**Wabo®FingerPlus Expansion Joint Assembly**

Sliding finger joint with a mechanically locked drainage system

for structures requiring thermal movements 6 inches or greater

1. **GENERAL**

The work specified in this section consists of fabricating, furnishing and installing a sliding finger expansion joint assembly of the type, for the total expansion and at the locations indicated in the contract plans in accordance with this specification and the joint system Manufacturer’s instructions.

1. **PRODUCT**

The Wabo®FingerPlus is a sliding finger expansion joint assembly that consists of a steel support system cast integral with the supporting concrete to which segmental finger plates are bolted to on one side of the joint. These finger plates span the joint opening and rest on the steel support on the opposing side of the joint. The top steel finger plates are flush with the deck surface. The Wabo®FingerPlus shall be fabricated with a slight downward taper toward the ends of the fingers in order to minimize potential for snowplow blade damage.

A flexible elastomeric drainage trough is mechanically locked in edge rails with a machined retainer cavity. Steel shapes shall be attached to the steel support system on both sides of the joint and elastomeric drainage trough sloped transversely to drain. The slope of the trough system should be steep enough to ensure adequate drainage

A machined retainer cavity cut into support plate materials for the finger joint system shall be allowed.

 The Wabo®FingerPlus expansion joint assembly shall be supplied by:

Watson Bowman Acme

95 Pineview Drive,

Amherst, New York 14228

(800) 677-4922

[www.watsonbowmanacme.com](http://www.watsonbowmanacme.com)

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1. **SUBMITTALS**

Submittals shall comply with the following:

1. Shop drawings of all structural steel fabrication, including:
	1. Complete details of system and shop assembly of all structural components.
	2. Details and procedures with associated diagrams indicating sequence of construction and installation.
	3. Manufacturer instructions for proper installation of the expansion joint system shall be described on the shop drawings. Shop drawings that lack Manufacturer installation instructions, may be returned without approval
2. Certified copies of mill reports describing the chemical and physical properties of all structural steel components of system.
3. Certificates for welding electrodes used in fabrication and assembly.
4. Weld procedures
5. Quality Control Program - Manufacturer shall be ISO-9001:2015 certified and shall provide written confirmation that a formal Quality Management System and Quality Processes have been adopted in the areas of (but not limited to) Engineering, Manufacturing, Quality Control and Customer Service for all processes, products, and their components.

 The contractor shall submit a written Quality Control program for review and approval by

 the engineer. Fabrication of finger joint assembly shall not be started until the quality

 control program has been approved.

1. **COMPONENT AND MATERIALS**

The finger joint system and all its component parts shall be supplied by the Manufacturer. The Manufacturer shall certify that the following components meet the requirements of Buy America. The Contractor shall furnish a manufacturer’s certification that the materials proposed will meet the requirements as set forth in the specification

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1. Steel Components

All steel components of the sliding finger expansion joint assembly shall be fabricated from ASTM A36, A572, Grade 50 or A588. Manufacturer shall identify material grade on shop drawings for review and approval by the Engineer

All steel components shall be galvanized and conform to ASTM A123

1. Hardware used to bolted finger plate to support plates shall meet the following:
	1. High Strength Bolts: Shall conform to ASTM A325.
	2. Nuts: Shall conform to ASTM A563
	3. Flat Washers: Shall conform to ASTM F436.
2. Anchorage

Provide concrete anchor studs factory welded to steel support plates as detailed on Manufacturer drawings for cast in-place conditions. Material shall meet the requirements of ASTM A108 with a maximum spacing of 12” on center unless project requirements govern otherwise. Provide alternate anchorage as recommended by Manufacturer for special conditions as detailed in the contract plans

1. Elastomeric Drainage Trough Edge Rails

Material utilized to produce shape suitable to mechanically lock the flexible elastomeric drainage trough material shall conform to properties of ASTM A 36 or A 588.

Edge rails, which retain the flexible elastomeric drainage trough material, shall consist of a monolithic steel shape with a machined or extruded retainer cavity. A machined retainer cavity cut into support plate materials for the finger joint system shall be allowed, and per Manufacturer’s recommendation. Multiple component welded steel shapes with rolled steel to achieve a final member cross section or seal retainer cavity shall not be permitted.

All shop welds shall be fillet welds unless otherwise specified by the Manufacturer, and welders shall be qualified in all procedures incorporated into the work

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1. Elastomeric Drainage Trough Material

The design of the flexible elastomeric drainage trough material shall accommodate all required design movements as specified in the contract plans. Material shall be a flexible, non-reinforced extruded neoprene compound, with a minimum thickness of 1/4 inch (6 mm).

Elastomeric drainage trough locking lugs shall exhibit the physical properties listed in the table below, and lugs shall mechanically snap into a corresponding machined shape cavity and meet ASTM D5973

|  |  |  |
| --- | --- | --- |
| PHYSICAL PROPERTIES | TEST METHODS | REQUIREMENTS |
| Tensile Strength  | ASTM D412 | 2000 psi |
| Elongation @ break | ASTM D412 | 250%, min |
| Hardness, Type A Durometer | ASTM D2240 modified | 60 +/-5 |
| Oven Aging 70 hrs @ 212°F Tensile Strength Elongation Hardness | ASTM D573 | 20% loss max20% loss max0 to +10 points |
| Oil Swell, 70 hrs @ 104°F | ASTM D471 | 45% |
| Ozone Resistance, 70 hrs @ 104°F 20% strain, 3000 pphm, in air | ASTM D1149 Method B | No cracks |
| Low Temperature Stiffening 7 days @ 14oF Hardness (Type A durometer) | ASTM D2240 | 0 to +15 |
| Compression Set, 70 hrs @ 212°F | ASTM D395 Method B | 35 max % |

 Flexible elastomeric drainage trough shall be installed utilizing a one-part moisture

 curing polyurethane and aromatic hydrocarbon solvent lubricant adhesive which

 complies with ASTM D4070.

1. **CONSTRUCTION REQUIREMENTS**

The Contractor shall submit product information and shop drawings after award of contract.

Wabo®FingerPlus Expansion Joint Assembly shall be installed in strict accordance with the Manufacturer’s written instructions and recommendations. The expansion joint system shall be accurately set as approved by the engineer and securely supported at the correct grade and elevation at the correct joint opening as shown on the plans and shop drawings.

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If required during installation to aid in the proper Wabo®FingerPlus System, the manufacturer shall furnish technical assistance at the cost of the owner and/or contractor. The Contractor shall be responsible for informing the representative of the date of installation

Manufacturer shall shop prepare all stage/phase construction locations to be field welded.

A site inspection of the Wabo®Finger Plus Expansion Joint Assembly after 1 year of service or within a time as stated in the special provisions should be conducted.  This inspection should be done at the cost of the owner and/or contractor.   The inspection should cover system components and surrounding substrate and include owners relevant field performance of the expansion joint system.

It is recommended that finger joints be cleaned and flushed including the drainage trough on an annual basis.

1. **PAYMENT**

The accepted quantity of Wabo®FingerPlus Expansion Joint Assembly shall be paid for at the contract unit price per linear foot. Measurement of the system shall be taken horizontally and vertically along the centerline of the joint system between the outer limits indicated on the contract plans. Payment will be made under:

PAY ITEM PAY UNIT

Wabo®FingerPlus Expansion Joint Assembly Linear Foot

Payment shall be full compensation for all work necessary to complete the items including furnishing and installing the Finger Joint assembly.

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