

**General Notes**

- All yellow paint for the Aircraft Safety Markings and J-lines shall contain reflective media, unless noted otherwise.
- The Safety Envelope (within Equipment Restraint Line) must be clear of all equipment, except for the following, under the following conditions and circumstances:
  - Fuel Cart: In designated fuel cart stow box
  - Pushback tug: Only when area is space constrained or there is insufficient space to support positioning of tug outside Safety Envelope

These Safety Envelope GSE parking exceptions must be clearly delineated, outlined and striped and GSE must be parked and remain within the delineated area during aircraft docking operations.
- PLB must remain clear of Safety Envelope (within Equipment Restraint Line when in the stowed position).
- Nosewheel stop aircraft identification text must follow the abbreviated Make-Model-Series-Wingtip convention. The following exceptions can be applied to minimize text
  - Boeing aircraft do not need to designate Make (eg. "739W")
  - For Nosewheel stops that accommodate all series of a specific Make and Model, the word "ALL" can be used after Make and Model (eg. "737-ALL")
  - or- for Boeing Series which do not include "700", the more generic Model can be provided to represent all Series (eg. "747")
- The J-line numbering convention contained in the gate identification boxes is as follows
  - 1 thru 39: Live Flight, RON, Remote, FedEx Feeder
  - 41 thru 49: Deicing Lines
  - 51 thru 59: Penalty Lines
  - 200+: Pushback Diamond ID
  - Letters "I" and "O" will not be utilized and shall be skipped
  - Number zero "0" will be skipped
  - For gate numbering, the primary position shall be assigned based on the gates primary purpose (i.e. widebody on international and narrowbody on domestic). Each PLB should be assigned to a primary position so that no "A" or "B" positions are visible from the passenger perspective. When an "A" or "B" position is needed, it should use the same gate back stand or PLB as the primary position.

**Wingtip Separation Requirements**

ADG	At Rest	At Rest W/ Approval	Gate Entry/Exit	Gate Entry/Exit W/ Approval
III Narrowbody	18'	N/A	15'	N/A
	18'	N/A	18'	15'
IV	20'	18'	20'	18'
V Widebody	25'	20'	25'	20'
	25'	N/A	25'	N/A

- Approval must be in writing and may require/include safety/risk assessment
- Aircraft tail must be a minimum of 3' from VSR / back of stand
- Gate Entry/Exit wingtip separation assumes one aircraft is stationary at its gate while the adjacent aircraft moves into/out of its gate
- For adjacent dissimilar ADG gates, the most restrictive separations are controlling
- For approval of at rest or entry/exit minimums, the following must be in place at a minimum:
  - The composite equipment restraint line must be provided
  - When available, a gate docking system will be utilized
  - Wing walkers must be unutilized on the side(s) of the aircraft that have an approved separation reduction

**Document/Standards Control**

- In order to ensure conformity and continuity any changes, modification or adjustments to these standards must be reviewed and approved by:
  - Manager, Airfield Operations - Ramp
  - Manager, Aviation Safety Management Systems
 and, at their discretion, may be contingent upon and subject to a safety risk assessment

**Marking Notes**

**Materials**

- Paint. All paint should be waterborne during season when temperature and humidity are not a concern. Waterborne paint shall meet Federal Specification TT-P-1952E. Solvent base paint in accordance with Commercial Item Description (CID) AA-2886 shall otherwise be used. Paint shall be furnished in the colors indicated on this sheet in accordance with Federal Standard No.595. Paint shall be furnished in Type II – Fast drying time for no-pick-up when tested in accordance with ASTM D711.
- Reflective Media. Reflective Glass Spheres (Beads) shall meet the requirements of Federal Specification TT-B-1325, Type III. Reflective Glass Beads shall be treated with adhesion promoting and/or flotation coatings specified by the manufacturer of the paint.

**Construction Methods**

- Weather Limitations. The painting shall be performed only when the surface is dry and the surface temperature is at least 45 degrees F., and rising. Painting shall not occur when the weather is foggy, dusty or windy. The suitability of the weather shall be determined by the Port Representative.
- Equipment. All equipment for the work shall be approved by the Port representative. Equipment shall include the apparatus necessary to properly clean the pavement surface, a mechanical marking machine, a bead dispensing machine and such auxiliary hand-painting equipment as may be necessary to satisfactorily complete the job.

The mechanical marker shall be an approved atomizing spray-type marking machine suitable for application of traffic paint. It shall produce an even and uniform film thickness at the required coverage and shall apply markings of uniform cross sections and clear-cut edges without running or spattering or over-spray and within the limits for straightness set forth herein. Painting equipment shall be capable of applying paint stripes of the widths required.

- Preparation of Surface. Immediately before application of the paint, the surface shall be dry and free from dirt, grease, oil, acids, curing compounds, laitance, or other foreign material which would reduce the bond between the paint and the pavement. The area to be painted shall be cleaned by sweeping and blowing or by other methods as required to remove all dirt, laitance and loose materials.

Paint shall not be applied to Portland Cement Concrete pavement until the areas to be painted are clean of curing compound. High pressure water blasting shall be used to remove curing compound.

- Layout of Markings. The proposed markings shall be laid out in advance of painting application. Control points shall be spaced at intervals adequate to ensure accurate location of all markings. An experienced technician shall supervise the location, alignment, layout, dimensions and application of the pavement markings. All work on, or near, active taxilanes, taxiways and aprons and the timing thereof shall be coordinated through the Port Representative.
- Application. Paint shall not be applied until the markings layout and condition of the surface have been approved by the Port Representative.

The paint shall be mixed in accordance with the manufacturer's instructions and applied to the pavement with the appropriate marking machine at the rate of 90 square feet per gallon maximum. The addition of thinner shall not be permitted.

The edges of the markings shall not vary from a straight line more than 1/2 inch in 50 feet, and the dimensions shall be within a tolerance of plus or minus 5 percent.

Reflective glass beads shall be distributed upon the identified areas immediately after application of the paint at an application rate of 12 pounds per gallon of paint minimum. A dispenser shall be furnished which is properly designed for attachment to the marking machine and suitable for dispensing glass beads. Reflective glass beads shall not be applied to Black paint. Reflective glass beads shall adhere to the cured paint or all marking operations shall cease until corrections are made.

Beads must be applied and retro-reflectance must be tested in accordance with FAA Advisory Circular 150/5370-10, P620-3.8. Reflectance shall be measured with a portable retro-reflectometer meeting ASTM E1710 (or equivalent). A total of 6 readings shall be taken over a 6 square foot area with 3 readings taken from each direction. The average shall be equal to or above the minimum levels of all readings which are within 30% of each other

Material	Minimum Retro-Reflectance Values		
	Retro-reflectance mcd/m2/lux		
	White	Yellow	Red
Initial Type I	300	175	35
Initial Type III	600	300	35
Initial Type Thermoplastic	225	100	35
All materials, remark when less than:	100	75	10

For letters and numbers, all font shall match existing Port of Seattle font (Alpine), spacing, and stencils.

- Protection. After application of the paint, all markings shall be protected from damage until the paint is dry. All surfaces shall be protected from disfiguration by splatter, splashes, spillage, or drippings of paint.

The fresh paint shall be protected from damage of any kind. Suitable warning signs, flags, barricades, protective screens or coverings shall be temporarily put in place, as necessary, to protect the markings until dry. All markings damaged shall be repaired to the satisfaction of the Port Representative at no cost to the Port. All surface areas not to be painted shall be protected from disfiguration by splatter, spillage, drippings of paint or other materials. All disfiguration and beads which did not adhere to the paint shall be removed at no cost to the Port.

- Removal of Markings. All markings identified on the drawings or by the Port Representative to be removed shall be completely removed with a STARJET water jetting paint removal system as manufactured by NLB Corporation or an approved equal. The markings shall be completely removed without damage to the pavement. The flow of wash water and removal residue shall be fully contained in the removal area, vacuumed, and disposed of off Port property. All debris generated by the removal operations shall be removed from the pavement immediately and properly disposed of off Port property. If directed by the Port Representative, a demonstration shall be completed of the jetting removal on a test section of marking prior to the start of work.

Removal of Markings After Painting of New Markings. Once the surface has been cleaned and prior to the painting of any new markings, all existing markings identified on the drawings or by the Port Representative shall be completely painted over using Flat Black paint. The width of painting shall be equal to or slightly greater than the marking to be painted over. The entire area of marking to be obliterated shall be painted over as required for each phase of work. No segments of the original markings shall be left exposed.

After the new permanent markings have dried completely the painted over markings shall be removed with a STARJET water jetting paint removal system as manufactured by NLB Corporation or an approved equal. The markings shall be completely removed without damage to the pavement. The flow of wash water and removal residue shall be fully contained in the removal area, vacuumed, and disposed of off Port property. All debris generated by the removal operations shall be removed from the pavement immediately and properly disposed of off Port property. If directed by the Port Representative, a demonstration shall be completed of the jetting removal on a test section of marking prior to the start of work.

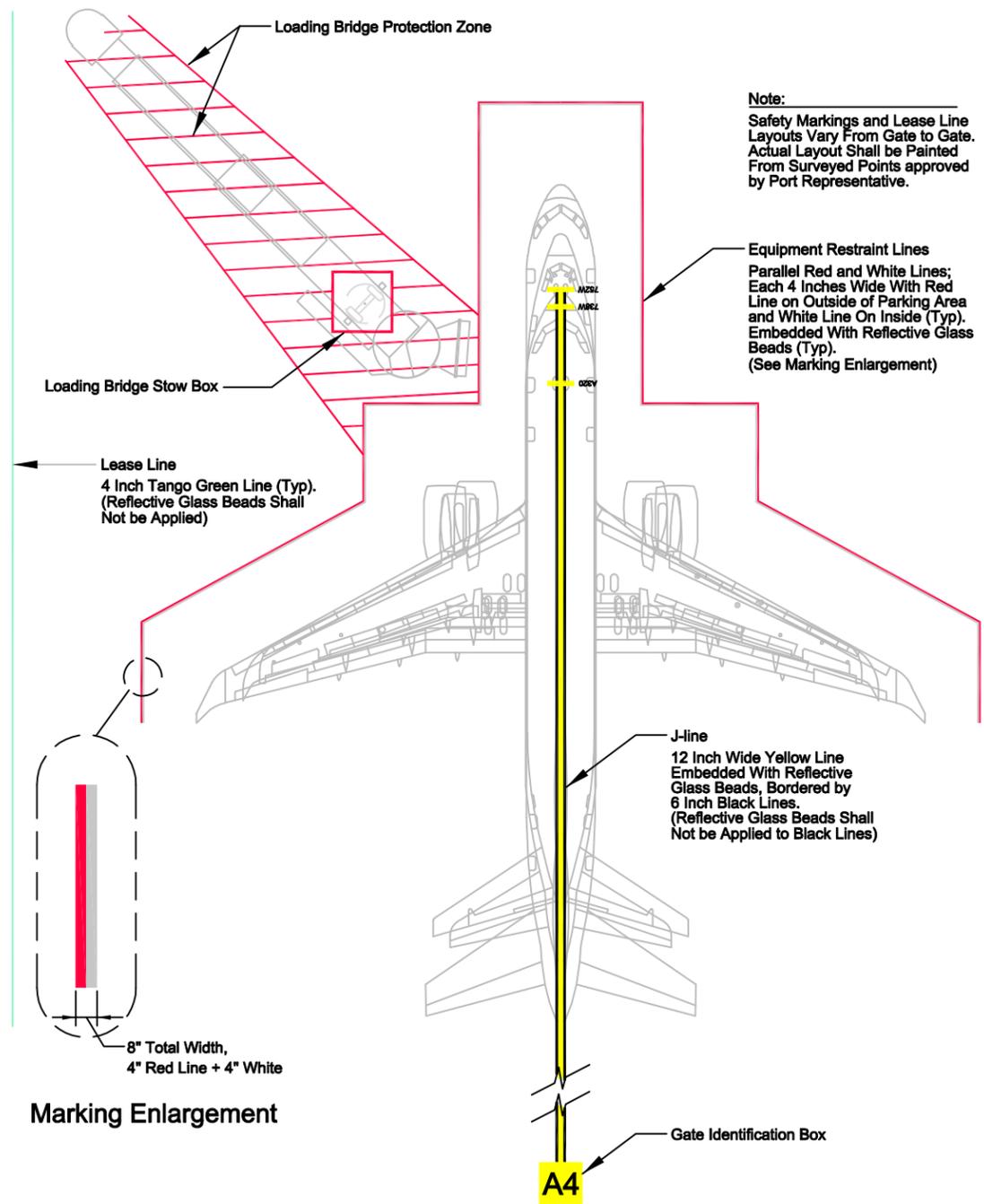
Markings to be removed shall be removed right up to the new marking but shall not remove or damage new markings. Any new markings damaged by the removal process, as determined by the Port Representative shall be repaired to the satisfaction of the Port Representative at no cost to the Port.

The schedule for all paint removal shall be coordinated with, and approved by the Port Representative.

- Defective Workmanship or Material. When any material not conforming to the requirements of the specifications or drawings has been delivered to the project or incorporated in the work or any work performed is inferior quality, such material or work shall be considered defective and shall be corrected, as directed by the Port Representative, at no cost to the Port.

# POS Gate Striping Standards

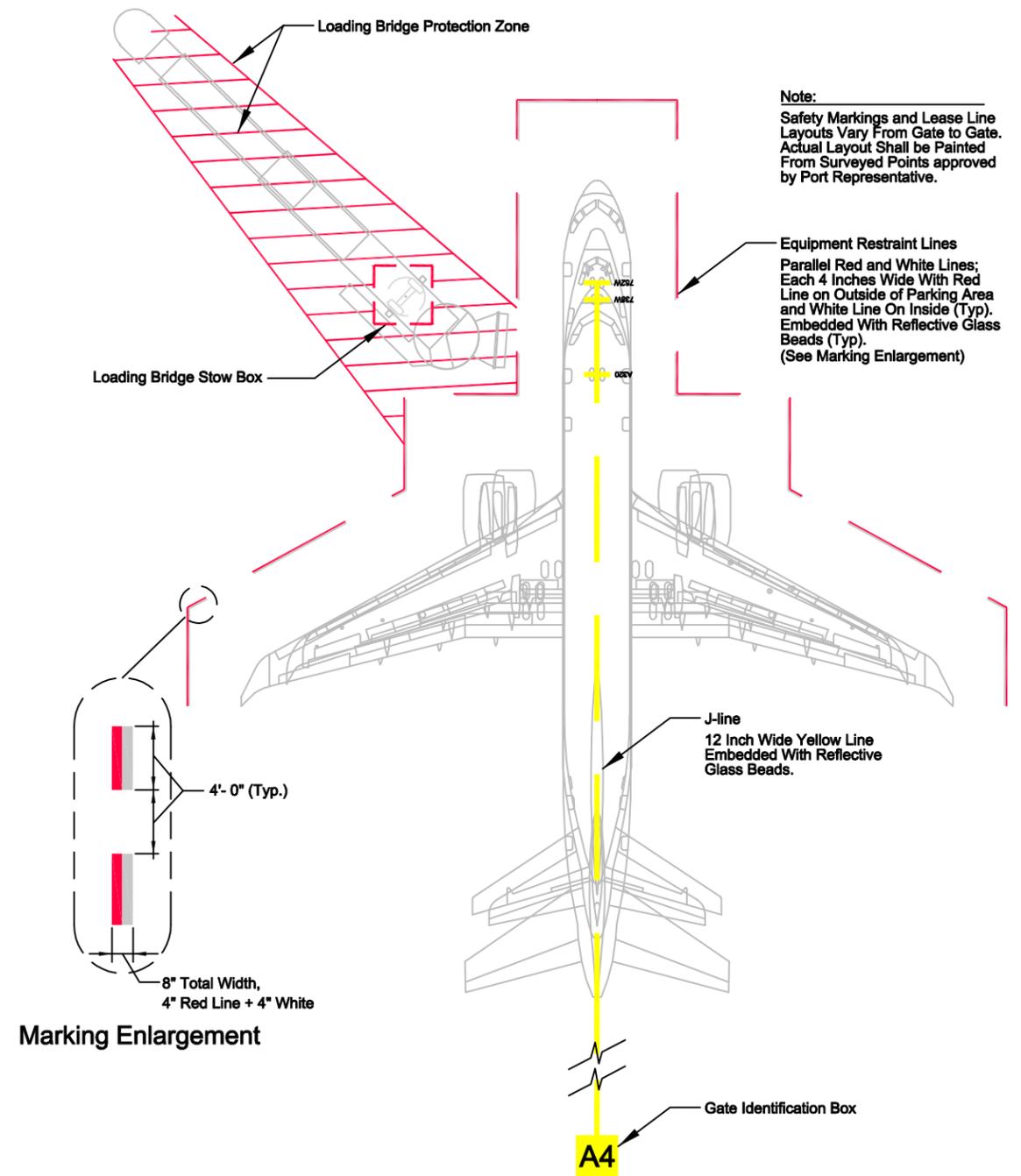
 <b>Aviation Planning</b> Seattle-Tacoma International Airport	SCALE	As Noted
	SHEET NO.	1
PROJECT: POS - Gate Planning	DATE: 08/12/2021	
SHEET TITLE: POS Gate Striping Standards	REVISION #: 3	



**Safety Markings Layout**

Scale: Not to Scale

1
2



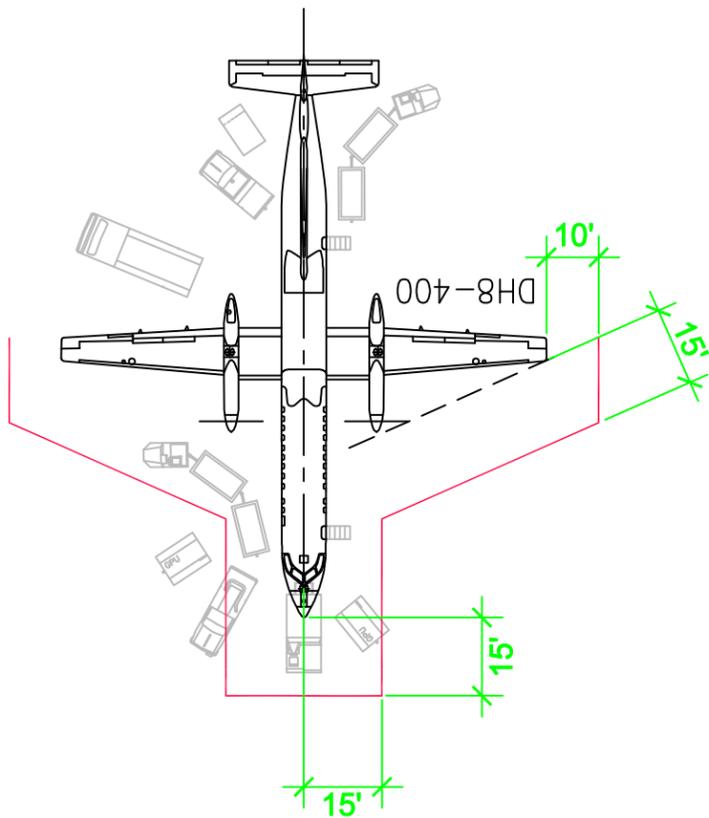
**Safety Markings Layout (Alternate Aircraft Position)**

Scale: Not to Scale

2
2

# POS Gate Striping Standards

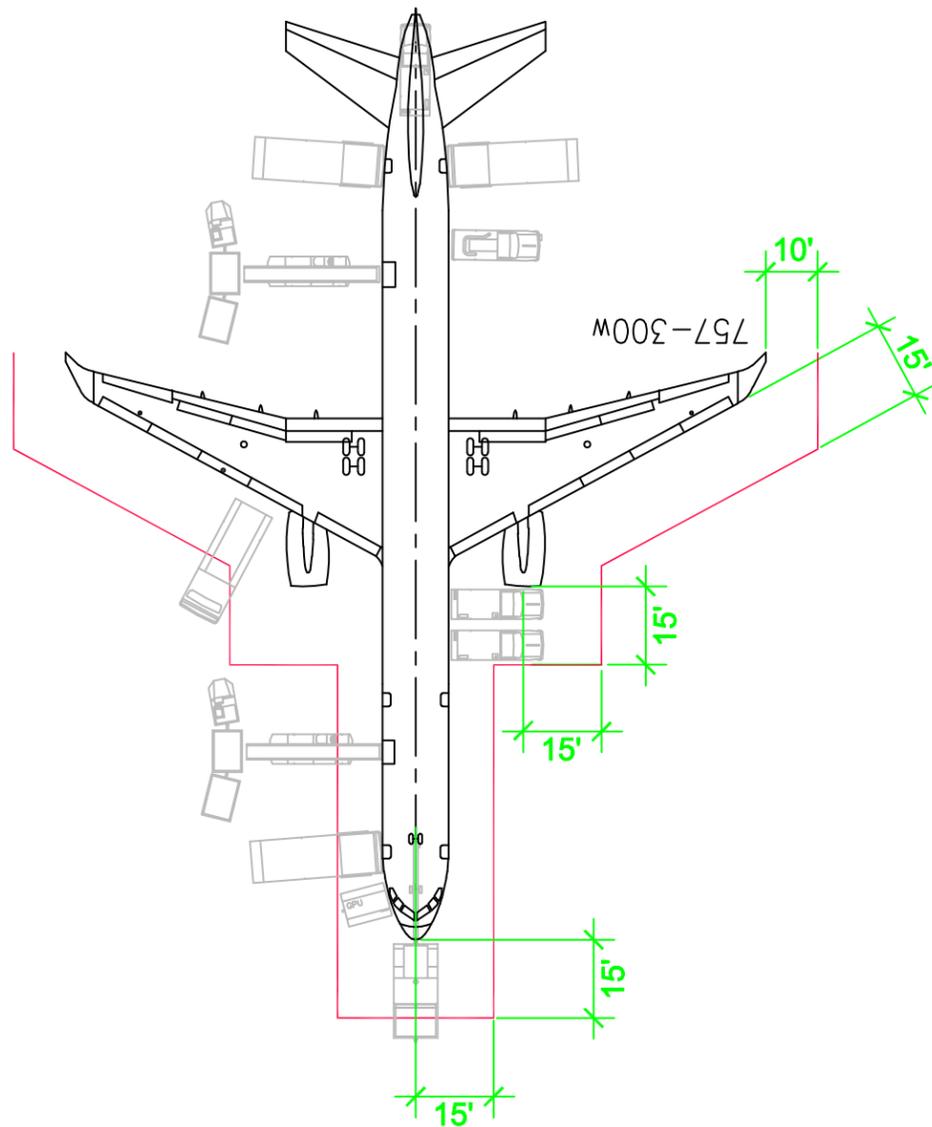
	<b>Aviation Planning</b> Seattle-Tacoma International Airport	SCALE As Noted
	PROJECT: POS - Gate Planning SHEET TITLE: POS Gate Striping Standards	DATE: 08/12/2021 REVISION #: 3



**Regional (Prop) Aircraft  
Equipment Restraint Line  
Dimensional Criteria**

Scale: Not to Scale

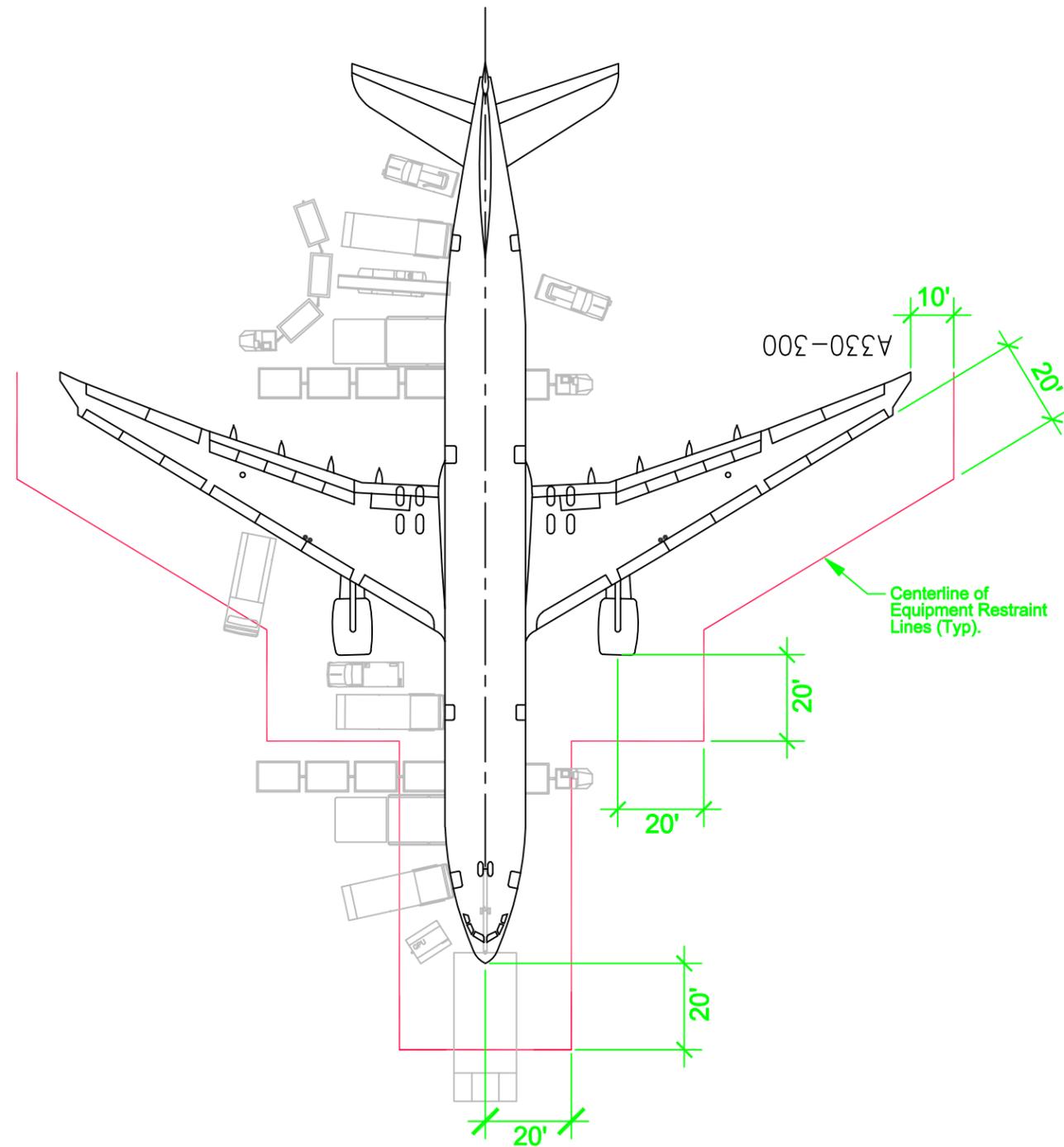
1  
3



**Narrowbody Aircraft  
Equipment Restraint Line Dimensional Criteria**

Scale: Not to Scale

2  
3



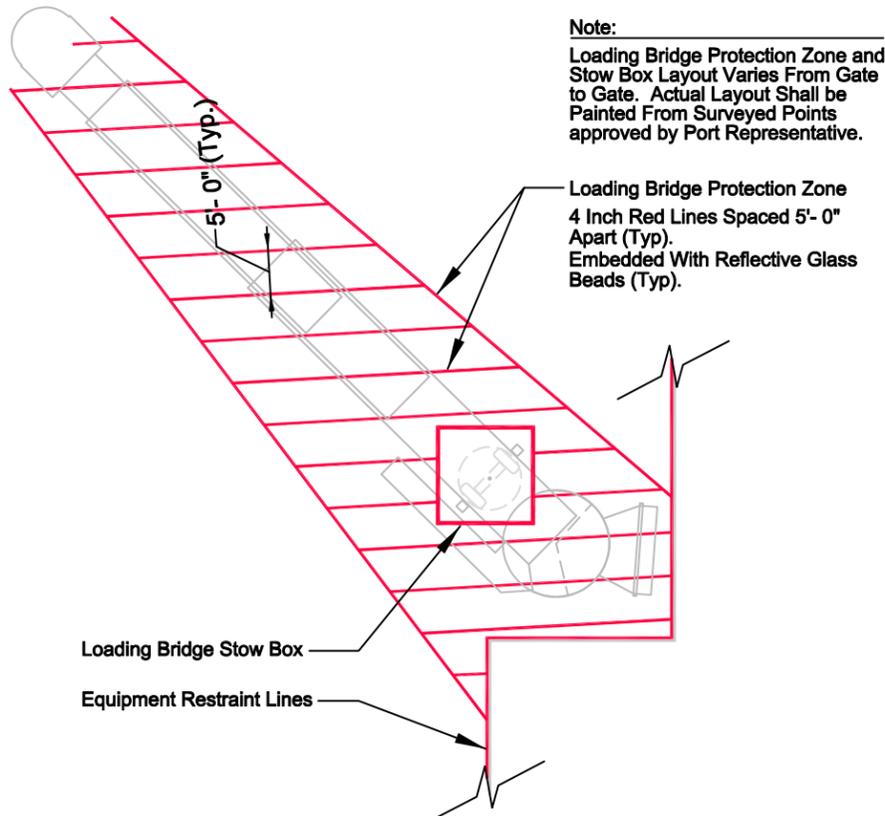
**Widebody Aircraft  
Equipment Restraint Line Dimensional Criteria**

Scale: Not to Scale

3  
3

**Note:**  
Safety Envelopes Are Designed  
For Idle Thrust Operations Only  
Operations Above Idle Thrust  
Are Prohibited In The Gate Area

# POS Gate Striping Standards

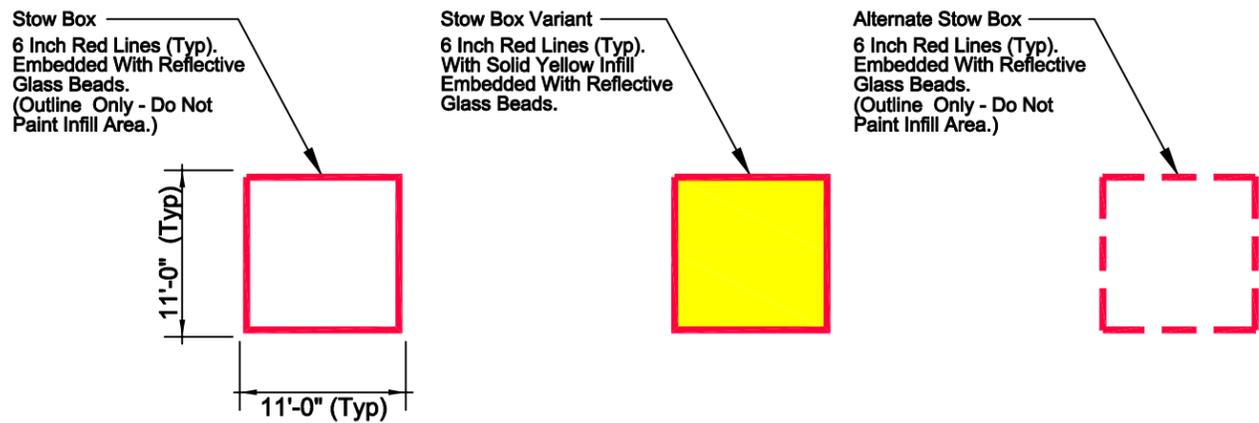


**Note:**  
Loading Bridge Must Remain Clear Of Equipment Restraint Line When In Stowed Position

### Loading Bridge Protection Zone

Scale: Not to Scale

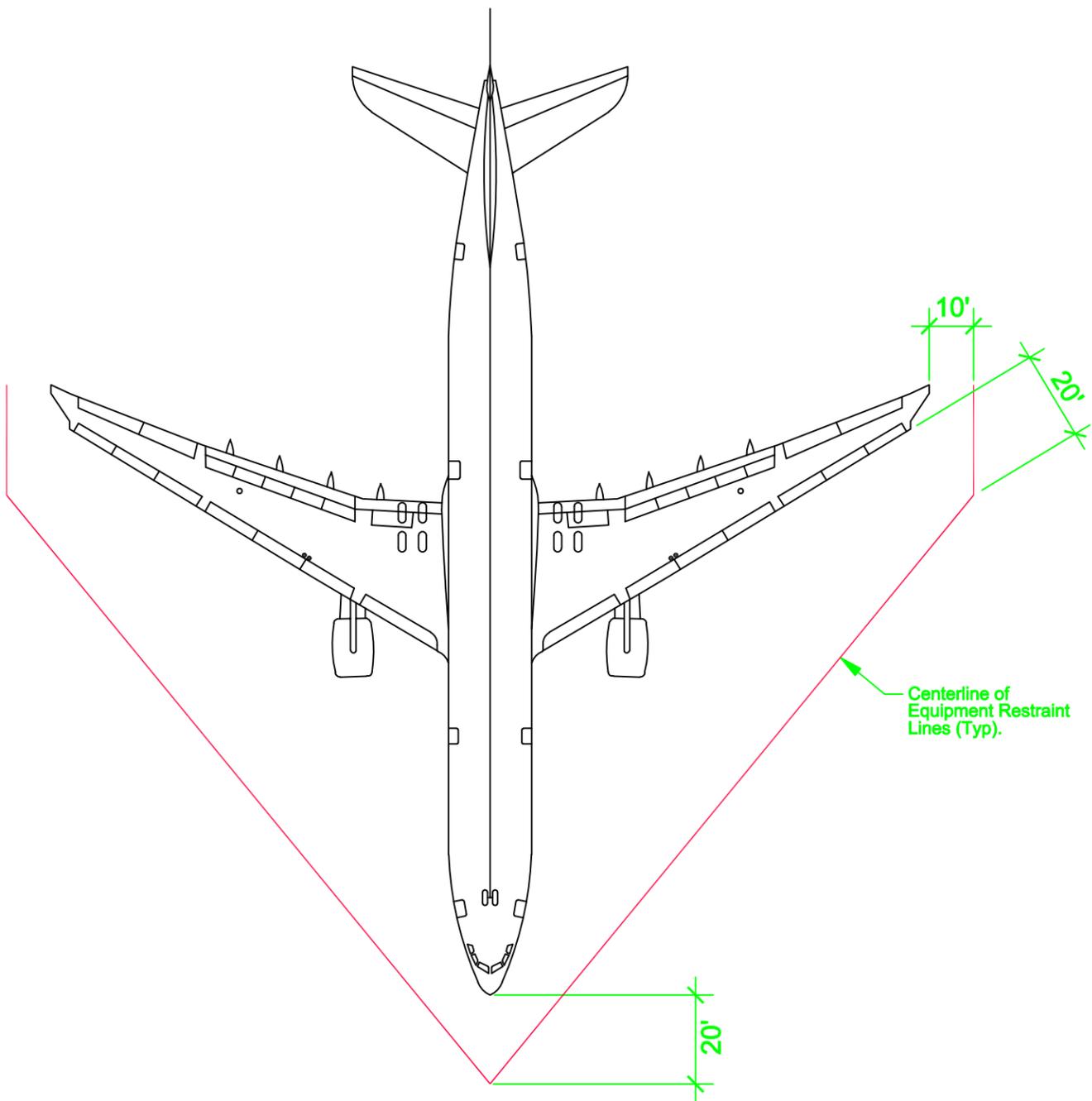
1  
4



### Loading Bridge Stow Box

Scale: Not to Scale

2  
4



### Widebody Cargo / Hardstand Variant Equipment Restraint Line Dimensional Criteria

Scale: Not to Scale

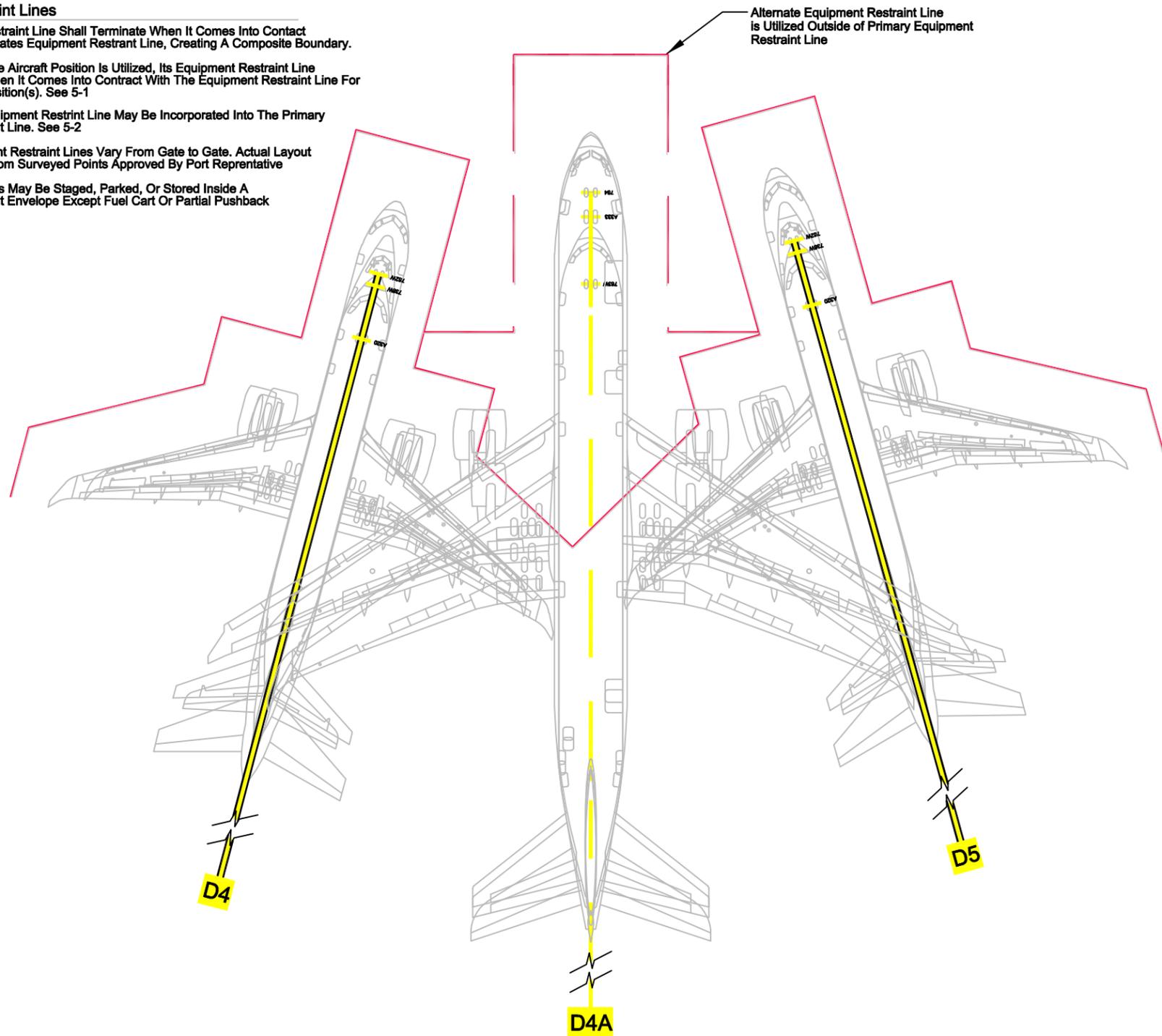
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# POS Gate Striping Standards

	<b>Aviation Planning</b> Seattle-Tacoma International Airport	SCALE No Scale
	PROJECT: POS - Gate Planning SHEET TITLE: POS Gate Striping Standards	DATE: 08/12/2021 REVISION #: 3

**Equipment Restraint Lines**

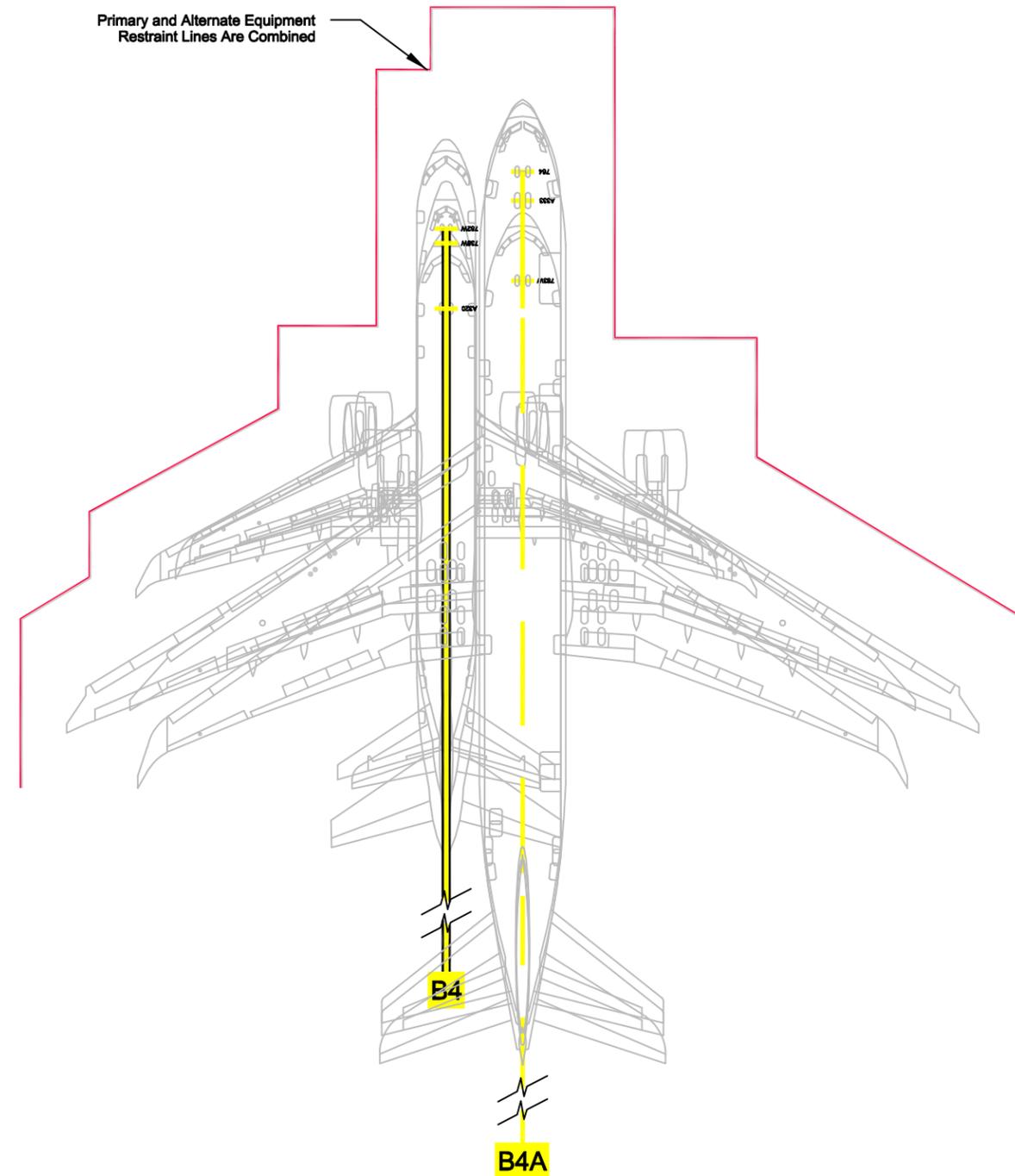
1. The Equipment Restraint Line Shall Terminate When It Comes Into Contact With An Adjacent Gates Equipment Restraint Line, Creating A Composite Boundary.
2. When An Alternative Aircraft Position Is Utilized, Its Equipment Restraint Line Shall Terminate When It Comes Into Contact With The Equipment Restraint Line For Primary Aircraft Position(s). See 5-1
3. The Alternative Equipment Restraint Line May Be Incorporated Into The Primary Equipment Restraint Line. See 5-2
4. Composit Equipment Restraint Lines Vary From Gate to Gate. Actual Layout Shall be Painted From Surveyed Points Approved By Port Representative
5. No GSE Or Vehicles May Be Staged, Parked, Or Stored Inside A Equipment Restraint Envelope Except Fuel Cart Or Partial Pushback Tug. See Sheet 7



**Safety Markings Layout (Partial Composite)**

Scale: Not to Scale

1  
5

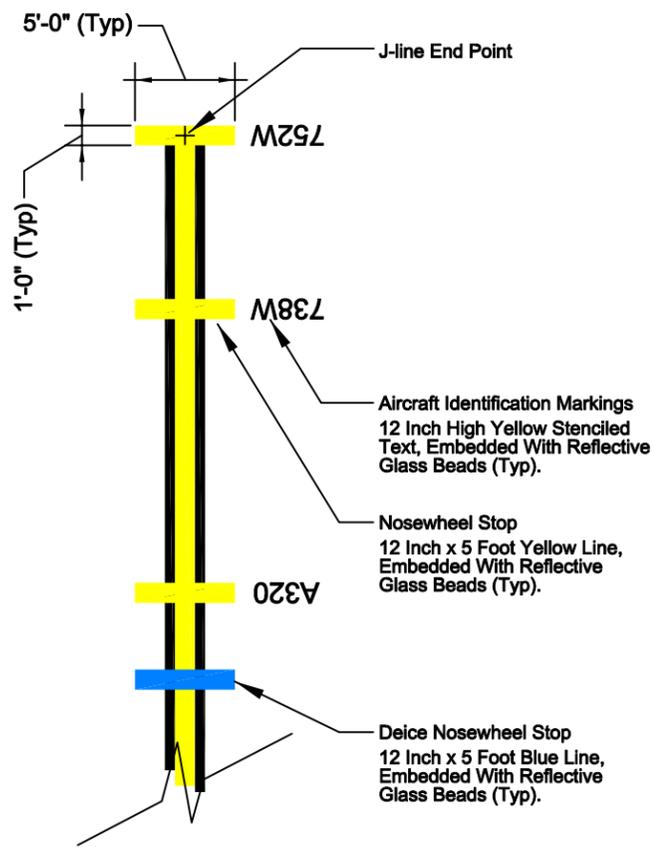


**Safety Markings Layout (Full Composite)**

Scale: Not to Scale

2  
5

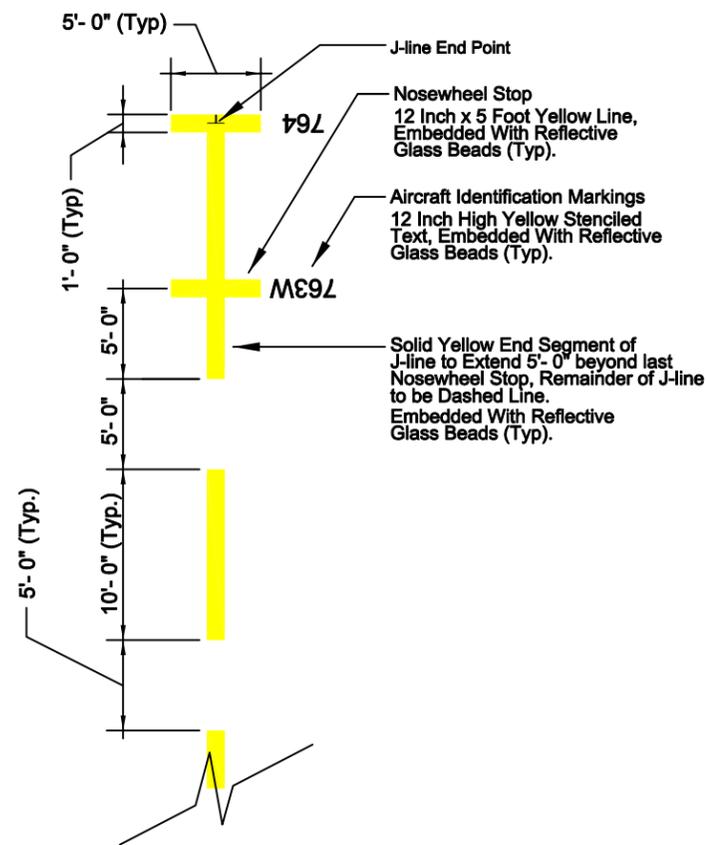
# POS Gate Striping Standards



**Nosewheel Stops/  
Aircraft Identification Markings**

Scale: Not to Scale

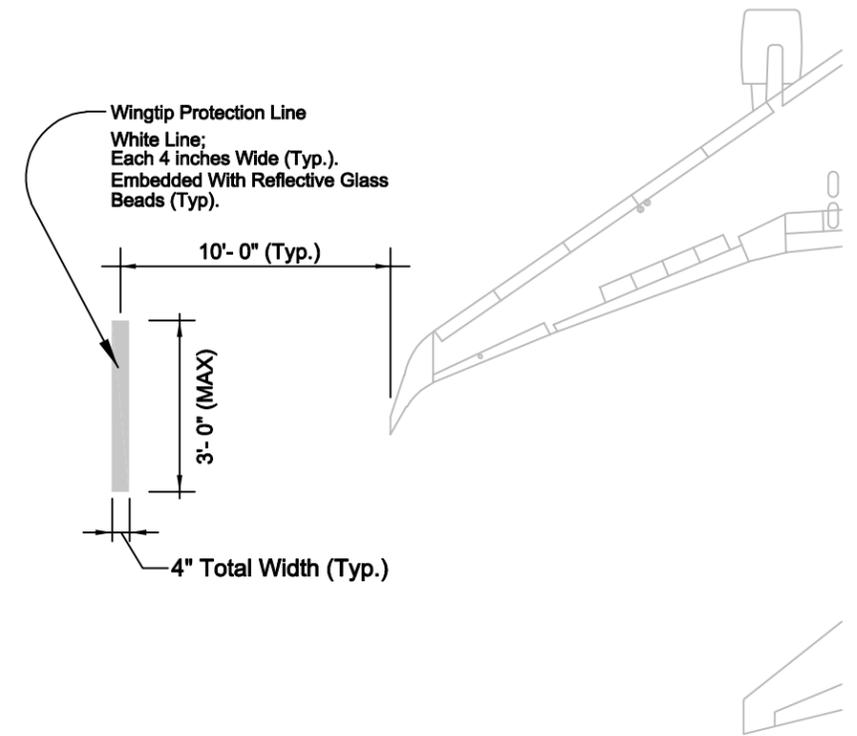
1  
6



**Alternate Nosewheel Stops/  
Aircraft Identification Markings**

Scale: Not to Scale

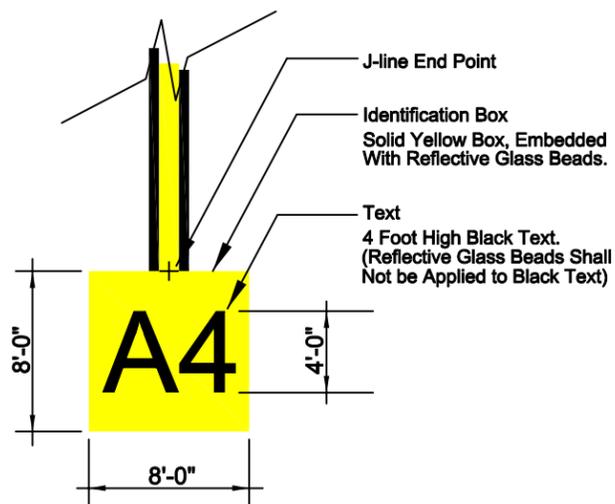
2  
6



**Gate Wingtip Projection Line**

Scale: Not to Scale

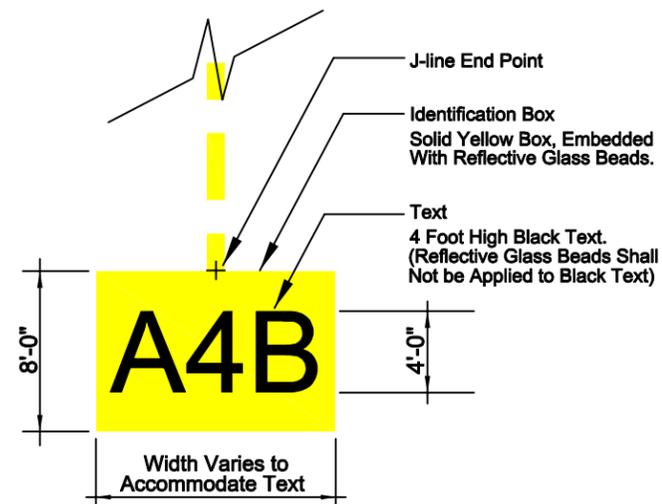
3  
6



**Gate Identification Box**

Scale: Not to Scale

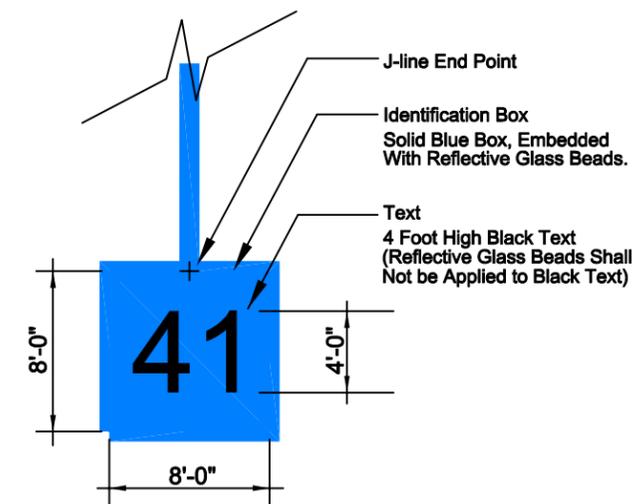
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6



**Alternate Gate Identification Box**

Scale: Not to Scale

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6



**Deice Identification Box**

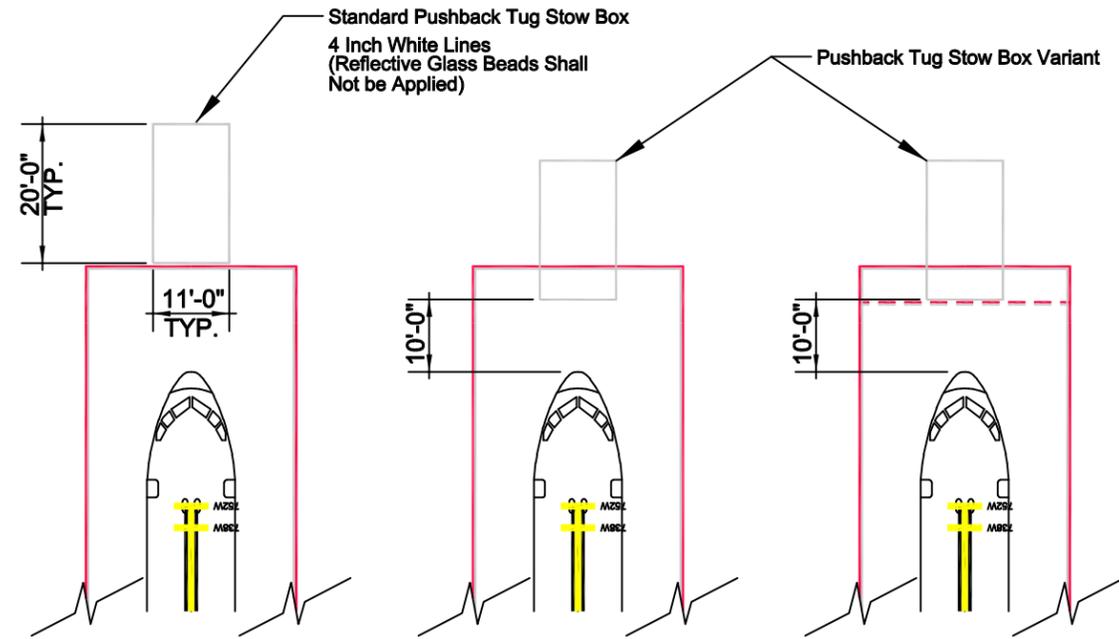
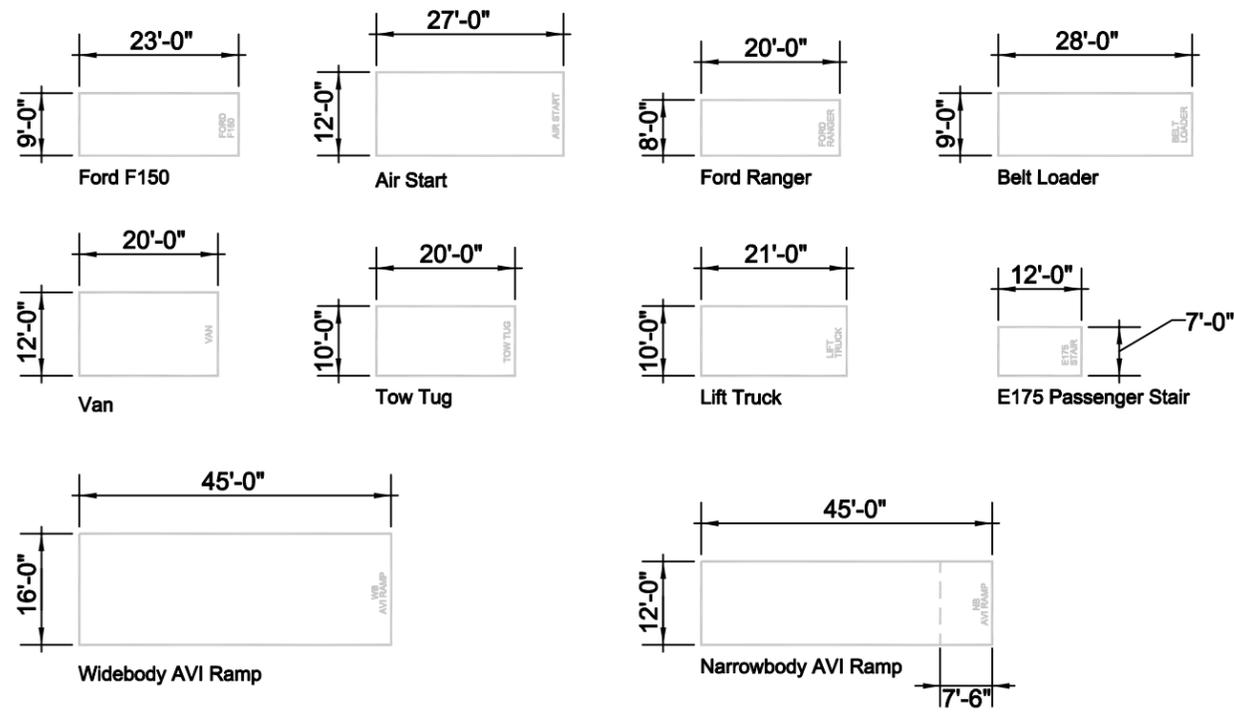
Scale: Not to Scale

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6

# POS Gate Striping Standards

**Note:**  
For letters and numbers, all font shall match existing Port of Seattle font (Alpine), spacing, and stencils.

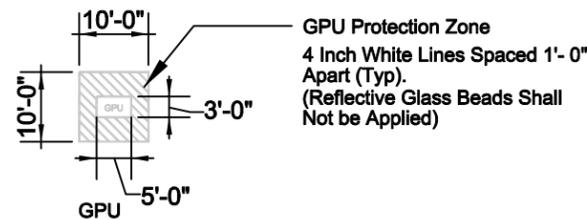
	<b>Aviation Planning</b> Seattle-Tacoma International Airport	SCALE As Noted
	PROJECT: POS - Gate Planning SHEET TITLE: POS Gate Striping Standards	DATE: 08/12/2021 REVISION #: 3



### Pushback Tug Stow Box

Scale: Not to Scale

2  
7



GPU Protection Zone  
4 Inch White Lines Spaced 1'-0"  
Apart (Typ).  
(Reflective Glass Beads Shall  
Not be Applied)



For letters and numbers, all font shall match existing  
Port of Seattle font (Alpine), spacing, and stencils.

Note:  
All GSE Stow Boxes Shall Be 4 Inch White Lines  
(Reflective Glass Beads Shall Not Be Applied)

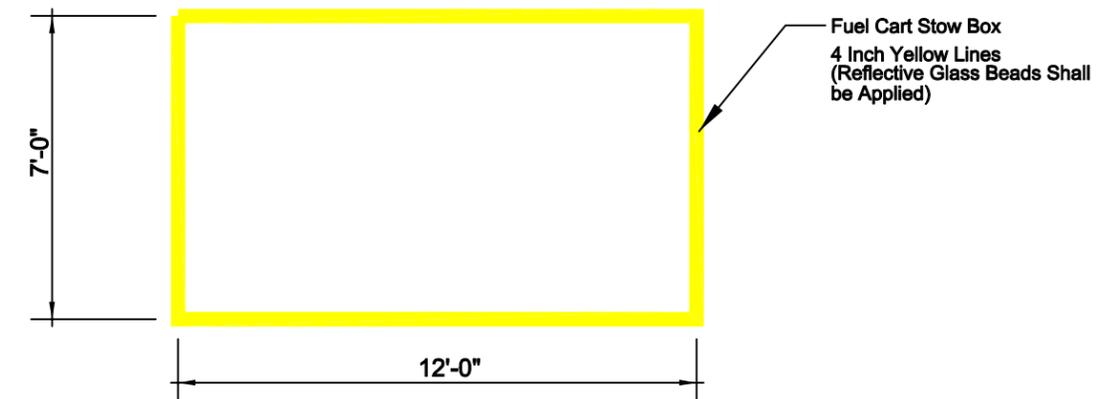
### GSE Box Dimensions

Scale: Not to Scale

1  
7

### Equipment Restraint Lines & GSE Staging

1. The Fuel Cart Stow Box Are The Only Approved GSE Inside Of The Equipment Restraint Line / Safety Envelope.
2. Pushback Tug Stow Box Can Overlap Equipment Restraint Line With Port Approval. See 7-2

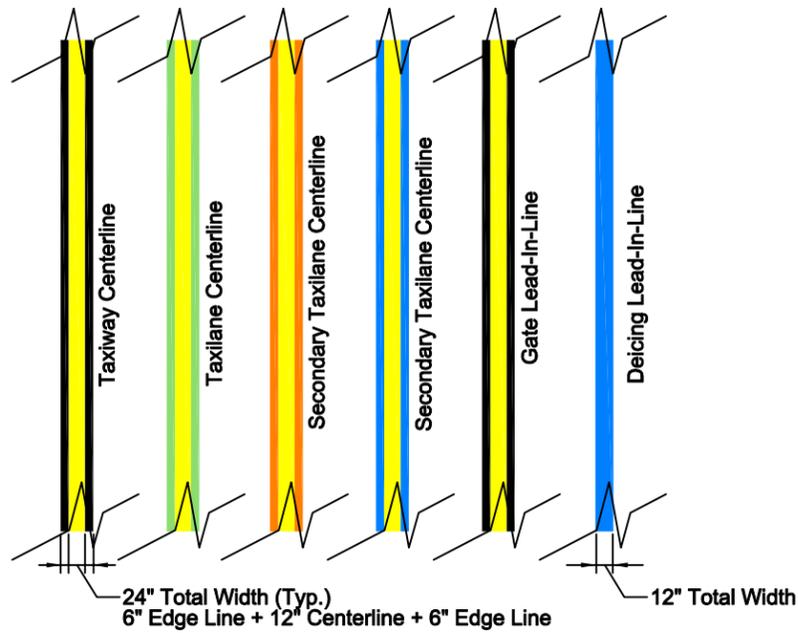


### Fuel Cart Stow Box

Scale: Not to Scale

3  
7

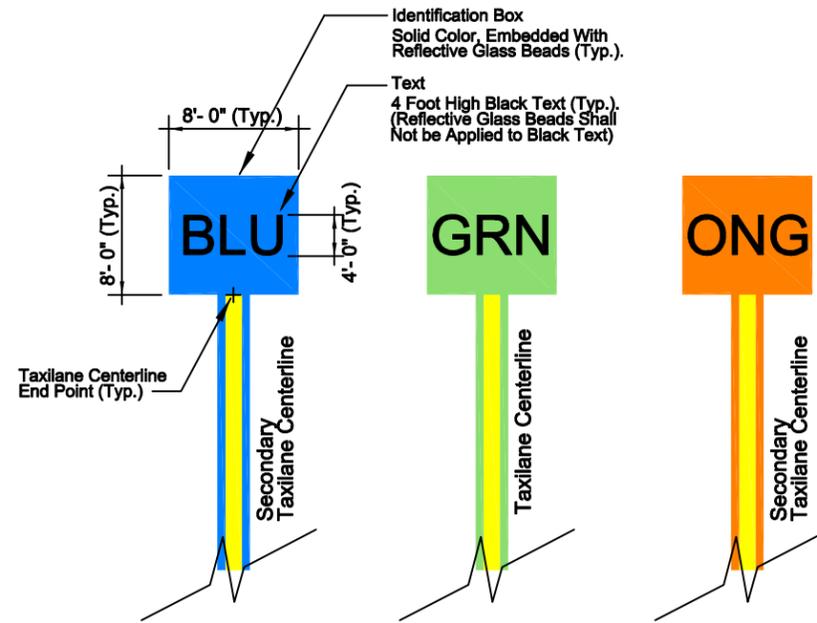
# POS Gate Striping Standards



**Centerline Markings**

Scale: Not to Scale

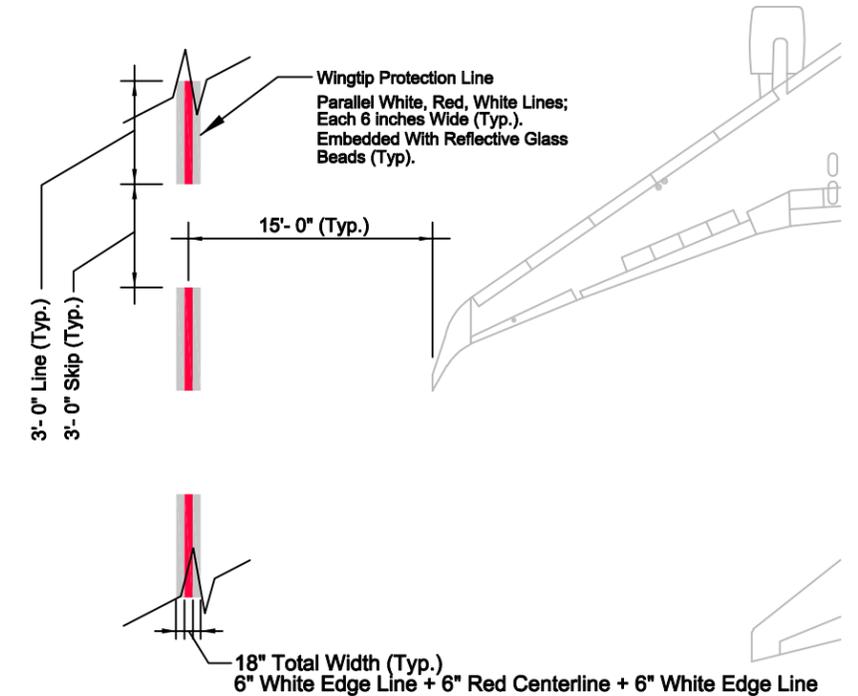
1  
8



**Taxilane Identification Boxes (Dual Taxilanes)**

Scale: Not to Scale

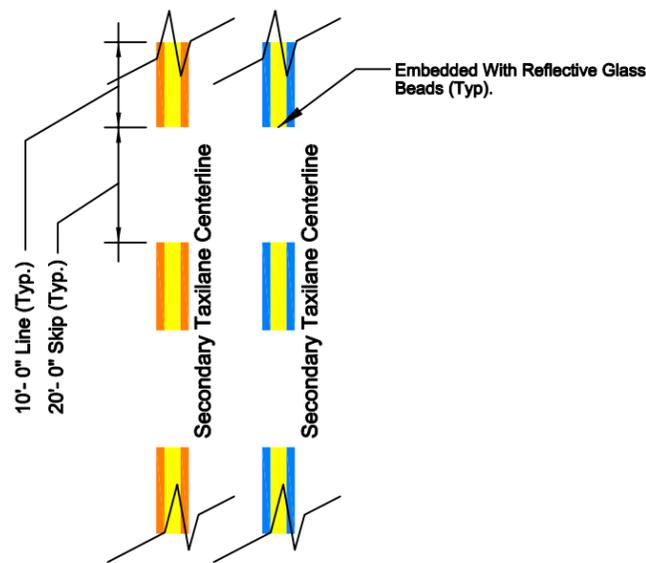
3  
8



**Taxilane Wingtip Protection Line**

Scale: Not to Scale

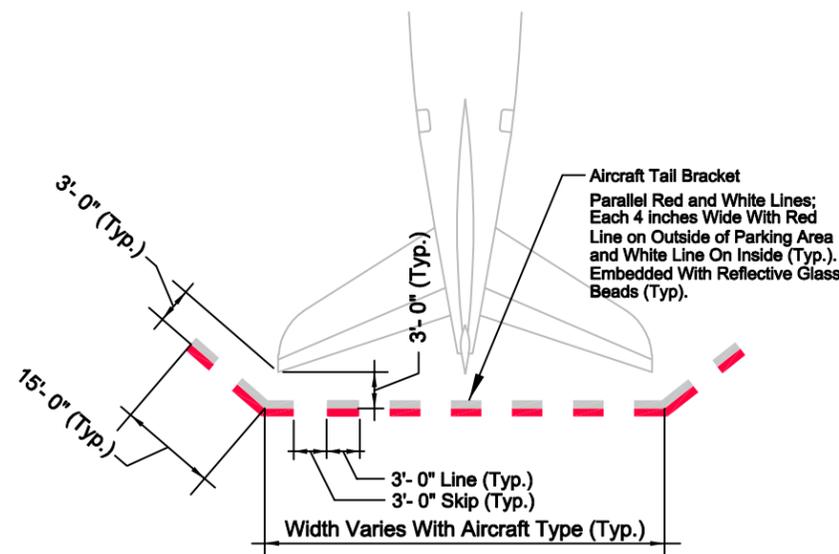
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**Taxilane Markings in Aircraft Overlap Zones (Dual Taxilanes)**

Scale: Not to Scale

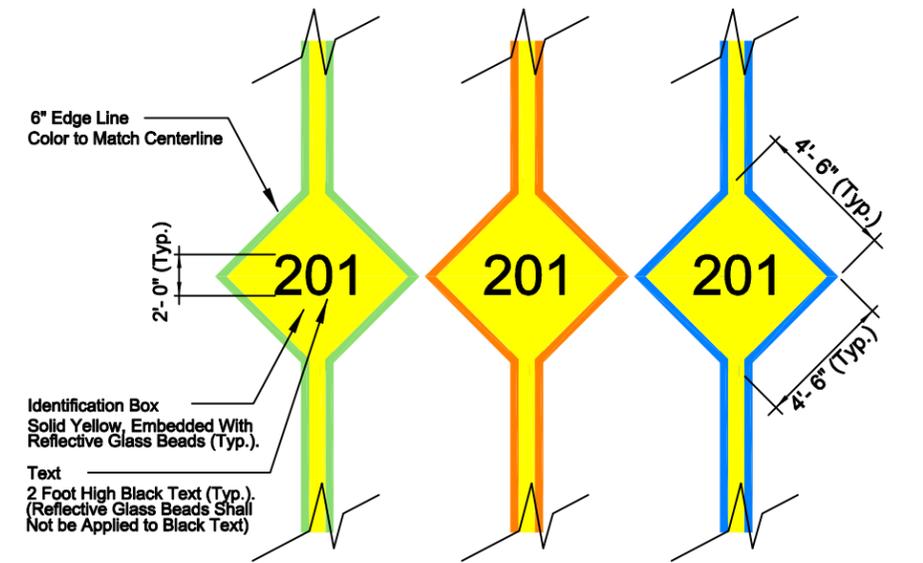
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8



**Aircraft Tail Bracket**

Scale: Not to Scale

4  
8



**Push-Back Diamond**

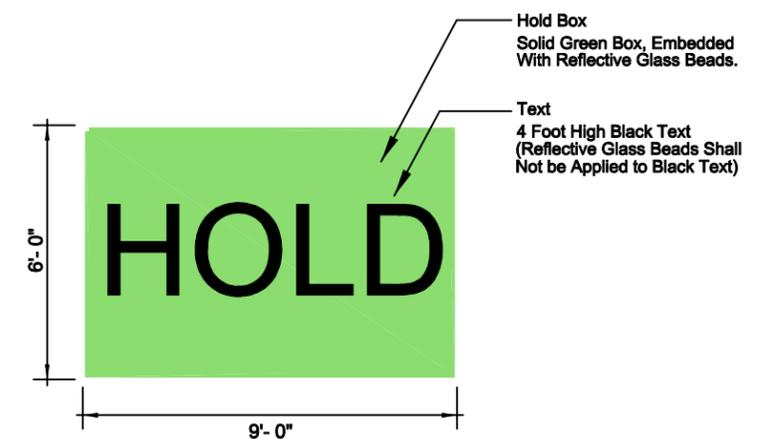
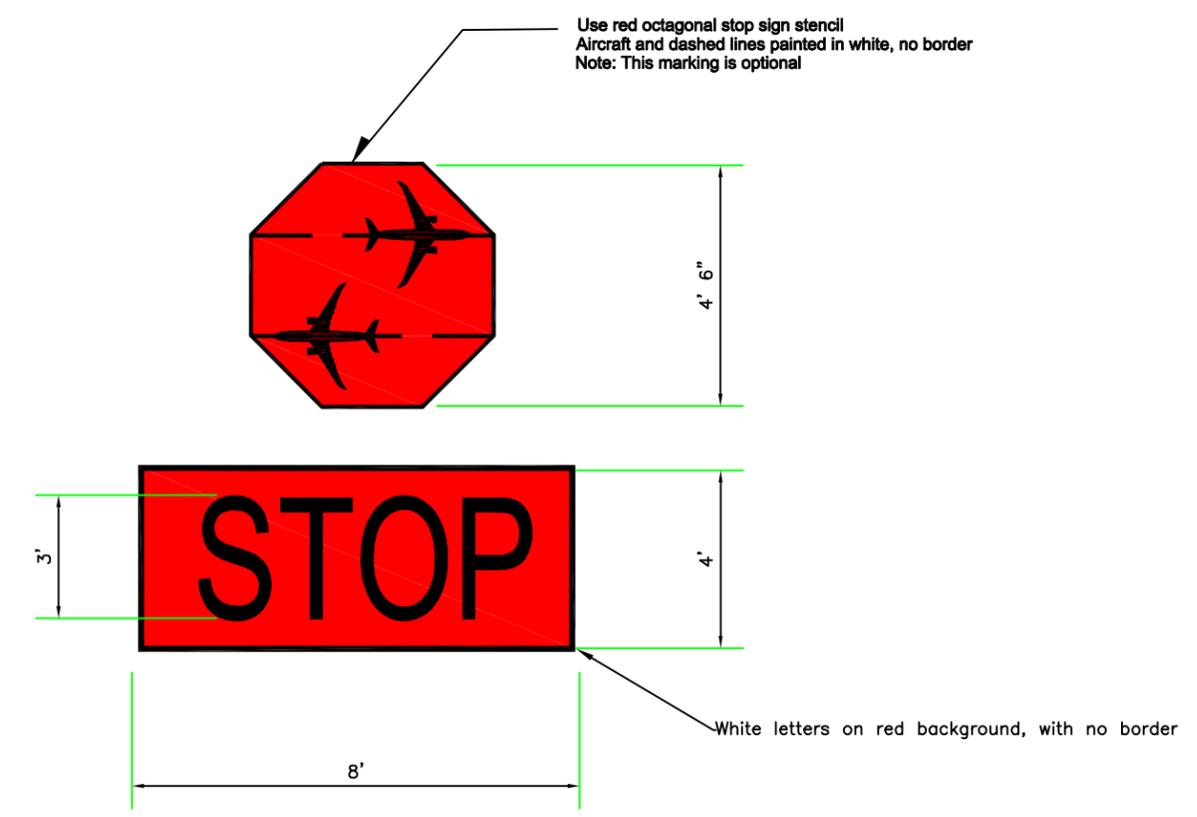
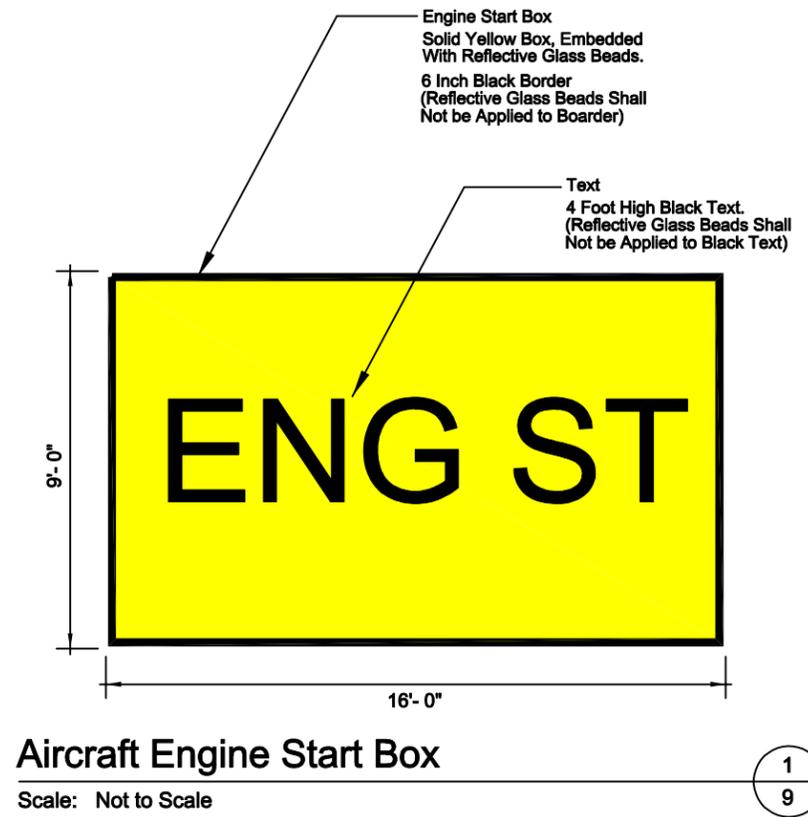
Scale: Not to Scale

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8

# POS Gate Striping Standards

Note:  
For letters and numbers, all font shall match existing Port of Seattle font (Alpine), spacing, and stencils.

	<b>Aviation Planning</b> Seattle-Tacoma International Airport	SCALE As Noted
	PROJECT: POS - Gate Planning SHEET TITLE: POS Gate Striping Standards	DATE: 08/12/2021 REVISION #: 3



# POS Gate Striping Standards

Note:  
For letters and numbers, all font shall match existing Port of Seattle font (Alpine), spacing, and stencils.

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