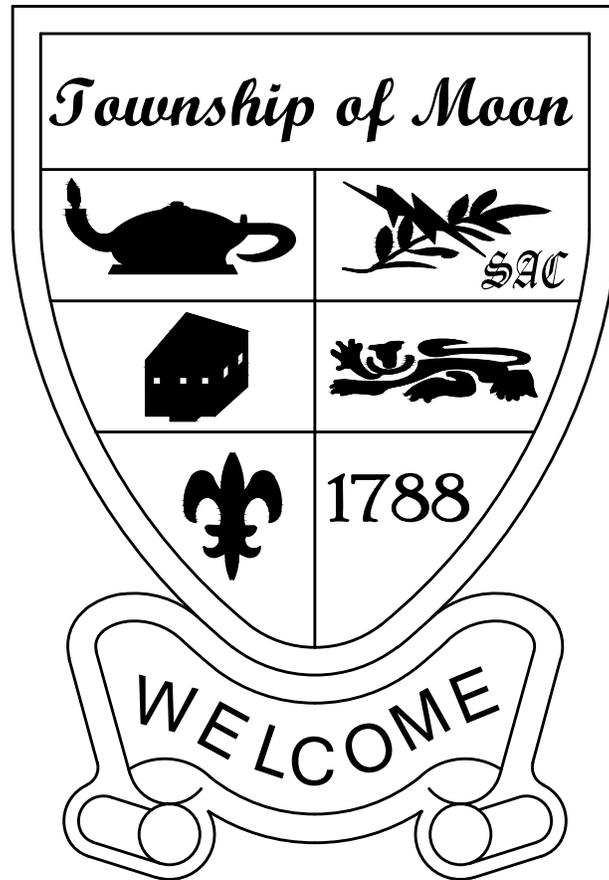


# MOON TOWNSHIP STANDARD DETAILS



SEPTEMBER 2000

REVISED THROUGH MARCH 2013

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 GN-2 GENERAL NOTES MARCH 2013

**EROSION CONTROL DETAILS**

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 RSD-10/1 CONCRETE MANHOLE (36" AND UP) MARCH 2013  
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 RSD-11 LADDER BARS FOR MANHOLES AND INLETS DECEMBER 1999  
 RSD-12/1 ENDWALLS (TYPE D, TYPE D-E, TYPE E-S) MARCH 2013  
 RSD-12/2 ENDWALLS (TYPE D-W) MARCH 2013  
 RSD-13/1 ROOF DRAIN SUMP OUTLET MARCH 2013  
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 RSD-14 NO DUMPING - DRAINS TO RIVER DISK MARCH 2013

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 SWM-2/4 PERMANENT EARTH DAM - SECTION A-A MARCH 2013  
 SWM-3/4 PERMANENT EARTH DAM - SECTIONS B-B AND C-C MARCH 2013  
 SWM-4/4 BASIN LOWFLOW CHANNEL/UNDERDRAIN MARCH 2013  
 SWM-2 CONCRETE ANTI-SEEP COLLAR DECEMBER 1999  
 SWM-2A CORRUGATED METAL ANTI-SEEP COLLAR FEBRUARY 2006  
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 SWM-6 ROOF DRAIN/SUMP STORAGE CHART (25 YEAR STORM EVENT) DECEMBER 1999  
 SWM-7 ROOF DRAIN/SUMP MARCH 2013  
 SWM-8 OUTLET PROTECTION (MINIMUM TAILWATER CONDITIONS) MARCH 2013  
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R-1 TYPICAL CROSS-SECTION LOCAL ROAD MARCH 2013  
 R-2 ROADWAY PAVING MATERIALS JULY 2010  
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 R-4 SUPERPAVE HMA TRENCH REPAIR MARCH 2013  
 R-5 CONCRETE DRIVEWAY/SIDEWALK APRON MARCH 2013  
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 R-9 TYPICAL BITUMINOUS CONCRETE WEDGE CURB MARCH 2013  
 R-10 TYPICAL BITUMINOUS CONCRETE KEYWAY MARCH 2013  
 R-11 CUL-DE-SAC WITH ISLAND MARCH 2005  
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 S-2A CURB RAMPS JUNE 2010  
 S-2B CURB RAMPS JUNE 2010  
 S-2C CURB RAMPS JUNE 2010  
 S-3 -DELETED-  
 S-4 CONCRETE MONUMENT DECEMBER 1999  
 S-5 BENCH DRAIN DECEMBER 1999  
 S-6 MULTI-PURPOSE WALKING AND BIKING TRAIL MARCH 2013



MICHAEL BAKER JR., INC.  
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FILE NAME:	INDEX SHEET.dwg
SCALE:	N.T.S.

**TOWNSHIP OF MOON  
 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 TOWNSHIP AFTER RECOMMENDATION OF THE ENGINEER.
2. CONDITIONS AT THE SITE WHICH CANNOT ALWAYS BE ANTICIPATED MAY NECESSITATE DEVIATIONS FROM TOWNSHIP STANDARD DETAILS; THEREFORE, THE TOWNSHIP OF MOON 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 TOWNSHIP 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 TOWNSHIP 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 TOWNSHIP 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 TOWNSHIP. ALL UTILITIES SHALL HAVE A MINIMUM COVER OF 36 INCHES. SLAG IS NOT PERMITTED AS BACKFILL. ALL UTILITY ROADWAY CROSSINGS MUST BE INSTALLED PRIOR TO ROADWAY CONSTRUCTION. ALL MAINLINE UTILITY ROADWAY CROSSINGS MUST BE MADE AT ROAD INTERSECTIONS, UNLESS OTHERWISE APPROVED BY THE TOWNSHIP.
7. ALL STORM SEWERS WITHIN TOWNSHIP ROADWAY RIGHTS-OF-WAY SHALL BE CLASS 3 REINFORCED CEMENT CONCRETE PIPE (RCCP) OF MINIMUM 15-INCH DIAMETER. CORRUGATED POLYETHYLENE PIPE (CPP) OF MINIMUM 15-INCH DIAMETER MAY BE USED OUTSIDE OF THE RIGHT-OF-WAY WITH THE WRITTEN PERMISSION OF THE TOWNSHIP AFTER RECOMMENDATION OF THE ENGINEER. ALL STORM SEWERS SHALL BE LAID TO LINE AND GRADE WITH A FULL MOON AND AT A MINIMUM ONE PERCENT GRADE.
8. THE TOWNSHIP OF MOON MUST BE NOTIFIED (412 262-1700) 72 HOURS PRIOR TO ANY WORK WITHIN A TOWNSHIP 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 TOWNSHIP FIRE CHIEF AND THE MUNICIPAL AUTHORITY. 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 OLD PENNDOT DESIGNATIONS AS FOLLOWS:

<u>PENNDOT</u>	<u>AASHTO</u>
4	1
3A	3
2B	57
PA #2	67
1B	8
1A	10
2A	NONE



MICHAEL BAKER JR., INC.  
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SCALE:	N.T.S.

**TOWNSHIP OF MOON**  
**STANDARD DETAILS**  
 DETAIL GN-1  
 GENERAL NOTES

GENERAL NOTES CONTINUED,

12. ALL PAVERS WHO WORK WITHIN EXISTING OR PROPOSED PUBLIC RIGHTS-OF-WAY WITHIN MOON TOWNSHIP MUST BE PENNDOT PRE-QUALIFIED. A HIGHWAY OCCUPANCY PERMIT MUST BE APPROVED BY PENNDOT OR THE TOWNSHIP PRIOR TO ANY WORK WITH THE PENNDOT OR TOWNSHIP RIGHT-OF-WAY.
13. ALL TRAFFIC SIGNALS INSTALLED OR MODIFIED SHALL BE DESIGNED, IN ACCORDANCE WITH THE PENNSYLVANIA DEPARTMENT OF TRANSPORTATION (PENNDOT) PUBLICATION 149 TRAFFIC SIGNAL DESIGN HANDBOOK AND PUBLICATION 148 TRAFFIC STANDARDS - SIGNALS.
14. ALL TRAFFIC SIGNAL INSTALLATIONS SHALL INCLUDE AN ACOUSTICAL EMERGENCY VEHICLE PREEMPTION SYSTEM CONFORMING TO THE CURRENT TOWNSHIP SYSTEM. THE SYSTEM SHALL INCLUDE CONFIRMATION BEACONS AND DETECTORS ON EACH APPROACH TO THE INTERSECTION, AS DIRECTED BY THE TOWNSHIP TRAFFIC ENGINEER. THE SYSTEM SHALL OPERATE ON PREEMPTION.
15. ALL TRAFFIC SIGNAL INSTALLATIONS SHALL INCLUDE L.E.D. RED, YELLOW AND GREEN VEHICULAR INDICATIONS. L.E.D. WALK AND DON'T WALK INDICATIONS SHALL ALSO BE INSTALLED.
16. ALL TRAFFIC SIGNAL INSTALLATIONS SHALL BE ON MAST ARMS PER PENN DOT STANDARDS.
17. ALL TRAFFIC CONTROL SHALL BE PERFORMED IN ACCORDANCE WITH PENNDOT PUBLICATION 213.
18. ALL NEW ELECTRIC, TELEPHONE AND CABLE TELEVISION MAINLINES AND SERVICE LINES SHALL BE CONSTRUCTED UNDERGROUND.
19. THE PA ONE CALL UTILITY INFORMATION, INCLUDING THE UTILITY PROVIDERS AND THE ONE CALL SERIAL NUMBER, NEEDS TO BE INCLUDED ON THE CONSTRUCTION PLANS.
20. ALL HANDICAPPED PARKING SPACES AND STALLS SHALL CONFORM TO CURRENT ADA STANDARDS.
21. ACCESS TO DETENTION FACILITIES MUST BE PAVED (DEPTH EQUAL TO ROADWAY PAVING DEPTH) FROM THE ROADWAY TO THE REAR OF THE LOT. THE MINIMUM WIDTH IS 10 FEET.
22. ALL UTILITY CROSSINGS MUST BE DRILLED. NO MOLES, GOFERS, OR SIMILAR MECHANICAL BORING DEVICES WILL BE PERMITTED.
23. STORM SEWER DROP CONNECTIONS FROM INVERT OF OUTFLOW PIPE TO INVERT OF INFLOW PIPE SHALL BE A MAXIMUM OF 2 FT.

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DATE:

MARCH 2013

FILE

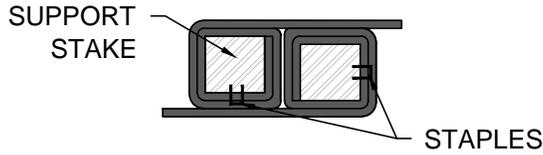
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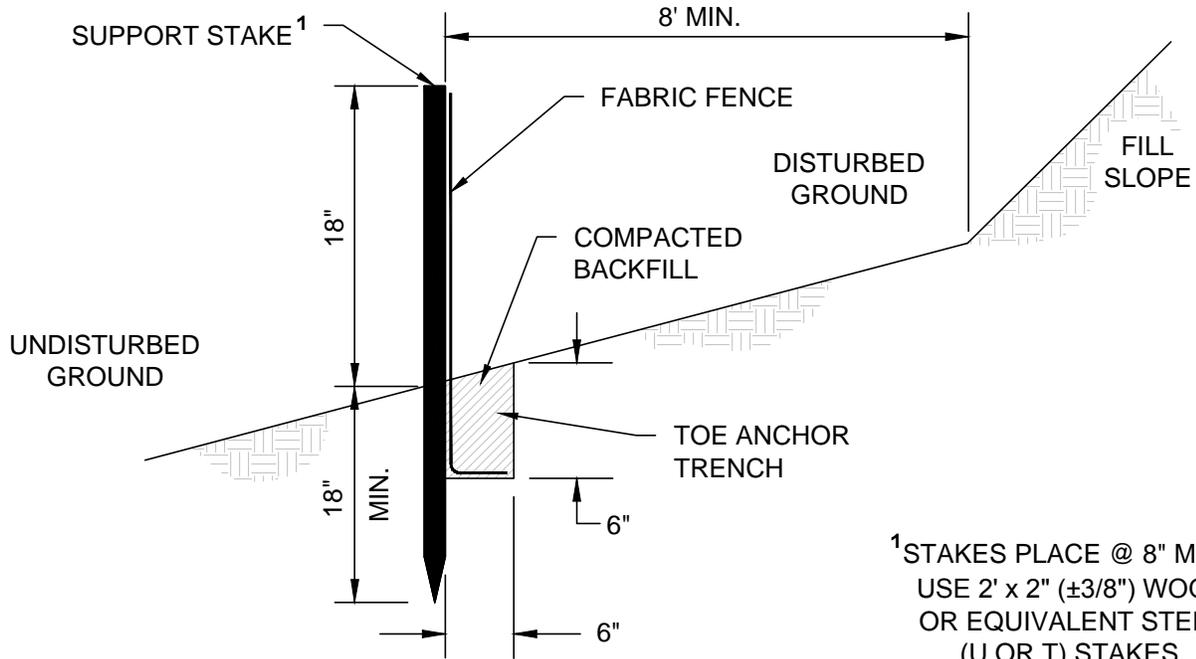
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TOWNSHIP OF MOON  
STANDARD DETAILS  
DETAIL GN-2  
GENERAL NOTES



**JOINING FENCE SECTIONS**



**ELEVATION VIEW**

<sup>1</sup>STAKES PLACE @ 8" MAX.  
USE 2' x 2" (±3/8") WOOD  
OR EQUIVALENT STEEL  
(U OR T) STAKES.

**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. FABRIC WIDTH SHALL BE 30" MINIMUM. STAKES SHALL BE HARDWOOD OR EQUIVALENT STEEL (U OR T) STAKES.
3. SILT FENCE SHALL BE PLACED AT LEVEL EXISTING GRADE. BOTH ENDS OF THE FENCE SHALL BE EXTENDED AT LEAST 8 FEET UP SLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT.
4. SEDIMENT SHALL BE REMOVED WHEN ACCUMULATIONS REACH HALF THE ABOVEGROUND HEIGHT OF THE FENCE.
5. ANY SECTION OF SILT FENCE WHICH HAS BEEN UNDERMINED OR TOPPED SHALL BE IMMEDIATELY REPLACED WITH A ROCK FILTER OUTLET (STANDARD DETAIL ES-2).
6. FENCE SHALL BE REMOVED AND PROPERLY DISPOSED OF WHEN TRIBUTARY AREA IS PERMANENTLY STABILIZED.
7. SOURCE: EROSION AND SEDIMENT POLLUTION CONTROL PROGRAM MANUAL 3/2012.
8. DETAILS UTILIZED SHALL BE TO PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION CURRENT STANDARDS.

MAXIMUM SLOPE LENGTH (FT.) ABOVE FENCE	
SLOPE %	STANDARD (18" HIGH) SILT FENCE
2 (OR LESS)	150
5	100
10	50
15	35
20	25
25	20
30	15
35	15
40	15
45	10
50	10

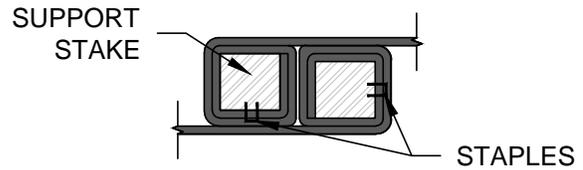
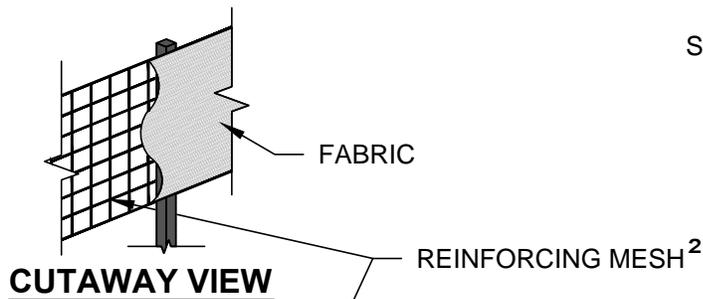
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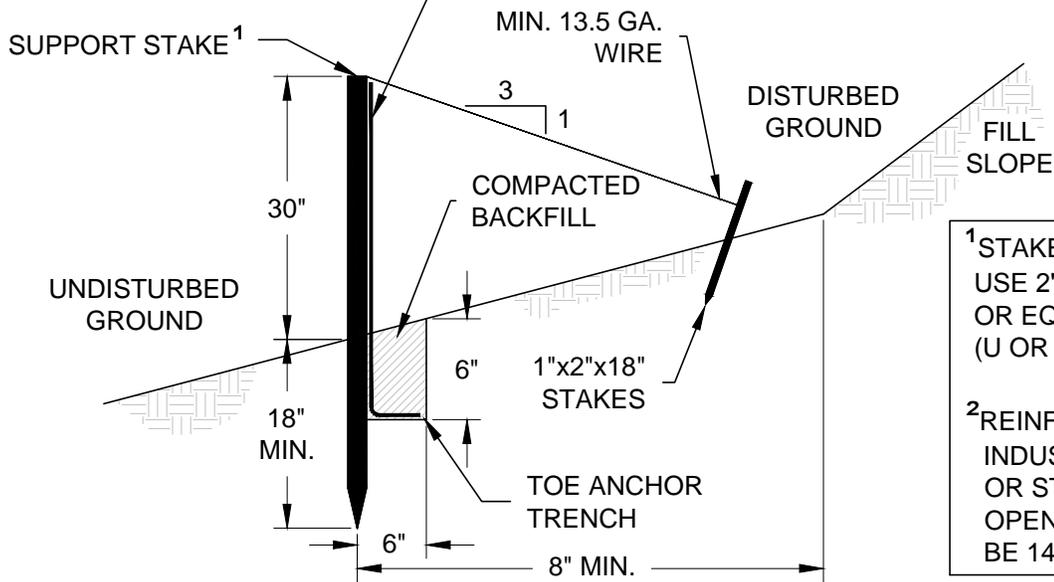
DATE: MARCH 2013  
FILE NAME: ES-1 18 SILT BARRIER FENCE.dwg  
SCALE: N.T.S.

**TOWNSHIP OF MOON  
STANDARD DETAILS**

DETAIL ES-1  
18" SILT BARRIER FENCE



**JOINING FENCE SECTIONS**



<sup>1</sup>STAKES PLACED @ 8" MAX. USE 2" x 2" x 48" (±3/8") WOOD OR EQUIVALENT STEEL (U OR T) STAKES.

<sup>2</sup>REINFORCING MESH EITHER INDUSTRIAL POLYPROPYLENE OR STEEL MESH WITH 6" MAX. OPENING STEEL MESH SHALL BE 14 GA. MIN.

**ELEVATION VIEW**

**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. FABRIC WIDTH SHALL BE 42" MINIMUM. STAKES SHALL BE HARDWOOD OR EQUIVALENT STEEL (U OR T). AN 18" SUPPORT STAKE SHALL BE DRIVEN 12" MINIMUM INTO UNDISTURBED GROUND.
3. SILT FENCE SHALL BE INSTALLED AT EXISTING LEVEL GRADE. BOTH ENDS OF EACH FENCE SECTION SHALL BE EXTENDED AT LEAST 8 FEET UP SLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT.
4. SEDIMENT SHALL BE REMOVED WHERE ACCUMULATIONS REACH HALF THE ABOVEGROUND HEIGHT OF THE FENCE.
5. ANY SECTION OF SILT FENCE WHICH HAS BEEN UNDERMINED OR TOPPED SHALL BE IMMEDIATELY REPLACED WITH A ROCK FILTER OUTLET (STANDARD DETAIL ES-2).
6. FENCE SHALL BE REMOVED AND PROPERLY DISPOSED OF WHEN TRIBUTARY AREA IS PERMANENTLY STABILIZED.
7. SOURCE: EROSION AND SEDIMENT POLLUTION CONTROL PROGRAM MANUAL 3/2012.

MAXIMUM SLOPE LENGTH (FT.) ABOVE FENCE	
SLOPE %	REINFORCED (30" HIGH) SILT FENCE
2 (OR LESS)	500
5	250
10	150
15	100
20	70
25	55
30	45
35	40
40	35
45	30
50	25

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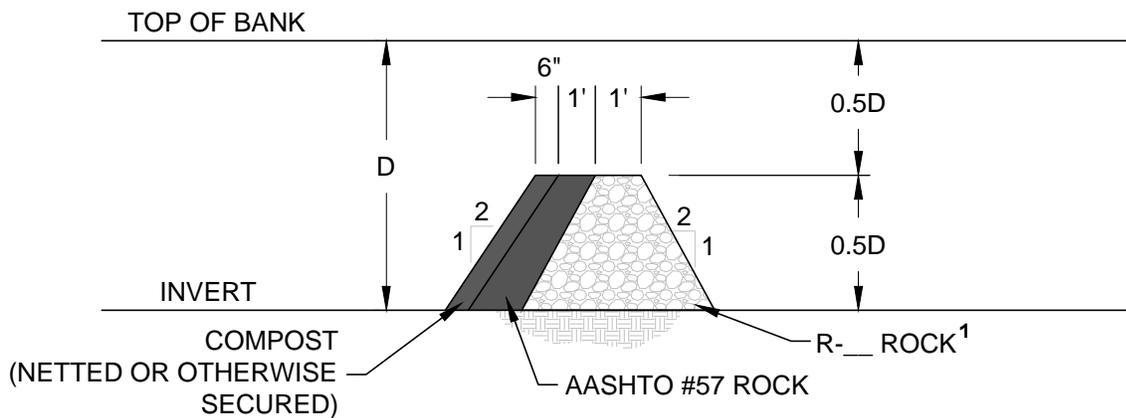
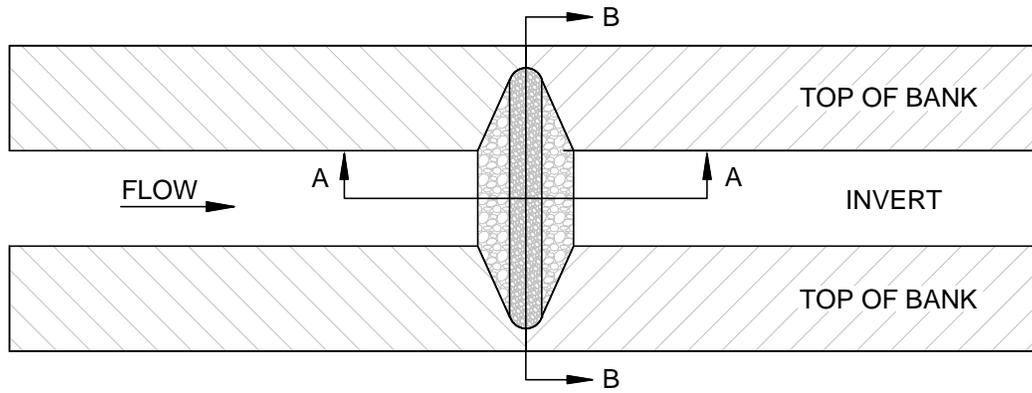
DATE:  
MARCH 2013

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ES-1a 30 SILT BARRIER FENCE.dwg

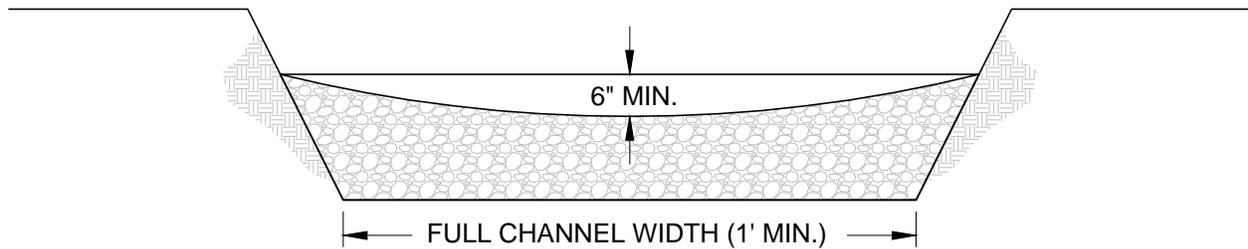
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**TOWNSHIP OF MOON  
STANDARD DETAILS**

DETAIL ES-1A  
30" REINFORCED SILT FENCE



**TYPICAL SECTION A-A**



**TYPICAL SECTION B-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. SEDIMENT SHALL BE REMOVED WHEN ACCUMULATIONS REACH 1/2 THE HEIGHT OF THE FILTER.
3. UPON STABILIZATION OF EACH CHANNEL, INSTALLER SHALL REMOVE ACCUMULATED SEDIMENT, REMOVE ROCK FILTER, AND STABILIZE DISTURBED AREAS.
4. SOURCE: EROSION AND SEDIMENT POLLUTION CONTROL PROGRAM MANUAL 3/2012.

1	FILTER STONE	
	FOR 3' ≤ D	USE R-4
	FOR 2' ≤ D	USE R-3
NOT APPLICABLE FOR D < 2'		

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DATE:  
MARCH 2013

FILE  
NAME:  
ES-2 ROCK FILTER.dwg

SCALE:  
N.T.S.

**TOWNSHIP OF MOON  
STANDARD DETAILS**

**DETAIL ES-2  
ROCK FILTER**

2" x 2" WOODEN STAKES PLACED 10' O.C.

BLOWN/PLACED FILTER MEDIA

COMPOST FILTER SOCK

DISTURBED AREA

UNDISTURBED AREA

12"  
MIN.

### SECTION VIEW

EXISTING  
CONTOURS

DISTURBED AREA

FLOW

FLOW

102

101

100

COMPOST FILTER SOCK  
(12" to 24" DIA.)

UNDISTURBED AREA

2" x 2" WOODEN  
STAKES PLACED 10' O.C.

### PLAN VIEW

#### 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. SOCK FABRIC SHALL MEET STANDARDS OF PA DEP EROSION AND SEDIMENT POLLUTION CONTROL PROGRAM MANUAL, TABLE 4.1. COMPOST SHALL MEET THE STANDARDS OF PA DEP EROSION AND SEDIMENT POLLUTION CONTROL PROGRAM MANUAL, TABLE 4.2.
3. COMPOST FILTER SOCK SHALL BE PLACED AT EXISTING LEVEL GRADE. BOTH ENDS OF THE SOCK SHALL BE EXTENDED AT LEAST 8 FEET UP SLOPE AT 45 DEGREES TO THE MAIN SOCK ALIGNMENT (FIGURE 4.1). MAXIMUM SLOPE LENGTH ABOVE ANY SOCK SHALL NOT EXCEED THAT SHOWN ON PA DEP EROSION AND SEDIMENT POLLUTION CONTROL PROGRAM MANUAL, FIGURE 4.2. STAKES MAY BE INSTALLED IMMEDIATELY DOWNSLOPE OF THE SOCK IF SO SPECIFIED BY THE MANUFACTURER.
4. TRAFFIC SHALL NOT BE PERMITTED TO CROSS FILTER SOCKS.
5. ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT REACHES HALF THE ABOVEGROUND HEIGHT OF THE SOCK AND DISPOSED IN THE MANNER DESCRIBED ELSEWHERE IN THE PLAN.
6. SOCKS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. DAMAGED SOCKS SHALL BE REPAIRED ACCORDING TO MANUFACTURER'S SPECIFICATIONS OR REPLACED WITHIN 24 HOURS OF INSPECTION.
7. BIODEGRADABLE FILTER SOCKS SHALL BE REPLACED AFTER 6 MONTHS; PHOTODEGRADABLE SOCKS AFTER 1 YEAR. POLYPROPYLENE SOCKS SHALL BE REPLACED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
8. UPON STABILIZATION OF THE AREA TRIBUTARY TO THE SOCK, STAKES SHALL BE REMOVED. THE SOCK MAY BE LEFT IN PLACE AND VEGETATED OR REMOVED. IN THE LATTER CASE, THE MESH SHALL BE CUT OPEN AND THE MULCH SPREAD AS A SOIL SUPPLEMENT.
9. SOURCE: EROSION AND SEDIMENT POLLUTION CONTROL PROGRAM MANUAL 3/2012.

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DATE:

MARCH 2013

FILE

NAME:

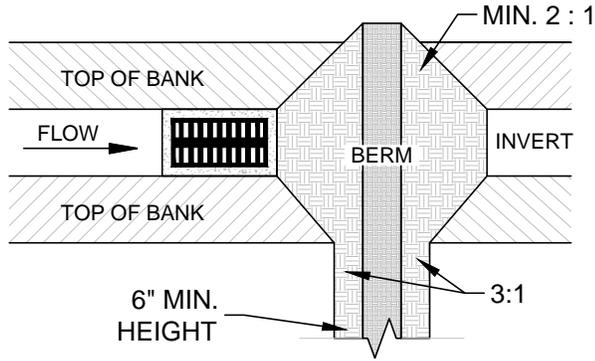
ES-3 COMPOST FILTER SOCK.dwg

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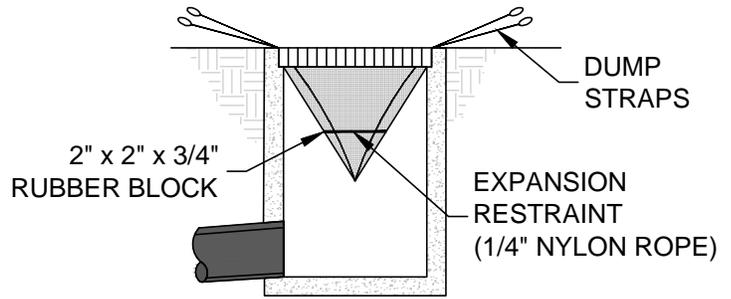
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TOWNSHIP OF MOON  
STANDARD DETAILS

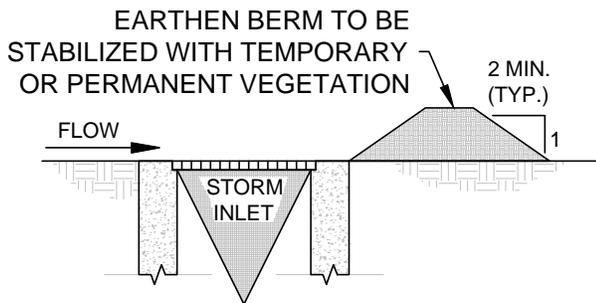
DETAIL ES-3  
COMPOST FILTER SOCK



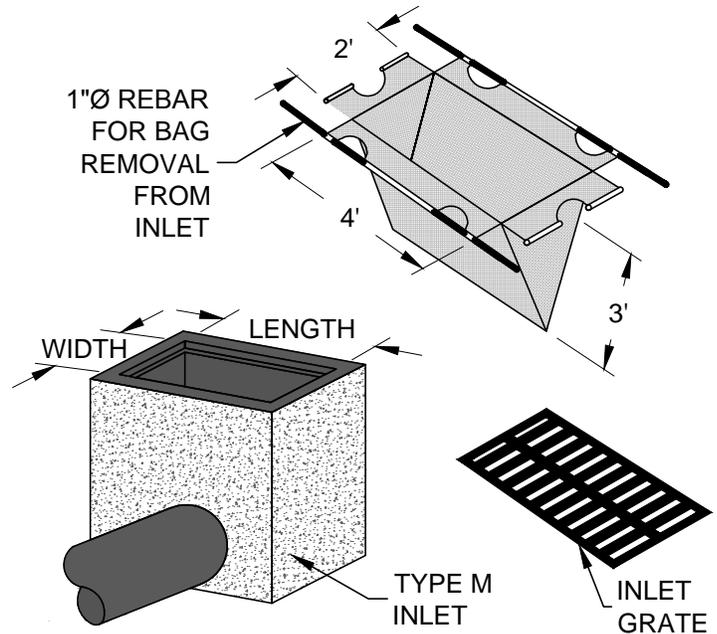
**PLAN VIEW**



**INSTALLATION DETAIL**



**ELEVATION VIEW**



**ISOMETRIC VIEW**

**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. MAXIMUM DRAINAGE AREA = 1/2 ACRE.
3. INLET PROTECTION SHALL NOT BE REQUIRED FOR INLET TRIBUTARY TO SEDIMENT BASIN OR TRAP. BERMS SHALL BE REQUIRED FOR ALL INSTALLATIONS.
4. ROLLED EARTHEN BERM IN ROADWAY SHALL BE MAINTAINED UNTIL ROADWAY IS STONED. ROAD SUBBASE BERM ON ROADWAY SHALL BE MAINTAINED UNTIL ROADWAY IS PAVED. EARTHEN BERM IN CHANNEL SHALL BE MAINTAINED UNTIL PERMANENT STABILIZATION IS COMPLETED OR REMAIN PERMANENTLY.
5. AT A MINIMUM, THE FABRIC SHALL HAVE A MINIMUM TENSILE STRENGTH OF 120 LBS., A MINIMUM BURST STRENGTH OF 200 PSI, AND A MINIMUM TRAPEZOIDAL TEAR STRENGTH OF 50 LBS. FILTER BAGS SHALL BE CAPABLE OF TRAPPING ALL PARTICLES NOT PASSING A NO. 40 SIEVE.
6. INLET FILTER BAGS SHALL BE INSPECTED ON A WEEKLY BASIS AND AFTER EACH RUNOFF EVENT. BAGS SHALL BE EMPTIED AND RINSED OR REPLACED WHEN HALF FULL OR WHEN FLOW CAPACITY HAS BEEN REDUCED SO AS TO CAUSE FLOODING OR BYPASSING OF THE INLET. DAMAGED OR CLOGGED BAGS SHALL BE REPLACED. A SUPPLY SHALL BE MAINTAINED ON SITE FOR REPLACEMENT OF BAGS. ALL NEEDED REPAIRS SHALL BE INITIATED IMMEDIATELY AFTER THE INSPECTION. DISPOSE ACCUMULATED SEDIMENT AS WELL AS ALL USED BAGS ACCORDING TO THE PLAN NOTES.
7. DO NOT USE ON MAJOR PAVED ROADWAYS WHERE PONDING MAY CAUSE TRAFFIC HAZARDS.
8. SILT SACK SHALL BE CONSTRUCTED AND MAINTAINED AS PER MANUFACTURER'S SPECIFICATIONS. (USE REGULAR SILT SACK)
9. OWNER SHALL SUBMIT MAINTENANCE SCHEDULE TO CONSERVATION DISTRICT FOR APPROVAL.
10. SOURCE: EROSION AND SEDIMENT POLLUTION CONTROL PROGRAM MANUAL 3/2012.

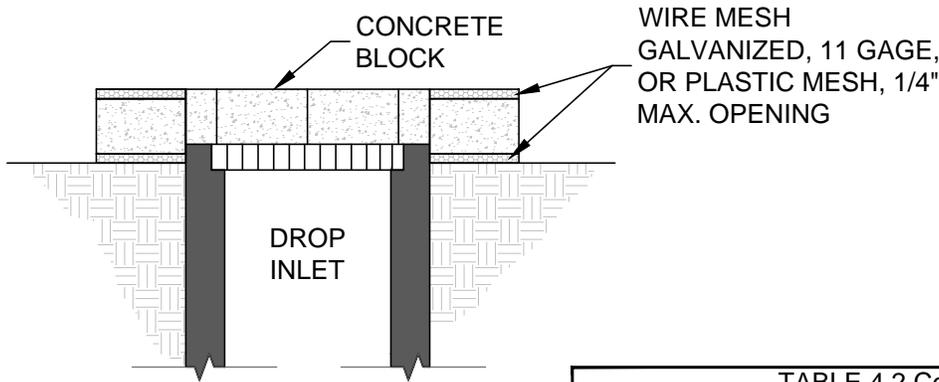
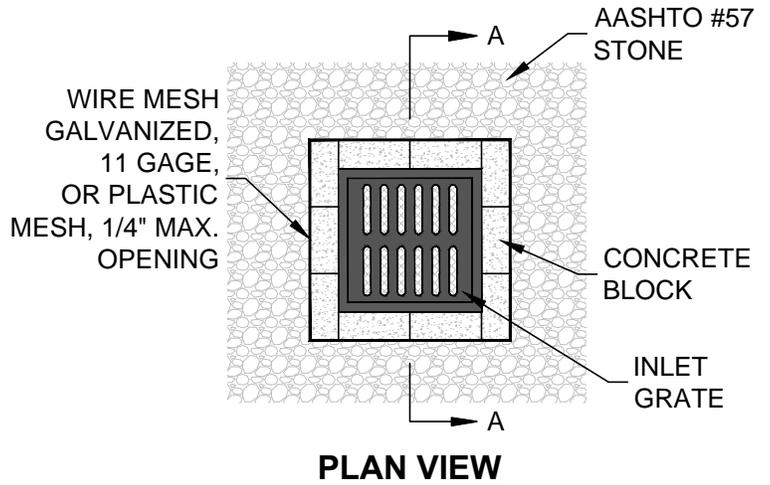
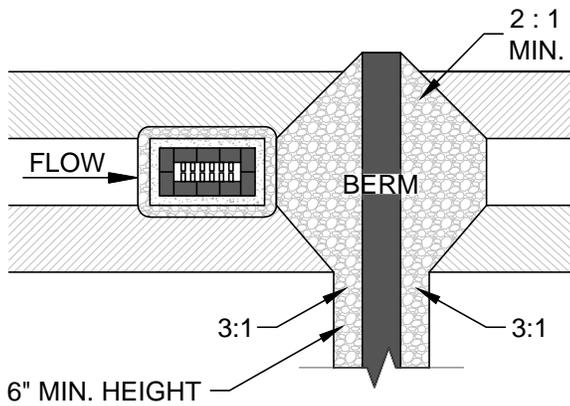
**Baker**

MICHAEL BAKER JR., INC.  
A UNIT OF MICHAEL BAKER CORP.  
4301 DUTCH RIDGE ROAD  
BEAVER, PENNSYLVANIA 15009

DATE:	MARCH 2013
FILE NAME:	ES-4 FILTER BAG INLET PROTECTION - TYPE M INLET.dwg
SCALE:	N.T.S.

**TOWNSHIP OF MOON  
STANDARD DETAILS**

DETAIL ES-4  
FILTER BAG INLET PROTECTION - TYPE M INLET



ORGANIC MATTER CONTENT	80% – 100% (DRY WEIGHT BASIS)
ORGANIC PORTION	FIBROUS AND ELONGATED
PH	5.5 – 8.0
MOISTURE CONTENT	35% – 55%
PARTICLE SIZE	98% PASS THROUGH 1" SCREEN
SOLUBLE SALT CONCENTRATION	5.0 DS/M (MMHOS/CM) MAX.

**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. MAXIMUM DRAINAGE AREA = 1 ACRE.
3. INLET PROTECTION SHALL NOT BE REQUIRED FOR INLET TRIBUTARY TO SEDIMENT BASIN OR TRAP. BERMS SHALL BE REQUIRED FOR ALL INSTALLATIONS NOT LOCATED AT A LOW POINT.
4. ROLLED EARTHEN BERM IN ROADWAY SHALL BE PROVIDED AND MAINTAINED IMMEDIATELY DOWN GRADIENT OF THE PROTECTED INLET UNTIL ROADWAY IS STONED. ROAD SUBBASE BERM ON ROADWAY SHALL BE MAINTAINED UNTIL ROADWAY IS PAVED. EARTHEN BERM IN CHANNEL SHALL BE MAINTAINED UNTIL PERMANENT STABILIZATION IS COMPLETED OR TO REMAIN PERMANENTLY.
5. TOP OF BLOCK SHALL BE AT LEAST 6 INCHES BELOW ADJACENT ROADS IF PONDED WATER WOULD POSE A SAFETY HAZARD TO TRAFFIC.
6. SEDIMENT SHALL BE REMOVED WHEN IT REACHES HALF THE HEIGHT OF THE STONE. DAMAGED OR CLOGGED INSTALLATIONS SHALL BE REPAIRED OR REPLACED IMMEDIATELY.
7. FOR SYSTEMS DISCHARGING TO HQ OR EV SURFACE WATER, A 6 INCH THICK COMPOST LAYER SHALL BE SECURELY ANCHORED ON OUTSIDE AND OVER TOPE OF STONE. COMPOST SHALL MEET THE STANDARDS IN TABLE 4.2.
8. GRAVEL FILTER MAY BE USED ON PAVEMENT OR BARE GROUND.
9. TEMPORARY INLET PROTECTION MAY BE REMOVED AFTER PERMANENT STABILIZATION.
10. SOURCE: EROSION AND SEDIMENT POLLUTION CONTROL PROGRAM MANUAL 3/2012.

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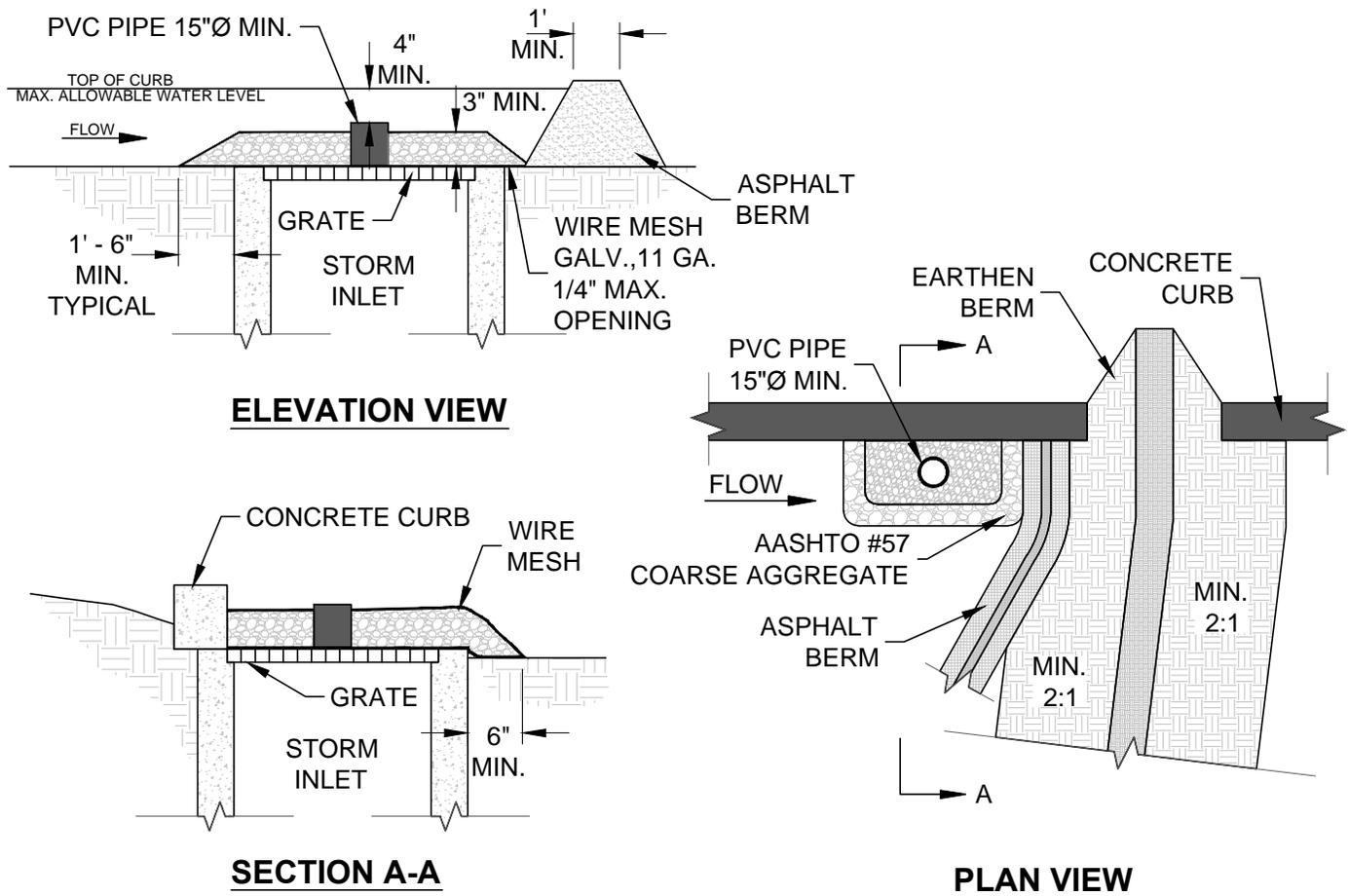
DATE: MARCH 2013

FILE NAME: ES-4a Inlet Sediment Filters - Type M Inlet.dwg

SCALE: N.T.S.

**TOWNSHIP OF MOON  
STANDARD DETAILS**

DETAIL ES-4A  
INLET SEDIMENT FILTERS - TYPE M INLET



ORGANIC MATTER CONTENT	80% – 100% (DRY WEIGHT BASIS)
ORGANIC PORTION	FIBROUS AND ELONGATED
PH	5.5 – 8.0
MOISTURE CONTENT	35% – 55%
PARTICLE SIZE	98% PASS THROUGH 1" SCREEN
SOLUBLE SALT CONCENTRATION	5.0 DS/M (MMHOS/CM) MAX.

**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. INLET PROTECTION SHALL NOT BE REQUIRED FOR INLET TRIBUTARY TO SEDIMENT BASIN OR TRAP. BERMS SHALL BE REQUIRED FOR ALL INSTALLATIONS.
3. ROLLED EARTHEN BERM IN ROADWAY SHALL BE PROVIDED AND MAINTAINED IMMEDIATELY DOWN GRADIENT OF THE PROTECTED INLET UNTIL ROADWAY IS STONED. ROAD SUBBASE BERM ON ROADWAY SHALL BE MAINTAINED UNTIL ROADWAY IS PAVED. A 6" MINIMUM HEIGHT ASPHALT BERM SHALL BE MAINTAINED UNTIL SURFACE RECEIVES FINAL COAT.
4. STONE INLET PROTECTION AND BERM FOR A TYPE C INLET CAN BE USED IN ONE ACRE MAXIMUM DRAINAGE AREA WITH 15" OVERFLOW PIPE AND 4" HEAD. A PERFORATED PLATE WELDED TO A METAL RISER MAY NOT BE SUBSTITUTED FOR THE WIRE MESH. A SLOTTED PLATE WELDED TO THE RISER MAY BE USED IN CONJUNCTION WITH THE WIRE MESH IF CALCULATIONS ARE PROVIDED TO SHOW EFFICIENT CAPACITY OF THE INLET TO ACCEPT THE PEAK RUNOFF FOR A 2-YEAR STORM EVENT FROM THE TRIBUTARY DRAINAGE AREA.
5. SEDIMENT SHALL BE REMOVED WHEN IT REACHES HALF THE HEIGHT OF THE STONE. DAMAGED OR CLOGGED INSTALLATIONS SHALL BE REPAIRED OR REPLACED IMMEDIATELY.
6. FOR SYSTEMS DISCHARGING TO HQ OR EV SURFACE WATER, A 6" THICK COMPOST LAYER SHALL BE SECURELY ANCHORED ON OUTSIDE AND OVER TOPE OF STONE. COMPOST SHALL MEET THE STANDARDS IN TABLE 4.2.
7. FURNISH PLASTIC OR WIRE MESH FABRIC WITH SQUARE OPENINGS NO LARGER THAN 1/4". THE LENGTH AND WIDTH OF THE MESH IS TO BE 4 FT. GREATER THAN THE OUTSIDE DIMENSIONS OF THE INLET TO BE PROTECTED.
8. DO NOT USE ON MAJOR PAVED ROADWAYS WHERE PONDING MAY CAUSE TRAFFIC HAZARDS.
9. SOURCE: EROSION AND SEDIMENT POLLUTION CONTROL PROGRAM MANUAL 3/2012.

**Baker**

MICHAEL BAKER JR., INC.  
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 4301 DUTCH RIDGE ROAD  
 BEAVER, PENNSYLVANIA 15009

DATE: MARCH 2013

FILE NAME: ES-4b Inlet Sediment Filters Curbed Locations.dwg

SCALE: N.T.S.

**TOWNSHIP OF MOON  
 STANDARD DETAILS**

DETAIL ES-4B  
 INLET SEDIMENT FILTERS FOR CURBED LOCATIONS

TEMPORARY SEED MIXTURE (ALL AREAS)					
FORMULA AND SPECIES	% BY WEIGHT	MINIMUM %		MAX. % WEED SEED	SEEDING RATE LBS. PER 1000 S.Y.
		PURITY	GERMINATION		
<b>FORMULA E</b> • RYEGRASS (VAR. KENTUCKY)	100	98	90	0.15	10.0

SPREAD SEED AS FOLLOWS:

FORMULA E - MARCH 15 TO OCTOBER 15

SEEDING FORMULA MUST COMPLY WITH PennDOT PUBLICATION 408, SECTION 804.

PERMANENT SEED MIXTURE (LAWN/YARD AREAS)					
FORMULA AND SPECIES	% BY WEIGHT	MINIMUM %		MAX. % WEED SEED	SEEDING RATE LBS. PER 1000 S.Y.
		PURITY	GERMINATION		
<b>FORMUL B</b> • PERENIAL RYEGRASS MIXTURE • CREEPING RED FESCUE OR CHEWING FESCUE • KENTUCKY BLUEGRASS MIXTURE	20 30 50	98 98 98	90 85 80	0.15 0.15 0.20	21.0 TOTAL 4.0 6.0 11.0

SPREAD SEED AS FOLLOWS:

FORMULA B - MARCH 15 TO JUNE 1  
AUGUST 1 TO OCTOBER 15

SEEDING FORMULA MUST COMPLY WITH PennDOT PUBLICATION 408, SECTION 804

PERMANENT SEED MIXTURE (NON-LAWN/YARD AREAS)					
FORMULA AND SPECIES	% BY WEIGHT	MINIMUM %		MAX. % WEED SEED	SEEDING RATE LBS. PER 1000 S.Y.
		PURITY	GERMINATION		
<b>FORMUL W (SLOPES &gt; 3 TO 1)</b> • TALL FESCUE (FESTUCA ARUNDINACEA VAR. KENTUCKY 31) • BIRDSFOOT TREFOIL MIXTURE (LOTUS CORNICULATUS) A MIXTURE OF 1/2 VIKING AND 1/2 OF EITHER EMPIRE, NORCEN, OR LEO. • REDTOP (AGORSTIS ALBA)	70 20 10	98 98 92	85 80* 80	0.15 0.10 0.15	10.5 TOTAL 7.5 2.0 1.0
<b>FORMUL D (SLOPES &lt; 3 TO 1)</b> • TALL FESCUE (FESTUCA ARUNDINACEA VAR. KENTUCKY) • CREEPING RED FESCUE OR CHEWING FESCUE.	70 30	98 98	85 85	0.15 0.15	21.0 TOTAL 15.0 6.0

SPREAD SEED AS FOLLOWS:

FORMULA W - APRIL 1 TO JUNE 15  
AUG. 15 TO SEPT. 15  
FORMULA D - MARCH 15 TO JUNE 1  
AUGUST 1 TO OCTOBER 15

\*MINIMUM 10% HARDSEED AND 70% NORMAL SPROUTS ABOVE TAKEN PennDOT PUBLICATION 408, SECTION 804.

MULCHES	
<b>HAY:</b>	TIMOTHY HAY, MIXED CLOVER AND TIMOTHY HAY, OR OTHER ACCEPTABLE NATIVE OR FORAGE GRASSES, WELL-CURED TO LESS THAN 20% MOISTURE CONTENT, BY WEIGHT. PLACE AT MINIMUM 3 TONS/AC.
<b>STRAW:</b>	EITHER WHEAT OR OAT STRAW, REASONABLY FREE OF VIABLE SEED, WELL-CURED TO LESS THAN 20% MOISTURE CONTENT, BY WEIGHT. PLACE AT MINIMUM 3 TONS/AC.
<b>WOOD FIBER:</b>	SPECIALLY PREPARED, BIODEGRADABLE, AIR-DRIED WOOD FIBERS MANUFACTURED FROM 100% WOOD CHIPS OR BARK FROM LUMBER MILL PROCESSING OPERATIONS, TINTED WITH NONTOXIC, GREEN DYE AND CONTAINING AN ORGANIC TACKIFIER APPROVED FOR USE WITH WOOD FIBERS; MANUFACTURED TO BE APPLIED WITH HYDRAULIC SEEDING EQUIPMENT; AND CONFORMING TO THE FOLLOWING REQUIREMENTS: <ul style="list-style-type: none"> <li>• MOISTURE CONTENT 15% MAXIMUM</li> <li>• ORGANIC MATTER (OVEN DRIED BASIS) 95% MINIMUM</li> <li>• WATER HOLDING CAPACITY (GRAMS OF WATER PER 100 GRAMS OF FIBER) 1000 MINIMUM</li> <li>• TACKIFIER CONTENT (BY MASS (WEIGHT)) 2.5% TO 3.5%</li> </ul> SUBMIT A CERTIFIED ANALYSIS OF THE PRODUCT FOR APPROVAL BEFORE APPLICATION.

MULCH MUST COMPLY WITH PennDOT PUBLICATION 408, SECTION 805.

FERTILIZER AND LIME
FERTILIZER: APPLY FERTILIZER OF ANALYSIS 10-20-20 AT A RATE OF 700 POUNDS PER ACRE. LIME: APPLY LIME AT A RATE OF 2 TONS PER ACRE.

NOTES:

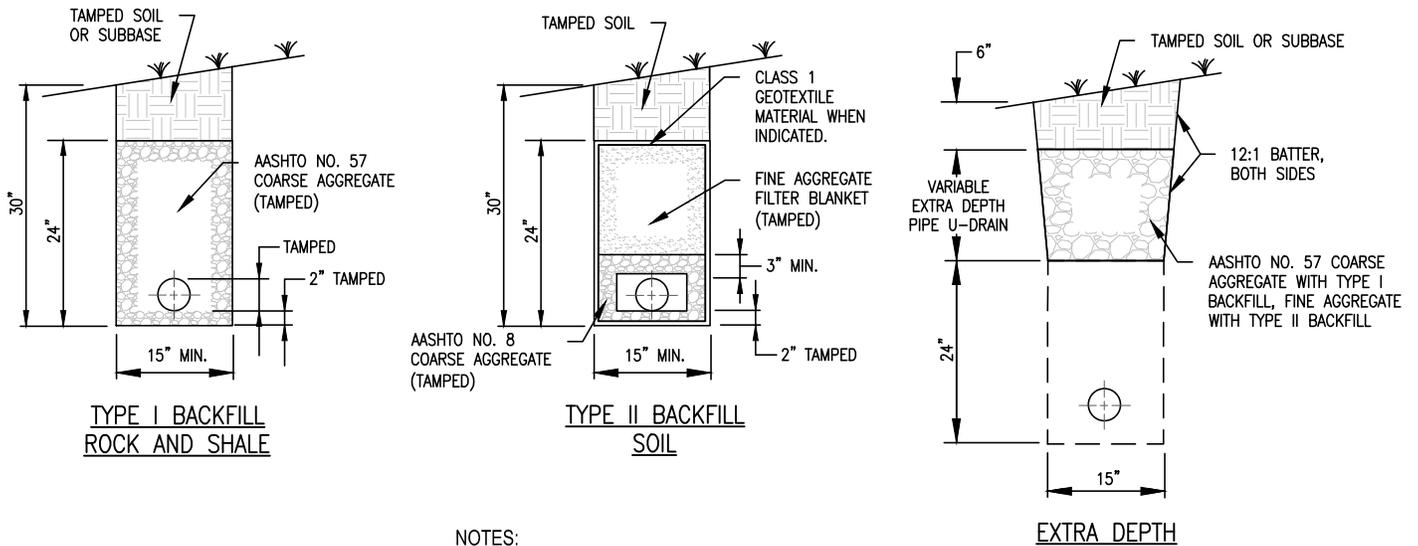
1. ABOVE RATES MAY VARY IF SOIL TEST COMPLETED.
2. DO NOT FERTILIZE FORMULA C SEED MIXTURE.
3. ALL LAWN AREAS SHALL HAVE A MINIMUM OF 4 INCHES OF TOPSOIL PLACED.

**Baker**

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BEAVER, PENNSYLVANIA 15009

DATE:	MARCH 2013
FILE NAME:	ES-5 Seeding Schedule.dwg
SCALE:	N.T.S.

TOWNSHIP OF MOON  
STANDARD DETAILS  
DETAIL ES-5  
SEEDING SCHEDULE

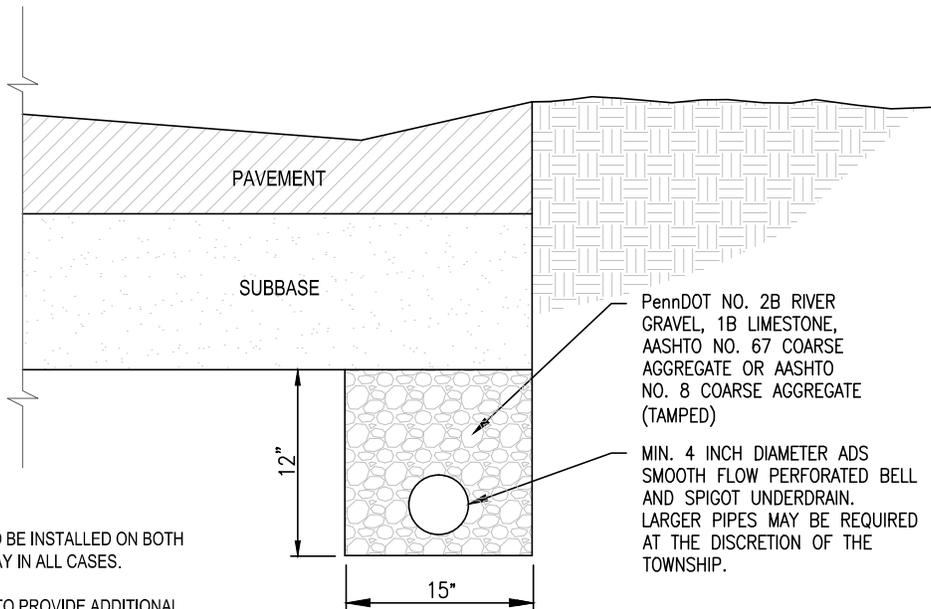


**NOTES:**

1. SLAG IS NOT PERMITTED AS BACKFILL.
2. 100 PERCENT STONE BACKFILL IS REQUIRED FULL WIDTH OF RIGHT-OF-WAY.

**PIPE UNDERDRAIN**

N.T.S.



**NOTES:**

1. UNDERDRAINS TO BE INSTALLED ON BOTH SIDES OF CARTWAY IN ALL CASES.
2. THE DEVELOPER TO PROVIDE ADDITIONAL UNDERDRAIN AT LOCATIONS AS SPECIFIED BY TOWNSHIP.
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.

SOURCE: PennDOT STANDARDS FOR ROADWAY CONSTRUCTION (LATEST EDITION)

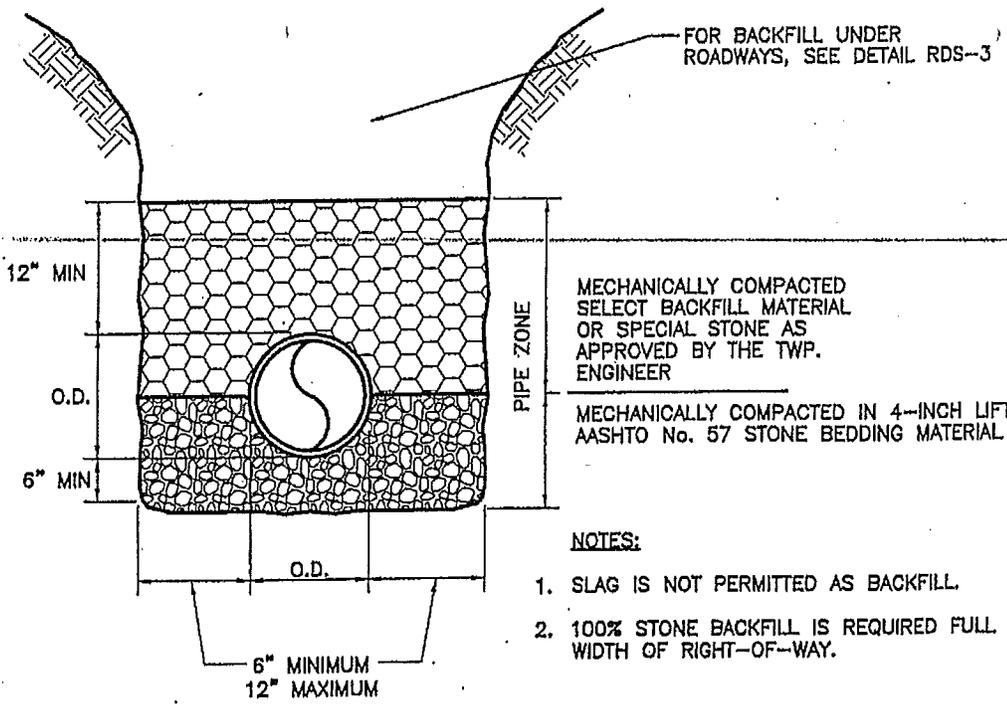
**Baker**

MICHAEL BAKER JR., INC.  
A UNIT OF MICHAEL BAKER CORP.  
4301 DUTCH RIDGE ROAD  
BEAVER, PENNSYLVANIA 15009

DATE: MARCH 2013  
FILE NAME: RSD-1 Pipe Underdrain\_Pavement Base Drain.dwg  
SCALE: N.T.S.

**TOWNSHIP OF MOON  
STANDARD DETAILS**

**DETAIL RSD-1  
PIPE UNDERDRAIN / PAVEMENT BASE DRAIN**



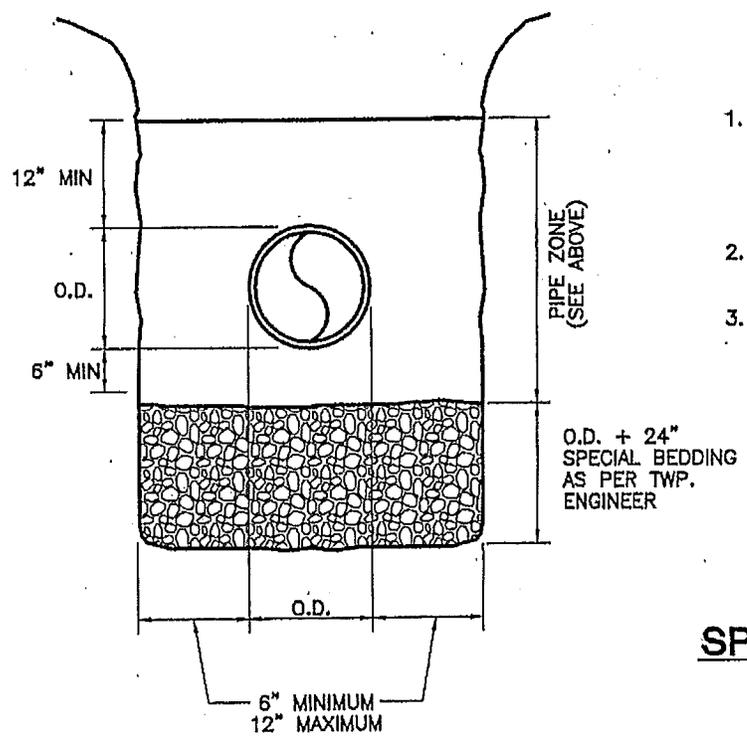
FOR BACKFILL UNDER ROADWAYS, SEE DETAIL RDS-3

MECHANICALLY COMPACTED SELECT BACKFILL MATERIAL OR SPECIAL STONE AS APPROVED BY THE TWP. ENGINEER

MECHANICALLY COMPACTED IN 4-INCH LIFTS AASHTO No. 57 STONE BEDDING MATERIAL

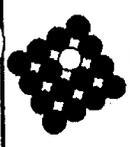
- NOTES:**
1. SLAG IS NOT PERMITTED AS BACKFILL.
  2. 100% STONE BACKFILL IS REQUIRED FULL WIDTH OF RIGHT-OF-WAY.

**REINFORCED CONCRETE PIPE**  
**TYPICAL BEDDING AND PIPE ZONE**  
 N. T. S.



- NOTES:**
1. SPECIAL BEDDING MAY BE REQUIRED BY THE TOWNSHIP ENGINEER IF FIELD CONDITIONS OR LOADS WARRANT THE ADDITIONAL BEDDING.
  2. SLAG IS NOT PERMITTED AS BACKFILL.
  3. 100% STONE BACKFILL IS REQUIRED FULL WIDTH OF RIGHT-OF-WAY.

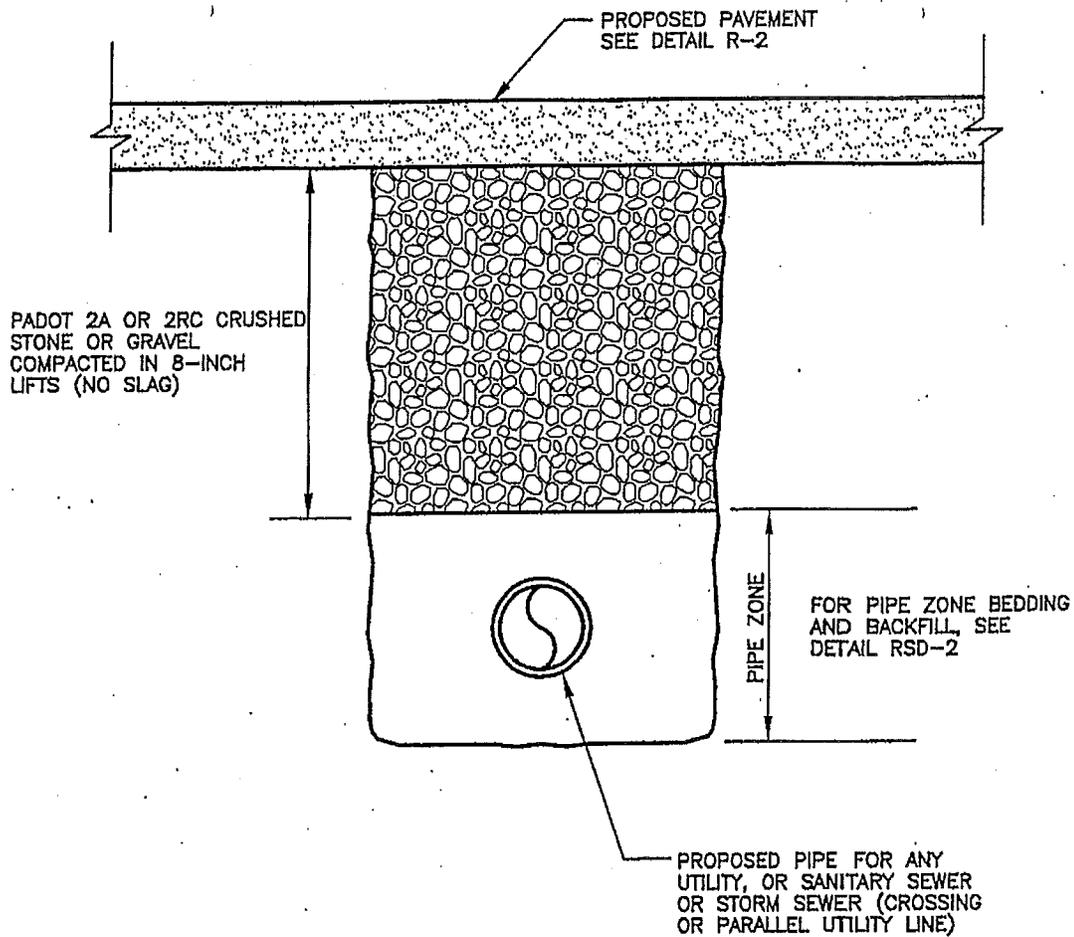
**SPECIAL BEDDING**  
 N.T.S.



**LENNON, SMITH,  
 SOULERET  
 ENGINEERING INC.**  
 848 Fourth Avenue  
 Coraopolis, PA 15108  
 Ph:(412)264-4400  
 Fax:(412)264-1200  
 E-mail: leso@quecor.net

DATE:	December 1999
FILE NAME:	Moondet.dwg
SCALE:	N.T.S.

**Township of Moon**  
**Standard Details**  
 Detail RSD-2  
 Typical Bedding and Pipe Zone for RCP / 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 TOWNSHIP ENGINEER.

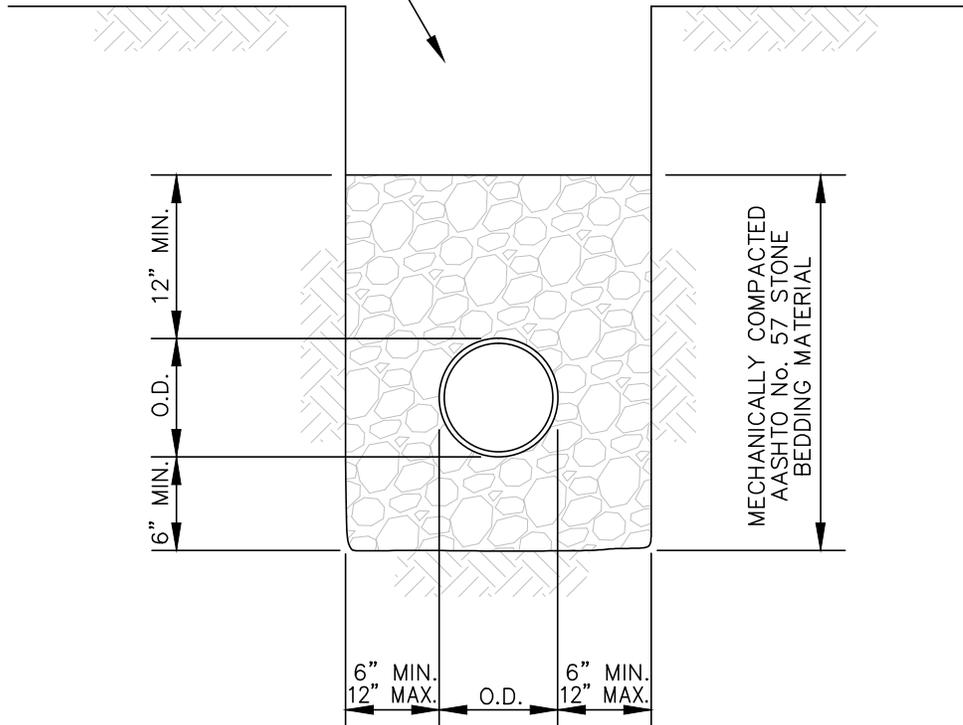


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DATE: December 1999  
FILE NAME: Moondet.dwg  
SCALE: N.T.S.

**Township of Moon**  
**Standard Details**  
Detail RSD-3  
Trench Backfill for Proposed Roads and Streets

OUTSIDE OF RIGHT-OF-WAY  
BACKFILL SHALL BE SELECT  
MATERIAL, COMPACTED IN  
MAX. 8" LIFTS



#### NOTES

- 1) ALL STORM SEWER WITHIN THE RIGHT-OF-WAY SHALL BE REINFORCED CEMENT CONCRETE PIPE (RCCP), CLASS III TONGUE AND GROOVE REINFORCED. POLYETHYLENE PIPE SHALL NOT BE PERMITTED IN ROADWAY RIGHT-OF-WAY UNLESS THERE IS AT LEAST 5 FT. OF COVER AND AT LEAST 6 INCHES OF PLAIN CONCRETE IN THE PIPE TRENCH ON TOP OF THE PIPE AND APPROVED BY THE TOWNSHIP ENGINEER.
- 2) AT TRANSITION FROM REINFORCED CEMENT CONCRETE PIPE TO POLYETHYLENE PIPE, PROVIDE AN INLET OR A MANHOLE.
- 3) SLAG IS NOT PERMITTED AS BACKFILL.

#### 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-3350 WITH THE APPLICABLE REQUIREMENTS DEFINED IN ASTM D-3350.
- 2) MINIMUM COVER IS TO BE 2 FT. WITH AASHTO No. 57 STONE A MINIMUM 12 INCHES ABOVE THE TOP OF THE PIPE. IF THE PIPE IS TO BE LAID UNDER DRIVEWAYS, STREETS OR PARKING AREAS AT THE MINIMUM COVER, THE 2 FT. SHALL BE PADOT 2A STONE. MAXIMUM COVER OVER POLYETHYLENE PIPES SHALL NOT EXCEED 30 FT.
- 3) POLYETHYLENE PIPE SHALL BE IN ACCORDANCE WITH PENNDOT PUBLICATION 408, SECTION 601.

**Baker**

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BEAVER, PENNSYLVANIA 15009

DATE:

MARCH 2013

FILE

NAME:

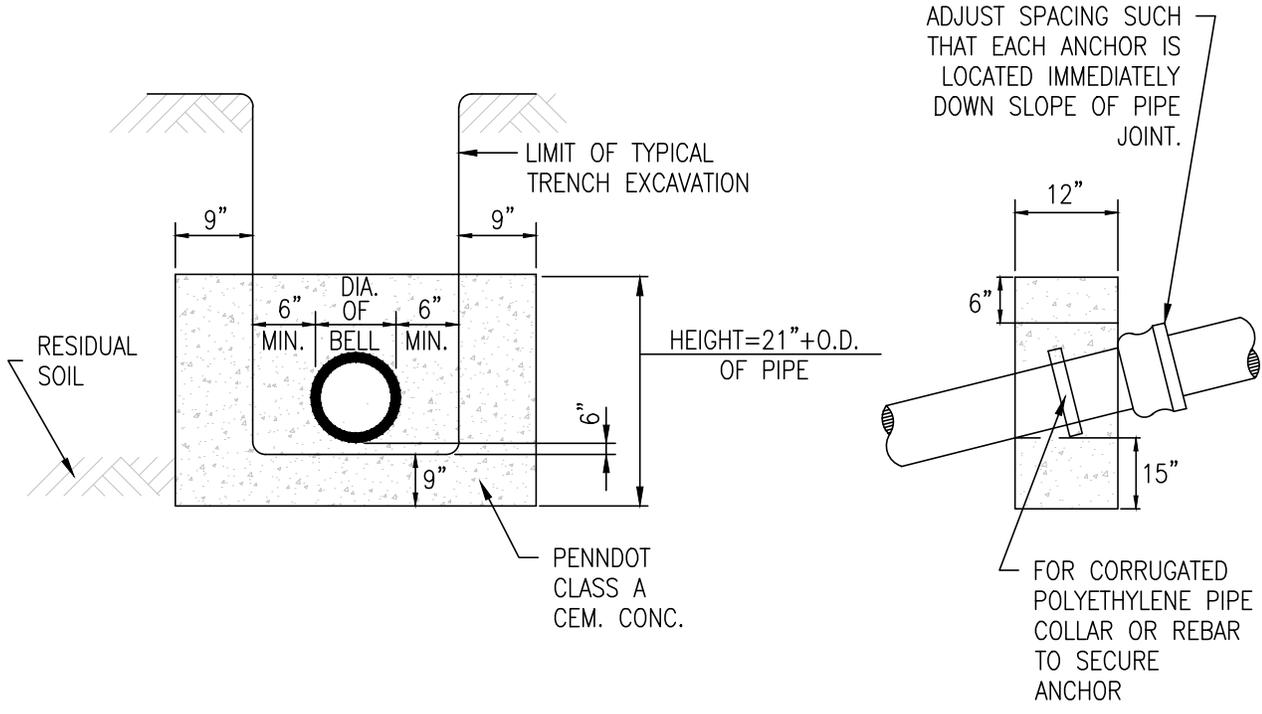
RSD-4 PE PIPE SPECS.dwg

SCALE:

N.T.S.

## TOWNSHIP OF MOON STANDARD DETAILS

DETAIL RSD-4  
POLYETHYLENE PIPE SPECIFICATIONS



NOTE:  
UNLESS OTHERWISE NOTED INSTALL CONCRETE ANCHORS AT  
PIPE JOINT IN ACCORDANCE WITH THE FOLLOWING TABLE:

PIPE SLOPE	APPROXIMATE MAXIMUM CONC. ANCHOR SPACING CENTER TO CENTER (SLOPE DIST.)
20% - 30%	36 FT.
30% + 50%	24 FT.
50% +	18 FT.



MICHAEL BAKER JR., INC.  
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BEAVER, PENNSYLVANIA 15009

DATE:  
MARCH 2013  
FILE  
NAME:  
RSD-5 PIPE ANCHOR.dwg  
SCALE:  
N.T.S.

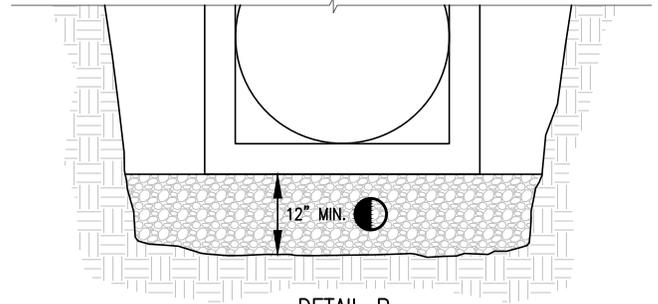
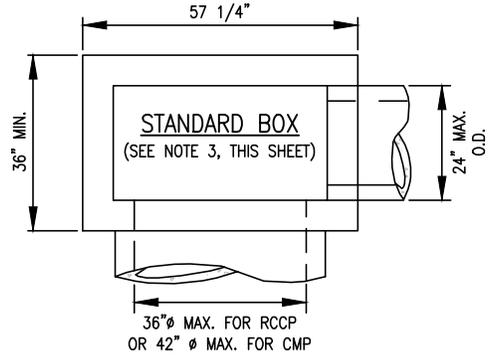
TOWNSHIP OF MOON  
STANDARD DETAILS

DETAIL RSD-5  
PIPE ANCHOR



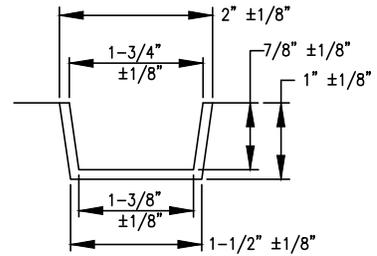
**NOTES:**

1. CONSTRUCT IN ACCORDANCE WITH THE REQUIREMENTS OF PUBLICATION 408, SECTION 605. PRECAST CONCRETE UNITS SHALL BE CONSTRUCTED IN ACCORDANCE WITH SECTION 714 AND PENNDOT PUBLICATION 72, RC-46M.
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" 1/4" STANDARD OPENING TO ACCOMMODATE THE STANDARD TOP COMPONENTS.
4. PROVIDE 6" THICK INLET WALLS, UNLESS OTHERWISE INDICATED FOR CONCRETE CONSTRUCTION.
5. INLETS THAT EXCEED THE MAXIMUM HEIGHT (9 FT.) 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.
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.
10. PLACE #4 REINFORCEMENT BARS, MINIMUM 12 INCHES LONG, SPACE AT 12 INCHES CENTER TO CENTER, 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 INCHES IN DIAMETER SHALL HAVE EXPANDED TYPE INLET BOX, DESIGN OF WHICH SHALL BE APPROVED BY THE TOWNSHIP ENGINEER.
13. CONSTRUCT IN ACCORDANCE WITH PennDOT SPECIFICATIONS.
14. STORM SEWER DROP CONNECTIONS FROM INVERT OF OUTFLOW PIPE TO INVERT OF INFLOW PIPE SHALL BE A MAXIMUM OF 2 FEET.

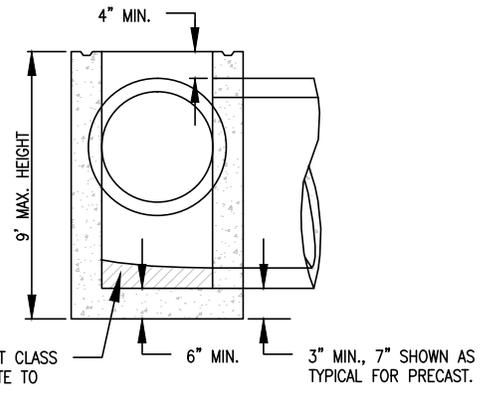
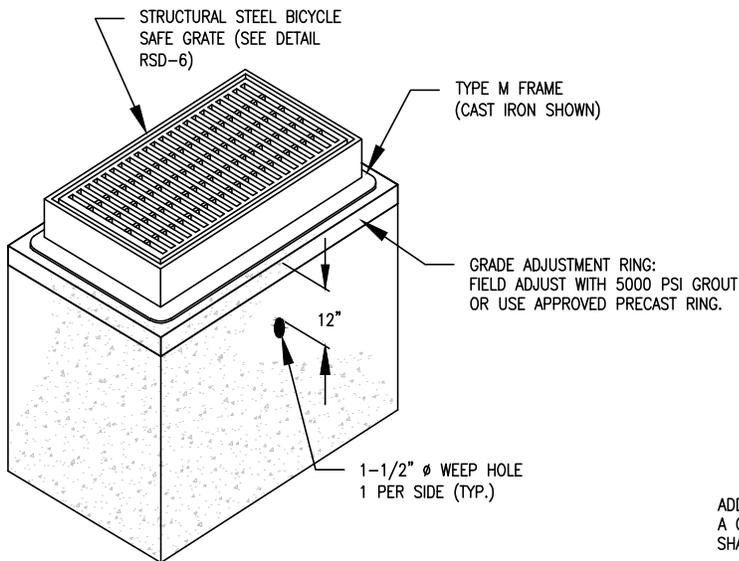


**DETAIL B  
PRECAST INLET BOX  
BASE PREPARATION**

PLACE MATERIAL MEETING THE REQUIREMENTS OF PUBLICATION 408, SECTION 350.2, IN 4 INCH LAYERS, COMPACTED TO A DENSITY SATISFACTORY TO THE ENGINEER.



**DETAIL A  
ALTERNATE JOINT**



**SECTION A-A**

SOURCE: PennDOT STANDARDS FOR ROADWAY CONSTRUCTION (LATEST EDITION)

**Baker**

MICHAEL BAKER JR., INC.  
A UNIT OF MICHAEL BAKER CORP.  
4301 DUTCH RIDGE ROAD  
BEAVER, PENNSYLVANIA 15009

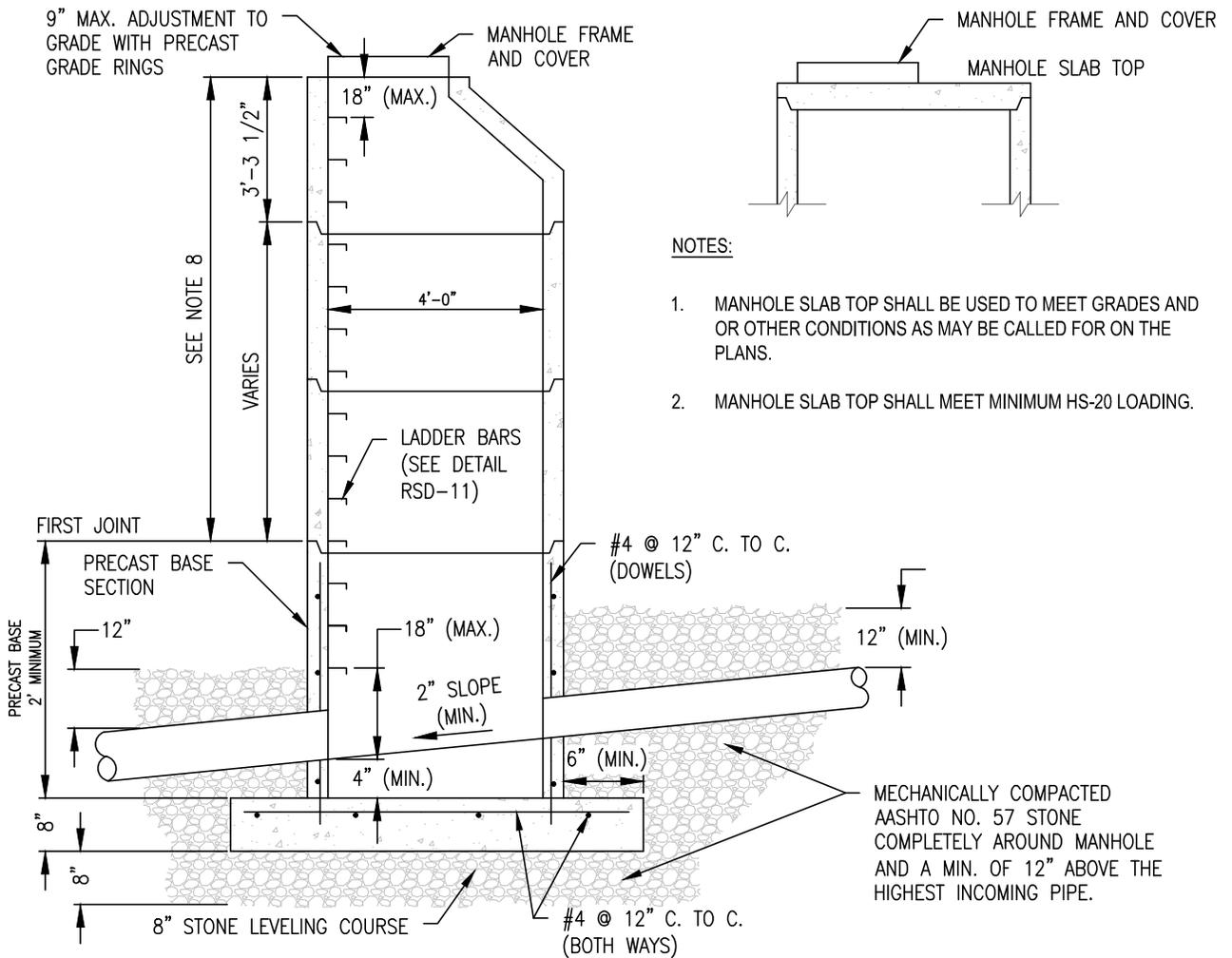
DATE:	MARCH 2013
FILE NAME:	RSD-6 Type-M Inlet (Box).dwg
SCALE:	N.T.S.

**TOWNSHIP OF MOON  
STANDARD DETAILS**

**DETAIL RSD-6A  
TYPE M INLET (BOX)**

**NOTES:**

1. ALL CONCRETE SHALL BE 4000 PSI, 5% AIR ENTRAINED PORTLAND CEMENT CONCRETE.
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 9 INCHES (9").
6. MANHOLES SHALL CONFORM TO PennDOT PUBLICATION 408, SECTION 714 AND PennDOT PUBLICATION 72, RC-39M.
7. MANHOLE INVERT SHALL BE CONCRETE TO THE SPRING LINE OF THE PIPE WITH SIDES SLOPING 1/2" TO 1'-0" TO INSIDE FACE OF PRECAST BASE SECTION.
8. IF THIS VERTICAL DIMENSION IS 3'-3" OR LESS, USE PRECAST SLAB TOP DESIGNED TO MEET LOAD CONDITIONS.
9. PROVIDE PennDOT CERTIFICATE ON ALL MATERIALS USED ON THE SITE.
10. STORM SEWER DROP CONNECTIONS FROM INVERT OF OUTFLOW PIPE TO INVERT OF INFLOW PIPES SHALL BE A MAXIMUM OF 2 FT.



**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 HS-20 LOADING.

SOURCE: PennDOT STANDARDS FOR ROADWAY CONSTRUCTION (LATEST EDITION)

**Baker**

MICHAEL BAKER JR., INC.  
A UNIT OF MICHAEL BAKER CORP.  
4301 DUTCH RIDGE ROAD  
BEAVER, PENNSYLVANIA 15009

MARCH 2013

FILE NAME:  
RSD-7 Precast Concrete Manhole  
(8 inch to 18 inch) - Manhole Slab Top.dwg

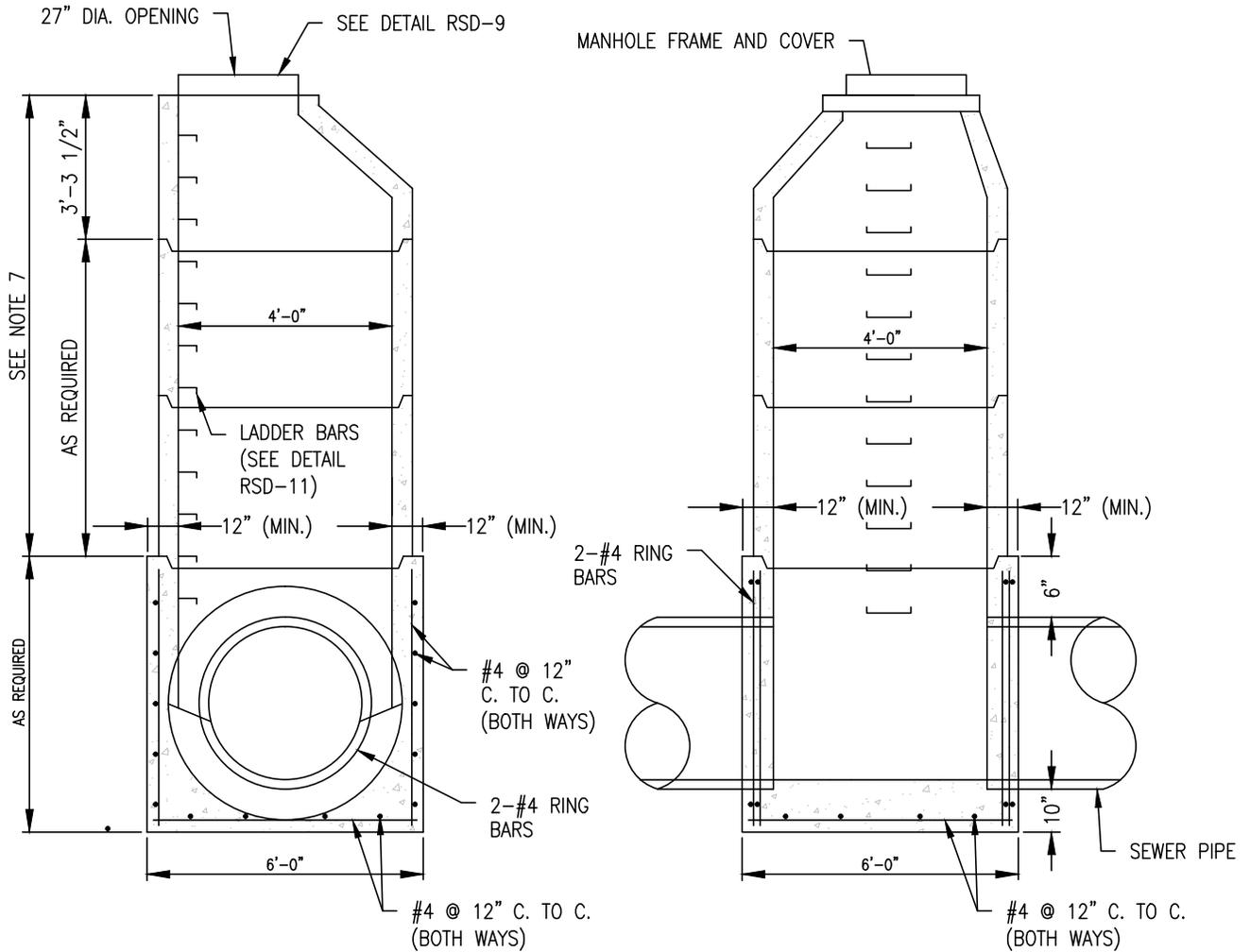
SCALE:

N.T.S.

**TOWNSHIP OF MOON  
STANDARD DETAILS**

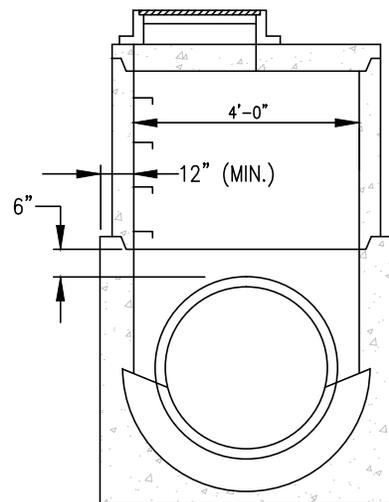
DETAIL RSD-7

PRECAST CONCRETE MANHOLE (8" TO 18") - MANHOLE SLAB TOP



**NOTES:**

1. ALL CONCRETE SHALL BE 4000 PSI, 5% +/-1% AIR ENTRAINED PORTLAND CEMENT CONCRETE.
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 9 INCHES (9").
6. MANHOLES SHALL CONFORM TO PennDOT PUBLICATION 408, SECTION 714 AND PennDOT PUBLICATION 72, RC-39M.
7. IF THIS VERTICAL DIMENSION IS 3'-3" OR LESS, USE PRECAST SLAB TOP DESIGNED TO MEET LOAD CONDITIONS.
8. PROVIDE PENNDOT MATERIAL CERTIFICATION ON ALL BULLETIN 15 MATERIALS DELIVERED TO THE SITE.



SOURCE: PennDOT STANDARDS FOR ROADWAY CONSTRUCTION (LATEST EDITION)

**Baker**

MICHAEL BAKER JR., INC.  
A UNIT OF MICHAEL BAKER CORP.  
4301 DUTCH RIDGE ROAD  
BEAVER, PENNSYLVANIA 15009

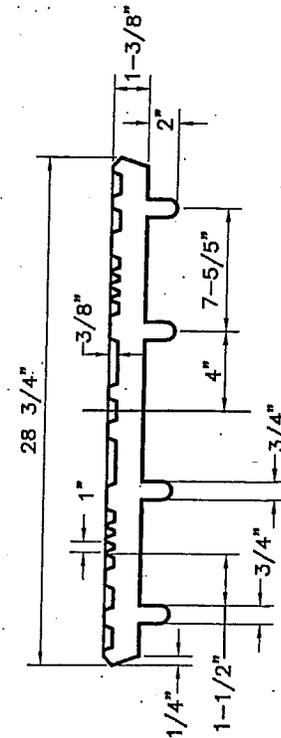
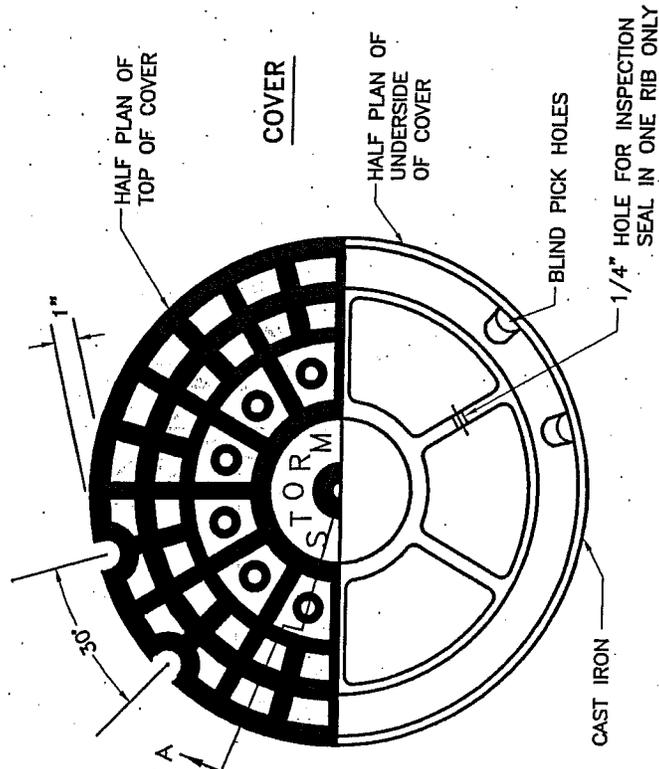
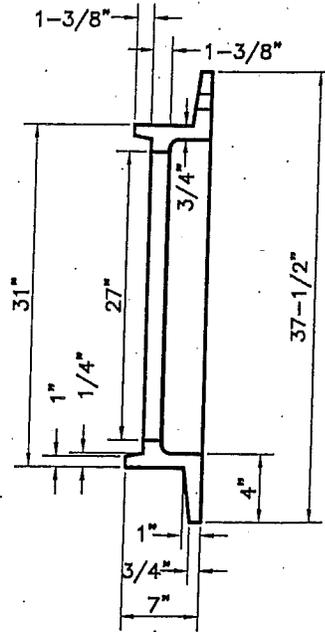
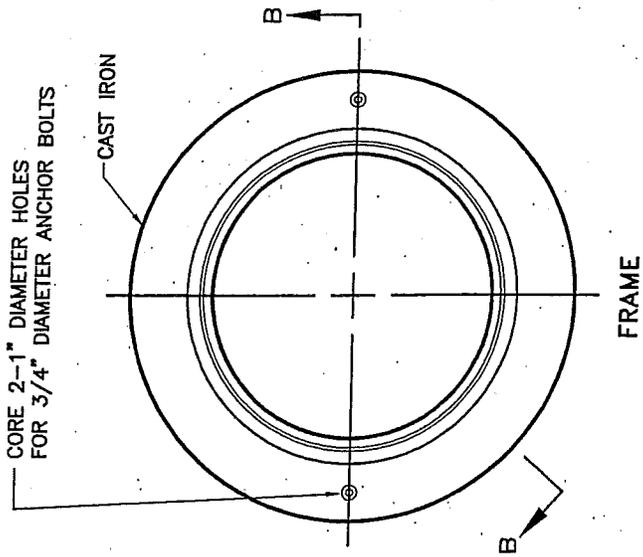
MARCH 2013

FILE NAME:  
RSD-8 Precast Concrete Manhole  
(20inch to 33inch).dwg  
SCALE:

N.T.S.

**TOWNSHIP OF MOON  
STANDARD DETAILS**

**DETAIL RSD-8  
PRECAST CONCRETE MANHOLE (20" TO 33")**



SECTION B-B

NOTE: LABEL MANHOLE COVER "STORM"

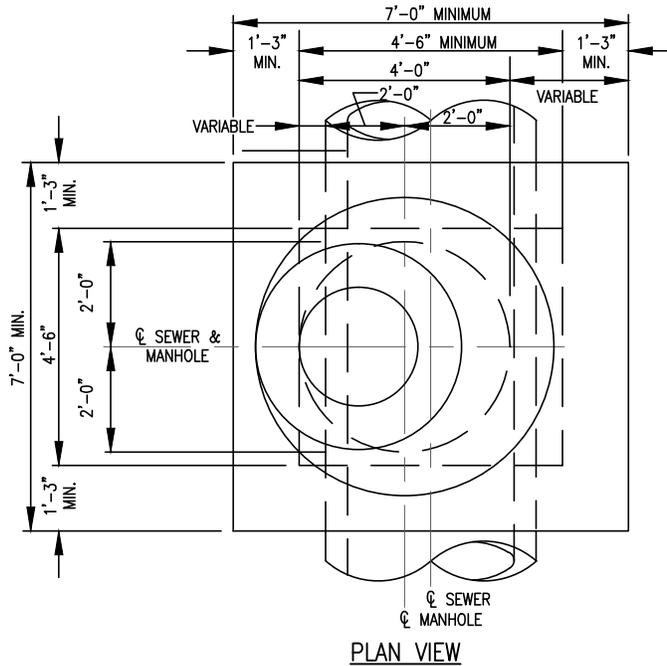
SECTION A-A



**LENNON, SMITH,  
SOULERET  
ENGINEERING INC.**  
846 Fourth Avenue  
Coraopolis, PA 15108  
Ph: (412) 264-4400  
Fax: (412) 264-1200  
E-mail: lseo@useor.net

DATE:	December 1999
FILE NAME:	Moondet.dwg
SCALE:	N.T.S.

**Township of Moon**  
**Standard Details**  
Detail RSD-9  
Circular Manhole Frame and Cover



**NOTES:**

1. FOR CONSTRUCTION REQUIREMENTS SEE NOTE 1, PennDOT RC-39M, SHEET 1 OF 6.
2. FOR DESIGN REQUIREMENTS SEE NOTE 1, PennDOT RC-39M, SHEET 6 OF 6.
3. 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.
4. DESIGN PROCEDURES 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. PLACE ADDITIONAL BARS IN THE SLAB AT 45° AROUND THE MANHOLE OPENING. SEE SECTION A-A FOR DETAILS.
  - B. "EDGE BEAM"  
 VIEWS SHOWING THE CONFIGURATION OF MANHOLE 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 BOX, TO CARRY A UNIFORMLY 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 PRESSURES. 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  $1/10 WL^2$  AND NEGATIVE MOMENT OF  $1/12 WL^2$  WHERE  $W$  IS THE UNIFORM BEARING PRESSURE. DO NOT TAKE INTO ACCOUNT THE CONCRETE IN THE CHANNEL WHEN CALCULATING CAPACITY OR THE FOOTING. AS A MINIMUM, PROVIDE #4 BARS AT 12" CENTERS, TOP AND BOTTOM OF SLAB IN THE OPPOSITE DIRECTION.

SOURCE: PennDOT STANDARDS FOR ROADWAY CONSTRUCTION (LATEST EDITION)

**Baker**

MICHAEL BAKER JR., INC.  
 A UNIT OF MICHAEL BAKER CORP.  
 4301 DUTCH RIDGE ROAD  
 BEAVER, PENNSYLVANIA 15009

MARCH 2013

FILE NAME:  
 RSD-10 Concrete Manhole  
 (36inch and up).dwg

SCALE:

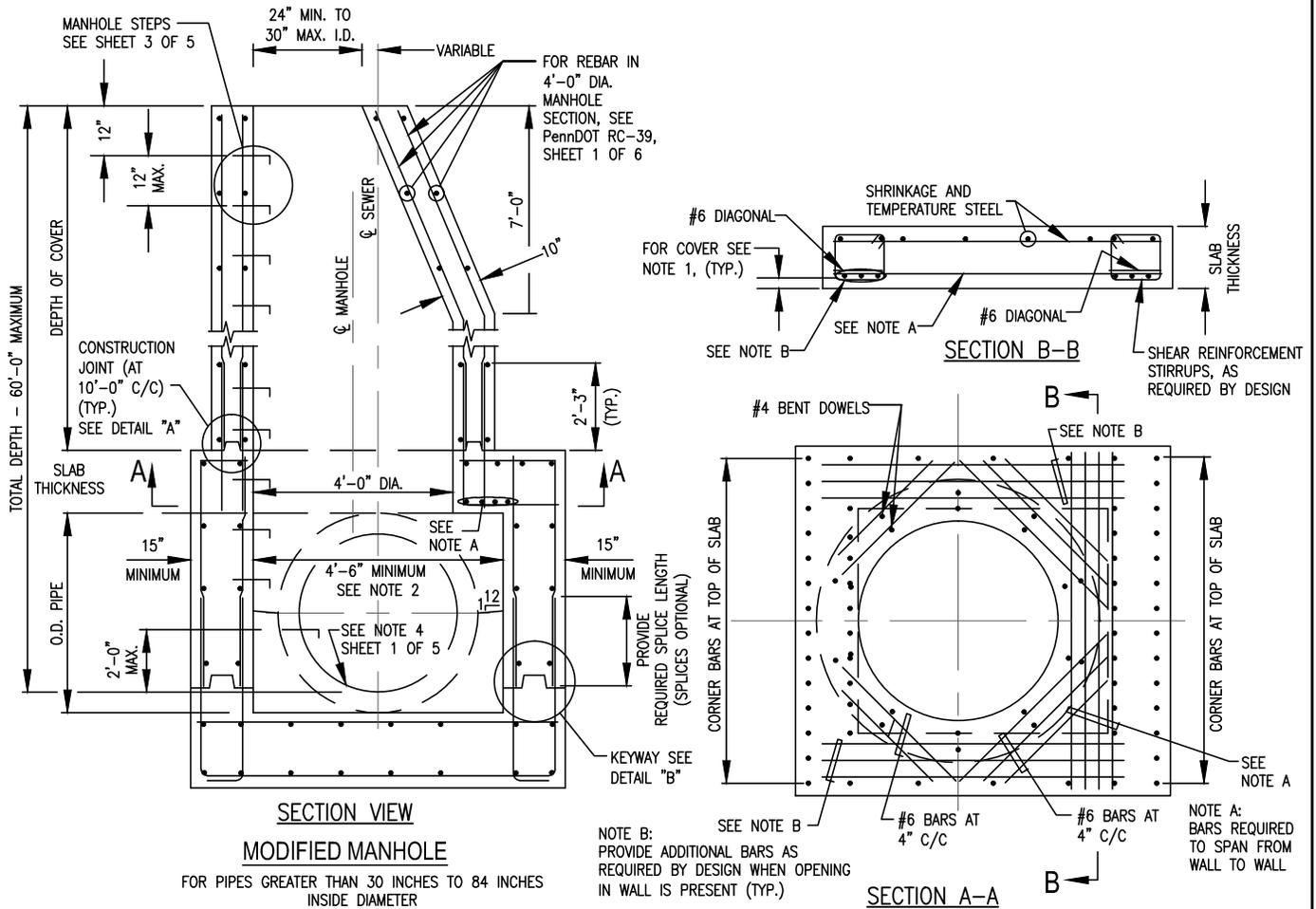
N.T.S.

**TOWNSHIP OF MOON  
 STANDARD DETAILS**

**DETAIL RSD-10 (1 OF 2)  
 CONCRETE MANHOLE (36" AND UP)**

**NOTES:**

1. FOR CONSTRUCTION REQUIREMENTS SEE NOTE 1, PennDOT RC-39M, SHEET 1 OF 6.
2. FOR DESIGN REQUIREMENTS SEE NOTE 1, PennDOT RC-39M, SHEET 6 OF 6.
3. 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.
4. DESIGN PROCEDURES 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. PLACE ADDITIONAL BARS IN THE SLAB AT 45° AROUND THE MANHOLE OPENING. SEE SECTION A-A FOR DETAILS.
  - B. "EDGE BEAM"  
VIEWS SHOWING THE CONFIGURATION OF MANHOLE 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 BOX, TO CARRY A UNIFORMLY 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 PRESSURES. 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  $1/10 WL^2$  AND NEGATIVE MOMENT OF  $1/12 WL^2$  WHERE  $W$  IS THE UNIFORM BEARING PRESSURE. DO NOT TAKE INTO ACCOUNT THE CONCRETE IN THE CHANNEL WHEN CALCULATING CAPACITY OR THE FOOTING. AS A MINIMUM, PROVIDE #4 BARS AT 12" CENTERS, TOP AND BOTTOM OF SLAB IN THE OPPOSITE DIRECTION.



SOURCE: PennDOT STANDARDS FOR ROADWAY CONSTRUCTION (LATEST EDITION)

**Baker**

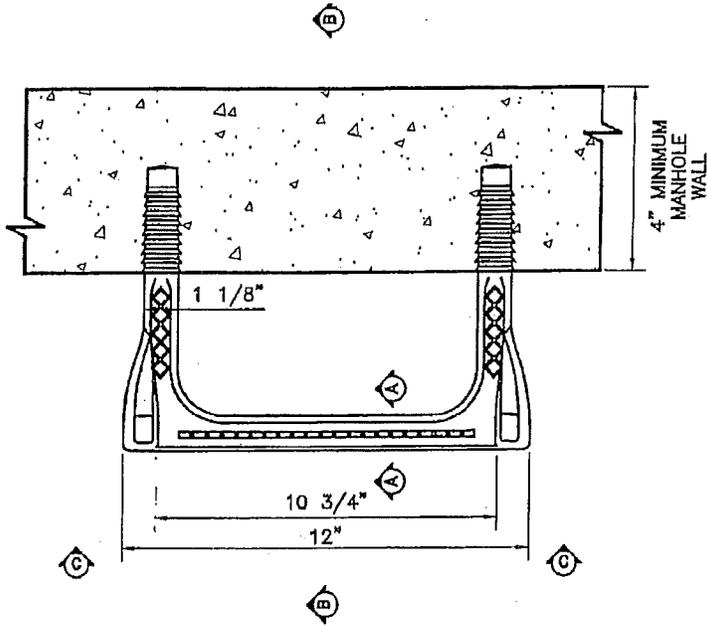
MICHAEL BAKER JR., INC.  
A UNIT OF MICHAEL BAKER CORP.  
4301 DUTCH RIDGE ROAD  
BEAVER, PENNSYLVANIA 15009

MARCH 2013

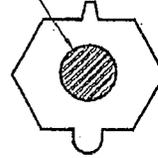
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RSD-10 Concrete Manhole  
(36inch and up).dwg  
SCALE:

N.T.S.

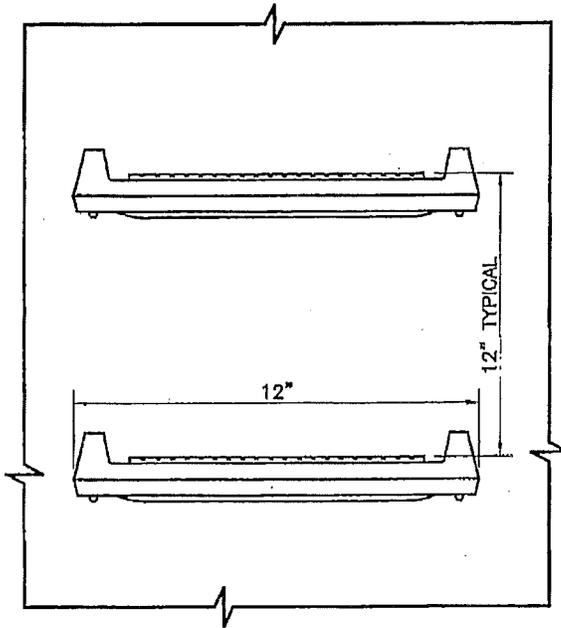
**TOWNSHIP OF MOON**  
**STANDARD DETAILS**  
**DETAIL RSD-10 (2 OF 2)**  
**CONCRETE MANHOLE (36" AND UP)**



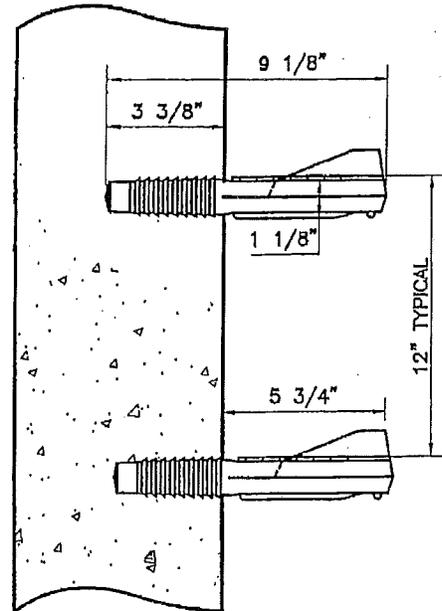
1/2" GRADE 60  
STEEL REINFORCEMENT



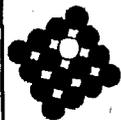
SECTION A-A



VIEW C-C



SECTION B-B

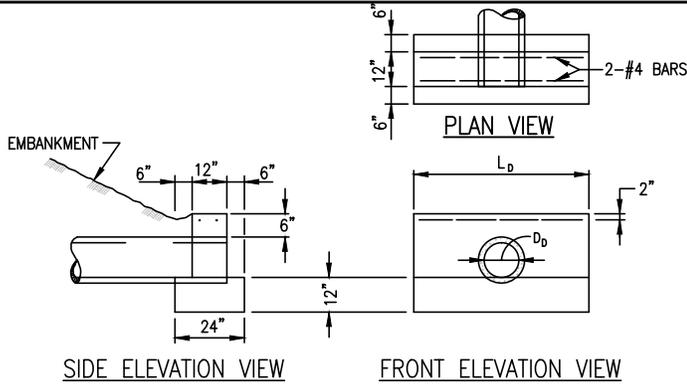


**LENNON, SMITH,  
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E-mail: lsso@uscon.net

DATE: December 1999  
FILE NAME: Moandet.dwg  
SCALE: N.T.S.

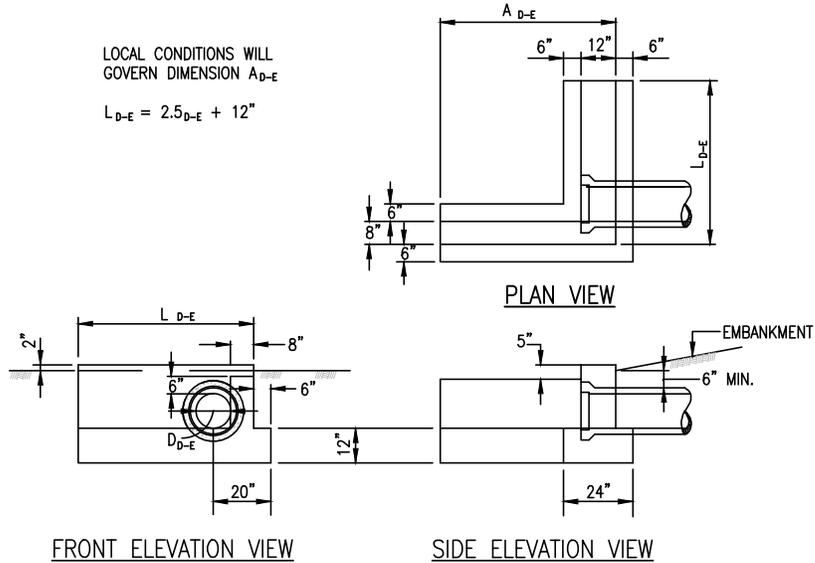
**Township of Moon  
Standard Details**  
Detail RSD-11  
Ladder Bars for Manholes and Inlets

PIPE DIAMETER	L <sub>D</sub>
18" AND 21"	5'
24" AND 27"	7'
30" AND 33"	9'
36" AND 39"	10'
42" AND 45"	11'
48" AND 51"	12'



SIDE ELEVATION VIEW      FRONT ELEVATION VIEW  
**TYPE D ENDWALL**

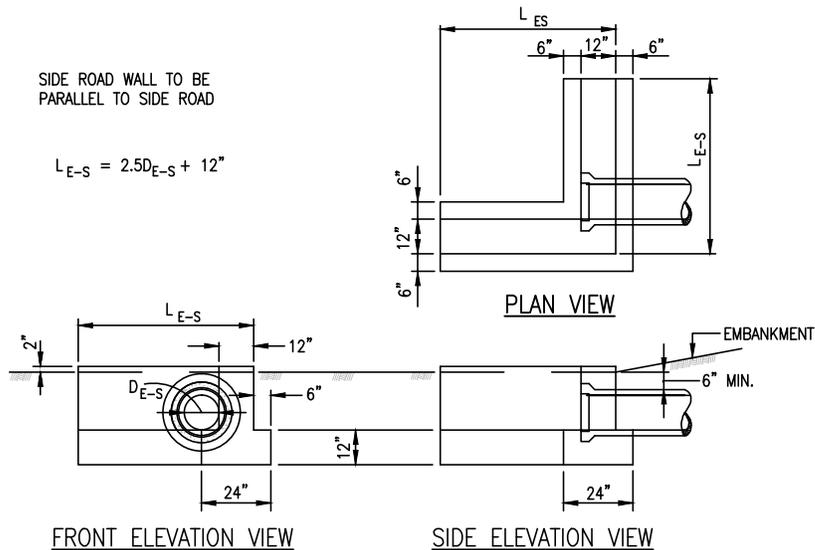
LOCAL CONDITIONS WILL GOVERN DIMENSION A<sub>D-E</sub>  
 $L_{D-E} = 2.5D_{D-E} + 12"$



FRONT ELEVATION VIEW      SIDE ELEVATION VIEW  
**TYPE D-E ENDWALL**

SIDE ROAD WALL TO BE PARALLEL TO SIDE ROAD

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



FRONT ELEVATION VIEW      SIDE ELEVATION VIEW  
**TYPE E-S ENDWALL**

SOURCE: PennDOT STANDARDS FOR ROADWAY CONSTRUCTION (LATEST EDITION)

**Baker**

MICHAEL BAKER JR., INC.  
 A UNIT OF MICHAEL BAKER CORP.  
 4301 DUTCH RIDGE ROAD  
 BEAVER, PENNSYLVANIA 15009

MARCH 2013

FILE NAME:  
 RSD-12 (Page 1 of 2) Endwalls.dwg

SCALE:  
 N.T.S.

**TOWNSHIP OF MOON  
 STANDARD DETAILS**

**DETAIL RSD-12 (1 of 2)  
 ENDWALLS**

**TABLE A**  
2:1 EMBANKMENT SLOPES

PIPE DIAMETER	SKEW $\alpha = 90^\circ$ TO $60^\circ$ $\theta = 30^\circ$				SKEW $\alpha = 55^\circ$ $\theta = 35^\circ$				SKEW $\alpha = 50^\circ$ $\theta = 40^\circ$				SKEW $\alpha = 45^\circ$ $\theta = 45^\circ$				SKEW $\alpha = 40^\circ$ $\theta = 50^\circ$				SKEW $\alpha = 30^\circ$ $\theta = 60^\circ$				SKEW $\alpha = 20^\circ$ $\theta = 70^\circ$				SKEW $\alpha = 10^\circ$ $\theta = 80^\circ$				X	
	$L_{D-W}$ (IN.)	$\rho$ (FT.)	$W_1$ (FT.)	$W_2$ (FT.)	$L_{D-W}$ (IN.)	$\rho$ (FT.)	$W_1$ (FT.)	$W_2$ (FT.)	$L_{D-W}$ (IN.)	$\rho$ (FT.)	$W_1$ (FT.)	$W_2$ (FT.)	$L_{D-W}$ (IN.)	$\rho$ (FT.)	$W_1$ (FT.)	$W_2$ (FT.)	$L_{D-W}$ (IN.)	$\rho$ (FT.)	$W_1$ (FT.)	$W_2$ (FT.)	$L_{D-W}$ (IN.)	$\rho$ (FT.)	$W_1$ (FT.)	$W_2$ (FT.)	$L_{D-W}$ (IN.)	$\rho$ (FT.)	$W_1$ (FT.)	$W_2$ (FT.)	$L_{D-W}$ (IN.)	$\rho$ (FT.)	$W_1$ (FT.)	$W_2$ (FT.)		
15	3.7	0	1.7	3.8	.33	1.8	3.9	.5	2.0	4.1	.67	2.1	4.2	.75	2.3	4.8	1.33	3.0	6.0	1.75	4.4	9.5	5.0	8.6	1.7									
18	4.0	0	2.3	4.1	.33	2.4	4.3	.5	2.6	4.4	.67	2.8	4.6	.75	3.1	5.3	1.33	4.0	6.7	1.75	5.8	10.9	5.0	11.5	2.3									
24	4.6	0	3.5	4.7	.33	3.7	4.9	.5	3.9	5.1	.67	4.2	5.4	.75	4.7	6.3	1.33	6.0	8.1	1.75	8.8	13.8	5.0	17.3	3.5									
30	5.2	0	4.6	5.4	.33	4.9	5.6	.5	5.2	5.8	.67	5.7	6.2	.75	6.2	7.3	1.33	8.0	9.6	1.75	11.7	16.7	5.0	23.0	4.6									
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	6.6	.33	6.1	6.9	.5	6.5	7.3	.67	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								

(15" - 30" DIA. PIPE)                      (36" - 72" DIA. PIPE)

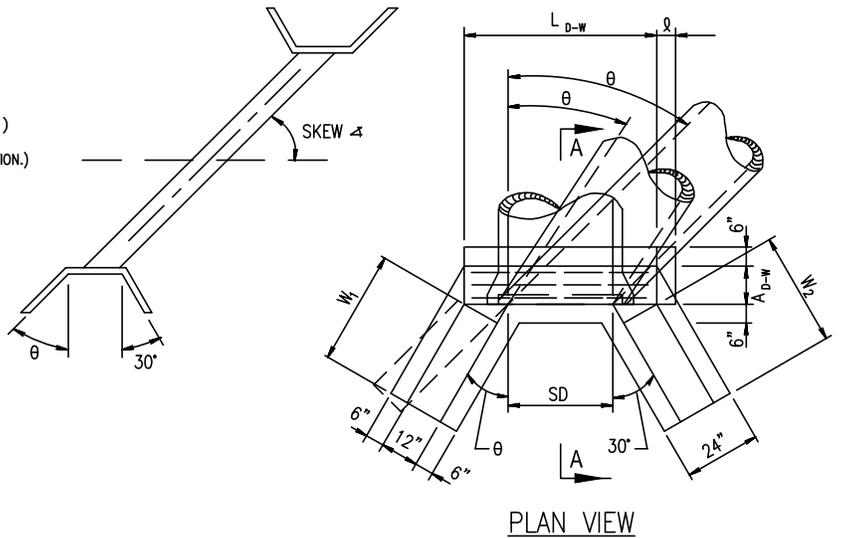
$$SD = \frac{D_{D-W}}{\cos \theta} = \frac{D_{D-W}}{\sin \text{SKEW } \alpha}$$

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

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

$$W_2 = \frac{X}{\cos \theta} (D_{D-W} 0.5 - \frac{1.0}{X})$$

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



**NOTES:**

1. PROVIDE MATERIALS AND WORKMANSHIP IN ACCORDANCE WITH THE APPROPRIATE SPECIFICATIONS AS OUTLINED IN PUBLICATION 408, SECTION 605, PennDOT MATERIALS CERTIFICATION ON ALL MATERIALS.
2. USE 4,000 PSI, 5% AIR ENTRAINED PORTLAND CEMENT CONCRETE OR BETTER.
3. CHAMFER EXPOSED EDGES ONE INCH.
4. PROVIDE REINFORCEMENT (.12 IN/LF) IN ACCORDANCE WITH PUBLICATION 408, SECTION 709.

SECTION A-A

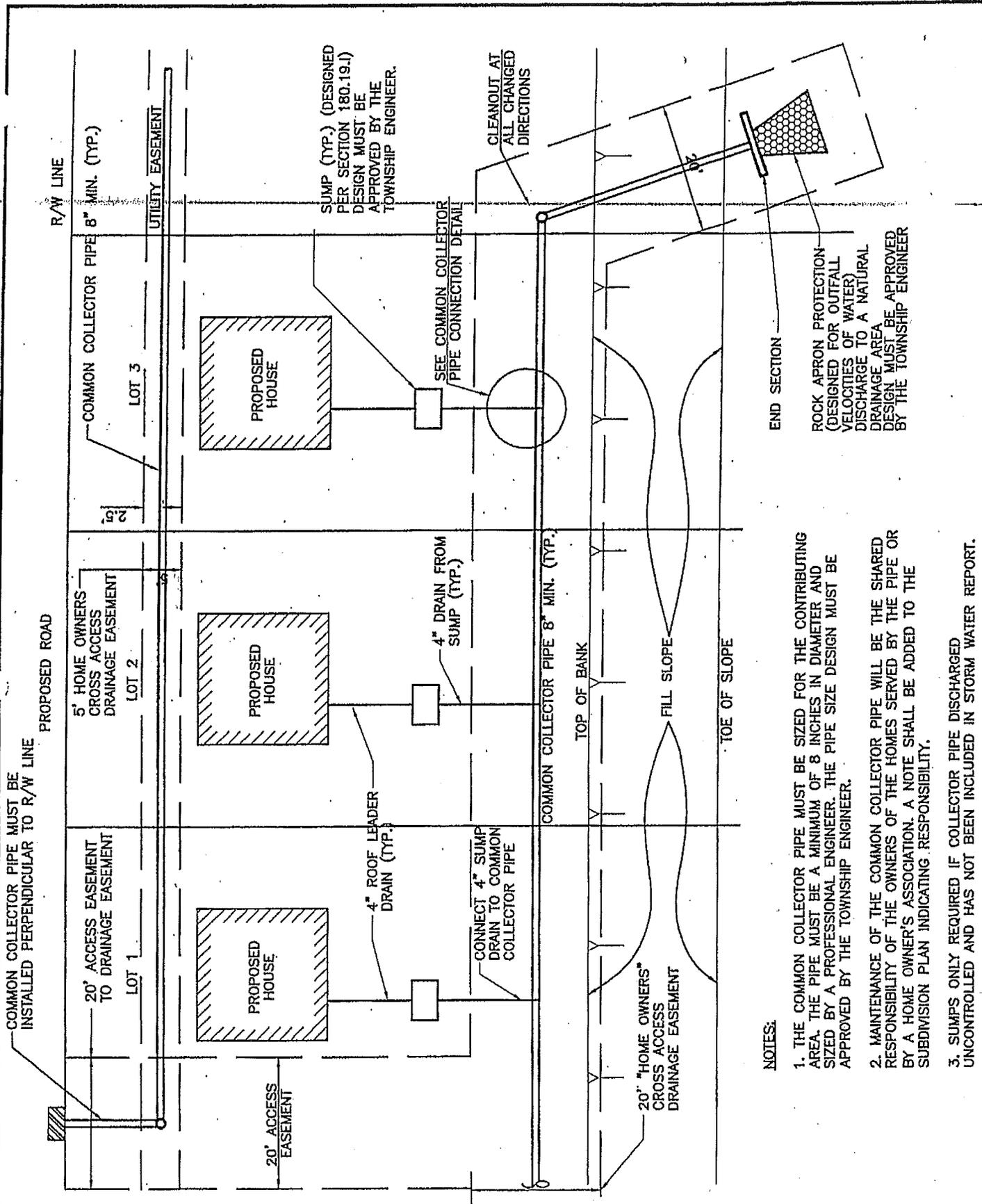
FRONT ELEVATION VIEW

**TYPE D-W ENDWALL**

(SEE TABLE A FOR DIMENSIONS NOT INDICATED)

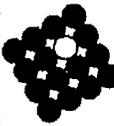
SOURCE: PennDOT STANDARDS FOR ROADWAY CONSTRUCTION (LATEST EDITION)

<p>MICHAEL BAKER JR., INC. A UNIT OF MICHAEL BAKER CORP. 4301 DUTCH RIDGE ROAD BEAVER, PENNSYLVANIA 15009</p>	MARCH 2013	<p><b>TOWNSHIP OF MOON</b> <b>STANDARD DETAILS</b></p> <p>DETAIL RSD-12 (2 of 2) ENDWALLS</p>
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	SCALE:  N.T.S.	



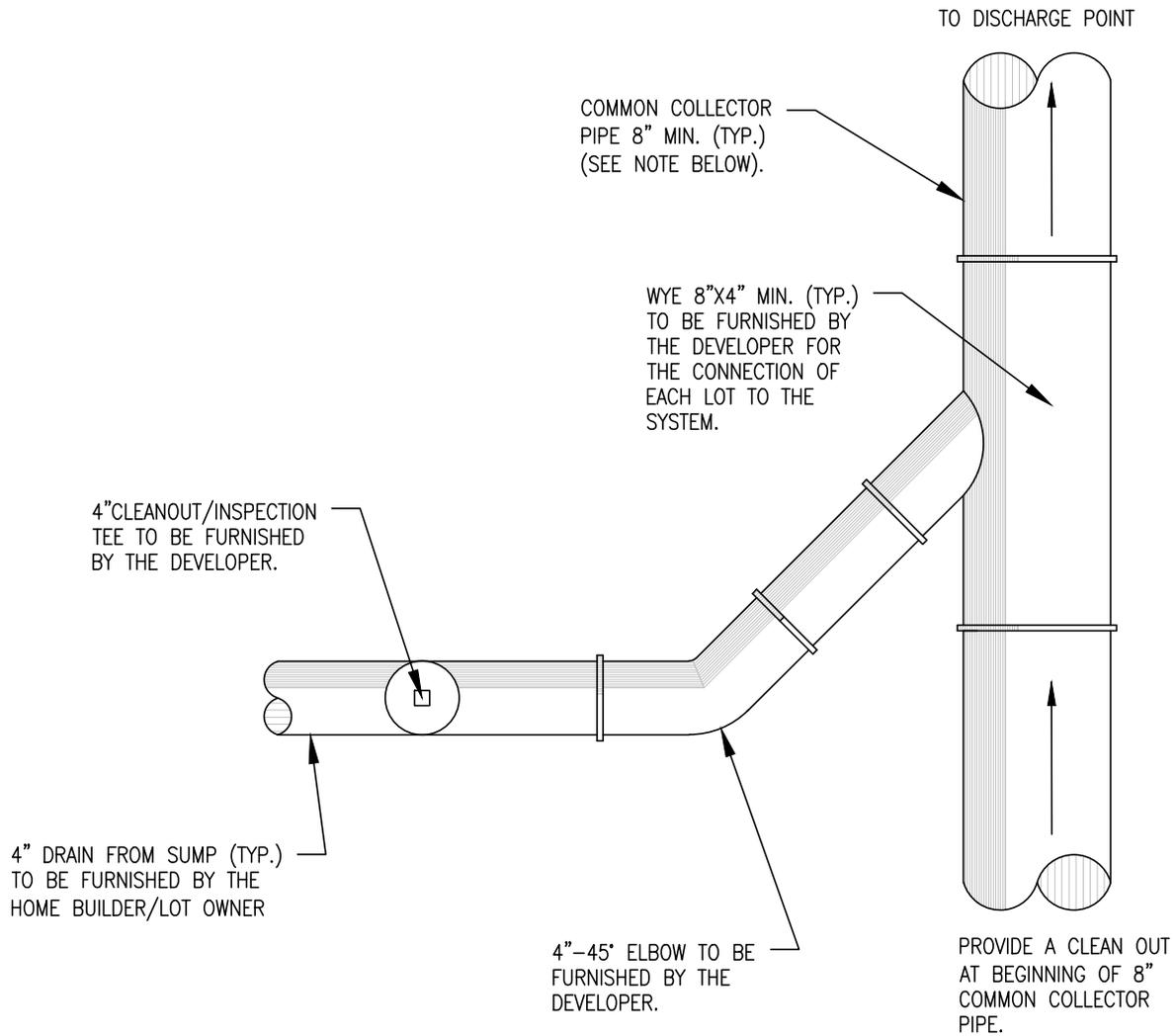
**NOTES:**

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 TOWNSHIP 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.
3. SUMPS ONLY REQUIRED IF COLLECTOR PIPE DISCHARGED UNCONTROLLED AND HAS NOT BEEN INCLUDED IN STORM WATER REPORT.


**LENNON, SMITH, SOULERET ENGINEERING INC.**  
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 Coraopolla, PA 15108  
 Ph: (412) 284-4400  
 Fax: (412) 284-1200  
 E-mail: leed@usoonet.net

DATE:	February 2006
FILE NAME:	Moondet.dwg
SCALE:	N.T.S.

**Township of Moon**  
**Standard Details**  
 Detail RSD-13 (PAGE 1 OF 2)  
 Roof Drain Sump Outlet



**PLAN VIEW**

**NOTES:**

1. THE COMMON COLLECTOR PIPE MUST BE SIZED FOR THE CONTRIBUTING DRAINAGE AREA. THE PIPE MUST BE A MINIMUM OF 8 INCHES IN DIAMETER (SDR-35) AND SIZED BY A PROFESSIONAL ENGINEER. THE PIPE SIZE DESIGN MUST BE APPROVED BY THE TOWNSHIP 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.

**Baker**

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4301 DUTCH RIDGE ROAD  
BEAVER, PENNSYLVANIA 15009

MARCH 2013

FILE NAME:  
RSD-13 (Page 2 of 2) Common  
Collector Pipe Connection.dwg

SCALE:

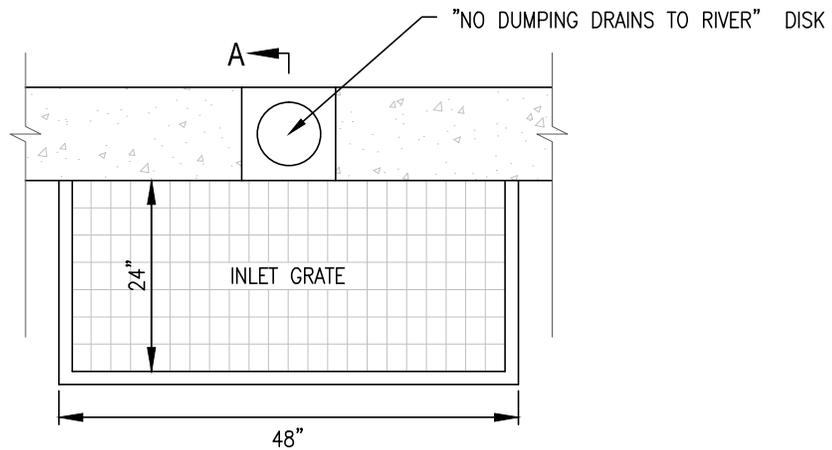
N.T.S.

**TOWNSHIP OF MOON  
STANDARD DETAILS**

DETAIL RSD-13 (2 of 2)  
COMMON COLLECTOR PIPE CONNECTION

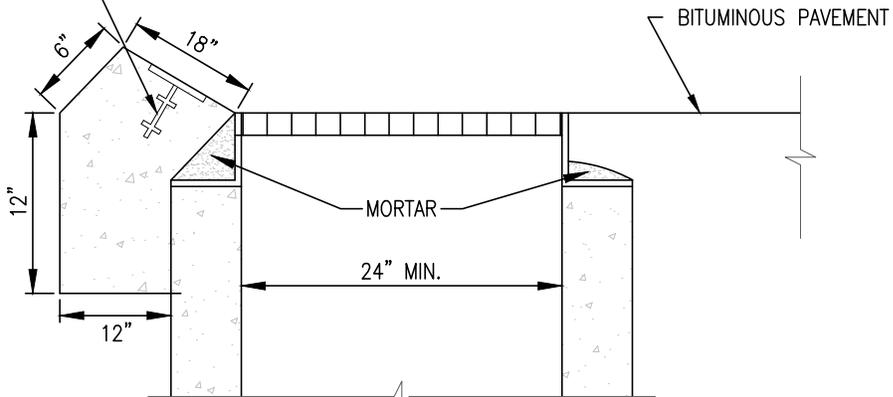


AS PROVIDED BY ALMETEK  
OR APPROVED EQUAL.



PLAN VIEW

6" LONG X 1/2"  
DIAMETER ROD WITH 2  
WELDED WASHERS OR  
APPROVED EQUAL



SECTION A-A

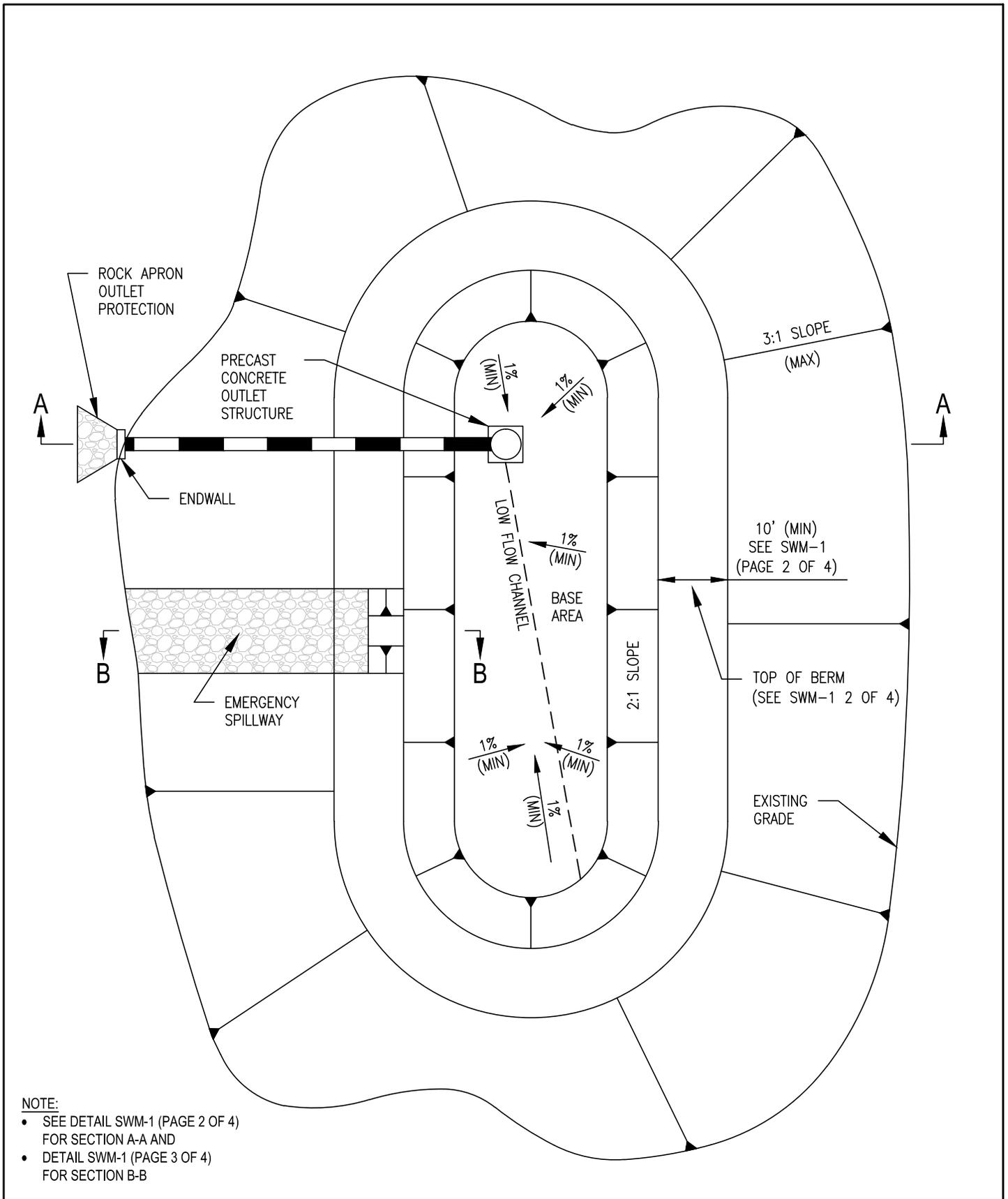
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4301 DUTCH RIDGE ROAD  
BEAVER, PENNSYLVANIA 15009

DATE:  
MARCH 2013  
FILE NAME:  
RSD-14 Detail NO DUMPING - DRAINS  
TO RIVER Disk.dwg  
SCALE:  
N.T.S.

**TOWNSHIP OF MOON  
STANDARD DETAILS**

DETAIL RSD-14  
DETAIL - "NO DUMPING DRAINS TO RIVER" DISK



**NOTE:**

- SEE DETAIL SWM-1 (PAGE 2 OF 4) FOR SECTION A-A AND
- DETAIL SWM-1 (PAGE 3 OF 4) FOR SECTION B-B

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 4301 DUTCH RIDGE ROAD  
 BEAVER, PENNSYLVANIA 15009

DATE:

MARCH 2013

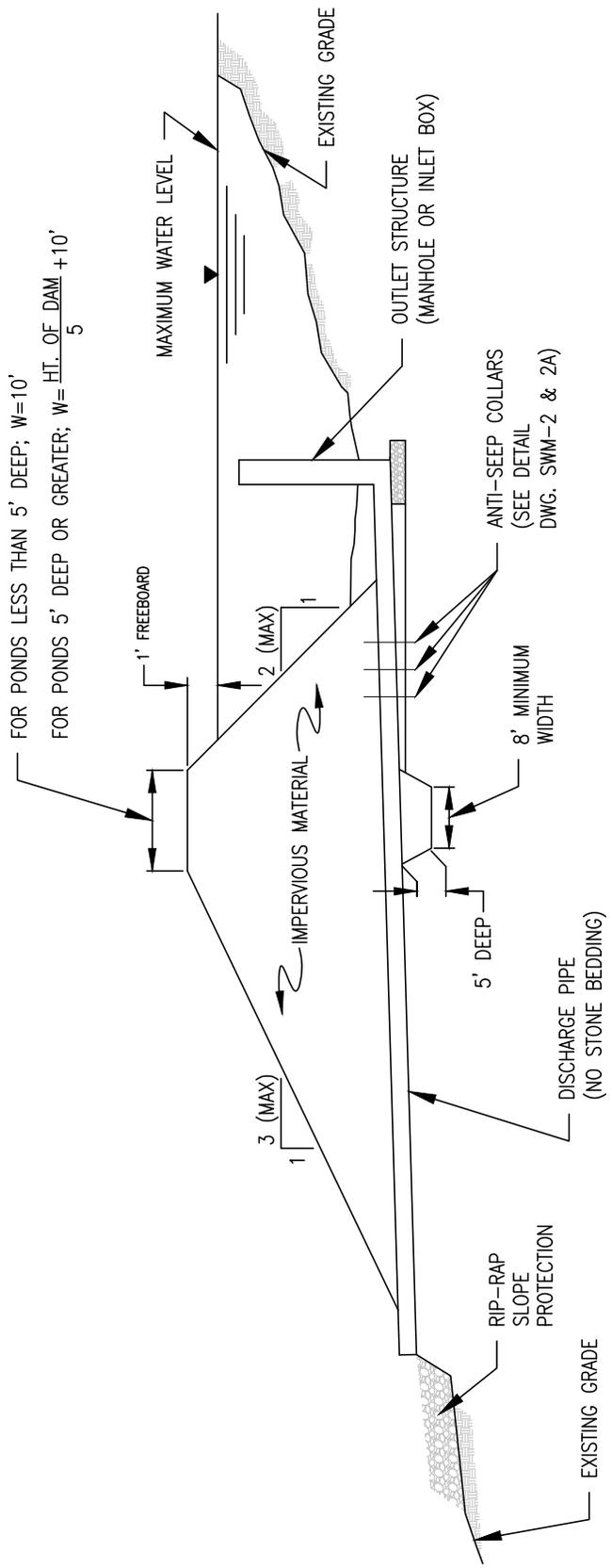
FILE NAME:  
 SWM-1 (PAGE 1 OF 4) Permanent  
 Earth Dam - Plan View.dwg

SCALE:

N.T.S.

**TOWNSHIP OF MOON  
 STANDARD DETAILS**

DETAIL SWM-1 (PAGE 1 OF 4)  
 PERMANENT EARTH DAM - PLAN VIEW



**PERMANENT EARTH DAM**  
**SECTION A-A**  
 N.T.S.

**NOTES:**

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

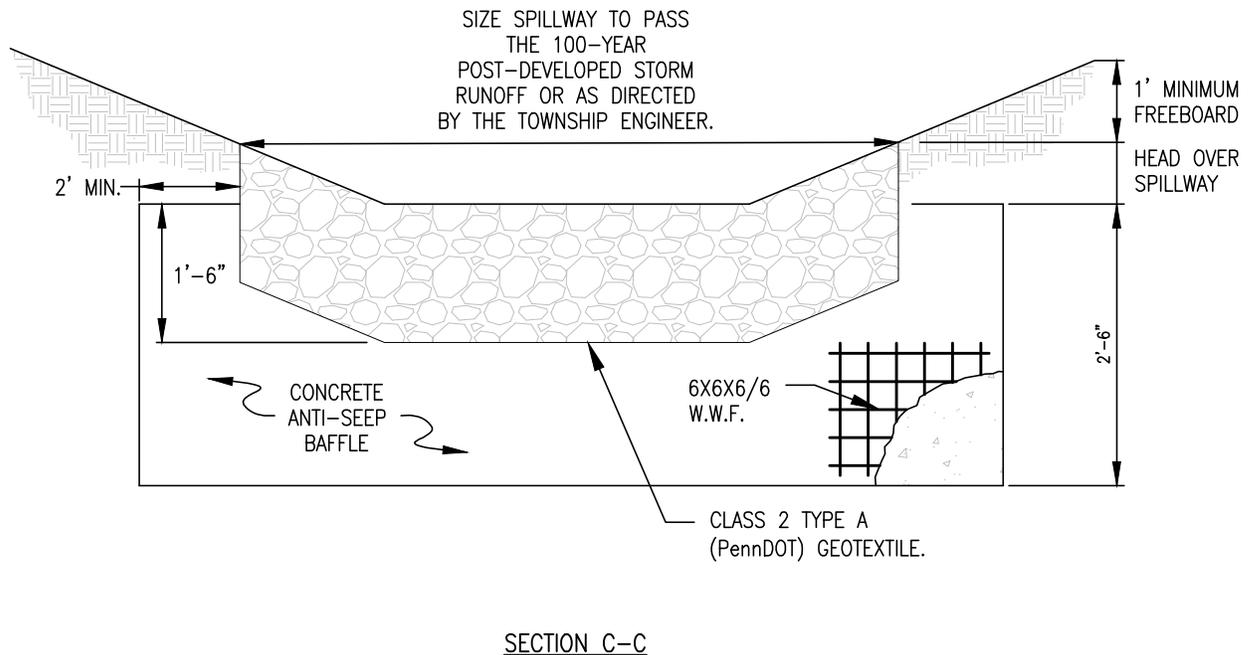
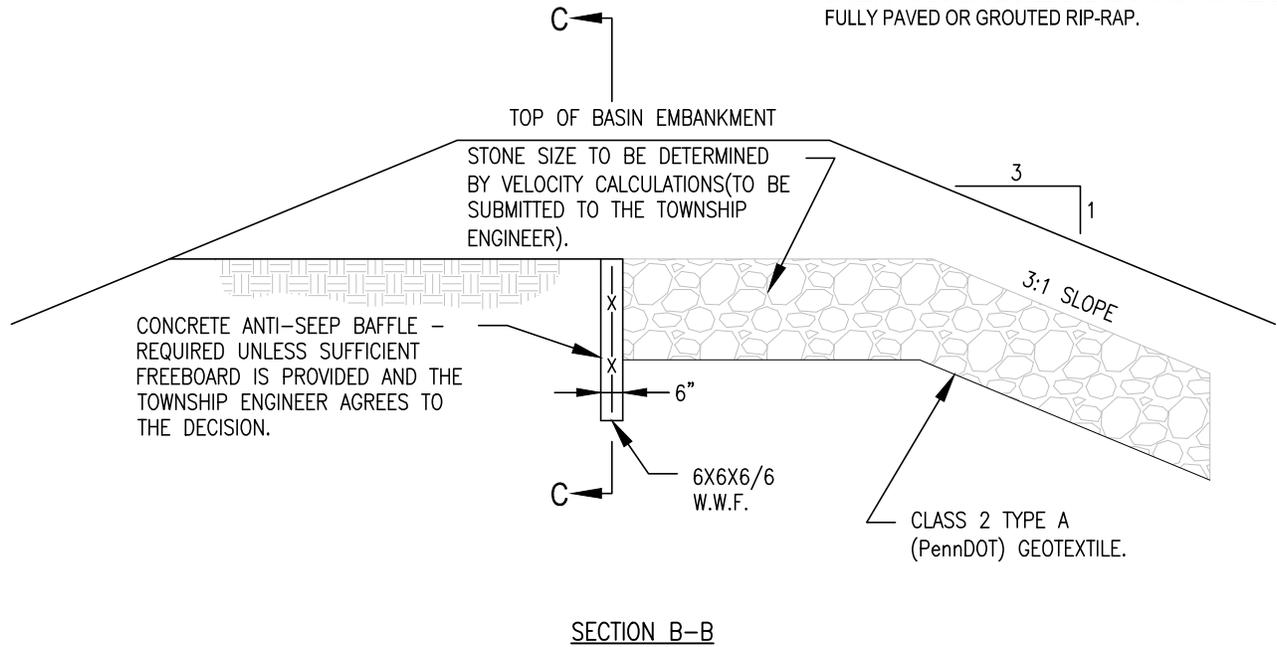
**Baker**

MICHAEL BAKER JR., INC.  
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 4301 DUTCH RIDGE ROAD  
 BEAVER, PENNSYLVANIA 15009

DATE:	MARCH 2013
FILE NAME:	SWM-1 (PAGE 2 OF 4) Permanent Earth Dam - Section A-A.dwg
SCALE:	N.T.S.

**TOWNSHIP OF MOON**  
**STANDARD DETAILS**  
 DETAIL SWM-1 (PAGE 2 OF 4)  
 PERMANENT EARTH DAM - SECTION A-A

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

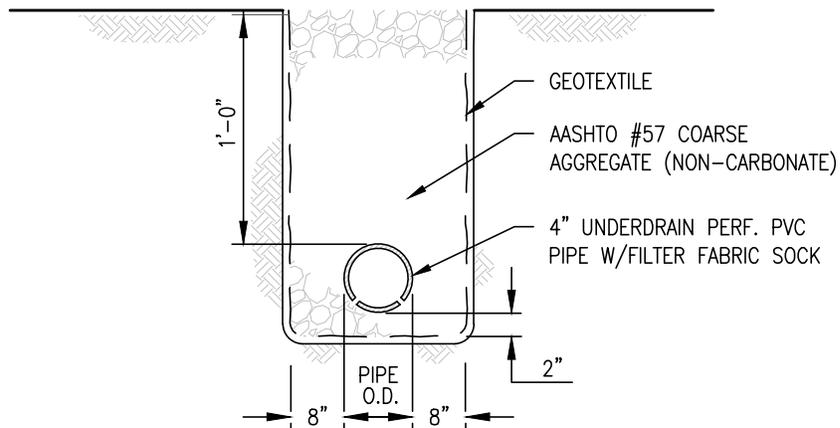


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 BEAVER, PENNSYLVANIA 15009

DATE: MARCH 2013  
 FILE NAME: SWM-1 (PAGE 3 OF 4) Permanent Earth Dam - SectionS B-B & C-C.dwg  
 SCALE: N.T.S.

TOWNSHIP OF MOON  
 STANDARD DETAILS  
 DETAIL SWM-1 (PAGE 3 OF 4)  
 PERMANENT EARTH DAM - SECTIONS B-B & C-C



### LOW FLOW CHANNEL AND UNDERDRAIN

N.T.S.

#### NOTES:

1. THE UNDERDRAIN SHALL HAVE A MINIMUM 1% SLOPE AND DISCHARGE INTO THE BASIN OR RAIN GARDEN OUTLET STRUCTURE.
2. THE LOW FLOW CHANNEL SHALL HAVE A MINIMUM 1% SLOPE TO THE OUTLET STRUCTURE.

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BEAVER, PENNSYLVANIA 15009

DATE:

MARCH 2013

FILE NAME:

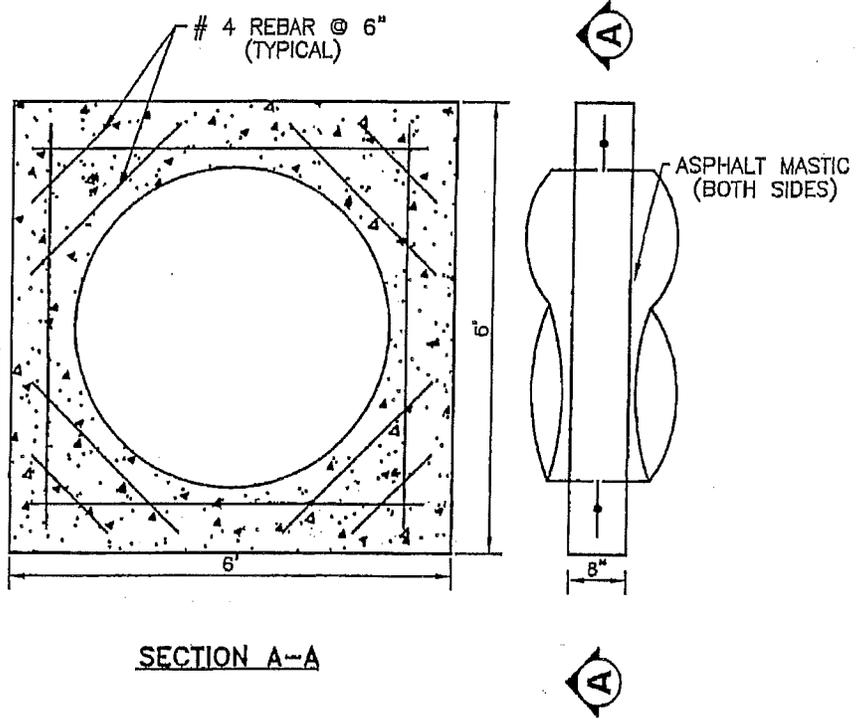
SWM-1 (PAGE 2 OF 4) Permanent Earth  
Dam - Section A-A.dwg

SCALE:

N.T.S.

**TOWNSHIP OF MOON  
STANDARD DETAILS**

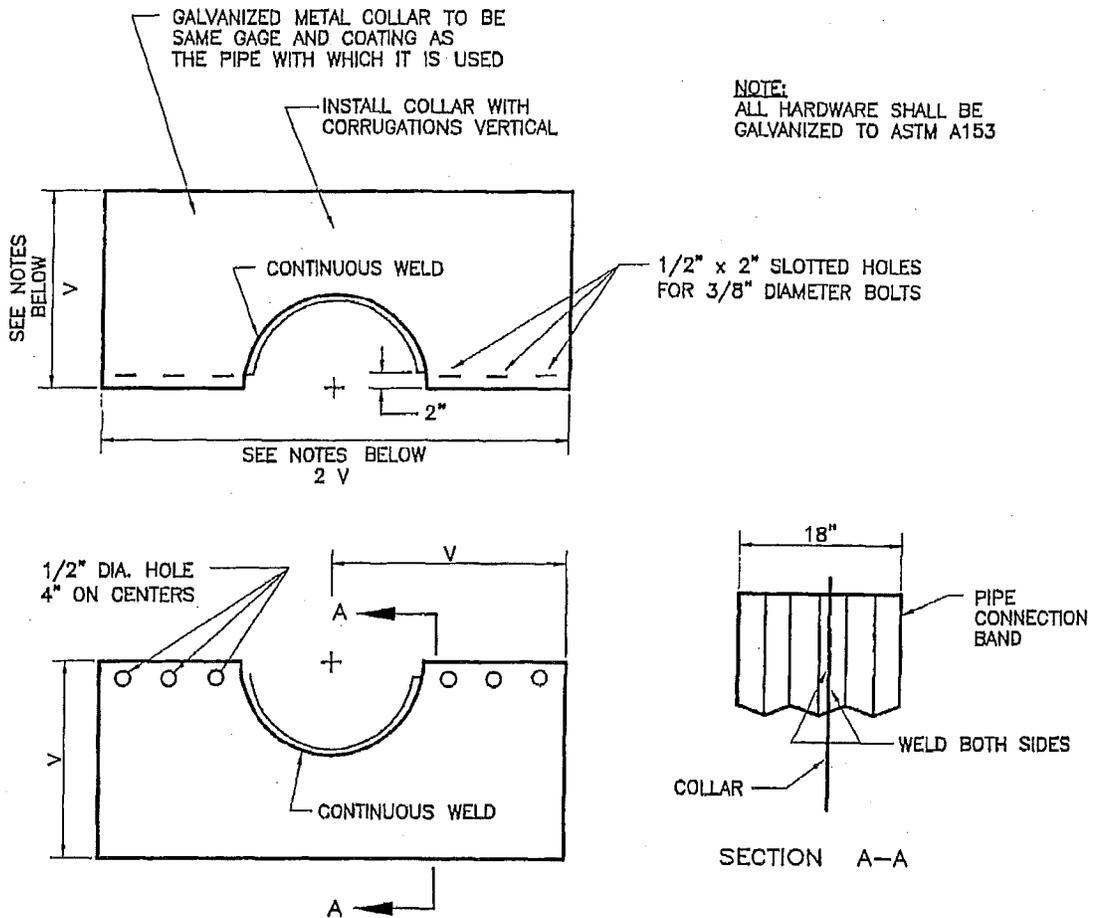
DETAIL SWM-1 (PAGE 4 OF 4)  
BASIN LOW FLOW CHANNEL/UNDERDRAIN



**LENNON, SMITH,  
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848 Fourth Avenue  
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DATE:	December 1999
FILE NAME:	Moandet.dwg
SCALE:	N.T.S.

**Township of Moon  
Standard Details**  
Detail SWM-2  
Concrete Anti-Seep Collars



**NOTE:**  
ALL HARDWARE SHALL BE GALVANIZED TO ASTM A153

**NOTES:**

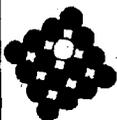
V = VERTICAL PROJECTION AND MINIMUM HORIZONTAL PROJECTION OF THE ANTI-SEEP COLLAR IN FEET

L = LENGTH IN FEET OF THE CONDUIT WITHIN THE ZONE OF SATURATION, MEASURED FROM THE DOWNSTREAM SIDE OF THE RISER TO THE TOE DRAIN OR POINT WHERE PHREATIC LINE INTERCEPTS THE CONDUIT, WHICHEVER IS SHORTER

N = NUMBER OF ANTI-SEEP COLLARS

THE RATIO OF THE LENGTH OF THE LINE OF SEEPAGE ( $L + 2 N V$ ) TO L IS TO BE NOT LESS THAN 1.15. ANTI-SEEP COLLARS SHALL BE EQUALLY SPACED ALONG THAT PART OF THE BARREL WITHIN THE SATURATED ZONE AT DISTANCES OF NOT MORE THAN 25 FEET.

\* TAKEN FROM U.S. DEPT. OF AGRICULTURE SCS TR-60



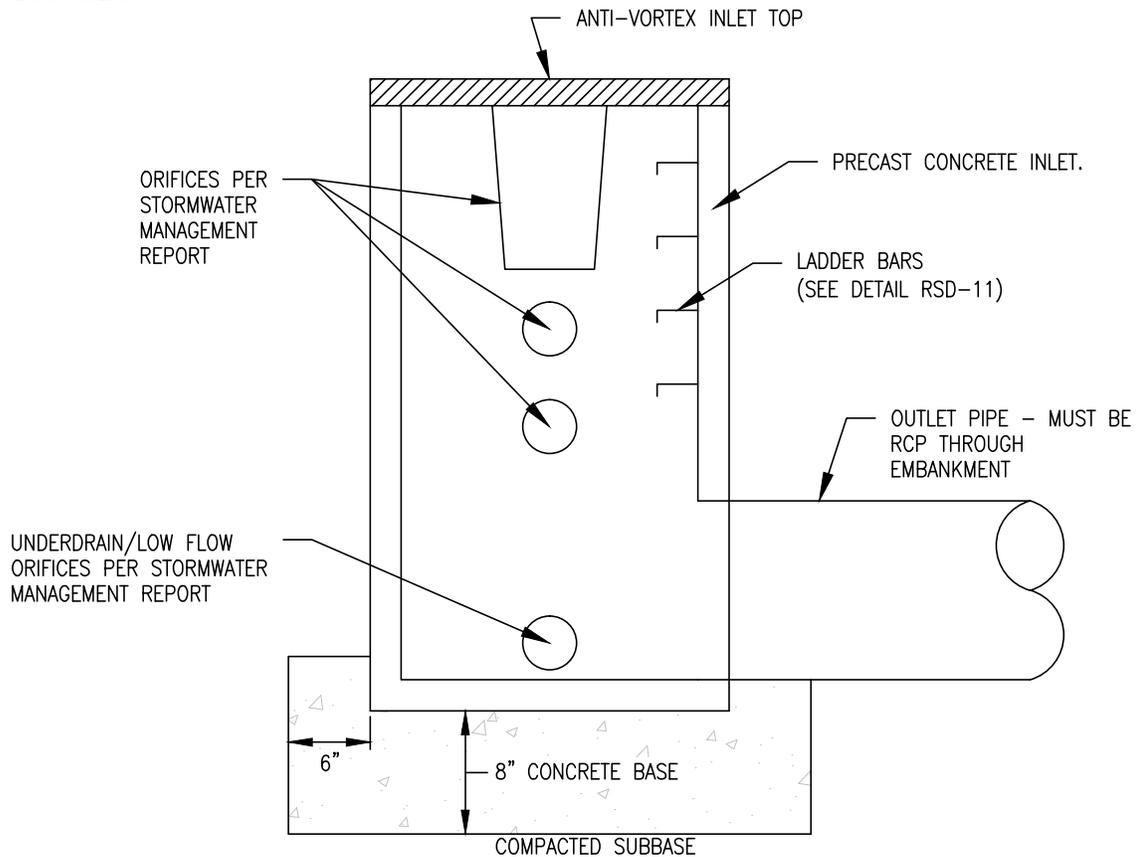
**LENNON, SMITH,  
SOULERET  
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848 Fourth Avenue  
Coraopolis, PA 15108  
Ph: (412) 284-4400  
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E-mail: lsm@lscor.net

DATE: February 2006  
FILE NAME: Moondet.dwg  
SCALE: N.T.S.

**Township of Moon  
Standard Details.**  
Detail SWM-2A  
Corrugated Metal Anti-Seep Collar

NOTES:

1. ALL CONCRETE SHALL BE 4000 PSI (28 DAY), 5% AIR ENTRAINED PORTLAND CEMENT CONCRETE.
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" INSIDE FACE OF PRECAST BASE SECTION.
8. IF THE OUTLET PIPE IS 18" OR LESS, USE 4'-0" RISER; IF GREATER THAN 18", USE 5'-0" RISER.



DETENTION BASIN OUTLET RISER

N.T.S.

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4301 DUTCH RIDGE ROAD  
BEAVER, PENNSYLVANIA 15009

DATE:

MARCH 2013

FILE NAME:  
SWM-3 Concrete Inlet Riser For  
Detention Basins.dwg

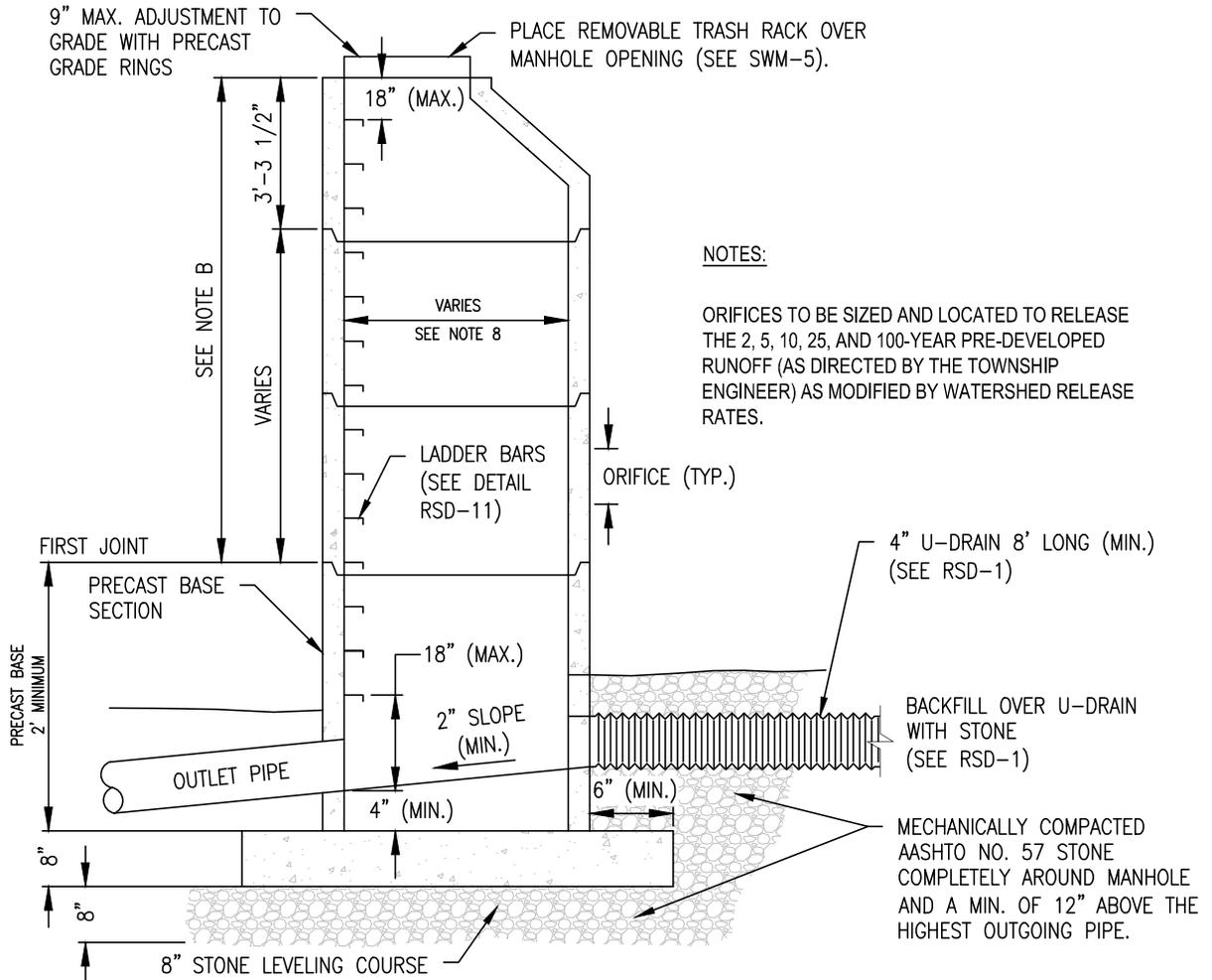
SCALE:

N.T.S.

**TOWNSHIP OF MOON  
STANDARD DETAILS  
DETAIL SWM-3  
CONCRETE INLET RISER FOR DETENTION BASINS**

**NOTES:**

1. ALL CONCRETE SHALL BE 4000 PSI, 5% AIR ENTRAINED CEMENT CONCRETE.
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 BLTS 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 9 INCHES (9").
6. MANHOLES SHALL CONFORM TO PennDOT PUBLICATION 408, SECTION 714 AND PennDOT PUBLICATION 72, RC-39M.
7. MANHOLE INVERT SHALL BE CONCRETE TO THE SPRING LINE OF THE 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" RISER; IF GREATER THAN 18", USE 5'-0" RISER.
9. PROVIDE PennDOT CERTIFICATE ON ALL MATERIALS USED ON THE SITE.



SOURCE: PennDOT STANDARDS FOR ROADWAY CONSTRUCTION (LATEST EDITION)

**Baker**

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BEAVER, PENNSYLVANIA 15009

MARCH 2013

FILE NAME:  
SWM-3A Concrete Manhole Riser  
for Detention Basins.dwg

SCALE:

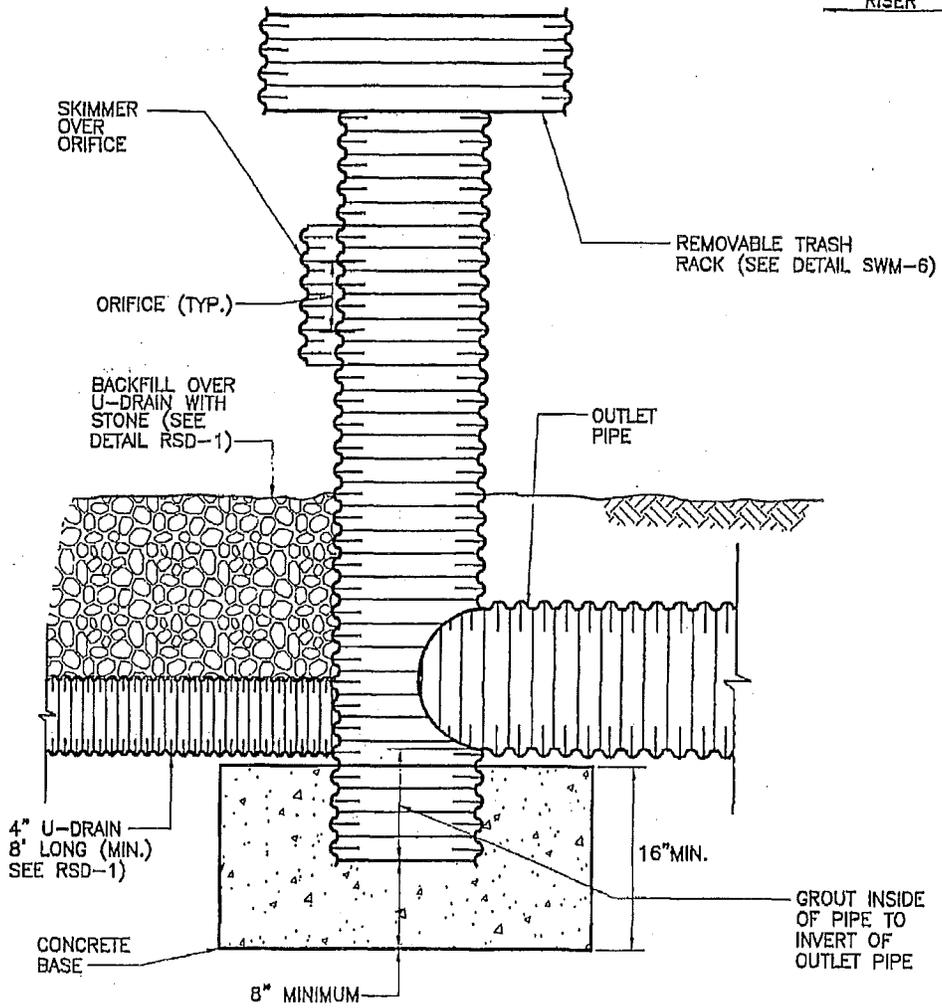
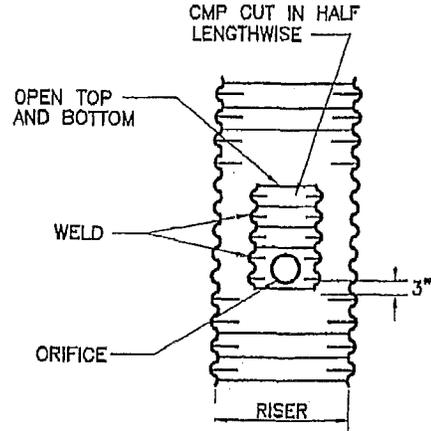
N.T.S.

**TOWNSHIP OF MOON  
STANDARD DETAILS**

**DETAIL SWM-3A  
CONCRETE MANHOLE RISER FOR DETENTION BASINS**

**NOTE:**

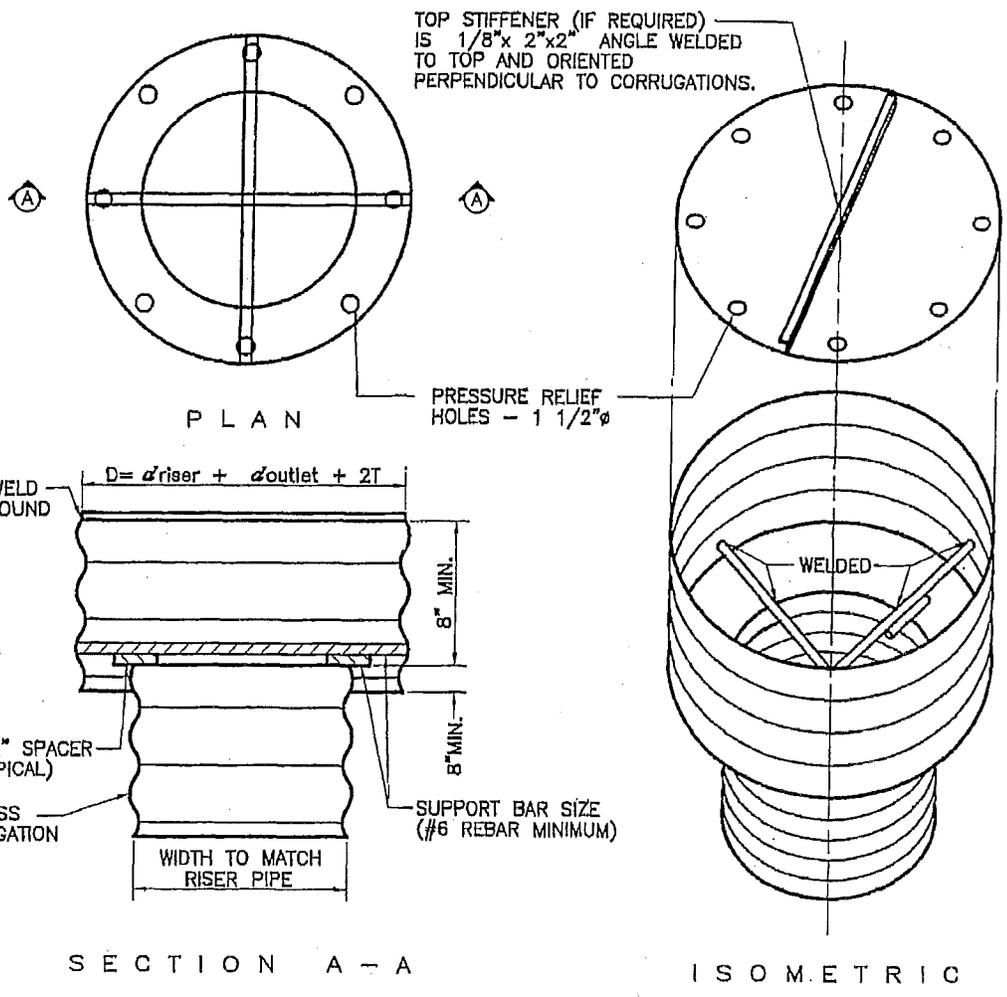
- (1) ORIFICE No., SIZE, AND LOCATION ON RISER TO BE DETERMINED BY CALCULATIONS AND SUBMITTED TO TWP. ENGINEER.
- (2) MAXIMUM HEIGHT OF RISER 8'-0"



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E-mail: lsso@uucor.net

DATE: December 1999  
FILE NAME: Moondet.dwg  
SCALE: N.T.S.

**Township of Moon  
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.



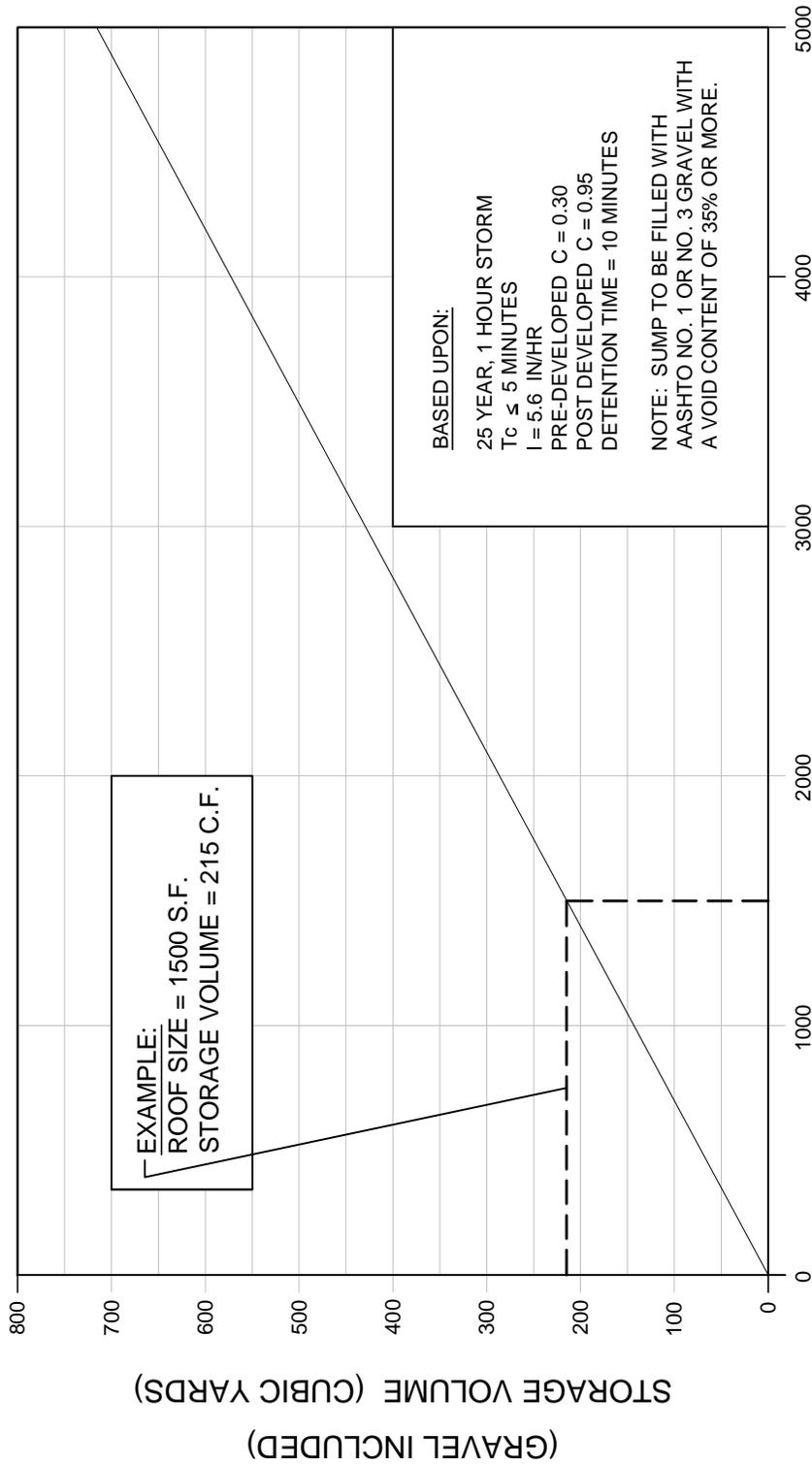
**LENNON, SMITH,  
SOULERET  
ENGINEERING INC.**  
848 Fourth Avenue  
Coraopolis, PA 15108  
Ph: (412) 284-4400  
Fax: (412) 284-1200  
E-mail: lss@usccor.net

DATE: December 1999  
FILE NAME: Moondet.dwg  
SCALE: N.T.S.

**Township of Moon  
Standard Details**  
Detail SWM-5

Trash Rack and Anti-Vortex Device For Temporary Sediment Basins

# ROOF DRAIN - SUMP STORAGE CHART MOON TOWNSHIP



**NOTES:**

1. THE ROOF DRAIN SUMP MAY BE A PRE-FAB DRY WELL OR CONSTRUCTED WITH GRAVEL AS OUTLINED IN THIS DETAIL.
2. THE ROOF DRAIN SUMP MUST BE A MINIMUM OF 10 FEET DOWNSLOPE OF THE STRUCTURE FOUNDATION.
3. CLEANOUTS MUST BE PROVIDED AS SHOWN ON DETAIL SWM-7.

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MARCH 2013

FILE NAME:  
SWM-6 Roof Drain\_Sump Storage Chart  
(25 Year Storm EventDesign.dwg)

SCALE:

N.T.S.

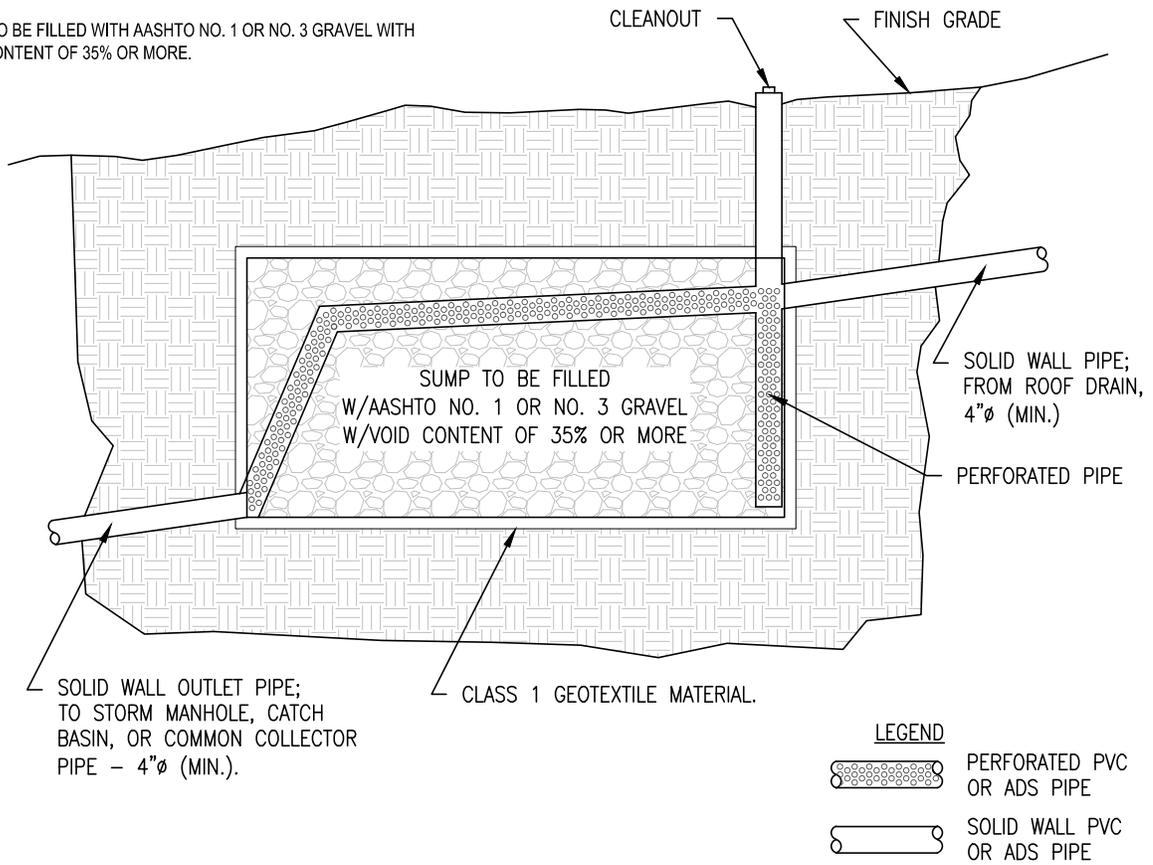
## TOWNSHIP OF MOON STANDARD DETAILS

DETAIL SWM-6

ROOF DRAIN/SUMP STORAGE CHART (25 YR STORM EVENT DESIGN)

**NOTES:**

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



**ROOF DRAIN SUMP  
W/OUTLET PIPE**  
N.T.S.

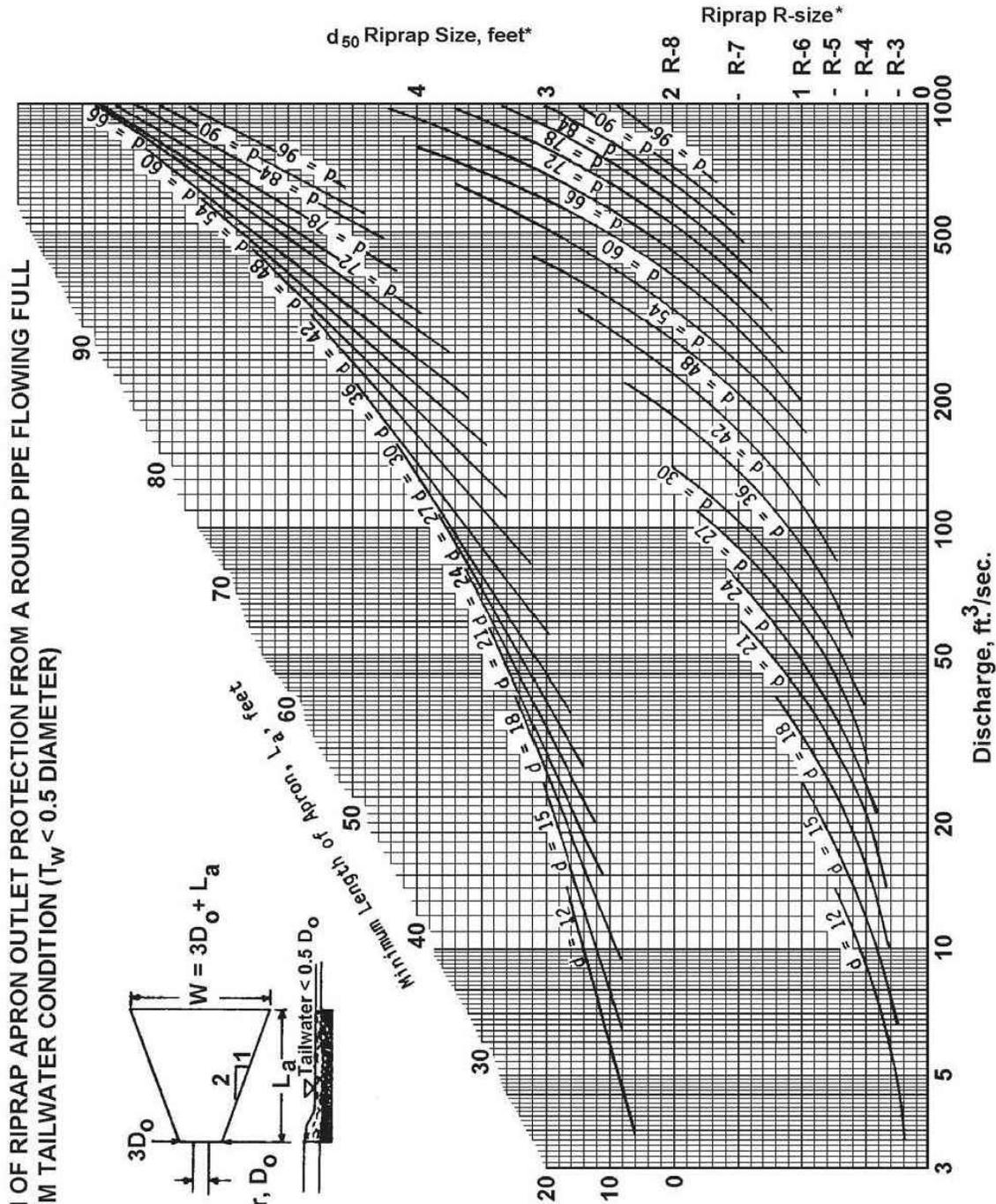


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4301 DUTCH RIDGE ROAD  
BEAVER, PENNSYLVANIA 15009

DATE: MARCH 2013  
FILE NAME: SWM-7 Roof Drain Sump w\_Outlet Pipe.dwg  
SCALE: N.T.S.

**TOWNSHIP OF MOON  
STANDARD DETAILS**  
  
DETAIL SWM-7  
ROOF DRAIN SUMP W/OUTLET PIPE

**FIGURE 9.3**  
**Riprap Apron Design, Minimum Tailwater Condition**



**DESIGN OF RIPRAP APRON OUTLET PROTECTION FROM A ROUND PIPE FLOWING FULL**  
**MINIMUM TAILWATER CONDITION (T<sub>w</sub> < 0.5 DIAMETER)**

Adapted from USDA - NRCS

**NOTE: Do not extrapolate**

**Not to be used for Box Culverts**

\* For discharge velocities exceeding Maximum Allowable for Riprap indicated, increase d<sub>50</sub> stone size and/or provide velocity reduction device.

SOURCE: PADEP EROSION AND SEDIMENT POLLUTION CONTROL PROGRAM MANUAL MARCH 2012

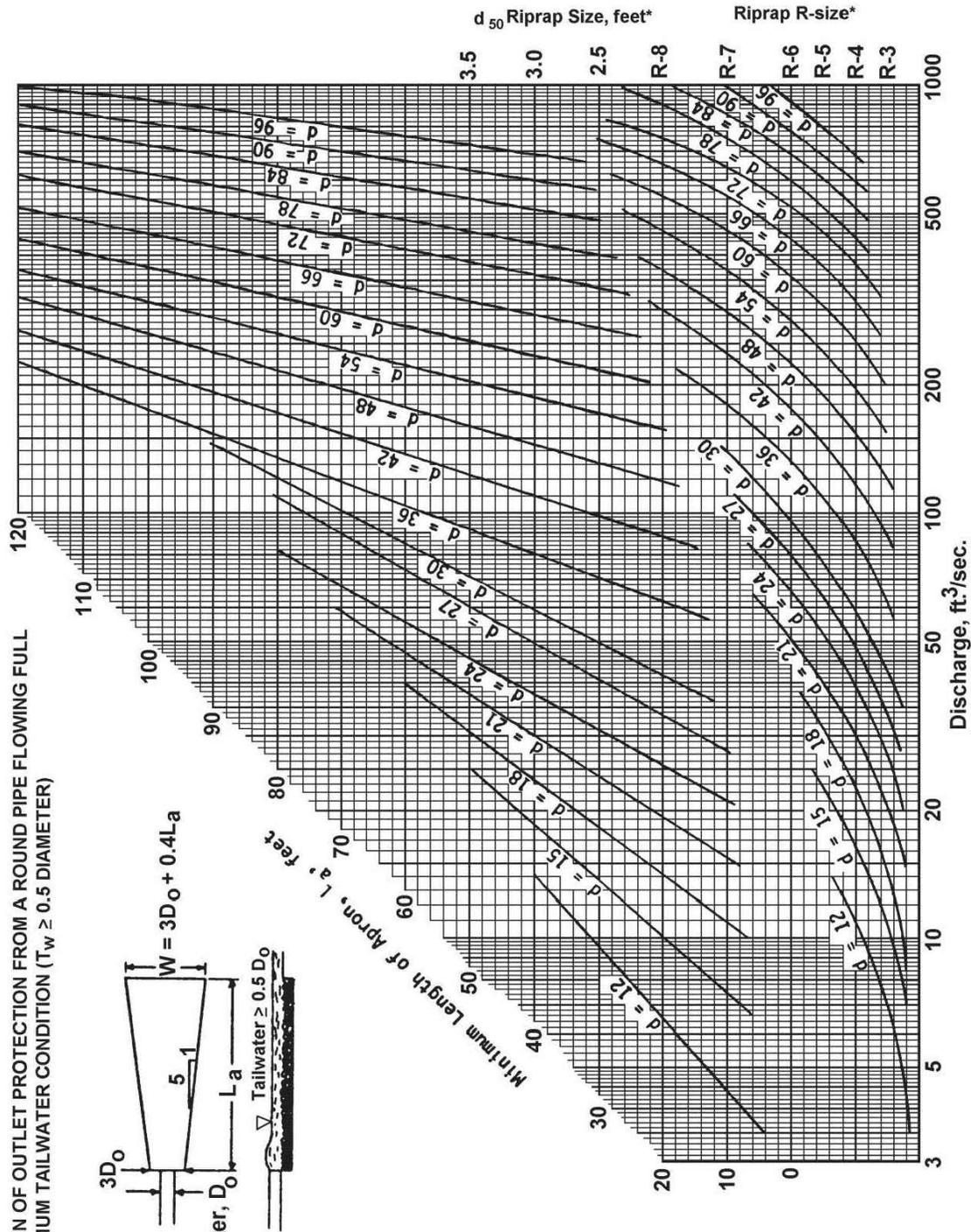
**Baker**

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 4301 DUTCH RIDGE ROAD  
 BEAVER, PENNSYLVANIA 15009

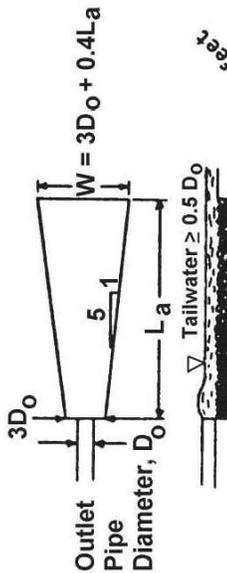
DATE: MARCH 2013  
 FILE NAME: SWM-8 Outlet Protection (Minimum Tailwater Conditions).dwg  
 SCALE: N.T.S.

**TOWNSHIP OF MOON**  
**STANDARD DETAILS**  
**DETAIL SWM-8**  
**OUTLET PROTECTION (MINIMUM TAILWATER CONDITIONS)**

**FIGURE 9.4**  
**Riprap Apron Design, Maximum Tailwater Condition**



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



Adapted from USDA - NRCS

NOTE: Do not extrapolate

\* For discharge velocities exceeding Maximum Allowable for Riprap indicated, increase  $d_{50}$  stone size and/or provide velocity reduction device.

Not to be used for Box Culverts

SOURCE: PADEP EROSION AND SEDIMENT POLLUTION CONTROL PROGRAM MANUAL MARCH 2012

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 BEAVER, PENNSYLVANIA 15009

DATE: MARCH 2013  
 FILE NAME: SWM-8A Outlet Protection (Maximum Tailwater Conditions).dwg  
 SCALE: N.T.S.

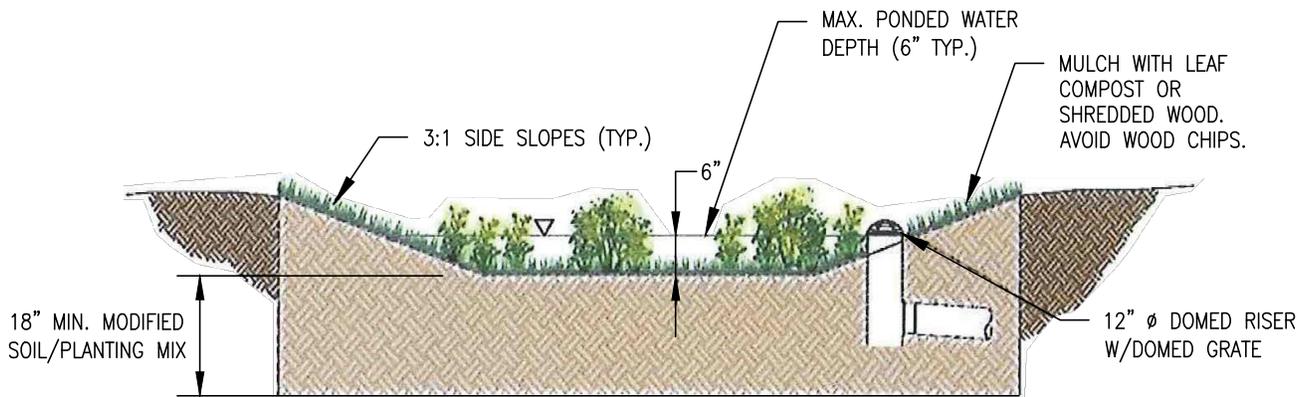
TOWNSHIP OF MOON  
 STANDARD DETAILS  
 DETAIL SWM-8A  
 OUTLET PROTECTION (MAXIMUM TAILWATER CONDITIONS)

**Description**

Bioretention is a method of treating stormwater by pooling water on the surface and allowing filtering and settling of suspended solids and sediment at the mulch layer, prior to entering the plants/soil/microbe complex media for infiltration and pollutant removal. Bioretention techniques are used to accomplish water quality improvements and water quantity reduction.

Bioretention can be integrated into a site with a high degree of flexibility and can balance nicely with other structural management systems, including porous asphalt parking lots, infiltration trenches, as well as non-structural stormwater BMPs described in Chapter 5 of the Pennsylvania BMP Manual.

The vegetation serves to filter (water quality) and transpire (water quantity) runoff, and the root systems can enhance infiltration. The plants take up pollutants; the soil medium filters out pollutants and allows storage and infiltration of stormwater runoff; and the bed provides additional volume control. Properly designed bioretention techniques mimic natural ecosystems through species diversity, density, and distribution of vegetation, and the use of native species, resulting in a system that is resistant to insects, disease, pollution, and climatic stresses.



**Rain Gardens / Bio-retention Function to:**

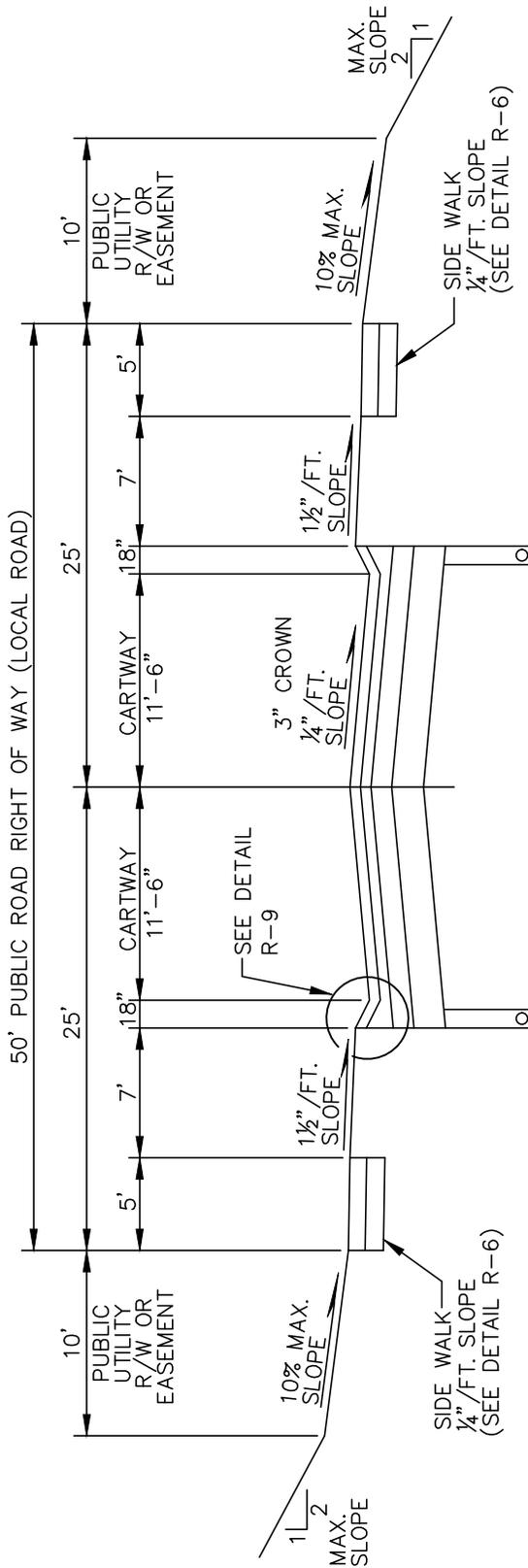
- Reduce run-off volume.
- Filter pollutants, through both soil particles (which trap pollutants) and plant material (which take up pollutants).
- Recharge groundwater by infiltration.
- Reduce stormwater temperature impacts.
- Enhance evapotranspiration.
- Enhance aesthetics.
- Provide habitat.

SOURCE: PENNSYLVANIA STORMWATER BEST MANAGEMENT PRACTICES MANUAL

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 BEAVER, PENNSYLVANIA 15009

DATE:	MARCH 2013
FILE NAME:	SWM-9 Rain Garden_Bio-Retention Facility.dwg
SCALE:	N.T.S.

**TOWNSHIP OF MOON  
 STANDARD DETAILS  
 DETAIL SWM-9  
 RAIN GARDEN / BIO-RETENTION FACILITY**



NOTES

- 1) FOR PAVING SPECIFICATIONS, SEE DETAIL R-2.
- 2) UNDERDRAINS SHALL BE INSTALLED ON BOTH SIDES OF ROAD IN ALL CASES.
- 3) THE DEVELOPER SHALL INDICATE UNDERDRAIN LOCATIONS ON THE PLANS.
- 4) SLAG IS NOT PERMITTED AS BACKFILL.
- 5) 100% 2A STONE BACKFILL IS REQUIRED THE FULL WIDTH OF THE RIGHT-OF-WAY.

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DATE:	MARCH 2013
FILE NAME:	R-1 TYPICAL SECTION LOCAL ROAD.dwg
SCALE:	1" = 10' HOR.

**TOWNSHIP OF MOON  
 STANDARD DETAILS**

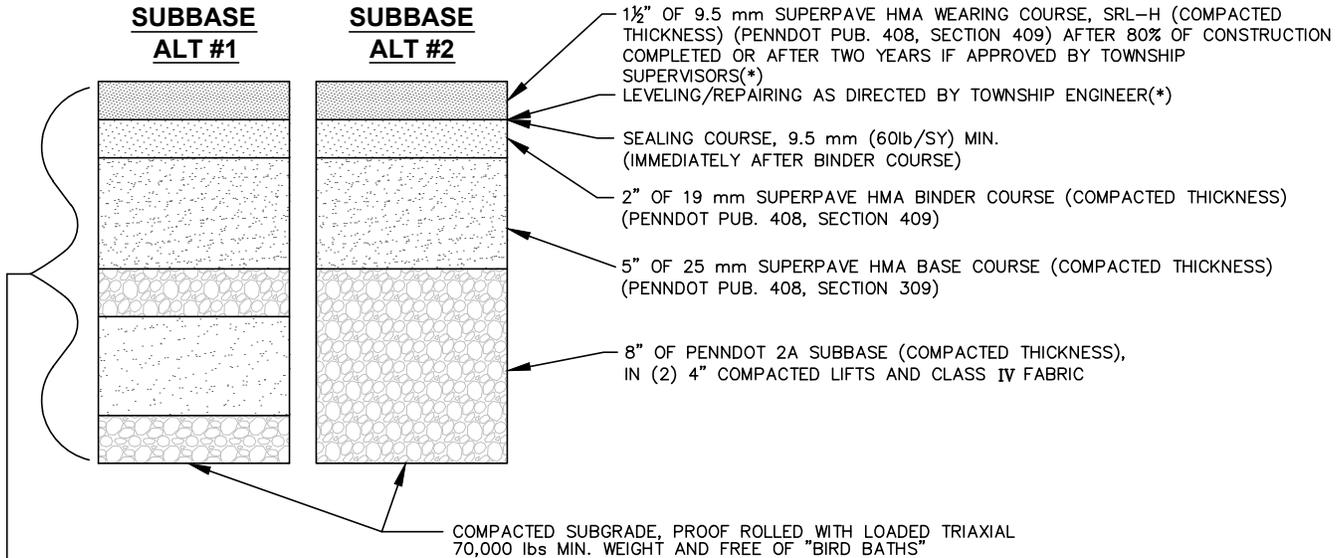
**DETAIL R-1  
 TYPICAL CROSS-SECTION LOCAL ROAD**

**ROADWAY CLASSIFICATION**

MAJOR	80' R/W	CARTWAY	18" CURB	5' SIDEWALK	
COLLECTOR	62' R/W		CARTWAY	18" CURB	5' SIDEWALK
LOCAL	50' R/W		CARTWAY	18" CURB	5' SIDEWALK
SERVICE	50' R/W		CARTWAY	18" CURB	5' SIDEWALK

SEE NOTE No. 4 FOR CARTWAY WIDTH

**STANDARD (SERVICE AND LOCAL CLASSIFICATION ONLY) (\*\*)**



- 1 1/2" OF 9.5 mm SUPERPAVE HMA WEARING COURSE, SRL-H (COMPACTED THICKNESS) (PENNDOT PUB. 408, SECTION 409) AFTER 80% OF CONSTRUCTION COMPLETED OR AFTER TWO YEARS IF APPROVED BY TOWNSHIP SUPERVISORS(\*), AND LEVELING/REPAIRING AS DIRECTED BY TOWNSHIP ENGINEER. (\*)
  - SEALING COURSE, 9.5 mm (60lb/SY) MIN. (IMMEDIATELY AFTER BINDER COURSE)
  - 2" OF 19 mm SUPERPAVE HMA BINDER COURSE (COMPACTED THICKNESS) (PENNDOT PUB. 408, SECTION 409)
  - 5" OF 25 mm SUPERPAVE HMA BASE COURSE (COMPACTED THICKNESS) (PENNDOT PUB. 408, SECTION 309)
  - 2" OF PENNDOT 2A SUBBASE
  - 4" OF AASHTO No. 1
  - 2" OF PENNDOT 2A SUBBASE INVERTED CHOKE CLASS IV FABRIC
- } 8" TOTAL COMPACTED THICKNESS OF SUBBASE AND CLASS IV FABRIC

**NOTES**

- 1) ALL THICKNESS AS LISTED ARE COMPACTED THICKNESS TO DENSITY AS LISTED IN PENNDOT PUBLICATION 408.
  - 2) SUBBASE ALTERNATE TO BE DETERMINED AND APPROVED BY THE TOWNSHIP ENGINEER BASED ON FIELD CONDITIONS.
  - 3) ALL INLETS AND MANHOLES MUST BE ADJUSTED FOR PROFILE AND CROSS SLOPE PRIOR TO INSTALLING FINAL WEARING SURFACE. INITIAL SUPERPAVE HMA WEARING COURSE MUST FINISH FLUSH WITH ALL INLETS AND MANHOLES. FINAL ADJUSTMENTS TO BE COMPLETE PRIOR TO FINAL WEARING SURFACE INSTALLATION. KEYWAYS AROUND STRUCTURES WILL NOT BE PERMITTED.
  - 4) THE TOWNSHIP TRAFFIC ENGINEER SHALL REVIEW THE TRAFFIC REPORT AND RECOMMEND THE CARTWAY WIDTH AND NUMBER OF LANES TO BE PROVIDED, WITH NO EXCEPTIONS FOR ROADWAY CLASSIFICATION. FOR TWO LANE SECTIONS, A 23' MINIMUM CARTWAY SHALL BE PROVIDED; FOR THREE LANE SECTIONS, A 34' MINIMUM CARTWAY SHALL BE PROVIDED AND FOR FOUR LANE SECTIONS, A MINIMUM 45' CARTWAY SHALL BE PROVIDED. THE ABOVE CARTWAY WIDTHS ARE TO BE MAINTAINED AS MINIMUMS.
- (\*) AS DIRECTED BY TOWNSHIP ENGINEER, ALL UNEVEN AREAS, SETTLED AREAS, AREAS DAMAGED BY UTILITY COMPANIES AND/OR OTHER BROKEN OR UNEVEN AREAS SHALL BE REPAIRED AND LEVELED WITH SUPERPAVE HMA WEARING COURSE PRIOR TO THE FINAL SUPERPAVE HMA WEARING COURSE APPLICATION, INSTALLED ON THE ENTIRE ROADWAY.
- (\*\*) FOR MAJOR AND COLLECTOR CLASSIFICATIONS, SUBMIT PAVEMENT DESIGN BASED UPON AVERAGE DAILY TRAFFIC AND ESAL LOADING COUNTS.

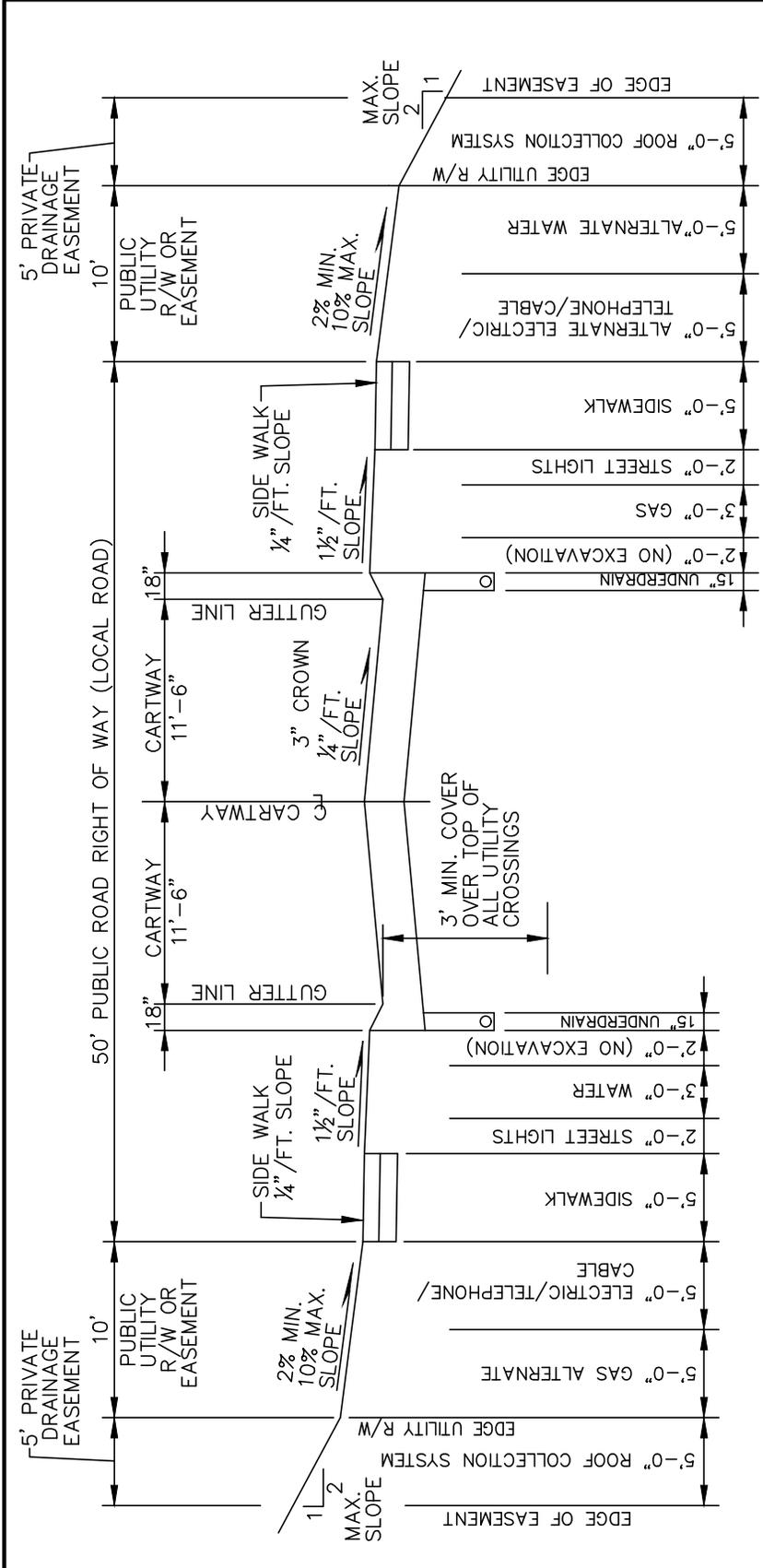
**Baker**

MICHAEL BAKER JR., INC.  
A UNIT OF MICHAEL BAKER CORP.  
4301 DUTCH RIDGE ROAD  
BEAVER, PENNSYLVANIA 15009

DATE:	MARCH 2013
FILE NAME:	R-2 ROADWAY PAVING MATERIALS.dwg
SCALE:	N.T.S.

**TOWNSHIP OF MOON**  
**STANDARD DETAILS**

DETAIL R-2  
ROADWAY PAVING MATERIALS



**NOTES**

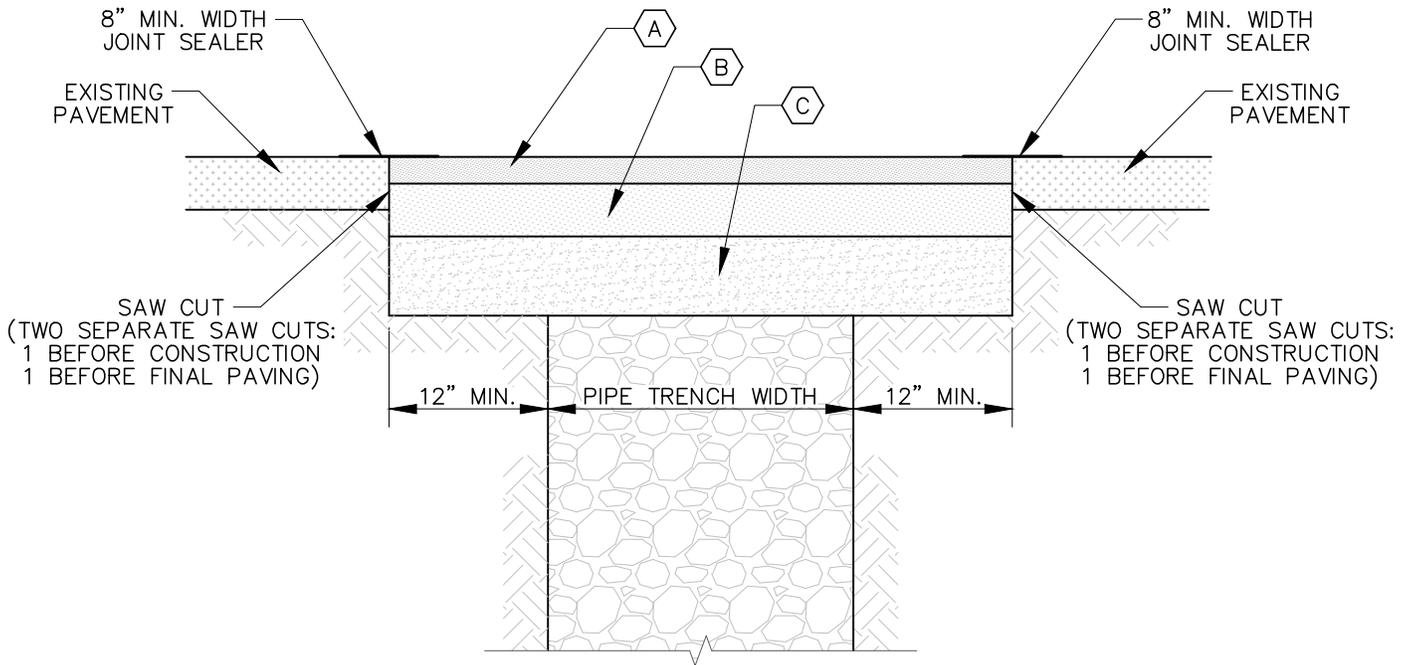
1. THESE LOCATIONS ARE TYPICAL FOR STRAIGHT AWAY; SITE AND/OR EXISTING CONDITIONS AT TIME OF INSTALLATION MAY WARRANT CHANGES. ANY CHANGES MUST BE INDICATED ON SPECIFIC CONSTRUCTION DOCUMENTS WITH PRIOR APPROVAL OF THE TOWNSHIP ENGINEER IN WRITING. SUBMIT CROSS SECTION SHOWING ALL LOCATIONS FOR APPROVAL.
2. UNDERDRAINS 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 A BACKFILL WITHIN THE TOWNSHIP RIGHTS-OF-WAY OR EASEMENTS.
5. 100% STONE BACKFILL IS REQUIRED THE FULL WIDTH OF THE RIGHT-OF-WAY.
6. WHEN SETTING MAILBOX POST, DO NOT DAMAGE UNDERDRAINS. SET BOTTOM POST A MAXIMUM OF 20" BELOW TOP OF CURB. DO NOT PERMIT CONCRETE COLLAR TO EXCEED 12" BELOW TOP OF CURB. MAILBOX POST SHALL BE MINIMUM 4X4 WOOD POST (OR TOWNSHIP APPROVED EQUAL).
7. SANITARY AND STORM SEWER LOCATIONS SHALL BE DETERMINED DURING APPROVAL PROCESS.
8. ALL UTILITY CROSSINGS MUST BE MADE PERPENDICULAR TO THE CENTERLINE OF THE CARTWAY.
9. ALL UTILITY LINES MUST BE STAKED IN THE FIELD AND REVIEWED BY THE TOWNSHIP PRIOR TO INSTALLATION OF THE UTILITIES.
10. THERE SHALL BE NO PLANTINGS WITHIN THE TOWNSHIP RIGHTS-OF-WAYS (TREES, LANDSCAPING, ETC.).
11. THE SIDEWALK MAY BE LOCATED ADJACENT TO THE CURB IN COMMERCIAL AREAS SUBJECT TO APPROVAL BY THE TOWNSHIP ENGINEER. THE LOCATIONS OF THE UTILITIES SHALL BE ADJUSTED ACCORDINGLY TO ACCOMMODATE THE SIDEWALK.



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DATE:	MARCH 2013
FILE NAME:	R-3 TYPICAL UTILITY LOCATIONS.dwg
SCALE:	1" = 10' HOR.

**TOWNSHIP OF MOON  
 STANDARD DETAILS**  
 DETAIL R-3  
 TYPICAL UTILITY LOCATIONS



**LEGEND**

- Ⓐ 1-1/2" MIN. (COMPACTED THICKNESS) OR EXISTING THICKNESS, WHICHEVER IS GREATER, OF SUPERPAVE HMA WEARING COURSE, SRL-H (PENNDOT PUB. 408, SECTION 409)
- Ⓑ 3" MIN. (COMPACTED THICKNESS) OR EXISTING THICKNESS, WHICHEVER IS GREATER, OF SUPERPAVE HMA BINDER COURSE, SRL-H (PENNDOT PUB. 408, SECTION 409)
- Ⓒ 5" MIN. (COMPACTED THICKNESS)(TWO LIFTS) OR EXISTING THICKNESS, WHICHEVER IS GREATER, OF SUPERPAVE HMA BASE COURSE (PENNDOT PUB. 408, SECTION 409)

**NOTES**

1. DURING COLD WEATHER MONTHS PROVIDE AND MAINTAIN A TEMPORARY BITUMINOUS COLD PATCH SURFACE UNTIL WEATHER PERMITS SUPERPAVE HMA PAVING.
2. TOWNSHIP ROADMASTER MUST BE NOTIFIED 72 HOURS IN ADVANCE OF ROAD OPENING AND SURFACING.
3. SLAG IS NOT PERMITTED AS BACKFILL WITHIN TOWNSHIP RIGHT-OF-WAYS OR EASEMENTS.
4. 100% 2A STONE BACKFILL IS REQUIRED THE FULL WIDTH OF THE RIGHT-OF-WAY. TEMPORARY PIPE BACKFILL USING EXCAVATED MATERIAL IS NOT PERMITTED.
5. ALL UTILITY CROSSINGS MUST BE MADE PERPENDICULAR TO THE CENTERLINE OF THE CARTWAY.
6. FOR PIPE BEDDING AND BACKFILL MATERIALS SEE DETAILS RSD-2, RSD-3 AND RSD-4.
7. ASPHALT MIX DESIGN MUST BE SUBMITTED TO TOWNSHIP FOR APPROVAL A MINIMUM OF 72 HOURS PRIOR TO START OF WORK.

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BEAVER, PENNSYLVANIA 15009

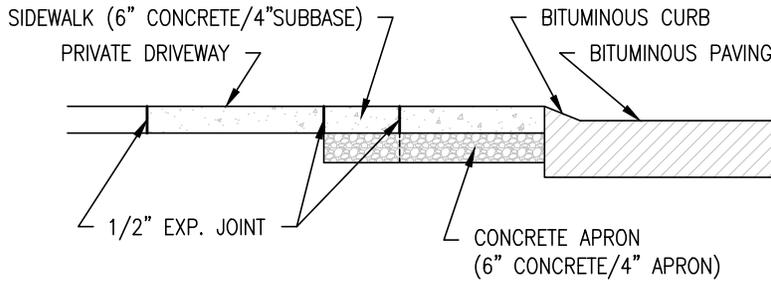
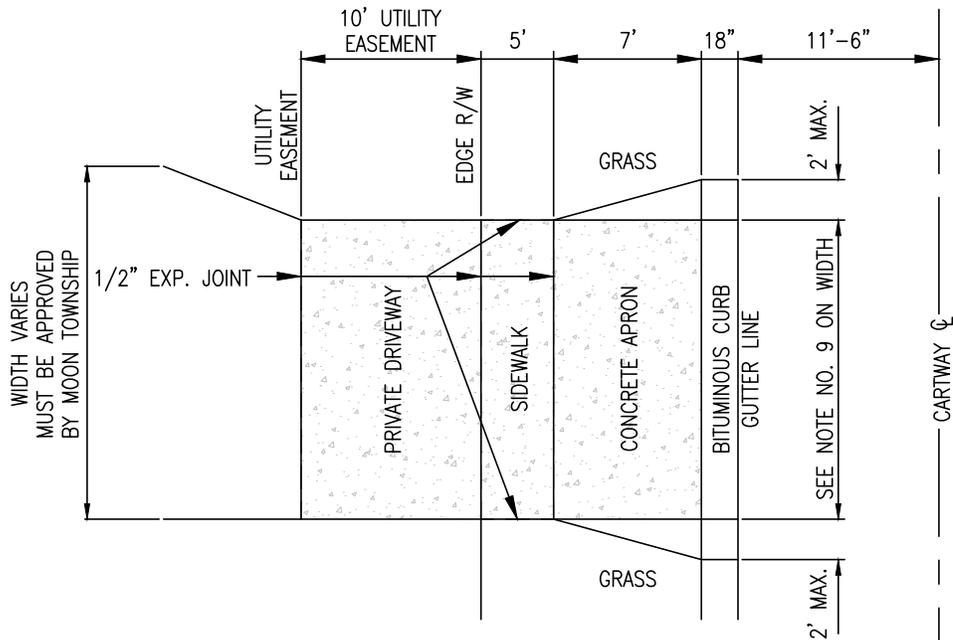
DATE:  
MARCH 2013

FILE NAME:  
R-4 SUPERPAVE HMA  
TRENCH REPAIR.dwg

SCALE:  
N.T.S.

**TOWNSHIP OF MOON  
STANDARD DETAILS**

DETAIL R-4  
SUPERPAVE HMA TRENCH REPAIR



**CONCRETE DRIVEWAY/SIDEWALK APRON**

N.T.S.

**CONSTRUCTION NOTES:**

1. SIDEWALK TO HAVE TROWELED EDGES WITH A STIFF BROOM FINISH.
2. PROVIDE 1/2" EXPANSION JOINT AT NEW SIDEWALK ABUTTING EXISTING SIDEWALK.
3. THE CONCRETE APRON SHALL BE 6" THICK CONCRETE ON A 4" COMPACTED STONE BASE. 4000 PSI 5% AIR ENTRAINED PORTLAND CEMENT CONCRETE WITH WWF 6 X 6, W4 X W4 REINFORCING OR REBAR.
4. SIDEWALK MAY BE LOWERED IN VICINITY OF APRON SO THAT AN ORDERLY TRANSITION IS POSSIBLE. (ONLY WITH TOWNSHIP 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. REINFORCEMENT MUST BE INSPECTED BY TOWNSHIP, PRIOR TO POURING CONCRETE.
8. TOWNSHIP CODE ENFORCEMENT OFFICER CAN REQUIRE RESIDENT TO PROVIDE ADDITIONAL ON LOT STORM WATER MANAGEMENT FOR DRIVEWAYS..
9. EXCEPTION TO DRIVEWAY APRON WIDTH - SEE MOON CODE CHAPTER 21, STREETS AND SIDEWALKS.

**Baker**

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BEAVER, PENNSYLVANIA 15009

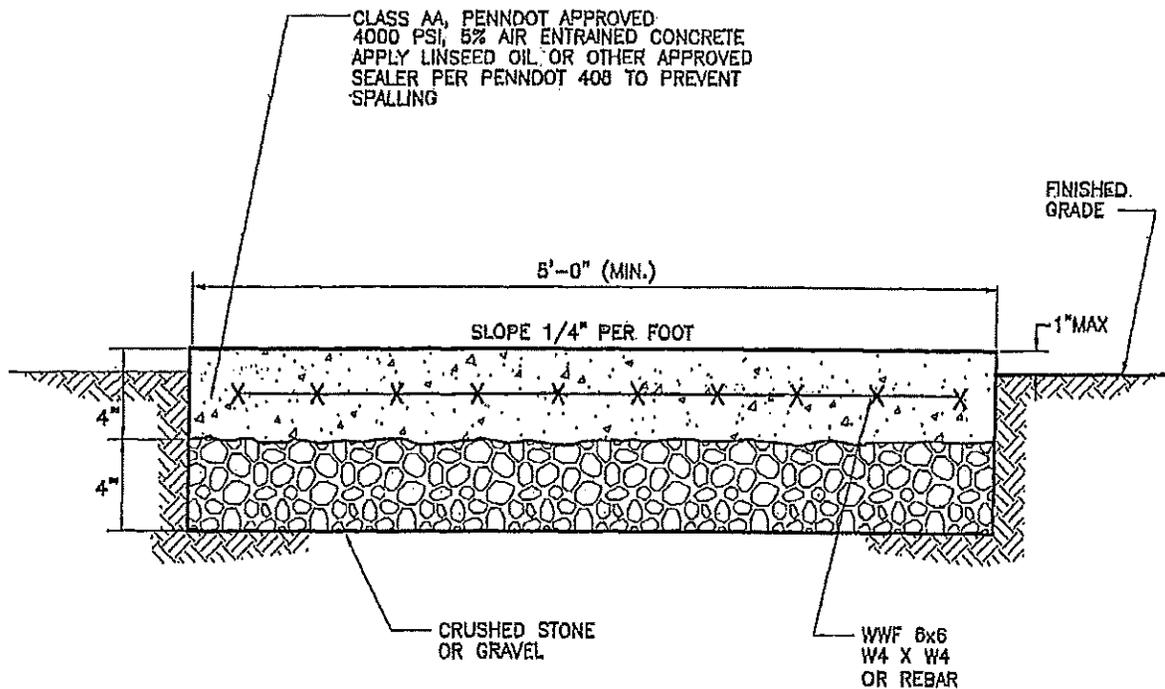
DATE:  
MARCH 2013

FILE NAME:  
R-5 Concrete Driveway\_Sidewalk  
Apron.dwg

SCALE:  
N.T.S.

**TOWNSHIP OF MOON  
STANDARD DETAILS**

**DETAIL R-5  
CONCRETE DRIVEWAY / SIDEWALK APRON**



**NOTES:**

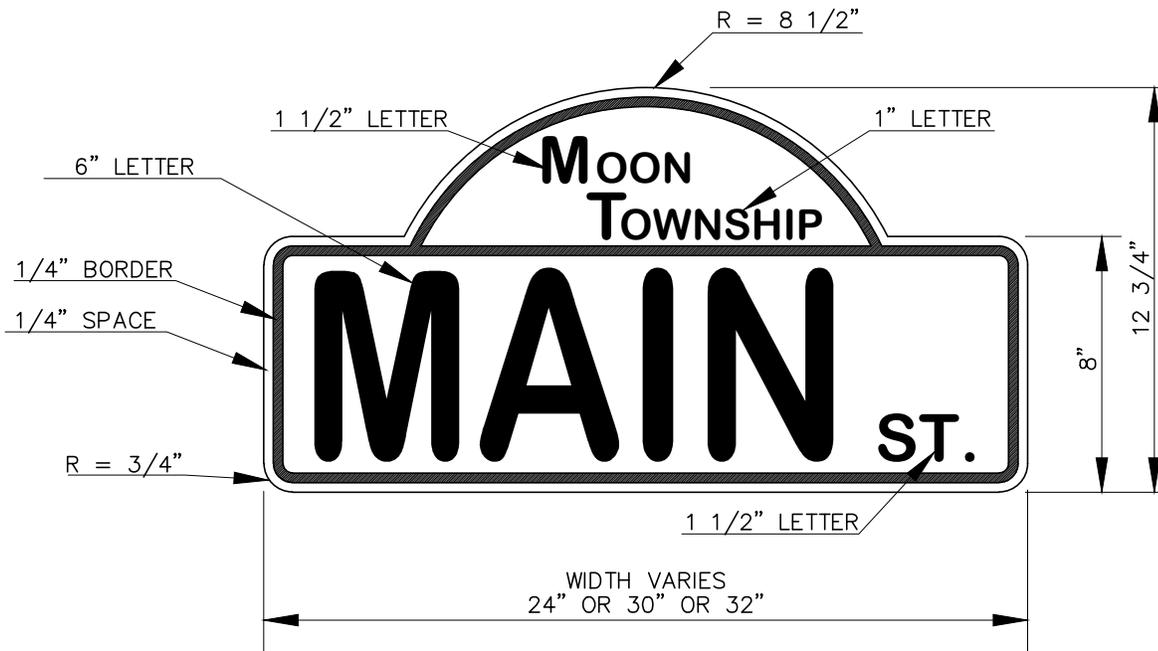
1. WALK SHALL BE CROSS SCORED EVERY FIVE FEET (5'). 1/2" PREFORMED EXPANSION JOINTS EVERY 50 FEET. WALK SHALL HAVE TROWELED EDGES WITH A STIFF BROOM FINISH.
2. IF A DRIVEWAY IS TO BE CONSTRUCTED OVER A SIDEWALK, THE CONCRETE SHALL BE PLACED AT 6" DEPTH; SEE DETAIL R-5.
3. PROVIDE TWO (2) No 4 DOWELS AT PROPERTY LINES
4. PREPATORY WORK ON REINFORCEMENT MUST BE INSPECTED BY TOWNSHIP PRIOR TO POURING OF CONCRETE.



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E-mail: [ls@lsmoon.net](mailto:ls@lsmoon.net)

DATE:	March 2005
FILE NAME:	Moondet.dwg
SCALE:	N.T.S.

**Township of Moon**  
**Standard Details**  
Detail R-6  
Concrete Sidewalk



NOTES

- ① STREET SIGNS SHALL BE PROVIDED BY THE TOWNSHIP AT THE DEVELOPER'S EXPENSE.
- ② SIGNS SHALL BE 1/8" THICK ALUMINUM
- ③ SIGN BACKGROUND SHALL BE PRESSURE SENSITIVE WHITE HIGH INTENSITY REFLECTIVE SHEETING.
- ④ LETTERING AND BORDERING SHALL BE PRESSURE SENSITIVE BLACK GLOSS REFLECTIVE SHEETING.
- ⑤ FONT SHALL BE ARIAL BOLD.
- ⑥ POSTS SHALL BE ROUND, 10 FOOT LONG, 2 3/8" IN DIAMETER, 13 GAUGE SIDE WALLS. POSTS SHALL BE POWDER COATED IN GLOSS BLACK.
- ⑦ POSTS SHALL BE CONCRETED INTO THE GROUND, 7 1/2 FEET TO THE BOTTOM OF THE L-BRACKET.
- ⑧ L-BRACKETS SHALL BE AN "S" SCROLL, 22 OR 29 INCHES FLAT LUGS, PAINTED BLACK. THE L-BRACKETS SHALL BE PURCHASED THROUGH TAPCO TRAFFIC & PARKING CONTROL COMPANY; 262-814-7000
- ⑨ FINIAL SHALL BE GLENCOE CAP, PAINTED BLACK, SIZED FOR 2 3/8" POLE. PURCHASED THROUGH TAPCO TRAFFIC & PARKING CONTROL COMPANY; 262-814-7000

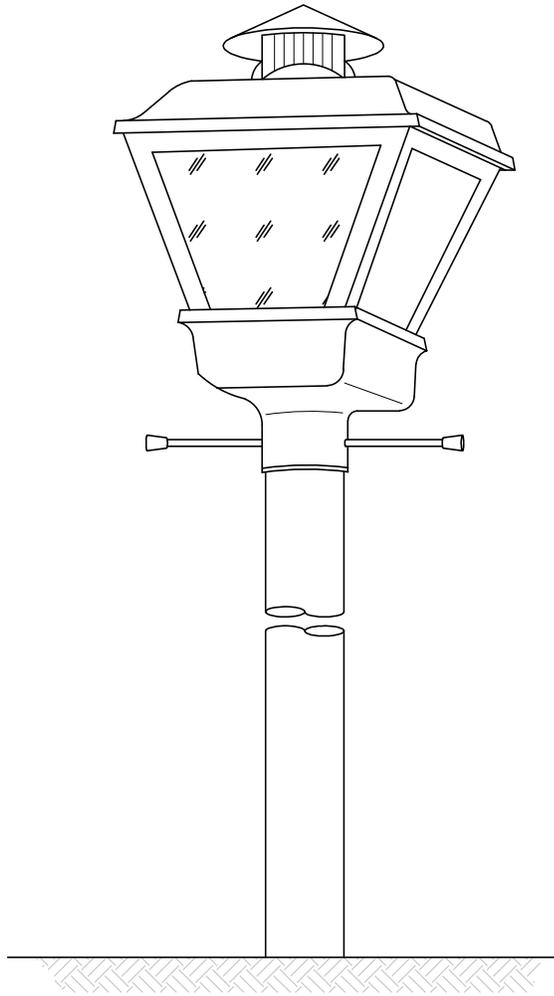
**Baker**

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4301 DUTCH RIDGE ROAD  
BEAVER, PENNSYLVANIA 15009

DATE:	MARCH 2010
FILE NAME:	R-7 STREET SIGN.dwg
SCALE:	N.T.S.

**TOWNSHIP OF MOON  
STANDARD DETAILS**

**DETAIL R-7  
STREET SIGN**



NOTES

- ① STREET LIGHTS SHALL BE PROVIDED BY THE THE DEVELOPER/CONTRACTOR IN ACCORDANCE WITH DUQUESNE LIGHT COMPANY REQUIREMENTS.
- ② SPACING AND WATTAGE TO BE APPROVED BY THE TOWNSHIP.
- ③ STREET LIGHTS SHALL BE COLONIAL STYLE ONLY.
- ④ STREET LIGHTS SHALL BE HIGH PRESSURE SODIUM OR LED ONLY.
- ⑤ OPTIONAL LIGHT STANDARDS MAY BE APPROVED BY THE TOWNSHIP WITH MAINTENANCE OF THE LIGHT REQUIRED BY DUQUESNE LIGHT COMPANY OR OTHER APPROVED PROVIDER.
- ⑥ THE CENTER OF THE POLE SHALL BE LOCATED SIX FEET INSIDE OF THE PUBLIC ROAD RIGHT-OF-WAY.

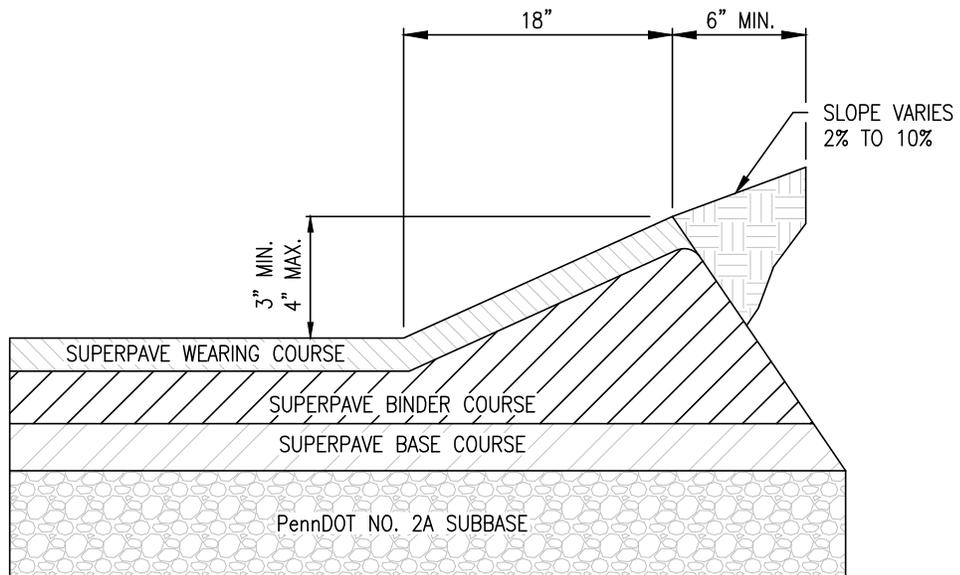
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 BEAVER, PENNSYLVANIA 15009

DATE:	MARCH 2010
FILE NAME:	R-8 STREET LIGHT.dwg
SCALE:	N.T.S.

**TOWNSHIP OF MOON  
 STANDARD DETAILS**

**DETAIL R-8  
 STREET LIGHT**



TYPICAL BITUMINOUS CONCRETE WEDGE CURB

N.T.S.

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4301 DUTCH RIDGE ROAD  
BEAVER, PENNSYLVANIA 15009

DATE:

MARCH 2013

FILE NAME:

R-9 Typical Bituminous Concrete  
Wedge Curb.dwg

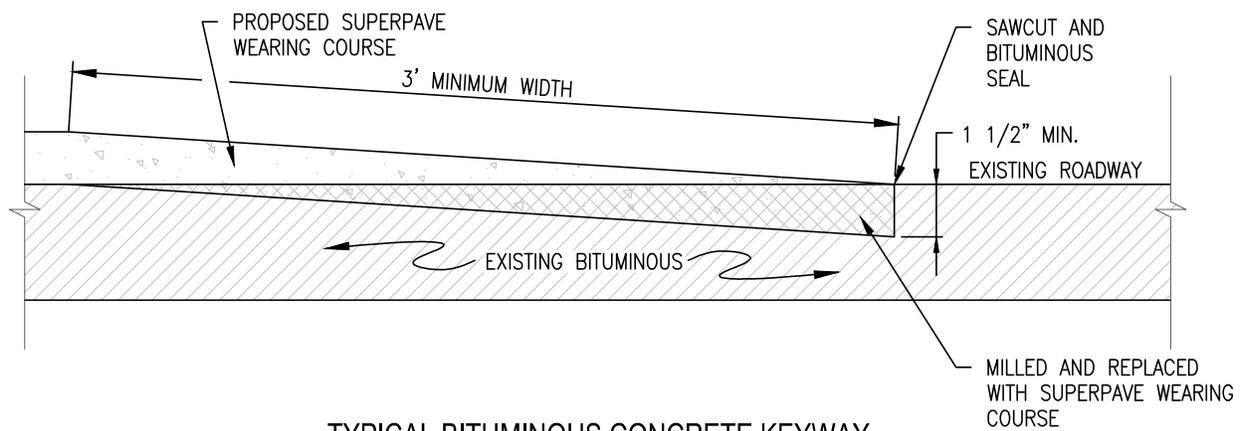
SCALE:

N.T.S.

**TOWNSHIP OF MOON  
STANDARD DETAILS**

DETAIL R-9

TYPICAL BITUMINOUS CONCRETE WEDGE CURB



**TYPICAL BITUMINOUS CONCRETE KEYWAY**

N.T.S.

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 4301 DUTCH RIDGE ROAD  
 BEAVER, PENNSYLVANIA 15009

DATE:  
 MARCH 2013

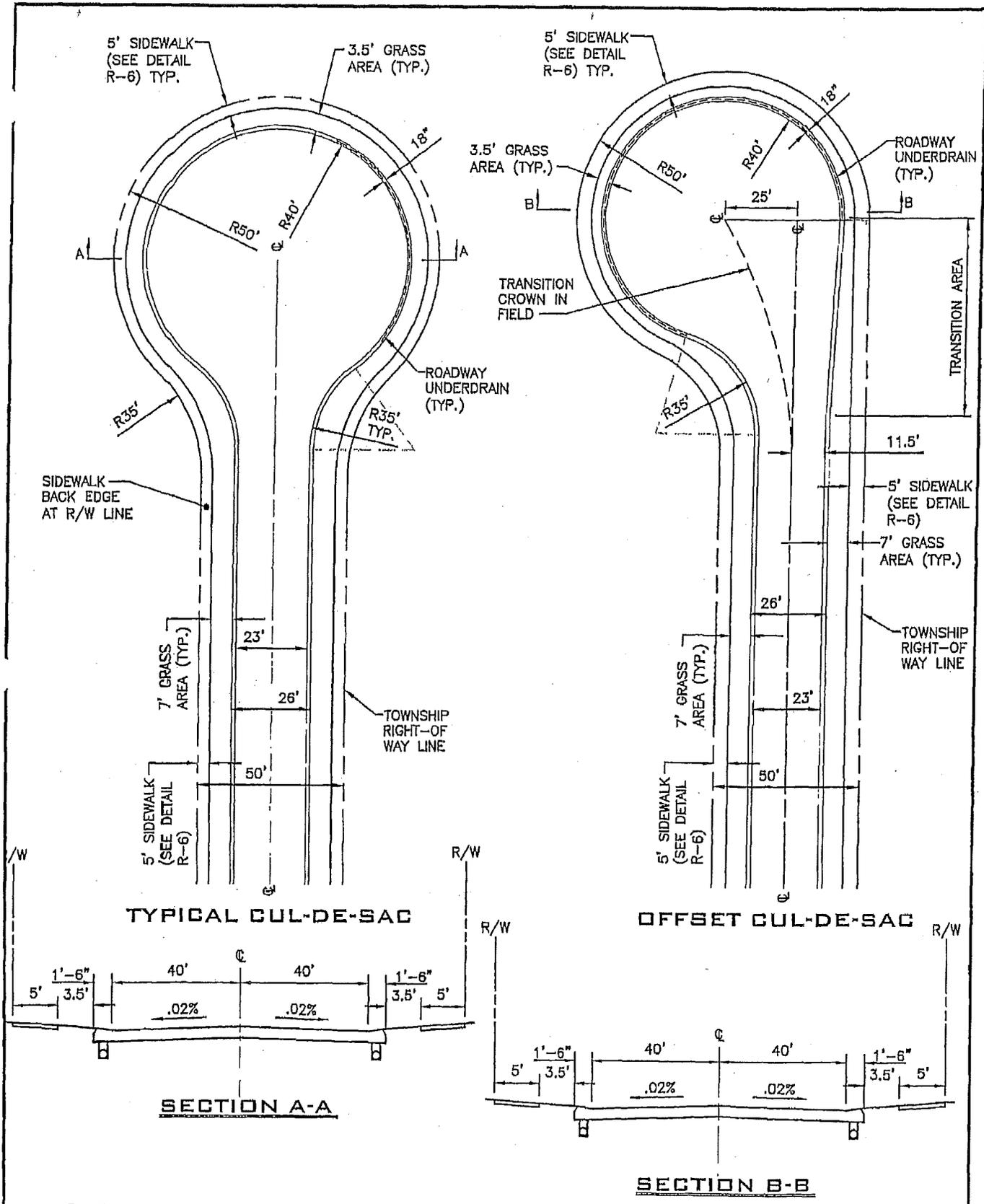
FILE NAME:  
 R-10 Typical Bituminous Concrete  
 Keyway.dwg

SCALE:  
 N.T.S.

**TOWNSHIP OF MOON  
 STANDARD DETAILS**

DETAIL R-10  
 TYPICAL BITUMINOUS CONCRETE KEYWAY





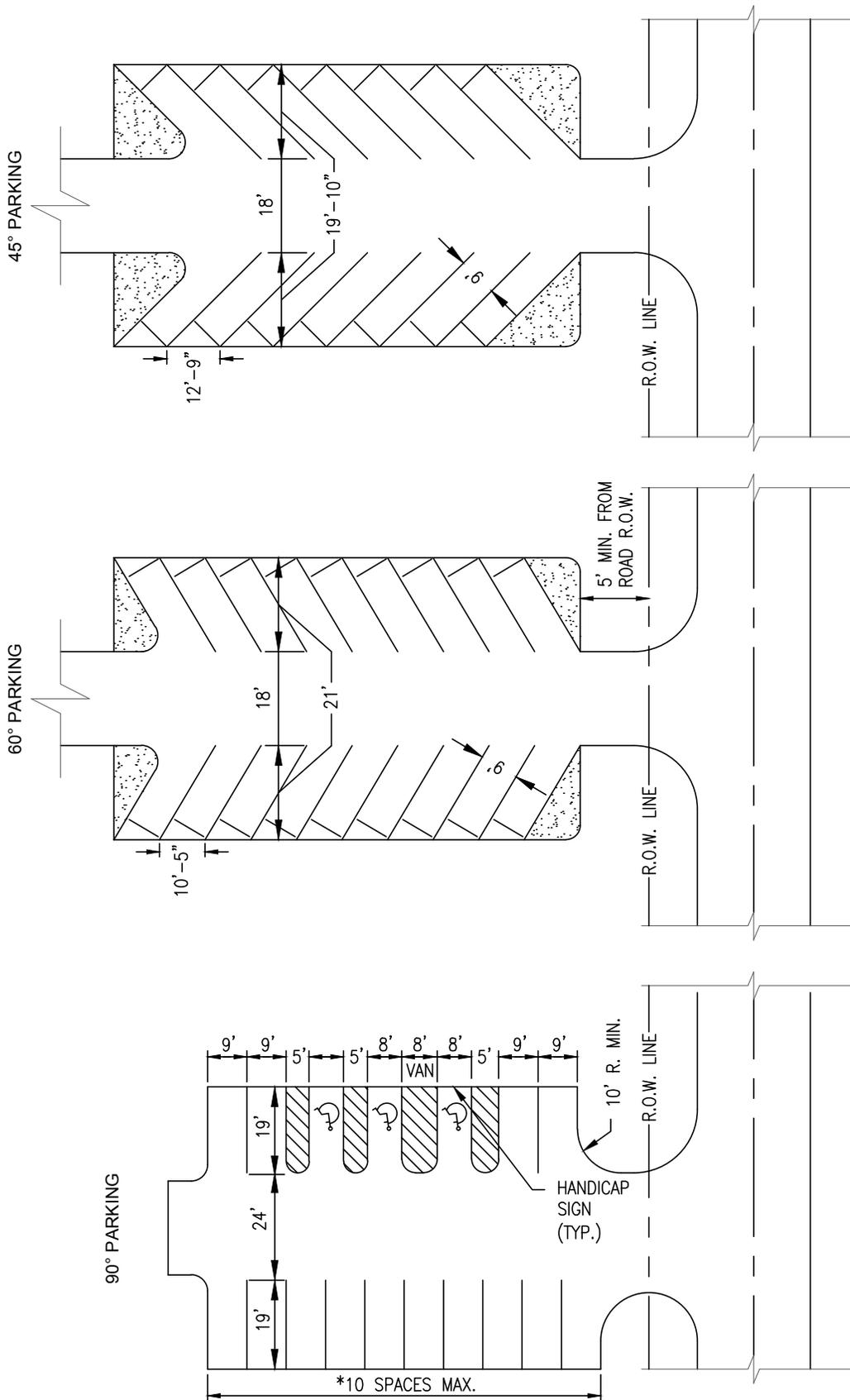

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DATE: March 2005  
 FILE NAME: Moondet.dwg  
 SCALE: N.T.S.

**Township of Moon**  
**Standard Details**  
 Detail R-12  
 Cul-de-sac without island

**CONSTRUCTION NOTES:**

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 MOON TOWNSHIP ZONING ORDINANCE, AND CONFORM TO ALL APPLICABLE ADA REQUIREMENTS.
3. \*A ROW OF NO MORE THAN TEN (10) PARKING SPACES SHALL BE PERMITTED WITHOUT A LANDSCAPED ISLAND.



**PARKING CONFIGURATIONS**

N.T.S.

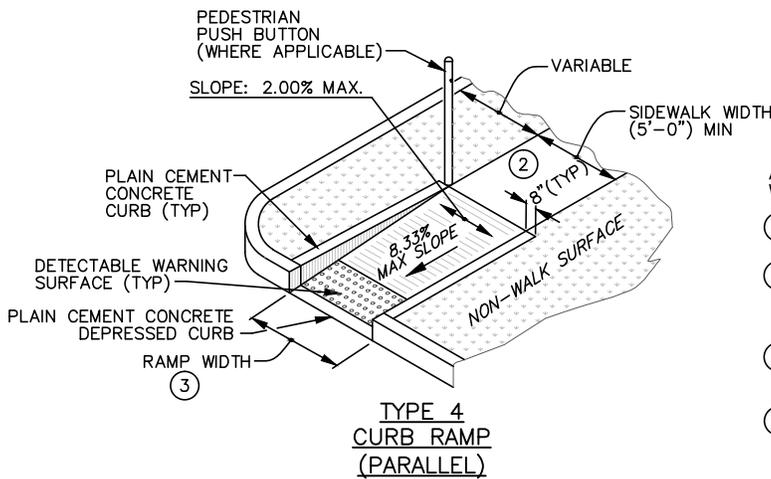
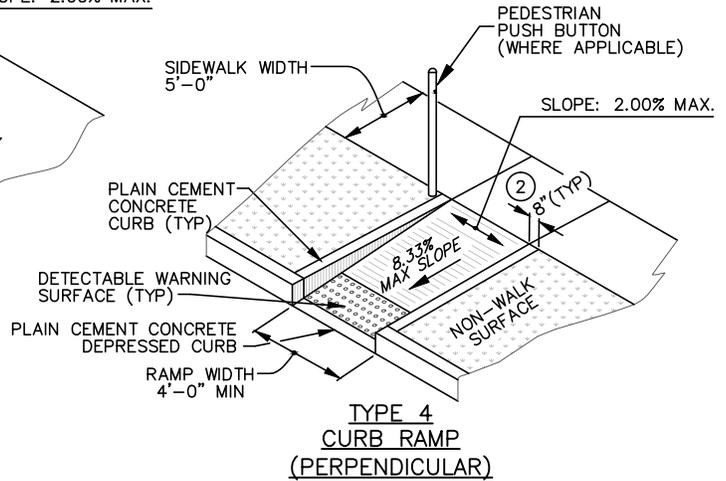
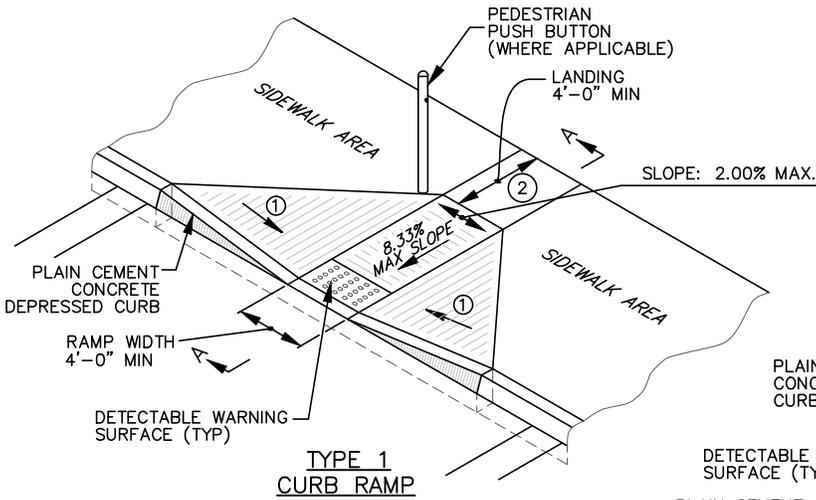
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 BEAVER, PENNSYLVANIA 15009

DATE:	MARCH 2013
FILE NAME:	S-1 Parking Configurations.dwg
SCALE:	N.T.S.

**TOWNSHIP OF MOON  
 STANDARD DETAILS**

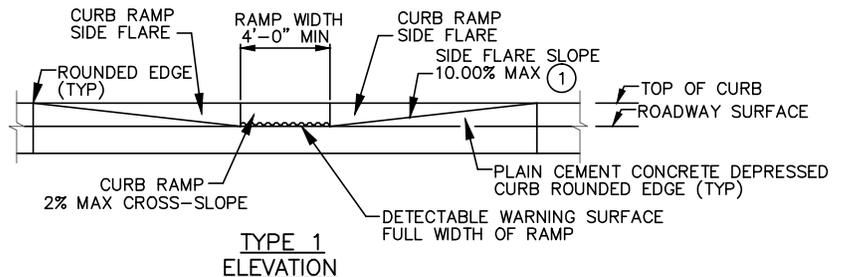
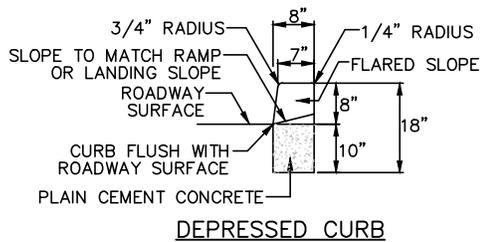
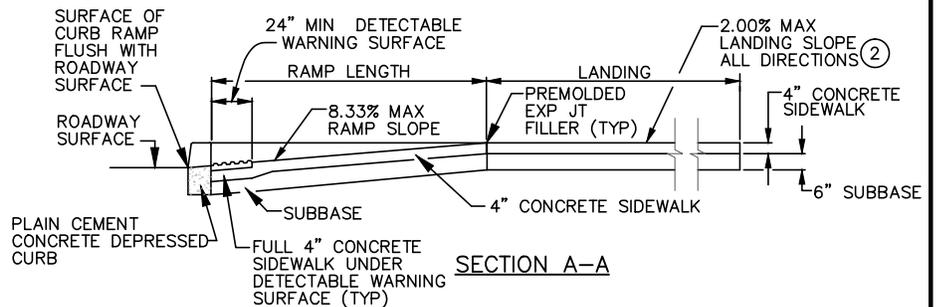
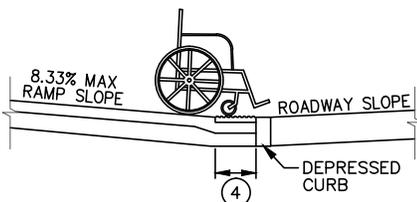
**DETAIL S-1  
 PARKING CONFIGURATIONS**



**NOTES**

ALL CURB RAMPS SHALL BE CONSTRUCTED IN ACCORDANCE WITH PENNDOT PUB. 72, RC-67M.

- ① SIDE FLARES 10.00% MAX SLOPE
- ② CURB RAMPS REQUIRE A 4'-0" MINIMUM LANDING WITH A MAXIMUM SLOPE OF 2.00% IN ALL DIRECTIONS WHERE PEDESTRIANS PERFORM TURNING MANEUVERS. SEE DETAILS FOR LOCATIONS.
- ③ CURB RAMP WIDTH IS EQUAL TO SIDEWALK WIDTH WHEN THE SIDEWALK WIDTH IS GREATER THAN OR EQUAL TO 5'-0".
- ④ PROVIDE A 24" MIN TRANSITION STRIP IF ALGEBRAIC DIFFERENCES BETWEEN ROADWAY SLOPE AND CURB RAMP SLOPE ARE GREATER THAN 11.00%. TRANSITION STRIP SLOPE NOT TO EXCEED 2.00%



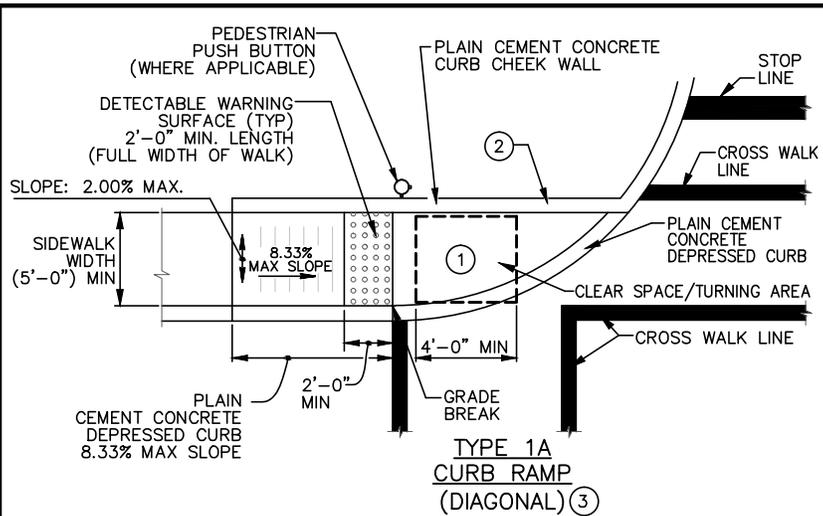
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BEAVER, PENNSYLVANIA 15009

DATE:	MARCH 2013
FILE NAME:	S-2A CURB RAMPS.dwg
SCALE:	N.T.S.

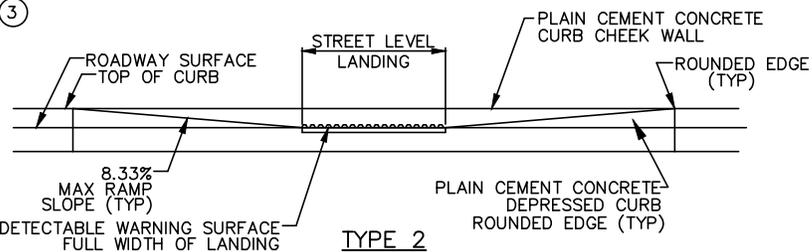
**TOWNSHIP OF MOON  
STANDARD DETAILS**

**DETAIL S-2A  
CURB RAMPS**

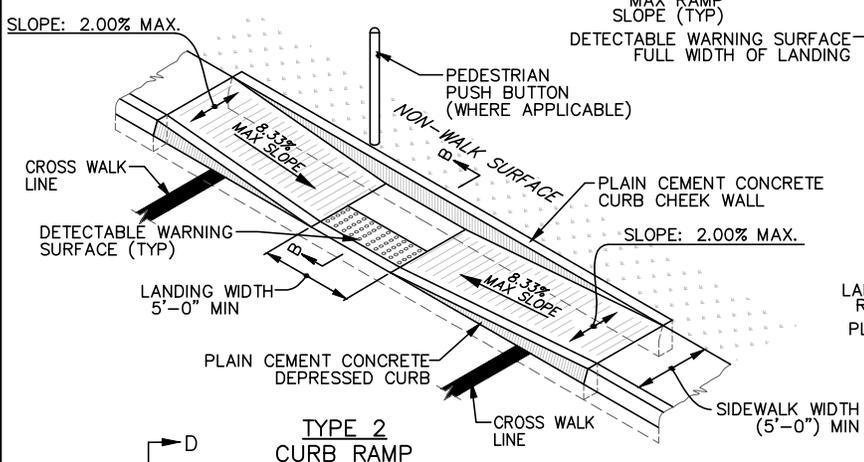


- NOTES**
- ALL CURB RAMPS SHALL BE CONSTRUCTED IN ACCORDANCE WITH PENNDOT PUB. 72, RC-67M.
- CONSTRUCT DIAGONAL CURB RAMPS WITH A 4'-0" CLEARSPACE OUTSIDE OF TRAVEL LANES AT THE BOTTOM OF THE RAMP. IF DIAGONAL CURB RAMPS ARE PROVIDED AT MARKED CROSSINGS, THE 4'-0" CLEAR SPACE IS LOCATED WITHIN THE MARKINGS AND OUTSIDE OF THE TRAVEL LANES.
  - OPTIONAL ROLLED CONCRETE SURFACE OR REGRADE SLOPE CAN BE USED TO MEET THE ADJACENT SURFACES IN LIEU OF A RETURN CURB CHEEK WALL.
  - REQUIRES PENNDOT APPROVAL
  - STAMPED DETECTABLE WARNING SURFACES ARE NOT PERMITTED. EITHER A PANEL OR SOLID BRICK PAVERS (MIN. 2'x4') MUST BE PROVIDED.

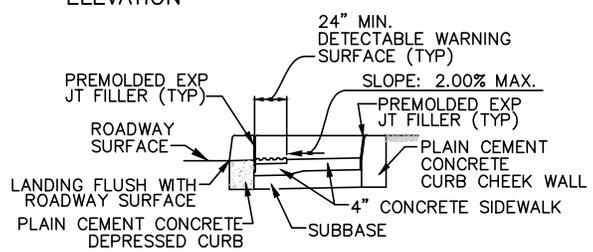
**TYPE 1A CURB RAMP (DIAGONAL) ③**



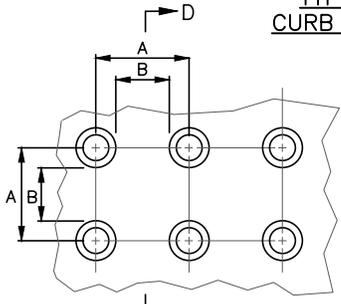
**TYPE 2 CURB RAMP ELEVATION**



**TYPE 2 CURB RAMP**



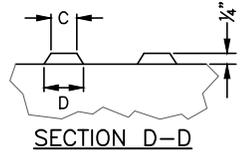
**TYPE 2 CURB RAMP SECTION B-B**



**PLAN**

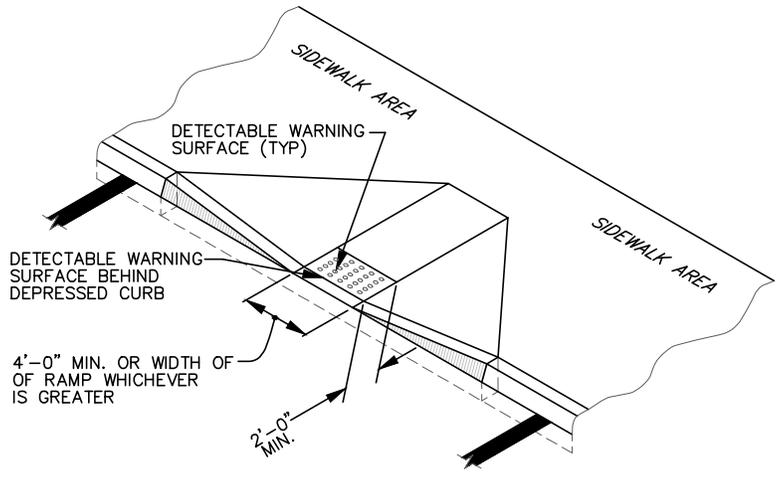
TRUNCATED DOME DIMENSIONS		
DIM	MIN	MAX
A	1 5/8"	2 3/8"
B	5/8"	1 1/2"
C	(4)	(4)
D	7/8"	1 3/8"

④ THE C DIMENSION IS 50% TO 65% OF THE D DIMENSION.



**SECTION D-D**

**DETECTABLE WARNING SURFACE TRUNCATED DOME DETAILS**



**DETECTABLE WARNING SURFACE TYPICAL PLACEMENT**

**Baker**

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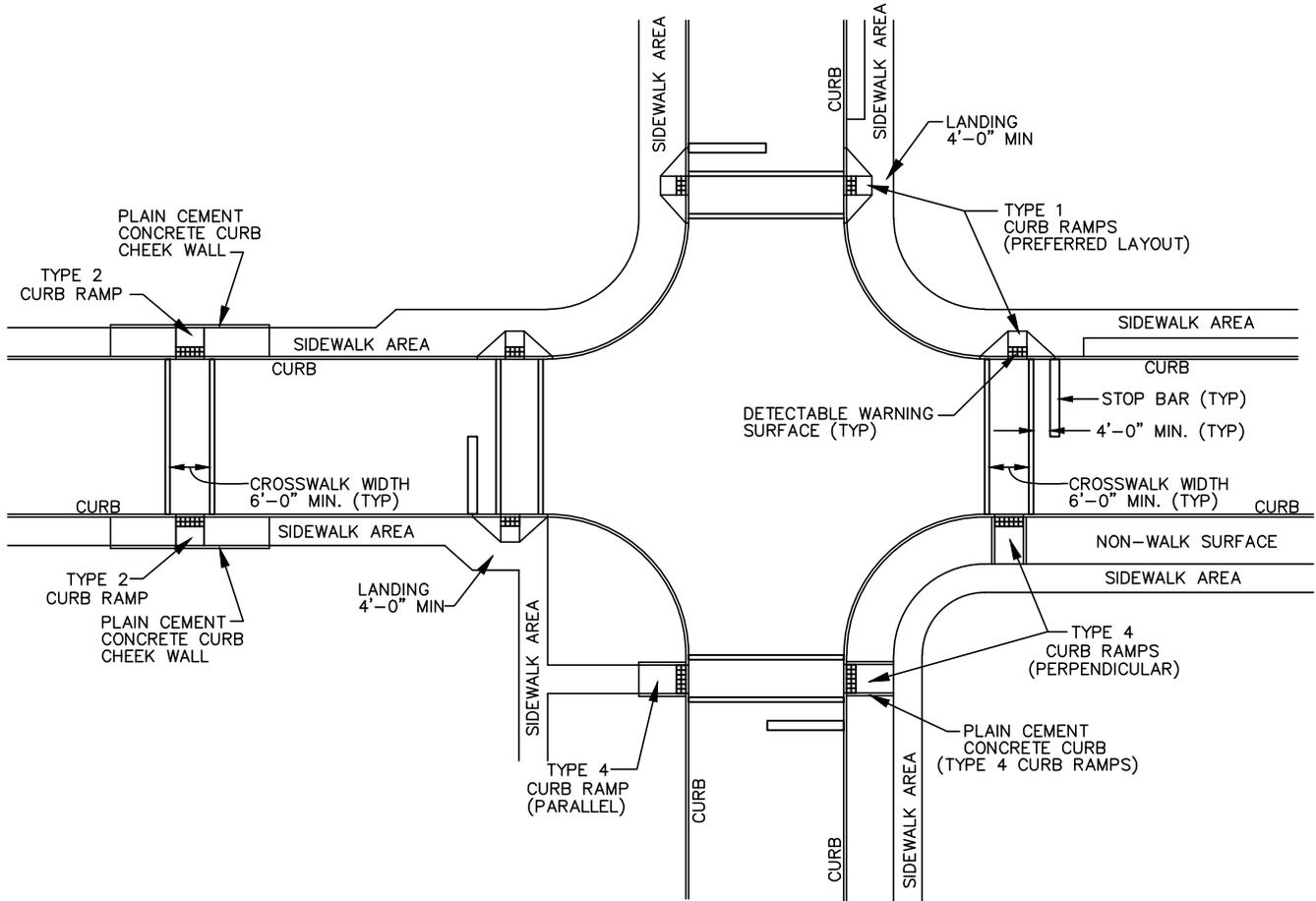
DATE: JUNE 2010

FILE NAME: S-2B CURB RAMPS.dwg

SCALE: N.T.S.

**TOWNSHIP OF MOON  
STANDARD DETAILS**

**DETAIL S-2B  
CURB RAMPS**



**TYPICAL INTERSECTION PLAN**

N.T.S.

**NOTES:**

1. ALL CURB RAMPS SHALL BE CONSTRUCTED IN ACCORDANCE WITH PENNDOT PUB. 72, RC-67M.
2. CURB RAMPS AND CROSS WALKS SHALL NOT BE CONSTRUCTED IN INTERSECTION RADII.
3. CURB RAMP CONSTRUCTION SHALL NOT INTERFERE WITH THE INTEGRITY OF THE GUTTERLINE SO AS TO MAINTAIN POSITIVE DRAINAGE TO ALL INLETS.

**Baker**

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DATE:

JUNE 2010

FILE NAME:

S-2C CURB RAMPS.dwg

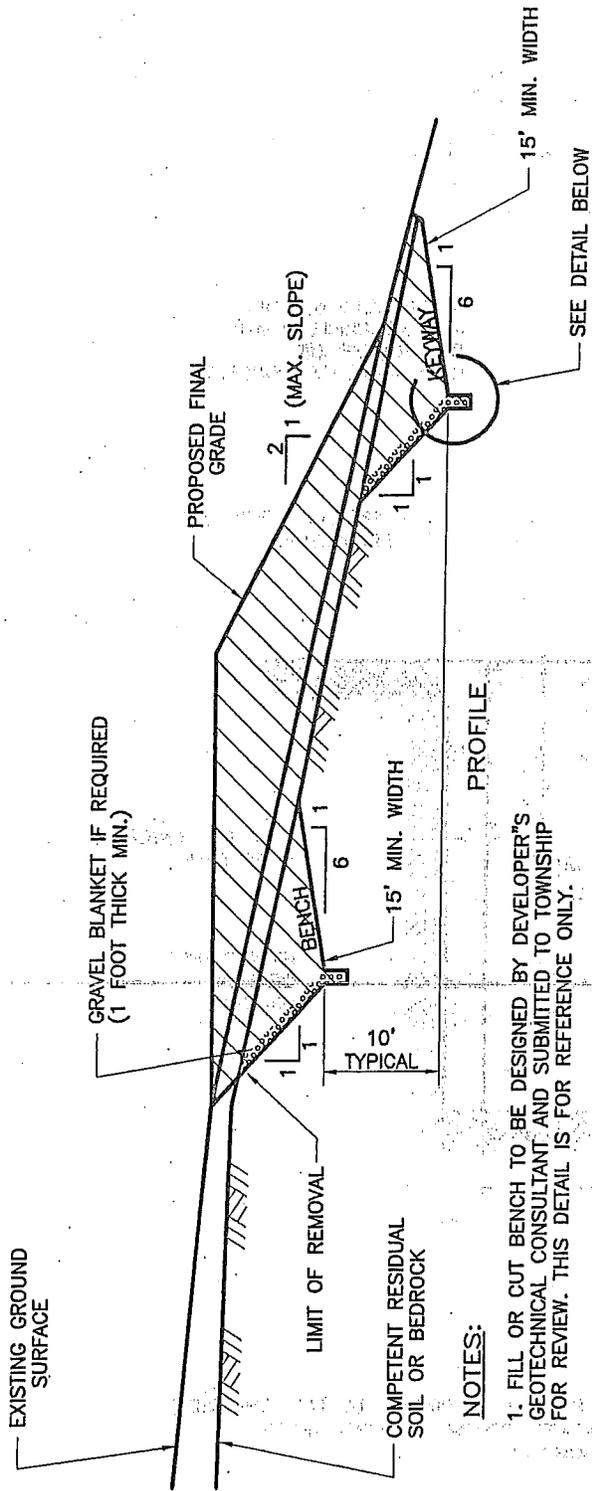
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N.T.S.

**TOWNSHIP OF MOON  
 STANDARD DETAILS**

**DETAIL S-2C  
 CURB RAMPS**

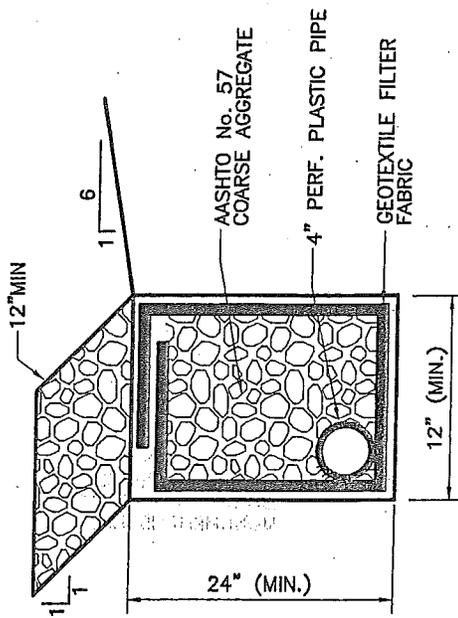




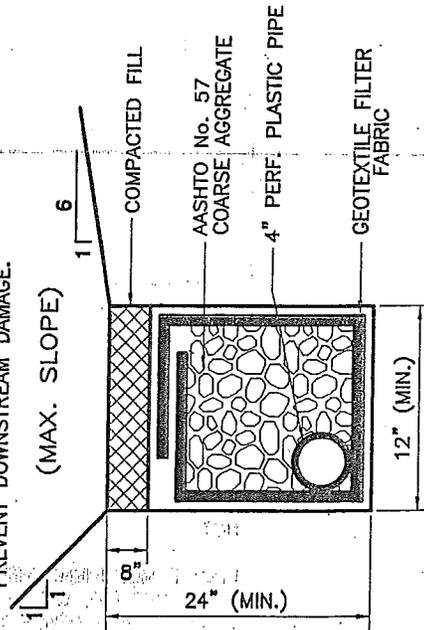
**PROFILE**

**NOTES:**

1. FILL OR CUT BENCH TO BE DESIGNED BY DEVELOPER'S GEOTECHNICAL CONSULTANT AND SUBMITTED TO TOWNSHIP FOR REVIEW. THIS DETAIL IS FOR REFERENCE ONLY.
2. GRAVEL BLANKET TO BE INSTALLED AS DIRECTED BY DEVELOPER'S GEOTECHNICAL CONSULTANT.
3. 4" PERF. PLASTIC PIPE TO DRAIN TO OUTSLOPE AND THE WATER DIVERTED OR COLLECTED IF NECESSARY TO PREVENT DOWNSTREAM DAMAGE.



(IF GRAVEL BLANKET IS REQUIRED)



(IF GRAVEL BLANKET IS NOT REQUIRED)

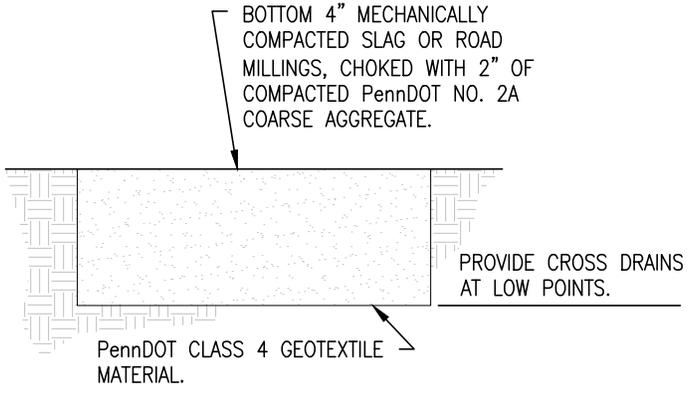


**LENNON, SMITH,  
SOULERET  
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848 Fourth Avenue  
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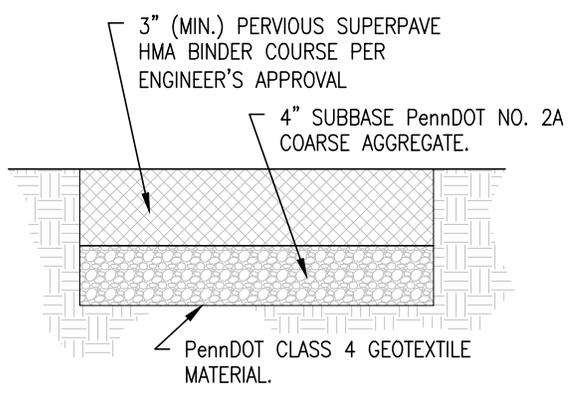
DATE:	December 1999
FILE NAME:	Moondet.dwg
SCALE:	N.T.S.

**Township of Moon  
Standard Details**

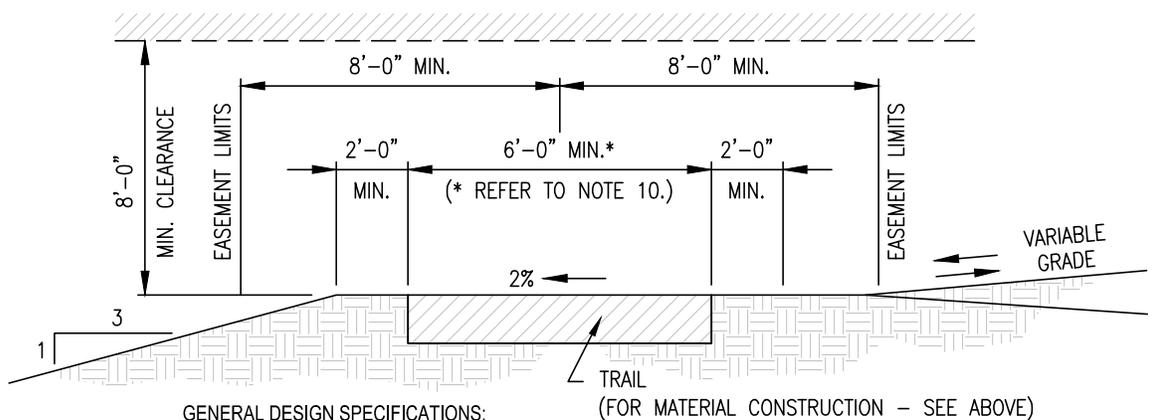
Detail S-5  
Bench Drain



**GRAVEL TRAIL SECTION**



**BITUMINOUS CONCRETE TRAIL SECTION**



1. TRAIL WIDTH 6' (MIN.).
2. TRAIL EASEMENT WIDTH: 16' (MIN.).  $\phi$  EASEMENT TO FOLLOW  $\phi$  TRAIL
3. TRAIL MARKERS PROVIDED EVERY 600' (MAX.). (OR AT LOCATIONS DESIGNATED BY TOWNSHIP).
4. TRAIL SIGHT DISTANCE: 50' (MIN.) EACH DIRECTION.
5. TRAIL MUST BE CONSTRUCTED WITH SMOOTH CONVEX SURFACE TO PREVENT WATER FROM PONDING AND ICE FORMATION.
6. REMOVE TREES AND PRESERVE NATURAL GROUND COVER WITHIN 2' ADJACENT TO TRAIL TO LIMIT SOIL EROSION. TRAIL CONSTRUCTION MUST CONFORM TO CURRENT PADEP AND ACCD STANDARDS FOR EROSION CONTROL.
7. TRAILS AND TRAIL EASEMENTS MUST MATCH TO TRAILS AND TRAIL EASEMENTS ON ADJOINING PROPERTIES.
8. TRAIL GRADES:
 

0-5%	DESIRED	
5-6%	FOR 800	LF (MAX.)
6-7%	FOR 400	LF (MAX.)
7-8%	FOR 300	LF (MAX.)
8-9%	FOR 200	LF (MAX.)
9-10%	FOR 100	LF (MAX.)
10-15%	FOR 50	LF (MAX.)
>15%	NOT ACCEPTABLE	

CONTINUOUS LENGTH WITHOUT AND INTERMEDIATE LANDING (MIN. 5-FEET LONG AND 5-FEET WIDE).
9. PROVIDE EXECUTED AND RECORDED EASEMENT FOR TRAIL TO TOWNSHIP.
10. THE TRAIL WIDTH SHALL BE INCREASED AS NECESSARY, BASED UPON PEDESTRIAN TRAFFIC VOLUMES AS DETERMINED BY THE TOWNSHIP.



MICHAEL BAKER JR., INC.  
A UNIT OF MICHAEL BAKER CORP.  
4301 DUTCH RIDGE ROAD  
BEAVER, PENNSYLVANIA 15009

DATE: MARCH 2013

FILE NAME: S-6 Multi-Purpose Walking and Biking Trail.dwg

SCALE: N.T.S.

**TOWNSHIP OF MOON  
STANDARD DETAILS**

**DETAIL S-6  
MULTI-PURPOSE WALKING AND BIKING TRAIL**