

INTRODUCTION

This report consists of the Phase I evaluation of a 2.37-mile section of the existing State Route 7 in Lawrence County (LAW-7-17.40/18.45). The project is located between approximate State Route mile markers 17 and 19 between the towns of Miller, Ohio and Crown City, Ohio. The area has had a long history of slope instability, both above and below the roadway. Numerous landslides and rock falls have occurred along the roadway. The Phase I evaluation includes a site reconnaissance, geologic mapping, preliminary geotechnical exploration, inventory and evaluation of retaining walls, upslope and down slope stability problems, hydrologic concerns, and prioritization of hazards along the roadway.

GEOLOGY AND OBSERVATIONS OF THE PROJECT

The project is located in the Appalachian Plateaus Province, Allegheny (Kanawha) Section, and the Marietta Plateau Physiographic Region. The terrain within the Marietta Physiographic Region is generally a well dissected high relief plateau. Landslides are common in this region.

The shallow soils at the site are underlain by bedrock of the Monongahela and Conemaugh Formations representing the Pennsylvanian geological period. These formations typically consist of cyclic sequences of sandstones, siltstones, shales, clay-shales and coal. Bedrock in the area exhibits numerous high angle joints and fractures, with the primary joint set having a strike that parallels the approximate direction of the Ohio River and generally dips toward the river.

EXPLORATION

Exploratory borings were advanced by means of hollow stem augers and/or NQ-size rock coring equipment powered by truck-mounted drill rigs. The exploration was conducted in February and March of 2004.

INVESTIGATIONAL FINDINGS

The soils primarily consist of colluvial materials that are generally in an unstable situation. There are numerous sandstone, siltstone and shale outcrops that are deteriorating over time creating steep slopes and cliffs in the area. The instability of the slopes is caused by several factors and combinations of these factors:

- * Creeps and slumps of colluvial material down the steep slopes,
- * Breaking away of sandstone, siltstone and shale slabs and boulders along joints and fractures in the bedrock that parallel the Ohio River and State Route 7, and
- * Rockfalls caused by weathering of non-durable shales which undercut the more durable rock above or by freeze-thaw effects from water migrating into existing joints and fractures.
- * Rapid earthflow situations.

Additional findings and discussion are included in the report entitled "Report of Geotechnical Overview-State LAW-7-17.40/18.45", that accompanies these drawings.

PROJECT INDEX		
STATIONS FROM TO		PLAN/PROFILE SHEET
MAINLINE		
82+11.9	109+00	3
109+00	137+00	4
137+00	165+00	5
165+00	193+00	6
193+00	207+25.5	7
SECTION STATION	SECTION SHEET	
MAINLINE		
101+88.3	12	
101+88.3	13	
144+66.5	10	
144+66.5	11	
171+21.9	8	
171+21.9	9	

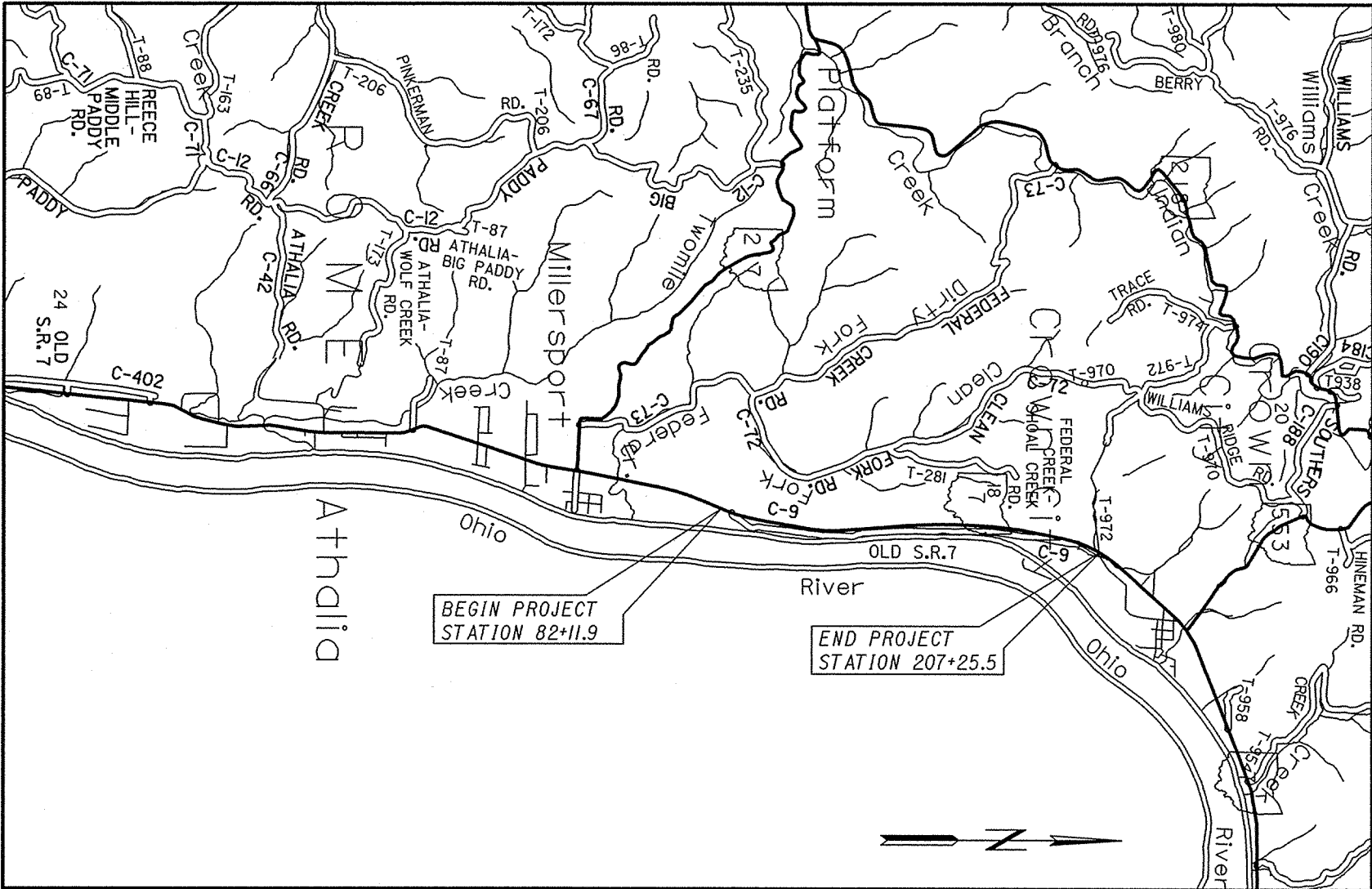
NOTE: Roadway stationing was not available from ODOT. FMSM Engineers created a baseline and related stationing for this project.

NOTE: Information presented on these drawings are not to be used as construction design criteria.

LEGEND FOR PROJECT AVERAGE RESULTS OF TESTS - SAMPLES TESTED

DESCRIPTION	ODOT CLASS	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SAMPLES TESTED
GRAVEL AND/OR STONE FRAGMENTS W/SAND AND SILT	A-2-4 (0)	39	10	19	19	13	26	8	13	2
SILTY CLAY	A-6b (8)	17	10	14	27	34	37	17	17	2
GRAVEL AND/OR STONE FRAGMENTS	A-1-a (0)	66	19	8	5	2	0	0	5	1
SANDY SILT	A-4a (3)	15	9	27	31	18	29	8	18	1
SILT AND CLAY	A-6a (2)	22	11	25	25	18	29	11	8	2
SHALE										
COAL										
SANDSTONE										
	SILTSTONE									
	WEATHERED SILTSTONE									
	WEATHERED SANDSTONE									
	WEATHERED SHALE									
	BOULDERY ZONE									
	VARIOUS OTHER MATERIALS									
Bench Mark										
Outcrop										
Fracture										
Feature										
Slide										
Joint										
DRIVE SAMPLE AND/OR CORE BORING - PLAN VIEW										
ROADWAY OR AUGER BORING PLOTTED TO VERTICAL SCALE ONLY										
DRIVE SAMPLE AND/OR CORE BORING PLOTTED TO VERTICAL SCALE ONLY										
NOTE: FIGURES BESIDE BORINGS INDICATE WATER CONTENT IN PERCENT.										
SDI	SLAKE DURABILITY INDEX (SDI)									
STRIKE AND DIP										
RETAINING WALLS										
POTENTIAL UNSTABLE AREAS ABOVE ROADWAY										
POTENTIAL UNSTABLE AREAS AT ROADWAY GRADE AND BELOW										
PAST AND/OR PRESENT SLIDE/UNSTABLE AREAS OBSERVED ALONG ROADWAY										
WATER CONTENT NEARLY EQUAL TO OR GREATER THAN LIQUID LIMIT										
INDICATES A NON PLASTIC MATERIAL WITH A HIGH WATER CONTENT										
FIGURES BESIDE THE BORING LOG IN PROFILE INDICATES THE NUMBER OF BLOWS FOR STANDARD PENETRATION TEST.										
NUMBER OF BLOWS FOR STANDARD PENETRATION TEST										
X = NUMBER OF BLOWS FOR FIRST 6 INCHES										
Y = NUMBER OF BLOWS FOR SECOND 6 INCHES										
Z = NUMBER OF BLOWS FOR THIRD 6 INCHES										

Recon - TS, JDB, JM, SM, SH - February-November, 2004
Drilling (Auger, Core) - ML, JL, DM, MA, JDB - February-March, 2004
Drafting - TJ, RWE, PJB - December 2004



LOCATION MAP