

## CHAPTER 7

# DRAINAGE, EROSION, TRAFFIC CONTROL, AND BARRIER ITEMS REVIEW

### 7.1 PURPOSE

The purpose of this chapter is to delineate the methods for the District Final Estimates Office (DFEO) to use in reviewing final quantities on those erosion, drainage, and traffic barrier items detailed under incidental construction in the applicable edition of the **Standard Specifications**. Payment is in accordance with the Contract Documents.

### 7.2 PROCEDURE

#### 7.2.1 Curb, Traffic Separator, and Barrier Wall

All items in this section are normally to be paid as plan quantity, subject to **Article 9-3 of the Specifications**.

- (A) Concrete Curb and Gutter: The items to be reviewed using these procedures are the various types of curbs and gutters constructed in conformity with the lines, grades, dimensions, and notes shown in the plans.
- (B) Concrete Traffic Separator: Quantities are paid for by the linear foot or linear meter based on plan quantity, subject to the type separator shown in the plans, completed and accepted. Alternatively, it may be paid for per square yard or square meter.
- (C) Barrier Wall: The plan quantity in linear feet or linear meters based on plan quantity, subject to **Article 9-3 of the Specifications** of the type detailed in the plans completed and accepted shall be the quantity paid for.

**NOTE:** Plan Quantity will not be final measured. Only field changes and/or plan errors are to be measured/documented in a non-standard field book, matrix, and or in the plans.

#### 7.2.2 Miscellaneous Concrete Paving Items

- (A) Concrete Sidewalk: The quantity to be paid for shall be the plan quantity in place, completed and accepted per **Article 9-3 of the Specifications**. When reviewing is required:

- (1) No deductions shall be made for the area occupied by ornamental trees, manholes, inlets, drainage structure, or public utility appurtenances within the normal sidewalk area.
  - (2) All steel reinforcement required shall be included in the costs of the concrete sidewalk.
  - (3) Confirm that all sections removed and replaced through no fault of the Contractor have been properly noted and that the Contractor has been paid for their removal and replacement.
  - (4) Note that any required excavation for the sidewalk shall be paid for under the items for the grading work.
- (B) Concrete Ditch and Slope Pavement: The quantities to be paid are the plan quantities subject to **Article 9-3 of the Specifications** in place, completed, and accepted.
- (C) Riprap: The quantities to be paid for under this item shall be the volume in cubic yards or cubic meters of: sand actually used in the sand-cement mixture; or of concrete blocks used, grout, and tons or metric tons of rubble satisfactorily placed and accepted. Check the appropriate Tabulation Forms, which will document the quantity used each day at each location. If the Department's Engineering Quantities Program was used, verify all keypunching, output, and the transfer of the summary to the computation book. Only the volume of sand-cement riprap, concrete blocks, or poured-in-place concrete placed within the neat lines shown in the plans, for a toe-wall, shall be included in the volume calculation of the final toe-wall quantities.
- (1) Rubble Riprap: Rubble riprap shall be measured by the ton or metric ton, in surface-dry natural state by railroad scales, truck scales, or barge displacement. For a typical barge displacement calculation ([See Figure No. 7-2](#))
    - (a) Verify that the certified weight tickets and/or appropriate Tabulation Form account for the weight of rubble riprap and have the signature of the Department representative.
    - (b) Be sure, when shown on the plans that concrete removed from an existing structure and paid for as Removal of Existing Structures is not paid for again as Rubble Riprap.
  - (2) Sand-Cement: If proportioned by volume, the sand shall be measured loose in an approved measure prior to mixing with cement. If proportioned by weight, use 85 pounds per cubic foot or 1360 kilograms per cubic meter for

sand as a standard conversion factor.

- (a) When the pay quantity for sand-cement riprap is determined by volume of the sand, calculations from sketches and dimensions of the batch box capacity (or other approved measure) should be verified. These computations shall be recorded in a bound final measurement non-standard field book or appropriate Tabulation Form.
- (b) Computations along with sketches and dimensions shall be checked when weights are based on barge displacement. For a typical barge displacement calculations [See Figure No. 7-2](#)
- (c) Payment for riprap structures such as end walls and wing walls shall be limited to the **Roadway and Traffic Design Standard Index** volumes, as shown on the drawings, unless field changes in the dimension are authorized.
- (d) Refer to **Section 6.3.3**, in the **Preparation and Documentation Manual**, for form and preparation data.

### 7.2.3 Traffic Control Items

- (A) Guardrail and End - Anchorage Assembly: This includes linear feet or linear meters of guardrail paid for as plan quantity end - anchorage assemblies; special posts; terminal - end sections; and bridge - anchorage assemblies. When reviewing is required:
  - (1) Verify that the final plans contain the Standards used during construction of these items.
  - (2) Determine by actual count those items of additional payment used in conjunction with the guardrail and paid for per each, i.e., terminal end sections and anchorage - assemblies.
  - (3) Resetting Salvageable Guardrail: New post, hardware, stand-off blocks, or other new material required for resetting salvageable guardrail are included in the unit price of Resetting Guardrail and shall not be paid for separately.
  - (4) Resetting non-salvageable Guardrail: Where the **Article 538-5 of the Specifications** call for new materials to be furnished to replace non salvageable guardrail panels and posts, excluding items damaged by the Contractor, the unit price per linear foot or linear meter for resetting Guardrail shall be adjusted based on 125% of invoice cost for those materials including transportation charges.

- (B) Fencing, Type 'A' and Type 'B': Quantities will be the plan quantity of each type of fence, Payment for extra - length posts requires an invoice from the Contractor. Compensation will be at invoice price plus 10%.

**Example:** Contractor submits invoice for 20 extra - length posts at a invoice price of \$250.00. An additional 10 percent = \$25.00. The compensation will be \$275.00 for the extra - length posts. An adjusted fencing item will be shown with a quantity of one (1) at a unit price of \$275.00. Ensure the RO/Consultant submitted a copy of the invoice with the Final Estimate Package.

Gates are to be paid individually. Location and summary needs to be provided to document quantity(s).

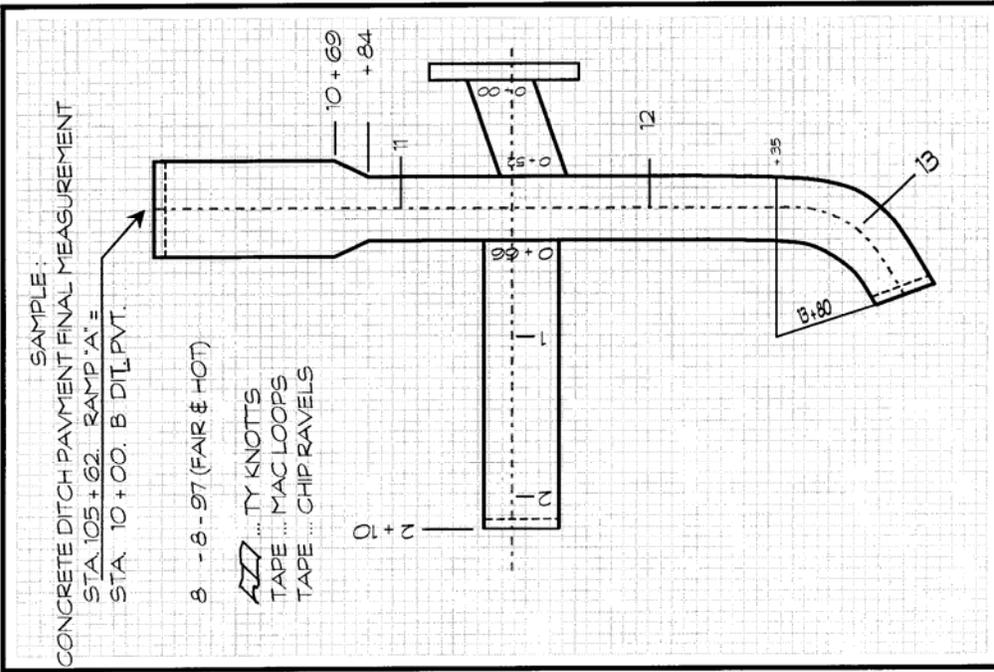
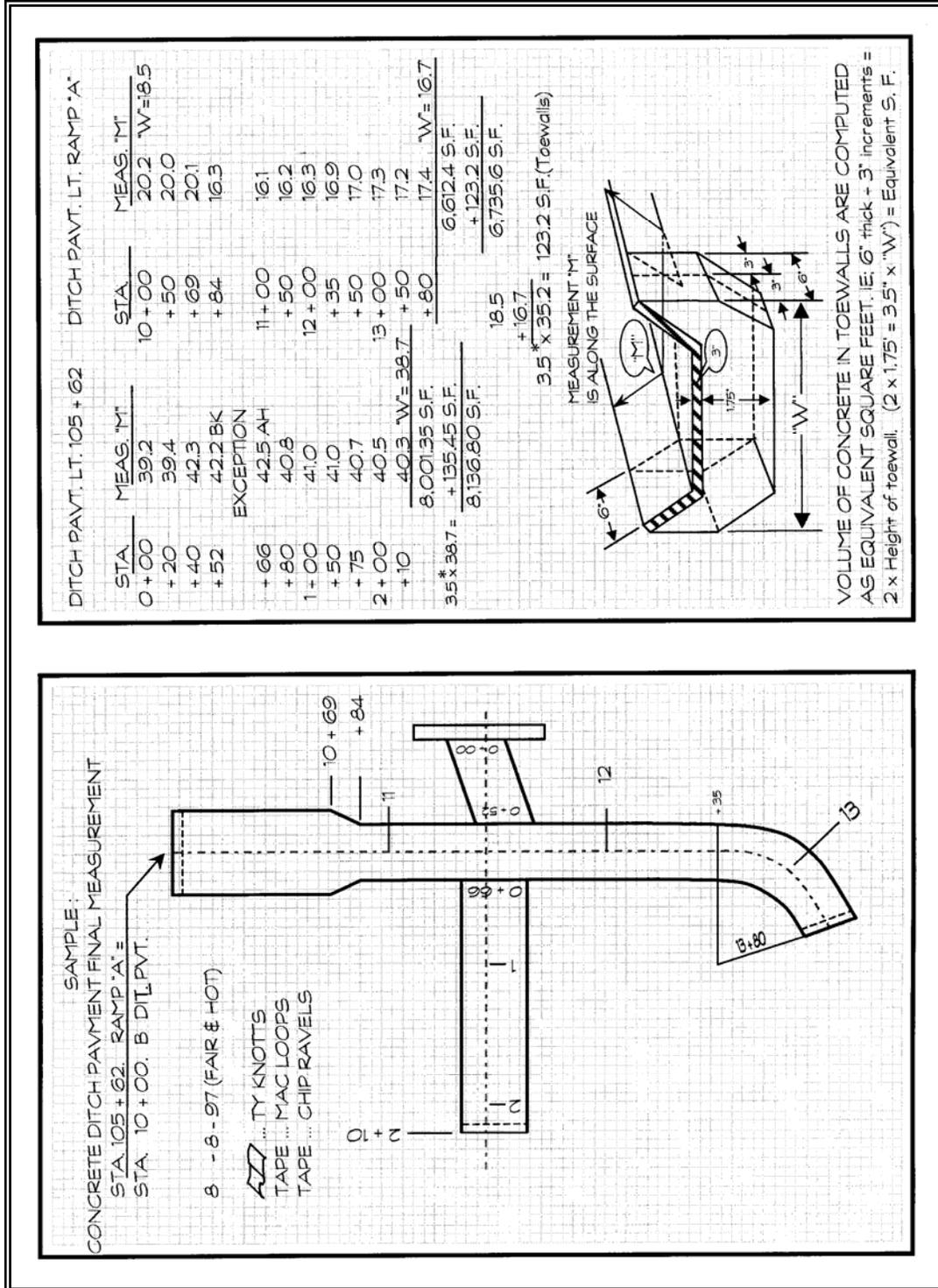
### 7.2.4 Erosion Control Items

- (A) Performance Turf: Per **Section 570-8** of the **Specification**, the method of measurement for performance turf will be plan quantity in square yards based on the area shown in the plans, completed and accepted. Prices and payments will be full compensation for all work and materials specified in this Section.

## 7.3 LIST OF FIGURES FOLLOWING THIS CHAPTER

- Figure No. 7-1 ..... Sample Calculation of Toe Wall Example
- Figure No. 7-2 ..... Typical Barge Displacement Form Example

**Figure 7-1**  
**EXAMPLE CALCULATIONS OF TOE WALL**



**Figure 7-2  
 EXAMPLE OF TYPICAL BARGE DISPLACEMENT FORM**

