



CITY OF ROLLING MEADOWS

ENGINEERING

DETAILS & STANDARDS

Revised - April 30, 2020

www.cityrm.org/DocumentCenter





Engineering Details & Standards

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Miscellaneous Roadway Standards/Notes

1. All connecting roadway gradients with an algebraic difference of greater than 1 percent shall be connected with a vertical curve. All standards contained in AASHTO's "A Policy on Geometric Design of Highways and Streets," latest edition, regarding vertical curves shall be followed. A design speed of 40 mph shall be used on collector roads and a design speed of 35 mph shall be used on local streets.
2. Street jogs with centerline offsets of less than 150' are not allowed on local roads. Offsets on collector roads are not allowed, and spacing between two cross streets on collector roads shall be no closer than 500'.
3. Gradients of streets shall be at least 0.6 percent and shall not exceed on:
 - a. Collector commercial/industrial streets, three (3) percent;
 - b. Minor streets, five (5) percent.
4. All Plats of Subdivision shall be submitted to the City on a 24" x 36' mylars for recording purposed. It shall be submitted to the City in electronic format on a CD in a format that is compatible with the City GIS.



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ENGINEERING DETAILS

MISCELLANEOUS ROADWAY NOTES

DATE: 8/31/2018

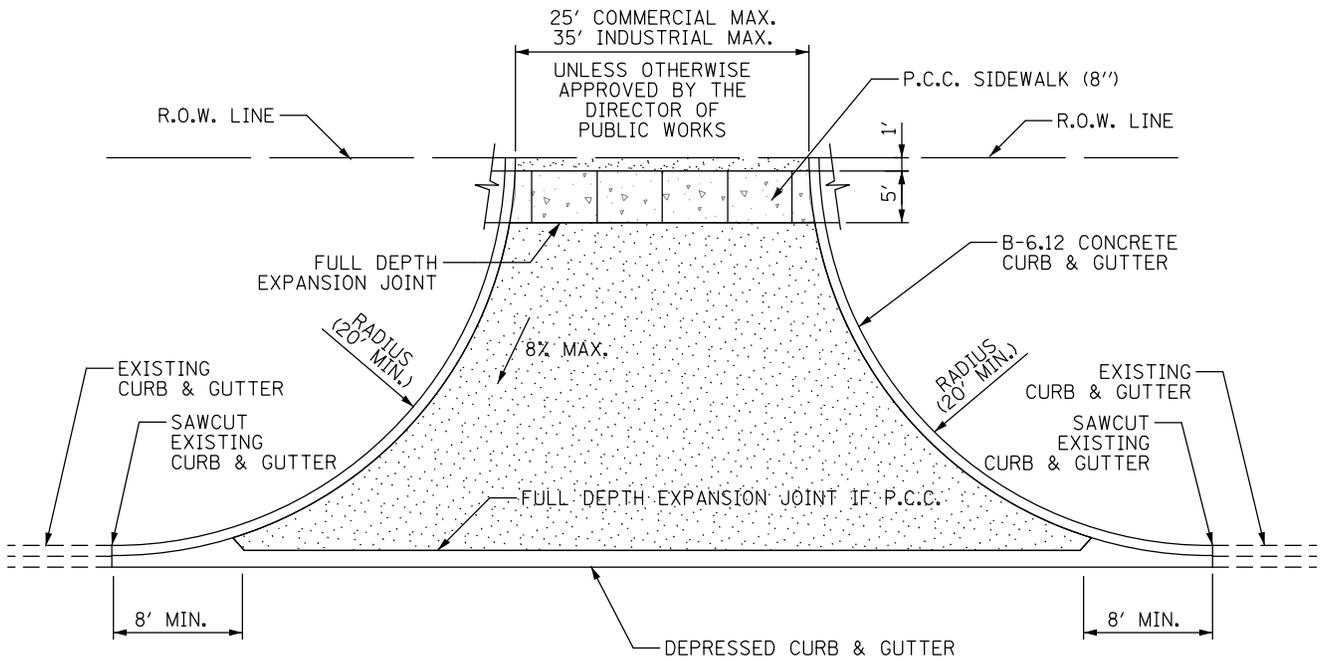
REV 1:

REV 2:

REV 3:

DETAIL NO.

R-0



| | BITUMINOUS | CONCRETE |
|------------|--|-----------------------------|
| COMMERCIAL | 2" BIT. SURFACE COURSE 6" BIT. BASE COURSE 4" AGGREGATE | 7" CONCRETE 4" AGGREGATE |
| INDUSTRIAL | 2" BIT. SURFACE COURSE 2" BIT. BINDER COURSE 6" BIT. BASE COURSE 4" AGGREGATE | 8" CONCRETE 4" AGGREGATE |



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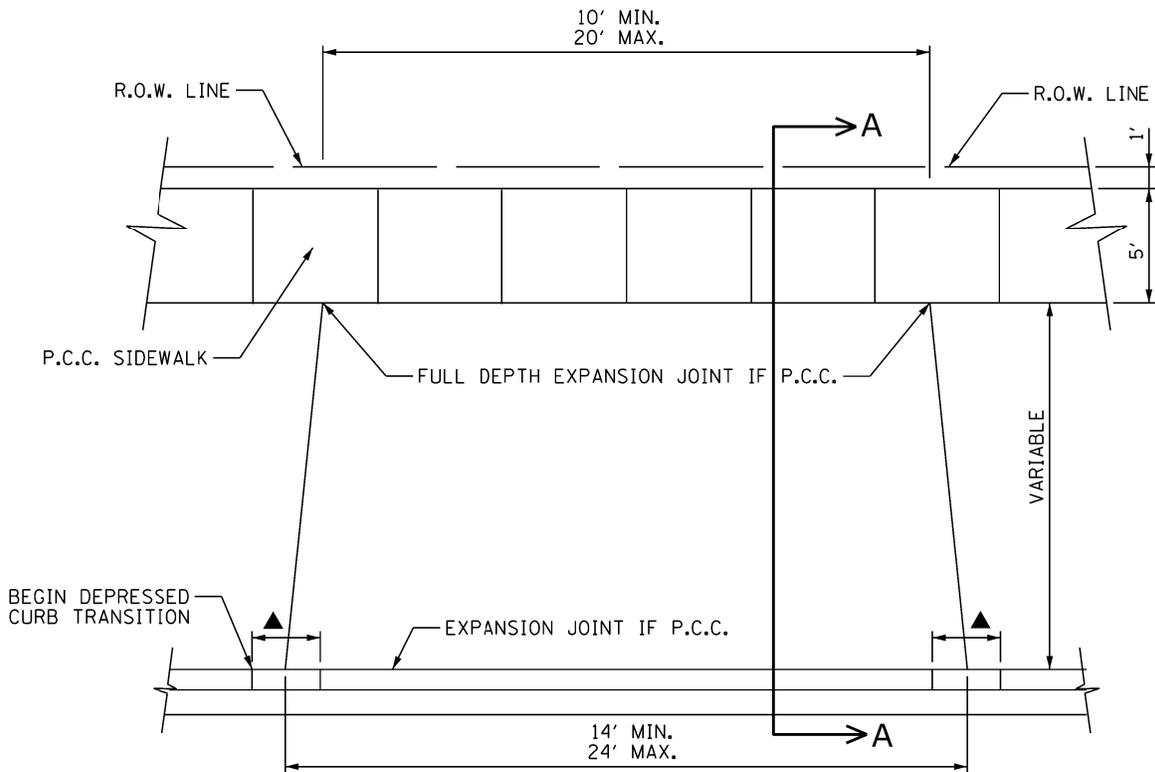
ENGINEERING DETAILS

INDUSTRIAL / COMMERCIAL DRIVEWAY DETAIL

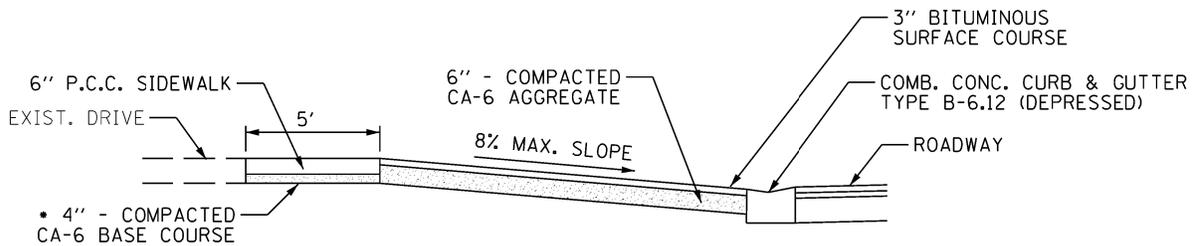
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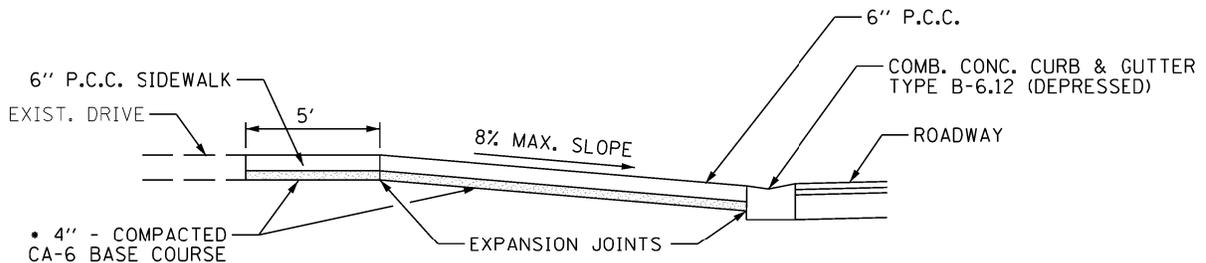
R-1



- ▲ - TRANSITION FROM FULL CURB IN 2 LINEAL FEET
- DRIVEWAY APPROACH SHALL MEET CURB AND GUTTER AT A POINT BETWEEN FULL CURB AND ONE-HALF CURB HEIGHT.
- DRIVEWAY FLARE SHALL BE SYMMETRIC ABOUT THE DRIVEWAY CENTERLINE UNLESS OTHERWISE APPROVED BY THE DIRECTOR OF PUBLIC WORKS.



**SECTION A - A
BITUMINOUS DRIVEWAY**



**SECTION A - A
P.C.C. DRIVEWAY**



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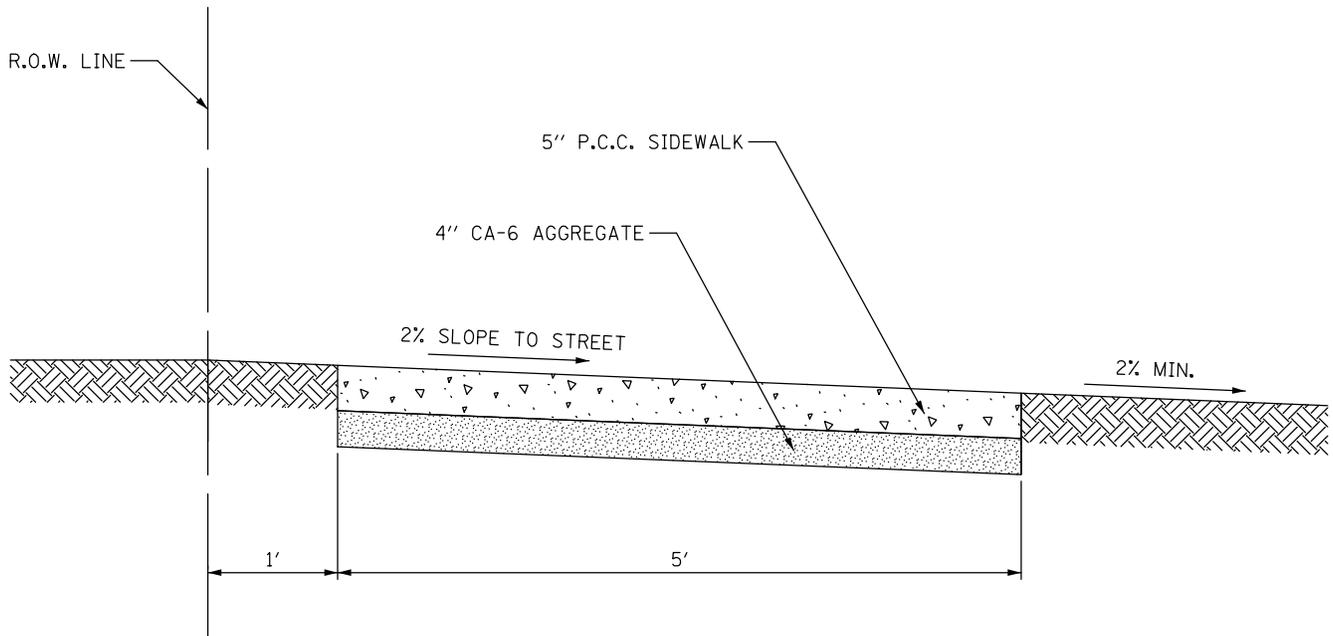
ENGINEERING DETAILS

**SINGLE FAMILY
RESIDENTIAL DRIVEWAY
APPROACH DETAIL**

DATE: 8/31/2018
REV 1: 4/30/2020
REV 2:
REV 3:

DETAIL NO.

R-2



NOTES:

SIDEWALK THROUGH DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH CITY OF ROLLING MEADOWS DETAIL R-1 OR R-2 AS APPROPRIATE. ALL SIDEWALKS SHALL HAVE CONTRACTION JOINTS AT 5' INTERVALS AND EXPANSION JOINTS AT 25' INTERVALS.



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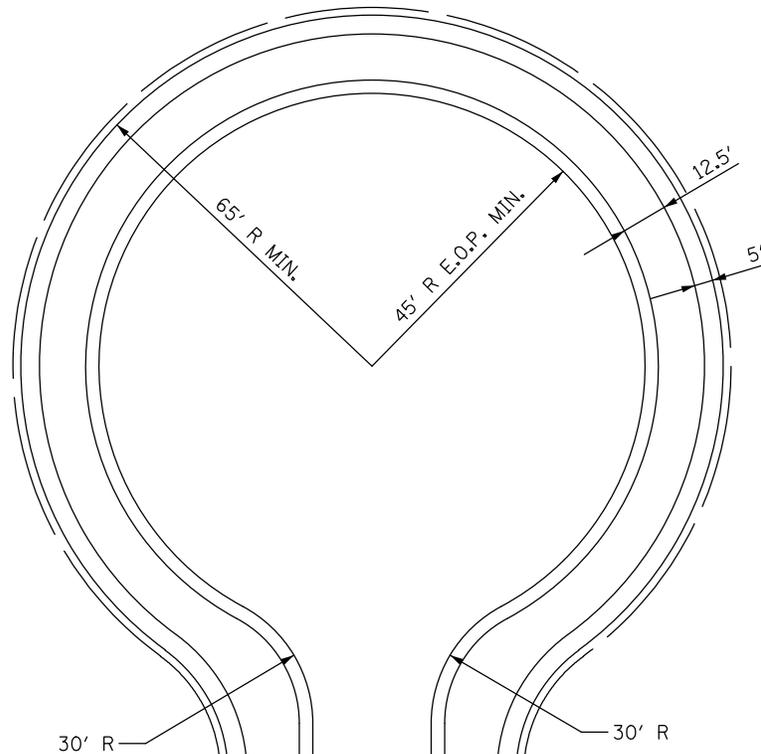
ENGINEERING DETAILS

SIDEWALK DETAIL

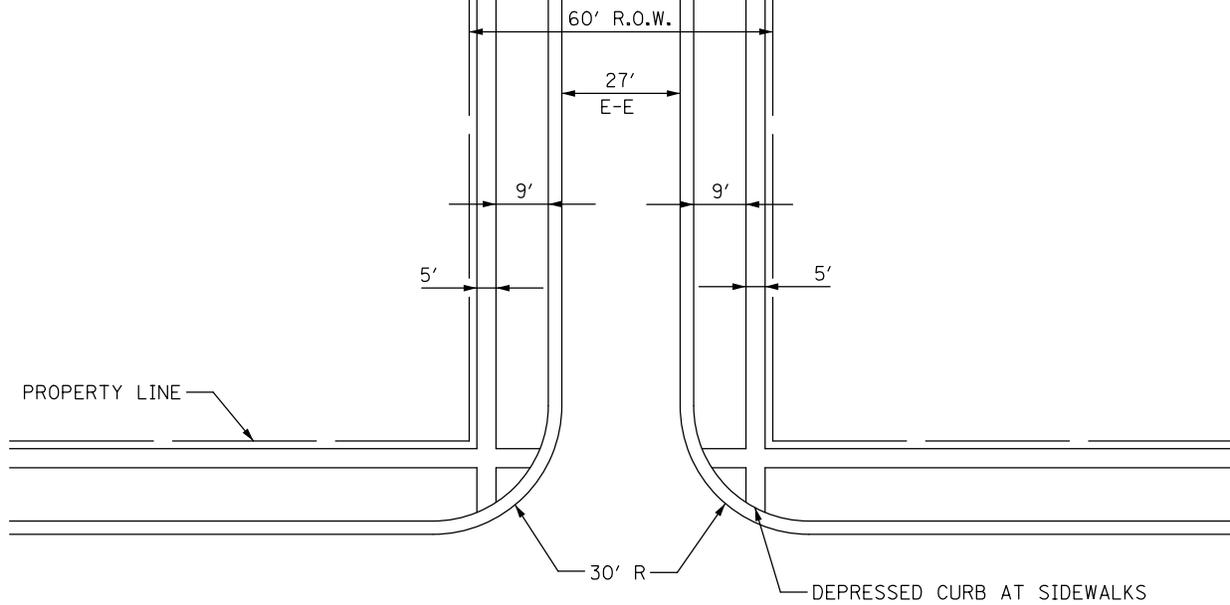
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| DATE: | 8/31/2018 |
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| REV 2: | |
| REV 3: | |

DETAIL NO.

R-3



NOTES:
 MAXIMUM LENGTH OF
 CUL-DE-SAC IS 600 FT.



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ENGINEERING DETAILS

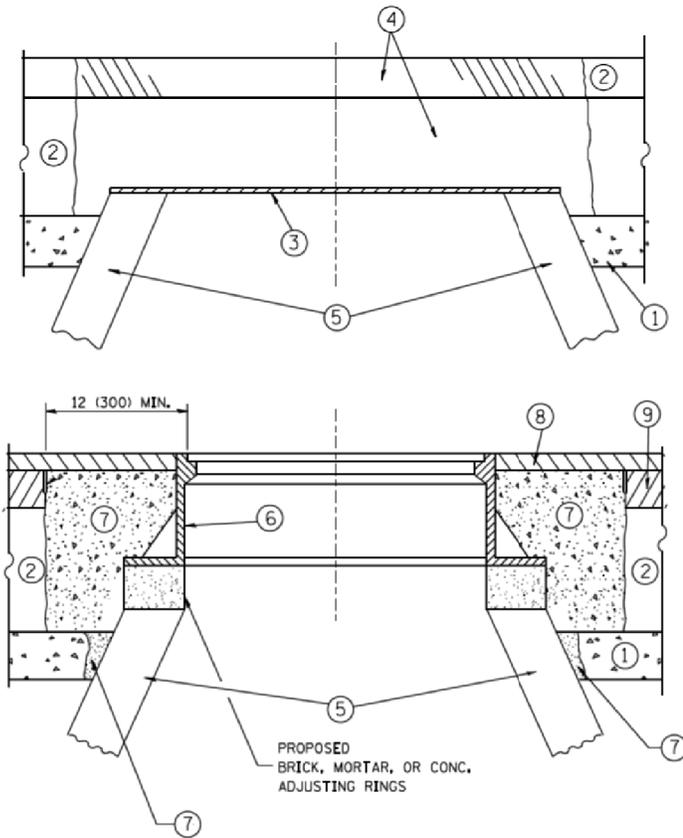
**RESIDENTIAL
 CUL-DE-SAC DESIGN
 AND CONSTRUCTION DETAIL**

| | |
|--------|-----------|
| DATE: | 8/31/2018 |
| REV 1: | |
| REV 2: | |
| REV 3: | |

DETAIL NO.

R-4

DETAILS FOR FRAMES AND LIDS ADJUSTMENT WHEN MILLING



- STAGE 1 (BEFORE PAVEMENT MILLING)
- A) REMOVE A MINIMUM OF 12" OF THE PAVEMENT FROM AROUND THE STRUCTURE.
 - B) REMOVE THE EXISTING FRAME AND LID FROM THE STRUCTURE
 - C) COVER THE STRUCTURE OPENING WITH A 36" DIAMETER METAL PLATE.
 - D) BACKFILL WITH CRUSHED STONE AND A MINIMUM 1 1/2" THICK HMA SURFACE MIX APPROVED BY THE ENGINEER.

- STAGE 2 (AFTER PAVEMENT MILLING)
- A) REMOVE THE HMA SURFACE MIX AND CRUSHED STONE.
 - B) INSTALL THE FRAME AND LID; ADJUST THE FRAME TO ITS FINAL SURFACE ELEVATION.
 - C) THE SURROUNDING SPACE SHALL BE FILLED WITH CLASS PP-1 CONCRETE TO THE ELEVATION OF THE SURFACE OF THE EXISTING BASE COURSE OR THE BINDER COURSE.

*UNLESS OTHERWISE SPECIFIED IN THE PLANS.

THE PROCEDURE EXPLAINED ABOVE SHALL CONFORM TO THE APPLICABLE PORTIONS OF SECTIONS 353, 406, 602, AND 603 OF THE STANDARD SPECIFICATIONS EXCEPT THAT "THE CONTRACTOR SHALL ADJUST THE STRUCTURES TO THE FINISHED PAVEMENT ELEVATION NO MORE THAN 5 CALENDAR DAYS PRIOR TO PLACEMENT OF THE FINAL LIFT OF SURFACE UNLESS APPROVED BY THE ENGINEER."

LEGEND:

- | | |
|--|-------------------------------|
| ① SUB-BASE GRANULAR MATERIAL | ⑥ FRAME AND LID (SEE NOTES) |
| ② EXISTING PAVEMENT | ⑦ CLASS PP-1 CONCRETE |
| ③ 36" DIAMETER METAL PLATE | ⑧ PROPOSED HMA SURFACE COURSE |
| ④ PROPOSED CRUSHED STONE AND HMA SURFACE MIX | ⑨ PROPOSED HMA BINDER COURSE |
| ⑤ EXISTING STRUCTURE | |

NOTES:

EXISTING BROKEN FRAMES AND LIDS SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR AND SHALL BE REPLACED AS DIRECTED BY THE ENGINEER. REPLACEMENT FRAMES AND LIDS WILL BE PAID FOR IN ACCORDANCE WITH ARTICLE 109.04 OF THE STANDARD SPECIFICATIONS UNLESS A SEPARATE PAY ITEM HAS BEEN PROVIDED.

IF THE EXISTING LIDS ARE OPEN, THE FRAME WILL BE ADJUSTED TO THE ELEVATION OF THE MILLED PAVEMENT SURFACE PRIOR TO THE MILLING OPERATION. THE FRAME WILL NOT BE REMOVED AND COVERED BY THE METAL PLATE.

THE METAL PLATE USED TO COVER THE STRUCTURE SHALL REMAIN THE PROPERTY OF THE CONTRACTOR.

WHEN STRUCTURES ARE TO BE ADJUSTED OR RECONSTRUCTED, THE LOWERING AND RAISING OF THE FRAMES AND LIDS WILL NOT BE PAID FOR SEPARATELY BUT WILL BE INCLUDED IN THE COST OF THE CORRESPONDING PAY ITEM.

LOCATION OF STRUCTURES:

THE CONTRACTOR WILL BE REQUIRED TO KEEP A RECORD OF THE LOCATIONS OF THE BURIED STRUCTURES ACCORDING TO THE STATION AND DISTANCE LEFT OR RIGHT OF THE CENTERLINE OF PAVEMENT. UPON COMPLETION OF THE WORK, THE CONTRACTOR WILL DELIVER THE RECORD TO THE ENGINEER .

BASIS OF PAYMENT:

REMOVING FRAMES AND LIDS ON DRAINAGE AND UTILITY STRUCTURES IN THE PAVEMENT PRIOR TO MILLING, AND ADJUSTING TO FINAL GRADE PRIOR TO PLACING THE SURFACE COURSE, WILL BE PAID FOR AT THE CONTRACT UNIT PRICE EACH FOR "FRAMES AND LIDS TO BE ADJUSTED (SPECIAL)."

THIS WORK WILL NOT BE PAID FOR WHEN DRAINAGE AND UTILITY STRUCTURES ARE SPECIFIED FOR PAYMENT AS STRUCTURE RECONSTRUCTION.

NEW FRAMES AND LIDS, WHEN SPECIFIED, WILL BE PAID FOR SEPARATELY.



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ENGINEERING DETAILS

FRAME ADJUSTMENT WHEN MILLING

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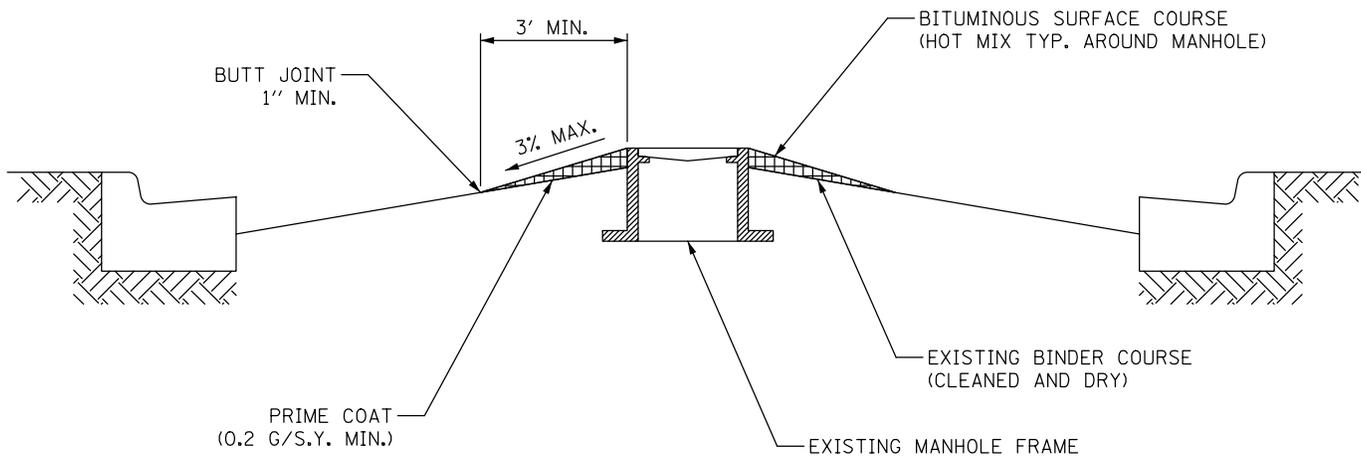
REV 1:

REV 2:

REV 3:

DETAIL NO.

R-5



NOTES:

1. TO BE USED WHEN PLATING PROCEDURE OF R-5 NOT POSSIBLE.
2. RAMP TO BE MAINTAINED THROUGHOUT THE WINTER BY DEVELOPER.
3. RAMP MATERIAL TO BE REMOVED BY MILLING OR OTHERWISE REMOVED BEFORE PLACEMENT OF FINAL SURFACE COURSE.



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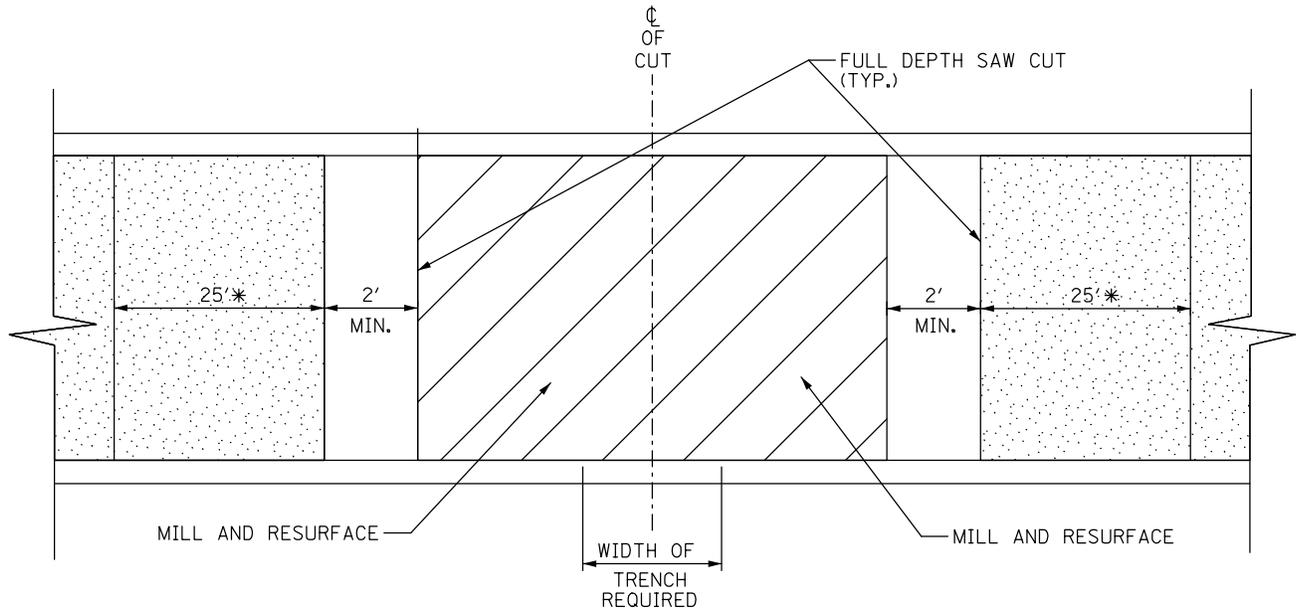
ENGINEERING DETAILS

**MANHOLE RAMPING
 DETAIL**

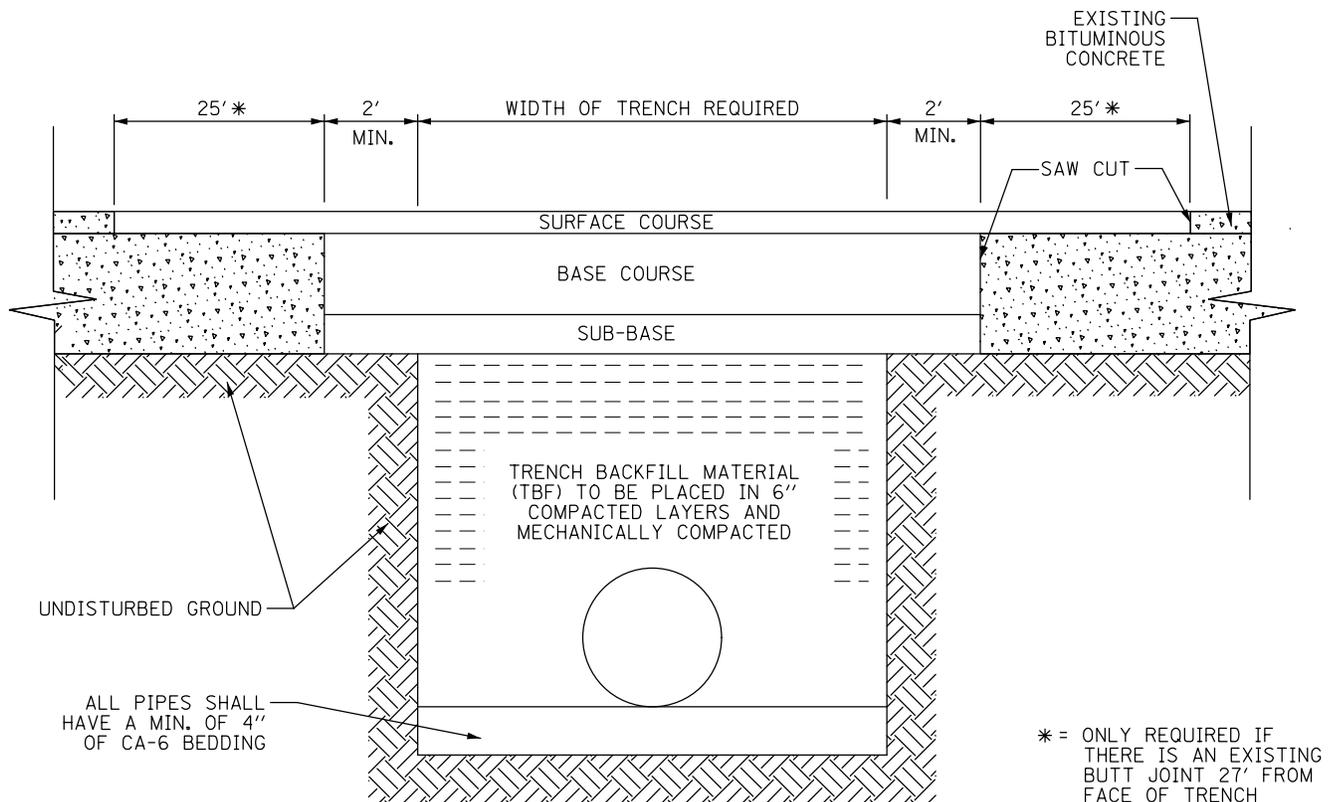
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| DATE: | 8/31/2018 |
| REV 1: | |
| REV 2: | |
| REV 3: | |

DETAIL NO.

R-6



PLAN VIEW



CROSS SECTION VIEW



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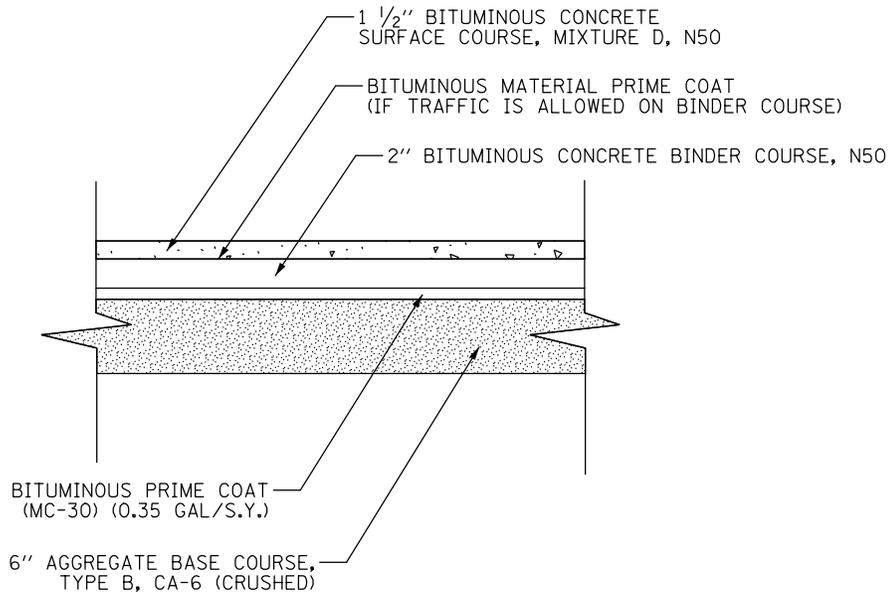
ENGINEERING DETAILS

PAVEMENT REMOVAL AND REPLACEMENT

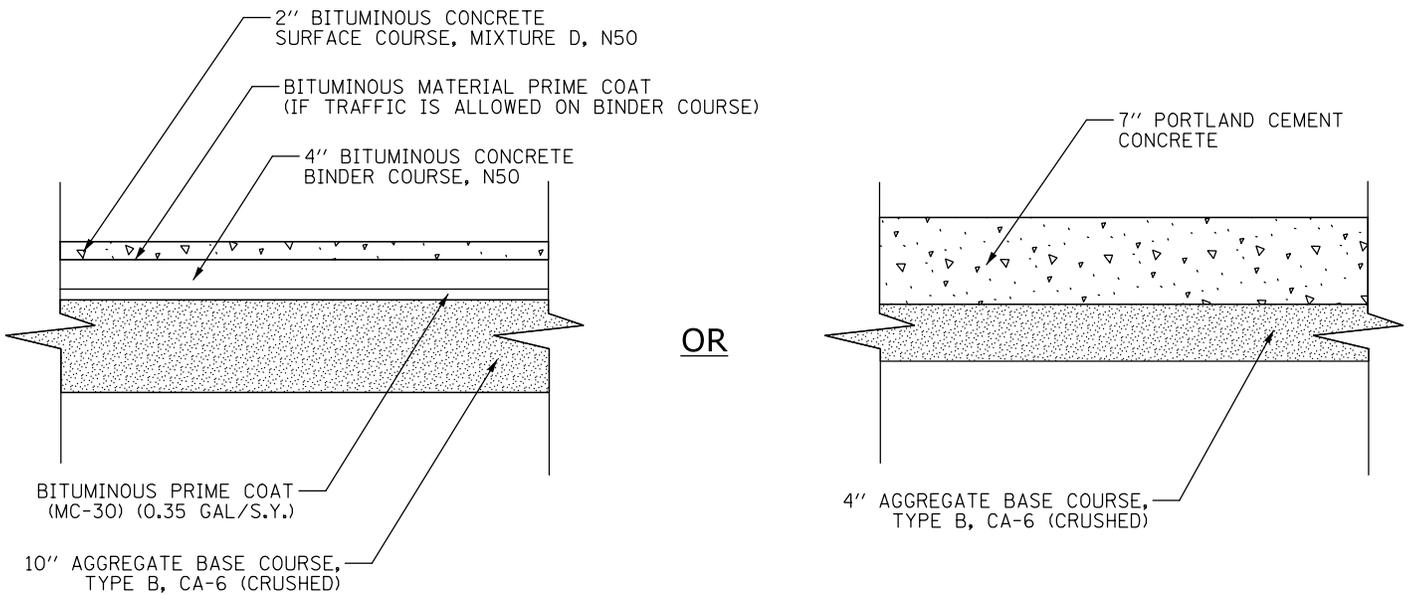
DATE: 8/31/2018
 REV 1:
 REV 2:
 REV 3:

DETAIL NO.

R-7



**MINIMUM
TYPICAL PARKING LOT
PAVEMENT SECTION**



**MINIMUM
HEAVY DUTY- PARKING LOT
PAVEMENT SECTION**



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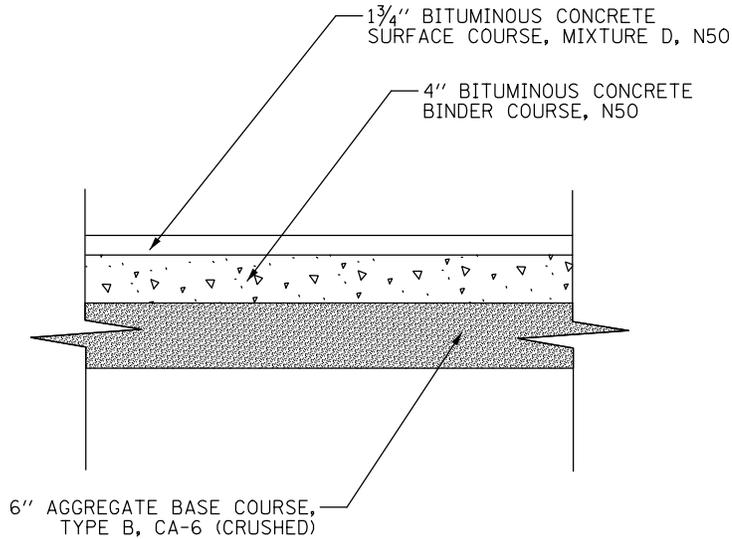
ENGINEERING DETAILS

**PARKING LOT
PAVEMENT SECTIONS**

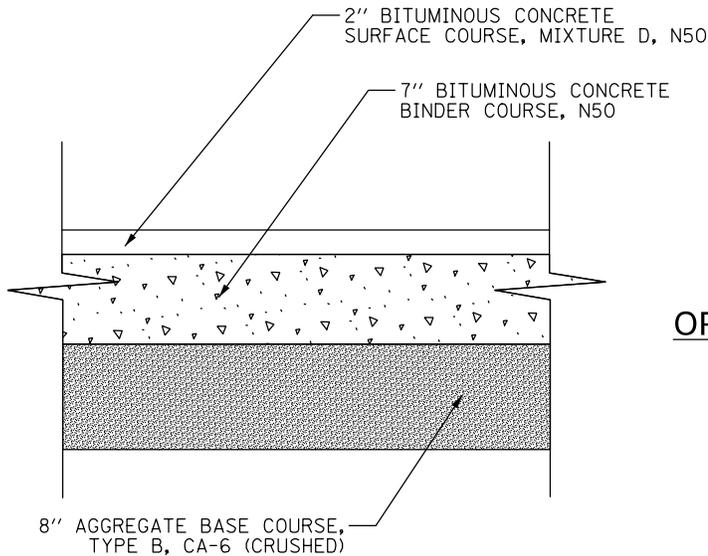
DATE: 8/31/2018
REV 1:
REV 2:
REV 3:

DETAIL NO.

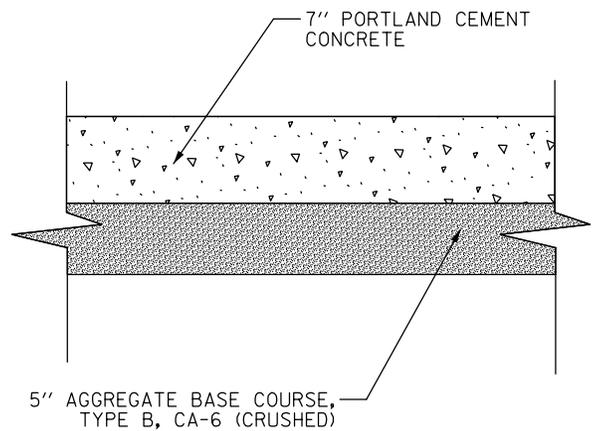
R-8



LOCAL STREETS



OR



COLLECTOR / MULTI-FAMILY STREETS



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ENGINEERING DETAILS

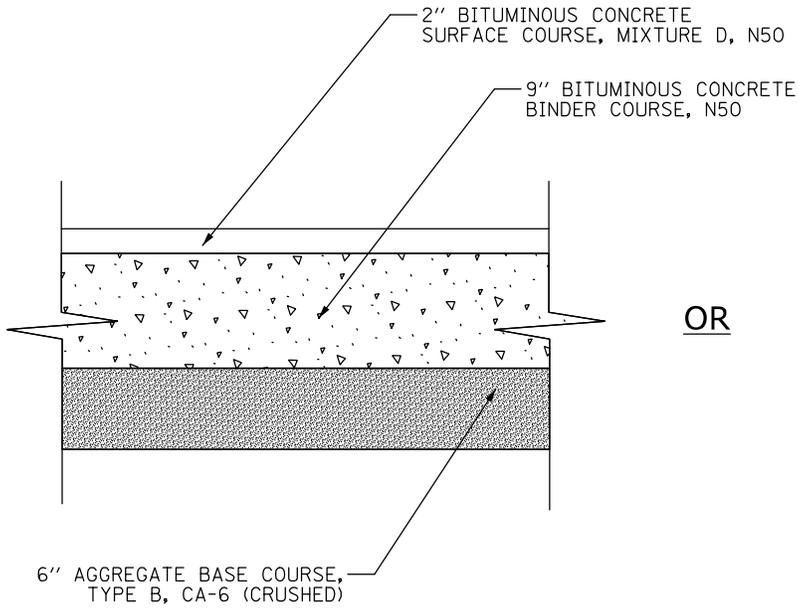
**LOCAL / COLLECTOR / INDUSTRIAL / MAJOR
STREETS PAVEMENT SECTION**

DATE: 8/31/2018
REV 1: _____
REV 2: _____
REV 3: _____

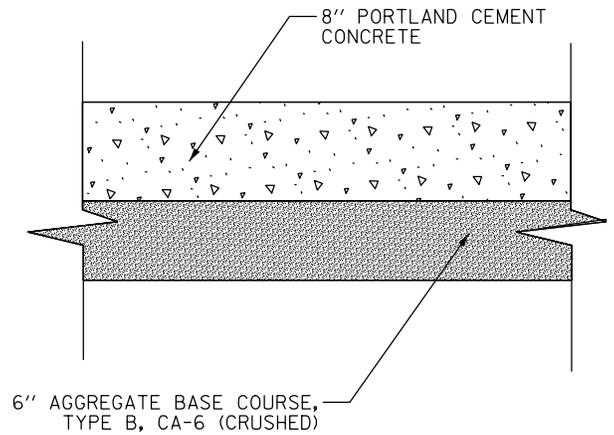
DETAIL NO.

R-9

1 OF 2



OR



MAJOR / INDUSTRIAL

NOTES:

1. BITUMINOUS MATERIALS PRIME COAT MUST BE USED.
2. PRIVATE STREETS SHALL CONFORM TO LOCAL PAVEMENT SECTION.



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ENGINEERING DETAILS

**LOCAL / COLLECTOR / INDUSTRIAL / MAJOR
 STREETS PAVEMENT SECTION**

| | |
|--------|-----------|
| DATE: | 8/31/2018 |
| REV 1: | |
| REV 2: | |
| REV 3: | |

| | |
|------------|------------|
| DETAIL NO. | R-9 |
| | |
| | |
| | |

| | REQUIRED ROW WIDTHS | REQUIRED ROADWAY WIDTHS (EDGE TO EDGE) | MINIMUM CENTERLINE RADII |
|------------|---------------------|--|--------------------------|
| MAJOR | 100' | 60' | 900' |
| COLLECTOR | 66' | 36' | 450' |
| LOCAL | 60' | 27' | 300' |
| INDUSTRIAL | 80' | 34' | 350' |



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ENGINEERING DETAILS

ROW / ROADWAY WIDTHS AND CENTERLINE RADII

DATE: 8/31/2018
 REV 1:
 REV 2:
 REV 3:

DETAIL NO.

R-10

SIGN PANEL

- ALL TRAFFIC CONTROL SIGNAS SHALL BE PRIZMATIC 3M REFLECTIVE MATERIAL W/1150 CLEAR OVERLAY
- ALL SIGNS SHALL BE 0.08 GAL ALUMINUM 1.5 RC
- INSTALLATION OF SIGNS SHALL BE IN ACCORDANCE WITH LATEST VERSION OF ILLINOIS MUTCD
- ALL STOP SIGN SHALL BE 30'' x 30''

METAL POST

- POSTS SHALL BE FRANKLIN INDUSTRIES EZE-ERECT, D-CHANNEL GALVANIZED WITH WALKWAY BASE
- POSTS SHALL BE 3 LBS/FT FOR ALL TRAFFIC CONTROL SIGNS (STOP, YIELD, SPEED LIMIT, LANE USE, STRET NAMES, ETC.)
- POST SHALL BE 2 LBS/FT INFORMATIONAL SIGNS



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ENGINEERING DETAILS

STREET SIGN AND POST STANDARDS

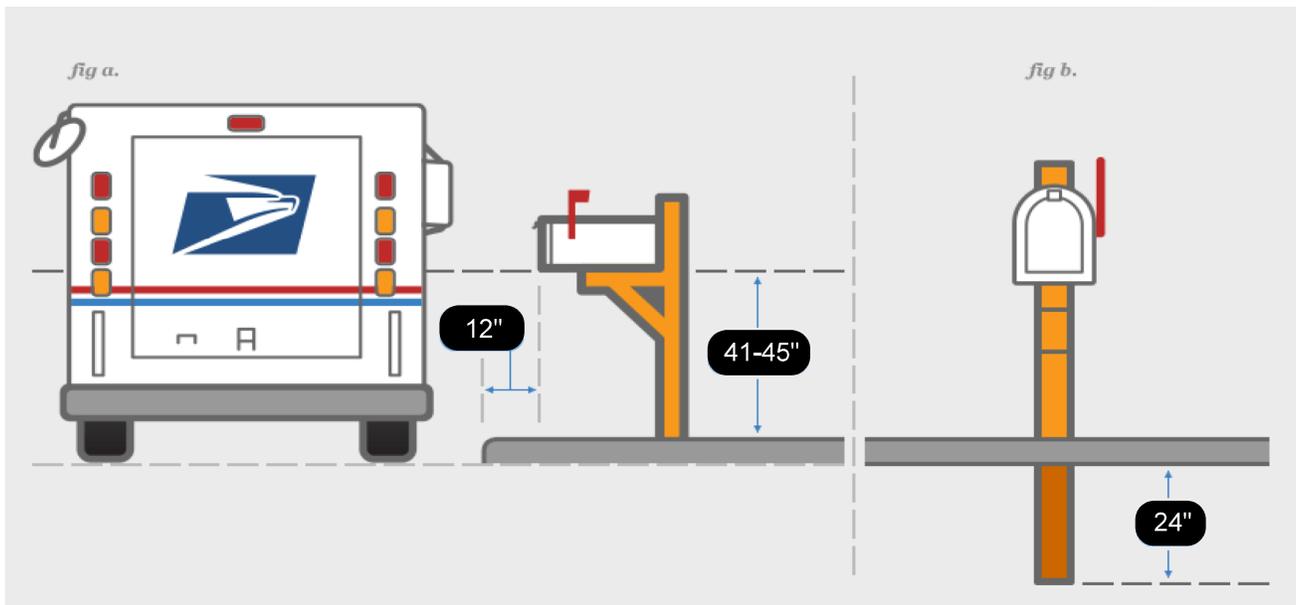
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| DATE: | 8/31/2018 |
| REV 1: | |
| REV 2: | |
| REV 3: | |

DETAIL NO.

R-11

GUIDELINES FOR THE INSTALLATION OF CURBSIDE MAILBOXES

1. THE HEIGHT OF THE MAILBOX MUST BE BETWEEN FORTY-ONE INCHES AND FORTY-FIVE INCHES (41"-45"). FROM THE TOP OF THE STREET TO THE BOTTOM OF THE MAILBOX.
2. HOUSE NUMBERS OF NOT LESS THAN ONE INCH (1") HIGH ARE REQUIRED ON ALL MAILBOXES, NAMES ARE OPTIONAL.
3. THE FACE OF THE MAILBOX SHOULD BE TWELVE INCHES (12") FROM THE BACK OF THE CURB, OR EDGE OF THE PAVEMENT IF NO CURB IS PRESENT.
4. SUPPORT POST SHOULD BE INSTALLED TWENTY-FOUR INCHES (24") BELOW GRADE.
5. ALL POSTS USED TO SUPPORT MAILBOXES MUST BE NEAT AND OF ADEQUATE STRENGTH.
6. MAILBOX SUPPORT STRUCTURES SHOULD BE PAINTED WITH A PRESERVATIVE TO PREVENT RUST OR DECAY.
7. THE CITY OF ROLLING MEADOWS PROHIBITS THE USE OF BRICKS AND/OR OTHER MASONRY STRUCTURES TO BE USED AS MAILBOX SUPPORTS.



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ENGINEERING DETAILS

STANDARD MAILBOX GUIDELINES

DATE: 8/31/2018

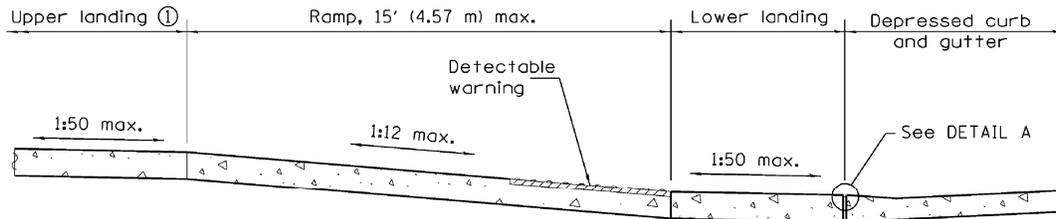
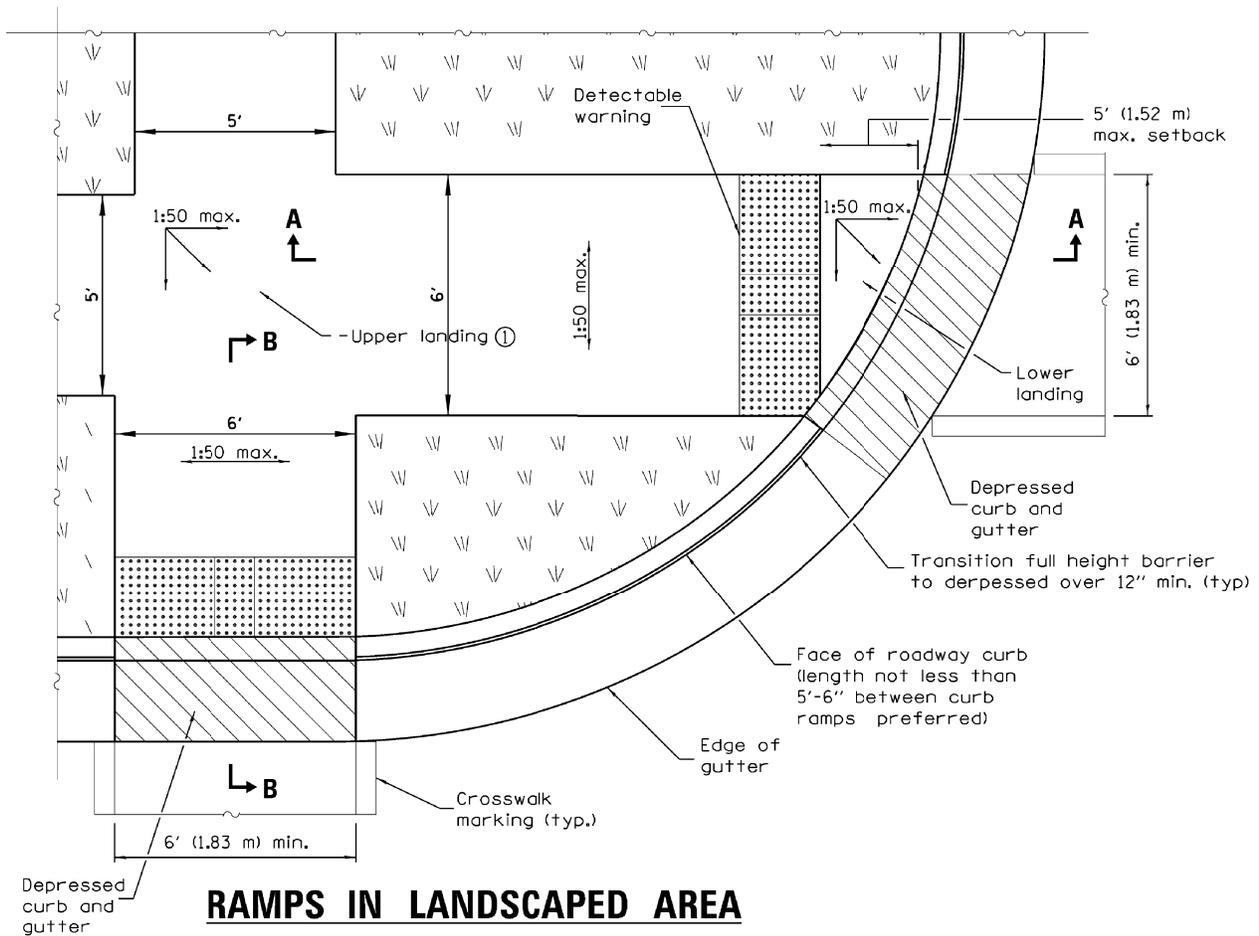
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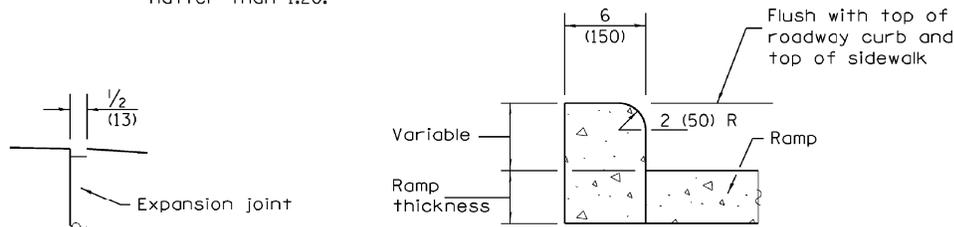
REV 3:

DETAIL NO.

R-12



① Upper landing not required for ramp slopes flatter than 1:20.



To be used only as directed by the Engineer



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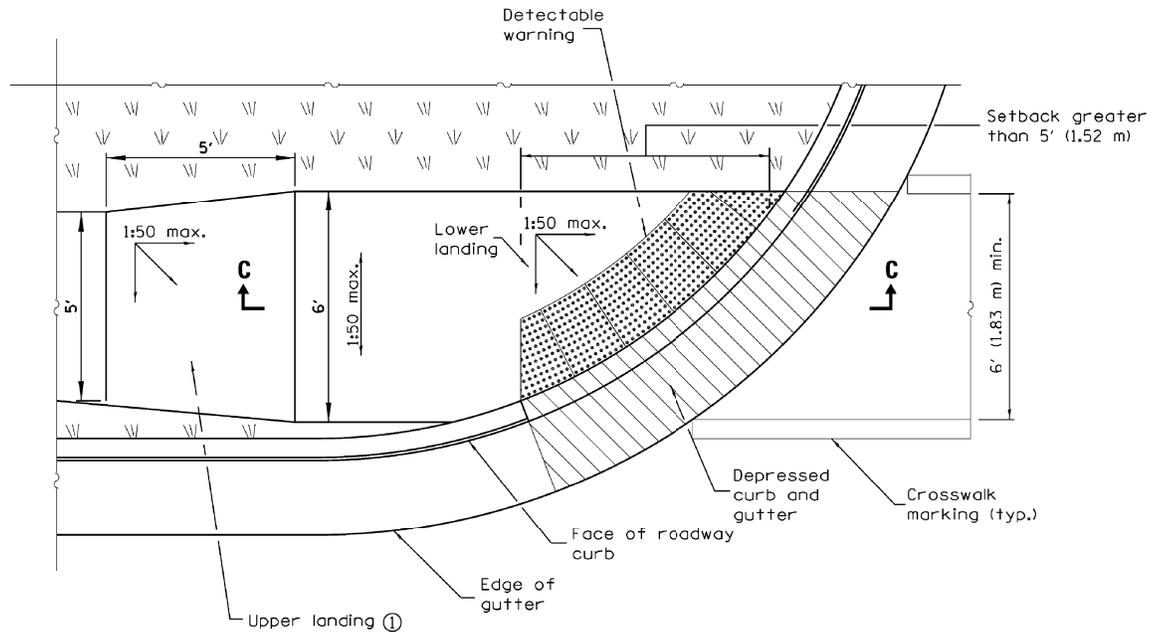
ADA RAMP DETAIL

DATE: 8/31/2018
REV 1: 4/30/2020
REV 2:
REV 3:

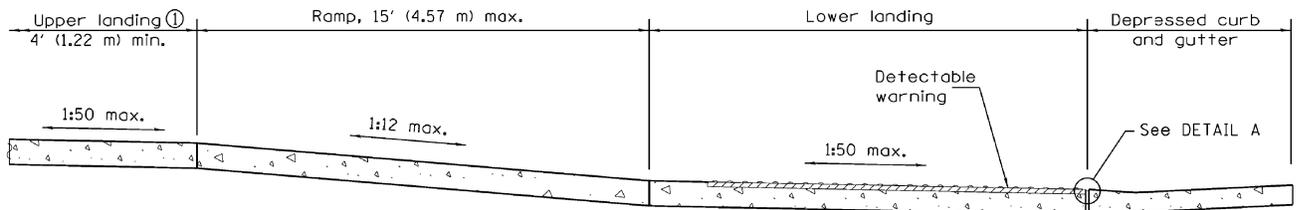
DETAIL NO.

R-13

1 OF 2



**RAMP IN LANDSCAPED AREA
SETBACK > 5'**



SECTION C-C

① Upper landing not required for ramp slopes flatter than 1:20.

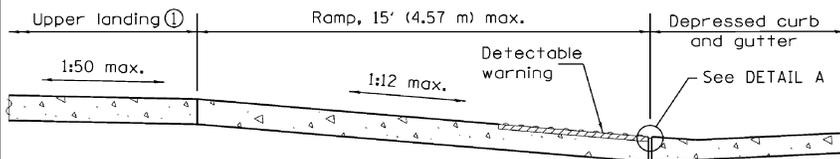
GENERAL NOTES

All slope ratios are expressed as units of vertical displacement to units of horizontal displacement (V:H).

Where 1:50 maximum slope is shown, 1:64 is preferred.

See Standard 606001 for details of depressed curb adjacent to curb ramp.

All dimensions are in inches (millimeters) unless otherwise shown.



SECTION B-B

① Upper landing not required for ramp slopes flatter than 1:20.



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ENGINEERING DETAILS

ADA RAMP DETAIL

DATE: 8/31/2018
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REV 2:
REV 3:

DETAIL NO.

R-13

2 OF 2

Miscellaneous Sanitary Sewer Notes

1. Sanitary sewers, main, and services and their fittings shall be constructed of one (1) or more of the following materials:
 - a. PVC pipe, ASTM D-3034, SDR26 with elastomeric gasket joints conforming to ASTM D-3212.
 - b. Ductile iron pipe Class 52 with joints conforming to ANSI A21.11. Only when approved for structural purposes by the City Engineer or Director of Public Works or designated representative.

2. Sanitary sewer manholes shall be five (5)-feet zero (0)-inches diameter precast structures. Frames shall be East Jordan 1020, 1022 on 1050 HD with self-sealing application lids with concealed pick holes. Lids shall be imprinted with the word "sanitary."

3. Sanitary sewer manholes and inspection manholes shall have eccentric cones. All manhole sections and adjusting rings shall be securely sealed to each other using pre-formed bituminous mastic such as "RAM-NEK." This mastic shall be applied in such a manner that ground water inflow cannot enter the manhole through gaps between barrel sections or cone sections and adjusting rings. Double "TAR STICK" may be required in areas with high water tables. External "CRETEX" brand chimney seals shall be installed in all manholes. "MAC RAP" is to be used at all manhole section joints. All sanitary structures to be tar-coated including cones.

4. All pipe connections in/out of a sanitary manhole shall be cored and booted with gasket type water stop gaskets, with stainless steel bands per ASTM C923.

5. Sanitary sewer service risers shall be used when sewer main exceeds 12-feet in depth. The bedding under the riser tee shall thoroughly compacted. The engineer reserves the right to require concrete encasement of the riser or a concrete thrust block under the tee.

6. All sanitary sewers including service stubs shall be subject to an air test Section 31 of the Standard Specifications. Applicable portions of main line sewer including main with riser sections shall be subjected to a deflection test conducted by the contractor. All testing shall be observed by a City of Rolling Meadows Public Works Department Representative.

7. The main sanitary sewer shall be televised prior to acceptance. A videotape, CD, or DVD along with a paper report shall be submitted to the City of Rolling Meadows Public Works Department. All sewer televising must be performed by NASSCO certified operators using current NASSCO standards and coding system that can be found in current NASSCO documents. The contractor, without delay, shall preform all necessary corrective work.



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ENGINEERING DETAILS

MISCELLANEOUS SANITARY SEWER NOTES

| | |
|--------|-----------|
| DATE: | 1/22/2018 |
| REV 1: | |
| REV 2: | |
| REV 3: | |

DETAIL NO.

SAN-0

8. Control and sampling manholes must be installed in the ROW or as approved by the City of Rolling Meadows on a straight portion of the line without any bends inside the manhole or within five (5)-feet of the exterior of the manhole. In the event that a grease trap is needed, the grease trap shall precede the sample manhole. The grease waste service must connect to a main service before the sample manhole.
9. All sump pumps must discharge outside of the home or to the storm sewer system. All interior floor drains waste ejector pits must connect to the sanitary sewer system.
10. All sanitary sewer stubs shall be marked with 4x4 post painted green.
11. Structures, manholes, inlets, catch basin sumps, and valve vaults shall be cleaned prior to any inspection at the end of the project and prior to City acceptance. Sanitary and storm sewer main shall be jet cleaned if evidence of debris build-up is present at the time of City acceptance.
12. Vehicle and truck dock drains must meet the plumbing code requirements, including waste interceptors, and must be approved by the City Public Works Director or designated representative.
13. When existing stubs are not available, all service connections to mainline sewer shall consist of the following:
 - a. If existing sewer is PVC or clay pipe, the mainline sewer shall be cut and a wye section with chamfer shall be installed with non-sheer mission coupling placed over connection points; for clay, a minimum of two (2)-feet of PVC is required on each side of wye;
 - b. Existing stubs or services planned for use must be televised and verified by the City of Rolling Meadows to be in acceptable condition prior to use or reuse; and
 - c. **Break in connections are not permitted.**
 - d. Sanitary Services must be a minimum of 6" and have an outside clean out access.
14. Septic tanks, cesspools, pit privies, aerobic treatment plants and seepage pits that are no longer in use shall be completely pumped. The floor and walls shall be cracked or crumbled so that the tank will not hold water, and the tank shall be filled with sand or soil. If the tank is removed from the ground, the excavation shall be filled with soil.



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ENGINEERING DETAILS

MISCELLANEOUS SANITARY SEWER NOTES

| | |
|--------|-----------|
| DATE: | 1/22/2018 |
| REV 1: | 4/30/2020 |
| REV 2: | |
| REV 3: | |

| | |
|------------|--------------|
| DETAIL NO. | SAN-0 |
| | |
| | |
| | |

EAST JORDAN 1050 HEAVY DUTY FRAME
IN ROADWAY 1020/1022 IN GRASSED
AREAS IMPRINTED W/"CITY OF ROLLING
MEADOWS SANITARY". GASKETED SEAL
TIGHT COVER, 22³/₄"

TWO (2) ADJUSTING RINGS
MAXIMUM ALLOWABLE. MAXIMUM
HEIGHT ON ADJUSTMENT IS 8"

PLASTIC BUTYL
SEALANT

EXTERNAL MANHOLE CHIMNEY SEAL,
CRETEX MFG. CONFORMING TO ASTM C-923

24"
MIN.

NON-CORROSIVE PLASTIC
COATED CAST IRON MANHOLE
STEPS

ECCENTRIC CONE SECTION ONLY

TAR COATED PRECAST
SECTIONS

60" DIA.
MIN.

5"
MIN.

EXTERNAL JOINT SEALS
CONFORMING TO ASTM C-877,
TYPE II MAR-MAC MFG. OR
APPROVED EQUAL

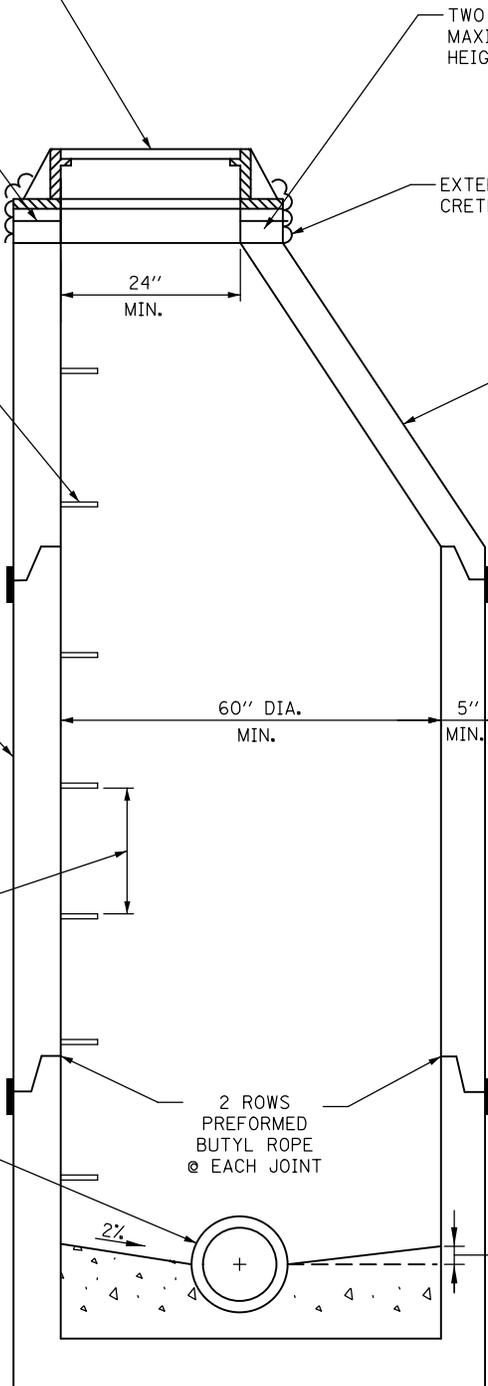
STEEL CORE PLASTIC
STEPS @ 16" O.C. NOT
BE POSITIONED OVER INVERTS

FLEXIBLE RUBBER CONNECTOR
CONFORMING TO ASTM C-923

2 ROWS
PREFORMED
BUTYL ROPE
@ EACH JOINT

FIRST SECTION MONOLITHIC
W/BASE

3" MIN.



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ENGINEERING DETAILS

**SANITARY MANHOLE
TYPE I**

DATE: 1/22/2018

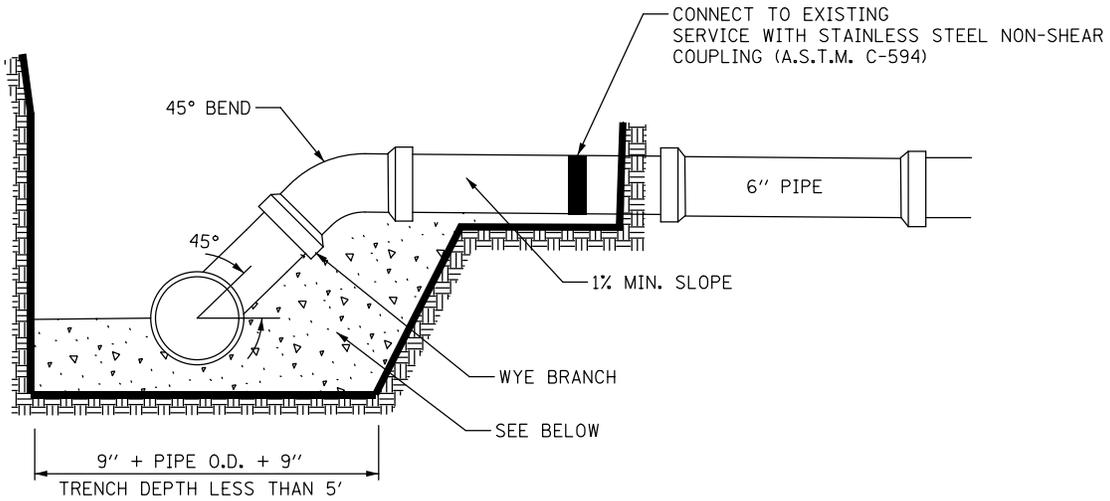
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REV 2:

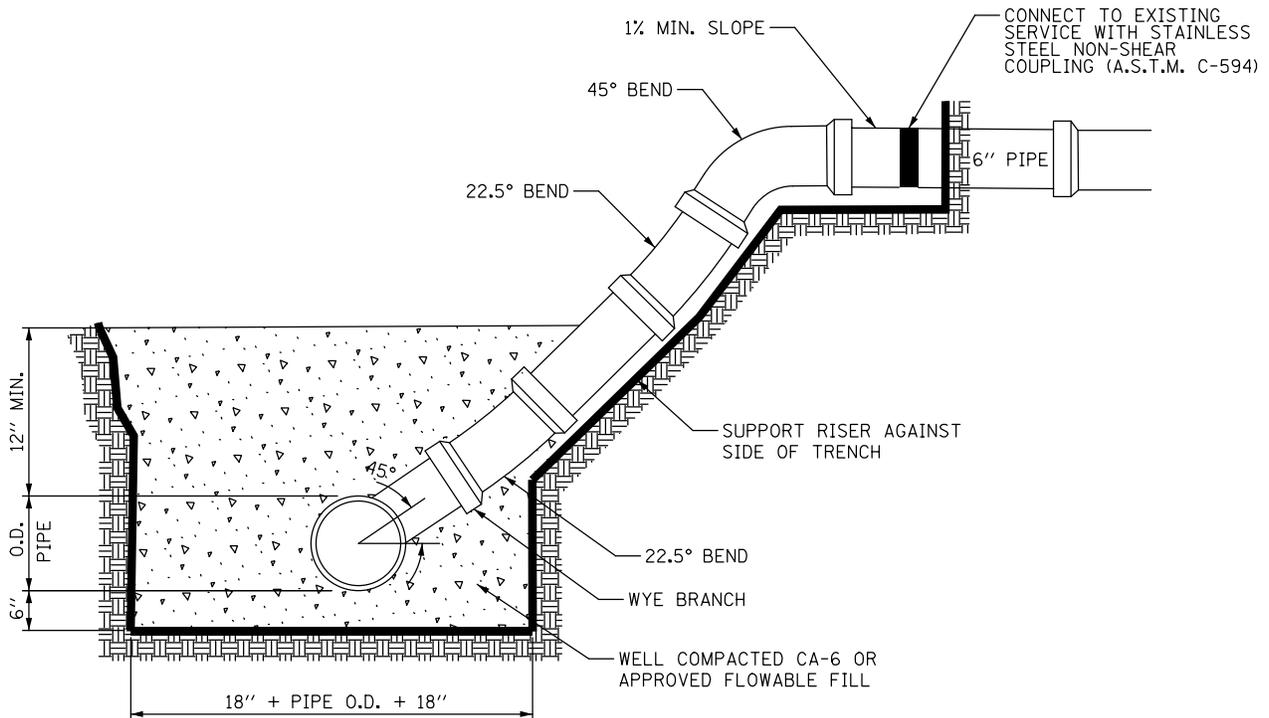
REV 3:

DETAIL NO.

SAN-1



BUILDING SERVICE DETAIL UNDER 5 FEET



TRENCH DEPTH 5' AND GREATER

NOTES:

1. DEPTHS, 10' SDR 26 PVC SEWER PIPE PER ASTM D-3034 CELL CLASS 12454B
2. NEW SERVICES TO BE PVC OR CAST IRON ONLY CLAY NOT PERMITTED 4. SEE SAN-8 FOR BEDDING AND BACKFILL
3. SEE SAN-6 FOR BEDDING AND BACKFILL
4. WATER MAIN QUALITY PVC C909 PIPE IF OVER EXISTING UTILITY



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ENGINEERING DETAILS

BUILDING SERVICE RISER

DATE: 1/22/2018

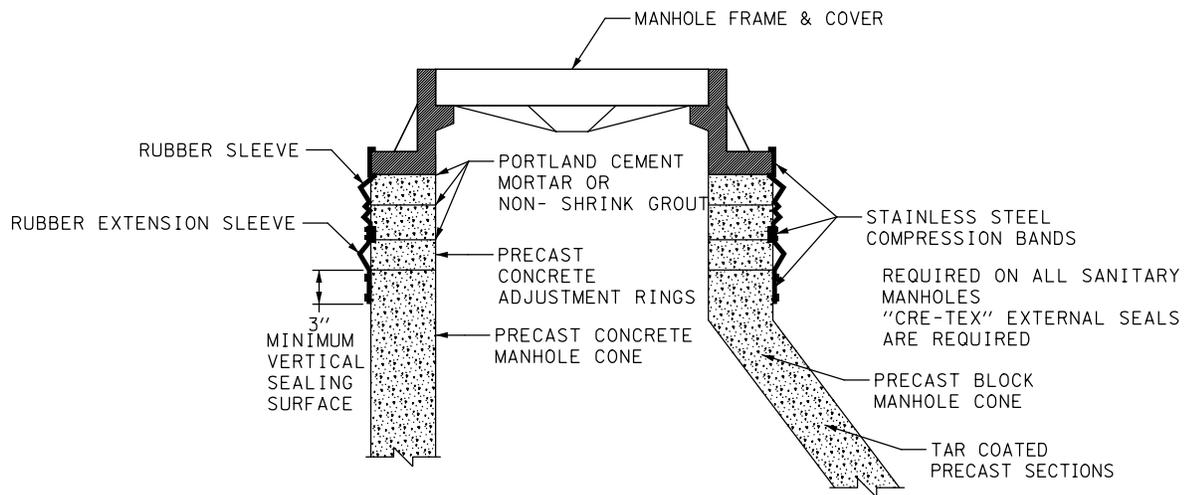
REV 1:

REV 2:

REV 3:

DETAIL NO.

SAN-2



NOTE:

MANHOLE FRAME - CHIMNEY SEAL SHALL BE INSTALLED ON SANITARY MANHOLES. THE SEAL AND SEAL EXTENSIONS SHALL BE AS MANUFACTURED BY CRETEX SPECIALTY PRODUCTS. THE SLEEVES AND EXTENSIONS SHALL HAVE A MINIMUM THICKNESS OF 3/16 INCHES AND SHALL BE EXTRUDED OR MOLDED FROM A HIGH-GRADE RUBBER COMPOUND CONFORMING TO THE APPLICABLE REQUIREMENTS OF ASTM C923, WITH A MINIMUM 1500 PSI TENSILE STRENGTH, MAXIMUM 18% COMPRESSION SET AND A HARDNESS (DUROMETER) OF 48±5. THE BANDS USED FOR COMPRESSING THE SLEEVE AND EXTENSION AGAINST THE MANHOLE SHALL BE FABRICATED FROM 16 GAUGE STAINLESS STEEL CONFORMING TO ASTM C-923 TYPE 304. ANY SCREW BOLTS OR NUTS USED ON THIS BAND SHALL BE STAINLESS STEEL CONFORMING TO ASTM F593 AND 594, TYPE 304. DETAILED INSTALLATION PROCEDURES SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. ALL COSTS FOR THE FURNISHING AND INSTALLATION OF THE INTERNAL RUBBER SEAL AND EXTENSION SHALL BE INCLUDED IN THE UNIT PRICE BID FOR SANITARY MANHOLES. NO INTERNAL CHIMNEY SEALS PERMITTED.

PRECAST MANHOLE WITH EXTERNAL SEAL

- 1) THE RUBBER SLEEVE IS AVAILABLE IN A 9" HEIGHT (STANDARD).
- 2) SEE THE CHIMNEY HEIGHT TABLE BELOW FOR SEAL AND EXTENSION COMBINATIONS NEEDED TO SPAN FROM THE FRAME TO THE TOP OF THE CONE ON MANHOLES WITH VARIOUS CHIMNEY HEIGHTS. FRAME OFFSETS OR DIAMETER DIFFERENCES WILL REDUCE THESE SPAN HEIGHTS.
- 3) THE TOP OF THE CONE SHALL HAVE A MINIMUM OF 3" HIGH VERTICAL SEALING SURFACE THAT IS SMOOTH AND FREE OF ANY FORM OFFSETS OR EXCESSIVE HONEYCOMB.

CHIMNEY HEIGHT TABLE

| COMBINATIONS OF SEALS AND EXTENSIONS | TO SPAN HEIGHTS OF: |
|---|---------------------|
| STANDARD 9" ONLY | OVER 3" - 6.5" |
| STANDARD SEAL + EXTENSION | OVER 6.5" - 13.5" |
| STANDARD SEAL + MULTI EXTENSIONS | OVER 13.5" |
| ADD 7" OF COVERAGE FOR EACH ADDITIONAL EXTENSION. | |



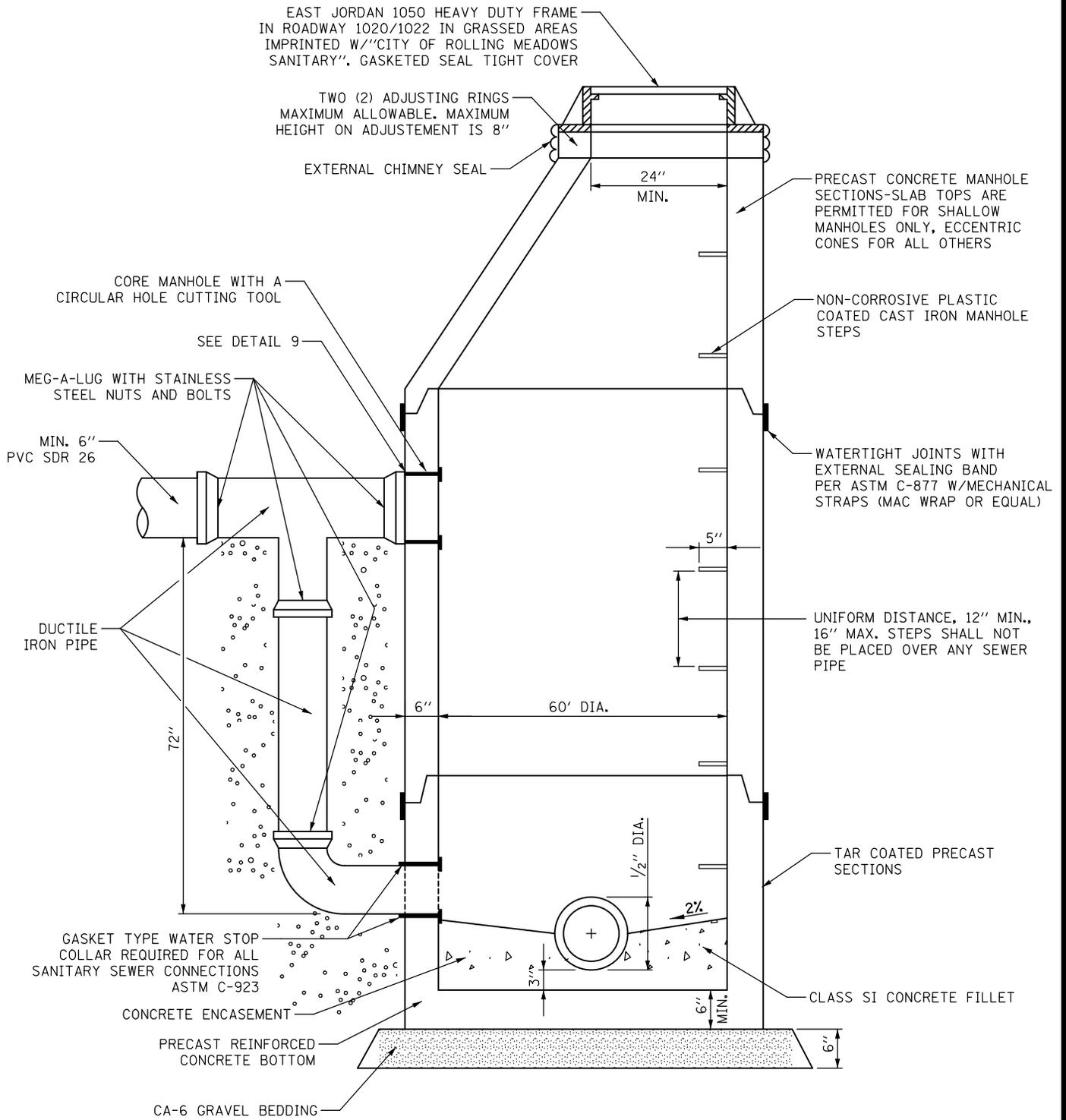
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ENGINEERING DETAILS

**SANITARY SEWER
 EXTERNAL CHIMNEY
 SEAL DETAIL**

| | |
|-----------------|------------|
| DATE: 1/22/2018 | DETAIL NO. |
| REV 1: | |
| REV 2: | |
| REV 3: | |

SAN-3



NOTES:

USE DROP CONNECTIONS FOR ANY SANITARY SEWER PIPE ENTERING TWO (2) FEET OR MORE ABOVE THE LOWEST PIPE INVERT.

ALL PRECAST CONCRETE STRUCTURES MUST CONFORM TO AASHTO M199

1. ALL PIPE CONNECTIONS OPENINGS SHALL BE PRECAST WITH RESILIENT RUBBER WATER TIGHT PIPE SLEEVES.
2. MANHOLE FRAME, ADJ. RINGS & ALL CONCRETE SECTIONS SHALL BE SET ON A PREFORMED BIT. PLASTIC GASKET (RUB-R-NEK OR EZ STIK)
3. FILL LUG HOLES WITH BITUMINOUS MASTIC JOINT MATERIAL AND NON-SHRINKING GROUT.



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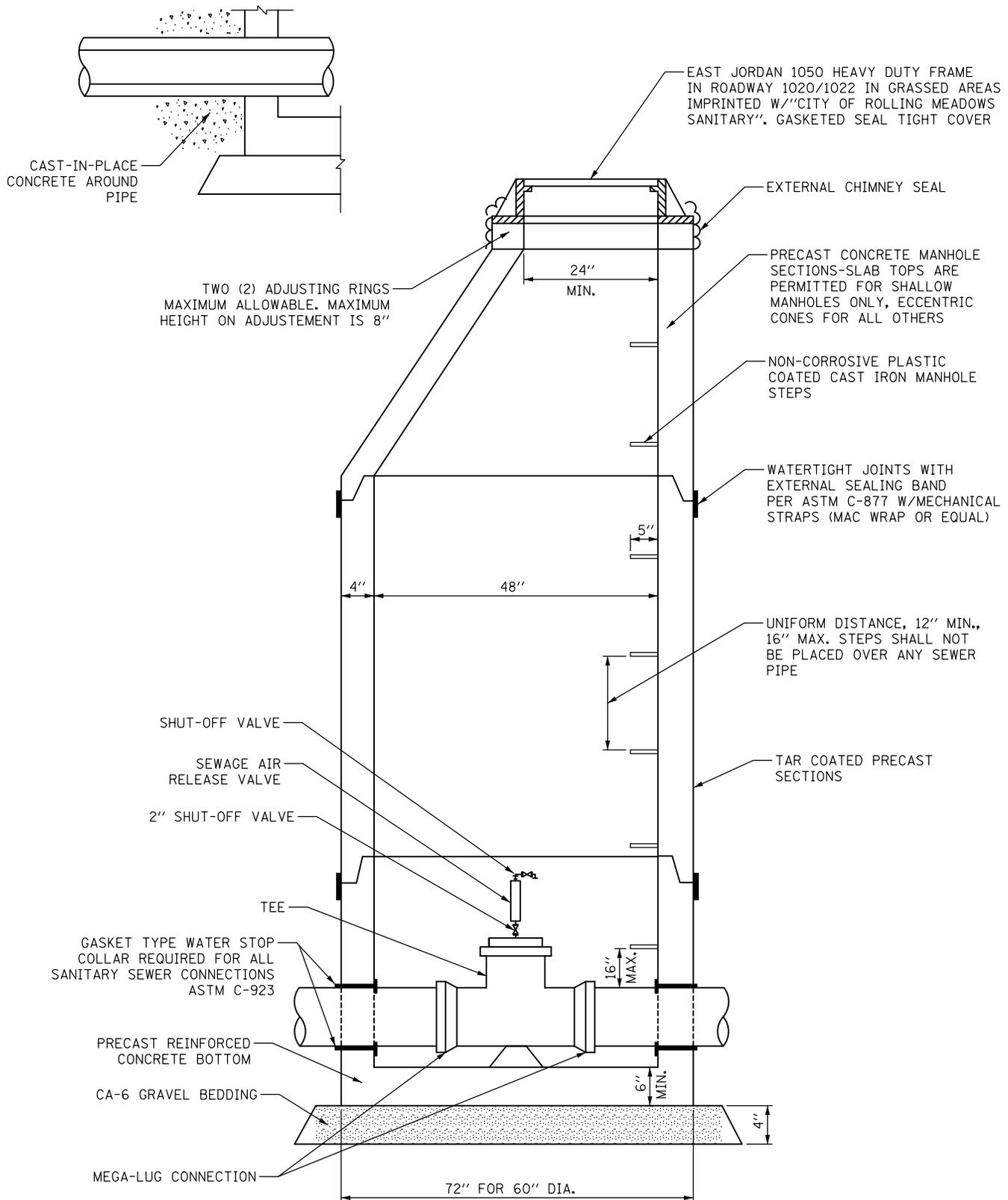
ENGINEERING DETAILS

**DROP MANHOLE
 DETAIL OUTSIDE TYPE**

| | |
|--------|-----------|
| DATE: | 1/22/2018 |
| REV 1: | |
| REV 2: | |
| REV 3: | |

DETAIL NO.

SAN-4



ALL PRECAST CONCRETE STRUCTURES MUST CONFORM TO AASHTO M199



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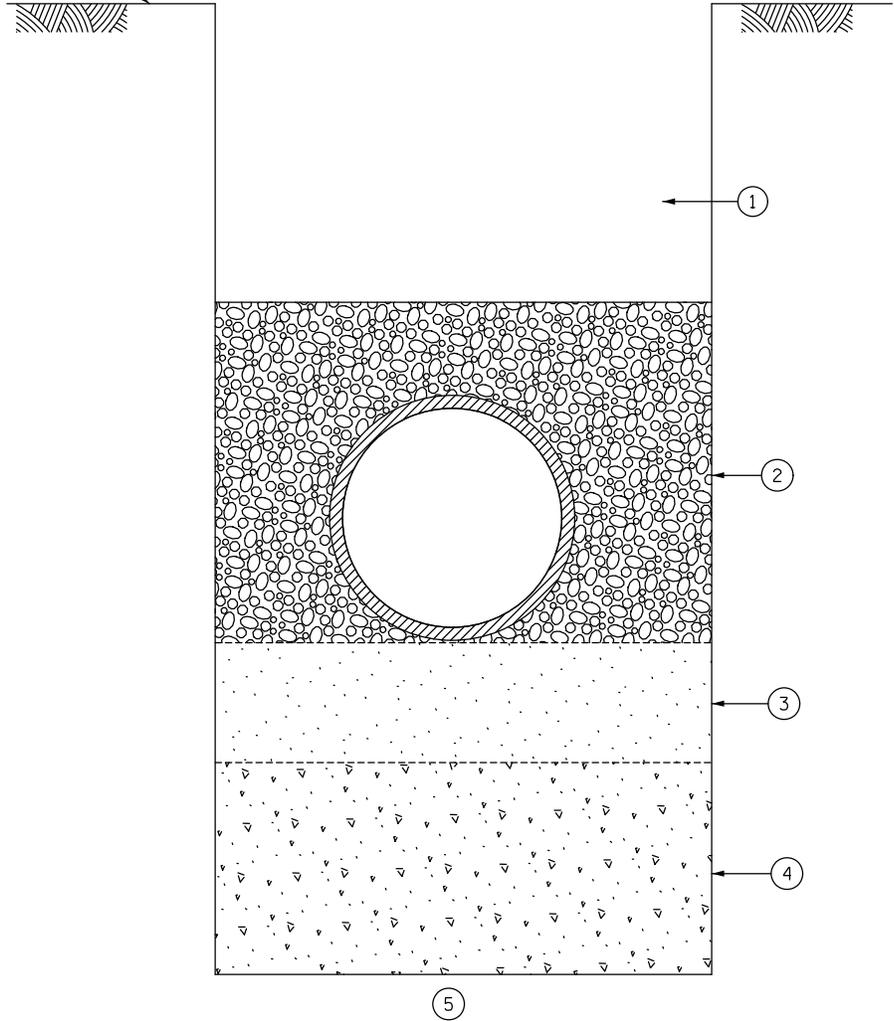
ENGINEERING DETAILS

**SANITARY SEWER
 AIR RELEASE
 MANHOLE DETAIL**

| | |
|--------|-----------|
| DATE: | 1/22/2018 |
| REV 1: | |
| REV 2: | |
| REV 3: | |

| | |
|------------|--------------|
| DETAIL NO. | SAN-5 |
| | |
| | |
| | |

FINISHED GRADE



- ① TRENCH BACKFILL UNDER PAVEMENT, CURB AND GUTTER AS INDICATED IN ROAD SUBGRADES AND WITHIN 2' OF ANY PROPOSED CURB AND GUTTER OR SIDEWALK. MECHANICALLY COMPACTED BACKFILL OF EXCAVATED MATERIALS IN OTHER LOCATIONS IF APPROVED BY THE PROVISIONS FOR MATERIALS AND COMPACTION REQUIREMENTS.
- ② FOR SANITARY SEWER PVC: COMPACTED GRANULAR MATERIAL CA-6 TO 12" ABOVE TOP PIPE. (ALSO SEE NOTE #1 BELOW)
- ③ 6" COMPACTED BEDDING, CA-6 GRADATION
- ④ UNSUITABLE MATERIAL TO BE REMOVED WHERE DIRECTED BY THE ENGINEER AND REPLACED WITH SUITABLE AND COMPACTED MATERIAL
- ⑤ TRENCH WIDTH - PIPE O.D. + 12" MINIMUM PIPE O.D. + 18" MAXIMUM

NOTES:

- 1. PVC PIPE CONFORMING TO THE SDR SPECIFIED IN THE PLANS SHALL BE INSTALLED TO THE LATEST REVISED SPECIFICATION REQUIREMENTS OF ASTM D2321 USING EITHER COMPACTED CLASS I OR CLASS II GRANULAR MATERIALS FOR BEDDING, HAUNCHING AND INITIAL BACKFILL OF 12" OVER THE TOP OF PIPE TO PROVIDE THE NECESSARY SUPPORT FOR THE PIPE SO THAT THE MAXIMUM DEFLECTION DOES NOT EXCEED 5% OF THE PIPE'S ORIGINAL INTERNAL DIAMETER.
- 2. ALL CA-6 MATERIAL TO BE IDOT APPROVED

SANITARY SEWER AND SERVICES



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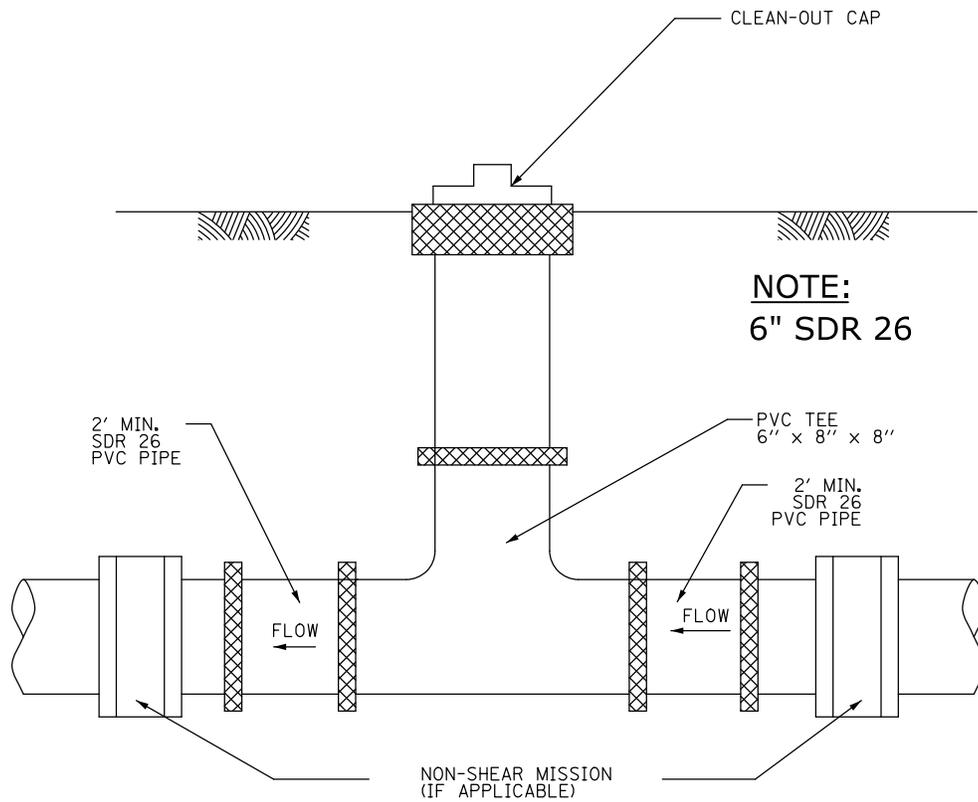
ENGINEERING DETAILS

**TYPICAL SANITARY TRENCH
 CROSS SECTION**

| | |
|--------|-----------|
| DATE: | 1/22/2018 |
| REV 1: | |
| REV 2: | |
| REV 3: | |

DETAIL NO.

SAN-6



CLEAN OUT

NOTE:

EXTERIOR CLEAN-OUTS CANNOT BE INSTALLED FURTHER THAN 5 FEET FROM THE FOUNDATION. EXCEPTION: WHEN EXISTING CONDITIONS PREVENT THE INSTALLATION AS SPECIFIED, THE CLEAN-OUT MAY BE INSTALLED IN A LOCATION AS DETERMINED BY THE DIRECTOR OF PUBLIC WORKS.



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ENGINEERING DETAILS

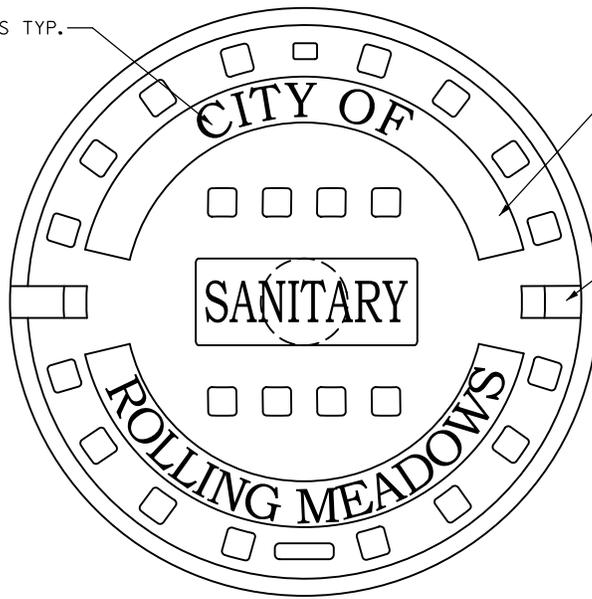
**SANITARY SEWER SERVICE
CLEANOUT DETAIL**

| | |
|--------|-----------|
| DATE: | 1/22/2018 |
| REV 1: | |
| REV 2: | |
| REV 3: | |

DETAIL NO.

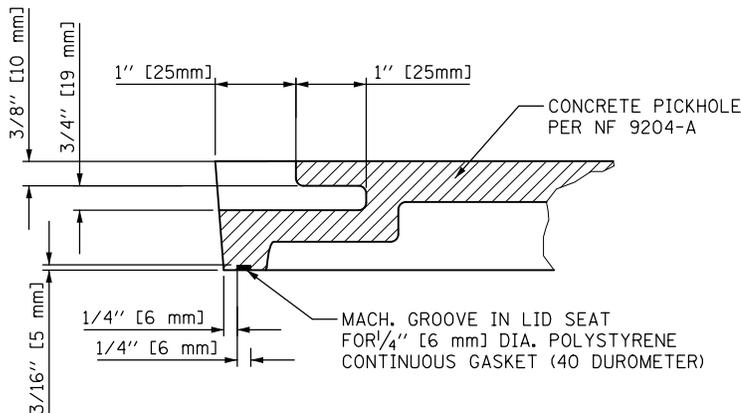
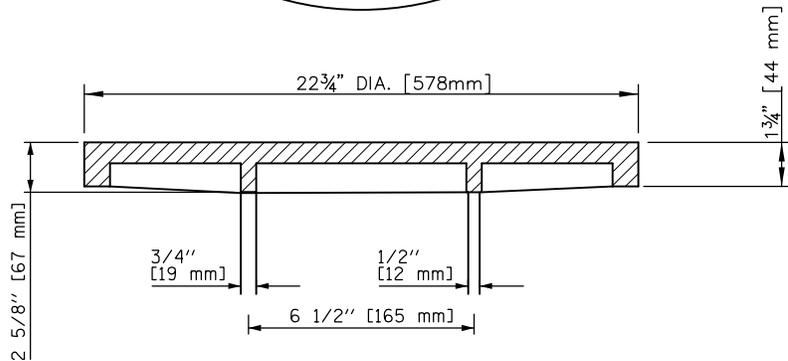
SAN-7

2" [51mm] RAISED LETTERS TYP.
FLUSH WITH SURFACE



TYPE "B" RECESSED POCKETS

(2) CONCEALED TYPE PICK HOLE
PER NF - 9204 - A



CONCRETE PICKHOLE
PER NF 9204-A

MACH. GROOVE IN LID SEAT
FOR 1/4" [6 mm] DIA. POLYSTYRENE
CONTINUOUS GASKET (40 DUROMETER)

EAST JORDAN GASKETED SEAL TIGHT COVER 1040



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ENGINEERING DETAILS

SANITARY MANHOLE SELF SEALING LID

DATE: 1/22/2018

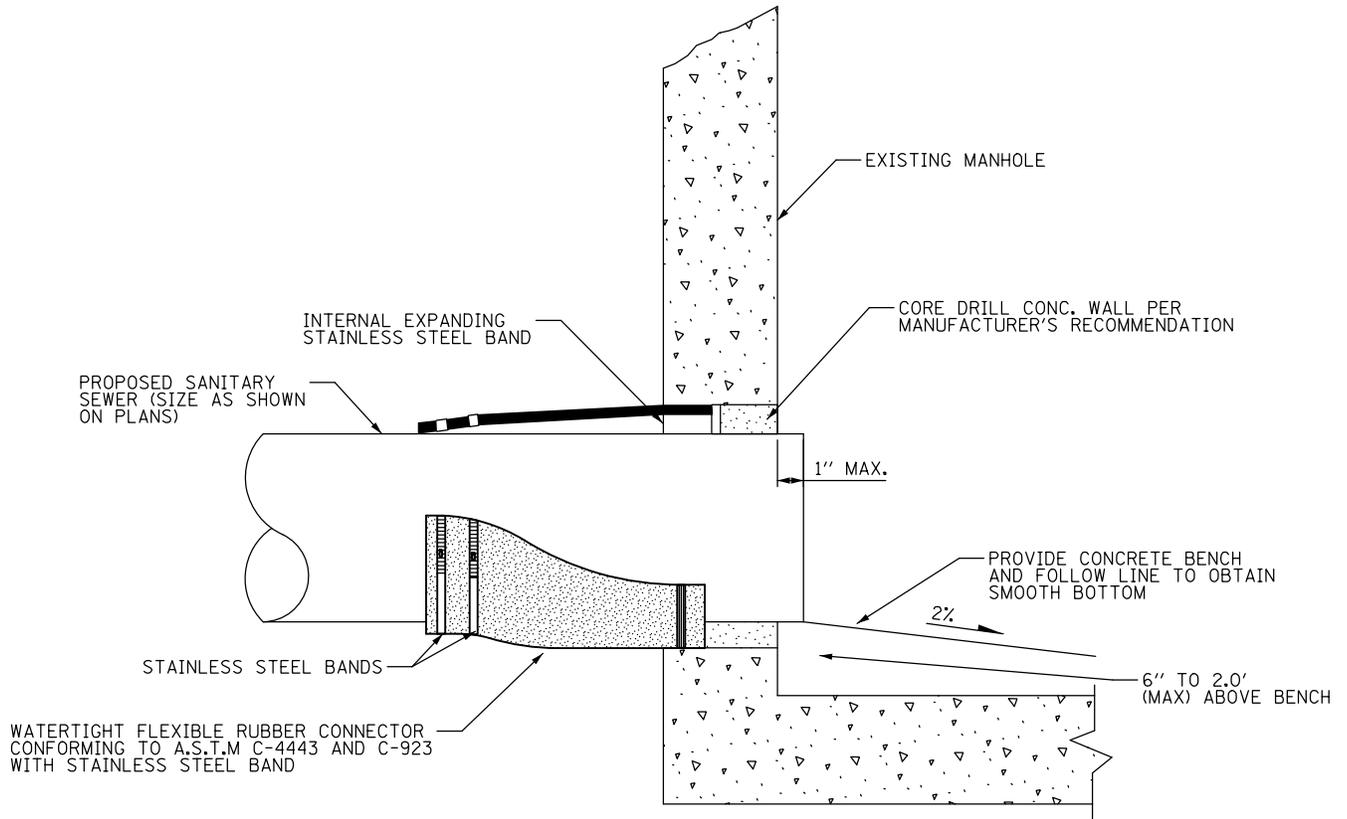
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REV 2:

REV 3:

DETAIL NO.

SAN-8



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ENGINEERING DETAILS

**EXISTING SANITARY MANHOLE
 PIPE ENTRY DETAIL**

| | |
|--------|-----------|
| DATE: | 1/22/2018 |
| REV 1: | |
| REV 2: | |
| REV 3: | |

DETAIL NO.
SAN-9

Sanitary Sewer Testing Specifications

1. Testing and Inspection for Acceptance of Sanitary Sewers
 - a. Exfiltration of air under pressure.
 - b. Deflection of flexible Thermoplastic Pipe.
 - c. Televising.

2. Testing Technique

All Testing Methods: All wyes, tees, and stubs shall be plugged with flexible jointed caps, or acceptable alternate, securely fastened to withstand the internal test pressure. Such plugs or caps shall be readily removable.

- a. Air Testing Method Procedures: The section of sewer to be tested shall have been trench backfilled and cleared. Pneumatic plugs (having a sealing length equal to or greater than the diameter of the pipe to be tested) placed in both ends of the pipe to be tested shall be inflated to 25 psig. The sealed sewer pipe shall then be pressurized to four (4) psig above the average back pressure of groundwater over the sewer pipe and the air pressure allowed to stabilize for at least two (2) minutes.

After the stabilization period the line shall be pressurized to three and a half (3.5) psig and the time in minutes measured for pressure to drop to two and a half (2.5) psig. If groundwater is present, the air pressure within shall be increased to three and a half (3.5) psig above the level of the groundwater and the drop of one (1) pound of air pressure measured in minutes.

Air testing techniques shall be in accordance with the latest ASTM Standard Practice for testing sewer lines by low-pressure air test method for the appropriate pipe material, except that the time shall not be less than that shown in the Air Test Table contained in Section 31-1.11 C of the Standard Specifications for Water and Sewer Main Construction.

3. Deflection Testing for Flexible Thermoplastic Pipe:

- a. The pipeline shall be tested for excess deflection by pulling a "go/no go" mandrel through the pipe from manhole to manhole. The mandrel shall be sized in accordance with Section 31-1.11 and record deflection.



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ENGINEERING DETAILS

SANITARY SEWER TESTING SPECIFICATIONS

DATE: 1/22/2018

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DETAIL NO.

SAN-10

PAGE 1 OF 2

- b. Wherever possible and practical, the testing shall initiate at the downstream lines and proceed towards the upstream lines.
- c. Where deflection is found to be in excess of allowable testing limits, the contractor shall excavate to the point of excess deflection and carefully compact around the point where excess deflection was found. The line shall then be retested for deflection. However, should after the initial testing the deflection pipe fail to return to the original size (inside diameter), the line shall be replaced.

4. Televising Standards

- a. The main sanitary sewer shall be televised prior to acceptance. A videotape, CD, or DVD (along with a paper report) shall be submitted to the City of Rolling Meadows Public Works Department. All sewer televising must be performed by NASSCO certified operators using current NASSCO standards and coding system that can be found in current NASSCO documents. The contractor without delay shall preform all necessary corrective work.

| AIR TEST TABLE | | | | | | | | | |
|--|-----------------------|------|------|------|------|-------|-------|-------|-------|
| TIME (MIN:SEC) REQUIRED FOR PRESSURE DROP FROM 30 TO 20 PSIG WHEN TESTING ONE PIPE DIAMETER ONLY | | | | | | | | | |
| Pipe Length (feet) | PIPE DIAMETER, Inches | | | | | | | | |
| | 4 | 6 | 8 | 10 | 12 | 15 | 18 | 21 | 24 |
| 2 | 0:04 | 0:10 | 0:18 | 0:28 | 0:40 | 1:02 | 1:29 | 2:01 | 2:38 |
| 4 | 0:09 | 0:20 | 0:35 | 0:55 | 1:19 | 2:04 | 2:58 | 4:03 | 5:17 |
| 6 | 0:13 | 0:30 | 0:53 | 1:23 | 1:59 | 3:06 | 4:27 | 6:04 | 7:55 |
| 8 | 0:18 | 0:40 | 1:10 | 1:50 | 2:38 | 4:08 | 5:56 | 8:05 | 10:34 |
| 10 | 0:22 | 0:50 | 1:28 | 2:18 | 3:18 | 5:09 | 7:26 | 9:55 | 11:20 |
| 12 | 0:26 | 0:59 | 1:46 | 2:45 | 3:58 | 6:11 | 8:30 | | |
| 14 | 0:31 | 1:09 | 2:03 | 3:13 | 4:37 | 7:05 | | | |
| 16 | 0:35 | 1:19 | 2:21 | 3:40 | 5:17 | | | | 12:06 |
| 18 | 0:40 | 1:29 | 2:38 | 4:08 | 5:40 | | | 10:25 | 13:36 |
| 20 | 0:44 | 1:39 | 2:56 | 4:35 | | | 8:31 | 11:35 | 15:07 |
| 22 | 0:48 | 1:49 | 3:14 | 4:43 | | | 9:21 | 12:44 | 16:38 |
| 24 | 0:53 | 1:59 | 3:31 | | | | 10:12 | 13:53 | 18:09 |
| 30 | 1:02 | 2:19 | 3:47 | | | 8:16 | 11:54 | 16:12 | 21:10 |
| 32 | 1:10 | 2:38 | | | 6:30 | 9:27 | 13:36 | 18:31 | 24:12 |
| 38 | 1:19 | 2:50 | | | 6:48 | 10:38 | 15:19 | 20:50 | 27:13 |
| 40 | 1:28 | | | 5:14 | 7:34 | 11:49 | 17:01 | 23:09 | 30:14 |



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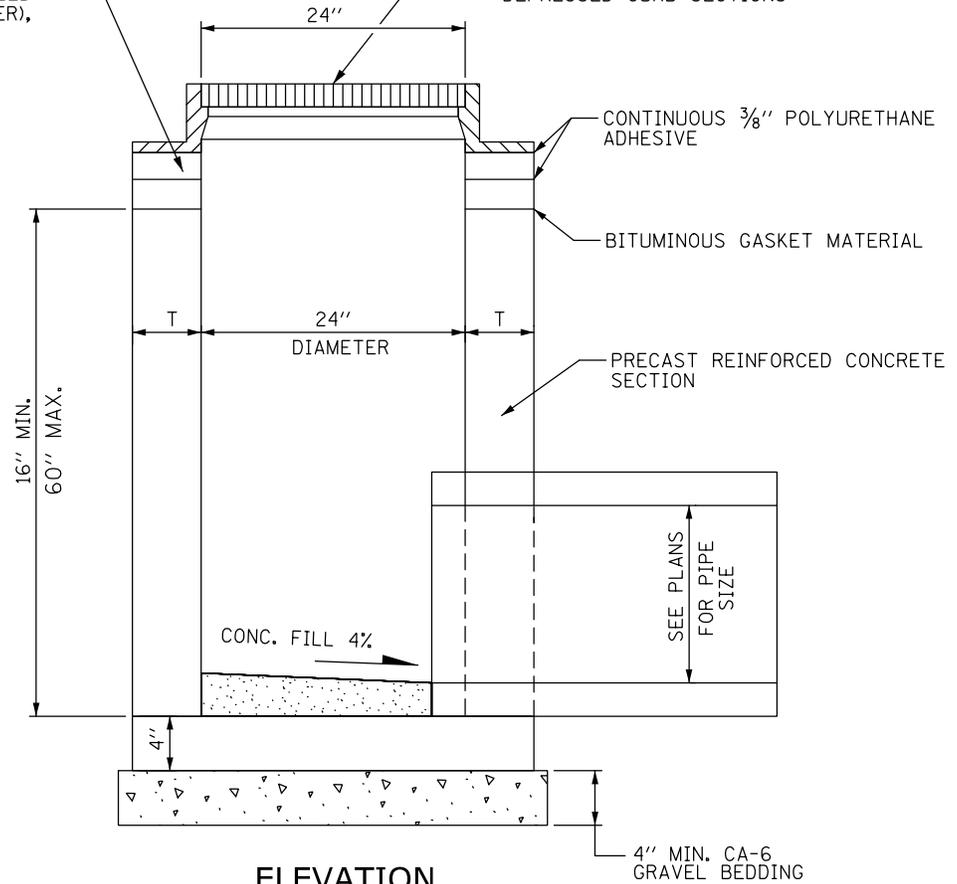
**SANITARY SEWER
 TESTING SPECIFICATIONS**

| | |
|-----------------|------------|
| DATE: 1/22/2018 | DETAIL NO. |
| REV 1: | |
| REV 2: | |
| REV 3: | |

SAN-10

PRECAST CONCRETE ADJUSTING RINGS (IF NEEDED) - (NO MORE THAN 2) MAX. ALLOWABLE ADJUSTMENT UTILIZING RINGS IS 8". TOP 2" OF ADJUSTMENT RINGS MUST BE VULCANIZED RUBBER (MFG=EJ INFRA-RISER),

EAST JORDAN 7010 FRAME WITH M3 SINUSOIDAL GRATE IN FULL CURB SECTIONS EAST JORDAN WORKS 5080 FRAME W/M1 SINUSOIDAL GRATE IN DEPRESSED CURB SECTIONS



ELEVATION

| | |
|-------------------------------------|----|
| MATERIALS FOR WALLS | T |
| PRECAST REINFORCED CONCRETE SECTION | 3" |

NOTES:

- UNLESS OTHERWISE SPECIFIED CONSTRUCTION AND MATERIALS SHALL CONFORM TO IDOT STANDARD SPECIAL ARTICLE 602.
- THE INLET RIM SHALL BE 1/4" BELOW PAVEMENT GRADE.



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ENGINEERING DETAILS

CURB INLET TYPE A

| | |
|--------|-----------|
| DATE: | 4/29/2018 |
| REV 1: | |
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| REV 3: | |

DETAIL NO.

ST-1

EAST JORDAN 7010 FRAME WITH M3 SINUSOIDAL GRATE IN FULL CURB SECTIONS EAST JORDAN WORKS 5080 FRAME W/M1 SINUSOIDAL GRATE IN DEPRESSED CURB SECTIONS

BITUMINOUS GASKETED JOINTS

24"

PRECAST CONCRETE ADJUSTING RINGS (IF NEEDED) - (NO MORE THAN 2) MAX. ALLOWABLE ADJUSTMENT UTILIZING RINGS IS 8". TOP 2" OF ADJUSTMENT RINGS MUST BE VULCANIZED RUBBER (MFG=EJ INFRA-RISER),

SEAL PIPE WITH NON-SHRINKING GROUT

C

INLET

STEPS AT 12" TO 16" CTS.

OUTLET

SEAL PIPE WITH NON-SHRINKING GROUT

4'-0"

D CIRCULAR

6"

4" MIN. CA-6 BEDDING

ELEVATION

| MATERIALS FOR WALLS | D | C* | T (MIN.) |
|-------------------------------------|-------------------------|-------------------------|----------------|
| PRECAST REINFORCED CONCRETE SECTION | 4'-0" 5'-0" 6'-0" | 2'-6" 3'-9" 5'-0" | 4" 5" 6" |

* DIMENSION "C" MAY VARY FROM THE DIMENSION GIVEN TO PLUS 6".

NOTES:

1. USE ECCENTRIC CONES UNLESS OTHERWISE INDICATED ON THE DRAWING. FLAT TOP SLABS PERMITTED ONLY FOR MANHOLES TOO SHALLOW FOR CONES.
2. USE 4'-0" DIAMETER FOR SEWER SIZES THRU 21", 5'-0" DIAMETER FOR SEWER SIZES 24" THRU 30", 6'-0" DIAMETER FOR SEWER SIZES GREATER THAN 30", UNLESS OTHERWISE NOTED.
3. UNLESS OTHERWISE SPECIFIED, CONSTRUCTION AND MATERIALS SHALL CONFORM IDOT STANDARD SPECIAL ARTICLE 602.
4. REMOVE TOP TWO MANHOLE STEPS PRIOR TO FINAL INSPECTION.



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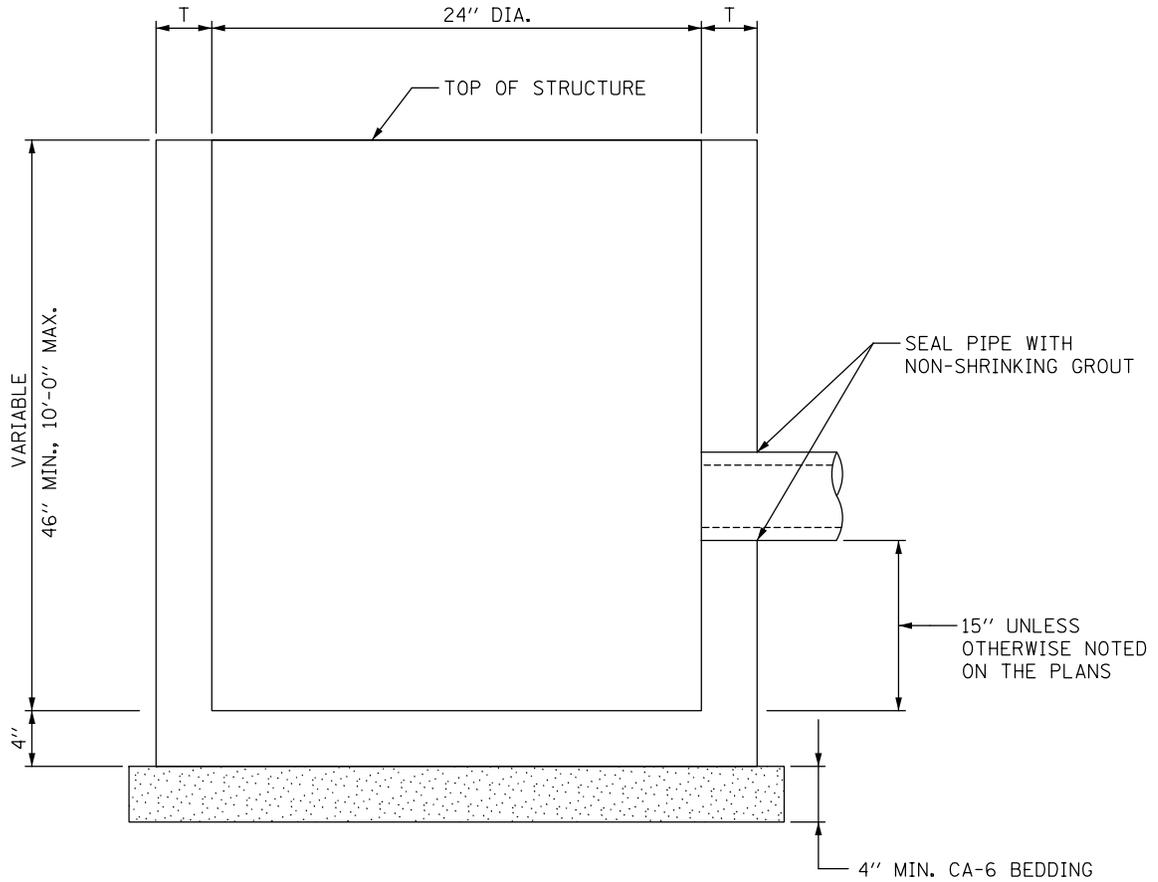
ENGINEERING DETAILS

CATCH BASIN TYPE A

DATE: 4/29/2018
REV 1:
REV 2:
REV 3:

DETAIL NO.

ST-2



ELEVATION

| MATERIALS FOR WALLS | T (MIN.) |
|--|-------------|
| PRECAST REINFORCED CONCRETE SECTION | 3" |

NOTES:

- UNLESS OTHERWISE SPECIFIED, CONSTRUCTION AND MATERIALS SHALL CONFORM TO IDOT STANDARD SPECIAL ARTICLE 602.



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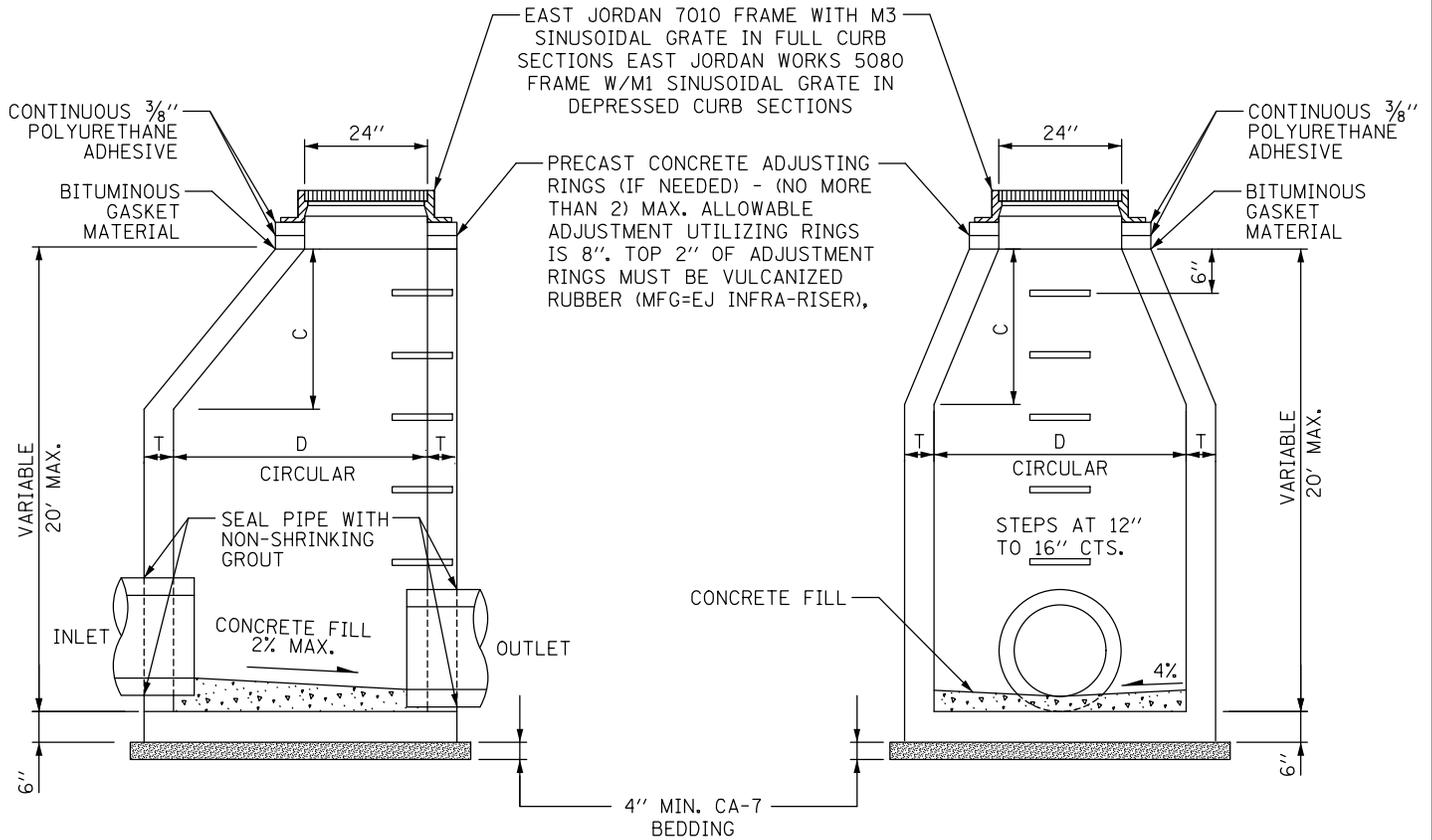
ENGINEERING DETAILS

CATCH BASIN TYPE C

| | |
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| DATE: | 4/29/2018 |
| REV 1: | |
| REV 2: | |
| REV 3: | |

DETAIL NO.

ST-3



ELEVATION - ECCENTRIC

ELEVATION - CONCENTRIC

| MATERIALS FOR WALLS | D | C* | T (MIN.) |
|-------------------------------------|-------|-------|----------|
| PRECAST REINFORCED CONCRETE SECTION | 4'-0" | 2'-6" | 4" |
| | 5'-0" | 3'-9" | 5" |
| | 6'-0" | 5'-0" | 6" |

*DIMENSION "C" MAY VARY FROM THE DIMENSION GIVEN TO PLUS 6".

NOTES:

1. USE ECCENTRIC CONES UNLESS OTHERWISE INDICATED ON THE DRAWING. FLAT TOP SLABS PERMITTED ONLY FOR MANHOLES TOO SHALLOW FOR CONES.
2. USE 4'-0" DIAMETER FOR SEWER SIZES THRU 21", 5'-0" DIAMETER FOR SEWER SIZES 24" THRU 30", 6'-0" DIAMETER FOR SEWER SIZES GREATER THAN 30", UNLESS OTHERWISE NOTED.
3. UNLESS OTHERWISE SPECIFIED, CONSTRUCTION AND MATERIALS SHALL CONFORM IDOT STANDARD SPECIAL ARTICLE 602.
4. REMOVE TOP TWO MANHOLE STEPS PRIOR TO FINAL INSPECTION.



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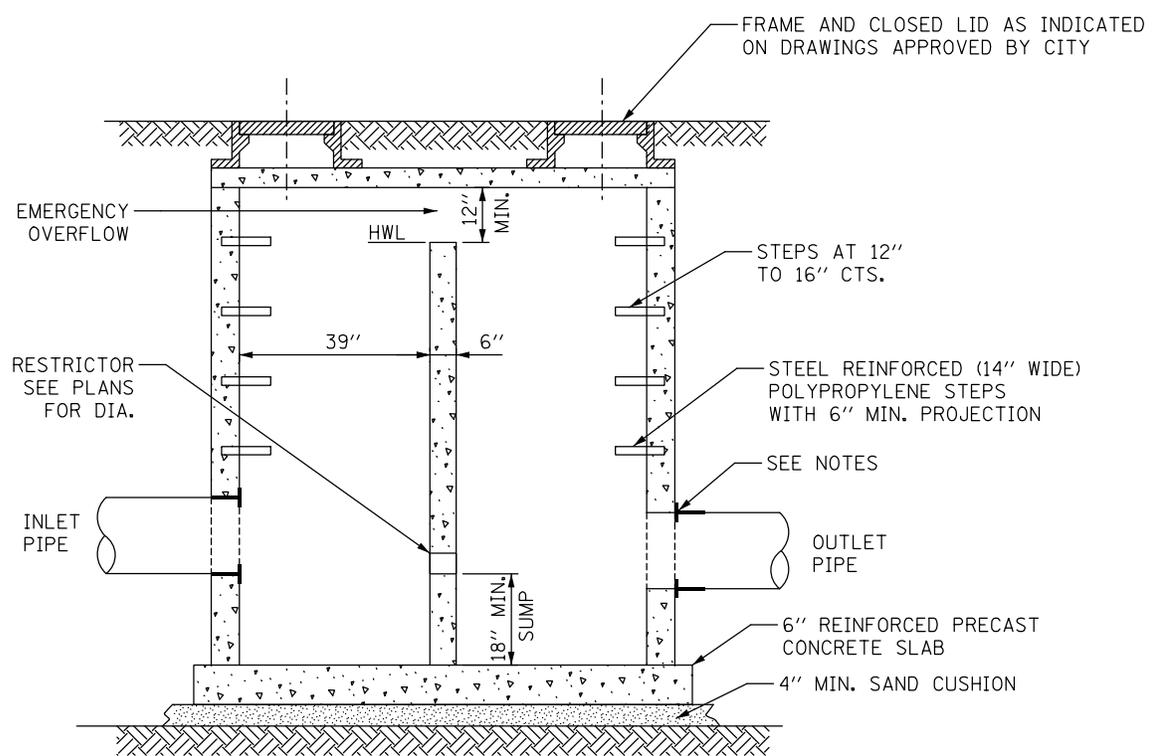
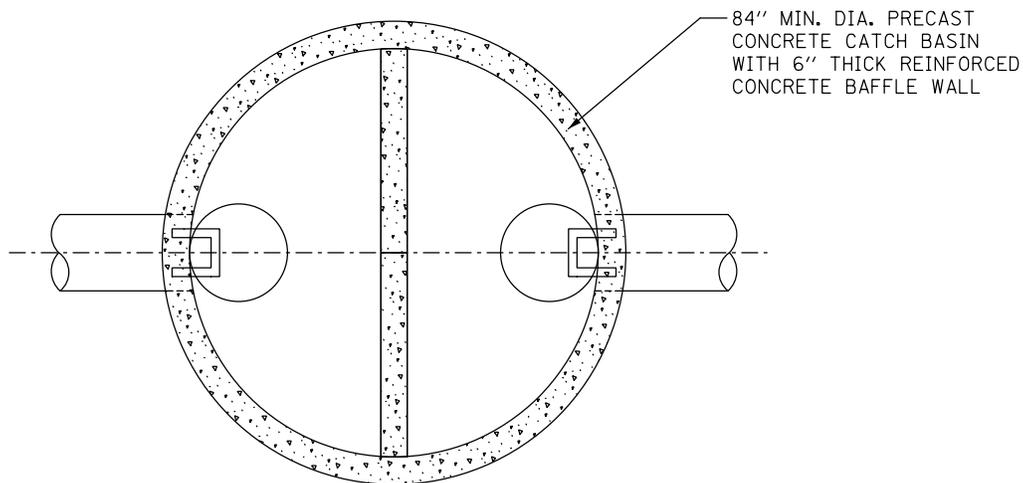
ENGINEERING DETAILS

STORM MANHOLE TYPE A

| | |
|--------|-----------|
| DATE: | 4/29/2018 |
| REV 1: | |
| REV 2: | |
| REV 3: | |

DETAIL NO.

ST-4



NOTES:

1. MINIMUM RESTRICTOR SIZE IS 4".
2. UNLESS OTHERWISE SPECIFIED, CONSTRUCTION AND MATERIALS SHALL CONFORM TO IDOT STANDARD SPECIAL ARTICLE 602.
3. PRECAST STRUCTURE SECTIONS TO BE TONGUE AND GROOVED.
4. NON-PRECAST OPENINGS SHALL BE CORED AND RUBBER BOOTED WITH WATERTIGHT FLEXIBLE RUBBER CONNECTOR (SEE DETAIL SAN-9).
5. MORTAR ALL PIPE PENETRATIONS INSIDE AND OUTSIDE OF STRUCTURE.
6. IN "SUBMERGED" CONDITIONS, ALL PIPE PENETRATIONS TO BE CORED, RUBBER BOOTED, AND INTERIOR MORTARED.



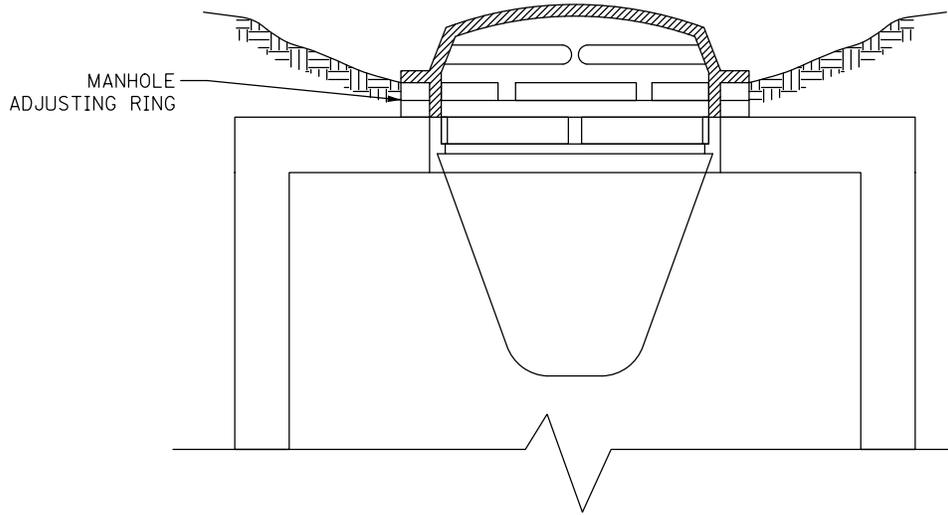
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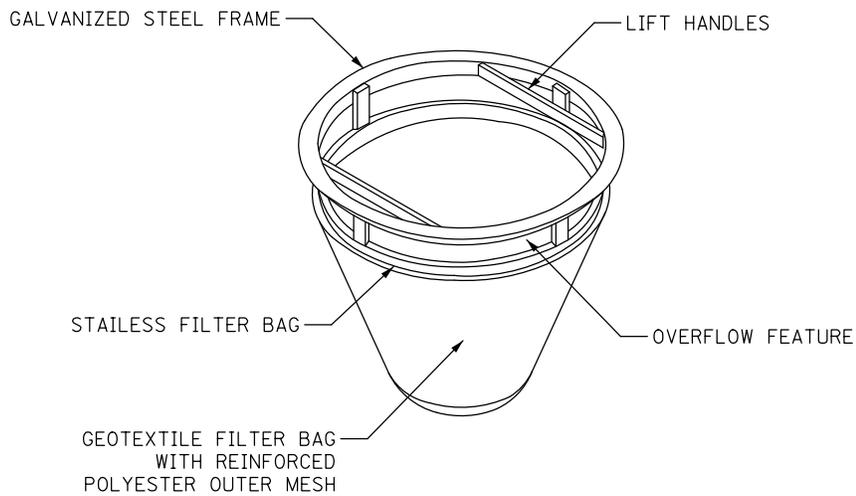
STORM WATER RESTRICTOR STRUCTURE

| | |
|--------|-----------|
| DATE: | 4/29/2018 |
| REV 1: | |
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DETAIL NO.
ST-5



SECTION THROUGH MANHOLE



FILTER INSERT

RECTANGULAR BASKETS REQUIRED FOR CURB INLETS



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ENGINEERING DETAILS

**TEMPORARY SILTATION BASKET
 INSTALLATION BETWEEN
 INLET FRAME AND GRATE**

| | |
|--------|-----------|
| DATE: | 4/29/2018 |
| REV 1: | |
| REV 2: | |
| REV 3: | |

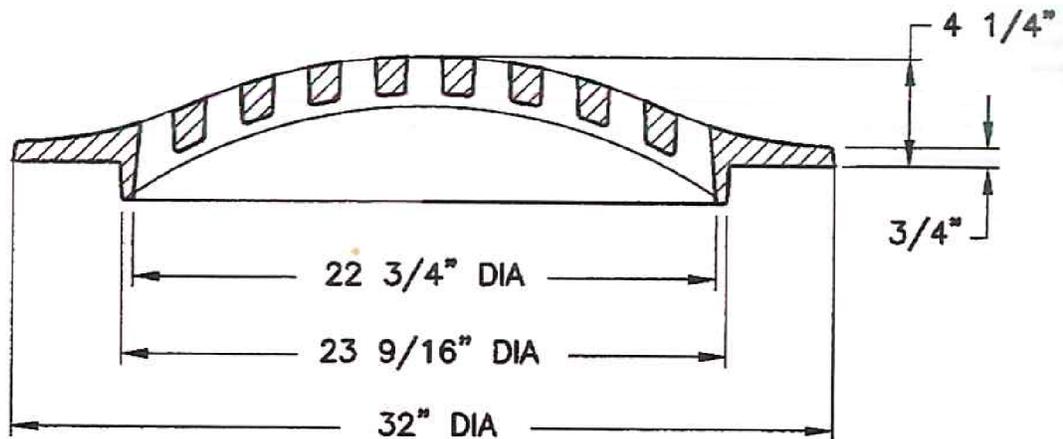
DETAIL NO.

ST-6

TYPICAL REAR YARD/SWALE INLET: EAST JORDAN 6517 BEEHIVE GRATE

6517 DITCH GRATE

Heavy duty
Approximate 190 sq. in. open area



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ENGINEERING DETAILS

TYPICAL REAR YARD INLETS

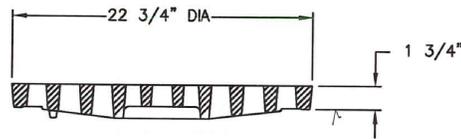
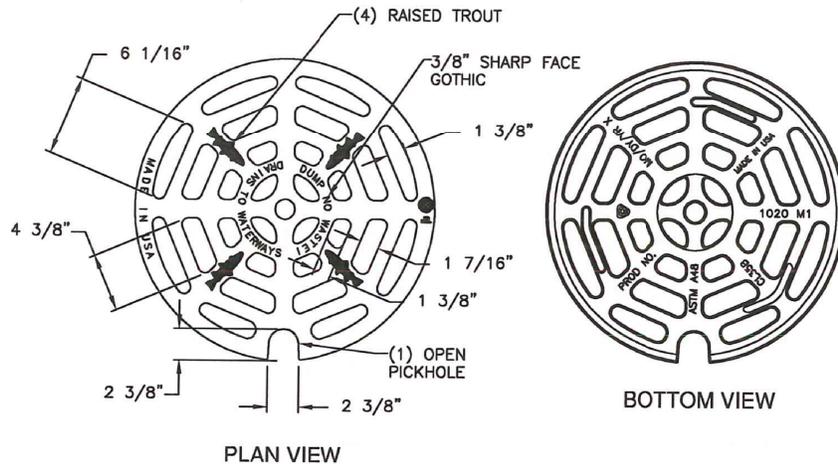
DATE: 4/29/2018
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DETAIL NO.

ST-7A

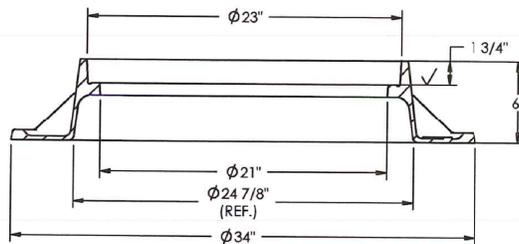
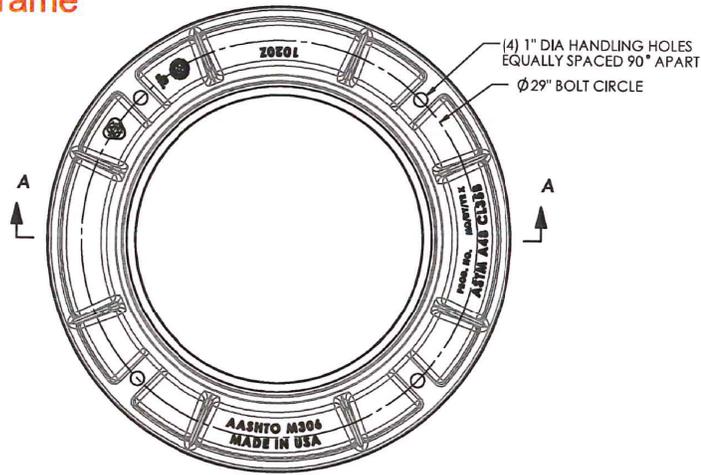
ALTERNATE REAR YARD INLET: EAST JORDAN 1020 OR 1022 M1 TYPE GRATE
 "DUMP NO WASTE"

1020M1 Grate



GRATE SECTION

1020Z Frame



SECTION A-A



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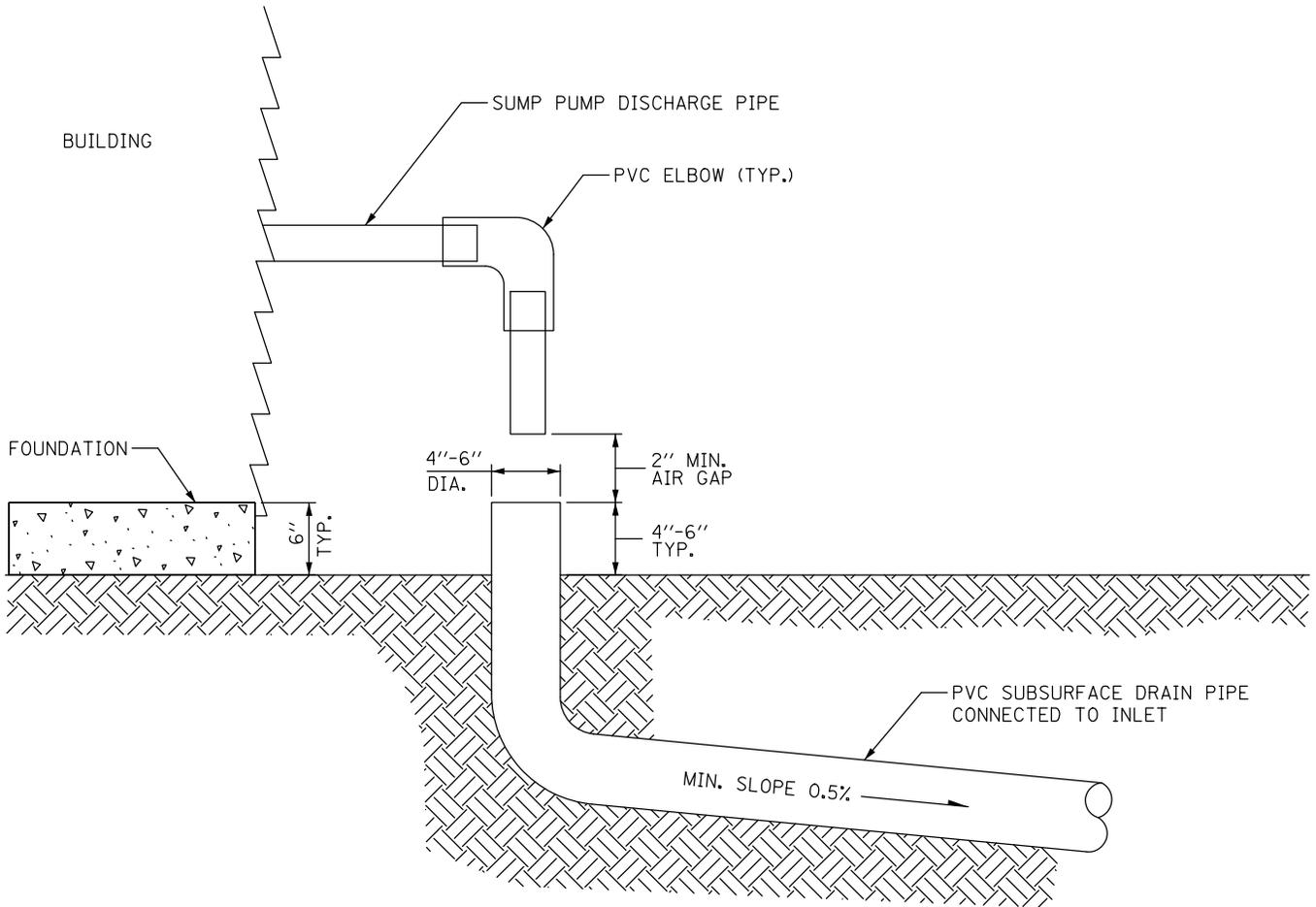
ENGINEERING DETAILS

TYPICAL REAR YARD INLETS

| | |
|--------|-----------|
| DATE: | 4/29/2018 |
| REV 1: | 4/30/2020 |
| REV 2: | |
| REV 3: | |

DETAIL NO.

ST-7B



NOTES:

1. SUMP PUMP CONNECTIONS TO OUTLET AT GRADE OR FOR RESIDENTIAL DEVELOPMENTS WITH AN ON-SITE STORMWATER CONTROL FACILITY, THE SUMP PUMP MAY BE CONNECTED INTO THE STORM SEWER SYSTEM LOCATED OUTSIDE THE PUBLIC RIGHT-OF-WAY, AT A STRUCTURE.
2. SUMP PUMP DISCHARGE SHALL BE DIRECTED AWAY FROM ADJACENT PROPERTIES, AND OUTLET SHALL BE LOCATED A MINIMUM OF 10 FEET FROM PROPERTY LINES. INSTALLATION OF "POP-UPS" ARE NOT RECOMMENDED. THE CITY SHALL ASSUME NO RESPONSIBILITY FOR ANY ISSUES RESULTING FROM THEIR INSTALLATION.
3. INSTALLER/OWNER ASSUMES FULL RESPONSIBILITY AND LIABILITY FOR ANY AND ALL DAMAGE TO UTILITIES OR ADJOINING PROPERTIES.
4. INSTALLATION OF SUMP PUMP DISCHARGE LINES MUST BE INSPECTED BY THE CITY PUBLIC WORKS DEPARTMENT.



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ENGINEERING DETAILS

SUMP PUMP CONNECTION

| | |
|--------|-----------|
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| REV 1: | |
| REV 2: | |
| REV 3: | |

| | |
|------------|-------------|
| DETAIL NO. | ST-8 |
| | |
| | |
| | |

FINISHED GRADE



① **SELECT TRENCH BACKFILL**

GRANULAR TRENCH BACKFILL TO BE USED UNDER EXISTING OR PROPOSED PAVEMENT, CURB AND GUTTER, SIDEWALK OR WITHIN 2' OF ANY EXISTING OR PROPOSED CURB AND GUTTER OR SIDEWALK, SHALL BE MECHANICALLY COMPACTED CA-6, GRADE #9

MECHANICALLY COMPACTED BACKFILL OF EXCAVATED MATERIALS IN OTHER LOCATIONS IF APPROVED BY THE ENGINEER. REFER TO TRENCH BACKFILL SPECIAL PROVISIONS FOR MATERIALS AND COMPACT REQUIREMENTS.

② **PIPE BEDDING & INITIAL TRENCH BACKFILL**

*6 WASHED STONE FROM 6" BELOW TO SPRING LINE OF PIPE.

③ **UNSUITABLE MATERIALS**

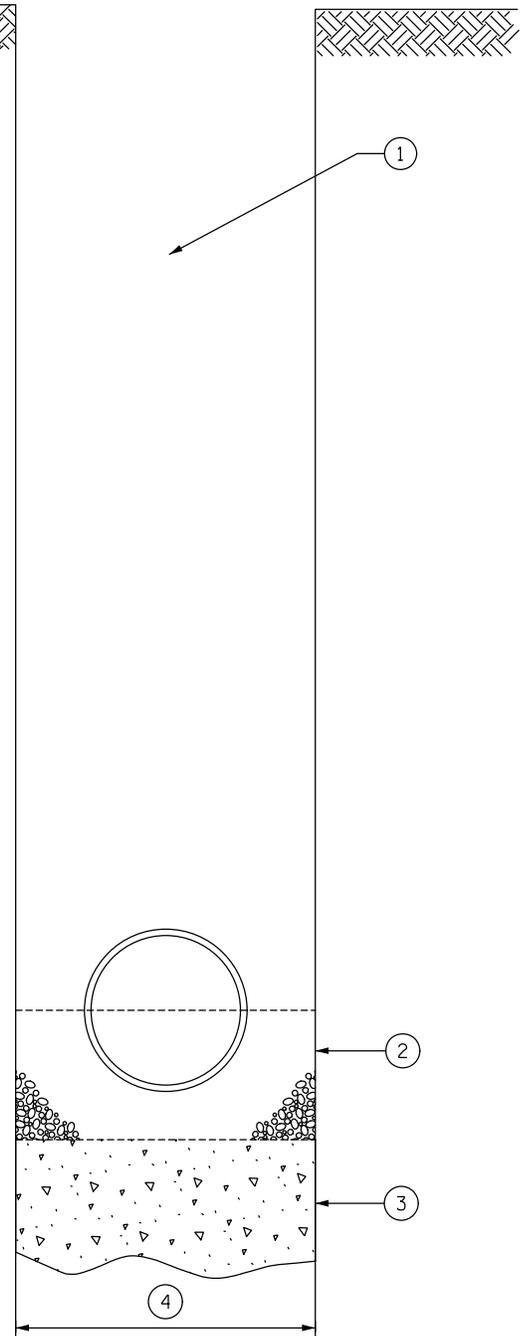
IF ENCOUNTERED - SHALL BE REMOVED WHERE DIRECTED BY THE ENGINEER AND REPLACED WITH SUITABLE GRANULAR BACKFILL AND COMPACTED.

④ **TRENCH WIDTH**

MINIMUM = PIPE O.D. + 18" WHEN DEPTH IS < 5'
 MAXIMUM = PIPE O.D. + 36" WHEN DEPTH IS ≥ 5'
 DEPTH = PROPOSED SUBGRADE TO PROPOSED INVERT

NOTES:

1. ALL CA-6 MATERIAL TO BE IDOT APPROVED.



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ENGINEERING DETAILS

**TYPICAL STORM SEWER
 TRENCH CROSS SECTION**

| | |
|--------|-----------|
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| REV 3: | |

DETAIL NO.

ST-9

Miscellaneous Water Standards/Notes

1. Water transmission shall be a minimum of 8" in diameter, shall include installation of shutoff valves and fire hydrants, and shall be free from dead-end mains, unless authorized by the City.
2. Any water service line replacement/up-sizing must include replacing the service within the City right-of-way up to the water main trunk line. Also, complete restoration of the parkway, including topsoil, seed, and any sidewalk repair, must be completed to the satisfaction of the City.
3. For any water service line repairs, the homeowner is responsible from the ROW to the house. The City will make repairs from ROW to the trunk line.
4. Water mains and fittings shall be ductile cast iron, cement lined, with push on joints class 52 conforming to latest ANSI/ AWWA C151/ A21.51-86, C111, and C104.
5. Fire hydrant leads shall be 6" diameter.
6. All ductile iron water main shall include installation of polyethylene encasement conforming to ANSI/ AWWA C105/ A21.5 and ASTM A674 standards.
7. A building permit is required for all water main/service installations.
8. Any dwelling with a private well providing drinking water that converts to City water must remove any and all well piping from the building. The well may be kept active for purposes of outside irrigation, only if the well meets current Illinois Department of Health guidelines, all well piping is removed from the building, and after inspection and with written permission of the Public Works Department.



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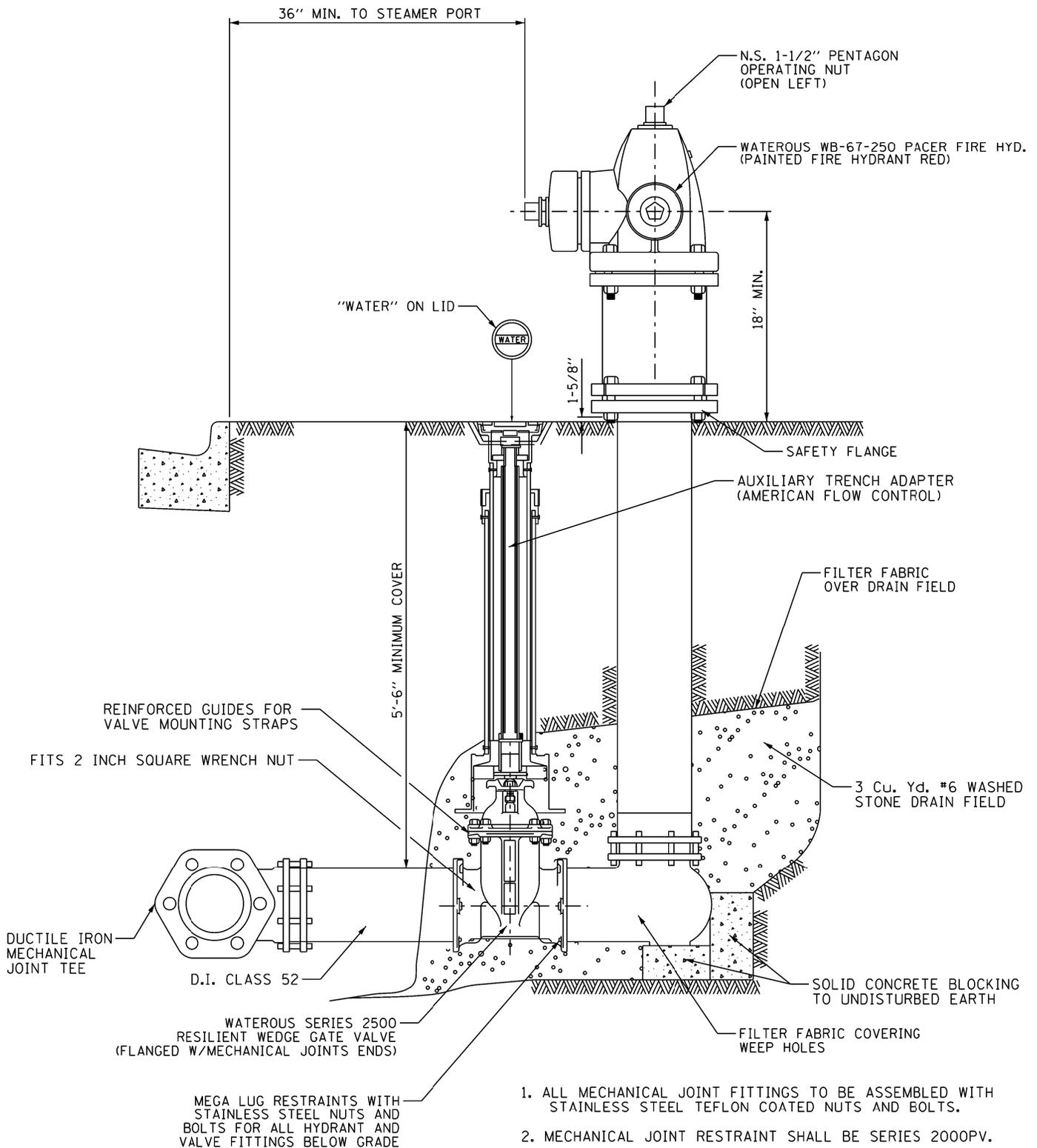
ENGINEERING DETAILS

MISCELLANEOUS WATER NOTES

| | |
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DETAIL NO.

W-0



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ENGINEERING DETAILS

TYPICAL FIRE HYDRANT

| | |
|--------|-----------|
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| REV 3: | |

DETAIL NO.

W-1

PRE-CAST CONCRETE ADJUSTING RINGS (IF NEEDED) - (NO MORE THAN 2) MAX. ALLOWABLE ADJUSTMENT UTILIZING RINGS IS 8". TOP 2" OF ADJUSTMENT RINGS MUST BE VULCANIZED RUBBER (MFG=EJ INFRA-RISER), IF GREATER ADJUSTMENT IS NEEDED, IT MUST BE ACCOMPLISHED UTILIZING 5' DIA. PRE-CAST BARREL SECTION.

EAST JORDAN 1020/1022 MANHOLE FRAME, TYPE "B" SELF-SEALING SOLID LID W/"WATER" IMPRINT (OR EQUIVALENT EAST JORDAN IRON WORKS FRAME AND LID)

CONTINUOUS 3/8" POLYURETHANE ADHESIVE
BITUMINOUS GASKET MATERIAL

MANHOLE STEPS @ 16" ON CENTER

5" MIN.
WATEROUS SERIES 2500 RESILIENT WEDGE GATE VALVE (FLANGED W/MECHANICAL JOINT ENDS)

BITUMINOUS GASKET MATERIAL

5' (TYP)

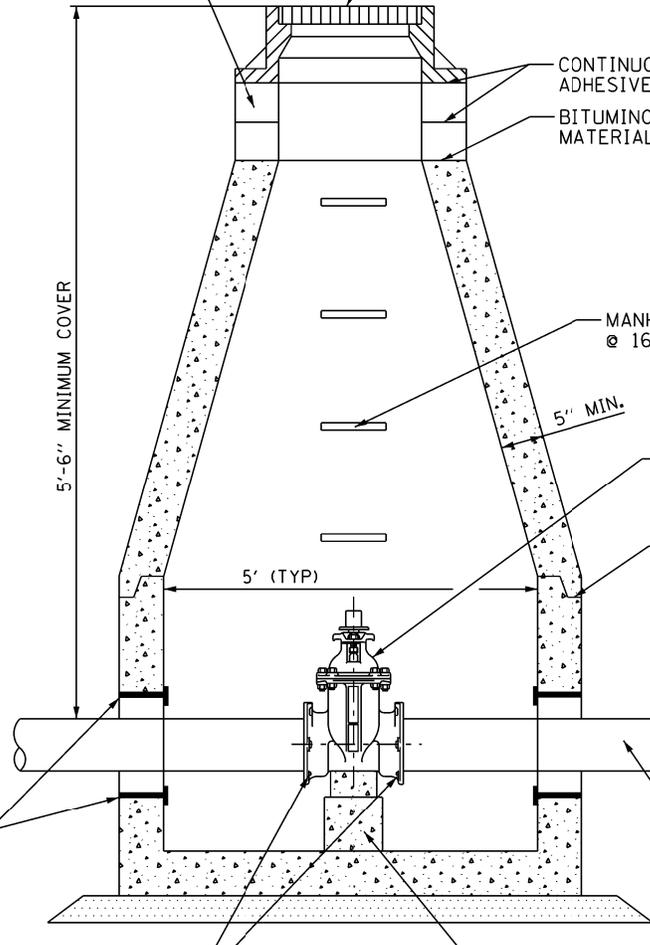
D.I. CLASS 52

GASKET TYPE WATER STOP COLLAR REQUIRED (ASTM C-923)

MEG-A-LUG WITH STAINLESS STEEL NUTS AND BOLTS

SOLID CONCRETE BLOCK

5'-6" MINIMUM COVER



1. ALL MECHANICAL JOINT FITTINGS TO BE ASSEMBLED WITH STAINLESS STEEL TEFLON COATED NUTS AND BOLTS.
2. MECHANICAL JOINT RESTRAINT SHALL BE SERIES 2000PV FOR USE WITH C-900 PVC PIPE OR D.I. PIPE CLASS 52.
3. VALVES 4" OR LARGER MUST BE ENCLOSED IN A VALVE VAULT.
4. VALVES LESS THAN 4", OR WHEN DIRECTED BY THE CITY, REQUIRE AN AMERICAN FLOW CONTROL TRENCH ADAPTER.



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ENGINEERING DETAILS

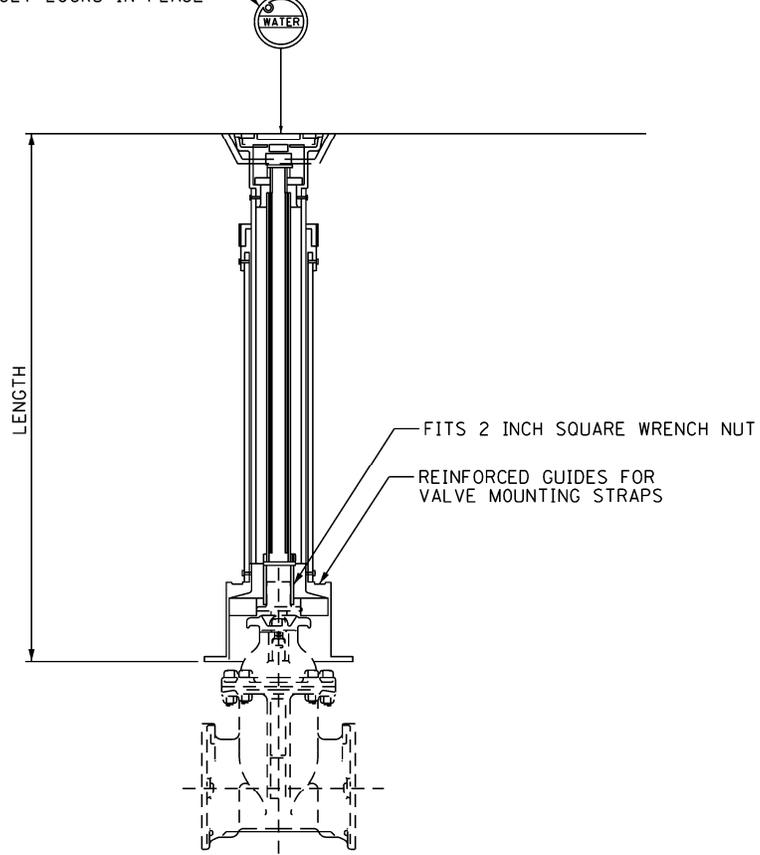
WATER VALVE & VALVE VAULT

| | |
|--------|-----------|
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| REV 2: | |
| REV 3: | |

DETAIL NO.

W-2

"WATER" ON LID
BOLT LOCKS IN PLACE



AMERICAN FLOW CONTROL TRENCH ADAPTER

| Model Number | Length (INCHES) | | Assembly Weight |
|--------------|-----------------|---------|-----------------|
| | Minimum | Maximum | |
| 1 | 18.25 | 20.25 | 29 LBS |
| 2 | 22.25 | 28.25 | 32 LBS |
| 3 | 24.75 | 32.50 | 35 LBS |
| 4 | 29.75 | 40.50 | 39 LBS |
| 5 | 37.75 | 56.50 | 48 LBS |
| 6 | 49.75 | 80.50 | 54 LBS |
| 7 | 73.75 | 128.50 | 72 LBS |
| 8 | 127.75 | 179.75 | 99 LBS |
| 9 | 178.75 | 230.75 | 127 LBS |

1. VALVES LESS THAN 4", OR WHEN DIRECTED BY THE CITY, REQUIRE AN AMERICAN FLOW CONTROL TRENCH ADAPTER.



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ENGINEERING DETAILS

TRENCH ADAPTER

DATE: 4/30/2020

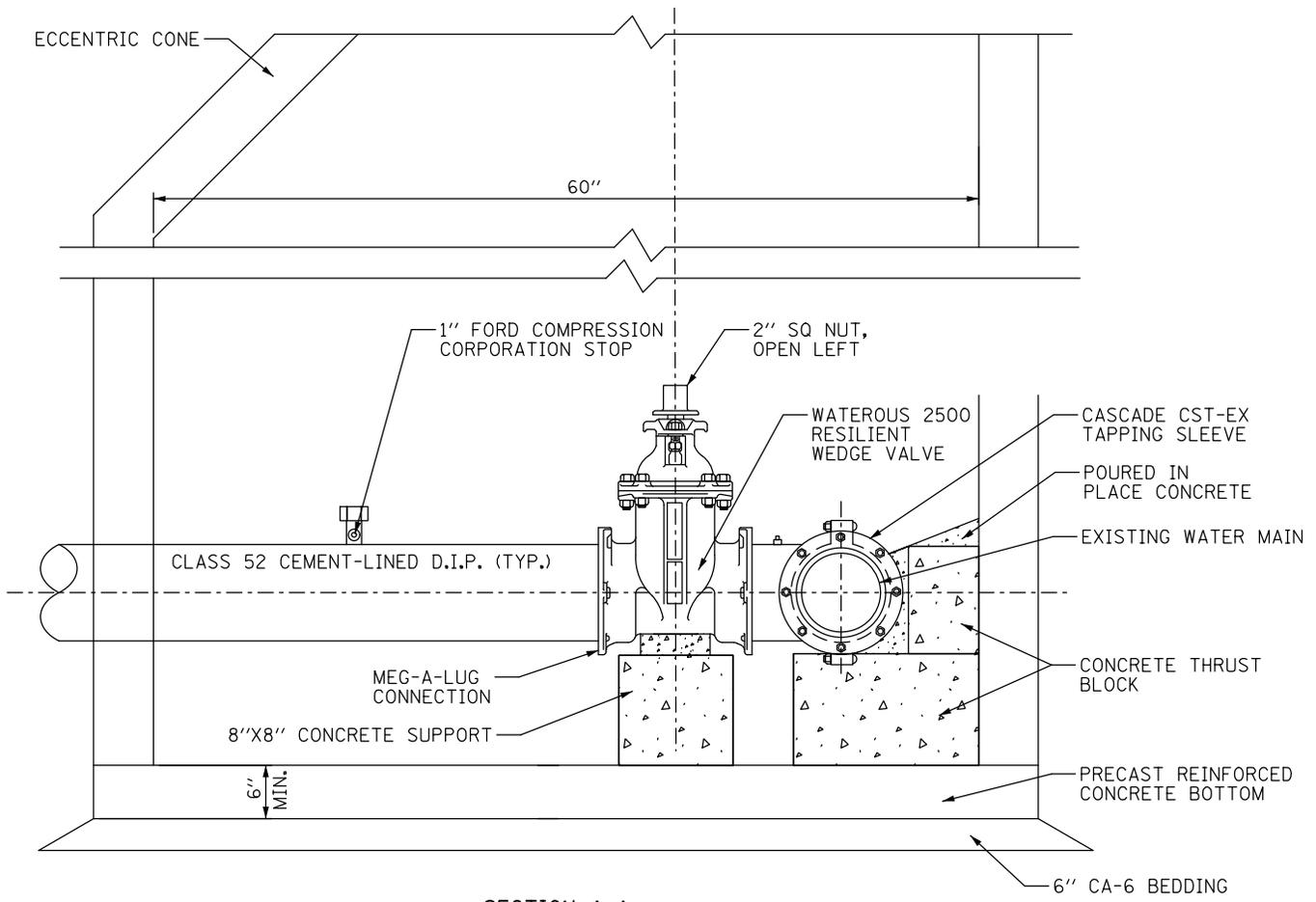
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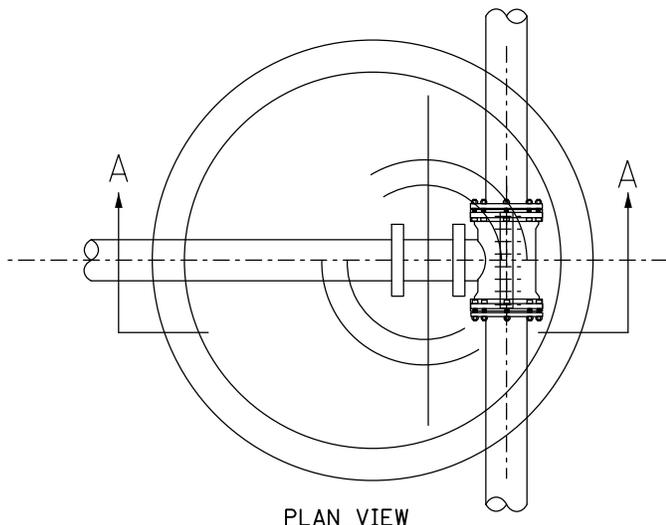
REV 3:

DETAIL NO.

W-2.1



SECTION A-A



PLAN VIEW

NOTES:
 C.I. MANHOLE FRAME AND COVER EAST JORDAN 1050 WITH STANDARD DUTY, NON-ROCKING TYPE LIDS (EAST JORDAN 1020 MAY BE USED IN GRASSY AREAS). ADJUSTING RING HEIGHT NOT TO EXCEED 8" (RUBBER ADJUSTING RINGS ALLOWED-NO MORE THAN 2) ALL JOINTS ARE TO BE MADE WATERTIGHT WITH EXTERNAL SEALING BANDS PER ASTM C-877 WITH MECHANICAL STRAPS (MAC WRAP OR EQUAL). STANDARD VALVE VAULT SPECIFICATIONS REQUIRE ECCENTRIC CONES (SEE SEPARATE DETAIL).

ALL PRECAST CONCRETE STRUCTURES MUST CONFORM TO AASHTO M199.



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ENGINEERING DETAILS

WATER MAIN PRESSURE CONNECTION DETAIL

| | |
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| | |
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| DETAIL NO. | W-3 |
| | |
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| | |

FINISHED GRADE

① SELECT TRENCH BACKFILL

GRANULAR TRENCH BACKFILL TO BE USED UNDER EXISTING OR PROPOSED PAVEMENT, CURB AND GUTTER, SIDEWALK OR WITHIN 2' OF ANY EXISTING OR PROPOSED CURB AND GUTTER OR SIDEWALK, SHALL BE MECHANICALLY COMPACTED CA-6, (NON-LIMESTONE)

MECHANICALLY COMPACTED BACKFILL OF EXCAVATED MATERIALS IN OTHER LOCATIONS IF APPROVED BY THE ENGINEER. REFER TO TRENCH BACKFILL SPECIAL PROVISIONS FOR MATERIALS AND COMPACTION REQUIREMENTS.

② PIPE BEDDING AND INITIAL TRENCH BACKFILL

#6 WASHED STONE FROM 6" BELOW TO 12" ABOVE TOP OF PIPE

③ UNSUITABLE MATERIALS

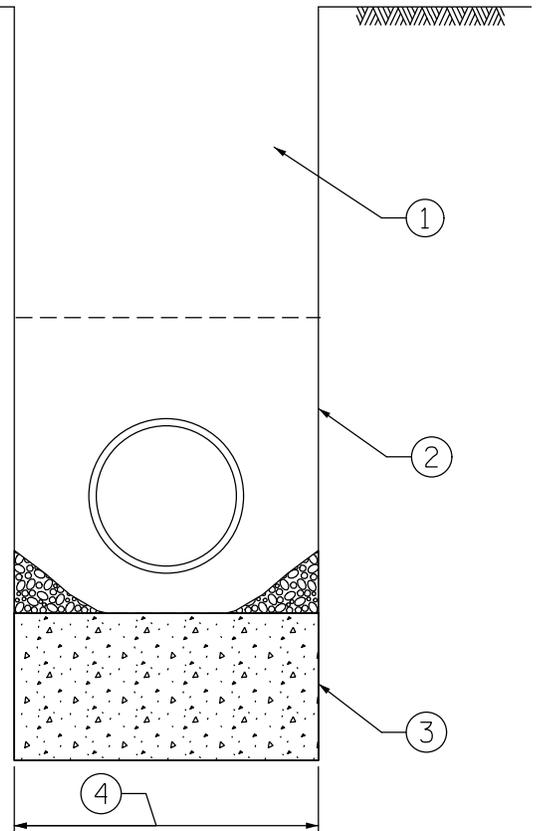
IF ENCOUNTERED - SHALL BE REMOVED WHERE DIRECTED BY THE ENGINEER AND REPLACED WITH SUITABLE AND COMPACTED MATERIAL.

④ TRENCH WIDTH

MINIMUM = PIPE O.D. +12"
MAXIMUM = PIPE O.D. +36"

NOTES:

1. ALL CA-6 MATERIAL TO BE IDOT APPROVED.



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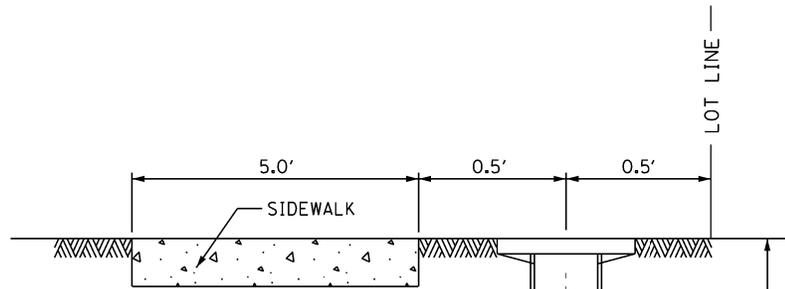
ENGINEERING DETAILS

**TYPICAL WATER MAIN
TRENCH CROSS SECTION**

DATE: 1/19/2018
REV 1s
REV 2s
REV 3s

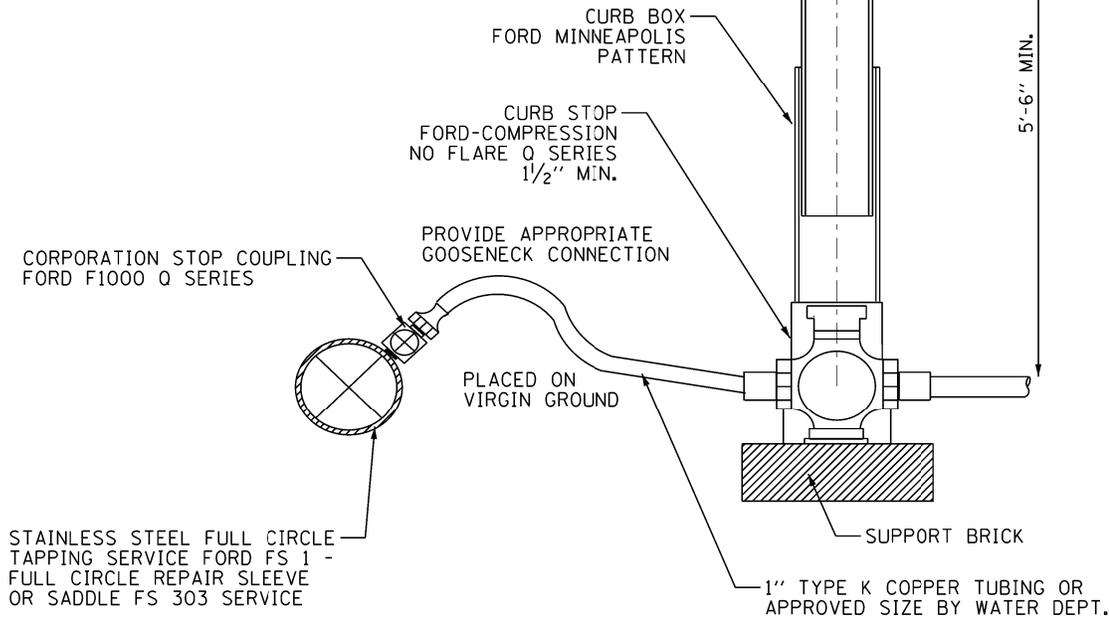
DETAIL NO.

W-4



NOTES:

1. 12" FREE COPPER INSIDE OF BUILDING MUST BE MAINTAINED.
2. WATER METER MUST BE SET WITHIN 18" OF ENTERING BUILDING.
3. TAP MUST BE 3' FROM ANY OTHER CONNECTION OR FITTING.



NOTES:

1. NO COUPLINGS PERMITTED BETWEEN CORPORATION AND CURB STOP.
2. NO COUPLINGS PERMITTED BETWEEN CURB STOP AND BUILDING.
3. NO LIMESTONE BACKFILL SHALL COME IN CONTACT WITH COPPER OR BRASS.
4. B-BOXES MUST BE LOCATED IN A GRASSY NON-PAVED AREA.
5. SERVICES OF 1 1/2" DIAMETER SHALL USE A 2" I.D. UPPER SLEEVE CURB BOX.



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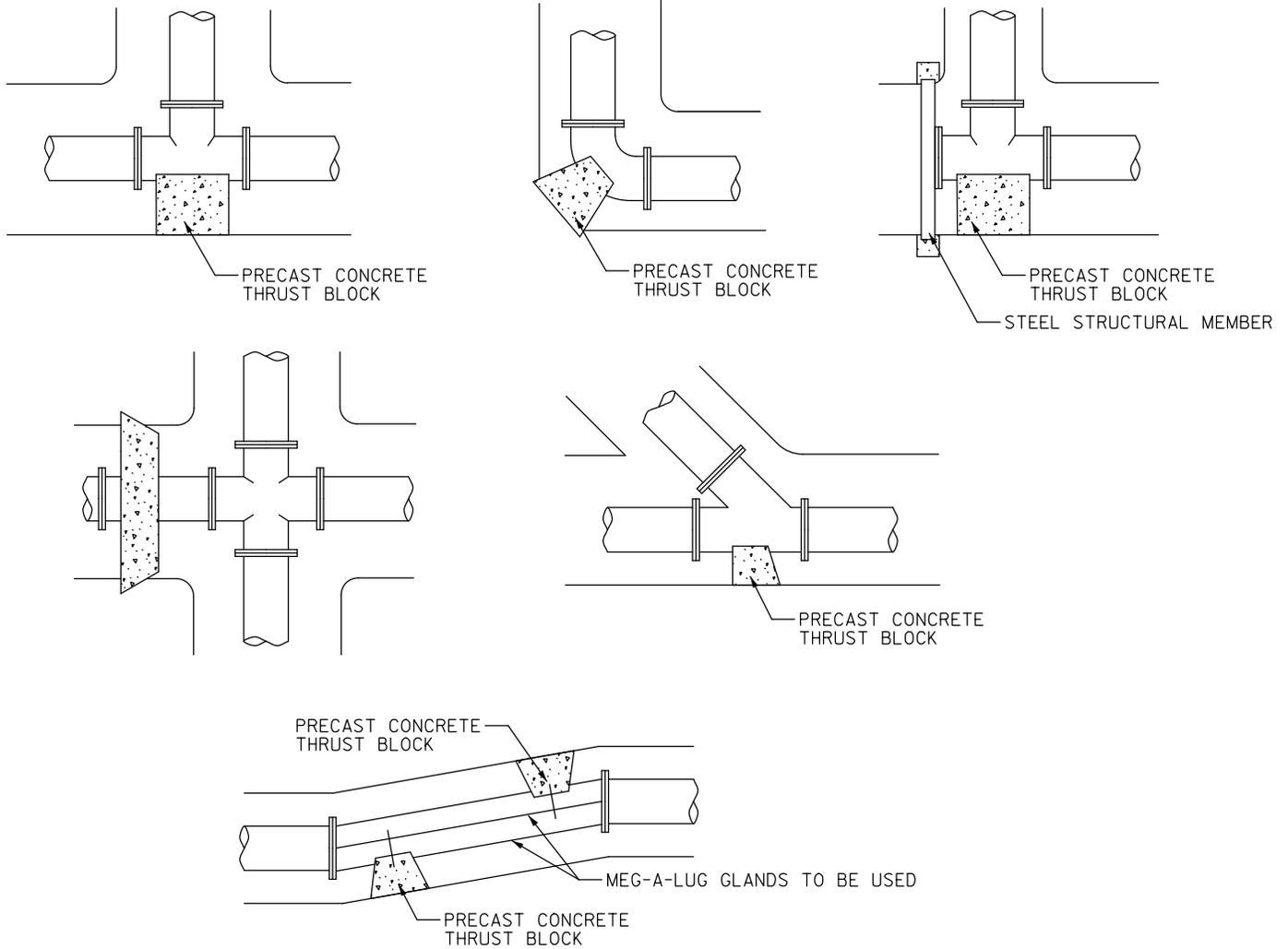
ENGINEERING DETAILS

WATER SERVICE CONNECTION

| | |
|--------|-----------|
| DATE: | 1/19/2018 |
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DETAIL NO.

W-5



BEARING AREA (SQ. FT.)

| PIPE SIZE | TEE/PLUG | 90 DEG. | 45 DEG. | 22 1/2° | 11.25° |
|-----------|----------|---------|---------|---------|--------|
| 6 | 4 | 2 | 1 | 1 | 1 |
| 8 | 6 | 4 | 3 | 1 | 1 |
| 10 | 7 | 5 | 3 | 2 | 1 |
| 12 | 8 | 6 | 4 | 3 | 2 |
| 14 | 12 | 9 | 6 | 4 | 3 |
| 16 | 15 | 12 | 7 | 5 | 3 |
| 18 | 18 | 15 | 9 | 5 | 4 |
| 24 | 40 | 30 | 15 | 10 | 5 |

ALL BLOCKING MUST BEAR ON UNDISTURBED EARTH.

ALL BENDS OR ELBOWS GREATER THAN AND INCLUDING 11.25° SHALL HAVE THRUST BLOCKING.

WOOD SHIMS NOT ALLOWED.



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ENGINEERING DETAILS

THRUST BLOCK DETAIL

DATE: 1/19/2018

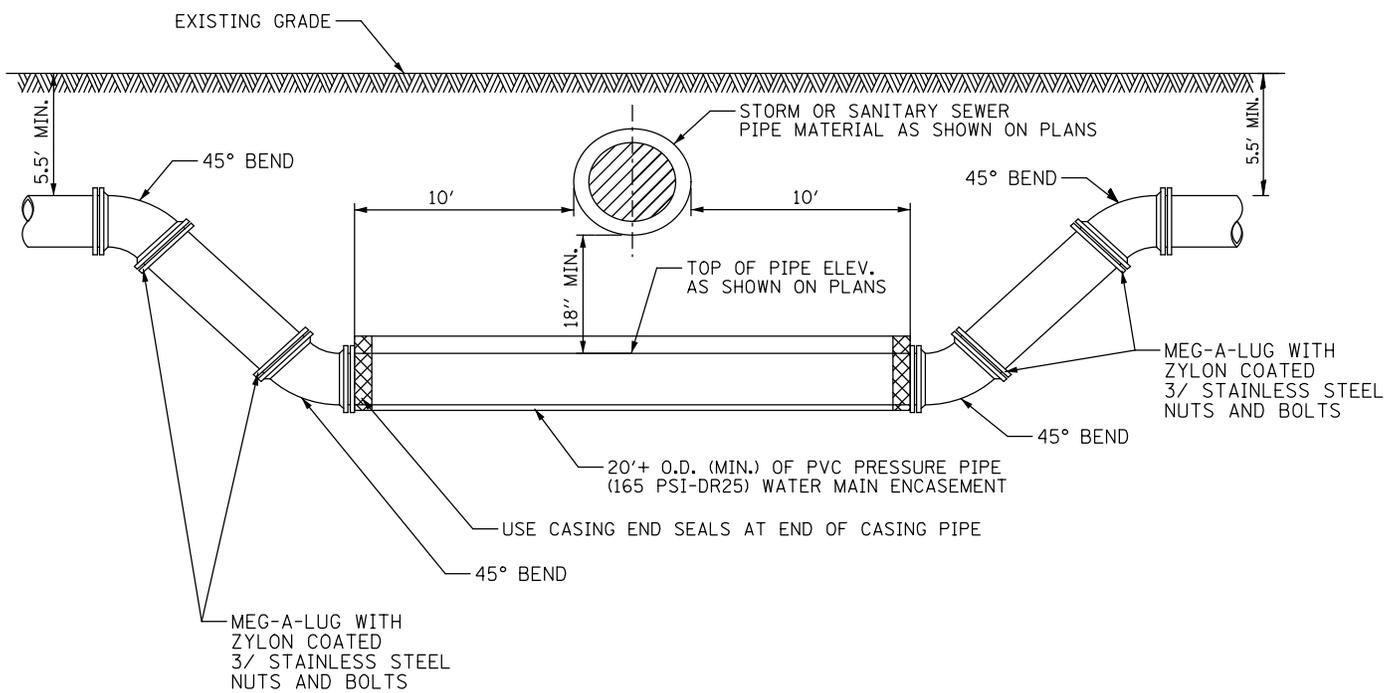
REV 1:

REV 2:

REV 3:

DETAIL NO.

W-6



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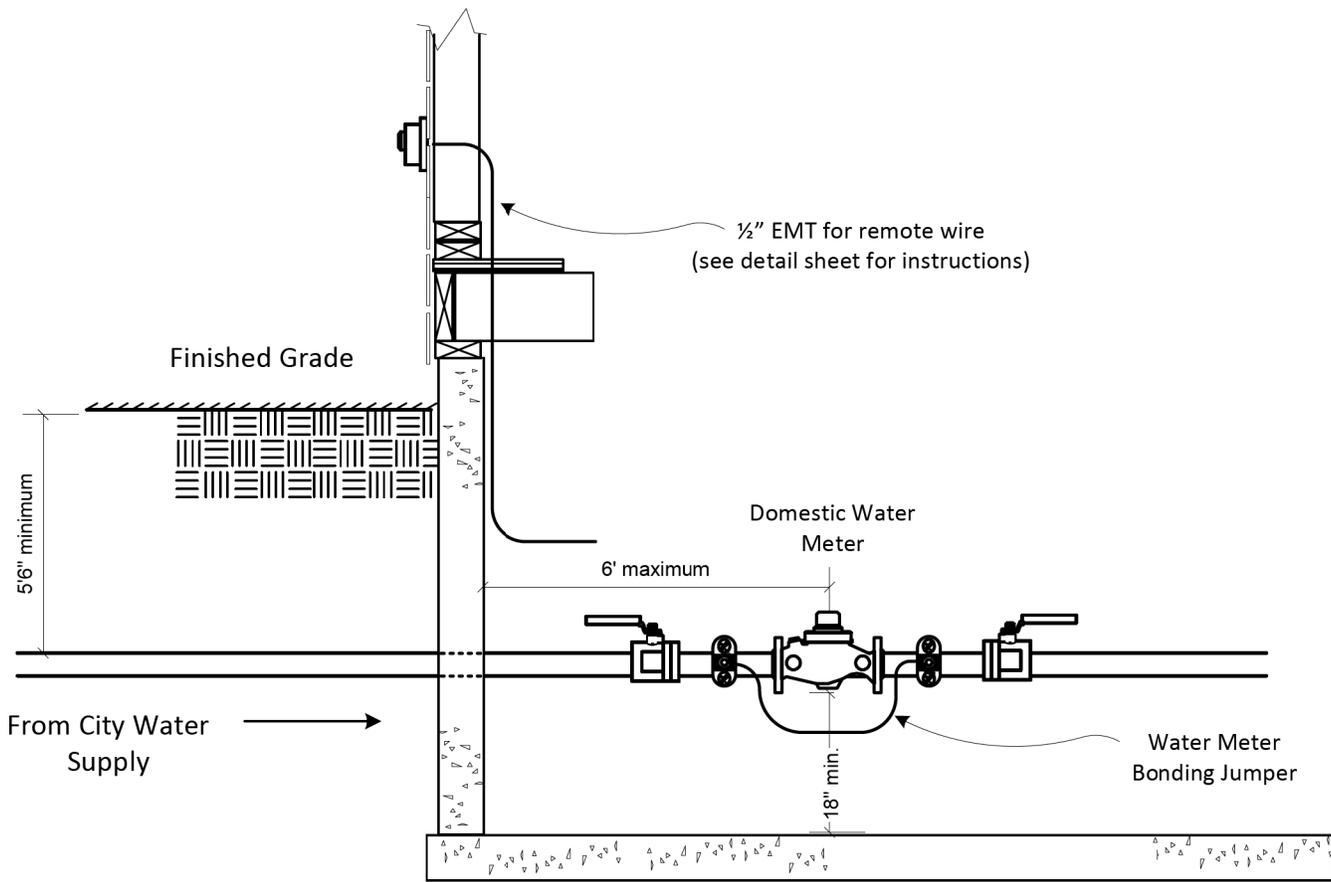
ENGINEERING DETAILS

WATER MAIN LOWERING DETAIL

| | |
|--------|-----------|
| DATE: | 1/19/2018 |
| REV 1: | |
| REV 2: | |
| REV 3: | |

DETAIL NO.

W-7



1. The water connection property owner is responsible for all labor, equipment, material, tools and transportation to complete the work..
2. The water customer, at their expense, must provide all suitable pipe connections. For water meters up to 2", two (2) full port ball valves, one immediately on the inlet side and one on the outlet side for the means of isolated the water meter is required.
3. The meter setting must have an electrical bonding jumper connected on the inlet and outlet sides of the piping. (See NEC requirements for proper cable size)
4. Minimum service size is 1" Type "K" copper tubing.
5. The meter setting must be accessible with a minimum clearances of 18" on all sides and 36" directly in front to allow servicing the meter.

Meter Information

3/4" iPERL meter length - 9", meter spread - 14 1/2"
 1" iPERL meter length - 10 3/4". Meter spread 16 1/4"



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ENGINEERING DETAILS

WATER METER

| | |
|--------|-----------|
| DATE: | 1/19/2018 |
| REV 1: | |
| REV 2: | |
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DETAIL NO.

W-8

Standards for Water Meter Remote Wiring and Conduit Installation



1. This standard covers the work to be undertaken for water meter remote wire and conduit installation. The property owner is responsible for providing all labor, equipment, material, tools and transportation to complete the work as described in this document.
2. All indoor conduit and all associated bends and fittings shall have a minimum inside trade size diameter of ½" and shall be electrical metallic tubing (EMT) type conduit.
3. The remote wire conduit shall be installed from a point, in the same room as the water meter, within 3 feet of the water meter, to a point on the outside wall of the building at a distance between 24" and 42" above finished grade.
4. Where the conduit terminates at the outside wall of the building, the conduit shall extend through the wall and terminate flush with the finished surface of the outside wall. The outside reader will be installed over the conduit end and sealed against the weather.
5. The conduit shall be installed to a point on the front wall of the building, or within 6 feet of the front wall of the building if placed on the side wall of the building.
6. The point on the outside wall of the building where the conduit terminates shall be accessible at all times. The remote reader location will be determined and approved by the Water Operations Division. The location must be accessible to a meter reader year-round, must not be located within a fenced-in area, must not be located in an area that creates a hazard for the meter reader due to situations including, but not limited to;
 - Dogs or other potentially dangerous animals
 - Bushes or other obstructions
 - Ice or snow accumulations
7. All conduit installations must comply with the NEC requirements.
8. Where the conduit terminates at the outside wall of the building, a clear space of a minimum of 16" x 16" shall be provided on the surface of the wall suitable for mounting the remote readout device or transmitter.
9. The route the conduit takes from the water meter to the termination point on the outside wall must be the shortest, most direct route.
10. Only the remote meter wire shall be permitted to be installed inside the conduit.
11. All wire installed on the exterior of any building or structure, including wire exiting any water meter vault, shall be protected with a galvanized rigid metal electrical conduit specifically designed for exterior use and the path of the raceway approved by the City.
12. The City shall supply the remote meter wire. The owner shall provide a pull string (Greenlee 430 Poly Fishing Line or equivalent) within the conduit leaving an excess of at least 3 feet of string at both ends. Both ends of the fishing line must be clearly tagged with the words "Water Meter". The fishing line must be a continuous single piece without splices.



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Water Main Testing Specifications

Pressure and Leakage Test

1. Testing Procedures
 - a. All pressure leakage testing shall be tested against installed pipe, fittings, valves, joints, and fire hydrants up to nozzles.
2. Valve Operations
 - a. City of Rolling Meadows Water Division personnel are the only individuals authorized to operate any water valves for pressurizing or flushing the system.
3. Taps for Testing
 - a. Contractor/developer is required to provide a minimum one (1)-inch service taps or size required for adequate flushing in manholes for test gauges, flushing needs, and for disinfection at each end of the pipe test section.
 - b. Service tap shall be a direct tap.
 - c. Contractor shall schedule an appointment with the City of Rolling Meadows Water Division for the witnessing/inspection of all taps. A 24-hour notice is required.
4. Air Removal
 - a. Before applying the specified test pressure, air shall be expelled completely from the section of piping under test. Air removal will be done in conjunction with the flushing procedures of the water main (see Flushing Requirements.)
5. Allowable Leakage
 - a. Testing allowance shall be defined as the maximum quantity of makeup water that is added into a pipeline undergoing hydrostatic pressure testing, or any valved section thereof, in order to maintain pressure within ± 5 psi of the specified test pressure (after the pipeline has been filled with water and the air has been expelled*). No pipeline installation will be accepted if the quantity of makeup water is greater than determined by the following formula:



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In inch-pound units,

$$L = \frac{SD\sqrt{P}}{148,000}$$

Where:

L = testing allowance (makeup water), in gallons per hour

S = length of pipe tested, in feet

D = nominal diameter of the pipe, in inches

P = average test pressure during the hydrostatic test, in pounds per square in (gauge)

These formulas are based on a testing allowance of 10.49 gpd/mi/in. of nominal diameter at a pressure of 150 psi. Values of testing allowance at various pressures are shown in the table below. When testing against closed metal-seated valves, an additional testing allowance per closed valve of 0.0078 gal/hr/in. of nominal value size shall be allowed. When hydrants are in the test section, the test shall be made against the main valve in the hydrant.

ALLOWABLE LEAKAGE PER 1,000 FT OF PIPELINE

| Avg. Test Pressure psi | Nominal Pipe Diameter—in. | | | | | | | | | | | | | | | | | |
|---------------------------|---------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| | 3 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 24 | 30 | 36 | 42 | 48 | 54 | 60 | 64 |
| 450 | 0.43 | 0.57 | 0.86 | 1.15 | 1.43 | 1.72 | 2.01 | 2.29 | 2.58 | 2.87 | 3.44 | 4.30 | 5.16 | 6.02 | 6.88 | 7.74 | 8.60 | 9.17 |
| 400 | 0.41 | 0.54 | 0.81 | 1.08 | 1.35 | 1.62 | 1.89 | 2.16 | 2.43 | 2.70 | 3.24 | 4.05 | 4.86 | 5.68 | 6.49 | 7.30 | 8.11 | 8.65 |
| 350 | 0.38 | 0.51 | 0.76 | 1.01 | 1.26 | 1.52 | 1.77 | 2.02 | 2.28 | 2.53 | 3.03 | 3.79 | 4.55 | 5.31 | 6.07 | 6.83 | 7.58 | 8.09 |
| 300 | 0.35 | 0.47 | 0.70 | 0.94 | 1.17 | 1.40 | 1.64 | 1.87 | 2.11 | 2.34 | 2.81 | 3.51 | 4.21 | 4.92 | 5.62 | 6.32 | 7.02 | 7.49 |
| 275 | 0.34 | 0.45 | 0.67 | 0.90 | 1.12 | 1.34 | 1.57 | 1.79 | 2.02 | 2.24 | 2.69 | 3.36 | 4.03 | 4.71 | 5.38 | 6.05 | 6.72 | 7.17 |
| 250 | 0.32 | 0.43 | 0.64 | 0.85 | 1.07 | 1.28 | 1.50 | 1.71 | 1.92 | 2.14 | 2.56 | 3.21 | 3.85 | 4.49 | 5.13 | 5.77 | 6.41 | 6.84 |
| 225 | 0.30 | 0.41 | 0.61 | 0.81 | 1.01 | 1.22 | 1.42 | 1.62 | 1.82 | 2.03 | 2.43 | 3.04 | 3.65 | 4.26 | 4.86 | 5.47 | 6.08 | 6.49 |
| 200 | 0.29 | 0.38 | 0.57 | 0.76 | 0.96 | 1.15 | 1.34 | 1.53 | 1.72 | 1.91 | 2.29 | 2.87 | 3.44 | 4.01 | 4.59 | 5.16 | 5.73 | 6.12 |
| 175 | 0.27 | 0.36 | 0.54 | 0.72 | 0.89 | 1.07 | 1.25 | 1.43 | 1.61 | 1.79 | 2.15 | 2.68 | 3.22 | 3.75 | 4.29 | 4.83 | 5.36 | 5.72 |
| 150 | 0.25 | 0.33 | 0.50 | 0.66 | 0.83 | 0.99 | 1.16 | 1.32 | 1.49 | 1.66 | 1.99 | 2.48 | 2.98 | 3.48 | 3.97 | 4.47 | 4.97 | 5.30 |
| 125 | 0.23 | 0.30 | 0.45 | 0.60 | 0.76 | 0.91 | 1.06 | 1.21 | 1.36 | 1.51 | 1.81 | 2.27 | 2.72 | 3.17 | 3.63 | 4.08 | 4.53 | 4.83 |
| 100 | 0.20 | 0.27 | 0.41 | 0.54 | 0.68 | 0.81 | 0.95 | 1.08 | 1.22 | 1.35 | 1.62 | 2.03 | 2.43 | 2.84 | 3.24 | 3.65 | 4.05 | 4.32 |

*If the pipeline under test contains sections of various diameters, the testing allowance will be the sum of the testing allowance for each size.

†Calculated on the basis of Eq 1.

6. Acceptance of Installation

- a. Acceptance shall be determined as the basis of allowable leakage or the procedures established by the City of Rolling Meadows Public Works Department. If any test of laid pipe discloses leakage greater than that



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specified, repairs or replacements shall be accomplished in accordance with the Specifications.

- b. All visible leaks are to be repaired regardless of the amount of leakage.
- c. Dye or any other form of colorizing the water will not be introduced into the water main for the purpose of locating leaks.

Disinfection of Water Mains

1. Flushing Water Main

- a. Sections of pipe to be disinfected shall first be flushed to remove any solids or contaminated material that may have become lodged in the pipe. Fire hydrants in these sections will be flushed using either the two and a half (2 ½)-inches nozzle or the pumper nozzle to develop a velocity of at least 2.5 feet³/sec in the main.
- b. All fire hydrants will be flushed and operated in the section of water main to be tested and disinfected.
- c. City of Rolling Meadows Water Division personnel are the only individuals authorized to operate any water valves.
- d. All valves that are closed will have a tap with copper tube and whip assembly installed in the vault for the purpose of flushing and disinfecting the water main to the furthest end point of each section being tested.

2. Requirement of Chlorine

The Contractor shall hire a City approved, independent, IEPA licensed Chlorination Contractor to chlorinate water mains and/or services and collect required samples before being placed into service.

All new mains, repaired portions of, and/or extensions to existing mains shall be chlorinated so that the initial chlorine residual is not less than 50 mg/l and that a chlorine residual of not less than 25 mg/l remains in the water after standing 24 hours in the pipe. Mains must be flushed of chlorinated water within 24 hours of disinfection. Continuous flushing method using sodium hypochlorite Azone 15 @ 12%/12.5 must be used.

3. Point of Application

The preferred point of application of the chlorinating agent is at the beginning of the pipeline extension or any valved section of it, and through a corporation stop inserted in the pipe.

- a. The contractor will install corporation cocks with a copper tube gooseneck assembly for the purpose of disinfecting and as sample collection point at each branch, dead end, or a location which has a closed valve. Fire hydrants will be disinfected as part of this procedure.
- b. At a point not to exceed two (2)-feet downstream from the beginning of the new main the water entering the new main will receive a dose of chlorine fed at a constant rate such that the water will have not less than 25 mg/1 free chlorine.



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- c. Water from the existing distribution system shall be made to flow at a constant rate into the new main.
- d. The City of Rolling Meadows Water Division personnel must witness the disinfection process. An appointment with 24-hour prior notice must be scheduled with City of Rolling Meadows Water Division.
- e. In the process of chlorinating newly laid pipe, all valves, fire hydrants, or other appurtenances shall be operated while the pipe line is filled with the chlorinating agent and under normal operating pressures.

Disinfection of Water Services (Larger Than Two (2)-Inches)

For the purpose of clarifying this section, water service in this section refers to one (1) or more of the following installations that terminate inside of a building under construction.

- The service line being installed is for the purpose of a combination domestic and fire protection use.
- The service line being installed is for the purpose of branching into multiple domestic services inside of a meter room.
- The service line is the section of main being tested from the City of Rolling Meadows right-of-way valve to a location inside of the building.
- There are no fire hydrants installed on the service line.

1. Meter Rooms/Building Installations

- a. The service line will be disinfected to the inside valve of the meter room prior to any branch service being connected.
- b. The meter room will have a permanent heating system installed and in working condition prior to the disinfection.
- c. One (1) sample point will be provided at the source and one (1) sample point will be provided at the inside valve provided the length of pipe does not exceed 1,000-feet.
- d. The contractor will supply a copper tube gooseneck assembly at each of the sample points and provide methods to divert the flushing water.
- e. The City of Rolling Meadows in Water Division personnel must witness the disinfection process. An appointment with 24 hours prior notice must be scheduled with City of Rolling Meadows Water Division.

2. Domestic/Fire Service Mains/Meter Room

- a. The service line will be disinfected up to the inside valve on both the fire branch and the domestic branch.
- b. The Fire Service Main Branch will have a valve of equal size to the riser section installed prior to chlorination.



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- c. The building, meter room, or location of the incoming service line will have a permanent heating system installed and in working condition prior to the disinfection.
- d. One (1) sample point will be provided at the source and one (1) sample point will be provided at the inside valve provided the length of pipe does not exceed 1,000-feet and provide a method to divert the flushing water.
- e. The contractor will supply a copper tube goose neck assembly at each of the sample points.
- f. The City of Rolling Meadows Water Division personnel must witness the disinfection process. An appointment with 24 hours prior notice must be scheduled with City of Rolling Meadows Water Division.

De-chlorination Requirements

Following chlorination, all treated water shall be thoroughly flushed from the newly laid pipe using the fire hydrant(s) and/or all the copper gooseneck assemblies. The flushing shall replace the highly chlorinated water with water that has a chlorine residual of less than 1mg/1 or equal to the residual from the supply service.

- The discharging of chlorinated water must be expelled to the surrounding ground surface.
- The contractor/developer must comply with all of the I.E.P.A. Rules, Regulations, and Standards for de-chlorinating water as part of the discharging.
- The contractor/developer is responsible for the equipment and materials to de-chlorinate the water at each point it is discharging.
- The City of Rolling Meadows Water Division personnel are the only individuals authorized to operate the valves.
- The City of Rolling Meadows Water Division personnel must witness the de-chlorination procedures when flushing the water mains. An appointment with 24-hour prior notice must be scheduled with City of Rolling Meadows Water Division.

Sampling and Testing

Sample collection for bacterial testing will start immediately after flushing the disinfection water from the system and prior to any portion of the water main being placed into service. Samples will be collected at all sample points designated by the City of Rolling Meadows Water Superintendent. Sampling procedures must follow the I.E.P.A. Standards for construction of new water mains.

- 1. Locations and Spacing
 - a. Samples will be collected from the service, along the water main, as required, and at the end of the line.



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- b. Samples will be collected from fire hydrants at points not to exceed 1,000-feet of linear water main, or as directed by the City of Rolling Meadows.
- c. A sample will be collected from the copper goose-neck assembly point that is located no further than five (5)-feet downstream from the beginning of the new water main.

2. Collection Requirements

- a. The contractor is required to collect all samples at the location(s) designated by the City of Rolling Meadows Water Superintendent.
- b. City of Rolling Meadows Water Division personnel are the only individuals authorized to operate any water valves and must witness all samples at time of collection. 24-hour prior notice must be scheduled with the City of Rolling Meadows Water Division.
- c. A chain of custody form will be used to identify sample location, chloride residual, time of collection, etc. All collection samples will be sealed with a tamper proof label.
- d. The contractor is required to take the collected samples to a certified laboratory approved by the City of Rolling Meadows Water Superintendent.
- e. The City of Rolling Meadows Water Division has the right to collect quality control samples at the same time contractor collects samples. The charges for the quality control samples will be charged to the contractor.
- f. Samples must be collected on two consecutive days with at least 24-hours of separation between the collection times.
- g. Each sample collected will be tested for quality and must show the absence of coliform organisms.

3. Satisfactory Sample Results

If all the samples tested meet the Bacteriological Quality Standards and are certified as satisfactory by the testing lab:

- a. The contractor may have the lab email the results directly to the City of Rolling Meadows Water Division;
- b. The contractor must provide original copies of the certified results to the City of Rolling Meadows Water Superintendent within seven (7) business days of the date on the test results; and
- c. The contractor must contact the City of Rolling Meadows Water Division to schedule an appointment to have the water main placed into service within 72 hours of the satisfactory test results being certified and only as approved by the Water Superintendent. All original chain of custody forms must be returned before activation.



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4. Unsatisfactory Sample Results

If any one of the samples tested fails to meet the Bacteriological Quality Standards and is deemed unsatisfactory, then all the samples collected on the same date for the tested section of pipe, will be considered unsatisfactory.

- d. Unsatisfactory samples from the first day of collection will be discarded. A new first day collection must be collected with a new second day to be collected consecutively.
- e. Unsatisfactory samples from the second day of collection will be discarded. First day samples will also be discarded and the contractor must schedule new first and second day samples.

The contractor will have up to three (3) chances of first day and two (2) chances of second day bacterial testing to obtain satisfactory results on all the samples collected and tested.

- f. Should the contractor fail to obtain satisfactory results after the allotted attempts, the watermain section being tested is to have the original disinfection procedures repeated until satisfactory results are obtained.

Flow Test

After completion of all water mains and installation of all fire hydrants within a subdivision, a flow test shall be performed at the point in the subdivisions farthest away from the existing City water main. The flow test shall provide information regarding static pressure, residual pressure and flow rate, and the information shall be supplied to the City.



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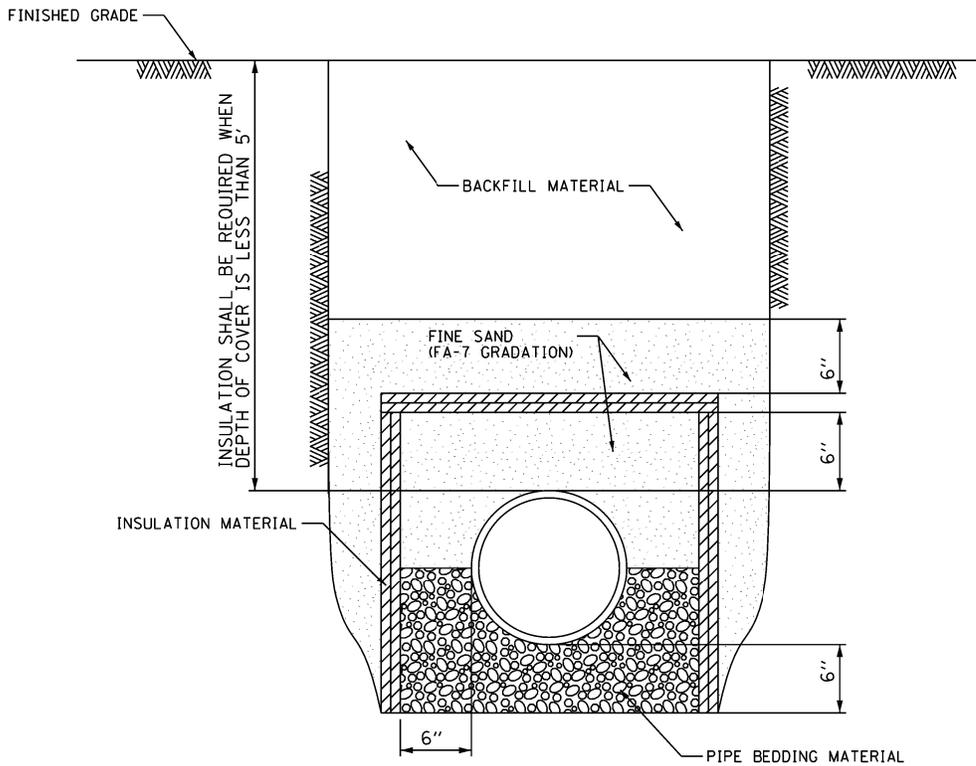
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NOTES:

1. INSULATION MATERIAL SHALL BE AS FOLLOWS:
 OFF ROADWAY INSTALLATIONS - OWENS CORNING FOAMULAR 400
 UNDER PAVED SURFACE INSTALLATIONS - OWENS CORNING FOAMULAR 1000
2. THICKNESS OF INSULATION MATERIAL SHALL BE 4"; USE 2 - 2" THICKNESS INSULATION BOARDS
3. APPLY MASTIC AND OVERLAP ALL INSULATION BOARD JOINTS.



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CITY OF ROLLING MEADOWS

PUBLIC WORKS DEPARTMENT

CROSS CONNECTION CONTROL – POLICY & PROCEDURES (rev. 2/20/2020)

PROGRAM DESCRIPTION

The purpose of this policy is:

1. To protect the public water supply system from contamination, pollution, and hazards that could significantly reduce the quality of life.
2. To promote the elimination, containment, isolation, or control of cross connection between the public water supply and non-potable water systems, plumbing fixtures and industrial process systems or other systems which introduce or may introduce contaminants into the public water supply or the consumer's water system.
3. To provide for the maintenance of a continuing program of cross connection control which will assist in preventing the contamination of the public water supply.

APPLICATION

The City of Rolling Meadows Cross Connection Control Ordinance and policy shall apply to all connections to the water system.

INTENT

The City will provide clean and safe drinking water free from contaminants. The City will reasonably interpret this policy. It is the intent of the City to recognize the varying degrees of hazard and to apply the principle that the degree of protection shall be commensurate with the degree of hazard.

If, in the judgment of the City or its authorized representative, cross connection protection is required through either piping modification or installation of an approved backflow prevention device, due notice shall be given to the customer. The customer shall immediately comply by providing the required protection at his or her own expense. Failure, refusal, or inability on the part of the property owner to provide such protection shall constitute grounds for the discontinuation of water service to the premises until such protection has been provided.

APPLICABLE STANDARDS

1. Illinois Environmental Protection Agency Regulations; EPA Subtitle F: Public Water Supplies Title 35: Environmental Protection.
2. Illinois Plumbing Code.

DEFINITIONS

The following definitions shall apply to the application of this policy:

Agency - the Illinois Environmental Protection Agency.

Approved - backflow prevention devices or methods approved by the Research Foundation for Cross-Connection Control of the University of Southern California, American Water Works Association, American National Standards Institute, or certified by the National Sanitation Foundation.

Auxiliary Water System - source of water outside of the City's potable water supply.

Backflow - the flow of water or other liquids, mixtures, or substances into the distribution pipes of a potable water supply from any source other than the intended source of the potable water supply.

Backflow Prevention Device - any device, method, or type of construction intended to prevent backflow into a potable water system. All devices used for backflow prevention within the City must meet all applicable State and Federal Standards.

Containment - the use of a backflow prevention device, installed on the domestic water service to any building, in a manner as to isolate the building from the domestic water supply, in case of a backflow situation.



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CROSS CONNECTION CONTROL – Definitions (cont.)

Contamination - the introduction into water of microorganisms, chemicals, wastes, or wastewater in a concentration that makes water unfit for its intended use.

Cross-Connection - any connection through which a supply of potable water could be contaminated or polluted.

Customer - The person appearing in the city's records for billing purposes is responsible for all water use in or on the premises and shall be considered prima facie for any violations occurring on the premises.

Domestic Water Supply System or Distribution System - all mains, piping and plumbing fixtures owned or maintained by the City, through which water is obtained and distributed to the public, including wells and well structures, pumping stations, reservoirs, storage tanks and appurtenances, collectively or severally, actually used or intended for use for the purpose of furnishing potable water.

Double Check Valve Assembly - an assembly composed of a single, independently acting check valves, including tight shutoff valves located at each end of the assembly and suitable connections for testing the water-tightness of each check valve.

Equipment means, but is not limited to, any machinery, tool, device, appurtenance, fixture, or experiment, which is connected to the domestic water supply system.

Fixed Air Gap – the stationary unobstructed vertical distance through the free atmosphere between the water discharge point and the flood level rim of the receptacle.

Flood Level Rim – the top edge of a receptacle or fixture over which an impounded liquid will flow when the receptacle is filled beyond its capacity

High Hazard Situation - "severe": (as used to qualify "health hazard") means a hazard to the health of the user that could be expected in death or significant reduction in the quality of life.

Inspection - a plumbing inspection to examine carefully and critically all materials, fixtures, piping and appurtenances, appliances and installations of a plumbing system for compliance with requirements of the Illinois Plumbing Code.

Isolation - the use of a backflow prevention device, installed on the domestic water service to any process, equipment, or fixture, in a manner as to isolate the process, equipment or fixture from the domestic water supply, in the event of a backflow situation.

Low Hazard Situation - "pollution": the presence of any foreign substance (organic, inorganic, radiological or biological) in the water that tends to degrade its quality so as to constitute, reduce or impair the usefulness of the water.

Medium Hazard Situation - "contamination": An impairment of the quality of the water by entrance of any substance to a degree that could create a health hazard.

Non-potable water - water not safe for drinking, personal or culinary use as determined by applicable State and Federal regulations.

Plumbing - the actual installation, repair, maintenance, alteration or extension of a plumbing system by any person, division/section or contractor. Plumbing includes all piping, fixtures, appurtenances and appliances for a supply of water for all purposes, from the source of public water supply on the premises or from the main supply line within and about any building or buildings where a person or persons live, work or assemble. Plumbing includes all piping from discharge of pumping units, to and including pressure tanks in water supply systems. Plumbing includes all piping, fixtures, appurtenances and appliances for a building drain and a sanitary drainage and related ventilation system of any building or buildings where a person or persons live work or assemble, from the point of connection to such a building drain to the building sewer or private sewage disposal system five feet beyond the foundation walls.

Pollution - the presence of any foreign substance (organic, inorganic, radiological, or biological) in water that tends to degrade its quality so as to constitute a hazard or impair the usefulness of the water.

Potable Water - water which meets the applicable State and Federal regulations for drinking, culinary and domestic purposes.

Potential Cross-Connection - a fixture or appurtenance with threaded hose connection, tapered spout, or other connection which would facilitate extension of the water supply line beyond its intended termination point.

Process - any activity found utilizing the public water supply as a source of process fluid(s), or equipment that involves the use of the public water supply in the execution of a designed mechanical function.

Process Fluid(s) - any fluid or solution that may be chemically, biologically or otherwise contaminated or polluted in a form or concentration such as would constitute a health, pollution or system hazard if introduced into the domestic water system.

This includes but is not limited to:

- a. Polluted or contaminated waters.
- b. Process waters
- c. Used waters originating from the public water supply which may have deteriorated in sanitary quality.
- d. Cooling waters.
- e. Questionable or contaminated natural waters taken from wells, lakes, streams, or irrigation systems.
- f. Chemicals in solution or suspension.



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CROSS CONNECTION CONTROL – Definitions (cont.)

g. Oils, gases, acids, alkalis, and other liquid and gaseous fluids used in industrial or other processes, or for fire fighting purposes.

Public Water Supply – all mains, pipes including water services lines, and structures through which potable water is obtained and distributed to the public served by the system, including wells and well structures, pumping stations, reservoirs, storage tanks and appurtenances, collectively or severally, actually used or intended to be used for furnishing water for drinking and domestic purposes.

Reduced pressure zone principal backflow prevention device (RPZ) - a device containing a minimum of two independently acting check valves together with an automatically operated pressure differential relief valve located between the two check valves. During the normal flow and at the cessation of normal flow, the pressure between the two checks shall be less than the supply pressure. In case of leakage of either valve, the differential relief valve, by discharging to the atmosphere, shall operate to maintain the pressure between the check valves at less than the supply pressure. The unit must include tightly closing shutoff valves located at each end of the device, and each device shall be fitted with the properly located testcocks.

Service connection - the connection to the public water supply, including all fittings and appurtenances, through which water is supplied to any equipment, process plumbing fixture, or outlet for potable water.

Survey - the biennial collection of information pertaining to the individual service connections to the City’s water supply. Information regarding the piping system and locations of all connections to the domestic water supply system, and must include the location, type and most recent testing date of all cross-connection control devices and methods, located within the domestic water supply system.

User’s - any connection to the public water supply serving the premise, commencing at the outlet side of the water meter service connection shutoff valve.

Water System - any water system serving the premise, including but not limited to; Domestic (DCW), Industrial Cooling Water (ICW), Deionized Water (DI), Hot Water Heating Supply and Return (HWHS&R), Dual Temperature Water Supply and Return (DTWS&R), Chilled Water Supply and Return (CHS&R), Low Conductivity Water Supply and Return (LCWS&R), Pond Water Supply and Return (PWS&R), Mixed Domestic Water (MIXDW)-tempered domestic water, Lower Level Heating Supply and Return (LLHRS&R), Lower Level Cold Water (LLCW)-domestic.

Well or Wells refers to the source of domestic water pumped from the ground either in its treated (chlorinated) or untreated form.

RESPONSIBILITIES

Community Development Department

1. It shall be the responsibility of the Community Development Department for enforcement of all applicable city plumbing regulations and codes for all connections served by the public water supply.
2. On new or proposed installations using the public water supply, the Community Development Department shall provide evaluation and/or inspection of plans and drawings in order to determine the type of backflow preventer is required.
3. Minimum required protection on the potable water supply serving the premises of all commercial and industrial sites shall be an RPZ installed directly downstream of the city’s water meter and prior to any tees or branches in the plumbing system.
4. Perform field inspections to assure cross connection control compliance.

Water Customer / User

It is the responsibility of the customer to prevent backflow into the public water supply by assuring that:

1. All cross-connections are removed; or approved cross- connection control devices are installed for control of backflow or back siphonage.
2. Cross-connection devices are installed in accordance with the manufacturer instructions, and applicable State and Federal regulations.
3. A licensed plumber certified as a Cross-Connection Control Device Inspector (CCCDI) shall inspect cross-connection control devices at least annually. The inspection of mechanical devices shall include physical testing in accordance with the manufacturer instructions and any applicable State or Federal Regulations.



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(847) 394-9500

ENGINEERING DETAILS

**CROSS CONNECTION CONTROL
POLICY & PROCEDURES**

| | |
|--------|-----------|
| DATE: | 4/30/2020 |
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DETAIL NO.

W-11.2

Water Customer / User (cont.)

4. The persons name appearing on the water bill will be required to obtain the contractor for conducting the inspections and necessary repairs, at least annually, of installed cross-connection control devices. This contractor must be an approved licensed plumber and certified as a Cross-Connection Control Device Inspector (CCCDI) and be licensed and bonded to perform work in the City of Rolling Meadows.

PROCEDURES

Cross-Connection Control Program Application

This policy shall apply to all users and customers served by the public water supply.

1. Surveys and Investigations

a. It shall be the responsibility of the Department of Public Works Water Utility Division to conduct surveys and investigations of all users of the water system where potable water is supplied, to determine whether actual or potential hazards to the water supply exist. These surveys shall be repeated at least every two years, or as the Department of Public Works Water Utility Division determines it is necessary. Records of such surveys shall be made available. Surveys may be accomplished through one or more methods, including inspection of the premises, Online, pencil and paper survey, or the review of annual maintenance testing records.

b. It shall be the responsibility of the Department of Public Works Water Utility Division to arrange periodic surveys of water use practices at the individual service connections to determine whether there are actual or potential cross-connections to the public water supply through which contamination or pollution could occur.

2. Prohibited Connections

a. Connections between the public water supply and other systems or equipment containing water or other substances of unknown or questionable quality are prohibited, except when and where an approved cross-connection control devices or methods are installed, tested, and maintained to insure proper operation on a continuing basis.

b. No connection shall be permitted between the public water supply and any other water supply

c. There shall be no arrangement or connection by which contamination or pollution may enter the public water supply.

3. Where Protection is Required

a. An approved backflow prevention device shall be installed on each water service line to a buildings domestic water system where the following conditions exist:

1. Buildings where any substance or process exists which can create an actual or potential hazard to the public water supply.

2. Buildings having internal cross-connections that in the judgment of the Department of Public Works Water Utility Division are not correctable or intricate plumbing arrangements exist which make it impractical to determine whether or not cross-connections exist.

3. Buildings having a repeated history of cross-connections being established or re-established.

4. An approved backflow device shall be installed on all lawn irrigation systems supplied by the public water supply.

5. Any water use from a fire hydrant.

4. Type of Protection Required

a. The type of protection required shall depend on the degree of hazard that exists as follows:

(i) An approved fixed airgap or an approved RPZ backflow prevention device shall be installed where the public water supply may be contaminated causing a "high hazard situation."



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DETAIL NO.

W-11.3

- (ii) An approved fixed airgap or an approved approved RPZ backflow prevention device shall be installed where the public water supply may be contaminated causing a "medium hazard situation."
 - (iii) An approved fixed proper airgap separation or an approved RPZ backflow prevention device shall be installed where the public water supply may be polluted with the substances that could cause a "low hazard situation."
- b. Where the public water supply is used for a fire protection system, Double Detector Check Valve backflow preventers shall be installed between the fire sprinkler system and the public water supply when:
- (i) Water pumped into the system from another source may be connected to the fire sprinkler system.
 - (ii) Piping material used for the fire sprinkler system is not approved for potable use.
- c. Where the public water supply is used for a fire protection system and the fire protection system contains antifreeze, fire retardant, or other chemicals, an approved RPZ backflow prevention device shall be installed between the fire sprinkler system and the public water supply.
- d. Where by-pass meters are installed on backflow prevention assemblies, the level of protection must be equal to or greater than the device on which it is installed.
- e. Any and all lawn irrigation systems served by the public water supply, including but not limited to, any new or previously installed systems regardless of age, or prior approval, shall be protected with an approved RPZ backflow prevention device.
- f. Any and all uses of fire hydrants, including but not limited to, tanks, vessels, or containers used for the purpose of transporting potable water and connect to the public water supply water shall be protected against contamination by a fixed air gap or approved backflow device.

5. Backflow Prevention Devices

- a. All backflow prevention devices or methods required by this policy shall comply with all applicable State and Federal codes or regulations related to these devices.
- b. The installation of approved devices shall be made in accordance with all applicable regulations or industry specifications. All installations shall be made in accordance with the State of Illinois Plumbing Code. Maintenance shall be performed as recommended by the manufacturer of the device. Maintenance manuals for each device shall be available on-site.

6. Maintenance/Testing/Repair

- a. It shall be the responsibility of the to have all RPZ and back flow devices tested, inspected, and maintenance repairs made annually or more often where inspections indicate a need or are specific in the manufacturer's instructions.
- b. Testing and repairs shall be performed by, licensed plumber and certified as a Cross-Connection Control Device Inspector (CCCDI) and be licensed and bonded to perform work in the City of Rolling Meadows.
- c. Whenever backflow prevention devices required by this policy are found defective; they shall be repaired or replaced immediately by a licensed plumber and certified as a Cross-Connection Control Device Inspector (CCCDI) and be licensed and bonded to perform work in the City of Rolling Meadows.

7. Records

- a. Records submitted online or by mail to the Department of Public Works Water Utility Division and shall be available for inspection and/or auditing purposes by the Illinois Environmental Protection Agency and any State or Federal regulations.
- b. Each device will have a tag attached listing the date of the most recent test, name and approval number of the CCCDI, and type and date of repairs and on display at the location of the device.



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ENGINEERING DETAILS

**CROSS CONNECTION CONTROL
 POLICY & PROCEDURES**

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DETAIL NO.

W-11.4

c. A maintenance log will be maintained by the Department of Public Works Water Utility Division. The maintenance log will include:

1. Date of each test
2. Name & approval number of the CCCDI performing the inspection or test.
3. Test/inspection results.
4. Repairs or servicing required.
5. Repairs and date completed.
6. Services performed and date completed.
7. Location of device noted on floor plan.
8. Distribution water source.
9. Application (Containment/Isolation).
10. Manufacturers name.
11. Serial number of device.
12. Model number of device.
13. Size of device.
14. Installation date.

8. Booster Pumps

a. Where a booster pump has been installed on the service line to or within any premises, a low-pressure cut off device shall shut-off the booster pump when the pressure in the service line on the suction side of the pump drops to 20 psi or less.

b. It shall be the responsibility of the customer to maintain the low-pressure cut-off device in proper working order, and to verify at least once a year that the device is operable.

9. Corrective Actions

a. The City is authorized to issue a notice to the customer; requesting that immediate corrective action(s) be taken to the water service supplying any process, equipment, or building where a connection in violation of this policy exists. This notice will include a brief description of the problem, immediate actions to be taken, and a recommendation for permanent corrective action. If the interruption of water service was deemed necessary by the City, water service to the aforementioned process, equipment, or building shall not be restored until such conditions have been eliminated or corrected in compliance with the provisions of this Policy.

b. Nothing within this policy shall prevent the City from taking such other action as it deems necessary to prevent or remedy a violation of this policy.

REFERENCES

1. Illinois Environmental Protection Agency Regulations, 1997 or most current; Chapter II: EPA Subtitle F: Public Water Supplies. Title 35: Environmental Protection.
2. Illinois Plumbing Code, 1988. Illinois Department of Public Health.
3. Illinois Cross-Connection Control Handbook, 1986 or most current. Printed by the Illinois Environmental Protection Agency in cooperation with the Illinois Department of Public Health.
4. Manual of Cross-Connection Control, Eighth Edition, 1988 or most current. Foundation for Cross- Connection Control and Hydraulic Research.
5. Cross-Connection Control Manual, 1989 or most current. United States Environmental Protection Agency, Office of Water.
6. City of Rolling Meadows Code of Ordinances.



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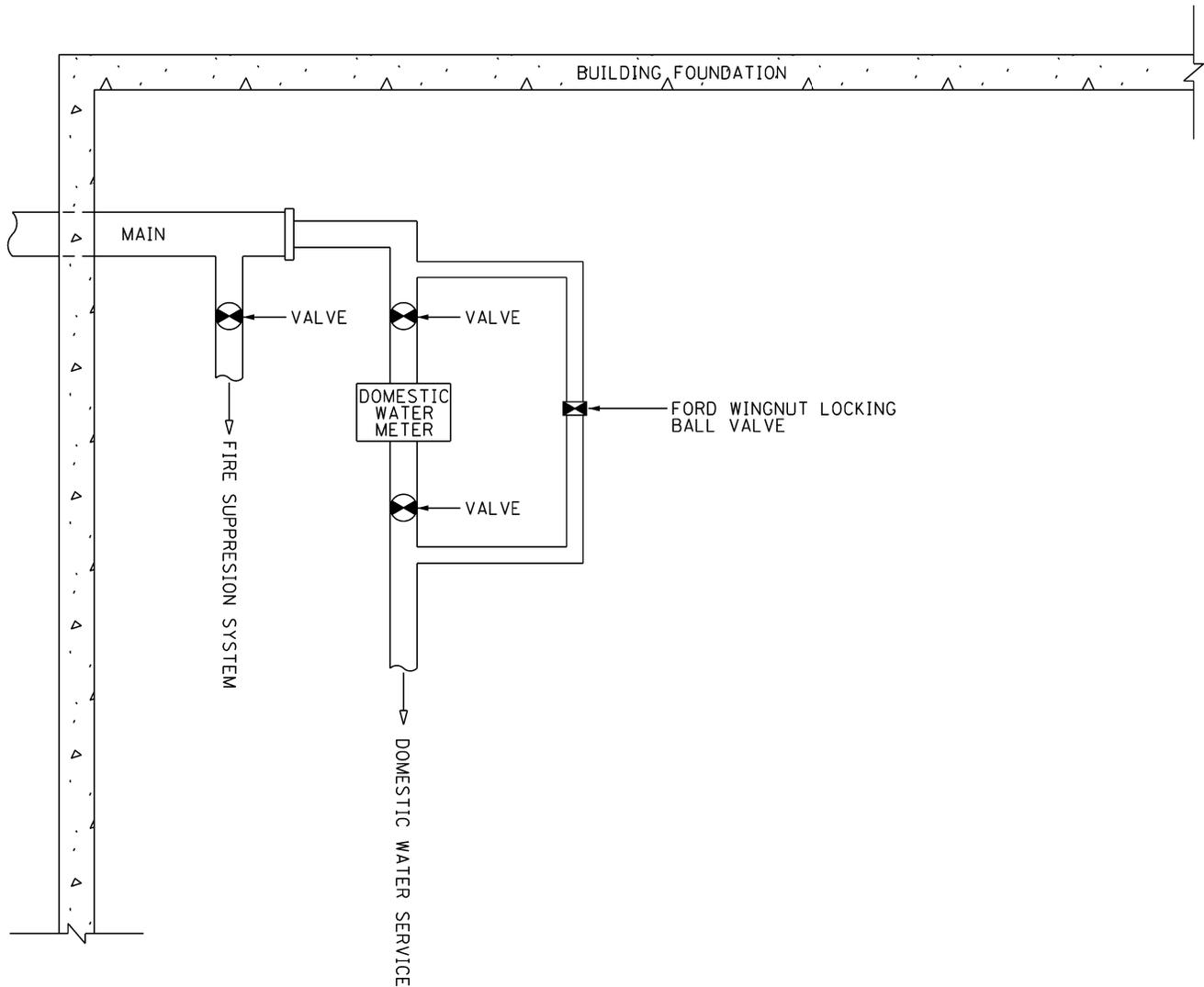
ENGINEERING DETAILS

**CROSS CONNECTION CONTROL
POLICY & PROCEDURES**

| | |
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| DATE: | 4/30/2020 |
| REV 1: | |
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DETAIL NO.

W-11.5



NOTES:

1. CONTRACTOR SHALL INSTALL WATER METER WITH ADAPTORS.
2. WATER METER SHALL BE INSTALLED HORIZONTALLY ONLY.
3. DOMESTIC WATER METER BYPASS REQUIRED ON ALL SERVICES 3" DIAMETER OR LARGER. METER BYPASS PIPING SHALL BE ONE HALF THE DIAMETER OF THE DOMESTIC WATER SERVICE PIPE DIAMETER.
4. CONTRACTOR TO PROVIDE FIXTURE OUTLET SHEET SO THAT CITY CAN DETERMINE WATER METER SIZE.



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ENGINEERING DETAILS

**COMMERCIAL WATER
 METER BYPASS SYSTEM**

| | |
|--------|-----------|
| DATE: | 4/30/2020 |
| REV 1: | |
| REV 2: | |
| REV 3: | |

| | |
|------------|-------------|
| DETAIL NO. | W-12 |
| | |
| | |
| | |

Street Lighting Notes

1. All underground wiring shall be copper XLP type-USE, extra abrasion resistance, 600 volts, in SCH 40 HDPE conduit buried a minimum 30 inches below finished grade, following the roadway or sidewalk edge. Minimum wire size shall be #8 AWG. Minimum conduit size shall be 1 1/4" diameter.
2. Circuits shall be alternating along roadway and sized for a maximum 5% voltage drop.
3. Rigid galvanized conduit sleeves shall be installed under all cross roads and driveways.
4. To maintain the structural integrity of light poles with mast arms, they shall not be erected and left to stand without luminaires.
5. Two sets of full size record drawings shall be furnished to the engineer upon completion of the improvements. The drawings shall show the installed locations of all light poles, underground conduits/wiring, handholes, junction boxes & controller cabinets. The drawings will be reviewed by the engineer.
6. All wires shall be labeled with wire markers indicating the circuit ID in every controller, pole base, hand hole and splice/connection point. Wire markers shall be white nylon with integral mechanical fastener with minimum 3/4" x 1" writeable area.



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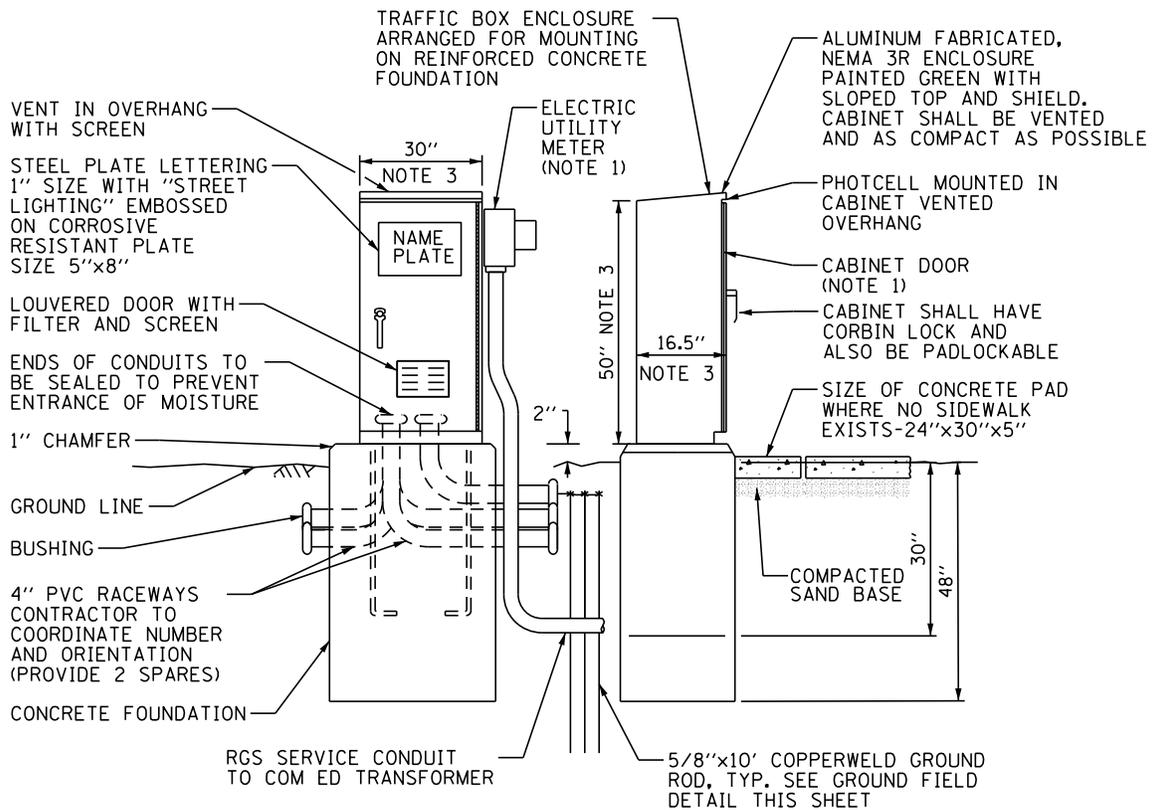
ENGINEERING DETAILS

STREET LIGHTING NOTES

| | |
|--------|-----------|
| DATE: | 8/17/2018 |
| REV 1: | 9/13/2018 |
| REV 2: | |
| REV 3: | |

DETAIL NO.

L-0

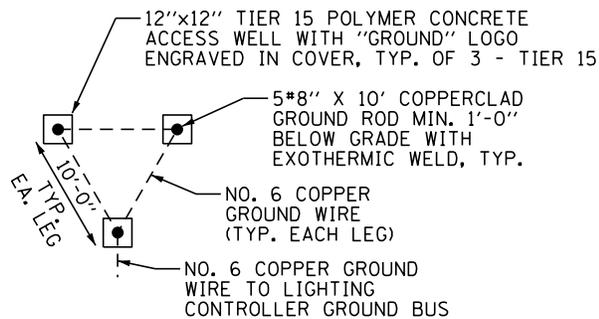


NOTES:

1. CABINET DIMENSIONS SHOWN ARE APPROXIMATE, CABINET SHALL BE AS COMPACT AS POSSIBLE, CONTRACTOR TO COORDINATE.

LIGHTING CONTROLLER CABINET AND FOUNDATION

N.T.S.



GROUND FIELD DETAIL (TYP.)

N.T.S.



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ENGINEERING DETAILS

LIGHTING CONTROLLER CABINET

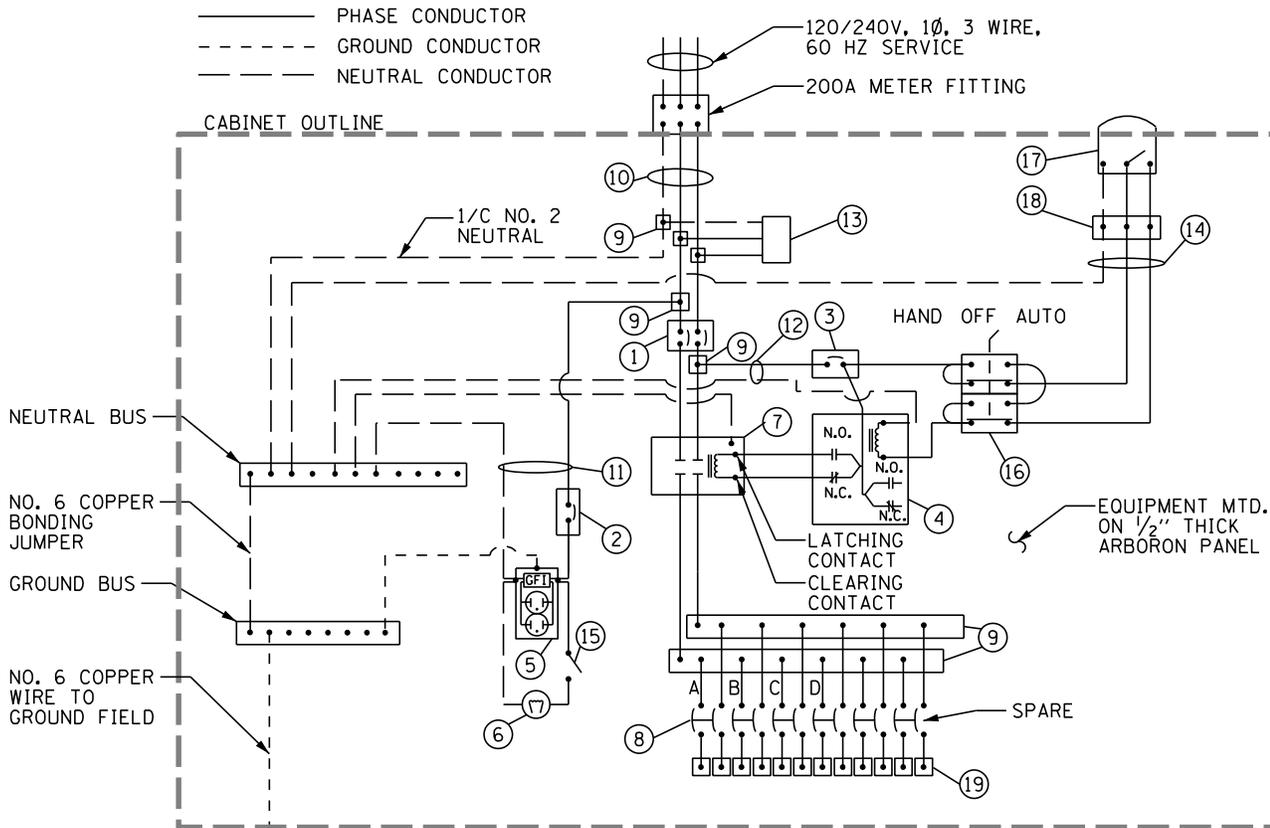
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|--------|-----------|
| DATE: | 8/17/2018 |
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DETAIL NO.

L-1

LIGHTING CONTROLLER CIRCUIT LOADS

| CIRCUIT ID | ROADWAY LUMINAIRE | | TOTAL CIRCUIT LOAD | |
|------------|-------------------|--------------------|--------------------|--------------|
| | QTY. | LOAD/FIXT. (WATTS) | (WATTS) | AMPS (VOLTS) |
| A | | W | W | A (240V) |
| B | | W | W | A (240V) |
| C | | W | W | A (240V) |
| D | | W | W | A (240V) |
| TOTAL | | N/A | W | A (240V) |



NOTES:

1. ALL GROUND CONDUCTORS SHALL BE GREEN AND NEUTRAL CONDUCTORS SHALL BE WHITE. PHASE CONDUCTORS SHALL BE COLOR CODED IN ACCORDANCE WITH SECTION 1066.02 OF THE STANDARD SPECIFICATIONS. CONTRACTOR SHALL ONLY USE SOLID COLOR CODED INSULATIONS. COLOR STRIPPING OF PHASE CONDUCTORS SHALL NOT BE ALLOWED.
2. IN ADDITION TO THE TERMINATIONS SHOWN, THE NEUTRAL AND GROUND BUS BARS SHALL ACCOMMODATE A MINIMUM OF 8 ADDITIONAL TERMINATIONS (*2-#14).

LIGHTING CONTROLLER WIRING DIAGRAM

N.T.S.



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ENGINEERING DETAILS

LIGHTING CONTROLLER

DATE: 8/17/2018

REV 1:

REV 2:

REV 3:

DETAIL NO.

L-2

| ITEM | SPECIFICATION | MFG./MODEL NO. OR APPR'D EQUAL |
|---|---|---|
| ① MAIN CIRCUIT BREAKER | MOLDED CASE, PANEL-MOUNTED, 100 AMPERE, 2P, 240V SERVICE RATING, 10KAIC | SQUARE D |
| ② LAMPHOLDER CIRCUIT BREAKER | MOLDED CASE, PANEL-MOUNTED, 20 AMPERE, 1P, 120V RATING, 10KAIC | SQUARE D |
| ③ PHOTOELECTRIC CONTROL CIRCUIT BREAKER | MOLDED CASE, PANEL-MOUNTED, 15 AMPERE, 1P, 120V RATING, 10KAIC | SQUARE D |
| ④ AUXILIARY RELAY | 120 V OPERATED DPDT 60 HZ COIL, 2 NO & 2 NC CONTACTS | MAGNECRAFT NO. 389 FXBXC1 - 120A |
| ⑤ CABINET RECEPTACLE AND BOX | COMMERCIAL GRADE GFCI 20A/120V, W.R., MOUNTED IN A WEATHERPROOF CAST ALUMINUM SINGLE GANG BOX WITH WEATHERPROOF COVER | RECEPTACLE: LEVITON NO. 8899, BOX: APPLETON NO. WSM150 COVER: APPLETON NO. WHG1 |
| ⑥ CABINET LIGHT | 5 WATT LED STRIP LIGHT, 60K HOUR RATING, 65K COLOR TEMPERATURE, DOOR SWITCH CONTROLLED, FASTENED TO TOP OF CABINET | PENTAIR NO. LEDA1S35 |
| ⑦ CONTACTOR | 100 AMPERE, 2P, 120V COIL, MECHANICALLY HELD | SQUARE D NO. 8903 S0010 V02 |
| ⑧ BRANCH LINE CIRCUIT BREAKERS | MOLDED CASE, PANEL-MOUNTED, 20A, 2P, 240V RATING, 10KAIC (MIN 2 SPARES) | SQUARE D |
| ⑨ POWER DISTRIBUTION BLOCK | 600 VOLT, INSULATED, SIZE AS REQ'D, 10KAIC | N/A |
| ⑩ SERVICE CABLES | 3-600V XLP NO. 2 | MARATHON |
| ⑪ LAMPHOLDER WIRE | 2-600V XLP NO. 12 | N/A |
| ⑫ CONTROL WIRE | 2-600V XLP NO. 12 | N/A |
| ⑬ SURGE ARRESTOR | 10 K AMPERE RATING | SQUARE D NO. SDSA 1175 |
| ⑭ PHOTOELECTRIC CONTROL WIRE | 3-600V XLP NO. 10 | N/A |
| ⑮ DOOR SWITCH | 20A/120V, DOOR MOUNTED SNAP ACTION TYPE PLUNGER SWITCH | OMRON NO. A-20G0-K |
| ⑯ HAND-AUTO-OFF CONTROL SWITCH | 20A, 3 POS. MTD IN CAST ALUM. ENCLOSURE | SQUARE D NO. 9001 KYK 111 |
| ⑰ PHOTOCCELL | 120V, MTD. ON CABINET, DELAY TYPE, SPST-NC | FISHER PIERCE NO. FPFA-105M |
| ⑱ TERMINAL BLOCK | 3 TERMINAL, SCREW TYPE, MAX. #10 WIRE SIZE | CINCH NO. 3-142 |
| ⑲ CIRCUIT BREAKER DISTRIBUTION BLOCKS | 30A, 600V, 10 KAIC - WIRE RANGE: LINE SIDE LUG (1) #2/0-#14 AWG, LOAD SIDE LUGS (6) #4-#14 AWG | MARATHON |

NOTES:

1. THE LIGHTING CONTROLLER TOGETHER WITH ALL OF ITS COMPONENTS SHALL BE UL LISTED AS AN "ENCLOSED INDUSTRIAL CONTROL PANEL" UNDER UL508A.
2. CONNECTION OF SURGE ARRESTOR TO LINE SIDE OF MAIN CIRCUIT BREAKER SHALL NOT BE "DOUBLE LUGGED."
3. THE MAIN CIRCUIT BREAKER SHALL BE LABELED "SERVICE DISCONNECT".
4. ALL SWITCHES AND CONTROLS SHALL BE IDENTIFIED USING TWO COLOR ENGRAVED NAMEPLATES.
5. THE PANEL MANUFACTURER SHALL LABEL THE CABINET WITH THE APPROPRIATE ARC FLASH WARNING AND PERSONNEL PROTECTION EQUIPMENT REQUIRED FOR SERVICING.
6. ALL EXPOSED BUS BARS SHALL BE INSULATED.
7. ALL WIRING SHALL BE COPPER.



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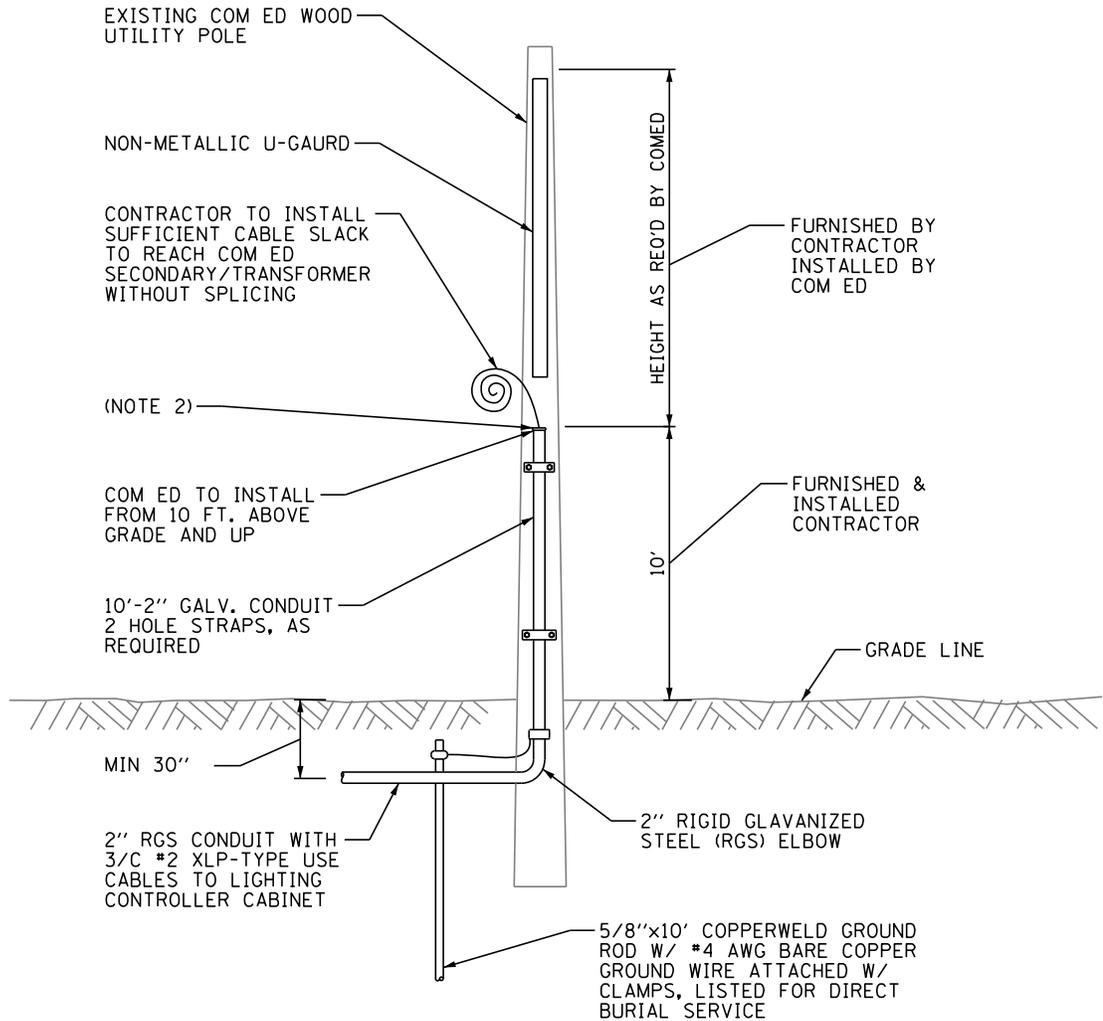
ENGINEERING DETAILS

**LIGHTING CONTROLLER
COMPONENT SCHEDULE**

| | |
|--------|-----------|
| DATE: | 8/17/2018 |
| REV 1: | |
| REV 2: | |
| REV 3: | |

DETAIL NO.

L-3



NOTES:

1. ALL WORK SHALL CONFORM TO COM ED'S BOOK OF "INFORMATION AND REQUIREMENTS FOR THE SUPPLY OF ELECTRIC SERVICE."
2. CONTRACTOR SHALL PROVIDE CONDUIT BUSHING AND SEALING COMPOUND AT TOP OF RISER.



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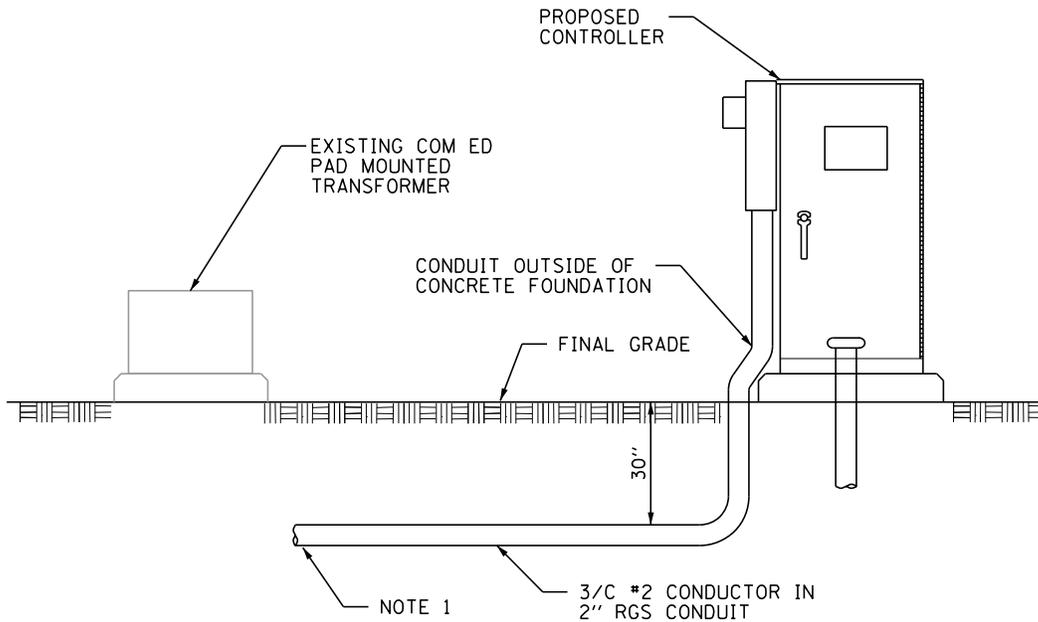
ENGINEERING DETAILS

**COM ED OVERHEAD
 SERVICE CONNECTION**

| | |
|--------|-----------|
| DATE: | 8/17/2018 |
| REV 1: | |
| REV 2: | |
| REV 3: | |

DETAIL NO.

L-4



NOTES:

1. ROUTE SERVICE CONDUIT UP TO 2 FT AWAY FROM TRANSFORMER. PROVIDE ADEQUATE SLACK CABLE COILED UP FOR COM ED TO CONNECT.
2. CONTRACTOR TO SCHEDULE & COORDINATE ALL WORK WITH COM ED. END OF CONDUIT SHALL HAVE A PROTECTIVE BUSHING.



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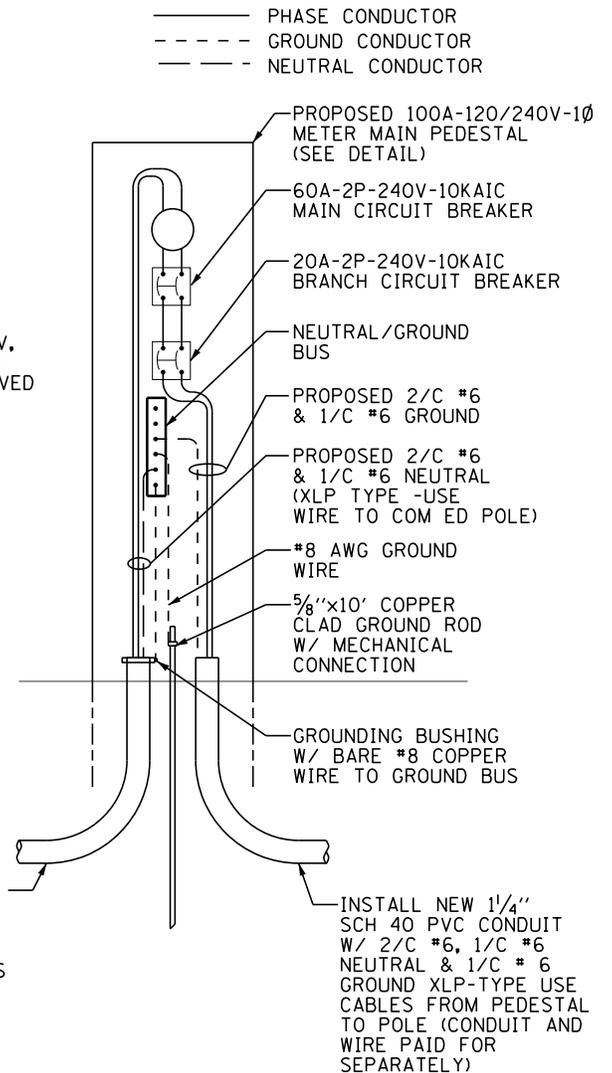
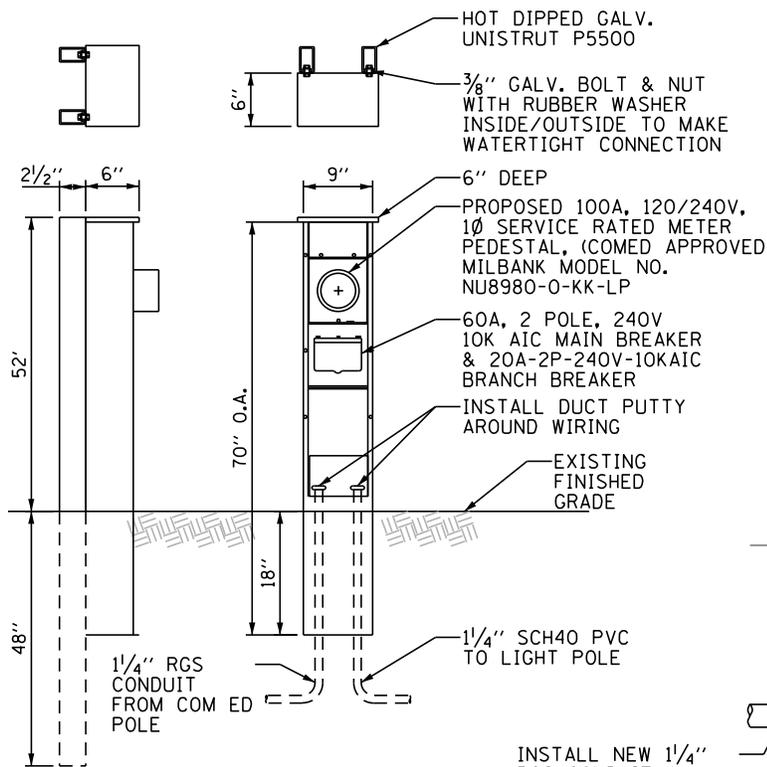
ENGINEERING DETAILS

**COM ED UNDERGROUND
 SERVICE CONNECTION**

| | |
|--------|-----------|
| DATE: | 8/17/2018 |
| REV 1: | |
| REV 2: | |
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DETAIL NO.

L-5



SERVICE METER PEDESTAL DETAIL

N.T.S.

WIRING DIAGRAM



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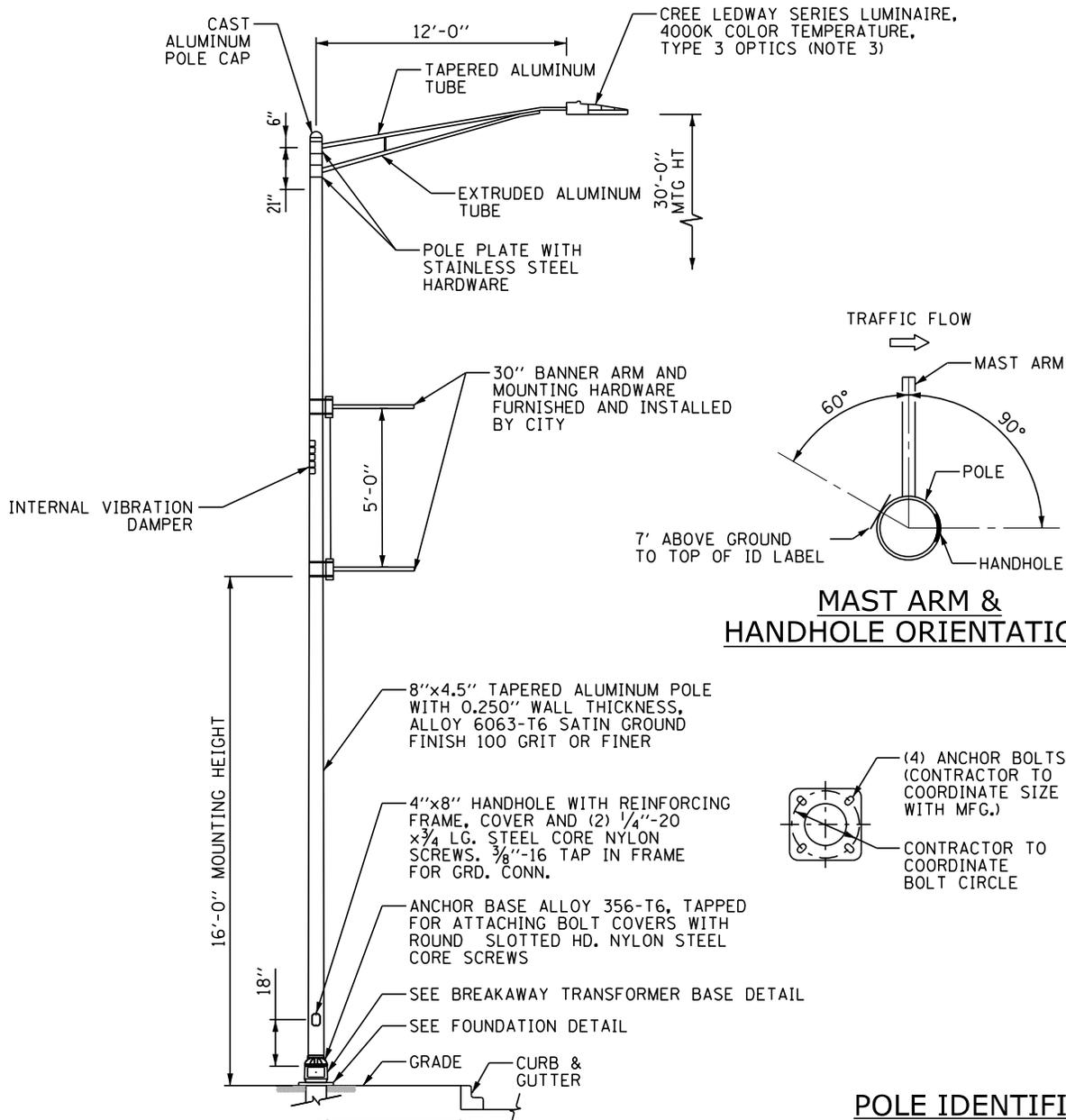
ENGINEERING DETAILS

DIRECT CONNECT SERVICE DISCONNECT PEDESTAL

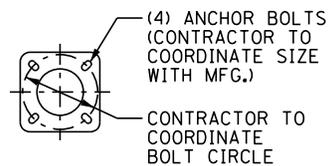
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| DATE: | 8/17/2018 |
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| REV 3: | |

DETAIL NO.

L-6



MAST ARM & HANDHOLE ORIENTATION



POLE IDENTIFICATION

NOTES:

1. LIGHT POLES SHALL MEET WIND LOADING & VIBRATION REQUIREMENTS ACCORDING TO THE LATEST AASHTO STANDARDS AND ARTICLE 1069.01 IN STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION. WIND LOADING SHALL INCLUDE BANNER.
2. POLE HANDHOLE SHALL FACE AWAY FROM TRAFFIC.
3. LED LUMINAIRE SHALL BE CREE "STR-LWY" TYPE. CONTRACTOR TO VERIFY PHOTOMETRICS TO DETERMINE WATTAGE

☐ CONTROLLER #

☐ CIRCUIT

☐ POLE #

WHITE CHARACTERS ON GREEN BACKGROUND

(REFER TO PLANS FOR LOCATIONS)



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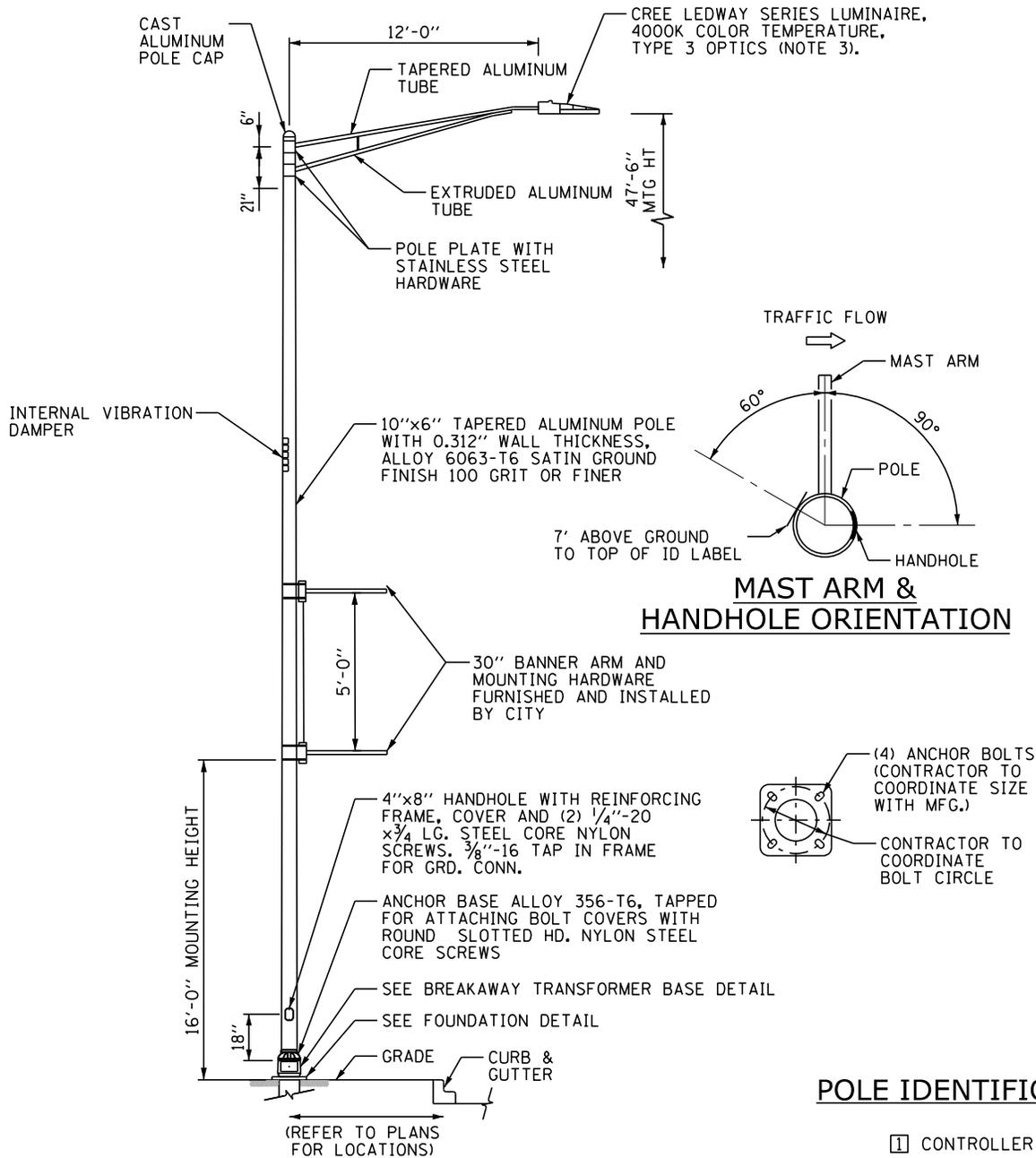
ENGINEERING DETAILS

**ALUMINUM LIGHT POLE
(30 FOOT MOUNTING HEIGHT)**

| | |
|--------|-----------|
| DATE: | 8/17/2018 |
| REV 1: | |
| REV 2: | |
| REV 3: | |

DETAIL NO.

L-7



NOTES:

1. LIGHT POLES SHALL MEET WIND LOADING & VIBRATION REQUIREMENTS ACCORDING TO THE LATEST AASHTO STANDARDS AND ARTICLE 1069.01 IN STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION. WIND LOADING SHALL INCLUDE BANNER.
2. POLE HANDHOLE SHALL FACE AWAY FROM TRAFFIC.
3. LED LUMINAIRE SHALL BE CREE "STR-LWY" TYPE. CONTRACTOR TO VERIFY PHOTOMETRICS TO DETERMINE WATTAGE



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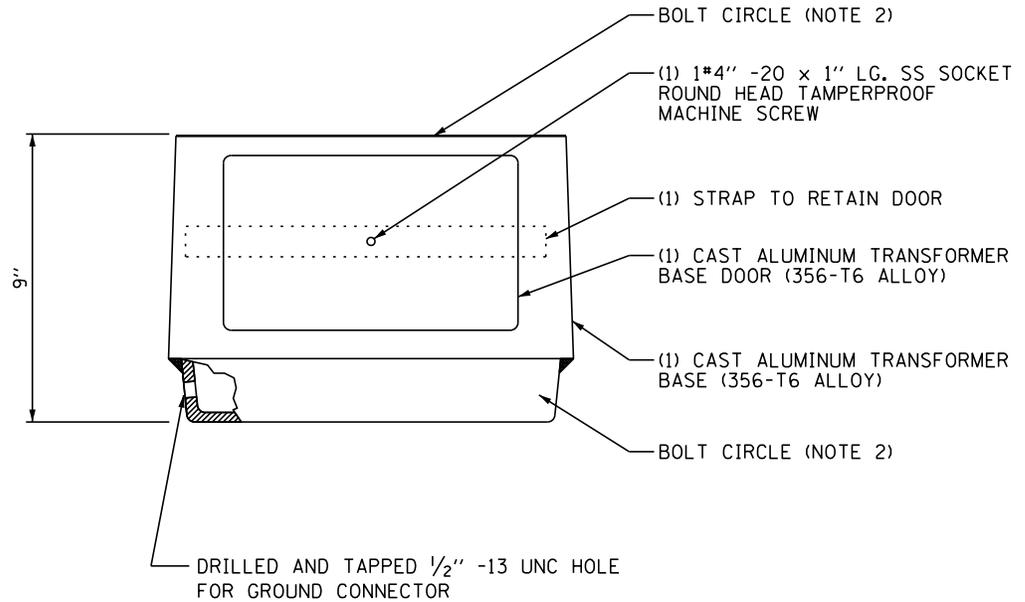
ENGINEERING DETAILS

**ALUMINUM LIGHT POLE
 (47.5 FOOT MOUNTING HEIGHT)**

| | |
|--------|-----------|
| DATE: | 8/17/2018 |
| REV 1: | |
| REV 2: | |
| REV 3: | |

DETAIL NO.

L-8



NOTES:

1. BEFORE INSTALLATION OF BREAKAWAY BASE, USER SHOULD CONSULT WITH AUTHORIZED DISTRIBUTOR REGARDING USERS PROPOSED APPLICATION, LOAD REQUIREMENTS AND INSTALLATION METHODS. FAILURES CAN RESULT FROM USERS MISAPPLICATION OR IMPROPER INSTALLATION. TO APPROACH OPTIMUM STATIC LOADS, USE THE LARGEST POSSIBLE BOLT CIRCLES. SHIMS SHALL NOT BE ALLOWED.
2. CONTRACTOR SHALL COORDINATE BOLT CIRCLE DIMENSIONS.



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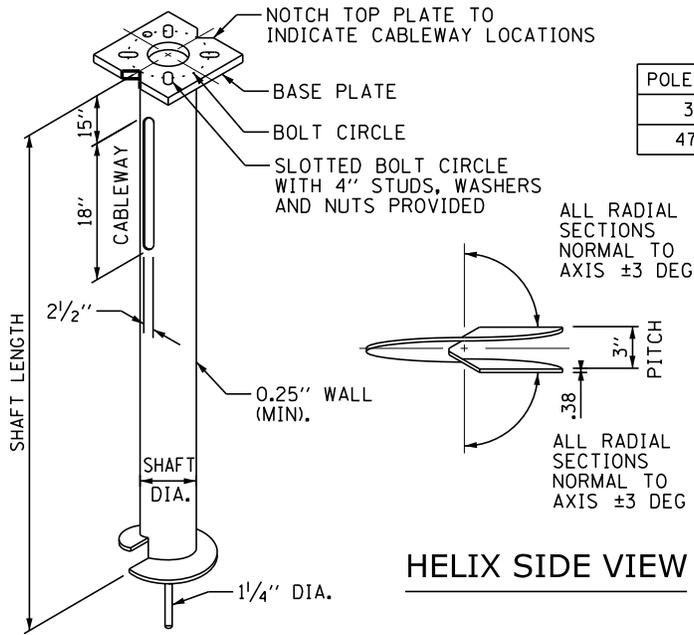
ENGINEERING DETAILS

BREAKAWAY TRANSFORMER BASE

| | |
|--------|-----------|
| DATE: | 8/17/2018 |
| REV 1: | |
| REV 2: | |
| REV 3: | |

DETAIL NO.

L-9



| POLE MTG HT | BOLT CIRCLE | SHAFT DIA. | SHAFT LENGTH | BASEPLATE |
|-------------|-------------|------------|--------------|----------------|
| 30 FT | 11 1/2" | 8 5/8" | 6.0 FT | 12"x12"x1" |
| 47.5 FT | 15" | 10" | 8.0 FT | 15"x15"x1 1/4" |

| HELIX FOUNDATION MATERIALS | |
|----------------------------|--|
| ITEM | MATERIAL REQUIREMENT |
| BASE PLATE | AASHTO M 270M, GRADE 36 (M270M, GRADE 250) |
| SHAFT | ASTM A 252, GRADE 2 (PHOSPHOROUS 0.04% MAXIMUM, SULFUR 0.05% MAXIMUM) |
| HELIX SCREW | AASHTO M 183 (ASTM A 635) |
| PILOT POINT | AASHTO M 270 (ASTM A 575) |
| ANCHOR RODS/STUDS | AASHTO M 314 (ASTM F 1554) |
| HEXAGON NUTS | AASHTO M 291M (ASTM A 563) GRADE DH, OR AASHTO M 292 (ASTM A 194) GRADE 2H |
| WASHERS | AASHTO M 293 (ASTM F 436) |

HELIX FOUNDATION

NOTES:

1. ALL MATERIALS SHALL BE GALVANIZED ACCORDING TO AASHTO M111 (LATEST REVISION).
2. ALL WELDS SHALL BE CONTINUOUS AND NOT LESS THAN 1/4" FILLET WELDS. THE WELDED FOUNDATION SHALL BE CAPABLE OF WITHSTANDING 10,000 FT/LBS OF INSTALLATION TORQUE APPLIED ABOUT THE AXIS OF THE FOUNDATION.
3. THE HELIX FOUNDATION SHAFT SHALL BE INSTALLED VERTICAL AND THE BASE PLATE SHALL BE IN LEVEL. THE BREAKAWAY COUPLINGS AND HARDWARE SHALL NOT BE USED TO ALIGN POLE INSTALLATION
4. THE CABLE TRENCH SHALL BE BACKFILLED AND FIRMLY COMPACTED BEFORE THE INSTALLATION OF THE LIGHT POLE.
5. THE CONTRACTOR SHALL COORDINATE EXTENSION OF ANCHOR BOLTS ABOVE TOP OF THE BASE PLATE WITH THE BREAKAWAY DEVICE MANUFACTURER'S REQUIREMENTS.
6. ANY VOIDS WITHIN THE METAL FOUNDATION SHALL BE FILLED WITH FINE AGGREGATE.
7. METAL FOUNDATIONS SHALL BE INSTALLED IN UNDISTURBED SOIL. PREDRILLING A PILOT HOLE AND/OR BACK FILLING AROUND THE FOUNDATION IS NOT ALLOWED.
8. THE METAL FOUNDATION SHALL NOT BE INSTALLED TO A TORQUE WHICH EXCEEDS THE MANUFACTURER'S MAXIMUM TORQUE RATING NOR SHALL IT BE INSTALLED TO AN INSTALLATION TORQUE VALUE OF LESS THAN 3,500 FT LB. METAL FOUNDATIONS THAT ARE NOT INSTALLED TO FULL INSTALLATION DEPTH OR DO NOT ACHIEVE THE MINIMUM INSTALLATION TORQUE SHALL BE REMOVED AND REPLACE WITH A CONCRETE FOUNDATION.
9. BASE PLATE TO BE PERPENDICULAR TO SHAFT AXIS (± 1 DEG) AND HOLE CENTERLINE CONCENTRIC (± 0.188) TO THE SHAFT AXIS.
10. PILOT POINT AND SHAFT AXES TO BE CONCENTRIC (± 125 FIM) AND IN LINE (± 2 DEG).
11. BASE PLATE SHALL BE PERMANENTLY STAMPED WITH MANUFACTURER'S NAME AND DATE.
12. 5/8"x10' COPPER CLAD STEEL GROUND ROD SHALL BE INSTALLED THRU WIREWAY WITH 8 FEET IN CONTACT WITH SOIL.



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Rolling Meadows, Illinois 60008
(847) 394-9500

ENGINEERING DETAILS

METAL HELIX FOUNDATION DETAIL

DATE: 8/17/2018

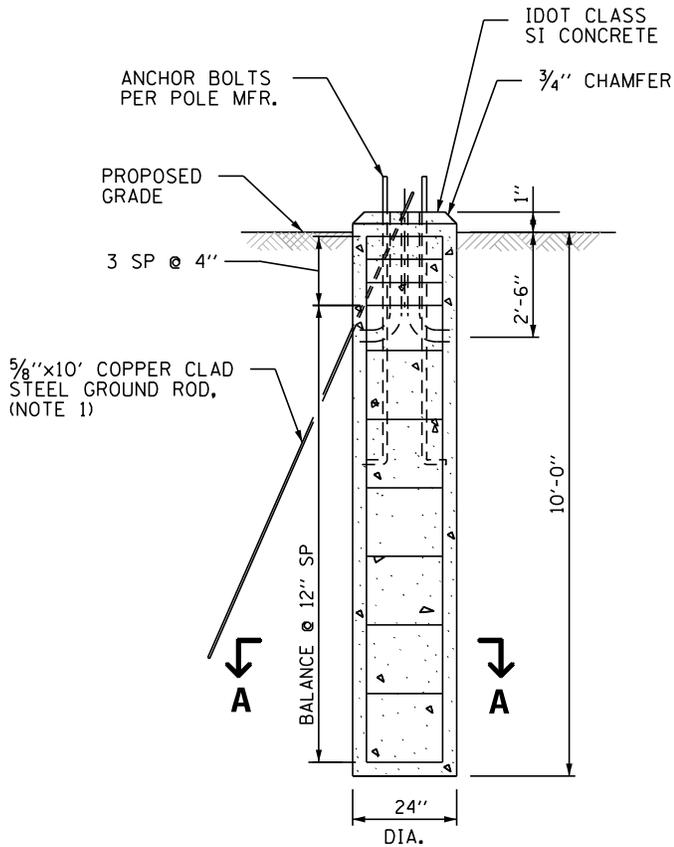
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REV 2:

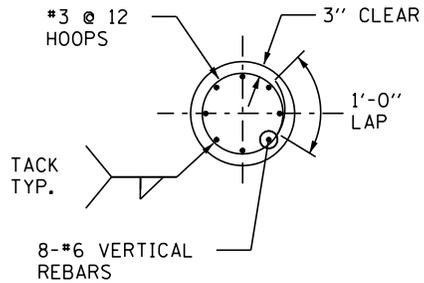
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DETAIL NO.

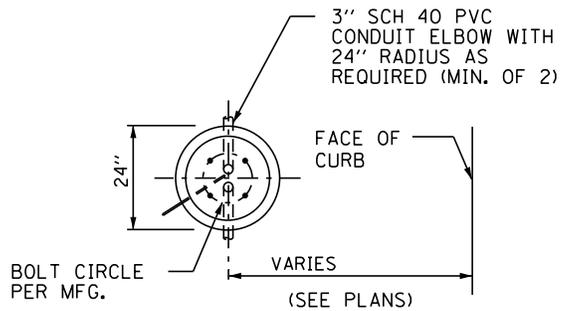
L-10



ELEVATION



SECTION A-A



PLAN

NOTES:

1. GROUND ROD SHALL BE CAST INTO CONCRETE FOUNDATION WITH 8 FEET IN CONTACT WITH SOIL.
2. FOUNDATIONS SHALL BE VIBRATED IN ACCORDANCE WITH IDOT STANDARD PRACTICES.



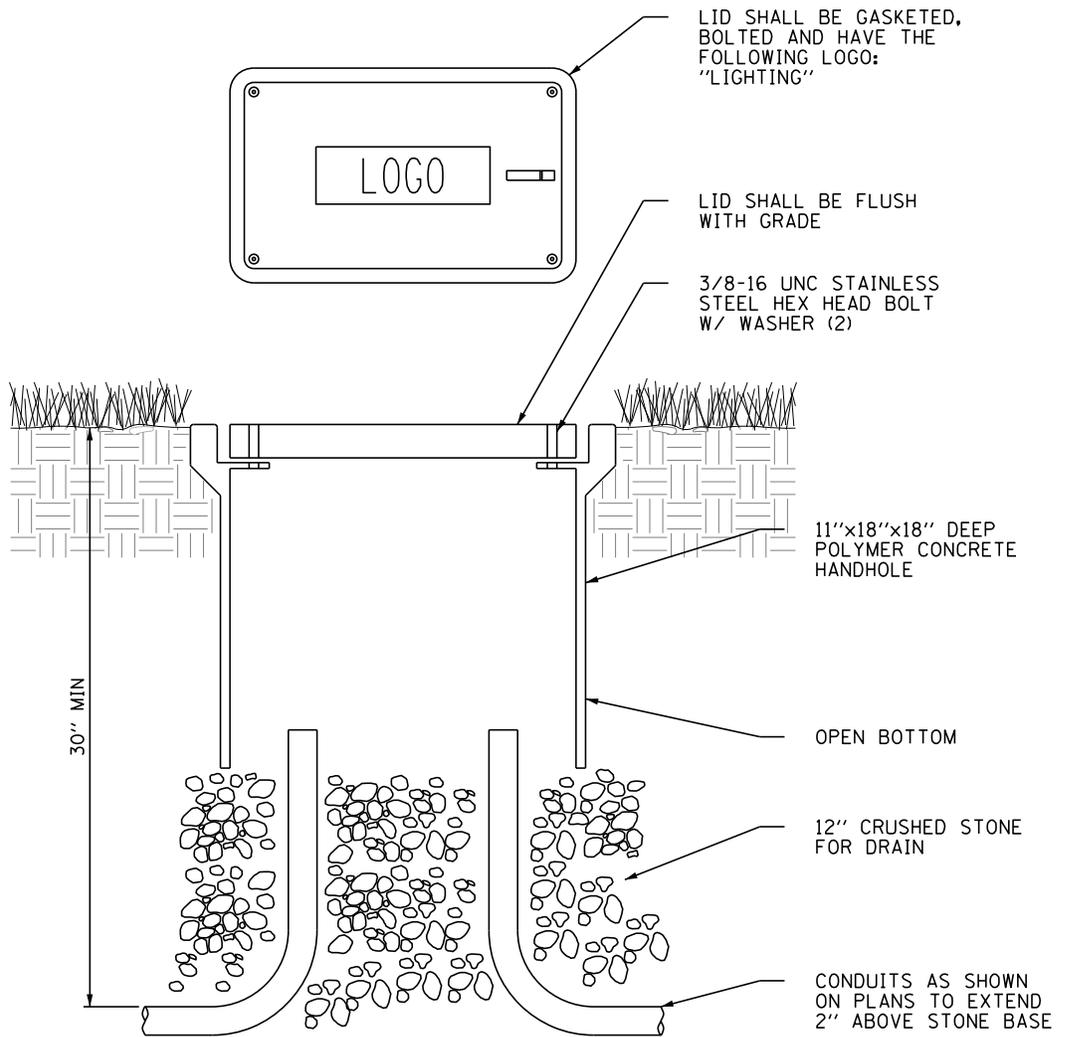
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 Rolling Meadows, Illinois 60008
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ENGINEERING DETAILS

**CONCRETE FOUNDATION
 DETAIL**

| | |
|--------|-----------|
| DATE: | 8/17/2018 |
| REV 1: | |
| REV 2: | |
| REV 3: | |

DETAIL NO.
L-11



NOTES:

1. NO SPLICING ALLOWED IN HANDHOLE
2. POLYMER CONCRETE HANDHOLE AND LID SHALL BE GREY.
3. BOX & LID SHALL MEET/EXCEED ANSI TIER 15 LOADING REQUIREMENTS AND BE TESTED IN ACCORDANCE WITH THE LATEST EDITION OF THE ANSI/SCTE 77 "SPECIFICATION FOR UNDERGROUND ENCLOSURE INTEGRITY", AND THE PROVISIONS OF PARAGRAPHS 5.2.3 AND 5.2.4 OF WESTERN UNDERGROUND COMMITTEE GUIDE 3.6.



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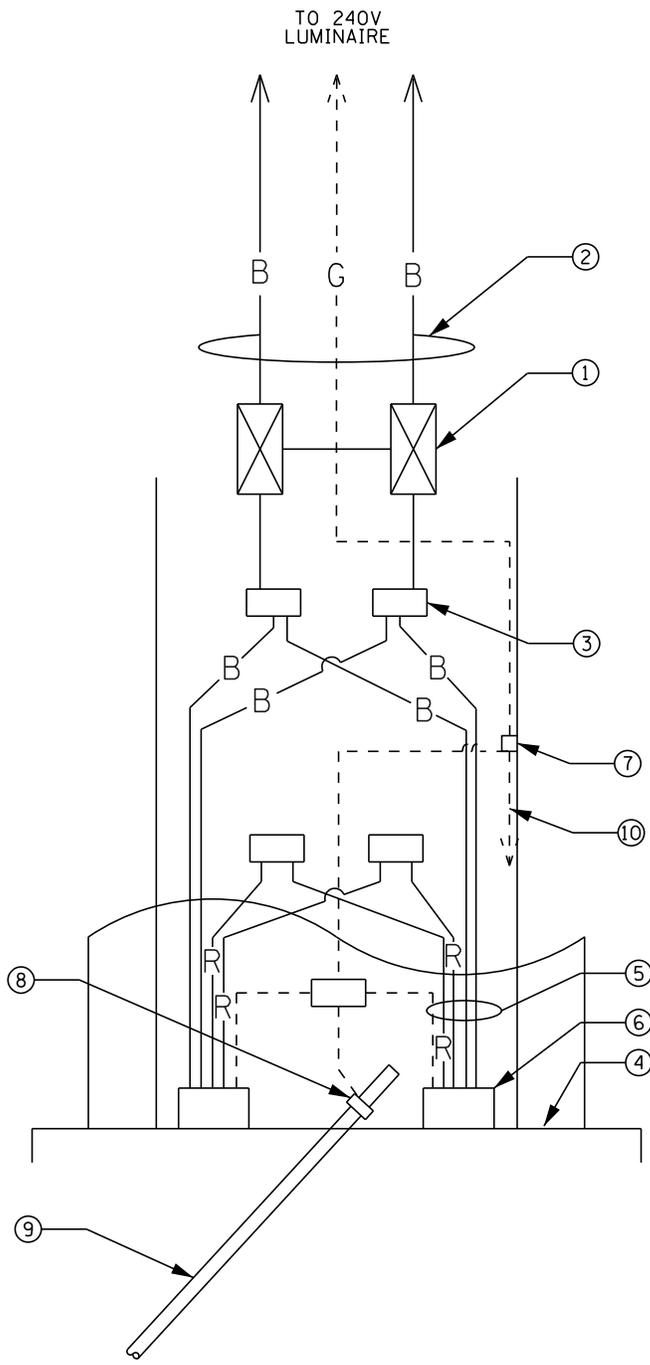
ENGINEERING DETAILS

COMPOSITE CONCRETE HANDHOLE

| | |
|--------|-----------|
| DATE: | 8/17/2018 |
| REV 1: | |
| REV 2: | |
| REV 3: | |

DETAIL NO.

L-12



- _____ PHASE CONDUCTOR
 - - - - - GROUND CONDUCTOR
- ① 5 AMP FUSE INSIDE A TWO POLE BREAKAWAY WATERPROOF FUSE HOLDER AND INSULATING BOOTS
 - ② NO. 10 XLP-TYPE USE POLE WIRES (COLOR TO MATCH BRANCH WIRING)
 - ③ MULTIPLE COMPRESSION FITTINGS (SPLICE)
 - ④ FOUNDATION
 - ⑤ WIRE AS SHOWN ON PLANS
 - ⑥ CONDUIT AS SHOWN ON PLANS
 - ⑦ POLE GROUND LUG
 - ⑧ #6 SOLID GROUND WIRE MECHANICALLY CONNECTED TO GROUND ROD
 - ⑨ 5/8" DIA.x10' GROUND ROD
 - ⑩ #6 SOLID BONDING JUMPER TO BREAKAWAY TRANSFORMER BASE

WIRE COLOR
 R = RED
 B = BLACK
 G = GREEN



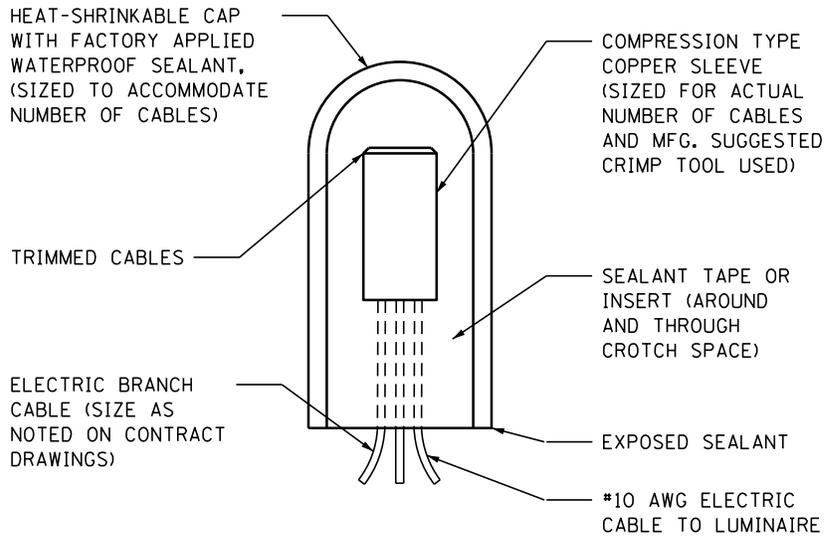
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ENGINEERING DETAILS

**LIGHT POLE
HANDHOLE WIRING DIAGRAM**

| | |
|--------|-----------|
| DATE: | 8/17/2018 |
| REV 1: | |
| REV 2: | |
| REV 3: | |

DETAIL NO.
L-13



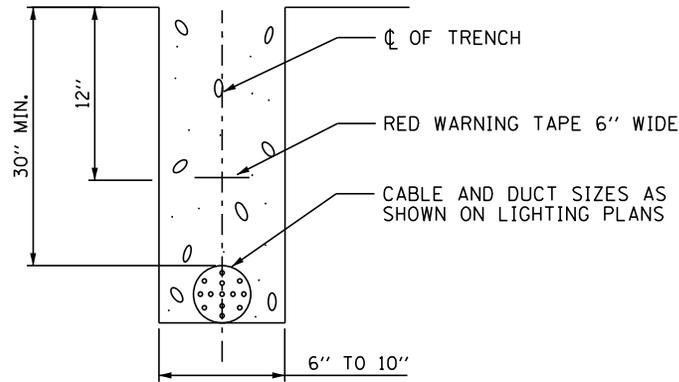
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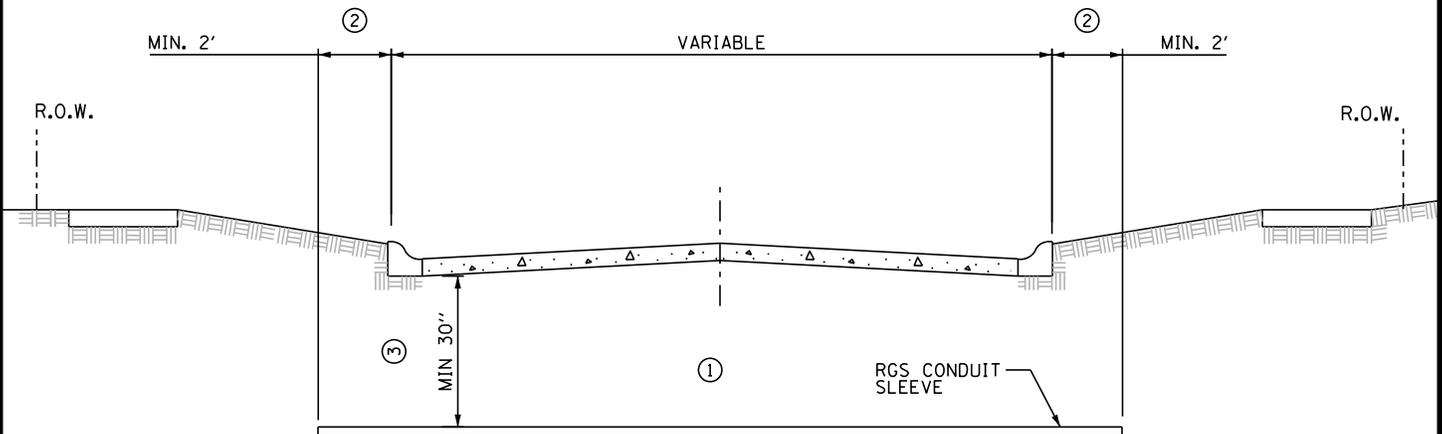
ELECTRIC CABLE SPLICING

| | |
|--------|-----------|
| DATE: | 8/17/2018 |
| REV 1: | |
| REV 2: | |
| REV 3: | |

DETAIL NO.
L-14



TRENCH CROSS SECTION



NOTES:

- ① SLEEVE SHALL BE HEAVY WALL RIGID GALVANIZED STEEL (RGS) CONDUIT.
- ② SLEEVE SHALL EXTEND A MINIMUM OF 2 FT. BEYOND BACK OF CURB.
- ③ SLEEVE SHALL BE A MINIMUM OF 30" BELOW ROADWAY OR CURB BOTTOM.

ROADWAY / PAVEMENT CROSSING



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ENGINEERING DETAILS

UNDERGROUND CONDUIT INSTALLATION

| | |
|--------|-----------|
| DATE: | 8/17/2018 |
| REV 1: | |
| REV 2: | |
| REV 3: | |

DETAIL NO.

L-15

