## Part 1 General

### 1.1 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 26 00 10 – Electrical Installations General Requirements.

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for communications equipment and include product characteristics, performance criteria, physical size, finish and limitations.

### 1.2 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 26 00 10 – Electrical Installations General Requirements and with manufacturer's written instructions.

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:

.1 Store materials indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

.2 Store and protect communications equipment from nicks, scratches, and blemishes.

.3 Replace defective or damaged materials with new.

.4 Develop Construction Waste Management Plan and/or Waste Reduction Workplan related to Work of this Section and in accordance with Section 26 00 10 – Electrical Installations General Requirements.

.5 Packaging Waste Management: remove for reuse and/or return of pallets, crates, padding, and packaging materials as specified in Construction Waste Management Plan and/or Waste Reduction Workplan in accordance with Section 26 00 10 – Electrical Installations General Requirements.

## Part 2 Products

### 2.1 TELEPHONE WIRE

.1 Service wire: 4 No. 22 AWG solid annealed copper conductors with polyethylene insulation, spiral four lay-up, inner jacket polyvinyl chloride, close serving of flat galvanized steel wire armour, outer jacket of polyvinyl chloride designed for buried service connections.

## Part 3 Execution

### 3.1 EXAMINATION

.1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for communications equipment installation in accordance with manufacturer's written instructions.

.1 Visually inspect substrate in presence of Consultant.

.2 Inform Consultant of unacceptable conditions immediately upon discovery.

.3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Consultant.

### 3.2 CLEANING

.1 Progress Cleaning: clean in accordance with Section 26 00 10 – Electrical Installations General Requirements.

.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 26 00 10 – Electrical Installations General Requirements.

.3 Waste Management: separate waste materials for reuse and/or recycling in accordance with Section 26 00 10 – Electrical Installations General Requirements.

.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

### 3.3 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by communications equipment installation.

**END OF SECTION**

## Part 1 General

### 1.1 RELATED SECTIONS

.1 Section 26 00 10 – Electrical Installations General Requirements.

.2 Section 26 05 31 - Splitters, Junction, Pull Boxes and Cabinets.

.3 Section 26 05 34 – Conduits, Conduit Fastenings and Conduit Fittings.

.4 Empty telecommunications raceways system consists of outlet boxes, cover plates, conduits and pull boxes.

### 1.2 SYSTEM DESCRIPTION

.1 Pathways for communications systems includes both horizontal distribution pathways as well as vertical components to point of use.

.2 Empty telecommunications raceways system consists of outlet boxes, cover plates, distribution, cabinets, conduits, cable troughs, pull boxes, sleeves and caps, fish wires, service poles, service fittings, concrete encased ducts.

.3 Overhead J-Hook distribution system.

### 1.3 WASTE MANAGEMENT AND DISPOSAL

.1 Remove from site and dispose of all packaging materials at appropriate recycling facilities.

.2 Collect and separate for disposal paper plastic polystyrene corrugated cardboard, packaging material in appropriate on-site bins for recycling in accordance with Waste Management Plan.

.3 Fold up metal banding, flatten and place in designated area for recycling.

## Part 2 Products

### 2.1 MATERIAL

.1 Conduits: EMT type in accordance with Section 26 05 34 - Conduits, Conduit Fastenings and Conduit Fittings.

.2 Junction boxes, cabinets: in accordance with Section 26 05 31 - Splitters, Junction, Pull Boxes and Cabinets.

.3 Outlet boxes, conduit boxes, and fittings: in accordance with Section 26 05 31 - Splitters, Junction, Pull Boxes and Cabinets.

**2.2 NON-CONTINUOUS CABLE SUPPORT SYSTEMS (J-HOOKS)**

.1 J-hooks shall provide a bearing surface of sufficient width to comply with required bend radii of high-performance cables per ANSI/TIA 568.0-D

.2 J-hooks shall have flared edges to prevent damage while installing cables.

.3 J-hooks shall have a cable retainer to provide containment of cables within the hanger. The cable retainer shall be removable and reusable.

.4 J-hooks shall have a hot-dipped galvanized or G60 finish and shall be rated for indoor use in noncorrosive environments.

.5 Base material of the J-hooks shall be metal (at least a 0.052" thickness) and not plastic or other similar material that will potentially fail to support cabling in a fire event. Any fasteners used to affix the HPNCCS shall also be metal and shall be fastened to the metal of the HPNCCS support. This is to provide added safety to building occupants and emergency responders in areas of egress to ensure that the cabling remains in the pathway in the ceiling during a fire event.

**Part 3 Execution**

.1 Install empty raceway system, including distribution system, fish wire, terminal cabinets, outlet boxes, floor boxes, pull boxes, cover plates, conduit, sleeves and caps, cabletroughs, service poles, miscellaneous and positioning material to constitute complete system.

.2 J-hooks are permitted in ceiling space. Conduits to be used within walls and surface work. Use a dedicated loop for each system.

.3 Install cables without damaging conductors, shield, or jacket

.4 Do not exceed load ratings specified by manufacturer.

.5 Follow manufacturer's recommendations for allowable fill capacity for each size of J-hooks.

**END OF SECTION**

## Part 1 General

### 1.1 REFERENCES

.1 Canadian Standards Association (CSA International)

.1 CSA-C22.2 No. 214-, latest revision, Communications Cables (Bi-National standard with UL 444).

.2 CSA-C22.2 No. 232, latest revision, Optical Fiber Cables.

.2 Telecommunications Industry Association (TIA)/Electronic Industries Alliance (EIA)

.1 TIA/EIA-568-B.1, latest revision, Commercial Building Telecommunications Cabling Standard, Part 1: General Requirements.

.2 TIA/EIA-568-B.2, latest revision, Commercial Building Telecommunications Cabling Standard, Part 2: Balanced Twisted-Pair Cabling Components.

.3 TIA/EIA-568-B.3, latest revision, Optical Fiber Cabling Components Standard.

.4 TIA/EIA-606-A, latest revision, Administration Standard for the Commercial Telecommunications Infrastructure.

.5 TIA TSB-140, latest revision, Telecommunications Systems Bulletin - Additional Guidelines for Field-Testing Length, Loss and Polarity of Optical Fiber Cabling Systems.

.6 TIA-598-C, latest revision, Optical Fiber Cable Color Coding.

### 1.2 DEFINITIONS

.1 Refer to TIA/EIA-598-C, Annex A for definitions of terms: optical-fiber interconnect, distribution, and breakout cables.

### 1.3 SYSTEM DESCRIPTION

.1 Structured telecommunications wiring system consist of unshielded-twisted-pair and optical fiber cables, terminations, connectors, cross-connection hardware and related equipment installed inside building for occupant's telecommunications systems, including voice (telephone), data, and image.

### 1.4 SUBMITTALS

.1 Provide submittals in accordance with Section 26 00 10 – Electrical Installations General Requirements.

### 1.5 QUALITY ASSURANCE

.1 Health and Safety Requirements: do construction occupational health and safety in accordance with Section 26 00 10 – Electrical Installations General Requirements.

.2 All cabling, termination hardware and connecting cords to be sourced from a certifying manufacturer to assure quality control.

.3 Upon completion of the installation, the system must be certified by a qualified installer and the manufacturer that it will support Category 6 applications. The installer must also

have experience in testing fibre optic cabling systems including the use of a light meter and OTDR.

### 1.6 DELIVERY, STORAGE AND HANDLING

.1 Waste Management and Disposal: separate waste materials for reuse and/or recycling in accordance with Section 26 00 10 – Electrical Installations General Requirements.

## Part 2 Products

### 2.1 FOUR-PAIR 100 Ω BALANCED TWISTED PAIR CABLE

.1 Four-pair, 100 ohm balanced unshielded-twisted-pair (UTP) cable, flame test classification FT6 or CMP to: CSA-C22.2 No. 214, Category 6 (Cat 6) to: TIA/EIA-568-B.2.

.2 Cable jacket colours to be as follows refer to 26 00 53 Identification for electrical systems (confirm with owner):

.3 Acceptable manufacturer or approved equal:

.1 Category 6 (Cat 6), FT6:

.1 Belden DataTwist #2413.

.2 Panduit #PUP6C04.

.3 Systimax GigaSPEED XL #2071E.

.4

### 2.2 WORK AREA UTP 4-PAIR MODULAR JACK

.1 Eight-position modular jack ("RJ-45"), type T568A, Category 6 to TIA/EIA-568-C.2:

.1 MDVO style.

.2 Punch down UTP connector.

.3 Modular jack colours to be as follows:

.1 Data: yellow.

.2 Voice (telephone): white.

.4 Acceptable manufacturer or approved equal:

.1 Category 6 (Cat 6):

.2 Belden #CAT6+ MDVO.

.3 Panduit #CJ688TGx.

.4 Systimax GigaSPEED XL #MGS400.

.2 Provide compatible single gang faceplates as follows:

.1 Flush entry, number of jack positions per faceplate as required.

.2 Top and bottom labeling windows for jack identification.

.3 Faceplate color: white.

.4 Acceptable manufacturer or approved equal:

.1 Faceplates:

.1 Belden MDVO faceplate with ID window.

.2 Panduit #CFPExxY.

.3 Systimax #M1xLE.

.3 Interface faceplates located in kitchen areas to be stainless steel.

.4 Provide self-contained white surface-mount box where indicated and as required, two (2) jack positions per box complete with modular jacks to suit.

## 2.3 MALE PLUG CONNECTOR

.1 Male plug connectors to mate with “RJ-45” jacks, Cat 6 for CCVE camera cables.

## 2.4 TELEPHONE RISER CABLE

.1 25-PR Category 5E (Cat 5E) backbone cable, gray colour, FT6.

.2 Use four 25-PR cables to achieve a 100-PR riser.

.3 Acceptable manufacturer or approved equal:

.1 Belden.

.2 Panduit.

.3 Hubbell.

## 2.5 TELEPHONE OUTLETS

.1 Eight (8) conductor jacks as indicated.

.2 Fully compliant with all requirements for category 6.

.3 White, 4 port angled entry faceplate with lamacoid identification label.

.4 Suitable for flush mounting as indicated, colors to match receptacle and switch cover plates.

.5 Acceptable manufacturers:

.1 Panduit # mini-com classic series or approved equal by Belden/CDT or Ortronics.

## 2.6 EQUIPMENT CORDS

.1 3 metres long, each end equipped with "RJ-45" plug Category 6 to: TIA/EIA-568-B.2.

.2 UTP work area cord colour to match horizontal cable colour for application; i.e. data.

.3 Acceptable manufacturer or approved equal:

.1 Belden CAT6+.

.2 Panduit TX6 PLUS.

.3 Systimax GigaSPEED XL.

## Part 3 Execution

### 3.1 INSTALLATION OF TERMINATION AND CROSS-CONNECT HARDWARE

.1 Install termination and cross-connect hardware in rack as indicated and according to manufacturers' instructions. Identify and label as indicated to: TIA/EIA-606-A.

.2 Install consolidation points, as indicated according to manufacturer's instructions. Identify and label as indicated to: TIA/EIA-606-A.

### 3.2 INSTALLATION OF HORIZONTAL DISTRIBUTION CABLES

.1 Install horizontal cables in pathways in accordance with Section 27 05 28 – Pathways for Communications Systems.

.1 Identify and label as indicated to: TIA/EIA-606-B.

.2 Routing of cables must be such that total length does not exceed 90 m.

.3 Leave sufficient tail at each end for termination of cable.

.4 Terminate horizontal cables in telecommunications room and at individual work-area jacks using T568A pin assignment. The amount of untwisting in a cable pair to terminate to be no greater than 13 mm.

.1 Identify and label as indicated to: TIA/EIA-606-B.

.5 Each horizontal cable to have identification markers installed on both ends.

.6 Each modular jack to be identified with an alpha/numeric label.

.7 Labeling to indicate rack number, patch panel letter and outlet number (i.e. 1A48 is rack 1, patch panel A, outlet 48).

.8 Identification is to be consistent with existing identification method.

.9 Where a cable terminates at a jack which is concealed within accessible ceiling space, provide a coloured adhesive dot on the T-bar or ceiling below to indicate its location. Coordinate colour of dot with Owner and with identification of other systems.

.10 Coil spare cables and store in ceiling space in zone.

.11 Harness slack cable in cabinets, racks, and wall-mounted termination and cross-connection hardware.

### 3.3 INSTALLATION OF BACKBONE CABLES

.1 Install backbone cables from each telecommunications room to main terminal/equipment room (MT/ER) as indicated and according to manufacturers' instructions.

.1 Identify and label as indicated to: TIA/EIA-606-A.

.2 Install backbone cables from MT/ER to carrier demarcation point in [Entrance Room] as indicated and according to manufacturer's instructions.

.1 Identify and label as indicated to: TIA/EIA-606-A.

.3 Each backbone cable to have identification markers installed on both ends.

## 3.4 IMPLEMENT CROSS-CONNECTIONS

.1 Implement cross-connections using patch cords as specified.

## 3.5 FIELD QUALITY CONTROL

.1 Test horizontal UTP cables as specified below and correct deficiencies provide record of results as hard copy and electronic record on usb stick.

.1 Perform tests for Permanent Link on installed cables, including spares:

.1 Category 5e using certified level IIe tester to: TIA/EIA-568-B.1.

.2 Category 6 using certified level III tester to: TIA/EIA-568-B.2.

.2 Perform tests for Channel on 20% of cross-connected data horizontal cabling installed from each telecommunications room, including shortest and longest drops from each telecommunications room: should more than 5% of tested cables fail, test remaining cross-connected data cables.

.1 Category 5e using certified level IIe tester to: TIA/EIA-568-B.1.

.2 Category 6 using certified level III tester to: TIA/EIA-568-B.2.

.2 Provide record of results as hard copy and electronic record on usb stick to: TIA/TSB-140.

.3 Test backbone cables as specified below and correct deficiencies: provide record of results as hard copy and electronic record on usb stick.

.1 Perform tests for Permanent Link on 4-pair cables:

.1 Category 6 using certified level III tester to: TIA/EIA-568-B.2.

.2 Perform Wire Map tests on multi-pair UTP cables to: TIA/EIA-568-B.1.

**END OF SECTION**

## PART 1 General

### 1.1 RELATED SECTIONS

.1 Section 27 10 06 – Communication Cable Inside Building.

.2 Section 27 00 10 – Communication Installations General Requirements.

### 1.2 REFERENCES, STANDARDS AND CODES

.1 As minimum standards, product and installation to:

.1 ANSI-J-STD-607-A-2002: Commercial Building Grounding and Bonding Requirements for Telecommunications.

.2 Canadian Electrical Code, Part 1.

.3 ANSI/TIA/EIA-606-A.2002: Administration Standard for Commercial Telecommunications Infrastructure.

.4 BICSI TDMM 10th edition.

.5 CAN/CSA-T527, latest revision, Grounding and Bonding for Telecommunications in Commercial Buildings.

.6 CAN/CSA-T530, latest revision, Building Facilities, Design Guidelines for Telecommunications.

### 1.3 SYSTEM DESCRIPTION

.1 The Telephone and Data system consist of bix panel, patch panels and equipment racks.

.2 The Data system consists of outlet, boxes, coverplates, conduits, pull boxes, sleeves and caps, fish wires, cables, cable tray, floor mounted rack and patch panel.

.3 Incoming cable of telephone entrance to communication room will be by Aliant. All cross connections between utility voice patch panel and customer patch panel shall be done by Aliant.

.4 Quality Assurance:

.1 Data and voice cabling, terminations and testing shall be performed by an end to end “Certified System Vendor”, or “Factory Authorized Contractor”, and shall be “IBDN Certified”, and have a 25 year passive component guaranty.

.2 Upon completion of the installation, the system must be certified by the installer and the manufacturer that it will meet or exceed Category 6 and 1000 Base T applications for voice and data.

### 1.4 COORDINATION WITH TELEPHONE AUTHORITIES

.1 Coordinate with Owner for exact location of service from switch and access for site survey.

## PART 2 Products

### 2.1 PATCH PANELS CABINETS AND RACKS

.1 Provide cross connect Bix Mount patch panel for voice:
- .1 25 pair bix mounts for cat 6, wall mounted c/w distribution rings.
- .2 16 gauge steel.
- .3 Beige powder paint finish
- .4 Fire-retardant thermoplastic fanning strip material.
- .5 Cable management rings.
- .6 Acceptable manufacturers:
  - .1 Belden
  - .2 Panduit
  - .3 Hubbell
  - .4 Avaya

.2 Connector Strips for Bix Mount patch panel
- .1 Bix distribution connector.
- .2 25 pair.
- .3 Fire-retardant thermoplastic material.
- .4 IDC clip: Copper alloy with tin plating over nickel.
- .5 Quantity: as required, plus 1 spare.
- .6 Acceptable manufacturers:
  - .1 Belden
  - .2 Panduit
  - .3 Hubbell
  - .4 Avaya

.3 UTP Patch Panels for DATA
- .1 UTP patch panel for copper
  - .1 Categroy 6 rated.
  - .2 48-port or 24 port, flex style, blank panel as shown.
  - .3 1.6mm steel, black finish.
  - .4 Complete with Gigaflex PS6+ modules as required.
  - .5 Acceptable manufacturers:
    - .1 Belden
    - .2 Panduit
    - .3 Hubbell
    - .4 Avaya
- .2 UTP patch panel for fiber
  - .1 Fiber express, 12/24 port (lu) rack mount patch panel
  - .2 14 gauge steel, black finish.

.3 Complete with double density secure/keyed [LC] adapter strip as required, and black strips to fill unused adapter strip openings.

.4 Acceptable manufacturers:

.1 Belden

.2 Panduit

.3 Hubbell

.4 Avaya

.3 Patch panels identifications

.1 Front and rear port identification complete with labels, mounting screws and installation sheets.

## 2.2 DATA RACK

.1 Pivital wall rack such as Middle Atlantic DWR Series.

.2 24RU,

.3 32” deep

.4 Rack mounted black powder coated ventilated shelves to be provided as follows:

.1 2U Rack space, 483 mm wide x 375 mm deep, quantity: 1 per rack.

.2 2U Rack space, sliding rackshelf, four point mounting, 90.7 kg capacity, 483 mm wide x 714 mm deep, quantity: 1 per rack.

.5 Rack mounted horizontal power strip, one front and eight rear 5-20R outlets, power switch/circuit breaker on front, 2.74 m power cord, quantity: 1 per rack.

.6 Acceptable manufacturer or approved equal:

.1 Middle Atlantic.

.2 Belden.

.3 Panduit Net-Access N-Type Cabinet.

.4 Systimax.

## 2.3 POWER BAR

.1 Rackmountable power bar

.1 Eight (8) rear outlets and one (1) front outlets, 15A 120V U-ground.

.2 MOV surge and spike protection.

.3 EMI filtering.

.4 Illuminated combination power switch/circuit breaker.

.5 2740 mm cord.

.6 Black powder coat finish.

.7 Complete with associated mounting equipment for rack side mount.

.8 Acceptable manufacturer:

.1 Middle Atlantic

.2 Panduit

.3 Hubbell
.4 Wiremold

**2.4 IDENTIFICATION**

.1 Each modular jack to be identified with an alpha/numeric label
.1 Acceptable manufacturer or approved equal:
.1 Panduit
.2 Hubbell

.2 Each patch panels and equipment racks to have corresponding labeling.

**PART 3 Execution**

**3.1 LABELLING**

.1 A structured alpha numeric system will uniquely identify each component of the UTP cabling system.
.1 RJ45 patch panel ports located in the communications room are to be labeled from 01 to 06.
.2 Both ends of each data cable shall be labeled with the room ID and the patch panel port ID to which it is connected. The labels should be placed 6 to 12 inches from each jack or connector and secured with shrink wrap.
.3 Each installed RJ45 jack shall be labeled with the room ID and the patch panel port ID to which it is connected.

.2 All labels must be machine made and of professional quality. No hand-written identification will be accepted. All patch cord labels must be shrink wrapped to ensure permanent identification.

**3.2 INSTALLATION OF RACKS AND EQUIPMENT**

.1 Install rack in server room allowing adequate working clearance.

.2 Ground racks using # 6AWG wire back to electrical room panel.

.3 Install rack mounted patch panels and wire management ducts on racks.

.4 Route cables through wire management ducts and terminate on patch panels.

.5 Install rack mounted power bar with surge protection for user equipment.

.6 Install cabinets plumb, level, square, and secure.

.7 Anchor cabinets to floor for seismic restraint in accordance with manufacturer's instructions.

.8 Spare space on data rack is reserved for the Owner's equipment. Other system equipment not related to the data/telephone system is not to be installed in the data rack.

.9 Identify each cabinet with a size 4 engraved nameplate in accordance with Section 26 00 53 - Identification for Electrical Systems.

## 3.3 FIELD QUALITY CONTROL

.1 The same individual snap-in type modular connectors will be utilized at both ends of the cable. The connectors at the patch panel and at the jack must be of the same model and manufacturer.

.2 The installation technicians must be certified through a manufacturer's certification program and must be capable of providing evidence of their training certification. The contracting firm must supply documentation verifying their current participation in a manufacturer's certification program. Upon request and at no additional cost to Owner, the contactor must provide a manufacturer's technical representative to conduct an on-site visit to ensure complete technical compliance.

.3 Upon request and at no additional cost to Owner, the contractor shall provide a manufacturer's technical representative to conduct an on-site visit to ensure complete technical compliance.

.4 The manufacturer's certification must guarantee that design or installation negligence on the part of the certified contractor will not negate or void any portion of the certified system. The manufacturer must guarantee that all material, components and Labour are covered n this circumstances for the full certification period. It must also guarantee that in the event a contractor is no longer in business, the full certification remains valid.

.5 Written acknowledgement of these conditions must be provided prior to award of the contract.

END OF SECTION

## Part 1 General

### 1.1 REFERENCES

.1 Industry Canada - Terminal Attachment Program

.1 CS-03, latest revision, Compliance Specification.

.2 National Fire Protection Association (NFPA)

.1 NFPA72, latest revision, National Fire Alarm and Signaling Code.

### 1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 26 00 10 – Electrical Installations General Requirements.

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for public address and mass notification systems and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Shop Drawings:

.1 Submit drawings stamped and signed by professional engineer registered or licensed in Province of New Brunswick, Canada.

.2 Indicate on drawings:

.1 Riser diagram, block diagram of complete public address system.

.2 Public address system design criteria.

### 1.3 CLOSEOUT SUBMITTALS

.1 Submit in accordance with Section 26 00 10 – Electrical Installations General Requirements.

.2 Operation and Maintenance Data: submit operation and maintenance data for public address and mass notification systems for incorporation into manual.

.3 Include in manual:

.1 Operation instructions.

.2 Description of system operation.

.3 Description of each subsystem operation.

.4 List showing each piece of equipment in system or subsystem by its original manufacturer name and model number.

.5 Part list showing parts used in equipment by identification numbers that are standard to electronics industry.

### 1.4 MAINTENANCE MATERIAL SUBMITTALS

.1 Submit maintenance materials in accordance with Section 26 00 10 – Electrical Installations General Requirements.

**1.5 DELIVERY, STORAGE AND HANDLING**

.1 Deliver, store and handle materials in accordance with Section 26 00 10 – Electrical Installations General Requirements and with manufacturer's written instructions.

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:

.1 Store materials indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

.2 Store and protect public address systems from nicks, scratches, and blemishes.

.3 Replace defective or damaged materials with new.

.4 Develop Construction Waste Management Plan and/or Waste Reduction Workplan related to Work of this Section and in accordance with Section 26 00 10 – Electrical Installations General Requirements.

.5 Packaging Waste Management: remove for reuse and/or return by manufacturer of pallets, crates, padding, and packaging materials as specified in Construction Waste Management Plan and/or Waste Reduction Workplan in accordance with Section 26 00 10 – Electrical Installations General Requirements.

**Part 2 Products**

**2.1 SYSTEM DESCRIPTION**

.1 Public address loudspeaker system to incorporate:

.1 Wireless microphone system.

.2 Recorded music from digital audio - MP3, WMA and AAC player.

.3 Additional features as specified.

.4 Speaker as indicated on drawings

.2 Operations:

.1 Paging:

.1 Wireless microphone system

.2 Selective area page to areas as indicated.

.3 Emergency page to all areas.

.4 Schedules page for breaks and lunch time.

.2 Music:

.1 Music from MP3 player or external source.

.3 Systems in various configurations to be rack mounted.

**2.2 MATERIALS**

.1 Conduits: in accordance with Section 26 05 34 - Conduits, Conduit Fastenings and Conduit Fittings.

.2 Communication conductors: as recommended by manufacturer.

.3 As indicated in on drawings and in this section.

.4 Provide back box and mounting channels for ceiling mounted speakers. All speaker must be supported independently, and are not to be reliant on drywall or ceiling tile for their support.

## Part 3 Execution

### 3.1 EXAMINATION

.1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for public address systems installation in accordance with manufacturer's written instructions.

.1 Visually inspect substrate in presence of Consultant.

.2 Inform Consultant of unacceptable conditions immediately upon discovery.

.3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Consultant.

### 3.2 INSTALLATION

.1 Install equipment in accordance with manufacturer's instructions, and as indicated.

.2 Install wiring in J-hook where cable can be concealed and in EMT when cable cannot be

.3 Install all wiring in conduits as per Section 26 05 34 – Conduits, Conduit Fastenings and Conduit Fittings when cables are exposed or in electrical room and in J-Hooks otherwise.

### 3.3 FIELD QUALITY CONTROL

.1 Perform tests in accordance with Section 26 00 10 – Electrical Installations General Requirements.

.2 Conduct intelligibility test.

### 3.4 CLOSEOUT ACTIVITIES

.1 Manufacturer's factory service engineer to instruct:

.1 Maintenance personnel in maintenance of system.

.2 Operating personnel in use of system.

### 3.5 CLEANING

.1 Progress Cleaning: clean in accordance with Section 26 00 10 – Electrical Installations General Requirements.

.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 26 00 10 – Electrical Installations General Requirements.

.3 Waste Management: separate waste materials for reuse and/or recycling in accordance with Section 26 00 10 – Electrical Installations General Requirements.

.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

## 3.6 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by public address and mass notification systems installation.

**END OF SECTION**