BILL OF MATERIALS

<table>
<thead>
<tr>
<th>ITEM</th>
<th>PART #</th>
<th>DESCRIPTION</th>
<th>MATERIAL</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>12-31-01</td>
<td>Protection Cap</td>
<td>Nuten T-4740 - according to ASTM D2597</td>
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<td>12-01-01</td>
<td>Protection Cap Bolts</td>
<td>Stainless Steel GR316 - according to ASTM F959</td>
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<td>3</td>
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<td>NPT Pipe Plug 3/4&quot;</td>
<td>SCH40 Steel - according to FDOT Tab 2.2.1.7-1 Sec 940</td>
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<td>4</td>
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<td>NPT Pipe Plug 3/4&quot; w/ welded port</td>
<td>SCH40 Steel - according to FDOT Tab 2.2.1.7-1 Sec 940</td>
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<tr>
<td>5</td>
<td>00-01-05</td>
<td>Pipe Nipple</td>
<td>SCH40 Steel - according to FDOT Tab 2.2.1.7-1 Sec 940</td>
</tr>
<tr>
<td>6</td>
<td>00-01-06</td>
<td>Duct Coupler 3.50&quot; electrofused</td>
<td>NBR - according to FDoT Tab.2.2.1.8-1 Sec.960</td>
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<tr>
<td>7</td>
<td>00-01-07</td>
<td>Duct Coupler 3.50&quot; slipless</td>
<td>High Density Polyethylene - according to ASTM D3350</td>
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<td>Protection Cap</td>
<td>SCH40 Steel - according to FDOT Tab 2.2.1.7-1 Sec 940</td>
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<td>9</td>
<td>00-01-09</td>
<td>High Density Polyethylene Sleeve, 354&quot; N. of Turns</td>
<td>Polyethylene - according to ASTM D3350</td>
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<td>00-01-10</td>
<td>High Density Polyethylene Sleeve, 227&quot; N. of Turns</td>
<td>Polypropylene - according to ASTM D4101</td>
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<td>00-01-11</td>
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<td>NBR - according to FDoT Tab.2.2.1.8-1 Sec.960</td>
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<td>Protection Cap</td>
<td>Steel GR270 - according to ASTM A416</td>
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<td>00-01-13</td>
<td>Protection Cap</td>
<td>Coated Polyolefin Backing - according to FDoT Tab.2.2.1.8-1 Sec.960</td>
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<td>00-01-14</td>
<td>Protection Cap</td>
<td>Commercially available and compatible silicone grease</td>
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<tr>
<td>15</td>
<td>00-01-15</td>
<td>Protection Cap</td>
<td>Commercially available thread seal tape</td>
</tr>
<tr>
<td>16</td>
<td>00-01-16</td>
<td>Protection Cap</td>
<td>Steel GR60, #4 - according to ASTM A615</td>
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<td>17</td>
<td>00-01-17</td>
<td>Protection Cap</td>
<td>Stainless Steel GR316L - according to ASTM F593</td>
</tr>
</tbody>
</table>

INSTRUCTIONS:

1. Preassemble anchor (AN) and strand (PT) in a safe area. Sand, silicone grease shall be used to facilitate the threading (in accordance with the manufacturer’s instructions). After completion of concrete placement, remove the pocket Former and prove that all is in order. If any obstructions or damage is found, all injection vents are free and secured.

2. Install strands by pulling or pushing individually as a bundle into duct. Allow sufficient extra length at the anchorage for stressing.

3. Check the wedge plate (WP) for rust and dirt, clean wedge holes with wire brush if necessary. Lightly oil or grease wedge holes.

4. Check the wedge holes for rust. Discard rusty wedges and use only clean ones.

5. Install the wedge plate (WP) in the inspection hole, side the wedge over the strands and securely place them into wedges.

6. Do not apply post-tensioning forces until the concrete is not less than the values shown on the spiral table. These values refer to cylindrical strength.

7. If appropriate clearance must be kept behind the hydraulic jack while stressing.

8. Stressing operation shall be executed according to the engineer form and requires the simultaneous reading of pressure and elongation. Check the conformity of the final elongations measurement with prescribed values.

9. Install the protection cap (PC) with O-ring sealing on AN using six bolts (home silicone grease shall be used to facilitate the compression of the O-ring).

10. Install PC not used (some thread seal tape shall be used to prevent concrete from penetrating. Weave shall be injected through the filler inlet until it escapes from the filler outlet. Special measures shall be applied for long tendons, for tendon paths with distinct high points or inclined tendons to avoid voids.

11. All vents and injection inlets/outlets have to be sealed with plugs or caps after injection.

12. Fill holes with non-shrink grout after post injection operation and inspection are completed.

13. After completion of concrete placement, remove the pocket Former and prove that all is in order. If any obstructions or damage is found, all injection vents are free and secured.

14. Install strands by pulling or pushing individually as a bundle into duct. Allow sufficient extra length at the anchorage for stressing.

15. Check the wedge plate (WP) for rust and dirt, clean wedge holes with wire brush if necessary. Lightly oil or grease wedge holes.

16. Check the wedge holes for rust. Discard rusty wedges and use only clean ones.

17. Install the wedge plate (WP) in the inspection hole, side the wedge over the strands and securely place them into wedges.

18. Do not apply post-tensioning forces until the concrete is not less than the values shown on the spiral table. These values refer to cylindrical strength.

19. Stressing operation shall be executed according to the engineer form and requires the simultaneous reading of pressure and elongation. Check the conformity of the final elongations measurement with prescribed values.

20. Install the protection cap (PC) with O-ring sealing on AN using six bolts (home silicone grease shall be used to facilitate the compression of the O-ring).

21. Install PC not used (some thread seal tape shall be used to prevent concrete from penetrating. Weave shall be injected through the filler inlet until it escapes from the filler outlet. Special measures shall be applied for long tendons, for tendon paths with distinct high points or inclined tendons to avoid voids.

22. All vents and injection inlets/outlets have to be sealed with plugs or caps after injection.

23. 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 1/2" ball valve (00-01-04-M) with 1/2" female plug (00-01-06) 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>
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<tbody>
<tr>
<td>1</td>
<td>XX-01-00*</td>
<td>Protection Cap</td>
<td>Nylon-S-PA0401 - according to ASTM D5989</td>
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<td>Anchor</td>
<td>Ductile Iron ASTM A536 GR80-55-06 + Galvanization according to ASTM A123</td>
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<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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<td>00-01-03-M</td>
<td>NPT Pipe Nipple 1/2&quot;</td>
<td>SCH40 steel</td>
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<td>5</td>
<td>00-01-04-M</td>
<td>NPT Ball Valve 1/2&quot;</td>
<td>SCH40 steel</td>
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<td>00-01-05</td>
<td>NPT Plug 1/2&quot;</td>
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<td>NPT Female Plug 1/2&quot;</td>
<td>SCH40 steel</td>
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<td>8</td>
<td>00-02-01-M</td>
<td>NPT Pipe Nipple 3/4&quot;</td>
<td>SCH40 steel</td>
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<td>00-02-02-M</td>
<td>NPT Ball Valve 3/4&quot;</td>
<td>SCH40 steel</td>
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<td>NPT Plug 3/4&quot;</td>
<td>High Density Polyethylene - according to ASTM D3350</td>
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<td>00-03-04*</td>
<td>NPT Female Plug 3/4&quot;</td>
<td>SCH40 steel</td>
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<tr>
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<td>00-07-04-EM</td>
<td>Vent Port 3/4&quot; NPT PE</td>
<td>Polyethylene - according to ASTM D3350</td>
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<td>00-07-06</td>
<td>NPT Nipple Coupler 3/4&quot;</td>
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<tr>
<td>14</td>
<td>00-07-07</td>
<td>NPT Elbow 3/4&quot;</td>
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**MISCELLANEOUS MATERIALS**

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

**PIPE EXTERNAL CONFIGURATION**

**ANCHORAGE CONFIGURATION**

Top venting and injection.

**NOTE:**

- 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.

---

This drawing contains proprietary information and shall be used for reference purposes only. It contains and integrates data according to the civil and penal provisions of the law.
PROTECTION CAP BOLTS for 12AMTS15

Material: Stainless Steel GR316L - according to ASTM F593

Title: PROTECTION CAP BOLTS

Drawn: F.MORAGLIA  Checked: T.CICCONE

Part #: 12-01-01

Dimensions: for reference only

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1111 KANE CONCOURSE, S.TE 200 - BAY HARBOR ISLAND, 33154 FL.

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SECTION A-A

NOTE:
- This drawing is not intended for manufacturing purposes.

Ø0.92" (Ø177.17mm)

Ø0.21" (Ø5.34mm)

Centro Guarnizioni TIGER s.r.l
PROTECTION CAP O-RING
for 12AMTS15 PT SYSTEM

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

T.C. : T.C. CICCONE
Dated : 12/20/2016

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WEDGE PLATE for 12AMTS15 (12-06") External and Internal Unbonded systems

Material: Steel AISI C1045 Normalized

Dimensions:
- Ø5.28" [Ø134mm]
- Ø6.3" [Ø160mm]
- 2.44" [62mm]
- 2.68" [68mm]

Marking passing hole Ø3/8" [Ø9.5mm]

Title:

Drawn: L.CIVATI
Checked: T.CICCONE

Date: 05/14/2018

Dimensions: FOR REFERENCE ONLY

Part #: E-IIU-12-02-00
Code: -
Material: Ductile Iron ASTM A536 GR80-55-06
Treatment: Galvanization according to ASTM A123
Title: ANCHOR 12AMTS15 (12-0.6")

SECTION A-A
- Ø3/4" NPT
- Mark on outer side
- Top inspection access

SECTION B-B
- Ø3/4" NPT
- Front inspection access

Dimensions:
- 7.48" [190mm]
- 8.66" [220mm]

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I have independently reviewed the calculations and testing reports, along with the documentation and certified that Tensa system spiral rebars 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 $f'_c$ is not less than the values shown in the present drawing.

NOTE: The local zone reinforcement is to be shown on the shop drawings.
Title:
TRUMPET for 12AMTS15 Internal Bonded and Internal Unbonded / External systems

Material:
High Density Polyethylene - according to ASTM D3350

Treatment:
-

Date:
12/20/2016

Description:
INCH [mm] FOR REFERENCE ONLY

Part #: 12-06-00

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**NOTE:**
- This drawing is not intended for manufacturing purposes.

**SECTION A-A**

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

**Part #:** 12-06-01

**Dimensions:**
- Ø4.48" [Ø113.70mm]
- Ø0.21" [Ø5.34mm]

**Title:**
Centro Guarnizioni TIGER s.r.l
COMPRESSION SEAL for 12AMTS15 between Anchor and Trumpet

**Checked:** T.CICCONE

**Drawn:** L.CIVATI

**Date:** 08/23/2016

**Dimensions:**
- INCH [mm]
- FOR REFERENCE ONLY

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

**Code:** OR 06450

**Dimensions:**
- Ø4.48" [Ø113.70mm]
- Ø0.21" [Ø5.34mm]
Minimum radius of curvature for prefabricated sections of duct: 8 ft (2.44 m)
Minimum radius of curvature for straight sections of duct to be field bent: 12 ft (3.66 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 445754C 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 3.50" for External and Internal Unbonded Systems - Std. fit for 12AMTS15

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 445754C as per ASTM D3350
  - minimum OIT of 40 minutes as per ASTM D3895

Updated with measures for US and European versions

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<td>10/08/19</td>
<td>Updated with measures for US and European versions</td>
<td>L.C.</td>
<td>T.C.</td>
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<td>05/14/18</td>
<td>First issue</td>
<td>L.C.</td>
<td>T.C.</td>
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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 ends 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 3.5" HDPE DUCT CONNECTION
Standard fit for 12AMTS15

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

**Treatment :**
- 

**Title :**
ELECTROFUSION COUPLER
for 3.5" HDPE DUCT CONNECTION
Standard fit for 12AMTS15

**Dimensions :**

**Date :** 10/08/2019

**Part # :** E-IU-12-07-12

**Code :** -

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**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

<table>
<thead>
<tr>
<th>Width reduction from 300 to 150 mm</th>
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<th>Dimensions</th>
<th>Material</th>
<th>Treatment</th>
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<td>0</td>
<td>03/06/20</td>
<td>INCH [mm]</td>
<td>Coated Polyolefin Backing - according to FDoT Tab.2.2.1.8-1 Sec.960</td>
<td>CANUSA-CPS HIGH TEMPERATURE HEAT SHRINK SLEEVE</td>
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<tr>
<td>0</td>
<td>05/14/18</td>
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<td></td>
<td>Standard fit for 12AMTS15 External and Internal Unbonded Systems</td>
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- Part #: E-IU-12-07-13
- Code : KLNN-90-150-BK

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NOTE:

- This drawing is not intended for manufacturing purposes;
- Coupler meets or exceeds FDoT requirements (Section 960-2.2.1.5 and 2.4.4);
- Standard fit for 3.00" [76mm] corrugated plastic duct and 3.50" smooth plastic duct.

Material: Polypropylene - according to ASTM D4101

Title: GTI STEPLESS COUPLER
Adaptation for 3.00" corrugated duct and 3.50" smooth plastic duct with 12AMTS15 trumpet

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NOTE:

- This drawing is not intended for manufacturing purposes;
- Coupler meets or exceeds FDoT requirements (Section 960-2.2.1.5 and 2.4.4);
- Standard fit for 3.00" [76mm] corrugated plastic duct and 3.50" smooth plastic duct.

Date: 05/24/2018

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