

QUESTION #1
ADDENDUM NO. 2

SECTION SP-7 – PIPING AND FITTINGS

DUCTILE IRON PIPE AND FITTINGS:

- 7.1. **GENERAL:** The Contractor shall furnish and install ductile iron (DI) pipe in accordance with “Water System Standards,” State of Hawai‘i, dated 2002, as amended. DI pipe shall meet the requirements of Section 202.01 – General. Fittings for DI pipe shall be DI mechanical joint fittings meeting the requirements of Section 202.01.A – Fittings, unless specifically stated otherwise in the plans. Installation shall be in accordance with the “Water System Standards.”
- 7.2. **SUBMITTALS:** The Contractor shall submit shop drawings and manufacturer’s data on DI pipe, joints, fittings and geotextile fabric certifying that the product provided meets the specified item.

Prior to excavation, the Contractor shall provide a submittal that certifies that the pipe cushion material meets the requirements below. On-site sand must be tested by a licensed geotechnical engineer and test results submitted to the Department of Water Engineer for approval.

- 7.3. **TRENCH EXCAVATION AND BACKFILL:** Trench excavation and backfill shall meet the requirements of “Water System Standards” Section 302 – Water Mains and Appurtenances; Section 302.02 – Trench Excavation; Section 302.03 – Trench Backfill; Section 302.04 – Sheathing; Section 302.05 – Dewatering; Section 302.06 – Adobe or Clay; Section 302.07 – Mud Removal and Crushed Rock Stabilization; Section 302.09 – Excavation for Manholes; Section 302.10 – Excavation for Thrust Blocks, Beams and Test Blocks; and Section 302.11 – Surplus Excavation.

Pipe cushion material shall meet the requirements of “Water System Standards” Section 209.02 – Pipe Cushion. Pipe cushion material shall be free from hard lumps, debris, salt, hazardous substances above its corresponding regulatory action level, and other deleterious substances.

When groundwater is encountered, pipe cushion material shall be wrapped in a non-woven geotextile fabric as indicated on the drawings and as specified in Section 212.05 – Geotextile Fabrics. However, if groundwater is encountered within the State Highways right-of-way, pipe cushion material shall conform to ASTM C33, size number 67, and shall be completely encapsulated with geotextile conforming to Section 716.03 – Geotextiles for Underdrain Applications as specified in “Hawai‘i Standard Specifications for Road and Bridge Construction,” State of Hawai‘i, dated 2005.

- 7.4. **INSTALLATION:** DI pipe installation shall meet the requirements of “Water System Standards” Section 302 – Water Mains and Appurtenances. Additionally, for pipe installation within State Highways right-of-way, pipe installation shall also adhere to the requirements of “Hawai‘i Standard Specifications for Road and Bridge Construction,” State of Hawai‘i, dated 2005, Section 624 – Water System and Section 703.21 – Trench Backfill Material.

The Contractor shall retain the services of a licensed geotechnical engineer in the State of Hawai‘i to monitor the quality of pipe cushion material and installation and compaction of the pipe cushion and trench backfill. The Department of Water will require periodic sieve testing of the pipe cushion material during the course of construction. Results of the geotechnical engineer’s tests shall be provided to the Department of Water within seven (7) calendar days of sampling.

The Contractor shall be responsible for all associated costs for the licensed geotechnical engineer, sieve analysis, and testing.

All exposed DI pipe, valves, and fittings shall be coated as specified in "Water System Standards," unless otherwise indicated in the Special Provision or as directed by the Department of Water Engineer. Color shall be Kaua'i Green.

REINFORCED CONCRETE PIPE:

~~7.5. GENERAL: The Contractor shall furnish and install reinforced concrete pipe (RCP) for drainage systems within the Department's property in accordance with "Water System Standards," State of Hawai'i, dated 2002, as amended. RCP shall meet the requirements of Section 303.31— Drainage System. Installation shall be in accordance with "Water System Standards." Diameter shall be as indicated on the plans.~~

~~7.6. SUBMITTALS: The Contractor shall submit shop drawings and manufacturer's data on RCP certifying that the product provided meets the specified item.~~

~~Prior to excavation, the Contractor shall provide a submittal that certifies that the pipe cushion material meets the requirements below. On-site sand must be tested by a licensed geotechnical engineer and test results submitted to the Department of Water Engineer for approval.~~

~~7.7. TRENCH EXCAVATION AND BACKFILL: Trench excavation and backfill shall meet the requirements of "Water System Standards" Section 302— Water Mains and Appurtenances; Section 302.02— Trench Excavation; Section 302.03— Trench Backfill; Section 302.04— Sheathing; Section 302.05— Dewatering; Section 302.06— Adobe or Clay; Section 302.07— Mud Removal and Crushed Rock Stabilization; Section 302.09— Excavation for Manholes; and Section 302.11— Surplus Excavation.~~

~~Pipe cushion material shall meet the requirements of "Water System Standards" Section 209.02— Pipe Cushion. Pipe cushion material shall be free from hard lumps, debris, salt, hazardous substances above its corresponding regulatory action level, and other deleterious substances.~~

~~When groundwater is encountered, pipe cushion material shall be wrapped in a non-woven geotextile fabric as indicated on the drawings and as specified in Section 212.05— Geotextile Fabrics. However, if groundwater is encountered within the State Highways right-of-way, pipe cushion material shall conform to ASTM C33, size number 67, and shall be completely encapsulated with geotextile conforming to Section 716.03— Geotextiles for Underdrain Applications as specified in "Hawai'i Standard Specifications for Road and Bridge Construction," State of Hawai'i, dated 2005.~~

~~7.8. INSTALLATION: RCP installation shall meet the requirements of "Water System Standards" Section 303.31— Drainage System. Additionally, for pipe installation within State Highways right-of-way, pipe installation shall also adhere to the requirements of "Hawai'i Standard Specifications for Road and Bridge Construction," State of Hawai'i, dated 2005, Section 603— Culverts and Storm Drains and Section 703.21— Trench Backfill Material.~~

~~The Contractor shall retain the services of a licensed geotechnical engineer in the State of Hawai'i to monitor the quality of pipe cushion material and installation and compaction of the pipe cushion and trench backfill. The Department of Water will require periodic sieve testing of the pipe cushion material during the course of construction. Results of the geotechnical engineer's~~

~~tests shall be provided to the Department of Water within seven (7) calendar days of sampling. The Contractor shall be responsible for all associated costs for the licensed geotechnical engineer, sieve analysis, and testing.~~

POLYVINYL CHLORIDE (PVC) PIPE AND FITTINGS:

- 7.9. GENERAL: The Contractor shall furnish and install PVC pipe in accordance with “Water System Standards, State of Hawai‘i, dated 2002”. PVC pipe shall meet the requirements of Section 204.01. Fittings for PVC pipe shall be per Section 204.01.D.2. Installation shall be in accordance with the Water System Standards.

Perforated PVC pipe shall conform to the 2002 Water System Standards, amendments to the 2002 Water System Standards for Perimeter Drains. Pipe should be Schedule 40, perforated with two rows of 1/2" diameter holes every five inches. Rows are parallel to the pipe axis and are 120 degrees apart.

- 7.10. SUBMITTALS: The Contractor shall submit manufacturer’s data on PVC pipe, joints, fittings and fusion equipment certifying that the product provided meets the specified item.
- 7.11. INSTALLATION: PVC pipe installation shall be laid to the line and grade shown on the construction plans and shall be installed in accordance with these specifications, the pipe manufacturer's instructions, and as directed by the Department of Water. Any pipe which has been installed and proven defective shall be removed and replaced by the Contractor at no additional cost to the Department of Water. During and after installation, the pipe shall not be bent more than the minimum radius indicated per manufacturer’s recommendations.

HIGH DENSITY POLYETHYLENE (HDPE) PIPE AND FITTINGS:

- 7.12. GENERAL: The Contractor shall furnish and install High Density Polyethylene (HDPE) pressure pipe in accordance with “Water System Standards, State of Hawai‘i, dated 2002”. Fittings for HDPE pipe shall be molded type and joined by butt fusion. Installation shall be in accordance with the Water System Standards.
- 7.13. SUBMITTALS: The Contractor shall submit manufacturer’s data on HDPE pipe, joints, fittings and fusion equipment certifying that the product provided meets the specified item.
- 7.14. INSTALLATION: HDPE pipe installation shall be laid to the line and grade shown on the construction plans and shall be installed in accordance with these specifications, the pipe manufacturer's instructions, and as directed by the Department of Water. Any pipe which has been installed and proven defective shall be removed and replaced by the Contractor at no additional cost to the Department of Water. During and after installation, the pipe shall not be bent more than the minimum radius indicated per manufacturer’s recommendations.

FLANGED COUPLING ADAPTERS:

- 7.15. GENERAL: The Contractor shall furnish and install flanged coupling adapters in accordance with “Water System Standards,” State of Hawai‘i, dated 2002, as amended. Flanged coupling adapters shall be Dresser or DOW approved equal. Model number and size shall be as indicated on the plans. Followers and middle rings shall be ductile iron conforming to ASTM A536. Coating shall be fusion-bonded powder epoxy conforming to NSF International Standard 61; color shall be Kaua‘i Green.

- 7.16. SUBMITTALS: The Contractor shall submit shop drawings and manufacturer's data on flanged coupling adapters certifying that the product provided meets the specified item.
- 7.17. INSTALLATION: Flanged coupling adapters shall be installed in accordance with the manufacturer's recommendations, applicable code requirements, and "Water System Standards."
- 7.18. PAYMENT: Payment for the furnishing and installation of the various sizes of flanged coupling adapters shall not be made directly but shall be part of the respective Unit Price of other Proposal items.

END OF SECTION