PACIFICORP
A BERKSHIRE HATHAWAY ENERGY COMPANY

SECTION 02815 CANTILEVER SLIDE GATE

1.0 General

1.1 Scope

The work covered by this specification includes furnishing of all labor, equipment and materials required for installation of manually operated cantilever slide gates constructed with aluminum frame members, galvanized chain link or expanded metal mesh security fabric and hardware as shown on the drawings and specified herein.

1.2 Related Work

01300	Submittals
02810	Chain Link Fencing and Gates
02812	Security Fencing and Gates

1.3 Codes and Standards

Comply with the provisions of the following codes, specifications and standards, except as otherwise shown or specified. The latest edition of the code or standard shall govern.

American Society of Testing and Materials (ASTM)

ASTM A 121	Standard Specification for Metallic-Coated Carbon Steel Barbed Wire
ASTM A 123	Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
ASTM A 307	Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength
ASTM A 392	Standard Specification for Zinc-Coated Steel Chain-Link Fence Fabric
ASTM A 780	Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings
ASTM B 221	Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles and Tubes
ASTM F 567	Standard Practice for Installation of Chain-Link Fence
ASTM F 626	Standard Specification for Fence Fittings
ASTM F 668	Standard Specification for Polyvinyl Chloride (PVC) and Other Organic Polymer-Coated Steel Chain-Link Fence Fabric

ASTM F 934	Standard Specification for Standard Colors for Polymer-Coated Chain Link Fence Materials
ASTM F 1043	Standard Specification for Strength and Protective Coatings on Steel Industrial Chain Link Fence Framework
ASTM F 1083	Standard Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures
ASTM F 1184	Standard Specification for Industrial and Commercial Horizontal Slide Gates
ASTM F 1267	Standard Specification for Metal, Expanded Steel
ASTM F 2200	Standard Specification for Automated Vehicular Gate Construction

1.4 Submittals

Shop drawings: Layout of adjacent fence and gate with dimensions, details, and finishes of components, accessories, and recommended post foundations.

Product Data: Manufacturer's catalog cut sheets indicating material compliance and specified options. Obtain cantilever slide gates, including accessories, fittings, and fastenings, from a single source.

Samples: Color selections for Polyolefin finishes. If requested, samples of materials (e.g., fabric, wires, and accessories).

Warranty: Provide manufacturer's standard limited warranty covering cantilever slide gate and truck assembly against failure resulting from normal use.

2.0 Materials

2.1 General

All materials shall conform to the following specifications unless otherwise approved by Company. All gates and associated hardware shall be fabricated for future electrical operation. Electrically operated horizontal slide gates must be manufactured and installed to comply with the safety requirements of ASTM F2200.

2.2 Gate Frame

Fabricate cantilever slide gates in accordance with ASTM F 1184, Type II, Class 2.

Aluminum Alloy Gate Frames

Gate frames shall be constructed of ASTM B 221 aluminum members. Members shall be welded together forming rigid one-piece frame integral with top track, (no substitution).

The fabricated gate shall meet the Performance Criteria for Maximum Allowable Distances per Table 3 of ASTM F 1184. Provide two truck assemblies for each gate leaf except on gates larger than 30′. Frame sizes over 27′ in length shall be shipped in two parts and field spliced with special attachments provided by the manufacturer.

For gate leaf sizes 31′ to 40′, weld two top track/rails together forming a dual enclosed track. Provide two truck assemblies for each track for each gate leaf, totaling four truck assemblies.

For gate leaf sizes 41′ to 50′, fabricate 24” wide rigid box frame truss. Truss shall consist of dual side frames, constructed similar to standard single leaf gates, separated by square cross members and diagonal truss rod bridging. Dual side frames shall each contain top track/rail to provide support for truss from both sides. Provide four trucks for each track, total eight for each gate leaf. Weld steel plate between top of support posts to maintain truck assemblies in alignment with tracks. See drawings for additional information.

2.3 Fabric

A. Chain Link

Fabric shall conform to ASTM A 392 (or ASTM F 668 if galvanized and Polyolefin coated), made from #9 gage (0.148″) diameter galvanized wire, spirally wound and interwoven into a two (2″) inch diamond mesh, with twisted and barbed selvage on top and bottom.

Minimum breaking strength of the fabric wire shall be 1,290 pounds after galvanizing. Fabric wire shall be galvanized to Class 1, with a minimum weight of 1.20 ounces of zinc per square foot of uncoated wire surface. Galvanized fabric wire shall be tested in accordance with to ASTM A 370.

Install fabric with hook bolts and tension bars at all four sides, (no substitution). Attach to gate frame at no more than 15 (15″) inches on center.

B. Security Fabric

Security fabric shall be Expanded Metal Mesh conforming to ASTM F 1267, Type II (Expanded and Flattened) for the gates, Class 2 Hot-Dip Galvanized with Grade A (0.0025 inch) minimum coating thickness. Hot-Dip Galvanize per ASTM A 123. Specific security fabric type will be indicated on the drawings.

C. Electrical Operation

To accommodate future electrical operation of the gates, the back frame shall be filled with fabric per ASTM F2200.

2.4 Finish

The finish will be hot-dip galvanizing for the mesh and bare aluminum for the gate frame.

Coatings over the bare aluminum gate frame and fence fabric shall be as follows:

Gate Frame:	Polyolefin Coated (including track) per ASTM F 1043 after fabrication, minimum 10 mils thermally fused
Fence Fabric:	Polyolefin Thermally Fused coating per ASTM F 668, Class-2b over zinc coated fabric. Contractor shall provide color samples per section 1.4. Colors available are (Black, Brown, Woodland Green (olive), Ensor Green) per ASTM F 934 as shown on the drawings.

2.5 Bracing

Provide diagonal adjustable length truss rods of ⅜″ galvanized steel, in each panel of gate frames. Truss rod assembly shall be capable of withstanding a tension of 2,000 pounds.

2.6 Top Track/Rail

The track and rail shall be an enclosed one-piece combination, aluminum extrusion. Track to withstand vertical reaction load of 2,000 lb.

2.7 Truck Assembly

The truck assembly shall be swivel type, zinc coated, die cast steel, with sealed lubricant ball bearing rollers, and a means to assure that the trucks remain properly aligned in the track during all normal operations of the gate. The truck assembly shall withstand same vertical reaction load as track of 2,000 lb.

Gate hangers, latches, brackets, guide assemblies, and stops: Malleable iron or steel, galvanized after fabrication. Provide positive latch with provisions for padlocking.

Bottom guide wheel assemblies: Each assembly shall consist of two, rubber wheels, straddling bottom horizontal gate rail, allowing adjustment to maintain gate frame plumb and in proper alignment. Attach one assembly to each guide post.

2.8 Gate Posts

For gates less than 31′-0″ posts shall be four (4) inch OD schedule 40 pipe or larger pipe size, ASTM F 1083, galvanized steel per ASTM A 123. Provide one latch post and two support posts for single slide gates.

For gates 31′-0″ or larger; provide two pairs of support posts for each leaf (dual) four (4″) inch OD schedule 40 pipe or larger pipe size, ASTM F 1083, galvanized steel per ASTM A 123. Posts are to be connected by welding six (6″) inch x ⅜-inch plate between posts as shown on drawings. Include one four (4″) inch latch post.

2.9 Security Wire

Security Wire shall be made of two strands of galvanized, Coating Type Z, twisted 12-½ gage carbon steel wire per ASTM 121, Design Number 12-4-5-14H. Barbs shall be four-point pattern on approximately 5" centers. Barbs shall be 14-gage carbon steel wire.

Three strands of security wire shall be securely fastened to gate framing that extend above the fabric covered part of the cantilever gate. Horizontal spacing of the security wire supports shall not exceed 10′.

Security wire shall be installed with sufficient tension to maintain tautness during temperature changes.

2.10 Latching

All gates shall be designed with sufficient lateral stability to assure that the gate will enter a catcher which has a 12 (12″) inch width (6 inches on each side from the center) under site wind loads.

2.11 Field Adjustment

All gates shall be designed with a means to adjust the vertical alignment of the gate in the field.

2.12 Slats

Slats shall be pre-woven into the chain link fabric and self-locked when manufactured. Slats shall be extruded from High Density Polyethylene (HDPE) with color pigments and ultra violet (UV) inhibitors added that are specifically formulated to retard the harmful effects of the sun and lengthen the life of the slat for 25 year warranty.

Note: Wind load on slated fence is significantly higher than one with bare fabric. Effects of increased wind loading shall be considered in the design of the cantilever gate, support posts and all connection hardware.

3.0 Execution

3.1 General

The cantilever slide gate shall be installed in compliance with the manufacturer's drawings and specifications.

3.2 Examination

Verify areas to receive fencing are completed to final grades and elevations.

Verify areas to assure sufficient space to receive gate in open position, (gate and overhang.)

Ensure property lines and legal boundaries of work are clearly established.

3.3 Gate Support Posts Installation

Install gateposts in accordance with manufacturer's instructions and as specified as follows.

Excavate post foundations with a power auger to the diameter and depth shown on the drawings. Post hole shall be clear of debris or standing water and shall not be left open more than 24 hours prior to placing concrete. All excavated materials shall be removed from the site or disposed as directed by the Company.

Gate support posts shall be embedded in the augured holes with concrete, in a vertical position, plumb and in line. The top six (6″) inches shall be formed if ground is not firm enough to permit excavation of the post hole to neat lines to prevent a mushroom top that are susceptible to frost heave.

Gate aprons or curbs, if specified on the drawings, shall be placed with forms.

Ready-mix concrete shall have a minimum 28-day compressive strength of 3,000 psi, maximum slump of five (5) inches, air content of 5% +/- 1%, and water-cement weight ratio not exceeding 0.53 at time of placement. Site-mixed concrete shall be 1:2:3 mix (one-cement, two-sand, and three-gravel). Concrete for gate aprons or curbs shall be per the structural concrete specification 03100, with a minimum 28-day compressive strength of 4,000 psi.

The top exposed surface of the concrete shall be crowned to shed water and troweled smooth. Top of concrete shall be formed in line with the sides of hole to avoid "mushrooming" of the concrete.

Where solid rock is encountered a hole shall be cored or air hammered into the rock that is ½-inch larger than the post diameter. Minimum depth of holes in solid rock shall be minimum of twelve (12″) inches for line posts and eighteen (18″) inches for end, corner, gate, and terminal posts, but not less than three times the post diameter or as shown on the drawings. Where solid rock is covered with an overburden of soil, the post shall be set in the solid rock to the depth as listed above and the upper portion of the hole shall be completed as a standard concrete footing.

Clear the hole of all loose debris and water then half-fill the void with non-shrink hydraulic cement grout approved by the Company. Then force the

post to the bottom of the hole and plumb. Thoroughly work additional grout into the hole so as to leave no voids. Crown the grout to shed water.

3.4 Gate Installation

Install gates plumb, level, and secure for full opening without interference. Attach hardware by means, which will prevent unauthorized removal. Adjust hardware for smooth operation. The fabricated gate as installed shall meet the Performance Criteria for Maximum Allowable Distances per Table 3 of ASTM F 1184.

Electrically operated horizontal slide gates must be installed to comply with the safety requirements of ASTM F2200.

3.5 Warning and Station Signs

Warning and station signs shall be supplied by Company and installed by Contractor as shown on the drawings. Signs shall be placed on all gates. The “Warning! Hazardous Voltage Inside Keep Out” and the “No Trespassing” sign shall be placed on one gate leaf and the station name sign shall be placed on the other leaf.

Station sign shall be installed on the main entry gate only.

Warning! Hazardous Voltage Inside Keep Out (RMP)
English SI# 7999852
Spanish: SI# 7999854

Warning! Hazardous Voltage Inside Keep Out (PP)
English SI# 7999851
Spanish: SI# 7999853

No Trespassing
SI# 8252306

Mounting Hardware
SI# 7999092

The mounting hardware is comprised of aluminum brackets with one inch temper-proof bolts and locking nuts. The bolts are installed through the sign’s front, and screw into the aluminum brackets located on the interior of the fence. Four sets of mounting hardware are needed for each sign.

3.6 Attachments

Field welding or drilling of tapped holes for attachments to the gate posts must be prepared and repainted with zinc rich paint prior to installation of the attachment. Zinc rich paint shall conform to ASTM A 780 “Cold Galvanizing Compound” as manufactured by ZRC Corporation is an acceptable product for this application.

3.7 Cleaning

Pieces of fencing or other scrap materials shall be removed. Dirt from excavations and left over concrete shall be removed or deposited as instructed by Company and the area shall be left clean and orderly.

END OF SECTION