

STANDARD STORM DRAIN DETAILS

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**STORM DRAIN
DETAILS**

DATE: MARCH 2004	
DRAWING NAME: SD-0	
DRAWN BY: JMC/DKB	
CHECKED:	APPROVED:

REVISIONS		
REV	DATE	BY

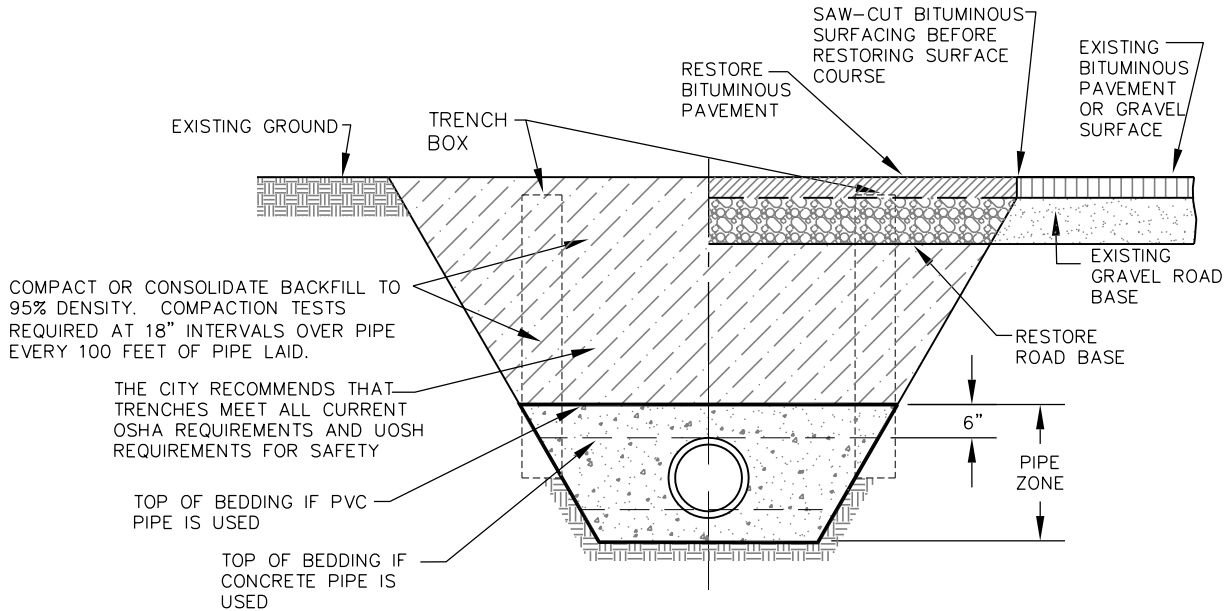
COMMENTS

 **GILSON**
ENGINEERING, INC.

CONSULTING ENGINEERS AND SURVEYORS
12401 South 450 East
(801) 571-9414 • Fax: (801) 571-9449



REV. A STANDARD DETAILS
SARATOGA CITY
SD-0



CROSS-SECTION: TYPICAL TRENCH

NOTES:

1. THE CITY RECOMMENDS CONTRACTOR MEET ALL OF THE REQUIREMENTS ESTABLISHED FOR SAFE TRENCHING. (SEE OSHA AND UOSH REQUIREMENTS, LATEST EDITIONS).
2. CONTRACTOR SHALL LOCATE ALL UNDERGROUND UTILITIES BEFORE LAYING PIPE WITHIN 50' OF SAID UTILITIES WHICH MAY BE EXPOSED, DAMAGED OR CROSSED AS SHOWN ON THE DRAWINGS OR AS "BLUE STAKED". THE CONTRACTOR WILL MAKE ARRANGEMENTS WITH THE UTILITY COMPANY TO MOVE THE UTILITY IF NECESSARY OR OBTAIN PERMISSION FROM THE CITY ENGINEER TO MODIFY GRADE OF PIPELINE IN ORDER TO GO AROUND UTILITIES.
3. TESTING: ALL STORM DRAIN LINES TO BE "VIDEOED" AND NECESSARY REPAIRS MADE BEFORE ACCEPTANCE. A MANDRAL OR BALL CAN BE USED TO VERIFY DEFORMATION OF A PIPE AS DETERMINED FROM THE VIDEO UNLESS SPECIFIED OTHERWISE.
4. ALL STORM DRAIN TO BE INSTALLED IN PUBLIC RIGHT-OF-WAY OR RECORDED DRAINAGE EASEMENT UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER.
5. WHERE COLLAPSIBLE SOILS ARE ENCOUNTERED, FURNISH, PLACE AND COMPACT IMPORTED BACKFILL MATERIALS AS REQUIRED AND AS DIRECTED.
6. MIN. DEPTH OF COVER IS 2' TO TOP OF PIPE UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER.

**STORM DRAIN
TRENCH**

DATE: MARCH 2003	
DRAWING NAME: SD-1	
DRAWN BY: JMC/DKB	
CHECKED:	APPROVED:

REVISIONS			
REV	DATE	BY	COMMENTS

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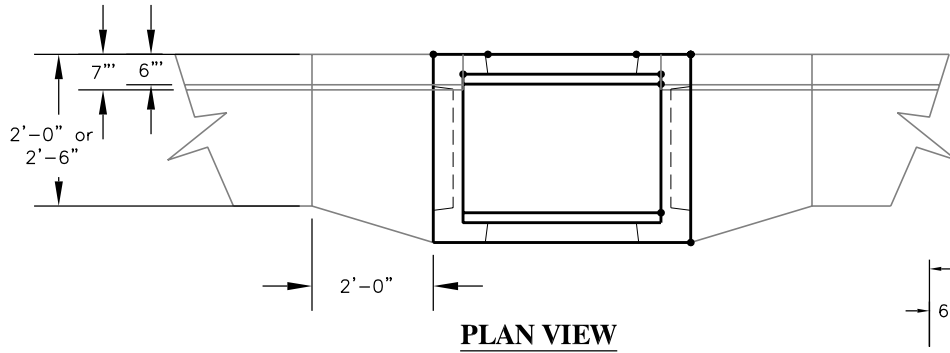
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REV. A STANDARD DETAILS
SARATOGA CITY
SD-1

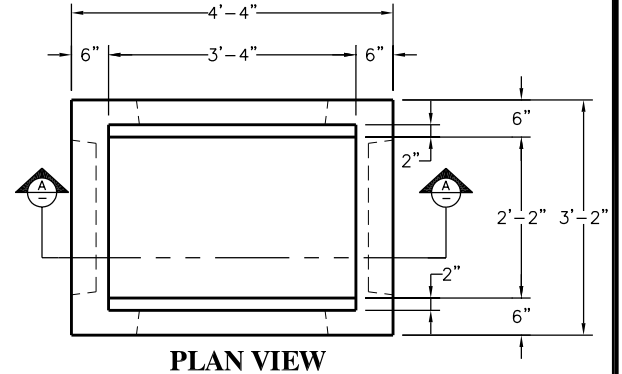
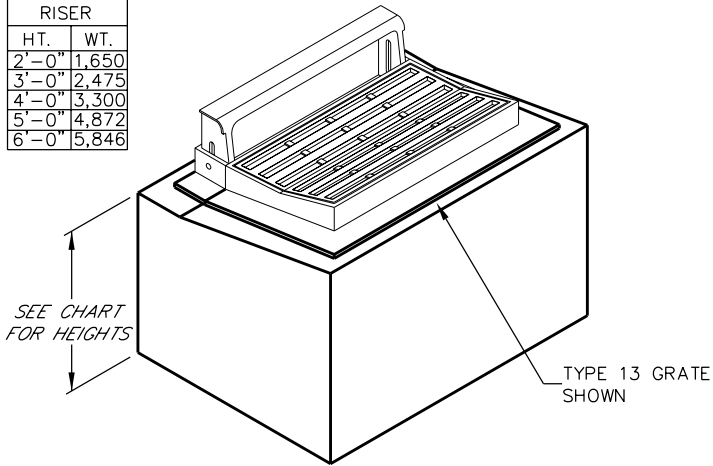
NOTES:

1. DESIGNED FOR AASHTO HS-20 LOADING.
2. DESIGNED ACCORDING TO ASTM C857-87 AND ASTM C858-83.



PLAN VIEW

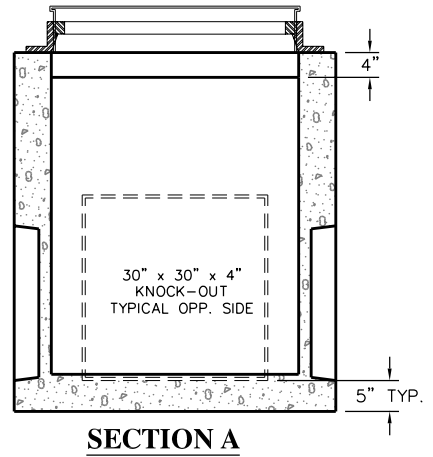
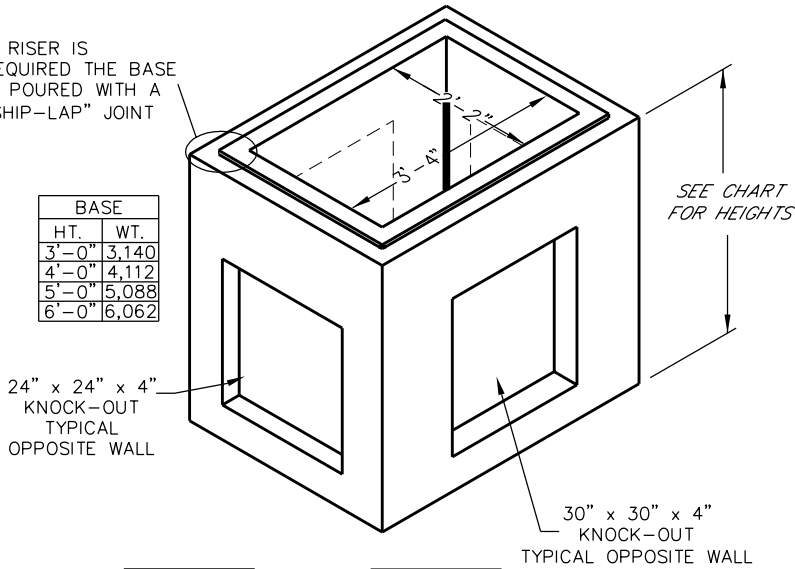
RISER	
HT.	WT.
2'-0"	1,650
3'-0"	2,475
4'-0"	3,300
5'-0"	4,872
6'-0"	5,846



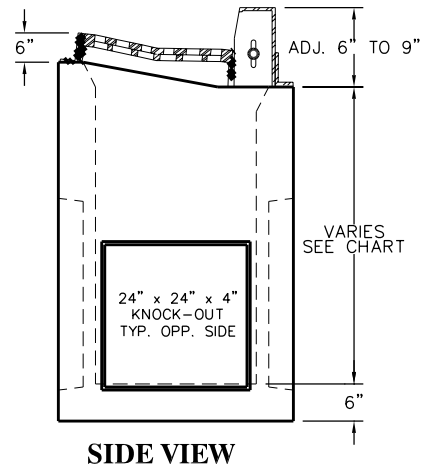
PLAN VIEW

IF RISER IS REQUIRED THE BASE IS POURED WITH A "SHIP-LAP" JOINT

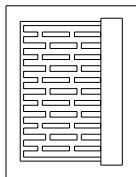
BASE	
HT.	WT.
3'-0"	3,140
4'-0"	4,112
5'-0"	5,088
6'-0"	6,062



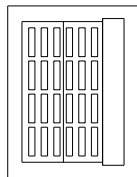
SECTION A



SIDE VIEW



TYPE 16 VALLEY FRAME AND GRATE
680 lbs.



TYPE 13 CURB-COMBO FRAME AND GRATE
600 lbs.

GRATES

GUTTER INLET BOX

DATE:
MARCH 2004

DRAWING NAME:
SD-2

DRAWN BY:
JMC/DKB

CHECKED: APPROVED:

REVISIONS

REV	DATE	BY	COMMENTS



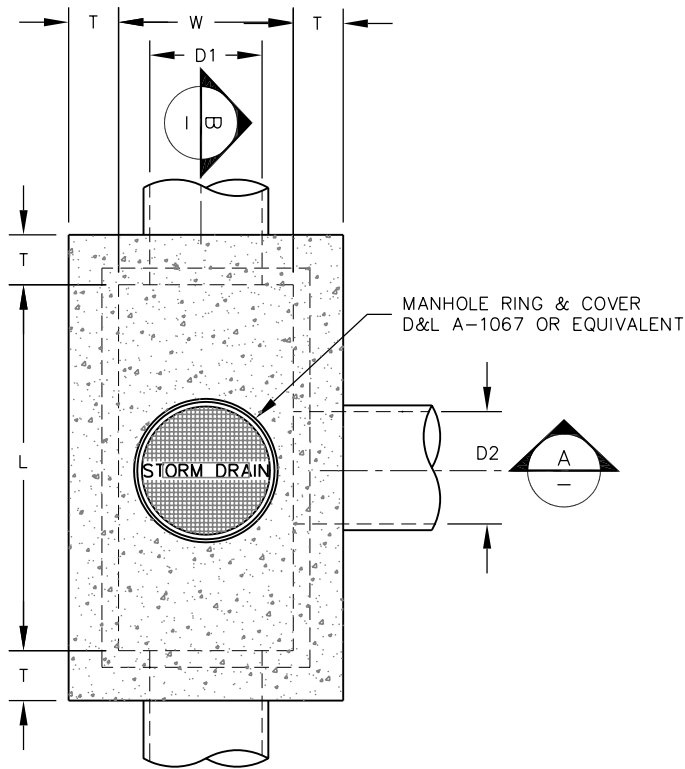
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REV. A
STANDARD DETAILS

SARATOGA CITY

SD-2



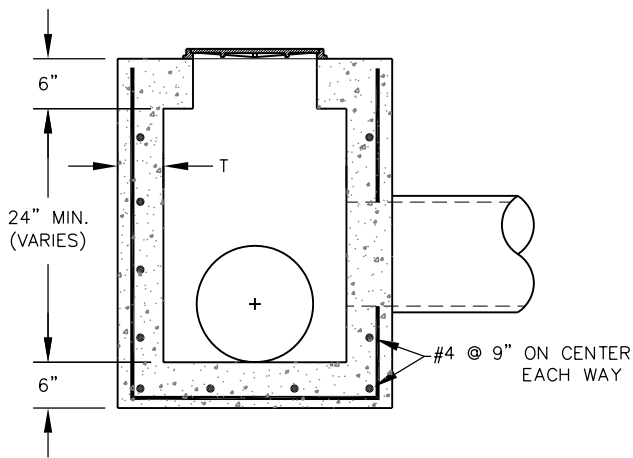
PLAN

NOTES:

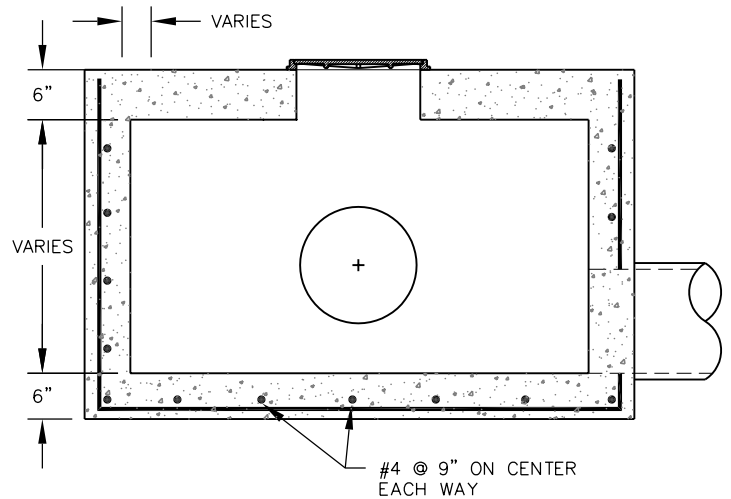
1. FLOW LINE OF PIPE LEAVING BOX SHALL BE FLUSH WITH BOTTOM OF BOX.
2. AMCOR CB110 OR EQUAL BOXES WILL BE ACCEPTED.

DIMENSIONS

W=	D1 + 12" (24" MIN.)
L=	D2 + 24" (44" MIN.)
T=	6" IF L IS LESS THAN OR EQUAL TO 5'-0"
T=	8" IF L IS GREATER THAN 5'-0"



SECTION 'A'



SECTION 'B'

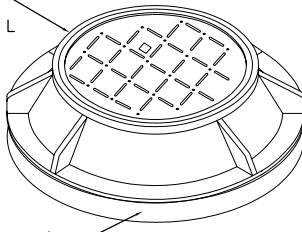
CLEANOUT BOX

DATE: MARCH 2004		REVISIONS	
DRAWING NAME: SD-3		REV	DATE
DRAWN BY: JMC/DKB		BY	COMMENTS
CHECKED:	APPROVED:	GILSON CONSULTING ENGINEERS AND SURVEYORS	
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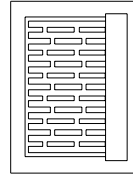


REV. A STANDARD DETAILS
SARATOGA CITY
SD-3

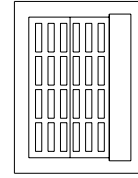
MANHOLE RING AND COVER D & L SUPPLY #E-1926



GRADE RINGS AS REQ'D

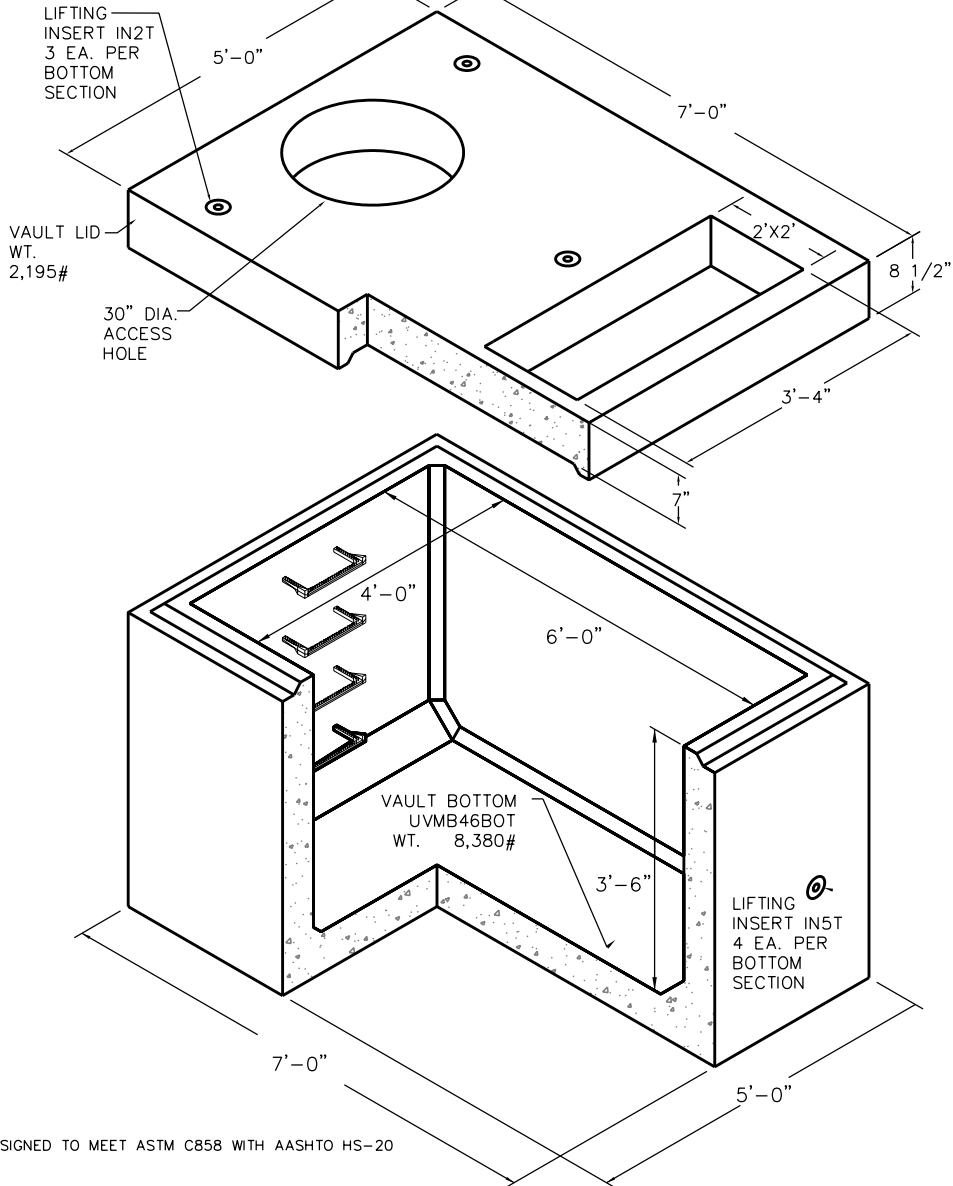


TYPE 16 VALLEY FRAME AND GRATE
680 lbs.



TYPE 13 CURB-COMBO FRAME AND GRATE
600 lbs.

GRATES



NOTES:

1. VAULTS ARE DESIGNED TO MEET ASTM C858 WITH AASHTO HS-20 LOADING.
2. OPENINGS MAY BE SIZED AND LOCATED AS REQUIRED.
3. OPTIONAL HARDWARE MAY BE CAST IN AS REQUIRED.
4. CHECK HARDWARE SECTION FOR OPTIONAL HARDWARE.

**COMBINATION GUTTER
INLET & CLEANOUT BOX**

DATE:
MARCH 2004

DRAWING NAME:
SD-4

DRAWN BY:
JMC/DKB

CHECKED: APPROVED:

REVISIONS

REV	DATE	BY	COMMENTS



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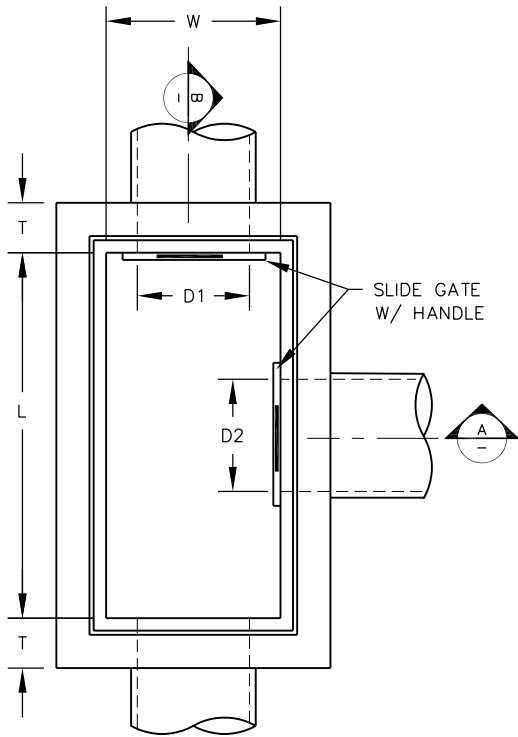
REV. A
STANDARD DETAILS

SARATOGA CITY

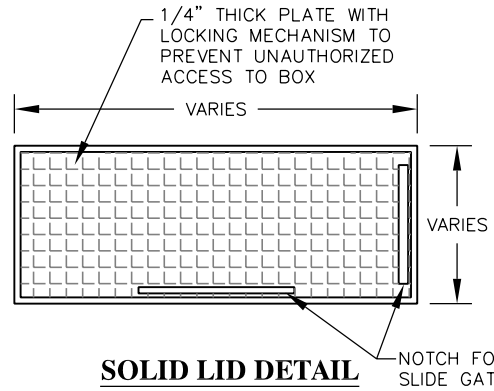
SD-4

DIMENSIONS

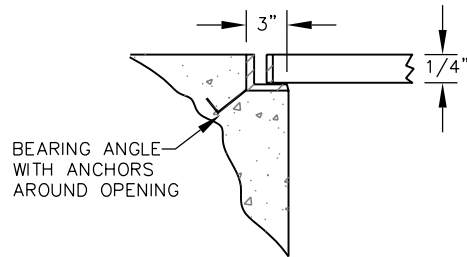
W=	D1 + 12" (24" MIN.)
L=	D2 + 24" (44" MIN.)
T=	6" IF L IS LESS THAN OR EQUAL TO 5'-0"
T=	8" IF L IS GREATER THAN 5'-0"



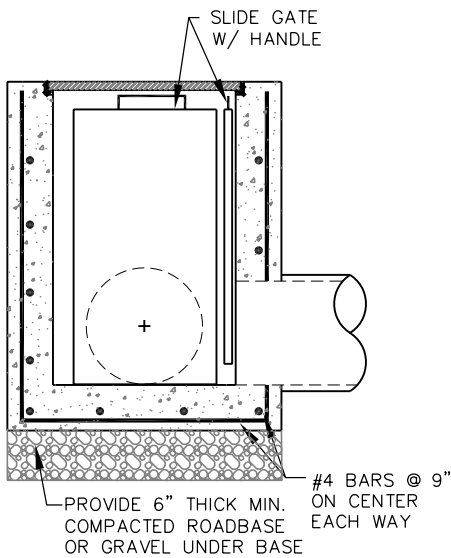
PLAN



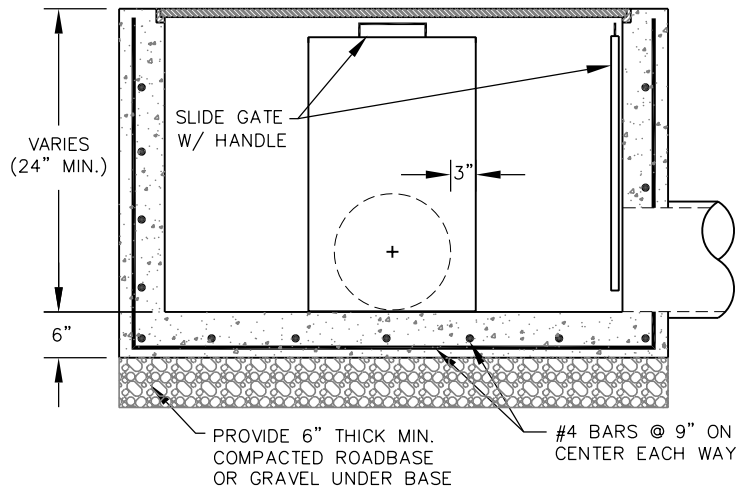
SOLID LID DETAIL



EDGE DETAIL



SECTION 'A'



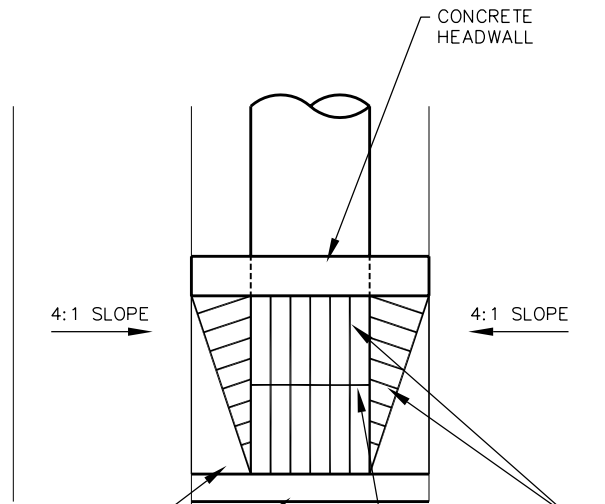
SECTION 'B'

DIVERSION BOX

DATE: MARCH 2004		REVISIONS	
DRAWING NAME: SD-5		REV	DATE
DRAWN BY: JMC/DKB		BY	COMMENTS
CHECKED:	APPROVED:		
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REV. A STANDARD DETAILS
SARATOGA CITY
SD-5



PLAN

NOTES:

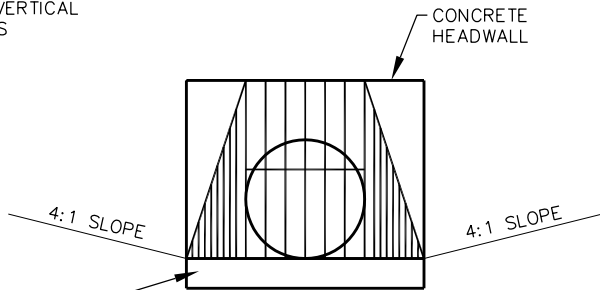
1. INSTALL AT INLETS AND OUTLETS OF ALL STORM DRAIN PIPE 15" OR GREATER AND ALL INLETS SMALLER THAN 18"
2. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS PRIOR TO FABRICATION.
3. FABRICATION SHALL BE ALL STEEL, HOT DIP GALVANIZED AFTER FABRICATION.

2" X 3/8" FLAT BARS @ 4" O.C.

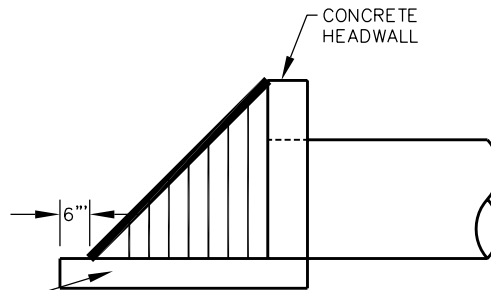
6" THICK CONCRETE SLAB

2" X 3/8" BAR WELD TO END OF VERTICAL BARS

1" X 1/4" FLAT BARS- WELD TO EACH VERTICAL BAR



FRONT VIEW




SIDE VIEW

INLET/OUTLET TRASH GRATES

DATE: MARCH 2004	
DRAWING NAME: SD-6	
DRAWN BY: JMC/DKB	
CHECKED:	APPROVED:

REVISIONS			
REV	DATE	BY	COMMENTS


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SD-6