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|------------------------------------------------------|--|-------------------------------------------------------------------------------|--|
| TO:                                                  |  | <b>ENGINEERING INSTRUCTION</b><br>NEW YORK STATE DEPARTMENT OF TRANSPORTATION |  |
| SUPERSEDED BY EI 90-036<br>EFFECTIVE 10/1/90         |  |                                                                               |  |
|                                                      |  | SUBJECT: SMOOTH INTERIOR CORRUGATED POLYETHYLENE<br>PIPE, ITEM 18603.97XX     |  |
|                                                      |  | Subject Code: 7.27-3-603                                                      |  |
| Distribution:                                        |  | Code: EI 90-14                                                                |  |
| 30 Main Office      32 Regions      34 Special       |  | Date: 5-7-90                                                                  |  |
| APPROVED: <i>J R Lambert</i>                         |  | Supersedes:                                                                   |  |
| J. R. LAMBERT, Deputy Chief Engineer, Fac. Des. Div. |  | EI 88-35                                                                      |  |

The attached are specifications for smooth interior polyethylene pipe:

|                 |                                                            |
|-----------------|------------------------------------------------------------|
| ITEM 18603.9712 | SMOOTH INTERIOR CORRUGATED POLYETHYLENE PIPE, 12" DIAMETER |
| ITEM 18603.9715 | SMOOTH INTERIOR CORRUGATED POLYETHYLENE PIPE, 15" DIAMETER |
| ITEM 18603.9718 | SMOOTH INTERIOR CORRUGATED POLYETHYLENE PIPE, 18" DIAMETER |
| ITEM 18603.9724 | SMOOTH INTERIOR CORRUGATED POLYETHYLENE PIPE, 24" DIAMETER |

Engineering Instruction 88-35 originally issued specifications for polyethylene smooth interior pipe under the same pay items. These original specifications did not specify if the side payment lines for the Trench and Culvert excavation were to be measured from the interior of the pipe or its exterior. We have revised the specifications to be specific that measurement is to be made from the exterior of the pipe. We have done this by referencing that installation is to be as per the standard sheet for rigid pipe. We have also indicated that Excavation limits should be measured from the outside of the pipe.

The remainder of this EI is taken from EI 88-35, which is hereby superseded:

These are the pay items for the 12 inch to 24 inch diameter smooth interior corrugated polyethylene pipe (PE). Although larger sizes are available from manufacturers, we are still testing and evaluating these sizes before allowing them as standards on Department Contracts.

The designer should consider the following points when considering an application for PE pipe.

1. This pipe should be designed using a Manning "n" value of 0.013.
2. Maximum height of cover is 15 feet.
3. The minimum cover height is 12" from crown to subgrade.
4. The anticipated service life of PE pipe is 70 years, regardless of zone.
5. Metal end sections should be used until the evaluation of PE end sections is completed.

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|------------------------------------------------------------------------|------|------|--------|
| Manual                                                                 | Code | Date | Page 2 |
| Subject: SMOOTH INTERIOR CORRUGATED POLYETHYLENE PIPE, ITEM 18603.97XX |      |      |        |

6. Partial height headwalls will require a special anchor bolt detail on the plans. Use the detail given in EI 83-42 but add a 1 5/16" washer. Ordinary Hex head nuts can be used.
7. The density of PE pipe is less than water. Therefore, when wet conditions are expected and dewatering may be a problem, the PE pipe will float and should not be specified.
8. The product may be used in both open and closed drainage systems.

This does not replace item 15603.85 - Optional Drainage Pipe.

This specification is a Main Office insert and copies will be inserted into proposals by the Final Plan Review Bureau.

This policy will be effective with the letting of September 13, 1990.

If you have any questions regarding this Engineering Instruction, contact L.W. Brown (518-457-4093) or E.R. Nagle (518-457-4090) in Final Plan Review Bureau.

ITEM 18603.97XX SMOOTH INTERIOR CORRUGATED POLYETHYLENE PIPE

DESCRIPTION

The work shall consist of furnishing and installing smooth interior corrugated polyethylene pipe for drainage in accordance with this specification and in conformity with the lines, grades and sections shown on the plans and Standard Sheet entitled "Installation Details for Circular and Elliptical Reinforced Concrete and Other Rigid Pipes".

MATERIALS

The smooth lined corrugated polyethylene pipe shall conform to the requirements of AASHTO M294.

The pipe also must exceed the minimum engineering property values as specified in Section 18 of the AASHTO Bridge Design Manual. These properties are listed below:

| <u>Section Properties</u><br><u>PE Corrugated Pipes</u> |                                                 |                                  |                                              |                                |
|---------------------------------------------------------|-------------------------------------------------|----------------------------------|----------------------------------------------|--------------------------------|
| <u>I.D.</u><br><u>(in.)</u>                             | <u>O.D.</u><br><u>(in.)</u><br><u>(Approx.)</u> | <u>A</u><br><u>(Sq. in./ft.)</u> | <u>C</u><br><u>(in.)</u><br><u>(Maximum)</u> | <u>I</u><br><u>(in. 4/in.)</u> |
| 12                                                      | 14.0                                            | 1.50                             | 0.625                                        | 0.024                          |
| 15                                                      | 17.7                                            | 1.91                             | 0.875                                        | 0.053                          |
| 18                                                      | 21.1                                            | 2.34                             | 0.851                                        | 0.062                          |
| 24                                                      | 27.5                                            | 3.14                             | 1.134                                        | 0.116                          |

BASIS OF ACCEPTANCE: Acceptance of this material will be based on the manufacturer's name appearing on the Department's Approved List and the manufacturer's certification of compliance with these requirements.

CONSTRUCTION DETAILS

The following provisions of Section 603 - Culverts and Storm Drains shall apply for the installation of the pipe:

|                 |                                                            |
|-----------------|------------------------------------------------------------|
| \$603-3.01      | Excavation. Side limits to be measured from exterior wall. |
| \$603-3.02A & B | Laying Pipe, General & Handling and Assembly of Pipe       |
| \$603-3.03      | Bedding and Backfilling Pipe                               |
| \$603-3.04A     | Damaged Pipe and Repair General                            |

METHOD OF MEASUREMENT

This work will be measured as the number of Linear Feet of pipe installed. Measurement will be made along the bottom center line of the pipe.

BASIS OF PAYMENT

The requirements of \$603-5.01 shall apply.

Payment will be made under:

|                 |                                                            |
|-----------------|------------------------------------------------------------|
| Item 18603.9712 | SMOOTH INTERIOR CORRUGATED POLYETHYLENE PIPE, 12" DIAMETER |
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