

## **SECTION 26 05 03**

### **BASIC MATERIALS AND METHODS**

#### **PART ONE - GENERAL:**

##### **1.01 APPROVALS AND SUBSTITUTIONS:**

- A. All requests for substitutions shall be submitted so as to be received by the Engineer at least ten (10) calendar days before bid date. Approved material will be listed in addendum form.
- B. Contract prices shall be based on material and equipment as specified, unless written approval is obtained for any deviations. Requests for substitutions before bid date may be submitted by Contractors or by Equipment Manufacturer's Representatives.
- C. Requests for approvals should be submitted in the form of a letter (with one copy minimum) on a letterhead of submitting firm, along with a self-addressed, stamped, return envelope. Letter shall be addressed to the Engineer and referenced to this project.
- D. If there are no deviations between the items submitted and the plans and specifications, then the submittal letter should contain the statement, "Items are in accordance with plans and specifications with no deviations". An item with deviations from the plans and specifications may be submitted for approval consideration. Letter should then state, "Item submitted is in accordance with plans and specifications, except for the following deviations." Deviations should then be listed in itemized form.
- E. Items approved shall not be construed as authorizing deviations from the plans and specifications. Contractor shall be responsible for verifying all dimensions with available space conditions with provisions for proper access, maintenance, and part replacement, and for coordination with other trades - mechanical, plumbing, structural, etc., for proper services and construction requirements.
- F. Where such approved deviations require a different quantity and arrangement of wiring, conduit and equipment from that specified or indicated on the drawings, the Sub-Contractor shall furnish and install any such structural supports, controllers, starters, electrical wiring and conduit, and any other additional equipment required by the system, at no additional cost to the Owner.

#### **PART TWO - PRODUCTS AND EXECUTION:**

##### **2.01 MANUFACTURER'S INSTRUCTIONS:**

- A. Prior to purchasing equipment, procure product manufacturer's application, installation, and operating instructions for use in conjunction with the system design drawings and specifications during construction. If there exists any conflict between the manufacturer's publications and the design drawings and specifications, immediately notify the Engineer, in writing. Upon notification by the Engineer, proceed in accordance with his instructions.

##### **2.02 Operations and Maintenance Manuals:**

- A. Prior to project closeout, the Sub-Contractor shall submit for approval, a completed operations and maintenance manual to the engineer for review. The operations and maintenance manual shall contain at least the following items. Exclusion of items is permissible only when the scope of

electrical work outlined in these contract documents does not include an item listed below:

1. Electrical Contractor's warrantee / guarantee showing dates of acceptance and duration.
2. Product data sheets, diagrams, performance curves, and charts published by the manufacturer. Complete electrical characteristics and manufacturer's part numbers shall be provided for all equipment.
3. Charts which explain the conduit color coding scheme used for conduit and wire throughout the facility.
4. Insulation resistance test results for all feeders.
5. Operating & users instruction manual(s) for Lighting control systems
6. Final circuit breaker trip and time delay settings
7. Chart listing fuse ampacity, type and manufacturer's part number installed in each disconnect.
8. Operating & users instruction manual(s) for any generators, transfer switches, or lighting inverters.
9. Copy of the UL "Master Label" for any lighting protection system required elsewhere in the contract documents.
10. Operating & users instruction manual(s) for the fire alarm system.
11. As built shop drawings and plans for the fire alarm system indicating device locations and all calculations.
12. Digital media with as built fire alarm system program and all required programming password & user names.
13. Copy of the fire alarm system paperwork required by the NFPA to be completed by the fire alarm system installer.
14. Operating & users instruction manual(s) for the security, telephone, public address, or sound augmentation and reinforcement systems.
15. A copy of the seismic submittal for electrical installation signed and sealed by the seismic engineer.

## 2.03 SHOP DRAWINGS:

- A. The Sub-Contractor shall submit for approval detailed shop drawings of all equipment and all material required to complete the project, and no material or equipment may be delivered to the job site or installed until the Sub-Contractor has in his possession the approved shop drawings for the particular material or equipment. The shop drawings shall be complete as described herein. The Sub-Contractor shall furnish the number of copies required by the General and Special Conditions of the contract, but in no case less than six (6) copies.
- B. Prior to delivery of any material to the job site, and sufficiently in advance of requirements to allow Architect ample time for checking, submit for approval detailed, dimensioned drawings or cuts, showing construction, size, arrangement, operating clearances, performance characteristics and capacity. Each item of equipment proposed shall be a standard catalog product of an established manufacturer and of equal quality, finish, and durability to that specified.
- C. Samples, drawings, specifications, and/or catalogs submitted for approval shall be properly labeled indicating specific service for which material or equipment is to be used, section and article number of specifications governing, Contractor's name, and name of project.
- D. Catalogs, pamphlets, or other documents submitted to describe items on which approval is being requested, shall be specific and identification in catalog, pamphlet, etc., of item submitted shall be

clearly made in ink. Data of a general nature will not be accepted.

- E. Approval by the Architect and/or Engineer of shop drawings for any material, apparatus, devices, and layouts shall not relieve the electrical contractor from the responsibility of furnishing same of proper dimension, size, quantity, quality, and all performance characteristics to efficiently perform the requirements, and intent of the contract documents. In addition, approval shall not relieve the electrical contractor from responsibility for errors of any sort on the shop drawings. If the shop drawings deviate from the contract documents, the electrical contractor shall advise the Architect and/or Engineer of the deviations, in writing, accompanying the shop drawings, including the reasons for deviations.
- F. Failure of the Sub-Contractor to submit shop drawings in ample time for checking shall not entitle him to an extension on contract time, and no claim for extension by reason of such default will be allowed.
- G. The table on the following pages shall be included in the front of the shop drawing submittal. Sections of the specifications that are included in the specifications manual for this project shall require a submittal for each item listed. Incomplete or partial submittals shall be rejected.

<b>Spec Section</b>	<b>#</b>	<b>Item Description</b>
Site Lighting	1	Landscape lighting fixtures
	2	Lamps
	3	Type FSIFP outlet boxes
General Completion	1	Insurance Certificate indicating that stored materials are held in a bonded warehouse
	2	Superintendent's name, job trailer phone and fax numbers
	3	Name Plates type and attachment method
Conduit	1	Conduit , Cables, Tubing
	2	Supports
	3	Fittings and connectors
	4	Expansion joints
	5	Ground Bushings
	6	Tracing tape
	7	Sealants
	8	Fire Wall Penetrations (Provide U.L. Listing Number)
Busways	1	Busway
Under floor Ducts	1	Duct system sharing joiners, spaces, covers, supports, seats, etc.
Surface Metal Raceway	1	Surface raceway system - include all components
Wires and Cables	1	
		Wire – minimum size, manufacturer, insulation type
Outlets, Switches & Boxes	2	Connectors and lugs
	1	Outlet boxes
	2	Floor Boxes
Wall Switches	1	Switches (Also indicate color, load type, terminal type, and rating)
	2	Plates
Receptacles	1	
		Receptacles
Lighting Control Relay System	2	Plates
	1	Relay cabinet and relay modules
	2	Override switches
	3	Cables
	4	Photocells
Dimming System	1	Dimmer panel and dimmer modules

Spec Section	#	Item Description
	2	Control consoles
Lighting Control Sensors	1	Sensors
	2	Power Packs
Motor Starter	1	Motor starters
Motor Control Center	1	
		Documentation showing installers experience with submitted system
	2	Motor control center with all components and appurtenances.
Panel boards	1	
		Panel boards (also indicate short circuit current rating and withstand rating)
Fuses	1	
		Fuses
	2	Fuse Cabinet
Main Switchboard	1	Main Switchboard (also indicate short circuit current rating and withstand rating)
Motor & Circuit Disconnects	1	Disconnect Switches
Dry Type Transformers	1	Dry type transformers
Pad Mounted xformers	1	Pad mounted transformer
Generator Set	1	Generator
	2	Transfer Switch
	3	Vibration Isolation
	4	Mounting / pad dimensions
	5	Cooling system
	6	Exhaust system
	7	Control system
	8	Engine heater
	9	Battery and charger
	#	Main line circuit breaker
External TVSS / SPD	1	Surge Protective Devices
Underground Electrical Work	1	Ground rods
Service and Metering	1	Meter sockets
	2	CT cabinets
Grounding	1	Grounding devices and fitting
	2	Ground rods
Lighting Fixtures	1	Light Fixtures

Spec Section	#	Item Description
Exterior Sports Lighting Poles	2	Lighting Control Systems
	3	Arc Keeper Devices
	4	Generator Transfer / Switch bypass devices (GTD)
	5	Occupancy Sensors
	6	Lighting Inverter Systems
	1	Data and calculation showing that submitted pole complies with contract documents
Emergency Lighting System	2	Data and calculation showing that submitted foundation complies with contract documents
	3	Poles
	4	Foundations
	5	Lighting protection system
	1	Inverter units
Fire Alarm System	2	Battery charger
	3	Batteries
	4	Cabinets
	1	Fire Alarm System Control Panel
	2	Power Supply / Batteries
	3	Smoke Detectors / Heat Detectors
	4	Addressable modules
	5	Cables and Wiring
Security System	6	Manual Pull Stations
	7	Notification Devices
	8	Documentation that certifies that the installer has been factory trained on the submitted system.
	1	Control panel
	2	Control key pads
	3	Enclosure
	4	Magnetic door contacts
	5	Motion detector
Office phone Sys.	6	Sounder
	1	Telephone system control cabinet
	2	Hand/desk sets
	3	Wire and cables

<b>Spec Section</b>	<b>#</b>	<b>Item Description</b>
Integrated Telecomm / Telemedia Systems	1	Integrated telephone, public address and telemedia control system
	2	Outline drawing of system control cabinet
	3	FCC registration number with signal equivalent
	4	Wiring diagrams showing typical connector
	5	Certification of completion and installation and service training from system manufacturer
Classroom Intercom, Master-clock & Program System	1	Console
	2	AM-FM tuner, cassette player
	3	AM-FM antenna
	4	Administrative telephone
	5	Staff telephone
	6	Room call-in switch
	7	Digital master clock
	8	Speakers/ back boxes
	9	Exterior speakers
	10	Cable
Public Address System Replacement	1	Equipment cabinet
	2	Control panel
	3	AM-FM tuner, cassette player
	4	Power amplifier
	5	Selection panels
	6	Master clock and program distribution system
	7	Room call-in switch
	8	Speakers/ back boxes
	9	Exterior speakers
	10	Cable
Public Address Communication Sys (w/phones)	1	FCC registration number of the submitted system
	2	Data sheets for all equipment being provided
	3	Internal control cabinet drawings showing internal block diagram connections
	4	Wiring diagrams showing typical field wiring connections

Spec Section	#	Item Description
Sound Augmentation Systems	5	Documentation that installer maintains service and parts for submitted system
	1	Microphones, receptacles, extension cables and stands
	2	Mixer/ pre-amp
	3	Amplifiers
	4	Cables
	5	Equipment housing
	6	CD player
	7	Monitor headphone
	8	Equalizer
	9	Crossover network
	10	High frequency horns and drivers
Sound Reinforcement System	11	Low frequency loudspeaker and enclosure
	1	Microphones, receptacles, extension cables and stands
	2	Mixer/ pre-amp
	3	Equalizer
	4	Crossover network
	5	Amplifier
	6	speakers
	7	Equipment housing
Athletic Field Sound Augmentation System	8	Cable
	1	Microphones
	2	Amplifiers / mixers
	3	Speakers & mounting brackets
	4	Equipment housing
	5	Cd players/mixers/compressors/power conditioners
Coaches' Communication Sys	6	Cables / wall plates
	1	Master station
	2	Headset 1 belt system
	3	Head coach switch module
Television Distribution System	4	Extension cables
	1	Block diagram of system showing catalog numbers of amplifiers, splitter, taps and cables



Spec Section	#	Item Description
Media Management Center and Video Distribution	2	Head end amplifiers
	3	Noise filters
	4	Pre-amplifiers, re-amplification and pads
	5	Coaxial cable
	1	Internal control cabinet block diagram
Telecom Infrastructure	2	Wiring diagrams showing typical field wiring connections
	3	FCC registration number
	4	Data sheets for all equipment being provided
	5	Cable
	1	Cable trays and supports
	2	Fire wall penetrations
	3	Grounding equipment
Vibration & Seismic Control	4	Hand Hole Boxes and Covers
	5	Cables
	6	Communication outlets
	7	Grounding equipment
	1	Complete set of calcs and shop drawings with PE seal certifying that the design meets seismic req.
	2	Seismic design errors and omissions insurance certificate.

**END OF SECTION**