



**DELAWARE MUNICIPAL AIRPORT  
RUNWAY 10-28 SAFETY AREA ANALYSIS  
NARRATIVE**

**Background**

The Delaware Municipal Airport is located about three miles southwest of downtown Delaware, Ohio, situated on approximately 316 acres of land. Runway 10-28 is 5000 feet in length and 100 feet wide, constructed of bituminous pavement. The most recent approved Airport Layout Plan (1997) classified the operational role of this runway as B-II, and ultimately C-II when the runway was extended to 5,000 feet. The runway was extended to 5,000 feet in 1999, therefore the runway is now classified as C-II; refer to Attachment A – Airport Layout Plan. This determination, in conjunction with related documentation, airport and runway characteristics, and the current Airport Master Plan that is being prepared, support the FAA’s current criteria to meet Approach Category C and Design Group II designations. The design standard for this Runway Safety Area (RSA) is 500 feet in width, and extends 1000 feet beyond each of the runway ends. The current approved RSA dimensions reflect this standard; with all of the property providing and containing the safety area limits being currently owned by the City of Delaware. Refer to Attachment B – Property Map.

**Site Inspection and Surveys**

A general site survey of the area surrounding Runway 10-28 was performed by GGC Engineers. Additionally, personnel from Baker & Associates completed a walk-through of the RSA for the purposes of structures and surfaces identification, including digital pictures of relevant items. This information was used to prepare plan and section reference files, used in the analysis and determinations for this study.

**Recommendations**

In accordance with FAA Order 5200.8 “Runway Safety Area Program”, and FAA Advisory Circular 150/5300-13 “Airport Design,” several improvements to the existing safety areas are recommended. There are no apparent site limitations or land acquisitions required that would prevent full compliance with established standards.

The safety area analysis shows that standards are not currently met due to the locations of existing drainage ditches, and headwall structures that do not fully comply with the FAA requirements. However, due to the relatively minor modifications required, it was not

necessary to develop multiple work phases or alternatives. As stated in the FAA Order for non-Part 139 Airports, these improvements are only required during the next major runway improvement such as a runway extension.

To bring the airport into compliance with the FAA's safety area requirements, the following improvements are recommended:

1. Relocate approximately 4050 feet of grass-lined ditch north of Runway 10-28. Please refer to Figure 1.
2. Relocate approximately 3000 feet of grass-lined ditch south of Runway 10-28. Please refer to Figure 1.



**Figure 1 – Typical Drainage Ditch within RSA**

3. Remove and replace 3 pipe outlets and concrete cradles for 6" drainage pipe outside of the Runway Safety Area. Please refer to Figure 2.



**Figure 2 - 6 inch Pipe outlets and Concrete Collar**

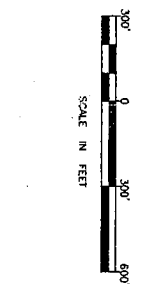
These improvements are depicted on the Runway 10-28 Safety Area Analysis Drawings provided in Attachment C. A preliminary construction cost estimate to improve this safety area is provided in Attachment D. With these improvements, Delaware Municipal Airport will fully comply with the requirements set forth by the FAA's safety area standards.

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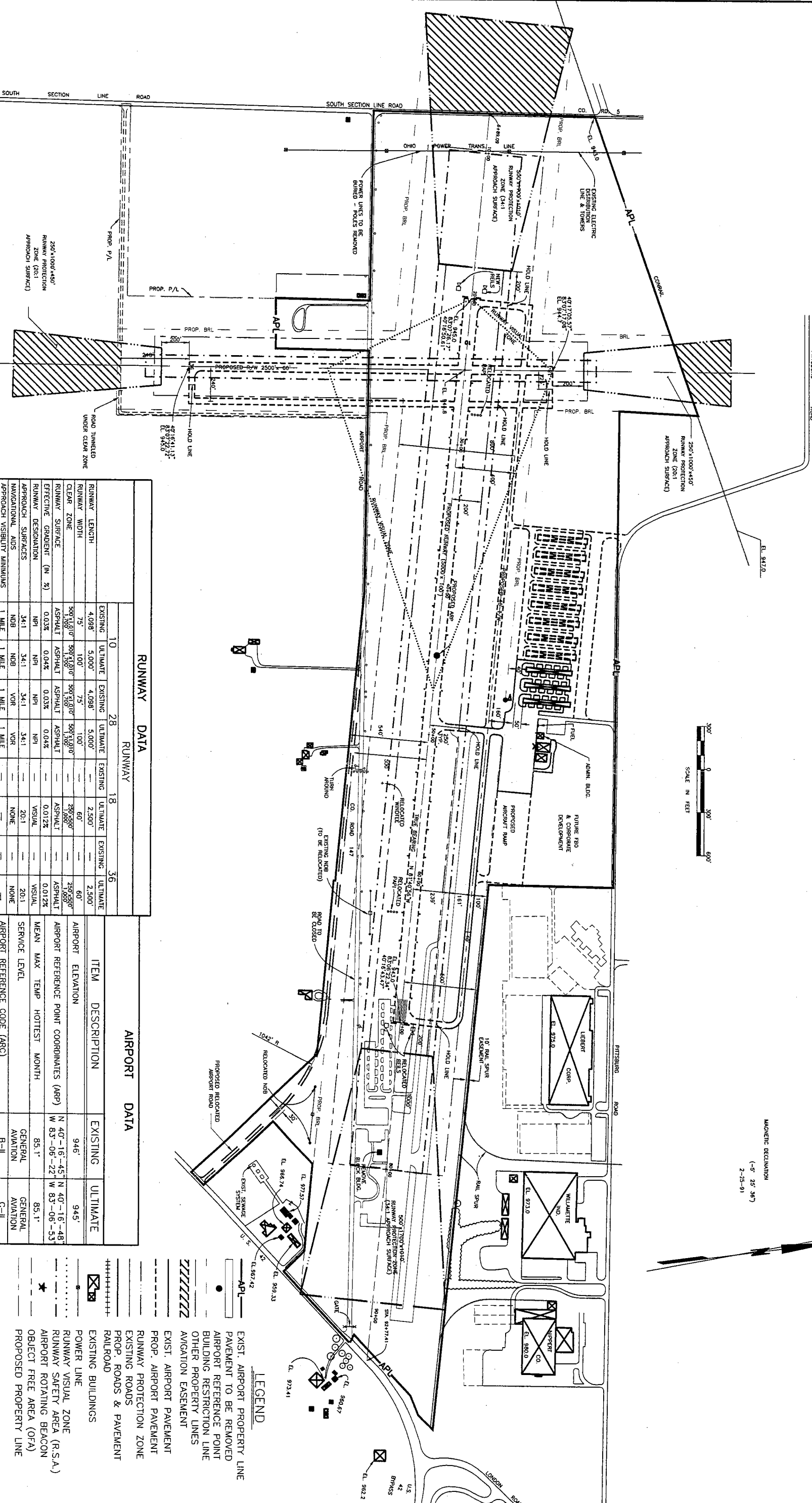
**ATTACHMENT “A”**

**Airport Layout Plan**

DELAWARE TOWNSHIP  
DELAWARE COUNTY, OHIO



MAGNETIC DECLINATION  
(-5° 29' 34")  
2-25-91



**NOTES**

EXISTING RUNWAY SAFETY AREA LENGTH BEYOND RUNWAY	10-28	PROPOSED RUNWAY SAFETY AREA LENGTH BEYOND RUNWAY	10-28
EXISTING RUNWAY OBJECT FREE AREA WIDTH	300'	PROPOSED RUNWAY OBJECT FREE AREA WIDTH	300'
EXISTING TAXIWAY SAFETY AREA WIDTH	79'	PROPOSED TAXIWAY SAFETY AREA WIDTH	79'
EXISTING TAXIWAY OBJECT FREE AREA WIDTH	115'	PROPOSED TAXIWAY OBJECT FREE AREA WIDTH	115'

250' x 1000' x 450' RUNWAY PROTECTION ZONE (20:1 APPROACH SURFACE)

**RUNWAY DATA**

RUNWAY	LENGTH	WIDTH	EFFECTIVE GRADIENT (IN %)	RUNWAY SURFACE	APPROACH SURFACES	APPROACH DESIGNATION	APPROACH VISIBILITY MINIMUMS	VISUAL AIDS				PAVEMENT STRENGTH	GROSS AIRCRAFT WEIGHT (S) SINGLE WHEEL (D) DUAL WHEEL (T) TAIL WINGSPAN	TAIL HEIGHT	APPROACH SPEED	WEIGHT
								RELS/PAPI	RELS/PAPI	RELS/PAPI	RELS/PAPI					
10	4,098'	75'	0.03%	ASPHALT	34:1	NDB	1 MILE	RELS/PAPI	RELS/PAPI	RELS/PAPI	RELS/PAPI	30,000 LBS	100'	115'	1000	10,000 LB
28	4,098'	100'	0.03%	ASPHALT	34:1	NDB	1 MILE	RELS/PAPI	RELS/PAPI	RELS/PAPI	RELS/PAPI	30,000 LBS	100'	162'	1000	10,000 LB
18	2,500'	60'	0.012%	ASPHALT	20:1	VISUAL	NONE	RELS/PAPI	RELS/PAPI	RELS/PAPI	RELS/PAPI	12,500 LBS	50'	115'	500	2,500 LB
36	2,500'	60'	0.012%	ASPHALT	20:1	VISUAL	NONE	RELS/PAPI	RELS/PAPI	RELS/PAPI	RELS/PAPI	12,500 LBS	50'	115'	500	2,500 LB

**AIRPORT DATA**

ITEM	DESCRIPTION	EXISTING	ULTIMATE
AIRPORT ELEVATION		946'	945'
AIRPORT REFERENCE POINT COORDINATES (ARP)		N 40°-16'-45" W 83°-06'-53"	N 40°-16'-45" W 83°-06'-53"
MEAN MAX TEMP HOTTEST MONTH		85.1°	85.1°
SERVICE LEVEL		GENERAL AVIATION	GENERAL AVIATION
AIRPORT REFERENCE CODE (ARC)		B-II	C-II

**REVISIONS**

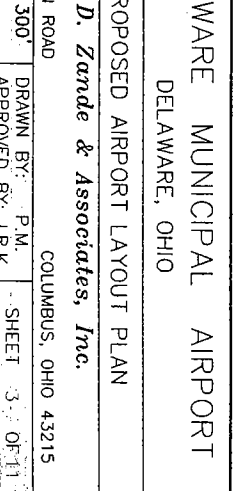
DESCRIPTION	APPROVED	DATE

**DELAWARE MUNICIPAL AIRPORT**  
DELAWARE, OHIO

PROPOSED AIRPORT LAYOUT PLAN  
R.D. Zande & Associates, Inc.

1237 DUBLIN ROAD  
COLUMBUS, OHIO 43215

SCALE: 1" = 300'  
DRAWN BY: P.M.  
DATE: APPROVED BY: J.R.K.  
SHEET 3 OF 11



**DELAWARE MUNICIPAL AIRPORT  
RUNWAY 10-28 SAFETY AREA ANALYSIS**

**ATTACHMENT “B”**

**Property Map**

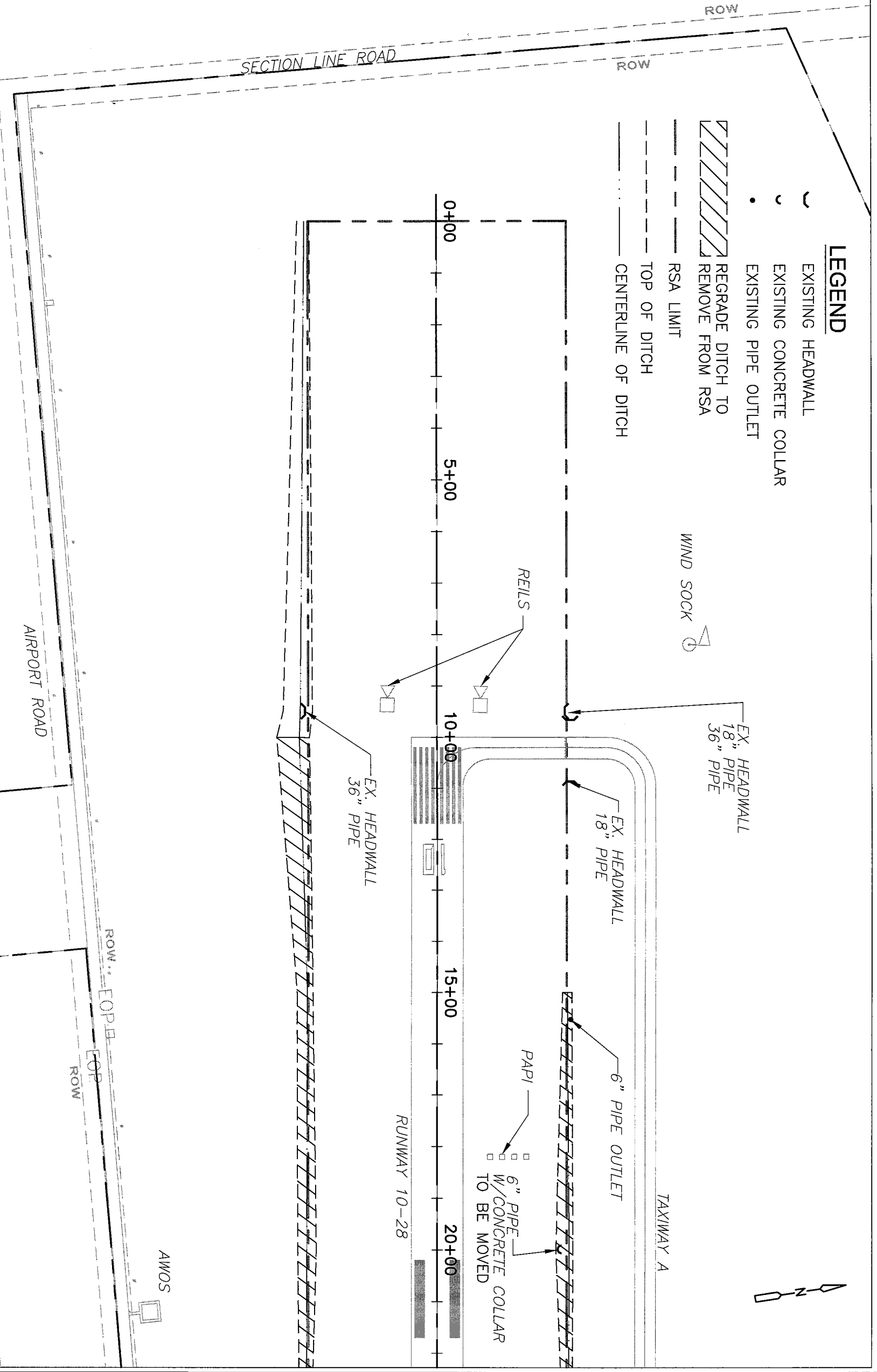


**DELAWARE MUNICIPAL AIRPORT  
RUNWAY 10-28 SAFETY AREA ANALYSIS**

**ATTACHMENT "C"**

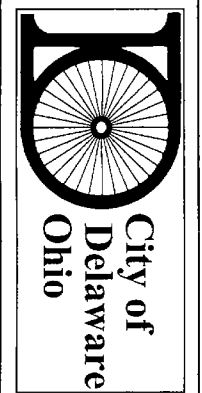
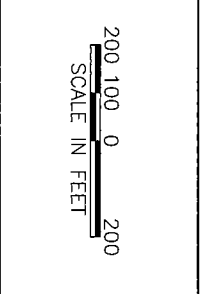
**Runway 10-28 Safety Area Analysis  
Drawings 1 through 3**

- LEGEND**
- EXISTING HEADWALL
  - EXISTING CONCRETE COLLAR
  - EXISTING PIPE OUTLET
  - ▨ REGRADE DITCH TO REMOVE FROM RSA
  - RSA LIMIT
  - - - TOP OF DITCH
  - CENTERLINE OF DITCH



**Baker**  
**Baker And Associates**  
 A Unit of Michael Baker Corporation  
 The Euclid Ninth Tower  
 2000 East Ninth Street, Suite 1220  
 Cleveland, Ohio 44115

DESIGNED: \_\_\_\_\_ DATE \_\_\_\_\_  
 DRAWN: \_\_\_\_\_ DATE \_\_\_\_\_  
 CHECKED: \_\_\_\_\_ DATE \_\_\_\_\_  
 APPROVED: \_\_\_\_\_ DATE \_\_\_\_\_



DELAWARE MUNICIPAL AIRPORT  
 1075 PITTSBURGH DRIVE  
 DELAWARE, OHIO 43015

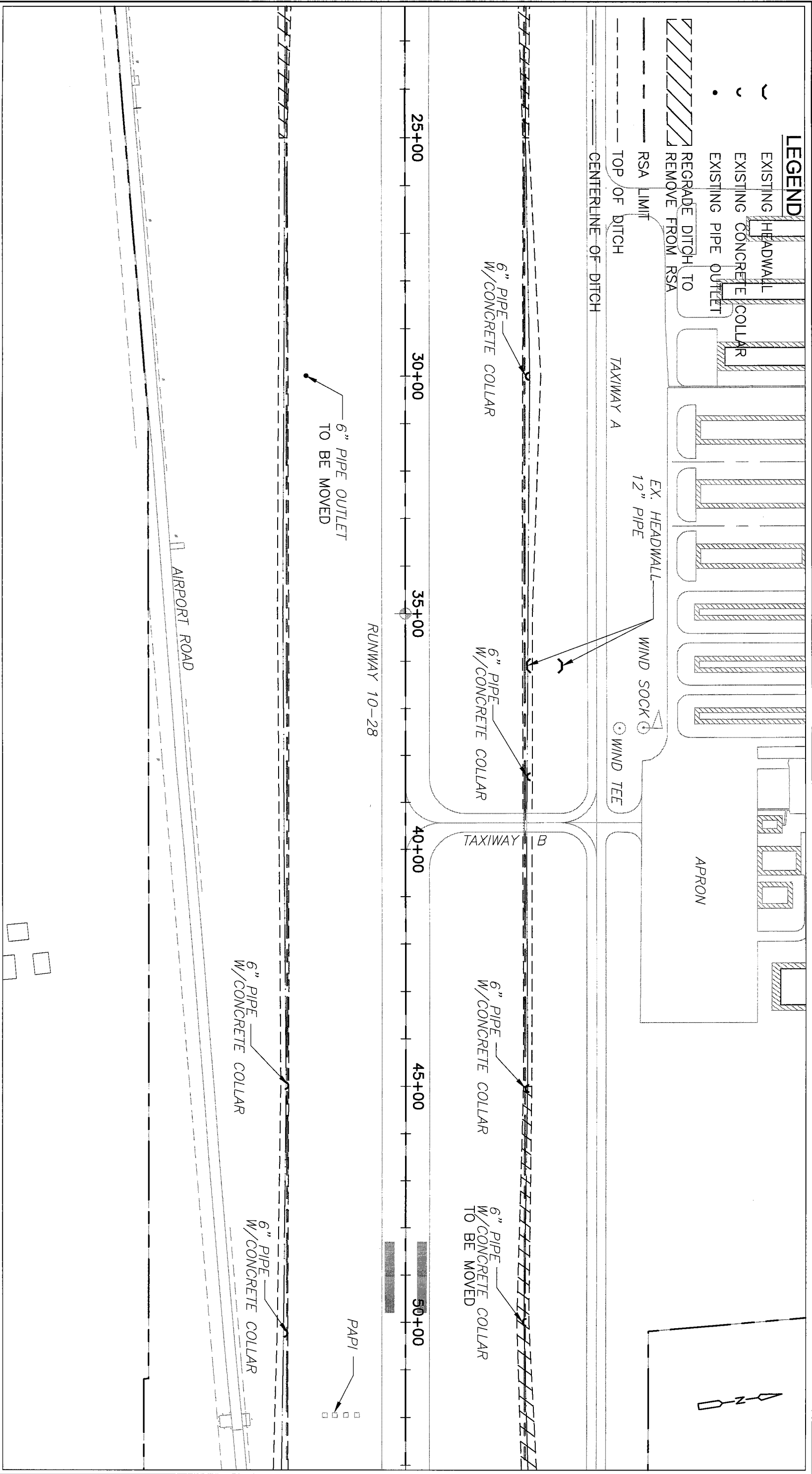
RUNWAY 10-28 SAFETY AREA  
 ANALYSIS

SHEET NO. **1** OF 3

SITE NO. 39-0032 DATE: OCTOBER 2003

**LEGEND**

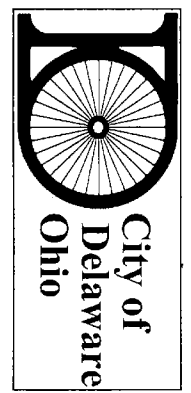
- ~ EXISTING HEADWALL
- ~ EXISTING CONCRETE COLLAR
- EXISTING PIPE OUTLET
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 APPROVED: \_\_\_\_\_ DATE \_\_\_\_\_

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 SCALE IN FEET

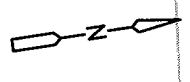


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 1075 PITTSBURGH DRIVE  
 DELAWARE, OHIO 43015

RUNWAY 10-28 SAFETY AREA  
 ANALYSIS

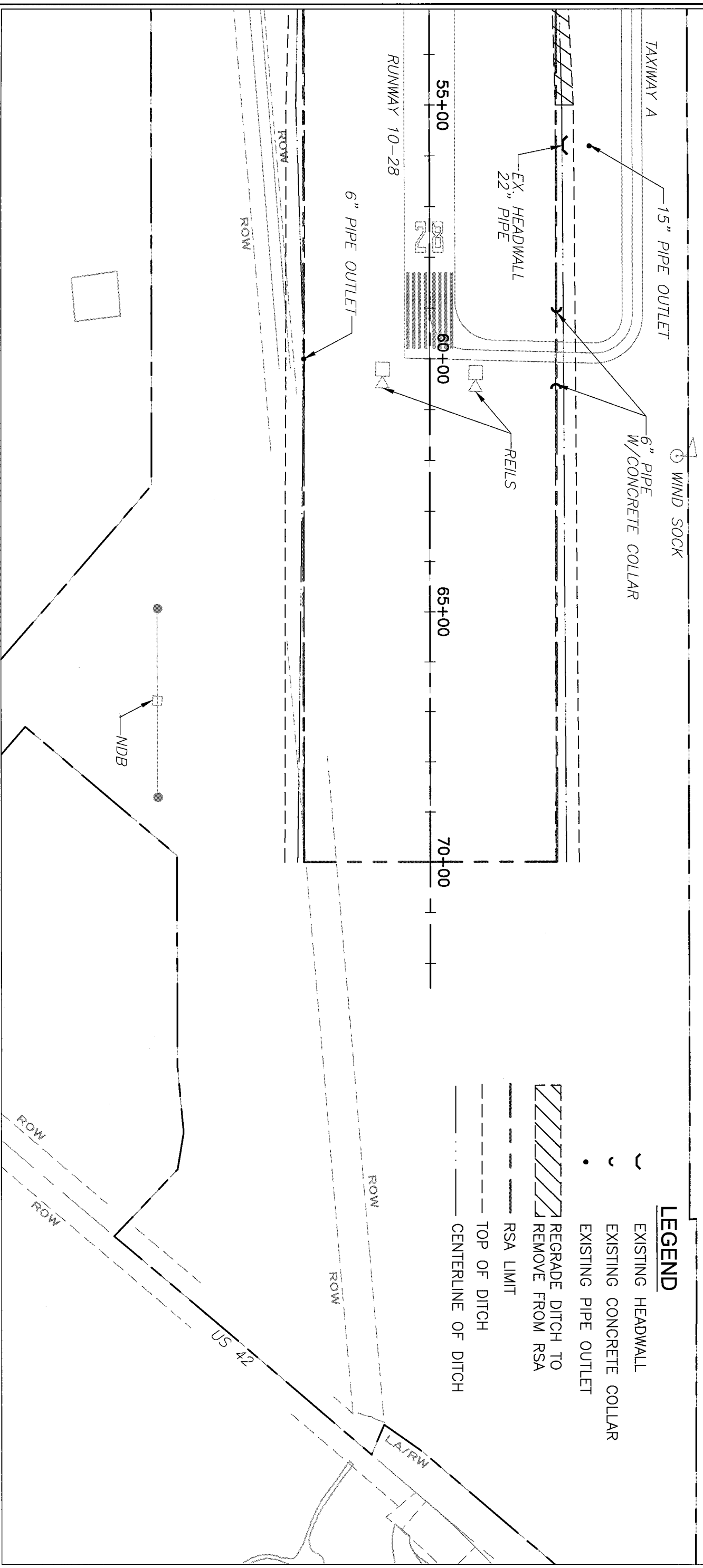
SHEET NO. **2** OF **3**

SITE NO. 39-0032 DATE: OCTOBER 2003



**LEGEND**

- ~ EXISTING HEADWALL
- ~ EXISTING CONCRETE COLLAR
- EXISTING PIPE OUTLET
- ▨ REGRADE DITCH TO REMOVE FROM RSA
- RSA LIMIT
- - - TOP OF DITCH
- CENTERLINE OF DITCH



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 CHECKED: \_\_\_\_\_ DATE \_\_\_\_\_  
 APPROVED: \_\_\_\_\_ DATE \_\_\_\_\_

200 100 0 200  
 SCALE IN FEET



**DELAWARE MUNICIPAL AIRPORT**  
 1075 PITTSBURGH DRIVE  
 DELAWARE, OHIO 43015

**RUNWAY 10-28 SAFETY AREA ANALYSIS**

SHEET NO. **3** OF 3

SITE NO. 39-0032 DATE: OCTOBER 2003

**DELAWARE MUNICIPAL AIRPORT  
RUNWAY 10-28 SAFETY AREA ANALYSIS**

**ATTACHMENT “D”**

**Estimate of Construction Costs  
for R.S.A. Improvement**

Delaware Municipal Airport  
Runway Safety Area Analysis  
Estimated Project Costs

SPEC. SECTION	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	EXTENDED PRICE
P-151	Removal of Existing Structures	3	EA	\$ 250.00	\$ 750.00
P-152	Unclassified Excavation	5300	CY	\$ 5.97	\$ 31,641.00
P-156	Silt Barrier Fence, 18" Height	220	LF	\$ 4.50	\$ 990.00
P-156	Rock Construction Entrance	2	EA	\$ 2,500.00	\$ 5,000.00
T-901	Seeding	5200	SY	\$ 0.31	\$ 1,612.00
T-908	Mulching	5200	SY	\$ 0.15	\$ 780.00
D-701	6" Non-perforated outlet pipe (w/ connection sleeve)	110	LF	\$ 18.00	\$ 1,980.00
D-751	Concrete inlet/outlet collar - for 6" pipe	3	EA	\$ 750.00	\$ 2,250.00
MC-001	Mobilization / Demobilization	1	LS	\$ 5,000.00	\$ 5,000.00
MC-002	M & P of Air Traffic	1	LS	\$ 3,000.00	\$ 3,000.00
<b>Total Estimated Construction Cost</b>					<b>\$ 53,003.00</b>
	Survey			\$	5,000.00
	Mapping			\$	2,500.00
	Subsurface Investigation			\$	-
	Design Engineering			\$	7,500.00
	Bidding			\$	3,000.00
<b>Total Estimated Engineering Cost</b>					<b>\$ 18,000.00</b>
	Legal Fees			\$	1,000.00
	Bid Advertisement			\$	1,000.00
	Grant Administration			\$	5,500.00
<b>Total Sponsor's Administrative Expenses</b>					<b>\$ 7,500.00</b>
<b>TOTAL ESTIMATED PROJECT COSTS</b>					<b>\$ 78,503.00</b>