SOIL INVESTIGATION

PROJECT

PEGASUS AIRPARK RUNWAY & TAXIWAY
ELLSWORTH ROAD & EMPIRE BOULEVARD
QUEEN CREEK, ARIZONA

PREPARED FOR

WAYNE HILLS, ET AL
C/O CIRCLE G. DEVELOPMENT
2220 S. COUNTRY CLUB DRIVE, SUITE 107
MESA, ARIZONA 85210

CONSTRUCTION INSPECTION & TESTING CO.
2002 WEST NORTH LANE
PHOENIX, ARIZONA 85021-1927
(602) 861-2002 FAX (602) 861-9116

CONSTRUCTION INSPECTION & TESTING CO.

2002 WEST NORTH LANE
PHOENIX, ARIZONA 85021-1927
(602) 861-2002 FAX (602)861-9116

DECEMBER 10, 1999

WAYNE HILLS, ET AL
C/O CIRCLE G. DEVELOPMENT
2220 S. COUNTRY CLUB DRIVE, SUITE 107
MESA, ARIZONA 85210

RE: SOIL INVESTIGATION

PROJECT: PEGASUS AIRPARK RUNWAY & TAXIWAY
ELLSWORTH ROAD & EMPIRE BOULEVARD
QUEEN CREEK, ARIZONA

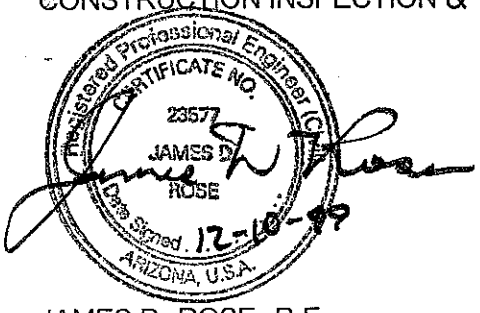
PROJECT NO. G99-00323

ATTENTION: WENDY LILLYCROP

IN ACCORDANCE WITH YOUR REQUEST, WE HAVE COMPLETED THE SOIL INVESTIGATION FOR THE SUBJECT PROJECT.

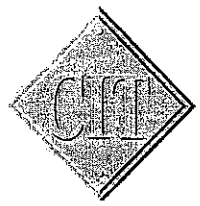
THE ACCOMPANYING REPORT INCLUDES THE RESULTS OF OUR FIELD INVESTIGATION AND LABORATORY TESTING ALONG WITH OUR CONCLUSIONS AND RECOMMENDATIONS.

RESPECTFULLY SUBMITTED,
CONSTRUCTION INSPECTION & TESTING CO.



JAMES D. ROSE, P.E.

COPIES TO: ADDRESSEE (5)
HOLGATE CONSULTING ENGINEERING



PART I

REPORT

PEGASUS AIRPARK RUNWAY & TAXIWAY
ELLSWORTH ROAD & EMPIRE BOULEVARD
QUEEN CREEK, ARIZONA
CIT PROJECT NO. G99-00323

GENERAL:

THIS REPORT WAS PREPARED AT THE DIRECTION OF WAYNE HILLS, ET AL, C/O CIRCLE G. DEVELOPMENT, MESA, ARIZONA, AND DESCRIBES THE SOIL CONDITIONS, LABORATORY FINDINGS AND A PAVEMENT THICKNESS EVALUATION OF THE PROJECT IDENTIFIED AS PEGASUS AIRPORT RUNWAY AND TAXIWAY, LOCATED AT ELLSWORTH ROAD AND EMPIRE BOULEVARD, QUEEN CREEK, ARIZONA. THE PURPOSE OF THE REPORT IS TO PRESENT GENERAL INFORMATION CONCERNING THE ENGINEERING CHARACTERISTICS OF THE SOIL AND TO SUBMIT RECOMMENDATIONS FOR THE RUNWAY AND TAXIWAY PAVEMENT USING FEDERAL AVIATION ADMINISTRATION (FAA) DESIGN GUIDELINES.

PROPOSED CONSTRUCTION:

IT IS UNDERSTOOD THAT THE PROPOSED PROJECT WILL CONSIST OF PAVING THE EXISTING RUNWAY AND TAXIWAY PRESENTLY SURFACED WITH A THIN BITUMINOUS SEAL APPLIED TO THE AGGREGATE BASE COURSE (ABC). THE PAVEMENT THICKNESS WILL BE DESIGNED FOR AIRCRAFT WITH A MAXIMUM WEIGHT OF 12,500 POUNDS.

INVESTIGATION:

NINE (9) TEST BORINGS WERE MADE AT THE LOCATIONS AS SHOWN ON THE ACCOMPANYING SITE PLAN. THE ABC SOILS ENCOUNTERED WERE CONTINUOUSLY EXAMINED, CLASSIFIED, LOGGED AND SAMPLED WHERE APPLICABLE. THE GRADATION AND ATTERBERG LIMITS WERE DETERMINED

PEGASUS AIRPARK RUNWAY & TAXIWAY
ELLSWORTH ROAD & EMPIRE BOULEVARD
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ON SELECTED SAMPLES TO DETERMINE THE ABC THICKNESS AND SUBGRADE PROPERTIES. PREVIOUS DENSITY TESTING OF SUBGRADE AND ABC BY RICKER, ATKINSON, MCBEE AND ASSOCIATES (1995-1996) WAS REVIEWED AS WELL AS CIT'S CORRESPONDENCE (6-30-97) AS PART OF THE INVESTIGATION.

RESULTS OF LABORATORY TESTS, FIELD INVESTIGATION AND CLASSIFICATION OF THE SUBSOILS WERE USED AS THE BASIS FOR THE CONCLUSIONS AND RECOMMENDATIONS CONTAINED IN THIS REPORT.

SITE CONDITIONS AND SOIL PROFILE:

THE SITE INCLUDES AN EXISTING RUNWAY OF ONE (1) MILE LENGTH AND A PARALLEL TAXIWAY OF APPROXIMATELY ONE HALF (1/2) MILE LENGTH. THE RUNWAY AND TAXIWAY ARE LOCATED WITHIN A TRACT OF APPROXIMATELY 320 ACRES. RECOMMENDED SITE WORK PROCEDURES WILL BE PRESENTED LATER IN THIS REPORT.

AS SHOWN ON THE ACCOMPANYING LOG OF TEST HOLES AND LABORATORY TEST RESULTS, THE EXISTING SURFACING AND SUBGRADE PROFILE TO THE DEPTHS EXPLORED CONSISTS OF A BITUMINOUS SEAL APPLIED TO AGGREGATE BASE OVERLYING CLAYEY SILTY SAND AND CLAYEY SAND/SANDY CLAY SOILS. THE CLAYEY SILTY SANDS OF LOW PLASTICITY RANGE FROM APPROXIMATELY 40 INCHES OF DEPTH TO DEEPER THAN EXPLORATION DEPTH. THE UNDERLYING SUBSOILS CONSIST OF CLAYEY

PEGASUS AIRPARK RUNWAY & TAXIWAY
ELLSWORTH ROAD & EMPIRE BOULEVARD
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SANDS AND SANDY CLAYS OF LOW TO MEDIUM-HIGH PLASTICITY.

THE AGGREGATE BASE COURSE (ABC) HAS THE SURFACE SEALED WITH A BITUMINOUS SEAL OF APPROXIMATELY ½ TO 5/8 INCH THICKNESS AND THE TOTAL THICKNESS OF THE BITUMINOUS SEAL AND ABC RANGES FROM 4 ¼ TO 9 ½ INCHES ON THE RUNWAY. TOTAL THICKNESS OF THE BITUMINOUS SEAL AND ABC ON THE TAXIWAY RANGED FROM 6 ½ TO 8 INCHES.

THE AGGREGATE BASE IS AN UNCRUSHED, ROUNDED TO SUB-ROUNDED MATERIAL HAVING PRACTICALLY NO FRACTURED FACES. FOUR (4) OUT OF 5 SAMPLES TESTED HAVE GRADATIONS WITHIN THE LIMITS ESTABLISHED BY MARICOPA ASSOCIATION OF GOVERNMENTS (MAG) SECTION 702. HOWEVER, THE MINUS NO. 40 PORTION OF THE ABC SAMPLES HAVE PLASTICITY INDICES (PI) RANGING FROM 9 TO 13 WHICH EXCEEDS THE MAG PI LIMIT OF 5. AS A RESULT OF THE HIGHER PI VALUES, THE QUALITY OF THE ABC IS REDUCED WHICH INDICATES SOME REDUCTION IN STRUCTURAL COEFFICIENT FROM SPECIFICATION ABC AND INCREASED SENSITIVITY TO MOISTURE.

DENSITY TESTS PERFORMED BY RICKER, ATKINSON, MCBEE AND ASSOCIATES IN 1996 INDICATE GOOD DENSITY FOR THE ABC.

THE SUBGRADE SUPPORTING THE ABC IS CLAYEY/SILTY SAND WITH THE MINUS NO. 200 PERCENTAGES RANGING FROM 30 TO 44 WITH AN AVERAGE

OF 37 PERCENT. THE PI OF THE SUBGRADE AVERAGES 5.

THESE AVERAGE PROPERTIES WERE USED TO DETERMINE CORRELATED R-VALUE AND RESILIENT MODULUS USING ARIZONA DEPARTMENT OF TRANSPORTATION (ADOT) CRITERIA. THE EQUIVALENT CBR VALUE OF 17.3 WAS DETERMINED USING AMERICAN ASSOCIATION OF HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO) RELATIONSHIPS. RICKER, ATKINSON, MCBEE AND ASSOCIATES IN 1995 INDICATE ADEQUATE DENSITY FOR THE SUBGRADE.

PAVEMENT (RUNWAY AND TAXIWAY)

GENERAL GUIDELINES OF THE FEDERAL AVIATION ADMINISTRATION (FAA) ADVISORY CIRCULAR 150/5320-6D WERE USED TO DETERMINE THE RUNWAY AND TAXIWAY PAVEMENT SECTION. A MINIMUM PAVEMENT SECTION OF 2 INCHES ASPHALTIC CONCRETE (AC) OVER 3 INCHES ABC IS REQUIRED. THE MINIMUM EXISTING ABC THICKNESS OF 4 ¼ INCHES IS ADEQUATE EVEN THOUGH THE ABC IS OF LOWER QUALITY.

THE EXISTING ABC SHOULD BE ROLLED TO TIGHTEN THE SURFACE PRIOR TO ANY PLACEMENT OF AC AS IT HAS BEEN OVER 3 YEARS SINCE THE ABC WAS PLACED. PAVEMENT MATERIALS AND PLACEMENT SHOULD BE IN ACCORDANCE WITH MARICOPA ASSOCIATION OF GOVERNMENTS (MAG) SPECIFICATIONS. THE AC SHOULD BE A 19MM MIX DESIGNED FOR LOW TRAFFIC CONDITIONS IN ACCORDANCE WITH MAG SECTION 710.

PEGASUS AIRPARK RUNWAY & TAXIWAY
ELLSWORTH ROAD & EMPIRE BOULEVARD
QUEEN CREEK, ARIZONA
CIT PROJECT NO. G99-00323

DRAINAGE:

DUE TO THE ADVERSE EFFECT THAT SATURATION HAS ON THE SUBSOILS, DRAINAGE OF SURFACE WATER AWAY FROM THE RUNWAY AND TAXIWAY SHOULD BE PROVIDED THROUGHOUT THEIR LIFE. LONG-TERM PONDING SHOULD NOT BE ALLOWED NEAR THE RUNWAY OR TAXIWAY.

STATEMENT REGARDING GEOLOGICAL FAULTS:

THIS PROJECT IS NOT LOCATED OVER ANY KNOWN ACTIVE FAULTS OR FAULT-ASSOCIATED DISTURBED ZONES AND NO ADVERSE GEOLOGICAL PROBLEMS ARE PRESENT. THE SITE LIES WITHIN AN AREA WHICH HAS UNDERGONE SUBSIDENCE AS A RESULT OF GROUNDWATER WITHDRAWAL. EARTH FISSURING HAS BEEN REPORTED AT A SITE APPROXIMATELY ¾ MILES SOUTH AND A SECOND SITE APPROXIMATELY 2 MILES WEST OF THIS PROJECT. NO EARTH FISSURES WERE OBSERVED ON SITE OR IN THE IMMEDIATE AREA. THE CURRENT TREND IS FOR DECREASING GROUNDWATER USE DUE TO REMOVAL OF AGRICULTURAL AREAS FROM PRODUCTION AND INTRODUCTION OF CENTRAL ARIZONA PROJECT WATER INTO THE PHOENIX METROPOLITAN AREA. THE ABSENCE OF EARTH FISSURES ON THE SITE AND ADJACENT AREA AND THE APPARENT REDUCTION IN GROUNDWATER WITHDRAWAL MAKES THE DEVELOPMENT OF EARTH FISSURES ON THE PROPERTY A DIMINISHING RISK.

LIMITATIONS:

THE RECOMMENDATIONS CONTAINED IN THIS REPORT ARE BASED ON THE

PEGASUS AIRPARK RUNWAY & TAXIWAY
ELLSWORTH ROAD & EMPIRE BOULEVARD
QUEEN CREEK, ARIZONA
CIT PROJECT NO. G99-00323

ASSUMPTION THAT THE SOIL CONDITIONS DO NOT DEVIATE APPRECIABLY FROM THOSE DISCLOSED BY THE TEST HOLES. SHOULD UNUSUAL MATERIAL OR CONDITIONS BE ENCOUNTERED DURING CONSTRUCTION, THE GEOTECHNICAL ENGINEER SHOULD BE NOTIFIED SO THAT HE MAY MAKE SUPPLEMENTAL RECOMMENDATIONS IF THIS SHOULD BE REQUIRED. THIS REPORT IS ISSUED WITH THE UNDERSTANDING THAT IT IS THE RESPONSIBILITY OF THE OWNER TO SEE THAT ITS PROVISIONS ARE CARRIED OUT OR BROUGHT TO THE ATTENTION OF THOSE CONCERNED.

THE FINDINGS OF THIS REPORT ARE CONSIDERED VALID AS OF THE PRESENT DATE. HOWEVER, CHANGES IN THE CONDITIONS OF THE SITE CAN OCCUR WITH THE PASSAGE OF TIME, WHETHER THEY BE DUE TO NATURAL EVENTS OR TO HUMAN ACTIVITIES ON THIS OR ADJACENT SITES. IN ADDITION, CHANGES IN APPLICABLE OR APPROPRIATE CODES AND STANDARDS MAY OCCUR, WHETHER THEY RESULT FROM LEGISLATION OR THE BROADENING OF KNOWLEDGE. ACCORDINGLY, THIS REPORT MAY BECOME INVALIDATED WHOLLY OR PARTIALLY BY CHANGES OUTSIDE OUR CONTROL. THEREFORE, THIS REPORT IS SUBJECT TO REVIEW AND REVISION AS CHANGED CONDITIONS ARE IDENTIFIED.

PART II

LABORATORY ANALYSIS

CONSTRUCTION INSPECTION & TESTING CO.

EXISTING SOIL CHARACTERISTICS

PROJECT: PEGASUS AIRPARK RUNWAY & TAXIWAY
LOCATION: ELLSWORTH ROAD & EMPIRE BOULEVARD
FOR: WAYNE HILLS, ET AL, C/O CIRCLE G DEVELOPMENT

DATE: 11/22/99
LAB NO. 99-8474-78
TYPE OF SAMPLE: ABC
SOURCE:

	% PASSING (SIEVE SIZE)							ATTERBERG LIMITS		
LOCATION	1	1\2	#4	#8	#30	#100	#200	LL	PL	PI
B1	100	75	47	39	25	11	8.4	30	17	13
B3	100	58	31	24	15	6	5.0	29	17	12
B5	100	73	47	37	24	11	8.1	27	18	9
B7	100	78	54	44	28	11	8.5	30	18	12
B9	100	84	63	52	35	15	11	30	17	13

EXISTING SOIL CHARACTERISTICS

PROJECT: PEGASUS AIRPARK RUNWAY & TAXIWAY
LOCATION: ELLSWORTH ROAD & EMPIRE BOULEVARD
FOR: WAYNE HILLS, ET AL, C/O CIRCLE G DEVELOPMENT

DATE: 11/22/99
LAB NO. 99-8479-83
TYPE OF SAMPLE: SOIL
SOURCE:

		% PASSING (SIEVE SIZE)							ATTERBERG LIMITS		
LOCATION		1	1\2	#4	#8	#30	#100	#200	LL	PL	PI
B1	9-48"		100	97	92	70	51	40	23	18	5
B3	42-60"	100	99	98	95	76	63	55	40	18	22
B5	9.5-60"	100	98	93	84	54	37	30	21	17	4
B7	7-48"		100	98	93	73	56	44	23	18	5
B9	8-60"	100	96	90	83	58	42	34	23	18	5

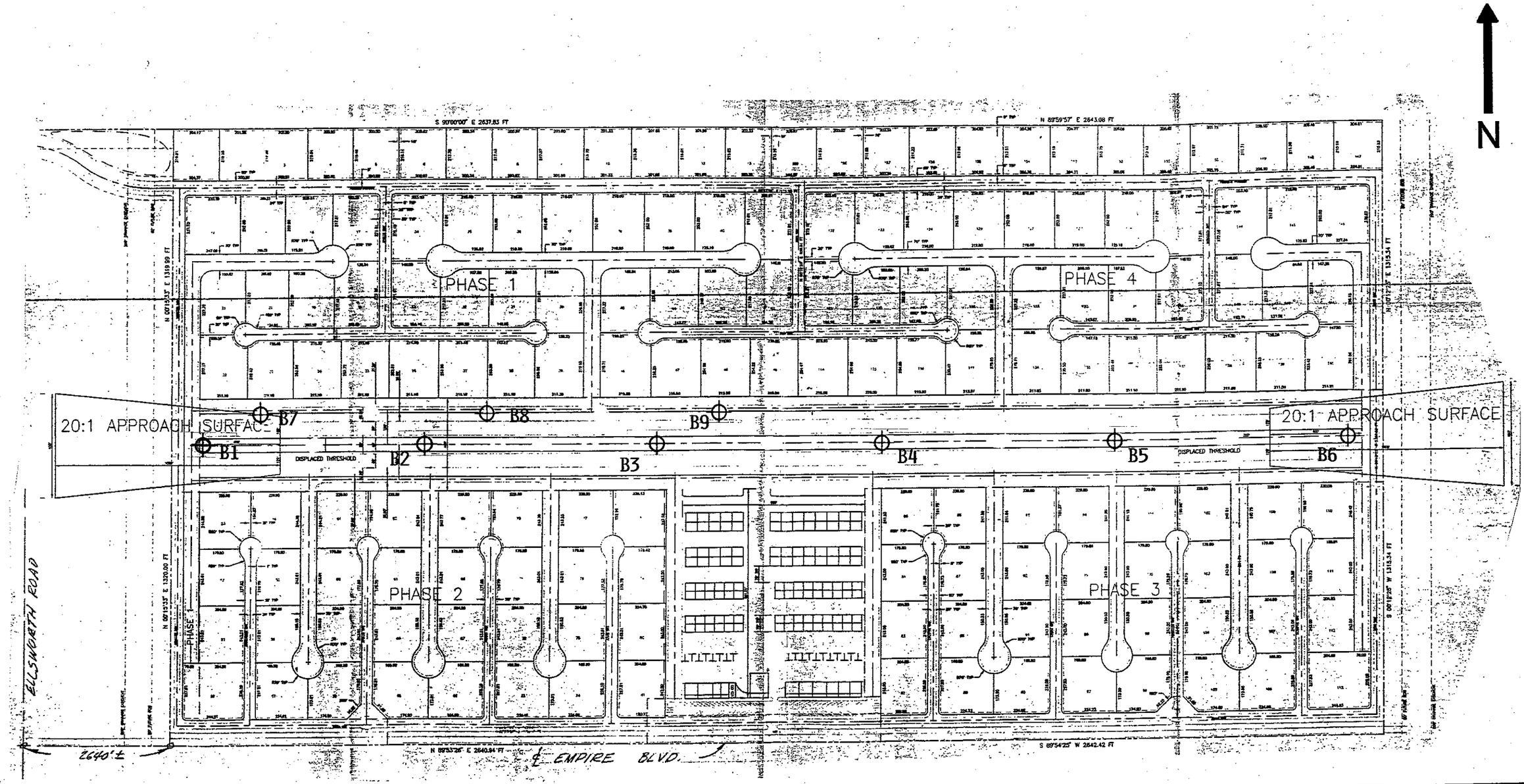
PEGASUS AIRPARK RUNWAY & TAXIWAY
ELLSWORTH ROAD & EMPIRE BOULEVARD
QUEEN CREEK, ARIZONA
CIT PROJECT NO. G99-00323

MOISTURE DETERMINATION

B#	9"-48"	42"-60"
1	3.7%	-
3	-	10.9%
5	3.9%	-
7	4.8%	-
9	3.3%	-

PART III

SITE PLAN



SITE PLAN

TEST HOLE LOCATIONS

PEGASUS AIRPARK
RUNWAY & TAXIWAY
ELLSWORTH RD. & EMPIRE BLVD.
QUEEN CREEK, ARIZONA

PART IV

FIELD INVESTIGATION

CONSTRUCTION INSPECTION & TESTING CO.

BORING LOG

FOR: WAYNE HILLS, ET AL
PROJECT: PEGASUS AIRPARK
LOCATION OF PROJECT: ELLSWORTH RD. & EMPIRE BLVD.
BORING NO. B1
LOCATION: RUNWAY

DATE: 11/22/99 **PROJ. NO** G99-00323
TYPE OF BORING: 7" AUGER
FIELD PARTY: J. COWELL

BORING NO. B2
LOCATION: RUNWAY

	5/8" BITUMINOUS SEAL, 8 3/8" ABC
10-	CLAYEY SILTY SAND, LOW PI, DAMP, LIGHT BROWN
20-	
30-	
40-	
	CLAYEY SAND, LOW-MEDIUM PI,
50-	MOIST, LIGHT BROWN
60-	BOTTOM AT 60"
70-	
80-	
90-	
100-	

	½" BITUMINOUS SEAL, 4 ½" ABC
10-	CLAYEY SILTY SAND, LOW PI, DAMP, LIGHT BROWN
20-	
30-	
40-	
	CLAYEY SAND, LOW PI, MOIST,
50-	LIGHT BROWN, WEAK CEMENTATION
60-	BOTTOM AT 60"
70-	
80-	
90-	
100-	

CONSTRUCTION INSPECTION & TESTING CO.

BORING LOG

FOR: WAYNE HILLS, ET AL
PROJECT: PEGASUS AIRPARK
LOCATION OF PROJECT: ELLSWORTH RD. & EMPIRE BLVD.
BORING NO. B3
LOCATION: RUNWAY

DATE: 11/22/99 **PROJ. NO** G99-00323
TYPE OF BORING: 7" AUGER
FIELD PARTY: J. COWELL

	5/8" BITUMINOUS SEAL, 6 7/8" ABC
10-	CLAYEY SILTY SAND, LOW PI, DAMP, LIGHT BROWN
20-	
30-	
40-	
	SANDY CLAY, MEDIUM-HIGH PI, MOIST, LIGHT BROWN
50-	
60-	BOTTOM AT 60"
70-	
80-	
90-	
100-	

BORING NO. B4
LOCATION: RUNWAY

	5/8" BITUMINOUS SEAL, 5 3/8" ABC
10-	CLAYEY SILTY SAND, LOW PI, DAMP, LIGHT BROWN
20-	
30-	
40-	
	CLAYEY SAND, LOW-MEDIUM PI, MOIST, LIGHT BROWN
50-	
60-	BOTTOM AT 60"
70-	
80-	
90-	
100-	

CONSTRUCTION INSPECTION & TESTING CO.

BORING LOG

FOR: WAYNE HILLS, ET AL
PROJECT: PEGASUS AIRPARK
LOCATION OF PROJECT: ELLSWORTH RD. & EMPIRE BLVD.
BORING NO. B5
LOCATION: RUNWAY

DATE: 11/22/99 **PROJ. NO** G99-00323
TYPE OF BORING: 7" AUGER
FIELD PARTY: J. COWELL

BORING NO. B6
LOCATION: RUNWAY

	½" BITUMINOUS SEAL, 9" ABC
10-	CLAYEY SILTY SAND, LOW PI, DAMP, LIGHT BROWN
20-	
30-	
40-	LESS FINES BELOW 42"
50-	
60-	BOTTOM AT 60"
70-	
80-	
90-	
100-	

	5/8" BITUMINOUS SEAL, 3 5/8" ABC
10-	CLAYEY SILTY SAND, LOW PI, DAMP, LIGHT BROWN
20-	
30-	
40-	
50-	
60-	BOTTOM AT 60"
70-	
80-	
90-	
100-	

CONSTRUCTION INSPECTION & TESTING CO.

BORING LOG

FOR: WAYNE HILLS, ET AL
PROJECT: PEGASUS AIRPARK
LOCATION OF PROJECT: ELLSWORTH RD. & EMPIRE BLVD.
BORING NO. B7
LOCATION: TAXIWAY

DATE: 11/22/99 **PROJ. NO** G99-00323
TYPE OF BORING: 7" AUGER
FIELD PARTY: J. COWELL

	5/8" BITUMINOUS SEAL, 6 3/8" ABC
10-	CLAYEY SILTY SAND, LOW PI, DAMP, LIGHT BROWN
20-	
30-	
40-	
50-	
	CLAYEY SAND, LOW-MEDIUM PI, DAMP, LIGHT BROWN
60-	BOTTOM AT 60"
70-	
80-	
90-	
100-	

BORING NO. B8
LOCATION: TAXIWAY

	½" BITUMINOUS SEAL, 6" ABC
10-	CLAYEY SILTY SAND, LOW PI, DAMP, LIGHT BROWN
20-	
30-	
40-	
	CLAYEY SAND, LOW-MEDIUM PI, DAMP, LIGHT BROWN, WEAK CEMENTATION
50-	
60-	BOTTOM AT 60"
70-	
80-	
90-	
100-	

CONSTRUCTION INSPECTION & TESTING CO.

BORING LOG

FOR: WAYNE HILLS, ET AL
PROJECT: PEGASUS AIRPARK
LOCATION OF PROJECT: ELLSWORTH RD. & EMPIRE BLVD.
BORING NO. B9
LOCATION: TAXIWAY

DATE: 11/22/99 **PROJ. NO** G99-00323
TYPE OF BORING: 7" AUGER
FIELD PARTY: J. COWELL

BORING NO.
LOCATION:

		5/8" BITUMINOUS SEAL, 7 3/8" ABC
10-		CLAYEY SILTY SAND, LOW PI, DAMP, LIGHT BROWN
20-		
30-		
40-		
50-		
60-		BOTTOM AT 60"
70-		
80-		
90-		
100-		

10-		
20-		
30-		
40-		
50-		
60-		
70-		
80-		
90-		
100-		

PEGASUS AIRPARK RUNWAY & TAXIWAY
ELLSWORTH ROAD & EMPIRE BOULEVARD
QUEEN CREEK, ARIZONA

APPENDIX A

JUNE 30, 1997

PROEHL DEVELOPMENT
6360-2 E. THOMAS ROAD, #328
SCOTTSDALE, ARIZONA 85251

RE: **RUNWAY RECOMMENDATIONS**

PROJECT: **PEGASUS AIRPARK DEVELOPMENT**
ELLSWORTH ROAD AND EMPIRE BOULEVARD
QUEEN CREEK, ARIZONA

ATTN: **ROBERT PROEHL**

IN ACCORDANCE WITH YOUR REQUEST, THIS FIRM HAS PERFORMED A SITE VISIT TO ASSESS THE PAVEMENT CONDITION OF THE SUBJECT PROJECT. THE FOLLOWING DISCUSSION IS PRESENTED AS WELL AS FUTURE RECOMMENDATIONS WHICH MAY BE UTILIZED AS A DEVELOPMENT PLAN.

DISCUSSION

THE SCOPE OF THIS INVESTIGATION WAS TO EVALUATE THE PRESENT RUNWAY STRUCTURE TO DETERMINE DEVELOPMENT ACTIONS WHICH COULD EXTEND THE PERFORMANCE LIFE OF THE RUNWAY. A VISUAL INSPECTION OF THE RUNWAY CONDITION AND A REVIEW OF TEST RESULTS PERFORMED DURING THE CONSTRUCTION OF THE RUNWAY WAS INITIATED. THE INSPECTION INDICATED AN AGGREGATE BASE SURFACE WHICH HAS BEEN PENETRATED UP TO 1/2 INCH WITH A BITUMINOUS SEAL. THE REVIEW INDICATED CONSTRUCTION COMPLIANCE WITH THE EXCEPTION OF THE AGGREGATE BASE QUALITY, I.E. THE PLASTICITY INDEX.

CONCLUSIONS AND RECOMMENDATIONS

THE RESULTS SHOWN IN RICKER, ATKINSON AND MCBEE'S REPORT INDICATES GOOD DENSITY FOR SUBGRADE AND AGGREGATE BASE COURSE (ABC) WHICH GENERALLY INDICATES A GOOD PERFORMING PAVEMENT AND THE GENERAL CONDITION OF THE PAVEMENT AGREES WITH THE RESULTS. HOWEVER; THE QUALITY OF THE ABC CAUSES CONCERN DUE TO THE PLASTICITY INDEX (PI). THE BASE COURSE IS DESIGNED TO PROVIDE A LOW DEFLECTION COURSE IN ITSELF OR IN CONJUCTION WITH OTHER SURFACING. THE MATERIAL INCORPORATED IN THE WORK DOES NOT MEET THIS DESIGN PARAMETER AND IS EXTREMELY MOISTURE SENSITIVE.

IT IS RECOMMENDED THAT THE PAVEMENT RECEIVE ANOTHER BITUMINOUS SEAL AS IMMEDIATELY AS POSSIBLE TO PREVENT MOISTURE INTRUSION.

PEGASUS AIRPARK
QUEEN CREEK, ARIZONA

THE FOLLOWING IS RECOMMENDED FOR THE FUTURE PAVEMENT UPGRADING:

IT IS NOT NECESSARY TO REMOVE THE ABC BUT IT NEEDS TO BE ACCOUNTED FOR IN STRUCTURAL DESIGN, THEREFORE, A SLIGHTLY THICKER ASPHALTIC CONCRETE SURFACING SHOULD BE UTILIZED IN CONJUNCTION WITH THE IMMEDIATE SEAL, ALTHOUGH NO AIRCRAFT INFORMATION HAS BEEN SUPPLIED, A 2.5 INCH COURSE OF ASPHALTIC CONCRETE WOULD BE A GOOD STARTING POINT. THE TYPE OF ASPHALTIC CONCRETE SHOULD INCORPORATE THE NEW TECHNOLOGY ASSOCIATED WITH SUPERPAVE MIXTURES.

IF YOU HAVE ANY FURTHER QUESTIONS REGARDING THIS MATTER, PLEASE CONTACT THE UNDERSIGNED.

RESPECTFULLY SUBMITTED,
CONSTRUCTION INSPECTION & TESTING CO.

JOHN B. RITTER, P.E.

Ricker Atkinson McBee & Assoc., Inc.
2105 S. Hardy Drive, Suite 13
Tempe, AZ 85282

Construction Material

FIELD DENSITY TEST RESULTS
(ASTM D1556, D2922)

Client: D&M Engineering
Attn: Duran Thompson
2711 West Kent Drive
Chandler, Arizona 85224

Project No.: T00098
Report No.: 1
Report Date: 2-Aug-95
Technician: RAM/B. Boyd

Project: Queen Creek Residential Development
Location: Queen Creek, Arizona
Material Type/Use: Native/Pavement Areas
Results:

Test No.	Date	Location	Elevation/Depth of Test
1	7/24/95	Entrance Road - Sta. 1+10, 11' right of centerline	Finished Subgrade
2	7/24/95	Entrance Road - Sta. 6+70, 21' left of centerline	Finished Subgrade
3	7/24/95	Entrance Road - Sta. 12+05, 23' right of centerlin	Finished Subgrade
4	7/24/95	Entrance Road - Sta. 18+00, 12' left of centerline	Finished Subgrade
5	7/24/95	Entrance Road - Sta. 26+50, 6' right of centerline	Finished Subgrade
6	7/24/95	Taxiway at west end of runway, 40' N. of runway & 11' left of centerline	Finished Subgrade
7	7/24/95	Taxiway at west end of runway, 250' N. of runway & 20' right of centerline	Finished Subgrade
8	7/24/95	Taxiway at west end of runway, 100' S. of entrance road at centerline	Finished Subgrade

Test No.	Optimum Moisture (%)	Maximum Density (pcf)	Field Moisture (%)	Field Density (pcf)	Percent Compaction
1	12.2	120.6	2.0	111.8	93
2	12.2	120.6	2.0	114.2	95
3	12.2	120.6	2.6	109.6	91
4	12.2	120.6	5.6	114.6	95
5	12.2	120.6	5.2	102.9	85
6	12.2	120.6	1.3	110.6	92
7	12.2	120.6	1.0	109.4	91
8	12.2	120.6	2.0	112.3	93

Maximum Density-Optimum Moisture Test Method: ASTM D698 - Method A

Distribution: Addressee (1)

Ricker Atkinson McBee & Assoc., Inc.
2105 S. Hardy Drive, Suite 13
Tempe, AZ 85282

Construction Material

FIELD DENSITY TEST RESULTS
(ASTM D1556, D2922)

Client: D&M Engineering
Attn: Duran Thompson
2711 West Kent Drive
Chandler, Arizona 85224

Project No.: T00098
Report No.: 2
Report Date: 2-Aug-95
Technician: RAM/B. Boyd

Project: Queen Creek Residential Development
Location: Queen Creek, Arizona
Material Type/Use: Native/Pavement Areas
Results:

Test No.	Date	Location	Elevation/Depth of Test
9	7/24/95	Runway - Sta. 1+50, 20' left of centerline	Finished Subgrade
10	7/24/95	Runway - Sta. 6+05, 27' right of centerline	Finished Subgrade
11	7/24/95	Runway - Sta. 11+98, 8' left of centerline	Finished Subgrade
12	7/24/95	Runway - Sta. 21+40, 11' right of centerline	Finished Subgrade
13	7/24/95	Runway - Sta. 27+15, 15' left of centerline	Finished Subgrade
14	7/24/95	Runway - Sta. 30+70, 6' left of centerline	Finished Subgrade
15	7/24/95	Runway - Sta. 39+42, 27' left of centerline	Finished Subgrade
16	7/24/95	Runway - Sta. 47+50, 18' right of centerline	Finished Subgrade

Test No.	Optimum Moisture (%)	Maximum Density (pcf)	Field Moisture (%)	Field Density (pcf)	Percent Compaction
9	12.2	120.6	2.0	113.2	94
10	12.2	120.6	3.0	113.6	94
11	12.2	120.6	3.0	115.5	96
12	12.2	120.6	3.2	112.4	93
13	12.2	120.6	2.0	115.2	96
14	12.2	120.6	2.5	110.7	92
15	12.2	120.6	1.6	114.7	95
16	12.2	120.6	2.8	112.4	93

Maximum Density-Optimum Moisture Test Method: ASTM D698 - Method A

Distribution: Addressee (1)

Ricker Atkinson McBee & Assoc., Inc.
2105 S. Hardy Drive, Suite 13
Tempe, AZ 85282

Construction Material

FIELD DENSITY TEST RESULTS
(ASTM D1556, D2922)

Client: D&M Engineering
Attn: Duran Thompson
2711 West Kent Drive
Chandler, Arizona 85224

Project No.: T00098
Report No.: 3
Report Date: 2-Aug-95
Technician: RAM/B. Boyd

Project: **Queen Creek Residential Development** Location: Queen Creek, Arizona
Material Type/Use: Native/Pavement Areas
Results:

Test No.	Date	Location	Elevation/Depth of Test
17	7/24/95	Runway - Sta. 42+50 at centerline	Finished Subgrade
18	8/1/95	Entrance Road - Sta. 13+25, 10' right of centerlin	Finished Subgrade
19	8/1/95	Entrance Road - Sta. 12+00, 8' right of centerline	Finished Subgrade
20	8/1/95	Entrance Road - Sta. 10+00, 17' right of centerlin	Finished Subgrade
21	8/1/95	Entrance Road - Sta. 7+85, 15' right of centerline	Finished Subgrade
22	8/1/95	Entrance Road - Sta. 6+00, 11' right of centerline	Finished Subgrade

Test No.	Optimum Moisture (%)	Maximum Density (pcf)	Field Moisture (%)	Field Density (pcf)	Percent Compaction
17	12.2	120.6	2.5	115.6	96
18	11.2	120.6	5.0	106.2	88
19	11.2	120.6	6.8	107.3	89
20	11.2	120.6	3.2	109.1	91
21	11.2	120.6	3.2	110.0	91
22	11.2	120.6	6.2	110.6	92

Maximum Density-Optimum Moisture Test Method: ASTM D698 - Method A

Distribution: Addressee (1)

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Construction Materials Testing
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FIELD DENSITY TEST RESULTS

(ASTM D1556, D2922)

Client: D&M Engineering
Attn: Duran Thompson
2711 West Kent Drive
Chandler, Arizona 85224

Project No.: T00098
Report No.: 1
Report Date: 25-Aug-95
Technician: RAM/D. Pedersen

Project: Queen Creek Residential Development
Location: Queen Creek, Arizona
Material Type/Use: Native/Entrance Drive
Results:

Test No.	Date	Location	Elevation/Depth of Test
1	8/4/95	Sta. 9+00, Eastbound Lane	Finished Subgrade
2	8/4/95	Sta. 14+00, Eastbound Lane	Finished Subgrade
3	8/10/95	Sta. 28+25, Westbound Lane	Finished Subgrade
4	8/10/95	Sta. 22+10, Westbound Lane	Finished Subgrade
5	8/10/95	Sta. 17+20, Westbound Lane	Finished Subgrade
6	8/15/95	Sta. 6+00, Westbound Lane	Finished Subgrade
7	8/15/95	Sta. 1+00, Westbound Lane	Finished Subgrade

Test No.	Optimum Moisture (%)	Maximum Density (pcf)	Field Moisture (%)	Field Density (pcf)	Percent Compaction	Within Specs.
1	11.2	120.6	7.4	122.0	100 +	Yes
2	11.2	120.6	13.3	120.7	100 +	Yes
3	11.2	120.6	6.9	115.8	96	Yes
4	11.2	120.6	12.1	115.7	96	Yes
5	11.2	120.6	12.3	116.4	97	Yes
6	11.2	120.6	7.8	122.4	100 +	Yes
7	11.2	120.6	5.1	116.4	97	Yes

Project Specified Compaction: 95% Minimum
Maximum Density-Optimum Moisture Test Method: ASTM D698 - Method A

Distribution: Addressee (1)

Respectfully submitted,

Charles H. Atkinson, P.E.

LAB9 Rev.0

Ricker Atkinson McBee & Assoc., Inc.
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LABORATORY TEST RESULTS

Client: D & M Engineering
Attn: Duran Thompson
4657 S. Lakeshore Drive, Suite 4
Tempe, AZ 85282

Project No.: T00098
Report Date: 30-Nov-95
Lab No.: 574

Project: Pegasus Development
Location: Queen Creek, Arizona

Sampled By: RAM/Boyd
Date Sampled: 21-Nov-95
Submitted By: RAM/Boyd
Date Submitted: 21-Nov-95

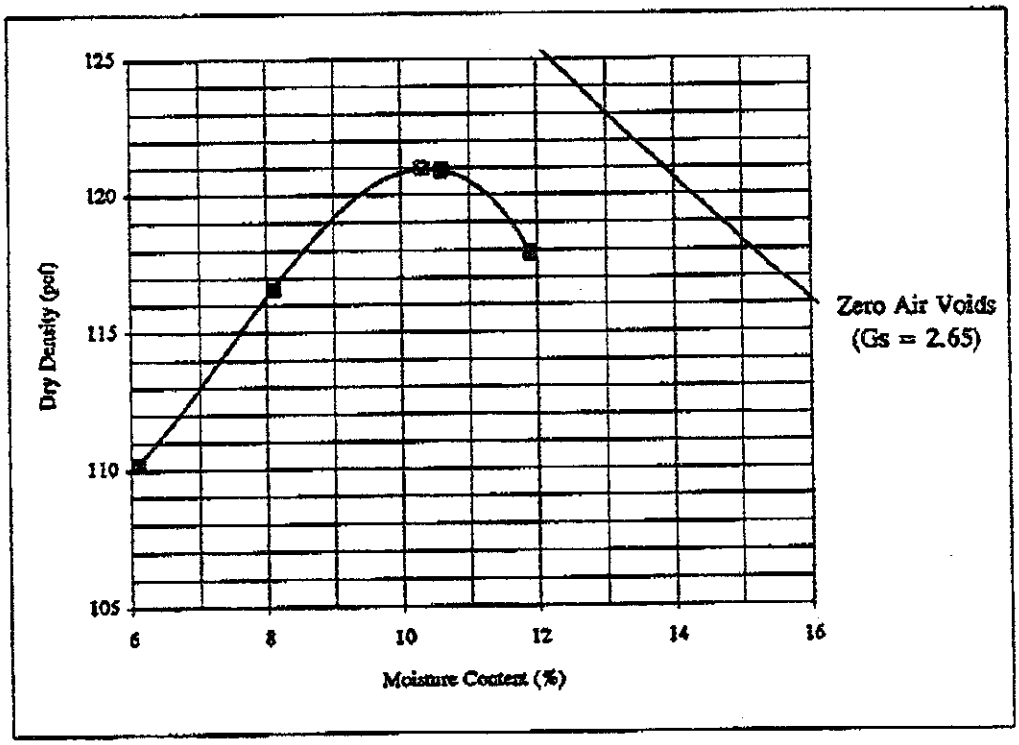
Sample Source: Sta. 1+00 to 7+00, Runway

Material: Aggregate Base Course Supplier: Oliver Sand & Rock

Test Method(s): Maximum Density-Optimum Moisture Determination (ASTM D698 Method A)

Results:

Maximum Density (pcf) = 121.0 Optimum Moisture (%) = 10.3



Distribution: Addressee (1)

Respectfully submitted,

Shawn C. Morman, E.I.T.
Technical Services Director

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FIELD DENSITY TEST RESULTS

(ASTM D1556, D2922)

Client: D&M Engineering
Attn: Duran Thompson
2711 West Kent Drive
Chandler, Arizona 85224

Project No.: T00098
Report No.: 1
Report Date: 1 Dec. 95
Technician: RAM/B. Boyd

Project: Queen Creek Residential Development Location: Queen Creek, Arizona
Material Type/Use: Native & ABC/Pavement Areas
Results:

Test No.	Date	Location	Elevation/Depth of Test
1	11/21/95	Sta. 24+15, 4' left of centerline on N. taxiway	Finish Subgrade
2	11/21/95	Sta. 14+82, 11' left of centerline on N. taxiway	Finish Subgrade
3	11/21/95	Sta. 6+90, 15' left of centerline of N. taxiway	Finish Subgrade
4	11/21/95	Sta. 1+25, 11' left of centerline on runway	Finish Base Course
5	11/21/95	Sta. 6+47, 8' left of centerline on runway	Finish Base Course

Test No.	Optimum Moisture (%)	Maximum Density (pcf)	Field Moisture (%)	Field Density (pcf)	Percent Compaction
1	10.3	121.0	7.5	117.2	97
2	10.3	121.0	10.3	125.1	100 +
3	10.3	121.0	8.7	121.0	100
4	5.7	134.9	3.8	135.3	100 +
5	6.5	132.5	4.2	131.3	99

Maximum Density-Optimum Moisture Test Method: ASTM D698 - Method A

Distribution: Addressee (1)

Respectfully submitted,

Charles H. Atkinson, P.E.

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LABORATORY TEST RESULTS

Client: D & M Engineering
Attn: Duran Thompson
4657 S. Lakeshore Drive, Suite 4
Tempe, AZ 85282

Project No.: T00098
Report Date: 8-Jan-96
Lab No.: 574

Project: **Pegasus Development**
Location: Queen Creek, Arizona

Sampled By: RAM/Boyd
Date Sampled: 21-Nov-95
Submitted By: RAM/Boyd
Date Submitted: 21-Nov-95

Sample Source: Sta. 1+00 to 7+00, Runway

Material: Aggregate Base Course

Supplier: Oliver Sand & Rock

Test Method(s): Sieve Analysis and Plasticity Index (ASTM C117, C136, AASHTO T89, T90)

Results:

Sieve Size	Percent Passing	Specifications	
		Minimum	Maximum
	100		
	100		
3"	100		
2"	100		
1-1/2"	100		
1"	100		
3/4"	89		
1/2"	66		
3/8"	57		
1/4"	46		
#4	40		
#8	33		
#10	31		
#16	27		
#30	20		
#40	16		
#50	13		
#100	8		
#200	6.7		

Liquid Limit: 25

Plastic Limit: 16

PLASTICITY INDEX: 9

Remarks:

Distribution: Addressee (1)

Respectfully submitted,

Shawn C. Morman, E.I.T.
Technical Services Director

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FIELD DENSITY TEST RESULTS

(ASTM D1556, D2922)

Client: D&M Engineering
Attn: Duran Thompson
2711 West Kent Drive
Chandler, Arizona 85224

Project No.: T00098
Report No.: 2
Report Date: 23-Jan-96
Technician: RAM/D. Miller

Project: **Queen Creek Residential Development** Location: Queen Creek, Arizona
Material Type/Use: ABC/Runway Area
Results:

Test No.	Date	Location	Elevation/Depth of Test
1	12/18/96	Sta. 78+00, 12' S. of centerline	Finish Base Course
2	12/18/96	Sta. 33+00, 33' N. of centerline	Finish Base Course
3	12/18/96	Sta. 38+00, 30' S. of centerline	Finish Base Course
4	12/18/96	Sta. 43+00, 10' N. of centerline	Finish Base Course
5	12/18/96	Sta. 48+15 of centerline	Finish Base Course

Test No.	Optimum Moisture (%)	Maximum Density (pcf)	Field Moisture (%)	Field Density (pcf)	Percent Compaction
1	6.0	133.8	4.6	142.0	100 +
2	5.5	135.5	4.4	144.8	100 +
3	5.6	135.0	4.3	140.6	100 +
4	5.6	135.1	4.2	139.0	100 +
5	5.3	135.8	5.1	135.1	100

Maximum Density-Optimum Moisture Test Method: ASTM D698 - Method A

Distribution: Addressee (1)

Respectfully submitted,

Charles H. Atkinson, P.E.