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PART 1. GENERAL (SECTION 031513 FOR BOMETALS THERMOPLASTIC ELASTOMERIC VULCANIZATE RUBBER [TPE-R] WATERSTOPS)

1.01. SECTION INCLUDES

- A. Provision of waterstops embedded in concrete and spanning control, expansion and/or construction joints thus creating a continuous diaphragm to prevent fluid migration.
- B. Non-metallic waterstops for use in concrete joints subject to water, chlorinated water, seawater, waterborne chemicals, solvents, fuels, hot petro-chemicals and many aggressive chemicals.

1.02. REFERENCES

A. THERMOPLASTIC VULCANIZATE RUBBER (TPE-R) WATERSTOP

- 1. American Society for Testing Materials (ASTM)
- 2. Canadian General Standards Board: 41-GP-35M Types 1 & 3
- 3. Section 03100-Concrete Forms and Accessories
- 4. Section 03300-Cast in Place Concrete.
- 5. ACI 350.2R-04 Concrete Structures for Containment of Hazardous materials.
- 6. ACI 350R-01 Code Requirements for Environmental Engineering Concrete Structures.

1.03. QUALITY ASSURANCE

- A. Waterstop manufacturer shall demonstrate five years (minimum) continuous, successful experience in production of TPE-R products.

1.04. SUBMITTALS

- A. Comply with Section 01330 – Submittal Procedures
- B. Submit manufacturer's product data with physical properties and instructions for installation.
- C. Submit manufacturer's 6-inch sample of each TPE-R waterstop profile.
- D. Submit certification from manufacturer that materials comply with specifications.
- E. Submit manufacturer's data for chemical resistance
- F. Submit warranty from manufacturer.

1.05. DELIVERY, STORAGE AND HANDLING

- A. Store TPE-R waterstops in storage containers or under tarps to protect from oil, dirt and sunlight.

PART 2. PRODUCTS

2.01 MANUFACTURER

- A. Provide Thermoplastic Elastomeric Rubber full Vulcanizate (TPER) waterstop profile (s) as manufactured by BoMetals, Inc. (fill in profile type [s] and number [s])
- B. The TPE-R waterstop shall be extruded from a thermoplastic Vulcanizate Elastomeric Rubber material, of which the basic resin is prime and virgin raw material. The TPER compound shall not contain any scrapped or reclaimed material or pigments whatsoever.
- C. Performance Requirements as follows:

Typical Properties	Nominal Value	ASTM
Specific Gravity	.93	D792
Shore A Hardness (+/-3, 10 sec delay)	85.0 (+/-5)	D2240
Tensile, PSI	2310	D638 Type IV
Elongation, % at break	850	D-412
100% Modulus, PSI	1073psi	D638
Brittle Point (tb) F	-70 (passed)	D746
Ozone Resistance	No Failure	D1171

2.02. ACCESSORIES

- A. Provide factory made waterstop fabrications for all changes of direction, intersections and transitions leaving only butt joint splicing for the field.
- B. Provide hog rings, grommets or holes spaced at 12 inches on center along the length of the waterstop.
- C. Provide thermostatically controlled, Teflon covered waterstop splicing irons for field splicing as manufacture by BoMetals, Inc.

PART 3. EXECUTION

3.01 INSTALLATION

- A. Field butt splices shall be fused welded using a thermostatically controlled Teflon covered waterstop iron at 400-degree F. Follow the Manufacture's recommended methods for welding. This will form a continuous watertight diaphragm. Lapping, gluing or use of adhesives shall not be permitted.
- B. Center waterstop in the joint and secure waterstop in correct position using hog rings, grommets or holes spaced 12 inch on center along the length of the TPE-R waterstop and wire tied to reinforcing steel.
- C. Always place the center bulb in the center of the expansion joint. Do not embed the centerbulb in concrete.
- D. Vibrate concrete around waterstops thoroughly to prevent honeycombing and to ensure contact between concrete and waterstop.

3.02. PREPARATION

- A. Uncoil waterstop 24 hours prior to installation for ease of fabrication and handling.
- B. Position waterstop to ensure proper distance from steel reinforcing bars.
- C. Clean concrete joint after first pour to remove dirt and debris.
- D. Protect waterstop from damage during progress of work.

3.03. EXAMINATION/INSPECTION

- A. Waterstop splicing defects which are unacceptable include, but, are not limited to the following:
 - 1. Tensile strength is less that 80% of parent section.
 - 2. Misalignment of center bulb, ribs and end bulbs greater than 1/6".
 - 3. Bond failure at joint deeper than 1/16" or 15% of material thickness.
 - 4. Misalignment that reduces waterstop cross section more than 15%.
 - 5. Visible porosity in the weld.
 - 6. Bubbles in the welds
 - 7. Inadequate bonding.
 - 8. Visible signs of splice separation when cooled splice is bent at a sharp angle using hand pressure.
 - 9. Charred or burnt splices.

END OF SECTION