STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
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SECRETARY

MEMORANDUM TO:	Project Engineers Project Design Engineers
FROM:	T. V. Rountree, P. E. State Bridge Design Engineer
DATE:	May 15,2000
SUBJECT:	Beam Bolsters

At the request of the Construction Unit and to better support the bottom mat of steel, detail 1¼" (32 mm) beam bolsters upper (BBU) in lieu of continuous high chairs for metal decks (CHCM) for all bridges using metal stay-in-place forms. The attached details show the orientation of the bar supports and are available for your use. The beam bolsters upper shall run longitudinally along the bridge and rest on the peaks of the stay-in-place forms. The beam bolsters upper shall have a maximum spacing of 4'-0" (1.2 m) as required by CRSI. Place the following note on the plans:

> ***Provide 1¼"** (32 mm) **high Beam Bolsters Upper (BBU) at 4'-0"** (1.2 m) **centers atop the metal stay-in-place forms to support the bottom mat of 'A' bars.***

This policy is effective as soon as is practicable, but no later than the September 2000 letting. The Design Manual will be updated at a later date.

TVR/JAD

Attachments

1. English "Superstructure - Slab Design".

2. English "Superstructure - Slab Design".

1. Metric "Superstructure - Slab Design".

2. Metric "Superstructure - Slab Design".

_____ LIVE LOAD
_____ ROADWAY
_____ RAILING
_____ PRESTR. CONC. GIRDERS SPA.@____ CTS.
_____ UNIFORM SLAB@ ℄ GIRDER
_____ SKEW
_____ ''A'' BARS @_____ CTS.
_____ ''B'' BARS @_____ CTS. IN BOTT. OF SLAB
#4 _____ ''B'' BARS @ 1'-6'' CTS. IN TOP OF SLAB

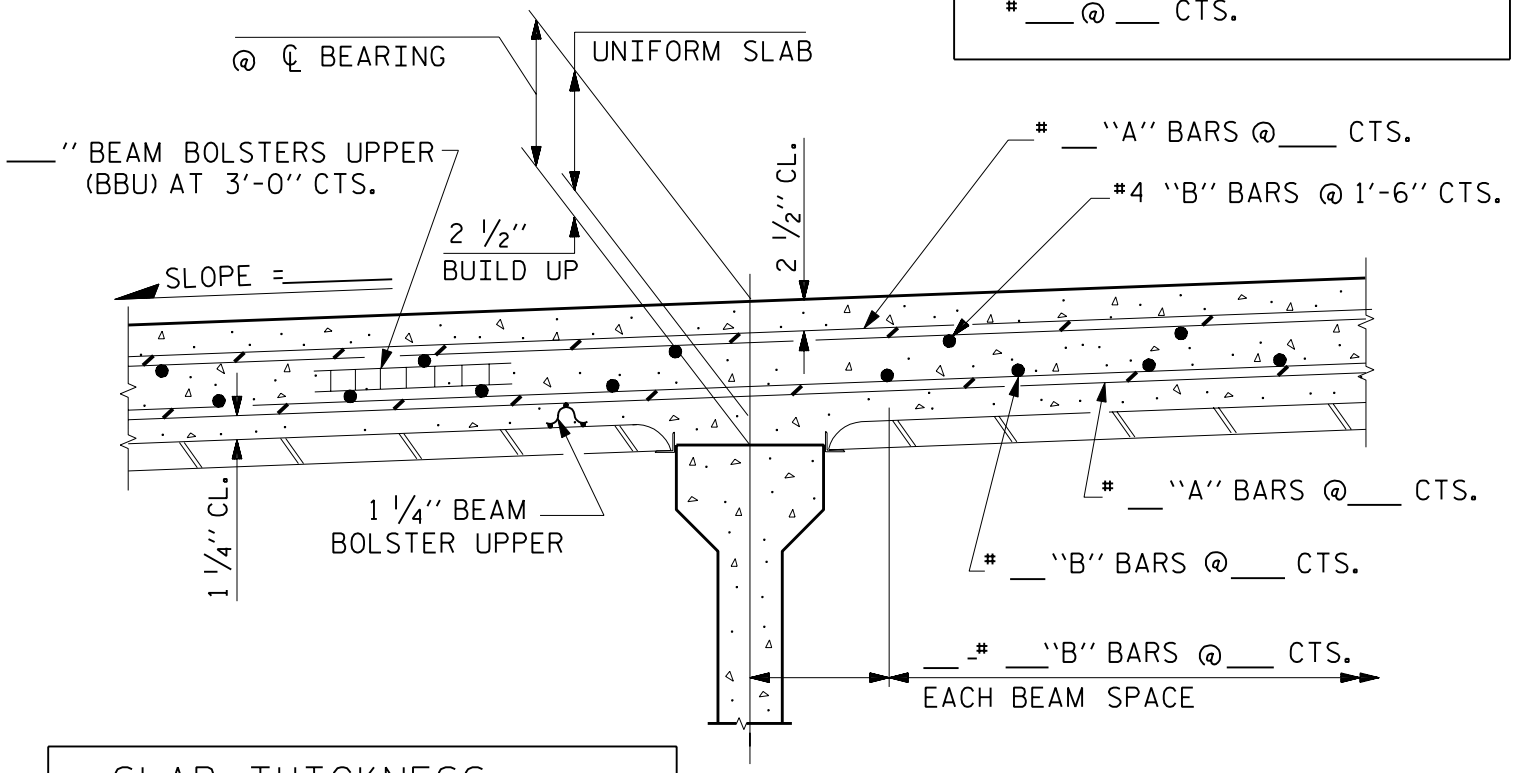
PROJECT :_____
COUNTY :_____
STATION :_____
DATE :_____
COMP'S BY:_____
✓ BY :_____

DISTRIBUTION STEEL

% = $\frac{220}{\sqrt{S}} = \frac{220}{\sqrt{\quad}}$ = _____ (67 % MAX.)

USE ____ × ____ % = ____ SQ. mm

____ @ ____ CTS.



SLAB THICKNESS

_____ CLEARANCE @ TOP
_____ ''d''
_____ HALF OF #___ BAR
_____ SLAB REQUIRED @ ℄ BEARING

NOTE ON PLANS:

PROVIDE 1 1/4" BEAM BOLSTERS UPPER AT 4'-0'' CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF 'A' BARS.

BBU DEPTH FOR TOP MAT

_____ CLEARANCE @ TOP
_____ #___ ''B'' BAR (BOTTOM)
_____ # 4 ''B'' BAR (TOP)
_____ 2 - #___ ''A'' BARS
_____ CLEARANCE @ BOTTOM
_____
_____ SLAB THICKNESS
_____ '' HIGH BBU @ 3'-0'' CTS.

SUPERSTRUCTURE - SLAB DESIGN

(DETAILED FOR STAY-IN-PLACE FORMS)

_____ LIVE LOAD
_____ ROADWAY
_____ RAILING
_____ PRESTR. CONC. GIRDERS SPA.@____ CTS.
_____ UNIFORM SLAB@ ℄ GIRDER
_____ SKEW
_____ ''A'' BARS @_____ CTS.
_____ ''B'' BARS @_____ CTS. IN BOTT. OF SLAB
#13 _____ ''B'' BARS @ 450mm CTS. IN TOP OF SLAB

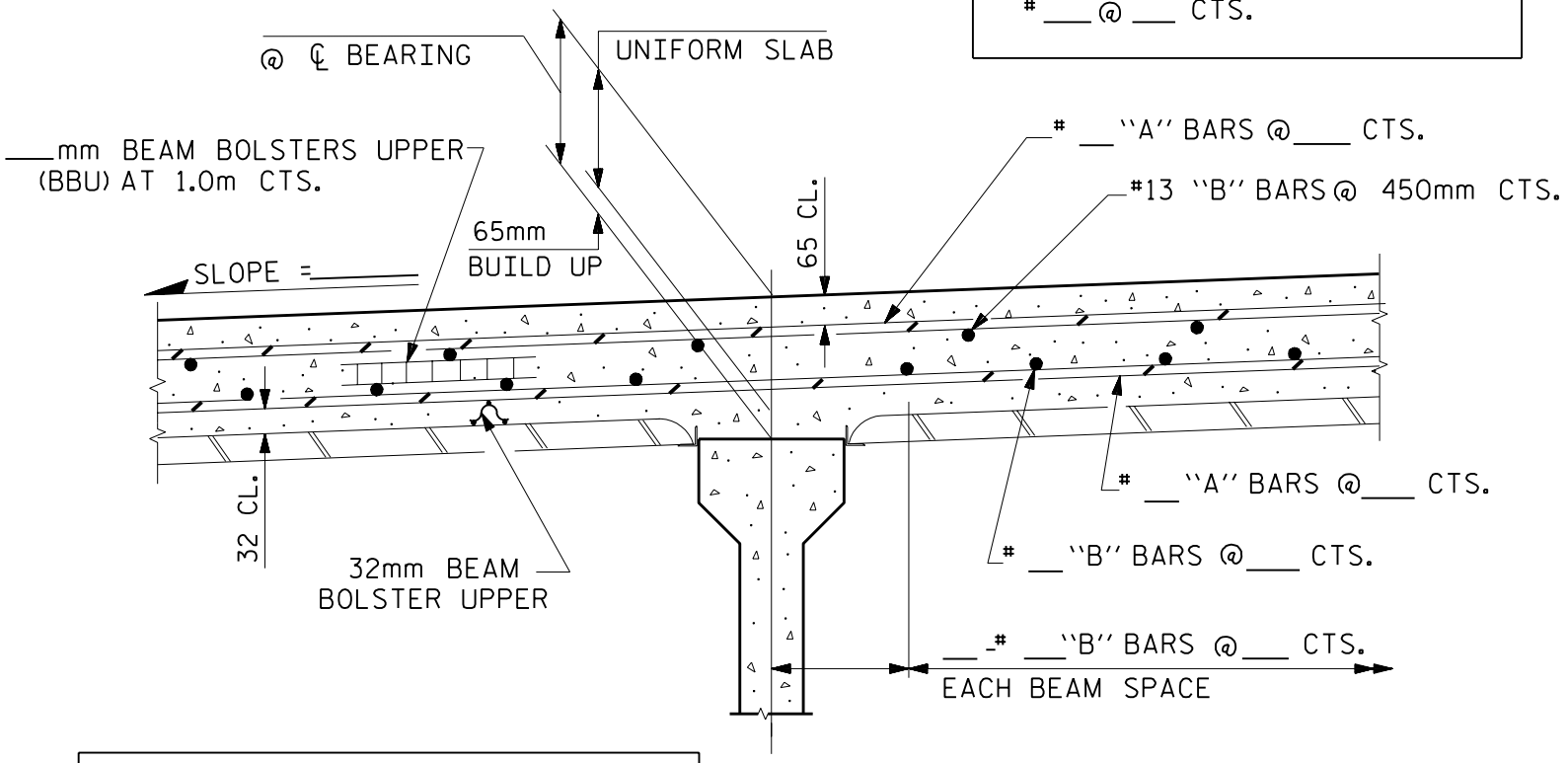
PROJECT :_____
COUNTY :_____
STATION :_____
DATE :_____
COMP'S BY:_____
✓ BY :_____

DISTRIBUTION STEEL

% = $\frac{121}{\sqrt{S}} = \frac{121}{\sqrt{\quad}}$ = _____ (67 % MAX.)

USE ____ x ____ % = ____ SQ. mm

____ @ ____ CTS.



SLAB THICKNESS

_____ CLEARANCE @ TOP
_____ ''d''
_____ HALF OF #___ BAR
_____ SLAB REQUIRED @ ℄ BEARING

NOTE ON PLANS:

PROVIDE 32mm HIGH BEAM BOLSTERS UPPER AT 1.2m CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF 'A' BARS.

B.B.U. DEPTH FOR TOP MAT

_____ CLEARANCE @ TOP
_____ #___ ''B'' BAR (BOTTOM)
_____ # 13 ''B'' BAR (TOP)
_____ 2 - #___ ''A'' BARS
_____ CLEARANCE @ BOTTOM
_____
_____ SLAB THICKNESS
_____ mm HIGH BBU@ 1.0m CTS.

SUPERSTRUCTURE - SLAB DESIGN

(DETAILED FOR STAY-IN-PLACE FORMS)

_____ LIVE LOAD
_____ ROADWAY
_____ RAILING
_____ STEEL BEAMS SPA. @ _____ CTS.
_____ UNIFORM SLAB
_____ SKEW
_____ ''A'' BARS @ ____ CTS.
_____ ''B'' BARS @ ____ CTS. IN BOTT. OF SLAB
_____ ''B'' BARS @ ____ CTS. IN TOP OF SLAB
_____ WALK

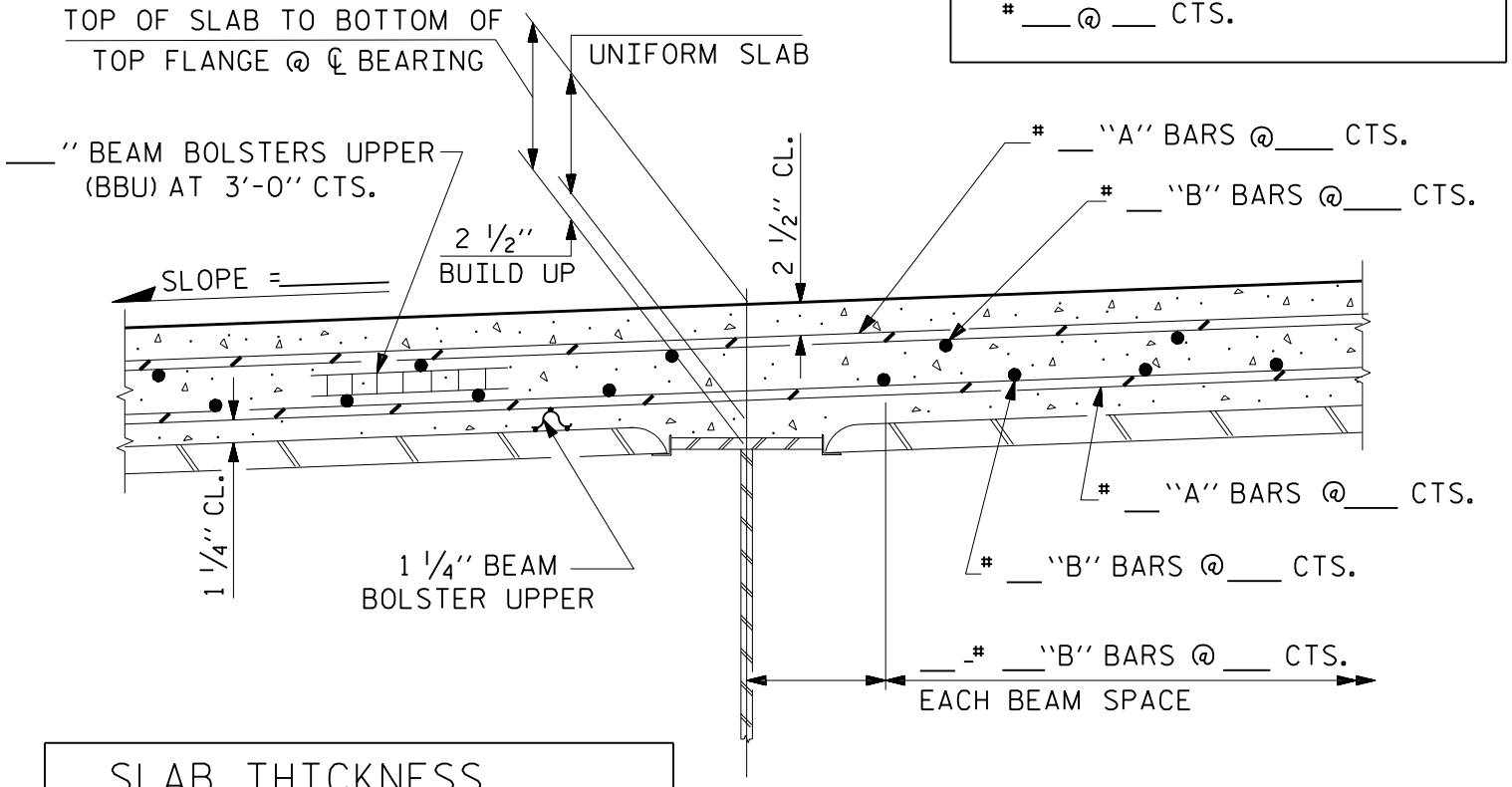
PROJECT : _____
COUNTY : _____
STATION : _____
DATE : _____
COMP'S BY: _____
✓ BY : _____

DISTRIBUTION STEEL

$\% = \frac{220}{\sqrt{S}} = \frac{220}{\sqrt{\quad}} =$ ____ (67 % MAX.)

USE ___ x ___ % = ____ SQ. mm

___ @ ___ CTS.



SLAB THICKNESS

_____ CLEARANCE @ TOP
_____ ''d''
_____ HALF OF #___ BAR
_____ SLAB REQUIRED

NOTE ON PLANS:

PROVIDE 1 1/4" HIGH BEAM BOLSTERS UPPER AT 4'-0'' CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF 'A' BARS.

BBU DEPTH FOR TOP MAT

_____ CLEARANCE @ TOP
_____ #___''B'' BAR (BOTTOM)
_____ #___''B'' BAR (TOP)
_____ 2 - #___''A'' BARS
_____ CLEARANCE @ BOTTOM
_____
_____ SLAB THICKNESS
_____ '' HIGH BBU @ 3'-0'' CTS.

SUPERSTRUCTURE - SLAB DESIGN

_____ LIVE LOAD
_____ ROADWAY
_____ RAILING
_____ STEEL BEAMS SPA. @ _____ CTS.
_____ UNIFORM SLAB
_____ SKEW
_____ ''A'' BARS @ ____ CTS.
_____ ''B'' BARS @ ____ CTS. IN BOTT. OF SLAB
_____ ''B'' BARS @ ____ CTS. IN TOP OF SLAB
_____ WALK

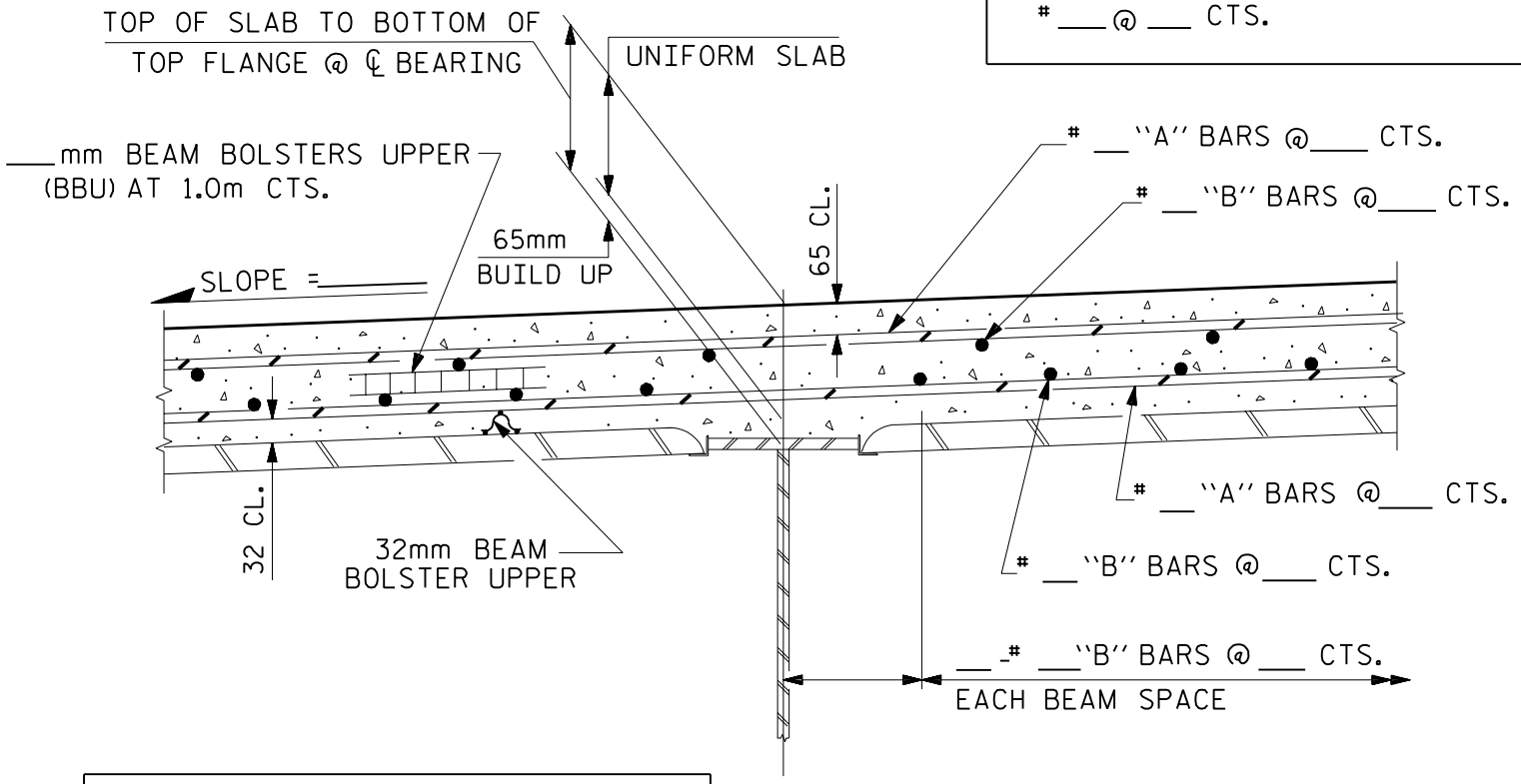
PROJECT : _____
COUNTY : _____
STATION : _____
DATE : _____
COMP'S BY: _____
✓ BY : _____

DISTRIBUTION STEEL

% = $\frac{121}{\sqrt{S}} = \frac{121}{\sqrt{\quad}}$ = ____ (67 % MAX.)

USE ___ × ___ % = ___ SQ. mm

___ @ ___ CTS.



SLAB THICKNESS

_____ CLEARANCE @ TOP
_____ ''d''
_____ HALF OF #___ BAR
_____ SLAB REQUIRED

NOTE ON PLANS:

PROVIDE 32mm HIGH BEAM BOLSTERS UPPER AT 1.2m CTS ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF 'A' BARS.

B.B.U. DEPTH FOR TOP MAT

_____ CLEARANCE @ TOP
_____ #___''B'' BAR (BOTTOM)
_____ #___''B'' BAR (TOP)
_____ 2 - #___''A'' BARS
_____ CLEARANCE @ BOTTOM
_____
_____ SLAB THICKNESS
_____ mm HIGH BBU @ 1.0m CTS.

SUPERSTRUCTURE - SLAB DESIGN