SECTION 02810 - IRRIGATION SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes piping, valves, sprinklers, specialties, controls, and wiring for automatic control irrigation system.

B. See Division 2 Section "Water Distribution" for water supply from water service piping, water meters, protective enclosures, and backflow preventers.

1.2 DEFINITIONS

A. Circuit Piping: Downstream from control valves to sprinklers, specialties, and drain valves. Piping is under pressure during flow.

B. Drain Piping: Downstream from circuit-piping drain valves. Piping is not under pressure.

C. Irrigation Main Piping: Downstream from point of connection to water distribution piping to, and including, control valves. Piping is under water-distribution-system pressure.

1.3 SUBMITTALS

A. Product Data: Include pressure ratings, rated capacities, and settings of selected models for the following:

1. General-duty valves.
2. Specialty valves.
3. Control-valve boxes.
4. Sprinklers.
5. Irrigation specialties.
6. Controllers.

B. As Built Drawings: Show irrigation system piping, including plan layout, and locations of irrigation system components. Include water meters, backflow preventers, valves, mainline piping, controls, and wiring. Show wire size and number of conductors for each control cable.

C. Field quality-control test reports.

D. Operation and maintenance data.

1.4 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

PART 2 - PRODUCTS

2.1 PIPES, TUBES, AND FITTINGS

A. PVC Pipe: ASTM D 1785, PVC 1120 compound, Schedule 40.

1. PVC Socket Fittings, Schedule 40: ASTM D 2466.

B. Transition Fittings: Basic Materials and Methods" for transition fittings.

C. Basic Materials and Methods" for commonly used joining materials.

2.2 GENERAL-DUTY VALVES

A. PVC Ball Valves: with full-port ball, socket or threaded detachable end connectors, and pressure rating not less than 150 psig

1. Material Option: MSS SP-122, of plastic other than PVC and suitable for potable water or non-potable water. Include threaded ends and pressure rating not less than 150 psig unless otherwise indicated.

2.3 SPECIALTY VALVES

A. Plastic Automatic Control Valves: Molded-plastic body, normally closed, diaphragm type with manual flow adjustment, and operated by 24-V ac solenoid.

B. Automatic Drain Valves: Spring-loaded-ball type of corrosion-resistant construction and designed to open for drainage if line pressure drops below 2-1/2 to 3 psig.

C. Quick-Couplers: Factory-fabricated, bronze or brass, two-piece assembly. Include coupler water-seal valve; removable upper body with spring-loaded or weighted, rubber-covered cap; hose swivel with ASME B1.20.7, 3/4-11.5NH threads for garden hose on outlet; and operating key.

D. Polymer-Concrete Control-Valve Boxes: Box and cover, with open bottom and openings for piping; designed for installing flush with grade. Include size as required for valves and service.

1. Shape: Round, Square, Rectangular.
2. Sidewall Material: Polymer concrete with lateral and vertical sidewall design loading of 5000 lb minimum over 10 by 10 inches square.
3. Cover Material: Polymer concrete with cover design loading of 5000 lb minimum over 10 by 10 inches square.

E. Drainage Backfill: Cleaned gravel or crushed stone, graded from 3/4 inch minimum to 3 inches maximum.

2.4 SPRINKLERS

A. Description: Brass or plastic housing and corrosion-resistant interior parts designed for uniform coverage over entire spray area indicated, at available water pressure.

1. Flush, Surface Sprinklers: Fixed pattern, with screw-type flow adjustment.
2. Bubblers: Fixed pattern, with screw-type flow adjustment.
3. Shrubbery Sprinklers: Fixed pattern, with screw-type flow adjustment.
4. Pop-up, Spray Sprinklers: Fixed pattern, with screw-type flow adjustment and stainless-steel retraction spring.

SPRINKLER SPECIALTIES

B. Strainer/Filter Units: Brass or plastic housing, with corrosion-resistant internal parts; of size and capacity required for devices downstream from unit.

C. Emitters: PE or vinyl body.

1. Single-Outlet Emitters: To deliver the following flow at approximately 20 psig

a. Flow: 1/2 gph, 1 gph, 2 gph 6 gph

2.5 AUTOMATIC-CONTROL SYSTEM

A. Exterior Control Enclosures: NEMA 250, Type 4, weatherproof, with locking cover and two matching keys; include provision for grounding.

B. Material: Stainless-steel, sheet metal.

C. Mounting: Surface type for wall mounting.

D. Control Transformer: 24-V secondary, with primary fuse.

E. Controller Stations for Automatic Control Valves: Each station is variable from approximately 5 to 60 minutes. Include switch for manual or automatic operation of each station.

F. Timing Device: Adjustable, 24-hour, 14-day clock, with automatic operations to skip operation any day in timer period, to operate every other day, or to operate 2 or more times daily.

1. Manual or Semiautomatic Operation: Allows this mode without disturbing preset automatic operation.
2. Nickel-Cadmium Battery and Trickle Charger: Automatically powers timing device during power outages.

G. Wiring: UL 493, Type UF-B multiconductor, with solid-copper conductors and insulated cable; suitable for direct burial.

1. Feeder-Circuit Cables: No. 12 AWG minimum, between building and controllers.
2. Low-Voltage, Branch-Circuit Cables: No. 14 AWG minimum, between controllers and automatic control valves; color-coded different from feeder-circuit-cable jacket color; with jackets of different colors for multiple-cable installation in same trench.
3. Splicing Materials: Manufacturer's packaged kit consisting of insulating, spring-type connector or crimped joint and epoxy resin moisture seal; suitable for direct burial.

PART 3 - EXECUTION

3.1 EARTHWORK

A. Install warning tape directly above pressure piping, 12 inches below finished grades, except 6 inches below subgrade under pavement and slabs.

B. Install piping and wiring in sleeves under sidewalks, roadways, parking lots and walls.

C. Drain Pockets: Excavate to sizes indicated. Backfill with cleaned gravel or crushed stone, graded from 3/4 to 3 inches to 12 inches below grade. Cover gravel or crushed stone with sheet of asphalt-saturated felt and backfill remainder with excavated material.

D. Provide minimum cover over top of underground piping according to the following:

1. Irrigation Main Piping: Minimum depth of 36 inches below finished grade.
2. Circuit Piping: 12 inches
3. Drain Piping: 12 inches
4. Sleeves: 24 inches

3.2 PIPING APPLICATIONS

A. Aboveground Irrigation Main Piping: Type L, Type M hard copper tube, wrought- or cast-copper fittings, and soldered joints.

B. Underground Irrigation Main Piping: Schedule 40, PVC pipe and socket fittings; and solvent-cemented joints.

C. Circuit Piping: Schedule 40, PVC pipe and socket fittings; and solvent-cemented joints.

D. Risers to Aboveground Sprinklers and Specialties: Schedule 80, PVC threaded pipe.

E. Drain Piping: Schedule 40, PVC pipe and socket fittings; and solvent-cemented joints.

F. Sleeves: Schedule 40, PVC pipe and socket fittings; and solvent-cemented joints.

G. Transition Fittings: Use transition fittings for plastic-to-metal pipe connections according to the following:

1. Couplings:

a. Underground Piping NPS 1-1/2 and Smaller: Manufactured fitting or coupling.
b. Underground Piping NPS 2 and Larger: AWWA transition coupling.

2. Fittings:

a. Aboveground Piping: Plastic-to-metal transition fittings.
b. Underground Piping: Union with plastic end of same material as plastic piping.

3.3 VALVE APPLICATIONS

A. Aboveground, Shutoff-Duty Valves:

1. NPS 2 and Smaller: Bronze, stem gate valve.
2. NPS 2 and Smaller: ball valve.

B. Underground, Shutoff-Duty Valves: Use the following:

1. NPS 2 and Smaller: Curb stop with tee head, curb-stop service box, and shutoff rod.
2. NPS 3 and Larger: AWWA cast-iron gate valve with elastomeric gaskets and stem nut, valve box, and shutoff rod.

C. Underground, Manual Control Valves: Bronze globe valve with control-valve box and valve key.

D. Control Valves: Bronze, Plastic ball valve.

E. Drain Valves: Bronze, Plastic ball valve.

3.4 INSTALLATION

A. Install piping at minimum uniform slope of 0.5 percent down toward drain valves.

B. Install piping free of sags and bends.

C. Install groups of pipes parallel to each other, spaced to permit valve servicing.

D. Install fittings for changes in direction and branch connections.

E. Install unions adjacent to valves and to final connections to other components.

F. Lay piping on solid subbase, uniformly sloped without humps or depressions.

G. Underground Ball Valves: Install in valve box with top flush with grade.

1. Install valves and PVC pipe with restrained, gasketed joints.

H. Control Valves: Install in control-valve box.

I. Drain Valves: Install in control-valve box.

J. Flush circuit piping with full head of water and install sprinklers after hydrostatic test is completed.

K. Locate part-circle sprinklers to maintain a minimum distance of 4 inches from walls and 2 inches from other boundaries, unless otherwise indicated.

L. Install freestanding controllers on precast concrete bases not less than 36 by 24 by 4 inches thick, and not less than 6 inches greater in each direction than overall dimensions of controller.

M. Install control cable in same trench as irrigation piping and at least 2 inches below or beside piping. Provide conductors of size not smaller than recommended by controller manufacturer. Install cable in separate sleeve under paved areas if irrigation piping is installed in sleeve.

3.5 CONNECTIONS

A. Ground equipment according to Division 16 Section "Grounding and Bonding".

B. Connect wiring according to Division 16 Section "Conductors and Cables".

3.6 FIELD QUALITY CONTROL

A. Perform the following field tests and inspections and prepare test reports:

1. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
2. Operational Test: After electrical circuitry has been energized, operate controllers and automatic control valves to confirm proper system operation.
3. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

B. Remove and replace units and retest, reinspect as specified above.

3.7 ADJUSTING

A. Adjust settings of controllers.

B. Adjust automatic control valves to provide flow rate of rated operating pressure required for each sprinkler circuit.

C. Adjust sprinklers so they will be flush with finish grade.

END OF SECTION 02810

SECTION 02821

CHAIN LINK FENCES AND GATES

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section describes the requirements for furnishing and installing the following:

1. Galvanized steel chain link fence.

2. Sliding chain link gate at Sallyport.

B. Related Sections:

1. Gate operators are specified in Section 02827.

1.02 REFERENCE STANDARDS

A. Leadership in Energy and Environmental Design (LEED), www.usgbc.org/LEED (United States Green Building Council (USGBC).

1. LEED – NC v2.2 Reference Guide, first edition, dated December 2006.

1.03 SUBMITTALS

A. Refer to Section 01352 – LEED Requirements for LEED related submittal requirements.

B. Product Data: Manufacturer's technical data, specifications, and installation instructions for fence and gate posts, fabric, gates, and accessories.

1. Recycled Content: Furnish product data on post-consumer recycled content and post-industrial recycled content as a percentage of the full product composite.

2. Regional Materials: Furnish product data or letter stating the location (closest city, state) where product was manufactured (final processing or assembly) and, if available, the location where raw materials were harvested, extracted or recovered (mine, quarry, plantation, forest, recycling recovery center, etc.).

C. Shop Drawings: Show location of fence, gates, each post, and details of post installation, extension arms, gate swing, hardware, and accessories.

1.04 QUALITY ASSURANCE

A. Single-Source Responsibility: Obtain chain link fences and gates as complete units, including necessary erection accessories, fittings, and fastenings from a single source or manufacturer.

1.05 ENVIRONMENTAL QUALITY ASSURANCE

A. Applicable LEED Credits: Refer to Section 01352.

1. Credit MRc4 – Recycled Content.

2. Credit MRc5 – Regional Materials.

PART 2 - PRODUCT

2.01 APPROVED MANUFACTURERS

A. Galvanized Steel Fencing and Fabric: Allied Tube and Conduit Corp., American Chain Link Fence Company, American Tube Company, Anchor Fence, Inc., Capitol Wire and Fence Co., Inc., Century Tube Corp., Cyclone Fence Div./USX Corp. or approved equal.

2.02 FABRIC

A. Selvage: Fabric 72-inches high and over with 2- or 2-1/8-inch mesh shall be knuckled at one selvage and twisted at the other; all mesh 60-inches high and under shall be knuckled at both selvages.

B. Steel Fabric: Comply with Chain Link Fence Manufacturers Institute (CLFMI) Product Manual. Furnish one-piece fabric widths for fencing up to 12-feet high. Wire size includes zinc or aluminum coating.

1. Size: 2-inch mesh, 9-gage (0.148-inch diameter) wire.

2. Galvanized Steel Finish: ASTM A392, Class 2, with not less than 2.0-oz. zinc per sq. ft. of uncoated wire surface on wire coated before weaving or not less than 2.0-oz. zinc per sq. ft. of uncoated wire surface on wire of fabric coated after weaving as determined from the average of two or more samples and not less than 1.8-oz. zinc per sq. ft. of uncoated wire surface for any individual sample.

2.03 FRAMING

A. Strength requirements for posts and rails conforming to ASTM F669.

B. Pipe shall be straight, true to section, material, and sizes specified, and shall conform to the following weights per foot:

NPS in inches	Outside Diameter (OD) in inches	Steel	Type I Steel	Type II Aluminum
1	1.315	1.68	1.35	0.435
1-1/4	1.660	2.27	1.84	0.786
1-1/2	1.900	2.72	2.28	-----
2	2.375	3.65	3.12	1.260
2-1/2	2.875	5.79	4.64	2.004
3	3.500	7.58	5.71	-----
3-1/2	4.000	9.11	6.56	3.151
4	4.500	10.79	----	-----
6	6.625	18.97	----	6.564
8	8.625	28.55	----	9.878

C. Steel Framework, General: Posts, rails, braces, and gate frames.

1. Type I Pipe: Hot-dipped galvanized steel pipe conforming to ASTM F1083, plain ends, standard weight (schedule 40) with not less than 1.8-oz. zinc per sq. ft. of surface area coated.

2. Type II Pipe: Manufactured from steel conforming to ASTM A569 or A446, grade D, cold formed, electric welded with minimum yield strength of 50,000-psi and triple coated with minimum 0.9-oz. zinc per sq. ft. after welding, a chromate conversion coating and a clear polymer overcoat. Corrosion protection on inside surfaces shall protect the metal from corrosion when subjected to the salt spray test of ASTM B117 for 300-hours with the end point of 5-percent Red Rust.

D. End, corner, and pull posts for following fabric heights:

1. Up to 6-feet: 2.375-inch OD Type I or II steel pipe, 2-inch square galvanized steel tubing weighing 2.60-lb. per lin. ft., or 3.5-inch by 3.5-inch roll-formed sections weighing 4.85-lb. per lin. ft.

2. Over 6-feet: 2.875-inch OD Type I or II steel pipe, 2.50-inch- square steel tubing weighing 5.10-lbs. per lin. ft., or 3.5-inch by 3.5-inch roll-formed sections weighing 4.85-lbs. per lin. ft.

E. Line or intermediate posts for following fabric heights:

1. Up to 6-feet: 1.90-inch OD Type I or II steel pipe, 1.875-inch by 1.625-inch C section weighing 2.28 lb. per lin. ft., or 2.25-inch x 1.70-inch galvanized steel H section weighing 3.26-lb. per lin. ft.

2. Over 6-feet: 2.375-inch OD Type I or II steel pipe, 2.25-inch by 1.70-inch C section weighing 2.70-lbs. per lin. ft., or 2.25-inch by 1.70-inch galvanized steel H section weighing 3.26-lb. per lin. ft.

F. Gate Posts: Furnish posts for supporting single gate leaf, or one leaf of a double gate installation, for nominal gate widths as follows:

1. Up to 6-feet: 2.875-inch OD Type I or II steel pipe, 2.50-inch square galvanized steel tubing weighing 5.10-lbs. per lin. ft., or 3.5-inch x 3.5-inch roll-formed sections weighing 4.85-lbs. per lin. ft.

2. Over 6-feet to 13-feet: 4.00-inch OD Type I or II steel pipe.

3. Over 13-feet to 18-feet: 6.625-inch OD Type I steel pipe.

4. Over 18-feet: 8.625-inch OD Type I steel pipe.

G. Top Rail: Manufacturer's longest lengths, with expansion-type couplings, approximately 6-inches long, for each joint. Provide means for attaching top rail securely to each gate corner, pull, and end post.

1. Galvanized Steel: 1-1/4-inch NPS (1.66-inch OD) Type I or II steel pipe or 1.625-inch by 1.25-inch roll-formed C sections weighing 1.35-lb. per ft.

2.04 FITTINGS AND ACCESSORIES

A. Material: Comply with ASTM F626. Mill-finished aluminum or galvanized iron or steel, to suit manufacturer's standards.

1. Zinc Coating: Unless specified otherwise, galvanize steel fence fittings and accessories in accordance with ASTM A153, with zinc weights per Table I.

B. Tension Wire: 0.177-inch-diameter metallic-coated steel marcelled tension wire conforming to ASTM A824 with finish to match fabric.

1. Type II Zinc Coated, Class 2 with a minimum coating weight of 1.20-oz. per sq. ft. of uncoated wire surface.

C. Tie Wires: 12-gage (0.106-inch diameter) galvanized steel with a minimum of 0.80-oz. per sq. ft. of zinc coating of surface area in accordance with ASTM A641, Class 3 or 9-gage (0.106-inch-diameter) aluminum wire alloy 1100-H14 or equal, to match fabric core material.

D. Bottom and Center Rail: Same material as top rail. Provide manufacturer's standard galvanized steel or cast iron or cast aluminum cap for each end.

E. Post and Line Caps: Provide weathertight closure cap for each post. Provide line post caps with loop to receive tension wire or top rail.

F. Tension or Stretcher Bars: Hot-dip galvanized steel with minimum, length 2-inches less than full height of fabric, minimum cross-section of 3/16-inch by 3/4-inch and minimum 1.2-oz. zinc coating per sq. ft. of surface area. Provide one bar for each gate and end post, and two for each corner and pull post, except where fabric is integrally woven into post.

G. Tension and Brace Bands: Minimum 3/4-inch-wide hot-dip galvanized steel with minimum 1.2-oz. zinc coating per sq. ft. of surface area.

1. Tension Bands: Minimum 14-gage (0.074-inch) thick.

H. Concrete: Provide concrete consisting of Portland cement, ASTM C150, aggregates ASTM C33, and clean water. Mix materials to obtain concrete with ,a minimum 28-day compressive strength of 2500-psi. Use at least 4 sacks of cement per cu. yd., 1-inch maximum size aggregate, maximum 3-inch slump, and 2- to 4-percent entrained air.

2.05 GATES

A. Fabrication: Fabricate perimeter frames of gates from metal and finish to match fence framework. Assemble gate frames by welding. Provide horizontal and vertical members to ensure proper gate operation and attachment of fabric, hardware, and accessories. Space frame members maximum of 8-feet apart unless otherwise indicated.

1. Provide same fabric as for fence unless otherwise indicated. Install fabric with tension bars and bands at vertical edges and at top and bottom edges.

2. Install diagonal cross-bracing consisting of 3/8-inch-diameter adjustable-length truss rods on gates to ensure frame rigidity without sag or twist.

B. Sliding Gates: Comply with ASTM F1184, Type II. Provide top rail incorporating track for top roller and guide posts to keep gate on rollers. External rollers shall have accessible grease fittings, and internal rollers shall have sealed lubricant ball bearings. Brace frame to prevent sagging and apply fabric to entire gate. Provide lockable positive latch and other hardware and accessories as required.

PART 3 - EXECUTION

3.01 INSTALLATION

A. General: Install fence in compliance with ASTM F567. Do not begin installation and erection before final grading is completed, unless otherwise permitted.

1. Apply fabric to secure side of framework.

B. Excavation: Drill or hand-excavate (using post-hole digger) holes for posts to diameters and spacing indicated, in firm, undisturbed or compacted soil.

1. If not indicated on drawings, excavate holes for each post to minimum diameter recommended by fence manufacturer, but not less than 4-times largest cross-section of post.

2. Unless otherwise indicated, excavate hole depths approximately 3-inches lower than post bottom, with bottom of posts set not less than 36-inches below finish grade surface.

C. Setting Posts: Center and align posts in holes 3-inches above bottom of excavation. Space maximum 10-feet o.c., unless otherwise indicated.

1. Protect portion of posts above ground from concrete splatter. Place concrete around posts and vibrate or tamp for consolidation. Check each post for vertical and top alignment, and hold in position during placement and finishing operations.

2. Unless otherwise indicated, extend concrete footings 2-inches above grade and trowel to a crown to shed water.

D. Top Rails: Run rail continuously through line post caps, bending to radius for curved runs and at other posts terminating into rail end attached to posts or post caps fabricated to receive rail. Provide expansion couplings as recommended by fencing manufacturer.

E. Center Rails: Provide center rails where indicated. Install in one piece between posts and flush with post on fabric side, using rail ends and special offset fittings where necessary.

F. Brace Assemblies: Install braces so posts are plumb when diagonal rod is under proper tension.

G. Bottom Tension Wire: Install tension wire within 6-inches of bottom of fabric before stretching fabric and tie to each post with not less than same gage and type of wire. Pull wire taut, without sags. Fasten fabric to tension wire with 11-gage hog rings of same material and finish as fabric wire, spaced maximum 24-inches o.c.

H. Fabric: Leave approximately 2-inches between finish grade and bottom selvage unless otherwise indicated. Pull fabric taut and tie to posts, rails, and tension wires. Install fabric on security side of fence, and anchor to framework so that fabric remains in tension after pulling force is released.

I. Tension or Stretcher Bars: Thread through or clamp to fabric 4-inches o.c., and secure to end, corner, pull, and gate posts with tension bands spaced not over 15-inches o.c.

J. Tie Wires: Use U-shaped wire of proper length to secure fabric firmly to posts and rails with ends twisted at least 2 full turns. Bend ends of wire to minimize hazard to persons or clothing.

1. Maximum Spacing: Tie fabric to line posts 12-inches o.c. and to rails and braces 24-inches o.c.

K. Fasteners: Install nuts for tension bands and hardware bolts on side of fence opposite fabric side. Peen ends of bolts or score threads to prevent removal of nuts.

L. Gates: Install gates plumb, level, and secure for full opening without interference. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation and lubricate where necessary. Coordinate gate installation with the work of Section 02827.

END OF SECTION

SECTION 02827

GATE OPERATORS

PART 1 – GENERAL

1.01 DESCRIPTION

A. This Section describes the requirements for furnishing and installing the following:

1. Sliding gate operator at Sallyport gate.

B. Related Sections:

1. Chain link fences and gates are specified in Section 02821.
2. Overhead coiling doors are specified in Section 08333.
3. Field-applied paint finish on gates is specified in Section 09900.
4. Vehicle detector loops are specified in Section 11150.

1.02 SUBMITTALS

A. Product Data: Manufacturer's printed information and installation instructions including required clearances.

B. Shop Drawings: Include complete details of gate operator and attachment of operator to sliding gate.

1.03 QUALITY ASSURANCE

A. Installer: Company specializing in the installation of the type(s) of gate operators specified, with a minimum of 3-years successful experience.

B. Manufacturer: Company specializing in the manufacture of the type of gate operators specified, with a minimum of 5-years successful experience.

C. Comply with NEMA, UL and CSA standards.

1.04 PROTECTION

A. Protect products against damage during transportation.

B. Protect adjacent construction and finishes as required to prevent damage during installation.

1.05 COORDINATION

A. Coordinate installation of gate operators to avoid interference with work of other Sections or separate Contracts.

1.06 WARRANTY

A. Warrant gate operators to be free from defects in materials and workmanship for a period of 5-years from date of Substantial Completion. This warranty shall be in addition to and not a limitation of other rights the Owner may have against the Contractor under the Contract Documents.

PART 2 – PRODUCTS

2.01 SLIDING GATE OPERATOR

A. Approved Manufacturer: Hy-Security Gate Operator Model 222SS or approved equal.

B. Type: Electric motor with hydraulic drive rail.

C. Horsepower: 1-HP.

D. Speed: Minimum 1-foot per second.

E. UL Usage Class: II, III, IV.

F. Features: Continuous duty without overloading or overheating. Rated by manufacturer at 30 or more complete cycles per hour. All components UL approved. Furnish disconnect switch with NEMA KS1: Type 3R enclosure.

1. Provide equipment with suitable electrical characteristics including phase, voltage, branch circuit wire size, over-current protection, and connection devices coordinated with Division 16.

2. Self-locking.

3. Weather-resistant steel enclosure protecting operating parts.

4. Automatic reversing upon obstruction during closing cycle and automatic stop upon obstruction during opening cycle.

5. Refer to electrical drawings for power requirements.

G. Controls: Electric and electronic programmable controls separated from motor and drive mechanism, sealed from water and insects, with space for additional optional equipment. Operation of gate shall be controlled from the Sallyport by a 3 position push button station housed in a NEMA 1 enclosure. Operation of the gate from the exterior shall be controlled by a hand-held transmitter. Transmitter shall be on the same frequency as the hand-held transmitter specified in Section 08333 for the overhead coiling door. Egress operation of gate shall be controlled by vehicle detector loop specified in Section 11150. Closing of gate in either direction shall be controlled by vehicle detector loops. Provide number of hand-held transmitters as directed by the Architect.

2.02 SLIDING GATE

A. Chain link gate specified in Section 02821.

PART 3 – EXECUTION

3.01 INSPECTION

A. Verify that conditions are satisfactory for the installation of gate operator. If unsatisfactory conditions exist, do not commence installation until such conditions have been corrected.

3.02 INSTALLATION

A. Install gate operators according to manufacturer's instructions. Adjust for smooth, trouble-free operation.

B. Advise and consult with the Owner to obtain the Owner's requirements for standard available programmable features or adjustable controls (such as time delays, interlocks, or safety devices), and make necessary adjustments.

C. Instruct Owner's personnel on proper operation and maintenance of gate operators.

END OF SECTION