

2022

Airport Master Record Seminar

**Airport Master Record (AMR) Module
within the
Airport Data and Information Portal (ADIP)**

**New Orleans, Louisiana
March 29 – 31, 2022**



FAA
Office of Airports

2018
AIRPORT MASTER RECORD SEMINAR

60.-63. Declared Distances

Airport Master Record
FAA Form 5010-1

Chart Supplement

	02/20	11/29
RUNWAY DATA		
> 30 RUNWAY INDENT:	7,001	10,104
> 31 LENGTH:	150	150
> 32 WIDTH:	CONC-E	CONC-E
> 33 SURF TYPE-COND:	GRVD	GRVD
> 34 SURF TREATMENT:	75.0	75.0
35 GROSS WT: S	180.0	180.0
36 (IN THSDS) D	380.0	380.0
37 2D		
38 2D/2D2		
> 39 PCN:	64 /R/C/W/T	123/R/C/W/T
LIGHTING/APCH AIDS		
> 40 EDGE INTENSITY:	HIGH	HIGH
> 42 RWY MARK TYPE-COND:	PIR - G / PIR - G	PIR - G / PIR - G
> 43 VGSI:	P4L / P4L	P4R / P4R
44 THR COSSING HGT.:	52 / 52	55 / 68
45 VISUAL GLIDE ANGLE:	3.00 / 3.00	2.80 / 3.00
> 46 CNTRLN-TDZ:	Y - N / Y - N	Y - Y / Y - N
> 47 RVR-RVV:	TR - N / TR - N	TMR - N / TMR - N
> 48 REIL:	/	/
> 49 APCH LIGHTS:	RLLS / MALS	ALSF2 / MALSR
OBSTRUCTION DATA		
50 FAR 77 CATEGORY	PIR / C	PIR / PIR
> 51 DISPLACED THR:	/	/ 304
> 52 CTLG OBSTN:	ROAD / ROAD	/ TREE
> 53 OBSTN MARKED/LGTD:	L / L	/
> 54 HGT ABOVE RWY END:	12 / 13	/ 53
> 55 DIST FROM RWY END:	200 / 200	/ 1,557
> 56 CNTRLN OFFSET:	365R / 289L	/ 694R
57 OBSTN CLNC SLOPE:	0:1 / 0:1	50:1 / 25:1
58 CLOSE IN OBSTN:	Y / Y	N / N
DECLARED DISTANCES		
> 60 TAKE OFF RUN AVBL (TORA):	7,001 / 7,001	10,104 / 10,104
> 61 TAKE OFF DIST AVBL (TODA):	7,001 / 7,001	10,104 / 10,104
> 62 ACLT STOP DIST AVBL (ASDA):	7,001 / 7,001	9,800 / 10,104
> 63 LNDG DIST AVBL (LDA):	7,001 / 7,001	9,800 / 9,800

(2) ARPT MGR PLEASE ADVISE FSS IN ITEM 86 WHEN CHANGES OCCUR TO ITEMS PRECEDED BY >

RUNWAY DECLARED DISTANCE INFORMATION

RWY 09: TORA-3113 TODA-3113 ASDA-3113 LDA-3113
RWY 18L:TORA-3697 TODA-3697 ASDA-3697 LDA-3697
RWY 18R:TORA-6880 TODA-6880 ASDA-6035 LDA-5510
RWY 27: TORA-3113 TODA-3113 ASDA-3113 LDA-3113
RWY 36L:TORA-6880 TODA-6880 ASDA-5955 LDA-5135
RWY 36R:TORA-3697 TODA-3697 ASDA-3697 LDA-3697

Declared Distances – Data Elements 60 - 63

Airport Master Record Module Facility Data

Declared Distances	11	29
60. Take Off Run Available (TORA) ⓘ	10104 ⓘ	10104 ⓘ
61. Take Off Distance Available (TODA) ⓘ	10104 ⓘ	10104 ⓘ
62. Accelerate Stop Distance Available (ASDA) ⓘ	9800 ⓘ	10104 ⓘ
63. Landing Distance Available (LDA) ⓘ	9800 ⓘ	9800 ⓘ

Declared Distances – Data Elements 60 - 63

System Permission – Airport Master Record

Field #	Field Name	Airport Manager	FAA	STATE	State Inspector	Remarks Required
60	Take Off Run Available (TORA)	N	Y	N	N	N
61	Take Off Distance Available (TODA)	N	Y	N	N	N
62	Accelerate Stop Distance Available (ASDA)	N	Y	N	N	N
63	Landing Distance Available (LDA)	N	Y	N	N	N

60.-63. Declared Distances

09/30/2009

5190.6B
Appendix R

What are Declared Distances? (a) Runway operational distances that pilots use to calculate their maximum allowable airplane operating weights; (b) Declared distances may shorten runway lengths available for landings and/or takeoffs, thus may reduce the allowable operating weights of aircraft, and as a result, may negatively impact capacity.

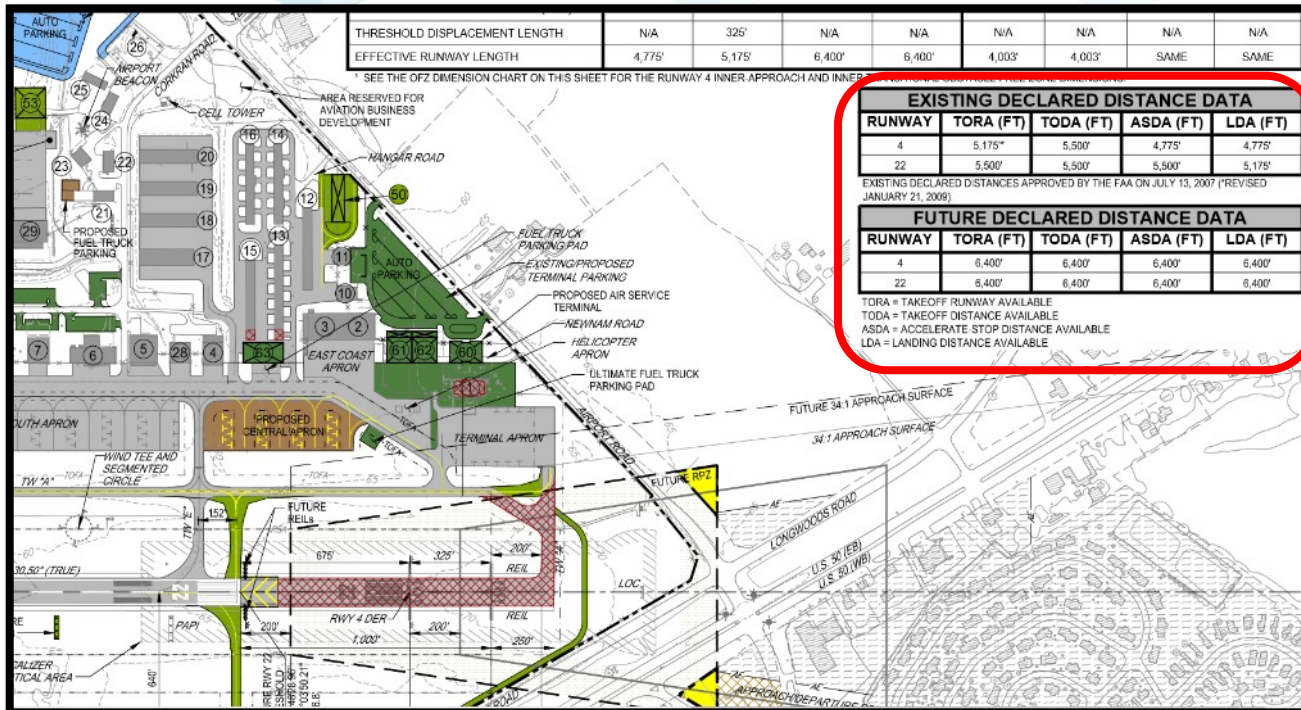
Purpose of Declared Distances:

- a) To increase takeoff runway length at constrained airport sites while still meeting design standards. (ex. increase runway takeoff length in one direction while maintaining standard RSAs, ROFAs and RPZs.)
- b) To enhance safety (improve RSAs, ROFAs, and RPZs) at constrained airport sites. (ex. existing runway safety area does not meet standards, but declared distances are used to effectively lengthen the runway safety area beyond the stop end of the runway.)

60.-63. Declared Distances

USDOT/FAA Order 5190.6B

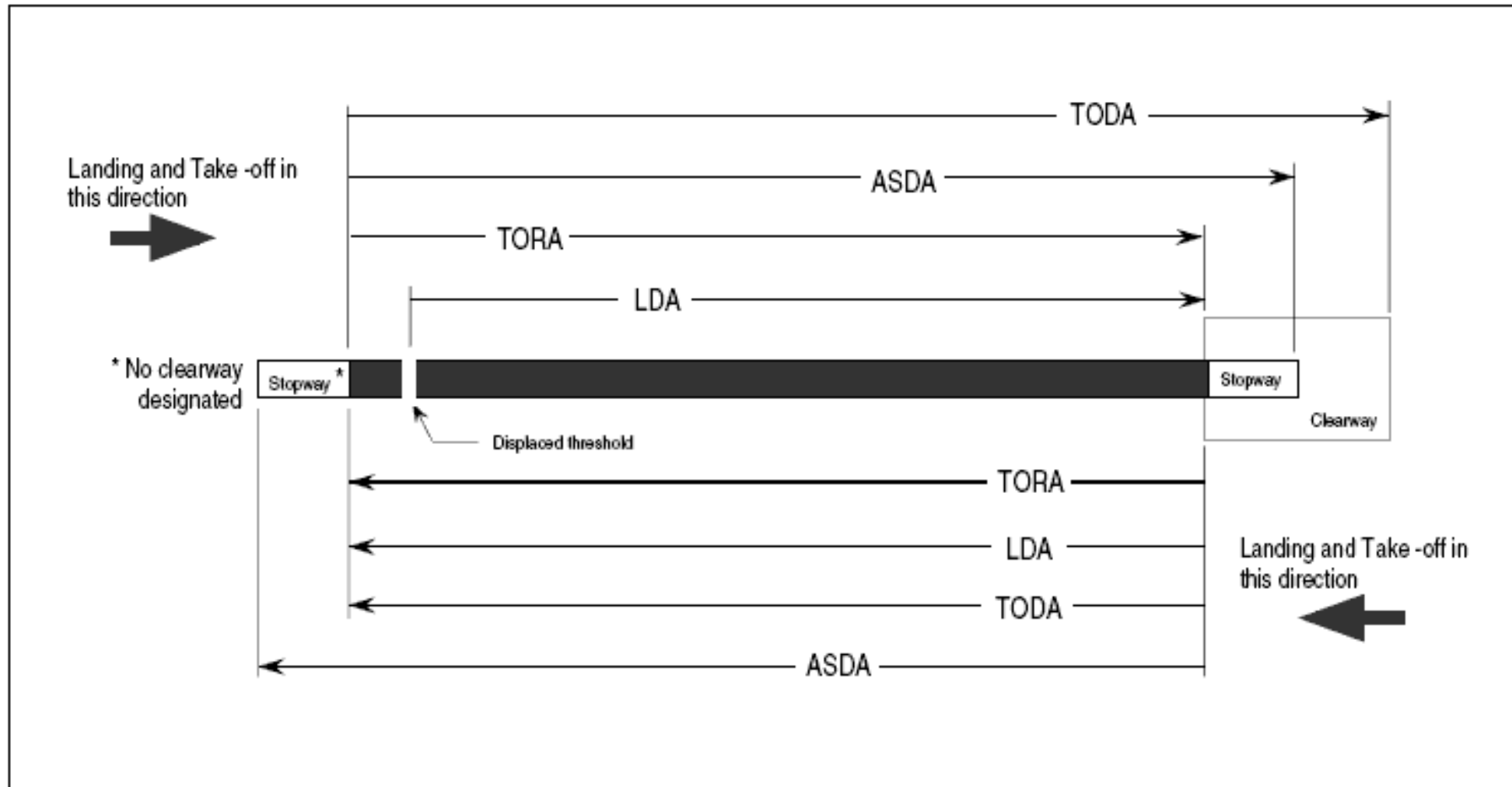
FAA Airport Compliance Handbook / CertAlert 09-05



- Declared distances are the distances the **Airport Owner/Operator** declares available for use in meeting an airplane's takeoff run (TORA), takeoff distance (TODA), accelerate stop distance (ASDA), and landing distance (LDA) requirements for each runway end.
- **Airport Owners/Operators** are responsible for ensuring that the airport information published in the Airport Master Record and the Chart Supplement is accurate and current.
- Pilots and airplane operators' performance engineers need this information for calculating their allowable takeoff and landing weights and speeds.
- Declared Distances are required to be shown on the Airport Layout Plan.
- Only FAA airport inspectors or FAA Regional or Airport District Office Personnel can edit the Declared Distances data elements.



60.-63. Declared Distances



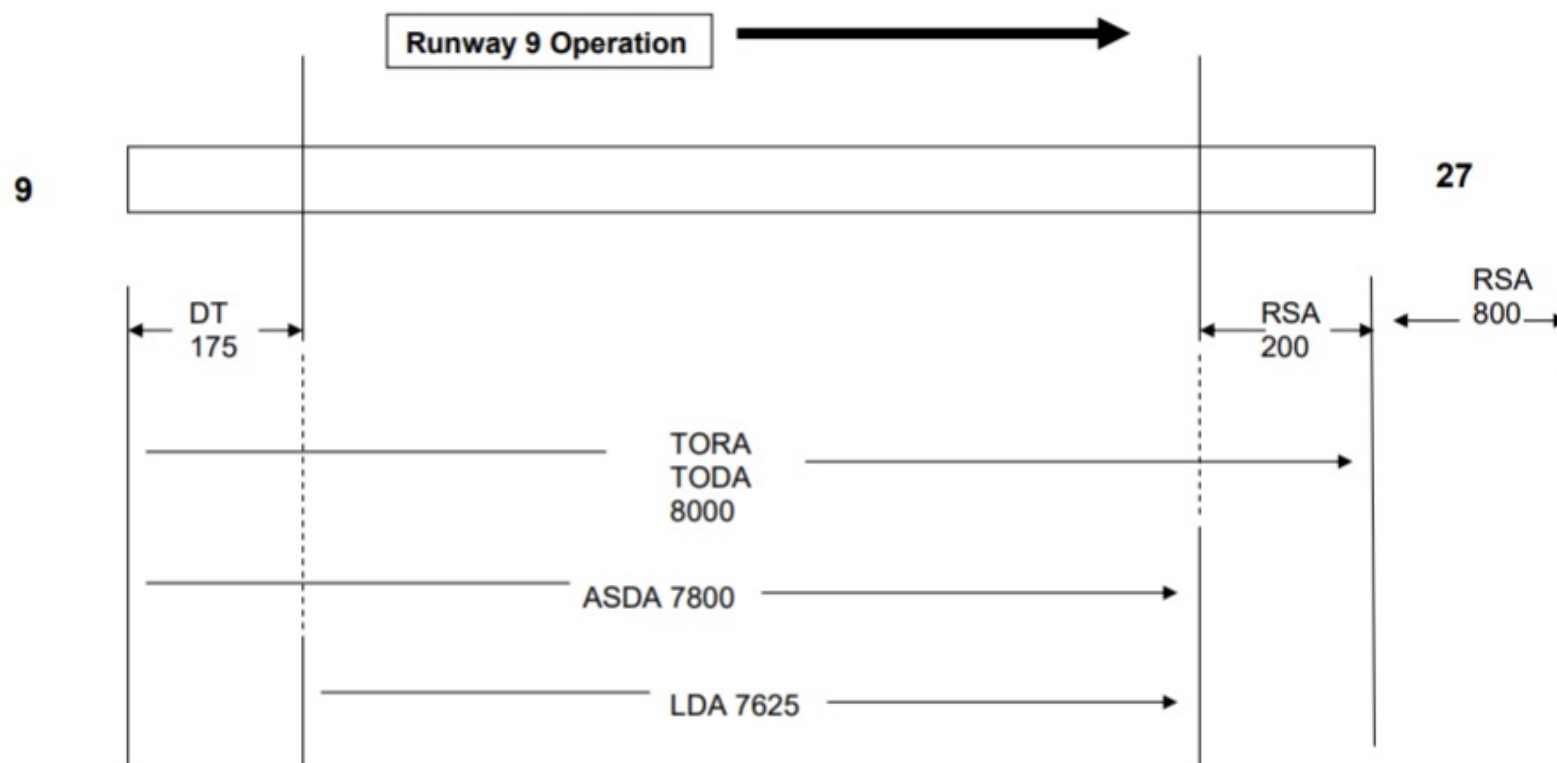
Declared Distances – Example

For declared distance definitions and further information on these concepts, see AC150/5300-13.

EXAMPLE Runway 9 - 27 is 8000 feet: (In calculating declared distances, always use one runway end at a time, never try to figure both ends together, since that will only confuse the situation. Also use arrows to show the direction of operation.)

Runway 9: Runway 9 has a displaced threshold of 175 feet. The departure end of the runway is used to gain a 200 foot safety area needed to complete the 1000 foot required RSA for this runway.

TORA 8000 TODA 8000 ASDA 7800 (8000-200) LDA 7625 (8000-175-200)

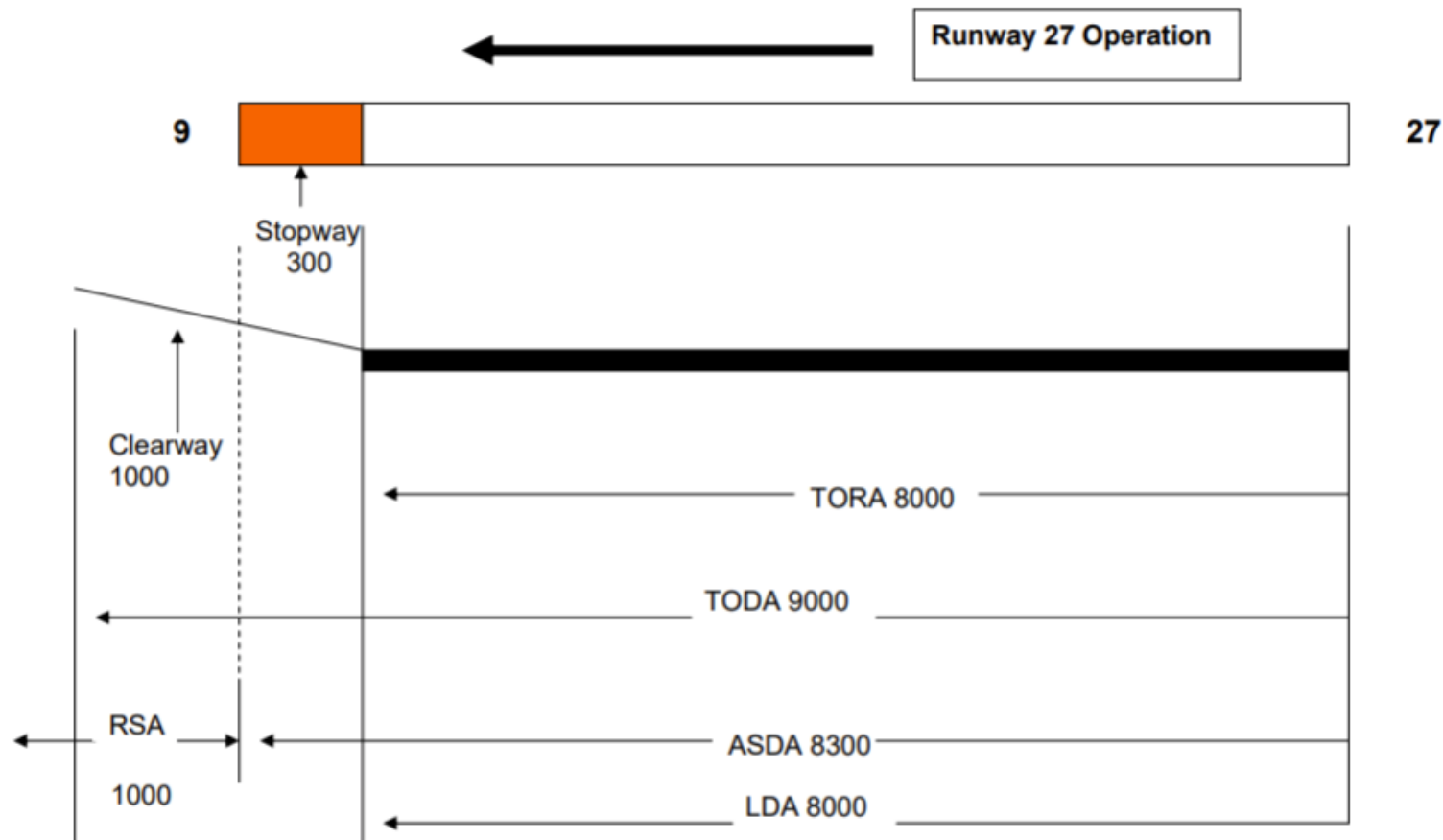


Declared Distances – Example

Runway 27:

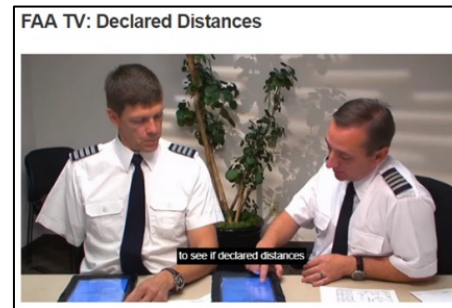
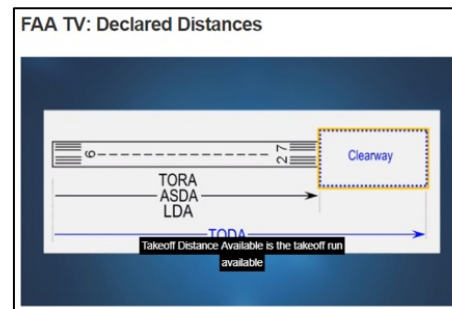
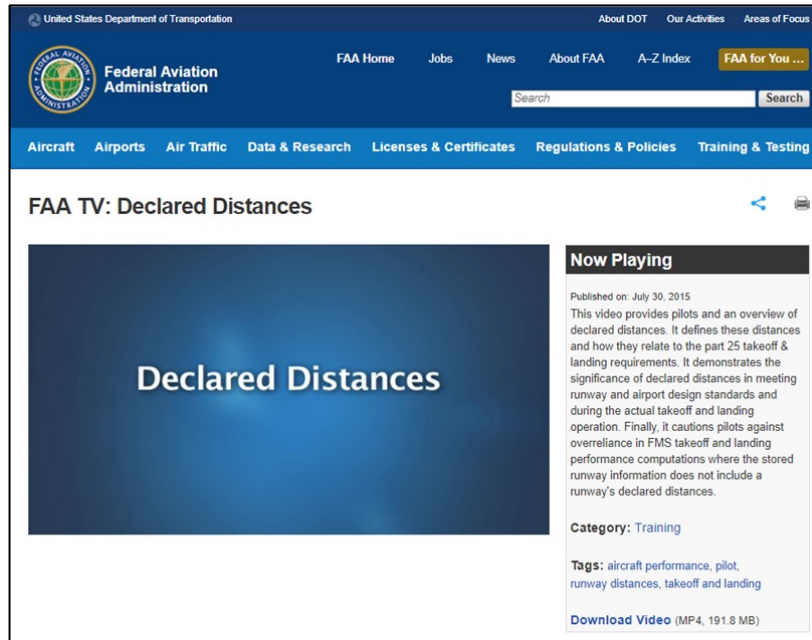
Runway 27 has a clearway of 1000 ft and a Stopway of 300 ft. There is no displaced threshold. The approach to runway 27 has a full safety area before the runway threshold for the landing operation. The RSA on the departure side is a full 1000 feet beyond the 300 foot Stopway.

TORA 8000 TODA 9000 (8000+1000) ASDA 8300 (8000+300) LDA 8000



60.-63. Declared Distances References

- See Federal Aviation Regulations (FAR)
Aeronautical Information Manual (AIM)
A/C 150/5300-13A – Airport Design
- FAA TV : Declared Distances Takeoff Run

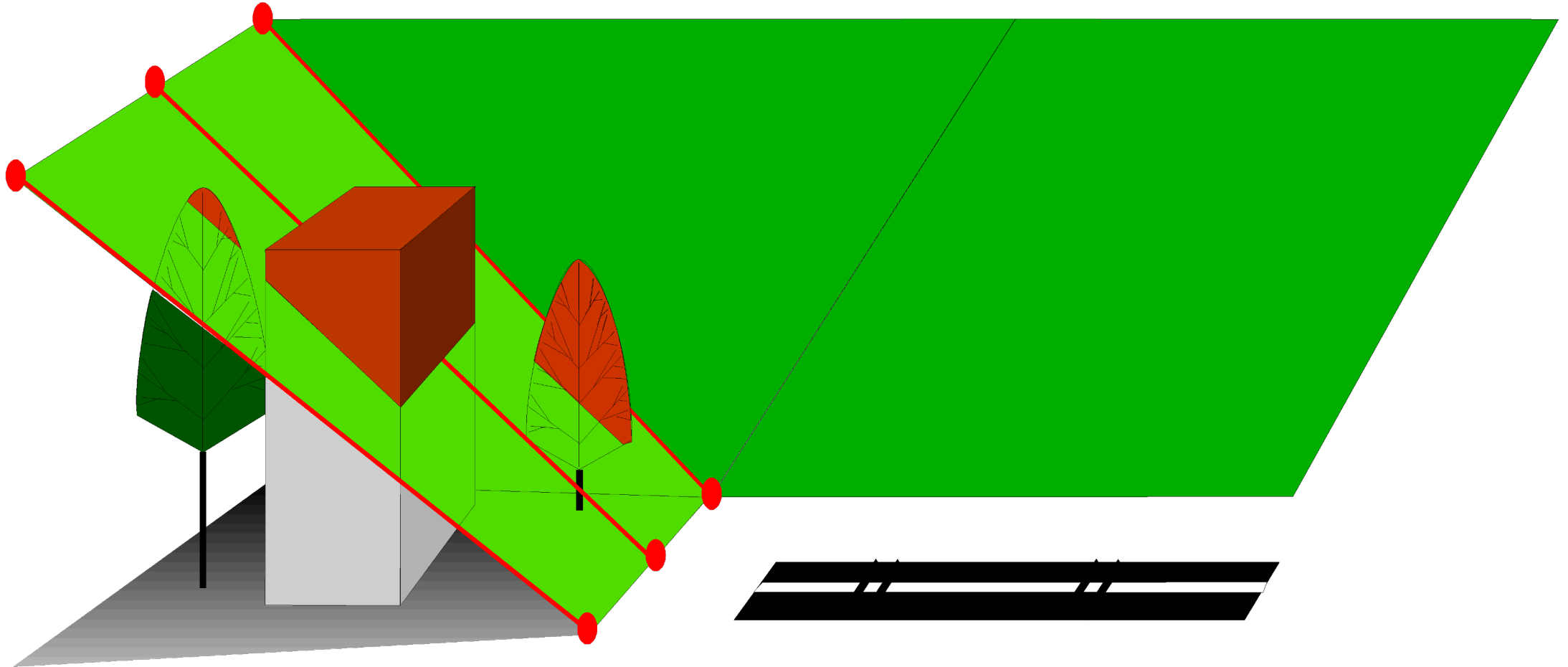


60.-63. Declared Distances

State Inspector Notes:

- Declared distances are the distances the **Airport Owner/Operator** declares available for use in meeting an airplane's takeoff run (TORA), takeoff distance (TODA), accelerate stop distance (ASDA), and landing distance (LDA) requirements for each runway end.
- Only FAA airport inspectors or FAA Regional or Airport District Office Personnel can edit the Declared Distances data elements.
- Review the Declared Distances Values as published in the Airport Master Record and the Chart Supplement with the Airport Manager to ensure the information is accurate and current.
- Inform the Airport Manager to publish revised declared distances in the NOTAM, when a temporary runway condition restricts or precludes use of any portion of runway resulting in a change in declared distances. Issue a NOTAM reciprocal runway if so affected.

Obstruction Data Elements 50-58



Obstruction Data Elements 50-58

Airport Master Record FAA Form 5010-1

OBSTRUCTION DATA	09/27	18L/36R	18R/36L
	A(V) / A(V)	A(V) / A(V)	PIR / C
> 51 DISPLACD THR:	/	/	239 / 820
> 52 CTLG OBSTN:	BERM / ROAD	/ BLDG	OTHER / BERM
> 53 OBSTN MARKED/LGTD:	L /	/ L	L /
> 54 HGT ABOVE RWY END:	4 / 14	/ 54	6 / 7
> 55 DIST FROM RWY END:	267 / 543	/ 2,035	300 / 200
> 56 CNTRLN OFFSET:	0B / 161R	/ 35L	0B / 0B
57 OBSTN CLNC SLOPE:	16:1 / 24:1	50:1 / 33:1	16:1 / 0:1
58 CLOSE-IN OBSTN:	N / N	N / N	N / Y

Chart Supplement

RWY 09: REIL. PAPI(P4L)—GA 3.0° TCH 40'. Berm.

RWY 27: PAPI(P4R)—GA 3.2° TCH 43'. Road. Rgt tfc

RWY 18L: REIL.

RWY 36R: REIL. PAPI(P4L)—GA 3.0° TCH 45'. Bldg. Rgt tfc

RWY 18R: MALSR. PAPI(P4L)—GA 3.0° TCH 51'. Thld dsplcd 239'. Rgt tfc.

RWY 36L: REIL. PAPI(P4L)—GA 3.0° TCH 50'. Thld dsplcd 820'. Berm.



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Obstruction Data Elements 50-58

Airport Master Record FAA Form 5010-1

> 110 REMARKS	
A 052	RWY 18R PIER.
A 057	RWY 18R APCH RATIO 50:1 FM DSPLCD THR.
A 057	RWY 36L APCH RATIO 32:1 AT DSPLCD THR; +77' SILO 2500'; 580' R.
A 058	RWY 36L +7 FT WALL 150 FT FM RY END.
A 110-002	BIRDS ON & INVOF ARPT.
A 110-004	BOATS AS HIGH AS 80 FT PASS WI 400 FT OF RWY 09 THLD.
A 110-014	BOAT MASTS UP TO 80 FT WI 0.5NM OF AER RWY 27.

Chart Supplement

AIRPORT REMARKS: Attended continuously. For assistance after 2100 local, contact arpt mgmt 504-874-0459. For field conditions after hrs contact ARFF 504-606-9264. Birds on and invof arpt. New AD fuel not avbl within 100' of terminal bldg. Boats as high as 80' pass within 400' of Rwy 09 thld. Boat masts up to 80' within 0.5 NM of AER Rwy 27. Rwy 18R-36L few low spots near intersection of Rwy 09-27 holding water. Twy A uneven pavement. Caution Twy F btn terminal ramp and flight line, first ramp irregular surface. Arpt windcone for ball park ramp lgts OTS perm. ARFF capability equivalent to Index B. PPR to land for acft transporting any items listed in Part 175 title 49, contact 504-606-9264. Overnight parking on terminal ramp must be coordinated with FBO.

Obstruction Data Elements 50-58

Airport Master Record Module Facility Data

Obstruction Data Per End	09 View Obstruction location on Map	27 View Obstruction location on Map
50. FAR 77 Category ⓘ	A(V)-Util Rwy, Vis Aprch	A(V)-Util Rwy, Vis Aprch
51. Displaced Threshold ⓘ		
52. Controlling Obstruction ⓘ	BERM-Berm, Dike, Levee, etc.	ROAD-Road, Hwy, Street, etc.
53. Obstruction Marked/Lighted ⓘ	L-Lighted	
54. Height Above Runway End ⓘ	4	14
55. Distance From Runway End ⓘ	267	543
56. Centerline Offset ⓘ	0	161
Centerline Offset Direction	B-Both sides on centerline	R-Right side
57. Obstruction Clearance Slope ⓘ	16	24
58. Close-In Obstruction ⓘ	No	No

FAA Form 5010 - Airport Master Record

9 specific Runway End Data Elements on the Airport Master Record.

- 50. FAR 77 CATEGORY
- 51. **DISPLACED THRESHOLD**
- 52. CONTROLLING OBSTRUCTION
- 53. OBSTRUCTION MARKED/LIGHTED
- 54. HEIGHT ABOVE RUNWAY END
- 55. DISTANCE FROM RUNWAY END
- 56. CONTROLLING OFFSET
- 57. OBSTRUCTION CLEARANCE SLOPE
- 58. CLOSE-IN OBSTRUCTION

Obstruction Data Elements 50-58

System Permission – Airport Master Record

Field #	Field Name	Airport Manager	FAA	STATE	State Inspector	Remarks Required	Comments
50	FAR 77 Category	N	Y	N	Y	N	
51	Displaced Threshold	N	N	N	N	N	FAA FORM 7480-1 REQUIRED
52	Controlling Obstruction	N	Y	N	Y	Y	<p>If there is an entry in data element 52, then entries are required in data elements 54 through 56 for public-use airports.</p> <p>Remarks required for the option 'OTHER'</p> <p>When element 52 data is set to blank, system will clear 53 to 56 fields</p>
53	Obstruction Marked/Lighted	N	Y	N	Y	N	
54	Height Above Runway End	N	Y	N	Y	N	
55	Distance From Runway End	N	Y	N	Y	N	
56	Centerline Offset	N	Y	N	Y	N	
56	Centerline Offset Direction	N	Y	N	Y	N	
57	Obstruction Clearance Slope	N	Y	N	Y	N	
58	Close-In Obstruction	N	Y	N	Y	Y	Remark are required for the option 'Yes'

Obstruction Data Elements 50 – FAR Part 77 Cat

FAR Part 77 — Subpart C – Civil Airport Imaginary Surfaces

Electronic Code of Federal Regulations

[Title 14](#) → [Chapter I](#) → [Subchapter E](#) → [Part 77](#)

PART 77—SAFE, EFFICIENT USE, AND PRESERVATION OF THE NAVIGABLE AIRSPACE

Subpart C—Standards for Determining Obstructions to Air Navigation or Navigational Aids or Facilities

§77.13 Applicability.

§77.15 Scope.

§77.17 Obstruction standards.

§77.19 Civil airport imaginary surfaces.

§77.21 Department of Defense (DOD) airport imaginary surfaces.

§77.23 Heliport imaginary surfaces.

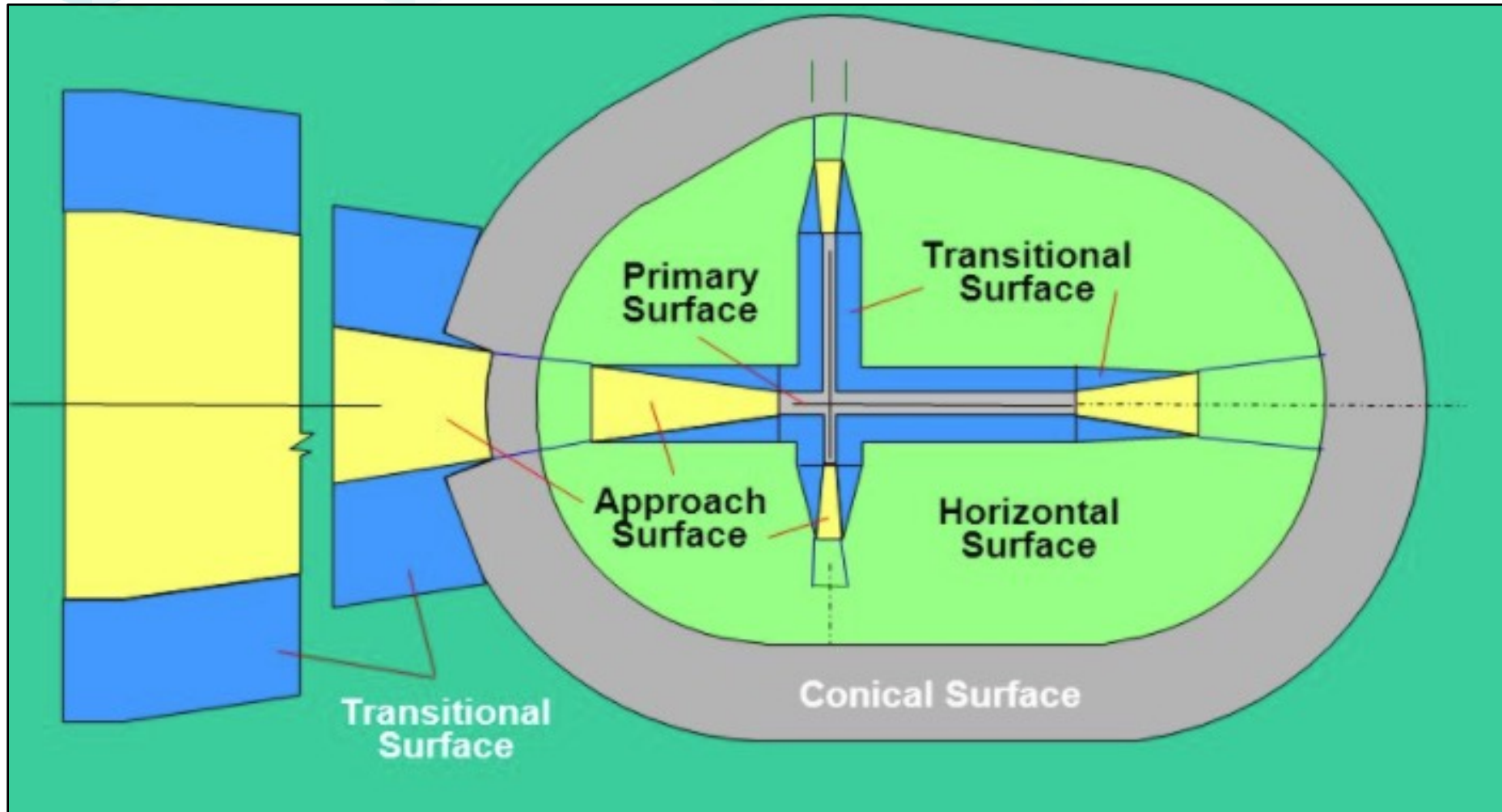
<https://www.ecfr.gov/cgi-bin/text-idx?node=pt14.2.77&rgn=div5>



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FAR Part 77 – Subpart C – Civil Airport Imaginary Surfaces



Obstruction Data Elements 50-58

Obstruction Data - Airport Master Record Module

Obstruction Data Per End

18R [View Obstruction location on Map](#)

36L [View Obstruction location on Map](#)

The entry is for two runway ends, and the two runway ends each have a drop down for selection.

ENTER	FOR	Primary Surface Width	Approach Surface Slope
A(V)	Utility runway with a visual approach	250 feet	20:1
B(V)	Other than utility runway with a visual approach.	500 feet	20:1
A(NP)	Utility runway with a non-precision approach	500 feet	20:1
C	Other than utility runway with a non-precision approach having visibility minimums greater than ¾ mile	500 feet	34:1
D	Other than utility runway with a non-precision approach having visibility minimums less than or equal to ¾ mile	1,000 feet	34:1
PIR	Precision Instrument Runway	1,000 feet	50:1

FAR Part 77 – Primary Surface

- Centered on the runway
- Ends 200 feet from the ends of a paved runway or ends at the runway end for unpaved runways
- Width varies with category of runway but is uniform over length of runway
- Elevation same as closest point on runway centerline



50. FAR 77 Category

- **Part 77 Category Note:**
- APPROACH SURFACE = a surface longitudinally centered on the extended runway centerline and extending outward and upward from each end of the primary surface. An approach surface is applied to each end of each runway based upon the type of approach available for that runway end.



50. FAR 77 Category

The approach surface
flares outward from the
corners of the primary surface

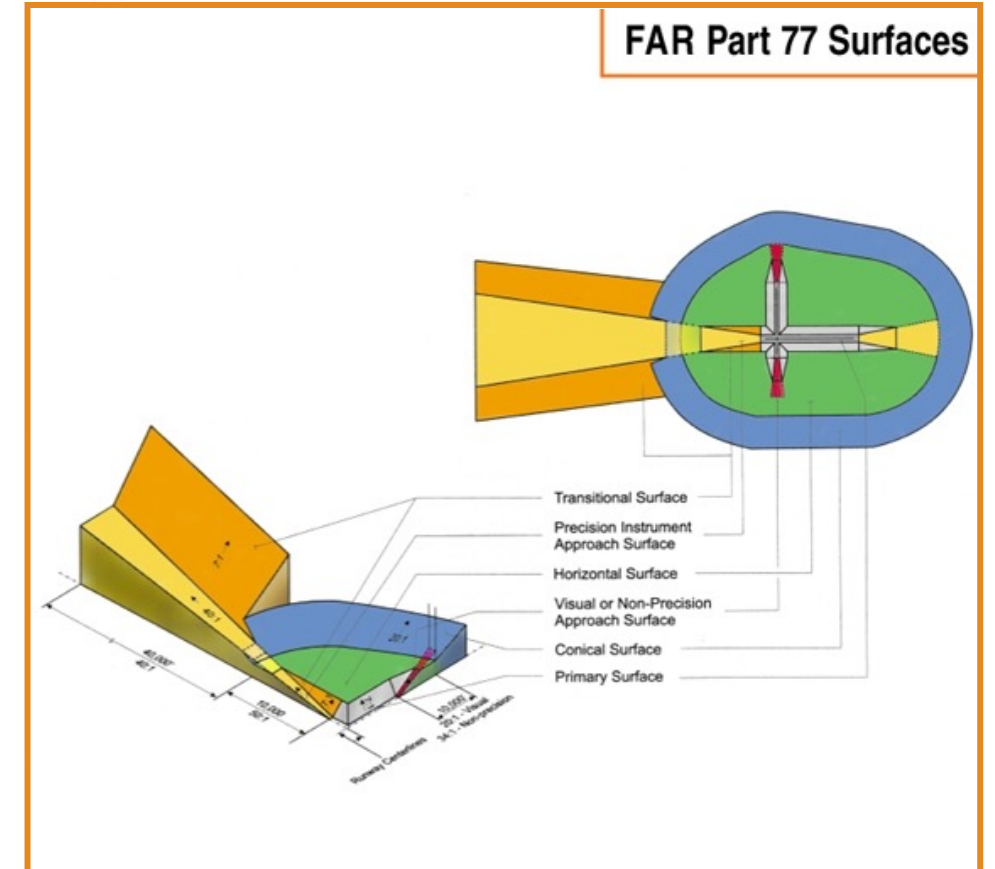


FAR Part 77

OBSTRUCTION IDENTIFICATION SURFACES FEDERAL AVIATION REGULATIONS PART 77

DIM	ITEM	DIMENSIONAL STANDARDS (FEET)					
		VISUAL RUNWAY		NON - PRECISION INSTRUMENT RUNWAY		PRECISION INSTRUMENT RUNWAY PIR	
		A	B	A	B		
					C		D
A	WIDTH OF PRIMARY SURFACE AND APPROACH SURFACE WIDTH AT INNER END	250	500	500	500	1,000	1,000
B	RADIUS OF HORIZONTAL SURFACE	5,000	5,000	5,000	10,000	10,000	10,000
		VISUAL APPROACH		NON - PRECISION INSTRUMENT APPROACH		PRECISION INSTRUMENT APPROACH	
		A	B	A	B		
					C		D
C	APPROACH SURFACE WIDTH AT END	1,250	1,500	2,000	3,500	4,000	16,000
D	APPROACH SURFACE LENGTH	5,000	5,000	5,000	10,000	10,000	*
E	APPROACH SLOPE	20:1	20:1	20:1	34:1	34:1	*

- A - UTILITY RUNWAYS
- B - RUNWAYS LARGER THAN UTILITY
- C - VISIBILITY MINIMUMS GREATER THAN 3/4 MILE
- D - VISIBILITY MINIMUMS AS LOW AS 3/4 MILE
- * - PRECISION INSTRUMENT APPROACH SLOPE IS 50:1 FOR INNER 10,000 FEET AND 40:1 FOR AN ADDITIONAL 40,000 FEET



Obstruction Data Elements 50 – Part 77 Cat

Part 77 Cat	Runway End Approach Procedure	Pri Sur Wth	Appr Lth	Appr Wth	App Slope
A(V)	Utility Runway with a Visual (V) Approach	250	5000	1250	20:1
A(NP)	Utility Runway with Non-Precision (NP) Approach	500	5000	2000	20:1
B(V)	Other than a Utility Runway with a Visual (V) Approach	500	5000	1500	20:1
C	Other than a Utility Runway with a Non- Precision Approach - Visibility Min greater than 3/4 Mile	500	10000	3500	34:1
D	Other than a Utility Runway with a Non- Precision Approach - Visibility Min less than or equal to 3/4 Mile	1000	10000	4000	34:1
PIR	Precision Instrument Approach *Approach Slope is 50:1 for first 10,000 ft. and 40:1 for remaining 40,000 feet	1000	50000	16000	*50:1 / 40:1

50. FAR 77 Category

- **Part 77 Category Note:**
- UTILITY RUNWAY = a runway that is constructed for and intended to be used by propeller driven aircraft of 12,500 pounds maximum gross weight and less.
- OTHER THAN UTILITY RUNWAY = a runway that is intended to be used by propeller driven aircraft with a maximum gross weight greater than 12,500 pounds and/or jet aircraft of any gross weight.



- **Part 77 Category Note:**
- After the “utility” or “other than utility” category is determined for that runway, look at the instrument approach procedures for the type of approach and visibility minimums. This will determine the correct Part 77 Category for that particular runway.



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50. FAR 77 Category

LANDING MINIMA FORMAT

In this example airport elevation is 1179, and runway touchdown zone elevation is 1152.

	DA	Visibility (RVR 100's of feet)	Aircraft Approach Category HAT/HATh	
CATEGORY	A	B	C	D
Straight-in ILS to Runway 27 S-ILS 27	1352/24	200	(200-½)	
Straight-in with Glide Slope Inoperative or not used to Runway 27 S-LOC 27	1440/24	288	(300-½)	1440/50 288 (300-1)
CIRCLING	1540-1 361 (400-1)	1640-1 461 (500-1)	1640-1½ 461 (500-1½)	1740-2 561 (600-2)
	MDA	HAA	Visibility in Statute Miles	

All weather minimums in parentheses not applicable to Civil Pilots. Military Pilots refer to appropriate regulations.

Comparable Values of RVR and Visibility

The following table shall be used for converting RVR to ground or flight visibility. For converting RVR values that fall between listed values, use the next higher RVR value; do not interpolate. For example, when converting 4800 RVR, use 5000 RVR with the resultant visibility of 1 mile.

RVR (feet)	Visibility (SM)	RVR (feet)	Visibility (SM)	RVR (feet)	Visibility (SM)	RVR (feet)	Visibility (SM)
1600	¼	2400	½	3500	⅝	5500	1
1800	½	2600	½	4000	¾	6000	1¼
2000	½	3000	⅝	4500	⅞		
2200	½	3200	⅝	5000	1		

https://www.faa.gov/air_traffic/flight_info/aeronav/digital_products/dtpp/search/

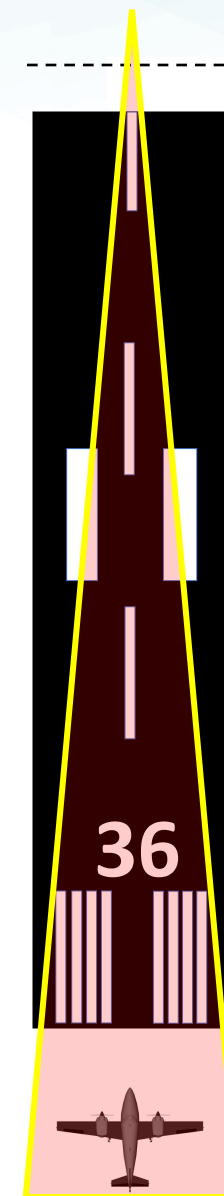
50. FAR 77 Category

- **Part 77 Category Note:**
- VISUAL RUNWAY = a runway using visual approach procedures, with no straight-in instrument approach procedures and no instrument designation.



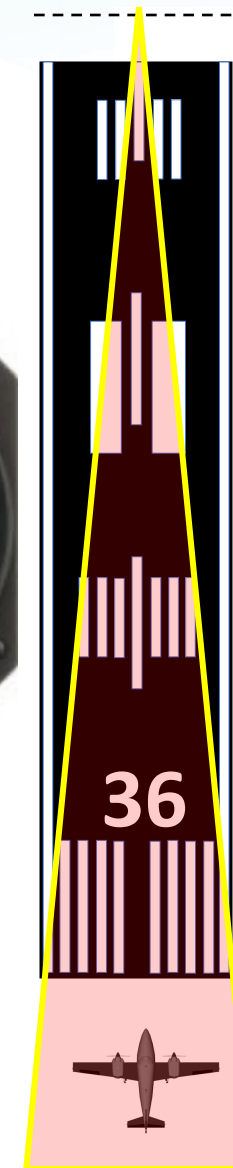
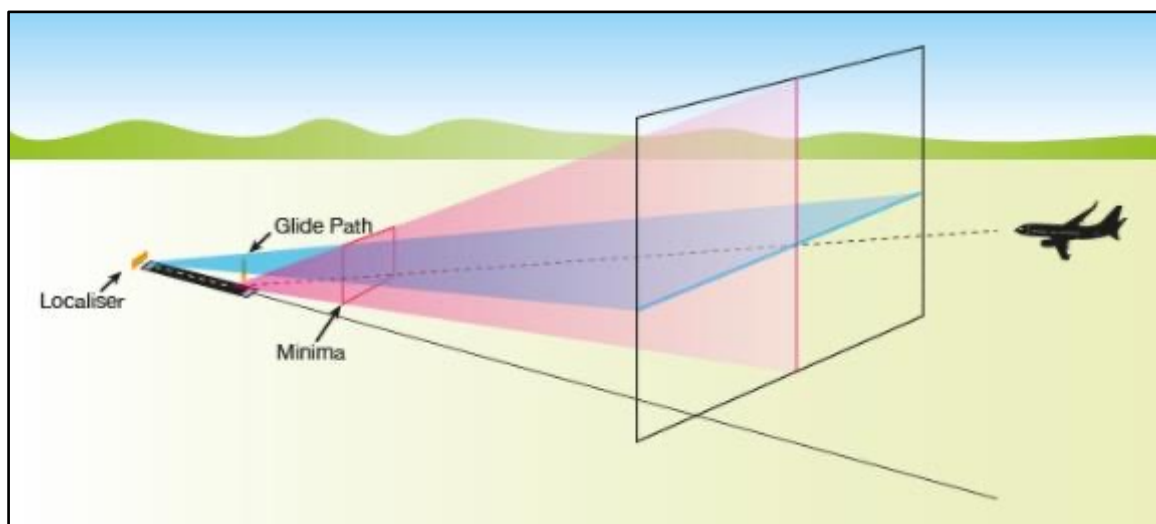
50. FAR 77 Category

- **Part 77 Category Note:**
- NON-PRECISION INSTRUMENT RUNWAY = a runway having an existing instrument approach procedure utilizing air navigation facilities with only horizontal guidance, or area type navigation equipment, for which a straight-in non-precision instrument approach procedure has been approved.




50. FAR 77 Category

- **Part 77 Category Note:**
- PRECISION INSTRUMENT RUNWAY = a runway with an existing instrument approach procedure utilizing an instrument landing system (ILS) or a Precision Approach Radar (PAR).



50. FAR 77 Category

- The entry is for two runway ends and the two runway ends each have fields for entry.
- Enter the rwy end category defined by Part 77 for the most precise EXISTING approach to each rwy end.

Obstruction Data Per End	18R View Obstruction location on Map	36L View Obstruction location on Map
 50. FAR 77 Category ⓘ	PIR-Prec Inst Rwy	C-Not Util Rwy, Nonprec Aprch-> ¾ mi.
51. Displaced Threshold ⓘ	239	820
52. Controlling Obstruction ⓘ	OTHER-Other Misc. Obstruction	BERM-Berm, Dike, Levee, etc.
53. Obstruction Marked/Lighted ⓘ	L-Lighted	
54. Height Above Runway End ⓘ	6	7
55. Distance From Runway End ⓘ	300	200
56. Centerline Offset ⓘ	0	0
Centerline Offset Direction	B-Both sides on centerline	B-Both sides on centerline
57. Obstruction Clearance Slope ⓘ	16	0
58. Close-In Obstruction ⓘ	No	Yes

50. FAR 77 Category

Obstruction Data Per End

18R

36L

50. Far 77 Category

PIR-Prec Inst Rwy ▼

C-Not Util Rwy, Nonprec Apr ▼

Sources for reviewing established,

a) Airport Layout Plan (ALP) for (

b) FAA published Instrument Ap

C	Other than a Utility Runway with a Non- Precision Approach - Visibility Min greater than 3/4 Mile
D	Other than a Utility Runway with a Non- Precision Approach - Visibility Min less than or equal to 3/4 Mile
PIR	Precision Instrument Approach *Approach Slope is 50:1 for first 10,000 ft. and 40:1 for remaining 40,000 feet

	6.1 NM		4.5 NM	0.6
CATEGORY	A	B	C	D
S-ILS 18R		258- ³ / ₄	250 (300- ³ / ₄)	
S-LOC 18R		320- ³ / ₄	312 (400- ³ / ₄)	
CIRCLING	460-1	452 (500-1)	520-1 ¹ / ₂ 512 (600-1 ¹ / ₂)	660-2 652 (700-2)

CATEGORY	A	B	C	D
S-36L	480-1	472 (500-1)	480-1 ¹ / ₄ 472 (500-1 ¹ / ₄)	480-1 ¹ / ₂ 472 (500-1 ¹ / ₂)
CIRCLING	520-1	512 (600-1)	520-1 ¹ / ₂ 512 (600-1 ¹ / ₂)	660-2 652 (700-2)

50. FAR 77 Category

- The entry is for two runway ends and the two runway ends each have fields for entry.
- Enter the rwly end category defined by Part 77 for the most precise EXISTING approach to each rwly end.

Obstruction Data Per End

18R [View Obstruction location on Map](#)

36L [View Obstruction location on Map](#)

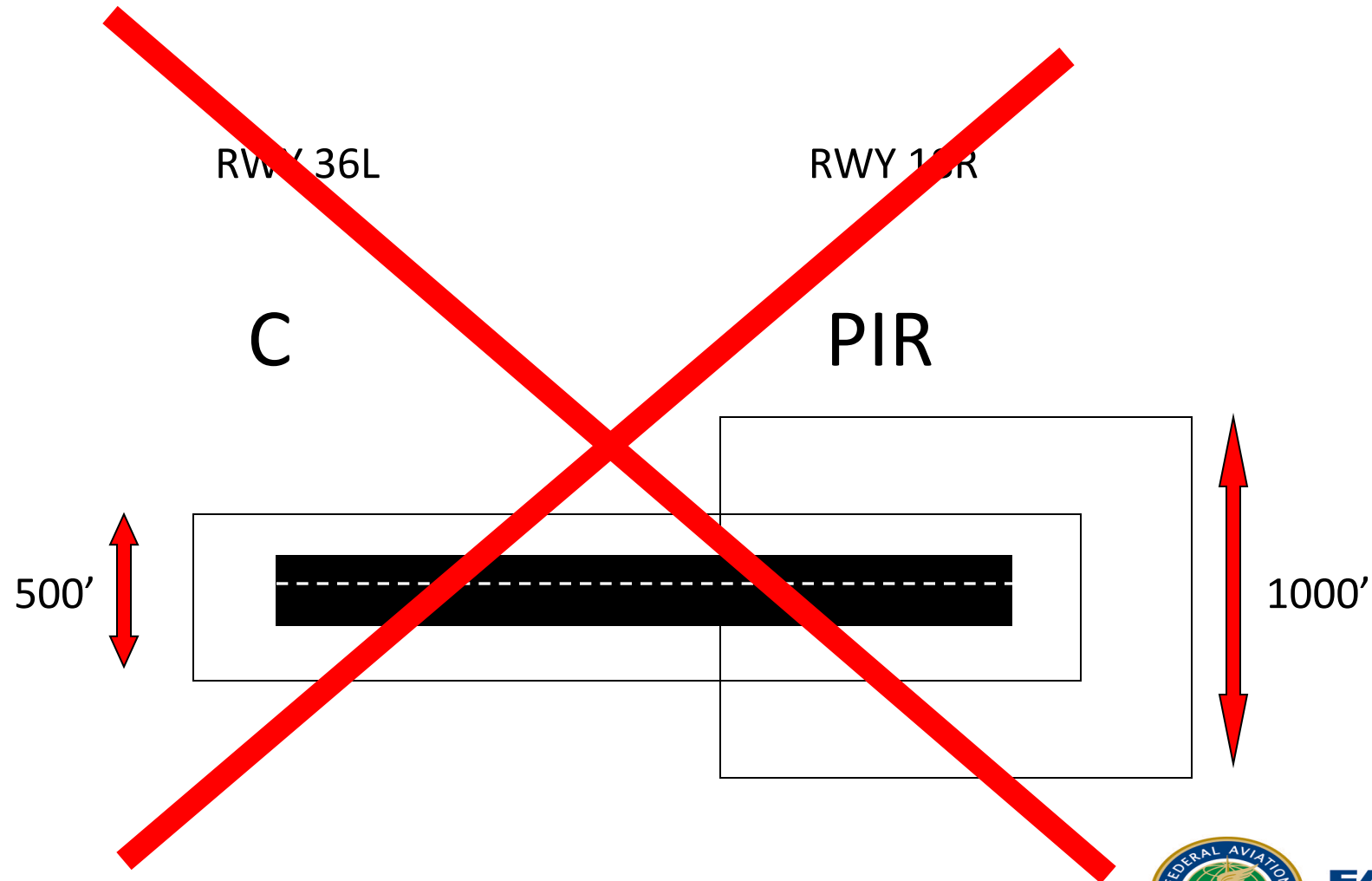
→ 50. FAR 77 Category

PIR-Prec Inst Rwy

C-Not Util Rwy, Nonprec Aprch-> ¼ mi.

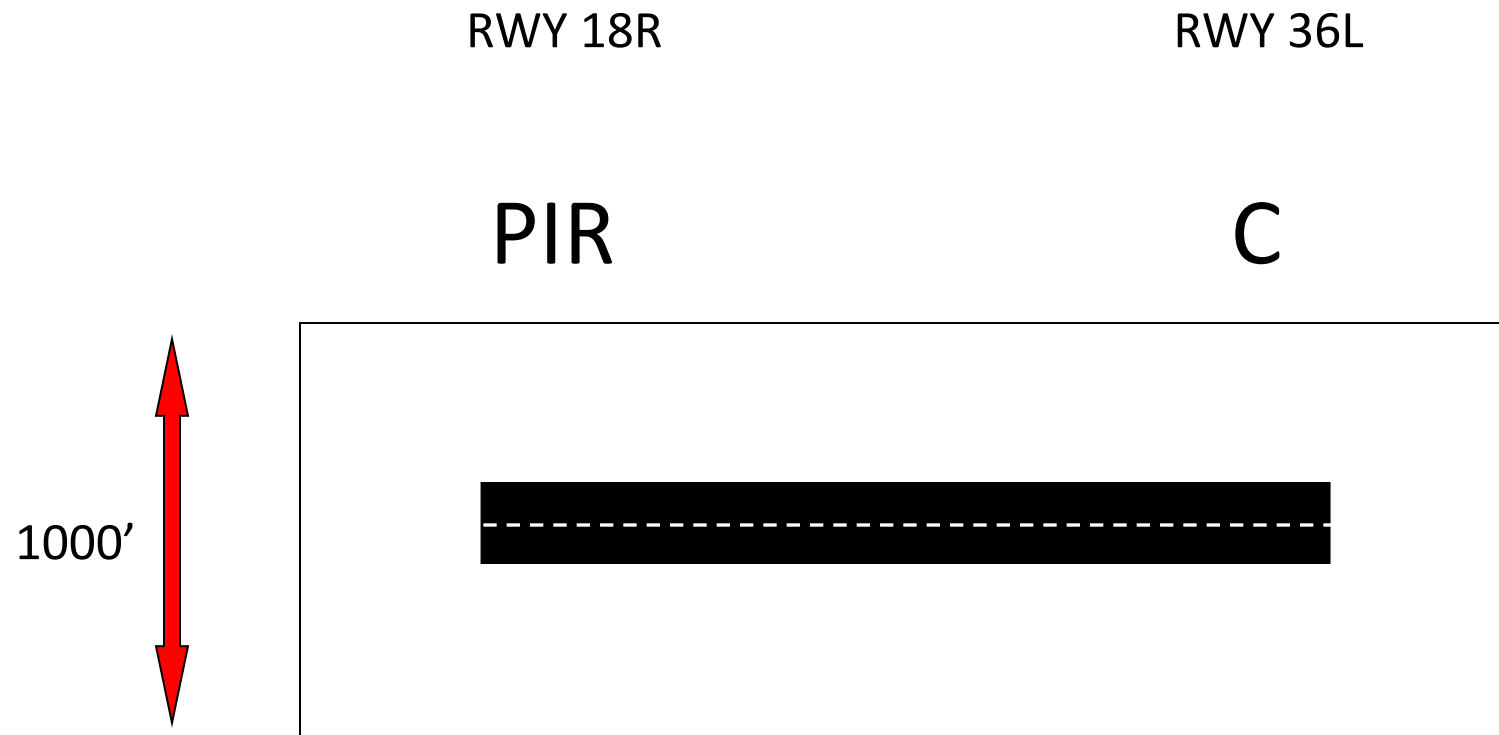
Part 77 Cat	Runway End Approach Procedure	Pri Sur Wth	Appr Lth	Appr Wth	App Slope
A(V)	Utility Runway with a Visual (V) Approach	250	5000	1250	20:1
A(NP)	Utility Runway with Non-Precision (NP) Approach	500	5000	2000	20:1
B(V)	Other than a Utility Runway with a Visual (V) Approach	500	5000	1500	20:1
C	Other than a Utility Runway with a Non- Precision Approach - Visibility Min greater than 3/4 Mile	500	10000	3500	34:1
D	Other than a Utility Runway with a Non- Precision Approach - Visibility Min less than or equal to 3/4 Mile	1000	10000	4000	34:1
PIR	Precision Instrument Approach *Approach Slope is 50:1 for first 10,000 ft. and 40:1 for remaining 40,000 feet	1000	50000	16000	*50:1 / 40:1

50. FAR 77 Category



50. FAR 77 Category

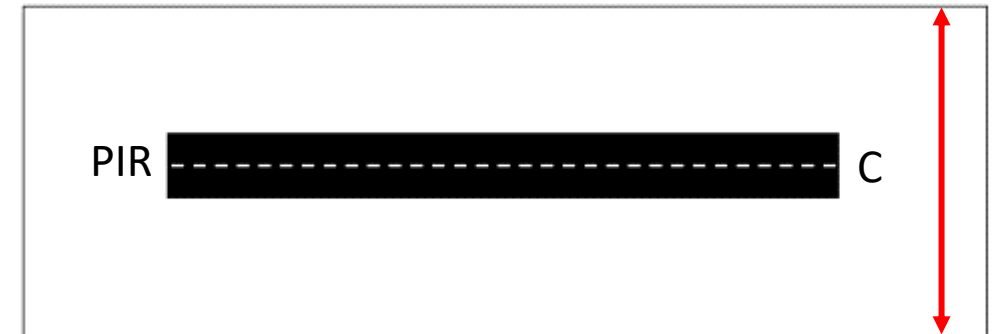
The width of the primary surface is the width prescribed for the most precise approach of that runway



50. FAR 77 Category

- Review the FAR Part 77 Category (Element #50) for each particular runway end
- Use the FAR Part 77 Category to Determine Width of Approach Surface
- An approach surface extends outward and upward from each end of the primary surface

Runway Combinations for Part 77 Approach Category	
50 FAR 77 Category	Primary Surface Width (feet)
A(V) / A(V)	250
A(V) / A (NP)	500
A(NP) / A(NP)	500
B(V) / B(V)	500
B(V) / C	500
B(V) / D	1000
B(V) / PIR	1000
C / C	500
C / D	1000
C / PIR	1000
D / D	1000
D / PIR	1000
PIR / PIR	1000



Part 77 RWY Category

RUNWAY CAT	Pri Sur Wth
FAR Part 77 CAT	(FT)
A(V) / A(V)	250
A(V) / A (NP)	500
A(NP) / A(NP)	500
B(V) / B(V)	500
B(V) / C	500
B(V) / D	1000
B(V) / PIR	1000
C / C	500
C / D	1000
C / PIR	1000
D / D	1000
D / PIR	1000
PIR / PIR	1000

Part 77 Category	Pri Sur Width	Appr Lth (ft)	Appr Wth (ft)	Approach Slope
A(V)	250	5000	1250	20:1
A(V)	500	5000	1250	20:1
A(NP)	500	5000	2000	20:1
B(V)	500	5000	1500	20:1
B(V)	1000	5000	1500	20:1
C	500	10000	3500	34:1
C	1000	10000	3500	34:1
D	1000	10000	4000	34:1
PIR	1000	50000	16000	50:1/40:1 *

* for PIR Runway End app slope is 50:1 for first 10,000 ft and 40:1 for remaining 40,000 ft.

Cat PIR

Cat C



Primary Surface
(green area)

Enter the runway category defined by Part 77 for the most precise EXISTING approach to each runway end.

Approaches Surfaces:

Utility RW constructed for propeller driven aircraft of 12,500 lbs max gross weight and less

A(V) - Visual Approach (Utility Runway)

A(NP) - Nonprecision Instrument Approach (Utility Runway)

Other Than Utility RW

B(V) - Visual Approach

C - Nonprecision Instrument Approach with Visibility Minimums greater than 3/4 mile

D - Nonprecision Instrument Approach with Visibility Minimums as low as 3/4 mile

PIR - Precision Instrument Approach

Subject: Seaplane Bases

Date: 8/31/2018

AC No.: 150/5395-1B

Initiated by: AAS-100

Change:



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2018
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Part 77 RWY Category

RUNWAY CAT	Pri Sur Wth
FAR Part 77 CAT	(FT)
A(V) / A(V)	250
A(V) / A (NP)	500
A(NP) / A(NP)	500
B(V) / B(V)	500
B(V) / C	500
B(V) / D	1000
B(V) / PIR	1000
C / C	500
C / D	1000
C / PIR	1000
D / D	1000
D / PIR	1000
PIR / PIR	1000

RWY End				
Part 77 Category	Pri Sur Width	Appr Lth (ft)	Appr Wth (ft)	Approach Slope
A(V)	250	5000	1250	20:1
A(V)	500	5000	1250	20:1
A(NP)	500	5000	2000	20:1
B(V)	500	5000	1500	20:1
B(V)	1000	5000	1500	20:1
C	500	10000	3500	34:1
C	1000	10000	3500	34:1
D	1000	10000	4000	34:1
PIR	1000	50000	16000	50:1/40:1

* for PIR Runway End app slope is 50:1 for first 10,000 ft and 40:1 for remaining 40,000 ft.

Enter the runway category defined by Part 77 for the most precise EXISTING approach to each runway end.

Approaches Surfaces:

Utility RW constructed for propeller driven aircraft of 12,500 lbs max gross weight and less

A(V) - Visual Approach (Utility Runway)

A(NP) - Nonprecision Instrument Approach (Utility Runway)

Other Than Utility RW

B(V) - Visual Approach

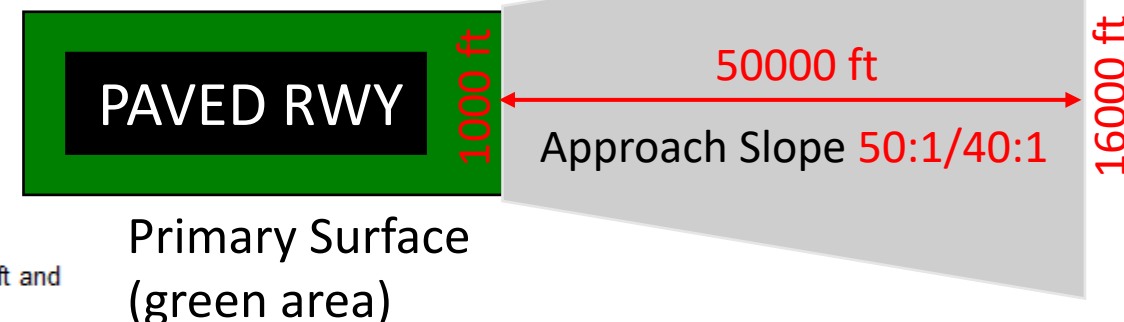
C - Nonprecision Instrument Approach with Visibility Minimums greater than 3/4 mile

D - Nonprecision Instrument Approach with Visibility Minimums as low as 3/4 mile

PIR - Precision Instrument Approach

Cat C

Cat PIR



Part 77 RWY Category

RUNWAY CAT	Pri Sur Wth (FT)
FAR Part 77 CAT	(FT)
A(V) / A(V)	250
A(V) / A (NP)	500
A(NP) / A(NP)	500
B(V) / B(V)	500
B(V) / C	500
B(V) / D	1000
B(V) / PIR	1000
C / C	500
C / D	1000
C / PIR	1000
D / D	1000
D / PIR	1000
PIR / PIR	1000

RWY End	Part 77 Category	Pri Sur Width	Appr Lth (ft)	Appr Wth (ft)	Approach Slope
A(V)	A(V)	250	5000	1250	20:1
A(V)	A(V)	500	5000	1250	20:1
A(NP)	A(NP)	500	5000	2000	20:1
B(V)	B(V)	500	5000	1500	20:1
B(V)	B(V)	1000	5000	1500	20:1
C	C	500	10000	3500	34:1
C	C	1000	10000	3500	34:1
D	D	1000	10000	4000	34:1
PIR	PIR	1000	50000	16000	50:1/40:1 *

* for PIR Runway End app slope is 50:1 for first 10,000 ft and 40:1 for remaining 40,000 ft.

Enter the runway category defined by Part 77 for the most precise EXISTING approach to each runway end.

Approaches Surfaces:

Utility RW constructed for propeller driven aircraft of 12,500 lbs max gross weight and less

A(V) - Visual Approach (Utility Runway)

A(NP) - Nonprecision Instrument Approach (Utility Runway)

Other Than Utility RW

B(V) - Visual Approach

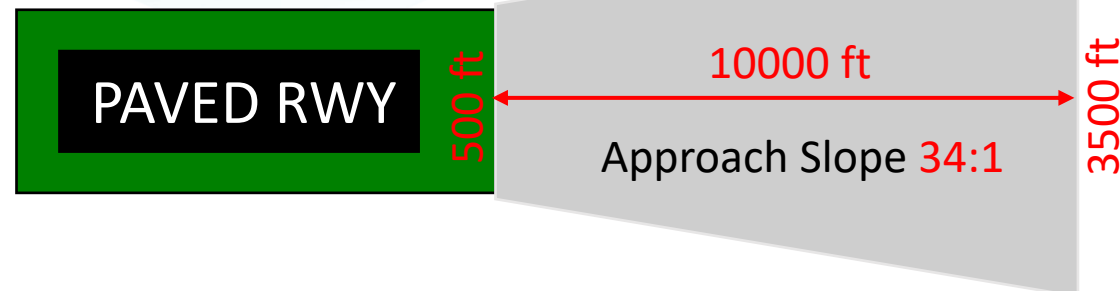
C - Nonprecision Instrument Approach with Visibility Minimums greater than 3/4 mile

D - Nonprecision Instrument Approach with Visibility Minimums as low as 3/4 mile

PIR - Precision Instrument Approach

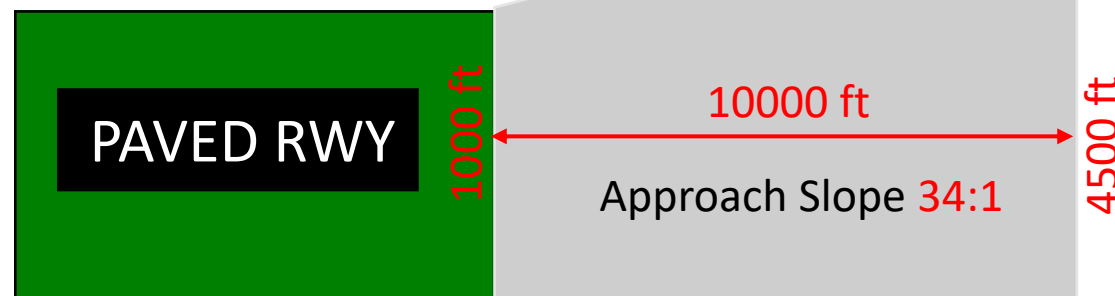
Cat C

Cat C



Cat C

Cat D



Subject: Seaplane Bases

Date: 8/31/2018

AC No.: 150/5395-1B

Initiated by: AAS-100

Change:



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50. FAR 77 Category

4/24/2012

AC 150/5390-2C

§77.23 Heliport imaginary surfaces.

(a) *Primary surface.* The area of the primary surface coincides in size and shape with the designated take-off and landing area. This surface is a horizontal plane at the elevation of the established heliport elevation.

(b) *Approach surface.* The approach surface begins at each end of the heliport primary surface with the same width as the primary surface, and extends outward and upward for a horizontal distance of 4,000 feet where its width is 500 feet. The slope of the approach surface is 8 to 1 for civil heliports and 10 to 1 for military heliports.

b. VFR approach/departure and transitional surfaces. Figure 2-7 illustrates the approach/departure and transitional surfaces.

(1) An approach/departure surface is centered on each approach/departure path. The approach/departure path starts at the edge of the FATO and slopes upward at 8:1 (8 units horizontal in 1 unit vertical) for a distance of 4,000 feet (1,219 m) where the width is 500 feet (152 m) at a height of 500 feet (152 m) above the heliport elevation.

Pri Sur Width	Appr Lth	App Slope
Varies - Width of Final Approach and Takeoff Area (FATO)	4000	8:1

Part 77 Cat	HELIPORTS
"BLANK"	FAR Part 77 Category is not required for Heliports

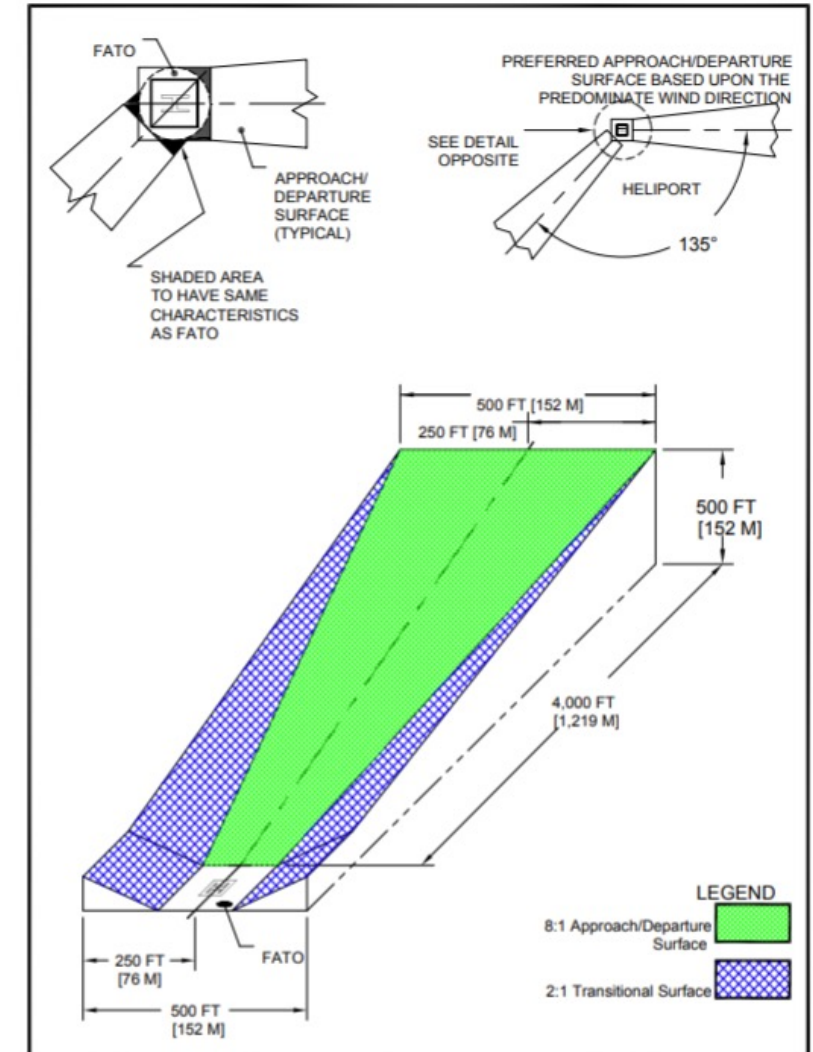


Figure 2-7. VFR Heliport Approach/Departure and Transitional Surfaces: General Aviation

Subject: Heliport Design

Date: 4/24/2012

AC No: 150/5390-2C

Initiated by: AAS-100

Change:

50. FAR 77 Category

§77.3 Definitions.

For the purpose of this part:

Seaplane base is considered to be an airport only if its sea lanes are outlined by visual markers.

Subject: Seaplane Bases

Date: 8/31/2018

AC No.: 150/5395-1B

Initiated by: AAS-100

Change:

Having the water lane ends marked (or planned to be marked), with identified geographic coordinates (LAT/LONG) and elevations allows the seaplane base to take advantage of the safety and notification benefits of 14 CFR Part 77

Without clear marking identifying the water lane, it is not possible to calculate and draw the approach, departure, and Part 77 surfaces.

The water lane should be designated with, at a minimum, two buoys at each end of the water lane, designating the threshold and width of the water lane.

Because these surfaces cannot be defined for unmarked water lanes, it is recommended that the sea plane base owner protect their facility through the application of building restrictions within airport property and work with state and local governments to implement zoning restrictions outside of the property boundary.



Notes for Turf Runways

§77.15 Scope.

At airports, excluding seaplane bases, having a defined landing and takeoff area with no defined pathways for aircraft takeoffs and landings, a determination must be made as to which portions of the landing and takeoff area are regularly used as landing and takeoff pathways. Those determined pathways must be considered runways, and an appropriate primary surface as defined in [§ 77.19](#) will be considered as longitudinally centered on each such runway. Each end of that primary surface must coincide with the corresponding end of that runway.

AC 150/5300-13A

314. Turf runways

f. Thresholds. Thresholds should be permanently identified to ensure that airspace evaluation is valid for the runway. Turf runways that are mowed to fence lines with no distinct threshold location marked can be hazardous due to the adjacent fences, roads, trees, and power lines. One type of permanent marker is a threshold strip of concrete pavement, 60 feet (18.5 m) wide by 10 feet (3 m) long, painted white. No portion of the concrete pavement should be more than 1.5 inches (38 mm) above the surrounding grade level. Frangible cones may also be used for this purpose. Ensure that approaches have clear 20:1 approach slopes starting at the threshold.



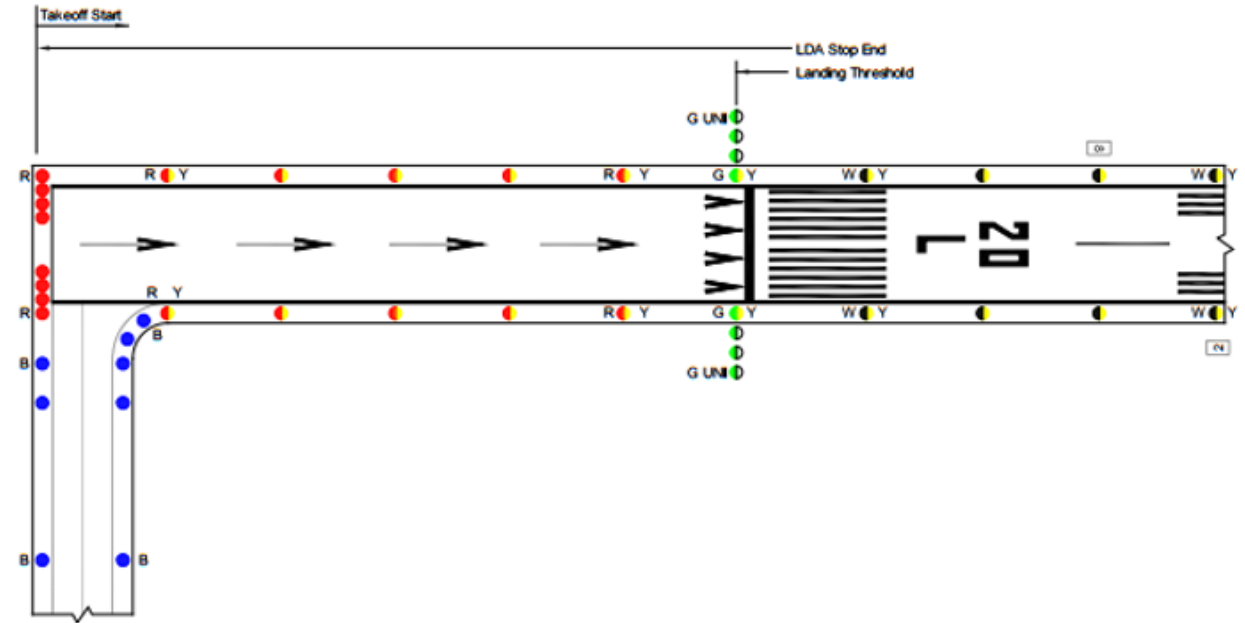
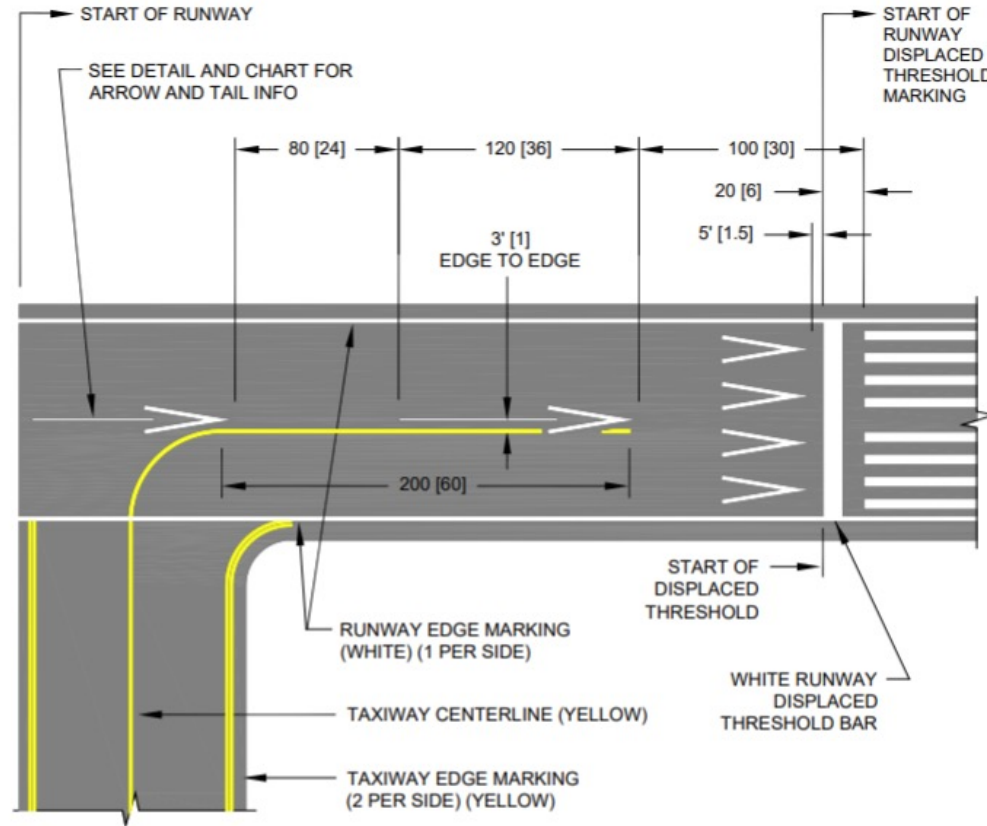
51. Displaced Threshold

- The entry is for two runway ends and the two runway ends each have fields for entry.
- Enter the length of the displaced threshold at a runway end in whole feet.

Obstruction Data Per End	18R View Obstruction location on Map	36L View Obstruction location on Map
50. FAR 77 Category ⓘ	PIR-Prec Inst Rwy	C-Not Util Rwy, Nonprec Aprch-> ¾ mi.
51. Displaced Threshold ⓘ	239	820
52. Controlling Obstruction ⓘ	OTHER-Other Misc. Obstruction	BERM-Berm, Dike, Levee, etc.
53. Obstruction Marked/Lighted ⓘ	L-Lighted	
54. Height Above Runway End ⓘ	6	7
55. Distance From Runway End ⓘ	300	200
56. Centerline Offset ⓘ	0	0
Centerline Offset Direction	B-Both sides on centerline	B-Both sides on centerline
57. Obstruction Clearance Slope ⓘ	16	0
58. Close-In Obstruction ⓘ	No	Yes



Displaced Threshold Marking and Lighting



Subject: Design and Installation Details for Airport Visual Aids

Date: 2/12/2018

AC No.: 150/5340-30J

Initiated by: AAS-100

Change:

Subject: Standards for Airport Markings

Date: 12/23/2020

AC No.: 150/5340-1M

Initiated By: AAS-100

Change: 1



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51. Displaced Threshold

- DISPLACED THRESHOLD MARKINGS FOR RUNWAYS WITH A NON-PAVED SURFACE:
Describe any form of markers used at the displaced threshold of a turf or gravel runway in an explanatory referenced remark.
- For Example: A051 RWY 03 DSPLCD THLD MARKED WITH YELLOW CONES.



51. Displaced Threshold

Obstruction D 51. Displaced Threshold

Note: At an airport with no federal funding, the FAA will conduct an aeronautical study of an airport proposal provided the airport operator file an [FAA Form 7480-1](#), Notice of Landing Area Proposal online with the nearest FAA Regional Office at least 90 days before any construction, realignment, alteration, activation, or deactivation of any runway or other aircraft landing or takeoff area.

At an airport with federal funding, the FAA will conduct an aeronautical study of an airport proposal based on the review and approval of the Airport Layout Plan (the ALP is used in lieu of the [FAA Form 7480-1](#)).

The entry is for two runway ends, and the two runway ends each have fields for entry.

Represents the length of the displaced threshold at a runway end in whole feet.

DISPLACED THRESHOLD MARKINGS FOR RUNWAYS WITH A PAVED SURFACE:

When a threshold is displaced, the markings at a displaced portion of the runway should be marked in accordance with the current FAA advisory circular on runway markings. If not, enter an explanatory referenced remark.

For Example: A051 RWY 03 DSPLCD THLD MARKINGS NSTD YELLOW.

DISPLACED THRESHOLD MARKINGS FOR RUNWAYS WITH A NON-PAVED SURFACE:

Describe any form of markers used at the displaced threshold of a turf or gravel runway in an explanatory referenced remark.


For Example: A051 RWY 03 DSPLCD THLD MARKED WITH ORANGE CONES.

51. Displaced Threshold

- Values display the length of displacement for each runway end that IS marked and/or lighted (ex. 200/150, 200/NONE)
- If a **paved** surfaced runway is NOT marked and/or lighted to standards, then the displacement length is displayed AND an A 051 Remark explains what is nonstandard
- For **unpaved** surfaced runways, markers used at the displaced threshold should be in an A 051 Remark
- The value will be blank if neither runway end has a displacement
- No marking/lighting, then no displaced threshold
- Displacement length IS included in the total runway length

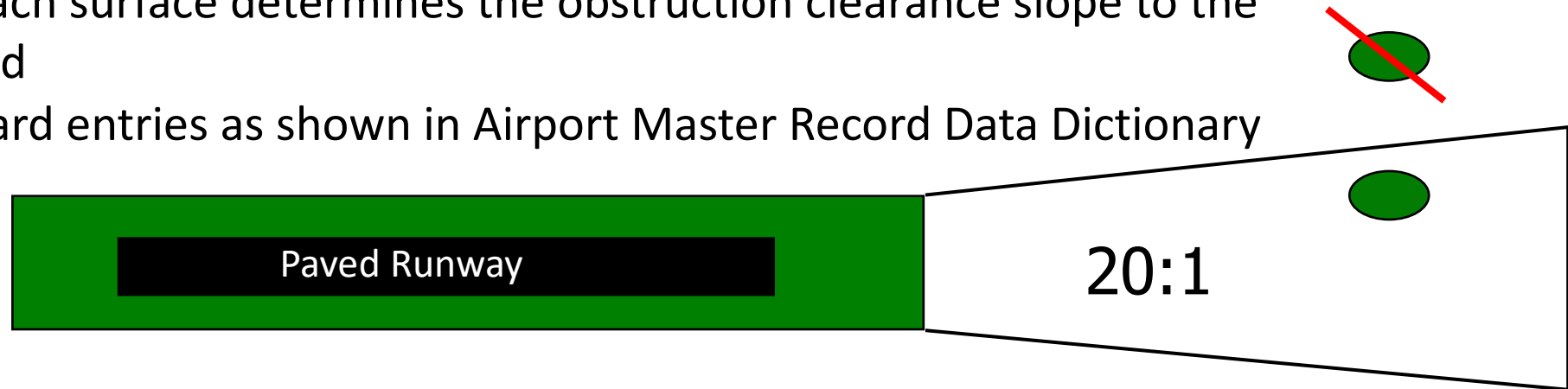
52. Controlling Obstruction

- The entry is for two runway ends and the two runway ends each have fields for entry.
- Enter the obstruction within the boundaries of the approach surface that controls the obstruction clearance slope to a runway end (not the displaced threshold). The approach surface is defined in Part 77.

Obstruction Data Per End	18R View Obstruction location on Map	36L View Obstruction location on Map
50. FAR 77 Category ⓘ	PIR-Prec Inst Rwy	C-Not Util Rwy, Nonprec Aprch-> ¾ mi.
51. Displaced Threshold ⓘ	239	820
 52. Controlling Obstruction ⓘ	OTHER-Other Misc. Obstruction	BERM-Berm, Dike, Levee, etc.
53. Obstruction Marked/Lighted ⓘ	L-Lighted	
54. Height Above Runway End ⓘ	6	7
55. Distance From Runway End ⓘ	300	200
56. Centerline Offset ⓘ	0	0
Centerline Offset Direction	B-Both sides on centerline	B-Both sides on centerline
57. Obstruction Clearance Slope ⓘ	16	0
58. Close-In Obstruction ⓘ	No	Yes

52. Controlling Obstruction

- Objects within the boundaries of the approach surface, that penetrate the approach surface determines the obstruction clearance slope to the runway end
- Use standard entries as shown in Airport Master Record Data Dictionary



- Examples:

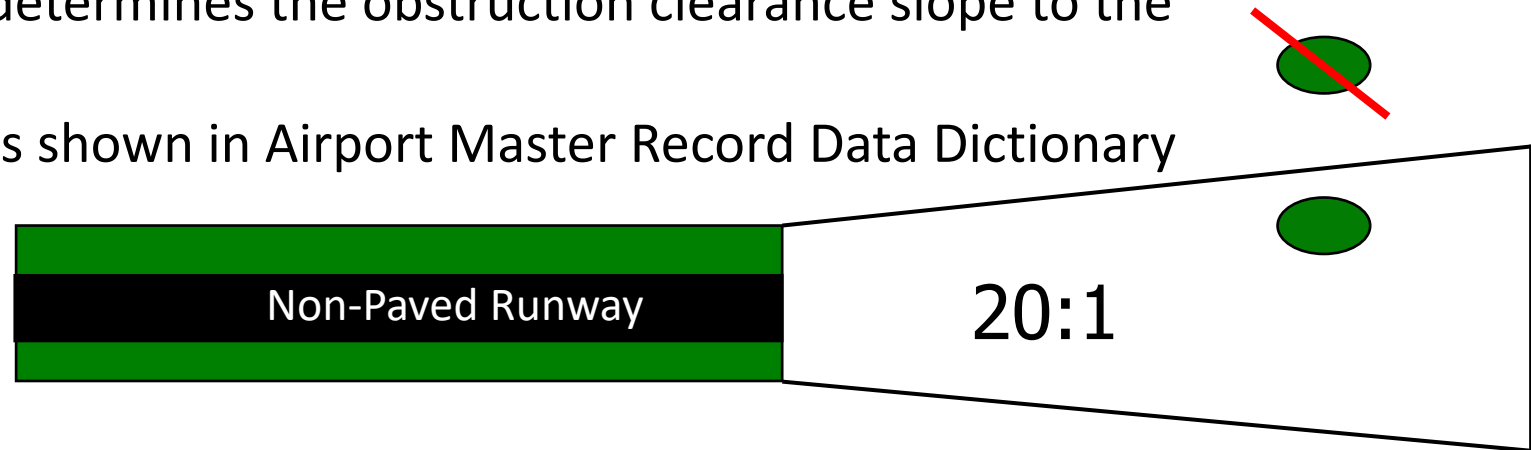
ACFT = Parked aircraft
ANT = Antenna mast on building, radio/TV antenna, etc.
TREE = Tree
TREES = Forest, orchard, grove, etc.



Primary Surface
(green area)

52. Controlling Obstruction

- Objects within the boundaries of the approach surface, that penetrate the approach surface determines the obstruction clearance slope to the runway end
- Use standard entries as shown in Airport Master Record Data Dictionary



- Examples:

ACFT = Parked aircraft

ANT = Antenna mast on building, radio/TV antenna, etc.

TREE = Tree

TREES = Forest, orchard, grove, etc.



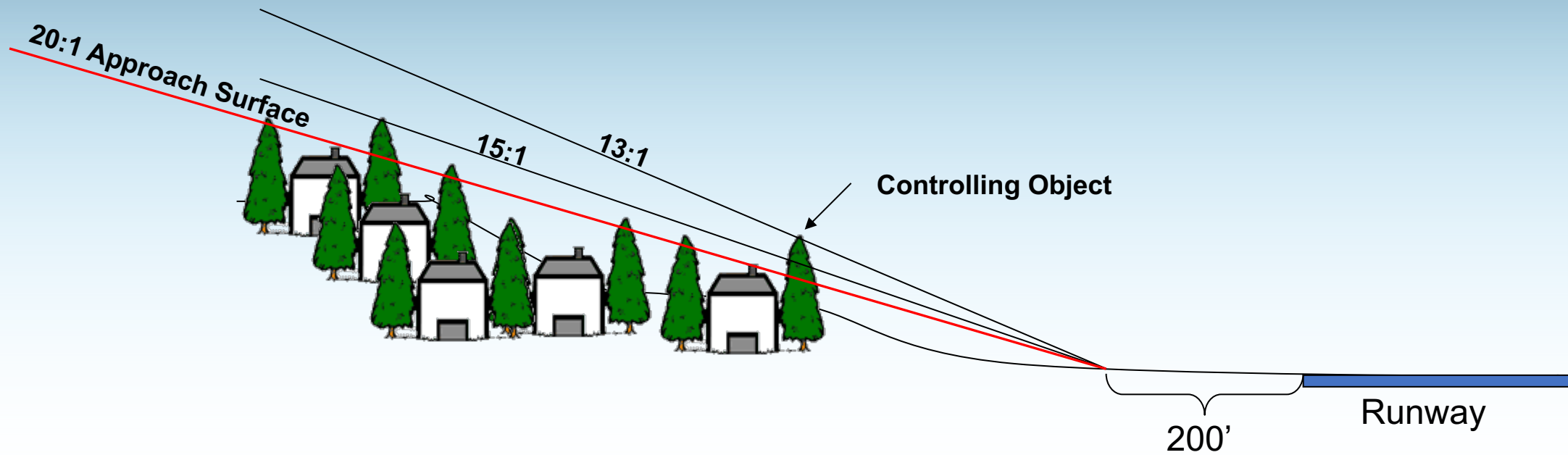
Primary Surface
(green area)

52. Controlling Obstruction

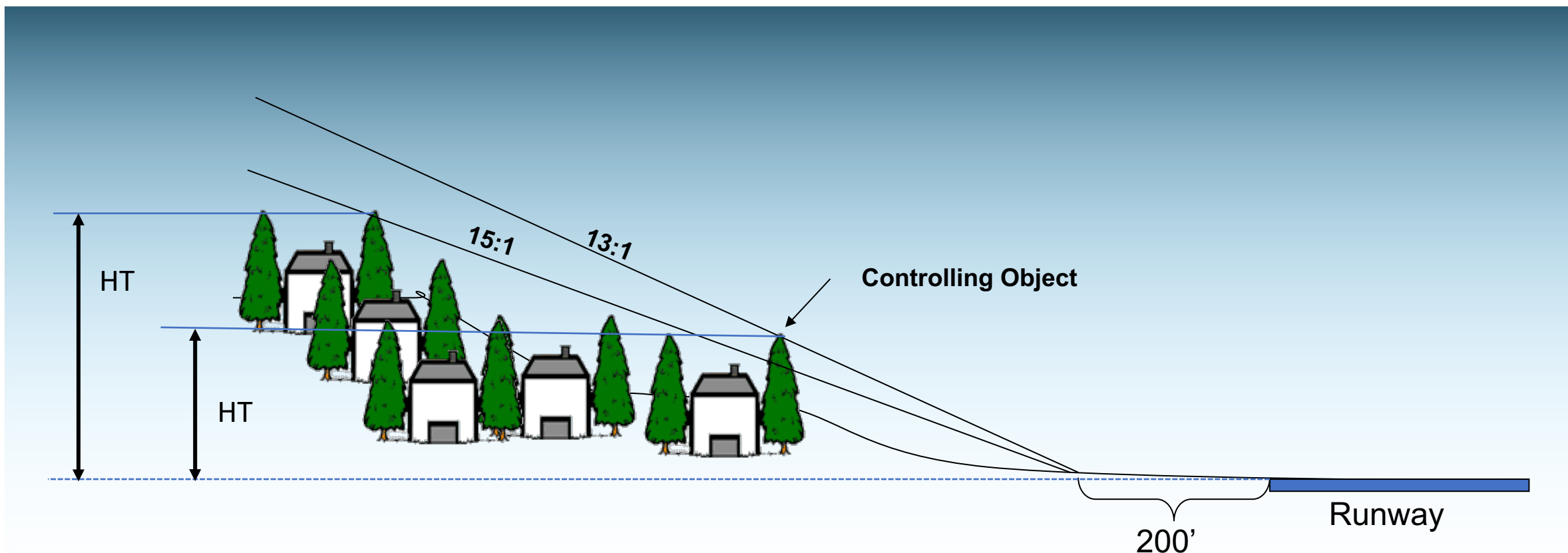
- Navigational aids and lighting apparatus associated with the operation of an airport are fixed by function and will NOT be reported as an obstruction.



52. Controlling Obstruction

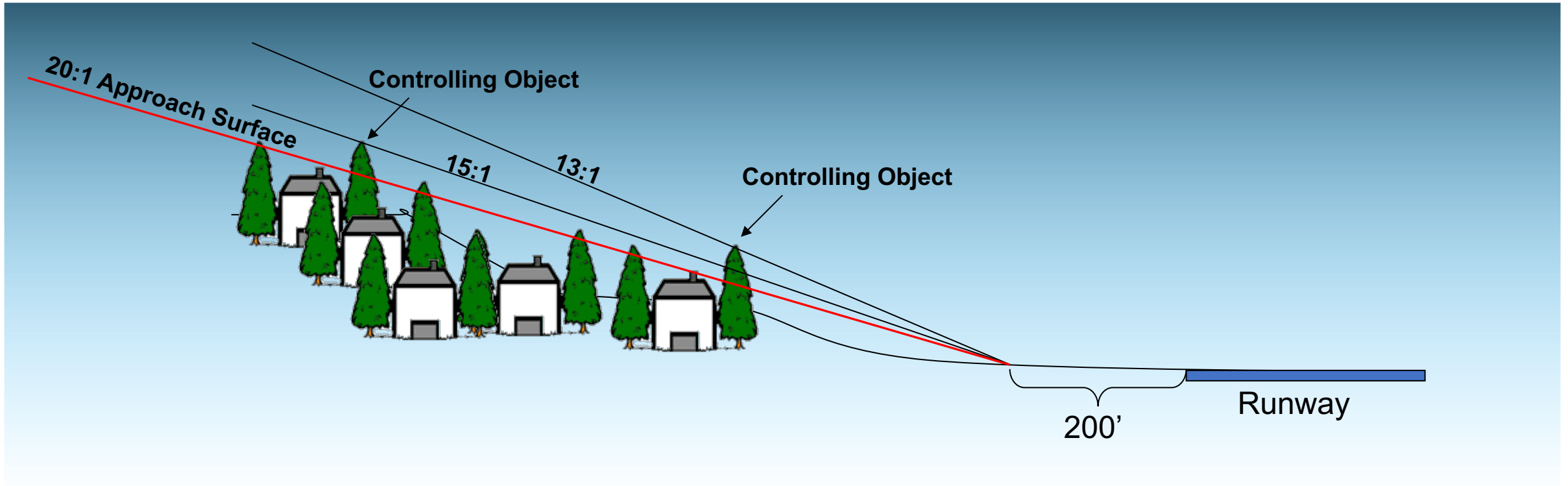


52. Controlling Obstruction

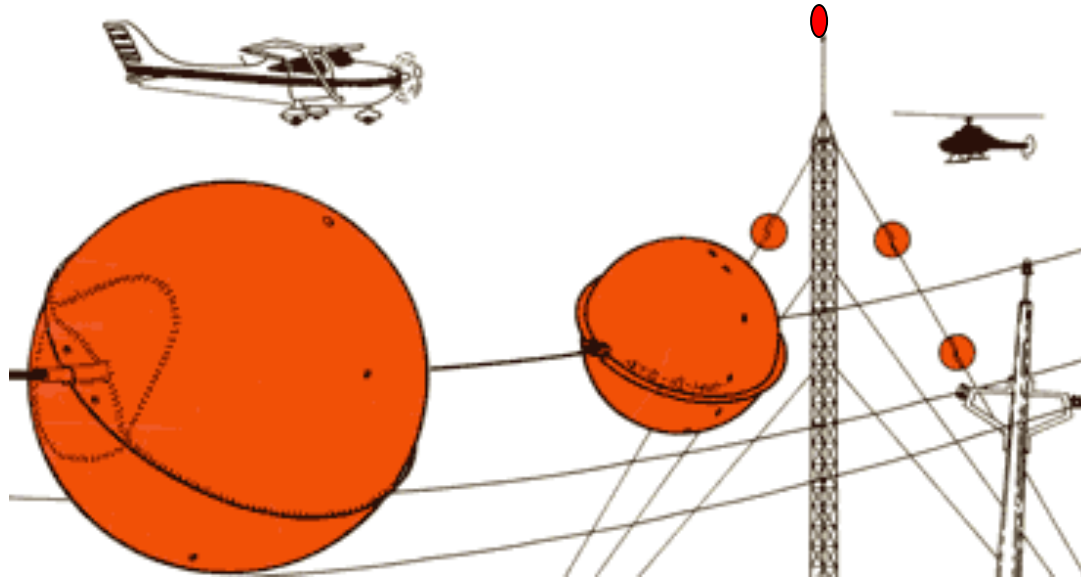


52. Controlling Obstruction

Removal of the controlling obstruction could result in the identification of a new controlling obstruction.



53. Obstruction Marked/Lighted



Obstruction Evaluation

11/16/2020

AC 70/7460-1M



U.S. Department
of Transportation
Federal Aviation
Administration

ADVISORY CIRCULAR

AC 70/7460-1M

Obstruction Marking and Lighting

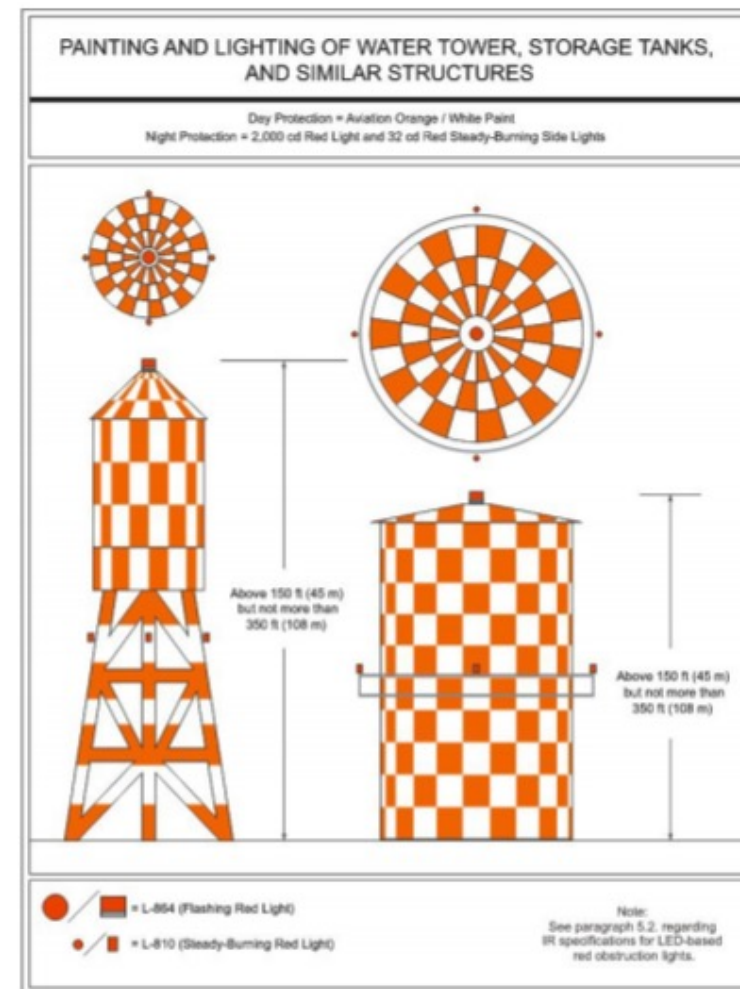
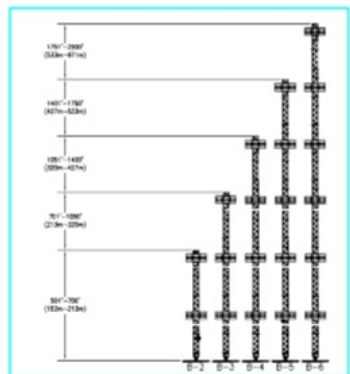
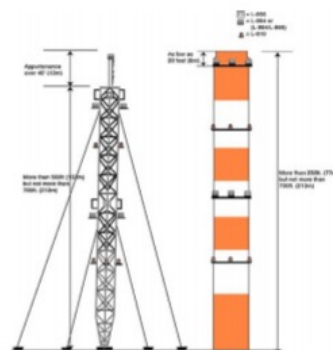
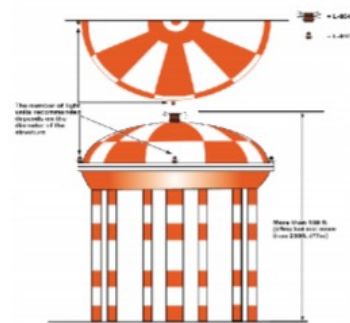


Figure A-3. Painting and Lighting of Water Towers, Storage Tanks, and Similar Structures

Effective: 11/16/2020

Initiated by: Policy Assurance

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53. Obstruction Marked/Lighted

- The entry is for two runway ends and the two runway ends each have fields for entry.

Obstruction Data Per End	18R View Obstruction location on Map	36L View Obstruction location on Map
50. FAR 77 Category ⓘ	PIR-Prec Inst Rwy	C-Not Util Rwy, Nonprec Aprch-> ¾ mi.
51. Displaced Threshold ⓘ	239	820
52. Controlling Obstruction ⓘ	OTHER-Other Misc. Obstruction	BERM-Berm, Dike, Levee, etc.
 53. Obstruction Marked/Lighted ⓘ	L-Lighted	
54. Height Above Runway End ⓘ	6	7
55. Distance From Runway End ⓘ	300	200
56. Centerline Offset ⓘ	0	0
Centerline Offset Direction	B-Both sides on centerline	B-Both sides on centerline
57. Obstruction Clearance Slope ⓘ	16	0
58. Close-In Obstruction ⓘ	No	Yes


53. Obstruction Marked/Lighted

- The entry is for two runway ends and the two runway ends each have fields for entry.
- Indicate whether or not the controlling obstruction in data element 52 is marked and/or lighted by entering one or more of the following:
 - L = Lighted
 - M = Marked
 - LM = Both Marked and Lighted
 - NL = Not Marked or Lighted

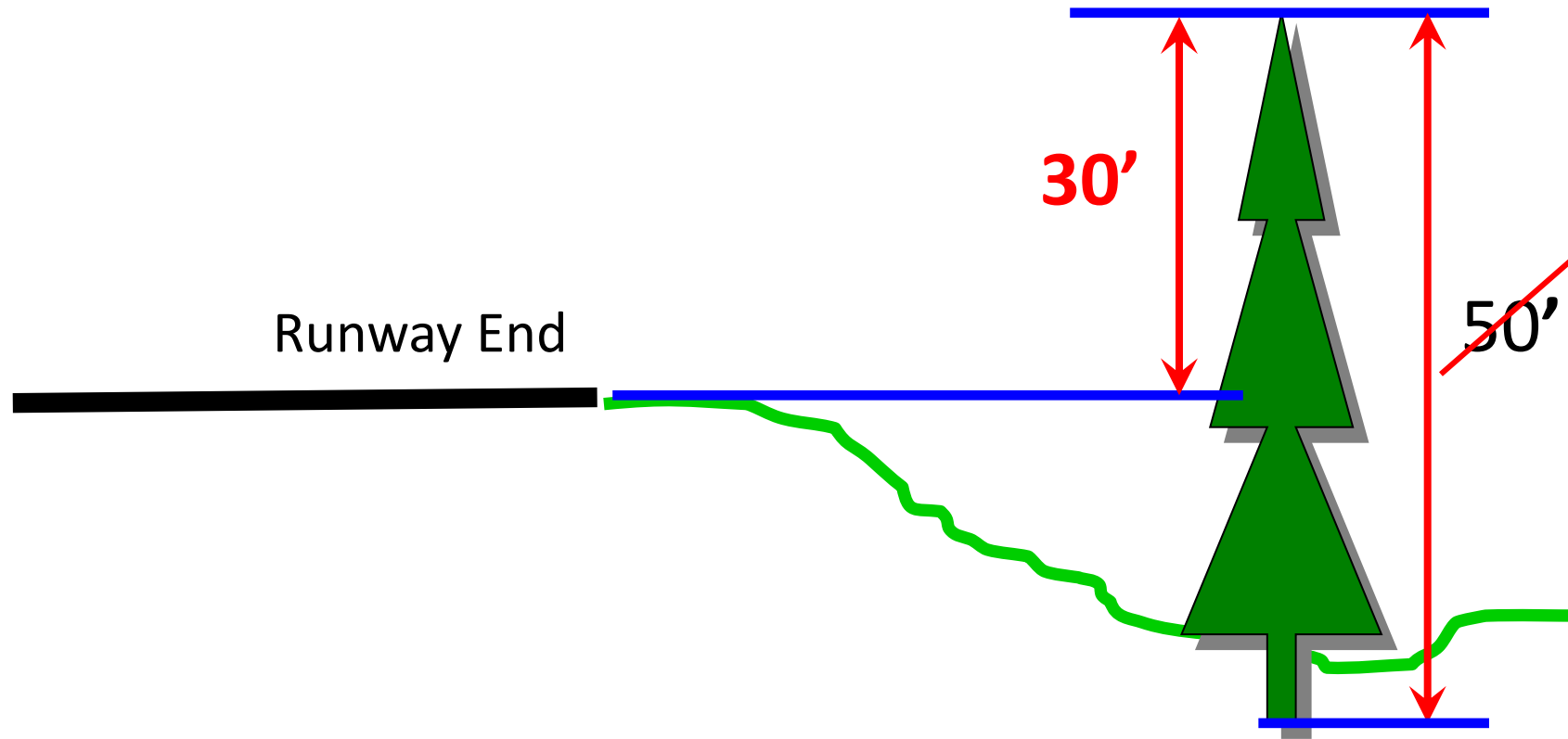


54. Height Above Runway End

- The entry is for two runway ends and the two runway ends each have fields for entry.
- Enter the height of the controlling obstruction above the runway end.

Obstruction Data Per End	18R View Obstruction location on Map	36L View Obstruction location on Map
50. FAR 77 Category ⓘ	PIR-Prec Inst Rwy	C-Not Util Rwy, Nonprec Aprch-> ¾ mi.
51. Displaced Threshold ⓘ	239	820
52. Controlling Obstruction ⓘ	OTHER-Other Misc. Obstruction	BERM-Berm, Dike, Levee, etc.
53. Obstruction Marked/Lighted ⓘ	L-Lighted	
 54. Height Above Runway End ⓘ	6	7
55. Distance From Runway End ⓘ	300	200
56. Centerline Offset ⓘ	0	0
Centerline Offset Direction	B-Both sides on centerline	B-Both sides on centerline
57. Obstruction Clearance Slope ⓘ	16	0
58. Close-In Obstruction ⓘ	No	Yes

54. Height Above Runway End



54. Height Above Runway End

- Enter the “effective height” of an object if it is a road, railroad, or waterway. The effective height is the sum of the actual object height above the runway end plus the clearance height imposed by Part 77.

(b) Except for traverse ways on or near an airport with an operative ground traffic control service furnished by an airport traffic control tower or by the airport management and coordinated with the air traffic control service, the standards of paragraph (a) of this section apply to traverse ways used or to be used for the passage of mobile objects only after the heights of these traverse ways are increased by:

(1) 17 feet for an Interstate Highway that is part of the National System of Military and Interstate Highways where overcrossings are designed for a minimum of 17 feet vertical distance.

(2) 15 feet for any other public roadway.

(3) 10 feet or the height of the highest mobile object that would normally traverse the road, whichever is greater, for a private road.

(4) 23 feet for a railroad.

(5) For a waterway or any other traverse way not previously mentioned, an amount equal to the height of the highest mobile object that would normally traverse it.



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54. Height Above Runway End

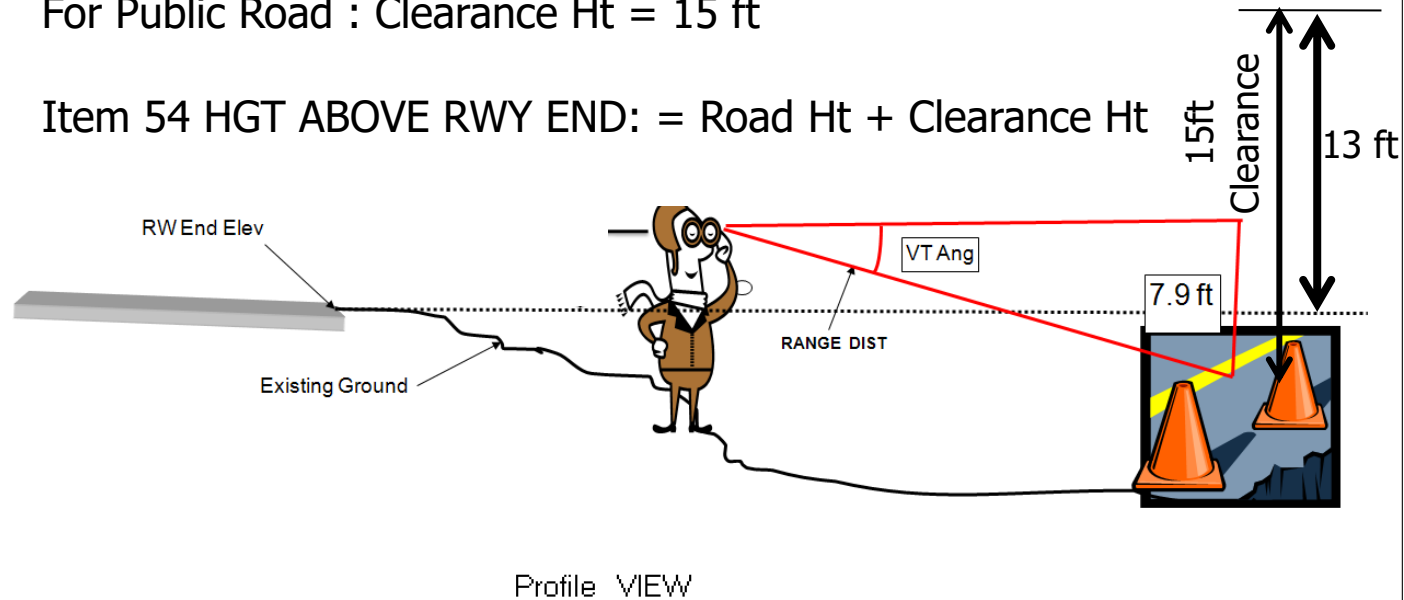
What is the Road Ht. above the Rwy End ??

Item 54 HGT Above RWY END: = Rd Ht + Clearance Ht

Road Ht = -2.3 ft (2.3 ft below the Rwy End)

For Public Road : Clearance Ht = 15 ft

Item 54 HGT ABOVE RWY END: = Road Ht + Clearance Ht



Item 54 HGT ABOVE RWY END: -2.3 ft + 15 ft = 13 ft

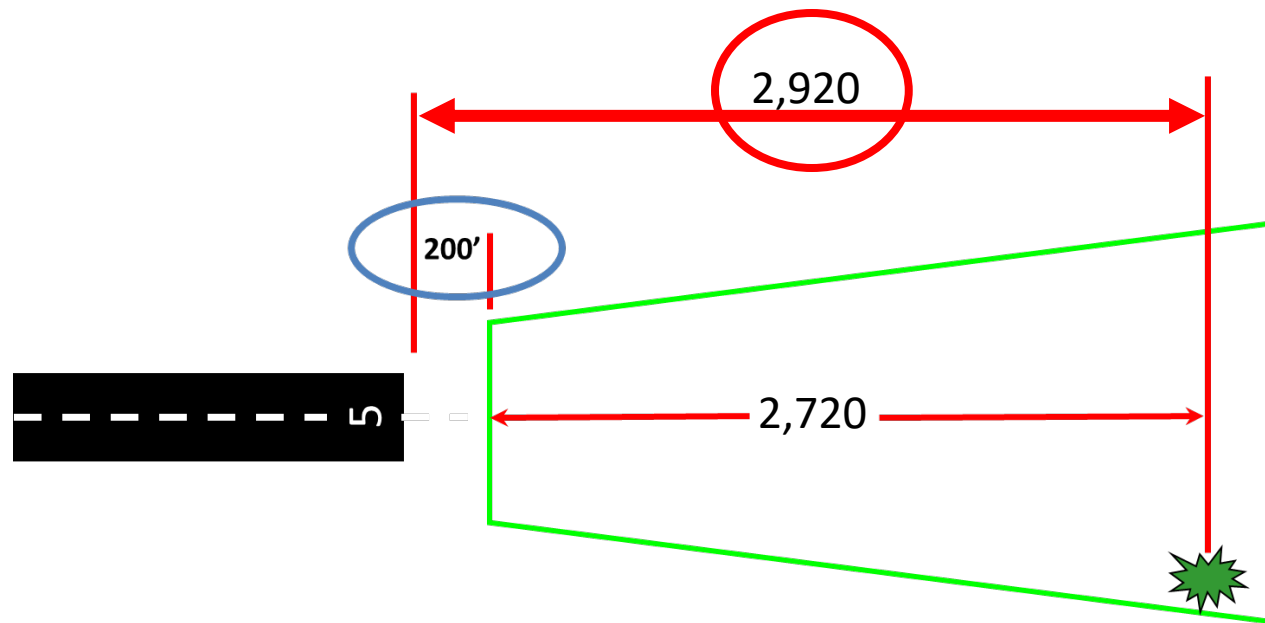
55. Distance From Runway End

- The entry is for two runway ends and the two runway ends each have fields for entry.

Obstruction Data Per End	18R View Obstruction location on Map	36L View Obstruction location on Map
50. FAR 77 Category ⓘ	PIR-Prec Inst Rwy	C-Not Util Rwy, Nonprec Aprch-> ¾ mi.
51. Displaced Threshold ⓘ	239	820
52. Controlling Obstruction ⓘ	OTHER-Other Misc. Obstruction	BERM-Berm, Dike, Levee, etc.
53. Obstruction Marked/Lighted ⓘ	L-Lighted	
54. Height Above Runway End ⓘ	6	7
→ 55. Distance From Runway End ⓘ	300	200
56. Centerline Offset ⓘ	0	0
Centerline Offset Direction	B-Both sides on centerline	B-Both sides on centerline
57. Obstruction Clearance Slope ⓘ	16	0
58. Close-In Obstruction ⓘ	No	Yes

55. Distance From Runway End

- Enter the distance in feet along the runway centerline extended from the runway end (not the displaced threshold) to the controlling obstruction. Measure the distance horizontally along the extended runway centerline (not a slant distance) to the point abeam the obstruction.



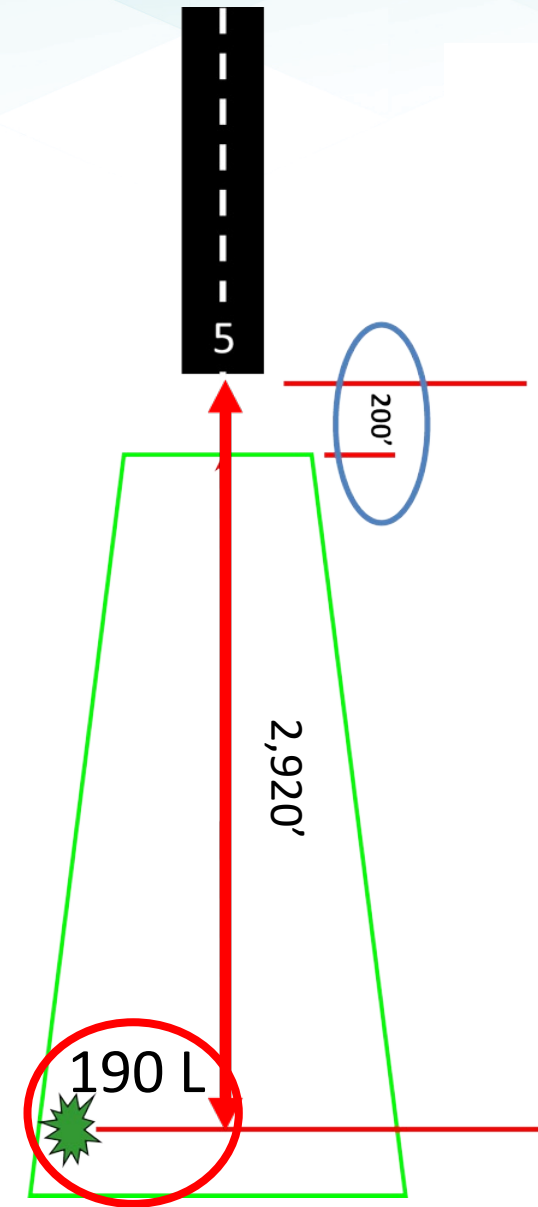
56. CNTRLN OFFSET (Centerline Offset)

- The entry is for two runway ends and the two runway ends each have fields for entry.

Obstruction Data Per End	18R View Obstruction location on Map	36L View Obstruction location on Map
50. FAR 77 Category ⓘ	PIR-Prec Inst Rwy	C-Not Util Rwy, Nonprec Aprch-> ¾ mi.
51. Displaced Threshold ⓘ	239	820
52. Controlling Obstruction ⓘ	OTHER-Other Misc. Obstruction	BERM-Berm, Dike, Levee, etc.
53. Obstruction Marked/Lighted ⓘ	L-Lighted	
54. Height Above Runway End ⓘ	6	7
55. Distance From Runway End ⓘ	300	200
→ 56. Centerline Offset ⓘ	0	0
→ Centerline Offset Direction	B-Both sides on centerline	B-Both sides on centerline
57. Obstruction Clearance Slope ⓘ	16	0
58. Close-In Obstruction ⓘ	No	Yes

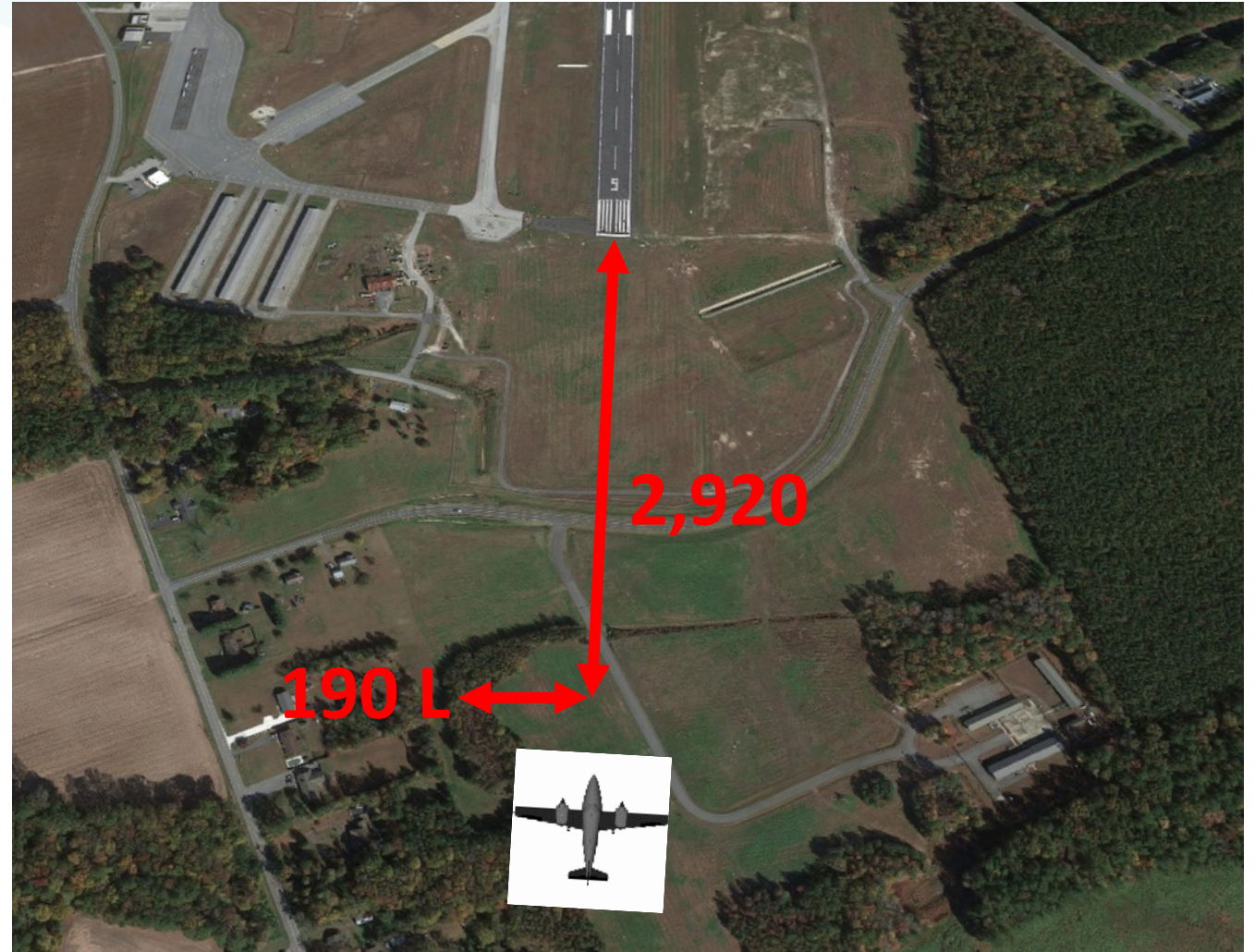
56. Centerline Offset Direction

- Enter the distance in feet that the controlling obstruction is located away from the extended runway centerline. Measure the distance horizontally on a line perpendicular to the extended runway centerline. Next enter whether the obstruction is right (R) or left (L) of the centerline as viewed by a pilot on final approach. Example 190 L.



56. Centerline Offset

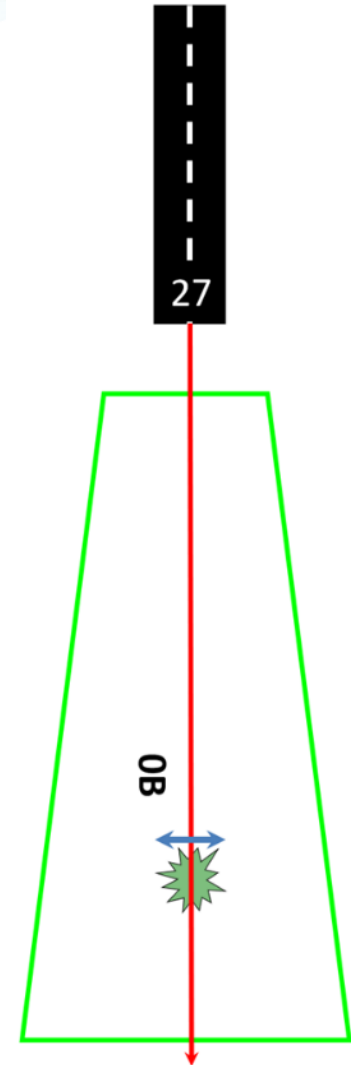
- This data element is calculated based on what a pilot sees as the pilot is flying an approach to a runway end. This is a two-part data element.



56. Centerline Offset Direction

- If the obstruction is a single obstruction and it is located directly on the centerline, enter the number zero followed by the letter B (e.g. 0B).
- If the obstruction spans both sides of the extended centerline, such as a row of trees, a road, or a power line, enter the distance right and left of the centerline followed by the letters L/R (e.g. 100L/R).

B-Both sides on centerline	=	Directly on the centerline
L-Left side	=	Left side of the centerline
L/R-Left and Right side	=	Spans across both sides of the centerline
R-Right side	=	Right side of the centerline



57. Obstruction Clearance Slope

- The entry is for two runway ends and the two runway ends each have fields for entry.
- Enter the obstruction clearance slope of the controlling obstruction identified in data element 52 using a ratio to indicate the clearance available to aircraft approaching that runway end. Slope ratios range from 1:1 to 50:1.

Obstruction Data Per End	18R View Obstruction location on Map	36L View Obstruction location on Map
50. FAR 77 Category ⓘ	PIR-Prec Inst Rwy	C-Not Util Rwy, Nonprec Aprch-> ¼ mi.
51. Displaced Threshold ⓘ	239	820
52. Controlling Obstruction ⓘ	OTHER-Other Misc. Obstruction	BERM-Berm, Dike, Levee, etc.
53. Obstruction Marked/Lighted ⓘ	L-Lighted	
54. Height Above Runway End ⓘ	6	7
55. Distance From Runway End ⓘ	300	200
56. Centerline Offset ⓘ	0	0
Centerline Offset Direction	B-Both sides on centerline	B-Both sides on centerline
→ 57. Obstruction Clearance Slope ⓘ	16	0
58. Close-In Obstruction ⓘ	No	Yes

57. Obstruction Clearance Slope

- If there are no objects penetrating the Part 77 Category Approach Surface, then the Part 77 approach surface is clear and there are no obstructions. Enter either 20:1 or 34:1 or 50:1, depending on the Part 77 Category approach to the runway end and no entries are required in data elements 52 through 56.

Obstruction Data Per End	18L View Obstruction location on Map	36R View Obstruction location on Map
50. FAR 77 Category ⓘ	PIR-Prec Inst Rwy	C-Not Util Rwy, Nonprec Aprch-> ¼ mi.
51. Displaced Threshold ⓘ		
52. Controlling Obstruction ⓘ		BLDG-Building
53. Obstruction Marked/Lighted ⓘ		L-Lighted
54. Height Above Runway End ⓘ		54
55. Distance From Runway End ⓘ		2035
56. Centerline Offset ⓘ		35
Centerline Offset Direction		L-Left side
57. Obstruction Clearance Slope ⓘ	50	33
58. Close-In Obstruction ⓘ	No	No

57. Obstruction Clearance Slope

- If there are no objects penetrating the Part 77 Category Approach Surface, then the Part 77 approach surface is clear and there are no obstructions. Enter either 20:1 or 34:1 or 50:1, depending on the Part 77 Category approach to the runway end and no entries are required in data elements 52 through 56.

Obstruction Data Per End					18L View Obstruction location on Map	36R View Obstruction location on Map
EN FAR 77 Category					A(V)-Util Rwy, Vis Aprch	A(V)-Util Rwy, Vis Aprch
Threshold						
Obstruction						BLDG-Building
RWY End						L-Lighted
Part 77 Category	Pri Sur Width	Appr Lth (ft)	Appr Wth (ft)	Approach Slope		54
A(V)	250	5000	1250	20:1		203
55. Distance from Runway End						35
56. Centerline Offset						L-Left side
Centerline Offset Direction						
57. Obstruction Clearance Slope					20:1	20:1
58. Close-In Obstruction					No	No

57. Obstruction Clearance Slope

- PAVED SURFACE RUNWAYS: Approach Ratio Calculation
- The distance from the runway end, data element 55, minus 200 feet, divided by the height above the runway end , data element 54.

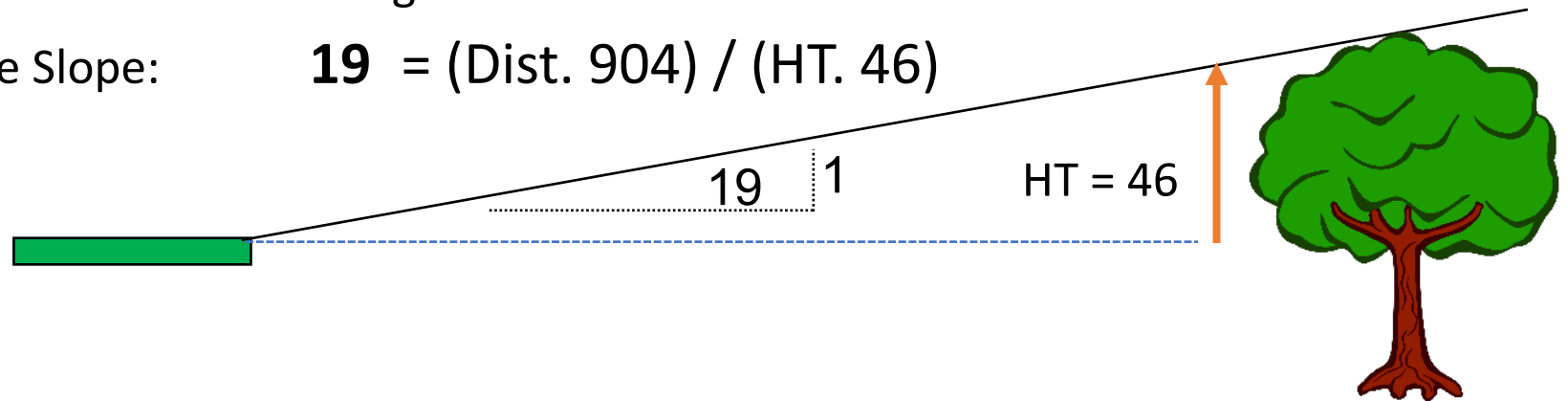
OBSTRUCTION DATA	
50 FAR 77 CATEGORY	C / C
> 51 DISPLACED THR:	/
> 52 CTLG OBSTN:	TREE / TREE
> 53 OBSTN MARKED/LGTD:	/
> 54 HGT ABOVE RWY END:	95 / 95
> 55 DIST FROM RWY END:	2,920 / 2,800
> 56 CNTRL N OFFSET:	1001 / 0B
57 OBSTN CLNC SLOPE:	28:1 / 27:1
58 CLOSE-IN OBSTN:	N / N

$$(\text{Dist}) 2,920 - 200 = 2,720 / (\text{HT}) 95 = 28.6 = 28$$

57. Obstruction Clearance Slope

Obstruction Clearance Slope Example: For NONPAVED Runway

52. Controlling Obstruction:	Tree
53. Obstruction Marked/Lighted:	N
54. Height Above Runway End:	46
55. Distance From Runway End:	904
56. Centerline Offset:	220
Centerline Offset Direction:	R-Right
57. Obstruction Clearance Slope:	19 = (Dist. 904) / (HT. 46)



Airport Master Records (AMR) Feature

New

Obstruction Data Per End

18R

[View Obstruction location on Map](#)

50. FAR 77 Category ⓘ	PIR-Prec Inst Rwy		
51. Displaced Threshold ⓘ	239		
52. Controlling Obstruction ⓘ	OTHER-Other Misc. Obstruction		
53. Obstruction Marked/Lighted ⓘ	L-Lighted		
54. Height Above Runway End ⓘ	71		
55. Distance From Runway End ⓘ	315		
56. Centerline Offset ⓘ	0		
Centerline Offset Direction	B-Both sides on centerline		
57. Obstruction Clearance Slope ⓘ	18		
	Calculated Slope: Specially Prepared Hard Surface: 16:1 Non-Specially Prepared Hard Surface: 45:1 Did not match the entered value - 18		
58. Close-In Obstruction ⓘ	No		

Calculated Slope info will appear if the entered Obst Clearance Slope does not match the Calculated Slope value.

Airport Master Records (AMR) Feature

New

Obstruction Data Per End

Controlling Obstruction on Runway End - 18R

ESRI World Imagery



Obstruction Data – View Obstruction location on Map

Controlling Obstruction on Runway End - 36L



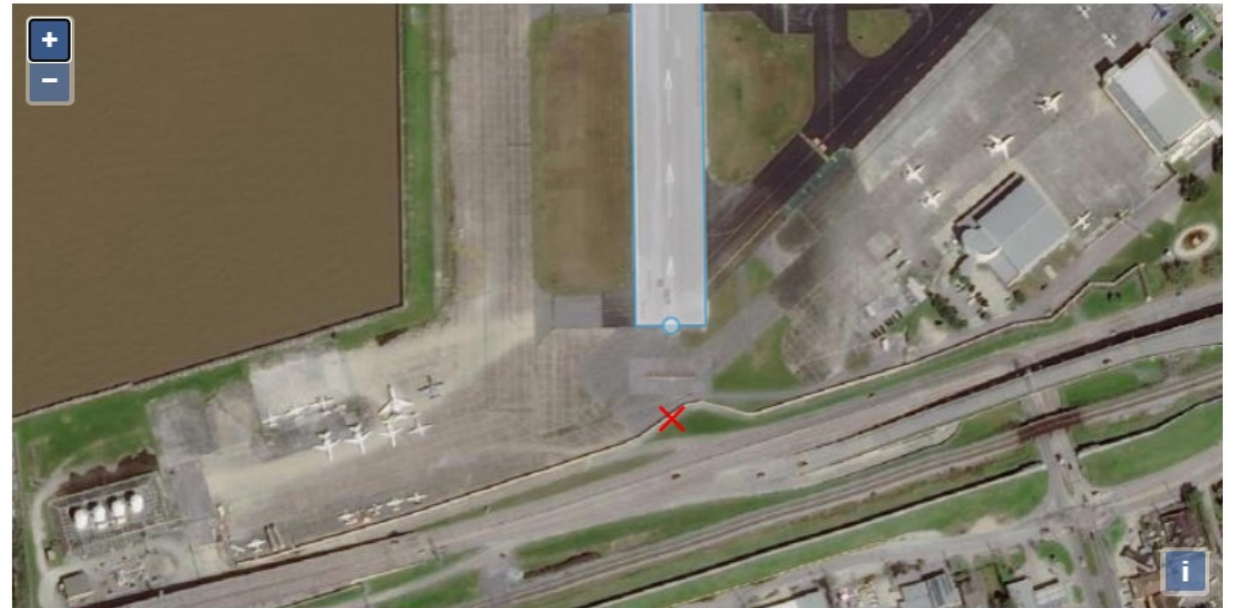
ESRI World Imagery



Controlling Obstruction on Runway End - 36L



ESRI World Imagery



57. Obstruction Clearance Slope

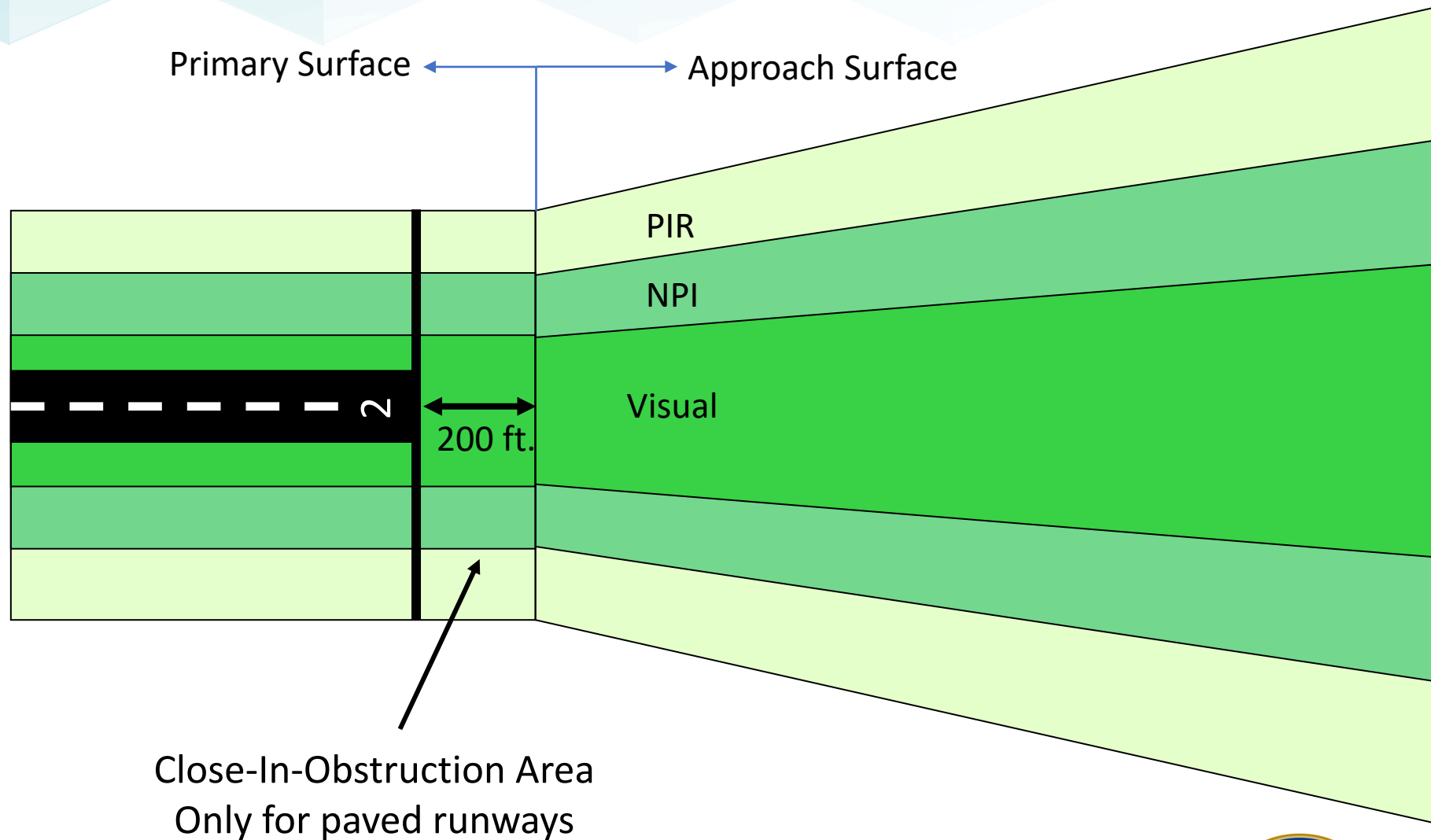
- The entry is for two runway ends and the two runway ends each have fields for entry.

APPROACH SLOPE FOR DISPLACED THRESHOLDS:

If an obstruction penetrates the approach slope to the displaced threshold and the obstruction is not the same one identified as the controlling obstruction to the runway end, it should be described in a referenced remark. All heights and distances are with respect to the displaced threshold.

Obstruction Data Per End		18R View Obstruction location on Map	36L View Obstruction location on Map
50. FAR 77 Category	PIR-Prec Inst Rwy	C-Not Util Rwy, Nonprec Aprch-> ¼ mi.	
51. Displaced Threshold	239	820	
52. Controlling Obstruction	OTHER-Other Misc. Obstruction	BERM-Berm, Dike, Levee, etc.	
53. Obstruction Marked/Lighted	L-Lighted		
54. Height Above Runway End	6	7	
55. Distance From Runway End			
57 - Obstruction Clearance Slope			
*Remark	*Remark		
57. APCH RATIO 50:1 FM DSP	APCH RATIO 32:1 AT DSPLCD THR; +77' SILO 2500'; 580' R.		

58. Close-In Obstruction



58. Close-In Obstruction

- Enter “Y” if there is an obstruction in the primary surface area within the first 200 feet beyond the runway end. In addition, a referenced remark is required in data element A058, identifying the obstruction, its height above the runway end, its distance from the runway end, and the centerline offset left or right to a pilot’s view on final approach.
- If no obstructions are located within the close-In-surface area, enter “N” or leave Blank.

58. Close-In Obstruction

- The entry is for two runway ends and the two runway ends each have fields for entry.
- This data element applies to PAVED Runways only. Leave BLANK for UNPAVED Runways.

Obstruction Data Per End		18R View Obstruction location on Map	36L View Obstruction location on Map
50. FAR 77 Category	PIR-Prec Inst Rwy	C-Not Util Rwy, Nonprec Aprch-> ¾ mi.	
58 - Close-In Obstruction			
*Remark			
<div>+7 FT WALL 150 FT FM RY END.</div>			
Currently Published Remark: +7 FT WALL 150 FT FM RY END.			
Add Remark		Remove Remark	
Cancel			

58. Close-In Obstruction

<u>OBSTRUCTION DATA</u>			
50 FAR 77 CATEGORY:	A(V) / A(V)	A(V) / A(V)	PIR / C
> 51 DISPLACED THR:	/	/	239 / 820
> 52 CTLG OBSTN:	BERM / ROAD	/ BLDG	PIER / WALL
> 53 OBSTN MARKED/LGTD:	L /	/ L	L /
> 54 HGT ABOVE RWY END:	4 / 14	/ 54	6 / 77
> 55 DIST FROM RWY END:	267 / 543	/ 2,035	300 / 2,500
> 56 CNTRLN OFFSET:	0B / 161R	/ 35L	0B / 580R
57 OBSTN CLNC SLOPE:	16:1 / 24:1	50:1 / 33:1	16:1 / 29:1
58 CLOSE-IN OBSTN:	N / N	N / N	N / Y
<u>DECLARED DISTANCES</u>			
> 60 TAKE OFF RUN AVBL (TORA):	3,113 / 3,113	3,697 / 3,697	6,880 / 6,880
> 61 TAKE OFF DIST AVBL (TODA):	3,113 / 3,113	3,697 / 3,697	6,880 / 6,880
> 62 ACLT STOP DIST AVBL (ASDA):	3,113 / 3,113	3,697 / 3,697	6,035 / 5,955
> 63 LNDG DIST AVBL (LDA):	3,113 / 3,113	3,697 / 3,697	5,510 / 5,135
(>) ARPT MGR PLEASE ADVISE FSS IN ITEM 86 WHEN CHANGES OCCUR TO ITEMS PRECEDED BY >			
> 110 REMARKS:			
A 024	LANDING FEE WAIVED WITH MINIMUM FUEL PURCHASE.		
A 033	RWY 18R/36L FEW LOW SPOTS NEAR INTERSECTION OF RY 09/27-HOLDING WATER.		
A 057	RWY 18R APCH RATIO 50:1 FM DSPLCD THR.		
A 057	RWY 36L APCH RATIO 32:1 AT DSPLCD THR; +77' SILO 2500'; 580' R.		
A 058	RWY 36L +7 FT WALL 150 FT FM RY END.		



A 058 RWY 36L +7FT WALL 150 FT FM RY END, L/R of C/L





Survey Field Example

Lakefront Airport

New Orleans, LA

RWY End 36R



FAR Part 77

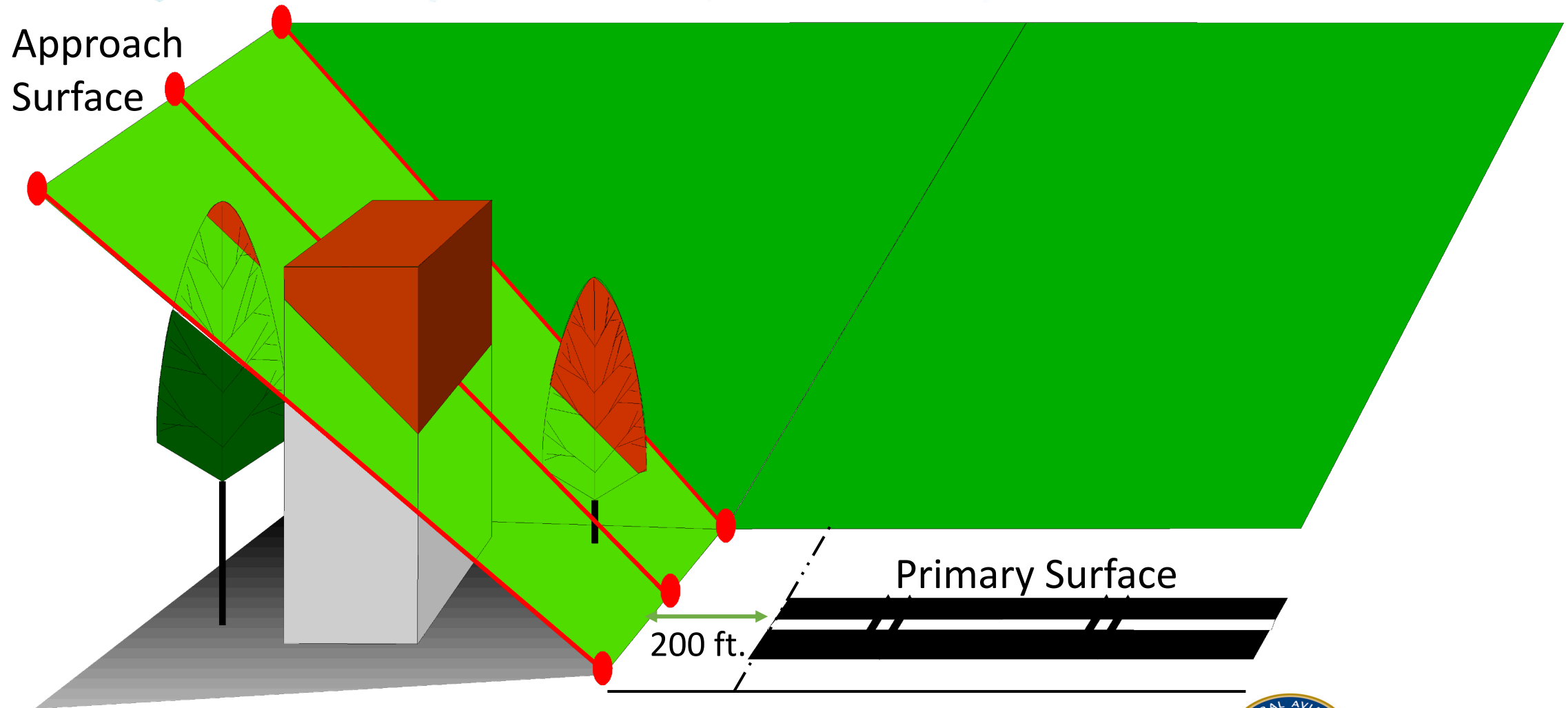
Part 77 establishes requirements for notification to the FAA of airspace and provides for aeronautical studies of such obstructions to determine their effect on the safe and efficient use of airspace. Part 77 applies only to public airports and heliports, airports operated by a federal agency or the Department of Defense, and private airports and heliports with at least one FAA approved instrument approach procedure.

Part 77 defines objects that are obstructions to surfaces and **presumes these objects to be hazards** unless an FAA study determines otherwise.

Obstruction Surfaces evaluated for the Airport Master Record FAA Form 5010-1:

- a) **Part 77 Approach Surface** - for all runways and heliports.
- b) For paved runways only: **Close-In-Obstruction Area** - the Primary Surface area extending 200 ft. beyond the runway end. Remark added for Object Obstruction.
- c) For **Displaced Thresholds**: Remark Added for Clearance-Slope to Disp Thr.

Part 77 Surfaces Evaluated for 5010



Obstruction Data - Survey Field Example

- From Current FAA Form 5010-1 , Review Data Elements 33, 35 and 50.
- From Data Element 33: ASPH Surface = Paved Runway
- From Data Element 35: Gross WT: S = 50.0
 - Approach Surface begins 200 feet from the runway end
 - Obstacles above the RW End Elev. located in the Pri Surface Area (0-200 feet) are Close-In-Obstns.
- Data Element 50 for RW 18L / 36R at Lakefront Airport: FAR Part 77 Cat = A(V) / A(V)
- For All Runway Ends:
 - An entry in Element #52 requires entries in Elements #53-57 for Public-Use Airports/Heliports
 - May leave Elements #52-56 “blank” if there are no penetrations to the Approach Surface.
 - Examples of Obstacles: ACFT/PLINE; TREE/BLDG

FAA Form 5010-1

RUNWAY DATA

> 30 RUNWAY INDENT:

OBSTRUCTION DATA

50 FAR 77 CATEGORY

> 51 DISPLACED THR:

> 52 CTLG OBSTN:

> 53 OBSTN MARKED/LGTD:

> 54 HGT ABOVE RWY END:

> 55 DIST FROM RWY END:

> 56 CNTRLN OFFSET:

57 OBSTN CLNC SLOPE:

58 CLOSE-IN OBSTN:

> 110 REMARKS

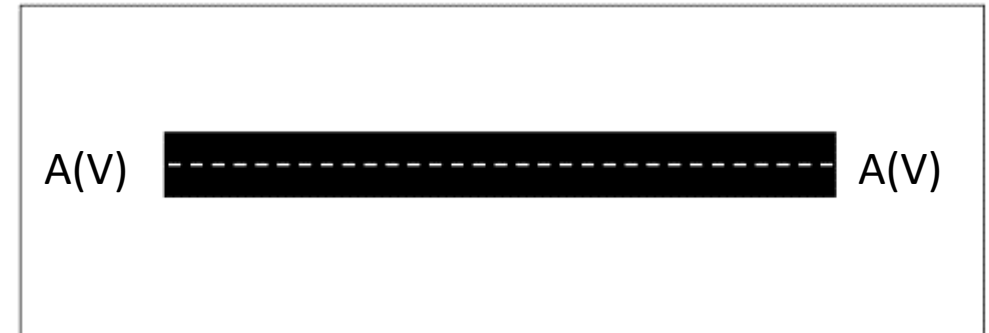
A 057 RWY 18R APCH RATIO 50:1 FM DSPLCD THR.
 A 057 RWY 36L APCH RATIO 32:1 AT DSPLCD THR; +77' SILO 2500'; 580' R.
 A 058 RWY 36L +7 FT WALL 150 FT FM RY END.

09/27	18L/36R	18R/36L
A(V) / A(V)	A(V) / A(V)	PIR / C
/	/	239 / 820
BERM / ROAD	/ BLDG	OTHER / BERM
L /	/ L	L /
4 / 14	/ 54	6 / 7
267 / 543	/ 2,035	300 / 200
0B / 161R	/ 35L	0B / 0B
16:1 / 24:1	50:1 / 33:1	16:1 / 0:1
N / N	N / N	N / Y

50. FAR 77 Category

- Review the FAR Part 77 Category (Element #50) for each particular runway end
- Use the FAR Part 77 Category to Determine Width of Approach Surface
- The width of the approach is the width prescribed for the most precise approach of that runway

Runway Combinations for Part 77 Approach Category	
50 FAR 77 Category	Primary Surface Width (feet)
A(V) / A(V)	250
A(V) / A (NP)	500
A(NP) / A(NP)	500
B(V) / B(V)	500
B(V) / C	500
B(V) / D	1000
B(V) / PIR	1000
C / C	500
C / D	1000
C / PIR	1000
D / D	1000
D / PIR	1000
PIR / PIR	1000



50. FAR 77 Category

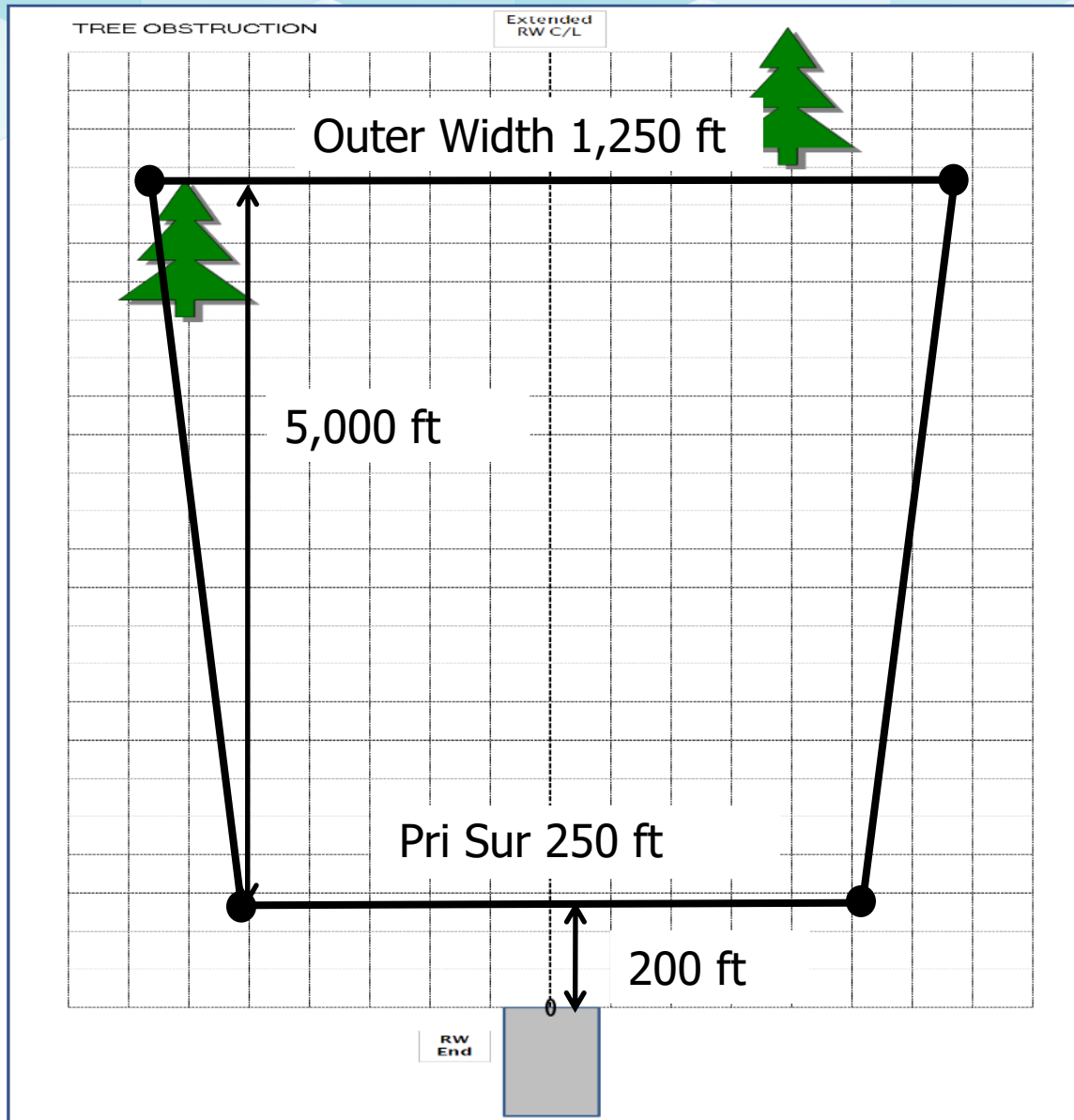
Part 77 Cat	Runway End Approach Procedure	Pri Sur Wth	Appr Lth	Appr Wth	App Slope
A(V)	Utility Runway with a Visual (V) Approach	250	5000	1250	20:1
A(NP)	Utility Runway with Non-Precision (NP) Approach	500	5000	2000	20:1
B(V)	Other than a Utility Runway with a Visual (V) Approach	500	5000	1500	20:1
C	Other than a Utility Runway with a Non- Precision Approach - Visibility Min greater than 3/4 Mile	500	10000	3500	34:1
D	Other than a Utility Runway with a Non- Precision Approach - Visibility Min less than or equal to 3/4 Mile	1000	10000	4000	34:1
PIR	Precision Instrument Approach *Approach Slope is 50:1 for first 10,000 ft. and 40:1 for remaining 40,000 feet	1000	50000	16000	*50:1 / 40:1

RWY 36R Approach Surface



RWY 36R Approach Surface



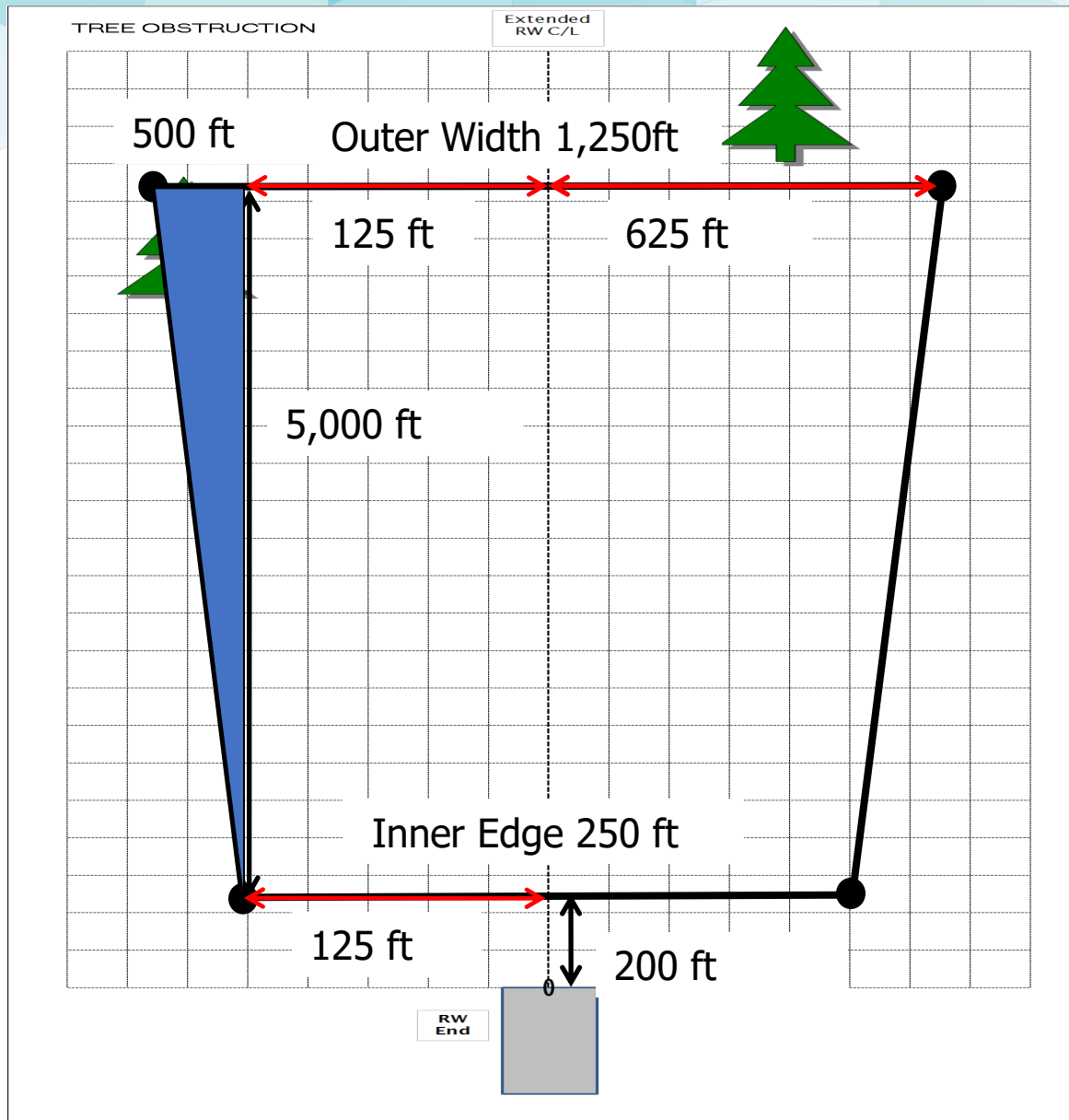


Part 77 Cat
A(V)/A(V)

Visual Approach (Utility RWY)

Pri Sur Width = 250 ft
 Inner Appr Width = 250 ft
 Appr Lth = 5,000 ft
 Outer Appr Width = 1,250 ft
 Approach Slope = 20:1

Hard Surface RWY
 Appr begins 200 ft from RWY End

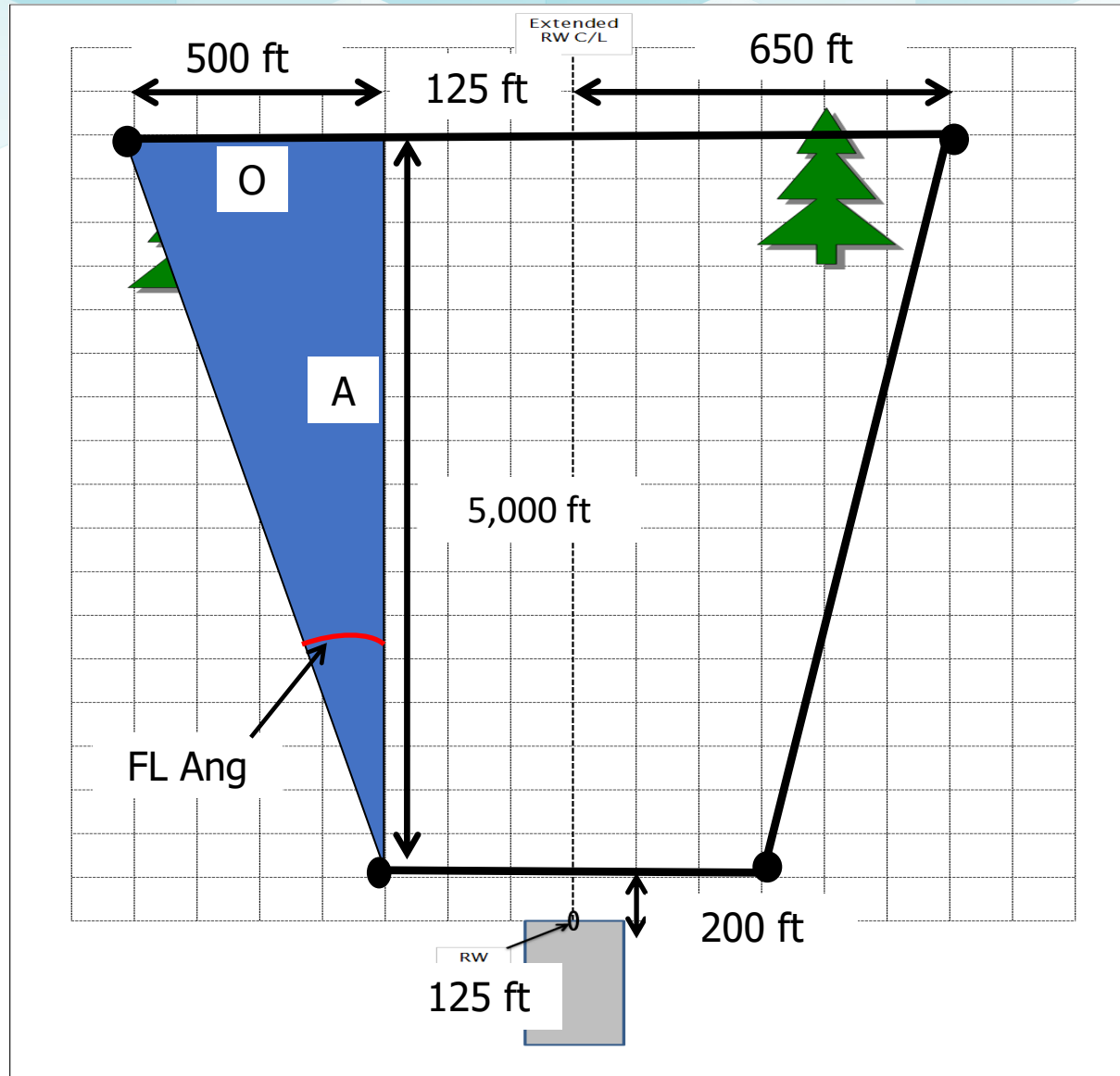


Part 77 Cat
A(V)/A(V)

Visual Approach (Utility RWY)

Pri Sur Width = 250 ft
 Inner Appr Width = 250 ft
 Appr Lth = 5,000 ft
 Outer Appr Width = 1,250 ft
 Approach Slope = 20:1

Hard Surface RWY
 Appr begins 200 ft from RWY End



Pri Sur Width = 250 ft
 Appr Lth = 5,000 ft
 Outer Appr Width = 1,250 ft
 Approach Slope = 20:1

$$\tan(\text{FL Ang}) = O / A$$

$$\tan(\text{FL Ang}) = 500 / 5,000$$

$$\tan(\text{FL Ang}) = 0.10$$

$$\text{FL Ang} = 10 \%$$

$$\text{FL Ang} = 5.71 \text{ Deg}$$

Part 77 RWY Category

RUNWAY CAT	Pri Sur Wth
FAR Part 77 CAT	(FT)
A(V) / A(V)	250
A(V) / A (NP)	500
A(NP) / A(NP)	500
B(V) / B(V)	500
B(V) / C	500
B(V) / D	1000
B(V) / PIR	1000
C / C	500
C / D	1000
C / PIR	1000
D / D	1000
D / PIR	1000
PIR / PIR	1000

RWY End						
Part 77 Category	Pri Sur Width	Appr Lth (ft)	Appr Wth (ft)	Approach Slope	FI Ang (deg)	Tan of FA (ratio)
A(V)	250	5000	1250	20:1	5.71	0.100
A(V)	500	5000	1250	20:1	4.29	0.075
A(NP)	500	5000	2000	20:1	8.53	0.150
B(V)	500	5000	1500	20:1	5.71	0.100
B(V)	1000	5000	1500	20:1	2.86	0.050
C	500	10000	3500	34:1	8.53	0.150
C	1000	10000	3500	34:1	7.13	0.125
D	1000	10000	4000	34:1	8.53	0.150
PIR	1000	50000	10000	50:1/40:1 *	8.53	0.150

* for PIR Runway End app slope is 50:1 for first 10,000 ft and 40:1 for remaining 40,000 ft.

Enter the runway category defined by Part 77 for the most precise EXISTING approach to each runway end.

Approaches Surfaces:

PIR - Precision Instrument Approach

D - Nonprecision Instrument Approach

C - Nonprecision Instrument Approach

B(V) - Visual Approach

A(NP) - Nonprecision Instrument Approach (Utility Runway)

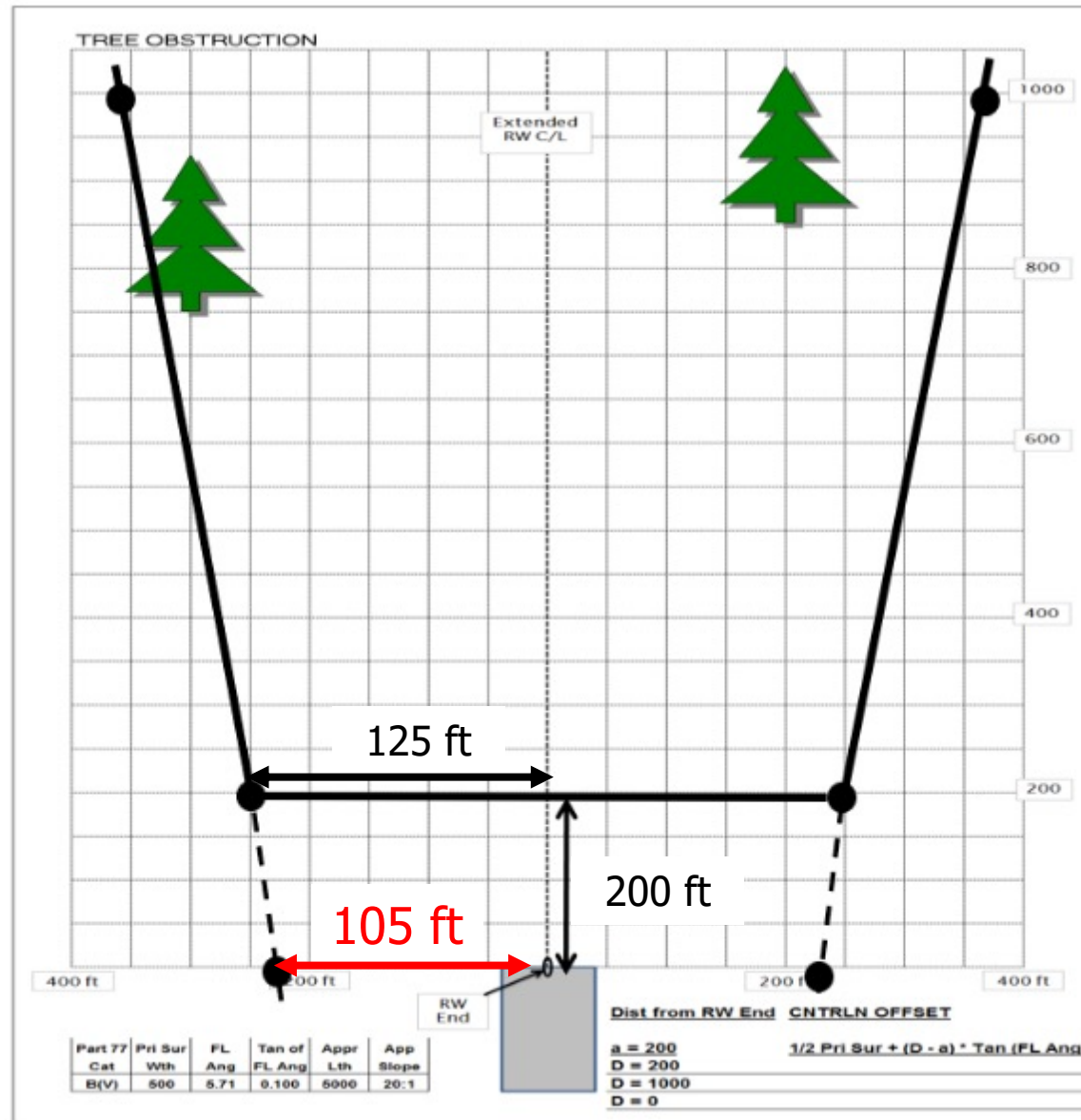
A(V) - Visual Approach (Utility Runway)

Visibility Minimums as low as 3/4 mile

Visibility Minimums greater than 3/4 mile

Utility RW constructed for propeller driven aircraft of 12,500 pounds maximum gross weight and less.

Obstruction Survey



Part 77 Cat
A(V)/A(V)

Visual Approach (Utility RWY)

Pri Sur Width = 250 ft
Inner Appr Width = 250 ft
Appr Lth = 5,000 ft
Outer Appr Width = 1,250 ft
Approach Slope = 20:1

Hard Surface RWY
Appr begins 200 ft from RWY End

RWY 36R

Survey Instruments Used for Measuring Distance

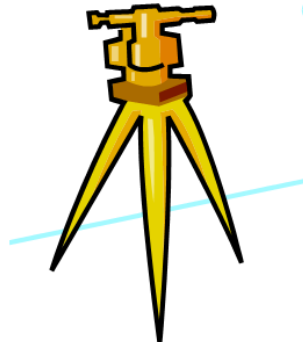
A) Measuring Wheel /
Surveyors Tape Measure



B) Range Finder



C) Total Station



RWY 36R

Survey Instruments Used for Measuring Direction

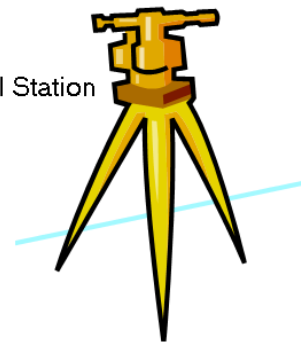
A) Right Angle Prism



B) Compass



C) Theodolite / Total Station

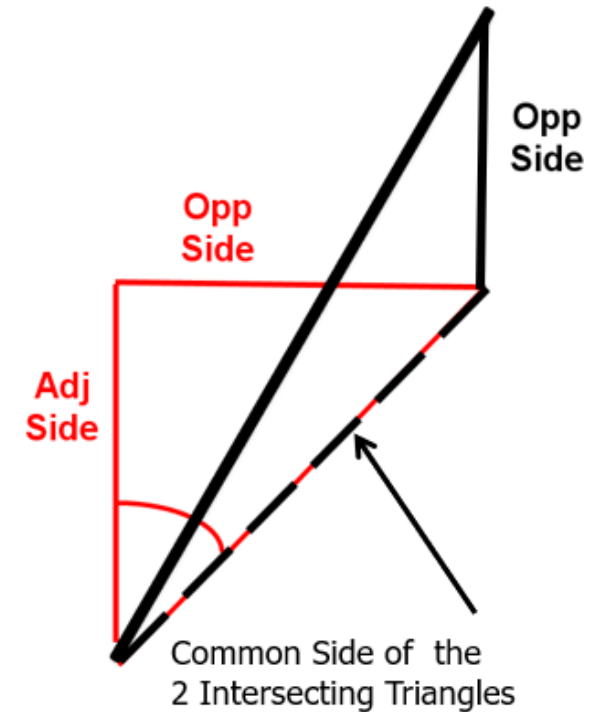
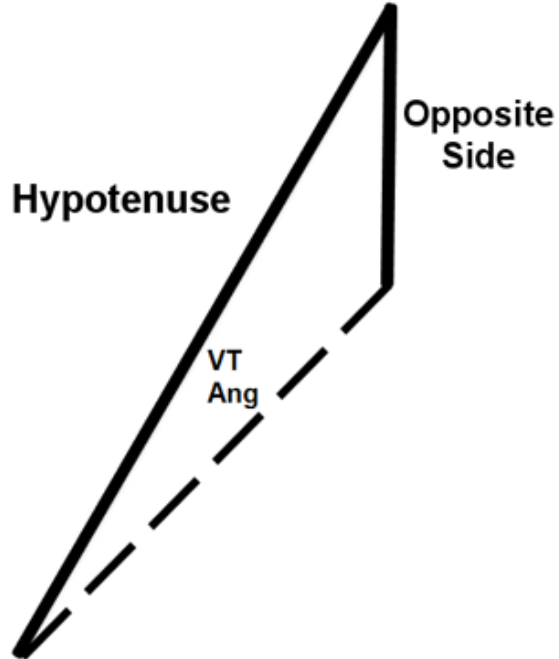
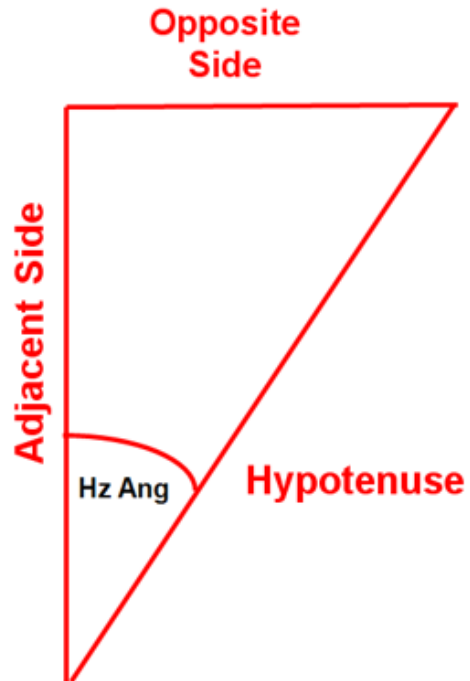


The Trigonometric functions sine, cosine and tangent of an angle are a ratio of two numbers. There is a direct relationship between the sides and angles in a right triangle.

$$\sin(\text{Angle 1}) = \text{Opposite} / \text{Hypotenuse}$$

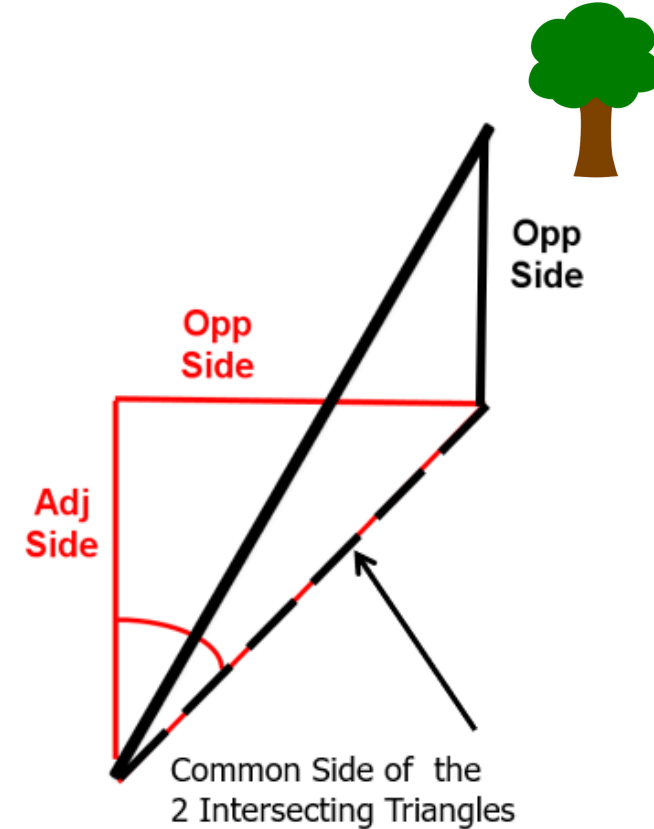
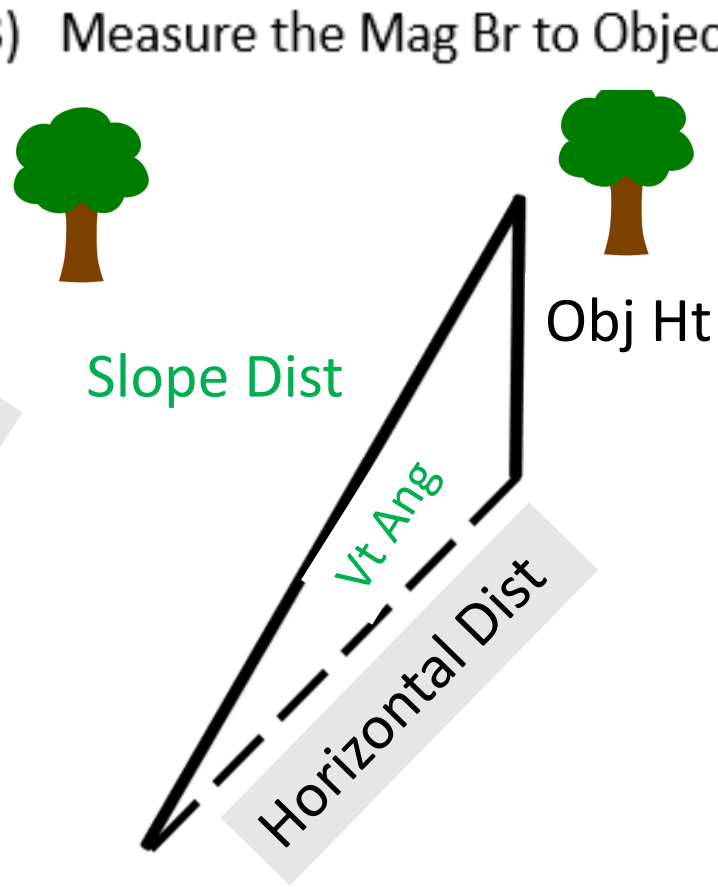
$$\cos(\text{Angle 1}) = \text{Adjacent} / \text{Hypotenuse}$$

$$\tan(\text{Angle 1}) = \text{Opposite} / \text{Adjacent}$$

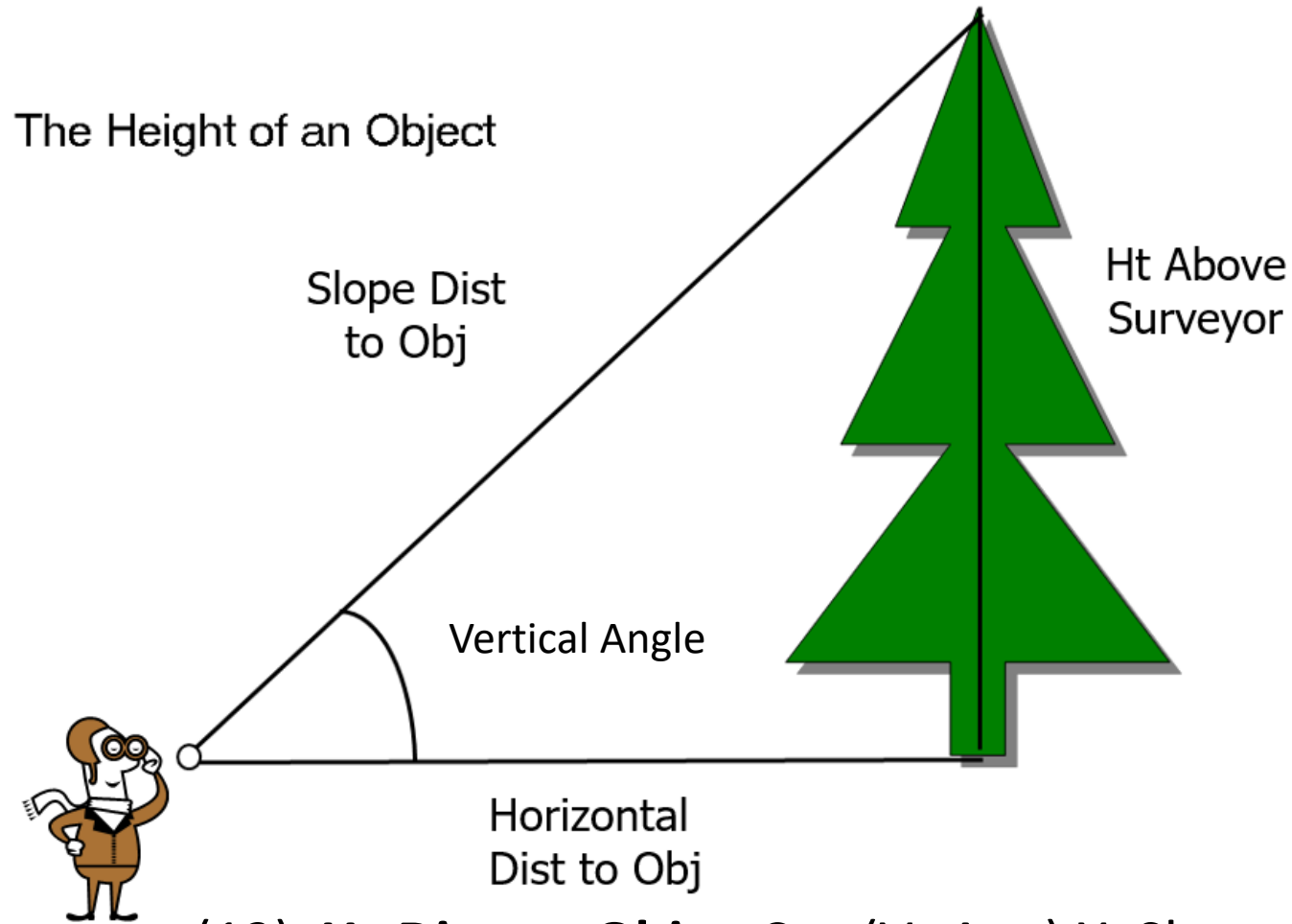


The Trigonometric functions sine, cosine and tangent of an angle are a ratio of two numbers. There is a direct relationship between the sides and angles in a right triangle.

- 1) Measure Slope Distance
- 2) Measure Vertical Angle to Object
- 3) Measure the Mag Br to Object



Item 54 Obj HT. = Sta. Eye Ht. + (Sin (Vt Ang) X Slope Dist.)

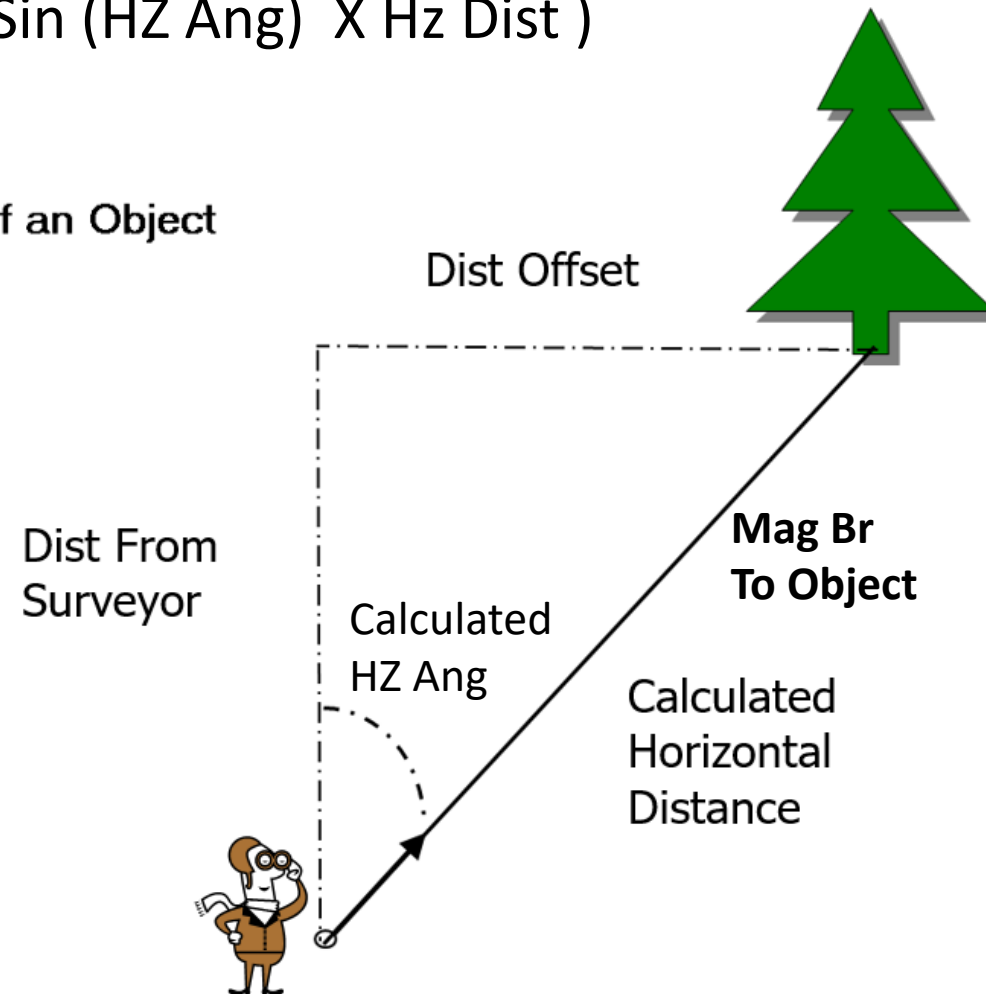


(12) Hz Dist. to Obj. = Cos (Vt Ang) X Slope Dist.

Item 55 **Dist from RWY End** = Sta. Dist + (Cos (Hz Ang) X Hz Dist)

Item 56 **Obj C/L OS** = Sta. OS + (Sin (HZ Ang) X Hz Dist)

The Location of an Object



Survey Field Example

Lakefront Airport

New Orleans, LA

RWY End 36R



FAA Form 5010-1

RUNWAY DATA

> 30 RUNWAY INDENT:

OBSTRUCTION DATA

50 FAR 77 CATEGORY

> 51 DISPLACED THR:

> 52 CTLG OBSTN:

> 53 OBSTN MARKED/LGTD:

> 54 HGT ABOVE RWY END:

> 55 DIST FROM RWY END:

> 56 CNTRLN OFFSET:

57 OBSTN CLNC SLOPE:

58 CLOSE-IN OBSTN:

> 110 REMARKS

A 057 RWY 18R APCH RATIO 50:1 FM DSPLCD THR.
 A 057 RWY 36L APCH RATIO 32:1 AT DSPLCD THR; +77' SILO 2500'; 580' R.
 A 058 RWY 36L +7 FT WALL 150 FT FM RY END.

09/27	18L/36R	18R/36L
A(V) / A(V)	A(V) / A(V)	PIR / C
/	/	239 / 820
BERM / ROAD	/ BLDG	OTHER / BERM
L /	/ L	L /
4 / 14	/ 54	6 / 7
267 / 543	/ 2,035	300 / 200
0B / 161R	/ 35L	0B / 0B
16:1 / 24:1	50:1 / 33:1	16:1 / 0:1
N / N	N / N	N / Y

Part 77 RWY Category

RUNWAY CAT	Pri Sur Wth
FAR Part 77 CAT	(FT)
A(V) / A(V)	250
A(V) / A (NP)	500
A(NP) / A(NP)	500
B(V) / B(V)	500
B(V) / C	500
B(V) / D	1000
B(V) / PIR	1000
C / C	500
C / D	1000
C / PIR	1000
D / D	1000
D / PIR	1000
PIR / PIR	1000

RWY End						
Part 77 Category	Pri Sur Width	Appr Lth (ft)	Appr Wth (ft)	Approach Slope	FI Ang (deg)	Tan of FA (ratio)
A(V)	250	5000	1250	20:1	5.71	0.100
A(V)	500	5000	1250	20:1	4.29	0.075
A(NP)	500	5000	2000	20:1	8.53	0.150
B(V)	500	5000	1500	20:1	5.71	0.100
B(V)	1000	5000	1500	20:1	2.86	0.050
C	500	10000	3500	34:1	8.53	0.150
C	1000	10000	3500	34:1	7.13	0.125
D	1000	10000	4000	34:1	8.53	0.150
PIR	1000	50000	10000	50:1/40:1 *	8.53	0.150

* for PIR Runway End app slope is 50:1 for first 10,000 ft and 40:1 for remaining 40,000 ft.

Enter the runway category defined by Part 77 for the most precise EXISTING approach to each runway end.

Approaches Surfaces:

PIR - Precision Instrument Approach

D - Nonprecision Instrument Approach

C - Nonprecision Instrument Approach

B(V) - Visual Approach

A(NP) - Nonprecision Instrument Approach (Utility Runway)

A(V) - Visual Approach (Utility Runway)

Visibility Minimums as low as 3/4 mile

Visibility Minimums greater than 3/4 mile

Utility RW constructed for propeller driven aircraft of 12,500 pounds maximum gross weight and less.

Survey Field Sheet

5010 Runway End Approach Slope Obstruction Evaluation

RW End 36R

Part 77 RW CAT 18L / 36R = _____ / _____

Primary Sur Wth = _____

Flare Angle = _____

Tan of Flare Ang = _____

Approach Slope = _____ :1

51 DSPLCD THLD = _____

Hard Surf RW = _____ Y (Y or N)

Obstruction Survey Data

1.) RW Mag Br = _____ (Observed)

2.) C/L Dep Br = _____

3.) LT Mag Br = _____

4.) RT Mag Br = _____

5.) Lt Side Flare App Sur Mag Br = _____

6.) Rt Side Flare App Sur Mag Br = _____



RWY 36R

5010 Runway End Approach Slope Obstruction Evaluation

Part 77 RW CAT 18L /36R = A(V) / A(V)

Primary Sur Wth = 250

Flare Angle = 5.71

Tan of Flare Ang = 0.10

Approach Slope = 20 :1

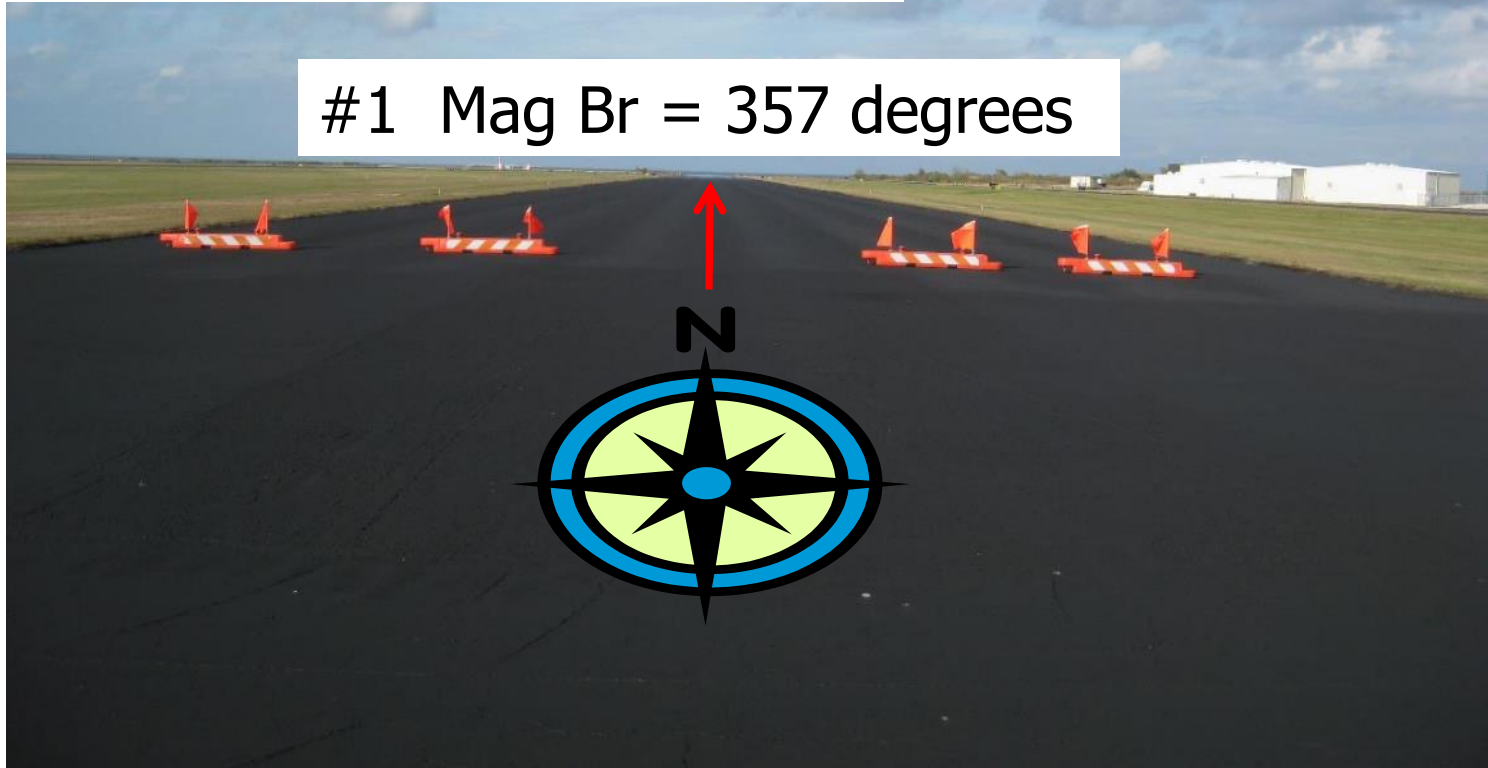
51 DSPLCD THLD =

Hard Surf RW = Y (Y or N)

RWY 36R

- 1.) Runway Mag Br=
- 2.) C/L Departure Mag Br=
- 3.) LT Direction Mag Br=
- 4.) RT Direction Mag Br=
- 5.) Lt Side App Sur Flare Mag Br =
- 6.) Rt Side App Sur Flare Mag Br =

#1 Mag Br = 357 degrees



RWY 36R – Approach



RWY 36R



RWY 36R

Part 77 RW CAT 18L /36R = A(V) / A(V)

Primary Sur Wth = 250

Flare Angle = 5.71

Tan of Flare Ang = 0.10

Approach Slope = 20 :1

51 DSPLCD THLD =

Hard Surf RW = Y (Y or N)

Obstruction Survey Data

1.) RW Mag Br = 357.0 (Observed)

2.) C/L Dep Br = 177.0

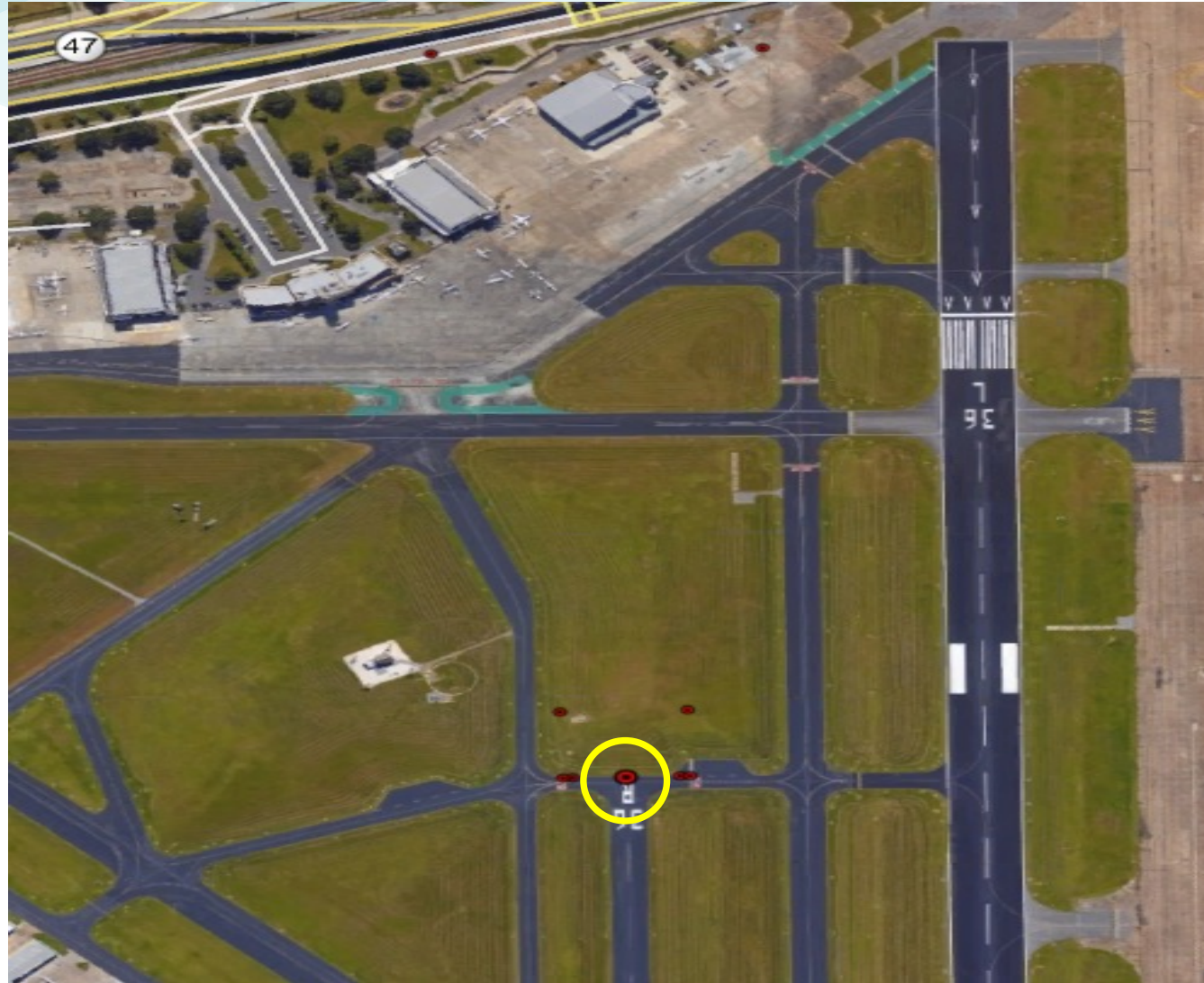
3.) LT Mag Br = 87.0

4.) RT Mag Br = 267.0

5.) Lt Side Flare App Sur Mag Br = 171.29

6.) Rt Side Flare App Sur Mag Br = 182.71

RWY 36R



Survey Station Location

7) Distance from RW End = D = 0 ft

Calculate Offset Distance from C/L to boundary of Approach Surface:

Calculate: Offset Dist (Lt Or Rt of C/L) = $[(D - 200) * \tan \text{ of Flare}] + 1/2 \text{ Primary Surface Width}$

8) CNTRL Offset to Appr Boundary 0.00 ft

9) Calculate your Eye Ht Abv RW End at your Survey Sta. location

Measure Range Dist Measure or calculate dist to RW End = (ft)

Measure your Vt Ang to RW End = (deg)

- Sin (Ang) =

Eye Ht. above Station = Slope Dist * (- Sin(Ang)) = ft

Your Set Up	Distance Left (-) or Right (+) of RW C/L	<u>0.00</u> ft
At Survey Station	Distance From Runway End along C/L	<u>0</u> ft
	Eye Height above your survey location	<u>5.3</u> ft

RWY 36R



RWY 36R



Survey Measured Values to Object

5010 Item 52 Select an Object Hangar 1 (H1)

5010 Item 53 Marked/Lighted (M, L, M/L) Lighted

(10) Record 3 Measurements:

- | | | |
|----|----------------------------|----------------|
| a) | Slope Distance to Object = | <u>1707</u> ft |
| b) | Vt. Ang to Object = | <u>1.1</u> deg |
| c) | Mag Br to Object = | <u>169</u> deg |

RWY 36R



Survey Station Calculations

Calculations: **(11)** Horizontal Angle to Object = (Mag Br to Obj - C/L DEP Br) = -8 deg

(12) HZ Dist to Obj = Cos (Vt. Ang) * Measured Slope Dist to Obj = 1706.69 ft

Item 54 (Ht Abv RW) = Eye Ht. + [Sin (Vt Ang) * Measured Slope Dist] = 38.0 ft

Item 55 (Dist from Rwy End) = Sta Dist + [Cos (Hz Ang) * HZ Dist to Obj] = 1690 ft

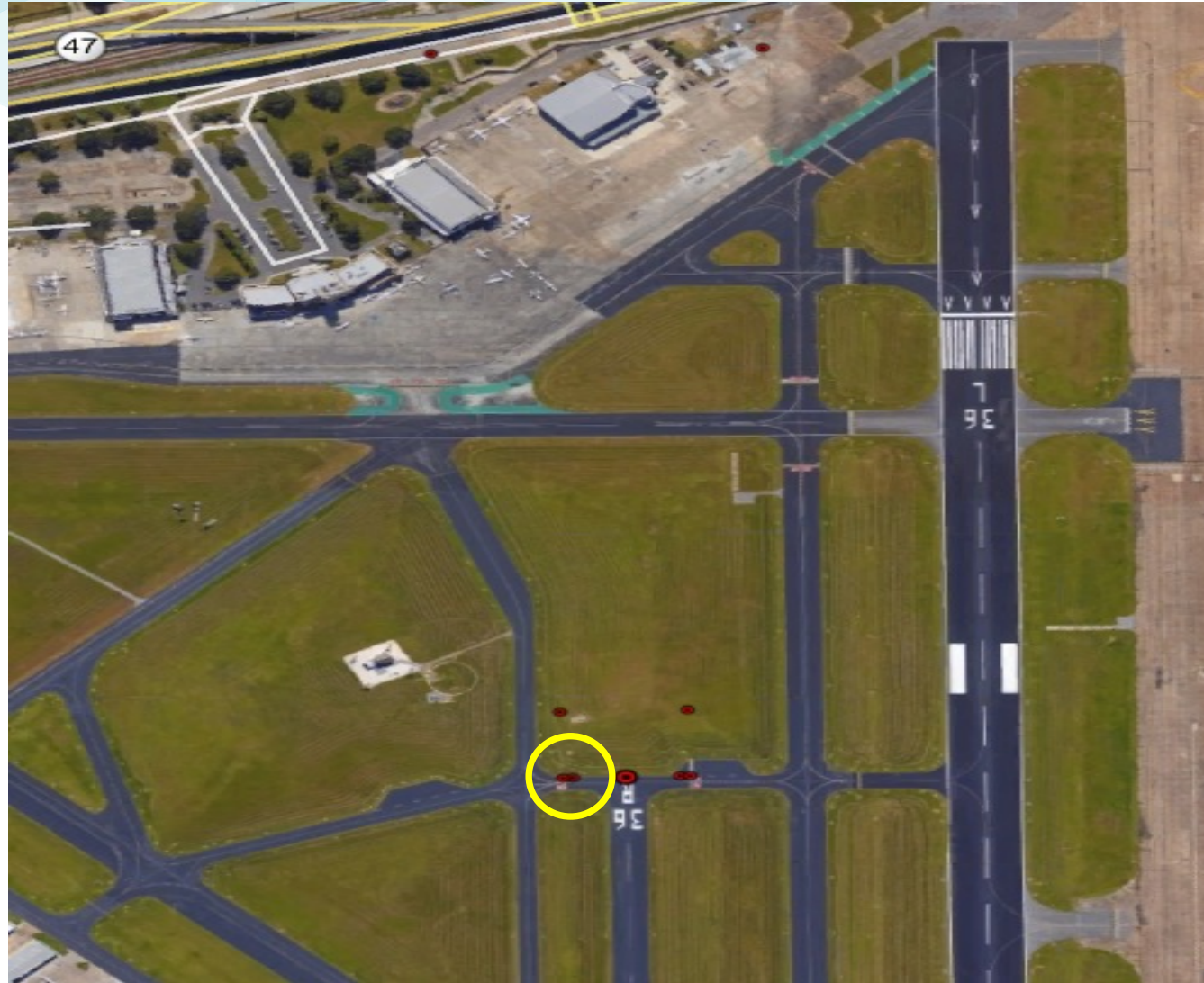
Item 56 (Obj C/L Offset) = Sta C/L Offset Dist + [Sin (HZ Ang) * HZ Dist to Obj] = -237 ft

Item 57 (Obj CLNC Slope) = (Item 55 - 200ft (if hard suf rw)) / Item 54 = 39 :1

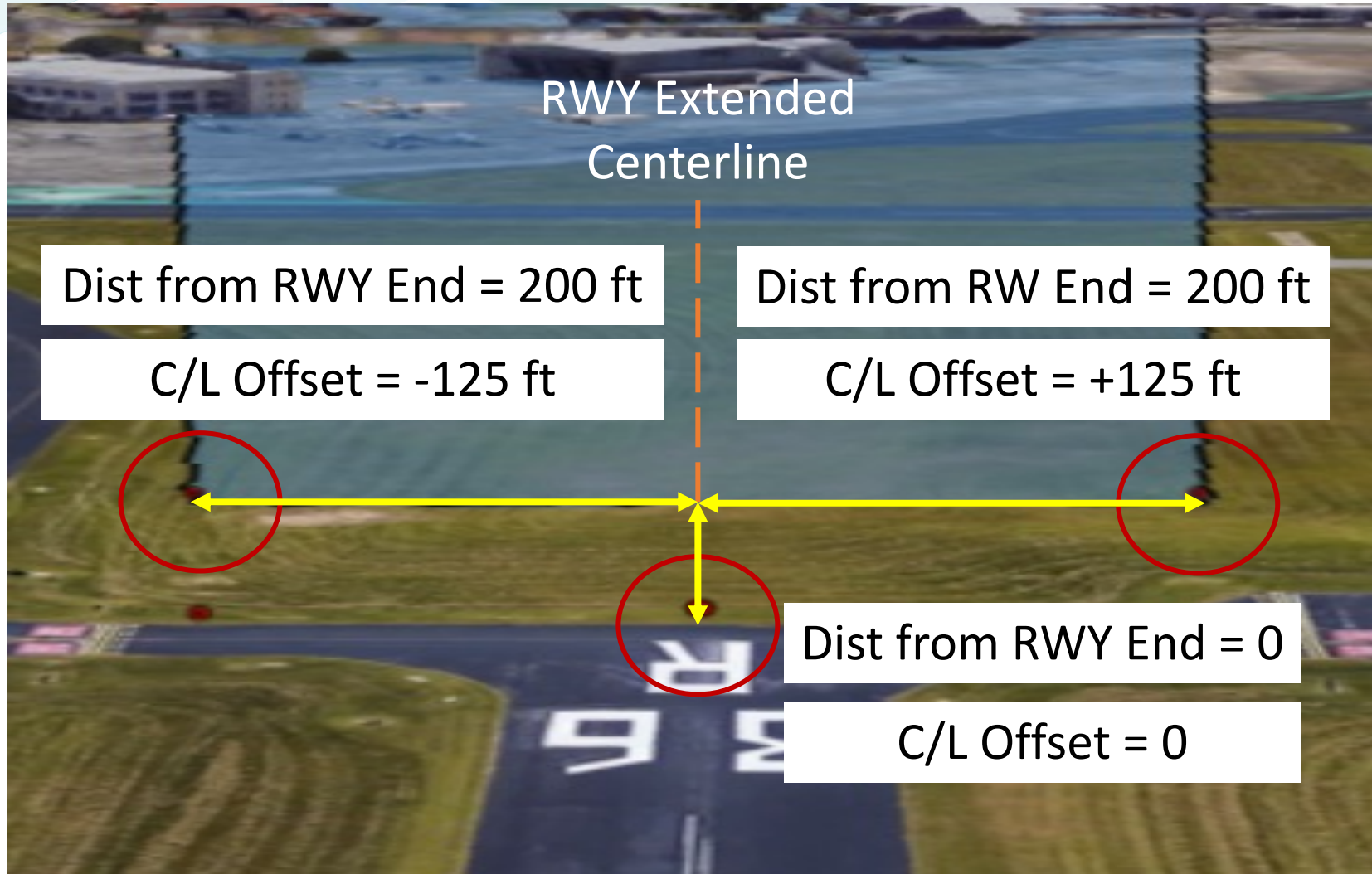
RWY 36R



RWY 36R



RWY 36R Approach Surface

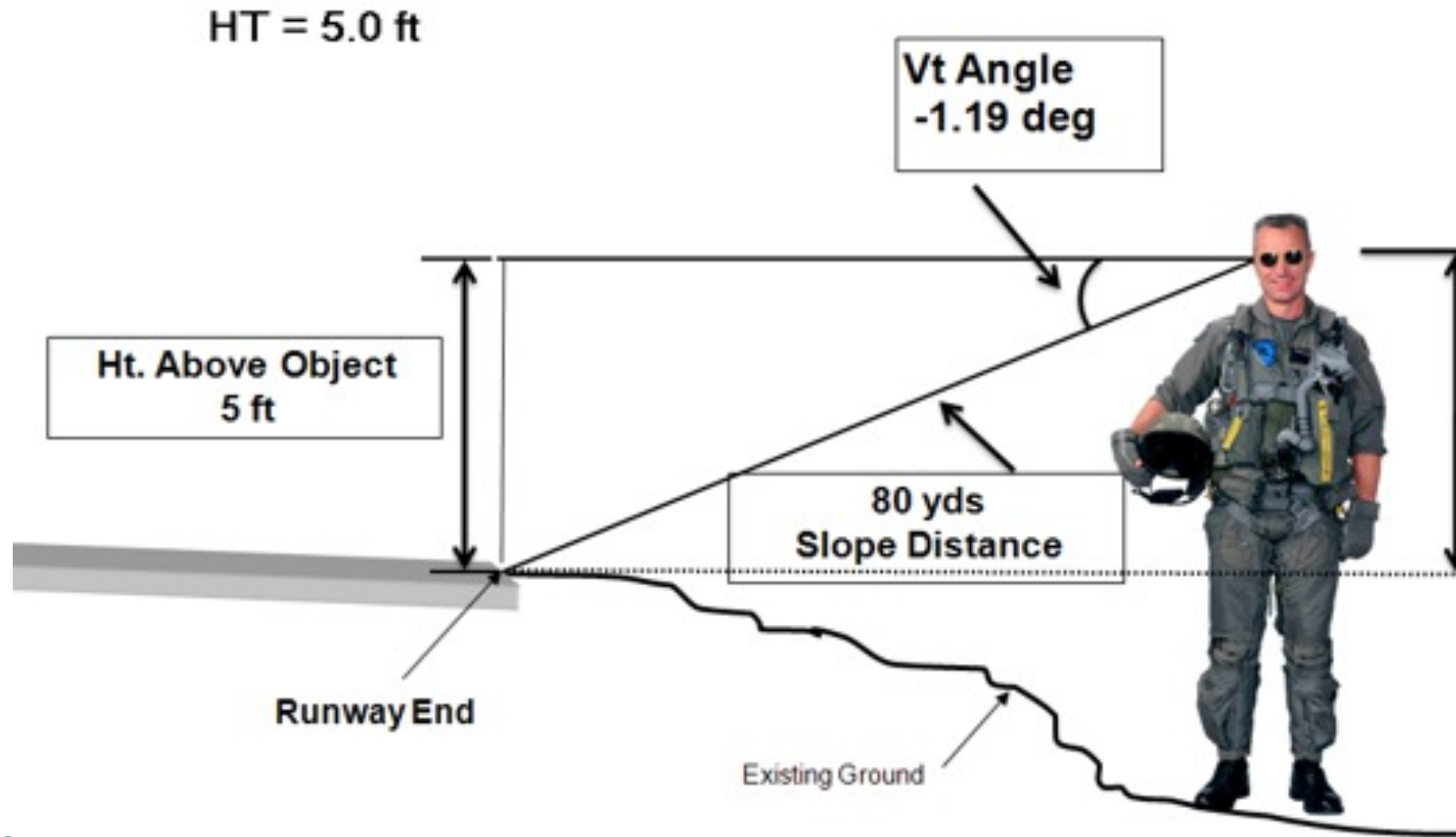


RWY 36R



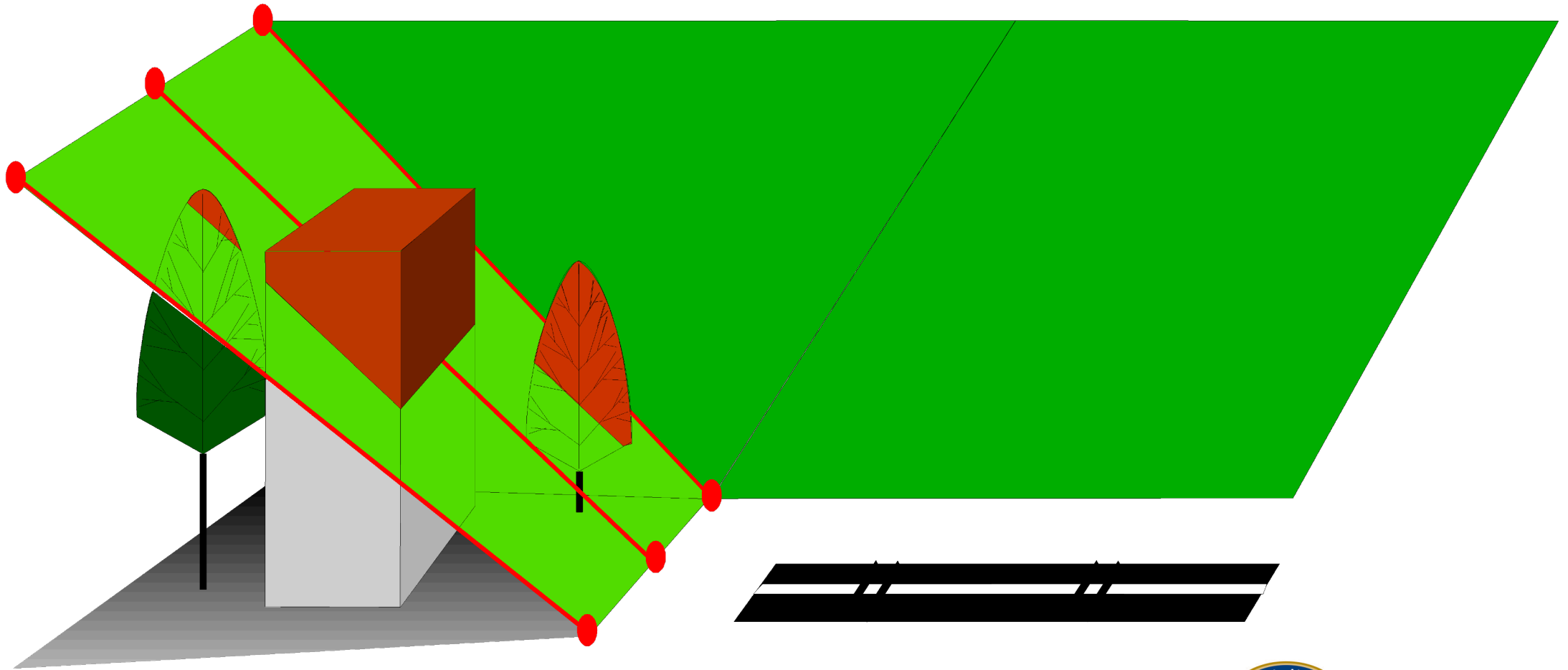
Calculate Eye Ht Above Survey Station

(9) Eye Ht. Abv Sta. = Slope Dist X (– (Sin (Vt Ang))





Obstruction Survey Review



Obstruction Example

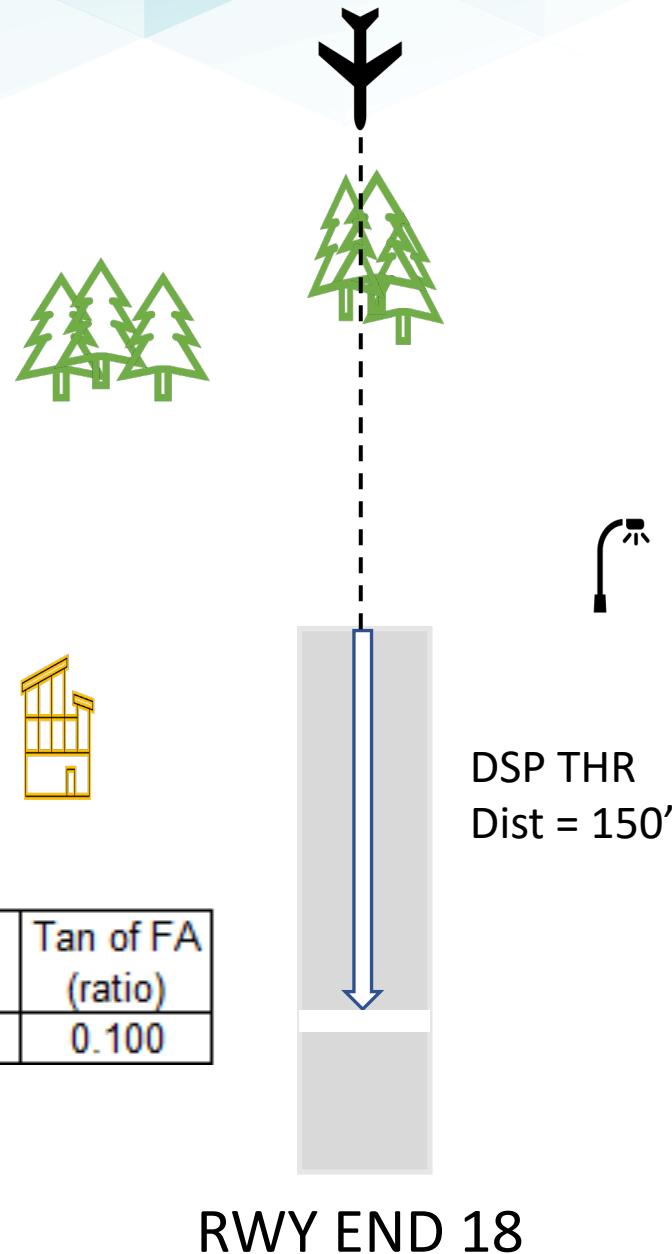
Paved RWY End

Part 77 RWY A(V) / A(V)
RWY END Elev = DSP THR Elev

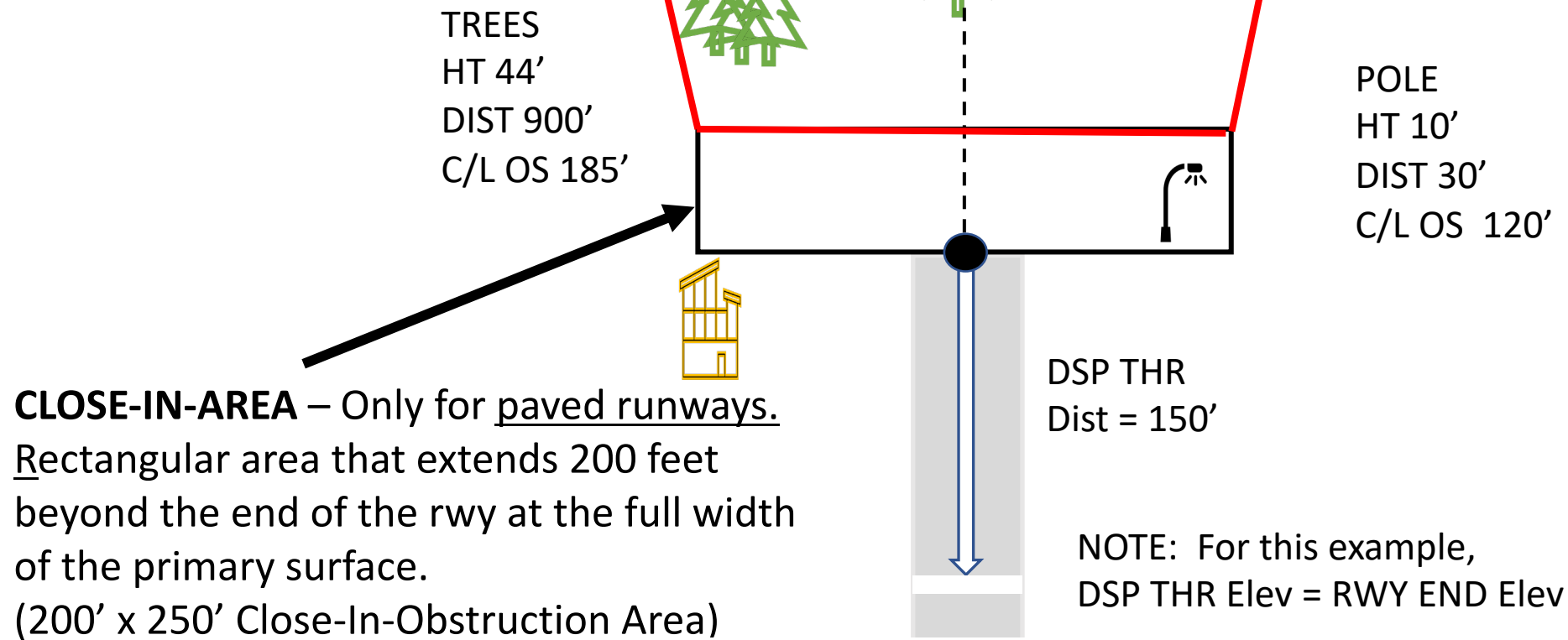
RUNWAY CAT	Pri Sur Wth
FAR Part 77 CAT	(FT)
A(V) / A(V)	250
A(V) / A (NP)	500
A(NP) / A(NP)	500

RWY End

Part 77 Category	Pri Sur Width	Appr Lth (ft)	Appr Wth (ft)	Approach Slope	FI Ang (deg)	Tan of FA (ratio)
A(V)	250	5000	1250	20:1	5.71	0.100



Example: RWY End Survey Data



RWY End						
Part 77 Category	Pri Sur Width	Appr Lth (ft)	Appr Wth (ft)	Approach Slope	Fl Ang (deg)	Tan of FA (ratio)
A(V)	250	5000	1250	20:1	5.71	0.100

Survey Data Runway End 18 (Paved)

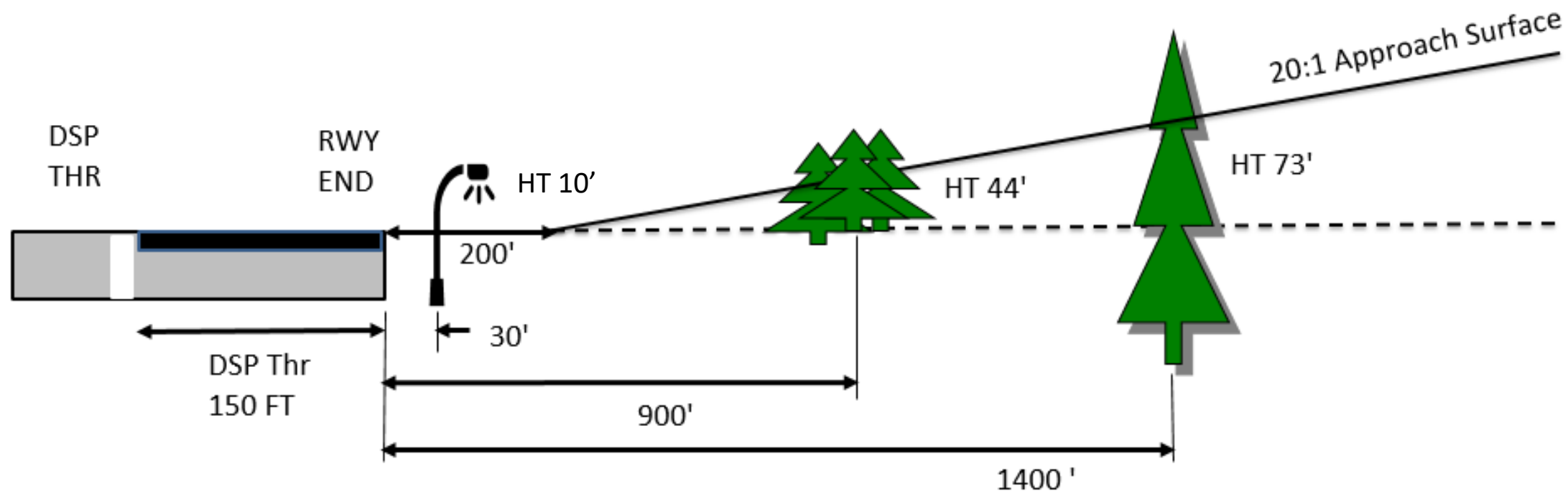
Object	TREE	TREES	POLE
Object Marked/Lighted	-	-	-
Height Abv RW End	73	44	10
Distance From Runway End	1400	900	30
Centerline Offset / Direction	0B	185 R	120 L

Obst CI Slope (Approach Surface)

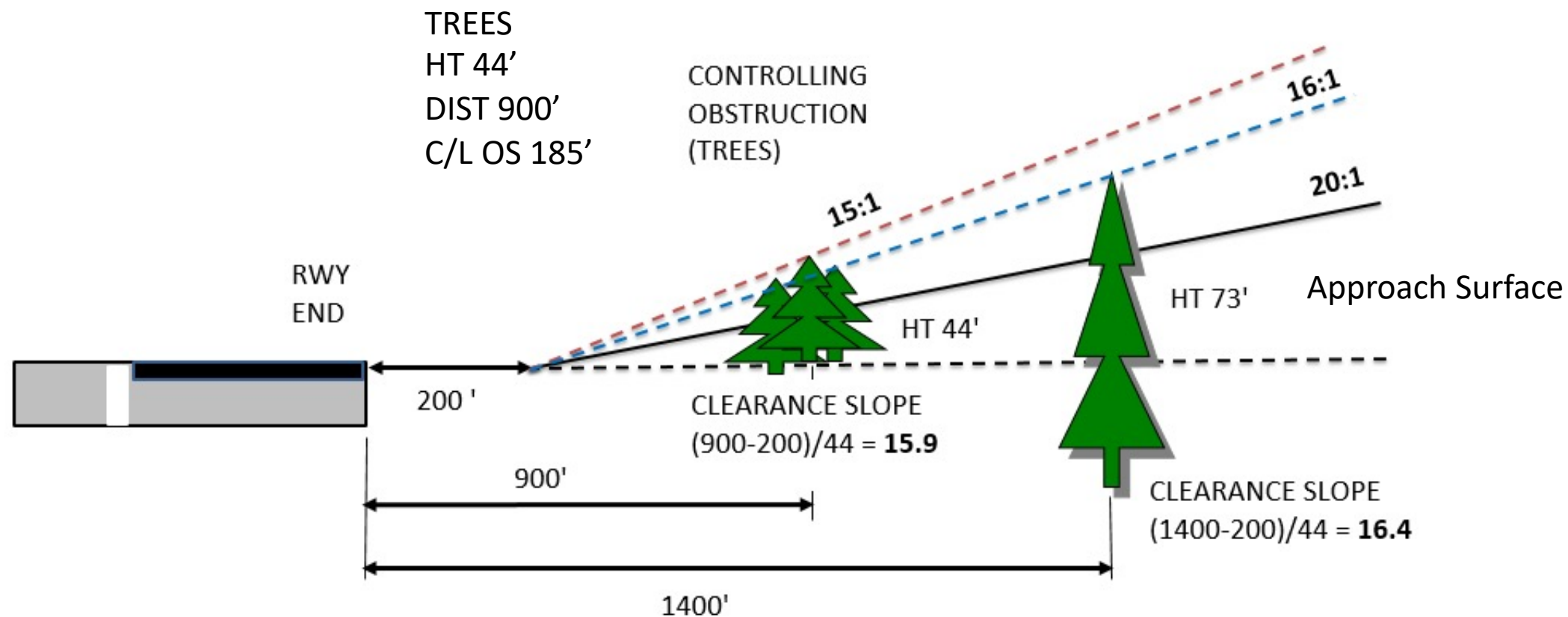
Obst CI Slope (from DSP THR)

Close-In-Obstruction

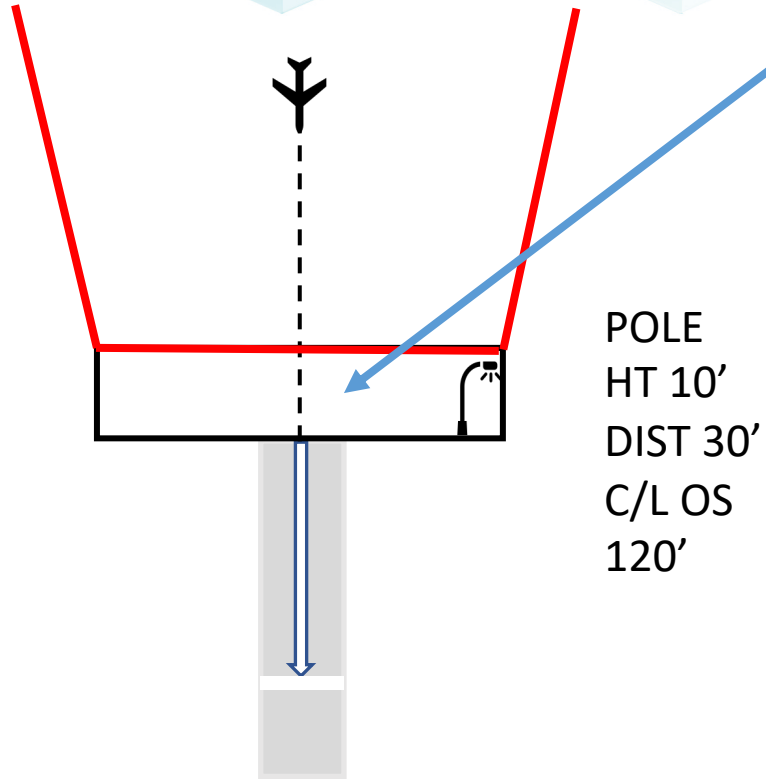
Obstruction Example:



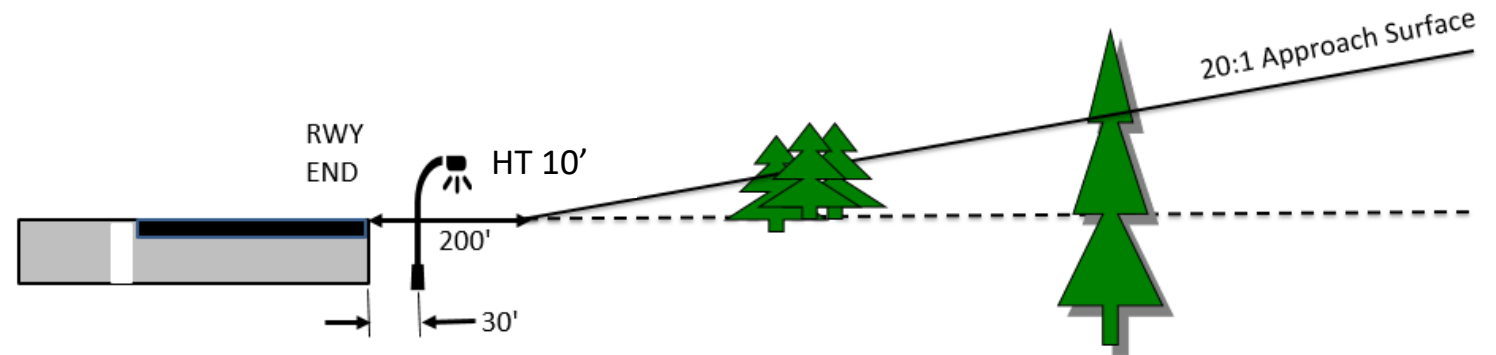
Example: Controlling Obstruction



Remark A 058 Close-In Obstruction

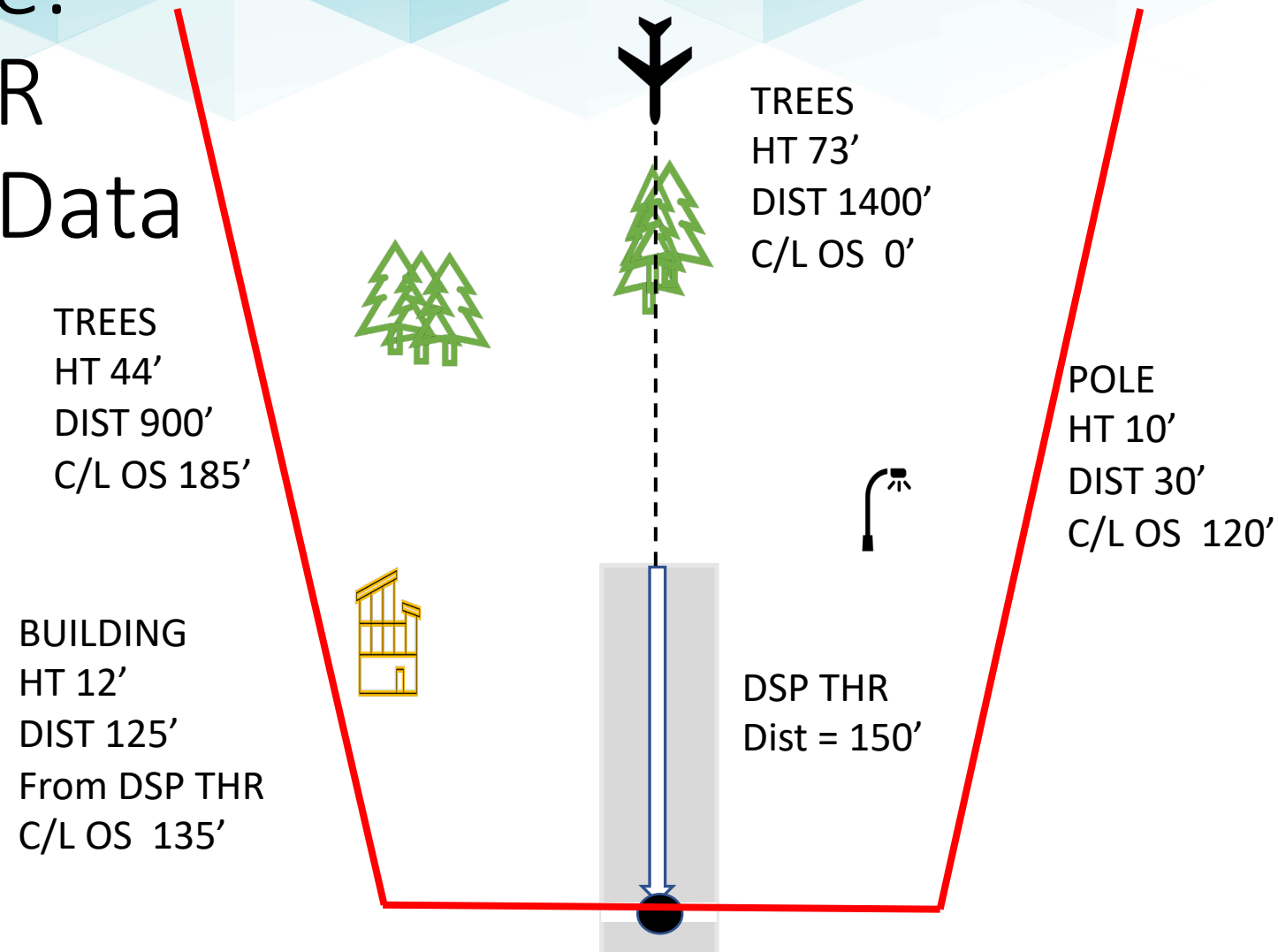


If object is located in Close-In-Area and above RW End Elev, data element 58 is “Y” and add remark to describe object.



A058 RWY 18 +10FT POLE; 30FT FROM THE RWY END; 120 FT L OF C/L

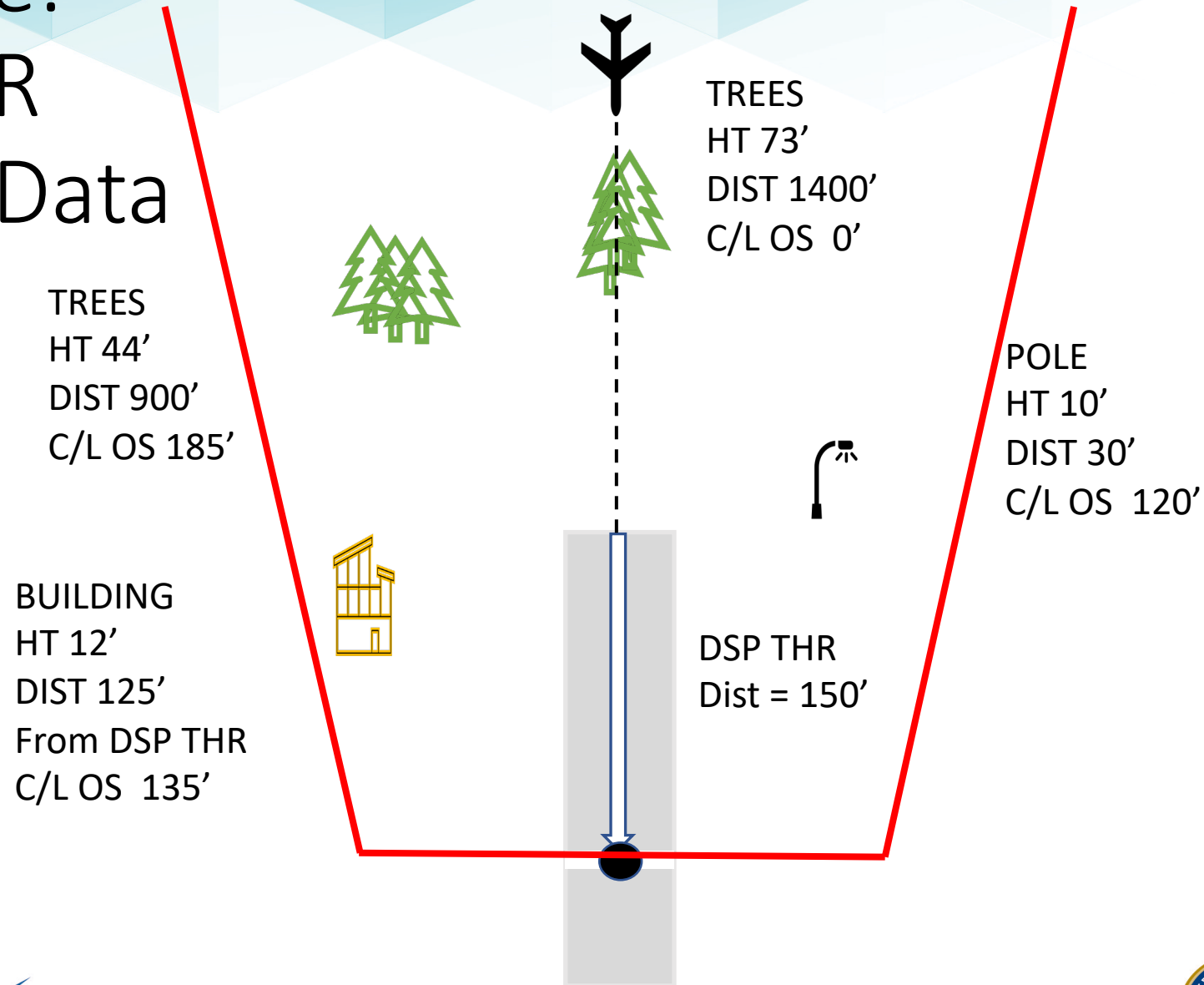
Example: DSP THR Survey Data



RWY End

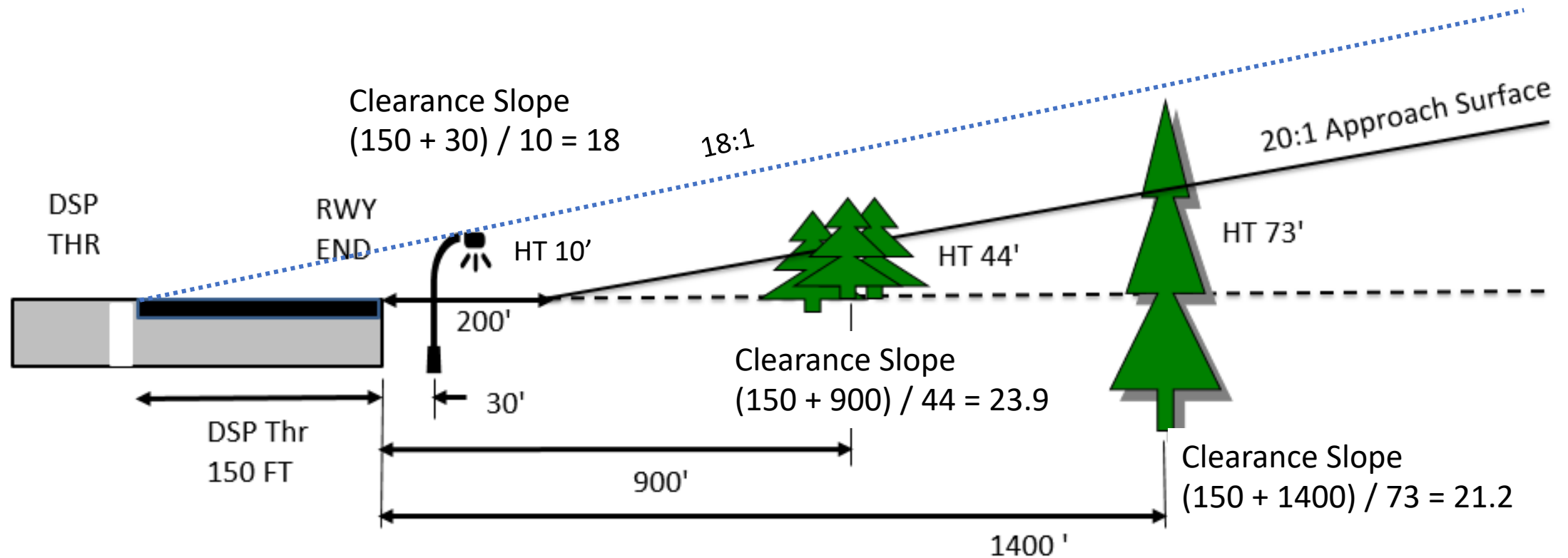
Part 77 Category	Pri Sur Width	Appr Lth (ft)	Appr Wth (ft)	Approach Slope	FI Ang (deg)	Tan of FA (ratio)
A(V)	250	5000	1250	20:1	5.71	0.100

Example: DSP THR Survey Data

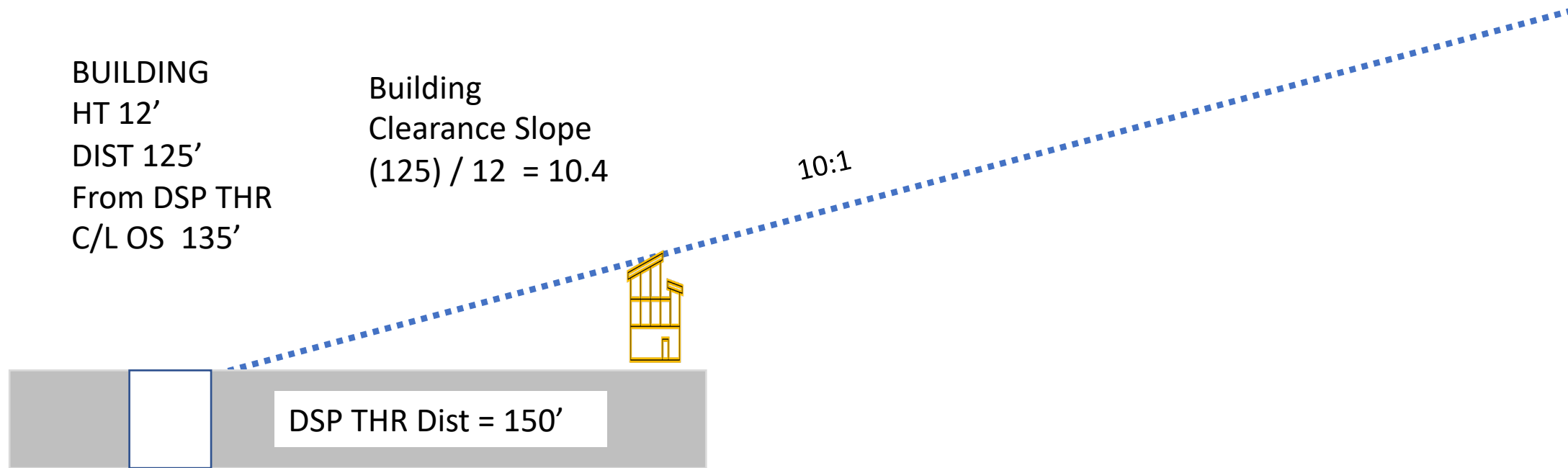


Remark A 057

Clearance Slope to Displaced Threshold



Clearance Slope to Displaced Threshold



A057 RWY 18 APPR SLOPE 10:1 DUE TO 12 FT BUILD., 125 FT FROM DSP THR; 135 FT R

Airport Master Records (AMR)

Survey Data Runway End 18 (Paved)

Object	TREE	TREES	POLE
Object Marked/Lighted	-	-	-
Height Abv RW End	73	44	10
Distance From Runway End	1400	900	30
Centerline Offset / Direction	0B	185 R	120 L
Obst Cl Slope (Approach Surface)	16.4	15.9	-
Obst Cl Slope (from DSP THR)	21.2	23.9	18
Close-In-Obstruction	-	-	Y

Airport Master Records (AMR)

Obstruction Data RW End 18

50 FAR Part 77 Category	A(V)
51 Displaced Threshold	150 FT
52 Controlling Obstruction	TREES
53 Obstruction Marked/Lighted	
54 Height Above Runway End	44
55 Distance from Runway End	900
56 Centerline Offset	185
Centerline Offset Direction	R
57 Obstruction Clearance Slope	15
58 Close-In-Obstruction	Y

Survey Data Runway End 18 (Paved)

Object	TREE	TREES	POLE
Object Marked/Lighted	-	-	-
Height Abv RW End	73	44	10
Distance From Runway End	1400	900	30
Centerline Offset / Direction	0B	185 R	120 L
Obst CI Slope (Approach Surface)	16.4	15.9	-
Obst CI Slope (from DSP THR)	21.2	23.9	18
Close-In-Obstruction	-	-	Y

Remarks:

A057 RWY 18 APPR SLOPE 10:1 DUE TO 12 FT BUILD., 125 FT FROM DSP THR; 135 FT R

A058 RWY 18 +10FT POLE; 30FT FROM THE RWY END; 120 FT L OF C/L

Survey Sheet for Field Work (Nov 2021)				Example Runway 18		A(V)	
				Part 77 RW Cat 4/22 =	A(V)/A(V)		
				Primary Sur Wth=	250		
				Flare Angle =	5.71		
				Tan of Flare Ang =	0.10		
				Approach Slope =	20	:1	
				51 DSPLCD THLD =	150		
				DSPLCD THLD Elev =	0	(+Abv Rwy End)	
				Hard Surf RW =	Y	(Y or N)	
				1.) RW Mag Br=	180.0	(Observed)	
				2.) C/L Dep Br=	360.0		
3.) LT Mag Br=	270.0						
4.) RT Mag Br=	90.0						
5.) Lt App Sur Mag Br =	354.29						
6.) Rt App Sur Mag Br =	5.71						
(7) Y Coordinate Distance from RW End = D =				200			
(8) X Coordinate = CNTRL Offset to Appr Boundary				125.00			
Calculate your Ht Abv RW End at Survey Sta.							
SD = Measure or calculate dist to RW End =				5 (ft)			
Measure Angle to RW End =				-90 (deg)			
(9) Z Coordinate Ht. above Station = Slope Dist * (- Sin(Ang)) =				5.0 ft			
Set Up Coord	X =	0.00	Dsp Thr Coord	X =	0.00		
Survey Station	Y =	0	At Sur St Set Up	Y =	150		
Sta #	Z =	5.0		Z =	5.0		
5010 Item 52	Select an Object	Tree	5010 Item 53	M/L			
(10) Record 3 Measurements:							
a)	Slope Distance to Object =	920 ft					
b)	Vt. Ang to Object =	2.43 deg					
c)	Mag Br or Hz Ang to Object =	348.3 deg					
5010 Item 54	(HT Abv RW End) =	44.0 ft	Abv DSP	DSP THR	44.0 ft		
5010 Item 55	(Dist from Rwy) =	900 ft	From DSP	1050 ft			
5010 Item 56	(Obj C/L Offset) =	-185 R	CL OS	-185 R			
5010 Item 57	(Obj CLNC Slope) =	15 :1	TO DSP	23 :1			
If Item 58 Close-In-Obst is "Y" Add Remarks: for Close-In-Obstructions and if Rwy has a displaced threshold add remark for CLNC slope to Disp Threshold							

Survey Sheet for Field Work (Nov 2021)				Example Runway 18		A(V)	
				Part 77 RW Cat 4/22 =		A(V)/A(V)	
				Primary Sur Wth=		250	
				Flare Angle =		5.71	
				Tan of Flare Ang =		0.10	
				Approach Slope =		20 :1	
				51 DSPLCD THLD Dist =		150	
				DSPLCD THLD Elev =		0	
				Hard Surf RW =		Y	
				1.) RW Mag Br=		180.0 (Observed)	
				2.) C/L Dep Br=		360.0	
3.) LT Mag Br=		270.0					
4.) RT Mag Br=		90.0					
5.) Lt App Sur Mag Br =		354.29					
6.) Rt App Sur Mag Br =		5.71					
(7) Y Coordinate Distance from RW End = D =				200			
(8) X Coordinate = CNTRL Offset to Appr Boundary				125.00			
Calculate your Ht Abv RW End at Survey Sta.							
SD = Measure or calculate dist to RW End =				5 (ft)			
Measure Angle to RW End =				-90 (deg)			
(9) Z Coordinate Ht. above Station = Slope Dist * (- Sin(Ang)) =				5.0 ft			
Set Up Coord		X = 0.00		Dsp Thr Coord		X = 0.00	
Survey Station		Y = 0		At Sur St Set Up		Y = 150	
Sta # 1		Z = 5.0				Z = 5.0	
5010 Item 52		Select an Object Building		5010 Item 53		M/L	
(10) Record 3 Measurements:							
a) Slope Distance to Object =				139 ft			
b) Vt. Ang to Object =				2.9 deg			
c) Mag Br or Hz Ang to Object =				259.2 deg			
5010 Item 54 (HT Abv RW End) =		12.0 ft		Abv DSP		12.0 ft	
5010 Item 55 (Dist from Rwy) =		-25 ft		From DSP		125 ft	
5010 Item 56 (Obj C/L Offset) =		-135 R		CL OS		-135 R	
5010 Item 57 (Obj CLNC Slope) =		:1		TO DSP		10 :1	
If Item 58 Close-In-Obst is "Y" Add Remarks: for Close-In-Obstructions and if Rwy has a displaced threshold add remark for CLNC slope to Disp Threshold							

