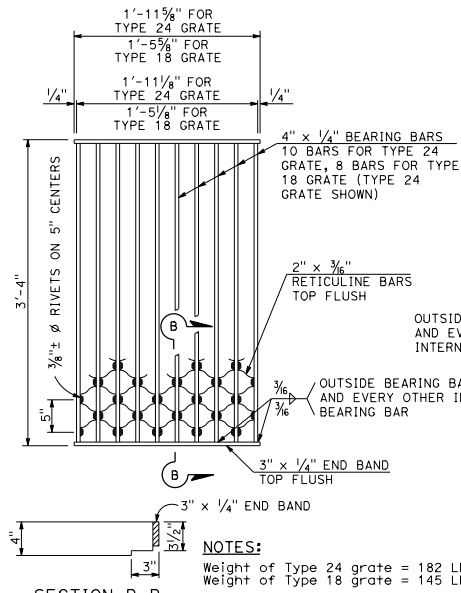


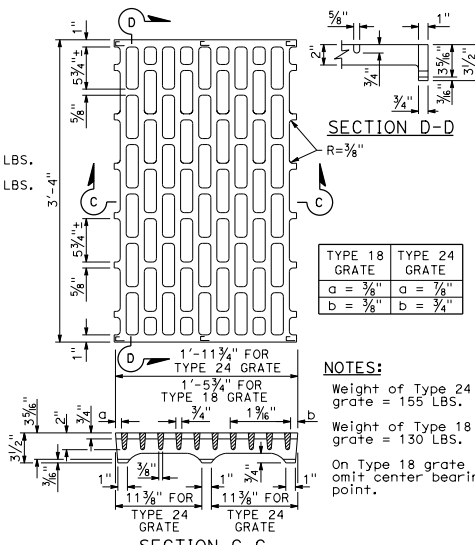
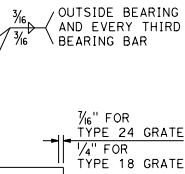
TYPE 18-10 AND 24-13 GRATE
(Welded Steel)



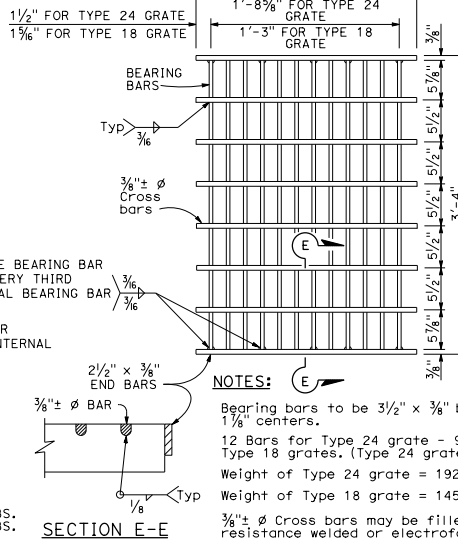
TYPE 18-8S AND 24-10S GRATE
(Welded Steel) Reticuline type

NOTES:

Bearing bars to be $3\frac{1}{2}$ " x $\frac{1}{4}$ " bars on 1" centers.
 $\frac{3}{8}$ " \pm ϕ Cross bars may be fillet welded, resistance welded or electroforged to bearing bars.
Weight of Type 24 grate = 141 LBS.
Weight of Type 18 grate = 107 LBS. (Type 24 grate shown).



TYPE 18-8C AND 24-10C GRATE
(Cast ductile iron)

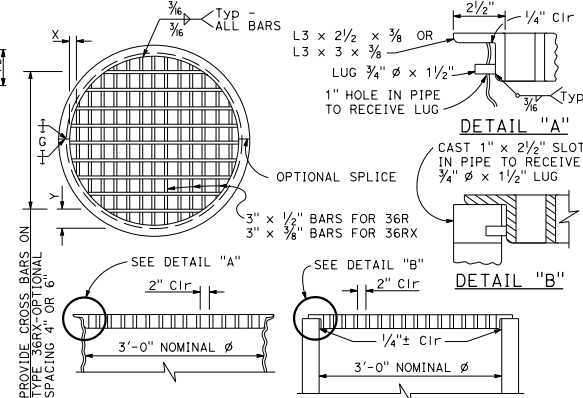


TYPE 18-9X AND 24-12X GRATE
(Welded Steel)

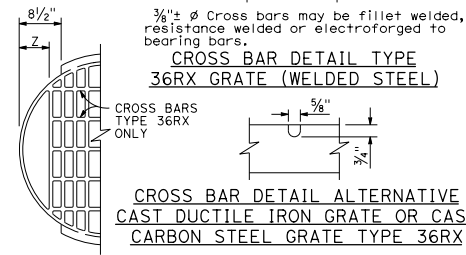
NOTES:

Weight of Type 24 grate = 155 LBS.
Weight of Type 18 grate = 130 LBS.
On Type 18 grate omit center bearing point.

TYPE 18 GRATE	TYPE 24 GRATE
a = $\frac{3}{8}$ "	a = $\frac{7}{8}$ "
b = $\frac{3}{8}$ "	b = $\frac{3}{4}$ "



TYPE 36R AND 36RX GRATE DETAILS



MODIFIED TYPE 36R AND 36RX GRATE FOR ODI INLET

NOTES:

- When alternative grates are allowed - Final pay based on alternative with the lesser weight.
- Use frame shown on Standard Plan D74A, D74B or RSP D77A as appropriate.
- When Type 24-10S, 24-12X or 24-13 grates are used with GDO inlets, a $\frac{1}{4}$ " x $\frac{3}{2}$ " x $3'-4\frac{1}{8}$ " steel bar shall be welded across the center of inlet frame to separate the individual grates.
- See Revised Standard Plan RSP D77A for connecting chain to welded grate and frame. When chain is required, do not use cast ductile iron grate.

GRATE BAR SPACING TABLE

TYPE	No. OF BARS	CLEAR BAR SPACING	X	Y	Z
36R	13	2"	$2\frac{1}{8}$ "	-	-
36RX (STEEL)	15	2"	$\frac{3}{8}$ "	$3\frac{3}{4}$ "	$5\frac{3}{4}$ "
36RX (CAST)	13	2"	$2\frac{1}{8}$ "	$3\frac{3}{4}$ "	$5\frac{3}{4}$ "
36R Mod	12	2"	$2\frac{1}{8}$ "	-	5"
36RX Mod (STEEL)	13	2"	$\frac{3}{8}$ "	$3\frac{3}{4}$ "	$5\frac{3}{4}$ "
36RX Mod (CAST)	12	2"	$2\frac{1}{8}$ "	$3\frac{3}{4}$ "	$5\frac{3}{4}$ "

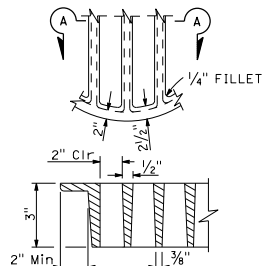
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
------	--------	-------	--------------------------	-----------	--------------

Raymond On Jester
REGISTERED CIVIL ENGINEER
No. C37332
Exp. 6-30-14
CIVIL
STATE OF CALIFORNIA

July 20, 2012
PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

TO ACCOMPANY PLANS DATED _____



ALTERNATIVE CAST DUCTILE IRON GRATE OR CAST CARBON STEEL GRATE TYPE 36R AND 36RX

BASIS FOR MISCELLANEOUS IRON AND STEEL FINAL PAY WEIGHTS FOR DRAINAGE INLETS

INLET TYPE	GRATE TYPE	No. OF GRATES	WEIGHT LB
GDO (SEE NOTE 4)	24-10C	2	391
	24-10S	2	456
	24-12X	2	473
	24-13	2	374
G0,G0L,G1,G2, G3,G4 (TYPE 24)	24-10C	1	202
	24-10S	1	229
	24-12X	1	239
	24-13	1	188
G4 (TYPE 18) G5,G6	18-8S	1	187
	18-9X	1	187
	18-10	1	149
GT1,GT2	18-8S	2	374
	18-9X	2	374
	18-10	2	298
GT3,GT4	24-10C	2	404
	24-10S	2	458
	24-12X	2	478
	24-13	2	376
ODI	36RX (Mod)	1	196
GMP,GCP,GCPI	36RX	1	215
ODI	36R (Mod)	1	220
GMP,GCP,GCPI	36R	1	236
TRASH RACK			22
GRATE CHAIN			3

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
BICYCLE TRAVERSABLE GRATE DETAILS
NO SCALE

RSP D77B DATED JULY 20, 2012 SUPERSEDES STANDARD PLAN D77B
DATED MAY 20, 2011 - PAGE 165 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP D77B