

FY 2018 HIGH RISK RURAL ROADS
FUNDING APPLICATION

FOR

MAST ROAD

CONTACT PERSON:

BRENT M. SCHLACK, P.E.
TRAFFIC & SAFETY SECTION
WASHTENAW COUNTY ROAD COMMISSION



Introduction

The Washtenaw County Road Commission (WCRC) is applying for High Risk Rural Roads (HRRR) Program to improve safety on Mast Road between Strawberry Lake Road and North Territorial Road. Project is located in Webster Township, Washtenaw County, Michigan. Figure 1 shows project location and Appendix A contains additional site information.

Figure 1 - Project Location



Location Information

Mast Road is a county paved primary road and has a National Functional Classification of “Rural Major Collector”. The most recent 24-hour traffic count on Mast Road was performed in 2014 and shows 3,435 vehicles north of North Territorial Road. The length of the project is approximately 2.8 miles. The speed limit on Mast Road is 55 mph (unposted).

Recent crash history on Mast Road has been reviewed and Single Motor Vehicle crash type was identified as a prevailing crash type. There were 6 crashes involving trees along Mast Road during 4 year period (2012-currently available data) resulting in 1 K-type injury and 1 B-type injury.

The UD-10 reports of crashes that were used to perform the Time-of-Return (TOR) analysis are presented in Appendix B. The TOR analysis is presented in Appendix C, MERL Cost Estimate is in Appendix D, and the Application Form is in Appendix E.

Pictures below were taking on Mast Road on April 5, 2016.

Photo 1 - Mast Road just north of Walsh Road



Photo 2 - Mast Road 0.25 mi north of Walsh Road



Photo 3 - Mast Road 1200 feet south of Strawberry Lake Road**Photo 4 - Mast Road culvert south of Strawberry Lake Road**

Proposed Improvements

Based on the crash patterns the WCRC is proposing targeted tree removal and tree trimming on Mast Road between Strawberry Lake Road and North Territorial Road.

One of the crashes occurred near culvert approximately 1200 feet south of Strawberry Lake Road. There is a steep drop-off and guardrail is proposed at this locations. The culvert itself is failing and needs to be replaced which was included in the scope for this project.

These improvements are expected to reduce number and severity of crashes along Mast Road.

WCRC Project Ability

The WCRC Traffic and Safety Engineering Section has a competent technical staff trained in designing and managing the construction of roadside and roadway improvements, intersection safety improvements and upgrades, and signalization projects. Previous examples of this work and WCRC's ability to follow through with Safety Funding Grants can be seen through the following list of successful projects:

- Cherry Hill Road at Prospect Road - FY 2014 Intersection Improvement;
- Michigan Avenue - FY 2013 - 4 to 3 Conversion;
- Rawsonville Road and Martz Road - FY 2012 Signalization Project;
- Waters Road - FY 2011 Roadside Safety Improvement Project.



Appendix A – Location Data



Washtenaw County Road Commission

Webster Township

Mast Rd N of N Territorial Rd
1 mile N of N Territorial

Site Code: 0031710004
Date Start: 12-May-14

Start Time	12-May-14		Mon Total	13-May-14		Tue Total	14-May-14		Wed Total	15-May-14		Thu Total	Fri SB	Fri NB	Fri Total	Day Average
	SB	NB		SB	NB		SB	NB		SB	NB					
12:00 AM	*	*	*	4	7	11	*	*	*	*	*	*	*	*	*	11
01:00	*	*	*	3	5	8	*	*	*	*	*	*	*	*	*	8
02:00	*	*	*	2	3	5	*	*	*	*	*	*	*	*	*	5
03:00	*	*	*	1	2	3	*	*	*	*	*	*	*	*	*	3
04:00	*	*	*	11	1	12	*	*	*	*	*	*	*	*	*	12
05:00	*	*	*	31	4	35	*	*	*	*	*	*	*	*	*	35
06:00	*	*	*	95	22	117	*	*	*	*	*	*	*	*	*	117
07:00	*	*	*	383	36	419	*	*	*	*	*	*	*	*	*	419
08:00	*	*	*	194	88	282	*	*	*	*	*	*	*	*	*	282
09:00	101	70	171	*	*	*	*	*	*	*	*	*	*	*	*	171
10:00	76	53	129	*	*	*	*	*	*	*	*	*	*	*	*	129
11:00	70	76	146	*	*	*	*	*	*	*	*	*	*	*	*	146
12:00 PM	57	76	133	*	*	*	*	*	*	*	*	*	*	*	*	133
01:00	88	74	162	*	*	*	*	*	*	*	*	*	*	*	*	162
02:00	101	100	201	*	*	*	*	*	*	*	*	*	*	*	*	201
03:00	76	153	229	*	*	*	*	*	*	*	*	*	*	*	*	229
04:00	54	143	197	*	*	*	*	*	*	*	*	*	*	*	*	197
05:00	95	361	456	*	*	*	*	*	*	*	*	*	*	*	*	456
06:00	70	261	331	*	*	*	*	*	*	*	*	*	*	*	*	331
07:00	34	100	134	*	*	*	*	*	*	*	*	*	*	*	*	134
08:00	35	87	122	*	*	*	*	*	*	*	*	*	*	*	*	122
09:00	20	51	71	*	*	*	*	*	*	*	*	*	*	*	*	71
10:00	17	25	42	*	*	*	*	*	*	*	*	*	*	*	*	42
11:00	6	13	19	*	*	*	*	*	*	*	*	*	*	*	*	19
Total	900	1643	2543	724	168	892	0	0	0	0	0	0	0	0	0	
24 Hr. Avg.																3435
AM Peak	-	-	09:00	-	-	07:00	-	-	-	-	-	-	-	-	-	07:00
Vol.	-	-	171	-	-	419	-	-	-	-	-	-	-	-	-	419
PM Peak	-	-	17:00	-	-	-	-	-	-	-	-	-	-	-	-	17:00
Vol.	-	-	456	-	-	-	-	-	-	-	-	-	-	-	-	456

Washtenaw County Road Commission

Webster Township

Mast Rd N of N Territorial Rd
1 mile N of N Territorial

Site Code: 0031710004
Date Start: 12-May-14

SB, NB	Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
	09:00	0	78	67	0	24	0	0	2	0	0	0	0	0	0	171
	10:00	0	57	42	1	24	0	0	5	0	0	0	0	0	0	129
	11:00	0	50	68	1	24	0	0	3	0	0	0	0	0	0	146
	12 PM	0	41	68	0	21	1	1	1	0	0	0	0	0	0	133
	13:00	0	63	72	2	22	1	0	1	1	0	0	0	0	0	162
	14:00	0	79	84	0	37	0	0	0	0	0	0	0	0	1	201
	15:00	0	66	123	1	37	0	0	1	1	0	0	0	0	0	229
	16:00	0	39	104	0	51	1	0	2	0	0	0	0	0	0	197
	17:00	3	90	276	7	79	0	0	1	0	0	0	0	0	0	456
	18:00	0	58	223	2	47	0	0	1	0	0	0	0	0	0	331
	19:00	0	35	78	1	19	0	0	1	0	0	0	0	0	0	134
	20:00	0	28	64	0	28	0	0	2	0	0	0	0	0	0	122
	21:00	0	17	45	0	9	0	0	0	0	0	0	0	0	0	71
	22:00	0	13	27	0	2	0	0	0	0	0	0	0	0	0	42
	23:00	0	5	12	0	2	0	0	0	0	0	0	0	0	0	19
	05/13/14	0	4	6	0	1	0	0	0	0	0	0	0	0	0	11
	01:00	0	3	4	0	1	0	0	0	0	0	0	0	0	0	8
	02:00	0	2	3	0	0	0	0	0	0	0	0	0	0	0	5
	03:00	0	0	3	0	0	0	0	0	0	0	0	0	0	0	3
	04:00	0	7	5	0	0	0	0	0	0	0	0	0	0	0	12
	05:00	0	28	6	0	1	0	0	0	0	0	0	0	0	0	35
	06:00	1	77	29	5	5	0	0	0	0	0	0	0	0	0	117
	07:00	0	338	69	2	9	0	0	1	0	0	0	0	0	0	419
	08:00	1	171	69	0	39	0	0	1	1	0	0	0	0	0	282
	Total	5	1349	1547	22	482	3	1	22	3	0	0	0	0	1	3435
	Percent	0.1%	39.3%	45.0%	0.6%	14.0%	0.1%	0.0%	0.6%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	

AM Peak Vol.		09:00	11:00	10:00	09:00				10:00							09:00
		78	68	1	24				5							171
PM Peak Vol.	17:00	17:00	17:00	17:00	17:00	12:00	12:00	16:00	13:00						14:00	17:00
	3	90	276	7	79	1	1	2	1					1		456

Appendix B – Crash Data



SANITIZED

Authority: 1949 PA 300, Sec.257 622
Compliance: Required MSP UD-10E
Penalty: \$100 and/or 90 days (Rev 11/2006)

External # 8302601
Crash ID 8302601

Page 01 of 01
Incident # ##### File Class 93001

STATE OF MICHIGAN TRAFFIC CRASH REPORT

ORI: MI 8118100	Department Name Washtenaw Co Sheriff's Office			Incident Disposition Closed	
Crash Date 02/24/2012	Crash Time 06:26	No. of Units 01	Crash Type Single Motor Vehicle	Special Circumstances <input type="checkbox"/> School Bus <input checked="" type="checkbox"/> None <input type="checkbox"/> Hit and Run <input type="checkbox"/> Deer <input type="checkbox"/> Fleeing Police	Special Checks <input type="checkbox"/> Fatal <input type="checkbox"/> Non-Traffic Area <input type="checkbox"/> ORV/Snowmobile
County 81 - Washtenaw	Traffic Control None	Relation to Roadway Outside of shoulder/curb	Special Study	Weather Snow/Blowing Snow	Area 10 - NON-FRWY Straight roadway
City/Twsp 18 - Webster Twp	Construction Zone (if applicable) Type	Lane Closed	Activity	Light Dark-Unlighted	Road Condition Snowy
Total Lanes 02	Speed Limit 55	Posted No			

Prefix	Road Name MAST	Road Type RD	Suffix	Divided Roadway
Distance 200 Feet N	Traffic Way 01 - Not physically divided		Access Control 01 - No access control	
Prefix	Intersecting Road WALSH	Road Type RD	Suffix	Divided Roadway

Unit Number 01	Unit Known Yes	State MI	Driver License Number #####	Date of Birth (Age) 06/18/1978 (33)	License Type <input checked="" type="checkbox"/> Operator <input type="checkbox"/> Cycle <input type="checkbox"/> Chauffeur <input type="checkbox"/> Moped	Endorsements <input type="checkbox"/> Farm <input type="checkbox"/> Recreation	Sex F	Total Occupants 01	Hazardous Action 01 - Speed too fast
Unit Type MV	Driver Information ##### DEXTER, MI 48130 (###) ###-####			Injury O	Position 01	Restraint 04	Hospital REFUSED		
Driver Condition <input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 99				Interlock No	Ejected	Trapped	Airbag Deployed Yes	Ambulance REFUSED	
Alcohol <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Test Type <input type="checkbox"/> Field <input type="checkbox"/> PBT <input type="checkbox"/> Breath <input type="checkbox"/> Blood <input type="checkbox"/> Urine				Test Results		Drugs <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Test Type <input type="checkbox"/> Blood <input type="checkbox"/> Urine		Citation Issued <input type="checkbox"/> Hazardous <input type="checkbox"/> Other	
Vehicle Registration #####	State MI	Insurance / Policy # #####		Towed To/By #####		Special Vehicles 0	Private Trailer Type	Vehicle Defect	
VIN #####	Vehicle Description CHRYSLER	Make VAN	Model	Color GREEN	Year 2008	Vehicle Type Van, motor home			
Location of Greatest Damage 01	First Impact 01	Extent of Damage 6	Driveable No	Vehicle Direction S	Vehicle Use 01 - Private	Action Prior 01 - Going Straight Ahead			
Sequence of Events First 01 - Loss of control			Second 39 - Tree		Third		Fourth		

PASSENGERS	Passenger Information	Date of Birth (Age)	Sex	Position	Restraint	Hospital
		Injury	Airbag Deployed	Ejected	Trapped	Ambulance
	Passenger Information	Date of Birth (Age)	Sex	Position	Restraint	Hospital
		Injury	Airbag Deployed	Ejected	Trapped	Ambulance
	Passenger Information	Date of Birth (Age)	Sex	Position	Restraint	Hospital
		Injury	Airbag Deployed	Ejected	Trapped	Ambulance

Carrier Information		Carrier Source	GVWR	ICCMC	USDOT	MPSC
Driver's CDL Type		Endorsements <input type="checkbox"/> H <input type="checkbox"/> P <input type="checkbox"/> T <input type="checkbox"/> N <input type="checkbox"/> S <input type="checkbox"/> X		CDL Exempt <input type="checkbox"/> Farm <input type="checkbox"/> Other	CDL Restrictions <input type="checkbox"/> 28 <input type="checkbox"/> 29 <input type="checkbox"/> 30 <input type="checkbox"/> 35 <input type="checkbox"/> 36	
Interstate/Intrastate	Vehicle Type	Type & Axle Per Unit First Second Third Fourth	Cargo Body Type	Medical Card	Hazardous Material <input type="checkbox"/> Placard <input type="checkbox"/> Cargo Spill	ID # Class #

OWNER'S	Owner Information	Owner Information
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Person Advised of Damaged Traffic Control	Damaged Property	Public
Contact Name: #####	Owner & Phone	
Contact Date: #####		
Contact Time: ##:##		

SANITIZED

Authority: 1949 PA 300, Sec.257 622
Compliance: Required MSP UD-10E
Penalty: \$100 and/or 90 days (Rev 11/2006)

External # *****
Crash ID 8516523

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Incident # ***** File Class 93001

STATE OF MICHIGAN TRAFFIC CRASH REPORT

ORI: MI 8118100		Department Name Washtenaw Co Sheriff's Office			Incident Disposition Closed	
Crash Date 12/10/2012		Crash Time 04:57	No. of Units 01	Crash Type Single Motor Vehicle	Special Circumstances <input type="checkbox"/> School Bus <input checked="" type="checkbox"/> None <input type="checkbox"/> Hit and Run <input type="checkbox"/> Deer <input type="checkbox"/> Fleeing Police <input type="checkbox"/> ORV/Snowmobile	Special Checks <input type="checkbox"/> Fatal <input type="checkbox"/> Non-Traffic Area <input type="checkbox"/> ORV/Snowmobile
County 81 - Washtenaw	Traffic Control None	Relation to Roadway Gore	Special Study	Weather Fog/Smoke	Area 10 - NON-FRWY Straight roadway	
City/Twsp 18 - Webster Twp	Construction Zone (if applicable) Type Lane Closed Activity		Light Dark-Unlighted	Road Condition Wet	Total Lanes 02	Speed Limit 55
					Posted No	

Prefix	Road Name MAST	Road Type RD	Suffix	Divided Roadway
Distance 2,640 Feet S	Traffic Way 01 - Not physically divided		Access Control 01 - No access control	
Prefix	Intersecting Road WALSH	Road Type RD	Suffix	Divided Roadway

Unit Number 01	Unit Known Yes	State MI	Driver License Number *****	Date of Birth (Age) 02/11/1961 (51)	License Type <input checked="" type="checkbox"/> Operator <input type="checkbox"/> Chauffeur <input type="checkbox"/> Moped	Endorsements <input type="checkbox"/> Cycle <input type="checkbox"/> Farm <input type="checkbox"/> Recreation	Sex M	Total Occupants 01	Hazardous Action 13 - Other
Unit Type MV	Driver Information ***** ***** BRIGHTON, MI 48114-9690 (###) ###-####			Injury O	Position 01	Restraint 04	Hospital NONE		
Driver Condition <input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 99				Interlock No	Ejected	Trapped	Airbag Deployed No	Ambulance NONE	
Alcohol <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Test Type <input type="checkbox"/> Field <input type="checkbox"/> PBT <input type="checkbox"/> Breath <input type="checkbox"/> Blood <input type="checkbox"/> Urine				Test Results		Drugs <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Test Type <input type="checkbox"/> Blood <input type="checkbox"/> Urine	Test Results		Citation Issued <input type="checkbox"/> Hazardous <input type="checkbox"/> Other
Vehicle Registration *****	State MI	Insurance / Policy # *****		Towed To/By *****		Special Vehicles 0	Private Trailer Type	Vehicle Defect	
VIN *****	Vehicle Description PONTIAC	Make	Model GRAND PRIX	Color TAN	Year 2003	Vehicle Type Passenger Car			
Location of Greatest Damage 02	First Impact 02	Extent of Damage 3	Driveable No	Vehicle Direction N	Vehicle Use 01 - Private	Action Prior 01 - Going Straight Ahead			
Sequence of Events (● indicates MOST harmful event)		First 04 - Ran off roadway-right	Second ● 39 - Tree	Third	Fourth				

PASSENGERS	Passenger Information	Date of Birth (Age)	Sex	Position	Restraint	Hospital
		Injury	Airbag Deployed	Ejected	Trapped	Ambulance
	Passenger Information	Date of Birth (Age)	Sex	Position	Restraint	Hospital
		Injury	Airbag Deployed	Ejected	Trapped	Ambulance
	Passenger Information	Date of Birth (Age)	Sex	Position	Restraint	Hospital
		Injury	Airbag Deployed	Ejected	Trapped	Ambulance
Passenger Information	Date of Birth (Age)	Sex	Position	Restraint	Hospital	
	Injury	Airbag Deployed	Ejected	Trapped	Ambulance	
Passenger Information	Date of Birth (Age)	Sex	Position	Restraint	Hospital	
	Injury	Airbag Deployed	Ejected	Trapped	Ambulance	

Carrier Information		Carrier Source	GVWR	ICCMC	USDOT	MPSC
		Driver's CDL Type	Endorsements <input type="checkbox"/> H <input type="checkbox"/> P <input type="checkbox"/> T <input type="checkbox"/> N <input type="checkbox"/> S <input type="checkbox"/> X	CDL Exempt <input type="checkbox"/> Farm <input type="checkbox"/> Other	CDL Restrictions <input type="checkbox"/> 28 <input type="checkbox"/> 29 <input type="checkbox"/> 30 <input type="checkbox"/> 35 <input type="checkbox"/> 36	
Interstate/Intrastate	Vehicle Type	Type & Axle Per Unit First Second Third Fourth	Cargo Body Type	Medical Card	Hazardous Material <input type="checkbox"/> Placard <input type="checkbox"/> Cargo Spill	ID # Class #

OWNER'S	Owner Information	Owner Information
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Person Advised of Damaged Traffic Control	Damaged Property	Public
Contact Name: *****	Owner & Phone	
Contact Date: ####/####		
Contact Time: ##:##		

SANITIZED

Authority: 1949 PA 300, Sec.257.622
Compliance: Required MSP UD-10E
Penalty: \$100 and/or 90 days (Rev 11/2006)

External # 0507126
Crash ID 9121129

Page 01 of 01
Incident # 140086808 File Class 93001

STATE OF MICHIGAN TRAFFIC CRASH REPORT

ORI: MI 8118100		Department Name Washtenaw Co Sheriff's Office			Incident Disposition Closed	
Crash Date 11/12/2014		Crash Time 22:28	No. of Units 01	Crash Type Single Motor Vehicle	Special Circumstances <input type="checkbox"/> School Bus <input checked="" type="checkbox"/> None <input type="checkbox"/> Hit and Run <input type="checkbox"/> Deer <input type="checkbox"/> Fleeing Police	Special Checks <input checked="" type="checkbox"/> Fatal <input type="checkbox"/> Non-Traffic Area <input type="checkbox"/> ORV/Snowmobile
County 81 - Washtenaw	Traffic Control None	Relation to Roadway Outside of shoulder/curb		Special Study	Weather Cloudy	Area 10 - NON-FRWY Straight roadway
City/Twsp 18 - Webster Twp	Construction Zone (if applicable) Type		Lane Closed	Activity	Light Dark-Unlighted	Road Condition Dry
		Total Lanes 02	Speed Limit 55	Posted No		

Prefix	Road Name MAST	Road Type RD	Suffix	Divided Roadway
Distance 1,320 Feet N	Traffic Way 01 - Not physically divided		Access Control 01 - No access control	
Prefix	Intersecting Road WALSH	Road Type RD	Suffix	Divided Roadway

Unit Number 01	Unit Known Yes	State MI	Driver License Number #####	Date of Birth (Age) ##/##/#### (18)	License Type <input checked="" type="checkbox"/> Operator <input type="checkbox"/> Cycle <input type="checkbox"/> Chauffeur <input type="checkbox"/> Moped	Endorsements <input type="checkbox"/> Farm <input type="checkbox"/> Recreation	Sex M	Total Occupants 01	Hazardous Action 01 - Speed too fast
Unit Type MV	Driver Information ##### ##### ANN ARBOR, MI 48103-5762 (###) ###-####			Injury K	Position 01	Restraint 09	Hospital UNIV OF MICHIGAN HEALTH SYSTEM-MEDICAL CENTER		
Driver Condition <input type="checkbox"/> 01 <input type="checkbox"/> 02 <input type="checkbox"/> 03 <input type="checkbox"/> 04 <input type="checkbox"/> 05 <input type="checkbox"/> 06 <input type="checkbox"/> 07 <input type="checkbox"/> 08 <input type="checkbox"/> 09 <input checked="" type="checkbox"/> 99				Interlock No	Ejected	Trapped	Airbag Deployed Yes	Ambulance HURON VALLEY AMBULANCE INC	
Alcohol <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Test Type <input type="checkbox"/> Field <input type="checkbox"/> PBT				Test Results <input type="checkbox"/> Not offered <input type="checkbox"/> Breath <input type="checkbox"/> Blood <input type="checkbox"/> Urine		Drugs <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Test Type <input type="checkbox"/> Blood <input type="checkbox"/> Urine		Citation Issued <input type="checkbox"/> Hazardous <input type="checkbox"/> Other	
Vehicle Registration #####	State MI	Insurance / Policy # #####		Towed To/By GRANTS - 7344260018		Special Vehicles 0	Private Trailer Type	Vehicle Defect	
VIN #####	Vehicle Description HONDA	Make	Model	Color TAN	Year 2003	Vehicle Type Van, motor home			
Location of Greatest Damage 07	First Impact 07	Extent of Damage 6	Driveable No	Vehicle Direction N	Vehicle Use 01 - Private	Action Prior 01 - Going Straight Ahead			
Sequence of Events (● indicates MOST harmful event)		First 04 - Ran off roadway-right		Second 02 - Cross centerline/median		Third 03 - Ran off roadway-left		Fourth ●39 - Tree	

PASSENGERS	Passenger Information	Date of Birth (Age)	Sex	Position	Restraint	Hospital
		Injury	Airbag Deployed	Ejected	Trapped	Ambulance
	Passenger Information	Date of Birth (Age)	Sex	Position	Restraint	Hospital
		Injury	Airbag Deployed	Ejected	Trapped	Ambulance
	Passenger Information	Date of Birth (Age)	Sex	Position	Restraint	Hospital
		Injury	Airbag Deployed	Ejected	Trapped	Ambulance
Passenger Information	Date of Birth (Age)	Sex	Position	Restraint	Hospital	
	Injury	Airbag Deployed	Ejected	Trapped	Ambulance	
Passenger Information	Date of Birth (Age)	Sex	Position	Restraint	Hospital	
	Injury	Airbag Deployed	Ejected	Trapped	Ambulance	
Passenger Information	Date of Birth (Age)	Sex	Position	Restraint	Hospital	
	Injury	Airbag Deployed	Ejected	Trapped	Ambulance	

Carrier Information		Carrier Source	GVWR	ICCMC	USDOT	MPSC
		Driver's CDL Type	Endorsements <input type="checkbox"/> H <input type="checkbox"/> P <input type="checkbox"/> T <input type="checkbox"/> N <input type="checkbox"/> S <input type="checkbox"/> X	CDL Exempt <input type="checkbox"/> Farm <input type="checkbox"/> Other	CDL Restrictions <input type="checkbox"/> 02 <input type="checkbox"/> 09 <input type="checkbox"/> 030 <input type="checkbox"/> 035 <input type="checkbox"/> 036	
Interstate/Intrastate	Vehicle Type	Type & Axle Per Unit First Second Third Fourth	Cargo Body Type	Medical Card	Hazardous Material <input type="checkbox"/> Placard <input type="checkbox"/> Cargo Spill	ID # Class #

OWNER'S	Owner Information ##### ##### #####, ## ####-#### (###) ###-####	Owner Information
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Person Advised of Damaged Traffic Control Contact Name: Contact Date: Contact Time:	Damaged Property Owner & Phone	Public
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SANITIZED

Authority: 1949 PA 300, Sec.257.622
Compliance: Required MSP UD-10E
Penalty: \$100 and/or 90 days (Rev 11/2006)

External # 0517124
Crash ID 9160385

Page 01 of 01
Incident # 140096642 File Class 93001

STATE OF MICHIGAN TRAFFIC CRASH REPORT

ORI: MI 8118100		Department Name Washtenaw Co Sheriff's Office				Incident Disposition Closed	
Crash Date 12/18/2014		Crash Time 02:00	No. of Units 01	Crash Type Single Motor Vehicle	Special Circumstances <input type="checkbox"/> School Bus <input checked="" type="checkbox"/> None <input type="checkbox"/> Hit and Run <input type="checkbox"/> Deer <input type="checkbox"/> Fleeing Police	Special Checks <input type="checkbox"/> Fatal <input type="checkbox"/> Non-Traffic Area <input type="checkbox"/> ORV/Snowmobile	
County 81 - Washtenaw	Traffic Control None	Relation to Roadway Shoulder		Special Study	Weather Clear	Area 10 - NON-FRWY Straight roadway	
City/Twsp 18 - Webster Twp	Construction Zone (if applicable) Type Lane Closed Activity		Light Dark-Unlighted	Road Condition Dry	Total Lanes 02	Speed Limit 55	
						Posted Yes	

Prefix	Road Name MAST	Road Type RD	Suffix	Divided Roadway
Distance 200 Feet S	Traffic Way 01 - Not physically divided		Access Control 01 - No access control	
Prefix	Intersecting Road STRAWBERRY LAKE	Road Type RD	Suffix	Divided Roadway

Unit Number 01	Unit Known Yes	State MI	Driver License Number #####	Date of Birth (Age) ##/##/#### (26)	License Type <input checked="" type="checkbox"/> Operator <input type="checkbox"/> Chauffeur <input type="checkbox"/> Moped	Endorsements <input type="checkbox"/> Cycle <input type="checkbox"/> Farm <input type="checkbox"/> Recreation	Sex M	Total Occupants 01	Hazardous Action 01 - Speed too fast
Unit Type MV	Driver Information ##### ##### DEXTER, MI 48130-1101 (###) ###-####				Injury O	Position 01	Restraint 04	Hospital NONE	
Driver Condition 01 <input checked="" type="checkbox"/> 02 <input type="checkbox"/> 03 <input type="checkbox"/> 04 <input type="checkbox"/> 05 <input type="checkbox"/> 06 <input type="checkbox"/> 07 <input type="checkbox"/> 08 <input type="checkbox"/> 09 <input type="checkbox"/> 099				Interlock No	Ejected	Trapped	Airbag Deployed Yes	Ambulance NONE	
Alcohol <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Test Type <input type="checkbox"/> Field <input type="checkbox"/> PBT <input type="checkbox"/> Breath <input type="checkbox"/> Blood <input type="checkbox"/> Urine				Test Results		Drugs <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Test Type <input type="checkbox"/> Blood <input type="checkbox"/> Urine		Citation Issued <input type="checkbox"/> Hazardous <input type="checkbox"/> Other	
Vehicle Registration #####	State MI	Insurance / Policy # #####		Towed To/By GRANTS/GRANTS		Special Vehicles 0	Private Trailer Type	Vehicle Defect	
VIN #####		Vehicle Description SATURN	Make VUE	Model	Color BLUE	Year 2004	Vehicle Type Passenger Car		
Location of Greatest Damage 00	First Impact 08	Extent of Damage 7	Driveable No	Vehicle Direction N	Vehicle Use 01 - Private	Action Prior 01 - Going Straight Ahead			
Sequence of Events (● indicates MOST harmful event)		First 02 - Cross centerline/median	Second 04 - Ran off roadway-right	Third ● 35 - Ditch	Fourth 39 - Tree				

PASSENGERS	Passenger Information		Date of Birth (Age)	Sex	Position	Restraint	Hospital
			Injury	Airbag Deployed	Ejected	Trapped	Ambulance
	Passenger Information		Date of Birth (Age)	Sex	Position	Restraint	Hospital
			Injury	Airbag Deployed	Ejected	Trapped	Ambulance
	Passenger Information		Date of Birth (Age)	Sex	Position	Restraint	Hospital
			Injury	Airbag Deployed	Ejected	Trapped	Ambulance
Passenger Information		Date of Birth (Age)	Sex	Position	Restraint	Hospital	
		Injury	Airbag Deployed	Ejected	Trapped	Ambulance	
Passenger Information		Date of Birth (Age)	Sex	Position	Restraint	Hospital	
		Injury	Airbag Deployed	Ejected	Trapped	Ambulance	
Passenger Information		Date of Birth (Age)	Sex	Position	Restraint	Hospital	
		Injury	Airbag Deployed	Ejected	Trapped	Ambulance	

Carrier Information		Carrier Source	GVWR	ICCMC	USDOT	MPSC
		Driver's CDL Type	Endorsements OH OP OT ON OS OX	CDL Exempt <input type="checkbox"/> Farm <input type="checkbox"/> Other	CDL Restrictions 028 029 030 035 036	
Interstate/Intrastate	Vehicle Type	Type & Axle Per Unit First Second Third Fourth	Cargo Body Type	Medical Card	Hazardous Material <input type="checkbox"/> Placard <input type="checkbox"/> Cargo Spill	ID # Class #

OWNER'S	Owner Information	Owner Information
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Person Advised of Damaged Traffic Control Contact Name: Contact Date: Contact Time:	Damaged Property Owner & Phone	Public
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SANITIZED

Authority: 1949 PA 300, Sec.257.622
Compliance: Required MSP UD-10E
Penalty: \$100 and/or 90 days (Rev 01/2016)

External # 0632765
Crash ID 9643496

Page 01 of 01
File Class 93001

STATE OF MICHIGAN TRAFFIC CRASH REPORT

ORI MI 8118100	Department Name Washtenaw Co Sheriff's Office			Incident # 160011305		
Crash Date 02/13/2016	Crash Time 20:52	No. of Units 01	Crash Type Single Motor Vehicle	Special Circumstances <input checked="" type="checkbox"/> None <input type="checkbox"/> Fleeting Police	<input type="checkbox"/> Hit and Run <input type="checkbox"/> Unknown	<input type="checkbox"/> School Bus <input type="checkbox"/> Animal
County 81 - Washtenaw			Traffic Control None	Relation to Roadway Shoulder	Weather Clear	Area NON-FRWY Straight Roadway
City/Twsp 18 - Webster Twp	Contributing Circumstances 1st		2nd	Light Dark-Unlighted	Road Surface Condition Dry	Total Lanes 02
Work Zone (if applicable) Type		Workers Present	Activity	Location		

Prefix MAST	Primary Road Name MAST	Road Type RD	Suffix	Divided Roadway
Distance / Direction 1,000 Feet N		Trafficway Not Physically Divided		
Prefix N	Intersecting Road Name TERRITORIAL	Road Type RD	Suffix	Divided Roadway

Unit Number 01	Unit Known Yes	State MI	Driver License Number #####	Date of Birth (Age) ###/###/#### (39)	License Type <input checked="" type="checkbox"/> Operator <input type="checkbox"/> Chauffeur <input type="checkbox"/> Moped	Endorsements <input type="checkbox"/> Cycle <input type="checkbox"/> Farm <input type="checkbox"/> Recreation	Sex M	Total Occupants 01	Hazardous Action Careless Driving
Unit Type MV	Driver Information ##### DEXTER, MI 48130-9601 (###)###-####			Driver is Owner Injury B	Position Front - Left		Restraint Shoulder and Lap Belt		
Driver Condition at Time of Crash 1st Unknown			2nd		Driver Distracted By		Ejected	Trapped	Airbag Deployed Not Deployed
Hospital NONE				Ambulance NONE					
Alcohol Suspected No	Contributing Factor No	Alcohol Test Type <input type="checkbox"/> Breath <input type="checkbox"/> Blood <input type="checkbox"/> Urine <input type="checkbox"/> Field <input type="checkbox"/> PBT <input type="checkbox"/> Refused <input checked="" type="checkbox"/> Not Offered			Alcohol Test Results <input type="checkbox"/> Pending Test Results:		Interlock Device No		
Drug Suspected No	Contributing Factor No	Drug Test Type <input type="checkbox"/> Blood <input type="checkbox"/> Urine <input type="checkbox"/> Field <input type="checkbox"/> Refused <input type="checkbox"/> Not Offered			Drug Test Results <input type="checkbox"/> Pending Test Results:		Citation Issued <input type="checkbox"/> Hazardous <input type="checkbox"/> Other		
Vehicle Registration #####	State MI	Vehicle Description Year 2003	Make CHEVROLET	Model	Color SILVER				
VIN #####	Vehicle Type Passenger Car, SUV, Van	Special Vehicles Not Applicable	Private Trailer Type	Vehicle Defect					
Insurance Company #####		Insurance Policy # #####	Towed By GRANTS - 7344260018	Towed To					
Location of Greatest Damage 01	First Impact 01	Extent of Damage (Power Unit and/or Trailers) Functional Damage	Vehicle Direction N	Vehicle Use Private	Action Prior Avoiding Object				
Sequence of Events First 01 - Loss of Control		Second 03 - Ran Off Roadway-Left		Third 39 - Tree		Fourth			

Passenger Information			Date of Birth (Age)	Sex	Position	Restraint
Injury	Ejected	Trapped	Airbag Deployed			
Hospital Ambulance						
Passenger Information			Date of Birth (Age)	Sex	Position	Restraint
Injury	Ejected	Trapped	Airbag Deployed			
Hospital Ambulance						
Passenger Information			Date of Birth (Age)	Sex	Position	Restraint
Injury	Ejected	Trapped	Airbag Deployed			
Hospital Ambulance						

Carrier Information		USDOT	MC	MPSC
Driver's CDL Type		Endorsements OH OP OT ON OS OX	CDL Exempt <input type="checkbox"/> Farm <input type="checkbox"/> Other	
GVWR/GCWR <input type="checkbox"/> 10,000 lbs. or Less <input type="checkbox"/> 10,001 - 26,000 lbs. <input type="checkbox"/> Greater than 26,000 lbs.	Vehicle Configuration	Cargo Body Type	Medical Card	Hazardous Material <input type="checkbox"/> Placard <input type="checkbox"/> Cargo Spill
ID #		Class #		

Owner Information		Owner Information		
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Damaged Property	Public	Owner & Phone
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Appendix C – Time of Return Analysis



COMPUTED BENEFITS DERIVED THROUGH CRASH REDUCTION

TOR FY 2018 (Local Agency)

Date: 05-Aug-16

Proj: **Mast Road**

City/Twp.: **Webster Township**

Prepared by: **Brent Schlack**

County: **Washtenaw**

PR Number: **Strawberry Lake Road**

PR MP: **N Territorial Road**

The method of evaluating crash costs, used below, is given on page 67 of Roy Jorgensen's report of Highway Safety Improvement Criteria 1966 edition. This same method is given in the Bureau of Public Roads IM21-3-67. In 1994 we have adapted the Q formula to blend Fatalities and A-injuries only. In the following analysis the costs provided by the National Safety Council (NSC) are:

2014 NSC VALUES:

Death	\$1,512,000	=FATCOST
Disabling (A) injury:	\$88,500	=ACOST
B-Injury	\$25,600	=BCOST
PDO and/or Minor Injury Crash:	\$11,300	=PDOCCST

$$BTOTAL = ADTa/ADTbx(QxR1+(BCOSTxR2)+(PDOCCSTxR3))$$

WHERE:

BTOTAL=	Total Benefit in Dollars Over Years Used	327937.5
ADTa =	Average traffic volume after the improvement	1.1
ADTb =	Average traffic volume before the improvement	1.0
R1 =	Reduction in fatalities and A-Injuries Combined.	0.8
R2 =	Reduction in B-injury crashes:	0.8
R3 =	Reduction in PDO and C-injury crashes	3.0
Q =	$[FATCOST+((I/F) \times ACOST)]/[1+(I/F)]$	
=	$[1,210,000+(4.85 \times 62,500)] / [1+4.85]$	331,700.0
	for AREA TYPE ERR	
I/F =		4.85

Q-Reference	Q	A-Injuries	Fatalities	I/F
RURAL	331700	6034	1243	4.85
URBAN	270000	9226	1348	6.84
BETWEEN	295100	15260	2591	5.89
Data from Safety Programs Unit, E. Line 5-Year Statewide, Non-Trunkline crash figures. (From 1-1-11 through 12-31-15) used.				

Time of Return (T.O.R.) is based on 4.0 years of data.

NOINFB =No-Inflation Annual Benefit=BTOTAL/years 81984.375

With an inflation rate of 2.50%

B=Annual Benefit=Present Value (with Inflation) \$104,947

C = Project Cost \$358,308

TOR=C/B=COST/ANNUAL BENEFIT= 3.41

NUMBER OF CRASHES OR INJURED PERSONS.

YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
0	2012	2013	2014	2015+2016

Targeted Tree Removal – Tree crashes	75%		%REDUCTION		
Number of Crashes	0	2	0	3	1
PDO+C Injury Crashes	0	2	0	2	0
B-Injured Persons	0	0	0	0	1
A-Injured or Killed Persons	0	0	0	1	0
-	-	-	-	-	-
0	0%		%REDUCTION		
Number of Crashes	0	0	0	0	0
PDO+C Injury Crashes	0	0	0	0	0
B-Injured Persons	0	0	0	0	0
A-Injured or Killed Persons	0	0	0	0	0
-	-	-	-	-	-
0	0%		%REDUCTION		
Number of Crashes	0	0	0	0	0
PDO+C Injury Crashes	0	0	0	0	0
B-Injured Persons	0	0	0	0	0
A-Injured or Killed Persons	0	0	0	0	0
-	-	-	-	-	-
0	0%		%REDUCTION		
Number of Crashes	0	0	0	0	0
PDO+C Injury Crashes	0	0	0	0	0
B-Injured Persons	0	0	0	0	0
A-Injured or Killed Persons	0	0	0	0	0
-	-	-	-	-	-
0	0%		%REDUCTION		
Number of Crashes	0	0	0	0	0
PDO+C Injury Crashes	0	0	0	0	0
B-Injured Persons	0	0	0	0	0
A-Injured or Killed Persons	0	0	0	0	0
-	-	-	-	-	-
0	0%		%REDUCTION		
Number of Crashes	0	0	0	0	0
PDO+C Injury Crashes	0	0	0	0	0
B-Injured Persons	0	0	0	0	0
A-Injured or Killed Persons	0	0	0	0	0
-	-	-	-	-	-

A-Injuries: 0 For reference only
 # Fatalities: 1 For reference only; "Q" accounts for the risk of a fatality.
 PROJECT COST ESTIMATE : \$358,308 If unknown, enter "0" (zero).
 ADTb (before-volume) 1.0 You may change these
 ADTa (after-volume) 1.1 default ADT values.
 NUMBER OF YEARS OF DATA: 4.00 **3 to 5** years should be used.
 RATE OF INFLATION: 2.50%
 AREA TYPE: 1 (1 = RURAL, 2 = URBAN, 3 = BETWEEN)

REMARKS:

0	Mast Road Strawberry Lake Road to N Territorial Road Strawberry Lake Road N Territorial Road Segment safety improvements
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Appendix D –MERL Cost Estimate



Engineer's Opinion of Costs

Project Number: T&S HRRR2 Estimate Number: 1: Mast Rd - Segment Safety Improvements Project Type: Miscellaneous Location: Mast Rd Webster Twp Description: Segment Safety Improvements: Targeted tree removal, tree trimming, culvert replacement, and guardrail.	Project Engineer: Brent Sclack Date Created: 04/25/2016 Date Edited: 04/29/2016 Fed/State #: Fed Item: Control Section:
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Line	Pay Item	Description	Quantity	Units	Unit Price	Total
Category: 0000						
0001	1500001	Mobilization, Max. ____	1.000	LSUM	\$32,573.00	\$32,573.00
0002	2017002	_ Trimming, Select	8.000	Sta	\$750.00	\$6,000.00
0003	2020002	Tree, Rem, 19 inch to 36 inch	15.000	Ea	\$1,250.00	\$18,750.00
0004	2020004	Tree, Rem, 6 inch to 18 inch	15.000	Ea	\$625.00	\$9,375.00
0005	2040060	Structures, Rem	1.000	LSUM	\$10,000.00	\$10,000.00
0006	2050010	Embankment, CIP	100.000	Cyd	\$20.00	\$2,000.00
0007	2060002	Backfill, Structure, CIP	300.000	Cyd	\$25.00	\$7,500.00
0008	2060010	Excavation, Fdn	250.000	Cyd	\$20.00	\$5,000.00
0009	3020016	Aggregate Base, 6 inch	750.000	Syd	\$10.00	\$7,500.00
0010	4060229	Culv, Precast Three-Sided or Arch, 24 foot by 8 foot	60.000	Ft	\$2,500.00	\$150,000.00
0011	5010044	HMA, 3E1	75.000	Ton	\$65.00	\$4,875.00
0012	5010050	HMA, 4E1	75.000	Ton	\$70.00	\$5,250.00
0013	5010056	HMA, 5E1	75.000	Ton	\$75.00	\$5,625.00
0014	7050002	Pile Driving Equipment, Furn	1.000	LSUM	\$15,000.00	\$15,000.00
0015	7050030	Pile, Steel, Furn and Driven, 12 inch	1,000.000	Ft	\$35.00	\$35,000.00
0016	7050031	Test Pile, Steel, 12 inch	2.000	Ea	\$1,000.00	\$2,000.00
0017	8070015	Guardrail, Backed, Det G1	2.000	Ea	\$1,500.00	\$3,000.00
0018	8070042	Guardrail Approach Terminal, Type 2B	4.000	Ea	\$2,220.00	\$8,880.00
0019	8070080	Guardrail Reflector	6.000	Ea	\$10.00	\$60.00
0020	8077001	_ Guardrail, Type B, 8 Ft Posts, Modified	300.000	Ft	\$18.00	\$5,400.00
0021	8120140	Lighted Arrow, Type C, Furn	4.000	Ea	\$400.00	\$1,600.00
0022	8120141	Lighted Arrow, Type C, Oper	4.000	Ea	\$50.00	\$200.00
0023	8120170	Minor Traf Devices	1.000	LSUM	\$15,000.00	\$15,000.00

Line	Pay Item	Description	Quantity	Units	Unit Price	Total
0024	8120340	Sign, Type A, Temp, Prismatic, Furn	72.000	Sft	\$8.00	\$576.00
0025	8120341	Sign, Type A, Temp, Prismatic, Oper	72.000	Sft	\$2.00	\$144.00
0026	8120350	Sign, Type B, Temp, Prismatic, Furn	200.000	Sft	\$8.00	\$1,600.00
0027	8120351	Sign, Type B, Temp, Prismatic, Oper	200.000	Sft	\$2.00	\$400.00
0028	8120370	Traf Regulator Control	1.000	LSUM	\$5,000.00	\$5,000.00

Category 0000 Total: \$358,308.00

Estimate Total: \$358,308.00

Appendix E –Application Form



LOCAL AGENCY PROGRAMS SAFETY PROJECT SUBMITTAL FORM

FUNDING TEMPLATE:

FISCAL YEAR: 2018

LOCAL AGENCY Washtenaw County Road Commission		LOCAL AGENCY CONTACT Brent Schlack, P.E.	
PHONE NO. (734) 327-6670	FAX NO. (734) 761-3737	EMAIL ADDRESS schlackb@wccroads.org	
ALTERNATIVE CONTACT Roy Townsend		PHONE NO. (734) 327-6662	FAX NO. (734) 761-3737
EMAIL ADDRESS townsendr@wccroads.org		HOUSE DISTRICT 52	SENATE DISTRICT 22

PROPOSED PROJECT LOCATION, LIMITS AND PROJECT DESCRIPTION
Mast Road, Strawberry Lake Road to North Territorial Road, Webster Township. Project consists of targeted tree removal and tree trimming, culvert replacement, and guardrail installation.

PROPOSED COST \$358,308	TIME OF RETURN (YEARS) 3.41	IMPROVEMENT CATEGORY (CHECK THE CATEGORY THAT APPLIES) <input type="checkbox"/> Intersection Improvements <input checked="" type="checkbox"/> Roadway and Structure Improvements <input checked="" type="checkbox"/> Roadside Improvements <input type="checkbox"/> Pedestrian and Bicycle Improvements <input type="checkbox"/> Other _____
BENEFIT TO COST RATIO	TOWNSHIP/CITY Webster Twp	
PLEASE LIST THE CRASH REDUCTION FACTORS USED: Fixed Objects Removal (Trees)		
DOES A PROJECT IMPACT A SCHOOL OR OTHER SENSITIVE ORGANIZATION? PLEASE DESCRIBE: No		

ROADWAY DATA		CROSS ROAD DATA (If an intersection improvement)	
PRIMARY ROUTE NAME Mast Road		ROUTE NAME	
ADT 3,435		ADT	
PERCENT COMMERCIAL 15.4	*NO. OF CRASHES 6	PERCENT COMMERCIAL	*NO. OF CRASHES
* NO. OF FATAL CRASHES 1	*NO. OF "A" TYPE CRASHES 0	*NO. OF FATAL CRASHES	*NO. OF "A" TYPE CRASHES
*PERIOD OF CRASH DATA 2012-2016	FUNCTIONAL CLASSIFICATION Rural Major Collector	*PERIOD OF CRASH DATA	FUNCTIONAL CLASSIFICATION

*Please attach Crash Summary and UD-10's to your project submittal with the most recent 5 years of available data.

EXPLANATION OF HOW THE PROPOSED IMPROVEMENT WILL IMPROVE SAFETY AND REDUCE CRASHES

Crash patterns on Mast Road between Strawberry Lake Road and North Territorial Road indicate that targeted tree removal and tree trimming will be very beneficial. Culvert replacement and new guardrail installation approximately 1200 feet south of Strawberry Lake Road will further enhance safety on Mast Road.

HAS YOUR LOCAL AGENCY RECEIVED APPROVAL OF A SAFETY PROJECT OR HRRR PROJECT THROUGH MDOT'S LAP UNIT IN THE PAST 5 YEARS?

YES
 NO
 SAFETY PROJECT
 HRRR PROJECT

IF YES, HAVE ALL PROJECTS BEEN COMPLETED?

YES
 NO

IF NO, PLEASE EXPLAIN WHY

The WCRC currently has several projects in construction & design phases.

OTHER PROJECT CONSIDERATIONS