

# OBSTRUCTION DATA SHEET

ODS 278  
MUSKEGON COUNTY AIRPORT  
MUSKEGON, MICHIGAN

DIGITIZED FROM

OC 278  
SURVEYED SEPTEMBER 1989  
10TH EDITION



PREPARED AND DISTRIBUTED BY  
THE NATIONAL OCEAN SERVICE  
U.S. DEPARTMENT OF COMMERCE  
FOR THE FEDERAL AVIATION ADMINISTRATION

## OBSTRUCTION DATA SHEET

The Obstruction Data Sheet (ODS) provides digital obstruction and runway data for use in aircraft arrival and departure planning. This information has been obtained using field survey and photogrammetric methods by the Photogrammetry Branch of the National Ocean Service in accordance with Federal Aviation Regulations Part 77 (FAR-77), "Objects Affecting Navigable Airspace" and FAA Nr. 405, "Specifications - Airport Obstruction Chart and Related Products."

The ODS is a derivative of the Airport Obstruction Chart (OC). The source OC is indicated on the ODS cover. All objects, both obstructing and nonobstructing, that carry an elevation on the OC are listed in the ODS. The ODS (and OC) depict a representation of objects that existed at the time of the OC field survey.

ODS information is arranged as follows:

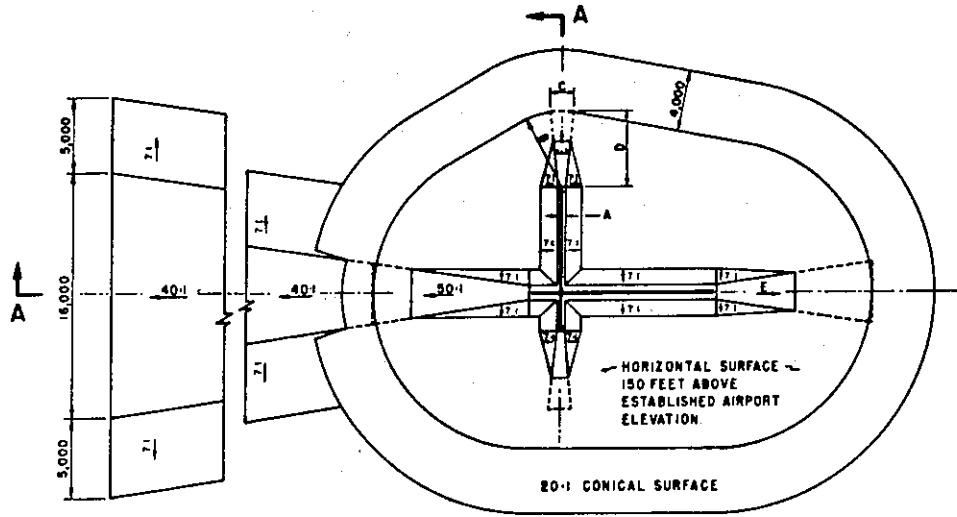
1. Objects located in FAR-77 approach (including supplemental approaches if present) or primary areas are listed with the associated runway (reference runway). For example, all objects in the Runway 9R approach or primary are listed with Runway 9R. Distances to these objects are computed from both the physical end and threshold of Runway 9R. Objects in the Runway 27L approach or primary are listed with Runway 27L. (Objects in the common 9R/27L primary area are listed with both runways.)
2. All objects not included in "1" above are listed with the Airport Reference Point (ARP).
3. Runway configuration and runway lengths, widths, and elevations are presented on the ODS last page.

The FAR-77 imaginary approach surfaces for which the obstruction surveys were performed are coded in the ODS as follows (see footnote 2 on page 3):

A(V) ..... Utility runway - visual approach only  
 A(NP) ..... Utility runway - nonprecision instrument approach  
 B(V) ..... Nonutility runway - visual approach only  
 C ..... Nonutility runway - nonprecision instrument approach with  
           visibility minimums greater than 3/4 mile  
 D ..... Nonutility runway - nonprecision instrument approach with  
           visibility minimums as low as 3/4 mile  
 PIR ..... Precision instrument runway  
 SUPLC ... Supplemental C underlying a B(V)

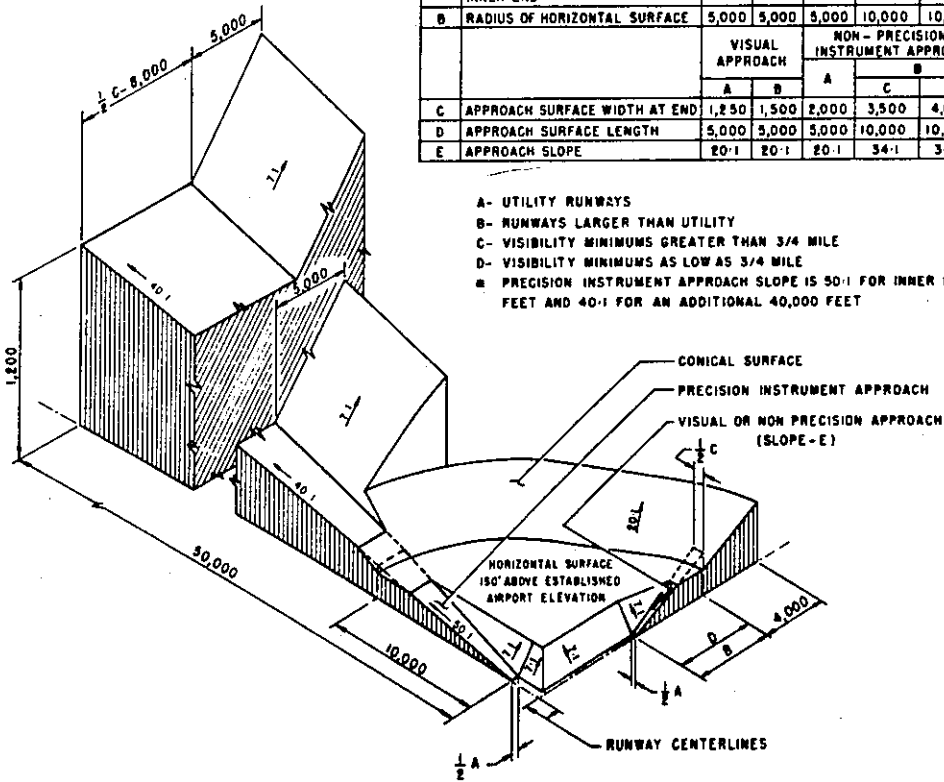
FAR-77 imaginary surface dimensions are defined on page 2 of this report.

Primary surface width is determined by the widest approach at the two approach/primary interfaces for that runway.



DIM	ITEM	DIMENSIONAL STANDARDS (FEET)					
		VISUAL RUNWAY		NON-PRECISION INSTRUMENT RUNWAY			PRECISION INSTRUMENT RUNWAY
		A	B	A	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
C	APPROACH SURFACE WIDTH AT END	VISUAL APPROACH		NON-PRECISION INSTRUMENT APPROACH			PRECISION INSTRUMENT APPROACH
		A	B	A	B		
		1,250	1,500	2,000	3,500	4,000	
D	APPROACH SURFACE LENGTH	5,000	5,000	5,000	10,000	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



ISOMETRIC VIEW OF SECTION A-A

FAR-77 CIVIL AIRPORT  
IMAGINARY SURFACES

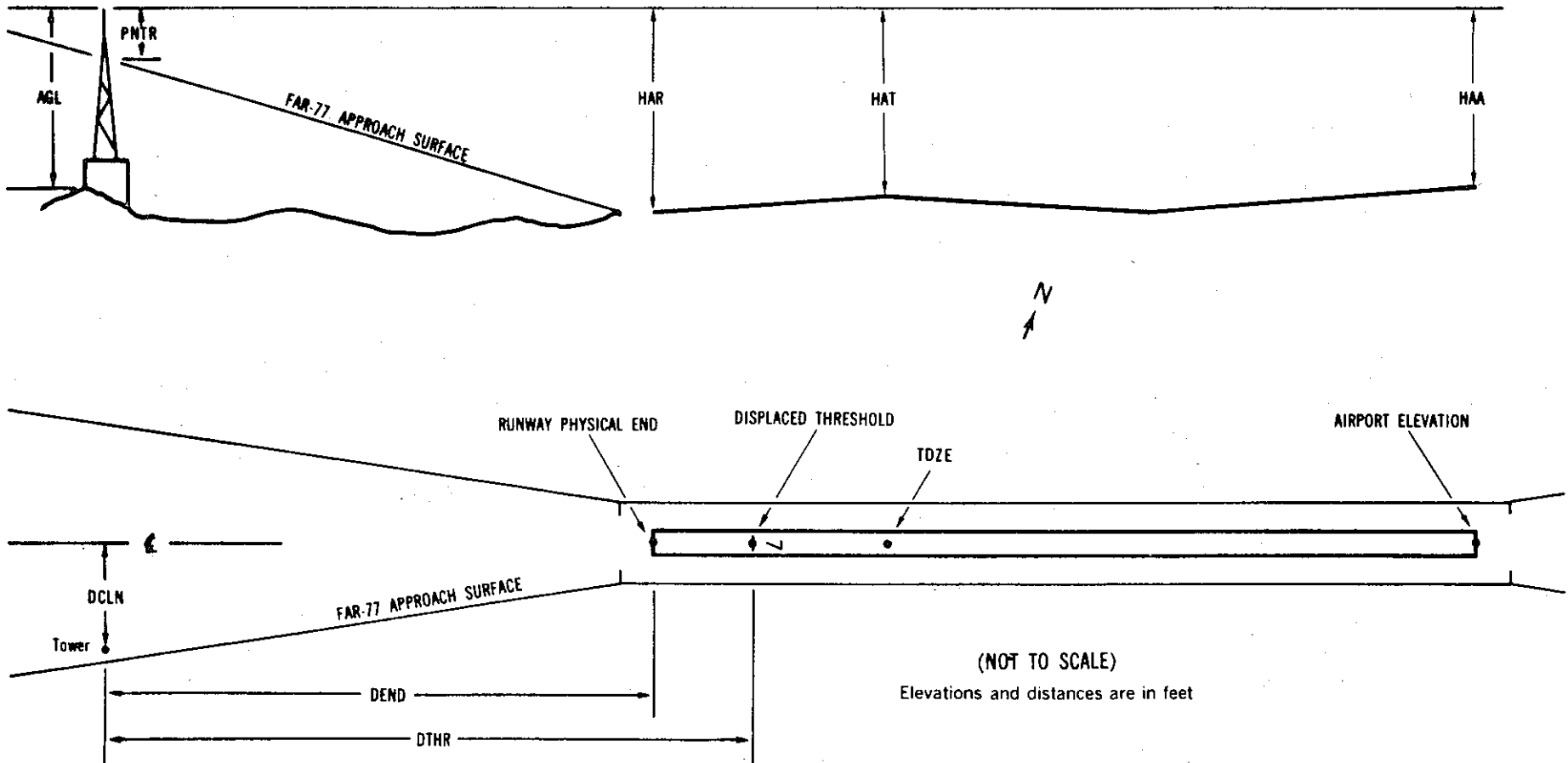
# ANNOTATION OF ODS DATA FORMAT

OC XXXX

AIRPORT ELEVATION XXXX

OBJECT	LAT	LONG	A <sup>8</sup>	ELEV <sup>9</sup>	AGL <sup>10</sup>	HAR <sup>11</sup>	HAT <sup>11</sup>	HAA <sup>11</sup>	DEND <sup>12</sup>	DTHR <sup>12</sup>	DCLN <sup>12</sup>	PNTR <sup>13</sup>
XXXXXXXXXXXX	XXXXXX.XXX	XXXXXXXX.XXX	XX	XXXX	XXXX	XXX	XXX	XXX	XXXXXX	XXXXXX	XXXX	XXXX
XXXXXXXXXXXX	XXXXXX.XXX	XXXXXXXX.XXX	XX	XXXX	XXXX	XXX	XXX	XXX	XXXXXX	XXXXXX	XXXX	XXXX

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## EXPLANATION OF FOOTNOTES

- <sup>1</sup> Data block identifier. If a runway number is entered (reference runway), this data block will contain data pertinent to the reference runway and to objects in the FAR-77 approach and primary area of the reference runway. If ARP is entered, this data block will contain the ARP position and data relative to all objects not in an FAR-77 approach or primary area.
- <sup>2</sup> For the reference runway, the lowest FAR-77 approach surface for which an obstruction survey was performed. (More than one surface may be surveyed.)
- <sup>3</sup> Reference runway approach physical end elevation/touchdown zone elevation
- <sup>4</sup> Latitude and longitude of reference runway approach physical end
- <sup>5</sup> Reference runway geodetic azimuth reckoned clockwise from south
- <sup>6</sup> Reference runway displaced threshold elevation/touchdown zone elevation
- <sup>7</sup> Latitude and longitude of reference runway displaced threshold
- <sup>8</sup> Accuracy Code:            Horizontal    Vertical  
                                   1 = 20            A = 2  
                                   2 = 40            B = 5  
   C = 20
- <sup>9</sup> Mean Sea Level (MSL) elevation at top of object. This value includes 15 feet added to noninterstate roads, 17 feet added to interstate roads, and 23 feet added to railroad tracks.
- <sup>10</sup> Height above ground level (AGL). AGLs are provided only for those objects appearing on the OC that are equal to, or greater than, 200 feet AGL. AGL accuracy is  $\pm 10$  feet.
- <sup>11</sup> HAA - Height above airport  
       HAR - Height above reference runway approach physical end  
       HAT - Height above reference runway touchdown zone elevation
- <sup>12</sup> DEND - Distance along reference runway centerline from point perpendicular to object to reference runway approach physical end  
       DTHR - Distance along reference runway centerline from point perpendicular to object to reference runway threshold  
       DCLN - Distance left (L) or right (R) of reference runway centerline as observed facing forward in a landing aircraft.
- A negative value for DEND or DTHR indicates object is in primary area on roll-out side of zero distance point.
- <sup>13</sup> PNTR - Penetration of indicated FAR-77 approach or primary surface (see footnote 2).

OC0278

AIRPORT ELEVATION 628

6 C 622/623 430941.814N 08615 3.017W 2362236

OBJECT	LAT	LONG	A	ELEV	AGL	HAR	HAT	HAA	DEND	DTHR	DCLN	PNTR
OL ON GLIDE SLOPE	431014.71	0861405.15	1A	660		38	37	32	-5415		399L	34
OL ON POLE	430956.30	0861443.59	1A	651		29	28	23	-2011		424L	28
TREE	430952.22	0861451.66	1A	666		44	43	38	-1284		411L	44
BUSH	430946.03	0861501.89	1A	632		10	9	4	-306		310L	10
BUSH	430937.15	0861500.81	1A	630		8	7	2	125		483R	8
TREE	430941.55	0861510.88	1A	649		27	26	21	500		300L	18
OL ON DME	430937.93	0861517.14	1A	636		14	13	8	1090		252L	-12
TREE	430931.42	0861513.31	1A	653		31	30	25	1218		454R	1
ANTENNA	430939.48	0861520.78	1A	654		32	31	26	1227		533L	2
TREE	430929.20	0861527.56	1A	678		56	55	50	2222		56R	-3
TREE	430925.58	0861531.70	1A	697		75	74	69	2681		192R	2
TREE	430838.74	0861645.16	1A	791		169	168	163	9841		1123R	-115
TOWER	430851.10	0861701.08	1A	834		212	211	206	10130		573L	-80

OC0278

AIRPORT ELEVATION 628

24 PIR 627/627 431017.360N 0861349.975W 0562326

OBJECT	LAT	LONG	A	ELEV	AGL	HAR	HAT	HAA	DEND	DTHR	DCLN	PNTR
BUSH	430937.15	0861500.81	1A	630		3	3	2	-6625		483L	8
BUSH	430946.03	0861501.89	1A	632		5	5	4	-6194		310R	10
TREE	430952.22	0861451.66	1A	666		39	39	38	-5216		411R	44
OL ON POLE	430956.30	0861443.59	1A	651		24	24	23	-4490		424R	28
OL ON GLIDE SLOPE	431014.71	0861405.15	1A	660		33	33	32	-1085		399R	34
TREE	431027.76	0861343.15	1A	651		24	24	23	1004		597R	8
TREE	431019.01	0861331.48	1A	655		28	28	27	1234		619L	7
TREE	431030.72	0861338.23	1A	660		33	33	32	1474		645R	8
TREE	431021.67	0861326.30	1A	672		45	45	44	1702		608L	15
TREE	431031.79	0861329.93	1A	680		53	53	52	2046		395R	16
TREE	431033.48	0861324.18	1A	699		72	72	71	2496		301R	26
FLOODLIGHT	431028.01	0861318.78	1A	671		44	44	43	2522		382L	-2
TREE	431033.24	0861318.12	1A	697		70	70	69	2856		32R	17
TREE	431030.91	0861314.06	1A	692		65	65	64	2976		331L	9
TREE	431028.15	0861306.11	1A	706		79	79	78	3312		890L	17
TREE	431035.26	0861307.72	1A	699		72	72	71	3611		224L	4

14 C 627/ 431036.718N 0861423.367W 3172303 627/628 431034.609N 0861420.715W

OBJECT	LAT	LONG	A	ELEV	AGL	HAR	HAT	HAA	DEND	DTHR	DCLN	PNTR
TREE	431002.08	0861331.22	1A	636		9	8	8	-5197	-4907	470L	11
GROUND	431001.19	0861334.17	1A	626		-1	-2	-2	-5116	-4826	248L	1
OL ON GLIDE SLOPE	431002.97	0861348.28	1A	673		46	45	45	-4276	-3985	400R	47
OL ON GLIDE SLOPE	431014.71	0861405.15	1A	660		33	32	32	-2554	-2264	515R	33
ANTENNA ON OL BUILDING	431038.79	0861420.42	1A	642		15	14	14	7	297	303L	15
TREE	431040.21	0861418.76	1A	640		13	12	12	29	319	491L	13
OL ON LOCALIZER	431037.32	0861424.12	1A	634		7	6	6	82	373	0L	7
TREE	431035.27	0861430.85	1A	663		36	35	35	267	558	508R	34

OC0278

AIRPORT ELEVATION 628

32 PIR 625/627 431000.366N 0861337.679W 1372334

OBJECT	LAT	LONG	A	ELEV	AGL	HAR	HAT	HAA	DEND	DTHR	DCLN	PNTR
OL ON LOCALIZER	431037.32	0861424.12	1A	634		9	7	6	-5083		0R	7
TREE	431040.21	0861418.76	1A	640		15	13	12	-5030		491R	13
ANTENNA ON OL BUILDING	431038.79	0861420.42	1A	642		17	15	14	-5008		303R	15
OL ON GLIDE SLOPE	431014.71	0861405.15	1A	660		35	33	32	-2447		515L	33
OL ON GLIDE SLOPE	431002.97	0861348.28	1A	673		48	46	45	-725		400L	47
GROUND	431001.19	0861334.17	1A	626		1	-1	-2	115		248R	1
TREE	431002.08	0861331.22	1A	636		11	9	8	196		470R	11
TREE	430959.78	0861329.91	1A	638		13	11	10	434		384R	8
TREE	430957.25	0861329.56	1A	636		11	9	8	640		230R	2
TREE	430948.91	0861313.03	1A	674		49	47	46	2090		560R	11
TREE	430939.81	0861312.70	1A	674		49	47	46	2785		47L	-3
TREE	430942.61	0861308.49	1A	679		54	52	51	2788		375R	2
TREE	430944.67	0861301.72	1A	693		68	66	65	2974		886R	13
TREE	430938.14	0861252.47	1A	709		84	82	81	3925		943R	10

18 A(V) 626/627 431033.996N 0861425.493W 3593943

OBJECT	LAT	LONG	A	ELEV	AGL	HAR	HAT	HAA	DEND	DTHR	DCLN	PNTR
OL ON LOCALIZER	431037.32	0861424.12	1A	634		8	7	6	336		104L	1

36 A(V) 623/627 431002.391N 0861425.238W 1793943

OBJECT	LAT	LONG	A	ELEV	AGL	HAR	HAT	HAA	DEND	DTHR	DCLN	PNTR
TREE	430949.10	0861421.96	1A	671		48	44	43	1347		235R	-9

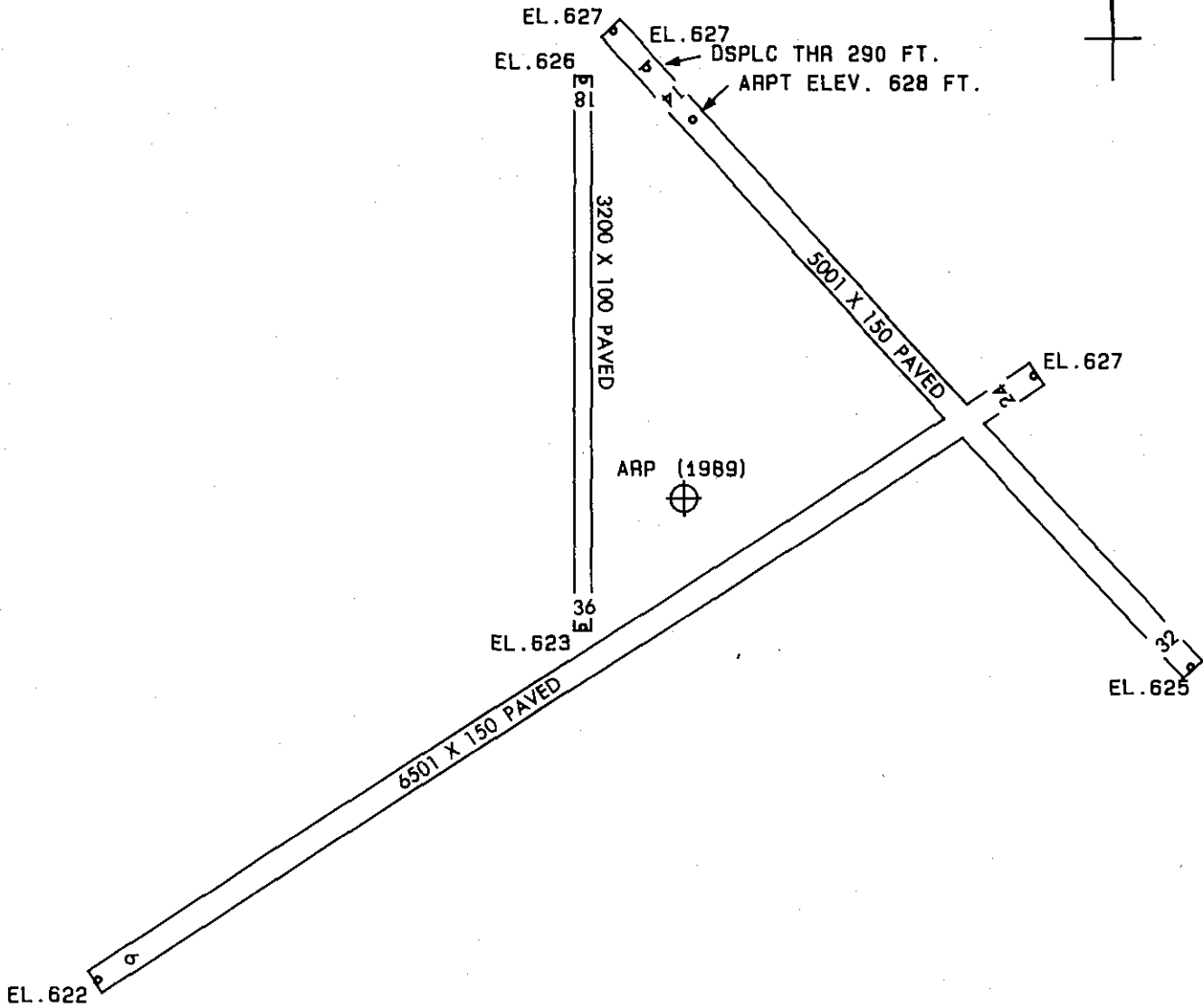
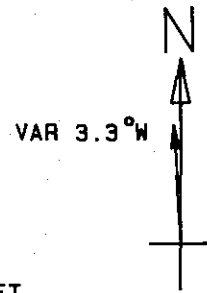


OC0278

AIRPORT ELEVATION 628

ARP 431010.086N 0861417.415W

OBJECT	LAT	LONG	A	ELEV	AGL	HAA	MAG BEARING	DISTANCE
OL ON LIGHTED WINDSOCK	431010.71	0861420.43	1A	654		26	289 5	232
ROD ON ANEMOMETER	431016.30	0861409.07	1A	650		22	47 47	882
TREE	431009.50	0861429.95	1A	650		22	269 37	931
ANTENNA ON OL CONTROL TR	431000.30	0861359.39	1A	720		92	129 52	1664
LIGHT POLE	430951.40	0861419.07	1A	681		53	187 1	1896
ROD ON OL WEATHER RADOME	430951.73	0861403.26	1A	709		81	153 51	2134
ANTENNA	430957.44	0861444.24	1A	666		38	240 31	2365
TREE	430956.93	0861445.49	1A	671		43	240 40	2471
TREE	430955.18	0861349.10	1A	703		75	129 1	2585
TREE	431033.90	0861434.43	1A	690		62	335 41	2721
OL ON AIRPORT BEACON	431034.66	0861354.83	1A	705		77	37 14	2998
TREE	431041.48	0861411.25	1A	694		66	11 29	3211
TREE	431042.70	0861415.26	1A	685		57	6 4	3306
TREE	430943.84	0861444.06	1A	670		42	219 55	3311
TREE	431015.91	0861331.38	1A	690		62	83 30	3462
TREE	431005.23	0861330.08	1A	681		53	101 16	3542
TREE	431035.22	0861334.25	1A	709		81	54 48	4088
TREE	430938.24	0861455.40	1A	678		50	224 26	4281
ROD ON ASR	430934.73	0861453.63	1A	709		81	220 10	4474
TREE	430941.81	0861330.25	1A	680		52	132 37	4518
TREE	430949.13	0861304.68	1A	692		64	114 46	5793
OL RADIO MAST	431116.89	0861448.74	2A	747		119	344 22	7151
OL ON WATER TANK	431129.13	0861333.51	1B	779		151	25 25	8639
OL RADIO TOWER(NE 1 OF 9)	430828.98	0861449.15	2A	776		148	196 15	10503
ANTENNA ON RADIO TOWER	431205.37	0861540.69	2A	825		197	335 27	13202
OL RADIO MAST (SE 1 OF 4)	430802.31	0861537.30	2A	867	262	239	207 54	14228



TOUCHDOWN ZONE  
RUNWAY ELEVATION

6	623
24	627
14	628
32	627
18	627
36	627

MUSKEGON COUNTY AIRPORT  
MUSKEGON, MICHIGAN  
(NOT TO SCALE)