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## CITY OF SPOKANE STANDARD PLANS – SECTION Z

*X-###* = Revised Standard Plan
***X-### = New Standard Plan

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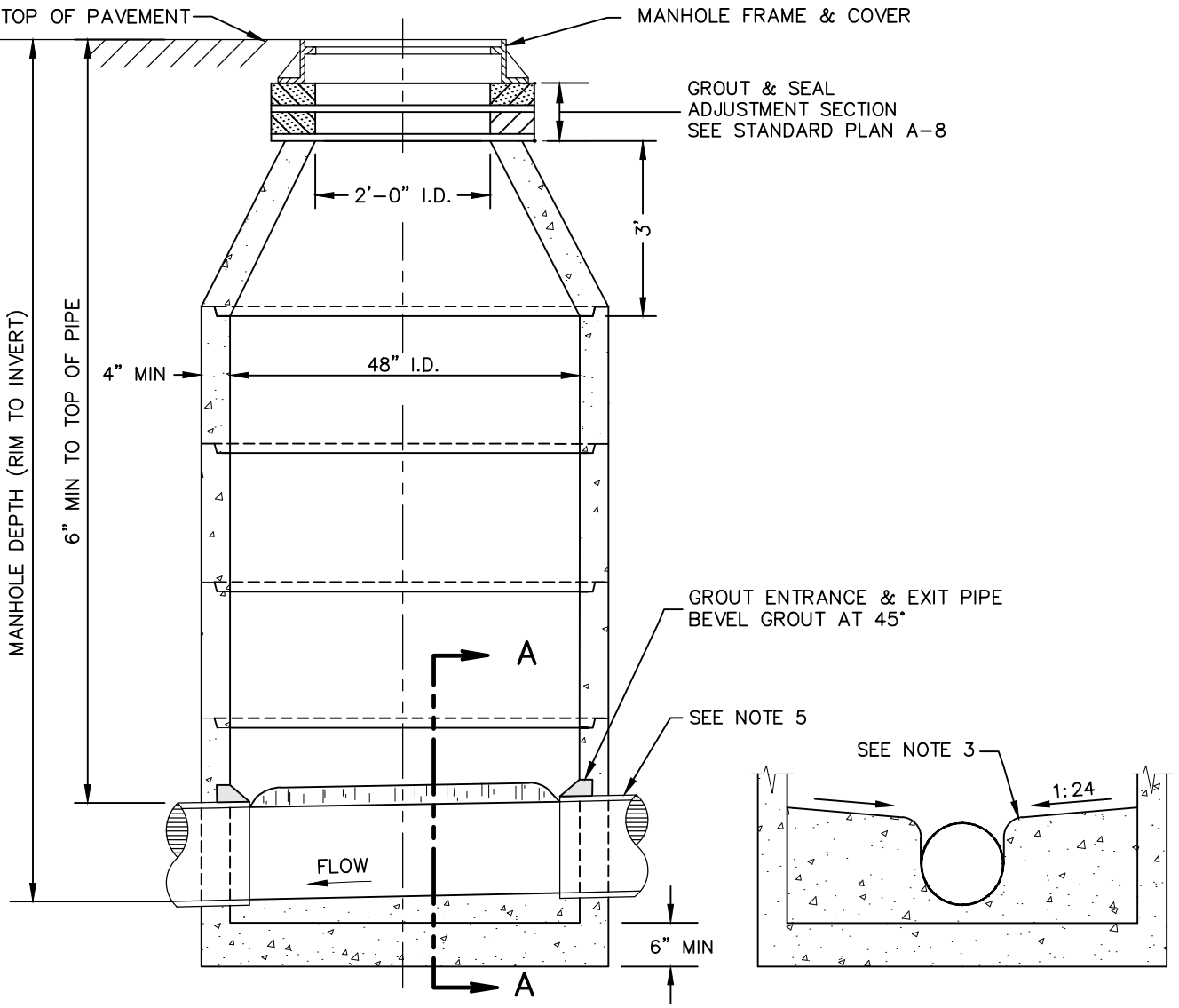



## SECTION A-A

NOTES:

1. SEE STANDARD PLANS A-12/A-13 FOR MANHOLE FRAME & COVER, AND Z-118 FOR BASE & FOUNDATION.
2. MANHOLE STEPS ARE REQUIRED, SEE Z-109.
3. FORM SHELF & SMOOTH CONTINUOUS CHANNEL WITH COMMERCIAL GRADE CONCRETE.
4. MANHOLES EXCEEDING A 20 FT DEPTH SHALL HAVE BARREL SECTIONS WITH MINIMUM 54" DIAMETER, SEE Z-102.
5. MAX PIPE DIA = 24". ANGULAR RUNS EXCEEDING 45° OR ADDITIONAL JUNCTIONS MAY REQUIRE LARGER MANHOLE. DESIGN VERIFICATION IS REQUIRED.
6. SEE STANDARD PLAN A-8 FOR ADJUSTMENT SECTION REQUIREMENTS.
7. IN AREAS WHERE SEASONAL HIGH GROUNDWATER REACHES THE MANHOLE BASE, RESISTANCE TO BUOYANCY SHALL BE ADDRESSED. IN ADDITION, MANHOLE JOINTS SHALL BE WRAPPED ON THE EXTERIOR TO PREVENT GROUNDWATER INFILTRATION INTO THE SEWER. JOINT WRAP 6" WIDE (FLAT JOINTS) AND 9" WIDE ON ANGLED JOINTS: SSI INFI-SHIELD GATOR WRAP, CCI WRAPIDSEAL, WESTATLANTIC WA-MH-JW-WRAP OR EQUIVALENT.
8. IN AREAS WITH SEASONAL HIGH WATER TABLE REACHING THE CONE, THE EXTERIOR SHALL BE COATED WITH XYPEX OR TWO COATS OF APPROVED MASTIC SEALANT.

APPROVED BY

DIRECTOR OF ENGINEERING SERVICES — DAN BULLER, P.E.

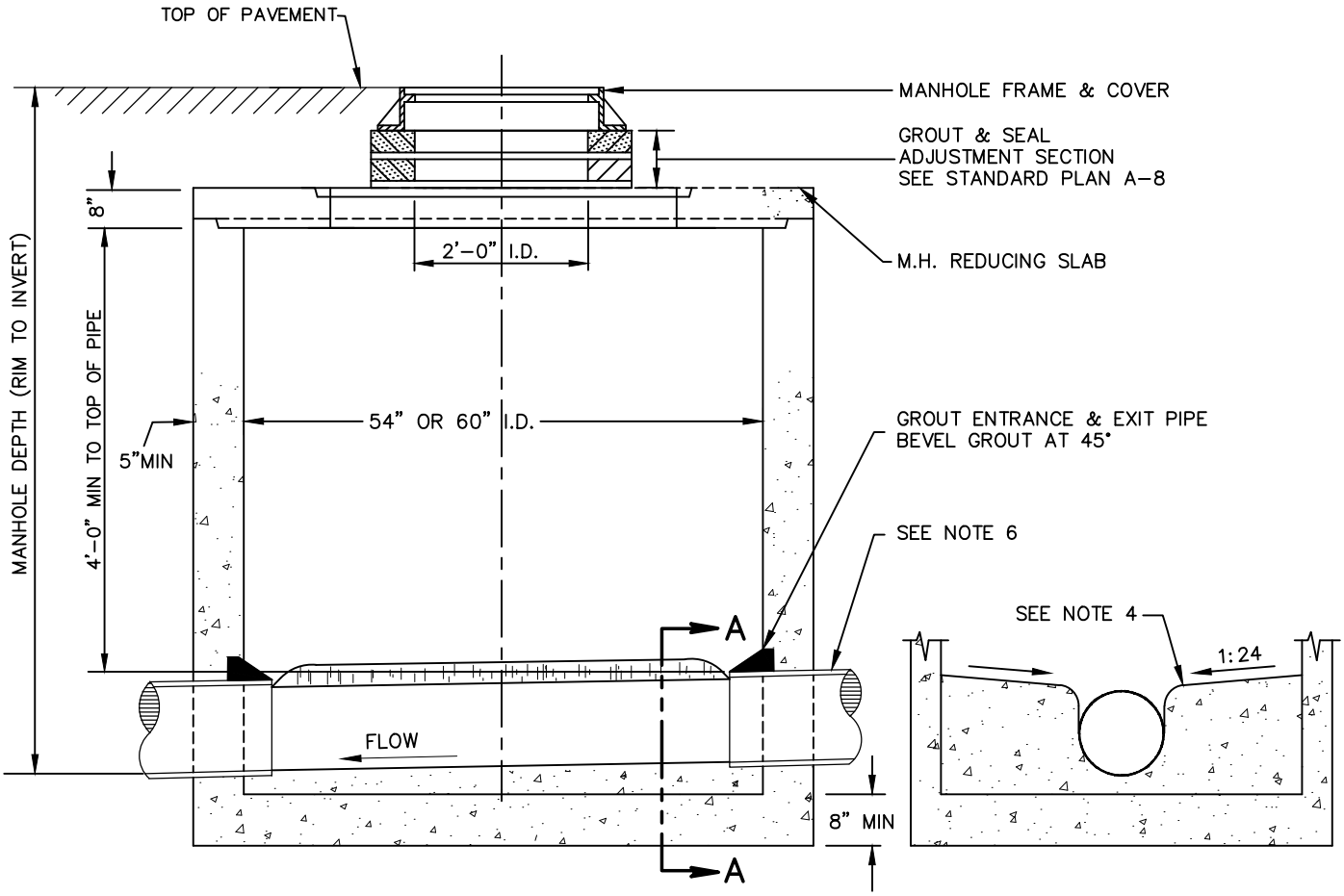
ADOPTED: _____
REVISED: 04/2025
SUPERSEDES: 05/2021
CHECKED BY: SJS
SCALE: NTS
REVISED BY: LWK/MLD

# MANHOLE – 48"

ENGINEERING SERVICES
CITY OF SPOKANE, WASHINGTON

STANDARD PLAN No. Z-101

Back to Section Z - TOC




SECTION A-A

NOTES:

1. SEE STANDARD PLANS A-12/A-13 FOR MANHOLE FRAME & COVER, AND Z-118 FOR BASE & FOUNDATION.
2. MANHOLE STEPS ARE REQUIRED, SEE Z-109.
3. FORM SHELF & SMOOTH CONTINUOUS CHANNEL WITH COMMERCIAL GRADE CONCRETE.
4. REDUCING SLAB SHALL BE INSTALLED WITH A 24" OPENING CENTERED ON THE SLAB.
5. MAX PIPE DIA. = 30" FOR 54" MANHOLE AND 36" FOR 60" MANHOLE. ANGULAR RUNS EXCEEDING 45° OR ADDITIONAL JUNCTIONS MAY REQUIRE LARGER MANHOLE. DESIGN VERIFICATION IS REQUIRED.
6. SEE STANDARD PLAN A-8 FOR ADJUSTMENT SECTION REQUIREMENTS.
7. IN AREAS WHERE SEASONAL HIGH GROUNDWATER REACHES THE MANHOLE BASE, RESISTANCE TO BUOYANCY SHALL BE ADDRESSED. IN ADDITION, MANHOLE JOINTS SHALL BE WRAPPED ON THE EXTERIOR TO PREVENT GROUNDWATER INFILTRATION INTO THE SEWER. JOINT WRAP 6" WIDE (FLAT JOINTS) AND 9" WIDE ON ANGLED JOINTS: SSI INFI-SHIELD GATOR WRAP, CCI WRAPIDSEAL, WESTATLANTIC WA-MH-JW-WRAP OR EQUIVALENT.
8. IN AREAS WITH SEASONAL HIGH WATER TABLE REACHING THE CONE, THE EXTERIOR SHALL BE COATED WITH XYPEX OR TWO COATS OF APPROVED MASTIC SEALANT.

APPROVED BY

DIRECTOR OF ENGINEERING SERVICES DAN BULLER, P.E.

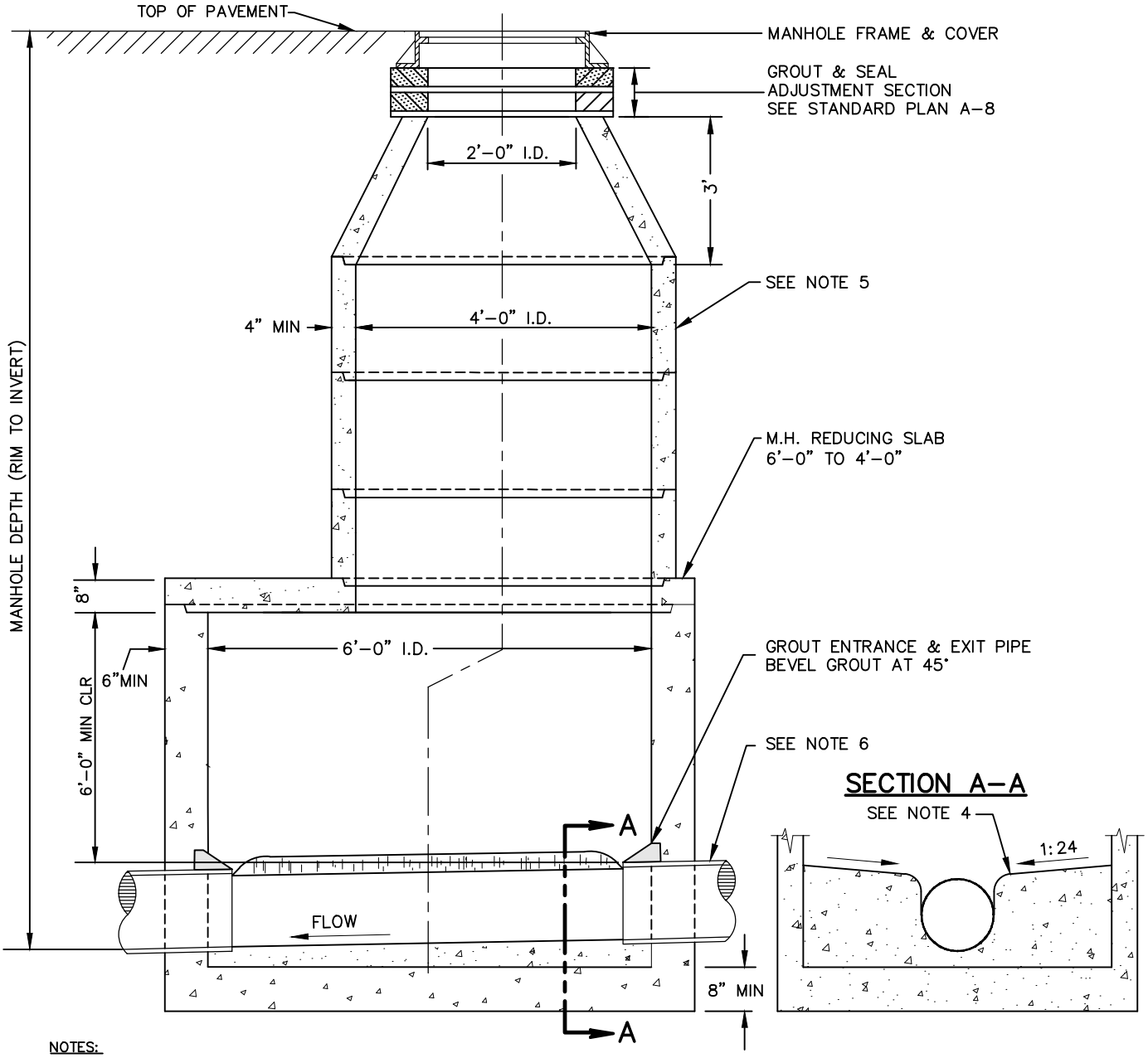
ADOPTED: _____
REVISED: 04/2025
SUPERSEDES: 04/2024
CHECKED BY: SJS
SCALE: NTS
REVISED BY: LWK/MLD

# MANHOLE – 54" & 60"

ENGINEERING SERVICES
CITY OF SPOKANE, WASHINGTON

STANDARD PLAN No. Z-102

Back to Section Z - TOC




NOTES:

1. SEE STANDARD PLANS A-12/A-13 FOR MANHOLE FRAME & COVER, AND Z-118 FOR BASE & FOUNDATION.
2. MANHOLE STEPS ARE REQUIRED, SEE Z-109.
3. ACCESS HOLE TO BE CENTERED OVER CHANNEL.
4. FORM SHELF & SMOOTH CONTINUOUS CHANNEL WITH COMMERCIAL GRADE CONCRETE.
5. MANHOLES EXCEEDING A 20 FT DEPTH SHALL HAVE BARREL SECTIONS 54" I.D. OR GREATER IN WHICH CASE A BARREL DIA X 24" REDUCING SLAB SHALL BE USED IN PLACE OF THE CONE, 24" OPENING CENTERED ON SLAB.
6. MAX PIPE DIA. = 48" ANGULAR RUNS EXCEEDING 45° OR ADDITIONAL JUNCTIONS MAY REQUIRE LARGER MANHOLE. DESIGN VERIFICATION IS REQUIRED.
7. SEE STANDARD PLAN A-8 FOR ADJUSTMENT SECTION REQUIREMENTS.
8. IN AREAS WHERE SEASONAL HIGH GROUNDWATER REACHES THE MANHOLE BASE, RESISTANCE TO BUOYANCY SHALL BE ADDRESSED. IN ADDITION, MANHOLE JOINTS SHALL BE WRAPPED ON THE EXTERIOR TO PREVENT GROUNDWATER INFILTRATION INTO THE SEWER. JOINT WRAP 6" WIDE (FLAT JOINTS) AND 9" WIDE ON ANGLED JOINTS: SSI INFI-SHIELD GATOR WRAP, CCI WRAPIDSEAL, WESTATLANTIC WA-MH-JW-WRAP OR EQUIVALENT.
9. IN AREAS WITH SEASONAL HIGH WATER TABLE REACHING THE CONE, THE EXTERIOR SHALL BE COATED WITH XYPEX OR TWO COATS OF APPROVED MASTIC SEALANT.

APPROVED BY

DIRECTOR OF ENGINEERING SERVICES — DAN BULLER, P.E.

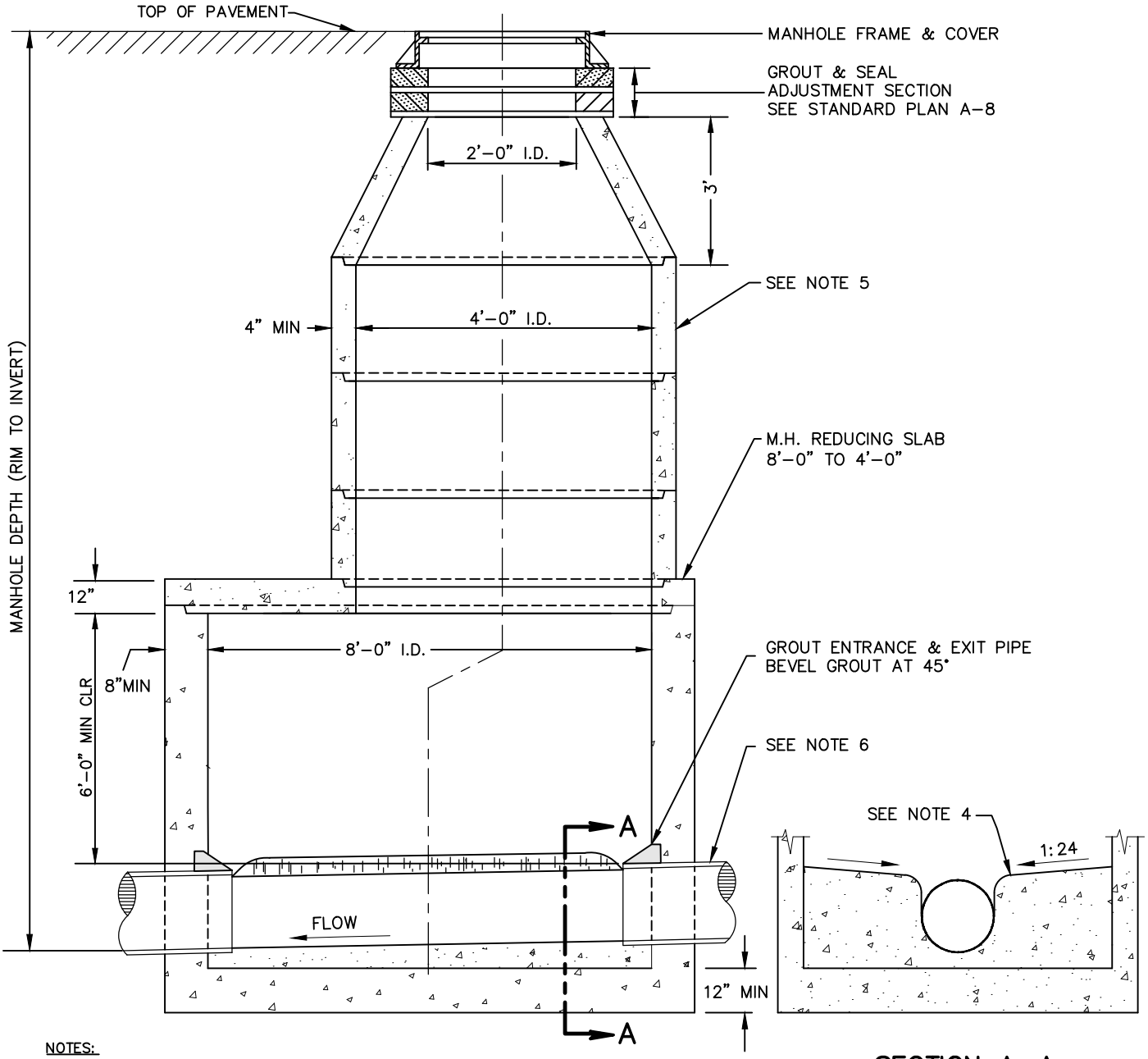
ADOPTED: _____
REVISED: 04/2025
SUPERSEDES: 04/2024
CHECKED BY: SJS
SCALE: NTS
REVISED BY: LWK/MLD

# MANHOLE – 72"

ENGINEERING SERVICES
CITY OF SPOKANE, WASHINGTON

STANDARD PLAN No. Z-103

Back to Section Z - TOC




SECTION A-A

NOTES:

1. SEE STD PLANS A-12/A-13 FOR MANHOLE FRAME & COVER, AND Z-118 FOR BASE & FOUNDATION.
2. MANHOLE STEPS ARE REQUIRED, SEE Z-109.
3. ACCESS HOLE TO BE CENTERED OVER CHANNEL.
4. FORM SHELF & SMOOTH CONTINUOUS CHANNEL WITH COMMERCIAL GRADE CONCRETE.
5. MANHOLES EXCEEDING A 20 FT DEPTH SHALL HAVE BARREL SECTIONS 54" I.D. OR GREATER.
6. MAX PIPE DIA. = 72" ANGULAR RUNS EXCEEDING 45° OR ADDITIONAL JUNCTIONS MAY REQUIRE LARGER MANHOLE. DESIGN VERIFICATION IS REQUIRED.
7. SEE STANDARD PLAN A-8 FOR ADJUSTMENT SECTION REQUIREMENTS.
8. IN AREAS WHERE SEASONAL HIGH GROUNDWATER REACHES THE MANHOLE BASE, RESISTANCE TO BUOYANCY SHALL BE ADDRESSED. IN ADDITION, MANHOLE JOINTS SHALL BE WRAPPED ON THE EXTERIOR TO PREVENT GROUNDWATER INFILTRATION INTO THE SEWER. JOINT WRAP 6" WIDE (FLAT JOINTS) AND 9" WIDE ON ANGLED JOINTS: SSI INFI-SHIELD GATOR WRAP, CCI WRAPIDSEAL, WESTATLANTIC WA-MH-JW-WRAP OR EQUIVALENT.
9. IN AREAS WITH SEASONAL HIGH WATER TABLE REACHING THE CONE, THE EXTERIOR SHALL BE COATED WITH XYPEX OR TWO COATS OF APPROVED MASTIC SEALANT.

APPROVED BY

DIRECTOR OF ENGINEERING SERVICES — DAN BULLER, P.E.

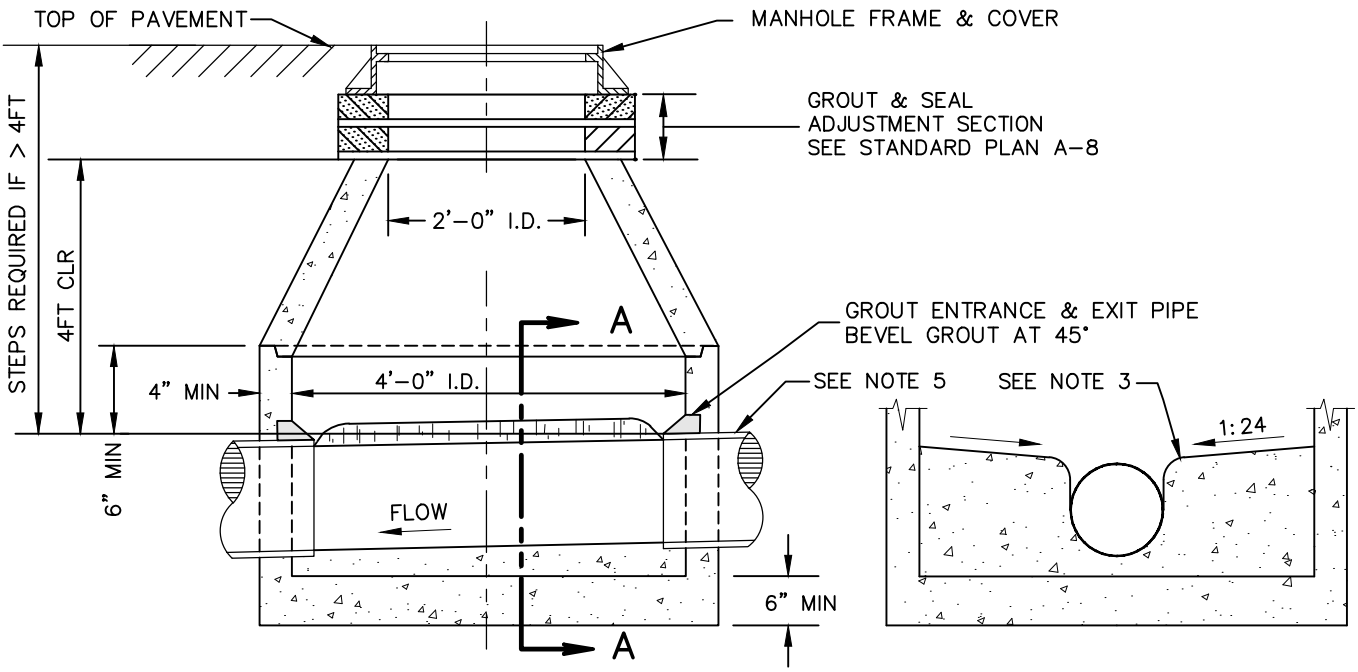
ADOPTED: _____
REVISED: 04/2025
SUPERSEDES: 04/2024
CHECKED BY: SJS
SCALE: NTS
REVISED BY: LWK/MLD

# MANHOLE – 96"

ENGINEERING SERVICES
CITY OF SPOKANE, WASHINGTON

STANDARD PLAN No. Z-104

Back to Section Z - TOC




## SECTION A–A

NOTES:

1. SEE STANDARD PLANS A–12/A–13 FOR MANHOLE FRAME & COVER, AND Z–118 FOR BASE & FOUNDATION.
2. SEE Z–109 FOR MANHOLE STEP DETAILS IF REQUIRED.
3. FORM SHELF & SMOOTH CONTINUOUS CHANNEL WITH COMMERCIAL GRADE CONCRETE.
4. IN GENERAL, SHALLOW MANHOLES ARE NOT ALLOWED. THIS DETAIL MAY BE ALLOWED WITH PRIOR PERMISSION OF THE SEWER DEPARTMENT ENGINEER WHERE SUFFICIENT VERTICAL CLEARANCE DOES NOT EXIST TO CONSTRUCT THE MANHOLE SHOWN ON Z–101. THIS DETAIL WILL NOT BE PERMITTED IN NEW INSTALLATIONS.
5. IN EXTREME SITUATIONS AND WITH APPROVAL OF THE SEWER DEPARTMENT ENGINEER, THE PIPE MAY BE LOCATED IN THE CONE AND THE BASE SLAB POURED IN PLACE.
6. SEE STANDARD PLAN A–8 FOR ADJUSTMENT SECTION REQUIREMENTS.
7. IN AREAS WHERE SEASONAL HIGH GROUNDWATER REACHES THE MANHOLE BASE, RESISTANCE TO BUOYANCY SHALL BE ADDRESSED. IN ADDITION, MANHOLE JOINTS SHALL BE WRAPPED ON THE EXTERIOR TO PREVENT GROUNDWATER INFILTRATION INTO THE SEWER. JOINT WRAP 6" WIDE (FLAT JOINTS) AND 9" WIDE ON ANGLED JOINTS: SSI INFI–SHIELD GATOR WRAP, CCI WRAPIDSEAL, WESTATLANTIC WA–MH–JW–WRAP OR EQUIVALENT.
8. IN AREAS WITH SEASONAL HIGH WATER TABLE REACHING THE CONE, THE EXTERIOR SHALL BE COATED WITH XYPEX OR TWO COATS OF APPROVED MASTIC SEALANT.

APPROVED BY

DIRECTOR OF ENGINEERING SERVICES DAN BULLER, P.E.

ADOPTED: _____
REVISED: 04/2025
SUPERSEDES: 04/2024
CHECKED BY: SJS
SCALE: NTS
REVISED BY: LWK/MLD

# MANHOLE – 48" SHALLOW

ENGINEERING SERVICES
CITY OF SPOKANE, WASHINGTON

STANDARD PLAN No. Z–105

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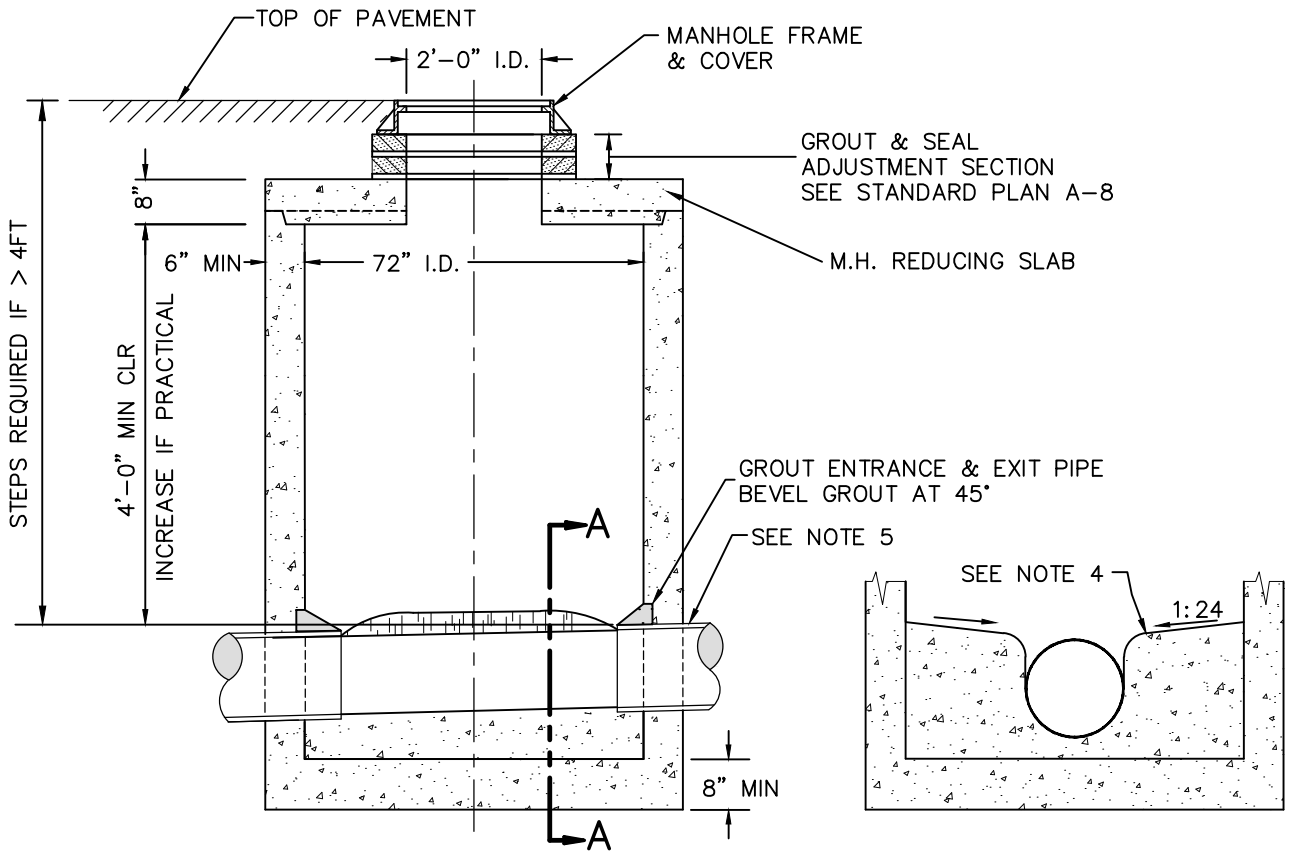


SECTION A-A

NOTES:

1. SEE STANDARD PLANS A-12/A-13 FOR FRAME & COVER, AND Z-118 FOR BASE & FOUNDATION.
2. SEE Z-109 FOR MANHOLE STEP DETAILS IF REQUIRED.
3. REDUCING SLAB SHALL BE INSTALLED WITH 24" OPENING CENTERED ON THE SLAB.
4. FORM SHELF & SMOOTH CONTINUOUS CHANNEL WITH COMMERCIAL GRADE CONCRETE.
5. MAX PIPE DIA. = 48". ANGULAR RUNS EXCEEDING 45° OR ADDITIONAL JUNCTIONS MAY REQUIRE LARGER MANHOLE. DESIGN VERIFICATION IS REQUIRED.
6. SEE STANDARD PLAN A-8 FOR ADJUSTMENT SECTION REQUIREMENTS.
7. IN AREAS WHERE SEASONAL HIGH GROUNDWATER REACHES THE MANHOLE BASE, RESISTANCE TO BUOYANCY SHALL BE ADDRESSED. IN ADDITION, MANHOLE JOINTS SHALL BE WRAPPED ON THE EXTERIOR TO PREVENT GROUNDWATER INFILTRATION INTO THE SEWER. JOINT WRAP 6" WIDE (FLAT JOINTS) AND 9" WIDE ON ANGLED JOINTS: SSI INFI-SHIELD GATOR WRAP, CCI WRAPIDSEAL, WESTATLANTIC WA-MH-JW-WRAP OR EQUIVALENT.
8. IN AREAS WITH SEASONAL HIGH WATER TABLE REACHING THE CONE, THE EXTERIOR SHALL BE COATED WITH XYPEX OR TWO COATS OF APPROVED MASTIC SEALANT.

APPROVED BY

DIRECTOR OF ENGINEERING SERVICES DAN BULLER, P.E.

ADOPTED: _____
REVISED: 04/2025
SUPERSEDES: 04/2024
CHECKED BY: SJS
SCALE: NTS
REVISED BY: LWK/MLD

# MANHOLE – 72" SHALLOW

ENGINEERING SERVICES
CITY OF SPOKANE, WASHINGTON

STANDARD PLAN No. Z-106

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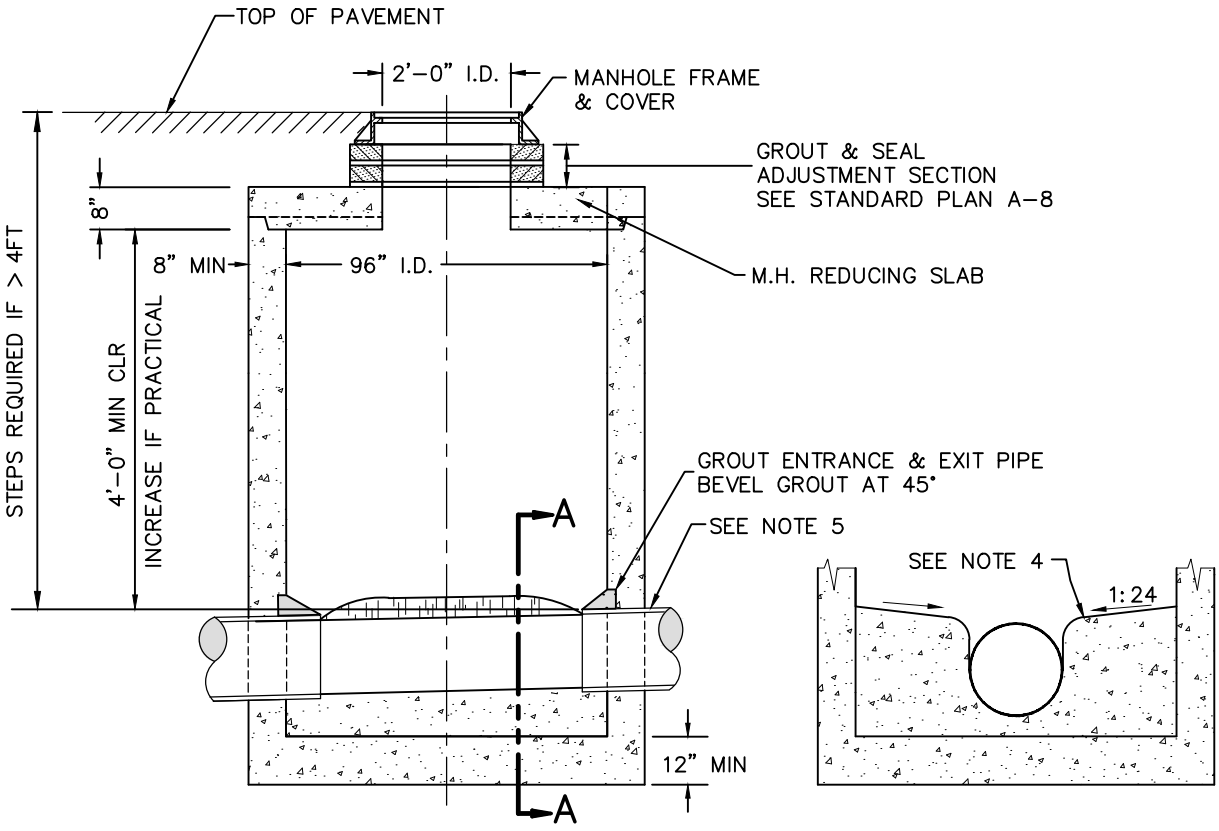


**SECTION A-A**

NOTES:

1. SEE STANDARD PLANS A-12/A-13 FOR FRAME & COVER, AND Z-118 FOR BASE & FOUNDATION.
2. SEE Z-109 FOR MANHOLE STEP DETAILS IF REQUIRED.
3. REDUCING SLAB SHALL BE INSTALLED WITH 24" OPENING CENTERED ON THE SLAB.
4. FORM SHELF & SMOOTH CONTINUOUS CHANNEL WITH COMMERCIAL GRADE CONCRETE.
5. MAX PIPE DIA. = 72". ANGULAR RUNS EXCEEDING 45° OR ADDITIONAL JUNCTIONS MAY REQUIRE LARGER MANHOLE. DESIGN VERIFICATION IS REQUIRED.
6. SEE STANDARD PLAN A-8 FOR ADJUSTMENT SECTION REQUIREMENTS.
7. IN AREAS WHERE SEASONAL HIGH GROUNDWATER REACHES THE MANHOLE BASE, RESISTANCE TO BUOYANCY SHALL BE ADDRESSED. IN ADDITION, MANHOLE JOINTS SHALL BE WRAPPED ON THE EXTERIOR TO PREVENT GROUNDWATER INFILTRATION INTO THE SEWER. JOINT WRAP 6" WIDE (FLAT JOINTS) AND 9" WIDE ON ANGLED JOINTS: SSI INFI-SHIELD GATOR WRAP, CCI WRAPIDSEAL, WESTATLANTIC WA-MH-JW-WRAP OR EQUIVALENT.
8. IN AREAS WITH SEASONAL HIGH WATER TABLE REACHING THE CONE, THE EXTERIOR SHALL BE COATED WITH XYPEX OR TWO COATS OF APPROVED MASTIC SEALANT.

APPROVED BY

DIRECTOR OF ENGINEERING SERVICES — DAN BULLER, P.E.

ADOPTED: _____
REVISED: 04/2025
SUPERSEDES: 04/2024
CHECKED BY: SJS
SCALE: NTS
REVISED BY: LWK/MLD

# MANHOLE – 96" SHALLOW

ENGINEERING SERVICES
CITY OF SPOKANE, WASHINGTON

STANDARD PLAN No. **Z-106A**

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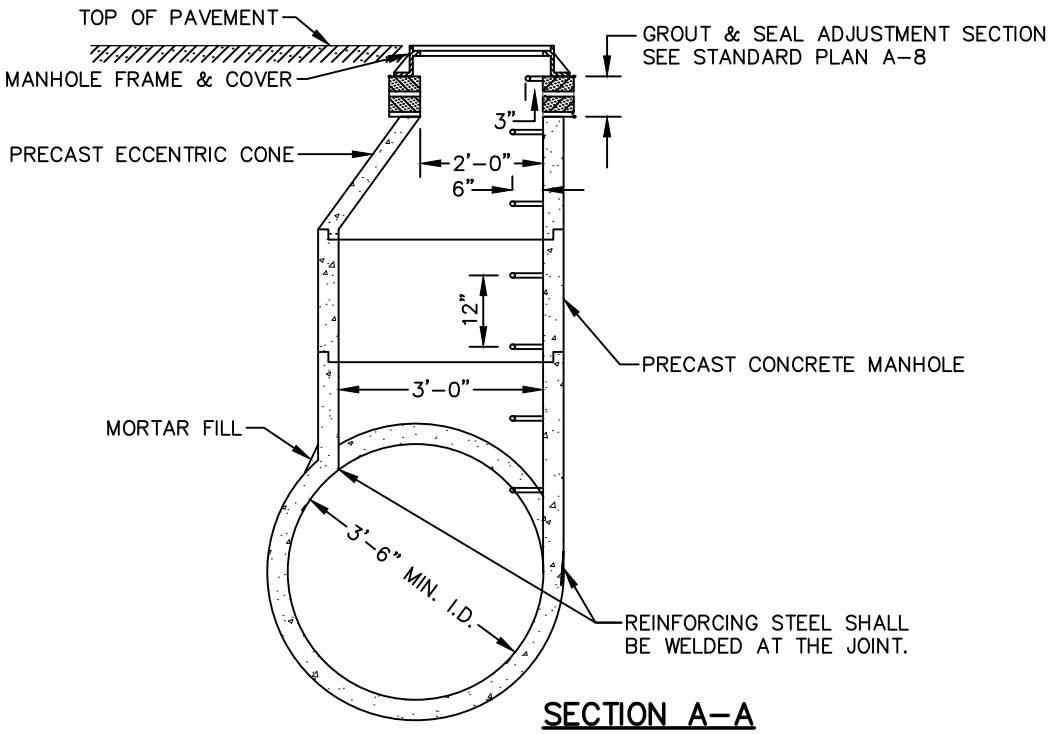
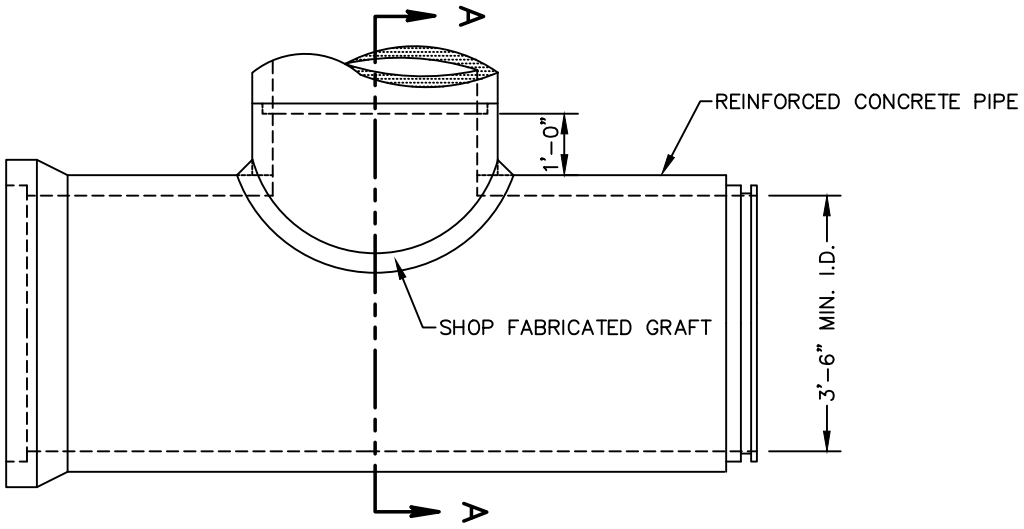



## SECTION A-A




NOTES:

1. SEE SECTIONS 7-05 & 9-12.4 FOR PRECAST CONCRETE MANHOLES.
2. SEE STANDARD PLANS A-12 & A-13 FOR MANHOLE FRAME & COVER.
3. SEE STANDARD PLAN Z-109 FOR M.H. STEP DETAILS.
4. CONE & BARREL JOINT(S) MAY BE EITHER TONGUE & GROOVE OR REVERSE TONGUE & GROOVE.
5. CONE ADJUSTMENT SECTION & BARREL JOINT(S) TO BE SEALED PER SECS 7-05 & 9-04.
6. ADDITIONAL REINFORCING AND/OR SPECIAL BEDDING FOR THE REINFORCED CONC PIPE SHALL BE AS SPECIFIED.
7. RISER DIA MAY BE 4'-0" FOR REINFORCED CONC PIPE SIZES 4'-0" & LARGER.
8. SEE STANDARD PLAN A-8 FOR ADJUSTMENT SECTION REQUIREMENTS.
9. IN AREAS WHERE SEASONAL HIGH GROUNDWATER REACHES THE MANHOLE BASE, RESISTANCE TO BUOYANCY SHALL BE ADDRESSED. IN ADDITION, MANHOLE JOINTS SHALL BE WRAPPED ON THE EXTERIOR TO PREVENT GROUNDWATER INFILTRATION INTO THE SEWER. JOINT WRAP 6" WIDE (FLAT JOINTS) AND 9" WIDE ON ANGLED JOINTS: SSI INFI-SHIELD GATOR WRAP, CCI WRAPIDSEAL, WESTATLANTIC WA-MH-JW-WRAP OR EQUIVALENT.
10. IN AREAS WITH SEASONAL HIGH WATER TABLE REACHING THE CONE, THE EXTERIOR SHALL BE COATED WITH XYPEX OR TWO COATS OF APPROVED MASTIC SEALANT.

APPROVED BY

DIRECTOR OF ENGINEERING SERVICES — DAN BULLER, P.E.

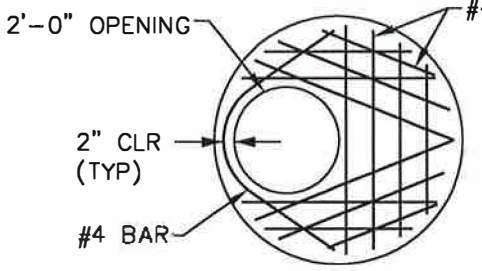
ADOPTED: _____
REVISED: 04/2025
SUPERSEDES: 04/2024
CHECKED BY: JAG
SCALE: NTS
DWG/REV. BY: MDH/MLD

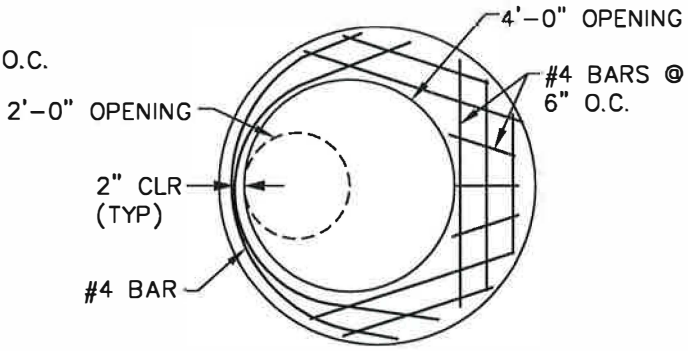
# MANHOLE – TYPE V

ENGINEERING SERVICES
CITY OF SPOKANE, WASHINGTON

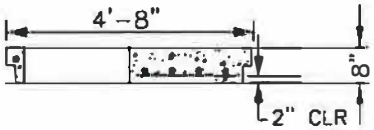
STANDARD PLAN No. Z-107

Back to Section Z - TOC

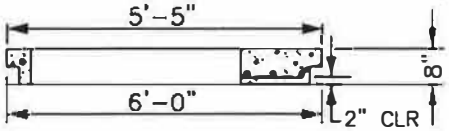


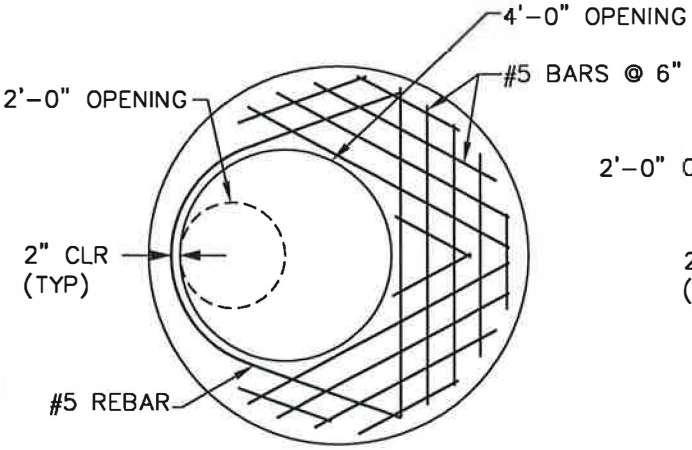

SLAB FOR 4'-6" I.D. MANHOLE

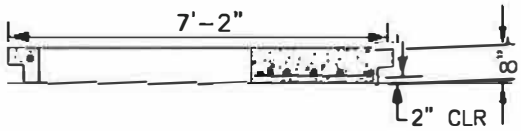



SLAB FOR 4'-0" I.D. MANHOLE

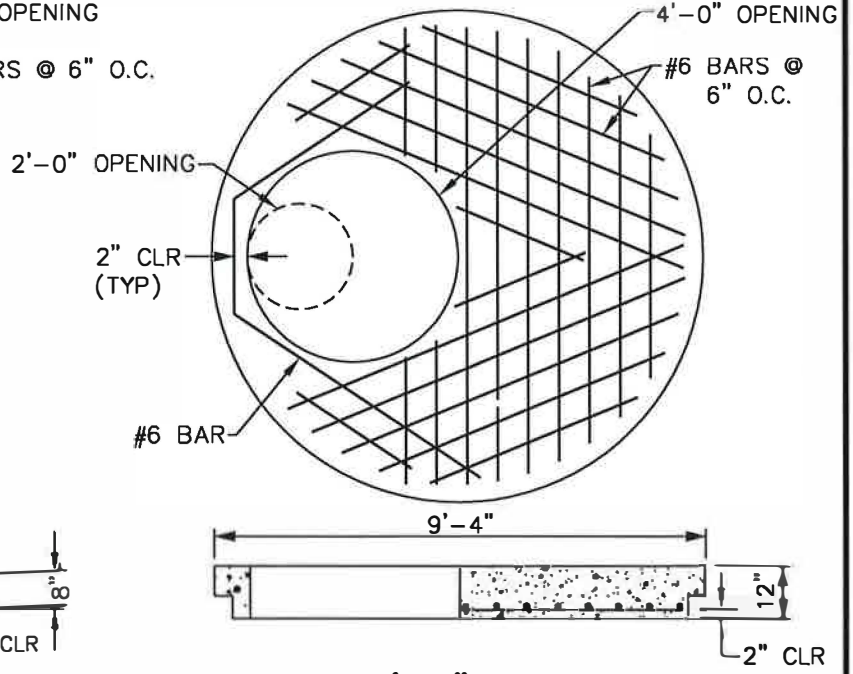



SLAB FOR 5'-0" I.D. MANHOLE




SLAB FOR 6'-0" I.D. MANHOLE




SLAB FOR 8'-0" I.D. MANHOLE

NOTES:

1. PLACE REBAR NEAR BTM FACE OF SLAB AT INDICATED CLEARANCES.
2. REINFORCING STEEL SHALL BE STD DEFORMED BAR; YIELD STRESS, Fy = 40 KSI.

APPROVED BY

DIRECTOR, ENGINEERING SERVICES — TOM L. ARNOLD, P.E.

PRINCIPAL ENGINEER, DESIGN — KEN M. BROWN, P.E.

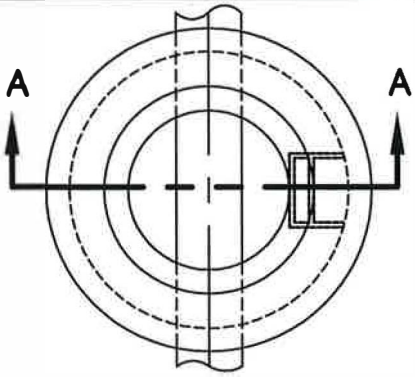
ADOPTED: 2/86
REVISED: 4/2004
SUPERSEDES:
SCALE: NTS
DWG/REV. BY: MDH

MANHOLE – REDUCING SLAB
REINFORCEMENT DETAILS

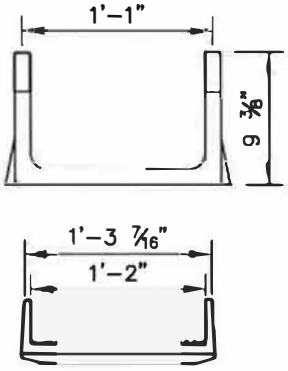
ENGINEERING SERVICES
CITY OF SPOKANE, WASHINGTON

STANDARD PLAN No. Z-108

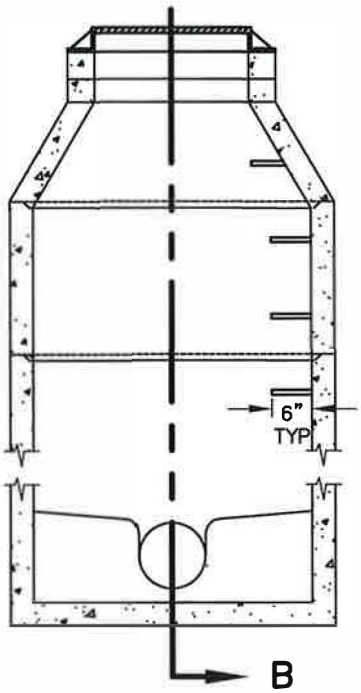
Back to Section Z - TOC



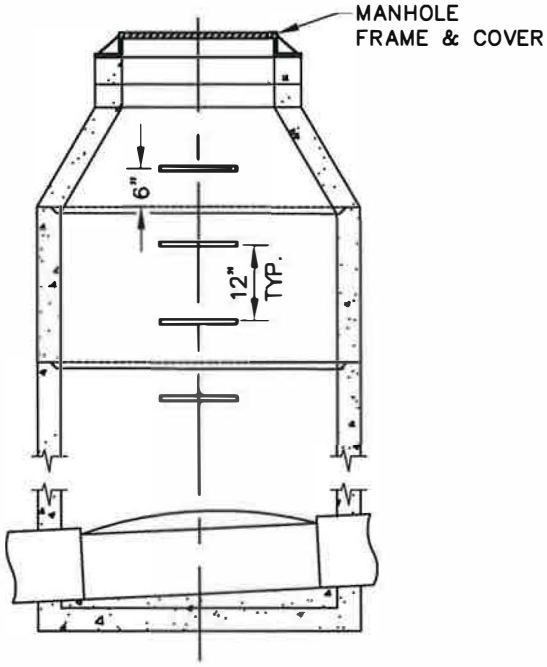

PLAN




MANHOLE STEP




SECTION A-A




SECTION B-B

**NOTES:**

1. MANHOLE STEPS SHALL BE GROUTED INTO THE PRECAST CONCRETE WALL. STEPS SHALL BE UNIFORMLY SPACED AT 12" O.C. VERTICALLY, LEVELED HORIZONTALLY, & ALIGNED ALONG THE MANHOLE'S C/L.
2. MANHOLES W/ OUT REDUCING SLABS SHALL HAVE THE STEPS LOCATED ABOVE THE SHELF. MANHOLES WITH REDUCING SLABS SHALL HAVE THE STEPS CENTERED BELOW THE SLAB ACCESS HOLE & THE UPSTREAM PIPE.
3. MANHOLE STEPS SHALL BE POLYPROPYLENE W/ANTI-SLIP TREAD DESIGN & TWO REFLECTORS PER STEP.

APPROVED BY

DIRECTOR, ENGINEERING SERVICES — PERRY M. TAYLOR, P.E.

PRINCIPAL ENGINEER, CONST. — KENNETH M. BROWN, P.E.

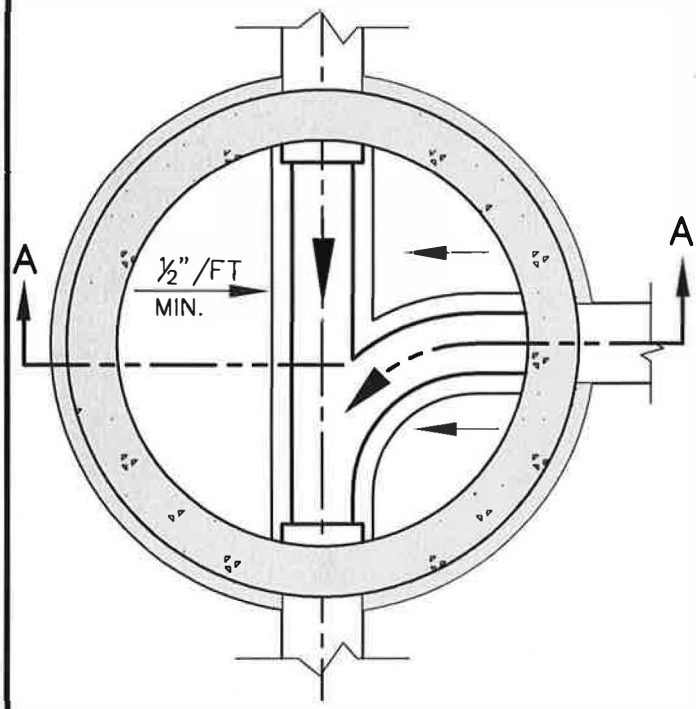
| | |
|---|---|
| ADOPTED: | 02/1986 |
| REVISED: | 04/2012 |
| SUPERSEDES: | 09/2010 |
| CHECKED BY: | SJS |
| SCALE: | NTS |
| REVISED BY: | LWK |

# MANHOLE
## STEP DETAILS

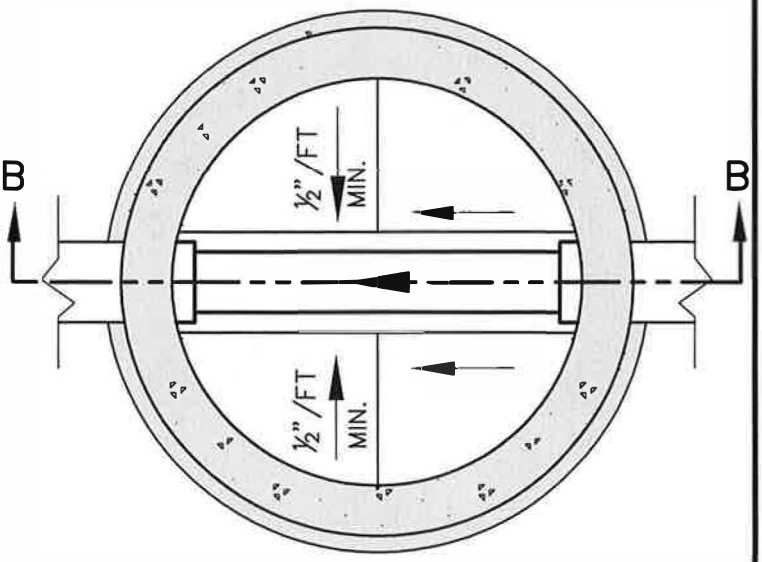
ENGINEERING SERVICES
CITY OF SPOKANE, WASHINGTON

STANDARD PLAN No. Z-109

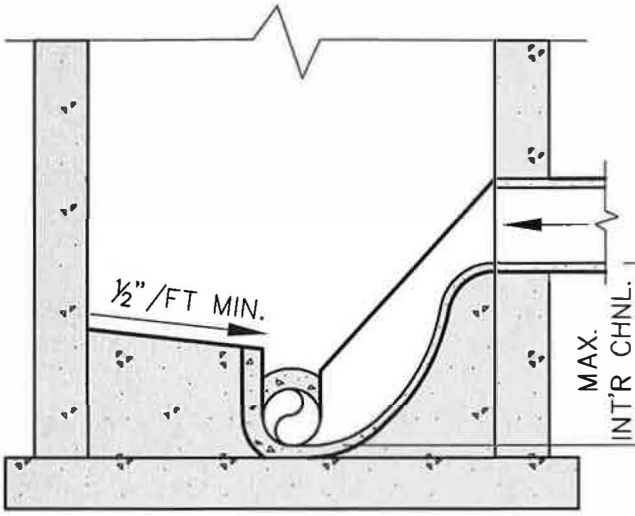
Back to Section Z - TOC



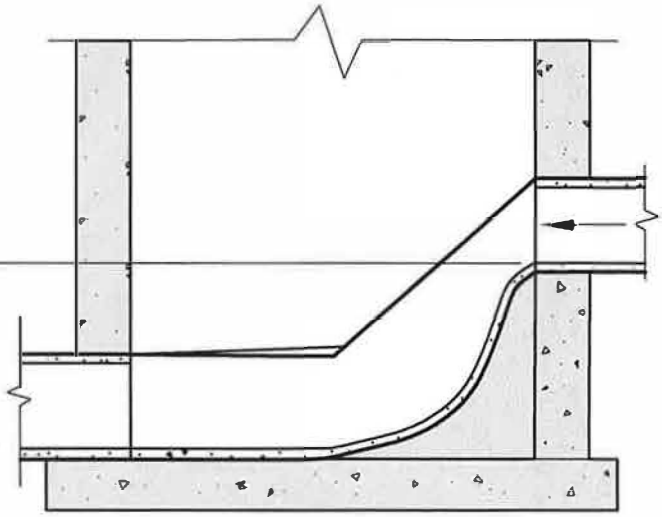

PLAN




PLAN




SECTION A–A



SECTION B–B

| MANHOLE I.D. INCHES | MAX. INT'R CHNL. DROP INCHES |
|---|---|
| 48 | 18 |
| 54 | 22 |
| 72 | 30 |
| 96 | 40 |

APPROVED BY

DIRECTOR, ENGINEERING SERVICES TOM L. ARNOLD, P.E.

PRINCIPAL ENGINEER, DESIGN GARY S. NELSON, P.E.

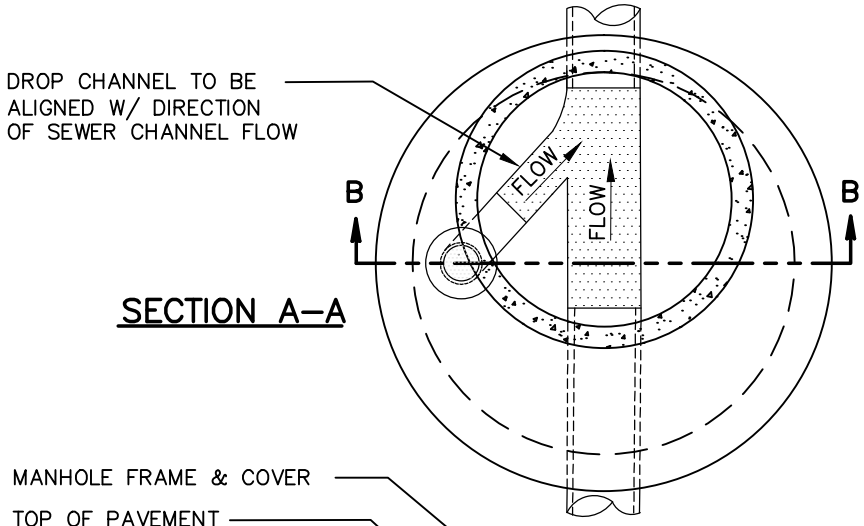
ADOPTED: 2/86
REVISED: 05/2007
SUPERSEDES: 12/98
CHECKED BY: JAG
SCALE: NTS
DWG/REV. BY: DGB/MDH

# MANHOLE – INTERIOR
## CHANNEL DROP

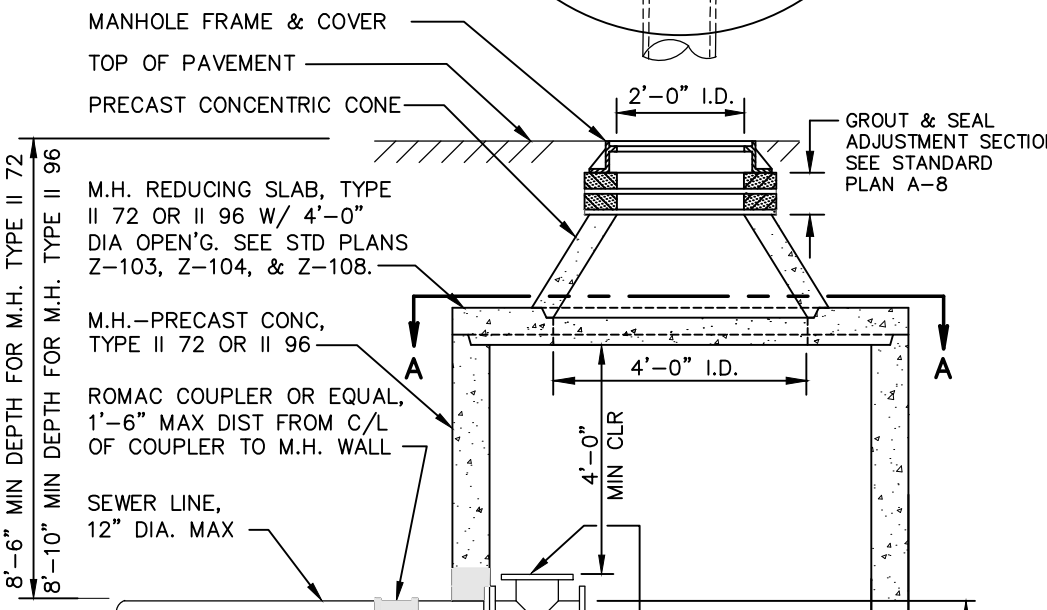
ENGINEERING SERVICES
CITY OF SPOKANE, WASHINGTON

STANDARD PLAN No. Z–110

Back to Section Z - TOC




## SECTION A–A




## SECTION B–B

NOTES:

1. SEE SECTIONS 7–05 & 9–12.4 FOR PRECAST CONCRETE MANHOLES.
2. SEE STD PLANS A–12 & A–13 FOR MAN–HOLE FRAME & COVER.
3. SEE STD PLAN Z–108 FOR MANHOLE REDUC–ING SLABS.
4. SEE STD PLAN Z–109 FOR MANHOLE STEP DETAILS.
5. SEE STD PLAN Z–118 FOR BASE & FOUND–ATION DETAILS.
6. CONE, REDUCING SLAB & BARREL JOINTS MAY BE EITHER TONGUE & GROOVE OR REVERSE TONGUE & GROOVE.
7. ADJUSTMENT SECTION, CONE, REDUCING SLAB & BARREL JOINTS TO BE SEALED PER SEC 7–05.3.
8. ACCESS HOLES OF MAN–HOLE & REDUCING SLAB TO BE CENTERED OVER CHANNEL.
9. D.I. PIPE JOINTS SHALL BE FLANGE JOINTS, EXCEPT AS NOTED OTHERWISE.
10. INT'R DROPS SHALL REQ'D THE APPROVAL OF THE CITY ENG'R SERVICES DEPT. DROPS ARE UTILIZED WHERE BEDROCK PREVENTS FULL–DEPTH EXCAVA–TION.
11. SEE STANDARD PLAN A–8 FOR ADJUSTMENT SECTION REQUIREMENTS.

APPROVED BY

ENGINEERING SERVICES DIRECTOR — KYLE TWOHIG

CITY ENGINEER — DAN BULLER, P.E.

ADOPTED: _____
REVISED: 10/2019
SUPERSEDES: 01/2017
CHECKED BY: JAG
SCALE: NTS
DWG/REV. BY: MDH/TSS

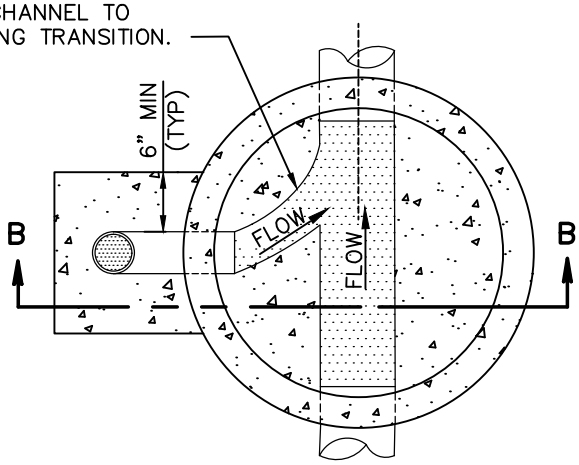
# MANHOLE–INTERIOR D.I.P. DROP

ENGINEERING SERVICES
CITY OF SPOKANE, WASHINGTON

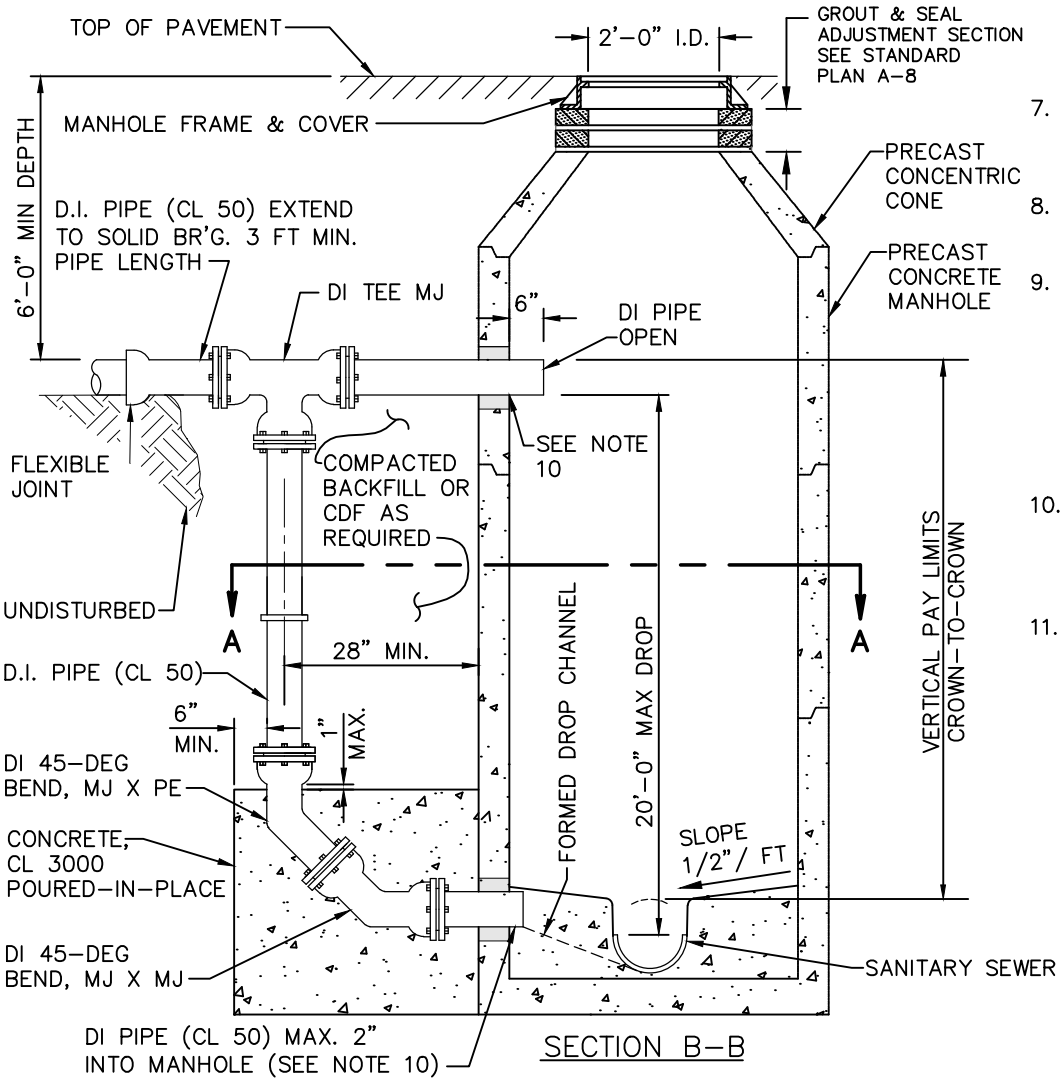
STANDARD PLAN No. Z–111

Back to Section Z - TOC

DROP CHANNEL TO BE ALIGNED W/ DIRECTION OF SEWER CHANNEL FLOW. SHAPE CHANNEL TO PROVIDE SMOOTH SWEEPING TRANSITION.




SECTION A–A




SECTION B–B

NOTES:

1. SEE SECS 7–05 & 9–12.4 FOR PRECAST CONCRETE MANHOLES.
2. SEE STD PLANS A–12 & A–13 FOR MANHOLE FRAME & COVER.
3. SEE STD Z–109 FOR MANHOLE STEP DETAILS.
4. SEE STD PLAN Z–118 FOR BASE & FOUN–DATION DETAILS.
5. CONE & BARREL JOINTS MAY BE EITHER TONGUE & GROOVE OR REVERSE TONGUE & GROOVE.
6. ADJUSTMENT SECTION, CONE & BARREL JOINTS TO BE SEALED PER SEC 7–05.3.
7. ACCESS HOLE TO BE CENTERED OVER CHANNEL.
8. D.I. PIPE JOINTS SHALL BE MECHANICAL JOINTS.
9. EXT'R PIPE DROPS SHALL REQUIRE THE APPROVAL OF THE CITY ENG'R SERVICES DEPT. DROPS ARE UTILIZED WHERE BEDROCK PREVENTS FULL–DEPTH EXCAVATION.
10. GROUT ENTIRE CIRCUM–FERENCE OF PIPE ANNULUS AROUND PIPE PENETRATION.
11. SEE STANDARD PLAN A–8 FOR ADJUSTMENT SECTION REQUIREMENTS.

APPROVED BY

ENGINEERING SERVICES DIRECTOR — KYLE TWOHIG

CITY ENGINEER — DAN BULLER, P.E.

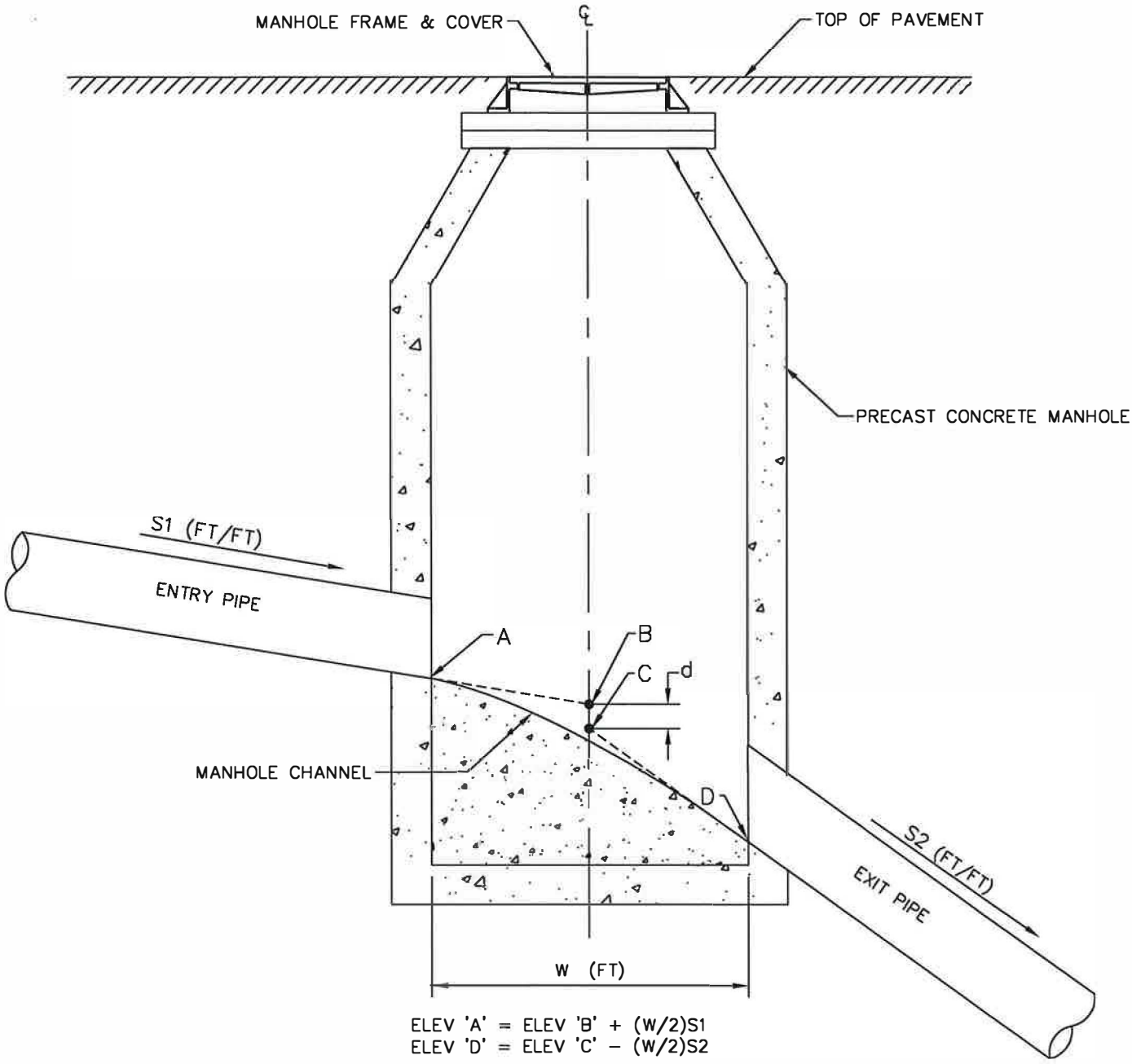
ADOPTED: _____
REVISED: 10/2019
SUPERSEDES: 01/2017
CHECKED BY: JAG
SCALE: NTS
DWG/REV. BY: MDH/MLD

# MANHOLE – EXTERIOR D.I.P. DROP

ENGINEERING SERVICES
CITY OF SPOKANE, WASHINGTON

STANDARD PLAN No. Z–112

Back to Section Z - TOC




NOTES:

1. ELEV 'A' IS THE INVERT ELEVATION OF THE ENTRY PIPE @ THE MANHOLE WALL ON GRADE S1.
2. ELEV'S 'B' & 'C' ARE THE DESIGN INVERT ELEVATIONS OF THE ENTRY/EXIT PIPES @ THE MANHOLE C/L.
3. ELEV 'D' IS THE INVERT ELEVATION OF THE EXIT PIPE @ THE MANHOLE WALL ON GRADE S2.
4. DIMENSION 'd' IS THE REQ'D MIN CHANNEL DROP PER DESIGN STD 4.2-6.
5. SEE STD PLANS Z-110, Z-111, & Z-112 FOR CHANNEL DROPS IN EXCESS OF THE MIN DROP.

APPROVED BY

Thomas L. Arnold
DIRECTOR, ENGINEERING SERVICES TOM L. ARNOLD, P.E.

K. Brown
PRINCIPAL ENGINEER, DESIGN KEN M. BROWN, P.E.

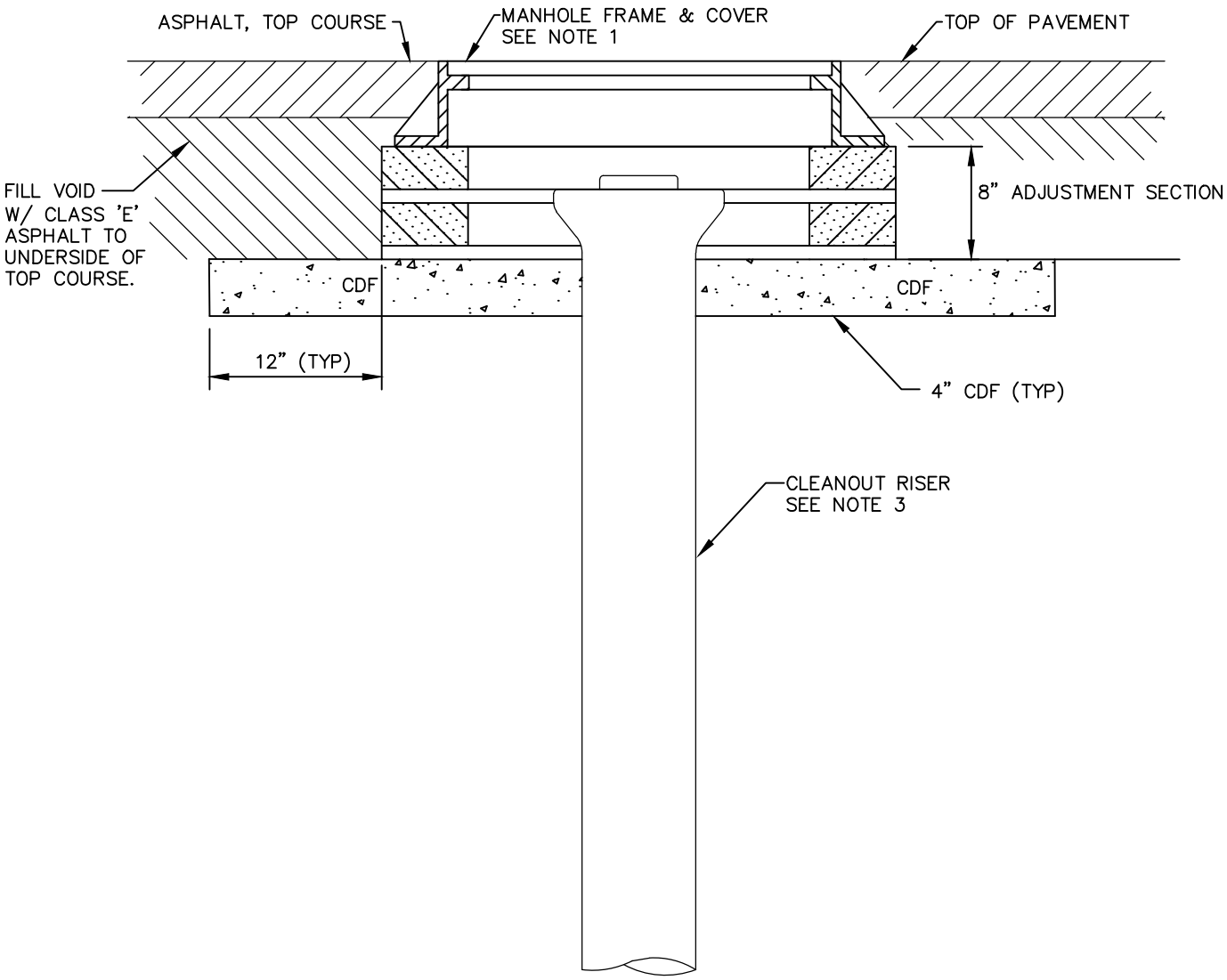
ADOPTED: 4/2004
REVISED:
SUPERSEDES: Z-111 12/98
SCALE: NTS
DWG/REV. BY: MDH/TSS

# MANHOLE – PIPE INVERT ELEVATIONS

ENGINEERING SERVICES
CITY OF SPOKANE, WASHINGTON

STANDARD PLAN No. Z-113

Back to Section Z - TOC




NOTES:

1. SEE STD PLANS A–12 & A–13 FOR MANHOLE FRAME & COVER.
2. ACCESS HOLE TO BE CENTERED OVER CLEANOUT.
3. TOP OF CLEANOUT SHALL EXTEND TO A POINT NOT LESS THAT 6" NOR MORE THAN 12" BELOW TOP OF MANHOLE COVER. CLEANOUTS SHALL BE PLUGGED W/ A REMOVABLE STOPPER WHICH SHALL PREVENT PASSAGE OF DIRT OR WATER.

APPROVED BY

ENGINEERING SERVICES DIRECTOR KYLE TWOHIG

CITY ENGINEER DAN BULLER, P.E.

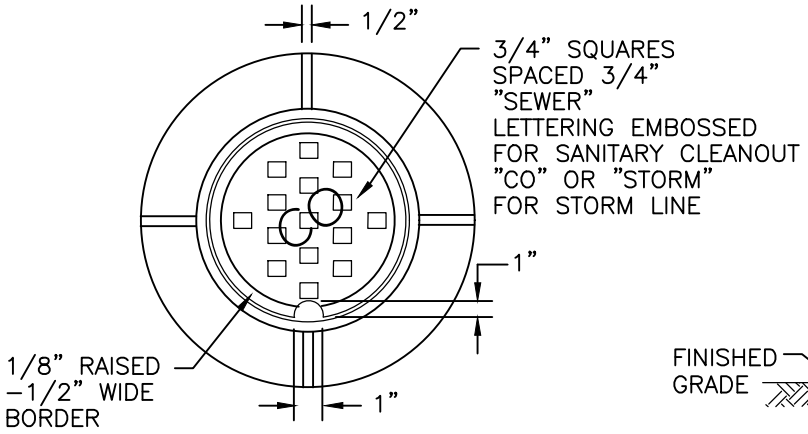
ADOPTED: _____
REVISED: 10/2019
SUPERSEDES: 4/2004
SCALE: NTS
DWG/REV. BY: TSS

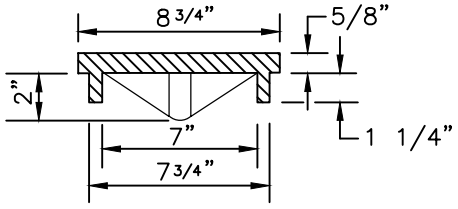
# SEWER CLEANOUT

ENGINEERING SERVICES
CITY OF SPOKANE, WASHINGTON

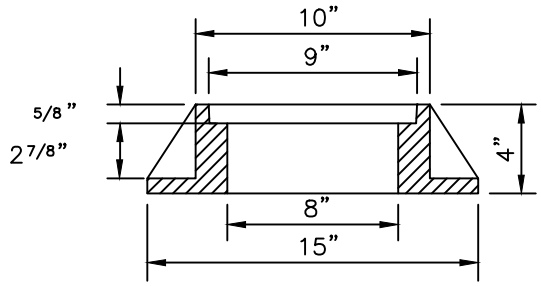
STANDARD PLAN No. Z–114

Back to Section Z - TOC

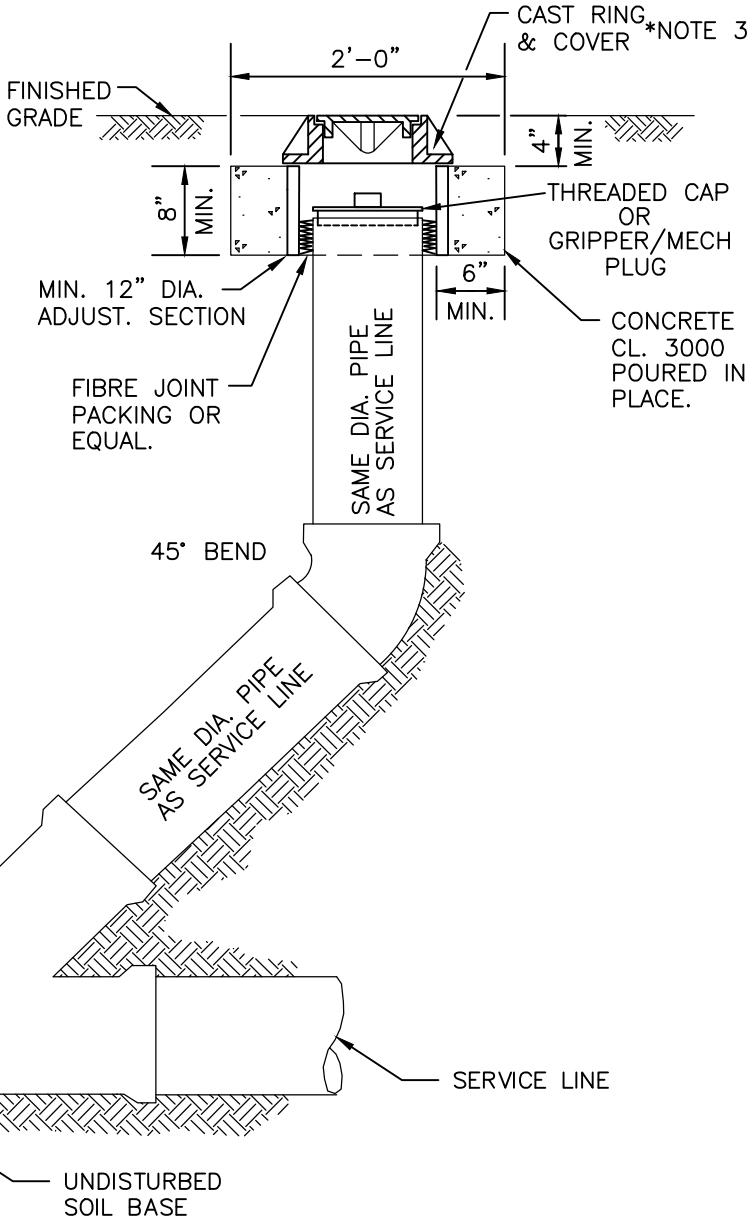



CAST IRON COVER




CAST IRON RING




SEWER CLEAN-OUT

NOTES:

1. FOR SERVICE AND CLEANOUT CONSTRUCTION REQUIREMENTS, REFER TO THE CITY OF SPOKANE SIDE SEWER INSTALLATION HANDBOOK.
2. 8" OR LARGER SERVICE LINES/LATERALS REQUIRE A MANHOLE.
3. CLEANOUT TO BE INSTALLED OUTSIDE OF BUILDING FOOTPRINT. HDPE RING AND COVER WITH "SEWER" ALLOWED IN NON-TRAFFIC AREAS.

APPROVED BY

DIRECTOR OF ENGINEERING SERVICES DAN BULLER, P.E.

ADOPTED: 04/2023
REVISED:
SUPERSEDES:
CHECKED BY: DCS
SCALE: NTS
DWG/REV. BY: /EWS

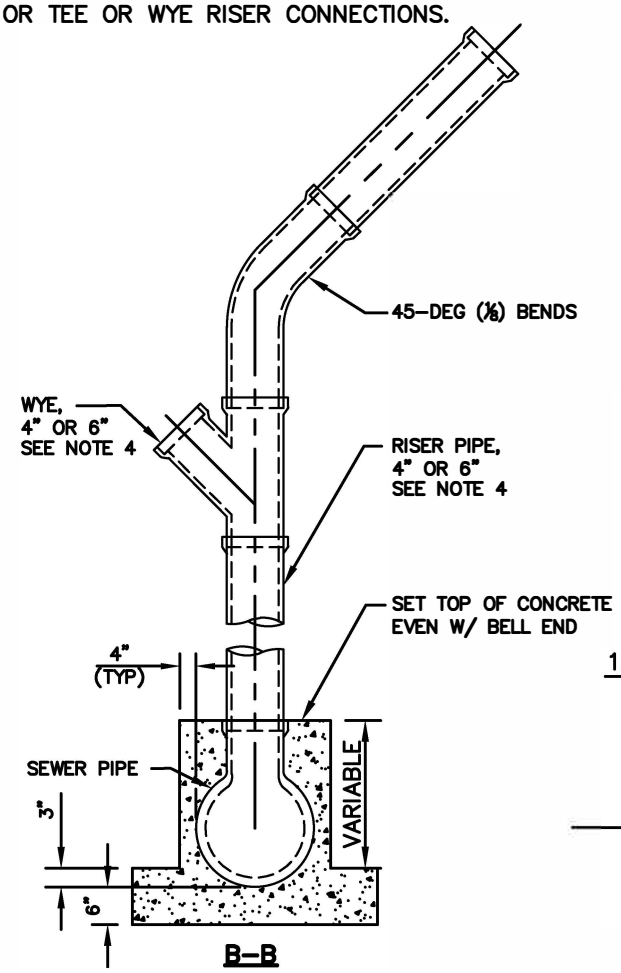
SIDE SEWER CLEAN-OUT

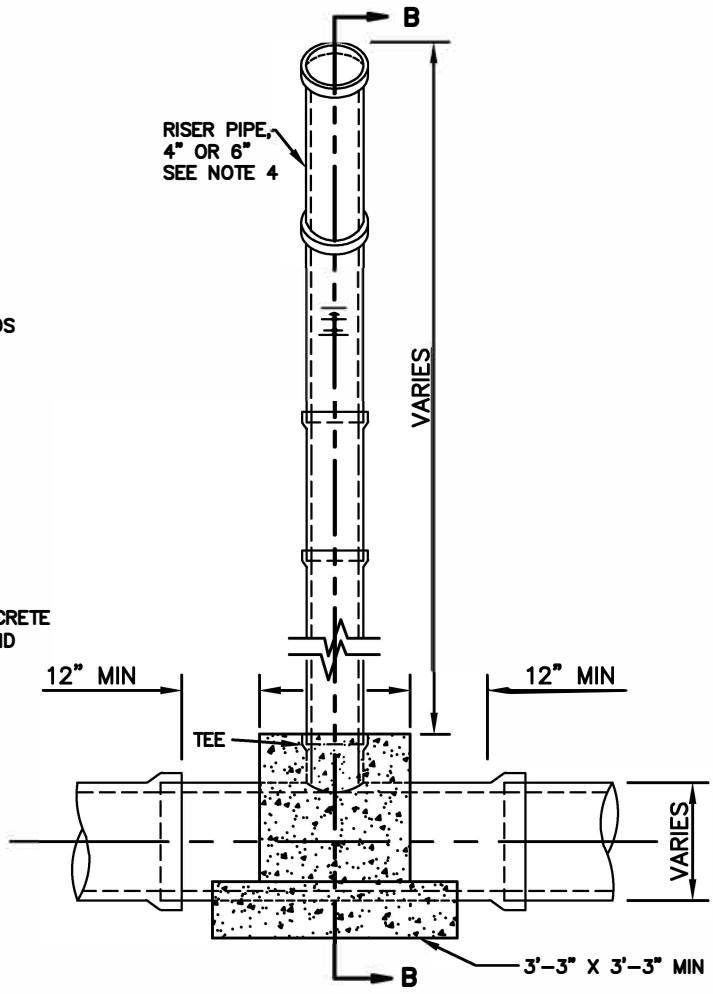
ENGINEERING SERVICES
CITY OF SPOKANE, WASHINGTON

STANDARD PLAN No. Z-114A

Back to Section Z - TOC

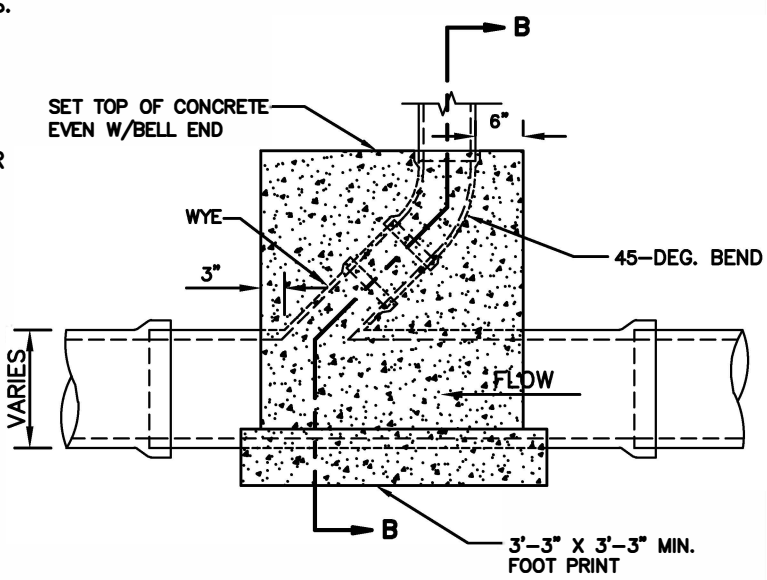
SEE STANDARD PLAN Z-116 FOR REQUIREMENTS FOR USE OR TEE OR WYE RISER CONNECTIONS.




NOTES:

1. SEE SEC 7-17 FOR SANITARY SEWER PIPE.
2. SEE DESIGN STANDARD 4.3 FOR SIDE-SEWERS.
3. CONCRETE SHALL BE CLASS 3000 PER SEC 6-02.
4. A MAX OF (2) SIDE-SEWER BRANCHES ARE ALLOWED OFF A VERTICAL RISER. SIDE-SEWER BRANCHES SHALL BE NO LARGER THAN THE SIZE OF THE VERTICAL RISER.VERTICAL RISER SHALL BE MAX 6" DIAMETER PIPE.
5. USE OF THIS RISER CONNECTION IS FOR SPECIAL CONDITIONS ONLY AND REQUIRES PRIOR APPROVAL OF THE CITY ENGINEER.




APPROVED BY

ENGINEERING OPERATIONS MANAGER KYLE TWOHIG

CITY ENGINEER DANIEL ALBERT BULLER, P.E.

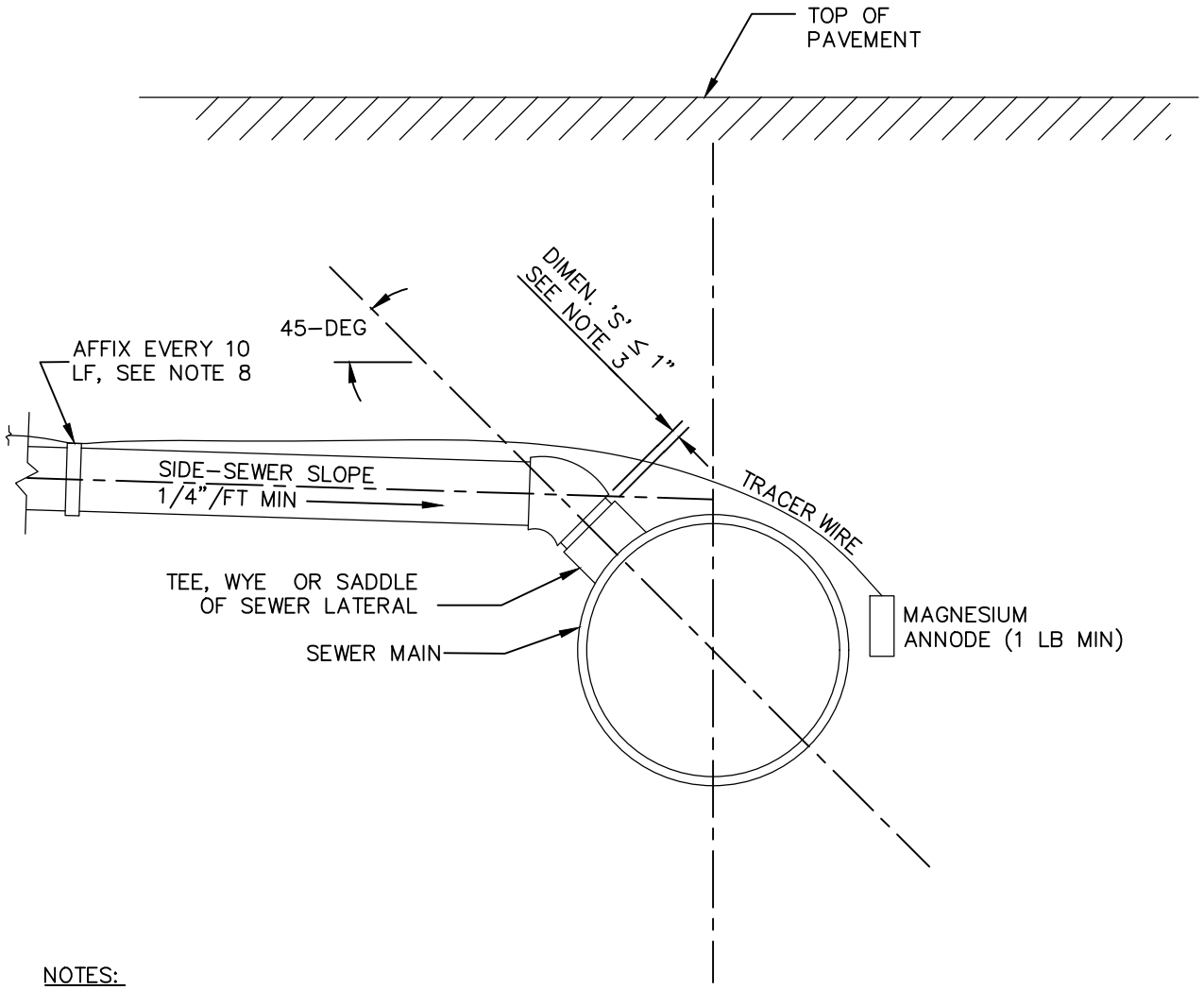
ADOPTED: 4/2004
REVISED: 02/2018
SUPERSEDES: 04/2013
SCALE: NTS
REVISED BY: MDH/MLD

# SIDE-SEWER
## RISER CONNECTION

ENGINEERING SERVICES
CITY OF SPOKANE, WASHINGTON

STANDARD PLAN No. Z-115

Back to Section Z - TOC




NOTES:

1. SEE DESIGN STANDARD 4.3 FOR SIDE-SEWERS.
2. RESIDENTIAL AREAS REQUIRE A 4" MIN SIDE-SEWER STUB. COMMERCIAL AREAS REQUIRE A 6" MIN SIDE-SEWER STUB.
3. DIMENSION 'S' MAY BE INCREASED TO PROVIDE A DESIRED SIDE-SEWER DEPTH @ PROPERTY LINE, IF APPROVED BY THE CITY ENGINEER.
4. THE FIRST SIDE SEWER CONNECTION OF ANY SIZE (4" OR 6") DOWNSTREAM OF AN END OF RUN MANHOLE SHALL BE A WYE CONNECTION.
5. FOR OTHER 4" SIDE SEWER CONNECTIONS, TEES OR WYES MAY BE USED TO CONSTRUCT SIDE SEWER CONNECTIONS.
6. ONLY WYE CONNECTIONS SHALL BE USED FOR 6" SIDE SEWERS CONNECTING TO SEWER MAINS UP TO AND INCLUDING 21" DIAMETER.
7. TEES OR WYES ARE ALLOWED FOR 6" SIDE SEWER CONNECTIONS TO SEWER MAINS LARGER THAN 21" DIAMETER.
8. ON NON-METALLIC PIPE, SIDE SEWERS SHALL HAVE A 12 GA. COPPER WIRE AFFIXED EVERY 10' ALONG ITS FULL LENGTH AND TERMINATE AT THE SURFACE WITH WEATHER PROOF EXTERIOR TAPE TO EACH CLEANOUT OUTSIDE THE BUILDING.

APPROVED BY

DIRECTOR OF ENGINEERING SERVICES DAN BULLER, P.E.

ADOPTED: _____
REVISED: 04/2025
SUPERSEDES: 01/2017
SCALE: NTS
DWG/REV. BY: PCF/MLD

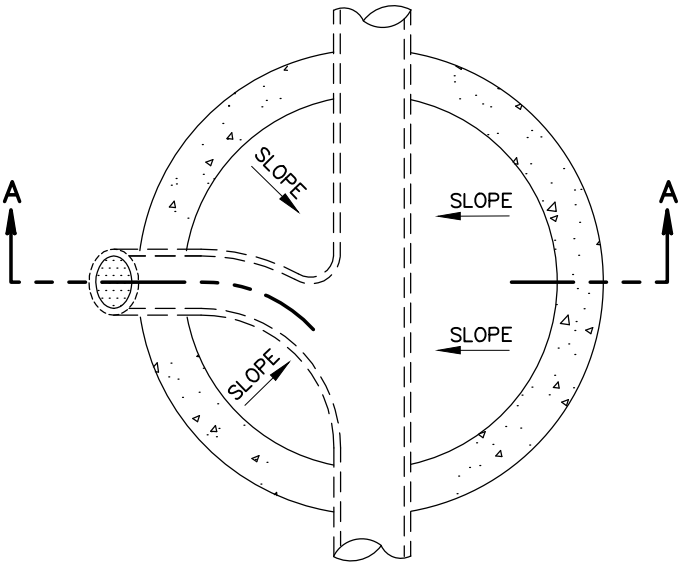
# SIDE-SEWER
TYPICAL CONNECTION

SPOKANE

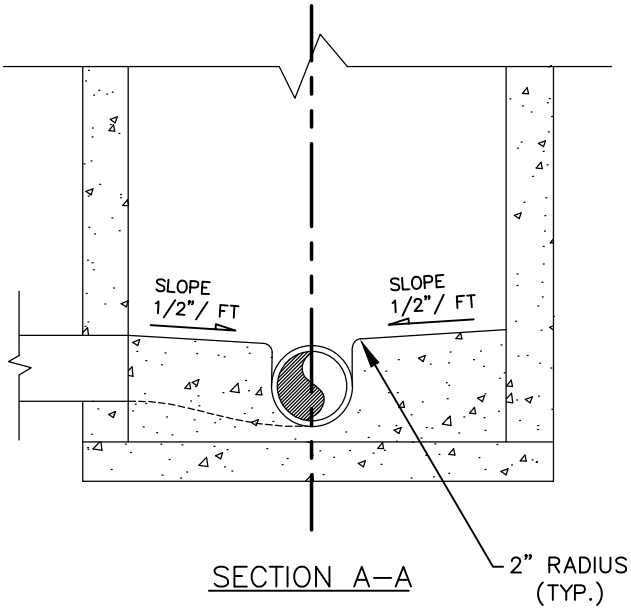
ENGINEERING SERVICES
CITY OF SPOKANE, WASHINGTON

STANDARD PLAN No.
Z-116

Back to Section Z - TOC



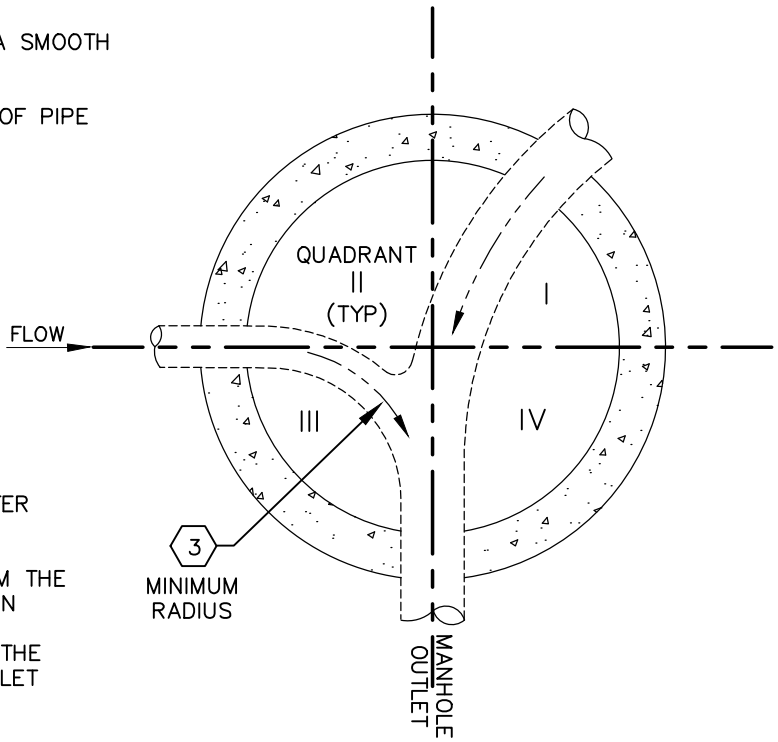

PLAN




SECTION A–A

GENERAL NOTES:

1. THE SHELF AND CHANNEL SHALL HAVE A SMOOTH FINISH
2. CONSTRUCT SHELF TO THE CROWN LINE OF PIPE
3. SLOPE BENCHES 1:24




QUADRANT PLAN VIEW

QUADRANT NOTES:

1. NO SEWER PIPE (CENTERLINE) SHALL ENTER MANHOLE IN QUADRANT III & IV
2. EXCEPT FOR A MANHOLE INLET 180° FROM THE CENTERLINE OF ANY CHANNEL ENTERING IN QUADRANT I OR II SHALL BE A SMOOTH, CONTINOUS ARC THAT IS A TANGENT TO THE CENTERLINE OF THE OUTLET PIPE AT OUTLET MANHOLE WALL
3. MINIMUM RADIUS OF ANY MANHOLE CHANNEL CENTERLINE SHALL BE EQUAL TO THE MANHOLE INSIDE DIAMETER

APPROVED BY

ENGINEERING SERVICES DIRECTOR — KYLE TWOHIG

CITY ENGINEER — DAN BULLER, P.E.

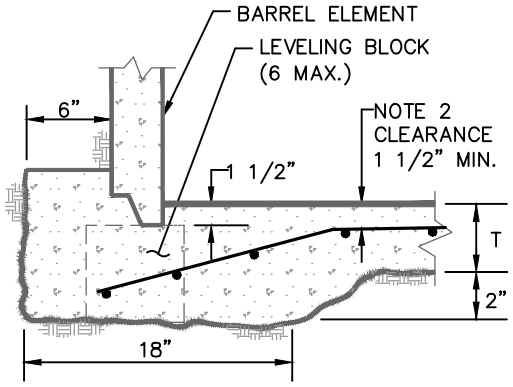
ADOPTED: 02/2019
REVISED:
SUPERSEDES:
CHECKED BY: WRP
SCALE: NTS
REVISED BY: CDJ

# MANHOLE CHANNEL DETAIL – TYPICAL

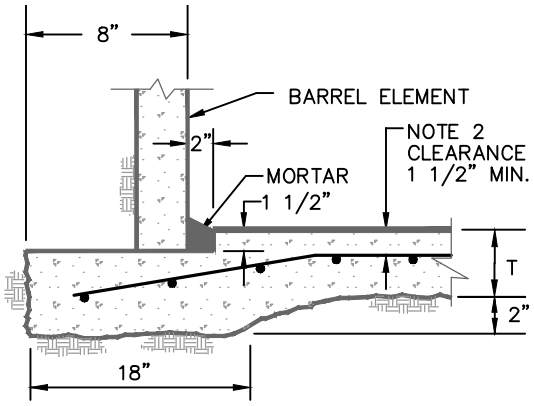
ENGINEERING SERVICES
CITY OF SPOKANE, WASHINGTON

STANDARD PLAN No. Z–117

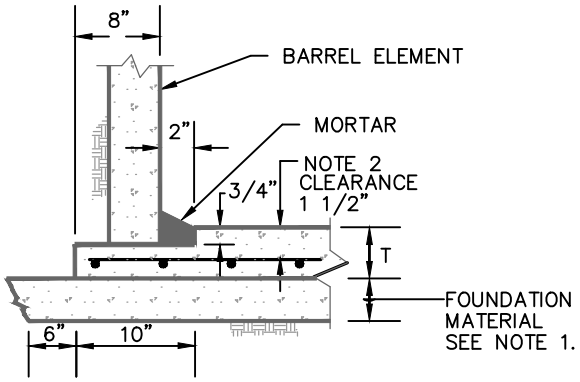
Back to Section Z - TOC



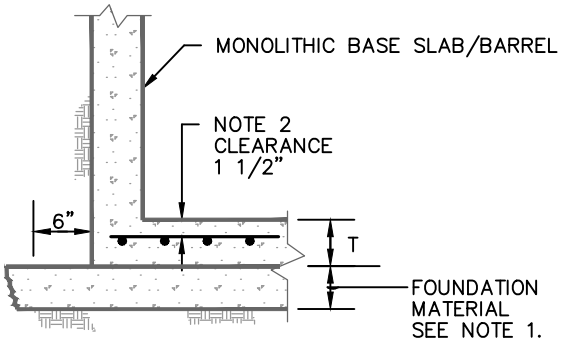

CAST IN PLACE BASE SLAB
(CAST AROUND BARREL)




CAST IN PLACE BASE SLAB
(SEPARATE FROM BARREL)




PRECAST BASE SLAB




PRECAST MONOLITHIC
BASE SLAB / BARREL

BASE SLAB MINIMUM REINFORCEMENT SCHEDULE

| BARREL SIZE | T | METHOD OF SLAB CONSTRUCTION | |
|---|---|---|---|
| | | PRECAST OR CAST-IN-PLACE | MONOLITHIC SLAB & BARREL |
| ≤ 48" | 6" | #4 @ 10" E.W. | #4 @ 10" E.W. |
| 54" | 8" | #4 @ 12" E.W. | #4 @ 12" E.W. |
| 72" | 8" | #4 @ 6 1/2" E.W. | #4 @ 10" E.W. |
| 96" | 12" | #4 @ 6" E.W. | #4 @ 8" E.W. |

## GENERAL NOTES:

1. 6" MINIMUM COMPACTED DEPTH OF BEDDING MATERIAL MEETING THE REQUIRMENTS OF THE SPECIAL PROVISIONS, OR 4" OF GROUT AS DIRECTED BY THE ENGINEER. COMPACT BEDDING MATERIAL TO 92%, MINIMUM.
2. SEE SCHEDULE FOR BASE SLAB REINFORCEMENT.
3. SEE PLAN B-102C BASE DETAILS FOR DRYWELLS

APPROVED BY
Katy Allen
DIRECTOR, ENGINEERING SERVICES KATY D. ALLEN, P.E.
PRINCIPAL ENGINEER, DESIGN JIM R. SMITH, P.E.

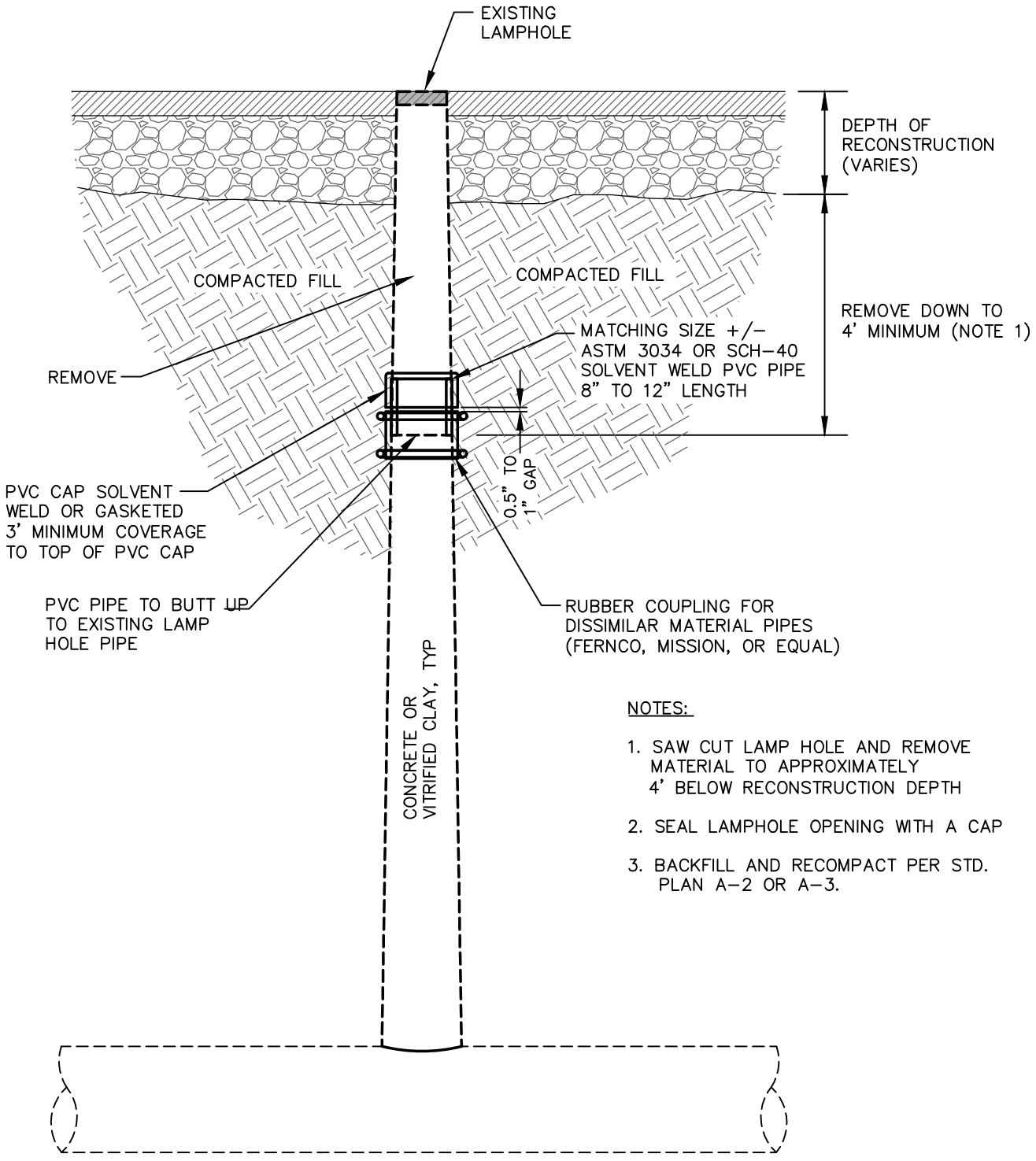
ADOPTED: 2/90
REVISED: 12/98
SUPERSEDES: 7/91
SCALE: N.T.S.
DWG./REV. BY: REP

# CATCH BASIN, DRYWELL & MANHOLE BASE SLAB AND FOUNDATION DETAILS

ENGINEERING SERVICES
CITY OF SPOKANE, WASHINGTON

STANDARD PLAN No. Z-118

Back to Section Z - TOC




NOTES:

1. SAW CUT LAMP HOLE AND REMOVE MATERIAL TO APPROXIMATELY 4' BELOW RECONSTRUCTION DEPTH
2. SEAL LAMPHOLE OPENING WITH A CAP
3. BACKFILL AND RECOMPACT PER STD. PLAN A-2 OR A-3.

APPROVED BY

DIRECTOR OF ENGINEERING SERVICES — KYLE TWOHIG

CITY ENGINEER — DAN BULLER, P.E.

ADOPTED: 03/2022
REVISED:
SUPERSEDES:
CHECKED BY: DS
SCALE: NTS
REVISED BY: CJ/EWS

# LAMPHOLE ABANDONMENT

ENGINEERING SERVICES
CITY OF SPOKANE, WASHINGTON

STANDARD PLAN No. Z-119