SECTION 02 41 00
DEMOLITION AND DECONSTRUCTION

1. EXISTING FACILITIES TO BE REMOVED

Inspect and evaluate existing structures onsite for reuse. Existing construction scheduled to be removed for reuse shall be disassembled. Dismantled and removed materials are to be separated, set aside, and prepared as specified, and stored or delivered to a collection point for reuse, remanufacture, recycling, or other disposal, as specified. Materials shall be designated for reuse onsite whenever possible.

a. Chain Link Fencing

Remove chain link fencing, gates and other related salvaged items scheduled for removal and transport to designated areas. Remove gates as whole units. Cut chain link fabric to 25 foot lengths and store in rolls off the ground.

b. Paving and Slabs

Remove sawcut concrete and asphaltic concrete paving and as indicated to a depth of 6 inches below existing adjacent or new finish] grade. Provide neat sawcuts at limits of pavement removal. Pavement and slabs designated to be recycled and utilized in this project shall be moved, ground and stored as directed by the HCDA. Pavement and slabs not to be used in this project shall be removed from the Installation at Contractor's expense.

c. Patching

Where removals leave holes and damaged surfaces exposed in the finished work, patch and repair these holes and damaged surfaces to match adjacent finished surfaces, using on-site materials when available. Where new work is to be applied to existing surfaces, perform removals and patching in a manner to produce surfaces suitable for receiving new work. Finished surfaces of patched area shall be flush with the adjacent existing surface and shall match the existing adjacent surface as closely as possible as to texture and finish.

2. DISPOSITION OF MATERIAL

a. Title to Materials

Except for salvaged items specified in related Sections, and for materials or equipment scheduled for salvage, all materials and equipment removed and not reused or salvaged, shall become the property of the Contractor and shall be removed from HCDA property. Title to materials resulting from demolition and deconstruction, and materials and equipment to be removed, is vested in the Contractor upon approval by the HCDA of the Contractor's demolition, deconstruction, and removal procedures, and authorization by the HCDA to begin demolition and deconstruction. The HCDA will not be responsible for the condition or loss of, or damage to, such property after contract award. Showing for sale or selling materials and equipment on site is prohibited.

b. Reuse of Materials and Equipment

Remove and store materials and equipment indicated to be reused or relocated to prevent damage, and reinstall as the work progresses.

3. CLEANUP

Remove debris and rubbish from basement and similar excavations. Remove and transport the debris in a manner that prevents spillage on streets or adjacent areas. Apply local regulations regarding hauling and disposal.

4. RECYCLE MATERIALS

Recycle materials to the maximum extent possible. Removal of recyclable materials shall be accomplished by hand labor wherever possible. Historic portions of the structure to remain and items identified for salvage shall not be damaged while removing materials for recycling.

5. DISPOSAL OF REMOVED MATERIALS

a. Regulation of Removed Materials

Dispose of debris, rubbish, scrap, and other nonsalvageable materials resulting from removal operations with all applicable federal, state and local regulations. Storage of removed materials on the project site is prohibited.

b. Burning on HCDA Property

Burning of materials removed from demolished and deconstructed structures will not be permitted on HCDA property.

c. Removal from HCDA Property

Transport waste materials removed from demolished and deconstructed structures from HCDA property for legal disposal.

6. REUSE OF SALVAGED ITEMS

Recondition salvaged materials and equipment designated for reuse before installation. Replace items damaged during removal and salvage operations or restore them as necessary to usable condition.

-- End of Section --

SECTION 02 42 91
REMOVAL AND SALVAGE OF HISTORIC BUILDING MATERIALS

1. SALVAGED ITEMS

Salvage items to the maximum extent possible. Prior to any demolition work, historic items to be salvaged shall be removed from the structure. Removal of salvageable items shall be accomplished by hand labor to the maximum extent possible. Care shall be taken to not damage historic portions of the structure to remain or items identified for salvage.

Keep a complete recording, including photographs, of all salvaged materials including the condition of such materials before, and after, salvage operations.

a. Thermal and Moisture Protection

The following materials shall be removed intact and salvaged: clay tiles.

b. Doors and Windows

Doors and windows with associated hardware and operating mechanisms shall be removed intact (including glass) and salvaged per schedule.

2. CLEAN-UP

Upon completion of the work, portions of structure to remain and adjacent areas and structures shall be cleaned of dust, dirt, and debris caused by salvage and demolition operations. Debris and rubbish shall be removed and transported in a manner that prevents spillage on streets or adjacent areas. Local regulations regarding hauling and disposal shall apply.

-- End of Section --

1. SELF LEVELING, SELF FINISHING UNDERLAYMENT.

    a. Working time, ASTM C 191: 20-40 minutes

    b. Compressive Strength, ASTM C 109 Modified: 1800 psi (12.4 MPa) @ 24 hours, 4000 psi (27.6 MPa) @ 7 days, 5500 psi (37.9 MPa) @ 28 days

    c. Slant Shear Bond Strength, ASTM C 1059: Exceeds 1250 psi (8.6 MPa) @ 28 days

    d. Walk On Time: 2-4 hours maximum

    e. Tensile Bond Strength, ASTM C 1059: 300 psi (2.1 MPa) @ 7 days, 400 psi @ 28 days

-- End of Section --

SECTION 05 40 00
COLD-FORMED METAL FRAMING

1. STEEL STUDS, JOISTS, TRACKS, BRACING, BRIDGING AND ACCESSORIES

Framing components shall comply with ASTM C955and the following.

a. Recycled Content of Steel Products:

   Provide products with an average recycled content of steel products so postconsumer recycled content plus one-half of preconsumer recycled content not less than 75 percent.

b. Steel Sheet: ASTM A1003/A1003M, Structural Grade, Type H, metallic coated, of grade and coating weight as follows:

   1. Grade: As required by structural performance.

   2. Coating: G90.

c. Steel Studs: Manufacturer's standard C-shaped steel studs, of web depths indicated, punched, with stiffened flanges.

d. Studs and Joists of 16 Gage (0.0538 Inch) and Heavier

   Galvanized steel, ASTM A653/A653M and ASTM A1003/A1003M, SS Grade 50, G90.

e. Studs and Joists of 18 Gage (0.0478 Inch)and Lighter

   Studs and Joists of 18 Gage (0.0428 Inch) and Lighter, Track, and Accessories (All Gages): Galvanized steel, ASTM A653/A653M and ASTM A1003/A1003M, SS, Grade 50 33,000 psi G60.

-- End of Section --

1. STANDARD STEEL DOORS

SDI/DOOR A250.8, except as specified otherwise. Prepare doors to receive door hardware as specified in Section 08 71 00. Undercut where indicated. Exterior doors shall have top edge closed flush and sealed to prevent water intrusion. Doors shall be 1-3/4 inch thick, minimum.

a. Interior Doors: SDI/DOOR A250.8, Level 3, physical performance Level A, Model 3 with core construction as required by the manufacturer.

b. Exterior Doors: SDI/DOOR A250.8, Level 4, physical performance Level A, Model 1 or2 with core construction as required by the manufacturer.

2. ASTRAGALS

For pairs of exterior steel doors which will not have aluminum astragals or removable mullions. Provide overlapping steel astragals with the doors.

3. STANDARD STEEL FRAMES

SDI/DOOR A250.8, Level 3 at interior doors and level 4 at exterior doors, except as otherwise specified.

Form frames with welded corners.

4. WELDED FRAMES

Continuously weld frame faces at corner joints. Mechanically interlock or continuously weld stops and rabbets. Grind welds smooth. Weld frames in accordance with the recommended practice of the Structural Welding Code Sections 1 through 6, AWS D1.1/D1.1Mand in accordance with the practice specified by the producer of the metal being welded.

5. MULLIONS AND TRANSON BARS

Mullions and transom bars shall be closed or tubular construction and be a member with heads and jambs butt-welded thereto. Bottom of door mullions shall have adjustable floor anchors and spreader connections.

6. STOPS AND BEADS

Form stops and beads from 20 gage steel. Provide for glazed and other openings in standard steel concealed clips and fasteners. Space fasteners approximately 12 to 16 inch on center. Miter molded shapes at corners. Butt or miter square or rectangular beads at corners.

7. ANCHORS

Provide anchors to secure the frame to adjoining construction. Provide steel anchors, zinc-coated or painted with rust-inhibitive paint, not lighter than 18 gage. Provide at least three anchors for each jamb.

For frames which are more than 7.5 feet in height, provide one additional anchor for each jamb for each additional 2.5 feet or fraction thereof.

8. WEATHERSTRIPPING

Integral Gasket: Black synthetic rubber gasket with tabs for factory fitting into factory slotted frames, or extruded neoprene foam gasket made to fit into a continuous groove formed in the frame. Insert gasket in groove after frame is finish painted. Air leakage of weatherstripped doors shall not exceed 0.5 cubic feet per minute of air per square foot of door area when tested in accordance with ASTM E283.

9. FACTORY PRIMED FINISH FOR INTERIOR DOORS

All surfaces of doors and frames shall be thoroughly cleaned, chemically treated and factory primed with a rust inhibiting coating as specified in SDI/DOOR A250.8. , or paintable A25 galvannealed steel without primer. Where coating is removed by welding, apply touchup of factory primer.

10. HOT DIPPED ZINC COATED AND FACTORY FINISH FOR EXTERIOR DOORS

Fabricate exterior doors and frames from hot dipped zinc coated steel, alloyed type, that complies with ASTM A924/A924M and ASTM A653/A653M. The coating weight shall meet or exceed the minimum requirements for G90 coatings. Repair damaged zinc-coated surfaces by the application of zinc dust paint. Thoroughly clean and chemically treat to insure maximum paint adhesion. Factory prime as specified in SDI/DOOR A250.8.

11. ELECTROLYTIC ZINC COATED ANCHORS AND ACCESSORES

Provide electrolytically deposited zinc-coated steel in accordance with ASTM A879/A879M, Commercial Quality, Coating Class A. Phosphate treat and factory prime zinc-coated surfaces as specified in SDI/DOOR A250.8.

12. FABRICATION

Finished doors and frames shall be strong and rigid, neat in appearance, and free from defects, waves, scratches, cuts, dents, ridges, holes, warp, and buckle. Molded members shall be clean cut, straight, and true, with joints coped or mitered, well formed, and in true alignment. Dress exposed welded and soldered joints smooth. Design door frame sections for use with the wall construction indicated. Corner joints shall be well formed and in true alignment. Conceal fastenings where practicable.

13. GROUTED FRAMES

For frames to be installed in exterior walls and to be filled with mortar or grout, fill the stops with strips of rigid insulation to keep the grout out of the stops and to facilitate installation of stop-applied head and jamb seals.

-- End of Section --

SECTION 08 51 25
REHABILITATION OF HISTORIC STEEL WINDOWS

1. MATERIALS
   a. Steel Bars: SWI SWS.
   b. Sheet Steel: ASTM A 1011/A 1011M.
   c. Zinc-Coated Sheet Steel: ASTM A 653/A 653M.
   d. Zinc Coating: ASTM A 123/A 123M.
   e. Paints and Coatings shall not exceed the VOC Content limits established in the South Coast Air Quality Management District (SCAQMD) Rule 1113, Architectural Coatings. (Non-flat paints: 150 g/L.)

2. FABRICATION

Fabricate window section from low carbon cold-rolled formed steel conforming to ASTM A 653/A 653M, 20 gauge thickness, constructed so that the glass in each window shall lie in the same plane within a tolerance of ¼ inch. The size of the frame and ventilator members shall be as follows:

   a. Neither ventilator nor supporting frame shall have depth, front and back, of less than 1-1/4 inch.
   b. Muntins: Tee shaped face, minimum 1-1/4 inch.

3. CONSTRUCTION

   a. Frame and ventilator sections shall be cold formed and members shall be mitered and key cornered.
   b. A butyl sealant shall be applied and corners shall be mechanically fastened so as to create a close fit.

4. GLASS

When continuous glazing angles or channels are used to hold glass in a window, these continuous members shall be steel. Glass shall be clear, ¼ inch thick minimum.

5. ANCHORS

Use Type 316 stainless steel anchors. Secure anchors and fasteners to beads, jambs, and sills of openings, and secure securely to windows or frames. Anchor each frame at jambs with minimum of three adjustable steel anchors.

6. WINDOW FINISH

   a. Refer tp painting section

7. METAL PREPARATION

a. Anticorrosion phosphoric acid compounds: Denatured alcohol.

8. PRIME COATING

a. MPI 79 Primer, alkyd, anti-corrosive for metal.
b. SSPC SP 11, hand or power tool clean, meeting Green Performance Standard (GPS) GPS-1-08 for Standard category: Rust preventive coating.

9. EXTERIOR FINISH COATING

a. Finish paint shall be compatible with primer.

10. INTERIOR FINISH COATING

a. Finish paint shall be compatible with primer.

11. SURFACE PREPARATION

a. Lead-Painted Surfaces

Comply to the appropriate OSHA Standards in 29 CFR 1910.1025 and 29 CFR 1926.62 for surface preparation on painted surface containing lead. Additional guidance is given in SSPC Guide 6 and SSPC Guide 7.

b. Existing Steel Window Surfaces

Solvent clean or detergent wash in accordance with SSPC SP 1 to remove oil and grease. Where shop coat is missing, damaged or rusted, clean according to SSPC SP 2, SSPC SP 3 or SSPC SP 6. Shop coated ferrous surfaces shall be protected from corrosion by treating and touching up corroded areas upon detection.

c. Rehabilitation of Steel Windows

i. Remove rust, flaking and excessive paint as specified hereinabove.

ii. Use pneumatic needle scaler to remove rust and paint Society for Protective Coatings SSPC SP 11 hand or power tool cleaning.

iii. Power Tool Cleaning to Bare Metal - Metallic surfaces which are prepared according to this specification, when viewed without magnification, shall be free of all visible oil, grease, dirt, dust mill scale, rust, paint, oxide, corrosion products and other foreign matter. Slight residues of rust and paint maybe left in the lower portion of pits if the original surface is

pitted. When painting is specified, the surface shall be roughened to a degree suitable for the specified paint system. The surface profile shall not be less than 1 mil (25 microns).

iv. DO NOT burn off rust with oxyacetylene or propane torch or inert gas welding gun.

v. Coordinate rust and paint removal with contractors lead based paint removal plan (Note, hazardous material reports indicated lead based paint on exterior of steel windows).

d. Apply anticorrosion phosphoric acid compound.

e. Remove anticorrosion phosphoric acid compound with damp cloth(s).

f. DO NOT flush with water.

g. Dry metal with industrial blow dryer.

h. Do not allow water or moisture to remain on or stand on steel window components.

i. Clean steel window components with denatured alcohol.

j. Metal surfaces shall be cleaned of foreign matter.

k. Programs for preparation of metal shall be per SSPC PA Guide 5. Grease, oil, and other soluble contaminants shall be removed by solvent cleaning per SSPC SP 1.

l. Surfaces shall be free from soils and corrosion; e.g. grease, oil, solder flux, welding flux, weld spatter, sand, rust, scale, and other contaminants that might interfere with the application of the new finish. Cleaning methods shall be the gentlest possible to achieve the desired result. Metals which are soft, thin, or exhibit fine detail shall not be abrasively cleaned.

m. Evidence of corrosion or contamination on a previously cleaned surface shall be cause for re-cleaning prior to painting.

n. Surfaces that have been cleaned, pretreated, and otherwise prepared for painting shall be given a coat of the specified first coat as soon as practical after such pretreatment has been completed, but prior to any deterioration of the prepared surface. Unless otherwise directed, the first coat primer shall be applied within 48 hours of surface preparation.

o. Straighten bent sections via heat and pressure applied slowly over time so as to not apply pressure unevenly.

p. Repair severely corroded areas of steel section with patching material of steel fiber reinforced epoxy binder.

q. DO NOT use heated or melted steel welding rod method. Replace missing sections of steel window sash (frame or mullion) with hot-rolled steel section to match existing section profile.

r. Prime exposed metal with a rust-inhibiting primer. Apply two coats oil-alkyd primer with zinc chromate.

s. Replace cracked or broken glass and glazing compound. Glass shall match existing color and clarity of existing glass.

t. Replace missing screws or fasteners.

u. Clean and lubricate hinges and latches.

v. Repaint all steel sections with two coats of finish paint compatible with the primer.

12. RE- INSTALLATION

Install without forcing into prepared window openings. Set at proper elevations, location, and reveal, plumb, square and level and in alignment. Brace and stay to prevent distortion and misalignment. Protect ventilators and operating parts against dirt and building materials by keeping closed and locked in frames. Install and seal windows in a manner that will prevent entrance of water and wind.

13. ADJUSTMENT AFTER INSTALLATION

After installation of windows and completion of glazing and field painting, adjust all ventilators and hardware to operate smoothly and to provide weathertight sealing when ventilators are closed and locked. Lubricate hardware and operating parts. Adjust weatherstripping to assure weather tight contact with frames when ventilators are closed and locked. Weatherstripping shall not cause binding of sash, or prevent closing and locking of ventilators. Verify products are properly installed, connected and adjusted.

14. CLEANING

Clean interior and exterior surfaces of window units of paint, spattering spots, and other foreign matter to prevent a neat appearance and to prevent fouling of weathering surfaces and weatherstripping, and interference with operating of hardware. Clean and touch up abraded surfaces. Replace with new windows any stained, discolored, or abraded windows that cannot be restored to original condition.

-- End of Section --

SECTION 09 29 00
GYPSUM BOARD

1. MATERIALS

a. Gypsum Board

ASTM C1396/C1396M. Gypsum board shall contain a minimum of 50 percent post-consumer recycled content, or a minimum of 40 percent post-industrial recycled content

b. Treatment Materials

ASTM C475/C475M. Use all purpose joint and texturing compound containing inert fillers and natural binders, including lime compound. Pre-mixed compounds shall be free of antifreeze, vinyl adhesives, preservatives, biocides and other slow releasing compounds.

c. Embedding Compound

Specifically formulated and manufactured for use in embedding tape at gypsum board joints and compatible with tape, substrate and fasteners.

d. Finishing or Topping Compound

Specifically formulated and manufactured for use as a finishing compound.

e. All-Purpose Compound

Specifically formulated and manufactured to serve as both a taping and a finishing compound and compatible with tape, substrate and fasteners.

f. Setting or Hardening Type Compound

Specifically formulated and manufactured for use with fiber glass mesh tape.

g. Joint Tape

Use cross-laminated, tapered edge, reinforced paper, or fiber glass mesh tape recommended by the manufacturer.

h. Fasteners

ASTM C1002, Type "G", Type "S" or Type "W" steel drill screws for fastening gypsum board to gypsum board and steel framing members less than 0.033 inch thick. ASTM C954steel drill screws for fastening gypsum board to steel framing members 0.033 to 0.112 inch thick. Provide cementitious backer unit screws with a polymer coating.

-- End of Section --

SECTION 23 74 33.00 40
PACKAGED, OUTDOOR, HEATING AND COOLING MAKEUP AIR-CONDITIONERS

1. REMOTE SPLIT TYPE, PACKAGED, SELF CONTAINED (RSAC)

Provide air-conditioner that consists of matched assemblies. Provide packaged unit complete with frame and enclosure, interconnecting piping and wiring, necessary controls and safety devices, and operating charge of oil. Provide unit that is ready for full-capacity operation after removal of shipping protection, connection to remote compressor/condenser or condenser, charging, and connection to utilities. Completely charge system in the field. Provide refrigerant that is R-22. Have units shipped with a refrigerant holding-charge.

Provide unit that has provisions for admitting controlled amounts of outside air as makeup and for exhausting internal air.

a. Compressor

Provide 1,750-revolution per minute (rpm) hermetic type compressor with internal crankcase sight glass and protected motor. A 3,500-rpm compressor is acceptable in units of 20 tons and less. Provide unit that is capable of continuous operation under ARI, "Maximum Operating Conditions" and "Load Temperature Operations".Provide compressor with capacity reduction devices to produce automatic-capacity reduction of at least 66 percent in two equal steps. Ensure compressors start with capacity reduction devices in the unloaded position. If standard with the manufacturer, provide two equal-sized compressors in lieu of a single compressor, and operate in completely independent refrigerant circuits, actuated by capacity control relays interlocked with a time sequence switch, that start unloaded or with gas pressures across the compressor equalized.

b. Cooling Coil

For compressors with capacity reduction, provide the associated coil with a separate circuit, liquid solenoid valve, and an expansion device for each two stages of capacity reduction. For each compressor of a dual-compressor unit, provide the associated coil with a protected, insulated drain pan. Provide seamless copper tubes, copper or aluminum fins, mechanically bonded to the tube at 12 fins per inch, maximum. Provide vertical coils equipped with liquid-feed distributors to ensure equal feed to each refrigerant circuit. Test coils at 400 pounds per square inch (psi) at the factory and completely dehydrated. Limit air flow to 500 feet per minute (fpm). Provide design that precludes carryover of water.

c. Fans

Provide centrifugal-type fans. Provide antifriction type bearings, manufactured from vacuum processed alloys. Provide bearings that have a L-10 life expectancy rating of 40,000 hours under service load conditions. Statically and dynamically balance fans. Provide fans that are V-belt driven by constant-speed motor of sufficient size that the brake power rating does not exceed the nominal motor rating. Ensure adjustable sheave provides not less than 20 percent fan-speed adjustment. Select sheave size so that fan speed at the approximate midpoint of the sheave adjustment produces the specified air quantity.

d. Casing

Provide outer casing that is constructed of insulated 18-gage metal panels adequately reinforced, and provided with easily removable access panels located for access to all parts of the equipment. Round corners to provide a neat appearance. Provide metal surfaces that are Bonderite treated, phosphatized, and have a baked enamel finish. Make return air inlet grilles located on the front face of the unit an integral part of the unit casing. Provide casing and insulation that are designed to limit noise and vibration within acceptable levels. Provide outlet grilles that are constructed to permit adjustable directional flow in both horizontal and vertical planes.

e. Controls

Mount a switch with fan/off/cool positions, with the remote thermostat. Mount other controls, including motor starter or contactors and safety controls, inside the enclosure and wire at the factory. Provide magnetic across-the-line type motor starters. Provide general purpose enclosures for motor starters. Where two or more compressors are used, provide time-delay relays for sequence starting.

f. Filters

Locate filters in the filter return air fixture. Provide filters that limit air velocities to 500 fpm. Provide filters with an average efficiency of not less than 20 percent based on ASHRAE 52.2.

g. Air-Cooled Condenser

Provide air-cooled condenser with vertical discharge, in a weather-protected casing, that is suitable for installation remote from air-conditioning unit. Provide air inlet and discharge grilles with galvanized wire-mesh birdscreens. Provide an extended surface fin-and-tube type condenser coil, constructed with copper or aluminum tubes with copper or aluminum fins per 1 inch mechanically bonded to coil. Dehydrate and seal entire refrigerant circuit at the factory. Provide coil that is designed for the refrigerant used in the air conditioner. Provide R-22 condensers that are designed for working pressure of not less than 300 psi and that are factory tested at not less than 400 psi. Provide centrifugal or propeller type fans. Provide fans that are belt-driven or directly connected to low-speed (1,200 rpm maximum) electric motors. Provide belt drive with guard and adjustable sheaves to provide not less than 20 percent fan speed adjustment. Select sheaves to provide the capacity indicated at the approximate midpoint of the adjustment. Provide electric motor that is totally enclosed. Provide magnetic across-the-line type motor starter within a weather-resistant housing. Provide condenser enclosure that is constructed of [not less than 18-gagesheet steel or aluminum adequately reinforced and braced, with access panels and with rust-inhibitive baked enamel or galvanized finish.

h. Vibration Isolators: Provide vibration isolation.

-- End of Section --

SECTION 32 84 24
IRRIGATION SPRINKLER SYSTEMS

1. POLYVINYAL CHLORIDE (PVC) PIPE, FITTINGS AND SOLVENT CEMENT

NSF/ANSI 14, seal of approval for potable water.

a. Pipe

ASTM D1785, PVC 1120 Schedule 80. Provide ultra-violet resistant piping for on-grade use.

2. Fittings

Solvent Welded Socket Type: ASTM D2466, Schedule 40. Provide ultra-violet resistant fittings for on grade use.

3. Solvent Cement

ASTM D2564.

4. POLYETHYLENE (PE) PLASTIC PIPING

a. Pipe

AWWA C901, outside diameter (od) base with dimension ratio (DR) of 9.3 to provide 150 psi minimum pressure rating.

b. Fittings

ASTM D3261, DR of 9.3.

c. Drip Irrigation Tubing

ASTM D2287, vinyl plastic extruded from non-rigid chloride, integrally algae-resistant, homogeneous throughout, smooth inside and outside, free from foreign materials, cracks, serrations, blisters and other effects. Provide fittings.

5. IRRIGATION AND DRIP SPRINKLER HEADS

a. Fixed Riser Irrigation Heads

i. Stream Rotors, Full or Part Circle

Sprinkler body, nozzle, and screen constructed of heavy-duty, ultra-violet resistant plastic. Heavy duty, stainless steel internal construction with plastic body.

ii. Gear Rotor Irrigation Head, Full or Part Circle

Single-stream, water lubricated, gear drive type with an adjustable arc coverage of 30 to 360 degrees. Stainless steel internal construction with plastic body, with matched precipitation rate

nozzles in standard /low/ flat angle trajectories, filter screen, reducible watering radius, and choice of nozzles.

iii. Spray Irrigation Heads, Full or Part Circle

Sprinkler body, nozzle, and screen constructed of heavy-duty, ultra-violet resistant plastic. Matched precipitation rate plastic nozzle with an adjustable screw capable of regulating the radius and the flow. Capable of housing under the nozzle; protective, non-clogging filter screen and/or pressure compensating devices. Screen used in conjunction with the adjusting screw from regulating.

b. Pop-Up Irrigation Head

i. Stream Rotor Irrigation Head, Full or Part Circle

Sprinkler body, nozzle, and screen constructed of heavy-duty, ultra-violet resistant plastic. Heavy duty, stainless steel internal construction with plastic body.

ii. Gear Rotor Irrigation Head, Full or Part Circle

Sprinkler body, nozzle, and screen constructed of heavy-duty, ultra-violet resistant plastic. Heavy duty, stainless steel internal construction with plastic body and match precipitation rates for standard low or flat angle trajectories. Single-stream, water lubricated, gear drive type. Part circle sprinkler with an adjustable arc coverage of 30 to 360 degrees. Provide wiper seal that positively seals against nozzle flange to keep debris out of rotor and cleans debris from pop-up steam as it retracts.

iii. Impact Irrigation Head

Provide one or two nozzles to distribute water, an inlet strainer to prevent debris from clogging nozzles, and non-corrosive plastic head and stainless steel assemblies. Seal bearing assembly from abrasives. Provide entire assembly including strainer removable from top of case without disturbing case installation. Provide plastic housing.

iv. Spray Irrigation Head, Full or Part Circle

Sprinkler body, nozzle, and screen constructed of heavy-duty, ultra-violet resistant plastic with wiper seal. Plastic nozzle with matched precipitation rate and an adjustable screw capable of regulating the radius and flow. Capable of housing under the nozzle; protective, non-clogging filter screen and/or pressure compensating devices. Screen used in conjunction with the adjusting screw from regulating.

6. VALVES

a. Isolation Valve

i. Ball Valves, Less than 3 Inches

API Std 598, plastic body, solvent soldered ends.

b. Control Valves

i. 2.3.2.1 Pressure Regulating Master Control Valve

Automatic mechanical self-cleaning, self-purging control system having an adjustable pressure setting operated by a solenoid on Direct current (dc) Valve shall close slowly and be free of chatter in each diaphragm position. Provide a manual flow stem to adjust closing speed and internal flushing. Provide an adjusting screw for setting pressure and schrader valve for monitoring pressure.

ii. 2.3.2.2 Remote Control Valve, Electrical

Solenoid actuated globe or angle valves of 3/4 to 3 inch size. Provide plastic valve housing suitable for service at 1034 kPa 150 psi operating pressure. Provide pressure regulating module capable of regulating outlet pressure between 15 to 25 psi (plus or minus).

c. Reduced Pressure Type Backflow Preventers

AWWA C511. Provide backflow preventers complete with 150 psi rated flanged bronze or brass mounted gate or ball valve and strainer, type 304 stainless steel or bronze, internal parts. Total pressure drop through complete assembly shall be a maximum of 10 psi at rated flow.

-- End of Section --