2010

# SR59 SB Roadway Joint Sealant Experiment

## Sealant Effectiveness Study

This preliminary report, prepared by the Seal No Seal Committee (SNS), outlines an approach to study transverse joint sealant effectiveness on SR59 near Joliet, Illinois. The experiment consists of constructing 8 sealed sections and two unsealed sections. Crafco hot pour and silicone sealant were installed in a single saw cut and reservoir cut design. The PCCP is 9 ¾ inches thick and dowelled on a 15 ft joint spacing. Walsh Construction constructed the roadway and Quality Saw and Seal constructed the joint experiment. The SB roadway was opened to traffic on November 3, 2009. Joint opening width measurements were obtained on May 23, 2010.


ACPA
SNS Committee
6/30/2010

## Introduction

The Seal-No-Seal Committee (SNS) is supporting a sealant effectiveness study. The test sections, located on SR59 near Joliet, Illinois, are the first in a series of test sections constructed to demonstrate the long term effectiveness of sealants on overall pavement performance.

The project consists of constructing a four lane facility through an urban area with curb and gutter. Intersections are prevalent within the project limits. The project consists of a 9 ¾ inch thick dowelled PCCP placed upon a twelve inch base. Joints are spaced at 15ft intervals. The two south bound lanes were constructed first, and are the location of the sealant experiment. In addition to the SNS sealant test sections, the Illinois DOT has also installed an early entry saw experiment in the southbound roadway. The early entry saw experiment is being conducted and reported upon by Applied Pavement Technologies.

The original project design consists of sealing the longitudinal joints (including the curb joint) with hot pour sealant. The transverse joints are narrow cut and unsealed. Walsh Construction is the contractor. The test sections were constructed during October/ November 2009. The northbound lanes, which are not part of the sealant experiment, will be constructed during 2010.

**Purpose of the Experiment**

- To determine the cost effectiveness of sealing transverse joints on overall pavement performance at this location.
- To establish actual construction costs for future life cycle costs analysis
- To document the construction process, site factors, material properties, and establish baseline performance measurements
- To provide addition information for future national or regional joint sealant evaluations.

**Field Evaluation**

Field evaluations will consist of the following activities:

**Pavement Distress**: Current plans include only periodic visual distress surveys from the sidewalk locations. The DOT will be approached in regards to conducting video logging of the new construction to permanently document the as-built construction.

**Pavement Roughness**: The goal is to obtain as-built construction profiles of each of the test sections and then periodically over time obtain subsequent profiles to define changes in roughness.

**Sealant Distress**: The traditional adhesive, cohesive, percent incompressible evaluations will **not** be conducted. Only periodic shoulder surveys will be conducted looking for spall type distress.

**Material Properties**: Three cylinders were fabricated during construction for establishing the coefficient thermal expansion. The actual movement will be compared to the predicted movement for this design.

**FWD Testing**: There are no current plans to conduct deflection testing but the DOT will be approached to conduct initial as-constructed deflection testing and then every 4-5 years.

**Slab Growth**: The intent is to establish joint opening movements and overall slab growth within each section. The joint opening width will be accomplished by measuring across the cut faces of the joints.

**Test Section Layout**

Figure 1 indicates the layout of the test sections. As indicated in Figure 1, Crafco hot pour and silicone sealant were installed in each of two joint geometries; a narrow cut configuration and a reservoir cut configuration. The reservoir cut opening width is 3/8 inches wide while the narrow cut opening width is 0.2 inches wide. Each test section consists of 33 panels in length or approximately 495 ft. For each sealant test section, the longitudinal and transverse joints were constructed to the same width and sealed with the same material.

Four sealed test sections were constructed at each of two locations (e.g. TS2-TS5 and TS6-TS9). The remainder of the project was constructed using a single saw cut design and unsealed transverse joints. The silicone sealed sections are indicated in yellow shading and the hot pour sealed sections indicated in blue shading. The two locations labeled as "project std." (e.g. TS1 and TS10) represent the control sections which use the standard project design of narrow cut unsealed transverse joints and sealed longitudinal joints. TS10 is co-located with the early entry saw experiment conducted by APTech for the Department of Transportation. The same control section (e.g. TS10) will be used for both experiments. The TS10 section is slightly shorter in length (e.g. 300 ft) than the other SNS test sections (e.g. 495 ft).

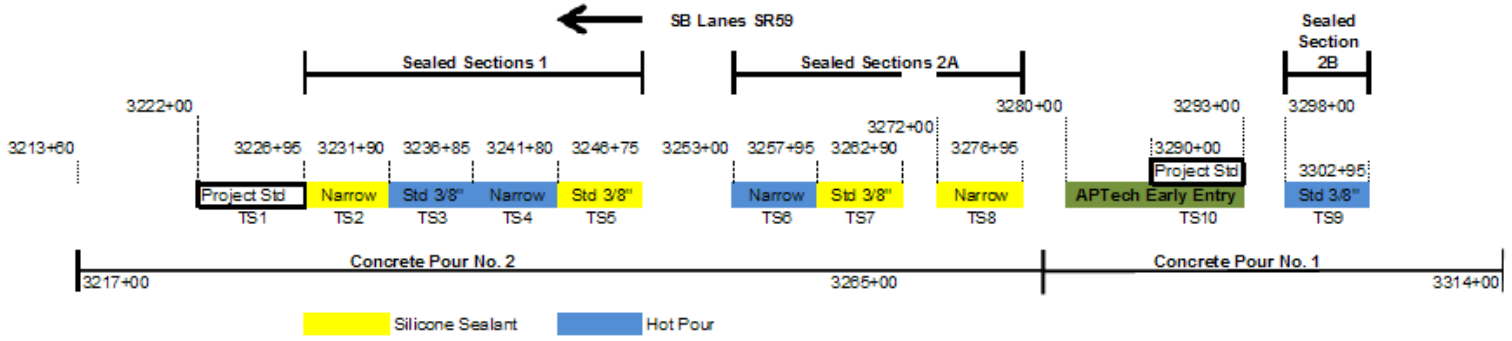



**Figure 1 SR59 Test Section Layout**

**Structural Section**

The structural section consists of 9 ¾ inches of concrete placed on 12 inches of aggregate base (See Figure 2). The 12 inches of aggregate base consists of 9 inches of PGE (crushed concrete up to 6 inch fragment size (See Figure 3) and 3 inches of AC millings (see Figure 4). The millings plate the crushed concrete and provide the final base for the concrete. The joint spacing is 15 ft non-skewed joints. Epoxy coated dowel bars 1 1/2 inch in diameter by 18 inch long are placed on 12 inch centers. Dowel bars are held in place by baskets staked to the base.

Twenty four inch long, epoxy coated tie bars are placed on 24 inch centers to tie the lanes together and the curb to the lanes. Number 6 tie bars are used to tie the curb to the lanes and number 8 tie bars used to tie the lanes together. The tie bars are placed into drilled holes that are epoxy filled.

**Figure 2 Dowel Basket Placement in High Speed Lane Alongside Recently Poured 9 ¾" Thick Travel Lane**

The concrete was slipped formed using a Gomaco paver and a random transverse tine finish installed using a Gomaco tine/cure machine. Equipment photos are available in Appendix 1.

**Figure 3 Six Inch Top Size Crushed Concrete Base**

**Figure 4 Three Inch Thick AC Millings Plating Crushed Concrete**

**Concrete Pavement Pour Sequence**

Construction of the south bound roadway occurred according to the placement schedule indicated in Table 1. The concrete is stationed every 200 ft in both directions. The stationing on the south bound roadway is located in the travel lane near the shoulder joint. The SB Roadway was opened to traffic on November 3, 2009.

**Table 1 Concrete Pavement Placement Schedule**

| Pour Number | Lane | Pour Date | Begin Station | End Station |
|---|---|---|---|---|
| 1 | 2 | 8/24/09 | 3314+00 | 3264+50 |
| 2 | 1 | 8/31/09 | 3314+00 | 3264+50 |
| 3 | 2 | 9/18/09 | 3264+50 | 3213+60 |
| 4 | 1 | 9/22/09 | 3264+50 | 3213+60 |

**Transverse Contraction Joints**

The construction of the transverse and longitudinal joints was accomplished by Quality Saw and Seal. The initial cuts were constructed within 6 to 8 hrs after concrete placement. The joint widening and sealant installation occurred between October 12$^{th}$ and November 1$^{st}$, 2009. The construction process consisted of the following steps:

- Initial saw cut using a down-cut saw with 0.145 inch blade width.

- Widen joints with down-cut saw followed by power wash:
    - For narrow joints, widen with a 0.20 inch wide blade to 1.5 inches
    - For 3/8 inch wide joint, widen with two blades with spacer to establish and maintain cut width at 3/8 inch to a depth of 1.5 inches.
- Just prior to installing backer rod, sand blast joint faces and air blast residue.
- Install backer rod, and just prior to sealing, air blast debris from joint.
- Install sealant in joints

The sequence for the joint construction and sealant installation is indicated in Table 2.

**Table 2 Sequence of Joint Construction and Sealant Installation**

| Test Section Number | Initial Saw Cut | Widening Cut | Sealant Installation |
|---|---|---|---|
| TS1 | 6-8 hrs after placing | N.A. | N.A. |
| TS2 | 6-8 hrs after placing | 10/15/09 | 11/1/09 |
| TS3 | 6-8 hrs after placing | 10/15 & 10/27/09 | 10/21 & 10/29/09 |
| TS4 | 6-8 hrs after placing | 10/21 & 10/27/09 | 10/21 & 10/28 & 10/29/09 |
| TS5 | 6-8 hrs after placing | 10/14/09 | 11/1/09 |
| TS6 | 6-8 hrs after placing | 10/14/09 | 10/19-20/09 |
| TS7 | 6-8 hrs after placing | 10/13/09 | 10/20/09 |
| TS8 | 6-8 hrs after placing | 10/13/09 | 10/20/09 |
| TS9 | 6-8 hrs after placing | 10/12/09 | 10/19/09 |
| TS10 | 6-8 hrs after placing | N.A. | N.A. |

The silicone sealant was Crafco self leveling silicone and the hot-pour sealant was Crafco Roadsaver 221. A ¼ inch recess was used for both the hot pour and silicone sealant. Photos of the installation process are included in Appendix 2.

**Joint Opening Widths**

At every fourth or fifth joint, a wider joint opening width occurred. This occurred in all sections including the early entry one-inch deep, the early entry T/3, and the conventional sawing at T/3. Due to the wider joints, Denver foam, see Figure 5, was used as the backer road material to accommodate the excessive width at these locations.

On May 23, 2010 joint opening width measurements were obtained using the micrometer indicated in Figure 6. Plots of the joint opening widths are indicated for each test section in Appendix 4. The actual field measurements are in Appendix 5.

**Figure 5 7/8 Inch Denver Foam Used as Backer Rod for Wide Joints**


**Figure 6 Micrometer Used to Measure Joint Opening Width**

**Early Entry Saw Experiment**

An early entry saw experiment is co-located with this experiment. It is not part of this sealant effectiveness study. The early entry-saw experiment is an ongoing research project for the Illinois DOT. The consultant conducting the work is Applied Pavement Technology, Inc. The early-entry experiment was planned and executed by the Illinois DOT to evaluate the expected joint durability of no seal joints when cut using early entry techniques compared to IDOT's standard practice for saw cuts. The thrust of the study is to determine if there are differences in freeze thaw durability and resistance to deicers between conventionally sawed joints and early-entry sawed joints. Information pertaining to the early entry experiment is included in Appendix 3.

**Project Contacts**

Walsh Construction

Shane Price-Project Manager: 312-907-1839

Joseph Sannasardo- Senior Project Manager: 312-656-6694

Quality Saw & Seal

Scott Eilken: 708-728-1895

Applied Pavement Solutions

James Krstulovich: 217-239-5371

Illinois Chapter, Inc.-ACPA

Randy Riley: 217-793-4933

# Appendix 1 Construction Photos

**Equipment**

**Paver**


# Appendix 1 Construction Photos

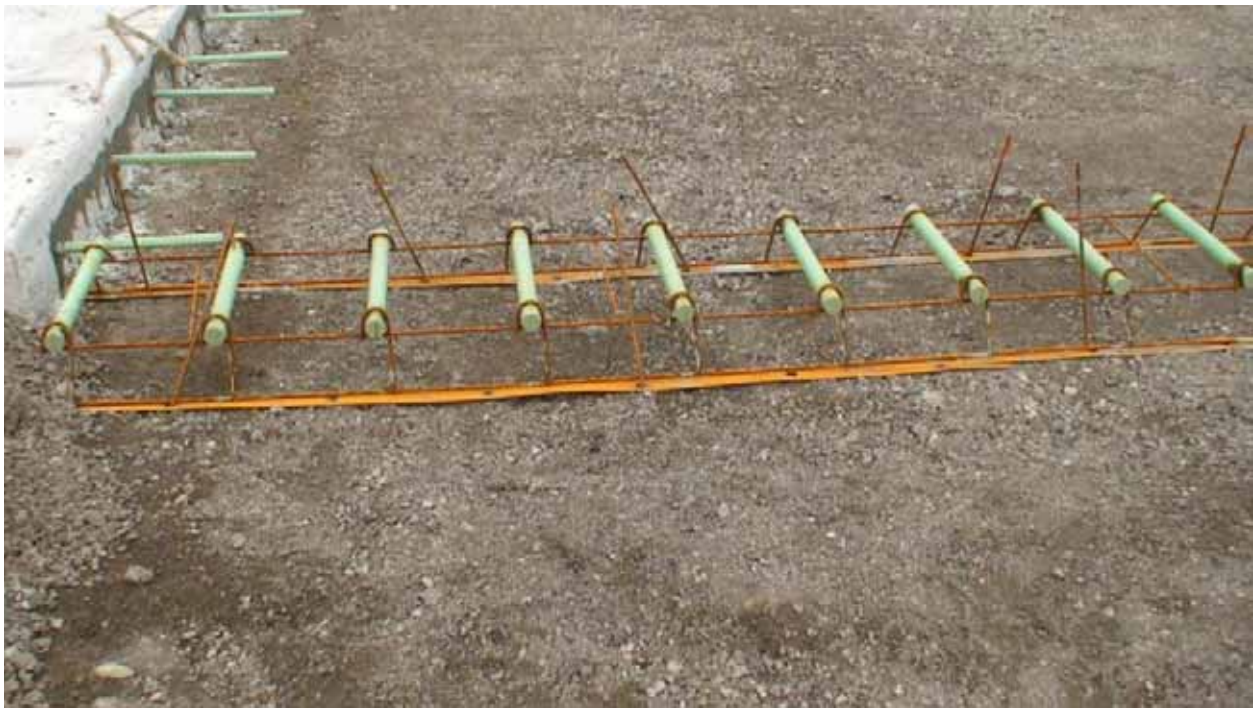
**Tine/Texture Equipment**


# Appendix 1 Construction Photos

## Dowel Baskets

# Appendix 1 Construction Photos

## Dowel Baskets



# Appendix 1 Construction Photos

## Tie Bars

# Appendix 1 Construction Photos

## Tie Bars

# Appendix 1 Construction Photos

## Finished Texture

# Appendix 1 Construction Photos

## Sawed Transverse Joints

# Appendix 1 Construction Photos

## AC Millings

# Appendix 1 Construction Photos

# Appendix 1 Construction Photos

## Crushed Concrete Base

# Appendix 1 Construction Photos

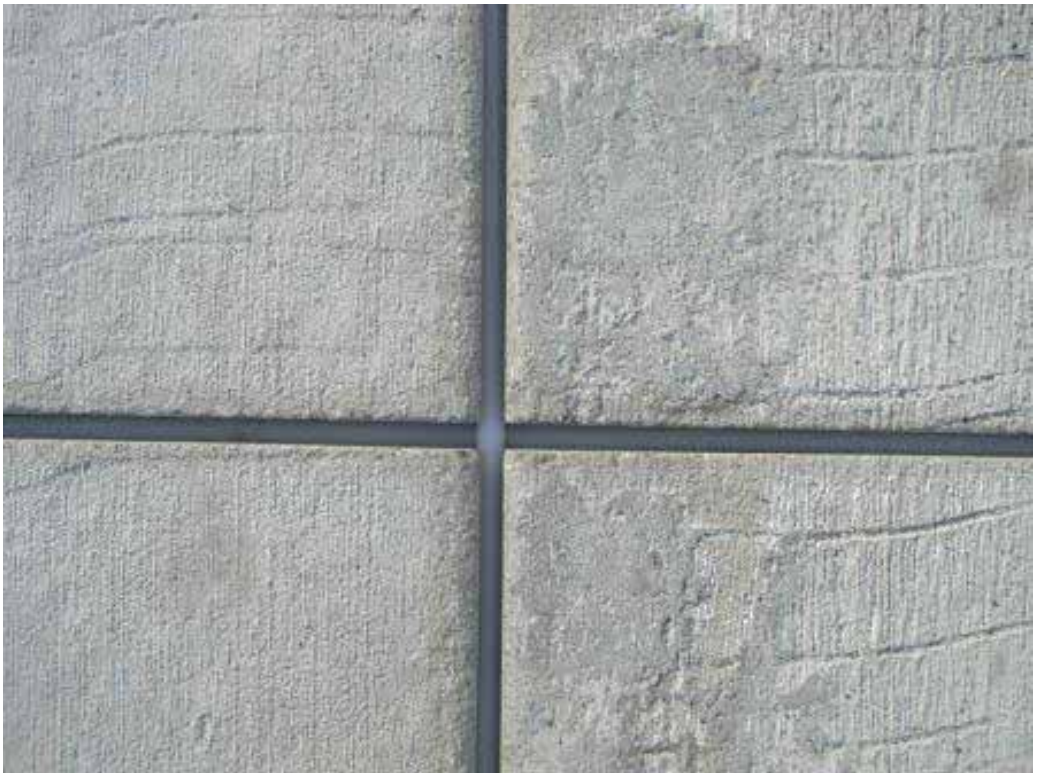
## Stationing in Concrete

# Appendix 2 Photos of Transverse Joint Construction


**Initial Saw Cut**


**Widening Cut and Power Washing**

# Appendix 2 Photos of Transverse Joint Construction



**Backer Rod Installed in Mainline**

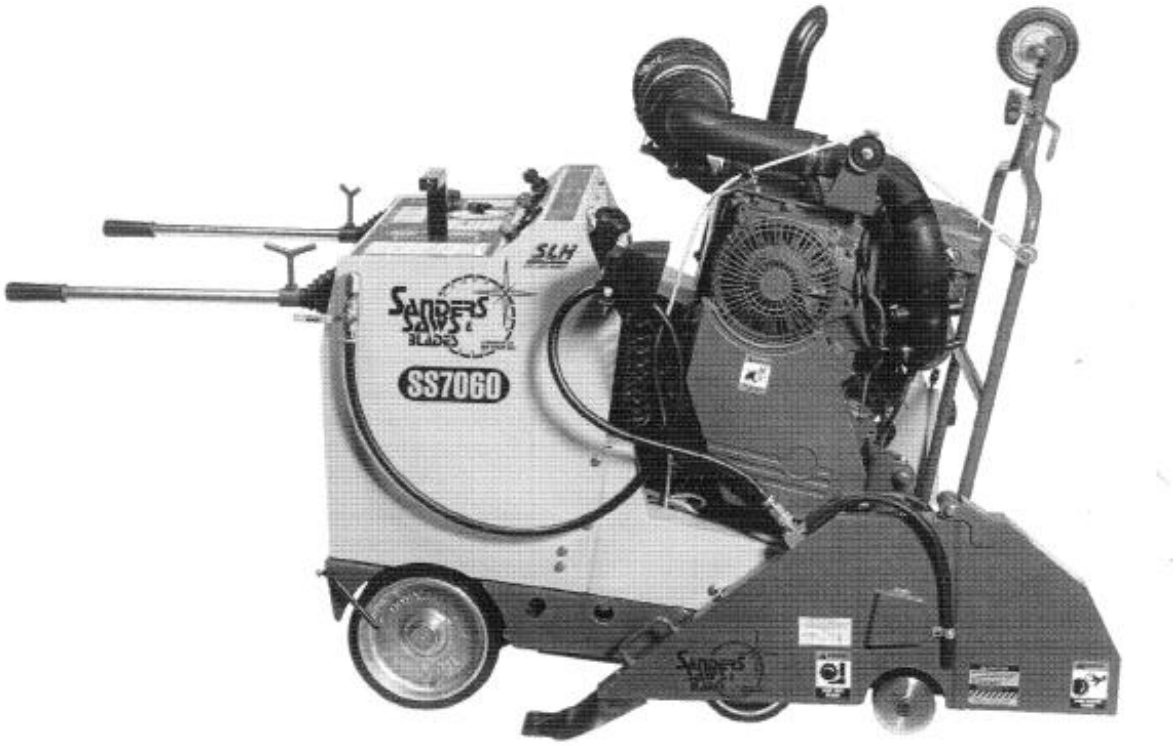
**Backer Rod Installed in Curb Joint**

# Appendix 2 Photos of Transverse Joint Construction

**Blowing Out Debris In Advance of Sealant Installation**

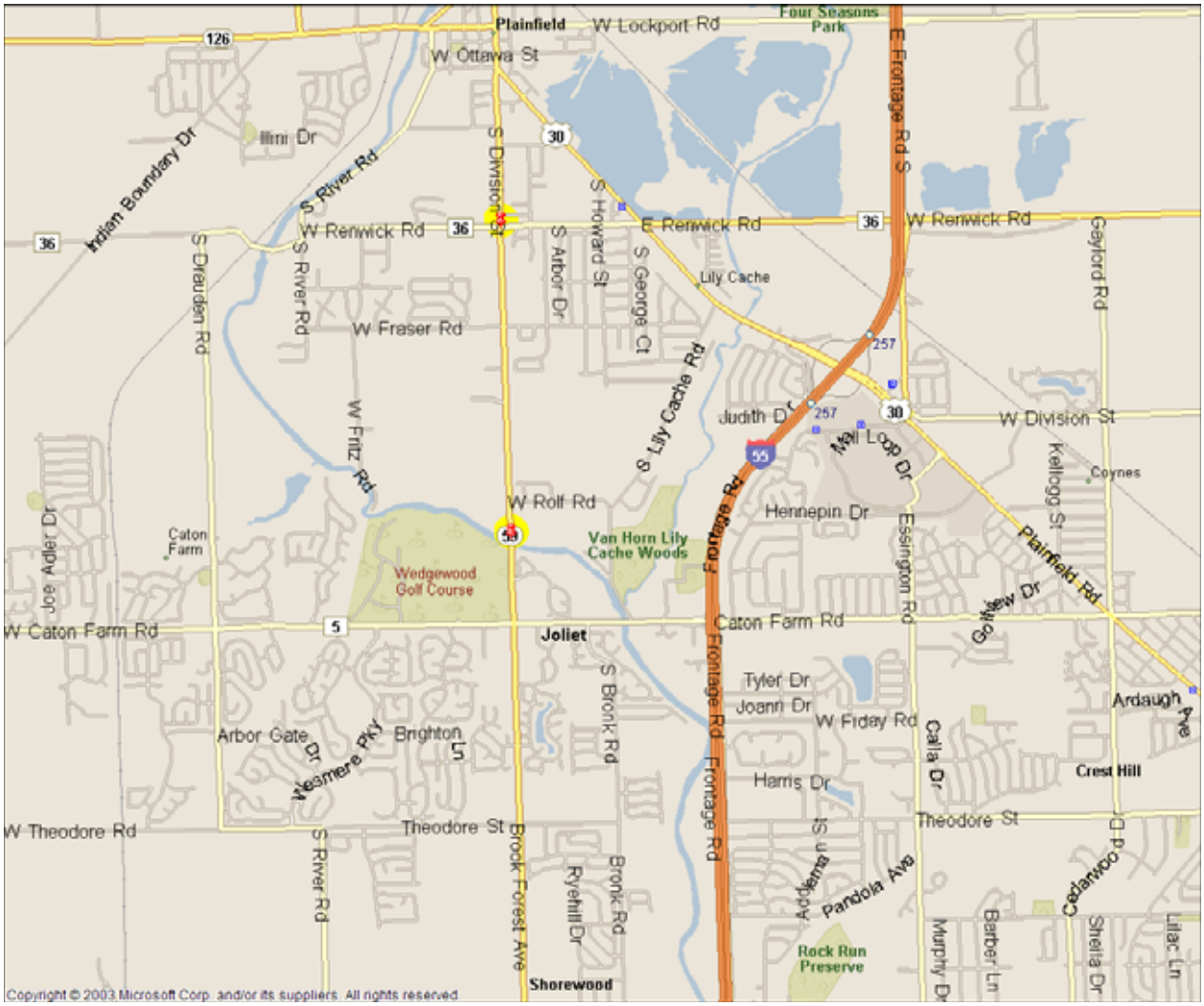
**Hot Pour Sealant Installed**

# Appendix 2 Photos of Transverse Joint Construction



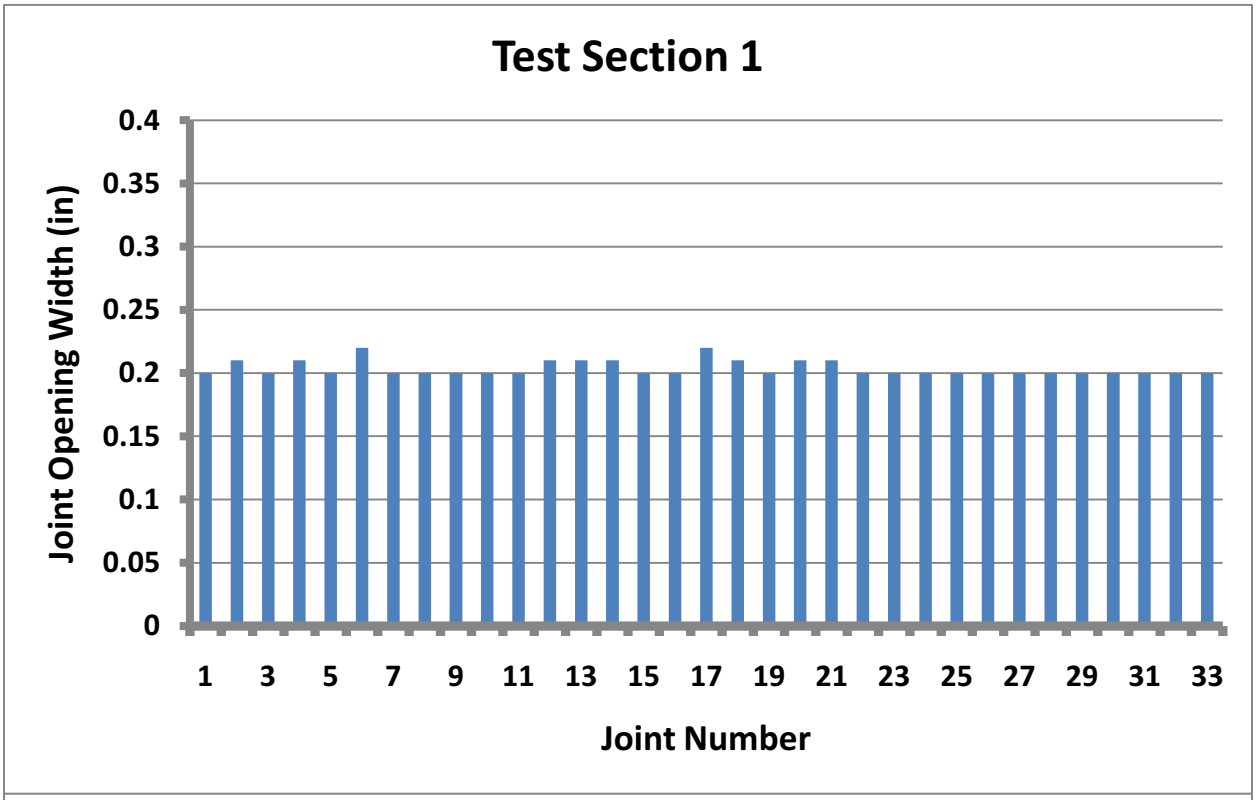

**Wet Saw Used For Constructing Longitudinal and Transverse Joints**

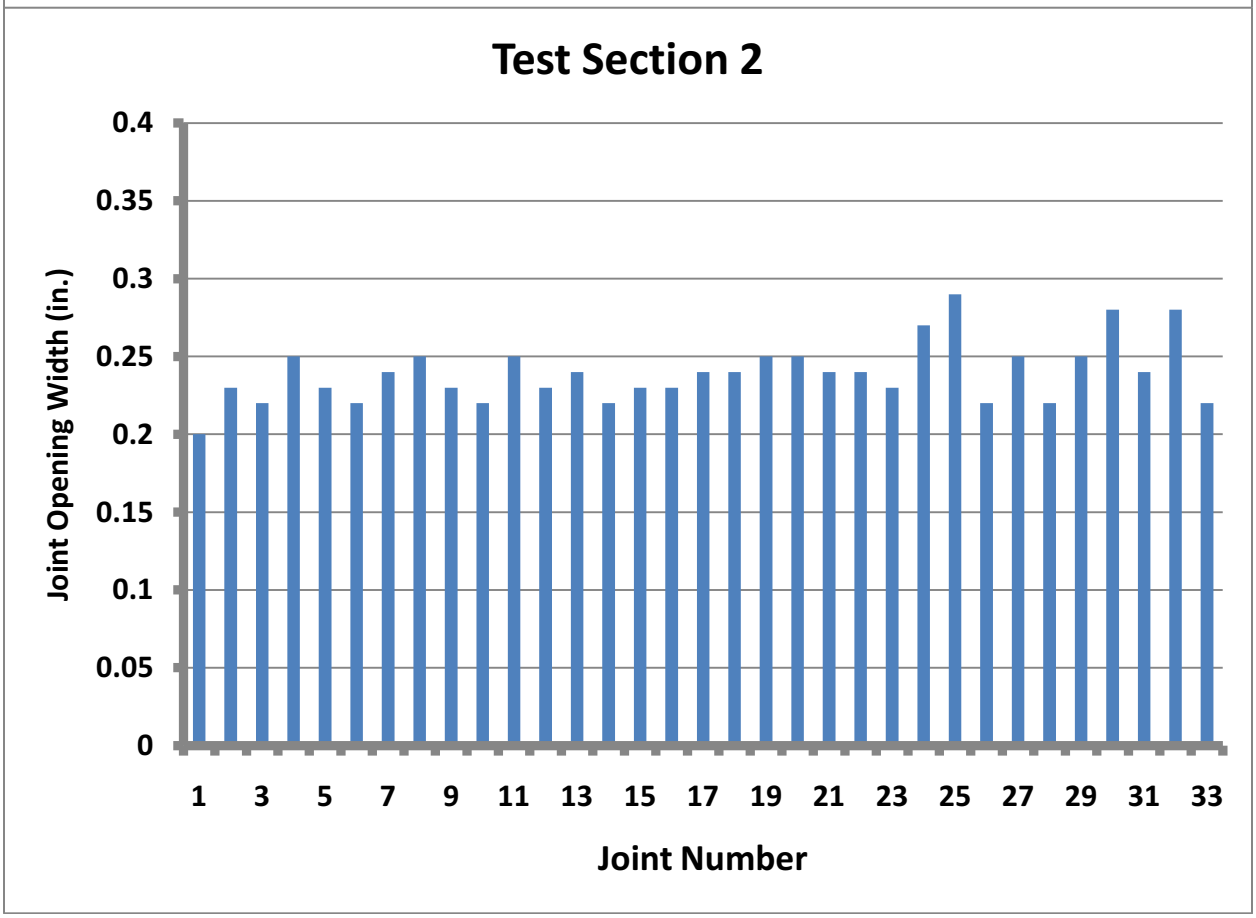
# Appendix 3 Map of Approximate Test Section Locations



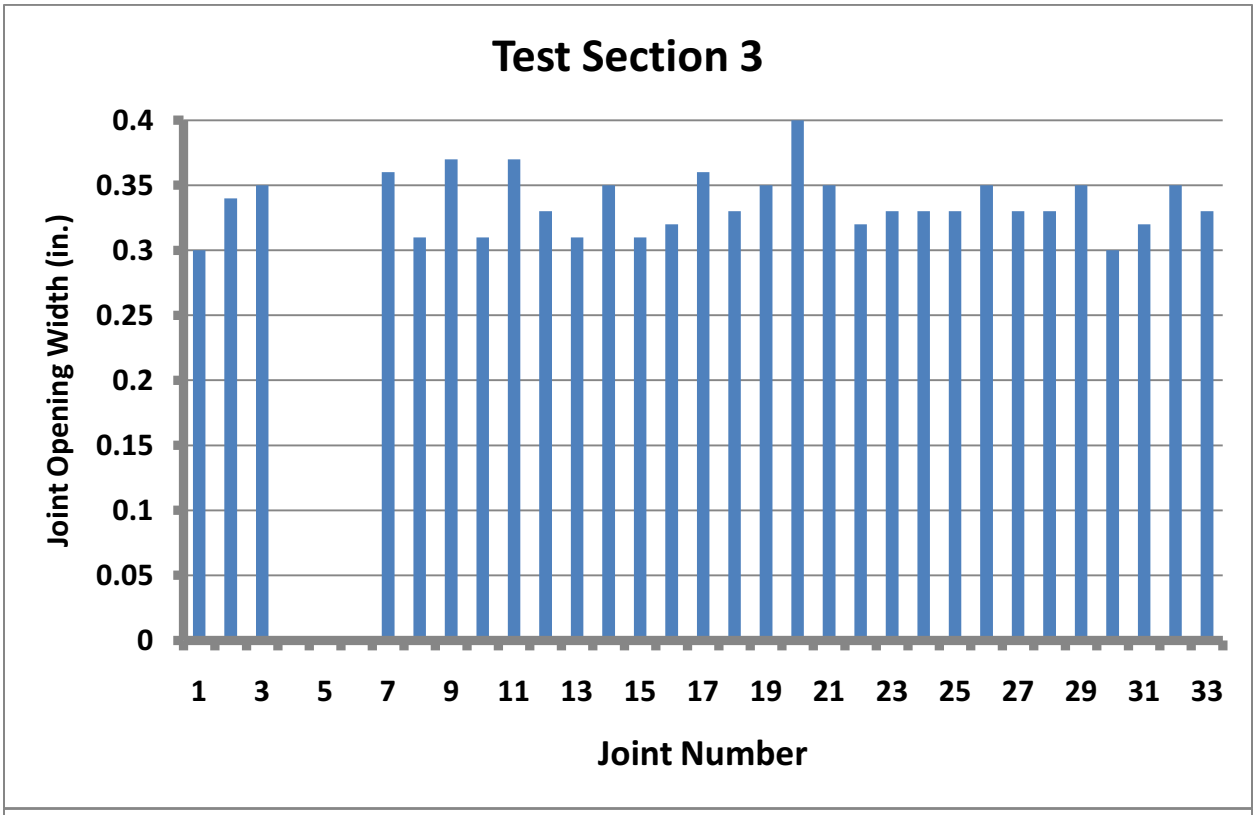

**Approximate Test Location Limits**

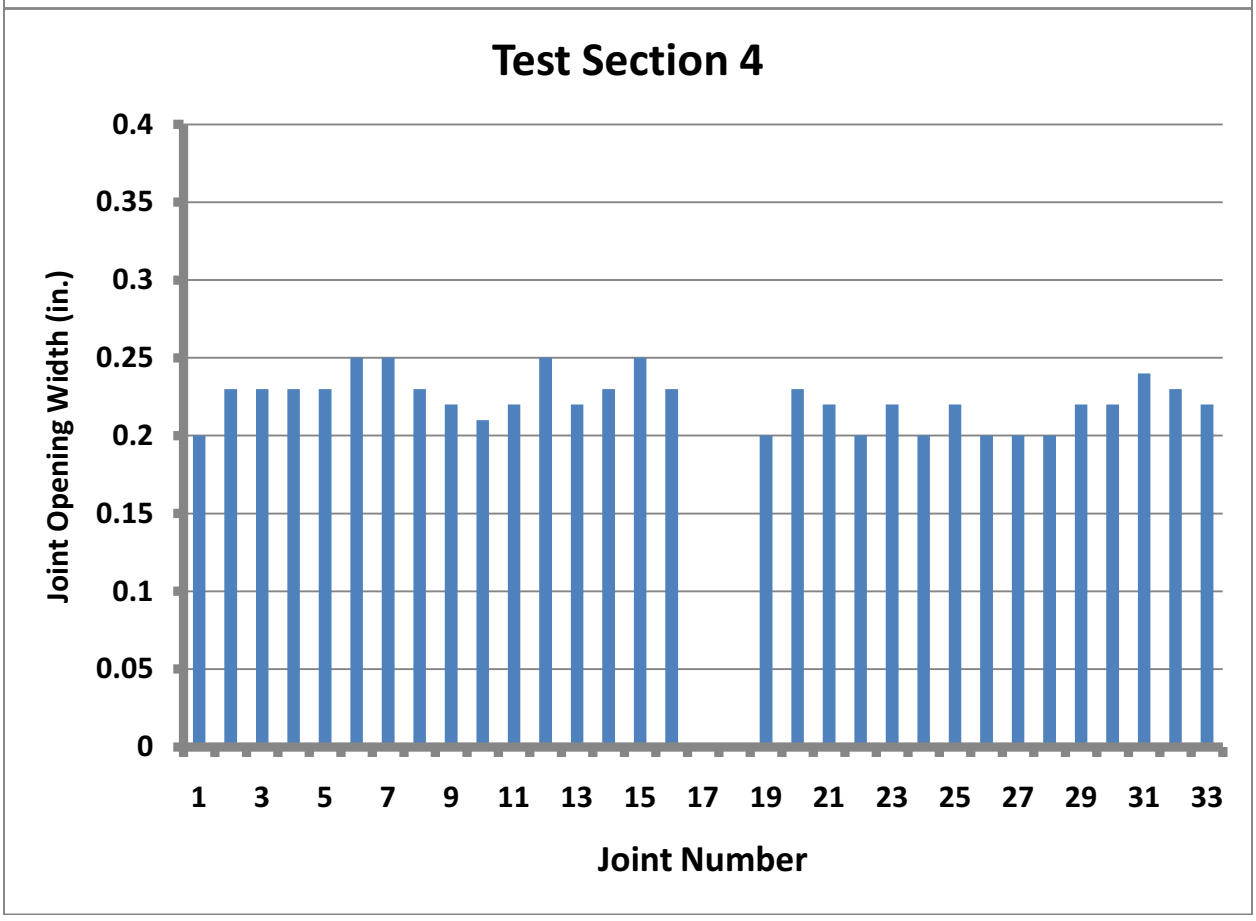
# Appendix 4 Plots of Joint Opening Width



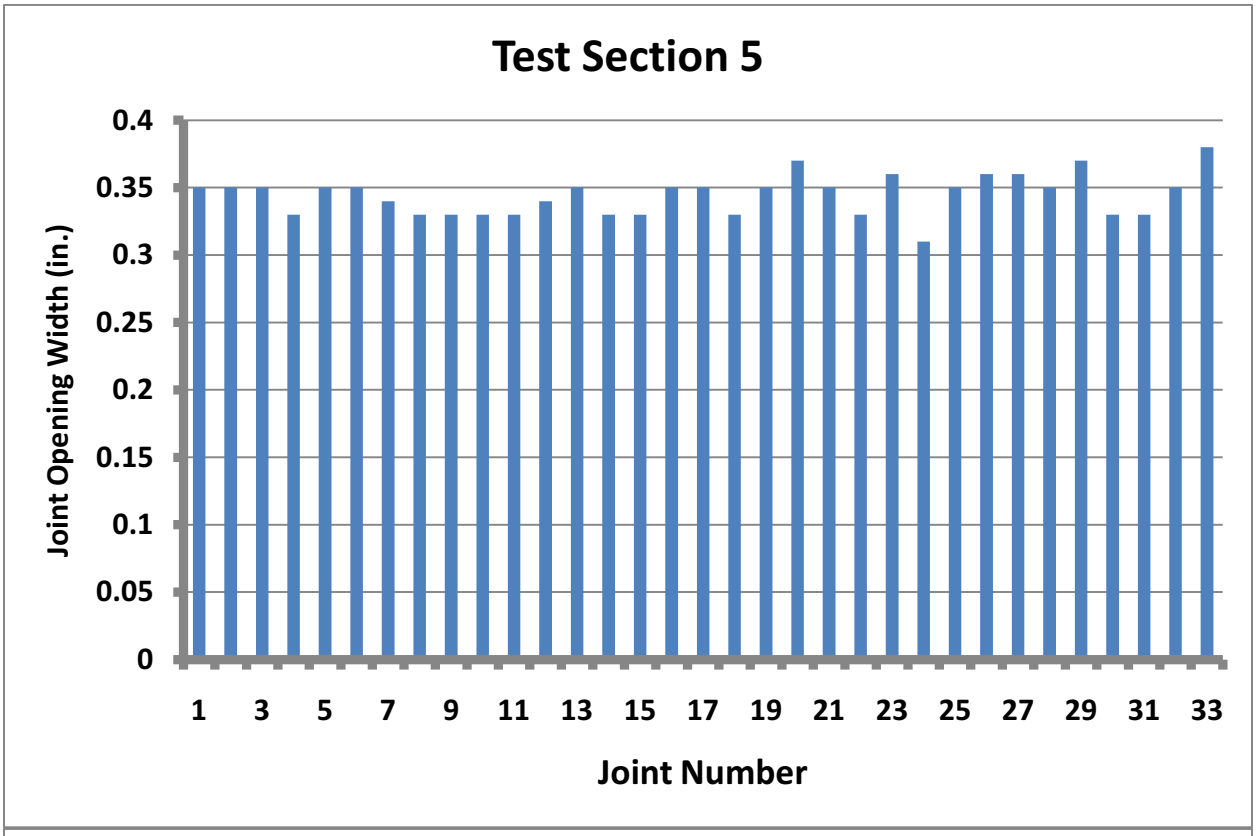



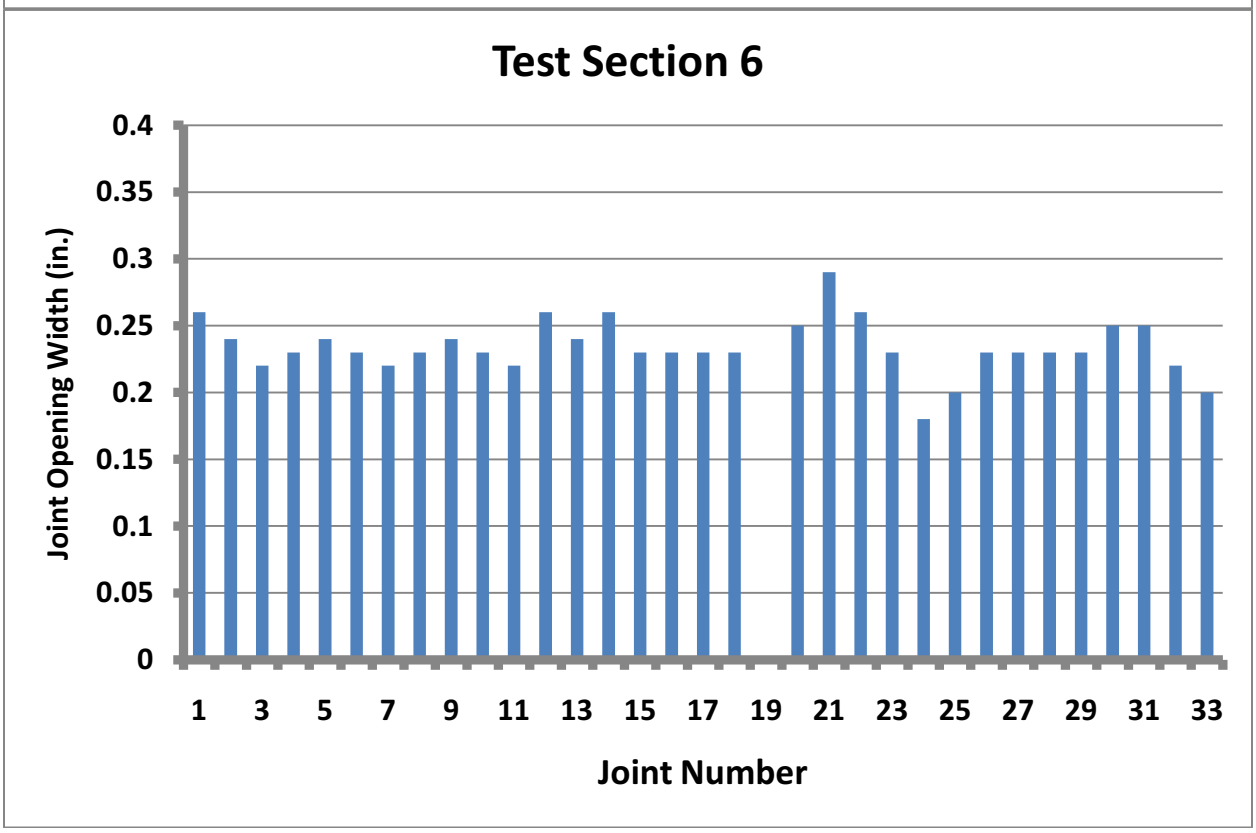
# Appendix 4 Plots of Joint Opening Width



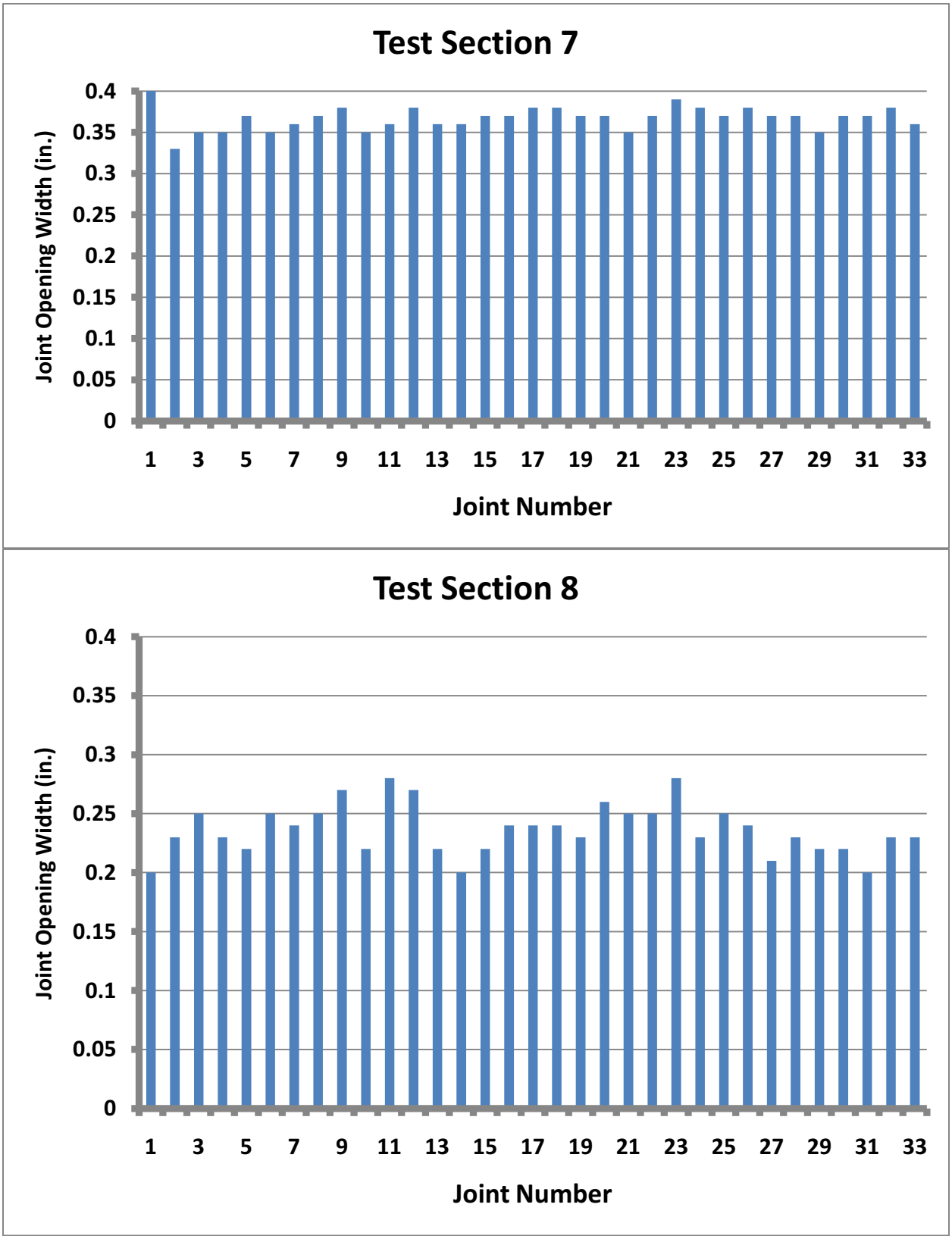



# Appendix 4 Plots of Joint Opening Width

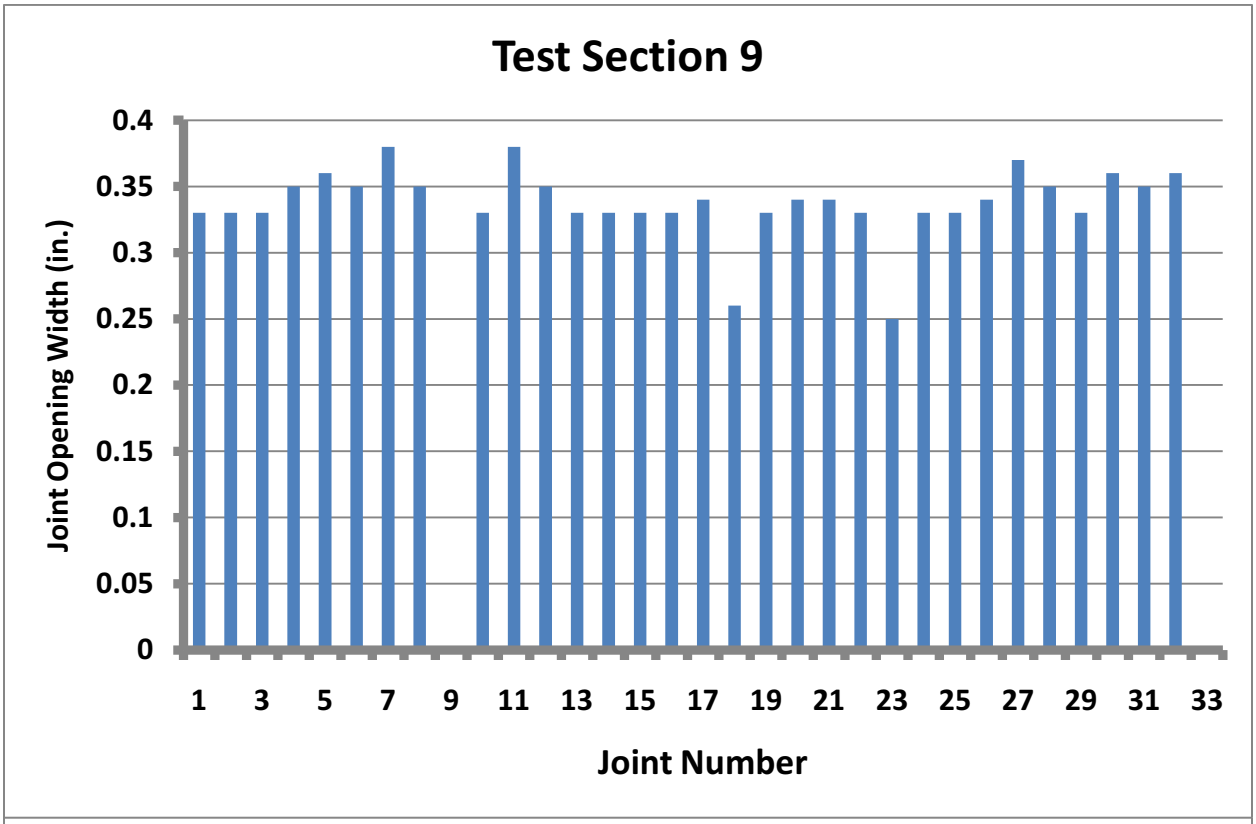


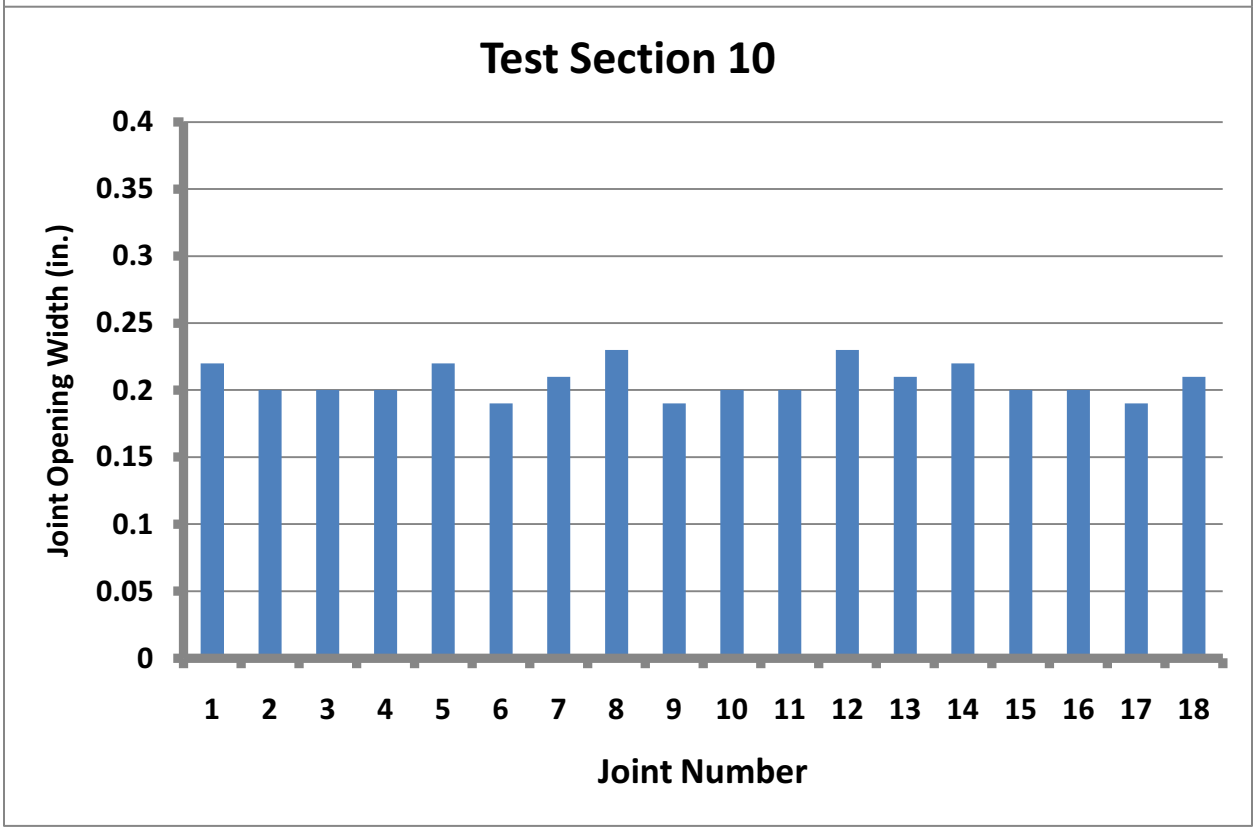



# Appendix 4 Plots of Joint Opening Width



# Appendix 4 Plots of Joint Opening Width



# Appendix 5 Joint Opening Width Measurements

| Test Section Number 1<br>3222+00 to 3226+95<br>Unsealed Project Std. | | | Test Section Number 2<br>3226+95 to 3231+90<br>Narrow Silicone | | | Test Section Number 3<br>3231+90 to 3236+85<br>3/8" Hot Pour | | |
|---|---|---|---|---|---|---|---|---|
| Joint Number | Opening Width | Comment | Joint Number | Opening Width | Comment | Joint Number | Opening Width | Comment |
| 1 | 0.2 | 3222+00 | 1 | 0.2 | | 1 | 0.3 | 3232+00 |
| 2 | 0.21 | | 2 | 0.23 | | 2 | 0.34 | |
| 3 | 0.2 | | 3 | 0.22 | | 3 | 0.35 | |
| 4 | 0.21 | | 4 | 0.25 | | 4 | Con Jt | |
| 5 | 0.2 | | 5 | 0.23 | | 5 | Con Jt | |
| 6 | 0.22 | | 6 | 0.22 | | 6 | Con Jt | |
| 7 | 0.2 | | 7 | 0.24 | | 7 | 0.36 | |
| 8 | 0.2 | | 8 | 0.25 | 3228+00 | 8 | 0.31 | |
| 9 | 0.2 | | 9 | 0.23 | | 9 | 0.37 | |
| 10 | 0.2 | | 10 | 0.22 | | 10 | 0.31 | |
| 11 | 0.2 | | 11 | 0.25 | | 11 | 0.37 | |
| 12 | 0.21 | | 12 | 0.23 | | 12 | 0.33 | |
| 13 | 0.21 | 3224+00 | 13 | 0.24 | | 13 | 0.31 | |
| 14 | 0.21 | | 14 | 0.22 | | 14 | 0.35 | |
| 15 | 0.2 | | 15 | 0.23 | | 15 | 0.31 | 3234+00 |
| 16 | 0.2 | | 16 | 0.23 | | 16 | 0.32 | |
| 17 | 0.22 | | 17 | 0.24 | | 17 | 0.36 | |
| 18 | 0.21 | | 18 | 0.24 | | 18 | 0.33 | |
| 19 | 0.2 | | 19 | 0.25 | | 19 | 0.35 | |
| 20 | 0.21 | | 20 | 0.25 | | 20 | 0.4 | |
| 21 | 0.21 | | 21 | 0.24 | | 21 | 0.35 | |
| 22 | 0.2 | | 22 | 0.24 | 3230+00 | 22 | 0.32 | |
| 23 | 0.2 | | 23 | 0.23 | | 23 | 0.33 | |
| 24 | 0.2 | | 24 | 0.27 | | 24 | 0.33 | |
| 25 | 0.2 | | 25 | 0.29 | | 25 | 0.33 | |
| 26 | 0.2 | | 26 | 0.22 | | 26 | 0.35 | |
| 27 | 0.2 | | 27 | 0.25 | | 27 | 0.33 | |
| 28 | 0.2 | 3226+00 | 28 | 0.22 | | 28 | 0.33 | 3236+00 |
| 29 | 0.2 | | 29 | 0.25 | | 29 | 0.35 | |
| 30 | 0.2 | | 30 | 0.28 | | 30 | 0.3 | |
| 31 | 0.2 | | 31 | 0.24 | | 31 | 0.32 | |
| 32 | 0.2 | | 32 | 0.28 | | 32 | 0.35 | |
| 33 | 0.2 | | 33 | 0.22 | | 33 | 0.33 | |

**NOTE: Joint Numbering is Sequenced Starting at Jt 1 on the South End and Increasing in Joint Number Until the North End is Reached**

# Appendix 5 Joint Opening Width Measurements

| Test Section Number 4<br>3236+85 to 3241+80<br>Narrow Hot Pour | | | Test Section Number 5<br>3241+80 to 3248+75<br>3/8" Silicone | | | Test Section Number 6<br>3253+00 to 3257+95<br>Narrow Hot Pour | | |
|---|---|---|---|---|---|---|---|---|
| Joint Number | Opening Width | Comment | Joint Number | Opening Width | Comment | Joint Number | Opening Width | Comment |
| 1 | 0.2 | | 1 | 0.35 | 3242+00 | 1 | 0.26 | |
| 2 | 0.23 | | 2 | 0.35 | | 2 | 0.24 | |
| 3 | 0.23 | | 3 | 0.35 | | 3 | 0.22 | |
| 4 | 0.23 | | 4 | 0.33 | | 4 | 0.23 | |
| 5 | 0.23 | | 5 | 0.35 | | 5 | 0.24 | |
| 6 | 0.25 | | 6 | 0.35 | | 6 | 0.23 | |
| 7 | 0.25 | | 7 | 0.34 | | 7 | 0.22 | 3254+00 |
| 8 | 0.23 | | 8 | 0.33 | | 8 | 0.23 | |
| 9 | 0.22 | 3238+00 | 9 | 0.33 | | 9 | 0.24 | |
| 10 | 0.21 | | 10 | 0.33 | | 10 | 0.23 | |
| 11 | 0.22 | | 11 | 0.33 | | 11 | 0.22 | |
| 12 | 0.25 | | 12 | 0.34 | | 12 | 0.26 | |
| 13 | 0.22 | | 13 | 0.35 | | 13 | 0.24 | |
| 14 | 0.23 | | 14 | 0.33 | | 14 | 0.26 | |
| 15 | 0.25 | | 15 | 0.33 | 3244+00 | 15 | 0.23 | |
| 16 | 0.23 | | 16 | 0.35 | | 16 | 0.23 | |
| 17 | Con Jt | | 17 | 0.35 | | 17 | 0.23 | |
| 18 | Con Jt | | 18 | 0.33 | | 18 | 0.23 | |
| 19 | 0.2 | | 19 | 0.35 | | 19 | const jt | |
| 20 | 0.23 | | 20 | 0.37 | | 20 | 0.25 | |
| 21 | 0.22 | | 21 | 0.35 | | 21 | 0.29 | 3256+00 con Jt |
| 22 | 0.2 | 3240+00 | 22 | 0.33 | | 22 | 0.26 | Wedgewood CT |
| 23 | 0.22 | | 23 | 0.36 | | 23 | 0.23 | |
| 24 | 0.2 | | 24 | 0.31 | | 24 | 0.18 | |
| 25 | 0.22 | | 25 | 0.35 | | 25 | 0.2 | |
| 26 | 0.2 | | 26 | 0.36 | | 26 | 0.23 | |
| 27 | 0.2 | | 27 | 0.36 | | 27 | 0.23 | |
| 28 | 0.2 | | 28 | 0.35 | | 28 | 0.23 | |
| 29 | 0.22 | | 29 | 0.37 | | 29 | 0.23 | |
| 30 | 0.22 | | 30 | 0.33 | | 30 | 0.25 | |
| 31 | 0.24 | | 31 | 0.33 | | 31 | 0.25 | |
| 32 | 0.23 | | 32 | 0.35 | | 32 | 0.22 | |
| 33 | 0.22 | | 33 | 0.38 | | 33 | 0.2 | |

**NOTE: Joint Numbering is Sequenced Starting at Jt 1 on the South End and Increasing in Joint Number Until the North End is Reached**

# Appendix 5 Joint Opening Width Measurements

| Test Section Number 7<br>3257+95 to 3262+90<br>3/8" Silicone | | | Test Section Number 8<br>3272+00 to 3276+95<br>Narrow Silicone | | | Test Section Number 9<br>3298+00 to 3302+95<br>3/8" Hot Pour | | |
|---|---|---|---|---|---|---|---|---|
| Joint Number | Opening Width | Comment | Joint Number | Opening Width | Comment | Joint Number | Opening Width | Comment |
| 1 | 0.41 | | 1 | 0.2 | | 1 | 0.33 | 3298+00 |
| 2 | 0.33 | | 2 | 0.23 | | 2 | 0.33 | |
| 3 | 0.35 | | 3 | 0.25 | | 3 | 0.33 | |
| 4 | 0.35 | | 4 | 0.23 | | 4 | 0.35 | |
| 5 | 0.37 | | 5 | 0.22 | | 5 | 0.36 | |
| 6 | 0.35 | | 6 | 0.25 | | 6 | 0.35 | |
| 7 | 0.36 | | 7 | 0.24 | | 7 | 0.38 | |
| 8 | 0.37 | | 8 | 0.25 | | 8 | 0.35 | |
| 9 | 0.38 | | 9 | 0.27 | | 9 | con jt | |
| 10 | 0.35 | | 10 | 0.22 | | 10 | 0.33 | |
| 11 | 0.36 | | 11 | 0.28 | | 11 | 0.38 | |
| 12 | 0.38 | | 12 | 0.27 | | 12 | 0.35 | |
| 13 | 0.36 | | 13 | 0.22 | | 13 | 0.33 | 3300+00 |
| 14 | 0.36 | | 14 | 0.2 | 3274+00 | 14 | 0.33 | |
| 15 | 0.37 | 3260+00 | 15 | 0.22 | | 15 | 0.33 | |
| 16 | 0.37 | | 16 | 0.24 | | 16 | 0.33 | |
| 17 | 0.38 | | 17 | 0.24 | | 17 | 0.34 | |
| 18 | 0.38 | | 18 | 0.24 | | 18 | 0.26 | |
| 19 | 0.37 | | 19 | 0.23 | | 19 | 0.33 | |
| 20 | 0.37 | | 20 | 0.26 | | 20 | 0.34 | |
| 21 | 0.35 | | 21 | 0.25 | | 21 | 0.34 | |
| 22 | 0.37 | | 22 | 0.25 | | 22 | 0.33 | |
| 23 | 0.39 | | 23 | 0.28 | | 23 | 0.25 | |
| 24 | 0.38 | | 24 | 0.23 | | 24 | 0.33 | |
| 25 | 0.37 | | 25 | 0.25 | | 25 | 0.33 | |
| 26 | 0.38 | | 26 | 0.24 | | 26 | 0.34 | 3302+00 |
| 27 | 0.37 | | 27 | 0.21 | | 27 | 0.37 | |
| 28 | 0.37 | | 28 | 0.23 | 3276+00 | 28 | 0.35 | |
| 29 | 0.35 | 3262+00 | 29 | 0.22 | | 29 | 0.33 | |
| 30 | 0.37 | | 30 | 0.22 | | 30 | 0.36 | |
| 31 | 0.37 | | 31 | 0.2 | | 31 | 0.35 | |
| 32 | 0.38 | | 32 | 0.23 | | 32 | 0.36 | |
| 33 | 0.36 | | 33 | 0.23 | | 33 | | |

**NOTE: Joint Numbering is Sequenced Starting at Jt 1 on the South End and Increasing in Joint Number Until the North End is Reached**

# Appendix 5 Joint Opening Width Measurements

| Test Section Number 10<br>3290+00 to 3293+00<br>Unsealed Project Std. | | |
|---|---|---|
| Joint Number | Opening Width | Comment |
| 1 | 0.22 | |
| 2 | 0.2 | 3290+00 |
| 3 | 0.2 | |
| 4 | 0.2 | |
| 5 | 0.22 | |
| 6 | 0.19 | |
| 7 | 0.21 | |
| 8 | 0.23 | |
| 9 | 0.19 | |
| 10 | 0.2 | |
| 11 | 0.2 | |
| 12 | 0.23 | |
| 13 | 0.21 | |
| 14 | 0.22 | |
| 15 | 0.2 | |
| 16 | 0.2 | |
| 17 | 0.19 | |
| 18 | 0.21 | |
| 19 | | 3294+00 |
| 20 | | Renwick Rd |
| 21 | | |
| 22 | | |
| 23 | | |
| 24 | | |
| 25 | | |
| 26 | | |
| 27 | | |
| 28 | | |
| 29 | | |
| 30 | | |
| 31 | | |
| 32 | | |
| 33 | | |
| | | |
| | | |

**NOTE: Joint Numbering is Sequenced Starting at Jt 1 on the South End and Increasing in Joint Number Until the North End is Reached**

# Appendix 6 Early Entry Saw Equipment

The concrete paving for the IDOT early entry test sections was placed on August 24th, 2009 by Walsh Construction and the sawing was conducted by Quality Saw and Seal. Table 1 indicates the equipment used in the sawing operations for these sections and Table 2 indicates the location, approximate placement times, and sawing windows. It was observed that by September 3, 2009 approximately 99% of the joints exhibited cracks beneath the initial saw cut. It was also observed that every 4th to 5th joint opened wider than the rest of the joints. This occurred whether it was early entry or conventional, or whether the initial saw cut was 1" deep or three inches deep (e.g. T/3).

**TABLE 1 SAW EQUIPMENT SPECIFICATIONS**

| | Equipment Model | Blade Size | Saw Horsepower |
|---|---|---|---|
| **Early Entry Saw** | Soff-Cut 5000 | 14" X 0.125" | 23 |
| **Conventional Wet Saw** | | 18" X 0.140" | 57 |

**TABLE 2 LOCATION, PLACMENT TIMES, AND SAWING WINDOW**

| Location | Saw Type | Approximate Concrete Placement Time | Approximate Sawing Window | Number of Joints in Section |
|---|---|---|---|---|
| Sta. 3289+93 to Sta. 3286+06 | Early Entry 3" Depth (T/3) | ~ 2 PM | 5PM ~7:15PM | 20 |
| Sta. 3285+00 to Sta. 3283+10 | Early Entry 1" Depth | ~ 3 PM | 7:15PM ~ 8:30PM | 21 |
| Sta. 3292+78 to Sta. 3289+93 | Conventional Wet Saw 3" | ~ 1 PM | 9:45PM ~ 12:30AM | |

**Early Entry Saw**

# Appendix 6 Early Entry Saw Equipment

**Early Entry Saw with Vacuum**


**Early Entry Saw With Vacuum**

# Appendix 6 Early Entry Saw Equipment

**Early Entry Saw With Vacuum**