GDOT
Georgia Department of Transportation

Concrete Branch

Office of Materials & Testing

Office of Materials and Testing
Concrete Branch / Ready Mix

Concrete Field Technical Services Unit

- This unit works closely with technicians, inspectors, engineers, and contractor personnel in the production and placement of ready mix concrete.
- This unit is also responsible for evaluating all ready mix plants, and their personnel, that are listed on GDOT QPL # 10. There are 267 certified ready mix plants and 10 volumetric trucks.
- We are responsible for investigating all concrete failures, completing bridge deck steel cover readings, bridge deck condition surveys, and testing the ride quality of new bridge decks.
- We also test new aggregate source for approval or verify third party labs results

Office of Materials and Testing
Concrete Branch / Prestress & Precast

Prestress / Precast Product Inspection

- The Office of Materials and Testing Concrete Branch is required to monitor the production of many Prestress/Precast components used in our Bridge Construction.
- Our Technicians visit 13 Plants within Georgia and 8 plants in four surrounding States to inspect the production of products to ensure all Department specifications are met.
- The Unit oversees the manufacturing of bridge beams, precast barrier wall, noise barrier, piling, deck slabs and many other structural items that are cast at the plants.
- Our Technicians are required to inspect these members and place their stamp on the major items.




How much concrete was poured this year in Georgia?

Prestress – Precast Concrete placed	= 67,904 cubic yards
Ready Mixed Concrete placed	= 310,243 cubic yards
I-285/SR400 Project	= 19,090 cubic yards
TOTAL	= 397,237cubic yards

What does that mean to the aggregate industry?

On average a cubic yard of concrete has 1200 lbs. of sand and 1800 lbs. of stone.

Sand = 238,342 tons

Stone = 357,513 tons

Concrete Field Technical Services Unit

- The Concrete Field Technical Services Unit works closely with technicians, inspectors, engineers, and contractors personnel in the production and placement of ready mix concrete.

- The concrete field technical services unit is responsible for evaluating concrete plants and their personnel for compliance with the Departments requirements that are listed in SOP – 10. After a plant meets these requirements they are placed on the approved list (QPL – 10) for use on Department projects.
- We also certify Volumetric Trucks for use on Department projects. The approved volumetric trucks can be found on QPL 100.
- Each district technician is responsible for conducting certification classes, and verifying that all concrete tests are conducted properly.
- Field Concrete Technician classes are given as a group and are valid for 3 years.
- FCON certification is a 2 part test, written test and field evaluation.

Field Concrete Certification

Air Test

Field Concrete Certification

Slump Test

Field Concrete Certification

Making Cylinders

Concrete Pavement

- The field tech services unit serves as the subject experts for Portland Cement Concrete Pavements (PCCP).
- We review the joint layout details and the construction methods proposed to be used by the contractor. We use GDOT Standard 5046H to check their submittal.
- All joint details for Section 430 & 439 must be approved prior to placement of concrete paving.
- A pre-pave conference must be scheduled with the Concrete TSE, project personnel, contractor, and ready mix producer (439) not more than 1 week prior to start.

PCC SUBMITALS

- Joint detail, for all concrete paving on project, with transverse & longitudinal saw cuts marked.
- Station Numbers marked on layout detail
- Equipment to be used on project
- List of certified personnel for batch plant (430)
- Mix design (materials are brought to OMAT for verification by the contractor)
- 3’ section of dowel bar basket, 3 – individual dowel bars, and 3 – tie bars

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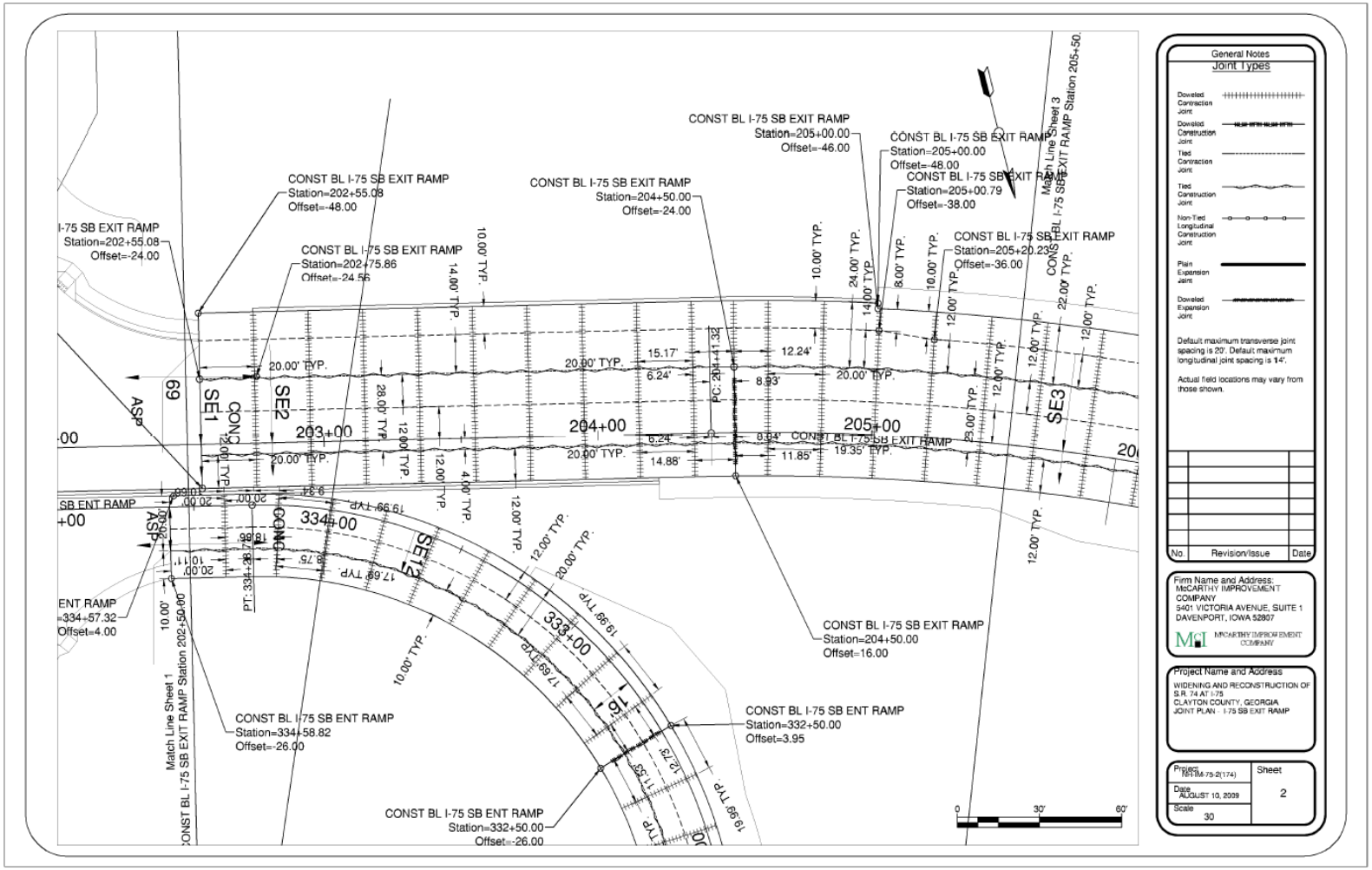

Concrete Pavement

Jointed Plain Concrete Pavement

CRC Pavement

Concrete Pavements

Concrete Pavements

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Concrete Pavements

Concrete Pavements

Concrete Pavements

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Whitetopping

Whitetopping

Whitetopping

Pre-Cast Concrete Pavement

Pre-Cast Concrete Pavement

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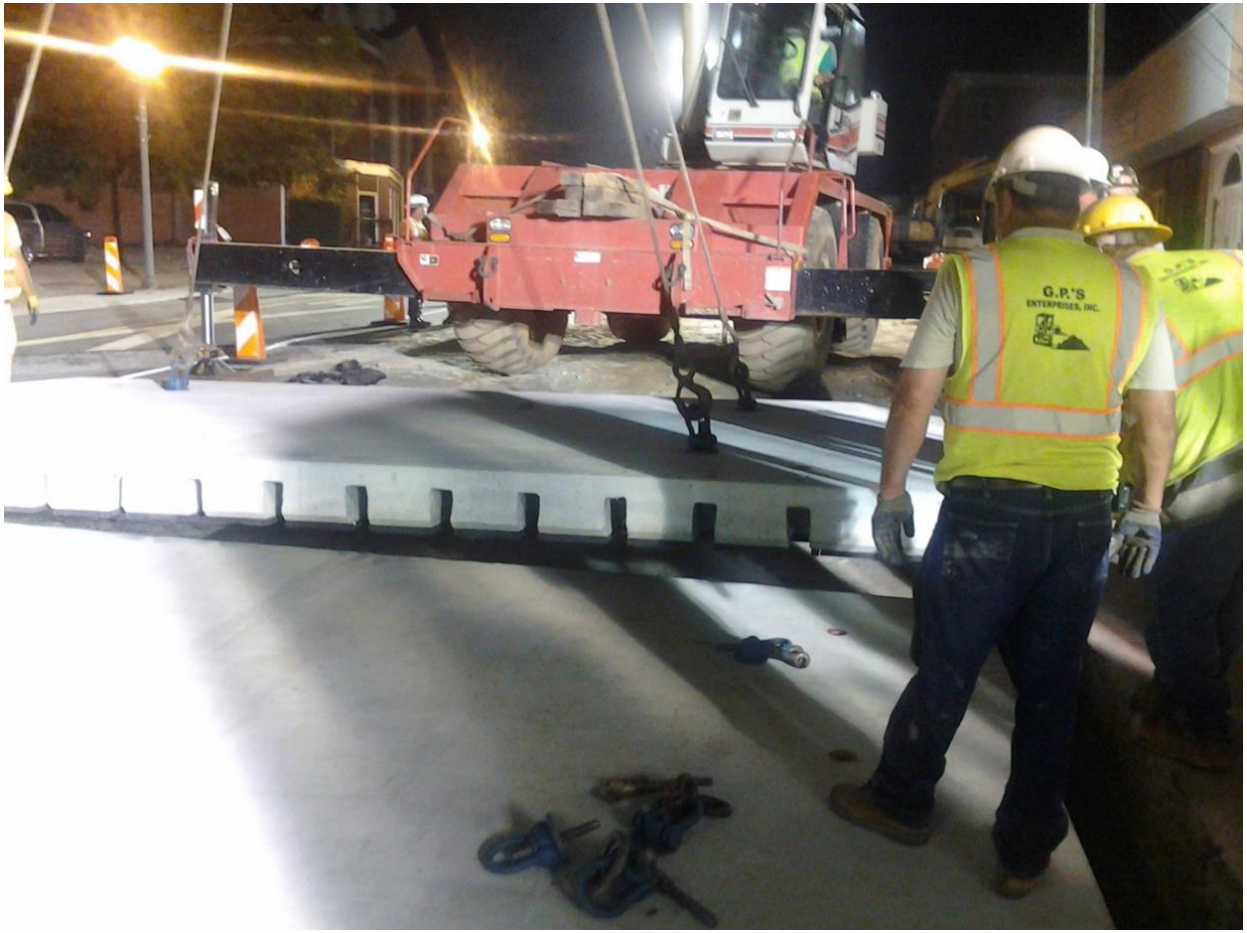
Pre-Cast Concrete Pavement



Pre-Cast Concrete Pavement

What is it?

Pug Mill

High Density Paver

Compactions

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Ground for a Smooth Ride

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RCC Open to Traffic

Equipment Used

Failures

The tech services unit is responsible for investigating all concrete that is of questionable quality. After conducting non-destructive testing, a recommendation is then made on the appropriate action to be taken.

Pachometer Readings

Pachometer Readings

- Readings are taken **prior** to any corrective work or grooving to the bridge deck. Small amounts of bump grinding are allowed.
- Pachometer readings are taken on all new bridge deck construction projects.
- Readings are taken in each bay about 10 feet apart.
- A report is then generated, giving the bridge a numeric grade.
- If readings are too shy or too deep, a core is taken to verify the pachometer results.
- If the readings are within tolerance no destructive testing will be done.

New Non-Destructive Testing Equipment

- **Profometer – Proceq**
  - ❖ Rebar detection (location and size), conformity of material, and cover meter.

Pachometer Readings – Contractor Rating

This system is a measure of the contractor's quality control for the desired cover over reinforcement steel in the bridge deck construction. The Contractor Quality Rating is derived from the statistical and non-statistical formulas. The rating is determined by measuring the distance, or closeness, of the actual value to the desired cover.

The scale table is such that a rating of 90 is equal to an established standard of 0.20 inches. This standard was determined by field experience and is considered to reflect a high quality level. The scale used for the rating system is as follows:

RATING	QUALITY CONTROL LEVEL
95 – 100	Excellent
90 – 94	Good
80 – 89	Fair
70 – 79	Marginal
Below 70	Needs Improvement

Profilograph

- We are responsible for the ride quality test for all bridges with 2000 vpd or on a state route. We also run the 100' New Construction Asphalt Approaches.
- The **contractor** is responsible for scheduling the Profilograph testing.
- On paving projects, we verify all traces taken on PCC pavements by the contractor using a Rainhart Profilograph. We run their traces through the Pro-Scan to ensure that the readings submitted by the contractor are accurate and meet specifications.
- We are looking to change from the Rainhart Profilograph to a Lightweight Profiler on concrete paving projects.

New Non-Destructive Testing Equipment

- **Ultrasonic Pulse Velocity – Olson Instruments**
  - Used to determine material velocity, strength, and integrity conditions of concrete beams, columns, elevated slabs, walls, and other members where two-sided access is available.

New Non-Destructive Testing Equipment

- **Foundation Test Gauge – Olson Instrument**
  - ❖ Utilized for quality assurance, condition evaluation, and forensic testing of piles and deep foundations.
  - ❖ Common applications are determining the length of foundations, and locating defects within foundations.

New Non-Destructive Testing Equipment

- **Cementometer – James Instruments**
  - ❖ Industry first water to cement ratio meter.
  - ❖ Allows user to instantaneously record the water to cement ratio of fresh concrete.
  - ❖ The instrument only measures the W/C Ratios that are between 0.35 to 0.65

C - Tags

New Identification System for Concrete – Barcode Identification/Management System (C-Tags)

- Pilot Research – 2 years of research conducted by Oklahoma State University
- Pilot Investigations led by GDOT:
  - C-Tags - September and October – OMAT
  - Comparison of C-Tags against an alternative identification system – October and November - OMAT

C - Tags

1 C- Tag consist of the following:

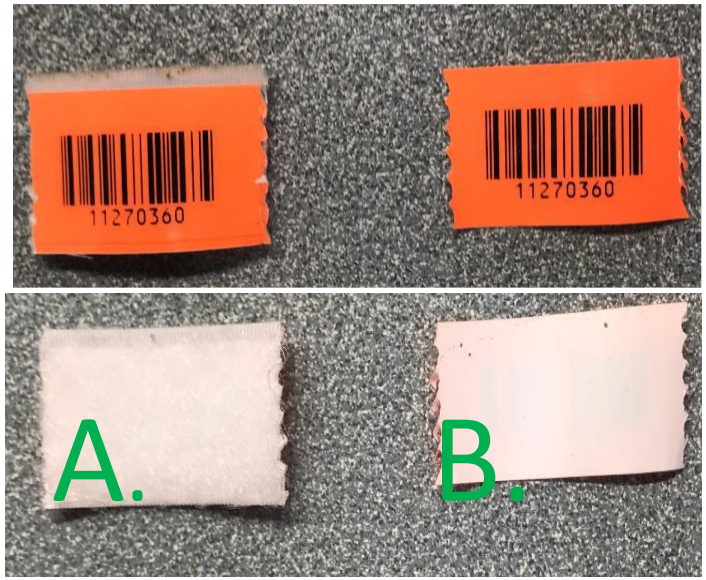
A. One adhesive barcode (Same Barcode No.) with Velcro on the back of the barcode.

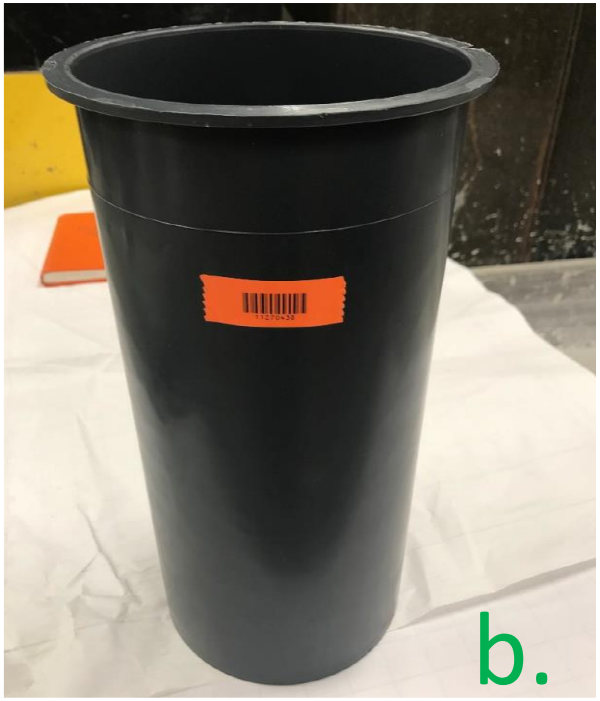
B. One adhesive barcode (Same Barcode No.)

Placement of C-Tag:

a. Inside of the Mold – Velcro Embedded in Concrete once fabricated.

b. Outside of Mold.





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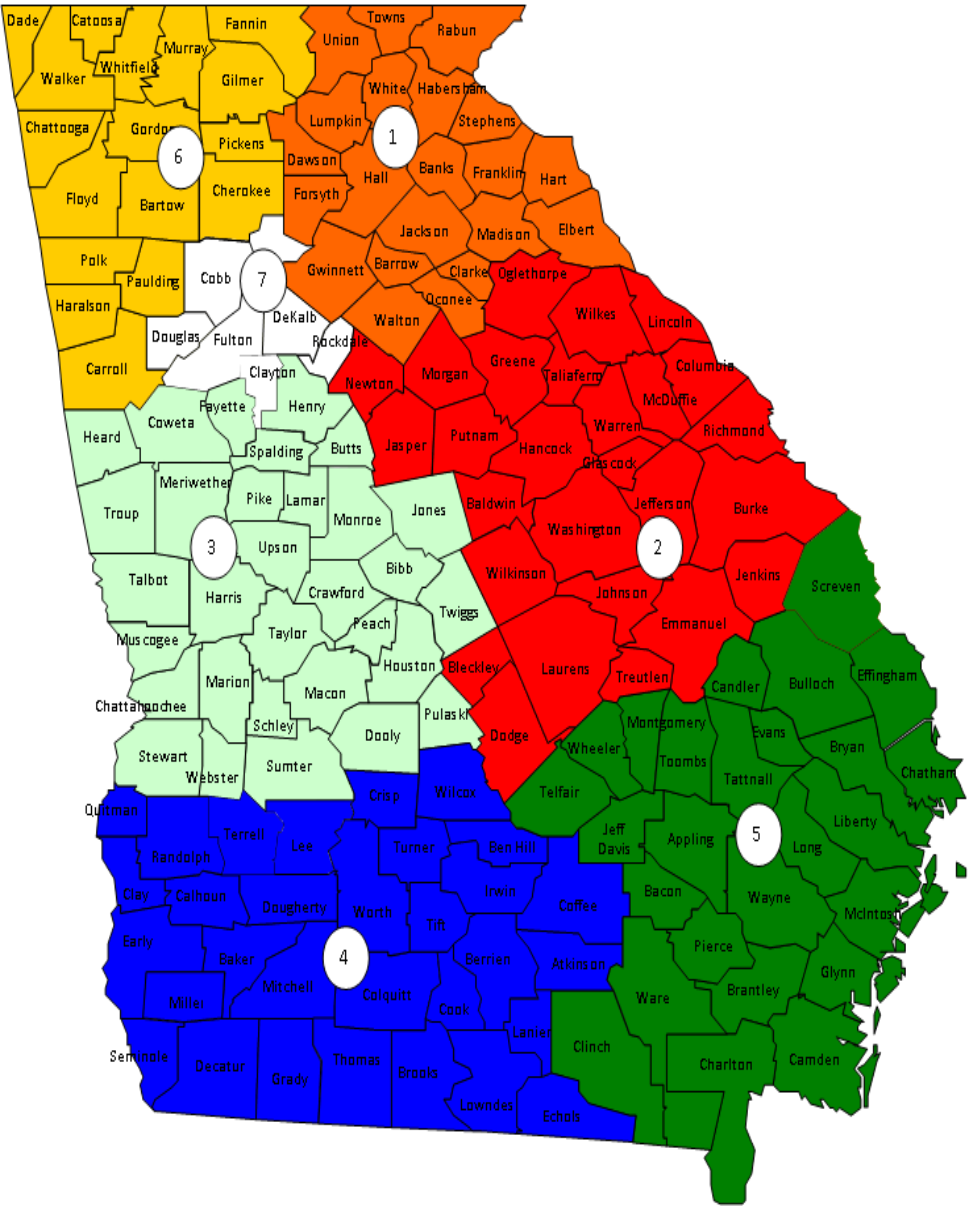

OFFICE OF MATERIALS AND TESTING
CONCRETE BRANCH

BRANCH CHIEF: JASON WATERS (O) 404-608-4876 (M) 404-694-6711

SECRETARY: JANET WURIE (O) 404-608-4877

MIX DESIGN SPECIALIST: CLIFF HILL (O) 404-608-4879

NDT Engineer: CHRIS COLLINS (O) 404-608-4883

PROFILOGRAPH OPERATOR (STATEWIDE): ROBERT (JOE) BUSH (M) 912-424-8840

CONCRETE TECHNICAL SERVICES UNIT

BRANCH SUPERVISOR: AMANDA SHELDON (O) 404-608-4880 (M) 404-694-6720

ASSISTANT BRANCH SUPERVISOR: Sonny Odum (STATEWIDE) (M) 912-424-8886

DISTRICT 1 – STEVE COLLIER (M) 404-694-6755

DISTRICT 2 – RUSTY BRANCH (M) 478-697-1584

DISTRICT 3 – AL HILL (M) 404-694-6706

DISTRICT 4 – CARL PARKER (M) 229-314-0463

DISTRICT 5 – (M)

DISTIRCT 6 – CURTIS TUCKER (M) 404-606-3097

DISTRICT 7 – JEFF DULWORTH (M) 404-694-6712

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Concrete Branch

Prestress/Precast Unit

- The Prestress/Precast Unit is in charge of all the Private Producers that manufacture Bridge Components for Georgia Construction.
- These Producer’s are visited daily by GDOT Plant Technicians.
- The Unit is considered Quality Assurance and conducts spot inspection of daily activity.
- Plants are re-certified annually and are kept on QPL 9.

Steel Strand

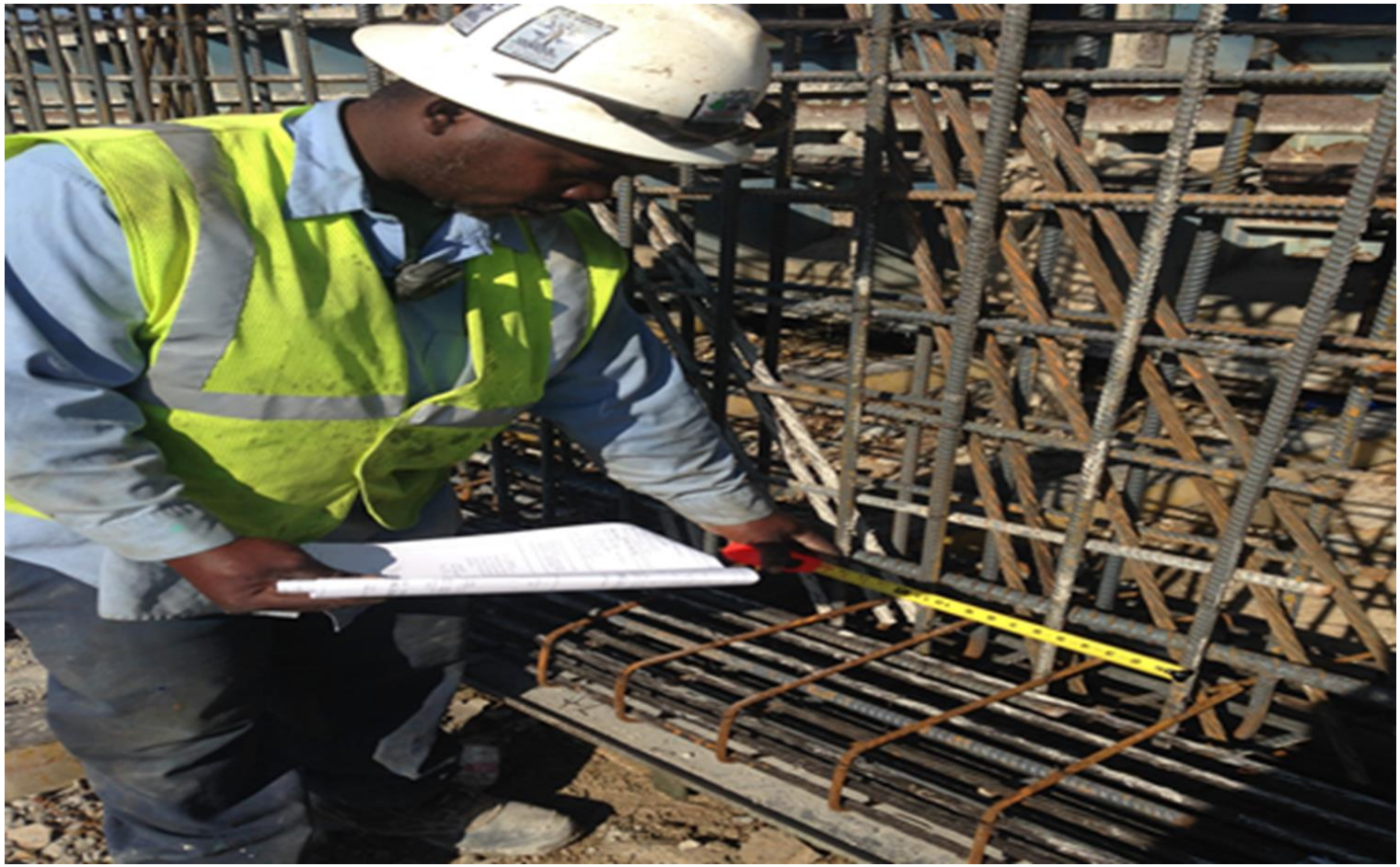
Steel Reinforcement

Sand and Aggregate

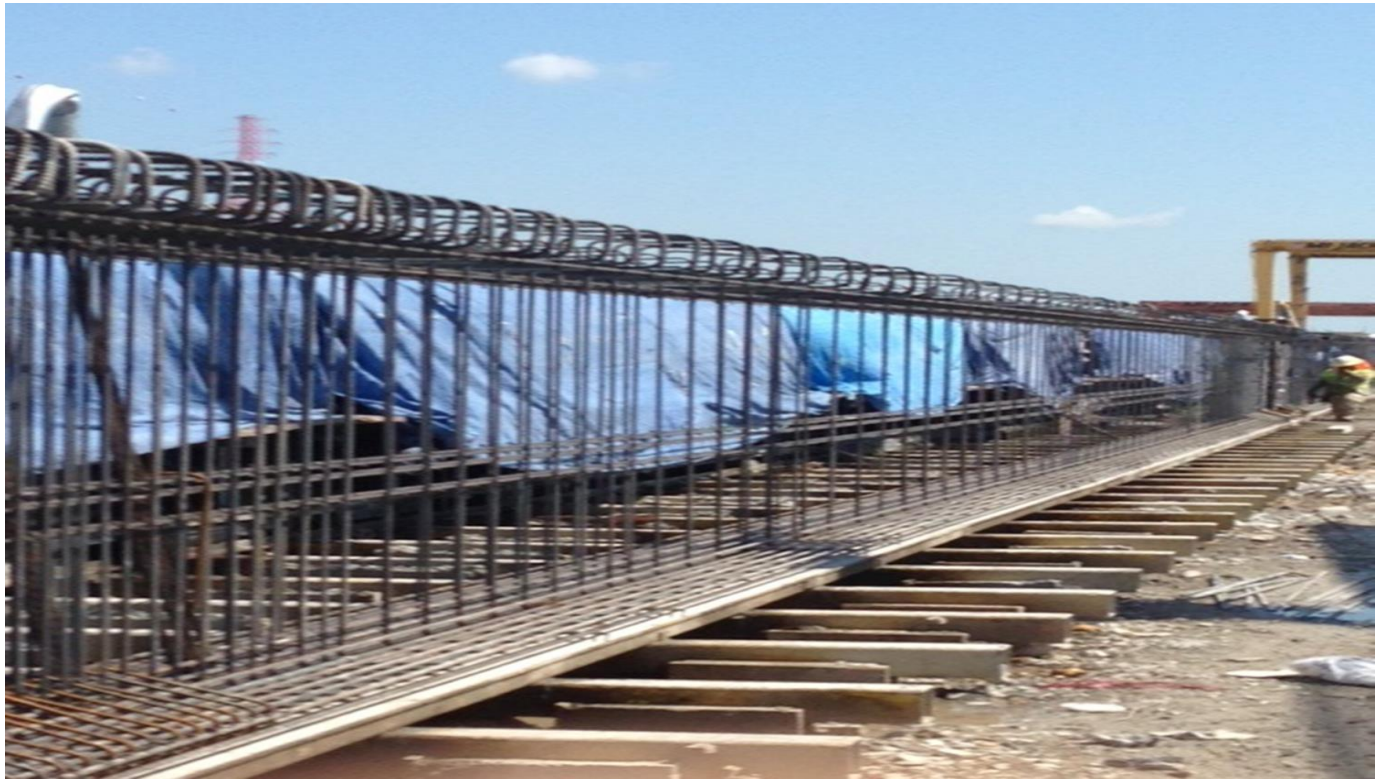
Cement Delivery at Plant

Georgia Department of Transportation

Quality Control Inspection



Casting Beds



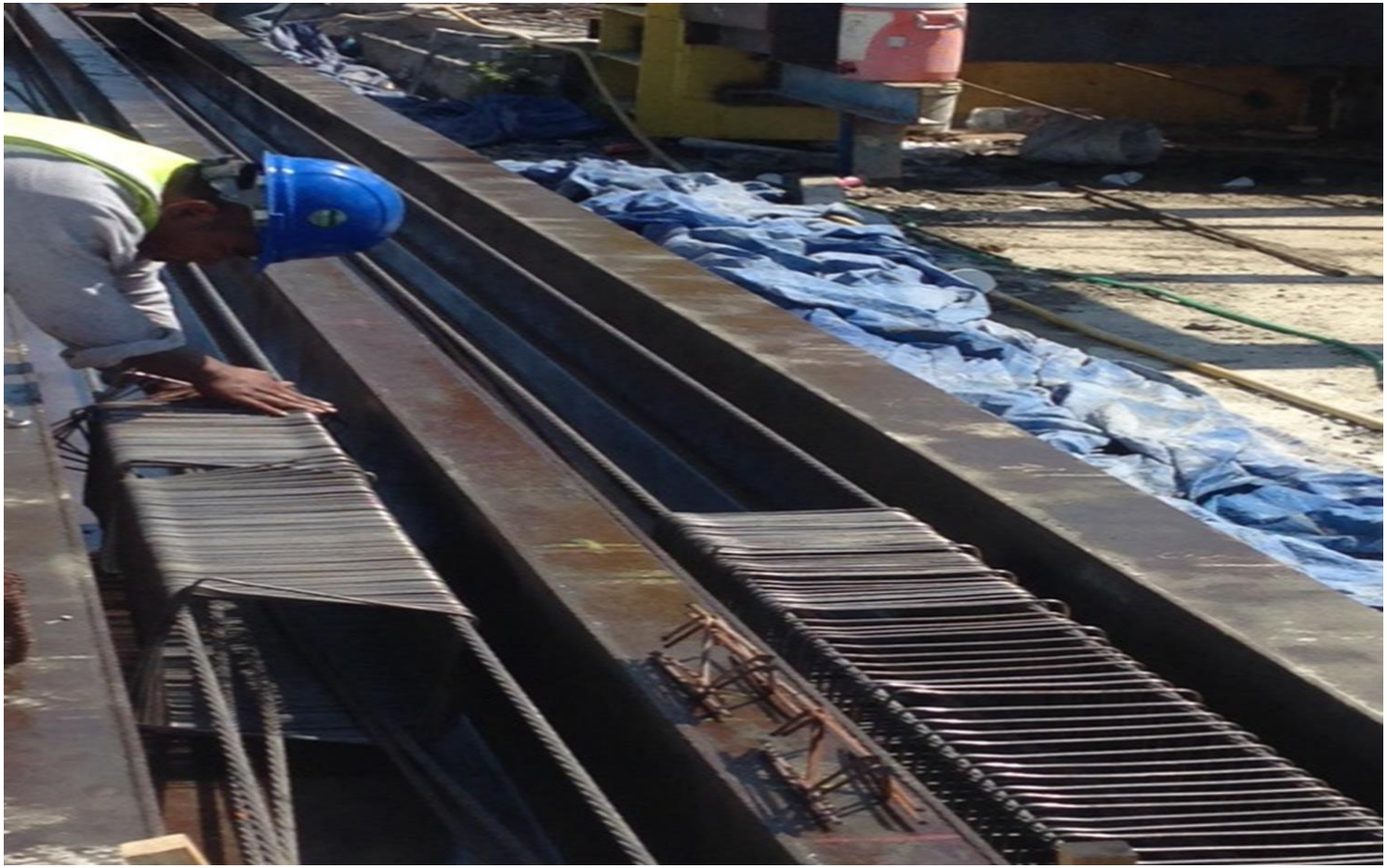
Steel Side Forms

Live End of Bed

Dead End of Bed

Hydraulic Jack System

Piling Bed



Bulb Tee Beam

Georgia Department of Transportation

Prestress Piling

Next Beam

MOD I

Type II

Special Design Haunch Girder

Special Design Haunch Girder

Special Design Haunch Girder

Stamping Girder

Prestress Spun Poles

Precast Noise Panels

Precast Barrier Wall

Precast MSE Panel

Technical Assistance

The List of Current approved GDOT Plant Technicians stamp and contact:

Jeff Carroll - GDOT JC 404-694-6707

Jeff Rollins - GDOT JR 404-977-7251

Alice Pickens - GDOT AP 404-694-6669

Shawn Oglesby - GDOT SO 478-232-0706

Kevin Leonard - GDOT KL 404-640-9542

Jon Smith - GDOT JS 404-694-6728

Questions?