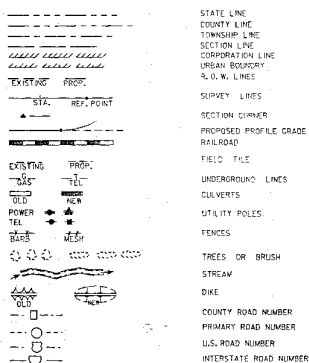


TWIN CULVERT EXTENSION  
F-30-5(65)--20-64

MARSHALL COUNTY

# CONVENTIONAL SIGNS



IOWA

## DEPARTMENT OF TRANSPORTATION

Highway Division

PLANS OF PROPOSED IMPROVEMENTS ON THE

## PRIMARY ROAD SYSTEM

## MARSHALL COUNTY

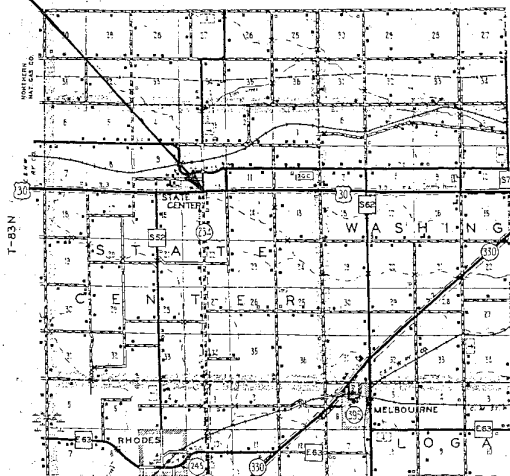
TWIN CULVERT EXTENSION

ON US.30 AT IOWA 234 INTERCHANGE - NEAR SCL  
OF STATE CENTER

SCALE: As Noted

The standard specifications, series of 1984 of the Iowa Department of Transportation shall apply to construction work on this project.

DESIGN NO. 289



R-20W



891.193  
004.642  
031  
57

Marshall Co. 20-64

### CONSTRUCTION PLANS SHOWING PROJECT AS BUILT

Plan Preparation Supervised By: Stephen J. Arnold  
Resident Construction Engineer  
Date: 1-4-91 Iowa Reg. No. 11450

### REVIEWED AND FORWARDED TO AMES

ROBERT YOUNG Date: 1-4-91  
District Construction Engineer

THREE Full-Size Prints To Be Made and Returned To

KENNETH MEERS  
District Engineer

AFTER MICROFILMING RETURN ORIGINAL  
TO DISTRICT NO. ONE

THIS PROJECT TO BE LET AS:  
FN-30-5 (65) -- 21-64

STATE	FHWA REGION	F.Y.	SHEET	TOTAL
IOWA	7		1	5

PROJECT NUMBER

F-30-5(65)--21-64

R.O.W. PROJECT NUMBER

PIN

88-64-020-2

### INDEX OF SHEETS

NO.	DESCRIPTION
1	TITLE SHEET
2	PROJECT QUAN. & E.W.O.
2-5	BRIDGE DESIGN NO. 289

### STANDARD ROAD PLANS

IDENT	DATE	IDENT	DATE

### STANDARD BRIDGE PLANS

STANDARD	ISSUED	REVISED
TWICH-01-87	JULY 1987	
TWICH-01-87	JULY 1987	
TWICH-02-87	JULY 1987	
TWICH-03-87	JULY 1987	
TWICH-04-87	JULY 1987	
TWICH-05-87	JULY 1987	
TWICH-06-87	JULY 1987	

### REVISIONS

**Iowa Department of Transportation**

AUTHORIZED FOR LETTING

SCW. GILMAN 6-8-89  
DEPUTY CHIEF ENGINEER DATE

I hereby certify that this plan was prepared under my supervision and that engineering decisions with regard to the design were made by me or by other duly Registered Professional Engineers under the laws of the State of Iowa.

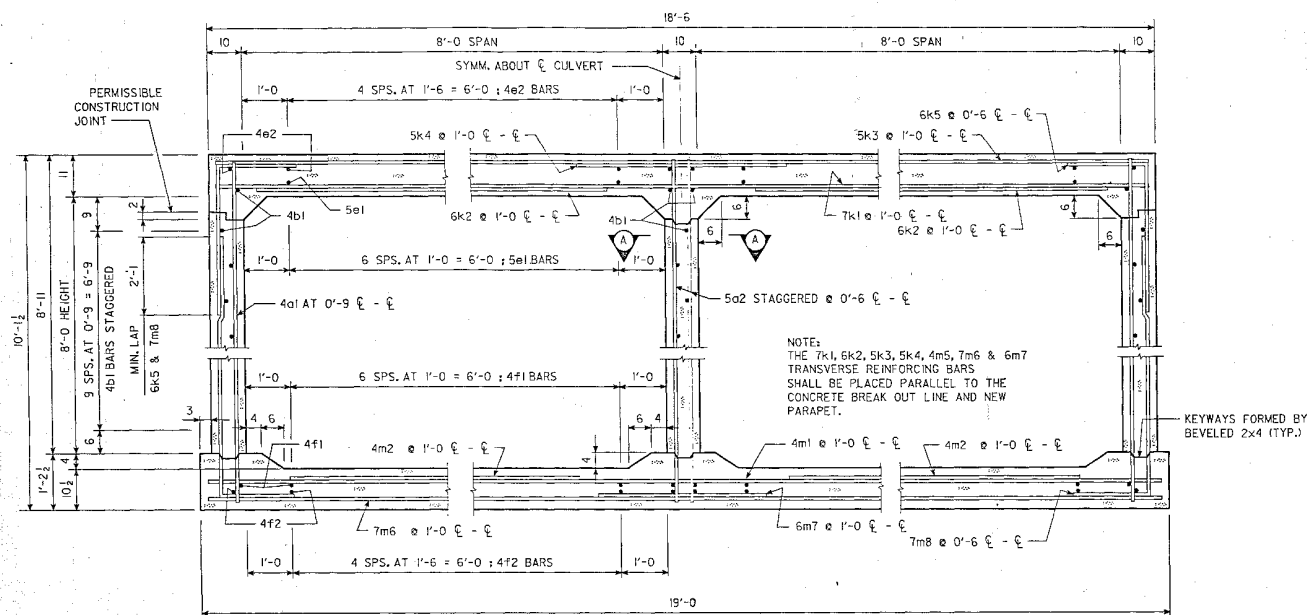
Name: William A. Arnold  
Iowa Registration No. 4449 Date: 5/9/89

U.S. DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION  
APPROVED

FOR THE DIVISION ADMINISTRATOR DATE

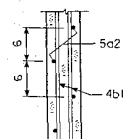


USD 044501--LEP THIS SHEET REBARRAV DEVICE ZHA0H(200,004) ARCH. TAPE NO. 15 DATE 9-8-88

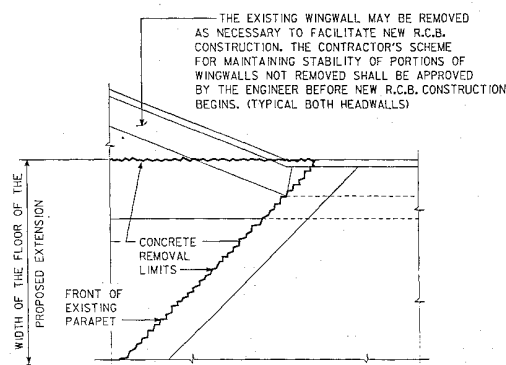


SECTION THRU BARREL  
(NORMAL TO CULVERT)

NOTE:  
DIMENSIONS SHOWN FOR  $\epsilon - \epsilon$  OF TRANSVERSE BARS, VERTICAL WALL BARS AND CORNER BARS ARE MEASURED ALONG CULVERT.



SECTION A-A

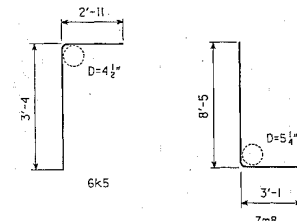


PART REMOVAL PLAN

# REINF. BAR LIST - ONE 18'-0" EXTENSION

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
4a1	EXTERIOR WALLS, F.F.V.	—	48	9'-8	310
5a2	CENTER WALL BOTH F.V.	—	36	9'-8	363
4b1	WALLS, F.F.H. & B.F.H.	—	34	17'-10	405
5a1	SLAB, BOTT. LONGIT.	—	14	17'-10	260
4a2	SLAB, TOP LONGIT.	—	14	17'-10	167
4f1	FLOOR, TOP LONGIT.	—	16	17'-10	214
4f2	FLOOR, BOTT. LONGIT.	—	14	17'-10	167
7k1	SLAB, BOTT. TRANSV.	—	20	25'-8	1049
6k2	SLAB, BOTT. TRANSV.	—	34	10'-5	532
5k3	SLAB, TOP TRANSV.	—	20	25'-8	535
5k4	SLAB, TOP TRANSV.	—	17	7'-0	124
6k5	SLAB, TOP CORNER	┐	72	6'-3	676
4m1	FLOOR, TOP TRANSV.	—	2	18'-8	25
4m2	FLOOR, TOP TRANSV.	—	18	5'-4	64
4m3	FLOOR, TOP TRANSV. VAR.	—	6	20'-5 ± 18'-11	79
4m4	FLOOR, TOP TRANSV. VAR.	—	33	18'-1 ± 2'-1	222
4m5	FLOOR, BOTT. TRANSV. EXIST. PPT.	—	2	26'-4	35
7m6	FLOOR, BOTT. TRANSV.	—	20	26'-4	1076
6m7	FLOOR, BOTT. TRANSV.	—	18	5'-8	153
7m8	FLOOR, BOTT. CORNER	└	72	11'-6	1692
	3" $\phi$ DOWELS	—	60	2'-6	156
				TOTAL ( LBS. )	8304

## BENT BAR DETAILS



NOTE: ALL DIMENSIONS ARE OUT TO OUT. D = PIN DIAMETER.

## DESIGN FOR A 45° SKEW TWIN 8'x8' R.C.B. CULV. EXTENSION

### BARREL EXTENSION DETAILS

STA. 180+60 OCTOBER, 1988

### MARSHALL COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION  
DESIGN SHEET NO. 2 OF 4 FILE NO. 27794 DESIGN NO. 289

DESIGNED BY THAYNE SORENSON  
CHECKED BY

TRACED BY  
CHECKED BY

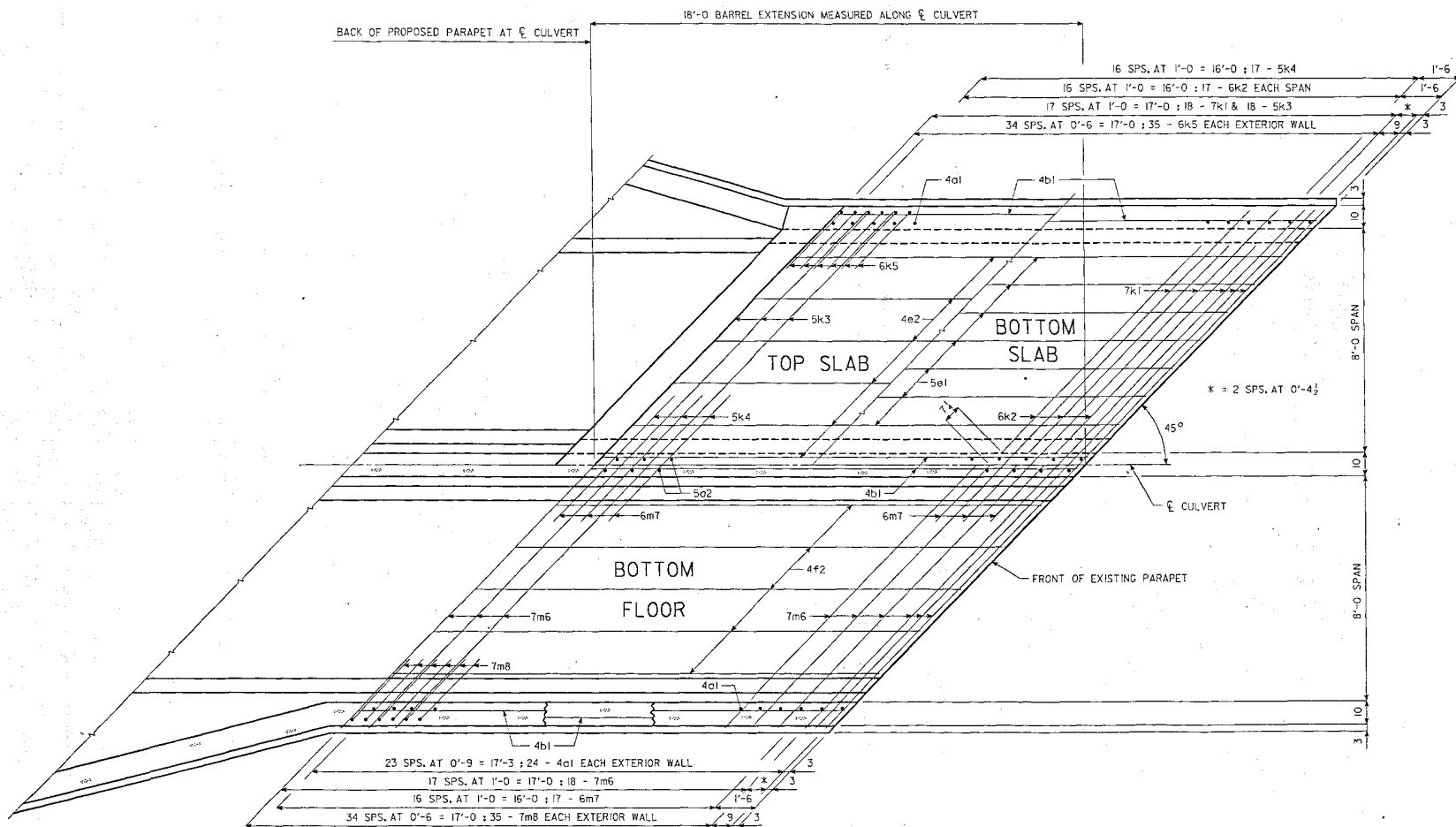
MARSHALL COUNTY

PROJECT NUMBER

FN-30-5(65)-21-64

STATE IOWA  
FUNDING  
SHEET NO. 289  
TOTAL SHEETS 289

H64028900.S02 DEVICE : ZHA0H(200,004) ARCH. TAPE NO. DATE



REINFORCING STEEL LAYOUT

DESIGN FOR A 45° SKEW  
TWIN 8'x8' R.C.B. CULV. EXTENSION  
BARREL EXTENSION DETAILS  
STA. 180+50 OCTOBER, 1988  
MARSHALL COUNTY  
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION  
DESIGN SHEET NO. 3 OF 4 FILE NO. 27794 SHEET NO. 289

DESIGNED BY THAYNE SORENSON TRACED BY \_\_\_\_\_  
DETAILED BY THAYNE SORENSON CHECKED BY HM  
H64028900.S03 DEVICE : ZHA04(200.004) ARCH. TAPE NO. \_\_\_\_\_ DATE \_\_\_\_\_

MARSHALL COUNTY

PROJECT NUMBER

FN-30-5(65)--21-64

STATE

IOWA

DESIGN

7

FILE NO.

27794

SHEET

47

DESIGN

5

