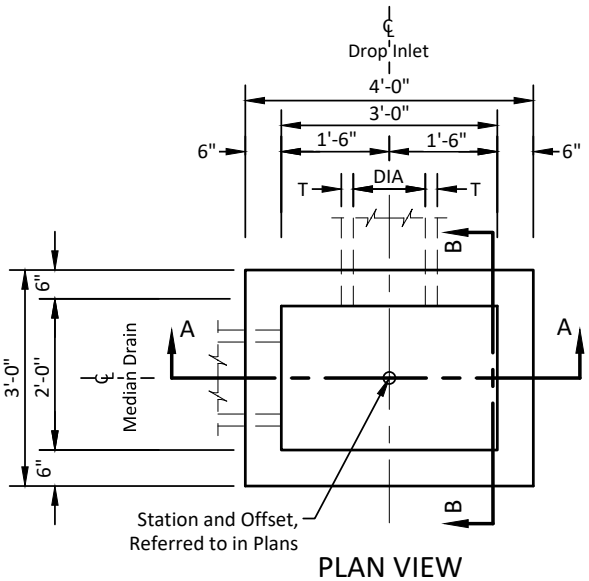
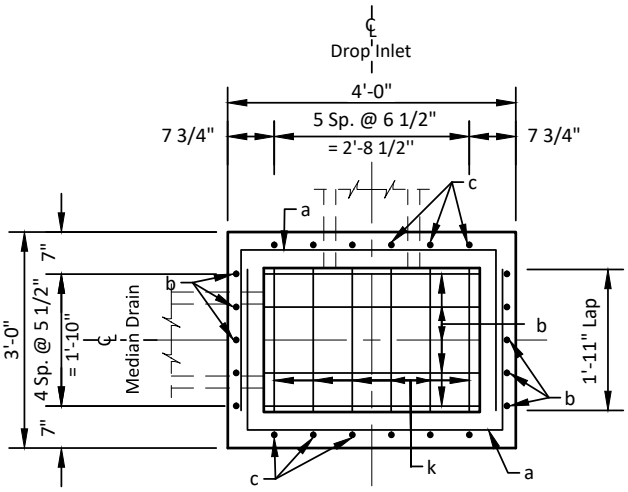


PLAN VIEW



BOTTOM SECTION

ESTIMATED QUANTITIES			
Item	Unit	Constant Quantity	Variable Quantity
Class M6 Concrete	Cu. Yd.	0.26	0.22H
Reinforcing Steel	Lb.	83.03	28.97H
Frame and Grate Assembly	Each	1	———

DROP INLETS FOR 12'' TO 24'' DIAMETER PIPE

Specifications:

1. Design Specifications: AASHTO LRFD Bridge Design Specifications 2012 Edition.
2. Construction Specifications: City of Rapid City Standard Specifications, Current Edition.

Notes:

1. Design Live Load: HL-93 loading. No construction loading in excess of legal load was considered.
2. Inlet may be precast. If precast inlet is used, and details differ from that shown, the precast inlet shall receive prior approval by the City.
3. To qualify for alternate design approval, submit: prior SDDOT approval, checked design by a South Dakota Registered Professional Engineer, and shop plans to the City of Rapid City. Design shall be in accordance with the current edition of the AASHTO LRFD Bridge Design Specifications.
4. Inlets shown may be modified by the addition or omission of connecting pipes as shown on the layouts. Connecting pipes shall not enter the inlet through the corners.
5. Maximum R.C. pipe diameter shall not exceed 18" entering perpendicular on the 2' wide side and shall not exceed 24" (24" for R.C. arch pipe) on the 3' wide side of the drop inlet.
6. Reinforcing steel shall conform to ASTM A615 grade 60. The d bars shall be lapped 12" with the b and c bars. Cut and bend reinforcing steel as required to place pipe(s) through the drop inlet wall.
7. Use minimum 1 1/2" clear cover on all reinforcing steel unless otherwise noted.
8. The dimension of H is in feet. Maximum H is 10'.

PIPE DISPLACEMENT REDUCTIONS			
	Diameter (Inches)	Wall T (Inches)	Class M6 Concrete (Cu. Yd.)
R.C.P.	12	2	0.03
	15	2 1/4	0.04
	18	2 1/2	0.05
	24	3	0.09
R.C. Arch	18	2 1/2	0.05
	24	3 1/2	0.09

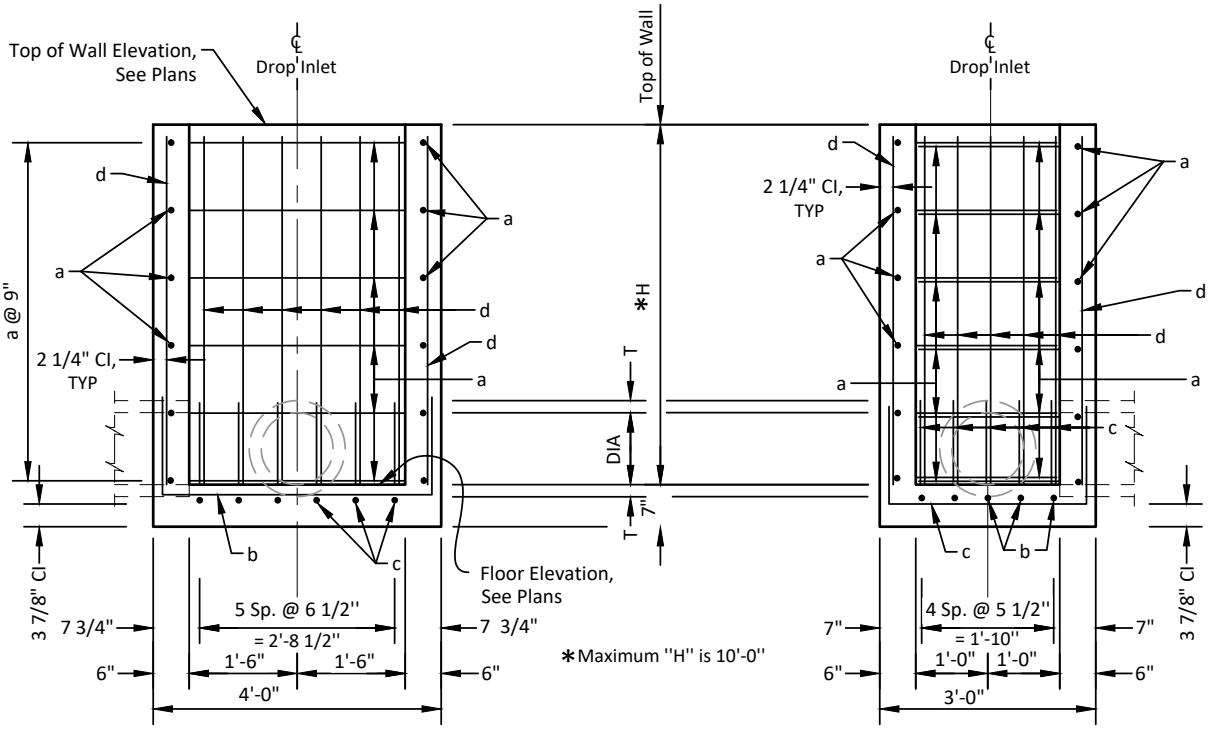
N.T.S.

CITY OF RAPID CITY — PUBLIC WORKS DEPARTMENT

2' x 3' TYPE B
REINFORCED CONCRETE DROP INLET

DATE: 8-19-22

Sec. - Sht.
62-1a



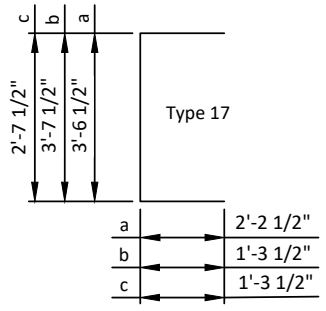
SECTION A - A

SECTION B - B

REINFORCING SCHEDULE

Mk.	No.	Size	Length	Type	Bending Details
a	2.67H	4	8'-0"	17	
b	5	5	6'-3"	17	
c	6	4	5'-3"	17	
d	22	4	H-2"	Str.	

Note:
All dimensions are out to out of bars.



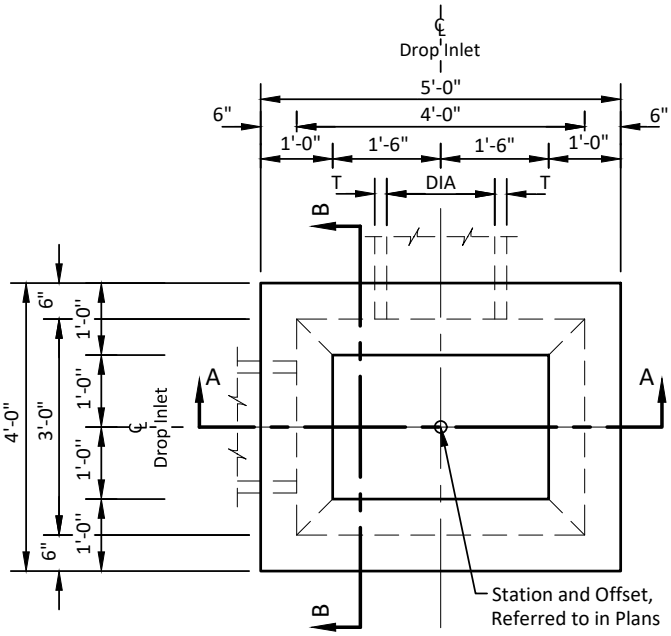
N.T.S.

CITY OF RAPID CITY | PUBLIC WORKS DEPARTMENT

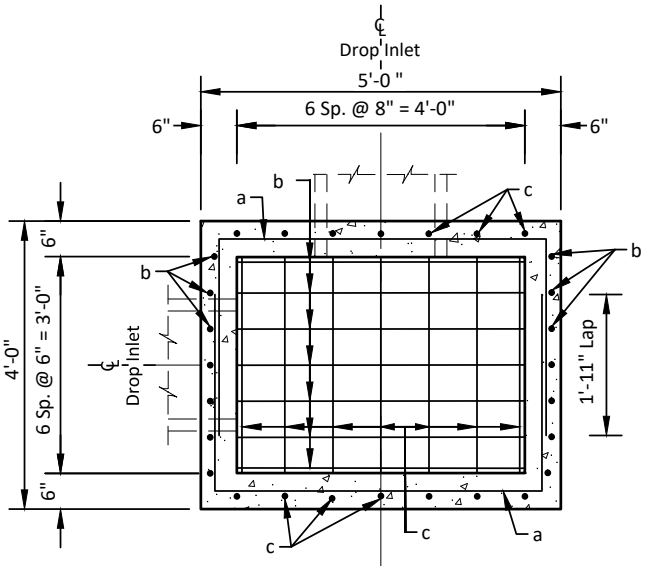
2' x 3' TYPE B
REINFORCED CONCRETE DROP INLET

DATE: 8-19-22

Sec. - Sht.
62-1b



PLAN VIEW



BOTTOM SECTION

ESTIMATED QUANTITIES			
Item	Unit	Constant Quantity	Variable Quantity
Class M6 Concrete	Cu. Yd.	0.72	0.30H
Reinforcing Steel	Lb.	130.93	36.54H
Frame and Grate Assembly	Each	1	———

DROP INLETS FOR 12'' TO 36'' DIAMETER PIPE

Specifications:

1. Design Specifications: AASHTO LRFD Bridge Design Specifications 2012 Edition.
2. Construction Specifications: City of Rapid City Standard Specifications, Current Edition.

Notes:

1. Design Live Load: HL-93 loading. No construction loading in excess of legal load was considered.
2. Inlet may be precast. If precast inlet is used, and details differ from that shown, the precast inlet shall receive prior approval by the City.
3. To qualify for alternate design approval, submit: prior SDDOT approval, checked design by a South Dakota Registered Professional Engineer, and shop plans to the City of Rapid City. Design shall be in accordance with the current edition of the AASHTO LRFD Bridge Design Specifications.
4. Inlets shown may be modified by the addition or omission of connecting pipes as shown on the layouts. Connecting pipes shall not enter the inlet through the corners.
5. Maximum R.C. pipe diameter shall not exceed 24" (24" for R. C. arch pipe) on the 3' wide side and shall not exceed 36" (30" for R.C. arch pipe) on the 4' wide side of the drop inlet.
6. Reinforcing steel shall conform to ASTM A615 grade 60. The d bars shall be lapped 12" with the b and c bars. Cut and bend reinforcing steel as required to place pipe(s) through the drop inlet wall.
7. Use minimum 2 1/2" clear cover on all reinforcing steel unless otherwise noted.
8. The dimension of H is in feet. Maximum H is 10'.

PIPE DISPLACEMENT REDUCTIONS			
	Diameter (Inches)	Wall T (Inches)	Class M6 Concrete (Cu. Yd.)
R.C.P.	12	2	0.03
	15	2 1/4	0.04
	18	2 1/2	0.05
	24	3	0.09
	30	3 1/2	0.14
	36	4	0.20
R.C. Arch	18	2 1/2	0.05
	24	3 1/2	0.09
	30	4	0.14

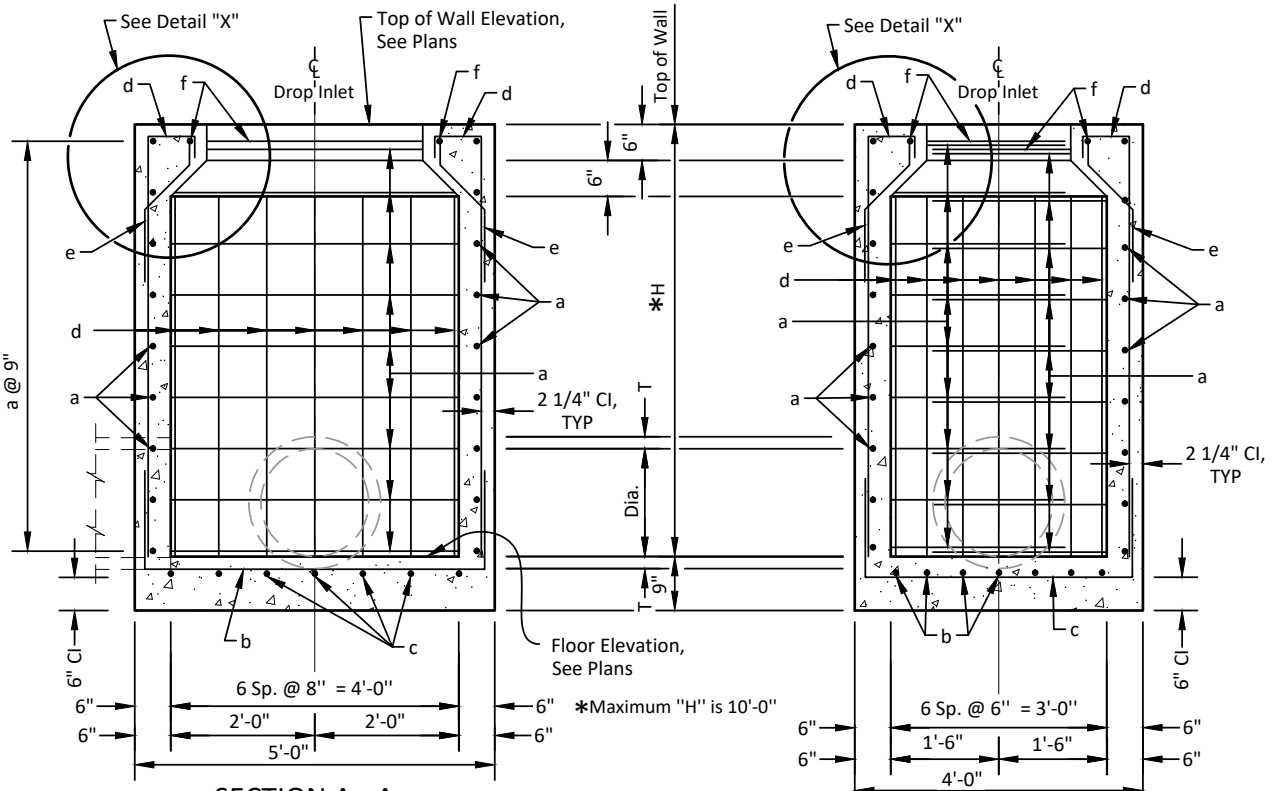
N.T.S.

CITY OF RAPID CITY — PUBLIC WORKS DEPARTMENT

3' x 4' TYPE B REINFORCED CONCRETE DROP INLET

DATE: 8-19-22

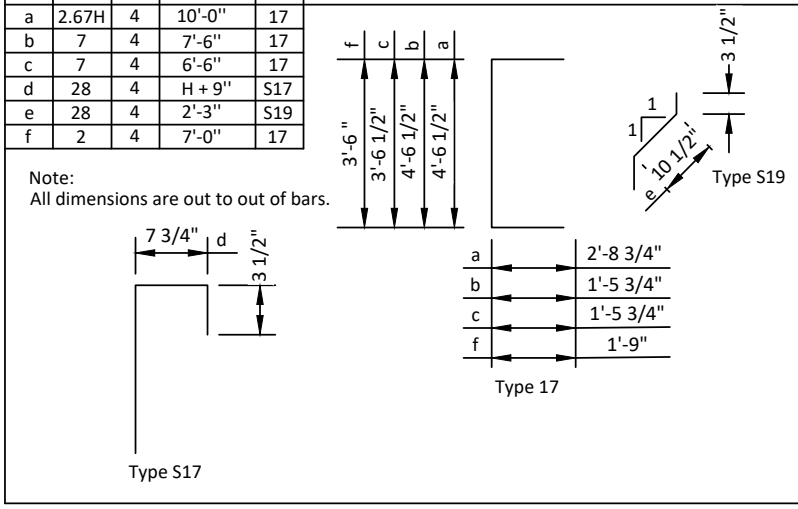
Sec. - Sht.
62-2a

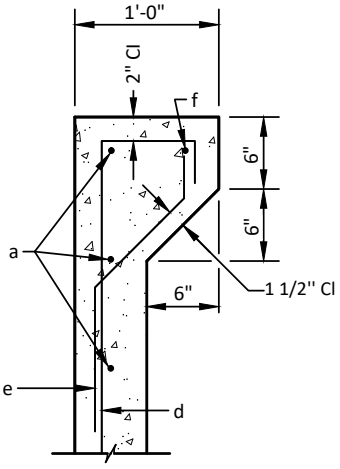


REINFORCING SCHEDULE

Mk.	No.	Size	Length	Type	Bending Details
a	2.67H	4	10'-0''	17	
b	7	4	7'-6''	17	
c	7	4	6'-6''	17	
d	28	4	H + 9''	S17	
e	28	4	2'-3''	S19	
f	2	4	7'-0''	17	

Note:
All dimensions are out to out of bars.





DETAIL "X"

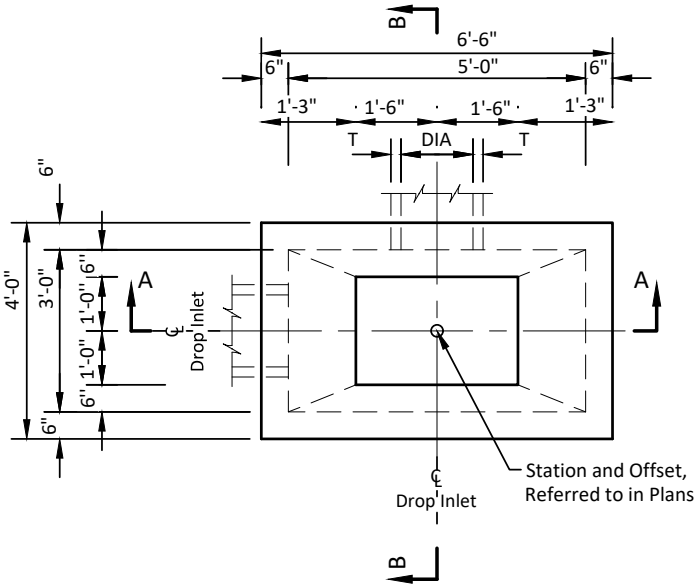
N.T.S.

CITY OF RAPID CITY | PUBLIC WORKS DEPARTMENT

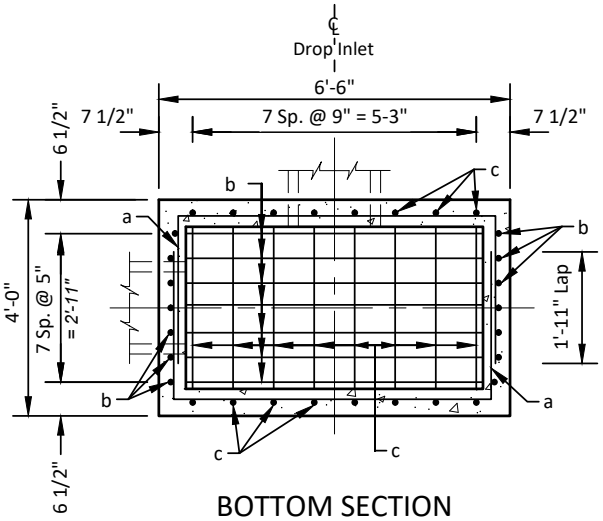
3' x 4' TYPE B
REINFORCED CONCRETE DROP INLET

DATE: 8-19-22

Sec. - Sht.
62-2b



PLAN VIEW



BOTTOM SECTION

ESTIMATED QUANTITIES			
Item	Unit	Constant Quantity	Variable Quantity
Class M6 Concrete	Cu. Yd.	1.02	0.35H
Reinforcing Steel	Lb.	130.93	31.2H
Frame and Grate Assembly	Each	1	———

DROP INLETS FOR 12'' TO 54'' DIAMETER PIPE

Specifications:

1. Design Specifications: AASHTO LRFD Bridge Design Specifications 2012 Edition.
2. Construction Specifications: City of Rapid City Standard Specifications, Current Edition.

Notes:

1. Design Live Load: HL-93 loading. No construction loading in excess of legal load was considered.
2. Inlet may be precast. If precast inlet is used, and details differ from that shown, the precast inlet shall receive prior approval by the City.
3. To qualify for alternate design approval, submit: prior SDDOT approval, checked design by a South Dakota Registered Professional Engineer, and shop plans to the City of Rapid City. Design shall be in accordance with the current edition of the AASHTO LRFD Bridge Design Specifications.
4. Inlets shown may be modified by the addition or omission of connecting pipes as shown on the layouts. Connecting pipes shall not enter the inlet through the corners.
5. Maximum R.C. pipe diameter shall not exceed 24" (24" for R. C. arch pipe) on the 3' wide side and shall not exceed 54" (42" for R.C. arch pipe) on the 5.5' wide side of the drop inlet.
6. Reinforcing steel shall conform to ASTM A615 grade 60. The d bars and e bars shall be lapped 12" with the c and b bars, respectively. Cut and bend reinforcing steel as required to place pipe(s) through the drop inlet wall.
7. Use minimum 2" clear cover on all reinforcing steel unless otherwise noted.
8. The dimension of H is in feet. Maximum H is 10'.

PIPE DISPLACEMENT REDUCTIONS			
	Diameter (Inches)	Wall T (Inches)	Class M6 Concrete (Cu. Yd.)
R.C.P.	12	2	0.03
	15	2 1/4	0.04
	18	2 1/2	0.05
	24	3	0.09
	30	3 1/2	0.14
	36	4	0.20
	42	4 1/2	0.26
	48	5	0.34
	54	5 1/2	0.43
R.C. Arch	18	2 1/2	0.05
	24	3 1/2	0.09
	30	4	0.14
	36	4 1/2	0.19
	42	4 1/2	0.24

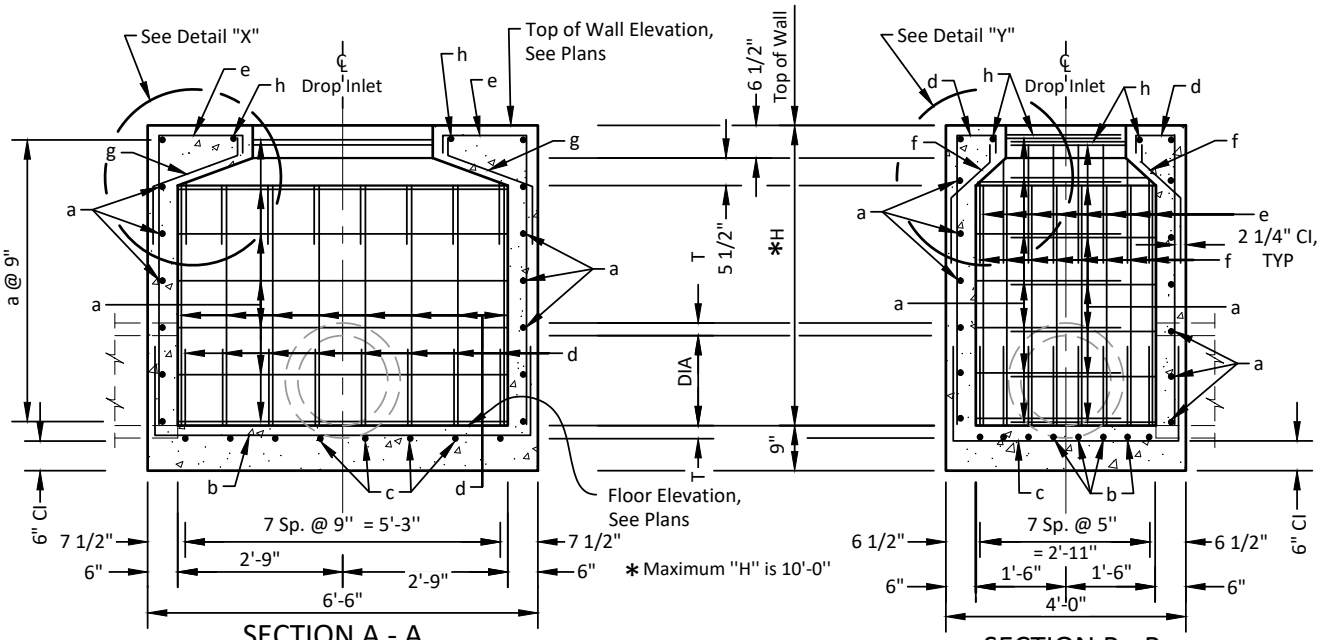
N.T.S.

CITY OF RAPID CITY — PUBLIC WORKS DEPARTMENT

3' x 5.5' TYPE B
REINFORCED CONCRETE DROP INLET

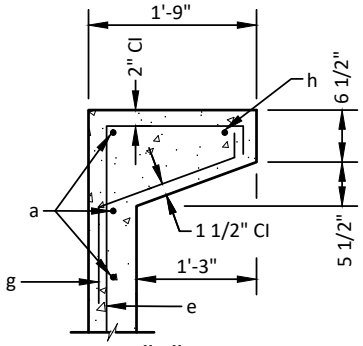
DATE: 8-19-22

Sec. - Sht.
62-3a

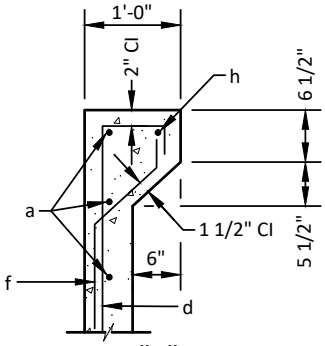


SECTION A - A

SECTION B - B



DETAIL "X"



DETAIL "Y"

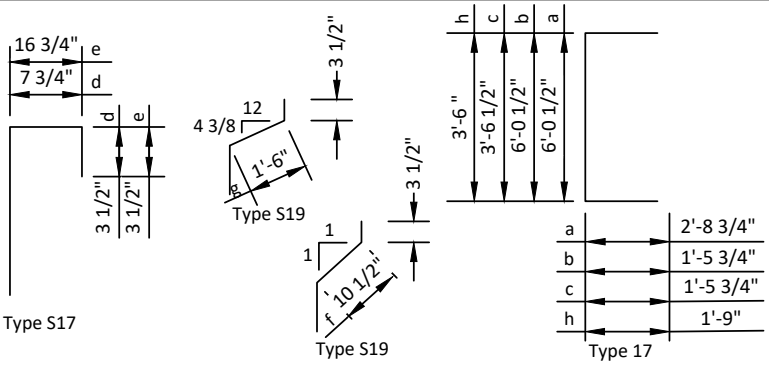
REINFORCING SCHEDULE

Mk.	No.	Size	Length	Type
a	2.67H	4	11'-6"	17
b	8	4	9'-0"	17
c	8	4	6'-6"	17
d	8	4	H + 9"	S17
e	8	4	H + 18"	S17
f	8	4	2'-3"	S19
g	8	4	2'-9"	S19
h	2	4	7'-0"	17

Note:

All dimensions are out to out of bars.

Bending Details



N.T.S.

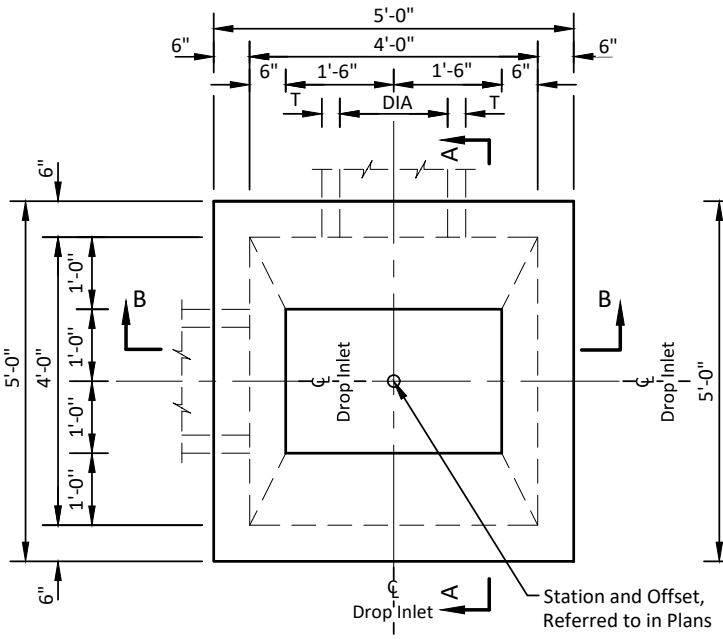
CITY OF RAPID CITY

PUBLIC WORKS DEPARTMENT

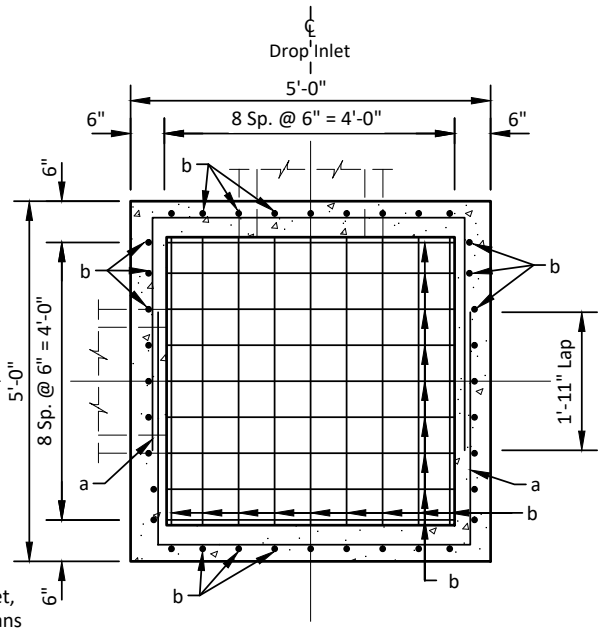
3' x 5.5' TYPE B
REINFORCED CONCRETE DROP INLET

DATE: 8-19-22

Sec. - Sht.
62-3b



PLAN VIEW



BOTTOM SECTION

ESTIMATED QUANTITIES			
Item	Unit	Constant Quantity	Variable Quantity
Class M6 Concrete	Cu. Yd.	0.98	0.33H
Reinforcing Steel	Lb.	180.69	43.67H
Frame and Grate Assembly	Each	1	———

DROP INLETS FOR 12'' TO 36'' DIAMETER PIPE

Specifications:

1. Design Specifications: AASHTO LRFD Bridge Design Specifications 2012 Edition.
2. Construction Specifications: City of Rapid City Standard Specifications, Current Edition.

Notes:

1. Design Live Load: HL-93 loading. No construction loading in excess of legal load was considered.
2. Inlet may be precast. If precast inlet is used, and details differ from that shown, the precast inlet shall receive prior approval by the City.
3. To qualify for alternate design approval, submit: prior SDDOT approval, checked design by a South Dakota Registered Professional Engineer, and shop plans to the City of Rapid City. Design shall be in accordance with the current edition of the AASHTO LRFD Bridge Design Specifications.
4. Inlets shown may be modified by the addition or omission of connecting pipes as shown on the layouts. Connecting pipes shall not enter the inlet through the corners.
5. Maximum R.C. pipe diameter shall not exceed 36" (30" for R. C. arch pipe) on the 4' wide side of the drop inlet.
6. Reinforcing steel shall conform to ASTM A615 grade 60. The d bars and e bars shall be lapped 12" with the c and b bars, respectively. Cut and bend reinforcing steel as required to place pipe(s) through the drop inlet wall.
7. Use minimum 1 1/2" clear cover on all reinforcing steel unless otherwise noted.
8. The dimension of H is in feet. Maximum H is 10'.

PIPE DISPLACEMENT REDUCTIONS			
	Diameter (Inches)	Wall T (Inches)	Class M6 Concrete (Cu. Yd.)
R.C.P.	12	2	0.03
	15	2 1/4	0.04
	18	2 1/2	0.05
	24	3	0.09
	30	3 1/2	0.14
	36	4	0.20
R.C. Arch	18	2 1/2	0.05
	24	3 1/2	0.09
	30	4	0.14

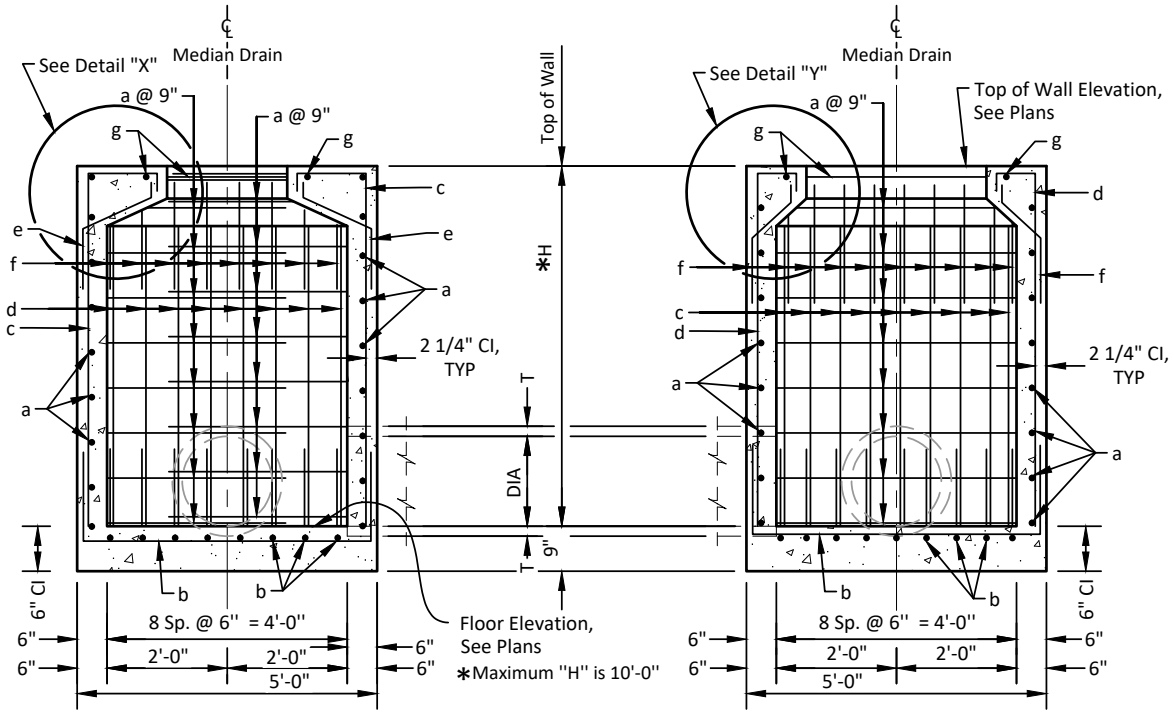
N.T.S.

CITY OF RAPID CITY — PUBLIC WORKS DEPARTMENT

4' x 4' TYPE B REINFORCED CONCRETE DROP INLET

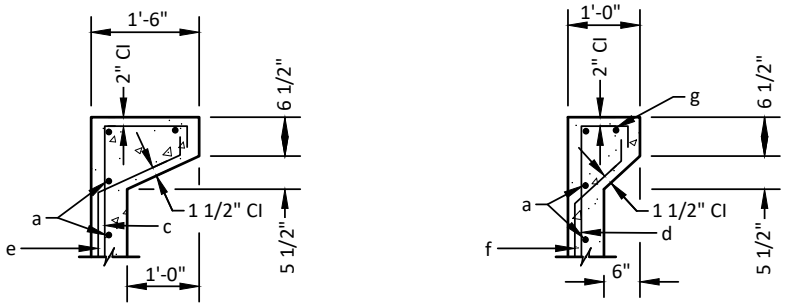
DATE: 8-19-22

Sec. - Sht.
62-4a



SECTION A - A

SECTION B - B



DETAIL "X"

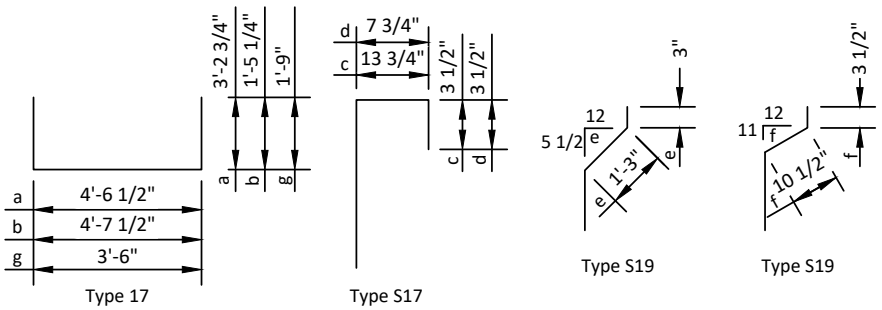
DETAIL "Y"

REINFORCING SCHEDULE

Mk.	No.	Size	Length	Type
a	2.67H	4	11'-0"	17
b	18	4	7'-6"	17
c	18	4	H + 15"	S17
d	18	4	H + 9"	S17
e	18	4	2'-6"	S19
f	18	4	2'-3"	S19
g	2	4	7'-0"	17

Note:
All dimensions are out to out of bars.

Bending Details



Type 17

Type S17

Type S19

Type S19

N.T.S.

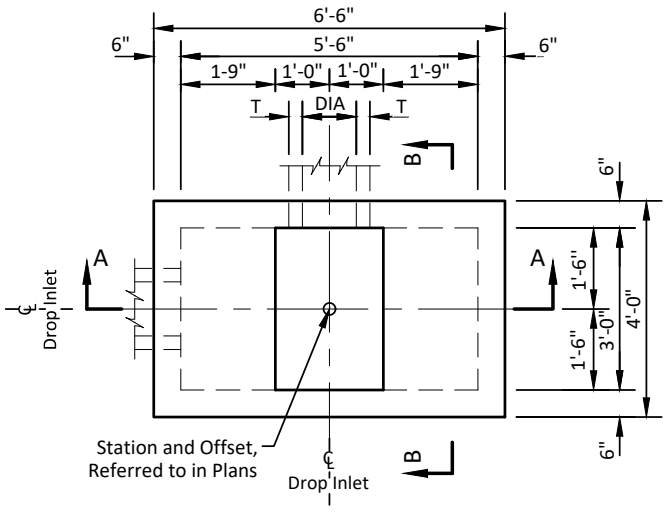
CITY OF RAPID CITY

PUBLIC WORKS DEPARTMENT

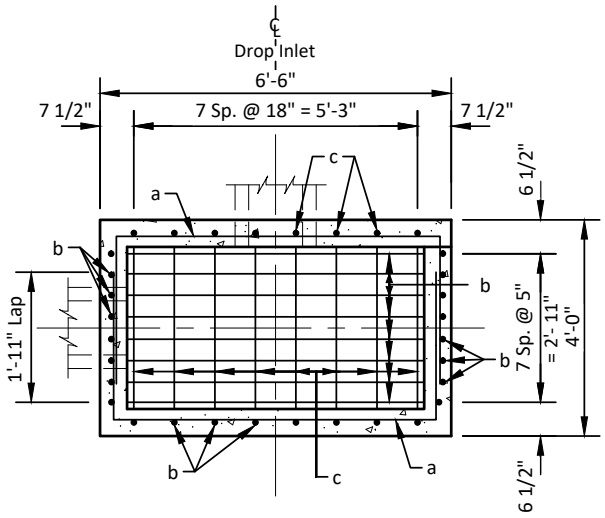
4' x 4' TYPE B
REINFORCED CONCRETE DROP INLET

DATE: 8-19-22

Sec. - Sht.
62-4b



PLAN VIEW



BOTTOM SECTION

ESTIMATED QUANTITIES			
Item	Unit	Constant Quantity	Variable Quantity
Class M6 Concrete	Cu. Yd.	1.03	0.35H
Reinforcing Steel	Lb.	161.19	47.89H
Frame and Grate Assembly	Each	1	———

DROP INLETS FOR 12'' TO 54'' DIAMETER PIPE

Specifications:

1. Design Specifications: AASHTO LRFD Bridge Design Specifications 2012 Edition.
2. Construction Specifications: City of Rapid City Standard Specifications, Current Edition.

Notes:

1. Design Live Load: HL-93 loading. No construction loading in excess of legal load was considered.
2. Inlet may be precast. If precast inlet is used, and details differ from that shown, the precast inlet shall receive prior approval by the City.
3. To qualify for alternate design approval, submit: prior SDDOT approval, checked design by a South Dakota Registered Professional Engineer, and shop plans to the City of Rapid City. Design shall be in accordance with the current edition of the AASHTO LRFD Bridge Design Specifications.
4. Inlets shown may be modified by the addition or omission of connecting pipes as shown on the layouts. Connecting pipes shall not enter the inlet through the corners.
5. Maximum R.C. pipe diameter shall not exceed 54" (42" for R. C. arch pipe) on the 5.5' wide side and shall not exceed 24" (24" for R.C. arch pipe) on the 3' wide side of the drop inlet.
6. Reinforcing steel shall conform to ASTM A615 grade 60. The d bars and e bars shall be lapped 12" with the c and b bars, respectively. Cut and bend reinforcing steel as required to place pipe(s) through the drop inlet wall.
7. Use minimum 2" clear cover on all reinforcing steel unless otherwise noted.
8. The dimension of H is in feet. Maximum H is 10'.

PIPE DISPLACEMENT REDUCTIONS			
	Diameter (Inches)	Wall T (Inches)	Class M6 Concrete (Cu. Yd.)
R.C.P.	12	2	0.03
	15	2 1/4	0.04
	18	2 1/2	0.05
	24	3	0.09
	30	3 1/2	0.14
	36	4	0.20
	42	4 1/2	0.26
	48	5	0.34
	54	5 1/2	0.43
R.C. Arch	18	2 1/2	0.05
	24	3 1/2	0.09
	30	4	0.14
	36	4 1/2	0.19
	42	4 1/2	0.24

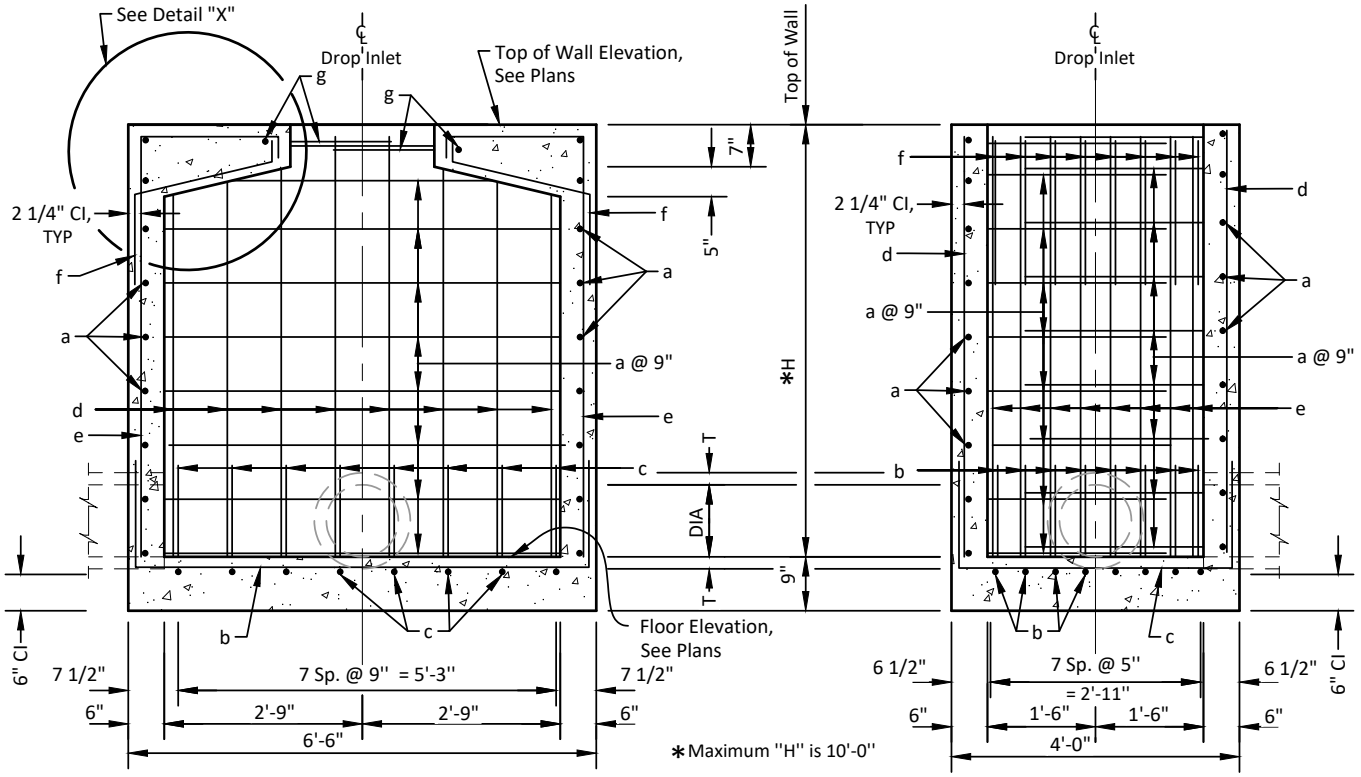
N.T.S.

CITY OF RAPID CITY — PUBLIC WORKS DEPARTMENT

5.5' x 3' TYPE B REINFORCED CONCRETE DROP INLET

DATE: 8-19-22

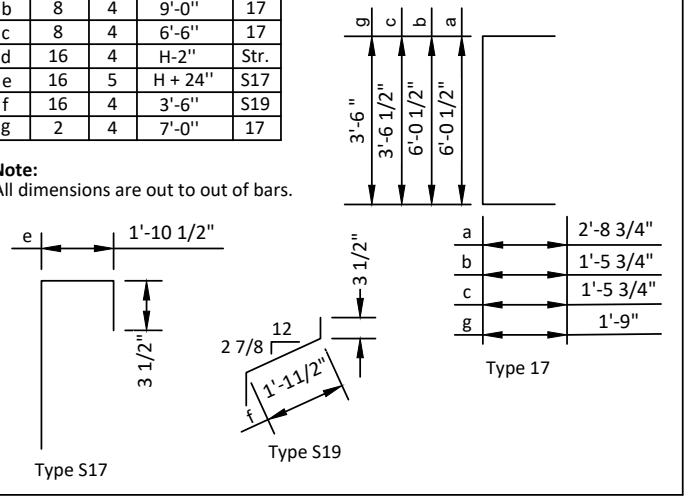
Sec. - Sht.
62-5a

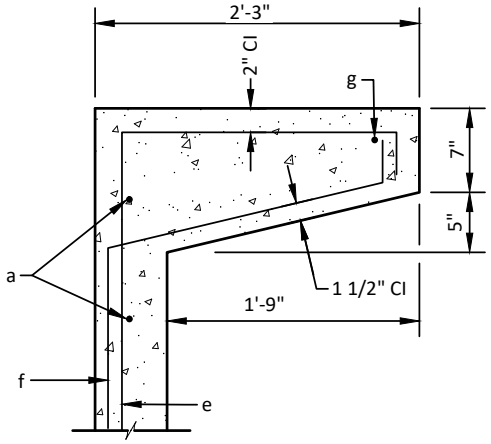


REINFORCING SCHEDULE

Mk.	No.	Size	Length	Type	Bending Details
a	2.67H	4	11'-6"	17	
b	8	4	9'-0"	17	
c	8	4	6'-6"	17	
d	16	4	H-2"	Str.	
e	16	5	H + 24"	S17	
f	16	4	3'-6"	S19	
g	2	4	7'-0"	17	

Note:
All dimensions are out to out of bars.





DETAIL "X"

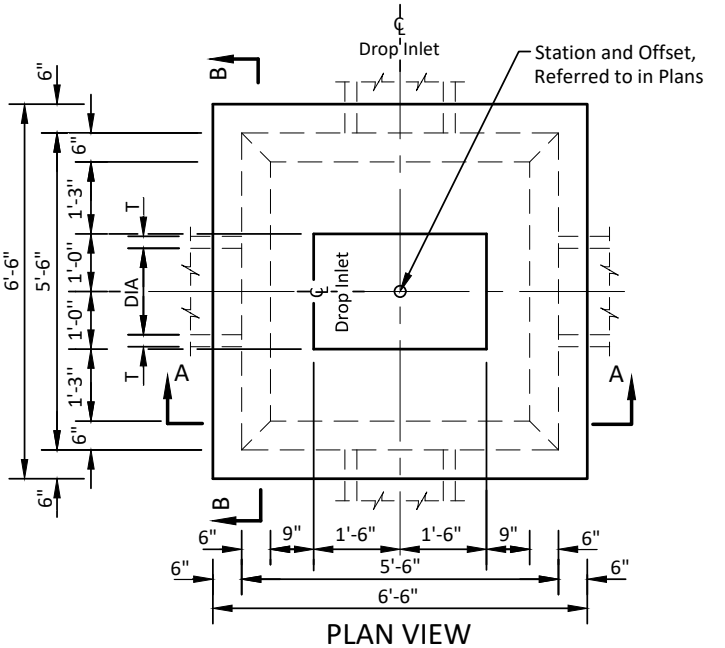
N.T.S.

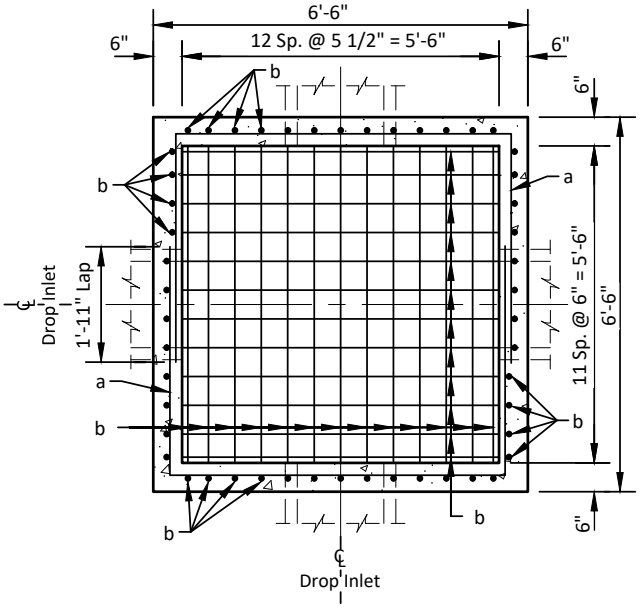
CITY OF RAPID CITY | PUBLIC WORKS DEPARTMENT

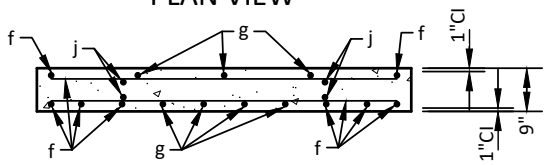
5.5' x 3' TYPE B
REINFORCED CONCRETE DROP INLET

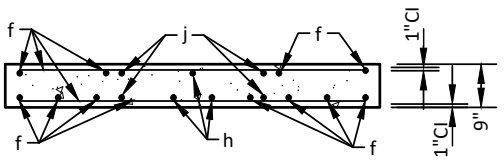
DATE: 8-19-22

Sec. - Sht.
62-5b









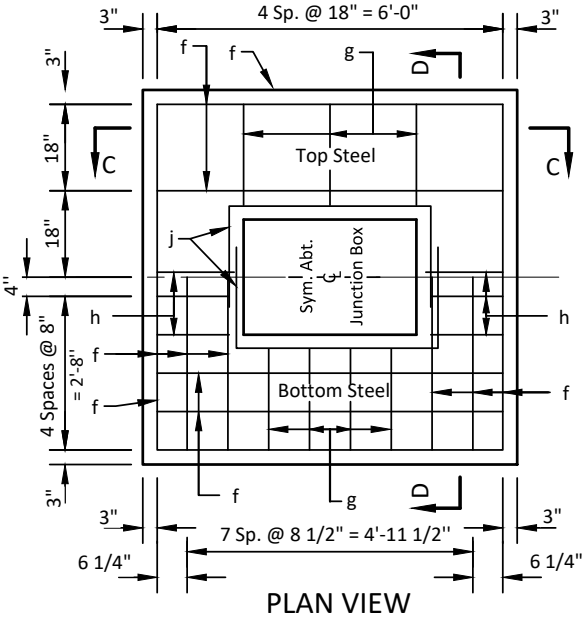
DROP INLETS FOR 12'' TO 54'' DIAMETER PIPE

Specifications:

1. Design Specifications: AASHTO LRFD Bridge Design Specifications 2012 Edition.
2. Construction Specifications: City of Rapid City Standard Specifications, Current Edition.

Notes:

1. Design Live Load: HL-93 loading. No construction loading in excess of legal load was considered.
2. Inlet may be precast. If precast inlet is used, and details differ from that shown, the precast inlet shall receive prior approval by the City.
3. To qualify for alternate design approval, submit: prior SDDOT approval, checked design by a South Dakota Registered Professional Engineer, and shop plans to the City of Rapid City. Design shall be in accordance with the current edition of the AASHTO LRFD Bridge Design Specifications.
4. Inlets shown may be modified by the addition or omission of connecting pipes as shown on the layouts. Connecting pipes shall not enter the inlet through the corners.
5. Maximum R.C. pipe diameter shall not exceed 54" (42" for R. C. arch pipe) of the drop inlet.
6. Reinforcing steel shall conform to ASTM A615 grade 60. The c bars shall be lapped 12" with the b bars. Cut and bend reinforcing steel as required to place pipe(s) through the drop inlet wall.
7. Use minimum 2 1/2" clear cover on all reinforcing steel unless otherwise noted.
8. Apply a thin layer of grout between the inlet walls and the cover to ensure uniform bearing.
9. The dimension of H is in feet. Maximum H is 10'.



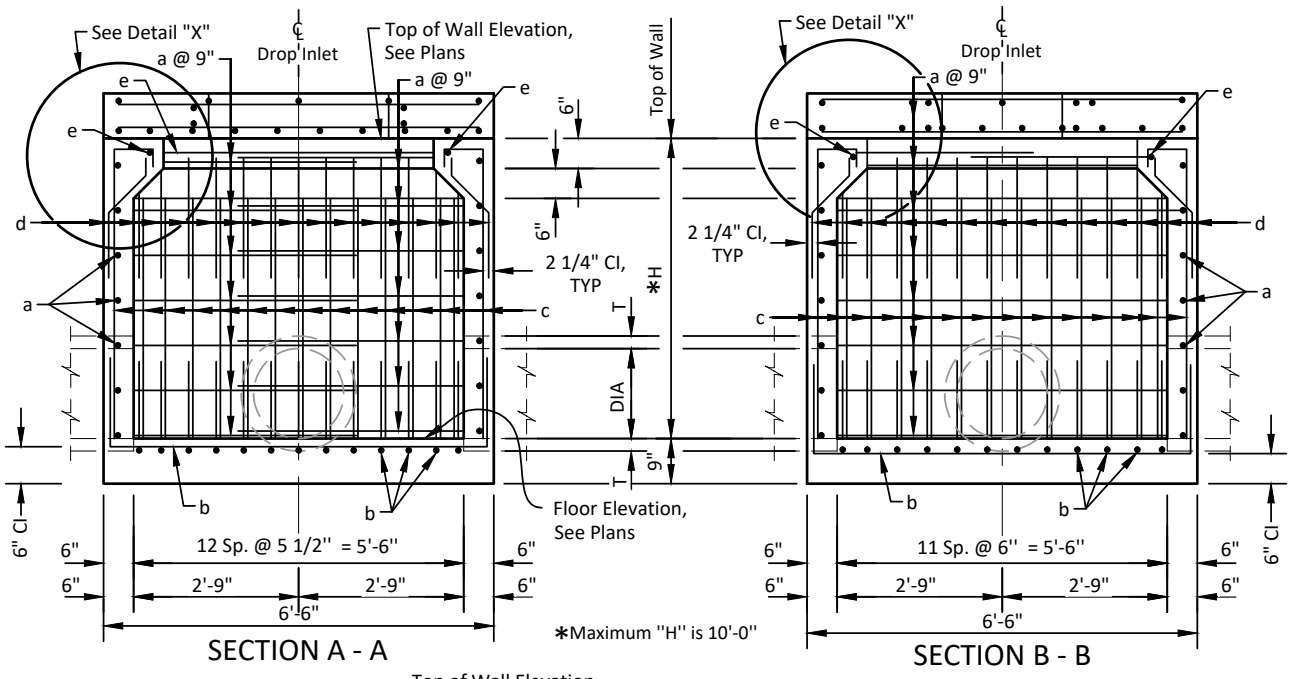
N.T.S.

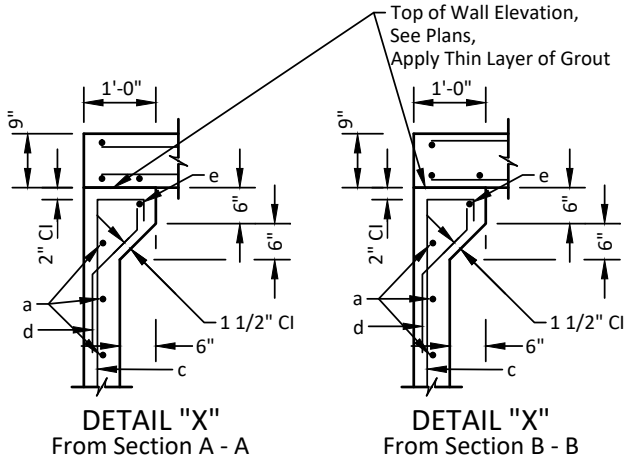
CITY OF RAPID CITY | PUBLIC WORKS DEPARTMENT

5.5' x 5.5' TYPE B REINFORCED CONCRETE DROP INLET

DATE: 8-19-22

Sec. - Sht.
62-6a



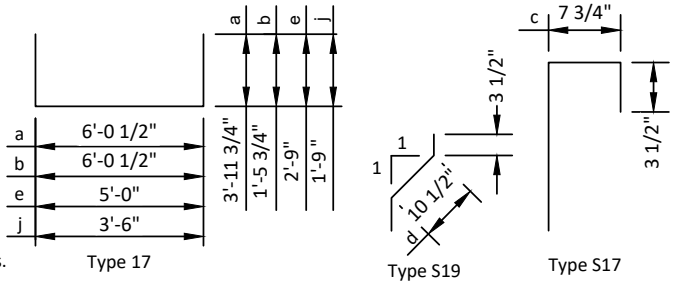


ESTIMATED QUANTITIES			
Item	Unit	Constant Quantity	Variable Quantity
Class M6 Concrete	Cu. Yd.	2.46	0.44H
Reinforcing Steel	Lb.	380.09	58.37H
Frame and Grate Assembly	Each	1	——

REINFORCING SCHEDULE				
Mk.	No.	Size	Length	Type
a	2.67H	4	14'-0''	17
b	25	4	9'-0''	17
c	50	4	H + 9''	S17
d	50	4	2'-3''	S19
e	2	4	10'-6''	17
f	18	4	6'-0''	Str.
g	14	4	1'-9''	Str.
h	10	4	1'-3''	Str.
j	4	4	7'-0''	17

Note:
All dimensions are out to out of bars.

Bending Details



PIPE DISPLACEMENT REDUCTIONS			
	Diameter (Inches)	Wall T (Inches)	Class M6 Concrete (Cu. Yd.)
R.C.P.	12	2	0.03
	15	2 1/4	0.04
	18	2 1/2	0.05
	24	3	0.09
	30	3 1/2	0.14
	36	4	0.20
	42	4 1/2	0.26
	48	5	0.34
	54	5 1/2	0.43
R.C. Arch	18	2 1/2	0.05
	24	3 1/2	0.09
	30	4	0.14
	36	4 1/2	0.19
	42	4 1/2	0.24

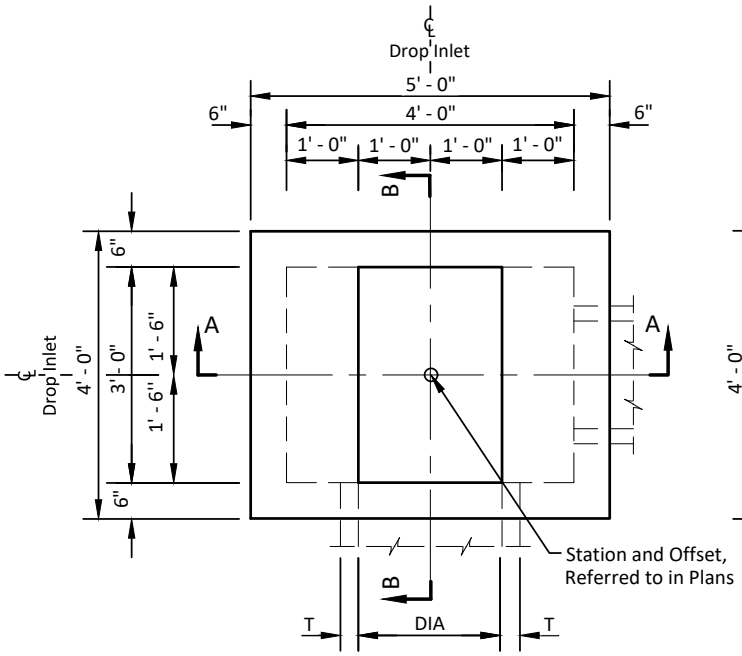
N.T.S.

CITY OF RAPID CITY | PUBLIC WORKS DEPARTMENT

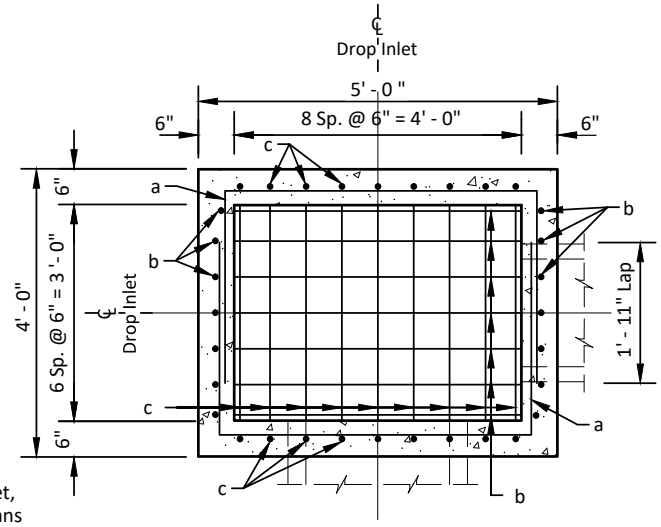
5.5' x 5.5' TYPE B
REINFORCED CONCRETE DROP INLET

DATE: 8-19-22

Sec. - Sht.
62-6b



PLAN VIEW



BOTTOM SECTION

ESTIMATED QUANTITIES			
Item	Unit	Constant Quantity	Variable Quantity
Class M6 Concrete	Cu. Yd.	0.58	0.33H
Reinforcing Steel	Lb.	116.24	39.21H
Frame and Grate Assembly	Each	1	———

DROP INLETS FOR 12'' TO 36'' DIAMETER PIPE

Specifications:

1. Design Specifications: AASHTO LRFD Bridge Design Specifications 2012 Edition.
2. Construction Specifications: City of Rapid City Standard Specifications, Current Edition.

Notes:

1. Design Live Load: HL-93 loading. No construction loading in excess of legal load was considered.
2. Inlet may be precast. If precast inlet is used, and details differ from that shown, the precast inlet shall receive prior approval by the City.
3. To qualify for alternate design approval, submit: prior SDDOT approval, checked design by a South Dakota Registered Professional Engineer, and shop plans to the City of Rapid City. Design shall be in accordance with the current edition of the AASHTO LRFD Bridge Design Specifications.
4. Inlets shown may be modified by the addition or omission of connecting pipes as shown on the layouts. Connecting pipes shall not enter the inlet through the corners.
5. Maximum R.C. pipe diameter shall not exceed 24" (24" for R. C. arch pipe) on the 3' wide side and shall not exceed 36" (30" for R.C. arch pipe) on the 4' wide side of the drop inlet.
6. Reinforcing steel shall conform to ASTM A615 grade 60. The d bars and e bars shall be lapped 12" with the c and b bars, respectively. Cut and bend reinforcing steel as required to place pipe(s) through the drop inlet wall.
7. Use minimum 1 1/2" clear cover on all reinforcing steel unless otherwise noted.
8. The dimension of H is in feet. Maximum H is 10'.

PIPE DISPLACEMENT REDUCTIONS			
	Diameter (Inches)	Wall T (Inches)	Class M6 Concrete (Cu. Yd.)
R.C.P.	12	2	0.03
	15	2 1/4	0.04
	18	2 1/2	0.05
	24	3	0.09
	30	3 1/2	0.14
	36	4	0.20
R.C. Arch	18	2 1/2	0.05
	24	3 1/2	0.09
	30	4	0.14

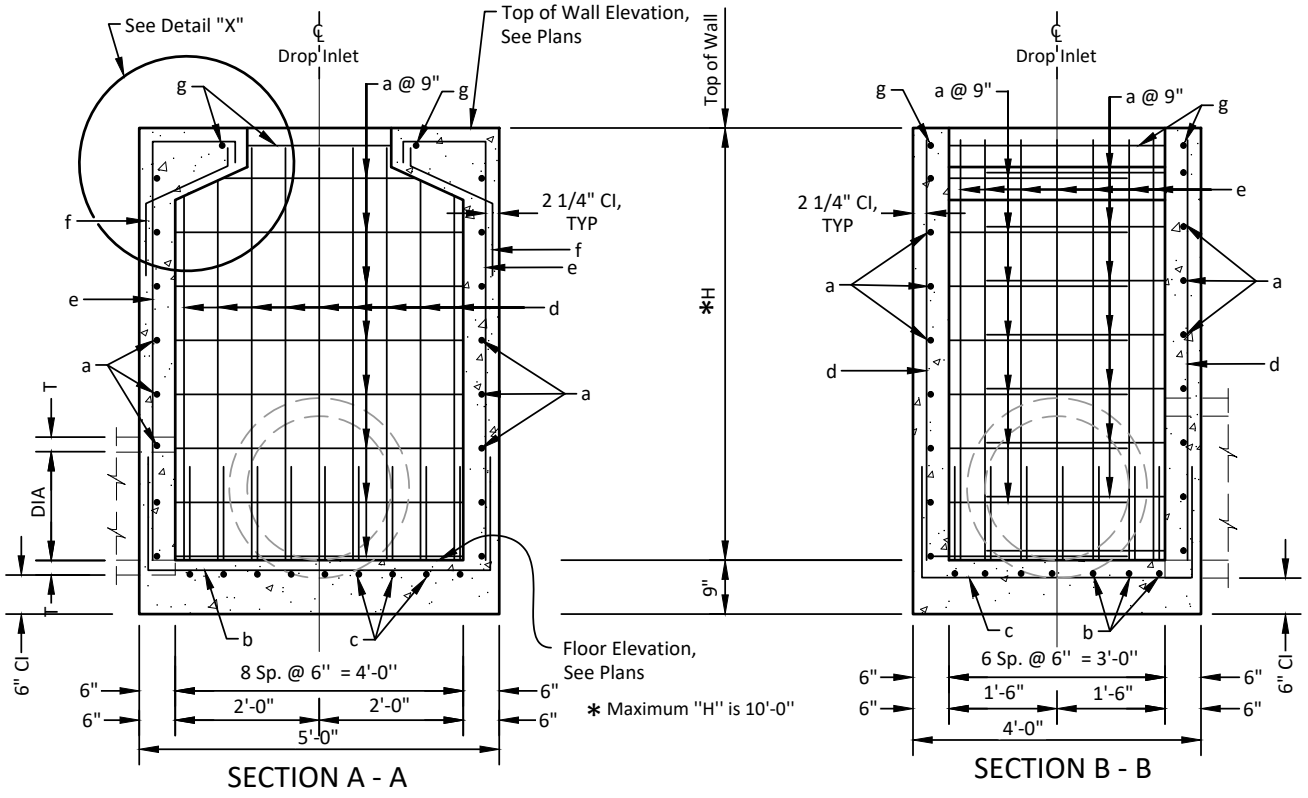
N.T.S.

CITY OF RAPID CITY — PUBLIC WORKS DEPARTMENT

4' x 3' TYPE B
REINFORCED CONCRETE DROP INLET

DATE: 8-19-22

Sec. - Sht.
62-7a

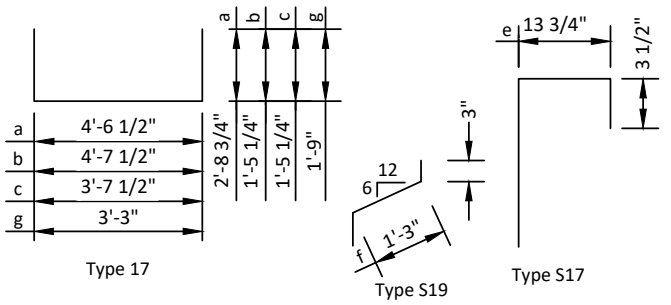


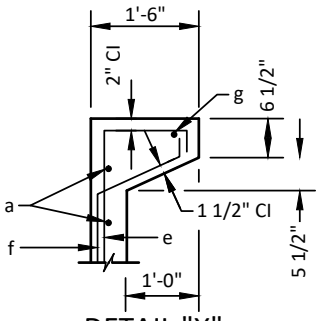
REINFORCING SCHEDULE

Mk.	No.	Size	Length	Type
a	2.67H	4	10'-0"	17
b	7	4	7'-6"	17
c	9	4	6'-6"	17
d	18	4	H-2"	Str.
e	14	4	H + 15"	S17
f	14	4	2'-6"	S19
g	2	4	6'-9"	17

Note:
All dimensions are out to out of bars.

Bending Details





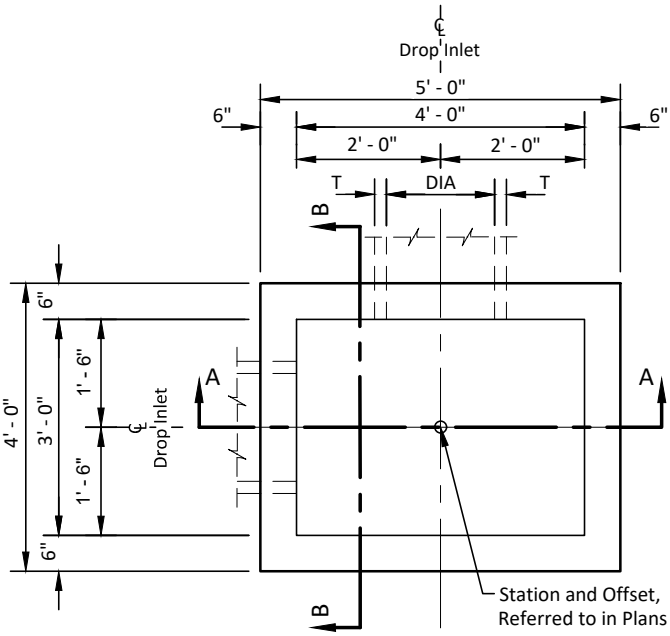
N.T.S.

CITY OF RAPID CITY — PUBLIC WORKS DEPARTMENT

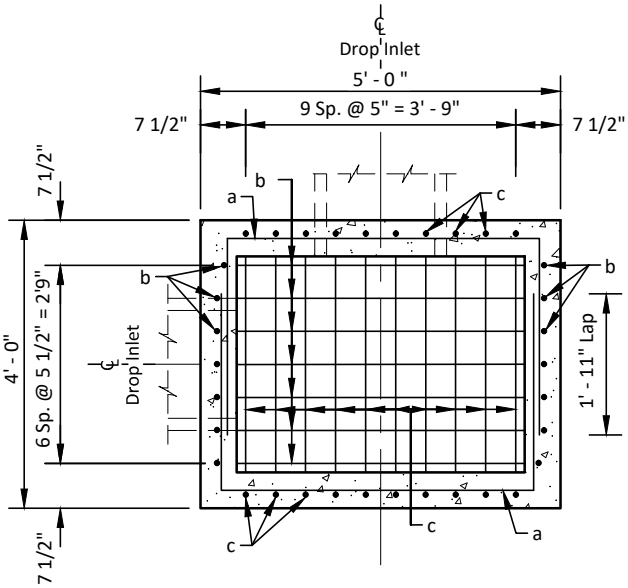
4' x 3' TYPE B
REINFORCED CONCRETE DROP INLET

DATE: 8-19-22

Sec. - Sht.
62-7b



PLAN VIEW



BOTTOM SECTION

ESTIMATED QUANTITIES			
Item	Unit	Constant Quantity	Variable Quantity
Class M6 Concrete	Cu. Yd.	0.43	0.30H
Reinforcing Steel	Lb.	90.90	40.53H
Frame and Grate Assembly	Each	1	———

DROP INLETS FOR 12'' TO 36'' DIAMETER PIPE

Specifications:

1. Design Specifications: AASHTO LRFD Bridge Design Specifications 2012 Edition.
2. Construction Specifications: City of Rapid City Standard Specifications, Current Edition.

Notes:

1. Design Live Load: HL-93 loading. No construction loading in excess of legal load was considered.
2. Inlet may be precast. If precast inlet is used, and details differ from that shown, the precast inlet shall receive prior approval by the City.
3. To qualify for alternate design approval, submit: prior SDDOT approval, checked design by a South Dakota Registered Professional Engineer, and shop plans to the City of Rapid City. Design shall be in accordance with the current edition of the AASHTO LRFD Bridge Design Specifications.
4. Inlets shown may be modified by the addition or omission of connecting pipes as shown on the layouts. Connecting pipes shall not enter the inlet through the corners.
5. Maximum R.C. pipe diameter shall not exceed 24" (24" for R. C. arch pipe) on the 3' wide side and shall not exceed 36" (30" for R.C. arch pipe) on the 4' wide side of the drop inlet.
6. Reinforcing steel shall conform to ASTM A615 grade 60. The d bars shall be lapped 12" with the b and c bars. Cut and bend reinforcing steel as required to place pipe(s) through the drop inlet wall.
7. Use minimum 2 1/2" clear cover on all reinforcing steel unless otherwise noted.
8. The dimension of H is in feet. Maximum H is 10 feet.

PIPE DISPLACEMENT REDUCTIONS			
	Diameter (Inches)	Wall T (Inches)	Class M6 Concrete (Cu. Yd.)
R.C.P.	12	2	0.03
	15	2 1/4	0.04
	18	2 1/2	0.05
	24	3	0.09
	30	3 1/2	0.14
	36	4	0.20
R.C. Arch	18	2 1/2	0.05
	24	3 1/2	0.09
	30	4	0.14

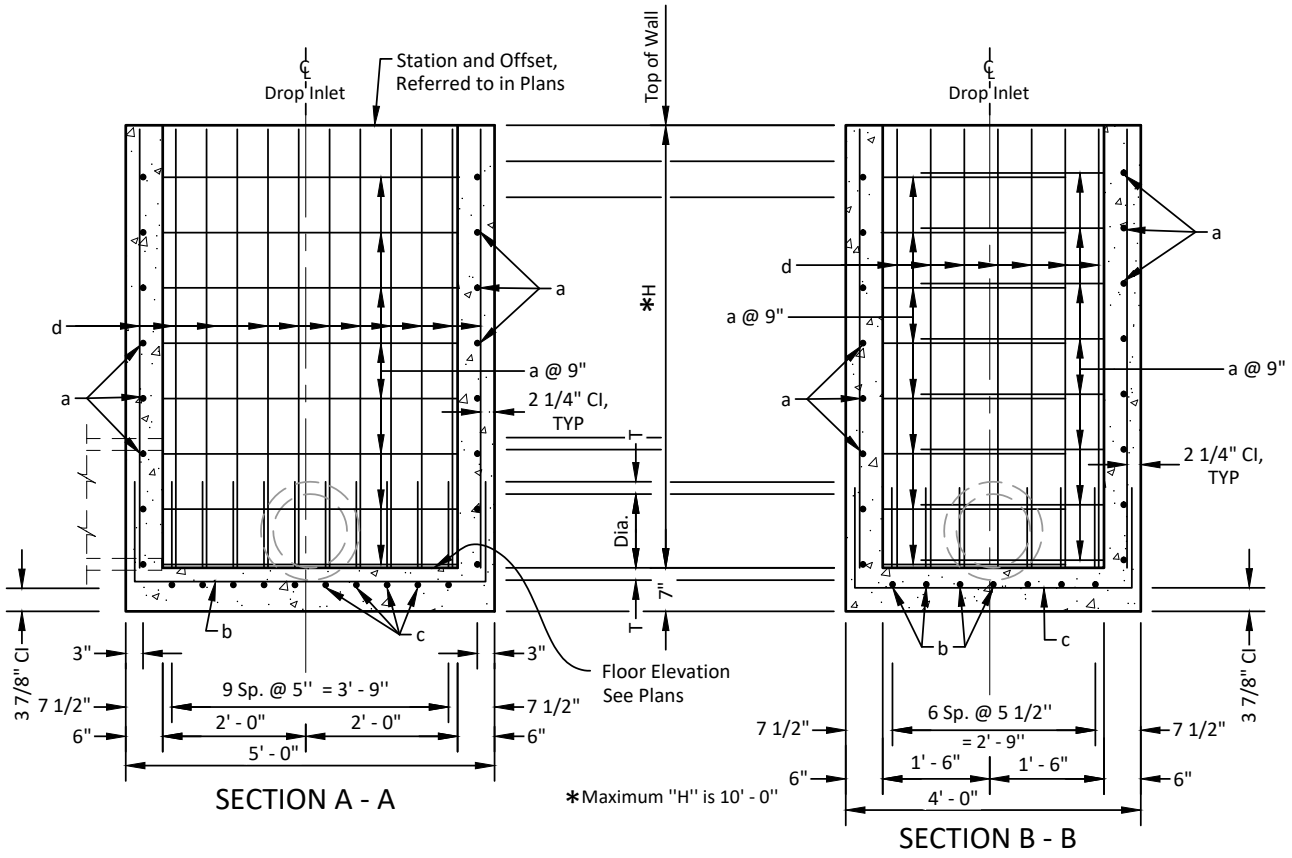
N.T.S.

CITY OF RAPID CITY — PUBLIC WORKS DEPARTMENT

3' x 4' TYPE C REINFORCED CONCRETE DROP INLET

DATE: 8-19-22

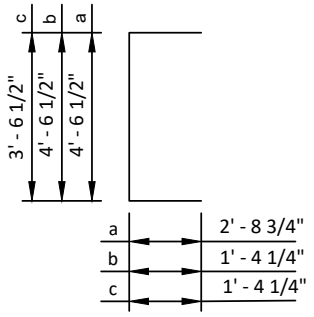
Sec. - Sht.
62-8a



REINFORCING SCHEDULE

Mk.	No.	Size	Length	Type	Bending Details
a	2.67H	4	10' - 0''	17	
b	7	5	7' - 3''	17	
c	10	4	6' - 3''	17	
d	34	4	H - 2''	Str	

Note:
All dimensions are out to out of bars.



Type 17

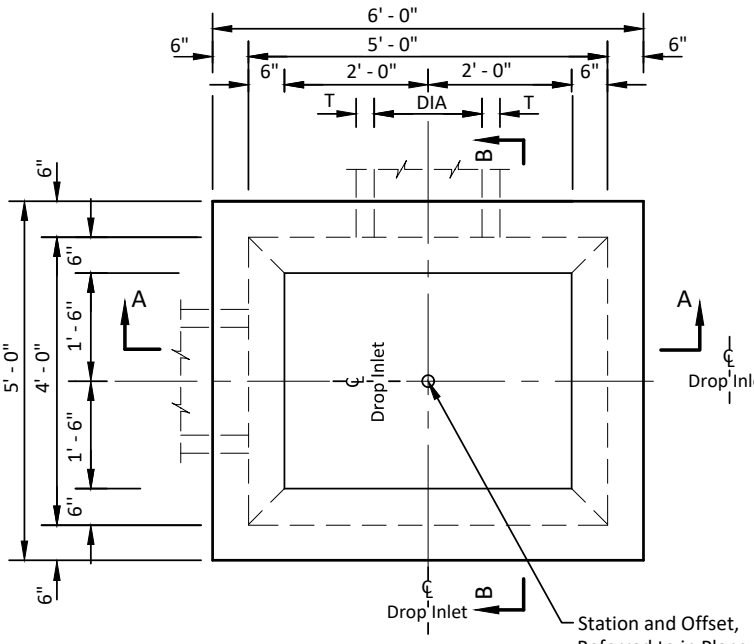
N.T.S.

CITY OF RAPID CITY | PUBLIC WORKS DEPARTMENT

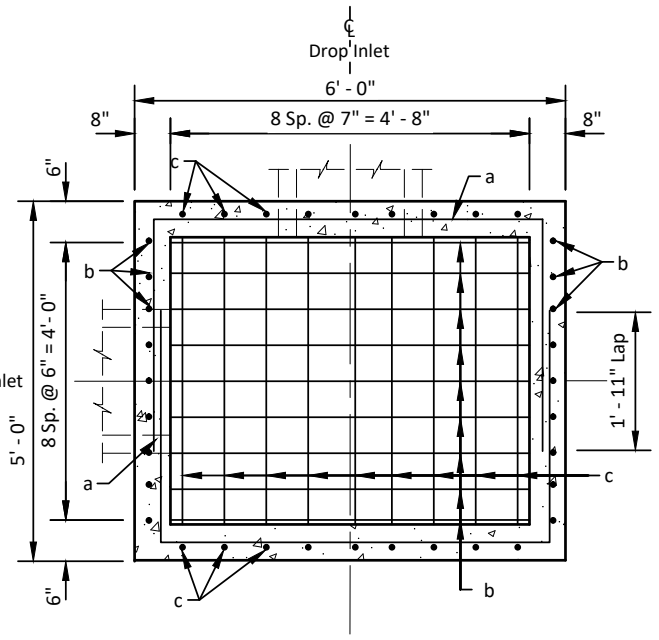
3' x 4' TYPE C
REINFORCED CONCRETE DROP INLET

DATE: 8-19-22

Sec. - Sht.
62-8b



PLAN VIEW



BOTTOM SECTION

ESTIMATED QUANTITIES			
Item	Unit	Constant Quantity	Variable Quantity
Class M6 Concrete	Cu. Yd.	1.06	0.37H
Reinforcing Steel	Lb.	180.36	45.43H
Frame and Grate Assembly	Each	1	———

DROP INLETS FOR 12'' TO 48'' DIAMETER PIPE

Specifications:

1. Design Specifications: AASHTO LRFD Bridge Design Specifications 2012 Edition.
2. Construction Specifications: City of Rapid City Standard Specifications, Current Edition.

Notes:

1. Design Live Load: HL-93 loading. No construction loading in excess of legal load was considered.
2. Inlet may be precast. If precast inlet is used, and details differ from that shown, the precast inlet shall receive prior approval by the City.
3. To qualify for alternate design approval, submit: prior SDDOT approval, checked design by a South Dakota Registered Professional Engineer, and shop plans to the City of Rapid City. Design shall be in accordance with the current edition of the AASHTO LRFD Bridge Design Specifications.
4. Inlets shown may be modified by the addition or omission of connecting pipes as shown on the layouts. Connecting pipes shall not enter the inlet through the corners and must fit between the inside face of walls.
5. Maximum R.C. pipe diameter shall not exceed 36" (30" for R. C. arch pipe) on the 4' wide side of the drop inlet and shall not exceed 48" (36" for R. C. arch pipe) on the 5' wide side of the drop inlet.
6. Reinforcing steel shall conform to ASTM A615 grade 60. The d bars shall be lapped 12" with the b and c bars, respectively. Cut and bend reinforcing steel as required to place pipe(s) through the drop inlet wall.
7. Use minimum 2 1/4" clear cover on all reinforcing steel unless otherwise noted.
8. The dimension of H is in feet. Maximum H is 10'.

	PIPE DISPLACEMENT REDUCTIONS		
	Diameter (Inches)	Wall T (Inches)	Class M6 Concrete (Cu. Yd.)
R.C.P.	12	2	0.03
	15	2 ¼	0.04
	18	2 ½	0.05
	24	3	0.09
	30	3 ½	0.14
	36	4	0.20
	42	4 ½	0.26
	48	5	0.34
R.C. Arch	18	2 ½	0.05
	24	3 ½	0.09
	30	4	0.14
	36	4 ½	0.19

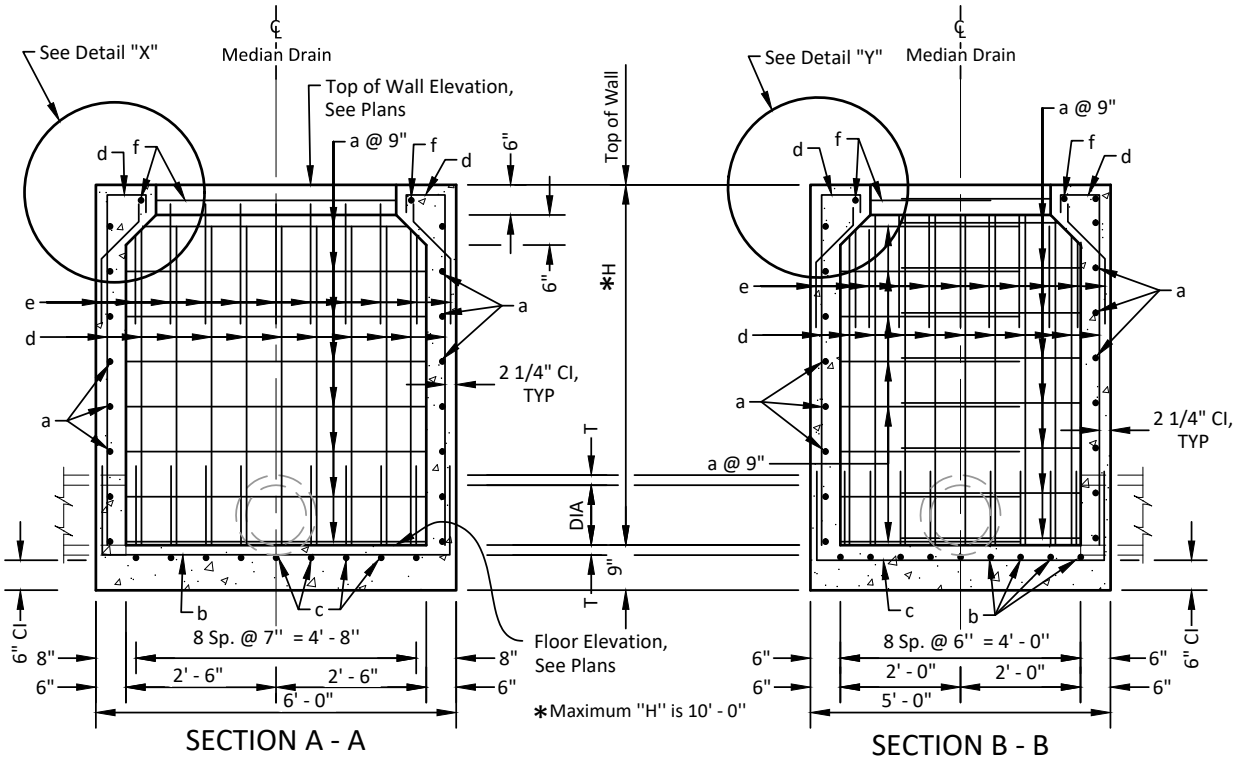
N.T.S.

CITY OF RAPID CITY — PUBLIC WORKS DEPARTMENT

4' x 5' TYPE C REINFORCED CONCRETE DROP INLET

DATE: 8-19-22

Sec. - Sht.
62-9a

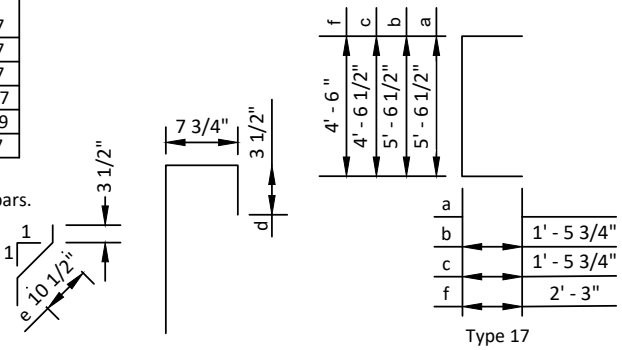


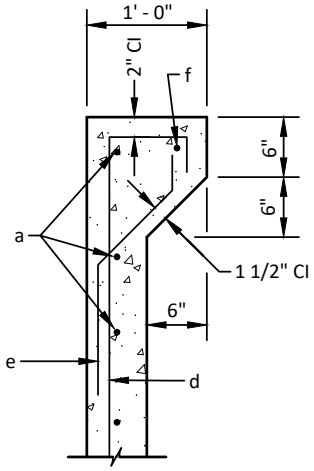
REINFORCING SCHEDULE

Bending Details

Mk.	No.	Size	Length	Type
a	2.67H	4	12' - 0"	17
b	9	4	8' - 6"	17
c	9	4	7' - 6"	17
d	36	4	H + 9"	S17
e	36	4	2' - 3"	S19
f	2	4	9' - 0"	17

Note:
All dimensions are out to out of bars.





DETAIL "X"

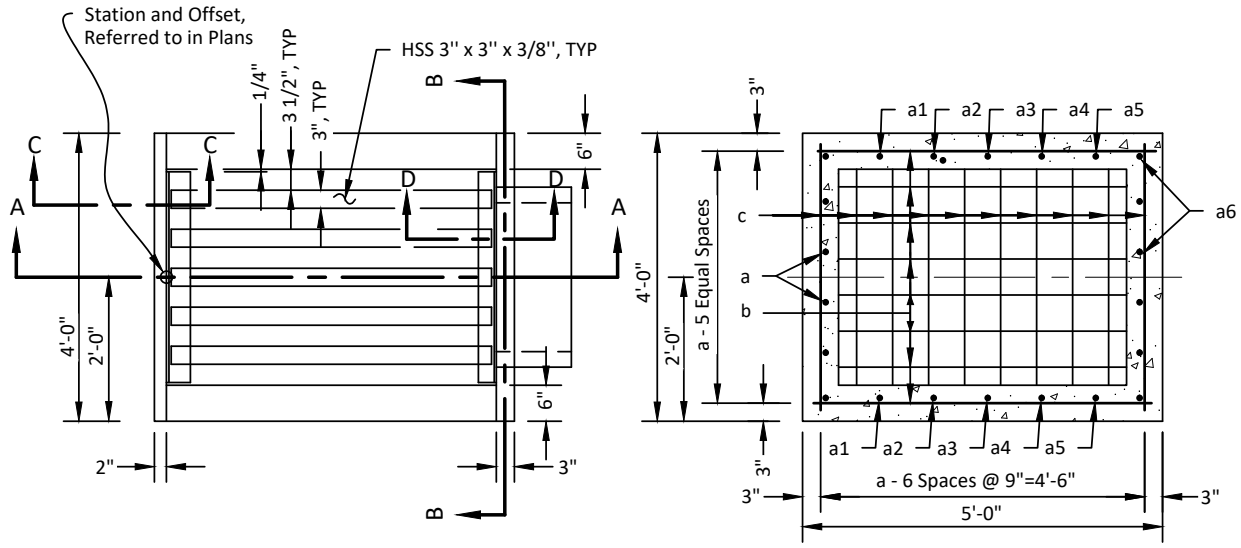
N.T.S.

CITY OF RAPID CITY — PUBLIC WORKS DEPARTMENT

4' x 5' TYPE C
REINFORCED CONCRETE DROP INLET

DATE: 8-19-22

Sec. - Sht.
62-9b



ESTIMATED QUANTITIES			
Item	Unit	Constant Quantity	Variable Quantity
Class M6 Concrete	Cu.Yd.	0.48	0.30 H
Reinforcing Steel	Lb.	116.84	14.70 H
Type L Frame and Grate Assembly	Each	1	———

PIPE DISPLACEMENT REDUCTIONS			
	Diameter (Inches)	Wall T (Inches)	Class M6 Concrete (Cu. Yd.)
R.C.P.	15	2 ¼	0.04
	18	2 ½	0.05
	24	3	0.09
R.C. Arch	18	2 ½	0.05
	24	3	0.09

Specifications:

1. Design Specifications: AASHTO LRFD Bridge Design Specifications, 2012 Edition.
2. Construction Specifications: City of Rapid City Standard Specifications, Current Edition.

Notes:

1. The dimension H is in feet.
2. Design Live Load: HL-93.
3. Cut and bend reinforcing steel during construction as necessary to accommodate pipe outlet. All reinforcing steel shall conform to ASTM A615 grade 60.
4. All Concrete shall be Class M6.
5. All angles shall conform to ASTM A36. Tubes shall conform to ASTM A500 grade B.
6. All exposed edges shall be chamfered 3/4".
7. Use 1 1/2" clear cover on all reinforcing steel except as shown.
8. After welding is complete, galvanize the frame and grate assembly in accordance with AASHTO M111 (ASTM A123). For information only, the estimated weight of the frame and grate assembly is 338 pounds.
9. Type L Median Drain shall be paid for at the contract unit price per each, which shall be full compensation for furnishing all materials and labor including casting, concrete collars for pipe connections, and necessary excavation and backfill required to construct one complete drain.
9. The location and size of pipe outlet from the drain shall be as noted on plan sheets. All pipes entering the structure shall leave a minimum 3" wall on each side of the pipe penetration.

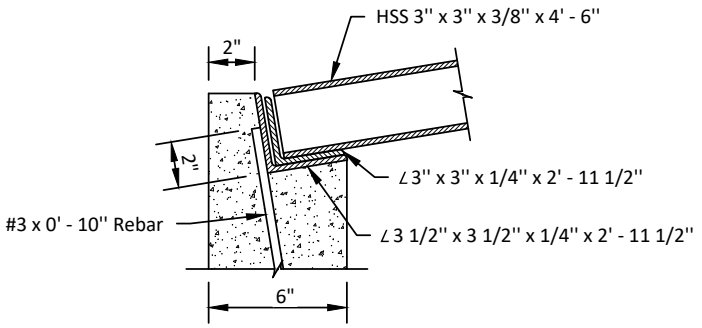
N.T.S.

CITY OF RAPID CITY | PUBLIC WORKS DEPARTMENT

TYPE L MEDIAN DRAIN FOR 6:1 INSLOPE

DATE: 8-19-22

Sec. - Sht.
62-10a

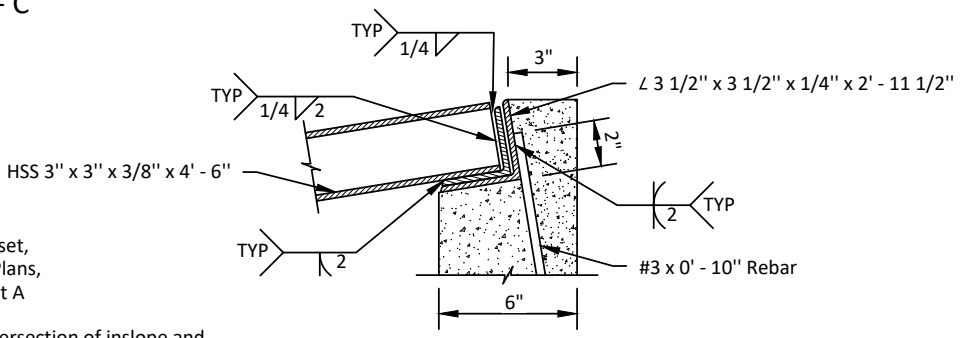


SECTION C - C

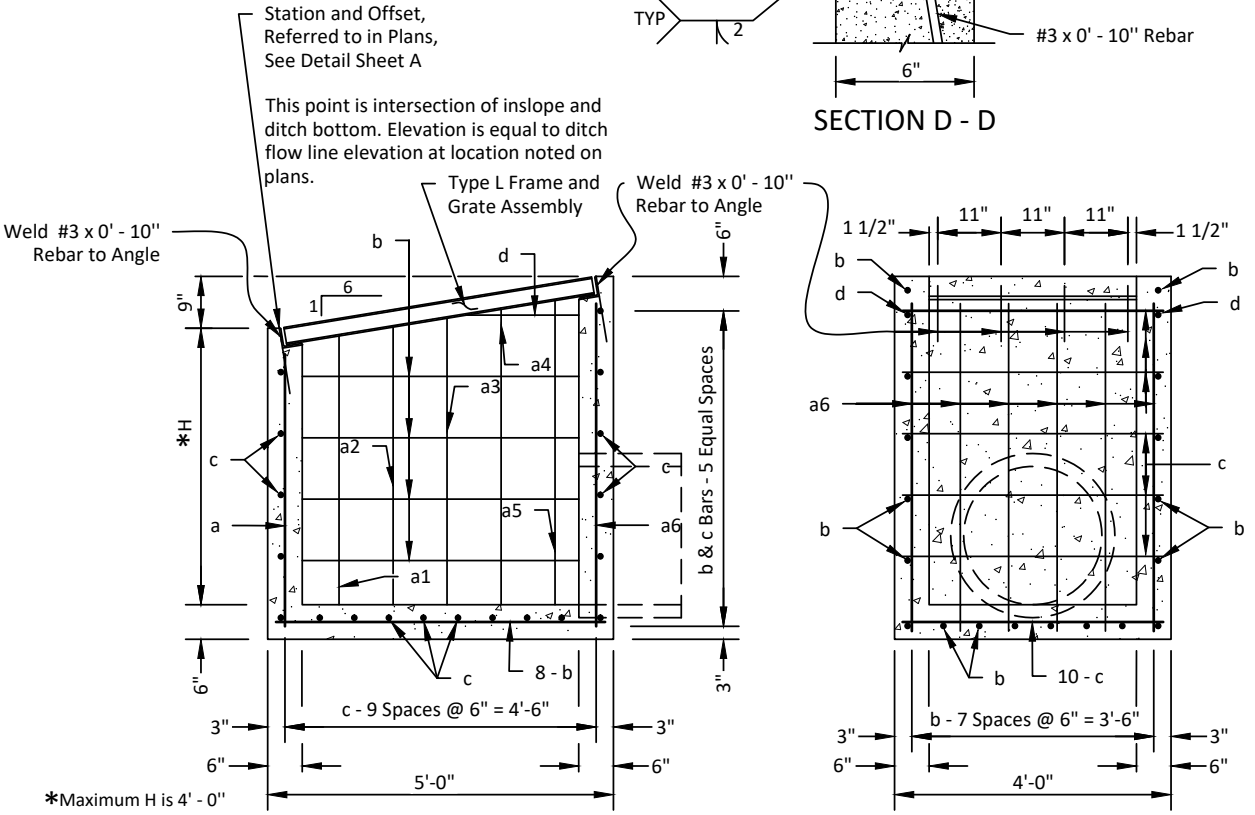
REINFORCING SCHEDULE
(For 1 Drain)

Mk.	No.	Size	Length	Type
a	6	4	H + 3''	Str.
a1	2	4	H + 4''	Str.
a2	2	4	H + 6''	Str.
a3	2	4	H + 7''	Str.
a4	2	4	H + 9''	Str.
a5	2	4	H + 10''	Str.
a6	6	4	H + 1.0'	Str.
b	18	4	4' - 9''	Str.
c	19	4	3' - 9''	Str.
d	2	4	2' - 4''	Str.

Note:
All dimensions are out to out of bars.



SECTION D - D



SECTION A - A

SECTION B - B

(∠3'' x 3'' x 1/4'' x 2' - 11 1/2'' not shown for illustration purpose)

N.T.S.

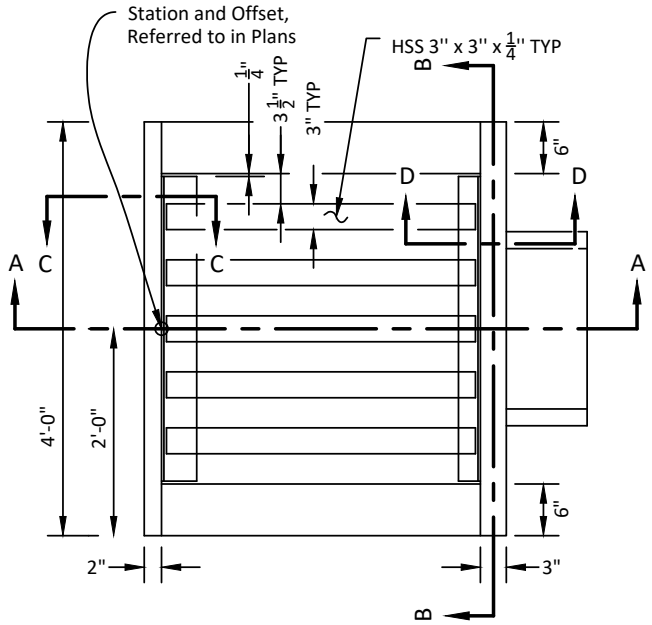
CITY OF RAPID CITY

PUBLIC WORKS DEPARTMENT

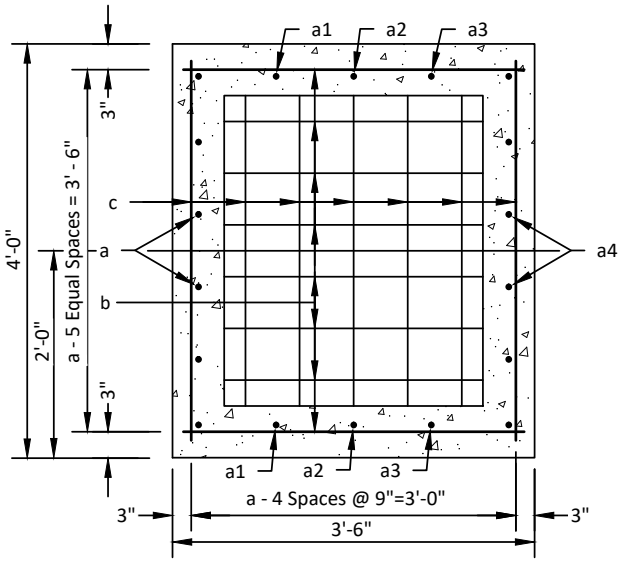
TYPE L MEDIAN DRAIN FOR 6:1 INSLOPE

DATE: 8-19-22

Sec. - Sht.
62-10b



PLAN VIEW - TYPE L FRAME AND GRATE ASSEMBLY



BOTTOM SECTION

ESTIMATED QUANTITIES			
Item	Unit	Constant Quantity	Variable Quantity
Class M6 Concrete	Cu.Yd.	0.35	0.24 H
Reinforcing Steel	Lb.	87.51	12.02 H
Type L Frame and Grate Assembly	Each	1	———

PIPE DISPLACEMENT REDUCTIONS			
	Diameter (Inches)	Wall T (Inches)	Class M6 Concrete (Cu. Yd.)
R.C.P.	15	2 1/4	0.04
	18	2 1/2	0.05
	24	3	0.09
R.C. Arch	18	2 1/2	0.05
	24	3	0.09

Specifications:

1. Design Specifications: AASHTO LRFD Bridge Design Specifications, 2012 Edition.
2. Construction Specifications: City of Rapid City Standard Specifications, Current Edition.

Notes:

1. The dimension H is in feet.
2. Design Live Load: HL-93.
3. Median drain may be precast. If precast median drain details differ from this standard plate, submit a checked design done by a SD registered P.E., prior SDDOT approval, and shop plans to the Public Works Director for approval.
4. Cut and bend reinforcing steel during construction as necessary to accommodate pipe outlet. All reinforcing steel shall conform to ASTM A615 grade 60.
5. All Concrete shall be Class M6.
6. All angles shall conform to ASTM A36. Tubes shall conform to ASTM A500 grade B.
7. All exposed edges shall be chamfered 3/4".
8. Use 1 1/2" clear cover on all reinforcing steel except as shown.
9. After welding is complete, galvanize the frame and grate assembly in accordance with AASHTO M111 (ASTM A123). For information only, the estimated weight of the frame and grate assembly is 338 pounds.
10. Type L Median Drain shall be paid for at the contract unit price per each, which shall be full compensation for furnishing all materials and labor including casting, concrete collars for pipe connections, and necessary excavation and backfill required to construct one complete drain.
11. The location and size of pipe outlet from the drain shall be as noted on plan sheets. All pipes entering the structure shall leave a minimum 3" wall on each side of the pipe penetration

N.T.S.

CITY OF RAPID CITY | PUBLIC WORKS DEPARTMENT

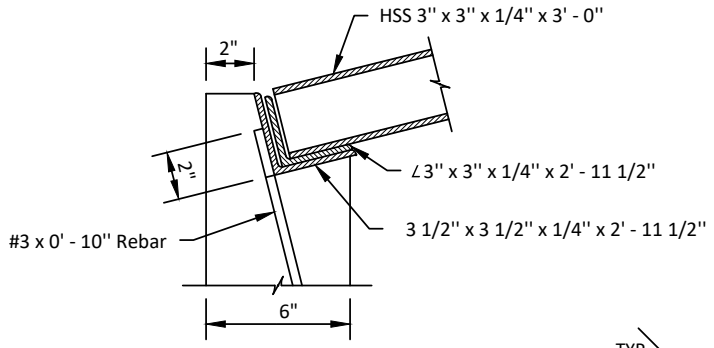
TYPE L MEDIAN DRAIN FOR 4:1 INSLOPE

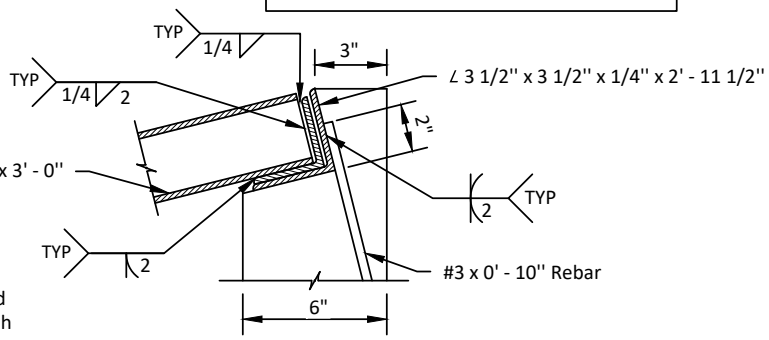
DATE: 8-19-22

Sec. - Sht.
62-11a

REINFORCING SCHEDULE (For 1 Drain)					
Mk.	No.	Size	Length	Type	
a	6	4	H + 3''	Str.	
a1	2	4	H + 5''	Str.	
a2	2	4	H + 7''	Str.	
a3	2	4	H + 9''	Str.	
a4	6	4	H + 11''	Str.	
b	18	4	3' - 3''	Str.	
c	16	4	3' - 9''	Str.	
d	2	4	1' - 0''	Str.	

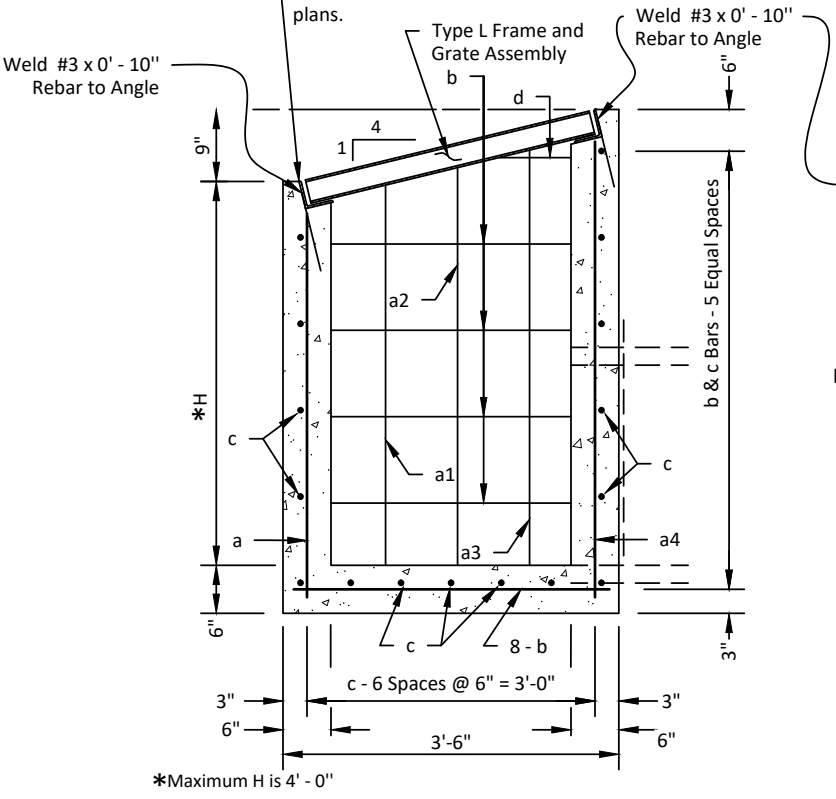
Note:
All dimensions are out to out of bars.

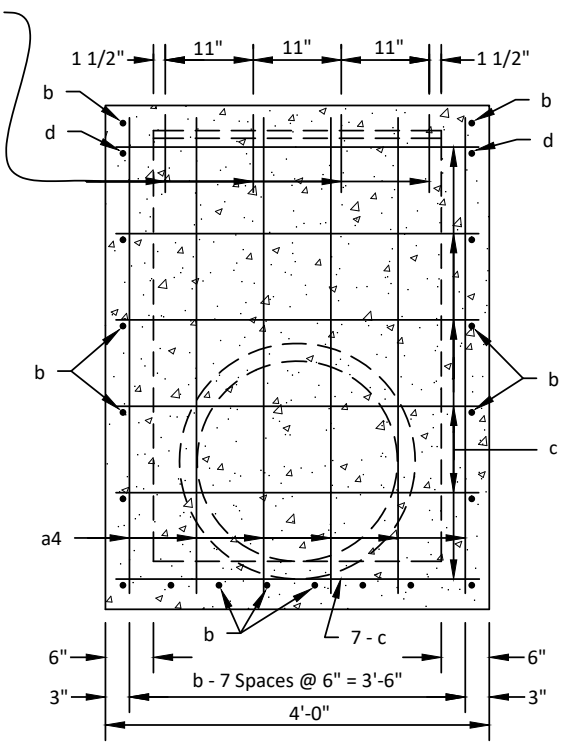




Station and Offset,
Referred to in Plans,
See Detail Sheet A

This point is intersection of inslope and ditch bottom. Elevation is equal to ditch flow line elevation at location noted on plans.





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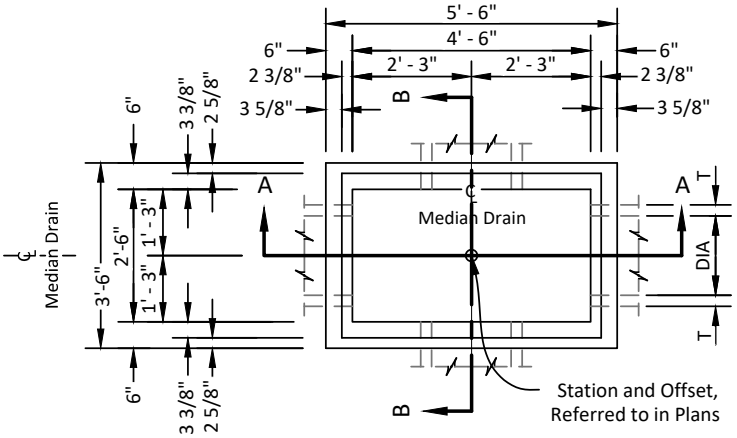
N.T.S.

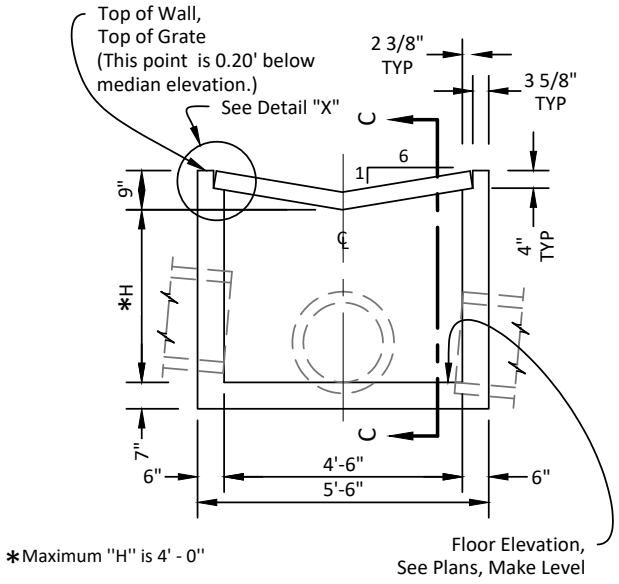
CITY OF RAPID CITY | PUBLIC WORKS DEPARTMENT

TYPE L MEDIAN DRAIN FOR 4:1 INSLOPE

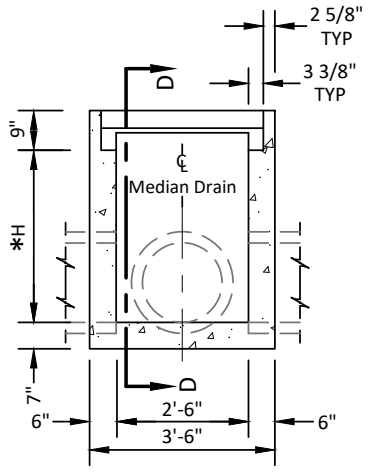
DATE: 8-19-22

Sec. - Sht.
62-11b





*Maximum ''H'' is 4' - 0''



ESTIMATED QUANTITIES			
ITEM	UNIT	CONSTANT QUANTITY	VARIABLE QUANTITY
Class M6 Concrete	Cu. Yd.	0.59	0.30H
Reinforcing Steel	Lb.	72.01	33.87H
Type M Frame and Grate Assembly	Each	1	———

Specifications:

1. Design Specifications: AASHTO LRFD Bridge Design Specifications, 2012 Edition.
2. Construction Specifications: City of Rapid City Standard Specifications, Current Edition

Notes:

1. Design Live Load: HL-93.
2. Reinforcing steel shall conform to ASTM A615 grade 60. The d bars shall be lapped 12" with the b and c bars. Cut and bend reinforcing steel as required to place pipe(s) through the drop inlet wall.
3. Median drain may be precast. If precast median drain details differ from this standard plate, submit a checked design done by a SD registered P.E., prior SDDOT approval, and shop plans to the Public Works Director for approval.
4. Median drain shown may be modified by the addition or omission of connecting pipes as noted elsewhere in the plans. All pipes entering median drain must fit between the inside face of walls and shall not enter through the corners.
5. Structural steel for angles and plates shall conform to ASTM A36. Structural steel for rectangular HSS shall conform to ASTM A500 grade B. For informational purpose, the approximate weight of the frame is 104 pounds and the approximate weight of the grate is 254 pounds.
6. Maximum R.C. pipe diameter shall not exceed 30" (18" R. C. arch pipe) on the 3'-6" wide side and shall not exceed 42" (36" for R. C. arch pipe) on the 5'- 6" wide side of the median drain.
7. The dimension of H is in feet. Maximum H is 4'.

PIPE DISPLACEMENT REDUCTIONS			
	Diameter (Inches)	Wall T (Inches)	Class M6 Concrete (Cu. Yd.)
R.C.P.	12	2	0.03
	15	2 1/4	0.04
	18	2 1/2	0.05
	24	3	0.09
	30	3 1/2	0.14
	36	4	0.20
	42	4 1/2	0.26
R.C. Arch	18	2 1/2	0.05
	24	3 1/2	0.09
	30	4	0.14
	36	4 1/2	0.19

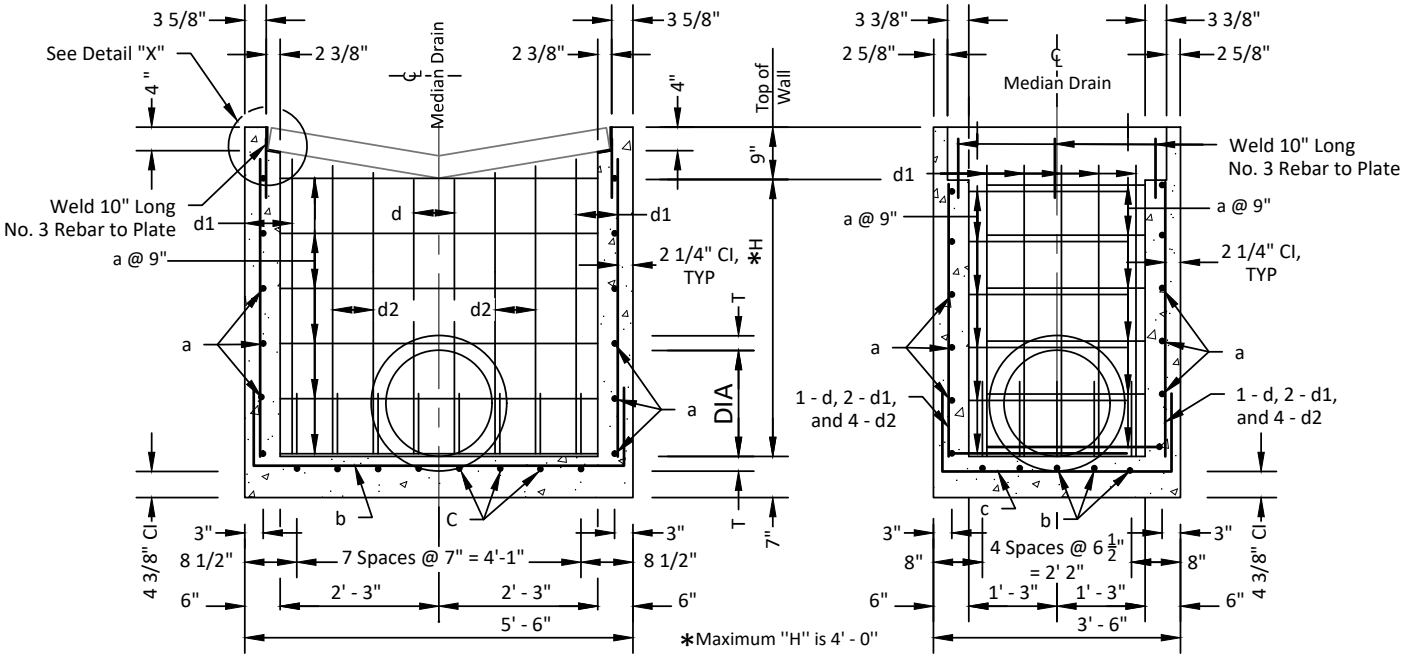
N.T.S.

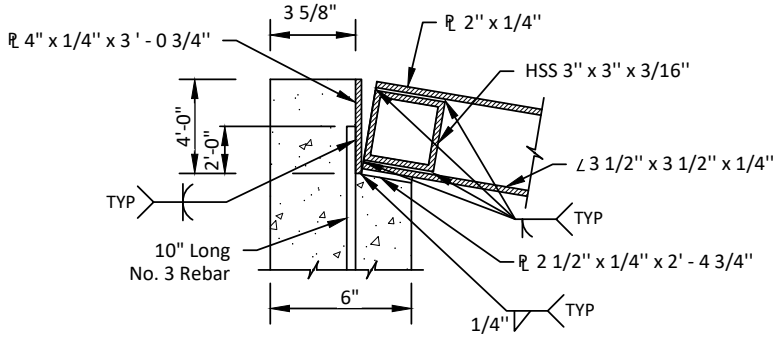
CITY OF RAPID CITY | PUBLIC WORKS DEPARTMENT

TYPE M MEDIAN DRAIN

DATE: 8-19-22

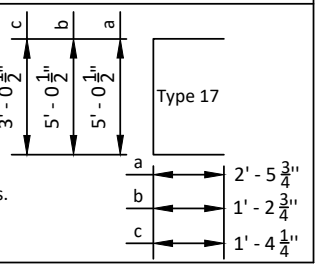
Sec. - Sht.
62-12a





REINFORCING SCHEDULE

Mk.	No.	Size	Length	Type	Bending Details
a	2.67H	4	10' - 0''	17	
b	5	5	7' - 6''	17	
c	8	4	5' - 9''	17	
d	2	4	H - 1 ½''	Str.	
d1	14	4	H + 3''	Str.	
d2	8	4	H	Str.	



Note:
All dimensions are out to out of bars.

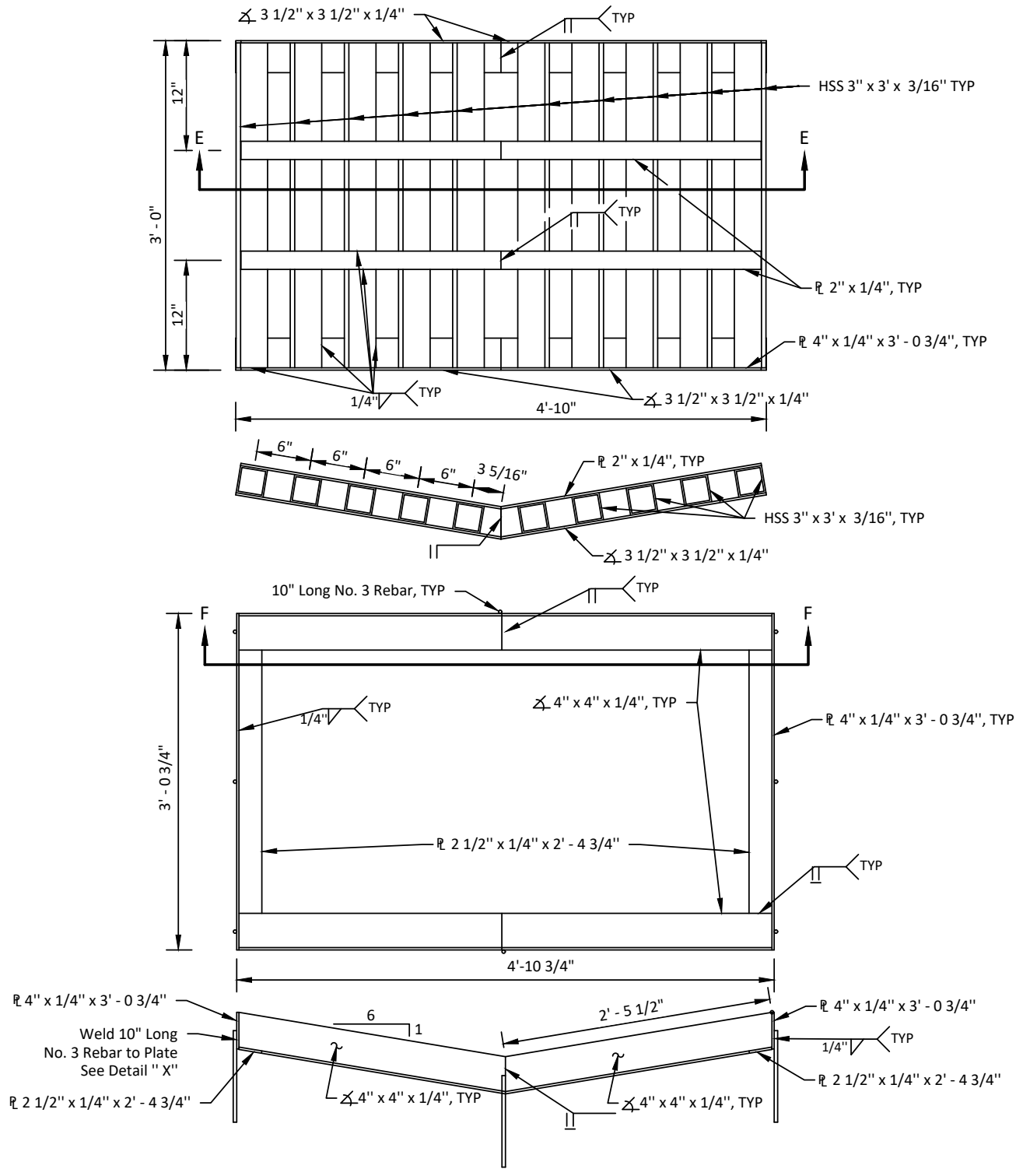
N.T.S.

CITY OF RAPID CITY | PUBLIC WORKS DEPARTMENT

TYPE M MEDIAN DRAIN

DATE: 8-19-22

Sec. - Sht.
62-12b



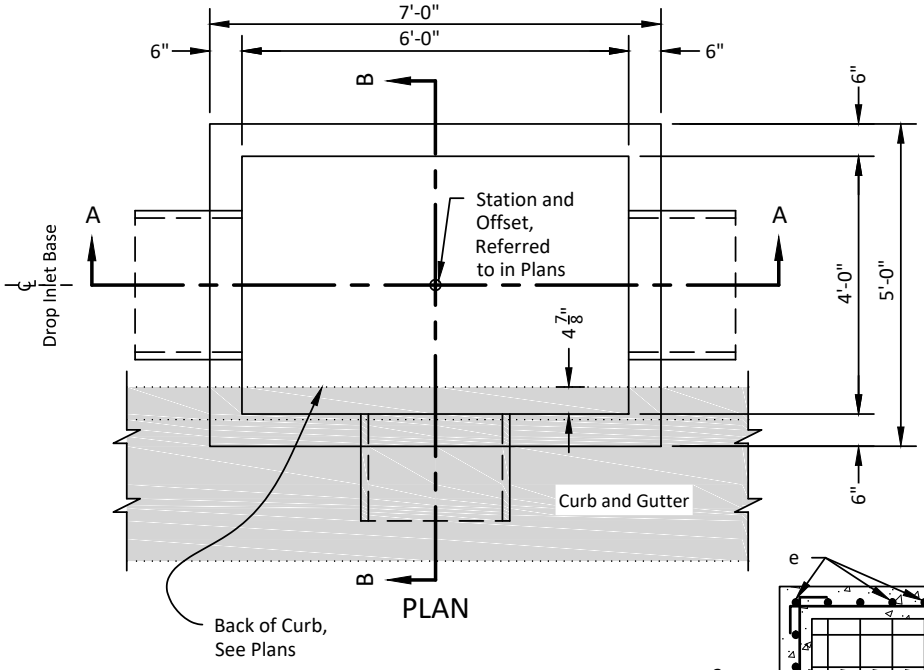
N.T.S.

CITY OF RAPID CITY | PUBLIC WORKS DEPARTMENT

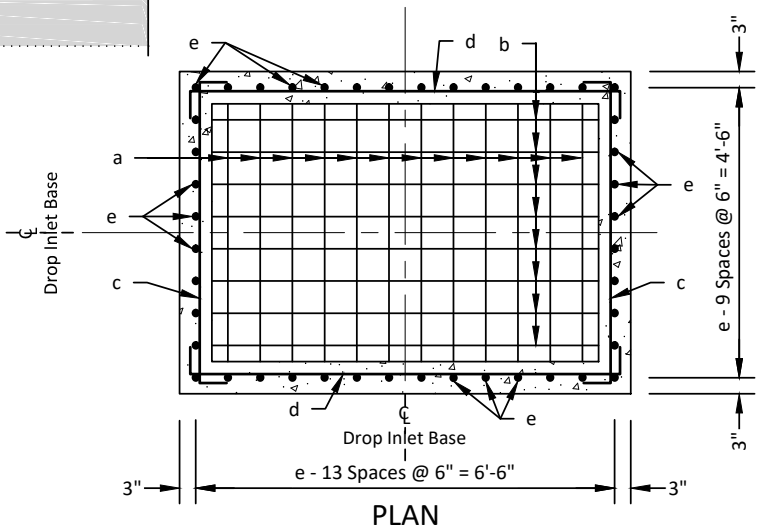
TYPE M MEDIAN DRAIN

DATE: 8-19-22

Sec. - Sht.
62-12c



PLAN



PLAN
(Bottom Steel)
(Pipe Not Shown)

Specifications:

1. Design Specifications: AASHTO LRFD Bridge Design Specifications 2012 Edition.
2. Construction Specifications: City of Rapid City Standard Specifications, Current Edition.

Notes:

1. Design Live Load: HL-93 loading. No construction loading in excess of legal load was considered.
2. Base is intended for use with a Precast Concrete Type S Drop Inlet Lid, Standard Detail 62-13c. Base may be precast. If precast base used, and details differ from that shown, the precast base shall receive prior approval by the City.
3. To qualify for alternate design approval, submit: prior SDDOT approval, checked design by a South Dakota Registered Professional Engineer, and shop plans to the City of Rapid City. Design shall be in accordance with the current edition of the AASHTO LRFD Bridge Design Specifications.
4. Inlets shown may be modified by the addition or omission of connecting pipes as shown on the layouts. Connecting pipes shall not enter the inlet through the corners.
5. Maximum R.C. pipe diameter shall not exceed 36" (30" for R.C. arch pipe) entering perpendicular on the 4' wide side and shall not exceed 54" (48" for R.C. arch pipe) entering perpendicular on the 6' wide side of the Drop Inlet. Pipes entering the structure at an angle shall leave a minimum 3" wall on each side of the pipe penetration on the 4' wide side, and shall leave a minimum 4 1/2" wall on each side of the pipe penetration on the 6' wide side.
6. Reinforcing steel shall conform to ASTM A615 grade 60. Cut and bend reinforcing steel as required to place pipe(s) through the inlet wall.
7. Use 1" clear cover on all reinforcing steel unless otherwise noted.
8. The dimension of H is in feet. Maximum H is 8'.
9. All costs associated with furnishing and installing the precast concrete Type S drop inlet lid and base including the Type S manhole frame and lid, shims, inserts, dowels and concrete collars for pipe connections shall be included in the contract unit price per each for "4' x 6' Concrete Type S Drop Inlet".

N.T.S.

CITY OF RAPID CITY | PUBLIC WORKS DEPARTMENT

4' X 6' TYPE S DROP INLET BASE

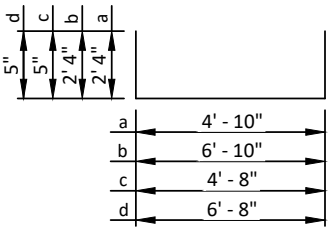
DATE: 8-19-22

Sec. - Sht.
62-13a

PIPE DISPLACEMENT REDUCTIONS			
	Diameter (Inches)	Wall T (Inches)	Class M6 Concrete (Cu. Yd.)
R.C.P.	12	2	0.03
	15	2 1/4	0.04
	18	2 1/2	0.05
	24	3	0.09
	30	3 1/2	0.14
	36	4	0.20
	42	4 1/2	0.26
	48	5	0.34
	54	5 1/2	0.43
R.C. Arch	18	2 1/2	0.05
	24	3 1/2	0.09
	30	4	0.14
	36	4 1/2	0.19
	42	4 1/2	0.24
	48	5	0.32

REINFORCING SCHEDULE

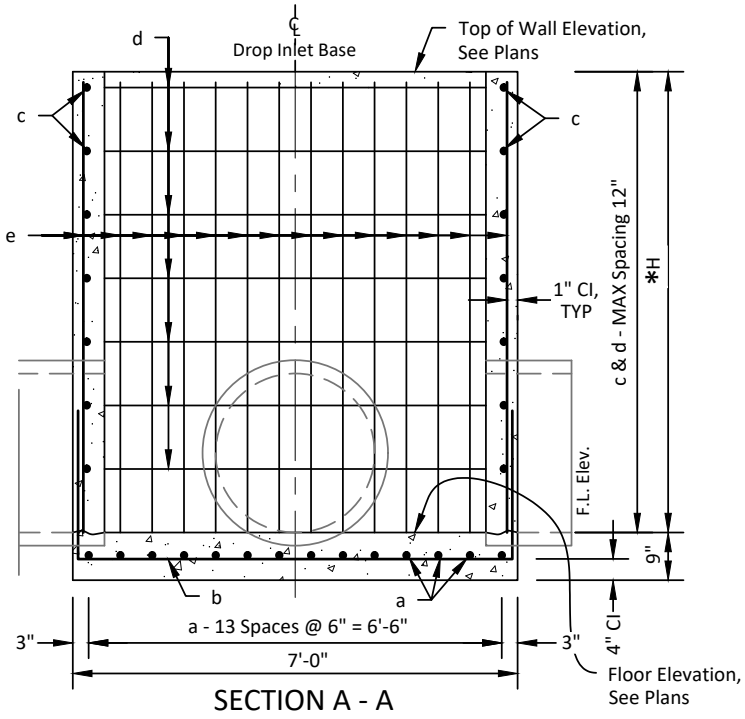
Mk.	No.	Size	Length	Type	Bending Details
a	14	5	9' - 6''	17	
b	10	5	11' - 6''	17	
c	2H	4	5' - 6''	17	
d	2H	4	7' - 6''	17	
e	44	4	H - 2''	Str.	



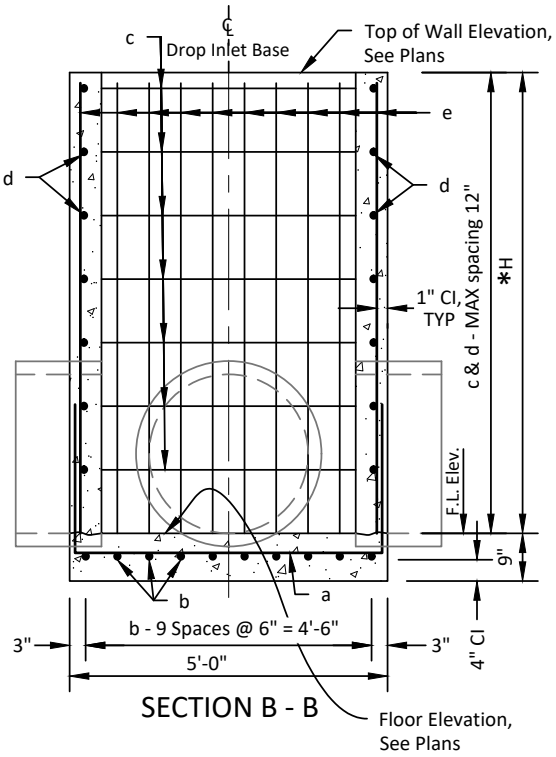
Type 17

Note:
All dimensions are out to out of bars.

ESTIMATED QUANTITIES			
Item	Unit	Constant Quantity	Variable Quantity
∗Class M6 Concrete	Cu.Yd.	0.97	0.41H
Reinforcing Steel	Lb.	253.77	46.76H



SECTION A - A



SECTION B - B

∗Maximum H is 8' - 0''

N.T.S.

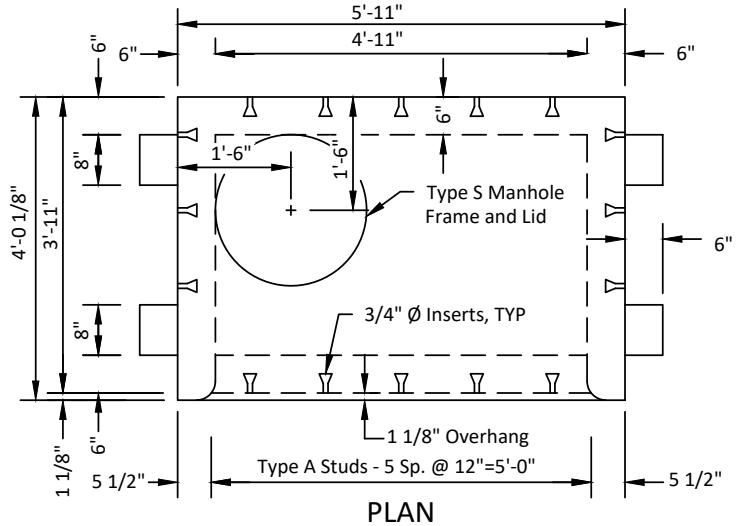
CITY OF RAPID CITY

PUBLIC WORKS DEPARTMENT

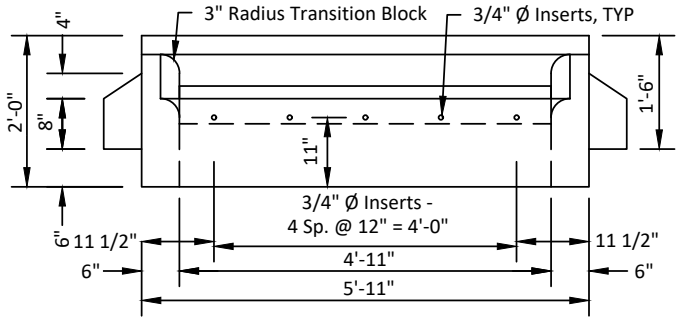
4' X 6' TYPE S DROP INLET BASE

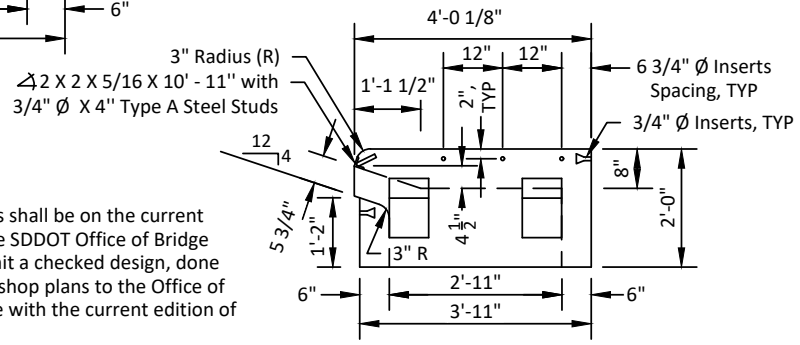
DATE: 8-19-22

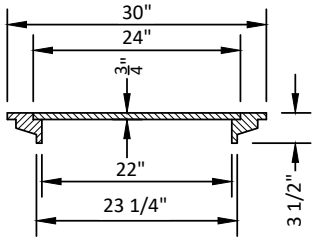
Sec. - Sht.
62-13b



PLAN







Notes:

1. The Precast Concrete Type S Drop Inlet Lid and the shims shall be on the current approved list available through proper channels from the SDDOT Office of Bridge Design. To qualify for addition to the approved list, submit a checked design, done by South Dakota Registered Professional Engineers, and shop plans to the Office of Bridge Design for approval. Design shall be in accordance with the current edition of the AASHTO LRFD Bridge Design Specifications.
2. Design Live Load shall be HL - 93.
3. Concrete mix shall be as per fabricators design, however, minimum compressive strength shall not be less than 4500 psi. Type II Cement is required.
4. The Type S Manhole Frame and Lid shall conform to AASHTO M105, Class 30.
5. Structural Steel shall conform to ASTM A36. The 3/4" diameter Headed Type A Steel Studs shall conform to Section 7 of the current edition of AWS DI. I Structural Steel Welding Code.
6. The 3/4" diameter Concrete Inserts shall be galvanized or made of a corrosion resistant material. Provide 3/4" diameter x 1' - 6'' long dowels conforming to ASTM A615, grade 60 threaded to fit Inserts with each lid.
7. All costs associated with furnishing and installing the Precast Concrete Type S Drop Inlet lid and base including the Type S manhole frame, shims, inserts, and dowels shall be included in the contract unit price per each for "4' x 6' Concrete Type S Drop Inlet".

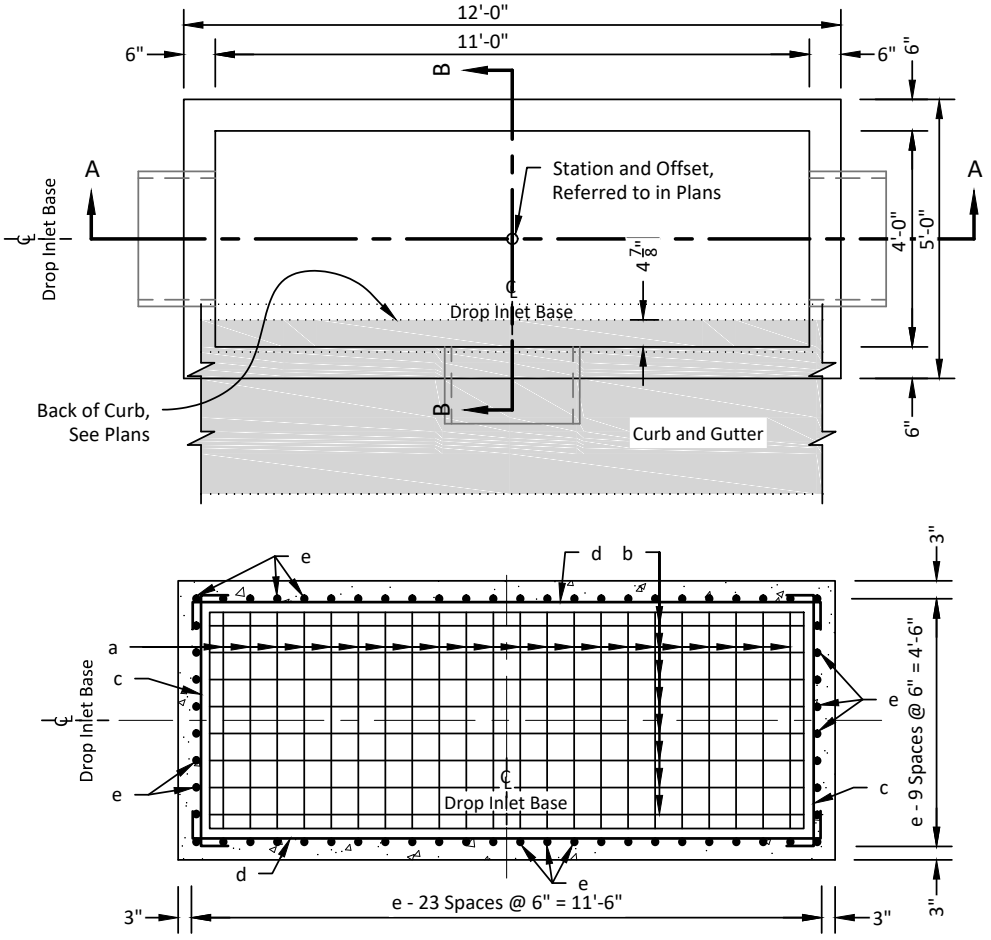
N.T.S.

CITY OF RAPID CITY | PUBLIC WORKS DEPARTMENT

4' X 6' PRECAST CONCRETE TYPE S DROP INLET LID

DATE: 8-19-22

Sec. - Sht.
62-13c



Specifications:

1. Design Specifications: AASHTO LRFD Bridge Design Specifications 2012 Edition.
2. Construction Specifications: City of Rapid City Standard Specifications, Current Edition.

Notes:

1. Design Live Load: HL-93 loading. No construction loading in excess of legal load was considered.
2. Base is intended for use with a Precast Concrete Type S Drop Inlet Lid, Standard Detail 62-14c. Base may be precast. If precast base used, and details differ from that shown, the precast base shall receive prior approval by the City.
3. To qualify for alternate design approval, submit: prior SDDOT approval, checked design by a South Dakota Registered Professional Engineer, and shop plans to the City of Rapid City. Design shall be in accordance with the current edition of the AASHTO LRFD Bridge Design Specifications.
4. Inlets shown may be modified by the addition or omission of connecting pipes as shown on the layouts. Connecting pipes shall not enter the inlet through the corners.
5. Maximum R.C. pipe diameter shall not exceed 36" (30" for R.C. arch pipe) entering perpendicular on the 4' wide side. Pipes entering the structure at an angle shall leave a minimum 3" wall on each side of the pipe penetration on the 4' wide side, and shall leave a minimum 4 1/2" wall on each side of the pipe penetration on the 6' wide side.
6. Reinforcing steel shall conform to ASTM A615 grade 60. Cut and bend reinforcing steel as required to place pipe(s) through the inlet wall.
7. Use 1" clear cover on all reinforcing steel unless otherwise noted.
8. The dimension of H is in feet. Maximum H is 8'.
9. All costs associated with furnishing and installing the precast concrete Type S drop inlet lid and base including the type S manhole frame and lid, shims, inserts, dowels and concrete collars for pipe connections shall be included in the contract unit price per each for "4' x 11' Concrete Type S Drop Inlet".

N.T.S.

CITY OF RAPID CITY | PUBLIC WORKS DEPARTMENT

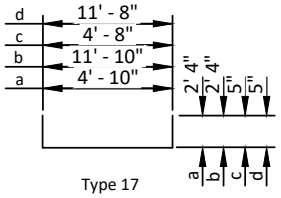
4' X 11' TYPE S DROP INLET BASE

DATE: 8-19-22

Sec. - Sht.
62-14a

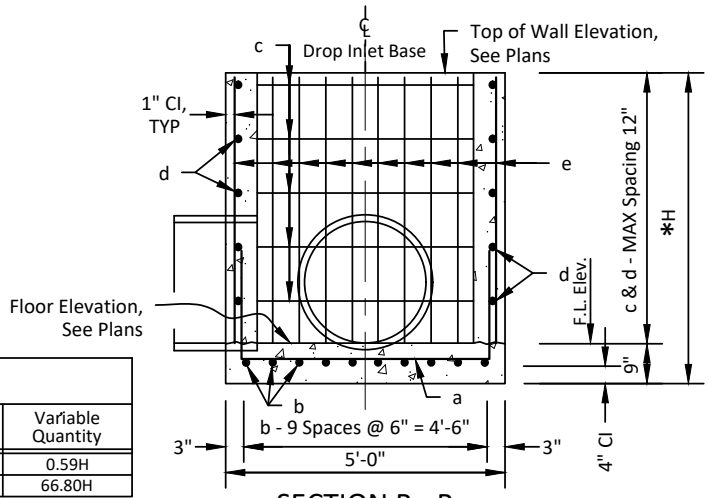
PIPE DISPLACEMENT REDUCTIONS			
	Diameter (Inches)	Wall T (Inches)	Class M6 Concrete (Cu. Yd.)
R.C.P.	12	2	0.03
	15	2 1/4	0.04
	18	2 1/2	0.05
	24	3	0.09
	30	3 1/2	0.14
	36	4	0.20
	42	4 1/2	0.26
	48	5	0.34
	54	5 1/2	0.43
	60	6	0.52
R.C. Arch	18	2 1/2	0.05
	24	3 1/2	0.09
	30	4	0.14
	36	4 1/2	0.19
	42	4 1/2	0.24
	48	5	0.32
	54	5 1/2	0.39
	60	6	0.49
	72	7	0.70
	84	8	0.93

REINFORCING SCHEDULE					
Mk.	No.	Size	Length	Type	Bending Details
a	24	5	9' - 6''	17	
b	10	5	16' - 6''	17	
c	2H	4	5' - 6''	17	
d	2H	4	12' - 6''	17	
e	64	4	H - 2''	Str.	



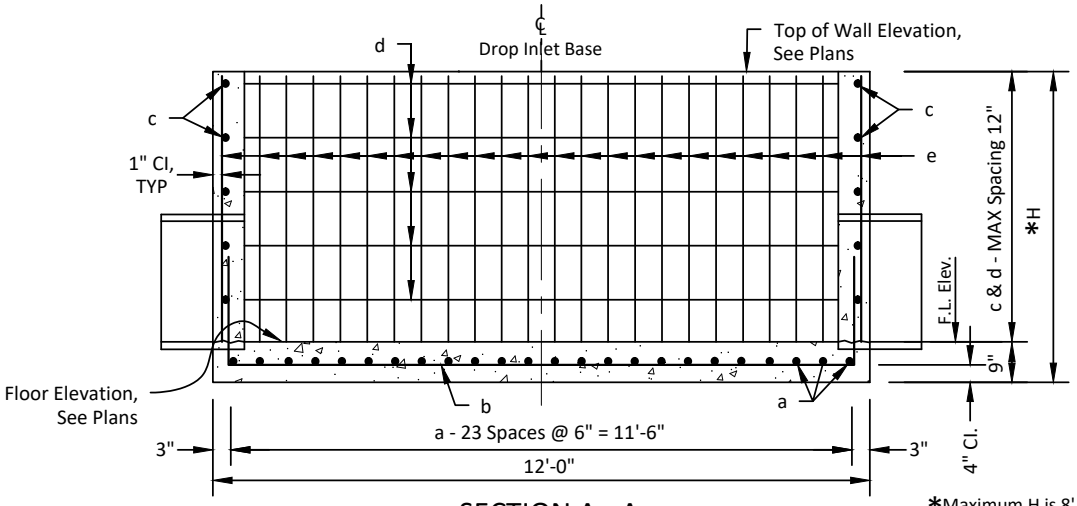
Type 17

Note:
All dimensions are out to out of bars.



SECTION B - B

ESTIMATED QUANTITIES			
Item	Unit	Constant Quantity	Variable Quantity
* Class M6 Concrete	Cu. Yd.	1.67	0.59H
Reinforcing Steel	Lb.	402.77	66.80H



SECTION A - A

*Maximum H is 8' - 0''

N.T.S.

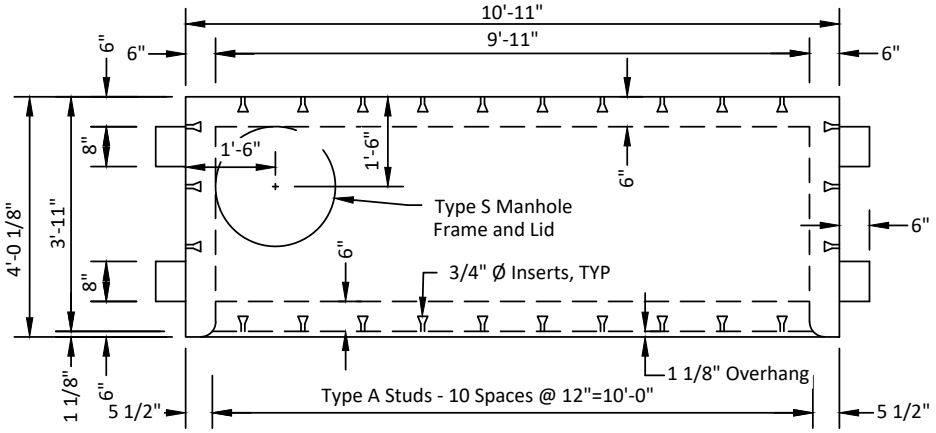
CITY OF RAPID CITY

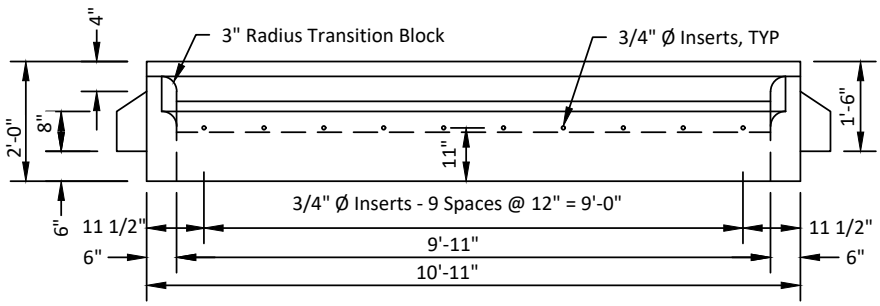
PUBLIC WORKS DEPARTMENT

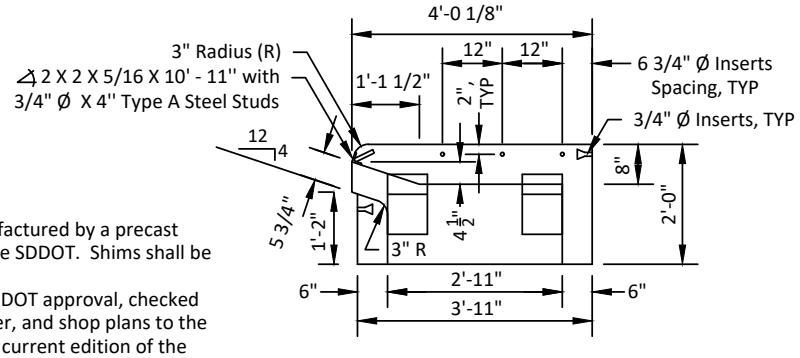
4' X 11' TYPE S DROP INLET BASE

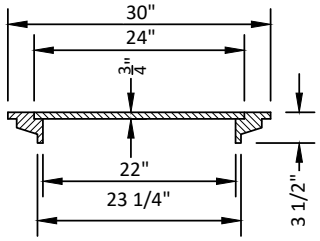
DATE: 8-19-22

Sec. - Sht.
62-14b









Notes:

1. The Precast Concrete Type S Drop Inlet Lid shall be manufactured by a precast facility that is approved to supply precast structures to the SDDOT. Shims shall be on the SDDOT approved products list.
2. To qualify for alternate design approval, submit: prior SDDOT approval, checked design by a South Dakota Registered Professional Engineer, and shop plans to the City of Rapid City. Design shall be in accordance with the current edition of the AASHTO LRFD Bridge Design Specifications.
3. Design Live Load shall be HL - 93.
4. Concrete mix shall be as per fabricators design, however, minimum compressive strength shall not be less than 4500 psi. Type II Cement is required.
5. The Type S Manhole Frame and Lid shall conform to AASHTO M105, Class 30.
6. Structural Steel shall conform to ASTM A36. The 3/4" diameter Headed Type A Steel Studs shall conform to Section 7 of the current edition of AWS D1.1 Structural Steel Welding Code.
7. The 3/4" diameter Concrete Inserts shall be galvanized or made of a corrosion resistant material. Provide 3/4" diameter x 1' - 6" long dowels conforming to ASTM A615, grade 60 threaded to fit Inserts with each lid.
9. All costs associated with furnishing and installing the precast concrete Type S drop inlet lid and base including the Type S manhole frame, shims, inserts, dowels and concrete collars for pipe connections shall be included in the contract unit price per each for "4' x 11' Concrete Type S Drop Inlet".

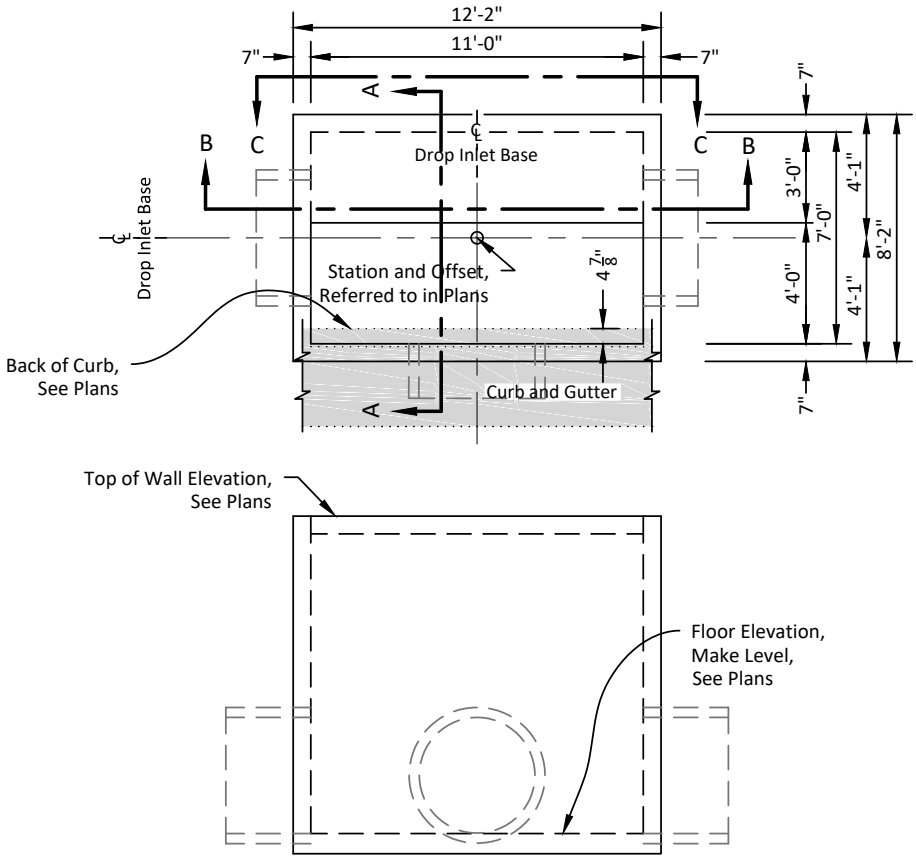
N.T.S.

CITY OF RAPID CITY | PUBLIC WORKS DEPARTMENT

4' X 11' PRECAST CONCRETE TYPE S DROP INLET LID

DATE: 8-19-22

Sec. - Sht.
62-14c



Specifications:

1. Design Specifications: AASHTO LRFD Bridge Design Specifications, 2012 Edition.
2. Construction Specifications: City of Rapid City Standard Specifications, Current Edition.

Notes:

1. Design Live Load: HL-93 loading. No construction loading in excess of legal load was considered.
2. Base is intended for use with a Precast Concrete Type S Drop Inlet Lid, Standard Detail 62-14c. Base may be precast. If precast base used, and details differ from that shown, the precast base shall receive prior approval by the City.
3. To qualify for alternate design approval, submit: prior SDDOT approval, checked design by a South Dakota Registered Professional Engineer, and shop plans to the City of Rapid City. Design shall be in accordance with the current edition of the AASHTO LRFD Bridge Design Specifications.
4. Inlets shown may be modified by the addition or omission of connecting pipes as shown on the layouts. Connecting pipes shall not enter the inlet through the corners.
5. Maximum R.C. pipe diameter shall not exceed 66" (54" for R.C. arch pipe) on the 7' wide side of the Drop Inlet. Pipes entering the structure at an angle shall leave a minimum 3" wall on each side of the pipe penetration on the 7' wide side, and shall leave a minimum $4\frac{1}{2}$" wall on each side of the pipe penetration on the 11' wide side.
6. Reinforcing steel shall conform to ASTM A615 grade 60. Cut and bend reinforcing steel as required to place pipe(s) through the inlet wall.
7. Use 1" clear cover on all reinforcing steel unless otherwise noted.
8. The dimension of H is in feet. Maximum H is 10'.
9. All costs associated with furnishing and installing the precast concrete Type S drop inlet lid and base including the type S manhole frame and lid, shims, inserts, dowels and concrete collars for pipe connections shall be included in the contract unit price per each for "7' x 11' Concrete Type S Drop Inlet".

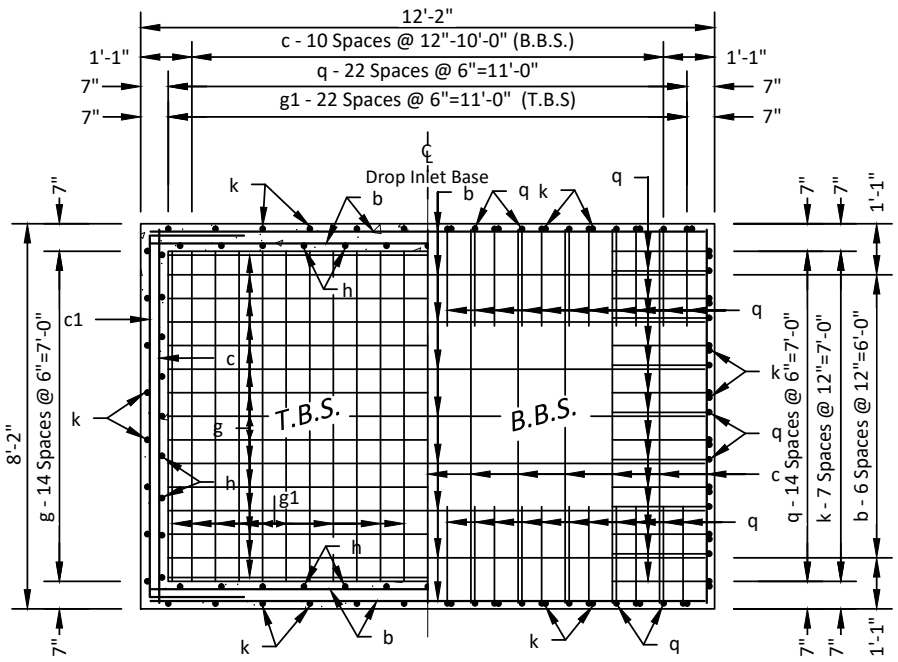
N.T.S.

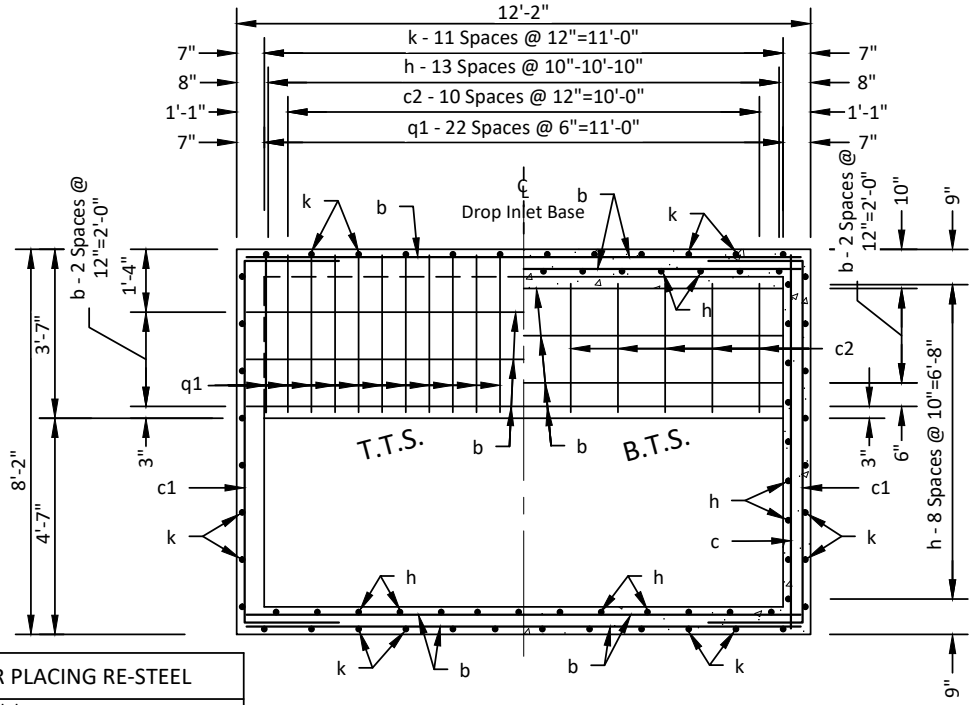
CITY OF RAPID CITY | PUBLIC WORKS DEPARTMENT

7' X 11' TYPE S DROP INLET BASE

DATE: 8-19-22

Sec. - Sht.
62-15a





LEGEND FOR PLACING RE-STEEL
T.T.S. - Top of Top Slab
B.T.S. - Bottom of Top Slab
T.B.S. - Top of Bottom Slab
B.B.S. - Bottom of Bottom Slab

N.T.S.

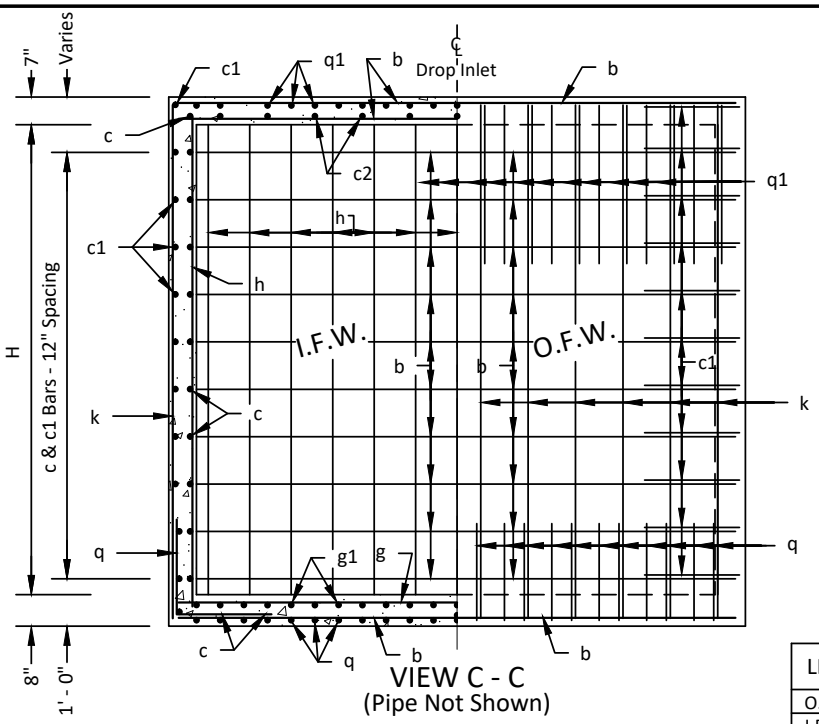
CITY OF RAPID CITY

PUBLIC WORKS DEPARTMENT

7' X 11' TYPE S DROP INLET BASE

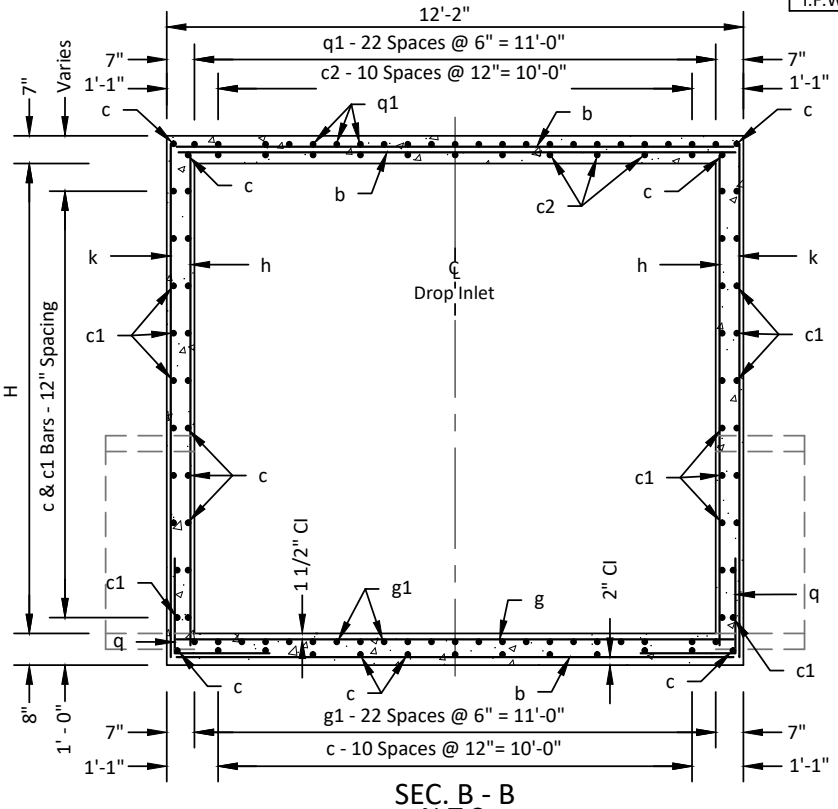
DATE: 8-19-22

Sec. - Sht.
62-15b



VIEW C - C
(Pipe Not Shown)

LEGEND FOR PLACING RE-STEEL
O.F.W. - Outside Face of Wall
I.F.W. - Inside Face of Wall



SEC. B - B
N.T.S.

*Maximum H is 10' - 0"

CITY OF RAPID CITY

PUBLIC WORKS DEPARTMENT

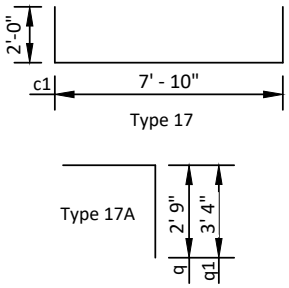
7' X 11' TYPE S DROP INLET BASE

DATE: 8-19-22

Sec. - Sht.
62-15c

REINFORCING SCHEDULE

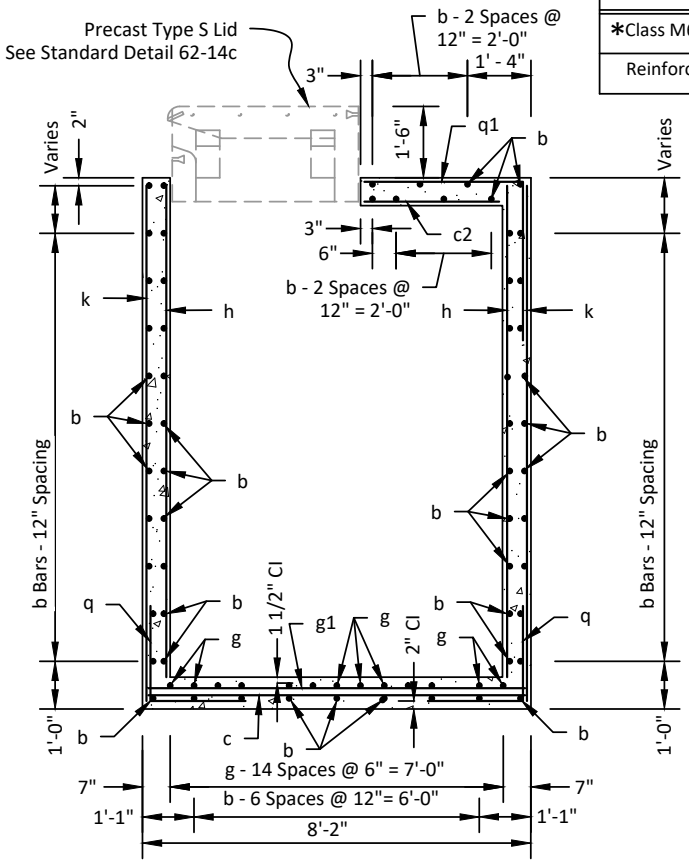
Mk.	No.	Size	Length	Type	Bending Details
b	19 + 4H	4	11' - 9''	Str.	
c	15 + 2H	4	7' - 9''	Str.	
c1	2 + 2H	4	11' - 10''	17	
c2	11	4	2' - 10''	Str.	
g	15	5	11' - 9''	Str.	
g1	23	5	7' - 9''	Str.	
h	46	5	H + 5''	Str.	
k	40	5	H + 5''	Str.	
q	76	5	5' - 6''	17A	
q1	23	5	6' - 8''	17A	



Note:
All dimensions are out to out of bars

ESTIMATED QUANTITIES

Item	Unit	Constant Quantity	Variable Quantity
*Class M6 Concrete	Cu.Yd.	3.65	0.83H
Reinforcing Steel	Lb.	1266	147.26H



PIPE DISPLACEMENT REDUCTIONS

	Diameter (Inches)	Wall T (Inches)	Class M6 Concrete (Cu. Yd.)
R.C.P.	12	2	0.03
	15	2 1/4	0.04
	18	2 1/2	0.06
	24	3	0.11
	30	3 1/2	0.16
	36	4	0.23
	42	4 1/2	0.31
	48	5	0.40
	54	5 1/2	0.50
	60	6	0.61
R.C. Arch	18	2 1/2	0.06
	24	3 1/2	0.11
	30	4	0.16
	36	4 1/2	0.22
	42	4 1/2	0.29
	48	5	0.37
	54	5 1/2	0.46
	60	6	0.57
	72	7	0.82
	84	8	1.09

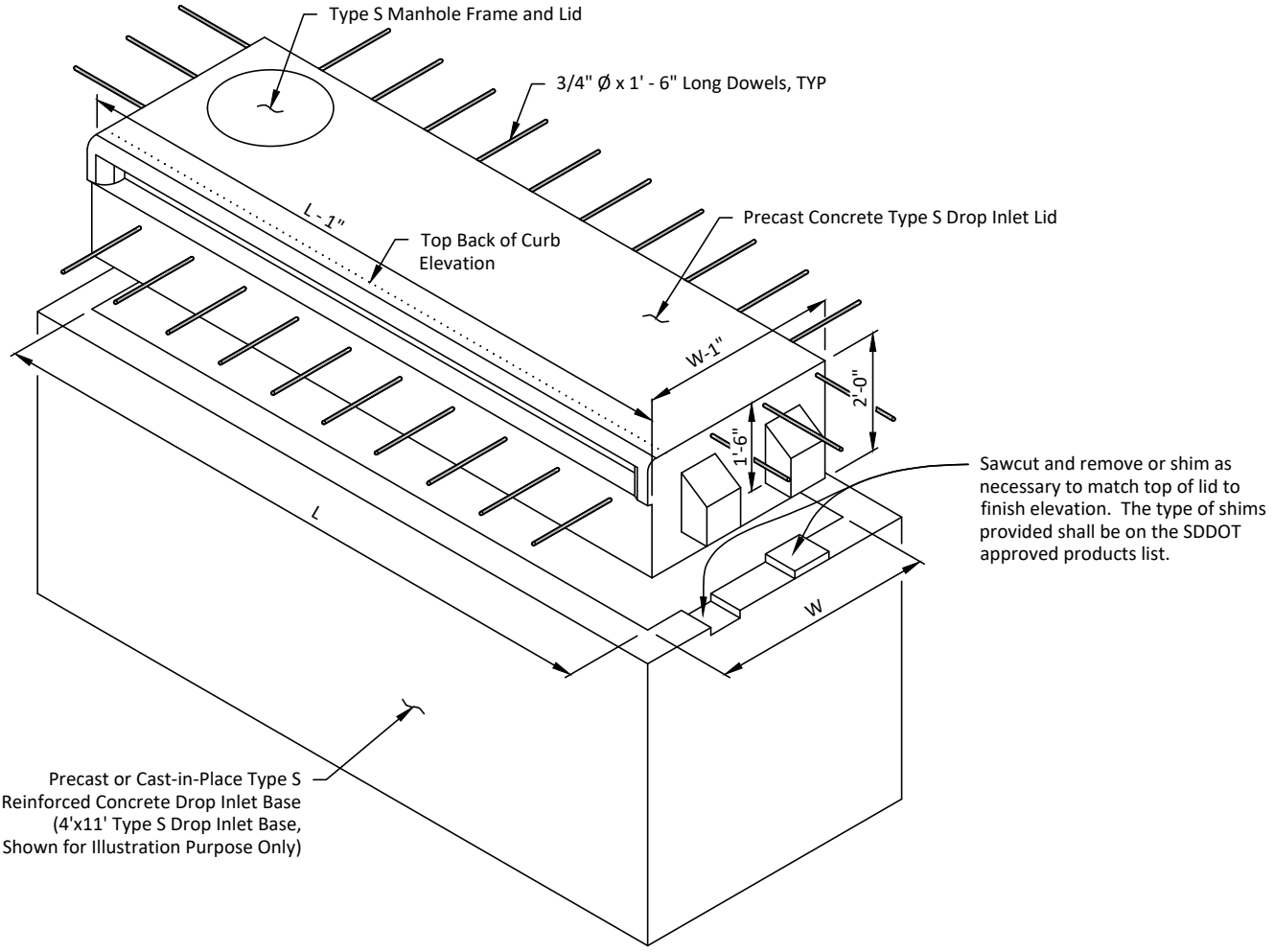
N.T.S.

CITY OF RAPID CITY | PUBLIC WORKS DEPARTMENT

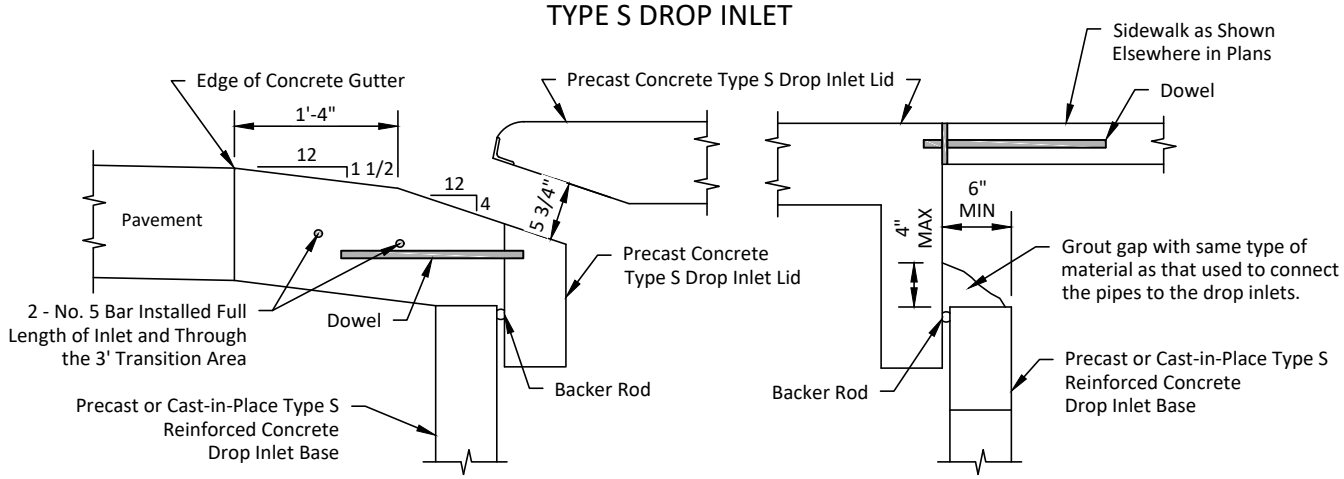
7' X 11' TYPE S DROP INLET BASE

DATE: 8-19-22

Sec. - Sht.
62-15d



TYPE S DROP INLET



CONCRETE GUTTER DETAIL

N.T.S.

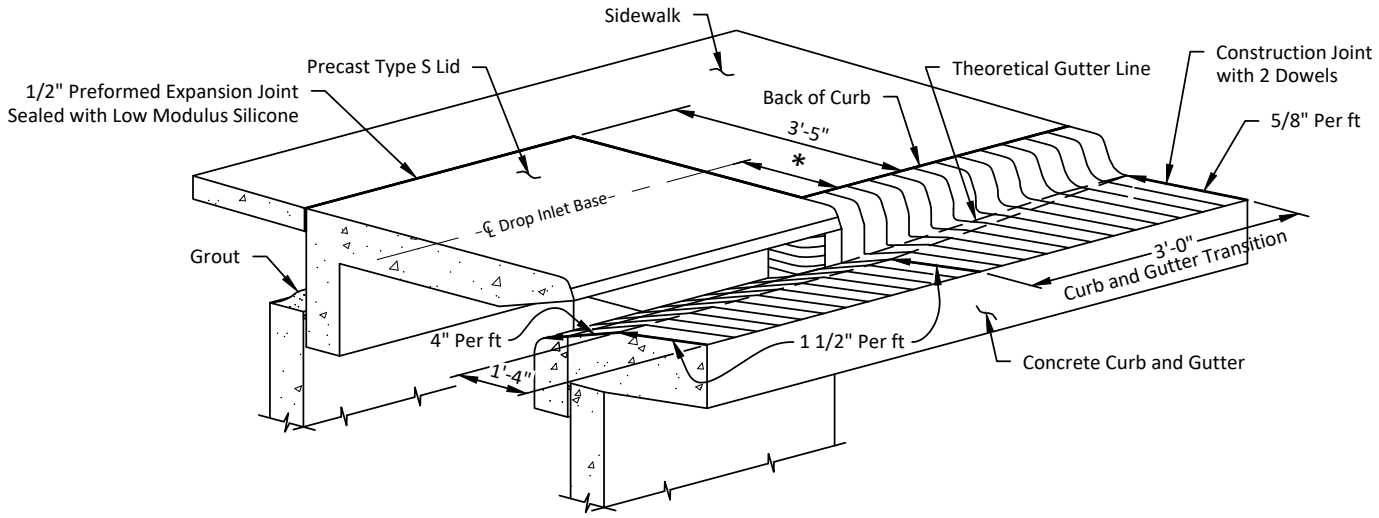
GROUTING DETAIL
(Sides and Back, Adjacent to Sidewalk)

CITY OF RAPID CITY | PUBLIC WORKS DEPARTMENT

INSTALLATION DETAILS FOR PRECAST CONCRETE TYPE S DROP INLET LID

DATE: 8-19-22

Sec. - Sht.
62-16a



Drop Inlet Base Unit Size	*Distance
4' x 6'	1' - 5 1/2''
4' x 11'	1' - 5 1/2''
7' x 11'	2' - 11 1/2''

Notes:

1. Dowels shall be used to anchor the precast concrete Type S drop inlet lid to the concrete gutter. See Standard Detail 62-16a or 60-7b as applicable.
2. If there is sidewalk adjacent, dowels shall be used to anchor the precast concrete Type S drop inlet lid to the sidewalk. If there is sidewalk adjacent to the drop inlet, the precast lid shall match the finish elevations and cross slopes of the sidewalk.
3. The sidewalk shall be steel reinforced when the sidewalk adjoins the precast lid. Refer to Standard Detail 61-6a and 61-6b for reinforced concrete sidewalk details.

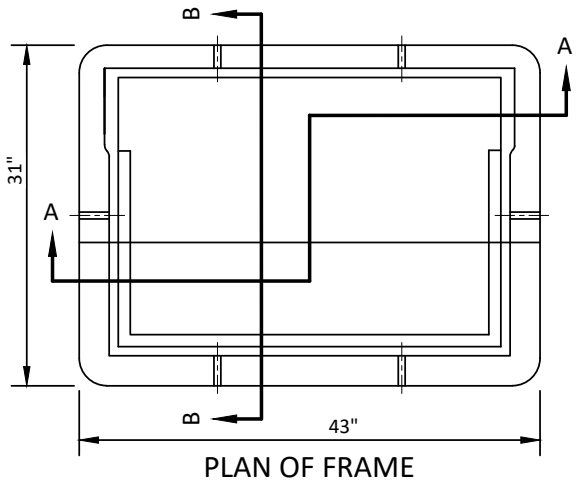
N.T.S.

CITY OF RAPID CITY | PUBLIC WORKS DEPARTMENT

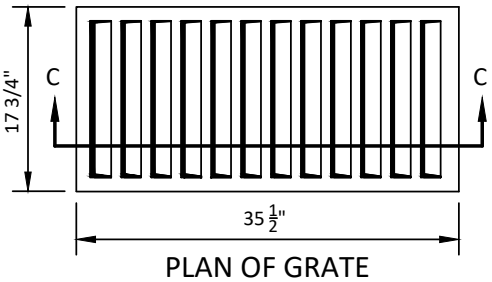
INSTALLATION DETAILS FOR PRECAST CONCRETE TYPE S DROP INLET LID

DATE: 8-19-22

Sec. - Sht.
62-16b

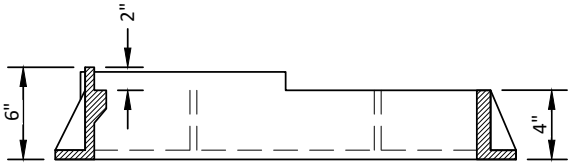


PLAN OF FRAME

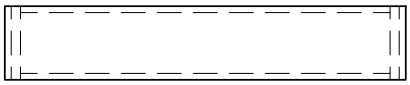


PLAN OF GRATE

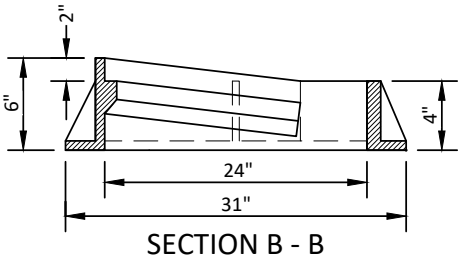
SECTION C - C



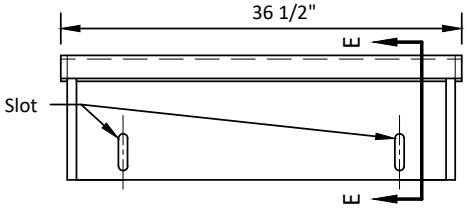
SECTION A -A



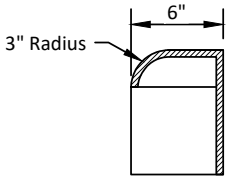
TOP VIEW OF CURB BOX



SECTION B - B



ELEVATION OF CURB BOX



SECTION E - E

Note:
Total weight of the assembly shall be 490 Lbs. minimum and the curb box shall be adjustable 6" to 9".

N.T.S.

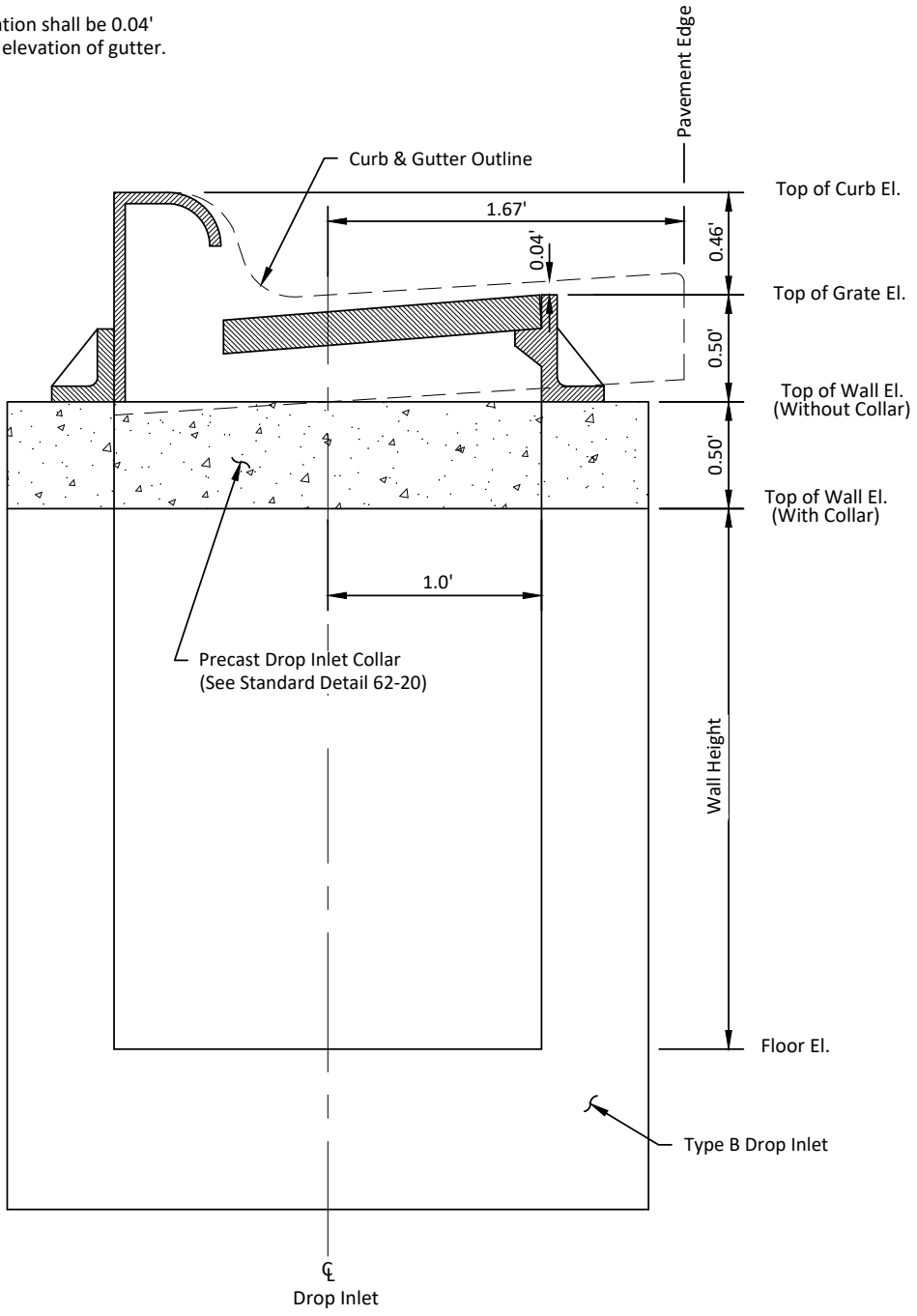
CITY OF RAPID CITY | PUBLIC WORKS DEPARTMENT

TYPE B FRAME AND GRATE ASSEMBLY

DATE: 8-19-22

Sec. - Sht.
62-17a

Note:
Top of grate elevation shall be 0.04'
below theoretical elevation of gutter.



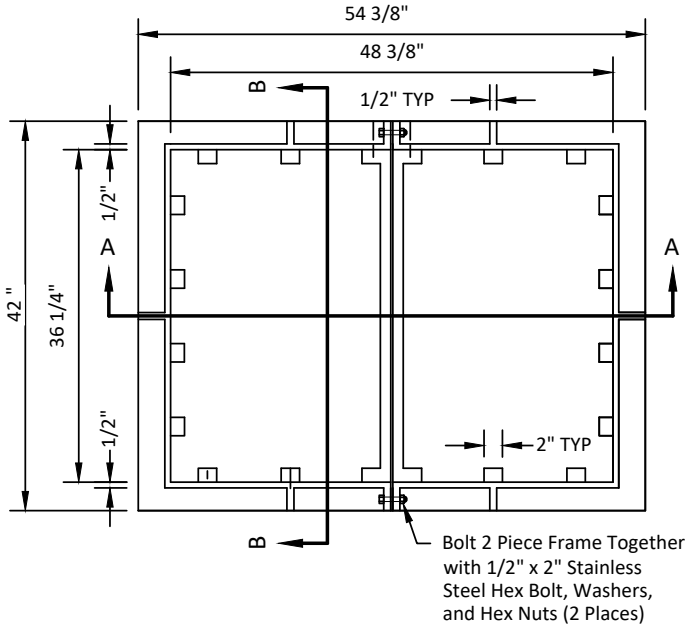
N.T.S.

CITY OF RAPID CITY | PUBLIC WORKS DEPARTMENT

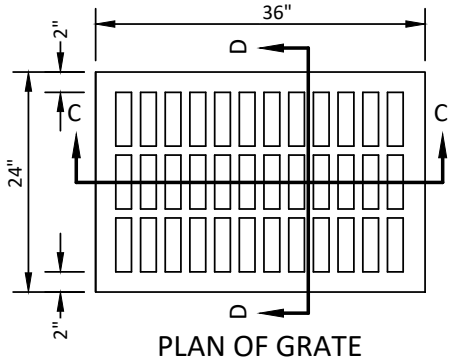
INSTALLATION OF TYPE B DROP INLET

DATE: 8-19-22

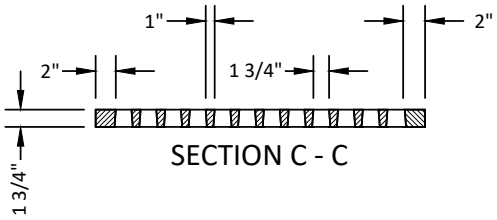
Sec. - Sht.
62-17b



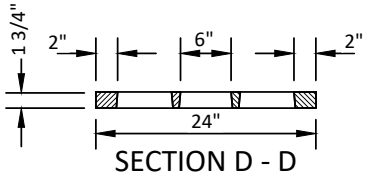
PLAN OF FRAME



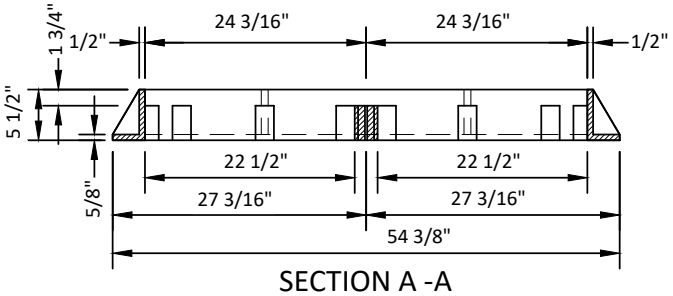
PLAN OF GRATE



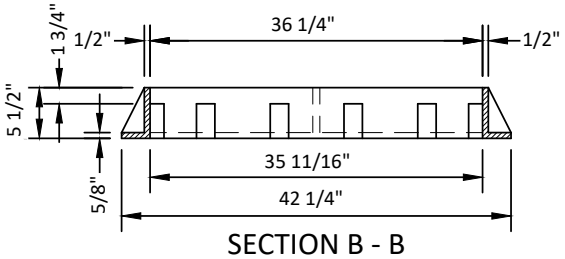
SECTION C - C



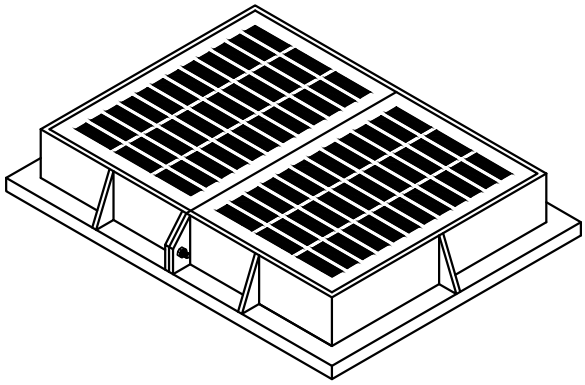
SECTION D - D



SECTION A -A



SECTION B - B



ASSEMBLED VIEW

Note:
The total weight of the frame and grate shall be 850 pounds minimum.

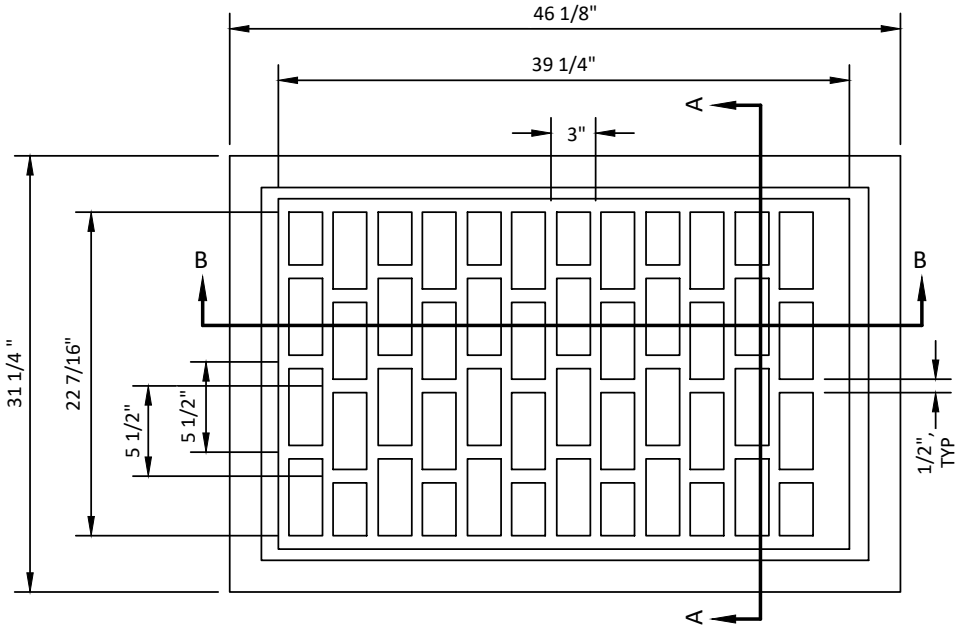
N.T.S.

CITY OF RAPID CITY | PUBLIC WORKS DEPARTMENT

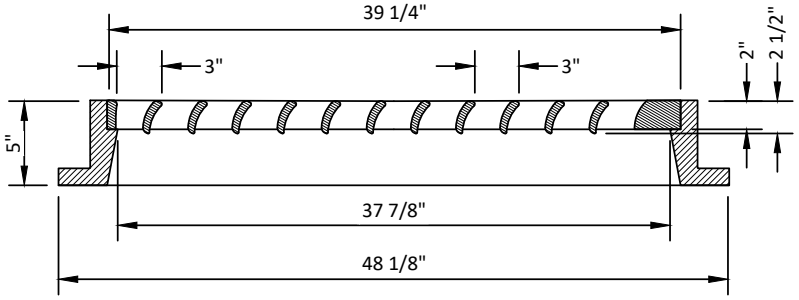
TYPE C FRAME AND GRATE

DATE: 8-19-22

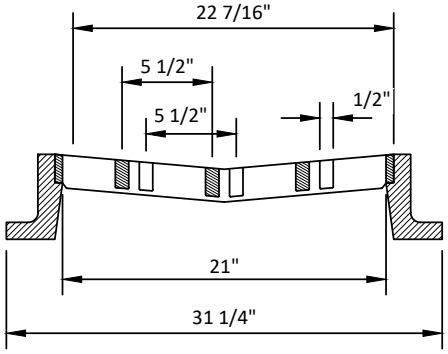
Sec. - Sht.
62-18



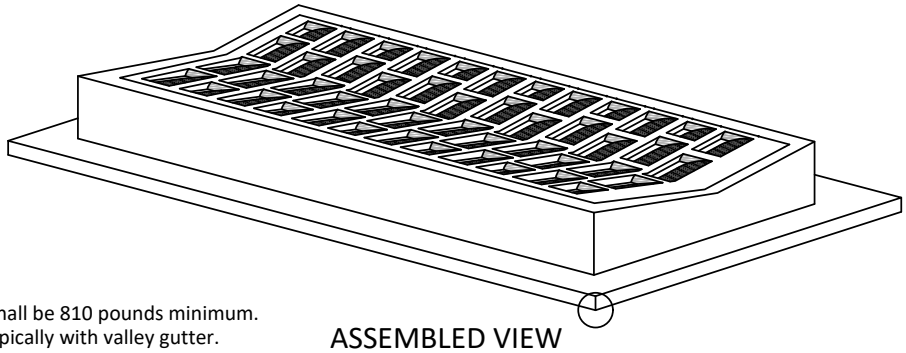
PLAN VIEW



SECTION B - B



SECTION A - A



ASSEMBLED VIEW

Notes:
The total weight of frame and grate shall be 810 pounds minimum.
The Type E frame and grate is used typically with valley gutter.

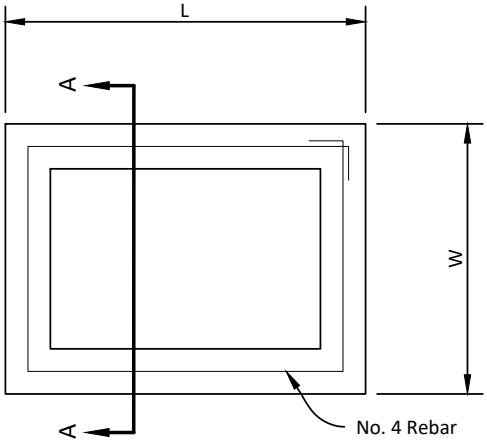
N.T.S.

CITY OF RAPID CITY | PUBLIC WORKS DEPARTMENT

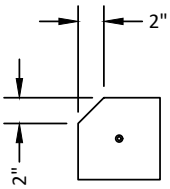
TYPE E FRAME AND GRATE

DATE: 8-19-22

Sec. - Sht.
62-19

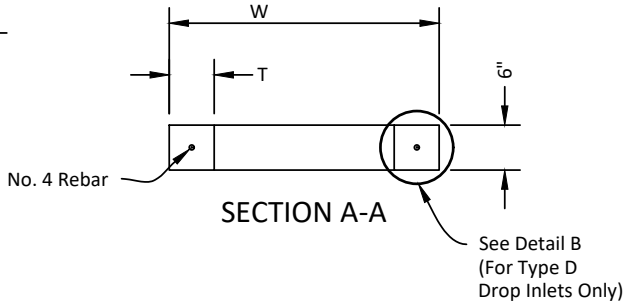


PLAN VIEW



For Type D Drop Inlets Only:
Use precast drop inlet collar with
2" Chamfer on L sides only.

DETAIL B



SECTION A-A

INFORMATIONAL QUANTITIES					
Frame and Grate Type	L Feet - Inches	W Feet - Inches	T Inches	Class M6 Concrete CY	Reinforcing Steel Lb.
Type B	4' - 0"	3' - 0"	6"	0.11	9
Type C	5' - 0"	4' - 0"	6"	0.15	11
Type D	4' - 0"	2' - 6"	6"	0.10	8

Notes:
1. All reinforcing steel shall conform to ASTM A615, grade 60.
2. The 1/2" diameter bar shall lap 6" +/- and shall be centered in the concrete.

N.T.S.

CITY OF RAPID CITY | PUBLIC WORKS DEPARTMENT

PRECAST DROP INLET COLLAR

DATE: 8-19-22

Sec. - Sht.
62-20