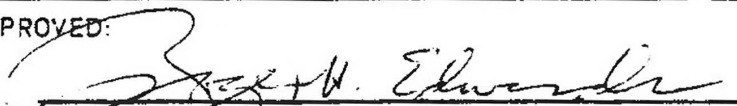


<p>MODIFIED BY EI 89-001 EFFECTIVE 12/1/88, EI 90-023 EFFECTIVE 6/26/90 & EI 91-012 EFFECTIVE 1/30/92</p> <p>SUPERSEDED BY EB 97-006 EFFECTIVE 2/14/97</p>	<h1>ENGINEERING INSTRUCTION</h1> <p>NEW YORK STATE DEPARTMENT OF TRANSPORTATION</p>
<p>Distribution:</p> <p style="text-align: center;">31 Main Office 33 Regions 34 Special</p>	<p>Code: <u>EI 85-49</u></p> <p>Date: <u>10/18/85</u></p> <p>Supersedes: None</p>
<p>APPROVED: </p> <p>R. H. EDWARDS, Fac. Design Div., Deputy Chief Engr.</p>	

As the result of an employee suggestion the regular Earthwork Summary Sheet, ES-1, may be replaced on some small projects by the attached new 8 1/2 by 11 inch sheets. This change should reduce regional reproduction costs.

Projects that involve less than a total of 5000 cubic yards of earthwork items 203.01, 203.02, and 203.03 may have the new ES-1's prepared instead of the contract size sheets. The new forms consist of ES-1 (Summary of Earthwork), ES-1A (Definitions and Symbols), and ES-1B (Explanation of Earthwork Design). These sheets are an abridged version of the standard large size ES-1 and copies are attached.

As per EI 83-14, an ES-2 will be required on projects over the 5000 cubic yard threshold and therefore the 8 1/2 X 11" sheets cannot be used on these projects.

This instruction is effective immediately.

SUMMARY OF EARTHWORK (ITEMS 203.02 & 203.03 ONLY)

SOURCE	EXCAVATION			203.02	203.03
	Te	Cr	Tu	CT	FT
TOTALS					

SUMMARY OF EARTHWORK (ITEM 203.01 ONLY)

SOURCE	EXCAVATION			CT	CT
	Te	Cr	Tu		
TOTALS					

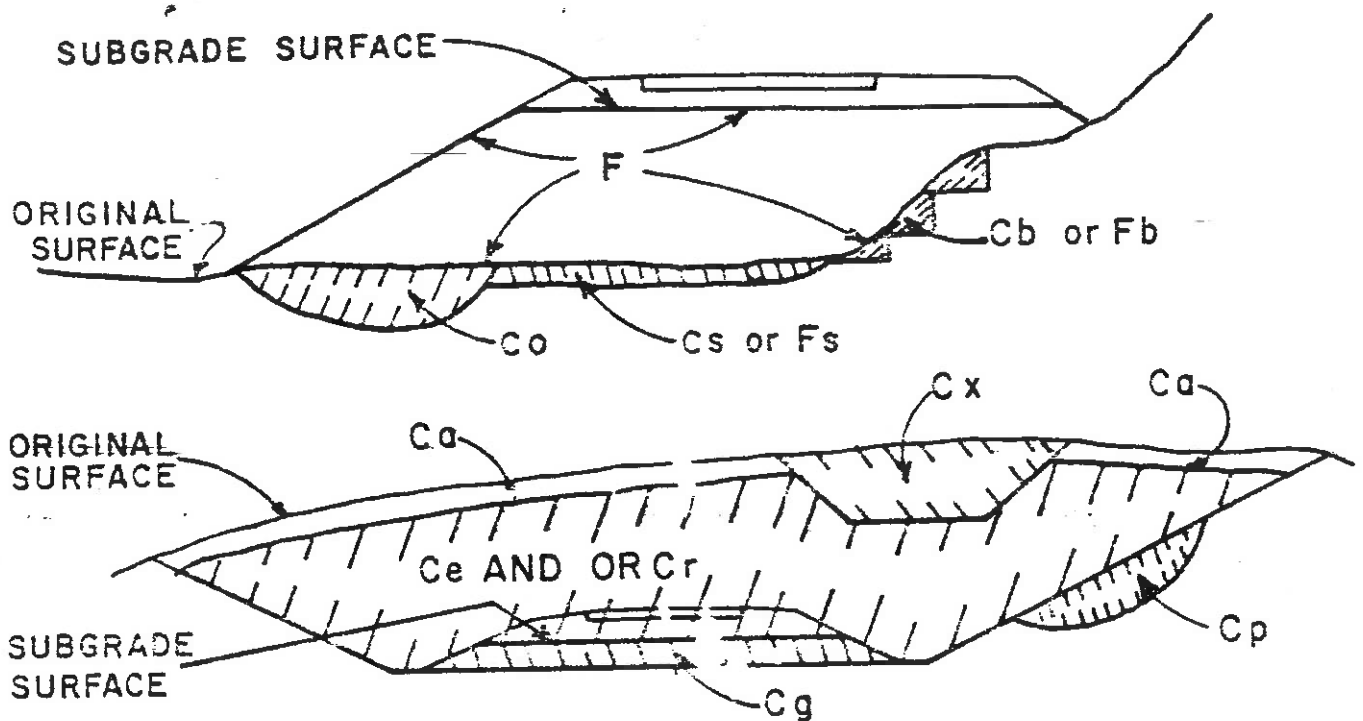
ASSUMED fe = _____ AND fr = _____

TA = Te fe + Cr fr = _____ + _____ = _____ CY.

DEFICIENCY = FT - TA = _____ - _____ = _____ CY.

BORROW = DEFICIENCY ÷ fe = _____ ÷ _____ = _____ CY.

TOTAL 203.01 = CT + BORROW = _____ + _____ = _____ CY.



- C_e - PORTION OF CUT ASSUMED TO BE SUITABLE FOR EMBANKMENT, EXCLUDING C_g AND C_p .
 C_r - PORTION OF CUT ASSUMED TO BE ROCK, INCLUDING C_g IF APPLICABLE.
 C_p - EXCAVATION FROM CUT SLOPE NECESSARY TO PLACE SLOPE PROTECTION.
 C_b - EXCAVATION FOR REQUIRED BENCHING (BOTH LONGITUDINAL AND TRANSVERSE).
 C_g - EXCAVATION FOR SUBGRADE IMPROVEMENT.
 T_e - $(C_e + C_p + C_b + C_g)$ TOTAL EARTH EXCAVATION ASSUMED SUITABLE FOR EMBANKMENT.
 C_o - EXCAVATION OF UNSUITABLE MATERIAL BENEATH EMBANKMENT. SWAMP OR DUMP.
 C_a - EXCAVATION OF TOPSOIL (UNSUITABLE MATERIAL) IN CUT.
 C_s - EXCAVATION OF TOPSOIL (UNSUITABLE MATERIAL) UNDER EMBANKMENT.
 C_x - EXCAVATION OF UNSUITABLE MATERIAL IN CUT: SWAMP OR DUMP.
 T_u - $(C_o + C_a + C_s + C_x)$ TOTAL EXCAVATION ASSUMED UNSUITABLE FOR EMBANKMENT.
 C_t - $(T_e + T_u + C_r)$ TOTAL EXCAVATION.
 F_b - FILL REQUIRED TO REPLACE BENCHES.
 F_s - FILL REQUIRED TO REPLACE TOPSOIL REMOVED BENEATH EMBANKMENTS.
 F - FILL REQUIRED TO COMPLETE EMBANKMENT TO THE SUBGRADE SURFACE AND SIDE SLOPES AFTER THE FOUNDATION HAS BEEN PREPARED.
 F_t - $(F_b + F_s + F)$ TOTAL FILL REQUIRED.
 T_a - $(T_e f_e + C_r f_r)$ THE VOLUME WHICH THE SUITABLE EXCAVATED MATERIAL COULD OCCUPY IN EMBANKMENT.
 f_e - SHRINKAGE FACTOR FOR EARTH.
 f_r - SWELL FACTOR FOR ROCK.

NOTES: THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE FACT THAT CONDITIONS AND QUANTITIES AS SHOWN ON THESE TABLES ARE ESTIMATED, AND ARE FOR THE PURPOSE OF PREPARING AN ESTIMATE. IN ANY EVENT, THESE CONDITIONS AND QUANTITIES ARE NOT TO BE DEEMED OR CONSIDERED BY THE CONTRACTOR AS A WARRANTY OR A REPRESENTATION BY THE STATE OF ACTUAL FIELD CONDITIONS TO BE ENCOUNTERED OR EXACT QUANTITIES OF WORK TO BE PERFORMED.

WHAT EXCAVATION IS PAID FOR UNDER ITEM 203.01, UNCLASSIFIED EXCAVATION AND EMBANKMENT, THE EARTHWORK FACTORS, f_e AND f_r , ARE ASSUMED, AND HAVE BEEN USED TO ESTIMATE THE QUANTITY OF BORROW OR SURPLUS MATERIAL.

EXPLANATION OF EARTHWORK DESIGN

EARTHWORK SUMMARY SHEET ES-1B