. Indicate space requirements for normal operations, routine maintenance, and for anticipated replacement of components during the life of the installation.
    - e. Show location and size of access doors and clearances required for access to concealed dampers, valves, and other controls.
    - f. Indicate required installation sequences.
    - g. Indicate dimensions shown on the Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternate sketches to Architect indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.
- D. Coordination Drawing Organization: Organize coordination drawings as follows:
1. Floor Plans and Reflected Ceiling Plans: Show architectural and structural elements, and mechanical, plumbing, fire-protection, fire-alarm, and electrical Work. Show locations of visible ceiling-mounted devices relative to acoustical ceiling grid. Supplement plan drawings with section drawings where required to adequately represent the Work.
  2. Plenum Space: Indicate subframing and bracing for support of ceiling and wall systems, mechanical and electrical equipment, and related Work. Locate components within ceiling plenum to accommodate layout of light fixtures indicated on Drawings. Indicate areas of conflict between light fixtures and other components.
  3. Mechanical Rooms: Provide coordination drawings for mechanical rooms showing plans and elevations of mechanical, plumbing, fire-protection, fire-alarm, and electrical equipment.
  4. Structural Penetrations: Indicate penetrations and openings required for other Work.
  5. Slab Edge and Embedded Items: Indicate slab edge locations and sizes and locations of embedded items for metal fabrications, sleeves, anchor bolts, bearing plates, angles, door floor closers, slab depressions for floor finishes, curbs and housekeeping pads, and similar items.
  6. Indicate piping loads and support points for all piping 4 inches and larger, racked piping, racked conduit, and busway, and submit to the Structural Engineer for review and approval. Indicate the elevation, location, support points, static, dynamic and expansion forces and loads imposed on the structure at support, anchor points, and size of all lines. Indicate all beam penetrations and slab penetrations sized and coordinated. Indicate all work routed underground or embedded in concrete by dimension to column and building lines.

7. Mechanical and Plumbing Work: Show the following:
  - a. Sizes and bottom elevations of ductwork, piping, and conduit runs, including insulation, bracing, flanges, and support systems.
  - b. Dimensions of major components, such as dampers, valves, diffusers, access doors, cleanouts and electrical distribution equipment.
  - c. Fire-rated enclosures around ductwork.
8. Electrical Work: Show the following:
  - a. Runs of vertical and horizontal conduit 1-1/4 inches in diameter and larger and cable trays.
  - b. Light fixture, exit light, emergency battery pack, smoke detector, and other fire-alarm device locations.
  - c. Motion detector, occupancy sensor, daylight sensor, and other electrical system control device locations.
  - d. Panel board, switch board, switchgear, transformer, busway, generator, and motor control center locations.
  - e. Location of pull boxes and junction boxes, dimensioned from column center lines.
9. Fire-Protection System: Show the following:
  - a. Locations of standpipes, mains piping, branch lines, pipe drops, and sprinkler heads.
10. Review: Architect will review coordination drawings to confirm that the Work is being coordinated, but not for the details of the coordination, which are Contractor's responsibility. If Architect determines that coordination drawings are not being prepared in sufficient scope or detail, or are otherwise deficient, Architect will so inform Owner, who will request Contractor to make changes as directed and resubmit.
11. Coordination Drawing Prints: Prepare coordination drawing prints according to requirements in Section 013300 "Submittal Procedures."

#### 1.6 REQUESTS FOR INTERPRETATION (RFIs)

- A. General: Immediately on discovery of the need for interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.
  1. Architect will return RFIs submitted to Architect by other entities controlled by Contractor with no response.
  2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.
- B. Content of the RFI: Include a detailed, legible description of item needing interpretation and the following:
  1. Project name.
  2. Project number.
  3. Date.
  4. Name of Contractor.
  5. Name of Architect.
  6. RFI number, numbered sequentially.
  7. RFI subject.
  8. Specification Section number and title and related paragraphs, as appropriate.
  9. Drawing number and detail references, as appropriate.
  10. Field dimensions and conditions, as appropriate.

11. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
  12. Contractor's signature.
  13. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.
- C. RFI Forms: Use Architect accepted form.
- D. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow ten working days for Architect's response for each RFI. RFIs received by Architect after 1:00 p.m. will be considered as received the following working day.
1. The following Contractor-generated RFIs will be returned without action:
    - a. Requests for approval of submittals.
    - b. Requests for approval of substitutions.
    - c. Requests for approval of Contractor's means and methods.
    - d. Requests for information already indicated in the Contract Documents.
    - e. Requests for adjustments in the Contract Time or the Contract Sum.
    - f. Requests for interpretation of Architect's actions on submittals.
    - g. Incomplete RFIs or inaccurately prepared RFIs.
  2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt of additional information.
  3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Section 012600 "Contract Modification Procedures."
    - a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within 10 days of receipt of the RFI response.
- E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly.
1. Log Form: Use Architect accepted form including the following:
    - a. Project name.
    - b. Name and address of Contractor.
    - c. Name and address of Architect.
    - d. RFI number including RFIs that were returned without action or withdrawn.
    - e. RFI description.
    - f. Date the RFI was submitted.
    - g. Date Architect's response was received.
- F. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within seven days if Contractor disagrees with response.
1. Indicate resulting Minor Change in the Work, Construction Change Directive, and Proposal Request in RFI log.

## 1.7 NEWFORMA PROJECT CENTER

- A. Use Architect's Newforma Project Center site for purposes of hosting and managing project communication and documentation until Final Completion. Use Newforma Project Center site for the following functions:
  - 1. Project directory.
  - 2. Project correspondence.
  - 3. Meeting minutes.
  - 4. Contract modifications forms and logs.
  - 5. RFI forms and logs.
  - 6. Task and issue management.
  - 7. Photo documentation.
  - 8. Schedule and calendar management.
  - 9. Submittals forms and logs.
  - 10. Payment application forms.
  - 11. Drawing and specification document hosting, viewing, and updating.
  - 12. Online document collaboration.
  - 13. Reminder and tracking functions.
  - 14. Archiving functions.
- B. Architect will grant access to Newforma Project Center for Contractor and others designated by Contractor.
- C. Contractor, subcontractors, and other parties granted access to Newforma Project Center site shall execute a data licensing agreement in the form of AIA Document C106 or other Architect accepted form.

## 1.8 PROJECT MEETINGS

- A. General: Schedule and conduct meetings and conferences at Project site unless otherwise indicated.
  - 1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.
  - 2. Coordinate meeting times with Architect's regularly scheduled site visits.
  - 3. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
  - 4. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within three days of the meeting.
- B. Preconstruction Conference: Schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 15 days after execution of the Agreement.
  - 1. Conduct the conference to review responsibilities and personnel assignments.
  - 2. Attendees: Authorized representatives of Owner, Owner's Commissioning Authority, and Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.

3. Agenda: Discuss items of significance that could affect progress, including the following:
    - a. Tentative construction schedule.
    - b. Critical work sequencing and long-lead items.
    - c. Designation of key personnel and their duties.
    - d. Lines of communications.
    - e. Procedures for processing field decisions and Change Orders.
    - f. Procedures for RFIs.
    - g. Procedures for testing and inspecting.
    - h. Procedures for processing Applications for Payment.
    - i. Distribution of the Contract Documents.
    - j. Submittal procedures.
    - k. Preparation of record documents.
    - l. Use of the premises.
    - m. Work restrictions.
    - n. Working hours.
    - o. Owner's occupancy requirements.
    - p. Responsibility for temporary facilities and controls.
    - q. Procedures for moisture and mold control.
    - r. Procedures for disruptions and shutdowns.
    - s. Owner's work restrictions.
    - t. Construction waste management and recycling.
    - u. Parking availability.
    - v. Office, work, and storage areas.
    - w. Equipment deliveries and priorities.
    - x. First aid.
    - y. Security.
    - z. Progress cleaning.
    - aa. Commissioning activities.
  4. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.
- C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity that requires coordination with other construction.
1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect, and Owner's Commissioning Authority of scheduled meeting dates.
  2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
    - a. Contract Documents.
    - b. Options.
    - c. Related RFIs.
    - d. Related Change Orders.
    - e. Purchases.
    - f. Deliveries.
    - g. Submittals.
    - h. Review of mockups.
    - i. Possible conflicts.
    - j. Compatibility requirements.
    - k. Time schedules.
    - l. Weather limitations.
    - m. Manufacturer's written instructions.

- n. Warranty requirements.
  - o. Compatibility of materials.
  - p. Acceptability of substrates.
  - q. Temporary facilities and controls.
  - r. Space and access limitations.
  - s. Regulations of authorities having jurisdiction.
  - t. Testing and inspecting requirements.
  - u. Installation procedures.
  - v. Coordination with other work.
  - w. Required performance results.
  - x. Protection of adjacent work.
  - y. Protection of construction and personnel.
  - z. Startup and adjusting procedures.
  - aa. Commissioning procedures.
- 3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
  - 4. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.
  - 5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.
- D. Project Closeout Conference: Schedule and conduct a project closeout conference, at a time convenient to Owner and Architect, but no later than 90 days prior to the scheduled date of Substantial Completion.
- 1. Conduct the conference to review requirements and responsibilities related to Project closeout.
  - 2. Attendees: Authorized representatives of Owner, Owner's Commissioning Authority, and Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
  - 3. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:
    - a. Preparation of record documents.
    - b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
    - c. Submittal of written warranties.
    - d. Requirements for preparing operations and maintenance data.
    - e. Requirements for delivery of material samples, attic stock, and spare parts.
    - f. Requirements for demonstration and training.
    - g. Preparation of Contractor's punch list.
    - h. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
    - i. Submittal procedures.
    - j. Coordination of Owner's work.
    - k. Owner's partial occupancy requirements.
    - l. Responsibility for removing temporary facilities and controls.
  - 4. Minutes: Entity conducting meeting will record and distribute meeting minutes.

- E. Progress Meetings: Conduct progress meetings at weekly intervals.
1. Coordinate dates of meetings with preparation of payment requests.
  2. Attendees: In addition to representatives of Owner, Owner's Commissioning Authority and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
  3. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
    - a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
      - 1) Review schedule for period until next meeting.
    - b. Review present and future needs of each entity present, including the following:
      - 1) Interface requirements.
      - 2) Sequence of operations.
      - 3) Status of submittals.
      - 4) Deliveries.
      - 5) Off-site fabrication.
      - 6) Access.
      - 7) Site utilization.
      - 8) Temporary facilities and controls.
      - 9) Progress cleaning.
      - 10) Quality and work standards.
      - 11) Status of correction of deficient items.
      - 12) Field observations.
      - 13) Status of RFIs.
      - 14) Status of proposal requests.
      - 15) Pending changes.
      - 16) Status of Change Orders.
      - 17) Pending claims and disputes.
      - 18) Documentation of information for payment requests.
  4. Minutes: Entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.
    - a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 013200

CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
  - 1. Startup construction schedule.
  - 2. Contractor's construction schedule.
  - 3. Construction schedule updating reports.
  - 4. Daily construction reports.
  - 5. Material location reports.
  - 6. Site condition reports.
  - 7. Special reports.
  - 8. Construction Photographs.

1.2 INFORMATIONAL SUBMITTALS

- A. Format for Submittals: Submit required submittals in the following format:
  - 1. PDF electronic file.
- B. Startup construction schedule.
- C. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.
- D. Look Ahead Schedule: Submit weekly with progress meeting agenda.
- E. CPM Reports: Concurrent with CPM schedule, submit each of the following reports. Format for each activity in reports shall contain activity number, activity description, cost and resource loading, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float in calendar days.
  - 1. Activity Report: List of all activities sorted by activity number and then early start date, or actual start date if known.
  - 2. Logic Report: List of preceding and succeeding activities for all activities, sorted in ascending order by activity number and then early start date, or actual start date if known.
  - 3. Total Float Report: List of all activities sorted in ascending order of total float.
  - 4. Earnings Report: Compilation of Contractor's total earnings from commencement of the Work until most recent Application for Payment.
- F. Construction Schedule Updating Reports: Submit with Applications for Payment.
- G. Daily Construction Reports: Submit at weekly intervals.
- H. Material Location Reports: Submit at monthly intervals.

- I. Site Condition Reports: Submit at time of discovery of differing conditions.
- J. Special Reports: Submit at time of unusual event.
- K. Construction Photographs:
  - 1. Photographer: Engage a qualified photographer to take construction photographs.
  - 2. Key Plan: Submit key plan of Project site with notation of vantage points marked for location and direction of each photograph. Indicate elevation or story of construction. Include same information as corresponding photographic documentation.
  - 3. Construction Photographs: Submit image files within two (2) days of taking photographs.
    - a. Format: Submit unaltered original files, with same aspect ratio as the sensor, uncropped, date and time stamped, in folder named by date of photograph, accompanied by key plan file.
    - b. Identification: Provide the following information with each image description in file metadata tag:
      - 1) Date photograph was taken.
      - 2) Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.
      - 3) Unique sequential identifier keyed to accompanying key plan.
    - c. Preconstruction Photographs: Submit preconstruction photographs prior to start of construction-related work, including staging of materials or site preparation work. Show existing conditions adjacent to property.

### 1.3 QUALITY ASSURANCE

- A. Prescheduling Conference: Conduct conference at Project site to comply with requirements in Section 013100 "Project Management and Coordination." Review methods and procedures related to the preliminary construction schedule and Contractor's construction schedule, including, but not limited to, the following:
  - 1. Review software limitations and content and format for reports.
  - 2. Verify availability of qualified personnel needed to develop and update schedule.
  - 3. Discuss constraints, including interim milestones.
  - 4. Review submittal requirements and procedures.
  - 5. Review time required for review of submittals and resubmittals.
  - 6. Review requirements for tests and inspections by independent testing and inspecting agencies.
  - 7. Review time required for Project closeout and Owner startup procedures, including commissioning activities.
  - 8. Review and finalize list of construction activities to be included in schedule.
  - 9. Review procedures for updating schedule.

#### 1.4 COORDINATION

- A. Coordinate Contractor's construction schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests, and other required schedules and reports.
  - 1. Secure time commitments for performing critical elements of the Work from entities involved.
  - 2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

### PART 2 - PRODUCTS

#### 2.1 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

- A. Time Frame: Extend schedule from date established for commencement of the Work to date of final completion.
  - 1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.
- B. Activities: Treat each story or separate area as a separate numbered activity for each main element of the Work. Comply with the following:
  - 1. Activity Duration: Define activities so no activity is longer than 20 days, unless specifically allowed by Architect.
  - 2. Procurement Activities: Include procurement process activities for long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
  - 3. Submittal Review Time: Include review and resubmittal times indicated in Section 013300 "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's construction schedule with submittal schedule.
  - 4. Startup and Testing Time: Include no fewer than 15 days for startup and testing.
  - 5. Commissioning: Include time for commissioning process activities specified in Section 019113 "General Commissioning Requirements" in schedule. Show separate line item for each major system specified to be commissioned.
  - 6. Demonstration and Training: Include time for demonstration and training activities specified in Section 017900 "Demonstration and Training" in schedule.
  - 7. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.
  - 8. Punch List and Final Completion: Include not more than 30 days for completion of punch list items and final completion.

- C. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
1. Work Restrictions: Show the effect of the following items on the schedule:
    - a. Coordination with existing construction.
    - b. Use of premises restrictions.
    - c. Seasonal variations.
    - d. Environmental control.
  2. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:
    - a. Subcontract awards.
    - b. Submittals.
    - c. Purchases.
    - d. Mockups.
    - e. Fabrication.
    - f. Sample testing.
    - g. Deliveries.
    - h. Installation.
    - i. Tests and inspections.
    - j. Adjusting.
    - k. Curing.
    - l. Startup and placement into final use and operation.
- D. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and final completion, and the following interim milestones:
1. Underground utility completion.
  2. Structural completion.
  3. Temporary enclosure and space conditioning.
  4. Mechanical completion.
  5. Electrical completion.
  6. Mechanical and electrical equipment mechanical checkout.
  7. Mechanical and electrical equipment operational test.
  8. Mechanical and electrical equipment commissioning.
- E. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:
1. Unresolved issues.
  2. Unanswered Requests for Interpretation.
  3. Rejected or unreturned submittals.
  4. Notations on returned submittals.
  5. Pending modifications affecting the Work and Contract Time.
- F. Recovery Schedule: When periodic update indicates the Work is 14 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, and equipment required to achieve compliance, and date by which recovery will be accomplished.
- G. Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.

## 2.2 STARTUP CONSTRUCTION SCHEDULE

- A. Bar-Chart Schedule: Submit startup, horizontal, bar-chart-type construction schedule within seven days of date established for commencement of the Work.
- B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line. Outline significant construction activities for first 90 days of construction. Include skeleton diagram for the remainder of the Work.

## 2.3 CONTRACTOR'S CONSTRUCTION SCHEDULE (CPM SCHEDULE)

- A. General: Prepare network diagrams using AON (activity-on-node) format.
- B. CPM Schedule: Prepare Contractor's construction schedule using a time-scaled CPM network analysis diagram for the Work.
  - 1. Develop network diagram in sufficient time to submit CPM schedule so it can be accepted for use no later than 60 days after date established for commencement of the Work.
    - a. Failure to include any work item required for performance of this Contract shall not excuse Contractor from completing all work within applicable completion dates, regardless of Architect's approval of the schedule.
  - 2. Establish procedures for monitoring and updating CPM schedule and for reporting progress. Coordinate procedures with progress meeting and payment request dates.
  - 3. Use "one workday" as the unit of time for individual activities. Indicate nonworking days and holidays incorporated into the schedule in order to coordinate with the Contract Time.
  - 4. Float: The measure of leeway in starting and completing an activity.
    - a. Float time is not for the exclusive use or benefit of either Owner or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.
    - b. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.
    - c. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.
- C. CPM Schedule Preparation: Prepare a list of all activities required to complete the Work.
  - 1. Activities: Indicate the estimated time duration, sequence requirements, and relationship of each activity in relation to other activities. Include estimated time frames for the following activities:
    - a. Preparation and processing of submittals.
    - b. Mobilization and demobilization.
    - c. Purchase of materials.
    - d. Delivery.
    - e. Fabrication.
    - f. Utility interruptions.
    - g. Installation.
    - h. Work by Owner that may affect or be affected by Contractor's activities.

- i. Testing.
  - j. Commissioning.
  - k. Punch list and final completion.
  - l. Activities occurring following final completion.
2. Critical Path Activities: Identify critical path activities, including those for interim completion dates. Scheduled start and completion dates shall be consistent with Contract milestone dates.
3. Processing: Process data to produce output data on a computer-drawn, time-scaled network. Revise data, reorganize activity sequences, and reproduce as often as necessary to produce the CPM schedule within the limitations of the Contract Time.
4. Format: Mark the critical path. Locate the critical path near center of network; locate paths with most float near the edges.
  - a. Subnetworks on separate sheets are permissible for activities clearly off the critical path.
- D. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using a network fragment to demonstrate the effect of the proposed change on the overall project schedule.
- E. Initial Issue of Schedule: Prepare initial network diagram from a sorted activity list indicating straight "early start-total float." Identify critical activities. Prepare tabulated reports showing the following:
  1. Contractor or subcontractor and the Work or activity.
  2. Description of activity.
  3. Main events of activity.
  4. Immediate preceding and succeeding activities.
  5. Early and late start dates.
  6. Early and late finish dates.
  7. Activity duration in workdays.
  8. Total float or slack time.
  9. Average size of workforce.
  10. Dollar value of activity (coordinated with the schedule of values).
- F. Schedule Updating: Concurrent with making revisions to schedule, prepare tabulated reports showing the following:
  1. Identification of activities that have changed.
  2. Changes in early and late start dates.
  3. Changes in early and late finish dates.
  4. Changes in activity durations in workdays.
  5. Changes in the critical path.
  6. Changes in total float or slack time.
  7. Changes in the Contract Time.
- G. Look Ahead Schedule: Three week period indicating activities within next three week period.

## 2.4 REPORTS

- A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:
  1. List of subcontractors at Project site.
  2. Approximate count of personnel at Project site.

3. Equipment at Project site.
  4. Material deliveries.
  5. High and low temperatures and general weather conditions, including presence of rain or snow.
  6. Accidents.
  7. Meetings and significant decisions.
  8. Unusual events (see special reports).
  9. Stoppages, delays, shortages, and losses.
  10. Meter readings and similar recordings.
  11. Emergency procedures.
  12. Orders and requests of authorities having jurisdiction.
  13. Change Orders received and implemented.
  14. Construction Change Directives received and implemented.
  15. Services connected and disconnected.
  16. Equipment or system tests and startups.
  17. Partial completions and occupancies.
  18. Substantial Completions authorized.
- B. Material Location Reports: At monthly intervals, prepare and submit a comprehensive list of materials delivered to and stored at Project site. List shall be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site. Indicate the following categories for stored materials:
1. Material stored prior to previous report and remaining in storage.
  2. Material stored prior to previous report and since removed from storage and installed.
  3. Material stored following previous report and remaining in storage.
- C. Site Condition Reports: Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Interpretation. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

## 2.5 SPECIAL REPORTS

- A. General: Submit special reports directly to Owner within one day of an occurrence. Distribute copies of report to parties affected by the occurrence.
- B. Reporting Unusual Events: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

## 2.6 CONSTRUCTION PHOTOGRAPHS

- A. Format: Provide full color images in TIF/TIFF format, produced by a digital camera.
- B. Resolution: 1024 x 768 pixels, minimum.
- C. Date Stamp: Each image shall include date and time stamp, added when image is taken and integral to digital image

## PART 3 - EXECUTION

### 3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.
  - 1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
  - 2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
  - 3. As the Work progresses, indicate final completion percentage for each activity.
- B. Distribution: Distribute copies of approved schedule to Architect Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.
  - 1. Post copies in Project meeting rooms and temporary field offices.
  - 2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

### 3.2 CONSTRUCTION PHOTOGRAPHS

- A. General: Take photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work. Photographs with blurry or out-of-focus areas will not be accepted.
  - 1. Maintain key plan with each set of construction photographs that identifies location of each photograph taken.
- B. Digital Images: Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.
  - 1. Field Office Images: Maintain one set of images accessible in the field office at Project site, available at all times for reference. Identify images in the same manner as those submitted to the Architect.
- C. Preconstruction Photographs: Prior to starting construction, take photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points, as required to accurately document existing conditions, and as directed by the Architect.
  - 1. Take not less than four (4) photographs of Project site and adjacent properties.
  - 2. Take additional photographs as required to completely record existing conditions of Project site or adjacent properties.
- D. Periodic Construction Photographs: Take photographs daily, with not less than twenty 20 photographs taken weekly. Select timing and vantage points to show status of construction and progress since last photographs were taken.

- E. Final Completion Construction Photographs: Take not less than eight (8) color photographs after date of Preliminary Acceptance / Substantial Completion for submission as project record documents. Architect will select desired vantage points.

END OF SECTION

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 013300  
SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Shop Drawings.
  2. Integrated Drawings.
  3. Product Data.
  4. Samples.
  5. Other submittals.
  6. Delegated-design services.

1.2 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require Architect's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."
- B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."

1.3 ACTION SUBMITTALS

- A. Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Architect and additional time for handling and reviewing submittals required by those corrections.
1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.
  2. Initial Submittal: Submit concurrently with startup construction schedule. Include submittals required during the first 60 days of construction. List those submittals required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.
  3. Final Submittal: Submit concurrently with the first complete submittal of Contractor's construction schedule.
    - a. Submit revised submittal schedule to reflect changes in current status and timing for submittals.
  4. Format: Arrange the following information in a tabular format:
    - a. Scheduled date for first submittal.
    - b. Specification Section number and title.
    - c. Submittal category: Action; informational.

- d. Name of subcontractor.
- e. Description of the Work covered.
- f. Scheduled date for Architect's final release or approval.
- g. Scheduled date of fabrication.
- h. Scheduled dates for purchasing.
- i. Scheduled dates for installation.
- j. Activity or event number.

#### 1.4 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

- A. Architect's Digital Data Files: Electronic digital data files of the Contract Drawings will be provided by Architect for Contractor's use in preparing submittals.
  - 1. Architect will furnish Contractor one set of digital data drawing files of the Contract Drawings for use in preparing Shop Drawings.
    - a. Architect makes no representations as to the accuracy or completeness of digital data drawing files as they relate to the Contract Drawings.
    - b. Digital Drawing Software Program: The Contract Drawings are available in AutoCAD or Revit.
    - c. Contractor shall execute a data licensing agreement in the form of AIA Document C106, Digital Data Licensing Agreement.
- B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
  - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
  - 2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
    - a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- C. Processing Time: Allow time for submittal review, including time for resubmittals. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
  - 1. Initial Review: Allow 10 working days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
  - 2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
  - 3. Resubmittal Review: Allow 10 working days for review of each resubmittal.
- D. Electronic Submittals: Identify and incorporate information in each electronic submittal file as follows:
  - 1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
    - a. Indicate in the lower right hand corner of each shop drawing, and each product data brochure on the front cover, the following: The submittal identification number; title of the sheet or brochure; name and location of the Project; names of the Architect, Engineer, Contractor, Subcontractor, manufacturer, supplier, and

- vendor; the date of submittal; and the date of each correction and version and revision.
  - b. Number each drawing sheet and product data brochures for each submittal consecutively.
  - c. Unless the above information is included, the submittal will be returned for resubmission.
  - d. Include with resubmittals of product data or brochures a cover letter summarizing the corrections made in response to the review comments and the submittal page numbers which were revised.
2. Name file with submittal number or other unique identifier, including revision identifier.
- a. File name shall use project identifier and Specification Section number followed by a decimal point and then a sequential number (e.g., LNHS-061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., LNHS-061000.01.A).
3. Provide means for insertion to permanently record Contractor's review and approval markings and action taken by Architect.
4. Transmittal Form for Electronic Submittals: Use electronic form acceptable to Architect, containing the following information:
- a. Project name.
  - b. Date.
  - c. Name and address of Architect.
  - d. Name of Contractor.
  - e. Name of firm or entity that prepared submittal.
  - f. Names of subcontractor, manufacturer, and supplier.
  - g. Category and type of submittal.
  - h. Submittal purpose and description.
  - i. Specification Section number and title.
  - j. Specification paragraph number or drawing designation and generic name for each of multiple items.
  - k. Drawing number and detail references, as appropriate.
  - l. Location(s) where product is to be installed, as appropriate.
  - m. Related physical samples submitted directly.
  - n. Indication of full or partial submittal.
  - o. Transmittal number, numbered consecutively.
  - p. Submittal and transmittal distribution record.
  - q. Other necessary identification.
  - r. Remarks.
- E. Options: Identify options requiring selection by Architect.
- F. Deviations and Additional Information: On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Architect on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same identification information as related submittal.

- G. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
  - 1. Note date and content of previous submittal.
  - 2. Note date and content of revision in label or title block and clearly indicate extent of revision.
  - 3. Bubble and identify submittal revisions showing changes from previous submission.
  - 4. Resubmit submittals until they are marked with approval notation from Architect's action stamp.
- H. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
- I. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Architect's action stamp.

## PART 2 - PRODUCTS

### 2.1 SUBMITTAL PROCEDURES

- A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.
  - 1. Post electronic submittals as PDF electronic files directly to Newforma Project Center site specifically established for Project.
    - a. Architect will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.
  - 2. Include relevant specification section marked up showing compliance or non-compliance with each specification clause. No submissions will be reviewed without this written statement of specification compliance.
  - 3. Include New York City M.E.A./BS&A numbers on equipment submittals.
  - 4. Identify each sheet of printed submittal pages (using arrows, underlining or circling) to show applicable sizes, types, model numbers, ratings, capacities and options actually being proposed. Cross out non-applicable information. Note specified features such as special tank linings, pump seals, materials or painting.
- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
  - 1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
  - 2. Mark each copy of each submittal to show which products and options are applicable.
  - 3. Include the following information, as applicable:
    - a. Manufacturer's catalog cuts.
    - b. Manufacturer's product specifications.
    - c. Standard color charts.
    - d. Statement of compliance with specified referenced standards.
    - e. Testing by recognized testing agency.
    - f. Application of testing agency labels and seals.
    - g. Notation of coordination requirements.
    - h. Availability and delivery time information.

4. For equipment, include the following in addition to the above, as applicable:
    - a. Wiring diagrams showing factory-installed wiring.
    - b. Printed performance curves.
    - c. Operational range diagrams.
    - d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
  5. Submit Product Data before or concurrent with Samples.
- C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.
1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
    - a. Identification of products.
    - b. Schedules.
    - c. Compliance with specified standards.
    - d. Notation of coordination requirements.
    - e. Notation of dimensions established by field measurement.
    - f. Relationship and attachment to adjoining construction clearly indicated.
    - g. Seal and signature of professional engineer if specified.
  2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches, but no larger than 30 by 42 inches.
- D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
  2. Identification: Attach label on unexposed side of Samples that includes the following:
    - a. Generic description of Sample.
    - b. Product name and name of manufacturer.
    - c. Sample source.
    - d. Number and title of applicable Specification Section.
    - e. Specification paragraph number and generic name of each item.
  3. For projects where electronic submittals are required, provide corresponding electronic submittal of Sample transmittal, digital image file illustrating Sample characteristics, and identification information for record.
  4. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
    - a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
    - b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.
  5. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
    - a. Number of Samples: Submit one full set of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.

6. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
  - a. Number of Samples: Submit three sets of Samples. Architect will retain one Sample set; remainder will be returned. Mark up and retain one returned Sample set as a project record sample.
- E. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
  1. Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by Contractor if none is indicated.
  2. Manufacturer and product name, and model number if applicable.
  3. Number and name of room or space.
  4. Location within room or space.
- F. Coordination Drawing Submittals: Comply with requirements specified in Section 013100 "Project Management and Coordination."
- G. Contractor's Construction Schedule: Comply with requirements specified in Section 013200 "Construction Progress Documentation."
- H. Application for Payment and Schedule of Values: Comply with requirements specified in Section 012900 "Payment Procedures."
- I. Test and Inspection Reports and Schedule of Tests and Inspections Submittals: Comply with requirements specified in Section 014000 "Quality Requirements."
- J. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Section 017700 "Closeout Procedures."
- K. Maintenance Data: Comply with requirements specified in Section 017823 "Operation and Maintenance Data."
- L. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.
- M. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on AWS forms. Include names of firms and personnel certified.
- N. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.

- O. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
- P. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- Q. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
- R. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
- S. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
- T. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
- U. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
- V. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
- W. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

## 2.2 INTEGRATED DRAWINGS

- A. The HVAC subcontractor shall prepare a Drawing or Drawings showing duct work, heating and sprinkler piping. This Drawing shall include location of grilles, registers, etc., and access doors in hung ceilings. Locations shall be fixed by elevations and dimensions from column center lines and/or walls.
- B. The HVAC subcontractor shall prepare and distribute to the Plumbing and Electrical subcontractors, the General Contractor, and to the Architect a reproducible of the above.
- C. The HVAC subcontractor shall lay out on his reproducible the reflected ceiling plan, beam soffit elevations, ceiling heights, roof openings, etc.
- D. The Plumbing subcontractor shall lay out on his reproducible the piping, valves, clean-outs, etc., indicating locations and elevations and shall indicate the necessary access doors.

- E. The Electrical subcontractor shall indicate on his reproducible the fixtures, large conduit runs, clearances, pull boxes, junction boxes, sound system speakers, etc.
- F. The General Contractor shall indicate on his reproducible any structural framing, ceiling hangers, etc.
- G. The General Contractor shall call as many meetings with the subcontractors as are necessary to resolve any conflicts that become apparent. He will call on the services of the Consultant Engineer or Architect where necessary. The General Contractor is responsible for the coordination of the Drawing or Drawings.
- H. On resolution of the conflicts, each subcontractor shall enter his own work on the HVAC subcontractor's reproducible, which shall become the master or integrated Drawings. The master reproducible shall be signed by each contributing subcontractor to indicate his acceptance of the arrangement of the work.
- I. A reproducible copy of the master integrated Drawing will be prepared by the HVAC subcontractor. The General Contractor will make distribution.
- J. Each subcontractor shall prepare his Shop Drawings in accordance with the integrated Drawings. No work will be permitted without approved Shop Drawings. It is therefore essential that this procedure be instituted as quickly as possible.

## 2.3 DELEGATED-DESIGN SERVICES

- A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
  - 1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.
- B. Delegated-Design Services Certification: Submit Shop Drawings, Product Data, performance and design criteria, design calculations, and other required submittals acceptable to authority having jurisdiction, in form of digitally signed PDF electronic file and three paper copies, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.
  - 1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

## PART 3 - EXECUTION

### 3.1 COORDINATION OF SUBMITTALS

- A. Prior to submittal for Architect's review, use all means necessary to fully coordinate all material, including the following procedures:
  - 1. Determine and verify all field dimensions and conditions, materials, catalog numbers and similar data.
  - 2. Coordinate as required with all trades and with public agencies involved.

3. Secure all necessary approvals from public agencies and others and signify by stamp, or other means, that they have been secured.
  4. Clearly indicate all deviations from the Contract Documents.
- B. Unless otherwise specifically permitted by the Architect, make all submittals in groups containing all associated items; the Architect may reject partial submittals as not complying with the provisions of the Contract Documents.

### 3.2 CONTRACTOR'S REVIEW

- A. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.
- B. Project Closeout and Maintenance Material Submittals: See requirements in Section 017700 "Closeout Procedures."
- C. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

### 3.3 ARCHITECT'S ACTION

- A. Action Submittals: Architect will review each submittal, make marks to indicate corrections or revisions required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action.
- B. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.
- C. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.
- D. Submittals not required by the Contract Documents may be returned by the Architect without action.

END OF SECTION

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 013553

ACCESS CONTROL AND SITE SECURITY

PART 1 - GENERAL

1.1 SUMMARY

- A. This section describes access to the site and protection of work and property required during construction within the construction site area.
- B. The Contractor is solely responsible for the site security and any individuals performing related works who are allowed access onto the site.
- C. All vehicles on the job site must display the Contractor's logo (magnetic signs are acceptable) on the front door panels of vehicles.
- D. The Contractor is responsible for the security of the project site and any violations created by contractors, Employees, and contracted workforce/supplier's agents or unauthorized access via the construction site.
- E. The Contractor is responsible to submit a site security plan along with a site logistics plan to Owner for approval. The Contractor is responsible to implement the approved security plan and site logistics plan for the duration of the project. The Contractor is required to install all facilities, fencing, gates, lighting, alarms, or other products that may be required to provide site security and is also responsible to employ a sufficient security staff required to provide site security. If the Contractor or Owner observe deficiencies with the approved site security plan, the Contractor shall address the deficiency immediately and update the site security plan for review and approval of Owner. Upon completion of the works, the Contractor is required to remove all temporary facilities and services required to perform the works.
- F. Related Requirements:
  - 1. Section 015000 "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.
- G. Related Standards: The following standards are included with this Project Manual and compliment the requirements of this Section. In case of conflict between requirements of this Section and the listed standards, the listed standards shall govern unless specifically indicated otherwise.
  - 1. The Port Authority of New York and New Jersey Construction Site Security Requirements.

## 1.2 REQUIREMENTS

- A. The Contractor shall initiate a security program prior to mobilization and maintain it throughout construction. Ten copies of the security program report shall be submitted to Owner for review and approval prior to mobilization.
  - 1. The Contractor is to retain a Subcontractor to provide 24-hours, 7-days per week site security.
  - 2. The Contractor is to appoint a site security manager. The security manager, or one of their appointed deputies authorized on security issues, is to be contactable by telephone 24-hours, 7-days per week. All such information will be included in the security program report.
- B. All staff and manpower inclusive of contractors, Subcontractors, suppliers, the Contractor's agents/consultants are to have a project identification badge that displays the name, picture, company of employment, and unique badge identification number. All badges are to be uniform in appearance and display project name and (primary) Contractor's logo.
  - 1. Prior to receipt of a badge to the individual the Contractor must determine that the individual can work on the project. Each badge applicant must complete a badge application form (format submitted to Owner for approval) that must be authorized by the Contractor's site security manager and an original copy of this authorization document is to remain on file at the Contractor's site office.
- C. The Contractor is to install, operate, and maintain a personnel and vehicle barrier entry system to ensure that only authorized traffic is allowed to enter the site and records of all traffic are captured. The system shall consist of:
  - 1. The Contractor is to include sufficient badges to be issued to Owner and Architect staff that will routinely visit or work on site. The Contractor is to issue visitor badges with badge sign out procedure to authorized individuals who may infrequently visit site. Each badge is to have a unique identification number that can be recorded. Each badge is required to be renewed every 12 months.
  - 2. Each badge is to have a printed PVC adhesive identification card that displays the project name, individual's name, picture, company of employment, unique badge identification number, and the Contractor's logo. The Contractor is to supply all badge-related materials.
  - 3. All individuals are to display their badge on outer garments in a prominent easily identifiable manner. All laborers are to be displaying their badges in accordance with the current Employer Site security policy/procedure. Any individual on Site not in possession of or without an authorized badge must be immediately removed from site by the Contractor.
  - 4. The Contractor is to record and retain a record history of all individuals' entry and exit from the Site.
  - 5. Install a personnel-monitored vehicle traffic access barrier system, system for entry and exit. The Contractor is to record the identification, license number, and time of entry/exit of all vehicles entering site.
  - 6. The Contractor is to provide security personnel at the site pedestrian and vehicular access points at all times, security staff are to be provided with an air conditioned office adjacent to the access point. Sufficient space is required for badge issuance of temporary badges. The security office is to be provided with the means of direct contact with the Contractor's site supervisors and management staff. Security personnel shall establish and maintain a working relationship and ongoing communications with JKJCC public safety personnel and local government law enforcement agencies, as required.
  - 7. All access points must be provided with security lighting.

8. The Contractor is responsible for submitting the site security plan to Owner for approval; improvements to the required scheme may be proposed by the contractor but, are subject approval of Owner.
  9. The Contractor may submit substitute materials and equipment of an equal or superior quality to Engineer for review and approval.
- D. The Contractor is to maintain good housekeeping practices on site to minimize the possibility of security issues. Materials, equipment, and objects are not to be stored within ten feet of any site security fence to prevent stored items being used as access to breach the fence.
- E. The Contractor is to ensure that all individuals working on site do so in a safe and professional manner. If the Contractor or Architect observe individuals not following accepted site rules and practices, the individual shall be removed from the site by the Contractor and have their identification badge withdrawn.
- F. All Contractor personnel are responsible for challenging and reporting anyone in their work areas not displaying a proper identification badge. All Contractor personnel shall contact the site security office if they observe anyone without a badge and detain person(s) if it is safe to do so.
- G. The Contractor is responsible to notify security authority(ies) immediately if a breach of security has occurred or if they suspect the safety/security of the JKJCC may be compromised. The Contractor shall also notify the police that a security breach has occurred or is suspected on site. The Contractor is to notify Architect immediately after the security authority(ies) have been contacted. The Contractor shall detail the security breach/compromise process in their site specific safety plan.
- H. The Contractor is to develop a procedure within the site security plan that ensures delivery vehicles that do not possess an approved badge have the correct paperwork when arriving at the site. Deliveries must be scheduled and arrive at predetermined time, have correct delivery paperwork, and be assigned to a supervisory member of the Contractor's workforce.
- I. Site visitors shall comply with Owner's site visitor policy.
- J. The Contractor is to develop as part of the site security plan and site logistics plan a layout drawing that ensures that pedestrians and vehicles can enter site efficiently and prevent waiting time or traffic jams on access roads.
- K. The Contractor is responsible for the training of personnel for site security rules instruction prior to granting access to the Site.
- 1.3 WRITTEN REPORT
- A. The Contractor shall submit a written security report that summarizes the site security for the prior month as part of the monthly progress report. The report shall detail any observations/actions taken by the site security staff. The Contractor is to include any requests to update the approved site security plan that they believe would enhance the site and airport security.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 014000  
QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
  - 1. Quality assurance requirements.
  - 2. Quality control requirements.
- B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
  - 1. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
  - 2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
  - 3. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner, Commissioning Authority, or authorities having jurisdiction are not limited by provisions of this Section.
  - 4. Specific test and inspection requirements are not specified in this Section.

1.2 CONFLICTING REQUIREMENTS

- A. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Architect for a decision before proceeding.
- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.
- C. Plans, specifications, codes and standards are minimum requirements. Where requirements differ, apply more stringent.
- D. Should any change in plans or specifications be required to comply with governing regulations, notify Architect/Engineer at time of submitting bid.

1.3 INFORMATIONAL SUBMITTALS

- A. Contractor's Quality-Control Plan: For quality-assurance and quality-control activities and responsibilities.

- B. Qualification Data: For Contractor's quality-control personnel.
- C. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.
- D. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
  - 1. Specification Section number and title.
  - 2. Entity responsible for performing tests and inspections.
  - 3. Description of test and inspection.
  - 4. Identification of applicable standards.
  - 5. Identification of test and inspection methods.
  - 6. Number of tests and inspections required.
  - 7. Time schedule or time span for tests and inspections.
  - 8. Requirements for obtaining samples.
  - 9. Unique characteristics of each quality-control service.

#### 1.4 CONTRACTOR'S QUALITY-CONTROL PLAN

- A. Quality-Control Plan, General: Submit quality-control plan within 10 days of Notice of Award, and not less than five days prior to preconstruction conference. Submit in format acceptable to Architect. Identify personnel, procedures, controls, instructions, tests, records, and forms to be used to carry out Contractor's quality-assurance and quality-control responsibilities. Coordinate with Contractor's construction schedule.
- B. Quality-Control Personnel Qualifications: Engage qualified full-time personnel trained and experienced in managing and executing quality-assurance and quality-control procedures similar in nature and extent to those required for Project.
- C. Submittal Procedure: Describe procedures for ensuring compliance with requirements through review and management of submittal process. Indicate qualifications of personnel responsible for submittal review.
- D. Testing and Inspection: In quality-control plan, include a comprehensive schedule of Work requiring testing or inspection, including the following:
  - 1. Contractor-performed tests and inspections including subcontractor-performed tests and inspections. Include required tests and inspections and Contractor-elected tests and inspections.
  - 2. Special inspections required by authorities having jurisdiction and indicated on the "Statement of Special Inspections."
  - 3. Owner-performed tests and inspections indicated in the Contract Documents, including tests and inspections indicated to be performed by the Commissioning Authority.
- E. Continuous Inspection of Workmanship: Describe process for continuous inspection during construction to identify and correct deficiencies in workmanship in addition to testing and inspection specified. Indicate types of corrective actions to be required to bring work into compliance with standards of workmanship established by Contract requirements and approved mockups.

- F. Monitoring and Documentation: Maintain testing and inspection reports including log of approved and rejected results. Include work Architect has indicated as nonconforming or defective. Indicate corrective actions taken to bring nonconforming work into compliance with requirements. Comply with requirements of authorities having jurisdiction.

## 1.5 REPORTS AND DOCUMENTS

- A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:
  - 1. Date of issue.
  - 2. Project title and number.
  - 3. Name, address, and telephone number of testing agency.
  - 4. Dates and locations of samples and tests or inspections.
  - 5. Names of individuals making tests and inspections.
  - 6. Description of the Work and test and inspection method.
  - 7. Identification of product and Specification Section.
  - 8. Complete test or inspection data.
  - 9. Test and inspection results and an interpretation of test results.
  - 10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
  - 11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
  - 12. Name and signature of laboratory inspector.
  - 13. Recommendations on retesting and reinspecting.
- B. Manufacturer's Field Service Reports: Prepare written information documenting manufacturer's technical or factory-authorized representative's tests and inspections specified in other Sections. Include the following:
  - 1. Name, address, and telephone number of representative making report.
  - 2. Statement on condition of substrates and their acceptability for installation of product.
  - 3. Statement that products at Project site comply with requirements.
  - 4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
  - 5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
  - 6. Statement whether conditions, products, and installation will affect warranty.
  - 7. Other required items indicated in individual Specification Sections.
- C. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

## 1.6 QUALITY ASSURANCE

- A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
  - 1. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

- B. **Manufacturer Qualifications:** A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- C. **Fabricator Qualifications:** A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. **Installer Qualifications:** A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- E. **Professional Engineer Qualifications:** A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar in material, design, and extent to those indicated for this Project.
- F. **Specialists:** Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
  - 1. Requirements of authorities having jurisdiction shall supersede requirements for specialists.
- G. **Testing Agency Qualifications:** An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 329; and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.
  - 1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
  - 2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.
- H. **Manufacturer's Technical Representative Qualifications:** An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- I. **Factory-Authorized Service Representative Qualifications:** An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- J. **Preconstruction Testing:** Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:
  - 1. Contractor responsibilities include the following:
    - a. Provide test specimens representative of proposed products and construction.
    - b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
    - c. When testing is complete, remove test specimens, assemblies, and mockups; do not reuse products on Project.

2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect and Commissioning Authority, with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.
- K. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:
  1. Build mockups in location and of size indicated or, if not indicated, as directed by Architect.
  2. Notify Architect seven days in advance of dates and times when mockups will be constructed.
  3. Employ supervisory personnel who will oversee mockup construction. Employ workers that will be employed during the construction at Project.
  4. Demonstrate the proposed range of aesthetic effects and workmanship.
  5. Obtain Architect's approval of mockups before starting work, fabrication, or construction.
    - a. Allow seven days for initial review and each re-review of each mockup.
  6. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
  7. Demolish and remove mockups when directed unless otherwise specified to remain as part of complete Work.

#### 1.7 QUALITY CONTROL

- A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
  1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
  2. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor.
- B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.
  1. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
    - a. Do not employ same entity engaged by Owner.
  2. Provide controlled inspection where required by local authorities or by these specifications.
  3. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
  4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
  5. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
  6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

- C. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Section 013300 "Submittal Procedures."
- D. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- E. Testing Agency Responsibilities: Cooperate with Architect, Commissioning Authority and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
  - 1. Notify Architect, Commissioning Authority, and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
  - 2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
  - 3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
  - 4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
  - 5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
  - 6. Do not perform any duties of Contractor.
- F. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
  - 1. Access to the Work.
  - 2. Incidental labor and facilities necessary to facilitate tests and inspections.
  - 3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
  - 4. Facilities for storage and field curing of test samples.
  - 5. Delivery of samples to testing agencies.
  - 6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
  - 7. Security and protection for samples and for testing and inspecting equipment at Project site.
- G. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
  - 1. Schedule times for tests, inspections, obtaining samples, and similar activities.
- H. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents. Coordinate and submit concurrently with Contractor's construction schedule. Update as the Work progresses.
  - 1. Distribution: Distribute schedule to Owner, Architect, Commissioning Authority, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

## 1.8 SPECIAL TESTS AND INSPECTIONS

- A. Special Tests and Inspections: Owner will engage a qualified special inspector to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner.

## PART 2 - PRODUCTS (Not Used)

## PART 3 - EXECUTION

### 3.1 TEST AND INSPECTION LOG

- A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:
  - 1. Date test or inspection was conducted.
  - 2. Description of the Work tested or inspected.
  - 3. Date test or inspection results were transmitted to Architect.
  - 4. Identification of testing agency or special inspector conducting test or inspection.
- B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Architect's, Commissioning Authority's, reference during normal working hours.

### 3.2 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
  - 1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 017300 "Execution."
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION

THIS PAGE INTENTIONALLY LEFT BLANK



**DASNY**

## 2014 BUILDING CODE OF NYC STATEMENT OF SPECIAL INSPECTIONS

The Registered Design Professional shall complete this table with respect to the project scope and include with the DASNY General Requirements, Section 014000<sup>1</sup>

**Campus/Facility:** Jacob K. Javits Convention Center

**Project Title:** Transformer Building

**Project Number:**

**DASNY Project Manager:**

**Registered Design Professional (RDP):** Epstein

**Name of Person Completing Statement:** Thomas Suarez

**Phone:** 3124298228

**Date:** 05/17/2016

**Comments:**

VERIFICATION AND INSPECTION	CONTINUOUS	PERIODIC	2014 NYCBC REFERENCE	CHECK IF REQUIRED	SPECIFICATION REFERENCE AND CLARIFYING NOTES (by RDP) <sup>2</sup>	COMMENTARY/NOTES (by DASNY) <sup>3</sup>
<b>A. Steel Construction</b>			1704.2, 1704.3 Table 1704.3			Fabrication of structural members and field assembly.
1. Material verification of high-strength bolts, nuts, and washers:						Includes submittal review and field verification.
a. Identification markings conform to ASTM standards		X		<input checked="" type="checkbox"/>	051200	As specified in the construction documents
b. Manufacturer's certificate of compliance required.		X		<input checked="" type="checkbox"/>	051200	
2. Inspection of high-strength bolting:			1704.3.3			
a. Snug-tight joints	<input type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	051200	Turn of the nut bolting shall be continuously inspected.
b. Pre-tensioned and slip- critical joints	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	051200	Turn of the nut without matchmarking or calibrated wrench shall be continuous.
3. Material verification of structural steel and cold formed steel deck:						
a. Identification of markings		X		<input checked="" type="checkbox"/>	051200	Assure conformance to AISC 360 for structural steel; ASTM standards in approved CD's for other steel.
b. Mfr. certified mill test reports		X		<input checked="" type="checkbox"/>	051200	Review each submittal.
4. Material verification of weld filler materials		X		<input checked="" type="checkbox"/>	051200	Includes (a) review of manufacturer's certificate of compliance and (b) field verification of identification markings to AWS spec.
5. Inspection of welding:			1704.3.1			NDT requirements and frequencies as specified in the Contract Documents.

VERIFICATION AND INSPECTION	CONTINUOUS	PERIODIC	2014 NYCBC REFERENCE	CHECK IF REQUIRED	SPECIFICATION REFERENCE AND CLARIFYING NOTES (by RDP) <sup>2</sup>	COMMENTARY/NOTES (by DASNY) <sup>3</sup>
a. Complete and partial penetration groove welds.	X			<input checked="" type="checkbox"/>	051200	
b. Multi-pass fillet welds	X			<input checked="" type="checkbox"/>	051200	
c. Single pass fillet welds greater than 5/16"	X			<input checked="" type="checkbox"/>	051200	
d. Plug and slot welds	X			<input checked="" type="checkbox"/>	051200	
e. Single pass fillet welds less than or equal to 5/16"		X		<input checked="" type="checkbox"/>	051200	
f. Floor and roof deck welds.		X		<input checked="" type="checkbox"/>	051200	
g. Cold-formed steel welds		X		<input type="checkbox"/>		
6. Reinforcing steel welding:			Table 1704.3, 1903.5.2			
a. Verification of weldability of steel other than ASTM A706		X		<input type="checkbox"/>		
b. Reinforcing steel-resisting flexural and axial forces in intermediate and special moment frames	X			<input type="checkbox"/>		Applies also to boundary elements of special reinforced concrete shear walls and shear reinforcement.
c. Shear reinforcement	X			<input type="checkbox"/>		
d. Other reinforcing steel		X		<input type="checkbox"/>		
7. Inspection of steel frame joint details:			1704.3.2			Review for compliance with approved construction docs.
a. Details such as bracing and stiffening.		X		<input checked="" type="checkbox"/>	051200	
b. Member locations		X		<input checked="" type="checkbox"/>	051200	
c. Application of joint details at each connection.		X		<input checked="" type="checkbox"/>	051200	
8. Verification of welder license/certification and welding procedures.	X		2204.1 28-407.1	<input checked="" type="checkbox"/>	051200	
<b>B. Cold-Formed Steel Light-Frame Construction</b>			1704.3.4 Table 1704.3.4			Fabrication of prefabricated structural elements and site-built assemblies.
1. Material Verification (per construction documents)		X		<input type="checkbox"/>		Identification markings and that material is clean, straight and undamaged.
2. Inspection of General Framing						
a. Member Sizes		X		<input type="checkbox"/>		Conformance to approved construction documents.
b. Member Layout		X		<input type="checkbox"/>		
c. Proper Bearing Lengths		X		<input type="checkbox"/>		
d. Punched holes and sheared or flame cut edges of material		X		<input type="checkbox"/>		Material in members shall be clean and free from notches and burred edges.
3. Framing connections and anchorages:						

VERIFICATION AND INSPECTION	CONTINUOUS	PERIODIC	2014 NYCBC REFERENCE	CHECK IF REQUIRED	SPECIFICATION REFERENCE AND CLARIFYING NOTES (by RDP) <sup>2</sup>	COMMENTARY/NOTES (by DASNY) <sup>3</sup>
a. Diameter, length, quantity, spacing, edge distance and location of screws, bolts and other fasteners.		X		<input type="checkbox"/>		Conformance to approved construction document requirements.
b. Manufactured connectors, such as joist hangers, caps, straps, clips, ties, hold-downs and anchors.		X		<input type="checkbox"/>		Conformance to approved construction document requirements for manufacturer, type, gauge and fastener requirements.
4. Welding (in accordance with Table 1704.3)		X		<input type="checkbox"/>		
5. Bracing						
a. Temporary bracing, shoring, jacks, etc.		X		<input type="checkbox"/>		Installed and not removed until no longer necessary in accordance with approved construction documents and erection drawings.
b. Permanent bracing, web stiffeners, bridging, blocking, wind bracing, etc.		X		<input type="checkbox"/>		Installed in accordance with approved construction documents and erection drawings.
c. For truss spans 60 feet or greater, temporary and permanent restraint/bracing		X	2210.3.4	<input type="checkbox"/>		Conformance to approved truss submittal package.
<b>C. Concrete Construction</b>			1704.2, 1704.4 Table 1704.4			Includes inspection of fabricators (precast) where applicable per BC 1704.2.
1. Inspection of reinforcing steel, including prestressing tendons and placement.		X	1903.5, 1907.1, 1907.7, 1913.4	<input checked="" type="checkbox"/>	033000	
2. Inspection of reinforcing steel welding.		X	1903.5.2	<input checked="" type="checkbox"/>	033000	Includes anchor bolt welding. See Item B.6 above.
3. Inspection of bolts to be installed in concrete prior to and during placement.	X		1911.5, 1912.1	<input checked="" type="checkbox"/>	033000	Where allowable loads have been increased or strength design used.
4. Inspection of anchors installed in hardened concrete.			1912.1	<input checked="" type="checkbox"/>	033000	
5. Verify use of required design mix.		X	1904, 1905.2 - 1905.4, 1913.3	<input checked="" type="checkbox"/>	033000	Submittal review. Batch plant inspection as specified in the contract documents.
6. Sampling fresh concrete: perform slump, unit weight, air content, temperature and fabricate strength test specimens.	X		1905.6, 1913.10	<input checked="" type="checkbox"/>	033000	Frequency of sampling and testing must be per the contract documents.
7. Inspection of concrete and shotcrete placement for proper application techniques.	X		1905.9, 1905.10, 1913.6 - 1913.8	<input checked="" type="checkbox"/>	033000	Also includes precast and shotcrete placement. For precast inspection (in-plant) specify PCI-MNL116

VERIFICATION AND INSPECTION	CONTINUOUS	PERIODIC	2014 NYCBC REFERENCE	CHECK IF REQUIRED	SPECIFICATION REFERENCE AND CLARIFYING NOTES (by RDP) <sup>2</sup>	COMMENTARY/NOTES (by DASNY) <sup>3</sup>
8. Inspection for maintenance of specified curing temperature and techniques.		X	1905.11, 1905.13, 1913.9	<input checked="" type="checkbox"/>	033000	Field inspection of curing process.
9. Inspection of prestressed concrete:			1704.2			
a. Application of pre-stressing forces	X			<input type="checkbox"/>		
b. Grouting of bonded pre-stressing tendons in the seismic-force-resisting system.	X			<input type="checkbox"/>		
10. Erection of precast concrete members.		X		<input checked="" type="checkbox"/>	034500	Specify PCI-MNL127.
11. Verification of in-situ concrete strength prior to stressing of tendons in post tensioned concrete and prior to removal of shores and forms from beams / structural slabs.		X	1906.2	<input type="checkbox"/>		Review field testing and laboratory reports.
12. Inspection of formwork for shape, location and dimensions of members.			1906.2	<input checked="" type="checkbox"/>	033000	
<b>D. Masonry Construction</b> <input checked="" type="checkbox"/> L1 = Level 1 Inspection <input type="checkbox"/> L2 = Level 2 Inspection			1704.5 Table 1704.5.1 Table 1704.5.3		<b>Structural Occupancy Category: III</b>	See NYCBC 1704.5.1 through 1704.5.3 for clarification of Level 1 vs. Level 2 inspection.
1. Verify compliance with inspection provisions of Construction Documents and approved submittals.		X L1 L2		<input checked="" type="checkbox"/>	042000	Inspection and test requirements per the contract documents. Inspection(s) may need to be continuous.
2. Verify $f'_m$ and $f'_{AAC}$						
a. Prior to construction		X L1		<input checked="" type="checkbox"/>	042000	Except where exempted by Code.
b. Prior to construction and for every 5,000 square feet		X L2		<input checked="" type="checkbox"/>	042000	
3. Verify proportions of materials in premixed or preblended mortar/grout.		X L2		<input checked="" type="checkbox"/>	042000	As delivered to the site.
4. Verify slump flow and VSI for self-consolidating grout.	X L1 L2			<input type="checkbox"/>		As delivered to the site
5. As masonry construction begins, the following shall be verified:		X L1		<input checked="" type="checkbox"/>	042000	
a. Proportions of site-prepared mortar		X L1		<input checked="" type="checkbox"/>	042000	
b. Construction of mortar joints		X L1		<input checked="" type="checkbox"/>	042000	
c. Location of reinforcement, connectors, prestressing tendons and anchorages		X L1		<input checked="" type="checkbox"/>	042000	

VERIFICATION AND INSPECTION	CONTINUOUS	PERIODIC	2014 NYCBC REFERENCE	CHECK IF REQUIRED	SPECIFICATION REFERENCE AND CLARIFYING NOTES (by RDP) <sup>2</sup>	COMMENTARY/NOTES (by DASNY) <sup>3</sup>
d. Prestressing techniques		X L1		<input type="checkbox"/>		
e. Grade and size of pre-stressing tendons and anchorages		X L1		<input type="checkbox"/>		
6. Verify to ensure compliance:						
a. Placement of masonry units and construction of mortar joints.		X L2		<input checked="" type="checkbox"/>	042000	
b. Construction of mortar joints		X L1		<input checked="" type="checkbox"/>	042000	Verify prior to grouting (Level 1)
c. Placement of reinforcement, connectors, tendons and anchorages.		X L1 L2		<input checked="" type="checkbox"/>	042000	
d. Proportions of site-prepared grout and prestressing grout for bonded tendons.		X L1 L2		<input checked="" type="checkbox"/>	042000	<i>For Level 2 inspection only, proportions of site-prepared mortar shall also be verified.</i>
e. Grout space is clean	X L2	X L1		<input checked="" type="checkbox"/>	042000	
f. Placement of grout	X L1 L2			<input checked="" type="checkbox"/>	042000	
g. Placement of pre-stressing grout	X L1 L2			<input type="checkbox"/>		
7. Inspection program shall verify:						
a. Size and location of structural elements.		X L1 L2		<input checked="" type="checkbox"/>	042000	Field and submittal review.
b. Type, size and location of anchors, including other details of anchorage of masonry to structural members, frames or other.	X L2	X L1		<input checked="" type="checkbox"/>	042000	
c. Specified size, grade and type of reinforcement, anchor bolts, prestressing tendons and anchorages.		X L1 L2		<input checked="" type="checkbox"/>	042000	
d. Welding of reinforcing bars.	X L1 L2			<input type="checkbox"/>		
e. Preparation, construction and protection of masonry during cold or hot weather.		X L1 L2	2104.3 2104.4	<input checked="" type="checkbox"/>	042000	
f. Measurement and application of pre-stressing force..	X L2	X L1		<input type="checkbox"/>		
8. Preparation of any required grout specimens, mortar specimens and/or prisms.	X L1 L2		2105.2.2 2105.3	<input checked="" type="checkbox"/>	042000	Includes observation of contractors sampling and preparation of samples by the Special Inspection agent.

VERIFICATION AND INSPECTION	CONTINUOUS	PERIODIC	2014 NYCBC REFERENCE	CHECK IF REQUIRED	SPECIFICATION REFERENCE AND CLARIFYING NOTES (by RDP) <sup>2</sup>	COMMENTARY/NOTES (by DASNY) <sup>3</sup>
<b>E. Wood Construction:</b>			1704.2 1704.6			Fabrication of prefabricated structural elements and site-built assemblies.
1. Installation of high-load diaphragms			1704.6.1	<input type="checkbox"/>		
2. Installation of metal-plate-connected trusses			1704.6.2	<input type="checkbox"/>		
3. Installation of pre-fabricated I-joists			1704.6.3	<input type="checkbox"/>		
4. Other structural wood construction			1704.6.4 and 110.3.3	<input type="checkbox"/>		Progress inspection per BC 110.3.3.
<b>F. Soils</b>			1704.7			
1. Subgrade inspection		X	1704.7.1	<input checked="" type="checkbox"/>		Field inspection and testing to verify that the site is prepared in accordance with the approved soils report.
2. During fill placement	X		1704.7.2	<input checked="" type="checkbox"/>		Review submittals, field testing and inspection. Verify soil types and lift thickness are per contract documents.
3. Evaluation of in-place density	X		1704.7.3	<input checked="" type="checkbox"/>		Verify conformance with contract documents.
<b>G. Deep foundation elements</b>	X		1704.8	<input checked="" type="checkbox"/>	316326	Special inspector shall verify installation conforms to contract documents.
<b>H. Helical Pile Foundations</b>	X		1704.8.5	<input type="checkbox"/>		
<b>I. Vertical masonry foundation elements</b>	X		1704.9	<input type="checkbox"/>		
<b>J. Wall Panels, Curtain Walls and Veneers</b>	X		1704.10, 1704.5	<input checked="" type="checkbox"/>	034500	Applicable to installation on buildings over a height of 40'.
<b>K. Sprayed Fire-Resistant Materials (SFRM)</b>			1704.11.1			Per AWCI 12-A
1. Structural member surface conditions		X	1704.11.2	<input checked="" type="checkbox"/>	078100	Field review of surface conditions prior to application.
2. Application		X	1704.11.3	<input checked="" type="checkbox"/>	078100	Verify ambient temperature and ventilation requirements before and after application.
3. Thickness		X	1704.11.4	<input checked="" type="checkbox"/>	078100	Field test.
4. Density		X	1704.11.5	<input checked="" type="checkbox"/>	078100	Collect field sample, test in laboratory.
5. Bond strength		X	1704.11.6	<input checked="" type="checkbox"/>	078100	Field test.
6. Inspection of existing SFRM during alterations		X	1704.11.7	<input type="checkbox"/>		Classified in Occupancy Group B.
<b>L. Mastic and intumescent fire-resistant coatings</b>		X	1704.12	<input checked="" type="checkbox"/>	078100	Per AWCI 12-B
<b>M. Exterior Insulation and Finish Systems (EIFS)</b>		X	1704.13	<input type="checkbox"/>		Applications installed more than 15 feet above grade.
<b>N. Special Cases (Attach Additional Information as necessary)</b>			1704.14	<input type="checkbox"/>		Applies to alternative materials and systems, when required by NYCDOB.

VERIFICATION AND INSPECTION	CONTINUOUS	PERIODIC	2014 NYCBC REFERENCE	CHECK IF REQUIRED	SPECIFICATION REFERENCE AND CLARIFYING NOTES (by RDP) <sup>2</sup>	COMMENTARY/NOTES (by DASNY) <sup>3</sup>
<b>O. Smoke Control Systems</b>		X	1704.15, 909	<input type="checkbox"/>		Inspect during ductwork, erection and system testing.
<b>P. Mechanical Systems</b>			1704.16	<input checked="" type="checkbox"/>		Includes interior and exterior mechanical systems and equipment.
<b>Q. Fuel Oil Storage and Piping Systems</b>			1704.17	<input checked="" type="checkbox"/>		Inspection for conformance with the approved CD's and manufacturers' requirements.
<b>R. High Pressure Steam and High Temperature Hot Water Piping</b>			1704.18	<input type="checkbox"/>		Welder qualifications, welding procedures and operations, hydrostatic testing
<b>S. High-pressure-gas piping</b>			1704.19	<input type="checkbox"/>		Welder qualifications, welding procedures and operations, pressure testing
<b>T. Structural Stability</b>						
1. Structural stability of existing buildings		X	1704.20.1	<input type="checkbox"/>		Applicable to structural alterations.
2. Excavations		X	1704.20.2	<input type="checkbox"/>		Methods employed to protect the sides of excavations.
3. Underpinning		X	1704.20.3	<input type="checkbox"/>		
4. Demolition		X	1704.20.4	<input type="checkbox"/>		For use of mechanical demolition equipment other than handheld devices.
5. Raising and moving of a building			1704.20.5	<input type="checkbox"/>		
<b>U. Private on-site storm water disposal systems and detention facilities</b>		X	1704.21	<input type="checkbox"/>		Applies to storm water detention, roof retention and dry well systems.
<b>V. Individual on-site private sewage disposal systems</b>		X	1704.22	<input type="checkbox"/>		
<b>W. Sprinkler Systems</b>			1704.23	<input type="checkbox"/>		Applies to new and altered systems.
<b>X. Standpipe Systems</b>			1704.24	<input type="checkbox"/>		
<b>Y. Heating Systems</b>			1704.25	<input type="checkbox"/>		
<b>Z. Chimneys</b>			1704.26	<input checked="" type="checkbox"/>		
<b>AA. Fire-resistant penetrations &amp; joints</b>		X	1704.27	<input checked="" type="checkbox"/>	078100, 078400	Penetration firestops and joint systems.
<b>BB. Aluminum construction</b>	<input type="checkbox"/>	<input type="checkbox"/>	1704.28	<input type="checkbox"/>		Applies to structural aluminum elements.
<b>CC. Flood zone compliance</b>	<input type="checkbox"/>	<input type="checkbox"/>	1704.29	<input checked="" type="checkbox"/>	NYCBC Appendix G	
<b>DD. Photoluminescent exit path markings</b>	<input type="checkbox"/>	<input type="checkbox"/>	1704.30	<input type="checkbox"/>		
<b>EE. Emergency and standby power systems</b>	<input type="checkbox"/>	<input type="checkbox"/>	1704.31	<input checked="" type="checkbox"/>		Generators
<b>FF. Post-installed anchors</b>	<input type="checkbox"/>	<input type="checkbox"/>	1704.32 Table 1704.32	<input checked="" type="checkbox"/>		Mechanical, adhesive and screw anchors.
<b>GG. Seismic Resistance</b>						
1. Mechanical, plumbing, fuel gas and electrical components		X	1707.7	<input checked="" type="checkbox"/>		Applies to structures assigned to SDC C or D.
2. Seismic Isolation Systems		X	1707.8	<input type="checkbox"/>		Installation of isolator units & energy dissipation devices.

VERIFICATION AND INSPECTION	CONTINUOUS	PERIODIC	2014 NYCBC REFERENCE	CHECK IF REQUIRED	SPECIFICATION REFERENCE AND CLARIFYING NOTES (by RDP) <sup>2</sup>	COMMENTARY/NOTES (by DASNY) <sup>3</sup>
<b>HH. Progress Inspections</b>						
1. Preliminary			110.2	<input checked="" type="checkbox"/>		
2. Footing & Foundation			110.3.1	<input checked="" type="checkbox"/>		
3. Lowest Floor Elevation			110.3.2	<input type="checkbox"/>		
4. Structural Wood Frame			110.3.3	<input type="checkbox"/>		
5. Fire-Resistance Rated Construction			110.3.4	<input checked="" type="checkbox"/>		
6. Energy Code Compliance			110.3.5	<input checked="" type="checkbox"/>		
7. Public Assembly Emergency Lighting			28-116.2.2	<input type="checkbox"/>		
8. Final			110.5	<input type="checkbox"/>		
<b>GG. Other Chapter 17 Requirements</b>						Indicate if requirements of BC 1711-1716 are applicable.
1.	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>		
2.	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>		
3.	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>		
4.	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>		
5.	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>		
6.	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>		

**TABLE LEGEND:**

NYCDOB - New York City Department of Buildings  
RDP – Registered Design Professional (A/E – Architect/Engineer)  
SDC – Seismic Design Category  
NYCBC – 2014 New York City Building Code

**NOTES:**

1. Completion of this form by the Registered Design Professional (RDP) is a DASNY requirement and separate from the TR1: Technical Report Statement of Responsibility form required to be filed with the New York City Department of Buildings.
2. RDP to provide reference specification section detailing the requirements for inspections and/or tests and other clarifying notes, as necessary.
3. Commentary/Notes by DASNY are provided for information and are not intended to provide complete details of the required tests and inspections. Refer to the 2014 NYCBC for complete and detailed requirements.

## SECTION 014200

### REFERENCES

#### PART 1 - GENERAL

##### 1.1 DEFINITIONS

- A. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
- B. "Install": Unload, temporarily store, unpack, assemble, erect, place, anchor, apply, work to dimension, finish, cure, protect, clean, and similar operations at Project site.
- C. "Provide": Furnish and install, complete and ready for the intended use.

##### 1.2 INDUSTRY STANDARDS

- A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
- B. Publication Dates: Comply with standards in effect as of date of the Contract Documents except where a specific date is specified or is established by code.
- C. Copies of Standards: When copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.
- D. When specified reference standards conflict with Contract Documents, request clarification from the Architect before proceeding.
- E. Neither the contractual relationships, duties, nor responsibilities of the parties in Contract nor those of the Architect shall be altered from the Contract Documents by mention or inference otherwise in any reference document.

##### 1.3 ABBREVIATIONS AND ACRONYMS

- A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in Gale's "Encyclopedia of Associations: National Organizations of the U.S." or in Columbia Books' "National Trade & Professional Associations of the United States."

#### PART 2 - PRODUCTS (Not Used)

#### PART 3 - EXECUTION (Not Used)

END OF SECTION

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 015000

TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Temporary utilities.
2. Support facilities.
3. Security and protection facilities.
4. Moisture and mold control.

B. Related Requirements:

1. Section 013553 "Access Control and Site Security" for site security program and service requirements.

1.2 USE CHARGES

- A. General: Installation and removal of and use charges for temporary facilities shall be included in the Contract Sum unless otherwise specified in this Section. Allow other entities to use temporary services and facilities without cost, including, but not limited to Architect, testing agencies, and authorities having jurisdiction.

B. Temporary Services from Owner's Existing System:

1. Water and Sewer Service: Water from Owner's existing water system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.
2. Electric Power Service: Electric power from Owner's existing system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.

1.3 INFORMATIONAL SUBMITTALS

- A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.
- B. Erosion- and Sedimentation-Control Plan: Show compliance with requirements of EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent.
- C. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.
- D. Moisture-Protection Plan: Describe procedures and controls for protecting materials and construction from water absorption and damage.
1. Describe delivery, handling, and storage provisions for materials subject to water absorption or water damage.

2. Indicate procedures for discarding water-damaged materials, protocols for mitigating water intrusion into completed Work, and replacing water-damaged Work.
  3. Indicate sequencing of work that requires water, such as sprayed fire-resistive materials, plastering, and terrazzo grinding, and describe plans for dealing with water from these operations. Show procedures for verifying that wet construction has dried sufficiently to permit installation of finish materials.
- E. Dust- and HVAC-Control Plan: Submit coordination drawing and narrative that indicates the dust- and HVAC-control measures proposed for use, proposed locations, and proposed time frame for their operation. Identify further options if proposed measures are later determined to be inadequate. Include the following:
1. Locations of dust-control partitions at each phase of work.
  2. HVAC system isolation schematic drawing.
  3. Location of proposed air-filtration system discharge.
  4. Waste handling procedures.
  5. Other dust-control measures.

#### 1.4 QUALITY ASSURANCE

- A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.
- B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.
- C. Accessible Temporary Egress: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines and ICC/ANSI A117.1.
1. Maintain accessible egress from occupied facilities at all times.

#### 1.5 PROJECT CONDITIONS

- A. Temporary Use of Permanent Facilities: Engage Installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

### PART 2 - PRODUCTS

#### 2.1 MATERIALS

- A. Chain-Link Fencing: Minimum 2-inch, 0.148-inch-thick, galvanized-steel, chain-link fabric fencing; minimum 6 feet high with galvanized-steel pipe posts; minimum 2-3/8-inch-OD line posts and 2-7/8-inch-OD corner and pull posts, with 1-5/8-inch-OD top rails.

#### 2.2 TEMPORARY FACILITIES

- A. Field Offices, General: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.

- B. Common-Use Field Office: Of sufficient size to accommodate needs of Owner, Architect, and construction personnel office activities and to accommodate Project meetings specified in other Division 01 Sections. Keep office clean and orderly. Furnish and equip offices as follows:
1. Furniture required for Project-site documents including file cabinets, plan tables, plan racks, and bookcases.
  2. Conference room of sufficient size to accommodate meetings of 12 individuals. Provide electrical power service and 120-V ac duplex receptacles, with no fewer than one receptacle on each wall. Furnish room with conference table, chairs, and 4-foot-square tack and marker boards.
  3. Drinking water and private toilet.
  4. Coffee machine and supplies.
  5. Heating and cooling equipment necessary to maintain a uniform indoor temperature of 68 to 72 deg F.
  6. Lighting fixtures capable of maintaining average illumination of 20 fc at desk height.
- C. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.

## 2.3 EQUIPMENT

- A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.
- B. HVAC Equipment: Unless Owner authorizes use of permanent HVAC system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.
1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
  2. Heating Units: Listed and labeled for type of fuel being consumed, by a qualified testing agency acceptable to authorities having jurisdiction, and marked for intended location and application.
  3. Permanent HVAC System: If Owner authorizes use of permanent HVAC system for temporary use during construction, provide filter with MERV of 8 at each return-air grille in system and remove at end of construction and clean HVAC system as required in Section 017700 "Closeout Procedures".

## PART 3 - EXECUTION

### 3.1 INSTALLATION, GENERAL

- A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.
1. Locate facilities to limit site disturbance as specified in Section 011000 "Summary."
- B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

### 3.2 TEMPORARY UTILITY INSTALLATION

- A. General: Install temporary service or connect to existing service.
  - 1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
- B. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.
  - 1. Connect temporary sewers to existing systems as directed by Owner.
- C. Water Service: Connect to Owner's existing water service facilities. Clean and maintain water service facilities in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.
- D. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.
- E. Heating: Provide temporary heating required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.
- F. Ventilation and Humidity Control: Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.
- G. Electric Power Service: Connect to Owner's existing electric power service. Maintain equipment in a condition acceptable to Owner.
- H. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.
  - 1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.

- I. Telephone Service: Provide temporary telephone service in common-use facilities for use by all construction personnel. Install minimum one telephone line for each field office.
  - 1. Provide additional telephone lines for the following:
    - a. Provide a dedicated telephone line for each facsimile machine in each field office.
  - 2. At each telephone, post a list of important telephone numbers.
    - a. Police and fire departments.
    - b. Ambulance service.
    - c. Contractor's home office.
    - d. Contractor's emergency after-hours telephone number.
    - e. Architect's office.
    - f. Engineers' offices.
    - g. Owner's office.
    - h. Principal subcontractors' field and home offices.
  - 3. Provide superintendent with cellular telephone or portable two-way radio for use when away from field office.
- J. Electronic Communication Service: Provide cable or fiber-optic broadband internet access with router and firewall for temporary electronic communication service, including electronic mail, in common-use facilities.
- K. Closed-Circuit Television (CCTV) System: Provide temporary IP network based CCTV surveillance system to include but not limited to Ethernet-based video cameras and Ethernet Network based video recorders for use by authorized security personnel to monitor the Project site.
  - 1. Provide system capable of near real-time, high-quality, full motion day and night images to monitoring stations.
    - a. Camera zoom capabilities: Minimum 25X optical zoom with 2X-16X digital zoom
    - b. Provide system designed to continuously operate in the environmental extremes and corrosiveness of the Project site.
  - 2. Provide network connectivity between cameras, recorders, and monitoring stations.
    - a. Provide monitoring station at a location approved by the Owner.
  - 3. Provide fixed and pan/tilt/zoom cameras obtaining an image of recognition of activities at the following locations:
    - a. Perimeter of site.
    - b. All site access points.
    - c. All site receiving areas.
    - d. All site parking areas.
    - e. All areas of Work.
  - 4. Field Of View Adjustment: Aim each fixed CCTV camera for the optimum view of the area that it is intended to cover, using a monitor to view the camera output.

### 3.3 SUPPORT FACILITIES INSTALLATION

- A. General: Comply with the following:
  - 1. Provide construction for temporary offices, shops, and sheds located within construction area or within 30 feet of building lines that is noncombustible according to ASTM E 136. Comply with NFPA 241.

2. Maintain support facilities until Architect schedules Substantial Completion inspection. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.
- B. Temporary Roads and Paved Areas: Construct and maintain temporary roads and paved areas adequate for construction operations. Locate temporary roads and paved areas as indicated on Drawings or as approved by Architect when not indicated.
1. Extend and relocate as Work progress requires, provide detours as necessary for unimpeded traffic flow.
  2. Provide dust-control treatment that is nonpolluting and nontracking. Reapply treatment as required to minimize dust.
  3. Provide means of removing mud from vehicle wheels before entering streets.
- C. Traffic Controls: Comply with requirements of authorities having jurisdiction.
1. Protect existing site improvements to remain including curbs, pavement, and utilities.
  2. Maintain access for fire-fighting equipment and access to fire hydrants.
  3. Staging of construction deliveries adjacent to the site is prohibited.
  4. Traffic control devices: Provide necessary traffic control cones, drums, and other devices as approved by authorities having jurisdiction.
  5. Flagmen: Provide trained and equipped flagmen to regulate traffic when construction operations or traffic encroach on public traffic lanes as approved by authorities having jurisdiction.
  6. Flares and lights: Use flares and lights during hours of low visibility to delineate traffic lanes and to guide traffic as approved by authorities having jurisdiction.
  7. Haul routes: Consult with authority having jurisdiction in establishing public thoroughfares to be used for haul routes and site access. Confine construction traffic to designated haul routes. Provide traffic control at critical areas of haul routes to regulate traffic, to minimize interference with public traffic.
    - a. Take great care to prevent any increase in vehicular congestion adjacent to the site.
  8. Traffic signs and signals: At approaches to site and on site, install at crossroads, detours, parking areas, and elsewhere as needed to direct construction and affected public traffic. Install and operate traffic control signals to direct and maintain orderly flow of traffic in areas under Contractor's control, and areas affected by Contractor's operations. Relocate as Work progresses, to maintain effective traffic control.
  9. Removal of traffic controls: Remove equipment and devices when no longer required and repair damage caused by installation.
- D. Parking:
1. Arrange for temporary off-site parking areas for construction personnel.
    - a. Construction personnel is prohibited from parking on JKJCC property.
  2. Double parking along any roadway or route adjacent to the site is strictly prohibited.
  3. Overnight parking of construction vehicles on the site without written consent from JKJCC Public Safety is prohibited.
    - a. Request consent for overnight parking from JKJCC Public Safety not less than 72 hours in advance.

- E. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.
  - 1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties or endanger permanent Work or temporary facilities.
  - 2. Remove snow and ice as required to minimize accumulations.
- F. Project Signs: Provide Project signs as indicated. Unauthorized signs are not permitted.
  - 1. Identification Signs: Provide Project identification signs as required by Owner.
  - 2. Temporary Signs: Provide other signs as indicated and as required to inform public and individuals seeking entrance to Project.
    - a. Provide temporary, directional signs for construction personnel and visitors.
  - 3. Maintain and touchup signs so they are legible at all times.
- G. Waste Disposal Facilities: Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."
- H. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.
- I. Temporary Stairs: Until permanent stairs are available, provide temporary stairs where ladders are not adequate.
- J. Temporary Use of Permanent Stairs: Use of new stairs for construction traffic will be permitted, provided stairs are protected and finishes restored to new condition at time of Substantial Completion.

### 3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.
- B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
  - 1. Comply with work restrictions specified in Section 011000 "Summary."
- C. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways, according to erosion- and sedimentation-control Drawings and requirements of 2003 EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent.
- D. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.
- E. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.

- F. Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Substantial Completion. Perform control operations lawfully, using environmentally safe materials.
- G. Site Enclosure Fence: Before construction operations begin, furnish and install site enclosure fence in a manner that will prevent people and animals from easily entering site except by entrance gates.
  - 1. Extent of Fence: As required to enclose entire Project site or portion determined sufficient to accommodate construction operations.
  - 2. Maintain security by limiting number of keys and restricting distribution to authorized personnel. Furnish one set of keys to Owner.
- H. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.
- I. Temporary Egress: Maintain temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction.
- J. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.
  - 1. Where heating or cooling is needed and permanent enclosure is incomplete, insulate temporary enclosures.
- K. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241; manage fire-prevention program.
  - 1. Prohibit smoking in construction areas.
  - 2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
  - 3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.
  - 4. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

### 3.5 MOISTURE AND MOLD CONTROL

- A. Contractor's Moisture-Protection Plan: Avoid trapping water in finished work. Document visible signs of mold that may appear during construction.
- B. Exposed Construction Phase: Before installation of weather barriers, when materials are subject to wetting and exposure and to airborne mold spores, protect as follows:
  - 1. Protect porous materials from water damage.
  - 2. Protect stored and installed material from flowing or standing water.
  - 3. Keep porous and organic materials from coming into prolonged contact with concrete.
  - 4. Remove standing water from decks.
  - 5. Keep deck openings covered or dammed.

- C. Partially Enclosed Construction Phase: After installation of weather barriers but before full enclosure and conditioning of building, when installed materials are still subject to infiltration of moisture and ambient mold spores, protect as follows:
  - 1. Do not load or install drywall or other porous materials or components, or items with high organic content, into partially enclosed building.
  - 2. Keep interior spaces reasonably clean and protected from water damage.
  - 3. Periodically collect and remove waste containing cellulose or other organic matter.
  - 4. Discard or replace water-damaged material.
  - 5. Do not install material that is wet.
  - 6. Discard, replace, or clean stored or installed material that begins to grow mold.
  - 7. Perform work in a sequence that allows any wet materials adequate time to dry before enclosing the material in drywall or other interior finishes.
- D. Controlled Construction Phase of Construction: After completing and sealing of the building enclosure but prior to the full operation of permanent HVAC systems, maintain as follows:
  - 1. Control moisture and humidity inside building by maintaining effective dry-in conditions.
  - 2. Remove materials that cannot be completely restored to their manufactured moisture level within 48 hours.

### 3.6 OPERATION, TERMINATION, AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- B. Maintenance: Maintain facilities in good operating condition until removal.
  - 1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
- C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.
- D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
  - 1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
  - 2. Remove temporary roads and paved areas not intended for or acceptable for integration into permanent construction. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.
  - 3. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 017700 "Closeout Procedures."

END OF SECTION

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 016000  
PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
  - 1. Product delivery, storage, and handling.
  - 2. Identifying markings.
  - 3. Product warranties.
  - 4. Temporary use of equipment.
  - 5. General requirements.
  - 6. Product selection procedures.
  - 7. Comparable products.

1.2 ACTION SUBMITTALS

- A. Basis-of-Design Product Specification Submittal: Comply with requirements in Section 013300 "Submittal Procedures." Show compliance with requirements.

1.3 QUALITY ASSURANCE

- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.

1.4 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.
- B. Delivery and Handling:
  - 1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
  - 2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
  - 3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
  - 4. Inspect products on delivery to determine compliance with the Contract Documents and to determine that products are undamaged and properly protected.
- C. Storage:
  - 1. Store products to allow for inspection and measurement of quantity or counting of units.
  - 2. Store materials in a manner that will not endanger Project structure.

3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
4. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
5. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
6. Protect stored products from damage and liquids from freezing.
7. Available storage space at the job site is limited to the area permitted by the Architect. Allocate such space for storage purposes. Any additional off-site space required is the responsibility of the Contractor.
8. Allocate the available storage areas and coordinate their use by the trades on the job. Maintain a current layout of all storage facilities.
9. Store and protect materials delivered at the site from damage. Do not use damaged material on the work.

#### 1.5 IDENTIFYING MARKINGS

- A. Name plates and other identifying markings shall not be affixed on exposed surfaces of manufactured items installed in finished spaces.

#### 1.6 PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
  1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
  2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner.
- B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.
  1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
  2. Specified Form: When specified forms are included with the Specifications, prepare a written document using indicated form properly executed.
  3. See other Sections for specific content requirements and particular requirements for submitting special warranties.
- C. Submittal Time: Comply with requirements in Section 017700 "Closeout Procedures."

#### 1.7 TEMPORARY USE OF EQUIPMENT

- A. No equipment intended for permanent installation shall be operated for temporary purposes without the written permission of the Architect.

- B. The temporary or trial usage by the Owner of any mechanical device, machinery, apparatus, equipment or any work or materials supplied under this Contract before final completion and written acceptance by the Architect, shall not be construed as evidence of the acceptance of same by the Owner. The Owner shall have the privilege of such temporary and trial usage, for such reasonable length of time as and when the Architect shall deem to be proper for making a complete and thorough test of same and no claim for damage shall be made by the Contractor for the injury to or breaking of parts of such work which may be caused by weakness or inaccuracy of structural parts or by defective material or workmanship. If the Contractor so elects, he may at his own expense, place a competent person or persons to make such trial usage; such trial usage shall be under the supervision of the Contractor.

## 1.8 GENERAL REQUIREMENTS

- A. In the event that it is necessary for the Contractor to store any materials offsite, he shall first obtain the approval of the Architect. The Contractor shall be responsible for insurance and warehousing charges of any materials stored offsite. The Contractor shall also be responsible for the cost of delivery to the job site of any materials that have been stored offsite.
- B. Materials delivered to the job site shall be carefully stored and protected from damage. Damaged material shall not be used in the work. The Contractor shall provide, where directed temporary storage facilities as may be required for the storage of all materials which might be damaged by weather.
- C. Manufactured articles, materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned as directed by the representative manufacturers, unless otherwise specified.
- D. Equipment, plant, and appliances, such as hoists, centering, concrete lifts, construction elevators, cranes, rigging, towers, derricks, walks, ramps, chutes, scaffolding, implements, transportation, cartage and other things necessary and required for the adequate execution of the work and as required by law and applicable Union rules shall be provided and shall be maintained in good and safe mechanical working order, be responsible for their safe use, and remove them when no longer required. Applicable requirements of OSHA shall become and form a part of this document.
- E. During handling and installation of work at project site clean and protect work in progress and adjoining work on a basis of perpetual maintenance. Apply suitable protective covering on newly installed work where reasonably required to ensure freedom from damage or deterioration at time of substantial completion; otherwise, clean and perform maintenance on newly installed work as frequently as necessary through remainder of construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- F. To extent possible through reasonable control and protection methods, supervise performance of work in a manner and by means which will ensure that none of the work whether completed or in progress, will be subjected to harmful, dangerous, damaging, or otherwise deleterious exposures during construction period. Such exposures include (where applicable, but not by way of limitation) static loading, dynamic loading, internal pressures, external pressures, high or low temperatures, thermal shock, high or low humidity, air contamination or pollution, water, ice, solvents, chemicals, light, radiation, puncture, abrasion, heavy traffic, soiling, bacteria, insect infestation, combustion, electrical current, high speed operation, improper lubrication, unusual wear, misuse, incompatible interface, destructive testing, misalignment, excessive weathering, unprotected storage, improper shipping/handling, theft and vandalism.

- G. Require installer of each major unit of work to inspect substrate to receive the work, and conditions under which the work will be performed, and to report (in writing to Contractor) unsatisfactory conditions. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to Installer.
- H. Where installations include manufactured products, comply with manufacturer's applicable instructions and recommendations for installation to whatever extent these are more explicit or more stringent than applicable requirements indicated in the Contract Documents.
- I. Inspect each item of materials or equipment immediately prior to installation and reject damaged and defective items.
- J. Provide attachment and connection devices and methods for securing work properly as it is installed; true to line and level, and within recognized industry tolerance if not otherwise indicated. Allow for expansions and building movements. Provide uniform joint widths in exposed work, organized for best possible visual effect. Refer questionable visual-effect choices to Architect for final decision.
- K. Recheck measurements and dimensions of the work as an integral step of starting each installation.
- L. Install work during conditions of temperature, humidity, exposure, forecasted weather, and status of project completion which will ensure best possible results for each unit of work in coordination with entire work. Isolate each unit of work from non-compatible work, as required to prevent deterioration.
- M. Coordinate enclosure (closing-in) of work with required inspections and tests, so as to avoid necessity of uncovering work for that purpose.
- N. Mounting Heights: Except as otherwise indicated, mount individual units of work at industry-recognized standard mounting heights, for applications indicated. In CMU walls mount units at height closest to manufacturer's recommendation so as to minimize cutting of block coursings. Refer questionable mounting height choices to Architect for final decision.

## PART 2 - PRODUCTS

### 2.1 PRODUCT SELECTION PROCEDURES

- A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.
  - 1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
  - 2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
  - 3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
  - 4. Where products are accompanied by the term "as selected," Architect will make selection.
  - 5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.

6. Or Equal: For products specified by name and accompanied by the term "or equal," or "or approved equal," or "or approved," comply with requirements in Division 01 Section "Substitution Procedures" to obtain approval for use of an unnamed product.
7. Provide New York City M.E.A./BS&A numbers for all alternative equipment.

B. Product Selection Procedures:

1. Product: Where Specifications or Drawings name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
2. Manufacturer/Source: Where Specifications or Drawings name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
3. Products:
  - a. Restricted List: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Substitutions for Contractor's convenience will not be considered.
  - b. Nonrestricted List: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product, that complies with requirements. Comply with requirements in Division 01 Section "Substitution Procedures" for consideration of an unnamed product.
4. Manufacturers:
  - a. Restricted List: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Substitutions for Contractor's convenience will not be considered.
  - b. Nonrestricted List: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer, that complies with requirements. Comply with requirements in Division 01 Section "Substitution Procedures" for consideration of an unnamed manufacturer's product.
5. Basis-of-Design Product: Where Specifications or Drawings name a product, and include a list of products or manufacturers, provide the basis of design product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in Division 01 Section "Substitution Procedures" for consideration of an unnamed product by one of the other named manufacturers.

- C. Visual Matching Specification: Where Specifications require "match Architect's sample", provide a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.
  - 1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Section 012500 "Substitution Procedures" for proposal of product.
- D. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or similar phrase, select a product that complies with requirements. Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 017300

EXECUTION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
  - 1. Construction layout.
  - 2. Field engineering and surveying.
  - 3. Installation of the Work.
  - 4. Cutting and patching.
  - 5. Progress cleaning.
  - 6. Correction of the work.
  - 7. Starting and adjusting.
  - 8. Protection of installed construction.

1.2 INFORMATIONAL SUBMITTALS

- A. Certificates: Submit certificate signed by land surveyor certifying that location and elevation of improvements comply with requirements.
- B. Cutting and Patching Plan: Submit plan describing procedures at least 10 days prior to the time cutting and patching will be performed. Include the following information:
  - 1. Extent: Describe reason for and extent of each occurrence of cutting and patching.
  - 2. Changes to In-Place Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building appearance and other significant visual elements.
  - 3. Products: List products to be used for patching and firms or entities that will perform patching work.
  - 4. Dates: Indicate when cutting and patching will be performed.
  - 5. Utilities and Mechanical and Electrical Systems: List services and systems that cutting and patching procedures will disturb or affect. List services and systems that will be relocated and those that will be temporarily out of service. Indicate length of time permanent services and systems will be disrupted.
    - a. Include description of provisions for temporary services and systems during interruption of permanent services and systems.
  - 6. Structural Elements: Where cutting and patching involve adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with original structure.
  - 7. Architect's Approval: Obtain approval of cutting and patching before cutting and patching. Approval does not waive right to later require removal and replacement of unsatisfactory work.
- C. Certified Surveys: Submit two copies signed by land surveyor.
- D. Final Property Survey: Submit 10 copies showing the Work performed and record survey data.

### 1.3 QUALITY ASSURANCE

- A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.
- B. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.
  - 1. Structural Elements: When cutting and patching structural elements, notify Architect of locations and details of cutting and await directions from Architect before proceeding. Shore, brace, and support structural elements during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection.
  - 2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety.
  - 3. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety.
  - 4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.
  - 5. Cutting and Patching Conference: Before proceeding, meet at Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.
- C. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. General: Comply with requirements specified in other Sections.
- B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
  - 1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Architect for the visual and functional performance of in-place materials.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. The Architect/Engineer makes no representations, regarding the character or extent of the subsoils, water levels, existing structural, mechanical and electrical installations, above or below ground, or other subsurface conditions which may be encountered during the work. This Contractor must make his own evaluation of existing conditions which may affect methods or cost of performing the work, based on his own examination of the facility or other information. Failure to examine the drawings or other information does not relieve the Contractor of his responsibility for satisfactory accomplishment of the work.
- B. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work.
  - 1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; underground electrical services, and other utilities.
  - 2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.
- C. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
  - 1. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
  - 2. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
  - 3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
- D. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:
  - 1. Description of the Work.
  - 2. List of detrimental conditions, including substrates.
  - 3. List of unacceptable installation tolerances.
  - 4. Recommended corrections.
- E. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

### 3.2 PREPARATION

- A. Existing Utility Information: Furnish information to local utility and Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.

- B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of Contractor, submit a request for interpretation to Architect according to requirements in Section 013100 "Project Management and Coordination."

### 3.3 CONSTRUCTION LAYOUT

- A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect promptly.
- B. General: Engage a land surveyor to lay out the Work using accepted surveying practices.
  - 1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
  - 2. Establish limits on use of Project site.
  - 3. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
  - 4. Inform installers of lines and levels to which they must comply.
  - 5. Check the location, level and plumb, of every major element as the Work progresses.
  - 6. Notify Architect when deviations from required lines and levels exceed allowable tolerances.
  - 7. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.
- C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.
- D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.
- E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect.

### 3.4 FIELD ENGINEERING

- A. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.
  - 1. Do not change or relocate existing benchmarks or control points without prior written approval of Architect. Report lost or destroyed permanent benchmarks or control points promptly.
  - 2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.
- B. Benchmarks: Establish and maintain a minimum of two permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.
  - 1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
  - 2. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.
  - 3. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.
- C. Certified Survey: On completion of foundation walls, major site improvements, and other work requiring field-engineering services, prepare a certified survey showing dimensions, locations, angles, and elevations of construction and sitework.
- D. Final Property Survey: Engage a land surveyor to prepare a final property survey showing significant features (real property) for Project. Include on the survey a certification, signed by land surveyor, that principal metes, bounds, lines, and levels of Project are accurately positioned as shown on the survey.
  - 1. Show boundary lines, monuments, streets, site improvements and utilities, existing improvements and significant vegetation, adjoining properties, acreage, grade contours, and the distance and bearing from a site corner to a legal point.
  - 2. Recording: At Substantial Completion, have the final property survey recorded by or with authorities having jurisdiction as the official "property survey."

### 3.5 INSTALLATION

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
  - 1. Make vertical work plumb and make horizontal work level.
  - 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
  - 3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.
- B. Install materials and equipment with qualified trades people.
- C. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

- D. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
- E. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
- F. Sequence the Work and allow adequate clearances to accommodate movement of construction items on site and placement in permanent locations.
- G. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.
- H. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
- I. Locate floor mounted equipment on 4 inch high concrete pad. Coordinate size and location with equipment mounting requirements.
- J. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.
  - 1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
  - 2. Allow for building movement, including thermal expansion and contraction.
  - 3. Coordinate installation of anchorages. 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.
- K. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
- L. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

### 3.6 CUTTING AND PATCHING

- A. Cutting and Patching, General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
  - 1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.
- C. Temporary Support: Provide temporary support of work to be cut.

- D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- E. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to minimize interruption to occupied areas according to requirements in Section 011000 "Summary." and as directed by Owner.
- F. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
  - 1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
  - 2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
  - 3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
  - 4. Excavating and Backfilling: Comply with requirements in applicable Sections where required by cutting and patching operations.
  - 5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
  - 6. Proceed with patching after construction operations requiring cutting are complete.
- G. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.
  - 1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
  - 2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.
    - a. Clean substrates before applying paint or other finishing materials.
    - b. Restore damaged materials to their original condition.
  - 3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
    - a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
  - 4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
  - 5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition and ensures thermal and moisture integrity of building enclosure.

- H. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

### 3.7 PROGRESS CLEANING

- A. General: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.
  - 1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
  - 2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F.
  - 3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
- B. Site: Maintain Project site free of waste materials and debris.
- C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
  - 1. Remove liquid spills promptly.
  - 2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
- D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways. Comply with waste disposal requirements in Section 017419 "Construction Waste Management and Disposal."
- H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- J. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period. Where applicable, such exposures include, but are not limited to, the following:
  - 1. Excessive static or dynamic loading.
  - 2. Excessive internal or external pressures.

3. Excessively high or low temperatures.
4. Thermal shock.
5. Excessively high or low humidity.
6. Air contamination or pollution.
7. Water or ice.
8. Solvents.
9. Chemicals.
10. Light.
11. Radiation.
12. Puncture.
13. Abrasion.
14. Heavy traffic.
15. Soiling, staining, and corrosion.
16. Bacteria.
17. Rodent and insect infestation.
18. Combustion.
19. Electrical current.
20. High-speed operation.
21. Improper lubrication.
22. Unusual wear or other misuse.
23. Contact between incompatible materials.
24. Destructive testing.
25. Misalignment.
26. Excessive weathering.
27. Unprotected storage.
28. Improper shipping or handling.
29. Theft.
30. Vandalism.

### 3.8 CORRECTION OF THE WORK

- A. Repair or remove and replace defective construction. Restore damaged substrates and finishes.
  1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.
- B. Restore permanent facilities used during construction to their specified condition.
- C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.
- D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.
- E. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

### 3.9 STARTING AND ADJUSTING

- A. Coordinate startup and adjusting of equipment and operating components with requirements in Section 019113 "General Commissioning Requirements."

- B. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
- C. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.
- D. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- E. Manufacturer's Field Service: Comply with qualification requirements in Section 014000 "Quality Requirements."

3.10 PROTECTION OF INSTALLED CONSTRUCTION

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- B. Comply with manufacturers' written instructions for temperature and relative humidity.

END OF SECTION

SECTION 017419

CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
  - 1. Salvaging nonhazardous demolition and construction waste.
  - 2. Recycling nonhazardous demolition and construction waste.
  - 3. Disposing of nonhazardous demolition and construction waste.

1.2 PERFORMANCE REQUIREMENTS

- A. General: Achieve end-of-Project rates for salvage/recycling of 95 percent by weight of total non-hazardous solid waste generated by the Work. Practice efficient waste management in the use of materials in the course of the Work. Use all reasonable means to divert construction and demolition waste from landfills and incinerators. Facilitate recycling and salvage of materials.

1.3 ACTION SUBMITTALS

- A. Waste Management Plan: Submit plan within 7 days of date established for commencement of the Work.

1.4 INFORMATIONAL SUBMITTALS

- A. Waste Reduction Progress Reports: Concurrent with each Application for Payment, submit report. Include the following information:
  - 1. Material category.
  - 2. Generation point of waste.
  - 3. Total quantity of waste in tons.
  - 4. Quantity of waste salvaged, both estimated and actual in tons.
  - 5. Quantity of waste recycled, both estimated and actual in tons.
  - 6. Total quantity of waste recovered (salvaged plus recycled) in tons.
  - 7. Total quantity of waste recovered (salvaged plus recycled) as a percentage of total waste.
- B. Waste Reduction Calculations: Before request for Substantial Completion, submit calculated end-of-Project rates for salvage, recycling, and disposal as a percentage of total waste generated by the Work.
- C. Records of Donations: Indicate receipt and acceptance of salvageable waste donated to individuals and organizations. Indicate whether organization is tax exempt.
- D. Records of Sales: Indicate receipt and acceptance of salvageable waste sold to individuals and organizations. Indicate whether organization is tax exempt.

- E. Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.
- F. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.
- G. Qualification Data: For refrigerant recovery technician.

## 1.5 QUALITY ASSURANCE

- A. Waste Management Conference: Conduct conference at Project site to comply with requirements in Section 013100 "Project Management and Coordination." Review methods and procedures related to waste management including, but not limited to, the following:
  - 1. Review and discuss waste management plan including responsibilities of waste management coordinator.
  - 2. Review requirements for documenting quantities of each type of waste and its disposition.
  - 3. Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.
  - 4. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
  - 5. Review waste management requirements for each trade.

## 1.6 WASTE MANAGEMENT PLAN

- A. General: Develop a waste management plan according to ASTM E 1609 and requirements in this Section. Plan shall consist of waste identification, waste reduction work plan, and cost/revenue analysis. Distinguish between demolition and construction waste. Indicate quantities by weight or volume, but use same units of measure throughout waste management plan.
- B. Waste Identification: Indicate anticipated types and quantities of demolition and construction waste generated by the Work. Include estimated quantities and assumptions for estimates.
- C. Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator. Include points of waste generation, total quantity of each type of waste, quantity for each means of recovery, and handling and transportation procedures.
  - 1. Salvaged Materials for Reuse: For materials that will be salvaged and reused in this Project, describe methods for preparing salvaged materials before incorporation into the Work.
  - 2. Salvaged Materials for Sale: For materials that will be sold to individuals and organizations, include list of their names, addresses, and telephone numbers.
  - 3. Salvaged Materials for Donation: For materials that will be donated to individuals and organizations, include list of their names, addresses, and telephone numbers.
  - 4. Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.

5. Disposed Materials: Indicate how and where materials will be disposed of. Include name, address, and telephone number of each landfill and incinerator facility.
  6. Handling and Transportation Procedures: Include method that will be used for separating recyclable waste including sizes of containers, container labeling, and designated location where materials separation will be performed.
- D. Cost/Revenue Analysis: Indicate total cost of waste disposal as if there was no waste management plan and net additional cost or net savings resulting from implementing waste management plan. Include the following:
1. Total quantity of waste.
  2. Estimated cost of disposal (cost per unit). Include hauling and tipping fees and cost of collection containers for each type of waste.
  3. Total cost of disposal (with no waste management).
  4. Revenue from salvaged materials.
  5. Revenue from recycled materials.
  6. Savings in hauling and tipping fees by donating materials.
  7. Savings in hauling and tipping fees that are avoided.
  8. Handling and transportation costs. Include cost of collection containers for each type of waste.
  9. Net additional cost or net savings from waste management plan.

## PART 2 - PRODUCTS (Not Used)

## PART 3 - EXECUTION

### 3.1 PLAN IMPLEMENTATION

- A. General: Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.
- B. Waste Management Coordinator: Engage a waste management coordinator to be responsible for implementing, monitoring, and reporting status of waste management work plan.
- C. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work.
  1. Distribute waste management plan to everyone concerned within three days of submittal return.
  2. Distribute waste management plan to entities when they first begin work on-site. Review plan procedures and locations established for salvage, recycling, and disposal.
- D. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
  1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.
  2. Comply with Section 015000 "Temporary Facilities and Controls" for controlling dust and dirt, environmental protection, and noise control.

### 3.2 SALVAGING DEMOLITION WASTE

- A. Salvaged Items for Reuse in the Work: Salvage items for reuse and handle as follows:
  - 1. Clean salvaged items.
  - 2. Pack or crate items after cleaning. Identify contents of containers with label indicating elements, date of removal, quantity, and location where removed.
  - 3. Store items in a secure area until installation.
  - 4. Protect items from damage during transport and storage.
  - 5. Install salvaged items to comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make items functional for use indicated.
- B. Salvaged Items for Sale and Donation: Not permitted on Project site.
- C. Salvaged Items for Owner's Use: Salvage items for Owner's use and handle as follows:
  - 1. Clean salvaged items.
  - 2. Pack or crate items after cleaning. Identify contents of containers with label indicating elements, date of removal, quantity, and location where removed.
  - 3. Store items in a secure area until delivery to Owner.
  - 4. Transport items to Owner's storage area designated by Owner.
  - 5. Protect items from damage during transport and storage.

### 3.3 RECYCLING DEMOLITION AND CONSTRUCTION WASTE, GENERAL

- A. General: Recycle paper and beverage containers used by on-site workers.
- B. Recycling Incentives: Revenues, savings, rebates, tax credits, and other incentives received for recycling waste materials shall accrue to Contractor.
- C. Use source separation procedures or co-mingling procedures suitable to sorting and processing method of selected recycling center. Dispose non-recyclable trash separately into landfill.
  - 1. General Procedures:
    - a. Separate recyclable waste from other waste materials, trash, and debris.
    - b. Protect recyclable waste from contamination by other waste materials and construction operations.
    - c. Protect recyclable waste from weather.
    - d. Remove recyclable waste from Owner's property and transport to recycling receiver or processor.
  - 2. Source Separation Procedures: Separate recyclable waste by type at Project site to the maximum extent practical according to approved construction waste management plan.
    - a. Provide appropriately marked containers or bins for controlling recyclable waste until removed from Project site. Include list of acceptable and unacceptable materials at each container and bin.
      - 1) Inspect containers and bins for contamination and remove contaminated materials if found.

- b. Stockpile separated materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
  - c. Stockpile materials away from construction area. Do not store within drip line of remaining trees.
  - d. Store components off the ground.
3. Co-Mingling Procedures: Place unsorted recyclable materials in bins or containers. Transport recyclable materials to recycling center for sorting.

### 3.4 RECYCLING DEMOLITION WASTE

- A. Asphalt Paving: Break up and transport paving to asphalt-recycling facility.
- B. Concrete: Remove reinforcement and other metals from concrete and sort with other metals.
- C. Masonry: Remove metal reinforcement, anchors, and ties from masonry and sort with other metals.
- D. Wood Materials: Sort and stack members according to size, type, and length. Separate lumber, engineered wood products, panel products, and treated wood materials.
- E. Metals: Separate metals by type.
  - 1. Structural Steel: Stack members according to size, type of member, and length.
  - 2. Remove and dispose of bolts, nuts, washers, and other rough hardware.
- F. Piping: Reduce piping to straight lengths and store by type and size. Separate supports, hangers, valves, sprinklers, and other components by type and size.
- G. Conduit: Reduce conduit to straight lengths and store by type and size.

### 3.5 RECYCLING CONSTRUCTION WASTE

- A. Packaging:
  - 1. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
  - 2. Polystyrene Packaging: Separate and bag materials.
  - 3. Pallets: As much as possible, require deliveries using pallets to remove pallets from Project site. For pallets that remain on-site, break down pallets into component wood pieces and comply with requirements for recycling wood.
  - 4. Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.
- B. Wood Materials:
  - 1. Clean Cut-Offs of Lumber: Grind or chip into small pieces.
  - 2. Clean Sawdust: Bag sawdust that does not contain painted or treated wood.

### 3.6 DISPOSAL OF WASTE

- A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.
  - 1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
  - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
- B. Burning: Do not burn waste materials.
- C. Disposal: Remove waste materials from Owner's property and legally dispose of them.

END OF SECTION

SECTION 017700  
CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
  - 1. Substantial Completion procedures.
  - 2. Final completion procedures.
  - 3. Project Record Documents.
  - 4. Warranties.
  - 5. Final cleaning.
  - 6. Instruction of Owner's personnel.
  - 7. Repair of the Work.

1.2 ACTION SUBMITTALS

- A. Product Data: For cleaning agents.
- B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.
- C. Certified List of Incomplete Items: Final submittal at Final Completion.

1.3 CLOSEOUT SUBMITTALS

- A. Certificates of Release: From authorities having jurisdiction.
- B. Certificate of Insurance: For continuing coverage.
- C. Field Report: For pest control inspection.

1.4 MAINTENANCE MATERIAL SUBMITTALS

- A. Schedule of Maintenance Material Items: For maintenance material submittal items specified in other Sections.

1.5 SUBSTANTIAL COMPLETION PROCEDURES

- A. Contractor's List of Incomplete Items: Prepare and submit a list of items 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 Owner 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 other Division 01 Sections, including project record documents, operation and maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.
  3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
  4. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Owner. Label with manufacturer's name and model number where applicable.
    - a. Schedule of Maintenance Material Items: 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 Owner's signature for receipt of submittals.
  5. Submit test/adjust/balance records.
  6. Submit changeover information related to Owner'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 Owner of pending insurance changeover requirements.
  2. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
  3. Complete startup and testing of systems and equipment.
  4. Perform preventive maintenance on equipment used prior to Substantial Completion.
  5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video recordings specified in Section 017900 "Demonstration and Training."
  6. Advise Owner of changeover in heat and other utilities.
  7. Participate with Owner in conducting inspection and walkthrough with local emergency responders.
  8. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
  9. Complete final cleaning requirements, including touchup painting.
  10. 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, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect 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 Architect, 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.
    - a. When more than one reinspection is required, pay for Architect's time to complete additional reinspections.
  2. Results of completed inspection will form the basis of requirements for final completion.

#### 1.6 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 012900 "Payment Procedures."
  2. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
  3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
  4. Submit pest-control final inspection report.
- 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, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect 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.
    - a. When more than one reinspection is required, pay for Architect's time to complete additional reinspections.

#### 1.7 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. Use Architect approved form.
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.
  - e. Page number.
4. Submit list of incomplete items in the following format:
  - a. MS Excel electronic file. Architect will return annotated file.

#### 1.8 SUBMITTAL OF PROJECT WARRANTIES

- A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated, or when delay in submittal of warranties might limit Owner's rights under warranty.
- B. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.
  1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
  2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
  3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
  4. Warranty Electronic File: Scan warranties and bonds and assemble complete warranty and bond submittal package into a single indexed electronic PDF file with links enabling navigation to each item. Provide bookmarked table of contents at beginning of document.
- C. Provide additional copies of each warranty to include in operation and maintenance manuals.

#### 1.9 PROJECT RECORD DOCUMENTS

- A. General: Do not use Project Record Documents for construction purposes. Protect Project Record Documents from deterioration and loss. Provide access to Project Record Documents for Architect's reference during normal working hours.
- B. Record Drawings: Maintain and submit one set of blue- or black-line white prints of Contract Drawings and Shop Drawings.
  1. Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.
    - a. Give particular attention to information on concealed elements that cannot be readily identified and recorded later.
    - b. Accurately record information in an understandable drawing technique.
    - c. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.

- d. Mark Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. Where Shop Drawings are marked, show cross-reference on Contract Drawings.
  2. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at the same location.
  3. Mark important additional information that was either shown schematically or omitted from original Drawings.
  4. Note Construction Change Directive numbers, Change Order numbers, alternate numbers, and similar identification where applicable.
  5. Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location. Organize into manageable sets; bind each set with durable paper cover sheets. Include identification on cover sheets.
- C. Record Specifications: Submit one copy of Project's Specifications, including addenda and contract modifications. Mark copy to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.
1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
  2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
  3. Note related Change Orders, Record Drawings and Product Data, where applicable.
- D. Record Product Data: Submit one copy of each Product Data submittal. Mark one set to indicate the actual product installation where installation varies substantially from that indicated in Product Data.
1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
  2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
  3. Note related Change Orders, Record Drawings and Record Specifications, where applicable.
- E. Miscellaneous Record Submittals: Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.
1. Use cleaning products that comply with Green Seal's GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

## PART 3 - EXECUTION

### 3.1 FINAL CLEANING

- A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
  - 1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project:
    - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
    - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
    - c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
    - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
    - e. Remove snow and ice to provide safe access to building.
    - f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
    - g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
    - h. Sweep concrete floors broom clean in unoccupied spaces.
    - i. Remove labels that are not permanent.
    - j. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
    - k. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
    - l. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
    - m. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency.
    - n. Leave Project clean and ready for occupancy.
- C. Pest Control: Comply with pest control requirements in Section 015000 "Temporary Facilities and Controls." Prepare written report.
- D. Construction Waste Disposal: Comply with waste disposal requirements in Section 017419 "Construction Waste Management and Disposal."

### 3.2 DEMONSTRATION AND TRAINING

- A. Instruction: Instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
  - 1. Provide instructors experienced in operation and maintenance procedures.
  - 2. Provide instruction at mutually agreed-on times. For equipment that requires seasonal operation, provide similar instruction at the start of each season.
  - 3. Schedule training with Owner with at least seven days' advance notice.
  - 4. Coordinate instructors, including providing notification of dates, times, length of instruction, and course content.
- B. Program Structure: Develop an instruction program that includes individual training modules for each system and equipment not part of a system, as required by individual Specification Sections. For each training module, develop a learning objective and teaching outline. Include instruction for the following:
  - 1. System design and operational philosophy.
  - 2. Review of documentation.
  - 3. Operations.
  - 4. Adjustments.
  - 5. Troubleshooting.
  - 6. Maintenance.
  - 7. Repair.

### 3.3 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 damaged 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 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 comply with requirements for new fixtures.

END OF SECTION

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 017823

OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Emergency manuals.
  2. Operation manuals for systems, subsystems, and equipment.
  3. Product maintenance manuals.
  4. Systems and equipment maintenance manuals.

1.2 CLOSEOUT SUBMITTALS

- A. Manual Content: Operations and maintenance manual content is specified in individual Specification Sections to be reviewed at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.
1. Architect and Commissioning Authority will comment on whether content of operations and maintenance submittals are acceptable.
  2. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.
- B. Format: Submit operations and maintenance manuals in the following format:
1. PDF electronic file. Assemble each manual into a composite electronically indexed file. Submit on digital media acceptable to Architect.
    - a. Name each indexed document file in composite electronic index with applicable item name. Include a complete electronically linked operation and maintenance directory.
    - b. Enable inserted reviewer comments on draft submittals.
- C. Initial Manual Submittal: Submit draft copy of each manual at least 30 days before commencing demonstration and training. Architect and Commissioning Authority will comment on whether general scope and content of manual are acceptable.
- D. Final Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least 15 days before commencing demonstration and training. Architect and Commissioning Authority will return copy with comments.
1. Correct or revise each manual to comply with Architect's and Commissioning Authority's comments. Submit copies of each corrected manual within 15 days of receipt of Architect's and Commissioning Authority's comments and prior to commencing demonstration and training.

## PART 2 - PRODUCTS

### 2.1 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS

- A. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
  - 1. Title page.
  - 2. Table of contents.
  - 3. Manual contents.
- B. Title Page: Include the following information:
  - 1. Subject matter included in manual.
  - 2. Name and address of Project.
  - 3. Name and address of Owner.
  - 4. Date of submittal.
  - 5. Name and contact information for Contractor.
  - 6. Name and contact information for Architect.
  - 7. Name and contact information for Commissioning Authority.
  - 8. Names and contact information for major consultants to the Architect that designed the systems contained in the manuals.
  - 9. Cross-reference to related systems in other operation and maintenance manuals.
- C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
- D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.
- E. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.
  - 1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
  - 2. File Names and Bookmarks: Enable bookmarking of individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.

### 2.2 EMERGENCY MANUALS

- A. Content: Organize manual into a separate section for each of the following:
  - 1. Type of emergency.
  - 2. Emergency instructions.
  - 3. Emergency procedures.

- B. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:
1. Fire.
  2. Flood.
  3. Gas leak.
  4. Water leak.
  5. Power failure.
  6. Water outage.
  7. System, subsystem, or equipment failure.
  8. Chemical release or spill.
- C. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.
- D. Emergency Procedures: Include the following, as applicable:
1. Instructions on stopping.
  2. Shutdown instructions for each type of emergency.
  3. Operating instructions for conditions outside normal operating limits.
  4. Required sequences for electric or electronic systems.
  5. Special operating instructions and procedures.

## 2.3 OPERATION MANUALS

- A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:
1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.
  2. Performance and design criteria if Contractor has delegated design responsibility.
  3. Operating standards.
  4. Operating procedures.
  5. Operating logs.
  6. Wiring diagrams.
  7. Control diagrams.
  8. Piped system diagrams.
  9. Precautions against improper use.
  10. License requirements including inspection and renewal dates.
- B. Descriptions: Include the following:
1. Product name and model number. Use designations for products indicated on Contract Documents.
  2. Manufacturer's name.
  3. Equipment identification with serial number of each component.
  4. Equipment function.
  5. Operating characteristics.
  6. Limiting conditions.
  7. Performance curves.
  8. Engineering data and tests.
  9. Complete nomenclature and number of replacement parts.

- C. Operating Procedures: Include the following, as applicable:
  - 1. Startup procedures.
  - 2. Equipment or system break-in procedures.
  - 3. Routine and normal operating instructions.
  - 4. Regulation and control procedures.
  - 5. Instructions on stopping.
  - 6. Normal shutdown instructions.
  - 7. Seasonal and weekend operating instructions.
  - 8. Required sequences for electric or electronic systems.
  - 9. Special operating instructions and procedures.
- D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.
- E. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.

## 2.4 PRODUCT MAINTENANCE MANUALS

- A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.
- B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.
- C. Product Information: Include the following, as applicable:
  - 1. Product name and model number.
  - 2. Manufacturer's name.
  - 3. Color, pattern, and texture.
  - 4. Material and chemical composition.
  - 5. Reordering information for specially manufactured products.
- D. Maintenance Procedures: Include manufacturer's written recommendations and the following:
  - 1. Inspection procedures.
  - 2. Types of cleaning agents to be used and methods of cleaning.
  - 3. List of cleaning agents and methods of cleaning detrimental to product.
  - 4. Schedule for routine cleaning and maintenance.
  - 5. Repair instructions.
- E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.
- F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
  - 1. Include procedures to follow and required notifications for warranty claims.

## 2.5 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

- A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.
- B. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.
- C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:
  - 1. Standard maintenance instructions and bulletins.
  - 2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
  - 3. Identification and nomenclature of parts and components.
  - 4. List of items recommended to be stocked as spare parts.
- D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:
  - 1. Test and inspection instructions.
  - 2. Troubleshooting guide.
  - 3. Precautions against improper maintenance.
  - 4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
  - 5. Aligning, adjusting, and checking instructions.
  - 6. Demonstration and training video recording, if available.
- E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
  - 1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
  - 2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.
- F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.
- G. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.
- H. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
  - 1. Include procedures to follow and required notifications for warranty claims.

## PART 3 - EXECUTION

### 3.1 MANUAL PREPARATION

- A. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.
- B. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.
- C. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.
  - 1. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.
- D. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
  - 1. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.
- E. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.
  - 1. Do not use original project record documents as part of operation and maintenance manuals.
- F. Comply with Section 017700 "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

END OF SECTION

SECTION 017839  
PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Record Drawings.
  2. Record Specifications.
  3. Record Product Data.
  4. Miscellaneous record submittals.

1.2 CLOSEOUT SUBMITTALS

- A. Record Drawings: Comply with the following:
1. Number of Copies: Submit one set of marked-up record prints with one set of full color PDF electronic files of scanned marked-up set.
- B. Record Specifications: Submit one paper copy with one set of full color PDF electronic files of scanned marked-up set of Project's Specifications, including addenda and contract modifications.
- C. Record Product Data: Submit one paper copy with one set of full color PDF electronic files of scanned marked-up set of each submittal.
1. Where record Product Data are required as part of operation and maintenance manuals, submit duplicate marked-up Product Data as a component of manual.
- D. Miscellaneous Record Submittals: See other Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Submit one paper copy with one set of full color PDF electronic files of scanned marked-up set of each submittal.
- E. Reports: Submit written report weekly indicating items incorporated into project record documents concurrent with progress of the Work, including revisions, concealed conditions, field changes, product selections, and other notations incorporated.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

- A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.
1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.

- a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
    - b. Accurately record information in an acceptable drawing technique.
    - c. Record data as soon as possible after obtaining it.
    - d. Record and check the markup before enclosing concealed installations.
    - e. Cross-reference record prints to corresponding archive photographic documentation.
  2. Content: Types of items requiring marking include, but are not limited to, the following:
    - a. Dimensional changes to Drawings.
    - b. Revisions to details shown on Drawings.
    - c. Depths of foundations below first floor.
    - d. Locations and depths of underground utilities.
    - e. Revisions to routing of piping and conduits.
    - f. Revisions to electrical circuitry.
    - g. Actual equipment locations.
    - h. Duct size and routing.
    - i. Locations of concealed internal utilities.
    - j. Changes made by Change Order or Construction Change Directive.
    - k. Changes made following Architect's written orders.
    - l. Details not on the original Contract Drawings.
    - m. Field records for variable and concealed conditions.
    - n. Record information on the Work that is shown only schematically.
  3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
  4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
  5. Mark important additional information that was either shown schematically or omitted from original Drawings.
  6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
- B. Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
1. Record Prints: Organize record prints and newly prepared record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
  2. Identification: As follows:
    - a. Project name.
    - b. Date.
    - c. Designation "PROJECT RECORD DRAWINGS."
    - d. Name of Architect.
    - e. Name of Contractor.

## 2.2 RECORD SPECIFICATIONS

- A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.
1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.

2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
4. For each principal product, indicate whether record Product Data has been submitted in operation and maintenance manuals instead of submitted as record Product Data.
5. Note related Change Orders, record Product Data, and record Drawings where applicable.

## 2.3 RECORD PRODUCT DATA

- A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
  1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
  2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
  3. Note related Change Orders, record Specifications, and record Drawings where applicable.
  4. Include record Product Data directory organized by Specification Section number and title, electronically linked to each item of record Product Data.

## 2.4 MISCELLANEOUS RECORD SUBMITTALS

- A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.
  1. Include miscellaneous record submittals directory organized by Specification Section number and title, electronically linked to each item of miscellaneous record submittals.

# PART 3 - EXECUTION

## 3.1 RECORDING AND MAINTENANCE

- A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and revisions to project record documents as they occur; do not wait until end of Project.
- B. Maintenance of Record Documents and Samples: Store record documents and Samples in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for Architect's reference during normal working hours.

END OF SECTION

THIS PAGE INTENTIONALLY LEFT BLANK

## SECTION 017900

### DEMONSTRATION AND TRAINING

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. Section Includes:
1. Demonstration of operation of systems, subsystems, and equipment.
  2. Training in operation and maintenance of systems, subsystems, and equipment.
  3. Demonstration and training video recordings.

##### 1.2 INFORMATIONAL SUBMITTALS

- A. Instruction Program: Submit outline of instructional program for demonstration and training, including a list of training modules and a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.
1. Indicate proposed training modules using manufacturer-produced demonstration and training video recordings for systems, equipment, and products in lieu of video recording of live instructional module.
- B. Qualification Data: For facilitator and instructor videographer.
- C. Attendance Record: For each training module, submit list of participants and length of instruction time.
- D. Evaluations: For each participant and for each training module, submit results and documentation of performance-based test.

##### 1.3 CLOSEOUT SUBMITTALS

- A. Demonstration and Training Video Recordings: Submit two copies within seven days of end of each training module.
1. Identification: On each copy, provide an applied label with the following information:
    - a. Name of Project.
    - b. Name and address of videographer.
    - c. Name of Architect.
    - d. Name of Construction Manager.
    - e. Name of Contractor.
    - f. Date of video recording.
  2. Transcript: Prepared in PDF electronic format. Include a cover sheet with same label information as the corresponding video recording and a table of contents with links to corresponding training components. Include name of Project and date of video recording on each page.
  3. At completion of training, submit complete training manual(s) for Owner's use in PDF electronic file format on compact disc.

#### 1.4 QUALITY ASSURANCE

- A. Facilitator Qualifications: A firm or individual experienced in training or educating maintenance personnel in a training program similar in content and extent to that indicated for this Project, and whose work has resulted in training or education with a record of successful learning performance.
- B. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Section 014000 "Quality Requirements," experienced in operation and maintenance procedures and training.
- C. Videographer Qualifications: A professional videographer who is experienced photographing demonstration and training events similar to those required.
- D. Preinstruction Conference: Conduct conference at Project site to comply with requirements in Section 013100 "Project Management and Coordination." Review methods and procedures related to demonstration and training including, but not limited to, the following:
  - 1. Inspect and discuss locations and other facilities required for instruction.
  - 2. Review and finalize instruction schedule and verify availability of educational materials, instructors' personnel, audiovisual equipment, and facilities needed to avoid delays.
  - 3. Review required content of instruction.
  - 4. For instruction that must occur outside, review weather and forecasted weather conditions and procedures to follow if conditions are unfavorable.

#### 1.5 COORDINATION

- A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations and to ensure availability of Owner's personnel.
- B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.
- C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by Architect.

### PART 2 - PRODUCTS

#### 2.1 INSTRUCTION PROGRAM

- A. Program Structure: Develop an instruction program that includes individual training modules for each system and for equipment not part of a system, as required by individual Specification Sections.
- B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following as applicable to the system, equipment, or component:
  - 1. Basis of System Design, Operational Requirements, and Criteria: Include the following:

- a. System, subsystem, and equipment descriptions.
  - b. Performance and design criteria if Contractor is delegated design responsibility.
  - c. Operating standards.
  - d. Regulatory requirements.
  - e. Equipment function.
  - f. Operating characteristics.
  - g. Limiting conditions.
  - h. Performance curves.
2. Documentation: Review the following items in detail:
  - a. Emergency manuals.
  - b. Operations manuals.
  - c. Maintenance manuals.
  - d. Project record documents.
  - e. Identification systems.
  - f. Warranties and bonds.
  - g. Maintenance service agreements and similar continuing commitments.
3. Emergencies: Include the following, as applicable:
  - a. Instructions on meaning of warnings, trouble indications, and error messages.
  - b. Instructions on stopping.
  - c. Shutdown instructions for each type of emergency.
  - d. Operating instructions for conditions outside of normal operating limits.
  - e. Sequences for electric or electronic systems.
  - f. Special operating instructions and procedures.
4. Operations: Include the following, as applicable:
  - a. Startup procedures.
  - b. Equipment or system break-in procedures.
  - c. Routine and normal operating instructions.
  - d. Regulation and control procedures.
  - e. Control sequences.
  - f. Safety procedures.
  - g. Instructions on stopping.
  - h. Normal shutdown instructions.
  - i. Operating procedures for emergencies.
  - j. Operating procedures for system, subsystem, or equipment failure.
  - k. Seasonal and weekend operating instructions.
  - l. Required sequences for electric or electronic systems.
  - m. Special operating instructions and procedures.
5. Adjustments: Include the following:
  - a. Alignments.
  - b. Checking adjustments.
  - c. Noise and vibration adjustments.
  - d. Economy and efficiency adjustments.
6. Troubleshooting: Include the following:
  - a. Diagnostic instructions.
  - b. Test and inspection procedures.
7. Maintenance: Include the following:
  - a. Inspection procedures.
  - b. Types of cleaning agents to be used and methods of cleaning.

- c. List of cleaning agents and methods of cleaning detrimental to product.
  - d. Procedures for routine cleaning
  - e. Procedures for preventive maintenance.
  - f. Procedures for routine maintenance.
  - g. Instruction on use of special tools.
8. Repairs: Include the following:
- a. Diagnosis instructions.
  - b. Repair instructions.
  - c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
  - d. Instructions for identifying parts and components.
  - e. Review of spare parts needed for operation and maintenance.

### PART 3 - EXECUTION

#### 3.1 PREPARATION

- A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a training manual organized in coordination with requirements in Section 017823 "Operation and Maintenance Data."
- B. Set up instructional equipment at instruction location.

#### 3.2 INSTRUCTION

- A. Facilitator: Engage a qualified facilitator to prepare instruction program and training modules, to coordinate instructors, and to coordinate between Contractor and Owner for number of participants, instruction times, and location.
- B. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
  - 1. Architect or Engineer, or both will furnish an instructor to describe basis of system design, operational requirements, criteria, and regulatory requirements.
  - 2. Owner will furnish an instructor to describe Owner's operational philosophy.
  - 3. Owner will furnish Contractor with names and positions of participants.
- C. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.
  - 1. Schedule training with Owner, through Architect, with at least seven days' advance notice.
- D. Training Location and Reference Material: Conduct training on-site in the completed and fully operational facility using the actual equipment in-place. Conduct training using final operation and maintenance data submittals.
- E. Evaluation: At conclusion of each training module, assess and document each participant's mastery of module by use of a written performance-based test.

- F. Cleanup: Collect used and leftover educational materials and remove from Project site. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

### 3.3 DEMONSTRATION AND TRAINING VIDEO RECORDINGS

- A. General: Engage a qualified commercial videographer to record demonstration and training video recordings. Record each training module separately. Include classroom instructions and demonstrations, board diagrams, and other visual aids, but not student practice.
  - 1. At beginning of each training module, record each chart containing learning objective and lesson outline.
- B. Video: Provide minimum 640 x 480 video resolution converted to mp4 format file type or other format file type acceptable to Owner, on electronic media.
  - 1. Electronic Media: Read-only format compact disc acceptable to Owner, with commercial-grade graphic label.
  - 2. File Hierarchy: Organize folder structure and file locations according to project manual table of contents. Provide complete screen-based menu.
  - 3. File Names: Utilize file names based upon name of equipment generally described in video segment, as identified in Project specifications.
  - 4. Contractor and Installer Contact File: Using appropriate software, create a file for inclusion on the Equipment Demonstration and Training DVD that describes the following for each Contractor involved on the Project, arranged according to Project table of contents:
    - a. Name of Contractor/Installer.
    - b. Business address.
    - c. Business phone number.
    - d. Point of contact.
    - e. E-mail address.
- C. Recording: Mount camera on tripod before starting recording, unless otherwise necessary to adequately cover area of demonstration and training. Display continuous running time.
  - 1. Film training session(s) in segments not to exceed 15 minutes.
    - a. Produce segments to present a single significant piece of equipment per segment.
    - b. Organize segments with multiple pieces of equipment to follow order of Project Manual table of contents.
    - c. Where a training session on a particular piece of equipment exceeds 15 minutes, stop filming and pause training session. Begin training session again upon commencement of new filming segment.

- D. Light Levels: Verify light levels are adequate to properly light equipment. Verify equipment markings are clearly visible prior to recording.
  - 1. Furnish additional portable lighting as required.
- E. Narration: Describe scenes on video recording by dubbing audio narration off-site after video recording is recorded. Include description of items being viewed.
- F. Transcript: Provide a transcript of the narration. Display images and running time captured from videotape opposite the corresponding narration segment.
- G. Preproduced Video Recordings: Provide video recordings used as a component of training modules in same format as recordings of live training.

END OF SECTION

## SECTION 019113

### GENERAL COMMISSIONING REQUIREMENTS

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. Section Includes:
  - 1. Owner's responsibilities.
  - 2. Contractor's responsibilities.
  - 3. Commissioning Authority's responsibilities.

##### 1.2 COMMISSIONING TEAM

- A. Members Appointed by Contractor(s): Individuals, each having the authority to act on behalf of the entity he or she represents, explicitly organized to implement the commissioning process through coordinated action. The commissioning team shall consist of, but not be limited to, representatives of Contractor, including Project superintendent and subcontractors, installers, suppliers, and specialists deemed appropriate by the CxA.
- B. Members Appointed by Owner:
  - 1. Commissioning Authority (CxA): The designated person, company, or entity that plans, schedules, and coordinates the commissioning team to implement the commissioning process. Owner will engage the CxA under a separate contract.
  - 2. Representatives of the facility user and operation and maintenance personnel.
  - 3. Architect and engineering design professionals.

##### 1.3 OWNER'S RESPONSIBILITIES

- A. Provide the Owner's Project Requirements (OPR) documentation to the CxA and Contractor for information and use.
  - 1. OPR: A document that details the functional requirements of a project and the expectations of how it will be used and operated. These include Project goals, measurable performance criteria, cost considerations, benchmarks, success criteria, and supporting information.
- B. Assign operation and maintenance personnel and schedule them to participate in commissioning team activities.
- C. Provide the Basis of Design (BoD) documentation, prepared by Architect and approved by Owner, to the CxA and Contractor for use in developing the commissioning plan, systems manual, and operation and maintenance training plan.
  - 1. BoD: A document that records concepts, calculations, decisions, and product selections used to meet the OPR and to satisfy applicable regulatory requirements, standards, and guidelines. The document includes both narrative descriptions and lists of individual items that support the design process.

#### 1.4 CONTRACTOR'S RESPONSIBILITIES

- A. Contractor shall assign representatives with expertise and authority to act on its behalf and shall schedule them to participate in and perform commissioning process activities including, but not limited to, the following:
  - 1. Evaluate performance deficiencies identified in test reports and, in collaboration with entity responsible for system and equipment installation, recommend corrective action.
  - 2. Cooperate with the CxA for resolution of issues recorded in the Issues Log.
  - 3. Attend commissioning team meetings held on a weekly basis.
  - 4. Integrate and coordinate commissioning process activities with construction schedule.
  - 5. Review and accept construction checklists provided by the CxA.
  - 6. Complete electronic construction checklists as Work is completed and provide to the Commissioning Authority on a daily basis.
  - 7. Review and accept commissioning process test procedures provided by the Commissioning Authority.
  - 8. Complete commissioning process test procedures.

#### 1.5 CxA'S RESPONSIBILITIES

- A. Organize and lead the commissioning team.
- B. Provide commissioning plan.
- C. Convene commissioning team meetings.
- D. Provide Project-specific construction checklists and commissioning process test procedures.
- E. Verify the execution of commissioning process activities using random sampling. The sampling rate may vary from 1 to 100 percent. Verification will include, but is not limited to, equipment submittals, construction checklists, training, operating and maintenance data, tests, and test reports to verify compliance with the OPR. When a random sample does not meet the requirement, the CxA will report the failure in the Issues Log.
- F. Prepare and maintain the Issues Log.
- G. Prepare and maintain completed construction checklist log.
- H. Witness systems, assemblies, equipment, and component startup.
- I. Compile test data, inspection reports, and certificates; include them in the systems manual and commissioning process report.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

