**INTERMEDIATE COUPLING DETAILS**

See installation procedures.

**MATERIALS**

<table>
<thead>
<tr>
<th>ITEM</th>
<th>PART #</th>
<th>DESCRIPTION</th>
<th>MATERIAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>19-01-00</td>
<td>Protection Cap</td>
<td>Nylor S-PAMGT - according to ASTM D3350</td>
</tr>
<tr>
<td>2.</td>
<td>19-00-21</td>
<td>NPT Pipe Nipple 3/4&quot;</td>
<td>SCH48 steel</td>
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<tr>
<td>3.</td>
<td>19-01-00</td>
<td>NPT Pipe Nipple 1/2&quot; with 1/2&quot; plug (00-01-05)</td>
<td>SCH48 steel</td>
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<tr>
<td>4.</td>
<td>19-00-20</td>
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<tr>
<td>6.</td>
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<tr>
<td>7.</td>
<td>00-02-00</td>
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<tr>
<td>8.</td>
<td>00-02-04</td>
<td>NPT Valve NYLON 3/4&quot;</td>
<td>SCH48 steel</td>
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<tr>
<td>9.</td>
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<td>SCH48 steel</td>
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<td>SCH48 steel</td>
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<td>12.</td>
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<td>SCH48 steel</td>
</tr>
<tr>
<td>13.</td>
<td>00-02-04</td>
<td>NPT Valve NYLON 3/4&quot;</td>
<td>SCH48 steel</td>
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<tr>
<td>14.</td>
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<td>SCH48 steel</td>
</tr>
<tr>
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<td>SCH48 steel</td>
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<td>17.</td>
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<td>NPT Valve NYLON 1/2&quot;</td>
<td>SCH48 steel</td>
</tr>
<tr>
<td>18.</td>
<td>00-02-04</td>
<td>NPT Valve NYLON 3/4&quot;</td>
<td>SCH48 steel</td>
</tr>
<tr>
<td>19.</td>
<td>00-03-01</td>
<td>NPT Valve NYLON 1/2&quot;</td>
<td>SCH48 steel</td>
</tr>
<tr>
<td>20.</td>
<td>00-01-05</td>
<td>NPT Valve NYLON 1/2&quot;</td>
<td>SCH48 steel</td>
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</tbody>
</table>

**BILLC OF MATERIALS**

**CONCRETE CLASS**

- 4000 PSI [27.5MPA]
- 6500 PSI [45MPA]
- 6000 PSI [41MPA]
- 5000 PSI [35MPA]
- 4000 PSI [27.5MPA]
- 3500 PSI [24MPA]
- 3050 PSI [21MPA]
- 2500 PSI [17MPA]
- 2000 PSI [14MPA]
- 1500 PSI [10MPA]
- 1000 PSI [7MPA]
- 500 PSI [3.5MPA]
- 250 PSI [1.75MPA]
- 150 PSI [1MPA]
- 50 PSI [0.35MPA]
- 25 PSI [0.17MPA]
- 15 PSI [0.1MPA]
- 10 PSI [0.07MPA]
- 5 PSI [0.035MPA]
- 2 PSI [0.017MPA]
- 1 PSI [0.07MPA]
- 0 PSI [0MPA]

**PIERCING TOOL**

- 11/" [280mm]
- 19 AMTS 15
- TENSA America

**INSTRUCTIONS**

1. Preferential anchor (SH) and plastic Truman (PT) (some silicone grease shall be used to facilitate the threading and the compression of the gasket).
2. Bolt the assembled AK in the pocket former using the two threaded holes located on the front surface of AK. AK shall be placed perpendicular to the tendon's axis and rotated such that the side injection hole points up.
3. The position of the spiral rotor (SR) shall be secured to the AK or to adjacent rebar by tack-welding or proper fixing. The SR shall be located such that a T-1 interface with 3/4" NPT pipe attachment (using side injection hole) aligns axis of SH with AK. Sealed unscrewed port in AK.
4. Install the smooth duct as shown on shop drawings and insert it into PT, sealing the connection by heat-shrink sleeving (if, for safety, possible, with heat-shrink wrap) in order to prevent concrete from penetrating.
5. Carry out the pressure test.

**CONCRETE PLACEMENT**

6. After completion of concrete placement, remove the pocket former and prove that duct is clear of any obstructions or damage that all injection vents are free and secured.
7. Install strands by pushing or pulling individually or as a bundle into duct. Allow sufficient extra length at the active excavation for stressing.
8. Check the wedge plate (PT) for rust and dirt, clean wedge holes with wire brush if necessary, lightly grease or oil wedge holes.
9. Check wedge for rust. Discard rusty wedges and use only clean ones.
10. Install wedge plate (keeping up the injection hold), slip the wedge over the strands and securely place them into wedge holes.
11. Do not apply post-tensioning forces until the concrete mean compressive strength, $F_{c}$ is not less than the values shown on the spiral table. These values refer to cylindrical strength.

**CONCRETE PLACEMENT**

12. Stressing operation shall be executed according to the engineer form and requires the simultaneous reading of pressure and elongation. Check the conformity at final elongations measurement with prescribed values.
13. Install the protection cap (PC) with 3/4" pipe opening on AK using six bolts (some silicone grease shall be used to facilitate the compression of the 0-ring).
14. Thread 3/4" pipe pipe for injection onto the PC and the 1/2" pipe to AK. Use a 3/4" plug to secure the hole as PC can not used (some threads will be used to improve the tightness of the threading).
15. Carry out the pressure test.

**INSTRUCTIONS**

16. X-ray shall be injected through the filter (until it) will be insufficient concentration of the tunneling, tendon paths with drilled holes or inclined tendons to avoid voids.
17. All vents and injection inlets/outlets have to be sealed with plugs soon after injection.
18. Fill holes with non-shrink grout after post injection operation and inspection are completed.

**NOTE:** Components marked with "T" on the drawing are temporary.
Replace 3/4" ball valve (00-03-02-M) with 3/4" female plug (00-03-04) at the end of operations.

Replace 3/4" ball valve (00-03-02-M) with 3/4" female plug (00-03-04) at the end of operations.

Replace 3/4" ball valve (00-03-02-M) with 3/4" female plug (00-03-04) at the end of operations.

Replace 3/4" ball valve (00-03-02-M) with 3/4" female plug (00-03-04) at the end of operations.

**Anchorage Configuration**

1. Replace 3/4" ball valve (00-03-02-M) with 3/4" female plug (00-03-04) at the end of operations.
2. Replace 3/4" ball valve (00-03-02-M) with 3/4" female plug (00-03-04) at the end of operations.

**Pipe Internal Configuration**

- Vent assemblies can be used as inlet, outlet or drain; when elbows are present, the vent cannot be used for injection / inspection.
- Epoxy grout shall be used to fill recesses: make reference to FDOT standard plans index 462-003 for post-tensioning anchorage and tendon filling details.
- Concrete cover must meet FDOT Structures Design Guidelines Section 1.4.2.
- Components marked with "T" on the drawing are temporary.

**Bill of Materials**

<table>
<thead>
<tr>
<th>ITEM</th>
<th>PART #</th>
<th>DESCRIPTION</th>
<th>MATERIAL</th>
</tr>
</thead>
</table>
| 1    | XX-01-00* | Protection Cap            | Nylon PA66 - according to ASTM D669 |}

<table>
<thead>
<tr>
<th>ITEM</th>
<th>PART #</th>
<th>DESCRIPTION</th>
<th>MATERIAL</th>
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<tbody>
<tr>
<td>2</td>
<td>XX-03-00*</td>
<td>Anchor</td>
<td>Ductile Iron ASTM A536 GR80-55-06 + Galvanization according to ASTM A123</td>
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<tr>
<td>3</td>
<td>E-IU-XX-07-08*</td>
<td>Smooth Plastic Duct</td>
<td>High Density Polyethylene - according to ASTM D3350</td>
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<tr>
<td>4</td>
<td>00-01-03-M</td>
<td>NPT Pipe Nipple 1/2&quot;</td>
<td>SCH40 steel</td>
</tr>
<tr>
<td>5</td>
<td>00-01-04-M</td>
<td>NPT Ball Valve 1/2&quot;</td>
<td>SCH40 steel</td>
</tr>
<tr>
<td>6</td>
<td>00-01-05</td>
<td>NPT Plug 1/2&quot;</td>
<td>SCH40 steel</td>
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<tr>
<td>7</td>
<td>00-01-06</td>
<td>NPT Female Plug 3/4&quot;</td>
<td>SCH40 steel</td>
</tr>
<tr>
<td>8</td>
<td>00-01-07</td>
<td>NPT Ball Valve 3/4&quot;</td>
<td>SCH40 steel</td>
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<tr>
<td>9</td>
<td>00-01-08</td>
<td>NPT Plug 3/4&quot;</td>
<td>High Density Polyethylene - according to ASTM D3350</td>
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<tr>
<td>10</td>
<td>00-03-01-M</td>
<td>NPT Pipe Nipple 3/4&quot;</td>
<td>SCH40 steel</td>
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<tr>
<td>11</td>
<td>00-03-02-M</td>
<td>NPT Female Plug 3/4&quot;</td>
<td>SCH40 steel</td>
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<td>12</td>
<td>00-03-03</td>
<td>NPT Ball Valve 3/4&quot;</td>
<td>SCH40 steel</td>
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<tr>
<td>13</td>
<td>00-03-04</td>
<td>NPT Plug 3/4&quot;</td>
<td>High Density Polyethylene - according to ASTM D3350</td>
</tr>
<tr>
<td>14</td>
<td>00-07-04-EM</td>
<td>Vent Port 3/4&quot;</td>
<td>Polyethylene - according to ASTM D3350</td>
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<tr>
<td>15</td>
<td>00-07-06</td>
<td>NPT Female Cupper 3/4&quot;</td>
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</tr>
<tr>
<td>16</td>
<td>00-07-07</td>
<td>NPT Elbow 3/4&quot;</td>
<td>SCH40 steel</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
<th>MATERIAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>Commercially available thread seal tape</td>
<td></td>
</tr>
</tbody>
</table>

**Pipe External Configuration**

- Vent assemblies can be used as inlet, outlet or drain; when elbows are present, the vent cannot be used for injection / inspection.
- Epoxy grout shall be used to fill recesses: make reference to FDOT standard plans index 462-003 for post-tensioning anchorage and tendon filling details.
- Concrete cover must meet FDOT Structures Design Guidelines Section 1.4.2.
- Components marked with "T" on the drawing are temporary.
NOTE:

- This drawing is not intended for manufacturing purposes.

Title:
Centro Guarnizioni TIGER s.r.l
PROTECTION CAP O-RING
for 19AMTS15 PT SYSTEM

Material:
NBR - according to FDoT Tab. 2.2.1.7-1 Sec. 960

Dimensions:
INCH [mm]

Part #: 19-01-02
Code: OR 06820

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Steel AISI C1045 Normalized

WEDGE PLATE for 19AMTS15 [19-06"] External and Internal Unbonded systems

Dimensions: INCH [mm] FOR REFERENCE ONLY

Part #: E-UL-19-02-00
Code: -

Drawn: L.CIVATI
Checked: T.CICCONE

Date: 08/23/2016

Material: Steel AISI C1045 Normalized

Title: WEDGE PLATE for 19AMTS15 [19-06"] External and Internal Unbonded systems

Inspection hole Ø9/8" (Ø9.5mm)

Marking

Dimensions:
- Ø6.26" (Ø159mm)
- Ø7.87" (Ø200mm)
- 2.91" (Ø4mm)
- 3.15" (80mm)

Checking:
- T.CICCONE

Drawn:
- L.CIVATI

Date:
- 08/23/2016

First issue
- 0

L.C.:
- T.C.:

Date of issue
- 08/23/2016

Dimensions:
- INCH [mm] FOR REFERENCE ONLY

Part #: E-UL-19-02-00
Code: -

Date:
- 08/23/2016

First issue
- 0

L.C.:
- T.C.:

Date of issue
- 08/23/2016
SECTION A-A

3/4" NPT

Mark on outer side

Top inspection access

SECTION B-B

3/4" NPT

Front inspection access

SECTION A-A

11.02" (280mm)

SECTION B-B

11.02" (280mm)

Material:
Ductile Iron ASTM A536 GR80-55-06

Treatment:
Galvanization according to ASTM A123

Title:
ANCHOR 19AMTS15 (19-0.6")

Drawn: F.MORAGLIA
Checked: T.CICCONE

Part #: 19-03-00

Dimensions:

INCH [mm] FOR REFERENCE ONLY

Top inspection access

Code: -
I have independently reviewed the calculations and testing reports, along with the documentation and certified that TENSA system spiral rebar detail meets the requirements as outlined in paragraph 3.3 PTI Anchorage Zone Design.

(*) Do not apply post-tensioning forces until the concrete mean compressive strength $f_{cm}$ is not less than the values shown in the present drawing.

NOTE: The local zone reinforcement is to be shown on the shop drawings.
NOTE:

- This drawing is not intended for manufacturing purposes.
Minimum radius of curvature for prefabricated sections of duct: 10 ft (3.05 m)
Minimum radius of curvature for straight sections of duct to be field bent: 20 ft (6.10 m)

**NOTE:**
- This drawing is not intended for manufacturing purposes;
- Duct meets FDoT requirements (Par. 2.2.1.2 and 2.4.4 Section 960):
  - maximum dimensional ratio (DR) of 17 as per ASTM D3035 or ASTM F714
  - 125 psi rated
  - minimum cell class of 445574C as per ASTM D3350
  - minimum OIT of 40 minutes as per ASTM D3895

**Material:**
High Density Polyethylene - according to ASTM D3350

**Title:**
SMOOTH PLASTIC DUCT 4.50”
for External and Internal Unbonded Systems - Std. fit for 19AMTS15

**Dimensions:**
- US Ø4.50” [Ø114.3mm]
- EU Ø4.33” [Ø100.0mm]
- US Ø3.94” [Ø100.1mm]
- EU Ø3.81” [Ø96.8mm]
- US 0.28” [7.1mm]
- EU 0.26” [6.6mm]

**Treatment:**
- OUTSIDE SMOOTHLY SLOTTED
- CODE: -
- Part #: E-IU-19-07-08

**Updated with measures for US and European versions**

**Date:** 10/08/2019
**Drawn:** L.CIVATI
**Checked:** T.CICCONE

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NOTE:

- The United States (US) coupler must be used with the corresponding US duct; the European (EU) coupler must be used with the corresponding EU duct;
- The installation procedure is general; reference to manufacturer’s instruction manual for the detailed installation instructions;
- This drawing is not intended for manufacturing purposes;
- Coupler meets FDoT requirements (Par. 2.2.1.5 Section 960):
  - 150 psi rated
  - minimum cell class of 445574C as per ASTM D3350
  - minimum OIT of 40 minutes as per ASTM D3895

INSTALLATION

Preparing the duct
1. Scrape the duct up to 0.4" (10mm) beyond the insertion length of the fitting.
2. Clean the welding area and let it dry.
3. Insert the duct straight into the fitting for the correct length.
4. Install the aligners in order to keep straight position.

The Welding Process
5. Connect the welding cables to the electrofusion coupler connectors and enter the welding parameters in the device.
6. At the end of the welding cycle, disconnect the cables and wait for the cooling.
7. Remove the aligners.

ELECTROFUSION COUPLER
for 4.5" HDPE DUCT CONNECTION
Standard fit for 19AMTS15
NOTE:

- Thickness is type L, i.e. 0.035" [0.9 mm] backing + 0.043" [1.1 mm] adhesive;
- This drawing is not intended for manufacturing purposes;
- Heat shrink sleeve meets or exceeds FDoT requirements (Table 2.2.1.8-1 Section 960);
- For the installation make reference to manufacturer procedure.

Material:
Coated Polyolefin Backing - according to FDoT Tab. 2.2.1.8-1 Sec. 960

Treatment:
CANUSA-CPS
HIGH TEMPERATURE HEAT SHRINK SLEEVE
Standard fit for 19AMTS15 External and Internal Unbonded Systems

Part # : E-IU-19-07-13
Code : KLNN-115-150-BK

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www.tensaamerica.com - PHONE: +1 305-866-9917

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