

BOROUGH OF CASTLE SHANNON STANDARD DETAILS



OCTOBER 2000

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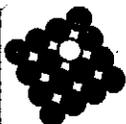
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- S-6 BENCH DRAIN



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BOROUGH OF CASTLE SHANNON
Standard Details
Index Sheet

GENERAL NOTES

1. THE PURPOSE OF THESE STANDARDS IS TO DEFINE THE MINIMUM ACCEPTABLE QUALITY OF MATERIALS AND WORKMANSHIP. IT IS NOT INTENDED TO PRECLUDE OTHER MATERIALS OR DESIGNS. OTHER DESIGN DETAILS MAY BE USED, HOWEVER, PROVIDED THEY RECEIVE PRIOR WRITTEN APPROVAL OF THE BOROUGH AFTER RECOMMENDATION OF THE ENGINEER.
2. CONDITIONS AT THE SITE WHICH CANNOT ALWAYS BE ANTICIPATED MAY NECESSITATE DEVIATIONS FROM BOROUGH STANDARD DETAILS; THEREFORE, THE BOROUGH OF CASTLE SHANNON HEREIN RESERVES THE RIGHT TO DIRECT CHANGES IN THE FIELD AS NEEDED AT ITS DISCRETION.
3. MATERIALS AND CONSTRUCTION REQUIREMENTS SHALL CONFORM TO THESE DETAILS AND TO THE LATEST EDITION OF THE PENNSYLVANIA DEPARTMENT OF TRANSPORTATION SPECIFICATIONS FORM 408 (PENNDOT 408). PENNDOT MATERIALS CERTIFICATIONS TO BE SUBMITTED TO BOROUGH ON ALL MATERIALS DELIVERED TO SITE.
4. EROSION AND SEDIMENTATION CONTROL FACILITIES SHALL BE PROVIDED ON ALL SITES WHERE THE GROUND SURFACE IS DISTURBED PURSUANT TO BOROUGH ORDINANCES. THESE FACILITIES SHALL BE DESIGNED IN ACCORDANCE WITH CURRENT MANUALS PUBLISHED BY THE PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION AND THE ALLEGHENY COUNTY CONSERVATION DISTRICT.
5. ALL DISTURBED AREAS SHALL BE PROMPTLY SEEDED, MULCHED AND FERTILIZED. THE FOLLOWING MINIMUM SEEDING FORMULAS SHALL BE USED IN ACCORDANCE WITH PENNDOT 408:
 - LAWN AREAS - FORMULA B
 - SLOPE AREAS 3:1 AND STEEPER - FORMULA W
 - TEMPORARY SEEDING - FORMULA E
6. ALL TRENCHES FOR UTILITIES INCLUDING STORM SEWERS, SANITARY SEWERS, WATERLINES, GAS LINES, ELECTRIC LINES, TELEPHONE LINES AND CABLE TELEVISION LINES CROSSING OR RUNNING IN BOROUGH CARTWAYS SHALL BE BACKFILLED WITH AASHTO No. 57 OR PADOT 2RC OR 2A CRUSHED STONE MECHANICALLY TAMPED IN 4-INCH LIFTS TO PROVIDE 100 PERCENT OF THE DETERMINED DRY WEIGHT DENSITY IN ACCORDANCE WITH PTM No. 112 OR PTM No. 402. NO PIPES IN ANY RIGHT-OF-WAY SHALL BE BACKFILLED WITHOUT INSPECTION BY THE BOROUGH. ALL UTILITIES SHALL HAVE A MINIMUM COVER OF 24 INCHES. SLAG IS NOT PERMITTED AS BACKFILL.
7. ALL STORM SEWERS WITHIN BOROUGH ROADWAY RIGHT-OF-WAYS SHALL CORRUGATED POLYETHYLENE PIPE (CPP) OF MINIMUM 15-INCH DIAMETER ALL STORM SEWERS SHALL BE LAID TO LINE AND GRADE WITH A FULL MOON AND AT A MINIMUM ONE PERCENT GRADE.
8. THE BOROUGH OF CASTLE SHANNON MUST BE NOTIFIED (412 885-9200) 72 HOURS PRIOR TO ANY WORK WITHIN A BOROUGH RIGHT-OF-WAY OR PRIOR TO THE START OF ANY PHASE OF CONSTRUCTION OF ANY APPROVED DEVELOPMENT PLAN.
9. ALL FIRE HYDRANT LOCATIONS AND SUPPLY LINES MUST BE APPROVED BY THE BOROUGH FIRE CHIEF AND THE PENNSYLVANIA WATER COMPANY. ALL FIRE HYDRANTS SHALL HAVE TWO 2-1/2 INCH NOZZLES AND ONE 4-1/2 INCH STREAMER NOZZLE. 2-1/2 INCH THREAD SHALL BE 3.078 I.D. X 6 THREADS PER INCH. 4-1/2 INCH STREAMER NOZZLE SHALL BE NATIONAL STANDARD THREAD.
10. ALL PIPE BORINGS SHALL HAVE A MINIMUM COVER OF 36 INCHES FROM TOP OF UTILITY LINE TO ROAD SURFACE.
11. WHEREIN THESE STANDARDS, DESIGNATIONS TO AASHTO SIEVE SIZES ARE MADE, THEY ARE CROSS REFERENCED TO THE ORIGINAL PENNDOT DESIGNATIONS AS FOLLOWS:

PENNDOT	AASHTO
4	1
3A	3
2B	57
PA #2	67
1B	8
1A	10
2A	NONE



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BOROUGH OF CASTLE SHANNON
Standard Details
Detail GN-1
General Notes

SUPPORT STAKE
 STAKES SPACED @ 8'-0" MAX.
 USE 2"x2" WOOD STAKES

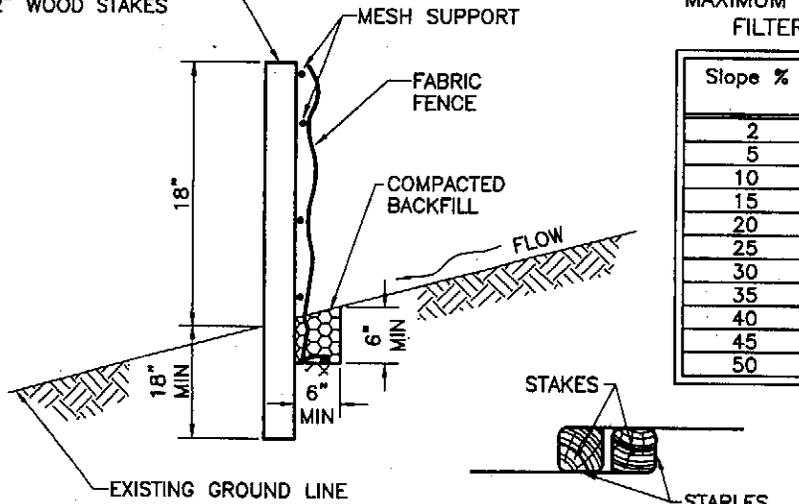


TABLE A1
 MAXIMUM SLOPE LENGTHS FOR
 FILTER FABRIC FENCES

Slope %	Max. Slope Length Above Fence
2	250
5	100
10	50
15	35
20	25
25	20
30	15
35	15
40	15
45	10
50	10

JOINING FENCE SECTIONS

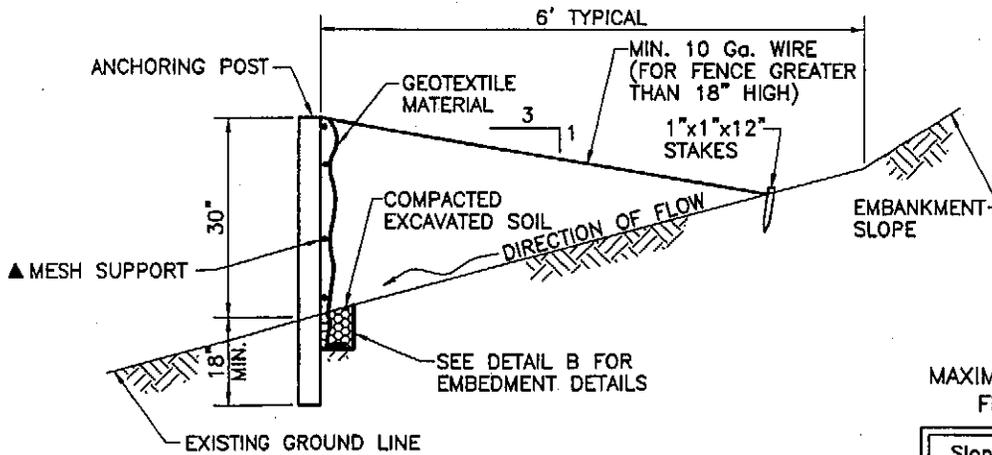
NOTES:

1. FILTER FABRIC MUST BE INSTALLED AT LEVEL GRADE. BOTH ENDS OF EACH FENCE SECTION MUST BE EXTENDED UPSLOPE SO THAT THE BOTTOM OF THE FENCE SHALL END AT THE TOP OF FENCE ELEVATION.
2. SEDIMENT MUST BE REMOVED WHERE ACCUMULATIONS REACH 1/2 THE ABOVE-GROUND HEIGHT OF THE FENCE.
3. ANY FENCE SECTION WHICH HAS BEEN UNDERMINED OR OVERTOPPED MUST BE IMMEDIATELY REPAIRED TO ORIGINAL CONDITION.
4. STRAW BALES SHALL NOT BE USED.
5. SOURCE: EROSION AND SEDIMENT POLLUTION CONTROL PROGRAM MANUAL 1/1996.
6. DETAILS UTILIZED SHALL BE TO PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION CURRENT STANDARDS.

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BOROUGH OF CASTLE SHANNON
Standard Details
 Detail ES-1
 18" Silt Barrier Fence



NOTE:
SILT BARRIER FENCE TO BE
PLACED "ON THE CONTOUR"

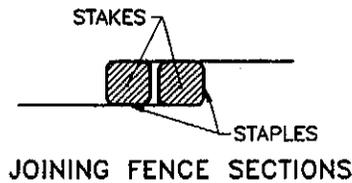
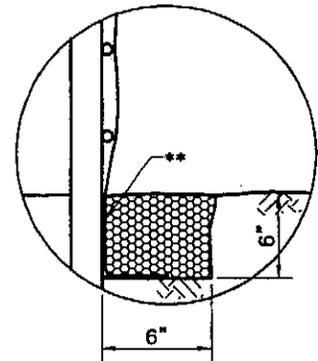
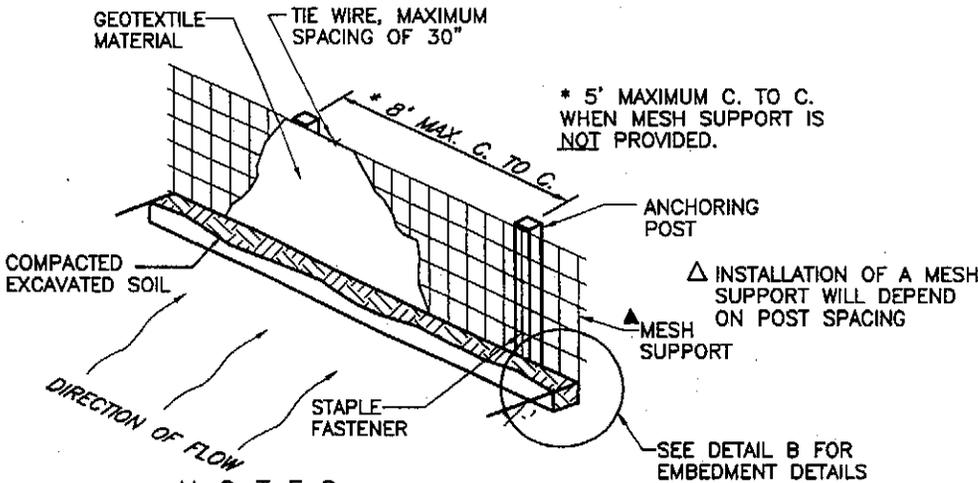


TABLE A2
MAXIMUM SLOPE LENGTHS FOR
FILTER FABRIC FENCES

Slope %	Max. Slope Length Above Fence
2	500
5	250
10	150
15	100
20	70
25	55
30	45
35	40
40	35
45	30
50	25



** EXTEND FABRIC 8" TO
12" INTO EXCAVATED
TRENCH.

DETAIL B

NOTES:

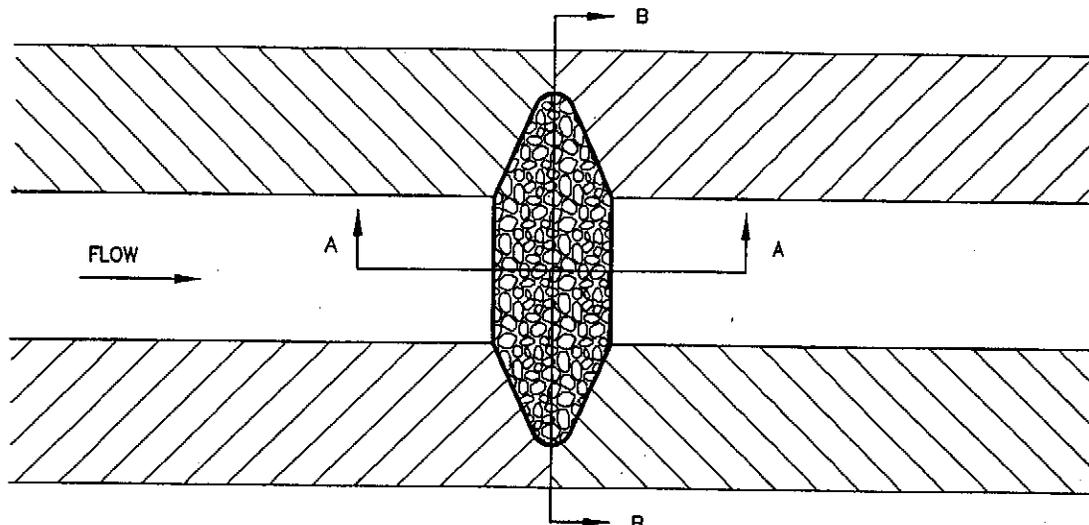
1. DETAILS FOR REFERENCE ONLY, FACILITIES TO BE DESIGNED IN ACCORDANCE WITH CURRENT MANUALS PUBLISHED BY PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION AND THE CONSERVATION DISTRICT.
2. FILTER FABRIC MUST BE INSTALLED AT LEVEL GRADE. BOTH ENDS OF EACH FENCE SECTION MUST BE EXTENDED UPSLOPE SO THAT THE BOTTOM OF THE FENCE SHALL END AT THE TOP OF FENCE ELEVATION.
3. SEDIMENT MUST BE REMOVED WHERE ACCUMULATIONS REACH 1/2 THE ABOVE-GROUND HEIGHT OF THE FENCE.
4. ANY FENCE SECTION WHICH HAS BEEN UNDERMINED OR OVERTOPPED MUST BE IMMEDIATELY REPAIRED TO ORIGINAL CONDITION.
5. STRAW BALES SHALL NOT BE USED.
6. SOURCE: PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION, EROSION AND SEDIMENTATION CONTROL STANDARD WORK SHEETS, 1/1996.



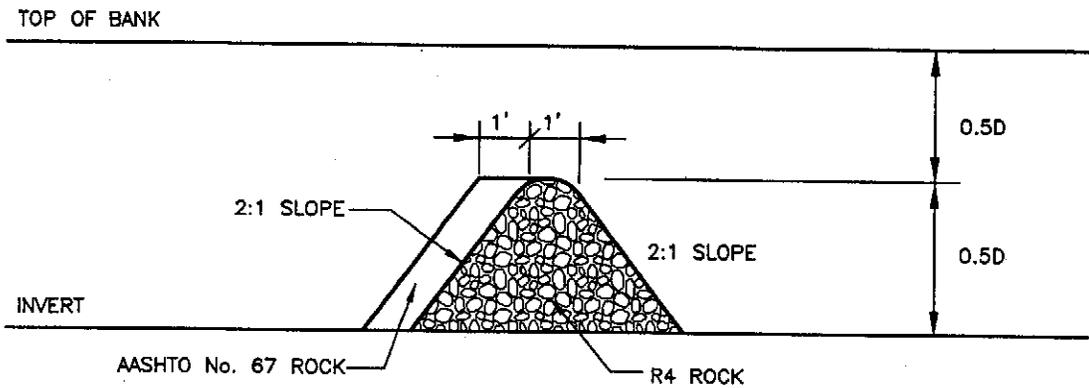
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BOROUGH OF CASTLE SHANNON
Standard Details
Detail ES-1A
30" Silt Barrier Fence

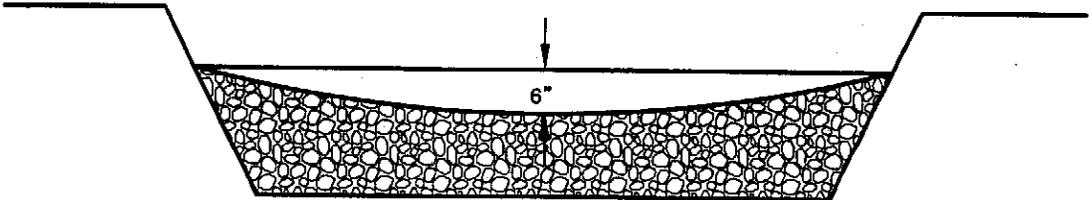


PLAN VIEW



D = DEPTH OF WATER AT CHANNEL CAPACITY

TYPICAL SECTION A-A



TYPICAL SECTION B-B

MAINTENANCE:
 ROCK FILTERS WILL BE REMOVED WHEN CLOGGED WITH SEDIMENTS.
 EXISTING MATERIALS MUST BE WASHED COMPLETELY FREE OF ALL
 FOREIGN MATERIAL OR NEW ROCK USED TO REBUILD THE FILTER.

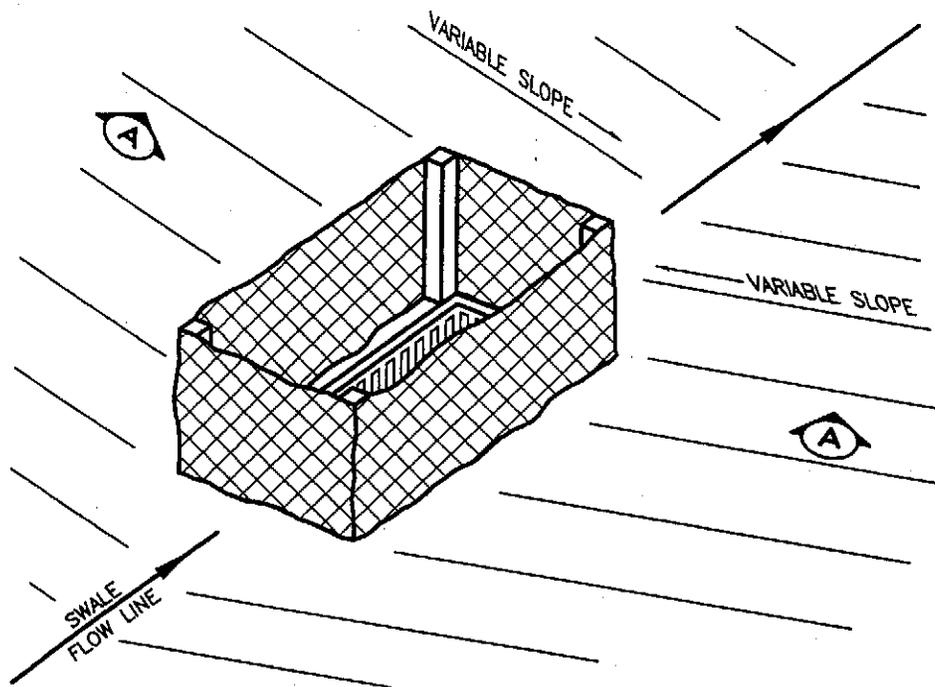
NOTES:

1. DETAILS FOR REFERENCE ONLY, FACILITIES TO BE DESIGNED IN ACCORDANCE WITH CURRENT MANUALS PUBLISHED BY PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION AND THE CONSERVATION DISTRICT.
2. SOURCE: PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION, EROSION AND SEDIMENTATION CONTROL STANDARD WORK SHEETS, 1/1996.

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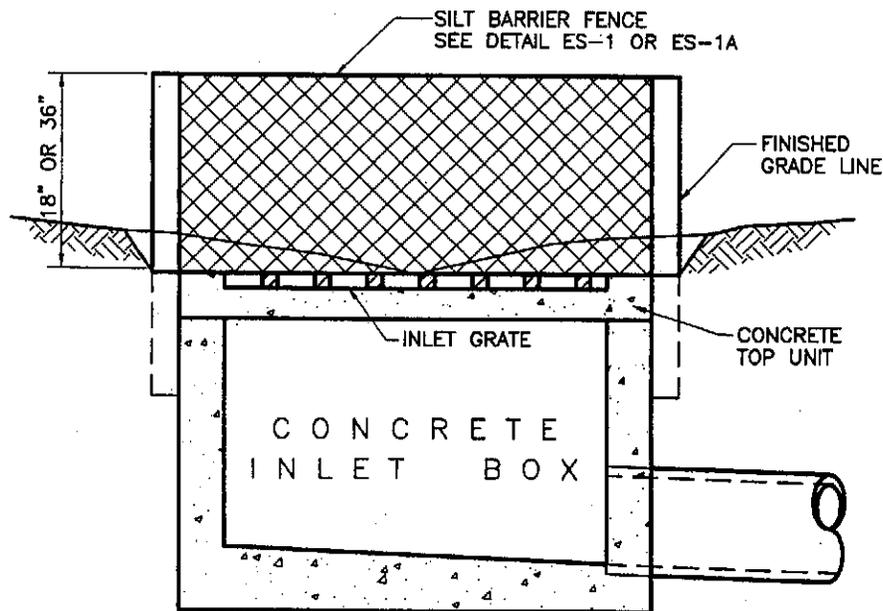
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BOROUGH OF CASTLE SHANNON
Standard Details
 Detail ES-2
 Rock Filter

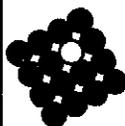


NOTES:

1. DETAILS FOR REFERENCE ONLY, FACILITIES TO BE DESIGNED IN ACCORDANCE WITH CURRENT MANUALS PUBLISHED BY PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION AND THE CONSERVATION DISTRICT.
2. SILT BARRIER FENCE SHOULD BE LOCATED TO PREVENT THE INFILTRATION OF FINES OR SEDIMENT INTO THE INLET BOX. IF BACKFILL OPERATIONS HAVE NOT BEEN PERFORMED, THE SILT BARRIER FENCE SHALL BE LOCATED OUTSIDE THE AREA EXCAVATED FOR THE INLET BOX.
3. SOURCE: PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION, EROSION AND SEDIMENTATION CONTROL STANDARD WORK SHEETS, 1/1996.



SECTION A-A

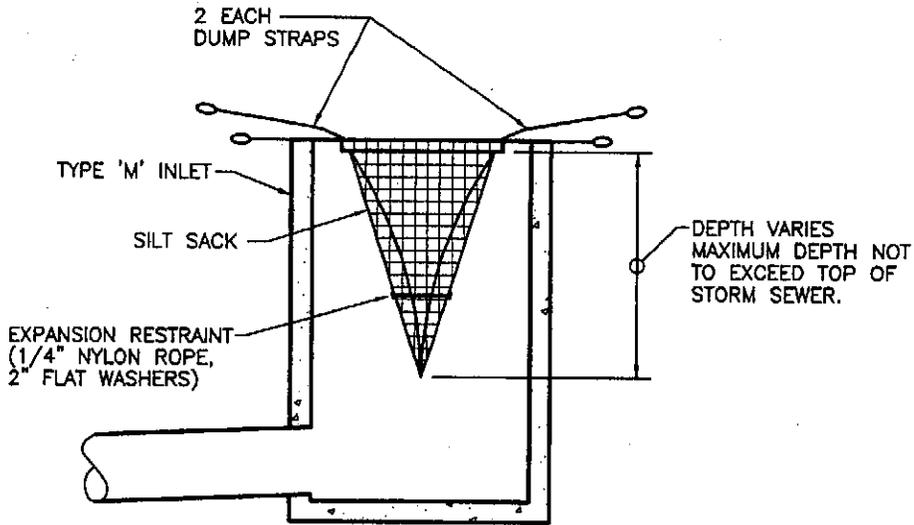


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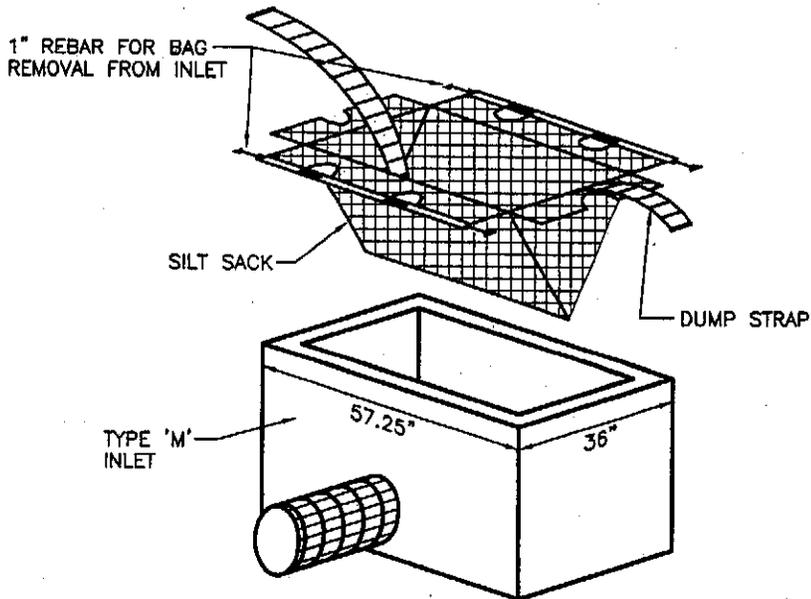
BOROUGH OF CASTLE SHANNON
Standard Details

Detail ES-3
Silt Barrier Fence for Inlet Protection



NOTES:

1. DETAILS FOR REFERENCE ONLY, FACILITIES TO BE DESIGNED IN ACCORDANCE WITH CURRENT MANUALS PUBLISHED BY PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION AND THE CONSERVATION DISTRICT.
2. SILT SACK SHALL BE CONSTRUCTED AND MAINTAINED AS PER MANUFACTURER'S SPECIFICATIONS. (USE REGULAR SILT SACK)
3. OWNER SHALL SUBMIT MAINTENANCE SCHEDULE TO CONSERVATION DISTRICT FOR APPROVAL.
4. SOURCE: PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION, EROSION AND SEDIMENTATION CONTROL STANDARD WORK SHEETS, 1/1996.

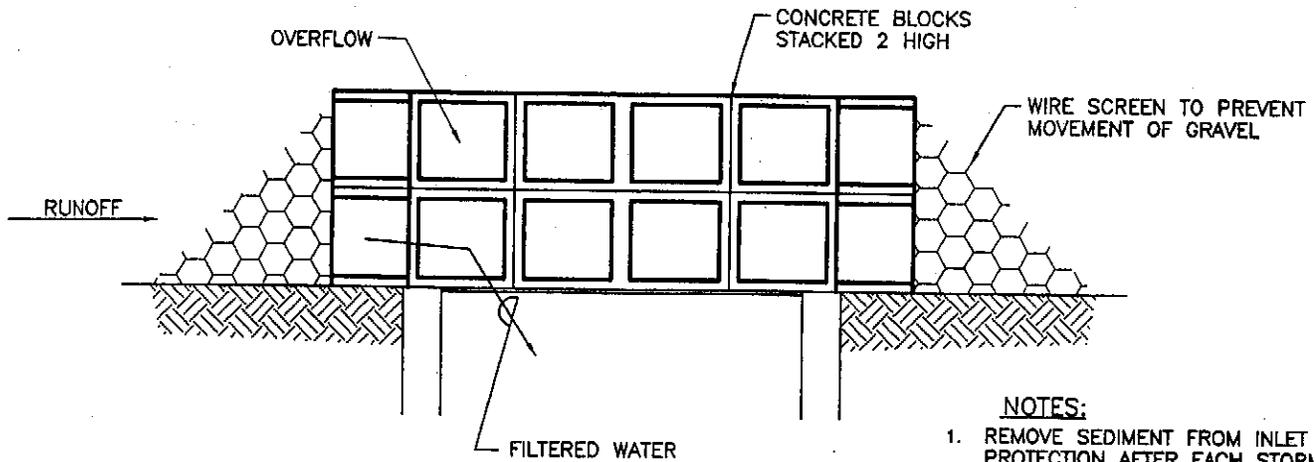


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**BOROUGH OF CASTLE SHANNON
Standard Details**

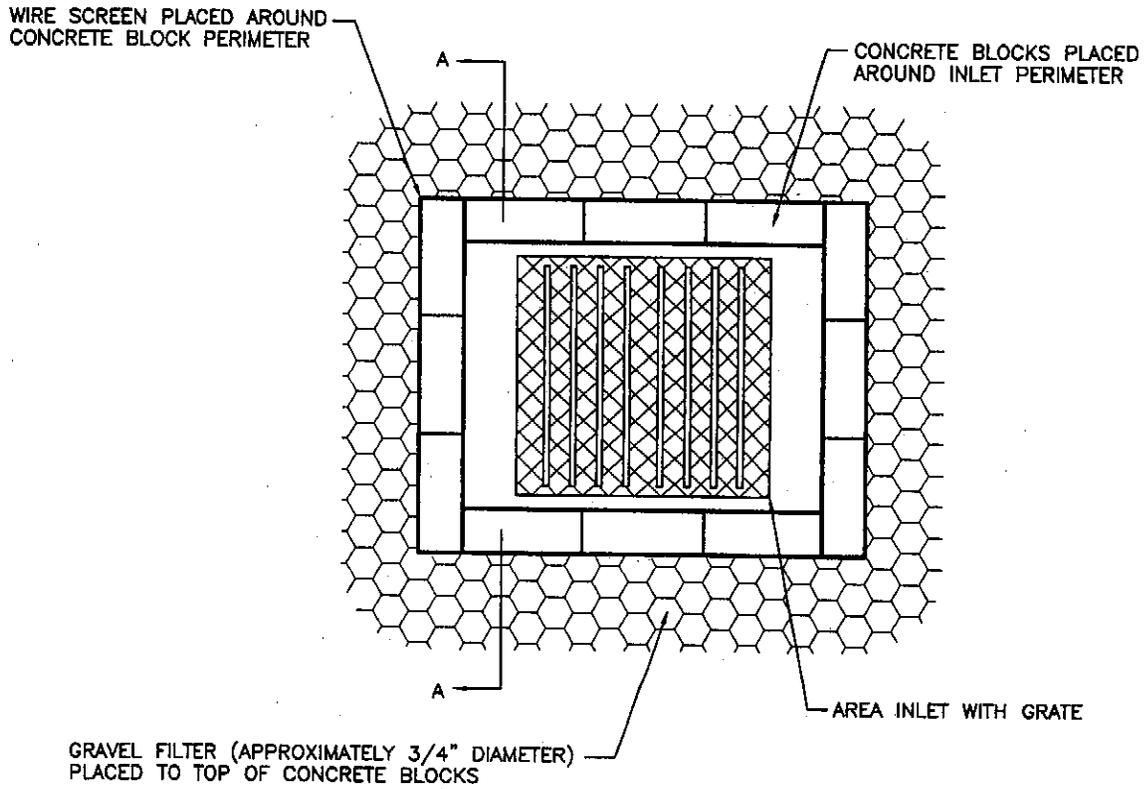
Detail ES-4
Silt Sack



SECTION A-A

NOTES:

1. REMOVE SEDIMENT FROM INLET PROTECTION AFTER EACH STORM EVENT AND RESTORE PROTECTION.
2. TEMPORARY INLET PROTECTION MAY BE REMOVED AFTER PERMANENT STABILIZATION.



NOTES:

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2. GRAVEL FILTER MAY BE USED ON PAVEMENT OR BARE GROUND.
3. SOURCE : PA DEPARTMENT OF ENVIRONMENTAL PROTECTION EROSION AND SEDIMENTATION CONTROL STANDARD WORKSHEET'S, (JANUARY,1996)

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BOROUGH OF CASTLE SHANNON
Standard Details
Detail ES-4A
Inlet Sediment Filters

TEMPORARY SEED MIXTURE

FORMULA AND SPECIES	% BY WEIGHT	MINIMUM %		MAX % WEED SEED	SEEDING RATE LBS. PER 1000 SY
		PURITY	GERMINATION		
FORMULA E • ANNUAL RYEGRASS (LOLIUM MULTIFLORUM)	100	98	90	0.15	10.0 TOTAL 10.0

SPREAD SEED AS FOLLOWS:
FORMULA E – MARCH 15 TO OCTOBER 15

SEEDING FORMULA MUST COMPLY WITH
PENNDOT FORM 408, SECTION 804

PERMANENT SEED MIXTURE

FORMULA AND SPECIES	% BY WEIGHT	MINIMUM %		MAX % WEED SEED	SEEDING RATE LBS. PER 1000 SY
		PURITY	GERMINATION		
FORMULA C (Slopes > 3 to 1) • CROWN VETCH (CORONILLA VARIA)	45	99	70	0.10	9.0 TOTAL 4.0
• ANNUAL RYE GRASS (LOLIUM MULTIFLORUM)	55	98	90	0.15	5.0
FORMULA D (Slopes < 3 to 1) • TALL FESCUE (FESTUCA ARUNDINACES VAR. KENTUCKY 31)	70	98	85	0.15	21.0 TOTAL 15.0
• CREEPING RED FESCUE OR CHEWINGS FESCUE	30	98	85	0.15	6.0

SPREAD SEED AS FOLLOWS:
FORMULA C – ANYTIME EXCEPT SEPTEMBER
AND OCTOBER
FORMULA D – MARCH 15 TO JUNE 1
– AUGUST 1 TO OCTOBER 15

SEEDING FORMULA MUST COMPLY WITH
PENNDOT FORM 408, SECTION 804

MULCHES

HAY: TIMOTHY HAY, MIXED CLOVER AND TIMOTHY HAY, OR OTHER ACCEPTABLE NATIVE OR FORAGE GRASSES, WELL-CURED TO LESS THAN 20% MOISTURE CONTENT, BY WEIGHT.

STRAW: EITHER WHEAT OR OAT STRAW, REASONABLY FREE OF VIABLE SEED, WELL-CURED TO LESS THAN 20% MOISTURE CONTENT, BY WEIGHT.

PLACE MULCH IMMEDIATELY AFTER SEEDING OR WITHIN 48 HOURS AFTER SEEDING IS COMPLETED. PLACE HAY OR STRAW UNIFORMLY, IN A CONTINUOUS BLANKET, AT A MINIMUM RATE OF 1200 POUNDS PER 1000 SQ. YDS. (3 TON PER ACRE). A MULCH BINDER SHALL BE APPLIED ON ALL SLOPES GREATER THAN 3:1. THE MULCH BINDER SHALL BE RECYCLED CELLULOSE FIBER CONFORMING TO PaDOT FORM 408, SECTION 805.2(b). THE APPLICATION RATE FOR THE RECYCLED CELLULOSE FIBER BINDER SHALL BE 160 lbs/1,000 SQ. YDS.

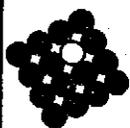
MULCH MUST COMPLY WITH
PENNDOT FORM 408, SECTION 804

FERTILIZER AND LIME

FERTILIZER: APPLY FERTILIZER OF ANALYSIS 10-20-20 AT A RATE OF 900-1000 POUNDS PER ACRE.
LIME: APPLY LIME AT A RATE OF 4 TO 6 TONS PER ACRE.

NOTES :

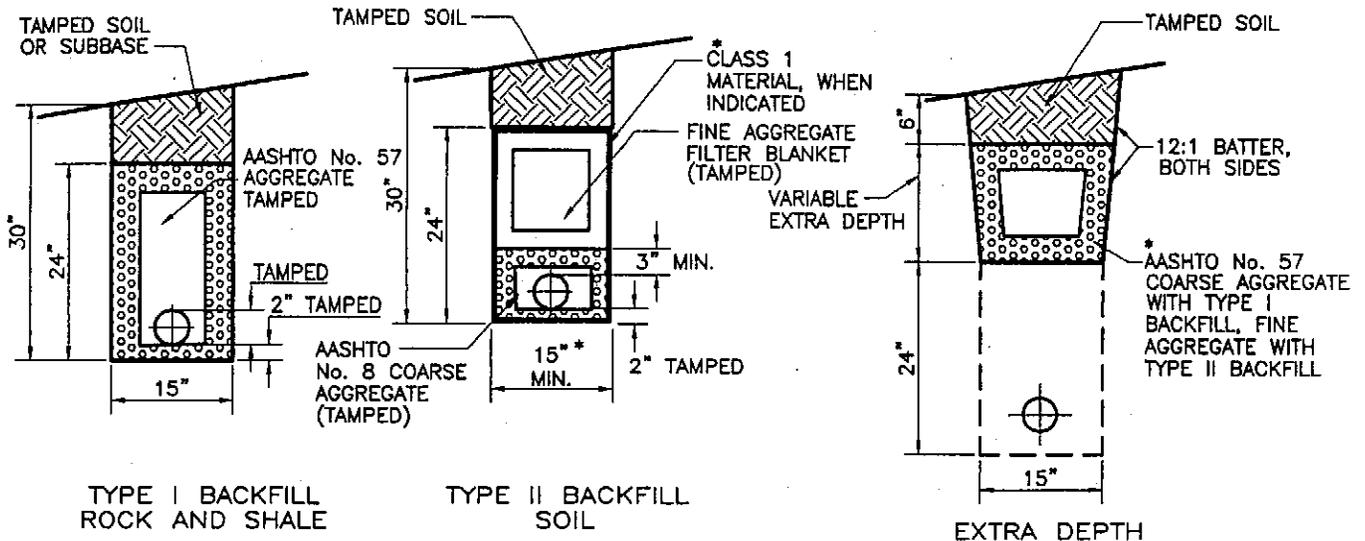
1. ABOVE RATES MAY VARY IF SOIL TEST COMPLETED.
2. DO NOT FERTILIZE FORMULA C SEED MIXTURE.
3. ALL LAWN AREAS SHALL HAVE A MINIMUM OF 4" TOPSOIL INSTALLED.



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BOROUGH OF CASTLE SHANNON
Standard Details
Detail ES-5
Seeding Schedule



TYPE I BACKFILL
ROCK AND SHALE

TYPE II BACKFILL
SOIL

EXTRA DEPTH

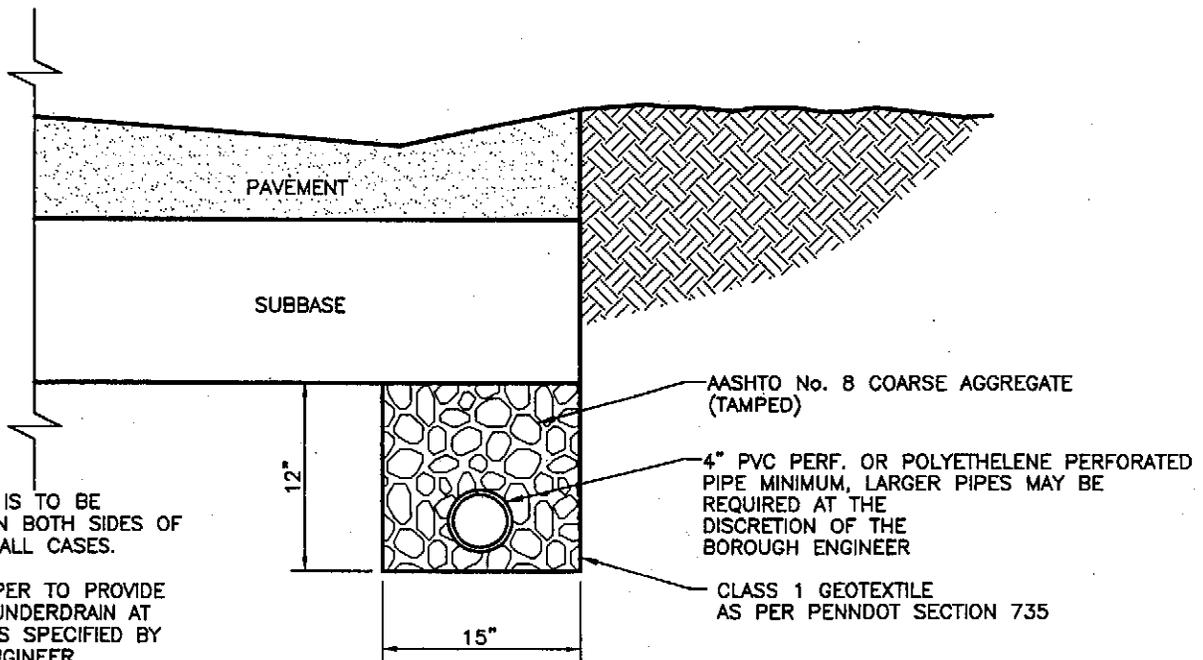
NOTES:

SLAG IS NOT PERMITTED AS BACKFILL.

100% STONE BACKFILL IS REQUIRED FULL WIDTH OF RIGHT-OF-WAY.

PIPE UNDERDRAIN

N. T. S.

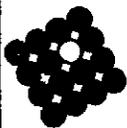


NOTES:

1. UNDERDRAIN IS TO BE INSTALLED ON BOTH SIDES OF CARTWAY IN ALL CASES.
2. THE DEVELOPER TO PROVIDE ADDITIONAL UNDERDRAIN AT LOCATIONS AS SPECIFIED BY BOROUGH ENGINEER.
3. SLAG IS NOT PERMITTED AS BACKFILL.
4. 100% STONE BACKFILL IS REQUIRED FULL WIDTH OF RIGHT-OF-WAY.

PAVEMENT BASE DRAIN

N. T. S.

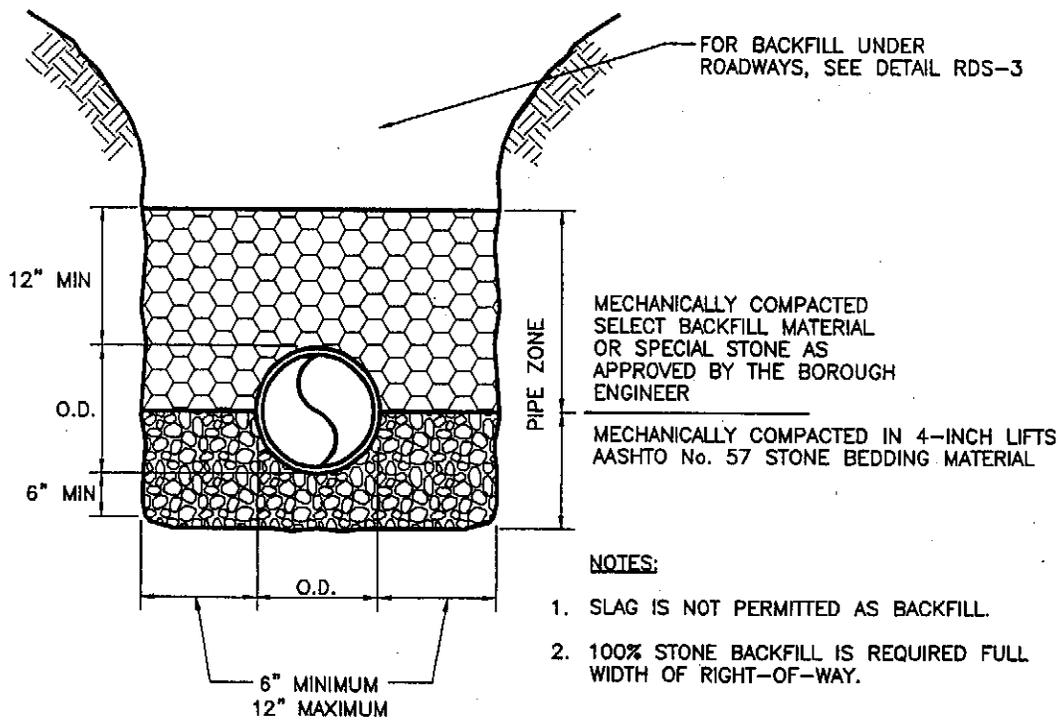


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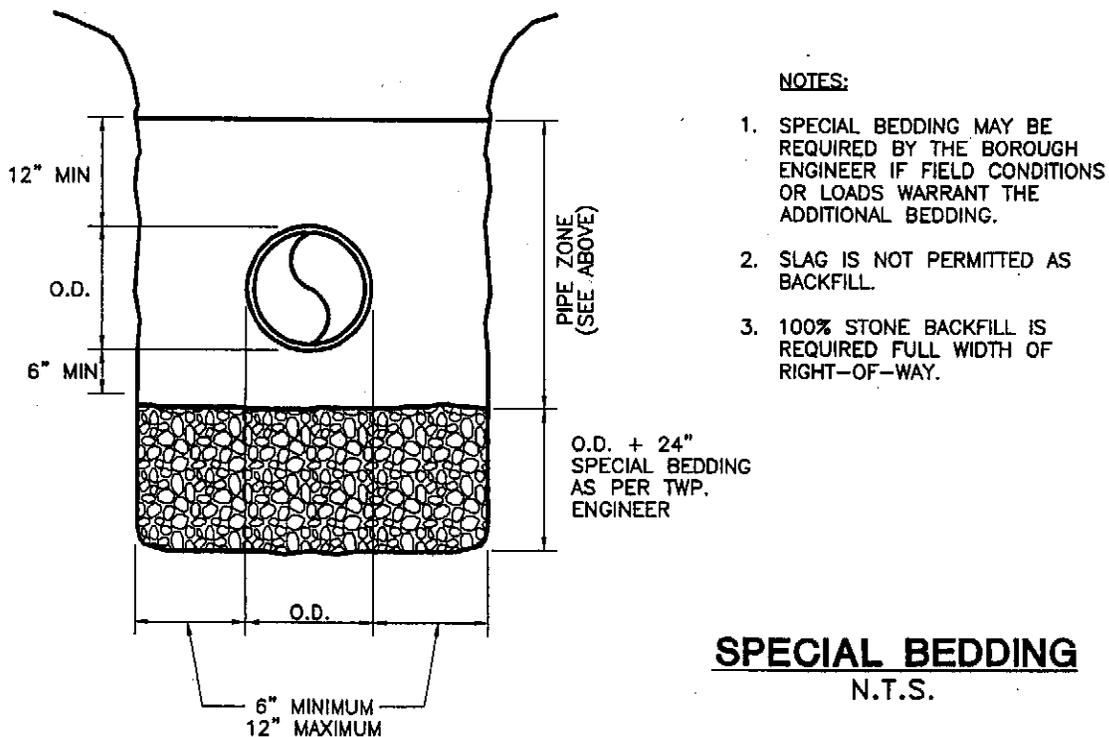
DATE: October 2000
FILE NAME: Shannondet.dwg
SCALE: N.T.S.

**BOROUGH OF CASTLE SHANNON
Standard Details**

Detail RSD-1
Pipe Underdrain / Pavement Base Drain



**CORRUGATED PLASTIC PIPE
TYPICAL BEDDING AND PIPE ZONE**
N. T. S.



SPECIAL BEDDING
N.T.S.



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BOROUGH OF CASTLE SHANNON
Standard Details
Detail RSD-2
Typical Bedding and Pipe Zone for CPP / Special Bedding

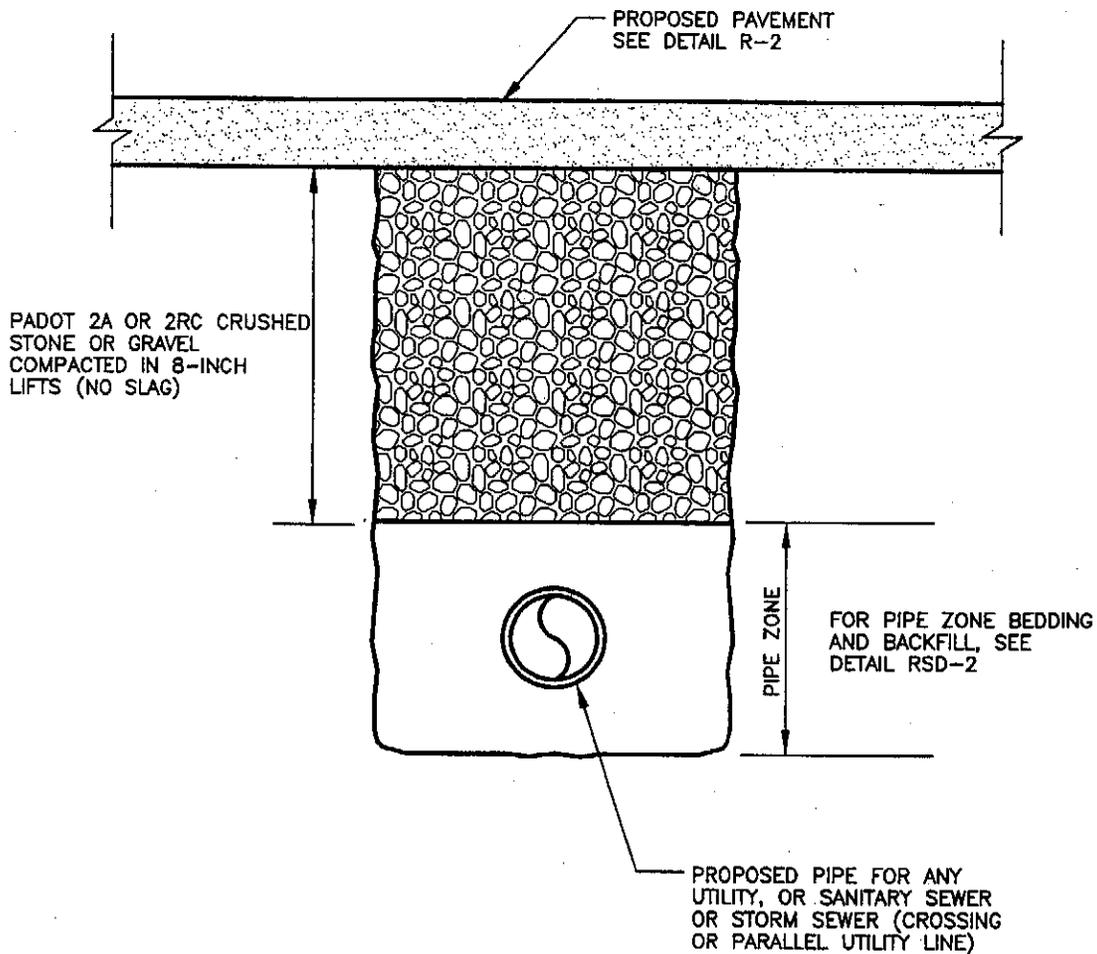


TABLE
REQUIRED SPACING AND MATERIALS FOR TRENCH PLUGS

TRENCH SLOPE (%)	SPACING (ft)	PLUG MATERIAL
< 5	*	*
5 - 15	500	**EARTH FILLED SACKS
15 - 25	300	**EARTH FILLED SACKS
25 - 35	200	**EARTH FILLED SACKS
35 - 100	100	**EARTH FILLED SACKS
> 100	50	CEMENT FILLED BAGS (WETTED)

* TRENCH PLUGS ARE REQUIRED AT ALL STREAM, RIVER OR WATER-BODY CROSSINGS REGARDLESS OF TRENCH SLOPE. OTHERWISE NOT REQUIRED.

** TOPSOIL MAY NOT BE USED TO FILL SACKS.

NOTES:

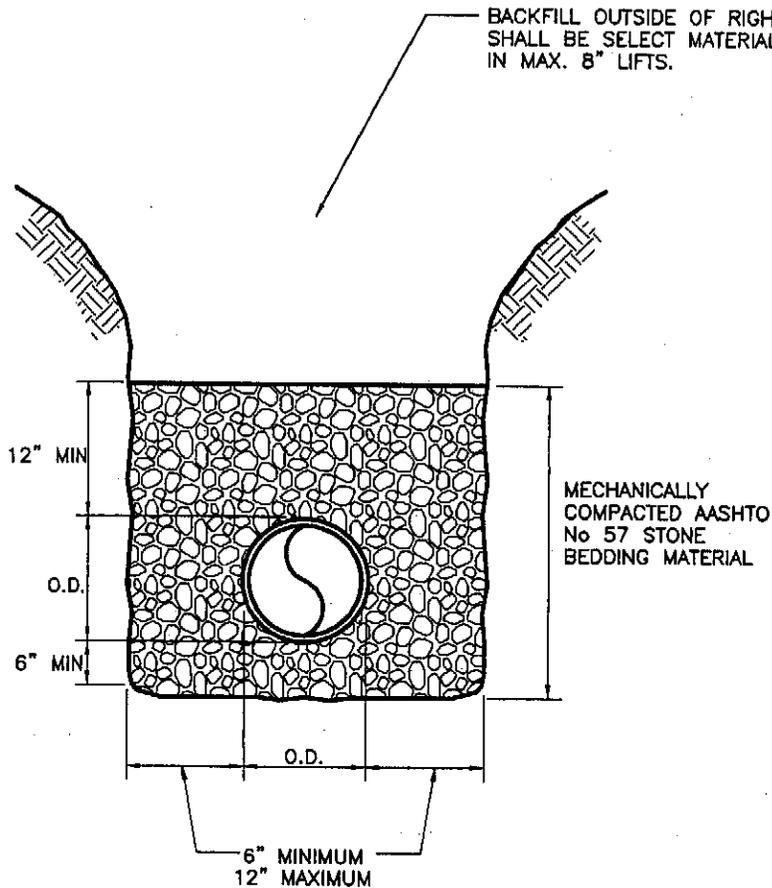
1. SLAG IS NOT PERMITTED AS BACKFILL.
2. 100% STONE BACKFILL IS REQUIRED FULL WIDTH OF RIGHT-OF-WAY.
3. SOIL PLUGS SPACING, SEE TABLE.
4. ALL JOINTS SHALL BE WATER TIGHT JOINTS, UNLESS APPROVED BY BOROUGH ENGINEER.



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BOROUGH OF CASTLE SHANNON
Standard Details
Detail RSD-3
Trench Backfill for Proposed Roads and Streets

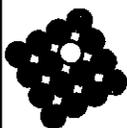


NOTES:

1. P.E. PIPE IS REQUIRED IN ROADWAY RIGHT-OF-WAY.
2. AT TRANSITION FROM RCP TO P.E. PIPE, PROVIDE INLET OR MANHOLE.
3. SLAG IS NOT PERMITTED AS BACKFILL.
4. 100% STONE BACKFILL IS REQUIRED FULL WIDTH OF RIGHT-OF-WAY.

POLYETHYLENE PIPE SPECIFICATIONS

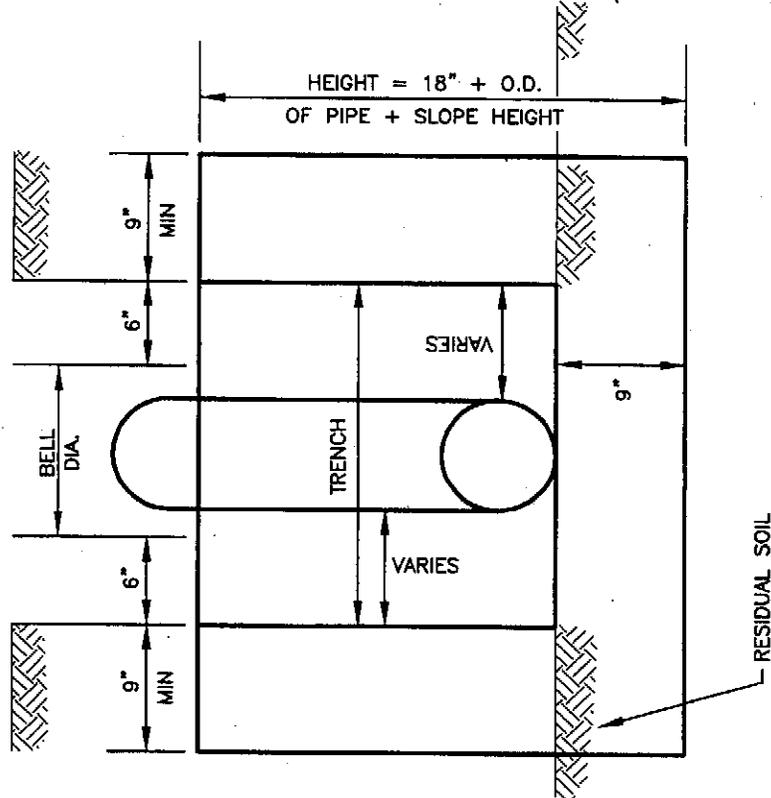
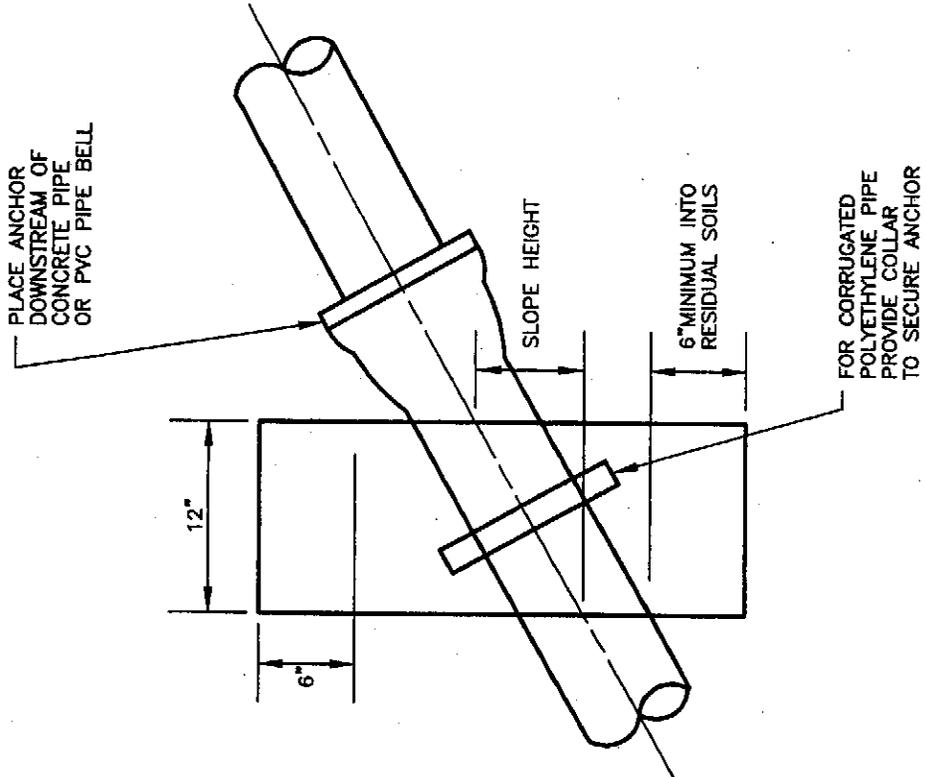
1. PIPE AND FITTINGS SHALL BE MADE OF POLYETHYLENE COMPOUNDS WHICH MEET OR EXCEED THE REQUIREMENTS OF TYPE III, CATEGORY 4 OR 5, GRADE P33 OR P34, CLASS C PER ASTM D-1248 WITH THE APPLICABLE REQUIREMENTS DEFINED IN ASTM D-1248.
2. MIN. COVER IS TO BE 2 FT. WITH AASHTO No. 57 STONE A MIN. OF 12" ABOVE THE TOP OF PIPE. IF THE PIPE IS TO BE LAID UNDER DRIVEWAYS, STREETS OR PARKING AREAS WITH MINIMUM COVER, THE 2 FEET SHALL BE PADOT 2A STONE. MAXIMUM COVER OVER THE PIPE IS NOT TO EXCEED 30 FEET.
3. ALL STORM SEWER WITHIN THE RIGHT-OF-WAY TO BE CPP.
4. MANNING'S "n" FOR DESIGN SHALL BE 0.012 FOR SMOOTH INTERIOR, AND SHALL BE 0.018 FOR SIZES UP TO AND INCLUDING 15", AND 0.020 FOR SIZES FROM 18" UP TO AND INCLUDING 36" FOR CORRUGATED INTERIOR.
5. POLYETHYLENE PIPE SHALL BE IN ACCORDANCE WITH PENNDOT FORM 408, SECTION 601.



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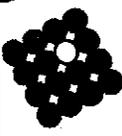
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BOROUGH OF CASTLE SHANNON
Standard Details
Detail RSD-4
Polyethylene Pipe Specifications



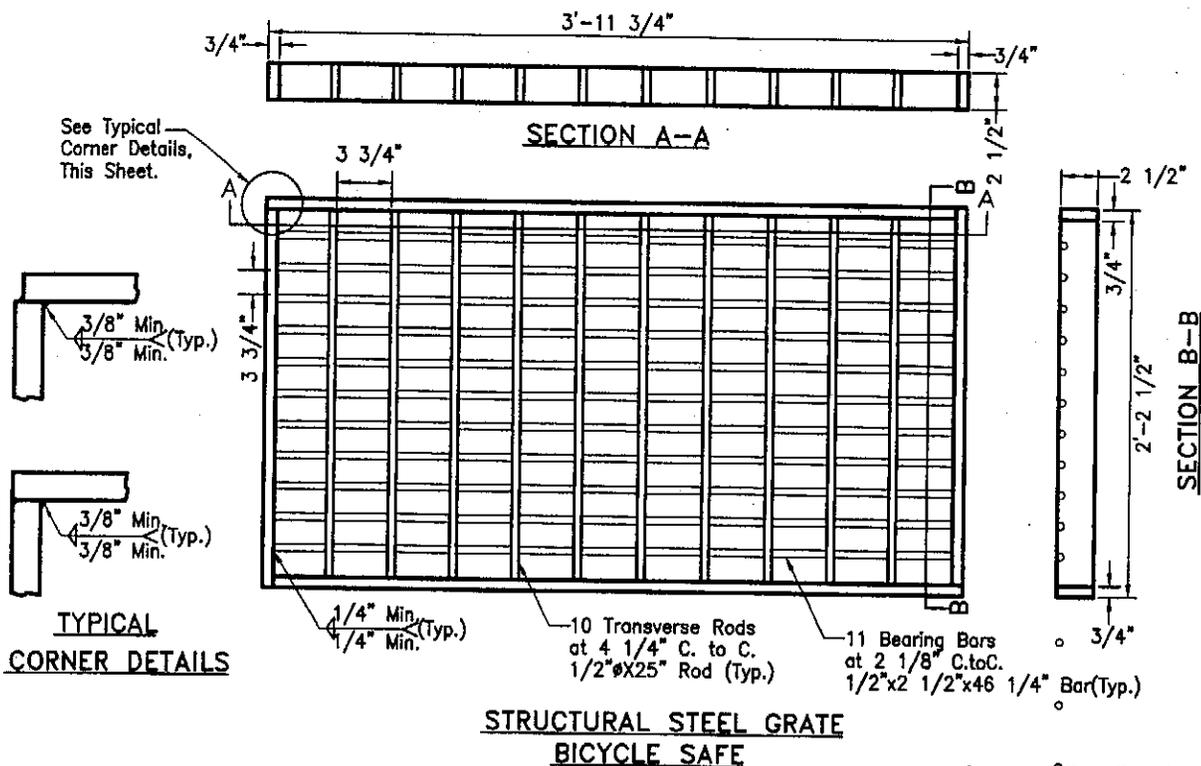
SPACING REQUIRED

% GRADE	DISTANCE CENTER TO CENTER	
	20% TO 30%	30% TO 50%
20% TO 30%	36' C.C.	24' C.C.
30% TO 50%	24' C.C.	18' C.C.
50% +	18' C.C.	


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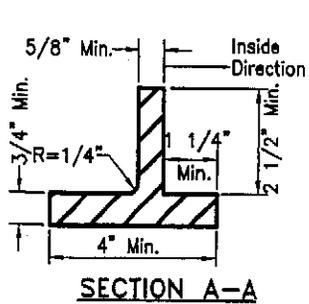
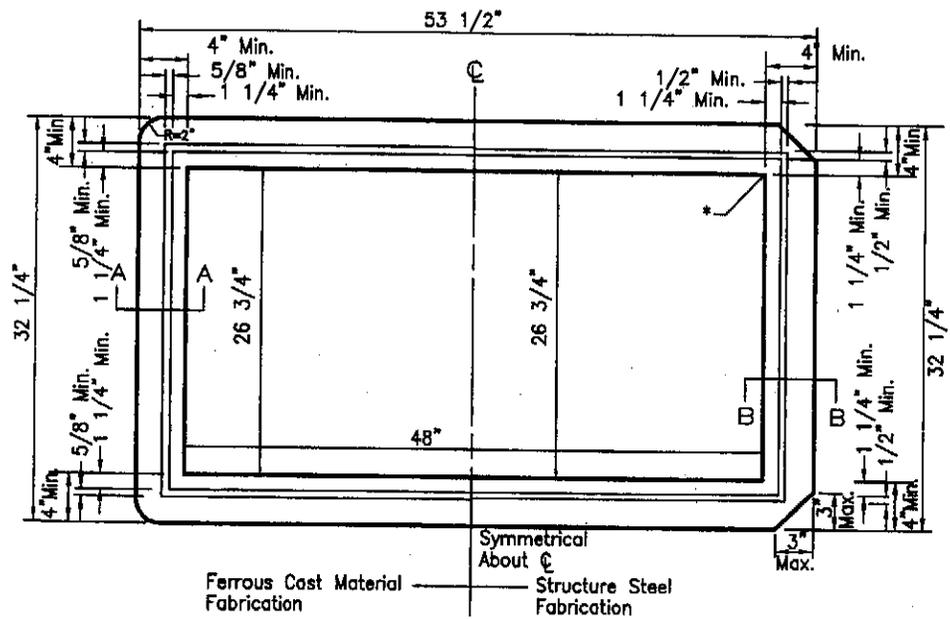
BOROUGH OF CASTLE SHANNON
Standard Details
 Detail RSD-5
 Pipe Anchor



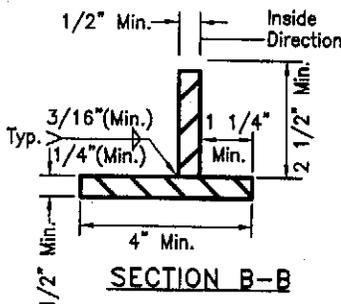
* Corner configuration details are fabricator's responsibility and shall be approved.

Notes:

1. This sheet depicts the dimensions required for uniformity and interchangeability. It does not include details required for fabrication or manufacturing. Only grates supplied by a manufacturer listed in Bulletin 15 shall be permitted.
2. Weld structural steel grates in accordance with the requirements of Publication 408, Section 1105.03(R).
3. Provide transverse bars, meeting the requirements of Publication 408.
4. Provide structural steel grates with the grate spacers located flush along the top surface of the grate.
5. Do not use cast iron grates within the travel lanes. These grates are permitted at the edge of outside shoulders, swales, wide median swales and infield areas that are outside the travel lanes or curb to curb roadways.
6. SOURCE : PA DOT Standards for Roadway Construction. (latest edition)



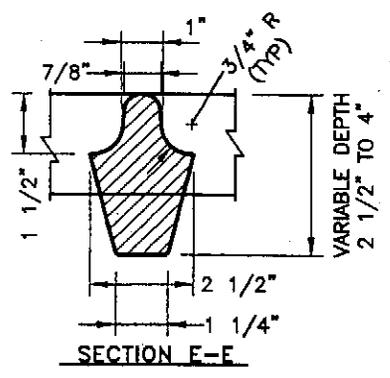
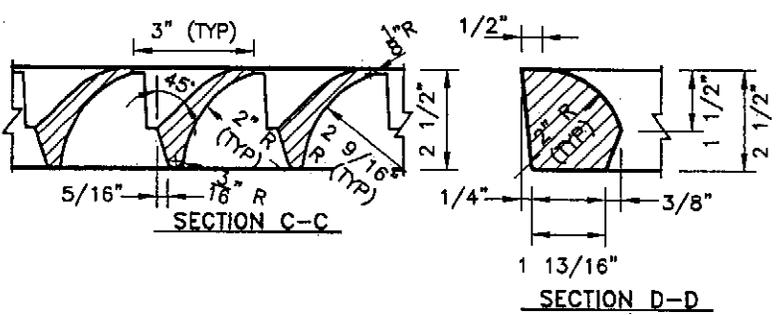
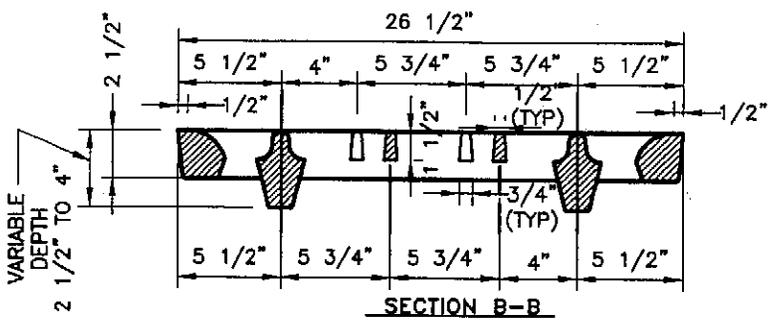
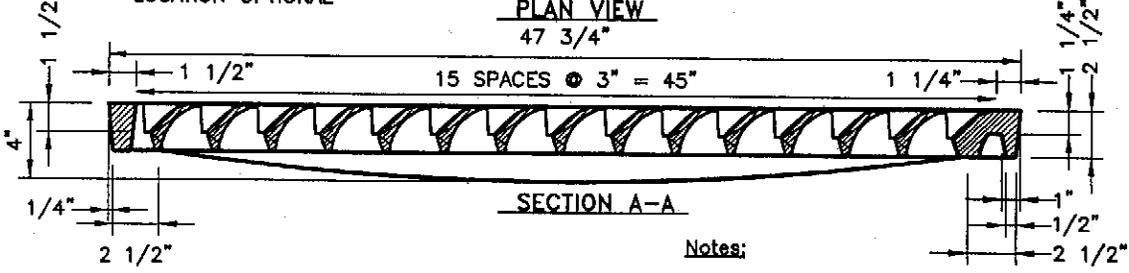
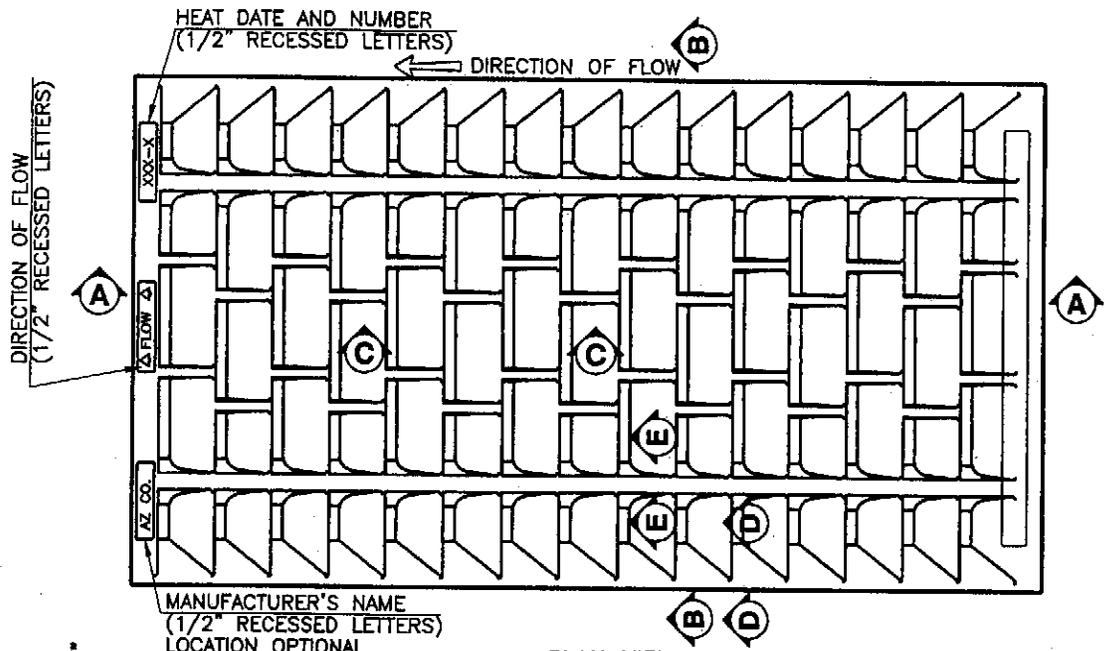
TYPE M FRAME



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SCALE:	N.T.S.

BOROUGH OF CASTLE SHANNON
Standard Details
Detail RSD-6
Type-M Inlet (Frame and Bicycle Safe Grate)



- Notes:**
1. Provide materials and construction in accordance with the requirements of Publication 408, Sections 605, 606 and 714. Only grates and grate adjustment systems supplied by a manufacturer listed in Bulletin 15 shall be permitted. For a Bulletin 15 listing, submit a 22 x 34" reproducible shop drawing for review and approval.
 2. Install vane grates with curve vanes facing the direction of flow.
 3. Provide 1/8" radius (typical) for all fillets and rounds, unless noted.
 4. Grate shall be (1-piece) PADOT approved as listed in Bulletin 15.
 5. Source: PADOT Standards for Roadway Construction (latest edition).

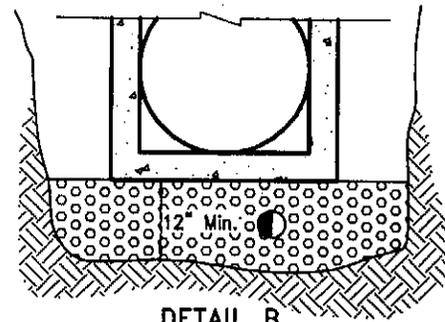
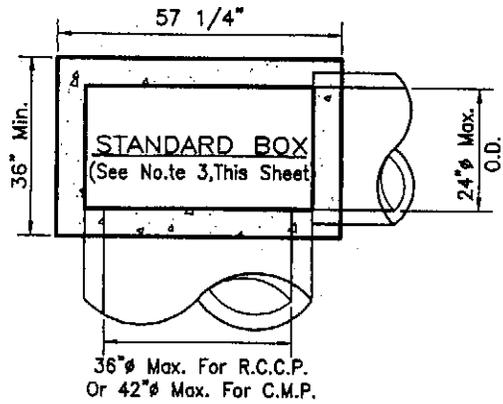
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SCALE:	N.T.S.

BOROUGH OF CASTLE SHANNON
Standard Details
Detail RSD-6A
Type-M Inlet (Cast Iron Vane Grate)

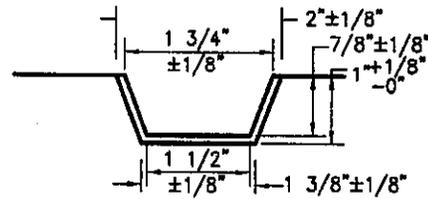
NOTES:

1. Construct in accordance with the requirements of Publication 408, Section 605, for Cast-in-Place units and Section 713.2 for Precast Cement Concrete units.
2. Precast concrete inlet boxes may be used in lieu of cast-in-place boxes shown. Only precast inlet boxes supplied by a manufacturer listed in Bulletin 15 will be permitted. See Note 9, this sheet.
3. Provide inlet boxes with 24" X 45 1/2" standard opening to accommodate the standard top components.
4. Provide 6" inlet walls, unless otherwise indicated, for concrete construction.
5. Inlets that exceed the maximum height, as shown, will require a special design.
6. Do not extend pipe block-outs into the base when base is not monolithic with the inlet walls.
7. Locate pipe or pipes, as indicated, with the inlet bottom shaped to channel the flow toward the outlet pipe.
8. Place precast inlet boxes on a properly prepared base as shown in Detail B.
9. Construct inlets that exceed 5 feet in height with steps similar to manholes. See RC-39.
10. Place #4 reinforcement bars, minimum 12 inches long, space at 12 inches C. to C., as dowels between the inlet base and walls when the concrete walls and inlet base are not constructed monolithically. The dowels may be eliminated if the alternate joint shown in Detail A is constructed.
11. Brick or concrete block inlets shall not be permitted.
12. All inlets for pipes > 36"Ø shall have expanded type inlet box, design of which shall be approved by the BOROUGH engineer.
13. Construct in accordance with PaDOT specifications.
14. Source: PaDOT Standards for Roadway Construction. (latest edition)

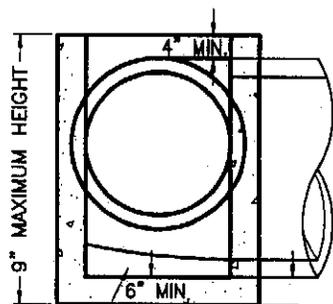
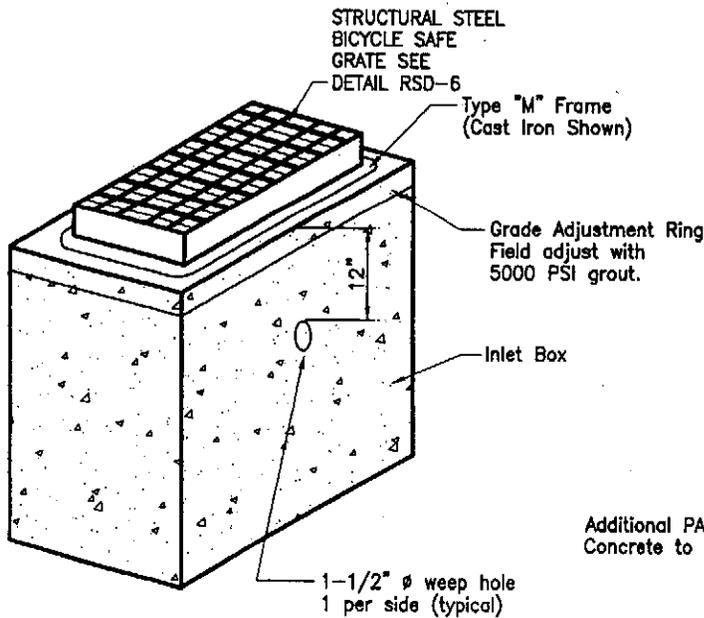


**DETAIL B
PRECAST INLET BOX
BASE PREPARATION**

- Place material meeting the requirements of Publication 408, Section 350.2, in 4 inch layers, compacted to a density satisfactory to the Engineer, incidental to the inlet pay item.



**DETAIL A
ALTERNATE JOINT**



Additional PaDOT Class "A" Concrete to Shape the Bottom.

SECTION A-A



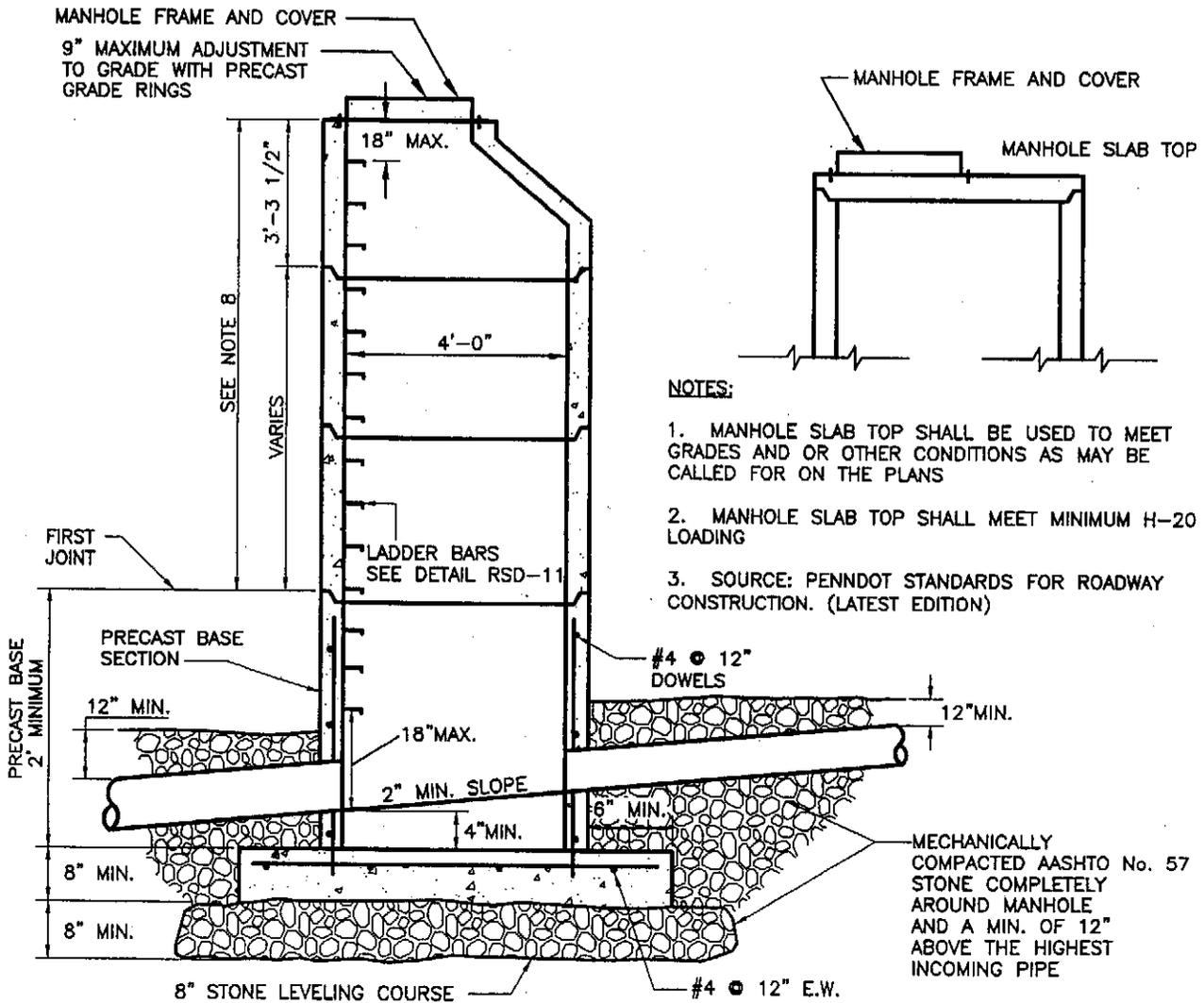
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BOROUGH OF CASTLE SHANNON
Standard Details
Detail RSD-6B
Type-M Inlet (Box)

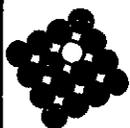
NOTES:

1. ALL CONCRETE SHALL BE CLASS A CONCRETE, 4000 PSI, 5% AIR ENTRAINED
2. MANHOLE BARREL JOINTS TO BE SEALED WITH 1" DIA. FLEXIBLE BUTYL RUBBER JOINT SEALANT, USE 1/2" DIA. FOR FRAME AND COVER
3. FRAME AND COVER TO BE ANCHORED WITH 2-3/4" DIA. S.S. ANCHOR BOLTS SET 6-INCHES INTO CONCRETE
4. LIFTING HOLES TO BE POINTED WITH NON-SHRINK GROUT, AND LEFT WATERTIGHT, NEAT AND SMOOTH
5. MAXIMUM ADJUSTMENT TO FINISHED GRADE USING PRECAST GRADE RINGS SHALL NOT EXCEED NINE INCHES (9")
6. PRECAST SECTIONS SHALL CONFORM TO ASTM C-478 AS REVISED
7. MANHOLE INVERT SHALL BE CONCRETE TO THE SPRING LINE OF PIPE WITH SIDES SLOPING 1/2" TO 1'-0" TO INSIDE FACE OF PRECAST BASE SECTION
8. IF THIS DIMENSION IS 3'-3", USE PRECAST SLAB TOP DESIGNED TO MEET LOAD CONDITIONS
9. PROVIDE PENN DOT CERTIFICATE ON ALL MATERIALS USED ON THE SITE



NOTES:

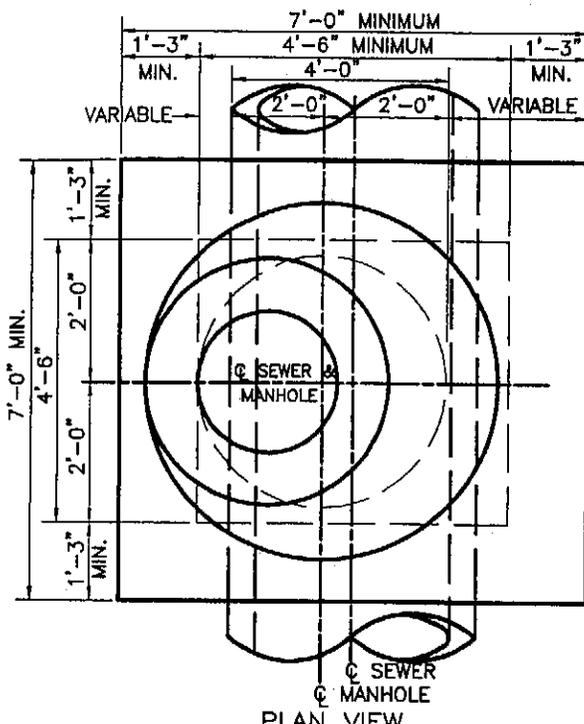
1. MANHOLE SLAB TOP SHALL BE USED TO MEET GRADES AND OR OTHER CONDITIONS AS MAY BE CALLED FOR ON THE PLANS
2. MANHOLE SLAB TOP SHALL MEET MINIMUM H-20 LOADING
3. SOURCE: PENNDOT STANDARDS FOR ROADWAY CONSTRUCTION. (LATEST EDITION)



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BOROUGH OF CASTLE SHANNON
Standard Details
Detail RSD-7
Precast Concrete Manhole (8 to 18") - Manhole Slab Top

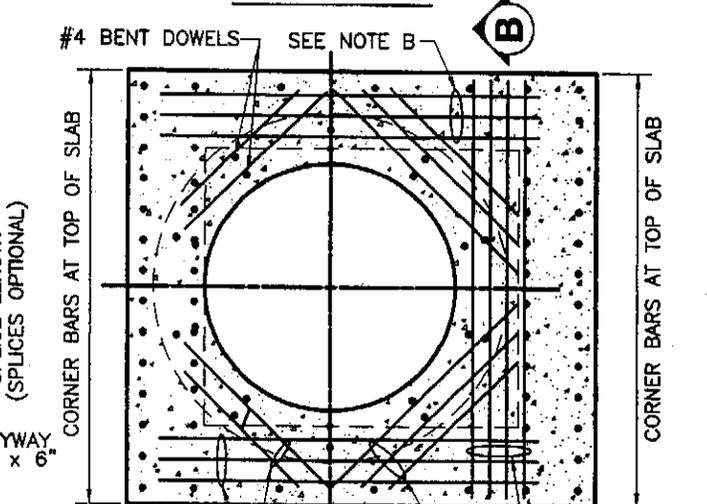
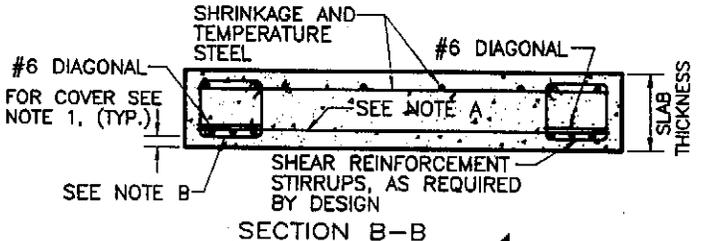
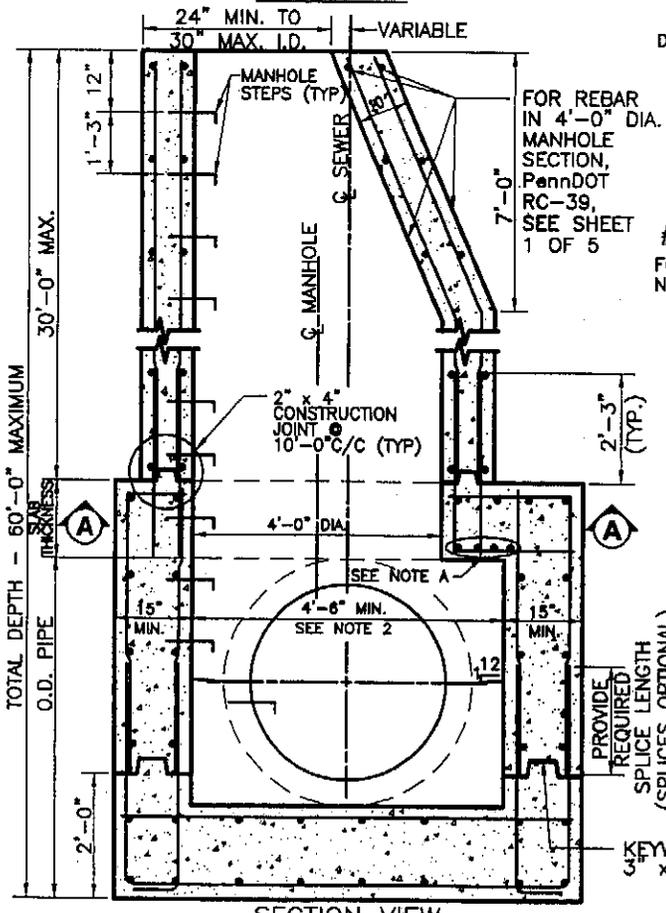


- NOTES:**
- FOR CONSTRUCTION REQUIREMENTS SEE NOTE 1, PennDOT RC-39, SHEET 1 OF 5.
 - FOR DESIGN REQUIREMENTS SEE NOTE 1, PennDOT RC-39, SHEET 5 OF 5.
 - INCREASE BOX SIZE WHEN REQUIRED TO KEEP WALLS OF MANHOLE BOX SECTION FLUSH WITH THE OPENING FOR PIPES LARGER THAN 42" I.D. INDICATE THE BOX SIZE ON THE CONSTRUCTION PLANS OR SHOP DRAWINGS BASED ON THE DESIGN PROCEDURES PROVIDED BELOW.
 - DESIGN PROCEDURE FOR MANHOLE BOX SECTION.
DESIGN ALL MEMBERS FOR MOMENT, CRACK CONTROL & SHEAR AT DISTANCE d (EFFECTIVE DEPTH OF MEMBER) FROM FACE OF SUPPORT. ALL SPAN LENGTHS ARE CALCULATED FROM THE CENTER OF THE SUPPORTS.

- A. TOP SLAB**
DESIGN A 12" WIDE SLAB STRIP FOR ONE-WAY ACTION TO CARRY DEAD LOAD, LIVE LOAD, AND WEIGHT OF EARTH. SPAN THE STRIP, SIMPLY SUPPORTED, ACROSS THE WIDTH OF THE BOX OR IN THE SHORT DIRECTION. SEE FIGURE 1 FOR DETAILS.
PLACE ADDITIONAL BARS IN THE SLAB AT 45 DEGREES AROUND THE MANHOLE OPENING. SEE SECTION A-A THIS SHEET FOR DETAILS.
- B. "EDGE BEAM"**
VIEWS SHOWING THE CONFIGURATION OF MANHOLE BOX SECTION ILLUSTRATE "EDGE BEAMS" TO BE THE SAME DEPTH AS THE TOP SLAB. TO ACHIEVE REQUIRED CAPACITY WHERE NECESSARY, INCREASE DEPTH OF "EDGE BEAM" BY PROVIDING ADDITIONAL CLEARANCE BETWEEN THE SLAB AND TOP OF OPENING. LOCATE HORIZONTAL STEEL FOR BEAM ABOVE THE SOFFIT OF THE OPENING. SEE FIGURE 2 FOR DETAILS.
DESIGN THE "EDGE BEAMS", SPANNING THE LENGTH OF THE CARRY A UNIFORMLY BOX, TO DISTRIBUTED LOAD EQUAL TO THE REACTION FROM THE SLAB.

- C. WALLS**
DESIGN THE WALLS TO CARRY THE AXIAL LOAD, DUE TO EARTH LOAD, LIVE LOAD, AND DEAD LOAD APPLIED DIRECTLY TO THE WALL, IN ADDITION TO REACTIONS FROM THE "EDGE BEAMS", AND THE VERTICAL MOMENT CAUSED BY SATURATED AT REST EARTH PRESSURE. SEE FIGURE 2 FOR PRESSURE DIAGRAM. CONSIDER THE WALL SIMPLY SUPPORTED BETWEEN TOP SLAB AND FOOTING. PROVIDE THE SAME REINFORCEMENT ON THE OUTSIDE FACE.

- D. FOOTING**
DESIGN SPAN NORMAL TO PIPE TO CARRY POSITIVE MOMENT OF $1/10 W L^2$ AND NEGATIVE MOMENT OF $1/12 W L^2$ WHERE W IS THE UNIFORM BEARING PRESSURE. DO NOT TAKE INTO ACCOUNT THE CONCRETE IN THE CHANNEL WHEN CALCULATING CAPACITY OF THE FOOTING. AS A MINIMUM, PROVIDE NO. 4 BARS AT 12" CENTERS, TOP AND BOTTOM OF SLAB IN THE OPPOSITE DIRECTION.



MODIFIED MANHOLE
(FOR PIPES 36" DIA. OR LARGER)

NOTE B: PROVIDE ADDITIONAL BARS AS REQUIRED BY DESIGN WHEN OPENING IN WALL IS PRESENT (TYP.)

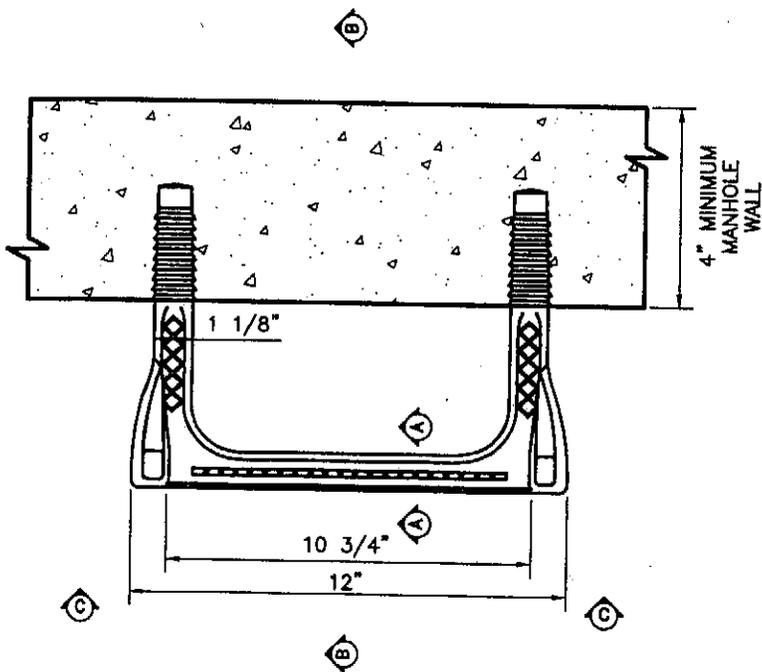
NOTE A: BARS REQUIRED TO SPAN FROM WALL TO WALL.

SOURCE: PENNDOT STANDARDS FOR ROADWAY CONSTRUCTION. (LATEST EDITION)

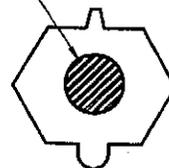
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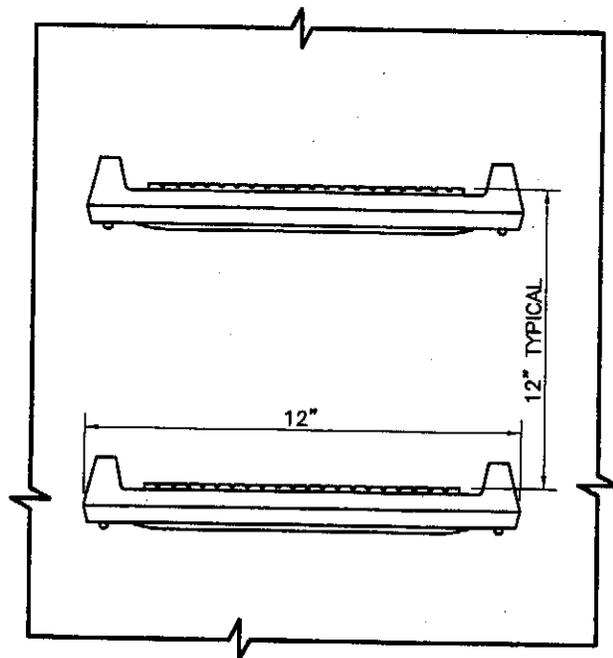
BOROUGH OF CASTLE SHANNON
Standard Details
Detail RSD-10
Concrete Manhole (36" and up)



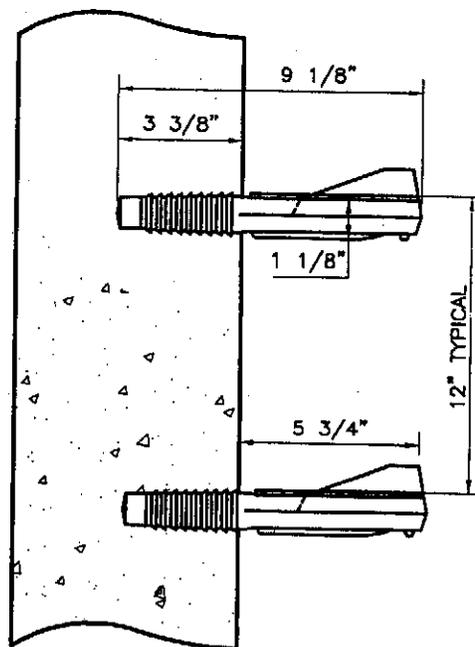
1/2" GRADE 60 STEEL REINFORCEMENT



SECTION A-A



VIEW C-C



SECTION B-B



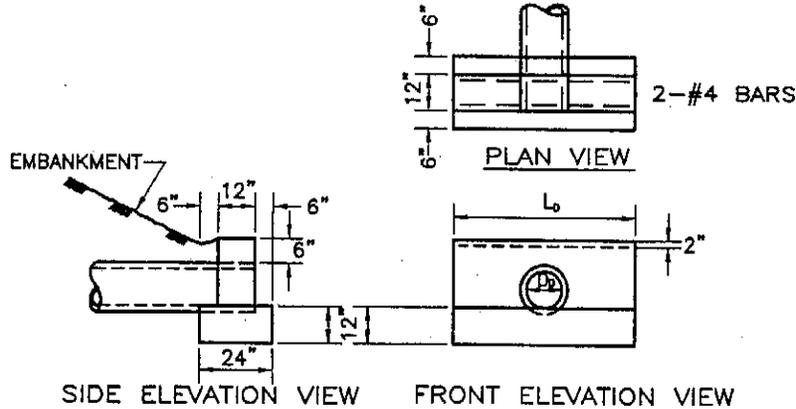
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BOROUGH OF CASTLE SHANNON
Standard Details

Detail RSD-11
Ladder Bars for Manholes and Inlets

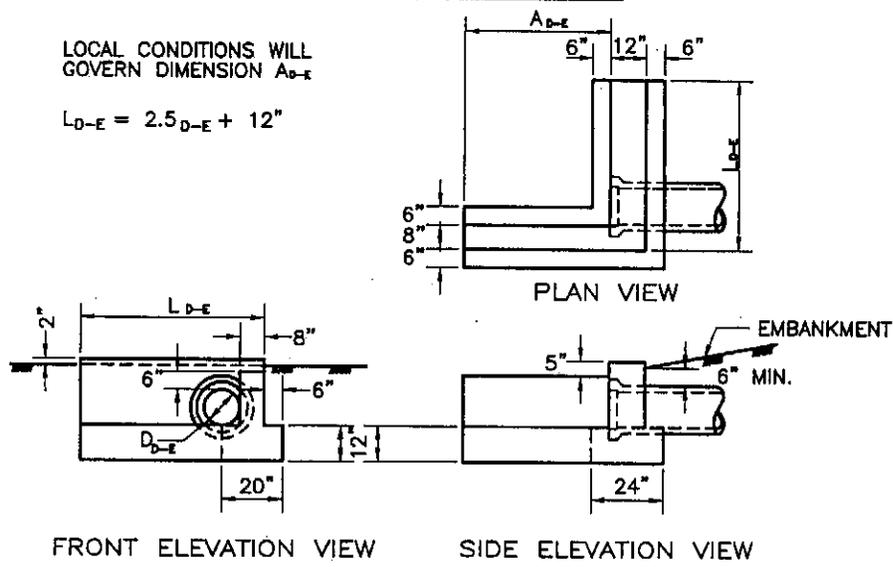
DIAMETER PIPE	L_D
18" AND 21"	5'
24" AND 27"	7'
30" AND 36"	9'



TYPE D ENDWALL

LOCAL CONDITIONS WILL GOVERN DIMENSION A_{D-E}

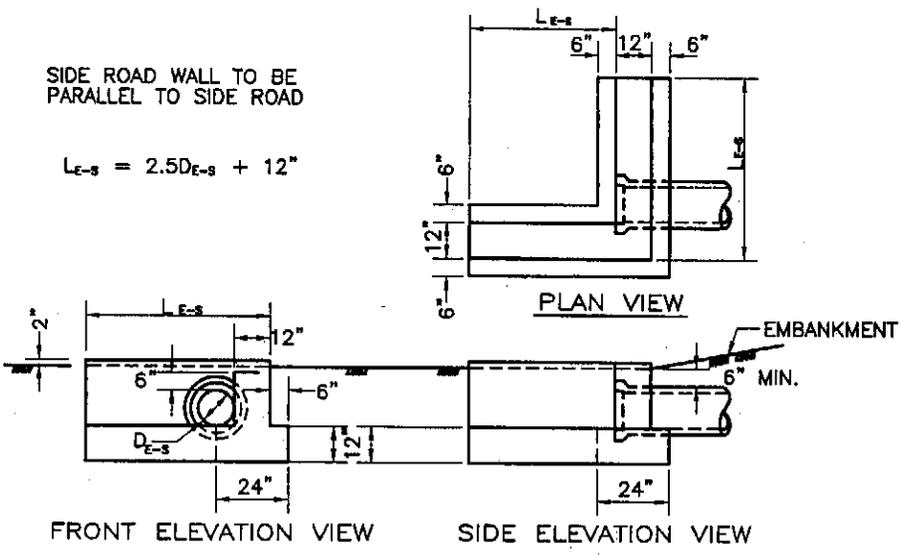
$$L_{D-E} = 2.5D_{D-E} + 12"$$



TYPE D-E ENDWALL

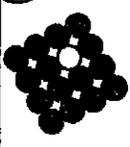
SIDE ROAD WALL TO BE PARALLEL TO SIDE ROAD

$$L_{E-S} = 2.5D_{E-S} + 12"$$



TYPE E-S ENDWALL

SOURCE: PENNDOT STANDARDS FOR ROADWAY CONSTRUCTION. (LATEST EDITION)



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BOROUGH OF CASTLE SHANNON
Standard Details
Detail RSD-12 (PAGE 1 OF 2)
Endwalls (15" to 33" Pipes)

TABLE A
2 : 1 EMBANKMENT SLOPES

PIPE DIA.	SKEW $\Delta = 90^\circ$ TO 60° $\theta = 30^\circ$			SKEW $\Delta = 55^\circ$ $\theta = 35^\circ$			SKEW $\Delta = 50^\circ$ $\theta = 40^\circ$			SKEW $\Delta = 45^\circ$ $\theta = 45^\circ$			SKEW $\Delta = 40^\circ$ $\theta = 50^\circ$			SKEW $\Delta = 30^\circ$ $\theta = 60^\circ$			SKEW $\Delta = 20^\circ$ $\theta = 70^\circ$			SKEW $\Delta = 10^\circ$ $\theta = 80^\circ$			X	
	D_{D-W} (IN.)	L_{D-W} (FT.)	W_1 (FT.)	L_{D-W} (FT.)	W_1 (FT.)	W_1 (FT.)	W_2 (FT.)	A_{D-W} (IN.)																		
36	5.8	0	4.6	6.0	.33	4.9	6.2	.5	5.2	6.5	.67	5.7	7.0	.75	6.2	8.3	1.33	8.0	11.1	1.75	11.7	19.6	5.0	23.0	4.6	12
42	6.3	0	5.8	6.8	.33	6.1	6.9	.5	6.5	7.3	.87	7.1	7.8	.75	7.8	9.3	1.33	10.0	12.5	1.75	14.6	22.5	5.0	28.8	5.8	12
48	6.9	0	6.9	7.2	.33	7.3	7.5	.5	7.8	8.0	.67	8.5	8.5	.75	9.4	10.3	1.33	12.0	14.0	1.75	17.5	25.3	5.0	34.6	6.9	12
54	7.5	0	8.0	7.8	.33	8.5	8.2	.5	9.1	8.7	.67	9.9	9.3	.75	10.9	11.3	1.33	14.0	15.5	1.75	20.5	28.2	5.0	40.3	8.0	12
60	8.1	0	9.2	8.4	.33	9.8	8.8	.5	10.4	9.4	.67	11.3	10.1	.75	12.5	12.3	1.33	16.0	16.9	1.75	23.4	31.1	5.0	46.0	9.2	15
72	9.2	0	11.5	9.6	.33	12.2	10.1	.5	13.0	10.8	.67	14.1	11.7	.75	15.6	14.3	1.33	20.0	19.8	1.75	29.2	36.9	5.0	57.6	11.5	15

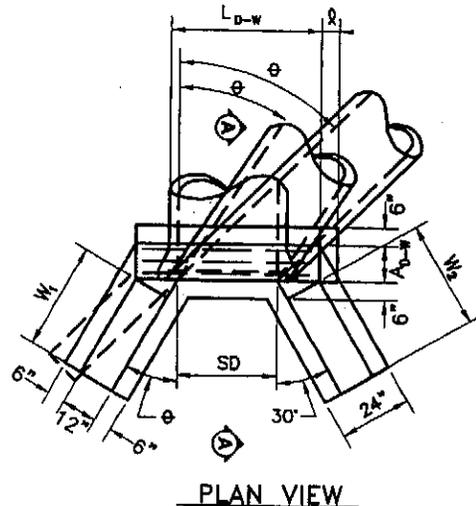
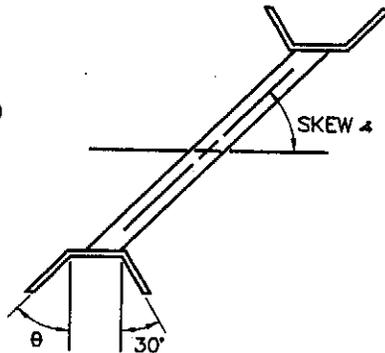
$$SD = \frac{D_{D-W}}{\cos \theta} = \frac{D_{D-W}}{\sin \text{SKEW } \Delta}$$

$$L_{D-W} = SD + 2.3'$$

$$W_1 = \frac{2D_{D-W} - 2'}{\cos \theta} \text{ (FOR 2 : 1 SLOPE)}$$

$$W_1 = \frac{X}{\cos \theta} (D_{D-W} - 0.5 \frac{1.0}{X})$$

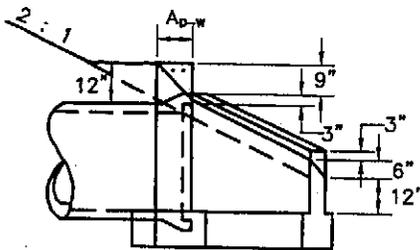
(FOR VARIABLE SLOPE WHEN X EQUALS HORIZONTAL DIMENSION OF THE SLOPE DESIGNATION.)



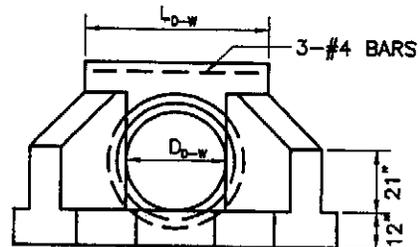
PLAN VIEW

NOTES:

1. PROVIDE MATERIALS AND WORKMANSHIP IN ACCORDANCE WITH THE APPROPRIATE SPECIFICATIONS AS OUTLINED IN PUBLICATION 408, SECTION 605. PENNDOT MATERIAL CERTIFICATION ON ALL MATERIALS
2. USE CLASS A CEMENT CONCRETE OR BETTER.
3. CHAMFER EXPOSED EDGES ONE INCH.
4. PROVIDE REINFORCEMENT (.12IN. /L.F.) IN ACCORDANCE WITH PUBLICATION 408, SECTION 709.



SECTION A-A

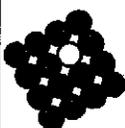


FRONT ELEVATION VIEW

TYPE D-W ENDWALL

(SEE TABLE A, FOR DIMENSIONS NOT INDICATED.)

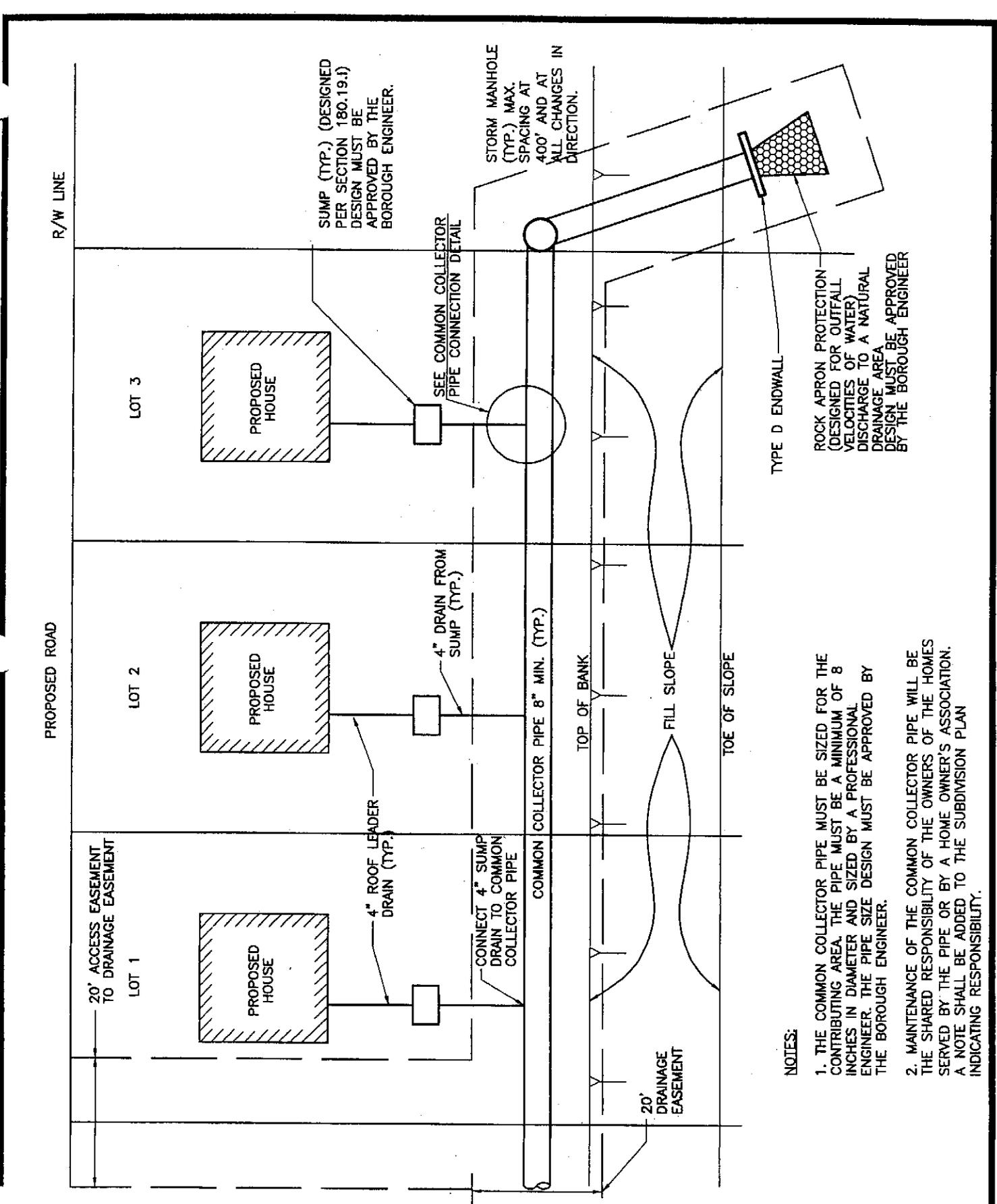
SOURCE: PENNDOT STANDARDS FOR ROADWAY CONSTRUCTION. (LATEST EDITION)



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FILE NAME: Shannondet.dwg
SCALE: N.T.S.

BOROUGH OF CASTLE SHANNON
Standard Details
Detail RSD-12 (PAGE 2 OF 2)
Endwalls (36" to 72" Pipes)



SUMP (TYP.) (DESIGNED PER SECTION 180.19.f) DESIGN MUST BE APPROVED BY THE BOROUGH ENGINEER.

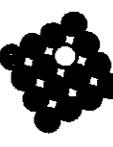
SEE COMMON COLLECTOR PIPE CONNECTION DETAIL

STORM MANHOLE (TYP.) MAX. SPACING AT 400' AND AT ALL CHANGES IN DIRECTION.

TYPE D ENDWALL
 ROCK APRON PROTECTION (DESIGNED FOR OUTFALL VELOCITIES OF WATER) DISCHARGE TO A NATURAL DRAINAGE AREA DESIGN MUST BE APPROVED BY THE BOROUGH ENGINEER

NOTES:

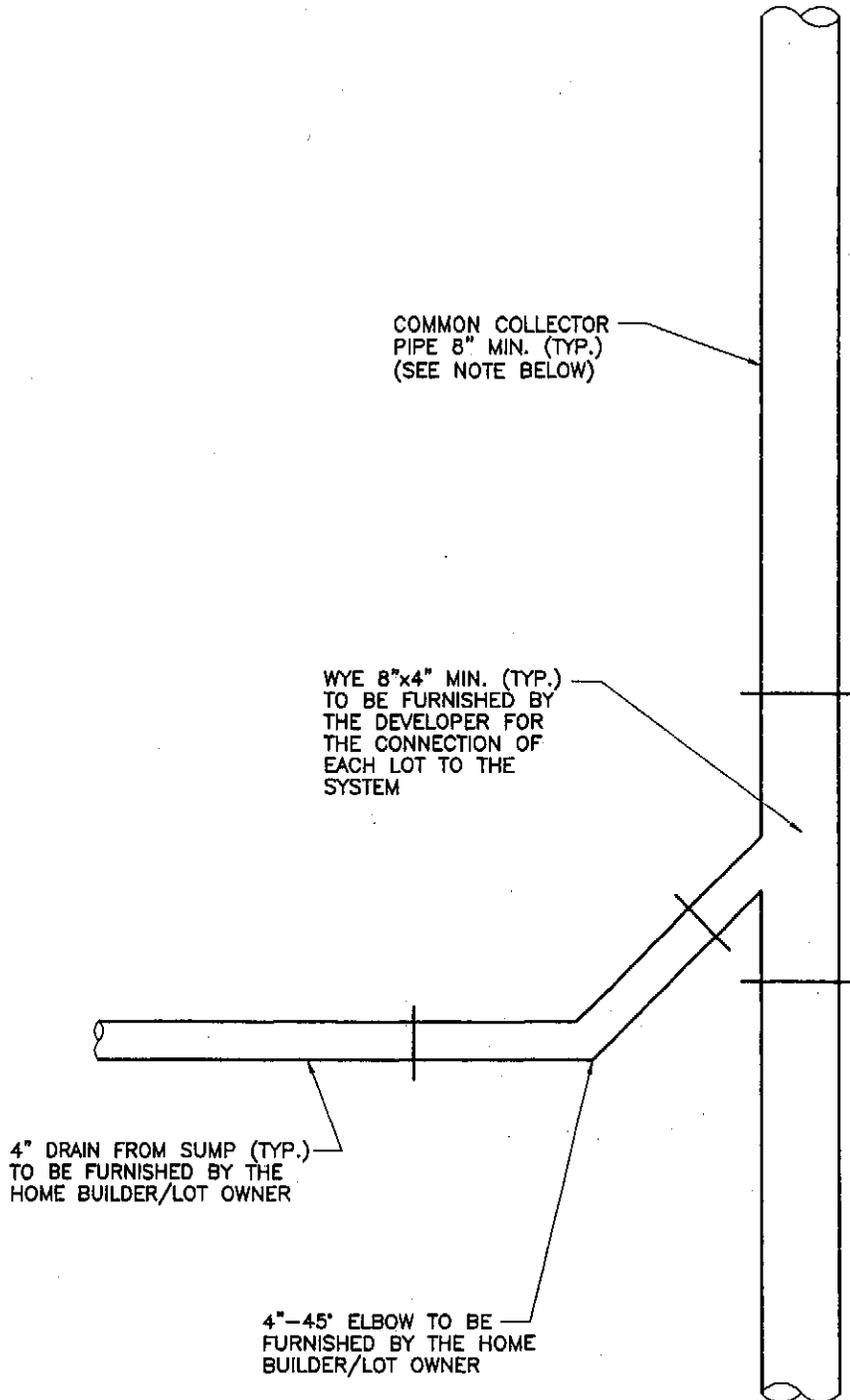
1. THE COMMON COLLECTOR PIPE MUST BE SIZED FOR THE CONTRIBUTING AREA. THE PIPE MUST BE A MINIMUM OF 8 INCHES IN DIAMETER AND SIZED BY A PROFESSIONAL ENGINEER. THE PIPE SIZE DESIGN MUST BE APPROVED BY THE BOROUGH ENGINEER.
2. MAINTENANCE OF THE COMMON COLLECTOR PIPE WILL BE THE SHARED RESPONSIBILITY OF THE OWNERS OF THE HOMES SERVED BY THE PIPE OR BY A HOME OWNER'S ASSOCIATION. A NOTE SHALL BE ADDED TO THE SUBDIVISION PLAN INDICATING RESPONSIBILITY.



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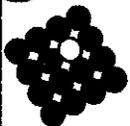
DATE:	October 2000
FILE NAME:	Shannondet.dwg
SCALE:	N.T.S.

BOROUGH OF CASTLE SHANNON
Standard Details
 Detail RSD-13 (PAGE 1 OF 2)
 Roof Drain Sump Outlet



NOTES:

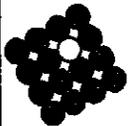
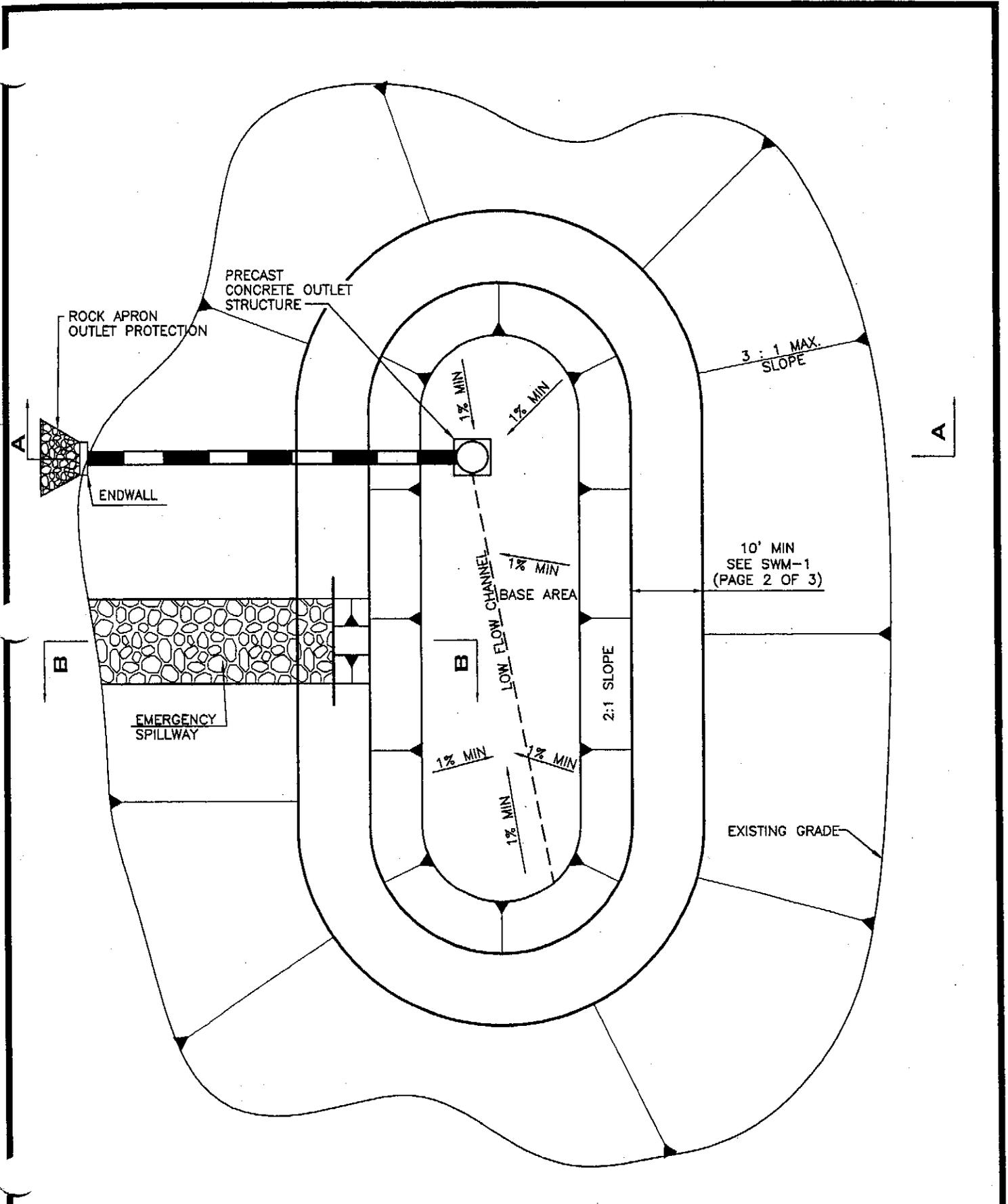
1. THE COMMON COLLECTOR PIPE MUST BE SIZED FOR THE CONTRIBUTING DRAINAGE AREA. THE PIPE MUST BE A MINIMUM OF 8 INCHES SDR-35 IN DIAMETER AND SIZED BY A PROFESSIONAL ENGINEER. THE PIPE SIZE DESIGN MUST BE APPROVED BY THE BOROUGH ENGINEER.
2. MAINTENANCE OF THE COMMON COLLECTOR PIPE WILL BE THE SHARED RESPONSIBILITY OF THE OWNERS OF THE HOMES SERVED BY THE PIPE OR BY A HOME OWNER'S ASSOCIATION. A NOTE SHALL BE ADDED TO THE SUBDIVISION PLAN INDICATING RESPONSIBILITY.



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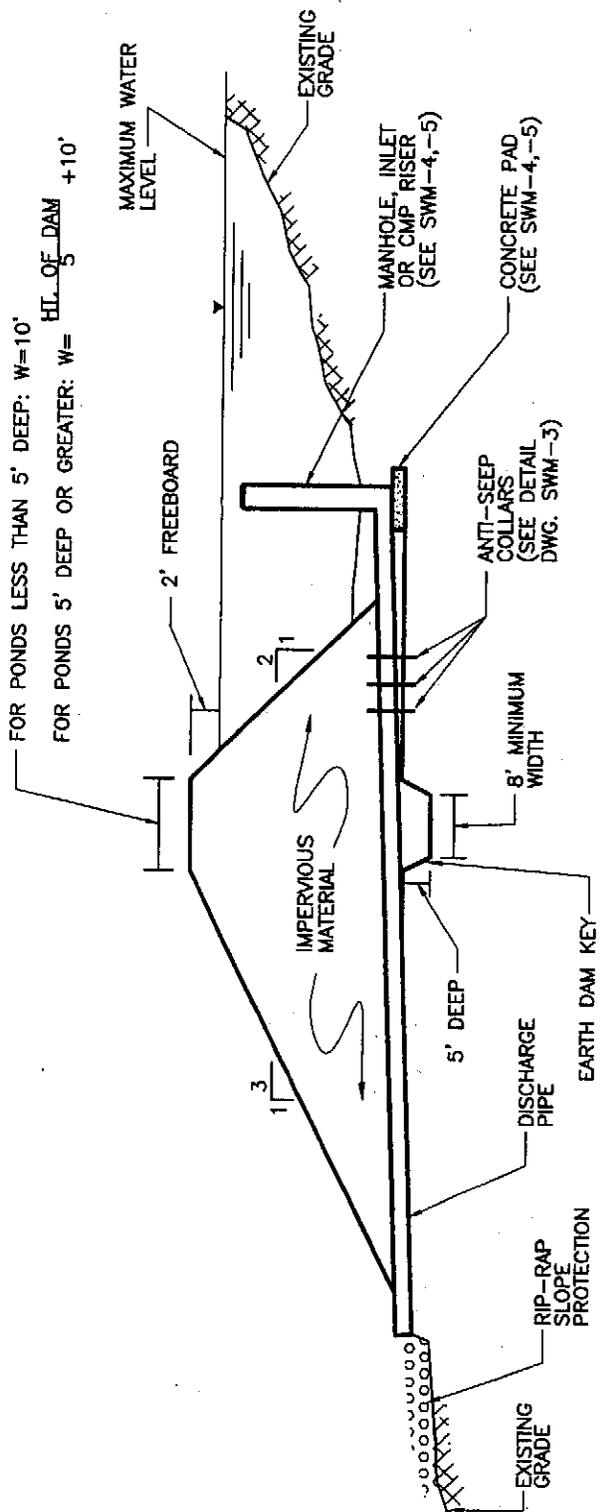
BOROUGH OF CASTLE SHANNON
Standard Details
Detail RSD-13 (PAGE 2 OF 2)
Common Collector Pipe Connection



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SCALE: N.T.S.

BOROUGH OF CASTLE SHANNON
Standard Details
Detail SWM-1 (PAGE 1 OF 3)
Permanent Earth Dam - Plan View



NOTES:

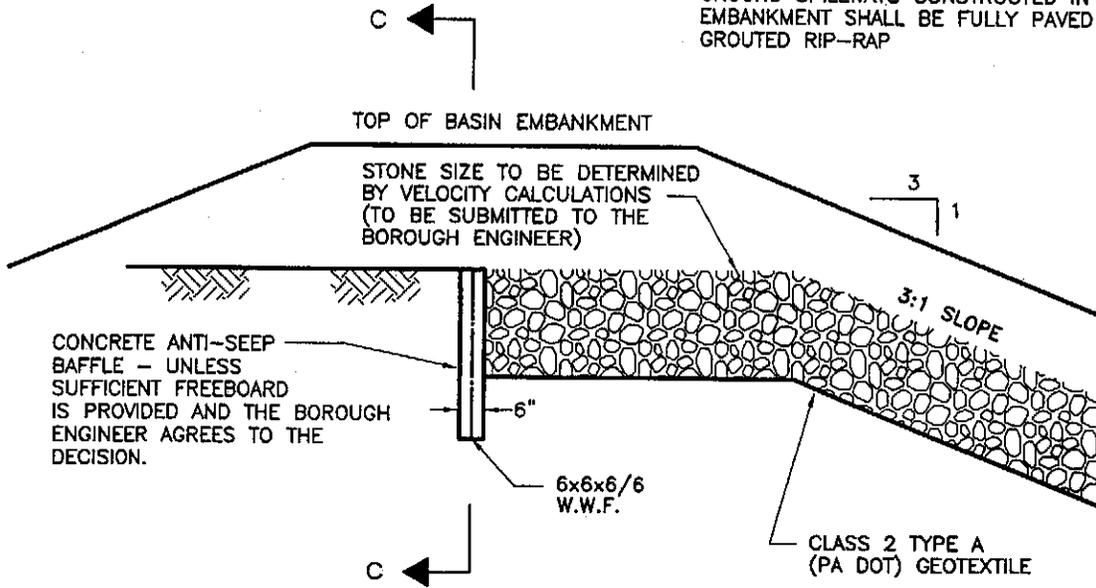
1. ROCK APRON OUTLET PROTECTION TO BE SIZED ACCORDING TO EXIT VELOCITY AND SHEAR CALCULATIONS TO BE SUBMITTED TO THE BOROUGH ENGINEER (SEE DETAILS SWM-8 & SWM-8A).
2. ALL CALCULATIONS FOR BASIN SIZING, FREEBOARD, OUTLET STRUCTURES, DISCHARGE PIPES, ETC. MUST BE SUBMITTED TO THE BOROUGH ENGINEER

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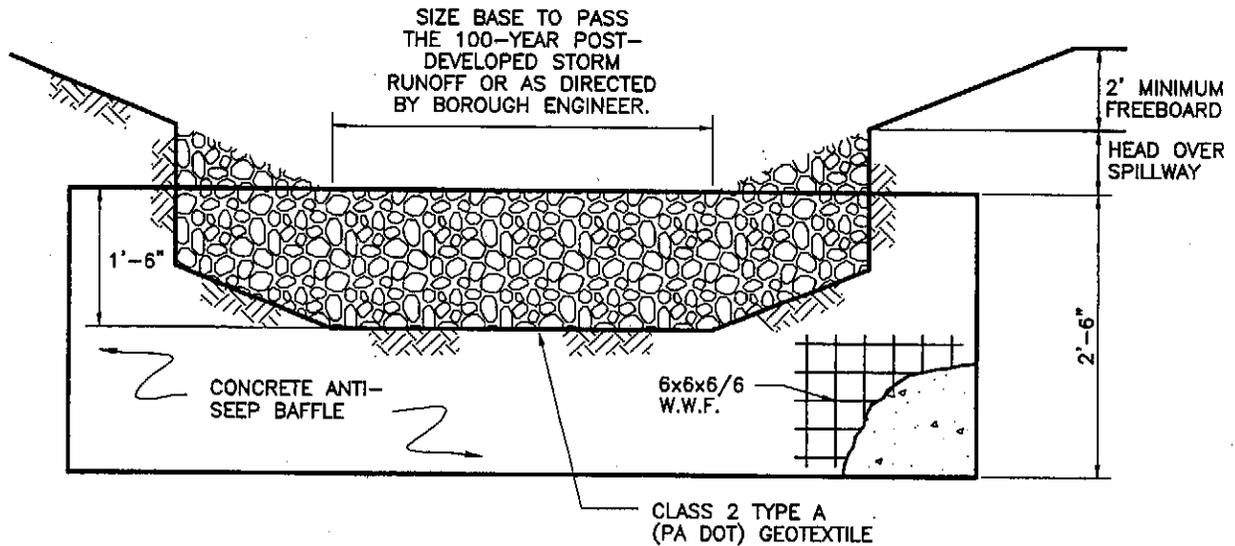
DATE:	October 2000
FILE NAME:	Shannondet.dwg
SCALE:	N.T.S.

BOROUGH OF CASTLE SHANNON
Standard Details
 Detail SWM-1 (PAGE 2 OF 3)
 Permanent Earth Dam - Section A-A

NOTE:
 SPILLWAY TO BE CUT INTO EXISTING
 GROUND SPILLWAYS CONSTRUCTED IN
 EMBANKMENT SHALL BE FULLY PAVED OR
 GROUTED RIP-RAP



SECTION B-B



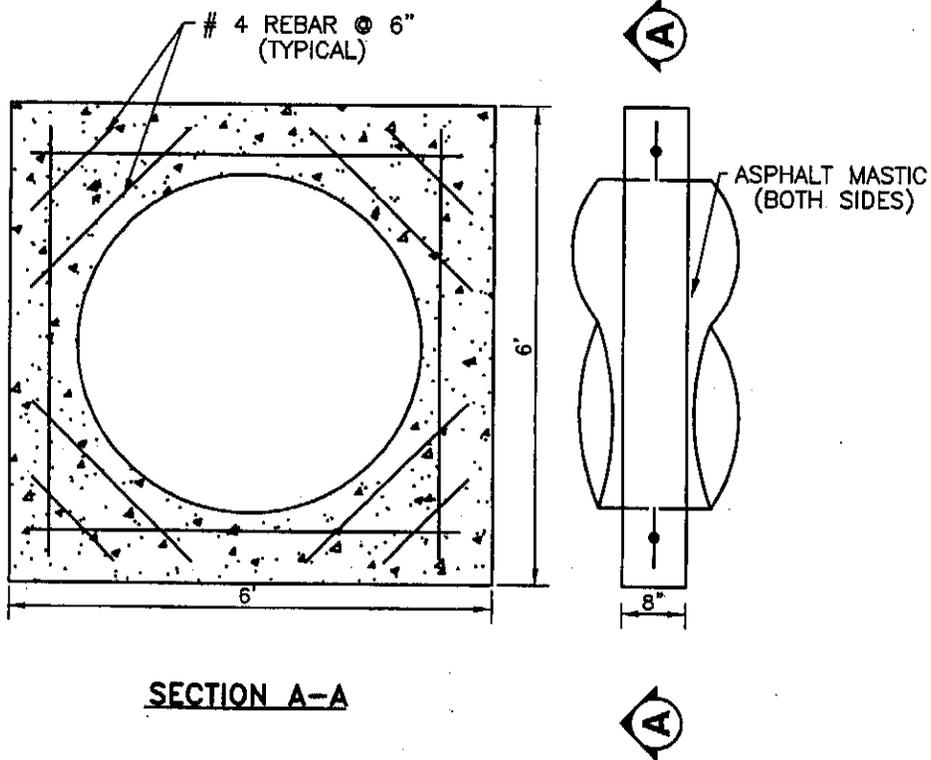
SECTION C-C



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 FILE NAME: Shannondet.dwg
 SCALE: N.T.S.

BOROUGH OF CASTLE SHANNON
Standard Details
 Detail SWM-1 (PAGE 3 OF 3)
 Permanent Earth Dam - Sections B-B & C-C



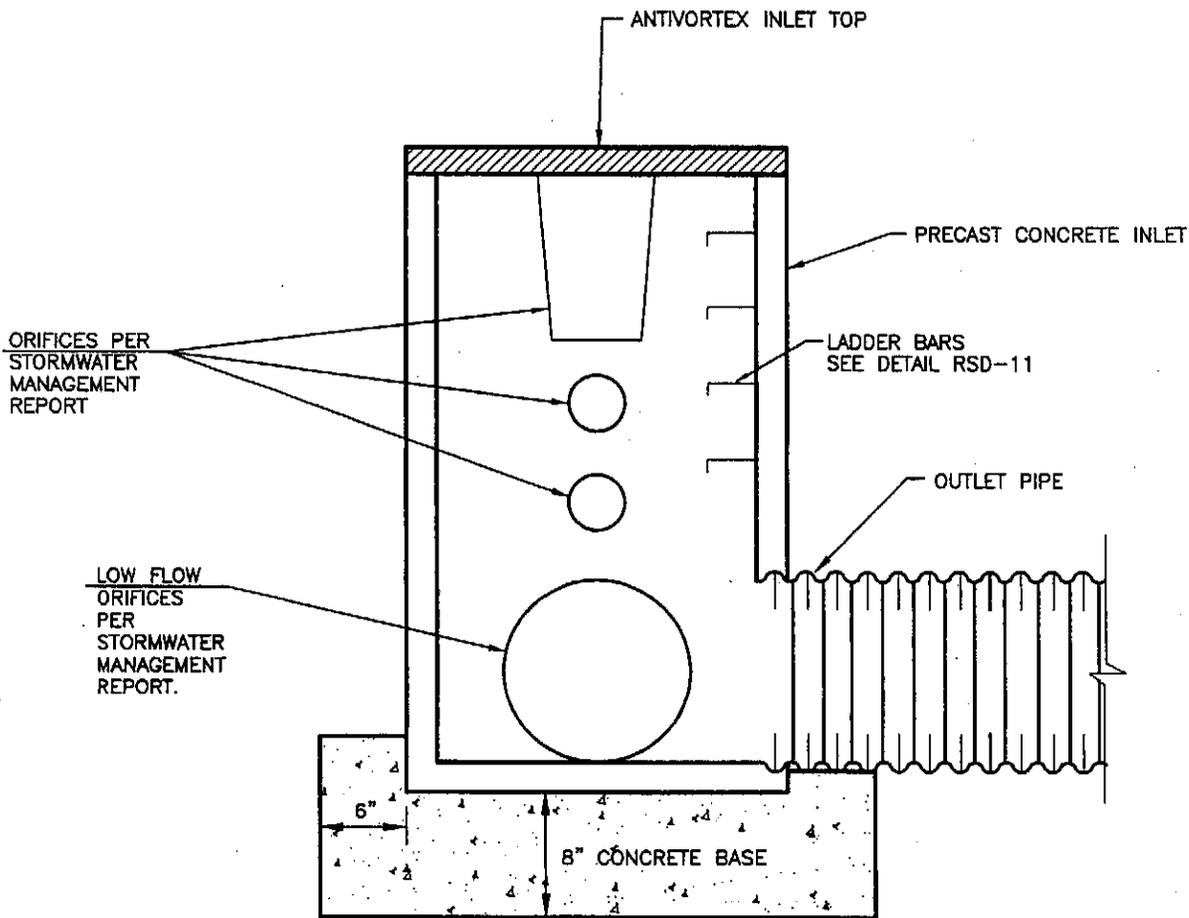
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BOROUGH OF CASTLE SHANNON
Standard Details
Detail SWM-2
Concrete Anti-Seep Collars

NOTES:

1. ALL CONCRETE SHALL BE CLASS A CONCRETE, 4000 PSI, 5% AIR ENTRAINED
2. INLET JOINTS TO BE SEALED WITH 1" DIA. FLEXIBLE BUTYL RUBBER JOINT SEALANT, USE 1/2" DIA. FOR FRAME AND GRATE
3. FRAME AND GRATE TO BE ANCHORED WITH 2-3/4" DIA. S.S. ANCHOR BOLTS SET 6-INCHES INTO CONCRETE
4. LIFTING HOLES TO BE POINTED WITH NON-SHRINK GROUT, AND LEFT WATERTIGHT, NEAT AND SMOOTH
5. MAXIMUM ADJUSTMENT TO FINISHED GRADE USING PRECAST GRADE SPACERS SHALL NOT EXCEED NINE INCHES (9")
6. PRECAST SECTIONS SHALL CONFORM TO ASTM C-478 AS REVISED
7. INLET INVERT SHALL BE CONCRETE TO THE SPRING LINE OF PIPE WITH SIDES SLOPING 1/2" TO 1'- 0" TO INSIDE FACE OF PRECAST BASE SECTION
8. IF THE OUTLET PIPE IS 18" OR LESS, USE 4'- 0"; IF GREATER THAN 18", USE 5'- 0"



DETENTION BASIN AC RISER

N. T. S.



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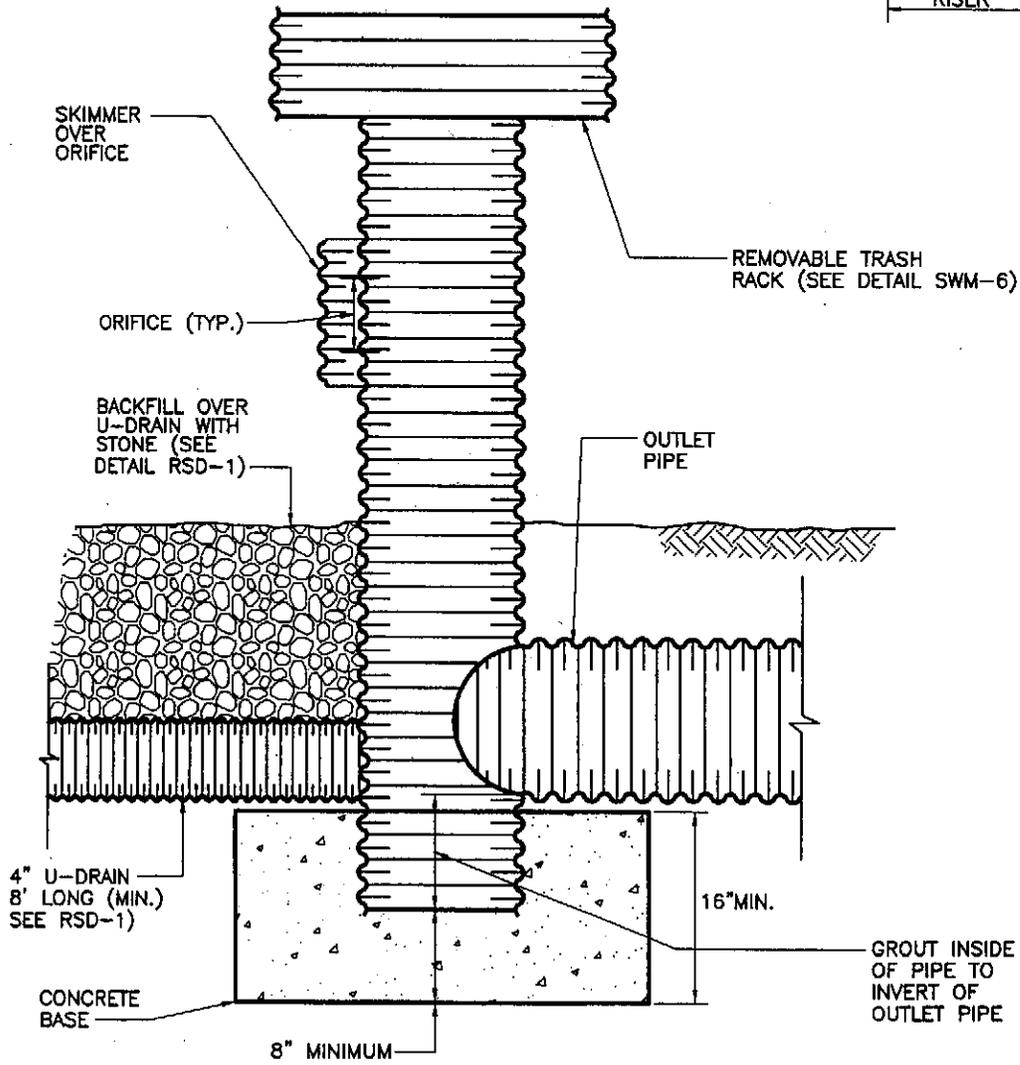
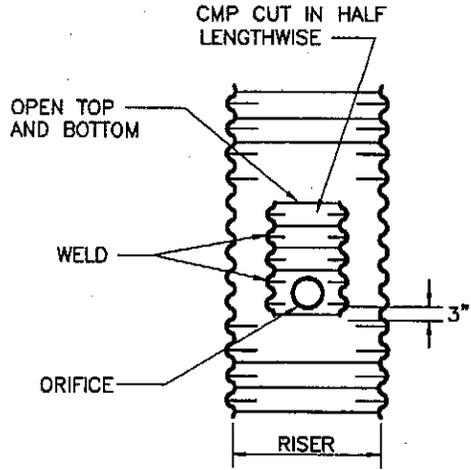
DATE:	October 2000
FILE NAME:	Shannondet.dwg
SCALE:	N.T.S.

**BOROUGH OF CASTLE SHANNON
Standard Details**

Detail SWM-3
Concrete Inlet Riser For Detention Basins

NOTE:

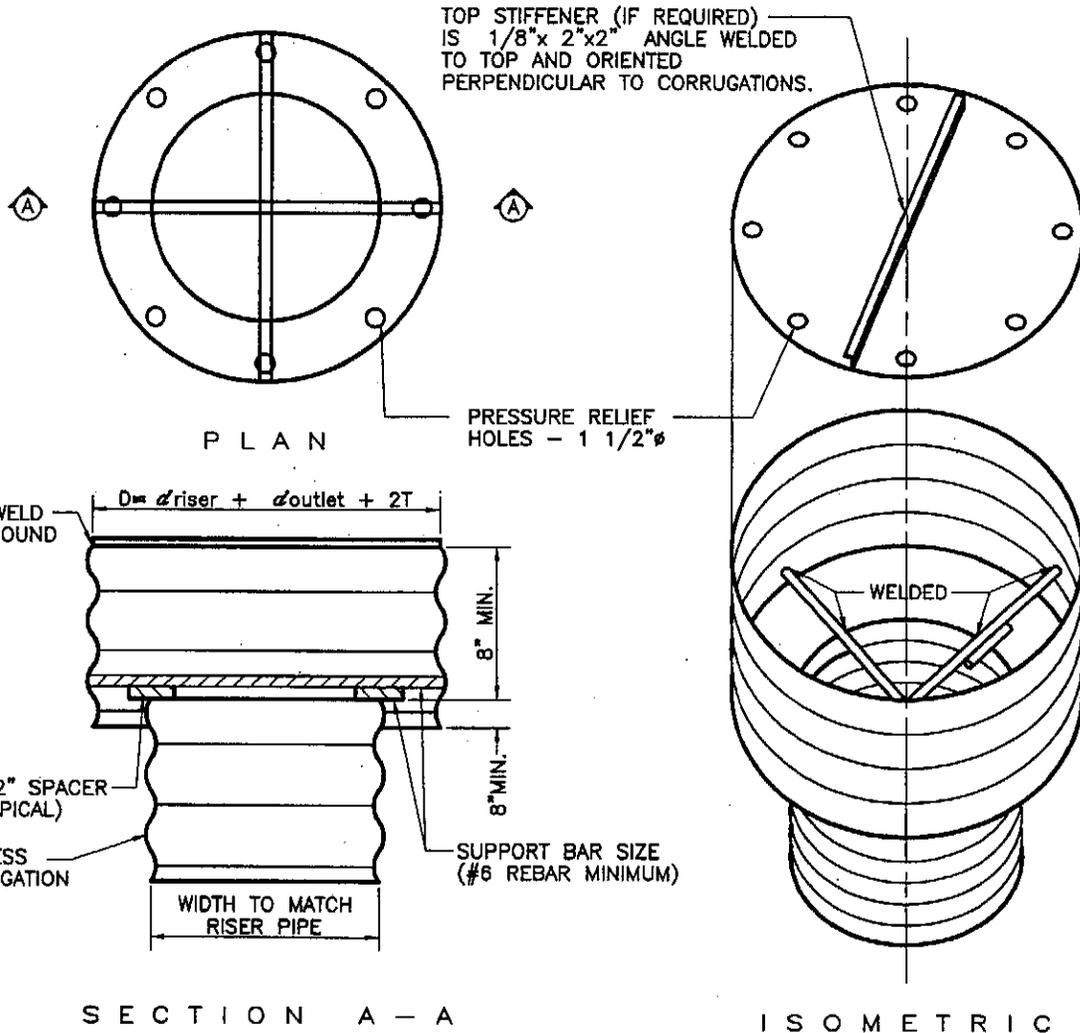
- (1) ORIFICE No., SIZE, AND LOCATION ON RISER TO BE DETERMINED BY CALCULATIONS AND SUBMITTED TO BOROUGH ENGINEER.
- (2) MAXIMUM HEIGHT OF RISER 8'-0"



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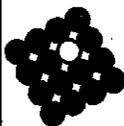
DATE:	October 2000
FILE NAME:	Shannondet.dwg
SCALE:	N.T.S.

BOROUGH OF CASTLE SHANNON
Standard Details
Detail SWM-4
Corrugated Metal Riser Pipe for Temporary Sediment Basins



NOTE:

1. TOP IS 14 GAGE CORRUGATED METAL OR 1/8" STEEL PLATE, PRESSURE RELIEF HOLES MAY BE OMITTED, IF ENDS OF CORRUGATIONS ARE LEFT FULLY OPEN WHEN CORRUGATED TOP IS WELDED TO CYLINDER.
2. CYLINDER IS 16 GAGE CORRUGATED METAL PIPE OR FABRICATED FROM 1/8" STEEL PLATE.
3. THE CYLINDER MUST BE FIRMLY FASTENED TO THE TOP OF THE RISER.
4. SUPPORT BARS ARE WELDED TO THE TOP OF THE RISER OR ATTACHED BY STRAPS BOLTED TO TOP OF RISER.



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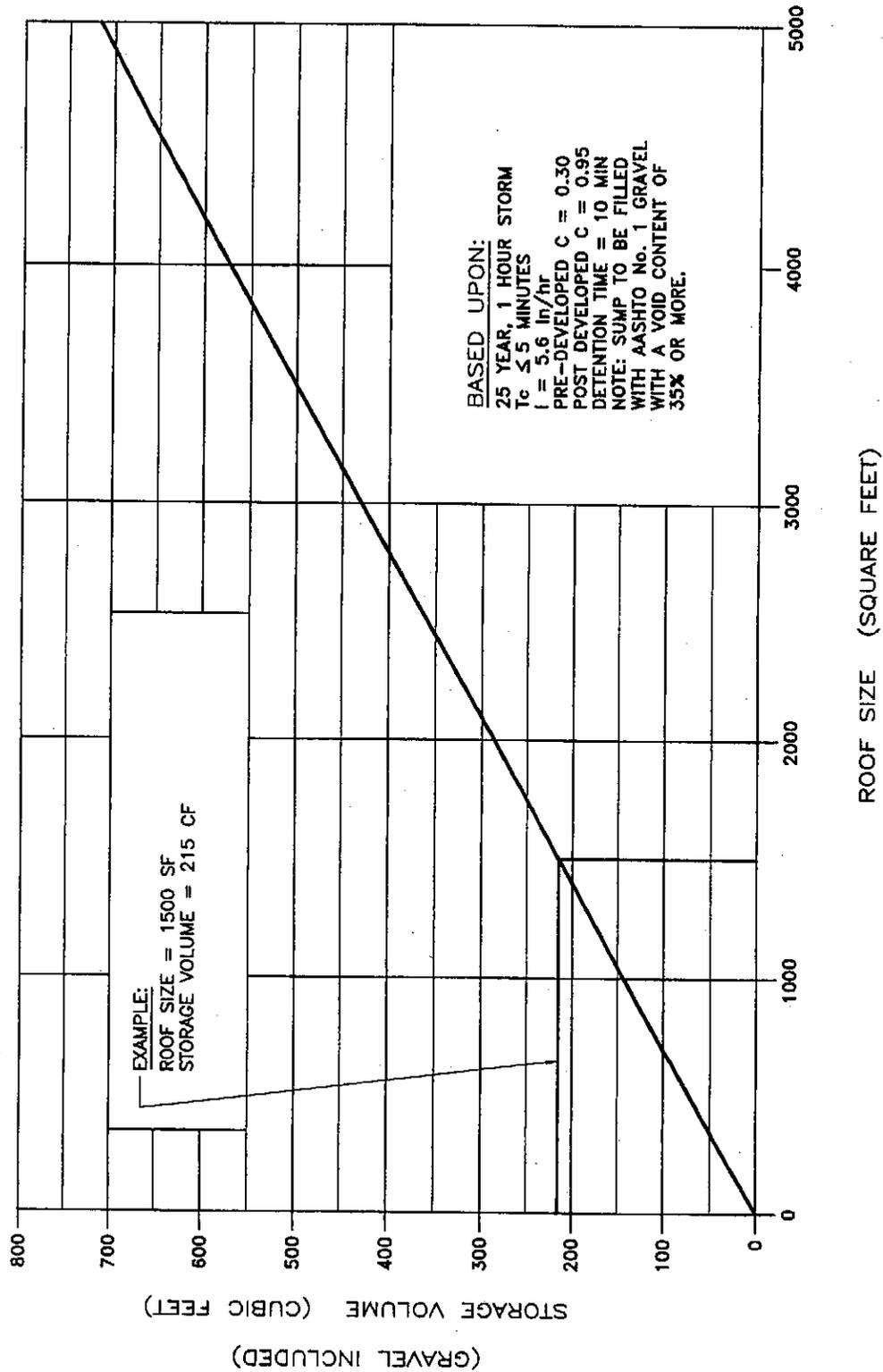
DATE: October 2000
FILE NAME: Shannondet.dwg
SCALE: N.T.S.

BOROUGH OF CASTLE SHANNON
Standard Details

Detail SWM-5

Trash Rack and Anti-Vortex Device For Temporary Sediment Basins

ROOF DRAIN - SUMP STORAGE CHART
BOROUGH OF CASTLE SHANNON

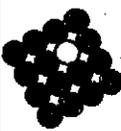
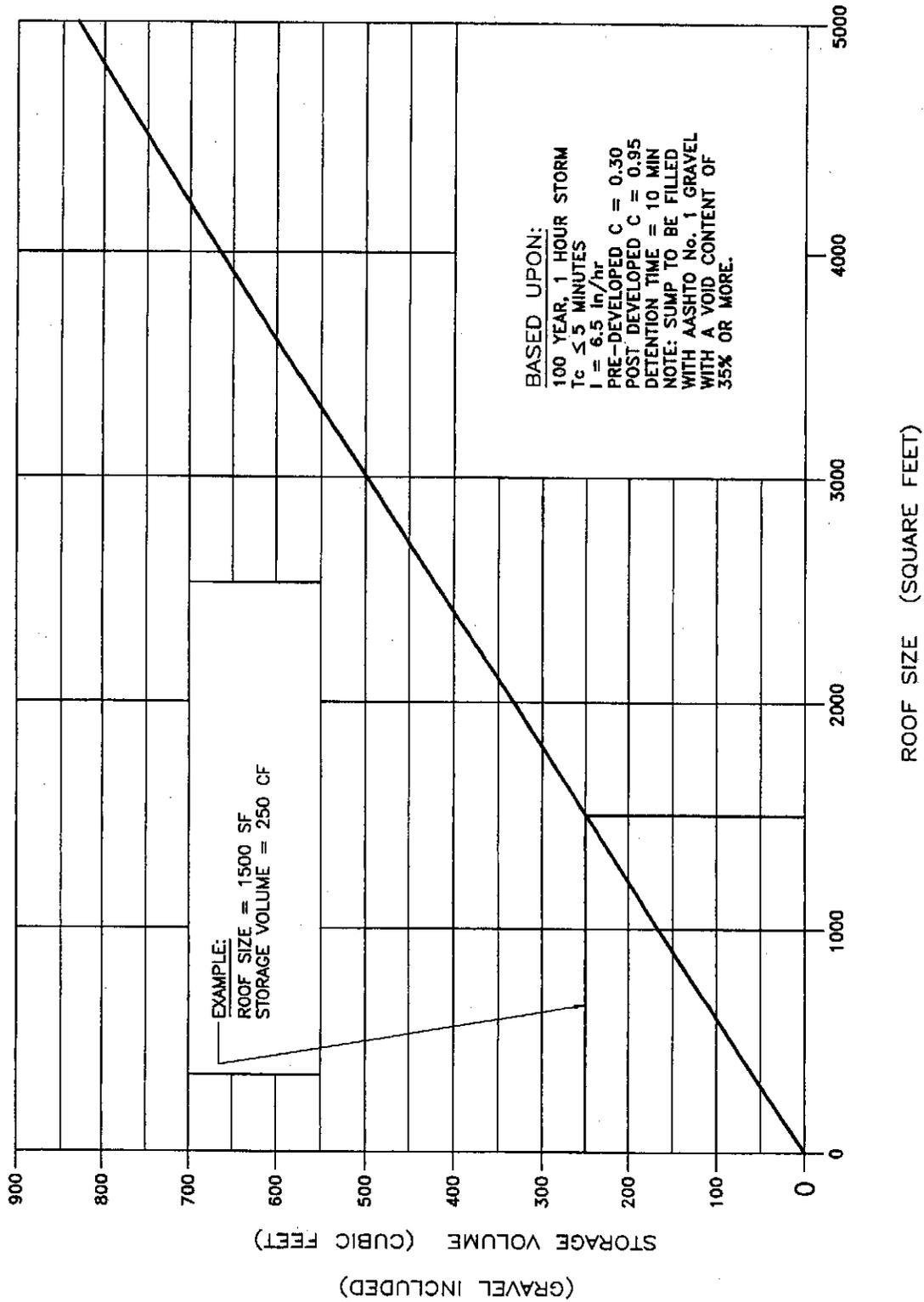


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SCALE: N.T.S.

BOROUGH OF CASTLE SHANNON
Standard Details
Detail SWM-6
Roof Drain / Sump Storage Chart (25-Year Storm Event Design)

ROOF DRAIN - SUMP STORAGE CHART
BOROUGH OF CASTLE SHANNON



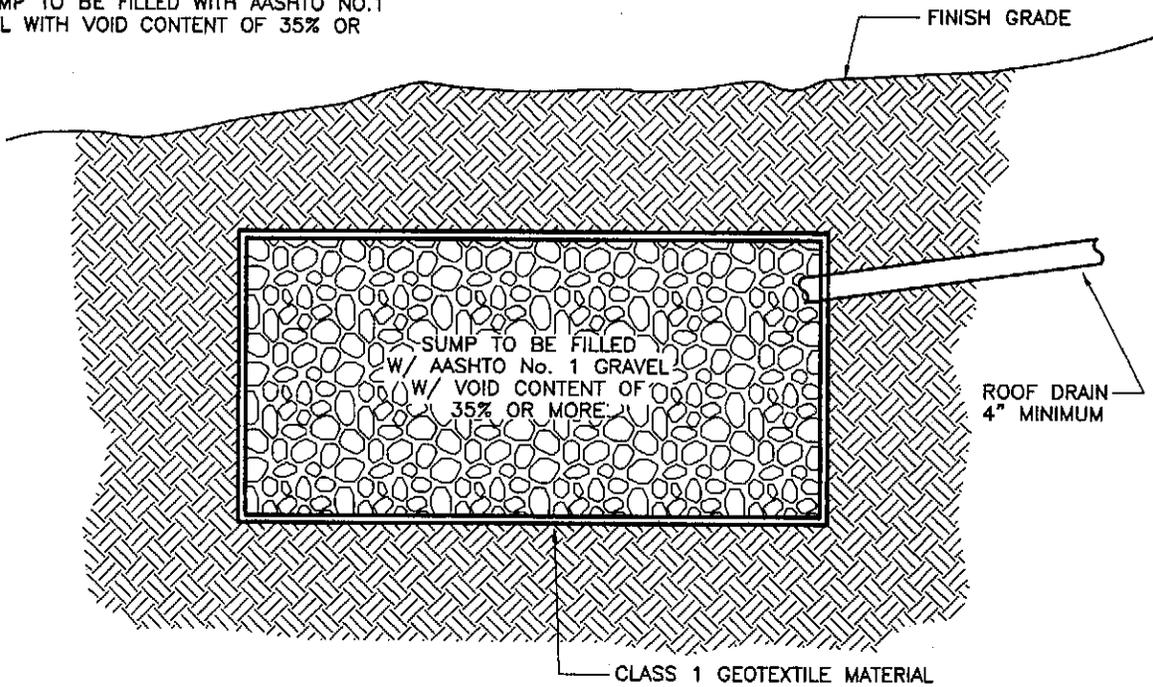
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FILE NAME: Shannondet.dwg
SCALE: N.T.S.

BOROUGH OF CASTLE SHANNON
Standard Details
Detail SWM-6A
Roof Drain / Sump Storage Chart (100-Year Storm Event Design)

NOTES:

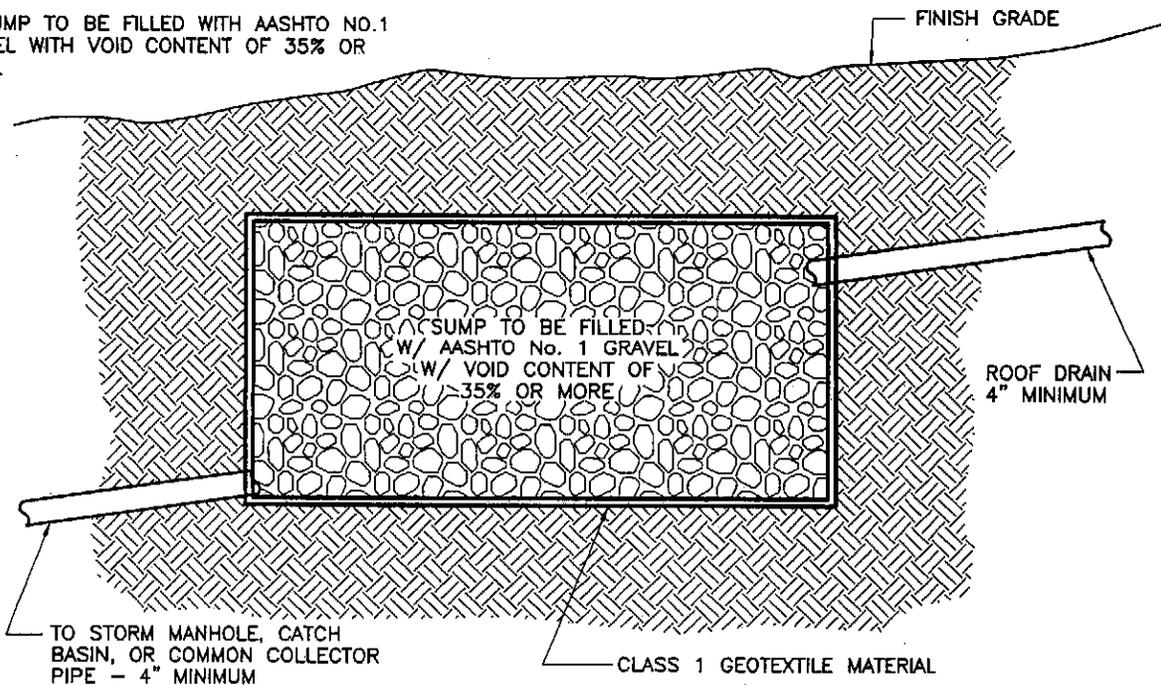
- 1. ALL PIPE SHALL BE PVC SCHEDULE 40
- 2. ALL SUMPS MINIMUM 10' FROM HOUSE
- 3. SUMP TO BE FILLED WITH AASHTO NO.1 GRAVEL WITH VOID CONTENT OF 35% OR MORE.



WITHOUT OUTLET PIPE

NOTES:

- 1. ALL PIPE SHALL BE PVC SCHEDULE 40
- 2. ALL SUMPS MINIMUM 10' FROM HOUSE
- 3. SUMP TO BE FILLED WITH AASHTO NO.1 GRAVEL WITH VOID CONTENT OF 35% OR MORE.



WITH OUTLET PIPE

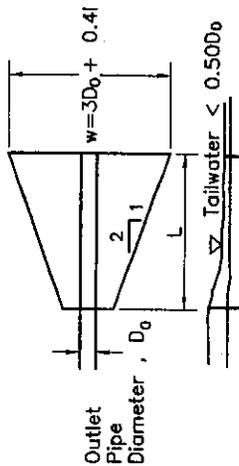


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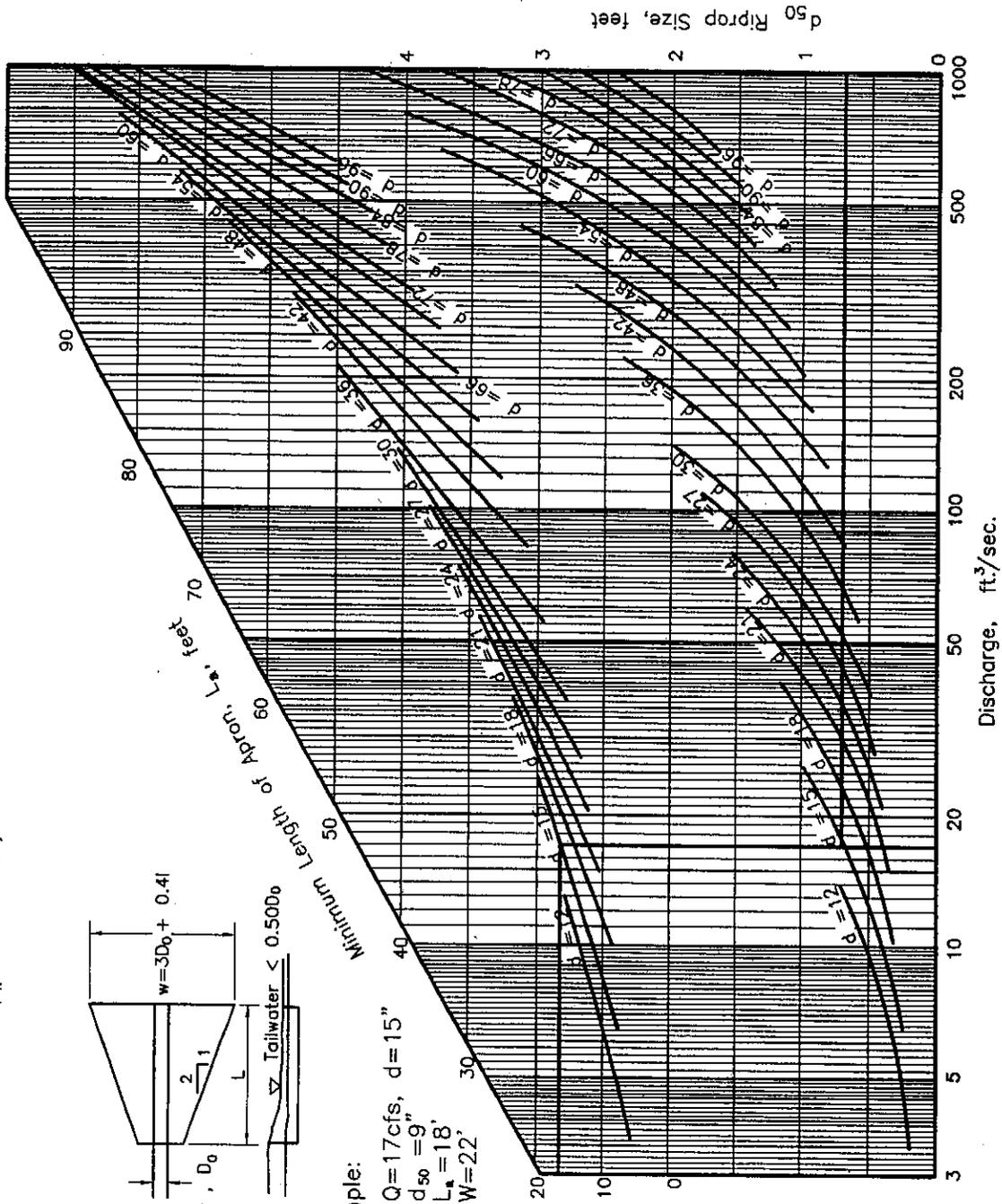
BOROUGH OF CASTLE SHANNON
Standard Details
Detail SWM-7
Roof Drain Sump

DESIGN OF OUTLET PROTECTION FROM A ROUND PIPE FLOWING FULL
 MINIMUM TAILWATER CONDITION ($T_w < 0.5$ DIAMETER)

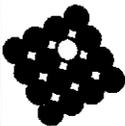


Example:

$Q = 17 \text{ cfs}$, $d = 15''$
 $d_{50} = 9''$
 $L_s = 18'$
 $W = 22'$



Source: USDA-SCS

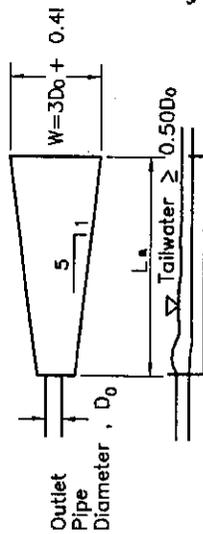


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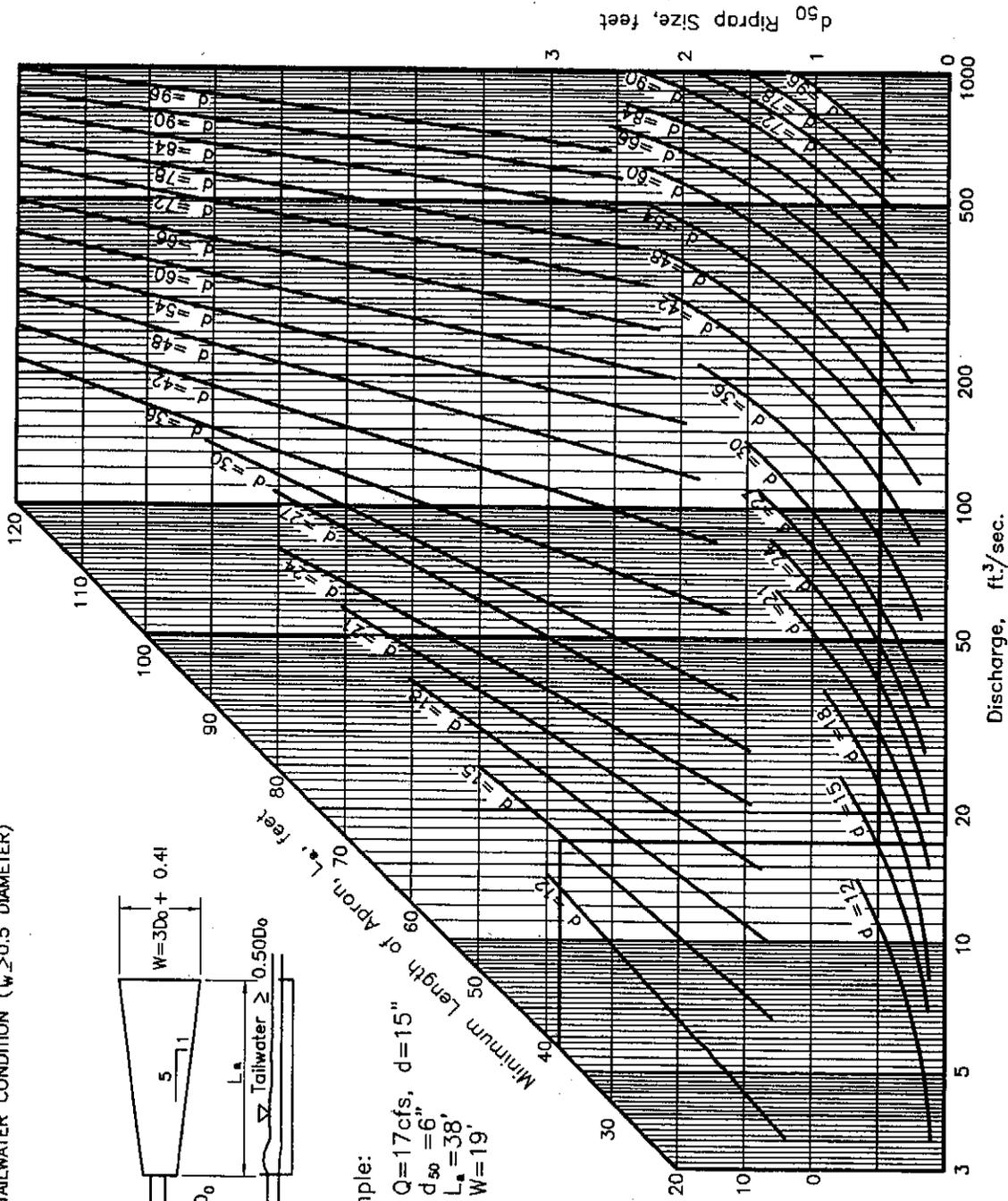
BOROUGH OF CASTLE SHANNON
Standard Details
 Detail SWM-8
 Outlet Protection (Minimum Tailwater Conditions)

DESIGN OF OUTLET PROTECTION FROM A ROUND PIPE FLOWING FULL
 MAXIMUM TAILWATER CONDITION ($W \geq 0.5$ DIAMETER)

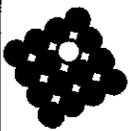


Example:

$Q = 17 \text{ cfs}$, $d = 15''$
 $d_{50} = 6''$
 $L_a = 38'$
 $W = 19'$



Source: USDA-SCS



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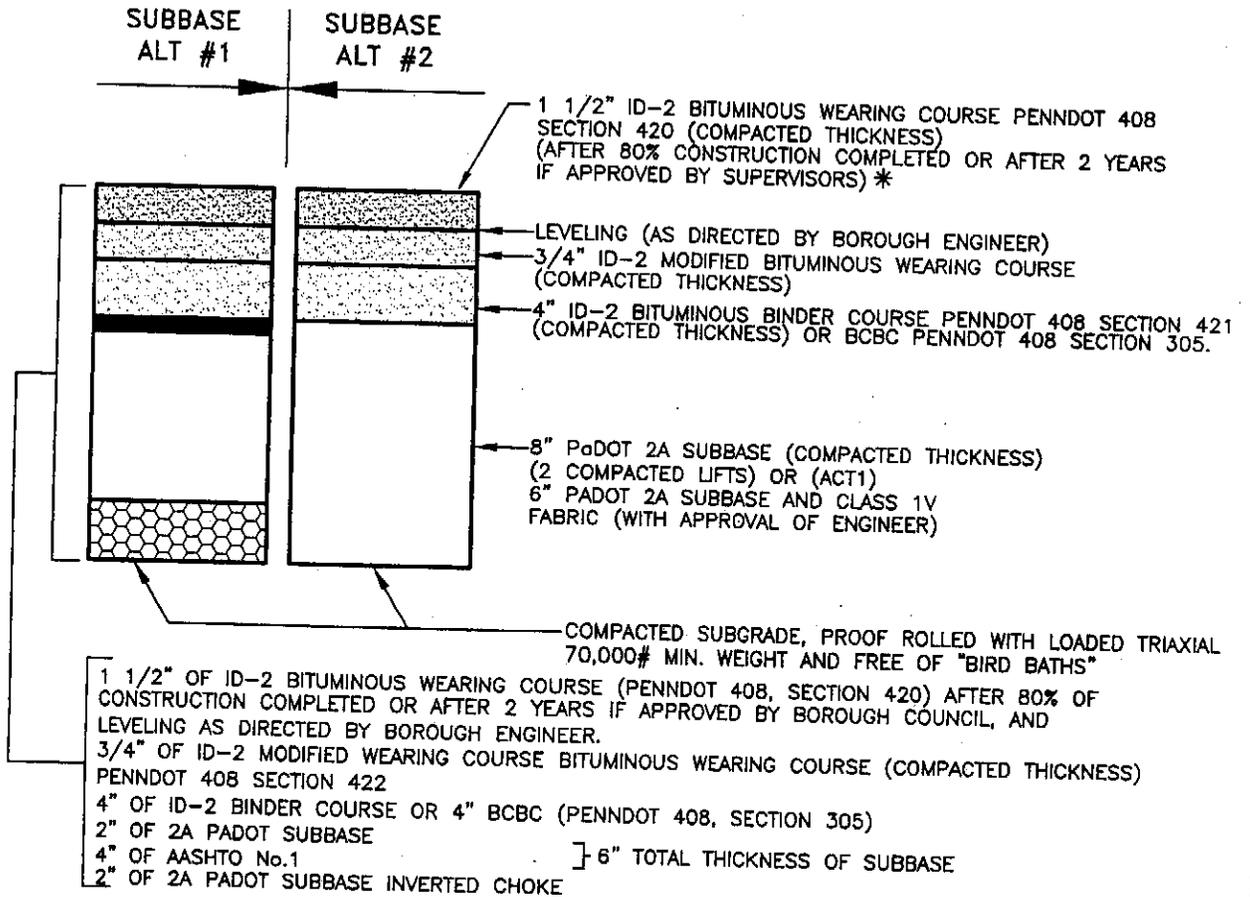
DATE: October 2000
 FILE NAME: Shannondet.dwg
 SCALE: N.T.S.

BOROUGH OF CASTLE SHANNON
Standard Details
 Detail SWM-8A
 Outlet Protection (Maximum Tailwater Conditions)

ROADWAY CLASSIFICATION

MAJOR	80' R/W	46' CARTWAY	12" CURB	5' SIDEWALK
COLLECTOR	60' R/W	35' CARTWAY	12" CURB	5' SIDEWALK
LOCAL	50' R/W	24' CARTWAY	12" CURB	5' SIDEWALK
SERVICE	40' R/W	24' CARTWAY	12" CURB	5' SIDEWALK

STANDARD (SERVICE AND LOCAL CLASS ONLY) **



NOTES:

1. ALL THICKNESSES AS LISTED ARE COMPACTED THICKNESS TO DENSITY AS LISTED IN PENNDOT PUBLICATION 408.
2. ALL INLETS AND MANHOLES MUST BE ADJUSTED FOR PROFILE AND CROSS SLOPE PRIOR TO INSTALLING FINAL WEARING SURFACE. INITIAL ID-2 MODIFIED WEARING COURSE MUST FINISH FLUSH WITH ALL MANHOLES AND INLETS. FINAL ADJUSTMENTS TO BE COMPLETE PRIOR TO FINAL WEARING SURFACE INSTALLATION. KEYWAYS AROUND STRUCTURES WILL NOT BE PERMITTED.

* AS DIRECTED BY BOROUGH ENGINEER ALL UNEVEN AREAS, SETTLED AREAS, DAMAGED BY UTILITY COMPANIES AND OTHER BROKEN OR UNEVEN AREAS SHALL BE REPAIRED AND LEVELING WITH ID-2 BITUMINOUS WEARING COURSE PRIOR TO FINAL BITUMINOUS WEARING COURSE APPLICATION, INSTALLED ON ENTIRE ROADWAY. SUBBASE ALTERNATE TO BE SELECTED AND APPROVED BY THE BOROUGH BASED UPON FIELD CONDITIONS.

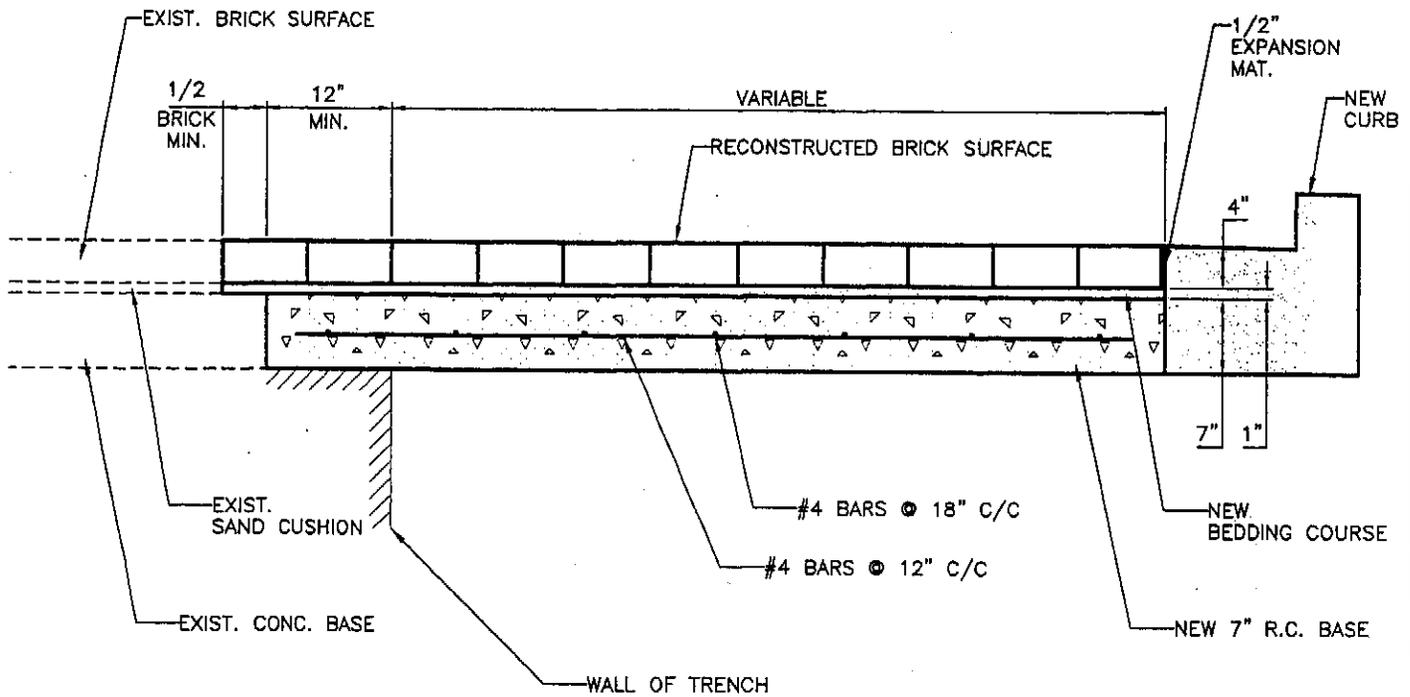
** FOR MAJOR AND COLLECTOR CLASS, SUBMIT PAVEMENT DESIGN BASED UPON AVERAGE DAILY TRAFFIC.



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 E-mail: len@usoor.net

DATE: October 2000
 FILE NAME: Shannondet.dwg
 SCALE: N.T.S.

BOROUGH OF CASTLE SHANNON
Standard Details
 Detail R-2
 Bituminous Roadway Paving Materials



JOINT BETWEEN OLD & NEW
BRICK SURFACE SHALL BE
MADE WITH FULL BRICK.

EXTRA BRICK NEEDED BECAUSE
OF BROKEN OR MISSING BRICKS
SHALL BE SUPPLIED AT DEVELOPER'S
COST.

BRICK ROADWAY RECONSTRUCTION

N. T. S.

NOTE: 1. CONSTRUCTION SHALL BE IN
ACCORDANCE WITH PA DOT 408
SPECIFICATIONS

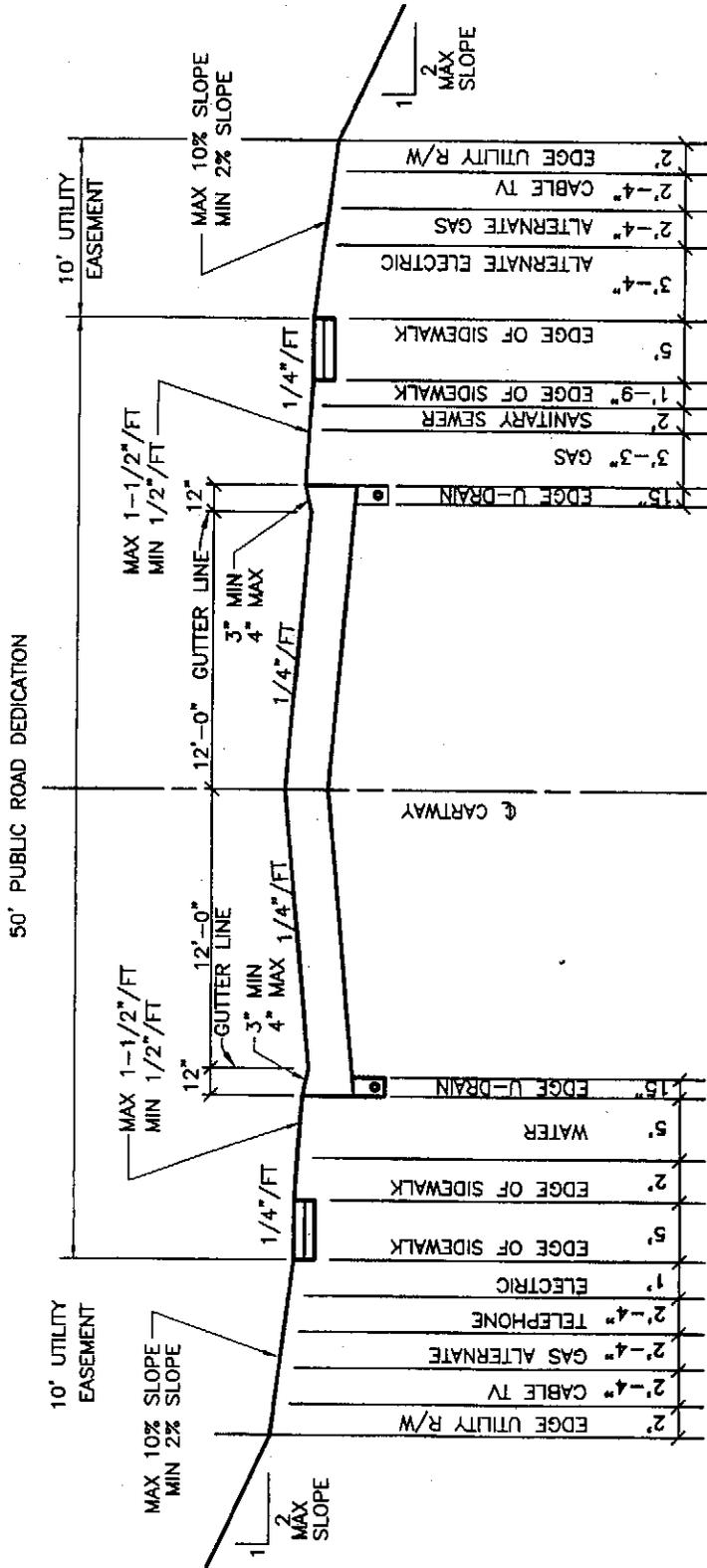


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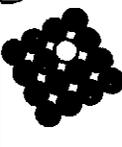
DATE: October 2000
FILE NAME: Shannondet.dwg
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BOROUGH OF CASTLE SHANNON
Standard Details

Detail R-2B
Brick Roadway Reconstruction



- NOTES:**
1. THESE LOCATIONS ARE TYPICAL FOR STRAIGHT AWAY - SITE AND/OR EXISTING CONDITIONS AT TIME OF INSTALLATION MAY WARRANT CHANGES. ANY CHANGES MUST BE INDICATED ON SPECIFIC CONSTRUCTION DOCUMENTS WITH PRIOR APPROVAL OF BOROUGH ENGINEER IN WRITING. SUBMIT CROSS-SECTION SHOWING LOCATIONS FOR APPROVAL.
 2. UNDERDRAIN SHALL BE INSTALLED ON BOTH SIDES IN ALL CASES.
 3. THE DEVELOPER SHALL INDICATE UNDERDRAIN LOCATIONS ON THE PLANS.
 4. SLAG IS NOT PERMITTED AS BACKFILL.
 5. 100% STONE BACKFILL IS REQUIRED FULL WIDTH OF RIGHT-OF-WAY.
 6. IN SETTING MAIL BOX POST DO NOT DAMAGE FRENCH DRAIN. SET BOTTOM POST A MAXIMUM OF 20" BELOW CURB. DO NOT PERMIT CONCRETE COLLAR TO EXCEED 12" BELOW TOP OF CURB. MAIL BOX SHALL BE MAXIMUM 4x4 WOOD POST. BRICK AND CONCRETE PILLARS ARE NOT PERMITTED.

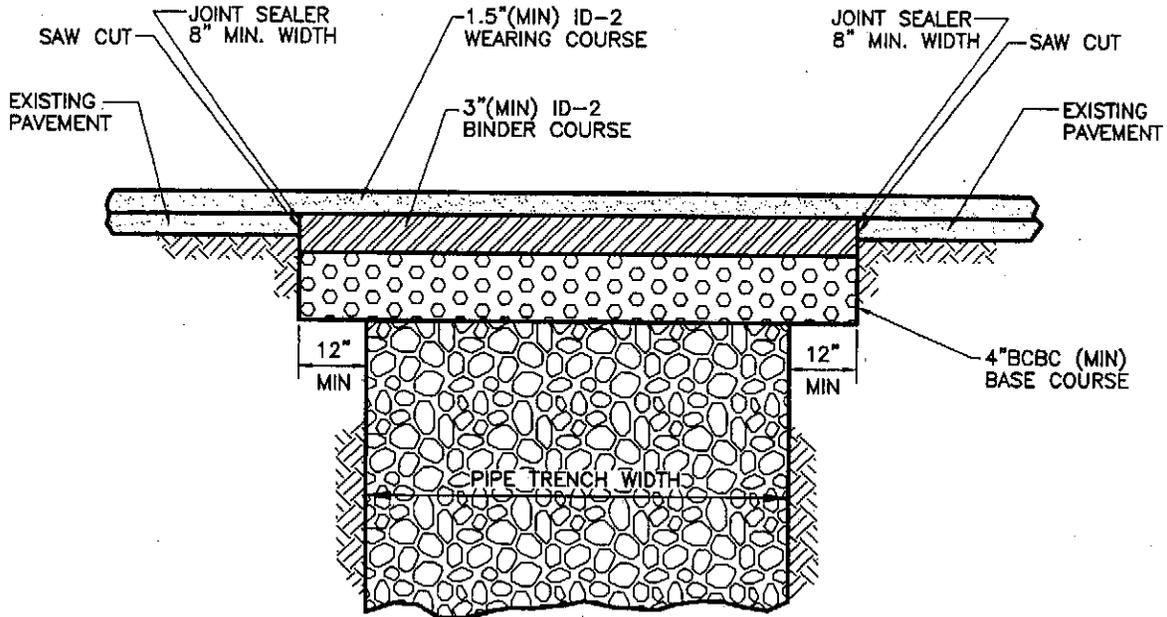


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BOROUGH OF CASTLE SHANNON
Standard Details
Detail R-3
Typical Utility Locations

NOTE: 2 SEPARATE SAW CUTS:
 1 CUT BEFORE CONSTRUCTION
 1 CUT BEFORE FINAL PAVING



NOTE:
 FOR PIPE BEDDING AND
 BACKFILL, SEE DETAILS RSD-2, RSD-3 AND RSD-4

NOTES:

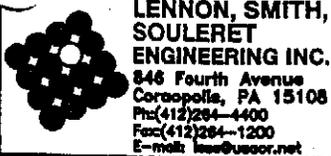
1. DURING COLD WEATHER MONTHS PROVIDE AND MAINTAIN A TEMPORARY BITUMINOUS COLD PATCH SURFACE UNTIL WEATHER PERMITS BITUMINOUS PAVING.
2. BOROUGH ROADMASTER MUST BE NOTIFIED 24 HOURS IN ADVANCE OF ROAD OPENING AND SURFACING.
3. SLAG IS NOT PERMITTED AS BACKFILL.
4. 100% STONE BACKFILL IS REQUIRED FULL WIDTH OF RIGHT-OF-WAY.
5. MILL ENTIRE ROAD TO A DEPTH OF 1 1/2". PROVIDE AN OVERLAY OF 1 1/2" ID-2 WEARING COURSE OVER THE ENTIRE ROADWAY FOR THE ENTIRE LIMITS AS DEFINED BY THE BOROUGH ENGINEER.

-  1.5" (MIN) ID-2 WEARING COURSE
-  3" (MIN) ID-2 BINDER COURSE
-  4" (MIN) BCBC BASE COURSE

BCBC BASE COURSE SHALL BE AS THICK AS EXISTING OR 4" MINIMUM (AFTER COMPACTION), WHICHEVER IS GREATER (TWO LIFTS).

BINDER COURSE SHALL BE AS THICK AS EXISTING OR 3" MINIMUM (AFTER COMPACTION), WHICHEVER IS GREATER

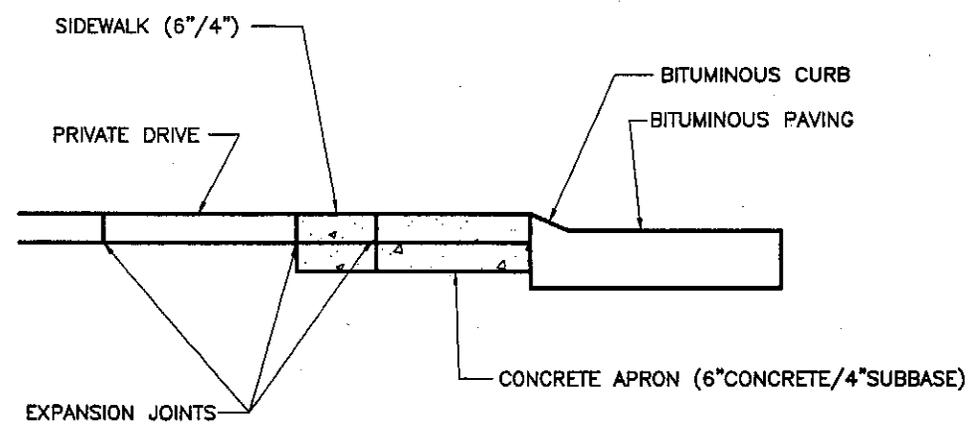
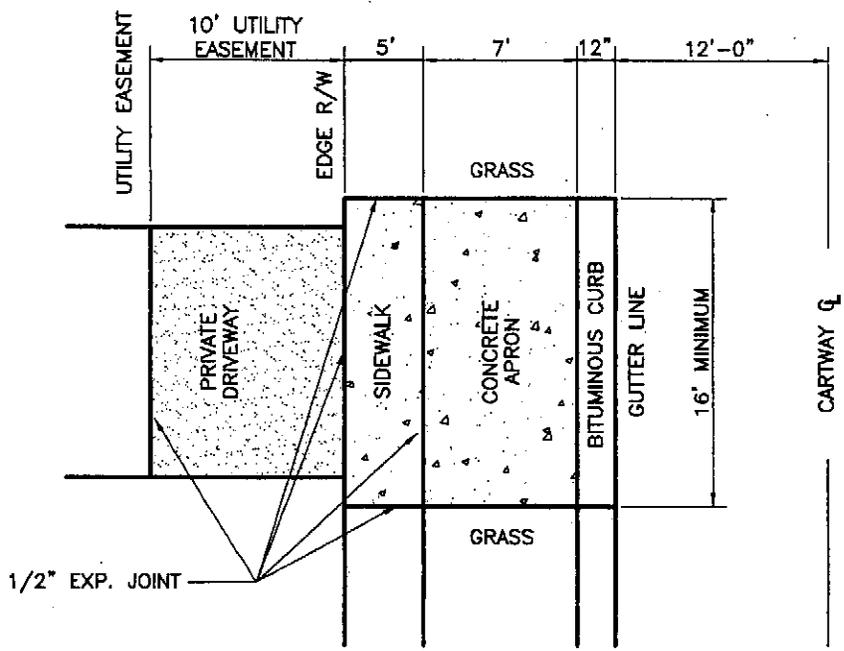
WEARING COURSE SHALL BE AS THICK AS EXISTING OR 1.5" MINIMUM (AFTER COMPACTION), WHICHEVER IS GREATER



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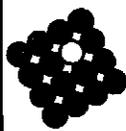
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BOROUGH OF CASTLE SHANNON
Standard Details
 Detail R-4
 Bituminous Trench Repair



NOTES:

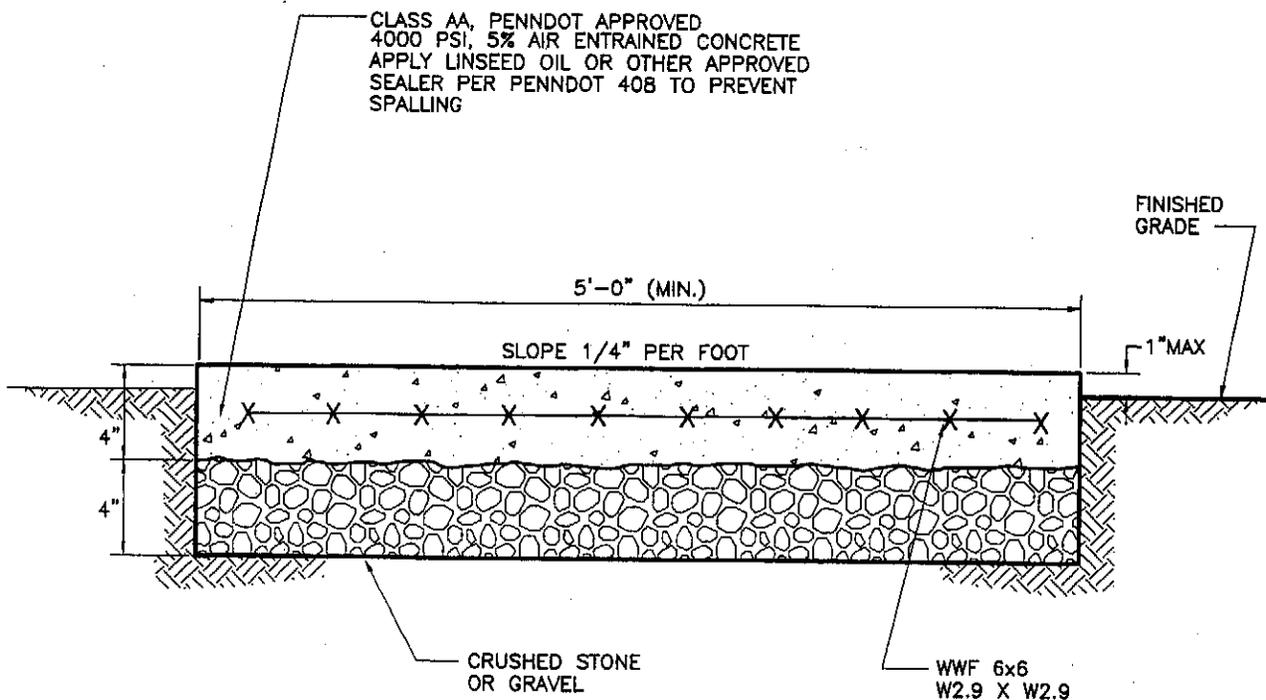
1. SIDEWALK TO HAVE STIFF BROOM FINISH WITH TROWELED EDGES.
2. PROVIDE 1/2" EXPANSION JOINT AT NEW SIDEWALK ABUTTING EXIST. SIDEWALK.
3. THE CONCRETE APRON SHALL BE 6" THICK CONCRETE ON A 4" COMPACTED STONE BASE, 4000 PSI CONCRETE WITH WWF 6 X 6, W4 X W4 REINFORCING.
4. SIDEWALK MAY BY LOWERED IN VICINITY OF APRON SO THAT AN ORDERLY TRANSITION IS POSSIBLE. (ONLY WITH BOROUGH APPROVAL)
5. THE DRIVEWAY WITHIN THE UTILITY EASEMENT SHALL NOT EXCEED 10%.
6. THE DEPRESSED SIDEWALK IS NOT TO EXCEED 1/4" PER FOOT LONGITUDINALLY.
7. PREPARATION OF REINFORCEMENT MUST BE INSPECTED BY BOROUGH PRIOR TO POURING OF CONCRETE.



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BOROUGH OF CASTLE SHANNON
Standard Details
Detail R-5
Concrete Driveway / Sidewalk Apron



NOTES:

1. WALK SHALL BE CROSS SCORED EVERY FIVE FEET (5'). 1/2" PREFORMED EXPANSION JOINTS EVERY 20 FEET. WALK SHALL HAVE A STIFF BROOM FINISH WITH TROWELED EDGES.
2. IF A DRIVEWAY IS TO BE CONSTRUCTED OVER A SIDEWALK, THE CONCRETE SHALL BE PLACED AT 6" DEPTH; SEE DETAIL R-5.
3. PROVIDE TWO (2) No 4 DOWELS AT PROPERTY LINES
4. PREPARATION OF REINFORCEMENT MUST BE INSPECTED BY BOROUGH PRIOR TO POURING OF CONCRETE.



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BOROUGH OF CASTLE SHANNON
Standard Details
Detail R-6
Concrete Sidewalk

METAL REFLECTIVE SIGN
4" WHITE LETTERS WITH
KELLY GREEN BACKGROUND
STYLE TO BE APPROVED
BY BOROUGH.

CHERRY ST.

6"

96"

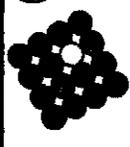
2-3/8" - 2-1/2" O.D. GALVINIZED
STEEL POLE

2000 PSI CONCRETE
⊙ 28 DAYS

24"

30"

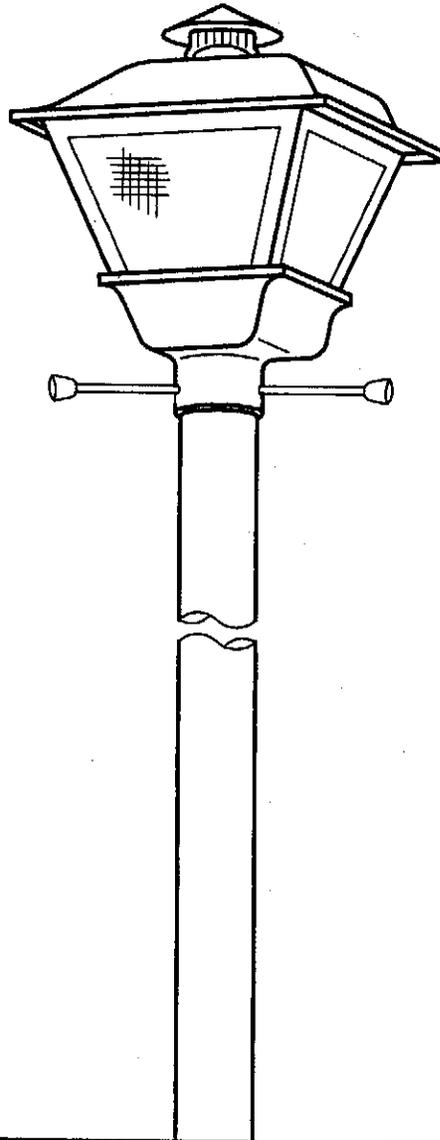
12"



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BOROUGH OF CASTLE SHANNON
Standard Details
Detail R-7
Street Sign



NOTES:

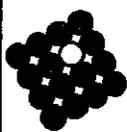
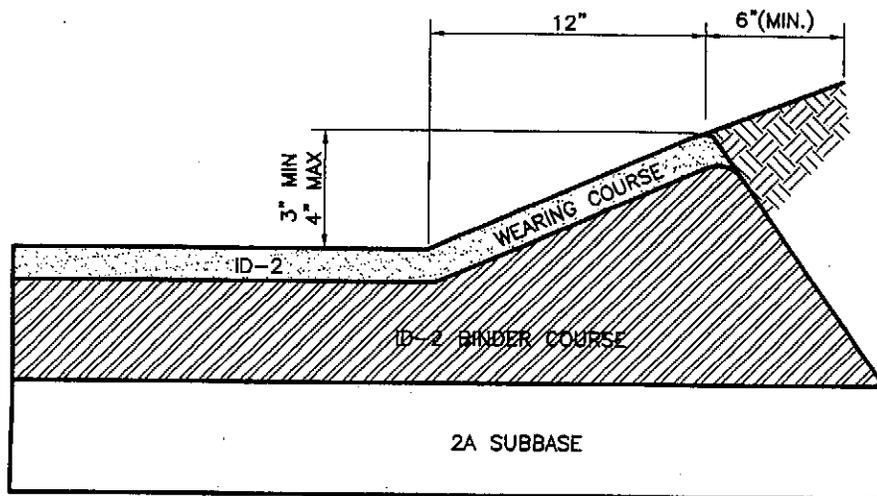
1. PROVIDE STREET LIGHTING AND INSTALL IN ACCORDANCE WITH DUQUESNE LIGHT REQUIREMENTS.
2. SPACING AND WATTAGE TO BE APPROVED BY THE BOROUGH.
3. COLONIAL STYLE ONLY.
4. HIGH PRESSURE SODIUM ONLY.



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BOROUGH OF CASTLE SHANNON
Standard Details
Detail R-8
Street Light

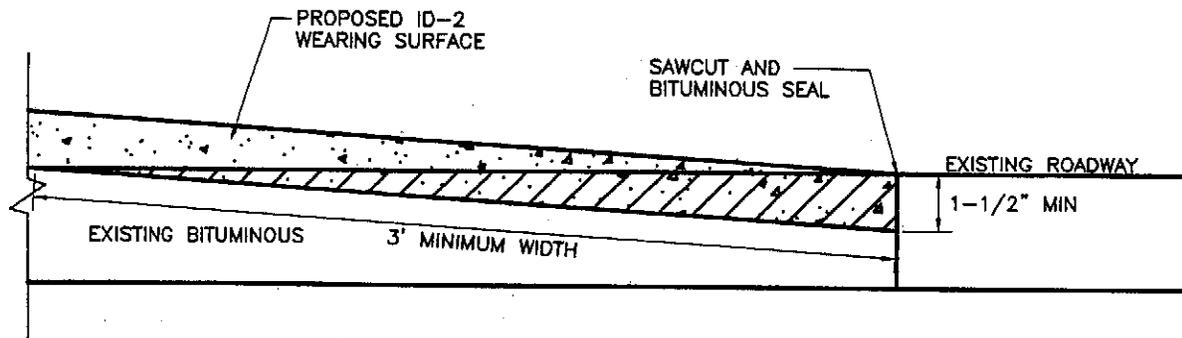


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**BOROUGH OF CASTLE SHANNON
Standard Details**

Detail R-9
Typical Bituminous Concrete Wedge Curb

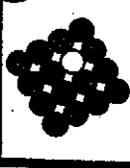
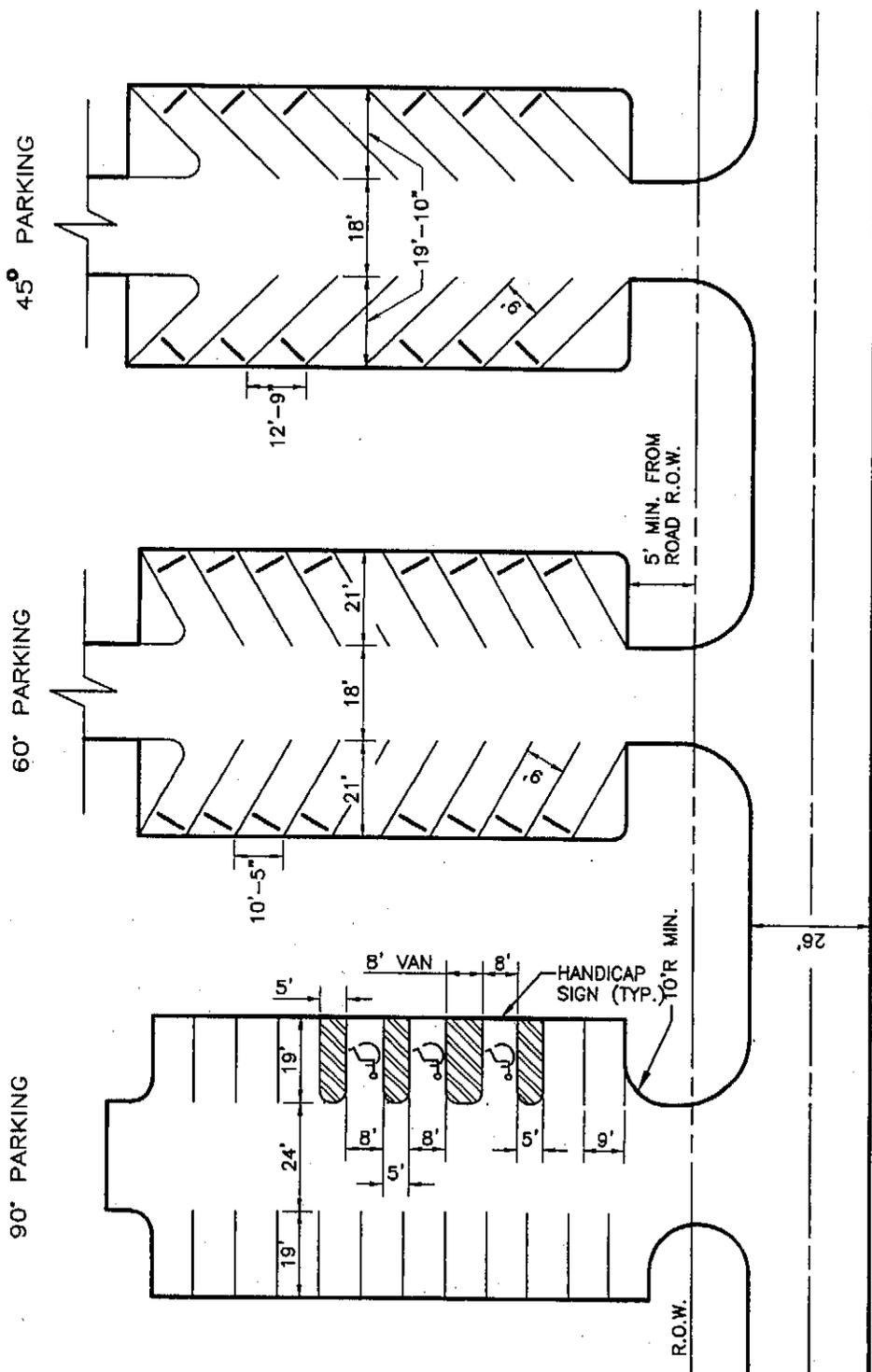


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BOROUGH OF CASTLE SHANNON
Standard Details
 Detail R-10
 Typical Bituminous Concrete Keyway

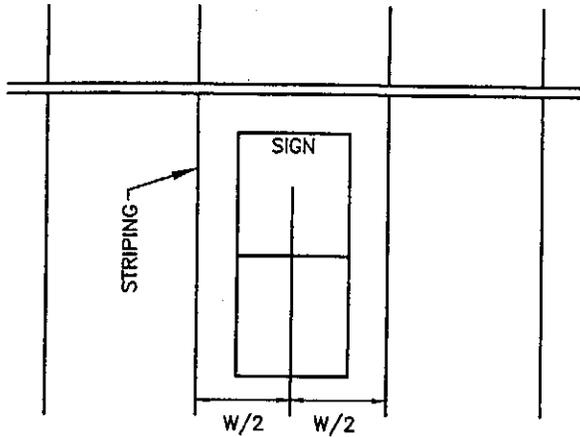
- NOTE:**
- (1) ALL OFF-STREET PARKING AREAS OF MORE THAN FIVE (5) VEHICLES AND (2) ACCESS DRIVES LEADING TO THE PARKING AREA WHICH ARE ACCESSIBLE TO THE GENERAL PUBLIC SHALL BE GRADED FOR PROPER DRAINAGE AND PAVED WITH CONCRETE, BITUMINOUS CONCRETE OR BITUMINOUS SEAL COAT.
 - (2) HANDICAPPED PARKING SPACES SHALL BE PROVIDED FOR PARKING AREAS PER SECTION 208-47.(1), OF THE BOROUGH OF CASTLE SHANNON ZONING ORDINANCE, AND CONFORM TO ALL APPLICABLE ADA REQUIREMENTS.



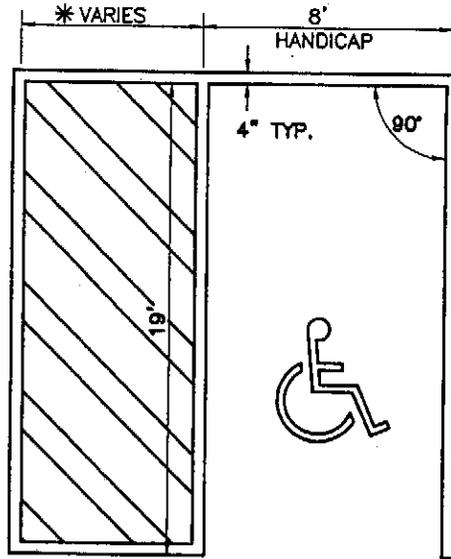
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BOROUGH OF CASTLE SHANNON
Standard Details
Detail S-1
Parking Configuration

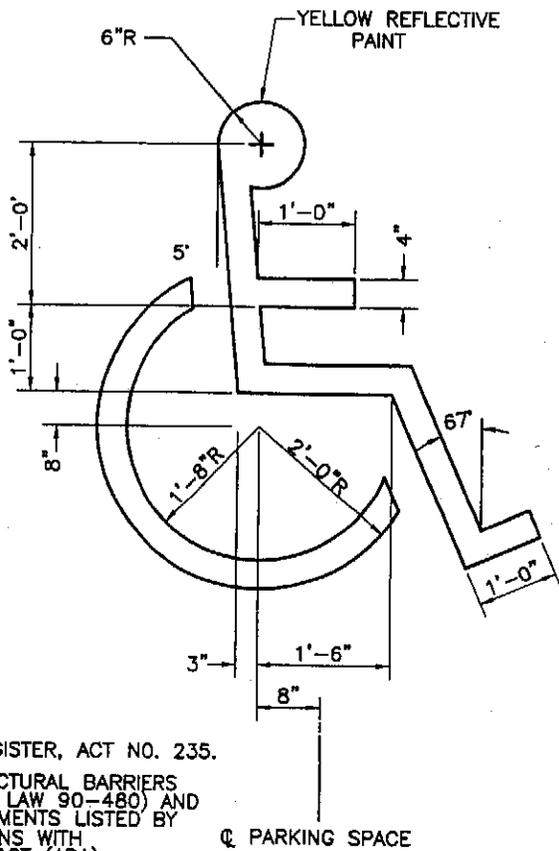


HANDICAP SIGN



* 5' STANDARD WIDTH
8' VAN ACCESSIBLE

INTERNATIONAL HANDICAP SYMBOL

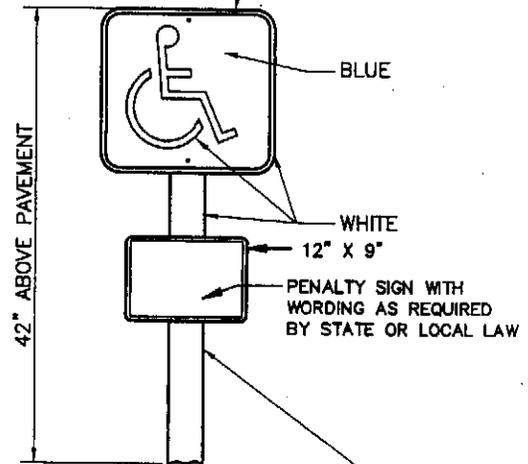


REFERENCES:

1. FEDERAL REGISTER, ACT NO. 235.
2. THE ARCHITECTURAL BARRIERS ACT (PUBLIC LAW 90-480) AND ALL REQUIREMENTS LISTED BY THE AMERICANS WITH DISABILITIES ACT (ADA).

⊕ PARKING SPACE

18" X 18" 18 GA. STEEL BAKED ENAMEL INTERNATIONAL HANDICAP SYMBOL SIMILAR TO 09EE503, SARGENT-SOWELL, INC., GRAND PRAIRE, TEXAS. (TWO SIGNS BACK TO BACK PER POST AT EACH HANDICAP SPACE.)



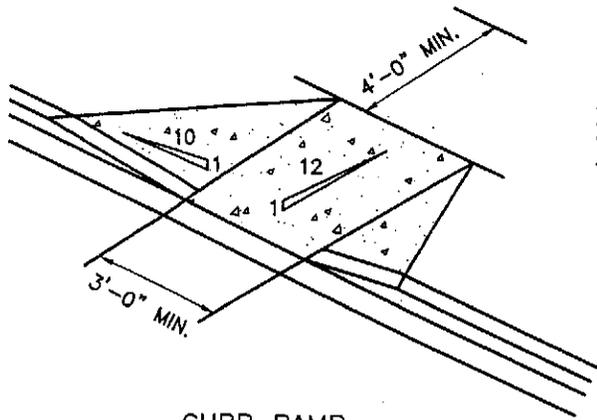
4" X 4" STEEL TUBE WITH WELDED TOP CAP ANCHORED 24" IN SOLID CONCRETE.



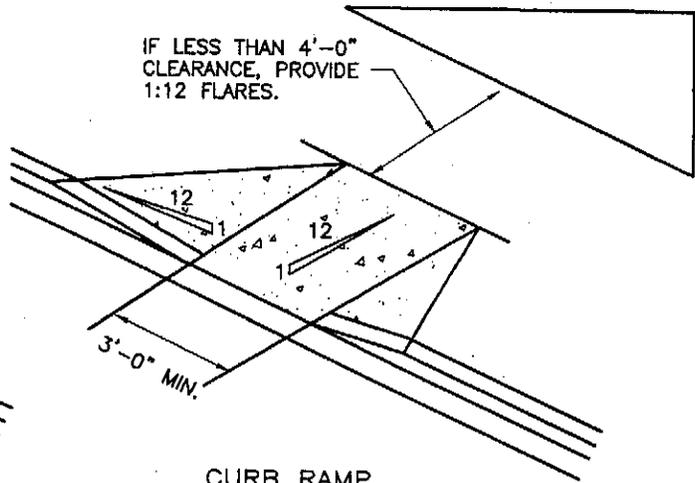
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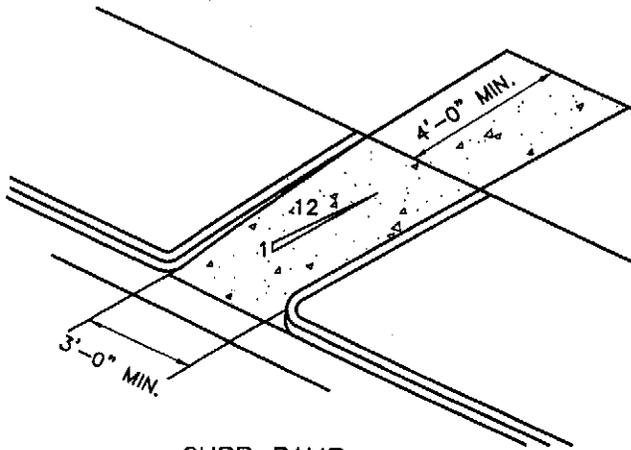
BOROUGH OF CASTLE SHANNON
Standard Details
Detail S-2
Handicap Stalls



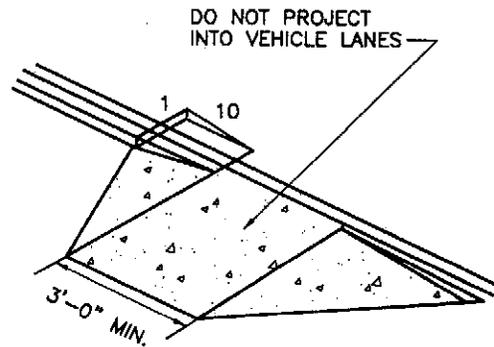
CURB RAMP



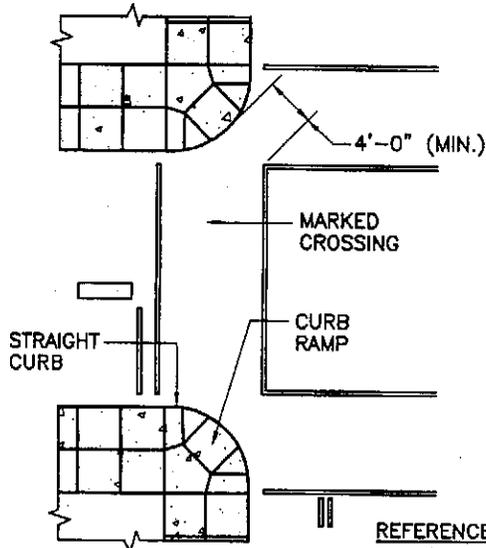
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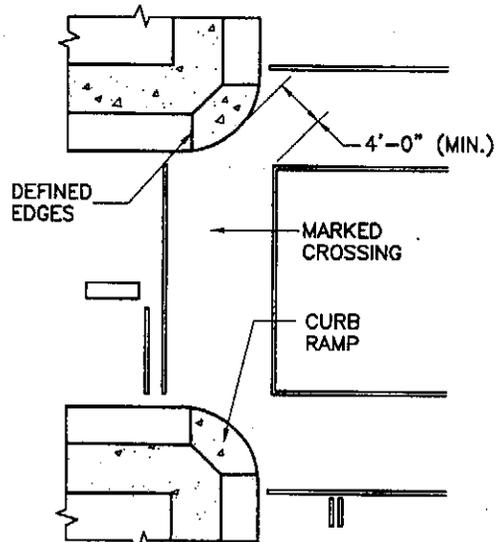
CURB RAMP



CURB RAMP



CROSSING



CROSSING

REFERENCES:

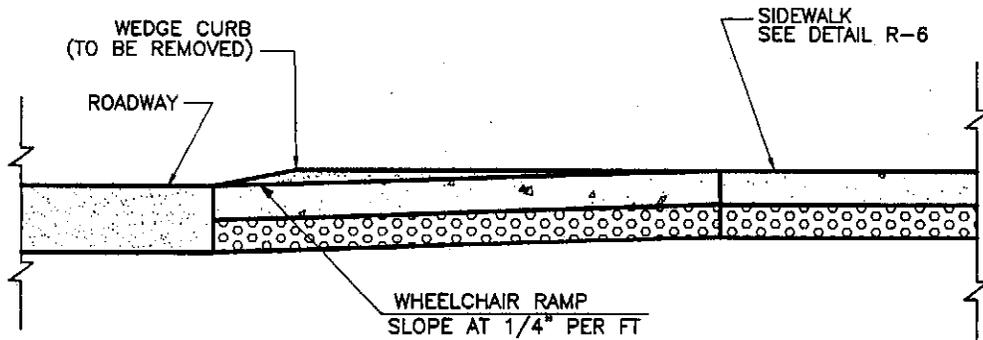
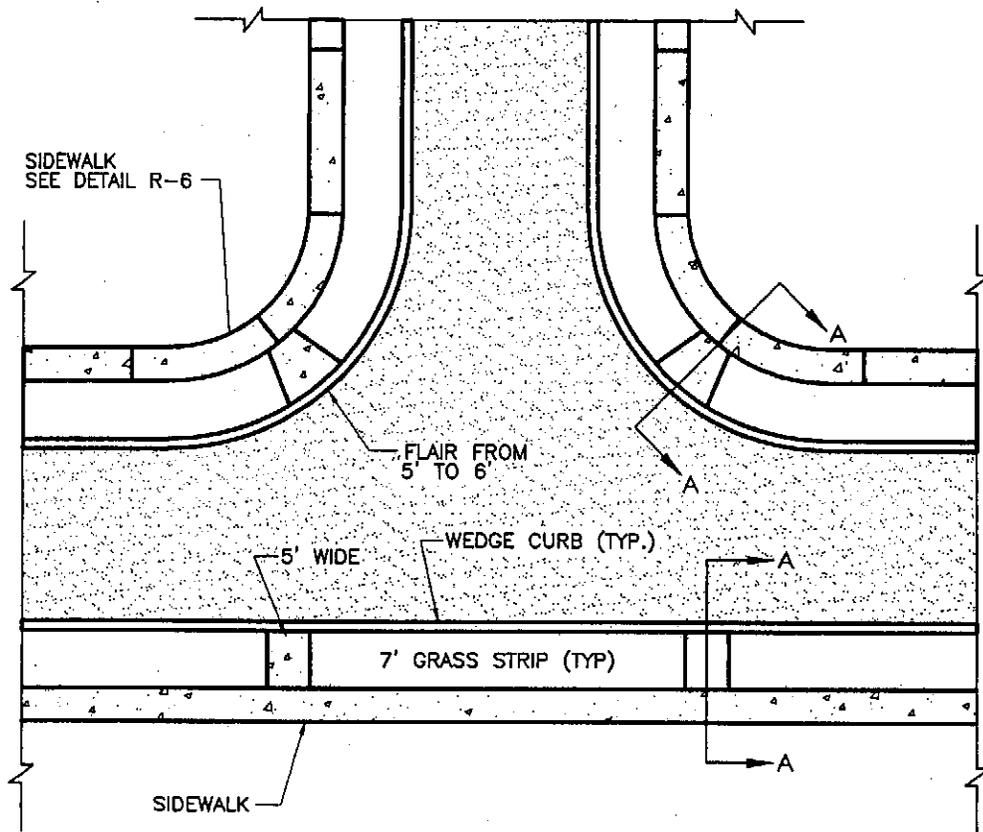
1. FEDERAL REGISTER, ACT NO. 235.
2. THE ARCHITECTURAL BARRIERS ACT (PUBLIC LAW 90-480) AND ALL REQUIREMENTS LISTED BY THE AMERICANS WITH DISABILITIES ACT (ADA).



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SCALE: N.T.S.

BOROUGH OF CASTLE SHANNON
Standard Details
Detail S-3
Wheelchair Ramps (Commercial)



NOTES:

1. CONTRACTOR TO MAINTAIN UNIFORM GUTTERLINE AT BASE OF WHEELCHAIR RAMPS AND MAINTAIN POSITIVE DRAINAGE TO ALL INLETS.
2. CONTRACTOR TO PROVIDE A COARSE, NON-SLIP FINISH BY SCORING SURFACE WITH STIFF BRISTLED BROOM PERPENDICULAR TO LINE OF PEDESTRIAN TRAFFIC.

SECTION A-A

REFERENCES:

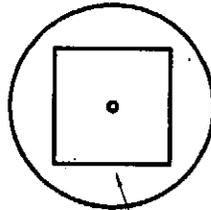
1. FEDERAL REGISTER, ACT NO. 235.
2. THE ARCHITECTURAL BARRIERS ACT (PUBLIC LAW 90-480) AND ALL REQUIREMENTS LISTED BY THE AMERICANS WITH DISABILITIES ACT (ADA).



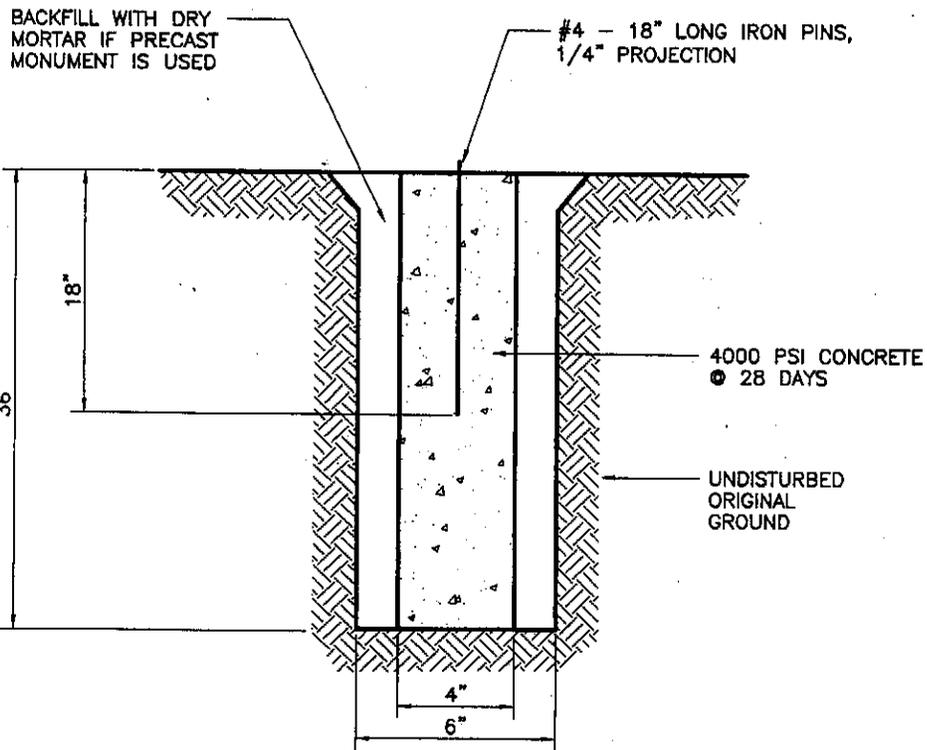
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BOROUGH OF CASTLE SHANNON
Standard Details
Detail S-4
Wheelchair Ramps (Residential)



6" DIA. AUGERED DRILLED HOLE, BACKFILLED WITH DRY MORTAR OR CAST-IN-PLACE CONCRETE



NOTE:

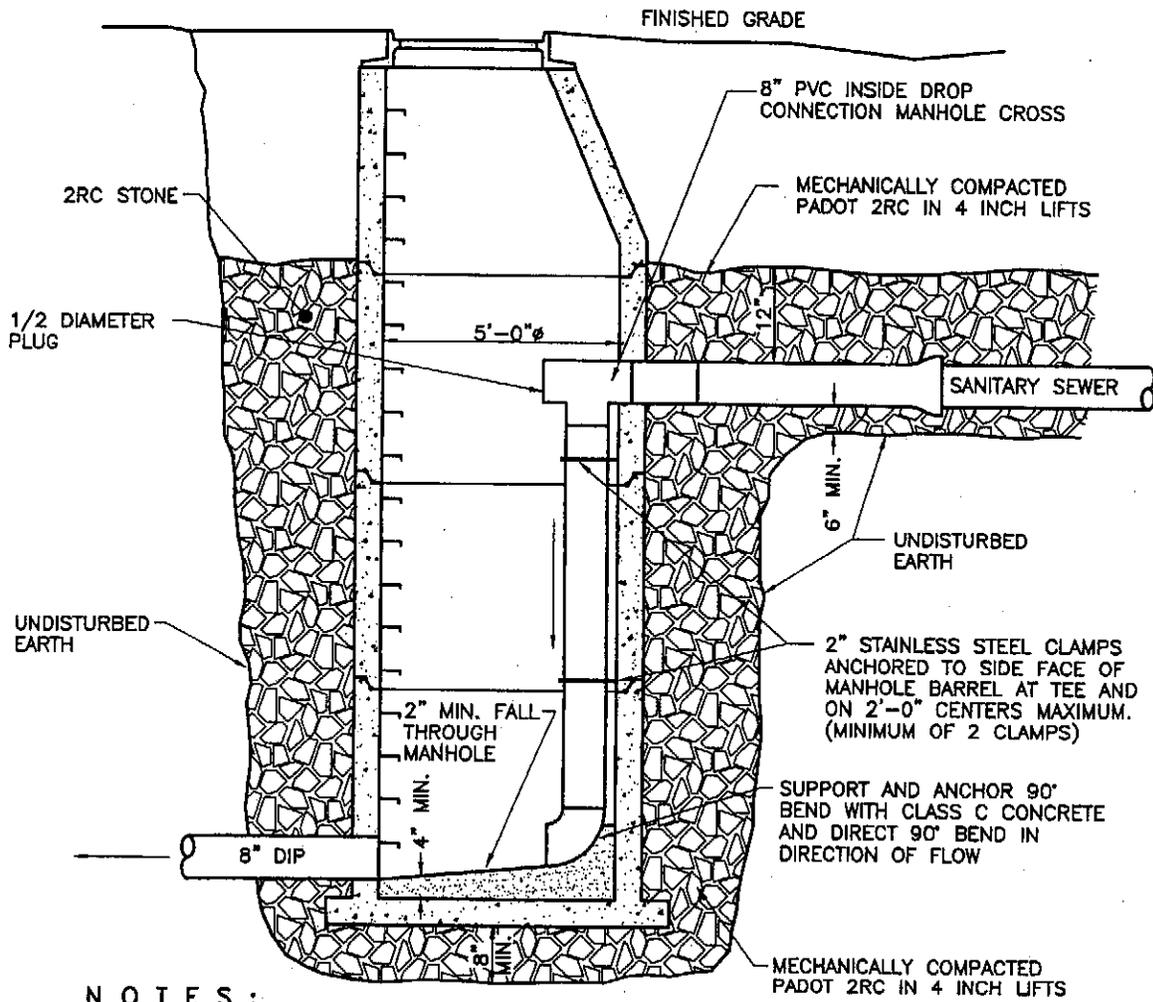
LOCATE MONUMENT PER RECORDED PLAN (AS APPROVED BY BOROUGH ENGINEER), 5'-6" OFF P/L WITHIN PUBLIC DEDICATED ROADWAY, INSTALL AFTER SIDEWALK AND OTHER GRADING IS COMPLETE



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BOROUGH OF CASTLE SHANNON
Standard Details
Detail S-5
Concrete Monument



NOTES :

1. DROP CONNECTION INTERNAL PIPING SHALL BE P.V.C. PIPE CONFORMING TO ASTM SDR 35.
2. DIAMETER OF THE DROP CONNECTION INLET PIPING SHALL EQUAL THE DIAMETER OF THE INLET PIPE.

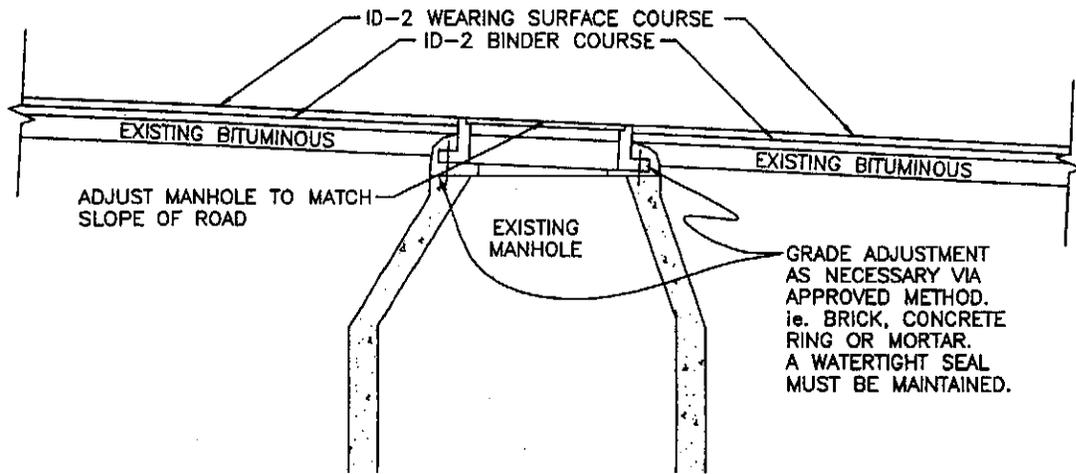
**TYPICAL SANITARY MANHOLE DETAIL
INSIDE MANHOLE DROP CONNECTION**

N. T. S.

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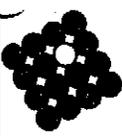
DATE:	October 2000
FILE NAME:	Shannondet.dwg
SCALE:	N.T.S.

BOROUGH OF CASTLE SHANNON
Sanitary Standard Details
SAN-2
Inside Manhole Drop Connection



**TYPICAL
MANHOLE ADJUSTMENT DETAIL**

N. T. S.



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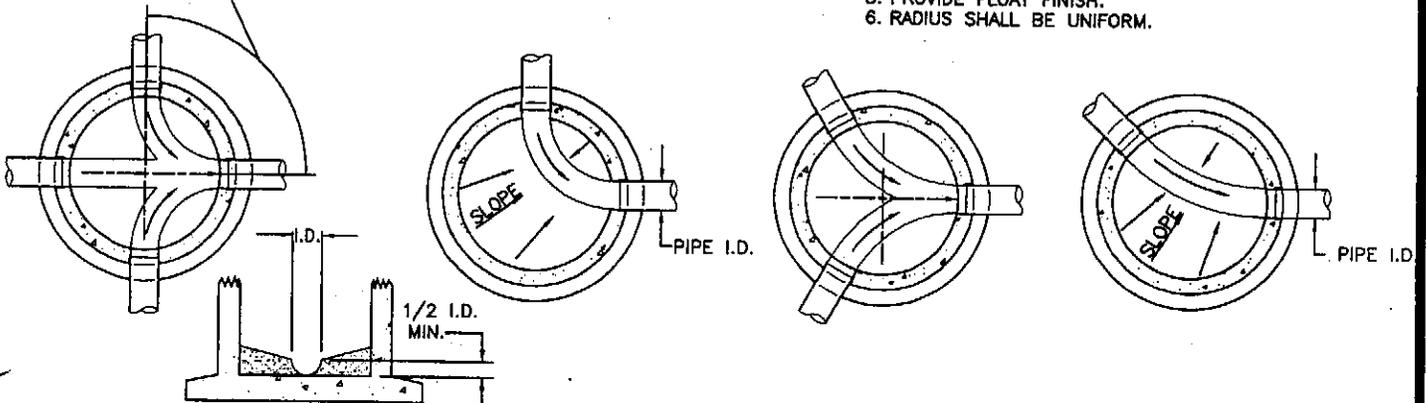
DATE:	October 2000
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BOROUGH OF CASTLE SHANNON
Sanitary Standard Details
SAN-3
Manhole Adjustment Detail

NOTES:

1. CHANNELS TYPICAL, NUMBER AND LOCATION TO MEET FIELD CONDITIONS.
2. CHANNELS TO BE SEMI-CIRCULAR IN SECTION.
3. MANHOLE FLOOR SHALL SLOPE TO CHANNEL.
4. CONCRETE TO FORM CHANNELS SHALL BE CLASS C AND HAVE A MINIMUM THICKNESS OF 4 INCHES.
5. PROVIDE FLOAT FINISH.
6. RADIUS SHALL BE UNIFORM.

MINIMUM ANGLE
OF 90 DEGREES
(TYPICAL OF ALL)



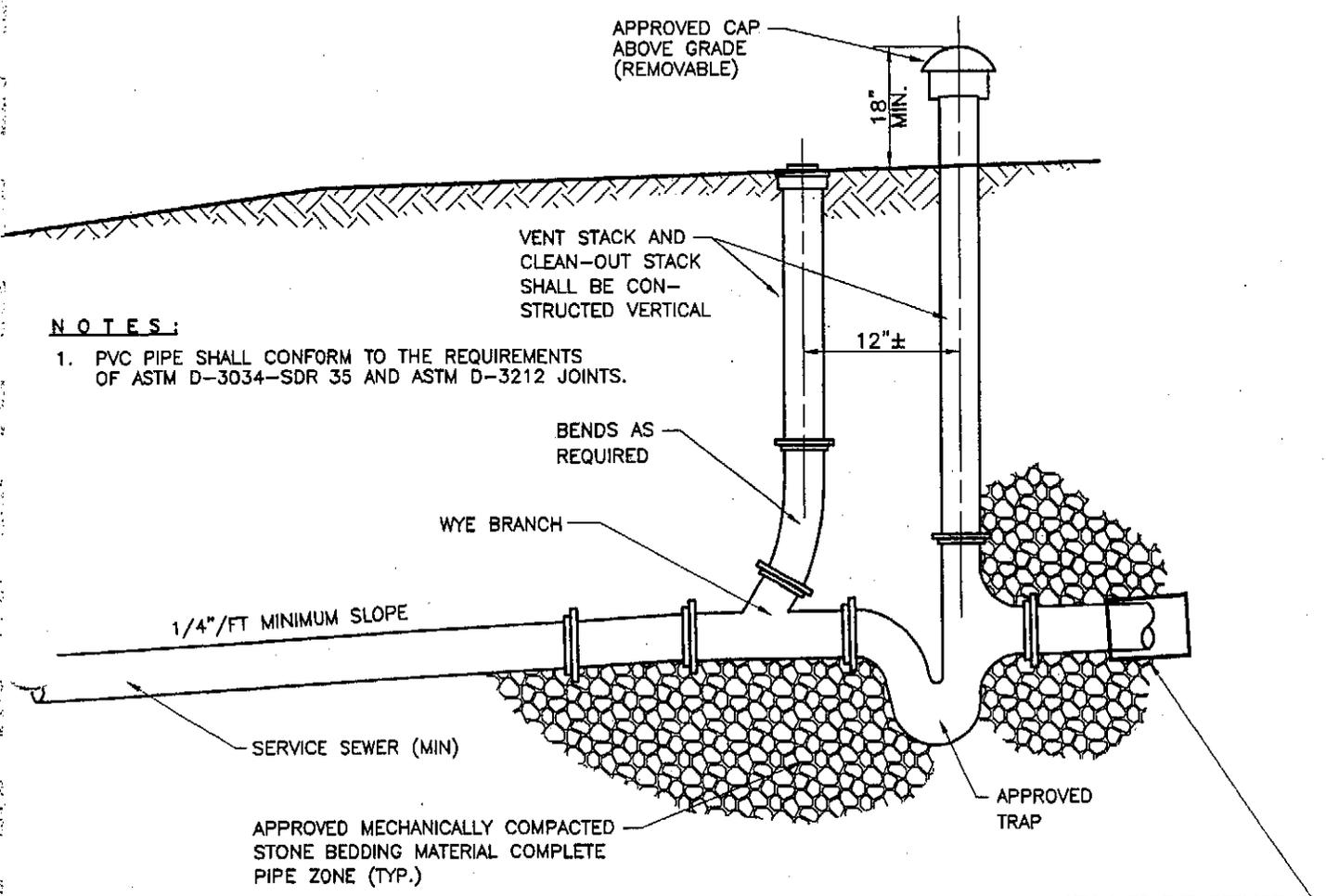
**TYPICAL
MANHOLE CHANNELS**

N. T. S.

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DATE: October 2000
FILE NAME: Shannondet.dwg
SCALE: N.T.S.

BOROUGH OF CASTLE SHANNON
Sanitary Standard Details
SAN-4
Manhole Channel



NOTES:

1. PVC PIPE SHALL CONFORM TO THE REQUIREMENTS OF ASTM D-3034-SDR 35 AND ASTM D-3212 JOINTS.

MAKE COMPLETE WATERTIGHT CONNECTION TO THE SERVICE LINE WITH A FERNCO COUPLING OR OTHER APPROVED METHOD UPON AGREEMENT WITH THE BOROUGH OF CASTLE SHANNON.

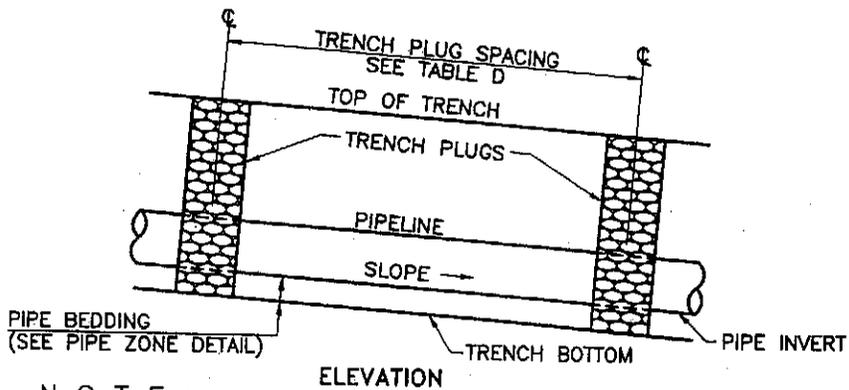
**TYPICAL
TRAP AND CLEANOUT ASSEMBLY**
N. T. S.

NOTE: CONTRACTOR SHALL COMPLETE IN ACCORDANCE WITH ALLEGHENY COUNTY DEPARTMENT OF HEALTH PLUMBING CODE

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BOROUGH OF CASTLE SHANNON
Sanitary Standard Details
SAN-5
Trap and Cleanout Assembly



N O T E :

LIMIT CLEARING & GRUBBING TO A DISTANCE EQUAL TO TWO TIMES THE LENGTH OF PIPE INSTALLATION THAT CAN BE COMPLETED IN ONE DAY AND LIMIT TRENCH EXCAVATION TO THE LENGTH OF PIPE INSTALLATION, PLUG INSTALLATION, AND BACKFILLING THAT CAN BE COMPLETED IN ONE DAY.

SOURCE: PA DEPARTMENT OF ENVIRONMENTAL PROTECTION EROSION AND SEDIMENTATION CONTROL STANDARD WORKSHEETS JANUARY 1996

TRENCH PLUG DETAIL

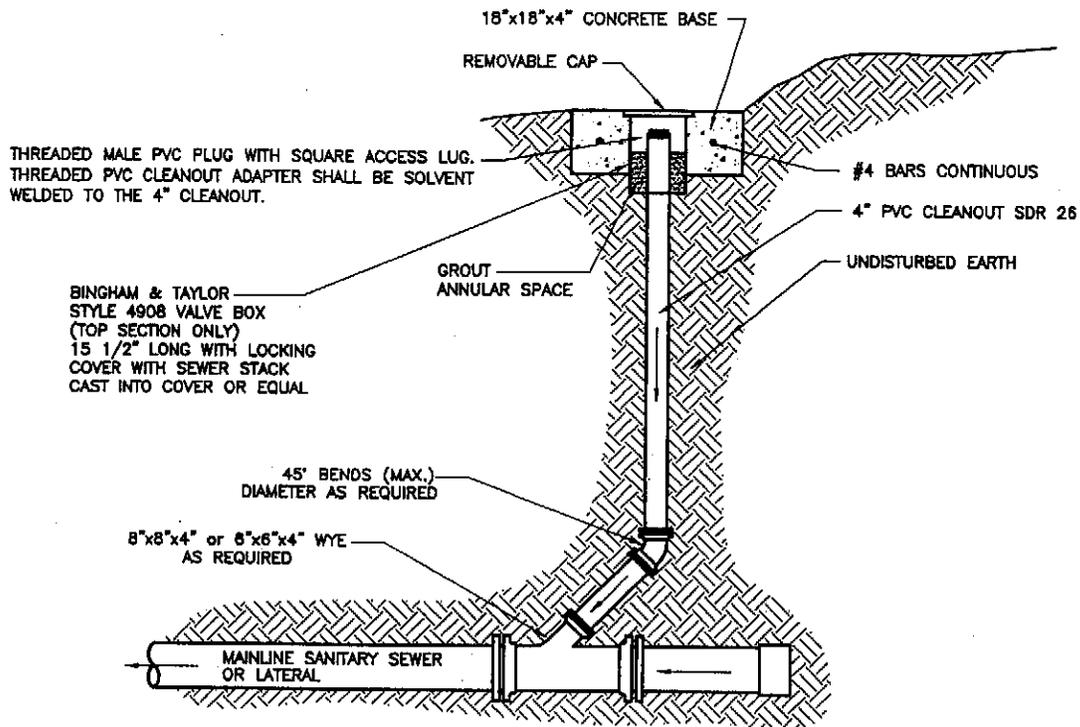
N. T. S.



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DATE:	October 2000
FILE NAME:	Shannondet.dwg
SCALE:	N.T.S.

BOROUGH OF CASTLE SHANNON
Sanitary Standard Details
SAN-6
Trench Plug Detail



NOTES:

1. PVC PIPE SHALL CONFORM TO THE REQUIREMENTS OF ASTM D-3034-SDR 26 AND ASTM D-3212 JOINTS.
2. ALL CLEAN OUTS SHALL BE INSTALLED ACCORDING TO THE TRENCH AND PIPE ZONE DETAIL.

CLEAN OUT ASSEMBLY

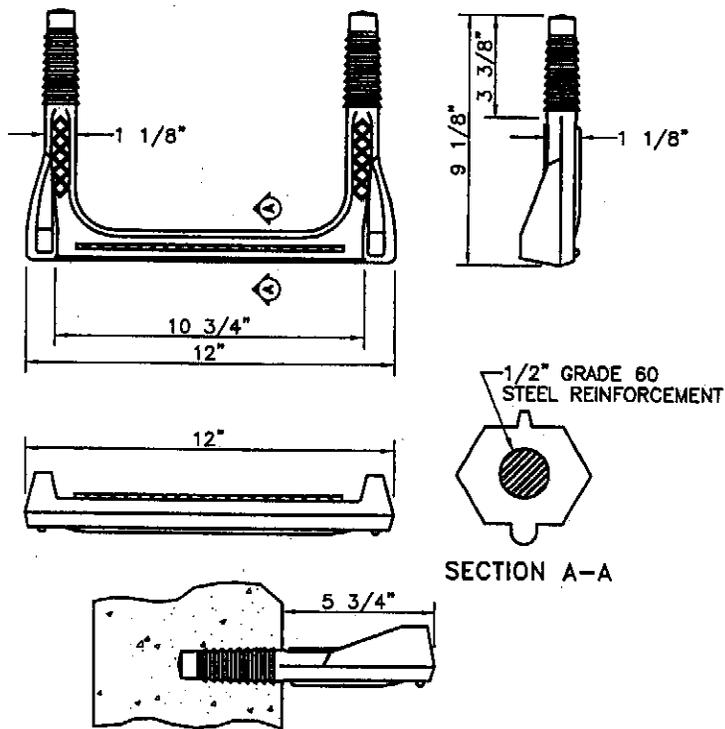
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SCALE:	N.T.S.

BOROUGH OF CASTLE SHANNON
Sanitary Standard Details
SAN-7
Clean Out Assembly



**TYPICAL
LADDER BARS FOR MANHOLES**

N. T. S.

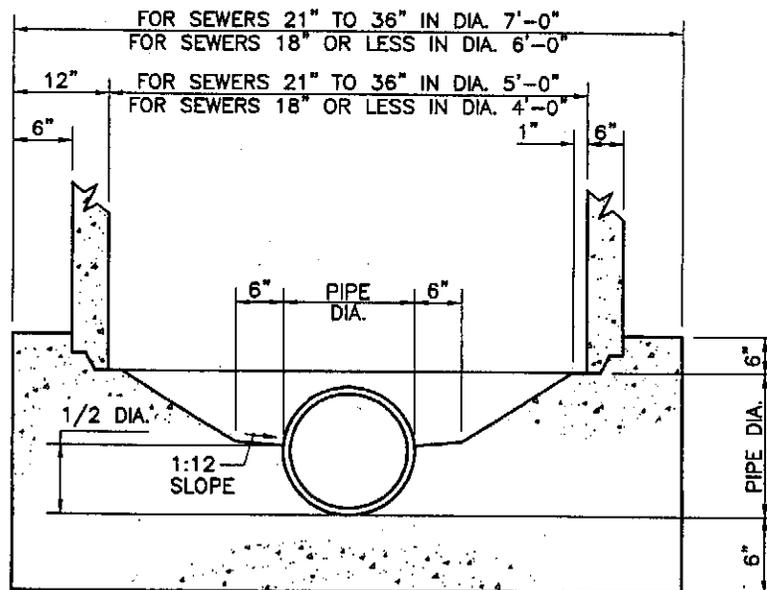
A P P R O V E D



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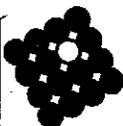
DATE:	October 2000
FILE NAME:	Shannondet.dwg
SCALE:	N.T.S.

BOROUGH OF CASTLE SHANNON
Sanitary Standard Details
SAN-8
Ladder Bars for Manholes



MANHOLE INVERT DETAIL

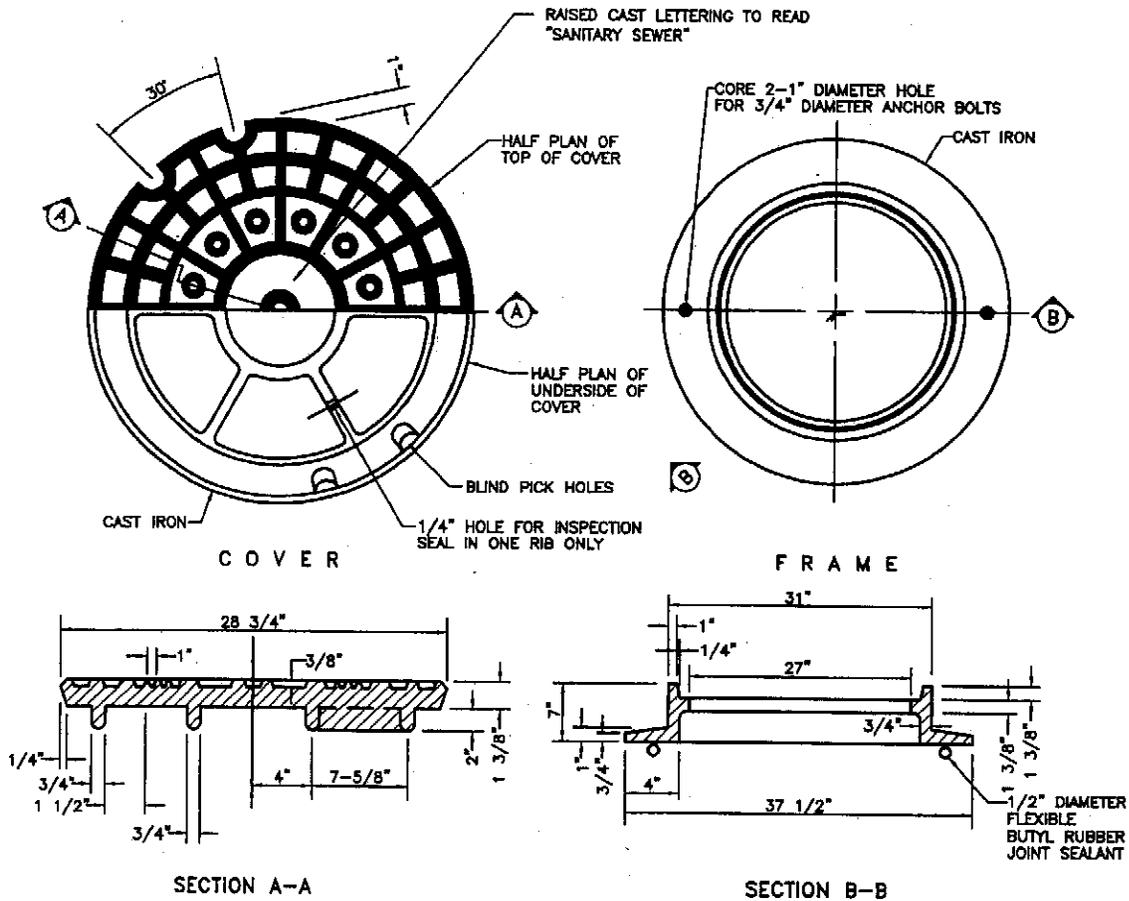
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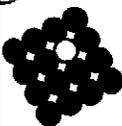
DATE: October 2000
 FILE NAME: Shannondet.dwg
 SCALE: N.T.S.

BOROUGH OF CASTLE SHANNON
Sanitary Standard Details
 SAN-9
 Manhole Invert Detail



SECTION A-A
 SECTION B-B
**TYPICAL SANITARY
 MANHOLE FRAME AND COVER**

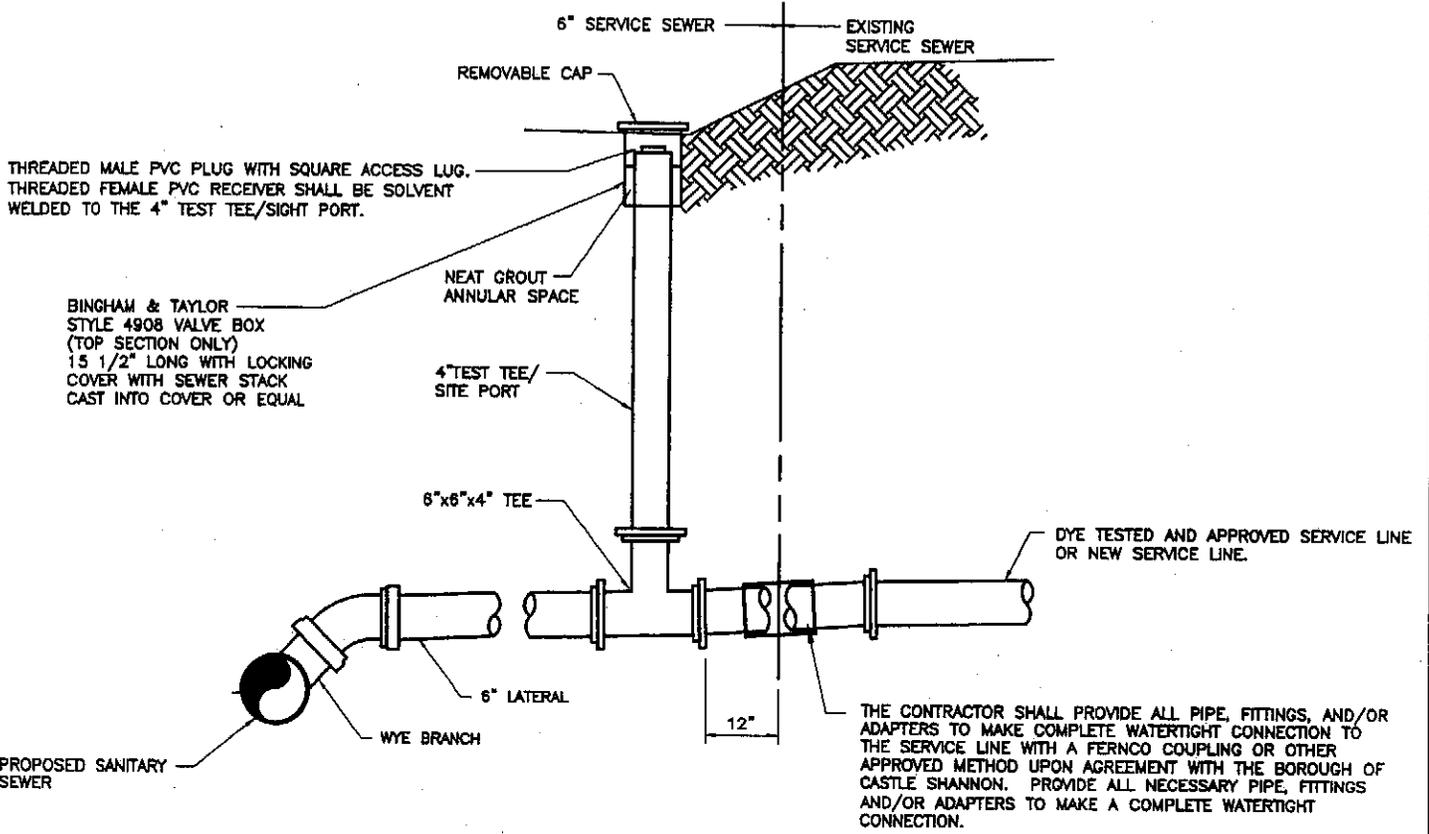
N. T. S.



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SCALE:	N.T.S.

BOROUGH OF CASTLE SHANNON
Sanitary Standard Details
 SAN-10
 Manhole Frame and Cover



WYE CONNECTION, SERVICE LATERAL, AND SIGHT TEE

N. T. S.



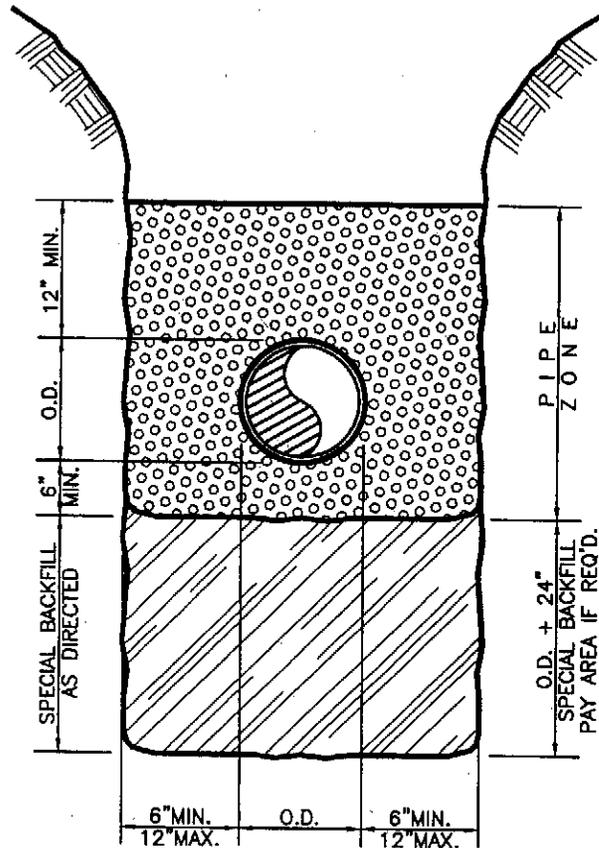
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DATE:	October 2000
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SCALE:	N.T.S.

BOROUGH OF CASTLE SHANNON
Sanitary Standard Details

SAN-11

Wye Connection, Service Lateral, and Sight Tee



**TYPICAL
SPECIAL BACKFILL**

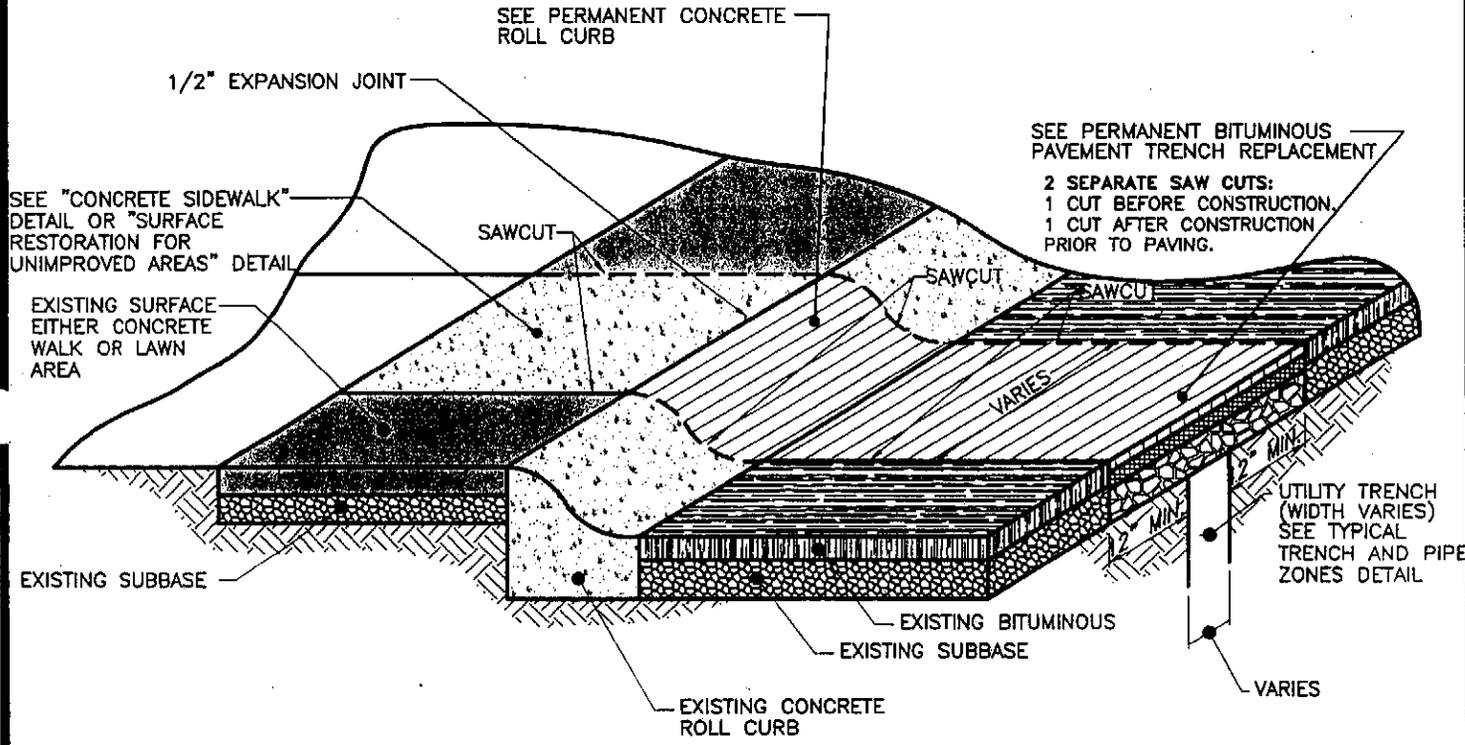
N. T. S.



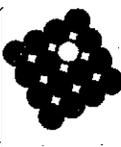
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FILE NAME:	Shannondet.dwg
SCALE:	N.T.S.

BOROUGH OF CASTLE SHANNON
Sanitary Standard Details
Detail SAN-12
Special Backfill



**PERMANENT
UTILITY TRENCH RESTORATION**
N. T. S.

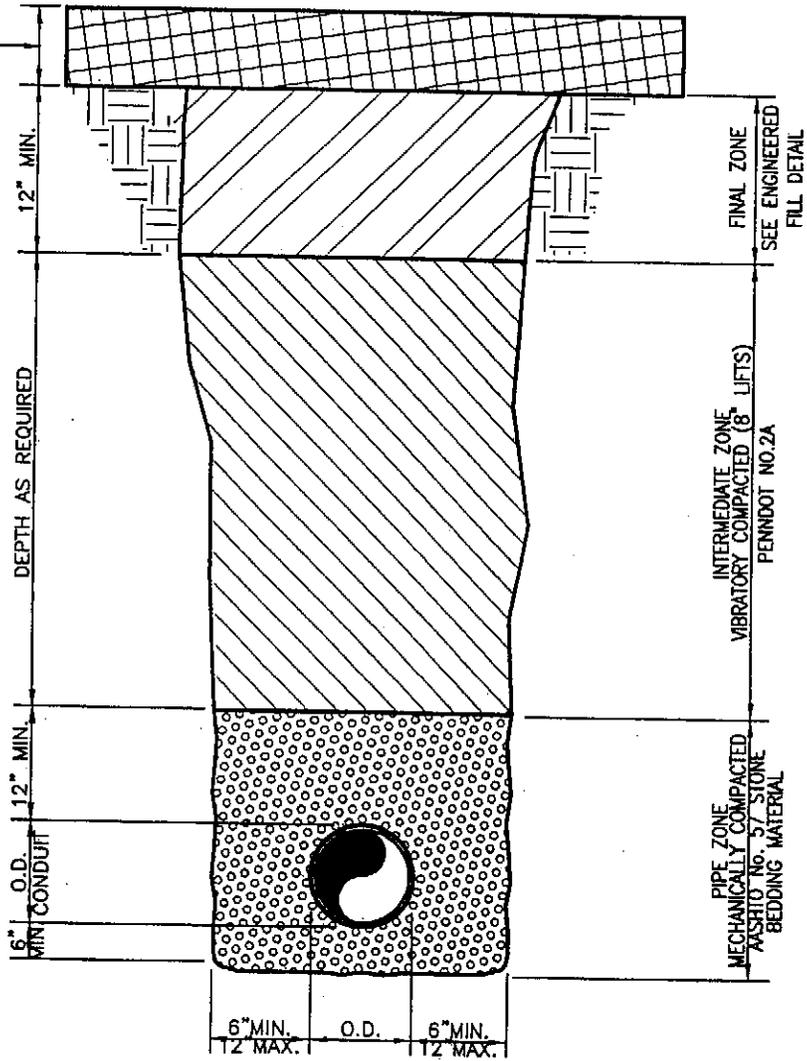


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DATE: October 2000
FILE NAME: Shannondet.dwg
SCALE: N.T.S.

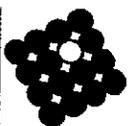
BOROUGH OF CASTLE SHANNON
Sanitary Standard Details
Detail SAN-13
Utility Trench Restoration

FINAL ZONE RESTORATION



TYPICAL
BEDDING AND PIPE ZONES

N. T. S.



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DATE: October 2000
FILE NAME: Shannondet.dwg
SCALE: N.T.S.

BOROUGH OF CASTLE SHANNON
Sanitary Standard Details
Detail SAN-14
Bedding and Pipe Zones

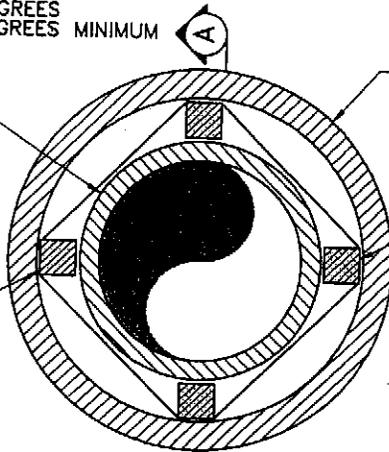
0-12" DIAMETER USE 4 EACH AT 90 DEGREES
 > 12" DIAMETER USE 6 EACH AT 60 DEGREES MINIMUM

RESTRAINED JOINT DUCTILE
 IRON CARRIER PIPE

STEEL CASING
 PIPE

STEEL
 BANDS
 (4 @ 90 DEGREES MINIMUM)

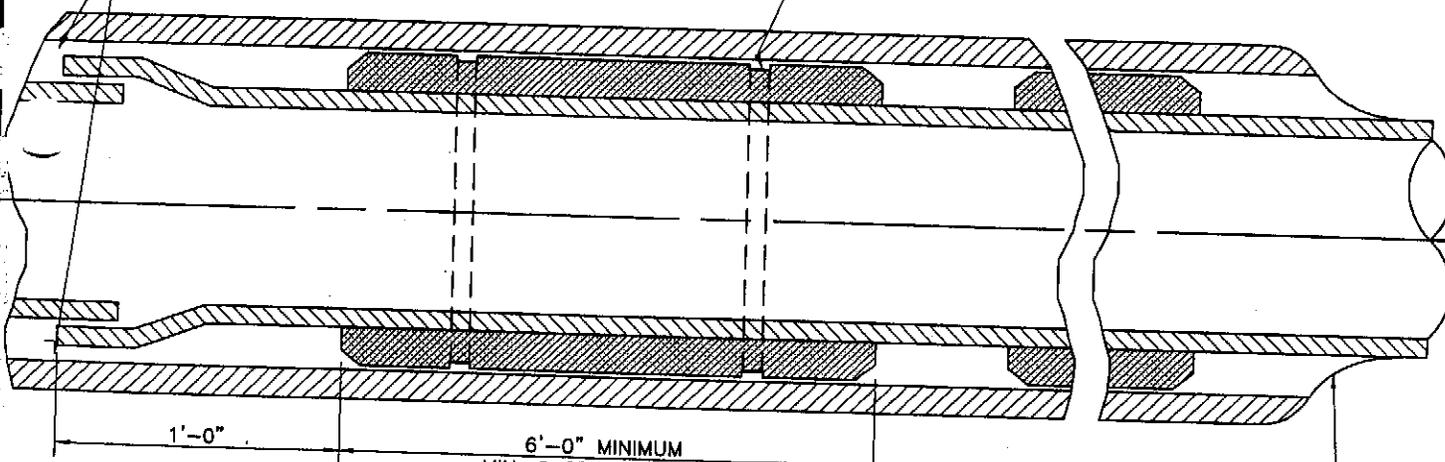
WOLMANIZED WOOD
 SKIDS SIZED TO ACCOMMODATE
 ANNULAR OPENING



2" (MIN.) CLEARANCE
 FROM CARRIER PIPE BELL
 O.D. TO CASING PIPE I.D.

END VIEW

SKIDS SHALL BE BANDED 4'-0" C. TO C.
 NOTCH SKIDS TO ACCOMMODATE BANDS



6'-0" MINIMUM
 MIN. 2 SETS OF SKIDS
 PER 20' LENGTH OF PIPE

SECTION A-A

SYNTHETIC RUBBER END SEAL
 (TYPICAL OF EACH END)

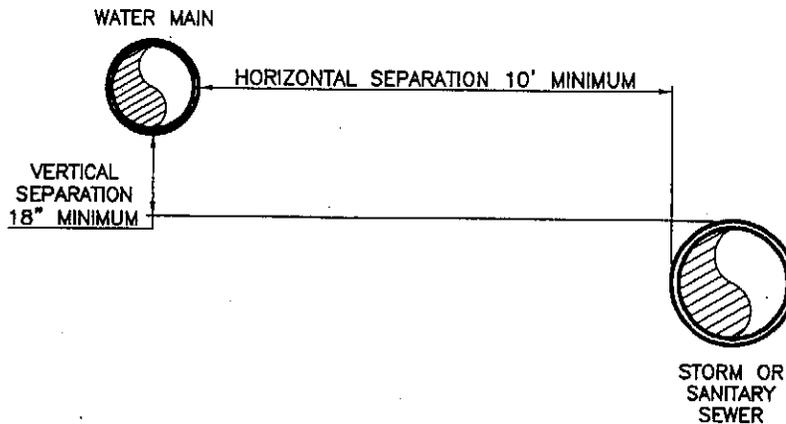
**TYPICAL
 SPACER/SKIDS FOR STEEL CASING PIPE**

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DATE: October 2000
 FILE NAME: Shannondet.dwg
 SCALE: N.T.S.

BOROUGH OF CASTLE SHANNON
Sanitary Standard Details
 Detail SAN-15
 Spacer/ Skids for Steel Casing Pipe



NOTES:

1. WHEN THE HORIZONTAL SEPARATION OF THE WATER MAIN AND SEWER LINE IS LESS THAN 10', THE VERTICAL SEPARATION BETWEEN THE TOP (CROWN) OF THE SEWER LINE AND THE BOTTOM (INVERT) OF THE WATER MAIN SHALL BE AT LEAST 18". WATERLINE SHALL BE ENCASED IN CONCRETE WHERE SEWER / WATERLINE CROSSINGS OCCUR AND, WHERE THE CONDITIONS PREVENT AN 18" VERTICAL SEPARATION.

2. NO OTHER UNDERGROUND UTILITIES, SUCH AS GAS, ELECTRIC, TELEPHONE, OR CABLE, SHALL BE PLACED ABOVE THE WATERLINE OR WITHIN THREE FEET OF EACH SIDE OF THE WATERLINE.

UTILITY SEPARATION

N. T. S.

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BOROUGH OF CASTLE SHANNON
Sanitary Standard Details
Detail SAN-16
Utility Separation