

## FULL DEPTH PRECAST DECK PANELS – A PRECASTER’S PERSPECTIVE



BAYSHORE CONCRETE PRODUCTS



## GOAL / OBJECTIVE

- COLLECTIVELY, WE (OWNERS, DESIGNERS, PRECASTERS, & ENGINEERS) NEED TO DEVELOP FULL DEPTH DECK PANELS THAT ARE A COST EFFECTIVE ALTERNATIVE, CREATES EFFICIENT CONSTRUCTION METHODS, AND PROVIDES A LONG LASTING, MAINTENACE FREE BRIDGE DECK.



## OVERVIEW

- CONCRETE CHARACTERISTICS
- TOLERANCES
- JOINT DETAILS
- SURFACE FINISH
- SHEAR POCKETS
- PANEL GEOMETRY
- FORMWORK



## CONCRETE CHARACTERISTICS

- HIGH PERFORMANCE CONCRETE
  - PERMEABILITY – ASTM C1202 – 56 DAY DURATION
  - SCALING – ASTM C 672 – 80 DAY DURATION (50 CYCLES)
  - FREEZE-THAW – ASTM C 666 - 180 DAY DURATION
  - CREEP – ASTM C 512 - 120 DAYS TO 13 MONTH DURATION
  - STRENGTH – ASTM C 39 – 28 DAY DURATION
- CONCRETE MIX TESTING
  - ALLOW TIME PRIOR TO PRODUCTION
- STORAGE REQUIREMENTS
  - MINIMIZE STORAGE NEEDED PRIOR TO ERECTION
  - CALCULATE / ESTABLISH TIME FOR CREEP/SHRINKAGE TO OCCUR

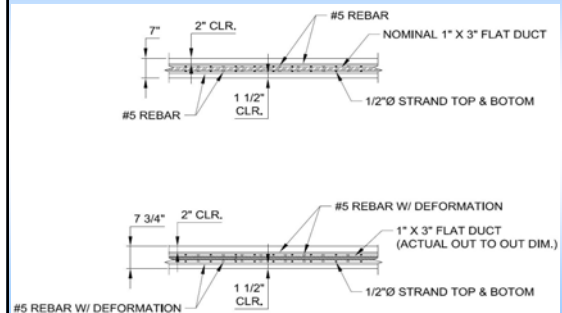


## TOLERANCES

- PRECAST CONCRETE TOLERANCES
- CRSI TOLERANCES
- ACTUAL DUCT O.D.
- COVER REQUIREMENTS



## TOLERANCES



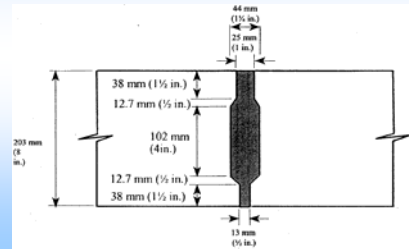
### JOINT DETAILS

- POUR BACK STRIP WITH PROJECTING BARS



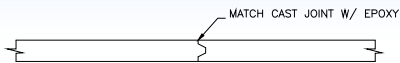
### JOINT DETAILS

- FORMED FACES/SHEAR KEYS WITH EPOXY



### JOINT DETAILS

- MATCH CAST FACES WITH THIN EPOXY BOND



### RIDING SURFACE

- PANEL FINISHED SURFACE AS RIDING SURFACE
  - ISSUES WITH PANEL IRREGULARITIES & DIFFERENTIAL CAMBER
- PANEL WITH SACRIFICIAL THICKNESS FOR GRINDING / GROOVING
  - BEST RESULTS FOR RIDEABILITY
  - FASTER APPROACH TO PUT PANELS IN SERVICE VERSUS AN OVERLAY
  - QUALITY OF THE CONCRETE FOR THE RIDING SURFACE IS INHERENT TO THE PANEL CONCRETE
- PANEL WITH ROUGHENED SURFACE FOR BONDING TO OVERLAY



### PANEL TO GIRDER SHEAR CONNECTIONS

- TWO FOOT SPACING OVER EACH GIRDER LINE (AASHTO REQ.)
- STEEL BEAMS – STUDS CAN BE SHOT AFTER PANEL PLACEMENT
- CONCRETE BEAMS – STUDS CAN BE GROUTED IN PLACE
- CONCRETE BEAMS – STUDS CAN BE CAST IN TOP OF GIRDERS
- SHEAR POCKET SPACING COULD BE INCREASED

### DECK PANEL GEOMETRY

- TRUCKING ISSUES TYPICALLY REQUIRE 8'-0" TO 10'-0" MAX WIDTH
- KEEP DIMENSIONS RELATIVELY CONSISTENT TO REDUCE COSTS
- CONSIDER PANEL WEIGHTS FOR SHIPPING
- DIFFERENTIAL CAMBER BETWEEN PIECES MAY OCCUR



## **FORMWORK**

- **MATCH CAST FORM WORK IS EXPENSIVE (ESP.W/ PRESTRESSING) AND TIME CONSUMING**
- **RIGID/MACHINED SIDE FORMS FOR SHEAR KEY – SHOULD ELIMINATE THE “NEED” FOR MATCH CASTING**
- **MAXIMIZE PANEL LAYOUT FOR PRESTRESS BEDS**
- **LOCATE PRESTRESS STRAND ON 2-INCH SPACING**

