CROSS SECTION

Where the material to be excavated exceeds 10' in depth, a 10' temporary surcharge will be required. It is necessary to move forward as the fill progresses. Not required where excavation results in a dry trench.

LONGITUDINAL SECTION

Fill to be constructed full width to 2' above the ground level, or as specified on plans. By end comp method as excavation progresses. (Except as indicated under notes.)

The balance of embankment shall be constructed according to the "controlled density method" for embankment construction.

METHOD A - 1
TOTAL EXCAVATION AND BACKFILL
(For single roadways)
TREATMENT OF PEAT MARSHES

CROSS SECTION

DEPTH OF EXCAVATION PAY LIMITS TO BE DETERMINED FROM BORINGS AFTER BACKFILL IS COMPLETED.

1. 15' OR DEPTH OF PEAT IF LESS THAN 15'.

2. THIS DISTANCE SHOULD BE INCREASED FOR SWAMPS MORE THAN 30' DEEP, WHICH WILL NECESSITATE A HIGHER THAN NORMAL SURCHARGE.

3. GRADE TO SUBGRADE ELEVATION OR TOP OF SURCHARGE, WHICHERVER IS LESS.

LONGITUDINAL SECTION

15' MINIMUM DEPTH OF TRENCH TO BE MAINTAINED THROUGHOUT THE PROGRESS OF WORK BY REMOVING UNEVALED PEAT, UNLESS MODIFIED BY THE ENGINEER BECAUSE OF FLUID NATURE OF THE PEAT OR IF PEAT DEPTH IS LESS THAN 15'.

METHOD B - 1
PARTIAL EXCAVATION, DISPLACEMENT AND BACKFILL
(FOR SINGLE ROADWAYS)
CROSS SECTION

WHERE THE MATERIAL TO BE EXCAVATED EXCEEDS 10' IN DEPTH, A 10' TEMPORARY SUBCUT TION WILL BE REQUIRED. (TO BE MOVED FORWARD AS THE FILL PROGRESSES.) NOT REQUIRED WHERE EXCAVATION RESULTS IN A DRY TRENCH.

LONGITUDINAL SECTION

FILL TO BE CONSTRUCTED FULL WIDTH TO 2' ABOVE THE GROUND LEVEL, OR AS SPECIFIED ON PLANS, BY EXCCHANGE METHOD AS EXCAVATION PROGRESSES. EXCEPT AS INDICATED UNDER NOTES.

THE BALANCE OF EMBANKMENT SHALL BE CONSTRUCTED ACCORDING TO THE "CONTROLLED DENSITY METHOD" FOR EMBANKMENT CONSTRUCTION.

METHOD C - 1

SIDE ELEVATION AND BACKFILL, OLD ROAD TO BE LEFT IN PLACE
( FOR SINGLE ROADWAYS)
LEFT ROADWAY CROSS SECTION

RIGHT ROADWAY CROSS SECTION

LONGITUDINAL SECTION

FILL TO BE CONSTRUCTED FULL WIDTH TO 2' ABOVE THE GROUND LEVEL, OR AS SPECIFIED ON PLANS. BY ERD DUMP METHOD AS EXCAVATION PROGRESSES. (EXCEPT AS INDICATED UNDER NOTES.)

THE BALANCE OF EMBANKMENT SHALL BE CONSTRUCTED ACCORDING TO THE "CONTROLLED DENSITY METHOD" FOR EMBANKMENT CONSTRUCTION.

METHOD A - 2

TOTAL EXCAVATION AND BACKFILL

FOR DUAL ROADSWAYS
TREATMENT OF PEAT MARSHES

**LEFT ROADWAY CROSS SECTION**

- Peat may be used to construct slope.
- Original ground plan fill slope.
- Stake for excavation (see notes).
- Peat, mire, or very soft clay.
- Pay limits for excavation.
- Limits of trench.
- Firm bottom.
- Depth of excavation pay limits to be determined from borings after backfill is completed.
- $\geq 15'$ or depth of peat if less than $15'$.
- $\geq 2'$ this distance should be increased for swamps more than $30'$ deep which will necessitate a higher than normal surcharge.
- Stake for excavation (see notes).

**RIGHT ROADWAY CROSS SECTION**

- Peat may be used to construct slope.
- Minimum height equals depth of peat if less than $15'$.
- 30' minimum depth of peat if less than $15'$.
- Stake for excavation (see notes).
- Pay limits for excavation.
- Firm bottom.
- Minimum height equals depth of peat material to firm bottom.

**LONGITUDINAL SECTION**

- 15' minimum depth of trench to be maintained throughout the progress of work by removing upheaved peat, unless modified by the engineer because of fluid nature of the peat or if peat depth is less than $15'$.

**METHOD B - 2**

PARTIAL EXCAVATION, DISPLACEMENT AND BACKFILL

(FOR DUAL ROADWAYS)
LEFT ROADWAY CROSS SECTION

RIGHT ROADWAY CROSS SECTION

LONGITUDINAL SECTION

METHOD C - 2
SIDE EXCAVATION AND BACKFILL, OLD ROAD TO BE LEFT IN PLACE
(FOR DUAL ROADWAYS)
NOTES:

PEAT MARSHES SHALL BE TREATED ACCORDING TO THE CURRENT STANDARD SPECIFICATIONS AND THE FOLLOWING PROVISIONS:

FULL WIDTH TRENCHING AND BACKFILLING SHALL BE CARRIED ACROSS THE MIRE PROGRESSIVELY. THE RATE OF ADVANCEMENT OF THE EMANKMENT AND SURCHARGE IN DEEP SWAMPS SHALL BE COORDINATED WITH THE RATE OF EXCAVATION OF THE UNEARTHED PEAT. IF A TRENCH OF THE REQUIRED DEPTH IS NOT MAINTAINED FULL WIDTH AHEAD OF SURCHARGE, ADDITIONAL EXCAVATING UNITS SHALL BE USED OR CONSTRUCTION OF EMANKMENT AND SURCHARGE SHALL BE STOPPED UNTIL THE TWO OPERATIONS ARE IN BALANCE. IN CASE DISPLACEMENT OF PEAT IS NOT PROGRESSING SATISFACTORILY, THE CONTRACTOR WILL BE REQUIRED TO LOOSEN PEAT BELOW THE LIMITS OF PEAT EXCAVATION. THIS MAY BE DONE BY PULLING THE DRAG LINE BUCKET THROUGH THE PEAT OR BY OTHER APPROVED METHODS.

WHERE TOTAL EXCAVATION RESULTS IN A DRY TRENCH, THE EXCAVATION OF THE PEAT AND BACKFILLING MAY BE CARRIED ON AS SEPARATE OPERATIONS. THE BACKFILLING OF A DRY TRENCH SHALL FOLLOW IMMEDIATELY UPON COMPLETION OF THE EXCAVATING OPERATION AND SHALL BE DONE BY THE CONTROLLED DENSITY METHOD EXCEPT THAT THE FIRST LAYER MAY BE INCREASED TO 3'-O" IN DEPTH. EMANKMENTS PLACED ABOVE THE LIMITS DESIGNATED FOR THE BACKFILL OF PEAT MARSHES ARE TO BE CONSTRUCTED ACCORDING TO THE CONTROLLED DENSITY METHOD.

THE CONTRACTOR SHALL MAINTAIN SUITABLE DRAINAGE BY DITCHES, TEMPORARY CULVERTS, OR BY OTHER METHODS APPROVED BY THE ENGINEER DURING ALL OPERATIONS OF TRENCHING AND BACKFILLING. THE WORK REQUIRED TO MAINTAIN SAID DRAINAGE WILL NOT BE PAID FOR SEPARATELY.

PEAT EXCAVATION AND PEAT DISPLACEMENT WILL BE PAID FOR AS PEAT EXCAVATION UNLESS OTHERWISE SPECIFIED ON THE PLANS. PAY LIMITS FOR EXCAVATION WILL BE AS SPECIFIED WITH THE PROVISION THAT UNDER METHOD "B" THE BOTTOM LINE OF THE CROSS-SECTION WILL BE DETERMINED FROM BORINGS MADE PRIOR TO HYDRAULIC CONSOLIDATION OR OTHER SUPPLEMENTAL TREATMENT.


WHERE METHOD "A" OR "C" RESULT IN A WATER FILLED TRENCH DURING EXCAVATION, THE CONTRACTOR SHALL FURNISH A BOAT (12'-O" MINIMUM) WITH DARS AND NECESSARY LABOR FOR USE BY THE ENGINEER IN TAKING CROSS-SECTIONS.

IF THE SOUN OP A BOAT (12'-O" MINIMUM) WITH DARS AND NECESSARY LABOR FOR USE BY THE ENGINEER IN TAKING CROSS-SECTIONS.

IF THE SOUND EARTH FILL BETWEEN THE TOP OF SWAMP BACKFILL AND BOTTOM OF SUBBASE WOULD BE 2'-O" OR LESS, DELETE IT AND INCREASE THE SWAMP BACKFILL UP TO THE BOTTOM OF THE SUBBASE.

AFTER BACKFILLING IS COMPLETE, PEAT SHALL BE INCORPORATED INTO THE SIDES OF THE EMANKMENT TO THE PLAN FILL SLOPE. THIS WORK SHALL BE DONE DURING GRADING OPERATIONS AND BEFORE SURFACING IS PLANNED. IF ENOUGH PEAT IS NOT AVAILABLE TO FINISH SIDES OF EMANKMENT TO PLAN FILL SLOPE, SOUND EARTH FILL SHALL BE USED AS A SUBSTITUTE. SOUND EARTH FILL SHALL NOT BE PLACED OVER PEAT, WHEN FINAL SHAPING RESTORE THE SLOPE TO PLAN FILL SLOPE. PEAT IN EXCESS OF THAT USED TO BUILD THE FILL SLOPE AS SPECIFIED IN THESE STANDARDS SHALL BE DISPOSED OF ACCORDING TO THE APPLICABLE WRITTEN PERMIT AND OR AS SPECIFIED ON THE PLANS.

STAKE LOCATION SHALL BE ADJUSTED AT CULVERT LOCATIONS AS NECESSARY TO ENSURE COMPLETE REMOVAL OF PEAT BELOW PIPE AND END SECTION.

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAY DEVELOPMENT SPECIAL DETAIL FOR

TREATMENT OF PEAT MARSHES

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