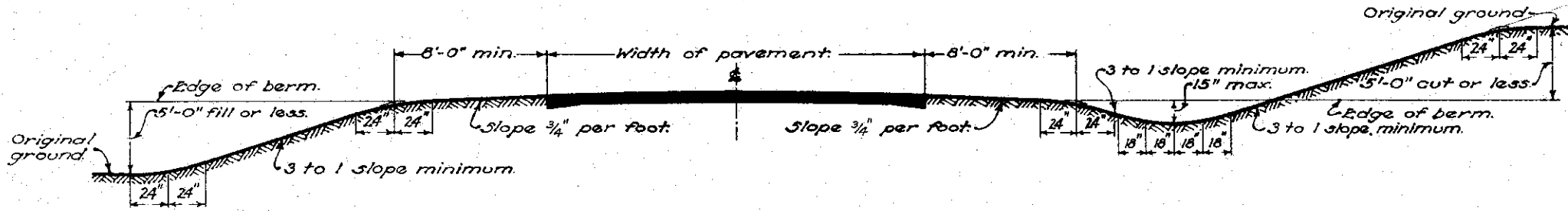


SHOULDERS, SLOPES AND DITCHES

NOTES

NORMAL SECTION

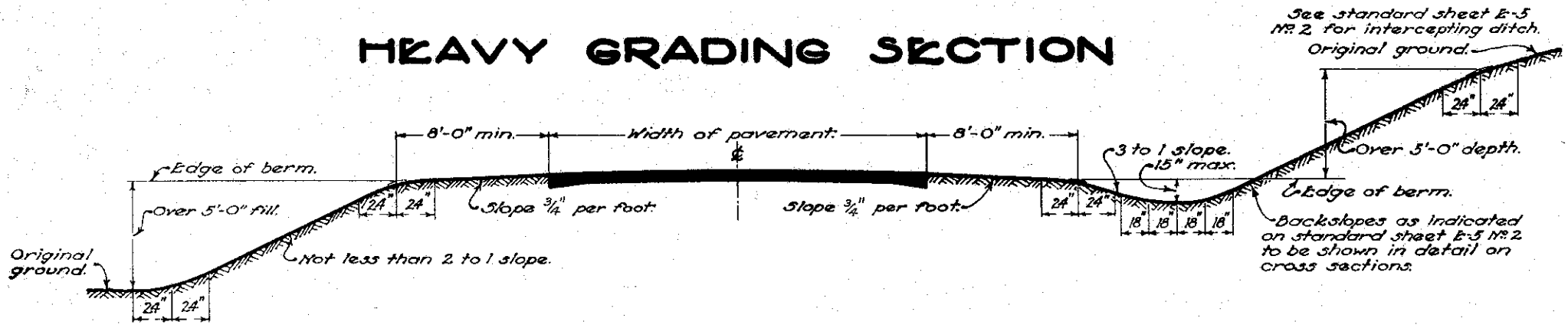


GENERAL:— The berm or shoulder width used shall be not less than that shown on this standard sheet; where guard rail is to be erected, the width of the shoulder should be increased two (2) feet. Shoulder widths should be uniform on each side of the pavement (except where guard rail is involved) and abrupt changes in shoulder width should be avoided.

When the project is in a village or urban district consideration should be given to the accommodation of pedestrians by the construction of walks or foot paths on one or both sides of the improvement.

NORMAL SECTION:— This section to be used in light grading construction, particularly in flat country and where the cuts and fills are generally less than five (5) feet. Where the right-of-way will permit, flatter slopes than those indicated on this section should be used. This may be accomplished by using 4 to 1 shoulder slope and back slope or a 4 to 1 shoulder slope and a 3 to 1 back slope, always maintaining the general width of shoulder and a uniform shoulder slope and back slope.

HEAVY GRADING SECTION



HEAVY GRADING SECTION:— The slopes shown on this section shall be standard for earth cuts and fills exceeding five (5) feet. In case a project has a considerable amount of surplus material and right-of-way and topography permitting, flatter fill slopes should be used. The slopes may be varied from those shown herewith and as indicated elsewhere on these standard drawings and should be as shown in detail on the cross-sections.

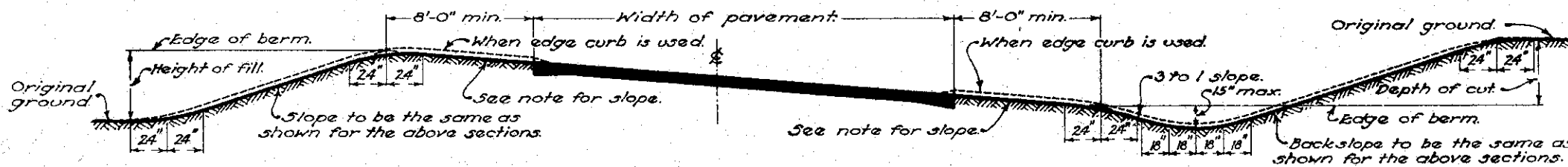
SUPERELEVATED SECTION:— The slope of the shoulder on the lower side of pavements without curbs shall be 3/4" per foot (unless otherwise shown on the typical section) until the rate of super-elevation of the pavement becomes more than 3/4" per foot, then the slope of the shoulder shall be the same as the rate of super-elevation of the pavement.

The slope of the shoulder on the upper side of pavements with or without curbs shall be the same as the slope of the pavement at all points around the curve and transitions.

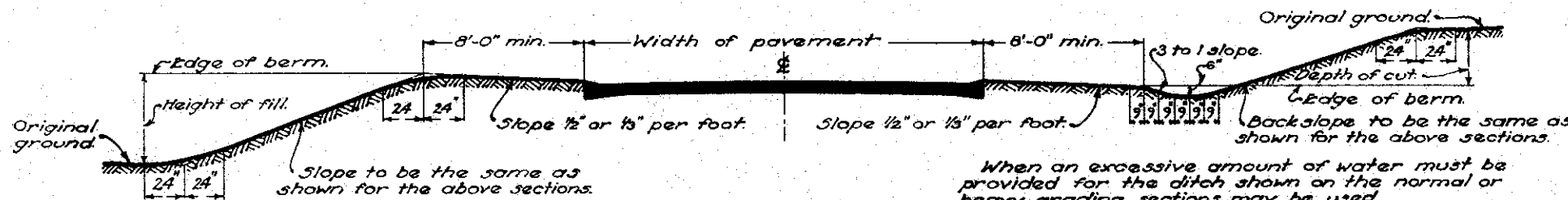
CURB SECTION:— On curb section the shoulders on fills should be sloped toward the pavement. The shoulders on the cut section should be sloped to the ditch.

Edge curb should be used wherever the gradient permits. Edge curb should be used on the inside of the super-elevated section, particularly where the curve occurs on a fill section.

SUPERELEVATED SECTION



CURB SECTION

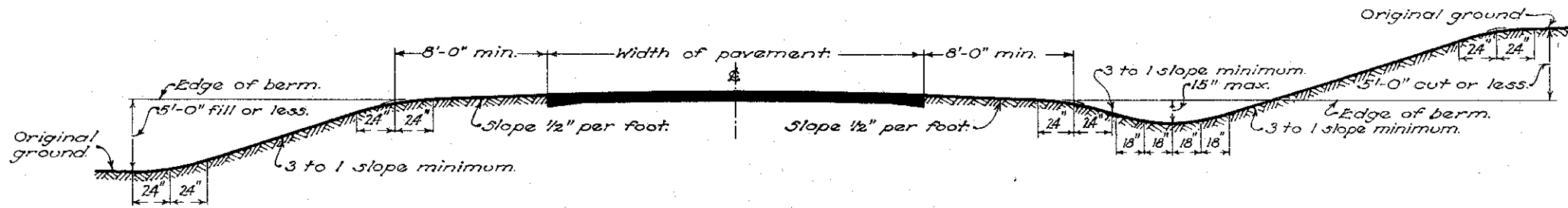


When an excessive amount of water must be provided for the ditch shown on the normal or heavy grading sections may be used.

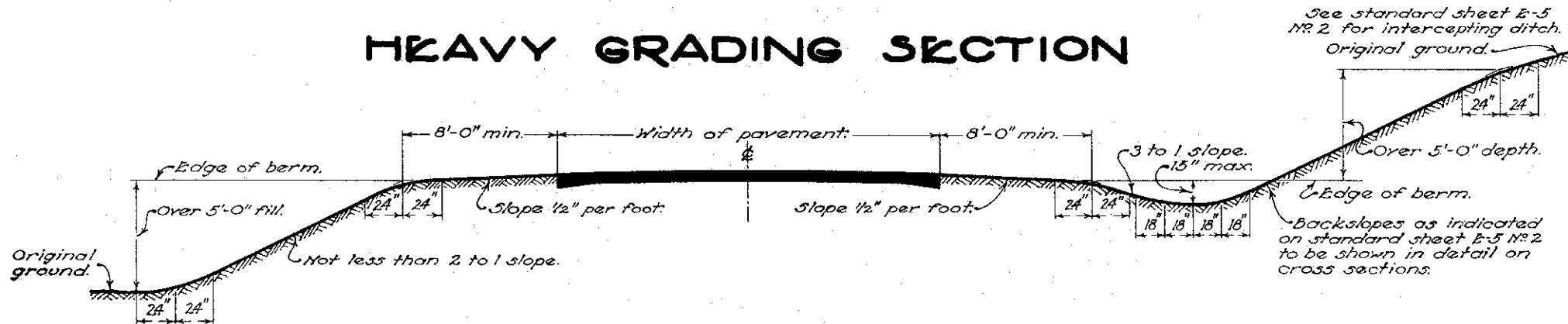
| | |
|--|----------------------|
| BUREAU OF LOCATION & RIGHT OF WAY OHIO DEPARTMENT OF HIGHWAYS | |
| SHOULDERS, SLOPES & DITCHES | |
| DATE: 7-12-35 6-1-36 8-25-39 7-1-40 | |
| STANDARD CONSTRUCTION DRAWING | E-5 No. 1 |
| APPROVED: <i>[Signature]</i> CHIEF ENGINEER | |

SHOULDERS, SLOPES AND DITCHES

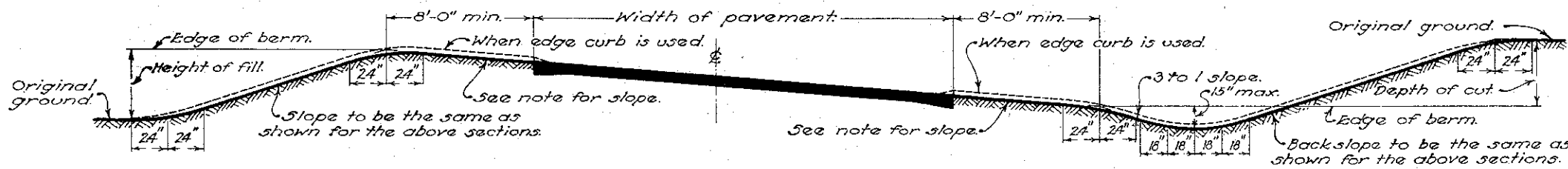
NORMAL SECTION



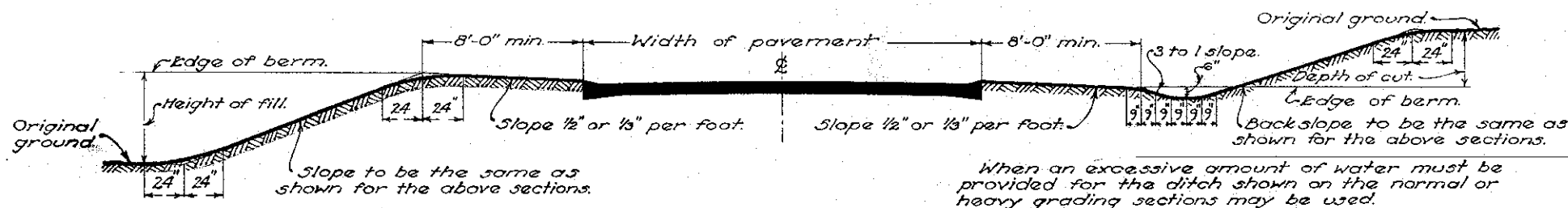
HEAVY GRADING SECTION



SUPERELEVATED SECTION



CURB SECTION



When an excessive amount of water must be provided for the ditch shown on the normal or heavy grading sections may be used.

NOTES

GENERAL:— The berm or shoulder width used shall be not less than that shown on this standard sheet; where guard rail is to be erected, the width of the shoulder should be increased two (2) feet. Shoulder widths should be uniform on each side of the pavement (except where guard rail is involved) and abrupt changes in shoulder width should be avoided.

When the project is in a village or urban district consideration should be given to the accommodation of pedestrians by the construction of walks or foot paths on one or both sides of the improvement.

NORMAL SECTION:— This section to be used in light grading construction, particularly in flat country and where the cuts and fills are generally less than five (5) feet. Where the right-of-way will permit, flatter slopes than those indicated on this section should be used. This may be accomplished by using 4 to 1 shoulder slope and back slope or a 4 to 1 shoulder slope and a 3 to 1 back slope, always maintaining the general width of shoulder and a uniform shoulder slope and back slope.

HEAVY GRADING SECTION:— The slopes shown on this section shall be standard for earth cuts and fills exceeding five (5) feet. In case a project has a considerable amount of surplus material and right-of-way and topography permitting, flatter fill slopes should be used. The slopes may be varied from those shown herewith and as indicated elsewhere on these standard drawings and should be as shown in detail on the cross-sections.

SUPERELEVATED SECTION:— The slope of the shoulder on the lower side of pavements without curbs shall be 1/2" per foot (unless otherwise shown on the typical section) until the rate of superelevation of the pavement becomes more than 1/2" per foot; then the slope of the shoulder shall be the same as the rate of superelevation of the pavement.

The slope of the shoulder on the upper side of pavements with or without curbs shall be the same as the slope of the pavement at all points around the curve and transitions.

CURB SECTION:— On curb section the shoulders on fills should be sloped toward the pavement. The shoulders on the cut section should be sloped to the ditch.

Edge curb should be used wherever the gradient permits. Edge curb should be used on the inside of the superelevated section, particularly where the curve occurs on a fill section.

BUREAU OF LOCATION & RIGHT OF WAY
OHIO DEPARTMENT OF HIGHWAYS

**SHOULDERS,
SLOPES
& DITCHES**

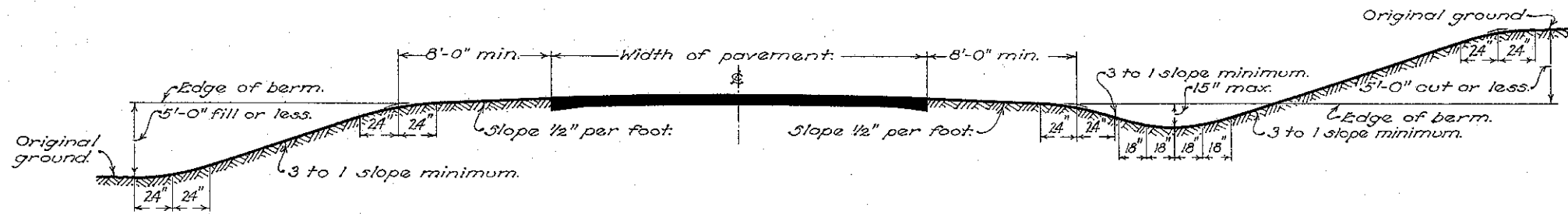
STANDARD CONSTRUCTION DRAWING
APPROVED *gpl* CHIEF ENGINEER

DATE:
7-12-35
8-1-38
8-25-39

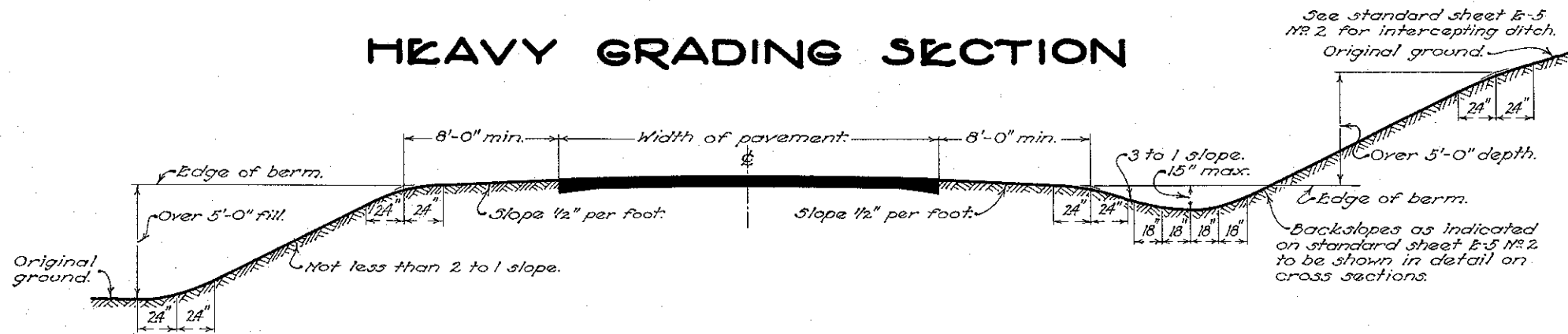
**E-5
NO. 1**

SHOULDERS, SLOPES AND DITCHES

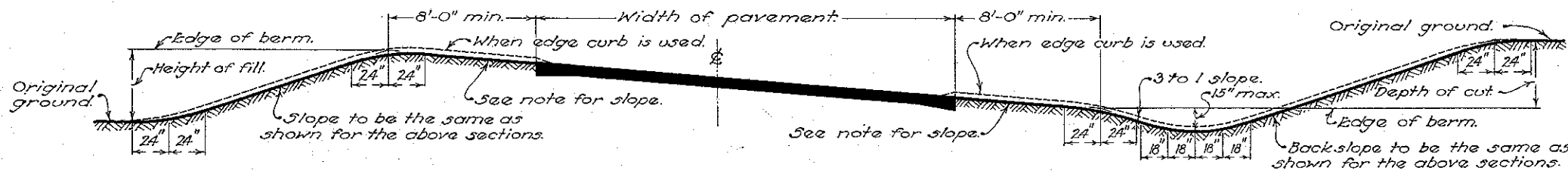
NORMAL SECTION



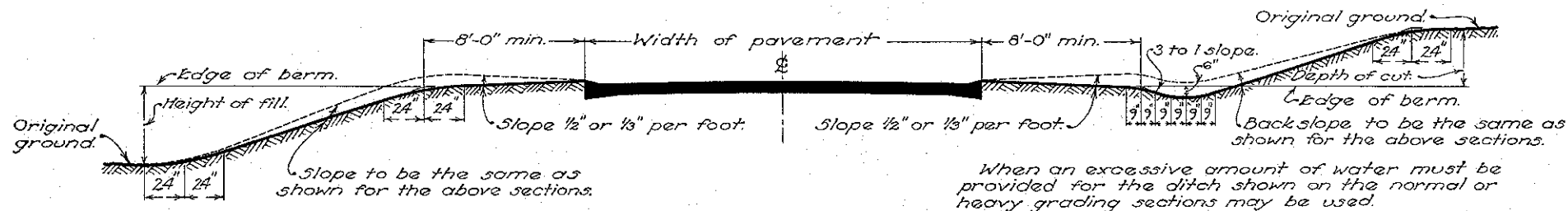
HEAVY GRADING SECTION



SUPERELEVATED SECTION



CURB SECTION



NOTES

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HEAVY GRADING SECTION:— The slopes shown on this section shall be standard for earth cuts and fills exceeding five (5) feet. In case a project has a considerable amount of surplus material and right-of-way and topography permitting, flatter fill slopes should be used. The slopes may be varied from those shown herewith and as indicated elsewhere on these standard drawings and should be as shown in detail on the cross-sections.

SUPERELEVATED SECTION:— The slope of the shoulder on the lower side of pavements without curbs shall be 1/2" per foot (unless otherwise shown on the typical section) until the rate of superelevation of the pavement becomes more than 1/2" per foot, then the slope of the shoulder shall be the same as the rate of superelevation of the pavement.

The slope of the shoulder on the upper side of pavements with or without curbs shall be the same as the slope of the pavement at all points around the curve and transitions.

CURB SECTION:— Generally on curve section the shoulders on fills should be sloped toward the pavement. The shoulders on the cut section should be sloped to the ditch.

Edge curb should be used wherever the gradient permits. Edge curb should be used on the inside of the superelevated section, particularly where the curve occurs on a fill section.

BUREAU OF LOCATION & DESIGN 7-12-35
OHIO DEPARTMENT OF HIGHWAYS 8-1-38

SHOULDERS, SLOPES & DITCHES

STANDARD CONSTRUCTION DRAWING E-5 No. 1
APPROVED K.L.R. CHIEF ENGINEER