



Traffic Signal Design Manual

ORIGINATOR Director, Bureau of Highway Operations		5-1-6
CHAPTER 5	Signal Plan Format	
SECTION 1	Permanent Signal Plan Format	
SUBJECT 6	Miscellaneous Quantities	

Plans **shall** be developed including the miscellaneous quantities according to the FDM Procedure 15-1-1, General Plan Preparation. The Regional and Central Office Traffic staff will determine which specific plan type is required for each signal installation. Revisions to a plan that are not part of a let or permit project that will be performed by WisDOT forces, such as adding a left turn phase or right turn overlap, etc., do not require a miscellaneous quantities sheet, but will require a plan revision per TSDM Subject 5-3-1.

Let projects require a significant amount of information in regard to the quantities. Discussions of these types of plans can be found in the FDM Chapter 19, PS&E. The sample plan in TSDM Subject 5-5-1 is a PS&E-type plan. For the purpose of discussion, sample "Miscellaneous Quantities" and sheets are shown in Figure 1.

MISCELLANEOUS QUANTITIES SHEET

There are two main parts to the Miscellaneous Quantities Sheet, the Summary Table and Miscellaneous Quantities Tables. The Summary Table must contain all quantities shown in the Miscellaneous Quantities Tables.

Summary Table

The Summary Table *should* be located in the top-left corner of the first Miscellaneous Quantities Sheet. This table is generally labeled "TRAFFIC SIGNALS (location)," with a line beneath describing the location of the signal installation or project.

The quantities for the signal installation are listed in order of bid item number. It is important that the identical terminology (exact bid item name) is written. The State *may* furnish some of the items needed for signal installations. Quantities furnished by the State and contractor *should* be labeled and differentiated by brackets.

Miscellaneous Quantities Tables

The Miscellaneous Quantities Tables are located after the Summary Table. The purpose of these tables is to indicate specific types, sizes, and locations for the signal equipment at the intersection. These tables follow a similar order to the Summary Table. A common sequence of tables is as follows:

SIGNAL HEADS
SIGNAL POLES, LUMINARE POLES, MAST ARMS, BASES
PULL BOXES
CONDUIT, SPECIAL
METALLIC CONDUIT
CONCRETE BASES
MAJOR ITEMS REQUIRED FOR TRAFFIC DETECTORS
TRAFFIC DETECTOR LOOPS
CONCRETE CONTROL CABINET BASE

Like items *should* be combined into one table to avoid several small tables. The item reference (i.e. signal base number, head number, pull box number, etc.) **shall** be included for all items labeled on the plan sheet of the signal installation. Station and offset reference *should* be linked only to items installed into the ground (i.e. pull boxes, concrete bases, detector loops, and control cabinet bases). Although not required, a solid line *may* be placed around each table to avoid confusion. Any items shown in the miscellaneous quantities tables, which are covered in the Summary Table lump sum *should* be noted as such.

ENGINEERS' ESTIMATE

An Engineers' Estimate is required for all PS&E contracts to be let. Preparation of this table generally follows completion and approval of the Miscellaneous Quantities Sheet. The Estimate Sheet is generated from the State computer system and is generally loaded in by the DOT design project manager.

ABBREVIATED PS&E PROJECTS (See FDM Procedure 15-1-6)

Abbreviated PS&E projects using improvement dollars and State forces for installation do not require the Miscellaneous Quantities Sheets. The Engineers' Estimate is generally one lump-sum item (i.e. TRAFFIC SIGNALS (location)). These projects often require a Public Interest (cost effectiveness) Finding (see FDM Procedure 3-20-12), which requires a cost estimate (estimate of quantities). It is recommended that the final estimate of quantities is prepared at this time due to the shorter time frame, which generally exists for these types of projects.

If the quantities are not formally submitted during the public interest finding, they *should* be included with the Special Provisions. A simple summary (8½" x 11" format) is

sufficient. The following pages reflect correspondence outlining the requirements of the Abbreviated PS&E Projects.

QUANTITY TAKE-OFF PROCEDURES

Methods used to estimate plan quantities follow standard engineering practices, which, for the most part, are self-explanatory. The following points *should* be reviewed prior to computing the final quantities.

Items must use same terminology as stated in the Standard Specifications, Supplemental Specifications, and Special Provisions.

The STATE-FURNISHED/CONTRACTOR-FURNISHED quantities **shall** be separated in the Summary Chart.

Every item listed in the Miscellaneous Quantities Tables must be included in the Summary Table.

Items appearing in the Miscellaneous Quantities Tables and also in the Summary Chart (as part of the lump sum) **shall** be so noted.

All plan sheet item references (i.e. signal base number, head number, pull box number, etc.) **shall** be tied to the appropriate quantity.

All pay items must be shown in the Miscellaneous Quantities Sheet.

Station and offset references **shall** be used to locate pull boxes, concrete bases, detector loops, and control cabinet bases.

DETERMINING ELECTRICAL CABLE QUANTITIES

Tables 1 and 2 show suggested cable measurements for poles and light poles that can be used to determine electrical cable quantities.

Table 1
Suggested cable measurements for poles

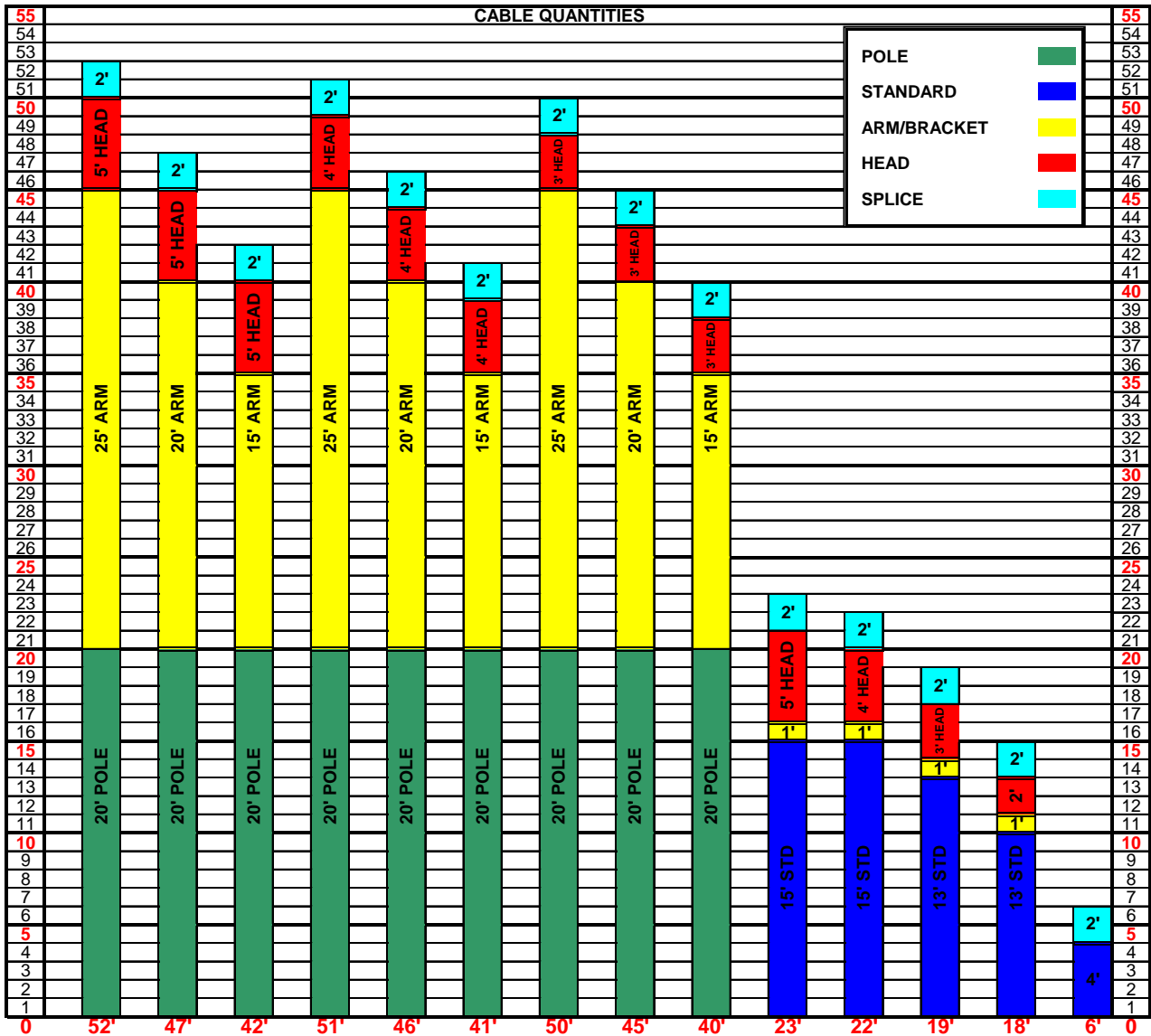


Table 2
Suggested cable measurements for light poles

HEIGHT IN FEET							HEIGHT IN FEET
70							70
69							69
68							68
67							67
66							66
65							65
64							64
63							63
62							62
61							61
60							60
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15							15
14							14
13							13
12							12
11							11
10							10
9							9
8							8
7							7
6							6
5							5
4							4
3							3
2							2
1							1
TOTAL FEET OF WIRE	117'	234' *	123'	246' *	144'	288' *	TOTAL FEET OF WIRE

