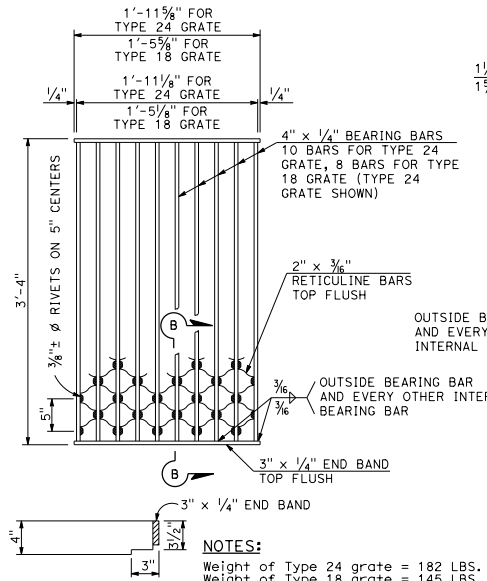


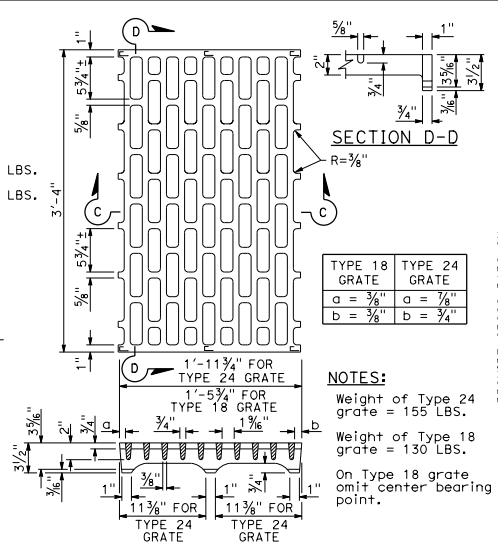
**SECTION F-F**  
**SECTION G-G**  
**TYPE 18-10 AND 24-13 GRATE**  
(Welded Steel)



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

**NOTES:**  
Bearing bars to be 3/2" x 1/4" bars on 1 1/8" centers.  
3/8" ±  $\phi$  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).

**NOTES:**  
Weight of Type 24 grate = 182 LBS.  
Weight of Type 18 grate = 145 LBS.

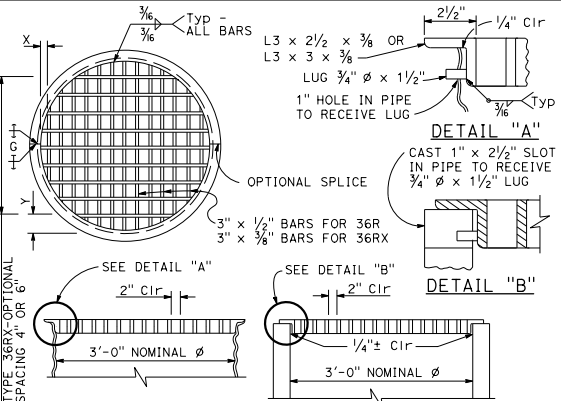


**SECTION C-C**  
**TYPE 18-8C AND 24-10C GRATE**  
(Cast ductile iron)

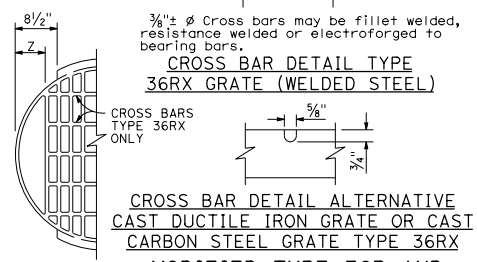
TYPE 18 GRATE	TYPE 24 GRATE
a = 3/8"	a = 7/8"
b = 3/8"	b = 3/4"

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

**NOTES:**  
Bearing bars to be 3/2" x 3/8" bars on 1 1/8" centers.  
12 Bars for Type 24 grate - 9 bars for Type 18 grates. (Type 24 grate shown).  
Weight of Type 24 grate = 192 LBS.  
Weight of Type 18 grate = 145 LBS.  
3/8" ±  $\phi$  Cross bars may be fillet welded, resistance welded or electroforged to bearing bars.



**TYPE 36R AND 36RX GRATE DETAILS**



**CROSS BAR DETAIL ALTERNATIVE CAST DUCTILE IRON GRATE OR CAST CARBON STEEL GRATE TYPE 36RX 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 1/4" x 3/2" x 3'-4 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	Y			Z
			4" SPACING	6" SPACING		
36R	13	2"	2 1/8"	-	-	-
36RX (STEEL)	15	2"	3/8"	3 3/4"	5 3/4"	-
36RX (CAST)	13	2"	2 1/8"	3 3/4"	5 3/4"	-
36R Mod	12	2"	2 1/8"	-	-	5"
36RX Mod (STEEL)	13	2"	3/8"	3 3/4"	5 3/4"	5 1/8"
36RX Mod (CAST)	12	2"	2 1/8"	3 3/4"	5 3/4"	5"

RSP D77B DATED APRIL 19, 2013 SUPERSEDES RSP D77B DATED JULY 20, 2012 AND STANDARD PLAN D77B DATED MAY 20, 2011 - PAGE 165 OF THE STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP D77B**

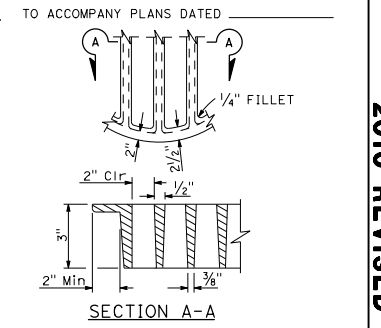
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
------	--------	-------	--------------------------	-----------	--------------

Raymond On Jester  
REGISTERED CIVIL ENGINEER

April 19, 2013  
PLANS APPROVAL DATE

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

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.



**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, GCP1	36RX	1	215
ODI	36R (Mod)	1	220
GMP, GCP, GCP1	36R	1	236
TRASH RACK			22
GRATE CHAIN			3

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**GRATE DETAILS No. 2**  
NO SCALE

2010 REVISED STANDARD PLAN RSP D77B