PROJECT MANUAL

for

FOUR POINTS by SHERATON

Shenandoah, Texas

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TABLE OF CONTENTS

DIVISION 5 – METALS

SECTION	05120	STRUCTURAL STEEL
	05500	METAL FABRICATIONS
	05510	METAL STAIRS
	05720	ORNAMENTAL HANDRAILS AND RAILINGS
	05810	EXPANSION JOINT COVER ASSEMBLIES

DIVISION 6 – WOOD AND PLASTICS

SECTION	06100	ROUGH CARPENTRY
	06130	HEAVY TIMBER CONSTRUCTION
	06175	WOOD TRUSSES
	06400	ARCHITECTURAL WOODWORK

DIVISION 7 – THERMAL AND MOISTURE PROTECTION

SECTION	07130	SHEET WATERPROOFING
	07210	BUILDING INSULATION
	07240	EXTERIOR INSULATION AND FINISH SYTEMS
	07340	MEMBRANE ROOF
	07410	METAL ROOF PANELS
	07550	MODIFIED BITUMINOUS MEMBRANE ROOFING
	07600	FLASHING AND SHEET METAL
	07840	FIRESTOPPING
	07900	JOINT SEALERS

DIVISION 8 – DOORS AND WINDOWS

SECTION	08110	STEEL INSULATED DOORS AND PREHUNG ASSEMBLIES
	08145	PREFABRICATED DOOR AND FRAME ASSEMBLIES
	08150	STEEL DRYWALL FRAMES
	08210	WOOD DOORS
	08310	ACCESS DOORS AND PANELS
	08520	ALUMINUM WINDOWS
	08710	FINISH HARDWARE

DIVISION 9 - FINISHES

SECTION	09100	LATH AND PLASTER
	09260	GYPSUM BOARD ASSEMBLIES
	09265	GYPSUM BOARD SHAFT WALL ASSEMBLIES
	09300	TILE
	09515	ACOUSTICAL TILE CEILINGS
	09650	RESILENT FLOORING

	09655	RESILENT BASE AND ACCESSORIES
	09685	SHEET CARPET
	09720	WALL COVERING
	09910	PAINTING

DIVISION 10 – SPECIALTIES

SECTION	10150	COMPARTMENTS AND CUBICLES
	10210	LOUVERS
	10440	INTERIOR SIGNAGE
	10505	METAL LOCKERS
	10525	FIRE EXTINGUISHERS AND CABINETS
	10655	FOLDING PANEL PARTITIONS
	10810	TOILET ACCESSORIES

DIVISION 11 - EQUIPMENT

SECTION	11457	FURNISHINGS

DIVISION 12 – FURNISHINGS

SECTION	12481	FLOOR MATS

DIVISION 13 – SPECIAL CONSTRUCTION

SECTION	13150	SWIMMING POOL AND SPA

DIVISION 14 – CONVEYING SYSTEMS

SECTION	14210	ELECTRIC TRACTION ELEVATORS
	14560	CHUTES

DIVISION 15 – MECHANICAL

SECTION	15242	VIBRATION ISOLATION
	15260	PIPING INSULATION
	15290	DUCTWORK INSULATION
	15330	AUTOMATIC SPRINKLER SYSTEM
	15410	PLUMBING PIPING
	15430	PLUMBING SPECIALTIES
	15440	PLUMBING FIXTURES
	15450	PLUMBING EQUIPMENT
	15575	BREACHING, CHIMNEYS AND STACKS
	15623	SPLIT SYSTEMS
	15782	PACKAGED TERMINAL AIR CONITIONING UNITS
	15835	ELECTRIC HEATERS

	15870	POWER VENTILATORS
	15890	DUCTWORK
	15910	DUCTWORK ACCESSORIES
	15936	AIR OUTLETS AND INLETS
	15975	CONTROL SYSTEMS

DIVISION 16 – ELECTRICAL

SECTION	16012	UNDERGROUND ELECTRICAL CONSTRUCTIONS
	16018	MOUNTING AND LOCATIONS
	16019	EQUIPMENT AND CONDUIT IDENTIFICATION
	16120	CONDUCTORS
	16131	OUTLETS AND BOXES
	16140	WIRING DEVICES
	16150	SUPPORTS, INSERTS AND HANGERS
	16162	SERVICE ENTRANCE/MAIN SWITCHBOARD
	16163	DISTRIBUTION BOARDS
	16164	BRANCH PANELBOARDS
	16170	SAFETY SWITCHES, CONTACTORS AND STARTERS
	16500	INTERIOR LIGHTING
	16721	FIRE ALARM SYSTEM

SECTION 02200

SITE CLEARING

PART 1 - GENERAL

1.1 SUMMARY

A. Provide site clearing operations.

1.2 SUBMITTALS

A. Clearing Plan: Submit list of proposed operations, and identify site improvements and features to remain. Include proposed location for stockpiles.

1.3 QUALITY ASSURANCE

A. Comply with governing codes and regulations. Use experienced workers.

PART 2 - PRODUCTS

2.1 MATERIALS

A.Tree protection, erosion control, siltation control, and dust control materials suitable for site conditions.

PART 3 - EXECUTION

3.1 SITE CLEARING OPERATIONS

A. Protection of existing trees, vegetation, landscaping, and site improvements not scheduled for clearing which might be damaged by construction activities.
B. Trimming of existing trees and vegetation as recommended by arborist for protection during construction activities.
C. Clearing and grubbing of stumps and vegetation, and removal and disposal of debris, rubbish, des ignated trees, and site improvements.
D. Topsoil stripping and stockpiling.
E. Temporary erosion control, siltation control, and dust control.
F. Temporary protection of adjacent property, structures, benchmarks, and monuments.
G. Temporary relocation of play structures, fencing, and site improvements scheduled for reuse.
H. Watering of trees and vegetation during construction activities.
I. Removal and legal disposal of cleared materials.

3.2 CLEARING

A. Prevent damage to existing improvements indicated to remain, including improvements on and off site. Protect existing trees and vegetation indicated to remain. Do not stockpile materials and restrict traffic within drip line of existing trees to remain. Provide and maintain temporary guards to encircle trees or groups of trees to remain; obtain approval before beginning work.
B .Water vegetation as required to maintain health. Cover temporarily exposed roots with wet burlap and backfill as soon as possible. Coat cut plant surfaces with approved emulsified asphalt plant coating.
C. Repair or replace vegetation which has been damaged or pay damages. Remove heavy growths of grass before stripping. Stockpile satisfactory topsoil containing no large stones, foreign matter and weeds on site for reuse.
D. Completely remove all improvements including stumps and debris except for those indicated to remain. Remove below grade improvements at least 12" below finish grade and to the extent necessary so as not to interfere with new construction. Remove abandoned mechanical and electrical work as required.

E. Prevent erosion and siltation of streets, catch basins and piping. Control windblown dust. Remove waste materials and unsuitable soil from site and dispose of in a legal manner.

END OF SECTION

SECTION 02300

EARTHWORK

PART 1 - GENERAL

1.1 SUMMARY

a. Perform complete geotechnical investigation and comply with recommendations of investigation report.
b. Perform excavation, filling, compacting and grading operations both inside and outside building limits as required for below-grade improvements and to achieve grades and elevations indicated. Provide trenching and backfill for mechanical and electrical work and utilities.
c. Provide subbase materials, drainage fill, common fill, and structural fill materials for slabs, pavements, and improvements.
d. Provide suitable fill from off-site if on-site quantities are insufficient or unacceptable, and legally dispose of excess fill off-site.
e. Provide rock excavation without blasting unless blasting is specifically authorized.

1.2 SUBMITTALS

a. Product Data: Submit manufacturer's product data and installation instructions for each material and product used.
b. Test Reports: Submit for approval test reports, list of materials and gradations proposed for use.

1.3 QUALITY ASSURANCE

a. Compaction:
    1). Under structures, building slabs, steps, pavements, and walkways, as required by geotechnical report.
    2). Under lawns or unpaved areas, as required by geotechnical report.
b. Grading Tolerances Outside Building Lines:
    1). Lawns, unpaved areas, and walks, plus or minus 1 inch.
    2). Pavements, plus or minus 1/2 inch.
c. Grading Tolerance for Fill Under Building Slabs: Plus or minus 1/2 inch measured with 10 foot straightedge.

PART 2 - PRODUCTS

2.1 MATERIALS

a. Subbase material (as required by geotechnical investigation and design engineer): Gravel or crushed stone graded for intended use as subbase for paving materials specified.
b. Drainage fill (as required by geotechnical investigation and design engineer): Washed gravel or crushed stone, 1/4" to 3/4" size; ASTM C 33, Size 67.
c. Common fill (as required by geotechnical investigation and design engineer): Mineral soil substantially free from organic and unsuitable materials, and free from rock or gravel larger than 2" in diameter; 80 percent passing No. 40 sieve and not more than 50 percent passing No. 200 sieve.
d. Structural fill (as required by geotechnical investigation and design engineer): Gravel or sandy gravel free of organic and unsuitable materials and within the following gradation limits: 4" sieve, 100 percent finer by weight; 1" sieve, 60 to 100 percent; No. 4 sieve, 25 to 85 percent; No. 20 sieve, 10 to 60 percent; No. 50 sieve, 4 to 35 percent; No. 200 sieve, 0 to 5 percent.

PART 3 - EXECUTION

INSTALLATION

a. Comply with requirements of geotechnical investigation report.
b. Excavation is unclassified and includes excavation to subgrade regardless of materials encountered. Repair excavations beyond elevations and dimensions indicated as follows:
    1). At Structure: Concrete or compacted structural fill.
    2). Elsewhere: Backfill and compact as directed.

c. Maintain stability of excavations; coordinate shoring and bracing as required by authorities having jurisdiction. Prevent surface and subsurface water from accumulating in excavations. Stockpile satisfactory materials for reuse, allow for proper drainage and do not stockpile materials within drip line of trees to remain.
d. Compact materials at the optimum moisture content as determined by ASTM D 1557 by aeration or wetting to the percentages of maximum dry density: required by the geotechnical investigation recommendations and design engineer.
e. Place acceptable materials in layers not more than 8" loose depth for materials compacted by heavy equipment and not more than 4" loose depth for materials compacted by hand equipment to subgrades indicated as follows:
    1). Structural Fill: Use under foundations, slabs on grade in layers as indicated.
    2). Drainage Fill: Use under designated building slabs, at foundation drainage and elsewhere as indicated.
    3). Common Fill: Use under unpaved areas.
    4). Subbase Material: Use under pavement, walks, steps, piping and conduit.
f. Grade to within 1/2" above or below required subgrade and within a tolerance of 1/2" in 10'.
g. Protect newly graded areas from traffic and erosion. Recompact and regrade settled, disturbed and damaged areas as necessary to restore quality, appearance, and condition of work.
h. Control erosion to prevent runoff into sewers or damage to sloped or surfaced areas.
i. Control dust to prevent hazards to adjacent properties and vehicles. Immediately repair or remedy damage caused by dust including air filters in equipment and vehicles. Clean soiled surfaces.
j. Dispose of waste and unsuitable materials off-site in a legal manner.

END OF SECTION

SECTION 02360

TERMITE CONTROL

PART 1 - GENERAL

1.1 SUMMARY

a. Provide soil treatment for termite control.

1.2 SUBMITTALS

a. Product Data: Submit manufacturer's product data and installation instructions for each material and product used.
b. Warranty: Submit manufacturer's standard warranty. Include labor and materials to repair or replace defective materials.
   1). Warranty Period: 5 years.

1.3 QUALITY ASSURANCE

a. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

PART 2 - PRODUCTS

A. MATERIALS

a. Soil Treatment Materials: Soil treatment materials shall bear Federal registration number of U.S. Environmental Protection Agency and acceptable to authorities having jurisdiction. If acceptable, products may include chloropyrifos, permathrin, cypermethrine, fenvalerate, isofenphose.

PART 3 - EXECUTION

INSTALLATION

a. Treat soil in strict compliance with National Pest Control Association standards and with manufacturer's printed instructions and recommendations.
b. Treat areas under floor slabs prior to placement of concrete if possible to avoid drilling. Treat areas outside foundation walls after excavation, filling and grading are complete. Do not apply treatment to frozen or excessively wet soils.
c. Post signs and other warnings indicating that soil poisoning has been applied. Protect persons and property from injury or damage from soil treatment work.

END OF SECTION

SECTION 02370

EROSION AND SEDIMENTATION CONTROL

PART 1 - GENERAL

1.1 SUMMARY

a. Provide erosion and sedimentation control in accordance with requirements of Authority Having Jurisdiction.

END OF SECTION

SECTION 02510

WATER DISTRIBUTION

PART 1 - GENERAL

1.1 SUMMARY

a. Provide an operating underground, exterior water service piping system. Include piping, control valves, and steel and concrete anchorages. Include water service system and piping, accessories, and appurtenances for potable water and fire service outside the building.
b. Comply with applicable building code requirements and requirements of authorities having jurisdiction.

1.2 SUBMITTALS

a. Product Data: Submit manufacturer's product data and installation instructions for each material and product used.
b. Shop Drawings: Submit shop drawings indicating material characteristics, details of construction, connections, and relationship with adjacent construction.

1.3 QUALITY ASSURANCE

a. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.
b. Testing: Hydrostatic tests at minimum 1-1/2 times working pressure for 2 hours.
c. Testing: Hydrostatic tests at minimum 2 times working pressure for 2 hours.

PART 2 - PRODUCTS

2.1 MATERIALS

a. Ductile Iron Pipe 4 Inches and Larger: AWWA C151, Class 50 minimum.
    1). Lining: AWWA C104, cement mortar, seal coated.
    2). Gaskets: AWWA C111.
    3). Ductile Iron and Cast Iron Fittings, AWWA C110 or AWWA C153, 250 psi minimum pressure rating; AWWA C104 cement mortar lining; AWWA C111 rubber gaskets.
b. PVC Pipe 4 Inches and Larger: AWWA C900, Class 150.
    1). Gaskets: ASTM F 477, elastomeric seal.
    2). PVC Couplings and Fittings: AWWA C900 with ASTM F 477 elastomeric seal gaskets.
    3). Ductile Iron and Cast Iron Fittings: AWWA C110, 250 psi pressure rating; AWWA C104 cement mortar lining; AWWA C111 rubber gaskets.
c. Fiberglass Pressure Pipe 2 Inches and Larger: AWWA C950, Type I filament wound or Type II centrifugally cast; Grade 1 or 2; fiberglass fittings, AWWA C950, RTRP, 200 psi minimum pressure rating.
d. Copper Water Tube 2 Inches and Smaller: ASTM B 88, Type K seamless, annealed temper; ANSI B16.22 wrought-copper solder-joint copper fittings.
e. Copper Water Tube 2 Inches and Smaller: ASTM B 88, Type L seamless, annealed temper; ANSI B16.22 wrought-copper solder-joint copper fittings.
f. PVC Pipe 3 Inches and Smaller: ASTM D 1785, Schedule 40; Schedule 40 socket-type PVC fittings or elastomeric gasketed joint.
g. Polybutylene Pipe 3 Inches and Smaller: AWWA C902, DR 17 barbed insert type brass or bronze fittings.
h. Polybutylene Pipe 3 Inches and Smaller: ASTM D 2662, SIDR15 barbed insert type brass or bronze fittings.
i. Polybutylene Tubing 3 Inches and Smaller: ASTM D 2666, SIDR13.5 brass or bronze fittings.
j. Polyethylene Pipe and Tubing 3 Inches and Smaller: AWWA C901; barbed insert type copper alloy or nylon fittings.
k. Couplings: ASTM A 126, gray iron sleeve assembly with followers, rubber gaskets, bolts, nuts,

and enamel paint finish.

l. Valves:
   1). Gate Valves - Standard shut-off valves with maximum working pressure cast into body, outside-screw-and-yoke type complying with AWWA C500.
   2). Check Valves - Gravity-operated, regular type, iron-bodied bronze fitted with metal-to-metal or rubber faced checks, complying with AWWA C506.
   3). Butterfly Valves - Rubber seated, equipped with gear or traveling nut accuator to minimize water hammer, complying with AWWA C504.

m. Anchorages:
   1). Clamps, Straps, and Washers: ASTM A 506, steel.
   2). Rods: ASTM A 575, steel.
   3). Rod Couplings: ASTM A 197, malleable iron.
   4). Bolts: ASTM A 307, steel.
   5). Cast-Iron Washers: ASTM A 126, gray iron.
   6). Concrete Reaction Backing at all bends greater than or equal to forty-five degrees: ASTM C 150, Type I Portland cement for 3000 psi, 28 day minimum compressive strength.

n. Fire Service Main Accessories:
   1). General - Provide cast-iron sidewalk fire hydrants with threaded male nozzle conforming to "American National Standard Fire Hose Connection Screw Threads" unless other hose connection required by local fire authorities. Furnish units which are FM approved and UL listed.
   2). Working pressure, 150 psi unless otherwise indicated.
   3). Valve opening direction, counter-clockwise, indicated by arrow and the word "Open" cast on dome.
   4). Nozzles, two 2-1/2" hose connections and one 4" pumper connection with caps and chains. Nozzle cap nuts to match operating stem nuts. Operating stem nuts as required by local authorities.

PART 3 - EXECUTION

3.1 INSTALLATION

a. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Install materials and systems in proper relation with adjacent construction. Coordinate with work of other sections.
b. Clean and disinfect system. Test for proper operation. Backfill and protect work from damage.

END OF SECTION

SECTION 02535

SANITARY AND STORM SEWER COLLECTION SYSTEM

PART 1 - GENERAL

1.1 SUMMARY

a. Provide sanitary and storm sewerage system.

1.2 SUBMITTALS

a. Product Data: Submit manufacturer's product data and installation instructions for each material and product used.
b. Shop Drawings: Submit shop drawings indicating material characteristics, details of construction, connections, and relationship with adjacent construction.

1.3 QUALITY ASSURANCE

a. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

PART 2 - PRODUCTS

A. MATERIALS

a. Pipe and Fittings:
   1). Ductile Iron Pressure Pipe: AWWA C151, Class 150 for push-on joints. Rubber gasket joints for mechanical joints or "push on" type joints shall conform to the requirements of ANSI Standard A21.11 (AWWA Standard C111), "Rubber Gasket Joints for Ductile Iron Pressure Pipe and Fittings", latest revision.
   2). PSP Poly Vinyl Chloride (Schedule 40 PVC) Sewer Pipe - PSP pipe, fittings and joints shall conform to ASTM Designation D-3034 and D-3212 with the exception that solvent cement joints shall not be used.
   3). Nonreinforced-Concrete Sewer Pipe and Fittings: ASTM C 14, Class 2, for gasketed joints.
   4). Reinforced-Concrete Sewer Pipe and Fittings: ASTM C 76, Class as indicated, with modified tongue and groove for gasketed joints complying with ANSI/ASTM C443..
   5). Poly Vinyl Chloride (Schedule 40 PVCP) – ANSI/ASTM D3034, Type PSM.
b. Manholes:
   1). Precast Concrete Manholes: ASTM C 478.
   2). Cast-In-Place Concrete Manholes: 3000 psi.
   3). Manhole Steps: Grey cast iron, ANSI/ASTM A48, Class 30 B, integrally cast in manhole sidewalls, unless otherwise indicated.
   4). Manhole Frames and Covers: Grey cast iron, ANSI/ASTM A48, Class 30 B with lettering.
c. Cleanouts:
   1). Cast-iron.
   2). PVC with cast-iron adapter.
d. Catch Basins for Storm Sewerage System:
   1). Precast Concrete Catch Basins: ASTM C 478 or ASTM C 858.
   2). Catch Basin Frames and Grates: Grey cast iron, ANSI/ASTM A48, Class 30 B.
e. Outfalls for Storm Sewerage System: Cast-in-place reinforced concrete pipe, head wall apron, tapered sides, and rip rap.
f. Dry Wells for Storm Sewerage System: ASTM C 858, precast reinforced perforated concrete rings with cast-in-place concrete floor and lift-off concrete cover.
g. Trench Drains for Storm Sewerage System: Interlocking precast polymer concrete modular units with grates, channel caps, and related accessories.
h. Identification: Metallic-core plastic underground warning tapes.

PART 3 - EXECUTION

INSTALLATION

a. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Install materials and systems in proper relation with adjacent construction. Coordinate with work of other sections.
b. Where connections are made to existing systems, rout out old drainage lines.
c. Test for proper operation. Clean and protect work from damage.

END OF SECTION

SECTION 02620

SUBDRAINAGE

PART 1 - GENERAL

1.1 SUMMARY

a. Provide subdrainage systems for foundations, slabs, and below grade construction shown.

1.2 SUBMITTALS

a. Product Data: Submit manufacturer's product data and installation instructions for each material and product used.

1.3 QUALITY ASSURANCE

a. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

PART 2 - PRODUCTS

2.1 MATERIALS

a. Pipe and Fittings:
   1). Polyvinyl Chloride (PVC) Sewer Pipe and Fittings: ASTM D 3034, SDR 35, bell-and-spigot ends, for gasketed joints.
   2). Perforated, Polyvinyl Chloride (PVC) Sewer Pipe and Fittings: ASTM D 2729, bell-and-spigot ends, for loose joints.
b. Accessories:
   1). Pipe couplings.
   2). Cleanouts.
   3). Sleeves.
   4). Drainage conduits.
c. Drainage panels:
   1). Composite drainage panels with insulating drainage core and filter fabric.

PART 3 - EXECUTION

3.1 INSTALLATION

a. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Install materials and systems in proper relation with adjacent construction. Coordinate with work of other sections. Provide cleanouts.
b. Connect to above-grade and below-grade drainage systems. Drain system to approved location. Test for proper operation. Clean system out and protect work from damage.

END OF SECTION

SECTION 02740

BITUMINOUS CONCRETE PAVEMENT

PART 1 - GENERAL

1.1 SUMMARY

a. Provide hot-mixed asphalt paving over prepared subbase and roadway markings.
b. Comply with requirements of geotechnical investigation report for all paving construction.
c. Verify local requirements for fire access lane and approach with Authorities Having Jurisdiction.

1.2 SUBMITTALS

a. Product Data: Submit manufacturer's product data and installation instructions for each material and product used.
b. Test Reports: Submit for approval test reports.

1.3 QUALITY ASSURANCE

a. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.
b. Construction Tolerances:
    1). Base Course Thickness: Within 1/2 inch.
    2). Surface Course Thickness: Within 1/4 inch.
    3). Base Course Surface Smoothness: Within 1/4 inch.
    4). Surface Course Surface Smoothness: Within 3/16 inch. No ponding acceptable.
    5). Crowned Surfaces: Within 1/4 inch from template.

PART 2 - PRODUCTS

2.1 MATERIALS

a. Asphalt-Aggregate Mixture: Plant-mixed, hot-laid asphalt-aggregate mixture, ASTM D 3515, complying with local DOT and DPW regulations.
b. Prime Coat: Cut-back asphalt, ASTM D 2027.
c. Tack Coat: Emulsified asphalt, ASTM D 977.
d. Lane and Parking Area Marking Paint, White Color: Alkyd-resin type, ready-mixed, AASHTO M 248, Type I. Disabled accessible markings shall be blue.

PART 3 - EXECUTION

3.1 INSTALLATION

a. Asphalt/Aggregate Mixture: Comply with local DOT or DPW Standard Specifications for Highways and Bridges. Class as required by loading and use and as described in the geotechnical investigation report.
b. Remove loose material from compacted subbase. Proof roll and check for areas requiring additional compaction. Report unsatisfactory conditions in writing. Beginning of work means acceptance of subbase.
c. Apply prime coat to prepared subbase. Apply tack coat to previous laid work and adjacent in-place concrete surfaces.
d. Construct curbs to dimensions indicated or if not indicated to standard shapes. Provide tack coat between curb and pavement.
e. Begin rolling when pavement can withstand weight of roller. Roll while still hot to obtain maximum density and to eliminate roller marks.
f. Provide 4" lane and striping paint in uniform, straight lines. Provide wheelstops where indicated and securely dowel into pavement. Protect work from traffic and damage.
g. Test in-place asphalt work for thickness and smoothness. Remove and replace defective work and patch to eliminate evidence of patching

END OF SECTION

SECTION 02750

CEMENT CONCRETE PAVING

PART 1 - GENERAL

1.1 SUMMARY

a. Provide cast-in-place concrete paving over prepared subbase.
b. Comply with requirements of geotechnical investigation report for all paving construction.
c. Verify local requirements for fire access lane and approach with Authorities Having Jurisdiction.

1.2 SUBMITTALS

a. Product Data: Submit manufacturer's product data and installation instructions for each material and product used.
b. Design Mixes: Submit for approval design mixes, including adjustments for variations in project conditions.
c. Test Reports: Submit for approval test reports.

1.3 QUALITY ASSURANCE

a. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.
b. Construction Tolerance: 1/8" in 10' for grade and alignment of top of forms; 1/4" in 10' for vertical face on longitudinal axis.
c. Testing: Independent testing laboratory.
d. Mock-Ups: Provide mock-up as required to demonstrate quality of workmanship.

PART 2 - PRODUCTS

A. MATERIALS

a. Concrete: ASTM C 150, Type I, Portland cement; ASTM C 33, normal weight aggregates; potable water.
   1). Design Mix: ASTM C 94, 3000 psi, 28 day minimum compressive strength.
   2). Slump Limits: 8 inches minimum with superplasticizer, 3 inches otherwise.
   3). Air Content: 5 to 8 percent.
   4). Finish: Broom finish, perpendicular to direction of travel.
   5). Finish: Exposed aggregate.
b. Wire Mesh Reinforcement: Welded plain steel wire fabric, ASTM A 185.
c. Reinforcing Bars: Deformed steel bars, ASTM A 615, Grade 60.
d. Fabricated Bar Mats: Steel bar or rod mats, ASTM A 184, using ASTM A 615, Grade 60 steel bars.
e. Joint Dowel Bars: Plain steel bars, ASTM A 615, Grade 60.
f. Hook Bolts: ASTM A 307, Grade A threaded bolts.
g. Liquid-Membrane Forming and Sealing Curing Compound: ASTM C 309, Type I, Class A.
h. Bonding Compound: Polyvinyl acetate or acrylic base.
i. Epoxy Adhesive: ASTM C 881.
j. Lane and Parking Area Marking Paint, White Color: Alkyd-resin type, ready-mixed, AASHTO M 248, Type I. Disabled accessible markings shall be blue.

PART 3 - EXECUTION

INSTALLATION

a. Proof roll subbase and check for unstable areas. Report unsatisfactory conditions in writing. Beginning paving work means acceptance of subbase.
b. Comply with concrete section for concrete mix, testing placement, joints, tolerances, curing, repairs and protection.
c. Dispose of over-mixed concrete off-site in a legal manner.
d. Protect concrete paving until weight of a person will not leave any impression. Remove and

replace concrete paving which shows impressions or other defects. Skim coating defects is not acceptable.

END OF SECTION

SECTION 02780

UNIT PAVERS

PART 1 - GENERAL

1.1 SUMMARY

a. Provide unit pavers over cast-in-place concrete sub-base.

1.2 SUBMITTALS

a. Product Data: Submit manufacturer's product data and installation instructions for each material and product used.
b. Samples: Submit two representative samples of each material specified indicating visual characteristics and finish. Include range samples if variation of finish is anticipated.

1.3 QUALITY ASSURANCE

a. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.
b. Construction Tolerance: Unit-to-unit offset tolerance of 1/32 inch from flush and 1/8 inch in 10 feet from level or required slope.
c. Mock-Ups: Provide mock-up as required to demonstrate quality of workmanship.

PART 2 - PRODUCTS

2.1 PRODUCTS

a. Precast Concrete Pavers: Solid concrete units as manufactured by Pavestone. Color to match patterned concrete.
b. Mortar and Grout:
    1). Mortar: Portland cement and lime setting-bed mortar, ASTM C 270, Type M.
    2). Integral Color: Pigment additive.
c. Setting Bed:
    1). Mortar over concrete slab.
d. Joint Treatment:
    1). Joint Treatment: Latex-Modified Portland cement grout, 3/8 inch wide.
    2). Expansion joints: Elastomeric joint filler with horizontal sealant.

PART 3 - EXECUTION

3.1 INSTALLATION

a. Install materials in accordance with manufacturer's instructions and approved submittals. Install materials in proper relation with adjacent construction and with uniform appearance. Coordinate with work of other sections.
b. Restore damaged pavers. Clean and protect work from damage.

END OF SECTION

SECTION 02810

IRRIGATION SYSTEM

PART 1 - GENERAL

1.1 SUMMARY

a. Provide a complete automatic landscape irrigation system in all landscape areas.
b. Provide separate irrigation water meter and dedicated circuit for irrigation controller..

1.2 SUBMITTALS

a. Product Data: Submit manufacturer's product data and installation instructions for each material and product used.
b. Shop Drawings: Submit shop drawings indicating material characteristics, details of construction, connections, and relationship with adjacent construction.
c. Warranty: Submit manufacturer's standard warranty. Include labor and materials to repair or replace defective materials.
   1). Warranty Period: 5 years.
d. Operation and Maintenance Data: Submit manufacturer's operation and maintenance data, including operating instructions, list of spare parts and maintenance schedule.

1.3 QUALITY ASSURANCE

a. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.
b. Water Coverage for Turf Areas: 100 percent.
c. Water Coverage for Planting Areas: 100 percent.

PART 2 - PRODUCTS

2.1 MATERIALS

a. Pressure Piping Aboveground:
   1). PVC plastic, ASTM D 1785, Schedule 80 pipe; ASTM D 2467 Schedule 80 threaded PVC plastic pipe fittings; threaded joints.
b. Pressure Piping Underground:
   1). PVC plastic, ASTM D 2441, SDR 17 pipe; ASTM D 2467, Schedule 80, PVC plastic socket-type pipe fittings; solvent-cemented joints.
c. Circuit Piping:
   1). PVC plastic, ASTM D 2241, SDR 17 pipe; ASTM D 2466, Schedule 40, PVC plastic socket-type pipe fittings; solvent-cemented joints.
d. Branches and Offsets at Sprinklers and Devices: PVC plastic, ASTM D 1785, Schedule 80 pipe with threaded ends; ASTM D 2464, Schedule 80, PVC plastic threaded fittings; threaded joints.
e. Sleeves:
   1). PVC plastic, ASTM D 1785, Schedule 40 pipe; ASTM D 2466, Schedule 40, PVC plastic socket-type pipe fittings; solvent-cemented joints.
f. Valves with Cast Bronze Bodies:
   1). Manual Circuit Valves: Globe valves.
g. Backflow Preventer: Cast bronze.
h. Sprinklers:
   1). Flush surface type with fixed pattern.
   2). Shrubbery type with fixed pattern.
   3). Pop-up spray type with fixed pattern.
i. Valve Box: Precast concrete.
j. Valve Cover and Frame: Cast iron, lockable.
k. Automatic Control System:
   1). Exterior control enclosure.

2). Low voltage transformer.
3). Circuit control.
4). Timing device.

PART 3 EXECUTION

3.1 INSTALLATION

a. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Install materials and systems in proper relation with adjacent construction. Coordinate with work of other sections.
b. Restore damaged components and test for proper operation. Clean out system and protect work from damage.
c. Instruct Owner's personnel in proper operation and maintenance procedures.

END OF SECTION

SECTION 02820

FENCES AND GATES

PART 1 - GENERAL

1.1 SUMMARY

a. Provide aluminum fencing and gates for site perimeter and areas requiring separation.

1.2 SUBMITTALS

a. Product Data: Submit manufacturer's product data and installation instructions for each material and product used.
b. Samples: Submit two representative samples of each material specified indicating visual characteristics and finish. Include range samples if variation of finish is anticipated.

1.3 QUALITY ASSURANCE

a. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

PART 2 - PRODUCTS

2.1 MATERIALS

a. Framework:
   1). Aluminum, ASTM B 429, Schedule 40, alloy 6063-T6, mill finish.
b. Gates:
   1). Swinging type.

PART 3 - EXECUTION

3.1 INSTALLATION

a. Install materials in accordance with manufacturer's instructions and approved submittals. Comply with ASTM F 567. Install materials in proper relation with adjacent construction and with uniform appearance. Coordinate with work of other sections. Install posts to depth to avoid frost heave.
b. Restore or replace damaged components. Clean and protect work from damage.

END OF SECTION

SECTION 02900

PLANTING

PART 1 - GENERAL

1.1 SUMMARY

a. Provide landscape work:
   1). Trees, shrubs, plants, and ground cover.
   2). Finish grading and lawns.
   3). Topsoil and soil amendments.
   4). Initial maintenance of landscape materials.

1.2 SUBMITTALS

a. Product Data: Submit manufacturer's product data and installation instructions for each material and product used.
b. Shop Drawings: Submit shop drawings indicating material characteristics, details of construction, connections, and relationship with adjacent construction.
c. Maintenance Data: Submit maintenance data, including maintenance schedule.
d. Notices: Submit 48-hour written notice prior to turnover to Owner for watering and maintenance.
e. Warranty: Warrant trees and shrubs for a period of one year after date of Substantial Completion, against defects including death and unsatisfactory growth and except for defects resulting from neglect by Owner, abuse by others, or natural phenomena. Replace unsatisfactory plant material at end of warranty period at no additional expense to the Owner. One replacement is required.

1.3 QUALITY ASSURANCE

a. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.
b. Balled and Burlapped Plants and Trees: Graded to American Standard for Nursery Stock, ANSI Z60.1.
c. Testing: Laboratory testing for suitable soil amendments and fertilizer.

PART 2 - PRODUCTS

2.1 MATERIALS

a. Plant Materials:
   1). Deciduous trees.
   2). Deciduous shrubs.
   3). Coniferous and broadleaf evergreen trees and shrubs.
   4). Ground cover.
   5). Plants.
b. Lawns: Seed, new crop seed mixture.
c. Lawns: Sod, strongly rooted, 2 years old.
d. Topsoil: Fertile, friable topsoil from offsite.
e. Topsoil: From site stockpile with additional fertile, friable topsoil from local source.
f. Soil Amendments:
   1). Sand: Clean, washed sand.
   2). Commercial Fertilizer: Neutral character for plant materials and lawns.
   3). Mulch: Ground or shredded pine bark mulch.
g. Landscape Materials:
   1). Gravel: Water-worn gravel.
   2). Anti-Erosion Mulch: Seed-free salt hay or threshed straw.
   3). Plastic Sheet: Black polyethylene, 8 mils.
   4). Filtration Fabric: Water permeable fiberglass or polypropylene fabric.
   5). Wrapping: Tree-wrap tape.
   6). Stakes and Guys: New hardwood, treated softwood, or redwood.

PART 3 - EXECUTION

3.1 INSTALLATION

a. Install materials in accordance with approved submittals. Install landscape work in proper relation with adjacent construction and with uniform appearance. Coordinate with work of other sections.
b. Prepare topsoil by mixing fertilizer with loam. Apply fertilizer at a rate of 2 pounds of actual nitrogen per 1000 sq. ft. for plant beds and 2 pounds per inch of trunk for tree pits.
c. Install soil mix to a depth of 18" in plant beds.
d. For seeded lawns, apply seed at rate of 5 pounds per 1000 square feet.
e. For lawns with sod, place sod tightly, with grain in same direction.
f. Excavate as required for trees and shrubs.
g. Install plant material and backfill with soil mix. Stake and guy trees. Water thoroughly. Allow for soil settlement.
h. Provide maintenance and watering until turnover to Owner’s for maintenance and watering. Replace damaged materials and dead or unhealthy plants prior to turnover to Owner.

END OF SECTION

SECTION 03300

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

a. Provide cast-in-place concrete for general building construction, including, without limitation:
   1). Footings, foundations, and basement walls.
   2). Slabs on grade.
   3). Base course for exterior pavers.
b. Requirements (materials, mixes, finishes) apply to concrete work specified in other sections, such as sidewalk paving and fill for metal pan stair treads.
c. Comply with requirements of the structural design for the project.

1.2 SUBMITTALS

a. Product Data: Submit manufacturer's product data and installation instructions for each material and product used.
b. Shop Drawings: Submit shop drawings indicating material characteristics, details of construction, connections, and relationship with adjacent construction.
   1). Shop drawings shall be prepared and stamped by a qualified engineer licensed in the jurisdiction of the project.
c. Mix Design: Submit for approval mix design proposed for use.

1.3 QUALITY ASSURANCE

a. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.
b. Testing: Employ an independent testing agency acceptable to Owner to design concrete mixes and to perform material evaluation tests. Provide 7 and 28 day cylinder tests. Comply with ASTM C 143, C 173, C 31 and C 39.
c. Standards:
   1). ACI 301, Specifications for structural Concrete for Buildings.
   2). ACI 318, Building Code Requirements for Reinforced Concrete, and CRSI Manual of Standard Practice.
d. Floor Flatness and Levelness Tolerances:
   1). Subfloors Under Materials Such as Concrete Toppings, Ceramic Tile, and Sand Bed Terrazzo: ACI 302.1R and ASTM E 1155, floor flatness (Ff) of 15, floor levelness (Fl) of 13.
   2). Subfloors Under Materials Such As Vinyl Tile, Epoxy Toppings, Paint, and Carpet: ACI 302.1R and ASTM E 1155, floor flatness (Ff) of 20, floor levelness (Fl) of 17.

PART 2 - PRODUCTS

2.1 MATERIALS

a. Concrete Design Mixes, ASTM C 94, 28 Day Compressive Strength in accordance with structural design.
b. Formwork: Plywood or metal panel formwork sufficient for structural and visual requirements.
   1). Special forms for textured finish concrete.
c. Reinforcing Materials:
   1). Reinforcing Bars: ASTM A 615, Grade 60, deformed.
   2). Steel Wire: ASTM A 82.
   3). Steel Wire Fabric: ASTM A 185, welded.
   4). Steel Wire Fabric: ASTM A 497, welded, deformed.
   5). Fiber Reinforcement: Engineered polypropylene fibers for secondary reinforcement of slabs.

d. Concrete Materials: ASTM C 150, Type I, Portland cement; potable water.
   1). Normal weight aggregates, ASTM C 33.
   2). Light weight aggregates, ASTM C 330.
   3). Fly Ash: ASTM C 618, Type F.
   4). Fiber Reinforcement: Polypropylene fibers for secondary reinforcement, ASTM C 1116, Type III.
e. Concrete Admixtures: Containing less than 0.1 percent chloride ions.
   1). Air-Entraining Admixture: ASTM C 260, for exterior exposed concrete and foundations exposed to freeze-thaw.
   2). Water-Reducing Admixture: ASTM C 494, Type A, for placement and workability.
   3). High-Range Water-Reducing Admixture, Super Plasticizer: ASTM C 494, Type F or G for placement and workability.
   4). Water-Reducing, Accelerating Admixture: ASTM C 494, Type E for placement and workability.
   5). Water-Reducing, Retarding Admixture: ASTM C 494, Type D for placement and workability.
f. Auxiliary Materials:
   1). Reglets: Galvanized sheet steel reglets, minimum 26 gauge (.018 inch).
   2). Waterstops: Rubber or PVC waterstops.
   3). Vapor Retarder: ASTM E 154 polyethylene sheet, 8 mils.
   4). Nonslip Aggregate Finish: Fused aluminum oxide granules or crushed emery.
   5). Liquid Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class A.
   6). Water-Based Acrylic Membrane Curing Compound: ASTM C 309, Type 1, Class B.
   7). Evaporation Control Compound: Monomolecular film-forming compound.
   8). Underlayment Compound: Free-flowing, self-leveling cement-based compound.
   9). Bonding Compound: Polyvinyl acetate or acrylic base.
   10). Epoxy Adhesive: ASTM C 881, two-component material.
g. Concrete Finishes For Formed Surfaces:
   1). Surfaces Not Exposed To View: As-cast form finish.
   2). Surfaces Exposed To View: Smooth rubbed finish.
h. Concrete Finishes for Monolithic Slabs:
   1). Trowel finish for surfaces to be exposed to view or covered with resilient flooring, carpet, tile, or other thin finish system.
   2). Trowel and fine broom finish for surfaces to receive thin-set ceramic or quarry tile.
   3). Nonslip broom finish for exterior concrete platforms, steps, ramps,, and sloped walls.
   4). Nonslip aggregate finish for concrete stair treads, platforms, ramps, and sloped walks.
   5). Patterned finish, pressed into concrete.
   6). Colored wear-resistant finish, dry shake type.

PART 3 - EXECUTION

3.1 INSTALLATION

a. Comply with ASTM C 94. Do not change mix design without approval. Calcium chloride admixtures are not permitted.
b. Chamfer exposed edges/corners to provide straight lines.
c. Tolerance: Plus 1/8" in 10' for grade, alignment, and straightness.
d. Construction Joints: Use keyways, continue reinforcement through joint.
e. Expansion Joints: For exterior work locate 30' o.c. at approved locations. Provide smooth dowels across joint which permit 1" horizontal movement and no vertical shear movement.
f. Isolation Joints: Provide between slabs and vertical elements such as columns and structural walls.
g. Control Joints: Provide sawn or tooled joints or removeable insert strips; depth equal to 1/4 slab thickness. Spacing as required and approved.
h. Wall Finishes: As-cast and patched for concealed work; rubbed smooth, filled and cement paste

coated for exposed work.

i. Cure and protect work. Report defective work in writing.

END OF SECTION

SECTION 03310
PATTERNED CONCRETE

PART 1 GENERAL

1.1 SUMMARY

PART 1 - Section Includes:
1. Subbase.
2. Patterned concrete.
3. Color hardener.
4. Color curing compound.
5. Seal.

PART 2 - Related Documents:
1. The Contract Documents, as defined in the General Conditions, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other documents.

1.2 SUBMITTALS

A. Submit manufacturer's product specifications, mixing and installation instructions for each product.

PART 2 PRODUCTS

2.1 SUBBASE

A. Subbase shall consist of #4 graded aggregate.

2.2 CONCRETE

A. Concrete mix design shall have a minimum compressive strength of 3000 psi. Portland cement shall conform to ASTM C150, Type I, II or V depending on soil conditions. Aggregates shall conform to ASTM C33 and shall be 3/8" and smaller in size. Mixing water shall be fresh, clean and potable. A normal set or retarded set admixture complying with ASTM C494 may be used, however, admixtures may not contain calcium chloride.

2.3 COLOR HARDENER

A. Heavy duty color hardener shall be installed in addition to, but not as a substitute for, integral color. Color shall be specified by Architect.

2.4 COLOR CURING COMPOUND

A. Provide curing membrane which complies with ASTM C309. Thin compound using a mixture of one part compound to one part mineral spirits.

2.5 INTEGRAL COLOR

A. Integral color shall be dry shake with pigments, surfacing conditioner, dispersing agents and portland cement combined with aggregate. Color shall be specified by Architect.

2.6 PATTERN

A. Pattern shall be placed as indicated on working drawings using special imprinting tools.
   1. Rock Salt Texture, Natural Cementone, Sealed
   2. Random cobblestone – brick red (LM Scofield A-26)
   3. Fish tail – brick red.
   4. Detectable warning pavement

B. All patterned concrete shall be colored.

2.7 ACCEPTABLE MANUFACTURER

A. Products indicated above shall be manufactured and purchased from:
   1. Bomanite Corporation, 415-321-0718
   2. Increte Systems, Inco Chemical, Tampa, Florida

2.8 SEALER

A. Provide concrete sealer in accordance with Section 09900 – Painting on all patterned concrete surfaces.

PART 3 EXECUTION

3.1 SUBBASE INSULATION

A. Install subbase in a thickness as required on the drawings over compacted or undisturbed soil.

3.2 CONCRETE INSTALLATION

A. Place and screed concrete mix in a thickness as required by patterned concrete manufacturers. Install concrete in required areas as indicated in Section 03300, Parts 3.2 and 3.3. Surfaces shall be rolled or tamped to force aggregate away from surface, screeded and then finished with wood floats or steel trowels in preparation to receive pattern.

B. Color hardener shall be applied evenly to the plastic concrete surfaces by the dry shake method using a minimum of 60 pounds per 100 square feet. Apply hardener in two or more shakes, floated after each, and troweled only after the final float.

C. While the concrete is still in the plastic stage of set, patterned imprinting tools shall be applied to make the desired patterned surface.

D. Apply thinned color curing compound uniformly with a roller or sprayer. Coverage rate shall be 600 to 650 square feet per gallon or unthinned curing compound.

E. Locate 1/4” wide x 1” deep tooled control joints in accordance with industry standards and as indicated on working drawings after concrete has thoroughly cured.

F. Clean colored, patterned concrete surface to remove residual dust and dirt. Apply two coats of sealer to all colored, patterned concrete in accordance with sealer manufacturer’s recommended application specifications.

END OF SECTION

SECTION 03530

LIGHTWEIGHT CONCRETE TOPPING

PART 1 - GENERAL

1.1 SUMMARY

a. Provide monolithic concrete floor toppings over structural wood floor and deck systems.

1.2 SUBMITTALS

a. Product Data: Submit manufacturer's product data and installation instructions for each material and product used.

1.3 QUALITY ASSURANCE

a. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.
b. Mock-Ups: Provide mock-up as required to demonstrate quality of workmanship.

PART 2 - PRODUCTS

A. MATERIALS

a. Manufacturer and Type: Maxxon Corporation, “Gyp-Crete” gypsum cement based floor underlayment or equivalent.
b. Standard aggregate Toppings:
   1). Compressive Strength: 1,500 psi.
   2). Flame Spread: 0.

END OF SECTION

SECTION 04800

MASONRY ASSEMBLIES

PART 1 GENERAL

1.1 SUMMARY

A. Provide unit masonry construction:

1. Freestanding site masonry walls.

PART 2 PRODUCTS

2.1 MATERIALS

A. Concrete Masonry Units:

1. Concrete Masonry Units: ASTM C 90, 1500 f'm compressive strength:
   a. Light weight.

Size: Face dimension of 7-5/8 inches high by 15-5/8 inches long by width required for application.
Bond Pattern: Running Bond.

B. Mortar and Grout for Brick and Concrete Masonry Unit Assemblies:

1. Mortar Mix: ASTM C 270, Type S, for reinforced masonry, masonry below grade and masonry in contact with earth and ASTM C 270, Type N, for above-grade loadbearing and nonloadbearing walls and parapet walls and for interior loadbearing and nonloadbearing partitions.

Color: Natural color.

C. Reinforcing Steel:

1. Reinforcing Bars: ASTM A 615, Grade 60.

D. Reinforcing: Welded wire with deformed side rods.

1. Steel Wire: 9 gauge (.1875 inch) galvanized steel.

Type: Ladder type.

E. Ties and Anchors:

1. Anchor Bolts: ASTM A 307, Grade A, galvanized.

Post-installed Anchors: Chemical or expansion anchors.

F. Masonry Accessories:

1. Preformed control joint gaskets.

Bond breaker strips.
Cotton sash cord for weeps.

END OF SECTION

SECTION 05120

STRUCTURAL STEEL

PART 1 PART 1 GENERAL

1.1 SUMMARY

A. Provide structural steel for building construction including sub-framing units which are part of the general framing system. Include related anchors, fasteners, and connectors.

PART 2 PART. 2 PRODUCTS

2.1. MATERIALS

A Steel Materials:

1.Structural Steel Shapes, Plates, and Bars: ASTM A 572.

Cold-Formed Steel Tubing: ASTM A 500, Grade B.

Hot-Formed Steel Tubing: ASTM A 501

Anchor Bolts: ASTM A 307, nonheaded type.

Unfinished Threaded Fasteners: ASTM A 307, Grade A.

High-Strength Threaded Fasteners: ASTM A 325 or ASTM A 490, as applicable.

B. Auxiliary Materials:

1.Direct Tension Indicators: ASTM A 959.
Electrodes for Welding: AWS Code.
Structural Steel Primer Paint: SSPC - Paint 13, compatible with topcoats.
Cement Grout: Portland cement, sand.

END OF SECTION

SECTION 05500

METAL FABRICATIONS

PART 1 GENERAL

1.1 SUMMARY

A. Provide the following metal fabrications:

1. Ladders (including elevator pit ladders).
Shelf and relieving angles.
Miscellaneous framing and supports for suspended toilet partitions.
Miscellaneous framing and supports for suspended operable partitions.
Miscellaneous framing and supports for elevator hoisting machines and sheaves.
Miscellaneous framing and supports for elevator door sills.

PART 2 PRODUCTS

2.1 MATERIALS

A. Ferrous Materials:

1.Steel Plates, Shapes and Bars: ASTM A 36.
Steel Tubing: ASTM A 500 or A 501.
Zinc-Coating: Hot-dip galvanized coating for materials in exterior assemblies or exterior walls.

B.Fasteners:

1. Bolts and Nuts: Hexagon head type, ASTM A 307, Grade A.
Lag Bolts: Square head, FS FF-B-561.

C. Auxiliary Materials:

1.Shop Primer: Alkyd primer, FS TT-P-645, compatible with topcoats.
Galvanizing Repair Paint: SSPC - Paint 20.
Bituminous Paint: Asphalt mastic, SSPC - Paint 12.

END OF SECTION

SECTION 05510

METAL STAIRS

PART 1 GENERAL

1.1 SUMMARY

A. Provide steel-framed stairs and handrails. Steel stairs shall consist of steel channel stringers with steel risers and concrete filled steel pan treads. Handrails shall be 1-1/4 inch steel pipe handrails and 1/2" vertical pickets at 4 1/2" on center.

PART 2 PRODUCTS

2.1 MATERIALS

A. Materials:

1. Steel Plates, Shapes, and Bars: ASTM A 36.
Cold-Formed Steel Tubing: ASTM A 500.
Hot-Formed Steel Tubing: ASTM A 501.
Steel Pipe: ASTM A 53, standard weight (Schedule 40).
Rolled Steel Floor Plate: ASTM A 786.
Cold-Rolled Structural Steel Sheet: ASTM A 611, Grade A.
Fasteners: Plated fasteners, ASTM B 633, zinc-coated.

B. Grout: Factory-packaged, nonshrink, nonmetallic, ASTM C 1107.

END OF SECTION

SECTION 05720

ORNAMENTAL HANDRAILS AND RAILINGS

PART 1 GENERAL

1.1 SUMMARY

A. Provide ornamental handrails and railings:

1. Aluminum or stell ornamental handrails and railing systems.

PART 2 PRODUCTS

2.1 MATERIALS

A. Manufacturers: Ametco Manufacturing, Arden Architectural Specialties, Julius Blum & Co., Blumcraft of Pittsburgh, Livers Bronze, Milgo/Bufkin, Zephyr Metals or approved equal.

B. Provide the following: ornamental handrails shown on design drawings.

C. Aluminum:

1. Extruded Bar and Tube: ASTM B 221, alloy 6063 T5/T52.
Drawn Seamless Tube: ASTM B 483, alloy 6063 T832.
Castings: ASTM B 26, alloy A356 T6.
Finish: Baked enamel.

D. Auxiliary Materials:

1. Welding Electrodes and Filler Metal: AWS specifications.
Fasteners, Anchors, and Inserts: Non-corrosive.
Exterior/Interior Anchoring Cement: Erosion-resistant hydraulic expansion cement.

END OF SECTION

SECTION 05810

EXPANSION JOINT COVER ASSEMBLIES

PART 1 GENERAL

1.1 SUMMARY

A. Provide expansion joint cover assemblies:

1. Floor expansion joint cover assemblies.
Wall expansion joint cover assemblies.
Ceiling expansion joint cover assemblies.

PART 2 PRODUCTS

2.1 MATERIALS

A. Manufacturers: Balco/Metalines, Conspec Systems, MM Systems, Watson Bowman Acme, or approved equal.

B. Assemblies:

1. Type: Metal assembly with flat cover plates.

C. Expansion Joint Cover Materials:

1.Bronze: ASTM B 455, alloy C38500 for extrusions; alloy C28000, Muntz metal for plates.
Elastomeric Sealant: ASTM C 920, Use T.

D.Finishes:
Bronze Finish: Natural satin finish.

END OF SECTION

SECTION 06100

ROUGH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

a. Provide rough carpentry:
   1). Framing with dimension lumber.
   2). Framing with engineered wood products.
   3). Rooftop equipment bases and support curbs.
   4). Wood grounds, nailers, and blocking.
   5). Wood furring.
   6). Backing panels.
   7). Sheathing.
   8). Subflooring.
   9). Underlayment.
   10). Air infiltration barrier.

1.2 SUBMITTALS

a. Product Data: Submit manufacturer's product data and installation instructions for each material and product used.

1.3 QUALITY ASSURANCE

a. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.
b. Lumber Standards and Grade Stamps: U.S. Product Standard PS 20, American Softwood Lumber Standard and inspection agency grade stamps.
c. Construction Panel Standards: PS 1, U.S. Product Standard for Construction and Industrial Plywood; APA PRP-108.
d. Preservative Treatment: AWPA C2 for lumber and AWPA C9 for plywood; waterborne pressure treatment. Provide for wood in contact with soil, concrete, masonry, roofing, flashing, dampproofing and waterproofing.
e. Fire-Retardant Treatment: AWPA C20 for lumber and AWPA C27 for plywood; noncorrosive type. Provide at building interior where required by code.

PART 2 - PRODUCTS

2.1 MATERIALS

a. Dimension Lumber:
   1). Light Framing: Stud, No. 3 or Standard grade.
   2). Structural Framing: Select structural grade.
   3). Species: Any species of grade indicated.
   4). Exposed Framing: Appearance grade.
b. Boards:
   1). Exposed Boards: 19 percent moisture content.
   2). Concealed Boards: 19 percent moisture content.
c. Miscellaneous Lumber:
   1). Moisture Content: 19 percent.
   2). Grade: Standard grade light framing.
d. Engineered Wood Products:
   1). Prefabricated Wood I Joists: Stress-graded lumber bonded to APA performance rated panel with exterior type adhesive; design stresses for use intended.
   2). Composite Joists and Headers: Laminated lumber veneers; design stresses for use intended.
e. Construction Panels:

1). Combination Subfloor-Underlayment: APA Sturd-I-Floor, Exterior.
2). Combination Subfloor-Underlayment: APA Sturd-I-Floor, Exposure 1.
3). Subflooring: APA Sheathing, Exterior.
4). Subflooring: APA Sheathing, Exposure 1.
5). Roof Sheathing: APA Sheathing, Exterior.
6). Plywood Backing Panels: APA C-D Plugged Exposure 1 with exterior glue, fire-retardant treated.
7). Plywood Underlayment for Resilient Flooring: APA Underlayment Exterior.
8). Construction Panel Underlayment for Resilient Flooring: APA Sturd-I-Floor, Exterior.
9). Construction Panel Underlayment for Ceramic Tile: APA Sturd-I-Floor, Exposure 1.
10). Plywood Underlayment for Carpet: APA Underlayment Exposure 1.

f. Gypsum Sheathing:
1). Material: Glass-fiber-surfaced gypsum sheathing board.
2). Type: Type X fire-resistant ASTM C 79.

g. Auxiliary Materials:
1). Air Infiltration Barrier: High density polyethylene.
2). Sill Sealer Gaskets: Glass fiber strip resilient insulation.
3). Framing Anchors and Fasteners: Non-corrosive, suitable for load and exposure. Drywall screws are not acceptable.

PART 3 - EXECUTION

3.1 INSTALLATION

a. Wood framing: Comply with recommendations of NFPA Recommended Nailing Schedule, and NFPA National Design Specifications for Wood Construction.
b. Plywood: Comply with recommendations of APA Design and Construction Guide - Residential and Commercial.
c. Provide nailers, blocking and grounds where required. Set work plumb, level and accurately cut.
d. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Install materials and systems in proper relation with adjacent construction. Coordinate with other work.
e. Comply with manufacturer's requirements for cutting, handling, fastening and working treated materials.
f. Restore damaged components. Protect work from damage.

END OF SECTION

SECTION 06130

HEAVY TIMBER CONSTRUCTION

PART 1 - GENERAL

1.1 SUMMARY

a. Provide heavy timber construction for structural framing:
   1). Beams, girders, and purlins.
   2). Columns including posts and standards.

1.2 SUBMITTALS

a. Product Data: Submit manufacturer's product data and installation instructions for each material and product used.
b. Shop Drawings: Submit shop drawings indicating material characteristics, details of construction, connections, and relationship with adjacent construction.
   1). Shop drawings shall be prepared and stamped by a qualified engineer licensed in the jurisdiction of the project.

1.3 QUALITY ASSURANCE

a. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.
b. Standards: AITC 108, Standard for Heavy Timber Construction; AITC 112, Standard for Tongue and Groove Heavy Timber Roof Decking.
c. Preservative Treatment, Timber Framing: AWPA C2.
d. Fire-Retardant Treatment, Solid Wood Decking: AWPA C20, flame-spread not higher than 25, UL Test 723.

PART 2 - PRODUCTS

2.1 MATERIALS

a. Timber Framing:
   1). Species: Fabricator's option.
   2). Grade: Suitable for use intended.
   3). Stress Rating: Suitable for use intended.
   4). Moisture Content: 19 percent S-DRY.
   5). Dressing: Dressed 4 sides.
   6). Connectors, Anchors, and Accessories: ASTM A 36, structural steel, and ASTM A 307, steel bolts.

PART 3 - EXECUTION

3.1 INSTALLATION

a. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Install materials and systems in proper relation with adjacent construction and with uniform appearance. Coordinate with work of other sections.
b. Restore damaged components. Clean and protect work from damage.

END OF SECTION

SECTION 06175

WOOD TRUSSES

PART 1 - GENERAL

1.1 SUMMARY

a. Provide prefabricated and pre-engineered wood trusses.

1.2 SUBMITTALS

a. Product Data: Submit manufacturer's product data and installation instructions for each material and product used.
b. Shop Drawings: Submit shop drawings indicating material characteristics, details of construction, connections, and relationship with adjacent construction.
   1). Shop drawings shall be prepared and stamped by a qualified engineer licensed in the jurisdiction of the project.

1.3 QUALITY ASSURANCE

a. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.
b. Standards: TPI, Design Specification for Metal Plate Connected Wood Trusses; TPI, Design Specification for Metal Plate Connected Parallel Chord Wood Trusses.
c. Design Engineering: Registered engineer.
d. Fire-Retardant Treatment: AWPA C20 for lumber; noncorrosive type.

PART 2 - PRODUCTS

2.1 MATERIALS

a. Wood Trusses:
   1). Lumber Standard: PS 20 American Softwood Lumber Standard.
   2). Species: Manufacturer's option.
   3). Moisture Content: Seasoned, 19 percent maximum.
b. Connectors, Fasteners, and Metal Framing Anchors:
   1). Nails, Wire, Brads, and Staples: FS FF-N-105.
   2). Power Driven Fasteners: National Evaluation Report NER-272.
   3). Wood Screws: ANSI B18.6.1.
   4). Lag Bolts: ANSI B18.2.1.
   5). Bolts: ASTM A 307, Grade A; ASTM A 563.
   6). Metal Framing Anchors: Hot-dip galvanized steel sheet, ASTM A 653, G60.
   7). Connectors: Hot-dip galvanized steel sheet, ASTM A 653, G60.

PART 3 - EXECUTION

3.1 INSTALLATION

a. Comply with recommendations of TPI Design Specifications for Metal Plate Connected Wood Trusses.
b. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Install materials and systems in proper relation with adjacent construction. Coordinate with work of other sections.
c. Restore damaged components. Clean and protect work from damage.

END OF SECTION

SECTION 06400

ARCHITECTURAL WOODWORK

PART 1- GENERAL

1.1 SUMMARY

A. Provide interior architectural woodwork:

1. Standing and running trim and rails.
2. Casework and countertops.

PART 2- PRODUCTS

2.1 MATERIALS

A. Interior Standing and Running Trim and Rails:

1. Species for Opaque Finish: Any closed-grain hardwood or medium density fiberboard.
2. Grade: Paint.

B. Interior Plastic Laminate Clad Casework:

1. Laminate: High pressure decorative laminate, NEMA LD-3.
2. Grade: Custom.
3. Face Style: Reveal overlay.
4. Frame Fabrication: Face frame.

C. Casework Hardware and Auxiliary Materials:

1. Hardware Standard: ANSI/BHMA A156.9.
2. Hardware Finish and Base Metal: Satin Brass.

D. Interior Plastic Laminate Clad Countertops:

1. Laminate: High pressure decorative laminate, NEMA LD-3.
2. Grade: Custom.
3. Core: Plywood.
4. Edge: Laminate.

E. Solid Surfacing Material Countertops:

1. Type: Synthetic countertops.
2. Grade: Custom.
3. Edge: Decorative.

F. Shelving Specialties:

1. Shelving: Plywood with hardwood edgeboard.
2. Closet Rods: Chrome plated steel.

G. Auxiliary Materials:

1. Screws: FS FF-S-111.
2. Nails: FS FF-N-105.
3. Anchors: Type required for secure anchorage.

END OF SECTION

SECTION 07130

SHEET WATERPROOFING

PART 1 GENERAL

1.1 SUMMARY

A. Provide sheet membrane waterproofing systems.

PART 2 PRODUCTS

2.1 MATERIALS

A. Rubberized Asphalt Sheet Waterproofing:

1. Manufacturers: Grace Construction Products, W. R. Meadows, Mirafi Moisture Protection Products, Pecora or approved equal.
2. Membrane: Self-adhering rubberized asphalt and polyethylene sheet membrane, 56 mils thick, tensile strength 250 psi.

B. Flashing Materials and Protection Board: Compatible with membrane waterproofing.

END OF SECTION

SECTION 07210

BUILDING INSULATION

PART 1 GENERAL

1.1 SUMMARY

A. Provide building insulation and vapor retarders as required.

PART 2 PRODUCTS

2.1 MATERIALS

A. Thermal Board Insulation:
   1). Application: Foundation walls.
   2). Type: Polyisocyanurate board, rigid, FS HH-I-1972/1, Class 2.

B. Thermal Blanket/Batt Insulation:
1. Application: Thermal insulation in studs in exterior walls.
2. Application: Thermal insulation at underside of roofs, over heated spaces and over soffits.
   3). Type: Glass fiber or mineral slag fiber, ASTM C 665, Type I (unfaced).
   4). Type: Glass fiber or mineral slag fiber, ASTM C 665, Type III (foil-scrim-kraft vapor-retarder membrane).

C. Thermal Loose Insulation (blown-in)
1. Application: Thermal insulation above top floor ceilings in structural space.
2. Type: Glass fiber loose insulation FS HH-1-1030B Type I, UL Listed.

D. Accessories:
1. Adhesives and mechanical anchors and clips.
2. Crack sealers and tapes.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Install materials and systems in proper relation with adjacent construction. Coordinate with work of other sections. Provide full thickness in one layer over entire area, tightly fitting around penetrations.

B. Protect installed insulation.

END OF SECTION

SECTION 07240

EXTERIOR INSULATION AND FINISH SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

a. Provide exterior insulation and finish systems.

1.2 SUBMITTALS

a. Product Data: Submit manufacturer's product data and installation instructions for each material and product used.
b. Shop Drawings: Submit shop drawings indicating material characteristics, details of construction, connections, and relationship with adjacent construction.
c. Samples: Submit two representative samples of each material specified indicating visual characteristics and finish. Include range samples if variation of finish is anticipated.
d. Warranty: Submit manufacturer’s standard warranty. Include labor and materials to repair or replace defective materials.
    1). Warranty Period: 5 years.

1.3 QUALITY ASSURANCE

a. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.
b. Mock-Ups: Provide mock-up as required to demonstrate quality of workmanship.

PART 2 - PRODUCTS

2.1 MATERIALS

a. Manufacturers: Acrocrete, Inc., Dryvit Systems, Inc., Parex Incorporated., Pleko Products, Inc., Senergy Div. of Harris Specialty Chemicals., Sto Corp. or approved equal.
b. Finish Coating over Molded Polystyrene Board:
    1). Type: EIMA Class PB, or as required by Authority Having Jurisdiction.
    2). Base Coat: Portland cement and polymer adhesive.
    3). Finish Coat: Polymer emulsion.
    4). Thermal Insulation: Molded rigid cellular polystyrene.
    5). Reinforcing Fabric: Standard weight with high-impact type at areas subject to damage.
    6). Insulation Attachment: Adhesive and mechanical anchors.

PART 3 - EXECUTION

3.1 INSTALLATION

a. Inspect substrate and report unsatisfactory conditions in writing; beginning work means acceptance of substrate.
b. Comply with system manufacturer's instructions and recommendations; admixtures shall not be used. Provide reinforced base and finish coats to provide a uniform appearance. Completely cover all insulation board including edges. Provide soft joints at all changes of substrate and at intervals suggested by manufacturers and at approved locations. Install areas of special patterns where indicated on drawings. Clean and protect work.

END OF SECTION

SECTION 07340
MEMBRANE ROOF

Part 1 General

1.1 Introduction

A. The following is information required to adhere the Duro-Last membrane to a properly prepared deck/substrate. Each installation shall be in compliance with the detail drawings, instructions, material descriptions, specifications, and other information stated here.

1.2 Requirements

A. The Duro-Last Roofing System must be installed by an authorized Duro-Last Contractor.
B. The Duro-Last membrane must be installed over a properly prepared deck.
The deck must be compatible with the roofing membrane
C. A Duro-Last Quality assurance must inspect the Duro-Last Roofing System for compliance with the Duro-Last specifications before a commercial warranty is issued.
D. All materials used in the installation of the Duro-Last Roofing System must be products of Duro-Last Roofing Inc. or accepted products as described and defined in the specification.
E. The Duro-Last Contractor is responsible for following all applicable, building, plumbing, and electrical codes.

1.3 Delivery

A. A complete Duro-Last Roofing system and related materials must be delivered in the original packaging and with shipping labels intact. Containers will be labeled with manufacturer's/supplier's name, product name and identification. Each shipment will be checked for damages and shortages, The freight agent must note damages or shortages on the freight bill. Materials damaged in shipping, handling, or storage must not be used.

1.4 Handling

A. Once the Duro-Last Roofing System is delivered to the job-site, the Contractor and the contractor's crew are responsible for all handling and installation of the roofing system. Adequate personnel and equipment will be available to move and place the material on the roof deck.

1.5 Storage

A. Duro-Last Materials shall not be stored in ponding water, or water runoff. The adhesives and sealants must be stored at temperatures 40oF and 80oF. Follow precautions listed on the containers.

Part 2 Quality Assurance

2.1 Fasteners

A. Use Duro-Last HD Threaded Fasteners for plywood deck.

2.2 Approved Deck

A. Plywood deck, 3/4", tongue and grove exterior grade plywood

2.3 Approved Insulation

A. Expanded/Extruded Polystyrene;
   1. Insulation must be Duro-Last approved for use with adhered single-ply membranes as identified in the current Factory Mutual Approval guide.
   2. The expanded polystyrene must be a min. of 1.5 PCF when tested in accordance with ASTM D 1622. All expanded polystyrene must be covered with an approved recover board for the fully adhered Duro-Last membrane.

Part 3 Execution

3.1 Substrate Preparation

A. The building owner/architect and the Duro-Last contractor must ensure that the deck/substrate is structurally-sound and meets industry construction practices prior to the application of the Duro-Last Roofing System

3.2 Installation

A. Wood nailers, will be #2 grade or better treated lumber, fastened to the deck as indicted on the drawings. They shall be secured in such a manner as to beable to resist a force of 180# applied from any direction. Nailers shall be installed flush with roof insulation.
B. Insulation shall be installed on the deck per the shop drawings so as to allow for slopes to be created to allow for water drainage. No Gaps greater than 1/4" shall be permitted between insulation boards. No more insulation board shall be installed than can be covered by roof membrane before the end of the days work.
C. The insulation shall be covered with a recover board of type approved by Duro-Last Roofing Systems.

3.3 Membrane Installation.

A. The pre-fabricated roof section is positioned over the area of the roof deck to be covered. Adjacent sheets of membrane must be overlapped 3". Fold back the membrane upon itself in a manner to avoid wrinkles during and after the installation process. Clean the surfaces to be bonded with forced air or stiff brooms to remove any excess dust and other debris. Stir Duro-Last adhesives, DO NOT THIN ADHESIVES.
   1. Duro-Last SB Adhesive(solvent-based), over a clean deck apply adhesive using a solvent resistant nap roller, 9-inch, depending upon deck material, application rate will be approximately one (1) gal. per 75 sq. ft. Adhesive must be applied smooth and even, no blobs, puddels, or skips. Apply adhesive to membrane in the same manner. The deck must have 100% coverage, allow deck to dry until when the adhesive is touched with a dry finger it produces strings. Roll the adhesive applied membrane upon the adhesive prepared deck, be careful so as not to produce any wrinkles or air pockets. The bonded membrane must be pressed firmly into place with stiff push brooms or smooth weighted rollers. The remaining non-aheared portion of the sheet must be folded back and the process repeated.
B. Precautions must be taken as not to contaminate areas to be hot air welded with adhesives.

3.4 Hot Air welding

A. Position the membrane to allow an overlap of the top membrane onto the bottom membrane, a minimum of 3 inches. Insure the welding area is clean and free of debris.
B. Weld the top membrane to the bottom membrane using a hand held welder

or an automatic welding machine and silicone roller. A minimum of 11/2 inch wide continuous weld is required.

C. All field weld seams must be inspected with a tack claw and all descripties noted.

3.5 Flashings

A. The parapet wall flashing must be pre-fabricated with a securement tab located at the transition point. Parapet flashings that exceed 60" in vertical height will require intermediate fastening tabs. The securement tab must be fastened with Duro-Last approved fasteners and stress distribution plates.

B. Mechanical attachment will be required at all expansion joints, curbs, skylights, and penthouses.

3.6 Roof Drains

A. All existing roofing materials must be removed from drain bowl clamping ring. After the Duro-Last membrane is properly installed onto the bowl and the clamping ring set in place, all bolts securing the ring must be installed to provide a constant even compression on the sealant.

3.7 Walkways Pads

A. Duro-Last Roof Trak II Walkway Pad shall be installed per required traffic patterns.

3.8 Caution

A. Do not breath fumes from adhesives. Keep containers away from fresh air intakes. Do not use adhesives when open flames might be present. Use adhesives only in open free air spaces.

Alternate Roofing
Fully Adhered Roofing System
Versico Roofing Syatem
If approved by the franchise the owner may use a fully adhered roofing system,
Such as Versiweld, a 60 mil Thermoplastic Polyolefin membrane. Use a authorized
Versico Roofing contractor installed per manufacturers instructions with a five
To 30 year warranty.

END OF SECTION

SECTION 07410

METAL ROOF PANELS

PART 1 - GENERAL

1.1 SUMMARY

a. Provide manufactured roof panels.

1.2 SUBMITTALS

a. Product Data: Submit manufacturer's product data and installation instructions for each material and product used.
b. Shop Drawings: Submit shop drawings indicating material characteristics, details of construction, connections, and relationship with adjacent construction.
c. Samples: Submit two representative samples of each material specified indicating visual characteristics and finish. Include range samples if variation of finish is anticipated.
d. Warranty: Submit manufacturer’s standard warranty. Include labor and materials to repair or replace defective materials.
   1). Warranty Period: 10 years.

1.3 QUALITY ASSURANCE

a. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.
b. Wind Uplift: UL 580 for Class 90 wind uplift resistance.

PART 2 - PRODUCTS

2.1 MATERIALS

a. Manufacturers: Met Tile Inc., or approved equal.
b. System Type:
   1). Barrel profile manufactured metal roof tile panels.
   2). Color as approved by La Quinta, medium dark red tone.

c. Manufactured Roof Panels:
   1). Sheet Materials: Galvanized steel sheet, ASTM A 653, G90 coating, 26 gauge (.0239 inch).

PART 3 - EXECUTION

3.1 INSTALLATION

a. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Install materials and systems in proper relation with adjacent construction and with uniform appearance. Coordinate with work of other sections.
b. Restore damaged components and finishes. Clean and protect work from damage.

END OF SECTION

SECTION 07550

MODIFIED BITUMINOUS MEMBRANE ROOFING

PART 1 - GENERAL

1.1 SUMMARY

a. Provide modified bituminous membrane roofing.

1.2 SUBMITTALS

a. Product Data: Submit manufacturer's product data and installation instructions for each material and product used.
b. Shop Drawings: Submit shop drawings indicating material characteristics, details of construction, connections, and relationship with adjacent construction.
c. Warranty: Submit manufacturer’s standard warranty. Include labor and materials to repair or replace defective materials.
   1). Warranty Period: 10 years.

1.3 QUALITY ASSURANCE

a. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.
b. Listing: UL Class A external fire exposure:
c. Listing: FM Class I construction.

PART 2 - PRODUCTS

2.1 MATERIALS

a. Manufacturers: Firestone Building Products Co., Celotex Corp., GAF Building Materials, Supreme Roofing and Waterproofing or approved equal.
b. Modified Bituminous Sheet Roofing:
   1). Type: Fully adhered.
   2). Modifier: Styrene-butadiene-styrene (SBS).
c. Auxiliary Materials:
   1). Vapor Retarder: Bituminous vapor retarder.
   2). Insulation: Perlite board.
   3). Insulation: Polyisocyanurate-foam board.
   4). Insulation: Composite insulation board.
   5). Insulation: Cellular-glass board.
   6). Surfacing Aggregate: Crushed stone, free of sharp edges, ASTM D 1863.
   7). Roof Coating: Asphalt emulsion, ASTM D 1227.
   8). Walkway Protection Boards: Compatible with system.
   9). Sheet Metal Accessories: SMACNA and NRCA recommendations.

PART 3 - EXECUTION

3.1 INSTALLATION

a. Inspect substrate and report unsatisfactory conditions in writing. Beginning work means acceptance of substrate. Coordinate installation with other trades, including carpentry, flashing and penetrating work.
b. Comply with NRCA Roofing and Waterproofing Manual and manufacturer's installation instructions.
c. Clean, prime and prepare substrate.
d. Install insulation with tightly butted joints and neatly fitted around penetrations.
e. Begin roof installation only in presence of manufacturer's representative.
f. Install walkway protection membrane at locations indicated and where required to provide access to roof mounted equipment.

g. Restore or replace damaged components. Protect work from damage.

END OF SECTION

SECTION 07600

FLASHING AND SHEET METAL

PART 1 GENERAL

1.1 SUMMARY

A. Provide flashing and sheet metal.

PART 2 PRODUCTS

2.1 MATERIALS

A. Applications:

1. Metal counterflashing and base flashing.
2. Exterior wall flashing and expansion joints.
3. Built-in metal valleys, gutters, and scuppers.
4. Gutters and downspouts.
5. Exposed metal trim and fascia units.
6. Sheet metal accessories.
7. Ridge and soffit vents.

B. Sheet Metal Flashing and Trim:

1. Zinc-Coated Steel: ASTM A 653, G90 hot-dip galvanized, 20 gauge (.0359 inch).
2. Sheet Aluminum: ASTM B 209, alloy 3003, clear anodized, 20 gauge (.0359 inch).

C. Flexible Sheet Membrane Flashing: Nonreinforced flexible black elastic sheet, 50 to 65 mils thick, neoprene synthetic rubber.

D. Fabricated Units: Compliance with SMACNA Sheet Metal Manual.

E. Elastic Expansion Joints: Factory-fabricated metal-flanged edges to fit curbs and curb substrate.

F. Ridge and Soffit Vents:

1. Continuous aluminum strip soffit vents
2. Baffled ridge vent suitable for direct application of shingles.

G. Auxiliary Materials:

1. Solder compatible with metal.
2. Bituminous isolation coating.
3. Mastic and elastomeric sealants.
4. Epoxy seam sealer.

5. Rosin-sized building paper slip sheet.

6.Reglets and metal accessories.

7. Gutter and conductor head guards.

END OF SECTION

SECTION 07840

FIRESTOPPING

PART 1 GENERAL

1.1 SUMMARY

A. Provide firestopping at locations required by code.

PART 2 PRODUCTS

2.1 MATERIALS

A. Through-Penetration Firestop Systems: Subject to compliance with requirements, provide systems designed for use required, of one or more of the following types:

1.Endothermic, latex sealant and compounds.

2. ntumescent latex sealant, putty and wrap strips.
3. Job-mixed vinyl compound.
4. Mortar.
5. Pillows/bags.
6. Silicone foams and sealants.

B. Fire-Resistive Elastomeric Joint Sealants:

1. Multi-component, nonsag, urethane sealant.

END OF SECTION

SECTION 07900

JOINT SEALERS

PART 1 GENERAL

1.1 SUMMARY

A. Provide joint sealers at interior and exterior vertical and horizontal joints.

B.Field-Constructed Mock-Ups: Each joint type.

PART 2 PRODUCTS

2.1 MATERIALS

A.Urethane Elastomeric Joint Sealants:

1.Manufacturers: Pecora Corp., Sika Corp., Tremco or approved equal.
2.Type and Application: Multi-part nonsag urethane sealant, ASTM C 920:
a. Application: For joints in horizontal. surfaces.
b. Exterior use.

B. Silicone Elastomeric Joint Sealants:

1. Manufacturers: Dow Corning, GE Silicones, Tremco, or approved equal.

2. Type and Application: One-part nonacid-curing silicone sealant, ASTM C 920, modulus as required for application:
a. Application: For joints in vertical surfaces.
b. Exterior use.

C. Latex Joint Sealants:

1. Manufacturers: Pecora Corporation, Polymeric Systems, Inc., Sonneborn Building products, Tremco, or approved equal.
2. Type: Acrylic-emulsion, ASTM C 834.a
3. Application: Interior joints in vertical and overhead surfaces with limited movement.

D. Compression Seals:
1. Type: Preformed hollow neoprene gasket, ASTM D 2628.
2. Application: Wide exterior joints in vertical surfaces.

E. Fire-Resistive Joint Sealers:

1. Type: One part fire-stopping sealant.
2. Application: Penetrations in fire-rated floor and wall assemblies.

F. Paving Joint Fillers:

1. Type: Bituminous fiber.
2. Application: Filler for exterior paving joints.

G. Auxiliary Materials:

1. Plastic foam joint fillers.
2. Elastomeric tubing backer rods.
3. Bond breaker tape.

END OF SECTION

SECTION 08110

STEEL INSULATED DOORS AND PREHUNG ASSEMBLIES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Doors and frames.

1.2 SUBMITTALS

A. Submit shop drawings indicating door and frame elevations sections, materials, gages, finishes, fabrication and erection details, location of finish hardware by dimension and locations and details of openings for glass and louvers.

B. Submit manufacturer's literature indicating product description and characteristics, including compliance with specified requirements and manufacturer's recommended maintenance instructions. Mark manufacturer's brochures to include only those products proposed for use.

1.4 QUALITY CRITERIA

A. Work in this section shall conform to requirements of the Insulated Steel Door Institute (ISDI) and the Steel Door Institute. (SDI)

B. Allowable Manufacturing Tolerances
1. Overall dimensions: 1/16" maximum variation.
2. Doors and frames shall have a maximum 1/8" variation in diagonal dimension.

C. Labeled components shall comply with the requirements of Underwriter's Laboratories, Inc. (UL) and the National Fire Protection Association (NFPA). Label shall be screw or rivet attached metal plate, not adhesive attached paper.

PART 2 PRODUCTS

2.1 DOOR CONSTRUCTION

A. The door slab shall be formed of sheets of 20 ga. steel, embossed smooth or textured stainable as shown, mechanically interlocked with non-metallic vinyl or plastic thermal break. No vinyl overlay permitted. Doors to have all steel edges with 12 ga. hinge reinforcements threaded for machine screw application of hinges. Top and bottom channel to be of wood or steel as recommended by door manufacturer. Door top to be fully closed and flush, adequately sealed to injection of core material. Core to be injected polyurethane foam. Foam density to provide minimum 'R' value of 15. Provide adequate reinforcement for all surface mounted hardware. Mortise reinforce, drill and tap for all mortised hardware.

2.2 WOOD FRAME CONSTRUCTION

A. Primed white pine finger joint frame assemblies that meet NWWDA supplied by Castlegate. Doors to be prehung in frames at factory. Standard hinges, threshold and door bottom to be attached to provide easy installation of the unit. Provide thresholds of proper height to comply with ADA requirements for handicapped accessibility. Door to be sized to maintain 32" clear space with door open at 90 degrees.

2.3 HINGES AND OTHER HARDWARE

A. For prehung assemblies hinges to be 4" x 4", YC2 finish. Provide NRP feature for outswinging doors. Manufacturer's standard handicapped aluminum threshold to be attached to the frame.

2.4 FINISH

A. Doors, frames, and stops to be provided factory primed in manufacture's standard white color. Field touch up primer prior to finish painting.

PART 3 - EXECUTION

3.1 INSTALLATION

A. All frames and doors to be level, plumb, and with equal perimeter clearances between door and frame. Install all hardware and adjust to provide a smooth operating and trouble free installation.

END OF SECTION

SECTION 08145

PREFABRICATED DOOR AND FRAME ASSEMBLIES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Prefabricated door and frame assemblies

1.2 SUBMITTALS

A. Submit shop drawings indicating door and frame elevations sections, materials, gages, finishes, fabrication and erection details, location of finish hardware by dimension and locations and details of openings for glass and louvers.

B. Submit manufacturer's literature indicating product description and characteristics, including compliance with specified requirements and manufacturer's recommended maintenance instructions. Mark manufacturer's brochures to include only those products proposed for use.

1.3 QUALITY CRITERIA

A. Labeled components shall comply with the requirements of Underwriter's Laboratories, Inc. (UL) and the National Fire Protection Association (NFPA). Label shall be screw or rivet attached metal plate, not adhesive attached paper.

PART 2 PRODUCTS

2.1 DOORS AND FRAMES

A. Doors and sidelight panels:

   1. 20 gauge galvanized steel face sheets.
   2. Interlocking steel door edges with vinyl thermal break.
   3. Polyurethane core.
   4. 12 gage hinge reinforcement
   5. Lock and deadbolt reinforcement - ABS plastic
   6. Finish texture: smooth
   7. Styles: See Drawings.

B. Frames:
   1. Manufacturer’s “Span-Rite SR” series steel reinforced frame where noted on Drawings.
      a. 18 gage galvanized steel.
      b. 12 gage hinge and lock reinforcement.
   2. Also See Section 08100.

C. Hardware:
   1. Hinges: Types as noted in Door Schedule
   2. Weatherstripping (where noted in Door Schedule): Manufacturer’s standard magnetic white.
   3. Door Bottoms (where ntoed in Door Schedule): Triple contact extruded vinyl sweeps.

D. Glazing:
   1. Exterior doors: Insulating glass shall consist of two layers of 1/8" thick tempered glass separated by a 3/8" air space, for an overall thickness of 5/8". Interior and exterior lights shall be clear. Provide divider bar sealed inside glass unit.
   2. Interior doors: 1/8" thick clear, tempered glass. Provide true divided lites.

2.2 ACCEPTABLE MANUFACTURERS

A.Castlegate Entry Systems, Pittsburg, KS ., 800-835-0364.
B.Ceco.
C.Steelcraft.
D.Other manufacturers offering equivalent products approved by Owner.

PART 3 EXECUTION

3.1 SETTING FRAMES

A. Frames: Provide frames for doors, transoms, side lights, borrowed lights, and other openings, of size and profile as indicated.
   1. Install Frames and accessories in accordance with shop drawings, manufacturer's data, and as herein specified.
   2. Setting Masonry Anchorage Devices: Provide masonry anchorage devices where required for securing frames to masonry construction.
      a Set anchorage devices opposite each anchor location, in accordance with details on final shop drawings and anchorage device manufacturer's instructions. Leave drilled holes rough, not reamed, and free from dust and debris.
   3. Floor anchors may be set with powder-actuated fasteners instead of masonry anchorage devices and machine screws, if so indicated on final shop drawings.
   4. Placing Frames: Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction in complete, remove temporary braces and spreaders, leaving surface smooth and undamaged.
      a. At masonry construction, set frames and secure in place with machine screws and masonry anchorage devices.
      b. Place frames at fire-rated openings in accordance with NFPA Standard No. 80.
      c. Make field splice in frames as detailed on final shop drawings, welded and finished to match factory work.
      d. Remove spreader bars only after fames or bucks have been properly set and secured.
   5. In metal stud partitions, install at least 3 wall anchors per jamb at hinge and strike levels. In closed steel stud partitions, attach wall anchors to studs with screws.
   6. In in-place drywall partitions install knock-down, slip-on drywall frames.

B. Caulking
   1. All metal frames shall be fully caulked against adjacent wall surfaces with caulking compound at interior areas and sealant at all exterior locations.

3.2 DOOR INSTALLATION

A. Install metal doors in frames using hardware specified in Door Schedule.

B. Edge clearances at doors shall be as follows:
   1. Between door and frame at head and jambs: 1/8"
   2. At carpeted floors: 1/4"
   3. At resilient tile floor: 5/8"
   4. At exposed concrete: 3/8"

3.3 PAINTING

A. Metal Frames
   1. Marred prime coat finish shall be thoroughly cleaned, touched-up and sanded smooth to match prime coat.
   2. Finish paint shall be brush applied. No brush marks shall be visible.

B. Metal Doors
   1. Marred prime coat finish shall be thoroughly cleaned, touched-up and sanded smooth to match prime coat.
   2. Finish paint shall be roller applied to all six sides of metal doors prior to hardware installation in accordance with Specification Section 09900 - Painting.

3.4 ADJUST AND CLEAN

A. Final Adjustments: Check and readjust operating hardware items, leaving steel doors and frames undamaged and in complete and proper operating condition.

END OF SECTION

SECTION 08150

STEEL DRYWALL FRAMES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Prefabricated, prefinished “Timely” frames.

1.2 SUBMITTALS

A. Submit shop drawings indicating door and frame elevations sections, materials, gages, finishes, fabrication and erection details, location of finish hardware by dimension and locations and details of openings for glass and louvers.

B. Submit manufacturer's literature indicating product description and characteristics, including compliance with specified requirements and manufacturer's recommended maintenance instructions. Mark manufacturer's brochures to include only those products proposed for use.

1.3 QUALITY CRITERIA

A. Allowable Manufacturing Tolerances
1. Overall dimensions: 1/16" maximum variation.
2. Doors and frames shall have a maximum 1/8" variation in diagonal dimension.

B. Labeled components shall comply with the requirements of Underwriter's Laboratories, Inc. (UL) and the National Fire Protection Association (NFPA). Label shall be screw or rivet attached metal plate, not adhesive attached paper. All labeled stairwell fire doors rated one hour or more shall have a maximum transmitted temperature end point of 450 degrees fahrenheit above the ambient temperature at the end of 30 minutes of standard fire text exposure.

C. Manufacturers:
1. Timely Industries, Pacoma, California,Telephone (213) 875-0124.

PART 2 PRODUCTS

2.1 DRYWALL FRAMES

A. All frames to be formed from cold rolled sheet steel complying with ASTM-A366

B. Roll-form or break frames to standard shapes as shown on the drawings.

C. Prepare frames for die formed, heat treated clips to assure tight casing fit. Clips to be mechanically fastened to assure a secure and properly aligned installation.

D. Provide holes on perimeter of frame to allow easy insertion of fasteners.

E. Provide oval alignment slots to allow visual alignment of the frames in the rough opening. Slots to allow for insertion of tool to move frame on the wall to avoid damage to wall finish.

F. All frames to have 14 gage hinge reinforcement plates applied to the frame.

G. Prepare for strikes (either 2 3/4" 'T' Stike, 4 7/8" ASA Strike, or 2 3/4" Deadbolt Strike) as required. Frames supplied with 2 3/4" adjustable strike are standard. For other strikes hardware supplier to supply strike to fit standard cut-outs in frame. ASA 4 7/8" strike preparation to be factory embossed and screw holes tapped for machine screws at the factory.

H. Provide standard field applied reinforcement for surface mounted hardware as required. Verify locations where reinforcement must be applied prior to installation of frame over the wall.

I. Provide standard casings as shown on drawing.
01. 22 gauge prefinished casing with standard corner brackets to assure tight miters. (standard TA-8)

02. Cellular PVC Casing (TA-35 x 2") with corner brackets to assured tight miters.

03. Wood casing as shown on Drawings. Eliminate clips when wood casing is used.

2.2 TYPES

A. 'S' Series, 20 gauge frames for standard commercial or residential fire rated f rames are required.

2.3 FINISHES

A. Colors: Refer to Finish Schedule.

B. Factory finished frames to have polyester paint finish to allow for even coverage and maximum impact resistance.

C. Steel to be chemically cleaned, bonderized, primed and given two separate top coats to assure sufficient bonding and paint thickness. Steel to be painted in coils prior to forming to assure even coverage.

D. Refer to manufacturer's technical material for actual paint performance.

E. Factory finished frames to be used in any exterior, high humidity, or corrosive area to be galvanized prior to painting. Owner to determine requirements and designate on drawings.

F. Field finished frames to be protected with chromium alloy electro galvanized process. Galvanizing to serve as a prime base for application of sovent based paint. Clean all surfaces prior to painting to ensure adhesion.

G. Provide aerosol touch-up paint to repair minor damage of factory finished frames.

PART 3 EXECUTION

3.1 INSTALLATION

A. Prior to installation, examine all openings to verify proper rough opening dimensions, wall thickness, blocking or other requirements to assure proper performance.

B. Frames to be installed over finished walls and anchored through the faces into the structure as shown.

C. Use a pre-fit template door or the actual door for the opening to assure proper alignment and door clearances. Door to be prefit according to frame manufacturer's printed instructions. Verify requirements and co-ordinate with wood door and hardware supplier.

D. Anchor with drywall screws or nails as shown. Use drywall screws for frames that may be relocated in the future to allow for easy removal and reinstallation.

E. Verify hardware requirements for each opening to provide proper reinforcement, preparation and anchorage or adequate performance and long life.

3.2 FINAL INSPECTION AND CLOSE-OUT

A. Inspect each opening for proper operation, correct hardware, general appearance and proper installation.

B. Make any adjustments necessary as directed by owner's representative.

END OF SECTION

SECTION 08210

WOOD DOORS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Hollow core flush panel doors.
2. Raised panel doors.
3. Solid core flush panel doors.

1.2 SUBMITTALS

A. Shop Drawings shall indicate door sizes, construction and hardware locations.

B. Submit manufacturer's literature indicating product description and characteristics, including compliance with specified requirements and manufacturer's recommended maintenance instructions. Mark manufacturer's brochures to include only those products proposed for use.

1.3 QUALITY CRITERIA

A. Allowable Fabrication Tolerances
1. Overall dimension may vary plus or minus 1/16".
2. Maximum warp, bow, cut or twist shall be 1/4".
3. Maximum 1/4" difference in diagonal measurements shall be allowed.

B. Doors shall comply with standards of:
1. National Wood WIndow & Door Association (NWWDA).
2. Architectural Woodwork Institute (AWI).

C. Provide each door with a stamp, brand or label which identifies manufacturer, trade association of which he is a member, grade, type of door and industry standard with which it complies.

D. Labeled components shall comply with Factory Mutual (FM) requirements or Underwriter's Laboratories, Inc. (UL) and the National Fire Protection Association (NFPA). Label shall be screw or rivet attached metal plate, not adhesive attached paper.

PART 2 PRODUCTS

2.1 HOLLOW CORE FLUSH DOORS

A. Doors shall comply with NWWDA Standard I.S.1.3-87.

B. Construction shall be 1-3/8" thick with a 7 ply, hollow ladder, mesh or cellular core.

C. Face veneers shall be birch.

D. Edge bands and moldings shall be finished to match face veneer on door faces. Provide hardwood end strips on top and bottom rails.

E. Adhesive shall comply with NWWDA I.S.1.6, Type II.

2.2 RAISED PANEL DOORS

A. Doors shall comply with NWWDA Standard I.S. 1.3-87.

B. Construction shall be 1-3/8" thick with molded hardboard door facings and hollow ladder, mesh or cellular core.
   1. Acceptable facing: Masonite "Colonist".

C. Edge bands and moldings shall be finished to match face veneer on door faces. Provide hardwood end strips on top and bottom rails.

D. Adhesive shall comply with NWWDA I.S.1.6, Type II.

2.3 SOLID CORE FLUSH DOORS

A. Doors shall comply with NWWDA Standard 1.S.1.2-87.

B. Construction shall be 1-3/4" thick, 7 ply solid lumber glued stave core for doors with up to a 20 minute rating and mineral core for doors with up to a 1 1/2 hour fire rating.

C. Face veneers shall be plastic laminate or stain grade birch rotary cut.

D. Edge bands and moldings shall be light birch. Finish to match face veneer on door stiles and top and bottom rails.

E. Adhesive shall comply with NWWDA I.S.1.6, Type II.

PART 3 EXECUTION

3.1 PREPARATION

A. Door manufacturer's representative shall be responsible for coordinating necessary information received by Contractor from hardware and metal frame manufacturers in order that doors shall be properly prepared to receive hinges and other hardware and fit hollow metal frames properly. Contractor shall provide door manufacturer with 3 copies of revised door frame shop drawings and reviewed hardware schedules. All information shall be in the possession of door manufacturer 90 days prior to delivery date.

3.2 INSTALLATION

A. Condition doors to average prevailing humidity in installation area prior to hanging for a minimum of 24 hours.

B. Install wood doors in accordance with manufacturer's instructions.

C. Fit doors to frame for proper fit and uniform clearance at each edge and machine for hardware. Seal cut surfaces after fitting and machining.
   1. Bevel non-fire-rated doors 1/8" in 2" at lock and hinge edges.
   2. Bevel fire-rated doors 1/16" in 2" at lock edge

D. Clearances around perimeter of doors shall be as follows:
   1. On hinge side: 1/16"

2. On lock side: 1/8"
3. Meeting edges at pairs of doors: 1/8"
4. At carpeted floors without pad: 3/4"
5. At mud bed quarry tile floor: varies w/condition
6. At thin set quarry tile floor: 3/4"
7. At resilient tile floor: 5/8"
8. At exposed concrete: 3/8"

E. Provide cut-outs for door grilles and glass lites without damaging door faces.

F. Machine doors for hardware using templates furnished by hardware manufacturer.

G. Seal cut-outs immediately after cutting or machining with one coat of solvent type sealer as recommended by door manufacturer.

H. Clean soil, smudge marks and handling defects from doors. Replace doors from which marks cannot be removed.

I. Finishing of veneers and edges shall be in accordance with Section 09900 - Painting. All wood doors shall be finished on all six sides prior to installation of door hardware.

END OF SECTION

SECTION 08310

ACCESS DOORS AND PANELS

PART 1 GENERAL

1.1 SUMMARY

A. Provide access doors and panels for walls and ceilings.

PART 2 PRODUCTS

2.1 MATERIALS

A. Manufacturers: J. L. Industries, Karp Associates, Milcor, or approved equal.

B. Access Doors:

1. Frames: 16 gauge (.0598 inch) sheet steel with flange suitable for adjacent material.
Doors: 14 gauge (.0625 inch) sheet steel.
Door Type: Flush panel.
Locking Devices: Cylinder locks.
Fire Rating: NFPA 80.

END OF SECTION

SECTION 08520

ALUMINUM WINDOWS

PART 1 GENERAL

1.1 SUMMARY

A. Provide aluminum windows.

PART 2 PRODUCTS

2.1 MATERIALS

A. Provide the following:

1. Manufacturers: Alenco, Quaker Window Products, Inc., Craftline or approved equal.

B. Aluminum Windows:

1. Construction: Thermal-break type.
Aluminum Window Members: Aluminum extrusions.
Anchors, Clips, and Window Accessories: Aluminum, nonmagnetic stainless steel, or galvanized steel.
Window Operation: Horizontal sliding windows.
Window Operation: Fixed windows.
Window Grade: Commercial grade, AAMA 101.
Glazing: Insulating glass.
Glazing Color: Clear glass.
Aluminum Finish: Baked enamel.

C. Auxiliary Materials:

1. Ventilator opening limit device.
Operating hardware.

END OF SECTION

SECTION 08710
FINISH HARDWARE

PART 1 – GENERAL

1.01 SUMMARY:

A. Section includes furnishing and installing finish hardware, thresholds, weatherstripping, and seals.

B. Related Sections include:
1. Division 8 Section “Steel Doors and Frames” for door silencers provided as part of the frame.
2. Division 8 Section “Overhead Coiling Doors” for door hardware provided as part of overhead door assemblies except cylinders.
3. Division 8 Section “Sliding Automatic Entrance Doors” for entrance door hardware, except cylinders.

1.02 PERFORMANCE REQUIREMENTS:

A. Furnish and install each finish hardware item to provide proper operation and required function of every unit without binding or failure.
1. Interior Door Operating Force: Adjust hardware operation at interior non-fire-rated doors to provide an opening force not greater than 5 lbs at a point 3" from latch, measured to leading edge of door.
2. Exterior and Fire Rated Door Opening Force: At exterior doors and fire-rated doors, adjust hardware opening force in small increments above the opening force required for interior non-fire-rated doors to close and latch the door.
3. Closer Sweep Adjustment: Adjust closer sweep period so that from a 70° open position, door will take at least 3 seconds to move to a point 3" from latch, measured to leading edge of door.

1.03 SUBMITTALS:

A. Submit manufacturer's technical product data for each item of hardware. Submit hardware schedule in vertical format and as indicated below. Coordinate hardware with doors, frames, and related work to ensure proper size thickness, hand, function, and finish of hardware. If requested by Architect, submit one sample of each type of exposed hardware unit, finished as required, and tagged with full description for coordination with schedule. Submit data and schedule at earliest possible date, particularly where acceptance of schedule must precede fabrication of other work (e. g. hollow metal frames) that is critical to the Project construction schedule.
1. Type, style, function, size and finish of each hardware item.
2. Name and manufacturer of each item.
3. Fastenings and other pertinent information.
4. Hardware set location cross-referenced to both Drawing floor plan and door schedule indications.
5. Explanation of all abbreviations, symbols, and codes in schedule.
6. Mounting locations for hardware.
7. Door and frame sizes and materials.

B. Coordinate keying instructions, and keying information. Deliver keys and key control box to owner in person and obtain receipt (No Exceptions). Provide 3 change keys per lock, 10 master keys, and 10 grand master keys, tagged and organized for Owner's use.

1.04 QUALITY ASSURANCE:

A. Supplier Qualifications: A recognized finish hardware supplier who has been furnishing hardware in the Project's vicinity for a period of not less than 2 years, and who is, or employs an experienced hardware consultant (AHC) who is available, at reasonable times during the course of the Work, for consultation about Project's hardware requirements, to Owner, Architect and Contractor.

B. Coordination and Schedules: Hardware units and usage specified in Part 2 of this Section and scheduled on the Drawings establish quality, quantity, function and finish required for each door opening. Review, coordinate and confirm that hardware specified for each opening is the proper function. In case of controversy, make appropriate notations of proposed changes from specified requirements on supplier's hardware schedule and request written clarification from the Architect prior to proceeding.

C. Fire-Rated Openings: Provide door hardware for fire rated openings that comply with NFPA Standards No. 80 and requirements of authorities having jurisdiction. Provide only items of door hardware that are listed and tested by UL or Warnock Hersey for given type/size opening and degree of label. Provide proper latching hardware, door closers, approved-bearing hinges and seals whether listed in the Hardware Schedule or not. All hardware shall comply with standers UBC 702 (1997) and UL 10C.

1. Where emergency exit devices are required on fire-rated doors (with supplementary marking on doors' UL labels indicating "Fire Door to be equipped with Fire Exit Hardware") provide UL label on exit devices indicating "Fire Exit Hardware".

PART 2 – PRODUCTS

2.01 GENERAL:

A. Provide hardware manufactured to conform to published templates, generally prepared for machine screw installation. Do not provide hardware that has been prepared for self-tapping sheet metal screws. With each hardware item, furnish machine screws for installation into steel, and provide threaded-to-the-head wood screws for installation into wood; all-purpose threads are not acceptable. Provide Phillips flat-head screws except as otherwise indicated. Finish exposed screws to match the hardware finish. Provide concealed fasteners for hardware units that are exposed when the door is closed, except to the extent no standard units of the type specified are available with concealed fasteners. Provide through bolts for closer installation.

2.02 HARDWARE UNITS AND USAGE:

A. Units specified below establish the design, grade, function, finish, size, and other qualities required for this Project. Provide the following hardware units in the quantities specified and locations indicated on the Door Schedule. Provide US 26D finish unless otherwise specified. Refer to Door Schedule on Drawings for door sizes, fire ratings, hardware function, exit devices, door closers, and other requirements at each door opening.

B.

1. Butt Hinges: Provide the following butt hinges produced by IVES, or equivalent butt hinges produced by, Hager, or Bommer, as approved. Provide 1-1/2 pair per door leaf up to 7'-6" high and one additional hinge per leaf for each additional 2'-6" of door height.
   a. Out-Swinging Exterior Doors: Ives 5BB1HW x NRP x non-ferrous.
   b. In-swinging Exterior Doors: Ives 5BB1HW x non-ferrous.
   c. Out-Swinging Interior High Frequency Doors: Ives 5BB1HW x NRP.
   d. In-Swinging Interior High Frequency Doors: Ives 5BB1HW.
   e. Out-Swinging Interior Average Frequency Doors: Ives 5BB1 x NRP.
   f. In-Swinging Interior Average Frequency Doors: Ives 5BB1.

2. Door Closers: Provide the following closers produced by Dor-O-Matic at the locations shown on the Door Schedule. Adjust operation to complying with ADA requirements. Provide type of arm recommended by closer manufacturer for door conditions (use, door hand and swing) indicated.
   a. Closers for fire-rated doors shall be provided with temperature stabilizing fluid that complies with standards UBC 7-2 (1997) and UL 10C.
   b. Door closer shall have fully hydraulic, full rack and pinion action.

c. Hydraulic fluid shall be of a type requiring no seasonal closer adjustment for temperatures ranging from 120 degrees F to 10 degrees F.
d. Spring power shall be continuously adjustable over the full range of closer sizes, and allow for reduced opening force for the physically handicapped. Hydraulic regulation shall be by tamper-proof, non-critical valves. Closers shall have separate adjustment for latch speed, general speed, and back check.
e. Provide powder coating certified to exceed 100 hours salt Spray testing by ETL, an independent testing laboratory used by BHMA for ANSI certification.
f. Closers to be installed to allow door swing as shown on plans. Doors swinging into exit corridors shall provide for corridor clear width as required by code. Where possible, mount closers inside rooms.
g. Door closers meeting this specification: Falcon SC61/ SC81 / SC90 Series (No Substitution).

3. Cylindrical Locks and latches: as scheduled, fastened with through-bolts and threaded chassis hubs. Provide the following Falcon T, B & W Series (No Substitution).
   a. Chassis: Cold-rolled steel, handing field-changeable without disassembly.
   b. Latchbolts: 5/8 inch throw.
   c. Lever Trim: Through-bolt, accessible design, cast lever or metal-filled wrought types as schedule. Spindles: independent break-away.
   d. Strikes: 16 gage curved steel, bronze or brass with 1” deep box construction, lips of sufficient length to clear trim and project clothing.
   e. Certifications:
      (1) ANSI A156.2, 1996 Grade 1 & 2
      (2) UL listed for 3 hour doors.

4. Guest Suit Entry Locksets: To be selected and furnished by Owner.

5. Exit Devices: Provide the following at the locations shown on the Door Schedule.
   a. Exit Devices shall be touchpad type, fabricated of bronze, brass, stainless steel, or aluminum, plated to the standard architectural finishes to match the balance of the door hardware.
   b. All exit devices shall incorporate a fluid damper, which decelerates the touchpad on its return stroke and eliminates noise associated with exit device operation. Touchpad shall extend a minimum of one half of the door width. All latch bolts to be dead latching type, with a self-lubrication coating to reduce wear. End-cap will install flush with the end of the device. Touchpad shall match exit device finish, and shall be stainless steel for US26, US26D, US28, US32, and US32D finishes. Only compression springs will be used in devices, latches, and outside trims or controls.
   c. Exit devices shall be UL listed panic exit hardware. All exit devices for fire rated openings shall be UL labeled fire exit hardware.
   d. Removable mullions shall be a 2” x 3” steel tube, removed by use of a keyed cylinder, which is self-locking when re-installed.
   e. Lever trim for exit devices shall be vandal-resistant type, which will travel to a 90-degree down position when more than 35 pounds of torque are applied, and which can easily be re-set.
   f. All Latch bolts must be dead latching type.
   g. Exit devices meeting this specification: Von Duprin 99 Series (No Substitution).

6. Kick Plates: Provide the following at locations designated; Ives or equivalent by Trimco Hardware
   a. Kick Plates at Entrance Side of Toilet Rooms: 10" high x 2" less than door width x minimum 0.0538" (1.3 mm) thick x B4E x US 32D.

7. Stops, Flush Bolts, Dust Proof Strikes, & Silencers: Provide the following at locations designated; IVES, or equivalent by Trimco or Rockwood
   a. Floor Stops: Ives FS436
   b. Manual Flush Bolts: 1 set IVES FB458 x US 26D x DP-2 x US 26D dustproof strike at each inactive leaf of a pair of doors (except equipped with exit devices).
   c. Silencers: IVES SR 64; (3) per single leaf opening, (4) per double leaf opening.

8. Weatherstripping, Seals and Thresholds: Provide the following at locations designated; National Guard Products or equivalent by Zero Weatherstripping or Pemko.

2.03 KEYING REQUIREMENTS

A. Key System Requirements: Initiate and conduct meeting(s) with Owner to determine. For estimate use GMK charge. Furnish Owner's written approval of the system. Provide construction key system in accordance with lock manufacturer's standard. Emboss keys "Do Not Duplicate" and key symbol.
   1. 1. Key System: Falcon Standard**.**

B. Permanent keys and cores: deliver only to Owner's representative.
   1. Key Transcript: Supply to Owner upon completion.

C. Furnish: 3 each change keys per lock/cylinder, 10 each master keys each system, 10 each grandmaster keys , 10 each construction master keys and one additional key blank per each lock/cylinder (round up to nearest 50).

2.04 KEY CONTROL SYSTEM:

A. Provide a Telkee (302) 678-7800 key control system, or equivalent by Lund Equipment Co., Inc., Cleveland, OH (Tel) 330-659-4800. Include envelopes, labels, tags with self-locking key clips, receipt forms, 3-way visible card index, temporary markers, permanent markers, and standard metal wall cabinet, all as recommended by system manufacturer, with capacity for 120% of the number of locks required for the Project. Assist Owner in setting up key control system. Organize keys by room, by master, grand master and key blanks, in key envelopes with neatly marked room numbers, as appropriate.

PART 3 – EXECUTION

3.01 PREPARATION:

A. Mount hardware units at heights indicated in "Recommended Locations for Builders Hardware for Custom Steel Doors and Frames" by the Door and Hardware Institute, except as specifically indicated or required to comply with governing regulations and except as otherwise directed by Architect. Reinforce the attachment substrate for secure installation and adjust for proper operation. Provide clean, properly sized mortises and drilled holes for all mortised and surface applied finish hardware.

3.02 INSTALLATION:

A. General: Install each hardware item in compliance with the manufacturer's instructions and recommendations.

B. Do not install surface-mounted items until finishes have been completed on the substrate. Before painters finish is applied, remove all finish hardware, except prime painted items. After finish coats are dry, permanently replace and readjust finish hardware for proper operation.

C. Set units level, plumb, and true to line and location.

D. Cut and fit threshold and floor covers to profile of door frames, with mitered corners and hair-line joints. Join units with concealed welds or concealed mechanical joints. Cut smooth openings for bolts and similar items, if any. Screw thresholds to substrate with No. 10 or larger stainless steel screws.

E. Installation survey is to be performed by a certified “AHC” in the employment of the hardware supplier.

3.03 ADJUSTMENT:

A. Adjust and check each operating item of hardware and each door, to ensure proper operation or function of every unit. Replace units which cannot be adjusted and lubricated to operate freely and smoothly as intended for the application made.

3.04 HARDWARE SCHEDULE:

A.

SPECWORKS # 102537-B7N42YZ8F

HW SET: 01 TYPICAL SINGLE GUEST ROOM ENTRY DOORS
DOOR NUMBER:
GROUP 01

EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	CARD LOCK	PROVIDED BY OWNER	626	B/O
1	EA	SURFACE CLOSER	SC91 RW/PA	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	STOP	WS407CCV/FS436 AS REQ'D	626	IVE
1	SET	SEALS	5020B	BRN	NGP
2	EA	VIEWER	U698	626	IVE
1	EA	DOOR GUARD	482 X EDGE GUARD	626	IVE

HW SET: 02 TYPICAL SINGLE GUEST ROOM BATHROOM DOORS
DOOR NUMBER:
GROUP 02

EACH TO HAVE:

1	SET	SLIDING DOOR HDW	2610 SERIES		JOH
1	SET	ADA FLUSH PULLS	27N X 27P	630	HAG

HW SET: 03 TYPICAL GUEST BEDROOM DOORS
DOOR NUMBER:
132A GROUP 03

EACH TO HAVE:

3	EA	HINGE	5PB1 4.5 X 4.5	652	IVE
1	EA	PRIVACY LOCK	W301S D	626	FAL
1	EA	STOP	WS407CCV/FS436 AS REQ'D	626	IVE
3	EA	SILENCER	SR64/SR65 AS REQ'D	GRY	IVE

HW SET: 04 TYPICAL PAIR GUEST CLOSET DOORS
DOOR NUMBER:
GROUP 04

EACH TO HAVE:

6	EA	HINGE	5PB1 4.5 X 4.5	652	IVE
2	EA	DUMMY TRIM	W12 D	626	FAL
2	EA	ROLLER LATCH	RL36	630	IVE
2	EA	DOOR STOP	69/70 AS REQ'D	669	IVE
2	EA	SILENCER	SR64/SR65 AS REQ'D	GRY	IVE

HW SET: 05 TYPICAL COMMUNICATING DOORS
DOOR NUMBER:
GROUP 05

EACH TO HAVE:

4	EA	SPRING HINGE	3SP1 4.5 X 4.5	652	IVE
2	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
2	EA	COMMUNICATING LOCK	W161 DAN	626	FAL
2	EA	STOP	WS407CCV/FS436 AS REQ'D	626	IVE
2	SET	SEALS	5020B	BRN	NGP
2	EA	DOOR GUARD	482 X EDGE GUARD	626	IVE

HW SET: 06 TYPICAL EXTERIOR ALUM SLIDING DOORS
DOOR NUMBER:
109A 109B 111

EACH TO HAVE:

	NOTE:	ALL HARDWARE BY DOOR MANUFACTURER		B/O

HW SET: 07 TYPICAL EXTERIOR SINGLE STAIR DOOR
DOOR NUMBER:
-02

EACH TO HAVE:

3	EA	HINGE	5BB1HW 4.5 X 4.5 NRP	630	IVE
1	EA	FIRE EXIT HARDWARE	99EO-F	628	VON
1	EA	SURFACE CLOSER	SC81 DS	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	SET	SEALS	5050B	BRN	NGP
1	EA	DRIP CAP	16A	AL	NGP
1	EA	DOOR SWEEP	95WH	AL	NGP
1	EA	THRESHOLD	896V	AL	NGP

HW SET: 08
DOOR NUMBER:
130B

EACH TO HAVE:

6	EA	HINGE	5BB1HW 4.5 X 4.5 NRP	630	IVE
2	EA	MANUAL FLUSH BOLT	FB458/FB358 AS REQ'D	626	IVE
1	EA	DUST PROOF STRIKE	DP1/DP2 AS REQ'D	626	IVE
1	EA	PANIC HARDWARE	9975EO	628	VON
1	EA	MORTISE CYLINDER	985 X CAM X COLLAR AS REQ'D	626	FAL
1	EA	DOOR PULL	VR910M-NL	630	IVE
1	SET	ASTRAGAL	115NA	AL	NGP
1	EA	SURFACE CLOSER	SC81 HD/PA	689	FAL
2	EA	SECURITY FLOOR STOP	FS18S	BLK	IVE
1	SET	SEALS	5050B	BRN	NGP
1	EA	DRIP CAP	16A	AL	NGP
2	EA	DOOR SWEEP	95WH	AL	NGP
1	EA	THRESHOLD	896V	AL	NGP

NOTE: INSTALL CLOSER @ ACTIVE LEAF.

HW SET: 09 TYPICAL INTERIOR STAIR DOOR
DOOR NUMBER:
-01

EACH TO HAVE:

3	EA	HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	FIRE EXIT HARDWARE	99L-F-BE 996L	628	VON
1	EA	SURFACE CLOSER	SC81 RW/PA	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	STOP	WS407CCV/FS436 AS REQ'D	626	IVE
1	SET	SEALS	5020B	BRN	NGP
1	EA	DOOR SWEEP	200NA	AL	NGP
1	EA	THRESHOLD	413	AL	NGP

HW SET: 10 TYPICAL EXTERIOR CORRIDOR DOORS W/CARD READER
DOOR NUMBER:
-15B 129C

EACH TO HAVE:

1	EA	PIVOT SET	7215	626	IVE
1	EA	PIVOT	7215 INT	626	IVE
1	EA	POWER TRANSFER	EPT-10	689	VON
1	EA	PANIC HARDWARE	EL33A-NL-OP	628	VON
1	EA	RIM CYLINDER	951 6 PIN	626	FAL
1	EA	OFFSET DOOR PULL	8190-0-O	630	IVE
1	EA	SURFACE CLOSER	SC81 SS X MTG BRACKETS AS REQ'D	689	FAL
1	SET	SEAL	FURNISHED BY DOOR MANUFACTURER		B/O
1	EA	DOOR BOTTOM	FURNISHED BY DOOR MANUFACTURER		B/O
1	EA	THRESHOLD	513	AL	NGP
1	EA	POWER SUPPLY	PS873-2	GRY	VON
1	EA	CARD READER	BY OWNER		B/O

HW SET: 11 TYPICAL EXTERIOR CORRIDOR DOORS W/CARD READER
DOOR NUMBER:
-14

EACH TO HAVE:

2	EA	PIVOT SET	7215	626	IVE
2	EA	PIVOT	7215 INT	626	IVE
1	EA	POWER TRANSFER	EPT-10	689	VON
1	EA	PANIC HARDWARE	EL3347A-EO	626	VON
1	EA	PANIC HARDWARE	EL3347A-NL-OP	626	VON
1	EA	RIM CYLINDER	951 6 PIN	626	FAL
2	EA	OFFSET DOOR PULL	8190-0-O	630	IVE
2	EA	SURFACE CLOSER	SC81 SS X MTG BRACKETS AS REQ'D	689	FAL
1	SET	SEAL	FURNISHED BY DOOR MANUFACTURER		B/O
2	EA	DOOR BOTTOM	FURNISHED BY DOOR MANUFACTURER		B/O
1	EA	THRESHOLD	513	AL	NGP
1	EA	POWER SUPPLY	PS873-2	GRY	VON
1	EA	CARD READER	BY OWNER		B/O

HW SET: 12
DOOR NUMBER:
110B 110C

EACH TO HAVE:

1	EA	PIVOT SET	7215	626	IVE
1	EA	PIVOT	7215 INT	626	IVE
1	EA	PANIC HARDWARE	33A-NL-OP	628	VON
1	EA	ALARM KIT	33A-ALK	628	VON
1	EA	RIM CYLINDER	951 6 PIN	626	FAL
1	EA	MORTISE CYLINDER	985 X CAM X COLLAR AS REQ'D	626	FAL
1	EA	OFFSET DOOR PULL	8190-0-O	630	IVE
1	EA	SURFACE CLOSER	SC81 SS X MTG BRACKETS AS REQ'D	689	FAL
1	SET	SEAL	FURNISHED BY DOOR MANUFACTURER		B/O
1	EA	DOOR BOTTOM	FURNISHED BY DOOR MANUFACTURER		B/O
1	EA	THRESHOLD	513	AL	NGP

HW SET: 13
DOOR NUMBER:
100A 131C

EACH TO HAVE:

6	EA	HINGE	5BB1HW 4.5 X 4.5 NRP	630	IVE
2	EA	MANUAL FLUSH BOLT	FB458/FB358 AS REQ'D	626	IVE
1	EA	DUST PROOF STRIKE	DP1/DP2 AS REQ'D	626	IVE
1	EA	STOREROOM LOCK	T581P6D D	626	FAL
1	SET	ASTRAGAL	115NA	AL	NGP
1	EA	SURFACE CLOSER	SC81 DS	689	FAL
1	EA	OVERHEAD STOP	700S	626	GLY
1	SET	SEALS	5050B	BRN	NGP
1	EA	DRIP CAP	16A	AL	NGP

2	EA	DOOR SWEEP	198NA	AL	NGP
1	EA	THRESHOLD	425	AL	NGP

NOTE: INSTALL CLOSER @ ACTIVE LEAF; STOP @ INACTIVE LEAF.

HW SET: 14
DOOR NUMBER:
100A-SGL

EACH TO HAVE:

3	EA	HINGE	5BB1HW 4.5 X 4.5 NRP	630	IVE
1	EA	STOREROOM LOCK	T581P6D D	626	FAL
1	EA	SURFACE CLOSER	SC81 DS	689	FAL
1	SET	SEALS	5050B	BRN	NGP
1	EA	DRIP CAP	16A	AL	NGP
1	EA	DOOR SWEEP	198NA	AL	NGP
1	EA	THRESHOLD	425	AL	NGP

HW SET: 15
DOOR NUMBER:
101B

EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	CLASSROOM LOCK	B561P6D D	626	FAL
1	EA	STOP	WS407CCV/FS436 AS REQ'D	626	IVE
3	EA	SILENCER	SR64/SR65 AS REQ'D	GRY	IVE

HW SET: 16
DOOR NUMBER:
132B

EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	CLASSROOM LOCK	B561P6D D	626	FAL
1	EA	SURFACE CLOSER	SC61 RW/PA X SLIM COVER	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	STOP	WS407CCV/FS436 AS REQ'D	626	IVE
3	EA	SILENCER	SR64/SR65 AS REQ'D	GRY	IVE

HW SET: 17
DOOR NUMBER:
124A

EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE

1	EA	CLASSROOM LOCK	B561P6D D	626	FAL
1	EA	SURFACE CLOSER	SC61 DS X SLIM COVER	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
3	EA	SILENCER	SR64/SR65 AS REQ'D	GRY	IVE

HW SET: 18
DOOR NUMBER:
-05 100B

EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	STOREROOM LOCK	B581P6D D	626	FAL
1	EA	SURFACE CLOSER	SC61 DS X SLIM COVER	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	SET	SEALS	5020B	BRN	NGP

HW SET: 19
DOOR NUMBER:
131A 131B

EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5	630	IVE
1	EA	STOREROOM LOCK	B581P6D D	626	FAL
1	EA	SURFACE CLOSER	SC61 DS X SLIM COVER	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	SET	SEALS	5020B	BRN	NGP
1	EA	DOOR SWEEP	200NA	AL	NGP
1	EA	THRESHOLD	413	AL	NGP

HW SET: 20
DOOR NUMBER:
-03 115A

EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	STOREROOM LOCK	B581P6D D	626	FAL
1	EA	STOP	WS407CCV/FS436 AS REQ'D	626	IVE
3	EA	SILENCER	SR64/SR65 AS REQ'D	GRY	IVE

HW SET: 21
DOOR NUMBER:
-04 102B

EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	STOREROOM LOCK	B581P6D D	626	FAL

1	EA	OVERHEAD STOP	450S	630	GLY
3	EA	SILENCER	SR64/SR65 AS REQ'D	GRY	IVE

HW SET: 22
DOOR NUMBER:
-06 -07 130A

EACH TO HAVE:

3	EA	HINGE	5BB1HW 5 X 4.5	652	IVE
1	EA	STOREROOM LOCK	B581P6D D	626	FAL
1	EA	SURFACE CLOSER	SC61 RW/PA X SLIM COVER	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	STOP	WS407CCV/FS436 AS REQ'D	626	IVE
1	SET	SEALS	5020B	BRN	NGP

HW SET: 23
DOOR NUMBER:
124B

EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	STOREROOM LOCK	B581P6D D	626	FAL
1	EA	SURFACE CLOSER	SC61 RW/PA X SLIM COVER	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	STOP	WS407CCV/FS436 AS REQ'D	626	IVE
3	EA	SILENCER	SR64/SR65 AS REQ'D	GRY	IVE

HW SET: 24
DOOR NUMBER:
115B 128A

EACH TO HAVE:

6	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
2	EA	MANUAL FLUSH BOLT	FB458/FB358 AS REQ'D	626	IVE
1	EA	DUST PROOF STRIKE	DP1/DP2 AS REQ'D	626	IVE
1	EA	STOREROOM LOCK	B581P6D D	626	FAL
1	SET	ASTRAGAL	600	AL	NGP
1	EA	SURFACE CLOSER	SC61 RW/PA X SLIM COVER	689	FAL
2	EA	KICK PLATE	8400 10" X 1" LDW	630	IVE
2	EA	STOP	WS407CCV/FS436 AS REQ'D	626	IVE
1	SET	SEALS	5020B	BRN	NGP

NOTE: INSTALL CLOSER @ ACTIVE LEAF ONLY.

HW SET: 25
DOOR NUMBER:

102A

EACH TO HAVE:

6	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
2	EA	MANUAL FLUSH BOLT	FB458/FB358 AS REQ'D	626	IVE
1	EA	DUST PROOF STRIKE	DP1/DP2 AS REQ'D	626	IVE
1	EA	STOREROOM LOCK	B581P6D D	626	FAL
1	EA	SURFACE CLOSER	SC61 DS X SLIM COVER	689	FAL
1	EA	OVERHEAD STOP	450S	630	GLY
2	EA	KICK PLATE	8400 10" X 1" LDW	630	IVE
2	EA	SILENCER	SR64/SR65 AS REQ'D	GRY	IVE

NOTE: INSTALL CLOSER @ ACTIVE LEAF ONLY; STOP @ INACTIVE LEAF.

HW SET: 26
DOOR NUMBER:
103B

EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	ENTRANCE LOCK	B501P6D D	626	FAL
1	EA	SURFACE CLOSER	SC61 RW/PA X SLIM COVER	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	STOP	WS407CCV/FS436 AS REQ'D	626	IVE
3	EA	SILENCER	SR64/SR65 AS REQ'D	GRY	IVE

HW SET: 27
DOOR NUMBER:
101A 103A

EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	ENTRANCE LOCK	B501P6D D	626	FAL
1	EA	STOP	WS407CCV/FS436 AS REQ'D	626	IVE
3	EA	SILENCER	SR64/SR65 AS REQ'D	GRY	IVE

HW SET: 28
DOOR NUMBER:
117B 117C 117D 119B 119C

EACH TO HAVE:

2	EA	SPRING HINGE	3SP1 4.5 X 4.5	652	IVE
1	EA	PRIVACY LOCK	W301S D	626	FAL
1	EA	STOP	WS407CCV/FS436 AS REQ'D	626	IVE
2	EA	SILENCER	SR64/SR65 AS REQ'D	GRY	IVE

HW SET: 29
DOOR NUMBER:
125

EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5	630	IVE
1	EA	PRIVACY SET	B301S D	626	FAL
1	EA	SURFACE CLOSER	SC81 DS	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	STOP	WS407CCV/FS436 AS REQ'D	626	IVE
3	EA	SILENCER	SR64/SR65 AS REQ'D	GRY	IVE

HW SET: 30
DOOR NUMBER:
128B

EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5	630	IVE
1	EA	PASSAGE SET	W101 D	626	FAL
1	EA	STOP	WS407CCV/FS436 AS REQ'D	626	IVE
3	EA	SILENCER	SR64/SR65 AS REQ'D	GRY	IVE

HW SET: 31
DOOR NUMBER:
123 129B

EACH TO HAVE:

1	EA	PIVOT SET	7215	626	IVE
1	EA	PIVOT	7215 INT	626	IVE
1	EA	CARD LOCK	PROVIDED BY OWNER	626	B/O
1	EA	SURFACE CLOSER	SC61 RW/PA X SLIM COVER	689	FAL
1	EA	STOP	WS407CCV/FS436 AS REQ'D	626	IVE
1	SET	SEAL	FURNISHED BY DOOR MANUFACTURER		B/O

HW SET: 32
DOOR NUMBER:
-08

EACH TO HAVE:

6	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	SET	AUTO FLUSH BOLT	FB31P/FB41P AS REQ'D	630	IVE
1	EA	DUST PROOF STRIKE	DP1/DP2 AS REQ'D	626	IVE
1	EA	PASSAGE SET	T101S D	626	FAL
1	EA	COORDINATOR	COR X FL X MTG BRACKETS AS REQ'D	628	IVE
1	SET	ASTRAGAL	600	AL	NGP
2	EA	SURFACE CLOSER	SC81 RW/PA	689	FAL
2	EA	KICK PLATE	8400 10" X 1" LDW	630	IVE
2	EA	MAGNETIC HOLD-OPEN	SEM 7850 (WIRE TO FIRE ALARM)	AL	LCN

1	SET	SEALS	5020B	BRN	NGP

HW SET: 33
DOOR NUMBER:
-12 -13

EACH TO HAVE:

3	EA	HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	FIRE EXIT HARDWARE	99L-F-BE 996L	628	VON
1	EA	SURFACE CLOSER	SC81 RW/PA	689	FAL
1	EA	STOP	WS407CCV/FS436 AS REQ'D	626	IVE
1	SET	SEALS	5020B	BRN	NGP

HW SET: 34
DOOR NUMBER:
-15A

EACH TO HAVE:

3	EA	HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	FIRE EXIT HARDWARE	99L-F-BE 996L	628	VON
1	EA	SURFACE CLOSER	SC81 DS	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	STOP	WS407CCV/FS436 AS REQ'D	626	IVE
1	SET	SEALS	5020B	BRN	NGP

HW SET: 35
DOOR NUMBER:
106A

EACH TO HAVE:

6	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	SET	AUTO FLUSH BOLT	FB31P/FB41P AS REQ'D	630	IVE
1	EA	DUST PROOF STRIKE	DP1/DP2 AS REQ'D	626	IVE
1	EA	STOREROOM LOCK	T581P6D D	626	FAL
1	EA	COORDINATOR	COR X FL X MTG BRACKETS AS REQ'D	628	IVE
1	SET	ASTRAGAL	600	AL	NGP
2	EA	SURFACE CLOSER	SC81 RW/PA	689	FAL
2	EA	KICK PLATE	8400 10" X 1" LDW	630	IVE
2	EA	STOP	WS407CCV/FS436 AS REQ'D	626	IVE
2	EA	SILENCER	SR64/SR65 AS REQ'D	GRY	IVE

HW SET: 36
DOOR NUMBER:
106B

EACH TO HAVE:

3	EA	SPRING HINGE	3029-8X4.5	652	BOM
2	EA	PUSH PLATE	8200 6" X 16"	630	IVE
2	EA	KICK PLATE	8400 10" X 1" LDW	630	IVE
2	EA	STOP	WS407CCV/FS436 AS REQ'D	626	IVE

HW SET: 37
DOOR NUMBER:
108A

EACH TO HAVE:

1	SET	SLIDING DOOR HDW	2610 SERIES		JOH
3	EA	EDGE PULL	230	626	IVE
3	SET	ADA FLUSH PULLS	27N X 27P	630	HAG

HW SET: 38
DOOR NUMBER:
108B 110A 114 118

EACH TO HAVE:

1	SET	POCKET DOOR HDW	1560 SERIES		JOH
2	EA	EDGE PULL	230	626	IVE
2	SET	ADA FLUSH PULLS	27N X 27P	630	HAG

HW SET: 39
DOOR NUMBER:
117A 119A 129A

EACH TO HAVE:

3	EA	HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	PUSH PLATE	8200 6" X 16"	630	IVE
1	EA	PULL PLATE	8302-0 6" X 16"	630	IVE
1	EA	SURFACE CLOSER	SC81 RW/PA	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	STOP	WS407CCV/FS436 AS REQ'D	626	IVE
3	EA	SILENCER	SR64/SR65 AS REQ'D	GRY	IVE

HW SET: 40
DOOR NUMBER:
120A

EACH TO HAVE:

6	EA	HINGE	5BB1HW 4.5 X 4.5	652	IVE
2	EA	FIRE EXIT HARDWARE	9927L-F-LBR 996L	628	VON
2	EA	RIM CYLINDER	951 6 PIN	626	FAL
1	SET	ASTRAGAL	600	AL	NGP
2	EA	SURFACE CLOSER	SC81 HD/PA	689	FAL

2	EA	STOP	WS407CCV/FS436 AS REQ'D	626	IVE
1	SET	SEALS	5020B	BRN	NGP

HW SET: 41
DOOR NUMBER:
120B

EACH TO HAVE:

6	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
2	EA	DUMMY TRIM	W12 D	626	FAL
2	EA	ROLLER LATCH	RL30-A (TOP MOUNT)	626	IVE
2	EA	STOP	WS407CCV/FS436 AS REQ'D	626	IVE
2	EA	SILENCER	SR64/SR65 AS REQ'D	GRY	IVE

Door Schedule

MARK	HWSET	DOOR	FRAME	OUTSIDELOCATION	INSIDELOCATION	DOOR SCHEDULE REMARK
-01	09	HMD	HMF	CORRIDOR	STAIR	
-02	07	HMD	HMF	EXTERIOR	STAIR	
-03	20	HMD	HMF		ELEC	
-04	21	HMD	HMF		IT	
-05	18	HMD	HMF		STORAGE	
-06	22	HMD	HMF		HOUSEKEEPING	
-07	22	HMD	HMF		STORAGE	
-08	32	HMD	HMF		ELEV LOBBY	
-12	33	HMD	HMF	CORRIDOR	CORRIDOR	
-13	33	HMD	HMF	CORRIDOR	CORRIDOR	
-14	11	A/G	ALF	EXTERIOR	CORRIDOR	
-15A	34	WD	HMF	CORRIDOR	CORRIDOR	
-15B	10	A/G	ALF	EXTERIOR	CORRIDOR	
100A	13	HMD	HMF	EXTERIOR	WATER HEATER	
100A-SGL	14	HMD	HMF	EXTERIOR	FIRE SPRINKLER	
100B	18	HMD	HMF		FIRE/SPRINKLER	
101A	27	WD	HMF		OFFICE	
101B	15	WD	HMF		PBX	
102A	25	WD	HMF		STORAGE	
102B	21	WD	HMF		STORAGE	
103A	27	WD	HMF		OFFICE	
103B	26	WD	HMF		OFFICE	
106A	35	HMD	HMF	CORRIDOR	KITCHEN	
106B	36	WD	HMF	BAR	KITCHEN	
108A	37	WD		BAR	KITCHEN	
108B	38	WD		BAR	BUFFET	
109A	06	ALD	ALF	EXTERIOR	VESTIBUL	
109B	06	ALD	ALF	EXTERIOR	VESTIBUL	
110A	38	WD		DINING	DINING	
110B	12	A/G	ALF	EXTERIOR	RESTAURANT	
110C	12	A/G	ALF	EXTERIOR	RESTAURANT	
111	06	ALD	ALF	VESTIBULE	LOBBY	

114	38	WD		MULTI PURPOSE	DINING	
115A	20	HMD	HMF	HOUSEKEEPING	JANITOR	
115B	24	HMD	HMF	CORRIDOR	HOUSEKEEPING	
117A	39	WD	HMF	CORRIDOR	RESTROOM	
117B	28	WD	HMF	RESTROOM	TOILET STALL	
117C	28	WD	HMF	RESTROOM	TOILET STALL	
117D	28	WD	HMF	RESTROOM	TOILET STALL	
118	38	WD		MEETING	DINING	
119A	39	WD	HMF	CORRIDOR	RESTROOM	
119B	28	WD	HMF	RESTROOM	TOILET STALL	
119C	28	WD	HMF	RESTROOM	TOILET STALL	
120A	40	WD	HMF	CORRIDOR	MEETING ROOM	
120B	41	WD	HMF	MEETING ROOM	MEETING ROOM	
123	31	A/G	ALF	CORRIDOR	FITNESS	
124A	17	HMD	HMF	LAUNDRY	LAUNDRY STORAGE	
124B	23	HMD	HMF	MEETING	MEETING STORAGE	
125	29	WD	HMF	POOL	TOILET	
128A	24	HMD	HMF	CORRIDOR	LAUNDRY	
128B	30	HMD	HMF	LAUNDRY	CHASE	
129A	39	WD	HMF	CORRIDOR	CORRIDOR	
129B	31	A/G	ALF	CORRIDOR	FITNESS	
129C	10	A/G	ALF	EXTERIOR	POOL	
130A	22	HMD	HMF	CORRIDOR	STORAGE	
130B	08	HMD	HMF	EXTERIOR	ELEC	
131A	19	HMD	HMF	POOL	STORAGE	
131B	19	HMD	HMF	POOL	EQUIP	
131C	13	HMD	HMF	EXTERIOR	POOL EQUIP	
132A	03	HMD	HMF	LOUNGE	EMPLOYEE TOILET	
132B	16	HMD	HMF	CORRIDOR	LOUNGE	
GROUP 01	01	WD	HMF	CORRIDOR	GUEST ROOM	
GROUP 02	02	WD	HMF	GUEST ROOM	BATHROOM	
GROUP 03	03	WD	HMF	GUEST ROOM	BEDROOM	
GROUP 04	04	WD	HMF	GUEST ROOM	CLOSET	
GROUP 05	05	WD	HMF	GUEST ROOM	GUEST ROOM	

END OF SECTION

SECTION 09100
LATH AND PLASTER

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of Contract, including General and Supplementary Conditions and all applicable specification sections, apply to this Section.

1.2 SECTION INCLUDES

A. Portland cement plaster (stucco), including, but not limited to:
1. Foam board for shapes indicated on drawings.
2. Metal metal furring and lathing.
3. Acrylic finish coat.

1.3 RELATED WORK OF OTHER SECTIONS

A. Coordinate Work of this Section with work of other Sections as required to properly execute the Work and as necessary to maintain satisfactory progress of the work of other Sections.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Framing and Sheathing:
1. Wood Framing: As specified in Section 06100, Rough Carpentry.
2. Exterior Sheathing: As specified in Section 09250, Gypsum Board Assemblies.

B. Foam Board: Extruded polystyrene of type, density, size, and shape recommended by installer to suit application

C. Furring and Lathing and Accessories: (As shown or required)
1. Metal Lath: Expanded type, diamond shape, weighing 3.4#/sq.yd., galvanized. Use "dimpled" self-furring type on solid surfaces.
2. Screws: Self-tapping, galvanized pan head.
3. Lathing Channels: Cold rolled from 16 gauge steel, hot dip galvanized 3/4 inch weighing 307 lbs. per 1000 linear feet.
4. Main Runner Channels: 1-1/2 inch cold rolled galvanized channels weighing 480 lbs. per 1000 linear feet.
5. Accessories: Zinc alloy unless otherwise noted.
a. Casing Bead: No. 66-X square nose with expansion flange, pure zinc.
b. Control Joints: 1/4 inch wide x 1/2 inch deep minimum No. 75 pure zinc control joints.
c. Expansion Joints: No. 40 pure zinc expansion joint.
d. Corner Bead: No. X2 standard expanded wing bead, pure zinc.
e. Interior Corner Reinforcement: 2 inch x 2 inch from metal lath.
f. Wire: Cold drawn annealed galvanized.
g. Hanger Wire: 8 gauge.
h. Tie Wire: 18 gauge.
i. Vented Plaster Reveal Trim: Venting where shown on drawings of type and size recommended to suit application as manufactured by Fry Reglet Corp., or Owner approved equal.
6. Approved Manufacturers:
a. Alabama Metal Industries Corp. (AMICO)

b. California Expanded Metal Products Company
c. Marino/Ware Division, Ware Industries, Inc.
d. Unimast, Inc.
e. Western Metal Lath

D. Cement Plaster (Stucco):
1. Portland Cement: Comply with ASTM C150, Type I.
2. Lime: Comply with ASTM C206, Type S and FS SS-L-00351a, Type F.
3. Sand: Provide sand that meets ASTM C144 finish coat graded in accordance with ASTM C842.
4. Water: Potable
5. Fiberglass Strands: 1/2 inch alkaline resistant similar to Fibermesh Stealth" fibers manufactured by SI Concrete Systems, or Owner approved equal.

E. Finish:
1. Type: Smooth Acrylic Finish Coat
2. Approved Manufacturers:
a. Dryvit Systems, Inc.
b. Degussa Wall Systems, Inc.
1) Finestone
2) SonoWall
3. Omega Products International, Inc. (Rydar, Inc.)
4. Parex, Inc.
5. Pleko
6. Sto Corp.
7. TEC, Div. H. B. Fuller

2.2 MIXES

A. Scratch Coat:
1. One (1) sack Portland cement.
2. Two (2) sacks masonry cement
3. Nine (9) cu. ft. plaster sand
4. 1-1/2 lbs of 1/2 inch of synthetic fiber reinforcement.
5. Water: Only enough to make mix workable.

B. Brown Coat: For all Portland cement plaster shall be mixed in the same proportions as scratch coat, except for one (1) additional cu. ft. plaster sand.

NOTE: Contractor's Material Option To Job Mixed Scratch and Brown Coat): In lieu of Portland cement, masonry cement, and synthetic fiber reinforcement specified above for scratch and brown coats, a proprietary product such as MagnaWall Scratch & Brown (S&B) Stucco S or Best Scratch & Brown (S&B) Stucco S manufactured by ISG Resources, Inc., (MagnaWall/Best Masonry), or Owner approved equal may be used.

C. Finish Coat: Approved acrylic finish coat in color selected by Owner from manufacturer's available colors.

PART 3 - EXECUTION

3.1 PREPARATION

A. Cold Weather:
1. Do not use frozen material.
2. Do not apply cement plaster to frozen surfaces or surfaces containing frost.

3. Do not mix materials or apply cement plaster when ambient temperature is less than 35 degrees F.
4. A temperature of at least 55 degrees F must be maintained prior to plaster application, during its application, and until it is dry. Plaster work which freezes within 48 hours of application shall be removed and replaced with new plaster.

B. Hot Weather:
1. Protect cement plaster from uneven and excessive evaporation during hot, windy, and dry weather.
2. Moist curing after each coat of cement plaster with water if ambient temperature is more than 75 degrees F. Moist cure for 48 hours after application of coats.
3. Hot, or dry, or windy weather the cement plaster should be moistened down and then covered with a single sheet of polyethylene plastic (clear only).
4. Moist curing is required at the start and end of work day.
5. Humidity higher than 75 percent. Moist curing not required.

C. Remove rust, oil, grease or other foreign substance which might hinder good bond from lath immediately prior to application of plaster.

D. Commencing work shall be construed as acceptance of preceding work performed by others as suitable to receive Work specified in this Section.

E. Erect and maintain scaffolding in accordance with all applicable laws and regulations, local or other.

F. Manufactured products shall be delivered in original packages, containers or bundles, bearing manufacturer's name and brand.

G. Mix in accordance with manufacturer's direction. Clean mixers, boxes and tools after each batch.

H. Mix thoroughly with correct amount of water until uniform color consistency. Measure materials accurately.

I. Do not apply finish coat when there is any form of precipitation. Protect cement plaster from all forms of precipitation during the application and the setting/curing period of finish coat. Ensure that the finish is fully set prior to removing protective covering.

3.2 APPLICATION

A. Ceiling and Soffit Framing: (As shown or required)
1. Main Runner Channels (1-1/2 inches) and Lath Channels (3/4 inch) shall be spaced at 4 feet-0 inches o.c. and 13-1/2 inches o.c. respectively.
2. The use of 16 gauge galvanized metal studs (3-5/8 inch wide) may be used as miscellaneous framing to achieve soffit geometry at skylight if approved by Architect in the field.
3. Hanger wires shall be spaced at 4 feet-0 inches o.c. max. Do not use power actuated anchors through metal deck for wire supports.
4. Prepare all framing to receive recessed lights and control joints, where applicable.

B. Metal Lath:
1. Secure lath to channels by tying securely with two (2) loops of 18 gauge wire at maximum six (6) inches o.c. spacing.
2. Lap metal lath at least two (2) inches over supports
3. Apply lath with long dimension of sheet across supports.
4. All lath shall be tightly stretched, free from looseness, bags, and bulges.

C. Metal Corner Beads:
1. Provide on all external plaster corners in single lengths where length of the corner does not exceed 12 feet.
2. Fasten securely with tie wire spaced 8 inches o.c. staggered in two (2) wings.

D. Casing Beads:
1. Install at edges of all horizontal planes and elsewhere as indicated on drawings.
2. All junctions shall be mitered.
3. Horizontal surfaces shall be isolated from all vertical surfaces.

E. Control Joints:
1. It is not required to cut lath behind control points, it is required to cut lath behind expansion joints.
2. Panels should be relatively square.
3. Notify Architect if plaster areas exceed 18 lineal feet in length without a control joint.
4. Install control joints for surface areas of approximately 150 square feet whether elevated or not.
5. Install where dissimilar back-up materials join whether detailed or not.

F. Plaster Application:
1. Basecoat Application:
   a. Scratch Coat:
      1. Embed lath to 3/8 inch thickness.
      2. Apply sufficient force to form good keys.
      3. Cross scratch upon attaining its initial set; deep-damp with fog spray.
   b. Brown Coat:
      1. Apply after scratch coat has set at least 24 hours.
      2. Lightly scratch brown coat; broom.
2. Finish Coat Application:
   a. Must be applied continuously in one (1) operation to the entire surface area.
   b. A wet edge must be maintained.
   c. Finish is to be applied so there are no scaffold lines or other marks due to application.
   d. The mixing and application must follow the manufacturer's recommendations.
   e. Texture and color shall be as selected and approved by Owner.
3. Total Thickness, unless shown otherwise: (Scratch, Brown and Finish Coat)
   a. Horizontal Conditions (Ceiling/Soffit): 3/4 inch.
   b. Vertical Conditions: One (1) inch.

3.3 CLEAN UP AND PROTECTION

A. Rubbish and debris shall be removed as often as necessary. As each room or space is complete, remove all rubbish, debris, scaffolding and tools, and leave broom clean.

B. Clean plaster spots from work of other trades. Protect finish plaster from injury.

END OF SECTION

SECTION 09260

GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.1 SUMMARY

A. Provide gypsum board assemblies:

1. Interior walls, partitions, and ceilings with tape and joint compound finish.
Steel framing systems to receive gypsum board.
Insulation and vapor barrier systems in gypsum board assemblies.
Glass-reinforced gypsum fabrications.
Installation of access panels in gypsum board assemblies.

PART 2 PRODUCTS

2.1 MATERIALS

A. Manufacturers of Gypsum Board: Domtar Gypsum, Georgia-Pacific Corp., National Gypsum Co., United States Gypsum Co., or approved equal.

B. Manufacturers of Steel Framing and Furring: Dale Incor, Dietrich Industries, Marino Ware, National Gypsum Co., Unimast, or approved equal.

C. Manufacturers of Grid and Suspension Systems: Armstrong World Industries, Chicago Metallic, USG Interiors, or approved equal.

D. Gypsum Board:

1. Gypsum Wallboard for Tape and Joint Compound Finish: ASTM C 36, regular, moisture-resistant, foil-backed, and fire-rated types as required:
a. Typical Thickness: 5/8 inch.
Water-Resistant Gypsum Backing Board: ASTM C 630, regular and fire-rated types as required:
b. Typical Thickness: 5/8 inch.
Joint Treatment: ASTM C 475 and ASTM C 840, 3-coat system, paper or fiberglass tape.
2. Gypsum Sheathing Board, ½" thick silicone treated gypsum core, with glass mats both front and back surface, alkali resistant surface, weather-resistant, zero flame spread, zero smoke developed. Approved Product/Manufacturer: "Dense-Glass Gold Exterior Guard" by Georgia-Pacific or approved equal. Use exterior sheathing behind exterior plaster (stucco).

E. Glass-Mat Water-Resistant Gypsum Backing Board:

1. Type: ASTM C 1178, Type X, 5/8 inch thick.

F. Trim Accessories:

1. Material: Metal trim
Types: Cornerbead, edge trim, and control joints.
Decorative Profiles: Extruded aluminum reveals and channels, with factory-applied primer.

G. Steel Framing for Walls and Partitions:

1. Steel Studs and Runners: ASTM C 645, steel studs with manufacturer's standard corrosion-resistant coating:
a. Thickness: 22 gauge (.0276 inch).

b. Typical Depth: 3-5/8 inch.

Furring Channels: ASTM C 645 with manufacturer's standard corrosion-resistant coating:

c. Thickness: 20 gauge (.0329 inch).

Auxiliary Framing Components: Furring brackets, resilient furring channels, Z-furring members, and non-corrosive fasteners.

H. Steel Framing for Suspended and Furred Ceilings:

1. Furring Channels: ASTM C 645, channels with manufacturer's standard corrosion-resistant coating:
   a. Type: Standard.
   b. Thickness: 20 gauge (.0329 inch).

Accessories: Hangers and inserts.

I. Auxiliary Materials:

1. Gypsum board screws, ASTM C 1002.

Fastening adhesive.
Concealed acoustical sealant.
Mineral fiber sound attenuation blankets.
Mineral fiber thermal insulation.

END OF SECTION

SECTION 09265

GYPSUM BOARD SHAFT WALL ASSEMBLIES

PART 1 GENERAL

1.1 SUMMARY

A. Provide gypsum board shaft-wall assemblies.

PART 2 PRODUCTS

2.1 MATERIALS

A. Manufacturers: Domtar Gypsum, Georgia Pacific, National Gypsum Co., United States Gypsum Company, or approved equal.

B. Cavity Shaft Wall Assemblies:

1. Shaftwall Board Thickness: Not less than 1 inch.
Studs: I, C-H or double E studs, not less than 20 gauge (.0329 inch).

C. Gypsum Board Shaft Wall Materials:

1. Steel Framing: ASTM C 645.
Gypsum Shaftwall Board: ASTM C 442, Type X.
Gypsum Wallboard: ASTM C 36, Type X.

D. Auxiliary Materials:

1. Cornerbeads, edge trim, and control joints.
Laminating adhesive.
Gypsum board screws, ASTM C 1002.
Concealed acoustical sealant.
Mineral fiber sound attenuation blankets.

END OF SECTION

SECTION 09300

TILE

PART 1 GENERAL

1.1 SUMMARY

A. Interior Tile:

1. Wall tile over gypsum wallboard.
Wall tile over tile backer board at wet areas.
Floor tile over concrete slab.

PART 2 PRODUCTS

2.1 MATERIALS

A. Manufacturers of Tile: Refer to Finish Selection Book from La Quinta.

B. Manufacturers of Setting Materials: American Olean, Bostick Construction Products, Laticrete, Mapei Corp or approved equal.

C. Provide the following:

1. Elastomeric crack isolation membrane, Laticrete 9235 or Nobleseal TS Crack Isolation Membrane or approved equal.

D. Tile Accessories:

1. Matching trim units.

E. Setting Materials:

1. Latex-Portland cement mortar.

F. Grout:

1. Laticrete Tri-Poly Fortified Latex Modified Grout - Series 1600, 1/8” wide grout joints in all locations except Guest Room Bath (1/16” grout joints).

G. Setting Accessories:

1. Membrane waterproofing under tile, ANSI A 118.10.
Grout Cleaner: Aqua mix Heavy Duty Tile & Grout Cleaner or equivalent.
Grout Sealer: Aqua mix “Sealers Choice”.

H. Elastomeric Sealants:

1. One-part mildew-resistant silicone sealant for non-traffic areas.

2.2 SCHEDULE

A. Tile Schedule: Refer to Finish Selection Book from La Quinta and Prototype Drawings.

END OF SECTION

SECTION 09515

ACOUSTICAL TILE CEILINGS

PART 1 GENERAL

1.1 SUMMARY

A. Provide acoustical tile ceilings and concealed metal suspension system.

PART 2 PRODUCTS

2.1 MATERIALS

A. Manufacturers: Armstrong World Industries, Celotex, USG Interiors or approved equal.

B. Provide the following:

1. Standard panel product: Armstrong Beveled Tegular "Ultima" RH90 or equivalent.

C. Mineral Base Panels, Nodular, Cast or Molded Type:

1. Size: 24 by 24 inches by 3/4 inch.
Size: 24 by 48 inches by 3/4 inch.

D. Concealed Suspension Systems, Non-Fire-Resistance Rated:

1. Type: Direct-hung double-web intermediate-duty system, ASTM C 635.
Suspension System Accessories: Attachment devices and hangers, ASTM C 635.

E. Auxiliary Materials:

1. Edge molding and trim.
Concealed acoustical sealant.

END OF SECTION

SECTION 09650

RESILIENT FLOORING

PART 1 GENERAL

1.1 SUMMARY

A. Provide resilient flooring and floor preparation.

PART 2 PRODUCTS

2.1 MATERIALS

A. Vinyl Composition Tile Flooring:
Manufacturers: Refer to Finish Selection Book from La Quinta.
1. Guest room entry and baths, Amtico W731E Wild Cherry is the approved wood floor finish product.
2. Johnsite Mouldings,
a T-moulding color #47 Brown (CD-47-B)
b. Millwork Reveal color #130 Sisal (MW-130-F)
c. Tub Molding (TM-50-A)

B. Auxiliary Materials:

1. Edge strips and terminations.
Leveling compound.

END OF SECTION

SECTION 09655

RESILIENT BASE AND ACCESSORIES

PART 1 GENERAL

1.1 SUMMARY

A. Provide resilient wall base and accessories.

PART 2 PRODUCTS

2.1 MATERIALS

A. Manufacturers: Refer to Finish Selection Book from Franchise.

B. Resilient Wall Base:

1. Rubber Wall Base: FS SS-W-40, Type II.
Thickness: 0.125 inches thick.
Height: 4 inches.

C. Installation Accessories:

1. Concrete Slab Primer: Nonstaining type.
Trowelable Underlayments and Patching Compounds: Latex-modified, Portland-cement-based formulation.
Adhesives: Water-resistant type.

END OF SECTION

SECTION 09685

SHEET CARPET

PART 1 GENERAL

1.1 SUMMARY

A. Provide sheet carpet and floor preparation.

1.2 MATERIALS

A. Carpet Material:

1. Material: Refer to Finish Selection Book by La Quinta.

B. Carpet Cushions:
Material: Refer to Finish Selection Book by La Quinta.

C. Auxiliary Materials:

1. Edge guards.
Adhesives, cements and fasteners.
Leveling compound.

END OF SECTION

SECTION 09720

WALL COVERING

PART 1 GENERAL

1.1 SUMMARY

A. Provide wall coverings and surface preparation.

PART 2 PRODUCTS

2.1 MATERIALS

A. Vinyl Wall Covering:
Manufacturers: Refer to Finish Selection Book by Franchise.

END OF SECTION

SECTION 09910

PAINTING

PART 1 GENERAL

1.1 SUMMARY

A. Provide the following:

1. Painting and surface preparation for interior unfinished surfaces as scheduled.
Painting and surface preparation for exterior unfinished surfaces as scheduled.
Field-painting and surface preparation of exposed mechanical and electrical piping, conduit, ductwork, and equipment.

PART 2 PRODUCTS

2.1 MATERIALS

2.2 Manufacturers: refer to table on elevation drawings.

A. Gypsum Drywall Walls:

1. Gloss:
   a. Semi
System:
   b. 1 coat latex primer.
   c. 2 coats latex finish.

B. Gypsum Drywall Walls and Ceilings in Bathrooms, Prep Areas, and Wet Areas:

1. Gloss:
   a. Semi
System:
   b. 1 coat alkyd primer.
   c. 2 coats alkyd finish

C. Gypsum Drywall Walls to Receive Wall Covering:

1. System:
   a. 1 coat latex primer

D. Gypsum Drywall Ceilings:

1. Gloss:
   a. Semi
System:
   b. 1 coat latex primer
   c. 2 coats latex finish

E. Wood for Painted Finish:

1. Gloss:
   a. Semi
System:
   b. 1 coat latex primer
   c. 2 coats latex enamel

F. Exterior Wood for Painted Finish:

1. Gloss:
   a. Semi

System:
   b. 1 coat latex primer
   c. 2 coats latex enamel

G. Ferrous Metals:

1. Gloss:
   a. Semi

System:
   b. 1 coat alkyd primer
   c. 2 coats alkyd enamel

H. Galvanized Metal:

1. Gloss:
   a. Semi

System:
   b. 1 coat alkyd primer
   c. 2 coats alkyd enamel

END OF SECTION

SECTION 10150

COMPARTMENTS AND CUBICLES

PART 1 GENERAL

1.1 SUMMARY

A. Provide toilet partitions and screens.

PART 2 PRODUCTS

2.1 MATERIALS

A. Manufacturers: Accurate Partitions, Bobrick Washroom Equipment, General Partitions Manufacturing, Knickerbocker Partition, Santana Products, Sanymetal, or approved equal.

B. Toilet Compartment Type and Mounting:

1. Compartments: Floor mounted overhead braced.
Screens: Wall-hung.
Style: Standard privacy style.

C. Toilet Compartment Materials:

1. Plastic Laminate Compartments: NEMA LD-3, minimum 0.050 inch thick plastic laminate facing on particleboard core.

Refer to La Quinta Finish Selection Book.

END OF SECTION

SECTION 10210

LOUVERS

PART 1 GENERAL

1.1 SUMMARY

A. Provide louvers and vents.

PART 2 PRODUCTS

2.1 MATERIALS

A. Manufacturers: Airline Products, Airolite, Construction Specialties, Industrial Louvers or approved equal.

B. Louvers:
Blades: Horizontal drainable sightproof blades.
Finish: Galvanized, primed, field painted to match adjacent surface.

C. Louver Accessories:

1. Bird screens.

END OF SECTION

SECTION 10440

INTERIOR SIGNAGE

PART 1 GENERAL

1.1 SUMMARY

A. Provide interior signage.

PART 2 PRODUCTS

2.1 MATERIALS

A. Material and Type: Refer to Finish Selection Book by Franchise.

END OF SECTION

SECTION 10505

METAL LOCKERS

PART 1 GENERAL

1.1 SUMMARY

A. Provide metal lockers.

PART 2 PRODUCTS

2.1 MATERIALS

A. Manufacturers: Lyon Metal Products, Penco Products, Republic Storage Systems, or approved equal.

B. Lockers:

1. Type: Wardrobe lockers, sheet steel, 24 gauge (.0239 inch) back and sides, 16 gauge (.0598 inch) top, bottom, and doors.

Tier: Multiple-tier lockers.
Face: Perforated.
Tops: Sloped.
Mounting: Elevated base.
Color to match adjacent wall surface.

END OF SECTION

SECTION 10525

FIRE EXTINGUISHERS AND CABINETS

PART 1 GENERAL

1.1 SUMMARY

A. Provide fire extinguishers and cabinets as required by applicable Building Codes and Authorities Having Jurisdiction.

PART 2 PRODUCTS

2.1 MATERIALS

A. Manufacturers: J. L. Industries, Larsen's Manufacturing, Potter-Roemer, or approved equal.

B. Fire Extinguishers:

1. Type: Multipurpose dry chemical type.
Rating: Sized for project requirements.
Public Area Mounting: Cabinet mounted.
Service Area Mounting: Metal brackets.

C. Cabinets:

1. Mounting: Recessed.
Trim: Trimless with hidden flange.
Doors: Enameled steel, baked enamel finish.
Doors: Acrylic.

END OF SECTION

SECTION 10655

FOLDING PANEL PARTITIONS

PART 1 - GENERAL

1.1 SUMMARY

a. Provide operable panel partitions and overhead tracks.

1.2 SUBMITTALS

a. Product Data: Submit manufacturer's product data and installation instructions for each material and product used.
b. Shop Drawings: Submit shop drawings indicating material characteristics, details of construction, connections, and relationship with adjacent construction.
c. Samples: Submit two representative samples of each material specified indicating visual characteristics and finish. Include range samples if variation of finish is anticipated.
d. Operation and Maintenance Data: Submit manufacturer’s operation and maintenance data, including operating instructions, list of spare parts and maintenance schedule.

1.3 QUALITY ASSURANCE

a. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.
b. System Performance:
    1). Sound Transmission Class: ASTM E 413.
        a). Class 45.
    2). Noise Reduction Coefficient: ASTM C 423.
        a). 0.75 NRC.
    3). Fire Rating:
        a). As required.

PART 2 - PRODUCTS

A. MATERIALS

a. Manufacturers: Holcomb & Hoke Manufacturing, Hufcor, Kwik-Wall, Modernfold, Panelfold or approved equal.
b. Operable Panel Partitions:
    1). Panel Type: Continuously hinged panels, center stacked.
    2). Operation: Manual.
    3). Frame: Steel reinforced aluminum.
    4). Finish: Vinyl.
c. Accessories:
    1). Pocket doors at end of partition.

PART 3 - EXECUTION

INSTALLATION

a. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Install materials and systems in proper relation with adjacent construction and with uniform appearance. Coordinate with work of other sections.
b. Restore damaged finishes and test for proper operation. Clean and protect work from damage.

END OF SECTION

SECTION 10810

TOILET ACCESSORIES

PART 1 GENERAL

1.1 SUMMARY

A. Provide toilet accessories and metal framed mirrors.

PART 2 PRODUCTS

2.1 MATERIALS

A. Provide the following:

1. Products of Bobrick Washroom Equipment, Bradley Corporation, and Franklin Brass or equivalent.

B. Mirrors and Frames:

1. Glazing: Mirror glass, 1/4 inch thick, ASTM C 1036.

C. Toilet Accessory Schedule:

CODE	PRODUCT	LOCATION	PRODUCTS			OF/CI CF/CI
A	Recessed Double Toilet Paper Holder	Public Toilets	Bobrick B388	Bradley 5150	Franklin Brass 970	CF/CI
B	Surface Mounted Toilet Paper Holder	Housekeeping Toilets	Bobrick B2740	Bradley 5234	Franklin Brass 980B	CF/CI
C	Facial Tissue Dispenser	Rental Unit Bath	Knutson Enterprises 0300 and 0200			OF/CI
D	Robe Hook	Rental Unit Bath	CSI DONNER P5030CH			OF/CI
F	Towel Bar 18”	Rental Unit Bath	CSI CONNER 411R 18CH			OF/CI
G	Shower Curtain Rod	Rental Unit Baths	CSI DONNER 02-1015555/63F			OF/CI
H	Grab Bar 12"	H/C Rental Unit Tub	Bobrick B5707X12	Bradley 832-000-12	Franklin Brass 5712	CF/CI
I	Grab Bar 24”	H/C Rental Unit Tub	Bobrick B5707X24	Bradley 832-000-24	Franklin Brass 5724	CF/CI
J	Grab Bar 36”	H/C Rental Unit Toilet, Typical Rental Unit	Bobrick B5707X36	Bradley 832-000-36	Franklin Brass 5736	CF/CI
K	Grab Bar 42”	H/C Rental Unit Toilet	Bobrick B5707X42	Bradley 832-000-42	Franklin Brass 5742	CF/CI
L	Grab Bar 48”	H/C Rental Unit Tub	Bobrick B5707X48	Bradley 832-000-48	Franklin B rass 5748	CF/CI

M	Toilet Paper Holder	Rental Unit Bath	CSI Donner 576/587			OF/CI
N	Wrap-Around Grab Bar	H/C Rental Unit Shower	Bobrick B5856	Bradley 832 - 040	Franklin Brass 5782	CF/CI
O	Unframed Mirror	Rental Unit Bath Vanity	(see part 2.5, this Section)			CF/CI
P	Tub Seat	H/C Rental Unit Shower	(see part 2.3, this Section)			CF/CI
Q	Shower Seat	H/C Rental Unit Shower	(see part 2.4, this Section)			CF/CI
R	Soap Dispenser Counter Top	Public Toilets	Bobrick B8221	Bradley 6304		CF/CI
S	Soap Dispenser Surface Mount	Prep Area	Bobrick B2111	Bradley 6562	Franklin Brass 1920	CF/CI
T	Napkin Disposal Surface Mount	Public Toilet	Bobrick B270	Bradley 4781-15	Franklin Brass 1985	CF/CI
U	Napkin Dispenser Recessed	Public Toilet	Bobrick B3502	Bradley 402-45		CF/CI
X	Paper Towel Dispenser/Disposal	Public Toilet Housekeeping	Bobrick B3947	Bradley 234-65	Franklin Brass 1982	CF/CI
Y	Paper Towel Dispenser		Bobrick B262	Bradley 251-15	Franklin Brass 1955	CF/CI
Z	Mop Strip		Bobrick B223-24	Bradley 9953		CF/CI

END OF SECTION

SECTION 11457
FURNISHINGS

PART 1 -GENERAL

1. Furnish Flat Screen LCD wide screen HDTV televisions in size required With HD-PPV Capability.

2. LG Electronics USA Inc. Nos, 42LC5DC, 37LC5DC, 32LC5DC/DCS

3. Contact La Quinta for preferred installations

END OF SECTION

SECTION 12481

FLOOR MATS

PART 1 GENERAL

1.1 SUMMARY

A. Provide floor mats and frames.

PART 2 PRODUCTS

2.1 MATERIALS

A. Manufacturers: Construction Specialties, Inc. or approved equal.

B. Floor Mats:

1. Type: Carpet-type mats.
Mounting: Recessed in metal frame.
Color: Refer to Finish Selection Book by La Quinta.

C. Frames:

1. Aluminum Alloy: Bronze finish with clear acrylic.

END OF SECTION

SECTION 13150
SWIMMING POOL AND SPA

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. All labor, material and equipment necessary for the construction of a swimming pool and spa.

1.2 SCOPE

A. Obtain permits for construction and opening the pool and spa from local and state authorities having jurisdiction.

1.3 SUBMITTALS

A. Submit complete shop drawings indicating proposed installation of swimming pool and spa including pool and spa wall, floor and deck construction, all reinforcing steel configurations, pool and spa equipment layout and all piping configurations. Submit ceramic tile samples

B. Submit equipment list enumerating all items proposed to be provided. As a minimum requirement, equipment list shall include all items specified herein and/or indicated on the drawings, as well as other items required for approval and/or proper operation of swimming pool and spa.

C. Submit manufacturer's literature describing all items submitted on equipment list. Circle or highlight only those items intended to be used on this project.

D. The pump and filter manufacturer shall submit shop drawings of filtration and circulation system designs with all components to be used as a complete functional system. Shop drawings shall show all system details and proposed equipment sizes. Architectural pool and spa plans and details are intended for scope and definitive purposes only and are schematic in nature.

E. General Contractor shall be totally responsible for design of all pool and spa piping, electrical requirements, equipment sizing, compliance with all applicable codes and franchise standards, compliance with local inspector's instructions and deck and pool and spa water waste disposal. Contractor shall thoroughly research all local and franchise requirements regarding pool and spa size and installation details and shall adequately provide for those requirements at no additional cost to the Owner. This specification and the architectural pool and spa plans and details, including dimensions, are for schematic purposes only and are diagrammatic in nature. Work inferred, but having details obviously omitted shall be furnished and installed as required to perform the necessary function at no additional cost to the Owner. The General Contractor shall be responsible for obtaining all necessary permits with regard to pool and spa installation and initial operation.

PART 2 PRODUCTS

2.1 POOL AND SPA PACKAGE SYSTEMS

A. To the greatest degree possible, pool and spa and spa components shall be pre-assembled/pre-packaged systems, including pump, filter, valves, controls, wiring etc., all tested at shop. Systems shall be set in fiberglass compartments with watertight tub, lid recessed into ground. System to include 100 amp main lug panel in compartment (or above grade if required by Code), with disconnet and power service by electrician. Provide 2 each 3’ x 3’ concrete pads for pool and spa heaters.

2.2 PIPING

A. All swimming pool and spa and deck drain piping shall be N.S.F. Testing Laboratory approved PVC pipe unless local requirements dictate otherwise. If PVC pipe is acceptable, provide schedule 40 pipe in all locations except under the pool and spa. At those locations, provide schedule 80 pipe. Piping from pool and spa perimeter to pool and spa equipment shall be supported on undisturbed soil or on 6" x 6" x 2" deep concrete pads on five feet centers. Continuous piping around pool and spa perimeter shall be contained within the typical pool and spa beam section. When portions of the pool and spa wall are curvilinear, PVC piping shall not be arced in a radius of less than 8'-0" without the insertion of swing joints. Any irregularities or turns in piping shall also be encased in concrete monolithic with pool and spa wall.

B. All pipes shall be graded back to the pool and spa on a uniform slope of not less than three inches per 100 horizontal feet. Drain plugs shall be provided in the filter and the pump for adequate drainage. Gravity lines shall be sloped a minimum of 1/4" per foot to drain. Disposal of pool and spa and deck drainage water shall be accomplished by a method and with materials approved by the local health department and local inspectors. All piping and related plumbing shall be installed in accordance with the directives of the local health department and local inspectors.

2.3 POOL AND SPA MARKINGS/SIGNAGE

A. Tile shall be set in 6" square pieces over the curb-and-gutter and 6" down the vertical pool and spa wall. Tile shall continue around the entire perimeter of the pool and spa and steps. The tile shall be frost proof and shall be set in accordance with specification P601 issued by the Tile Council of America in addition to requirements established herein and indicated on the working drawings.

B. Depth marker locations shall be positioned around the pool and spa. Stencilled, sprayed-on numbers shall not be acceptable. Adjacent to all depth markers, signage indicating "No Diving" which matches depth marker text shall be recessed into coping.

2.4 SAFETY EQUIPMENT

A. Provide and install a life line rope consisting of 3 strand, regular lay monofilament 3/4" diameter white polyethylene rope with a 5000 pound breaking strength. Rope shall float and shall be non-conducting. Provide length sufficient to span width of pool and spa.

B. Provide and install 2 piece, telescopic, aluminum pole with metal cam constructed of drawn aluminum tubing.

C. Provide and install two Coast Guard-approved life rings.

D. Provide and install a standard 24 piece first aid kit for swimming pool and spa injuries approved by the Red Cross.

E. At exterior pool and spas, fence shall enclose the entire pool and spa area and have 3' wide self-closing and self-latching gates located where indicated on the drawings.

2.5 TEST KIT

A. Provide and install test kit equipped for free chlorine, pH, acid demand, alkalai demand and total alkalinity testing.

END OF SECTION

SECTION 14210
ELECTRIC TRACTION ELEVATORS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Electric Traction Elevators.

B. Products Supplied But Not Installed Under this Section:
1. Hoist Beam
2. Pit Ladder

C. Work Supplied Under Other Sections:
1. Temporary lighting, including temporary lighting in hoistway for machine space with switch located in hoistway on the strike jamb side of top landing door.
2. Hoistway ventilation shall be in accordance with local and national building code requirements.
3. Guide Rail Support shall be structurally adequate to extend from pit floor to top of hoistway, with spans in accordance with requirements of authority having jurisdiction and final layouts.
4. Removable barricades at all hoistway openings, in compliance with OSHA 29 CFR 1926.502 in addition to any local code requirements.
5. Lifeline attachments capable of withstanding 5000 lb load in accordance with OSHA 29 CFR 1926.502. Provide a minimum of 2 at the top, front of each hoistway.
6. Pit lighting: Fixture with switch and guards. Provide illumination level equal to or greater than that required by ASME A17.1/CSA B44 2000, or applicable version.
7. Control space lighting with switch. Coordinate switch with lighting for machine space as allowable by code.
8. Access Doors: As required for access to governor. Access door shall be self-closing, self-locking if necessary and operable from the inside without a key.

D. Related sections:
1. Section 015000 - Temporary Facilities and Controls
2. Section 033000 - Cast-in-Place Concrete:
3. Section 042000 - Unit Masonry
4. Section 055000 - Metal Fabrications
5. Section 071600 - Cementitious Waterproofing
6. Section 230000 - Heating, Ventilating, and Air Conditioning
7. Section 260000 - Electrical
8. Section 263000 - Electric Power Generating and Storing Equipment
9. Section 273000 - Voice Communications
10. Section 283100 - Fire Detection and Alarm
11. Section 310000 - Earthwork

E. Industry and government standards:
1. ICC/ANSI A117.1 Accessible and Usable Buildings and Facilities
2. ADAAG - Accessibility Guidelines for Buildings and Facilities
3. ANSI/NFPA 70, National Electrical Code
4. ANSI/NFPA 80, Standard for Fire Doors and Fire Windows
5. ASME/ANSI A17.1, Safety Code for Elevators and Escalators.

1.02 DESCRIPTION OF ELEVATOR

A. Elevator Equipment: KONE EcoSpace™ gearless traction elevator

B. Equipment Control: KCM831

C. Quantity of Elevators: 2

D. Landings: 5

E. Openings: 5 Front Openings, 5 Back Openings

F. Travel: 50'-0"

G. Rated Capacity: 2500 lbs (1134 kg)

H. Rated Speed: 150 fpm

I. Clear Inside Dimensions (W x D): 6'-8" x 4'-3"

J. Cab Height: 8'

K. Clear height under suspended ceiling: 7'-7"

L. Entrance Width & Type: 3'-6" & Front/Back Right/Left Openings

M. Entrance Height: 7'

N. Main Power Supply: 208 Volts + 5%, three-phase

O. Operation: Duplex

P. Machine Location: Inside the hoistway mounted on car guide rail

Q. Control Space Location: Integral Closet at top landing.

R. Elevator Equipment shall conform to the requirements of seismic zone: Non-Seismic

S. Maintenance Service Period: 12 Months

1.03 PERFORMANCE REQUIREMENTS

A. Car Performance
1. Car Speed ± 5% of contract speed under any loading condition or direction of travel.
2. Car Capacity: Safely lower, stop and hold (per code) up to 125% of rated load.

B. System Performance
1. Vertical Vibration (maximum): 25 mg
2. Horizontal Vibration (maximum): 25 mg
3. Jerk Rate (maximum): 1.3 ft/sec3
4. Acceleration (maximum) 1.3 ft/sec2
5. In Car Noise: = 55 dB(A)
6. Leveling Accuracy: ±0.2 inches
7. Starts per hour (maximum): 120

1.04 SUBMITTALS

A. Product Data: Submit manufacturer's product literature for each proposed system.
1. Cab design, dimensions and layout.
2. Layout, finishes, and accessories and available options.
3. Controls, signals and operating system.

4. Color selection charts for cab and entrances.

B. Shop Drawings:
1. Clearances and travel of car.
2. Clear inside hoistway and pit dimensions.
3. Location and layout of equipment and signals.
4. Car, guide rails, buffers and other components in hoistway.
5. Maximum rail bracket spacing.
6. Maximum loads imposed on building structure.
7. Hoist beam requirements.
8. Location and sizes of access doors.
9. Location and details of hoistway door and frames.
10. Electrical characteristics and connection requirements.

C. Operation and maintenance data:
1. Provide manufacturer's standard maintenance and operation manual.

1.05 QUALITY ASSURANCE

A. Manufacturer: Minimum of ten years experience in the fabrication, installation and service of elevators of the type and performance of the specified. The manufacturer shall have a documented quality assurance program.

B. Installer: The equipment manufacturer shall install the elevator.

C. Inspection and Testing: In accordance with requirements of local jurisdiction, obtain required permits, inspections and tests.

1.06 DELIVERY, STORAGE AND HANDLING

A. If the construction site is not prepared to receive the elevator equipment at the agreed ship date, the General Contractor shall be responsible to provide a safe, dry, and easily accessible storage area on or off the premises. Additional lablor costs for double handling will be the responsibility of the general contractor.

B. Delivered elevator materials shall be stored in a protected environment in accordance with manufacturer recommendations. A minimum storage area of 10 feet by 20 feet is required adjacent to the hoistway.

1.07 WARRANTY

A. Provide manufacturer warranty for a period of one year. The warranty period is to begin upon Substantial Completion of the Contract. Warranty covers defects in materials and workmanship. Damage due to ordinary use, vandalism, improper or insufficient maintenance, misuse, or neglect do not constitute defective material or workmanship.

1.08 MAINTENANCE SERVICE

A. The elevator manufacturer shall provide maintenance service consisting of regular examinations and adjustments of the elevator equipment for a period of 12 Months after date of substantial completion. Replacement parts shall be produced by the original equipment manufacturer.

B. Maintenance service be performed during regular working hours of regular working days and shall include emergency 24-hour call back service.

C. Maintenance service shall not include adjustments, repairs or replacement of parts due to negligence, misuse, abuse or accidents.

PART 2 PRODUCTS

2.01 MANUFACTURER

A. Provide AC gearless machine room-less elevator systems subject to compliance with the design and performance requirements of this specification. Elevator manufacturers may include but are not limited to one of the following:
   1. Basis of Design: EcoSpace™ traction elevators by KONE, Inc. (www.kone.com).
   2. Other acceptable machine room-less products:
      a. Otis Elevator Co. - Gen2™ Product
      b. Schindler Elevator Corp. - 400A Product

2.02 EQUIPMENT: CONTROL COMPONENTS AND CONTROL SPACE

A. Controller: Provide microcomputer based control system to perform all of the functions.
   1. All high voltage (110V or above) contact points inside the controller cabinet shall be protected from accidental contact in a situation where the controller doors are open.
   2. Controller shall be separated into two distinct halves; Motor Drive side and Control side. High voltage motor power conductors shall be routed and physically segregated from the rest of the controller.
   3. Provide a serial cardrack and main CPU board containing a non-erasable EPROM and operating system firmware.
   4. Variable field parameters and adjustments shall be contained in a non-volatile memory module.

B. Drive: Provide Variable Voltage Variable Frequency AC drive system to develop high starting torque with low starting current.

C. Controller Location: Locate controller{s} in an integral cabinet adjacent to the entrance frame at the top landing of the elevator.

2.03 EQUIPMENT: HOISTWAY COMPONENTS

A. Machine: AC gearless machine, with permanent magnet synchronous motor, direct current electro-mechanical disc brakes and integral traction drive sheave, mounted to the car guide rail at the top of the hoistway.

B. Governor: Friction type over-speed governor rated for the duty of the elevator specified.

C. Buffers, Car and Counterweight: Polyurethane buffer.

D. Hoistway Operating Devices:
   1. Emergency stop switch in the pit
   2. Terminal stopping switches.
   3. Emergency stop switch on the machine

E. Positioning System: System consisting of magnets and proximity switches.

F. Guide Rails and Attachments: Steel rails with brackets and fasteners.

2.04 EQUIPMENT: HOISTWAY ENTRANCES

A. Hoistway Entrances
   1. Sills: extruded.
   2. Doors: Hollow metal construction with vertical internal channel reinforcements.
   3. Fire Rating: Entrance and doors shall be UL fire-rated for 1-1/2 hour.

4. Entrance Finish: Brushed Stainless Steel.
5. Entrance Markings Jamb Plates: Provide standard entrance jamb tactile markings on both jambs, at all floors. Plate Mounting: Refer to manufacturer drawings.

2.05 EQUIPMENT: CAR COMPONENTS

A. Car Frame: Provide car frame with adequate bracing to support the platform and car enclosure.

B. Platform: Platform shall be per manufacturers standard.

C. Car Guides: Provide guide-shoes mounted to top and bottom of both car and counterweight frame. Each guide-shoe assembly shall be arranged to maintain constant contact on the rail surfaces. Provide retainers in areas with Seismic design requirements.

D. Load weighing device shall be strain gauge type mounted to dead-end hitch attached atop the hoistway guide-rail.

E. Steel Cab (Laminate Series)
1. Panels: Non-removable vertical panels, plastic laminate selected from standard manufacturer's catalog of choices.
2. Car Front Finish: Brushed stainless steel.
3. Car Door Finish: Brushed stainless steel.
4. Ceiling:
   a. Standard Translucent Panels - LF-1: Polygal Translucent three panel suspended ceiling with T-5 Fluorescent lighting and Brushed Aluminum frame.
5. Handrail:
   a. Round tube brushed aluminum - 1.5 in.. Rails to be located on Back Wall and Side Walls - Front opening only of car enclosure.
6. Flooring: By others. (Not to exceed 2sqft & 1/2" finished depth.)
7. Threshold: Aluminum

F. Emergency Car Signals
1. Emergency Siren: Siren mounted on top of cab that is activated when the alarm button in the car operating panel is engaged. Siren shall have rated sound pressure level of 80 dB(A) at a distance of three feet from device. Siren shall respond with a delay of not more than one second after activation of alarm button.
2. Emergency Car Lighting: Provide emergency power unit employing a 12-volt sealed rechargeable battery and totally static circuits shall illuminate the elevator car and provide current to the alarm bell in the event of building power failure.
3. Emergency Exit Contact: An electrical contact shall be provided on the car-top exit.

G. Ventilation: No fan.

2.06 EQUIPMENT: SIGNAL DEVICES AND FIXTURES

A. Car Operating Panel: Provide car operating panel with all push buttons, key switches, and message indicators for elevator operation.
1. Full height car operating panel shall contain a bank of round, mechanical, illuminated buttons marked to correspond to landings served, emergency call button, door open button, door close button, and key switches for lights, inspection, and exhaust fan. Buttons have amber illumination (halo). All buttons to have raised text and Braille marking on left hand side. The car operating display panel shall be amber 7 Segment. All texts, when illuminated, shall be amber. The full height car operating panel shall have a polycarbonate face plate that is shatterproof and impact resistant in a color and pattern per manufacturers standard selection.
2. Additional features of car operating panel shall include:
   a. Car Position Indicator within operating panel (amber).

b. Elevator Data Plate marked with elevator capacity and car number on car top.
c. Help buttons with raised markings.
d. In car stop switch per local code.
e. Firefighter's hat.
f. Firefighter's Phase II Key-switch.
g. Call Cancel Button.
h. Pre-programmed integrated ADA phone (complete description of krms features included as standard)
i. Help Button/Communicator. Activation of help button will initiate two-way communication between car and a location inside the building, switching over to alternate location if call is unanswered, where personnel are available to take the appropriate action. Visual indicators are provided for call initiation and call acknowledgement.
j. Firefighter's Phase II emergency in-car operating instructions.

B. Hall Fixtures: Wall mounted hall fixtures shall be provided with necessary push buttons and key switches for elevator operation. Wall mounted hall fixtures shall have a polycarbonate face plate that is shatterproof and impact resistant in a color per manufacturers standard selection.
1. Hall fixtures shall feature round, mechanical, illuminated buttons in raised fixture housings. Hall fixtures shall correspond to options available from that landing. Buttons shall be flat flush in vertically mounted fixture. Hall fixtures should not be jamb-mounted. Hall lanterns shall feature amber illumination.

C. Car Lantern and Chime: A directional lantern visible from the corridor shall be provided in the car entrance. When the car stops and the doors are opening, the lantern shall indicate the direction in which the car is to travel and a chime will sound. The chime will sound once for up and twice for down.

2.07 EQUIPMENT: ELEVATOR OPERATION AND CONTROLLER

A. Elevator Operation
1. Duplex Collective Operation (two cars): Using a microprocessor-based controller, the operation shall be automatic by means of the car and hall buttons. In the absence of system activity, one car can be made to park at the pre-selected main landing. The other car shall remain at the last landing served. Only one car shall respond to a hall call. If either car is removed from service, the other car shall immediately answer all hall calls, as well as its own car calls.
2. Zoned Car Parking.
3. Relative System Response Dispatching.

B. Standard Operating Features to include:
1. Full Collective Operation
2. Fan and Light Control.
3. Load Weighing Bypass.
4. Ascending Car Uncontrolled Movement Protection
5. Top of Car Inspection Station.
6. Zoned Car Parking.
7. Relative System Response Dispatching

C. Additional Operating Features to include:

D. Elevator Control System for Inspections and Emergency
1. Provide devices within controller to run the elevator in inspection operation.
2. Provide devices on car top to run the elevator in inspection operation.
3. Provide within controller an emergency stop switch to disconnect power from the brake and prevents motor from running.

4. Provide the means from the controller to mechanically lift and control the elevator brake to safely bring car to nearest available landing when power is interrupted.
5. Provide the means from the controller to reset the governor over speed switch and also trip the governor.
6. Provide the means from the controller to reset the emergency brake when set because of an unintended car movement or ascending car over speed.
7. Provide the means for the control to reset elevator earthquake operation.

2.08 EQUIPMENT: DOOR OPERATOR AND CONTROL

A. Door Operator: A closed loop permanent magnet VVVF high-performance door operator shall be provided to open and close the car and hoistway doors simultaneously. Door movement shall be cushioned at both limits of travel. Electro-mechanical interlock shall be provided at each hoistway entrance to prevent operation of the elevator unless all doors are closed and locked. An electric contact shall be provided on the car at each car entrance to prevent the operation of the elevator unless the car door is closed.

B. The door operator shall be arranged so that, in case of interruption or failure of electric power, the doors can be readily opened by hand from within the car, in accordance with applicable code. Emergency devices and keys for opening doors from the landing shall be provided as required by local code.

C. Doors shall open automatically when the car has arrived at or is leveling at the respective landings. Doors shall close after a predetermined time interval or immediately upon pressing of a car button. A door open button shall be provided in the car. Momentary pressing of this button shall reopen the doors and reset the time interval.

D. Door hangers and tracks shall be provided for each car and hoistway door. Tracks shall be contoured to match the hanger sheaves. The hangers shall be designed for power operation with provisions for vertical and lateral adjustment. Hanger sheaves shall have polyurethane tires and pre-lubricated sealed-for-life bearings.

E. Electronic Door Safety Device. The elevator car shall be equipped with an electronic protective device extending the full height of the car. When activated, this sensor shall prevent the doors from closing or cause them to stop and reopen if they are in the process of closing. The doors shall remain open as long as the flow of traffic continues and shall close shortly after the last person passes through the door opening.

PART 3 EXECUTION

3.01 EXAMINATION

A. Field measure and examine substrates, supports, and other conditions under which elevator work is to be performed.

B. Do not proceed with work until unsatisfactory conditions are corrected.

C. Prior to start of Work, verify hoistway is in accordance with shop drawings. Dimensional tolerance of hoistway from shop drawings: -0 inches +2 inches. Do not begin work of this section until dimensions are within tolerances.

D. Prior to start of Work, verify projections greater then 2 inches (4 inches if ASME A17.1/CSA B44 2000 applies) must be beveled not less then 75 degrees from horizontal.

E. Prior to start of Work, verify landings have been prepared for entrance sill installation. Traditional sill angle or concrete sill support shall not be required.

F. Prior to start of Work, verify elevator pit has been constructed in accordance with requirements, is dry and reinforced to sustain vertical forces, as indicated in approved submittal. Verify that sumps or sump pumps located within pit will not interfere with installed elevator equipment.

G. Prior to start of Work, verify control space has been constructed in accordance with requirements, with access coordinated with elevator shop drawings, including Sleeves and penetrations.

H. Verify installation of GFCI protected 20-amp in pit and adjacent to each signal control cabinet in control space.

3.02 PREPARATION

A. Coordinate installation of anchors, bearing plates, brackets and other related accessories.

3.03 INSTALLATION

A. Install equipment, guides, controls, car and accessories in accordance with manufacturer installation methods and recommended practices.

B. Properly locate guide rails and related supports at locations in accordance with manufacturer's recommendations and approved shop drawings. Anchor to building structure using isolation system to minimize transmission of vibration to structure.

C. All hoistway frames shall be securely fastened to fixing angles mounted in the hoistway. Coordinate installation of sills and frames with other trades.

D. Lubricate operating system components in accordance with manufacturer recommendations.

E. Perform final adjustments, and necessary service prior to substantial completion.

3.04 CONSTRUCTION

A. Interface with Other Work:
   1. Guide rail brackets attached to steel shall be installed prior to application of fireproofing.
   2. Coordinate construction of entrance walls with installation of door frames and sills. Maintain front wall opening until elevator equipment has been installed.
      a. Ensure adequate support for entrance attachment points at all landings.
      b. Coordinate wall openings for hall push buttons, signal fixtures and sleeves. Each elevator requires sleeves within the hoistway wall.
      c. Coordinate emergency power transfer switch and power change pending signals as required for termination at the primary elevator signal control cabinet in each group.
      d. Coordinate interface of elevators and fire alarm system.
      e. Coordinate interface of dedicated telephone line.

3.05 TESTING AND INSPECTIONS

A. Perform recommended and required testing in accordance with authority having jurisdiction.

B. Obtain required permits and provide originals to Owner's Representative.

3.06 DEMONSTRATION

A. Prior to substantial completion, instruct Owner's Representative on the proper function and required daily maintenance of elevators. Instruct personnel on emergency procedures.

END OF SECTION

SECTION 14560

CHUTES

PART 1 GENERAL

1.1 SUMMARY

A. Provide the following:

1. Linen chutes.

PART 2 PRODUCTS

2.1 MATERIALS

A. Provide the following:

1. Products as manufactured by Valiant Products or equal.

B. Chutes:

1. Type: Linen chutes.
Chute Diameter:
a. 24 inches
Chute Metal: Aluminum coated steel.
Chute Intake Door and Frame: UL labeled, stainless steel, satin finish.
Chute Discharge Door: Horizontal discharge, fusible link, self closing steel.

C. Accessories:

1. Sprinkler in shaft.
Vent at top of chute as recommended by Manufacturer.

END OF SECTION

SECTION 15242
VIBRATION ISOLATION

PART 1 GENERAL

1.1 SUMMARY

A. Provide vibration isolators for motor driven equipment.

B. Provide spring isolators on piping connected to isolated equipment.

END OF SECTION

SECTION 15260

PIPING INSULATION

PART 1 GENERAL

1.01 SUMMARY

A. Provide piping insulation, jackets, and accessories.

1.2 RELATED WORK

PART 2 PRODUCTS

2.01 INSULATION MATERIALS

A. Type A: Owens-Corning - Heavy density Fiberglass pipe insulation with factory applied all-service jacket (ASJ) and Doublesure (Trademark of Morgan Adhesives Company) two-component adhesive closure system, rated for a maximum service temperature of 850 F. For large pipe sizes where SSL-II is not available, the single adhesive SSL closure may be substituted. Circumferential joints shall be sealed by butt strips having a two-component sealing system. Stapling shall not be required to complete the closure.

1. Manufacturers: CertainTeed Corp., Knauf Fiber Glass, Owens Corning, Manville Insulation.

B. Type B: Polyisocayanurate Foam Insulation: ASTM C 591, Type 1.
1. Factory-Applied Facing: Not required.
2. Manufacturers: Apache Products Company, The Dow Chemical Company, Cook Brothers Insulation, Rock Wool Mfg.

C. Type C: Armstrong AP Armaflex flexible elastomeric pipe insulation. Seal joints and seams with Armstrong 520 adhesive. For outdoor installations, use Armstrong Armaflex finish.

1. Manufacturers: Armstrong World Industries, Inc., Halstead Industries, Inc., Rubatex Corporation

2.02 FIELD-APPLIED JACKETS

A. PVC Jacket: High-impact, ultraviolet-resistant PVC; 0.75 mm (30 mils) thick. Adhesive: As recommended by insulation material manufacturer.
B. PVC Fitting Covers: Factory-fabricated, heavy-duty fitting covers manufactured from high-impact, ultraviolet-resistant PVC.
C. Stainless-Steel Jacket: ASTM A 666, Type 304 or 316; and Factory cut and rolled to indicated sizes, or Roll stock ready for shop or field cutting and forming indicated sizes.

2.03 ACCESSORIES AND ATTACHMENTS

A. Adhesives: As recommended by insulation material manufacturer and complying with MIL-A-24179A.

B. Fire-Resistant Adhesive: MIL-A-3316C, Classes 1 and 2, Grade A.

C. Bands: 19 mm (3/4 inch) wide, in one of the following materials compatible with jacket:

1. Stainless Steel: ASTM A 666, Type 304.

2.04 VAPOR RETARDERS

A. Mastics: Materials recommended by insulation material manufacturer that are compatible with insulation materials, jackets, and substrates.

B. Vapor-Retarder Mastics: Comply with MIL-C-19565C, Type II; fire and water resistant.

PART 3 EXECUTION

3.10 PIPE INSULATION SCHEDULE

PIPING TYPE	**PIPE SIZE**	**INSULATION THICKNESS**	**INSULATION TYPE**
Domestic Hot Water Supply	thru 3/4	1/2	A/B
Domestic Hot Water Supply	above 3/4	1	A/B
Domestic Hot Water Supply (below grade)	all	1	B
Domestic Hot Water Circulating	all	1/2	A/B
Domestic Cold Water	all	1/2	A/B
Cold Condensate Drains	all	1/2	A/B
Piping Exposed to Freezing with heat tracing	all	2	A/B
Horizontal Rain Water Pipe	all	1/2	A/B
Refrigerant Piping	all	1/2	B/C

END OF SECTION

SECTION 15290

DUCTWORK INSULATION

PART 1 GENERAL

1.01 WORK INCLUDED

A. Provide ductwork insulation and insulation jackets.

PART 2 PRODUCTS

2.01 INSULATION MATERIALS

A. Type A: Fiberglass all service duct wrap, light density glass fiber insulation in roll form, faced with a reinforced foil/kraft laminate, meeting the requirements of ASTM C 553. Duct wrap overlap shall be stapled and sealed with mastic coated fabric cloth.

B. Type B: Fiberglass Aeroflex duct liner, resilient fibrous glass in blanket form, with a fire-resistant coating to bond with fibers of the airstream surface, meeting the requirements of ASTM C 1071 and complying with National Fire Protection Association Standard NFPA 90A.

2.02 ACCESSORIES AND ATTACHMENTS

A. Adhesives: As recommended by insulation material manufacturer and complying with MIL-A-24179A.

B. Fire-Resistant Adhesive: MIL-A-3316C, Classes 1 and 2, Grade A.

C. Bands: 19 mm (3/4 inch) wide, in one of the following materials compatible with jacket:
1. Stainless Steel: ASTM A 666, Type 304.

2.03 VAPOR RETARDERS

A. Mastics: Materials recommended by insulation material manufacturer that are compatible with insulation materials, jackets, and substrates.

B. Vapor-Retarder Mastics: Comply with MIL-C-19565C, Type II; fire and water resistant.

PART 3 EXECUTION

3.01 DUCTWORK INSULATION SCHEDULE

DUCTWORK TYPE	INSULATION TYPE	INSULATION THICKNESS (Inches)
Supply Ducts	A	2
Supply Ducts in Attics	A	3
Supply Plenum	B	1

Return Ducts	A	2
Return Ducts in Attics	A	3
Return Plenum	B	1
Exposed Ductwork	B	1
Exhaust Ducts (within 10 feet of exterior openings)	A	2
Make-up Air Ducts	A	2
Dryer Exhaust Ducts	A	2

END OF SECTION

SECTION 15330

AUTOMATIC SPRINKLER SYSTEM

PART 1 - GENERAL

1.1 SUMMARY

a. Provide sprinkler system:
   1). Wet pipe system with automatic sprinklers in accordance with applicable Building Codes and Authorities Having Jurisdiction.

1.2 SUBMITTALS

a. Product Data: Submit manufacturer's product data and installation instructions for each material and product used.
b. Shop Drawings: Submit shop drawings indicating material characteristics, details of construction, connections, and relationship with adjacent construction.
   1). Shop drawings shall be prepared and stamped by a qualified engineer licensed in the jurisdiction of the project.
   2). Provide hydraulic calculations for pipe sizing.
c. Operation and Maintenance Data: Submit manufacturer’s operation and maintenance data, including operating instructions, list of spare parts and maintenance schedule.

1.3 QUALITY ASSURANCE

a. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.
b. Local Fire Department Requirements: Comply with requirements of the local Fire Department pertaining to sprinkler systems and standpipes. Obtain approval from local Fire Marshall, in writing, of proposed fire-protection system before proceding with installation.
c. Compliance: NFPA 13 for sprinkler system, NFPA 14 for standpipes; UL listed and labeled; FM approved.

PART 2 PRODUCTS

A. MATERIALS

a. Pipes and Fittings:
   1). Steel Pipe: ASTM A 135, threadable lightwall, black and galvanized.
   2). Fittings: Suitable for service class and piping type; threaded, grooved-end, press-seal types.
   3). Joining Materials: Welding and gasket materials suitable for design temperatures and pressures. Victaulic materials and couplings.
b. Valves and Accessories:
   1). General Duty Valves: Gate valves, swing check valves.
   2). Specialty Valves: Alarm check valves, dry-pipe valves, deluge valves, detector check valves suitable for system use.
   3). Manual Control Stations: Hydraulic operation, with union, pipe nipple and bronze ball valve.
   4). Control Panels: Single area, two area, or single area cross-zoned as required, NEMA ICS 6 Type 1 enclosure.
   5). Water Meters: AWWA C700 series as applicable.
   6). Backflow Preventers: ASSE, sized for maximum flow rate and maximum pressure loss.
   7). Excess Pressure Pumps: UL listed, positive-displacement, gear-type pump assembly.
   8). Fire Department Connections: UL 405 unit, connections and finish suitable for use:
      a). Exposed, wall type.
   9). Alarm Devices: Water-motor-operated alarms, waterflow indicators, pressure switches, supervisory switches.
   10). Pressure Gages: UL 393.

c. Sprinklers, Hose Racks and Accessories:
   1). Automatic Sprinklers: Fusible link type; upright, pendant, and sidewall styles; concealed, flush, and recessed styles; wall-mounted sprinkler head cabinet and wrench, suitable for service required.
   2). Sprinkler Fittings: UL listed and FM approved, UL 213.
   3). Nonadjustable Hose Valves: UL 668.
   4). Pressure Regulating Hose Valves: UL 1468.
   5). Hose Racks and Hoses: UL 47, semiautomatic hose rack assembly; UL 668 rating.
   6). Fire Hose: Lined, length and nozzle suitable for application.

PART 3 - EXECUTION

INSTALLATION

a. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Vent all fixtures. Install materials in proper relation with adjacent construction and with uniform appearance for exposed work. Coordinate with work of other sections. Comply with applicable regulations and code requirements. Provide proper clearances for serv icing.
b. Support piping properly. Pitch to drain points. Install with pipe expansion loops, mechanical expansion joints, and anchors.
c. Center ceiling mounted elements in center of ceiling tiles as applicable.
d. Maintain indicated fire ratings of walls, partitions, ceilings and floors at penetrations. Seal with firestopping to maintain fire rating.
e. Clearly label and tag all components.
f. Test and balance all systems for proper operation.
g. Restore damaged finishes. Clean and protect work from damage.
h. Instruct Owner's personnel in proper operation of systems.

END OF SECTION

SECTION 15410

PLUMBING PIPING

PART 1 GENERAL

1.01 SUMMARY

A. Perform Work in accordance with all relevant codes.

PART 2 PRODUCTS

2.01 SANITARY SEWER AND STORM DRAIN PIPING, BURIED WITHIN 5 FEET OF BUILDING AND BELOW FLOOR SLAB

A. Schedule 40 PVC Pipe.
1. Fittings: PVC.
2. Joints: Solvent weld with solvent cement.

2.02 SANITARY SEWER AND STORM DRAIN PIPING, ABOVE GRADE

A. Schedule 40 PVC Pipe.
1. Fittings: PVC.
2. Joints: Solvent weld with solvent cement.

B. The contractor may use Cast Iron or Copper trap arms with firestopping as shown on Architect's firestop penetration details drawing.

2.03 WATER SERVICE ENTRANCE PIPING, BURIED WITHIN 5 FEET OF THE BUILDING.

A. Ductile Iron Pipe: ANSI/AWWA C-60.
1. Fittings: Flanged.

2.04 WATER PIPING, BELOW FLOOR SLAB

A. Copper Tubing: ASTM B88, Type K soft copper.
1. Fittings: ASME B16.18, cast bronze or ASTM B16.22 wrought copper and bronze.

2.05 WATER PIPING, ABOVE GRADE.

A. Copper Tubing: ASTM B88, Type L hard drawn.
1. Fittings: ASME B16.18, cast bronze, or ASME B16.22, wrought copper and bronze.
2. Joints: ASTM B32, solder, Grade 95TA for Ω" through 6"
3. Joints: Grooved ends for 2 1/2" through 6".
a. Manufacturers: Grinnell, Victaulic.

2.06 NATURAL GAS PIPING, BURIED WITHIN 5 FEET OF BUILDING

A. Steel Pipe: ASTM A53 or A120, Schedule 40 black.

1. Fittings: ASTM A234, forged steel welding type, with AWWA C105 polyethylene jacket or double layer, half lapped 10 mil polyethylene tape.
2. Joints: ANSI B31, welded.

2.07 NATURAL GAS PIPING, ABOVE GRADE

A. Gas Pipe 3 inches and larger
1. Steel Pipe: ASTM A53 or A120, Schedule 40 black.
a. Fittings: ASTM A234, forged steel welding type.
b. Joints: ANSI B31, welded.

B. Gas Pipe 2 1/2 inches and smaller.
1. Steel Pipe: ASTM A53 or A120, Schedule 40 black.
a. Fittings: ASME B16.3, malleable iron, or ASTM A234, forged steel welding type.
b. Joints: NFPA 54, threaded or welded to ANSI B31.

2.08 FLANGES, UNIONS, AND COUPLINGS

A. Pipe Size 2 Inches and Under:
1. Ferrous pipe: 150 psig malleable iron threaded unions.
2. Copper tube and pipe: 150 psig bronze unions with soldered joints.

B. Dielectric Connections: Union with galvanized or plated steel threaded end, copper solder end, water impervious isolation barrier.

2.09 GATE VALVES (DOMESTIC WATER SYSTEM)

A. Manufacturers:
1. Milwaukee 1145: 1/2 inch through 4 inch.
B. Bronze body, bronze trim, non-rising stem, handwheel, inside screw, solid bronze wedge (split wedge on 4 inch), solder ends.

C. Ball valves may be used in lieu of gate valves.

2.10 GLOBE VALVES (DOMESTIC WATER)

A. Manufacturers:
1. Milwaukee 1502

B. Bronze body, bronze trim, rising stem, handwheel, inside screw, bronze disc, solder ends.

2.11 BUTTERFLY VALVES (DOMESTIC WATER)

A. Solder Ends: Bronze body, stainless steel trim, stainless steel disk with Viton seal, solder ends.

B. Grooved Ends
1. Manufacturers:
2. Victaulic grooved ends 2 1/2" through 6"
3. Other acceptable manufacturers offering equivalent products.
a. Grinnell
4. Bronze body, stainless steel trim, stainless steel disk with Viton seal, solder ends.

2.12 BALL VALVES (DOMESTIC WATER)

A. Manufacturers:
1. Milwaukee BA 155

B. Other acceptable manufacturers offering equivalent products.
1. Crane
2. Grinnell
3. Milwaukee
4. Nibco
5. Stockham

C. Full port valve, bronze body, bronze trim, stainless or chrome plated bronze ball, teflon seats, solder ends.

2.13 FLOW CONTROL VALVE (DOMESTIC WATER)

A. Manufacturers:
1. Griswold FLOWCON Y Model 3031B.

B. Factory set for 0.5 gpm at 3.5 feet of head.

C. Brass body, brass/stainless steel trim, solder ends.

2.14 CHECK VALVES

A. Manufacturers:
1. Milwaukee 508

B. Other acceptable manufacturers offering equivalent products.
1. Crane
2. Grinnell
3. Milwaukee
4. Nibco
5. Stockham

C. Bronze body, bronze trim, bronze disc, solder ends.

2.15 RELIEF VALVES

A. Bronze body, Teflon seat, steel stem and springs, automatic, direct pressure actuated, capacities ASME certified and labelled.

2.16 WATER PRESSURE REDUCING VALVES

A. Manufacturers: Watts 25AUB.

B. Other acceptable manufacturers offering equivalent products.
1. Wilkins.
2. Bell and Gossett.
3. Approved substitute

C. 2 Inches and less: Bronze body, stainless steel parts, fabric reinforced diaphragm, strainer, single union, threaded ends.

2.17 STRAINERS

A. Size 2 inch and Under: Screwed brass or iron body for 175 psig working

pressure, Y pattern with 1/32 inch stainless steel perforated screen.

2.18 TRAPS

A. Provide on all equipment and drains connected to sanitary system,

B. All floor drain, hub drain and condensate drain traps shall have trap primer connections. Provide inline trap primer valve off of nearest domestic cold water line and pipe to trap.

2.19 AIR CHAMBERS

A. Air Chambers shall be 12" in length and one pipe size larger than the pipe on which it is installed. All air chambers shall be installed in the vertical position. Air chambers shall not be used for shock absorbing purposes unless specifically called for on the drawings.

B. Air chambers shall be installed on the hot and cold water branch lines to all fixtures. Fixtures in a battery of fixtures will not require individual air chambers, if an air chamber is installed on the supply line after or at the last fixture.

2.20 BACKFLOW PREVENTER

A. Manufacturers:
1. 4 inch: Watts 909
2. 1 inch: Watts 009

B. Other acceptable manufacturers offering equivalent products.
1. Conbraco Industries
2. Hershey
3. Febco
4. Watts
5. Wilkins

C. Bronze body, bronze trim, renewable composition disc, flanged fitting.

2.21 GAS VALVES & GAS PRESSURE REGULATORS

A. Valves 2 inches and smaller.
1. McDonald Model No. 559B
2. Homestead Model No. 611
3. Rockwell Nordstrom Model No. 142
4. Dezurik Model No. 425-S1RS49.
5. 175 PSI black iron body, flat head cock, with brass plug.

B. Valves 2 1/2 inches and larger.
1. McDonald Model No. 10685
2. Homestead Model No. 612
3. Rockwell Nordstrom Model No. 143
4. Dezurik Model No. 425-S1RS49
5. 175 PSI WOG, semi-steel, lubricated, wrench operated, and flange ends.

C. Pressure Regulators
1. Gas Pressure Reducing Regulators: Provide commercial style regulator manufactured by Equimeter, Fisher, or Maxitrol.

END OF SECTION

SECTION 15430

PLUMBING SPECIALTIES

PART 1 GENERAL

1.1 SUMMARY

A. Provide floor drains, Floor Sinks, Cleanouts, Wall Hydrants, Trap Primers, Grease Traps as shown on drawings.

PART 2 PRODUCTS

2.1 FLOOR DRAINS (FD)

A. Laundry Rooms: J. R. Smith 2005-A6-B-P.

B. Mechanical & Fire Pump Rooms: J. R. Smith 2220-P.

C. Toilet Rooms: J. R. Smith 2005-A6-B-P.

D. Showers - J. R. Smith 2005-A6-B-P.

E. Food Prep: J. R. Smith 3040-P

F. Manufacturers:
1. Josam
2. Wade
3. Zurn
4. Approved substitute

G. Provide trap primers on all floor drains.

2.2 FLOOR SINKS (FS)

A. Food Prep: J. R. Smith 3100-94-P

B. Manufacturers:
1.Josam
2.Wade
3.Zurn
4.Approved substitute

2.3 CLEANOUTS

A. Cleanouts shall be provided where shown on the drawings and shall be the same size as the pipe on which the cleanout is installed.

B. Cleanouts in vertical piping shall be roughed with centerline not more than 1' 6" above the finished floor, but high enough to clear the baseboard.

C. Exterior Areas: Cast iron ferrule and countersunk bronze plug, J. R. Smith 4400. Where not in paved areas, cleanout shall be set in 12" x 12" x 6" deep poured concrete pad set flush with grade.

D. Interior Finished Wall Areas: Cast iron, extra heavy cleanout tee with countersunk bronze plug tapped for machine screw, shallow stainless steel face-of-wall access cover, and vandal-proof securing screw, J. R. Smith 4472.

E. Interior Finished Floor Areas: Cast iron with gasket seal threaded plug for easy removal, adjustable round nickle bronze top recessed for tile with securing screw; J. R. Smith 4151.

F. Manufacturers:
1. Josam
2. Wade
3. Zurn
4. Schier
5. Approved substitute

2.4 WALL HYDRANTS (WH)

A. Manufacturers:
1. J.R. Smith Model 5509.

B. Other acceptable manufacturers offering equivalent products.
1. Arrowhead
2. Josam.
3. Wade.
4. Woodford
5. Zurn.

C. Wall Hydrant: ANSI/ASSE 1019; 3/4" in size, non-freeze, integral vacuum breaker, self-draining type with hose thread spout, removable key and bronze box with chrome plated face.

2.5 LAWN HYDRANTS (LH)

A. Manufacturers:
1. Woodford Model Y95.

B. Other acceptable manufacturers offering equivalent products.
1. Arrowhead
2. Josam.
3. J.R. Smith
4. Wade.
5. Zurn.

C. Lawn Hydrant: 3/4" in size, tamper proof cover, non-freeze, integral vacuum breaker, self-draining type with hose thread spout and removable key.

D. Mount hydrant in 14"x14"x4" concrete pad. Concrete pad shall be flush with grade.

2.6. TRAP PRIMERS

A. Precision Plumbing Company Model No. P-2.

B. Manufacturers: Approved substitute
1. Josam
2. J.R. Smith
3. Zurn

C. Automatic type, bronze body with integral vacuum breaker, strainer and union ends.

2.7 LINT INTERCEPTOR (LT)

A. Manufacturers:
1. J.R. Smith 8910-50.

B. Other acceptable manufacturers offering equivalent products:
1. Josam
2. Zurn

C. Construction: Epoxy coated fabricated steel for fully recessed flush with grade installation, with stainless steel primary and secondary lint screens. Provide with threaded 2" vent connection, and extension option of field determined height.

D. Unit Rating: 50 gal/min.

2.8 GREASE TRAP (GT)

A. Manufacturers:
1. J.R. Smith 8350.

B. Other acceptable manufacturers offering equivalent products.
1. Josam.
2. Wade.
3. Zurn.

C. Construction: Epoxy coated fabricated steel for fully recessed flush with grade installation, with multi-weir baffle assembly, integral deep seal trap, removable integral flow control, and non-skid epoxy coated steel cover with gasket and securing handle. Provide flow control fitting and extension option of field determined height.

D. Unit Rating: 50 gal/min flow and 100 lbs grease capacity.

2.9 LINT INTERCEPTOR (LI)

A. Manufacturers:
1. J.R. Smith 8910-100

B. Other acceptable manufacturers offering equivalent products.
1. Josam.
2. Wade.
3. Zurn.

C. Construction: Epoxy coated fabricated steel fully recessed flush with floor installation, with primary and secondary stainless steel lint screens.

PART 3 EXECUTION

3.1 PREPARATION

A. Coordinate cutting and forming of floor construction to receive drains to required invert elevations.

3.2 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Extend cleanouts to finished floor or wall surface. Lubricate threaded cleanout plugs with mixture of graphite and linseed oil. Ensure clearance at cleanout for rodding of drainage system.

C. Encase exterior cleanouts and interceptors/traps in concrete flush with grade.

D. Install trap primers on all floor drains.

END OF SECTION

SECTION 15440

PLUMBING FIXTURES

PART 1 GENERAL

1.1 SUMMARY

A. Provide plumbing fixtures as shown on the drawings. Install in accordance with manufacturer's instructions. Install each fixture with trap, easily removable for servicing and cleaning. Provide chrome plated rigid or flexible supplies to fixtures with loose key stops, reducers, and escutcheons. Install components level and plumb. Install and secure fixtures in place with wall supports and bolts. Seal fixtures to wall and floor surfaces with non-hardening sealant, color to match fixture. Solidly attach water closets to floor with lag screws. Lead flashing is not intended to hold fixture in place.

B. Adjust stops or valves for intended water flow rate to fixtures without splashing, noise, or overflow.

END OF SECTION

SECTION 15450

PLUMBING EQUIPMENT

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
1. Water heater.
2. Circulating pump.

B. Perform Work in accordance with the local authorities. Install water heaters in accordance with manufacturer's instructions and to NSF and UL requirements.

C. Ensure products and installation of specified products are in conformance with recommendations and requirements of the following organizations:

1. National Sanitation Foundation (NSF).
2. American Society of Mechanical Engineers (ASME).
3. National Board of Boiler and Pressure Vessel Inspectors (NBBPVI).
4. National Electrical Manufacturers' Association (NEMA).
5. Underwriters Laboratories (UL).

D. Ensure pumps operate at specified system fluid temperatures without vapor binding and cavitation, are non-overloading in parallel or individual operation, operate within 25 percent of midpoint of published maximum efficiency curve.

1.02 REGULATORY REQUIREMENTS

A. Conform to NSF, ANSI/NFPA 70, and ANSI/UL 1453 requirements for water heaters.

1.03 WARRANTY

A. Provide three year manufacturer's warranty.

PART 2 PRODUCTS

2.01 COMMERCIAL GAS FIRED DOMESTIC WATER HEATER SYSTEM

A. A.O. Smith (2) LW-1000 Legend Hot Water Boilers.
1. Acceptable manufacturers:
a. Lochinvar-ACE

B. Storage Tanks: (2) A.O. Smith TJV-350.

C. Expansion tank: Amtrol Therm-X-Trol Model ST-42V, 30 gallon capacity, suitable for potable water.

2.02 COMMERCIAL GAS FIRED DOMESTIC WATER HEATERS (160(HW)

A. A.O. Smith BTH-120 Cyclone Water Heater.
1. Acceptable manufacturers:
a. Teledyne Larrs

b. ACE

B. Expansion tank: Amtrol Therm-X-Trol Model ST-42V, 17.5 gallon capacity, suitable for potable water.

2.03 BUILDING CIRCULATOR PUMP

A. Provide Taco circuit setter balancing valves with isolation ball valves for hot water recirculation loops.

2.04 CHEMCIAL INJECTION SYSTEM

A. Manufacturer: Scale Free Companies, Inc. (800) 933-7354.

B. Model: SFC Water Treatment System.

C. Features:

1. Meter:
   a. Pulse water meter: SCF/IP1115B
   b. Electronic head: FT410
   c. Interface: Connect to timer and metering pump.
   d. Probe: Type IP215P, PVC hot-tap unit
   e. Electrical Rating: 115 volts.
2. Mixing tank:
   a. 55 gallon fiberglass reinforced with maximum burst pressure of 1.5 times working pressure.
   b. NSF approved.
   c. Upper and lower distribution systems: factory installed.
   d. Provide even distribution of regeneration water.
   e. Provide collection of processed water.
3. Timer:
   a. SFC/PT 32 pulse timer.
   b. Controls chemical feed pump.
   c. Adjustable to control chemical feed ratio.
4. Chemical Feed Pump:
   a. SFC/P151-31 pump with four function valve.
   b. Capacity: 1 GPD rated for acid duty.
   c. Adjustable from 1-1270 pulses, 1-1270 second duration.
   d. Electrical Rating: 120 volt, 5 amp.
5. Warranty: Manufacturer's standard.

2.05 DOMESTIC WATER BOOSTER PUMP

1. Provide factory pre-fabricated system on skid, complete with duplex pumps, control panel, hydo-pneumatic tank, isolation and control valves and over-temperature protection as manufactured by Tiger Flow.

END OF SECTION

SECTION 15575

BREACHING, CHIMNEYS AND STACKS

PART 1 GENERAL

1.01 SUMMARY

A. Provide manufactured chimneys for gas fired equipment; install according to manufacturers instructions.

B. Provide manufactured double wall chimneys for fuel fired equipment; install according to manufacturers instructions.

1.02 DESIGN REQUIREMENTS

A. Factory built vents and chimneys used for venting natural draft appliances shall comply with NFPA 211 and be UL listed and labeled.

1.03 REGULATORY REQUIREMENTS

A. Conform to applicable ANSI Z223.1 code for installation of natural gas burning appliances and equipment.

END OF SECTION

SECTION 15623

SPLIT SYSTEMS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Forced air furnaces.

B. Refrigerant cooling coil and condenser.

C. Controls.

1.2 REFERENCES

A. ANSI/ASHRAE 15 - Safety Code for Mechanical Refrigeration.

B. ANSI/ASHRAE - 90A - Energy Conservation in New Building Design.

C. ANSI/NFPA 90B - Installation of Warm Air Heating and Air Conditioning Systems.

D. NFPA 90A - Installation of Air Conditioning and Ventilating Systems.

1.3 SUBMITTALS

A. Submit shop drawings indicating assembly, required clearances, and location and size of field connections.

B. Product Data: Provide rated capacities, weights, accessories, electrical nameplate data, and wiring diagrams.

C. Design data: Indicate refrigerant pipe sizing.

D. Manufacturer's Installation Instructions: Indicate rigging, assembly, and installation instructions.

1.4 OPERATION AND MAINTENANCE DATA

A. Submit operation data under provisions of Section 15010.

B. Include manufacturer's descriptive literature, operating instructions, installation instructions, maintenance and repair data, and parts listing.

1.5 QUALITY ASSURANCE

A. Perform Work in accordance with ANSI/ASHRAE 15.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Carrier.

B. First Company

C. Lennox.

D. Trane.

E. York.

2.2 MANUFACTURED UNITS

A. Configuration: Upflow or horizontal type with electric heating elements and electric refrigeration.

B. Units: Self-contained, packaged, factory assembled, pre-wired unit consisting of cabinet, supply fan, electric heating elements, controls, air filter, refrigerant cooling coil and outdoor package containing compressor, condenser coil and condenser fan.

2.3 FABRICATION

A. Cabinet: Galvanized steel with baked enamel finish, easily removed and secured access doors, glass fiber insulation and reflective liner. Fasten glass fiber insulation to cabinet with mechanical fasteners.

B. Supply Fan: Centrifugal type rubber mounted with direct or belt drive.

C. Motor: ANSI/NEMA MG 1; 1750 rpm rubber isolated hinge mounted.

D. Air Filters: 1 inch thick glass fiber, disposable type arranged for easy replacement.

2.4 ELECTRIC HEATER

A. Heater: Helix wound bare nichrome wire heating elements arranged in I incremental states of 5 kW each, with porcelain insulators.

2.5 ELECTRIC HEATER OPERATING CONTROLS

A. Low voltage adjustable room thermostat energized heater stages in sequence with pre-determined delay between heating stages to maintain room temperature setting.

B. High limit temperature control de-energizes heating elements to protect against overheating.

C. Supply fan starts before electric elements are energized and continues operating after thermostat is satisfied until bonnet temperature reaches minimum setting.

2.6 EVAPORATOR COIL

A. Coil: Copper tube aluminum fin assembly, galvanized drain pan, drain connection, refrigerant piping connections and factory installed thermostatic expansion valve.

2.7 REFRIGERATION PACKAGE

A. Compressor: Hermetic, 3600 rpm maximum, resiliently mounted integral with condenser, with positive lubrication, crankcase heater, high pressure control, motor overload protection, service valves and drier.

B. Air Cooled Condenser: Aluminum fin and copper tube coil, with direct drive axial propeller fan resiliently mounted, galvanized fan guard.

2.8 OPERATING CONTROLS

A. Electric solid state microcomputer based room thermostat.

B. Room thermostat to incorporate:
1. Automatic switching from heating to cooling.
2. Preferential rate control to minimize overshoot and deviation from set point.
3. Set-up for four separate temperatures per day.
4. Instant override of setpoint for a minimum of three hours.
5. Short cycle protection.
6. Programming based on weekdays, Saturday and Sunday.
7. Switch selection features including imperial or metric display, 12 or 24 hour clock, keyboard disable, fan on-auto.

C. Room thermostat display to include:
1. Time of day.
2. Actual room Temperature.
3. Programmed temperature.
4. Programmed time.
5. Timed override.
6. Day of week.
7. System model indication: heating, cooling, auto, off, fan auto, fan on.
State (heating or cooling) operation.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that floors are ready for installation of units and openings are as indicated on shop drawings. Verify that supports for air cooled condensers are completed.

B. Verify that proper power supply is available for furnace and condenser package.

3.2 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install to NFPA 90A and ANSI/NFPA 90B.

C. Mount air cooled condenser-compressor package on 4" thick concrete pad with a minimum of 6" clearance between the edge of the pad and the condensing unit.

D. Clean evaporator and condenser coils six months after substantial completion. Provide report to Architect indicating that coils have been cleaned.

END OF SECTION

SECTION 15782

PACKAGED TERMINAL AIR CONDITIONING UNITS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Packaged terminal air conditioning units.

B. Wall sleeves

C. Louvers.

D. Controls.

1.2 REFERENCES

A. ARI 210 - Unitary Air-Conditioning Equipment.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Amana

B. Carrier

C. General Electric

D. Trane

E. Substitutions: Under provisions of Section 15010.

2.2 MANUFACTURED UNITS

A. Provide packaged, self-contained, through-the-wall air cooled terminal air conditioning units, with wall sleeve, room cabinet, electric refrigeration system, electric heating, outside air louvers and built-in temperature controls.

2.3 CABINET

A. Cabinet: Wall mounted of 18 gauge galvanized steel with baked enamel finish, removable front panel with concealed latches.

B. Discharge Grill and Access Door: Removable, punched louver discharge grills allowing 4-way discharge air pattern, with hinged door in top of cabinet for access to controls.

2.4 WALL SLEEVES AND LOUVERS

A. Wall Sleeves: 16 gauge galvanized steel with protective mastic coating.

B. Louvers: Custom Architectural/aluminum with baked on enamel paint color Sherwin Williams, Frosty White.

2.5 CHASSIS

A. Refrigeration System:

B. Direct expansion cooling coil.

C. Hermetically sealed compressor with internal spring isolation, external isolation, permanent split capacitor motor and overload protection.

D. Condenser coil and fan.

E. Capillary restrictor.

F. Air System: Centrifugal forward curved evaporator fans with two speed permanent split capacitor motor, permanent washable filters, positive pressure ventilation damper with concealed manual operator.

G. Heating Coil: Electric.

H. Condensate Drain: Drain pan to direct condensate to condenser coil for re-evaporation.

I. Condenser Fan: Centrifugal, forward curved type with permanent split capacitor motor.

2.6 CONTROLS

A. Control Module: Unit mounted adjustable thermostat with heat anticipator, heat-cool-off switch, high-low fan switch.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install in accordance with manufacturers' instructions.

B. Coordinate installation of units with architectural and electrical work.

END OF SECTION

SECTION 15835

ELECTRIC HEATERS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Electric Unit Heaters.

1.2 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.

1.3 REGULATORY REQUIREMENTS

A. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc., as suitable for the purpose specified and indicated.

PART 2 PRODUCTS

2.1 ELECTRIC UNIT HEATERS

A. Manufacturer: Dayton.

B. Other acceptable manufacturers offering equivalent products.
1. Q-Mark.
2. Brasch.
3. Emerson.
4. Substitutions: Not Permitted.

C. Assembly: UL listed and labeled assembly with terminal box and cover, and built-in controls.

D. Heating Elements: Enclosed copper tube, aluminum finned element of coiled nickel-chrome resistance wire centered in tubes and embedded in refractory material.

E. Cabinet: 0.0478 inch steel with easily removed front panel with integral air outlet and inlet grills.

F. Element Hangers: Quiet operating, ball bearing cradle type providing unrestricted longitudinal movement, on enclosed brackets.

G. Fan: Direct drive propeller type, statically and dynamically balanced, with fan guard.

H. Motor: Permanently lubricated, sleeve bearings for horizontal models, ball bearings for vertical models.

I. Control: Separate fan speed switch and thermostat heat selector switch, factory wired, with switches built-in behind cover. Provide thermal overload.

J. Electrical Characteristics: As shown on Drawings.

2.2 ELECTRIC DUCT HEATERS

A. Manufacturer: Indeeco.

B. Other acceptable manufacturers offering equivalent products.
   1. Electric Heaters, Inc.
   2. Emerson.
   3. Redd-I Heat
   4. Substitutions: Per Division 1.

C. Duct heaters shall be electric resistance type conforming to UL and NEC requirements. Heaters shall have capacities, stages, and electrical characteristics as shown on the drawings. Duct heaters and panels shall be UL label, listed for zero clearance to combustible surfaces.

D. Heating elements shall be open coil, 80% nickel, 20% chromium Type A resistance wire with ceramic terminal and element support bushings. Coils shall be machine crimped into stainless steel terminals extending a minimum of 1" into the air stream and all terminal hardware shall be stainless steel. Intermediate ceramic support bushings shall be affixed to aluminized steel supporting brackets. At scheduled capacity and air flow, coils shall operate in the "black heat" range. Individual elements shall be wired to terminal blocks in the junction box. Heaters with three phase power shall have elements wired in a balanced three phase legs.

E. Frame and terminal panel shall be aluminized steel, slip-in type with NEMA 1 junction box and control cabinet on one end. Junction and control box cover shall be hinged on one end and latched on the other. Wiring within cabinet shall be 90 degrees C machine tool wiring rated not less than 125% of load carried.

F. Duct heaters shall have the following factory installed features:
   1. Factory power disconnect switch, 600 volt non-fusible type rated for 125% of heater full load amperage. Switch shall open all ungrounded conductors and shall be operated from exterior of control panel with door interlock.
   2. Dual element power fuses rated for enclosure temperature. Fuses shall be UL rated at 125% of load and provided for all ungrounded conductors.
   3. Power contractors, 600 volt magnetic type. Contractors shall open all ungrounded conductors and shall be UL rated for 100,000 cycles with resistance load.
   4. Control power transformer, line voltage to 120 volts with primary and secondary fuse protection.
   5. Automatic primary high temperature limit switch, UL rated disc type.
   6. Manuel re-set secondary high limit switch with back-up contractors, 600 magnetic type, or secondary high limit fuses. Contractors shall open all ungrounded conductors and shall be rated for 6,000 cycles with resistance load. Secondary limit fuses shall open all power conductors.
   7. Air flow switch, differential pressure type with air velocity probe.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install in accordance with manufacturers' instructions.

B. Install equipment exposed to finished areas after walls and ceiling are finished and painted. Avoid damage.

C. Unit Heaters: Hang from building structure, with pipe hangers anchored to building, not from piping. Mount as high as possible to maintain greatest headroom unless otherwise indicated.

D. Install electric heating equipment including devices furnished by manufacturer but not factory-mounted. Furnish copy of manufacturer's wiring diagram submittal. Install electrical wiring in accordance with manufacturer's submittals.

3.2 CLEANING

A. After construction is completed, including painting, clean exposed surfaces of units. Vacuum clean coils and inside of cabinets.

B. Touch-up marred or scratched surfaces of factory-finished cabinets, using finished materials furnished by manufacturer.

END OF SECTION

SECTION 15870

POWER VENTILATORS

PART 1 GENERAL

1.1 WORK INCLUDED

A. Cabinet exhaust fans.

1.2 RELATED WORK

A. Section 15890 - Ductwork.

1.3 REFERENCES

A. AMCA 99 - Standards Handbook.

B. AMCA 210 - Laboratory Methods of Testing Fans for Rating Purposes.

C. AMCA 300 - Test Code for Sound Rating Air Moving Devices.

D. AMCA 301 - Method of Publishing Sound Ratings for Air Moving Devices.

E. SMACNA - Low Pressure Duct Construction Standard.

1.4 QUALITY ASSURANCE

A. Performance Ratings: Conform to AMCA 210 and bear the AMCA Certified Rating Seal.

B. Sound Ratings: AMCA 301, tested to AMCA 300 , and bear AMCA Certified Sound Rating Seal.

C. Fabrication: Conform to AMCA 99.

1.5 SUBMITTALS

A. Submit product data under provisions of Section 15010.

B. Provide product data on cabinet fans and supply fans.

C. Provide fan curves with specified operating point clearly plotted.

D. Submit sound power levels for both fan inlet and outlet at rated capacity.

E. Submit manufacturer's installation instructions under provisions of Section 15010.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Acme.

B. Carnes.

C. Cook.

D. Greenheck.

E. Penn.

2.2 CABINET EXHAUST FANS

A. Centrifugal Fan Unit: V-belt or direct driven, with galvanized steel housing, resilient mounted motor, gravity backdraft damper in discharge and motor starter.

B. Disconnect Switch: Factory wired, non-fusible, in housing for thermal overload protected motor.

C. Grille: Molded white plastic or aluminum with baked white enamel finish.

D. Sheaves: Cast iron or steel, dynamically balanced, bored to fit shafts and keyed; variable and adjustable pitch motor sheaves selected so required RPM is obtained with sheaves set at mid-position; fan shaft with self-aligning pre-lubricated ball bearings.

2.3 OPERATING CONTROLS

A. Refer to Fan Schedule for fan operation requirements.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install in accordance with manufacturer's instructions.

END OF SECTION

SECTION 15890

DUCTWORK

PART 1 GENERAL

1.1 SUMMARY

A. Provide low pressure ducts in accordance with the drawings and all applicable codes.

B Construct ductwork to NFPA 90A, NFPA 90B and NFPA 96 standards.

PART 2 PRODUCTS

2.1 MATERIALS

A. General: Non-combustible or conforming to requirements for Class 1 air duct materials, or UL 181.

B. Steel Ducts: ASTM A525 or ASTM A527 galvanized steel, lock-forming quality, having zinc coating of 1.25 oz per sq ft for each side in conformance with ASTM A90.

C. Insulated Flexible Ducts: Flexible duct wrapped with flexible glass fiber insulation, enclosed by seamless aluminum pigmented plastic vapor barrier jacket; maximum 0.23 K value at 75 degrees F.

D. Fasteners: Rivets, bolts, or sheet metal screws.

E. Sealant: Non-hardening, water resistant, fire resistive, compatible with mating materials; liquid used alone or with tape, or heavy mastic.

F. Hanger Rod: Steel, galvanized; threaded both ends, threaded one end, or continuously threaded.

2.2 LOW PRESSURE DUCTWORK

A. Fabricate and support in accordance with SMACNA Low Pressure Duct Construction Standards and ASHRAE handbooks, except as indicated. Provide duct material, gauges, reinforcing, and sealing for operating pressures indicated.

B. Size round ducts installed in place of rectangular ducts in accordance with ASHRAE table of equivalent rectangular and round ducts. No variation of duct configuration or sizes permitted except by written permission.

C. Construct T's, bends, and elbows with radius of not less than 1-1/2 times width of duct on centerline. Where not possible and where rectangular elbows are used, provide turning vanes. Where acoustical lining is indicated, provide turning vanes of perforated metal with glass fiber insulation.

D. Increase duct sizes gradually, not exceeding 15 degrees divergence wherever possible. Divergence upstream of equipment shall not exceed 30 degrees; convergence downstream shall not exceed 45 degrees.

E. Provide easements where low pressure ductwork conflicts with piping and structure. Where easements exceed 10 percent duct area, split into two ducts maintaining original duct area.

F. Connect flexible ducts to metal ducts with draw bands.

G. Use double nuts and lock washers on threaded rod supports.

END OF SECTION

SECTION 15910

DUCTWORK ACCESSORIES

PART 1 GENERAL

1.1 WORK INCLUDED

A. Provide the following accessories in accordance with manufacturers' instructions: Volume control dampers. Fire dampers. Smoke dampers. Combination smoke and fire dampers. Air turning devices. Smoke Detectors.

PART 2 PRODUCTS

2.1 VOLUME CONTROL DAMPERS.

A. Fabricate in accordance with SMACNA Low Pressure Duct Construction Standards, and as indicated.

B. Fabricate splitter dampers of material same gauge as duct to 24 inches size in either direction, and two gauges heavier for sizes over 24 inches.

C. Fabricate single blade dampers for duct sizes to 9-1/2 x 30 inch.

D. Fabricate multi-blade damper of opposed blade pattern with maximum blade sizes 12 x 72 inch. Assemble center and edge crimped blades in prime coated or galvanized channel frame with suitable hardware.

E. Except in round ductwork 12 inches and smaller, provide end bearings. On multiple blade dampers, provide oil-impregnated nylon or sintered bronze bearings.

F. Provide locking, indicating quadrant regulators on single and multi-blade dampers. Where rod lengths exceed 30 inches provide regulator at both ends.

G. On insulated ducts mount quadrant regulators on stand-off mounting brackets, bases, or adapters.

2.2 FIRE DAMPERS

A. Fabricate in accordance with NFPA 90A and UL 555, and as indicated.

B. Fabricate ceiling firestop flaps of galvanized steel, 22 gauge frame and 16 gauge flap, two layers 0.125 inch ceramic fiber on top side with locking clip.

C. Fabricate ceiling dampers of galvanized steel, 22 gauge frame, stainless steel closure spring, and light weight, heat retardant non-asbestos fabric blanket closure.

D. Fabricate curtain type dampers of galvanized steel with interlocking blades. Provide stainless steel closure springs and latches for horizontal installations. Configure with blades out of air stream except for low pressure ducts up to 12 inches in height.

E. Fabricate multiple blade fire dampers with 16 gauge galvanized steel frame and blades, oil-impregnated bronze or stainless steel sleeve bearings and plated steel axles, 1/8 x 1/2 inch plated steel concealed linkage, stainless steel closure spring, blade stops, and lock.

F. Fusible links, UL 33, shall separate at 212 degrees F. Provide adjustable link straps for combination fire/balancing dampers.

2.3 AIR TUNING DEVICES

A. Multi-blade device with radius blades attached to pivoting frame and bracket, steel or aluminum construction, with push-pull operator strap.

END OF SECTION

SECTION 15936

AIR OUTLETS AND INLETS

PART 1 GENERAL

1.1 WORK INCLUDED

A. Diffusers.

B. Diffuser boots.

C. Registers/grilles.

D. Door grilles.

E. Louvers.

F. Roof hoods.

G. Goosenecks.

1.2 RELATED WORK

A. Section 15890 - Ductwork.

1.3 REFERENCES

A. ADC 1062 - Certification, Rating and Test Manual.

B. AMCA 500 - Test Method for Louvers, Dampers and Shutters.

C. ANSI/NFPA 90A - Installation of Air Conditioning and Ventilating Systems.

D. ARI 650 - Air Outlets and Inlets.

E. ASHRAE 70 - Method of Testing for Rating the Air Flow Performance of Outlets and Inlets.

F. SMACNA - Low Pressure Duct Construction Standard.

1.4 QUALITY ASSURANCE

A. Test and rate performance of air outlets and inlets in accordance with ADC Equipment Test Code 1062 and ASHRAE 70.

B. Test and rate performance of louvers in accordance with AMCA 500.

1.5 REGULATORY REQUIREMENTS

A. Conform to ANSI/NFPA 90A.

1.6 SUBMITTALS

A. Submit product data under provisions of Section 15010.

B. Provide product data for items required for this project.

C. Submit schedule of outlets and inlets indicating type, size, location, application, and noise level.
D. Review requirements of outlets and inlets as to size, finish, and type of mounting prior to submitting product data and schedules of outlets and inlets.

E. Submit manufacturer's installation instructions under provisions of Section 15010.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Provide and install items as listed in schedule.

B. Equal manufacturers are Titus, Barber-Coleman, Metal Aire or approved equal.

C. Substitutions: Items of same function and performance are acceptable in conformance with Section 15010.

2.2 APPLICATION

A. Rate units in accordance with ADC standards.

B. Base air outlet application on space noise level (NC) indicated on schedules.

C. Provide supply outlets with sponge rubber seal around edge.

D. Provide baffles to direct air away from walls, columns, or other obstructions within radius of diffuser operation.

E. Provide frames suitable for application.

F. Provide anti-smudge frames or plaques on diffusers located in rough textured surfaces such as an acoustical plaster.

2.3 SUPPLY GRILLES

A. For sidewall supply grilles provide streamlined and individually adjustable blades, depth of which exceeds 3/4 inch maximum spacing. Provide spring tension or other device to set blades. Provide units with horizontal face, double deflection bar style grilles.

B. Provide 1-1/4 inch margin frame with countersunk screw holes.

C. Fabricate steel with 20 gauge minimum frames and 22 gauge minimum blades, steel and aluminum with 20 gauge minimum frame, or aluminum extrusions.

D. Provide grilles with integral, gang-operated opposed blade dampers with removable key operator, operable from face.

E. Finish in factory baked enamel finish.

2.4 LOUVERED SUPPLY GRILLES

A. For ceiling supply grilles provide streamlined and individually adjustable curved blades to discharge air along face of grille. Units shall have one-way deflection.

B. Provide 1-1/4 inch margin frame with countersunk screw holes.

C. Fabricate of aluminum extrusions.

D. Provide grilles with integral, gang-operated opposed blade dampers with removable key operator, operable from face.

E. Finish in factory baked enamel finish.

2.5 GRID CORE RETURN AND EXHAUST GRILLES

A. Fabricate fixed grilles of 1/2 inch x 1/2 inch x 1/2 inch louvers.

B. Provide frame type as scheduled on drawings.

C. Fabrication of aluminum.

D. Provide exhaust grilles, where not individually connected to exhaust fans, with integral, gang-operated opposed blade dampers with removable key operator, operable from face.

2.6 RECTANGULAR SUPPLY DIFFUSER

A. Provide rectangular, adjustable pattern, stamped, multicore type diffuser to discharge air in 360 degree pattern with sectorizing baffles where indicated or required.

B. Diffusers shall have frame type as scheduled on drawings..

C. Fabrication of steel with baked enamel off white finish.

2.7 SLOT DIFFUSERS

A. Slot diffusers shall be for appropriate use in the ceiling as shown on plans and shall be furnished with all required mounting brackets. Diffusers shall be thermally and acoustically lined with 1/2 inch dual density fiberglass insulation and meet NFPA and UL 181 requirements.

B. Diffusers shall be of the length and cfm capacity shown on the plans.

C. Finish shall be as scheduled on drawings.

2.8 DOOR GRILLES

A. Acceptable Manufacturers.
1. Anemostat.
2. Carnes.
3. Krueger
4. Metal-Aire
5. Price
6. Titus.
7. Tuttle & Bailey
8. Substitutions: Under provisions of Section 15010.

B. V-shaped louvers of 20 gauge steel, one inch deep on 1/2 inch centers.

C. Provide 20 gauge steel frame with auxiliary frame to give finished appearance on both sides of door, with factory prime coat finish.

2.9 LOUVERS

A. Acceptable Manufacturers.
   1. Construction Specialties
   2. Ruskin
   3. Airstream
   4. Substitutions: Under provisions of Section 15010.

B. Provide 4 inch deep louvers with blades on 37.5 degree slope, heavy channel box frame, birdscreen with 1/2 inch square mesh for exhaust and 3/4 inch for intake.

C. Fabricate of 0.08 inch thick, extruded 6360-T aluminum alloy in an all welded assembly.

D. Apply factory finish of alkyd prime coat or Kynar 500 finish in color as specified by the Architect. Louvers adjacent to aluminum windows shall be pre-finished to match windows. Louvers adjacent to all other surfaces shall be factory primed, and field painted to match adjacent surface.

E. Sizes shall be as indicated on the architectural and mechanical drawings.

F. Provide ½" thick insulating panels constructed of styrofoam insulation contained in fabricated .032" aluminum panels on the interior side of all exposed inactive louver areas. Perimeter of sleeve or duct attached to louvers shall be caulked with louver color and interior panel finish shall match frame color.

G. Coordinate louver installation with aluminum window work.

2.10 ROOF HOODS

A. Fabricate air inlet or exhaust hoods in accordance with SMACNA Low Pressure Duct Construction Standards.

B. Fabricate of aluminum, minimum 16 gauge base and 18 gauge hood; suitably reinforced; with removable hood; birdscreen with 1/2 inch square mesh for exhaust and 3/4 inch for intake, and factory baked enamel finish.

C. Mount unit on minimum 12 inch high curb base with insulation between duct and curb.

D. Make hood outlet area minimum of twice throat area.

2.11 GOOSENECKS

A. Fabricate in accordance with SMACNA Low Pressure Duct Construction Standards of minimum 18 gauge galvanized steel.

B. Mount on minimum 12 inch high curb base where size exceeds 9 x 9 inch.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install items in accordance with manufacturers' instructions.

B. Check location of outlets and inlets and make necessary adjustments in position to conform with architectural features, symmetry, and lighting arrangement.

C. Install diffusers to ductwork with air tight connection.

D. Provide balancing dampers on duct take-off to diffusers, and grilles and registers, regardless of whether dampers are specified as part of the diffuser, or grille and register assembly.

E. Paint ductwork visible behind air outlets and inlets matte black.

END OF SECTION

SECTION 15975

CONTROL SYSTEMS

PART 1 GENERAL

1.1 SUMMARY

A. This Section includes control equipment for HVAC systems and components, including control components for terminal heating and cooling units that are not supplied with factory-wired controls.

1.2 SYSTEM DESCRIPTION

A. Control system consists for sensors, thermostats, wiring, final control elements, interface equipment, other apparatus, and accessories connected to controllers to operate mechanical systems according to sequences of operation specified.

1.3 SEQUENCE OF OPERATION

A. Exhaust Fan - Electrical Rooms
   1. Cooling only thermostat mounted at 5' AFF.
   2. Thermostat shall cycle exhaust fan based on setpoint of 80 degrees F.

B. Exhaust Fan - Vending Area
   1. Cooling only thermostat mounted at 7' AFF.
   2. Thermostat shall cycle exhaust fan based on setpoint of 80 degrees F.

C. Corridor Split System A/C Units
   1. Cooling/heating thermostat mounted at 5 feet AFF, located where shown on Drawings.
   2. Remote sensors located near return grille in corridor as indicated on drawings.
   3. Air handler fan shall run constant. The thermostat shall cycle cooling and heating to maintain corridor temperature of 72 degrees.

D. Space Split System A/C Units
   1. Cooling/heating electronic thermostat to be located were shown on plans at 5 ft. AFF.
   2. Thermostat will cycle cooling and heating to maintain space temperature of 72 degrees.
   3. Air handler fan shall run constant.

1.4 SUBMITTALS

A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections and Section 15010.

B. Product Data for each type of product specified. Include manufacturer's technical Product Data for each control device furnished, indicating dimensions, capacities, performance characteristics, electrical characteristics, finishes of materials, installation instructions, and startup instructions.

C. Wiring diagrams detailing wiring for power, signal, and control systems and differentiating clearly between manufacturer-installed and field-installed wiring.

D. Project Record Documents: Record actual locations of control components, including control units, thermostats, and sensors. Revise Drawings to reflect actual installation and operating sequences.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced Installer specializing in control system installations.

B. Manufacturer Qualifications: Engage a firm experienced in manufacturing control systems similar to those indicated for this Project and that have a record of successful in-service performance.

C. Startup Personnel Qualifications: Engage specially trained personnel in direct employ of manufacturer of primary temperature control system.

D. Comply with NFPA 90A.

E. Comply with NFPA 70.

F. Coordinate equipment selection with Division 16 Section "Fire Alarm Systems" to achieve compatibility with equipment that interfaces with that system.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store equipment and materials inside and protected from weather.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:
1. Honeywell.
2. Johnson.
3. White-Rodgers.
4. Carrier.
5. Trane.

2.2 THERMOSTATS

A. Combination Thermostat and Fan Switches: Low-voltage thermostat with 2 subbase positions. Subbase to have touch pad or lever-operated, fan switch plus 4 position touch on pad or lever operated mode switch.
1. Label fan switches "FAN ON-OFF", and mode switch "HEAT, COOL, OFF, AUTO". Provide unit for mounting on 2-gang switch box.

B. Low-Voltage, ON-OFF Thermostats: NEMA DC 3, 24-V, bimetal-operated, mercury-switch type, with either adjustable or fixed anticipation heater for exhaust fans and unit heaters.

C. Split System Corridor Units:
1. Thermostat with remote sensor. Locate sensor and thermostat as shown on Drawings.
2. Thermostat to incorporate:
a. Auto changeover.
b. Short cycle protection.

D. Fire-Protection Thermostats; UL listed with fixed or adjustable settings to operate at not less than 75 deg F (24 deg C) above normal maximum operating temperature, with the follow:
1. Reset: Manual
2. Reset: Automatic with control circuit arranged to require manual reset at central control panel, with pilot light and reset switch on panel labeled to indicate operation.

PART 3 EXECUTION

3.1 COMMISSIONING

A. Test and adjust control and safeties.

B. Replace damaged or malfunctioning controls and equipment.

C. Start, test and adjust control systems.

D. Adjust, calibrate and fine tune circuits and equipment to achieve sequence of operation specified.

END OF SECTION

SECTION 16012

UNDERGROUND ELECTRICAL CONSTRUCTION

PART 1 GENERAL

1.01 SUMMARY

A. Provide all excavation and backfill required for the installation of electrical work.

B. Contractor shall be responsible for the proper layout and the establishment of all lines and levels required for the execution of his work. Coordination of trades to avoid interference, meet clearances, etc. is the Contractor's responsibility.

C. No excavation and backfill shall be done within drip line of trees not shown to be removed on architectural drawings. No trees shall be removed without prior approval of the Owner's representative.

D. Provide protection for trees within 15 feet of utility excavation.

E. When services are to be run side by side, a common trench may be used, providing the vertical and horizontal separation between the various services are maintained and providing the methods of bedding and backfill meet the approval of the Architect. Contractors involved shall make their own agreement as to the sharing of the cost for the common trenching and backfill work.

F. Unless otherwise noted on plans, all trenching and backfill for ducts shall be open cut from the surface.

3.3 PROTECTION

A. Each Contractor responsible for excavation work shall be required to provide all necessary barricades, fencing, bracing, shoring, sheet piling, warning signs, pumping, etc., for the protection of workers, general public and properties. Excavation work shall comply with ASA Standard A10.2 "Safety Code for Building Construction" and AGC Standard, "Manual of Accident Prevention in Construction" and the Department of Labor Occupational Safety and Health Standards.

3.4 EXCESS EARTH FROM EXCAVATION

A. Excess earth from excavation shall be removed from the site by the Contractor making the excavation, or may be piled on the site at a location designated by the Owner's Representative.

B. Debris, trash or rock not usable for fill shall be removed from the site by each Contractor.

C. Each Contractor shall be responsible for immediate "clean-up" of streets, roadways, and private property due to excavation.

3.5 RESTORATION OF EXISTING CONDITIONS

A. When the excavation is within the area of finished site work by the Contractor, backfill to the height of rough grade. Final surfacing by Contractor.

3.6 PROTECTION OF WORK

A. Each Contractor shall be responsible for the protection of his work against being damaged by others during construction.

3.7 COMPACTION

A. All backfill materials shall be clean and free from trash, debris, organic material and rocks (over4"). Compact in 6" lifts to 95% of compaction per the proctor test. Hand compact all materials within 18" of conduits, pipes, etc.

END OF SECTION

SECTION 16018

MOUNTING AND LOCATIONS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Mounting and location of devices.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

3.1 MOUNTING HEIGHT

A. Unless otherwise called for on drawings, the center line height of all new wiring devices shall comply with the schedule below if not specifically indicated on drawings. Device mounting heights are from finished floor (or countertop) to center of device.

B. All boxes shall be carefully plumbed, leveled, and rigidly secured so that subsequent operations of other Contractors will not cause misalignment.

C. Schedule (General Guide)

	Devices	Mounting
1.	Light Switches	48" above finish floor.
2.	Receptacles	18" AFF mounted vertically or as detailed on drawings.
3.	Telephone (for desk)	Match the height of receptacles.
4.	Telephone (for wall)	48" above finish floor.
5.	Disconnect Switch (mechanical space)	48" above finish floor.
6.	Receptacles (mechanical space)	18" above finish floor.

7. Panelboards and (in finished areas) terminal boxes
   a. In general, panelboards shall be centered approximately 4'-6" above floor. However, the topmost switch or circuit breaker on panel shall not be higher than 6'-0" above floor. If this condition exists, the panel boxes shall be lowered.
   b. When more than one panelboard or terminal box is mounted side-by-side, the boxes shall be lined up at the top.

8. Exit Lights Ceiling mounted, or wall mounted 1'-0" above door, or as noted on drawings.

9. Auxiliary control devices such as bells, push buttons, alarm stations, etc., shall be installed as marked on drawings or as directed by Owner.

10. Receptacles, light switches, wire mold, etc., located above counters shall be coordinated with actual counter and backsplash height. Typical mounting height at 6 inches above countertops unless noted otherwise.

3.2 EXECUTION

A. The Contractor shall include any cost for layout of the location and mounting heights.

END OF SECTION

SECTION 16019

EQUIPMENT AND CONDUIT IDENTIFICATION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Nameplates.
2. Labels.

1.2 GENERAL

A. All electrical equipment and devices shall be identified by nameplates, name-tapes or labels.

PART 2 PRODUCTS

2.1 NAMEPLATES

A. Nameplates shall be 4" x 1" x 1/8" thick white core, black face, plastic with engraved letters. Attachment to equipment shall be done by means of screws.

B. Nameplates shall be used for all major equipment such as switchboards, motor panelboards, motor control centers, panelboards (lighting, power and auxiliary) on each switch and starter in each panelboard, disconnect switches, relays, loose mounted motor starters, and on control panels serving fire alarm, security and public address system and motor circuits.

2.2 LABELS

A. Labels (Stencils) shall be Brady, Westline or 3M and shall be color coded in accordance with ASA-Z34-1-53 "SAFETY COLOR CODE" to include system voltages, abbreviations of service, etc. For example: Telephone, Emergency, 120/208V, etc.

PART 3 EXECUTION

3.1 GENERAL

A. In general, all exposed feeders, conduits, raceways, pull boxes, and junction boxes shall be identified.

B. For conduit systems installed for future wiring installations all conduits and pull boxes, both exposed and above ceiling, shall be identified.

C. Labels shall be used on all bare or smooth painted surfaces. For rough textured surfaces, such as wrinkle painted surfaces or plastic materials where sticking labels would not be permanent, stencils or screwed on letters shall be used.

3.2 EQUIPMENT IDENTIFICATION

A. Panelboard - Nameplate shall designate panel number and voltage. Nameplate shall be mounted on the inside of panel door when the panel is located in finished areas and on the front of door when located in mechanical equipment rooms; typewritten branch circuit connection sheet shall be inserted within the card

holder provided by panelboard manufacturer. Branch circuit designations shall be made only after the load balancing of the panelboards has been completed.

B. Disconnect Switches and Motor Starters - Nameplates shall describe the equipment to be controlled and power circuit number, for example: "Chilled Water Pump CP-1, Panel 1P1-4", etc.

C. Push button Stations - Name-tape shall identify the equipment controlled.

D. Auxiliary System Equipment - The control cabinets for auxiliary systems, such as fire alarm, etc., shall be identified with nameplate describing the system by designation, power circuit voltage.

E. Junction and Pull Boxes - Identify the function of the box, such as "208 volt", "telephone", "fire alarm", etc. with labels.

F. Fusible Switches - In addition to the nameplate, there shall be labeled on the inside of switch door, the fuse size required for equipment served.

3.3 RACEWAY IDENTIFICATION

A. In general, all exposed feeder conduits, wire ways, etc., shall be identified. Branch circuit conduits from panelboards to load need not be identified.

B. The identification labels shall be located at intervals of 50 feet or less and at every point where a conduit or raceway is entering and leaving a room.

C. All emergency power conduit, fire alarm conduit and junction boxes shall be spray painted, red, every 8 feet (approximately).

3.4 CONDUCTOR IDENTIFICATION

A. All conductors in junction boxes shall be identified and labeled with panel and circuit number designation.

B. All telephone cables shall be identified at each end with matching labels and department. Record drawing shall be provided to Owner's field representative.

3.5 RESPONSIBILITY

A. Identification nameplates and labels shall be provided for all equipment and raceways installed under this Contract or as indicated on drawings. It shall include all equipment, such as motor starters and boxes furnished by others.

END OF SECTION

SECTION 16120

CONDUCTORS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Circuit material.
2. Color code.
3. Terminations.

PART 2 PRODUCTS

2.1 MATERIALS

A. Type - All wiring shall be "copper" and comply with the latest specifications of the NEC. Wire and cable shall be new, shall have size, type of insulation, voltage rating, and manufacturer's name permanently marked on outer covering at regular intervals.

B. Unless otherwise called for, cables and wires shall conform to UL-83 and shall be as follows:
1. Conductors # 10 or smaller be solid or stranded.
2. Conductors # 8 and larger shall be stranded.
3. Minimum 600v insulation.

Applications	Types of Wires and Cables
1. Feeders to panelboards.	Type THHN/THWN-75 degrees C
2. Branch circuits	Type THHN/THWN-75 degrees C
3. Service entrance conductors	Type XHHW-90 degrees C
4. Feeders and branch circuits below grade or outside building smaller than # 6.	Type XHHW-90 degrees C
5. Fixture wiring	Type THHN/THWN-75 degrees C

C. All branch circuits shall be a minimum # 12 wire unless noted otherwise. Control wiring shall be a minimum # 14 wire unless noted otherwise.

2.2 COLOR CODE

A. All branch circuits shall be color coded in accordance with NEC and shall be:

Conductor	120/208 Volt
Phase A	Black
Phase B	Red
Phase C	Blue
Neutral	White

B. Equipment Ground Conductor (all systems) - Green

C. Switched Leg - Purple

D. Dummy Legs of 3-way Switching - Pink

E. Cables #6 and larger need not be color coded throughout, but each conductor shall be identified at each end and at all junction and pull box by means of painting or color taping, 3" minimum.

F. All auxiliary systems shall be color coded in accordance with system manufacturer's recommendations or in a manner approved by the Architect/Owner.

G. All conductors shall be soft drawn, annealed 98% conductivity copper.

PART 3 EXECUTION

3.1 INSTALLATION

A. No conductors or cables shall be installed in raceways until the raceway system has been completed. When installing conductors, exercise due care to prevent damage to conductor or insulation. Only materials specifically manufactured for cable lubrication shall be used when necessary. Mechanical means shall not be used in pulling wire # 8 or smaller.

B. All feeder cables shall be continuous from origin to panel or equipment termination without running splices in intermediate pull or splice boxes. Where taps and/or splices are necessary and approved, they shall be made in approved splice boxes with suitable compression type connectors as noted herein.

C. Unless noted otherwise, each feeder raceway shall contain only those conductors constituting a single feeder circuit.

D. All branch circuit cable terminations, taps and splices # 8 and smaller shall be made with solderless spring type connectors such as "Scotchlok" or "Wingnut". All manufactured terminations shall be 75 degrees C rated. Use of connectors without internal spiral spring, (wire nuts) shall not be acceptable.

E. Compression type connectors are required on branch circuit and feeder cables # 6 and larger and be of the type as manufactured by the Burndy Company and shall be installed with approved hydraulic tools to assure a permanent mechanically secure high conductivity joint.

F. All uninsulated splices, joints and free ends of conductors shall be covered with rubber and friction tape or high-dielectric polyvinylchloride electrical tape such as "Scotch 33". Insulation value to be same as wire insulation.

G. Where bolted connectors are used for make-up of cables or termination, they must be sized exactly to suit cable being used. Trimming, shimming or cutting of conductor strands is not permitted. Where branch circuit conduits are jointed or placed using crimp-on or twist-on connectors, wire must first be twisted together full length and then the connector shall be installed.

H. Connection to Ground Conductor No. 1/0 and larger shall be made by Cadweld, Thermoweld or Burndy Exothermic Process.

I. Where conductors are connected to metallic surfaces, the coated surfaces of the metal shall be cleaned to the bare metal before installing the connector. Lacquer coating of raceways shall be removed where ground clamps are to be installed.

J. All conductors shall be installed such that when panel covers are removed or switch doors are open, the conductor size shall be easily read.

END OF SECTION

SECTION 16131

OUTLETS AND BOXES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Device boxes.
2. Pull and junction boxes.

1.2 SUMMARY

A. Furnish outlets and boxes where required by plans or code. Record all locations and mounting heights of all outlet, pull and junction boxes. Follow ANSI, NEMA, and NEC standards.

PART 2 PRODUCTS

2.1 OUTLET AND SWITCH BOXES

A. General - All outlet and switch boxes shall be NEC metal approved type, sized to provide ample space for wiring devices, conductors, and grounding wires and shall comply with the following:
1. Where space is available, all feed through boxes shall be minimum 4" square by 1 1/2" deep. Boxes shall be set back to allow the installation of a square cut and raised adapter ring; depth of raised portion shall match the wall construction.
2. When more than one wiring device (switches and receptacles) is shown on the same location, gang boxes shall be used.
3. When wiring devices (switching and receptacles) are shown side-by-side with special wiring devices (such as lighting dimmers or exhaust fan switches), separate boxes shall be installed for these special devices in order to allow the proper clearance for installing these special device covers.
4. Where shown for installation in hollow metal supports, door jambs or other locations where space is limited, boxes shall be RACO No. 426, 427 (2 gang tandem), 428 (3 gang tandem) or approved substitute.
5. Where any device is installed with exposed conduit, the outlet box shall be Type "FS".
6. Wall boxes for flush exterior use, hot-dipped galvanized complete with lockable weatherproof cover and rubber or neoprene gasket.
7. Outlet boxes for vaporproof or weatherproof construction shall be cast, having threaded hubs for conduits and shall be galvanized or shearardized. Box shall be provided with gaskets under all covers.
8. Outlet boxes for installation in hazardous areas shall be explosion proof type.
9. Owner's option to locate outlets - See specification Section 16 018.
10. Provide a blank cover for each outlet not to be provided with light fixture or other device.

B. Manufacturers - Boxes shall be products of RACO, Appleton, Russell Stoll, Crouse-Hinds, Steel-City or approved substitute.

2.2 PULL AND JUNCTION BOXES

A. Pull and junction boxes are not completely shown on plans. They shall be installed where required in accordance with National Electrical Code, and a maximum of 180' apart.

B. All boxes shall be constructed of minimum No. 14 gauge hot-dipped galvanized steel, cast or sheet aluminum with screwed or hinged cover. Fasteners shall be brass or zinc coated screws. Where exposed to weather, moisture-tight gasket cover shall be provided.

C. Watertight: Cast iron with threaded hubs, galvanized with rust-resistant parts and airtight/watertight gaskets between box and cover.

D. Electrical boxes with un-used knockouts shall be plugged.

E. All boxes shall be of adequate size without the use of extension boxes.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install electrical boxes as shown on drawings, and as required for splices, taps, wire pulling, equipment connections and compliance with regulatory requirements.

B. Install electrical boxes to maintain headroom and to present neat mechanical appearance.

C. Install pull boxes and junction boxes above accessible ceilings and in unfinished areas only.

D. Inaccessible Ceiling Areas: Install outlet and junction boxes no more than 6 inches (150 mm) from ceiling access panel or from removable recessed luminaire.

E. Install boxes to preserve fire resistance rating of partitions and other elements, using materials and methods under the other provisions of this specification.

F. Align adjacent wall-mounted outlet boxes for switches, thermostats, and similar devices with each other.

G. Use flush mounting outlet boxes in finished areas.

H. Secure flush mounting box to interior wall and partition studs. Accurately position to allow for surface finish thickness.

I. Use stamped steel bridges to fasten flush mounting outlet box between studs.

J. Install flush mounting box without damaging wall insulation or reducing its effectiveness.

K. Use adjustable steel channel fasteners for hung ceiling outlet box.

L. Do not fasten boxes to ceiling support wires.

M. Support boxes independently of conduit.

N. Where drawings show back-to-back wiring devices, the devices on opposite side of the wall shall be offset so that each device will be installed in separate boxes to avoid sound transmission between adjacent rooms. Through-the-wall boxes shall not be used.

O. Owner's option to relocate outlets - See Specification Section 16018.

3.2 INTERFACE WITH OTHER PRODUCTS

A. Coordinate locations and sizes of required access doors with other sections of specification.

B. Convenience outlets mounted in brick walls shall be mounted in horizontal position and located at nearest joint and shall be masonry type.

C. Locate flush mounting box in masonry wall to require cutting of masonry unit corner only. Coordinate masonry cutting to achieve neat opening.

D. Coordinate mounting heights and locations of outlets mounted above counters, benches, and backsplashes.

E. Position outlet boxes to locate luminaires as shown on reflected ceiling plan.

3.3 OUTLET INSTALLATION

A. Install to bear evenly and truly, secured on axis of supporting members.

B. Where boxes are back of finished surface, use recess boxes and proper length screws or size to form shoulder at exact point to retain switch in position. Use no wooden wedges, shims or blocks for truing up.

C. Locations indicated for local wall switches are subject to modifications. At or near doors, install switch on side opposite hinge. Verify final door hinge location in field prior to switch outlet installation.

D. Set boxes square and true with building finish. Erect wall and switch outlets in advance of furring and fireproofing. Secure to building structure or steel by adjustable strap irons.

E. Verify locations of outlets and switches in finished rooms with drawings of interior details and finish. In centering outlets and locating boxes, allow for overhead pipes, ducts and mechanical equipment, variations in fireproofing and plastering, window and door trim, paneling, hung panels and the like and correct any inaccuracy resulting from failure to do so without expense to Owner.

3.4 CEILING OUTLET BOXES

A. Install flush with ceiling.

B. Boxes shall be secured with lead anchors or beam clamps as required with all thread rod or approved substitute. A workmanship installation shall prevail.

3.5 PULL AND JUNCTION BOXES INSTALLATION

A. Boxes for concealed conduit runs shall be concealed above accessible ceilings or behind access panels. In locations where exposed conduits are permitted, boxes shall be surface mounted.

B. Location of concealed boxes shall be indicated on the "Record Drawings" for Owner's record.

C. Boxes shall be accessible at job completion. Box with covers in finished areas shall be in those physical locations approved by the Architect.

D. Junction and pull boxes shall be located so as not to be exposed in finished areas. (Preferred location in accessible ceiling spaces.)

E. Support junction and pull boxes directly to building structure with no weight bearing on conduits.

F. Outlet boxes for lighting fixtures recessed in hung ceilings shall be accessible through opening created by removal of fixture or adjacent ceiling tile.

END OF SECTION

SECTION 16140

WIRING DEVICES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Switches.
2. Dimmers.
3. Convenience outlets.
4. Coverplates.

1.2 GENERAL

A. All wiring devices shall be of the type indicated below. Color of devices and plates shall be white.

PART 2 PRODUCTS

2.1 MATERIALS

A. Devices are based on Leviton, type Decora Plus. Equivalent devices by General Electric, Pass and Seymour, and Hubbell are acceptable.

2.2 SWITCHES

A. Rocker type switches shall be UL listed and conform to NEMA standards, as well as the latest Federal Specifications W-S896d.

1.	Rocker type , single pole	- 5621-W
2.	Rocker type , double pole	- 5622-W
3.	Rocker type , three-way	- 5623-W
4.	Rocker type , four-way	- 5624-W
5.	Key operated	- 1121-2L-W
6.	Pilot lighted (at guestroom entry and toilet room doors only)	- 5631-W
7.	Pilot lighted (at two room suite between living and bedroom, at toilet doors, and at entry door.	- 5631-2W & 5633-2W

2.3 DIMMERS

A. Dimmers shall be UL listed, solid state, voltage compensated.

2.4 CONVENIENCE OUTLETS

A. Conventional type, duplex, 3 wire, grounding type, side and backwired Leviton 16352-W.

B. Exterior type, duplex, 3 wire, ground-fault interrupter (feed-through of end-of-line) with waterproof coverplate. Leviton 6899-W. Device shall be mounted horizontally in a single gang, 3" deep outlet box.

C. Isolated ground type, 3 wire, side and backwired, orange, Leviton 16362-IG duplex or Leviton 5361-IG simplex.

2.5 MANUAL MOTOR SWITCHES

A. Single phase motors, smaller than 1/2 HP, shall be Allen Bradley Bullet No. 600 or Square D Class 2510, toggle switch type with neon pilot light.

B. Provide appropriate NEMA enclosure depending on the application. All units in finished areas shall be flush mounted and shall have special engraved coverplate matching coverplates specified for wiring devices. Coverplate shall specify unit controlled.

C. Unless otherwise noted on the drawings as manual motor starters, controllers for a single phase loads 1000 watts and smaller shall be 20A AC switches with pilot light.

2.6 COVERPLATES

A. General - Coverplates shall accommodate the devices installed in the outlet boxes. When more than one device is indicated at the same location, a gang plate shall be used. Plates covering boxes for future systems shall be blank. All plates shall be compatible with the device configuration. Install in each and every outlet box, as indicated on the drawings, a wiring device and coverplate.
   1. Interior or Exterior –Leviton 8000 Series.
   2. Block and Brick Walls - On block and brick walls (finished and unfinished areas) shall be of the materials specified above; however, all plates shall be "jumbo" size.
   3. Convenience outlets mounted in brick walls shall be mounted in horizontal position and located at nearest joint.

B. Finish:
   1. In all finished areas, plate shall be 4 1/2" high, standard width white colored nylon with brass or stainless steel semi-flush head fastening screws and in exposed service conduit areas, cadmium plated pressed steel plates shall be used. At locations where more than one switch and/or outlet occurs, coverplates shall be ganged or combination type as required. Screws to be finished white to match cover plate.

2.7 GUESTROOM SMOKE DETECTORS

A. Guestroom Smoke Detectors: Wall mounted, 120VAC with batery backup, with intergal horn. Integral horns - 85dB steady tone at 10 feet from the detector.
   1. Manufacturer/model - Gentex 7100 or approved equal.

PART 3 EXECUTION

3.1 INSTALLATION

A. Installation shall be in complete accordance with latest applicable edition of the NEC. Mounting heights shall be in accordance with Section 16018 of the specification herein and as indicated on Drawings.

END OF SECTION

SECTION 16150

SUPPORTS, INSERTS AND HANGERS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Supports, inserts and hangers.

PART 2 PRODUCTS

2.1 SUPPORTS, INSERTS AND HANGERS

A. The contractor shall provide all supports, inserts and hangers for conduits, cables, lighting fixtures, cabinets and other electrical equipment. Inserts and hangers shall be Powerstrut, Kindorf, Unistrut, Superstrut or B-Line. Pipe straps shall be used for wall mounting conduit. Pipe straps shall be malleable iron, single hole type. Pipe straps, fixtures and cabinets shall be secured to the wall by means of screws, toggle bolts, lag screws in metal expansion shield or other approved method. Wooden plugs shall not be used. All overhead conduit shall be supported from the structural beams. Grouped conduit supports shall be steel channel attached to structural beams with proper size beam clamps. Channel may be suspended below structural beams with proper beam clamps and 3/8" continuous threaded hanger rods installed (maximum) 2'-0" on center for the entire length of channel. Conduit shall be secured to channel with single bolt two (2) piece channel pipe clamps for 1-1/2" and larger conduits and strut clips (similar to "Caddy" number 12MFA clips) for 1" and smaller conduits. Individually supported conduits shall be secured to structural beams with proper size beam clamps and one (1) piece pipe hanger clamps with closure bolt (similar to "Kindorf" "6HB" series) for 1-1/4" and larger conduits and combination conduit hanger clamps (similar to "Caddy" #16-M-5-8) for 1" and smaller conduits.

B. Welded studs may be used for attachment to steel members, but conduits shall not be welded directly. Tie wire shall not be used to support or secure conduit.

C. Approved manufacturers of channel are Powerstrut, Unistrut, Kindorf, Superstrut and B-Line. Approved manufacturers of conduit clamps are Powerstrut, Unistrut, Kindorf, Minerallac and Caddy.

D. Note: Contractor shall be responsible for determining proper size clamps for the various conduit sizes and brass flange thicknesses encountered.

E. Vertical cable supports shall be provided in accordance with the requirements of NEC and/or the governing code for vertical conduit risers.

F. Conduits shall not be supported by ceiling grid. They shall be supported directly by the building structure.

G. Run exposed raceway parallel with or at right angles to walls.

H. Pass raceways over water, steam or other piping where pull boxes are not required. No raceway within three inches of steam and hot water pipes or appliances, except at crossings where raceway shall be at least one inch from pipe cover.

I. Install raceway to prevent collection of trapped condensation and be devoid of traps.

J. Do not terminate in or fasten raceways to motor foundations.

K. Raceways installed outside underground: Minimum 18 inches top cover.

L. Joints in underground raceways: Watertight.

PART 3 EXECUTION

NOT USED

END OF SECTION

SECTION 16162

SERVICE ENTRANCE/MAIN SWITCHBOARD

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Service entrance equipment.
2. Switchboards.

PART 2 PRODUCTS

2.1 SERVICE ENTRANCE EQUIPMENT

A. Service entrance equipment shall be as indicated on drawings. Equipment shall be grounded.

B. Equipment shall be as follows:
1. Current transformers for power company's metering shall be used on all services which require 300,000 circular mills or larger service entrance conductors.
2. Coordinated with general construction work to insure proper installation.

D. Refer to drawings for the exact scope of work by utility company and exact scope of work by the contractor.

2.2 SWITCHBOARDS

A. Furnish and install switchboard in the location and with the electrical characteristics indicated. Each switchboard, as a complete unit, shall be given a single integrated equipment rating certifying that all components are capable of withstanding the stresses of a fault of the magnitude indicated by the RMS symmetrical current available and that no device will be applied beyond its interrupting or withstanding rating. Where used as service entrance, switchboards shall carry a certification label indicating suitability for service entrance.

B. Manufacturer - Switchboards shall be the product of Siemens, General Electric, Square D or Eaton.

C. General Construction:
1. Switchboard shall consist of a completely enclosed, self-supporting metal structure of the required number of formed and welded vertical panel sections incorporating distribution branches and other associated equipment as indicated on the One-Line Diagram.
2. All screwed on front covers shall be fabricated from minimum 14 gauge sheet steel. The top, side and front enclosing sheet steel plate shall be removable and shall not be less than minimum 14 gauge. Structure shall be provided with openings for proper ventilation where required.
3. All exterior and interior steel surfaces of the switchboard shall be properly cleaned and finished with gray lacquer over a rust inhibiting primer.
4. Main horizontal busses and bus connections between main bus and switching device shall consist of tin-plated copper of 98 percent conductivity and sized on the basis of Nema/UL. Support base shall withstand 100,000 ampere RMS symmetrical short circuit current. Busing shall be of sufficient size to limit temperature rise to 65 degrees C, over an average air temperature outside the enclosure of 40 degrees C. Ampere rating of vertical bussing shall be not less than 80 percent of the summation of the rating of each device served, including spaces appearing in the section, but in no case shall rating exceed that of the through bus. All bussing shall be copper, in ratings as called for on the One-Line Diagram. Bus supports shall be of a high-shock, non-tracking, non-carbonizing and moisture-

resistant molded phenolic or glass polyester. Bus supports shall efficiently support bus bars under short circuit conditions of 100,000 RMS amperes. A full length solid copper ground bus shall be provided and bolted to each vertical section with required lugs. All hardware used on bussing shall be zinc or cadmium plated. Each bolt shall have a Belleville washer to maintain clamping force under thermal cycling. Ground bus shall be sized for no less than 25 percent capacity.

5. The internal components (switching and protective devices, etc.) shall be removable from the front and shall be panel mounted with the necessary device line and load connections front accessible. All sections shall be rear aligned. A suitable terminal, UL listed for conductors, of the circular crimp compression type shall be provided for connecting each incoming or service conductor. The main terminal shall be capable of securing the smallest conductor (or group of conductors in multiple) of standard AWG size having an ampacity adequate for the supply rating indicated. See Section 16120. Termination shall be 75 deg. C rated.
6. Contractor shall coordinate with the power company requirements for metering. Contractor shall furnish and install all material, conduit and wiring as required.
7. Furnish and install for switchboard, one 4 1/2" switchboard type A.C. ammeter, having an accuracy of within 1 percent of full scale value complete with a zero adjuster, constructed in accordance with ANSI standard C39.1, complete with rotating switch to change the readings form Phase 1 to 2 to 3 to off. Furnish necessary instruments, transformers, potential transformers and accessory devices for complete wiring and installation.
8. Furnish and install for switchboard, one 4 1/2" switchboard type A.C. voltmeter compete with rotating switch to change the readings from line 1 to 2 to 3 to off and with all accessory devices for complete wiring and installation.

D. Circuit Breakers:
   1. Refer to Section 16163 - Distribution Boards for circuit breaker requirements.

E. Switches:
   1. Quick-make, Quick-break Fusible Switches - Shall be used for all distribution switches under 800 AMP unless noted otherwise on the One-Line Diagram. Ampere rating and fuse size shall be as indicated on the One-Line Diagram. All switches shall have provisions for padlocking in both open and closed positions.
   2. Switches 800 AMP and larger shall be fusible bolted pressure contact type. Bolted pressure switch shall be 3 pole solid neutral, silver contact, load break type, as indicated on drawings. The switch shall be dead front operating with NEMA Class "L" fuse accommodations and with provisions for padlocking in the "off" position. The switch shall be capable of interrupting and closing against 750 percent of rating at rated voltage three (3) times and shall be capable of closing, withstanding and interrupting a fault current of 200,000 amps at full voltage in three (3) phase circuit with fuses in place, without affecting its ability to carry full rated load. The switch bolting mechanism shall be nonferrous and nonmagnetic material. Approved manufacturers are Pringle and Square "D" Boltloc. Bolted pressure switch may be panelboard mounted, as indicated on drawings.
   3. Suitable UL listed, 75 deg. C rated terminals for use with copper conductors shall be provided for connected load side conductors. See One-Line Diagram and Specification Section 16120.
   4. Fuses in main disconnect switches shall be NEMA Class L fuses current limiting, with 200,000 amps RMS symmetrical interrupting capacity designed with 45 second time delay at 300 percent current rating. Fuses 600 ampere and less shall be dual element with minimum time delay 10 seconds at 500 percent rating current limiting with interrupting capacity of 200,000 amperes RMS symmetrical.
   5. Type of fuses to be used shall comply with the following:
      a. Main, Power or Lighting Feeders
         i) 601 Ampere and Above - Bussman Type KRP-C, Hi-Cap.
         ii) 70 to 600 Amp - Type LPN-RK-1 or LPS-RK-1, Low Peak.
         iii) 60 Amp and Smaller - Type FRN-R or FRS-R, Fusetron.

F. Identification:
   1. Nameplates shall be 4" x 1" x 1/8" thick white core, black face, plastic with engraved letters. Attachment to equipment shall be done by means of screws.

2. All mains and branches shall be identified with nameplates.
3. Provide nameplate for switchboard.

G. Spare Parts:
1. Provide a spare set of fuses for each size used in the main switchboard. Fuses shall be stored in a spare fuse cabinet to be mounted on wall adjacent to main switchboard.

H. Contractor shall submit main switchboard shop drawings to and receive approval from the local utility company.

PART 3 EXECUTION

NOT USED

END OF SECTION

SECTION 16163

DISTRIBUTION BOARDS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Distribution panelboards.
   2. Circuit breakers.

1.2 GENERAL

A. Distribution panelboards may be circuit breaker or of fusible type as indicated on drawings. The type specified shall not be substituted without written approval from the engineers.

PART 2 PRODUCTS

2.1 MATERIALS

A. Distribution panels shall be dead front sectional type using quick-make, quick-break interrupter switches. Panels shall be suitable for use with 208Y/120 volt, 3 phase, 4 wire, manufactured by General Electric, Square "D", Eaton or Siemens. Flush mounted multi-section panels shall be same height and depth. Surface mounted multi-section panels may vary in heights, but not depth.

B. Mains and main lugs shall be indicated on the panelboard schedule.

C. Switches shall be constructed with silver alloy contacts and fuse clips for fuse types herein specified. Switch cover shall be hinged door with spring latch, on-off indication, metal card holder and have provisions for locking switch in the open position with padlock.

D. Panelboard fronts shall have rust-inhibitive primer coat and gray enamel finish coat.

E. Panelboard bussing shall be tin-plated copper.

F. Line side lugs shall be suitable for copper conductors as indicated on the One-Line Diagram. See Specifications Section 16120. Termination shall be 75 deg. C rated.

G. Identify panel and all branches with "nameplates".

H. Switches:
   1. All switches shall have label on inside of switch door indicating fuse size required for equipment served.
   2. Enclosure shall be heavy duty NEMA type "HD" arranged for side operation with lockout provision in the "open" position.
   3. Fused Motor Disconnect Switches (or switches for other 3 wire - 3 phase equipment) shall be heavy duty (3 pole, 3 blades, 3 fuses) NEMA type "HD" of the size and rating as indicated on the drawings.
   4. No-Fuse Motor Disconnect Switches (or switches for other 3 wire, 3 phase equipment) shall be heavy duty (3 pole, 3 blades) NEMA Type "HD" or size and rating as indicated on the drawings.
   5. Weatherproof Disconnect Switch shall be NEMA Type "3R" rain tight with all other requirements as indicated by Items J and K above.

6. Lighting Panel Switches shall be heavy duty 4-wire solid neutral (4 pole, 3 blade, 3 fuse) NEMA Type "HD" of size and rating as indicated on drawings.

2.2 CIRCUIT BREAKERS

A. Operation:
1. Quick-make, quick-break with full contact pressure until the time of opening.
2. Thermal-magnetic trip with inverse time-limit characteristics to prevent tripping on momentary overloads, but trip before dangerous values are reached.
3. Trip indicated by handle assuming a position distinctive from normal "off" or "on" position.

B. Construction:
1. Totally enclosed and sealed trip unit.
2. One, two or three pole as indicated on the drawings.
3. Multi pole breakers shall be common trip with one common thermal-magnetic trip unit.
4. Trips free from handle.
5. Contacts shall be non-welding type.
6. Breaker shall be bolted to the panel bus.
7. Rating: As indicated on drawings.

(this part intentionally left blank)

C. Breaker Frame and Interrupting Capacity:

CONT. AMP RATING	MANUFACTURER'S BREAKER FRAME DESIGNATION				AMPERE AT 240V
	GEN. ELEC.	I.T.E.	SQUARE "D"	WESTING-HOUSE	
20-100	TEB	E-QB	FA	EHD	10,000
	TED	EH	FA	EHD	18,000
	THED	HE	FH	---	65,000
	TBI	CE	--	FDB/LFB Tri Pak	100,000
125-225	TFG	FJ	KA	FDB	18,000
	TFK	JL	KA	FDB	15,000
	TJJ	JL	KH	HFD	42,000
	THJK4	HJ	KH	HKA HFD	65,000
	TB4	CJ	--	LCL or Tri Pak LA-P	100,000
250-400	TJJ	JJ	LA	JDB/KDB KD/KD	35,000
	TJJ	JJ	LA	JDB/KDB JD/KD	42,000
	THJK4	HJ	LAH	HJD/HKD	65,000
	TB4	CJ	--	LCL/ TRI-PAC/ LA-P	100,000
400-800	TKM8	KM	MA	MC	42,000
	THKM8	HM	MH	HMC	65,000
	TB8	CM	PHF	TRI-PAC/ NB-P	100,000
800-1200	TKS	KP	PAF	NC	42,000
	THK-MIZ	HP	PAF	HNC	65,000
	THS	CP	--	---	130,000
	THS	CP	--	---	200,000

PART 3 EXECUTION

3.1 INSTALLATION

A. Install panelboards plumb and flush with wall finishes in conformance with NEMA PB1.1.

B. Height: 6', unless otherwise noted or required.

C. Provide filler plates for unused spaces in panelboards.

D. Provide typed circuit directory for each distribution panelboard. Revise directory to reflect circuiting changes required to balance phase loads.

E. Stub three empty 1" conduits to accessible location above ceiling out of each recessed panelboard.

3.2 FIELD QUALITY CONTROL

A. Visual and Mechanical Inspection: Inspect for physical damage, proper alignment, anchorage, and grounding. Check proper installation and tightness of connections for circuit breakers, fusible switches, and fuses.

END OF SECTION

SECTION 16164

BRANCH PANELBOARDS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Panelboard assembly.
2. Circuit breakers.
3. Cabinets.

1.2 GENERAL

A. Lighting panelboards shall be circuit breaker, dead-front type in accordance with UL Standards for panelboards and standard for cabinets and boxes and shall be so labeled.

B. Provide a minimum of one (1) 3/4" conduit stubbed out of each recessed panelboard to above the ceiling and/or below floor (depending on area(s) served by panel) for every three (3) spare or spaces.

C. Panel directories shall be typed and filled out after testing and checkout.

PART 2 PRODUCTS

2.1 PANELBOARD ASSEMBLY

A. Panels for 208Y/120 volt, 3 phase, 4 wire operation shall be Siemens, General Electric, Square "D" or Westinghouse.

B. Panelboards shall have distributed phase bussing.

C. Main lug size shall have distributed phase bussing.

D. Two and three pole breakers shall be furnished where called for. Handle ties will not be accepted.

E. Panelboard bussing shall be electrical grade, tin-plated copper.

2.2 CIRCUIT BREAKERS

A. All breakers shall be bolt-on type.

B. Breakers shall have amp I.C. at 240 volts as shown in panel schedules and as scheduled in Section 16163.

C. Two and three pole breakers shall have common trip.

D. Quick-make, quick-break with full contact pressure until the time of opening.

E. Thermal magnetic trip with inverse time limit characteristics to prevent tripping on momentary overloads, but trip before dangerous values are reached.

F. Trip indicated by handle assuming a position distinctive from normal "off" or "on" position.

G. Totally enclosed and sealed trip unit.

H. Trips free from handle.

I. Contacts shall be non-welding type.

J. Rating: Unless indicated otherwise, breakers shall be trip set to 20 amps.

K. Panelboards include both lighting and power distribution type. The following is a list of approved manufacturers by type, voltage and use:

L. Terminations shall be 75 deg. C rated.

APPROVED MANUFACTURER AND TYPE

Application Description	Siemens	General Electric	Square "D"	Westinghouse
120/208V lighting	NLAB	NLAB	NQOB	PRL1
120/208V circuit	CDP	CCB	HCW	PRL4-B

NOTE: The above equipment shall be factory assembled unit only, not an assembly of miscellaneous parts.

2.3 CABINETS

A. Boxes shall be commercial hot galvanized sheet steel, 14 gauge minimum.

B. Front trim: Cold rolled sheet steel, 14 gauge minimum, properly cleaned, with prime coat of rust-inhibiting paint and gray enamel finish coat. Front trim shall be furnished with approved fast trim captive trim clamps fastening front to box.

C. Doors have been hinged with combination lock and catch. All locks shall be keyed alike, and two milled keys furnished with each lock. All panels shall be equipped with doors.

D. Flush mounted multi-section panels shall be same height and depth. Surface mounted multi-section panels may vary in height, but not depth.

E. Identify panels with engraved lamicoid nameplates indicating the panel identification and panel voltage.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install recessed panelboards plumb and flush with wall finishes in conformance with NEMA PB1.1.

B. Height: 6' (2 m).

C. Provide filler plates for unused spaces in panelboards.

D. Provide typed circuit directory for each branch circuit panelboard. Revise directory to reflect circuiting changes required to balance phase loads.

E. Stub three empty 1" conduits to accessible location above ceiling out of each recessed panelboard.

3.2 FIELD QUALITY CONTROL

A. Visual and Mechanical Inspection: Inspect for physical damage, proper alignment, anchorage, and grounding. Check proper installation and tightness of connections for circuit breakers, fusible switches, and fuses.

END OF SECTION

SECTION 16170
SAFETY SWITCHES, CONTACTORS AND STARTERS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Disconnect switches.
2. Push buttons.

B. Related Documents:
1. The Contract Documents, as defined in the General Conditions, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other documents.

1.2 GENERAL

A. Refer to drawings for sizes indicated.

B. Terminal shall be 75 deg. C rated.

PART 2 PRODUCTS

2.1 DISCONNECT SWITCHES

A. Disconnect switches for single and three phase loads over 1000 watts or 1/2 horsepower shall be horsepower rated, heavy duty type, quick-make, quick-break as manufactured by Siemens, Square D, General Electric or Eaton. Switches exposed to weather shall be NEMA 3R.

B. Disconnecting devices for single phase loads 1000 watts and smaller shall be furnished and installed by Contractor unless otherwise noted.

C. Fuses for disconnect switches and fused switch distribution panels shall be dual element with minimum time delay of 10 seconds when they serve transformer or motor loads. Fuses serving loads other than motor and transformer loads shall be dual element of the size scheduled.

2.2 PUSH BUTTONS

A. All push buttons for manual remote control of motorized equipment shall be furnished and installed by Electrical Contractor unless otherwise noted.

B. Push buttons shall be heavy duty type, momentary contacts, with pilot light (color as directed) for each speed as manufactured by Siemens, Square D, General Electric or Westinghouse. Push buttons in finished areas shall be flush mounted on stainless steel plate, engraved as required.

2.3 CONTACTORS

A. All contactors and relays shall be UL listed under UL 508 fully rated and marked for use with tungsten lamps and ballast (fluorescent) lamp loads with electrical characteristics as indicated. Contactors shall be of the single coil, electrically operated, mechanically held type, in either NEMA 1 enclosure or cabinets or pull boxes with hinged covers or integrally mounted in panelboards as indicated. Control voltage shall be 120V AC unless otherwise indicated. All contactors shall be mounted with an integral hand-off auto switch.

B. Group mounted contactors or relays, if indicated on drawing, shall be numbered. Mount a directory, indicating equipment controlled on the enclosure cover, as specified for lighting panelboards.

C. Where in-rush current on large contactors or magnetic starters is greater than the capacity of the remote control devices, pilot relays with voltage indicated, compatible with unit characteristics, shall be supplied.

D. All units not integrally mounted in panelboards shall contain, in an individual enclosure, a UL listed copper ground terminal.

e. Contactor manufacturers: Square D, Westinghouse, General Electric or Siemens

2.4 MAGNETIC MOTOR STARTERS

A. General Division of Responsibility - Magnetic motor starters for mechanical equipment, unless indicated otherwise, shall be furnished by the mechanical contractor.

B. Auxiliary Contacts - Magnetic motor starters will be provided with auxiliary contacts required for operation of starting device only. Additional auxiliary contacts required for electrical interlock and automatic controls shall be furnished and installed as specified in the controls

C. Heater Elements:
1. In order that they be properly sized, all heater elements for overload relays on magnetic motor starters (except the starters factory pre-wired with equipment) shall be furnished and installed by the Contractor in the field.
2. Each Contractor furnishing motor-operated equipment shall be required to furnish a list of motor characteristics to Contractor so that properly sized heater elements may be provided. The list shall include equipment identification by name and by number, full load current, locked rotor current, voltage rating and suggested service factor to compensate for operating duty cycle and ambient temperatures.

D. Type of Magnetic Motor Starters:
1. Type - Across-the-line, multi-speed, reduced in rush or reduced voltage type as specified in the Equipment Data Schedule. Multi-speed motor starters shall be of the type suitable for the motor winding (single winding consequent poles or separate windings). Refer to manufacturer's wiring diagram prior to ordering starters.
2. Overload Relays - One (1) O.L. Relay on 120 volt motors; two (2) on 208 volt single phase motors; three (3) on 3 phase motors regardless of voltage.
3. Voltage of Holding Coil - When motor is locally controlled, line voltage coils up to 240 volts may be used; when motor is remote controlled or electrically interlocked with other motors, all motor start holding coils shall be rated for 24 volts with individual control transformers built within the starter enclosure.
4. Enclosure - Of the proper type for indoor, outdoor or hazardous area applications shall be furnished.
5. Products by a Single Manufacturer - Except for starters factory pre-wired on equipment, all motor starters furnished by each Contractor shall be the products of a single manufacturer for the convenience of the Owner in stocking spare parts.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install switches where shown or required by the N.E.C. of size shown on plans, or as required. Switches shall be installed level/plumb complete with compatible fuses (where shown or required).

END OF SECTION

SECTION 16500

INTERIOR LIGHTING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Ballasts.
2. Lamps.
3. Lighting fixtures.

PART 2 PRODUCTS

2.1 BALLASTS

A. All fluorescent lamp ballasts shall be low-loss, electronic T8 type, reduced harmonic, Class "P", with "A" sound rating, and shall bear UL and CBM certifications. Ballast shall have THD of less than 20 percent. Zero degree ballast shall be T8 electronic where possible.

B. Ballasts shall be MagneTek Triad RH type or approved equal.

2.2 LAMPS

A. Fluorescent lamps shall be energy saving, T8 type, 3,500K, 70+ CRI series of size and wattage as scheduled on the drawings. They shall be General Electric "Trimline SP" series, or approved substitute as manufactured by Osram Sylvania or Phillips.

B. Incandescent lamps shall be of type and size as scheduled on the drawings. They shall be rated 130V and be frosted (IF) type.

2.3 LIGHTING FIXTURES

A. Letter designations beside symbols on drawings correspond to letter designations in Lighting Fixture Schedule.

B. Lens in troffer-type lighting fixtures shall be clear virgin acrylic, nominal .125 inch thick, or pryamidal low-brightness pattern, unless scheduled otherwise. Deep cell parabolic fixtures shall be protected from contaminants with a polyethelene cover until construction is completed.

PART 3 EXECUTION

3.1 LIGHTING FIXTURES

A. Provide lighting fixtures at all locations indicated by symbols or notes on the drawings.

B. Suspended ceilings shall normally be used to mount and support lighting fixtures. Ceilings shall be designed to support the weight of the lighting fixtures.

C. Locations of lighting fixtures on the electrical drawings are approximate. Refer to Architectural reflected ceiling plan for actual locations fixtures.

D. Lighting fixtures installed in cementitious ceiling shall have a flanged plaster frame.

E. Fixtures recessed in concealed-spline tile, and in gypsum board ceilings shall be flanged.

F. Interior lighting fixtures shall be mounted as follows:
   1. Recessed fixtures installed in exposed tee bar ceiling shall use the ceiling grid to support the fixtures.
   2. Surface mounted fixtures on exposed tee bar ceiling shall use patented grip clips on the tee bars to support the fixtures.
   3. Surface or recessed fixtures in or on cementitious ceilings shall be supported from pieces of support channel spanning across the main supporting channels.
   4. Recessed fixtures installed in tee bar ceilings shall have two wires attached at opposite corners secured to the structure above.

G. All recessed fixtures in lay-in suspended ceiling areas shall be connected using Greenfield connector. The Greenfield connector shall be attached to the fixture and the cover of the outlet box. No conduit shall enter a recessed fixture directly.

H. All emergency lighting equipment shall be UL 924 and NFPA 101 listed and shall comply with state and local codes. Where required, emergency lighting equipment shall be suitable for floor proximity installation.

3.2 LAMPS

A. Furnish and install one complete set of lamps for all contractor furnished fixtures.

END OF SECTION

SECTION 16721

FIRE ALARM SYSTEM

PART 1 - GENERAL

1.1 SUMMARY

a. Provide fire detection and alarm systems.

1.2 SUBMITTALS

a. Product Data: Submit manufacturer's product data and installation instructions for each material and product used.
b. Shop Drawings: Submit shop drawings indicating material characteristics, details of construction, connections, and relationship with adjacent construction.
   1). Shop drawings shall be prepared and stamped by a qualified engineer licensed in the jurisdiction of the project.
c. Warranty: Submit manufacturer’s standard warranty. Include labor and materials to repair or replace defective materials.
d. Operation and Maintenance Data: Submit manufacturer’s operation and maintenance data, including operating instructions, list of spare parts and maintenance schedule.

1.3 QUALITY ASSURANCE

a. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.
b. Compliance: NFPA 70, 71, 72, 72E, 72G, 72H.

PART 2 - PRODUCTS

A. MATERIALS

a. Fire Alarm System Operational Characteristics:
   1). Signal Transmission: Hard-wired individual circuits.
   2). Audible Alarm Indication: Horns, bells, and tone signals on loudspeakers.
   3). Interface: Smoke removal systems, smoke dampers, air handling units control.
b. Fire Alarm System Components:
   1). Manual Pull Stations: Double-action type, metal or plastic.
   2). Smoke Detectors: UL 268, self-restoring type with visual indicator, photoelectric and ionization-types.
   3). Thermal Detectors: Fixed-temperature and rate-of-rise type.
   4). Flame Detectors: Ultraviolet type with delay.
   5). Fire Alarm Bells: Electric vibrating under-dome type.
   6). Fire Alarm Horns: Electric vibrating polarized type.
   7). Visual Alarm Devices: Dual-voltage strobe lights.
   8). Voice/Tone Speakers: UL 1480 type.
   9). Fire Fighters Telephones: Telephone handset with dedicated, supervised communication lines.
   10). Device Location-Indicating Lights: System-voltage-indicating light.
   11). Fire Alarm Control Panel: UL 864 with lockable steel enclosure and alphanumeric display and system controls.
   12). Graphic Annunciator: LED indicators on graphic building floor plan.
   13). Transmitter: Auto-dialer type.
   14). Emergency Power Supply: Battery operated, 24-hour operation capacity.

PART 3 - EXECUTION

INSTALLATION

a. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Install materials in proper relation with adjacent construction and with uniform

appearance for exposed work. Coordinate with work of other sections. Provide proper clearances for servicing.

b. Comply with National Electrical Code and building code requirements. Maintain continuity of circuits required to supply new or existing equipment in service.
c. Provide core drilling as required for new work.
d. Center ceiling-mounted elements in center of ceiling tiles as applicable.
e. Maintain indicated fire ratings of walls, partitions, ceilings and floors at penetrations. Seal with firestopping to maintain fire rating.
f. Test all systems for proper operation. Label circuits in electrical panels.
g. Restore damaged finishes. Clean and protect work from damage.
h. Instruct Owner's personnel in proper operation of systems.

END OF SECTION