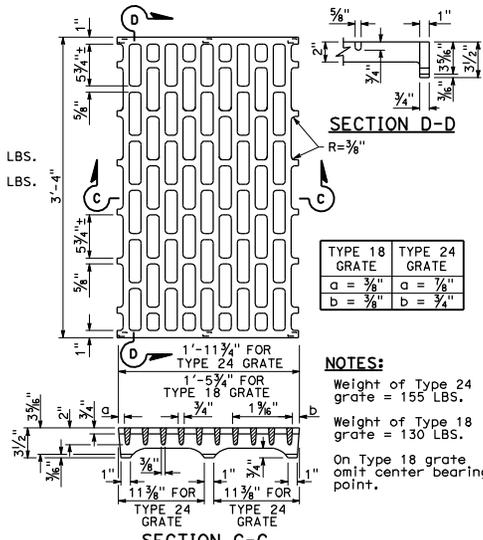


TYPE 18-10 AND 24-13 GRATE

NOTES:

Bearing bars to be 3/2" x 1/4" bars on 1 1/8" centers.
 3/8" ± 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).

3/16" FILLET WELD FULL DEPTH EACH SIDE ON OUTSIDE BEARING BARS AND ON EVERY THIRD INTERNAL BEARING BAR

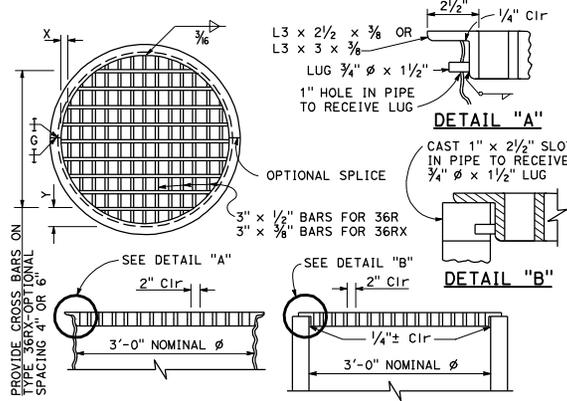


TYPE 18-8C AND 24-10C GRATE

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 = 3/8"	a = 7/8"
b = 3/8"	b = 3/4"



TYPE 36R AND 36RX GRATE DETAILS

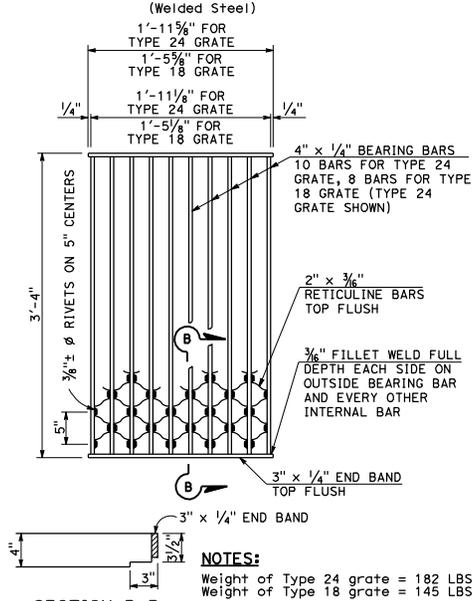


MODIFIED TYPE 36R AND 36RX GRATE FOR ODI INLET

- NOTES:**
- When alternative grades are allowed - Final pay based on alternative with the lesser weight.
 - Seal welding at all surfaces not required when grates are galvanized.
 - Use frame shown on Standard Plan D74A, D74B or D77A as appropriate.
 - When Type 24-10S, 24-12X or 24-13 grates are used with GDO inlets, a 1/4" x 3 1/2" x 3'-4 1/8" steel bar shall be welded across the center of inlet frame to separate the individual grates.

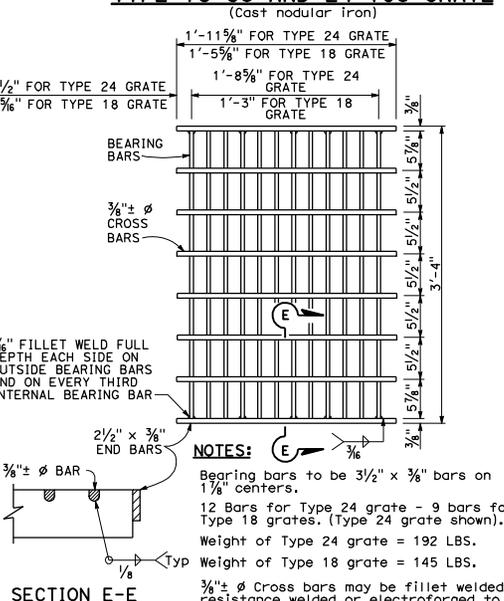
GRATE BAR SPACING TABLE

TYPE	No. OF BARS	CLEAR BAR SPACING	X	4" SPACING	6" SPACING	Y	Z
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 1/2"
36RX Mod (STEEL)	13	2"	3/8"	3 3/4"	5 3/4"	-	5 1/2"
36RX Mod (CAST)	12	2"	2 1/8"	3 3/4"	5 3/4"	-	5"



TYPE 18-8S AND 24-10S GRATE

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



TYPE 18-9X AND 24-12X GRATE

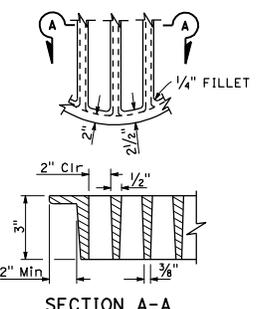
NOTES:
 Bearing bars to be 3/2" x 3/8" bars on 1 1/8" centers.
 12 Bars for Type 24 grate - 9 bars for Type 18 grates. (Type 24 grate shown).
 Weight of Type 24 grate = 192 LBS.
 Weight of Type 18 grate = 145 LBS.
 3/8" ± φ Cross bars may be fillet welded, resistance welded or electroforged to bearing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

D16+	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
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Glenn DeCou
 REGISTERED CIVIL ENGINEER
 No. C34547
 Exp. 9-30-11
 CIVIL ENGINEER PROFESSIONAL SEAL
 STATE OF CALIFORNIA

May 20, 2011
 PLANS APPROVAL DATE

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ALTERNATIVE CAST NODULAR IRON GRATE OR CAST STEEL GRATE TYPE 36R AND 36RX

BASIS FOR Misc 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
G4 (TYPE 18) G5, G6	24-13	1	188
	18-8S	1	187
	18-9X	1	187
GT1, GT2	18-10	1	149
	18-8S	2	374
	18-9X	2	374
GT3, GT4	18-10	2	298
	24-10C	2	404
	24-10S	2	458
	24-12X	2	478
ODI	24-13	2	376
	36RX (Mod)	1	196
	36RX	1	215
	36R (Mod)	1	220
GMP, GCP, GCPI	36R	1	236

BICYCLE PROOF GRATE DETAILS
 NO SCALE

D77B