NOTE: PENETRATIONS OF AREA SEPERATION WALLS SHALL BE PROTECTED WITH THROUGH-PENETRATION FIRE STOPS AND MEMBRANE PENETRATION FIRE STOPS

MATERIALS FOR DRAIN, WASTE, VENT PIPE, AND FITTINGS					
MATERIAL	UNDERGROUND DRAIN, WASTE, VENT PIPE AND FITTINGS	ABOVE GROUND DRAIN, WASTE, VENT PIPE AND FITTINGS	BUILDING SEWER PIPE AND FITTINGS	REFERENCED STANDARD PIPE	REFERENCED STANDARD(S) FITTINGS
ABS (SCHEDULE 40)	X	X	X	ASTM D 1527, ASTM D 2661, ASTM D 2680[1], ASTM F 628	ASTM D 2661, ASTM D 2680[1]
ASBESTOS-CEMENT			X	ASTM C 428[1], ASTM C 14	
BRASS		X		ASTM B 43	
CAST-IRON	X	X	X	ASTM A 74, ASTM A 888, CISPI 301	ASTM B 16.12, ASTM A 74, ASTM A 888, CISPI 301
CO-EXTRUDED ABS (SCHEDULE 40)	X	X	X	ASTM F 1488	ASME D 2661, ASTM D 2680[1]
CO-EXTRUDED PVC (SCHEDULE 40)	X	X	X	ASTM F 1488, ASTM F 891	ASME D 2665, ASTM D 794[1], ASTM F 1866
COPPER (TYPE DWV)	X	X	X	ASME B 75, ASTM B 251, ASTM 302, ASTM B 306	ASME B16.3
GALVANIZED MALLEABLE IRON		X			ASME B16.3
GALVANIZED STEEL		X		ASTMA 53	
PVC (SCHEDULE 40)	X	X	X	ASTM D 1785, ASTM D 2665, ASTM F 794[1]	ASTM D 2665, ASTM F 794[1], ASTM F 1866
STAINLESS STEEL		X		ASTM A 112.3.1	ASTM A 112.3.1
STAINLESS STEEL	X		X	ASTM A 112.3.1	ASTM A 112.3.1
VITRIFIED CLAY (EXTRA STRENGTH)			X	ASTM C 700	ASTM C 700
STAINLESS STEEL 304		X		ASTM A 112.3.1	ASTM A 112.3.1
STAINLESS STEEL 316L	X	X	X	ASTM A 112.3.1	ASTM A 112.3.1

1 For building sewer applications

MATERIALS FOR BUILDING SUPPLY AND WATER DISTRIBUTION PIPING AND FITTINGS				
MATERIAL	BUILDING SUPPLY PIPE AND FITTINGS	WATER DISTRIBUTION PIPE AND FITTINGS	REFERENCED STANDARD PIPE	REFERENCED STANDARD(S) FITTINGS
ASBESTOS-CEMENT	X[1]		ASTM C 296, AWWA C400	
BRASS	X	X	ASTM B 43, ASTM B 135	
COPPER	X	X	ASTM B 42, ASTM B 75, ASTM B 88, ASTM B 251, ASTM B302, ASTM B447	ASTM B16.15, ASME B16.18, ASME B16.22, ASME B16.26
CPVC	X	X	ASTM D 2846, ASTM F 441, ASTM F 442	ASTM D 2846, ASTM F 437, ASTM F 438, ASTM F 439, ASTM F 1970
DUCTILE-IRON	X	X	AWWA C151	ASME B 16.4, AWWA C110, AWWA C153
GALVANIZED STEEL	X	X	ASTM A 53	
MALLEABLE IRON	X	X		ASME B16.3
PE	X[1]		ASTM D 2239, ASTM D 2737, ASTM D 3035, AWWA C901, CSA B137.1	ASTM D 2609, ASTM D 2683, ASTM D 3261, ASTM F 1055, CSA B137.1
PE-AL-PE	X	X	ASTM F 1282, CSA B137.9	ASTM F 1282, ASTM F 1974, CSA B137.9
PEX[3, 4]	X	X	ASTM F 876, ASTM F 877, CSA B137.5	ASTM F 877, ASTM F 1807, ASTM F 1960, ASTM F 1961, ASTM F 2080, ASTM F 2159, CSA B137.5
PEX-AL-PEX[2]	X	X	ASTM F 1281, ASTM F 2262, CSA B137.10	ASTM F 1281, ASTM F 1974, ASTM F 2434, CSA B137.10
PVC	X[1]		ASTM D 1785, ASTM D 2241, AWWA C900	ASTM D 2464, ASTM D 2466, ASTM D 2467, ASTM F 1970
STAINLESS STEEL	X	X	ASTM A 269, ASTM A 312	

NOTE: PENETRATIONS OF AREA SEPERATION WALLS SHALL BE PROTECTED WITH THROUGH-PENETRATION FIRE STOPS AND MEMBRANE PENETRATION FIRE STOPS

MECHANICAL SPECIFICATIONS

SECTION 14240 - HYDRAULIC ELEVATORS

A. GENERAL

1. Submittals: Submit the following:
   - a. Product Data: Manufacturer's complete technical product data indicating capacities, sizes, performances, operations, safety features, controls, finishes and similar data.
   - b. Shop Drawings: Plans, elevations, and details showing dimensional data, service at each landing, and interfaces with other work including loading on structure.
   - c. Samples: Submit samples of exposed finishes (excluding primed-for-paint finish).
   - d. Certificates and Permits: Obtain and furnish required inspection/acceptance certificates and operating permits as required by jurisdictional authorities.
2. Regulatory Requirements: In addition to State and local governing regulations, comply with ASME/ANSI A17.1, "Safety Code for Elevators and Escalators."
3. Maintenance and Operating Manual: Furnish two bound copies of maintenance and operating manuals.
4. Maintenance Service: Provide 12 months of complete maintenance, on a monthly site visit/preventive maintenance basis, starting on date of Substantial Completion.
5. Main elevator to operate on emergency generator standby power. Provide required equipment and notification as required by local jurisdiction.

B. PRODUCTS

1. Elevator Manufacturer:
   - a. Thyssen Krupp Elevator
   - b. Contact:
     Ryan Clinedinst National Accounts Sales Manager
     ThyssenKrupp Elevator
     4017 Crescent Park Drive, Riverview, Fl. 33578
     Phone 813-261-2208 Fax 813-261-2222
     ryan.cliniedinst@thyssenkruppelevator.com

2a. Elevator Performance (ELEVATOR #1 NEAR ATRIUM):
   - a. Hydraulic Power Unit: Manufacturer's standard belt-drive, nonpulsating, constant-displacement unit with single-speed electric motor, muffler and solenoid-operated valves.
   - b. Hydraulic Machines and Elevator Equipment: Manufacturer's standard single-acting under-the-car hydraulic plunger-cylinder unit. Provide complete with steel casing and waterproofed well cylinder.
   - c. Motor/Power Supply: 30HP, 208 volt a.c., 3-phase, 60 Hertz. Verify with Electrical.
   - d. Capacity and Speed: 3,500 lbs., 85 feet per minute up, 110 feet per minute down.
   - e. Landings and Travel: Refer to plans.
   - f. Front and rear entrance car operation-when shown on drawing.
   - g. Minimum clear space in car: 6'-8" wide by 5'-5" deep and a minimum door width of 3'-6" per MPS 614-1.
   - h. Elevator shall be connected to back-up emergency generator.

2b. Elevator Performance (ELEVATOR #2 IN WING):
   - a. Hydraulic Power Unit: Manufacturer's standard belt-drive, nonpulsating, constant-displacement unit with single-speed electric motor, muffler and solenoid-operated valves.
   - b. Hydraulic Machines and Elevator Equipment: Manufacturer's standard single-acting under-the-car hydraulic plunger-cylinder unit. Provide complete with steel casing and waterproofed well cylinder.
   - c. Motor/Power Supply: 25HP, 208 volt a.c., 3-phase, 60 Hertz. Verify with Electrical.
   - d. Capacity and Speed: 2,500 lbs., 85 feet per minute up, 110 feet per minute down.
   - e. Landings and Travel: Refer to plans.
   - f. Front and rear entrance car operation-when shown on drawing.
   - g. Minimum clear space in car: 6'-8" wide by 4'-3" deep and a minimum door width of 3'-6" per MPS 614-1.
   - h. With emergency battery lowering kit.

3. Elevator Control System: Provide industry-recognized automatic operation which responds to momentary pressing of signal buttons and to others signals and devices.
4. Provide emergency lowering operation.
5. Provide soft-start for reduced elevator motor starting load. Utilize solid-state, delta-wye or approved technology.
6. Devices and Equipment: Provide the following:
   - a. Automatic Two-Way Leveling Device: Provide with leveling tolerance of 1/4-inch for travel either direction.
   - b. Power Door Operator: Provide car door operator with inter-connection to hoistway doors, checking action, and hand operation of car door for power failure for each entrance door.
   - c. Door Edge Protection Device: Provide retractable astragal on leading edges to automatically reopen doors upon contact each entrance door.
   - d. Electronic Photo-Eye Device: Provide dual beam electronic photo-device to reopen doors with 15-second timed cut-out each entrance door.
   - e. Signal Equipment: Provide manufacturers standard signal equipment and graphics system, for the required control and operation of elevators. Provide Standard VANDAL RESISTANT fixtures for both the car controls and hall station on all floors.
   - f. Provide elevator protection pads for walls.
7. Car Enclosures: Provide manufacturer's standard car enclosures. Include walls, ceiling, lighting, doors, emergency call access panels, hardware, accessories and finish on walls, ceilings and floor. Provide the following finishes where indicated:
   - a. Wall Finish: Plastic laminate paneling, and pattern as selected from manufacturers standard selections. Baked enamel Reveal color F116 white.
   - b. Lighting: Suspended Fluorescent lamp lighting w/white diffusers and baked enamel frame, F116 white.
   - c. Floor Finish: Prepare platform to receive carpet finish.
   - d. Doors/Frames: Hollow metal, #4 Stainless return and door finish.
   - e. Sills: Extruded aluminum.
   - f. Handrails: #4 Stainless Cylindrical 1-1/2" on rear and side walls.
   - g. Door hand- Refer to plans.
8. Hoistway Entrances: Provide manufacturer's standard hoistway entrances for each entrance door.
   - a. Construction: 14 ga. flush-bolted frames, and 16 ga. flush-welded door panels: sound deadened.
   - b. Door and frame Finish: Baked enamel, F116 white.
   - c. Sills: Extruded aluminum.
   - d. Style/Function: Single-leaf, horizontal sliding.

C. EXECUTION

1. Installation: Comply with Code and shop drawing requirements. Install and align properly with hoistway. Install guide rails for uniform, close tolerance of car door with hoistway entrances. Install sills after car installation, and align with car sill.
2. Testing: Before elevators are placed into use, perform acceptance tests as required and recommended by Code and governing authorities. Review test results with Owner, and submit record copy.

SECTION 15050 - BASIC MATRL'S AND METHODS

PART 1 - PRODUCTS

1.1 PIPING MATERIALS

- A. Cast Iron Soil Pipe: Service weight no-hub cast iron pipe and fittings conforming to ANSI Standard A-112.5.2.
- B. Steel Pipe: Schedule 40 pipe, black or galvanized, ASTM A53.
- C. Copper Tube: Hard drawn copper, Types L and M conforming to ANSI H23.1. Fittings shall be wrought copper solder joint fittings conforming to ANSI B16.22.
- D. PVC rain drain piping or as complies with code.
- E. ABS: ASTM Standard D2661-85a with solvent cement joints conforming to ASTM Standard D2235-8.

SECTION 15010 - BASIC MECHANICAL REQ'MNTS

PART 1 - GENERAL

1.1 CODES, RULES AND REGULATIONS

- A. All work and materials shall conform to the local, State Codes and all State and other applicable Laws and Regulations.
- B. Whenever indicated material, workmanship, arrangement or construction is of higher quality or capacity than that required by the above Codes, the Drawings and/or specifications shall govern.
- C. Should there be any direct conflict between Codes and the Drawings and/or Specifications, the Codes, Laws or Regulations shall govern.

1.2 WORKING DRAWINGS

- A. The working drawings are generally diagrammatic. They do not show every offset, bend or elbow required for installation in the space provided. Check all locations for mechanical work and coordinate the Architectural, Structural and Electrical Drawings.
- B. Where equipment is shown, dimensions have been taken from typical equipment of the class indicated. Carefully check the Drawings to see that the equipment, under consideration for installation, will fit the space provided and that all connections may be made thereto without impairment of area and height requirements and of Code required clearances.
- C. Mechanical contractor to provide shop drawing of duct material and flues showing: Bottom of Duct, Top of Duct, Sizes, Ceiling height from finish floor and Bottom of Duct from finish floor.
- D. Plumbing contractor to provide shop drawing for piping materials showing routing: Bottom of Pipe, Sizes, Ceiling height from finish floor and Bottom of Duct from finish floor.

1.3 SUBMITTALS

- A. Submit all Shop Drawings at one time. Bind each set in a three-ring binder.
- B. Clearly reference each item submitted by page and paragraph to the applicable portion of this Specification. Where equipment is designated by number or symbol on the Drawings, the submittal shall also show this number or symbol.
- C. All specified features and performance data must be specifically noted on the submittal.
- D. Check Shop Drawings for space requirements and conformance with the Specifications and shall mark corrections and approval on all Shop Drawings prior to submittal to the Architect.

1.4 RECORD DRAWINGS

- A. Keep up-to-date Record Drawings, showing dimensions, locations and depths of all buried and concealed piping and equipment. Keep master copy on the job. No backfilling of trenches will be permitted until Record Drawings are approved as up-to-date by the Owner's Representative. No plumbing progress payments will be approved unless Record Drawings are up-to-date. Depth of sewers shall be from finish floor elevation. Submit Record Drawings to the owner's representative upon completion of project.

1.5 GUARANTEES

- A. Furnish written guarantee to Owner for period of one year covering all defects in material and workmanship. Should any trouble develop during this period due to defective materials or faulty workmanship, the Contractor shall furnish all necessary labor and material and correct the trouble promptly and without any additional cost to the Owner.

1.6 PERMITS

- A. Unless otherwise distinctly herein specified, apply and pay for all necessary permits, fees and inspections required by any public authority having jurisdiction over work.

1.7 VISITING THE PREMISES

- A. Visit the site and become familiar with all visible existing conditions. As a result of having visited the premises, the Contractor shall be responsible for the installation of the work as it relates to such visible existing conditions.
- B. The submission of a bid will be considered an acknowledgment on the part of the Bidder of visitation to the site.

1.8 PRODUCT DELIVERY, HANDLING AND STORAGE

- A. Store materials off the ground.
- B. Manufacturer's label required on each storage container.
- C. Protect from weather and damage.

PART 2 - PRODUCTS

2.1 MATERIAL

- A. All materials and products used for construction shall be new, of the best grade and the latest products as listed in printed catalog data. All articles of a kind shall be the standard product of a single manufacturer. Trade names and manufacturers names denote the character and quality of equipment desired and shall not be construed as limiting competition.

  Equipment to be UL approved where required.

PART 3 - EXECUTION

3.1 SITE OBSERVATION

- A. All work and materials subject to field observation at any and all times by engineer and/or Owner's Representative.
- B. The Contractor shall notify the Engineer a minimum of two working days prior to testing any piping system which must be witnessed and approved before it is covered up or enclosed.
- C. If observer finds any material or work not conforming to these Specifications, the Contractor shall, within three days after being notified, remove materials from the premises. If the material has been the entire expense of removing and replacing will be borne by the Contractor.

3.2 WORKMANSHIP AND SUPERVISION

- A. Constantly supervise work covered by this Specifications. Verify all conditions on job site and lay out work accordingly.

3.3 COMPLETION REQUIREMENTS

- A. Upon completion of the work and adjustment of all equipment, test all systems by the Contractor to demonstrate to the Owner's Representative that all equipment furnished and installed or connected under the Provisions of these Specifications functions mechanically in the manner required. At the time of this demonstration, the Contractor shall deliver to the Owner's Representative four bound copies of the following materials:

1. Catalog description of each item of equipment actually installed on the job.
2. Spare parts list of manufacturer's recommended replacement parts for each fixture and item of equipment.
3. Operating and maintenance instructions for each item of equipment requiring inspection, lubrication or service, describing and scheduling the performance of such maintenance.

3.4 INSTALLATION

- A. Equipment Installation: follow manufacturers instructions for installation of all plumbing fixtures, equipment and accessories unless specifically noted otherwise.

3.5 ACCESS PANELS

- A. Provide for all fire and fire-smoke dampers, valves, and smoke detectors in non accessible ceilings.

PART 2 - PRODUCTS

2.1 VALVES

- A. General: Valves manufactured by Jenkins, Kennedy, Watts, Nibco, Stockham, Hammond or Lunkenheimer.
- B. Gate Valves - 2-inch and Smaller: Bronze body, 125 psi working pressure, non-rising stem. Nibco Model 113.
- C. Ball Valves - Size 2-inch and Smaller: Bronze body, 200 psi working pressure, lever handle with stops, threaded or soldered ends to match pipe and bronze stem and ball. Seats and seal shall be Buna-N for service of maximum 150F. For service over 150F, seat and seal shall be ethylene propylene or Teflon. Valve seat replaceable without disturbing piping either by swing away or top entry method. Nibco Model 590W for below 150F, Model 590Y above 150F.
- D. Check Valves - 2-inch and Smaller: Bronze ASTM B-62 body with TFE seat disc, Y-pattern swing type manufactured in accordance with MSS SP-80: Class 125. Nibco T413-Y Threaded.

2.2 UNIONS

- A. Steel Pipe Union: 150 pounds malleable iron, brass to iron seat, ground joint, black or galvanized to match pipe.
  1. Sizes 2-inch and Smaller: Screwed connection.
  2. Sizes 2-1/2-inch and Larger: Flanged connection.
- B. Copper Pipe Union: 200 psi working pressure. Bronze body, solder ends.
- C. Dielectric Unions: 250 psi working pressure. Pipe ends and material to match piping. Electric current below 1 percent of galvanic current. Gasket material as recommended by manufacturer. EPCO or accepted substitution.

2.3 ESCUTCHEONS

- A. Brass material, chrome plated finish. Size sufficient to cover all pipe openings through wall, floor or ceiling. Set screw or spring to secure to pipe.

2.4 PIPE HANGERS AND SUPPORTS

- A. General: Michigan Figure Numbers are indicated but comparable products manufactured by Elcen, Kinline, F&S Central, Super Strut or approved substitute.
- B. Pipe Hangers: Adjustable clevis type or malleable iron, split ring hanger, black, UL listed. Michigan No. 111 or Figure 400 or approved substitute.

2.5 ACCESS PANELS

- A. Steel, 24 inch by 24 inch (or required type and approved size) complete with steel frame, hinged locking door and prime coat finish. Milcor or approved. Where access panels are located in fire rated areas of structure, they shall be rated accordingly. Fire damper access panels to be identified with 1/2" letters.

PART 3 - EXECUTION

3.1 PIPE AND PIPE FITTINGS

- A. Install unions in all non-flanged pipe connections to apparatus and adjacent to all screwed control valves, traps and appurtenances requiring removal for servicing, so located that piping may be disconnected without disturbing the general system. Provide dielectric couplings, unions or flanges between steel and copper pipe or tubing.
  1. Run all piping parallel to the building structure and support it sufficiently to prevent sagging.
  2. Install all piping where possible so as to vent and drain.
  3. Support all piping independently so that its weight is not carried by the equipment.
  4. Screwed joints shall have the pipe ends reamed, dope or tape applied to male threads only, with the exception of brass to brass joints which shall be made with Teflon tape only.
- B. Brazed solder type joints: use Fos-Copper rod on wrought copper fittings, or silver brazing alloy with flux recommended for that particular alloy on all fittings. Clean copper tubing and fittings thoroughly before applying the flux. Remove all copper tubing burrs, ream to full bore and true and round all joints. Apply heating uniformly to secure penetration of the rod and leave a full bead around the entire circumference of the joint to show proper penetration and sealing. Under no circumstances will Fos-Copper be used on cast fittings.
- C. No-Hub Cast Iron Pipe: Conform with state Plumbing Code and Cast Iron Soil Pipe Institute recommendations.
- D. Uninsulated piping shall be installed so that unrestrained direct contact with the structure or other system installations is avoided. Where contact with or passage through building or structural features cannot be avoided: piping shall be firmly anchored to, or isolated from, the structure to prevent noise transmission and occurrence of physical damage. Piping to be insulated shall be installed with adequate clearance around piping to allow for placement of full thickness insulating material.

3.2 VALVES

- A. Install valves on each side of all equipment and where shown on the Drawings. Full size of pipe unless otherwise indicated.
- B. Provide neat appearance and easy grouping with all parts easily accessible. Valve stems shall be installed in a horizontal or upright position.
- C. Valve Application:

Service	Valve Type	Minimum Pressure Rating
Domestic Water	Gate (or ball)	125 psi

3.3 UNIONS

- A. Pipe Unions: Install where indicated on Drawings and on each side of all pieces of equipment to permit easy removal of the equipment.
- B. Insulating Union: Place in line in piping systems where two dissimilar metals come in contact.

3.4 ESCUTCHEONS

- A. Install on all exposed pipes passing through ceilings, walls or floors.

3.5 PIPE HANGERS AND SUPPORTS

- A. General: Provide adjustable hangers on all pipes, complete with adjusters, swivels, rods, etc.. Size hangers to clear insulation and guides.
- B. Provide hanger within three feet of all changes in direction.
- C. Branches six feet or longer shall have separate hanger.
- D. Plumbers Tape: Not permitted as pipe hangers.

3.6 CUTTING AND PATCHING

- A. Cutting, patching and repairing required for the proper installation and completion of the work specified in this Division, including plastering, masonry work, concrete work, carpentry work and painting shall be performed by skilled craftsmen in these respective trades, all at the expense of this Subcontractor. Holes which are cut oversize shall be filled back in so that a tight fit is obtained around the pipe, duct or object passing through. Cutting of roof is to be performed by landlord's contractor. Coordinate size and locations of required openings.

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MECHANICAL SPECIFICATIONS

DATE
8/28/2015

REVISED DATE
1 9/22/2015

SHEET
M4.3