Appendix

RAPID CITY REGIONAL AIRPORT

# Airport Master Plan Update

# ENGINEER'S ESTIMATE OF PROBABLE COST

RAPID CITY REGIONAL AIRPORT
RAPID CITY, SOUTH DAKOTA

## PHASE I - 1998

## TAXIWAY ALPHA OVERLAY

3" P-401 Overlay on Taxiway Alpha

Taxiway Painting, Shouldering

| ITEM NO. | DESCRIPTION OF ITEM | QUANTITY | UNIT | UNIT PRICE | AMOUNT |
|---|---|---|---|---|---|
| 1 | Mobilization | Lump Sum | L.S. | $ 10,000.00 | $ 10,000.00 |
| 2 | Field Laboratory | Lump Sum | L.S. | $ 3,000.00 | $ 3,000.00 |
| 3 | Pavement Milling | 1000 | S.Y. | $ 6.00 | $ 6,000.00 |
| 4 | Crack Sealing of Asphalt Concrete | 1650 | L.F. | $ 0.85 | $ 1,402.50 |
| 5 | Bituminous Surface Course (Crushed Ledge Rock) | 1,787 | Ton | $ 17.60 | $ 31,451.20 |
| 6 | Asphalt Cement for Base Course AC 10 or 85-100 PEN. (Crushed Ledge Rock) | 107 | Ton | $ 130.00 | $ 13,910.00 |
| 7 | Bituminous Tack Coat SS-1H/CSS-1H | 2 | Ton | $ 470.00 | $ 940.00 |
| 8 | Bituminous Flush Seal SS-1H/CSS-1H | 2 | Ton | $ 470.00 | $ 940.00 |
| 9 | Taxiway Painting | 1,391 | S.F. | $ 0.55 | $ 765.05 |
| 10 | Glass Beads | 283 | LB. | $ 2.00 | $ 566.00 |
| 11 | Shouldering | Lump Sum | L.S. | $ 3,000.00 | $ 3,000.00 |
| 12 | Incidental Work | Lump Sum | L.S. | $ 5,000.00 | $ 5,000.00 |
| 13 | | | | | |
| 14 | ESTIMATED CONSTRUCTION COST - SUBTOTAL | | | | $ 76,974.75 |
| 15 | CONTIGENCY | | | | $ 15,394.95 |
| 16 | ADMIN., LEGAL; DESIGN, CONSTRUCTION ENGINEERING | | | | $ 27,710.91 |
| 17 | TOTAL | | | | $ 120,080.61 |

# ENGINEER'S ESTIMATE OF PROBABLE COST

RAPID CITY REGIONAL AIRPORT
RAPID CITY, SOUTH DAKOTA

## PHASE I - 1998

## G. A. TAXIWAY OVERLAY

3" P-401 Overlay on G.A. Taxiway

Taxiway Painting, Shouldering

| ITEM NO. | DESCRIPTION OF ITEM | QUANTITY | UNIT | UNIT PRICE | AMOUNT |
|---|---|---|---|---|---|
| 1 | Mobilization | Lump Sum | L.S. | $ 10,000.00 | $ 10,000.00 |
| 2 | Field Laboratory | Lump Sum | L.S. | $ 2,500.00 | $ 2,500.00 |
| 3 | Pavement Milling | 80 | S.Y. | $ 6.00 | $ 480.00 |
| 4 | Crack Sealing of Asphalt Concrete | 2090 | L.F. | $ 0.85 | $ 1,776.50 |
| 5 | Bituminous Surface Course (Crushed Ledge Rock) | 2,465 | Ton | $ 17.60 | $ 43,384.00 |
| 6 | Asphalt Cement for Base Course AC 10 or 85-100 PEN. (Crushed Ledge Rock) | 148 | Ton | $ 130.00 | $ 19,240.00 |
| 7 | Bituminous Tack Coat SS-1H/CSS-1H | 2.8 | Ton | $ 470.00 | $ 1,316.00 |
| 8 | Bituminous Flush Seal SS-1H/CSS-1H | 2.8 | Ton | $ 470.00 | $ 1,316.00 |
| 9 | Shouldering | Lump Sum | L.S. | $ 5,000.00 | $ 5,000.00 |
| 10 | Incidental Work | Lump Sum | L.S. | $ 8,000.00 | $ 8,000.00 |
| 11 | | | | | |
| 12 | ESTIMATED CONSTRUCTION COST - SUBTOTAL | | | | $ 93,012.50 |
| 13 | CONTIGENCY | | | | $ 18,602.50 |
| 14 | ADMIN., LEGAL; DESIGN, CONSTRUCTION ENGINEERING | | | | $ 33,484.50 |
| 15 | TOTAL | | | | $ 145,099.50 |

# ENGINEER'S ESTIMATE OF PROBABLE COST

RAPID CITY REGIONAL AIRPORT

RAPID CITY, SOUTH DAKOTA

## PHASE I - 1999

## REPLACE HIRL 14/32

Replace Runway H.I. Lights and Transformers, Replace Light Bases,
Replace Regulator, and Replace Cable in Existing Ducts

| ITEM NO. | DESCRIPTION OF ITEM | ESTIMATED QUANTITY | UNIT | UNIT PRICE | AMOUNT |
|---|---|---|---|---|---|
| 1 | Mobilization | Lump Sum | L.S. | $ 15,000.00 | $ 15,000.00 |
| 2 | 1/C #8-5 KV Cable in Duct | 23,500 | L.F. | $ 3.25 | $ 76,375.00 |
| 3 | #8 Bare Counterpoise Wire | 24,700 | L.F. | $ 1.00 | $ 24,700.00 |
| 4 | L-867 Container, Class I, Type B (12" Dia.) | 95 | Each | $ 300.00 | $ 28,500.00 |
| 5 | L-868 Container, Class I, Type B (12" Dia.) | 16 | Each | $ 300.00 | $ 4,800.00 |
| 6 | L-862 Runway H.I. Light w/L-830-4 Transformer | 95 | Each | $ 350.00 | $ 33,250.00 |
| 7 | L-862E Runway H.I. Light w/L-830-6 Transformer | 16 | Each | $ 350.00 | $ 5,600.00 |
| 8 | L-828, 30 KW, 2400 Volt Regulator &Misc Vault Electrical Equipment | 1 | Each | $ 30,000.00 | $ 30,000.00 |
| 9 | Removal Existing Lights | 110 | Each | $ 75.00 | $ 8,250.00 |
| 10 | Incidental Work | Lump Sum | L.S. | $ 18,500.00 | $ 18,500.00 |
| 11 | ESTIMATED CONSTRUCTION COST - SUBTOTAL | | | | $ 244,975.00 |
| 12 | CONTIGENCY | | | | $ 48,995.00 |
| 13 | ADMIN., LEGAL; DESIGN, CONSTRUCTION ENGINEERING | | | | $ 88,191.00 |
| 14 | TOTAL | | | | $ 382,161.00 |

# ENGINEER'S ESTIMATE OF PROBABLE COST

RAPID CITY REGIONAL AIRPORT
RAPID CITY, SOUTH DAKOTA

## PHASE I - 2000
## TAXIWAY "B" OVERLAY

3" P-401 Overlay on Taxiway "B"

Taxiway Painting, Shouldering

| ITEM NO. | DESCRIPTION OF ITEM | QUANTITY | UNIT | UNIT PRICE | AMOUNT |
|---|---|---|---|---|---|
| 1 | Mobilization | Lump Sum | L.S. | $ 20,000.00 | $ 20,000.00 |
| 2 | Field Laboratory | Lump Sum | L.S. | $ 3,000.00 | $ 3,000.00 |
| 3 | Pavement Milling | 352 | S.Y. | $ 6.00 | $ 2,112.00 |
| 4 | Crack Sealing of Asphalt Concrete | 3454 | L.F. | $ 0.85 | $ 2,935.90 |
| 5 | Bituminous Surface Course (Crushed Ledge Rock) | 2,770 | Ton | $ 17.60 | $ 48,752.00 |
| 6 | Asphalt Cement for Base Course AC 10 or 85-100 PEN. (Crushed Ledge Rock) | 786 | Ton | $ 130.00 | $ 102,180.00 |
| 7 | Bituminous Tack Coat SS-1H/CSS-1H | 6.4 | Ton | $ 470.00 | $ 3,008.00 |
| 8 | Bituminous Flush Seal SS-1H/CSS-1H | 6.4 | Ton | $ 470.00 | $ 3,008.00 |
| 9 | Taxiway Painting | 2,936 | S.F. | $ 0.55 | $ 1,614.80 |
| 10 | Glass Beads | 587 | LB. | $ 2.00 | $ 1,174.00 |
| 11 | Shouldering | Lump Sum | L.S. | $ 10,000.00 | $ 10,000.00 |
| 12 | Incidental Work | Lump Sum | L.S. | $ 10,000.00 | $ 10,000.00 |
| 13 | | | | | |
| 14 | ESTIMATED CONSTRUCTION COST - SUBTOTAL | | | | $ 207,784.70 |
| 15 | CONTIGENCY | | | | $ 41,556.94 |
| 16 | ADMIN., LEGAL; DESIGN, CONSTRUCTION ENGINEERING | | | | $ 74,802.49 |
| 17 | TOTAL | | | | $ 324,144.13 |

# ENGINEER'S ESTIMATE OF PROBABLE COST

RAPID CITY REGIONAL AIRPORT

RAPID CITY, SOUTH DAKOTA

## Phase I - 2001

## Northern Access Road to I-90 (only on airport property)

Grading, Asphalt Concrete Paving, Box Culvert, Fencing, Signing, Pavement Marking, CM Pipe, Delineators, Topsoil, Seeding, Fertilizing, Mulching

| ITEM NO. | DESCRIPTION OF ITEM | QUANTITY | UNIT | UNIT PRICE | AMOUNT |
|---|---|---|---|---|---|
| 1 | Mobilization | Lump Sum | L.S. | $ 57,300.00 | $ 57,300.00 |
| 2 | Clearing | Lump Sum | L.S. | $ 1,500.00 | $ 1,500.00 |
| 3 | Field Laboratory | Lump Sum | L.S. | $ 3,000.00 | $ 3,000.00 |
| 4 | Unclassified Excavation | 55,400 | C.Y. | $ 1.20 | $ 66,480.00 |
| 5 | Borrow Unclassified Excavation | 78,940 | C.Y. | $ 2.00 | $ 157,880.00 |
| 6 | Embankment in Place | 134,340 | C.Y. | $ 1.30 | $ 174,642.00 |
| 7 | Base Course | 20750 | TON | $ 9.00 | $ 186,750.00 |
| 8 | Asphalt Concrete Class 'E' | 7,020 | Ton | $ 18.00 | $ 126,360.00 |
| 9 | Asphalt Cement for Class 'E' AC 5 or 120-150 PEN. | 420 | Ton | $ 150.00 | $ 63,000.00 |
| 10 | Bituminous Prime Coat, MC-70 | 39 | Ton | $ 280.00 | $ 10,920.00 |
| 11 | Bituminous Tack Coat SS-1H/CSS-1H | 3.3 | Ton | $ 180.00 | $ 594.00 |
| 12 | Bituminous Flush Coat SS-1H/CSS-1H | 3.3 | Ton | $ 180.00 | $ 594.00 |
| 13 | Silt Fence | 600 | LF | $ 3.00 | $ 1,800.00 |
| 14 | Mucking Silt Fence | 600 | LF | $ 3.00 | $ 1,800.00 |
| 15 | Removal Silt Fence | 600 | LF | $ 5.00 | $ 3,000.00 |
| 16 | R/W Fence | 15500 | LF | $ 1.00 | $ 15,500.00 |
| 17 | 2 Post Fence Panel | 16 | EA | $ 75.00 | $ 1,200.00 |
| 18 | 3 Post Fence Panel | 8 | EA | $ 90.00 | $ 720.00 |
| 19 | 4 Post Fence Panel | 12 | EA | $ 120.00 | $ 1,440.00 |
| 20 | 5 Post Fence Panel | 12 | EA | $ 130.00 | $ 1,560.00 |
| 21 | Take out Fence | 320 | LF | $ 0.50 | $ 160.00 |
| 22 | Delineators | 82 | EA | $ 25.00 | $ 2,050.00 |
| 23 | Traffic Signing | 16 | EA | $ 80.00 | $ 1,280.00 |
| 24 | Wood Post 4x4 | 14 | EA | $ 25.00 | $ 350.00 |
| 25 | Traffic Control | 750 | UNIT | $ 2.50 | $ 1,875.00 |
| 26 | Traffic Control Miscellaneous | Lump Sum | LS | $ 500.00 | $ 500.00 |
| 27 | Flagging | 500 | HR | $ 12.00 | $ 6,000.00 |
| 28 | Erosion Bale | 100 | EA | $ 16.50 | $ 1,650.00 |
| 29 | Water for Granular Material | 1730 | MGAL | $ 11.00 | $ 19,030.00 |
| 30 | Mulching | 27 | Acre | $ 150.00 | $ 4,050.00 |
| 31 | Seeding and Fertilizing | 27 | Acre | $ 700.00 | $ 18,900.00 |
| 32 | Placing Topsoil | 17,900 | C.Y. | $ 0.20 | $ 3,580.00 |
| 33 | 18 CMP 16 GA F&I | 220 | LF | $ 20.00 | $ 4,400.00 |
| 34 | 18 CMP End F&I | 4 | EA | $ 150.00 | $ 600.00 |
| 35 | 24" RCP F&I | 440 | L.F. | $ 34.00 | $ 14,960.00 |
| 36 | 24" RCP End F&I | 8 | EA | $ 575.00 | $ 4,600.00 |
| 37 | 48" RCP F&I | 208 | L.F. | $ 85.00 | $ 17,680.00 |
| 38 | 48" End F&I | 4 | Each | $ 100.00 | $ 400.00 |
| 39 | Box Culverts (2) | Lump Sum | LS | $ 140,000.00 | $ 140,000.00 |
| 40 | Rip Rap | 350 | Ton | $ 30.00 | $ 10,500.00 |
| 41 | Pavement Marking Paint | 52 | Gal. | $ 11.00 | $ 572.00 |
| 42 | Incidental Work | Lump Sum | L.S. | $ 75,000.00 | $ 75,000.00 |
| 43 | ESTIMATED CONSTRUCTION COST - SUBTOTAL | | | | $ 1,204,177.00 |
| 44 | CONTIGENCY | | | | $ 240,835.40 |
| 45 | ADMIN., LEGAL; DESIGN, CONSTRUCTION ENGINEERING | | | | $ 433,503.72 |
| 46 | TOTAL | | | | $ 1,878,516.12 |

ENGINEER'S ESTIMATE OF PROBABLE COST

RAPID CITY REGIONAL AIRPORT

RAPID CITY, SOUTH DAKOTA

## PHASE I - 2001

## MAP AIRPORT INDUSTRIAL/OFFICE PARK AREA

Contours and Limits of Flood Plain

| ITEM NO. | DESCRIPTION OF ITEM | QUANTITY | UNIT | UNIT PRICE | AMOUNT |
|---|---|---|---|---|---|
| 1 | Administration | Lump Sum | L.S. | $ 1,413.00 | $ 1,413.00 |
| 2 | Field Survey | Lump Sum | L.S. | $ 9,408.00 | $ 9,408.00 |
| 3 | Office Mapping | Lump Sum | L.S. | $ 3,540.00 | $ 3,540.00 |
| 4 | Flood Plain | Lump Sum | L.S. | $ 625.00 | $ 625.00 |
| 5 | Incidental Work | Lump Sum | L.S. | $ 500.00 | $ 500.00 |
| 6 | | | | | |
| 7 | ESTIMATED CONSTRUCTION COST - SUBTOTAL | | | | $ 15,486.00 |
| 8 | CONTIGENCY | | | | $ 3,097.20 |
| 9 | ADMIN., LEGAL | | | | $ 2,787.48 |
| 10 | TOTAL | | | | $ 21,370.68 |

# ENGINEER'S ESTIMATE OF PROBABLE COST

RAPID CITY REGIONAL AIRPORT

RAPID CITY, SOUTH DAKOTA

## PHASE I - 2002

## RUNWAY 14/32, TAXIWAY A AND APRON REPAIRS

Route and Seal Joints and Repair Cracks and Panels on Runway 14/32 and Apron

Route and Seal Cracks on Taxiway A

| ITEM NO. | DESCRIPTION OF ITEM | ESTIMATED QUANTITY | UNIT | UNIT PRICE | AMOUNT |
|---|---|---|---|---|---|
| 1 | Mobilization | Lump Sum | L.S. | $ 65,000.00 | $ 65,000.00 |
| 2 | Route and Seal Joints on Runway 14/32, Taxiway A1 and A6 | 107,429 | L.F. | $ 2.00 | $ 214,858.00 |
| 3 | Route and Seal Joints on Apron | 77,150 | L.F. | $ 2.00 | $ 154,300.00 |
| 4 | Repair Cracks on Runway 14/32, Taxiway A1 and A6 | 10,743 | L.F. | $ 2.00 | $ 21,486.00 |
| 5 | Repair Cracks on Apron | 7,715 | L.F. | $ 2.00 | $ 15,430.00 |
| 6 | Repair Panels on Runway 14/32, Taxiway A1 and A6 | 15,970 | S.Y. | $ 30.00 | $ 479,100.00 |
| 7 | Repair Panels on Apron | 7,579 | S.Y. | $ 30.00 | $ 227,370.00 |
| 8 | Route and Seal Cracks on Taxiway A | 950 | L.F. | $ 3.00 | $ 2,850.00 |
| 9 | Incidental Work | Lump Sum | L.S. | $ 168,000.00 | $ 168,000.00 |
| 10 | ESTIMATED CONSTRUCTION COST - SUBTOTAL | | | | $ 1,348,394.00 |
| 11 | CONTIGENCY | | | | $ 269,678.80 |
| 12 | ADMIN., LEGAL; DESIGN, CONSTRUCTION ENGINEERING | | | | $ 485,421.84 |
| 13 | TOTAL | | | | $ 2,103,494.64 |

# ENGINEER'S ESTIMATE OF PROBABLE COST

RAPID CITY REGIONAL AIRPORT
RAPID CITY, SOUTH DAKOTA

## PHASE II

## RECONSTRUCT TAXIWAY ALPHA & ADD RUNUP AREAS

Grading, PCC Pavement, Painting, Lighting, Signs

| ITEM NO. | DESCRIPTION OF ITEM | QUANTITY | UNIT | UNIT PRICE | AMOUNT |
|---|---|---|---|---|---|
| 1 | Mobilization | Lump Sum | L.S. | $ 312,400.00 | $ 312,400.00 |
| 2 | Field Laboratory | Lump Sum | L.S. | $ 3,000.00 | $ 3,000.00 |
| 3 | Relocate Taxiway Lights Base Mount | 145 | Each | $ 224.00 | $ 32,480.00 |
| 4 | New Taxiway Lights Base Mount | 15 | Each | $ 650.00 | $ 9,750.00 |
| 5 | Cable in Duct | 46925 | L.F. | $ 6.00 | $ 281,550.00 |
| 6 | Trenching & Backfilling for Light Cables | 17,460 | L.F. | $ 3.50 | $ 61,110.00 |
| 7 | New Electrical Manhole | 18 | Each | $ 600.00 | $ 10,800.00 |
| 8 | Relocate Buried Cable | Lump Sum | L.S. | $ 5,000.00 | $ 5,000.00 |
| 9 | New Taxiway Signs | 4 | Each | $ 3,000.00 | $ 12,000.00 |
| 10 | Relocate Taxiway Signs | 22 | Each | $ 1,200.00 | $ 26,400.00 |
| 11 | | | C.Y. | $ 0.80 | $ - |
| 12 | | | C.Y. | $ 0.94 | $ - |
| 13 | | | C.Y. | $ 1.24 | $ - |
| 14 | Bituminous Base Course (Crushed Ledge Rock) | 21,437 | Ton | $ 17.60 | $ 377,291.20 |
| 15 | Asphalt Cement for Base Course AC 5 or 120-150 PEN. (Crushed Ledge Rock) | 1286 | Ton | $ 130.00 | $ 167,180.00 |
| 16 | P.C.C. Pavement (15½") | 71,024 | S.Y. | $ 25.00 | $ 1,775,600.00 |
| 17 | Joint Sealing Filler | 43,530 | L.F. | $ 2.00 | $ 87,060.00 |
| 18 | Bituminous Prime Coat, MC-70 | 90 | Ton | $ 200.00 | $ 18,000.00 |
| 19 | Bituminous Tack Coat SS-1H/CSS-1H | 16 | Ton | $ 470.00 | $ 7,520.00 |
| 20 | Taxiway Painting | 5,825 | S.F. | $ 0.55 | $ 3,203.75 |
| 21 | | | L.S. | | $ - |
| 22 | Hydromulching | 69 | Acre | $ 300.00 | $ 20,700.00 |
| 23 | Seeding and Fertilizing | 69 | Acre | $ 700.00 | $ 48,300.00 |
| 24 | Placing Topsoil | 32,280 | C.Y. | $ 0.20 | $ 6,456.00 |
| 25 | 24" RCP | 1,440 | L.F. | $ 28.00 | $ 40,320.00 |
| 26 | 24" RCP Flared end | 6 | Each | $ 400.00 | |
| 27 | Drain and Grate | 6 | Each | $ 2,500.00 | $ 15,000.00 |
| 28 | Class I Rip Rap | 30 | Ton | $ 30.00 | $ 900.00 |
| 29 | Incidental Work | Lump Sum | L.S. | $ 25,000.00 | $ 25,000.00 |
| 30 | | | | | |
| 31 | ESTIMATED CONSTRUCTION COST - SUBTOTAL | | | | $ 3,347,020.95 |
| 32 | CONTIGENCY | | | | $ 669,404.19 |
| 33 | ADMIN., LEGAL; DESIGN, CONSTRUCTION ENGINEERING | | | | $ 1,204,927.54 |
| 34 | TOTAL | | | | $ 5,221,352.68 |

# ENGINEER'S ESTIMATE OF PROBABLE COST

RAPID CITY REGIONAL AIRPORT

RAPID CITY, SOUTH DAKOTA

## PHASE II

## SLURRY SEAL RUNWAY 5/23 AND TAXIWAY 'B'

Slurry Seal, Painting

| ITEM NO. | DESCRIPTION OF ITEM | ESTIMATED QUANTITY | UNIT | UNIT PRICE | AMOUNT |
|---|---|---|---|---|---|
| 1 | Mobilization | Lump Sum | L.S. | $ 3,900.00 | $ 3,900.00 |
| 2 | Crack Sealing | 4300 | L.F. | $ 0.85 | $ 3,655.00 |
| 3 | Bituminous Tack Coat SS-1 H/CSS-1H | 28 | Ton | $ 470.00 | $ 13,160.00 |
| 4 | Rubberized Asphalt Cement AC 10 or 85-100 PEN. | 112 | Ton | $ 180.00 | $ 20,160.00 |
| 5 | Cover Aggregate fo Chip Seal | 890 | Ton | $ 28.00 | $ 24,920.00 |
| 6 | Flush Coat | 9 | Ton | $ 180.00 | $ 1,620.00 |
| 7 | Blotting Sand | 90 | Ton | $ 18.00 | $ 1,620.00 |
| 8 | Runway and Taxiway Painting | 6,041 | S.F. | $ 1.00 | $ 6,041.00 |
| 9 | Incidental Work | Lump Sum | L.S. | $ 7,100.00 | $ 7,100.00 |
| 10 | | | | | |
| 11 | | | | | |
| 12 | ESTIMATED CONSTRUCTION COST - SUBTOTAL | | | | $ 82,176.00 |
| 13 | CONTIGENCY | | | | $ 16,435.20 |
| 14 | ADMIN., LEGAL; DESIGN, CONSTRUCTION ENGINEERING | | | | $ 29,583.36 |
| 15 | | | | | |
| 16 | TOTAL | | | | $ 128,194.56 |

# ENGINEER'S ESTIMATE OF PROBABLE COST

RAPID CITY REGIONAL AIRPORT

RAPID CITY, SOUTH DAKOTA

## PHASE II

## PAVE AUTO PARKING AND EXPANSION OF 160 SPACES

Grading, Asphalt Concrete Paving, Signing, Pavement Marking
Drainage, Delineators, Topsoil, Seeding, Fertilizing, Mulching

| ITEM NO. | DESCRIPTION OF ITEM | QUANTITY | UNIT | UNIT PRICE | AMOUNT |
|---|---|---|---|---|---|
| 1 | Mobilization | Lump Sum | L.S. | $ 12,900.00 | $ 12,900.00 |
| 1 | Field Laboratory | Lump Sum | L.S. | $ 3,000.00 | $ 3,000.00 |
| 2 | Unclassified Excavation | 5,130 | C.Y. | $ 1.20 | $ 6,156.00 |
| 3 | Asphalt Concrete Class 'G' | 6,690 | Ton | $ 18.00 | $ 120,420.00 |
| 4 | Asphalt Cement for Class 'G' AC 10 or 85-100 PEN. | 401 | Ton | $ 150.00 | $ 60,150.00 |
| 5 | Bituminous Prime Coat, MC-70 | 8.4 | Ton | $ 280.00 | $ 2,352.00 |
| 6 | Bituminous Tack Coat SS-1H/CSS-1H | 9.5 | Ton | $ 180.00 | $ 1,710.00 |
| 7 | Bituminous Flush Coat SS-1H/CSS-1H | 8 | Ton | $ 180.00 | $ 1,440.00 |
| 8 | Parking Lot Striping | 111 | Gal. | $ 11.00 | $ 1,221.00 |
| 9 | Curb and Gutter, B66 | 1203 | L.F. | $ 9.00 | $ 10,827.00 |
| 10 | Parking Lot Signing | Lump Sum | L.S. | $ 5,000.00 | $ 5,000.00 |
| 11 | Parking Lot Lighting | Lump Sum | L.S. | $ 20,000.00 | $ 20,000.00 |
| 12 | Traffic Control | 250 | UNIT | $ 2.50 | $ 625.00 |
| 13 | Traffic Control Miscellaneous | Lump Sum | LS | $ 500.00 | $ 500.00 |
| 14 | Flagging | 50 | HR | $ 12.00 | $ 600.00 |
| 15 | Irrigation | Lump Sum | L.S. | $ 5,000.00 | $ 5,000.00 |
| 16 | Placing Topsoil | 300 | C.Y. | $ 0.20 | $ 60.00 |
| 17 | Landscaping | Lump Sum | L.S. | $ 5,000.00 | $ 5,000.00 |
| 18 | 18 RC Pipe F&I | 120 | LF | $ 28.00 | $ 3,360.00 |
| 19 | Storm Drain Inlets | 5 | Each | $ 250.00 | $ 1,250.00 |
| 20 | Incidental Work | Lump Sum | L.S. | $ 10,000.00 | $ 10,000.00 |
| 21 | | | | | |
| 22 | ESTIMATED CONSTRUCTION COST - SUBTOTAL | | | | $ 271,571.00 |
| 23 | CONTIGENCY | | | | $ 54,314.20 |
| 24 | ADMIN., LEGAL; DESIGN, CONSTRUCTION ENGINEERING | | | | $ 97,765.56 |
| 25 | TOTAL | | | | $ 423,650.76 |

# ENGINEER'S ESTIMATE OF PROBABLE COST

RAPID CITY REGIONAL AIRPORT

RAPID CITY, SOUTH DAKOTA

## PHASE II

## FBO PARKING OVERLAY

3" Overlay on FBO Parking near Old Terminal Building and Marking

| ITEM NO. | DESCRIPTION OF ITEM | ESTIMATED QUANTITY | UNIT | UNIT PRICE | AMOUNT |
|---|---|---|---|---|---|
| 1 | Mobilization | Lump Sum | L.S. | $ 4,000.00 | $ 4,000.00 |
| 2 | Bituminous Surface Course (Crushed Ledge Rock) | 2,045 | Ton | $ 23.00 | $ 47,035.00 |
| 3 | Asphalt Cement for Surface Course AC 5 or 120-150 PEN. (Crushed Ledge Rock) | 105 | Ton | $ 170.00 | $ 17,850.00 |
| 4 | Bituminous Tack Coat SS-1H/CSS-1H | 3 | Ton | $ 500.00 | $ 1,500.00 |
| 5 | Bituminous Flush Seal | 3 | Ton | $ 500.00 | $ 1,500.00 |
| 6 | Parking Lot Painting | Lump Sum | L.S. | $ 5,000.00 | $ 5,000.00 |
| 7 | Incidental Work | 1 | L.S. | $ 7,300.00 | $ 7,300.00 |
| 8 | | | | | |
| 9 | ESTIMATED CONSTRUCTION COST - SUBTOTAL | | | | $ 84,185.00 |
| 10 | CONTIGENCY | | | | $ 16,837.00 |
| 11 | ADMIN., LEGAL; DESIGN, CONSTRUCTION ENGINEERING | | | | $ 30,306.60 |
| 12 | | | | | |
| 13 | TOTAL | | | | $ 131,328.60 |

C:\tc\r9625\QUANT1.XLS FBO PARKING

| | | | | | |
|---|---|---|---|---|---|
| 1 | Mobilization | Lump Sum | L.S. | $ 23,500.00 | $ 23,500.00 |
| 2 | Route and Seal Joints on Runway 14/32, Taxiway A1 and A6 | 107,429 | L.F. | $ 2.00 | $ 214,858.00 |
| 3 | Route and Seal Joints on Apron | 77,150 | L.F. | $ 2.00 | $ 154,300.00 |
| 4 | Repair Cracks on Runway 14/32, Taxiway A1 and A6 | 10,743 | L.F. | $ 2.00 | $ 21,486.00 |
| 5 | Repair Cracks on Apron | 7,715 | L.F. | $ 2.00 | $ 15,430.00 |
| 6 | Incidental Work | Lump Sum | L.S. | $ 61,000.00 | $ 61,000.00 |
| 7 | ESTIMATED CONSTRUCTION COST - SUBTOTAL | | | | $ 490,574.00 |
| 8 | CONTIGENCY | | | | $ 98,114.80 |
| 9 | ADMIN., LEGAL; DESIGN, CONSTRUCTION ENGINEERING | | | | $ 176,606.64 |
| 10 | TOTAL | | | | $ 765,295.44 |

# ENGINEER'S ESTIMATE OF PROBABLE COST

RAPID CITY REGIONAL AIRPORT

RAPID CITY, SOUTH DAKOTA

## PHASE III

## EXPAND G.A. RAMP

Expand G.A. Ramp for 20 aircraft, P-401, Painting, Drainage, Tie-downs

| ITEM NO. | DESCRIPTION OF ITEM | ESTIMATED QUANTITY | UNIT | UNIT PRICE | AMOUNT |
|---|---|---|---|---|---|
| 1 | Mobilization | Lump Sum | L.S. | $ 30,200.00 | $ 30,200.00 |
| 2 | Field Laboratory | Lump Sum | L.S. | $ 3,000.00 | $ 3,000.00 |
| 3 | Unclassified Excavation | 14,830 | C.Y. | $ 2.00 | $ 29,660.00 |
| 4 | Embankment in Place | 11,016 | C.Y. | $ 3.00 | $ 33,048.00 |
| 5 | Bituminous Surface Course (Crushed Ledge Rock) | 14,944 | Ton | $ 23.00 | $ 343,712.00 |
| 6 | Asphalt Cement for Surface Course AC 5 or 120-150 PEN. (Crushed Ledge Rock) | 896 | Ton | $ 170.00 | $ 152,320.00 |
| 7 | Bituminous Prime Coat, MC-70 | 16.6 | Ton | $ 330.00 | $ 5,478.00 |
| 8 | Bituminous Tack Coat SS-1H/CSS-1H | 3 | Ton | $ 500.00 | $ 1,500.00 |
| 9 | Bituminous Flush Seal | 3 | Ton | $ 500.00 | $ 1,500.00 |
| 10 | Painting | 1,374 | S.F. | $ 1.00 | $ 1,374.00 |
| 11 | Seeding and Fertilizing | 1 | Acre | $ 700.00 | $ 700.00 |
| 12 | Placing Topsoil | 1 | C.Y. | $ 2.00 | $ 2.00 |
| 13 | Hydromulching | 1 | Acre | $ 500.00 | $ 500.00 |
| 14 | Reset Taxiway Lights | 11 | Each | $ 225.00 | $ 2,475.00 |
| 15 | Reset Signs | 2 | Each | $ 1,000.00 | $ 2,000.00 |
| 16 | Tie Downs (set of 3) | 20 | Each | $ 475.00 | $ 9,500.00 |
| 17 | Drop Inlet | 2 | Each | $ 1,000.00 | $ 2,000.00 |
| 18 | 24" RC Pipe | 500 | L.F. | $ 28.00 | $ 14,000.00 |
| 19 | Incidental Work | Lump Sum | L.S. | $ 1,000.00 | $ 1,000.00 |
| 20 | | | | | |
| 21 | ESTIMATED CONSTRUCTION COST - SUBTOTAL | | | | $ 633,969.00 |
| 22 | CONTIGENCY | | | | $ 126,793.80 |
| 23 | ADMIN., LEGAL; DESIGN, CONSTRUCTION ENGINEERING | | | | $ 228,228.84 |
| 24 | | | | | |
| 25 | TOTAL | | | | $ 988,991.64 |

# ENGINEER'S ESTIMATE OF PROBABLE COST

RAPID CITY REGIONAL AIRPORT
RAPID CITY, SOUTH DAKOTA

## PHASE III
## INSTALL ADDITIONAL JETWAY

Jetway

| ITEM NO. | DESCRIPTION OF ITEM | QUANTITY | UNIT | UNIT PRICE | AMOUNT |
|---|---|---|---|---|---|
| 1 | Mobilization | Lump Sum | L.S. | $ 12,800.00 | $ 12,800.00 |
| 2 | New Jetway | Lump Sum | L.S. | $ 250,000.00 | $ 250,000.00 |
| 3 | | | | | $ - |
| 4 | | | | | $ - |
| 5 | Incidental Work | Lump Sum | L.S. | $ 5,000.00 | $ 5,000.00 |
| 6 | | | | | |
| 7 | ESTIMATED CONSTRUCTION COST - SUBTOTAL | | | | $ 267,800.00 |
| 8 | CONTIGENCY | | | | $ 26,780.00 |
| 9 | ADMIN., LEGAL; DESIGN, CONSTRUCTION ENGINEERING | | | | $ 44,187.00 |
| 10 | TOTAL | | | | $ 338,767.00 |

# ENGINEER'S ESTIMATE OF PROBABLE COST

RAPID CITY REGIONAL AIRPORT
RAPID CITY, SOUTH DAKOTA

## PHASE III

## UNBONDED 6" OVERLAY RUNWAY 14/32

Unbonded 6" Concrete Overlay on Runway 14/32, Taxi Entrances A1 and A6, and Blast Pads; Runway Light and Sign Extensions; Marking and Striping

| ITEM NO. | DESCRIPTION OF ITEM | QUANTITY | UNIT | UNIT PRICE | AMOUNT |
|---|---|---|---|---|---|
| 1 | Mobilization | Lump Sum | L.S. | $ 250,000.00 | $ 250,000.00 |
| 2 | Field Laboratory | Lump Sum | L.S. | $ 5,000.00 | $ 5,000.00 |
| 3 | Cold Milling of Bituminous Materials, Remove and Stockpile (2" Nom. Depth) | 4,000 | S.Y. | $ 2.50 | $ 10,000.00 |
| 4 | Light Adjustments | 186 | Each | $ 250.00 | $ 46,500.00 |
| 5 | New MALS Threshold Outboard Lights | 2 | Each | $ 1,000.00 | $ 2,000.00 |
| 6 | New MALS Threshold Central Lights | 16 | Each | $ 200.00 | $ 3,200.00 |
| 7 | Adjust MALSR Light Bar | 1 | Each | $ 4,500.00 | $ 4,500.00 |
| 8 | Sign Adjustment | 14 | Each | $ 1,000.00 | $ 14,000.00 |
| 9 | Electrical Manhole Adjustments | 11 | Each | $ 600.00 | $ 6,600.00 |
| 10 | Unclassified Excavation | 21,000 | C.Y. | $ 5.00 | $ 105,000.00 |
| 11 | Bituminous Leveling Course (Crushed Ledge Rock) | 13,480 | Ton | $ 23.00 | $ 310,040.00 |
| 12 | Asphalt Cement for Leveling Course AC 5 or 120 - 150 PEN. (Crushed Ledge Rock) | 674 | Ton | $ 170.00 | $ 114,580.00 |
| 13 | Bituminous Surface Course (Crushed Ledge Rock) | 2,600 | Ton | $ 23.00 | $ 59,800.00 |
| 14 | Asphalt Cement for Surface Course AC 5 or 120 - 150 PEN. (Crushed Ledge Rock) | 130 | Ton | $ 170.00 | $ 22,100.00 |
| 15 | P.C.C. Overlay (6") | 159,704 | S.Y. | $ 20.00 | $ 3,194,080.00 |
| 16 | P.C.C. Grooving | 125,667 | S.Y. | $ 1.40 | $ 175,933.80 |
| 17 | Joint Sealing Filler | 107,429 | L.F. | $ 2.00 | $ 214,858.00 |
| 18 | Bituminous Tack Coat SS-1H/CSS-1H | 50 | Ton | $ 500.00 | $ 25,000.00 |
| 19 | Runway and Taxiway Painting | 153,470 | S.F. | $ 1.00 | $ 153,470.00 |
| 20 | Hydromulching | 50 | Acre | $ 500.00 | $ 25,000.00 |
| 21 | Seeding and Fertilizing | 50 | Acre | $ 700.00 | $ 35,000.00 |
| 22 | Placing Topsoil | 10,500 | C.Y. | $ 2.00 | $ 21,000.00 |
| 23 | Incidental Work | Lump Sum | L.S. | $ 450,000.00 | $ 450,000.00 |
| 24 | | | | | |
| 25 | ESTIMATED CONSTRUCTION COST - SUBTOTAL | | | | $ 5,247,661.80 |
| 26 | CONTIGENCY | | | | $ 787,149.27 |
| 27 | ADMIN., LEGAL; DESIGN, CONSTRUCTION ENGINEERING | | | | $ 1,810,443.32 |
| 28 | | | | | |
| 29 | TOTAL | | | | $ 7,845,254.39 |

# ENGINEER'S ESTIMATE OF PROBABLE COST

RAPID CITY REGIONAL AIRPORT

RAPID CITY, SOUTH DAKOTA

## PHASE III

## SANITARY SEWER UPGRADE

Sanitary Sewer Upgrade (Gravity and Force Main) to Rapid City Wastewater Treatment Plant

| ITEM NO. | DESCRIPTION OF ITEM | ESTIMATED QUANTITY | UNIT | UNIT PRICE | AMOUNT |
|---|---|---|---|---|---|
| 1 | Mobilization | Lump Sum | L.S. | $ 25,000.00 | $ 25,000.00 |
| 2 | 15" PVC Gravity Sewer | 7,300 | L.F. | $ 22.00 | $ 160,600.00 |
| 3 | 6" PVC Sewer Force Main | 6,600 | L.F. | $ 20.00 | $ 132,000.00 |
| 4 | Manhole | 19 | EA. | $ 2,200.00 | $ 41,800.00 |
| 5 | 21" Steel Casing, Bored and Jacked | 80 | L.F. | $ 200.00 | $ 16,000.00 |
| 6 | Lift Station and Controls | Lump Sum | L.S. | $ 70,000.00 | $ 70,000.00 |
| 7 | Seeding and Fertilizing | 7 | Acre | $ 700.00 | $ 4,900.00 |
| 8 | Mulching | 7 | Acre | $ 250.00 | $ 1,750.00 |
| 9 | Incidental Work | Lump Sum | L.S. | $ 64,000.00 | $ 64,000.00 |
| 10 | ESTIMATED CONSTRUCTION COST - SUBTOTAL | | | | $ 516,050.00 |
| 11 | CONTIGENCY | | | | $ 103,210.00 |
| 12 | ADMIN., LEGAL; DESIGN, CONSTRUCTION ENGINEERING | | | | $ 185,778.00 |
| 13 | TOTAL | | | | $ 805,038.00 |

ENGINEER'S ESTIMATE OF PROBABLE COST

RAPID CITY REGIONAL AIRPORT

RAPID CITY, SOUTH DAKOTA

## PHASE III

## REMOVE FORMER TERMINAL BUILDING

Jetway

| ITEM NO. | DESCRIPTION OF ITEM | QUANTITY | UNIT | UNIT PRICE | AMOUNT |
|---|---|---|---|---|---|
| 1 | Mobilization | Lump Sum | L.S. | $ 19,000.00 | $ 19,000.00 |
| 2 | Demo and Remove Building | Lump Sum | L.S. | $ 56,840.00 | $ 56,840.00 |
| 3 | Asbestos Removal and Disposal | Lump Sum | L.S. | $ 232,440.00 | $ 232,440.00 |
| 4 | Waste Desposal | Lump Sum | L.S. | $ 85,580.00 | $ 85,580.00 |
| 5 | Incidental Work | Lump Sum | L.S. | $ 5,000.00 | $ 5,000.00 |
| 6 | | | | | |
| 7 | ESTIMATED CONSTRUCTION COST - SUBTOTAL | | | | $ 398,860.00 |
| 8 | CONTIGENCY | | | | $ 79,772.00 |
| 9 | ADMIN., LEGAL; DESIGN, CONSTRUCTION ENGINEERING | | | | $ 95,726.40 |
| 10 | TOTAL | | | | $ 574,358.40 |

# RAPID CITY REGIONAL AIRPORT (2017)
# INTEGRATED NOISE MODEL (INM VERSION 5.1) NOISE ANALYSIS
## Conversion for Percentage of Track Use

| INM Input Factors | |
|---|---|
| Forecast Total Annual Aircraft Operations (2017): | 83,901 |

**Percent Runway Use**

| Indicated Runway | Day (%) | Evening (%) | Night (%) | % Operations Per Aircraft Type |
|---|---|---|---|---|
| Runway 14 Arrivals/Departures | 29.0% | 2.5% | 1.5% | 33.0% |
| Runway 32 Arrivals/Departures | 45.0% | 2.5% | 1.5% | 49.0% |
| Runway 5 Arrivals/Departures | 6.0% | 0.5% | 0.5% | 7.0% |
| Runway 23 Arrivals/Departures | 5.0% | 0.5% | 0.5% | 6.0% |
| n/a | 0.0% | 0.0% | 0.0% | 0.0% |
| n/a | 0.0% | 0.0% | 0.0% | 0.0% |
| Runway 32 - Touch & Gos | 5.0% | 0.0% | 0.0% | 5.0% |
| n/a | 0.0% | 0.0% | 0.0% | 0.0% |
| n/a | 0.0% | 0.0% | 0.0% | 0.0% |
| **Total Operations on All Runways** | **90.00%** | **6.00%** | **4.00%** | **100.00%** |

**Aircraft Type and Percent of Use**

| Aircraft Type/Substitution | Designation | % Ops | Operations | % Operations Per Aircraft Type |
|---|---|---|---|---|
| Single Engine - Composite | SEP | 30.0% | 25,170 | 30.0% |
| Multi-Engine Piston Prop | BEC58P | 20.0% | 16,780 | 20.0% |
| Corporate Jet - Turbofan | COMJET | 5.0% | 4,195 | 5.0% |
| Air Carrier - Turbo Prop | DHC8 | 20.0% | 16,780 | 20.0% |
| Air Carrier - Regional Jet | CL601 | 6.0% | 5,034 | 6.0% |
| Air Carrier - Jetliner | DC9Q9 | 4.0% | 3,356 | 4.0% |
| Rotorcraft - Military | S-76 | 15.0% | 12,585 | 15.0% |
| **Total Aircraft Operations by Type** | | **100.00%** | **83,901** | **100.0%** |

**Touch & Go Aircraft and Use**

| Aircraft Type | Designation | % Ops | Operations | % Operations Per Aircraft Type |
|---|---|---|---|---|
| Single Engine - Composite | SEP | 5.0% | 4,195 | 5.0% |
| | | 0.0% | 0 | 0.0% |
| | | 0.0% | 0 | 0.0% |
| | | 0.0% | 0 | 0.0% |
| **Total Aircraft Operations by Type** | | **5.00%** | **4,195** | **5.0%** |

# FLIGHT TRACK INFORMATION/DATA/CALCULATIONS

## Track Description - Runway 14 Arrivals/Departures

| Aircraft Type | Total Operations By Aircraft Type | Aircraft Use (%) | Runway Use (%) | # of Flight Tracks | Flight Track Percent | Total Use Percent | Operations Per Day | Operations Per Track |
|---|---|---|---|---|---|---|---|---|
| SEP (D) | 25,170 | 30.00% | 29.00% | 2 | 4.350% | 8.700% | 20.0 | 10.00 |
| SEP (E) | 25,170 | 30.00% | 2.50% | 2 | 0.375% | 0.750% | 1.7 | 0.86 |
| SEP (N) | 25,170 | 30.00% | 1.50% | 2 | 0.225% | 0.450% | 1.0 | 0.52 |
| BEC58 (D) | 16,780 | 20.00% | 29.00% | 2 | 2.900% | 5.800% | 13.3 | 6.67 |
| BEC58 (E) | 16,780 | 20.00% | 2.50% | 2 | 0.250% | 0.500% | 1.1 | 0.57 |
| BEC58 (N) | 16,780 | 20.00% | 1.50% | 2 | 0.150% | 0.300% | 0.7 | 0.34 |
| COMJET (D) | 4,195 | 5.00% | 29.00% | 2 | 0.725% | 1.450% | 3.3 | 1.67 |
| COMJET (E) | 4,195 | 5.00% | 2.50% | 2 | 0.063% | 0.125% | 0.3 | 0.14 |
| COMJET (N) | 4,195 | 5.00% | 1.50% | 2 | 0.038% | 0.075% | 0.2 | 0.09 |
| DHC8 (D) | 16,780 | 20.00% | 29.00% | 2 | 2.900% | 5.800% | 13.3 | 6.67 |
| DHC8 (E) | 16,780 | 20.00% | 2.50% | 2 | 0.250% | 0.500% | 1.1 | 0.57 |
| DHC8 (N) | 16,780 | 20.00% | 1.50% | 2 | 0.150% | 0.300% | 0.7 | 0.34 |
| CL601 (D) | 5,034 | 6.00% | 29.00% | 2 | 0.870% | 1.740% | 4.0 | 2.00 |
| CL601 (E) | 5,034 | 6.00% | 2.50% | 2 | 0.075% | 0.150% | 0.3 | 0.17 |
| CL601 (N) | 5,034 | 6.00% | 1.50% | 2 | 0.045% | 0.090% | 0.2 | 0.10 |
| DC9Q9 (D) | 3,356 | 4.00% | 29.00% | 2 | 0.580% | 1.160% | 2.7 | 1.33 |
| DC9Q9 (E) | 3,356 | 4.00% | 2.50% | 2 | 0.050% | 0.100% | 0.2 | 0.11 |
| DC9Q9 (N) | 3,356 | 4.00% | 1.50% | 2 | 0.030% | 0.060% | 0.1 | 0.07 |
| HEL S-76 (D) | 12,585 | 15.00% | 29.00% | 2 | 2.175% | 4.350% | 10.0 | 5.00 |
| HEL S-76 (E) | 12,585 | 15.00% | 2.50% | 2 | 0.188% | 0.375% | 0.9 | 0.43 |
| HEL S-76 (N) | 12,585 | 15.00% | 1.50% | 2 | 0.113% | 0.225% | 0.5 | 0.26 |
| TOTAL | | | | | | 33.000% | 76.9 | |

## Track Description - Runway 32 Arrivals/Departures

| Aircraft Type | Total Operations By Aircraft Type | Aircraft Use (%) | Runway Use (%) | # of Flight Tracks | Flight Track Percent | Total Use Percent | Operations Per Day | Operations Per Track |
|---|---|---|---|---|---|---|---|---|
| SEP (D) | 25,170 | 30.00% | 45.00% | 2 | 6.750% | 13.500% | 31.0 | 15.52 |
| SEP (E) | 25,170 | 30.00% | 2.50% | 2 | 0.375% | 0.750% | 1.7 | 0.86 |
| SEP (N) | 25,170 | 30.00% | 1.50% | 2 | 0.225% | 0.450% | 1.0 | 0.52 |
| BEC58 (D) | 16,780 | 20.00% | 45.00% | 2 | 4.500% | 9.000% | 20.7 | 10.34 |
| BEC58 (E) | 16,780 | 20.00% | 2.50% | 2 | 0.250% | 0.500% | 1.1 | 0.57 |
| BEC58 (N) | 16,780 | 20.00% | 1.50% | 2 | 0.150% | 0.300% | 0.7 | 0.34 |
| COMJET (D) | 4,195 | 5.00% | 45.00% | 2 | 1.125% | 2.250% | 5.2 | 2.59 |
| COMJET (E) | 4,195 | 5.00% | 2.50% | 2 | 0.063% | 0.125% | 0.3 | 0.14 |
| COMJET (N) | 4,195 | 5.00% | 1.50% | 2 | 0.038% | 0.075% | 0.2 | 0.09 |
| DHC8 (D) | 16,780 | 20.00% | 45.00% | 2 | 4.500% | 9.000% | 20.7 | 10.34 |
| DHC8 (E) | 16,780 | 20.00% | 2.50% | 2 | 0.250% | 0.500% | 1.1 | 0.57 |
| DHC8 (N) | 16,780 | 20.00% | 1.50% | 2 | 0.150% | 0.300% | 0.7 | 0.34 |
| CL601 (D) | 5,034 | 6.00% | 45.00% | 2 | 1.350% | 2.700% | 6.2 | 3.10 |
| CL601 (E) | 5,034 | 6.00% | 2.50% | 2 | 0.075% | 0.150% | 0.3 | 0.17 |
| CL601 (N) | 5,034 | 6.00% | 1.50% | 2 | 0.045% | 0.090% | 0.2 | 0.10 |
| DC9Q9 (D) | 3,356 | 4.00% | 45.00% | 2 | 0.900% | 1.800% | 4.1 | 2.07 |
| DC9Q9 (E) | 3,356 | 4.00% | 2.50% | 2 | 0.050% | 0.100% | 0.2 | 0.11 |
| DC9Q9 (N) | 3,356 | 4.00% | 1.50% | 2 | 0.030% | 0.060% | 0.1 | 0.07 |
| HEL S-76 (D) | 12,585 | 15.00% | 45.00% | 2 | 3.375% | 6.750% | 15.5 | 7.76 |
| HEL S-76 (E) | 12,585 | 15.00% | 2.50% | 2 | 0.188% | 0.375% | 0.9 | 0.43 |
| HEL S-76 (N) | 12,585 | 15.00% | 1.50% | 2 | 0.113% | 0.225% | 0.5 | 0.26 |
| TOTAL | | | | | | 49.000% | 112.6 | |

| Track Description - Runway 5 Arrivals/Departures | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Aircraft Type | Total Operations By Aircraft Type | Aircraft Use (%) | Runway Use (%) | Flight Tracks | Flight Track Percent | Total Use Percent | Operations Per Day | Operations Per Track |
| SEP (D) | 83,901 | 100.00% | 6.00% | 2 | 3.000% | 6.000% | 13.8 | 6.90 |
| SEP (E) | 83,901 | 100.00% | 0.50% | 2 | 0.250% | 0.500% | 1.1 | 0.57 |
| SEP (N) | 83,901 | 100.00% | 0.50% | 2 | 0.250% | 0.500% | 1.1 | 0.57 |
| TOTAL | | | | | | 7.000% | 16.1 | |

| Track Description - Runway 23 Arrivals/Departures | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Aircraft Type | Total Operations By Aircraft Type | Aircraft Use (%) | Runway Use (%) | Flight Tracks | Flight Track Percent | Total Use Percent | Operations Per Day | Operations Per Track |
| SEP (D) | 83,901 | 100.00% | 5.00% | 2 | 2.500% | 5.000% | 11.5 | 5.75 |
| SEP (E) | 83,901 | 100.00% | 0.50% | 2 | 0.250% | 0.500% | 1.1 | 0.57 |
| SEP (N) | 83,901 | 100.00% | 0.50% | 2 | 0.250% | 0.500% | 1.1 | 0.57 |
| TOTAL | | | | | | 6.000% | 13.8 | |

| Track Description - Runway 14 Touch & Go Operations | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Aircraft Type | Total Operations By Aircraft Type | Aircraft Use (%) | Runway Use (%) | Flight Tracks | Flight Track Percent | Total Use Percent | Operations Per Day | Operations Per Track |
| SEP (D) | 83,901 | 100.00% | 5.00% | 2 | 2.500% | 5.000% | 11.5 | 5.75 |
| SEP (E) | 83,901 | 100.00% | 0.00% | 2 | 0.000% | 0.000% | 0.0 | 0.00 |
| SEP (N) | 83,901 | 100.00% | 0.00% | 2 | 0.000% | 0.000% | 0.0 | 0.00 |
| TOTAL | | | | | | 5.000% | 11.5 | |

| TOTAL TRACK USE (ALL TRACKS COMBINED) | | | | | | 100.00% | 229.9 | |
|---|---|---|---|---|---|---|---|---|

INM 5.1a ECHO REPORT 27-Aug-97 11:43

STUDY: C:\INM51\RAPID\
Created : 25-Aug-97 13:12
Units : English
Airport : RAP
Description :
Your description

CASE: RAP-2017
Created date: 26-Aug-97 09:23
Description : INM 5.1 - RAP (2017)

STUDY AIRPORT
Lat : 44.045320 deg
Long : 103.057360 deg
Elev : 320.00 ft
Temp : 57.90 F
Press : 29.92 in-Hg
Wind : 8.00 knt

STUDY RUNWAYS
14
Lat : 44.053825 deg
Long : 103.049712 deg
X : -0.3309 nmi
Y : 0.5103 nmi
Elevation: 3189.0 ft
OtherEnd : 32
Length : 8699 ft
Gradient : -0.55%
Wind : 8.0 knt
TkoThrsh : 0 ft
AppThrsh : 0 ft
23
Lat : 44.052500 deg
Long : 103.062974 deg
X : 0.2429 nmi
Y : 0.4308 nmi
Elevation: 3202.0 ft
OtherEnd : 5
Length : 3278 ft
Gradient : -0.95%
Wind : 8.0 knt
TkoThrsh : 0 ft
AppThrsh : 0 ft
32
Lat : 44.032789 deg
Long : 103.065333 deg
X : 0.3451 nmi
Y : -0.7518 nmi
Elevation: 3141.0 ft
OtherEnd : 14
Length : 8699 ft
Gradient : 0.55%
Wind : 8.0 knt
TkoThrsh : 0 ft
AppThrsh : 0 ft
5
Lat : 44.047863 deg
Long : 103.052290 deg
X : -0.2194 nmi
Y : 0.1526 nmi
Elevation: 3171.0 ft
OtherEnd : 23
Length : 3278 ft
Gradient : 0.95%
Wind : 8.0 knt
TkoThrsh : 0 ft
AppThrsh : 0 ft

STUDY TRACKS
RwyId-OpType-TrkId
Sub PctSub TrkType Delta(ft)
14 -APP-14A
0 100.00 Vectors 0.0
14 -DEP-14-D
0 100.00 Vectors 0.0
-TGO-TG
0 100.00 Vectors 0.0
23 -APP-23A
0 100.00 Vectors 0.0
23 -DEP-23D
0 100.00 Vectors 0.0
32 -APP-32A

```
    0   100.00   Vectors      0.0
  32 -DEP-32D
    0   100.00   Vectors      0.0
  5  -APP-5A
    0   100.00   Vectors      0.0
  5  -DEP-5D
    0   100.00   Vectors      0.0

STUDY TRACK DETAIL
  RwyId-OpType-TrkId-SubTrk
        SegType       Param1      Param2(nmi)
  14 -APP-14A -0
     1  Straight    50.0000 nmi
     2  RightTurn  250.0000 deg    10.0000
     3  Straight     9.5000 nmi
  14 -DEP-14-D-0
     1  Straight    50.0000 nmi
  14 -TGO-TG  -0
     1  Straight     2.5000 nmi
     2  LeftTurn   180.0000 deg     0.7500
     3  Straight     4.0000 nmi
     4  LeftTurn   180.0000 deg     0.7500
     5  Straight     1.5000 nmi
  23 -APP-23A -0
     1  Straight    50.0000 nmi
     2  LeftTurn   137.0000 deg     1.0000
     3  Straight     1.5000 nmi
  23 -DEP-23D -0
     1  Straight     1.5000 nmi
     2  LeftTurn    45.0000 deg     1.0000
     3  Straight    10.0000 nmi
     4  RightTurn   20.0000 deg     1.0000
     5  Straight    50.0000 nmi
  32 -APP-32A -0
     1  Straight    50.0000 nmi
  32 -DEP-32D -0
     1  Straight     1.5000 nmi
     2  LeftTurn   200.0000 deg     0.7500
     3  Straight     4.2000 nmi
     4  RightTurn   20.0000 deg     1.0000
     5  Straight     0.5000 nmi
     6  RightTurn   30.0000 deg     1.0000
     7  Straight    50.0000 nmi
  5  -APP-5A  -0
     1  Straight    50.0000 nmi
     2  RightTurn  127.0000 deg     1.0000
     3  Straight     1.5000 nmi
  5  -DEP-5D  -0
     1  Straight     1.5000 nmi
     2  RightTurn  131.0000 deg     1.0000
     3  Straight    50.0000 nmi

STUDY AIRCRAFT
  BEC58P Standard data
  CL600  Standard data
  COMJET Standard data
  COMSEP Standard data
  DC9Q9  Standard data
  DHC8   Standard data
  S-76   User-defined
    Descrip   : INM 5.1 User Defined Helicopter
    UserID    : GA
    WgtCat    : Small
    OwnerCat  : Military
    EngType   : TurboProp
    NoiseCat  : 2
    Type      : Prop
    NumEng    : 0
    NoiseId   : PT6A27
    ATRS      : Yes
    TkoWgt    : 10000 lb
    LndWgt    : 10000 lb
    LndDist   : 0 ft
    StaticThr : 2000 lb

STUDY SUBSTITUTION AIRCRAFT

USER-DEFINED NOISE
     Type   Thrust Crv  200   400   630  1000  2000  4000  6300  10000 16000 25000

USER-DEFINED PROFILES
    OpType   Prof       Weight(lb)
  S-76
     APP      U1          10000
     DEP      U1          10000
```

USER-DEFINED PROFILE POINTS

| | | Distance(ft) | Altitude(ft) | Speed(knt) | Thrust | Curve |
|---|---|---|---|---|---|---|
| S-76 | -APP-U1 | | | | | |
| | 1 | -23696.8 | 2500.0 | 160.0 | 75.0 % | N |
| | 2 | -18836.0 | 2000.0 | 160.0 | 75.0 % | N |
| | 3 | -14582.7 | 1500.0 | 160.0 | 75.0 % | N |
| | 4 | -9758.8 | 1000.0 | 160.0 | 75.0 % | N |
| | 5 | -4860.9 | 500.0 | 160.0 | 75.0 % | N |
| | 6 | 0.0 | 0.0 | 160.0 | 75.0 % | N |
| | 7 | 0.0 | 0.0 | 160.0 | 75.0 % | N |
| S-76 | -DEP-U1 | | | | | |
| | 1 | 10.0 | 0.0 | 32.0 | 100.0 % | N |
| | 2 | 1376.0 | 0.0 | 160.0 | 100.0 % | N |
| | 3 | 4126.0 | 500.0 | 160.0 | 100.0 % | N |
| | 4 | 6876.0 | 1000.0 | 160.0 | 100.0 % | N |
| | 5 | 6877.0 | 1000.0 | 160.0 | 100.0 % | N |
| | 6 | 9626.0 | 1500.0 | 160.0 | 100.0 % | N |
| | 7 | 10000.0 | 1500.0 | 160.0 | 75.0 % | N |
| | 8 | 15000.0 | 1500.0 | 160.0 | 75.0 % | N |

USER-DEFINED PROCEDURES

| | StepType | Flap | ThrType | Param1 | Param2(knt) | Param3 |
|---|---|---|---|---|---|---|
| CL600 | -APP-S1 | | | | | |
| 1 | Descend | 10 | None | 6000.0 ft | 250.0 | 3.0 |

FLIGHT OPERATIONS

| AcftId | Op | Prof | Rwy | Track | Group | Day | Eve | Night |
|---|---|---|---|---|---|---|---|---|
| BEC58P | APP | S1 | 14 | 14A | 0 GA | 6.6700 | 0.5700 | 0.3400 |
| BEC58P | APP | S1 | 32 | 32A | 0 GA | 10.3400 | 0.5700 | 0.3400 |
| BEC58P | DEP | S1 | 14 | 14-D | 0 GA | 6.6700 | 0.5700 | 0.3400 |
| BEC58P | DEP | S1 | 32 | 32D | 0 GA | 10.3400 | 0.5700 | 0.3400 |
| CL600 | APP | S1 | 14 | 14A | 0 GA | 2.0000 | 0.1700 | 0.1000 |
| CL600 | APP | S1 | 32 | 32A | 0 GA | 3.1000 | 0.1700 | 0.1000 |
| CL600 | DEP | S1 | 14 | 14-D | 0 GA | 2.0000 | 0.1700 | 0.1000 |
| CL600 | DEP | S1 | 32 | 32D | 0 GA | 3.1000 | 0.1700 | 0.1000 |
| COMJET | APP | S1 | 14 | 14A | 0 GA | 1.6700 | 0.1400 | 0.0900 |
| COMJET | APP | S1 | 32 | 32A | 0 GA | 2.5900 | 0.1400 | 0.0900 |
| COMJET | DEP | S1 | 14 | 14-D | 0 GA | 1.6700 | 0.1400 | 0.0900 |
| COMJET | DEP | S1 | 32 | 32D | 0 GA | 2.5900 | 0.1400 | 0.0900 |
| COMSEP | APP | S1 | 14 | 14A | 0 GA | 10.0000 | 0.8600 | 0.5200 |
| COMSEP | APP | S1 | 23 | 23A | 0 GA | 5.7500 | 0.5700 | 0.5700 |
| COMSEP | APP | S1 | 32 | 32A | 0 GA | 15.5200 | 0.8600 | 0.5200 |
| COMSEP | APP | S1 | 5 | 5A | 0 GA | 6.9000 | 0.5700 | 0.5700 |
| COMSEP | DEP | S1 | 14 | 14-D | 0 GA | 10.0000 | 0.8600 | 0.5200 |
| COMSEP | DEP | S1 | 23 | 23D | 0 GA | 5.7500 | 0.5700 | 0.5700 |
| COMSEP | DEP | S1 | 32 | 32D | 0 GA | 15.5200 | 0.8600 | 0.5200 |
| COMSEP | DEP | S1 | 5 | 5D | 0 GA | 6.9000 | 0.5700 | 0.5700 |
| COMSEP | TGO | S1 | 14 | TG | 0 GA | 11.5000 | 0.5700 | 0.5700 |
| DC9Q9 | APP | S1 | 14 | 14A | 0 COM | 1.3300 | 0.1100 | 0.0700 |
| DC9Q9 | APP | S1 | 32 | 32A | 0 COM | 2.0900 | 0.1100 | 0.0700 |
| DC9Q9 | DEP | S1 | 14 | 14-D | 0 COM | 1.3300 | 0.1100 | 0.0700 |
| DC9Q9 | DEP | S1 | 32 | 32D | 0 COM | 2.0700 | 0.1100 | 0.0700 |
| DHC8 | APP | S1 | 14 | 14A | 0 COM | 6.6700 | 0.5700 | 0.3400 |
| DHC8 | APP | S1 | 32 | 32A | 0 COM | 10.3400 | 0.5700 | 0.3400 |
| DHC8 | DEP | S1 | 14 | 14-D | 0 COM | 6.6700 | 0.5700 | 0.3400 |
| DHC8 | DEP | S1 | 32 | 32D | 0 COM | 10.3400 | 0.5700 | 0.3400 |
| S-76 | APP | U1 | 14 | 14A | 0 GA | 5.0000 | 0.4300 | 0.2600 |
| S-76 | APP | U1 | 32 | 32A | 0 GA | 7.7600 | 0.4300 | 0.2600 |
| S-76 | DEP | U1 | 14 | 14-D | 0 GA | 5.0000 | 0.4300 | 0.2600 |
| S-76 | DEP | U1 | 32 | 32D | 0 GA | 7.7600 | 0.4300 | 0.2600 |

RUNUP OPERATIONS

| | ID | X(nmi) | Y(nmi) | Head | Thrust | Time(sec) | Day | Eve | Night |
|---|---|---|---|---|---|---|---|---|---|
| CL600 | ARU | -0.0762 | -0.1790 | 50.0 | 1800.0 lb | 90.0 | 10.0000 | 4.0000 | 0.0000 |
| DC9Q9 | ARU | -0.0762 | -0.1790 | 50.0 | 3800.0 lb | 90.0 | 3.0000 | 1.0000 | 0.0000 |
| S-76 | HRU | 0.1372 | -0.5022 | 50.0 | 75.0 % | 210.0 | 5.0000 | 1.0000 | 0.0000 |

USER-DEFINED METRICS

| Type | Family | Day | Eve | Night | Time(dB) |
|---|---|---|---|---|---|

USER-DEFINED FLAP COEFFICIENTS

| Flap | Op | Coeff R | Coeff C_D | Coeff B |
|---|---|---|---|---|

USER-DEFINED JET THRUST COEFFICIENTS

| ThrType | CoeffE | Coeff F | CoeffGA | CoeffGB | CoeffH |
|---|---|---|---|---|---|

USER-DEFINED PROP THRUST COEFFICIENTS

| ThrType | Efficiency | Power |
|---|---|---|

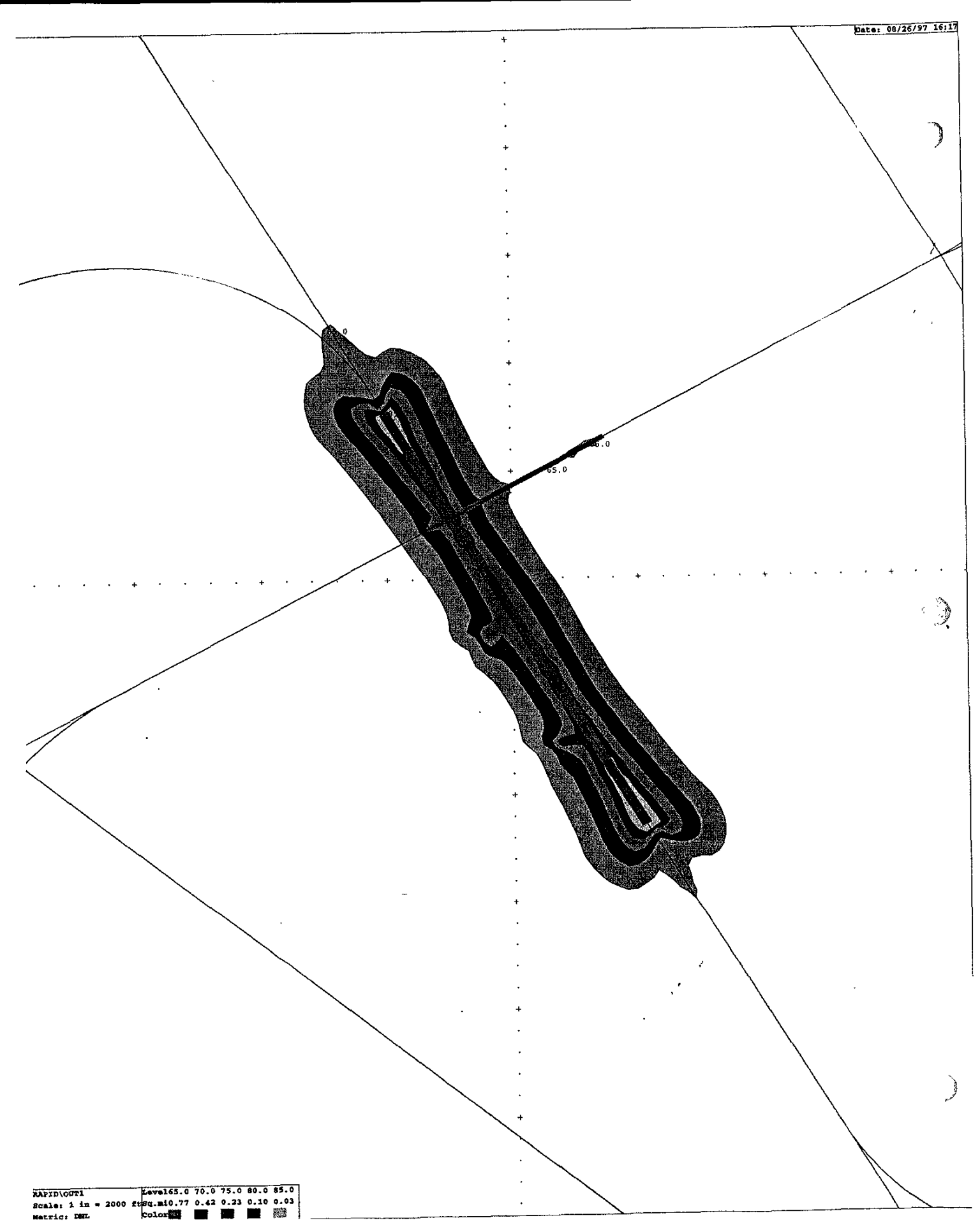
GRID

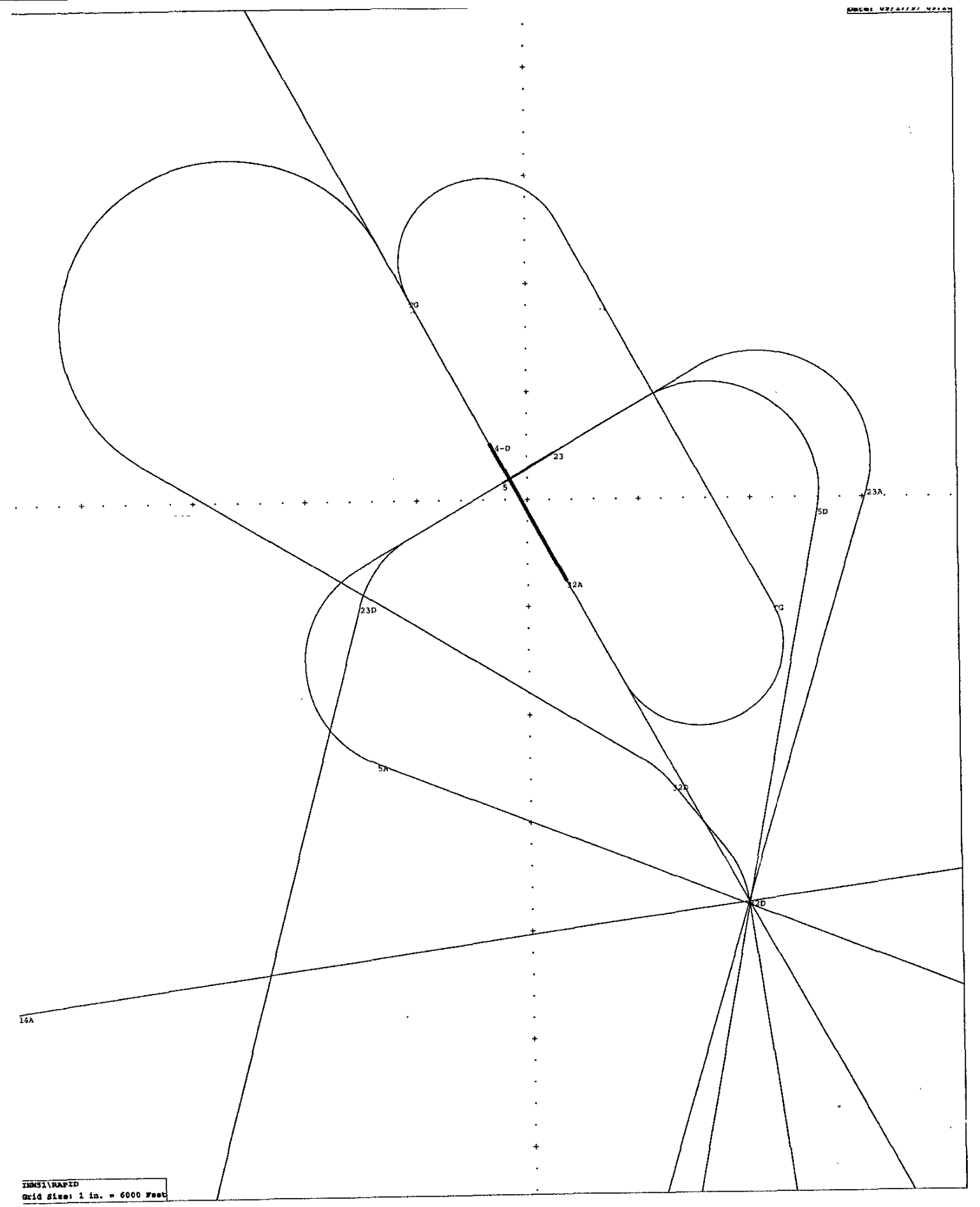
| | X(nmi) | Y(nmi) | Ang(deg) | DistI(nmi) | DistJ(nmi) | NI | NJ |
|---|---|---|---|---|---|---|---|
| CNR Contour | -8.0000 | -8.0000 | 0.0 | 16.0000 | 16.0000 | 2 | 2 |

RUN OPTIONS

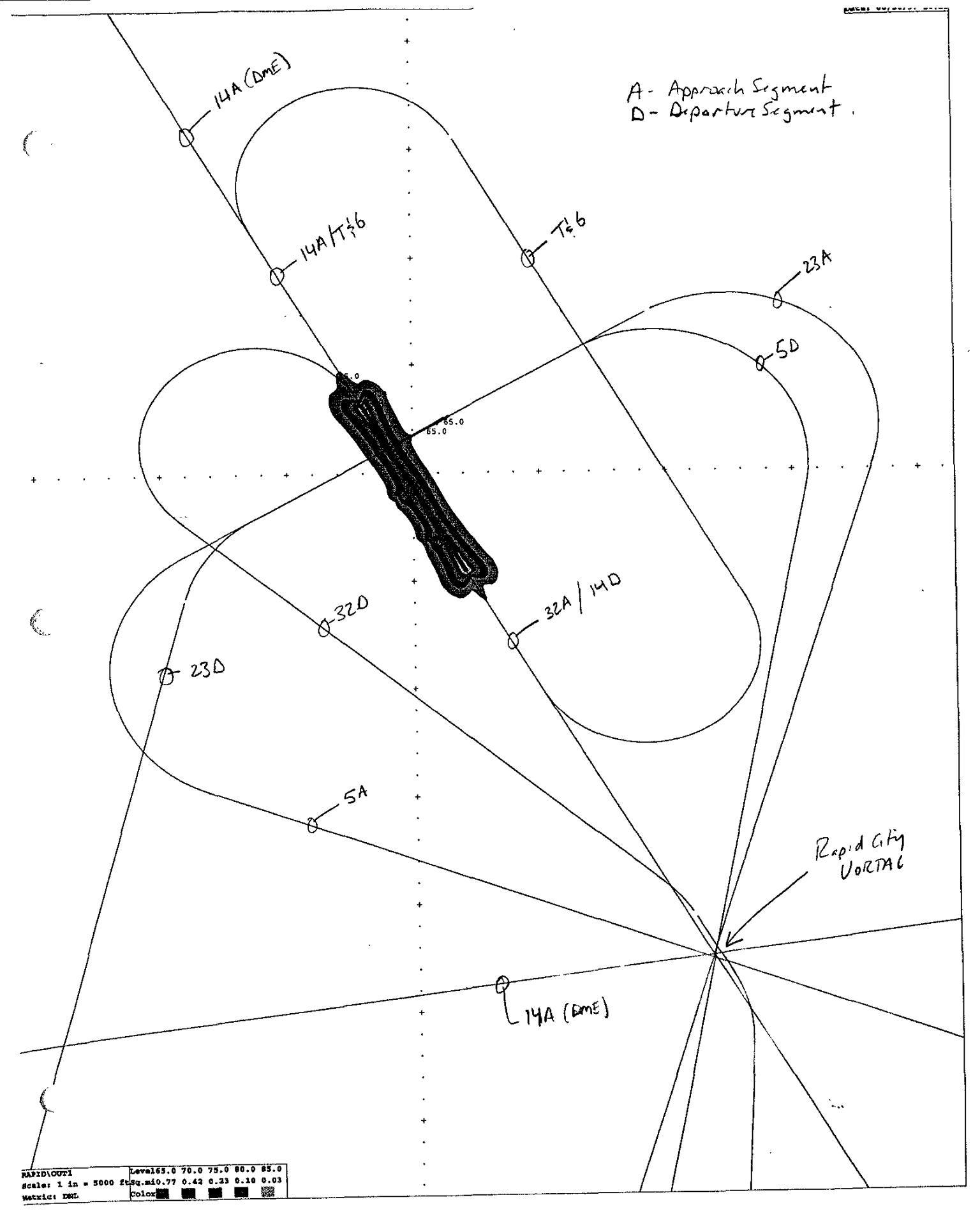
Run Type : SingleMetric
NoiseMetric : DNL

```
TA Threshold  : 90.0 dB
Do Terrain    : No
Do Contour    : Yes
Refinement    : 8
Tolerance     : 0.50
Do Population : No
Do Locations  : No
Do Stand.Grid : No
Do Detail.Grid: No
Low Cutoff    : 55.0
High Cutoff   : 90.0
Compute System Metrics:
   DNL     : Yes
   CNEL    : No
   LAEQ    : No
   LAEQD   : No
   LAEQN   : No
   SEL     : No
   LAMAX   : No
   TALA    : No
   NEF     : No
   WECPNL  : No
   EPNL    : No
   PNLTM   : No
   TAPNL   : No
```


Date: 08/26/97 16:17
65.0
RAPID\OUT1
Scale: 1 in = 2000 ft
Metric: DEL
Level 65.0 70.0 75.0 80.0 85.0
Sq.mi 0.77 0.42 0.23 0.10 0.03
Color




INM51\RAPID
Grid Size: 1 in. = 6000 Feet


A- Approach Segment
D- Departure Segment.
14A (DME)
14A/T↓6
T↓6
23A
5D
65.0
65.0
32D
32A / 14D
23D
5A
Rapid City VORTAC
14A (DME)
RAPID\OUT1
Scale: 1 in = 5000 ft
Metric: DBL
Level 65.0 70.0 75.0 80.0 85.0
Sq.mi 0.77 0.42 0.23 0.10 0.03
Color

United States
Department of
Agriculture

Natural
Resources
Conservation
Service

Federal Building
200 Fourth Street, SW
Huron, SD 57350-2475

August 14, 1997

Mr. Bradley C. Weisenburger, ASLA
Airport Planner
Bucher, Willis & Ratliff Corporation
7920 Ward Parkway
Kansas City, MI 64114-2021

Dear Mr. Weisenburger:

We have reviewed the following sites for the planned ultimate development for the Rapid City Airport in Rapid City, South Dakota.

1. Reconstruct crosswind Runway 05-23
2. Develop office park land use guide
3. Investigate the potential access points for railand auto access

The sites are not located on prime farmland. There is no hydric soils involved on the site.

Sincerely,

Jerome Schaar

JEROME M. SCHAAR
State Soil Scientist

cc: Eugene Waterson, DC, NRCS, Rapid City, SD

U.S. Department of Agriculture

# FARMLAND CONVERSION IMPACT RATING

| PART I *(To be completed by Federal Agency)* | |
|---|---|
| Name Of Project: Rapid City Regional Airport | Date Of Land Evaluation Request: 8/9/97 |
| Proposed Land Use: Airport | Federal Agency Involved: FAA |
| | County And State: Pennington - South Dakota |
| **PART II** *(To be completed by SCS)* | Date Request Received By SCS: 8/8/97 |

| Does the site contain prime, unique, statewide or local important farmland? *(If no, the FPPA does not apply – do not complete additional parts of this form).* | Yes | No | Acres Irrigated | Average Farm Size |
|---|---|---|---|---|
| | ☐ | ☒ | | |

| Major Crop(s) | Farmable Land In Govt. Jurisdiction | Amount Of Farmland As Defined in FPPA |
|---|---|---|
| | Acres: % | Acres: % |
| Name Of Land Evaluation System Used | Name Of Local Site Assessment System | Date Land Evaluation Returned By SCS: 8-14-97 |

| PART III *(To be completed by Federal Agency)* | Alternative Site Rating | | | |
|---|---|---|---|---|
| | Site A | Site B | Site C | Site D |
| A. Total Acres To Be Converted Directly | 0 | | | |
| B. Total Acres To Be Converted Indirectly | 150 | | | |
| C. Total Acres In Site | 1655 | | | |
| **PART IV** *(To be completed by SCS)* Land Evaluation Information | | | | |
| A. Total Acres Prime And Unique Farmland | | | | |
| B. Total Acres Statewide And Local Important Farmland | | | | |
| C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted | | | | |
| D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value | | | | |
| **PART V** *(To be completed by SCS)* Land Evaluation Criterion Relative Value Of Farmland To Be Converted *(Scale of 0 to 100 Points)* | | | | |
| **PART VI** *(To be completed by Federal Agency)* Site Assessment Criteria *(These criteria are explained in 7 CFR 658.5(b)* | Maximum Points | | | |
| 1. Area In Nonurban Use | | | | |
| 2. Perimeter In Nonurban Use | | | | |
| 3. Percent Of Site Being Farmed | | | | |
| 4. Protection Provided By State And Local Government | | | | |
| 5. Distance From Urban Builtup Area | | | | |
| 6. Distance To Urban Support Services | | | | |
| 7. Size Of Present Farm Unit Compared To Average | | | | |
| 8. Creation Of Nonfarmable Farmland | | | | |
| 9. Availability Of Farm Support Services | | | | |
| 10. On-Farm Investments | | | | |
| 11. Effects Of Conversion On Farm Support Services | | | | |
| 12. Compatibility With Existing Agricultural Use | | | | |
| TOTAL SITE ASSESSMENT POINTS | 160 | | | |
| **PART VII** *(To be completed by Federal Agency)* | | | | |
| Relative Value Of Farmland *(From Part V)* | 100 | | | |
| Total Site Assessment *(From Part VI above or a local site assessment)* | 160 | | | |
| TOTAL POINTS *(Total of above 2 lines)* | 260 | | | |

| Site Selected: | Date Of Selection | Was A Local Site Assessment Used? Yes ☐ No ☐ |
|---|---|---|

Reason For Selection:

*(See Instructions on reverse side)*

Form AD-1006 (10-83

South Dakota State Historical Society
Cultural Heritage Center
900 Governors Drive
Pierre, SD 57501-2217
(605) 773-3458 Fax (605) 773-6041



August 19, 1997

BRADLEY C WEISENBURGER ASLA
BWR
7920 WARD PARKWAY
KANSAS CITY MO 64114-2021

**SECTION 106 CONSULTATION - IDENTIFICATION/TECHNICAL ADVICE**
Project: 970818010F-AIRPORT MASTER PLAN UPDATE, RAPID CITY AIRPORT
Location: Pennington County

Dear Mr. Weisenburger:

Thank you for the opportunity to comment on the above referenced project pursuant to Section 106 of the Historic Preservation Act of 1966 (as amended). Based upon the information provided in your letter received August 18, 1997, the South Dakota SHPO Program is making the following general recommendations regarding identification procedures for this project:

1. Construction activities or impacts in areas of **obvious previous ground disturbance** (such as reconstruction of Runway 05-23) will not require any further identification methods. Please note that land previously subject to agricultural tillage is *not* included in this category.

2. All portions of the long-term development involving areas of **new ground disturbance** (such as new road or rail access) need to be reviewed by this office on a case-by -case basis and may require an archeological records check and an on-the-ground archeological survey.

If during the course of any ground disturbance related to the project, any bones, artifacts, foundations, or other indications of past human occupation of the area are uncovered, the project should be temporarily stopped and the State Historic Preservation Officer notified at once.

Should you require any additional information, please do not hesitate to contact Linda Palmer or Dana Vaillancourt at 773-6004. Your concern for the heritage of our state is appreciated.

Sincerely,

JAY D. VOGT
SHPO

LAP

SG 816

1957 40th Anniversary 1997

BUCHER, WILLIS & RATLIFF CORPORATION

Engineers, Planners & Architects

August 4, 1997

U.S. Fish and Wildlife
Dave Allardyce
420 S. Garfield
Pierre, SD 57501

U.S. Fish & Wildlife Service
SD ES Field Office

Project as described will have no significant impact on fish and wildlife resources. It does not involve any federally listed threatened or endangered species or their habitats. If project design changes, please submit plans for review.

8-7-97 Date

Field Supervisor

Re: Rapid City (Rapid City) Airport - Environmental Coordination Letter
BWR Job Number: 96211

Dear Mr. Allardyce:

Bucher, Willis & Ratliff Corporation of Kansas City, Missouri is preparing an Airport Master Plan Update & Environmental Review for the Rapid City Airport in Rapid City, South Dakota. To further evaluate the environmental aspects and the proposed actions, we are requesting your comments on any impacts regarding your agency's jurisdiction. Please comment specifically on the presence of any endangered species in the area.

The airport is forecast to have 124 based aircraft 83,901 operations by the year 2017. Airline operations will amount to approximately 16,000 in 2017. Planned ultimate development includes the following:

- Reconstruct crosswind Runway 05-23
- Develop office park land use guide
- Investigate the potential access points for rail and auto

A reply with an assessment of your position is appreciated within 30 calender days from receipt of this letter. If no response is received, it will be assumed there will be no comments. Should you have any questions or need additional information, please call me at 1-800-748-8276.

Thank you for your assistance.

Sincerely,

BUCHER, WILLIS & RATLIFF CORPORATION

Bradley C. Weisenburger

Bradley C. Weisenburger, ASLA
Airport Planner

enclosures

7920 WARD PARKWAY ▮ KANSAS CITY, MISSOURI 64114-2021 ▮ 816/363-2696 ▮ FAX: 816/363-0027

# Department of Transportation

**Rapid City Region**
**2300 Eglin**
**P.O. Box 1970**
**Rapid City, SD 57709-1970**
**PHONE: 605/394-2244**
**FAX: 605/394-1904**




August 12, 1997

Mr. Bradley C. Weisenburger, ASLA
Airport Planner
Bucher, Willis & Ratliff Corporation
7920 Ward Parkway
Kansas City, MO 64114-2021

RE: Rapid City Regional Airport
BWR Job Number 96211

Dear Mr. Weisenburger:

We do not have any additional information. You should continue to work with the Rapid City MPO as you work your way through the study. Marcia Elkins, Rapid City/Pennington County Planning & Zoning Director, would be a good contact person to keep you informed of activity in the area.

The Rail Crossing proposed at SD 44 may require a grade separation, but it may depend on the type of rail service that will be provided. The I-90/Airport connector has been discussed for many years, but with the tight budgets I do not know if it will be done. The new I-90 interchange at MP 67 may provide a good access point and may generate some additional desire to build the connector in the future. The SDDOT does not have anything in our long range program to address either the rail or connector proposals.

Yours truly,

DEPARTMENT OF TRANSPORTATION

Dennis P. Landguth, PE/LS
Region Engineer

DPL/sss

cc: File

GREAT FACES. GREAT PLACES.

**DEPARTMENT of ENVIRONMENT and NATURAL RESOURCES**
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3181

August 15, 1997

Mr. Bradley Weisenburger
Bucher, Willis & Ratliff
7920 Ward Parkway
Kansas City, Missouri 64114-2021

Dear Mr. Weisenburger:

Bucher, Willis & Ratliff Corporation of Kansas City, Missouri is preparing an Airport Master Plan Update & Environmental Review for the Rapid City Airport in Rapid City, South Dakota.

The airport is forecast to have 124 based aircraft 83,901 operations by the year 2017. Airline operations will amount to approximately 16,000 in 2017. Planned ultimate development includes the following:

- Reconstruct crosswind Runway 05-23
- Develop office park land use guide
- Investigate the potential access points for rail and auto access

As a part of the funding process, an environmental review is required. Our office has determined that the proposed project should not have any environmental effects to drinking water.

Sincerely,

Mitchel Williams

Mitchel Williams
Environmental Senior Scientist

**DEPARTMENT of ENVIRONMENT and NATURAL RESOURCES**
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3181



August 22, 1997

Bradley C. Weisenburger
Bucher, Willis & Ratliff Corporation
7920 Ward Parkway
Kansas City Mo 64114-2021

Dear Mr. Weisenburger:

The South Dakota Department of Environment and Natural Resources (DENR) has reviewed the proposed project concerning the construction of a 90 unit development. The DENR finds that this construction, using conventional construction techniques, should not cause violation of any statutes or regulations administered by the DENR based on the following recommendations:

1. Best Management Practices (BMP) for sediment and erosion control should be incorporated into the planning, design, and construction of this project. Copies of the BMP Guide are available upon request from this office.

2. A Surface Water Discharge (SWD) permit may be required if any construction dewatering should occur as a result of this project. Please contact this office for more information.

3. A General Storm Water Permit for Construction Activities may be required. If you have any questions, please contact Norma Job at 1-800-SDSTORM (1-800-737-8676).

4. Wetlands may be impacted by this project. Wetlands are considered waters of the state and are protected under the South Dakota Surface Water Quality Standards. The discharge of pollutants from any source, including indiscriminate use of fill material, may not cause destruction or impairment of wetlands except where authorized under Sections 402 or 404 of the Federal Water Pollution Control Act. Please contact the U.S. Army Corps of Engineers concerning these permits.

5. Some tributaries may be affected by this project, steps must be taken to ensure that they will not be impacted.

If you have any questions concerning these comments, please contact me at the number listed below.

Sincerely,

John Miller

John Miller
Environmental Project Scientist
Air and Surface Water Program
(605) 773-3351

1957 40th Anniversary 1997

BUCHER, WILLIS & RATLIFF CORPORATION

Engineers, Planners & Architects

August 5, 1997



Mr. Tim Olson
South Dakota Dept. of Game, Fish and Parks
Joe Foss Building
523 E. Capitol Avenue
Pierre, SD 57501-3181

Re: Rapid City Regional Airport
Environmental Coordination Letter
BWR Job Number: 96211

Dear Mr. Olson:

Bucher, Willis & Ratliff Corporation (BWR) of Kansas City, Missouri is preparing an Airport Master Plan Update & Environmental Review for the Rapid City Airport in Rapid City, South Dakota. To further evaluate the environmental aspects and the proposed actions, we are requesting your comments on any impacts regarding your agency's jurisdiction.

The airport is forecast to have 124 based aircraft 83,901 operations by the year 2017. Airline operations will amount to approximately 16,000 in 2017. Planned ultimate development includes the following:

- Reconstruct crosswind Runway 05-23
- Develop office park land use guide
- Investigate the potential access points for rail and auto access

A reply with an assessment of your position is appreciated within 30 calender days from receipt of this letter. If no response is received, it will be assumed there will be no comments. Should you have any questions or need additional information, please call me at 1-800-748-8276.

Thank you for your assistance

Sincerely,

**BUCHER, WILLIS & RATLIFF CORPORATION**

Bradley C. Weisenburger

Bradley C. Weisenburger, ASLA
Airport Planner

S.D. DEPARTMENT OF
GAME, FISH AND PARKS
Project as described will have no significant impact on fish and wildlife resources. If project design changes, please submit plans for review.

8/29/97 — Date

Approval

BCW:bet
enclosures

7920 WARD PARKWAY ▮ KANSAS CITY, MISSOURI 64114-2021 ▮ 816/363-2696 ▮ FAX: 816/363-0027

GREAT FACES. GREAT PLACES.

DEPARTMENT of ENVIRONMENT and NATURAL RESOURCES
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3181



September 9, 1997

Bradley Weisenburger
Bucker, Willis & Ratliff Corporation
7920 Ward Parkway
Kansas City, Missouri 64114-2021

Dear Mr. Weisenburger:

I have review the information presented in your August 5, 1997, letter describing the Rapid City Airport Master Plan. You specifically requested the status of the Rapid City air quality designation.

Historically, Rapid City has had problems with high particulate matter concentrations above the health limits set by EPA for ambient air quality. Beginning in 1978, the state and local government along with industry have work on control measures to reduce the dust levels. These measures have reduced the number of high concentration days and annual levels for particulate matter.

Currently, Rapid City is designated as unclassifiable for particulate matter (PM10) by the EPA. The 24-hour PM10 standard is exceeded on an average of one time per year. During some periods like in 1996 and 1997, Rapid City area exceeded the national standard 4 times. These exceedance occurred during uncontrollable natural events of high winds and dry soil conditions.

Presently, the state and the Pennington Air Quality Board are developing a Natural Events Action Plan for this area. The action plan may require further emission reduction from the sources and provide a warning system to notify the public of possible high concentration conditions.

The Rapid City Airport is located outside of the area identified as having air quality problems. The airport area is designated

as meeting all the national ambient air quality standards set by EPA.

I would like to bring other issues to your attention. The first issue is the location of the Rapid City Airport being within 100 kilometers of the Badlands and the Wind Cave National Monuments. Both monuments are listed as class 1 areas for the protection of visibility by EPA. Major changes to the airport that would increase air pollution levels will need to be reviewed by the federal land manager for these class 1 areas. This review would determine if airport changes would degrade the visibility in the national monuments listed above.

The final issue relates to the Pennington County Air Quality Program. The City of Rapid City has annexed the road leading to the airport as part of the city limits. All construction within 3 miles of the city limits must be reviewed by the Pennington County Air Quality Program to be sure the projects comply with the Pennington County air quality ordinance.

If you have questions or require more information on the air quality status of the Rapid City area please feel free to contact me. Thank you for supplying this information to the Air Quality Section for review.

Sincerely,

Brad Schultz

Brad Schultz
Senior Scientist
Air and Surface Water Program
605-773-6038

**Rapid City Regional Airport**
**Business User Surveys: Subsections**
**October, 1997**
**Executive Summary**

## Background

From the business user surveys received, a subsection analysis was done to gain more insight into business use of the airport. Two main categories were created, those companies with over 20% of their employees traveling on company business and those with 30% or more employees traveling on company business. Then a cross-tabulation was done with the size of a company and the percent of those employees traveling on business.

## Results

Refining the data even more, of the 153 companies with 20% or more employees traveling by air on business. The distance traveled on these trips were comparable to the above stated group. Sixty-one percent said their employees ticketed originating flights from Sioux Falls or Denver rather than Rapid City. Ticket price was sited by the majority as the reason. About half of these companies purchased 10% or less of their tickets originating from Sioux Falls or Denver in the past year. Over 30% had purchased 20% to 30% of their tickets out of these alternate cities and 14% had for over 50% of their flights.

Of the 50 respondents with over 30% of their employees traveling by air on company business, eighty percent said most of their trips were over 500 miles and the remaining 20% said their trips were within 250 and 500 miles. Two-thirds stated that their employees have ticketed flights from Sioux City or Denver rather than Rapid City. Of these respondents the majority said ticket price was the reason. Over one-third of respondents had done this for up to 10% of the past years trips. Almost one-quarter of the respondents said 40% or more of their tickets were purchased out of Denver or Sioux City within the past year.

*Cross-Tabulations by Company Size*

A cross-tabulation was done using just those companies who have over 20% of their employees traveling on business and the total number of employees they retain. Two business sizes were created, those with 25 or less employees and those with 26 or more employees.

The cross-tabulation showed that about two-thirds of smaller companies had 20% of their workforce traveling on business and one-quarter had more than 40% traveling on business. In this group, 72% of their air trips were over 500 miles, and 27% were within 250-500 miles. When asked if their company had ever ticketed originating flights out of Sioux Falls or Denver, two-thirds of smaller businesses said they had and almost all said

the reason was ticket prices. The percentage of all tickets purchased in the last year originating in either Denver or Sioux City varied more. Forty-four percent purchased 10% or less or their tickets in those alternate cities, and one-quarter had forty percent or more of their tickets originating out of Denver or Sioux City.

Of the larger companies with 26 or more employees, almost all had 20% of their employees traveling by air on business. Eighty-six percent of these trips were over 500 miles. Fifty-five percent stated that employees had ticketed originating flights from Sioux Falls or Denver. Of these participants, three-quarters said ticket price was the reason. When asked what percentage of all tickets purchased in the last year originated in either Denver or Sioux Falls, over half said 10% or less, and 40% said between 20% and 40% of tickets were.

**Rapid City Regional Airport**
**Business User Surveys**
**October, 1997**
**Executive Summary**

## Background

As part of the Rapid City Regional Airport Master Plan Update study, 600 businesses were surveyed regarding their travel patterns and attitudes toward the airport facilities. The 600 businesses were culled from over 1200 members of the Chamber of Commerce and those businesses selected were, in the opinion of the consultant, most likely to have employees who might travel. Of 600 surveys mailed, 202 were returned for an outstanding response ratio of 33%.

Of the 202 respondents, over 94% said that 20% or more of their employees traveled by air on company business.

## Results

Over two-thirds of the businesses had 25 or fewer employees. A majority of respondents stated that 20% of their employees travel by air on company business, and 18% had more than half of their employees flying on business. Three quarters of respondents said their company's air trips were over 500 miles in distance from Rapid City. Most of the remaining business trips were in the 250 to 500 mile range. When asked how their company purchases airline tickets, a large majority said they purchased through a travel agency.

Fifty-nine percent of responding businesses said they had ticketed originating flights from Sioux Falls or Denver. Of these, the majority said the most significant reason was ticket price. Forty-four percent said 10% of all tickets purchased in the last 12 months originated in either Denver or Sioux Falls. Almost one-quarter had 40% or more of all tickets originating in Denver or Sioux Falls in the past year.

Of the ten percent of respondents that own or rent aircraft based in Rapid City, 40% said they had an average of 4 flights a month out of Rapid City. One quarter said they fly five or more times a month out of Rapid City.

About one-quarter of businesses stated they had chartered aircraft based in Rapid City. Of these companies, over half charter aircraft once or twice a year and 25% charter four or more times a year. Sioux Falls was the destination for one-third of those who charter, own or rent an aircraft. Other common destinations were Pierre, Denver, Montana and in-state destinations.

When asked if they would consider relocating their business to the Rapid City Regional Airport in the event an office or industrial park was developed, 5% of respondents said

they would consider a move if space were available.. Almost two-thirds said they would rate the overall community attitude toward the airport as strong or moderate support, and only 16% said they would rate community attitude as negative.

*Influencing Factors*

Respondents were asked to rate the influence of different factors on their travel decisions by using the terms essential, very important, important, slightly important and not important.

Flight schedules were said to be an essential to important factor by 93% of the respondents. When asked how the cost of airline tickets affects their decision to fly, 93% of the respondents said it was essential to important. On the importance of type of aircraft one-third said it was not important or slightly important, and 63% said it was important to very important in travel decisions.

Connection times were said to be essential, very important or important by 91% of the businesses. Frequent flier or other business incentive programs were said to be unimportant to slightly important by over half of the respondents, with forty percent stating these programs were important or very important.

*Airline Services*

Rapid City companies were asked to rate their satisfaction level on various airline services as very satisfied, satisfied, neutral, dissatisfied and very dissatisfied.

Two-thirds said they were satisfied or neutral on the number of scheduled flights, although, almost one-third were dissatisfied or very dissatisfied. Almost half were satisfied with the availability of seats on scheduled flights, and over three-quarters of respondents said they were satisfied to very satisfied with customer service at ticket counters. Dissatisfied was the overall response by businesses on the price of airline tickets, with 82% choosing dissatisfied or very dissatisfied.

*Airport Services and Facilities Rankings*

Respondents were asked to rate the airport facilities by selecting good, fair, poor, or no opinion options. The aspects of the airport's facility that were rated included: directional/highway signage, airport signage inside the terminal, baggage claim, rental car services, security, passenger drop-off and pick-up, short-term and long-term parking, restrooms, restaurant and shops, and handicapped facilities and access. Overall ratings were fairly evenly distributed between good and very good on all categories.

*Respondent Comments*

Of the 202 businesses surveyed, 75 offered comments and/or suggestions. The majority of comments pertained to the price of tickets. Many expressed concern that the high cost of airfare will have a negative impact on the economy of Rapid City and the surrounding areas. Another common suggestion was to add more flights, especially to Sioux Falls and Denver. Other comments were about adding more airlines and frustration with flight unreliability.

Those who commented on the airport and its employees had mostly good things to say. One suggestions was to give more attention to the grounds around the airport since this would be the first impression of the area travelers would get. Overall, those commenting on the staff and facilities were satisfied with their performance.

## Cross-Tabulation and Analysis

From the business user surveys received, a subsection analysis was done to gain more insight into business use of the airport. Two main categories were created, those companies with over 20% of their employees traveling on company business and those with 30% or more employees traveling on company business. Then a cross-tabulation was done with the size of a company and the percent of those employees traveling on business.

## Results

*Cross-Tabulation by Percentage of Traveling Employees*

There were 160 companies with 20% or more employees traveling by air on business. Three-quarters said their trips were over 500 miles. Sixty-one percent said employees ticketed at least some of their originating flights out of Sioux Falls or Denver rather than Rapid City. Ticket price was cited by the majority as the reason. Almost half of these companies booked 10% of their flights originating from Sioux Falls or Denver in the past year. Almost one-third had 20% to 30% of their flights and 14% had over 50% of their flights originating from these alternate cities in the past year.

Refining the data even more, of the 52 companies with over 30% of their employees traveling by air on company business, eighty percent said most of their trips were over 500 miles and the remaining 20% said their trips were within 250 and 500 miles. Two-thirds stated that their employees have ticketed some flights from Sioux City or Denver rather than Rapid City. Of these respondents the majority said ticket price was the reason. Over one-third of respondents had done this for up to 10% of the past years trips. Almost one-quarter of the respondents said 40% or more of their tickets originated out of Denver or Sioux City within the past year.

*Cross-Tabulations by Company Size*

A cross-tabulation was done by company size and those who have 20% or more of their employees traveling by air on business. Two categories of business sizes were created, those with 25 or less employees and those with 26 or more employees.

The cross-tabulation showed that about two-thirds of smaller companies had 20% of their workforce traveling on business and one-quarter had more than 40% traveling on business. In this group, 72% of their air trips were over 500 miles, and 27% were within 250-500 miles. Two-thirds of smaller businesses said they had at some time ticketed originating flights out of Sioux Falls or Denver, and almost all said the reason was ticket prices. The percentage of all tickets purchased in the last year originating in either Denver or Sioux City varied more. Forty-four percent booked 10% or less or their tickets in those alternate cities, and one-quarter had forty percent or more of their tickets originating out of Denver or Sioux City.

Of the larger companies with 26 or more employees, almost all had 20% of their employees traveling by air on business. Eighty-six percent of these trips were over 500 miles. Fifty-five percent stated that employees had ticketed some originating flights from Sioux Falls or Denver. Of these participants, three-quarters said ticket price was the reason. When asked what percentage of all tickets purchased in the last year originated in either Denver or Sioux Falls, over half said 10% or less and 17% said 20%. Twenty percent said they had ticketed 30% to 40% of originating flights out of the alternate cities in the past year.

# Rapid City Regional Airport
# Travel Intercept Surveys
# August, 1997
# Executive Summary

## Background

An intercept survey was conducted at the Rapid City Regional Airport for a period of six days - August 14, 15, 16, 22, 23, and 24, 1997. Interviewers intercepted 241 travelers to participate in the survey. Respondents were fairly evenly distributed among the airlines with 32% flying Northwest, 29% flying Skywest and 39% flying United on the day of the interview. Participants were asked to rate various aspects of the airport and airlines, as well as, reveal attitudes toward the airport and asked for any comments they wished to share.

## Results

### *The Respondents*

The total group of respondents was almost evenly distributed between male and female, 54.8% and 45.2% respectively. The majority of the participants, 72.61%, were out-of-town visitors, and of these, 60.8% were traveling for pleasure. Most participants purchased their ticket through a travel agent. The most frequently cited factor influencing the selection of their flight was the flight schedule. However, ticket price and other were the second most important factors.

Type of aircraft influenced less than 5% of local travelers and less the 2% of out-of-town travelers in making a flight selection. Forty percent of out-of-town travelers stated they had no preference in the airline they used and local travelers preferences were fairly evenly divided among the three airlines and no preference. Over 89% of out-of-town visitors had flown into Rapid City only once or twice in the past year and 45% of local residents had flown out of Rapid City once or twice in the past year.

Pleasure was the reason for this trip for over 67% of local residents. Only 22% of local residents stated they had flown out of Denver or Sioux Falls due to lower fares and of those, 78% stated they had gone to those cities once or twice in the past two years and over 21% have flown out of those alternative cities 3 or more times in the past 24 months.

The survey also revealed that 86.5% of the respondents could remember the amount they had paid for their ticket at the time of completing the survey. This left only 13.5% unable to recall the price of their ticket.

***Airport Service and Facility Rankings***

Respondents were asked to rate several different aspects of the airport and airline services by selecting good, fair, poor, or no opinion.

The airport facility received good rankings of over 90% on physical layout, signage in the airport terminal and condition of grounds and building. Receiving good rankings by more than 83% of the respondents were the location of the airport, security, access to the airport and restroom facilities. For those facilities not all travelers might have used during this trip, if no opinion answers are factored out, of those respondents who had an opinion, over 94% rated as good passenger drop-off/pick, handicapped facilities and access to the airport as good. Good rankings were given by 86% for rental car services, 84% for long-term parking, 82% for short-term parking and 78% for the gift shop and 77% for the restaurant/lounge.

***Airline Services***

Of all respondents, only 8% connected with an airline other than those servicing Rapid City. Nearly 70 percent of the respondents ranked airline flight schedules as good. Overall airline ticket prices were ranked good by slightly more than 36% of respondents with 51% ranking them fair or poor. The type of aircraft available at R.C.R.A. was ranked good 51% of the time and almost 39% ranked it fair or poor and 10% expressing no opinion. On-time departures and arrivals at the airport were ranked good by 54% and fair or poor by 37% of the respondents. Service at the ticket counters were ranked very highly. Almost 93% of the participants ranked service good with a few saying they would rank it excellent. Only 5% said they would rank service at the ticket counter fair or poor.

When asked what participants had paid for their airline ticket for this trip, 14% could not respond. Ticket prices for those responding fell in clear groups. Of those who remembered their ticket price, 34% paid $300 or less for the ticket. Slightly over 50% of those flying with Northwest paid between $300 and $400 or flew for free, and Skywest had 57% paying between $200 and $300 or flying free. United customers varied more in ticket prices. Forty-six percent paid between $200 and $400 and another 19% received their tickets for free.

***Respondent Comments***

Of the 241 people surveyed, 103 offered comments. These responses given by the participants in the survey are useful in measuring what was most "top of mind" for the

traveler during the trip as it related to the airport and airlines. When addressing the airlines, many stated that they thought ticket prices were high and wanted lower fares. They also wanted bigger planes. In particular, many expressed frustration with failures to meet departure and arrival times. It should be noted that on one day of the interview, United had mechanical problems which resulted in extensive flight delays that day and likely resulted in more people making comments relating to flight delays then was the norm for the balance of the survey days.

Those who commented on the airport and its employees had very positive things to say. Many commented on how friendly and helpful the staff was to them, and that the facilities were very nice and accommodating. One suggestion for the airport was the need for more signs on the highways and interstate with airport directions. It was also suggested that a better communication system be installed in the airport to keep travelers updated on arrival times and delays.

# Rapid City Regional Airport Master Plan Update
# Travel Agency Survey Summary

As part of the Rapid City Regional Airport Master Plan Update, a survey was sent in October, 1997, to 11 travel agencies in Rapid City to gather data on how many tickets agencies issue annually out of an alternative originating city. Five agencies responded to the survey for an exceptional response rate of 45%. The size of agencies responding ranged from under 3,000 to over 10,000 round-trip tickets issued annually.

For the five reporting agencies, a total of 43,333 round-trip tickets are issued annually. Of those tickets, 88% are issued to Rapid City residents and 70% are for pleasure trips with 30% for business trips.

Of the 38,050 tickets issued to Rapid City residents annually, between 23 - 25%** are issued from an originating city other than Rapid City and the reason primarily is cost of tickets. There are a limited number that are issued out of Denver because of tour packages.

Of these tickets issued out of alternative originating cities, 82% are for pleasure travel. Alternative cities cited include Denver, Sioux Falls, Chadren and Pierre.

**One agency responded with a "less than" percentage so the difference between 23% and 25% is from zero tickets issued to the exact percentage named issued, i.e., less than 15% would be counted as no tickets and up to 15% of all tickets issued.