DIVISION 16

SECTION 16A ELECTRIC WORK

16A.01 GENERAL:

A. All work under this Section is subject to the Contract Documents, Contract Drawings and the "General Conditions Governing all Contracts," all of which form a part of this Section as if written out in full herein.

B. The contractor for work under this specification is referred to the General Conditions, Special Conditions and all Contract Documents, all of which are hereby made part of this specification.

C. Perform all necessary removals, cuttings, repairs, replace- mend etc., for the completion of this work and provide all materials, labor, tools and equipment required to perform the work as specified herein.

D. Contractor must carefully examine the site of the proposed work, as well as its adjacent area, and seek other usual sources of information for they will be conclusively presumed to have full knowledge of any and all conditions on, about, or above the site relating to, or affecting in anyway, the performance of the work to be done under this contract which were or should have been indicated to a reasonably prudent bidder.

NOTE: NOTIFY ARCHITECT BEFORE STARTING WORK. ALL WORK TO BE DONE UNDER THE DIRECTION OF THE ARCHITECT. NO WORK TO BE PERFORMED ON WEEKENDS WITHOUT PRIOR APPROVAL FROM THE ARCHITECT.

E. *All Electrical work shall be performed by a Licensed Electrician, as specified by NYC Building Department in a neat manner and in accordance with best practices. All work shall comply with the National Electrical Code (NEC), all New York City amendments to that code, state and Federal rules and regulations. The Contractor shall obtain and complete all necessary applications, approvals and pay all fees required to obtain all trade related permits and final sign offs from all agencies having jurisdiction.*

F. The Contractor shall perform all necessary removal, cutting, repair, replacement, etc. for the completion of this work, and provide all labor, materials, tools and equipment required to perform the work as specified herein and to comply with the National Electrical Code (NEC). Rubbish and debris shall be expeditiously removed from the premises.

G. The Contractor shall obtain prior approval from Architect for changes, additions or modifications to the "Scope of Work", specifications, and drawings.

H. Notify Architect before starting work. All work is to be done under the supervision and as directed by Architect. Prior to completion of Contract, Architect shall coordinate with the Management Group a single authorized punch-list for issuance to the Contractor.

I. Tenants in occupancy (If applicable):

1. It is understood and agreed that the existing tenants in the building may remain in occupancy during the work. The Contractor shall, at all times, be responsible for minimizing inconvenience to the tenants, protecting life and property of tenants, and maintaining the work area in a clean and habitable condition.

2. If the work requires substantial disruption, the Contractor shall be responsible for informing Architect of the time and extent of the disruption at least two days in advance and shall obtain approval from Architect to proceed with the work.

3. Temporary electrical services must be provided during construction to all tenants. Electrical power cannot be shut off for more than 24 hours without proper notification and scheduling with tenants.

J. The Contractor shall fully familiarize himself with the job and field conditions before submitting his bid.

K. Substitutions:

1. Reference in the Contract Document to materials, form of construction, products, and equipment by proprietary name, make and catalogue number shall be interpreted as establishing a standard of quality of manufacture, performance, or appearance, and shall not be construed as limited competition.

2. Should the Contractor desire to substitute any item of brand or manufacture other than that specified, he shall submit to Architect a written request for approval of the substitutions he proposes and wishes to make. Such requests shall be accompanied by descriptive literature, drawings, samples or such information as the Architect will investigate all such requests and render decisions thereon as promptly as is reasonably possible, and such decisions shall be final.

3. Any substitution of material specified shall be equal in quality and value, or credit is due to the Owner.

L. Immediately upon award of this contract, Contractor shall confer with Architect prepare a work program schedule. This schedule shall be revised as may be required by Architect and when approved, shall establish the order in which the work shall proceed, and the dates when the various parts shall be installed or completed.

M. Provide for all work for a complete and working electrical system. Any items or services not indicated in the contract documents and necessary for completion of the system, or required by all codes, must be brought to Architect's attention prior to bidding. This contractor is responsible for all items or services necessary for a complete installation of the electrical system.

16A.02 WORK INCLUDED

A. ***Refer to "Supplement of Requirements for Adaptable Apartments, "Division 1, Section 1E and/or Requirements for Public Areas" Division 1 Section 1F. for Handicapped if Applicable and provide systems as indicated in all A.D.A adaptable apartments and public areas.***

B. Provide all labor, materials and equipment necessary or incidental to perform the work of this Section and related work as indicated in the Contract Documents. Refer to "Division Scope of Work" section: 16A for complete scope of work for this section, which form a part of the contract specifications.

C. Wiring of all electrical devices such as pumps, exhaust fans, heating equipment, Intercom and door release systems, control panels, compactor and elevator (if applicable), etc.

D. Temporary power and light distribution system for construction purposes. See sections 1A.18 and 16A.14 of this specification.

16A.03 WORK EXCLUDED

A. Painting, except as noted herein.

B. Removal of friable asbestos insulation.

16A.04 SUBMISSION REQUIREMENTS

A. Before Work Commences Architect's Approval is Required

1. Submit four (4) catalog cuts for light fixtures, service equipment, panels, receptacles, switches, wiring, etc.

B. Must Accompany Final Payment Request

1. New York City Department of Buildings Final Sign-off for all work under this section.

2. Operation/Service manuals and warrantee information for all equipment and devices installed.

16A.05 SCOPE OF WORK

A. This contractor must only refer to the appropriate sections of the specification as requested in the Scope of Work and/or contract drawings.

B. Provide complete Electrical system in accordance with National Electrical Code (NEC) and New York City amendments to that code including new electrical service, service equipment, all wiring and conduits, receptacles, fixtures, etc.

16A.06 CODES, RULES AND CERTIFICATES

A. The complete installation of the electrical systems and all other items of the work shall be in strict accordance with all laws and with latest rules and regulations of The National Electrical Code (NEC) and New York City amendments to that code, and all Municipal and other Public Agencies, and the National Board of Fire Underwriters. Should there be a conflict between any items or requirements, specified herein and/or shown on the contract drawings, all pertinent rules, regulations, and legal requirements shall apply.

B. This contractor is responsible to complete all necessary applications, pay all fees, give all notices, file all drawings (if required) and obtain all permits and final sign-offs from The Department of Buildings for work under this contract. Adhere to controlled inspection requirements and furnish Certificates of Inspection by all Agencies requiring them.

16A.07 CONTRACT DRAWINGS

A. The contract drawings show the approximate location of all required equipment and the diagrammatic arrangement of piping and/or conduits. Conduit runs have been shown with the intention of most clearly indicating the routing. Actual runs may differ if kept within the requirements and provisions of these specifications, and providing that all modifications have been shown in the shop drawings. Exact location of all equipment will be determined in the field and the contractor must secure exact dimensional data before laying out any work.

B. This contractor must submit shop drawings only if the final field installation will differ from architect's proposed drawings.

1. Five (5) copies of each drawing shall be submitted to architect before any work begins.

2. Drawing shall be 1/4" = l' - 0" scale blueprint indicating exact location and size of all equipment and piping. Plans to include cellar layout, first floor layout, typical floor layout, riser diagram, schematic of boiler room indicating all equipment valves and piping, and any drawings Architect may request. Drawings will not be accepted unless a complete list of deviations from architect's proposed plans is included.

16A.08 REMOVAL OF RUBBISH

A. This contractor shall remove at all times from the building, waste materials or rubbish accumulated resulting from this work. Upon completion of the work, clean all heating materials and equipment to the satisfaction of architect.

16A.09 ACCESSIBILITY

A. Ascertain that all equipment, such as valves, traps, cleanouts and such other apparatus as may be necessary to be reached from time to time for operation and maintenance, is made easily accessible.

B. The location of equipment may conflict with the building construction and may disclose the fact that the location for this work does not make its position easily and quickly accessible. In such cases, call Architect's attention to this fact before installing this work and contractor shall be guided by Architect's instructions.

16A.10 REQUIREMENTS AND PROCEDURES

A. General

1. The new Electrical systems shall include new building service (1 phase, 3 wire or 3 phase, 4 wire; see drawings), service equipment, sub-feeder risers, panels, wiring, switches, receptacles, light fixtures, building intercom system, master television distribution system, telephone system, exterior lighting, public hall and cellar/basement lighting and wiring, etc. If commercial or community areas are present, areas shall be provided with lighting, receptacles, wiring, exit and emergency lighting, telephone system, etc. See drawings for exact system to be used.

2. All rooms shall be provided with a switched ceiling mounted light fixture.

3. One telephone and master television jack shall be provided in each living room, master bedroom and/or kitchen as shown on drawings.

B. Coordination of Work and Trades

1. All piping and equipment installed under this contract shall be 5'-0" minimum from all electrical equipment.

2. Wiring shall be concealed in wall chases, recesses, shafts, and hung ceilings where same are provided. Refer to, and carefully check Architectural, Structural, Sprinkler, Plumbing and HVAC Drawings and details for locations where walls, partitions, ceilings, beams, columns and other surfaces are furred, locations of shafts and conflicts with work of other trades.

3. Obtain maximum possible headroom to the bottom of exposed conduits or covering. In no case shall headroom be less than seven (7) foot six (6) inches above finished floor.

4. The Contractor shall provide offsets as may be required to maintain pitch, elevation or to accommodate routing around obstacles.

5. Should any work installed require subsequent modification to avoid interference, as determined by the architect such changes shall be made without cost to Owner. Architect's decision where interference or other conditions require the changing of work installed shall be final.

6. Where the work of the Contractor is concealed, the contractor is responsible for its proper installation to assure that it does not project beyond the finished lines of floors, ceilings, or walls.

16A.11 EXCAVATION AND BACKFILL

A. Perform all excavation, backfilling, pumping and sheathing required for installation of all work described herein. Backfilling shall be carefully done and thoroughly compacted. For excavation below 8'-0", fill shall be made in layers not more than one foot deep and each layer tamped. Fill around piping shall be flushed in with water. No large stone or boulders shall be used. All backfill shall be installed as per requirements of Bureau Highways Operations and New York Paving.

B. Contractor is required to obtain a permit from the Department of Highways prior to proceeding with any pavement excavation.

C. All backfill for pavement shall be tested and inspected by an approved testing laboratory and Professional Engineer provided by the contractor in accordance with Bureau of Highways Operations and New York paving requirements.

16A.12 MATERIALS AND WORKMANSHIP

A. All materials furnished and installed shall be new and of makes and sizes specified or indicated in bid documents. Submit complete and detailed list of equipment and materials, four (4) copies each for approval before placing orders. Workmanship must be first class in every respect. Workmen must be skilled in their line of work. Competent foremen shall remain on the job until completion whenever any of his employees are working at the site.

B. ELECTRIC SERVICE EQUIPMENT AND INTERIOR DISTRIBUTION SYSTEM

1. Arrange with the Consolidated Edison Company for new 120/208V, 3 phase, 4

wire or 120/240V, 1 phase, 3 wire service (see scope of work and/or drawings) and comply with their requirements for metering, C.T. cabinet, service end box or property manhole and service equipment in general. Provide all work not shown or specified which the Utility Company may deem necessary to fulfill their requirements. Utility Company approval of work shall be obtained.

2. Building interior electric distribution equipment shall comprise of heavy duty enclosed National Electrical Code (NEC) approved service switches installed near service end box, meter pans for meters, distribution panel board and a series of sub feeders (risers) to all apartments, house and commercial space (where applicable) panels.

3. Service switches shall be sized as indicated on drawings. Switches shall have a metal nameplate permanently identifying the catalog number and Amps HP Rating. Unit must be NEMA 1 (indoor rated) or NEMA 3R (Rain Proof). Units shall be quick-make, quick-break, load interrupter enclosed knife switch with externally operated handle and can be padlocked in ON or OFF position.

4. Distribution panels board shall house thermal magnetic circuit breakers for sub-feeders which shall be sized per design data indicated on the drawings. The circuit breakers shall be rated for 22,000 A.I.C. and be coordinated with fuses in service switches. The panel board shall be NEMA approved and may be integral part of meter bank as manufactured by General Electric, Square - D or approved equal.

5. Fuses shall be of current rating, voltage, interrupting capacity as shown on drawings and must conform to UL 198 and ANSI C97.1 for low voltage and ANSI C37.41 for high voltage fuses. Service switches shall be fused with "Bussman" type fuses. Two complete sets of spare fuses for each type and fuse puller shall be furnished.

6. House panel shall be rated at 100AMP (min), 1 or 3 phase as indicated on drawings.

7. Primary voltage transformers shall be Energy Star compliant.

8. The service splice boxes and all conduits and conductors

9. Service End Boxes of the type and size indicated on drawings or required shall be provided at the location designated. Utility company shall perform splices in end boxes as directed.

10. All meters shall be supplied from Utility Company.

11. The face of all main switches, motor disconnects, panels and metering equipment shall be stenciled (after equipment has been painted) clearly indicating function.

C. MAIN FEEDERS AND SUB-FEEDERS

1. All feeders shall be type THW or type THH or THWN installed in approved metallic raceways. All main feeders and branch circuit wiring shall carry ground wire and the system-grounding conductor shall be bonded to building water mains in approved manner.

2. A separate sub feeder riser will serve each apartment from the cellar/basement distribution panel. Install separate panel and meter as required for the house loads and any commercial space in accordance with electrical riser diagram as indicated on drawings.

D. APARTMENT PANELS

1. Provide panel in each apartment, with the proper number of circuit breakers.

2. Panels shall be installed in code gauge galvanized steel cabinets for flush mounting. Cabinets shall be provided with 3" wide wiring space at one side to provide for connection to risers. Minimum size feeder taps to panel shall be #8 wires. Panels shall be dead front, with front containing door and be designed for 1 phase, 3 wire, 120/240 volts. Maximum depth of cabinet shall be 3-3/4". Architect shall approve panels. Panels shall be recessed in wall with flush door surface.

3. Apartment circuit breaker panels shall be flush mounted and be located as per drawings. The uppermost circuit breaker shall be 72" above the finish flooring and 48” above finished floor in ADA Handicapped Adaptable apartments.

4. The panel circuit indexing plate shall be completed indicating breaker designation; and areas and devices for which they protect.

5. Approved Manufactures: Square D, General Electric Westinghouse or Approved Equal.

E. HOUSE LIGHTING AND POWER PANEL

1. The panels shall be of the enclosed type; surface mounted as indicated on plans, galvanized steel cabinet with copper bus bars.

2. Panel boards shall have type written directory providing circuit identification. Directory shall be mounted behind glass and shall indicate load on each circuit motor or device or type of load, which it serves, and size of wiring and conduit.

3. Panel boards shall be equipped with bolted type molded case circuit breakers of size, poles and quantity as indicated on plans.

4. House panel shall be rated at 100AMP (minimum), 1 or 3 phase as indicated on drawings.

5. Panels shall be dead front, with front containing door.

6. Minimum size gutters shall be 5" for lighting panels and power panels.

7. Approved Manufacture: Square D, General Electric, Westinghouse or Approved Equal

8. The panel circuit indexing plate shall be completed indicating breaker designation; and areas and devices for which they protect.

F. OUTLET BOXES

1. Interior Outlet Boxes

a. All boxes shall be galvanized, flat-rolled, sheet steel interior grade outlet wiring boxes, of types, shapes, and sizes to suit each respective location and installation requirements. Boxes shall be constructed with stamped knockouts in back and sides, and with threaded screw holes with corrosion resistant screws for securing box covers and wiring devices.

b. All boxes for receptacles and switches shall be 4-inch square, 1 ½" deep, for up to two devices; ganged for over two devices and installed so that device covers are tight and plumb with finished wall.

c. All boxes shall be provided with a single or double device cover plate. Cover plate height to be covered by Gypsum drywall thickness.

d. All boxes for ceiling mounted fixtures shall be adjustable ceiling bar hanger type with armored cable clamps and conduit knockouts; and securely mounted to floor joists.

2. Exterior Outlet Boxes

a. All outlet boxes shall be galvanized or cadmium plated cast metal, threaded for conduit connections, of types, shapes, and sizes to suit each respective location and installation requirements.

b. Faceplate covers shall be with spring hinged, watertight type caps including gaskets and stainless or brass screws.

3. Junction and Pull Boxes

   a. Provide galvanized, sheet-steel junction and pull boxes and covers for all interior locations; and cast-metal boxes and covers for all exterior locations of types, shapes, and sizes to suit each respective location and installation requirements.

   b. Boxes larger than larger than 36-inches shall contain racks and supports for all cables or conductors.

4. Should any job conditions make it necessary to change the location of any of the outlets, the exact location should be determined by Architect. Relocate outlets required as much as 16' in any direction without increase in cost. No outlets are to be located on exposed brick walls, except as directed to be such by Architect.

5. Outlet boxes shall be securely fastened in place and provided with covers and fixture supports where required. See section 16A.12J for mounting heights. The box shall have no other opening than that required to admit the wiring.

6. Outlet boxes shall be provided for all receptacles, switches, telephone and cable outlets, and intercom panel.

7. All boxes must conform to NEMA OS1, NEMA 250, UL 50, UL 514A, UL 514B AND NFPA 70 requirements.

8. All outlet boxes that contain receptacles or switches shall be anchored in a manner where the box is rigid when installed and supported directly by the wall structure. The outlet box shall be installed so that the receptacle will be flush with the surrounding wall.

9. Approved manufactures include Steel City, Raco, Thomas & Betts.

G. CIRCUIT BREAKERS (OVERCURRENT PROTECTION)

1. All branch circuits that supply 125Volt, single-phase (15 or 20 Amp) receptacles in bedrooms must be provided with an Arc-Fault Circuit Interrupter (AFCI) breakers.

H. WALL SWITCHES

1. Switches shall be provided as indicated on the plans and as per NEC Code. Switches shall be residential grade.

2. Lighting switches shall be provided as indicated on plans. Where several switches and/or receptacles are shown at the same location, multiple gang boxes and plates shall be used.

3. All switches and wall plates shall be white. All device plates shall have beveled edges and shall be installed vertically and with all four edges in continuous contact with finished wall surface without the use of mats or similar devices. In kitchens and baths provide non-conductive plates, all plates shall be oversized type. Install air-sealing gaskets under wall plates on all interior wall switches located on exterior walls, gaskets as manufactured by IC Pro, model#OS200 or approved equal.

4. Check final door swings so that switches are on strike side of door.

5. Flush wall switches shall be rated at 15 amperes, 125 volts, and shall have the operating mechanism totally enclosed in a high heat, non-flammable, non-hygroscopic molded compound case with terminal posts securely held in place to prevent turning, and shall have operating handles of the toggle type.

6. Wiring shall be concealed in walls, chases, recesses and hung ceilings. Refer to, and carefully check Architectural, Structural, Sprinkler, Plumbing and HVAC Drawings and details for locations where walls, partitions, ceilings, beams, columns and other surfaces are furred, locations of shafts and conflicts with work of other trades.

7. Approved Manufacturer: Leviton, Hubbel or Approved Equal.

I. WALL RECEPTACLES

1. Receptacles shall be provided as indicated on the plans and as per NEC Code. Receptacles shall be residential grade, wire grounding type.

2. All bathroom and exterior receptacles shall be Ground Fault Interrupter (GFI) protection type, 20 Ampere, 125 Volt.

3. All kitchen receptacles shall be Ground Fault Interrupter (GFI) protection type, 20 Amp, 125 Volt.

4. All general-purpose receptacles shall be rated at 15 Ampere, 125 Volt.

5. All air conditioner receptacles shall be rated at 20 Ampere, 125 Volt.

6. All receptacles and wall plates shall be white. All device plates shall have beveled edges and shall be installed vertically and with all four edges in continuous contact with finished wall surface without the use of mats or similar devices. In kitchens and baths provide non-conductive plates, all plates shall be oversized

type. Install air-sealing gaskets under wall plates on all interior wall receptacles located on exterior walls, gaskets as manufactured by IC Pro, model#OS200 or approved equal.

7. Wiring shall be concealed in walls, chases, recesses and hung ceilings. Refer to, and carefully check Architectural, Structural, Sprinkler, Plumbing and HVAC Drawings and details for locations where walls, partitions, ceilings, beams, columns and other surfaces are furred, locations of shafts and conflicts with work of other trades.

8. Approved Manufacturer: Leviton, Hubbel or Approved Equal.

J. DISTRIBUTION OF OUTLETS

1. Outlets, switches and receptacles shall be located as indicated on drawings and as required by National Electrical Code (NEC) section 210.52.

2. Each fixture, switch, receptacle etc., shall be provided with a recessed outlet box.

3. All outlets occurring in panels or other architectural features shall be centered accurately. All outlets shall be flush mounted.

4. In general the heights of outlets from centerline of outlet to finished floor shall be as follows:

   a. Switches 48" above finish floor and 46" above finish floor in all ADA handicapped adaptable apartments.

   b. Convenience receptacles 14" above finish floor and 18" above finish floor in all ADA handicapped adaptable apartments.

   c. Combination switches and receptacles, 48" above floor and 46" above finish floor in all ADA handicapped adaptable apartments.

   d. Air conditioning outlets 14" above finish floor and 18" above finish floor in all ADA handicapped adaptable apartments. Air conditioning outlets are not to be installed below fire escape accessible windows.

   e. Duplex small appliance receptacle outlets over kitchen counter tops shall be 46" above finish floor and 44" above finish floor in all ADA handicapped adaptable apartments.

   f. In rooms with 48" high ceramic tile walls, locate switch outlet 54" above floor.

g. Refrigerator outlets 54" above finish floor and stove outlets 30". Both centered behind appliances.

h. Range Hood connections shall be provided with a junction box at a height of 70 inches above finished floor and centered behind the range hood for hardwire connection to the exhaust fan and light contained therein. *In all ADA handicapped adaptable apartments, a 15-Ampere single pole wall switch shall be provided, at a height of 46" above finished floor, to simultaneously control the ON/OFF operation of the hood fan and light.*

5. Each bathroom receptacle shall be provided with a 20Ampere-dedicated circuit.

6. Two or more 20-Ampere small appliance branch circuits shall be provided to serve all receptacles in each kitchen, dining room or alcove areas.

7. Each living room, bedroom and dining room shall be provided with at least one individual dedicated 20-Ampere, 120-Volt circuit for each room for air conditioners as per N.Y.C. NEC 1999 amendment.

8. Hallways of ten (10) feet or more in length shall be provided with at least one receptacle.

9. No 120-volt circuit wire shall be smaller than number 12 gauge. Evenly distribute and balance all loads.

10. Where an exterior receptacle is required, the junction box shall be a galvanized waterproof type box with rubber gasket and threaded nut and the conduit to the main switch shall be galvanized.

11. Wiring shall be concealed in walls, chases, recesses and hung ceilings. Refer to, and carefully check Architectural, Structural, Sprinkler, Plumbing and HVAC Drawings and details for locations where walls, partitions, ceilings, beams, columns and other surfaces are furred, locations of shafts and conflicts with work of other trades.

K. LIGHTING FIXTURES

NOTE 1: FURNISH AND INSTALL ALL LIGHTING FIXTURES, INCLUDING ALL NECESSARY SUPPORTS, HANGERS AND PLASTER RINGS WHERE REQUIRED. ALL FIXTURES SHALL BE SUPPLIED COMPLETELY WIRED, ASSEMBLED, AND READY FOR INSTALLATION. ALL LIGHTING FIXTURES, REGARDLESS OF TYPE OR STYLE, SHALL BE UL LISTED.

NOTE 2: ALL APARTMENTS AREAS SHALL BE PROVIDED WITH CEILING MOUNTED FIXTURES CONTROLLED BY A WALL SWITCH AND ALL CEILING FIXTURES MUST BE MOUNTED IN THE CENTER OF ROOM.

1. Each area shall be provided with a lighting fixture as indicated below and drawings.

   A. Kitchens: Progress P7311-60STRWB (or HPD approved equal) complete with regressed white chassis, white contoured acrylic round cloud, with electronic ballast and four – 13 watt 4 pin QUAD lamps. Unit is 20”dia. X 4”high.

   B. Foyers and Hallways: Progress P7313-10STRWB (or HPD approved equal) complete with white acrylic diffuser with brass trim, with electronic ballast and two (2) - 13 watt compact fluorescent lamps. Unit is 11”dia. X 3 1/2” high

   C. Bedrooms: Progress P7324-10EBWB (or HPD approved equal) complete with white satin glass with brass trim, with electronic ballast and two (2) - 13 watt compact fluorescent lamps. Unit is 15 1/4”dia. X 4 1/2” high.

   D. Living Rooms: Progress P7325-10EBWB (or HPD approved equal) complete with white satin glass with brass trim, with electronic ballast and three (3) - 13 watt compact fluorescent lamps. Unit is 19”dia. X 5 1/2” Ht.

   E. Bathrooms (Wall mounted): Progress P7114-60EB (or HPD approved equal) complete with white acrylic diffuser, with electronic ballast and two (2) F17T8 lamps. Unit is 26¾”L x 6”Ht x 4 ¼” extension. Mounting height to centerline of fixture shall 84” above finished floor and vertical centerline of fixture must match centerline of medicine cabinet.

   F. Bathrooms (Ceiling mounted): Progress P7375-30STRWB (or HPD approved equal) complete with white acrylic diffuser, with electronic ballast and one (1) 13W compact fluorescent lamps. Unit is 9”dia. x 3 ¼”Ht.

   G. Public Hall Lights: Progress P7273-30 (trim) (or HPD approved equal) white acrylic diffuser and frame, unit is 26 ½”L x 26”W x 4 ¼”H. Provide surface mounted chassis (Progress P7213-30EB) with electronic ballast and two (2) FB32T8 lamps.

   H. First Floor Public Hall Lights: (See Drawings if Required) Progress P3498-86STRWB (or HPD approved equal) Burnished Chestnut trim with Alabaster diffuser, with electronic ballast and two (2) 13W compact fluorescent lamps. Unit is 17”D x 9”H.

I. Building Entrance Lights: Progress P5772-31EB (or HPD approved equal) Roman Coach wall lantern. Unit housing shall be black with built-in photocell, electronic ballast and one (1) 26W lamp. Unit is 26" Ht. with tail (19" without tail) and extends 7", and must be surface mounted with an appropriate recessed wall box. Mounting height of fixture to be indicated on drawings or as directed by architect. Rough-in wiring or mounting box must not be installed until final height and location is determined by H.P.D.

J. Mailbox Light: (mounted above mailboxes)- Progress P7120-30 (trim) (or HPD approved equal) white tri-band metal louvered sconce, horizontal wall mounted, unit is 14"w x 7"ht x 4" extent from wall. Provide recessed chassis (P7200-30STRWB) with electronic ballast and two (2) PL-13 lamps. Mounting height to centerline of fixture shall 84" above finished floor and vertical centerline of fixture must match centerline of mailbox assembly, unless otherwise noted.

K. Cellar/Bulkhead Stair (Interior): Progress P7133-30EB (or HPD approved equal) wraparound with white diffuser with electronic ballast and two (2) F32T8 lamps. Unit is 48"L x 4 ¼"H and extends 4".

L. Cellar/Bulkhead Stair (Interior): Progress P7129-30EB (or HPD approved equal) wraparound with white diffuser with electronic ballast and two (2) F17T8 lamps. Unit is 24"L x 4 ¼"H and extends 4".

M. Commercial and Community Spaces: Metalux W-432A-120V-EB8 (48"Lx14"W) (or HPD approved equal) surface mounted with wraparound acrylic diffuser, with electronic ballast and four (4) 32W T8 lamps.

N. Commercial and Community Spaces: Metalux W-417A-120V-EB8 (24"Lx14"w) (or HPD approved equal) surface mounted with wraparound acrylic diffuser, with electronic ballast and four (4) 17W T8 lamps.

O. Boiler Room and Cellar Areas: Metalux SN232-120V-EB8 (or HPD approved equal) general purpose strip fixture 48" long, complete with electronic ballast and two (2) 32W T8 lamps.

P. Exterior Passages: Progress P5816-31EB (or HPD approved equal) white polycarbonate globe and black finish wall mounted housing with built-in photocell, electronic ballast and one (1) - 18 watt, compact fluorescent lamp. All units to be mounted approximately 6 inches down from passage finished ceiling.

Q. Exterior Courts and Yards: Hubbell, high pressure sodium floodlight model #WPH-100S (or HPD approved equal), E18 lamp, 100 watts,

mogul base. All units to be wall mounted 10 to 12 feet above finished grade operated by an externally mounted photocell. See section 16A.12P.

R. Interior Public Hall Combination Exit Sign/Emergency lighting: Atlite Company, XLC4 series, #XLC46SR1 (or HPD approved equal), with 6" red letters, LED lamps, steel housing, two adjustable emergency lights and battery back-up system. Unit to be ceiling mounted.

S. Interior Commercial Space Combination Exit Sign/Emergency lighting: Atlite Company, XLC4 series, #XLC48SR1 (or HPD approved equal), with 8" red letters, LED lamps, steel housing, two adjustable emergency lights and battery back-up system. Unit to be ceiling mounted.

T. Exterior Egress Passageway Exit Sign: Sure-Lites Company, UX series, #UX7000RWH (or HPD approved equal), with 6" red letters, LED lamps, white aluminum housing, NEMA 4X compliant and battery back-up system. Unit to be wall mounted.

U. Exterior Egress Passageway Emergency Lighting: Sure-Lites Company, UEL series, #UEL1WHSD (or HPD approved equal), with two adjustable 12V lamp heads, aluminum housing, NEMA 4X compliant and battery back-up system. Unit to be wall mounted.

2. All light fixtures shall be provided with appropriate lamps, where not otherwise specified, 120 volt, 10,000 hours life for interior compact fluorescent and 130 volt rated at the exterior.

3. Wiring shall be concealed in walls, chases, recesses and hung ceilings. Refer to, and carefully check Architectural, Structural, Sprinkler, Plumbing and HVAC Drawings and details for locations where walls, partitions, ceilings, beams, columns and other surfaces are furred, locations of shafts and conflicts with work of other trades.

L. INTERCOM AND DOOR BUZZER SYSTEM

1. The work under this section consisted of furnishing and installation of new Intercom System ESG-750, designed and manufactured by Enterprise Service Group, Inc., Brooklyn, NY or approved equal as determined by HPD.

2. ESG-750 System will be used by the tenants to communicate with visitors at entrance lobby panel(s), and allow visitors entry to building by using ESG-700P (plastic) two (2) pushbutton apartment stations or approved equal as determined by HPD.

3. Construction and Features:

a. Provide all labor, materials and equipment for new Intercom System shall include entrance lobby panel(s), apartment stations, junction boxes, amplifiers, power supply units, entry and vestibule door locking systems, and all associated wiring.

b. All new Intercom Systems shall be “hard wired” and shall work independently, without use of telephone wiring.

c. System Operation:

1) Intercom System shall be constantly in stand-by mode and cannot be operated from apartment. When visitor comes to the building and presses code on the entry panel, system automatically activates apartment station at that apartment only. After tenant hears electronic signal, they must activate apartment station by pressing pushbutton “Talk/Listen”. If satisfied with the person’s identity, the tenant may press the button marked “Door”.

2) This button shall activate and unlock a door release(s) on the primary entrance door immediately (up to 5 seconds) and afterwards unlock the secondary door (up to a 15 second delay). At the time the secondary door unlocks the primary door will lock. Both doors will have locking mechanisms, specified under Sections 8D “Finish Hardware” and 8F “Aluminum entrance Work” or 8K “Steel Entrance Work”. The system shall be provided with a provision that in case of power failure or fire in the building the electromagnet(s) will automatically be de-activated and stay in that position until power is restored.

3) The System shall allow only one conversation at a time, without interference. The front entrance panel shall be semi-recessed or flush mounted with bevel unless otherwise noted. It shall contain a 12-pushbutton metal keypad for operation with Tenant’s name (or apartment number) and code number (Model ESG-350*).

*Note: Model ESG-350 with keypad, designed to provide more security for building entrance, because visitor shall press Code Number according to tenant’s directory instead of apartment number.

4) The Intercom System shall be provided with an amplification control and power circuits needed to operate the entire system. The amplifier shall provide door release operation selected by terminal connection and selected by delayed door timing.

5) The locks shall be furnished as specified by sections 8D, 8F and 8K. Refer to Building Entrance sections and drawings for details.

d. Building Entry Panel:

1) Provide a vandal-proof intercom panel ESG-350 as designed by Enterprise Service Group, Inc., or approved equal.

2) Entry panel faceplate shall be made of 16-gauge stainless steel. The plate edges shall be flush with a 45-degree bevel or semi-surface ¼" with a 90-degree bevel and the entire plate shall have a satin finish.

3) The building address and "Directory For Users" shall be engraved on the panel and filled with black paint.

4) The panel is custom designed to the width and height requirements for each specific installation.

5) The micro switches with 50,000.00 cycles shall be soldered to a circuit board and bolted to the protective bracket.

6) The 2 ½" dia. Speaker with a mylar cone, shall be mounted behind a protective perforated metal panel. The speaker plate shall be mounted on the entry panel behind a grid of holes no larger than 3/16" (.187).

7) The entry panel shall incorporate a postal door release system. This system shall allow entry to a postal representative with a special master lock/key mechanism mounted in the entry panel. The lock/key mechanism shall be specified to the postal zone in which the building is located.

8) Flush or semi-surface mounted panels shall be precisely drilled and anchored into a steel mounted recessed back box, set into a masonry wall. The back box shall be mounted so that the bottom of the box shall be 48" above the finished floor. For installation of the panel at building entrances with handicapped access, see Section 1F "SUPPLEMENT OF HANDICAPPED REQUIREMENTS FOR PUBLIC AREAS".

9) All mounting back boxes for masonry installation shall be fabricated from 16-gauge galvanized steel.

10) As in the case when entry panels are mounted in entry door frames, the installation shall be coordinated with the door manufacturer.

e. Apartment Station:

1) Apartment station unit ESG-750P (White ABS plastic) shall be as designed and manufactured by Enterprise Service Group, Inc., or approved equal.

2) The intercom apartment station unit shall be; three-wire, two solid pushbuttons (first – "Talk/Listen" and second – "Door" for door operation).

3) Unit dimensions shall be 6 ¾" h X 5" w X 1 ¼" d.

4) The speaker shall be a 2 ½" diameter Mylar cone.

5) The intercom apartment station shall be surface mounted and be located as indicated on the drawings. Top of the unit shall be located at 54" above the finished floor and 48" above finished floor in ADA Handicapped Adaptable apartments.

f. Amplifier:

1) Amplifier ESG-700NP or approved equal, shall work at the time with specified locking devices.

a. Amplifier shall contain, built in:
-Door time delay.
-Power supply for locking devices.
-Postal door release.
-2 tone generators with different sounds for ring-up and private doorbell.
-Adjustable volume for conversation and ring-up.

g. Power Supplies:

1) Power Supplies for amplifier shall be A.C. power 120V single phase shall be provided from the house panel and stepped down via transformer. Transformer shall be UL listed, 120VAC/16-24VAC, 30VA Model PS-30A or approved equal.

2) The contractor shall submit shop drawings and wiring schematics of the Intercom System prior to commencing with the work.

3) The power supply cabinets shall be properly fused and connected to the 120V, 60-cycle service.

4) Provide a secondary power supply unit, Model ESG-700PS for support of Maglatch # 9032 and Electrolatch # 9012.

h. Wiring:

1) The system shall be wired in strict accordance with the manufacturer's wiring diagram and recommendations. 22 AWG solid copper wires must be used for new installations and 22 AWG stranded shielded 2-conductor cable must be used between the ESG-700NP amplifier and the speaker on the entrance lobby panel. All wiring shall be free of grounds and short circuits. Printed circuits in the system shall be approved for moist environments.

i. Training & Manuals:

1) The Intercom System installer shall provide training session for building Owner/Superintendent, in order to properly operate and maintain installed system.

2) A complete set of Operating Manuals shall be given to the building Owner and operating instruction (written in English and Spanish) with safety precautions, shall be supplied for every apartment in the building.

M. MASTER TELEVISION ANTENNA SYSTEM

1. A complete VHF and UHF television antenna system shall be provided with the proper roof antenna, amplifiers, wiring and conduit plus proper outlet in each living room.

2. The system shall receive, amplify and distribute to all outlets installed color and black and white TV channels and radio bands: Channel 2,4,5,7, 9, 11, 13 UHF 21,31,41,47 and FM and radio signals.

3. ANTENNA

a. Antenna shall be UHF/VHF/FM Type, suitable for outdoors use, Channel Master - Quantum Series, Model 1165B or approved equal.

b. Antenna shall be wall mounted to the stair bulkhead with two (2) heavy duty brackets, Channel Master, Model 9036 or approved equal, If a bulkhead is not available, two (2) vent mount brackets can be used, Channel Master, Model 9001 or approved equal.

c. Antenna shall be mounted on a 10 foot 1 1/2" - 16GA. steel mast, Channel Master Model 161 NOTE 1:7 or approved equal

4. DISTRIBUTION AMPLIFIERS

a. Amplifier(s) shall provide one (1) coaxial output for each apartment.

b. UNITS AS FOLLOWS:

1) 2 Apartments - Model 3043

2) 4 Apartments - Model 3044

3) 8 Apartments - Model 3045

4) More than 8 Apartments - multiple units can be used in parallel to obtain the necessary number of outputs.

5) All units as manufactured by Channel Master or approved equal.

5. WIRING

a. Television wiring shall include a separate cable wire run for each apartment. Cable wire shall run from outlet in each apartment to amplifiers in cellar/basement. Each wire run shall clearly tagged in cellar, indicating apartment of origin.

b. Cable runs must be continuous with no splices.

c. All wiring to be run within partitions.

d. All wiring shall be 75 OHM coaxial cable RG - 6U type.

6. OUTLETS

a. Outlets shall be coaxial type mounted on an appropriate back (Gem.) box

b. Outlets to be mounted 14" above finish floor and 18" above finish floor in handicapped adaptable apartments.

c. All outlets to be located within four (4) feet of an electrical outlet.

d. All outlets shall be white.

7. All basic equipment shall be designed for continuous duty and shall be of single manufacturer.

8. Approved manufacturers include Channel Master, Blonder - Torque and Gerald.

9. A guarantee of the entire master antenna system shall be provided for a term of one (1) year against all electrical and mechanical defects, and including one (1) year's service starting from *when* ***Final Certificate of Occupancy*** is issued from Department of Buildings.

10. Entire installation must provide a complete and functioning system. Any items, devices, equipment or requirements not indicated above, must be provided at the contractor's expense.

N. TELEPHONE SYSTEM

1. The telephone system shall be a complete and functioning system. Each apartment shall be provided with a separate line from utility interface to an outlet in apartment.

2. Furnish and install all continuous riser conduits, sleeves, pull boxes as required by Telephone Company. Each line of apartments shall be provided with a separate 1 1/2 inch riser conduit and each apartment shall be provided with pull box.

   a. Conduit type shall be one of the following:

      1) Electrical metallic tubing

      2) Rigid metal conduit

      3) Intermediate metal conduit

      4) Metallic duct

   b. All riser conduits shall be located within partitions.

   c. Each conduit riser shall terminate in cellar/basement at telephone company panel, panel location to be determined by Telephone Company.

3. All pull boxes shall be located within closets, whenever possible; or as requested by utility company or building management group.

   a. Pull boxes requirements are as follows:

      1) Construction to NEC Article 370-20 standards

      2) Pull Boxes to be positioned immediately after second 90-degree sweep. Pull boxes are not permitted in the 90-degree sweep.

      3) Change in direction of conduit run cannot occur in a pull box.

4) Conduit will enter and leave in a single band, no multi stacking.

4. Sleeves are required at the end and beginning of a conduit run. If proposed conduit run ends or begins with a pull box, sleeves are not necessary. Conduits should not extend more than twelve inches (12") beyond the wall/floor terminating point unless an obstacle is to be bypassed.

5. Each apartment shall be provided with separate 4 conductor telephone wire from cellar / basement utility panel to apartment modular jack. Each wire must be clearly tagged identifying the apartment of origin.

6. Provide a minimum of one (1) 120 Volt junction box located at basement utility interface panel. Circuit shall be a individual 20 AMP circuit.

7. Each apartment shall be provided with 4-conductor modular telephone jack and mounting box.

a. See drawings for jack locations:

1) Living room, bedroom or dining room jacks shall be flush mount type, 14 " above finish floor and 18" above finish floor in ADA handicapped adaptable apartments.

2) Kitchens shall receive a wall phone jack with quick connect terminals, 60" above finished floor and 48" above finish floor in ADA handicapped adaptable apartments.

b. All jacks shall be white.

c. Jacks to be located within three (3) feet of an electrical receptacle.

8. Contractor shall provide notification to Telephone Company and written notification to building management for installation of telephone system prior to construction. Entire installation must conform to telephone company's requirements. Any items, devices, fees, equipment or requirements not indicated above, must be provided at the contractor's expense. Contractor shall have the option of contracting with the Telephone Company to pre-wire the building for telephone service. All costs for this option to be borne by Electrical Contractor.

O. COMBINATION SMOKE AND CARBON MONOXIDE DETECTORS

1. Units shall be 120V hardwired with battery back up.

2. Smoke sensors shall be ionization type; CO sensor shall be electrochemical.

3. Units shall be UL listed; FHA, HUD and NFPA compliant.

4. Unit as manufactured by Kidde Company, Model: KN – COSM-IB, Part number: 900-0114 or approved equal.

5. Provide a combination smoke and carbon monoxide detector where indicated on drawings. Detectors shall be installed as per NEC requirements.

6. Locations:

   a. Outside of any room used for sleeping purposes, within 15 feet of the entrance to such room.

   b. In any room used for sleeping purposes.

   c. Commercial Spaces

   d. Tenant Laundry, Meeting or Office Areas

7. All detectors within any dwelling unit shall be interconnected to provide simultaneous operation of all detectors within any one particular dwelling unit.

8. All units installed in A.D.A. adaptable apartments and/or areas requiring A.D.A. devices, must be provided with a visual warning device for the hearing impaired. Unit shall mount directly on the combination detectors and interconnected as required by code. Kidde model# SL177i or approved equal.

P. PHOTO-ELECTRIC SENSOR SWITCHES

1. Photo-electric cell sensors shall be provided all exterior lighting fixtures for on/off operation. (Only if fixture is not provided with a factory installed internal sensor**)**

2. Units shall be weatherproof and corrosion resistant.

3. Photo-electric controlled light fixtures shall be activated by a bi-metal switch, providing a built-in, time delay to prevent accidental turn-off by momentary brightness, flashes or severe shock and vibration.

4. Unit must be UL listed, load rated at 1200 watts and standard turn on at 1 foot candle

5. Sensors must be mounted above light fixtures, out of direct light fixture discharge and direct sunlight.

6. Units as manufactured Mulberry, Model #30820 or approved equal.

7. All sensors shall be mounted in rear or side yards.

Q. WIRING FOR AUXILIARY EQUIPMENT

1. Boiler Room Wiring:

   a. An electrical distribution panel shall be provided in the boiler room. This panel provides power for all boiler room equipment and devices to include boiler, water heater, all pumps, control panels, etc.

   b. An electrical feeder shall be provided power from the building house panel to the boiler room distribution panel.

   c. A remote emergency equipment shutdown safety switch shall be provided at each means of egress from boiler room.

2. Intercom, Telephone and Master Television Systems:

   a. Each system shall be provided with a separate dedicated 20Amp, 120Vcircuit supplied from the house panel.

   b. Termination of circuits must be adjacent to final location of devices.

3. Electric Wiring For Compactor (Where Applicable):

   b. Provide a 120/208 volt, 3 phase, 4 wire feeder service equipment and terminating in a non-fused disconnect switch located adjacent to compactor.

4. Electric Wiring for Elevator (Where Applicable):

   a. Install a 120/208 volt, 3 phase, 4 wire feeder from service equipment and terminating in a fused disconnect 100AMP switch located in elevator machine room near the entrance door.

   b. In elevator pit locate on receptacle and switch operated porcelain lamp holder as required by code and elevator manufacturer.

5. All above equipment and devices will receive power from house panel.

R. WIRING

1. Conductors shall conform to A.S.T.M. and I.P.C.E.A. standards, and be UL listed.

2. Conductors shall have 600-volt insulation and shall be soft-annealed, uncoated copper with 98% conductivity. Conductors No. 10 or smaller for lighting and power shall be solid; conductors No. 8 and larger shall be stranded.

3. All conductors shall have identifiable lettering on the insulation jacket as to the voltage rating, wire type, A.W.G. size, insulation and manufacture ID.

4. The wire used shall be UL approved copper, type TW, THW or THH/WN. Each conductor shall be separately taped. Each phase leg shall be color-coded (Black-Phase A, Red-Phase B, Blue-Phase C, White-Neutral and Green-Ground). Where single circuit home runs are indicated on plan, combine circuits to make full use of common neutral.

5. Wiring shall be concealed in walls, chases, recesses and hung ceilings. Refer to, and carefully check Architectural, Structural, Sprinkler, Plumbing and HVAC Drawings and details for locations where walls, partitions, ceilings, beams, columns and other surfaces are furred, locations of shafts and conflicts with work of other trades.

6. All concealed wiring shall be in Metal Clad Armored type (commonly known as "BX"). The flexible metal covering shall be interlocked galvanized steel in intimate contact with the armor for the entire cable length.

7. All wiring shall be in rigid galvanized conduits, exposed wiring is not acceptable.

S. CONDUITS

1. All wire to be run concealed in partitions, floors and walls may be armored cable. EMT conduit may be exposed in cellars. Incoming service conductors and feeders shall be installed in rigid galvanized steel conduit. Where conduit is run in earth, provide one coat of asphalt paint. Exposed, interior conduit may be electric-metallic-tubing (EMT) with compression fittings. Exterior conduit must be heavy weight rigid galvanized

T. SAFETY SWITCHES

1. Unless otherwise noted, safety switches shall be horsepower rated 3 phase, 120 volts, with current rating as required and as approved by under writer's laboratories.

2. Approved Manufactures: Square D, General Electric, Westinghouse or Approved Equal.

U. POWER AND CONTROL WIRING

1. Except for heating controls, this contractor shall install control equipment etc., wiring and make all connections required for the proper operation of all motors. This contractor shall install all wiring and disconnect switches for ventilation blowers, water pumps, sprinkler alarm, ventilation controls and automatic controls. (See respective specifications for controls furnished by the Heating and Ventilation Contractor, Plumbing Contractor and Sprinkler Contractor). This contractor shall do all electrical apparatuses and wiring not specifically included by other contractors.

2. Mount all equipment controls, etc. furnished by other contractors.

V. SLEEVES

1. This work includes furnishing and cutting, setting and grouting of all sleeves or forms as may be necessary for conduit and equipment supplied under this contract. The work of this contractor shall include all necessary cutting and caulking of conduit in the sleeves to the approval of Architect. After the installation of all pipe sleeves they shall be grouted and surrounded with concrete the full depth of the foundation walls, by this contractor an made watertight.

W. SUPPORTS AND HANGERS

1. This contractor shall provide all required braces and hangers for conduits, pull-boxes, wiring troughs, and all other equipment installed by him. Do not use hangers and pipe supports of the mechanical trades.

16A.13 TESTS

1. Before Architect accepts work, the contractor shall make tests for the system as directed and as required by Code and Utility Company. Any defects shall be promptly remedied and at completion of all Electrical Work shall be left in perfect operating order.

2. All of the testing work shall be done when and as directed by Bureau of Electrical Control and Architect before the system is accepted. Place the system in operation and make all required corrections and adjustments.

16A.14 TEMPORARY WIRING

1. In buildings where electricity is available, arrangements for metering and distribution of construction power and lighting usage shall be made. Where no electricity is available within the building, it is this contractor's responsibility to obtain temporary power and light permits and set up temporary metering and distribution system. Remove at completion of all work.

NOTE: IF PERMISSIBLE BY UTILITY COMPANY, THE PERMANENT SERVICE MAY BE USED FOR CONSTRUCTION METERING.

2. The following temporary facilities and connections thereof shall be furnished, installed, maintained and removed by this contractor, at completion of all work:

   a. Power receptacles and wiring on all floors ready for plug connections for use by all contractors.

   b. Temporary lights and wiring on all floors, corridors, stair halls, sidewalk shed and cellar/basement.

   c. Lighting facilities for General Contractor's Field Office.

   d. Temporary wiring connections for bringing electric current to point of consumption from Utility Company point of entry.

3. Permanent wiring shall be made available as early as possible for temporary use. This contractor without additional cost shall provide any temporary connections required thereafter.

4. In the event the electric services are required for sanding of finished floors, etc., before permanent wiring has been installed it will be this contractor's obligation to provide required services through temporary wiring, so as not to delay progress of construction as a whole. Similarly, in the event the electric services are required for temporary heat before permanent wiring has been installed, it will be this contractor's obligation to provide required temporary wiring so as not to delay the progress of construction as a whole.

5. Adhere to OSHA safety standards for portable tools etc.

16A.15 GUARANTEES

1. Upon completion of all work to be performed under this Contract and acceptance of same by Architect, this contractor shall guarantee that all workmanship and materials used in the performance of this contact, shall remain free from defects for a period of one (1) year, in addition to manufacturer’s standard warranties. All guarantees to be from the date, when **Final Certificate of Occupancy** is issued from Department of Buildings. This contractor shall guarantee to repair or replace, as determined by Architect, any defective portions of the various systems described herein the guarantee period

END OF SECTION

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