

Construction of the Western Kentucky Parkway

RALPH R. WADDLE
Turnpike Construction Engineer
Kentucky Department of Highways

The Western Kentucky Parkway is a toll facility extending 127.943 miles from Princeton to Elizabethtown. The route generally parallels US 62 and lies to the north of US 62 from Princeton to Central City. At this point the Parkway crosses US 62 and lies to the south from there to Elizabethtown. The western terminus of the Parkway is at KY 278 approximately two miles west of Princeton. The eastern terminus is at Interstate 65 near the junction of Interstate 65 and the Kentucky Turnpike.



While the Western Kentucky Parkway lies in only two physiographic regions, the Mississippian Plateau and the Western Coal Field—highly varied topography was encountered.

Near Princeton, the Mississippian Plateau is gently rolling to rolling with large sinkholes and caves occurring in the valley bottoms in the St. Louis and Renalt Limestones. The soil is relatively deep on the uplands, consisting of clay and loam and little rock was encountered in roadway cuts. The majority of rock encountered was of a boulder formation. The plateau rises sharply east of Princeton and here shale and sandstone predominated, interbedded with some limestone. The soils tended to heavier clays in this area and were relatively thin. The surface drainage here was well defined and there were no apparent sinkholes although some cavities of a minor nature were encountered which evidently had occurred as a result of subsurface water eroding seams of clay interspersed with the shale and limestone.

From here the Parkway enters the Western Kentucky Coal Field which is a topographic, as well as a structural basin, and is a region of the Pennsylvania Outcrop. In this area shale and sandstone of the Tradewater Group predominated with the shale ranging from blue to black and varying greatly in character from a reasonably sound, hard rock to soapstone and mudstone. Some of the shale was soft enough to be broken down to soil during the process of excavating, handling and compacting. The sandstone also covers a broad range and most of the sandstone encountered was also soft enough to break down into sand. In most cases, the shale and sandstone was embedded in seams of moderate depth, although some massive sandstone was encountered. As a result of the fact that much of the shale and sandstone was soft enough to break down into soil and sand during the process of excavating, handling and compacting, it was necessary to maintain a constant vigil of balance since the plans were in some cases prepared on the basis of an assumed swell factor, whereas, the actual swell factor was much lower than the assumed factor.

Soils were relatively thin in the uplands and consisted of clay to loam often overlying sand. The major stream valleys contain deep alluvial deposits and are poor-

ly drained. Most notable are the Tradewater, Pond, and Green Rivers and Cypress and Pond Creeks.

Coal was frequently encountered in the roadway cuts and in most instances was wasted.

The Mississippian Plateau, as found in Hardin County, is gently rolling with numerous sinkholes and dismembered drainage. In the western section high water from the Nolin River backs up through underground channels, making it necessary to avoid the sinks. The soil is predominantly clay and was relatively deep.

There are eight interchanges located on the Parkway. These are situated at KY 91 near Princeton, KY 109 near Dawson Springs, US 41 By-Pass near Nortonville, US 431 near Central City, US 231 near Beaver Dam, KY 105 near Caneyville, KY 259 near Leitchfield and Interstate 65 near Elizabethtown. Three toll plazas are provided and these are at KY 109 near Dawson Springs, US 431 near Central City, and KY 259 near Leitchfield. The only free travel possible is between KY 278 at the western terminus and KY 91 near Princeton. Interchanges were located to intercept the major traffic movements in the areas traversed by the Parkway and to provide maximum service consistent with the Parkway design and safety.

The design criteria adopted for the Parkway conforms generally to the normal practices of the department, modified where necessary to fit the specified project.

Roadway Criteria

1. Design Speed—70 MPH for the Parkway throughout.
2. Horizontal Alignment—The maximum curve used was 3 degrees, all curves 1 degree 30 minutes and sharper were approached by a spiral transition as set forth in the Bureau of Public Roads "Transition Curves for Highways". A distance of 500 feet was maintained between curves in opposite directions and a minimum distance of 1,000 feet was maintained between curves in the same direction.
3. Vertical Alignment—The maximum grade used was 4.00%. A minimum grade of 0.50% was maintained in all cut sections and a minimum grade of 0.30% was maintained on super-elevated sections which occurred in fills in order to provide longitudinal drainage. The stopping sight distance used was 750 feet and all vertical curves provided for this, with the minimum vertical curve being 400 feet in length.
4. Super-elevation—The super-elevation used was generally consistent with the department's normal practices.
5. Clearance—Vertical Clearances were used as follows:

Parkway Under	15.0'	
Parkway Over Interstate	16.25'	
Parkway Over Primary	15.0'	Desirable
Parkway Over Secondary	14.5'	Minimum
Parkway Over Railroad	22.5'	or as required by the R.R. Co.

A minimum horizontal clearance of 10 feet from the outside edge of the pavement and 4.5 feet from the inside edge was maintained.

6. Right-of-way—A minimum right-of-way width to provide 20 ft. outside of construction limits was maintained, with widening where needed. This right-of-way, as well as that required for the construction of the interchanges, has fully controlled access.
7. Side Roads and Frontage Roads.—All side roads, cross roads, and frontage roads were designed to conform with the Departments' "Minimum Geometric Design Standards."

8. Interchanges—The types of interchanges designed for the various locations were determined by the class of road involved, the anticipated traffic, and the method of toll collection used. A minimum radius of 230 feet was used for the ramps, regardless of shape, and terminal details conform to the latest standards of the Department. Maximum grade used on the ramps was 5.00%.

A 30 foot raised median was selected for use in the typical section on the premise that this is the narrowest median which will allow for future widening without excessive earthwork.

The selection of the pavement type resulted in 36 miles of flexible type pavement and 92 miles of rigid type pavement based on the available subgrade soil types and characteristics and the estimated traffic volumes. The median was faced with a sod curb for its entire length with median inlets provided in the sod curbs on the high side of super-elevated sections. The pavement was designed for a straight line slope of 3/16 degree per foot away from the median except that in some cases where the roadways divide in a service area, the cross section of the pavement reverts to a normal crown section.

The flexible pavement type constituted 36 miles of the total width; 16.5 miles on the extreme western end and 19.5 miles on the extreme eastern end, with the exception that a portion classified as within the interchange with I 65 area near E'town. The flexible pavement consisted of 1-1/2 inches of bituminous concrete surface Class I, 5 inches of Class I modified base, and 12 inches of dense graded aggregate base. The depth of the dense graded aggregate base varied throughout the flexible type pavement sections depending upon the C.B.R. value of the subgrade soil.

The rigid type pavement constituted 92 miles of the Parkway mileage and consisted of a 9inch reinforced concrete pavement with 4 inches of dense graded aggregate for insulation material throughout.

On the rigid pavement sections, shoulders were constructed of full depth dense graded aggregate with 2 inches of bituminous concrete Class I surface. In order to provide a contrast in color, the shoulders on the flexible type pavement sections were constructed of 1-3/4 inches bit. conc. surface Class I and were treated with a seal coat of 20 lbs. per square yard of No. 9 stone with RS-2 for seal.

I think it would be well at this point to present the total actual quantities involved for some of the major contract items to give you an idea of the magnitude of the project.

Roadway excavation	27,250,000 C.Y.
Borrow	6,750,000 C.Y.
Clearing and Grubbing	5,057 acres
Right of Way Fence	1,350,000 Ft.
Steel Beam Guard Rail	476,700 Ft.
Seeding and Protection	14,440,000 S.Y.
Crushed Limestone	3,105,000 Tons
Bit. Conc. Surface Class I	314,000 Tons
Bit. Mod. Base Conc.	308,000 Tons
P.C.C. Pavement	2,650,000 S.Y.
Culvert Pipe	134,000 Ft.
Concrete Class "A"	112,000 C.Y.
Str. Exc. Common	68,000 C.Y.
Str. Exc. Solid Rock	11,000 C.Y.
Structural Steel	8,650,000 Lbs.
Steel Reinf.	19,340,000 Lbs.

It is interesting to note that the total cost per mile as of Dec. 31, 1963, based on total actual expenditures, is \$651,963.30.

Realizing the magnitude of a project of this nature and the further fact that the Department did not have sufficient personnel to supervise the construction of this project and the increased construction program within the state, it was decided by the Department to engage the services of consulting engineers for this purpose. Accordingly, the services of nine engineering firms were engaged as Section Engineers. Brighton Engineering Company of Frankfort was selected to act in the capacity of General Consultant to supervise and direct the services of the Section Engineers. The Section Engineer and the section supervised is:

- Section 1 - Hurst-Rosche, Inc., Frankfort, Kentucky
- Section 2 - Johnson, Depp & Quisenberry, Owensboro, Ky.
- Section 3 - Harry Balke Engrs., Cincinnati, Ohio
- Section 4 - Carl P. Kroboth, Lexington, Ky.
- Section 5 - L. E. Gregg & Assoc., Lexington, Ky.
- Section 6-1, - C. J. Fuller, Lexington, Ky.
- Section 6-2, - Preston & Assoc., Lexington, Ky.
- Section 7 - H. A. Spalding Engrs., Hazard, Ky.
- Section 8 - Adam K. Grafe, Lexington, Ky.

The first contract of the Parkway was let to contract on October 13, 1961. This project consisted of 8.031 miles of grade and drain construction in Grayson and Hardin Counties. The contract for this section was awarded to Axton Contracting, Inc., of Jeffersonville, Indiana, on October 20, 1961, in the amount of \$1,225,944.13. A ground-breaking ceremony was held near Big Clifty, Ky. on October 28, 1961, and construction work was started on the Parkway on this date. Exactly two years from that date, October 28, 1963, a dedication ceremony was held at Leitchfield and the Parkway was officially opened to traffic.

There were 58 separate contracts let on the construction of the Parkway. Of these, 25 were for grade and drain construction. Two consisted of grade and drain and P.C.C. surfacing, 16 surfacing only, and 15 miscellaneous contracts which included lighting, signing, administration buildings, toll plazas, toll collector equipment and toll booth communications equipment. Because of limited time for the project, it was necessary to prepare and maintain a rigid completion schedule and in view of the tight schedule, agreed liquidated damages on the various contracts ranged from a low of \$300 per day to as high as \$2400 per day. Needless-to-say, with liquidated damages of such a nature, we could be assured that delays occasioned by insufficient labor and equipment on the part of the contractor would be kept to a minimum.

As might be expected on a project of this size of undertaking, certain problems developed which were peculiar to the normal construction projects. There were also new methods of operation and new types of equipment used by the contractors to increase production and meet the scheduled completion dates. I will attempt to touch briefly upon some of the problems with which we were confronted and the methods we used to correct or solve these problems. I will also touch briefly on some of the relatively new methods of operation and new types of equipment used by the different contractors on the Parkway.

The Parkway traverses the Coal Field through Hopkins, Muhlenberg and Ohio Counties and several problems were confronted in this area not encountered in the other counties. The greatest problem was through the stripped-out areas, where it was necessary to undercut the spoil banks and cross abandoned pits. In most cases, the grade line had been so set on the design stage, that the desired under-

cutting could be accomplished without too much difficulty. There were cases where this was not practical and it was necessary to either remove the loose material, replace and compact it, or where the depth of material was not too great, it was merely compacted in its existing position.

One of the biggest problems encountered in traversing the stripped-out areas was that of drainage. Where the pits were dry or could be drained, no special treatment was required, other than the removal of the accumulation of muck at the bottom. In some few cases, the pits were below the surrounding drainage and could not be drained. However, rock fill was available and was used in the fills to a point above the water line with equalizer pipes placed near the water line to accommodate drainage.

Several underground mines were known to exist in this area, most of which were idle. It became necessary in such case, to drill exploratory holes to locate these mines and then through the use of explosives, collapse them to insure that there would be no settlement in the Parkway roadway at some future date.

A further problem in the coal field areas was that of the acid water produced by the mining activities. Tests showed that the water had a PH as low as 2.6 with 3.0 being common at extreme low flow. It is a well-known fact that acid water with a PH within this range is highly detrimental to drainage structures. Recognizing this fact, Section Engineers, in whose section this acid water was present were asked during the design stage to present their recommendations as to how to overcome this problem. Generally speaking, three different recommendations were presented, namely: the use of an asbestos bonded bitumen coated pipe with a paved invert; reinforced concrete pipe with an epoxy resin coating on the interior of the pipe representing flow to a one foot depth and joints sealed with bituminous mastic joint sealing materials; and reinforced concrete pipe, with the wall thickness conforming to the dimensions for Wall C. Class V ASTM Des. C76-60T, minimum compressive strength of 6000 p.s.i. and the aggregates used of a silicious nature, joints to be sealed with bituminous mastic joint sealing materials.

It was felt that either of these three types of pipe would produce satisfactory results. Accordingly, the use of each type was specified. The asbestos bonded, bituminous coated corrugated metal pipe with paved invert was specified on Sections 2 and 4 which covered Hopkins, Muhlenberg and Ohio Counties. The extra wall thickness concrete pipe was specified on Section 3 in Muhlenberg County. The epoxy coated pipe was specified to be used in Section 5 in Ohio County. It was further felt this would also provide an opportunity for the observation of the performance of each type by the Research Laboratory.

Much thought was given to the proper method to use for providing adequate protection to the reinforced concrete box culverts. It was finally decided to increase the thickness of the bottom slab and the barrel and wing walls by 3 inches for a height above the flow line of 18 inches. This would provide what was termed as "sacrificial concrete." The theory behind the "sacrificial concrete" was that erosion of the concrete was going to occur due to the corrosive effect of the acid water. Therefore, provide additional concrete for the acid water to erode with the thought that the extra thickness would not be eroded before the life of the structure had expired. It was noted during final inspection of the structures that the height of the acid wall of the culverts should have been increased since many of the structures within the acid water areas had the tendency to "silt up" considerably. This, of course, decreased the usefulness of the "acid wall."

It was also considered necessary to provide protection to exposed piling supporting structures in the acid water areas. This protection was provided by en-

closing in a concrete pipe, that portion of the pile subjected to the acid water. Here, once again, the concrete pipe served as "sacrificial concrete."

Just east of the Green River the Parkway traverses an area in which the soil has a relatively low load bearing capacity. This area is a fairly low area and is subject to frequent flooding by the waters of the Green River. The soil in this area is a silty soil which has evidently been deposited by the flood waters from the Green River.

In order to keep above the flood waters and at the same time maintain the proper grade for the approach to the Green River bridge further west, it was necessary to construct a fill approximately 50 feet in height above the original ground level. A culvert was also constructed in this fill to serve mainly in the capacity of an equalizer in time of flooding, and still provide for the natural drainage toward the Green River.

After the fill had been constructed in its entirety, subsidence in the old ground occurred causing an area of the fill from approximate centerline out for a longitudinal distance of about 800 feet to drop vertically approximately 10 to 12 feet. The result was that the old ground was heaved up by this amount at a point just outside the toe of the fill. This subsidence also caused considerable damage to the R.C. box culvert in the fill in that the long wing was sheared off of the north end of the culvert and serious cracks were produced in the barrel walls.

The analysis of the situation indicated that the approach to this problem was to load the toe of the fill and the area just beyond the toe with enough material or enough weight to counteract the downward thrust of the superimposed fill material. Fortunately, the obtaining of additional right of way within this area was of little problem or cost. We were at the same time concerned with the possibility of the same thing occurring on the south side of the fill. Therefore, enough additional right of way was acquired on the south side to also load the toe of this fill sufficiently to prevent the possibility of the same occurrence on this side.

The affected portion of the fill was removed in its entirety along the fractured plane and to the depth of the fracture. This followed, in general, an arc from the top of the fill to a point near the toe of the fill. The fill material was then replaced in benches and compacted simultaneously with a berm approximately 50 feet in width from the toe of the fill. The berm was constructed to a height of approximately 20 feet above the existing ground and throughout the entire length of the break. The sheared wing was removed from the culvert and replaced with a wing extending generally perpendicular to the fill and parallel to the barrel wall. The cracks in the culvert were thoroughly cleaned and sealed with an epoxy mortar. A berm was also constructed on the south side of the fill to a height and width similar to the one on the north side.

An incident similar in many respects to the Ohio County subsidence, occurred in Caldwell County on Project WK 1-2. Here the Parkway rises from the valley bottoms into the uplands just east of Princeton. To maintain the design standards, the Parkway passed eastward through a 100 foot rock cut and then skirted the outside of a hill with a 100 foot side fill, and passed over an existing 30 inch gas line located just at the top of the hill. This routing of the Parkway was followed to prevent the costly relocation of the 30 inch gas line.

As the fill was being constructed, a point was reached where the load of the fill exceeded the load bearing capacity of the original ground at the toe of the fill. Some seepage was also noted through the existing ground at the approximate mid-point of the fill which may have tended to lubricate the slippage plane and facilitate the failure.

The corrective steps taken here were similar to those on the Ohio County project. However, because of the height of the fill in this case, the berm was constructed in two lifts, one lift being stepped in from the other. Here again, the fill material was removed almost in its entirety and a berm was constructed throughout the entire length of the fill. The lower berm was constructed for a distance of approximately 80 feet from the toe of the fill and to a height of approximately 20 feet. The second berm was constructed to a width of approximately 50 feet and a height of approximately 20 feet. In replacing the fill the width of the benches was increased as much as practical to provide for greater stability and a line of perforated pipe was installed longitudinally in an attempt to pick up and control the noted seepage. On the upper side of the roadway, a special ditch was constructed in an effort to pick up any seepage before it had a chance to permeate the fill material.

West of Central City the Parkway passes through an area known as The Little Cypress Creek Swamp Area. This is a very swampy area and the general opinion was that the original ground was so saturated with water that it would be unable to support the load of a fill with traffic. It was decided, therefore, to use vertical sand drains in an attempt to allow the subsurface water to rise to the surface and then by application of a surcharge, cause the old ground to consolidate as the subsurface water was removed. Settlement platforms and piezometers were to be installed to measure the amount of consolidation taking place.

The vertical sand drain pattern was specified throughout the fill to either 15 feet or 20 feet center to center. The first operations consisted of the placing of the initial platform embankment material which was formed with material excavated in adjacent cut sections and/or approved borrow pits. This material had to be free of stones and/or boulders which would impede the installation of the vertical sand drains. Compaction requirements were waived for this initial embankment except that the material had to be compacted enough to support the necessary construction equipment used to properly install the vertical sand drains.

The next operations consisted of the placing of a 2 foot sand blanket over the initial platform material. This 2 foot sand blanket consisted of concrete sand since it was felt that natural sand would not provide the desired porosity. After the placing of the 2 foot sand blanket, the next operation was the driving and placing of the 18 inch vertical sand drains. The pattern of the vertical sand drains was either 15 foot or 20 foot on centers which varied according to the amount of fill to be placed. The sand drains were driven to a depth sufficient to get through the compressible material zone which was generally about 30 feet. This work was performed by the Hercules Concrete Pile Co. of Ridgefield, New Jersey. The method used included the use of a fully equipped pile driving rig in which a plugged mandrel with a hinged bottom was driven to the desired elevation, the mandrel filled with concrete sand and air pressure used to eject the sand upon extraction of the mandrel.

After the vertical sand drains were driven the first two feet of embankment was placed over the sand drains. Much care had to be used here to prevent the sealing of the edges of the sand blanket with dirt. This material could come from the adjacent cuts and/or borrow pits provided that it was free from stone or boulders which might harm the sand blanket.

The embankment material was then placed to the subgrade elevation and the plans called for a 10 foot surcharge of material to be added to the entire length of the fill. The 10 foot surcharge was eliminated in view of the fact that some 7 inches to 9 inches of settlement had taken place by the time the embankment was completed. The specifications required that the embankment and surcharge material shall have been in place for six months before work could start on the abutments

of the bridge near the center of the fill. Work on the piers, however, could begin as soon as the embankment and surcharge material were complete and in place.

A periodic measurement was made on the settlement platforms and a total settlement of some 11 inches was recorded from the beginning of the operation until the end of the specified time that the embankment material was to remain in place before beginning work on the structure.

The biggest stream crossing on the Parkway was the crossing of the Green River. This crossing consisted of twin structures. Each structure was 160 feet-200 feet-160 feet, 160 feet-200 feet-160 feet, 220 feet-320 feet-220 feet continuous welded steel plate girder spans with a 30 foot roadway.

It appeared that the date of the opening of the Parkway to traffic would in all probability depend upon the date which this structure could be completed. The contract for the superstructure was let on June 1, 1962, with a completion date of October 15, 1963. This contract was let at such an early date in order to provide the contractor ample time to complete the fabrication of the necessary structural steel with the anticipation that erection could begin in early spring of 1963. The contract was awarded on June 20, 1962, to Allied Structural Steel Company of Chicago, Illinois.

The concrete deck was subcontracted to the R. R. Dawson Bridge Company of Bloomfield, Kentucky. The erection schedule was such that the Dawson Company could not anticipate the start of their forming operations for the concrete deck sooner than July 1, 1963. This would mean that they had, at the most, approximately 3-1/2 months in which to place and finish over 3700 cubic yards of Class "A" concrete which involved some 3600 lineal feet of bridge deck 30 feet in width.

Accordingly, R. R. Dawson Bridge Company decided upon the use of a Bidwell Bridge Deck Finisher manufactured by K & R Equipment, Inc., of Canton, South Dakota. In conjunction with this machine, they also decided to use 18 gauge metal stay-in-place forms rather than the conventional method of timber forms. It was felt that each of these methods would materially expedite the progress of the project and at the same time produce a finished product in keeping with the requirements of the specifications.

A major problem confronting all bridge contractors has involved the effort to obtain a smooth riding surface on the bridge deck. Most finishing must be done by hand because of the confines of the working area. Experience has shown that most of the hand finishing has been eliminated with the use of a mechanical bridge deck finisher. It is also felt that a superior riding quality of the bridge deck is obtained through the use of a finisher.

The conventional method of finishing bridge decks consists of screed pipes set at approximate intervals of eight feet transversely to the roadway and at such elevations that the tops of the screed pipes are flush with the finished elevation of the concrete. The concrete is then manipulated and finished manually by striking off between the two adjacent screed pipes. This has resulted in irregularities in the finish of the concrete and has produced highly undesirable irregularities at the points where the screed pipes have been removed. Oftentimes it has become necessary for workmen to walk in the newly placed concrete to remove the pipes with the end result that such points are areas of either high or low places in the concrete.

Much of the above has been eliminated through the use of the mechanical bridge finisher. The finisher itself is rather simple in design and operation. The machine rides on rails which are set above the concrete curb at predetermined elevations which are parallel to the longitudinal grade of the gutter line of the bridge. The truss supporting the machine is adjustable so that it may be adjusted to accommo-

date any bridge section from the crown to a perfectly flat section. The screed is 10 feet in length and 12 inches in width. The screed is slung under the truss and moves transversely from gutter line to gutter line striking off longitudinally. After the strike off has been completed, the finishing machine is moved ahead in such a manner that the screed laps approximately five feet over the preceding section. The surface is then straightened with a 10 foot straight edge, a small area along the gutter line is hand finished, and the surface is belted or dragged with a burlap drag.

The machine weighs approximately 2500 pounds, is driven by electric motors, can be adjusted to accommodate skews up to 45 degrees, and is equipped with a vibrating unit. The basic machine is 37 feet overall, but can be extended for widths up to 65 feet.

The results obtained through the use of this machine were of importance. A ten-foot rolling straight edge revealed very few irregularities in excess of 1/8 inch. The first concrete deck was placed near the first of August and the deck was completed in its entirety and opened to traffic near the middle of October, a period of 2 1/2 months. The contractor was able to place as much as 250 cubic yards of concrete in a single day, the controlling factor being the supply of concrete to the project. I think that the future will bring much in the way of bridge deck finishing with a mechanical finisher, and I further think that through the use of mechanical bridge deck finishers, the riding qualities of bridge decks in Kentucky will improve materially.

The contracts for the surfacing were let in the late fall and winter of 1962 in order to allow the contractors ample time to stockpile the necessary materials to be incorporated into the project. No paving was accomplished until spring of 1963.

The riding quality of some of the flexible type pavement placed on the Parkway is beyond compare in the state of Kentucky. Electronically controlled pavers were used on most of the flexible type pavement. It is only natural that some portions of the pavement would be superior to others. The superior flexible pavement was obtained through the use of the most modern type of equipment from the subgrade through the completion of the surfacing. Here a Gurries Road Building machine was used in the preparation of the subgrade and the planing and shaping of the dense-graded aggregate base. The bituminous base material and the surfacing were placed with an electronically controlled paver with the end result being that the riding qualities obtained are beyond compare within the state of Kentucky.

Two concrete paving records for 9 inch concrete pavement were set on the Parkway. On June 3, 1963, Arcole Midwest Corporation of Evanston, Illinois placed 9132 feet to break a record of 8101 feet set in August of 1962 by Pierson Contracting Company of Saginaw, Michigan on a stretch of Interstate 96 located near West Lansing, Michigan. Arcole Midwest's record remained for just 15 days when on June 18, 1963, Green Construction Company of Oaktown, Indiana placed 10,614 feet of 24 feet wide, 9 inch thick reinforced concrete pavement on a section of the Parkway in Grayson County.

Each of the above companies used Rex dual 8-cubic yard central mix plants. Each of the companies was hauling in the neighborhood of two miles from the plant. Arcole Midwest used 20 trucks with rear dump agitating bodies and six trucks with non-agitating side dumps. Green used 28 non-agitating side dumps and three agitating rear dumps. All trucks used were of 8-cubic yard capacity.

Each paving train included two box spreaders, one for the lower course and the second for placing the top course over the reinforcing steel. Each paving train included a finishing machine and a finisher drag float. Green, however, used a fac-

tory-made belt machine while Arcole used his own shop-built burlap drag. Green's first box spreader towed a mesh cart while Arcole used laborers to place the mesh in the forms, carrying it in from outside the forms where it had been placed before paving began.

Realizing the difficulty involved in making a proper final inspection by riding the project, it was decided to walk each of the projects to insure that as little as possible would be missed. This, of course, meant walking some 250 miles, or 127 miles on grade and drain final inspection and 127 miles on surfacing final inspection.

Beyond doubt, Kentucky has in the Western Kentucky Parkway, an achievement to be well proud of and a facility which will provide a modern and rapid means of access to and from the western portions of Kentucky and its many resources and tourist attractions.