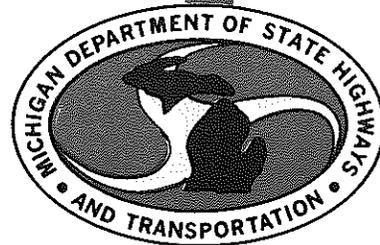


EVALUATION OF MONOSLABS FOR PAVING
OF DITCHES AND SERVICE DRIVES



**TESTING AND RESEARCH DIVISION
RESEARCH LABORATORY SECTION**

**EVALUATION OF MONOSLABS FOR PAVING
OF DITCHES AND SERVICE DRIVES**

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**A Category 2 project conducted in cooperation
with the U. S. Department of Transportation,
Federal Highway Administration**

**Research Laboratory Section
Testing and Research Division
Research Project 74 NM-398
Research Report No. R-1089
(Work Plan No. 40)**

**Michigan State Highway Commission
Peter B. Fletcher, Chairman; Carl V. Pellonpaa,
Vice-Chairman; Hannes Meyers, Jr., Weston E. Vivian
John P. Woodford, Director
Lansing, April 1978**

In a memorandum of August 18, 1976, K. A. Allemeier requested that the Research Laboratory evaluate 'Monoslabs,' a product approved by the New Materials Committee for use as a light riprap for erosion control, and that this work be conducted under the Category 2 research program. Work on these projects was performed in accordance with Experimental Work Plan No. 40, as Research Project 74 NM-398.

Monoslabs, a proprietary product of Mono Concrete, Ltd., Croydon, England, are precast concrete slabs 23-1/2 in. by 15-5/8 in. by 4-7/8 in. thick and weigh about 77 lb each. They have a waffle-like configuration with raised portions protruding 3/4 in. (Fig. 1). The licensee for Monoslabs in this country is Grass Pavers, Ltd., Royal Oak, Michigan. The units for these projects were manufactured by Fendt Builders Supply, Inc., of Farmington, Michigan.

The primary purpose for which Monoslabs are intended is for reinforcing turf so that grass sodded areas can be used to support light traffic either as a roadway, shoulder, or parking area. Placed on a compacted soil or a sand base course, the projecting feet of the grid provide support for vehicle loads. A lawn or turf surface can then be established and maintained between--and level with--the protruding grids. In this way vehicular support is provided while maintaining the pleasing appearance of a lawn. Drainage is not a problem because water can soak through the grids into the subsoil.

Other specific uses for Monoslabs are: stabilizing roadway slopes before and after establishment of turf; lining of drainage canal slopes and beds; revetments for reinforcing shoreline slopes to provide seawall toe protection; and as temporary roadways for all-weather use at construction sites. A novel suggested use is as a 'secret pavement' under grass, as a non-obvious median cross-over for freeways.

Two proposed projects (Fig. 2) were selected in which Monoslabs were to be studied for different purposes:

- 1) Sewer construction for rest area modernization on eastbound I 96 at Novi where Monoslabs were to be used to line the ditch bottom and parts of the front and back slope. This ditch had been subject to erosion problems.

- 2) Modernization of a rest area on eastbound I 96, east of M 100 near Grand Ledge, in which Monoslabs were to be used to provide a surface for the service drive to sewer lagoons and trash bins.

Lining for Drainage Ditch

This phase of the project was located at the rest area on eastbound I 96 near Novi. It was hoped that the use of Monoslabs would correct the erosion problem shown in Figure 3.

Before placing the Monoslabs, existing topsoil was removed and the grade re-sloped to meet design specifications. After completion of the earthwork, individual Monoslabs were placed by hand, an operation requiring two people. Approximately 4 ft of ditch bottom and 2 ft of the front and back slopes were covered with Monoslabs. This required seven slabs placed widthwise across the ditch (Fig. 4).

Before construction was completed, rainy weather caused some erosion and settling of the drainage ditch (Fig. 5). Sodding was placed around the edge of the ditch, to reduce erosion until such time as grass could grow within the Monoslabs (Fig. 6).

Use for Construction of a Service Drive

The second phase of this project consisted of using Monoslabs to form an access service drive at the rest area on eastbound I 96 near Grand Ledge.

The driveway is 10 ft wide by approximately 200 ft long. After grading, a 1-in. sand base was added and compacted, on which Monoslabs were placed by hand. In order to form curved sections of the roadway, it was necessary to break the Monoslabs on an angle and into smaller pieces (Fig. 7). Topsoil was placed over the Monoslabs as soon as possible after placing, to reduce the possibility of erosion. Slabs were covered completely with topsoil, leaving only the surface of raised portions exposed. In this way, growth of grass is permitted with the protruding 'feet' of the Monoslabs supporting the weight of traffic. Sodding was placed around the edge of the drive while the rest of the area was seeded. The completed job is shown in Figure 8.

Summary of Findings to Date

Based on observations made during and immediately after construction of these projects, the following comments can be made:

- 1) Monoslabs tend to break unless handled and placed with care.
- 2) Being rectangular, Monoslabs must be broken into appropriate pieces when placed on curved sections.
- 3) Once Monoslabs are in place, topsoil should be spread as soon as possible, to prevent possible breakage and movement of the slabs.
- 4) Generally, the Monoslab installations appear to be satisfactory. A few slabs placed in the drainage ditch have shifted slightly, but no serious soil erosion has been noted.

Future performance of the Monoslabs will be evaluated through periodic inspections.

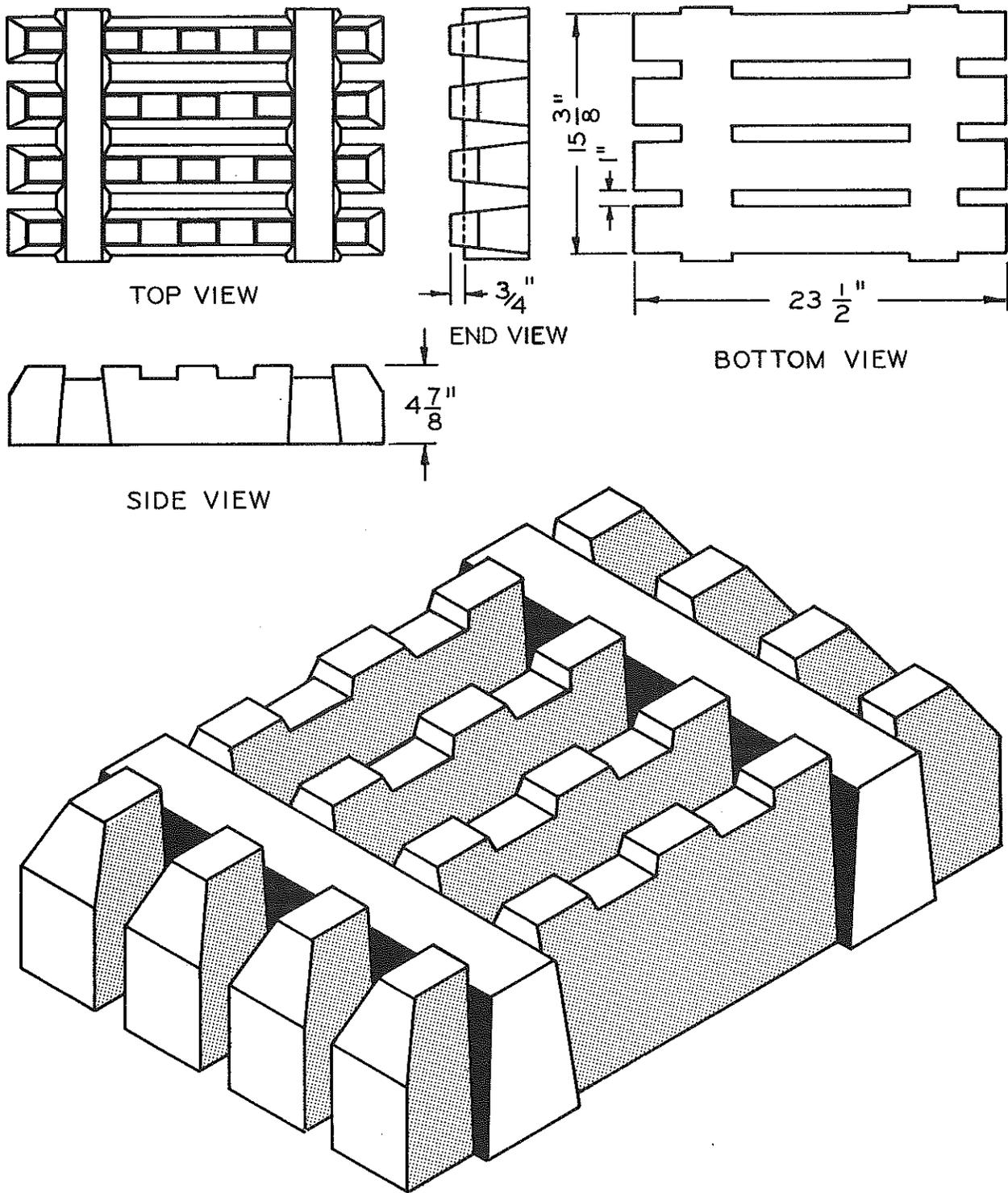
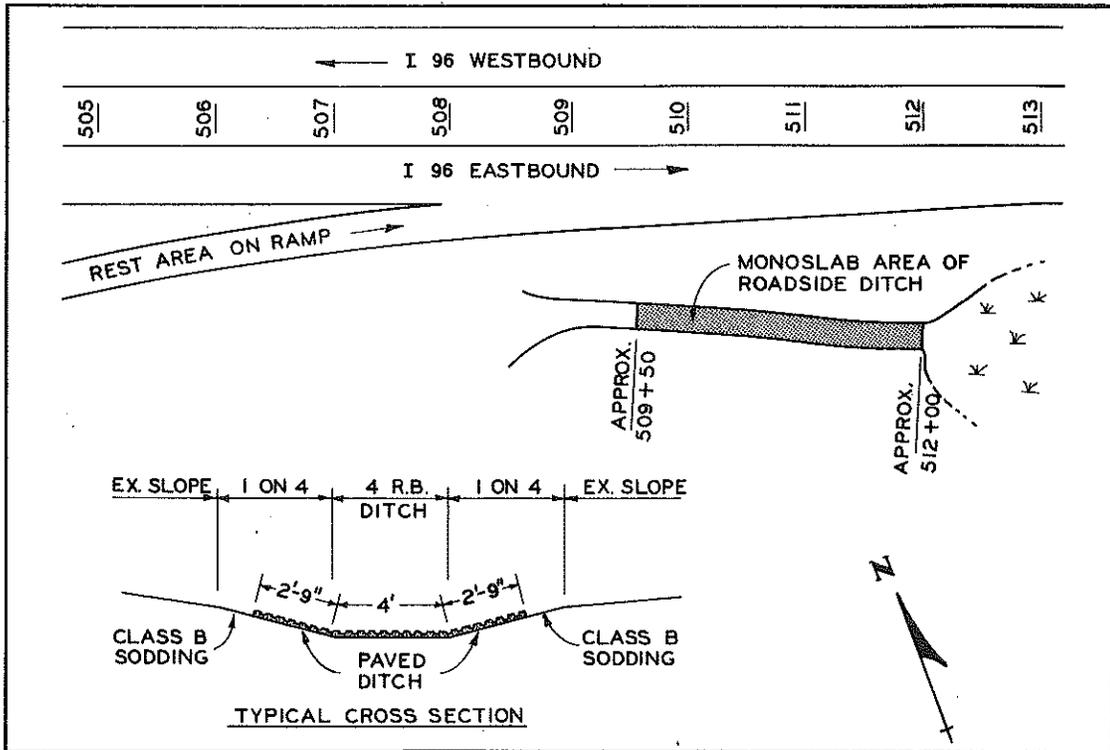
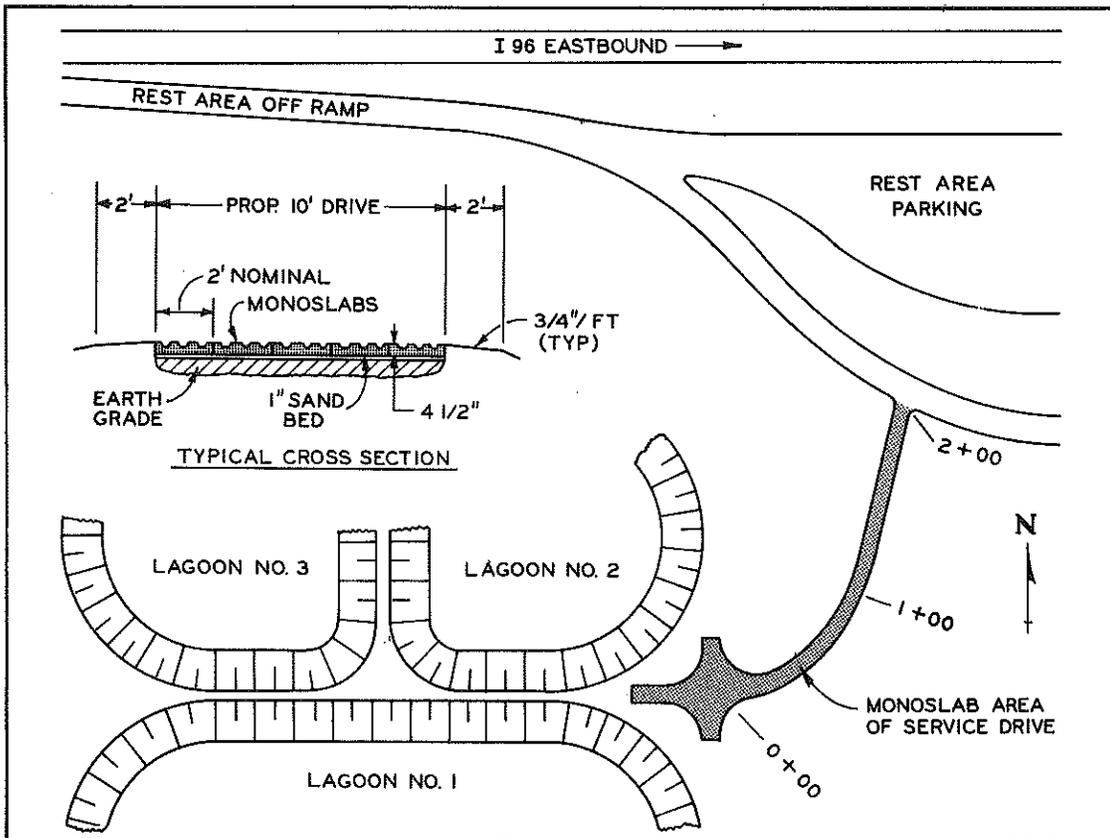


Figure 1. Configuration of a Monoslab section.



I 96 rest area near Novi, lining drainage ditch.



I 96 rest area near Grand Ledge, service drive.

Figure 2. Location of experimental Monoslab installations.



Figure 3. Erosion problems at the Novi rest area drainage ditch.

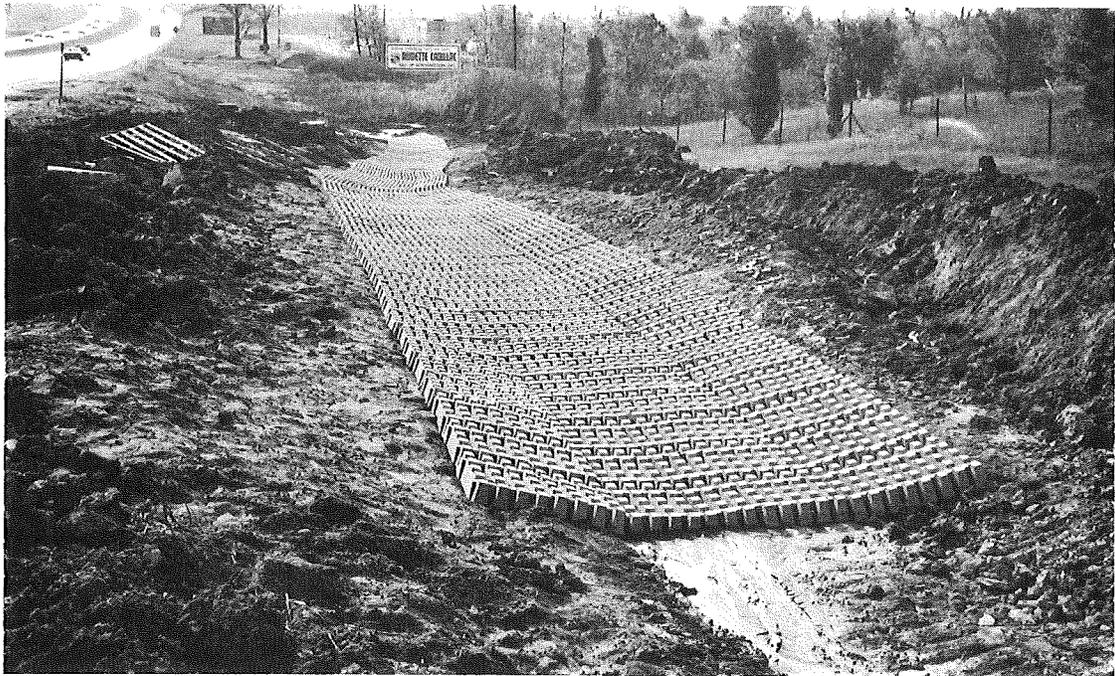


Figure 4. Monoslabs placed on graded ditch bottom.



Figure 5. Erosion during construction prior to sodding sides of ditch.

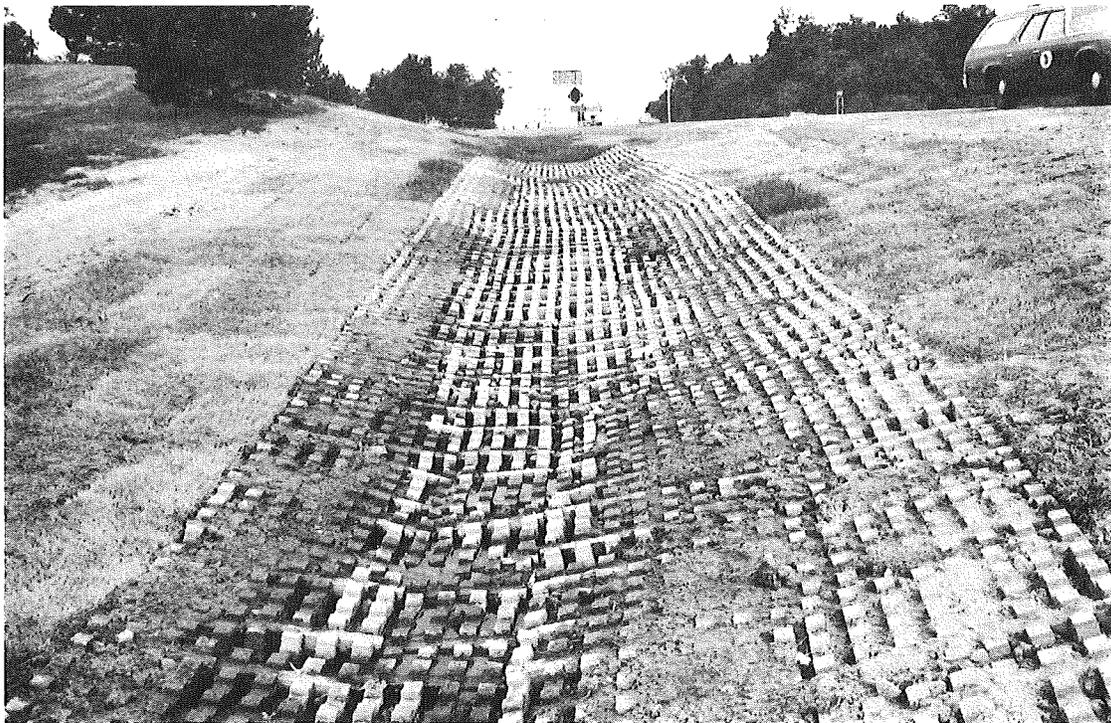


Figure 6. Completed ditch lining after sodding.



Figure 7. Method of placing Monoslabs at curved section of the service drive.



Figure 8. Sections of completed Monoslab service drive.