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EFFECTIVE 12/3/81

ENGINEERING INSTRUCTION

NEW YORK STATE DEPARTMENT OF TRANSPORTATION

SUPERSEDED
EFFECTIVE 1/2/85

SUBJECT: BITUMINIZED FIBER PULLBOXES AND RIGID
PLASTIC CONDUIT FOR TRAFFIC SIGNALS

Subject Code: 7.27-1-680

Distribution:



Main Office



Regions



Special

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APPROVED:

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Deputy Chief Engineer (Facilities Design)

Supersedes:

This Engineering Instruction transmits notes and specifications that allow the use of Rigid Plastic Conduit and Bituminized Fiber Pullboxes on Traffic Signal Projects starting with the June 12, 1980 letting. When these items are specified, the note and specification will be incorporated in the proposal by the Final Plan Review Bureau.

Two classes of Rigid Plastic Conduit are specified. Class 1, Heavy Wall PVC, may be used either above ground or below ground. Class 2, High Density PE, shall be used below ground only. Rigid Plastic Conduit may be substituted for metal conduit in those situations where it is not susceptible to physical damage or heavy loads.

The following Item Numbers are assigned:

<u>Item No.</u>	<u>Item</u>	<u>Pay Unit</u>
680.5205XX	Rigid Plastic Conduit, Class 1	Linear Foot
680.5207XX	Rigid Plastic Conduit, Class 1 or Class 2	Linear Foot

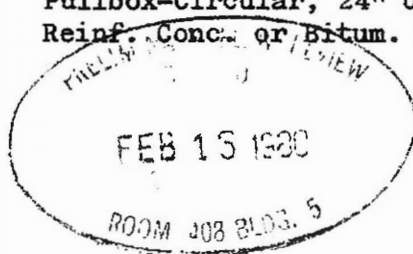
└─Diameter Code

Item 680.5205XX may be specified for either above ground or below ground use. Item 680.5207XX shall be specified for below ground use only.

Bituminized Fiber Pullboxes may be used interchangeably with Circular Reinforced Concrete Pullboxes at locations where they will not be subjected to vehicular traffic.

The following Item Numbers shall be used from now on for all pullboxes:

<u>Item No.</u>	<u>Item</u>	<u>Pay Unit</u>
680.510101	Pullbox-Circular, 15" dia., Reinf. Conc.	Each
680.510102	Pullbox-Circular, 15" dia., Optional Reinf. Conc. or Bitum. Fiber	Each
680.510201	Pullbox-Circular, 18" dia., Reinf. Conc.	Each
680.510202	Pullbox-Circular, 18" dia., Optional Reinf. Conc. or Bitum. Fiber	Each
680.510301	Pullbox-Circular, 24" dia., Reinf. Conc.	Each
680.510302	Pullbox-Circular, 24" dia., Optional Reinf. Conc. or Bitum. Fiber	Each



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<u>Item No.</u>	<u>Item</u>	<u>Pay Unit</u>
680.510401	Pullbox-Circular, 30" dia., Reinf. Conc.	Each
680.510402	Pullbox-Circular, 30" dia., Optional, Reinf. Conc. or Bitum. Fiber	Each
680.510501	Pullbox - Rectangular, 26" x 18", Reinf.Con.	Each
680.510601	Pullbox - Optional Rectangular, 26" x 18", or Circular, 24" dia., Reinf. Conc.	Each
680.510602	Pullbox - Optional, Rectangular, 26" x 18", or Circular, 24" dia., Reinf. Conc. or Bitum. Fiber	Each
680.510701	Pullbox - Optional, Rectangular, 26" x 18", or Circular, 30" dia., Reinf. Conc.	Each
680.510702	Pullbox - Optional, Rectangular, 26" x 18", or Circular, 30" dia., Reinf. Conc. or Bitum. Fiber	Each

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BITUMINIZED FIBER PULLBOXES

Make the following changes to Standard Sheet 680-11:

1. Add the attached detail on "Circular Bituminized Fiber Pullbox" to Standard Sheet 680-11.
2. Add the following to Standard Sheet 680-11 under GENERAL NOTES:
 8. THE FRAME AND COVER FOR CIRCULAR PULLBOXES SHALL BE USED FOR BOTH REINFORCED CONCRETE AND BITUMINIZED FIBER PULLBOXES.

Make the following changes to the Standard Specifications of January 3, 1978 and Addendum No. 2:

Page 40 of Addendum No. 2

Under § 680-2.01, Traffic Signal Equipment, in the list of Materials, insert "Bituminized Fiber Pullboxes, 723-46" after "Precast Reinforced Concrete Pullboxes, 723-45".

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Add the following after § 723-45, PRECAST REINFORCED CONCRETE PULLBOXES:

723-46 BITUMINIZED FIBER PULLBOXES

SCOPE. This specification covers the material requirements for laminated-wall bituminized fiber pullboxes.

GENERAL. Bituminized fiber pullboxes shall be composed of a bituminous compound reinforced with a fibrous structure. The fibrous material shall be thoroughly impregnated with the bituminous compound.

MATERIAL REQUIREMENTS. When tested, in accordance with ASTM D2315, bituminized fiber pullboxes shall meet the following requirements:

1. Dry Crushing Strength. When loaded under the three-edge bearing method, the pullbox housing shall meet the requirements of Table 1.
2. Wet Crushing Strength. When loaded under the three-edge bearing method, the pullbox housing shall meet the requirements of Table 1.

3. Axial Compression Crushing Strength. When loaded under axial compression, the pullbox housing shall meet the requirements of Table 1.

TABLE 1 - MINIMUM CRUSHING STRENGTH

PULLBOX SIZE (Nominal ID - Inches)	MINIMUM CRUSHING STRENGTH		
	DRY (lbs/LF)	WET (lbs/LF)	AXIAL (lbs)
15	450	450	40,000
18	450	450	40,000
24	450	450	40,000
30	525	525	110,000

4. Water Absorption. The percent increase in weight of the test specimen shall not exceed two percent (2.0%).
5. Boiling Water Resistance. When loaded under the three-edge bearing method, the conditioned test specimen shall have a crushing strength of not less than 90% of the Dry Crushing Strength values given in Table 1.
6. Heat Resistance. The test specimen shall show no appreciable exudation of the bituminous compound.
7. Chemical Resistance. The test specimen shall show no appreciable signs of chemical reaction or deterioration of the bituminous compound.

BASIS OF ACCEPTANCE. Bituminized fiber pullboxes will be accepted on the basis of the manufacturer's certification of compliance with these specifications.

RIGID PLASTIC CONDUIT

Make the following changes to the Standard Specifications of January 3, 1978 and Addendum No. 2:

Page 40 of Addendum No. 2

Under § 680-2.01, Traffic Signal Equipment, in the list of Materials, insert "Rigid Plastic Conduit, 723-19" after "Iron Castings, 715-05".

Page 7-158

Add the following after § 723-15.01 - BREAKAWAY TRANSFORMER BASE (ALUMINUM).

723-19 RIGID PLASTIC CONDUIT

SCOPE. This specification covers the material requirements for rigid plastic conduits (PVC and high-density PE) for use as raceway for wires or cables of an electrical system. Rigid plastic conduit is acceptable for up to 75°C (167°F) wiring service. Rigid PVC (polyvinyl chloride) conduit is suitable for installation above or below ground and with or without concrete encasement; high-density PE (polyethylene) conduit is intended for below ground installations only, and with or without concrete encasement.

GENERAL. Under these requirements either Class 1, Heavy Wall PVC or Class 2, High Density PE conduit may be supplied for underground installation. For above ground use, only Class 1 conduit shall be allowed.

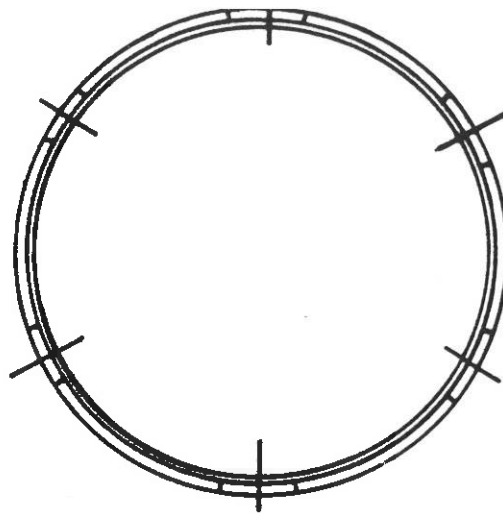
MATERIAL REQUIREMENTS: Rigid plastic conduit shall conform to the following requirements.

CLASS 1, Heavy Wall PVC - Federal Specification W-C-1094A, Type II
(UL 651, Heavy Wall PVC Conduit).

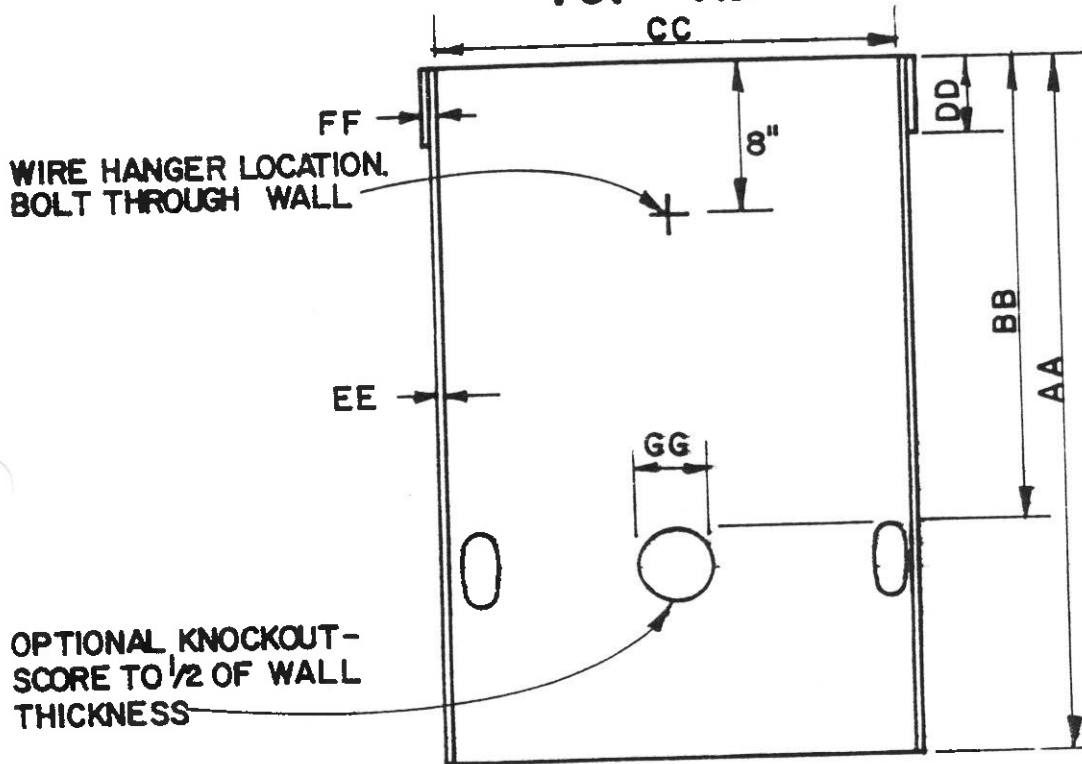
CLASS 2, High Density PE - Federal Specification W-C-1094A, Type III
(UL 651, High Density PE Conduit).

All fittings, couplings and expansion fittings shall conform to the applicable requirements of Fed. Spec. W-C-1094A and UL514. Solvent cement for joining Class 1 conduit and conduit fittings shall meet the requirements of ASTM D2564, or alternately be of the type recommended by the conduit manufacturer. Unless otherwise recommended by the manufacturer, fittings for Class 2 conduit shall be of a drive-on type and solvent cement will not be needed for "jointing".

BASIS OF ACCEPTANCE. Rigid plastic conduit shall be accepted upon the basis of the Manufacturer's certification that it meets the requirements of this specification, as well as being Underwriters Laboratory Listed. Fittings, couplings and solvent cement shall be accepted upon the Manufacturer's certification that they meet the requirements of this specification.



TOP VIEW



SIDE VIEW

PULLBOX SIZE INCHES	DIMENSIONS IN INCHES							NUMBER OF KNOCKOUTS	NO. OF WIRE HANGERS
	AA	BB	CC	DD	EE	FF	GG		
15	36	22	15	4	.330 MIN.	.660 MIN.	4	4	1
18	36	22	18	4	.375 MIN.	.750 MIN.	4	4	1
24	36	22	24	4	.375 MIN.	.750 MIN.	4	6	2
30	36	22	30	4	.480 MIN.	.960 MIN.	4	6	2

CIRCULAR BITUMINIZED FIBER PULLBOX