

NDDOT Soils IC Demonstration

Highway 12, Marmarth, ND. Aug. 9 to 12, 2010

On-Site Contact List

Last name	First name	Affiliation	Telephone	Email
ICPF Project Team				
Chang	George	Transtec Group	C 512-659-1231	gkchang@thetranstecgroup.com
Horan	Bob	Asphalt Institute	C 804-539-3036	bhoran@AsphaltInstitute.org
White	David	ISU Geotechnical Mobile Lab	515-294-1463 C 515-290-1080	djwhite@iastate.edu
Gieselman	Heath	ISU Geotechnical Mobile Lab	C 515-450-1383	giese@iastate.edu
Gallivan	Lee	FHWA	317-226-7493	Victor.Gallivan@dot.gov
State DOT and etc.				
Ketterling	Jon	NDDOT – ICPF rep & open house contact	701-328-6908	jketterl@nd.gov
Bold	Tom	NDDOT – ICPF rep	701-328-6921	Tbold@nd.gov
Fischer	Jason	NDDOT – project manager	701-270-7918	jrfischer@nd.gov
Rayhorn	Rob	NDDOT	701-227-6511	rroyhorn@nd.gov
	Harry	NDDOT - FWD	C701-220-6478 C701-220-6888	
Roller/GPSs Vendors				
Hanson	Kris	Caterpillar Global Paving	763- 493-7505	hanson_kris@cat.com
Young	Candace	Caterpillar – Marketing	763-493-7641 C612-210-8678	Young_Candace_R@cat.com
Souraty	Mario	Caterpillar Global Paving	763-493-7527 C763-245-0068	Souraty_Mario_J@cat.com
Hourscht	Steve	Caterpillar – sales		
Magnuson	Luke	ZieglerCAT/GPS support	612-518-6602	Luke.Magnuson@zieglercat.com
Paving/Earhwork Contractors				
Reiss	Keith	Northern Improvement	701-225-5197 C 701-260-2411	kreiss@nicnd.com
Burke	Terry	Gratech	701-453-3434?	tburke@gratechcompanyltd.com

Important Notes

- BRIEFING: All onsite personnel will meet at the ISU geotechnical mobile lab at the project staging area at 8AM (MDT), Monday, August 9 for a briefing.
- The ISU Geotech Mobile Lab will be arriving on Saturday or Sunday, Aug. 7/8. ISU will contact the superintendant of the project, Ted Schneider of Northern Improvement, cell: (701) 220-6865 on Thursday/Friday (Aug. 5/6).
- Northern Improvement field office: 109 2nd Street SW, Marmarth ND 58643. (701) 279-7921
- Cell phone reception might not be available on site. Walkie-talkie is recommended.

IC Roller Shipment

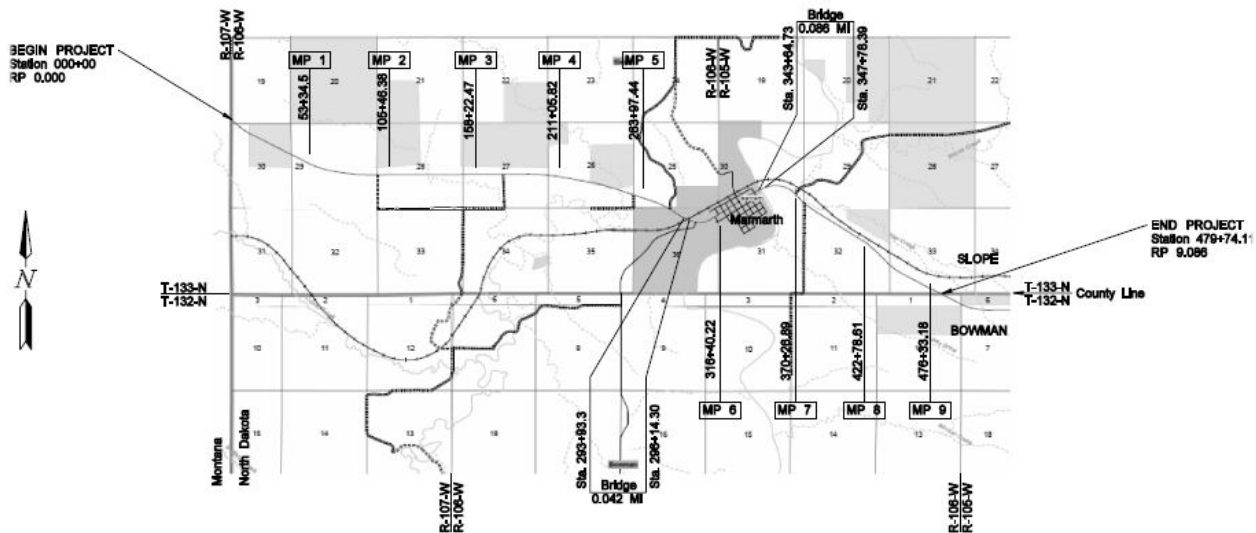
The shipping address is: **Staging area of this project, 1 miles west of Marmarth**

Contacts: **Keith Reiss, Northern Improvement, 701-225-5197 C701-260-2411**

Arrival: **Friday, August 6, 2010**

Site Map

This earthwork project is located on Highway 12 in southwest ND, 9 miles from Montana State line through city of Marmarth to Bowman County line.



Caterpillar Single Drum IC Roller



Figure 1. Caterpillar single smooth drum roller (left - CS65, right – CS56).

Table 1. Features of the Caterpillar Single-Drum IC Rollers.

Manufacturer/ Vendor	Caterpillar	Caterpillar
Model	AccuGrade	AccuGrade
Model Number	CS563E smooth drum	CS56 - with a padfoot shell.
Drum Size	60" dia. X 84" wide*	60" dia. X 84" wide*
Machine Weight	25,000 lbs. (~ 12.5 tons)	25,000 lbs. (~ 12.5 tons)
Amplitude Settings	High: 0.070", Low: 0.035"	High: 0.070", Low: 0.035"
Frequency Setting/ Range	1,914 vpm	1,914 vpm
Auto-Feedback	No, but there is a feedback via RMV.	No, but there is a feedback via RMV.
With measurement System	Yes	Yes
Measurement Value	CMV, MDP	MDP
Measurement Unit	Unitless	Unitless
Documentation System	AccuGrade Office	AccuGrade Office

Global Position System

Grid Reference

UTM 13-N is the preferred grid reference. State plane coordinate is the second choice.

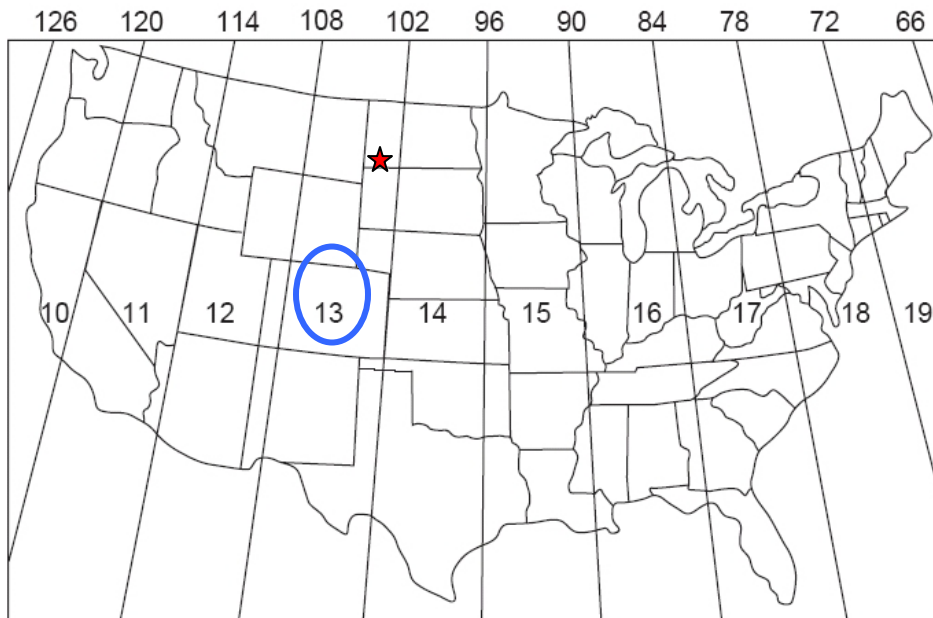


Figure 2. UTM Zones in the US.

Caterpillar

- Provide a Caterpillar CS56 smooth drum roller (with a padfoot shell) that equipped a Trimble GPS receiver and a radio.

ISU Geotechnical Lab

- Provide a hand-held Trimble GPS rover for in-situ point measurements.
- Provide a Trimble GPS base station to broadcast RTK correction signals.
- Will provide 5+ local control survey points for producing a local calibration file.

ZieglerCAT

- Help shooting GPS at control points and generating local calibration file.
- A hand-held Trimble GPS rover will be used for in-situ point measurements.

Responsibility of All Participants

NDDOT

- Provide a FWD and an operator for in-situ testing.
- Provide compaction acceptance testing equipments required by NDDOT.
- Provide assistance to ISU mobile lab.
- Assist the Open House by inviting DOT district engineers, cities/counties, Universities, local earth work associations, and others.
- Provide a LCD projector and a screen for the indoor presentation portion of the Open House.

FWD Tests

- Platen Size: 5.9” radius (rigid plate)
- Geophone positions: 0, 8, 12, 18, 24, 36, 48, 60, 72 inches (9 sensors)
- Test patterns: At test locations designated by the IC team
- Drops/Loads: Save 2 drops at targeting 9,000 and 12,000 lbs. (loads may be adjusted based on the trial test data)
- File format: F25, DDX, MDB, or any text format (including load history)

Northern Improvement/ Gratech

- Provide ISU mobile lab a 50 ft X 100 staging location (leveled and without clayey soils).
- Provide ISU mobile lab with 50 gallon of potable water.
- Provide 300 gallons of fuel for the IC roller(s).
- (Gratech) Provide 1 to 2 roller operators for the production work.

Experimental Plan

Goals

- Document impact of variable feedback control on compaction uniformity
- Document machine vibration amplitude influence on compaction efficiency
- Study IC roller measurement influence depth
- Develop correlations b/w IC roller values to traditional measurements
- Compare IC results to tradition compaction operations
- Study IC roller measurement values in production compaction operations
- Evaluate IC measurement values in terms of alternative specification options

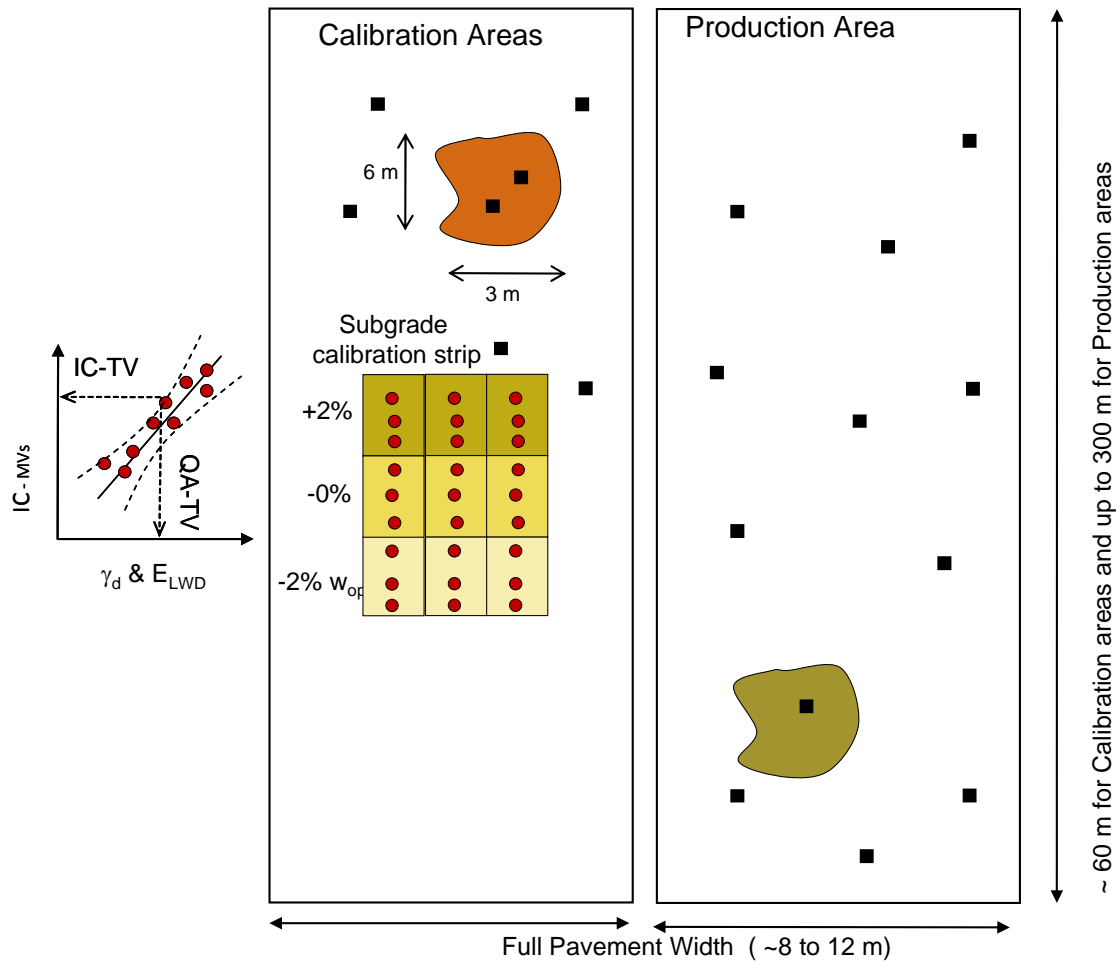
Test Plan and Schedule (a sample)

Date	TB	Machine	Amp (mm)	Spot Tests	Notes/Comments
8/8	ISU arrives at site to setup mobile lab Meet with Contractor and identify potential test areas Setup IC rollers and make trial runs with GPS Collect material samples for on-site laboratory characterization				
8/9	1	CAT (padfoot)	Static, 0.9, 1.8	DCP, LWD, NG, and PLT	8 m x 60 m calibration test area. 1.Prepare then compact foundation layer with 8 roller passes and map for subgrade. 2.Place one 200 to 300 mm loose lift of subgrade. 3.Create variable moisture conditions. 4.Compact in three lanes using static, medium, and high amplitude @ 8-12 passes + 3 mapping passes 5.Develop compaction curves 6.Repeat compaction for 3 lifts in same area
	2	CAT (smooth)	TBD	DCP, LWD, NG, PLT, FWD	Roller mapping in production areas of subgrade. Monitor existing practice and perform in-situ tests for comparison. Use data for test run on IC QC/QA specification.
8/10	3	CAT(smooth)	Low, High, Feedback control	DCP, LWD, NG, PLT	12 m x 60 m calibration test area. 1.Compact foundation layer with 8 roller passes and map. 2.Place 150 mm lift of stabilized subgrade 3.Create variable moisture conditions. 4.Compact in three lanes using low, high, and feedback control @ 8-12 passes + 3 mapping passes 5.Develop compaction curves
	4	CAT (padfoot)	Static, 0.9, 1.8	DCP, LWD, NG, PLT	
8/11	5/6	CAT (padfoot)	TBD	DCP, LWD, NG, PLT, FWD	Roller mapping in production areas of subgrade. Monitor existing practice and perform in-situ tests for comparison. Use data for test run on IC QA specification.
8/12	Open House –presentation of preliminary results and roller demonstrations.				

Notes:

- A. Moisture condition calibration test strip areas \pm 1.5% optimum except as noted.
- B. DOT assistance requested for FWD testing and information on project QA testing requirements.
- C. As time permits repeatability passes for roller will be performed on embankment.

Schematic of Test Plan (a sample)



Open House



Where

City of Marmarth Community Center, 204 N. Main St., Marmarth, ND 58643

When

10 AM to 2PM, Thursday, Aug. 12, 2010

Agenda

- Session 1 - 10AM to noon - Indoor Presentation
- Session 2 – 1 PM to 2 PM – IC Roller and GPS Equipment Demonstration (at the job site)

Contact

Jon Ketterling, NDDOT, (701) 328-6908, jketter1@nd.gov

Safety



Safety vest are required.