


MASON COUNTY AIRPORT
Ludington, Michigan

PROPOSED AIRPORT DEVELOPMENT
FOR
YEARS 2012 – 2022

Submitted by:


Fabian Knizacky, County Manager


Dave Johnson, Airport Manager

Date: 11-15-11

**MICHIGAN STATE BLOCK GRANT PROGRAM
TEN-YEAR AIRPORT CAPITAL IMPROVEMENT PROGRAM (CIP) FY-2012* to FY-2022**

Airport Name: Mason County Airport
 Associated City: Ludington, Michigan
 Sponsor:
 Airport Identifier: LDM
 Date prepared: Rev. 10/26/2011
 Prepared By: Peckham Eng./Mason Co.
 Sponsor email address & phone:

Development Year	Project Description	Shown on AIP? (Yes or No)	ACIP Code**	NPIAS Priority Rating **	Federal Entitlements	Federal Apportionment	Federal Discretionary	State	Local	Total	Remarks/Item Justification - Provide as much detail as possible.
2012	Pay Loader with Plow Blade		STEQSN	45	199,500			2,520	5,250	210,000	To handle additional Taxiway
	TOTAL Estimated Cost 2012				199,500			2,520	5,250	210,000	
2013/2014	6 Unit T-Hangar Taxilanes/Apron to T-Hangars	Yes	STBDM5 CATWCO	31 57	296,400 128,250			7,800 3,375	7,800 3,375	312,000 135,000	To replace existing 40 year old hangars. requests for hangar space is unfilled.
	TOTAL Estimated Cost 2013/2014				424,650			11,175	11,175	447,000	
2015/2016	Snow Blower	Yes	STEQSN STEQSW	45	380,000			10,000	10,000	400,000	To replace existing blower
	TOTAL Estimated Cost 2015/2016				380,000			10,000	10,000	400,000	
2017	Land Acquisition		STLASZ	42	665,000			17,500	17,500	700,000	To improve approach 26 for precision
	TOTAL Estimated Cost 2017				665,000			17,500	17,500	700,000	

** In accordance with FAA Order 5100.39A, Appendix 6 - Fields need to be completed

**MICHIGAN STATE BLOCK GRANT PROGRAM
TEN-YEAR AIRPORT CAPITAL IMPROVEMENT PROGRAM (CIP) FY-2011* to FY-2021**

Airport Name: Mason County Airport Associated City: Ludington, Michigan Sponsor: Airport Identifier: LDM												
Date prepared: REV. 10-26-2011 Prepared By: Sponsor email address & phone: FINAL ACIP due to MDOOT AERO: no later than 09/01/2011												
Development Year	Project Description	Shown on ALP? (Yes or No)	ACIP Code**	NPIAS Priority Rating **	Federal Entitlements	Federal Apportionment	Federal Discretionary	State	Local	Total	Remarks/Item Justification - Provide as much detail as possible.	
2018	Airfield Marking Clearing Approach (26) Trees and Buildings	Yes	STRWSF	48	33,250 95,000			875 2,500	875 2,500	35,000 100,000	To clear approach 26 for precision operations.	
	TOTAL Estimated Cost 2018				128,250			3,375	3,375	135,000		
2019	Rehabilitate Apron Expand Terminal Apron Rehabilitate Car Parking and Entrance Road	Yes	CAAPEX CAGTAC	46 46	363,850 282,150			9,575 7,425	9,575 7,425	383,000 297,000	Expected need for summer traffic	
	TOTAL Estimated Cost 2019				82,650			2,175	2,175	87,000	Rehabilitate 20 year old pavement.	
2020	Rehabilitate Rwy 1-19	Yes	RERWIM	70	304,950			8,025	8,025	321,000	Rehabilitate 20 year old pavement.	
	TOTAL Estimated Cost 2020				304,950			8,025	8,025	321,000		
2021	Airfield Marking MALSR Approach (26)	Yes	SPRWVI	81	33,250 570,000			875 15,000	875 15,000	35,000 600,000	To improve landing minimums	
	TOTAL Estimated Cost 2021				603,250			15,875	15,875	635,000		
2022	Sand Storage Building Plow Truck with Sand Spreader	Yes	STBDSN STEQSN	39 47	76,000 237,500			2,000 6,250	2,000 6,250	80,000 250,000	To provide all weather Landing conditions.	
	TOTAL Estimated Cost 2022				313,500			8,250	8,250	330,000		

** In accordance with FAA Order 5100.39A, Appendix 6 - Fields need to be completed



AIRPORT MASTER RECORD

> 1 ASSOC CITY: LUDINGTON 4 STATE: MI LOC ID: LDM FAA SITE N.R: 10034.*A
> 2 AIRPORT NAME: MASON COUNTY 5 COUNTY: MASON MI
> 3 CBD TO AIRPORT (NM): 02 NE 6 REGION/ADO: AGUDET 7 SECT AERO CHT: CHICAGO

GENERAL		SERVICES	BASED AIRCRAFT
> 10 OWNERSHIP: PU		> 70 FUEL: 100LL A	90 SINGLE ENG: 23
> 11 OWNER: COUNTY OF MASON		> 71 AIRFRAME RPRS: MAJOR	91 MULTI ENG: 3
> 12 ADDRESS: COURT HOUSE		> 72 PWR PLANT RPRS: MAJOR	92 JET: 0
LUDINGTON, MI 49431		> 73 BOTTLE OXYGEN:	TOTAL: 26
> 13 PHONE NR: 231-843-8202		> 74 BULK OXYGEN:	93 HELICOPTERS: 0
> 14 MANAGER: WALTER D. JOHNSON		75 TSNT STORAGE: HGR, TIE	94 GLIDERS: 0
> 15 ADDRESS: 5300 WEST U.S. 10		76 OTHER SERVICES:	95 MILITARY: 0
LUDINGTON, MI 49431		CHTR, INSTR, RNTL	96 ULTRA-LIGHT: 0
> 16 PHONE NR: 231-843-2049			
> 17 ATTENDANCE SCHEDULE:		FACILITIES	OPERATIONS
APR-MAY ALL 0800-1700		> 80 ARPT BCH: CG	100 AIR CARRIER: 0
OCT-MAR MON-FRI 0900-1700		> 81 ARPT LGT SKED: DUSK-DAWN	102 AIR TAXI: 2,000
OCT-MAR SAT-SUN 0800-1700		> 82 UNICOM: 123.000	103 G A LOCAL: 7,594
JUN-AUG ALL 0800-2000		> 83 WIND INDICATOR: YES	104 G A ITRRNT: 5,594
18 AIRPORT USE: ALL PUBLIC		84 SEGMENTED CIRCLE: YES	105 MILITARY: 0
19 ARPT LAT: 43-57-45.1000N ESTIMATED		85 CONTROL TWR: NONE	TOTAL: 15,188
20 ARPT LONG: 086-24-28.5000W		86 FSS: LANSING	OPERATIONS FOR 12
21 ARPT ELEV: 646 SURVEYED		87 FSS ON ARPT: NO	MONTHS ENDING 12/31/2009
22 ACREAGE: 238		88 FSS PHONE NR:	
> 23 RIGHT TRAFFIC: NO		89 TOLL FREE NR: 1-800-WX-BRIEF	
> 24 NON-COMM LANDING: NO			
> 25 NPIAS/FED AGREEMENTS:NGY			
> 26 FAR 139 INDEX:			

RUNWAY DATA

> 30 RUNWAY IDENT:
> 31 LENGTH:
> 32 WIDTH:
> 33 SURF TYPE-COND:
> 34 SURF TREATMENT:
35 GROSS WT: SW
36 (IN THSDS) DW
37 DTW
38 DDTW
> 39 PCN:

	01/19	08/26		
	3,503	5,003		
	75	75		
	ASPH-G	ASPH-G		
	PFC	PFC		
	19.0	25.0		
	MED	MED		
	BSC - G / BSC - G	NPI - G / NPI - G	- / -	- / -
	P2L / P2L	P2L / P4L	/	/
	/	28 / 43	/	/
	/	3.00 / 3.00	/	/
	N - N / N - N	N - N / N - N	- / -	- / -
	- N / - N	- N / - N	- / -	- / -
	N / N	N / Y	/	/
	/	/	/	/
	A(V) / A(V)	B(V) / C	/	/
	/	/	/	/
	/ TREES	TREES / TREES	/	/
	/	/	/	/
	62 / 75	73 / 63	/	/
	1,750 / 1,700	1,600 / 1,460	/	/
	223L / 0B	0B / 378L	/	/
	25:1 / 20:1	20:1 / 20:1	/	/
	N / N	N / N	/	/
	/	/	/	/
	/	/	/	/
	/	/	/	/
	/	/	/	/

LIGHTING/APCH AIDS

> 40 EDGE INTENSITY:
> 42 RWY MARK TYPE-COND:
> 43 VGSI:
44 THR CROSSING HGT:
45 VISUAL GLIDE ANGLE:
> 46 CNTRLN-TDZ:
> 47 RVR-RVV:
> 48 REIL:
> 49 APCH LIGHTS:

OBSTRUCTION DATA

50 FAR 77 CATEGORY:
> 51 DISPLACED THR:
> 52 CTLG OBSTN:
> 53 OBSTN MARKED/LGTD:
> 54 HGT ABOVE RWY END:
> 55 DIST FROM RWY END:
> 56 CNTRLN OFFSET:
57 OBSTN CLNC SLOPE:
58 CLOSE-IN OBSTN:

DECLARED DISTANCES

> 59 TAKE OFF RUN AVBL (TORA):
> 60 TAKE OFF DIST AVBL (TODA):
> 61 ACFT STOP DIST AVBL (ASDA):
> 62 LNDG DIST AVBL (LDA):

(P) ARPT MGR PLEASE ADVISE FAA IN ITEM 66 WHEN CHANGES OCCUR TO ITEMS PRECEDED BY >

> 110 REMARKS:
A 081 ACTVT MRL RYS 08/26 & 01/19 PAPI RYS 08, 26, 01 & 19, AND REIL RY 26 - CTAF.
A 110 THIS AIRPORT HAS BEEN SURVEYED BY THE NATIONAL GEODETIC SURVEY.
A 110-1 BIRDS & DEER ON & INVOLV ARPT.



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> 1 ASSOC CITY: LUDINGTON 4 STATE: MI LOC ID: LDM
> 2 AIRPORT NAME: MASON COUNTY 5 COUNTY: MASON MI FAA SITE NR: 10034.*A
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BASED AIRCRAFT

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> 16 PHONE NR: 231-843-2049
> 17 ATTENDANCE SCHEDULE:
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OCT-MAR ALL 0900-1700

> 70 FUEL: 100LL A
> 71 AIRFRAME RPRS: MAJOR
> 72 PWR PLANT RPRS: MAJOR
> 73 BOTTLE OXYGEN:
> 74 BULK OXYGEN:
75 TSNT STORAGE: HGR, TIE
76 OTHER SERVICES:
CHTR, INSTR, RNTL

90 SINGLE ENG: 24
91 MULTI ENG: 3
92 JET: 0
TOTAL: 27
93 HELICOPTERS: 0
94 GLIDERS: 0
95 MILITARY: 0
96 ULTRA-LIGHT: 0

FACILITIES

OPERATIONS

> 80 ARPT BCN: CG
> 81 ARPT LGT SKED: DUSK-DAWN
> 82 UNICOM: 123.000
> 83 WIND INDICATOR: YES
84 SEGMENTED CIRCLE: YES
85 CONTROL TWR: NONE
86 FSS: LANSING
87 FSS ON ARPT: NO
88 FSS PHONE NR:
89 TOLL FREE NR: 1-800-WX-BRIEF

100 AIR CARRIER: 0
102 AIR TAXI: 2,000
103 G A LOCAL: 7,594
104 G A ITRNRT: 5,594
105 MILITARY: 0
TOTAL: 15,188
OPERATIONS FOR 12 MONTHS ENDING 12/31/2007

RUNWAY DATA

> 30 RUNWAY IDENT:
> 31 LENGTH: PUBLIC
> 32 WIDTH: 43-57-45.1000N ESTIMATED
> 33 SURF TYPE-COND: 086-24-28.5000W
> 34 SURF TREATMENT: 646 SURVEYED
> 35 GROSS WT: 238
> 36 (IN THSDS) NO
> 37 DW
> 38 DTW
> 39 PCN: DDTW

01/19	08/26
3,503	5,003
75	75
ASPH-G	ASPH-G
PFC	PFC
19.0	25.0

LIGHTING/APCH AIDS

> 40 EDGE INTENSITY:
> 42 RWY MARK TYPE-COND:
> 43 VGS: MED
44 THR CROSSING HGT: BSC - G / BSC - G
45 VISUAL GLIDE ANGLE: P2L / P2L
> 46 CNTRLN-TDZ: /
> 47 RVR-RVV: N - N / N - N
> 48 REIL: - N / - N
> 49 APCH LIGHTS: N / N

MED	MED		
BSC - G / BSC - G	NPI - G / NPI - G	- / -	- / -
P2L / P2L	P2L / P4L	/	/
/	28 / 43	/	/
/	3.00 / 3.00	/	/
N - N / N - N	N - N / N - N	- / -	- / -
- N / - N	- N / - N	- / -	- / -
N / N	N / Y	/	/
/	/	/	/

OBSTRUCTION DATA

50 FAR 77 CATEGORY:
> 51 DISPLACED THR: A(V) / A(V)
> 52 CTLG OBSTN: / TREES
> 53 OBSTN MARKED/LGTD: / TREES / TREES
> 54 HGT ABOVE RWY END: /
> 55 DIST FROM RWY END: / 55 75 / 50
> 56 CNTRLN OFFSET: / 1,300 1,700 / 1,900
> 57 OBSTN CLNC SLOPE: / 0B 111L / 0B
> 58 CLOSE-IN OBSTN: 50:1 / 20:1 20:1 / 34:1

A(V) / A(V)	B(V) / C	/	/
/ TREES	TREES / TREES	/	/
/	/	/	/
/ 55	75 / 50	/	/
/ 1,300	1,700 / 1,900	/	/
/ 0B	111L / 0B	/	/
50:1 / 20:1	20:1 / 34:1	/	/
N / N	N / N	/	/

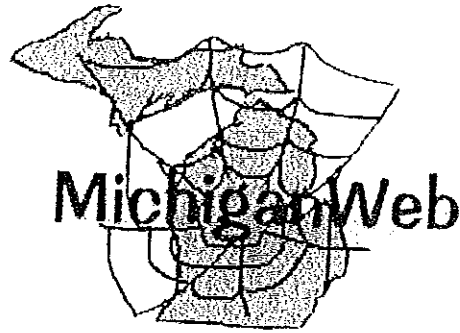
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A 110 THIS AIRPORT HAS BEEN SURVEYED BY THE NATIONAL GEODETIC SURVEY.
A 110-1 BIRDS & DEER ON & INVOF ARPT.

111 INSPECTOR: (S) 112 LAST INSP: 09/18/2008 113 LAST INFO REQ:



MASON COUNTY MICHIGAN

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Size: 493 Square Miles

Elevation: 600-1000 Feet

Physiography: Rolling plains, lake border plains

Growing Season: 160-180 days

Annual Precipitation: 30-34 inches

Average Snowfall: 60-90 inches

Forest Type: Maple-Beech-Birch-Hemlock, Oak-Hickory

Fall Colors: Late September - Early October

Named after Michigan's first governor, Steven Mason. In the mid 1600's French missionaries, including Father Pere Marquette, visited the Ottawa Indians here and Marquette's Memorial on the south side of the channel marks his death in 1675. In 1847 Burr Caswell settled in the county at the mouth of the Pere Marquette River. Because of all the Pine trees lumbering became a major industry. Car ferries began in 1897 and today there are still still operating year round between Ludington and Manitawoc, Wisconsin. The Pere Marquette River, a major attraction here which empties into Lake Michigan at Ludington.

CHAPTER 6. SELECTION OF ROTARY AND DISPLACEMENT PLOWS.

37. DESCRIPTION. This chapter provides guidance in the selection of rotary and displacement plows under varying winter operational conditions. It is intended to familiarize the operator with the graphs and tables discussed earlier for use in determining displacement plow geometrics and rotary plow capacities. Several practical examples are discussed including a mathematical analyses that involves a number of variables including snow density, plow efficiency, and equipment speed.

38. MINIMUM EQUIPMENT REQUIREMENTS.

a. **Commercial Service Airports.** For commercial service airports that provide scheduled air carrier service and experience snow conditions as presented in AC 150/5200-30A, at least one high-speed rotary snowplow is recommended. This plow should be supplemented with at least two displacement plows having equal capacity. In addition to this equipment, for each 750,000 ft² (70 000 m²) of primary pavement area, one towed or self propelled air-blast power sweeper and one hopper spreader for abrasives and solid de-icing chemical should be provided. If liquid de-icing chemical is used in lieu of, or in addition to, solid chemical, a minimum of one liquid spreader vehicle is recommended.

b. **Non-commercial Service Airports.** For non-commercial service airports having 10,000 or fewer annual operations and an annual snowfall of 30 inches (.76 m) or less, a minimum of one displacement plow should be provided. Airports having more than 30 inches (.76 m) of snow or those with over 10,000 operations and at least 15 inches (.38 m) of snow should have a minimum of one high-speed rotary plow supported by two displacement plows of equal capacity.

c. **Supporting Equipment.** Support vehicles such as sweepers and wheel loaders are usually needed to complete the removal of snow from all operational areas including secondary runways, taxiways, and ramp aprons.

39. DISPLACEMENT PLOW/VEHICLE COMPATIBILITY. A displacement plow must be properly paired with its carrier vehicle to achieve maximum operational performance. The level of performance between the two units is directly proportional to the type, size and weight of the plow and the power and weight of the vehicle. Figure 3-2, Carrier Vehicle Power versus Moldboard Length, provides a graphical representation of the vehicle power/displacement plow length relationship.

40. SELECTING A ROTARY PLOW FOR COMMERCIAL AND NON-COMMERCIAL SERVICE AIRPORTS.

In this example, an airport operator of a commercial service airport having an annual activity level of 35,000 operations wants to acquire a rotary plow for the upcoming winter season. Determine the size of the rotary plow needed based on the following conditions:

a. The airport snowplan calls for removal operations to begin when one inch of snow accumulates on the runway.

b. AC 150/5200-30A states that the primary surface area of this airport should be cleared in one hour.

c. Snow density is 25 lb/ft³ (400 kg/m³)-industry accepted standard.

GRAPHICAL SOLUTION

Step 1. Determine the size of the primary area to be cleared.

Location	Area
Main runway (9000 ft x 150 ft)	1,350,000 ft ²
Taxiways	187,000
Fillets	20,000
AARF apron and roads	20,000
Apron	40,000
Blast pads	60,000
Miscellaneous	20,000

Total primary area to be cleared 1,697,000 ft²

Note: For calculation purposes, the area may be rounded off to 1,700,000 ft² (158 000 m²).

Snow Removal Equipment Calculations
Michigan State Block Grant Program - Non-Commercial Service
**Except for the Notes sections, the darkly shaded areas will automatically calculate*

Airport Name: **MASON COUNTY AIRPORT**
 Annual Aircraft Operations **10 TO 40K**
 (MDOT AERO will provide upon request, if needed.)

Associated City: **LUDINGTON, MI**
 Average Annual Snowfall (inches): **90**
 Source: _____

Current MASP Classification (i.e. CII, BII, etc.) _____ (refer to Table 36)

Clearance Time per AC 150-5200-30B (refer to Table 1-2) **2** hours

Priority 1 (Critical) Snow Removal Areas

Primary Runway

Designation: 8/26	5003	length (ft) x	75	width (ft)	=	375,225	sq. ft.
Designation:		length (ft) x		width (ft)	=	0	sq. ft.
Designation:		length (ft) x		width (ft)	=	0	sq. ft.
TOTAL						375,225	

Notes: _____

Parallel Taxiway and one or two principal connecting taxiways

Designation:	5090	length (ft) x	35	width (ft)	=	178,150	sq. ft.
Designation:		length (ft) x		width (ft)	=	0	sq. ft.
Designation:		length (ft) x		width (ft)	=	0	sq. ft.
Designation:		length (ft) x		width (ft)	=	0	sq. ft.
TOTAL						178,150	

Notes: _____

Terminal, Cargo, and/or General Aviation Aprons (Critical apron area assumed as 2/3 of the apron)

67% Req' x	650	length (ft) x	430	width (ft)	=	187,265	sq. ft.
67% Req' x		length (ft) x		width (ft)	=	0	sq. ft.
67% Req' x		length (ft) x		width (ft)	=	0	sq. ft.
67% Req' x		length (ft) x		width (ft)	=	0	sq. ft.
TOTAL						187,265	

If more of apron(s) is considered critical, written justification must be provided.

Notes: _____

Other Critical Areas (i.e. emergency service roads, ARFF access roads, NAVAIDS, & other areas deemed essential)

Describe: ACCESS ROAD	800	length (ft) x	24	width (ft)	=	19,200	sq. ft.
Describe:		length (ft) x		width (ft)	=	0	sq. ft.
Describe:		length (ft) x		width (ft)	=	0	sq. ft.
Describe:		length (ft) x		width (ft)	=	0	sq. ft.
TOTAL						19,200	

Notes: _____

Total Priority 1 (Critical) Area	759,840	sq. ft.
Snow Density (using 1" of snow at 25 lbs/cu ft.)	792	tons
Minimum snow removal rate (70% efficiency)	565	tons/hr

Snow Removal Equipment Determination

AC 150-5220-20	Eligible SRE Items	Quantity	Requirements and Assumptions
Rotary Plows (Chapter 2)	Snow Blower	1	Class 1 up to 600 tons/hr (Refer to Table 2-1 - Rotary Plow Capacities) <i>The largest class is automatically populated based on tons/hr</i>
Displacement Plows (Chapter 6)	Plow	2	2 x the # of eligible snow blowers (equal capacity to blower) if annual snowfall > 30" or > 10,000 annual operations and at least 15" of snow.
Snowsweepers (Chapter 8)	Sweeper	1	Considered Supporting Equipment as needed to complete snow removal operations in accordance with FAA AC 150/5220-20
Carrier Vehicles (Chapter 5)	Front End Loader/Tractor	1	Considered Supporting Equipment as needed to complete snow removal operations in accordance with FAA AC 150/5220-20

Above table based on AC 150/5220-20, Chapter 6, Paragraph 38 (b & c) for Minimum Equipment Requirements.

If an airport requests more than the eligible quantities of snow removal equipment, additional justification must be submitted for determination of eligibility.

Sponsor Remarks:

MDOT will review sheet and make final determination of eligible SRE.
 MDOT Use ONLY

1220 Airport Access Road
 G.A. Terminal, 2nd Floor
 Traverse City, MI 49686
 Phone 231-946-2394

ENGINEER'S COST ESTIMATE

AIRPORT NAME: MASON COUNTY AIRPORT DATE: 6/14/2011

LOCATION: LUDINGTON, MI PEI JOB NO. _____ PROGRAM _____

FEDERAL PROJECT NO: _____ STATE CONTRACT NO: _____

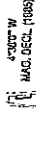
DESCRIPTION OF WORK: FRONT END LOADER WITH 14 FT. PLOW BLADE

ESTIMATE BASED UPON:

JUDGEMENT ESTIMATE: X PRE-PLANS: _____ DETAIL CONSTRUCTION PLANS: _____

LINE NO.	SPEC. NO.	ITEM DESCRIPTION	UNIT	QUANT.	UNIT PRICE	AMOUNT:
1		FRONT END LOADER WITH SNOW BUCKET	L.SUM			\$ 160,000.00
2		14 FT. PLOW BLASÉ WITH QUICK CONNECT	L.SUM			\$ 40,000.00

TOTAL ESTIMATED CONSTRUCTION:	\$	200,000.00
TOTAL ESTIMATED ENGINEERING:	\$	8,000.00
TOTAL ESTIMATED ADMINISTRATION:	\$	2,000.00
TOTAL ESTIMATED COST:	\$	210,000.00



X 67

X 6E

X 6465

CAR PARKING LOT
± 240' x 180'

ENTRANCE ROAD

EXISTING 30' TAXIWAY

EDC

ELEV. = 674.0

EXISTING TERMINAL BUILDING

EXISTING TERMINAL APRON
430' x 620'

EXISTING POWER GATE

EXISTING SRE
BDDG. T.E. = 668.0'

EXIST. FUEL TANK
T.ELEV. = 651.10'

EXIST. FUEL TANK
T.ELEV. = 650.90'

EXIST. FIELD LIGHTING ELECTRICAL VAULT

EXISTING HANGAR (F.B.O.)
T.ELEV. = 672.00'

FUTURE BOY HANGAR

FUTURE BOY HANGAR

FUTURE 14 UNIT HANGARS

FUTURE 6-UNIT HANGAR

FUTURE BOY HANGAR

FUTURE BOY HANGAR

FUTURE BOY HANGAR

HANGAR
T.E. = 659.10'

HANGAR
T.E. = 662.30'

HANGAR
T.E. = 665.4'

HANGAR
T.E. = 667.6'

EX. HANGAR
T.ELEV. = 656.8'

EX. HANGAR
T.E. = 655.6'

EX. HANGAR
T.ELEV. = 652.1'

FUTURE

FUTURE

FUTURE

FUTURE

FUTURE

FUTURE

FUTURE

TAXIWAY

- DEVELOPMENT YEAR 2013
- ① 6 UNIT T-HANGAR
 - ② TAXI STREETS

MASON COUNTY AIRPORT

DEVELOPMENT YEAR 2013

POSSIBILITIES ENGINEERING, INC.

1220 WEST MAIN STREET, SUITE 200, MARIETTA, GA 30067

APPROVED FILE NO. PROGRAM DRAWN BY DATE 2011 SHEET 1 OF 1

FEDERAL PROJECT NO. PROGRAM STATE CONTRACT NO.

ENGINEER'S COST ESTIMATE

AIRPORT NAME: MASON COUNTY AIRPORT

DATE: 10/26/2011

LOCATION: LUDINGTON, MI

PEI JOB NO. PROGRAM

FEDERAL PROJECT NO: _____

STATE CONTRACT NO: _____

DESCRIPTION OF WORK: T-HANGARS (6 Unit)

ESTIMATE BASED UPON:

JUDGEMENT ESTIMATE: X

PRE-PLANS: _____

DETAIL CONSTRUCTION PLANS: _____

LINE NO.	SPEC. NO.	ITEM DESCRIPTION	UNIT	QUANT.	UNIT PRICE	AMOUNT:
1	1000400	MOBILIZATION AND GENERAL CONDITIONS	L.SUM			\$ 20,000.00
2	1000410	SAFETY & SECURITY	L.SUM			\$ 1,000.00
3		REMOVE EXISTING T-HANGARS	EACH	6	\$ 1,000.00	\$ 6,000.00
4		T-HANGARS WITH BI-FOLD DOORS	EACH	6	\$ 42,000.00	\$ 252,000.00

TOTAL ESTIMATED CONSTRUCTION:	\$	279,000.00
TOTAL ESTIMATED ENGINEERING:	\$	31,000.00
TOTAL ESTIMATED ADMINISTRATION:	\$	2,000.00
TOTAL ESTIMATED COST:	\$	312,000.00

ENGINEER'S COST ESTIMATE

AIRPORT NAME: MASON COUNTY AIRPORT

DATE: 6/6/2011

LOCATION: LUDINGTON, MI

PEI JOB NO. PROGRAM

FEDERAL PROJECT NO: _____

STATE CONTRACT NO: _____

DESCRIPTION OF WORK: TAXI STREETS, T-HANGARS (4,500 S.YDS)

ESTIMATE BASED UPON:

JUDGEMENT ESTIMATE: X

PRE-PLANS: _____

DETAIL CONSTRUCTION PLANS: _____

LINE NO.	SPEC. NO.	ITEM DESCRIPTION	UNIT	QUANT.	UNIT PRICE	AMOUNT:
1	1000400	MOBILIZATION AND GENERAL CONDITIONS	L.SUM			\$ 7,000.00
2	1000410	SAFETY & SECURITY	L.SUM			\$ 1,500.00
3		PAVEMENT REMOVAL	S.YD	2,000	\$ 2.00	\$ 4,000.00
4		UNCLASSIFIED EXCAVATION	C.YD	3,000	\$ 5.00	\$ 15,000.00
5		AGGREGATE BASE COURSE	C.YD	750	\$ 30.00	\$ 22,500.00
6		BITUMINOUS SURFACE COURSE	TON	780	\$ 75.00	\$ 58,500.00
7		TURF & MULCH	ACRE	1	\$ 1,500.00	\$ 1,500.00
8		MISC.				\$ 5,000.00

TOTAL ESTIMATED CONSTRUCTION:	\$	115,000.00
TOTAL ESTIMATED ENGINEERING:	\$	18,000.00
TOTAL ESTIMATED ADMINISTRATION:	\$	2,000.00
TOTAL ESTIMATED COST:	\$	135,000.00

1220 Airport Access Road
 G.A. Terminal, 2nd Floor
 Traverse City, MI 49686
 Phone 231-946-2394

ENGINEER'S COST ESTIMATE

AIRPORT NAME: MASON COUNTY AIRPORT

DATE: 6/6/2011

LOCATION: LUDINGTON, MI

PEI JOB NO. PROGRAM

FEDERAL PROJECT NO: _____

STATE CONTRACT NO: _____

DESCRIPTION OF WORK: SNOW BLOWER

ESTIMATE BASED UPON:

JUDGEMENT ESTIMATE: X

PRE-PLANS: _____

DETAIL CONSTRUCTION PLANS: _____

LINE NO.	SPEC. NO.	ITEM DESCRIPTION	UNIT	QUANT.	UNIT PRICE	AMOUNT:
1		SNOW BLOWER	L.SUM			\$ 393,000.00

TOTAL ESTIMATED CONSTRUCTION:	\$	393,000.00
TOTAL ESTIMATED ENGINEERING:	\$	6,000.00
TOTAL ESTIMATED ADMINISTRATION:	\$	1,000.00
TOTAL ESTIMATED COST:	\$	400,000.00

ENGINEER'S COST ESTIMATE

AIRPORT NAME: MASON COUNTY AIRPORT

DATE: 6/6/2011

LOCATION: LUDINGTON, MI

PEI JOB NO. _____ PROGRAM _____

FEDERAL PROJECT NO: _____

STATE CONTRACT NO: _____

DESCRIPTION OF WORK: LAND ACQUISITION APPROACH 26

ESTIMATE BASED UPON:

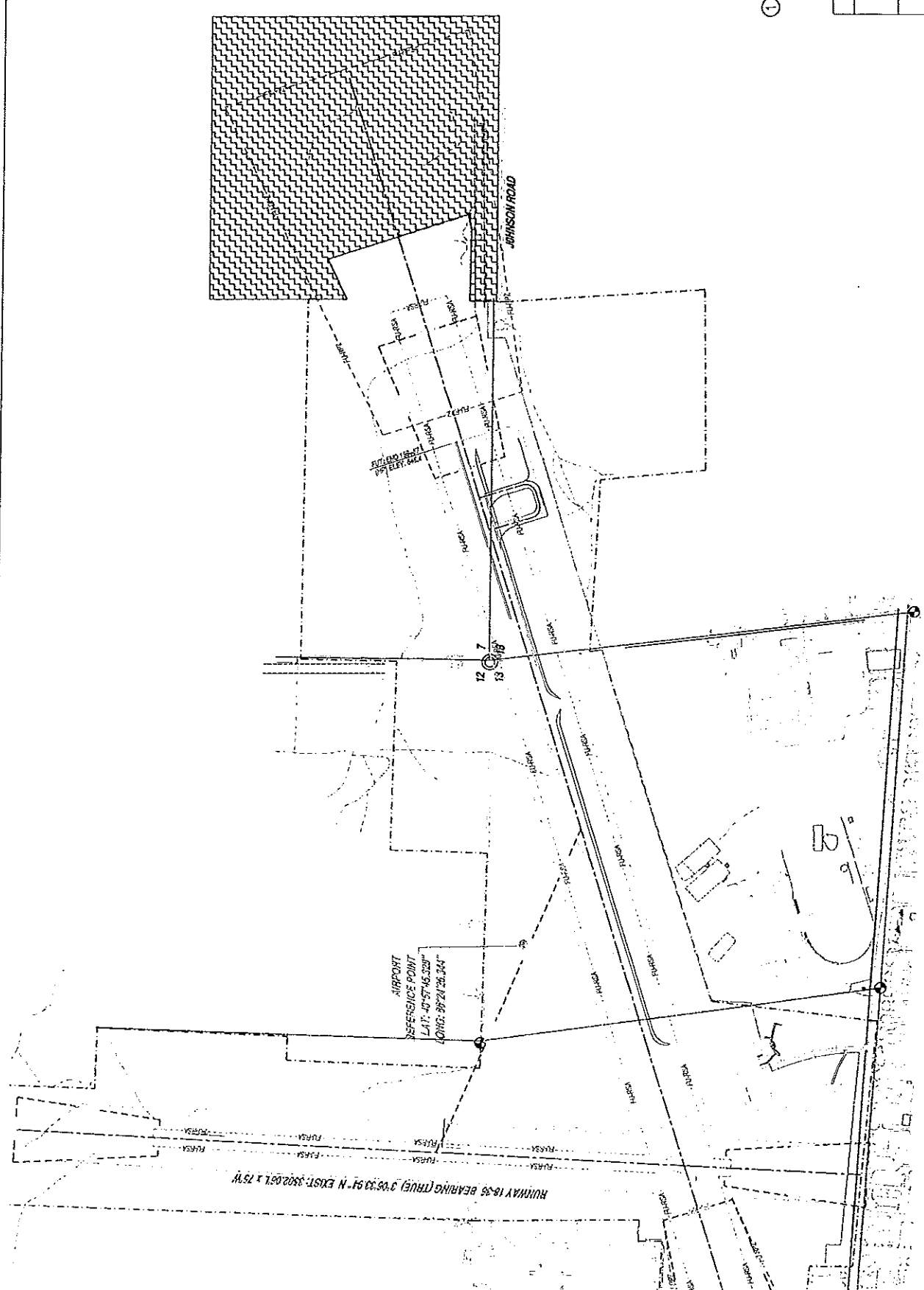
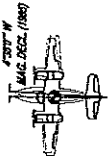
JUDGEMENT ESTIMATE: X

PRE-PLANS: _____

DETAIL CONSTRUCTION PLANS: _____

LINE NO.	SPEC. NO.	ITEM DESCRIPTION	UNIT	QUANT.	UNIT PRICE	AMOUNT:
1		LAND ACQUISITION	ACRES	90	\$ 2,000.00	\$ 180,000.00
2		RESIDENCES (2)	EACH	2	\$ 200,000.00	\$ 400,000.00
3		APPROACHES (6) FEE	EACH	6	\$ 10,000.00	\$ 60,000.00
4		ACQUISITION FEE				\$ 60,000.00

TOTAL ESTIMATED CONSTRUCTION:	\$	700,000.00
TOTAL ESTIMATED ENGINEERING:		
TOTAL ESTIMATED ADMINISTRATION:		
TOTAL ESTIMATED COST:	\$	700,000.00



Runway 18-36 BEARING (TRUE) 305°33'54" N EXIST. 3802FT x 75W

AIRPORT REFERENCE POINT
 LAT: 43°57'45.538"
 LONG: 89°24'28.344"

1 APPROACH CLEARING

HASON COUNTY AIRPORT	
DEVELOPMENT YEAR 2018	
Peckham Engineering, Inc. <small>1200 W. WASHINGTON ST. SUITE 200, WASHINGTON, MO 64785</small>	

AIRPORT ICAO	FD004
AIRPORT IATA	
AUTOGRAV FILE NO.	PROGRAM
DRAWN	DATE
SHEET	SHEET
FEDERAL PROJECT NO.	
STATE CONTRACT NO.	

ENGINEER'S COST ESTIMATE

AIRPORT NAME: MASON COUNTY AIRPORT

DATE: 6/16/2011

LOCATION: LUDINGTON, MI

PEI JOB NO. _____ PROGRAM _____

FEDERAL PROJECT NO: _____

STATE CONTRACT NO: _____

DESCRIPTION OF WORK: AIRFIELD MARKING

ESTIMATE BASED UPON:

JUDGEMENT ESTIMATE: X

PRE-PLANS: _____

DETAIL CONSTRUCTION PLANS: _____

LINE NO.	SPEC. NO.	ITEM DESCRIPTION	UNIT	QUANT.	UNIT PRICE	AMOUNT:
1	1000400	MOBILIZATION AND GENERAL CONDITIONS	L.SUM			\$ 2,000.00
2	1000410	SAFETY & SECURITY	L.SUM			\$ 1,197.25
3	6200517	BLACK OUTLINE MARKING	S.FT.	24,351	\$ 0.35	\$ 8,522.85
4	6200538	REMARKING, SOLID WHITE	S.FT.	36,621	\$ 0.30	\$ 10,986.30
5	6200539	YELLOW TAXIWAY REMARKING	S.FT.	24,312	\$ 0.30	\$ 7,293.60

TOTAL ESTIMATED CONSTRUCTION:	\$	30,000.00
TOTAL ESTIMATED ENGINEERING:	\$	4,500.00
TOTAL ESTIMATED ADMINISTRATION:	\$	500.00
TOTAL ESTIMATED COST:	\$	35,000.00

ENGINEER'S COST ESTIMATE

AIRPORT NAME: MASON COUNTY AIRPORT DATE: 6/14/2011

LOCATION: LUDINGTON, MI PEI JOB NO. _____ PROGRAM _____

FEDERAL PROJECT NO: _____ STATE CONTRACT NO: _____

DESCRIPTION OF WORK: REHABILITATE TERMINAL APRON (34,000 S. YD.)

ESTIMATE BASED UPON:

JUDGEMENT ESTIMATE: X PRE-PLANS: _____ DETAIL CONSTRUCTION PLANS: _____

LINE NO.	SPEC. NO.	ITEM DESCRIPTION	UNIT	QUANT.	UNIT PRICE	AMOUNT:
1	1000400	MOBILIZATION AND GENERAL CONDITIONS	L.SUM			\$ 25,000.00
2	1000410	SAFETY & SECURITY	L.SUM			\$ 3,500.00
3		CRACK REPAIR (CUT AND PATCH)	L.FT.	3,000	\$ 5.00	\$ 15,000.00
4		COLD MILLING	L.FT.	35,000	\$ 2.00	\$ 70,000.00
5		BITUMINOUS TACK COAT	GAL.	3,000	\$ 1.50	\$ 4,500.00
6		BITUMINOUS SURFACE COURSE	TON	3,000	\$ 70.00	\$ 210,000.00
7		MARKING	L. SUM			\$ 2,000.00

TOTAL ESTIMATED CONSTRUCTION:	\$	330,000.00
TOTAL ESTIMATED ENGINEERING:	\$	50,000.00
TOTAL ESTIMATED ADMINISTRATION:	\$	3,000.00
TOTAL ESTIMATED COST:	\$	383,000.00

ENGINEER'S COST ESTIMATE

AIRPORT NAME: MASON COUNTY AIRPORT

DATE: 6/14/2011

LOCATION: LUDINGTON, MI

PEI JOB NO. PROGRAM

FEDERAL PROJECT NO: _____

STATE CONTRACT NO: _____

DESCRIPTION OF WORK: EXPAND TERMINAL APRON (9,400 S.YD.)

ESTIMATE BASED UPON:

JUDGEMENT ESTIMATE: X

PRE-PLANS: _____

DETAIL CONSTRUCTION PLANS: _____

LINE NO.	SPEC. NO.	ITEM DESCRIPTION	UNIT	QUANT.	UNIT PRICE	AMOUNT:
1	1000400	MOBILIZATION AND GENERAL CONDITIONS	L.SUM			\$ 18,000.00
2	1000410	SAFETY & SECURITY	L.SUM			\$ 4,250.00
3		UNCLASSIFIED EXCAVATION	C.YD.	5,000	\$ 5.00	\$ 25,000.00
4		AGGREGATE BASE COURSE	C.YD.	1,600	\$ 35.00	\$ 56,000.00
5		BITUMINOUS SURFACE	TON	1,700	\$ 70.00	\$ 119,000.00
6		BITUMINOUS TACK	GAL.	1,000	\$ 1.50	\$ 1,500.00
7		TIE DOWN	EACH	45	\$ 200.00	\$ 9,000.00
8		STORM DRAIN	L.FT.	350	\$ 35.00	\$ 12,250.00
9		CATCH BASIN	EACH	4	\$ 2,000.00	\$ 8,000.00
10		TURFING	ACRES	2	\$ 1,000.00	\$ 2,000.00

TOTAL ESTIMATED CONSTRUCTION:	\$	255,000.00
TOTAL ESTIMATED ENGINEERING:	\$	39,000.00
TOTAL ESTIMATED ADMINISTRATION:	\$	3,000.00
TOTAL ESTIMATED COST:	\$	297,000.00

1220 Airport Access Road
 G.A. Terminal, 2nd Floor
 Traverse City, MI 49686
 Phone 231-946-2394

ENGINEER'S COST ESTIMATE

AIRPORT NAME: MASON COUNTY AIRPORT

DATE: 6/14/2011

LOCATION: LUDINGTON, MI

PEI JOB NO. PROGRAM

FEDERAL PROJECT NO: _____

STATE CONTRACT NO: _____

DESCRIPTION OF WORK: REHABILITATE RUNWAY 1-19 CRACK REPAIR AND POROUS FRICTION COURSE
(29,000 S.YD.)

ESTIMATE BASED UPON:

JUDGEMENT ESTIMATE: X

PRE-PLANS: _____

DETAIL CONSTRUCTION PLANS: _____

LINE NO.	SPEC. NO.	ITEM DESCRIPTION	UNIT	QUANT.	UNIT PRICE	AMOUNT:
1	1000400	MOBILIZATION AND GENERAL CONDITIONS	L.SUM			\$ 20,000.00
2	1000410	SAFETY & SECURITY	L.SUM			\$ 3,700.00
3		COLD MILLING	S. YD.	29,200	\$ 1.50	\$ 43,800.00
4		CRACK REPAIR	L.FT.	3,000	\$ 5.00	\$ 15,000.00
5		BITUMINOUS SURFACE	TON	2,500	\$ 70.00	\$ 175,000.00
6		BITUMINOUS TACK	GAL.	3,000	\$ 1.50	\$ 4,500.00
7		MARKING	L.SUM			\$ 14,000.00

TOTAL ESTIMATED CONSTRUCTION:	\$	276,000.00
TOTAL ESTIMATED ENGINEERING:	\$	42,000.00
TOTAL ESTIMATED ADMINISTRATION:	\$	3,000.00
TOTAL ESTIMATED COST:	\$	321,000.00

ENGINEER'S COST ESTIMATE

AIRPORT NAME: MASON COUNTY AIRPORT DATE: 6/16/2011
 LOCATION: LUDINGTON, MI PEI JOB NO. PROGRAM
 FEDERAL PROJECT NO: _____ STATE CONTRACT NO: _____
 DESCRIPTION OF WORK: AIRFIELD MARKING

ESTIMATE BASED UPON:

JUDGEMENT ESTIMATE: X PRE-PLANS: _____ DETAIL CONSTRUCTION PLANS: _____

LINE NO.	SPEC. NO.	ITEM DESCRIPTION	UNIT	QUANT.	UNIT PRICE	AMOUNT:
1	1000400	MOBILIZATION AND GENERAL CONDITIONS	L.SUM			\$ 2,000.00
2	1000410	SAFETY & SECURITY	L.SUM			\$ 1,197.25
3	6200517	BLACK OUTLINE MARKING	S.FT.	24,351	\$ 0.35	\$ 8,522.85
4	6200538	REMARKING, SOLID WHITE	S.FT.	36,621	\$ 0.30	\$ 10,986.30
5	6200539	YELLOW TAXIWAY REMARKING	S.FT.	24,312	\$ 0.30	\$ 7,293.60

TOTAL ESTIMATED CONSTRUCTION:	\$	30,000.00
TOTAL ESTIMATED ENGINEERING:	\$	4,500.00
TOTAL ESTIMATED ADMINISTRATION:	\$	500.00
TOTAL ESTIMATED COST:	\$	35,000.00

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ENGINEER'S COST ESTIMATE

AIRPORT NAME: MASON COUNTY AIRPORT DATE: 6/14/2011

LOCATION: LUDINGTON, MI PEI JOB NO. PROGRAM

FEDERAL PROJECT NO: _____ STATE CONTRACT NO: _____

DESCRIPTION OF WORK: MEDIUM INTENSITY APPROACH LIGHTING SYSTEM (MALSR) RUNWAY 26

ESTIMATE BASED UPON:

JUDGEMENT ESTIMATE: X PRE-PLANS: _____ DETAIL CONSTRUCTION PLANS: _____

LINE NO.	SPEC. NO.	ITEM DESCRIPTION	UNIT	QUANT.	UNIT PRICE	AMOUNT:
1	1000400	MOBILIZATION AND GENERAL CONDITIONS	L.SUM			\$ 50,000.00
2	1000410	SAFETY & SECURITY	L.SUM			\$ 5,000.00
3		FURNISH AND INSTALL MEDIUM INTENSITY APPROACH LIGHTING SYSTEM WITH RUNWAY ALIGNMENT INDICATOR LIGHTS (MALSR)	L.SUM			\$ 200,000.00
4		FURNISH AND INSTALL FIBERGLASS SHELTER FOR MALSR	L.SUM			\$ 80,000.00
5		FURNISH AND INSTALL OPERATING EQUIPMENT (MALSR)	L.SUM			\$ 130,000.00
6		POWER SUPPLY	L.SUM			\$ 40,000.00

TOTAL ESTIMATED CONSTRUCTION:	\$	505,000.00
TOTAL ESTIMATED ENGINEERING:	\$	90,000.00
TOTAL ESTIMATED ADMINISTRATION:	\$	5,000.00
TOTAL ESTIMATED COST:	\$	600,000.00

ENGINEER'S COST ESTIMATE

AIRPORT NAME: MASON COUNTY AIRPORT

DATE: 6/6/2011

LOCATION: LUDINGTON, MI

PEI JOB NO. PROGRAM

FEDERAL PROJECT NO: _____

STATE CONTRACT NO: _____

DESCRIPTION OF WORK: SAND STORAGE BUILDING (400 S.FT.)

ESTIMATE BASED UPON:

JUDGEMENT ESTIMATE: X

PRE-PLANS: _____

DETAIL CONSTRUCTION PLANS: _____

LINE NO.	SPEC. NO.	ITEM DESCRIPTION	UNIT	QUANT.	UNIT PRICE	AMOUNT:
1	1000400	MOBILIZATION AND GENERAL CONDITIONS	L.SUM			\$ 5,000.00
2	1000410	SAFETY & SECURITY	L.SUM			\$ 2,000.00
3		SAND STORAGE BUILDING	S.FT.	400	\$ 150.00	\$ 60,000.00

TOTAL ESTIMATED CONSTRUCTION:	\$	67,000.00
TOTAL ESTIMATED ENGINEERING:	\$	11,000.00
TOTAL ESTIMATED ADMINISTRATION:	\$	2,000.00
TOTAL ESTIMATED COST:	\$	80,000.00