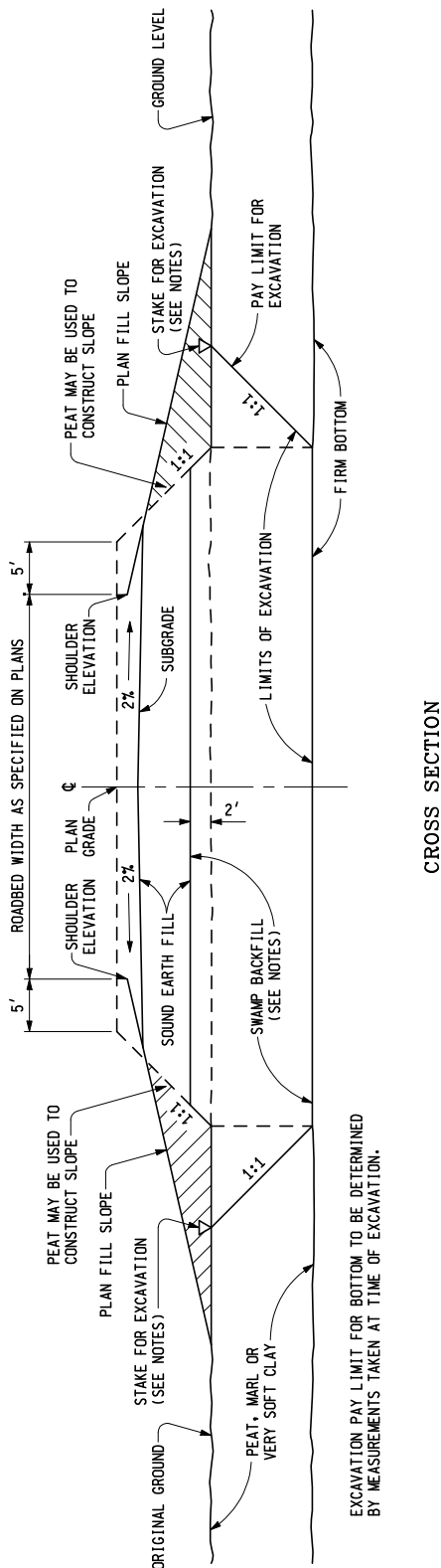
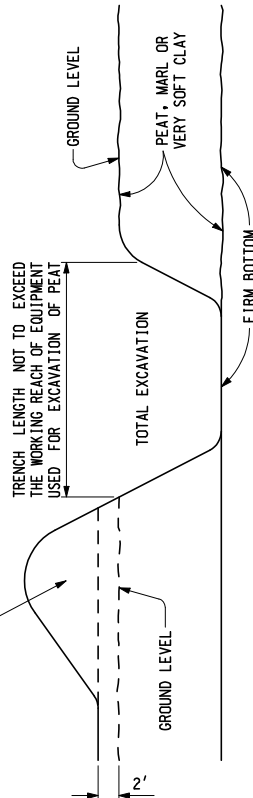




CROSS SECTION

EXCAVATION PAY LIMIT FOR BOTTOM TO BE DETERMINED BY MEASUREMENTS TAKEN AT TIME OF EXCAVATION.

WHERE THE MATERIAL TO BE EXCAVATED EXCEEDS 10' IN DEPTH, A 10' TEMPORARY SURCHARGE 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 END 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 - 1 TOTAL EXCAVATION AND BACKFILL (FOR SINGLE ROADWAYS)



PREPARED BY
DESIGN DIVISION

DRAWN BY: B.L.T.

CHECKED BY: W.K.P.

DEPARTMENT DIRECTOR
Kirk T. Steudle

APPROVED BY: John C. Friend
ENGINEER OF DELIVERY

APPROVED BY: John C. Friend
ENGINEER OF DEVELOPMENT

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR

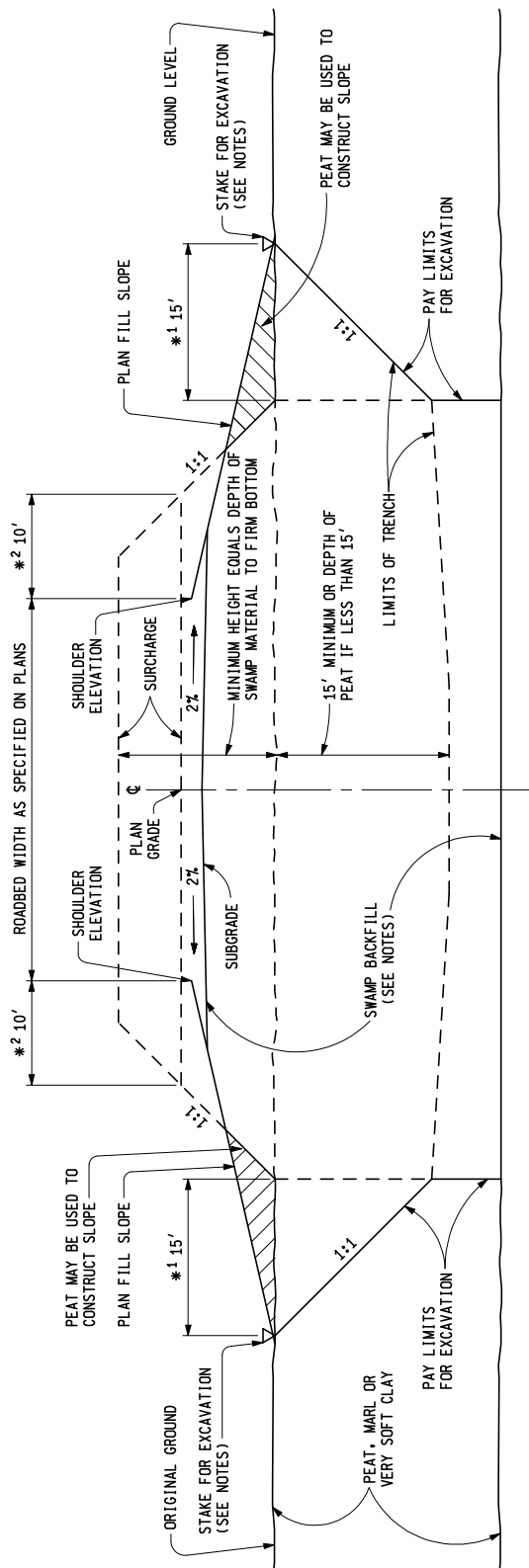
TREATMENT OF PEAT MARSHES

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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, WHICHEVER IS LESS.

MINIMUM HEIGHT EQUALS DEPTH OF SWAMP MATERIAL TO FIRM BOTTOM

MINIMUM LENGTH OF OPEN TRENCH SHALL BE APPROXIMATELY EQUAL TO THE DEPTH OF SWAMP. THE WORKING REACH OF THE EXCAVATING EQUIPMENT SHALL BE SUFFICIENT TO MAINTAIN THIS MINIMUM LENGTH OF NEED.

MINIMUM HEIGHT EQUALS DEPTH OF SWAMP MATERIAL TO FIRM BOTTOM

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MINIMUM LENGTH OF OPEN TRENCH SHALL BE APPROXIMATELY EQUAL TO THE DEPTH OF SWAMP. THE WORKING REACH OF THE EXCAVATING EQUIPMENT SHALL BE SUFFICIENT TO MAINTAIN THIS MINIMUM LENGTH OF NEED.

FILL TO BE CONSTRUCTED FULL WIDTH TO MINIMUM HEIGHT BY END DUMP METHOD AS PEAT EXCAVATION PROGRESSES. TEMPORARY SURCHARGE TO BE MOVED FORWARD AS FILL PROGRESSES.

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 - 1 PARTIAL EXCAVATION, DISPLACEMENT AND BACKFILL (FOR SINGLE ROADWAYS)

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR

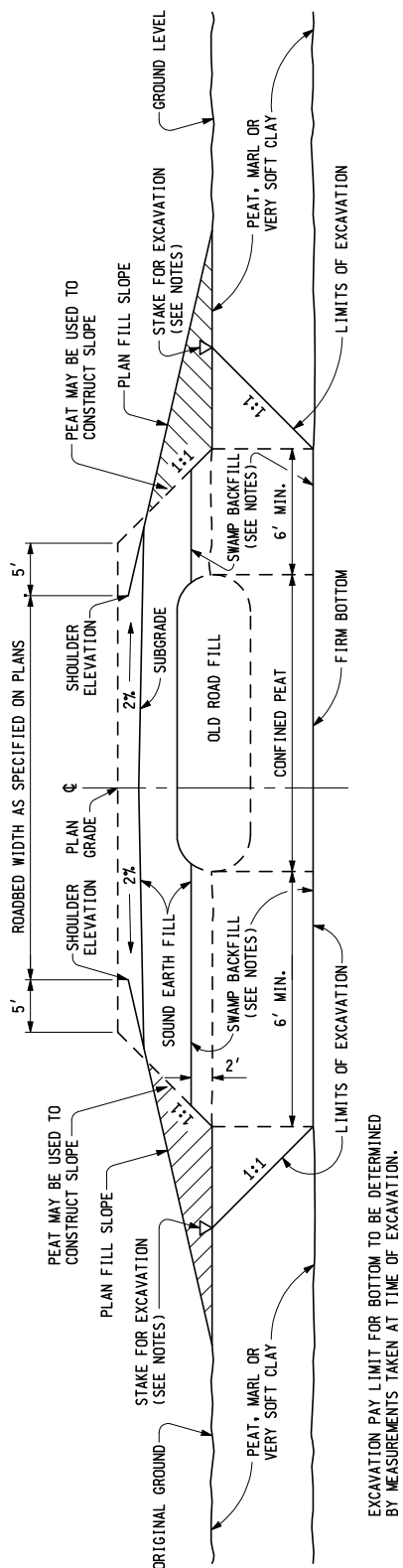
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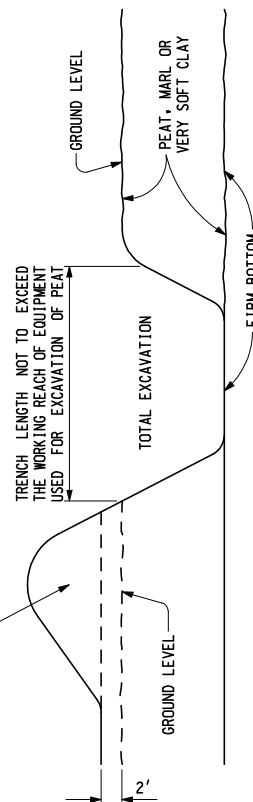
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CROSS SECTION

WHERE THE MATERIAL TO BE EXCAVATED EXCEEDS 10' IN DEPTH, A 10' TEMPORARY SURCHARGE 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 END 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 C - 1 SIDE ELEVATION AND BACKFILL, OLD ROAD TO BE LEFT IN PLACE (FOR SINGLE ROADWAYS)

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAY DEVELOPMENT SPECIAL DETAIL FOR

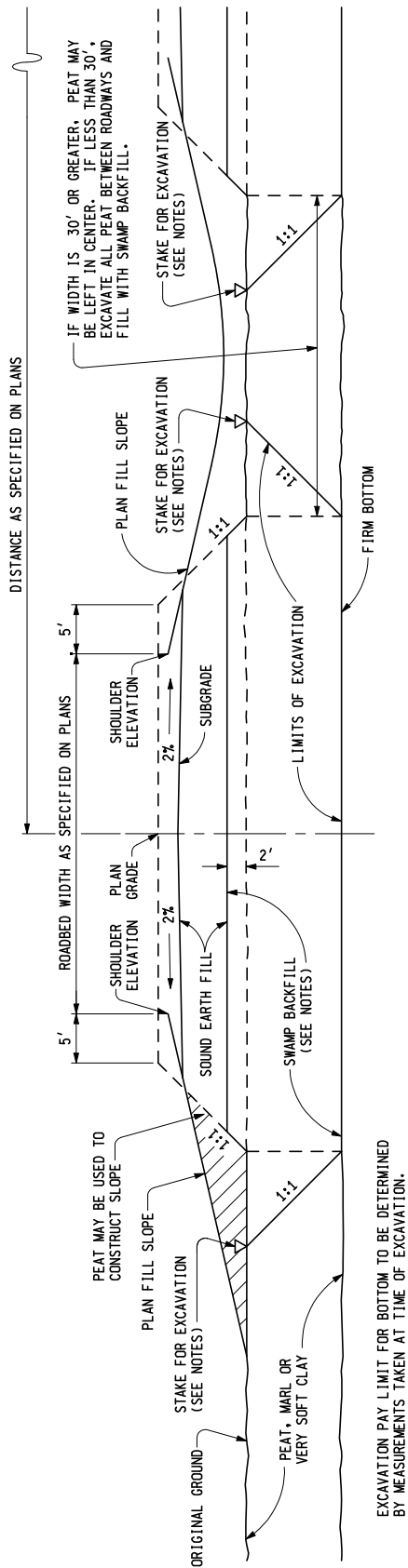
TREATMENT OF PEAT MARSHES

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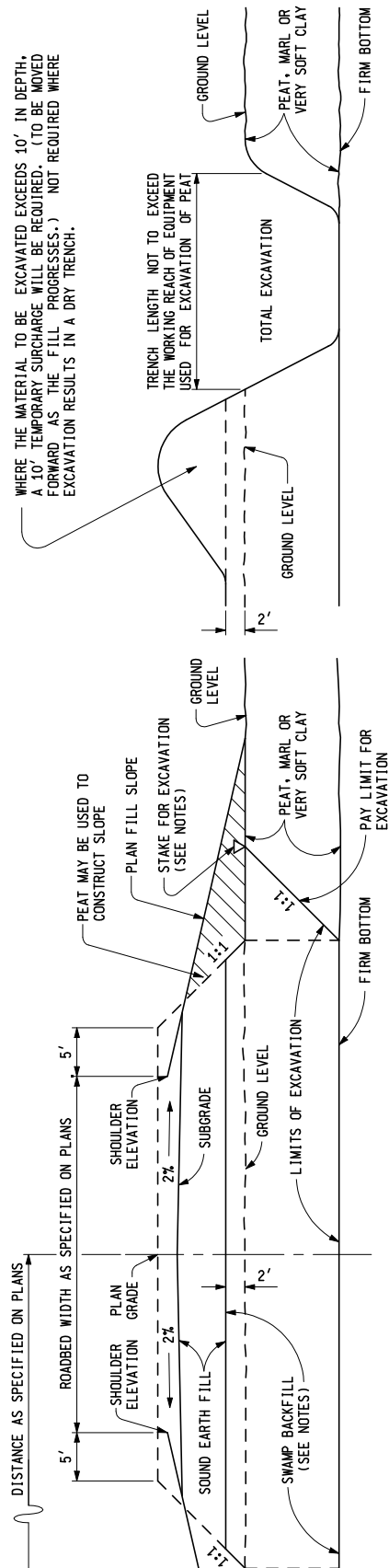
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LEFT ROADWAY CROSS SECTION



RIGHT ROADWAY CROSS SECTION

LONGITUDINAL SECTION

FILL TO BE CONSTRUCTED FULL WIDTH TO 2' ABOVE THE GROUND LEVEL, OR AS SPECIFIED ON PLANS, BY END 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 ROADWAYS)

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAY DEVELOPMENT SPECIAL DETAIL FOR

TREATMENT OF PEAT MARSHES

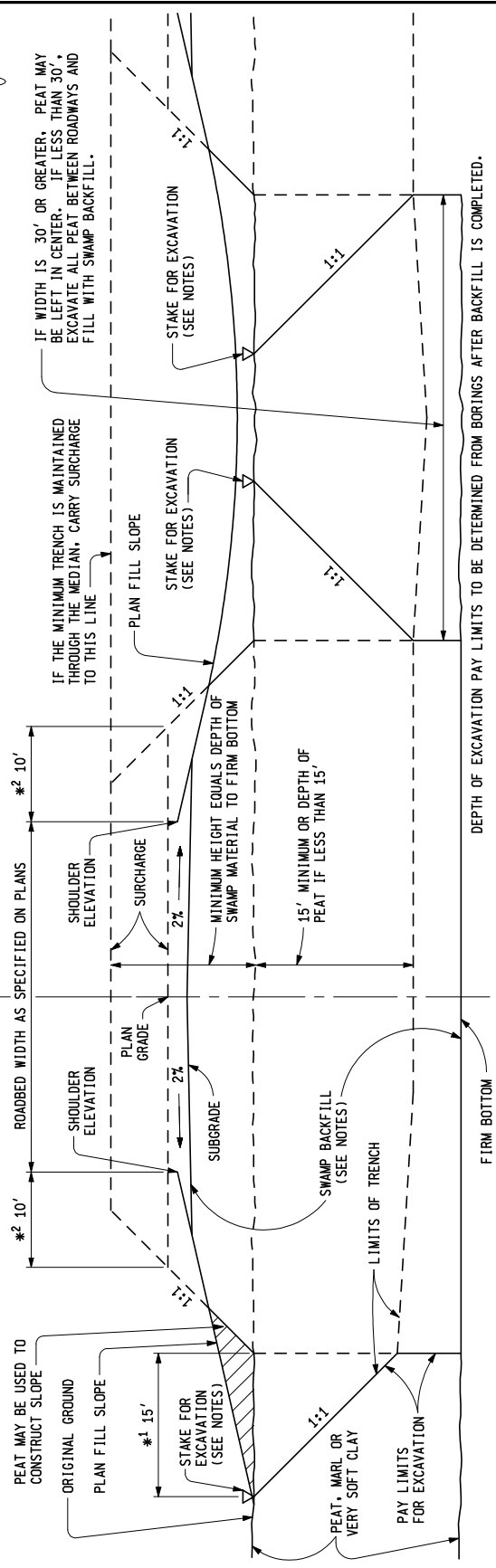
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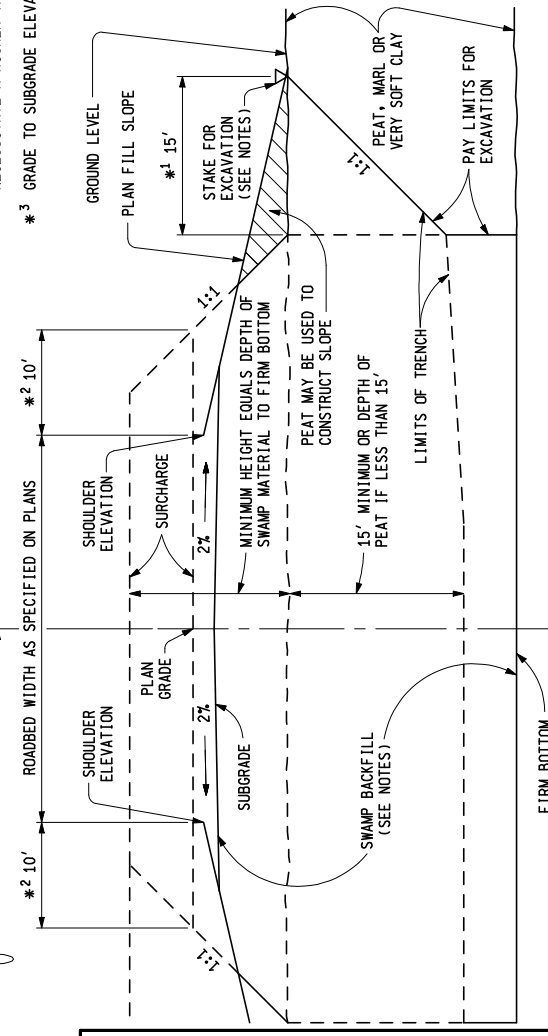
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DISTANCE AS SPECIFIED ON PLANS



LEFT ROADWAY CROSS SECTION

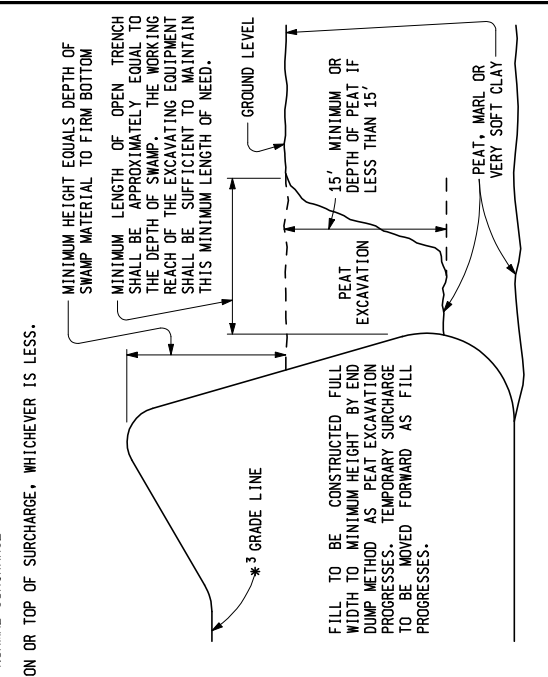
DISTANCE AS SPECIFIED ON PLANS



RIGHT ROADWAY CROSS SECTION

LONGITUDINAL SECTION

DISTANCE AS SPECIFIED ON PLANS



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)

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAY DEVELOPMENT SPECIAL DETAIL FOR

TREATMENT OF PEAT MARSHES

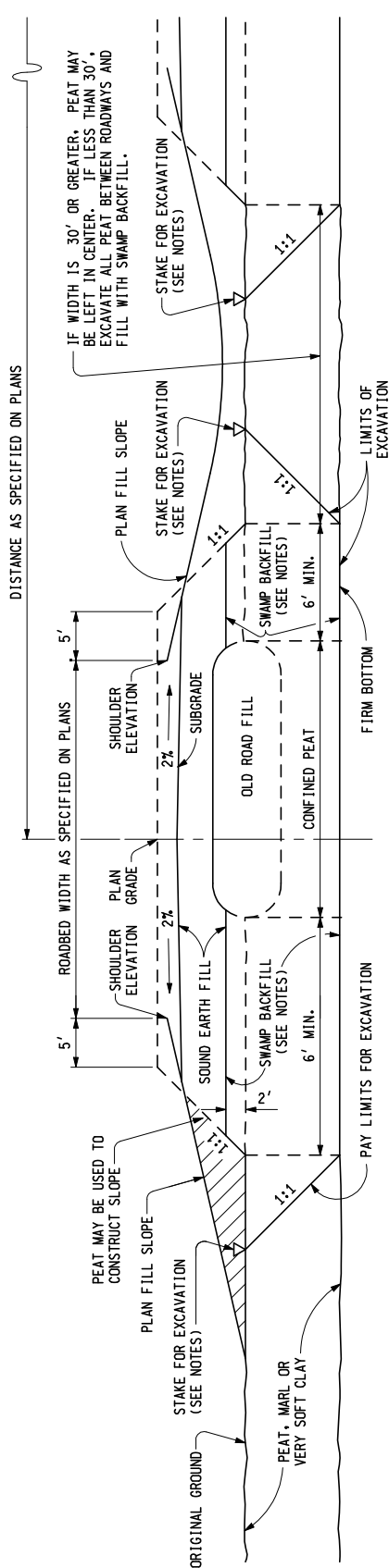
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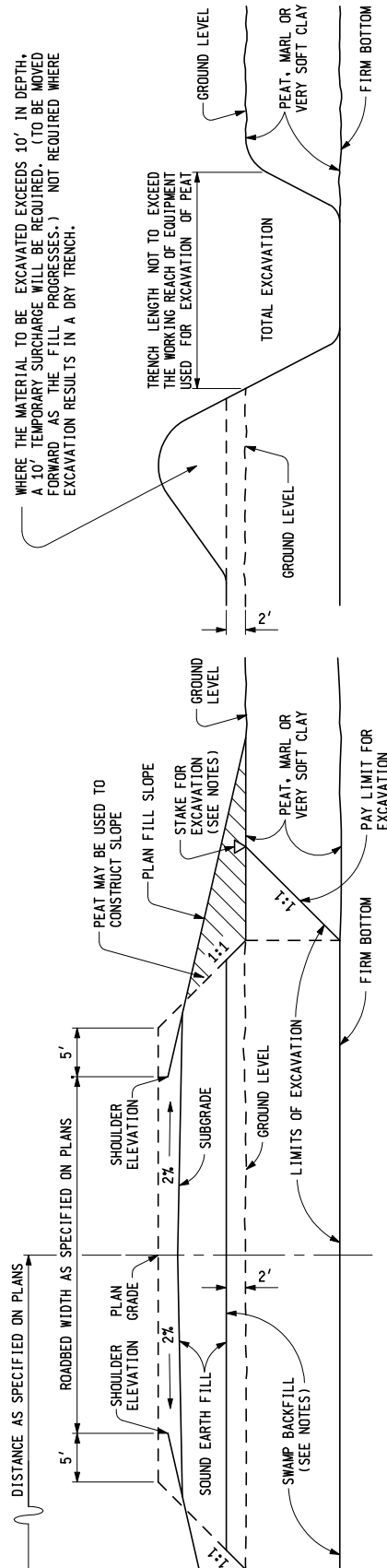
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DISTANCE AS SPECIFIED ON PLANS



EXCAVATION PAY LIMIT FOR BOTTOM TO BE DETERMINED BY MEASUREMENTS TAKEN AT TIME OF EXCAVATION.

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

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAY DEVELOPMENT SPECIAL DETAIL FOR

TREATMENT OF PEAT MARSHES

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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 MARSH PROGRESSIVELY. THE RATE OF ADVANCEMENT OF THE EMBANKMENT AND SURCHARGE IN DEEP SWAMPS SHALL BE COORDINATED WITH THE RATE OF EXCAVATION OF THE UPHEAVED 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 EMBANKMENT 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'-0" IN DEPTH. EMBANKMENTS 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.

SWAMP BACKFILL MATERIAL SHALL BE GRANULAR MATERIAL CLASS III ACCORDING TO THE STANDARD SPECIFICATIONS. SWAMP BACKFILL, WHEN PRACTICAL, WILL BE MEASURED BY CROSS-SECTION IN ITS ORIGINAL POSITION UNLESS OTHERWISE SPECIFIED ON THE PLANS AND AS INDICATED IN THE STANDARD SPECIFICATION. FOR METHODS "A" AND "C", THE PORTION OF THE CROSS-SECTION BELOW ORIGINAL GROUND WILL BE THE SAME AS THE PAY LIMIT FOR EXCAVATION, AND FOR THE "B" METHOD THE PORTION OF THE CROSS-SECTION BELOW ORIGINAL GROUND WILL BE DETERMINED FROM BORINGS.

WHERE METHOD "A" OR "C" RESULT IN A WATER FILLED TRENCH DURING EXCAVATION, THE CONTRACTOR SHALL FURNISH A BOAT (12'-0" MINIMUM) WITH OARS 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'-0" 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 EMBANKMENT TO THE PLAN FILL SLOPE. THIS WORK SHALL BE DONE DURING GRADING OPERATIONS AND BEFORE SURFACING IS PLACED. IF ENOUGH PEAT IS NOT AVAILABLE TO FINISH SIDES OF EMBANKMENT 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 SLOPES 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

10-21-2008
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