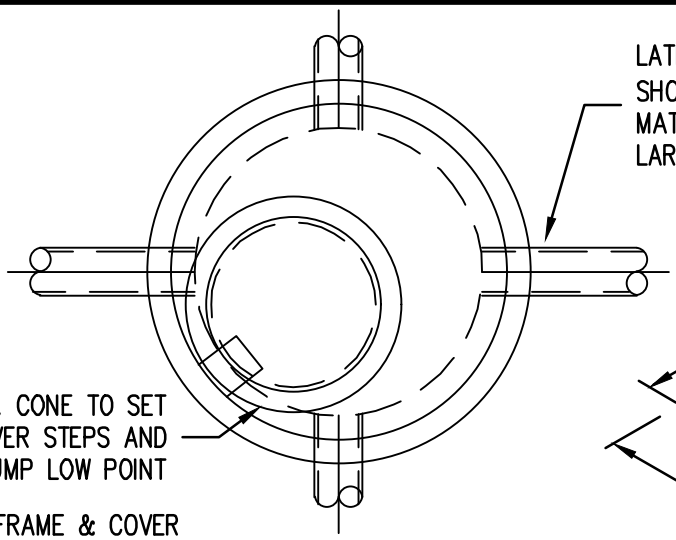
400. INDEX OF STANDARD DETAILS - STORMWATER MANAGEMENT	
DETAIL NUMBER	**DESCRIPTION**
400	STANDARD STORMWATER NOTES
401	STORM DRAINAGE MANHOLE
402	FLAT TOP MANHOLE
403	STORM DRAINAGE MANHOLE FRAMES, COVERS & RISER RINGS
404	TAMPERPROOF & WATERPROOF MANHOLE FRAME AND COVER
405	ROUND CLEANOUT
406	TYPE 1 CATCH BASIN
407	TYPE 2 CATCH BASIN
408	TYPE 3 CATCH BASIN & DITCH INLET
409	CATCH BASIN FRAMES & GRATES
410	TYPE 1 CATCH BASIN (RETROFIT ONLY)
411	TYPE 2 CATCH BASIN (RETROFIT ONLY)
412	CATCH BASIN FRAMES & GRATES (RETROFIT ONLY)
413	DOUBLE CATCH BASIN FOR UTILITY CONFLICTS
414	24-INCH BEEHIVE INLET
415	HORIZONTAL DRYWELL & INFILTRATION TRENCH
416	VERTICAL DRYWELL MANHOLE
417	ROW INFILTRATION PLANTER - PLAN VIEW
418	ROW INFILTRATION PLANTER - SECTION VIEWS
419	PLANTER WALL DETAILS
420	CONCRETE CHECK DAM FOR ROW PLANTERS
421	WATERPROOF LINER DETAILS
422	ROW INFILTRATION SWALE - PLAN VIEW
423	ROW INFILTRATION SWALE - SECTION VIEWS
424	AGGREGATE CHECK DAM FOR ROW SWALES
425	INLET PRE-TREATMENT & ENERGY DISSIPATOR
426	PUBLIC STORMWATER FACILITY UNDERDRAIN WITH CLEANOUT
427	SLEEVE DETAIL FOR DOMESTIC WATER SERVICE
428	FLOW CONTROL MANHOLE
429	COMMON FLOW CONTROL COMPONENTS
430	24-INCH BEHIVE INLET CONTROL
431	STORMWATER DETENTION SYSTEM
432	DETENTION STORAGE ACCESS PORT
433	ROW INFILTRATION PLANTER - PLANTING TEMPLATE
434	ROW INFILTRATION SWALE - PLANTING TEMPLATE

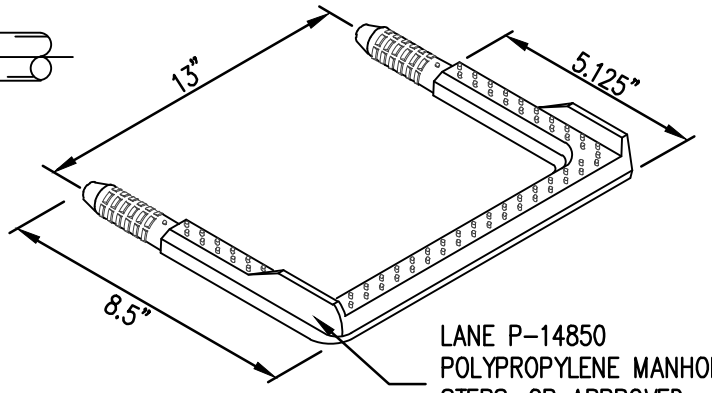
1. ALL CONSTRUCTION TO BE TO CITY OF KEIZER STANDARD CONSTRUCTION SPECIFICATIONS AND DESIGN STANDARDS.
2. PUBLIC STORM DRAIN PIPE SHALL BE PVC CONFORMING TO THE FOLLOWING:

4" – 15"	ASTM D3034, SDR 35
18" – 27"	ASTM F679, PS 46
30" – 48"	ASTM F793, PS 46, SEAMLESS OR ASTM F1803, PS 46
48" – 60"	ASTM F1803, PS 46

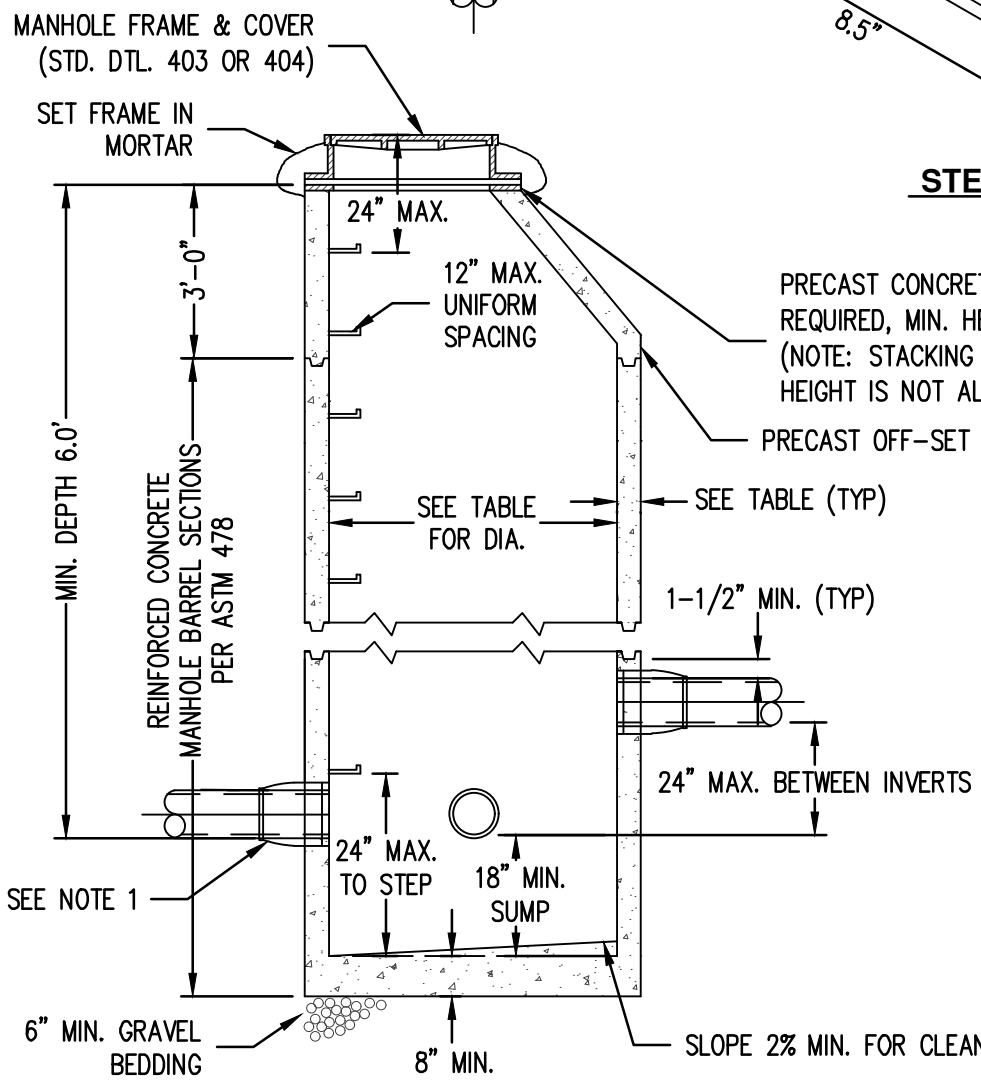
   FITTINGS SHALL BE OF THE SAME MATERIAL AS THE PIPE. PVC PIPE AND FITTINGS SHALL HAVE GASKETED JOINTS CONFORMING TO ASTM D3212 AND F477 AND BE INSTALLED IN ACCORDANCE WITH ASTM D2321. REINFORCED CONCRETE PIPE CONFORMING TO ASTM C–14 MAY BE USED UNDER DRIVEWAYS OR ELSEWHERE AS APPROVED BY THE DIRECTOR.
3. MINIMUM COVER FOR ALL PIPE SHALL BE 2.5 FEET UNDER PAVEMENT AND 2.0 FEET ELSEWHERE, UNLESS OTHERWISE APPROVED BY THE DIRECTOR.
4. ALL STORM MANHOLES AND CATCH BASINS SHALL BE EQUIPPED WITH A MINIMUM 18" SUMP EXCEPT WHEN NOTED OTHERWISE ON DRAWINGS OR OTHER DETAILS.
5. PIPE CONNECTIONS TO MANHOLES SHALL USE RESILIENT CONNECTORS CONFORMING TO ASTM C923, UNLESS OTHERWISE APPROVED BY THE DIRECTOR.
6. RIM ELEVATIONS SHOWN ON PLAN ARE FOR REFERENCE ONLY. CONTRACTOR TO SET STRUCTURE RIMS TO FINISH GRADE IMMEDIATELY AFTER COMPLETION OF BASE ROCK GRADING AND PRIOR TO PAVING.
7. CONTRACTOR SHALL USE UNIFORM PIPE MATERIAL ON EACH PIPE RUN BETWEEN STRUCTURES UNLESS OTHERWISE DIRECTED OR APPROVED. STORM DRAINS SHALL BE LAID ON A STRAIGHT ALIGNMENT WITH UNIFORM GRADE BETWEEN STRUCTURES AND LAID UPGRADE WITH SPIGOT ENDS POINTING IN DIRECTION OF FLOW. ALL STORM PIPE JOINTS SHALL BE WATERTIGHT REGARDLESS OF SPECIFIED OR SELECTED MATERIAL.
8. CATCH BASINS AND JUNCTION BOXES SHALL BE SET SQUARE WITH THE EDGE OF THE CURB AND STREET WHEREIN THEY LIE. INLET STRUCTURES AND PAVING SHALL BE ADJUSTED SO WATER FLOWS INTO THE STRUCTURE WITHOUT PONDING.
9. GRANULAR BACKFILL OR CONTROLLED DENSITY BACKFILL FOR ALL PIPELINES CONSTRUCTED IN THE IMPROVED PORTION OF THE ROADWAY. USE CONTROL DENSITY BACKFILL IN STREET CROSSINGS AS NOTED ON THE PLAN.
10. UNLESS OTHERWISE SPECIFIED OR DIRECTED, INSTALL STORM DRAIN PIPE IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION GUIDELINES.
11. PRIOR TO MANDREL TESTING OR TV INSPECTION, FLUSH AND CLEAN ALL STORM DRAINS, AND REMOVE ALL FOREIGN MATERIAL FROM THE MAINLINES, MANHOLES, AND CATCH BASINS.
12. CONTRACTOR SHALL CONDUCT A DEFLECTION TEST OF FLEXIBLE STORM SEWER PIPES BY PULLING AN APPROVED MANDREL THROUGH THE COMPLETED PIPE LINE FOLLOWING TRENCH COMPACTION, TESTING AND CITY APPROVAL. THE DIAMETER OF THE MANDREL SHALL BE 95 PERCENT OF THE INITIAL PIPE DIAMETER.
13. UPON COMPLETION OF CONSTRUCTION, TESTING, AND REPAIR, THE CONTRACTOR SHALL CONDUCT A COLOR TV ACCEPTANCE INSPECTION OF ALL PUBLIC STORM MAINS IN ACCORDANCE WITH OREGON STANDARD SPECIFICATIONS FOR CONSTRUCTION (ODOT/APWA) SECTION 00415. THE VIDEO RECORDING AND REPORT SHALL BE PROVIDED TO THE CITY.
14. PRIOR TO FINAL APPROVAL, PROJECT ENGINEER TO SUPPLY THE CITY WITH A COMPLETE SET OF "AS BUILT" DRAWINGS SHOWING SERVICE LOCATIONS, LENGTHS, DEPTHS, PIPE LENGTHS BETWEEN STRUCTURES, TEES, AND CLEANOUTS.
15. DIMENSIONS AND NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

STORM DRAINAGE MANHOLE 401





STEP DETAIL



PIPE SIZE	MANHOLE DIAMETER	WALL THICKNESS
≤21"	48"	5"
24"-30"	60"	6"
36"-42"	72"	7"
48"-54"	84"	8"

NOTES:

1. RESILIENT CONNECTORS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.
2. PIPES SHALL BE FLUSH WITH INSIDE WALL. GROUT PIPE CONNECTION JOINTS SMOOTH AT MANHOLE INTERIOR.
3. PLYWOOD FORM ALL CAST-IN-PLACE BASES. BASE MAY BE ROUND OR SQUARE.

ISSUED: 05/04/2023

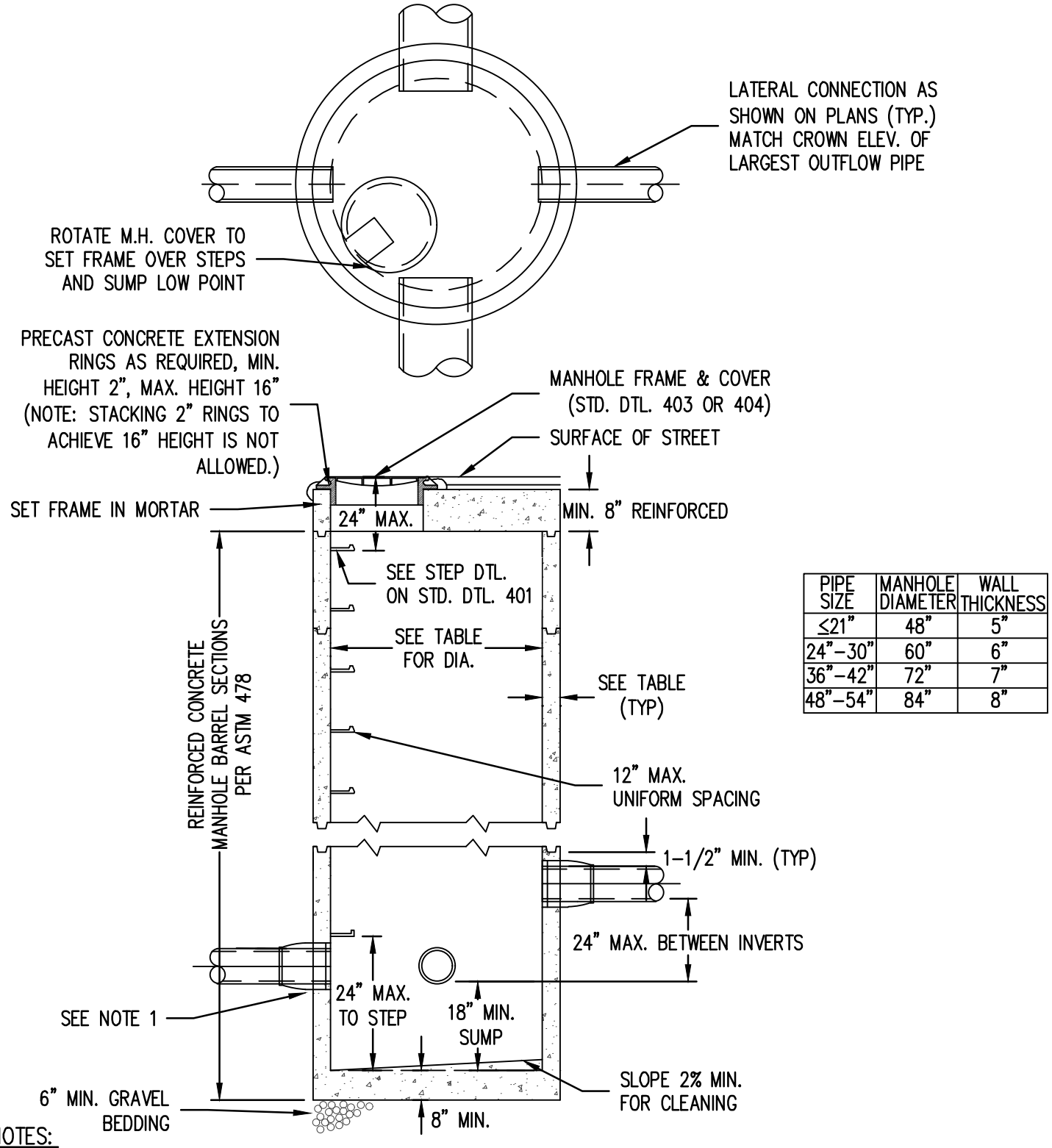
REVISED:_____

DRAWING NOT TO SCALE

CITY OF KEIZER | Public Works Department
STANDARD DETAILS
STORMWATER MANAGEMENT

FLAT TOP MANHOLE

402



PIPE SIZE	MANHOLE DIAMETER	WALL THICKNESS
≤21"	48"	5"
24"–30"	60"	6"
36"–42"	72"	7"
48"–54"	84"	8"

NOTES:

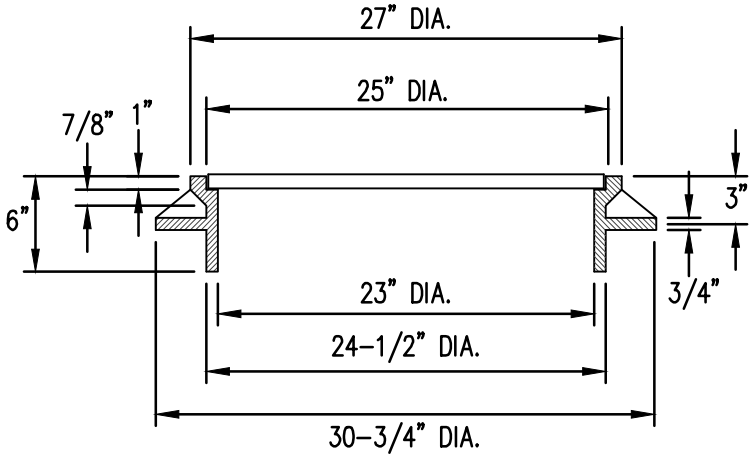
1. RESILIENT CONNECTORS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.
2. PIPES SHALL BE FLUSH WITH INSIDE WALL. GROUT PIPE CONNECTION JOINTS SMOOTH AT MANHOLE INTERIOR.
3. PLYWOOD FORM ALL CAST-IN-PLACE BASES. BASES MAY BE ROUND OR SQUARE.
4. APPROVAL FROM THE DIRECTOR REQUIRED BEFORE INSTALLATION OF FLAT TOP MANHOLE.

ISSUED: 05/04/2023

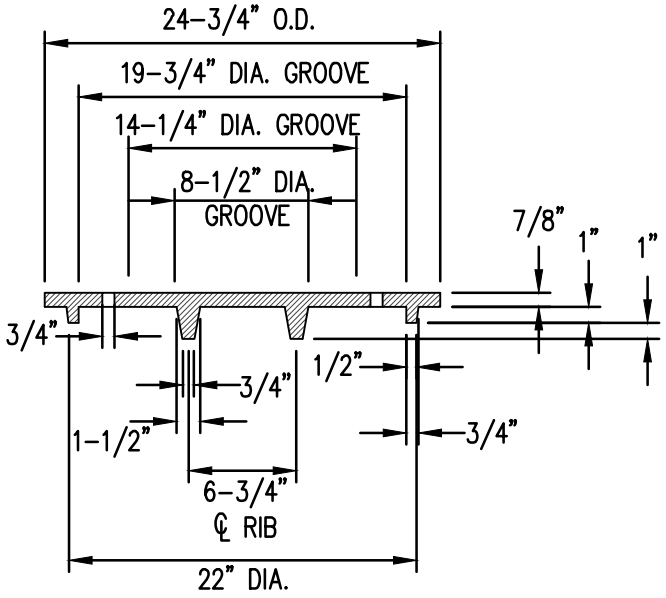
REVISED:_____

DRAWING NOT TO SCALE

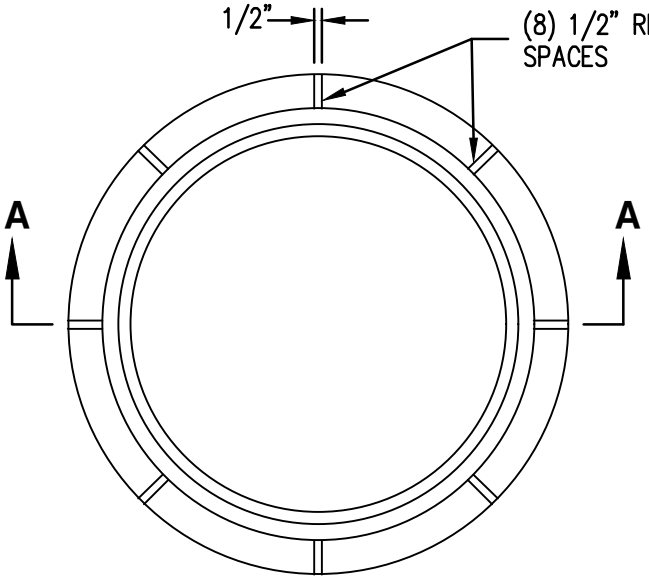
CITY OF KEIZER | Public Works Department
STANDARD DETAILS
STORMWATER MANAGEMENT



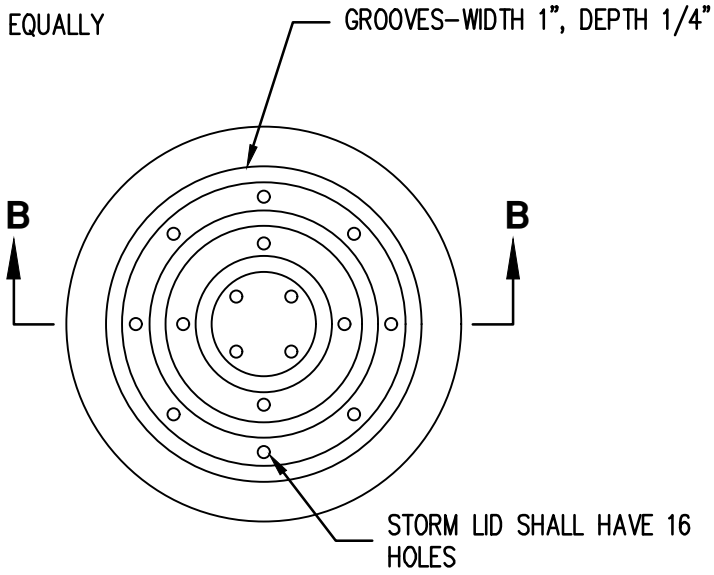
SECTION "A-A"



SECTION "B-B"



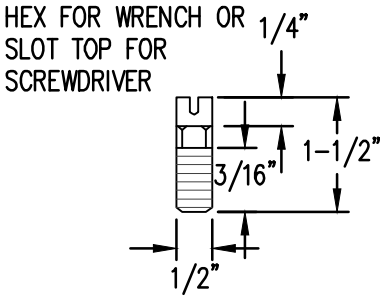
MANHOLE FRAME



MANHOLE COVER

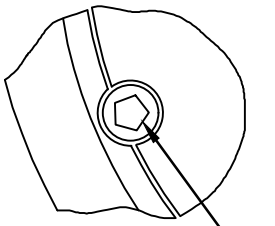
ISSUED: 05/04/2023	CITY OF KEIZER | Public Works Department STANDARD DETAILS *STORMWATER MANAGEMENT*
REVISED:_____	
DRAWING NOT TO SCALE	

TAMPERPROOF & WATERPROOF MANHOLE FRAME AND COVER

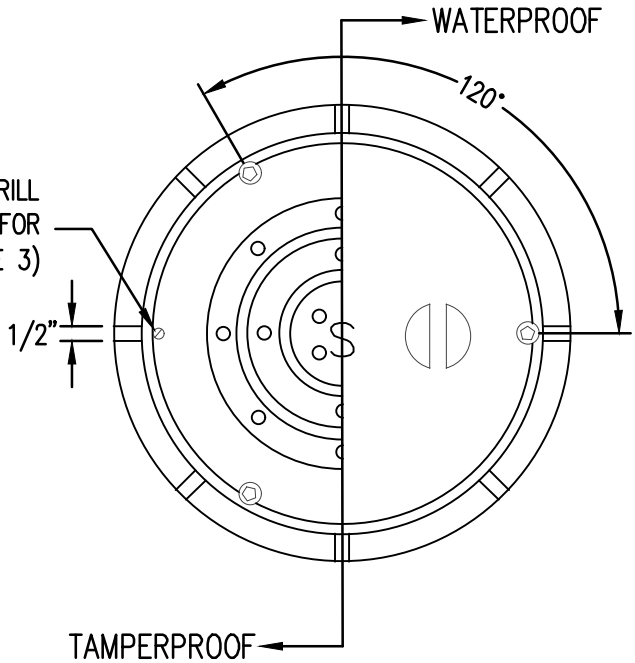


1 STUD REQUIRED PER COVER.
STUD TO BE 60° COUNTER-CLOCKWISE
FROM CAP SCREW.

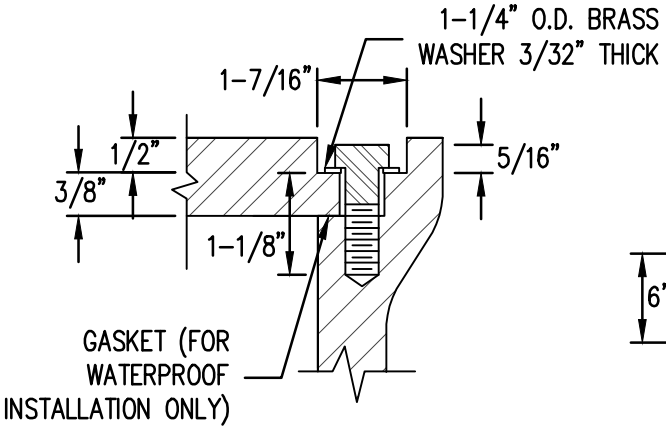
STUD DETAIL



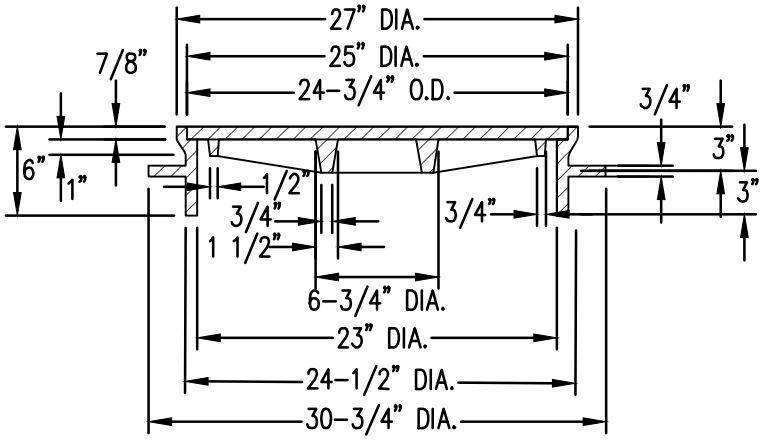
1/2"-13 X 1" LONG BRASS
OR BRONZE
PENTAGON-HEAD CAP
SCREW



PLAN



X-SECTION



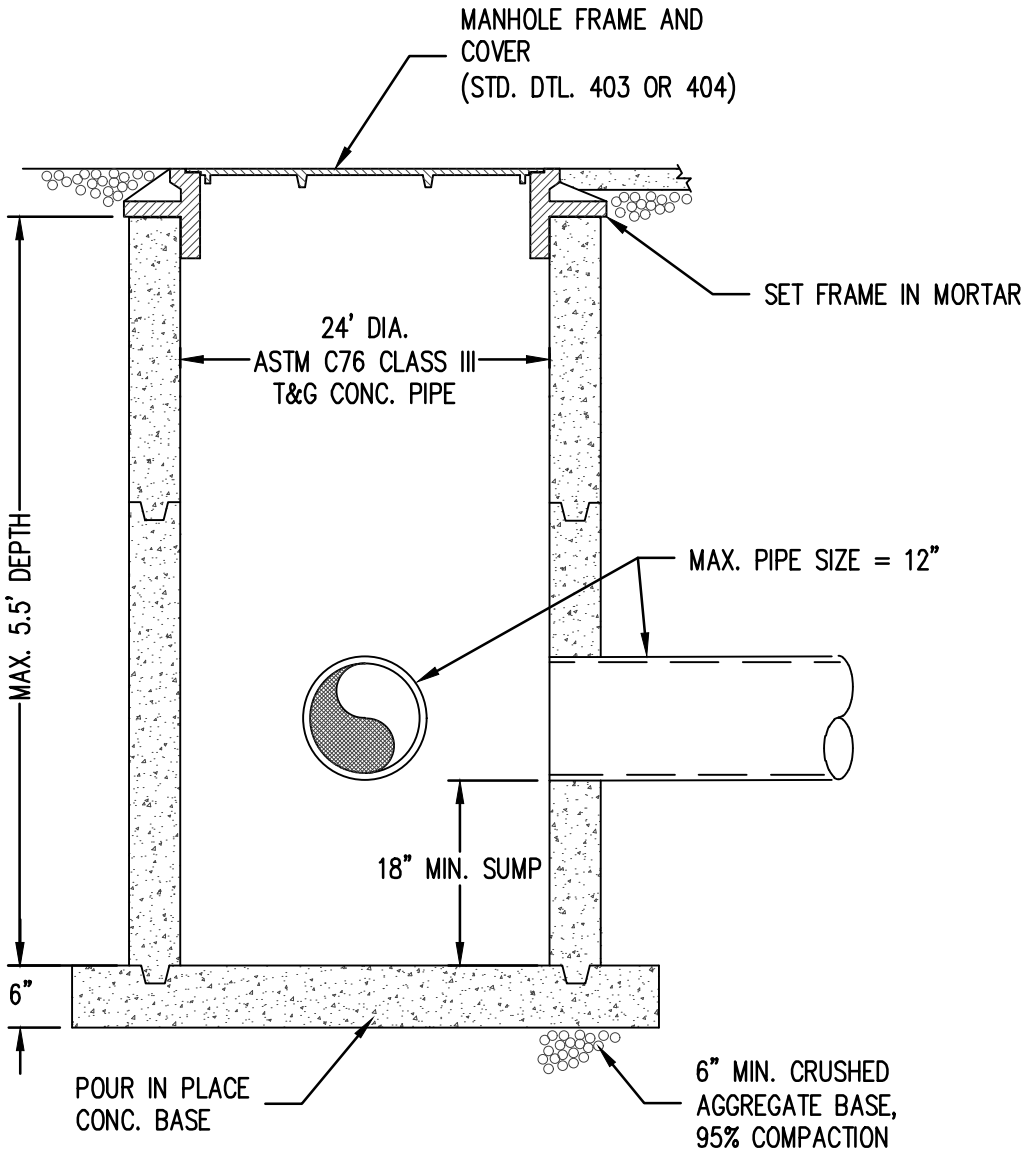
CAP SCREW DETAIL

NOTES:
1. ALL BEARING SURFACES TO BE MACHINED.

ISSUED: 05/04/2023	CITY OF KEIZER | Public Works Department STANDARD DETAILS *STORMWATER MANAGEMENT*
REVISED:_____	
DRAWING NOT TO SCALE	

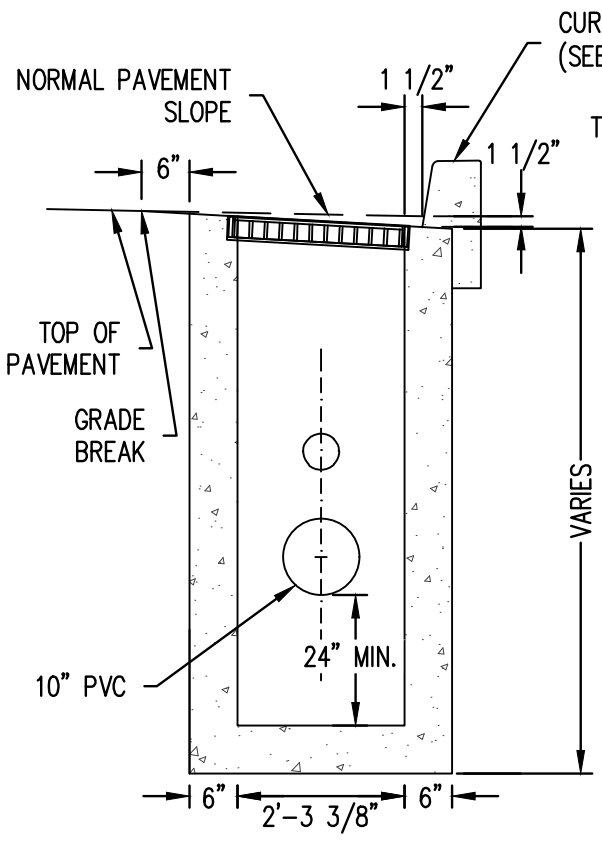
ROUND CLEANOUT

405

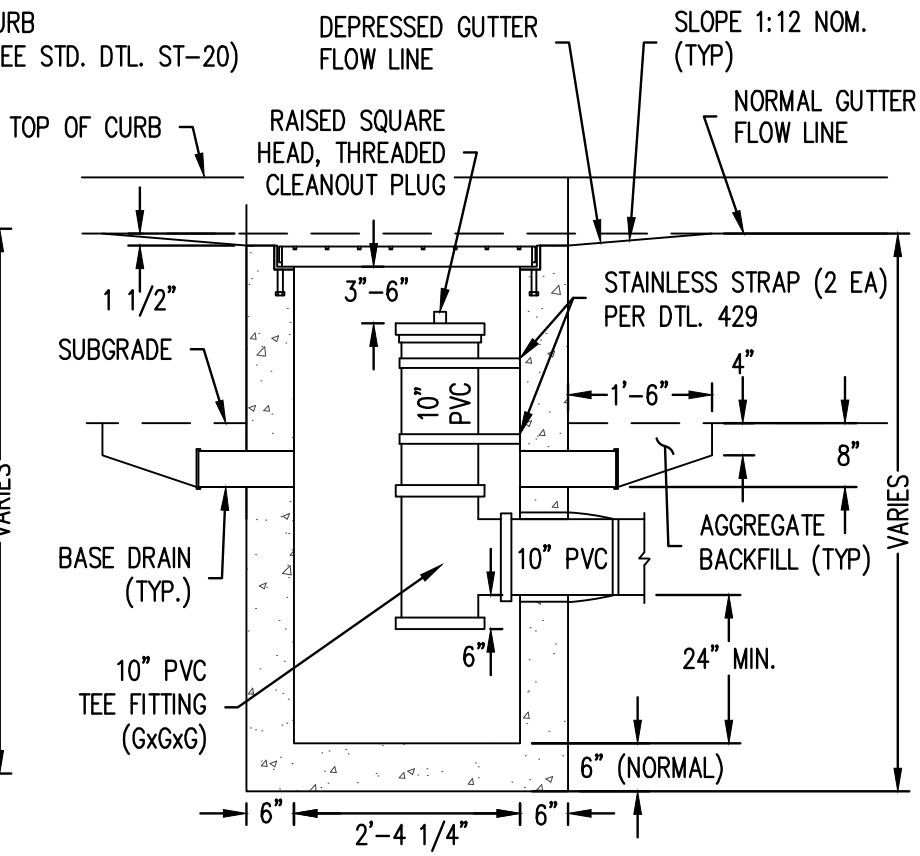


NOTES:
1. ONLY TO BE USED IN CASES PRE-AUTHORIZED BY THE DIRECTOR.
2. NOT ALLOWED IN HEAVY TRAFFIC AREAS.
3. GROUT PIPE CONNECTION JOINTS SMOOTH AT STRUCTURE INTERIOR.

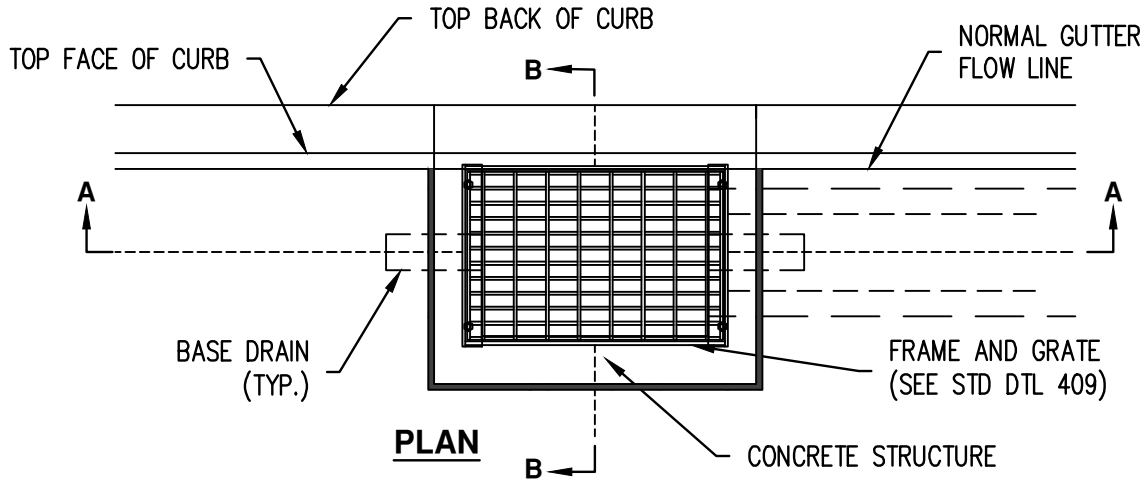
ISSUED: 05/04/2023	CITY OF KEIZER | Public Works Department STANDARD DETAILS *STORMWATER MANAGEMENT*
REVISED:_____	
DRAWING NOT TO SCALE	



SECTION B-B



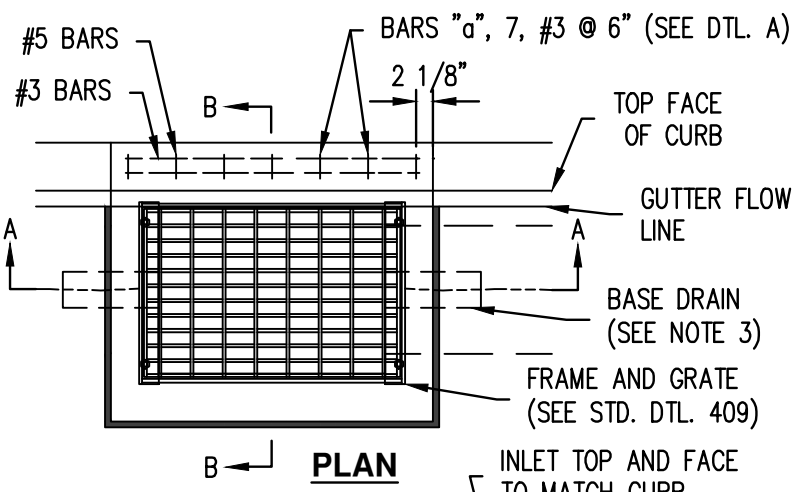
SECTION A-A



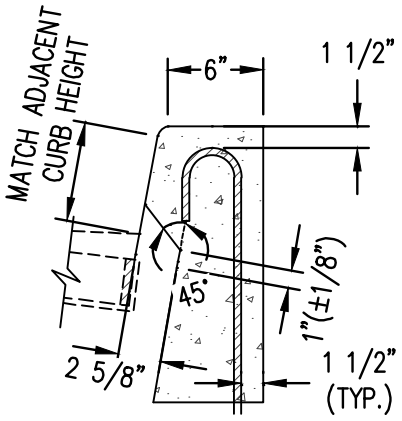
PLAN

NOTES:

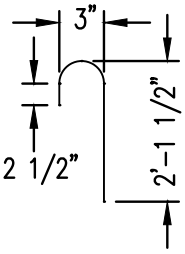
1. SEE PLANS FOR PIPE LOCATION AND INVERTS.
2. CONCRETE SHALL BE 3,300 PSI AT 28 DAY STRENGTH.
3. BASE DRAINS SHALL BE 4" SCHEDULE 40 PVC PERFORATED WITH 6 EACH-3/8" DIA. HOLES DRILLED IN LOWER SIDE, INSTALLED FLUSH WITH INSIDE WALL. CAP SHALL HAVE 4 EACH-3/8" DIA. HOLES. LOCATE JUST ABOVE SUBGRADE AS SHOWN. TWO DRAINS REQUIRED WHEN LOCATED IN A SAG VERTICAL CURVE.
4. WHEN PRECAST CATCH BASINS ARE USED AS AN ALTERATIVE TO CAST-IN-PLACE, PRECAST UNITS SHALL HAVE 6" MIN. THICK WALLS AND CONFORM TO ASTM C-913.
5. GROUT PIPE CONNECTION SMOOTH AT STRUCTURE INTERIOR.



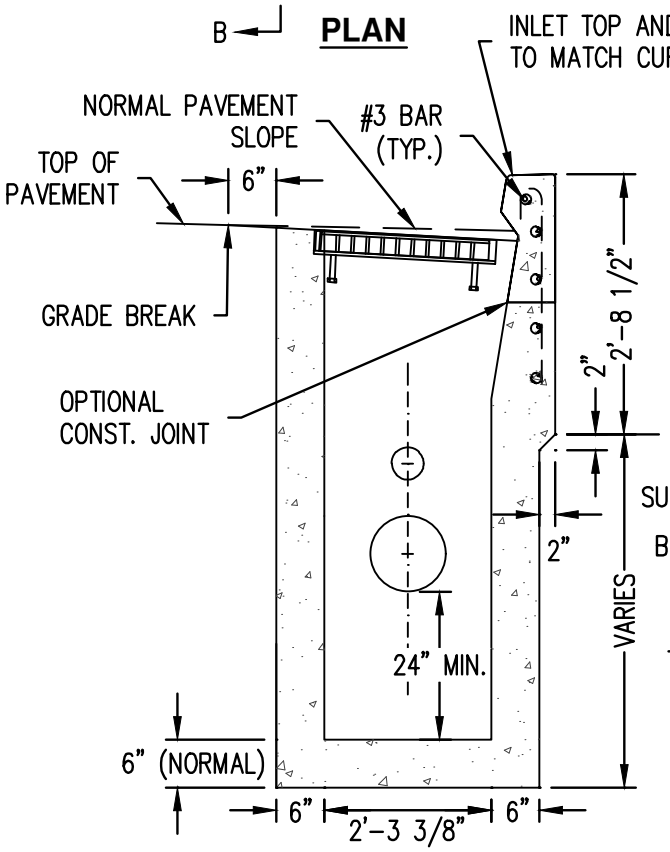
PLAN



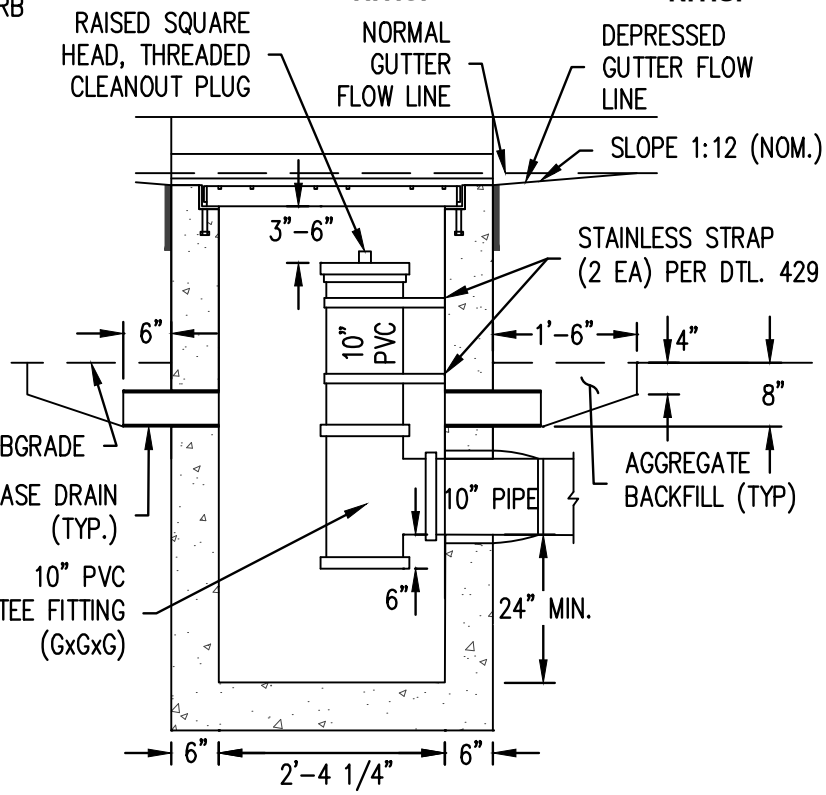
DETAIL A
N.T.S.



BAR "a"
N.T.S.



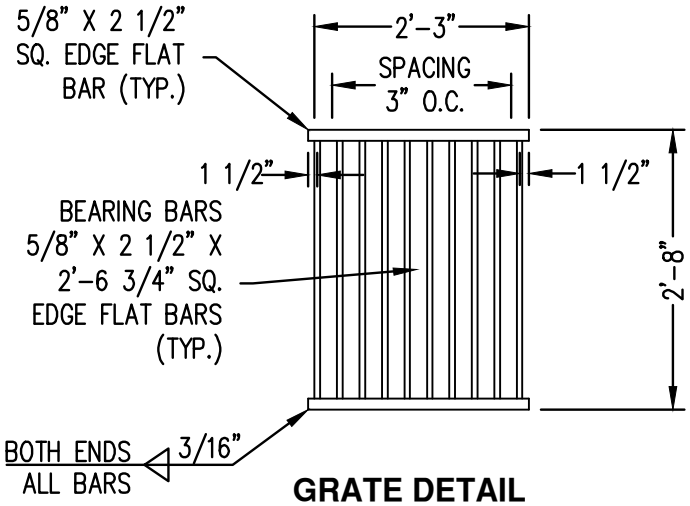
SECTION B-B



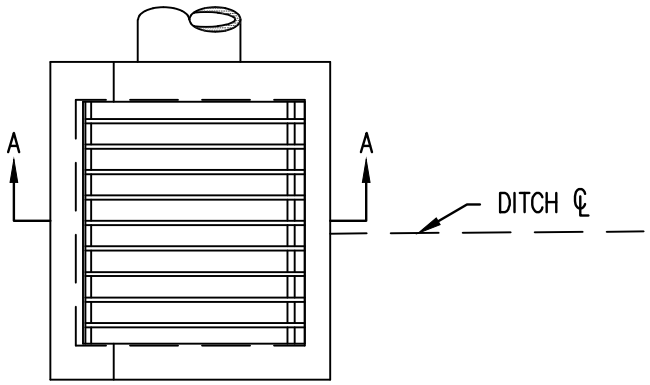
SECTION A-A

NOTES:

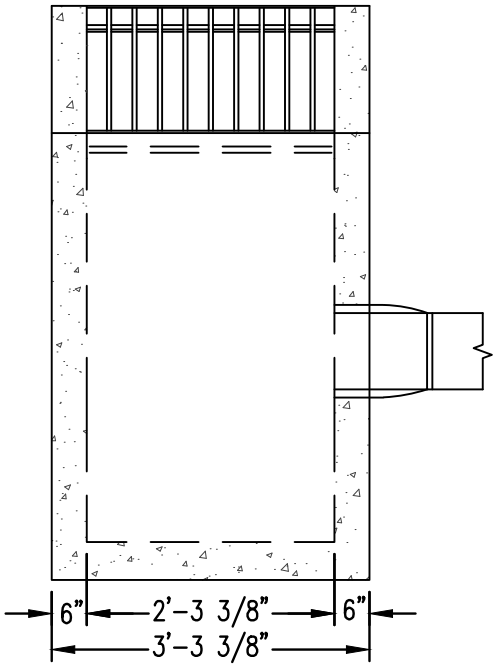
1. SEE PLANS FOR PIPE LOCATION AND INVERTS.
2. CONCRETE SHALL BE 3,300 PSI AT 28 DAY STRENGTH.
3. BASE DRAINS SHALL BE 4" SCHEDULE 40 PVC PERFORATED WITH 6 EACH-3/8" DIA. HOLES DRILLED IN LOWER SIDE, INSTALLED FLUSH WITH INSIDE WALL. CAP SHALL HAVE 4 EACH-3/8" DIA. HOLES. LOCATE JUST ABOVE SUBGRADE AS SHOWN. TWO DRAINS REQUIRED WHEN LOCATED IN A SAG VERTICAL CURVE.
4. WHEN PRECAST CATCH BASINS ARE USED AS AN ALTERATIVE TO CAST-IN-PLACE, PRECAST UNITS SHALL HAVE 6" MIN. THICK WALLS AND CONFORM TO ASTM C-913.
5. GROUT PIPE CONNCETIONS SMOOTH AT STRUCTURE INTERIOR.



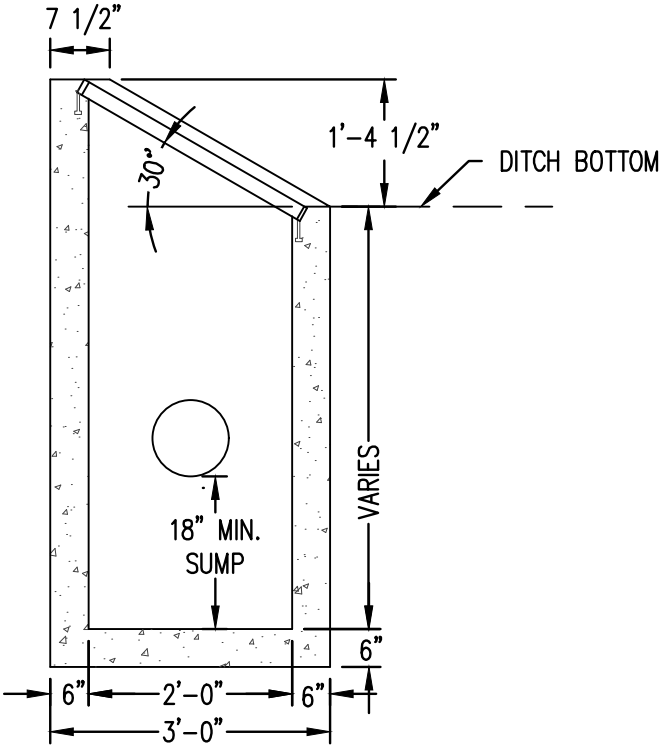
GRATE DETAIL
(TYPE 1)



PLAN

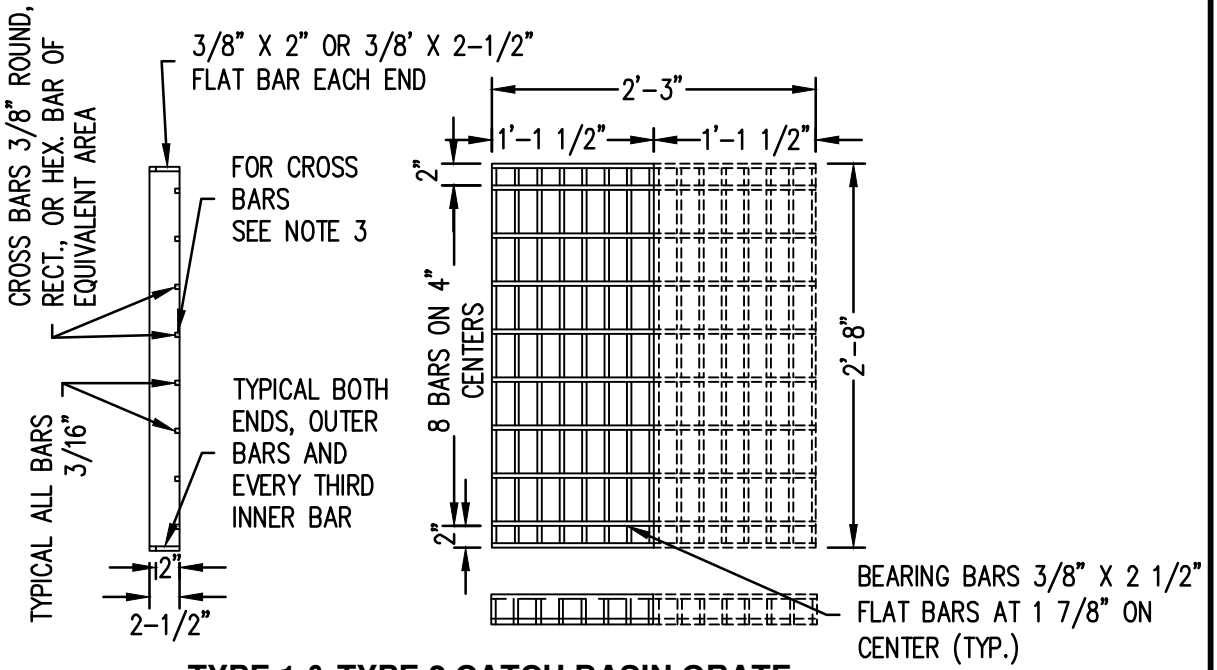


ELEVATION



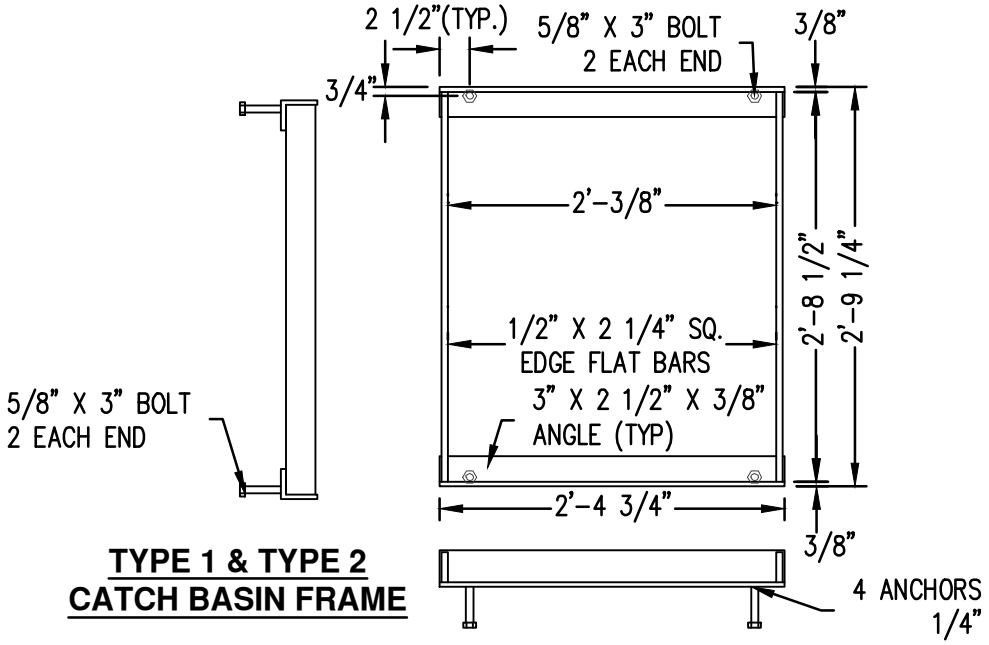
SECTION A-A

NOTES:
1. ALL CONCRETE SHALL BE CLASS 3000 PSI AT 28 DAY STRENGTH.
2. PIPES SHALL BE FLUSH WITH INSIDE OF WALL. GROUT JOINTS SMOOTH AT STRUCTURE INTERIOR.
3. SEE PLANS FOR PIPE SIZE, LOCATION, AND INVERTS.
4. GROUT PIPE CONNECTIONS SMOOTH AT STRUCTURE INTERIOR.



TYPE 1 & TYPE 2 CATCH BASIN GRATE

(BICYCLE-SAFE – 2 GRATES REQUIRED PER INLET AS SHOWN)

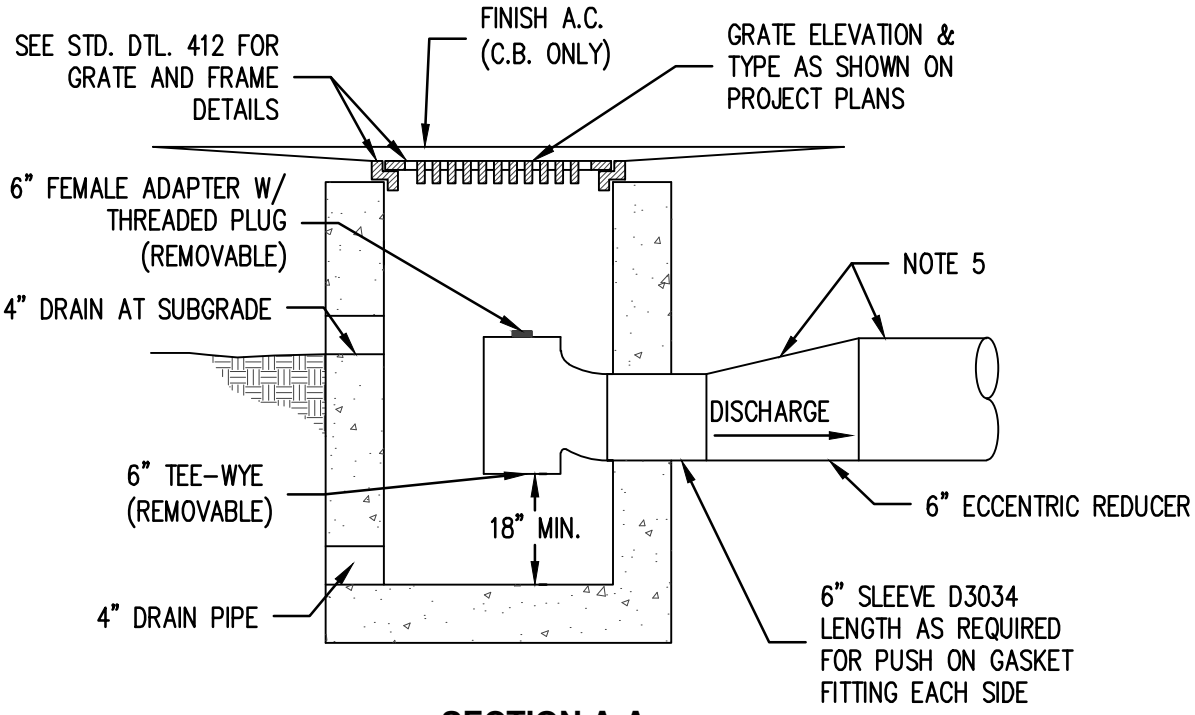


TYPE 1 & TYPE 2 CATCH BASIN FRAME

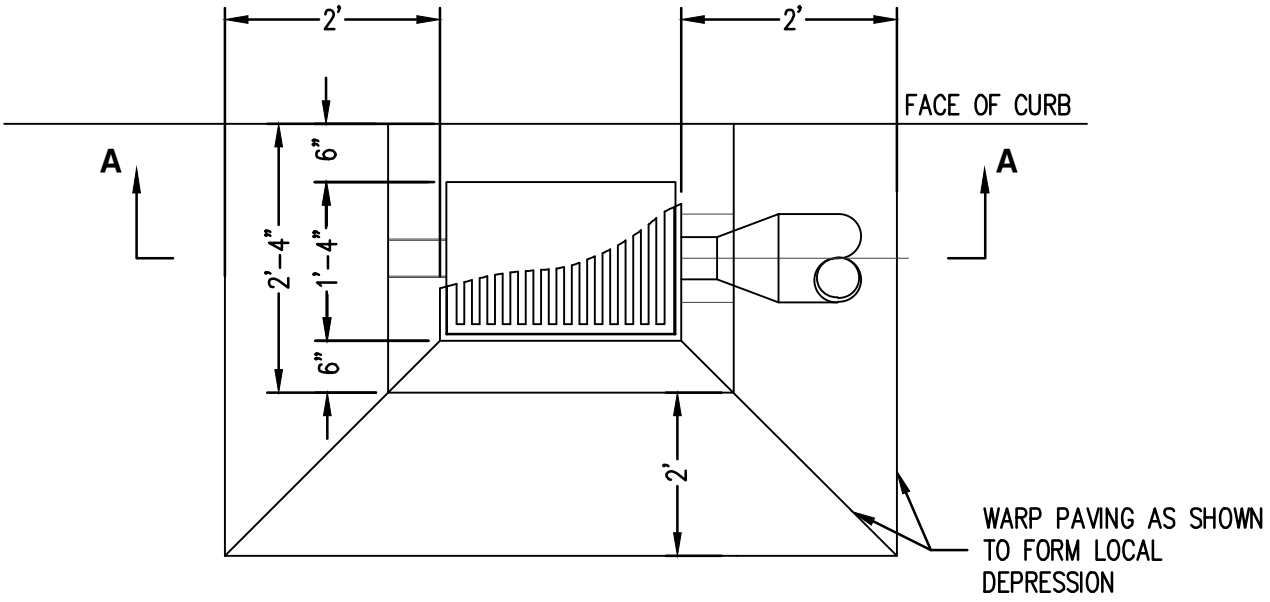
NOTES:

1. ALL CASTINGS SHALL CONFORM TO ASTM A 48 (AASHTO 105) FOR GRAY IRON CASTINGS, CLASS 30, OR (AASHTO M 192K CLASS 70) FOR CAST STEEL.
2. ROUNDS, FILLETS, TAPERS AND OTHER MINOR MODIFICATIONS TO THE DIMENSIONS SHOWN MAY BE MADE TO CONFORM TO COMMON SHOP PRACTICES.
3. 3/8" CROSS BARS SHALL BE FLUSH WITH THE TOP OF GRATE SURFACE AND MAY BE FILLET WELDED, RESISTANCE WELDED OR ELECTROFORGED TO BEARING BARS.
4. HOT DIP GALVANIZE AFTER FABRICATION.
5. CAST IRON GRATE AND FRAME FROM ODOT QUALIFIED PRODUCTS LIST MAY BE USED WITH DIRECTOR APPROVAL.

TYPE 1 CATCH BASIN (RETROFIT ONLY) 410



SECTION A-A



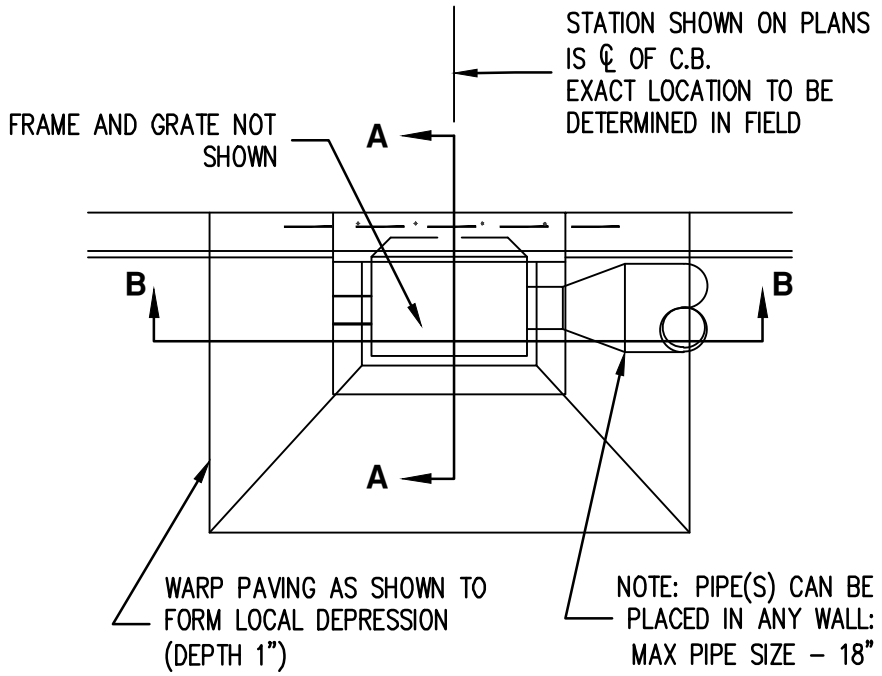
PLAN

NOTES:

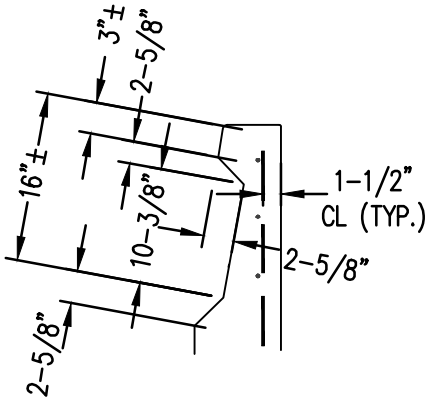
1. THIS DETAIL TO BE USED ONLY FOR RETROFIT OR REPLACEMENT UPON OF EXISTING TYPE 1 CATCH BASINS ONLY.
2. PIPE(S) CAN BE PLACED IN ANY WALL
3. ALL CONCRETE TO BE 3300 P.S.I.
4. 4" DRAINS TO BE P.V.C. PIPE.
5. SEE STD. DTL. 409 FOR C.B. FRAME & GRATES.
6. INSTALL ECCENTRIC REDUCER FROM 6" TEE-WYE TO STORM DRAIN PIPE. FOR STORM DRAIN PIPE SIZE, LOCATION, AND INVERT ELEVATION SEE PROJECT PLANS.

ISSUED: 05/04/2023	CITY OF KEIZER | Public Works Department STANDARD DETAILS *STORMWATER MANAGEMENT*
REVISED:_____	
DRAWING NOT TO SCALE	

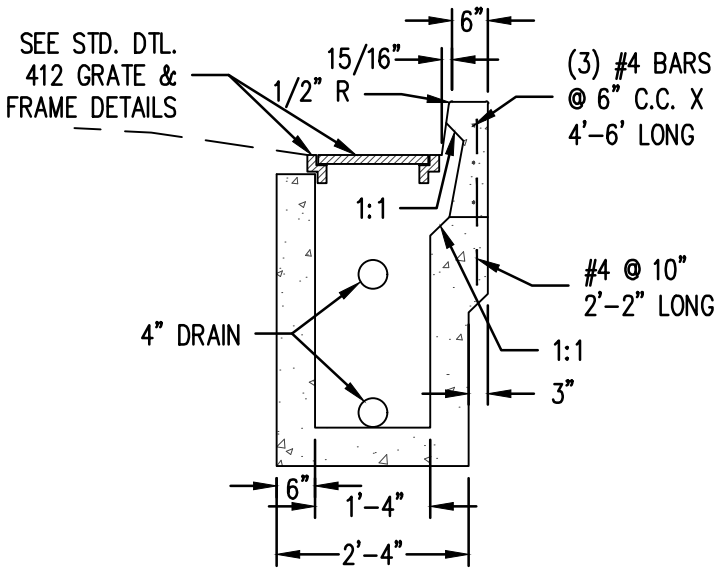
TYPE 2 CATCH BASIN (RETROFIT ONLY)



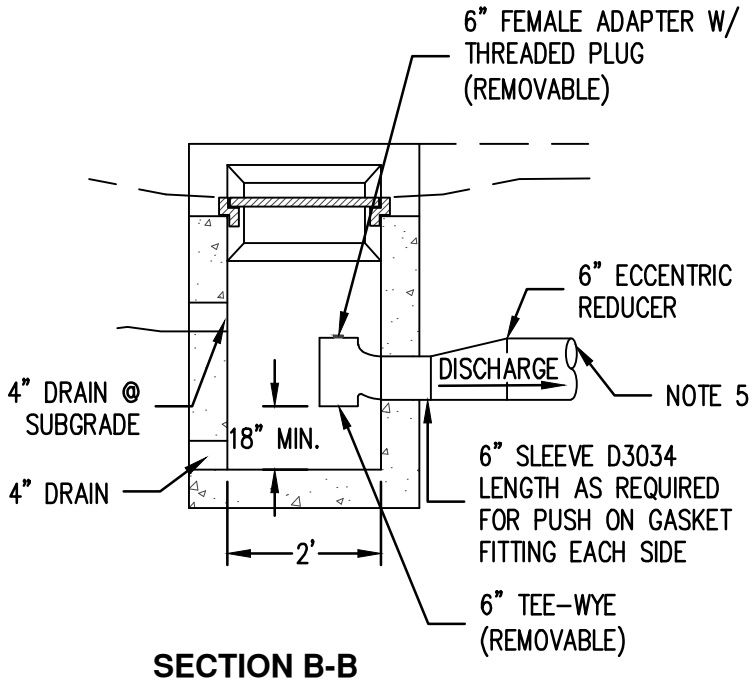
PLAN



CURB OPENING DETAIL



SECTION A-A



SECTION B-B

NOTES:

1. THIS DETAIL TO BE USED ONLY FOR RETROFIT OR REPLACEMENT UPON APPROVAL BY THE DIRECTOR.
2. ALL CONCRETE SHALL BE CLASS 3300 PSI.
3. DRAINS SHALL BE 4-INCH P.V.C. PIPE.
4. FOR OUTLET PIPE SIZE, LOCATION, AND INVERT ELEVATION SEE PROJECT PLANS.
5. SEE STD. DTL. 412 FOR C.B. FRAME & GRATES.
6. INSTALL ECCENTRIC REDUCER FROM 6" TEE-WYE TO STORM DRAIN PIPE. FOR PIPE SIZE, LOCATION, AND INVERT ELEVATION SEE PROJECT PLANS.

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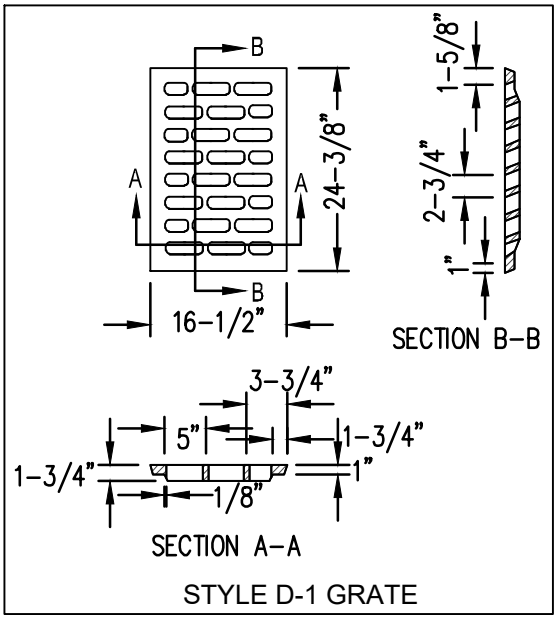
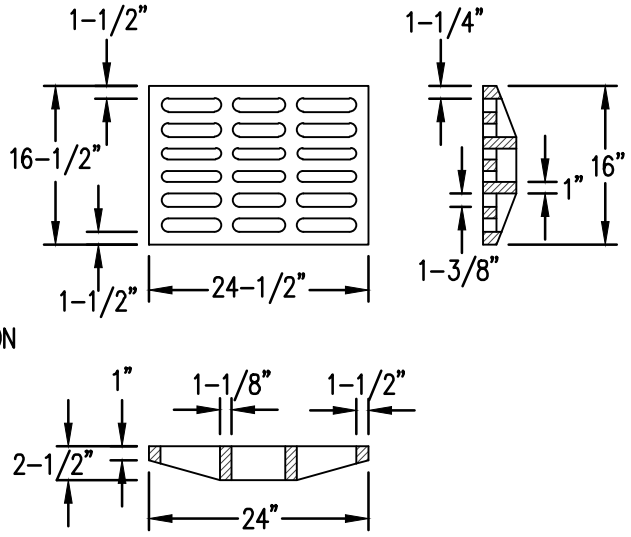
DRAWING NOT TO SCALE	



ONLY TO BE USED IN CASES PRE-AUTHORIZED BY THE CITY OF KEIZER PUBLIC WORKS DEPARTMENT.

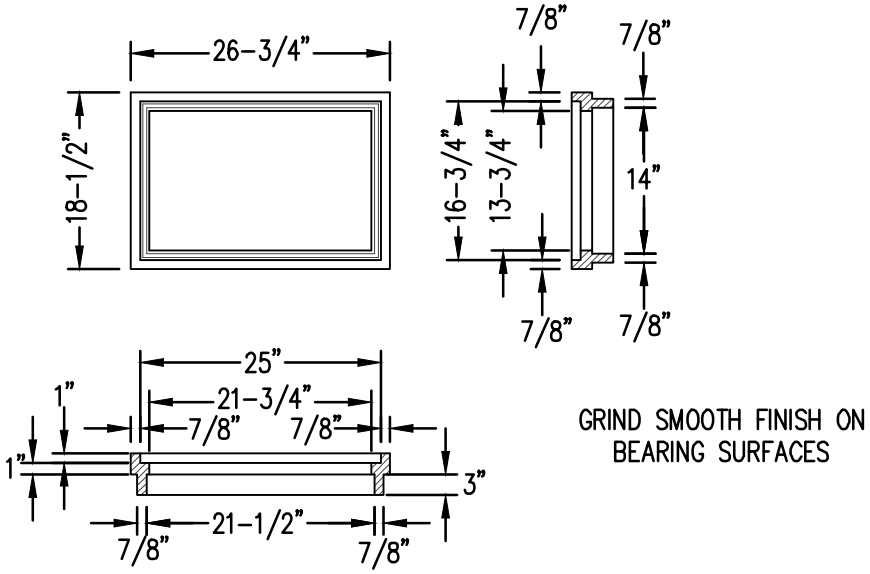
DIRECTIONAL FLOW GRATE



TYPE A GRATE

1-3/8" CLEAR SPACING

CAST IRON / CAST STEEL GRATES



GRIND SMOOTH FINISH ON BEARING SURFACES

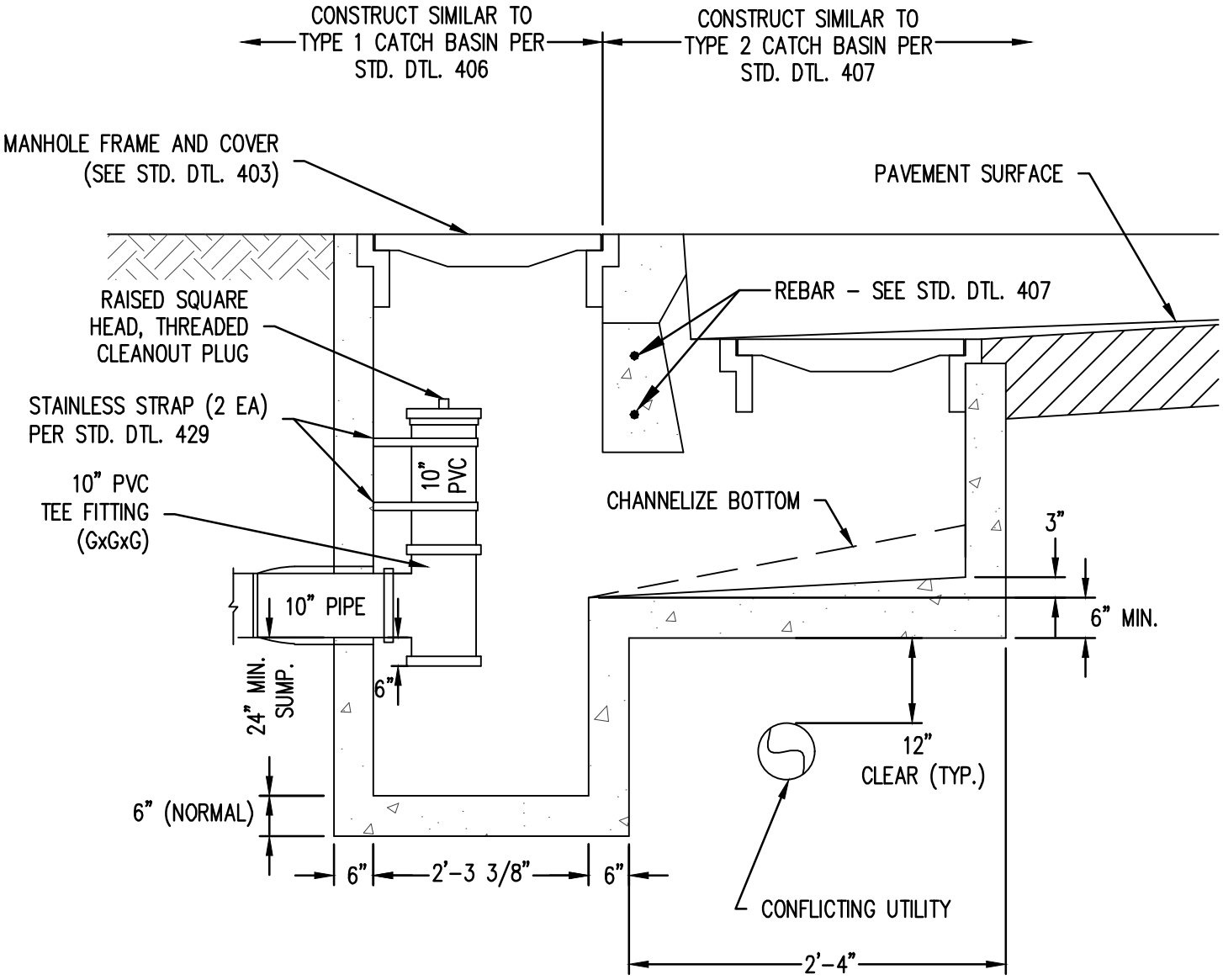
CAST IRON / CAST STEEL GRATE FRAMES

NOTES:

1. ALL CASTINGS SHALL CONFORM TO ASTM A 48 (AASHTO M 105) FOR GRAY IRON CASTINGS. CLASS 30, OR (AASHTO M 192K CLASS 70) FOR CAST STEEL.
2. ROUNDS, FILLETS, TAPERS AND OTHER MINOR MODIFICATIONS TO THE DIMENSIONS SHOWN FOR CASTINGS MAY BE MADE TO CONFORM TO COMMON SHOP PRACTICES.

DOUBLE CATCH BASIN FOR UTILITY CONFLICTS

413



NOTES:

1. SEE PLANS FOR PIPE LOCATION AND INVERTS.
2. ALL CONCRETE SHALL BE CLASS 3000 PSI AT 28 DAY STRENGTH.
3. GROUT PIPE CONNECTIONS SMOOTH AT STRUCTURE INTERIOR.

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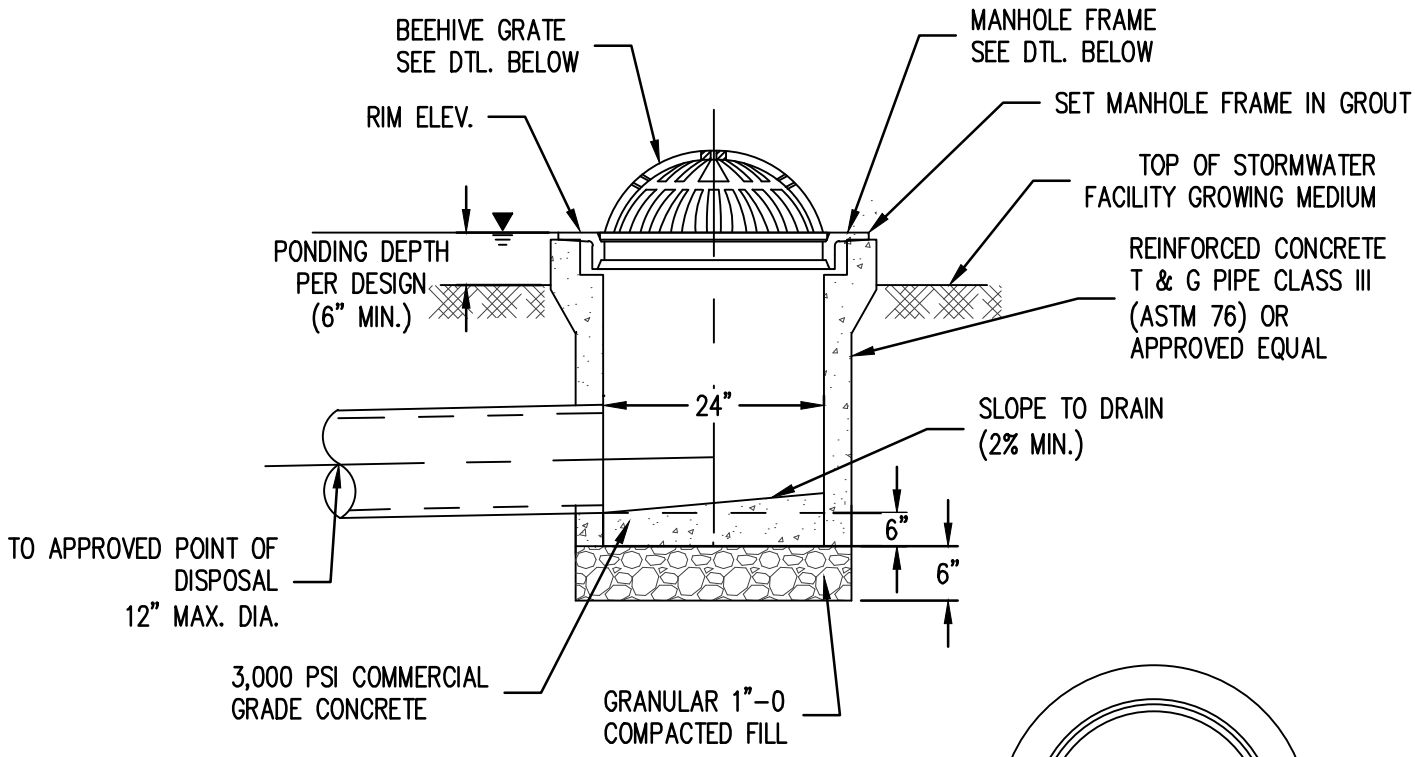
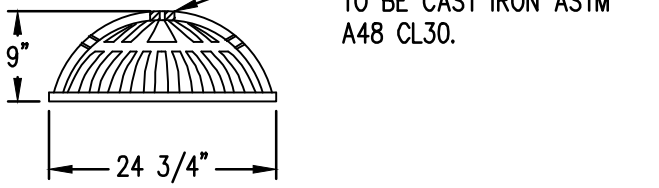
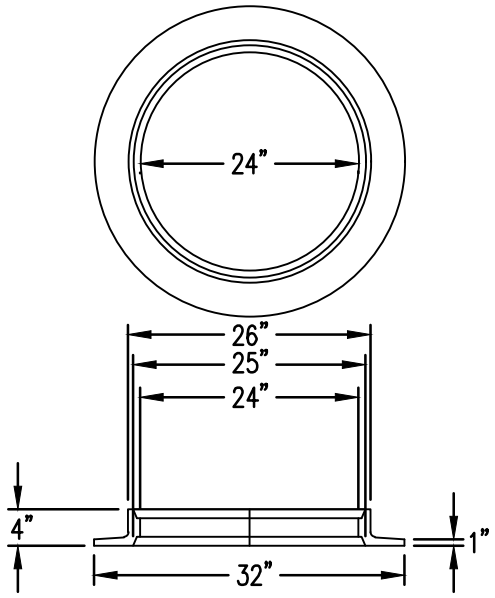


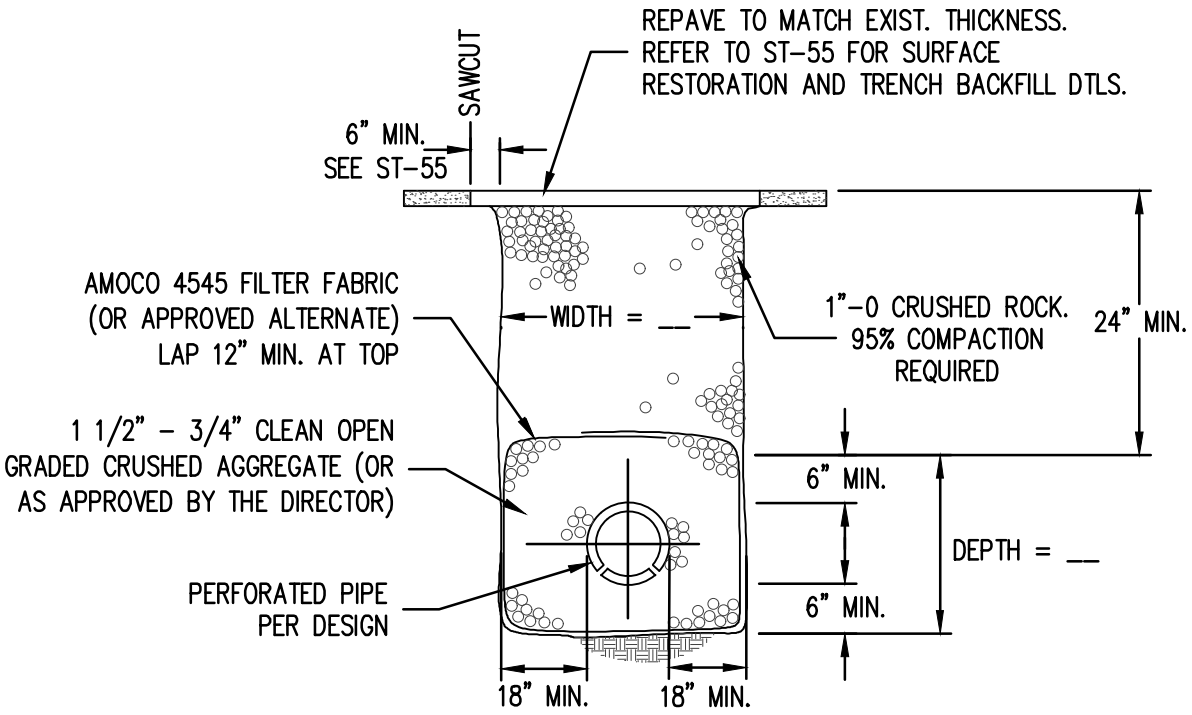


BEEHIVE GRATE



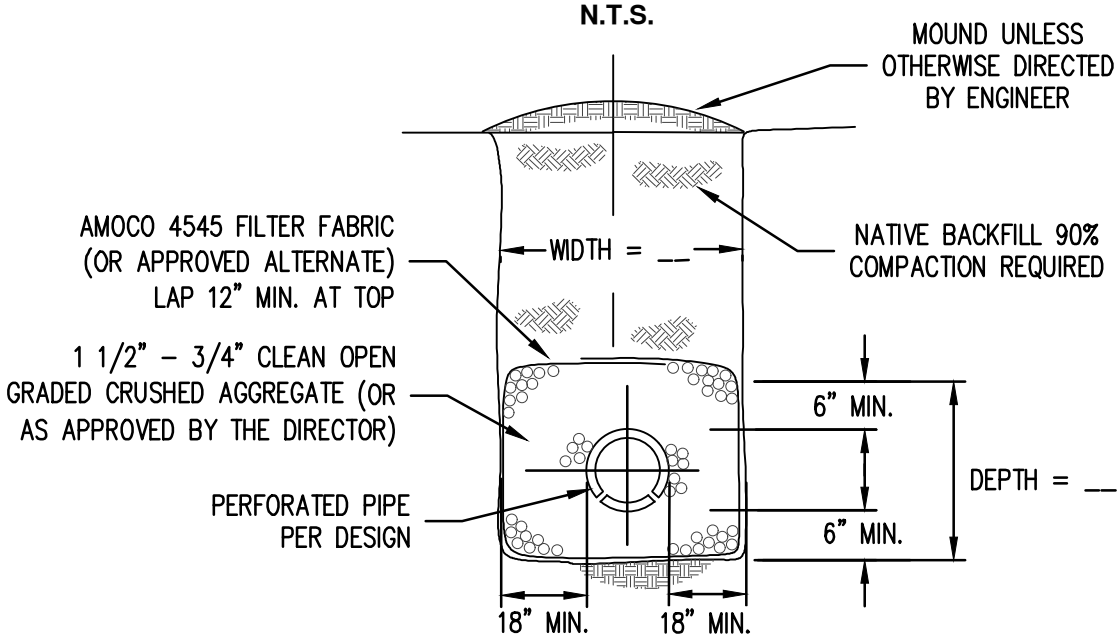
24"x4" REVERSIBLE MANHOLE FRAME

NOTES:
1. GROUT PIPE CONNECTIONS JOINTS SMOOTH AT STRUCTURE INTERIOR.
2. 5' MAX. DEPTH RIM TO BOTTOM OF STRUCTURE.
3. WHERE HIGH GROUNDWATER IS ENCOUNTERED, IT MAY BE NECESSARY TO ANCHOR THE BASE OF THE STRUCTURE WITH DOWELS AND ADDITIONAL CONCRETE BALLAST AS DETERMINED BY DESIGN ENGINEER.



PAVED AREA DETAIL

N.T.S.



NON-PAVED AREA DETAIL

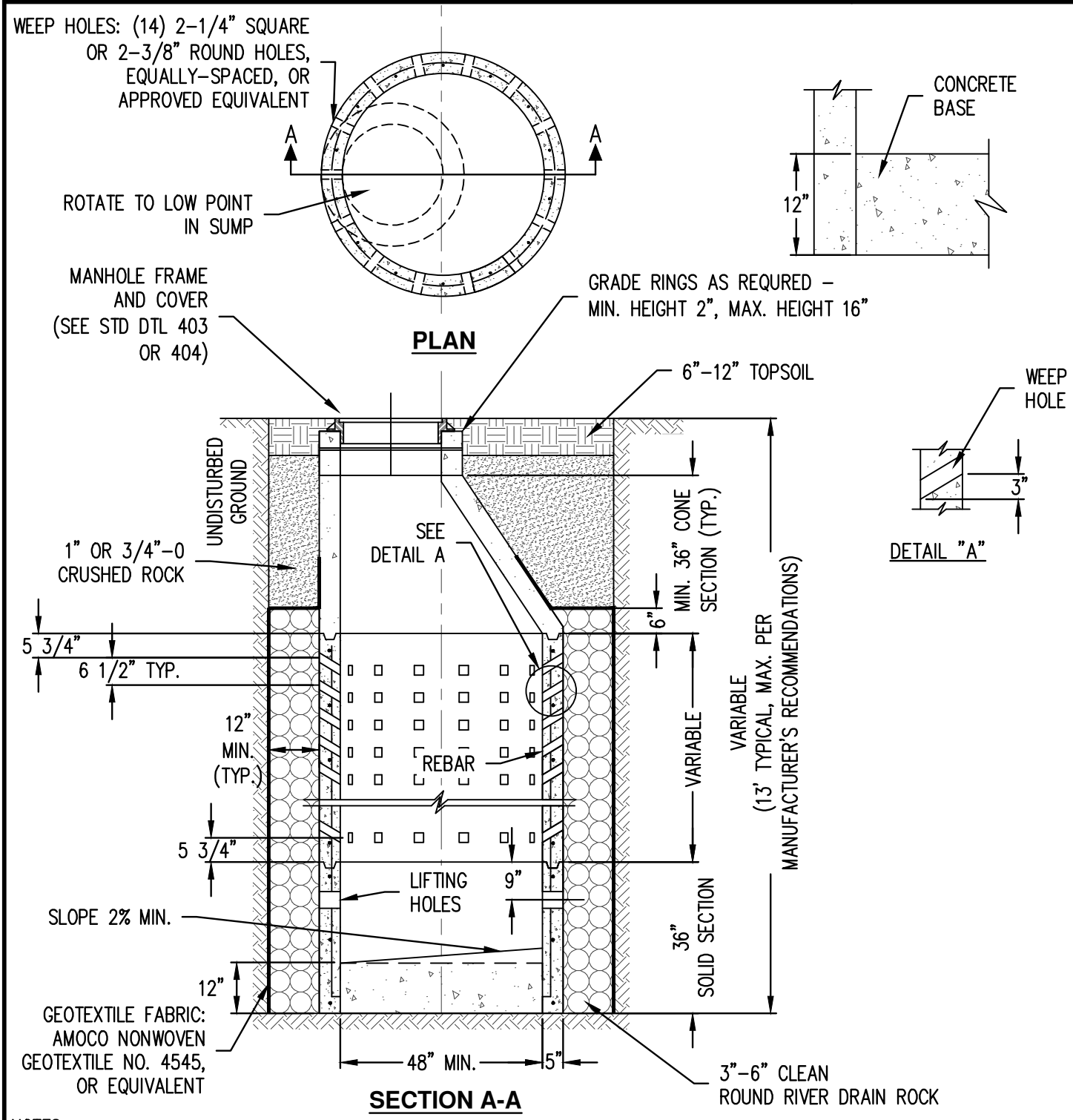
N.T.S.

NOTES:

1. THE PERFORATED PIPE SHALL BE ASTM D3034 PVC MATERIAL. DRILL TWO ROWS OF 1/2" DIA. HOLES, 12" ON CENTER, 60° APART ALONG PIPE, AND PLACE HOLES FACING TRENCH BOTTOM.
2. WIDTH AND DEPTH DIMENSIONS TO BE PROVIDED BY DESIGN ENGINEER.
3. FOR PUBLIC INSTALLATION, MANHOLE STRUCTURE REQUIRED AT EACH END OF HORIZONTAL DRYWELL FOR ACCESS AND MAINTENANCE.

VERTICAL DRYWELL MANHOLE

416



NOTES:

1. STRUCTURE MUST BE APPROVED BY THE CITY AS AN UNDERGROUND INJECTION CONTROL DEVICE.
2. ALL PRECAST SECTIONS SHALL CONFORM TO REQUIREMENTS OF ASTM C478.
3. NOT TO BE PLACED IN STREETS OR PAVED AREAS UNLESS APPROVED BY THE DIRECTOR.
4. DESIGN ENGINEER TO DETERMINE TIME OF TRAVEL, GROUNDWATER SEPARATION, AND THICKNESS OF SURROUNDING DRAIN ROCK.
5. GROUT PIPE CONNECTION JOINTS SMOOTH AT STRUCTURE INTERIOR.
6. ALL NON-STORM PIPES AND UTILITIES TO BE INSTALLED OUTSIDE OF DRAIN ROCK.

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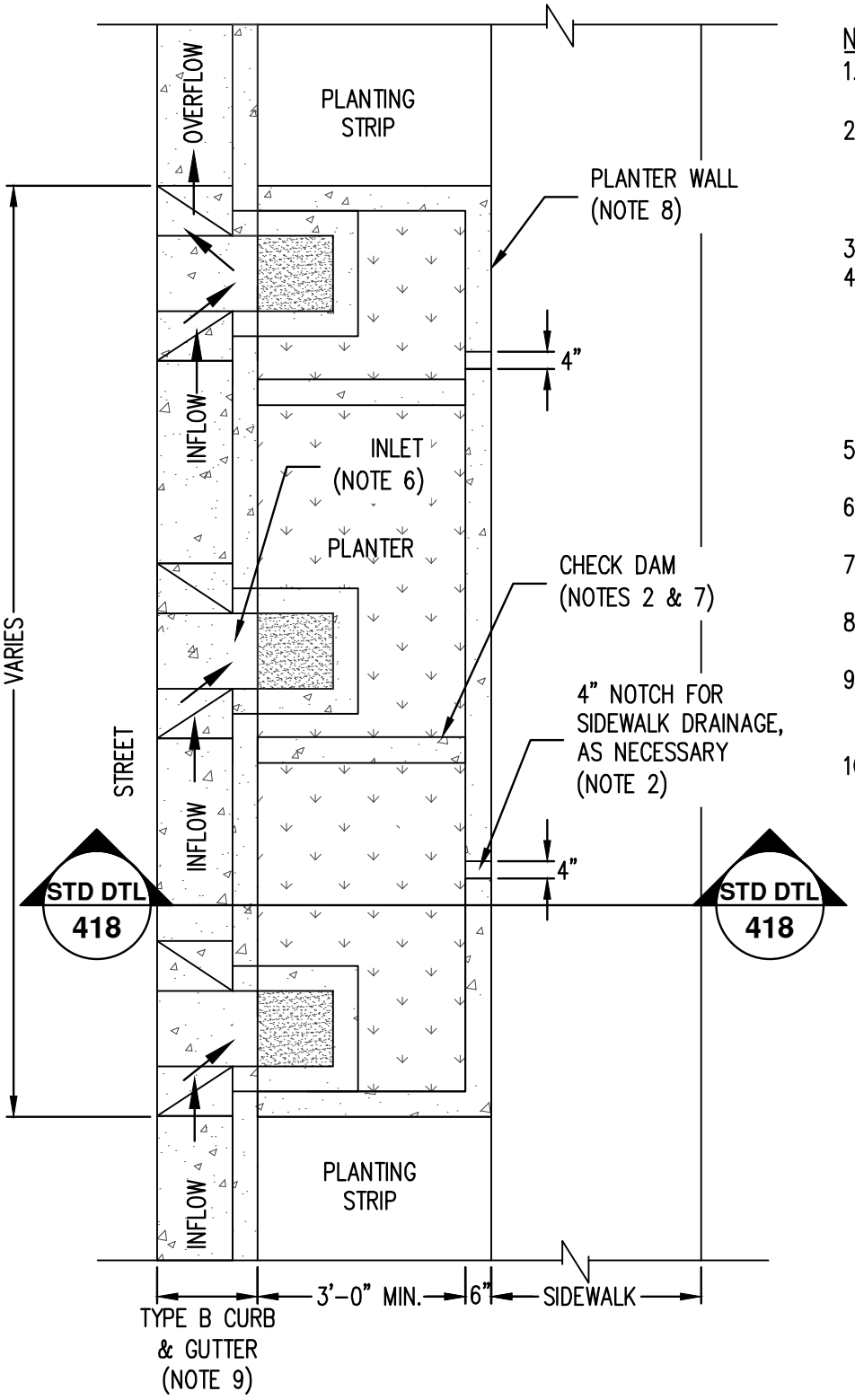
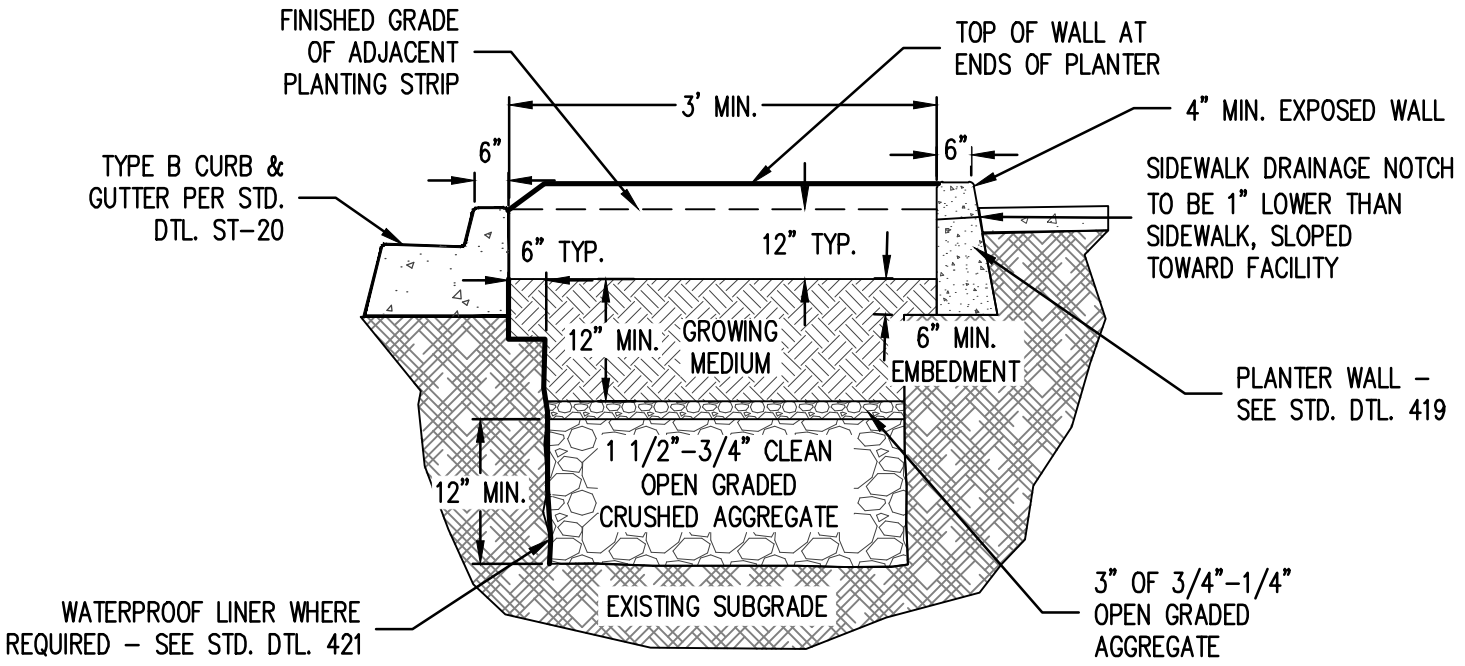


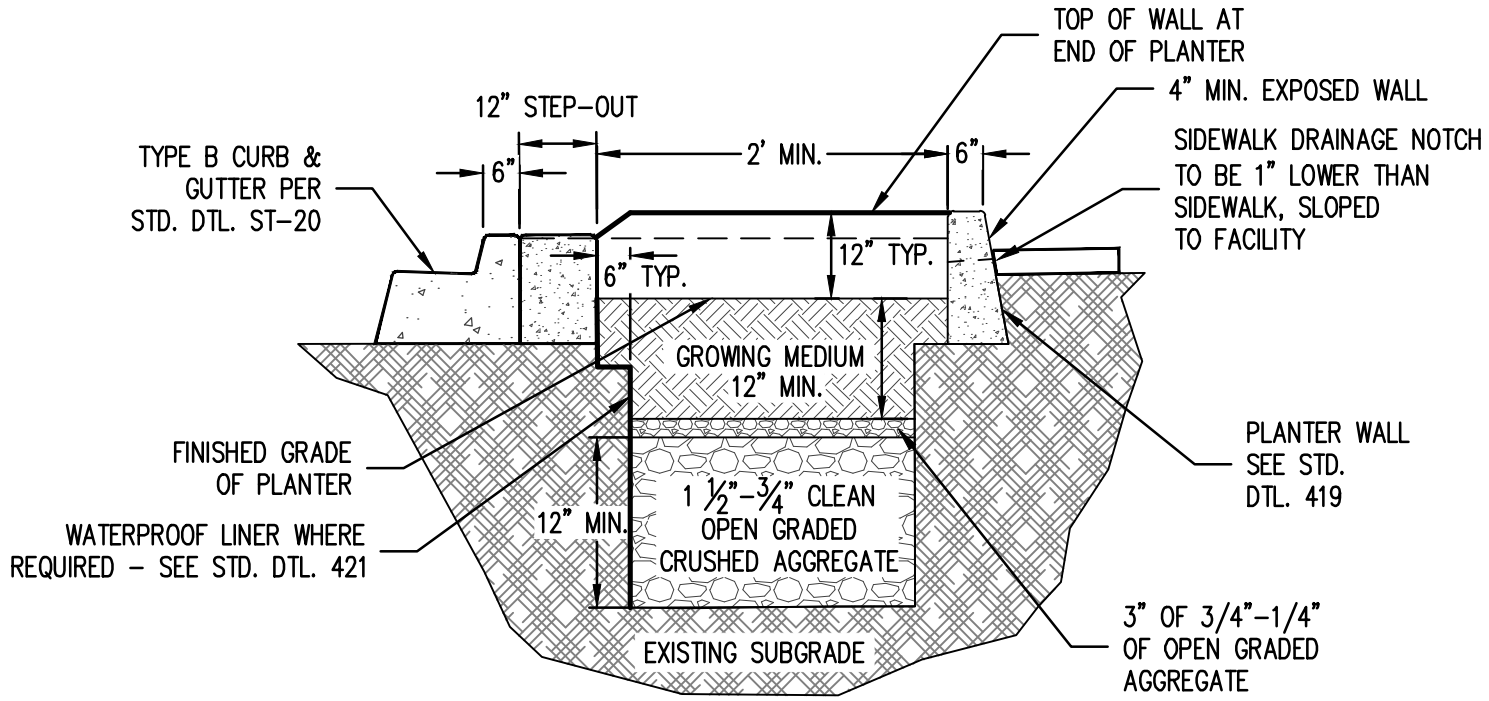
PLAN VIEW

NOTES:

1. STREET GRADE MAY REQUIRE "STEPPING" BETWEEN PLANTER SECTIONS.
2. SIDEWALK ELEV. SHALL BE SET ABOVE CHECK DAM AND INLET/OUTLET ELEVS. TO ALLOW OVERFLOW TO DRAIN TO STREET AND NOT SIDEWALK.
3. MIN. INTERIOR PLANTER WIDTH IS 3 FEET.
4. PARALLEL UTILITY LINES LOCATED WITHIN FACILITY MUST BE SLEEVED OR RELOCATED. PROPOSED UTILITY LINES SHALL BE LOCATED OUTSIDE OF STORMWATER FACILITY UNLESS APPROVED BY THE DIRECTOR.
5. AREA AND DEPTH OF FACILITY ARE PER DESIGN ENGINEER.
6. FOR INLET PRE-TREATMENT & ENERGY DISSIPATOR SEE STD. DTL. 425
7. FOR CHECK DAM SEE STD. DTLS. 420 OR 424.
8. FOR PLANTER WALL DTLS. SEE STD. DTL. 419.
9. USE TYPE B CURB & GUTTER ALONG THE LENGTH OF THE PLANTER. SEE STD. DTL. ST-20.
10. STREET TREES SHOULD NOT BE INSTALLED IN PLANTER, UNLESS APPROVED BY THE DIRECTOR.

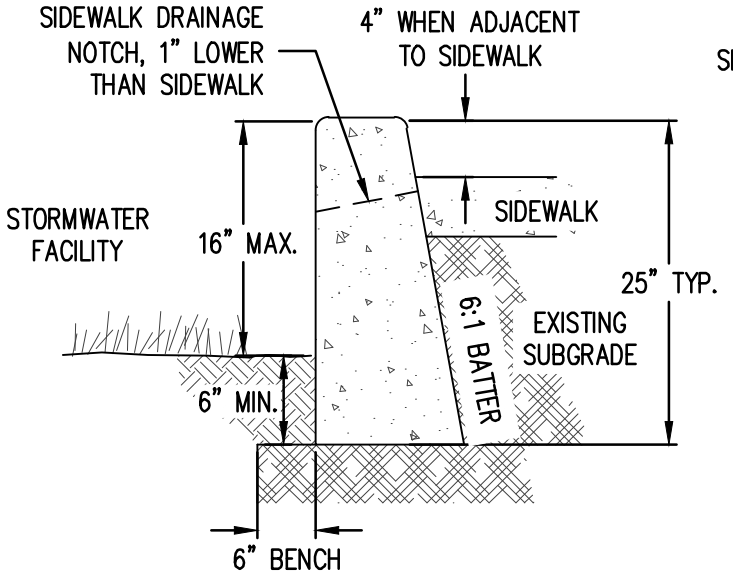


SECTION A-A
PLANTER WITHOUT PARKING

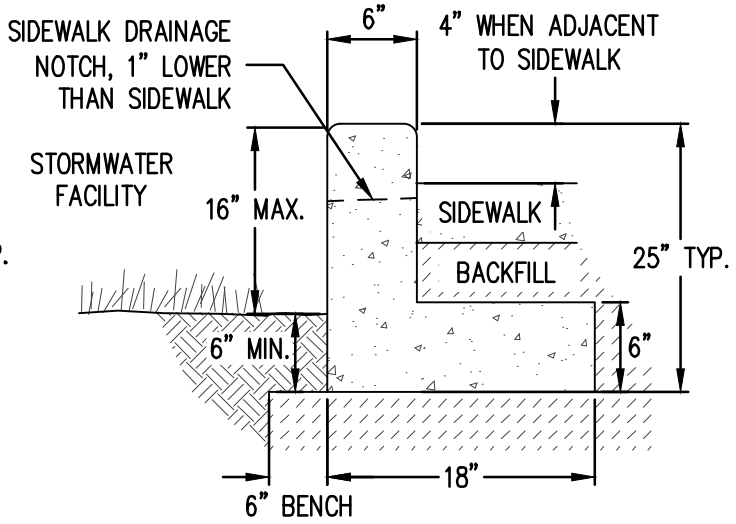


SECTION B-B
PLANTER WITH PARKING

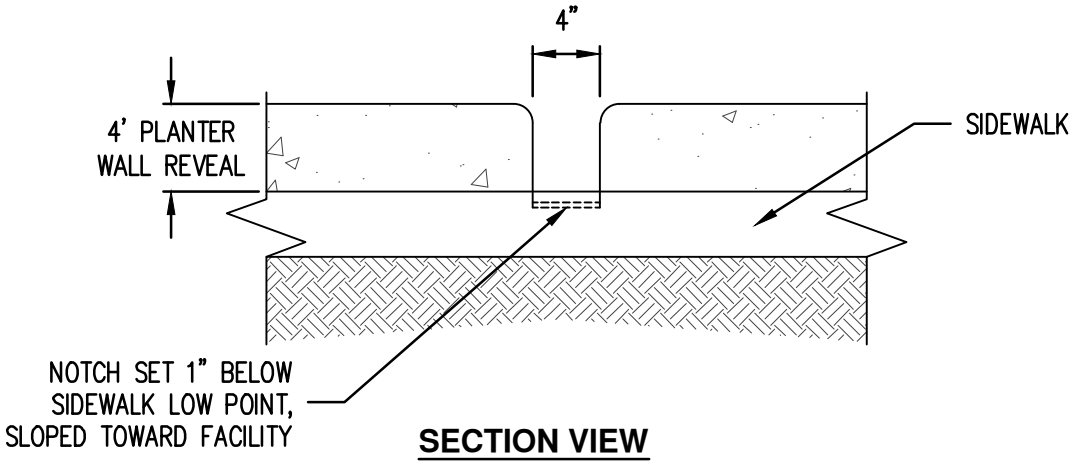
NOTES:
1. SCARIFY THE EXISTING SUBGRADE FOLLOWING THE INITIAL EXCAVATION AND BEFORE INSTALLING TOPSOIL OR ROCK.
2. AMENDED SOIL MAY BE USED IN PLACE OF GROWING MEDIUM AS APPROVED BY THE DIRECTOR.



STANDARD WALL



L-SHAPE WALL

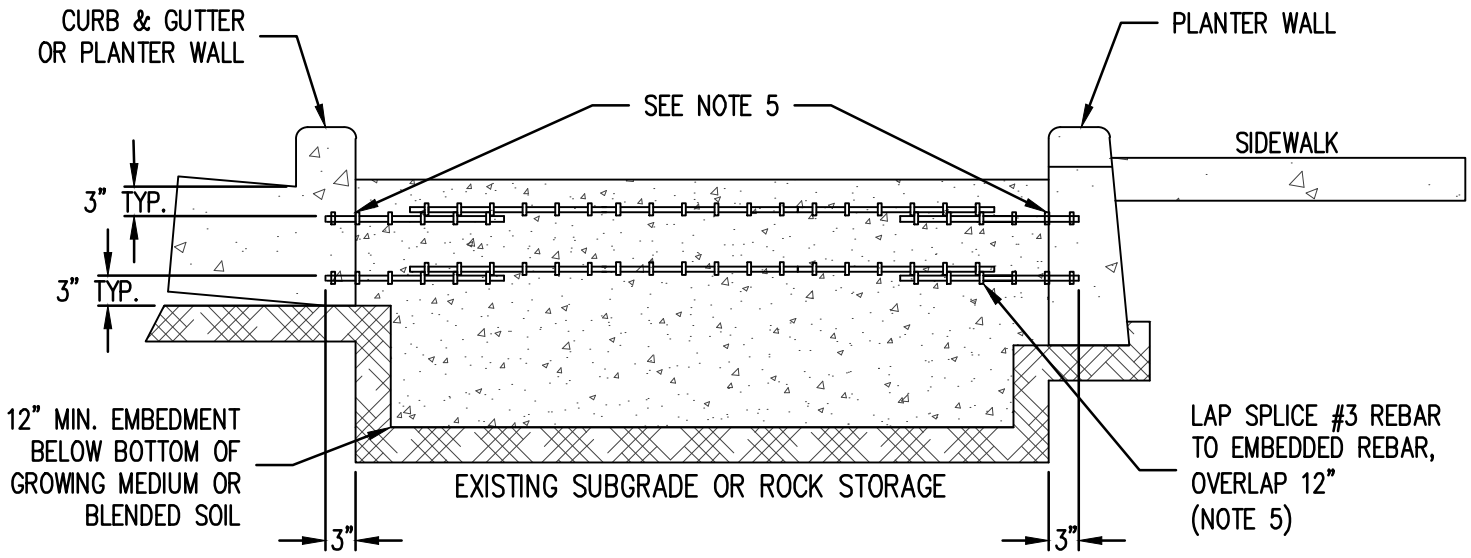


SECTION VIEW

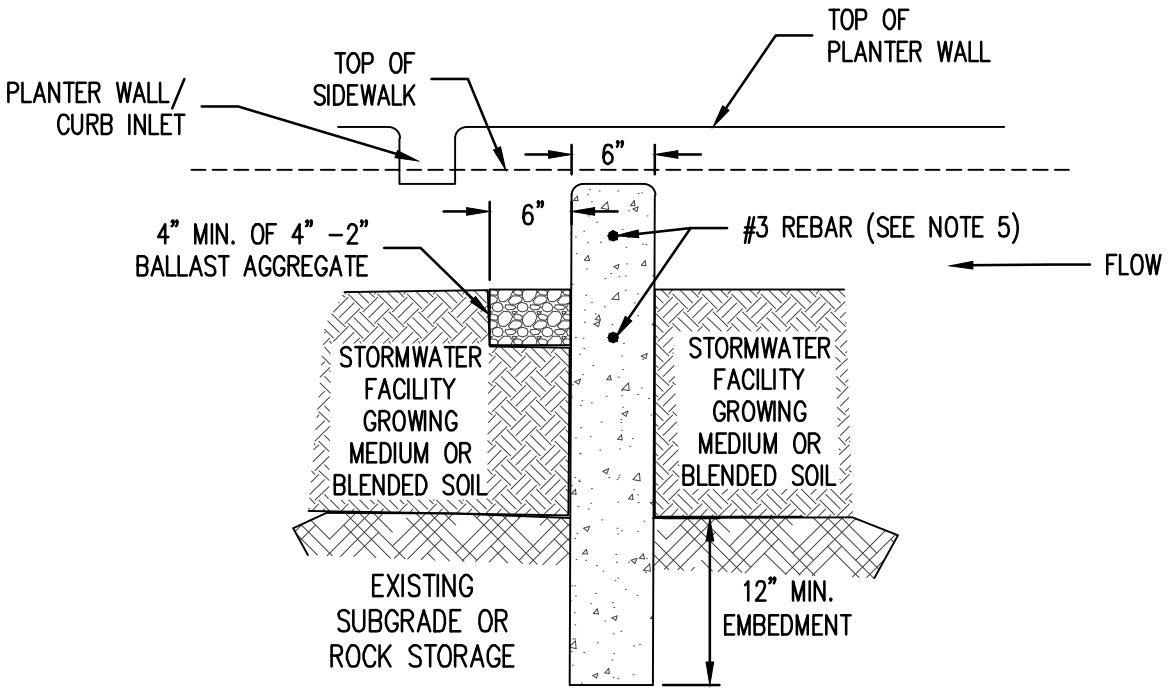
NOTES:
1. SPECIAL DESIGN CONSIDERATIONS OR STRUCTURAL REVIEW MAY BE REQUIRED FOR PLANTER WALL SPANS LONGER THAN 50 FEET REINFORCEMENT OR ADDITIONAL CONCRETE CHECK DAMS MAY BE NEEDED.
2. RETAINING WALL DESIGN WILL BE REQUIRED FOR WALLS TALLER THAN 16 INCHES.
3. USE OF THE ABOVE PLANTER WALL OPTIONS BASED ON SITE CONDITIONS.
4. BROOM FINISH ALL EXPOSED CONCRETE SURFACES.

CONCRETE CHECK DAM FOR ROW PLANTERS

420



ELEVATION



SECTION

NOTES:

1. CONCRETE CHECK DAM FOR USE IN ROW PLANTERS.
2. PROVIDE STATIONING AND DIMENSIONING FOR CHECK DAMS ON FACILITY DESIGN.
3. CHECK DAM ELEVATIONS SHALL NOT CAUSE STORMWATER TO OVERFLOW TO SIDEWALK, STREET OR NEARBY STRUCTURES.
4. PLANTER WALL SHALL EXTEND TO EXISTING SUBGRADE OR STORAGE ROCK.
5. EMBED #3 REBAR 3" INTO CURB AND PLANTER WALL.

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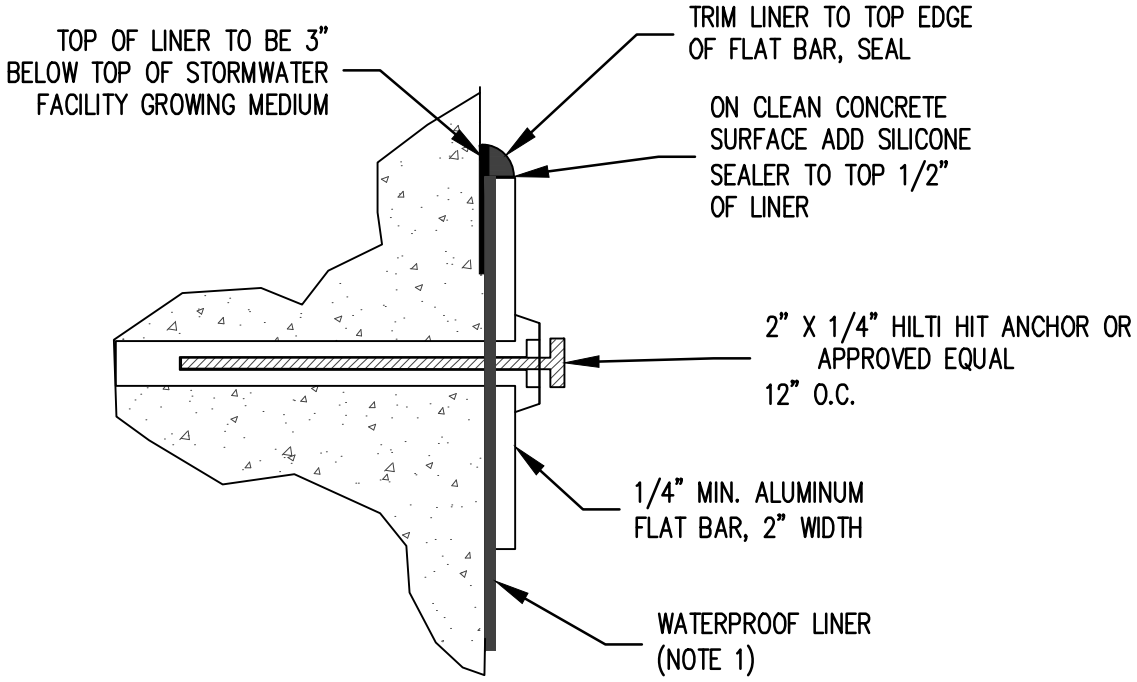
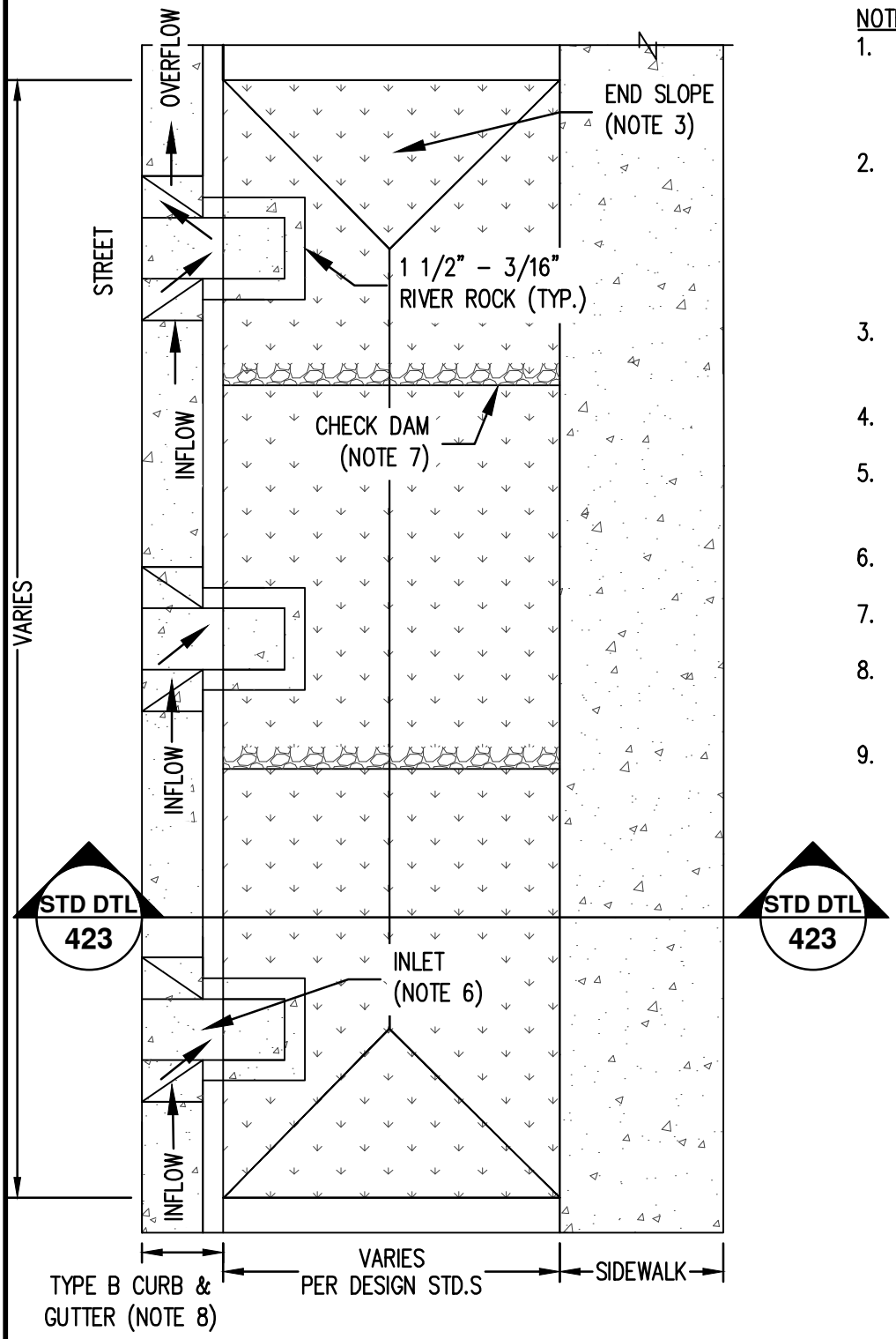


LINER ATTACHMENT

NOTES:
1. LINER MATERIALS TO BE 30 MIL. PVC, HDPE OR EQUIVALENT. LINER TO EXTEND FROM TOP OF GROWING MEDIUM TO THE BOTTOM OF EXCAVATION.
2. A MINIMUM OF 3 INCHES OF CONCRETE IS REQUIRED ON ALL SIDES OF ANCHOR ATTACHMENT.
3. SEE DESIGN AND STD. DTLS. FOR LOCATION OF LINER.

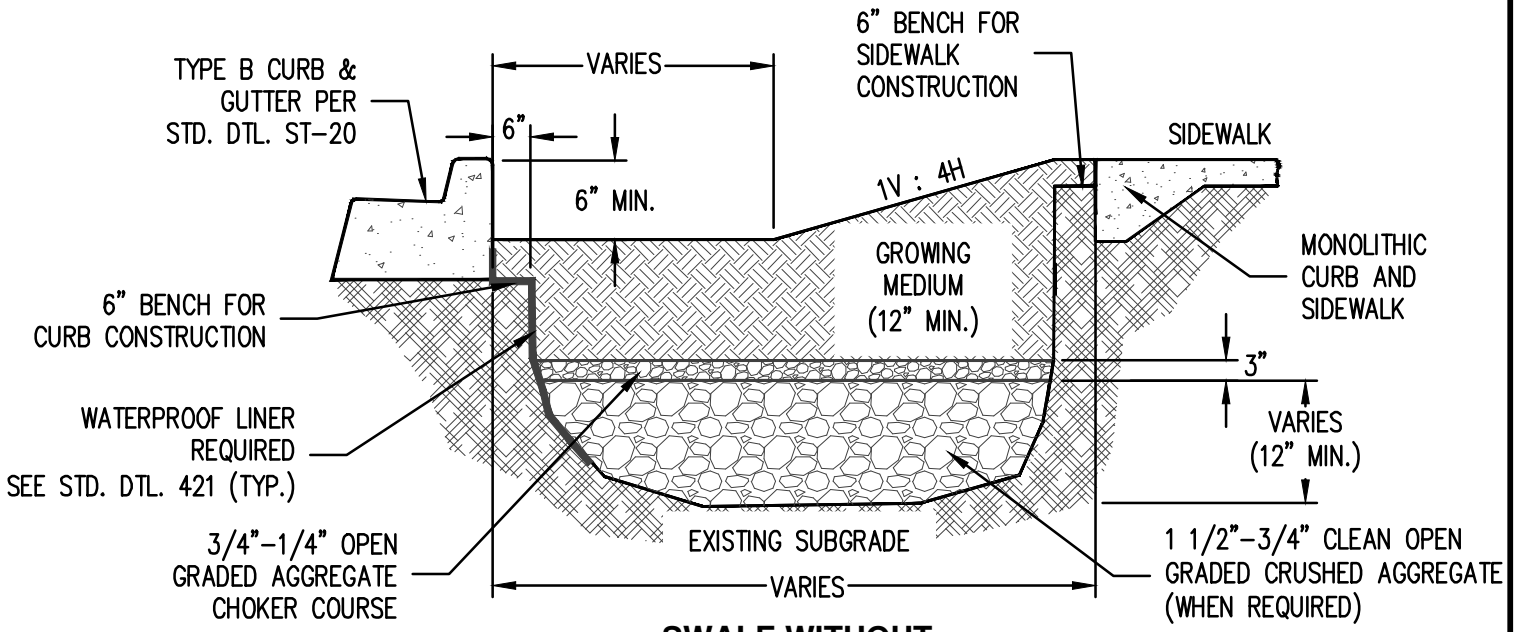
PLANTER STRIP INFILTRATION SWALE - PLAN VIEW



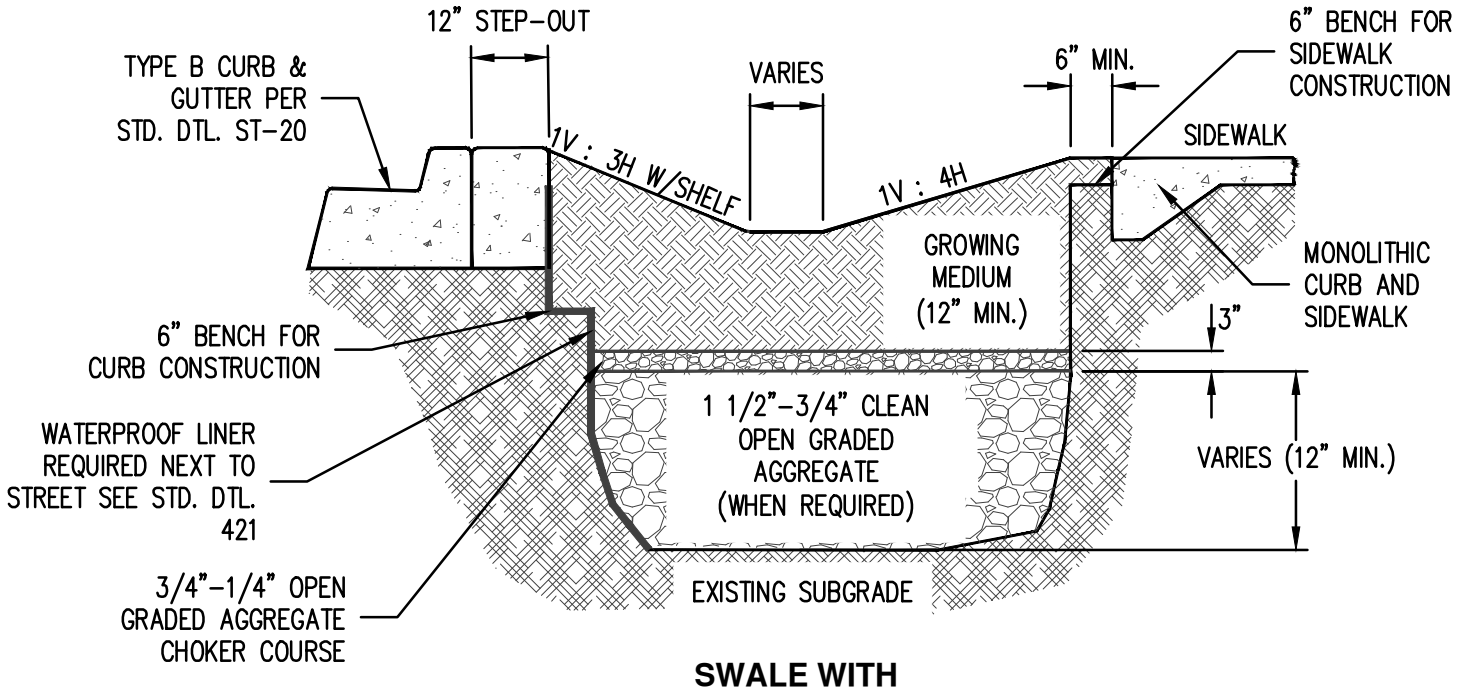
NOTES:

1. SIDEWALK SURFACE SHALL BE SET ABOVE CHECK DAM AND INLET/OUTLET. ELEVATIONS TO ENSURE OVERFLOW DRAINS TO DOWNSTREAM GUTTER.
2. PARALLEL UTILITY LINES LOCATED WITHIN FACILITY MUST BE SLEEVED OR RELOCATED. PROPOSED UTILITY LINES SHALL BE LOCATED OUTSIDE OF STORMWATER FACILITY UNLESS APPROVED BY THE DIRECTOR.
3. END SLOPES 1V:4H MAX. SEE SWALE SECTIONS ON STD. DTL. 423 FOR SIDE SLOPES.
4. LONGITUDINAL SLOPE OF SWALE SHALL MATCH STREET GRADE.
5. AREA AND DEPTH OF FACILITY ARE BASED UPON ENGINEERING DESIGN AND SITE CONSTRAINTS.
6. FOR INLET PRE-TREATMENT AND ENERGY DISSIPATOR SEE STD. DTL. 425.
7. FOR CHECK DAM SEE STD. DTLS. 420 AND 424.
8. USE TYPE B CURB AND GUTTER ALONG THE LENGTH OF THE SWALE, SEE STD. DTL. ST-20.
9. FOR SPECIAL REQUIREMENTS FOR WATER SERVICES CROSSING SWALE, SEE STD. DTL. 427.

PLANTER STRIP INFILTRATION SWALE - SECTION VIEWS



SWALE WITHOUT ON STREET PARKING



SWALE WITH ON STREET PARKING

NOTES:
1. SCARIFY THE NATIVE SOIL FOLLOWING THE INITIAL EXCAVATION AND BEFORE INSTALLING TOPSOIL OR ROCK.
2. AMENDED SOIL MAY BE USED IN PLACE OF GROWING MEDIUM AS APPROVED BY THE DIRECTOR.

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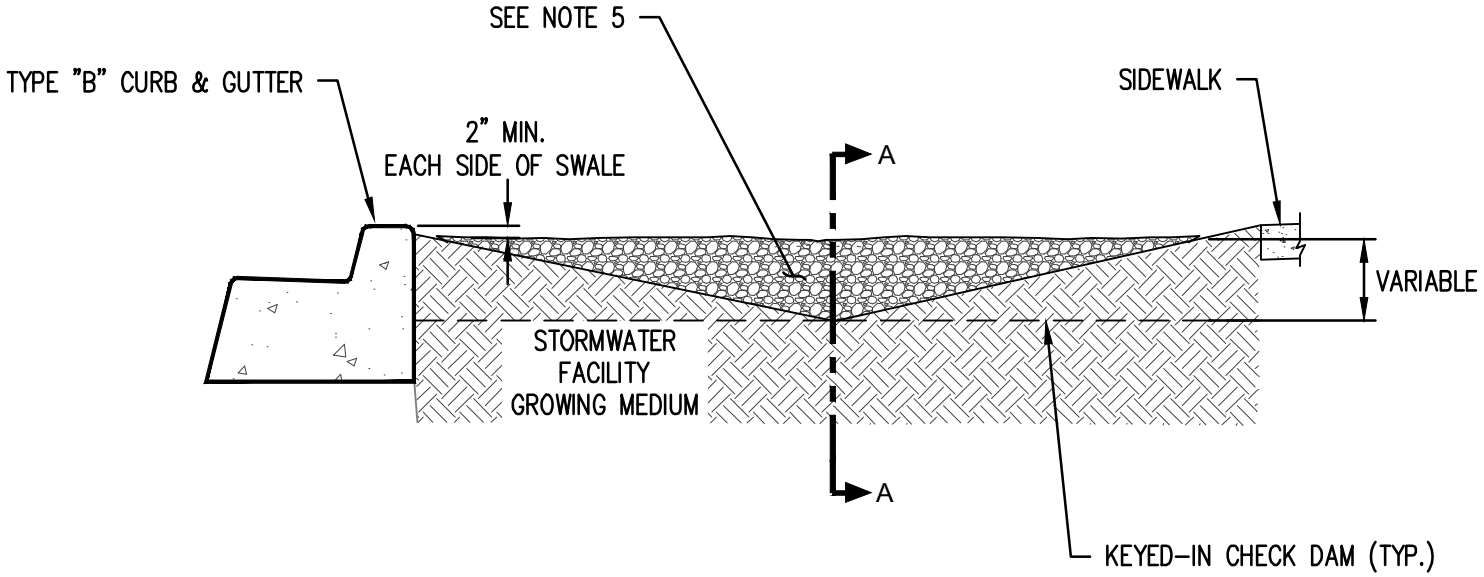
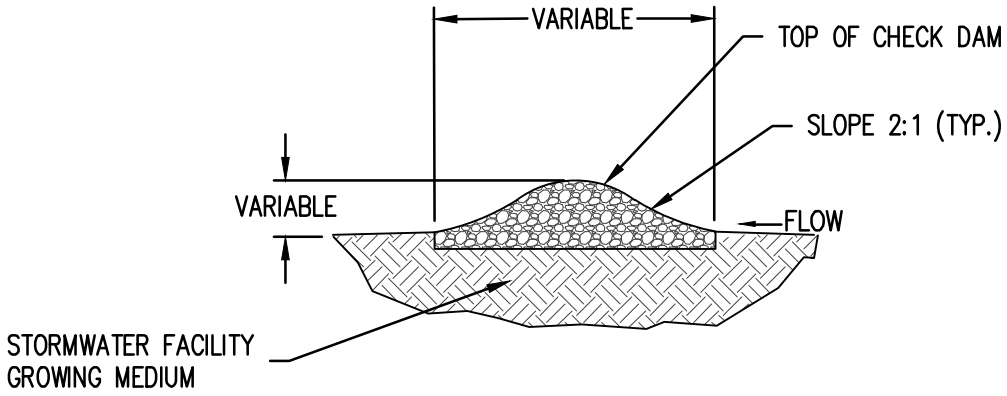
AGGREGATE CHECK DAM FOR ROW SWALES



ELEVATION



SECTION A-A

NOTES:

1. AGGREGATE CHECK DAM MAY BE USED IN SWALES WITH SIDE SLOPES.
2. CHECK DAM SPACING ELEVATION AND WIDTH AS SPECIFIED BY DESIGN ENGINEER.
3. HAND TAMP GROWING MEDIUM DIRECTLY UNDER CHECK DAM.
4. KEY CHECK DAM INTO STORMWATER FACILITY GROWING MEDIUM.
5. CHECK DAM ROCK GRADATION AS SPECIFIED BY DESIGN ENGINEER. MIN. 2"–4" BALLAST AGGREGATE AND MIN. 6" EMBEDMENT.

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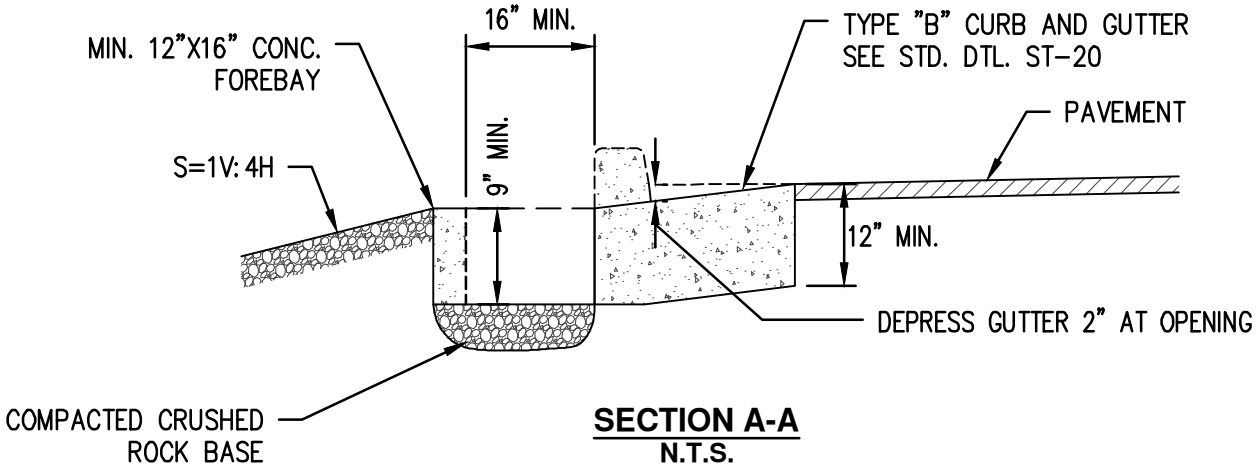
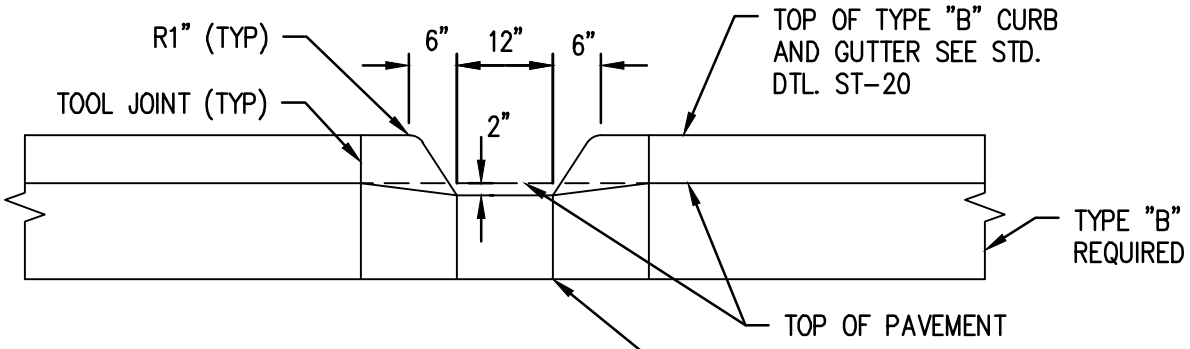
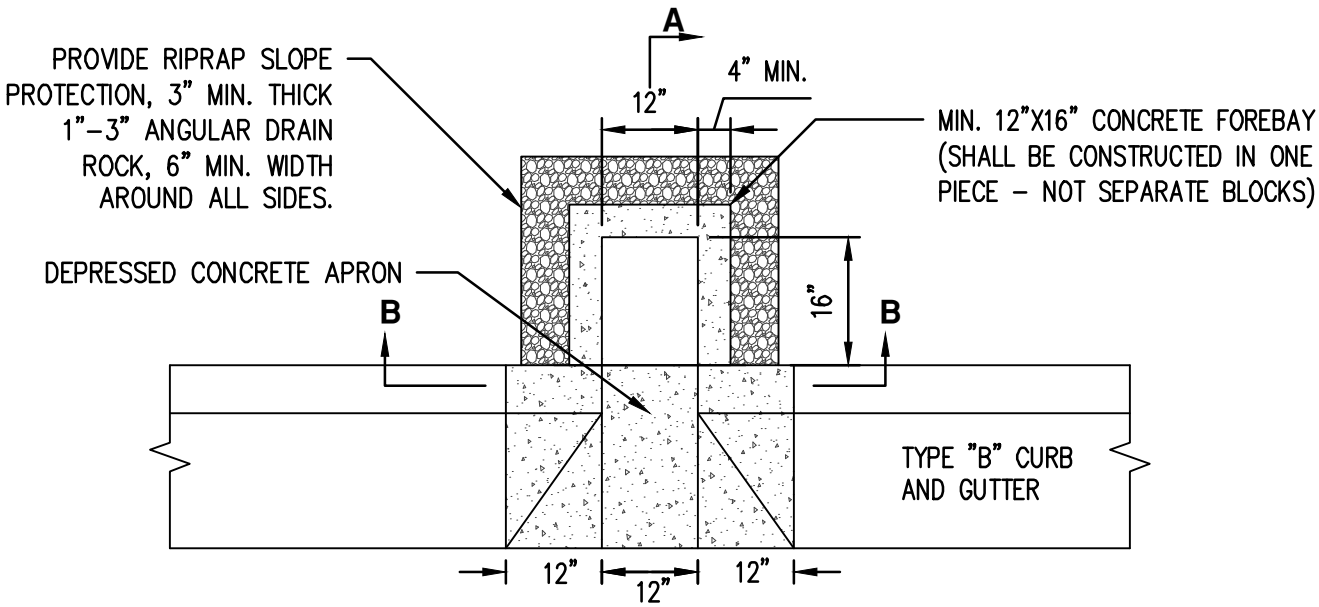


SECTION A-A
N.T.S.

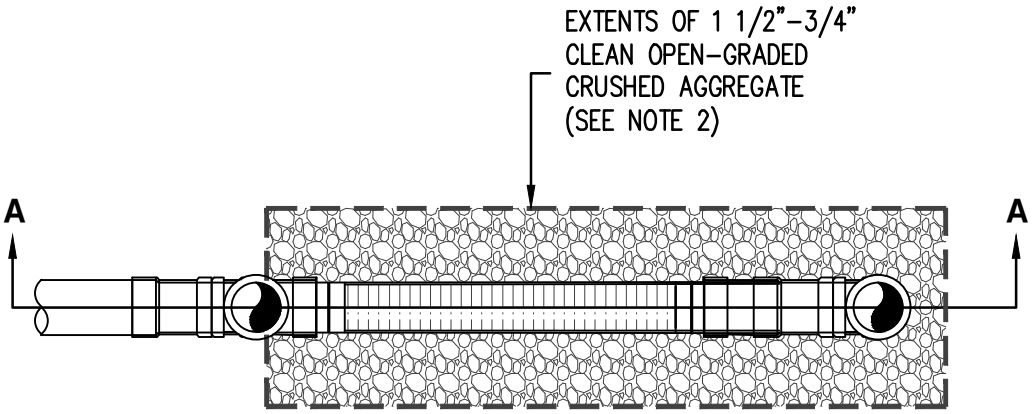


SECTION B-B
N.T.S.

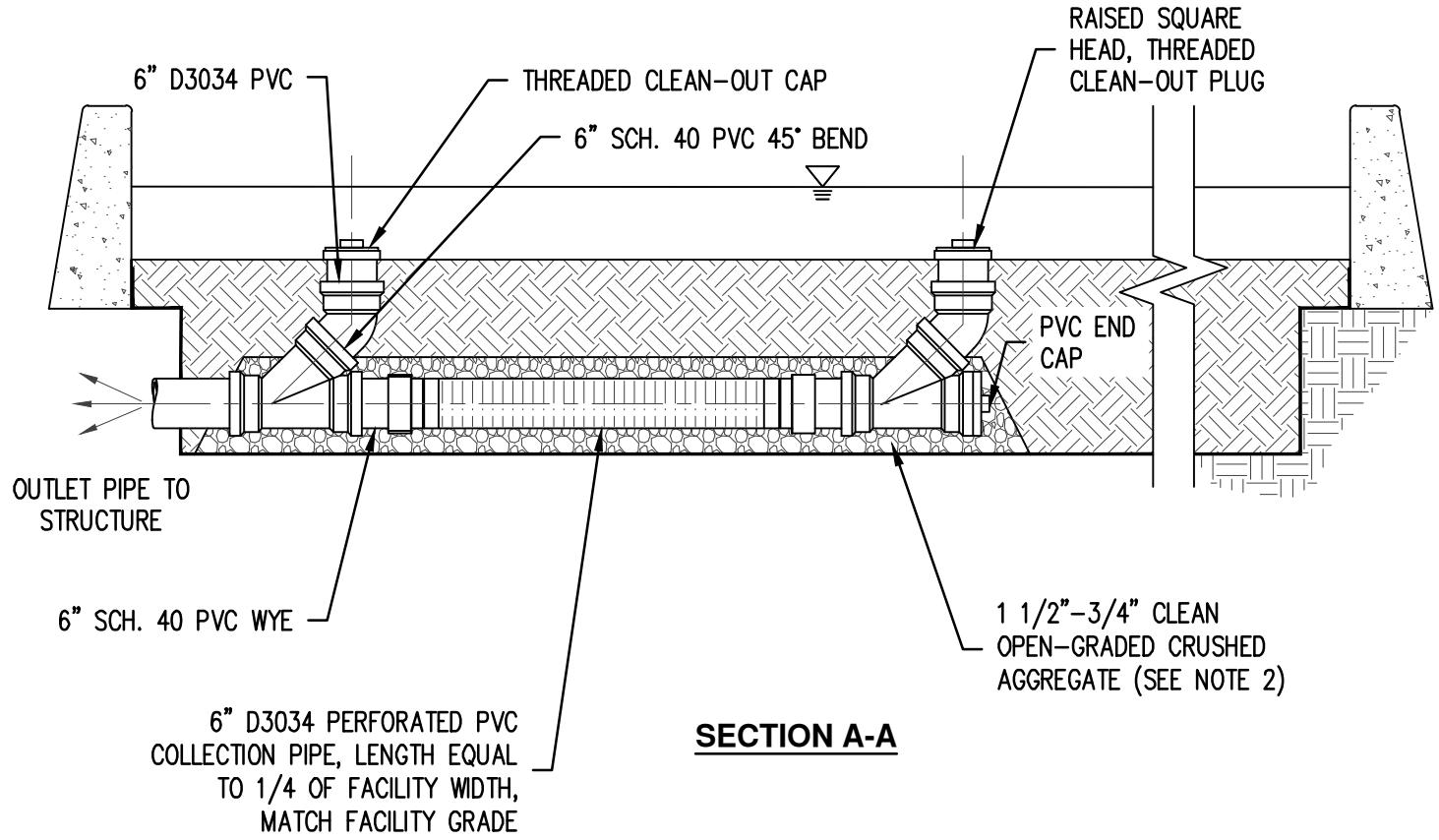


PLAN
N.T.S.

PUBLIC STORMWATER FACILITY UNDERDRAIN WITH CLEANOUT



PLAN



SECTION A-A

NOTES:

1. ALL PVC PIPES EXPOSED TO SUNLIGHT SHALL BE PAINTED WITH EARTH–COLORED EXTERIOR PAINT AS RECOMMENDED BY THE MANUFACTURED FOR ABOVEGROUND UV EXPOSURE.
2. CRUSHED AGGREGATE SHALL BE WRAPPED IN AMOCO 4545 FILTER FABIRC OR APPROVED ALTERNATIVE. LAP 12" MIN. OVER TOP.

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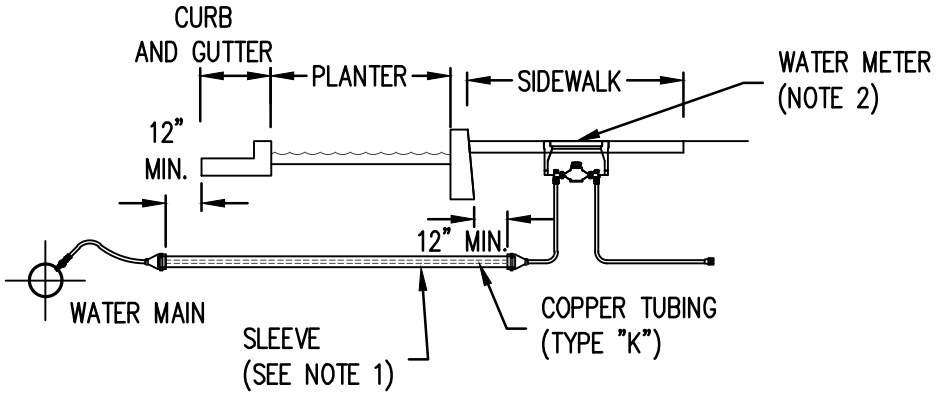
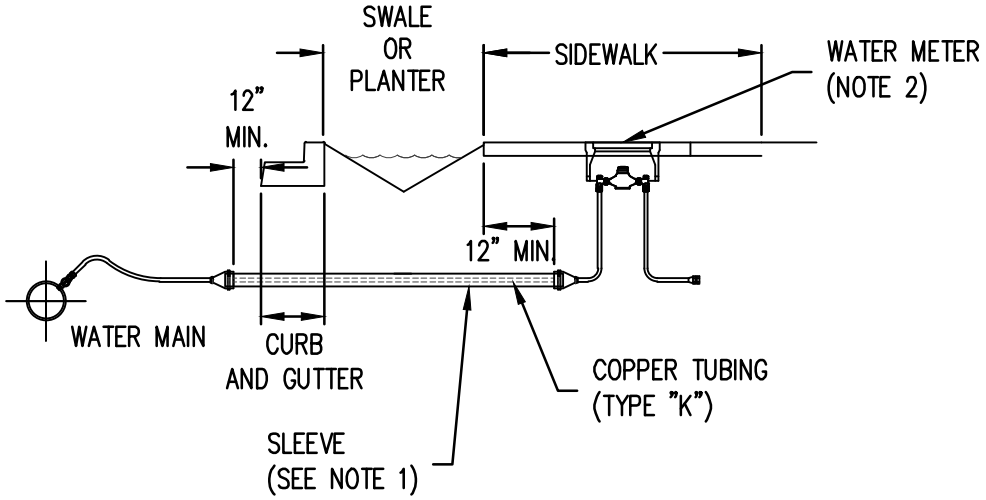
SLEEVE DETAIL FOR DOMESTIC WATER SERVICE



ROW PLANTER



ROW SWALE

NOTES:

1. TAPE, WRAP, AND SLEEVE WATER SERVICES IN 4" PVC ASTM D1785 SCHEDULE 80 WITH MOLDED PIPE SLEEVE END SEALS.
2. FOR WATER METER INSTALLATION SEE WATER STD. DTLS.

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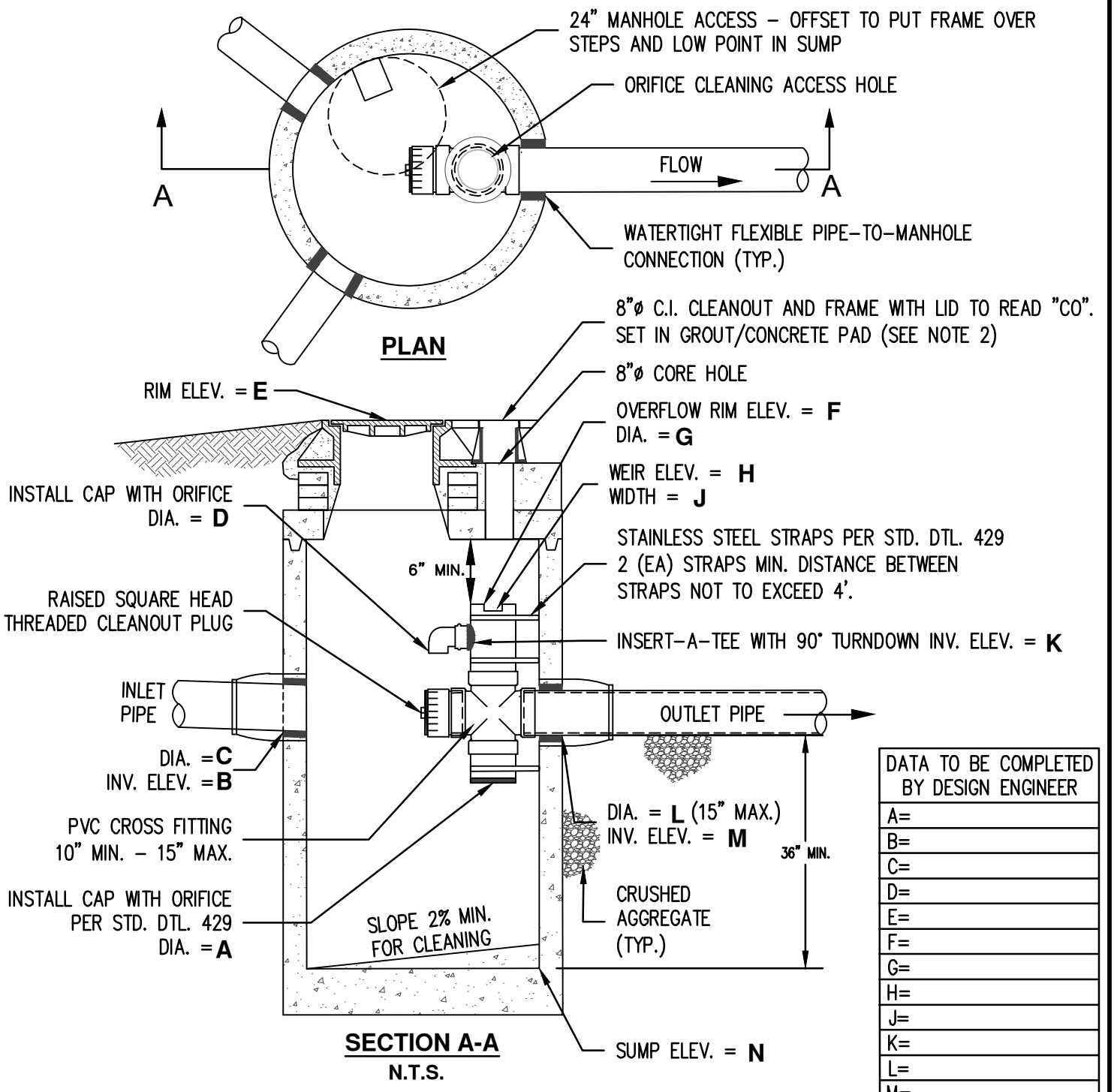
FLOW CONTROL MANHOLE



DATA TO BE COMPLETED BY DESIGN ENGINEER
A=
B=
C=
D=
E=
F=
G=
H=
J=
K=
L=
M=
N=

NOTES:

1. THIS CONTROL STRUCTURE ONLY TO BE USED WITH OUTLET PIPE UP TO 15–INCHES IN DIA. IF GREATER THAN 15–INCHES PROVIDE ALTERNATE DESIGN FOR APPROVAL BY THE DIRECTOR.
2. ORIFICE CLEANING ACCESS TO BE AN 8–INCH CORE HOLE THROUGH FLAT TOP CONCRETE (CENTERED ON OVERFLOW) WITH CAST IRON CLEANOUT BOX GROUTED TO SLAB.
3. REFERENCE PLANS AND ORIFICE MEASUREMENT TABLE ON STD. DTL. 429 FOR ORIFICE SIZE REQUIREMENTS.
4. CONSTRUCT MANHOLE PER STD. DTL. 402 – MIN. DIA. IS 60–INCHES.

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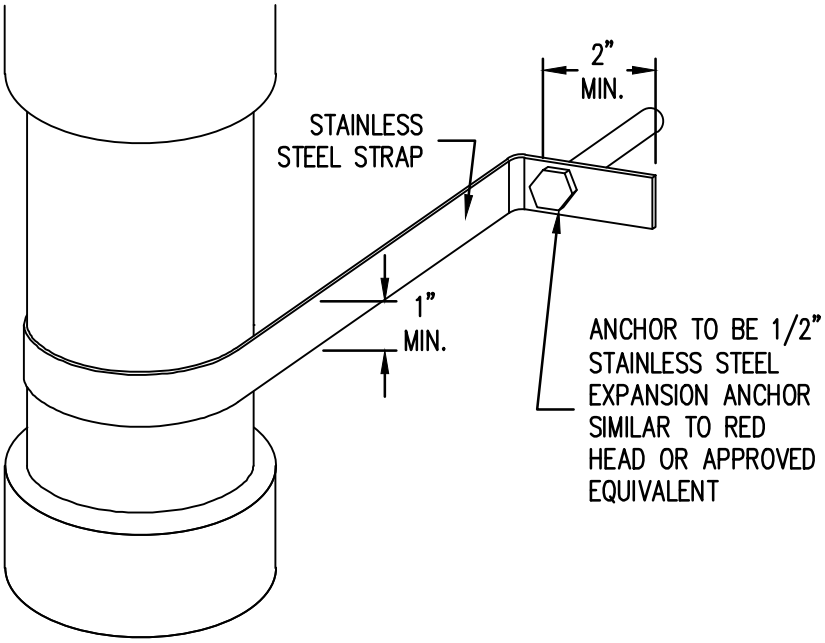
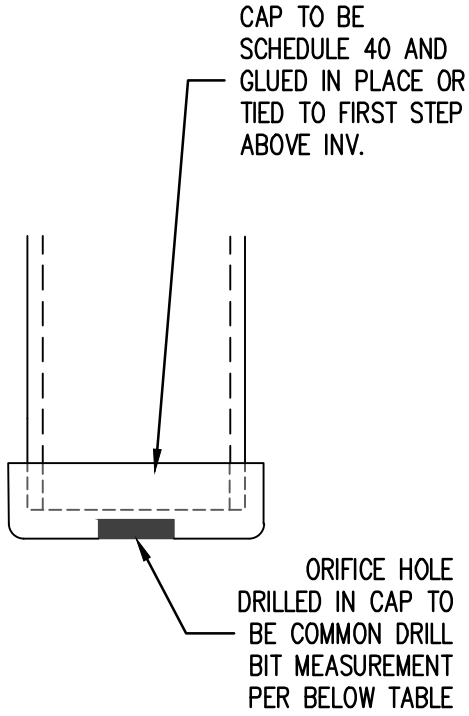
STORMWATER MANAGEMENT



STAINLESS STRAP
N.T.S.

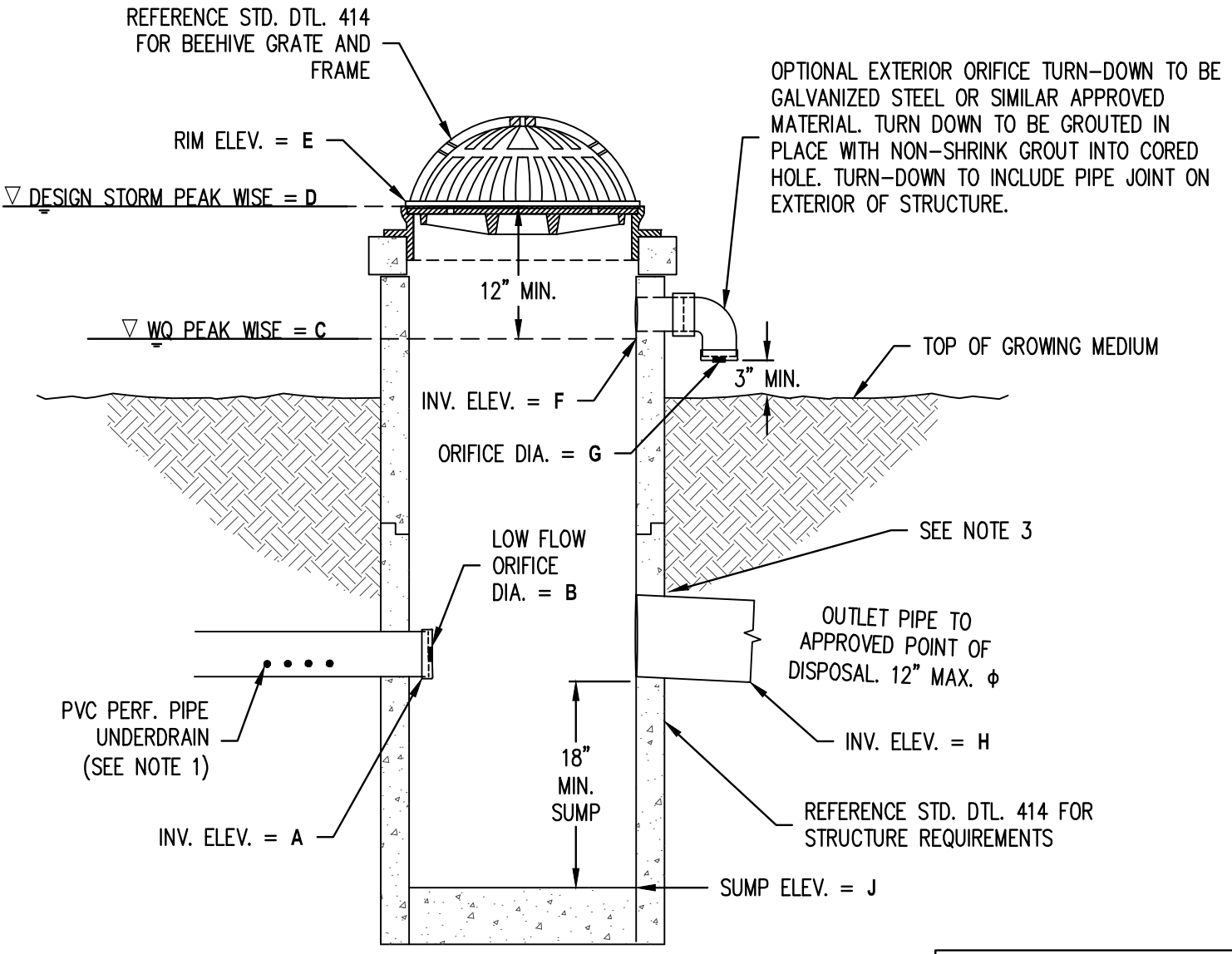
NOTE: 2 STRAPS REQUIRED. MAX. 4' SPACING BETWEEN STRAPS



ORIFICE CAP
N.T.S.

ORIFICE TABLE MEASUREMENT	
CALCULATED SIZE	INCREMENT
1/4" – 1"	1/8"
1" – 3"	1/4"
> 3"	1/2"

24-INCH BEEHIVE INLET CONTROL



TYPICAL SECTION
N.T.S.

DATA TO BE COMPLETED BY DESIGN ENGINEER
A=
B=
C=
D=
E=
F=
G=
H=
J=

NOTES:

1. A CAPPED, SOLID WALL, PVC CLEANOUT SHALL BE PLACED AT THE FAR END OF THE UNDERDRAIN. PIPE UNDERDRAIN NOT TO BE USED AS OUTLET FROM STRUCTURE.
2. REFERENCE ORIFICE MEASUREMENT TABLE ON STD. DTL. 429 FOR ORIFICE REQUIREMENTS.
3. SANDED MANHOLE ADAPTERS OR LINK SEAL PIPE-TO-STRUCTURE CONNECTIONS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.
4. PIPES (WITHOUT ORIFICE CAP) SHALL BE FLUSH WITH INSIDE OF WALL. GROUT JOINTS SMOOTH AT STRUCTURE INTERIOR.
5. WHERE HIGH GROUNDWATER IS ENCOUNTERED, IT MAY BE NECESSARY TO ANCHOR THE BASE OF THE STRUCTURE WITH DOWELS AND ADDITIONAL CONCRETE BALLAST AS DETERMINED BY DESIGN ENGINEER.

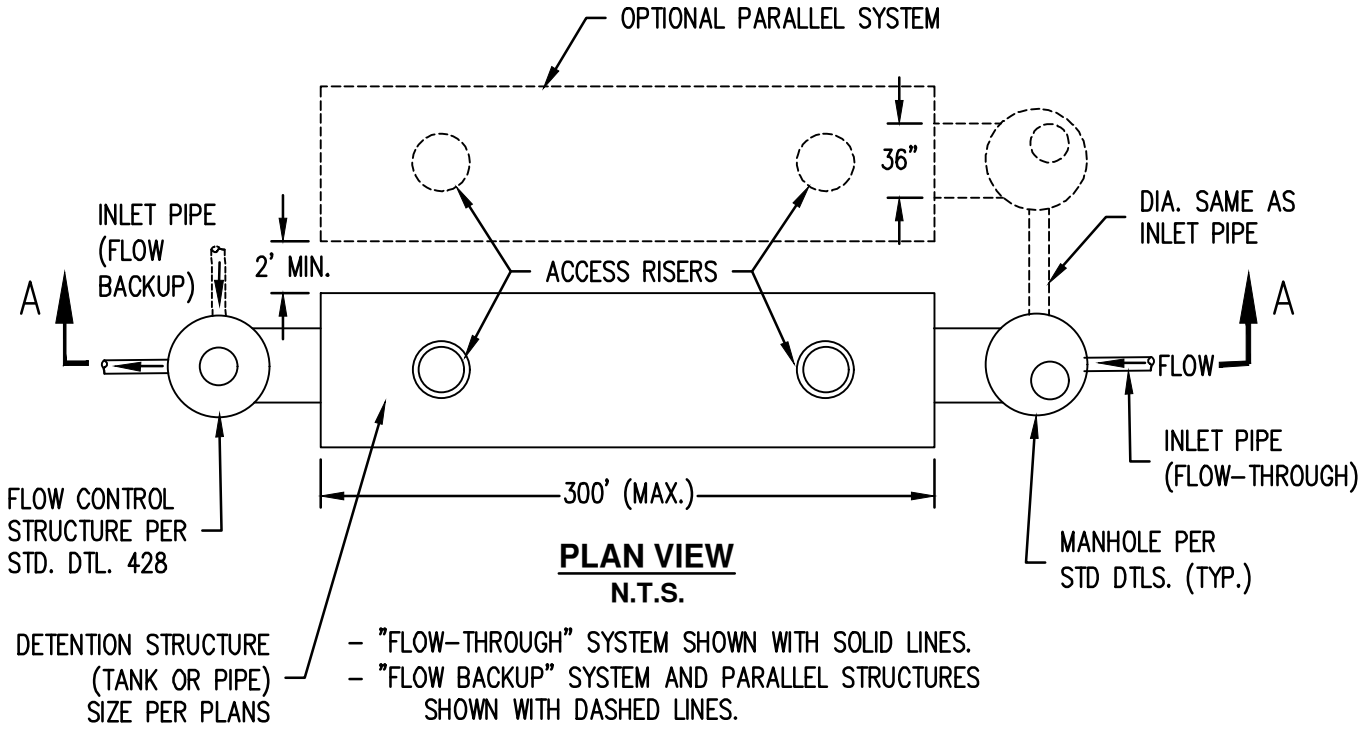
ISSUED: 05/04/2023

REVISED:_____

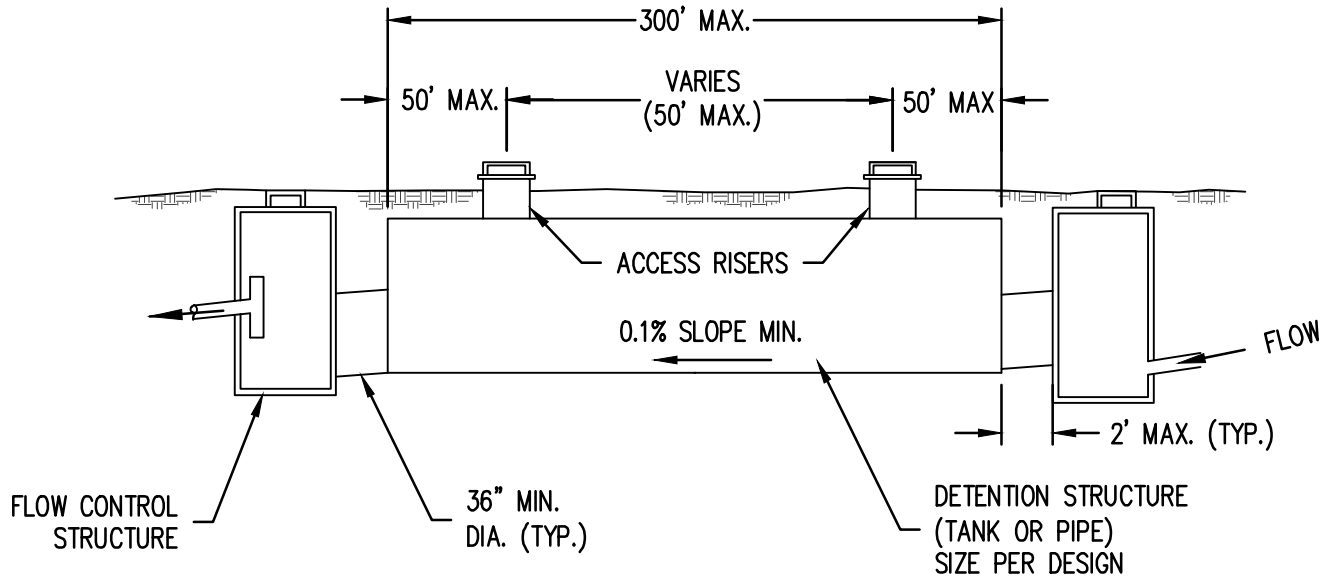
DRAWING NOT TO SCALE

CITY OF KEIZER | Public Works Department
STANDARD DETAILS
STORMWATER MANAGEMENT

KEIZER SINCE 1982



PLAN VIEW
N.T.S.



SECTION A-A
N.T.S.

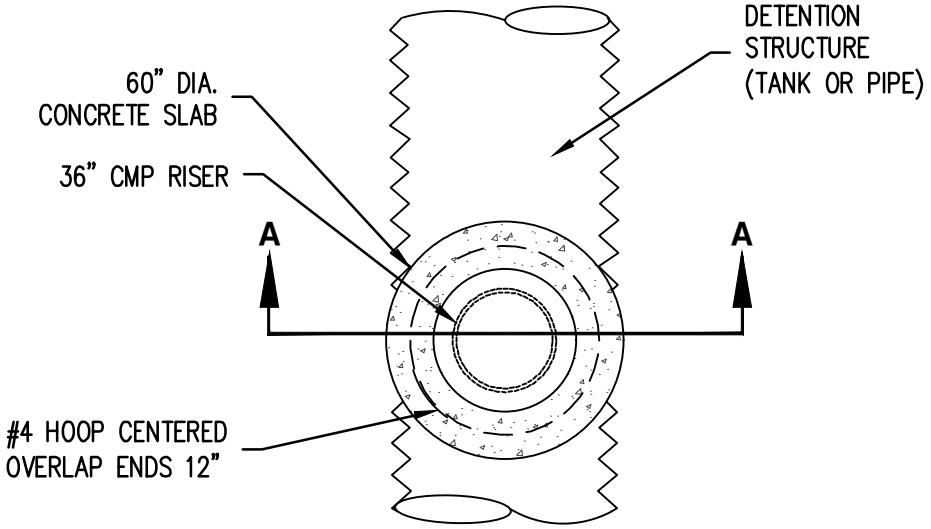
NOTES:
1. ALL STRUCTURES AND CONNECTIONS SHALL BE WATER TIGHT.
2. ALL METAL PARTS TO BE ALUMINUM OR GALVANIZED AND ASPHALT COATED STEEL. CORRUGATED METAL PIPE NOT ALLOWED.
3. FOR ACCESS RISER DTLS. SEE STD. DTL. 432.

ISSUED: 05/04/2023

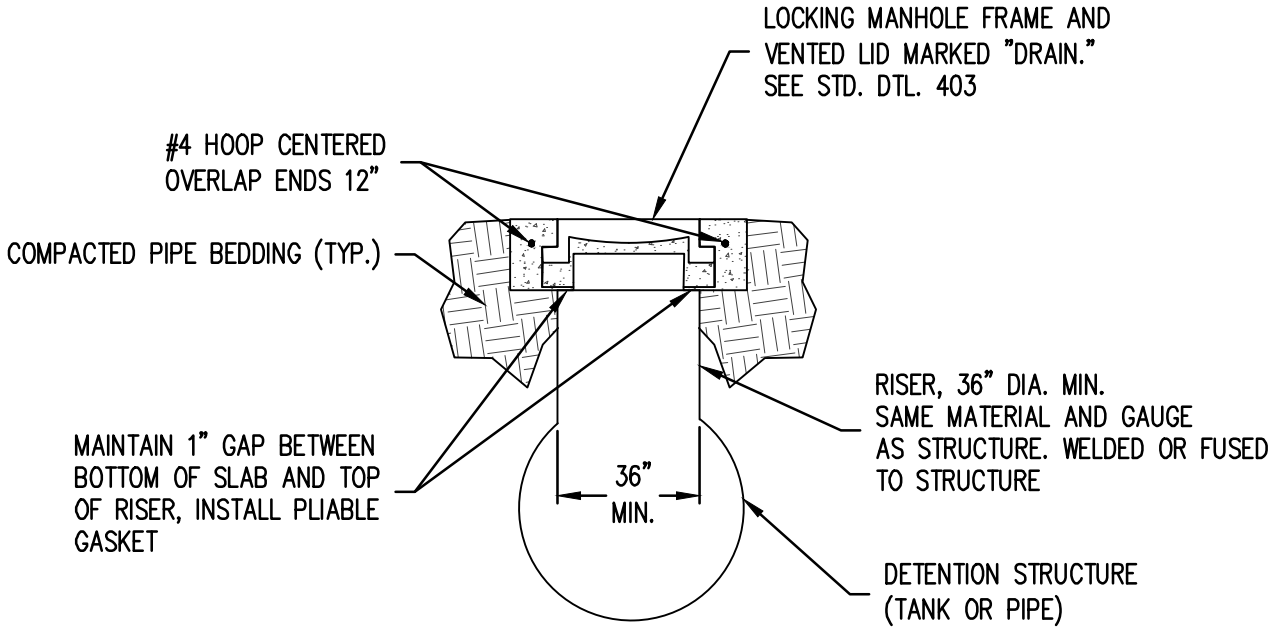
REVISED:_____

DRAWING NOT TO SCALE

DETENTION STORAGE ACCESS PORT



PLAN VIEW
N.T.S.



SECTION A-A
N.T.S.

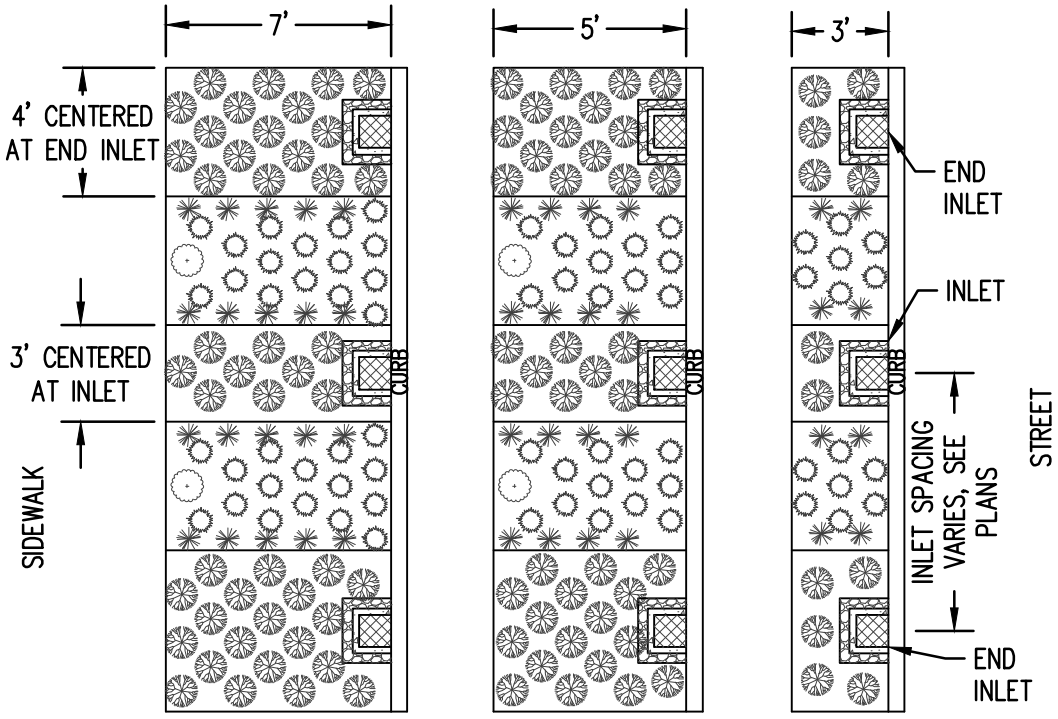
NOTES:

1. USE EXTENSION RINGS AS REQUIRED TO BRING FRAME TO GRADE.
2. ALL METAL MATERIALS TO BE ALUMINUM OR GALVANIZED AND ASPHALT COATED. CORRUGATED METAL PIPE NOT ALLOWED.
3. MUST BE LOCATED FOR ACCESS BY MAINTENANCE VEHICLES – SEE PLANS.

ISSUED: 05/04/2023	CITY OF KEIZER | Public Works Department STANDARD DETAILS *STORMWATER MANAGEMENT*
REVISED:_____	
DRAWING NOT TO SCALE	

ROW INFILTRATION PLANTER - PLANTING TEMPLATE

TYPICAL PLANTING LAYOUT FOR 3', 5', AND 7' WIDE PLANTERS (SEE NOTE 1)



PLANTING LAYOUT GUIDELINES:

- RUSHES MINIMUM WIDTH AS SHOWN, CENTERED AT INLET
- GRASSES THROUGHOUT CENTER, WITH PERENNIALS ALONG SECTION BORDERS
- IN PLANTERS 5 FEET OR WIDER, INCLUDE SHRUBS ON SIDE OPPOSITE FROM INLETS AND OUTSIDE OF RUSH SECTION

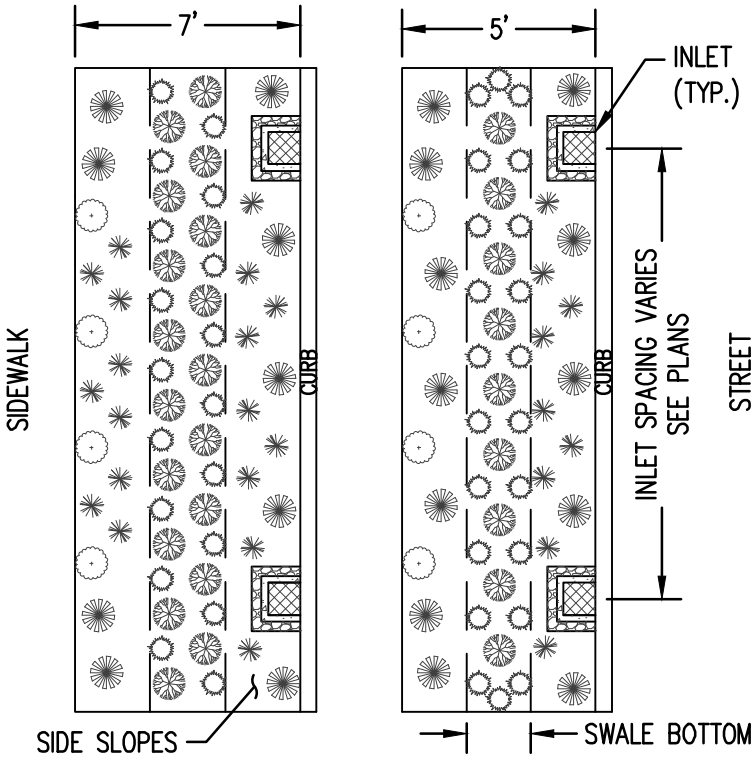
SYMBOL	BOTANICAL NAME COMMON NAME			SPACING
	PREFERRED PLANT	ALTERNATE PLANT	ALTERNATE PLANT	
	JUNCTUS ENSIFOLIUS SWORD LEAF RUSH	JUNCTUS EFFUSUS COMMON RUSH	JUNCTUS PATENS SPREADING RUSH	12" O.C.
	SISYRINCHIUM CALIFORNICUM YELLOW-EYED GRASS	SISYRINCHIUM ANGUSTIFOLIUM BLUE-EYED GRASS	DESCHAMPSIA CESPITOSA 'NORTHERN LIGHTS' VARIEGATED TUFTED HAIRGRASS	12" O.C.
	CAMASSIA QUAMASH COMMON CAMAS	IRIS TENAX OREGON IRIS	MIMULUS LEWISII PURPLE MONKEYFLOWER	12" O.C.
	CORNUS SERICEA 'KELSEYI' KELSEY DOGWOOD	SPIREA BETULIFOLIA 'TOR' BIRCHLEAF SPIREA *	MAHONIA AQUIFOLIUM 'COMPACTA' COMPACT OREGON GRAPE*	36" O.C.

* NOT ALLOWED WITHIN VISION CLEARANCE AREAS.

NOTES:

1. GENERAL LAYOUTS SHOWN. PLANTING LAYOUT TO BE ADJUSTED AS APPROPRIATE FOR SITE SPECIFIC FACILITY DESIGN.
2. OTHER PLANT TYPES MAY BE UTILIZED UPON APPROVAL BY THE DIRECTOR.
3. SEE PLANTING REQUIREMENTS IN THE DESIGN STANDARDS FOR DETAILS ON SIZING AND DENSITY.
4. ALL PLANT SIZES SHALL BE 1 GALLON POT SIZE UNLESS OTHERWISE NOTED.
5. IRRIGATION SYSTEM CONTROLLER: RAIN BIRD ESP 9V, HUNTER NODE 9V, OR DIRECTOR APPROVED EQUAL WITH BATTERY OPERATED CONTROLLER MODIFIED WITH A COMPATIBLE DC-LATCHING SOLENOID.
6. IRRIGATION SYSTEM SHALL BE DESIGNED USING POP-UP STYLE SPRINKLER HEADS UNLESS OTHERWISE APPROVED BY DIRECTOR.
7. ALTERNATE IRRIGATION SYSTEM COMPONENTS MUST BE APPROVED BY THE DIRECTOR.

TYPICAL PLANTING LAYOUT FOR 5' AND 7' WIDE SWALES (SEE NOTE 1)



PLANTING LAYOUT GUIDELINES:

- RUSHES ALONG CENTER AND BOTTOM OF SWALE WITH GRASSES ALONG THE EDGE OF SWALE BOTTOM
- GROUNDCOVER ALONG CURB-SIDE SLOPES
- PERENNIALS AS ACCENT AMONG GROUNDCOVER AND SHRUBS
- SHRUBS ALONG SIDEWALK-SIDE SLOPES

SYMBOL	BOTANICAL NAME COMMON NAME			SPACING
	PREFERRED PLANT	ALTERNATE PLANT	ALTERNATE PLANT	
	JUNCTUS ENSIFOLIUS SWORD LEAF RUSH	JUNCTUS EFFUSUS COMMON RUSH	JUNCTUS PATENS SPREADING RUSH	12" O.C.
	SISYRINCHIUM CALIFORNICUM YELLOW-EYED GRASS	SISYRINCHIUM ANGUSTIFOLIUM BLUE-EYED GRASS	DESCHAMPSIA CESPITOSA 'NORTHERN LIGHTS' VARIEGATED TUFTED HAIRGRASS	12" O.C.
	ARCTOSTAPHYLOS UVA-URSI KINNIKINNICK	FRAGARIA CHILOENSIS COASTAL STRAWBERRY	MAHONIA REPENS CREEPING OREGON GRAPE	18" O.C.
	CAMASSIA QUAMASH COMMON CAMAS	IRIS TENAX OREGON IRIS	PENSTEMON CARDWELLII CARDWELL'S PENSTEMON	12" O.C.
	CORNUS SERICEA 'KELSEYI' KELSEY DOGWOOD	SPIREA BETULIFOLIA 'TOR' BIRCHLEAF SPIREA *	MAHONIA AQUIFOLIUM 'COMPACTA' COMPACT OREGON GRAPE*	36" O.C.

* NOT ALLOWED WITHIN VISION CLEARANCE AREAS.

NOTES:

1. GENERAL LAYOUTS SHOWN. PLANTING LAYOUT TO BE ADJUSTED AS APPROPRIATE FOR SITE SPECIFIC FACILITY DESIGN.
2. OTHER PLANT TYPES MAY BE UTILIZED UPON APPROVAL BY THE DIRECTOR.
3. SEE PLANTING REQUIREMENTS IN THE DESIGN STANDARDS FOR DETAILS IN SIZING AND DENSITY.
4. ALL PLANT SIZES SHALL BE 1 GALLON POT SIZE UNLESS OTHERWISE NOTED.
5. IRRIGATION SYSTEM CONTROLLER: RAIN BIRD ESP 9V, HUNTER NODE 9V, OR DIRECTOR-APPROVED EQUAL WITH BATTERY OPERATED CONTROLLER MODIFIED WITH A COMPATIBLE DC-LATCHING SOLENOID.
6. IRRIGATION SYSTEM SHALL BE DESIGNED USING POP-UP STYLE SPRINKLER HEADS UNLESS OTHERWISE APPROVED BY DIRECTOR.
7. ALTERNATE IRRIGATION SYSTEM COMPONENTS MUST BE APPROVED BY THE DIRECTOR.