Part One: Guidelines & Procedures for Precast Product Verification by Non-Destructive and Destructive Testing

Tennessee Department of Transportation
# Table of Contents

1.0 REFERENCES ................................................................................................................................. 2

2.0 PRODUCT SELECTION ................................................................................................................ 2

3.0 NON-DESTRUCTIVE VERIFICATION ............................................................................................ 5

4.0 DESTRUCTIVE VERIFICATION ..................................................................................................... 16

5.0 REPORT ....................................................................................................................................... 53
1.0 REFERENCES
Refer to SOP 5-3 Section 6.0 for verification procedures.

2.0 PRODUCT SELECTION

2.1 Standard Precast Drainage Catch Basins

2.1.1 Square and Rectangular Concrete & Lid

2.1.2 Standard Precast Circular Concrete & Lid

2.2 Endwall
2.3 Standard Precast Drainage Manholes

2.3.1 Square Concrete & Lid

2.3.2 Circular Concrete and Lid

2.4 Standard Precast Drainage Junction and Spring Box

2.4.1 Square Concrete & Lid
2.4.2 Circular Concrete & Lid
3.0 NON-DESTRUCTIVE VERIFICATION

3.1 Dimensional Measurements

3.1.1 Square and Rectangular Concrete (Drainage Catch Basins)

**NOT TO SCALE**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Measurement 1</th>
<th>Measurement 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wall Thickness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Height</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outlet Diameter</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Horizontal/Vertical</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inlet Diameter</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Horizontal/Vertical</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opening Length</td>
<td>1.___________</td>
<td>1.___________</td>
</tr>
<tr>
<td>Opening Width</td>
<td>2.___________</td>
<td>2.___________</td>
</tr>
<tr>
<td>Width</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Length</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Height</td>
<td>1.___________</td>
<td>2.___________</td>
</tr>
<tr>
<td>Opening Width</td>
<td>2.___________</td>
<td></td>
</tr>
<tr>
<td>Opening Length</td>
<td>1.___________</td>
<td></td>
</tr>
</tbody>
</table>

Note: All Measurements shall be reported to 1/16”
3.1.2 Square Concrete (Drainage Manhole)

NOT TO SCALE

Wall Thickness

Outlet Diameter Horizontal/Vertical
1. ____________
2. ____________

Height
________________

Width
________________

Opening Length 1. ____________
Opening Width 2. ____________

Inlet Diameter Horizontal/Vertical
1. ____________
2. ____________

Length ____________

Length
1. ____________
2. ____________

Width
1. ____________
2. ____________

Height
1. ____________
2. ____________

Manhole Diameter ____________

Note: All Measurements shall be reported to 1/16”
3.1.3 Endwall

*NOT TO SCALE*

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Wall Thickness</td>
<td></td>
</tr>
<tr>
<td>Height</td>
<td></td>
</tr>
<tr>
<td>Inlet Diameter</td>
<td></td>
</tr>
<tr>
<td>Horizontal/Vertical</td>
<td>1.</td>
</tr>
<tr>
<td></td>
<td>2.</td>
</tr>
<tr>
<td>Width</td>
<td></td>
</tr>
<tr>
<td>Length, ( L_1 )</td>
<td></td>
</tr>
<tr>
<td>Sidewall Thickness</td>
<td></td>
</tr>
<tr>
<td>Toe Thickness</td>
<td></td>
</tr>
<tr>
<td>Toe Width</td>
<td></td>
</tr>
<tr>
<td>Length, ( L_2 )</td>
<td></td>
</tr>
</tbody>
</table>

Note: All Measurements shall be reported to 1/16”
3.1.4 Square Concrete (Drainage Junction Box)

**NOT TO SCALE**

- **Wall Thickness**
- **Outlet Diameter Horizontal/Vertical**
  1. _____________
  2. _____________
- **Height**
  _____________
- **Width**
- **Length**
- **Opening Length** 1. _____________
- **Opening Width** 2. _____________
- **Inlet Diameter Horizontal/Vertical**
  1. _____________
  2. _____________
- **Length**
  1. _____________
  2. _____________
- **Width**
  1. _____________
  2. _____________
- **Height**
  1. _____________
  2. _____________

**Note:** All Measurements shall be reported to 1/16”
3.1.5 Square Concrete (Drainage Spring Box)

**NOT TO SCALE**

- **Wall Thickness**
- **Opening Length** 1.___________
- **Opening Width** 2.___________
- **Outlet Diameter Horizontal/Vertical**
  1.___________________
  2.___________________
- **Height**
  1.___________________
- **Length**
  1.___________________
  2.___________________
- **Width**
  1.___________________
  2.___________________
- **Inlet Diameter Horizontal/Vertical**
  1.___________________
  2.___________________
- **Height**
  1.___________________
  2.___________________
- **Depth**
  1.___________________
  2.___________________

**Note:** All Measurements shall be reported to 1/16”
3.1.6 Standard Precast Circular (Drainage Catch Basins)

**NOT TO SCALE**

<table>
<thead>
<tr>
<th>Inside Diameter</th>
<th>Wall Thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td>_______________</td>
<td>______________</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Inlet Diameter Horizontal/Vertical</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. ____________________</td>
</tr>
<tr>
<td>2. ____________________</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Inside Depth</th>
</tr>
</thead>
<tbody>
<tr>
<td>______________</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>______________</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Outlet Diameter Horizontal/Vertical</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. ____________________</td>
</tr>
<tr>
<td>2. ____________________</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Diameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. ______________</td>
</tr>
<tr>
<td>2. ______________</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. ______________</td>
</tr>
<tr>
<td>2. ______________</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Opening Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. ____________</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Opening Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. ____________</td>
</tr>
</tbody>
</table>

Note: All Measurements shall be reported to 1/16”
3.1.7 Standard Precast Circular (Drainage Manhole)

*NOT TO SCALE*

- Inside Diameter
- Wall Thickness
- Inlet Diameter Horizontal/Vertical
  1. __________
  2. __________
- Inside Depth
- Height
- Outlet Diameter Horizontal/Vertical
  1. __________
  2. __________
- Diameter
  1. __________
  2. __________
- Manhole Diameter
- Height
  1. __________
  2. __________

Note: All Measurements shall be reported to 1/16”
3.1.8 Standard Precast Circular (Drainage Junction Box)

NOT TO SCALE

Inside Diameter

Wall Thickness

Height

Outlet Diameter

Horizontal/Vertical

1. 

2. 

Inlet Diameter

Horizontal/Vertical

1. 

2. 

Inside Depth

Height

1. 

2. 

Diameter

1. 

2. 

Note: All Measurements shall be reported to 1/16"
3.1.9 Standard Precast Circular (Drainage Junction Box)

NOT TO SCALE

Inside Diameter

Wall Thickness

Inlet Diameter
Horizontal/Vertical
1.__________________
2.__________________

Height

________________

Inside Depth

________________

Outlet Diameter
Horizontal/Vertical
1.__________________
2.__________________

Height

________________

________________

Inside Depth

________________

Height

1.__________________
2.__________________

Outlet Diameter
Horizontal/Vertical
1.__________________
2.__________________

Diameter

1.__________________
2.__________________

Note: All Measurements shall be reported to 1/16”
3.2 Verification of Concrete Strength (SCHMIDT Hammer Method)

The SCHMIDT concrete test hammer (also known as “Swiss Hammer”) is designed for the non-destructive testing of the uniformity of concrete and for estimating the compressive strength. The test-hammer strikes the concrete with defined force; a body rebounds depending on the hardness of the concrete.

3.2.1 SCHMIDT Hammer Measuring Procedure

- Rub test surface with grinding stone.
- Release the impact bolt by applying pressure to it.
- Place test hammer perpendicular to the test surface.

Release the impact bolt by applying pressure to it.
Place test hammer perpendicular to the test surface.

3.2.2 SCHMIDT Hammer Calculation

Per ASTM C-805 9.1 Discard readings differing from the average of 10 readings by more than 6 units and determine the average of the remaining readings. If more than 2 readings differ from the average by 6 units, discard the entire set of readings and determine rebound numbers at 10 new locations within the test area as shown in Table 1 below.

Table 1: Verification of Concrete Strength by SCHMIDT Hammer Method

<table>
<thead>
<tr>
<th>Blow No.</th>
<th>Rebound</th>
<th>Blow No.</th>
<th>Rebound</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>32</td>
<td>6</td>
<td>39</td>
</tr>
<tr>
<td>2</td>
<td>35</td>
<td>7</td>
<td>45</td>
</tr>
<tr>
<td>3</td>
<td>36</td>
<td>8</td>
<td>32</td>
</tr>
<tr>
<td>4</td>
<td>33</td>
<td>9</td>
<td>29</td>
</tr>
<tr>
<td>5</td>
<td>31</td>
<td>10</td>
<td>34</td>
</tr>
</tbody>
</table>

REBOUND AVERAGE: 34.6

Note: Eliminate values higher or lower than 6 units of first average rebounds.

COMPRESSIVE STRENGTH: 3600 psi

Note: Compressive Strength from Concrete Hammer Graph Position A.
3.3. Verification of Location of Steel (Ground Penetrating Radar (GPR) Method)

1. Verify that there are no metal items on hands, fingers, or in the vicinity of test area
2. Power on: Press the ON/OFF button on the top panel
3. Reset the Instrument
4. Check the operation with the start-up test kit and confirm:
   - The location and orientation of the rebar
   - The position between two rebar
   - Cover depth
4.0 **DESTRUCTIVE VERIFICATION**

4.1 Destructive Testing Equipment – The following saws are recommendations. Any type of sawing equipment is acceptable that will provide the appropriate required cuts.

4.1.1 Gas Powered Concrete Chain Saw

![Gas Powered Concrete Chain Saw]

<table>
<thead>
<tr>
<th><strong>695GC AND 695F4 PRODUCT SPECIFICATIONS</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>WEIGHT</strong></td>
</tr>
<tr>
<td><strong>ENGINE SPEED</strong></td>
</tr>
<tr>
<td><strong>HORSEPOWER</strong></td>
</tr>
<tr>
<td><strong>ENGINE TYPE</strong></td>
</tr>
<tr>
<td><strong>DISPLACEMENT</strong></td>
</tr>
<tr>
<td><strong>BAR LENGTH</strong></td>
</tr>
<tr>
<td><strong>POWERHEAD DIMENSIONS</strong></td>
</tr>
<tr>
<td><strong>WATER SUPPLY</strong></td>
</tr>
<tr>
<td><strong>FUEL MIX RATIO</strong></td>
</tr>
<tr>
<td><strong>FUEL CAPACITY</strong></td>
</tr>
</tbody>
</table>

4.1.2 Hydraulic Powered Concrete Chain Saw

![Hydraulic Powered Concrete Chain Saw]

<table>
<thead>
<tr>
<th><strong>880F4 PRODUCT SPECIFICATIONS - 12 GPM</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>WEIGHT</strong></td>
</tr>
<tr>
<td><strong>BAR LENGTH</strong></td>
</tr>
<tr>
<td><strong>MOTOR SPEED</strong></td>
</tr>
<tr>
<td><strong>POWERHEAD DIMENSIONS</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>TORQUE</strong></td>
</tr>
<tr>
<td><strong>HORSEPOWER</strong></td>
</tr>
<tr>
<td><strong>HYDRAULIC SUPPLY</strong></td>
</tr>
<tr>
<td><strong>NOISE LEVEL</strong></td>
</tr>
<tr>
<td><strong>VIBRATION LEVEL</strong></td>
</tr>
<tr>
<td><strong>WATER SUPPLY</strong></td>
</tr>
</tbody>
</table>

- Product data shown is rated based on maximum input conditions and efficiency assumptions and may vary dependent on power supply.
4.1.3. Location of Steel (Pachometer Method)

**First time user:** Complete the tutorial OR see a demo by a qualified representative. Also, please refer to manufacturer user’s manual for further instructions.

2. Verify that there are no metal items on hands, fingers, or in the vicinity of test area
2. Power on: Press the ON/OFF button on the top panel
3. Reset the Instrument
4. Check the location of the Measurement Center (MC) which indicates the center of the probe

5. Check the operation with the start-up test kit and confirm:
   - The location and orientation of the rebar
   - The position between two rebar
   - Cover depth 15mm/0.59” and 60mm/2.36”
   - Diameter 16 mm/ #5

6. Locate and draw horizontal and vertical bars prior to cut as shown in Figures below
5.0 VERIFICATION

Figures 1 through 9 illustrate the different types of structures and possible testing locations. Testing locations and data sheets for each specific structure are detailed on the following pages.
Endwall

Pipe End View

Side View

Toe End View

Figure 5

Figure 6

Figure 7

Junction and Spring Box

Lid

Figure 8

Figure 9

Fig
5.1. Drainage Catch Basins

5.1.1. Square and Rectangular Concrete

It’s recommended that a minimum of **two sides be verified**. These areas should include one **corner** and one **V-cut**. Corner areas can be made on any of the eight corners of the structure. The V-cut can be taken from any side of the structure including directly over an inlet or outlet.

**V-Cut Side Wall**
Approximately a 10” wide wedge and vertical area to a depth of 10” to 12”
(As necessary)

**Corner Area Top or Bottom**
Approximately a 10” to 12” wide vertical and horizontal area to a depth of 10” to 12”
(As necessary)
5.1.1.1. Verification of the Steel Placement

The following shows a recommended procedure for verifying steel placement in a Square and Rectangular Concrete Catch Basin.

**AREA ON SIDE OR OVER OUTLET/INLET**

1. Choose the location to verify; the area shall be from the top edge of the structure or over an inlet or outlet.

2. Measure and mark an area approximately **10 to 12** inches wide.

**EXAMPLE:**

![Diagram of Steel Placement Verification](image)
CORNERS AREA TOP OR BOTTOM

1. Choose the location of the corner area; corner area can be made on any of the eight corners of the structure.

2. Measure and mark an area approximately **10 to 12** inches wide.

EXAMPLE:
5.1.1.2 Confirm Rebar Size, Spacing, and Coverage

Verify Rebar Size, Spacing, & Coverage
DOCUMENT ALL MEASUREMENTS BELOW

Example

Example
5.1.2. Square/Rectangular Precast Lids

It’s recommended that at a minimum of **two areas be verified**. The area can be taken from any side of the structure. The following shows the recommended procedure for making a V-Cut on a square/rectangular lid.

**V Cut Side Wall Area**
Approximately a 10” wide wedge to a depth of 10” to 12”
(As necessary)
5.1.2.1 Verification of the Steel Placement (Saw Cut Method)

The following shows a recommended procedure for making a V-Cut from a square/rectangular lid.

1. Choose the location of the V-cut; the cut shall be verified from two sides of the lid.

2. Measure and mark a wedge **10 to 12** inches wide and deep.

EXAMPLE:
5.1.2.2 Confirm Rebar Size, Spacing, and Coverage

**Verify Rebar Size, Spacing, & Coverage**
DOCUMENT ALL MEASUREMENTS BELOW
5.2. Drainage Manhole

5.2.1. Square Concrete

It’s recommended that a minimum of **two areas be verified**. The area should include **one corner** cut and **one other area**. Corner areas can be made on any of the eight corners of the structure. The other area can be taken from any side of the structure including directly over an inlet or outlet.

**Corner Cut Top or Bottom**
- Approximately a 10” to 12” wide vertical cut and a horizontal cut to a depth of 10” to 12”
  (As necessary)

**V-Cut Side Wall**
- Approximately a 10” wide wedge and vertical cut to a depth of 10” to 12”
  (As necessary)
5.2.1.1. Verification of the Steel Placement (Saw Cut Method)
The following shows a recommended procedure for making a V-Cut and a Corner Cut for a Square Concrete Manhole.

**V-CUT ON SIDE OR OVER OUTLET/INLET**

1. Choose the location areas be verified. The area shall be from the top edge of the structure or over an inlet or outlet.

2. Measure and mark an area approximately 10 to 12 inches wide.

   EXAMPLE:
3. Choose the location of the corner area; corner area can be made on any of the eight corners of the structure.

4. Measure and mark an area approximately **10 to 12 inches** wide.

EXAMPLE:
5.2.1.2 Confirm Rebar Size, Spacing, and Coverage

Verify Rebar Size, Spacing, & Coverage
DOCUMENT ALL MEASUREMENTS BELOW

Example

Rebar Size
Coverage
Rebar Spacing
Coverage

Example
5.2.2. Square Precast Lids

It’s recommended that at a minimum of **two areas be verified**. The area can be taken from any side of the structure. The following shows the recommended procedure for making a V-Cut on a square lid.

---

**V Cut Side Wall**
Approximately a 10” wide wedge to a depth of 10” to 12”
(As necessary)
5.2.2.1 Verification of the Steel Placement (Saw Cut Method)

The following shows a recommended procedure for making a V-Cut from a square lid.

3. Choose the location of two areas be verified. The area shall be from two sides of the lid.

4. Measure and mark a wedge 10 to 12 inches wide and deep.

EXAMPLE:
5.2.2.2 Confirm Rebar Size, Spacing, and Coverage

**Verify Rebar Size, Spacing, & Coverage**

DOCUMENT ALL MEASUREMENTS BELOW

Example
5.3. Endwall

It’s recommended that at a minimum of **three areas be verified**. One area shall be taken from any side of the structure, one shall be directly over pipe inlet, and one shall be taken from the toe. The following shows a recommended procedure for multiple V-Cuts for an End Wall.

**V Cut Over Inlet**
Approximately a 10” to 12” wide wedge to a depth of 10” to 12” (As necessary)
Top or Bottom V Cut over Toe
A wedge cut approximately 10” to 12” wide
5.3.1. Verification of the Steel Placement (Saw Cut Method)

**V-CUT OVER INLET**

1. Choose the location of the area **be verified**. The area shall be from the top edge of the structure and should be over inlet.

2. Measure and mark an area approximately **10 to 12** inches wide.

**EXAMPLE:**

![Example Image](image-url)
AREA ON SIDE

1. Choose the location of the **area to be verified**. The area shall be from the top edge of the structure and should be on one of the sides.

2. Measure and mark an area approximately **10 to 12 inches wide**.

EXAMPLE:

[Area taken from side with dimensions 10”-12” indicated]
AREA ON TOE

1. Choose the location **area to be verified**. The area shall be from the top edge of the structure and should be on top or bottom of Endwall toe.

2. Measure and mark an area approximately **10 to 12 inches wide**.

**EXAMPLE:**

- **Area taken from bottom of toe**
- **Area taken from top of toe**

- **Rebar Size and Coverage**
- **A wedge cut approximately 10” to 12” wide**
- **Approximately a 10” to 12” vertical cut with a wedge cut to complete the sample**

*Back View of Endwall*
5.3.2 Confirm Rebar Size, Spacing, and Coverage

Verify Rebar Size, Spacing & Coverage
DOCUMENT ALL MEASUREMENTS BELOW

Example

Cut No.1
Cut No.2
Cut No.3

Rebar Size

Coverage

Rebar Spacing

Coverage
5.4. Drainage Junction Box

5.4.1. Square Concrete

It’s recommended that a minimum of two areas be verified. The area should include one corner cut and one other area. Corner area can be made on any of the eight corners of the structure. The other area can be taken from any side of the structure including directly over an inlet or outlet.
5.4.1.1. Verification of the Steel Placement (Saw Cut Method)

The following shows a recommended procedure for making a V-Cut and a Corner Cut for a Square Concrete Junction Box.

**AREA ON SIDE OR OVER OUTLET/INLET**

1. Choose the location of the **area to be verified**. The area shall be from the top edge of the structure or over an inlet or outlet.

2. Measure and mark an area approximately **10 to 12 inches wide**.

   **EXAMPLE:**

   ![Example Image](image-url)

   - Approx. 10” to 12”
   - Approx. 10” to 12” depth
   - Rebar Size and Coverage
   - Rebar Size and Coverage
CORNER AREA TOP OR BOTTOM

1. Choose the location of the **area to be verified**. The area can be made on any of the eight corners of the structure.

2. Measure and mark an area approximately **10 to 12** inches wide.

   EXAMPLE:
5.4.1.2 Confirm Rebar Size, Spacing, and Coverage

**Verify Rebar Size, Spacing, & Coverage**
DOCUMENT ALL MEASUREMENTS BELOW

Example
5.4.2. Square Precast Lids

It’s recommended that at a minimum of **two areas be verified**. The area can be taken from any side of the structure. The following shows the recommended procedure for making a V-Cut on a square lid.

**V Cut Side Wall**  
Approximately a 10” wide wedge to a depth of 10” to 12”  
(As necessary)
5.4.2.1 Verification of the Steel Placement (Saw Cut Method)

The following shows a recommended procedure for making a V-Cut from a square lid.

- Choose the location of the **area to be verified**. The area shall be from two sides of the lid.

- Measure and mark a wedge **10 to 12** inches wide and deep.

**EXAMPLE:**

![Diagram showing the procedure for making a V-Cut from a square lid.](image)
5.4.2.2 Confirm Rebar Size, Spacing, and Coverage

Verify Rebar Size, Spacing, & Coverage
DOCUMENT ALL MEASUREMENTS BELOW

Example
5.5. Drainage Spring Box

5.5.1. Square Concrete

It’s recommended that a minimum of **two areas be verified**. The area should include **one corner** cut and **one other area**. Corner area can be made on any of the eight corners of the structure. The other area can be taken from any side of the structure including directly over an inlet or outlet.

- **Corner Area Top or Bottom**: Approximately a 10” to 12” wide vertical cut and a horizontal area to a depth of 10” to 12” (As necessary)

- **V-Cut Side Wall**: Approximately a 10” wide wedge and vertical area to a depth of 10” to 12” (As necessary)
5.5.1.1. Verification of the Steel Placement (Saw Cut Method)

The following shows a recommended procedure for making a V-Cut and a Corner Cut for a Square Concrete Spring Box.

**AREA ON SIDE OR OVER OUTLET/INLET**

- Choose the location of the **area to be verified**. The area shall be from the top edge of the structure or over an inlet or outlet.
- Measure and mark an area approximately **10 to 12** inches wide.

**EXAMPLE:**
CORNER AREA TOP OR BOTTOM

• Choose the location of the corner **area to be verified.** The area can be made on any of the eight corners of the structure.

• Measure and mark an area approximately **10 to 12** inches wide.

  EXAMPLE:
5.5.1.2 Confirm Rebar Size, Spacing, and Coverage

Verify Rebar Size, Spacing, & Coverage
DOCUMENT ALL MEASUREMENTS BELOW
5.5.2. Square Precast Lids

It’s recommended that at a minimum of **two areas be verified**. The area can be taken from any side of the structure. The following shows the recommended procedure for making a V-Cut on a square lid.

![V Cut Side Wall](image)

**V Cut Side Wall**
Approximately a 10” wide wedge to a depth of 10” to 12”
(As necessary)
3. Choose the location of the **area to be verified**. The area shall be from two sides of the lid.

4. Measure and mark a wedge **10 to 12** inches wide and deep.
5.5.2.2 Confirm Rebar Size, Spacing, and Coverage

**Verify Rebar Size, Spacing, & Coverage**
DOCUMENT ALL MEASUREMENTS BELOW

Example
6.0 REPORT

Copies of all documentation (data recorded, photographs, etc.) of the process for verification testing of Precast Drainage Structures shall be sent to HQ Materials and Test and Construction. Also, samples in question shall be retained by Regional office.