Chapter Six

Temporary Works

(Falsework and Forms)

Falsework Definition:

- The temporary construction used to support the permanent structure until it becomes self supporting
- Includes: Beams, Joists, Columns, Piles, etc...

Formwork Definition:

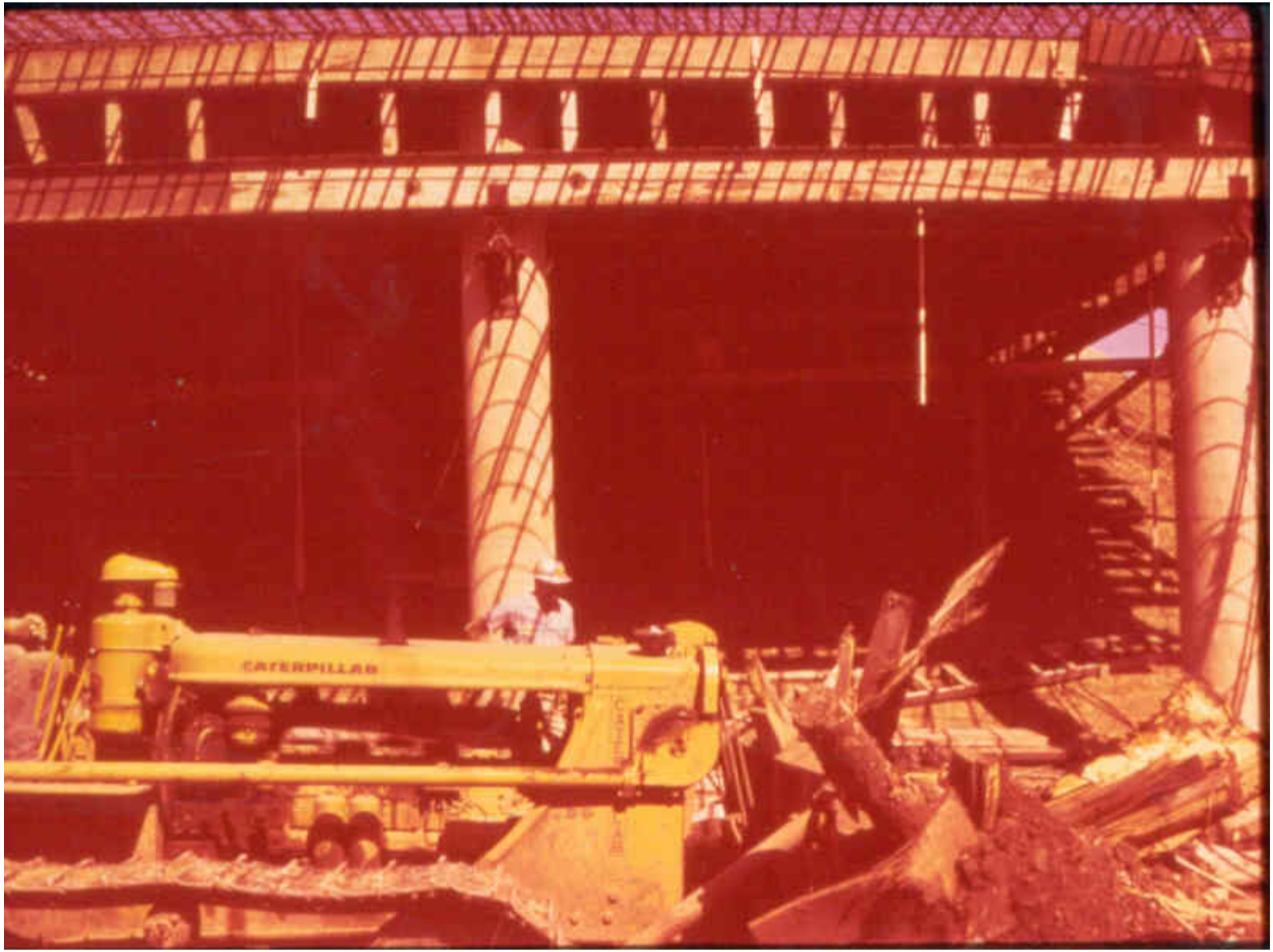
- A temporary structure or mold used to retain the plastic or fluid concrete.

- Basically…. Sheathing or plywood.

Falsework Plans

- Must be designed in accordance with AASHTO Guide Design Spec. for Bridge Temporary Works.
- Must be designed by PE registered in South Dakota
- Must be submitted to the Office of Bridge Design 30 days prior to starting construction.

- The Contractor shall not be allowed to erect false-work until false-work plans are approved.
- The False-work shall be built as shown in approved false-work plans.
- The Contractor must resubmit false-work plans for any changes.


CATERPILLAR

The different types of structure require different types of false-work

- Slab Bridge (support from ground)
  - False Pile
  - Beams
- Girder Bridge (support from girders)
  - Spanalls
  - Timber Stringers
  - Overhang Brackets

False Piles

- Driven to bearing shown in false-work plans (witnessed by inspector)
- Adequately braced
- Removed 1 foot below finished ground line

Mudsill

- Soil Strength and material must be submitted with false-work plans
- Soil must be leveled and compacted to allow even bearing

Steel Scaffold

- Good to excellent condition
- All components shall be from same manufacturer
- Jacks shall not be over extended (manufacturer recomandition)

Strickland Brackets

- Good to Excellent condition
- Placed so beam is completely on bracket
- Grout holes in column

Bolted Brackets

- Built as shown on false-work plans
- Holes proper size for bolt or use plate washers
- Grout holes in concrete

Beams, Stringers, Joists, Hangers and Overhang Brackets

- Good to excellent condition
- Manufactured Components shall not be field modified and must be same model and manufacturer as shown on plans
- Check grade on lumber

Miscellaneous Forming Items

- Plywood
- Rustication, Chamfer
- Form Ties
- Block-outs
- Form Joints Mortar Tight
- Ensure Quality Forming Material

Supports parallel to face grain
Weak Direction

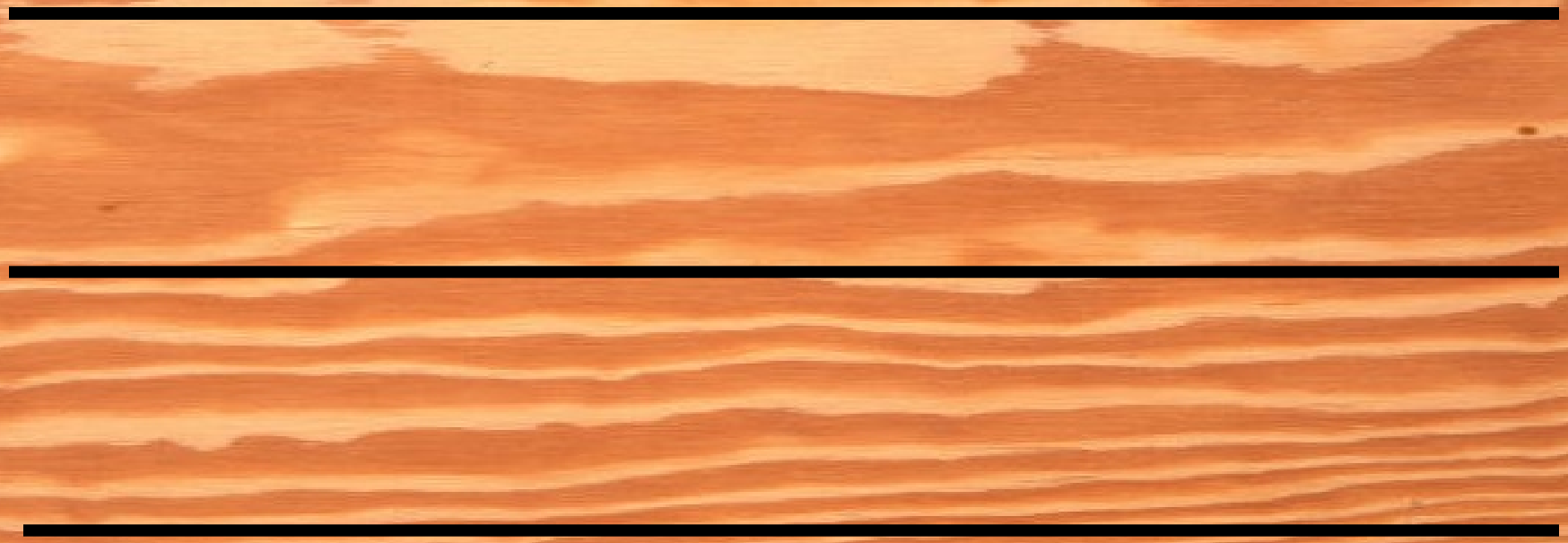


Figure 6.12

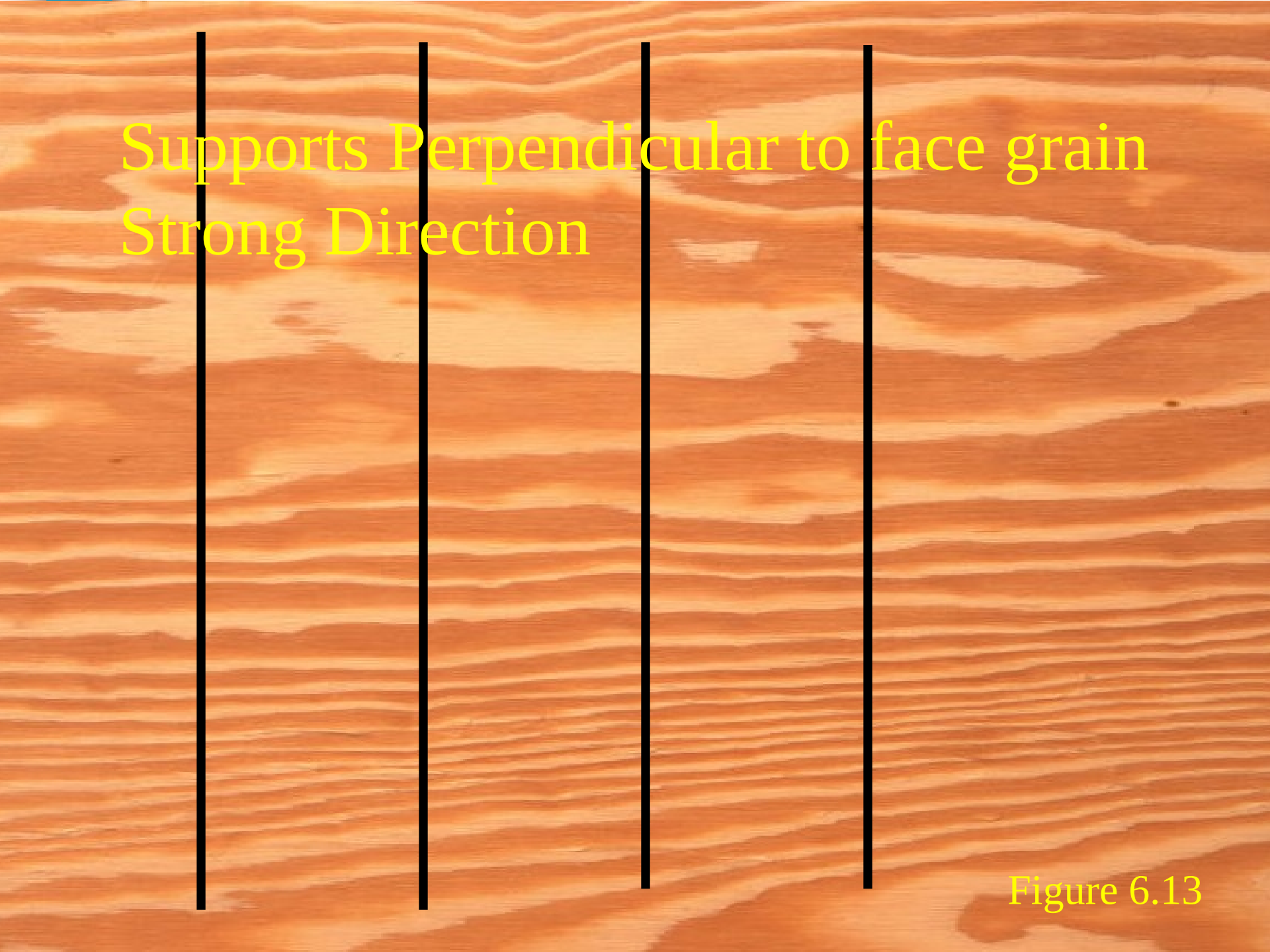
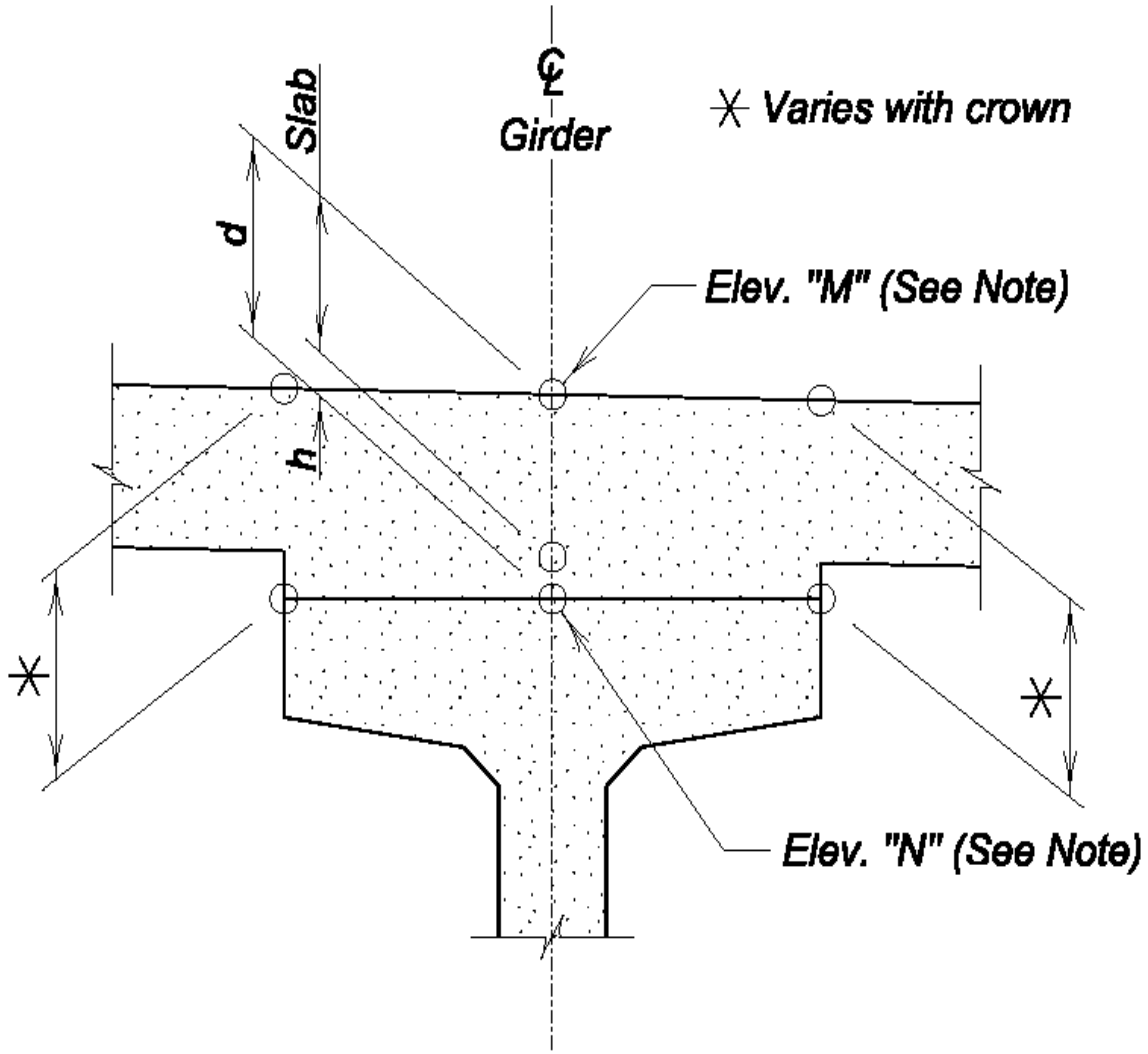


Figure 6.13

Setting Forms on a Girder Bridge
(See Table of Slab Form Elevations)

- “M” - - Top of Slab Elevation
- “N” - - Elevation On Top Of Girder
- “d” - - Distance From Top of Girder to Top of Slab
- “h” - - Haunch Depth(If “h” is less than 0” or greater than 4” contact the bridge office)


℄
Girder
Slab
d
h
Varies with crown
Elev. "M" (See Note)
Elev. "N" (See Note)

		0	1	2	3	4	5	6	
GIRDER NO. 1	ELEV. "M"	1305.144	1305.431	1305.705	1305.966	1306.211	1306.440	1306.653	130
	(-) ELEV. "N"								
	(=) d								
	(-) 0.7083'								
	(=) h								
GIRDER NO. 2	ELEV. "M"	1305.324	1305.611	1305.885	1306.146	1306.391	1306.620	1306.833	130
	(-) ELEV. "N"					**1305.60'**			
	(=) d					**0.791'**			
	(-) 0.7083'					**0.783'**			
	(=) h					**0.083'**			
GIRDER NO. 3	ELEV. "M"	1305.504	1305.791	1306.065	1306.326	1306.571	1306.800	1307.013	130
	(-) ELEV. "N"								
	(=) d								
	(-) 0.7083'								
	(=) h								

- Example page 6-118


26

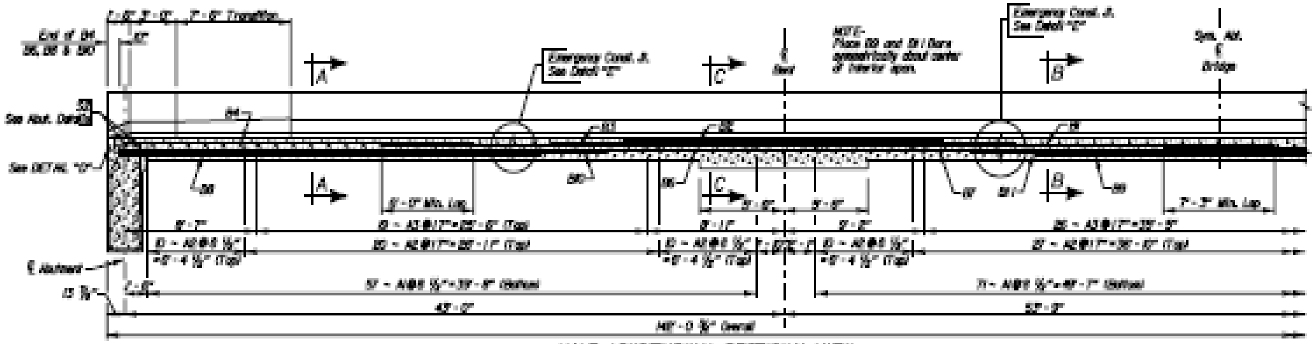
Setting Forms on a Concrete Bridge

- Curb and Centerline Elevation Diagram
- Lumber Crush
- Form Camber

Setting Forms on a Concrete Bridge

- Use the top of slab elevation from the Curb and Centerline Elevation Diagram and subtract the thickness of the deck.
- Add the lumber crush to each elevation.
- Add the form camber to each elevation
- This number should be the form elevations after reinforcing steel is placed.

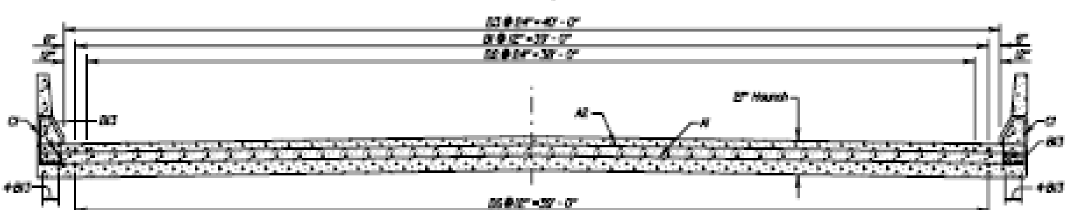
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0010(38)362	E22	E33



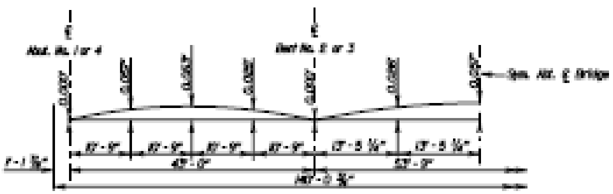
HALF LONGITUDINAL SECTIONAL VIEW

SEC. A-A

SEC. B-B

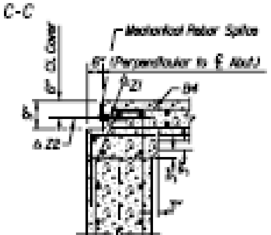


SEC. C-C

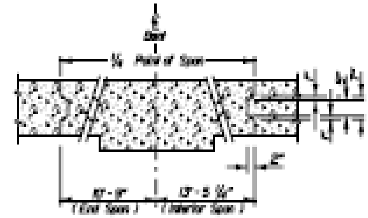


CAMBER DIAGRAM

Camber is calculated for dead load deflection plus plastic flow and has been added to the proposed grade elevations of the respective stations to establish the elevations of the top of the finished roadway slab.



DETAIL "D"



DETAIL "E"

REINFORCING SCHEDULE

Mk.	No.	Size	Length	Type
A1	695	6	46'-10"	Str.
A2	421	5	46'-10"	Str.
A3	335	6	6'-9"	14
A4	(See Bent Details)			
B1	40	11	58'-3"	Str.
B2	78	10	80'-9"	Str.
B3	82	10	30'-3"	Str.
B4	80	10	83'-7"	14
B5	80	6	43'-3"	Str.
B6	80	11	43'-3"	Str.
B7	40	11	53'-9"	Str.
B8	78	11	37'-0"	Str.
B9	78	11	80'-9"	Str.
B10	82	11	31'-9"	Str.
B11	41	10	89'-3"	Str.
B12	36	6	46'-5"	Str.
B13	10	6	53'-9"	Str.
B15	12	5	69'-0"	Str.
B16	6	4	47'-7"	Str.
B17	8	4	6'-6"	16B
B18	12	8	4'-3"	16B
B19	12	5	8'-4"	Str.
B20	12	6	3'-10"	17A
* B21	12	4	47'-11"	Str.
C1	896	5	6'-9"	T8A
C2	238	5	9'-7"	S11
C3	4	5	8'-0"	S11
C4	4	5	9'-0"	S11
C5	4	5	9'-0"	S11
C6	4	5	6'-8"	T1
C7	4	5	6'-5"	T1
C8	4	5	6'-11"	T1
C9	4	5	7'-0"	T1
C10	16	6	7'-0"	T8A
C11	16	5	7'-7"	T1
C12	4	6	6'-7"	17
C13	4	5	10'-4"	17
△ Z1	108	7	3'-0"	Str.

Bending Details

NOTES-

All reinforcing steel shall be epoxy coated.

All dimensions are out to out of bars.

△ See Sheet No. 12 of 17 for location of Z1 & Z2 bars.

* Bend in field as necessary to fit.

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
* Class A45 Concrete, Bridge Deck	Cu. Yd.	385.2
Epoxy Coated Reinforcing Steel	Lb.	132952
Grooving Bridge Deck	Sq. Yd.	595
Concrete Penetrating Sealer	Sq. Yd.	625
No. 7 Rebar Splice	Each	108

* Concrete Quantity for Barrier Curb is 0.0842 cu. yd./ft. and Concrete Quantity for one 12 ft. End Block is 1.809 cu. yd.

SUPERSTRUCTURE DETAILS

FOR

142' - 0¾" CONT. CONC. BRIDGE

OVER LITTLE MINN. RIVER — 30° R.H.F. SKEW

40'-0" ROADWAY — SEC. 29/32-T126N-R50W

STA. 57+40.24 TO STA. 58+82.31 — P 0010(38)362

STR. NO. 55-132-190 — HS 25-44 (& ALT.)

ROBERTS COUNTY

S. D. DEPT. OF TRANSPORTATION

OCTOBER 2004

9 OF 17

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
SJ/MM	DK	SJ/MM	BRIDGE ENGINEER
90813732	37329809		

Removal of Temporary Works

- Section 460.3.P - Standard Specs.
- Strength vs. Time
- Remove supports slowly and uniformly

Questions???