CHAPTER SIX
Automatic Gates

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Purpose:
Emergency responders need dependable access through gates to deliver prompt service. Design of access needs to be uniform.
VEHICLE ACCESS GATE
PERMITS AND PLAN GUIDELINES

1. In addition to the Northwest Fire District gate permit, **A SEPARATE BUILDING DEPARTMENT PERMIT IS REQUIRED** for automatic gates. Obtain the permit at the appropriate Building Department, Pima County or Town of Marana. Stamped, approved plans must be on site for all inspections.

2. Electrical inspections and approval must be obtained prior to the final fire inspection.

3. Submit **two** (2) sets of plans along with a completed permit application for review to the appropriate location:
   
   a. Pima County projects: Northwest Fire District Admin Offices
      5225 West Massingale Drive
   
   b. Town of Marana projects: 11555 West Civic Center Drive

**In addition to specific requirements detailed in this guide, site plans shall include the following information:**

- Name and address of the installing contractor.
  - New contractors will need to supply the following:
    - Arizona Contractor’s C-11 or CR-11 license(s)
- Project location including address and suite numbers, if applicable
- Orientation to streets, buildings and property lines
- Scale of drawing with a graphic representation of the scale
- Point of compass
- Number of gates to be installed and their locations
VEHICLE ACCESS GATE REQUIREMENTS

1. All clear openings as shown on plans shall be a minimum 20 feet clear width for ENTRANCE and 16 feet clear width or larger on all EXIT drives.

2. Turning radius shall comply with AASHTO WB-40 turning radius requirements.

3. An approved KNOX KEY SWITCH SERIES #3500 shall be used for 24-hour Fire Department access. See Chapter 4-1 for Knox ordering details. The emergency key switch, when activated, shall by-pass any occupant control and loop systems. When activated, the gate will remain in the open position until de-activated by the Fire Department. Only when deactivated will the gate resume normal operation.

4. The Knox key switch shall open both the entrance and exit gate(s) within 15 seconds when gate(s) are in close proximity to each other. Gates shall remain in the open position until closed by operation of the electrical control device.

5. The Knox key switch shall be mounted at five and one-half (5½) feet from grade (location shown on plan) on ENTRANCE and EXIT side of gate.

6. The Knox key switch shall be located below and within twelve (12) inches of a sign labeled “FD ACCESS”.

7. Preemption devices shall be installed on all automatic gates including single-family gated communities containing five or more homes and all multi-family gated communities, per Northwest Fire District installation requirements outlined in this chapter.

8. Gate operator(s) shall open at a rate of one foot per second. Parking barrier arms will open or clear in approximately two seconds. Gates are to remain open for a minimum of 30 minutes following preemption device activation.

9. Automatic gate operator(s) and/or parking barrier arm(s) shall be equipped with battery backup on ENTRANCE and EXIT gates.

10. Residential/multifamily gates will open on battery backup during loss of power and remain open until the power is restored (fail safe).

11. Commercial/industrial properties remain closed until the emergency gate switch is activated, then open on battery backup (fail secure).

12. Electric gate operators shall be listed in accordance with UL325 (Standard for Door, Drapery, Gate, Louver and Window Operators and Systems). Gates intended for automatic operation shall be designed, constructed and installed to comply with requirements of ASTM F 2200 (Standard Specifications for Automatic Vehicular Gate Construction).

Gate installations and modifications shall be subject to final fire inspection and approval.

ELECTRICAL INSPECTION and APPROVAL
must be obtained from the appropriate Building Safety Division
(Town of Marana or Pima County)
prior to Northwest Fire District final inspection.
All electric gates shall be equipped with or have installed, approved preemptive control opening equipment and a key switch compatible with the Fire District’s existing system in compliance with the 2012 International Fire Code as adopted and amended by the Northwest Fire District. D103.5.

Minimum Standards for Installation

• Detectors shall be mounted eight (8) to ten (10) feet from grade
• Detectors shall be located behind the access gate (property side)
• Detectors shall be mounted on a 4x4 inch metal post, not on guidepost
• Post shall be cemented 18 inches below grade
• Detectors shall activate 150 feet from gate
• Each gate shall have two approved individual Tomar detectors or an approved Tomar Dual Strobe switch, model 2795-2 or equivalent. Exit gates are permitted to open with an approved approach sensor or weight sensor in lieu of preemption devices installed on the egress side.
• Detectors shall point toward the APPROACH and EXIT path of the emergency vehicle
• Detectors’ sight path shall be free of visual obstructions such as signs, covered parking canopies, and vegetation
• Individual detectors shall be mounted together with the power module in a dual detector mounting box, or with an approved Tomar Dual Strobe switch, model 2795-2 or equivalent
• An approved KNOX KEY SWITCH SERIES #3500 shall be provided as a manual backup. See Chapter 4-1 for Knox ordering information.
• The entrance Knox switch shall be located above the keypad, where applicable, at 5½ feet above grade, with the detectors
ITEMS TO BE COORDINATED WITH GATE COMPANY

1. A dedicated 15-AMP circuit breaker must be provided for each gate motor. (It is recommended to use a 20-AMP circuit breaker.)

2. 110-volt power must be provided to gate motors.
   a. Exception: Gate operators that run on low voltage or solar power.

3. A minimum ½ inch conduit shall be provided for:
   a. Service meter (electrical panel to master operator)
   b. Master operator to the slave operator, if applicable
   c. Closest operator to the preemption detectors
   d. Closest operator to Site Directory
   e. Telephone line
   f. (¾ inch or larger conduit is recommended for best results)

4. It is recommended to run two conduits to each device. When low voltage and 110-volt are run in the same conduit (even with properly rated wire) it can cause cross talk, static and/or malfunction could occur.

5. Bury conduit a minimum of 24 inches under driveways and 18 inches in landscaped areas.

6. No landscaping shall obstruct the sight path of preemption detectors.

Remember that these strict guidelines have been developed to protect the public (your customer) from unreliable installations, and above all, emergency response delays.
ELECTRICAL REQUIREMENTS FOR NEW GATED COMMUNITIES

1. The Electrical Site Plan must show:
   a. An individual branch circuit of a minimum 15-ampere and raceway of a minimum 1/2 inch serving each automatic gate. (20 ampere and 3/4 inches or larger raceway/conduit is recommended.)
   b. The service equipment location and/or panel board location.
   c. The panel board schedule and new and/or revised load calculations.
   d. The location of the automatic gate operator(s), control equipment and actuation devices.

2. A separate electrical permit shall be obtained for each automatic gate through the Town of Marana or Pima County unless the vehicle gate(s) are shown on the scope of work for another permit. If the gates are included in another permit, make sure the gates are scheduled for a final electrical inspection before that permit is closed out.

3. Have conduit depth inspected for the gate operators, preemption detectors, resident keypad and Knox Key Switches. Obtain an inspection for Electrical Underground for the gate that reads, “Pass for Gate/s”. Marking on the plans will not be accepted by the Fire Department. Without this, when the electrical final is done, the conduits will need to be re-exposed.

4. Have final electrical inspection for gates. Inspection final must read “Final Electrical for Gates”. Marking this on the plans will not be accepted by the Fire District. A passed final inspection must be obtained before the gate company can call for a Fire District Inspection.

5. Items that will be inspected for electrical final:
   a. Electrical Underground for Gate
   b. Final Electrical Inspection for Gate
   c. Proper Grounding
   d. 110-volt connections
   e. Disconnect provided within site (NEC 2005, Sec. 430 – 101, 102)
NOTES:

1. Detectors shall be mounted on 4x4 inch post 8 feet to 10 feet above finished final grade.

2. Fire Department approved Tomar Dual Strobe Switch detector model #2795-2 or equivalent.

3. Fire Department approved KNOX KEY SWITCH #3500 series flush mounted in 4x4 inch post. See Chapter 4-1 for Knox ordering information.
TYPICAL ENTRANCE TO MULTIPLE RESIDENTIAL COMMUNITIES WITH AUTOMATIC GATES

See Chapter 3-7 for sign detail
NOTES:

1. Detectors shall be mounted eight (8) to ten (10) feet from grade on a 4x4 inch metal post. No mirrors shall substitute the requirements of two detectors per gate.

2. Detectors shall point toward the approach path and exit path of the emergency vehicles. Detectors must activate 150 feet from gate.

3. The power module shall be mounted in an electrical junction box, under the detectors on the same 4x4 inch metal post.

4. The 4x4 inch square post with detector and power module shall be installed on the property side of the gate. (Not on guide post)

5. An approved KNOX KEY SWITCH SERIES #3500 shall be installed on the entrance side of access gate. Entrance switch shall be located above the key pad, if applicable, at 5½ feet from grade. See Chapter 4-1 for Knox ordering information.
TOMAR PREEMPTION DETECTOR
MODEL 1790-1014
(or equivalent)
NOTE:
1. Three heads are required with 90 degree turning layouts.
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APPROVED AUTOMATIC FIRE DEPARTMENT ACCESS GATE
PREEMPTION DETECTORS WITH KNOX KEY SWITCHES

NOTES:

1. Each automatic gate shall have two detectors.
2. Detectors shall be mounted eight (8) to ten (10) feet from grade on a 4x4 inch metal post. No mirrors shall substitute the requirements of two detectors per gate.
3. Detectors shall point toward the approach path and exit path of emergency vehicles.
4. Detectors must activate within 150 feet from gate.
5. The power module shall be mounted in an electrical junction box, under the detectors on the same 4x4 inch metal post.
6. The 4x4 inch square post with detector and power module shall be installed on the property side of the gate, not on guidepost.
7. An approved emergency KNOX KEY SWITCH SERIES #3500 shall be installed on the entrance access gate. Switch shall be located 5½ feet above grade recessed in the 4x4 inch post with dual detectors and power module unit. See Chapter 4-1 for Knox ordering information.
SPECIAL APPLICATION FOR RETROFITTING WITH PREEMPTION

NOTES:

1. Each automatic gate shall have two detectors.
2. Detectors shall be mounted eight (8) to ten (10) feet above finish final grade on a 4x4 inch metal post. Detectors shall be on separate post, not on guide post.
3. Detectors shall point toward the approach path and exit path of the emergency vehicles.
4. Detectors must activate within 150 feet from gate.
5. The power module shall be mounted in an electrical junction box, under the detectors on the same 4x4 metal post.
6. The 4x4 square post with detector and power module shall be installed on the property side of the gate. An approved KNOX KEY SWITCH SERIES #3500 shall be installed on the entrance access gate. Entrance switch shall be located above the key pad, if applicable, at 5 ½ feet from grade. See Chapter 4-1 for Knox ordering information.
RETROFITTING EXISTING PROPERTY AUTOMATIC GATE AND GATE PULLOUT LANE PLUS PREEMPTION DETECTORS

NOTES:

1. Provide an approved KNOX KEY SWITCH SERIES #3500 on guest key pad pedestal at the entrance and Knox key switch on preemption post on property side both installed 5 ½ feet above finished final grade. See Chapter 4-1 for Knox ordering information.

2. The minimum overall width of the gate opening shall be 20 feet. Notice: larger openings are preferred, if possible.
NOTES:

1. Gate release pump to be accessible from both sides of gate, three (3) feet from gate.

2. Lock cabinet doors with an approved KNOX PADLOCK SERIES #3770, one for each door. See Chapter 4-1 for Knox ordering information.

3. Locate emergency gate release sign above pump box, on both sides of gate.

4. Locate pump sign on inside of pump box doors.

5. For residential properties – an approved KNOX KEY SWITCH SERIES #3500 shall be located on a pedestal above tenant key pad. See Chapter 4-1 for Knox ordering information.

6. The minimum overall width of the gate opening shall be 20 feet.
ENTRANCE ISLAND DETAILS TO RESIDENTIAL COMMUNITY WITH AUTOMATIC GATES

See Chapter 3-7 for sign detail
See Chapter 4-1 for Knox ordering information
SPECIAL FIRE DEPARTMENT ACCESS SIGN
SPECIAL APPLICATION

NOTES:
1. The sign plate shall be 24x18 inches with a thickness of .080 aluminum construction and 1½ inch radius corners.

2. Font style is Handel Gothic capital fonts.

3. The sign face shall have a white 3M diamond-grade reflective sheeting (3990 series VIP type IX) applied as a background.

4. Lettering/Graphics shall be one of the following:
   a. 3M Scotchlite electronic transparent cutable film (1170 series) inverse cut to allow white reflective background to show through lettering.
   b. Screen printed using 3M 8801 series red translucent ink.
   c. Both processes (a or b) will accomplish a red field with white copy.

5. The sign shall identify the correct lane for Fire Department emergency access at restricted gate locations.
PREEMPTION DUAL STROBE SWITCH DETECTOR PLACEMENT

TOMAR ELECTRONICS, INC,
MODEL 2795-2
DUAL STROBESWITCH DETECTOR
STROBESWITCH is a compact low cost detector, which recognizes a coded strobelight signal from special emitters mounted on fire vehicles and ambulances. The system provides an output activation of the emergency access switch. In the Northwest Fire District approved configuration, two detectors are used – one to sense entering emergency vehicles and another to facilitate quick exit. Both detectors are mounted on a rugged weatherproof power module that contains all additional processing circuitry. The assembly provides a dry relay closure signal to the gate operator, and requires only 24 VAC input power to operate.

HOW IT WORKS:

The emergency vehicle uses a special strobe light to transmit a continuously flashing optical signal. The TOMAR Model 2795-2 STROBESWITCH receives this signal, and if the signal format is correct, activates a relay. The relay contacts may be used to control security gates, Fire Department garage doors, and other devices. Signaling is optical by line-of-sight, and the 2795-2 can operate indoors or outdoors, in bright sunlight, or in any weather. The unit is not susceptible to radio frequency interference, and uses digital frequency discrimination to reject unwanted signals, such as flashlights, emergency vehicle lighting systems, flashing signs, etc.

AVAILABLE FROM:

Any authorized gate company licensed by the Arizona Registrar of Contractors as L-5 or C-5 License. Conduct an internet search for Gates & Operating Devices.