

# Count On Concrete for Long Life & Value

A Contractors Footprint in the Deck!

## How Can Contractors Contribute to Long Life & Value in Full Depth Precast/Prestressed Deck Systems?

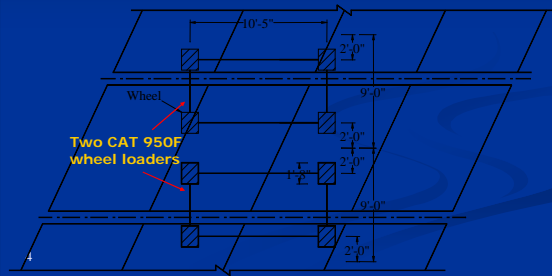
- Address Construction Means & Methods in the Shop Drawing Phase.
- Panel Production
- Handling, Transport, & Storage
- Field Engineering & Accuracy of Installation
- Erection
- Transverse & Longitudinal Joints

## Means & Methods in the Shop Drawing Phase

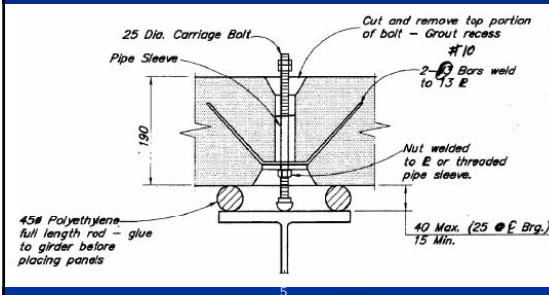
- Will construction be top-down, or bottom-up? If top-down, will add'l reinforcing be required for setting operation? (live loading of installation equipment on partially completed deck)
- Will producers standard lifting and handling embeds be adequate for setting operation? If not, can producer install embeds that will also accommodate contractors setting operation?
- How will panels be supported in place prior to keyway grouting? Haunch Support Angles? Leveling Bolts?

## Construction Loading For Top-Down Erection

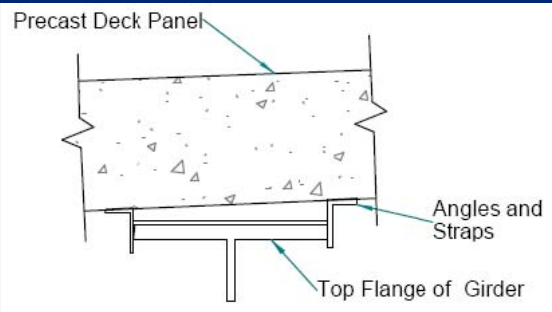
CAT 950F wheel loader  
(machine weight is 35,000 lbs)



Older Panel Elevation adjustment method.  
Angle support system is preferred.



## Size Panel Supports For Construction Loading



## Panel Production

- Have a competent contractor employee interact with the panel supplier during initial casting operation and as necessary thereafter to verify embed location and overall conformity to dimensional requirements.
- Challenge the panel supplier to perform better than his specified tolerances require.



## Handling, Transport, & Storage

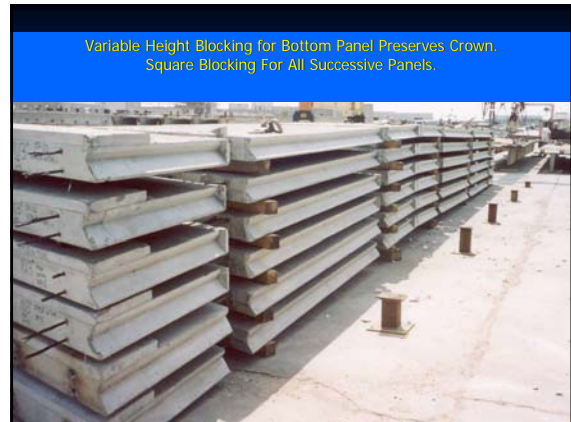
- Develop a formal lifting, transport, and jobsite storage (if necessary) plan.
- Set panels from delivery truck into final position whenever possible. Avoid stockpiling panels on jobsite.
- If panels must be stored on site, improve storage area as necessary to insure its load bearing characteristics and stability under adverse weather conditions.
- If stacking is required, always use square blocking material. (4x4 or 6x6, not 4x6)
- Periodically check stockpiles for unexpected settlement and modify as required



## Blocking Supports Panel in Crowned Position

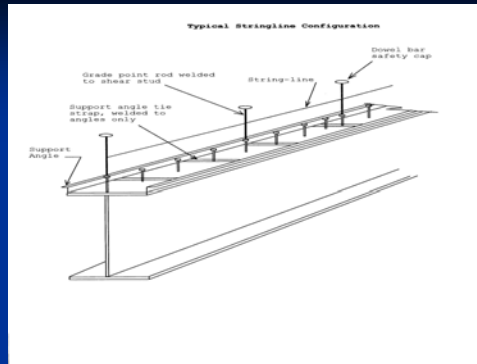


Variable Height Blocking for Bottom Panel Preserves Crown.  
Square Blocking For All Successive Panels.



## Field Engineering & Accuracy of Installation

- Top of girder elevations should be shot twice, by different instrument men if possible.
- Set grade points to coincide with transverse panel joints, or multiples thereof.
- Install string-lines set at a constant vertical offset along centerline of girders above grade points for use in installation of panel support devices.
- Project management should inspect string-lines for common plane between girders, and smooth vertical transitions between spans or into abutments as applicable PRIOR to any panel erection or installation of panel supporting devices.



## Panel Erection

- Inspect panels for dimensional irregularities and remediate prior to erection.
- Lay-out termination points on girders for each panel.
- Adjust rigging so that panels hang at roughly the same cross slope as the girders.
- If leveling bolts are used for panel support and elevation control, check and set elevation as each panel is installed, and once panel is on grade, use torque wrenches to compare torque values between the bolts of each panel. Actual torque values are insignificant, but adjust until all bolts for each panel fall within a range of 10%. This procedure will minimize the occurrence of hard point bearing areas in the panels prior to haunch grouting.



## Panel Erection



## Transverse & Longitudinal Joints

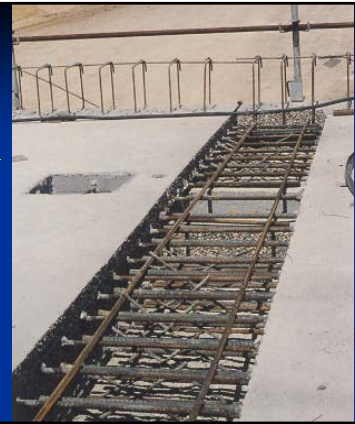
- Joints between precast panels have historically been a source for moisture intrusion and corrosion.
- Most joints are "wet cast" in that they are filled with a high performance cast-in-place concrete after erection.
- Research is currently under way that investigates the possibility of "match cast" transverse panel joints. Match casting would eliminate the need for CIP closures, and the waterproofing of the joint would be obtained by either an epoxy gel, or a thin compressed neoprene strip adhered to one side of the joint.

## Wet Cast Joints

- Project specifications generally call for either water-blasting or sand-blasting to be performed in advance of joint filling operations under the wet cast method.
- The best condition would be for the precast supplier to sand-blast joint surfaces as soon as possible after form removal. The form finish paste would be removed from the surface, and both coarse and fine aggregate would be visible on the bonding plane. Immediately prior to the placement of the CIP joint fill material, the contractor would perform a high pressure water-blast of the bonding planes. The water-blasting removes any deleterious material deposited since sand blasting, and properly moisture impregnates the surfaces for the best bond with the chosen joint fill CIP concrete.

Wet Cast Joint

Note Exposed Aggregate Surface



## Match Cast Joints

(Not currently utilized in full depth deck panels, but hopefully coming soon!)

- Closely inspect joints for any irregularities
- Grind off any form seam or joint marks that might interfere with tightness of joint.
- Sand or water-blast surface to obtain good bonding profile for chosen epoxy.
- Use epoxy gel with enough set time and in appropriate temperature conditions to allow for minute adjustments of panel as may be required without premature set.

## Thank You

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