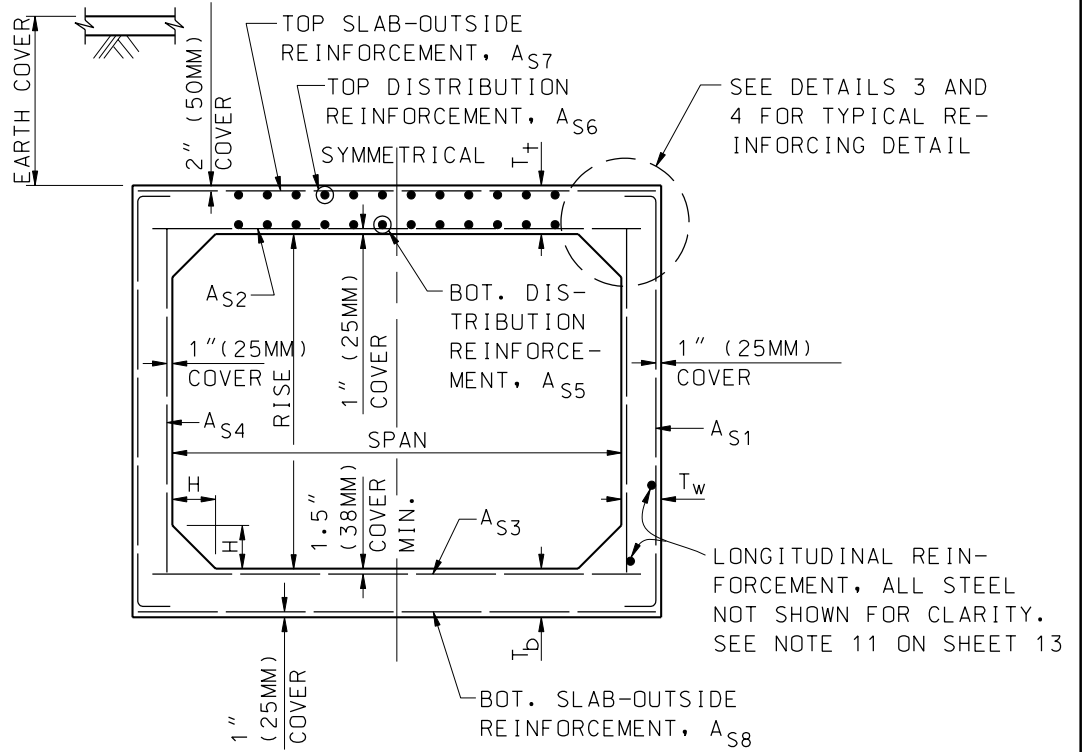
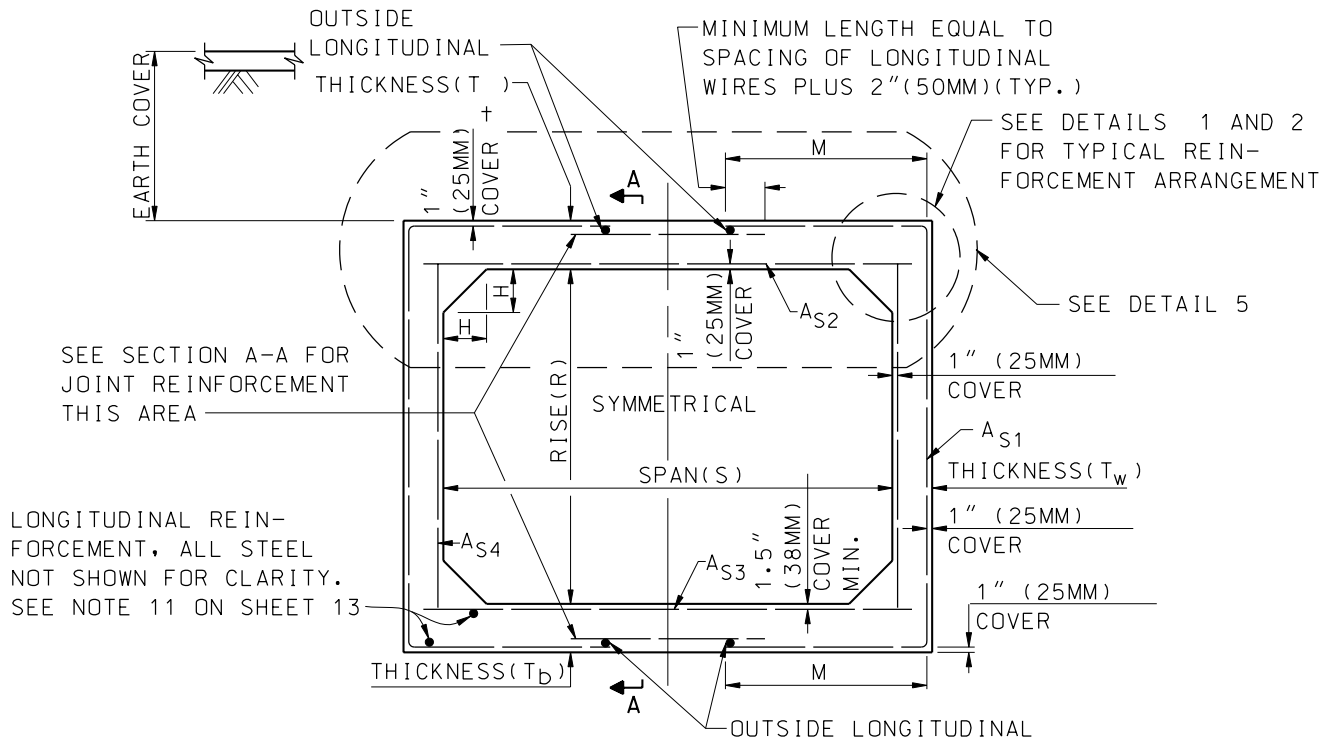


DRAFT



EARTH COVER LESS THAN 24" (600MM)



EARTH COVER 24" (600MM) AND GREATER

TYPICAL BOX SECTIONS

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

PRECAST REINFORCED CONCRETE BOX

STANDARD PLAN

3054-0

APPROVED

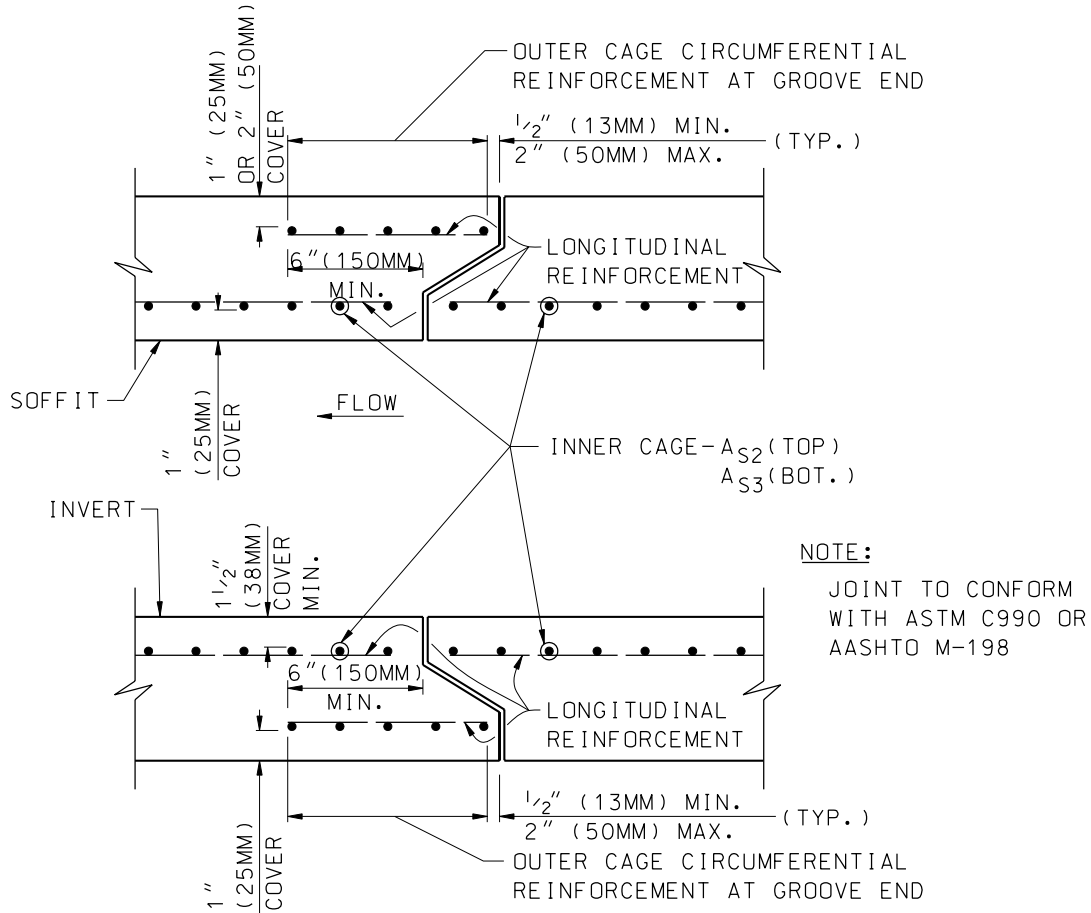
Thomas A. Edmanson
DIRECTOR OF PUBLIC WORKS

5/31/1992
DATE

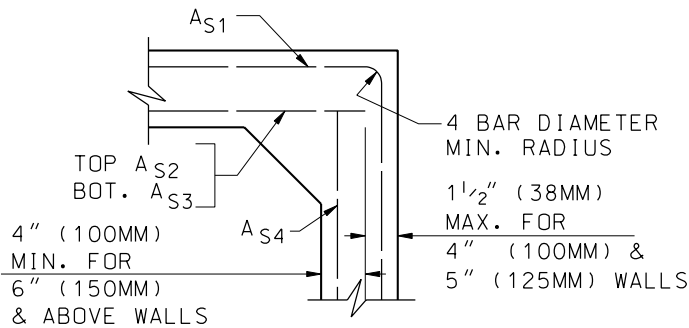
1995, 1999, 2007
REVISIONS

SHEET 1 OF 66

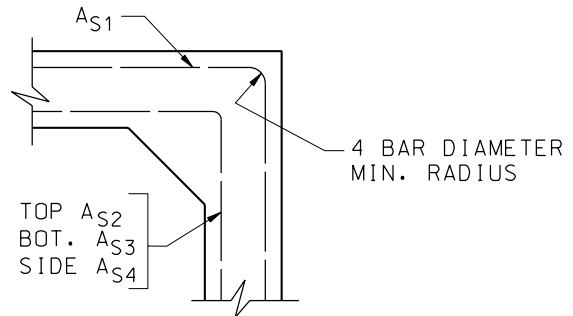
DRAFT



SECTION A-A
TOP AND BOTTOM SLAB JOINT REINFORCEMENT



DETAIL 1
INNER REINFORCEMENT



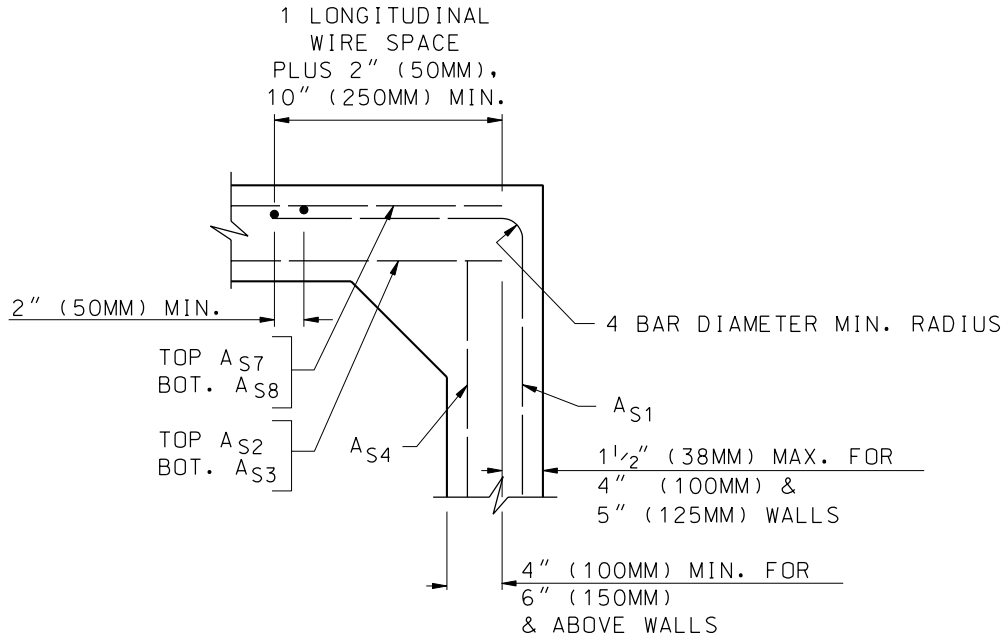
DETAIL 2
OPTION

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

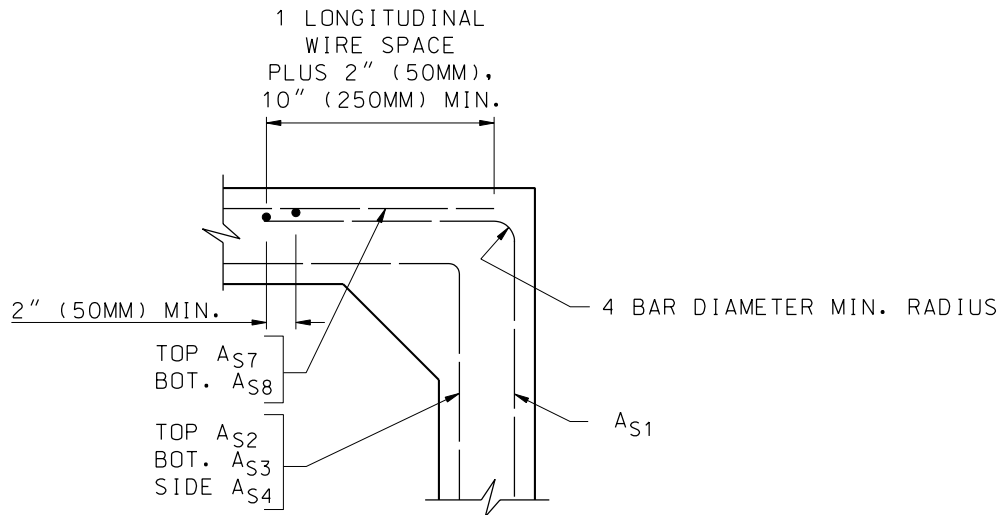
PRECAST REINFORCED CONCRETE BOX

STANDARD PLAN
3054-0
SHEET 2 OF 66

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DETAIL 3
REINFORCEMENT ARRANGEMENT



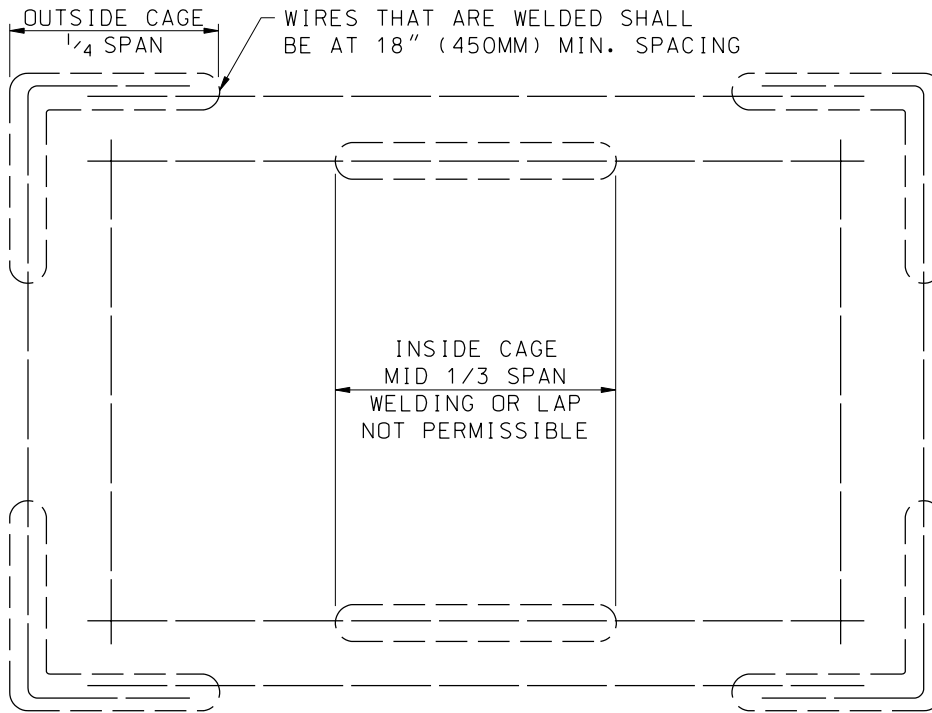
DETAIL 4

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

PRECAST REINFORCED CONCRETE BOX

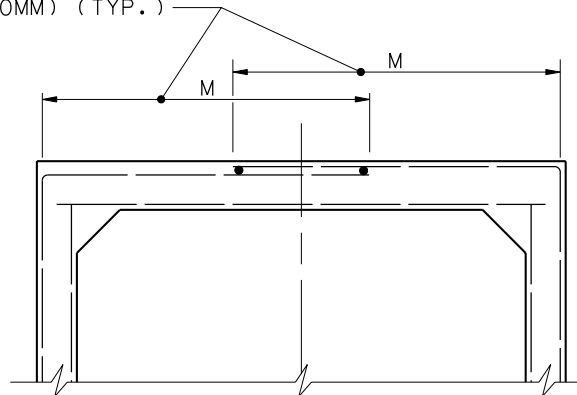
STANDARD PLAN
3054-0
SHEET 3 OF 66

DRAFT



CRITICAL ZONES OF HIGH STRESS
WHERE WELDING IS RESTRICTED

MINIMUM LENGTH EQUAL TO
SPACING OF LONGITUDINAL
WIRES PLUS 2" (50MM) (TYP.)



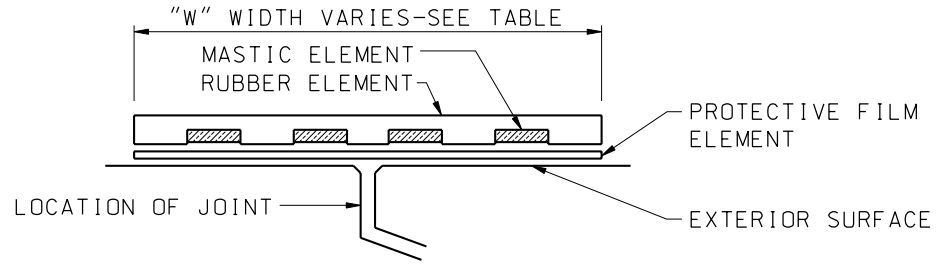
DETAIL 5
OPTION

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

PRECAST REINFORCED CONCRETE BOX

STANDARD PLAN
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SHEET 4 OF 66

DRAFT

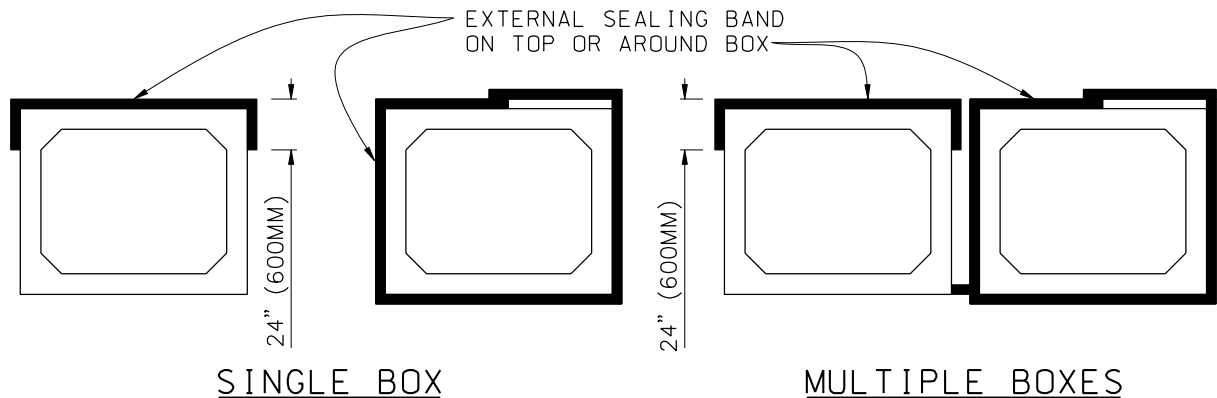


EXTERNAL SEALING BAND SCHEMATIC

TABLE			
SPAN		"W" EXTERNAL SEALING BAND WIDTH	
(FT)	(M)	(IN)	(MM)
4-6	1.2-1.8	9	225
7-8	2.1-2.4	11	275
10-12	3.1-3.7	14	350

NOTES:

1. THE INSIDE SURFACE OF THE RCB SOFFIT SHALL BE MARKED "TOP".
2. "W" MINIMUM SHALL EQUAL THE WALL THICKNESS. "W" MAXIMUM SHALL BE 8" (200MM) FOR SPANS THROUGH 8' (2.44M) AND 14" (350MM) FOR SPANS OVER 8' (2.44M).
3. FOR EXTERNAL SEALING BAND APPLICATIONS SEE BELOW.



LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

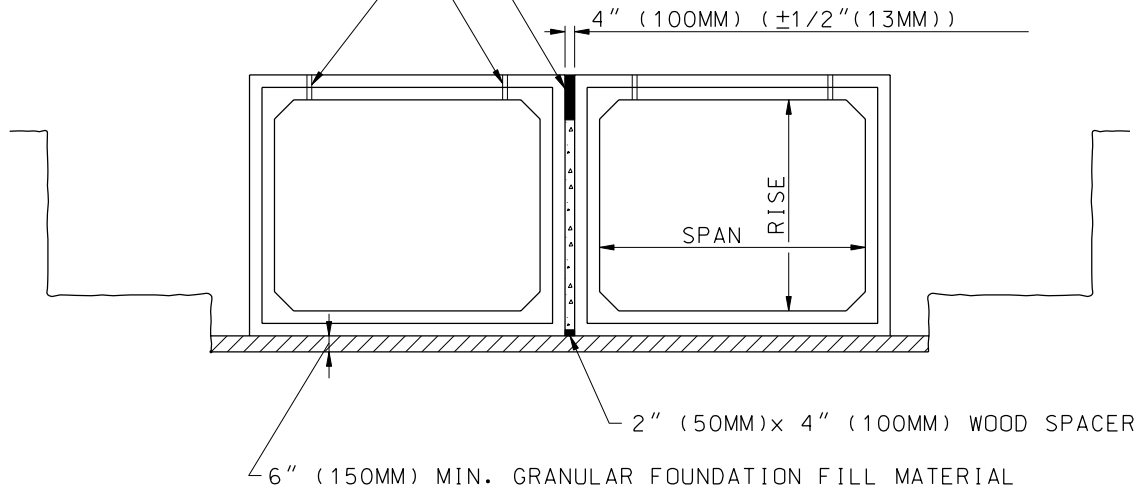
PRECAST REINFORCED CONCRETE BOX

STANDARD PLAN
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SHEET 5 OF 66

DRAFT

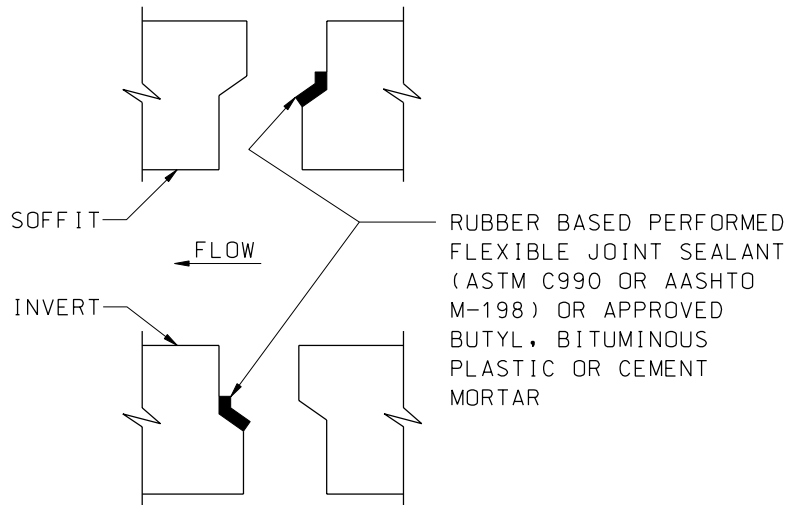
LIFTING HOLES, SIZE & LOCATION TO BE DETERMINED BY FABRICATOR

AT MULTIPLE CELL INSTALLATIONS, FILL GAP BETWEEN SECTIONS WITH EITHER FLOWABLE FILL GROUT OR SAND WITH AT LEAST THE TOP TWO FEET FILLED WITH FLOWABLE FILL GROUT



TYPICAL SECTION

(SHOWING RECOMMENDED INSTALLATION OF MULTI-CELL LOCATIONS, SINGLE CELL INSTALLATION TO BE SIMILAR.)



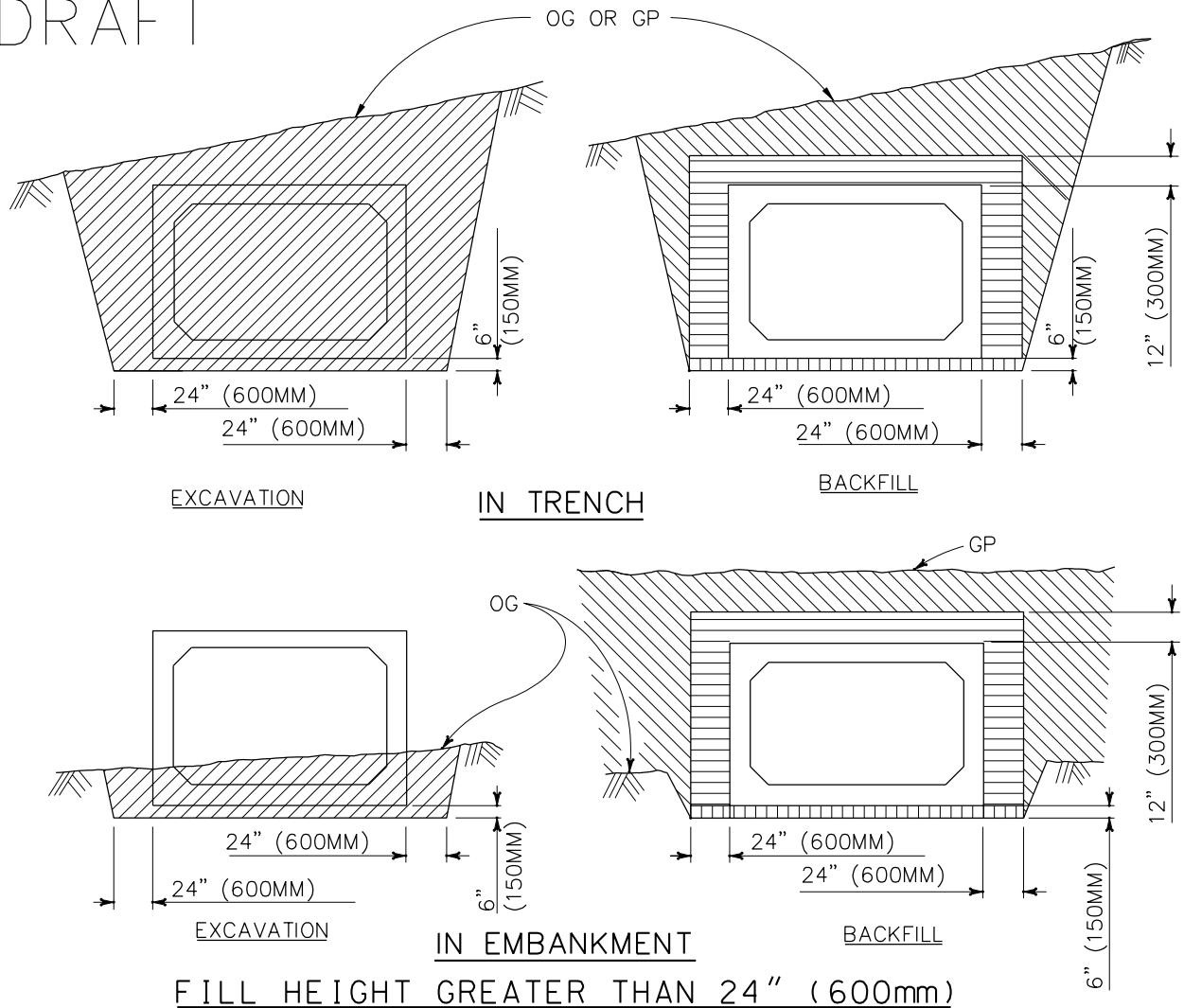
TYPICAL JOINT DETAIL

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

PRECAST REINFORCED CONCRETE BOX

STANDARD PLAN
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SHEET 6 OF 66

DRAFT



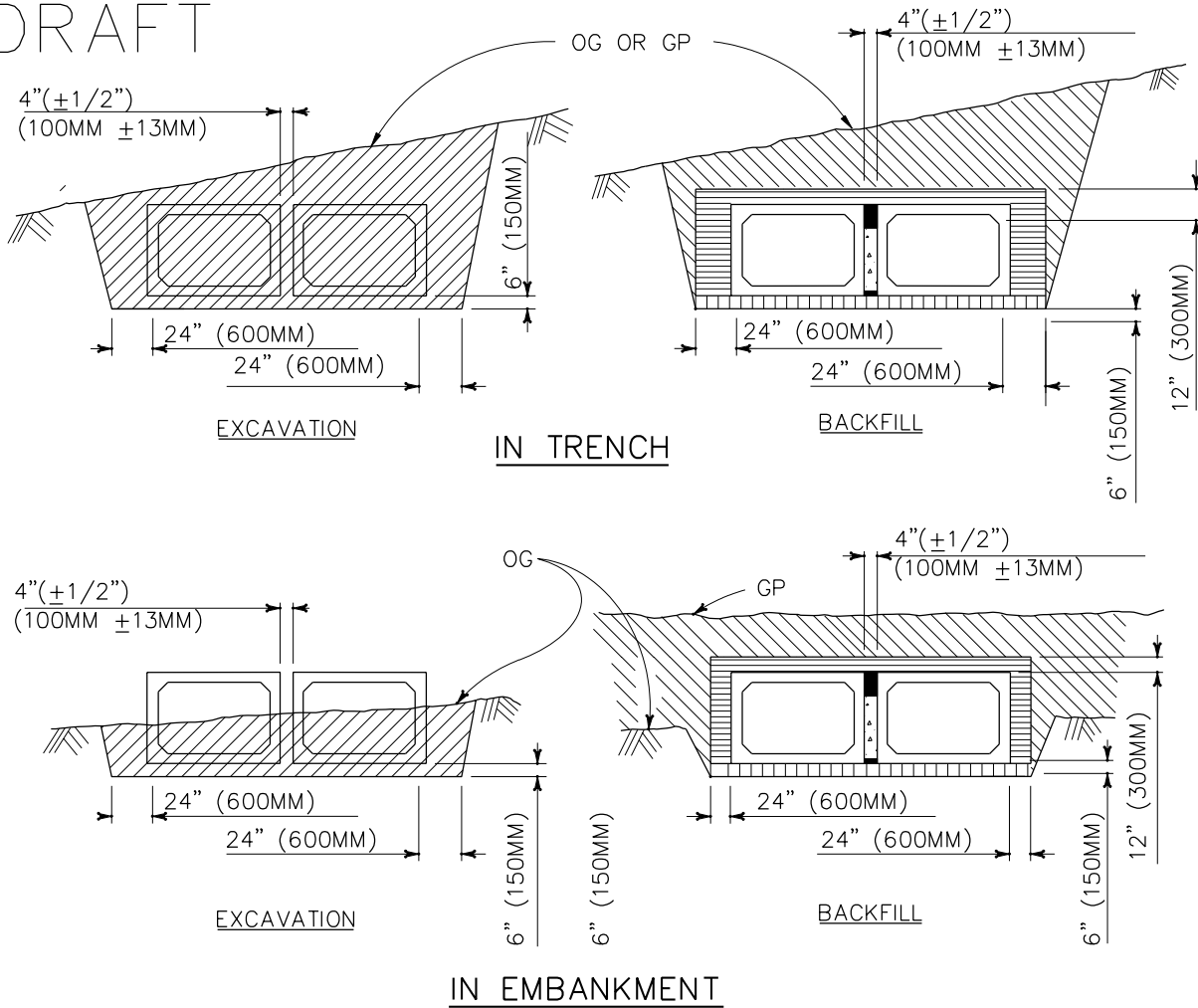
- STRUCTURE EXCAVATION
- STRUCTURE BACKFILL
95% RELATIVE COMPACTION
- ROADWAY EMBANKMENT
- SLURRY CEMENT BACKFILL
- LEVELING BED MATERIAL
- ROADWAY STRUCTURAL SECTION
- ORIGINAL GROUND

- NOTES:**
1. SLOPE OR SHORE EXCAVATION SIDES AS DETERMINED BY THE ENGINEER.
 2. DIMENSIONS SHOWN ARE MINIMUM.








EXCAVATION AND BACKFILL DETAILS 1

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS	
PRECAST REINFORCED CONCRETE BOX	STANDARD PLAN 3054-0 SHEET 7 OF 66

DRAFT



FILL HEIGHT GREATER THAN 24" (600MM)

-  STRUCTURE EXCAVATION
-  STRUCTURE BACKFILL
95% RELATIVE COMPACTION
-  ROADWAY EMBANKMENT
-  SLURRY CEMENT BACKFILL
-  LEVELING BED MATERIAL
-  ROADWAY STRUCTURAL SECTION
-  ORIGINAL GROUND

NOTES:

1. SLOPE OR SHORE EXCAVATION SIDES AS DETERMINED BY THE ENGINEER.
2. DIMENSIONS SHOWN ARE MINIMUM.

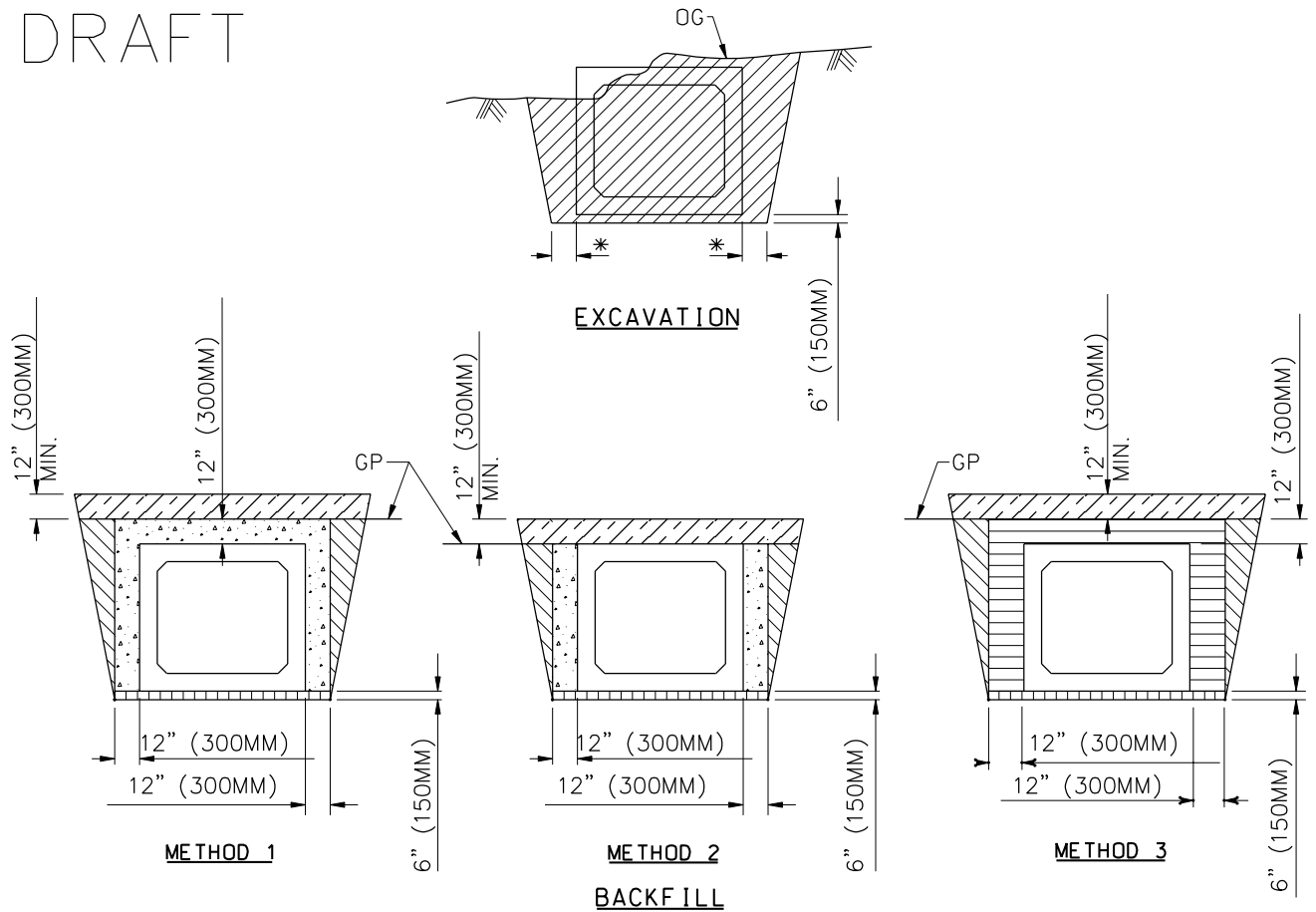
EXCAVATION AND BACKFILL DETAILS 2

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

PRECAST REINFORCED CONCRETE BOX








STANDARD PLAN
3054-0
SHEET 8 OF 66

DRAFT



FILL HEIGHT 24" OR LESS

* 12" (300mm) WHERE METHOD 1 OR 2 BACKFILL IS USED.
 24" (600mm) WHERE METHOD 3 BACKFILL IS USED.

-  STRUCTURE EXCAVATION
-  STRUCTURE BACKFILL
95% RELATIVE COMPACTION
-  ROADWAY EMBANKMENT
-  SLURRY CEMENT BACKFILL
-  LEVELING BED MATERIAL
-  ROADWAY STRUCTURAL SECTION
-  ORIGINAL GROUND

NOTES:

1. SLOPE OR SHORE EXCAVATION SIDES AS DETERMINED BY THE ENGINEER.
2. DIMENSIONS SHOWN ARE MINIMUM.
3. CONSTRUCTION OF ROADWAY STRUCTURAL SECTION SHALL NOT DISTURB THE EXTERNAL SEALING BAND INSTALLATION.

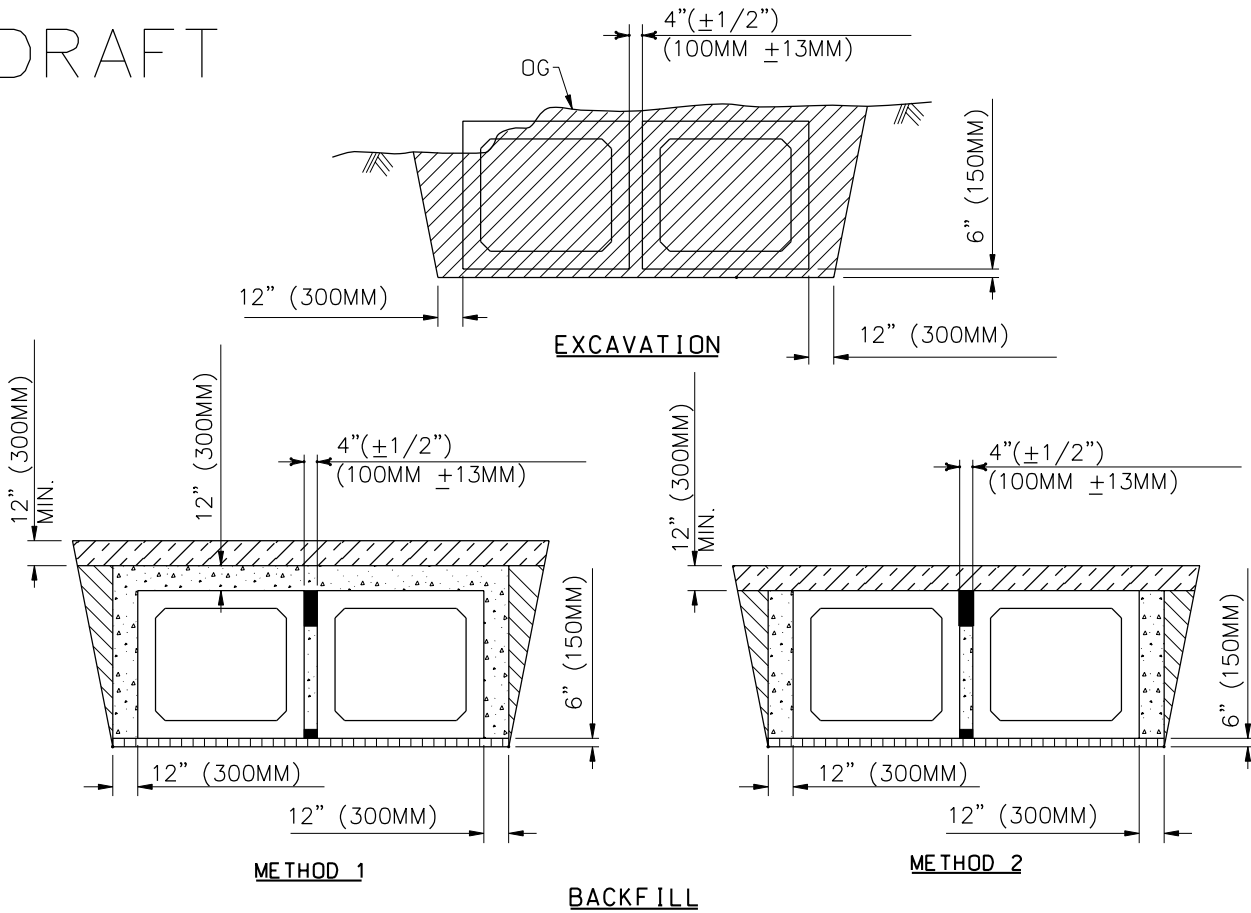
EXCAVATION AND BACKFILL DETAILS 3

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS








PRECAST REINFORCED CONCRETE BOX

STANDARD PLAN
3054-0
 SHEET 9 OF 66

DRAFT



FILL HEIGHT 24" (600MM) OR LESS

-  STRUCTURE EXCAVATION
-  STRUCTURE BACKFILL
95% RELATIVE COMPACTION
-  ROADWAY EMBANKMENT
-  SLURRY CEMENT BACKFILL
-  LEVELING BED MATERIAL
-  ROADWAY STRUCTURAL SECTION
-  ORIGINAL GROUND

NOTES:

1. SLOPE OR SHORE EXCAVATION SIDES AS DETERMINED BY THE ENGINEER.
2. DIMENSIONS SHOWN ARE MINIMUM.
3. CONSTRUCTION OF ROADWAY STRUCTURAL SECTION SHALL NOT DISTURB THE EXTERNAL SEALING BAND INSTALLATION.

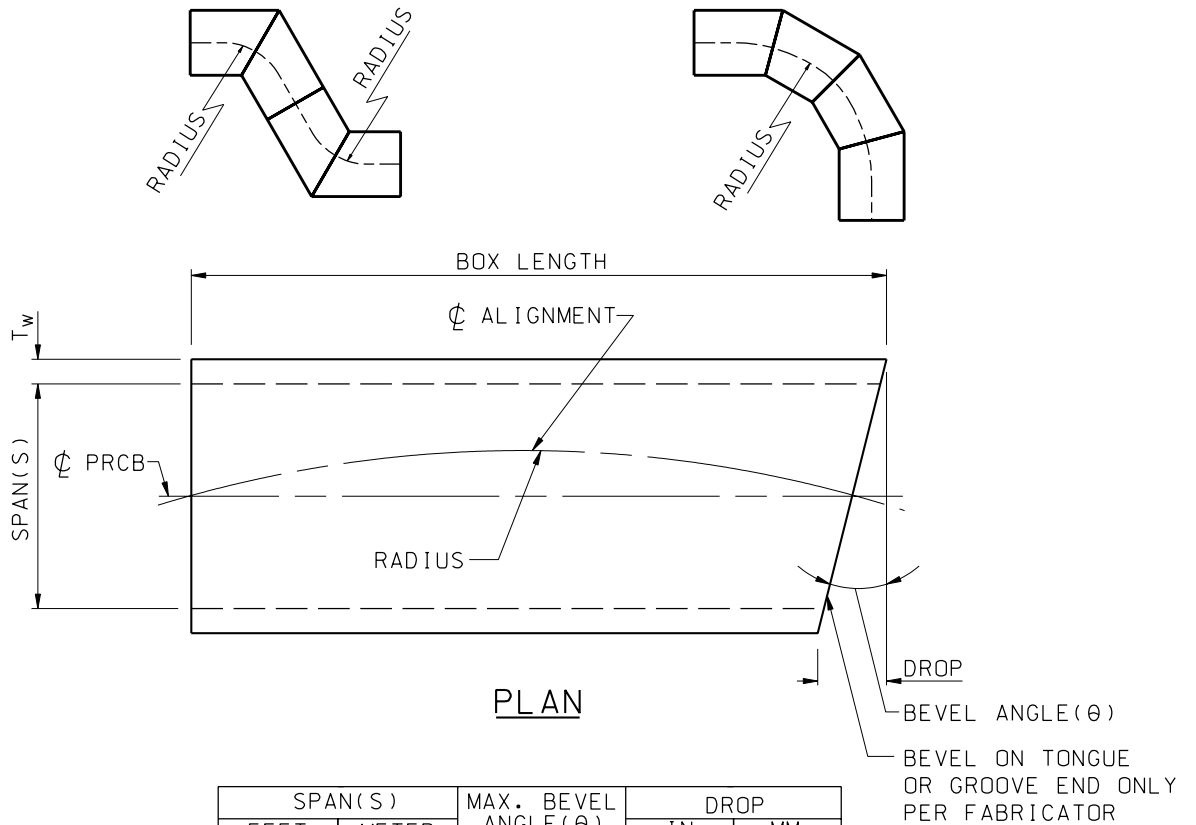
EXCAVATION AND BACKFILL DETAILS 4

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

PRECAST REINFORCED CONCRETE BOX

STANDARD PLAN
3054-0
SHEET 10 OF 66

DRAFT



01/15/08

SPAN(S)		MAX. BEVEL ANGLE (θ)	DROP	
FEET	METER		IN	MM
3	.915	5	3.85	97
4	1.22	5	5.07	125
5	1.53	5	6.30	158
6	1.83	5	7.52	188
7	2.14	3	5.20	130
8	2.44	3	5.87	147
9	2.75	3	6.60	165
10	3.05	3	7.33	183
11	3.36	3	8.07	200
12	3.66	3	8.80	220

SPAN(S)		BOX LENGTH	BOX LENGTH	MIN. RADIUS	MIN. RADIUS
FEET	METER	FEET	METER	FEET	METER
3	.915	4	1.22	45	13.73
THROUGH	THROUGH	6	1.83	67.5	20.59
6	1.83	8	2.44	90	27.45
7	2.14	4	1.22	75	22.88
THROUGH	THROUGH	6	1.83	112.5	34.31
12	3.66	8	2.44	150	45.75

PRECAST REINFORCED CONCRETE BOX BEVELS

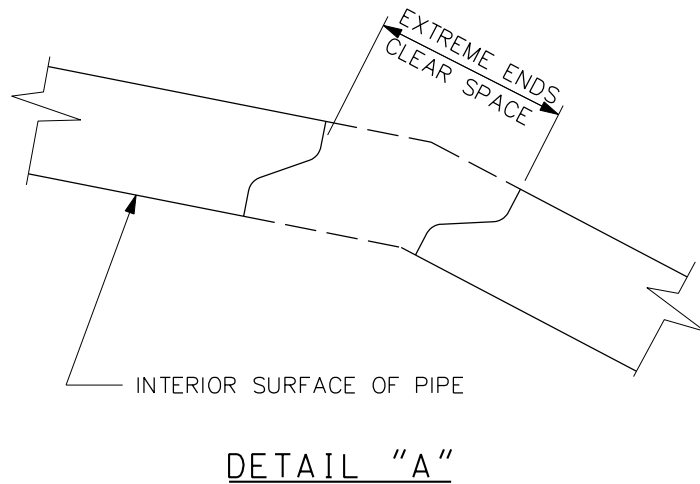
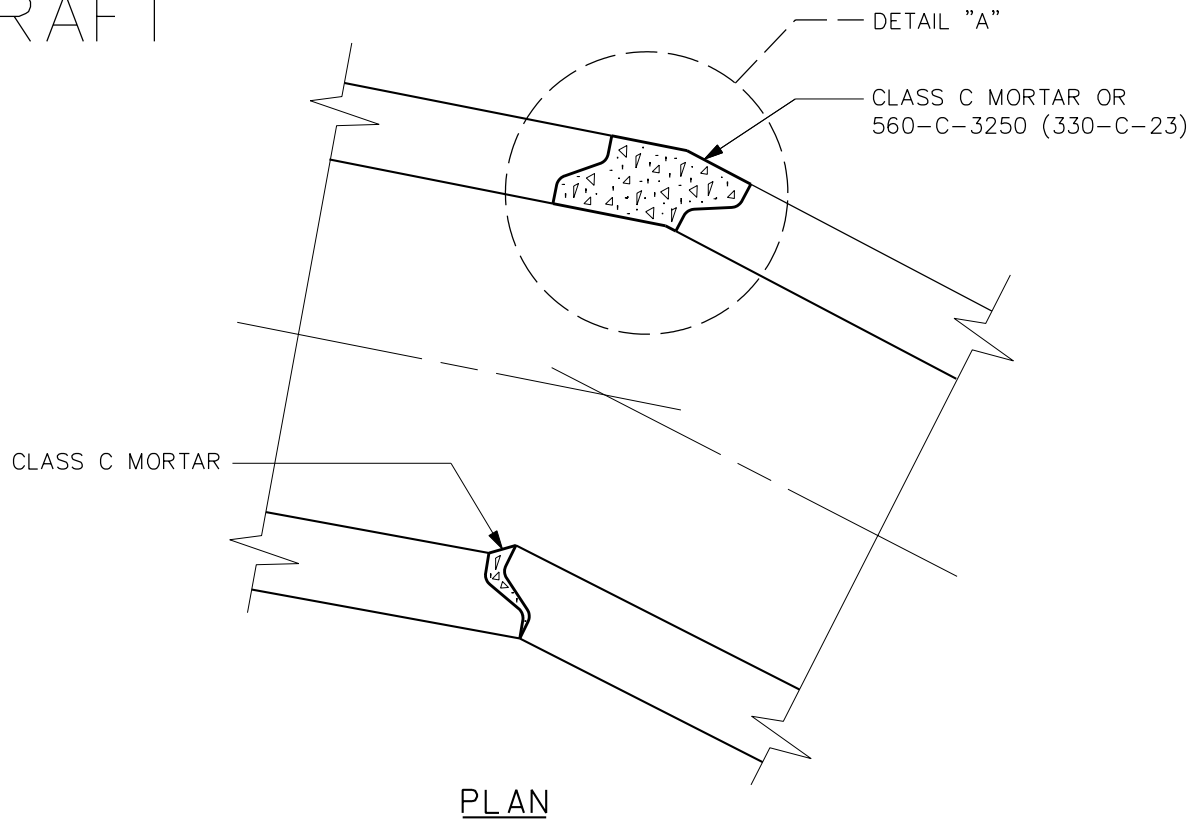
LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

PRECAST REINFORCED CONCRETE BOX

STANDARD PLAN
3054-0
 SHEET 11 OF 66

01/15/08

DRAFT



PRECAST REINFORCED CONCRETE BOX PULLED

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

PRECAST REINFORCED CONCRETE BOX

STANDARD PLAN
3054-0
SHEET 12 OF 66

DRAFT

NOTES:

1. STEEL COVER SHALL BE FROM THE FACE OF THE BAR OR WIRE TO THE FACE OF THE CONCRETE.
2. STEEL COVER FROM THE TOP OF INVERT SLAB SHALL BE IN ACCORDANCE WITH THE FOLLOWING:

<u>VELOCITY (FPS)</u>	<u>STEEL COVER (INCHES)</u>	<u>MINIMUM 28-DAY CONCRETE STRENGTH</u>
< 5	1.5	5,000 PSI
5 TO 20	2	5,000 PSI
>20 TO 40	2.5	5,000 PSI
> 40	NOT ALLOWED	NOT ALLOWED

3. STEEL COVER FROM THE TOP OF THE INVERT SLAB MAY BE INCREASED FOR PRCB SUBJECT TO THE ACTION OF SEAWATER, HARMFUL GROUNDWATER, OR APPRECIABLE DEBRIS FLOWS.
4. STEEL COVER GREATER THAN 2.5 INCHES MAY RESULT IN DELAMINATION OF CONCRETE. SEE THE PLANS FOR SACRIFICIAL STEEL TO PREVENT SLABBING WHEN THE STEEL COVER EXCEEDS 2.5 INCHES.
5. PRCB SHALL NOT BE PERMITTED WHEN THE MAXIMUM GROUND WATER TABLE IS LOCATED 1 FEET BELOW THE BOTTOM OF INVERT OR HIGHER, OR THE HYDRAULIC GRADE LINE IS MORE THAN 4 FEET ABOVE THE SOFFIT.
6. PRCB WITH RISE LARGER THAN 12 FEET AND SPAN GREATER THAN 12 FEET SPAN TO 24 FEET, MUST HAVE A SPECIAL DESIGN SUBMITTED FOR REVIEW AND ARE SUBJECT TO APPROVAL BY THE ENGINEER.
7. THE DESIGN TABLES IN THIS STANDARD PLAN DO NOT ACCOUNT FOR TEMPERATURE VARIATIONS, UNBALANCED LATERAL LOADS, RAILROAD LOADING OR LOADING DUE TO OTHER TEMPORARY OR PERMANENT STRUCTURES. SPECIAL DESIGN FOR THESE LOADS, IF APPLICABLE, MUST BE SUBMITTED FOR REVIEW AND ARE SUBJECT TO APPROVAL BY THE ENGINEER.
8. DESIGN CRITERIA: AASHTO SPECIFICATIONS FOR HIGHWAY BRIDGES, CURRENT LFD EDITION, EXCEPT THE LOAD FACTOR FOR DEAD LOAD (β_D) AND EARTH PRESSURE (β_E) = 1.4
9. IF STEEL BARS (GRADE 60) ARE USED IN LIEU OF WELDED WIRE FABRIC, THE STEEL AREAS PRESENTED SHALL BE INCREASED TO ACCOUNT FOR THE DIFFERENCES IN STEEL YIELD STRENGTH, STEEL SPACING, CONCRETE COVER, AND CRACK CONTROL.
10. THE JOINTS OF THE SECTIONS SHALL BE OF SUCH DESIGN THAT THEY WILL WITHSTAND THE FORCES CAUSED BY THE COMPRESSION OF THE SEALANT WHEN JOINED, WITHOUT CRACKING OR FRACTURING WHEN TESTED.
11. LONGITUDINAL STEEL TO HAVE AN AREA OF AT LEAST 40 PERCENT OF THE CIRCUMFERENTIAL STEEL AND 8 INCHES MAXIMUM SPACING.

SHEET 12 TO 29 ONLY APPLY TO 1.5 INCHES COVER FOR TOP OF INVERT SLAB.

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

PRECAST REINFORCED CONCRETE BOX

STANDARD PLAN

3054-0

APPROVED _____

DIRECTOR OF PUBLIC WORKS

DATE

REVISIONS

SHEET 13 OF 66

DRAFT

3' x 2'

S	R	Tt	Tb	Tw	H	Earth	Reinforcement Areas, in. ² /ft								M, in.						
							Span	Rise	Top	Bottom	Side	Haunch	A _{s1}	A _{s2}		A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}
							ft	ft	in.	in.	in.	in.	Cover, ft								
3	2	7	6	4	4	0 < 2	0.17	0.38	0.23	0.10	0.22	0.17	0.17	0.14	-						
3	2	4	4	4	4	2 < 3	0.13	0.21	0.26	0.10	-	-	-	-	31						
3	2	4	4	4	4	3 - 5	0.10	0.10	0.11	0.10	-	-	-	-	31						
3	2	4	4	4	4	10	0.10	0.11	0.14	0.10	-	-	-	-	31						
3	2	4	4	4	4	15	0.10	0.16	0.20	0.10	-	-	-	-	31						
3	2	4	4	4	4	20	0.12	0.22	0.25	0.10	-	-	-	-	31						
3	2	4	4	4	4	25	0.16	0.28	0.35	0.10	-	-	-	-	31						

3' x 3'

S	R	Tt	Tb	Tw	H	Earth	Reinforcement Areas, in. ² /ft								M, in.						
							Span	Rise	Top	Bottom	Side	Haunch	A _{s1}	A _{s2}		A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}
							ft	ft	in.	in.	in.	in.	Cover, ft								
3	3	7	6	4	4	0 < 2	0.17	0.40	0.25	0.10	0.23	0.17	0.17	0.14	-						
3	3	4	4	4	4	2 < 3	0.10	0.25	0.31	0.10	-	-	-	-	31						
3	3	4	4	4	4	3 - 5	0.10	0.11	0.12	0.10	-	-	-	-	31						
3	3	4	4	4	4	10	1.10	0.16	0.14	0.10	-	-	-	-	31						
3	3	4	4	4	4	15	0.10	0.22	0.21	0.10	-	-	-	-	31						
3	3	4	4	4	4	20	0.10	0.28	0.26	0.10	-	-	-	-	31						
3	3	4	4	4	4	25	0.11	0.28	0.36	0.10	-	-	-	-	31						

4' x 2'

S	R	Tt	Tb	Tw	H	Earth	Reinforcement Areas, in. ² /ft								M, in.						
							Span	Rise	Top	Bottom	Side	Haunch	A _{s1}	A _{s2}		A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}
							ft	ft	in.	in.	in.	in.	Cover, ft								
4	2	7.5	6	5	5	0 < 2	0.18	0.40	0.22	0.12	0.21	0.18	0.18	0.14	-						
4	2	5	5	5	5	2 < 3	0.21	0.23	0.23	0.12	-	-	-	-	38						
4	2	5	5	5	5	3 - 5	0.12	0.12	0.13	0.12	-	-	-	-	38						
4	2	5	5	5	5	10	0.12	0.14	0.16	0.12	-	-	-	-	38						
4	2	5	5	5	5	15	0.16	0.20	0.24	0.12	-	-	-	-	38						
4	2	5	5	5	5	20	0.22	0.27	0.32	0.12	-	-	-	-	38						
4	2	5	5	5	5	25	0.28	0.34	0.40	0.12	-	-	-	-	38						

Design Criteria

f_c = 5,000 psi

f_y = 65,000 psi (welded-wire fabric)

Live Load: HS-20 Loading

STEEL COVER FROM TOP OF INVERT SLAB = 1.5 INCHES

DUE TO SHEAR REQUIREMENT, SPECIAL DESIGN & REVIEW REQUIRE FOR APPROVAL

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS	
<h2 style="text-align: center; margin: 0;">PRECAST REINFORCED CONCRETE BOX</h2> <p>APPROVED _____</p> <p style="text-align: center;">DIRECTOR OF PUBLIC WORKS DATE REVISIONS</p>	<p>STANDARD PLAN</p> <h1 style="margin: 0;">3054-0</h1> <p>SHEET 14 OF 66</p>

DRAFT

4' x 3'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
4	3	7.5	6	5	5	0 < 2	0.18	0.45	0.26	0.12	0.23	0.18	0.18	0.14	-
4	3	5	5	5	5	2 < 3	0.17	0.25	0.28	0.12	-	-	-	-	38
4	3	5	5	5	5	3 - 5	0.12	0.12	0.15	0.12	-	-	-	-	38
4	3	5	5	5	5	10	0.12	0.15	0.19	0.12	-	-	-	-	38
4	3	5	5	5	5	15	0.12	0.23	0.27	0.12	-	-	-	-	38
4	3	5	5	5	5	20	0.16	0.30	0.36	0.12	-	-	-	-	38
4	3	5	5	5	5	25	0.20	0.38	0.46	0.12	-	-	-	-	38

4' x 4'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
4	4	7.5	6	5	5	0 < 2	0.18	0.47	0.28	0.12	0.25	0.18	0.18	0.14	-
4	4	5	5	5	5	2 < 3	0.14	0.31	0.32	0.12	-	-	-	-	38
4	4	5	5	5	5	3 - 5	0.12	0.17	0.15	0.12	-	-	-	-	38
4	4	5	5	5	5	10	0.12	0.15	0.19	0.12	-	-	-	-	38
4	4	5	5	5	5	15	0.12	0.22	0.27	0.12	-	-	-	-	38
4	4	5	5	5	5	20	0.13	0.30	0.36	0.12	-	-	-	-	38
4	4	5	5	5	5	25	0.16	0.38	0.46	0.12	-	-	-	-	38

5' x 3'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
5	3	8	7	6	6	0 < 2	0.19	0.44	0.24	0.14	0.22	0.19	0.19	0.17	-
5	3	6	6	6	6	2 < 3	0.21	0.29	0.25	0.14	-	-	-	-	45
5	3	6	6	6	6	3 - 5	0.14	0.15	0.17	0.14	-	-	-	-	36
5	3	6	6	6	6	10	0.14	0.18	0.22	0.14	-	-	-	-	36
5	3	6	6	6	6	15	0.18	0.27	0.32	0.14	-	-	-	-	35
5	3	6	6	6	6	20	0.25	0.36	0.42	0.14	-	-	-	-	35
5	3	6	6	6	6	25	0.32	0.46	0.53	0.14	-	-	-	-	35

Design Criteria

f'c = 5,000 psi

fy = 65,000 psi (welded-wire fabric)

Live Load: HS-20 Loading

STEEL COVER FROM TOP OF INVERT SLAB = 1.5 INCHES

 DUE TO SHEAR REQUIREMENT, SPECIAL DESIGN & REVIEW REQUIRE FOR APPROVAL

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

PRECAST REINFORCED CONCRETE BOX

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REVISIONS

SHEET 15 OF 66

DRAFT

5' x 4'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
5	4	8	7	6	6	0 < 2	0.19	0.48	0.27	0.14	0.24	0.19	0.19	0.17	-
5	4	6	6	6	6	2 < 3	0.18	0.33	0.28	0.14	-	-	-	-	45
5	4	6	6	6	6	3 - 5	0.14	0.16	0.19	0.14	-	-	-	-	45
5	4	6	6	6	6	10	0.14	0.20	0.24	0.14	-	-	-	-	36
5	4	6	6	6	6	15	0.15	0.29	0.34	0.14	-	-	-	-	35
5	4	6	6	6	6	20	0.20	0.39	0.45	0.14	-	-	-	-	35
5	4	6	6	6	6	25	0.25	0.49	0.57	0.14	-	-	-	-	35

5' x 5'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
5	5	8	7	6	6	0 < 2	0.19	0.50	0.29	0.14	0.25	0.19	0.19	0.17	-
5	5	6	6	6	6	2 < 3	0.16	0.35	0.31	0.14	-	-	-	-	45
5	5	6	6	6	6	3 - 5	0.14	0.17	0.20	0.14	-	-	-	-	45
5	5	6	6	6	6	10	0.14	0.20	0.25	0.14	-	-	-	-	45
5	5	6	6	6	6	15	0.14	0.29	0.35	0.14	-	-	-	-	36
5	5	6	6	6	6	20	0.17	0.39	0.46	0.14	-	-	-	-	35
5	5	6	6	6	6	25	0.21	0.49	0.58	0.14	-	-	-	-	35

6' x 3'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
6	3	8	7	7	7	0 < 2	0.23	0.45	0.22	0.17	0.22	0.19	0.19	0.17	-
6	3	7	7	7	7	2 < 3	0.24	0.29	0.24	0.17	-	-	-	-	43
6	3	7	7	7	7	3 - 5	0.17	0.17	0.16	0.17	-	-	-	-	40
6	3	7	7	7	7	10	0.17	0.21	0.25	0.17	-	-	-	-	39
6	3	7	7	7	7	15	0.25	0.31	0.36	0.17	-	-	-	-	38
6	3	7	7	7	7	20	0.34	0.41	0.47	0.17	-	-	-	-	38
6	3	7	7	7	7	25	0.44	0.52	0.58	0.17	-	-	-	-	38

Design Criteria

f'c = 5,000 psi

fy = 65,000 psi (welded-wire fabric)

Live Load: HS-20 Loading

STEEL COVER FROM TOP OF INVERT SLAB = 1.5 INCHES

 DUE TO SHEAR REQUIREMENT, SPECIAL DESIGN & REVIEW REQUIRE FOR APPROVAL

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

PRECAST REINFORCED CONCRETE BOX

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REVISIONS

SHEET 16 OF 66

DRAFT

6' x 4'

S	R	Tt	Tb	Tw	H	Earth	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
Span	Rise	Top	Bottom	Side	Haunch	Cover, ft									
ft	ft	in.	in.	in.	in.										
6	4	8	7	7	7	0 < 2	0.19	0.49	0.25	0.17	0.23	0.19	0.19	0.17	-
6	4	7	7	7	7	2 < 3	0.22	0.33	0.27	0.17	-	-	-	-	43
6	4	7	7	7	7	3 - 5	0.17	0.18	0.21	0.17	-	-	-	-	40
6	4	7	7	7	7	10	0.17	0.22	0.27	0.17	-	-	-	-	39
6	4	7	7	7	7	15	0.21	0.33	0.39	0.17	-	-	-	-	38
6	4	7	7	7	7	20	0.28	0.44	0.50	0.17	-	-	-	-	38
6	4	7	7	7	7	25	0.35	0.56	0.64	0.17	-	-	-	-	38

6' x 5'

S	R	Tt	Tb	Tw	H	Earth	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
Span	Rise	Top	Bottom	Side	Haunch	Cover, ft									
ft	ft	in.	in.	in.	in.										
6	5	8	7	7	7	0 < 2	0.19	0.52	0.28	0.17	0.25	0.19	0.19	0.17	-
6	5	7	7	7	7	2 < 3	0.19	0.36	0.30	0.17	-	-	-	-	52
6	5	7	7	7	7	3 - 5	0.17	0.20	0.23	0.17	-	-	-	-	43
6	5	7	7	7	7	10	0.17	0.24	0.29	0.17	-	-	-	-	39
6	5	7	7	7	7	15	0.18	0.35	0.42	0.17	-	-	-	-	38
6	5	7	7	7	7	20	0.24	0.47	0.54	0.17	-	-	-	-	38
6	5	7	7	7	7	25	0.30	0.59	0.68	0.17	-	-	-	-	38

6' x 6'

S	R	Tt	Tb	Tw	H	Earth	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
Span	Rise	Top	Bottom	Side	Haunch	Cover, ft									
ft	ft	in.	in.	in.	in.										
6	6	8	7	7	7	0 < 2	0.19	0.54	0.30	0.17	0.26	0.19	0.19	0.17	-
6	6	7	7	7	7	2 < 3	0.17	0.38	0.32	0.17	-	-	-	-	52
6	6	7	7	7	7	3 - 5	0.17	0.20	0.24	0.17	-	-	-	-	52
6	6	7	7	7	7	10	0.17	0.23	0.29	0.17	-	-	-	-	43
6	6	7	7	7	7	15	0.17	0.34	0.41	0.17	-	-	-	-	39
6	6	7	7	7	7	20	0.21	0.46	0.54	0.17	-	-	-	-	38
6	6	7	7	7	7	25	0.27	0.58	0.67	0.17	-	-	-	-	38

Design Criteria

f'c = 5,000 psi

fy = 65,000 psi (welded-wire fabric)

Live Load: HS-20 Loading

STEEL COVER FROM TOP OF INVERT SLAB = 1.5 INCHES

 DUE TO SHEAR REQUIREMENT, SPECIAL DESIGN & REVIEW REQUIRE FOR APPROVAL

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

PRECAST REINFORCED CONCRETE BOX

STANDARD PLAN

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REVISIONS

SHEET 17 OF 66

DRAFT

7' x 4'

S	R	Tt	Tb	Tw	H	Earth	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
Span	Rise	Top	Bottom	Side	Haunch	Cover, ft									
ft	ft	in.	in.	in.	in.										
7	4	8	8	8	8	0 < 2	0.26	0.49	0.25	0.19	0.23	0.19	0.19	0.19	-
7	4	8	8	8	8	2 < 3	0.24	0.33	0.33	0.19	-	-	-	-	47
7	4	8	8	8	8	3 - 5	0.19	0.21	0.24	0.19	-	-	-	-	43
7	4	8	8	8	8	10	0.19	0.26	0.31	0.19	-	-	-	-	43
7	4	8	8	8	8	15	0.28	0.38	0.44	0.19	-	-	-	-	41
7	4	8	8	8	8	20	0.37	0.51	0.57	0.19	-	-	-	-	41
7	4	8	8	8	8	25	0.47	0.64	0.71	0.19	-	-	-	-	41

7' x 5'

S	R	Tt	Tb	Tw	H	Earth	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
Span	Rise	Top	Bottom	Side	Haunch	Cover, ft									
ft	ft	in.	in.	in.	in.										
7	5	8	8	8	8	0 < 2	0.23	0.52	0.31	0.19	0.24	0.19	0.19	0.19	-
7	5	8	8	8	8	2 < 3	0.22	0.36	0.36	0.19	-	-	-	-	59
7	5	8	8	8	8	3 - 5	0.19	0.23	0.26	0.19	-	-	-	-	43
7	5	8	8	8	8	10	0.19	0.28	0.33	0.19	-	-	-	-	43
7	5	8	8	8	8	15	0.24	0.41	0.48	0.19	-	-	-	-	41
7	5	8	8	8	8	20	0.32	0.54	0.62	0.19	-	-	-	-	41
7	5	8	8	8	8	25	0.40	0.68	0.76	0.19	-	-	-	-	41

7' x 6'

S	R	Tt	Tb	Tw	H	Earth	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
Span	Rise	Top	Bottom	Side	Haunch	Cover, ft									
ft	ft	in.	in.	in.	in.										
7	6	8	8	8	8	0 < 2	0.21	0.54	0.33	0.19	0.26	0.19	0.19	0.19	-
7	6	8	8	8	8	2 < 3	0.20	0.39	0.39	0.19	-	-	-	-	59
7	6	8	8	8	8	3 - 5	0.19	0.24	0.28	0.19	-	-	-	-	47
7	6	8	8	8	8	10	0.19	0.29	0.35	0.19	-	-	-	-	43
7	6	8	8	8	8	15	0.21	0.42	0.50	0.19	-	-	-	-	41
7	6	8	8	8	8	20	0.28	0.55	0.64	0.19	-	-	-	-	41
7	6	8	8	8	8	25	0.35	0.70	0.79	0.19	-	-	-	-	41

Design Criteria

f'c = 5,000 psi

fy = 65,000 psi (welded-wire fabric)

Live Load: HS-20 Loading

STEEL COVER FROM TOP OF INVERT SLAB = 1.5 INCHES

 DUE TO SHEAR REQUIREMENT, SPECIAL DESIGN & REVIEW REQUIRE FOR APPROVAL

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

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REVISIONS

SHEET 18 OF 66

DRAFT

7' x 7'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
7	7	8	8	8	8	0 < 2	0.19	0.56	0.36	0.19	0.27	0.19	0.19	0.19	-
7	7	8	8	8	8	2 < 3	0.19	0.41	0.41	0.19	-	-	-	-	59
7	7	8	8	8	8	3 - 5	0.19	0.25	0.30	0.19	-	-	-	-	59
7	7	8	8	8	8	10	0.19	0.29	0.36	0.19	-	-	-	-	47
7	7	8	8	8	8	15	0.20	0.42	0.50	0.19	-	-	-	-	43
7	7	8	8	8	8	20	0.26	0.56	0.65	0.19	-	-	-	-	41
7	7	8	8	8	8	25	0.32	0.70	0.80	0.19	-	-	-	-	41

8' x 4'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
8	4	8	8	8	8	0 < 2	0.31	0.53	0.32	0.19	0.25	0.19	0.19	0.19	-
8	4	8	8	8	8	2 < 3	0.32	0.39	0.38	0.19	-	-	-	-	50
8	4	8	8	8	8	3 - 5	0.22	0.26	0.29	0.19	-	-	-	-	45
8	4	8	8	8	8	10	0.28	0.33	0.39	0.19	-	-	-	-	45
8	4	8	8	8	8	15	0.42	0.49	0.56	0.19	-	-	-	-	41
8	4	8	8	8	8	20	0.57	0.65	0.73	0.19	-	-	-	-	41
8	4	8	8	8	8	25	0.73	0.83	0.92	0.19	-	-	-	-	41

8' x 5'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
8	5	8	8	8	8	0 < 2	0.28	0.57	0.35	0.19	0.26	0.19	0.19	0.19	-
8	5	8	8	8	8	2 < 3	0.28	0.42	0.42	0.19	-	-	-	-	50
8	5	8	8	8	8	3 - 5	0.20	0.28	0.33	0.19	-	-	-	-	50
8	5	8	8	8	8	10	0.25	0.35	0.42	0.19	-	-	-	-	45
8	5	8	8	8	8	15	0.37	0.52	0.60	0.19	-	-	-	-	41
8	5	8	8	8	8	20	0.49	0.70	0.79	0.19	-	-	-	-	41
8	5	8	8	8	8	25	0.63	0.89	1.00	0.19	-	-	-	-	41

Design Criteria

f'c = 5,000 psi

fy = 65,000 psi (welded-wire fabric)

Live Load: HS-20 Loading

STEEL COVER FROM TOP OF INVERT SLAB = 1.5 INCHES

 DUE TO SHEAR REQUIREMENT, SPECIAL DESIGN & REVIEW REQUIRE FOR APPROVAL

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

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STANDARD PLAN

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DIRECTOR OF PUBLIC WORKS

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REVISIONS

SHEET 19 OF 66

DRAFT

8' x 6'

S Span ft	R Rise ft	Tt Top in.	Tb Bottom in.	Tw Side in.	H Haunch in.	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
8	6	8	8	8	8	0 < 2	0.26	0.59	0.37	0.19	0.28	0.22	0.19	0.19	-
8	6	8	8	8	8	2 < 3	0.25	0.45	0.45	0.19	-	-	-	-	55
8	6	8	8	8	8	3 - 5	0.19	0.30	0.35	0.19	-	-	-	-	50
8	6	8	8	8	8	10	0.23	0.37	0.45	0.19	-	-	-	-	45
8	6	8	8	8	8	15	0.33	0.55	0.63	0.19	-	-	-	-	41
8	6	8	8	8	8	20	0.44	0.73	0.83	0.19	-	-	-	-	41
8	6	8	8	8	8	25	0.56	0.93	1.05	0.19	-	-	-	-	41

8' x 7'

S Span ft	R Rise ft	Tt Top in.	Tb Bottom in.	Tw Side in.	H Haunch in.	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
8	7	8	8	8	8	0 < 2	0.24	0.62	0.40	0.20	0.29	0.19	0.19	0.19	-
8	7	8	8	8	8	2 < 3	0.23	0.47	0.49	0.19	-	-	-	-	65
8	7	8	8	8	8	3 - 5	0.19	0.31	0.37	0.19	-	-	-	-	55
8	7	8	8	8	8	10	0.21	0.38	0.46	0.19	-	-	-	-	45
8	7	8	8	8	8	15	0.30	0.56	0.65	0.19	-	-	-	-	41
8	7	8	8	8	8	20	0.40	0.75	0.86	0.19	-	-	-	-	41
8	7	8	8	8	8	25	0.51	0.95	1.08	0.19	-	-	-	-	41

8' x 8'

S Span ft	R Rise ft	Tt Top in.	Tb Bottom in.	Tw Side in.	H Haunch in.	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
8	8	8	8	8	8	0 < 2	0.22	0.64	0.42	0.24	0.30	0.19	0.19	0.19	-
8	8	8	8	8	8	2 < 3	0.22	0.49	0.52	0.19	-	-	-	-	65
8	8	8	8	8	8	3 - 5	0.19	0.33	0.39	0.19	-	-	-	-	65
8	8	8	8	8	8	10	0.20	0.39	0.48	0.19	-	-	-	-	50
8	8	8	8	8	8	15	0.29	0.56	0.66	0.19	-	-	-	-	45
8	8	8	8	8	8	20	0.38	0.75	0.87	0.19	-	-	-	-	45
8	8	8	8	8	8	25	0.48	0.95	1.09	0.19	-	-	-	-	45

Design Criteria

f'c = 5,000 psi

fy = 65,000 psi (welded-wire fabric)

Live Load: HS-20 Loading

STEEL COVER FROM TOP OF INVERT SLAB = 1.5 INCHES

 DUE TO SHEAR REQUIREMENT, SPECIAL DESIGN & REVIEW REQUIRE FOR APPROVAL

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

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REVISIONS

SHEET 20 OF 66

DRAFT

9' x 5'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
9	5	9	9	9	9	0 < 2	0.29	0.53	0.33	0.22	0.25	0.22	0.22	0.22	-
9	5	9	9	9	9	2 < 3	0.34	0.44	0.58	0.22	-	-	-	-	54
9	5	9	9	9	9	3 - 5	0.24	0.30	0.35	0.22	-	-	-	-	49
9	5	9	9	9	9	10	0.30	0.38	0.46	0.22	-	-	-	-	49
9	5	9	9	9	9	15	0.44	0.56	0.62	0.22	-	-	-	-	44
9	5	9	9	9	9	20	0.59	0.75	0.85	0.22	-	-	-	-	44
9	5	9	9	9	9	25	0.76	0.95	1.05	0.22	-	-	-	-	44

9' x 6'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
9	6	9	9	9	9	0 < 2	0.27	0.56	0.35	0.22	0.26	0.22	0.22	0.22	-
9	6	9	9	9	9	2 < 3	0.37	0.47	0.52	0.22	-	-	-	-	59
9	6	9	9	9	9	3 - 5	0.22	0.32	0.37	0.22	-	-	-	-	54
9	6	9	9	9	9	10	0.24	0.40	0.49	0.22	-	-	-	-	49
9	6	9	9	9	9	15	0.40	0.59	0.69	0.22	-	-	-	-	44
9	6	9	9	9	9	20	0.53	0.79	0.89	0.22	-	-	-	-	44
9	6	9	9	9	9	25	0.68	1.00	1.12	0.22	-	-	-	-	44

9' x 7'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
9	7	9	9	9	9	0 < 2	0.25	0.58	0.38	0.22	0.27	0.22	0.22	0.22	-
9	7	9	9	9	9	2 < 3	0.28	0.49	0.53	0.22	-	-	-	-	59
9	7	9	9	9	9	3 - 5	0.22	0.34	0.40	0.22	-	-	-	-	54
9	7	9	9	9	9	10	0.25	0.42	0.51	0.22	-	-	-	-	49
9	7	9	9	9	9	15	0.36	0.61	0.72	0.22	-	-	-	-	44
9	7	9	9	9	9	20	0.48	0.82	0.93	0.22	-	-	-	-	44
9	7	9	9	9	9	25	0.61	1.04	1.17	0.22	-	-	-	-	44

Design Criteria

f'c = 5,000 psi

fy = 65,000 psi (welded-wire fabric)

Live Load: HS-20 Loading

STEEL COVER FROM TOP OF INVERT SLAB = 1.5 INCHES

 DUE TO SHEAR REQUIREMENT, SPECIAL DESIGN & REVIEW REQUIRE FOR APPROVAL

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

PRECAST REINFORCED CONCRETE BOX

STANDARD PLAN

3054-0

APPROVED _____

DIRECTOR OF PUBLIC WORKS

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REVISIONS

SHEET 21 OF 66

DRAFT

9' x 8'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
9	8	9	9	9	9	0 < 2	0.23	0.60	0.41	0.22	0.28	0.22	0.22	0.22	-
9	8	9	9	9	9	2 < 3	0.26	0.51	0.57	0.22	-	-	-	-	72
9	8	9	9	9	9	3 - 5	0.22	0.35	0.42	0.22	-	-	-	-	59
9	8	9	9	9	9	10	0.24	0.43	0.53	0.22	-	-	-	-	54
9	8	9	9	9	9	15	0.34	0.63	0.74	0.22	-	-	-	-	44
9	8	9	9	9	9	20	0.45	0.83	0.95	0.22	-	-	-	-	44
9	8	9	9	9	9	25	0.57	1.05	1.19	0.22	-	-	-	-	44

9' x 9'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
9	9	9	9	9	9	0 < 2	0.24	0.62	0.44	0.27	0.28	0.22	0.22	0.22	-
9	9	9	9	9	9	2 < 3	0.25	0.53	0.60	0.22	-	-	-	-	72
9	9	9	9	9	9	3 - 5	0.22	0.37	0.44	0.22	-	-	-	-	72
9	9	9	9	9	9	10	0.23	0.43	0.54	0.22	-	-	-	-	59
9	9	9	9	9	9	15	0.32	0.63	0.75	0.22	-	-	-	-	49
9	9	9	9	9	9	20	0.43	0.84	0.96	0.22	-	-	-	-	49
9	9	9	9	9	9	25	0.54	1.05	1.20	0.22	-	-	-	-	44

10' x 5'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
10	5	10	10	10	10	0 < 2	0.29	0.51	0.34	0.24	0.24	0.24	0.24	0.24	-
10	5	10	10	10	10	2 < 3	0.38	0.46	0.48	0.24	-	-	-	-	58
10	5	10	10	10	10	3 - 5	0.28	0.32	0.37	0.24	-	-	-	-	52
10	5	10	10	10	10	10	0.35	0.41	0.49	0.24	-	-	-	-	52
10	5	10	10	10	10	15	0.52	0.60	0.70	0.24	-	-	-	-	47
10	5	10	10	10	10	20	0.70	0.80	0.91	0.24	-	-	-	-	47
10	5	10	10	10	10	25	0.90	1.01	1.11	0.24	-	-	-	-	47

Design Criteria

f'c = 5,000 psi

fy = 65,000 psi (welded-wire fabric)

Live Load: HS-20 Loading

STEEL COVER FROM TOP OF INVERT SLAB = 1.5 INCHES

 DUE TO SHEAR REQUIREMENT, SPECIAL DESIGN & REVIEW REQUIRE FOR APPROVAL

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

PRECAST REINFORCED CONCRETE BOX

STANDARD PLAN

3054-0

APPROVED _____

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REVISIONS

SHEET 22 OF 66

DRAFT

10' x 6'

S	R	Tt	Tb	Tw	H	Earth	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
Span	Rise	Top	Bottom	Side	Haunch	Cover, ft									
ft	ft	in.	in.	in.	in.										
10	6	10	10	10	10	0 < 2	0.27	0.53	0.37	0.24	0.24	0.24	0.24	0.24	-
10	6	10	10	10	10	2 < 3	0.35	0.49	0.52	0.24	-	-	-	-	58
10	6	10	10	10	10	3 - 5	0.26	0.34	0.40	0.24	-	-	-	-	52
10	6	10	10	10	10	10	0.32	0.44	0.52	0.24	-	-	-	-	52
10	6	10	10	10	10	15	0.47	0.64	0.74	0.24	-	-	-	-	47
10	6	10	10	10	10	20	0.33	0.85	0.96	0.24	-	-	-	-	47
10	6	10	10	10	10	25	0.80	1.07	1.18	0.24	-	-	-	-	47

10' x 7'

S	R	Tt	Tb	Tw	H	Earth	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
Span	Rise	Top	Bottom	Side	Haunch	Cover, ft									
ft	ft	in.	in.	in.	in.										
10	7	10	10	10	10	0 < 2	0.25	0.55	0.40	0.24	0.25	0.24	0.24	0.24	-
10	7	10	10	10	10	2 < 3	0.32	0.51	0.56	0.24	-	-	-	-	64
10	7	10	10	10	10	3 - 5	0.24	0.36	0.43	0.24	-	-	-	-	58
10	7	10	10	10	10	10	0.30	0.46	0.55	0.24	-	-	-	-	52
10	7	10	10	10	10	15	0.43	0.67	0.78	0.24	-	-	-	-	47
10	7	10	10	10	10	20	0.57	0.89	1.01	0.24	-	-	-	-	47
10	7	10	10	10	10	25	0.73	1.12	1.24	0.24	-	-	-	-	47

10' x 8'

S	R	Tt	Tb	Tw	H	Earth	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
Span	Rise	Top	Bottom	Side	Haunch	Cover, ft									
ft	ft	in.	in.	in.	in.										
10	8	10	10	10	10	0 < 2	0.24	0.57	0.43	0.24	0.26	0.24	0.24	0.24	-
10	8	10	10	10	10	2 < 3	0.30	0.54	0.60	0.24	-	-	-	-	64
10	8	10	10	10	10	3 - 5	0.21	0.38	0.46	0.24	-	-	-	-	58
10	8	10	10	10	10	10	0.28	0.47	0.58	0.24	-	-	-	-	52
10	8	10	10	10	10	15	0.40	0.68	0.81	0.24	-	-	-	-	47
10	8	10	10	10	10	20	0.53	0.91	1.04	0.24	-	-	-	-	47
10	8	10	10	10	10	25	0.67	1.15	1.28	0.24	-	-	-	-	47

Design Criteria

f'c = 5,000 psi

fy = 65,000 psi (welded-wire fabric)

Live Load: HS-20 Loading

STEEL COVER FROM TOP OF INVERT SLAB = 1.5 INCHES

 DUE TO SHEAR REQUIREMENT, SPECIAL DESIGN & REVIEW REQUIRE FOR APPROVAL

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

PRECAST REINFORCED CONCRETE BOX

STANDARD PLAN

3054-0

APPROVED _____

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REVISIONS

SHEET 23 OF 66

DRAFT

10' x 9'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
10	9	10	10	10	10	0 < 2	0.24	0.59	0.46	0.25	0.27	0.24	0.24	0.24	-
10	9	10	10	10	10	2 < 3	0.28	0.56	0.64	0.24	-	-	-	-	79
10	9	10	10	10	10	3 - 5	0.24	0.39	0.48	0.24	-	-	-	-	64
10	9	10	10	10	10	10	0.27	0.48	0.60	0.24	-	-	-	-	58
10	9	10	10	10	10	15	0.38	0.69	0.83	0.24	-	-	-	-	47
10	9	10	10	10	10	20	0.50	0.92	1.06	0.24	-	-	-	-	47
10	9	10	10	10	10	25	0.63	1.16	1.31	0.24	-	-	-	-	47

10' x 10'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
10	10	10	10	10	10	0 < 2	0.26	0.60	0.49	0.30	0.28	0.24	0.24	0.24	-
10	10	10	10	10	10	2 < 3	0.27	0.57	0.68	0.24	-	-	-	-	79
10	10	10	10	10	10	3 - 5	0.24	0.41	0.50	0.24	-	-	-	-	70
10	10	10	10	10	10	10	0.26	0.48	0.61	0.24	-	-	-	-	64
10	10	10	10	10	10	15	0.36	0.70	0.84	0.24	-	-	-	-	52
10	10	10	10	10	10	20	0.48	0.92	1.07	0.24	-	-	-	-	52
10	10	10	10	10	10	25	0.60	1.16	1.32	0.24	-	-	-	-	47

11' x 4'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
11	4	11	11	11	11	0 < 2	0.32	0.46	0.31	0.26	0.26	0.26	0.26	0.26	-
11	4	11	11	11	11	2 < 3	0.46	0.43	0.43	0.26	-	-	-	-	62
11	4	11	11	11	11	3 - 5	0.35	0.31	0.36	0.26	-	-	-	-	62
11	4	11	11	11	11	10	0.45	0.40	0.48	0.29	-	-	-	-	55
11	4	11	11	11	11	15	0.67	0.58	0.68	0.26	-	-	-	-	55
11	4	11	11	11	11	20	0.91	0.77	0.89	0.26	-	-	-	-	55
11	4	11	11	11	11	25	1.17	0.97	1.09	0.26	-	-	-	-	55

Design Criteria

f'c = 5,000 psi

fy = 65,000 psi (welded-wire fabric)

Live Load: HS-20 Loading

STEEL COVER FROM TOP OF INVERT SLAB = 1.5 INCHES

 DUE TO SHEAR REQUIREMENT, SPECIAL DESIGN & REVIEW REQUIRE FOR APPROVAL

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

PRECAST REINFORCED CONCRETE BOX

STANDARD PLAN

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APPROVED _____

DIRECTOR OF PUBLIC WORKS

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REVISIONS

SHEET 24 OF 66

DRAFT

11' x 5'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
11	5	11	11	11	11	0 < 2	0.30	0.48	0.34	0.26	0.26	0.26	0.26	0.26	-
11	5	11	11	11	11	2 < 3	0.41	0.47	0.48	0.26	-	-	-	-	62
11	5	11	11	11	11	3 - 5	0.32	0.34	0.40	0.26	-	-	-	-	62
11	5	11	11	11	11	10	0.41	0.44	0.52	0.26	-	-	-	-	55
11	5	11	11	11	11	15	0.60	0.64	0.74	0.26	-	-	-	-	55
11	5	11	11	11	11	20	0.81	0.85	0.96	0.26	-	-	-	-	55
11	5	11	11	11	11	25	1.04	1.06	1.19	0.26	-	-	-	-	55

11' x 6'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
11	6	11	11	11	11	0 < 2	0.28	0.51	0.37	0.26	0.26	0.26	0.26	0.26	-
11	6	11	11	11	11	2 < 3	0.40	0.50	0.52	0.26	-	-	-	-	62
11	6	11	11	11	11	3 - 5	0.30	0.37	0.43	0.26	-	-	-	-	55
11	6	11	11	11	11	10	0.38	0.47	0.56	0.26	-	-	-	-	55
11	6	11	11	11	11	15	0.55	0.68	0.80	0.26	-	-	-	-	50
11	6	11	11	11	11	20	0.73	0.90	1.03	0.26	-	-	-	-	50
11	6	11	11	11	11	25	0.93	1.14	1.26	0.26	-	-	-	-	50

11' x 7'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
11	7	11	11	11	11	0 < 2	0.26	0.53	0.40	0.26	0.26	0.26	0.26	0.26	-
11	7	11	11	11	11	2 < 3	0.37	0.53	0.56	0.26	-	-	-	-	69
11	7	11	11	11	11	3 - 5	0.28	0.39	0.46	0.26	-	-	-	-	62
11	7	11	11	11	11	10	0.35	0.49	0.60	0.26	-	-	-	-	55
11	7	11	11	11	11	15	0.50	0.71	0.84	0.26	-	-	-	-	50
11	7	11	11	11	11	20	0.67	0.95	1.08	0.26	-	-	-	-	50
11	7	11	11	11	11	25	0.85	1.19	1.32	0.26	-	-	-	-	50

Design Criteria

f'c = 5,000 psi

fy = 65,000 psi (welded-wire fabric)

Live Load: HS-20 Loading

STEEL COVER FROM TOP OF INVERT SLAB = 1.5 INCHES

 DUE TO SHEAR REQUIREMENT, SPECIAL DESIGN & REVIEW REQUIRE FOR APPROVAL

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

PRECAST REINFORCED CONCRETE BOX

STANDARD PLAN

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APPROVED _____

DIRECTOR OF PUBLIC WORKS

DATE

REVISIONS

SHEET 25 OF 66

DRAFT

11' x 8'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
11	8	11	11	11	11	0 < 2	0.26	0.55	0.43	0.26	0.26	0.26	0.26	0.26	-
11	8	11	11	11	11	2 < 3	0.34	0.56	0.60	0.26	-	-	-	-	69
11	8	11	11	11	11	3 - 5	0.26	0.41	0.49	0.26	-	-	-	-	62
11	8	11	11	11	11	10	0.33	0.51	0.62	0.26	-	-	-	-	55
11	8	11	11	11	11	15	0.47	0.74	0.87	0.26	-	-	-	-	50
11	8	11	11	11	11	20	0.62	0.98	1.12	0.26	-	-	-	-	50
11	8	11	11	11	11	25	0.78	1.23	1.37	0.26	-	-	-	-	50

11' x 9'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
11	9	11	11	11	11	0 < 2	0.26	0.56	0.46	0.26	0.27	0.26	0.26	0.26	-
11	9	11	11	11	11	2 < 3	0.33	0.58	0.64	0.26	-	-	-	-	86
11	9	11	11	11	11	3 - 5	0.26	0.42	0.52	0.26	-	-	-	-	69
11	9	11	11	11	11	10	0.31	0.52	0.65	0.26	-	-	-	-	62
11	9	11	11	11	11	15	0.44	0.75	0.90	0.26	-	-	-	-	50
11	9	11	11	11	11	20	0.58	1.00	1.15	0.26	-	-	-	-	50
11	9	11	11	11	11	25	0.73	1.26	1.40	0.26	-	-	-	-	50

11' x 10'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
11	10	11	11	11	11	0 < 2	0.26	0.58	0.49	0.27	0.28	0.26	0.26	0.26	-
11	10	11	11	11	11	2 < 3	0.32	0.60	0.68	0.26	-	-	-	-	86
11	10	11	11	11	11	3 - 5	0.26	0.44	0.54	0.26	-	-	-	-	69
11	10	11	11	11	11	10	0.30	0.53	0.67	0.26	-	-	-	-	62
11	10	11	11	11	11	15	0.42	0.76	0.92	0.26	-	-	-	-	50
11	10	11	11	11	11	20	0.55	1.01	1.17	0.26	-	-	-	-	50
11	10	11	11	11	11	25	0.69	1.27	1.43	0.26	-	-	-	-	50

Design Criteria

f'c = 5,000 psi

fy = 65,000 psi (welded-wire fabric)

Live Load: HS-20 Loading

STEEL COVER FROM TOP OF INVERT SLAB = 1.5 INCHES

 DUE TO SHEAR REQUIREMENT, SPECIAL DESIGN & REVIEW REQUIRE FOR APPROVAL

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PRECAST REINFORCED CONCRETE BOX

STANDARD PLAN

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APPROVED _____

DIRECTOR OF PUBLIC WORKS

DATE

REVISIONS

SHEET 26 OF 66

DRAFT

11' x 11'

S Span ft	R Rise ft	Tt Top in.	Tb Bottom in.	Tw Side in.	H Haunch in.	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
11	11	11	11	11	11	0 < 2	0.28	0.59	0.52	0.34	0.29	0.26	0.26	0.26	-
11	11	11	11	11	11	2 < 3	0.28	0.62	0.71	0.26	-	-	-	-	86
11	11	11	11	11	11	3 - 5	0.26	0.45	0.57	0.26	-	-	-	-	75
11	11	11	11	11	11	10	0.29	0.54	0.69	0.26	-	-	-	-	69
11	11	11	11	11	11	15	0.40	0.77	0.93	0.26	-	-	-	-	55
11	11	11	11	11	11	20	0.53	1.01	1.18	0.26	-	-	-	-	55
11	11	11	11	11	11	25	0.66	1.27	1.44	0.26	-	-	-	-	55

12' x 4'

S Span ft	R Rise ft	Tt Top in.	Tb Bottom in.	Tw Side in.	H Haunch in.	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
12	4	12	12	12	12	0 < 2	0.37	0.44	0.33	0.29	0.29	0.29	0.29	0.29	-
12	4	12	12	12	12	2 < 3	0.50	0.44	0.45	0.29	-	-	-	-	73
12	4	12	12	12	12	3 - 5	0.40	0.33	0.38	0.29	-	-	-	-	66
12	4	12	12	12	12	10	0.51	0.42	0.51	0.29	-	-	-	-	59
12	4	12	12	12	12	15	0.76	0.61	0.72	0.29	-	-	-	-	59
12	4	12	12	12	12	20	1.03	0.81	0.94	0.29	-	-	-	-	59
12	4	12	12	12	12	25	1.32	1.02	1.15	0.29	-	-	-	-	59

12' x 5'

S Span ft	R Rise ft	Tt Top in.	Tb Bottom in.	Tw Side in.	H Haunch in.	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
12	5	12	12	12	12	0 < 2	0.35	0.46	0.36	0.29	0.29	0.29	0.29	0.29	-
12	5	12	12	12	12	2 < 3	0.47	0.48	0.50	0.29	-	-	-	-	73
12	5	12	12	12	12	3 - 5	0.37	0.36	0.42	0.29	-	-	-	-	66
12	5	12	12	12	12	10	0.47	0.46	0.56	0.29	-	-	-	-	59
12	5	12	12	12	12	15	0.69	0.67	0.79	0.29	-	-	-	-	59
12	5	12	12	12	12	20	0.92	0.89	1.02	0.29	-	-	-	-	59
12	5	12	12	12	12	25	1.18	1.12	1.25	0.29	-	-	-	-	59

Design Criteria

f'c = 5,000 psi

fy = 65,000 psi (welded-wire fabric)

Live Load: HS-20 Loading

STEEL COVER FROM TOP OF INVERT SLAB = 1.5 INCHES

 DUE TO SHEAR REQUIREMENT, SPECIAL DESIGN & REVIEW REQUIRE FOR APPROVAL

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DRAFT

12' x 6'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
12	6	12	12	12	12	0 < 2	0.33	0.49	0.39	0.29	0.29	0.29	0.29	0.29	-
12	6	12	12	12	12	2 < 3	0.44	0.52	0.54	0.29	-	-	-	-	66
12	6	12	12	12	12	3 - 5	0.34	0.39	0.46	0.29	-	-	-	-	59
12	6	12	12	12	12	10	0.43	0.49	0.60	0.29	-	-	-	-	59
12	6	12	12	12	12	15	0.63	0.72	0.85	0.29	-	-	-	-	53
12	6	12	12	12	12	20	0.84	0.95	1.09	0.29	-	-	-	-	53
12	6	12	12	12	12	25	1.07	1.20	1.34	0.29	-	-	-	-	53

12' x 7'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
12	7	12	12	12	12	0 < 2	0.31	0.51	0.43	0.29	0.29	0.29	0.29	0.29	-
12	7	12	12	12	12	2 < 3	0.41	0.55	0.59	0.29	-	-	-	-	66
12	7	12	12	12	12	3 - 5	0.32	0.41	0.49	0.29	-	-	-	-	59
12	7	12	12	12	12	10	0.40	0.52	0.64	0.29	-	-	-	-	59
12	7	12	12	12	12	15	0.58	0.76	0.89	0.29	-	-	-	-	53
12	7	12	12	12	12	20	0.77	1.00	1.15	0.29	-	-	-	-	53
12	7	12	12	12	12	25	0.97	1.26	1.41	0.29	-	-	-	-	53

12' x 8'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
12	8	12	12	12	12	0 < 2	0.30	0.52	0.46	0.29	0.29	0.29	0.29	0.29	-
12	8	12	12	12	12	2 < 3	0.39	0.58	0.63	0.29	-	-	-	-	66
12	8	12	12	12	12	3 - 5	0.30	0.43	0.52	0.29	-	-	-	-	59
12	8	12	12	12	12	10	0.38	0.54	0.67	0.29	-	-	-	-	59
12	8	12	12	12	12	15	0.54	0.79	0.93	0.29	-	-	-	-	53
12	8	12	12	12	12	20	0.71	1.04	1.20	0.29	-	-	-	-	53
12	8	12	12	12	12	25	0.90	1.31	1.47	0.29	-	-	-	-	53

Design Criteria

f'c = 5,000 psi

fy = 65,000 psi (welded-wire fabric)

Live Load: HS-20 Loading

STEEL COVER FROM TOP OF INVERT SLAB = 1.5 INCHES

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DRAFT

12' x 9'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
12	9	12	12	12	12	0 < 2	0.29	0.54	0.49	0.29	0.29	0.29	0.29	0.29	-
12	9	12	12	12	12	2 < 3	0.37	0.61	0.67	0.29	-	-	-	-	80
12	9	12	12	12	12	3 - 5	0.29	0.45	0.55	0.29	-	-	-	-	66
12	9	12	12	12	12	10	0.36	0.56	0.70	0.29	-	-	-	-	59
12	9	12	12	12	12	15	0.50	0.81	0.97	0.29	-	-	-	-	53
12	9	12	12	12	12	20	0.66	1.07	1.24	0.29	-	-	-	-	53
12	9	12	12	12	12	25	0.84	1.35	1.51	0.29	-	-	-	-	53

12' x 10'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
12	10	12	12	12	12	0 < 2	0.29	0.55	0.52	0.29	0.30	0.29	0.29	0.29	-
12	10	12	12	12	12	2 < 3	0.34	0.64	0.71	0.29	-	-	-	-	80
12	10	12	12	12	12	3 - 5	0.29	0.47	0.58	0.29	-	-	-	-	66
12	10	12	12	12	12	10	0.34	0.57	0.72	0.29	-	-	-	-	59
12	10	12	12	12	12	15	0.48	0.83	1.00	0.29	-	-	-	-	53
12	10	12	12	12	12	20	0.63	1.09	1.27	0.29	-	-	-	-	53
12	10	12	12	12	12	25	0.79	1.37	1.54	0.29	-	-	-	-	53

12' x 11'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
12	11	12	12	12	12	0 < 2	0.29	0.57	0.55	0.30	0.31	0.29	0.29	0.29	-
12	11	12	12	12	12	2 < 3	0.35	0.66	0.75	0.29	-	-	-	-	93
12	11	12	12	12	12	3 - 5	0.29	0.48	0.61	0.29	-	-	-	-	80
12	11	12	12	12	12	10	0.33	0.58	0.74	0.29	-	-	-	-	73
12	11	12	12	12	12	15	0.46	0.84	1.02	0.29	-	-	-	-	59
12	11	12	12	12	12	20	0.60	1.10	1.29	0.29	-	-	-	-	59
12	11	12	12	12	12	25	0.75	1.38	1.56	0.29	-	-	-	-	59

Design Criteria

f'c = 5,000 psi

fy = 65,000 psi (welded-wire fabric)

Live Load: HS-20 Loading

STEEL COVER FROM TOP OF INVERT SLAB = 1.5 INCHES

 DUE TO SHEAR REQUIREMENT, SPECIAL DESIGN & REVIEW REQUIRE FOR APPROVAL

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DRAFT

12' x 12'

S Span ft	R Rise ft	Tt Top in.	Tb Bottom in.	Tw Side in.	H Haunch in.	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
12	12	12	12	12	12	0 < 2	0.31	0.58	0.58	0.38	0.32	0.29	0.29	0.29	-
12	12	12	12	12	12	2 < 3	0.31	0.69	0.79	0.29	-	-	-	-	93
12	12	12	12	12	12	3 - 5	0.29	0.50	0.63	0.29	-	-	-	-	80
12	12	12	12	12	12	10	0.32	0.59	0.76	0.29	-	-	-	-	73
12	12	12	12	12	12	15	0.45	0.84	1.03	0.29	-	-	-	-	59
12	12	12	12	12	12	20	0.58	1.11	1.30	0.29	-	-	-	-	59
12	12	12	12	12	12	25	0.73	1.38	1.58	0.29	-	-	-	-	59

Design Criteria

f'c = 5,000 psi

fy = 65,000 psi (welded-wire fabric)

Live Load: HS-20 Loading

STEEL COVER FROM TOP OF INVERT SLAB = 1.5 INCHES

DUE TO SHEAR REQUIREMENT, SPECIAL DESIGN & REVIEW REQUIRE FOR APPROVAL

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DRAFT

NOTES:

1. STEEL COVER SHALL BE FROM THE FACE OF THE BAR OR WIRE TO THE FACE OF THE CONCRETE.
2. STEEL COVER FROM THE TOP OF INVERT SLAB SHALL BE IN ACCORDANCE WITH THE FOLLOWING:

<u>VELOCITY (FPS)</u>	<u>STEEL COVER (INCHES)</u>	<u>MINIMUM 28-DAY CONCRETE STRENGTH</u>
< 5	1.5	5,000 PSI
5 TO 20	2	5,000 PSI
>20 TO 40	2.5	5,000 PSI
> 40	NOT ALLOWED	NOT ALLOWED

3. STEEL COVER FROM THE TOP OF THE INVERT SLAB MAY BE INCREASED FOR PRCB SUBJECT TO THE ACTION OF SEAWATER, HARMFUL GROUNDWATER, OR APPRECIABLE DEBRIS FLOWS.
4. STEEL COVER GREATER THAN 2.5 INCHES MAY RESULT IN DELAMINATION OF CONCRETE. SEE THE PLANS FOR SACRIFICIAL STEEL TO PREVENT SLABBING WHEN THE STEEL COVER EXCEEDS 2.5 INCHES.
5. PRCB SHALL NOT BE PERMITTED WHEN THE MAXIMUM GROUND WATER TABLE IS LOCATED 1 FEET BELOW THE BOTTOM OF INVERT OR HIGHER, OR THE HYDRAULIC GRADE LINE IS MORE THAN 4 FEET ABOVE THE SOFFIT.
6. PRCB WITH RISE LARGER THAN 12 FEET AND SPAN GREATER THAN 12 FEET SPAN TO 24 FEET, MUST HAVE A SPECIAL DESIGN SUBMITTED FOR REVIEW AND ARE SUBJECT TO APPROVAL BY THE ENGINEER.
7. THE DESIGN TABLES IN THIS STANDARD PLAN DO NOT ACCOUNT FOR TEMPERATURE VARIATIONS, UNBALANCED LATERAL LOADS, RAILROAD LOADING OR LOADING DUE TO OTHER TEMPORARY OR PERMANENT STRUCTURES. SPECIAL DESIGN FOR THESE LOADS, IF APPLICABLE, MUST BE SUBMITTED FOR REVIEW AND ARE SUBJECT TO APPROVAL BY THE ENGINEER.
8. DESIGN CRITERIA: AASHTO SPECIFICATIONS FOR HIGHWAY BRIDGES, CURRENT LFD EDITION, EXCEPT THE LOAD FACTOR FOR DEAD LOAD (β_D) AND EARTH PRESSURE (β_E) = 1.4
9. IF STEEL BARS (GRADE 60) ARE USED IN LIEU OF WELDED WIRE FABRIC, THE STEEL AREAS PRESENTED SHALL BE INCREASED TO ACCOUNT FOR THE DIFFERENCES IN STEEL YIELD STRENGTH, STEEL SPACING, CONCRETE COVER, AND CRACK CONTROL.
10. THE JOINTS OF THE SECTIONS SHALL BE OF SUCH DESIGN THAT THEY WILL WITHSTAND THE FORCES CAUSED BY THE COMPRESSION OF THE SEALANT WHEN JOINED, WITHOUT CRACKING OR FRACTURING WHEN TESTED.
11. LONGITUDINAL STEEL TO HAVE AN AREA OF AT LEAST 40 PERCENT OF THE CIRCUMFERENTIAL STEEL AND 8 INCHES MAXIMUM SPACING.

SHEET 30 TO 47 ONLY APPLY TO 2.0 INCHES COVER FOR TOP OF INVERT SLAB.

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SHEET 31 OF 66

DRAFT

3' x 2'

S	R	Tt	Tb	Tw	H	Earth	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
Span	Rise	Top	Bottom	Side	Haunch	Cover, ft									
ft	ft	in.	in.	in.	in.										
3	2	7	6	4	4	0 < 2	0.17	0.37	0.26	0.1	0.22	0.17	0.17	0.14	--
3	2	4	4	4	4	2 < 3	0.12	0.21	0.33	0.1					31
3	2	4	4	4	4	3 - 5	0.1	0.1	0.17	0.1					31
3	2	4	4	4	4	10	0.1	0.12	0.24	0.1					31
3	2	4	4	4	4	15	0.1	0.18	0.33	0.1					31
3	2	4	4	4	4	20	0.13	0.23	0.43	0.1					31

3' x 3'

S	R	Tt	Tb	Tw	H	Earth	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
Span	Rise	Top	Bottom	Side	Haunch	Cover, ft									
ft	ft	in.	in.	in.	in.										
3	3	7	6	4	4	0 < 2	0.17	0.4	0.28	0.1	0.23	0.17	0.17	0.17	--
3	3	4	4	4	4	2 < 3	0.1	0/25	0.39	0.1					31
3	3	4	4	4	4	3 - 5	0.1	0.12	0.21	0.1					31
3	3	4	4	4	4	10	0.1	0.13	0.24	0.1					31
3	3	4	4	4	4	15	0.1	0.18	0.34	0.1					31
3	3	4	4	4	4	20	0.1	0.24	0.43	0.1					31

4' x 2'

S	R	Tt	Tb	Tw	H	Earth	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
Span	Rise	Top	Bottom	Side	Haunch	Cover, ft									
ft	ft	in.	in.	in.	in.										
4	2	7.5	6	5	5	0 < 2	0.18	0.4	0.25	0.12	0.21	0.18	0.18	0.14	--
4	2	5	5	5	5	2 < 3	0.21	0.23	0.27	0.12					38
4	2	5	5	5	5	3 - 5	0.12	0.13	0.19	0.12					38
4	2	5	5	5	5	10	0.12	0.15	0.25	0.12					38
4	2	5	5	5	5	15	0.17	0.21	0.35	0.12					38
4	2	5	5	5	5	20	0.23	0.28	0.45	0.12					38
4	2	5	5	5	5	25	0.29	0.35	0.56	0.12					38

Design Criteria

f_c = 5,000 psi

f_y = 65,000 psi (welded-wire fabric)

Live Load: HS-20 Loading

STEEL COVER FROM TOP OF INVERT SLAB = 2.0 INCHES

DUE TO SHEAR REQUIREMENT, SPECIAL DESIGN & REVIEW REQUIRE FOR APPROVAL

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SHEET 32 OF 66

DRAFT

4' x 3'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
4	3	7.5	6	5	5	0 < 2	0.18	0.44	0.29	0.12	0.23	0.18	0.18	0.14	--
4	3	5	5	5	5	2 < 3	0.16	0.28	0.33	0.12					38
4	3	5	5	5	5	3 - 5	0.12	0.15	0.23	0.12					38
4	3	5	5	5	5	10	0.12	0.17	0.28	0.12					38
4	3	5	5	5	5	15	0.12	0.24	0.4	0.12					38
4	3	5	5	5	5	20	0.16	0.31	0.51	0.12					38
4	3	5	5	5	5	25	0.21	0.39	0.62	0.12					38

4' x 4'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
4	4	7.5	6	5	5	0 < 2	0.18	0.46	0.32	0.12	0.25	0.18	0.18	0.14	--
4	4	5	5	5	5	2 < 3	0.13	0.31	0.37	0.12					38
4	4	5	5	5	5	3 - 5	0.12	0.16	0.16	0.12					38
4	4	5	5	5	5	10	0.12	0.17	0.3	0.12					38
4	4	5	5	5	5	15	0.12	0.24	0.41	0.12					38
4	4	5	5	5	5	20	0.13	0.32	0.52	0.12					38
4	4	5	5	5	5	25	0.16	0.48	0.64	0.12					38

5' x 3'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
5	3	8	7	6	6	0 < 2	0.19	0.44	0.26	0.14	0.22	19	0.19	0.17	--
5	3	6	6	6	6	2 < 3	0.21	0.29	0.3	0.14					45
5	3	6	6	6	6	3 - 5	0.14	0.17	0.25	0.14					36
5	3	6	6	6	6	10	0.14	0.2	0.32	0.14					36
5	3	6	6	6	6	15	0.19	0.29	0.44	0.12					35
5	3	6	6	6	6	20	0.25	0.37	0.57	0.12					35
5	3	6	6	6	6	25	0.32	0.47	0.7	0.12					35

Design Criteria

f'c = 5,000 psi

fy = 65,000 psi (welded-wire fabric)

Live Load: HS-20 Loading

STEEL COVER FROM TOP OF INVERT SLAB = 2.0 INCHES

 DUE TO SHEAR REQUIREMENT, SPECIAL DESIGN & REVIEW REQUIRE FOR APPROVAL

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SHEET 33 OF 66

DRAFT

5' x 4'

S Span ft	R Rise ft	Tt Top in.	Tb Bottom in.	Tw Side in.	H Haunch in.	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
5	4	8	7	6	6	0 < 2	0.19	0.47	0.29	0.14	0.24	0.19	0.19	0.17	--
5	4	6	6	6	6	2 < 3	0.18	0.33	0.34	0.14					45
5	4	6	6	6	6	3 - 5	0.14	0.19	0.29	0.14					45
5	4	6	6	6	6	10	0.14	0.22	0.35	0.14					36
5	4	6	6	6	6	15	0.15	0.31	0.48	0.14					35
5	4	6	6	6	6	20	0.2	0.4	0.62	0.12					35
5	4	6	6	6	6	25	0.25	0.5	0.75	0.12					35

5' x 5'

S Span ft	R Rise ft	Tt Top in.	Tb Bottom in.	Tw Side in.	H Haunch in.	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
5	5	8	7	6	6	0 < 2	0.19	0.5	0.32	0.14	0.25	0.19	0.19	0.17	--
5	5	6	6	6	6	2 < 3	0.16	0.35	0.37	0.14					45
5	5	6	6	6	6	3 - 5	0.14	0.21	0.31	0.14					45
5	5	6	6	6	6	10	0.14	0.22	0.36	0.14					36
5	5	6	6	6	6	15	0.14	0.31	0.49	0.14					35
5	5	6	6	6	6	20	0.17	0.4	0.63	0.14					35
5	5	6	6	6	6	25	0.22	0.5	0.76	0.14					35

6' x 3'

S Span ft	R Rise ft	Tt Top in.	Tb Bottom in.	Tw Side in.	H Haunch in.	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
6	3	8	7	7	7	0 < 2	0.23	0.45	0.24	0.17	0.19	0.19	0.19	0.17	--
6	3	7	7	7	7	2 < 3	0.24	0.29	0.29	0.17					43
6	3	7	7	7	7	3 - 5	0.17	0.19	0.27	0.17					40
6	3	7	7	7	7	10	0.19	0.23	0.35	0.17					39
6	3	7	7	7	7	15	0.27	0.32	0.49	0.17					38
6	3	7	7	7	7	20	0.36	0.42	0.63	0.17					38
6	3	7	7	7	7	25	0.45	0.53	0.78	0.17					38

Design Criteria

f'c = 5,000 psi

fy = 65,000 psi (welded-wire fabric)

Live Load: HS-20 Loading

STEEL COVER FROM TOP OF INVERT SLAB = 2.0 INCHES

 DUE TO SHEAR REQUIREMENT, SPECIAL DESIGN & REVIEW REQUIRE FOR APPROVAL

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

PRECAST REINFORCED CONCRETE BOX

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DRAFT

6' x 4'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
6	4	8	7	7	7	0 < 2	0.19	0.49	0.31	0.17	0.24	0.19	0.19	0.17	--
6	4	7	7	7	7	2 < 3	0.22	0.33	0.33	0.17					43
6	4	7	7	7	7	3 - 5	0.17	0.22	0.31	0.17					40
6	4	7	7	7	7	10	0.17	0.25	0.39	0.17					39
6	4	7	7	7	7	15	0.22	0.32	0.54	0.17					39
6	4	7	7	7	7	20	0.29	0.47	0.69	0.17					38
6	4	7	7	7	7	25	0.36	0.58	0.85	0.17					38

6' x 5'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
6	5	8	7	7	7	0 < 2	0.19	0.52	0.34	0.17	0.25	0.19	0.19	0.17	--
6	5	7	7	7	7	2 < 3	0.19	0.36	0.36	0.17					52
6	5	7	7	7	7	3 - 5	0.17	0.24	0.35	0.17					43
6	5	7	7	7	7	10	0.17	0.37	0.42	0.17					39
6	5	7	7	7	7	15	0.19	0.37	0.59	0.17					38
6	5	7	7	7	7	20	0.24	0.49	0.73	0.17					38
6	5	7	7	7	7	25	0.31	0.6	0.89	0.17					38

6' x 6'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
6	6	8	7	7	7	0 < 2	0.19	0.54	0.36	0.17	0.26	0.19	0.19	0.17	--
6	6	7	7	7	7	2 < 3	0.17	0.38	0.4	0.17					52
6	6	7	7	7	7	3 - 5	0.17	0.25	0.37	0.17					52
6	6	7	7	7	7	10	0.17	0.27	0.43	0.17					43
6	6	7	7	7	7	15	0.17	0.38	0.58	0.17					39
6	6	7	7	7	7	20	0.22	0.49	0.74	0.17					38
6	6	7	7	7	7	25	0.27	0.61	0.89	0.17					38

Design Criteria

f'c = 5,000 psi

fy = 65,000 psi (welded-wire fabric)

Live Load: HS-20 Loading

STEEL COVER FROM TOP OF INVERT SLAB = 2.0 INCHES

 DUE TO SHEAR REQUIREMENT, SPECIAL DESIGN & REVIEW REQUIRE FOR APPROVAL

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DRAFT

7' x 4'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
7	4	8	8	8	8	0 < 2	0.26	0.49	0.25	0.19	0.23	0.19	0.19	0.19	--
7	4	8	8	8	8	2 < 3	0.24	0.33	0.38	0.19					47
7	4	8	8	8	8	3 - 5	0.19	0.24	0.24	0.19					43
7	4	8	8	8	8	10	0.21	0.28	0.43	0.19					43
7	4	8	8	8	8	15	0.38	0.52	0.76	0.19					41
7	4	8	8	8	8	20	0.39	0.52	0.76	0.19					41
7	4	8	8	8	8	25	0.49	0.65	0.94	0.19					41

7' x 5'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
7	5	8	8	8	8	0 < 2	0.23	0.52	0.34	0.19	0.24	0.19	0.19	0.19	--
7	5	8	8	8	8	2 < 3	0.22	0.36	0.42	0.19					59
7	5	8	8	8	8	3 - 5	0.19	0.27	0.38	0.19					43
7	5	8	8	8	8	10	0.19	0.3	0.4	0.19					43
7	5	8	8	8	8	15	0.25	0.43	0.64	0.19					41
7	5	8	8	8	8	20	0.33	0.56	0.82	0.19					41
7	5	8	8	8	8	25	0.41	0.69	0.99	0.19					41

7' x 6'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
7	6	8	8	8	8	0 < 2	0.21	0.54	0.37	0.19	0.26	0.19	0.19	0.19	--
7	6	8	8	8	8	2 < 3	0.2	0.39	0.46	0.19					59
7	6	8	8	8	8	3 - 5	0.19	0.28	0.41	0.19					47
7	6	8	8	8	8	10	0.19	0.32	0.49	0.19					43
7	6	8	8	8	8	15	0.22	0.44	0.66	0.19					41
7	6	8	8	8	8	20	0.29	0.57	0.84	0.19					41
7	6	8	8	8	8	25	0.36	0.71	1.03	0.19					41

Design Criteria

f'c = 5,000 psi

fy = 65,000 psi (welded-wire fabric)

Live Load: HS-20 Loading

STEEL COVER FROM TOP OF INVERT SLAB = 2.0 INCHES

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DRAFT

7' x 7'

S Span ft	R Rise ft	Tt Top in.	Tb Bottom in.	Tw Side in.	H Haunch in.	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
7	7	8	8	8	8	0 < 2	0.19	0.56	0.39	0.19	0.27	0.19	0.19	0.19	--
7	7	8	8	8	8	2 < 3	0.19	0.41	0.5	0.19					59
7	7	8	8	8	8	3 - 5	0.19	0.27	0.44	0.19					59
7	7	8	8	8	8	10	0.19	0.32	0.5	0.19					47
7	7	8	8	8	8	15	0.2	0.44	0.68	0.19					43
7	7	8	8	8	8	20	0.26	0.58	0.86	0.19					41
7	7	8	8	8	8	25	0.33	0.71	1.03	0.19					41

8' x 4'

S Span ft	R Rise ft	Tt Top in.	Tb Bottom in.	Tw Side in.	H Haunch in.	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
8	4	8	8	8	8	0 < 2	0.31	0.53	0.35	0.19	0.25	0.19	0.19	0.19	--
8	4	8	8	8	8	2 < 3	0.31	0.39	0.45	0.19					50
8	4	8	8	8	8	3 - 5	0.25	0.31	0.42	0.19					45
8	4	8	8	8	8	10	0.31	0.36	0.54	0.19					45
8	4	8	8	8	8	15	0.44	0.51	0.75	0.19					41
8	4	8	8	8	8	20	0.58	0.67	0.97	0.19					41
8	4	8	8	8	8	25	0.75	0.84	1.18	0.19					41

8' x 5'

S Span ft	R Rise ft	Tt Top in.	Tb Bottom in.	Tw Side in.	H Haunch in.	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
8	5	8	8	8	8	0 < 2	0.28	0.57	0.39	0.19	0.26	0.19	0.19	0.19	--
8	5	8	8	8	8	2 < 3	0.27	0.72	0.5	0.19					50
8	5	8	8	8	8	3 - 5	0.23	0.33	0.46	0.19					50
8	5	8	8	8	8	10	0.27	0.39	0.59	0.19					45
8	5	8	8	8	8	15	0.38	0.55	0.81	0.19					41
8	5	8	8	8	8	20	0.51	0.72	1.04	0.19					41
8	5	8	8	8	8	25	0.65	0.91	1.27	0.19					41

Design Criteria

f'c = 5,000 psi

fy = 65,000 psi (welded-wire fabric)

Live Load: HS-20 Loading

STEEL COVER FROM TOP OF INVERT SLAB = 2.0 INCHES

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DRAFT

8' x 6'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
8	6	8	8	8	8	0 < 2	0.26	0.59	0.42	0.19	0.28	0.19	0.19	0.19	--
8	6	8	8	8	8	2 < 3	0.25	0.45	0.54	0.19					55
8	6	8	8	8	8	3 - 5	0.21	0.36	0.5	0.19					50
8	6	8	8	8	8	10	0.25	0.41	0.62	0.19					45
8	6	8	8	8	8	15	0.35	0.58	0.85	0.19					41
8	6	8	8	8	8	20	0.45	0.76	1.08	0.19					41
8	6	8	8	8	8	25	0.57	0.95	1.32	0.19					41

8' x 7'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
8	7	8	8	8	8	0 < 2	0.24	0.62	0.45	0.19	0.29	0.19	0.19	0.19	--
8	7	8	8	8	8	2 < 3	0.23	0.47	0.58	0.19					65
8	7	8	8	8	8	3 - 5	0.19	0.38	0.54	0.19					55
8	7	8	8	8	8	10	0.23	0.42	0.65	0.19					45
8	7	8	8	8	8	15	0.32	0.59	0.88	0.19					41
8	7	8	8	8	8	20	0.42	0.77	1.11	0.19					41
8	7	8	8	8	8	25	0.52	0.97	1.35	0.19					41

8' x 8'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
8	8	8	8	8	8	0 < 2	0.22	0.64	0.49	0.19	0.3	0.19	0.19	0.19	--
8	8	8	8	8	8	2 < 3	0.22	0.49	0.62	0.19					65
8	8	8	8	8	8	3 - 5	0.19	0.4	0.57	0.19					65
8	8	8	8	8	8	10	0.22	0.43	0.66	0.19					50
8	8	8	8	8	8	15	0.3	0.59	0.89	0.19					45
8	8	8	8	8	8	20	0.39	0.77	1.12	0.19					45
8	8	8	8	8	8	25	0.49	0.97	1.36	0.19					45

Design Criteria

f'c = 5,000 psi

fy = 65,000 psi (welded-wire fabric)

Live Load: HS-20 Loading

STEEL COVER FROM TOP OF INVERT SLAB = 2.0 INCHES

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DRAFT

9' x 5'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
9	5	9	9	9	9	0 < 2	0.29	0.53	0.4	0.22	0.25	0.22	0.22	0.22	--
9	5	9	9	9	9	2 < 3	0.34	0.44	0.54	0.22					54
9	5	9	9	9	9	3 - 5	0.28	0.35	0.29	0.22					49
9	5	9	9	9	9	10	0.33	0.42	0.62	0.22					49
9	5	9	9	9	9	15	0.46	0.59	0.86	0.22					44
9	5	9	9	9	9	20	0.61	0.78	1.1	0.22					44
9	5	9	9	9	9	25	0.78	0.97	1.34	0.22					44

9' x 6'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
9	6	9	9	9	9	0 < 2	0.27	0.56	0.42	0.22	0.26	0.22	0.22	0.22	--
9	6	9	9	9	9	2 < 3	0.3	0.47	0.58	0.22					59
9	6	9	9	9	9	3 - 5	0.25	0.38	0.53	0.22					54
9	6	9	9	9	9	10	0.3	0.44	0.66	0.22					49
9	6	9	9	9	9	15	0.42	0.62	0.91	0.22					44
9	6	9	9	9	9	20	0.55	0.82	1.16	0.22					44
9	6	9	9	9	9	25	0.69	1.02	1.42	0.22					44

9' x 7'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
9	7	9	9	9	9	0 < 2	0.25	0.58	0.45	0.22	0.27	0.22	0.22	0.22	--
9	7	9	9	9	9	2 < 3	0.28	0.49	0.63	0.22					59
9	7	9	9	9	9	3 - 5	0.23	0.41	0.57	0.22					54
9	7	9	9	9	9	10	0.27	0.46	0.7	0.22					49
9	7	9	9	9	9	15	0.38	0.65	0.95	0.22					44
9	7	9	9	9	9	20	0.5	0.85	1.21	0.22					44
9	7	9	9	9	9	25	0.63	1.06	1.46	0.22					44

Design Criteria

f'c = 5,000 psi

fy = 65,000 psi (welded-wire fabric)

Live Load: HS-20 Loading

STEEL COVER FROM TOP OF INVERT SLAB = 2.0 INCHES

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DRAFT

9' x 8'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
9	8	9	9	9	9	0 < 2	0.23	0.6	0.48	0.22	0.28	0.22	0.22	0.22	--
9	8	9	9	9	9	2 < 3	0.26	0.51	0.67	0.22					72
9	8	9	9	9	9	3 - 5	0.22	0.43	0.61	0.22					59
9	8	9	9	9	9	10	0.26	0.47	0.72	0.22					54
9	8	9	9	9	9	15	0.36	0.66	0.98	0.22					44
9	8	9	9	9	9	20	0.46	0.86	1.23	0.22					44
9	8	9	9	9	9	25	0.58	1.07	1.49	0.22					44

9' x 9'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
9	9	9	9	9	9	0 < 2	0.25	0.62	0.54	0.27	0.28	0.22	0.22	0.22	--
9	9	9	9	9	9	2 < 3	0.25	0.53	0.71	0.22					72
9	9	9	9	9	9	3 - 5	0.22	0.44	0.64	0.22					72
9	9	9	9	9	9	10	0.25	0.48	0.74	0.22					59
9	9	9	9	9	9	15	0.34	0.66	0.99	0.22					49
9	9	9	9	9	9	20	0.44	0.86	1.25	0.22					49
9	9	9	9	9	9	25	0.55	1.08	1.5	0.22					44

10' x 5'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
10	5	10	10	10	10	0 < 2	0.29	0.51	0.38	0.24	0.24	0.24	0.24	0.24	--
10	5	10	10	10	10	2 < 3	0.38	0.46	0.57	0.24					58
10	5	10	10	10	10	3 - 5	0.32	0.38	0.52	0.24					52
10	5	10	10	10	10	10	0.39	0.45	0.66	0.24					52
10	5	10	10	10	10	15	0.54	0.63	0.91	0.24					47
10	5	10	10	10	10	20	0.72	0.82	1.17	0.24					47
10	5	10	10	10	10	25	0.91	1.03	1.42	0.24					47

Design Criteria

f'c = 5,000 psi

fy = 65,000 psi (welded-wire fabric)

Live Load: HS-20 Loading

STEEL COVER FROM TOP OF INVERT SLAB = 2.0 INCHES

 DUE TO SHEAR REQUIREMENT, SPECIAL DESIGN & REVIEW REQUIRE FOR APPROVAL

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

PRECAST REINFORCED CONCRETE BOX

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SHEET 40 OF 66

DRAFT

10' x 6'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.	
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}		
10	6	10	10	10	10	0 < 2	0.27	0.53	0.42	0.24	0.24	0.24	0.24	0.24	0.24	--
10	6	10	10	10	10	2 < 3	0.34	0.49	0.63	0.24						58
10	6	10	10	10	10	3 - 5	0.3	0.41	0.56	0.24						52
10	6	10	10	10	10	10	0.35	0.48	0.71	0.24						52
10	6	10	10	10	10	15	0.49	0.67	0.97	0.24						47
10	6	10	10	10	10	20	0.65	0.88	1.24	0.24						47
10	6	10	10	10	10	25	0.82	1.09	1.51	0.24						47

10' x 7'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.	
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}		
10	7	10	10	10	10	0 < 2	0.25	0.55	0.45	0.24	0.25	0.24	0.24	0.24		--
10	7	10	10	10	10	2 < 3	0.32	0.51	0.67	0.24						64
10	7	10	10	10	10	3 - 5	0.28	0.43	0.6	0.24						58
10	7	10	10	10	10	10	0.32	0.5	0.75	0.24						52
10	7	10	10	10	10	15	0.45	0.7	1.02	0.24						47
10	7	10	10	10	10	20	0.59	0.91	1.29	0.24						47
10	7	10	10	10	10	25	0.74	1.14	1.57	0.24						47

10' x 8'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.	
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}		
10	8	10	10	10	10	0 < 2	0.24	0.57	0.48	0.24	0.26					--
10	8	10	10	10	10	2 < 3	0.3	0.54	0.72	0.24						64
10	8	10	10	10	10	3 - 5	0.26	0.46	0.64	0.24						58
10	8	10	10	10	10	10	0.3	0.52	0.78	0.24						52
10	8	10	10	10	10	15	0.42	0.72	1.05	0.24						47
10	8	10	10	10	10	20	0.54	0.94	1.33	0.24						47
10	8	10	10	10	10	25	0.68	1.17	1.62	0.24						47

Design Criteria

f'c = 5,000 psi

fy = 65,000 psi (welded-wire fabric)

Live Load: HS-20 Loading

STEEL COVER FROM TOP OF INVERT SLAB = 2.0 INCHES

 DUE TO SHEAR REQUIREMENT, SPECIAL DESIGN & REVIEW REQUIRE FOR APPROVAL

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DRAFT

10' x 9'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
10	9	10	10	10	10	0 < 2	0.24	0.59	0.57	0.24	0.27	0.24	0.24	0.24	--
10	9	10	10	10	10	2 < 3	0.28	0.56	0.76	0.24					79
10	9	10	10	10	10	3 - 5	0.24	0.47	0.68	0.24					64
10	9	10	10	10	10	10	0.29	0.53	0.81	0.24					58
10	9	10	10	10	10	15	0.39	0.73	1.08	0.24					47
10	9	10	10	10	10	20	0.51	0.95	1.36	0.24					47
10	9	10	10	10	10	25	0.64	1.18	1.64	0.24					47

10' x 10'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
10	10	10	10	10	10	0 < 2	0.26	0.6	0.6	0.3	0.28	0.24	0.24	0.24	--
10	10	10	10	10	10	2 < 3	0.26	0.57	0.8	0.24					79
10	10	10	10	10	10	3 - 5	0.24	0.5	0.72	0.24					70
10	10	10	10	10	10	10	0.28	0.54	0.83	0.34					64
10	10	10	10	10	10	15	0.38	0.74	1.19	0.24					52
10	10	10	10	10	10	20	0.49	0.95	1.38	0.24					52
10	10	10	10	10	10	25	0.61	1.19	1.65	0.24					47

11' x 4'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
11	4	11	11	11	11	0 < 2	0.32	0.46	0.35	0.26	0.26	0.26	0.26	0.26	--
11	4	11	11	11	11	2 < 3	0.45	0.43	0.52	0.26					62
11	4	11	11	11	11	3 - 5	0.4	0.36	0.49	0.26					62
11	4	11	11	11	11	10	0.49	0.44	0.64	0.26					55
11	4	11	11	11	11	15	0.7	0.61	0.88	0.26					55
11	4	11	11	11	11	20	0.93	0.8	1.13	0.26					55
11	4	11	11	11	11	25	1.19	0.99	1.38	0.26					55

Design Criteria

f'c = 5,000 psi

fy = 65,000 psi (welded-wire fabric)

Live Load: HS-20 Loading

STEEL COVER FROM TOP OF INVERT SLAB = 2.0 INCHES

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DRAFT

11' x 5'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
11	5	11	11	11	11	0 < 2	0.3	0.48	0.29	0.26	0.26	0.26	0.26	0.26	--
11	5	11	11	11	11	2 < 3	0.43	0.47	0.58	0.26					62
11	5	11	11	11	11	3 - 5	0.39	0.4	0.54	0.26					62
11	5	11	11	11	11	10	0.45	0.48	0.7	0.26					55
11	5	11	11	11	11	15	0.63	0.67	0.96	0.26					55
11	5	11	11	11	11	20	0.83	0.87	1.23	0.26					55
11	5	11	11	11	11	25	1.86	1.08	1.5	0.26					55

11' x 6'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
11	6	11	11	11	11	0 < 2	0.28	0.51	0.42	0.26	0.26	0.26	0.26	0.26	--
11	6	11	11	11	11	2 < 3	0.43	0.5	0.63	0.26					62
11	6	11	11	11	11	3 - 5	0.32	0.38	0.54	0.26					55
11	6	11	11	11	11	10	0.41	0.51	0.75	0.26					55
11	6	11	11	11	11	15	0.57	0.71	1.03	0.26					50
11	6	11	11	11	11	20	0.75	0.93	1.31	0.26					50
11	6	11	11	11	11	25	0.95	1.16	1.6	0.26					50

11' x 7'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
11	7	11	11	11	11	0 < 2	0.26	0.53	0.5	0.26	0.26	0.26	0.26	0.26	--
11	7	11	11	11	11	2 < 3	0.37	0.53	0.68	0.24					69
11	7	11	11	11	11	3 - 5	0.28	0.4	0.57	0.26					62
11	7	11	11	11	11	10	0.38	0.54	0.79	0.26					55
11	7	11	11	11	11	15	0.52	0.75	1.086	0.26					50
11	7	11	11	11	11	20	0.69	0.97	1.38	0.26					50
11	7	11	11	11	11	25	0.86	1.21	1.67	0.26					50

Design Criteria

f'c = 5,000 psi

fy = 65,000 psi (welded-wire fabric)

Live Load: HS-20 Loading

STEEL COVER FROM TOP OF INVERT SLAB = 2.0 INCHES

 DUE TO SHEAR REQUIREMENT, SPECIAL DESIGN & REVIEW REQUIRE FOR APPROVAL

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DRAFT

11' x 8'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
11	8	11	11	11	11	0 < 2	0.26	0.55	0.54	0.26	0.26	0.26	0.26	0.26	--
11	8	11	11	11	11	2 < 3	0.34	0.56	0.72	0.26					69
11	8	11	11	11	11	3 - 5	0.27	0.43	0.61	0.26					62
11	8	11	11	11	11	10	0.35	0.56	0.83	0.26					55
11	8	11	11	11	11	15	0.49	0.77	1.17	0.26					50
11	8	11	11	11	11	20	0.63	1.01	1.43	0.26					50
11	8	11	11	11	11	25	0.79	1.26	1.73	0.26					50

11' x 9'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
11	9	11	11	11	11	0 < 2	0.26	0.56	0.57	0.26	0.27	0.26	0.26	0.26	--
11	9	11	11	11	11	2 < 3	0.31	0.58	0.77	0.26					86
11	9	11	11	11	11	3 - 5	0.26	0.45	0.64	0.26					69
11	9	11	11	11	11	10	0.33	0.57	0.87	0.26					62
11	9	11	11	11	11	15	0.46	0.79	1.16	0.26					50
11	9	11	11	11	11	20	0.59	1.03	1.47	0.26					50
11	9	11	11	11	11	25	0.74	1.28	1.77	0.26					50

11' x 10'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
11	10	11	11	11	11	0 < 2	0.26	0.58	0.61	0.26	0.28	0.26	0.26	0.26	--
11	10	11	11	11	11	2 < 3	0.29	0.6	0.81	0.26					86
11	10	11	11	11	11	3 - 5	0.37	0.52	0.76	0.26					69
11	10	11	11	11	11	10	0.29	0.52	0.76	0.26					62
11	10	11	11	11	11	15	0.44	0.82	1.19	0.26					50
11	10	11	11	11	11	20	0.56	1.04	1.49	0.26					50
11	10	11	11	11	11	25	0.7	1.3	1.8	0.26					50

Design Criteria

f'c = 5,000 psi

fy = 65,000 psi (welded-wire fabric)

Live Load: HS-20 Loading

STEEL COVER FROM TOP OF INVERT SLAB = 2.0 INCHES

 DUE TO SHEAR REQUIREMENT, SPECIAL DESIGN & REVIEW REQUIRE FOR APPROVAL

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DRAFT

11' x 11'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
11	11	11	11	11	11	0 < 2	0.28	0.59	0.65	0.34	0.29	0.26	0.26	0.26	--
11	11	11	11	11	11	2 < 3	0.28	0.62	0.86	0.26					86
11	11	11	11	11	11	3 - 5	0.26	0.55	0.88	0.26					75
11	11	11	11	11	11	10	0.31	0.59	0.92	0.26					69
11	11	11	11	11	11	15	0.42	0.81	1.21	0.26					55
11	11	11	11	11	11	20	0.54	1.05	1.51	0.26					55
11	11	11	11	11	11	25	0.68	1.3	1.81	0.26					55

12' x 4'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
12	4	12	12	12	12	0 < 2	0.4	0.44	0.4	0.29	0.29	0.29	0.29	0.29	--
12	4	12	12	12	12	2 < 3	0.31	0.69	0.95	0.29					73
12	4	12	12	12	12	3 - 5	0.46	0.53	0.8	0.29					66
12	4	12	12	12	12	10	0.56	0.46	0.67	0.29					59
12	4	12	12	12	12	15	0.8	0.64	0.92	0.29					59
12	4	12	12	12	12	20	1.06	0.83	1.18	0.26					59
12	4	12	12	12	12	25	1.35	1.03	1.44	0.29					59

12' x 5'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
12	5	12	12	12	12	0 < 2	0.35	0.46	0.44	0.29	0.29	0.29	0.29	0.29	--
12	5	12	12	12	12	2 < 3	0.47	0.48	0.61	0.29					73
12	5	12	12	12	12	3 - 5	0.42	0.52	0.57	0.29					66
12	5	12	12	12	12	10	0.51	0.5	0.71	0.29					59
12	5	12	12	12	12	15	0.72	0.7	1.01	0.29					59
12	5	12	12	12	12	20	0.95	0.91	1.29	0.29					59
12	5	12	12	12	12	25	1.21	1.14	1.57	0.26					59

Design Criteria

f'c = 5,000 psi

fy = 65,000 psi (welded-wire fabric)

Live Load: HS-20 Loading

STEEL COVER FROM TOP OF INVERT SLAB = 2.0 INCHES

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DRAFT

12' x 6'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
12	6	12	12	12	12	0 < 2	0.33	0.49	0.49	0.29	0.29	0.29	0.29	0.29	--
12	6	12	12	12	12	2 < 3	0.44	0.52	0.66	0.29					66
12	6	12	12	12	12	3 - 5	0.39	0.45	0.62	0.29					59
12	6	12	12	12	12	10	0.47	0.54	0.79	0.29					59
12	6	12	12	12	12	15	0.66	0.75	1.08	0.29					53
12	6	12	12	12	12	20	0.86	0.98	1.38	0.29					53
12	6	12	12	12	12	25	1.09	1.22	1.68	0.29					53

12' x 7'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
12	7	12	12	12	12	0 < 2	0.31	0.51	0.53	0.29	0.29	0.29	0.29	0.29	--
12	7	12	12	12	12	2 < 3	0.41	0.55	0.77	0.29					66
12	7	12	12	12	12	3 - 5	0.37	0.49	0.67	0.29					59
12	7	12	12	12	12	10	0.44	0.57	0.84	0.29					59
12	7	12	12	12	12	15	0.6	0.79	1.15	0.29					53
12	7	12	12	12	12	20	0.79	1.03	1.46	0.29					53
12	7	12	12	12	12	25	0.99	1.28	1.77	0.29					53

12' x 8'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
12	8	12	12	12	12	0 < 2	0.3	0.52	0.57	0.29	0.29	0.29	0.29	0.29	--
12	8	12	12	12	12	2 < 3	0.38	0.58	0.76	0.29					66
12	8	12	12	12	12	3 - 5	0.35	0.51	0.72	0.29					59
12	8	12	12	12	12	10	0.41	0.59	0.89	0.29					59
12	8	12	12	12	12	15	0.56	0.83	1.2	0.29					53
12	8	12	12	12	12	20	0.73	1.07	1.52	0.29					53
12	8	12	12	12	12	25	0.92	1.34	1.84	0.29					53

Design Criteria

f'c = 5,000 psi

fy = 65,000 psi (welded-wire fabric)

Live Load: HS-20 Loading

STEEL COVER FROM TOP OF INVERT SLAB = 2.0 INCHES

 DUE TO SHEAR REQUIREMENT, SPECIAL DESIGN & REVIEW REQUIRE FOR APPROVAL

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

PRECAST REINFORCED CONCRETE BOX

STANDARD PLAN

3054-0

APPROVED _____

DIRECTOR OF PUBLIC WORKS

DATE

REVISIONS

SHEET 46 OF 66

DRAFT

12' x 9'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
12	9	12	12	12	12	0 < 2	0.29	0.54	0.6	0.29	0.29	0.29	0.29	0.29	--
12	9	12	12	12	12	2 < 3	0.36	0.61	0.81	0.29					80
12	9	12	12	12	12	3 - 5	0.33	0.54	0.76	0.29					66
12	9	12	12	12	12	10	0.39	0.61	0.92	0.29					59
12	9	12	12	12	12	15	0.53	0.85	1.24	0.29					53
12	9	12	12	12	12	20	0.68	1.1	1.57	0.29					53
12	9	12	12	12	12	25	0.85	1.37	1.9	0.29					53

12' x 10'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
12	10	12	12	12	12	0 < 2	0.29	0.55	0.64	0.29	0.3	0.29	0.29	0.29	--
12	10	12	12	12	12	2 < 3	0.34	0.63	0.75	0.29					80
12	10	12	12	12	12	3 - 5	0.31	0.56	0.8	0.29					66
12	10	12	12	12	12	10	0.37	0.63	0.96	0.29					59
12	10	12	12	12	12	15	0.5	0.87	1.27	0.29					53
12	10	12	12	12	12	20	0.64	1.13	1.6	0.29					53
12	10	12	12	12	12	25	0.8	1.4	1.94	0.29					53

12' x 11'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
12	11	12	12	12	12	0 < 2	0.29	0.57	0.68	0.29	0.31	0.29	0.29	0.29	--
12	11	12	12	12	12	2 < 3	0.32	0.66	0.9	0.29					93
12	11	12	12	12	12	3 - 5	0.31	0.58	0.84	0.29					80
12	11	12	12	12	12	10	0.35	0.64	0.99	0.29					73
12	11	12	12	12	12	15	0.48	0.88	1.31	0.29					59
12	11	12	12	12	12	20	0.62	1.14	1.63	0.29					59
12	11	12	12	12	12	25	0.77	1.41	1.96	0.29					59

Design Criteria

f'c = 5,000 psi

fy = 65,000 psi (welded-wire fabric)

Live Load: HS-20 Loading

STEEL COVER FROM TOP OF INVERT SLAB = 2.0 INCHES

 DUE TO SHEAR REQUIREMENT, SPECIAL DESIGN & REVIEW REQUIRE FOR APPROVAL

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

PRECAST REINFORCED CONCRETE BOX

STANDARD PLAN

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DIRECTOR OF PUBLIC WORKS

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REVISIONS

SHEET 47 OF 66

DRAFT

12' x 12'

S Span ft	R Rise ft	Tt Top in.	Tb Bottom in.	Tw Side in.	H Haunch in.	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
12	12	12	12	12	12	0 < 2	0.31	0.58	0.72	0.29	0.32	0.29	0.29	0.29	--
12	12	12	12	12	12	2 < 3	0.31	0.65	0.95	0.29					93
12	12	12	12	12	12	3 - 5	0.29	0.6	0.88	0.29					80
12	12	12	12	12	12	10	0.34	0.65	1.01	0.29					73
12	12	12	12	12	12	15	0.46	0.89	1.33	0.29					59
12	12	12	12	12	12	20	0.6	1.14	1.65	0.29					59
12	12	12	12	12	12	25	0.74	1.41	1.98	0.96					59

Design Criteria

f'c = 5,000 psi

fy = 65,000 psi (welded-wire fabric)

Live Load: HS-20 Loading

STEEL COVER FROM TOP OF INVERT SLAB = 2.0 INCHES

DUE TO SHEAR REQUIREMENT, SPECIAL DESIGN & REVIEW REQUIRE FOR APPROVAL

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS	
<p style="text-align: center; font-size: 1.2em; margin: 0;">PRECAST REINFORCED CONCRETE BOX</p> <p>APPROVED _____</p> <p style="text-align: center; font-size: 0.8em; margin: 0;">DIRECTOR OF PUBLIC WORKS DATE REVISIONS</p>	<p style="font-size: 0.8em; margin: 0;">STANDARD PLAN</p> <p style="font-size: 1.5em; margin: 0;">3054-0</p> <p style="font-size: 0.8em; margin: 0;">SHEET 48 OF 66</p>

DRAFT

NOTES:

1. STEEL COVER SHALL BE FROM THE FACE OF THE BAR OR WIRE TO THE FACE OF THE CONCRETE.
2. STEEL COVER FROM THE TOP OF INVERT SLAB SHALL BE IN ACCORDANCE WITH THE FOLLOWING:

<u>VELOCITY (FPS)</u>	<u>STEEL COVER (INCHES)</u>	<u>MINIMUM 28-DAY CONCRETE STRENGTH</u>
< 5	1.5	5,000 PSI
5 TO 20	2	5,000 PSI
>20 TO 40	2.5	5,000 PSI
> 40	NOT ALLOWED	NOT ALLOWED

3. STEEL COVER FROM THE TOP OF THE INVERT SLAB MAY BE INCREASED FOR PRCB SUBJECT TO THE ACTION OF SEAWATER, HARMFUL GROUNDWATER, OR APPRECIABLE DEBRIS FLOWS.
4. STEEL COVER GREATER THAN 2.5 INCHES MAY RESULT IN DELAMINATION OF CONCRETE. SEE THE PLANS FOR SACRIFICIAL STEEL TO PREVENT SLABBING WHEN THE STEEL COVER EXCEEDS 2.5 INCHES.
5. PRCB SHALL NOT BE PERMITTED WHEN THE MAXIMUM GROUND WATER TABLE IS LOCATED 1 FEET BELOW THE BOTTOM OF INVERT OR HIGHER, OR THE HYDRAULIC GRADE LINE IS MORE THAN 4 FEET ABOVE THE SOFFIT.
6. PRCB WITH RISE LARGER THAN 12 FEET AND SPAN GREATER THAN 12 FEET SPAN TO 24 FEET, MUST HAVE A SPECIAL DESIGN SUBMITTED FOR REVIEW AND ARE SUBJECT TO APPROVAL BY THE ENGINEER.
7. THE DESIGN TABLES IN THIS STANDARD PLAN DO NOT ACCOUNT FOR TEMPERATURE VARIATIONS, UNBALANCED LATERAL LOADS, RAILROAD LOADING OR LOADING DUE TO OTHER TEMPORARY OR PERMANENT STRUCTURES. SPECIAL DESIGN FOR THESE LOADS, IF APPLICABLE, MUST BE SUBMITTED FOR REVIEW AND ARE SUBJECT TO APPROVAL BY THE ENGINEER.
8. DESIGN CRITERIA: AASHTO SPECIFICATIONS FOR HIGHWAY BRIDGES, CURRENT LFD EDITION, EXCEPT THE LOAD FACTOR FOR DEAD LOAD (β_D) AND EARTH PRESSURE (β_E) = 1.4
9. IF STEEL BARS (GRADE 60) ARE USED IN LIEU OF WELDED WIRE FABRIC, THE STEEL AREAS PRESENTED SHALL BE INCREASED TO ACCOUNT FOR THE DIFFERENCES IN STEEL YIELD STRENGTH, STEEL SPACING, CONCRETE COVER, AND CRACK CONTROL.
10. THE JOINTS OF THE SECTIONS SHALL BE OF SUCH DESIGN THAT THEY WILL WITHSTAND THE FORCES CAUSED BY THE COMPRESSION OF THE SEALANT WHEN JOINED, WITHOUT CRACKING OR FRACTURING WHEN TESTED.
11. LONGITUDINAL STEEL TO HAVE AN AREA OF AT LEAST 40 PERCENT OF THE CIRCUMFERENTIAL STEEL AND 8 INCHES MAXIMUM SPACING.

SHEET 48 TO 65 ONLY APPLY TO 2.5" INCHES COVER FOR TOP OF INVERT SLAB.

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

PRECAST REINFORCED CONCRETE BOX

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SHEET 49 OF 66

DRAFT

3' x 2'

S	R	Tt	Tb	Tw	H	Earth	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
Span	Rise	Top	Bottom	Side	Haunch	Cover, ft									
ft	ft	in.	in.	in.	in.										
3	2	7	6	4	4	0 < 2	0.17	0.38	0.30	0.10	0.22	0.17	0.17	0.14	-
3	2	4	4	4	4	2 < 3	0.13	0.21	0.25	0.10	-	-	-	-	31
3	2	4	4	4	4	3 - 5	0.10	0.10	0.22	0.10	-	-	-	-	31
3	2	4	4	4	4	10	0.10	0.11	0.28	0.10	-	-	-	-	31

3' x 3'

S	R	Tt	Tb	Tw	H	Earth	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
Span	Rise	Top	Bottom	Side	Haunch	Cover, ft									
ft	ft	in.	in.	in.	in.										
3	3	7	6	4	4	0 < 2	0.17	0.40	0.32	0.10	0.23	0.17	0.17	0.14	-
3	3	4	4	4	4	2 < 3	0.10	0.25	0.27	0.10	-	-	-	-	31
3	3	4	4	4	4	3 - 5	0.10	0.10	0.23	0.10	-	-	-	-	31
3	3	4	4	4	4	10	0.10	0.11	0.29	0.10	-	-	-	-	31

4' x 2'

S	R	Tt	Tb	Tw	H	Earth	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
Span	Rise	Top	Bottom	Side	Haunch	Cover, ft									
ft	ft	in.	in.	in.	in.										
4	2	7.5	6	5	5	0 < 2	0.18	0.40	0.29	0.12	0.21	0.18	0.18	0.14	-
4	2	5	5	5	5	2 < 3	0.19	0.23	0.34	0.12	-	-	-	-	38
4	2	5	5	5	5	3 - 5	0.12	0.12	0.21	0.12	-	-	-	-	38
4	2	5	5	5	5	10	0.12	0.14	0.28	0.12	-	-	-	-	38
4	2	5	5	5	5	15	0.16	0.20	0.41	0.12	-	-	-	-	38
4	2	5	5	5	5	20	0.22	0.27	0.54	0.12	-	-	-	-	38

Design Criteria

f_c = 5,000 psi

f_y = 65,000 psi (welded-wire fabric)

Live Load: HS-20 Loading

STEEL COVER FROM TOP OF INVERT SLAB = 2.5 INCHES

DUE TO SHEAR REQUIREMENT, SPECIAL DESIGN & REVIEW REQUIRE FOR APPROVAL

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

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SHEET 50 OF 66

DRAFT

4' x 3'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
4	3	7.5	6	5	5	0 < 2	0.18	0.45	0.34	0.12	0.23	0.18	0.18	0.14	-
4	3	5	5	5	5	2 < 3	0.17	0.28	0.41	0.12	-	-	-	-	38
4	3	5	5	5	5	3 - 5	0.12	0.12	0.25	0.12	-	-	-	-	38
4	3	5	5	5	5	10	0.12	0.15	0.32	0.12	-	-	-	-	38
4	3	5	5	5	5	15	0.12	0.23	0.46	0.12	-	-	-	-	38

4' x 4'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
4	4	7.5	6	5	5	0 < 2	0.18	0.47	0.36	0.12	0.25	0.18	0.18	0.14	-
4	4	5	5	5	5	2 < 3	0.14	0.31	0.45	0.12	-	-	-	-	38
4	4	5	5	5	5	3 - 5	0.12	0.14	0.26	0.12	-	-	-	-	38
4	4	5	5	5	5	10	0.12	0.15	0.32	0.12	-	-	-	-	38
4	4	5	5	5	5	15	0.12	0.22	0.46	0.12	-	-	-	-	38

5' x 3'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
5	3	8	7	6	6	0 < 2	0.19	0.44	0.30	0.14	0.22	0.19	0.19	0.17	-
5	3	6	6	6	6	2 < 3	0.21	0.29	0.34	0.14	-	-	-	-	45
5	3	6	6	6	6	3 - 5	0.14	0.15	0.26	0.14	-	-	-	-	36
5	3	6	6	6	6	10	0.14	0.18	0.34	0.14	-	-	-	-	36
5	3	6	6	6	6	15	0.18	0.27	0.49	0.14	-	-	-	-	35
5	3	6	6	6	6	20	0.25	0.36	0.64	0.14	-	-	-	-	35
5	3	6	6	6	6	25	0.32	0.46	0.80	0.14	-	-	-	-	35

Design Criteria

f'c = 5,000 psi

fy = 65,000 psi (welded-wire fabric)

Live Load: HS-20 Loading

STEEL COVER FROM TOP OF INVERT SLAB = 2.5 INCHES

DUE TO SHEAR REQUIREMENT, SPECIAL DESIGN & REVIEW REQUIRE FOR APPROVAL

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

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SHEET 51 OF 66

DRAFT

5' x 4'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
5	4	8	7	6	6	0 < 2	0.19	0.48	0.33	0.14	0.24	0.19	0.19	0.17	-
5	4	6	6	6	6	2 < 3	0.18	0.33	0.39	0.14	-	-	-	-	45
5	4	6	6	6	6	3 - 5	0.14	0.16	0.29	0.14	-	-	-	-	45
5	4	6	6	6	6	10	0.14	0.20	0.37	0.14	-	-	-	-	36
5	4	6	6	6	6	15	0.15	0.29	0.53	0.14	-	-	-	-	35
5	4	6	6	6	6	20	0.20	0.39	0.69	0.14	-	-	-	-	35

5' x 5'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
5	5	8	7	6	6	0 < 2	0.19	0.50	0.35	0.14	0.25	0.19	0.19	0.17	-
5	5	6	6	6	6	2 < 3	0.16	0.35	0.43	0.14	-	-	-	-	45
5	5	6	6	6	6	3 - 5	0.14	0.17	0.31	0.14	-	-	-	-	45
5	5	6	6	6	6	10	0.14	0.20	0.38	0.14	-	-	-	-	45
5	5	6	6	6	6	15	0.14	0.29	0.54	0.14	-	-	-	-	36
5	5	6	6	6	6	20	0.17	0.39	0.70	0.14	-	-	-	-	35

6' x 3'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
6	3	8	7	7	7	0 < 2	0.23	0.45	0.30	0.17	0.22	0.19	0.19	0.17	-
6	3	7	7	7	7	2 < 3	0.24	0.30	0.32	0.17	-	-	-	-	43
6	3	7	7	7	7	3 - 5	0.17	0.17	0.27	0.17	-	-	-	-	40
6	3	7	7	7	7	10	0.17	0.21	0.36	0.17	-	-	-	-	39
6	3	7	7	7	7	15	0.25	0.31	0.52	0.17	-	-	-	-	38
6	3	7	7	7	7	20	0.34	0.41	0.68	0.17	-	-	-	-	38
6	3	7	7	7	7	25	0.44	0.52	0.84	0.17	-	-	-	-	38

Design Criteria

f'c = 5,000 psi

fy = 65,000 psi (welded-wire fabric)

Live Load: HS-20 Loading

STEEL COVER FROM TOP OF INVERT SLAB = 2.5 INCHES

 DUE TO SHEAR REQUIREMENT, SPECIAL DESIGN & REVIEW REQUIRE FOR APPROVAL

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

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SHEET 52 OF 66

DRAFT

6' x 4'

S	R	Tt	Tb	Tw	H	Earth	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
Span	Rise	Top	Bottom	Side	Haunch	Cover, ft									
ft	ft	in.	in.	in.	in.										
6	4	8	7	7	7	0 < 2	0.19	0.49	0.33	0.17	0.23	0.19	0.19	0.17	-
6	4	7	7	7	7	2 < 3	0.22	0.33	0.36	0.17	-	-	-	-	43
6	4	7	7	7	7	3 - 5	0.17	0.18	0.30	0.17	-	-	-	-	40
6	4	7	7	7	7	10	0.17	0.22	0.39	0.17	-	-	-	-	39
6	4	7	7	7	7	15	0.21	0.33	0.57	0.17	-	-	-	-	38
6	4	7	7	7	7	20	0.28	0.44	0.74	0.17	-	-	-	-	38
6	4	7	7	7	7	25	0.35	0.56	0.91	0.17	-	-	-	-	38

6' x 5'

S	R	Tt	Tb	Tw	H	Earth	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
Span	Rise	Top	Bottom	Side	Haunch	Cover, ft									
ft	ft	in.	in.	in.	in.										
6	5	8	7	7	7	0 < 2	0.19	0.52	0.37	0.17	0.25	0.19	0.19	0.17	-
6	5	7	7	7	7	2 < 3	0.19	0.36	0.41	0.17	-	-	-	-	52
6	5	7	7	7	7	3 - 5	0.17	0.20	0.34	0.17	-	-	-	-	43
6	5	7	7	7	7	10	0.17	0.24	0.43	0.17	-	-	-	-	39
6	5	7	7	7	7	15	0.18	0.35	0.61	0.17	-	-	-	-	38
6	5	7	7	7	7	20	0.24	0.47	0.79	0.17	-	-	-	-	38
6	5	7	7	7	7	25	0.30	0.59	0.97	0.17	-	-	-	-	38

6' x 6'

S	R	Tt	Tb	Tw	H	Earth	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
Span	Rise	Top	Bottom	Side	Haunch	Cover, ft									
ft	ft	in.	in.	in.	in.										
6	6	8	7	7	7	0 < 2	0.19	0.54	0.39	0.17	0.26	0.19	0.19	0.17	-
6	6	7	7	7	7	2 < 3	0.17	0.38	0.43	0.17	-	-	-	-	52
6	6	7	7	7	7	3 - 5	0.17	0.20	0.35	0.17	-	-	-	-	52
6	6	7	7	7	7	10	0.17	0.24	0.43	0.17	-	-	-	-	43
6	6	7	7	7	7	15	0.17	0.34	0.60	0.17	-	-	-	-	39
6	6	7	7	7	7	20	0.21	0.46	0.78	0.17	-	-	-	-	38
6	6	7	7	7	7	25	0.25	0.58	0.96	0.17	-	-	-	-	38

Design Criteria

f'c = 5,000 psi

fy = 65,000 psi (welded-wire fabric)

Live Load: HS-20 Loading

STEEL COVER FROM TOP OF INVERT SLAB = 2.5 INCHES

 DUE TO SHEAR REQUIREMENT, SPECIAL DESIGN & REVIEW REQUIRE FOR APPROVAL

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

PRECAST REINFORCED CONCRETE BOX

STANDARD PLAN

3054-0

APPROVED _____

DIRECTOR OF PUBLIC WORKS

DATE

REVISIONS

SHEET 53 OF 66

DRAFT

7' x 4'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
7	4	8	8	8	8	0 < 2	0.26	0.49	0.34	0.19	0.23	0.19	0.19	0.19	-
7	4	8	8	8	8	2 < 3	0.24	0.33	0.41	0.19	-	-	-	-	47
7	4	8	8	8	8	3 - 5	0.19	0.21	0.33	0.19	-	-	-	-	43
7	4	8	8	8	8	10	0.19	0.26	0.43	0.19	-	-	-	-	43
7	4	8	8	8	8	15	0.28	0.38	0.62	0.19	-	-	-	-	41
7	4	8	8	8	8	20	0.37	0.51	0.81	0.19	-	-	-	-	41
7	4	8	8	8	8	25	0.47	0.64	1.00	0.19	-	-	-	-	41

7' x 5'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
7	5	8	8	8	8	0 < 2	0.23	0.52	0.38	0.19	0.24	0.19	0.19	0.19	-
7	5	8	8	8	8	2 < 3	0.22	0.36	0.46	0.19	-	-	-	-	59
7	5	8	8	8	8	3 - 5	0.19	0.23	0.37	0.19	-	-	-	-	43
7	5	8	8	8	8	10	0.19	0.28	0.47	0.19	-	-	-	-	43
7	5	8	8	8	8	15	0.24	0.41	0.67	0.19	-	-	-	-	41
7	5	8	8	8	8	20	0.32	0.54	0.87	0.19	-	-	-	-	41
7	5	8	8	8	8	25	0.40	0.68	1.07	0.19	-	-	-	-	41

7' x 6'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
7	6	8	8	8	8	0 < 2	0.21	0.54	0.41	0.19	0.26	0.19	0.19	0.19	-
7	6	8	8	8	8	2 < 3	0.20	0.39	0.50	0.19	-	-	-	-	59
7	6	8	8	8	8	3 - 5	0.19	0.24	0.40	0.19	-	-	-	-	47
7	6	8	8	8	8	10	0.19	0.29	0.49	0.19	-	-	-	-	43
7	6	8	8	8	8	15	0.21	0.41	0.70	0.19	-	-	-	-	41
7	6	8	8	8	8	20	0.28	0.55	0.90	0.19	-	-	-	-	41
7	6	8	8	8	8	25	0.33	0.70	1.10	0.19	-	-	-	-	41

Design Criteria

f'c = 5,000 psi

fy = 65,000 psi (welded-wire fabric)

Live Load: HS-20 Loading

STEEL COVER FROM TOP OF INVERT SLAB = 2.5 INCHES

 DUE TO SHEAR REQUIREMENT, SPECIAL DESIGN & REVIEW REQUIRE FOR APPROVAL

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

PRECAST REINFORCED CONCRETE BOX

STANDARD PLAN

3054-0

APPROVED _____

DIRECTOR OF PUBLIC WORKS

DATE

REVISIONS

SHEET 54 OF 66

DRAFT

7' x 7'

S Span ft	R Rise ft	Tt Top in.	Tb Bottom in.	Tw Side in.	H Haunch in.	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
7	7	8	8	8	8	0 < 2	0.19	0.56	0.44	0.19	0.27	0.19	0.19	0.19	-
7	7	8	8	8	8	2 < 3	0.19	0.41	0.54	0.19	-	-	-	-	59
7	7	8	8	8	8	3 - 5	0.19	0.25	0.42	0.19	-	-	-	-	59
7	7	8	8	8	8	10	0.19	0.29	0.51	0.19	-	-	-	-	47
7	7	8	8	8	8	15	0.19	0.42	0.71	0.19	-	-	-	-	43
7	7	8	8	8	8	20	0.26	0.56	0.91	0.19	-	-	-	-	41
7	7	8	8	8	8	25	0.32	0.70	1.11	0.19	-	-	-	-	41

8' x 4'

S Span ft	R Rise ft	Tt Top in.	Tb Bottom in.	Tw Side in.	H Haunch in.	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
8	4	8	8	8	8	0 < 2	0.31	0.53	0.38	0.19	0.25	0.19	0.19	0.19	-
8	4	8	8	8	8	2 < 3	0.32	0.39	0.49	0.19	-	-	-	-	50
8	4	8	8	8	8	3 - 5	0.22	0.26	0.41	0.19	-	-	-	-	45
8	4	8	8	8	8	10	0.28	0.33	0.55	0.19	-	-	-	-	45
8	4	8	8	8	8	15	0.42	0.49	0.79	0.19	-	-	-	-	41
8	4	8	8	8	8	20	0.57	0.65	1.03	0.19	-	-	-	-	41
8	4	8	8	8	8	25	0.73	0.83	1.27	0.19	-	-	-	-	41

8' x 5'

S Span ft	R Rise ft	Tt Top in.	Tb Bottom in.	Tw Side in.	H Haunch in.	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
8	5	8	8	8	8	0 < 2	0.28	0.57	0.43	0.19	0.26	0.19	0.19	0.19	-
8	5	8	8	8	8	2 < 3	0.28	0.42	0.55	0.19	-	-	-	-	50
8	5	8	8	8	8	3 - 5	0.20	0.28	0.46	0.19	-	-	-	-	50
8	5	8	8	8	8	10	0.25	0.35	0.60	0.19	-	-	-	-	45
8	5	8	8	8	8	15	0.37	0.52	0.85	0.19	-	-	-	-	41
8	5	8	8	8	8	20	0.49	0.70	1.11	0.19	-	-	-	-	41
8	5	8	8	8	8	25	0.63	0.89	1.36	0.19	-	-	-	-	41

Design Criteria

f'c = 5,000 psi

fy = 65,000 psi (welded-wire fabric)

Live Load: HS-20 Loading

STEEL COVER FROM TOP OF INVERT SLAB = 2.5 INCHES

 DUE TO SHEAR REQUIREMENT, SPECIAL DESIGN & REVIEW REQUIRE FOR APPROVAL

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

PRECAST REINFORCED CONCRETE BOX

STANDARD PLAN

3054-0

APPROVED _____

DIRECTOR OF PUBLIC WORKS

DATE

REVISIONS

SHEET 55 OF 66

DRAFT

8' x 6'

S	R	Tt	Tb	Tw	H	Earth	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
Span	Rise	Top	Bottom	Side	Haunch	Cover, ft									
ft	ft	in.	in.	in.	in.										
8	6	8	8	8	8	0 < 2	0.26	0.59	0.46	0.19	0.28	0.19	0.19	0.19	-
8	6	8	8	8	8	2 < 3	0.25	0.45	0.59	0.19	-	-	-	-	55
8	6	8	8	8	8	3 - 5	0.19	0.30	0.50	0.19	-	-	-	-	50
8	6	8	8	8	8	10	0.23	0.37	0.63	0.19	-	-	-	-	45
8	6	8	8	8	8	15	0.33	0.55	0.89	0.19	-	-	-	-	41
8	6	8	8	8	8	20	0.44	0.73	1.16	0.19	-	-	-	-	41

8' x 7'

S	R	Tt	Tb	Tw	H	Earth	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
Span	Rise	Top	Bottom	Side	Haunch	Cover, ft									
ft	ft	in.	in.	in.	in.										
8	7	8	8	8	8	0 < 2	0.24	0.62	0.51	0.20	0.29	0.19	0.19	0.19	-
8	7	8	8	8	8	2 < 3	0.23	0.47	0.64	0.19	-	-	-	-	65
8	7	8	8	8	8	3 - 5	0.19	0.31	0.53	0.19	-	-	-	-	55
8	7	8	8	8	8	10	0.21	0.38	0.65	0.19	-	-	-	-	45
8	7	8	8	8	8	15	0.30	0.56	0.92	0.19	-	-	-	-	41
8	7	8	8	8	8	20	0.40	0.75	1.19	0.19	-	-	-	-	41

8' x 8'

S	R	Tt	Tb	Tw	H	Earth	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
Span	Rise	Top	Bottom	Side	Haunch	Cover, ft									
ft	ft	in.	in.	in.	in.										
8	8	8	8	8	8	0 < 2	0.22	0.64	0.55	0.24	0.30	0.19	0.19	0.19	-
8	8	8	8	8	8	2 < 3	0.22	0.49	0.68	0.19	-	-	-	-	65
8	8	8	8	8	8	3 - 5	0.19	0.33	0.55	0.19	-	-	-	-	65
8	8	8	8	8	8	10	0.20	0.39	0.67	0.19	-	-	-	-	50
8	8	8	8	8	8	15	0.29	0.56	0.94	0.19	-	-	-	-	45
8	8	8	8	8	8	20	0.38	0.75	1.20	0.19	-	-	-	-	45

Design Criteria

f'c = 5,000 psi

fy = 65,000 psi (welded-wire fabric)

Live Load: HS-20 Loading

STEEL COVER FROM TOP OF INVERT SLAB = 2.5 INCHES

DUE TO SHEAR REQUIREMENT, SPECIAL DESIGN & REVIEW REQUIRE FOR APPROVAL

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

PRECAST REINFORCED CONCRETE BOX

STANDARD PLAN

3054-0

APPROVED _____

DIRECTOR OF PUBLIC WORKS

DATE

REVISIONS

SHEET 56 OF 66

DRAFT

9' x 5'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
9	5	9	9	9	9	0 < 2	0.29	0.53	0.43	0.22	0.25	0.22	0.22	0.22	-
9	5	9	9	9	9	2 < 3	0.34	0.44	0.58	0.22	-	-	-	-	54
9	5	9	9	9	9	3 - 5	0.24	0.30	0.48	0.22	-	-	-	-	49
9	5	9	9	9	9	10	0.30	0.38	0.63	0.22	-	-	-	-	49
9	5	9	9	9	9	15	0.44	0.56	0.89	0.22	-	-	-	-	44
9	5	9	9	9	9	20	0.59	0.75	1.16	0.22	-	-	-	-	44
9	5	9	9	9	9	25	0.76	0.95	1.43	0.22	-	-	-	-	44

9' x 6'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
9	6	9	9	9	9	0 < 2	0.27	0.56	0.47	0.22	0.26	0.22	0.22	0.22	-
9	6	9	9	9	9	2 < 3	0.37	0.47	0.71	0.22	-	-	-	-	59
9	6	9	9	9	9	3 - 5	0.22	0.32	0.51	0.22	-	-	-	-	54
9	6	9	9	9	9	10	0.27	0.40	0.67	0.22	-	-	-	-	49
9	6	9	9	9	9	15	0.40	0.59	0.95	0.22	-	-	-	-	44
9	6	9	9	9	9	20	0.53	0.79	1.23	0.22	-	-	-	-	44
9	6	9	9	9	9	25	0.68	1.00	1.51	0.22	-	-	-	-	44

9' x 7'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
9	7	9	9	9	9	0 < 2	0.25	0.58	0.51	0.22	0.27	0.22	0.22	0.22	-
9	7	9	9	9	9	2 < 3	0.28	0.49	0.68	0.22	-	-	-	-	59
9	7	9	9	9	9	3 - 5	0.22	0.34	0.55	0.22	-	-	-	-	54
9	7	9	9	9	9	10	0.25	0.42	0.70	0.22	-	-	-	-	49
9	7	9	9	9	9	15	0.36	0.61	0.98	0.22	-	-	-	-	44
9	7	9	9	9	9	20	0.48	0.82	1.27	0.22	-	-	-	-	44
9	7	9	9	9	9	25	0.61	1.04	1.56	0.22	-	-	-	-	44

Design Criteria

f'c = 5,000 psi

fy = 65,000 psi (welded-wire fabric)

Live Load: HS-20 Loading

STEEL COVER FROM TOP OF INVERT SLAB = 2.5 INCHES

 DUE TO SHEAR REQUIREMENT, SPECIAL DESIGN & REVIEW REQUIRE FOR APPROVAL

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

PRECAST REINFORCED CONCRETE BOX

STANDARD PLAN

3054-0

APPROVED _____

DIRECTOR OF PUBLIC WORKS

DATE

REVISIONS

SHEET 57 OF 66

DRAFT

9' x 8'

S	R	Tt	Tb	Tw	H	Earth	Reinforcement Areas, in. ² /ft										M, in.					
							Span	Rise	Top	Bottom	Side	Haunch	Cover, ft	A _{s1}	A _{s2}	A _{s3}		A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}
							ft	ft	in.	in.	in.	in.										
9	8	9	9	9	9	0 < 2	0.23	0.60	0.54	0.22	0.28	0.22	0.22	0.22	-							
9	8	9	9	9	9	2 < 3	0.26	0.51	0.73	0.22	-	-	-	-	72							
9	8	9	9	9	9	3 - 5	0.22	0.35	0.58	0.22	-	-	-	-	59							
9	8	9	9	9	9	10	0.24	0.43	0.72	0.22	-	-	-	-	54							
9	8	9	9	9	9	15	0.34	0.63	1.01	0.22	-	-	-	-	44							
9	8	9	9	9	9	20	0.45	0.83	1.30	0.22	-	-	-	-	44							
9	8	9	9	9	9	25	0.57	1.05	1.59	0.22	-	-	-	-	44							

9' x 9'

S	R	Tt	Tb	Tw	H	Earth	Reinforcement Areas, in. ² /ft										M, in.					
							Span	Rise	Top	Bottom	Side	Haunch	Cover, ft	A _{s1}	A _{s2}	A _{s3}		A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}
							ft	ft	in.	in.	in.	in.										
9	9	9	9	9	9	0 < 2	0.24	0.62	0.58	0.27	0.28	0.22	0.22	0.22	-							
9	9	9	9	9	9	2 < 3	0.25	0.53	0.77	0.22	-	-	-	-	72							
9	9	9	9	9	9	3 - 5	0.22	0.37	0.61	0.22	-	-	-	-	72							
9	9	9	9	9	9	10	0.23	0.43	0.74	0.22	-	-	-	-	59							
9	9	9	9	9	9	15	0.32	0.63	1.03	0.22	-	-	-	-	49							
9	9	9	9	9	9	20	0.43	0.84	1.31	0.22	-	-	-	-	49							

10' x 5'

S	R	Tt	Tb	Tw	H	Earth	Reinforcement Areas, in. ² /ft										M, in.					
							Span	Rise	Top	Bottom	Side	Haunch	Cover, ft	A _{s1}	A _{s2}	A _{s3}		A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}
							ft	ft	in.	in.	in.	in.										
10	5	10	10	10	10	0 < 2	0.29	0.51	0.45	0.24	0.24	0.24	0.24	0.24	-							
10	5	10	10	10	10	2 < 3	0.38	0.46	0.61	0.24	-	-	-	-	58							
10	5	10	10	10	10	3 - 5	0.28	0.32	0.50	0.24	-	-	-	-	52							
10	5	10	10	10	10	10	0.35	0.41	0.66	0.24	-	-	-	-	52							
10	5	10	10	10	10	15	0.52	0.60	0.94	0.24	-	-	-	-	47							
10	5	10	10	10	10	20	0.70	0.80	1.22	0.24	-	-	-	-	47							
10	5	10	10	10	10	25	0.90	1.01	1.50	0.24	-	-	-	-	47							

Design Criteria

f'c = 5,000 psi

fy = 65,000 psi (welded-wire fabric)

Live Load: HS-20 Loading

STEEL COVER FROM TOP OF INVERT SLAB = 2.5 INCHES

DUE TO SHEAR REQUIREMENT, SPECIAL DESIGN & REVIEW REQUIRE FOR APPROVAL

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PRECAST REINFORCED CONCRETE BOX

STANDARD PLAN

3054-0

APPROVED _____

DIRECTOR OF PUBLIC WORKS

DATE

REVISIONS

SHEET 58 OF 66

DRAFT

10' x 6'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
10	6	10	10	10	10	0 < 2	0.27	0.53	0.49	0.24	0.24	0.24	0.24	0.24	-
10	6	10	10	10	10	2 < 3	0.35	0.49	0.67	0.24	-	-	-	-	58
10	6	10	10	10	10	3 - 5	0.26	0.34	0.54	0.24	-	-	-	-	52
10	6	10	10	10	10	10	0.32	0.44	0.70	0.24	-	-	-	-	52
10	6	10	10	10	10	15	0.47	0.63	1.00	0.24	-	-	-	-	47
10	6	10	10	10	10	20	0.63	0.85	1.29	0.24	-	-	-	-	47
10	6	10	10	10	10	25	0.80	1.07	1.59	0.24	-	-	-	-	47

10' x 7'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
10	7	10	10	10	10	0 < 2	0.25	0.55	0.52	0.24	0.25	0.24	0.24	0.24	-
10	7	10	10	10	10	2 < 3	0.32	0.51	0.71	0.24	-	-	-	-	64
10	7	10	10	10	10	3 - 5	0.24	0.35	0.56	0.24	-	-	-	-	58
10	7	10	10	10	10	10	0.30	0.47	0.75	0.24	-	-	-	-	52
10	7	10	10	10	10	15	0.42	0.65	1.02	0.24	-	-	-	-	47
10	7	10	10	10	10	20	0.54	0.84	1.28	0.24	-	-	-	-	47
10	7	10	10	10	10	25	0.68	1.04	1.56	0.24	-	-	-	-	47

10' x 8'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
10	8	10	10	10	10	0 < 2	0.24	0.57	0.57	0.24	0.26	0.24	0.24	0.24	-
10	8	10	10	10	10	2 < 3	0.30	0.54	0.77	0.24	-	-	-	-	64
10	8	10	10	10	10	3 - 5	0.24	0.38	0.61	0.24	-	-	-	-	58
10	8	10	10	10	10	10	0.28	0.47	0.77	0.24	-	-	-	-	52
10	8	10	10	10	10	15	0.40	0.68	1.08	0.24	-	-	-	-	47
10	8	10	10	10	10	20	0.53	0.91	1.39	0.24	-	-	-	-	47
10	8	10	10	10	10	25	0.67	1.15	1.70	0.24	-	-	-	-	47

Design Criteria

f'c = 5,000 psi

fy = 65,000 psi (welded-wire fabric)

Live Load: HS-20 Loading

STEEL COVER FROM TOP OF INVERT SLAB = 2.5 INCHES

 DUE TO SHEAR REQUIREMENT, SPECIAL DESIGN & REVIEW REQUIRE FOR APPROVAL

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

PRECAST REINFORCED CONCRETE BOX

STANDARD PLAN

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DIRECTOR OF PUBLIC WORKS

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REVISIONS

SHEET 59 OF 66

DRAFT

10' x 9'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
10	9	10	10	10	10	0 < 2	0.24	0.59	0.60	0.25	0.27	0.24	0.24	0.24	-
10	9	10	10	10	10	2 < 3	0.28	0.56	0.81	0.24	-	-	-	-	79
10	9	10	10	10	10	3 - 5	0.24	0.39	0.64	0.24	-	-	-	-	64
10	9	10	10	10	10	10	0.27	0.48	0.80	0.24	-	-	-	-	58
10	9	10	10	10	10	15	0.38	0.63	1.11	0.24	-	-	-	-	47
10	9	10	10	10	10	20	0.50	0.92	1.42	0.24	-	-	-	-	47
10	9	10	10	10	10	25	0.63	1.16	1.73	0.24	-	-	-	-	47

10' x 10'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
10	10	10	10	10	10	0 < 2	0.26	0.60	0.64	0.30	0.28	0.24	0.24	0.24	-
10	10	10	10	10	10	2 < 3	0.27	0.57	0.86	0.24	-	-	-	-	79
10	10	10	10	10	10	3 - 5	0.24	0.41	0.67	0.24	-	-	-	-	70
10	10	10	10	10	10	10	0.26	0.48	0.82	0.24	-	-	-	-	64
10	10	10	10	10	10	15	0.36	0.70	1.13	0.24	-	-	-	-	52
10	10	10	10	10	10	20	0.48	0.92	1.46	0.24	-	-	-	-	52
10	10	10	10	10	10	25	0.60	1.06	1.74	0.24	-	-	-	-	47

11' x 4'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
11	4	11	11	11	11	0 < 2	0.32	0.46	0.40	0.26	0.26	0.26	0.26	0.26	-
11	4	11	11	11	11	2 < 3	0.46	0.43	0.55	0.26	-	-	-	-	62
11	4	11	11	11	11	3 - 5	0.35	0.31	0.47	0.26	-	-	-	-	62
11	4	11	11	11	11	10	0.45	0.40	0.63	0.26	-	-	-	-	55
11	4	11	11	11	11	15	0.67	0.58	0.90	0.26	-	-	-	-	55
11	4	11	11	11	11	20	0.91	0.77	1.17	0.26	-	-	-	-	55
11	4	11	11	11	11	25	1.17	0.97	1.44	0.26	-	-	-	-	55

Design Criteria

f'c = 5,000 psi

fy = 65,000 psi (welded-wire fabric)

Live Load: HS-20 Loading

STEEL COVER FROM TOP OF INVERT SLAB = 2.5 INCHES

 DUE TO SHEAR REQUIREMENT, SPECIAL DESIGN & REVIEW REQUIRE FOR APPROVAL

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

PRECAST REINFORCED CONCRETE BOX

STANDARD PLAN

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REVISIONS

SHEET 60 OF 66

DRAFT

11' x 5'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
11	5	11	11	11	11	0 < 2	0.30	0.48	0.45	0.26	0.26	0.26	0.26	0.26	-
11	5	11	11	11	11	2 < 3	0.41	0.47	0.61	0.26	-	-	-	-	62
11	5	11	11	11	11	3 - 5	0.32	0.34	0.52	0.26	-	-	-	-	62
11	5	11	11	11	11	10	0.41	0.44	0.69	0.26	-	-	-	-	55
11	5	11	11	11	11	15	0.60	0.64	0.98	0.26	-	-	-	-	55
11	5	11	11	11	11	20	0.81	0.85	1.27	0.26	-	-	-	-	55
11	5	11	11	11	11	25	1.04	1.06	1.57	0.26	-	-	-	-	55

11' x 6'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
11	6	11	11	11	11	0 < 2	0.28	0.51	0.49	0.26	0.26	0.26	0.26	0.26	-
11	6	11	11	11	11	2 < 3	0.40	0.50	0.67	0.26	-	-	-	-	62
11	6	11	11	11	11	3 - 5	0.30	0.37	0.57	0.26	-	-	-	-	55
11	6	11	11	11	11	10	0.38	0.47	0.74	0.26	-	-	-	-	55
11	6	11	11	11	11	15	0.55	0.68	1.05	0.26	-	-	-	-	50
11	6	11	11	11	11	20	0.73	0.90	1.36	0.26	-	-	-	-	50
11	6	11	11	11	11	25	0.93	1.14	1.67	0.26	-	-	-	-	50

11' x 7'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
11	7	11	11	11	11	0 < 2	0.26	0.53	0.53	0.26	0.26	0.26	0.26	0.26	-
11	7	11	11	11	11	2 < 3	0.37	0.53	0.72	0.26	-	-	-	-	69
11	7	11	11	11	11	3 - 5	0.28	0.39	0.61	0.26	-	-	-	-	62
11	7	11	11	11	11	10	0.35	0.49	0.79	0.26	-	-	-	-	55
11	7	11	11	11	11	15	0.50	0.71	1.11	0.26	-	-	-	-	50
11	7	11	11	11	11	20	0.67	0.95	1.43	0.26	-	-	-	-	50
11	7	11	11	11	11	25	0.85	1.19	1.75	0.26	-	-	-	-	50

Design Criteria

f'c = 5,000 psi

fy = 65,000 psi (welded-wire fabric)

Live Load: HS-20 Loading

STEEL COVER FROM TOP OF INVERT SLAB = 2.5 INCHES

 DUE TO SHEAR REQUIREMENT, SPECIAL DESIGN & REVIEW REQUIRE FOR APPROVAL

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

PRECAST REINFORCED CONCRETE BOX

STANDARD PLAN

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REVISIONS

SHEET 61 OF 66

DRAFT

11' x 8'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
11	8	11	11	11	11	0 < 2	0.26	0.55	0.57	0.26	0.26	0.26	0.26	-	-
11	8	11	11	11	11	2 < 3	0.34	0.56	0.77	0.26	-	-	-	-	69
11	8	11	11	11	11	3 - 5	0.26	0.41	0.65	0.26	-	-	-	-	62
11	8	11	11	11	11	10	0.33	0.51	0.82	0.26	-	-	-	-	55
11	8	11	11	11	11	15	0.47	0.74	1.15	0.26	-	-	-	-	50
11	8	11	11	11	11	20	0.62	0.98	1.48	0.26	-	-	-	-	50
11	8	11	11	11	11	25	0.78	1.23	1.81	0.26	-	-	-	-	50

11' x 9'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
11	9	11	11	11	11	0 < 2	0.26	0.56	0.61	0.26	0.27	0.26	0.26	0.26	-
11	9	11	11	11	11	2 < 3	0.33	0.58	0.82	0.26	-	-	-	-	86
11	9	11	11	11	11	3 - 5	0.26	0.42	0.68	0.26	-	-	-	-	69
11	9	11	11	11	11	10	0.31	0.52	0.86	0.26	-	-	-	-	62
11	9	11	11	11	11	15	0.44	0.75	1.19	0.26	-	-	-	-	50
11	9	11	11	11	11	20	0.58	1.00	1.52	0.26	-	-	-	-	50
11	9	11	11	11	11	25	0.73	1.26	1.85	0.26	-	-	-	-	50

11' x 10'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
11	10	11	11	11	11	0 < 2	0.26	0.58	0.65	0.27	0.28	0.26	0.26	0.26	-
11	10	11	11	11	11	2 < 3	0.32	0.60	0.86	0.26	-	-	-	-	86
11	10	11	11	11	11	3 - 5	0.26	0.44	0.72	0.26	-	-	-	-	69
11	10	11	11	11	11	10	0.30	0.53	0.88	0.26	-	-	-	-	62
11	10	11	11	11	11	15	0.42	0.76	1.21	0.26	-	-	-	-	50
11	10	11	11	11	11	20	0.55	1.01	1.55	0.26	-	-	-	-	50
11	10	11	11	11	11	25	0.69	1.27	1.88	0.26	-	-	-	-	50

Design Criteria

f'c = 5,000 psi

fy = 65,000 psi (welded-wire fabric)

Live Load: HS-20 Loading

STEEL COVER FROM TOP OF INVERT SLAB = 2.5 INCHES

 DUE TO SHEAR REQUIREMENT, SPECIAL DESIGN & REVIEW REQUIRE FOR APPROVAL

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

PRECAST REINFORCED CONCRETE BOX

STANDARD PLAN

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DIRECTOR OF PUBLIC WORKS

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REVISIONS

SHEET 62 OF 66

DRAFT

11' x 11'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
11	11	11	11	11	11	0 < 2	0.28	0.59	0.68	0.34	0.29	0.26	0.26	0.26	-
11	11	11	11	11	11	2 < 3	0.28	0.62	0.91	0.26	-	-	-	-	86
11	11	11	11	11	11	3 - 5	0.26	0.45	0.75	0.26	-	-	-	-	75
11	11	11	11	11	11	10	0.29	0.55	0.91	0.26	-	-	-	-	69
11	11	11	11	11	11	15	0.40	0.77	1.24	0.26	-	-	-	-	55
11	11	11	11	11	11	20	0.53	1.01	1.56	0.26	-	-	-	-	55
11	11	11	11	11	11	25	0.66	1.27	1.89	0.26	-	-	-	-	55

12' x 4'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
12	4	12	12	12	12	0 < 2	0.37	0.44	0.42	0.29	0.29	0.29	0.29	0.29	-
12	4	12	12	12	12	2 < 3	0.50	0.44	0.58	0.29	-	-	-	-	73
12	4	12	12	12	12	3 - 5	0.40	0.33	0.50	0.29	-	-	-	-	66
12	4	12	12	12	12	10	0.51	0.42	0.66	0.29	-	-	-	-	59
12	4	12	12	12	12	15	0.76	0.61	0.94	0.29	-	-	-	-	59
12	4	12	12	12	12	20	1.03	0.81	1.22	0.29	-	-	-	-	59
12	4	12	12	12	12	25	1.32	1.02	1.50	0.29	-	-	-	-	59

12' x 5'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
12	5	12	12	12	12	0 < 2	0.35	0.46	0.47	0.29	0.29	0.29	0.29	0.29	-
12	5	12	12	12	12	2 < 3	0.47	0.48	0.64	0.29	-	-	-	-	73
12	5	12	12	12	12	3 - 5	0.37	0.36	0.55	0.29	-	-	-	-	66
12	5	12	12	12	12	10	0.47	0.46	0.72	0.29	-	-	-	-	59
12	5	12	12	12	12	15	0.69	0.67	1.03	0.29	-	-	-	-	59
12	5	12	12	12	12	20	0.92	0.89	1.33	0.29	-	-	-	-	59
12	5	12	12	12	12	25	1.18	1.12	1.64	0.29	-	-	-	-	59

Design Criteria

f'c = 5,000 psi

fy = 65,000 psi (welded-wire fabric)

Live Load: HS-20 Loading

STEEL COVER FROM TOP OF INVERT SLAB = 2.5 INCHES

 DUE TO SHEAR REQUIREMENT, SPECIAL DESIGN & REVIEW REQUIRE FOR APPROVAL

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

PRECAST REINFORCED CONCRETE BOX

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REVISIONS

SHEET 63 OF 66

DRAFT

12' x 6'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
12	6	12	12	12	12	0 < 2	0.33	0.49	0.51	0.29	0.29	0.29	0.29	0.29	-
12	6	12	12	12	12	2 < 3	0.44	0.52	0.70	0.29	-	-	-	-	66
12	6	12	12	12	12	3 - 5	0.34	0.39	0.60	0.29	-	-	-	-	59
12	6	12	12	12	12	10	0.43	0.49	0.78	0.29	-	-	-	-	59
12	6	12	12	12	12	15	0.63	0.72	1.10	0.29	-	-	-	-	53
12	6	12	12	12	12	20	0.84	0.95	1.43	0.29	-	-	-	-	53
12	6	12	12	12	12	25	1.07	1.20	1.75	0.29	-	-	-	-	53

12' x 7'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
12	7	12	12	12	12	0 < 2	0.31	0.51	0.55	0.29	0.29	0.29	0.29	0.29	-
12	7	12	12	12	12	2 < 3	0.41	0.55	0.75	0.29	-	-	-	-	66
12	7	12	12	12	12	3 - 5	0.32	0.41	0.64	0.29	-	-	-	-	59
12	7	12	12	12	12	10	0.40	0.52	0.83	0.29	-	-	-	-	59
12	7	12	12	12	12	15	0.58	0.76	1.17	0.29	-	-	-	-	53
12	7	12	12	12	12	20	0.77	1.00	1.50	0.29	-	-	-	-	53
12	7	12	12	12	12	25	0.97	1.26	1.84	0.29	-	-	-	-	53

12' x 8'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
12	8	12	12	12	12	0 < 2	0.30	0.52	0.60	0.29	0.29	0.29	0.29	0.29	-
12	8	12	12	12	12	2 < 3	0.39	0.58	0.81	0.29	-	-	-	-	66
12	8	12	12	12	12	3 - 5	0.30	0.43	0.68	0.29	-	-	-	-	59
12	8	12	12	12	12	10	0.38	0.54	0.87	0.29	-	-	-	-	59
12	8	12	12	12	12	15	0.54	0.79	1.22	0.29	-	-	-	-	53
12	8	12	12	12	12	20	0.71	1.04	1.57	0.29	-	-	-	-	53
12	8	12	12	12	12	25	0.90	1.31	1.91	0.29	-	-	-	-	53

Design Criteria

f'c = 5,000 psi

fy = 65,000 psi (welded-wire fabric)

Live Load: HS-20 Loading

STEEL COVER FROM TOP OF INVERT SLAB = 2.5 INCHES

 DUE TO SHEAR REQUIREMENT, SPECIAL DESIGN & REVIEW REQUIRE FOR APPROVAL

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SHEET 64 OF 66

DRAFT

12' x 9'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
12	9	12	12	12	12	0 < 2	0.29	0.54	0.64	0.29	0.29	0.29	0.29	0.29	-
12	9	12	12	12	12	2 < 3	0.37	0.61	0.86	0.29	-	-	-	-	80
12	9	12	12	12	12	3 - 5	0.29	0.45	0.72	0.29	-	-	-	-	66
12	9	12	12	12	12	10	0.36	0.56	0.91	0.29	-	-	-	-	59
12	9	12	12	12	12	15	0.50	0.81	1.26	0.29	-	-	-	-	53
12	9	12	12	12	12	20	0.66	1.07	1.62	0.29	-	-	-	-	53
12	9	12	12	12	12	25	0.84	1.35	1.97	0.29	-	-	-	-	53

12' x 10'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
12	10	12	12	12	12	0 < 2	0.29	0.55	0.68	0.29	0.30	0.29	0.29	0.29	-
12	10	12	12	12	12	2 < 3	0.34	0.64	0.90	0.29	-	-	-	-	80
12	10	12	12	12	12	3 - 5	0.29	0.47	0.76	0.29	-	-	-	-	66
12	10	12	12	12	12	10	0.34	0.57	0.94	0.29	-	-	-	-	59
12	10	12	12	12	12	15	0.48	0.83	1.30	0.29	-	-	-	-	53
12	10	12	12	12	12	20	0.63	1.09	1.65	0.29	-	-	-	-	53
12	10	12	12	12	12	25	0.79	1.37	2.01	0.29	-	-	-	-	53

12' x 11'

S Span	R Rise	Tt Top	Tb Bottom	Tw Side	H Haunch	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
12	11	12	12	12	12	0 < 2	0.29	0.57	0.72	0.30	0.31	0.29	0.29	0.29	-
12	11	12	12	12	12	2 < 3	0.35	0.66	0.95	0.29	-	-	-	-	93
12	11	12	12	12	12	3 - 5	0.29	0.48	0.79	0.29	-	-	-	-	80
12	11	12	12	12	12	10	0.33	0.58	0.97	0.29	-	-	-	-	73
12	11	12	12	12	12	15	0.46	0.84	1.33	0.29	-	-	-	-	59
12	11	12	12	12	12	20	0.60	1.10	1.68	0.29	-	-	-	-	59
12	11	12	12	12	12	25	0.75	1.38	2.04	0.29	-	-	-	-	59

Design Criteria

f'c = 5,000 psi

fy = 65,000 psi (welded-wire fabric)

Live Load: HS-20 Loading

STEEL COVER FROM TOP OF INVERT SLAB = 2.5 INCHES

 DUE TO SHEAR REQUIREMENT, SPECIAL DESIGN & REVIEW REQUIRE FOR APPROVAL

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

PRECAST REINFORCED CONCRETE BOX

STANDARD PLAN

3054-0

APPROVED _____

DIRECTOR OF PUBLIC WORKS

DATE

REVISIONS

SHEET 65 OF 66

DRAFT

12' x 12'

S Span ft	R Rise ft	Tt Top in.	Tb Bottom in.	Tw Side in.	H Haunch in.	Earth Cover, ft	Reinforcement Areas, in. ² /ft								M, in.
							A _{s1}	A _{s2}	A _{s3}	A _{s4}	A _{s5}	A _{s6}	A _{s7}	A _{s8}	
12	12	12	12	12	12	0 < 2	0.31	0.58	0.76	0.38	0.32	0.29	0.29	0.29	-
12	12	12	12	12	12	2 < 3	0.31	0.69	1.00	0.29	-	-	-	-	93
12	12	12	12	12	12	3 - 5	0.29	0.50	0.83	0.29	-	-	-	-	80
12	12	12	12	12	12	10	0.32	0.59	1.00	0.29	-	-	-	-	73
12	12	12	12	12	12	15	0.45	0.84	1.35	0.29	-	-	-	-	59
12	12	12	12	12	12	20	0.58	1.11	1.70	0.29	-	-	-	-	59
12	12	12	12	12	12	25	0.73	1.38	2.05	0.29	-	-	-	-	59

Design Criteria

f'c = 5,000 psi

fy = 65,000 psi (welded-wire fabric)

Live Load: HS-20 Loading

STEEL COVER FROM TOP OF INVERT SLAB = 2.5 INCHES

DUE TO SHEAR REQUIREMENT, SPECIAL DESIGN & REVIEW REQUIRE FOR APPROVAL

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS		
PRECAST REINFORCED CONCRETE BOX		STANDARD PLAN 3054-0
APPROVED _____	DATE _____	REVISIONS _____
DIRECTOR OF PUBLIC WORKS		
		SHEET 66 OF 66