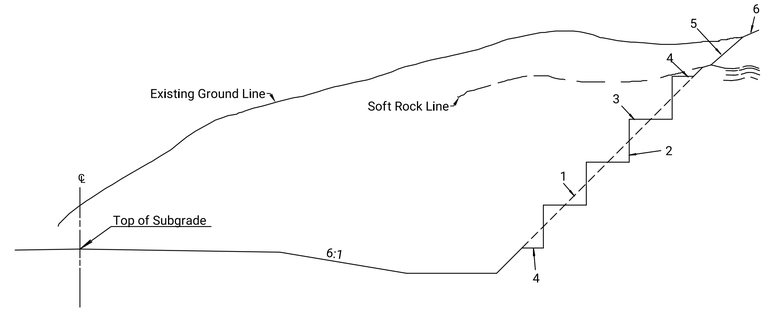
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS		0	0	



TYPICAL SECTION OF STEPPED SLOPES

LEGEND

1 Staked slope line for soft rock - Variable slope (see cross sections)
2 Step rise - Height variable (see Table)
3 Step tread - Width = Staked slope times step rise
4 Step termini - Width = one-half step tread width
5 Mantle - Variable slope (see cross sections)
6 Slope rounding

NOTES:

Cuts in soft rock, as listed on the plans or designated by the Engineer, shall be excavated to shape the cut face to a stepped pattern in reasonably close conformity with the typical cross section shown in the detail above.

The steps may vary one foot vertically from the dimension shown on the plans, with the horizontal dimension being a function of the staked slope. The approximate midpoint of the horizontal tread of the step shall be constructed on the staked slope line.

The first step shall begin immediately below the soft-rock line and continue to the bottom of the designated formation(s).

The steps shall be constructed horizontal (±1%) rather than parallel to the centerline grade. Excavation of each step shall be in the opposite direction from the preceding one to minimize buidup of loose material at the ends of steps. Loose material which collects at the ends of steps shall be removed and the ends blended into the natural ground. Where rock, too hard to rip, is encountered within a cut, the steps shall be blended into the rock.

Scaling need not be performed on the stepped slopes except for removal of large rocks or material which may fall into the ditch or onto the roadway.

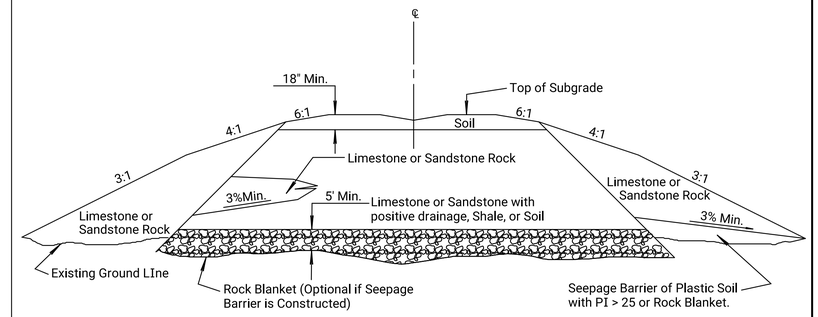
Construction of stepped slopes shall be subsidiary to other items of the contract.

Individual benches constructed during the spring and summer months shall be seeded promptly under the temporary seeding provisions of the contract. Benches constructed during the winter months shall be seeded as soon as weather permits under the temporary seeding provisions so that vegetation can be established early in the spring. At the direction of the Engineer, benches seeded earlier, which have not developed satisfactory vegatative cover, shall be reseeded with temporary seeding. All seeding or reseeding shall be done without disking or other preparation.

All benches shall receive permanent seeding without disking or other preparation under the permanent seeding contract for the project.

LOCATIONS OF STEPPED SLOPES

Sta. to Sta.	Lt. or Rt.	Formation	Vertical Bench Dimension(Rise)	Backslope Ratio



TYPICAL SECTION OF ROCK EMBANKMENTS

NOTES:

Embankments constructed primarily from rock and shale shall be constructed as shown in the detail above where designated in the plans.

Excavation and ensuing embankment construction shall be scheduled so that soil or shale geologic members are placed in the "core" of the embankment. The "core" is roughly defined as that portion of the embankment lying inside of a 1:1 slope projected downward from the normal 6:1 - 4:1 break in slope. The portion outside of the "core" shall be constructed from limestone or sandstone geologic members.

Where the excavation produces embankment material alternating between shale and limestone, the respective portions of the embankment may be constructed independently. Also excess limestone excavation may be placed in the "core" portion with positive drainage (3%+) to the outside. If necessary, the top one-half of the embankment as measured along the embankment slopes may be constructed full width from shale excavation, except that a minimum of 18 inches of suitable materials, as stated on the plans, shall be placed in the top of the embankment.

To ensure that embankments constructed on existing ground, which slopes across the embankment, do not become saturated by ground water and/or surface water, a rock blanket shall be constructed at the base of the embankment "core". The top of the rock blanket shall be uniform in slope across the embankment with a minimum thickness of five feet. If rock is not available for this purpose, a seepage barrier to provide positive drainage (3%+) to the toe of the embankment shall be constructed instead of the rock blanket. The seepage barrier shall be constructed from soils with a plasticity index greater than 25.

Twelve inches of select soil shall be placed on the exposed slopes constructed from limestone or sandstone. Approximately fifteen linear feet of rock as measured along the slopes shall be left exposed at the base of the embankment to allow free drainage.

Since no stockpiling or severely restricted excavation methods will be required, this embankment construction shall be subsidiary to other items on the contract.

ROCK AND SHALE EMBANKMENT LOCATIONS

Station	to	Station

NO.	DATE	REVISIONS	BY	APP'D
01	08-15-94	Entered on CADD, no change	R.J.S.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

ROCK EMBANKMENTS STEPPED SLOPES

RD598

FHWA APPROVAL	12-22-94	APP'D.	James O. Brewer
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

KDOT Graphics Certified 04-22-2022 Sh. No. 0

KDOT Graphics Certified

Plotted by : Kylee.Sims@ks.gov 22-JUL-2022 14:17
File : rd598.dgn