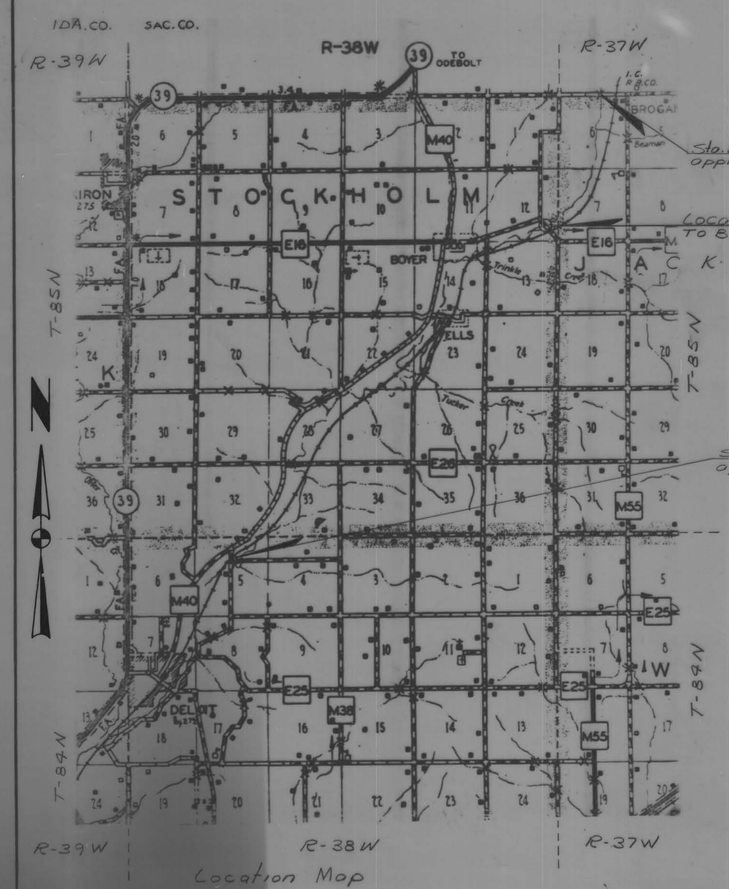
FED. ROAD DIST. NO	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO	TOTAL SHEETS
5	IOWA	L71-21 L71-22	1971	1	5

CONVENTIONAL SIGNS

CITY LIMITS
STATE OR COUNTY LINES
SECTION LINES
FENCE LINES
RIGHT OF WAY LINES
GUARD RAIL
TRAVELED WAY
BASE OR SURVEY LINE
RAILROADS
PRESENT TILE DRAINS
PROPOSED TILE DRAINS
PIPE LINE
CULVERTS
TELEPHONE, TELEGRAPH OR TRANSMISSION LINES
PRIMARY ROAD NUMBERS
U.S. ROAD NUMBERS
INTERSTATE ROAD NUMBERS



Location Map

129B91

Sta. 8+40 ℄ 90'X17' Pony Truss and approachs. Project No. L71-21

Location 75'x20' Pony Truss To Be Hauled By Contractor

Sta. 2+81.5 ℄ 75'x 20' Pony Truss and approachs. Project No. L71-22.

STATE OF IOWA

STATE HIGHWAY COMMISSION

BRIDGES
ON THE
SECONDARY ROAD SYSTEM
CRAWFORD (SAC) COUNTIES
PROJECT NO. L71-21 ONLY

CRAWFORD COUNTY
PROJECT NO. L71-22

THE IOWA STATE HIGHWAY COMMISSION STANDARD SPECICATIONS FOR CONSTRUCTION WORK, SERIES OF 1964 SHALL APPLY TO WORK ON THIS PROJECT, PLUS CURRENT SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS.

INDEX OF SHEETS

MILEAGE SUMMARY

Sta 8+40.0 = 132'-5" = 0.02508 Miles
Sta 2+81.5 = 137'-5" = 0.02603 Miles
Total Net Mileage = 0.05111 Miles

Crawford (Sac) Counties — Project No. L71-21
90'x17' Pony Truss & Approaches - ESTIMATE OF QUANTITIES

ITEM	Piers	Deck	Abutment	Totals
① Structural Concrete	⑤ 11.50 cu. yds			11.50 cu. yds.
① Reinforcing Steel	1352 Lbs.			1352 Lbs.
② Creosoted Piles 10@ 90'			400 L.F.	400 L.F.
③ Cast in Place 45° TYPE II 16" 14@ ~~50~~	700 L.F.			700 L.F.
④ Re-erect Bridge ⑥ and Approaches				Lump sum

① Furnish and Place by Contractor
② Contractor To furnish and drive.
③ Furnished and hauled by County, To be driven, filled with Class "C" Concrete and pointed 3' below Stream bed by Contractor.
④ See general notes, and plan
⑤ Class "C" Concrete.
⑥ Removal of existing abutments of proposed bridge site, Shall be considered incidental.

Crawford County — Project No. L71-22
75'x20' Pony Truss & Approachs - ESTIMATE OF QUANTITIES

ITEM	Piers	Deck	Abutment	Totals
① Structural Concrete	⑥ 13.02 cu. yds.	⑦ 50.89 cu. yds	———	63.91 cu. yds.
① Reinforcing Steel	1474 Lbs.	4296 Lbs.	———	5770 Lbs.
② Creosoted Piles 10@ 90'	———	———	900 L.F.	900 L.F.
③ Cast in Place TYPE II 16" 14@ 50'	700 L.F.	———	———	700 L.F.
④ Excavation Class 10 Channel	———	———	———	175 cu. yds.
⑤ Re-erect Bridge ⑧ and Approachs	———	———	———	Lump sum

① Furnish and Place, by contractor.
② Contractor To furnish and drive.
③ Furnish and hauled by County, To be driven, filled with Class "C" concrete and Pointed 3' below stream bed by contr.
④ By Contractor
⑤ See general notes, and plan.
⑥ Class C concrete
⑦ Class D concrete
⑧ Contractor To disassemble and haul Trusses To proposed bridge site, Shall be considered incidental. Removal of existing abutments of Proposed bridge site, Shall be considered incidental.

1966 TRAFFIC
PROJECT NO. L71-21 26 V.P.D.
PROJECT NO. L71-22-37 V.P.D.

I hereby certify that this part, plan, specification or report was prepared by me or under my direct personal supervision and that I am a duly registered Professional Engineer and Land Surveyor, under the laws of the State of Iowa.

Signed H. Dale Wright Date July 28, 1971
H. DALE WIGHT, P. E. & L. S. Iowa Reg. No. 5798

APPROVED
L. L. Greenway 8-2-71
SAC COUNTY ENGINEER

APPROVED
Marvin Nutzman 8-2-71
Lawrence Ritter 8-2-71
L. H. Moore 8-2-71
BOARD OF SUPERVISORS
SAC COUNTY PROJ. NO. L71-21

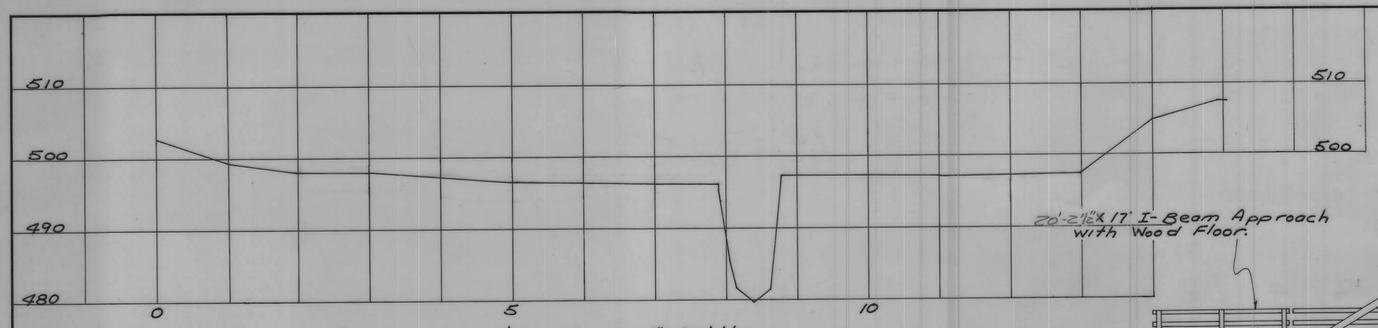
APPROVED
K. O. Steik 8-2-71
Earth Fuller 8-2-71
Myrna Arnold 8-3-71
John Hildebrandt 8-3-71
Clarence Stemmler 8-9-71
BOARD OF SUPERVISORS
CRAWFORD COUNTY
PROJ. NOS. L71-21 & L71-22

APPROVED
DEPUTY CHIEF ENGINEER DATE
IOWA HIGHWAY COMMISSION

ASSISTANT DISTRICT ENGINEER
SECONDARY ROADS
IOWA STATE HIGHWAY COMMISSION
APPROVED
DATE

CRAWFORD (SAC) COUNTIES PROJECT NO. L71-21 ONLY-CRAWFORD COUNTY PROJECT NO. L71-22

B.M.#1 SPK in Corner Post in Fence Line, 35'Lt. Sta. 0+00 Elev.-500.00
B.M.#2 SPK in Telegraph Pole 20' Rt. Sta. 14+81 Elev.-514.11



Stream Slope 4.6' Per mile from Bulletin No. 28 "Magnitude and Frequency of Iowa Floods", Which checks design slope from drainage ditch plans.

Hydraulic Data

M.A.F. = $50.22\ A^{.707}\ S^{.367}$
A = 210 Sq. Mi.
S = 4.6
M.A.F. = $(50.22)(210)^{.707}(4.6)^{.367}$
= (50.22)(43.9)(1.75) = 3858 C.f.s.
25 year storm (3858)(2.65) = 10,224 c.f.s.
50 year storm (3858)(3.10) = 11,960 c.f.s.

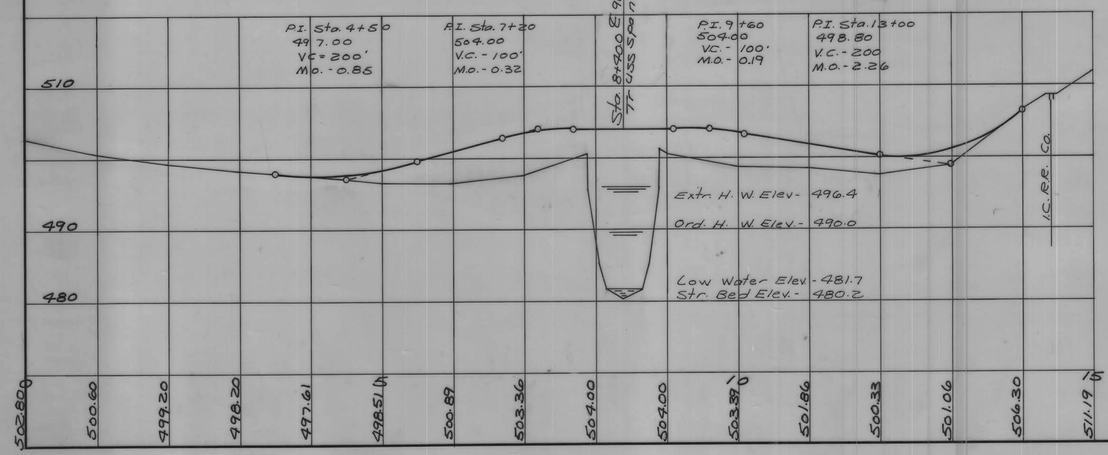
$V = \frac{1.486}{n} R^{2/3} S^{1/2}$

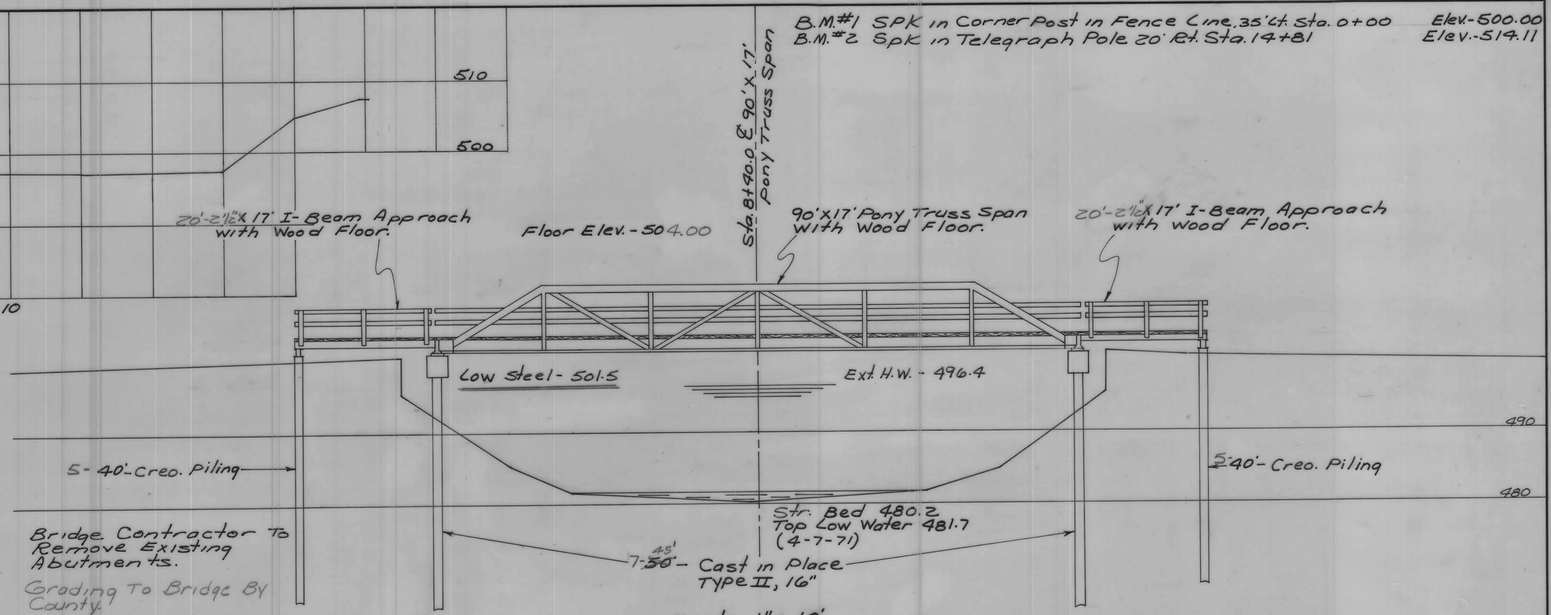
$V = \frac{1.486}{.028} = 53.07$ .025 was used on original drainage ditch calculations.

$R^{2/3} = \frac{1058}{109} = 9.71^{2/3} = 4.56$

$S^{1/2} = .000871^{1/2} = .0294$

V = (53.07)(4.56)(.0294) = 7.11 fps
Q = V. A.
Q = (7.11)(1500) = 10,665 c.f.s. @ Elev.- 501.5





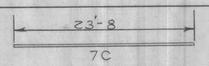
RE-ERECTION
90'X 17' PONY TRUSS BRIDGE WITH APPROACH SPANS.
LOCATED AT THE NORTH LINE OF SEC. 6, T-85N, R-37W, JACKSON TWP., CRAWFORD COUNTY, IOWA, OVER THE BOYER RIVER.

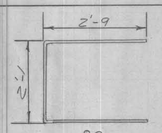
1966 Traffic 26 V.P.D.

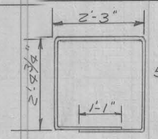
CRAWFORD (SAC) COUNTIES PROJECT NO. L71-21 SHEET NO. 2 of 5

2-Caps Reinforcing Steel				
Bar	Size	Length	№	Weight
c	7	23'-8	20	968
d	5	10'-4½	28	303
e	8	7'-7	4	81
Total Weight				1352

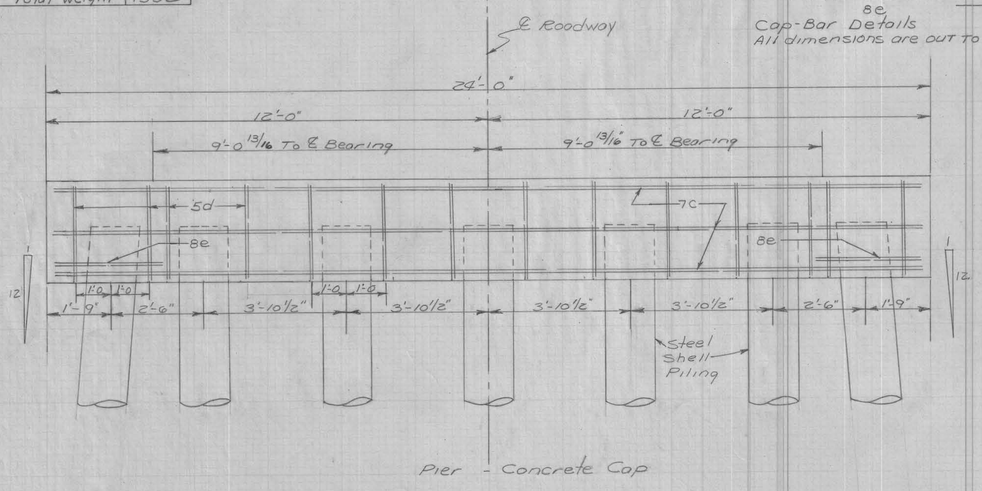
Class "C" Concrete - 2 caps
11.50 cu. yds.



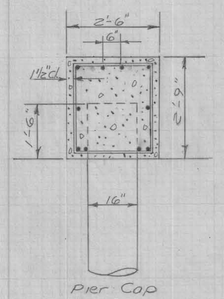




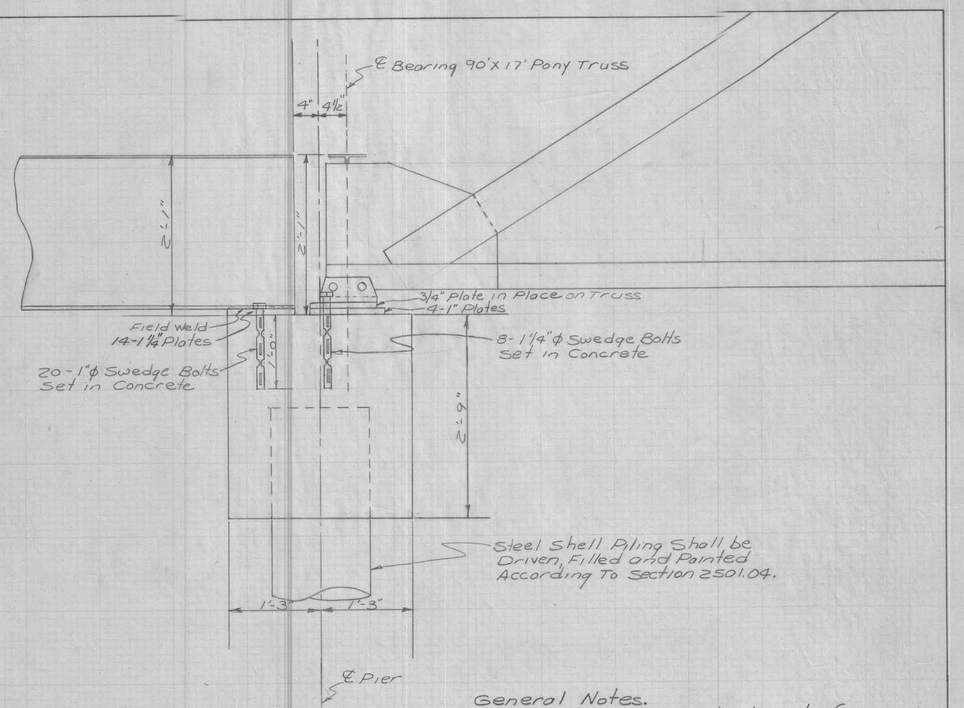
Cap-Bar Details
All dimensions are OUT TO OUT



Pier - Concrete Cap



Pier Cap



General Notes.

County To haul Pony Truss bridge, To proposed bridge site, from Mapleton, Ia. The two 90' truss sections are broken down into 3 sections each. All transverse and longitudinal I-Beams have been removed. Contractor to re-erect bridge.

County To furnish and haul to bridge site steel I-Beams and steel caps for approaches.

County To furnish rail for approaches, To be built by contr.

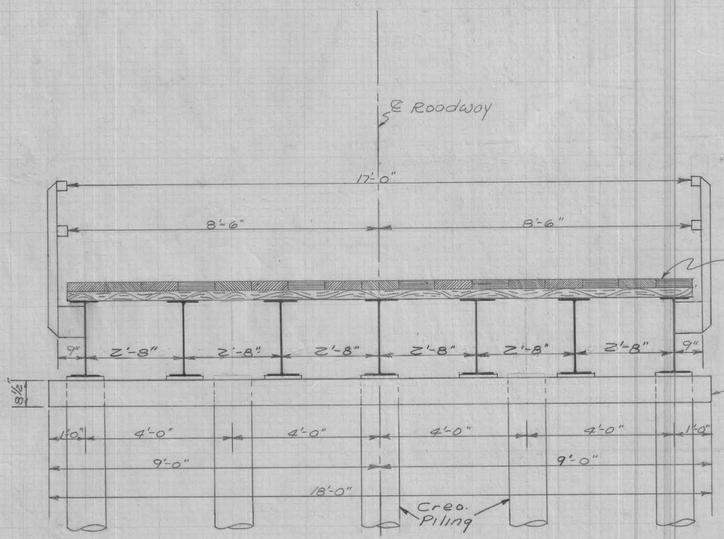
County TO build Plank deck.

County To furnish and haul steel shell piling To bridge site.

Contractor To furnish and drive wood Piling.

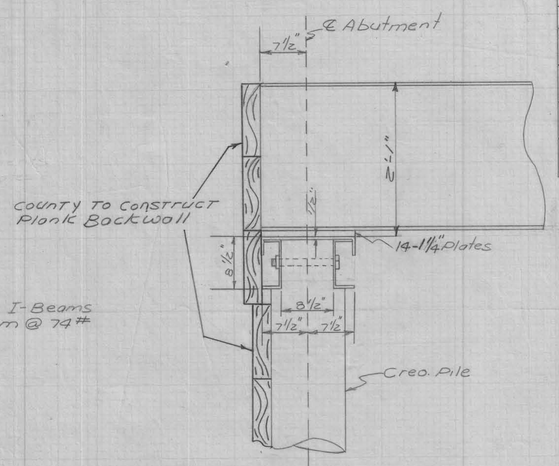
County To furnish Plates and bolts.

All exposed Corners of 90° or Sharper are To be filleted ¾".



Abutment | 20' Approaches

Approach I-Beams
14-23¾"x20'-6" WF I-Beam @ 74#



ESTIMATE OF QUANTITIES				
Item	Piers	Deck	Abutment	Totals
① Structural Concrete	⑤ 11.50 cu yds.	——	——	11.50 cu yds.
① Reinforcing Steel	1352 Lbs.	——	——	1352 Lbs.
② Creosoted Piles 10 @ 40'	——	——	400 L.F.	400 L.F.
③ Cast in Place TYPE II 16" 14 @ 50'	700 L.F.	——	——	700 L.F.
④ Re-erect Bridge ⑥ and Approaches	——	——	——	Lump Sum

① Furnish and Place by Contractor
② Contractor To furnish and drive.
③ Furnished and hauled by County, To be driven, filled with Class "C" Concrete and painted 3' below stream bed by contractor.
④ See general notes, and plan
⑤ Class "C" Concrete.
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RE-ERECTION
90'X17' PONY TRUSS BRIDGE
WITH APPROACH SPANS.
NORTH LINE SEC. 6-T85N, R37W
OVER THE BOYER RIVER.

PI. Sta. 4+50
497.00
VC - 200
M.O. - 0.8781475
PI Sta 7+20
504.00
V.C. - 100'
M.O. - 0.32407375
PI Sta. 9+60
504.00
VC - 100
M.O. - 0.19117625
PI. Sta. 13+00
498.80
V.C. - 200
M.O. - 2.2573525
-0.800%
+2.59259%
+0.00%
-1.52971
+7.50%
300' downst
510
500
490
480
5
10
15
old pier
old pier
old abut
4.6 per mile
V = 7.13
Hydraulic Data
M.A.F. = 50.22 A^.707 S^.367
A = 210 Sq. mi.
S = 4.6
M.A.F = (50.22)(210)^.707 (4.6)^.367
= (50.22)(43.9)(1.75) = 3858 c.f.s.
25 year storm (3858)(2.65) = 10,224 c.f.s.
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V = 1.486/n R^2/3 S^1/2
V = 1.486/.028 = 53.07
R^2/3 = 1058/109 = 9.71^2/3 = 4.56
S^1/2 = .000871^1/2 = .0294
V = (53.07)(4.56)(.0294) = 7.11
Q = VA
Q = (7.11)(1398) = 9,940 Low steel @ 500.5
(7.11) x (1500) = 10,665 c.f.s. Low steel @ 501.5
Bottom deck 503.50
Low steel 501.5
Low steel 500.5
4.1 x 99 = 405.9
Ext. High water 496.4
.9 x 15 = 13.5
10.6 x 15.0 / 2 = 79.50
11.4 x 60 = 684.00
5.1 x 8 / 2 = 20.4
5 x 60 = 300'
4.6 x 9 = 40.5
2.2 x 10.0 / 2 = 16.00
12.00
75.75
98.10
17.10
684.00
165.00
18.75
18.75
13.50
79.50
16.00
1198.45 sq. ft.
1198.45
405.90
1604.35
21.28
1583.07
Cos. 28° - .882948 x 1583.07 = 1398 sq. ft. from low steel @ 500.5
Cos. 28° .882948 x 1198.45 = 1058 sq. ft. opening from Elev. - 496.4
+70
+80
+90
8+00
+10
+20
+30
+40
+50
+60
+70
+80
+90
9+00
+10
+20
+30
+40
+50
"PERFECT" CROSS SECTION 10 x 10 = ONE INCH
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