
MEMORANDUM

TO: Design Professional

FROM: Victor Palma
Airport Engineer

RE: Security Fencing / Security Gate: Standard Requirements

DATE: May 23, 2018

The attached Tucson Airport Authority standard security fence guide specification and details shall be incorporated in all projects requiring fencing by the Design Professional. Edit specifications and details as required to specific project requirements. Note that it is intended that the specifications and details match the latest edition of FAA Advisory Circular 150/5370-10.

FOR AIRPORT COMPUTER ACCESS SECURITY SYSTEM (CASS) CONTROLLED GATES, CONTACT TAA PLANNING & ENGINEERING FOR ADDITIONAL REQUIREMENTS.

GENERAL REQUIREMENTS:

1. Consult with TAA Planning and Engineering Department (P&E), regarding specific project fencing requirements. **ALL STEEL FENCE AND GATE MATERIALS INCLUDING TRACKS, DRIVE RAILS, AND FITTINGS SHALL BE HOT DIPPED GALVANIZED. AREAS DAMAGED BY FIELD ASSEMBLY OR WELDING SHALL BE REPAIRED USING MATERIAL SPECIFIED IN SECTION 3.10 OF THESE SPECIFICATIONS.**
2. Distance between bottom of gate leaves and ground line shall not exceed 2".
3. A strain panel shall be installed on each side of gate locations.
4. All braces, tension rods and tension wires (including gates) shall be tied to fence fabric at indicated intervals.
5. Minimum gate frame stock shall be 1.90" outside diameter galvanized pipe.
6. All vertical gate frame members or posts not requiring barbed wire supports shall be provided with domed post tops.
7. Plans shall show gate locations, width, type, and direction of swing or slide. Fence lines requiring security reinforcement shall also be clearly shown.
8. All gates shall be detailed on plans or otherwise adequately described and reviewed with TAA P&E.
9. Gate posts for swing and sliding gates shall be a minimum of 4" outside diameter minimum and be installed in 18" diameter by 3' concrete foundation. Post bottom will be 6" minimum above bottom of foundation.
10. **Detailed Shop drawings and materials submittals shall be required for all gates and equipment. These shall be reviewed by the Design Professional and TAA prior to construction. These shop drawings shall include the installation of all electrical and relocated work to demonstrate a complete, working installation.**
11. Vehicle gate openings shall be 2' wider than designed travel way.
12. Minimum concrete gate stop foundation shall be 18" diameter x 24" deep.
13. Special care shall be given to fence crossing drainage swales, structures, loose sand areas, etc. where special closure details may be required.

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14. Padlocks and chains shall be provided by TAA.
15. When electric slide gates are required, the designer shall insure that the proper details are provided and that the gate equipment matches the current TAA standard for security gates. Unless otherwise directed, gates are to function in a similar manner and be compatible with TAA security control needs.
16. On a case-by-case basis, a mortared Cement Masonry Units (CMU) or concrete wall with angled barbed wire support arms with three strands of barbed wire may be used in place of the standard security fencing. The total height of the wall and barbed wire shall be a minimum of seven (7) feet from the adjacent ground elevation of the non-protected side of the wall and support arms shall be spaced at ten (10) feet apart maximum. All metal materials and barbed wire shall be per the specifications. Angled barbed wire support arms shall be constructed of galvanized steel tube stock of sufficient strength to meet or exceed the strength of standard chain link fence support arms and be adequately fastened to the CMU wall.

If you have any questions, please call me at (520) 573-4853.

SECTION _____ CHAIN-LINK FENCES

DESCRIPTION

1.1 This item shall consist of furnishing and erecting a non-reinforced and/or reinforced chain-link fence in accordance with these specifications and the details shown on the plans and in conformity with the lines and grades shown on the plans.

1.2 The fence shall be the product of a manufacturer who has demonstrated by actual installations of a similar nature that its product is of the type required. This item shall include all accessories, fittings and fastenings necessary for a complete and satisfactory installation within the intent of the drawings. All runs of the fence shall present the same general appearance. The product of only one manufacturer will be accepted, except for items that do not influence the appearance of the completed fence. No used, rerolled, or open-seam steel shall be permitted in posts, gate frames, or braces.

1.3 If shown on plans, electric gate operators shall operate by means of a metal rail passing between a pair of solid aluminum wheels with polyurethane treads. Operator motors shall be hydraulic, roller type, and system shall not include belts, gears, pulleys, roller chains or sprockets to transfer power from operator to gate panel. The operation shall generate a minimum horizontal pull of 300 pounds without the drive wheels slipping and without distortion of supporting arms. Gate panel velocity shall not be less than 1.2 feet per second and shall be stopped gradually to prevent shock loads to the gate and operator assembly. The "soft stop" feature of the gate operator shall be adjustable from a minimum of one-second, to accommodate gates of all sizes.

MATERIALS

2.1 FABRIC. The fabric shall be woven with a 9-gauge galvanized steel wire in a 2-inch mesh and shall meet the requirements of ASTM A 392, Class 2. Metallic-coated fabric shall have a clear acrylic coating applied to the selvage area after weaving.

2.2 BARBED WIRE. Barbed wire shall be 2-strand 12-1/2 gauge zinc-coated wire with 4-point barbs and shall conform to the requirements of ASTM A 121, Class 3, Chain Link Fence Grade.

2.3 POSTS, RAILS AND BRACES. Line posts, rails, and braces shall conform to the requirements ASTM F1043 or ASTM F1083 as follows: Galvanized tubular steel pipe shall conform to the requirements of Group IA, (Schedule 40) coatings conforming to Type A, or Group IC (High Strength Pipe), External coating Type B, and internal coating Type B or D. The dimensions of the posts, rails and braces shall be in accordance with Tables I through VI of Fed. Spec. RR-F-191/3.

2.4 GATES. Gate frames shall consist of galvanized steel pipe and shall conform to the specifications for the same material under paragraph 2.3. The fabric shall be of the same type material as used in the fence. Submit shop drawings to the Design Professional for approval.

2.4.1 GATE OPERATORS AND EQUIPMENT. Gate operators shall be Hy-Security brand model 222 SS ST mounted on 12" Hy-security extension pedestal.

2.4.1.1 SHOP DRAWINGS AND MATERIAL SUBMITTAL. The contractor shall submit shop drawings and material submittals for the gates and associated equipment. This submittal shall show manufacturer's data, installation details, and plan layouts for all gates and operator equipment for the Design Professional's approval prior to ordering any equipment or materials.

2.4.1.2 ELECTRICAL. The electrical work for the gate operators and equipment shall be in accordance with current applicable electrical codes and good practice. For all underground wiring, use only XHHW stranded wire in conduits. For vehicle "detection" use Hy-5A Hy-security integral loop detector or equal that will plug into control board.

2.4.1.3 MISCELLANEOUS POWERED ROLLING GATE OPERATOR AND EQUIPMENT REQUIREMENTS. The following miscellaneous requirements shall be provided for:

1. Mechanical components shall include the following:
 - a. Supporting Arms: Cast aluminum channel. Arms shall incorporate a fully bushed, 1½" bearing surface.
 - b. Arm Pivots: ¾" diameter, stainless steel pins, in hinge configuration with supporting arm channel.
 - c. Tension Spring: 2½" heavy-duty, 800-pound capacity.
 - d. Tension Adjustment: Finger tightened nut, not requiring the use of tools.
 - e. Drive Release: Must instantly release tension of both drive wheels and be capable of disengaging, from contact with rail in a single motion, for manual operation.
 - f. Push-button Operation: 3-button station: open / close / stop shall be provided for local maintenance purposes located inside of each gate operator enclosure or closure enclosing and shall not be visible after enclosure cover is in place.
 - g. Limit Switches: Fully adjustable, toggle type, NEMA 4 tamper protected and shall not be accessible from the outside of the gate operator.
 1. Limit switch shall have multiple contacts isolated from each other.
 2. Minimum 2-sets of contacts that are isolated that are 1) normally open; 2) normally closed.
 3. Limit switch that monitors the true closed condition will be used to tie into security system.
 4. No logic programming of relays will be allowed for monitoring gate position. Physical position of gate will be allowed for monitoring position.
 - h. Chassis Base: ¼" steel plated, welded and ground edges, powder paint finish smooth to the touch.
 - i. Cover: 16 GA galvanized sheet metal with a powder paint finish. All joints welded, filled and ground smooth. Finished corners square and true with no visible joints.
 - j. Finish: High gloss powder paint finish coat, withstanding 1000-hour salt spray test.
 - k. Drive Wheels: Aluminum hub with polyurethane tread and durometer hardness not less than 80.
 - l. Drive Rail: Shall be extruded 6061 T6, not less than 1/8" thick. Drive rail shall incorporate alignment pins for ease of replacement, splicing and for break-away design. Pins shall provide perfect butt splice.
 - m. Hydraulic Valves: Shall be individually replaceable in an integrated hydraulic manifold.
 - n. Hose Fittings: At manifold shall be quick-disconnect type, other locations shall be swivel type.
 - o. Hydraulic Fluid: High performance type with a viscosity index greater

- than 375.
- p. **Gate Operator:** Shall have override so that gate may be opened manually in case of power failure or gate operator failure.
2. **Minimum standard electrical components:** Operator assembly shall be "Listed" by Underwriters Laboratories, Inc.
- a. **Pump Motor:** Shall be 1 HP, with a minimum service factor of 1.15. Standard voltages available, single or three phase. **Coordinate required voltages with TAA Electrical Department for approval.**
- b. All components shall have overload protection and pre-wired.
- c. **Controls:** Industrial grade relays, hard-wired with individually numbered wires.
- d. **Transformer:** 75 VA, non-jumpered taps, for all common voltages.
- e. **Maximum Run Timer:** Included in all operators.
- f. **Control Circuit:** 24VAC.
3. **Control Devices:** Contractor to provide post-mounted key switch system consisting of post foundation, bollards, stanchion, wiring, box and control wiring (receiver supported by TAA) and vehicle loop detector. Key switch box and switch mechanism provided by others as manufactured by Door King Systems or approved equal.
- Switch posts shall be protected by two 3" I.D. steel posts with 12" diameter x 24" deep concrete foundation. Posts shall be concrete filled, extend 3.5' above grade, painted black with four, 4" bands of white reflectorized tape. Top of concrete fill shall be domed or capped.
4. **Safety Devices:** Automatic safety system that shall sense obstructions in the path of the gate and shall automatically stop the gate operators then continue forward. This shall consist of vehicle detector loops in the roadway and a photo-eye system mounted adjacent to the gate opening. Loops shall consist of preformed vehicle detection wiring type XHHW enclosed in non-metallic conduit (rigid or flexible).
5. **Electrical service.** Each gate shall be provided with a rack mounted minimum 12 circuit panelboard with circuit breakers for each gate controller, light, and receptacle shown on the plans.
- Each equipment rack shall be fitted with a steady burning white light and weatherproof receptacle. The fixture shall be Cooper Light Fixtures Model XTOR1A-HA or approved equal. The outlet shall be NEMA 5-15R GFCI receptacle in NEMA 3R metal enclosure.
6. Gate operators shall include all attachments, controllers, and accessory equipment needed for a complete fully functional gate.
7. All gate hardware to be galvanized steel.
8. Existing functional gate controls shall be included in any gate replacement project.

2.5 WIRE TIES AND TENSION WIRES. Wire ties for use in conjunction with a given type of fabric shall be of the same material and coating weight identified with the fabric type. The tension wire shall be 7-gauge marcelled steel wire with the same coating as the fabric type and shall conform to ASTM A 824. All material shall conform to Federal Spec. RR-F-191/4.

Wire rope clips required for reinforced fencing shall be 3/16" size, galvanized, per Federal Specification FF-C-450 D, Type 1, Class 2.

2.6 MISCELLANEOUS FITTINGS AND HARDWARE. Miscellaneous steel fittings and hardware for use with zinc-coated steel fabric shall be of commercial grade steel or better quality, wrought or cast as appropriate to the article, and sufficient in strength to provide a balanced design when used in conjunction with fabric posts, and wires of the quality specified herein. All steel fittings and hardware shall be protected with a zinc coating applied in conformance with ASTM A 153. Barbed wire support arms shall withstand a load of 250 pounds applied vertically to the outermost end of the arm.

2.7 WELDING. Structural members of gates or fittings shall be fully welded by a method that will produce a continuous weld on all sides and faces of joints at exposed edges. Surplus welding material shall be removed. Welded areas shall be cleaned and covered with field applied galvanizing coating, not painted.

2.8 CONCRETE. Concrete shall be of a commercial grade with a minimum 28-day compressive strength of 3,000 psi unless shown otherwise on the plans.

2.9 MARKING. Each roll of fabric shall carry a tag showing the kind of base metal (steel number), kind of coating, the gauge of the wire, the length of fencing in the roll, and the name of the manufacturer. Posts, wire, and other fittings shall be identified as to manufacturer, kind of base metal (steel number), and kind of coating.

CONSTRUCTION METHODS

3.1 GENERAL. The fence shall be constructed in accordance with the details on the plans. All work shall be performed in a manner satisfactory to the Design Professional. Prior to the beginning of the work the location of the work shall be established and marked.

3.2 CLEARING AND GRADING FENCE LINE. Unless otherwise shown on the plans, all trees, brush, stumps, logs, and other debris which would interfere with the proper construction of the fence in the required location shall be removed a minimum width of 5 feet on each side of the fence centerline before starting fencing operations. The fence line shall be graded to provide a minimum of 2" between the bottom of the fence and the ground. Holes or depressions shall be filled with suitable material and compacted to match the compaction of the surrounding ground. The cost of grading and removing and disposing of the material shall not constitute a pay item and shall be considered incidental to fence construction.

3.3 INSTALLING POSTS. All posts shall be set in concrete at the required dimension and depth and at the spacing shown on the plans. Posts shall be spaced not more than ten (10) feet apart and set in concrete footings to depths indicated on the plans or these specifications.

If the ground is not level, the upgrade gate post shall be set first to determine the proper height for the downgrade gate post.

Longer posts shall be provided if necessary at no additional cost, to accommodate grade requirements. The concrete shall be thoroughly compacted around the posts by tamping or vibrating and shall have a smooth finish slightly higher than the ground and sloped to drain away from the posts. All posts shall be set plumb and to the required grade and alignment. No materials shall be installed on the posts, nor shall the posts be disturbed in any manner within seven (7) days after the individual post footing is completed.

3.4 INSTALLING BRACES. Horizontal brace rails, with diagonal truss rods and turnbuckles, shall be installed at all terminal posts and strain panels.

3.5 INSTALLING FABRIC AND BARBED WIRE. The tension wires, wire fabric, barbed support arms and barbed wire shall be firmly attached to the posts and braced in the manner shown on the plans. The fabric, the top and bottom tension wire shall be pulled taut. The top tension wire shall pass thru a hole in the barbed wire support arms. The bottom tension wire shall be installed on the unsecured side of the posts and tied to each post with 9-gauge tie to secure the wire to the post. The fabric shall then be tied to the top and bottom tension wires using 9 gauge wire ties at 12" on center. Hog rings will not be accepted. Terminations of tension wires and fabric ties shall be tightly twisted a minimum of four and three turns respectively and the end clipped neatly.

The fence shall generally follow the contour of the ground following grading. The space between the ground surface and the bottom of the fence fabric shall be consistently maintained from 0" to 2" maximum (including gate locations). Grading shall be performed where necessary to provide a neat appearance, relatively free from excessive loose material which would allow easy access under the fence by digging.

Long fence runs shall be stretched at approximately 100-foot intervals to insure proper tension of fabric. Loose fabric shall be rejected.

At locations of small natural swales or drainage ditches and where it is not practical to have the fence conform to the general contour of the ground surface, longer posts may be used and multiple strands of barbed wire stretched thereon to span the opening below the fence. The vertical clearance between strands of barbed wire shall be 2-inches or less. Unless otherwise shown on the plans, steel vertical supports shall be provided and driven a minimum of 12-inches into the ground at 12-inches on center. The supports shall overlap and be woven into the bottom of the fence fabric 12-inches minimum and tied to fabric with 9-gauge wire ties at 6-inches on center.

Single barbed wire support arms shall be installed to slope away from the area being secured. The support arms shall be securely fastened to the fence posts with self-tapping screws to prevent removal. All barbed wire shall be stretched taut and terminal ends tightly twisted a minimum of four turns and the end clipped neatly. Nine (9) gauge wire ties shall be inserted into the top of support arms between the arm and the wire to prevent the barbed wire from being removed from support arms. Completed barbed wire shall be secure within the support arm notches. Loose wire or wire that may be removed with bare hands shall be rejected. All posts which do not require barbed wire supports shall be fitted with domed post tops.

a. **SIGNAGE.**

Install "No Trespassing" signs (English/Spanish) at 200' intervals along all fence runs. Install one sign midway of runs less than 200' and one on public side of gate leaf.

Install stop signs (per UTC) on each side of gate, centered on gate leaf.

Install signs instructing personnel to clear gate and wait for gate closure before leaving gate, on public and secured side, clear of painted box for traffic loops.

Any existing signs shall be salvaged and returned to TAA.

All signage shall be incidental to the fence installation.

3.6 SECURITY REINFORCEMENT (IF SHOWN ON THE PLANS). Security reinforcement shall be installed at locations and as detailed on the plans. 3/8-inch, 7 x 19 galvanized braided wire reinforcement cables and fittings shall be installed in place of top and bottom tension wires as follows:

- a. Install one cable 4-inches above bottom selvage of taut fence fabric, one cable 33-inches from the top selvage of the taut fence fabric and one cable approximately 2-inches from the top selvage of the taut fence fabric.
- b. Each cable shall be woven in and out of at least four openings before and after each post and in and out of six opening at the halfway point of each fence panel.
- c. All cables shall be carefully woven to prevent damage to fence fabric and pulled taut with a suitable device at approximately 30-foot intervals.
- d. When the cables are properly drawn taut, a 3/8-inch cable clamp shall be installed at the center point of the fence panel to secure the cable to the fabric. Fasteners shall be located on the inside or protected side of the fence and the threads shall be tack welded to prevent removal.
- e. Terminations of cables to anchor posts shall be accomplished by weaving the free end of the cable through six fabric openings before the post, bringing the cable around the post once and weaving back through at least two fabric openings. The cable end shall be fastened to the cable and the fence fabric with a 3/8-inch cable clamp. The clamp shall be installed on the inside or protected side of the fence and the threads shall be tack welded to prevent removal.
- f. Cables shall be routed around line posts so that bottom cable alternates on the front side of every other post and wrap once around every fourth post starting with the first post. The center cable shall wrap around every third post in addition to alternating in front of and behind every other post starting from the third post from the anchor post. The top cable shall wrap around every fourth post in addition to alternating in front of and behind every other post starting with the first post.

When the 3/8-inch cable must be spliced, the cable ends shall be overlapped a minimum of 12-inches and secured with two 3/8-inch cable clamps. The clamps shall be attached a minimum of 2-inches from the cable ends, securing tightened and the bolt threads tack welded to prevent removal. All splices shall be secured on the protected or inside of the fence.

The anchor post terminations of all cables shall be trimmed after the clamp is tightened so that no more than 6-inches of loose cable end remains.

3.7 INSTALLING GATES. Gates shall be provided at locations and of lengths and types shown on the plans.

Gates shall be constructed with adequate bracing to prevent twisting or sagging. Vertical frame members for large gates shall be spaced not more than six feet apart.

Hinges for swing gates shall be of the size and type to suit the gate size. All hinges shall be lift off proof and capable of swinging 180°. Provide one pair of hinges per each gate leaf.

Latches for swing gates shall be forked type for single leaf or plunge-bar type for double leaf gates. Latches shall permit operation from either side of gate.

Gate keepers for swing gates shall be installed for vehicle gates to automatically hold the gate open until manually released. Double swing gates shall be constructed with appropriate fixture set in concrete to receive center drop rod or plunger bar. Top of concrete shall be set flush with grade.

Rolling manual and powered gates shall be constructed as detailed on the plans.

SHOP DRAWINGS OF ALL GATES AND EQUIPMENT SHALL BE SUBMITTED FOR REVIEW PRIOR TO ANY ORDERING OF MATERIALS OR FABRICATION.

3.7.1 Gate Operator Installation. The gate operators and equipment shall be installed per the manufacturer's recommendation and as shown on the plans.

3.7.2 The following requirements shall be provided:

1. Factory Testing

- a. Fully assemble and test, at the factory, each gate operator to assure smooth operations, sequencing and electrical connection integrity. Apply physical loads to the operator to simulate field conditions. Tests shall simulate physical and electrical loads equal to the fully rated capacity of the operator components.
- b. Check all mechanical connection for tightness and alignment. Check all welds for completeness and continuity. Check welded corners and edges to assure they are square and straight.
- c. Inspect painted finish for completeness and gloss. Touch up any imperfections prior to shipment.
- d. Check all hydraulic hoses and electrical wires to assure that chafing cannot occur during shipping or operation.
- e. Test Reports
 - A. Submit affidavits from the manufacturer demonstrating that the gate mechanism has been tested to 200,000 cycles without breakdown.
 - B. Each operator shall bear a label indicating that the operator mechanism has been tested for full power and pressure of all hydraulic components, full stress tests of all mechanical components and electrical tests of all overload devices.

2. Quality Assurance

- a. **Manufacturer:** A company specializing in the manufacture of hydraulic security gate operators of the type specified, with a minimum of ten-years experience and minimum of five-years experience with gate operators of this type and design.
 - b. **Installer:** A firm with not less than five-years of successful installation experience of installing operator systems similar to those required for this project and which is certified by the manufacturer of gate operators.
 - c. **Project Coordination:** Provide coordination with sliding gate manufacturer and provide all necessary parts and attachments for gate, if required. Coordinate with existing gate control systems for incorporation into new gate operator. Field verify prior to submitting shop drawings.
3. **Codes and Regulatory Requirements:** Operators shall be built to standards of the Underwriters Laboratories and bear a U.L. Listed label. Complete all electrical work according to local codes and National Electrical code. All fieldwork shall be performed in a neat and professional manner, completed to journeyman standards.
 4. **Product Delivery and Storage:** Store products upright in the original shipping containers, covered, ventilated and protected from all weather conditions.
 5. **Warranty:** Provide a five-year limited warranty against all defects in materials or workmanship. Defective material shall be replaced with comparable materials furnished by the manufacturer, at no cost to the owner. Freight, labor and other incidental costs are not covered under the factory warranty.

3.8 EXISTING FENCE CONNECTIONS. Wherever the new fence joins an existing fence, either at a corner or at the intersection of straight fence lines, a corner post shall be set at the junction. The first panel of the new fence shall be a strain panel. The connecting panel of the existing fence shall be refitted as necessary to convert to a strain panel. New and existing fabric shall be connected to the new post in the manner required for a strain post.

3.9 ELECTRICAL GROUNDS. Electrical grounds shall be constructed where a power line passes over the fence (directly below the point of crossing), at 500-foot (on total runs less than 500-feet, provide one ground) intervals along the total run of the fence, and at both ends of all gates. The ground shall be accomplished with a copper clad rod 8-feet long and a minimum of 5/8-inch in diameter driven vertically until the top is 6-inches below the ground surface. A No. 6 solid copper conductor shall be clamped to the rod and to the fence in such a manner that each element of the fence is grounded. Installation of ground rods shall not constitute a pay item and shall be considered incidental to fence construction.

3.10 GALVANIZING REPAIR. Galvanized surfaces which have become damaged from welding, handling, or installation shall be repaired immediately after installation with galvanizing repair material in accordance with ASTM A780.

3.11 TEMPORARY SECURITY FENCE. NOTE: When temporary fencing replaces TAA perimeter security fencing, "T" bases are not allowed. All posts must be driven (dirt or pavement) to a minimum depth of 18". All other projects requiring temporary security fencing shall meet or exceed the following:

- a. 6' portable chainlink fence panels with 3-strands of barbed wire on top shall be used. The fabric shall be in good condition to prevent entry of small animals or personnel.

- b. Fencing fabric and barbed wire fastened with #11 GA steel ties (no aluminum).
- c. Posts used to join panels shall be tack welded or clamped (nuts & bolts located on the secure side) to discourage removal.
- d. Contractor locks on gates shall meet TAA's security standards.
- e. The ends of temporary security fencing shall be chained to adjacent permanent fencing. Chains and locks will be provided by TAA P&E department.
- f. TAA P&E personnel will inspect temporary security fencing installation prior to being used as a primary security fence.

3.12 CLEANING UP. The Contractor shall remove from the vicinity of the completed work all tools, buildings, equipment, etc., used during construction. Earth spoil from the post holes shall be removed from the site or raked smooth (in non-pavement areas)

BASIS OF MEASUREMENT

4.1 Chain-link fence will be measured for payment by the linear foot. Measurement will be along the top of the fence from center to center of end posts, excluding the length occupied by gate openings.

Gates will be measured as complete units.

BASIS OF PAYMENT

5.1 Payment for chain-link fence will be made at the contract unit price per linear foot.

Payment for gates will be made at the contract unit price for each gate.

The price shall be full compensations for furnishing all materials, and for all preparation, erection, and installation of these materials, and for all labor equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item F-162-5.1	6' Chain-Link Fence – per linear foot
Item F-162-5.2	8' Chain-Link Fence – per linear foot
Item F-162-5.3	Gates – per each

MATERIAL REQUIREMENTS

ASTM A 121	Zinc-coated (galvanized) steel barbed wire
ASTM A 153 ASTM A 392	Zinc Coating (Hot-Dip) on Iron and Steel Hardware Zinc-coated steel chain-link fence fabric
ASTM A780	Galvanizing Repair
ASTM A 824	Metallic-coated steel Marcellled tension wire for use with chain-link fence
ASTM F 1043	Strength and Protective Coatings on Metal Industrial Chain Link Fence Framework
ASTM F 1083	Pipe, Steel, Hot-dipped Zinc-coated (galvanized) Welded, for Fence Structures
ASTM G 153	Operating Enclosed Carbon-Arc Light Apparatus for Exposure of Nonmetallic Materials
Fed. Spec. FF-C-450 D (1)	Clamps, Wire Rope
Fed. Spec. RR-F-191/3	Fencing, Wire and Post, Metal (Chain-Link Fence Posts, Top Rails and Braces)
Fed. Spec. RR-F-191/4	Fencing, Wire and Post, Metal (Chain-Link fence accessories)

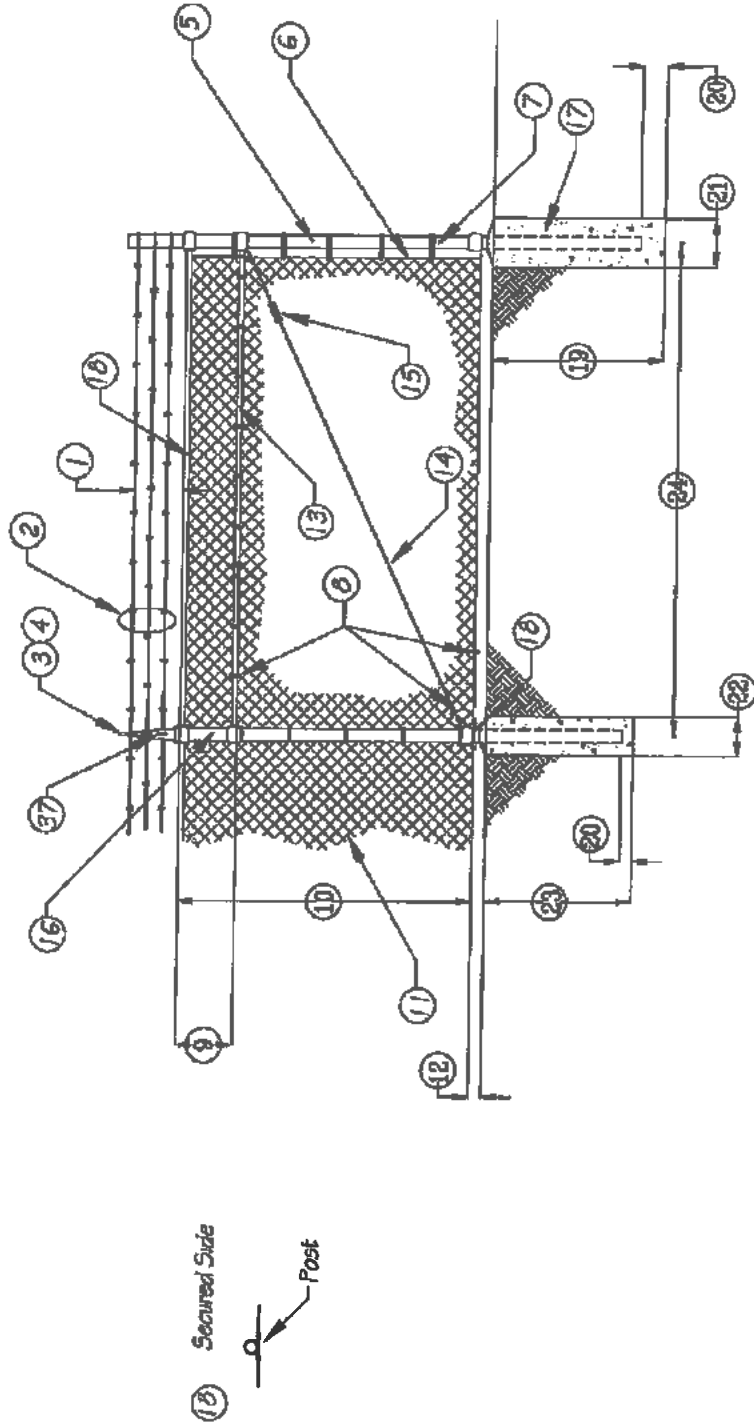
FENCE KEY NOTES

1. 12 " from top edge of fabric.
2. 2-strand 12½-gauge barbed wire with 4-point barbs, spaced at 4", typical.
3. One piece barbed wire extension arm. Secure to fence post with #12 x 1" self-tapping screws with hex head washer, wing tip.
4. Barbed wire extension arms shall angle away from area being protected.
5. 2.375" (6') / 2 7/8" (8') outside diameter minimum corner or end post, typical.
6. ¼" x 3/4" x 6'-0" Stretcher bar.
7. Stretcher band at 1'-3" on center, typical.
8. 9 gauge wire ties at 12" on center for braces, tension rods, and tension wires; 1'-2" on center for post ties.
9. 12" maximum.
10. 6'0" / 8'0"
11. 9 gauge, 2" fabric galvanized, typical.
12. 0" to 2" maximum from bottom of fabric to ground.
13. 1.66" outside diameter brace, typical.
14. 3/8" diameter tension rod, typical.
15. Rod tightener.
16. 1.90" (6') or 2 3/8" (8') outside diameter line post.
17. Concrete foundation (3000 P.S.I. at 28 days), typical. Slope top to drain (1"± above ground).
18. 7-gauge marcelled galvanized steel tension wire. Tie with 9 gauge wire ties at 12" on center, typical. Tension wire shall be installed on the unsecured side of the posts. The bottom tension wires shall be tied to each post with a 9-gauge tie to secure them to the posts. Top tension wires shall pass through the hole in the extension arm. All wires shall be pulled taut.
19. 3'-0" minimum, typical end post foundation depth.
20. 6" minimum.
21. 18" minimum diameter – full depth.
22. 10" minimum diameter – full depth.
23. 2'-0" minimum, typical line post foundation depth.

24. 10'-0" maximum spacing.
25. Selvage of fabric (twisted, barbed and coated).
26. Ground elevation at centerline of fence run.
27. Strain panel, typical.
28. 3.0' minimum, typical strain post foundation depth.
29. 2.375" outside diameter minimum strain post.
30. Post cap.
31. Top or bottom of 6'-0" or 8'0" width fabric.
32. All twisted ends shall be neatly clipped short.
33. Reinforced fence only: Weave free end of cable through 6 fabric openings prior to anchor post, wrap once around post and weave back through two fabric openings and clamp to cable and fabric with 3/8" clamp.
34. Anchor post may be end, corner, gate or strain post.
35. Reinforced fence only: Weave cable through 6 fabric openings at midpoint of panel and install 3/8" clamp, typical.
36. Reinforced fence only: 3/8", 7 x 19 galvanized braided cable.
37. 9 gauge wire tie, typical all support arms. See detail.
38. Bend over each end a minimum of 3".
39. Reinforced fence only: Weave cable in and out of at least four openings before and after each line post. Wrap/alternate cable at posts as shown.
40. 4" outside diameter gate post.

NOTE: SEE ATTACHED KEY NOTES.

NOT TO SCALE

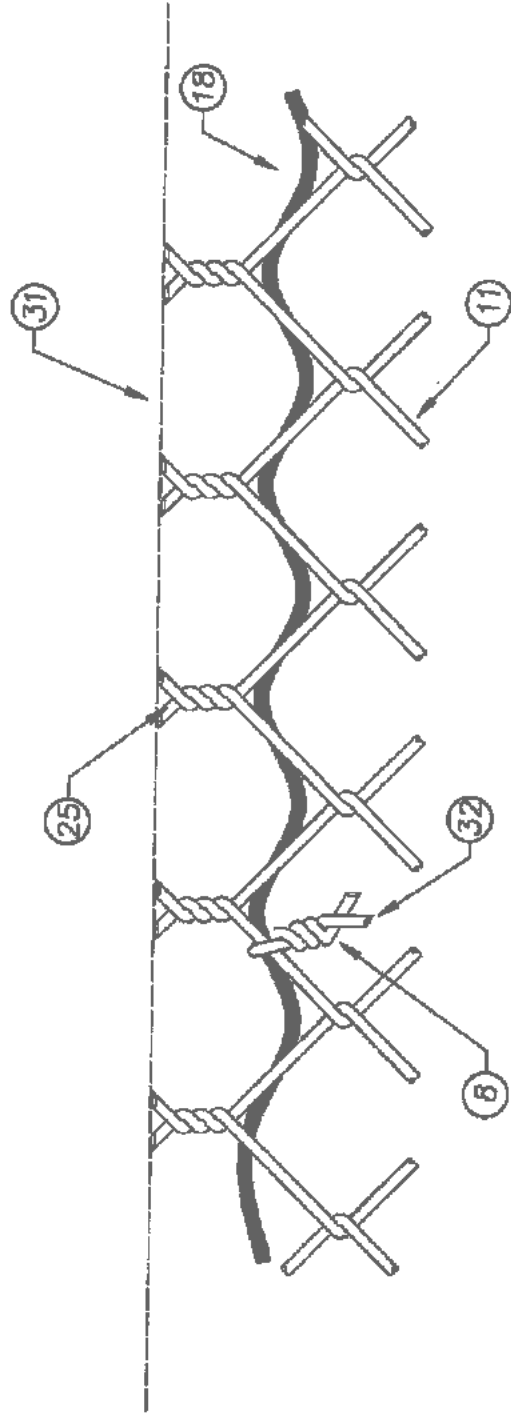


1 TYPICAL CORNER, END OR STRAIN PANEL

NOTE: THESE DRAWINGS ARE PROVIDED AS SCHEDULED GUIDES TO TYPICAL FORMING, BRACING, AND TIEING INSTALLATIONS THROUGHOUT THE TPA PROJECT. IT IS THE CONTRACTOR'S AND/OR SUBCONTRACTOR'S RESPONSIBILITY TO INVESTIGATE ALL FIELD CONDITIONS, VERIFY ALL DIMENSIONS AND MATERIALS, DETERMINE THE APPLICABILITY OF THESE DRAWINGS TO FIELD CONDITIONS, AND TO NOTIFY THE DESIGNER OR THE AUTHORITY OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE SHEET DIMENSIONS OF ALL INSTALLATIONS FOR TPA REVIEW AND APPROVAL. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL ANALYZE THESE DRAWINGS TO IDENTIFY AS-BUILT CONDITIONS AND ANY ALTERATIONS CONDUCTED DURING CONSTRUCTION, AND SHALL SUBMIT THESE AMENDMENT DRAWINGS TO THE AUTHORITY.

PLANNING AND ENGINEERING		The County of Alameda	
PROJECT:	CONCRETE SECURED SIDE	DATE:	04/02/16
DESIGNED BY:	REVIEWED BY:	TICKSON AIRPORT AUTHORITY 1000 SHAW BLVD., SUITE 200 OAKLAND, CA 94612	
BY: LG	APPROVED BY:	DATE:	Sheet 1 of 22

NOTE: SEE ATTACHED KEY NOTES.



NOTE: VIEWED FROM UNSECURED SIDE.

2 TYPICAL TOP OR BOTTOM TENSION WIRE INSTALLATION
NOT TO SCALE

NOTES:
 THESE DRAWINGS ARE PROVIDED AS SCHEMATIC GUIDES TO TYPICAL POWERED GATE AND TONING INSTALLATIONS THROUGHOUT THE TPA FACILITY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO INVESTIGATE ALL FIELD CONDITIONS, VERIFY ALL QUANTITIES AND MATERIALS, DETERMINE THE APPLICABILITY OF THESE DRAWINGS TO THE SPECIFIC SITE CONDITIONS, AND TO NOTIFY THE DESIGNER OF THE AUTHORITY OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE SHOP DRAWINGS OF ALL INSTALLATIONS FOR TPA SUPERVISORIAL REVIEW PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL ANNOTATE THESE DRAWINGS TO INDICATE AS-BUILT CONDITIONS AND ANY ALTERATIONS CONDUCTED DURING CONSTRUCTION, AND SHALL SUBMIT THESE ANNOTATED DRAWINGS TO THE AUTHORITY.

PLANNING AND ENGINEERING		DATE: 04/20/10	Sheet 2 of 22
PROJECT:	PROJECT: 04/20/10		
DESIGNER:	DESIGNER: 04/20/10		
APPROVED BY:	APPROVED BY: 1/8"		
SCALE:	SCALE:		
TACSON			
AIRPORT AUTHORITY			

NOTE: SEE ATTACHED KEY NOTES.



ROUTING OF TOP CABLE
(PLAN VIEW)



ROUTING OF CENTER CABLE
(PLAN VIEW)



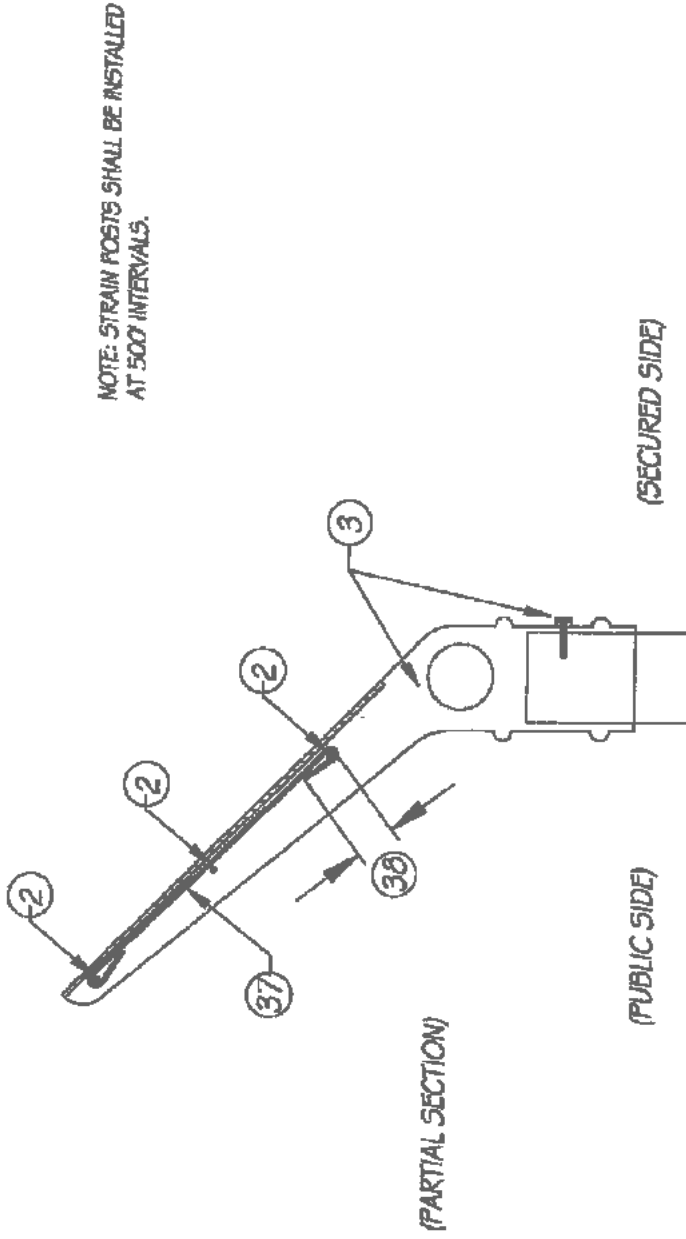
ROUTING OF BOTTOM CABLE
(PLAN VIEW)

4 SECURITY FENCE REINFORCEMENT
NOT TO SCALE

THESE DRAWINGS ARE PROVIDED AS SCHEMATIC GUIDES TO TYPICAL POWERED GATE AND FENCING INSTALLATIONS THROUGHOUT THE TMA FACILITY. IT IS THE CONSULTANT'S AND/OR CONTRACTOR'S RESPONSIBILITY TO INVESTIGATE ALL FIELD CONDITIONS, VERIFY ALL GUARANTEES AND MATERIALS, DETERMINE THE ADEQUACY OF THESE DRAWINGS BEFORE CONSTRUCTION, AND TO NOTIFY THE DESIGNER OR THE AUTHORITY OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE SHOP DRAWINGS OF ALL INSTALLATIONS FOR TMA REVIEW AND APPROVAL PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE SHOP DRAWINGS TO INDICATE AS-BUILT CONDITIONS AND ANY ADDITIONAL CONTRACTOR PERFORMED CONSTRUCTION, AND SHALL SUBMIT THESE ANNOTATED DRAWINGS TO THE AUTHORITY.

PLANNING AND ENGINEERING		DATE: 04/03/10	Sheet 4 of 22
PROJECT: FEDERAL SECURITY/TOUL		TAKSON AIRPORT AUTHORITY	1/00
SCHEDULE ITEM:			
BY: GS	APPROVED BY:		

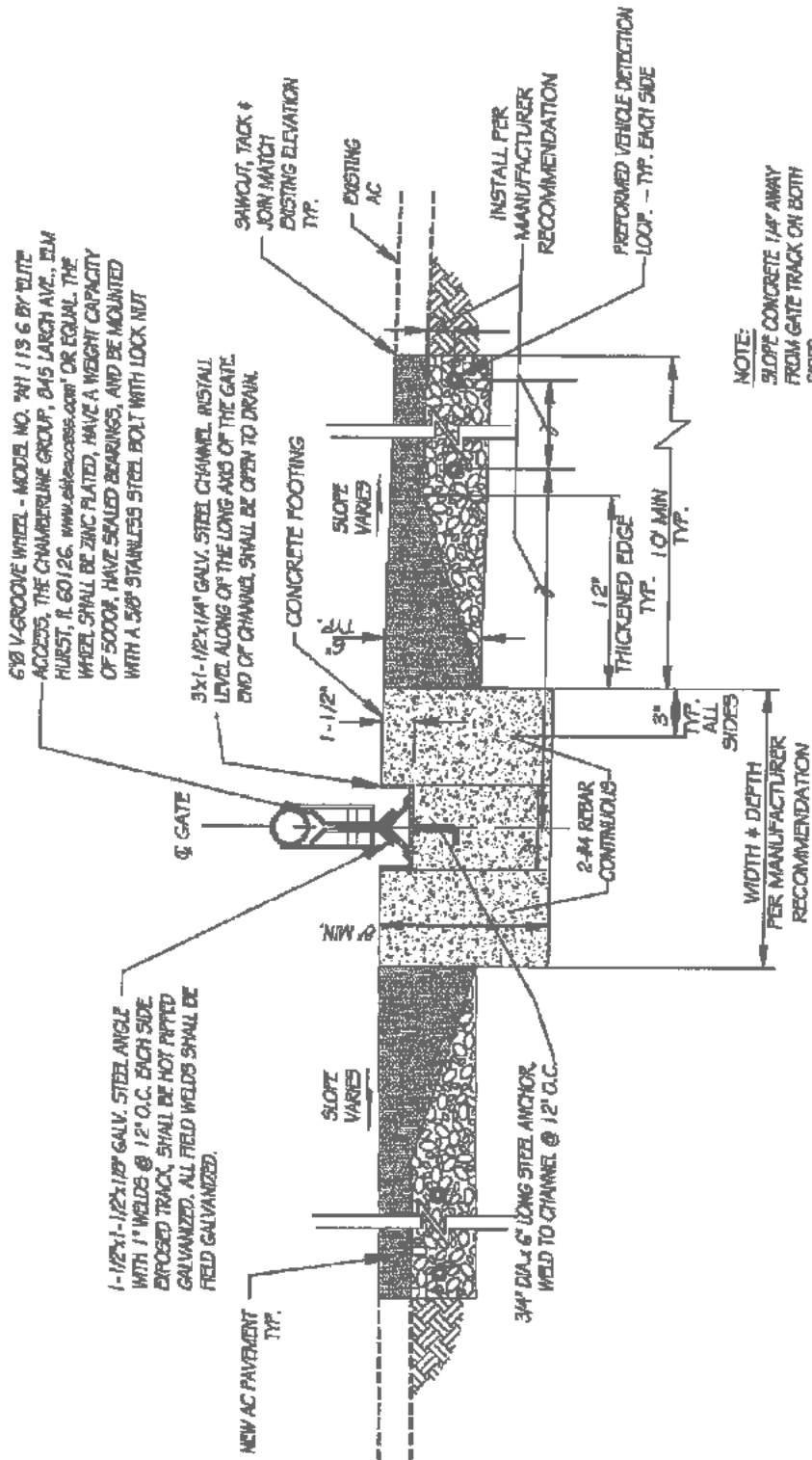
NOTE: SEE ATTACHED KEY NOTES.



5 BARBED WIRE TIE DETAIL
NOT TO SCALE

NOTE: THESE DRAWINGS ARE PROVIDED AS SCHEMATIC GUIDES TO TYPICAL POWERED GATE AND TOLLING INSTALLATIONS THROUGHOUT THE TIA FACILITY. IT IS THE CONSULTANT'S AND/OR CONTRACTOR'S RESPONSIBILITY TO INVESTIGATE ALL FIELD CONDITIONS, VERIFY ALL CONDITIONS AND MATERIALS, DETERMINE THE APPLICABILITY OF THESE DRAWINGS TO EACH SPECIFIC SITE CONDITION, AND TO NOTIFY THE DESIGNER OF THE AUTHORITY OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE SHOP DRAWINGS OF ALL INSTALLATIONS FOR TIA REVIEW AND APPROVAL PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL ANNOTATE THESE DRAWINGS TO INDICATE AS-BUILT CONDITIONS AND ANY ALTERATIONS CONDUCTED DURING CONSTRUCTION, AND SHALL SUBMIT THESE HIGHLIGHTED DRAWINGS TO THE AUTHORITY.

PLANNING AND ENGINEERING		DATE: 04/01/18	Sheet 5 of 22
PROJECT: FRENCHESIDE/STATION/STANDARD GATE		DATE: 04/01/18	
BY: LG		APPROVED BY: YAP	
TIPSON AIRPORT AUTHORITY			



6" V-GROOVE WHEEL - MODEL NO. 74111S 6 BY ELITE ACCESS, THE CHAMBERLAIN GROUP, 645 LARCH AVE., ELM HURST, R. 60126. www.eliteaccess.com OR EQUAL. THE WHEEL SHALL BE ZINC PLATED, HAVE A WEIGHT CAPACITY OF 5000#, HAVE SEALED BEARINGS, AND BE MOUNTED WITH A 3/8" STAINLESS STEEL BOLT WITH LOCK NUT

3x1-1/2x1/4" GALV. STEEL CHANNEL. INSTALL LEVEL ALONG OF THE LONG AXIS OF THE GATE. END OF CHANNEL SHALL BE OPEN TO DRAIN.

SHOW CUT, TACK & JOIN MATCH EXISTING ELEVATION TYP.

CONCRETE FOOTING

1-1/2" TYP.

SLOPE VARIES

1-1/2" x 1-1/2" GALV. STEEL ANGLE WITH 1" WELDS @ 12" O.C. EACH SIDE EXPOSED TRACK SHALL BE HOT DIPPED GALVANIZED. ALL FIELD WELDS SHALL BE FIELD GALVANIZED.

NEW AC PAVEMENT TYP.

SLOPE VARIES

3/4" DIA x 6" LONG STEEL ANCHOR WELD TO CHANNEL @ 12" O.C.

2-#4 REBAR CONTINUOUS

3" TYP. ALL SIDES

WIDTH & DEPTH PER MANUFACTURER RECOMMENDATION

INSTALL PER MANUFACTURER RECOMMENDATION

12" TYP. THICKENED EDGE

10' MIN TYP.

PERFORMED VEHICLE DETECTION LOOP - TYP. EACH SIDE

NOTE:
SLOPE CONCRETE 1/4" AWAY FROM GATE TRACK ON BOTH SIDES

7 GATE TRACK FOOTING DETAIL

NOT TO SCALE

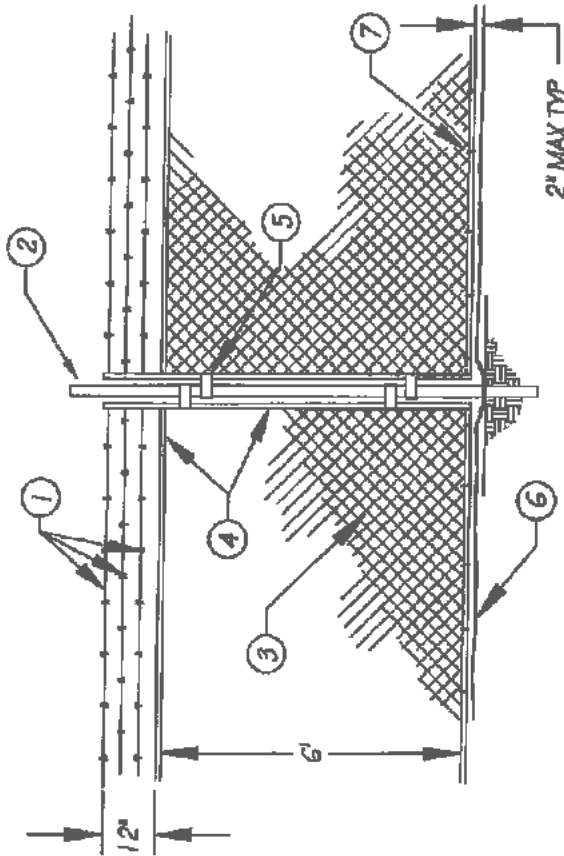
NOTE:

THESE DRAWINGS ARE PROVIDED AS SCHEMATIC GUIDES TO TYPICAL POWERED GATE AND FENCING INSTALLATIONS THROUGHOUT THE DMA FACILITY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO INVESTIGATE ALL FIELD CONDITIONS, VERIFY ALL DIMENSIONS AND MATERIALS, DETERMINE THE APPLICABILITY OF THESE DRAWINGS TO THE SPECIFIC SITE CONDITIONS, AND TO NOTIFY THE DESIGNER OR THE AUTHORITY OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL FURNISH SUCH DRAWINGS UPON ALL REQUESTS FOR THE AUTHORITY OF REVIEW PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL ADVISE THESE DRAWINGS TO INDICATE AS-BUILT CONDITIONS AND ANY ALTERATIONS CONDUCTED DURING CONSTRUCTION, AND SHALL SUBMIT THESE AMENDMENTS DRAWINGS TO THE AUTHORITY.

PLANNING AND ENGINEERING		PL Drawing #	0905018
PROJECT:		DATE	09/20/18
DESIGNED BY: SHAWNDON DUTCH		DATE	09/20/18
DRAWN BY:		DATE	
CHECKED BY:		DATE	
APPROVED BY:		DATE	
Sheet 7 of 22			



NOTE: SEE ATTACHED KEY NOTES.



NOTE:
ALL POSTS MUST BE CLAMPED
AND DRIVEN TO A MINIMUM
DEPTH OF 18"

8 TEMPORARY FENCE DETAIL
NOT TO SCALE

TEMPORARY FENCE NOTES:

1. 2-STRAND 12 1/2 GAUGE BARBED WIRE WITH 14 GAUGE BARBS, (3 TOTAL).
2. 1.90" OUTSIDE DIAMETER LINE POST, TYPICAL
3. // GAUGE, 2" FABRIC, TYPICAL
4. 1 1/8" OUTSIDE DIAMETER LINE POST, TYPICAL
5. TACK WELDED OR CLAMPED TO END POST TO PREVENT REMOVAL
6. GROUND LINE
7. 11 GA. STEEL TIES AT 12" O.C. OR WRAPPED CONTINUOUSLY, TYP. ALL SIDES

PLANNING AND ENGINEERING		DATE: 04/20/18
PROJECT: FONSECA GOS BRUNING FEEL TECHNOLOGY REGULATIONS		DATE: 04/20/18
BY: LG		ATTACHED BY: 148
TUCKSON AIRPORT AUTHORITY		Sheet 5 of 22

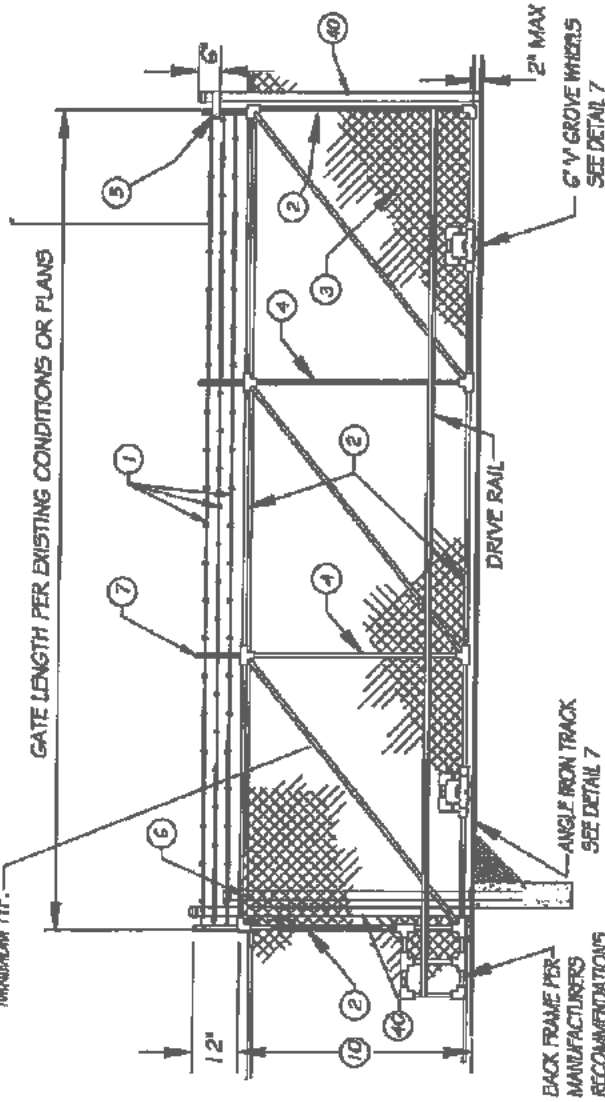
NOTE: THESE DRAWINGS ARE PROVIDED AS SCHEDULED GUIDES TO TYPICAL JOINED GATE AND FENCING REGULATIONS THROUGHOUT THE FAA FACILITY. IT IS THE CONTRACTOR'S AND/OR CONSULTANT'S RESPONSIBILITY TO INVESTIGATE ALL FIELD CONDITIONS, VERIFY ALL DIMENSIONS AND MATERIALS, DETERMINE THE APPLICABILITY OF THESE DRAWINGS TO THE PROJECT SITE CONDITIONS, AND TO VERIFY THE DESIGN OR THE AUTHORITY OF ANY DIMENSIONS PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE SHOP DRAWINGS OF ALL INSTALLATIONS FOR THE REVIEW/APPROVAL PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL ADVISE THE ARCHITECT IMMEDIATELY IN WRITING OF ANY CHANGES OR ALTERATIONS CONDUCTED DURING CONSTRUCTION, AND SHALL SUBMIT THESE APPROVED DRAWINGS TO THE AUTHORITY.

FENCE KEY NOTES:

1. 3 STRAND 1/2 GUAGE BARBED WIRE WITH 14 GAUGE BARBS, TYPICAL
2. 2.375" OUTSIDE DIAMETER MINIMUM CORNER OR END POST, TYPICAL.
3. 9 GUAGE, 2' FABRIC, TYPICAL.
4. 1.90" OUTSIDE DIAMETER LINE POST, TYPICAL.
5. PROVIDE POSITIVE KEEPER DEVICE ON FENCE POST TO PREVENT LIFTING GATE OFF TRACK WHEN CLOSED. FOR DOUBLE GATE INTALLATION, INSTALL DEVICE ON LEADING EDGE OF ONE OF THE GATE PANELS.
6. GATE GUIDE SYSTEM W/SUPPORT POST, SEE DETAIL 19.
7. MATCHING CAP, TYP ALL POSTS.

NOTE: ALL EXPOSED MATERIAL AND FITTINGS SHALL BE HOT DIPPED GALVANIZED. ALL FIELD WELDS SHALL BE FIELD GALVANIZED.

TRUSS BRACE PER GATE MANUFACTURER 1.90" DIAMETER MINIMUM TYP.



TYPICAL GATE ELEVATION

NOT TO SCALE

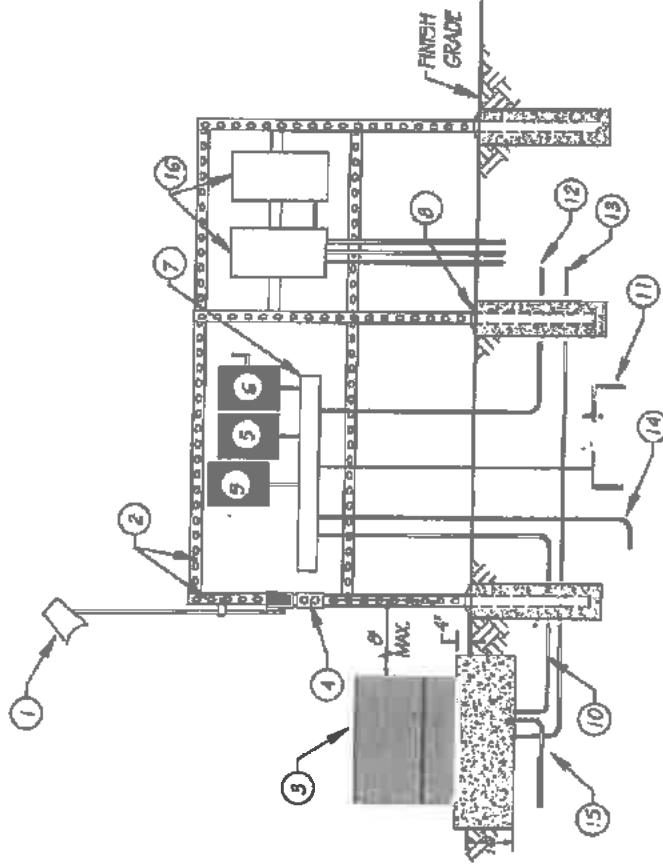
9

NOTE: THESE DRAWINGS ARE PROVIDED AS SCHEMATIC GUIDES TO TYPICAL POWERUP GATE AND FENCING INSTALLATIONS THROUGHOUT THE TSA FACILITY. IT IS THE CONSULTANT'S AND/OR CONTRACTOR'S RESPONSIBILITY TO INVESTIGATE ALL FIELD CONDITIONS, VERIFY ALL DIMENSIONS AND MATERIALS, DETERMINE THE APPLICABILITY OF THESE DIMENSIONS TO THE SPECIFIC SITE CONDITIONS, AND TO NOTIFY THE DESIGNER OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE SHOP DRAWINGS OF ALL INSTALLATIONS FOR THE AUTHORITY OF THE AIRPORT AUTHORITY. PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL ANALYZE THESE DRAWINGS TO VERIFY AS-BUILT CONDITIONS AND ANY SUBSTITUTIONS CONDUCTED DURING CONSTRUCTION, AND SHALL SUBMIT THESE ANNOTATED DRAWINGS TO THE AUTHORITY.

PLANNING AND ENGINEERING		THE COMPANY
PROJECT:	POWERUP GATE REMOVAL DETAIL	DATE: 04/20/12
DR: 10	APPROVED BY: [Signature]	Sheet 9 of 22

NOTE:

- ELECTRICAL RACK AND EQUIPMENT TO BE ADEQUATELY PRIMED AND PAINTED WITH SHERWIN WILLIAMS STAMPEL GRAY OR SUPPLY GALVANIZED UNISTRUT W/BOULTED FITTINGS.
- WALL FINISH SIZED ACCORDING TO PROJECT REQUIREMENTS.
- WALL ABOVE GROUND PIPING AND FITTINGS SHALL BE RIGID GALVANIZED STEEL.



10 ELECTRIC EQUIPMENT RACK

DRAWING NOT TO SCALE

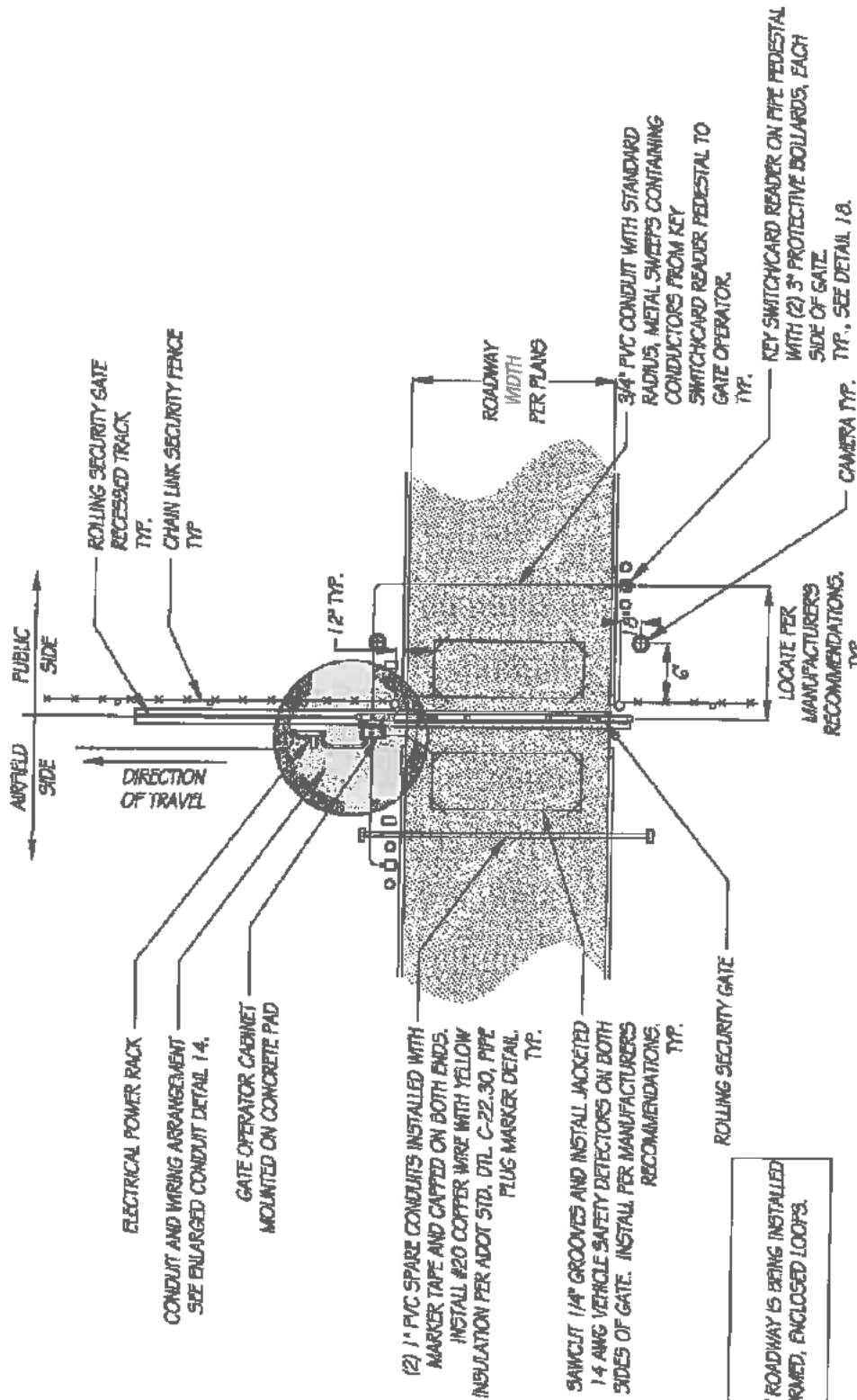
NOTE:

THESE DRAWINGS ARE PROVIDED AS SCHEDULED GUIDES TO TYPICAL POWERED GATE AND FENCING INSTALLATIONS THROUGHOUT THE TIA FACILITY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO INVESTIGATE ALL FIELD CONDITIONS, VERIFY ALL QUANTITIES AND MATERIALS, DETERMINE THE FEASIBILITY OF THESE DRAWINGS, AND TO NOTIFY THE DESIGNER OF ANY DISCREPANCIES OR CHANGES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE SHOP DRAWINGS OF ALL INSTALLATIONS FOR THE DESIGNER'S REVIEW PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL APPROVE THESE DRAWINGS TO ADEQUATE AS-BUILT CONDITIONS AND ANY ALTERATIONS CONDUCTED DURING CONSTRUCTION, AND SHALL SUBMIT THESE APPROVED DRAWINGS TO THE AUTHORITY.

EQUIPMENT RACK NOTES:

1. LED LIGHT FIXTURE AS MANUFACTURED BY COOPER LIGHT FIXTURES OR APPROVED EQUAL. RUN 1/2" RIGID CONDUIT TO WEATHER PROOF ROUND BELL BOX, 8" ABOVE FINISHED GRADE. MOUNT LIGHT IN WALL PACK FASHION AIMED TOWARD CONTROL CABINET.
2. UNISTRUT FRAME WITH BOLTED FITTINGS. SHALL BE 3/4" DOUBLE UNISTRUT.
3. GATE CONTROLLER - MOUNT ON 12" HY-SECURITY EXTENSION PEDestal WITH CONCRETE BASE PER MANUFACTURER RECOMMENDATIONS. EXTEND CONC. BASE 4" ABOVE EXISTING GRADE.
4. NEMA 5-15R GFCI RECEPTACLE IN NEMA 3R METAL ENCLOSURE.
5. 6KVA, 3Ø NEMA 3R 480V PRIMARY - 120/208V SECONDARY FOR OBSTRUCTION LIGHT AND GFCI RECEPTACLE. LABEL AS SUCH. (TRANSFORMER)
6. 600V, 3ØA, 3Ø, FUSIBLE, HEAVY-DUTY, NEMA3R, SAFETY SWITCH, TO FEED TRANSFORMER
7. 6" X 6" NEMA 3R GUTTER WITH LANDING LUGS.
8. 1.8" DIAMETER X 24" DEEP CONCRETE FOOTING.
9. NEMA 3R LOAD CENTER/W MAIN BREAKER. MIN. 12 CKT. 5 Ø. 120/208V. 4W. 100 AMP
10. 3/4" PVC CONDUIT @ 1.8" BELOW FINISHED SUBGRADE ELEVATION WITH 3 #10, 1 #10 BOND TO GATE CONTROLLER RIGID GALVANIZED STEEL BENDS & RISERS. CONTINUE CONDUIT TO GUTTER.
11. #2 EGC TO (2) 3/4" X 8' LONG COPPER-CLAD GROUND RODS SEPARATED A MINIMUM OF 10'. CONNECTIONS OF CONDUCTOR TO GROUND RODS SHALL BE THERMITE WELDED. ROUTE ALONG AND ATTACH TO UNISTRUT RACK WITH NON-FERROUS FASTENERS.
12. PVC CONDUIT (SEE PLAN FOR SIZE AND CONDUCTOR FILL) @ 1.8" BELOW FINISHED SUBGRADE ELEVATION, FROM SERVICE PANEL RIGID STEEL BENDS AND RISERS. SIZE AS REQUIRED.
13. 3/4" PVC CONDUIT TO KEY POSTCARD READER & EXIT BUTTON (2 CONDUITS REQUIRED WITH REQUIRED CONDUCTORS).
14. 3/4" CONDUIT TO PHOTO-SENSOR WITH REQUIRED CONDUCTORS.
15. (2) 3/4" CONDUITS TO LOOP DETECTORS AS REQUIRED.
16. GSS CONTROLLER ENCLOSURES. SEE DETAIL 20.

PLANNING AND ENGINEERING		DATE	04/23/18
PROJECT:		DATE	04/23/18
POWERED GATE SHERWIN EXTRA		TICKSON	
STATIONING INSTALLATION		AIRPORT AUTHORITY	
DR 10	APPROVED BY	10"	Sheet 10 of 22



(2) 1" PVC SPARE CONDUITS INSTALLED WITH MARKER TAPE AND CAPPED ON BOTH ENDS. INSTALL #20 COPPER WIRE WITH YELLOW INSULATION PER ADOT STD. DETL. C-22.30, PIPE PLUG MARKER DETAIL TYP.

* SAWCUT 1/4" GROOVES AND INSTALL JACKETED 14 AWG VEHICLE SAFETY DETECTORS ON BOTH SIDES OF GATE. INSTALL PER MANUFACTURERS RECOMMENDATIONS TYP.

ROLLING SECURITY GATE

NOTE:
WHEN NEW ROADWAY IS BEING INSTALLED USE PREFORMED, ENCLOSED LOOPS.

12 SCHEMATIC GATE PLAN - SINGLE GATE ARRANGEMENT

NOT TO SCALE

NOTE:

THESE DRAWINGS ARE PROVIDED AS SCHEMATIC GUIDES TO TYPICAL POWDERED GATE AND FENCING INSTALLATIONS THROUGHOUT THE TIA FACILITY. IT IS THE CONTRACTOR'S AND/OR CONVEYOR'S RESPONSIBILITY TO INVESTIGATE ALL FIELD CONDITIONS, VERIFY ALL QUANTITIES AND HORIZONS, DETERMINE THE APPROPRIATE FENCING FOR THE SPECIFIC SITE CONDITIONS, AND TO NOTIFY THE DESIGNER OR THE AUTHORITY OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE SHOP DRAWINGS OF ALL INSTALLATIONS FOR THE AUTHORITY'S REVIEW PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL APPROVE THESE DRAWINGS TO INDICATE SUBMIT CONDITIONS AND ANY ALTERATIONS CONDUCTED DURING CONSTRUCTION, AND SHALL SUBMIT THESE ANNOTATED DRAWINGS TO THE AUTHORITY.

PLANNING AND ENGINEERING

PROJECT:
POWDERED GATE STARTUP DETAIL

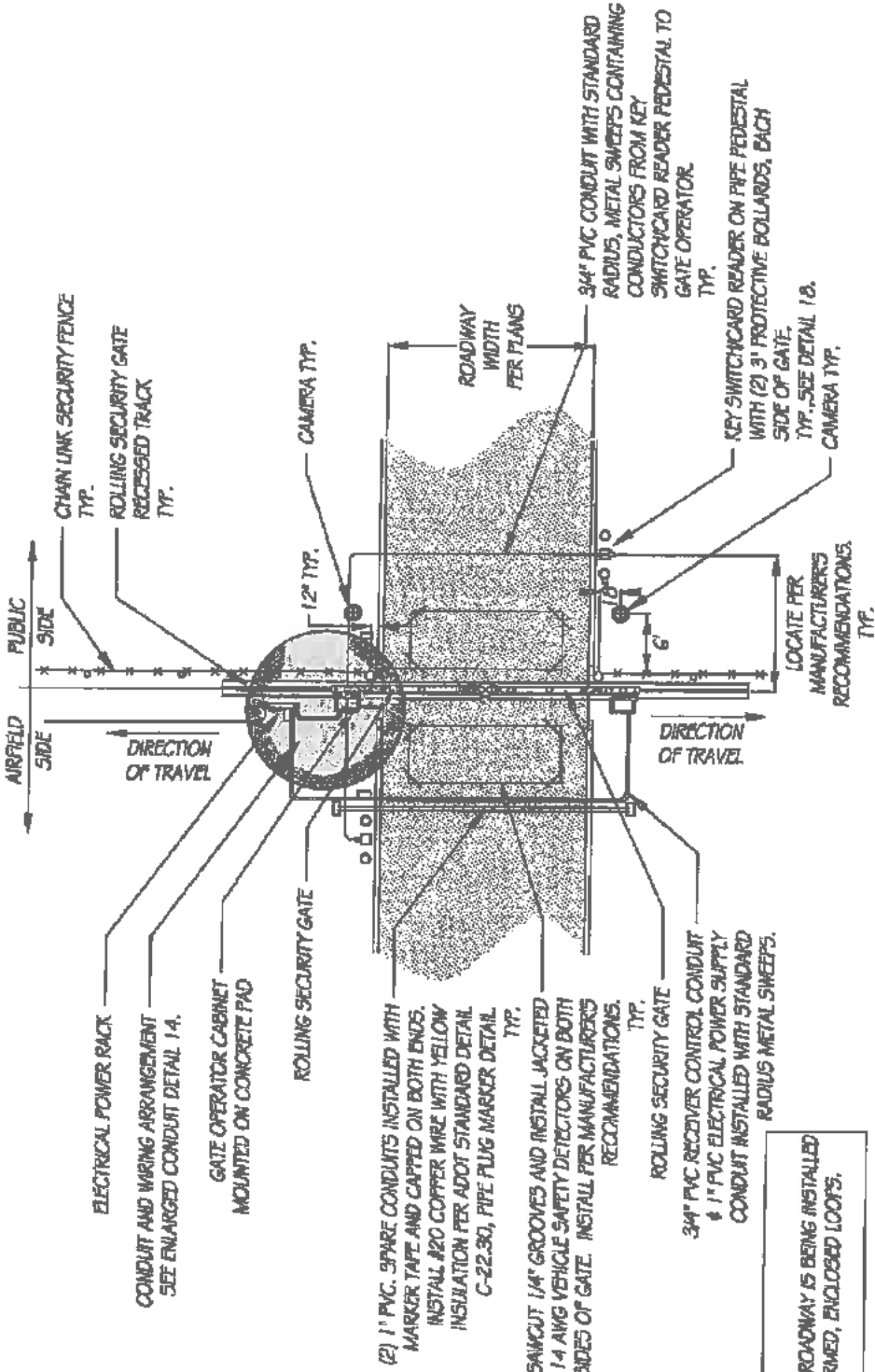
TIA Drawing /
Sheet

DATE: 04/26/2010

TUCKSON
AIRPORT AUTHORITY

BY: [Signature] APPROVED BY: [Signature]

Sheet 12 of 22



(2) 1" PVC SPARE CONDUITS INSTALLED WITH MARKER TAPE AND CAPPED ON BOTH ENDS. INSTALL #20 COPPER WIRE WITH YELLOW INSULATION PER ADOT STANDARD DETAIL C-22-80, PIPE PLUG MARKER DETAIL TYP.

* SAWCUT 1/4" GROOVES AND INSTALL JACKETED 14 AWG VEHICLE SAFETY DETECTORS ON BOTH SIDES OF GATE. INSTALL PER MANUFACTURER'S RECOMMENDATIONS. TYP.

* NOTE:
WHEN NEW ROADWAY IS BEING INSTALLED USE PREFORMED, ENCLOSED LOOPS.

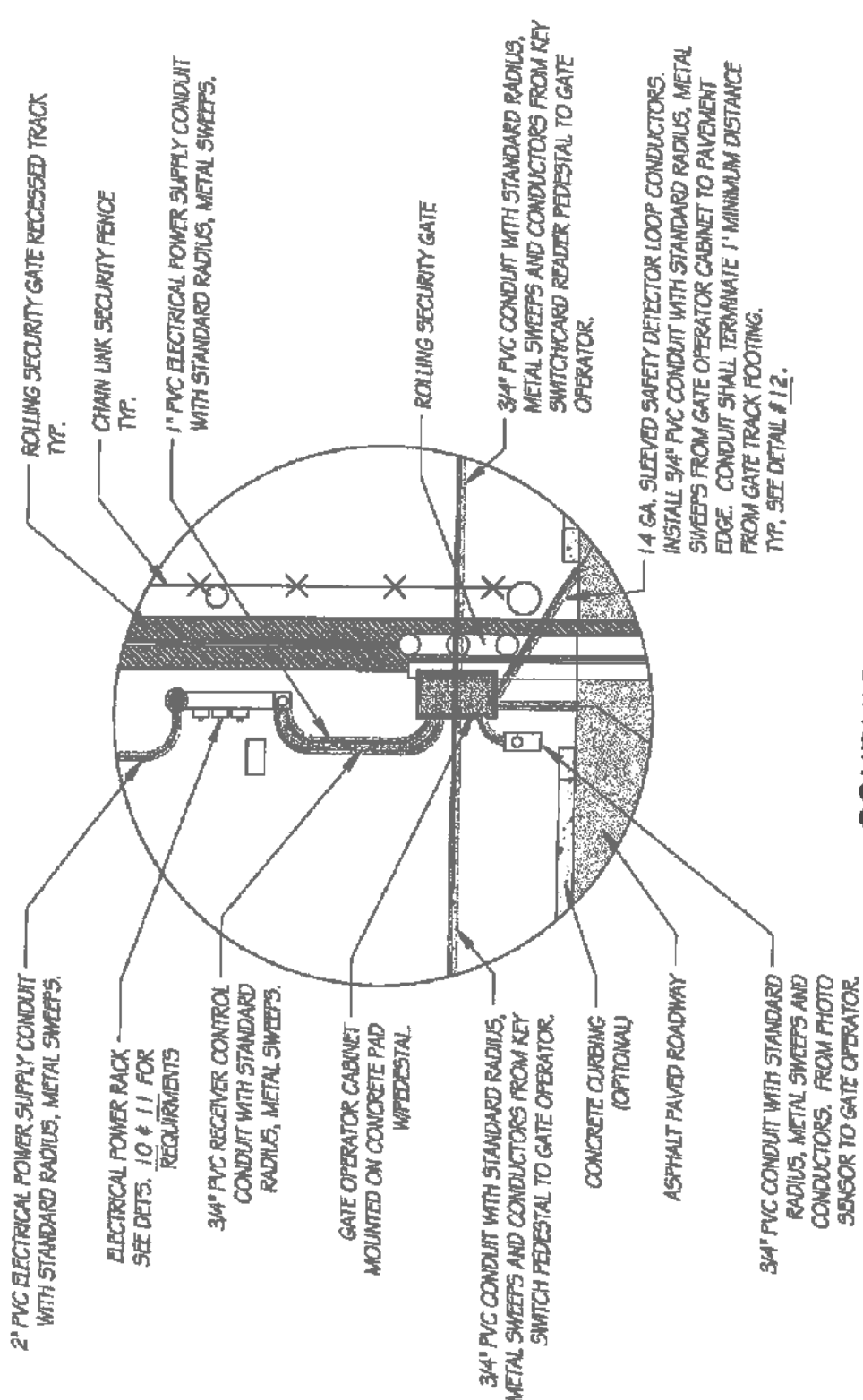
13 SCHEMATIC GATE PLAN - DOUBLE GATE ARRANGEMENT

NOT TO SCALE

NOTE:
THESE DRAWINGS ARE PREPARED AS SCHEMATIC GUIDES TO TYPICAL POWERED GATE AND ROLLING INSTALLATIONS THROUGHOUT THE TIA FACILITY. IT IS THE CONTRACTOR'S AND/OR SUBCONTRACTOR'S RESPONSIBILITY TO INVESTIGATE ALL FIELD CONDITIONS, VERIFY ALL DIMENSIONS AND MATERIALS, DETERMINE THE APPLICABILITY OF THESE DRAWINGS TO THE SPECIFIC SITE CONDITIONS, AND TO NOTIFY THE DESIGNER OF THE AUTHORITY OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE SHOP DRAWINGS OF ALL INSTALLATIONS FOR THE REVIEW AND APPROVAL OF THE AUTHORITY PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL MAINTAIN THE DRAWINGS TO REFLECT AS-BUILT CONDITIONS AND ANY ALTERATIONS CONDUCTED DURING CONSTRUCTION, AND SHALL SUBMIT THESE AMENDED DRAWINGS TO THE AUTHORITY.

PLANNING AND ENGINEERING		DATE: 04/02/19	Sheet 13 of 22
PROJECT: POWER SITE GRADING DEMO		DATE: 04/02/19	
DESIGNED BY: _____		DATE: _____	
CHECKED BY: _____		DATE: _____	
DRAWN BY: _____		DATE: _____	
APPROVED BY: _____		DATE: _____	
TYP: _____		DATE: _____	
SCALE: _____		DATE: _____	
PROJECT NO: _____		DATE: _____	
DRAWING NO: _____		DATE: _____	
REV: _____		DATE: _____	
APPROVED BY: _____		DATE: _____	
TYP: _____		DATE: _____	





14 CONDUIT DETAIL
NOT TO SCALE

NOTE:
 THESE DRAWINGS ARE PREPARED AS SCHEMATIC GUIDES TO TYPICAL POWERED GATE AND FENCING INSTALLATIONS THROUGHOUT THE TWA FACILITY. IT IS THE CONTRACTOR'S AND/OR CONSTRUCTION'S RESPONSIBILITY TO INVESTIGATE ALL FIELD CONDITIONS, VERIFY ALL QUANTITIES AND MATERIALS, DETERMINE THE FEASIBILITY OF THESE DRAWINGS TOWARD SPECIFIC SITE CONDITIONS, AND TO NOTIFY THE DESIGNER OR THE AUTHORITY OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE SUFFICIENT DIMENSIONS FOR ALL INSTALLATIONS FOR THE IDENTIFICATION OF ALL MATERIALS PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL ANNOTATE THESE DRAWINGS TO INDICATE AS-BUILT CONDITIONS AND ANY ALTERATIONS CONDUCTED DURING CONSTRUCTION, AND SHALL SUBMIT THESE ANNOTATED DRAWINGS TO THE AUTHORITY.

PLANNING AND ENGINEERING		DATE: 04/02/16
PROJECT: POWER GATE 200002 FEAS.		DRAWN BY: 04/02/16
BY: LD	APPROVED BY: VVP	SHEET 14 OF 22





LOOP DETECTOR MARKING NOTES:

1. VEHICLE SAFETY DETECTORS, BOTH SIDES OF GATE. INSTALL PER MANUF. RECOMM. SEE DETAIL # 12.
2. PAINT STRIPE: 12" WIDE YELLOW ENTIRE LOOP

16 LOOP DETECTOR MARKING

NOTE:
 THESE DRAWINGS ARE PROVIDED AS SCHEDULED GUIDES TO TYPICAL POWERED GATE AND TOWBAR INSTALLATIONS THROUGHOUT THE FAA FACILITY. IT IS THE CONTRACTOR'S MAJOR CONTRACTOR'S RESPONSIBILITY TO INVESTIGATE ALL FIELD CONDITIONS, VERIFY ALL DIMENSIONS AND MARKINGS, DETERMINE THE AUTHORITY OF THESE DRAWINGS FOR THE PROJECT, AND TO NOTIFY THE DESIGNER OR THE AUTHORITY OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE SHOP DRAWINGS OF ALL INSTALLATIONS FOR THE AUTHORITY'S REVIEW PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL ADVISE THE DESIGNER IMMEDIATELY TO INDICATE ANY FIELD CONDITIONS AND ANY ALTERATIONS CONDUCTED DURING CONSTRUCTION, AND SHALL SUBMIT THESE AMENDMENTS IMMEDIATELY TO THE AUTHORITY.

PLANNING AND ENGINEERING		THE COMPANY #	DATE	04/30/18
PROJECT:		TOLSON AIRPORT AUTHORITY		
DESIGNED BY		DATE		
CHECKED BY		DATE		
APPROVED BY		DATE		
DATE		DATE		



PHOTO-EYE SYSTEM NOTES:

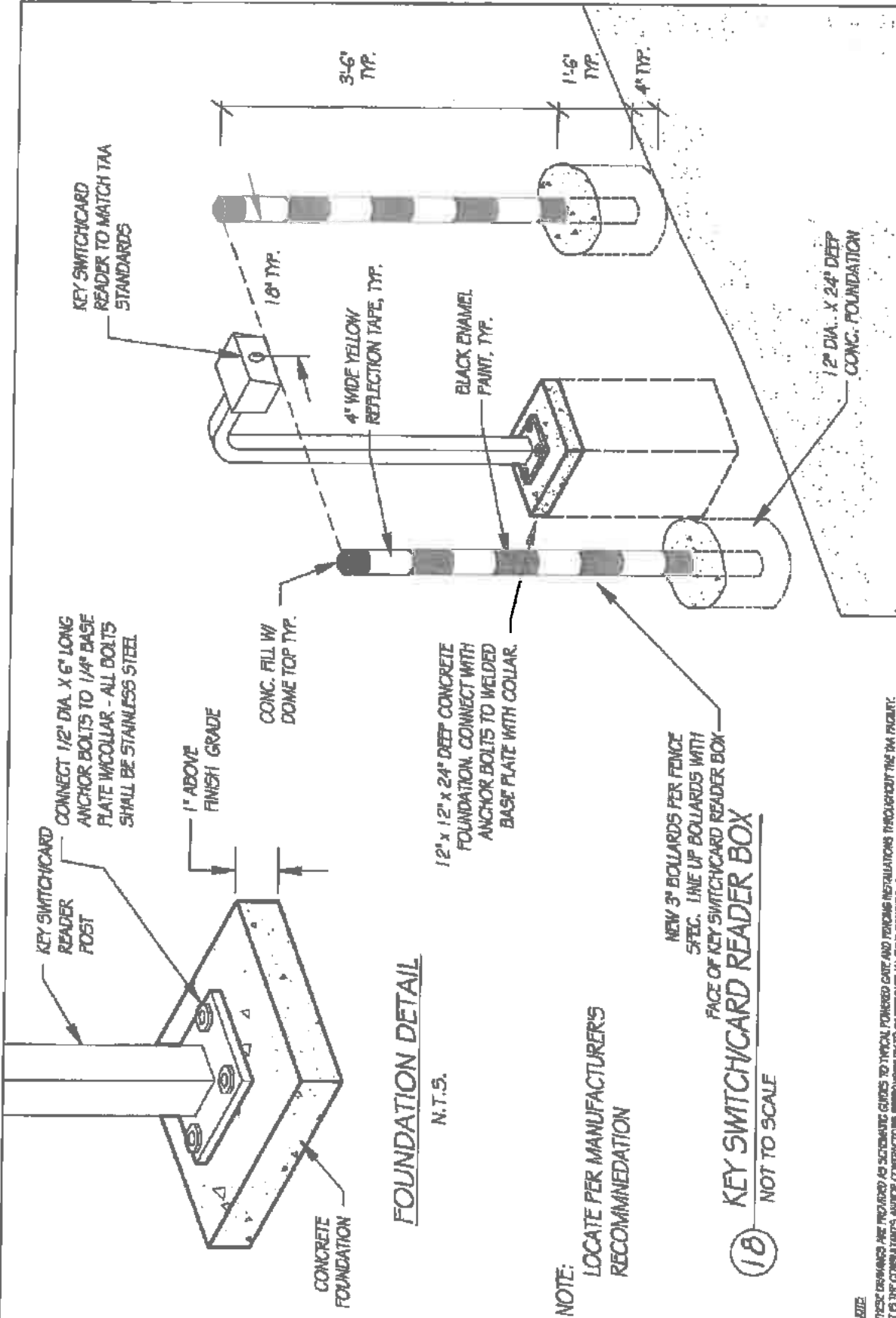
1. SENDING UNIT- GRAINGER TELEMACANIQUE RF 30.
2. REFLECTOR
3. UNI-STRUT MOUNTING
4. 12" DIA. X 24" DEEP CONCRETE BASE
5. GATE OPERATOR

17 PHOTO-EYE SYSTEM

NOTE:

THESE DRAWINGS ARE PROVIDED AS SCHEMATIC GUIDES TO TYPICAL PORTABLE GATE AND FENCING REGULATIONS THROUGHOUT THE TIA FACILITY. IT IS THE CONTRACTOR'S AND/OR CONTRACTOR'S RESPONSIBILITY TO INVESTIGATE ALL FIELD CONDITIONS, VERIFY ALL QUANTITIES AND MATERIALS, AND TO ADOPT THE DESIGNER'S INTENTIONS AND TO VERIFY THE DESIGNER'S INTENTIONS ON THE AUTHORITY OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE SHOP DRAWINGS OF ALL INSTALLATIONS FOR THE ARCHITECT'S REVIEW PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL VERIFY THESE DRAWINGS TO BECOME AS-BUILT CONDITIONS AND ANY ADJUSTMENTS COMPLETED DURING CONSTRUCTION, AND SHALL SUBMIT THESE ADJUSTMENTS TO THE ARCHITECT.

PLANNING AND ENGINEERING		DATE	04/30/16
PROJECT		TIA Terminal 4	
PROJECT NO./SUBMITAL NO.		043016	
DRAWING NO.		17	
REVISED BY		UP	
DATE		04/30/16	
DRAWN BY		UP	
CHECKED BY		UP	
APPROVED BY		UP	
DATE		04/30/16	
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CHECKED BY		UP	
APPROVED BY		UP	
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FOUNDATION DETAIL

N.T.S.

NOTE: LOCATE PER MANUFACTURER'S RECOMMENDATION

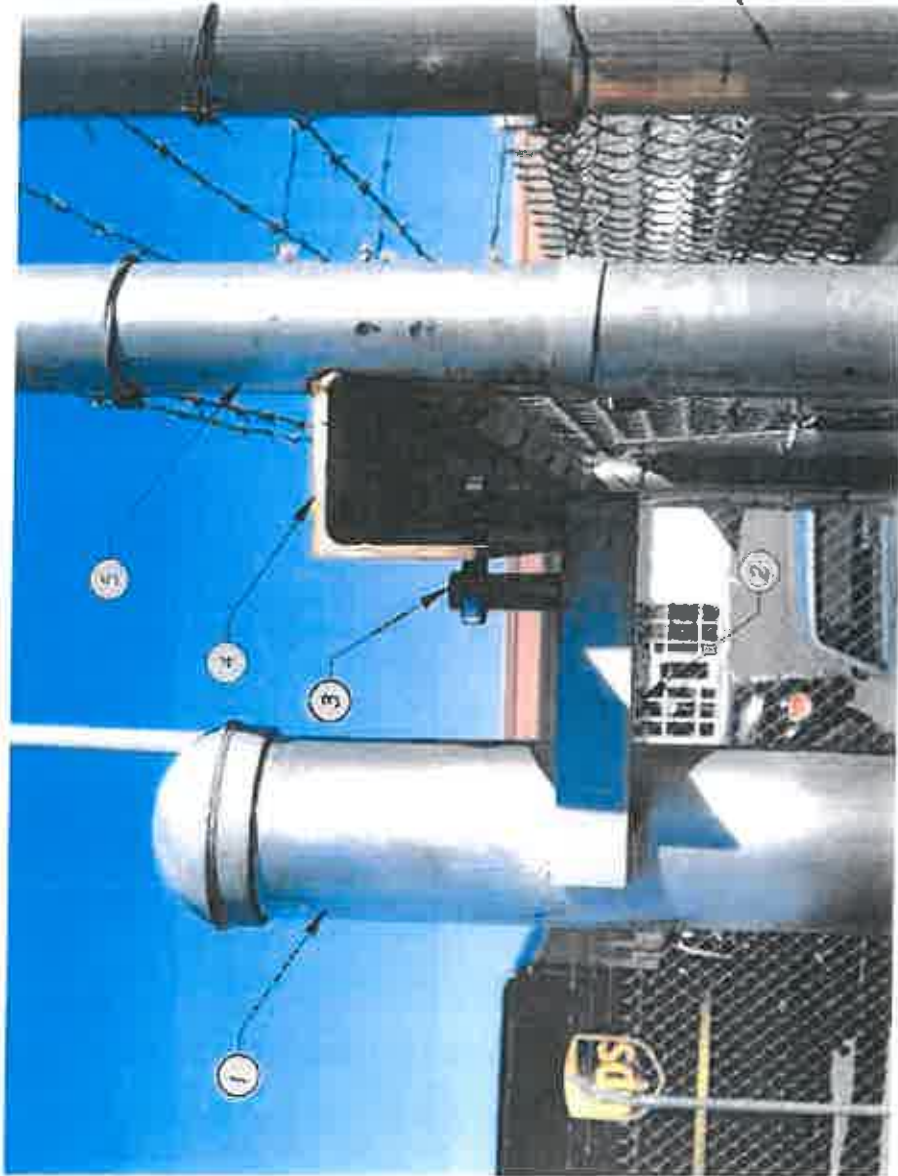
NEW 3" BOLLARDS PER FENCE SPEC. LINE UP BOLLARDS WITH FACE OF KEY SWITCHCARD READER BOX

18 KEY SWITCHCARD READER BOX
NOT TO SCALE

THESE DRAWINGS ARE PROVIDED AS SCHEDULING AIDS TO FACILITATE THE INSTALLATION OF THE FACILITY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO INVESTIGATE ALL FIELD CONDITIONS, VERIFY ALL QUANTITIES AND MATERIALS, DETERMINE THE FEASIBILITY OF THESE DRAWINGS, AND TO NOTIFY THE DESIGNER OR THE AUTHORITY OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE SHOP DRAWINGS OF ALL INSTALLATIONS FOR THE DESIGNER'S REVIEW AND APPROVAL PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE THESE DRAWINGS TO INDICATE AS-BUILT CONDITIONS AND ANY ALTERATIONS CONDUCTED DURING CONSTRUCTION, AND SHALL SUBMIT THESE AMENDMENTS TO THE AUTHORITY.

PLANNING AND ENGINEERING		DATE: 04/03/19
PROJECT: FORNED BAY BOARDS/DETEL		PROJECT NO: 0493019
BY: 10	APPROVED BY: 10P	DATE: 18 of 22






GATE GUIDE SYSTEM NOTES:

1. 3" DIA. SUPPORT POST W/CAF. -HEIGHT AS REQD.
2. WELD 3/4" THICK X 1 1/2" WIDE BAR TO SUPPORT POST ROLLER BEARINGS, LENGTH AS REQD.
3. DOUBLE SEALED ROLLER BEARINGS WITH STAINLESS STEEL BOLT.
4. 2 1/2" X 2 1/2" ANGLE IRON - SPOT WELD TO TOP OF GATE RAIL, WITH 1" WELDS @ 12" O.C.
5. NEW SLIDING GATE

19 GATE GUIDE SYSTEM

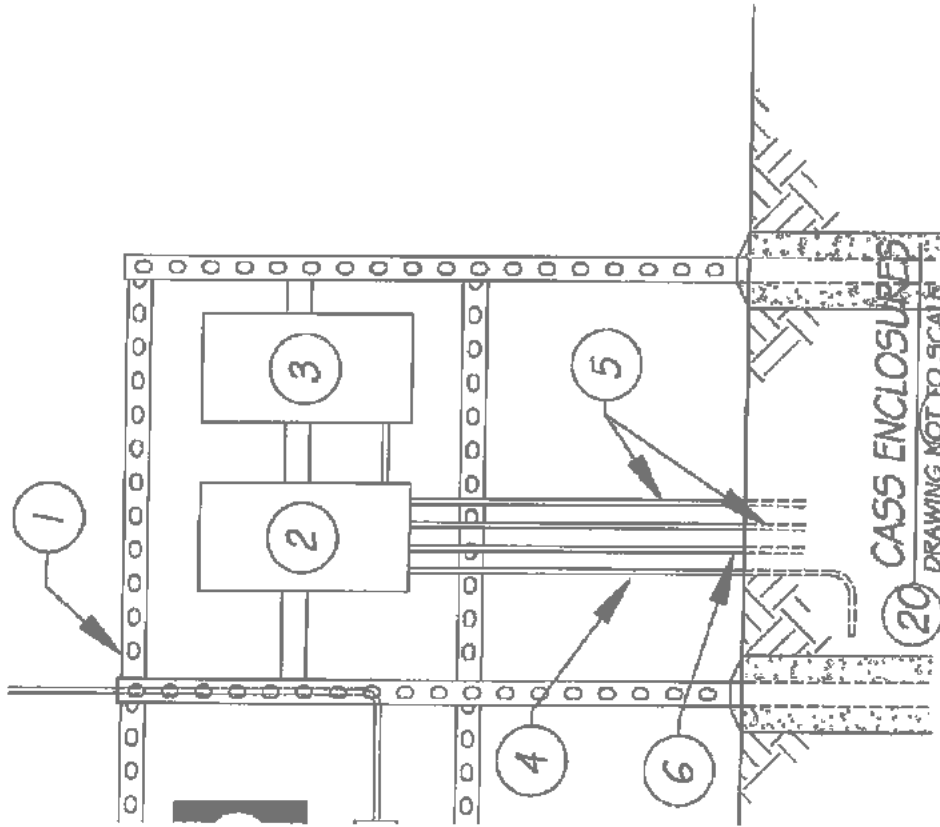
NOTES:

THESE DRAWINGS ARE PROVIDED AS SCHEMATIC GUIDES TO TYPICAL FORMED BRICK AND FINISHING INSTALLATIONS THROUGHOUT THE TIA FACILITY. IT IS THE CONTRACTOR'S AND/OR SUBCONTRACTOR'S RESPONSIBILITY TO INVESTIGATE ALL FIELD CONDITIONS, VERIFY ALL DIMENSIONS AND MATERIALS, AND OBTAIN THE APPROVAL OF THE ARCHITECT BEFORE PROCEEDING WITH ANY WORK. THE CONTRACTOR SHALL PROVIDE SHOP DRAWINGS OF ALL INSTALLATIONS FOR THE ARCHITECT'S REVIEW AND APPROVAL PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL ANNOTATE THESE DRAWINGS TO REFLECT AS-BUILT CONDITIONS AND ANY ALTERATIONS CONDUCTED DURING CONSTRUCTION, AND SHALL SUBMIT THESE ANNOTATED DRAWINGS TO THE ARCHITECT.

PLANNING AND ENGINEERING		DATE	04/09/10
PROJECT:		CARRONIA	
DRAWING NO.:		19-001	
SCALE:		AS SHOWN	
BY:		JW	
CHECKED BY:		JW	
APPROVED BY:		JW	
 TIKSON REPORT AUTHORITY			Sheet 19 of 22

NOTE:

- ELECTRICAL RACK AND EQUIPMENT TO BE ADEQUATELY FRAMED AND PAINTED WITH SHERWIN WILLIAMS STEEPLE GRAY OR SUPPLY GALVANIZED UNBOLTED IMBOLTED FITTINGS.
- ALL PILING SHALL BE RIGID GALVANIZED STEEL.
- RADIO CONTROL MAY ONLY BE USED WHEN APPROVED BY TAA.
- ALL ABOVE GROUND PIPING AND FITTINGS SHALL BE RIGID GALVANIZED STEEL.



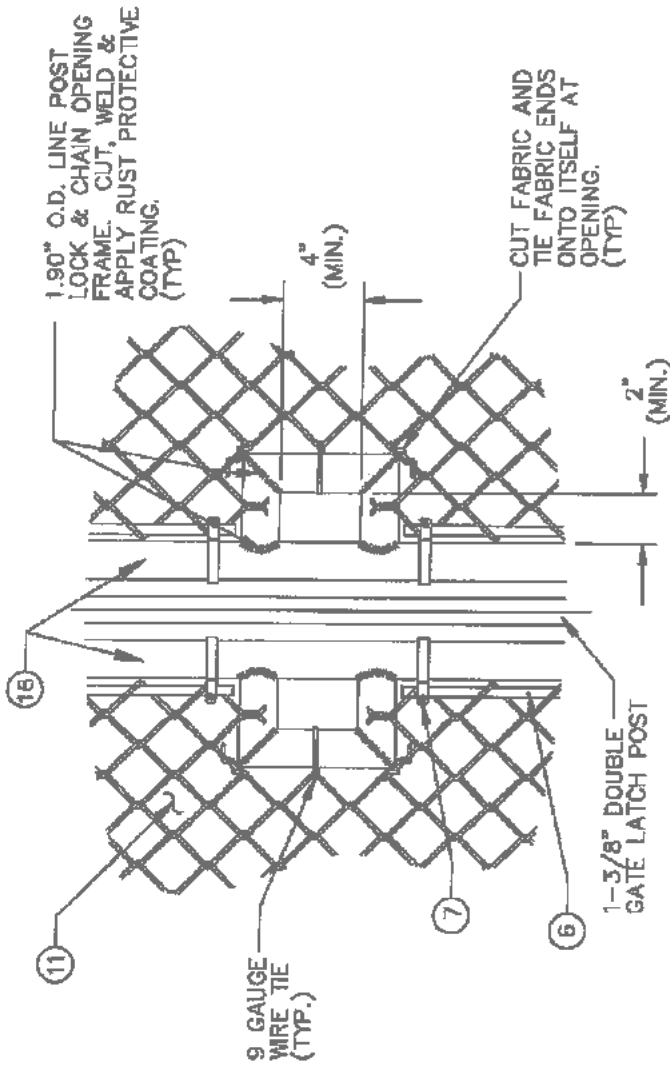
EQUIPMENT RACK NOTES:

1. EXTEND ELECTRICAL RACK AS NEEDED FOR CASS ENCLOSURES.
2. PROVIDE 24X36X12" NEMA 12 WHITE ENCLOSURE FOR FUTURE CASS CONTROLLER.
3. PROVIDE 24X36X12" NEMA 12 WHITE ENCLOSURE FOR FUTURE FIBER OPTIC CONNECTION.
4. PROVIDE 1" EMPTY CONDUIT WITH PULL STRING TO GATE OPERATOR
5. PROVIDE 2-1" EMPTY CONDUITS WITH PULL STRINGS FOR FUTURE CCTV CAMERAS. SEE PLAN FOR STUB OUT LOCATION.
6. PROVIDE 2" EMPTY CONDUIT FOR FUTURE FIBER OPTIC FEED.

NOTE:

THESE DRAWINGS ARE PREPARED AS SUPPLEMENTAL TO TYPICAL FOUNDATION AND PILING INSTALLATIONS THROUGHOUT THE TAA FACILITY. IT IS THE CONSULTANT'S AND/OR CONTRACTOR'S RESPONSIBILITY TO INVESTIGATE ALL FIELD CONDITIONS, VERIFY ALL DIMENSIONS AND MATERIALS, DETERMINE THE APPLICABILITY OF THESE DRAWINGS THROUGHOUT THE ENTIRE SITE, AND TO NOTIFY THE DESIGNER OR THE AUTHORITY OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL MAKE SURE THAT ALL INSTALLATIONS FOR THE FOUNDATIONAL PILING TO CONSTRUCTION. THE CONTRACTOR SHALL MAKE SURE THESE DIMENSIONS TO MEET AS-BUILT CONDITIONS AND ANY VARIATIONS CONDUCTED DURING CONSTRUCTION, AND SHALL SUBMIT THESE APPROVED DIMENSIONS TO THE AUTHORITY.

PLANNING AND ENGINEERING		PA Drawing # B-01
PROJECT: CASS ENCLOSURE	DATE: 04/20/18	
APP. LB	APPROVED BY	Sheet 20 of 22



NOTE:
FABRICATE GATE WITH CENTER OF LOCK AND CHAIN OPENING
APPROXIMATELY 4' ABOVE FINISHED GRADE MEASURED AT CENTER
OF CLOSED GATE. WHEN COMPLETED GATE IS INSTALLED ON SITE.

(21) LOCK & CHAIN DETAIL
DRAWING NOT TO SCALE

NOTE:

THESE DRAWINGS ARE PROVIDED AS SYNTHETIC GUIDES TO FACILITATE FORWARD GATE AND FINISHING INSTALLATIONS THROUGHOUT THE PROJECT. IT IS THE CONSULTANT'S AND/OR CONTRACTOR'S RESPONSIBILITY TO INVESTIGATE ALL FIELD CONDITIONS, VERIFY ALL DIMENSIONS AND MATERIALS, DETERMINE THE APPLICABILITY OF THESE DRAWINGS TO THE SPECIFIC SITE CONDITIONS, AND TO NOTIFY THE DESIGNER OF THE AUTHORITY OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE SHOP DRAWINGS OF ALL INSTALLATIONS FOR THE ARCHITECT'S REVIEW PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL AMEND THESE DRAWINGS TO REFLECT AS-BUILT CONDITIONS AND ANY ALTERATIONS CONTRACTED DURING CONSTRUCTION, AND SHALL SUBMIT THESE AMENDED DRAWINGS TO THE AUTHORITY.

PLANNING AND ENGINEERING

301 Dwyer

AVENUE

PROJECT:
LOCK & CHAIN DETAIL

DATE: 04/20/18

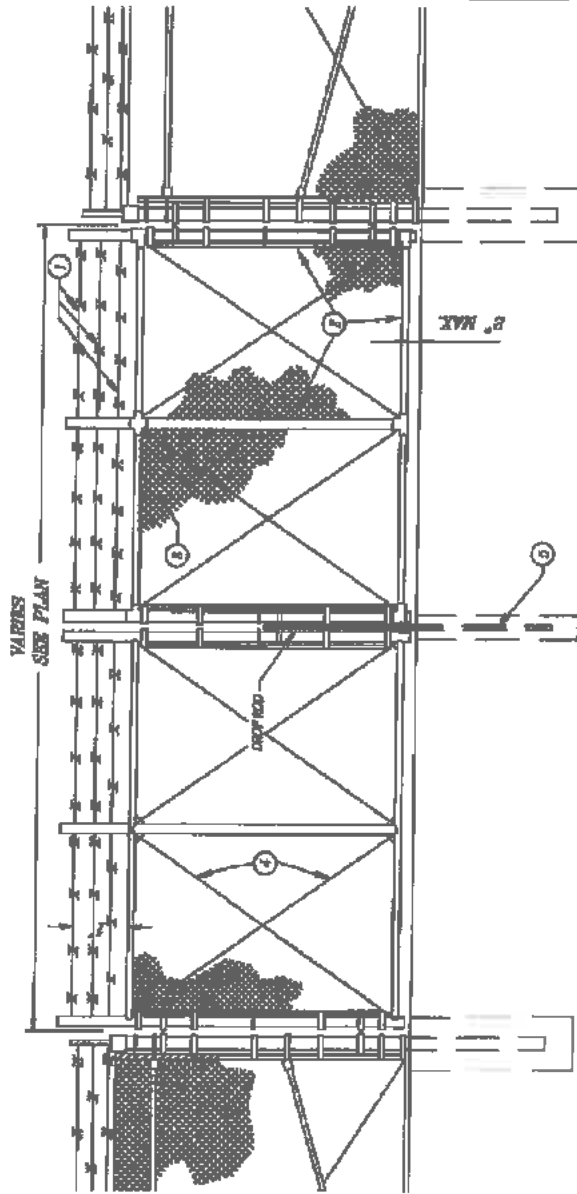


DR 10 APPROVED BY: 109

Sheet 21 of 22

FENCE KEY NOTES:

1. 3 STRANDS OF 12 1/2 GAUGE BARBED WIRE WITH 14 GAUGE BARBS, SPACED 4" APART.
2. 1.90" O.D. LINE POST; TYP
3. 9 GAUGE, 2" FABRIC, TYP.
4. 3/8" Ø TRUSS RODS, TYP.
5. DROP ROD FOUNDATION WITH APPROPRIATE SIZED PIPE TO RECEIVE CENTER DROP ROD.



NOTE: ALL EXPOSED MATERIAL AND FITTINGS SHALL BE HOT DIPPED GALVANIZED. ALL FIELD WEBS SHALL BE FIELD GALVANIZED.

22 SWING GATE DETAIL
DRAWING NOT TO SCALE

NOTE: THESE DRAWINGS ARE PROVIDED AS SCHEMATIC GUIDES TO TRUCK, POWERED GATE AND TRUCKING REGULATIONS THROUGHOUT THE TIA FACILITY. IT IS THE CONTRACTOR'S AND/OR CONTRACTOR'S RESPONSIBILITY TO INVESTIGATE ALL LOCAL CONDITIONS, VERIFY ALL CLEARANCES AND LAZARETS, DETERMINE THE ATTITUDE OF THESE DRAWINGS TOWARD STRUCTURAL CONDITIONS, AND TO NOTIFY THE DESIGNER OR THE AUTHORITY OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE SPOKE REINFORCEMENT OF ALL STRUCTURES FOR TIA REINFORCEMENT. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL ADEQUATELY THESE DRAWINGS TO NEGOTIATE ASSUMPTIONS AND ANY ADJUSTMENTS CONDUCTED DURING CONSTRUCTION, AND SHALL SUBMIT THESE ANNOTATED DRAWINGS TO THE AUTHORITY.

PLANNING AND ENGINEERING		DATE: 04/02/10
PROJECT: SEWAGE TREATMENT		DATE: 04/02/10
DRAWING NO.:		DATE: 04/02/10
APPROVED BY:		DATE: 04/02/10
DRAWN BY:		DATE: 04/02/10
CHECKED BY:		DATE: 04/02/10
SCALE:		DATE: 04/02/10
SHEET NO.:		DATE: 04/02/10
SHEET TOTAL:		DATE: 04/02/10



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