### Intermediate Coupling Details

**Insertion Procedure**

1. **Preassemble anchor (AN) and plastic trumpet (PT)** to form the intermediate connection (ITC) in the tunnel or shaft. Do not apply post-tensioning forces until the concrete is set. The ITC shall be installed in the correct orientation.

2. **Replace part** 3/4" pipe (00-03-01-M) with 3/4" plug (00-03-03) after injection and inspection.

3. **Replace 3/4" pipe (00-03-01-M)** with 3/4" plug (00-03-03) after injection and inspection.

4. **Install the smooth duct as shown on shop drawings and insert into PT, sealing the connection by heat shrink sleeve [if, if possible, with heat shrink wrap] in order to prevent concrete from penetrating.**

5. **Carry out the pressure test.**

**Concreting can now proceed:**

6. **Fill holes with non-shrink grout after post-injection.**

7. **Ensure proper fill, and then proceed with the following steps.**

8. **Verify that the hole is filled to the required level.**

9. **Concreting can now proceed.**

**Stressing can now proceed:**

10. **Install the smooth duct as shown on shop drawings and insert into PT, sealing the connection by heat shrink sleeve [if, if possible, with heat shrink wrap] in order to prevent concrete from penetrating.**

11. **Carry out the pressure test.**

**NOTE: Components marked with “T” on the drawing are temporary**

### ENDD View

**SECTION B-B**

- **High injection and setting**

**SECTION A-A**

- **Fresh injection and setting**

### Material List

<table>
<thead>
<tr>
<th>Item</th>
<th>Part A</th>
<th>Material Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>31-01-06</td>
<td>Protection Cap Stainless steel (SS) 1/2&quot; according to ASTM A559</td>
</tr>
<tr>
<td>2</td>
<td>31-01-07</td>
<td>Protection Cap Bolts Stainless steel (SS) 1/4&quot; according to ASTM A559</td>
</tr>
<tr>
<td>3</td>
<td>31-01-08</td>
<td>Protection Cap to Ring Stainless steel (SS) 1/2&quot; according to ASTM A559</td>
</tr>
<tr>
<td>4</td>
<td>00-03-03-M</td>
<td>NPT Pipe Nipple 1/2&quot; stainless steel</td>
</tr>
<tr>
<td>5</td>
<td>31-01-05</td>
<td>NPT Ball Valve 3/4&quot; stainless steel</td>
</tr>
<tr>
<td>6</td>
<td>00-01-03-M</td>
<td>NPT Plug 1/2&quot; stainless steel</td>
</tr>
<tr>
<td>7</td>
<td>31-01-01</td>
<td>Wedge Plate Stainless steel (SS) 1/2&quot; according to ASTM A559</td>
</tr>
<tr>
<td>8</td>
<td>31-01-09</td>
<td>Anchor Stainless steel (SS) 1/2&quot; according to ASTM A559</td>
</tr>
<tr>
<td>9</td>
<td>00-03-03-M</td>
<td>NPT Pipe Nipple 3/4&quot; stainless steel</td>
</tr>
<tr>
<td>10</td>
<td>31-01-02</td>
<td>NPT Ball Valve 3/4&quot; stainless steel</td>
</tr>
<tr>
<td>11</td>
<td>00-01-03-M</td>
<td>NPT Plug 3/4&quot; stainless steel</td>
</tr>
<tr>
<td>12</td>
<td>00-01-04</td>
<td>Wedge Stainless steel (SS) 3/4&quot; according to ASTM A559</td>
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<tr>
<td>13</td>
<td>31-05-00</td>
<td>NPT Nut 7/16&quot; stainless steel</td>
</tr>
<tr>
<td>14</td>
<td>31-01-12</td>
<td>Anchor Stainless steel (SS) 7/16&quot; according to ASTM A559</td>
</tr>
<tr>
<td>15</td>
<td>31-01-07</td>
<td>Wedge Stainless steel (SS) 7/16&quot; according to ASTM A559</td>
</tr>
<tr>
<td>16</td>
<td>31-03-00</td>
<td>NPT Nut 9/16&quot; stainless steel</td>
</tr>
<tr>
<td>17</td>
<td>31-01-11</td>
<td>Anchor Stainless steel (SS) 9/16&quot; according to ASTM A559</td>
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<tr>
<td>18</td>
<td>31-06-00</td>
<td>Compression Seal Stainless steel (SS) 1/2&quot; according to ASTM A156</td>
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<tr>
<td>19</td>
<td>31-01-08</td>
<td>Smooth Plastic Duct 3/4&quot; 1 1/2&quot; according to ASTM D3032</td>
</tr>
<tr>
<td>20</td>
<td>31-01-10</td>
<td>Electrification Duct Coupler 3/4&quot; 1 1/2&quot; according to ASTM D3032</td>
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<tr>
<td>21</td>
<td>31-01-05</td>
<td>NPT Nipple 3/4&quot; stainless steel</td>
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<tr>
<td>22</td>
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<tr>
<td>23</td>
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<td>Wedge Stainless steel (SS) 3/4&quot; according to ASTM A559</td>
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<tr>
<td>24</td>
<td>31-05-00</td>
<td>NPT Nut 7/16&quot; stainless steel</td>
</tr>
<tr>
<td>25</td>
<td>31-01-12</td>
<td>Anchor Stainless steel (SS) 7/16&quot; according to ASTM A559</td>
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<tr>
<td>26</td>
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</tr>
<tr>
<td>28</td>
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### Miscellaneous Materials

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<tr>
<th>Item</th>
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<tbody>
<tr>
<td>22</td>
<td>Commercially available thread seal tape</td>
</tr>
<tr>
<td>23</td>
<td>Commercially available and compatible silicone grease</td>
</tr>
</tbody>
</table>

### Concrete Class

- **Concrete Class:**
  - 6000 PSI [42MPa]
  - 5500 PSI [38MPa]

### SPIRAL

- **Length (L):**
  - 25-1/2" - [167mm]
  - 28-3/4" - [732mm]

- **Diaphram (D):**
  - 6500 PSI [45MPa]

- **N.B.:**
  - Commercially available thread seal tape should be used to facilitate the compression of the O-ring.

- **Appropriate clearance must be kept behind the hydraulic jack while stressing.**

- **Install the smooth duct as shown on shop drawings and insert into PT, sealing the connection by heat shrink sleeve [if, if possible, with heat shrink wrap] in order to prevent concrete from penetrating.**

- **Carry out the pressure test.**

- **Injection can now proceed:**

- **Fill holes with non-shrink grout after post-injection and inspection are completed.**
Replace 3/4" ball valve (00-03-02-M) with 3/4" female plug (00-03-04) at the end of operations.

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.

**BILL OF MATERIALS**

<table>
<thead>
<tr>
<th>ITEM</th>
<th>PART #</th>
<th>DESCRIPTION</th>
<th>MATERIAL</th>
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<tr>
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<td>XX-01-00*</td>
<td>Protection Cap</td>
<td>Nylon 6-PA66T - according to ASTM D883</td>
</tr>
<tr>
<td>2</td>
<td>XX-03-00*</td>
<td>Anchor</td>
<td>Steel from ASTM A536 SD-50-50 + Galvanization according to ASTM A123</td>
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<tr>
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<td>Smooth Plastic Fitting</td>
<td>High Density Polyethylene - according to ASTM D3350</td>
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<td>SCH40 steel</td>
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</table>

* depending from system dimension

**BILL OF MATERIALS**

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<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>SCH40 steel</td>
</tr>
</tbody>
</table>
Material: Stainless Steel GR316L - according to ASTM F593

Title: PROTECTION CAP BOLTS for 31AMTS15

Dimensions: mm FOR REFERENCE ONLY

Part #: 31-01-01

Drawn: F.MORAGLIA  Checked: T.CICCONE

12/20/16

0  First issue

Dimensions: mm FOR REFERENCE ONLY

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NOTE:

- This drawing is not intended for manufacturing purposes;
ANCHOR 31AMTS15 (31-0.6")

Material: Ductile Iron ASTM A536 GR80-55-06
Treatment: Galvanization according to ASTM A123

Title: ANCHOR 31AMTS15 (31-0.6")

Dimensions:
- 13.78" [350mm]
- 11.81" [300mm]

Drawn: F.MORAGLIA
Checked: T.CICCONE

Part #: 31-03-00

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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: 13 ft (3.96 m)
Minimum radius of curvature for straight sections of duct to be field bent: 30 ft (9.14 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 5.563”
for External and Internal Unbonded Systems - Standard fit for 31AMTS15
Alternate fit for 27AMTS15

Material: US 0.35” [8.8mm] EU 0.33” [8.3mm]
US Ø4.87” [Ø123.7mm] EU 4.86” [Ø123.4mm]
US Ø5.56” [Ø141.3mm] EU Ø5.51” [Ø140.0mm]

Treatment:

Code: -
Drawn: L.CIVATI
Dimensions:
Date: 10/08/2019
Material: High Density Polyethylene- according to ASTM D3350

Checked: T.CICCONE

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

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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
NOTE:

- Reference to manufacturer’s installation manual for the detailed installation instructions;
- The representation of both smooth and corrugated duct in the same coupler is purely representative;
- Segmental duct coupler meets FDoT requirements (Par. 2.2.1.6 and 3.2.1 Section 960);
- Components marked with "T" on the drawing are temporary, components marked with "O" are optional;
- In the beside table "XX" stands for the system dimension
NOTE:

- All dimensions are measured;
- This drawing is not intended for manufacturing purposes.

SECTION A-A

Material: Polypropylene - according to ASTM D4101
Title: GTI SDC BULKHEAD COUPLER 5.125" for 5.125" GTI corrugated duct and 5.563" smooth duct
Standard fit for 31AMTS15
Alternate fit for 27AMTS15

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NOTE:

- All dimensions are measured;
- This drawing is not intended for manufacturing purposes.

**Title:** GTI SDC MATCHCAST COUPLER 5.125"
for 5.125" GTI corrugated duct and
5.563" smooth duct

**Alternate fit for 27AMTS15**

**Material:** Polypropylene - according to ASTM D4101

**Treatment:**

- [INCH [mm]]

**Part #: 31-07-03-02**

**Dimensions:**

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<thead>
<tr>
<th>Section A-A</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.18&quot; [55mm]</td>
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<tr>
<td>7.51&quot; [191mm]</td>
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<tr>
<td>6.21&quot; [158mm]</td>
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<tr>
<td>7.39&quot; [188mm]</td>
</tr>
</tbody>
</table>
NOTE:

- All dimensions are measured;
- This drawing is not intended for manufacturing purposes.

Title: GTI SDC SEALING GASKET 5.125" for 5.125" GTI corrugated duct and 5.563" smooth duct

Standard fit for 31AMTS15
Alternate fit for 27AMTS15

Material: TPR Blend - according to FDoT Tab.2.2.1.7-1 Sec.940

Treatment: TPR Blend - according to FDoT Tab.2.2.1.7-1 Sec.940

NOTE:

- All dimensions are measured;
- This drawing is not intended for manufacturing purposes.

Date: 03/20/2019

Dimensions: FOR REFERENCE ONLY

Part #: 31-07-03-03
Code: 220533

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NOTE:
- All dimensions are measured;
- This drawing is not intended for manufacturing purposes.
NOTE:
- All dimensions are measured;
- This drawing is not intended for manufacturing purposes;
- Temporary item.

Title: GTI SDC BULKHEAD LOAD PLUG 5.125"
for 5.125" GTI corrugated duct and
5.563" smooth duct
Standard fit for 31AMTS15
Alternate fit for 27AMTS15

Material: Nylon

NOTE:
- All dimensions are measured;
- This drawing is not intended for manufacturing purposes;
- Temporary item.
NOTE:

- All dimensions are measured;
- This drawing is not intended for manufacturing purposes;
- Temporary item.

Material: Nylon

Title: GTI SDC MATCHCAST LOAD PLUG 5.125"
for 5.125" GTI corrugated duct and
5.563" smooth duct
Standard fit for 31AMTS15
Alternate fit for 27AMTS15

Dimensions: 0.79" [20mm]
4.20" [107mm]
5.22" [133mm]

Treatment:

Part #: 31-07-03-06
Code: 220546

Check: T. CICCONE
Drawn: L. CIVATI

Date: 03/20/2019

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NOTE:

- All dimensions are measured;
- This drawing is not intended for manufacturing purposes;
- Temporary item.

Material: Polypropylene - according to ASTM D4101

Title: GTI SDC GASKET BLOCKOUT 5.125" for 5.125" GTI corrugated duct and 5.563" smooth duct

Standard fit for 31AMTS15
Alternate fit for 27AMTS15

Part #: 31-07-03-07
Code: 220539

Date: 03/20/2019

Checked: T. CICCONE
Drawn: L. CIVATI
NOTE:

- All dimensions are measured;
- This drawing is not intended for manufacturing purposes;
- Temporary item.

Title: GTI SDC STORAGE CAP 5.125"
for 5.125" GTI corrugated duct and
5.563" smooth duct
Standard fit for 31AMTS15
Alternate fit for 27AMTS15

Material: Polypropylene - according to ASTM D4101

TENSA AMERICA LLC  -  www.tensaamerica.com - PHONE +1 305-866-9917
1111 KANE CONCOURSE, S. TE 200 - BAY HARBOR ISLAND - 33154 FL

Date: 03/20/2019
Dimensions: [INCH] mm FOR REFERENCE ONLY

Part #: 31-07-03-08
Code: 220547

Description  Rev  Date  L.C.  T.C.
0  03/20/19  First issue

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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

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 27AMTS15 External and Internal Unbonded Systems

TENSA AMERICA LLC - www.tensaamerica.com - PHONE: +1 305-886-9917
111 KANE CONCOURSE, S.TE 200 - BAY HARBOR ISLAND - 33154 FL

Date: 04/27/2018
Dimensions: INCH [mm] FOR REFERENCE ONLY
Part #: E-IU-27-07-13
Code: KLNN-125-300-BK

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