

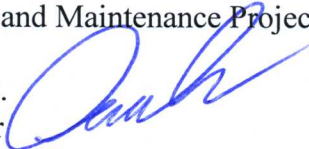


STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
800 BAY ROAD
P.O. Box 778
DOVER, DELAWARE 19903

SHAILEN P. BHATT
SECRETARY

MEMORANDUM

TO: Design, Construction, and Maintenance Project Personnel

FROM: Donald D. Weber, P.E.
Chief Traffic Engineer 

DATE: April 17, 2012

SUBJECT: Updated Signal Design Practices

The purpose of this memorandum is to provide guidance on new signal design practices - in particular, the installation of underground pathway components.

• **Conduit**

- All proposed signal conduit shall be 4" Schedule 80 PVC when installed by trench or open cut
- All proposed signal conduit shall be 4" Schedule 80 HDPE when installed by bore. If hand bore is required conduit size may be reduced upon approval by a Traffic Systems Design representative.
- All proposed signal electrical service shall be provided by a single 2" (or larger, as determined by maximum fill capacity) Schedule 80 PVC conduit.
- All proposed loop detector lead-in conduit shall be 1" flexible non-metallic liquid tight conduit.
- All pole base conduits shall be as outlined below. Once a tie in to a junction well has occurred, the remainder of the pathway shall be as stated above.

For minor signal improvements, smaller conduit sizes may be used upon approval by a Traffic Systems Design representative.

• **Pole Bases**

- Type 1, 2, 2A, 2B, 3, 3A and 3B pole bases shall have two (2) 3" Schedule 80 PVC conduit elbows with one providing a connection



from the pole base to the nearest junction well (or cabinet: see below) and the other being capped, unless otherwise required.

- Type 4 pole bases shall have one (1) 2.5" Schedule 80 PVC conduit elbows connecting the pole base to the nearest junction well.
- All signal pole bases shall tie into a junction well (unless otherwise approved by a Traffic Systems Design representative or as noted below for direct connection to a cabinet base).

- **Cabinet Bases**

- All proposed signal cabinets bases shall be connected directly to a Type 14 junction well with a minimum of three (3) runs of 4" Schedule 80 PVC conduit. An additional 3" Schedule 80 PVC conduit shall be provided for direct access to the nearest signal pole into the cabinet base.
- A single 2" (or larger, as determined by maximum fill capacity) Schedule 80 PVC conduit shall also be provided for direct access from the power source into the cabinet base.

- **Junction Wells**

- All new junction wells should have a composite frame and lid. Steel frame and lid junction wells may still be used where necessary due to field conditions. An example of when a steel frame lid may be appropriate is in median nose where vehicles may track over well causing damage to composite frame and lid.
- For most design projects, existing steel frame and lid junction wells should be retrofitted with new composite frames and lids.
- When approved by a Traffic System Design representative existing steel frame junction wells should be bonded and grounded. Refer to standard construction detail T-2 for more guidance.
- For certain signal projects with a small scope of work, with the approval of a Traffic Systems Design representative, there may be no need to modify existing junction wells.

- **Ground Wire**

- A single #6 AWG ground wire shall run through all pathways between the cabinet and power source, cabinet and junction wells and at the bases of all pole structures.

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Please distribute to appropriate staff for immediate implementation on all active design projects.

MH:mhb

cc: Natalie Barnhart
 Mark Luszcz
 Jim Bunting
 Melody Peters
 Bob Hutson
 Monroe Hite, III
 Denny Hehman