OPERATOR & ELECTRONICS DIVISION
DASMA TECHNICAL DATA SHEET
#370

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Rationale Behind the Provisions of ASTM F 2200
&
Illustration Guidelines Based on the Provisions of ASTM F 2200

(AFA Reference #G-125A)
(NOMMA Reference #325-003-2000)

DASMA, in cooperation with the American Fence Association (AFA) and the National Ornamental & Miscellaneous Metals Association (NOMMA), has developed a rationale document along with illustration guidelines to help clarify key provisions of ASTM F 2200, *Standard for Automated Vehicular Gate Construction.* The three organizations agree that further explanations through text and graphics will help show their intentions as ASTM F 2200 was being developed. The headings that appear in the rationale document refer to the corresponding sections of ASTM F 2200.

Please note:

- The rationale document and the illustration guidelines are not considered a part of ASTM F 2200.
- The illustration guidelines are for illustration purposes only and are not intended as a limitation or sole example of how to comply with the intent of the guidelines.

NOTE: This document is not considered a part of ASTM F2200-02.

R 1. SCOPE

The standard has been developed to allow both performance-based and prescriptive-based methods. The standard provides gate designers/constructors/installers with pertinent requirements on how to build certain aspects of gates and pertinent requirements on meeting certain objectives in order to achieve safe operation of automated vehicular gates. Common gate types, which are based on descriptions found in UL 325, have been included. The scope mentions gate types not included in the standard to promote safe operation for such gates.

R 2. REFERENCED DOCUMENTS

ASTM F 2200 has been harmonized with ASTM gate construction standards for swing gates and slide gates. Automation of vehicular gates was outside the scope of those standards. The requirements for barbed tape are intended to be consistent with the ASTM practice for the installation of barbed tape. ASTM F 2200 has been harmonized with ANSI/UL 325, the standard governing gate operators. Various instructional requirements in ANSI/UL 325 have been incorporated into ASTM F 2200.

R 3. TERMINOLOGY

Many of the definitions have been extracted directly from ANSI/UL 325. Other gate related definitions are based on commonly accepted definitions within the gate industry. The definition for vehicular overhead pivot gates is based on a similar definition for vehicular overhead-type garage doors.

R 4. GENERAL REQUIREMENTS

R 4.1 Gates have been divided into five basic designs of construction: horizontal slide, horizontal swing, vertical lift, vertical pivot and overhead pivot. These designs are considered to be the most common types being installed in the U.S. Each specific design shall be constructed and installed to conform to requirements that are unique to each particular gate type.

R 4.2 All vehicular gate designs shall be constructed and installed with designs such that the gate cannot fall over more than 45 degrees from the vertical plane if detached from the gates supporting hardware, to prevent injury during service or in case of support failure. These designs can be

accomplished by installing support posts, brackets, cables, chains or other devices that would hold or support the gate should it become detached from its supporting hardware.

R 4.3 All gate designs shall have smooth bottom surfaces and be free of any protrusions that can cut, scrape, puncture and, in general, injure a person when the gate is moving. Any exclusions or exceptions to this requirement are covered under Section 4.8.

R 4.4 Barbed tape by its very design is intended to be a hazardous material upon contact with persons, but it may become unnecessarily hazardous to persons in the vicinity of a moving gate. If barbed tape is installed on a gate at eight feet or higher above grade, unintended injury is much less likely to occur.

R 4.5 Barbed wire by its very design is intended to be a hazardous material upon contact with persons, but it may become unnecessarily hazardous to persons in the vicinity of a moving gate. If barbed wire is installed on a gate at six feet or higher above grade, unintended injury is much less likely to occur.

R 4.6 Gate latches for manual gates are designed only for padlocks and chain locks. When a gate is automated, any manual gate latch would become a hazardous protrusion and should be removed prior to automation of the gate.

R 4.7 A manual gate latch is not designed for an automated gate. When required, a safe design receiver guide should be installed in lieu of a gate catch.

R 4.8 Protrusions on any gate design are hazardous and are not permitted on any gate that will be automated. Any exceptions to this requirement are covered in Sections 4.8.1 through 4.8.9.

> **R 4.8.1** The bottom edge of any automated gate shall be free of any protrusions other than hardware such as fasteners, bolts, etc. Such hardware must not project greater than ½" and must be smooth on all surfaces, with no sharp edges, to prevent injuries such as cutting, scraping, or other similar.
>
> **R 4.8.2** Gate edge sensors, and safety devices in general, are not protrusions as defined in this standard.
>
> **R 4.8.3** Horizontal slide gates often require hardware, such as bolts, which extend through the leading and trailing edges of the gate. These are not considered protrusions as long as they do not exceed ½ inch and have smooth surfaces free of any sharp cutting edges.

R 4.8.4 Decorative designs such as pickets, scrolls, etc., shall not be considered protrusions on horizontal slide or swing gates provided they do not extend outside the vertical plane.

R 4.8.5 Gate locks are not considered protrusions, as long as the gate lock cross sectional area that could contact an individual is less than 9 square inches. Guide wheels for horizontal slide roll gates are not considered protrusions. The guide wheels are considered required hardware. However, all V-grooved rollers must be guarded. Positive stops that are required on all horizontal slide gates are not considered protrusions; however, positive stops should be installed at the top of the gate when possible.

R 4.8.6 It is common for Class IV gates, which are designed for prisons, jails and military installations, to have a bottom lip or guide that extends below the bottom horizontal edge and usually slides through or along a gate guide embedment. This lip or guide is not considered a protrusion.

R 4.8.7 Since vertical lift gates move upward in a vertical plane, gate locks, top pickets and decorative designs are not considered protrusions

R 4.8.8 Positive stops located at the top of a vertical lift gate shall not be considered a protrusion.

R 4.8.9 A gate lock normally installed or mounted on the bottom horizontal edge of a vertical pivot gate shall not be considered a protrusion.

R 4.9 Gates should be installed to minimize unintentional movement that could cause injury or entrapment to an individual when the gate is disconnected from the operator.

R 5. SPECIFIC APPLICATIONS

R 5.1 Since this standard is written with the assumption that ANSI/UL 325 compliant gate operators will be installed on vehicular gates, existing gates that are to be automated may need to be upgraded.

R 5.2 Many of the risks posed by operation of an automated gate do not exist when someone moves a non-automated gate; therefore, standards for non-automated gates that will not be automated are best handled by a separate standard. Pedestrian gates have means-of-egress related requirements that vehicular gates do not have, and are therefore best handled by a separate standard.

R 5.3 Since the assumption should be made that an existing gate operator will be replaced with an operator that is compliant with ANSI/UL 325, existing gates should be upgraded as needed.

R 6. VEHICULAR HORIZONTAL SLIDE GATES

R 6.1 Classes I, II and III could be combined because of the common aspect of prioritizing safety over security based on their respective applications.

R 6.1.1 The eight foot parameter was chosen because any roller above this level could not present a hazard to a person using the gate, but rollers below this level need to be guarded so that persons could not come into direct contact with exposed rollers or bearings. The words "weight bearing" are used so as to provide some separation between rollers that can cause a "crushing" action against those rollers that can cause only a "pinch" action.

R 6.1.2 This section was written to be in harmony with the ANSI/UL 325 standard.

R 6.1.3 This section was written to provide a standard for gate openings above the 48-inch height, which is not addressed in the ANSI/UL 325 standard. Four inches was chosen to be in harmony with standards for railings.

R 6.1.4 Information taken between 1985 and 2001 from the National Electronic Information Surveillance System published by the CPSC indicates that persons riding a horizontal slide gate while the gate was opening have had their head or body pulled into a gap between the moving gate panel and the support structure and subsequently suffered serious head or chest injuries or death by asphyxiation. The standard is intended to limit the gap in order to prevent or reduce the probability of the described occurrences from happening. The quantified limitation of the gap is consistent with the quantified limitation of guarding or screening of openings noted elsewhere in the standard.

R 6.1.5 A potential hazard can be created when a slide gate is opened or closed beyond its supporting hardware. If this were to occur, the gate could fall and possibly cause injury to persons in the area of the gate. Positive stops limit the lateral movement of the gate and prevent the gate from traveling beyond its design limit. The stops are to be installed at either

the top or bottom of the gate because these areas would allow the stops to perform their intended function while minimizing any risk of pinching or crushing.

R 6.1.6 Wind on a slide gate in operation can cause the gate to bend laterally beyond plumb during its travel from open to close. The lateral distance beyond plumb is a function of the gate surface area, gate length, gate construction, wind speed and wind direction, all of which are unpredictable and cannot be written into a standard.

R 6.1.6.1 A receiver guide mounted behind the leading edge of the receiver post in single gate applications eliminates the receiver guide protruding into the opening and thus eliminates the guide as a possible puncture hazard. A receiver guide mounted greater than 8 feet above grade is not considered a puncture hazard to people in the vicinity of the gate.

R 6.1.6.2 A receiver guide with greater than a 9 square inch cross-sectional area is not considered a puncture hazard to people in the vicinity of the gate.

R 6.2 Certain provisions that apply to Classes I, II and II gates are not applicable to Class IV gates because of the possibility of prioritizing security over safety in these applications.

R 7. VEHICULAR HORIZONTAL SWING GATES

R 7.1 Classes I, II and III could be combined because of the common aspect of prioritizing safety over security based on their respective applications.

R 7.1.1 A crushing or entrapment condition can be created with a fixed object and a gate moving in the direction of the fixed object. Exceptions are incorporated because ANSI/UL 325 allows for the installation of approved electronic devices to detect entrapment, or the potential thereof, as an alternative to the physical requirements.

R 7.1.1.1 This provision allows for the required hardware, such as hinges or rods, to be installed but restricts the physical area to prevent crushing or entrapment of an individual.

R 7.1.1.2 The established minimum distance requirement is to prevent entrapment between a fixed object such as a wall, fence, house, etc., and a gate in the open position.

R 7.2 No restrictions on this class of gate because of the security related applications under Class IV.

R 8. VEHICULAR VERTICAL LIFT GATES

R 8.1 The safety / protective issues addressed in Sections 8.1.1 through 8.1.4 apply to Classes I, II and III vehicular vertical lift gates as these Classes of gates are most likely to be encountered by the general public.

R 8.1.1 Guarding / screening of the portion of the gate and/or fence that is covered by movement of the gate during travel is desired to reduce the opportunity for injuries caused by an individual "reaching through" those areas.

R 8.1.2 Limiting the opening between a fixed, stationary object and any framing component of a moving gate is desired to reduce the likelihood that an individual can become entrapped between these surface areas.

R 8.1.3 Although a gate operating vertically may not pull a person into a gap between a moving gate panel and a supporting structure in a manner similar to that described in horizontal slide gate related incidents, such a gate should be designed to prevent an individual from having their head or body enter such a gap. Therefore, the quantified limitation is consistent with the quantified limitation used in conjunction with current standard spacing for railings contained in building codes.

R 8.1.4 A vertical lift gate shall have a means of preventing "overtravel" when moving toward the fully open position, thus avoiding the gate falling out of the guides.

R 8.2 Since Class IV gates are usually designed for prisons, jails and military installations, there may be specific security conditions at these sites that are prioritized over safety / protective issues.

R 9. VEHICULAR VERTICAL PIVOT GATES

R 9.1 The safety / protective issues addressed in Sections 9.1.1 through 9.1.4 apply to Classes I, II and III vehicular vertical pivot gates as these Classes of gates are most likely to be encountered by the general public.

R 9.1.1 Guarding / screening of the portion of the gate and/or fence that is covered by movement of the gate during travel is desired to reduce the opportunity for injuries caused by an individual "reaching through" those areas.

R 9.1.2 See R 8.1.3.

R 9.1.3 A vertical pivot gate shall have smooth surfaces on the bottom, top and side framing members and shall be free of any protrusions that can cut, scrape, puncture and, in general, injure a person when the gate is moving. Any exclusions or exceptions to this requirement are covered under Section 4.8.

R 9.1.4 A vertical pivot gate shall have sufficient lateral stability so as to be able to enter a receiver guide in the closed position to prevent someone from pushing the gate horizontally to enter.

R 9.2 Since Class IV gates are usually designed for prisons, jails and military installations, there may be specific security conditions at these sites that are prioritized over safety / protective issues.

R 10. VEHICULAR OVERHEAD PIVOT GATES

R 10.1 The safety / protective issues addressed in Sections 10.1.1 through 10.1.6 apply to Classes I, II and III vehicular overhead pivot gates as these Classes of gates are most likely to be encountered by the general public.

R 10.1.1 The eight foot parameter was chosen because any roller above this level could not present a hazard to a person using the gate, but rollers below this level need to be guarded so that persons could not come into direct contact with exposed rollers or bearings. The words "weight bearing" are used so as to provide some separation between rollers that can cause a "crushing" action against those rollers that can cause only a "pinch" action.

R 10.1.2 Guarding / screening of the portion of the gate and/or fence that is covered by movement of the gate during travel is desired to reduce the opportunity for injuries caused by an individual "reaching through" those areas.

R 10.1.3 See R 8.1.3.

R 10.1.4 An overhead pivot gate shall have smooth surfaces on the bottom, top and side framing members and shall be free of any protrusions that can cut, scrape, puncture and, in general, injure a person when the gate is moving. Any exclusions or exceptions to this requirement are covered under Section 4.8.

R 10.1.5 A potential hazard can be created when an overhead pivot gate is opened beyond its supporting hardware. If this were to occur, the gate could fall and possibly cause injury to

persons in the area of the gate. A positive stop can limit the lateral movement of the gate and prevent the gate from traveling beyond its design limit. The stop is to be installed at the top of the gate because this would allow the stop to perform its intended function while minimizing any risk of pinching or crushing.

R 10.1.6 The weight of an overhead pivot gate may cause serious injury to an individual if the gate should come loose and fall due to improper gate supporting mechanisms.

R 10.2 Since Class IV gates are usually designed for prisons, jails and military installations, there may be specific security conditions at these sites that are prioritized over safety / protective issues.

Illustration Guidelines

Dwg #	Gate Type	Description	ASTM F 2200 Section
1	General	Gate Fall Over	4.2
2	General	Gate Fall Over	4.2
3	General	Gate Fall Over	4.2
4	General	Bottom Edges	4.3
5	General	Minimum Height	4.4 and 4.5
6	General	Gate Edge Protrusions	4.8.3
7	Horizontal Slide	Guards/Covers	6.1.1
8	Horizontal Slide	Guards/Covers	6.1.1
9	Horizontal Slide	Screening	6.1.2
10	Horizontal Slide	Screening	6.1.2
11	Horizontal Slide	Screening	6.1.3
12	Horizontal Slide	Maximum Gap	6.1.4
13	Horizontal Slide	Positive Stops	6.1.5
14	Horizontal Slide	Receiver Guide, Single Panel	6.1.6.1
15	Horizontal Slide	Receiver Guide, Dual Panels	6.1.6.2
16	Horizontal Slide	Receiver Guide, Dual Panels	6.1.6.2
17	Horizontal Swing	Pivot Point	7.1.1.1
18	Horizontal Swing	Gate Clearance	7.1.1.2
19	Vertical Lift	Screening and Positive Stops	8.1.1 & 8.1.4
20	Vertical Pivot	Screening	9.1.1
21	Vertical Pivot	Screening	9.1.1

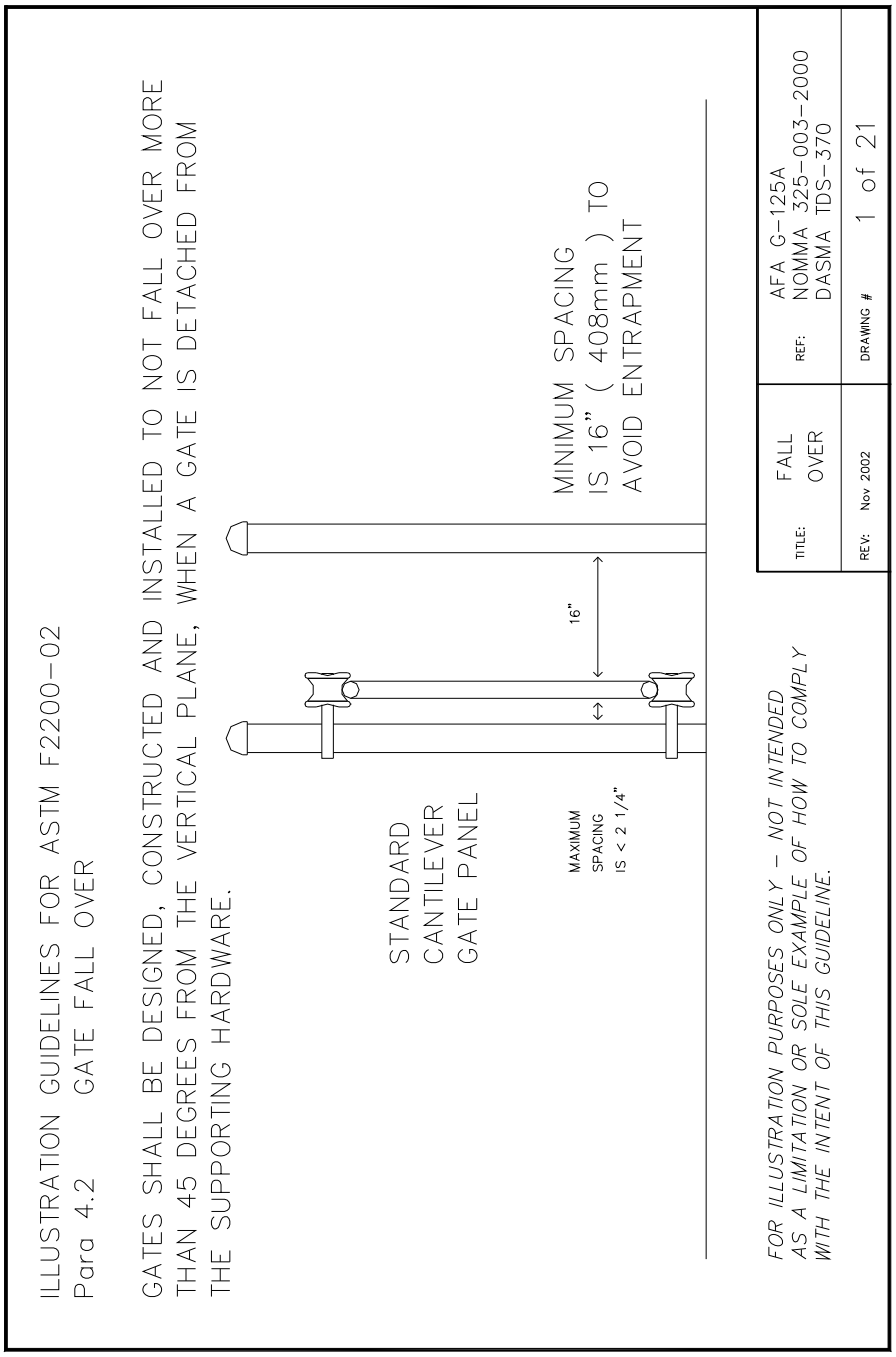

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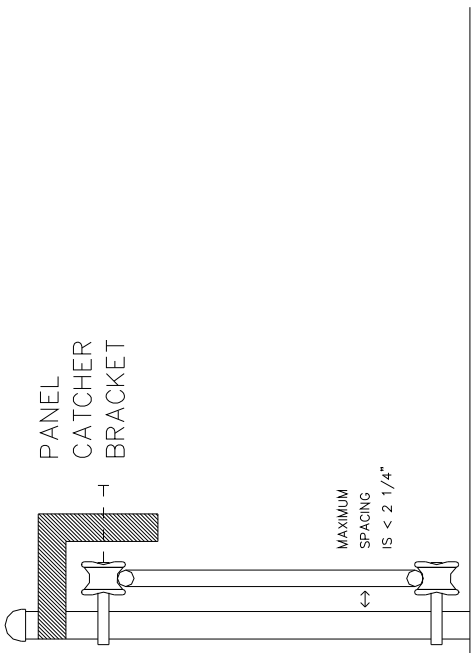
ILLUSTRATION GUIDELINES FOR ASTM F2200-02
Para 4.2 GATE FALL OVER

GATES SHALL BE DESIGNED, CONSTRUCTED AND INSTALLED TO NOT FALL OVER MORE THAN 45 DEGREES FROM THE VERTICAL PLANE, WHEN A GATE IS DETACHED FROM THE SUPPORTING HARDWARE.



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TITLE:	FALL OVER	REF:	AFA G-125A NOMMA 325-003-2000 DASMA TDS-370
REV:	Nov 2002	DRAWING #	2 of 21

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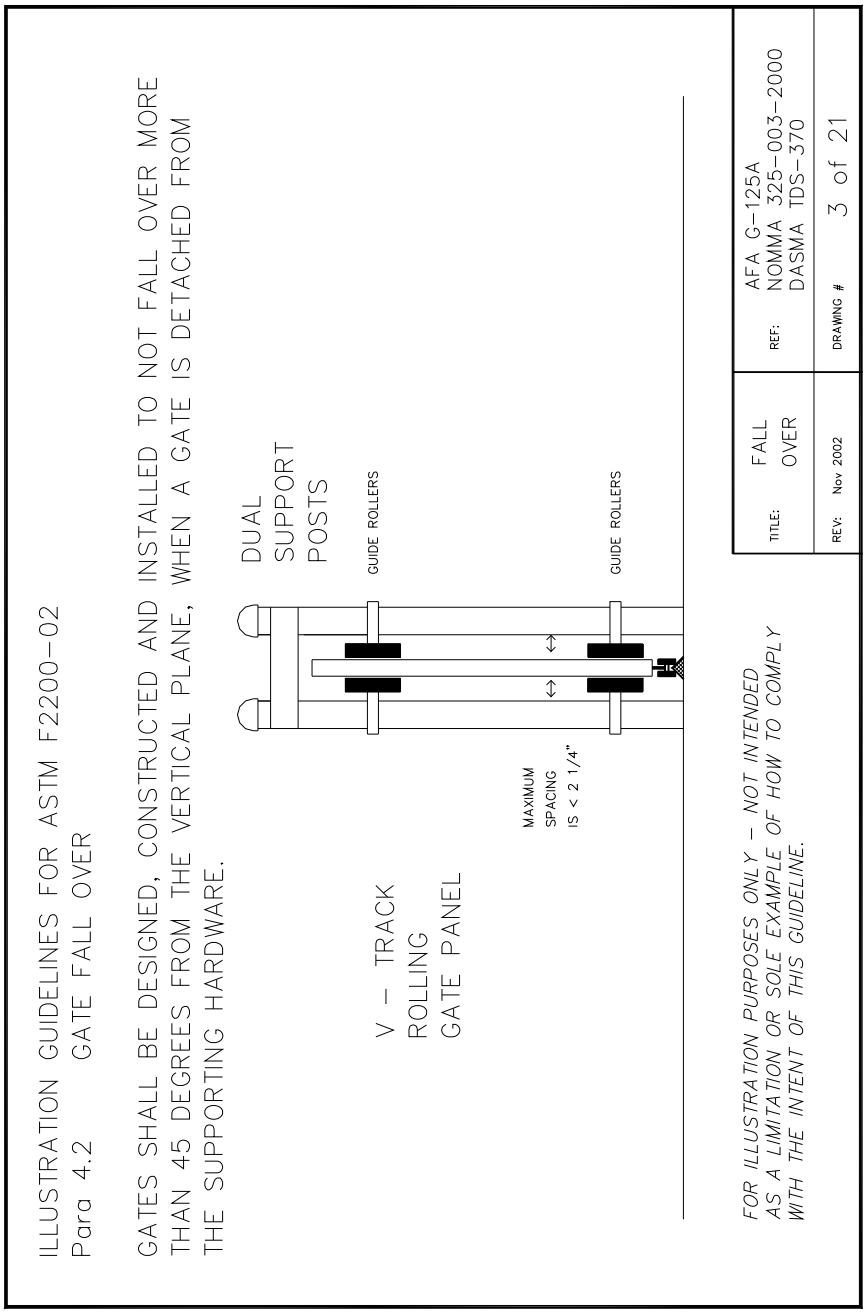

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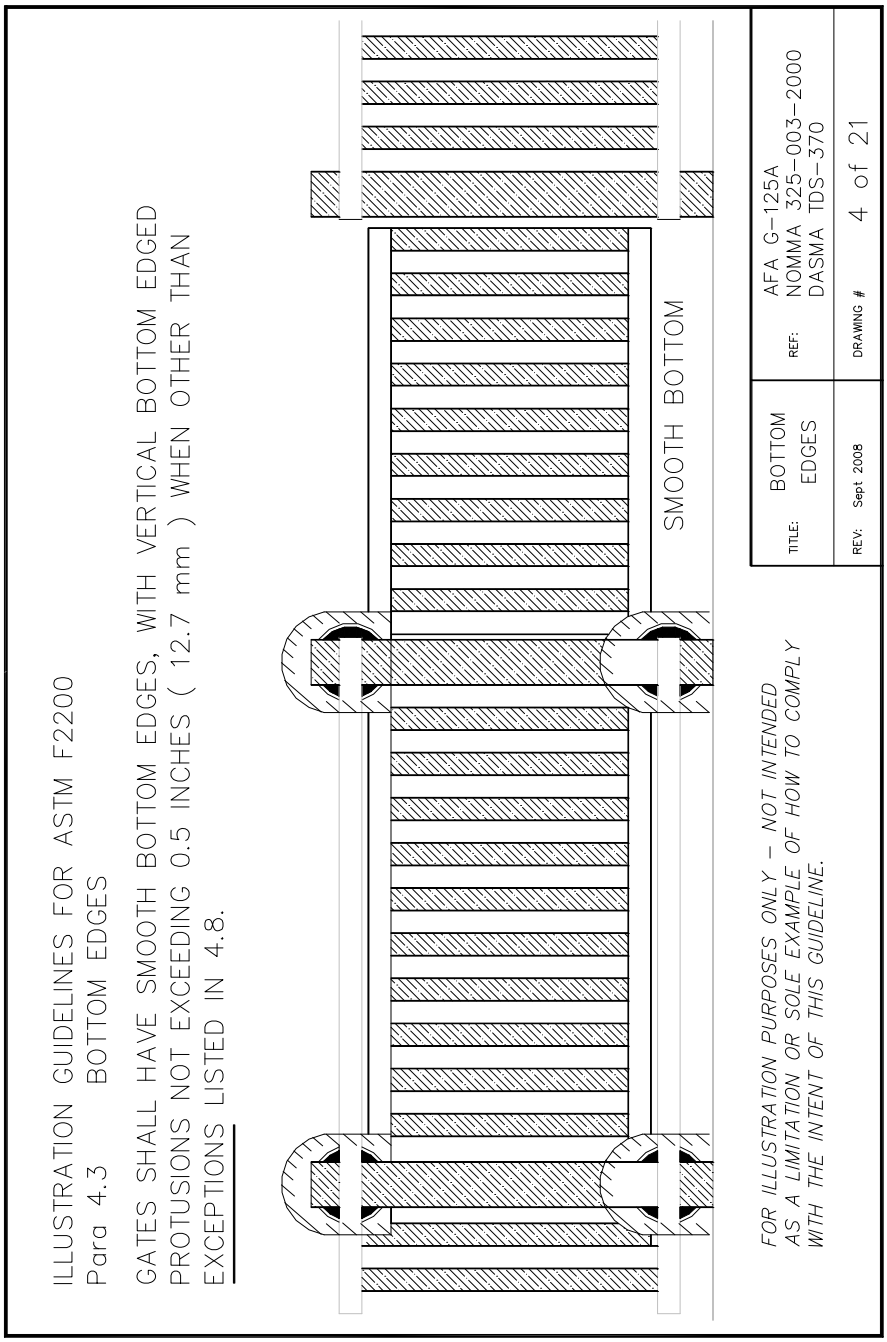

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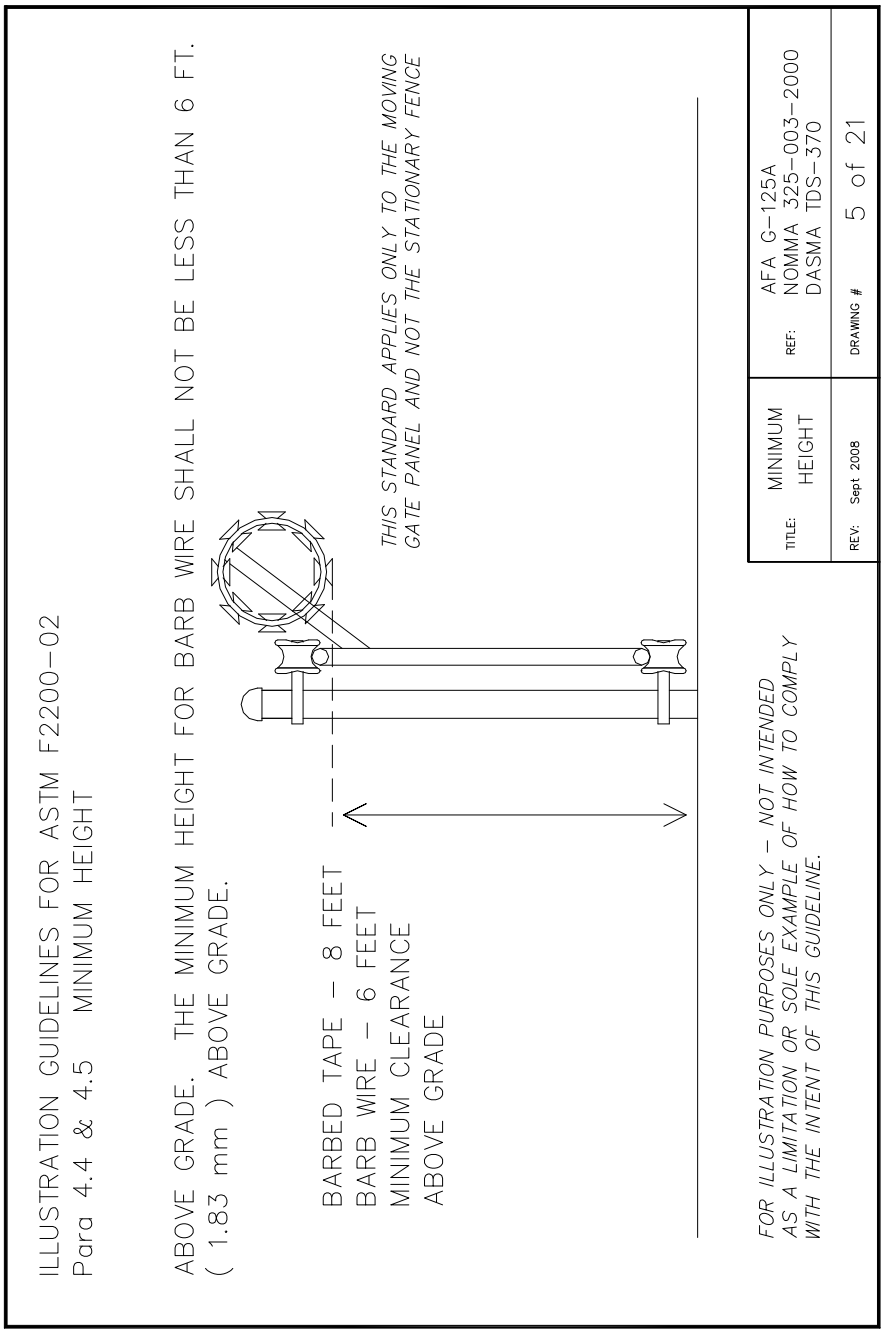

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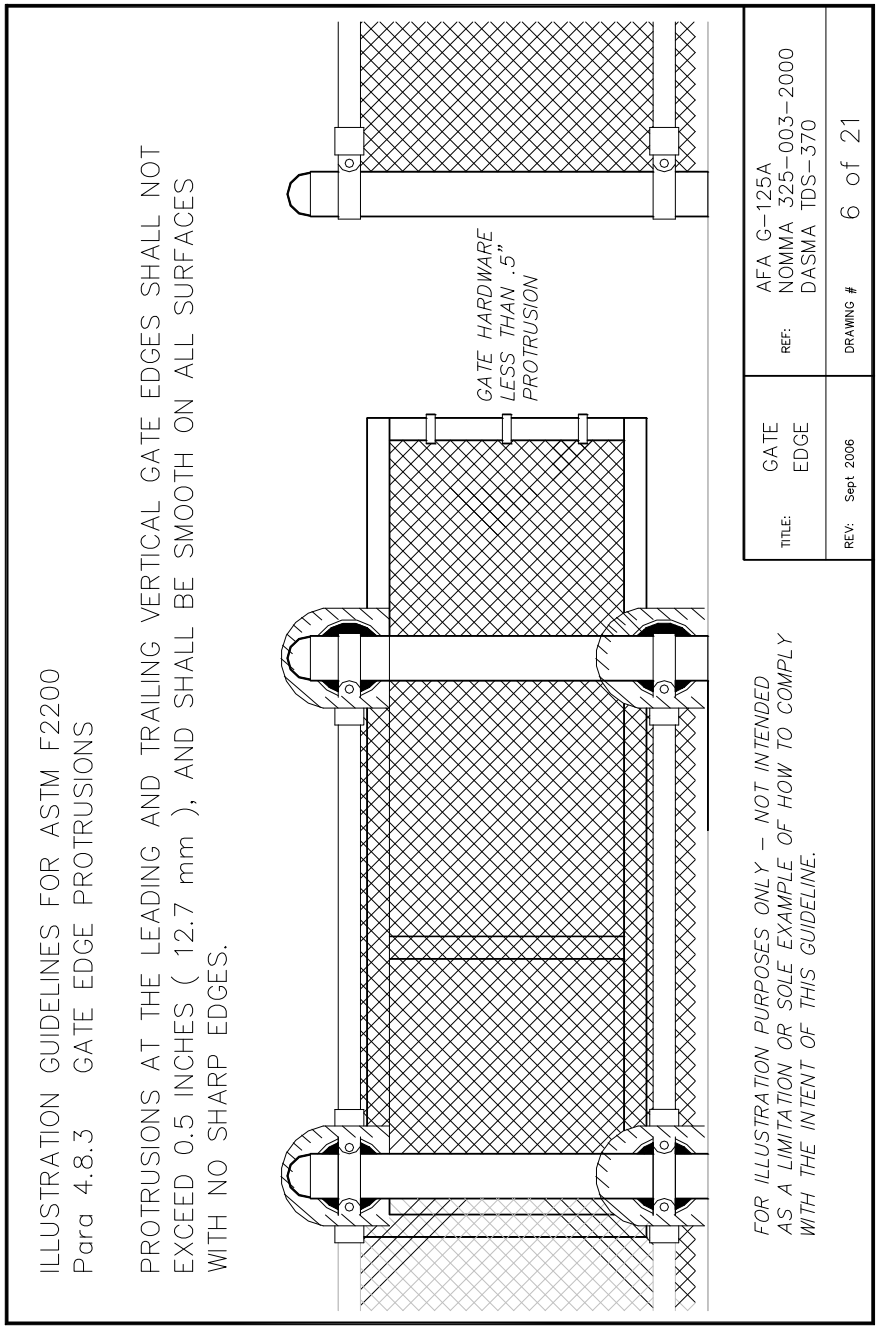

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TECHNICAL DATA SHEET

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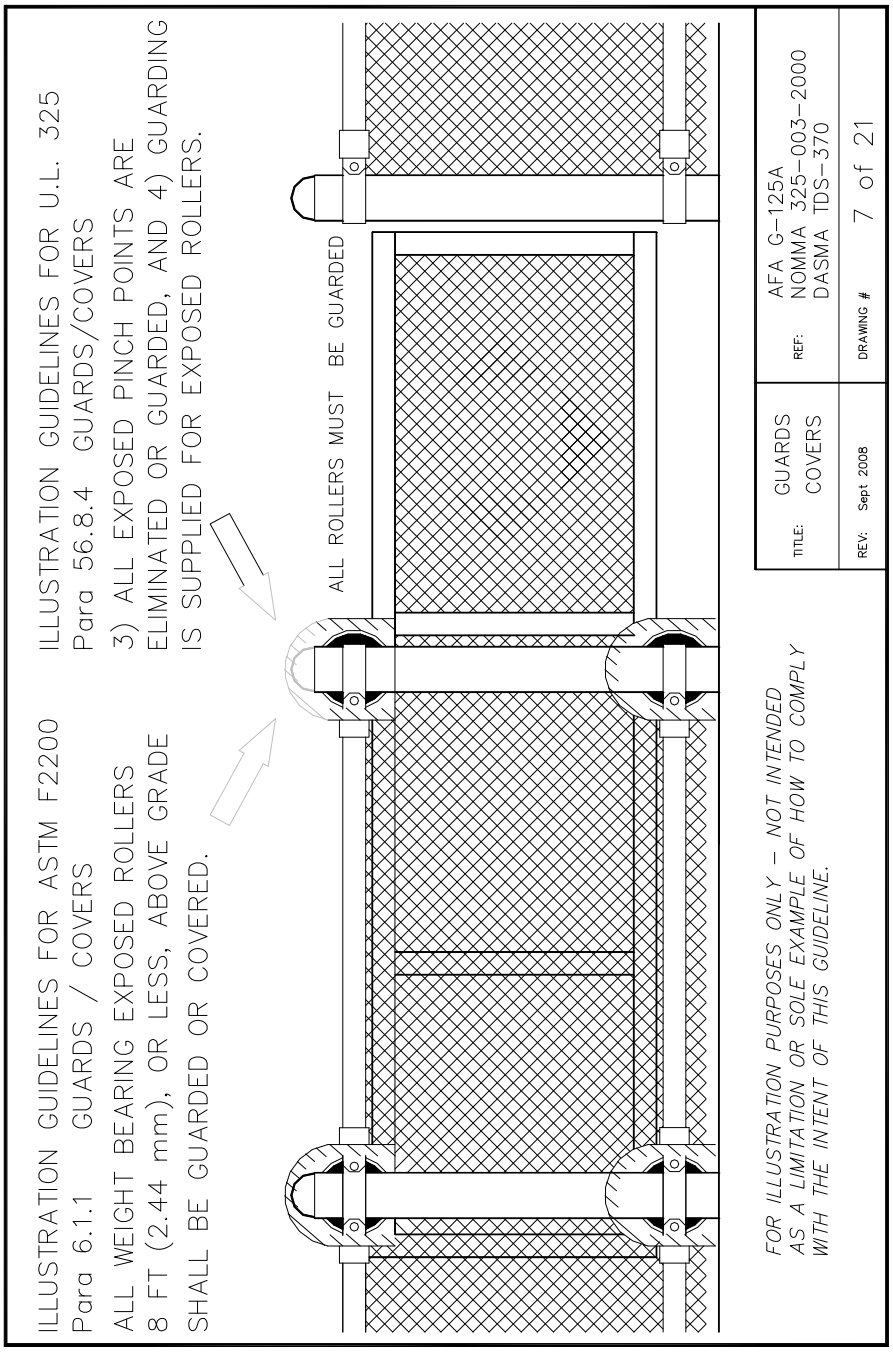

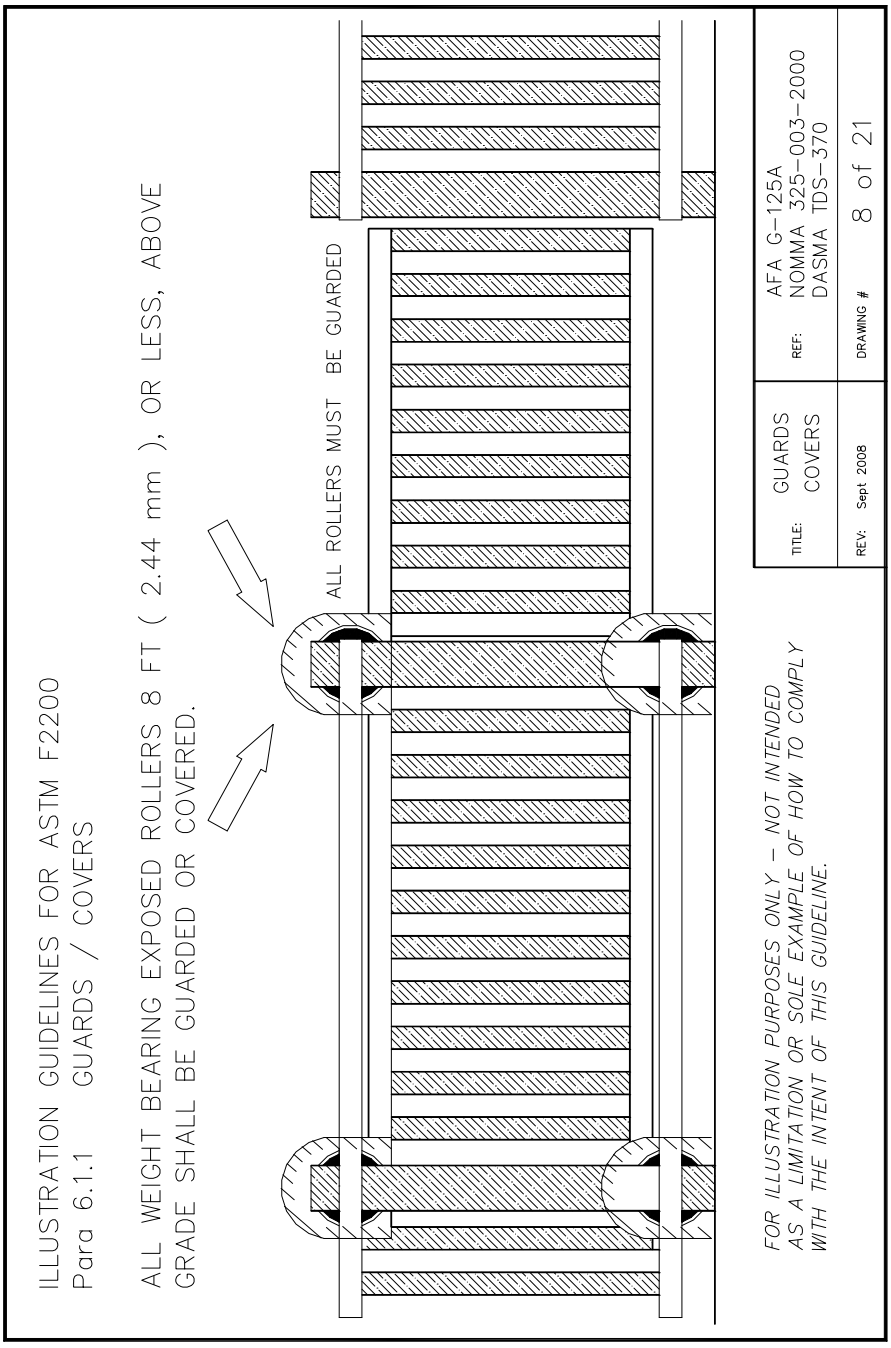

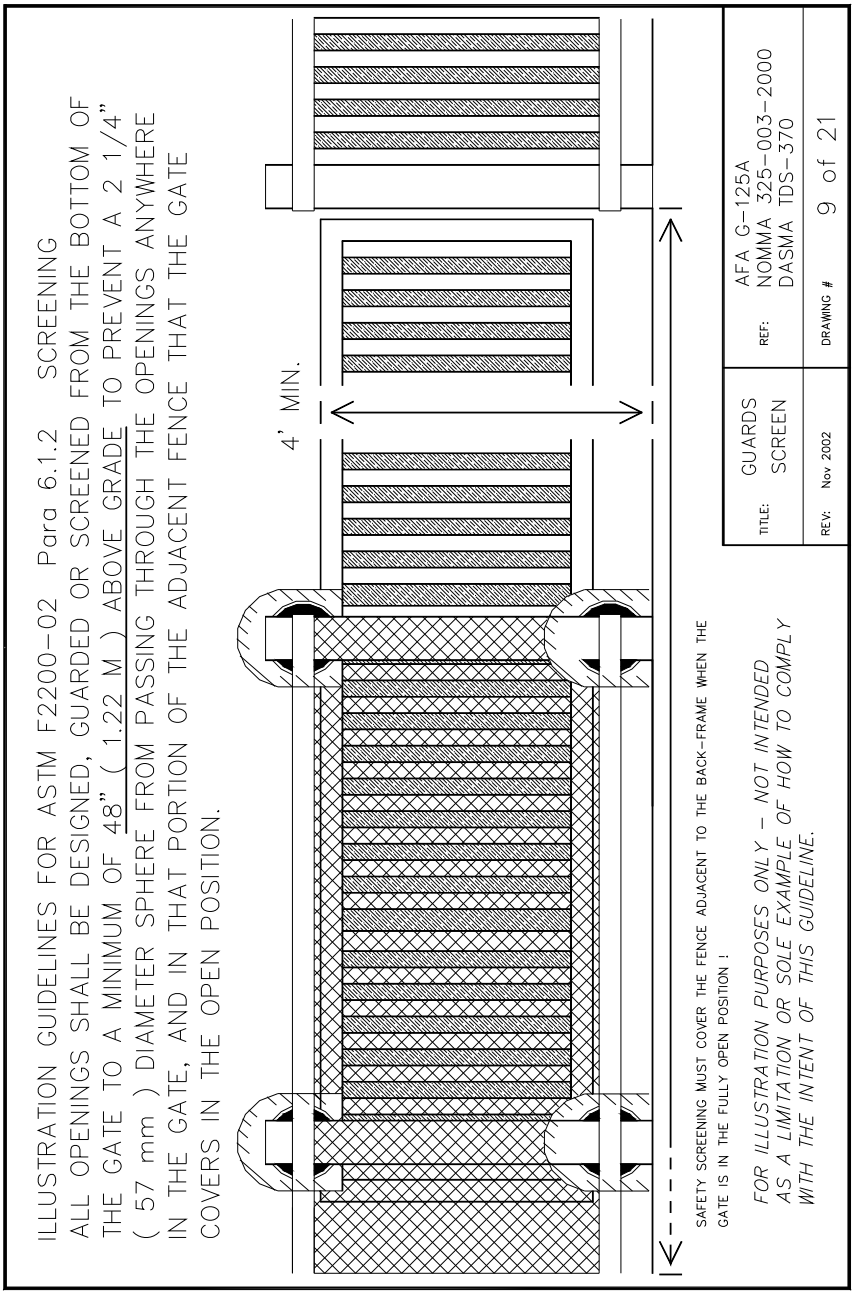

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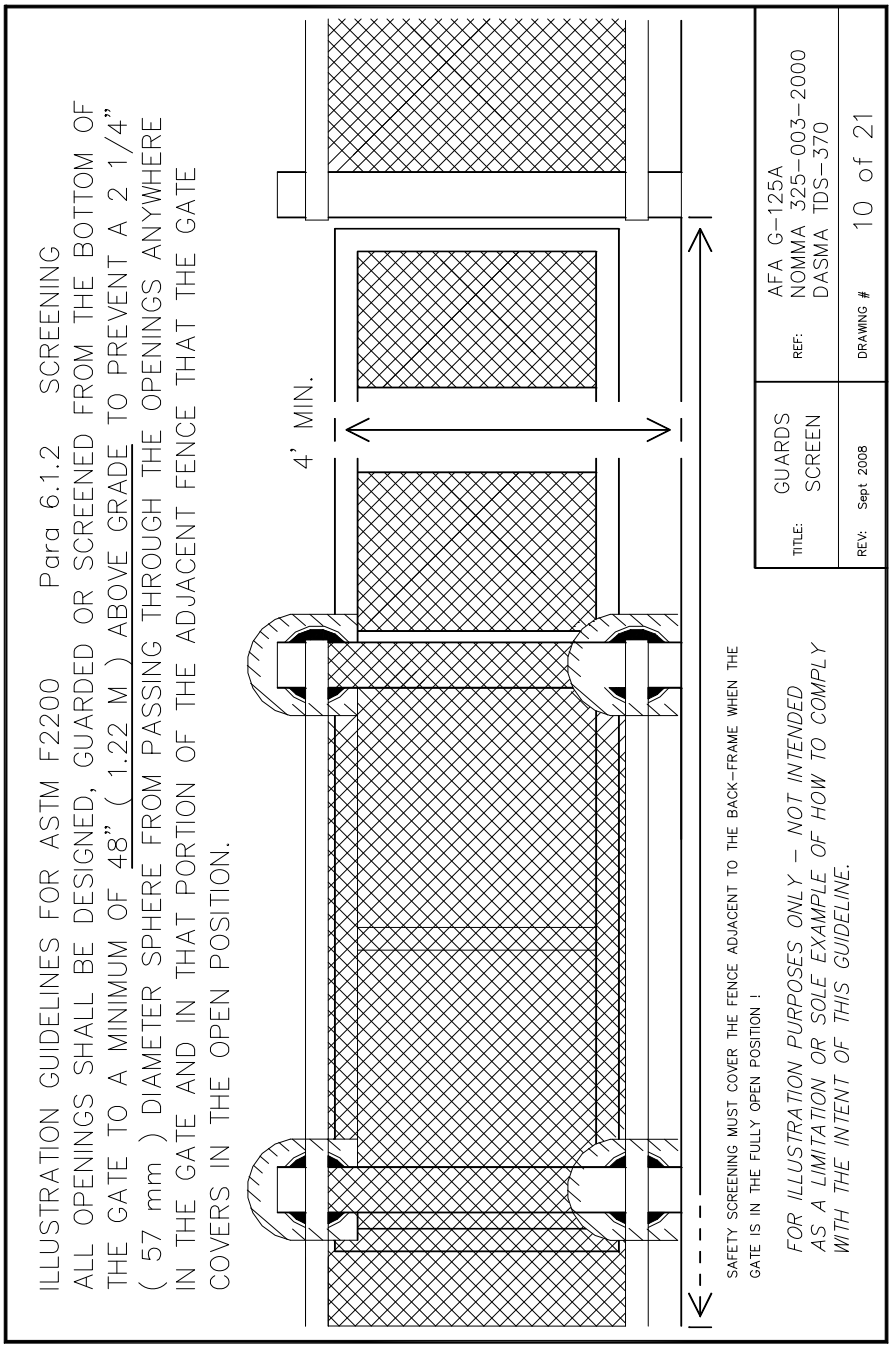

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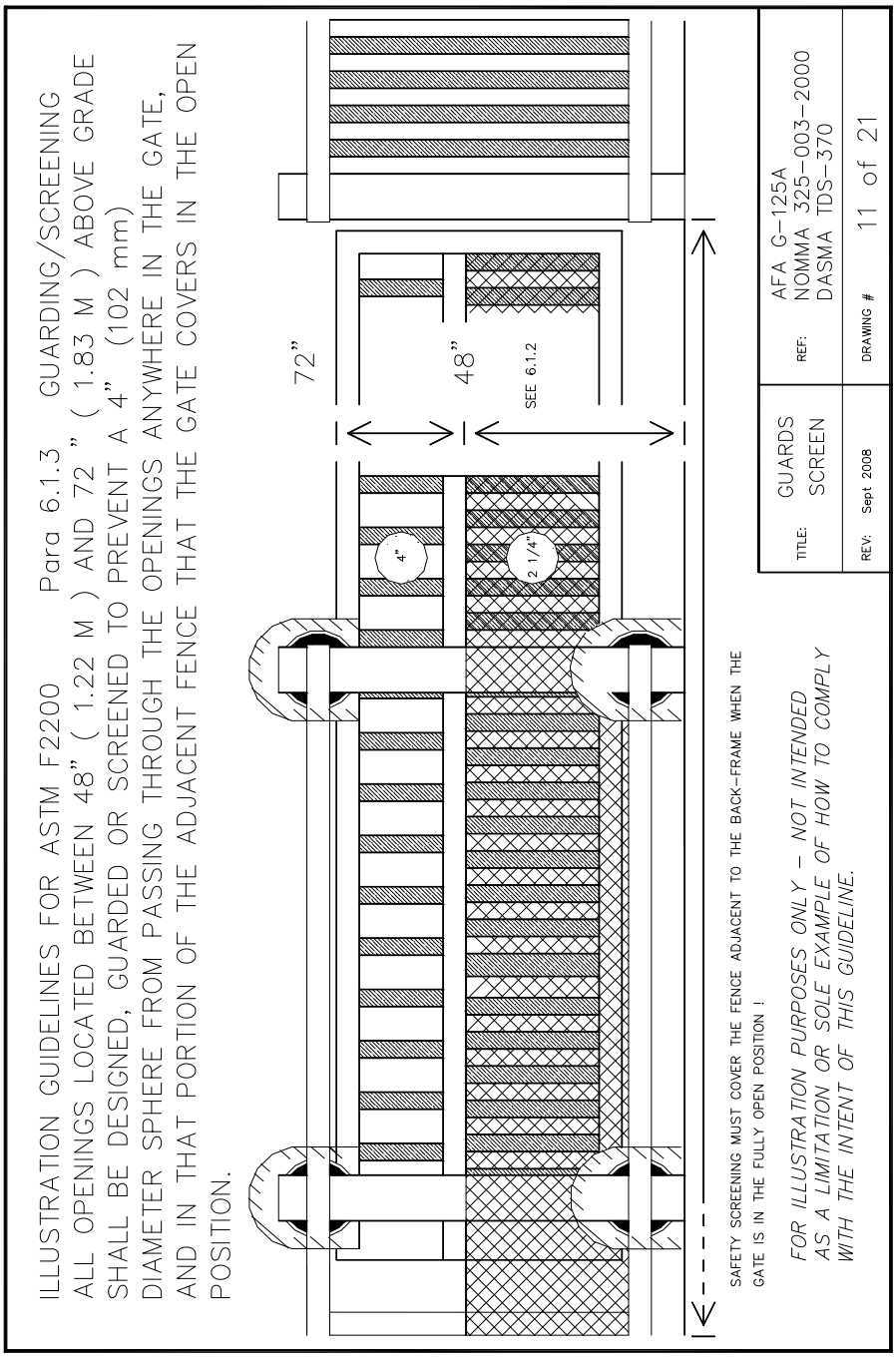
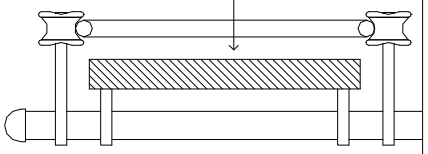


ILLUSTRATION GUIDELINES FOR ASTM F2200 Para 6.1.4 MAXIMUM GAP
A GAP, MEASURED IN THE HORIZONTAL PLANE PARALLEL TO THE ROADWAY, BETWEEN A FIXED STATIONARY OBJECT NEAREST THE ROADWAY (SUCH AS A GATE SUPPORT POST) AND THE GATE FRAME WHEN THE GATE IS IN EITHER THE FULLY OPEN OR THE FULLY CLOSED POSITION, SHALL NOT EXCEED 2 1/4 INCHES (57 mm).
EXCEPTION: ALL OTHER FIXED STATIONARY OBJECTS GREATER THAN 16" (406 mm) FROM THE GATE FRAME SHALL NOT BE REQUIRED TO COMPLY WITH THIS SECTION



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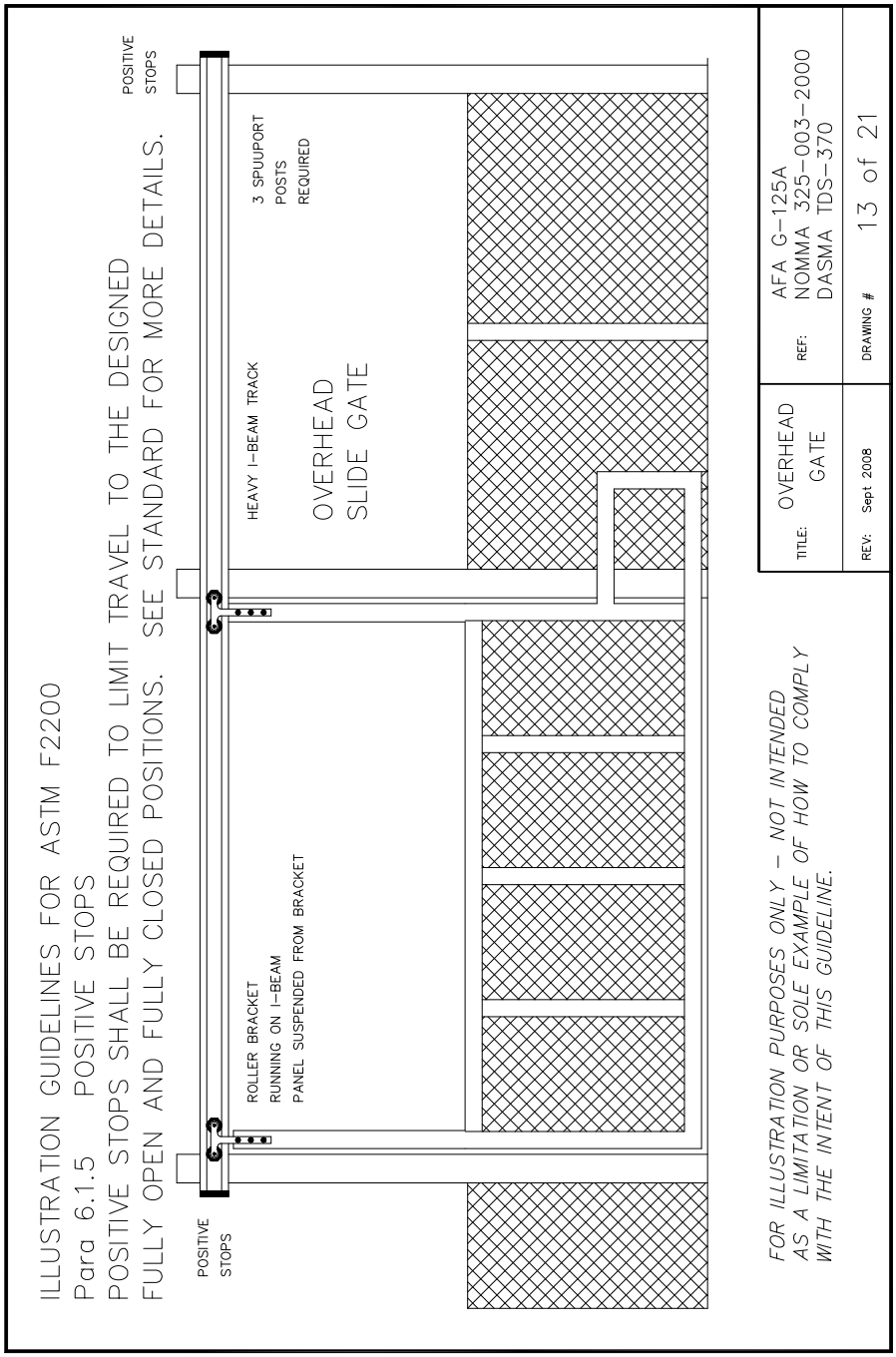
REV: Sept 2008	DRAWING #	12 of 21



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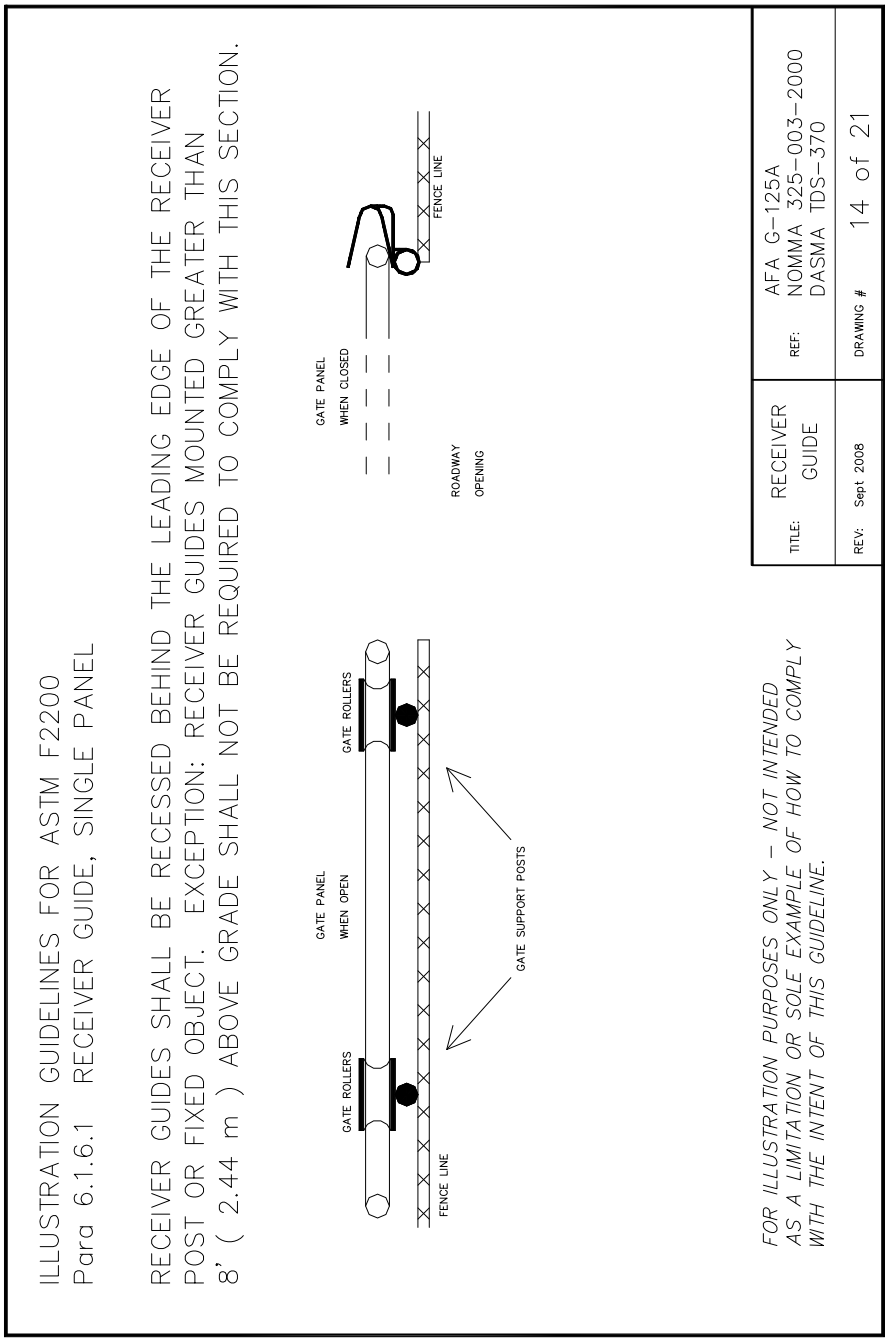

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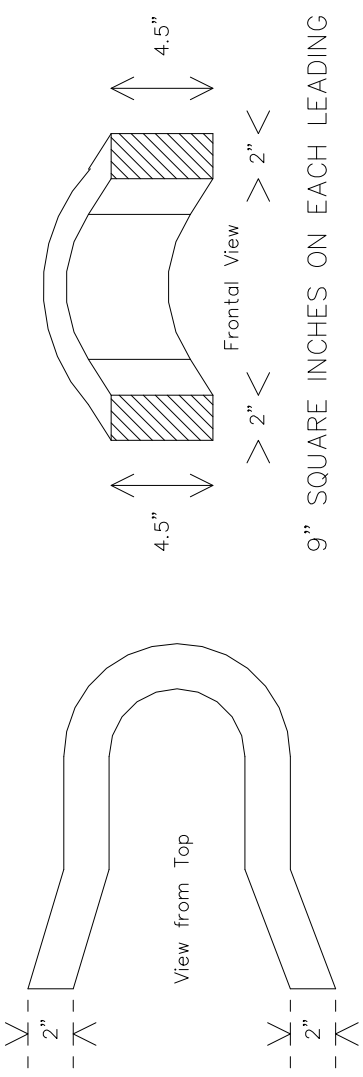
ILLUSTRATION GUIDELINES FOR ASTM F2200
Para 6.1.6.2 RECEIVER GUIDE, DUAL PANELS

DUAL PANEL RECEIVER GUIDES, IF USED, MAY BE INSTALLED ON EITHER PANEL AND SHALL INCLUDE A CROSS-SECTIONAL AREA OF 9 SQUARE INCHES (5806mm SQUARE) OR GREATER AS MEASURED ON THE LEADING EDGE OF EACH GUIDE.
EXCEPTION: RECEIVER GUIDES MOUNTED GREATER THAN 8 FT (2.44 mm) ABOVE GRADE SHALL NOT BE REQUIRED TO COMPLY WITH THIS SECTION.



FOR ILLUSTRATION PURPOSES ONLY - NOT INTENDED AS A LIMITATION OR SOLE EXAMPLE OF HOW TO COMPLY WITH THE INTENT OF THIS GUIDELINE.

TITLE: RECEIVER GUIDE	REF:	AFA G-125A NOMMA 325-003-2000 DASMA TDS-370
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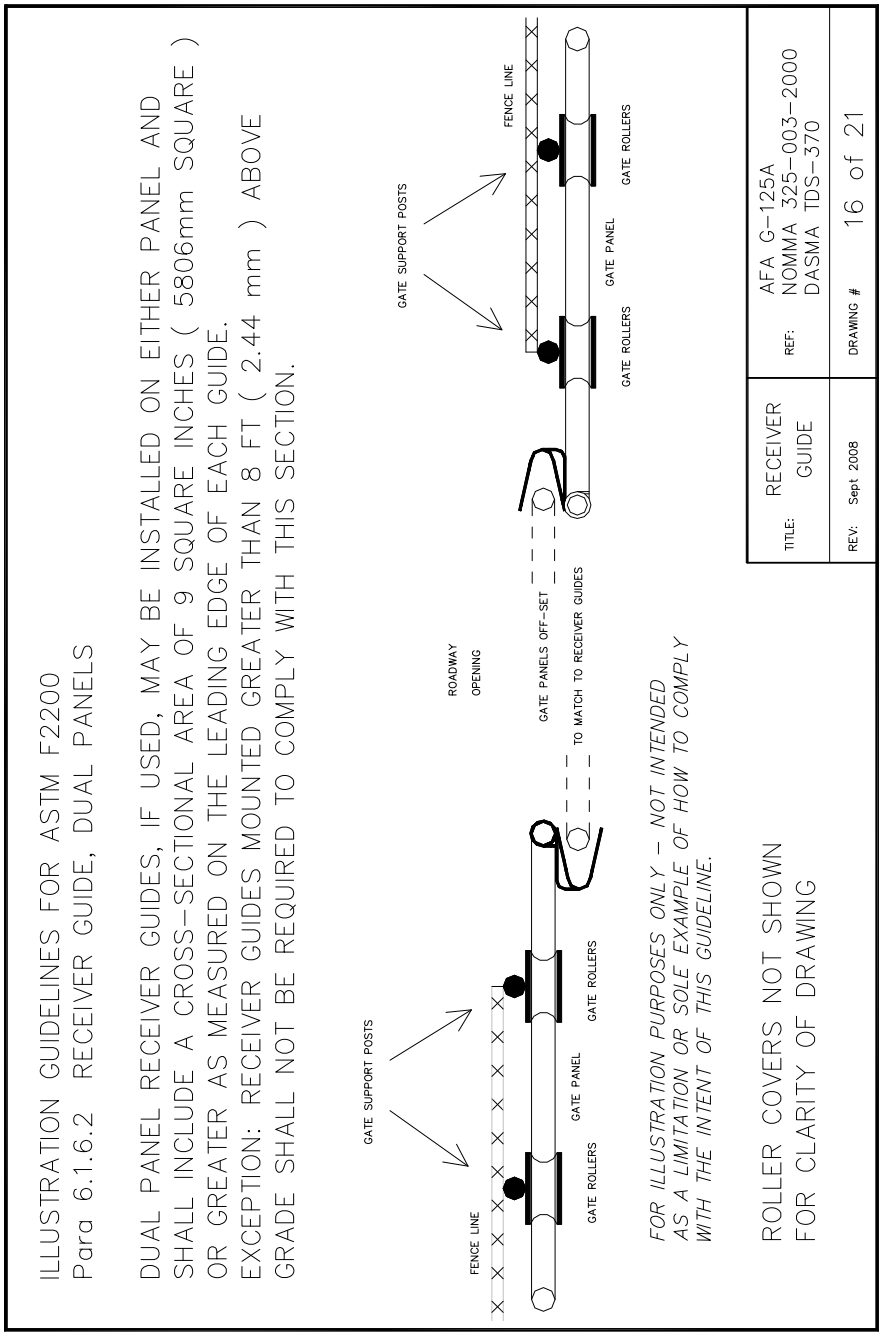
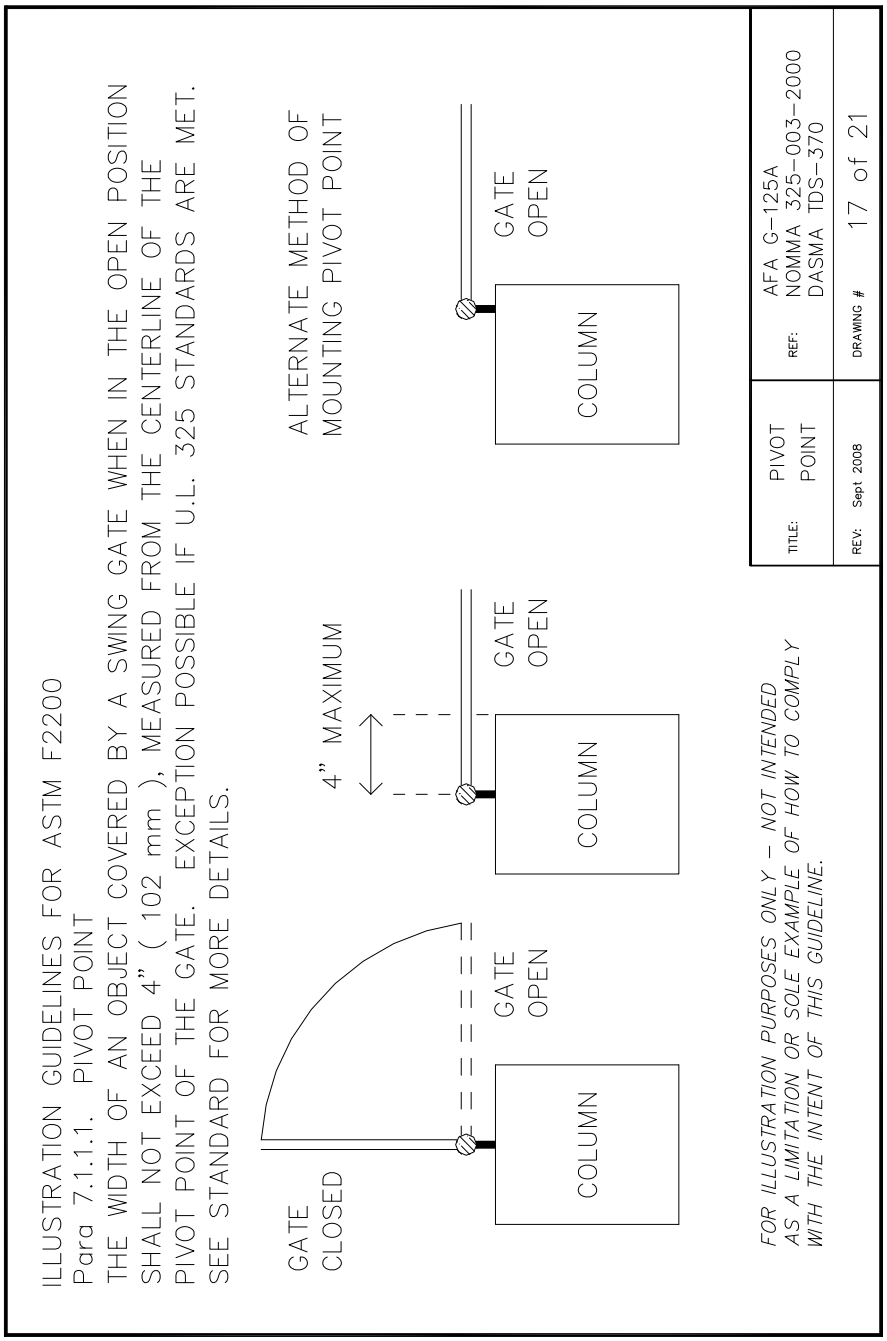


Note: Technical Data Sheets are information tools only and should not be used as substitutes for instructions from individual manufacturers. Always consult with individual manufacturers for specific recommendations for their products and check the applicable local regulations.

This Technical Data Sheet was prepared by the members of DASMA's Operator & Electronics Division Technical Committee. DASMA is a trade association comprising manufacturers of rolling doors, fire doors, grilles, counter shutters, sheet doors, and related products; upward-acting residential and commercial garage doors; operating devices for garage doors and gates, sensing devices, and electronic remote controls for garage doors and gate operators; as well as companies that manufacture or supply either raw materials or significant components used in the manufacture and installation of the Active Members' products.



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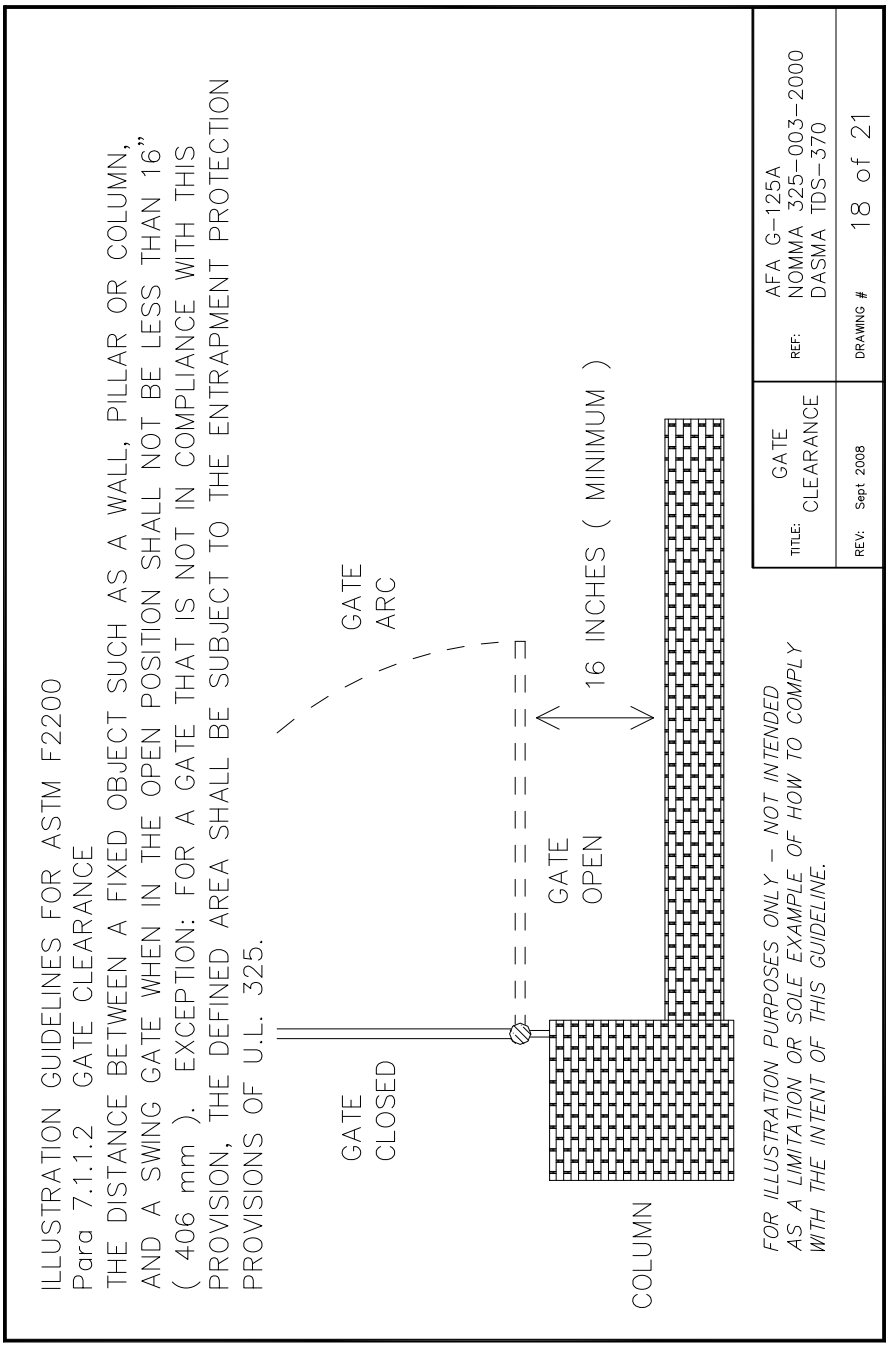

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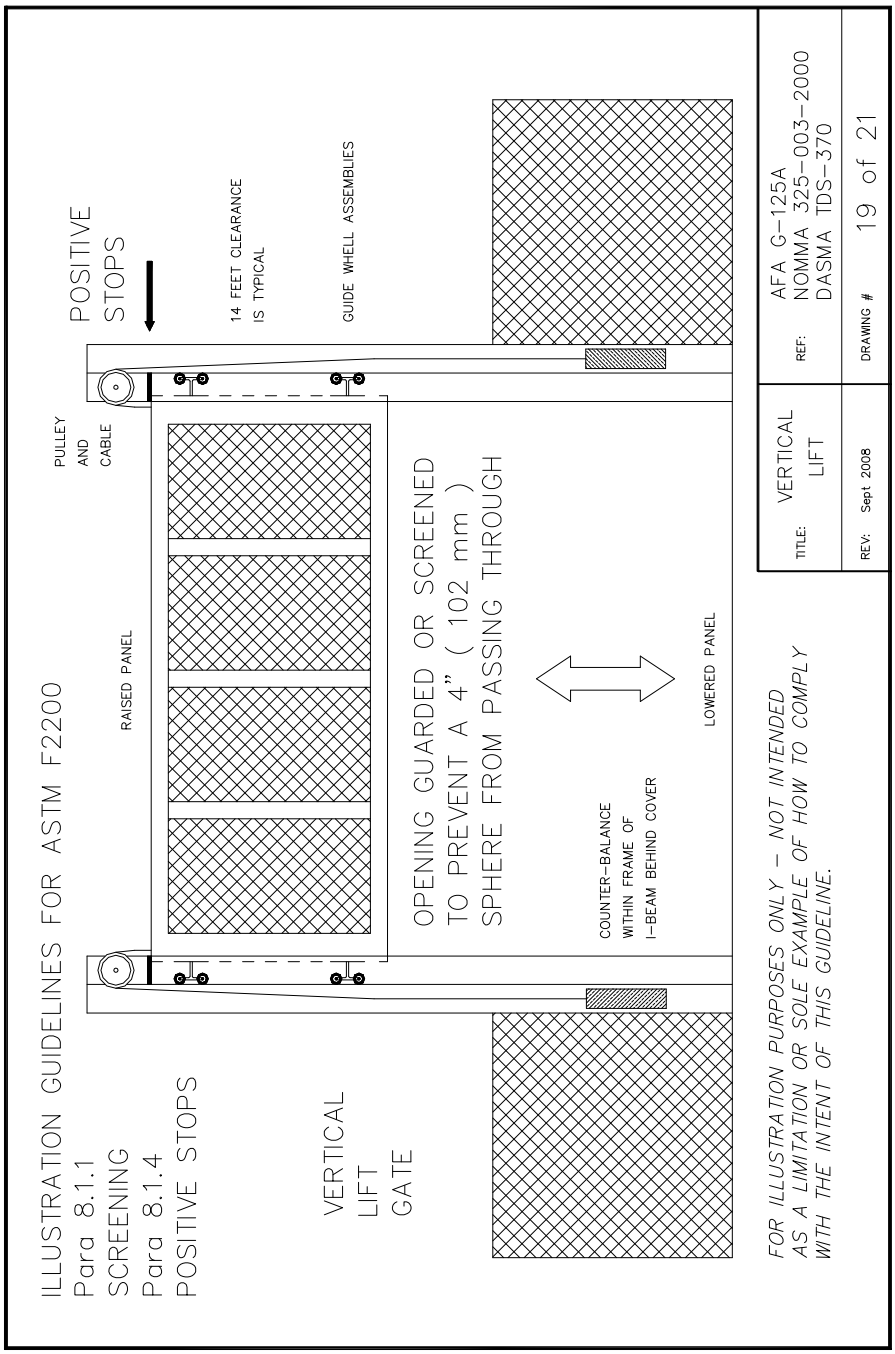

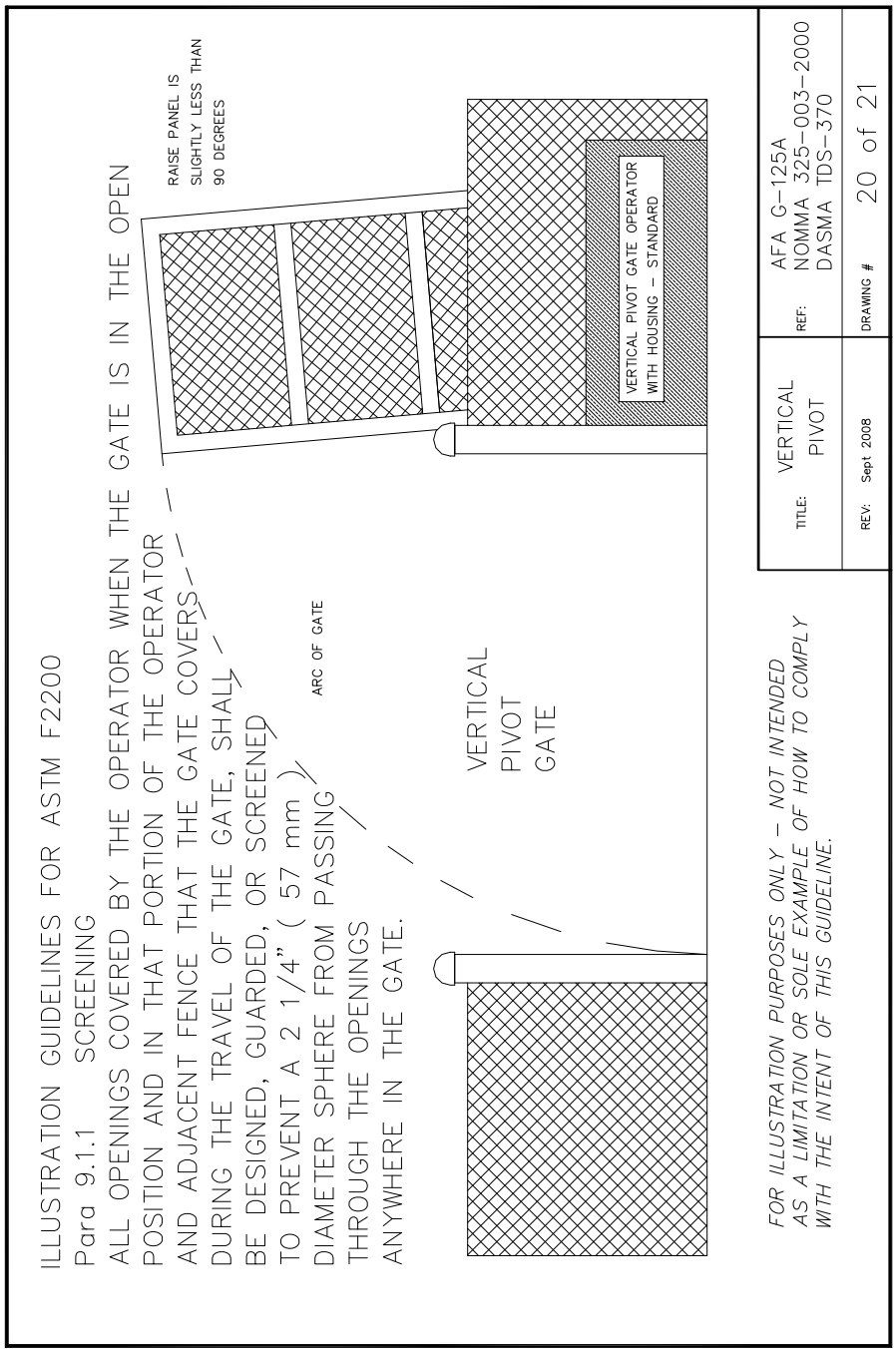

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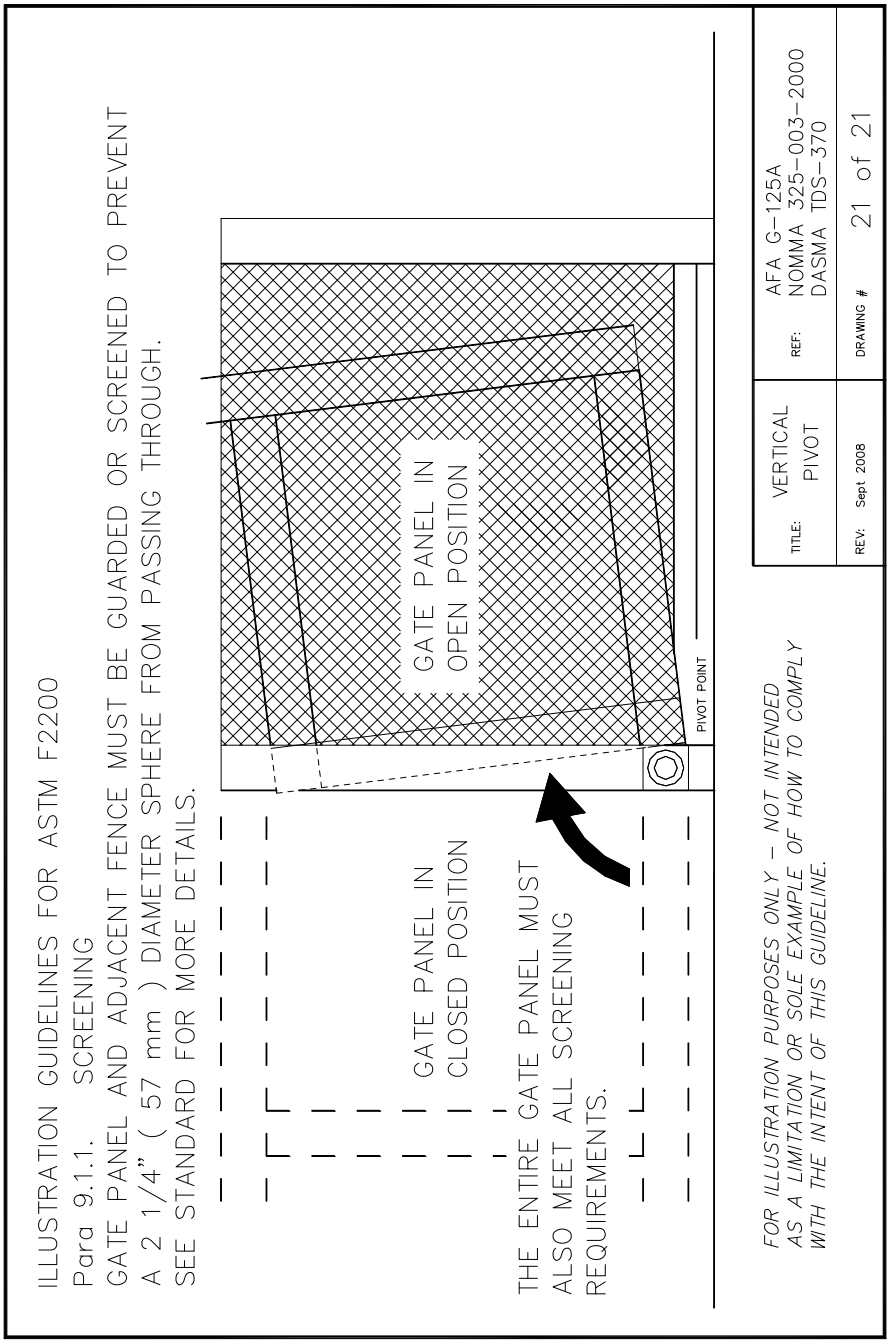
TECHNICAL DATA SHEET

#370



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OPERATOR & ELECTRONICS DIVISION

DASMA TECHNICAL DATA SHEET

#356

Door & Access Systems Manufacturers Association International

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UL 325 And Gate Installations
Frequently Asked Questions
(Note: References to UL 325 have been updated to the 5th Edition)

1. **Is compliance with UL 325 a national law?** No; however, it became a state law in Nevada effective March 1, 2000. DASMA is continuing to monitor other states for potential legislation in this area.

2. **Who is going to check the gate system to determine if it is in compliance with the new standard?** No one at the present time; however, keep in mind there is the potential for liability if a gate system is not installed in compliance with UL 325.

3. **Am I required to upgrade existing installed operators to the new UL 325 standard?** No. There is no retroactivity with respect to UL 325.

4. **Can older operators that do not meet the standard be repaired?** Yes. You may wish to contact your attorney or your trade association legal counsel regarding liability issues in repairing older operators that have no entrapment sensing provisions.

5. **Can I upgrade, to the new standard, operators already installed?** There are no requirements to upgrade existing operators; however, upgrading is dependent on the product itself. The operator manufacturer must be consulted on this matter.

6. **What happens with the product that I have in stock that was purchased prior to March 1, 2000? Can I still install it?** Yes. There is no recall provision in the UL standard. Products that have already been tested and Listed can be installed.

7. **What is the significance of the operator usage classifications?** The classifications are intended to signify specific end use applications as defined in UL 325.

8. **Can operators be classified under more than one of the classifications?** Yes. UL 325 requires that "A vehicular gate operator shall be permanently marked to specify all intended Classes of applications." (underline added)

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9. **What is the difference between a primary and secondary entrapment protection device?** The secondary entrapment protection device is intended as a backup feature should the primary device fail or not work properly.

10. **Do photoelectric cells or electric edges have to be installed on all gates?** Not necessarily. These two options are among several acceptable options. Contact the operator manufacturer for acceptable protection devices to be installed on a particular gate.

11. **Do I have to install both photoelectric cells and reversing edges as secondary devices to be in compliance with the standard?** No; you do not have to put both on the gate. Either a non-contact sensor, a contact sensor or a combination thereof can be used as secondary devices.

12. **Will an operator function if a photoelectric cell or reversing edge is not connected?** This is dependent on the operator design. The operator manufacturer must be consulted on this matter.

13. **How far away from the gate should an access device (push button, card reader, etc.) be installed?** The applicable provision in UL 325 reads, "Controls must be far enough from the gate so that the user is prevented from coming in contact with the gate while operating the controls."

14. **If a reset switch is to be installed, where does it have to be installed?** UL 325 requires that "Controls intended to be used to reset an operator after 2 sequential activations of the entrapment protection device or devices must be located in the line-of-sight of the gate."

15. **Do I have to install a separate pedestrian gate?** UL 325 states that if the operator is for a vehicular gate, pedestrians must use a separate entrance.

16. **Do the new UL 325 requirements apply to both new and existing gates?** UL 325 requirements will apply to all new construction of gates and existing gates that could be motorized. Older non-motorized gates may need to be altered to meet the new requirements.

17. **Do I have to install guarding or screening on a gate?** Yes; however, this applies only to horizontal sliding gates. The important fact to remember is that if a horizontal gate system is not guarded or screened in accordance with the manufacturer's instructions, it cannot be claimed to be in compliance with UL 325.

18. **Does the 2 1/4 inch sphere test start at the bottom of the gate or is it measured from the ground up to 4 feet?** UL 325 requires that "All openings of a horizontal slide gate are guarded or screened from the bottom of the gate to a minimum of 4 feet above the ground …" (underline added)

19. **If a slide gate is on wheels and there is a 4-inch gap between the ground and the bottom of the gate, is this OK?** The standard does not include provisions governing the gap between the bottom of the gate and the ground; however, the standard for automated vehicular gate construction, ASTM F2200, addresses this matter.

20. **Do swing gates need to be guarded or screened so that a 2 1/4 inch sphere will not pass through it?** No.

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21. **Is there a difference between a UL listed product, an ETL listed product, or a product listed by anyone else?** Any listing by a Nationally Recognized Testing Laboratory (NRTL) that tests to the UL 325 standard is acceptable. The test laboratories are expected to use the same standard.

22. **Is there a speed limit for a pivot gate, and if so where would this be measured?** The only limit on speed that is specified in the standard is in Section 31.1.19, which specifies that either a Class I and Class II horizontal slide gate cannot move greater than 1 foot per second. Note that this only applies to slide gates. There is no speed limit on swing gates, or on vertical pivot gates.

23. **Should a gate weight limit, as well as gate speed limit, be considered?** UL 325 specifies minimum standards on vehicular gate operators. The standard in no way addresses the gate itself; therefore gate weight limits do not apply and do not belong in UL 325.

24. **Where should a hard wired input be located?** Section 56.8.4f calls for controls to be far enough away from the gate so that the person using the control cannot come in contact with the gate while operating the control. This paragraph also states that controls, intended to be used to reset an operator after 2 sequential activations of the entrapment protection devices, **must** be located in the line of site of the gate. Some manufacturers specify that the minimum distance the control should be from the gate or gate operator is 6 feet, while other manufacturers say 10 feet. The intent of Section 56.8.4f is to prevent persons from reaching through a gate to activate a control. Keep in mind that outdoor controls or easily accessible controls must have a security feature to prevent unauthorized activation.

25. **Can a placard be mounted on a post as well as a fence or gate?** Section 56.8.4g clearly states that "all warning signs and placards must be installed **where visible in the area of the gate**."

26. **Should code language read "if a pedestrian gate is installed, it shall be located within 10 feet of a vehicular gate"?** Section 56.8.4b clearly calls for the installation of a separate pedestrian access opening. There is no "if" in the paragraph; however, the location of the gate should be specified by some agency. For example, if a pedestrian access gate is installed 100 yards away from the vehicular gate, does this meet the intent of this paragraph? Code language should be to specify that a pedestrian gate must be installed, but location criteria for such gate have yet to be determined.

27. **Should placement of non-contact sensors be quantified?** Every gate installation is different. With respect to non-contact sensors, Section 56.8.4h, paragraph 3 calls for "one or more" non-contact sensors to be located **where the risk of entrapment or obstruction exists**. This places some responsibility on the installer to be able to identify these areas of risk. The standard cannot quantify this; there is no way to ascertain the risk areas until the vehicular gate system is installed.

28. **Should non-contact sensors be also placed on the secured side of the gate?** Yes, if there is a risk of entrapment or obstruction.

29. **How many contact sensors should be used on a gate?** Every gate installation is different. With respect to contact sensors, Section 56.8.4i, Paragraph 1 states that "one or more" contact sensors are to be located **where the risk of entrapment or obstruction exists** for slide gates. Paragraph 2 calls out "one or more" contact sensors for a vehicular vertical lift gate. Paragraph 3 calls out "one or more" contact sensors for a vehicular vertical pivot gate. Paragraph 6 calls for "one or more" contact sensors on the inside **and** outside leading edge of swing gate as well the bottom edge if there is greater than 6" between the gate and ground surface. Paragraph 7 calls out "one or more" contact sensors for a vertical barrier (arm). This places some responsibility on the installer to be able to identify these areas of risk. The standard cannot quantify this; there is no way to ascertain the risk areas until the vehicular gate system is installed.

30. **Is the difference between Classes I and II outlined in other provisions of UL 325 besides the definition section?** Regarding temperature testing, Class I is tested for limited duty and Class II is tested for continuous duty. Otherwise, there are no differences between Class I and Class II as described within UL 325.

31. **An airport security area appears to be a Class IV application. If a gate in this area is unmanned, is this a Class III application?** This would be a Class III application because the gate system is not manned, or guard controlled via a closed circuit connection, which is a requirement for a Class IV application. Keep in mind that a Class IV operator could not be used in this application.

32. **What is the difference between a Type E device and an audible device that warns that the gate is about to operate?** An alarm that warns that the gate is about to operate must do so during the entire gate cycle (Section 31A.1.16) and must be differentiated from the inherent entrapment alarm (Section 31A.1.18).

33. **Can "monitor" be defined as used in UL 325?** In reference to Section 31A.1.6, "monitor" means that the operator must check for the presence and proper operation of the device. This includes checking for the proper connection of the device, verifying that the device is functioning, verifying that there are no short circuits in the connection of the device, and verifying that there are no open circuits in the connection of the device, at least once during each open and close cycle. Keep in mind that the monitoring function is only applicable to those external devices that are used as a **primary** entrapment protection device. The standard does not call for any monitoring of a secondary entrapment protection device. Many manufacturers use Type A (inherent) devices as the primary entrapment protection device such that monitoring of an external device is not necessary, but some also use monitoring on devices that are not primary entrapment protection devices.

34. **How do you monitor a wireless device?** A wireless device would be extremely difficult to monitor under the conditions specified in Section 31A.1.6. There are no known external wireless devices being used as **primary** entrapment protection.

35. **Are there two graphics offered for the placards (slide and swing)?** The graphics on the placards must comply with the standard practices for safety information as prescribed in the Standard for Product Safety Signs and Labels, ANSI Z535.4-1991 (Section 58A.1.2). Section 58.1.4 allows for more than one pictorial to be used; however, most

manufacturers are using placards as designed by DASMA for industry standardization. The one-sign design is acceptable for both slide and swing gate applications.

36. **Our city has a noise law, 10 PM- 7 AM daily, where noise cannot exceed 70 dB at the property line. How does this affect compliance with UL 325?** We would have to have a copy of the city noise legislation before commenting on this. There may be provisions in the law that allow for safety related devices to exceed the 70db noise limit. If there is no such provision, then UL should be made aware of this for possible action.

37. **If a gate is not closed via a timer, does this affect any of the entrapment protection provisions that would be required for compliance?** No. The entrapment protection provisions are not dependent on whether an automatic close timer is employed or not.

38. **Where can I obtain more information on UL 325?** You may contact UL directly at (847) 272-8800, or DASMA at (216) 241-7333, or you may purchase UL 325 from Global Engineering Documents at (800) 854-7179 or from Comm 2000 at 888-853-3503.