

SUGGESTED SPECIFICATIONS

GENERAL

1. The _____ shall design, furnish, and install a continuous cable trough, as specified herein and shown on the contract drawings. The cable trough shall be furnished within project limits. All signal, power, control and communication cables shall be installed in the cable trough in accordance with the detailed design, as approved by the engineer.
2. **Material - Construction Cover and Trough**
 - a) The cable trough shall be Plastibeton® as manufactured by Oldcastle Moulded Products, or approved equal.
 - b) Material for cable trough and cover shall be a dielectric material, High Density Polymer Concrete. Material shall conform to the Suggested Material Specifications.
 - c) The cable trough shall be totally nonporous and shall resist the degrading action of freeze/thaw cycles. The material shall also be unaffected by grease, oil, and salt.
 - d) The cover material shall be of a dielectric characteristic, non-metallic, and shall be reinforced with Sheet Moulding Compound for impact resistance. Cover shall be designed to withstand excessive loadings and not shatter under duress.
 - e) The weight of each cover shall not exceed the allowable handling weight as per OSHA requirements.
 - f) Cover shall sit inside the trench to allow flush to grade installation.
 - g) The cable trough system shall include the U-shaped channel, covers and all necessary fittings.

Model 68 – Cover	27 lb
Model 128 / 1216 – Cover	82 lb
Model 2012 / 2016 – Cover	115 lb
Model 3012 / 3016 – Cover	123 lb
Model 4016 – Cover	201 lb

- h) The cable trough shall be of the self supporting type equipped with easy access covers.
- i) Cable trough shall have no interior permanent exposed steel components to support the cable trough sidewalls or cable trough covers. Cable trough must be able to support vehicular sidewall pressures and loads during initial installation and during the entire construction period without additional interior permanent exposed steel components.
- j) The cable trough including the Polymer Concrete covers shall be rated to support a minimum load of 40,000 lb without failure, H2O loading.

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- k) Cable trough and cover shall be subjected to cycle testing to simulate vehicular traffic. Cover shall support 20,800 lb over a 10 x 10 sq. in., load applied 50 times and then final load applied anywhere on the cover until failure. Minimum failure point to be no less than 40,000 lb.
- l) The cable trough can be provided with integral dividers installed as per the end users location detail. Divider shall be manufactured utilizing Sheet Moulding Compound and be designed to support lateral loads from cables without any structural warping or deflections. Installation hardware shall be stainless bolts, round head, and countersunk to prevent any damage to cable sheathing.

3. Installing Cable Trough

- a) The cable trough shall be installed by the contractor within the excavated trench as specified, on locations shown on the contract drawings, and as specified herein.
- b) The trench shall allow for the installation of crushed stone under and on the sides of the trough in accordance with the approved manufacturer's recommendations and as approved by the Engineer.

RAILROAD APPLICATIONS

- The cable trough shall be installed with the top of the cable trough at least one inch below the bottom of all adjacent railroad ties.
- In unballasted areas that are unaffected by rail renewal programs, the cable trough shall be installed with the top of the cable trough one inch below the finished grade.
- In ballasted areas unaffected by rail replacement programs, the cable trough shall be installed as that the ballast can be tamped using heavy equipment without disturbing the cable trough. The ballast shall be so graded to allow free access to the cover of the cable trough.
- Using a transit, prepare a line grade to set the channel at a level in the excavation.
- If utilizing leveling blocks, place leveling blocks on compacted even surface, backfill around and to the height of leveling block and compact once again. Ensure that area between leveling blocks are leveled with no "hills or valleys" to guarantee a level surface.
- Set the units into place on leveling blocks. The alignment of the sections shall be made with an instrument.
- Backfill material placed on each side of the channel shall be done simultaneously. The backfill material shall be placed in four inch lifts and compacted.
- Complete tamping the earth against the channel sidewalls and finish to final grade level with proper compactable materials.
- Channel and covers must be maneuverable and can be cut on site with standard cutting equipment.
- All backfill material shall be specified in Section 2M, Excavation - No Saturated Materials, no Ice.
- Keep trench free and clear of construction debris, rocks, and earth or backfill materials. Remove foreign materials from trench prior to placing cables and covers.



SUGGESTED MATERIAL SPECIFICATIONS

Property	Test Method	Test Result
• Compressive strength	ASTM C-170	Min. 17,000 psi
• Modulus of elasticity in compression	ASTM C-469	Min. 6.0×10^6 psi
• Modulus of rupture	ASTM C-99	Min. 5,800 psi
• Direct tensile strength	ASTM C-190	Min. 1,600 psi
• Punching shear	ASTM D-617	Min. 6,000 psi
• Creep behaviour in flexure		No effect at 60% of rupture after 2 months
• Impact strength		Min. 34 in-lb
• Coefficient of expansion/contractor	ASTM B-95	Max. 7×10^{-6} °F ⁻¹
• Water absorption	ASTM C-97	Max. 0.31%
• Specific gravity	ASTM C-97	150 lb/ft ³ 2.40
• Fire resistance	ASTM E-84 NFPA 130	FSI 5 SD 30 Passed
• Freeze/thaw resistance 1000 cycles	ASTM C-666	No change
• Scaling resistance 100 cycles	ASTM C-672	No change
• Sulphuric acid (50%)		No significant change
• Sodium hydroxide (5%)		No significant change
• Sodium sulphate (10%)		No significant change
• Sodium chloride (26%)		No significant change

American Society for Testing and Materials

ASTM C-170	ASTM D-167
ASTM C-469	ASTM B-95
ASTM C-90	ASTM C-97
ASTM C-190	ASTM E-84
ASTM C-617	ASTM C-666

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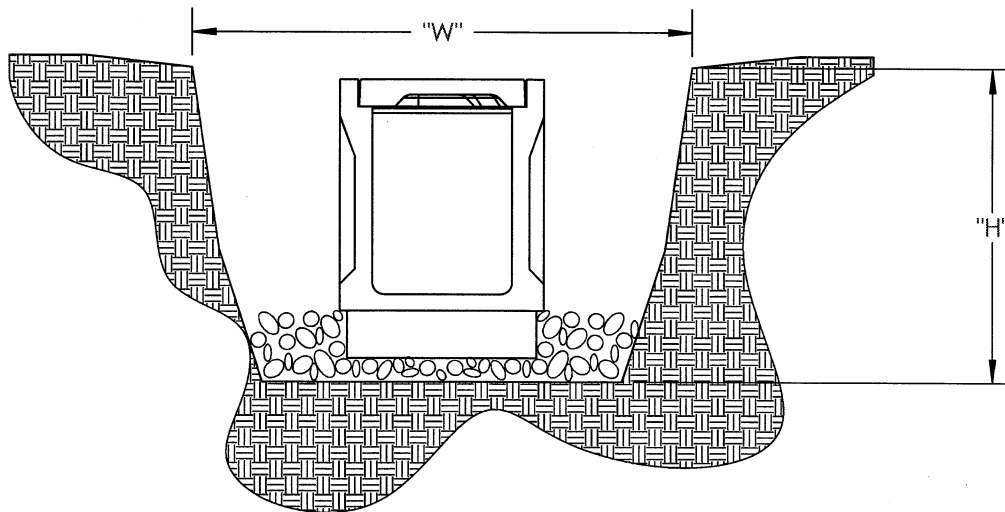
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Installation Instructions

Excavation

- * Open the trench with back hoe as per size for specific Trench Model.
- * Install a layer of firmly compacted stone 6" thick, to bring the side walls of the channel to stand 2" below the final finished grade level.



EQUIPMENT REQUIRED

- * BACK HOE
- * NYLON SLINGS WITH HOOKS
- * SHOVELS
- * TAPE MEASURE 16'/100'
- * WRECKING BAR
- * SLEDGE HAMMER
- * CORD LINE
- * LINE LEVEL

EXCAVATION SIZE CHART

MODEL	WIDTH	HEIGHT
68	36"	18"
128	45"	18"
1216	45"	27"
2012	50"	24"
2016	50"	27"
3012	60"	24"
3016	60"	27"
4016	70"	27"

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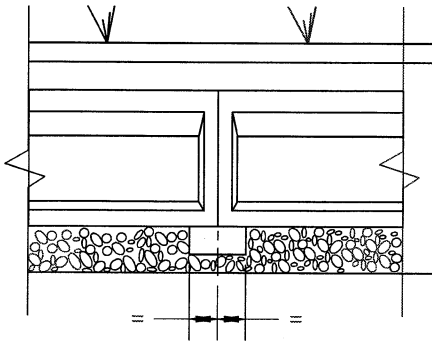
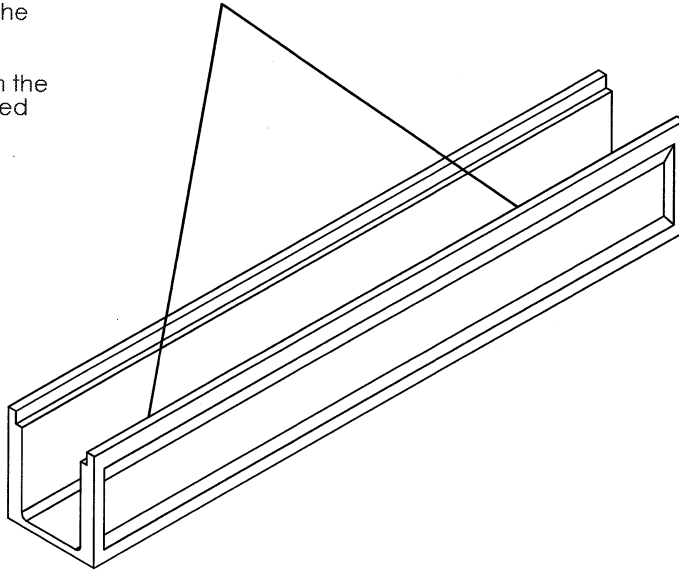
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Installation Instructions

Handling

- * Using mechanized equipment and a lifting harness or slings fitted with channel lifting devices (see accessories) inserted in drainage holes, set the channels in place.
- * The channels are butted-joined to each other on the leveling blocks, each channel should be supported for 4" on the leveling blocks at joints.



WEIGHT CHART
HDPC H-20 TRENCH

MODEL	WEIGHT
68	402 lb
128	595 lb
1216	920 lb
2012	922 lb
2016	1030 lb
3012	1260 lb
3016	1400 lb
4016	1485 lb*

*PRELIMINARY WEIGHT

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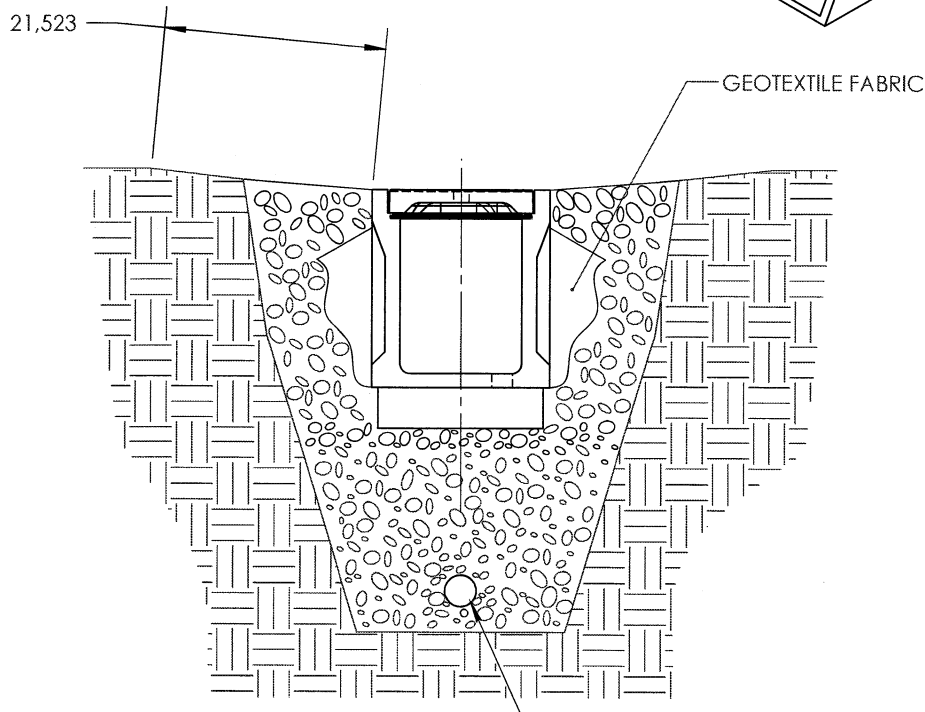
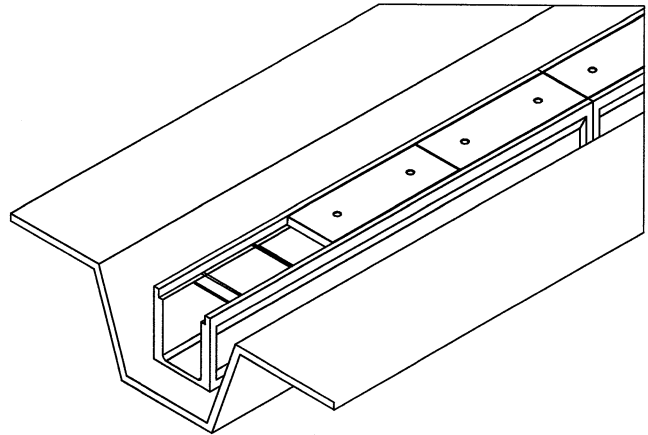
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Installation Instructions

Leveling

- * Finish tamping the earth against the channel side walls and finish stone. Channel top set at 2" below final grade level.
- * Install protection rods.
- * Cover channels with HDPC covers (3 per full section of channel) (5 covers for model 3012) using cover lifting hooks, (2) provided.
- * Covers should not overlap two trench sections.



WEIGHT CHART
HDPC H-20 COVERS

MODEL	WEIGHT
68	27 lb
128	82 lb
1216	82 lb
2012	115 lb
2016	115 lb
3012	123 lb
3016	123 lb
4016	201 lb*

*PRELIMINARY WEIGHT

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