

(CHECK ONE) PRELIMINARY SURVEY X AS-BUILT SURVEY

(CHECK ONE) STORM MH X CATCH BASIN SANITARY MH

STRUCTURE NO: 035 POINT NO. 6901

TOP OF CASTING (TOC) ELEV: 1250.72 (C COVER FOR MH, C GRATE @ GUTTERLINE FOR CB)

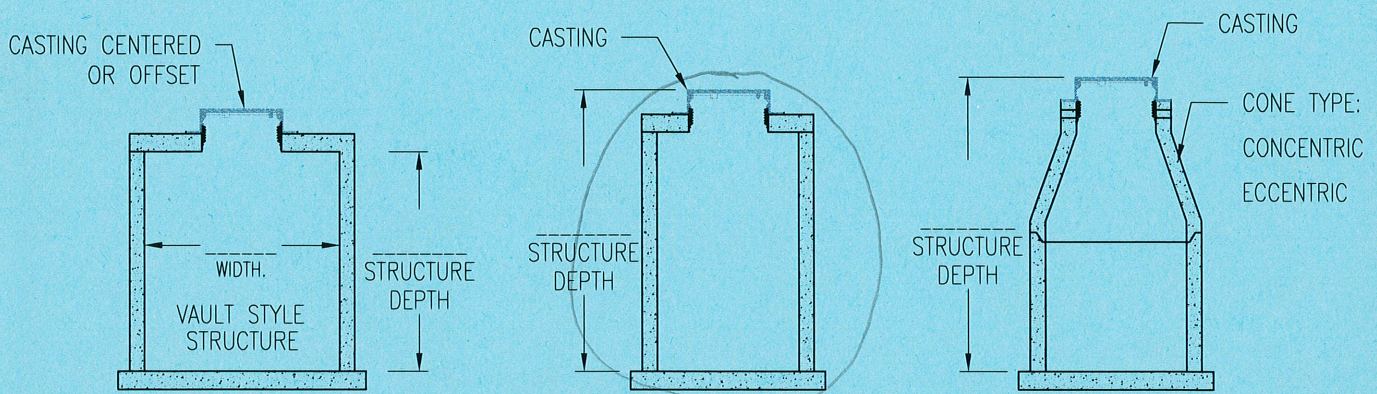
CASTING/COVER TYPE: A. WATERTIGHT B. W/HOLES C GRATE D. OTHER

STRUCTURE TYPE: A. BRICK B. BLOCK C PRECAST D. OTHER

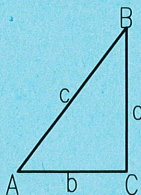
(IF BRICK OR BLOCK, ESTIMATE % MORTAR MOSS: %)

STEP MATERIAL: A NONE B CAST IRON C ALUMINUM D EPOXY COATED E OTHER

MH/ CB GEOMETRY:

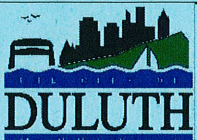
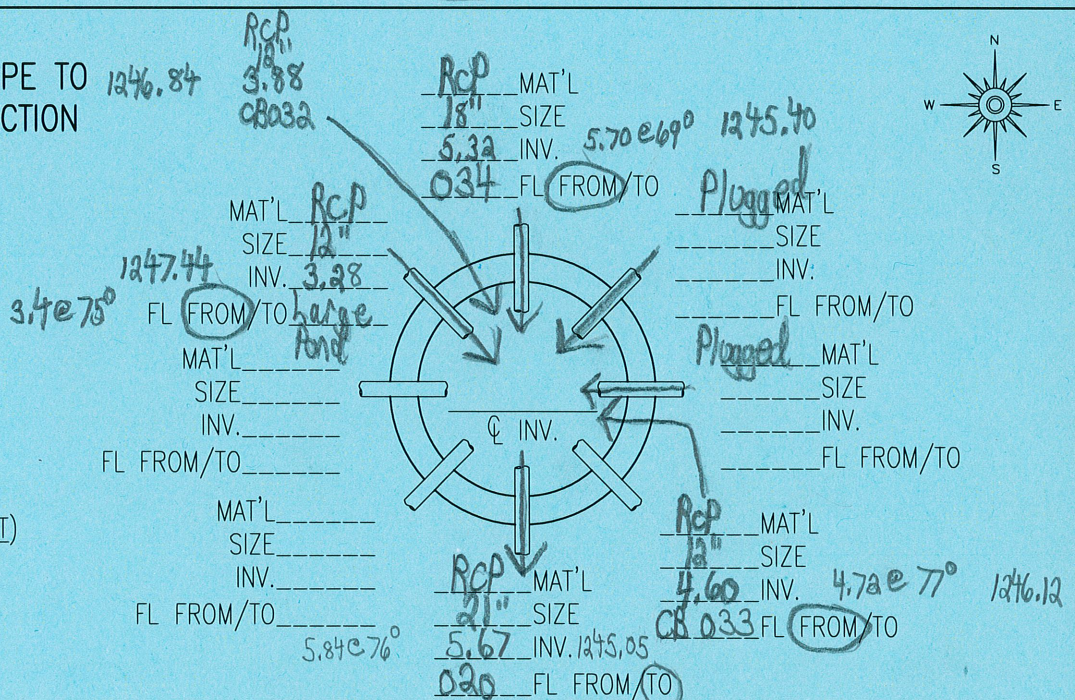


DRAW ARROW ON PIPE TO
INDICATE FLOW DIRECTION



$$a = c \sin A$$

(ROD X sin d° = HEIGHT)
(90° IS ALWAYS UP)
(sin = e)



City of Duluth
Department of Public Works/Utilities
Engineering Division
211 City Hall Duluth MN 55802
(218) 730-5200 Fax: (218) 730-5907

MANHOLE & CATCH BASIN DATA SHEET

PROJECT #: 1468
LOCATION: Arrowhead Rd
DATE: 11/9/15 BY: NML

(CHECK ONE) PRELIMINARY SURVEY X AS-BUILT SURVEY

(CHECK ONE) STORM MH CATCH BASIN X SANITARY MH

STRUCTURE NO: 033

POINT NO. 6902

TOP OF CASTING (TOC) ELEV: 1250.67 (℄ COVER FOR MH, ℄ GRATE @ GUTTERLINE FOR CB)

CASTING/COVER TYPE: A. WATERTIGHT B. W/HOLES C GRATE D. OTHER

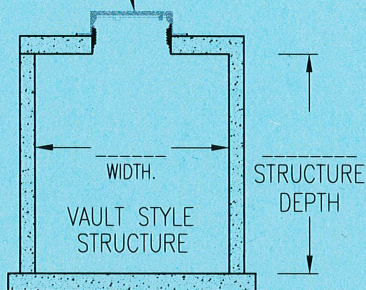
STRUCTURE TYPE: A. BRICK B. BLOCK C PRECAST D. OTHER

(IF BRICK OR BLOCK, ESTIMATE % MORTAR LOSS: %)

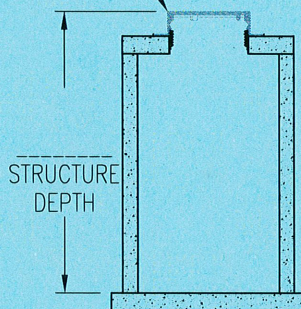
STEP MATERIAL: A NONE B CAST IRON C ALUMINUM D EPOXY COATED E OTHER

MH/ CB GEOMETRY:

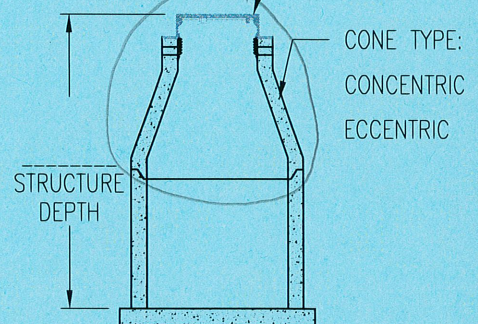
CASTING CENTERED
OR OFFSET



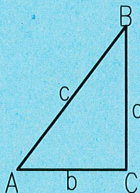
CASTING



CASTING



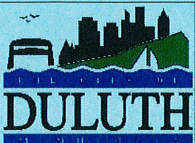
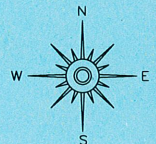
DRAW ARROW ON PIPE TO
INDICATE FLOW DIRECTION



$$a = c \sin A$$

(ROD X $\sin d^\circ$ = HEIGHT)
(90° IS ALWAYS UP)
($\sin = \frac{opposite}{hypotenuse}$)

MAT'L <u>RCP</u>	_____	MAT'L _____
SIZE <u>12</u>	_____	SIZE _____
INV. <u>9.33</u>	_____	INV. _____
FL FROM/TO <u>035</u>	_____	FL FROM/TO _____
MAT'L _____		MAT'L _____
SIZE _____		SIZE _____
INV. _____		INV. _____
FL FROM/TO _____		FL FROM/TO _____
MAT'L _____	MAT'L _____	MAT'L _____
SIZE _____	SIZE _____	SIZE _____
INV. _____	INV. _____	INV. _____
FL FROM/TO _____	FL FROM/TO _____	FL FROM/TO _____



City of Duluth

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MANHOLE & CATCH BASIN DATA SHEET

PROJECT #: 1468

LOCATION: Arrowhead Rd

DATE: 11/9/15

BY: NRL

(CHECK ONE) PRELIMINARY SURVEY X AS-BUILT SURVEY

(CHECK ONE) STORM MH CATCH BASIN X SANITARY MH

STRUCTURE NO: 032 POINT NO. 6943

TOP OF CASTING (TOC) ELEV: 1250.40 (C COVER FOR MH, C GRATE @ GUTTERLINE FOR CB)

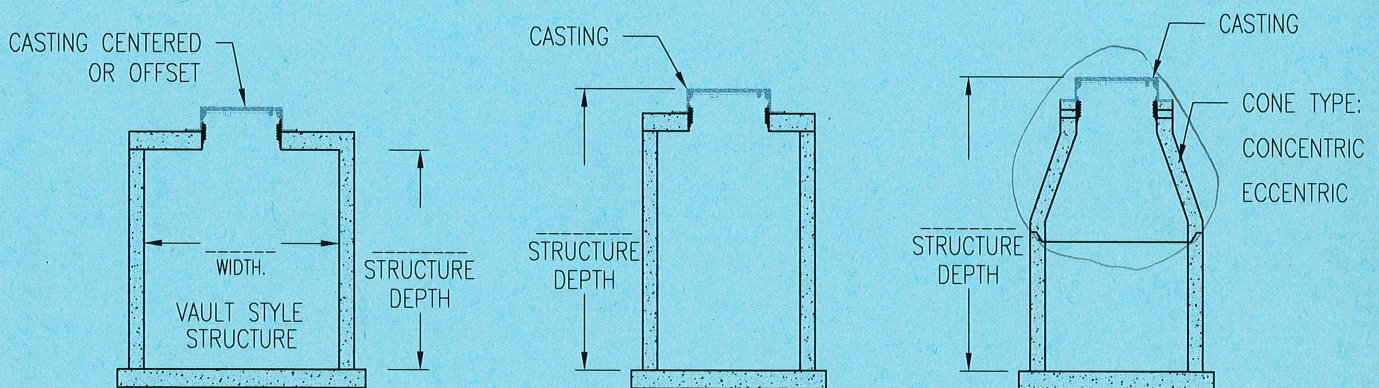
CASTING/COVER TYPE: A. WATERTIGHT B. W/HOLES C GRATE D. OTHER

STRUCTURE TYPE: A. BRICK B. BLOCK C PRECAST D. OTHER

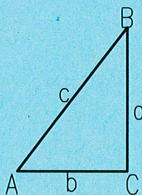
(IF BRICK OR BLOCK, ESTIMATE % MORTAR MOSS: %)

STEP MATERIAL: A NONE B CAST IRON C ALUMINUM D EPOXY COATED E OTHER

MH/ CB GEOMETRY:

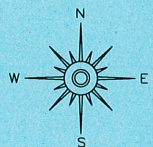
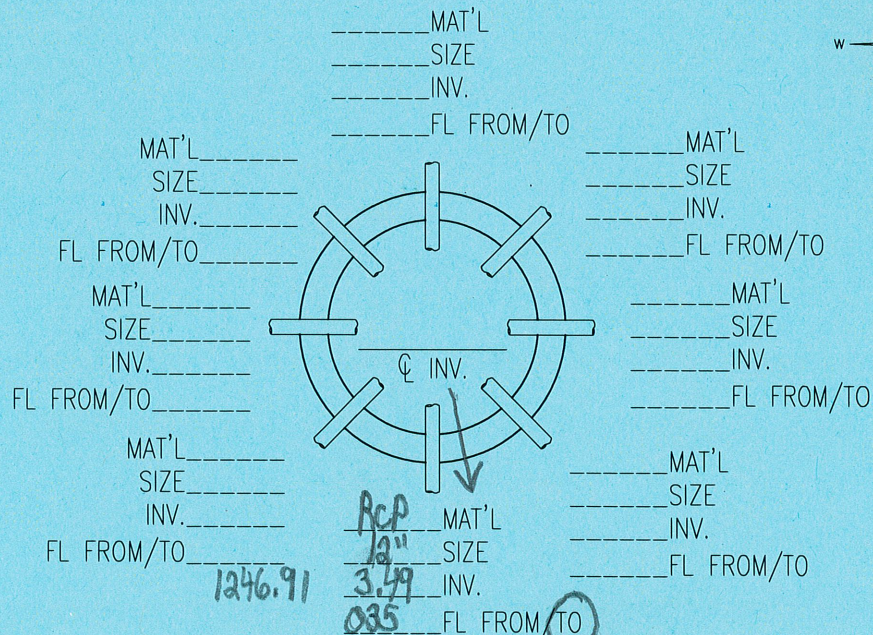


DRAW ARROW ON PIPE TO
INDICATE FLOW DIRECTION



$$a = c \sin A$$

(ROD X sin d° = HEIGHT)
(90° IS ALWAYS UP)
(sin = g)



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MANHOLE & CATCH BASIN DATA SHEET

PROJECT #: 1468
LOCATION: Warren Ave
DATE: 11/9/15 BY: NML

(CHECK ONE) PRELIMINARY SURVEY X AS-BUILT SURVEY

(CHECK ONE) STORM MH X CATCH BASIN SANITARY MH

STRUCTURE NO: 030 POINT NO. 6159

TOP OF CASTING (TOC) ELEV: 1251.77 (¢ COVER FOR MH, ¢ GRATE @ GUTTERLINE FOR CB)

CASTING/COVER TYPE: A. WATERTIGHT B. W/HOLES C. GRATE D. OTHER

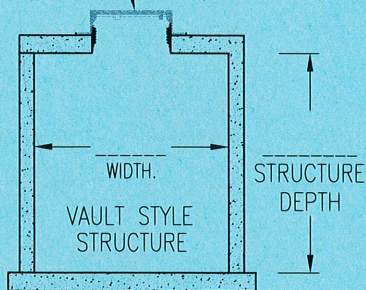
STRUCTURE TYPE: A. BRICK B. BLOCK C. PRECAST D. OTHER

(IF BRICK OR BLOCK, ESTIMATE % MORTAR LOSS: 20 %)

STEP MATERIAL: A. NONE B. CAST IRON C. ALUMINUM D. EPOXY COATED E. OTHER

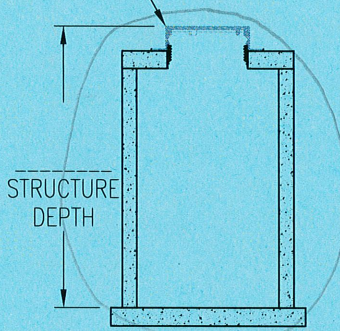
MH/ CB GEOMETRY:

CASTING CENTERED
OR OFFSET



CASTING

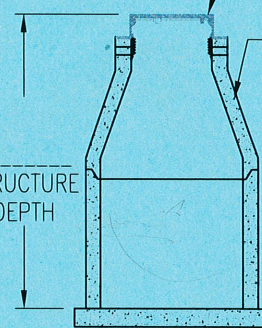
STRUCTURE
DEPTH



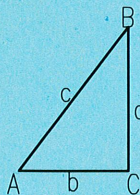
CASTING

CONE TYPE:
CONCENTRIC
ECCENTRIC

STRUCTURE
DEPTH



DRAW ARROW ON PIPE TO
INDICATE FLOW DIRECTION

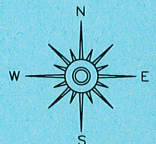
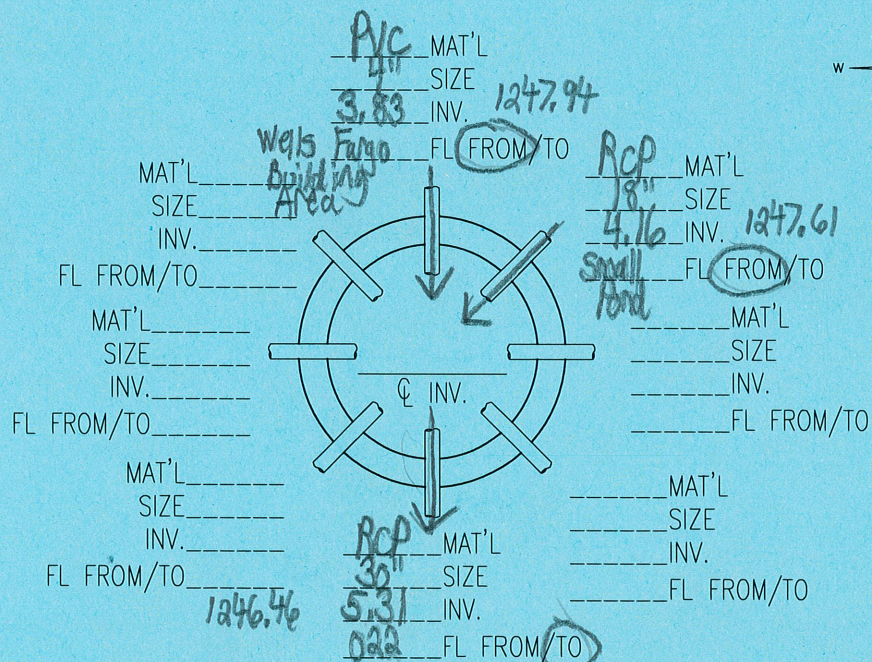


$$a = c \sin A$$

$$(\text{ROD} \times \sin d^\circ = \text{HEIGHT})$$

(90° IS ALWAYS UP)

$$(\sin = \frac{\text{opposite}}{\text{hypotenuse}})$$



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MANHOLE & CATCH BASIN DATA SHEET

PROJECT #: 1468
LOCATION: Arrowhead Rd
DATE: 11/9/15 BY: MM

(CHECK ONE) PRELIMINARY SURVEY X AS-BUILT SURVEY

(CHECK ONE) STORM MH CATCH BASIN X SANITARY MH

STRUCTURE NO: 023 POINT NO. 5601

TOP OF CASTING (TOC) ELEV: 1246.53 (C COVER FOR MH, C GRATE @ GUTTERLINE FOR CB)

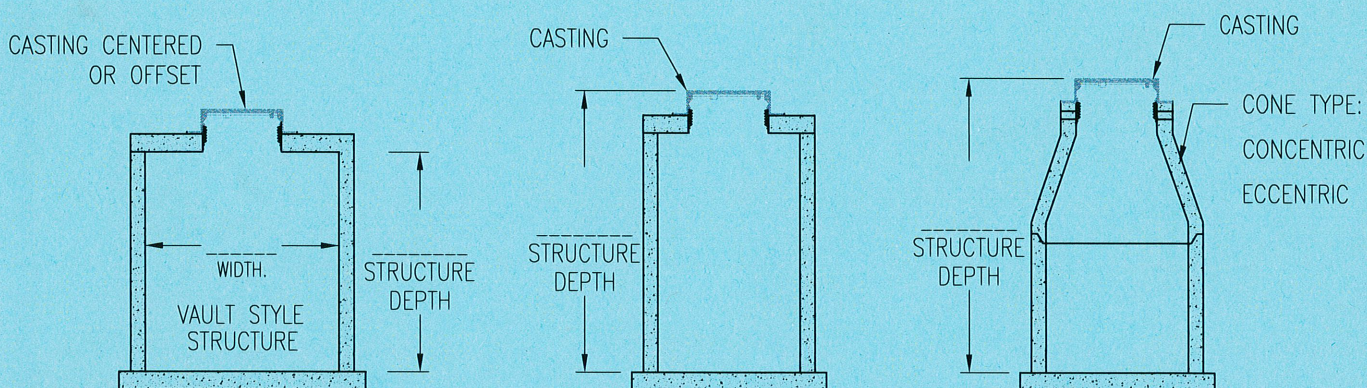
CASTING/COVER TYPE: A. WATERTIGHT B. W/HOLES C GRATE D. OTHER

STRUCTURE TYPE: A. BRICK B. BLOCK C. PRECAST D. OTHER

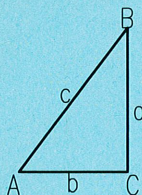
(IF BRICK OR BLOCK, ESTIMATE % MORTAR MOSS: %)

STEP MATERIAL: A NONE B CAST IRON C ALUMINUM D EPOXY COATED E OTHER

MH/ CB GEOMETRY:

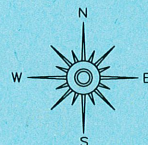
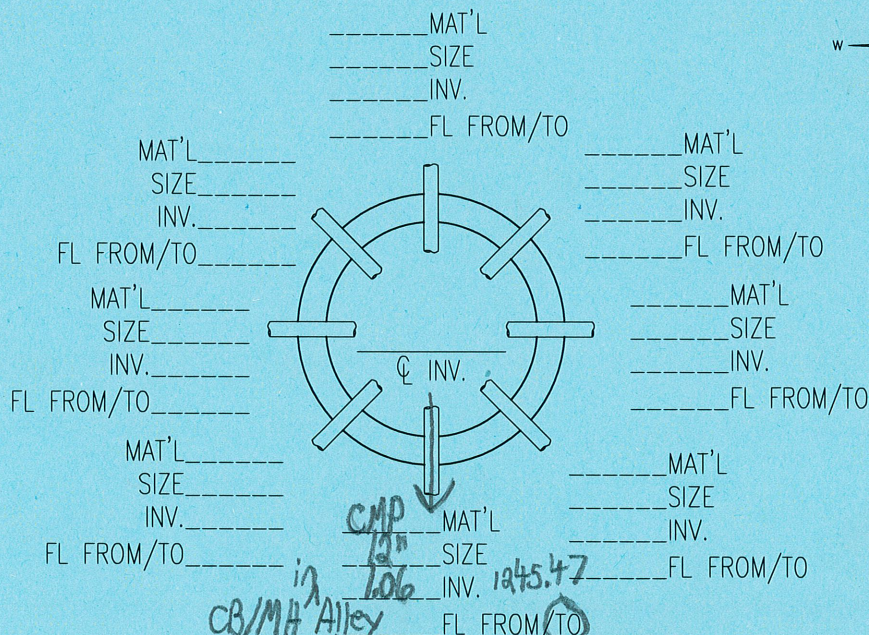


DRAW ARROW ON PIPE TO INDICATE FLOW DIRECTION

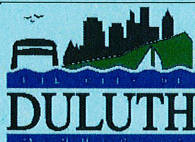


$$a = c \sin A$$

($\text{ROD} \times \sin d = \text{HEIGHT}$)
(90° IS ALWAYS UP)
($\sin = \frac{a}{c}$)



*in 12\"/>
CB/MH Alley
Behind Kenwood Shopping Center*



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MANHOLE & CATCH BASIN DATA SHEET

PROJECT #: 1468
LOCATION: Kenwood Shopping Center
DATE: 11/16/15 BY: NML

(CHECK ONE) PRELIMINARY SURVEY X AS-BUILT SURVEY

(CHECK ONE) STORM MH CATCH BASIN SANITARY MH X

STRUCTURE NO: 031 POINT NO. 513

TOP OF CASTING (TOC) ELEV: 1253.81 (C COVER FOR MH, C GRATE @ GUTTERLINE FOR CB)

CASTING/COVER TYPE: A. WATERTIGHT B. W/HOLES C GRATE D. OTHER

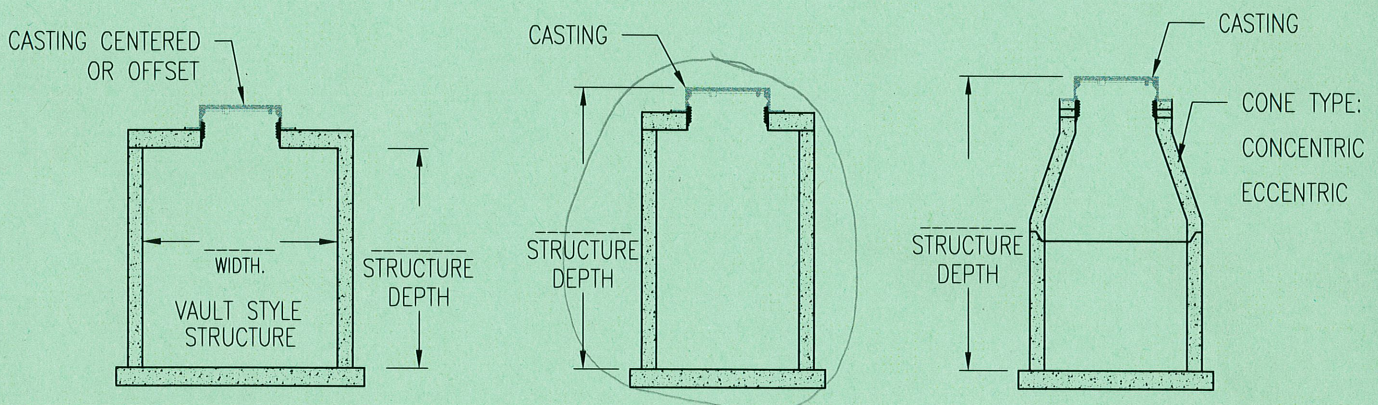
STRUCTURE TYPE: A. BRICK B. BLOCK C PRECAST D. OTHER

(IF BRICK OR BLOCK, ESTIMATE % MORTAR MOSS: 20 %)

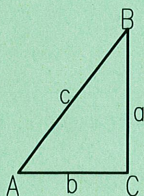
STEP MATERIAL: A NONE B CAST IRON C ALUMINUM D EPOXY COATED E OTHER

MH/ CB GEOMETRY:

*Walls are shifting all directions
water infiltration from East.*

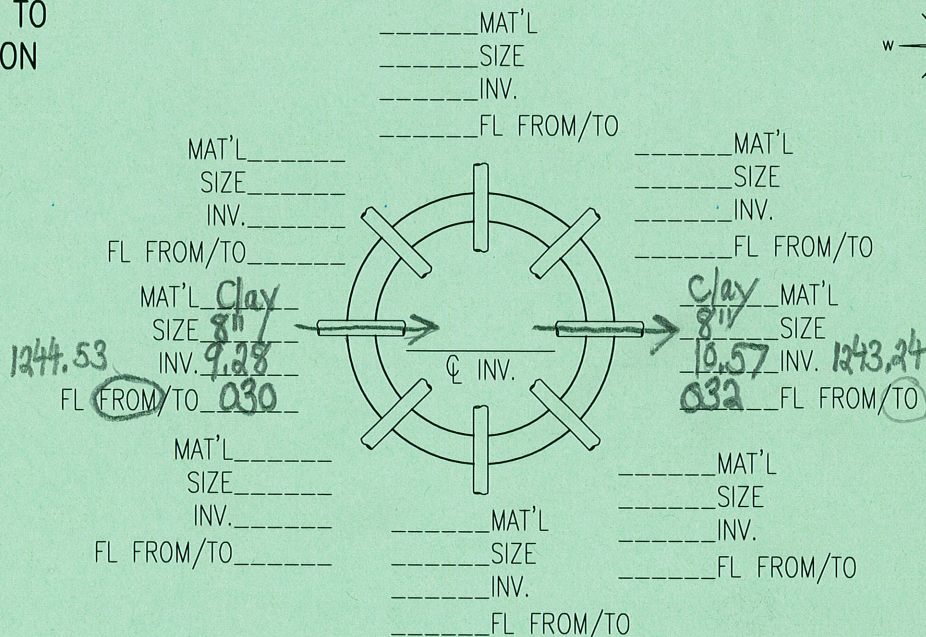


DRAW ARROW ON PIPE TO
INDICATE FLOW DIRECTION



$$a = c \sin A$$

(ROD X sin d = HEIGHT)
(90° IS ALWAYS UP)
(sin = $\frac{a}{c}$)

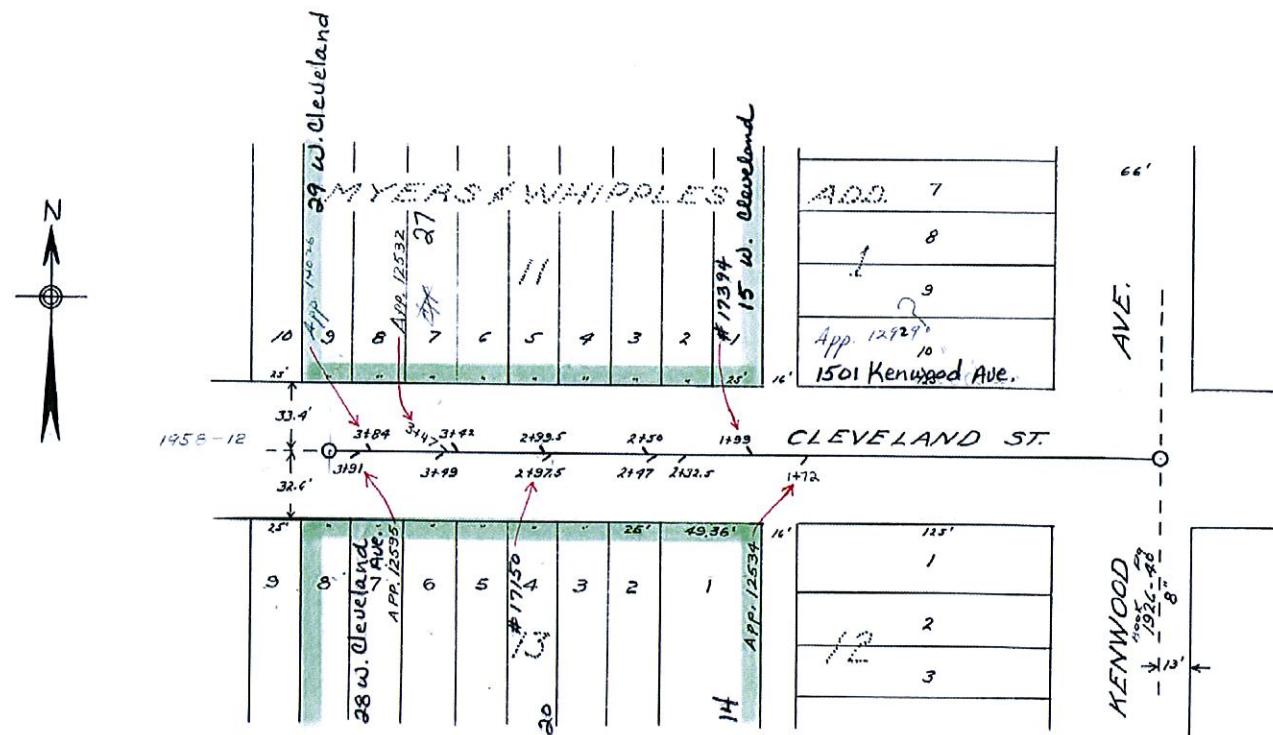


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MANHOLE & CATCH BASIN
DATA SHEET

PROJECT #: 1468
LOCATION: Cleveland St
DATE: 11/10/15 BY: NML

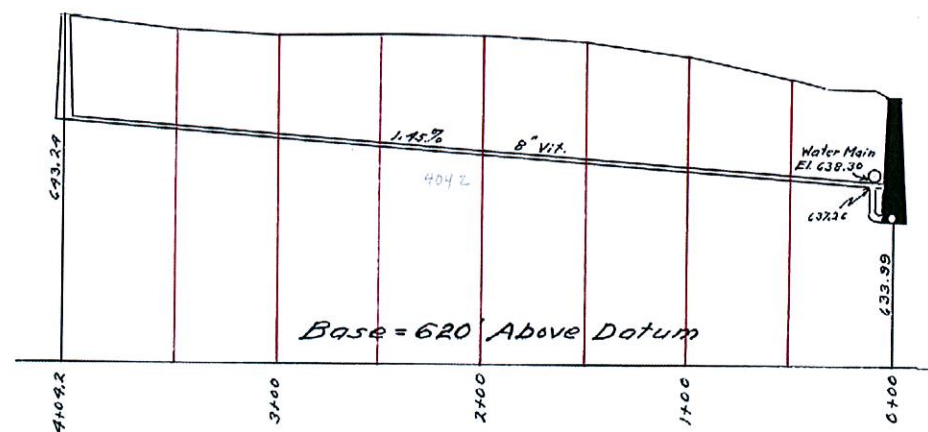
Job No. 5194
 Contract No. 3815
 File No. 3103
 Year 1949



CLEVELAND ST. SANITARY SEWER

SCALE: HORIZONTAL 1" = 50'
 VERTICAL 1" = 10'

Approved - Check with Treasurer's Records



I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of Minnesota.

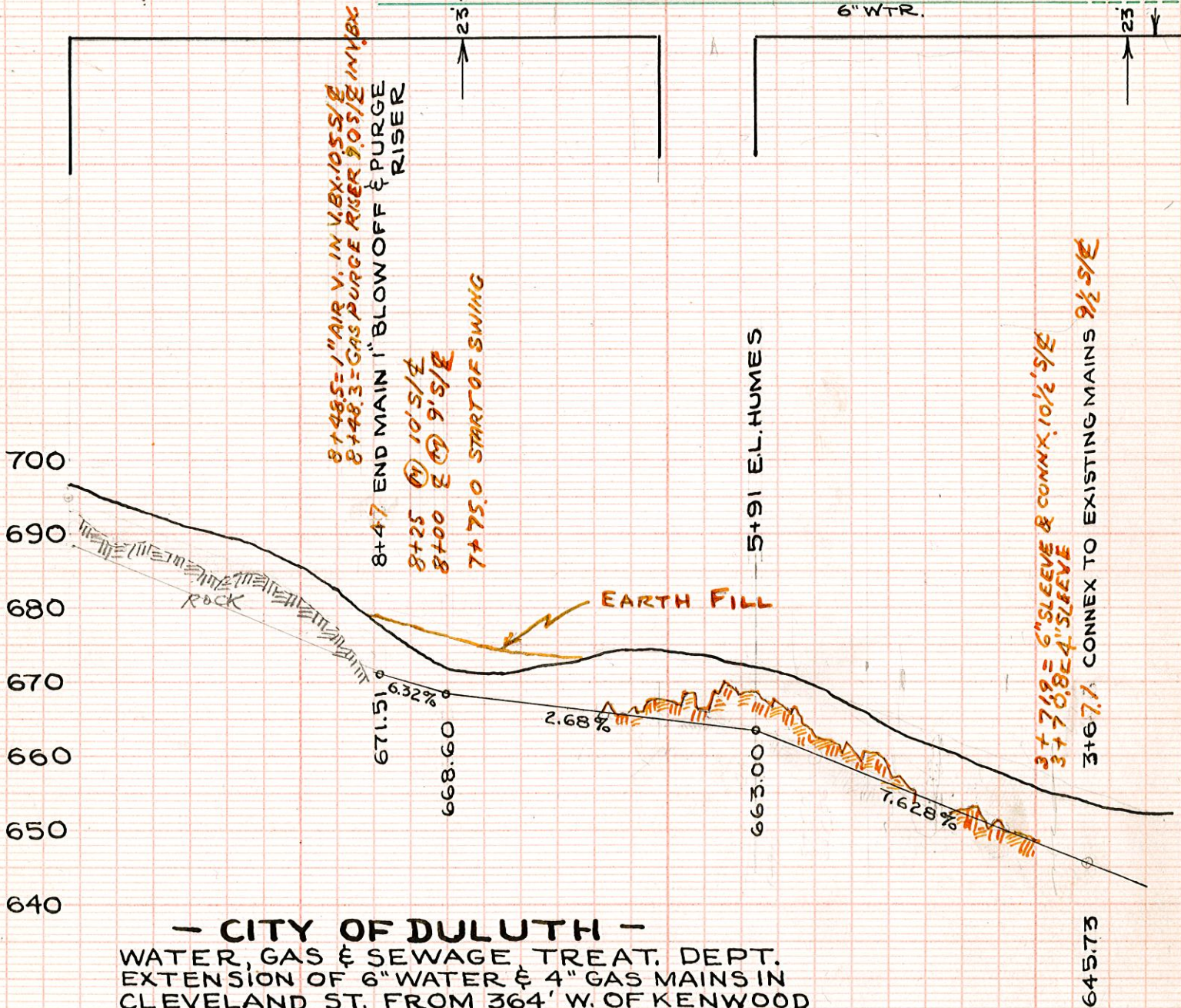
John T. Adams
Date 5-13-58 Reg. No. 3577

CENTER AVE.

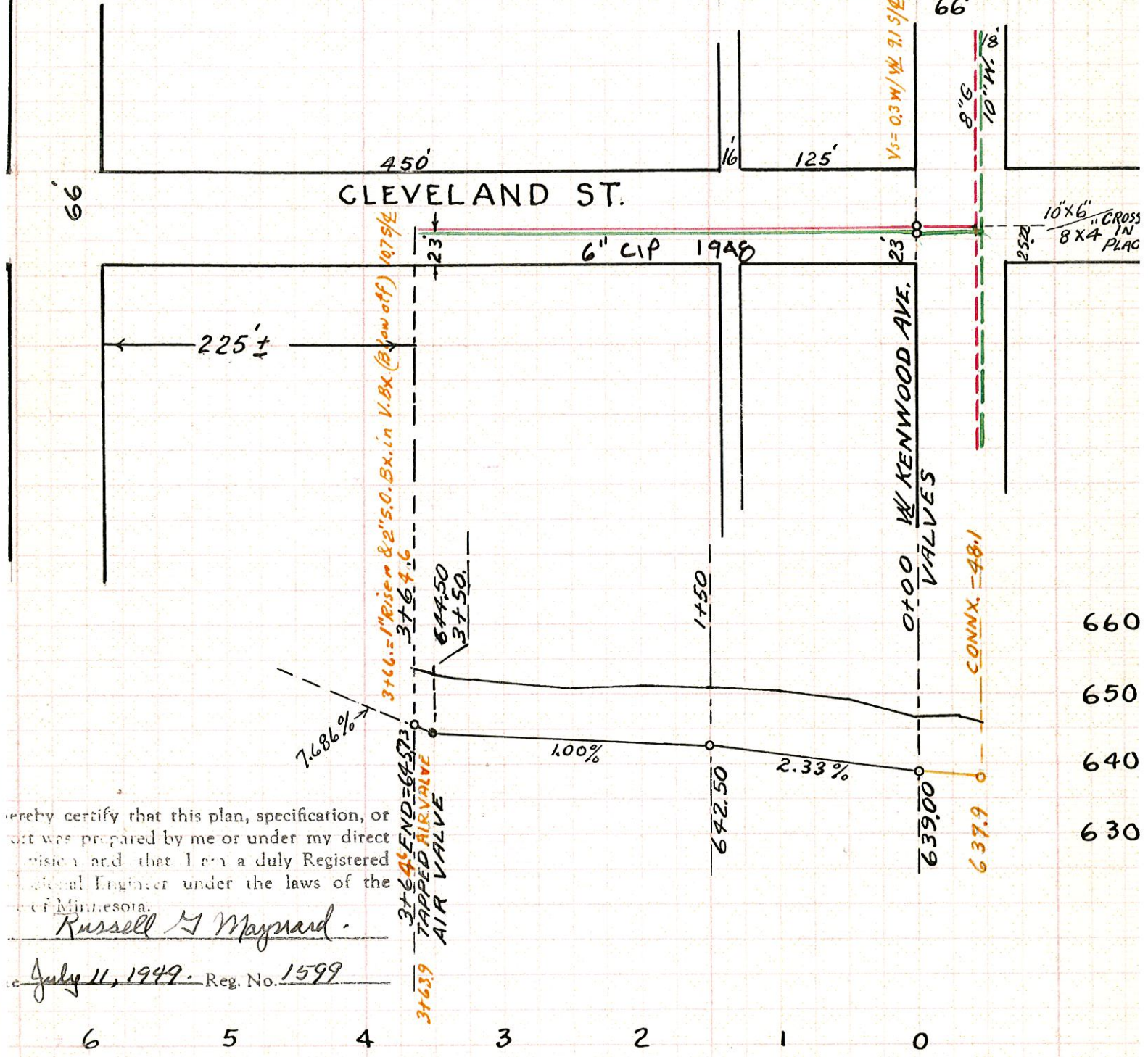
HUMES AVE.

CLEVELAND ST.

4" GAS
6" WTR.



- CITY OF DULUTH -
WATER, GAS & SEWAGE TREAT. DEPT.
EXTENSION OF 6" WATER & 4" GAS MAINS IN
CLEVELAND ST. FROM 364' W. OF KENWOOD
AVE. TO 190' WEST OF HUMES AVE.
JOB NO. 802 PET. NO. 57-19 REV.
B.M. SPIKE IN POWER POLE #2 OPPOSITE
STA. 2+43 ELEV. 651.07



I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of Minnesota.

Russell M. Maynard.

July 11, 1949. Reg. No. 1599

CITY OF DULUTH
WATER, GAS & SEW. DISPL. DEPARTMENT
PLAN & PROFILE

EXTENSION OF WATER & GAS MAINS IN CLEVELAND ST. FROM MAINS IN KENWOOD AVE. TO 225 FT. EAST OF HUMES AVE.

JOB NO. 700

Scale 1" = 20 FT. VERT.
 1" = 100 FT. HORZ.

B.M. ELEV. 656.25
 X on SW. COR. STORE N.E. COR.
 ARROWHEAD RD. & KENWOOD AVE.