THE OAKS OF WEST CHESTER

SECTION FIVE (PHASE EIGHT)
FINAL DEVELOPMENT PLAN

SECTION 22, TOWN 3, RANGE 2
WEST CHESTER TOWNSHIP
BUTLER COUNTY, OHIO

GENERAL NOTES

1. Item numbers refer to the Ohio Department of Transportation construction and material specifications, and all construction work shall be done according to said specifications of Butler County requirements and standards for subdivisions. When in conflict, the County requirements shall prevail.

2. Items that pertain to underground utilities such as watermain pipe, sanitary sewer pipe, water valves and manhole frames and covers, etc., will remain under specifications of the utility serving the area. Storm sewers shall be designed and constructed in accordance with the requirements of the Butler County Engineer.

3. All trenches within the right-of-way and 10' utility easement shall be compacted and backfilled in accordance with item 204 and 603 (ODOT 2010) in the state specifications.

4. Surface course (Item 448) and tack coat (Item 407) are to be applied no sooner than nine (9) months after the leveling course, (Item 448), and fifty (50) percent of the homes are completed. If after two (2) years fifty (50) percent of the homes have not been completed, then the top course may be applied.

5. A minimum 10' utility easement shall be shown on the record plat parallel and immediately adjacent to the right-of-way line allowing for installation, operation and maintenance of sewers, water, electric and telephone conduits and any other public or quasi public utility.

6. Developer shall be responsible for the installation of conduits for the full width of the public right-of-way at a depth of 36" for use by the electric, telephone and cable services. The location of the lines shall be coordinated with utility companies by the developer.

7. All electrical transformers shall be located so that they do not interfere with the existing manholes or water main appurtenances.

8. Sump line conduits are to be SDR 35.

9. WATER MAIN
   - 9.A. Water main materials, valves, fire hydrants, fittings and appurtenances and installation to be as per Butler County specifications, using class 53 Ductile Iron as per AWWA C-151 with minimum 4' cover.
   - 9.B. All water main valves to have a minimum depth of 2.5' and a maximum depth of 4' from proposed grade to the top of the Valve Operating Nut.
   - 9.C. Minimum 10' horizontal, 18" vertical separation between water main and sanitary and/or storm sewer.
   - 9.D. If meter pits cannot be initially installed at the location shown on the typical section, a curb stop can be set up at this location.

10. SANITARY SEWER
   - 10.A. Sanitary sewer materials and installation to be as per Butler County specifications, using Section 3110 for PVC SDR-35 & 26 pipe; Section 3140 for ABS or PVC composite pipe; Section 3410 for manholes.
   - 10.B. Crossings Whenever a sanitary sewer and water main must cross, the sewer shall be at such an elevation that the crown of the sewer is at least 18 inches measured between the outside pipe walls, below the bottom of the water main. If it is absolutely impossible to maintain the 18 inch vertical separation, the water main shall be relocated or the sewer shall be constructed as follows:
     - 10.B.1. A sewer passing over or under the water main shall be encased or constructed of materials that are equivalent to water main standards of construction for a minimum distance of 10 feet on each side of the water main.
     - 10.B.2. The sewer crossing shall be constructed so that the sewer joints will be equidistant and as far as possible from the water main joints.
     - 10.B.3. Where a water main passes under a sewer, adequate structural support shall be provided for the sewer to prevent damage to the water main.
   - 10.C. Sanitary laterals shall be extended to at least ten (10) feet beyond the Property / Right-of-Way or to the edge of the easement, whichever is greater.
   - 10.D. Sanitary sewer laterals, which shall include all pipe and appurtenances from the building to the public sewer main, and the connection to the public sewer main shall be considered private and the responsibility of the property owner to maintain. The connection to the sewer would be any piping that extends out from the main barrel of the sewer main.
   - 10.E. All buildings to be served by the public sewer system shall be constructed so as to provide a minimum of four feet (4') of vertical separation between the public sanitary sewer, at the point of connection, and the lowest building level served by a gravity sewer connection and shall not exceed a depth of 12 feet below finish grade at the end of the lateral at the right-of-way unless specifically authorized by the County. In addition, said building level shall be at least one (1) foot above the lowest point of free-overflow (non-sealed manhole cover) upstream of any treatment facility or wastewater pumping facility that receives the discharge from said building. Said minimum service levels shall be recorded on the "As-built" plans for the development which will be kept on file in the office of the Butler County Department of Environmental Services.

11. Butler County Water and Sewer Department does not accept any responsibility for the relocation, repair, or replacement of any other utility installed within five (5) feet of the center line of any sanitary sewer main or water main.

12. STORM SEWER
   - 12.A. Storm sewer pipe shall meet the requirements as follows:
     - 12.A.1. PVC pipe as per ODOT Specification 707.42 for all diameters
     - 12.A.2. HDPE pipe as per ODOT Specification 707.33
     - 12.A.3. Corrugated steel pipe as per ODOT Specification 707.01 or 707.02 for all diameters
     - 12.A.4. Reinforced concrete pipe as per ODOT Construction and Material Specification 706.02 for all diameters. Class shall be specified at the contractor's request. (Cincinnati Concrete Pipe, Duracrete or equal).
     - 12.A.5. Bituminous coated corrugated steel pipe as per ODOT Specification 707.05 or 707.07 Installation shall meet Butler County Specifications. All joints shall be soil seal joints unless specifically noted on the plans.
   - 12.B. Deflection Testing for Storm Sewers and Culverts 15% of all storm sewers shall be tested for deflection within thirty days after they are complete. Butler County Engineer or his designated representative will determine what 15% shall be tested. If any storm sewer in the original 15% is found out of compliance, deflection tests will be required on 100% of the remaining storm sewer. A vertical ring deflection greater than 5% will not be allowed. This deflection is defined as 5% reduction in the vertical base or average inside diameter. The method of testing shall be subject to the approval of the engineer. If rigid balls or mandrels are used to test pipe deflection, no mechanical pulling devices shall be used. The deflection test may be conducted with a nine prong mandrel, a ball or a cylinder or another manner acceptable to the Butler County Engineer or his designated representative. The testing will be accomplished from manhole to manhole or catchbasin to catchbasin, following the complete flushing of the line. The contractor shall furnish all equipment required to complete the deflection testing. The deflection test shall be witnessed by the County Engineer or his designated representative. Any section of pipe that fails to meet the aforementioned requirements shall be rerounded by a procedure acceptable to the County or be excavated and either be relayed or replaced, and retested until the requirements are met.
   - 12.C. All catch basins and manholes with a depth greater than 4' shall be provided with steps. Steps shall meet the requirements of ODOT STD. 604 and shall conform to the details as shown on Butler County Standard Drawing MH-1A.
   - 12.D. Headwall: HW-4A to be used with Corrugated Metal pipe or HW-4B to be used with Concrete Pipe.

13. Roof drains, foundation drains, and other clean water connections to the sanitary sewer system are prohibited.

14. Any detention basin on site should be constructed prior to the clearing of topsoil and grading of the site. All trees and vegetation shall be removed from all proposed detention basins regardless of maintenance responsibility.

15. SEDIMENTATION CONTROL
   - 15.A. The project has been designed to control erosion and prevent damage to other property. All stripping, earthwork, and regrading shall be performed to minimize erosion. Natural vegetation shall be retained wherever possible. The proposed plan will allow almost all eroded material to be retained on site.
   - 15.B. All areas disturbed by the construction of the roadways, ditches and sediment basins shall be seeded and strawed as soon as possible to limit the erosion and stabilize the soil. Payment will be by the number of square yards disturbed as per the grading plan. For additional sedimentation control details, see grading plan.

16. Butler County will not be responsible for any pavement or storm sewer repairs resulting from water main and sanitary sewer repairs. Butler County also will not be responsible for adjusting manholes, valves, fire hydrants, meter pits, etc. as a result of grade changes. The grantor shall be responsible for proper adjustment of manholes, valves, fire hydrants, meter pits, etc. to the satisfaction of Butler County, due to grade changes, paving, repairing, etc. initiated by the grantor.

17. A typical five (5) foot drainage easement is to be provided on both sides of every lot line.

18. Any roadway settlement greater than one inch will be required to be repaired with Item 613 Low Strength Mortar Backfill (Type 1). See Detail on Sheet C8.0.

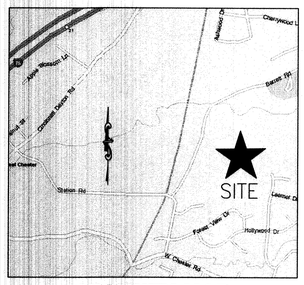
19. Provide the Butler County Engineer's Office with a forty-eight (48) hour notice prior to the start of any construction, including sanitary installation. Phone 785-4145.

20. Contractors to accept all Quantities as correct prior to beginning construction.

21. Contractor shall include the cost of County inspection and extension fees in unit price bid.

22. Private driveways, parking lots and other paved areas, earthen berms or structures should not be constructed over private water or sewer service lines within the public road right of way or within the easement areas for the public utilities. Should this occur, the property owner shall be held responsible for the protection and repair and for providing access to any curb stops, meter pits, manholes, clean-outs, etc. installed in conjunction with these private service lines and for any damage or restoration of the paved surfaces or structures that may result from the future operation, maintenance, repair or replacement of said service lines and appurtenances.

1. M5610-023-000-014 Lawrence Gundler Etal. P.O. Box 401 West Chester, OH 45071
2. M5610-023-000-012 County of Butler, State of Ohio 315 High St. Hamilton, OH 45011
3. M5610-023-000-006 Anne Holbrook 7056 Barret Rd. West Chester, OH 45069
4. M5610-023-000-007 Earl Gettelfinger 7074 Barret Rd. West Chester, OH 45069
5. M5610-023-000-008 James W. Parton Jr. 7098 Barret Rd. West Chester, OH 45069
6. M5610-023-000-009 Hipolito & Christine Vigil 7118 Barret Rd. West Chester, OH 45069
7. M5610-023-000-010 Jeffrey W. & Christine Buchold 7158 Barret Rd. West Chester, OH 45069
8. M5610-023-000-066 Timothy E. & Yvonne C. Poff TR 7200 Barret Rd. West Chester, OH 45069
9. M5620-099-000-038 Kevin A. Meyerl & Amanda G. Patten 7204 Barret Rd. West Chester, OH 45069
10. M5610-018-000-013 Trustees of Union Township 8113 Cincinnati Dayton Rd. West Chester, OH 45069



VICINITY MAP
NOT TO SCALE

SECTION FIVE SUMMARY

EXISTING ZONING	R-PUD (7/18/2008)
TYPICAL LOT FRONTAGE	100 FT
SQUARE FOOTAGE (MIN)	15,000 SF
FRONT SETBACK (MIN)	30 FT
SIDE SETBACK (MIN)	5 FT
SIDE SETBACK (TOTAL)	30 FT
(20 FT MIN REQUIRED BTW HOUSES)	
REAR SETBACK	30 FT
NUMBER OF LOTS	8 LOTS
OPEN SPACE LOTS	2 LOTS
TOTAL	10 LOTS
TOTAL ACREAGE	16.665 ACRES
TOTAL OPEN SPACE	10.029 ACRES
% OF OPEN SPACE	60.18%

PLANNER, ENGINEER, SURVEYOR, AND LANDSCAPE ARCHITECT

BAYER BECKER
6900 TYLERSVILLE ROAD, SUITE A
MASON, OHIO 45040
PH: 513-336-6600

DEVELOPER

RHEIN GUNDLER LLC
11025 REED HARTMAN HIGHWAY, SUITE B-1
CINCINNATI, OH 45242
PH: 513-891-7100

OWNERS

ERROL & NANCY GUNDLER
6466 CONTRERRAS ROAD,
OXFORD, OH 45056

LAWRENCE & ESTELLA GUNDLER
6745 BARRETT ROAD
WEST CHESTER, OH 45071

BENCHMARK

ON PIN SET - CAPPED BB TRAVERSE LOCATED 12.00'
WEST OF FIRE HYDRANT AT THE SOUTHWEST
INTERSECTION OF BARRET ROAD & SPRUCE HILL CIRCLE
ELEVATION = 768.52
ELEVATION BASED ON STATE PLANE COORDINATE
SYSTEM (NAD 83) OHIO SOUTH ZONE 3402

INDEX OF SHEETS

DRAWING NO.	DRAWING TITLE	ISSUE DATE	REVISION NO.	REVISION DATE
C1.0	TITLE SHEET	08-13-19	5	11-12-19
C2.0	LAYOUT PLAN	08-13-19	2	10-17-19
C3.0	UTILITY PLAN	08-13-19	4	11-12-19
C4.0	UTILITY PROFILES & DETAILS	08-13-19	6	11-12-19
C5.0	GRADING AND EROSION CONTROL PLAN	08-13-19	4	11-12-19
C5.1	SOIL AND EROSION CONTROL DETAILS	08-13-19		
C6.0	SIGHT DISTANCE EXHIBIT	08-13-19	1	10-10-19
C7.0	BUTLER COUNTY SANITARY DETAILS	08-13-19		
C7.1	BUTLER COUNTY WATER DETAILS	08-13-19		
C7.2	BUTLER COUNTY STORM DETAILS	08-13-19		

811
Know what's **below.**
Call before you dig.

LOCATION OF ALL EXISTING UTILITIES TO BE DETERMINED IN THE FIELD PRIOR TO CONSTRUCTION

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Item	Revision Description	Date	Drwn:	Chk:
1	REVISE PER CLIENT COMMENTS	07-12-19	AW	JSD
2	REVISED PRIVATE DRIVE LAYOUT, UTILITIES, AND EARTHWORK	10-17-19	CJO	JSD
3	REVISED PER BCWS COMMENTS	10-31-19	CJO	JSD
4	REVISED PER BCWS COMMENTS	11-04-19	CJO	JSD
5	REVISED PER BCEO COMMENTS	11-12-19	CJO	JSD

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NOV 13 2019
BY:

THE OAKS OF WEST CHESTER
SECTION FIVE (PHASE EIGHT)
SECTION 22, TOWN 3, RANGE 2
WEST CHESTER TOWNSHIP,
BUTLER COUNTY, OHIO

TITLE SHEET

bayer becker
www.bayerbecker.com
6900 Tylersville Road, Suite A
Mason, OH 45040 - 513.336.6600

Drawing: 06F158-005 CD
Drawn by: LDF
Checked By: JSD
Issue Date: 08-13-19
Sheet: C1.0

Plot time: Nov 12, 2019 - 6:10pm
Drawing name: J:\2006\06F158-005\CVD\DWG\06F158-005 CD.dwg - Layout Tab: C1.0 TITLE SHEET

GENERAL NOTES

1. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST EDITION OF THE OHIO DEPARTMENT OF TRANSPORTATION (ODOT) "CONSTRUCTION AND MATERIAL SPECIFICATIONS," AND PROJECT SPECIFICATIONS. IN THE EVENT OF A CONFLICT, THE MORE STRINGENT STANDARD APPLIES.
2. WHERE CONNECTING TO EXISTING ASPHALT PAVEMENT, THE CONTRACTOR SHALL SAW CUT THE EXISTING EDGE OF PAVEMENT TO PROVIDE A CLEAN EDGE. ITEM 407 TACK COAT SHALL BE APPLIED TO THE ENTIRE CUT FACE OF THE EXISTING PAVEMENT PRIOR TO THE PLACEMENT OF THE PROPOSED PAVEMENT.
3. TWO (2) AUTUMN BLAZE MAPLE TREES TO BE PLANTED ON EACH LOT BY BUILDER, MINIMUM 2 $\frac{1}{2}$" CALIPER.

LEGEND

NO TREE CLEARING OR WORK TO BE COMPLETED WITHIN THIS AREA

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LOCATION OF ALL EXISTING UTILITIES TO BE DETERMINED IN THE FIELD PRIOR TO CONSTRUCTION

Plot time: Oct 17, 2019 - 2:02pm
Drawing name: J:\2006\06F158-005\CV\DWG\06F158-005 CD.dwg - Layout Tab: C2.0 LAYOUT PLAN

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Item	Revision Description	Date	Drwn:	Chk:
1	REVISED PRIVATE DRIVE LAYOUT, UTILITIES, AND EARTHWORK	10-10-19	CJO	JSD
2	REVISED PER BCWS COMMENTS	10-17-19	CJO	JSD

THE OAKS OF WEST CHESTER SECTION FIVE (PHASE EIGHT)

SECTION 22, TOWN 3, RANGE 2
WEST CHESTER TOWNSHIP,
BUTLER COUNTY, OHIO

LAYOUT PLAN

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Drawing: 06F158-005 CD
Drawn by: LDF
Checked By: JSD
Issue Date: 08-13-19
Sheet: C2.0

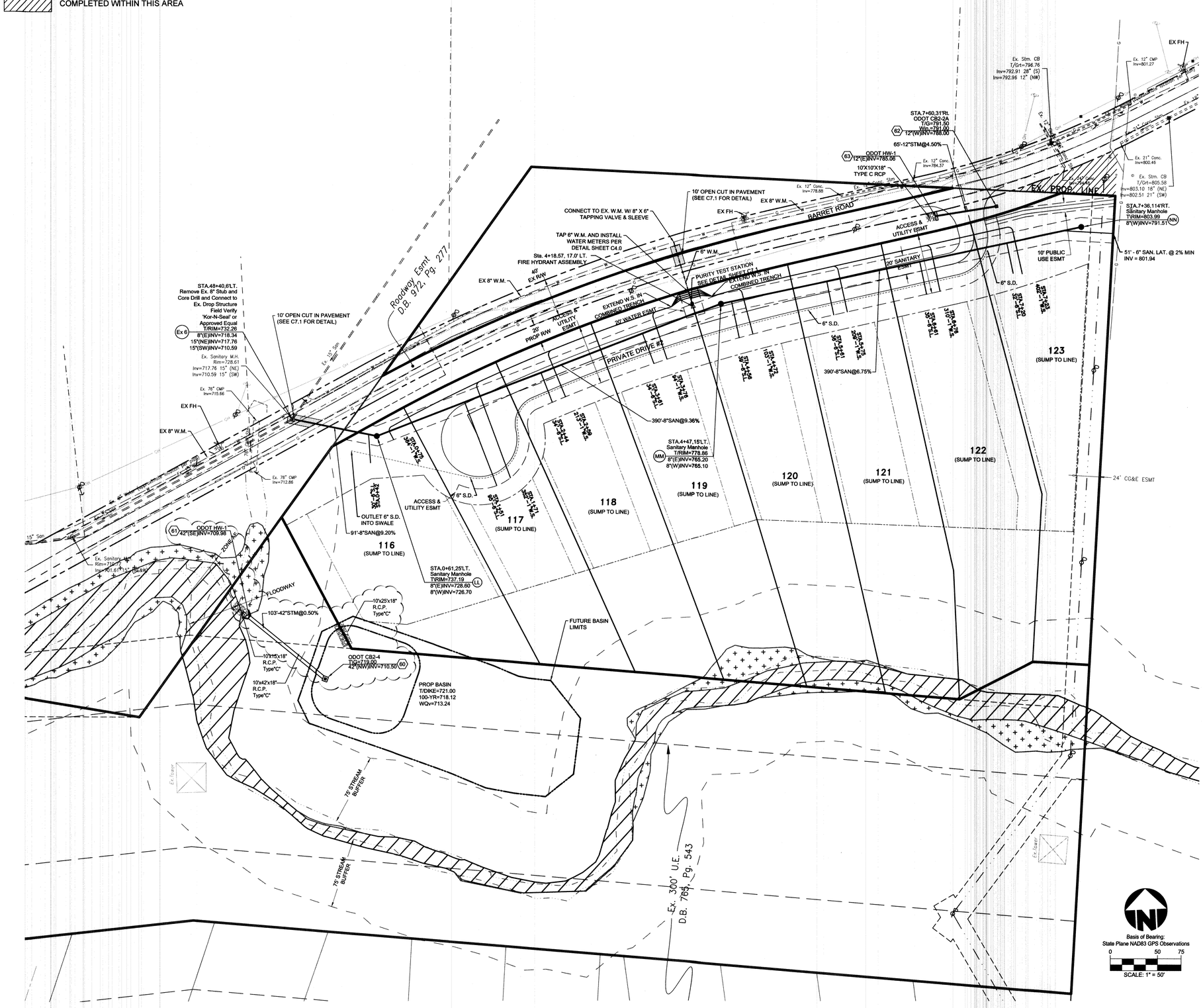
UTILITY NOTES:

1. 48 hours notice to be given to affected residents before construction begins.
2. All Catch Basin T/G Elevations located within the curb are set to the Gutter Line Elevations.
3. Lower 1" Water Services as needed to avoid conflicts with Storm with Min. 4' Cover.
4. Location of existing utilities to be determined in the field prior to work beginning.
5. All lots Sump to Sump Drain unless otherwise noted in plan.
6. Sump Lines to be installed as per Standard Service Detail. Wyes or Tees are to be placed ten feet past lot line, on the low side of specified lots, and marked with Wye poles.
7. Contractors to accept all quantities as correct prior to beginning construction.
8. Contractor end deep connection sanitary sewer laterals at 12' below grade. See detail on sheet C8.0.
9. 1" water services to be installed with Type K Copper Pipe.

NOTE:
MSL = MIN. SERVICE LEVEL = LOWEST FLOOR ELEVATION SERVED W/ GRAVITY SANITARY SEWER (8" MAIN INVERT AT POINT OF SANITARY LATERAL CONNECTION PLUS 4').

LEGEND

NO TREE CLEARING OR WORK TO BE COMPLETED WITHIN THIS AREA



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Know what's below.
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LOCATION OF ALL EXISTING UTILITIES TO BE DETERMINED IN THE FIELD PRIOR TO CONSTRUCTION

Plot time: Nov 12, 2019 - 5:55pm
Drawing name: J:\2006\06F158-005\CV\DWG\06F158-005 CD.dwg - Layout Tab: C3.0 UTILITY

Item	Revision Description	Date	Drwn:	Chk:
1	REVISED PRIVATE DRIVE LAYOUT, UTILITIES, AND EARTHWORK	10-10-19	CJO	JSD
2	REVISED PER BOVS COMMENTS	10-17-19	CJO	JSD
3	REVISED PER BOVS COMMENTS	11-04-19	CJO	JSD
4	REVISED PER BCEO COMMENTS	11-12-19	CJO	JSD

THE OAKS OF WEST CHESTER SECTION FIVE (PHASE EIGHT)

SECTION 22, TOWN 3, RANGE 2
WEST CHESTER TOWNSHIP,
BUTLER COUNTY, OHIO

UTILITY PLAN

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Drawing: 06F158-005 CD
Drawn by: LDF
Checked By: JSD
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Sheet: C3.0

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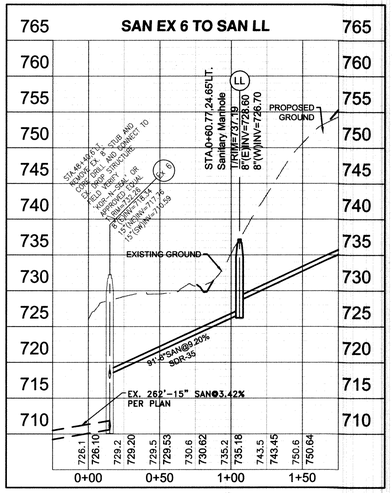
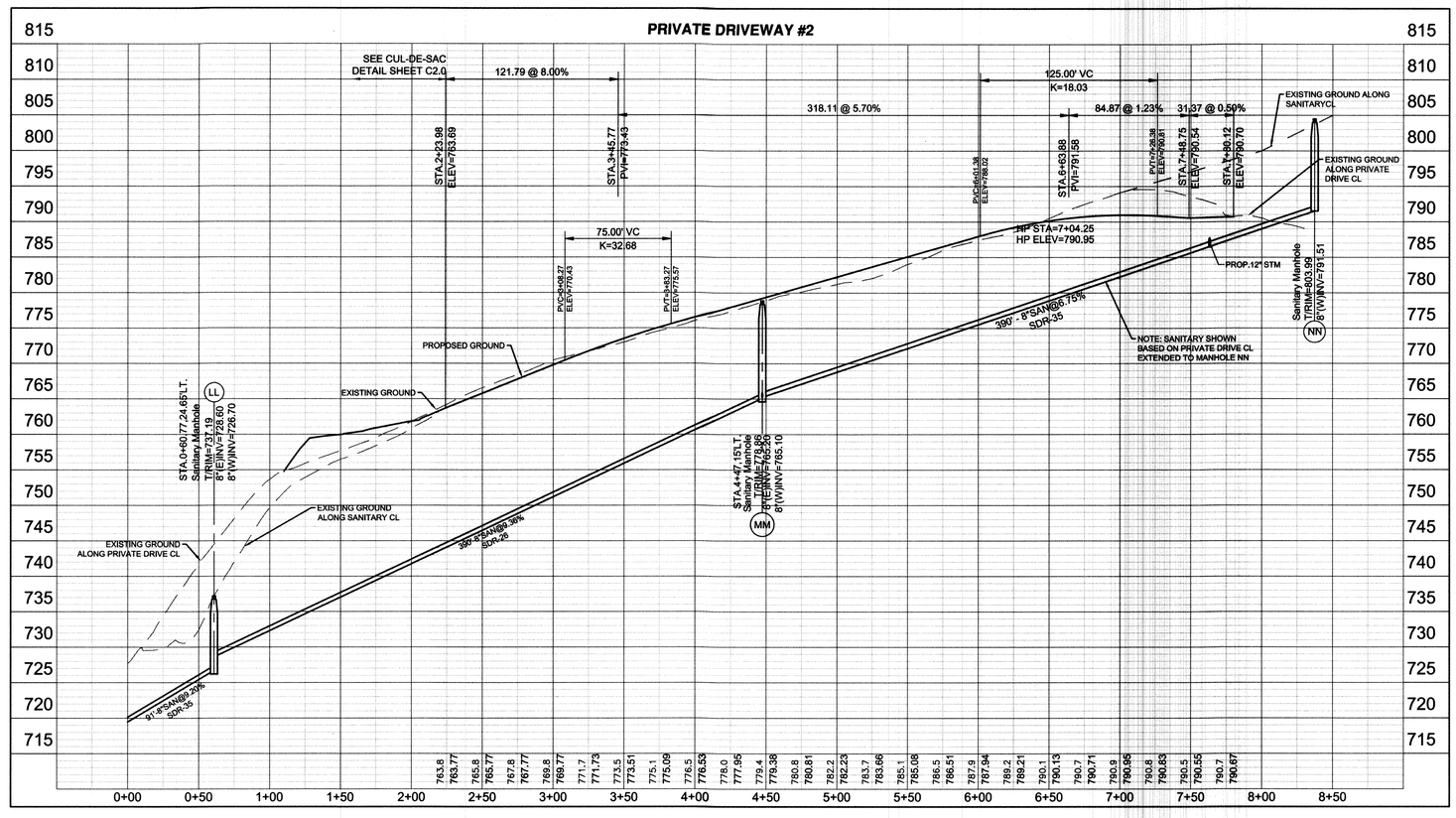
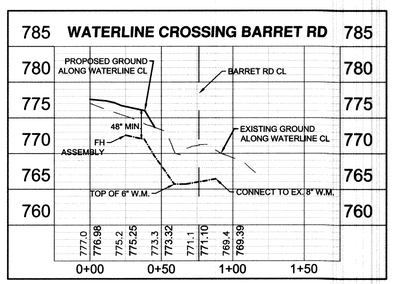
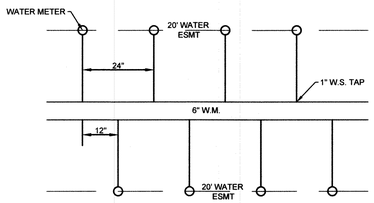
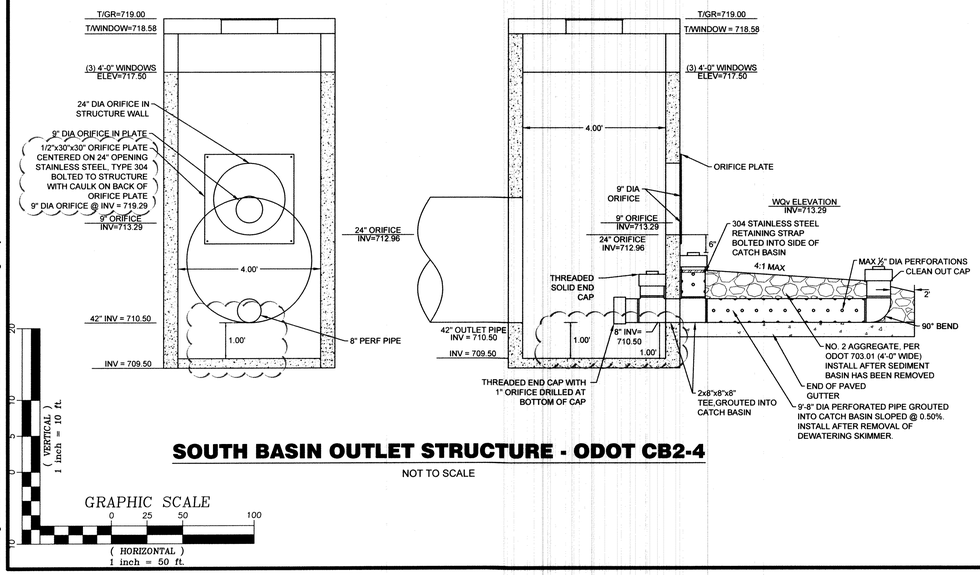






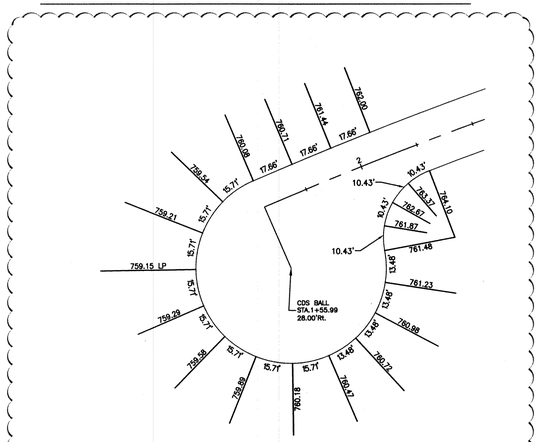


W.S. AND METER INSTALLATION DETAIL



SOUTH BASIN OUTLET STRUCTURE - ODOT CB2-4

NOT TO SCALE



PRIVATE DRIVEWAY CUL-DE-SAC

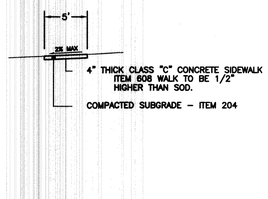
Basis of Bearing:
State Plane NAD83 GPS Observations

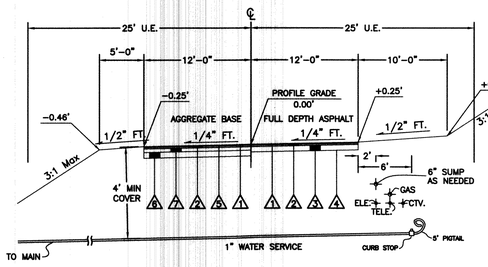
0 30 45

SCALE: 1" = 30'

ITEM	DEPTH TOP OF PIPE
Underdrain	18"
Sumpfines	24" - 30"
Gas	24" - 36"
Water	48" - 54"
Electric	36" - 42"
Telephone	36" - 42"
Cable TV	36" - 42"

*SURFACE COURSE (ITEM 448) AND TACK COAT (ITEM 407) ARE TO BE APPLIED NO SOONER THAN TWELVE (12) MONTHS AFTER THE LEVELING COURSE (ITEM 448), AND FIFTY (50) PERCENT OF THE HOMES ARE COMPLETED. IF AFTER TWO (2) YEARS FIFTY (50) PERCENT OF THE HOMES HAVE NOT BEEN COMPLETED, THEN THE TOP COURSE MAY BE APPLIED.





1. 1" ITEM SURFACE COURSE - 448 ASPHALTIC CONCRETE SEE * NOTE
2. 1 1/2" LEVELING COURSE - ITEM 448 ASPHALTIC CONCRETE
3. 6" BASE COURSE - ITEM 301 BITUMINOUS AGGREGATE BASE
4. COMPACTED SUBGRADE - ITEM 204
5. TACK COAT - ITEM 407 - TO BE APPLIED AT A RATE OF 0.05 GAL. PER SQUARE YARD, SEE * NOTE
6. 6" BASE COURSE - ITEM 304 AGGREGATE BASE
7. 4" BASE COURSE - ITEM 301 BITUMINOUS AGGREGATE BASE

TYPICAL STREET SECTION

PRIVATE DRIVE

NOT TO SCALE

GRAPHIC SCALE

(VERTICAL) 1 inch = 10 ft.

(HORIZONTAL) 1 inch = 50 ft.

Plot time: Nov 12, 2019 - 5:54pm
Drawing name: J:\2006\06F158-005\CV\DWG\06F158-005 CD.dwg - Layout Tab: C4.0 PROFILES

Item	Revision Description	Date	Drwn:	Chk:
1	REVISED PER BCVS/BCEO REVIEWS	03-14-19	AMB	JSD
2	REVISED FUTURE SANITARY LAYOUT			
3	REVISED PRIVATE DRIVE LAYOUT, UTILITIES, AND EARTHWORK	10-10-19	CJO	JSD
4	REVISED PER BCVS COMMENTS	10-17-19	CJO	JSD
5	REVISED PER BCVS COMMENTS	11-04-19	CJO	JSD
6	REVISED PER BCEO COMMENTS	11-12-19	CJO	JSD

THE OAKS OF WEST CHESTER SECTION FIVE (PHASE EIGHT)

SECTION 22, TOWN 3, RANGE 2
WEST CHESTER TOWNSHIP,
BUTLER COUNTY, OHIO

UTILITY PROFILES & INTERSECTION DETAILS

bayer becker
www.bayerbecker.com
6900 Tylersville Road, Suite A
Mason, OH 45040 - 513.336.6600

Drawing: 06F158-005 CD
Drawn by: LDF
Checked By: JSD
Issue Date: 08-13-19
Sheet: C4.0

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GRADING NOTES

1. LOCATION OF EXISTING UTILITIES TO BE DETERMINED IN THE FIELD PRIOR TO BEGINNING WORK.
2. THE GRADING PLAN IS TO BE USED FOR GRADING PURPOSES ONLY.
3. CONTRACTOR SHALL OBTAIN A COPY OF THE COMPLETE GEOTECHNICAL REPORT PREPARED BY THELEN ASSOCIATES, INC. DATED JANUARY 3, 2007 AND ALL ADDENDUMS PRIOR TO BIDDING THE PROJECT.
4. CONTRACTORS SHALL SET UP AN ONSITE PRE-CONSTRUCTION MEETING WITH THE DEVELOPER, PROJECT GEOTECHNICAL ENGINEER, EARTHWORK CONTRACTOR, AND SITE CIVIL ENGINEER PRIOR TO BEGINNING CONSTRUCTION.
5. CONTRACTOR SHALL ASSUME THE TOP 8" OF EXISTING GROUND IS TOPSOIL. TOPSOIL REMOVED TO DEPTHS GREATER THAN 8" SHALL BE DONE ONLY AFTER CONSULTATION WITH THE PROJECT GEOTECHNICAL ENGINEER AND APPROVAL OF THE DEVELOPER.
6. ALL EARTHWORK AND CONSTRUCTION ACTIVITY SHALL BE PERFORMED PER THE RECOMMENDATIONS OF THE PROJECT GEOTECHNICAL ENGINEER AS DESCRIBED IN THE GEOTECHNICAL EXPLORATION REPORT AND ALL ADDENDUMS.
7. CONTRACTOR SHALL VERIFY ALL EARTHWORK QUANTITIES PRIOR TO AWARD OF CONTRACT. PAY QUANTITIES ARE FINAL EXCEPT FOR DOCUMENTED UNDERCUT APPROVED BY DEVELOPER PRIOR TO COMPLETION OF THE EXTRA WORK. UPON REQUEST, CONTRACTORS MAY HAVE ACCESS TO THE SITE TO FIELD CHECK TOPOGRAPHY.
8. CONTRACTOR TO PROVIDE SILT FENCE AT STORM SEWER OUTLETS (ALONG WITH ROCK CHANNEL PROTECTION AS SPECIFIED ON UTILITY PLAN) TO PREVENT EROSION.
9. CONTRACTOR SHALL INSTALL AND MAINTAIN A CONCRETE WASHOUT FACILITY PER BUTLER COUNTY STANDARDS.
10. EROSION CONTROL MEASURES SHALL BE IMPLEMENTED PRIOR TO CONSTRUCTION AND MAINTAINED DURING CONSTRUCTION.
11. BEST MANAGEMENT PRACTICES (BMPs) SHOWN ON PLANS SHALL BE REVISED OR IMPLEMENTED AS REQUIRED. CONTRACTOR SHALL MONITOR CONSTRUCTION BMPs AND PROVIDE ADDITIONAL BMPs AS REQUIRED TO PREVENT SEDIMENT RUNOFF FROM CONSTRUCTION SITE ONTO PAVEMENT AND NON-WORK AREAS.
12. AT A MINIMUM, ALL EROSION AND SEDIMENT CONTROLS ON THE SITE SHALL BE INSPECTED AT LEAST ONCE EVERY SEVEN CALENDAR DAYS AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN ONE-HALF INCH OF RAIN PER 24 HOUR PERIOD. QUALIFIED INSPECTION PERSONNEL (THOSE WITH KNOWLEDGE AND EXPERIENCE IN THE INSTALLATION AND MAINTENANCE OF SEDIMENT AND EROSION CONTROLS) SHALL CONDUCT THESE INSPECTIONS TO ENSURE THAT THE CONTROL PRACTICES ARE FUNCTIONAL AND TO EVALUATE WHETHER THE EROSION CONTROL IS ADEQUATE AND PROPERLY IMPLEMENTED OR WHETHER ADDITIONAL CONTROL MEASURES ARE REQUIRED. DISTURBED AREAS AND AREAS USED FOR STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION SHALL BE INSPECTED FOR EVIDENCE OF OR THE POTENTIAL FOR, POLLUTANTS ENTERING THE DRAINAGE SYSTEM. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE OBSERVED TO ENSURE THAT THEY ARE OPERATING CORRECTLY. DISCHARGE LOCATIONS SHALL BE INSPECTED TO ASCERTAIN WHETHER EROSION AND SEDIMENT CONTROL MEASURES ARE EFFECTIVE IN PREVENTING SIGNIFICANT IMPACTS TO THE RECEIVING WATERS. LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE SHALL BE INSPECTED FOR EVIDENCE OF OFF-SITE VEHICLE TRACKING.
13. SITE STABILIZATION SHALL BEGIN WITHIN 7 DAYS ON AREAS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE PERMANENTLY OR TEMPORARILY CEASED FOR 14 DAYS.
13. ALL MUD OR DEBRIS TRACKED ON EXISTING STREETS SHALL BE CLEANED AT THE END OF EACH DAY OR AS DIRECTED BY BUTLER COUNTY OR THE OWNER. PERIODIC STREET SWEEPING MAY BE REQUIRED.
14. IN ADDITION TO ANY TEMPORARY EROSION, MUD, AND DEBRIS CONTROL DETAILS AND NOTES SHOWN ON THE PLANS, THE CONTRACTOR SHOULD PLACE TEMPORARY OR PERMANENT SEEDING, MULCHING AND/OR MULCH NETTING OR ANY OTHER GENERALLY ACCEPTED METHODS TO PREVENT EROSION, MUD, AND DEBRIS FROM BEING DEPOSITED ON OTHER PROPERTY, ON NEWLY CONSTRUCTED OR EXISTING ROADS, OR INTO EXISTING SEWERS OR NEW SEWERS WITHIN THE DEVELOPMENT. THE CONTRACTOR SHOULD CONTINUALLY MONITOR THE CONSTRUCTION PROGRESS AND MAKE ANY NECESSARY TEMPORARY ADJUSTMENTS TO MAINTAIN THIS CONTROL.
15. AFTER THE VEGETATION HAS BECOME WELL ESTABLISHED, TEMPORARY EROSION AND SEDIMENT CONTROLS CAN BE REMOVED.
16. THE LAST 18" OF FILL OUTSIDE OF PAVEMENT AREAS IS TO MADE USING TOPSOIL.

SWPPP NOTES

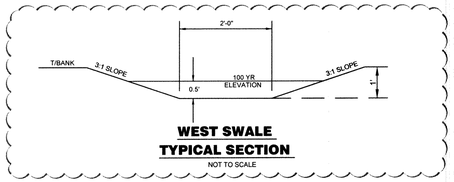
1. CONTRACTOR TO PROVIDE SILT FENCE AT STORM SEWER OUTLETS (ALONG WITH ROCK CHANNEL PROTECTION AS SPECIFIED ON UTILITY PLAN) TO PREVENT EROSION.
2. EROSION CONTROL MEASURES SHALL BE IMPLEMENTED PRIOR TO CONSTRUCTION AND MAINTAINED DURING CONSTRUCTION.
3. BEST MANAGEMENT PRACTICES (BMPs) SHOWN ON PLANS SHALL BE REVISED OR IMPLEMENTED AS REQUIRED. CONTRACTOR SHALL MONITOR CONSTRUCTION BMPs AND PROVIDE ADDITIONAL BMPs AS REQUIRED TO PREVENT SEDIMENT RUNOFF FROM CONSTRUCTION SITE ONTO PAVEMENT AND NON-WORK AREAS.
4. AT A MINIMUM, ALL EROSION AND SEDIMENT CONTROLS ON THE SITE SHALL BE INSPECTED AT LEAST ONCE EVERY SEVEN CALENDAR DAYS AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN ONE-HALF INCH OF RAIN PER 24 HOUR PERIOD. QUALIFIED INSPECTION PERSONNEL (THOSE WITH KNOWLEDGE AND EXPERIENCE IN THE INSTALLATION AND MAINTENANCE OF SEDIMENT AND EROSION CONTROLS) SHALL CONDUCT THESE INSPECTIONS TO ENSURE THAT THE CONTROL PRACTICES ARE FUNCTIONAL AND TO EVALUATE WHETHER THE EROSION CONTROL IS ADEQUATE AND PROPERLY IMPLEMENTED OR WHETHER ADDITIONAL CONTROL MEASURES ARE REQUIRED. DISTURBED AREAS AND AREAS USED FOR STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION SHALL BE INSPECTED FOR EVIDENCE OF OR THE POTENTIAL FOR, POLLUTANTS ENTERING THE DRAINAGE SYSTEM. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE OBSERVED TO ENSURE THAT THEY ARE OPERATING CORRECTLY. DISCHARGE LOCATIONS SHALL BE INSPECTED TO ASCERTAIN WHETHER EROSION AND SEDIMENT CONTROL MEASURES ARE EFFECTIVE IN PREVENTING SIGNIFICANT IMPACTS TO THE RECEIVING WATERS. LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE SHALL BE INSPECTED FOR EVIDENCE OF OFF-SITE VEHICLE TRACKING.
5. SITE STABILIZATION SHALL BEGIN WITHIN 7 DAYS ON AREAS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE PERMANENTLY OR TEMPORARILY CEASED FOR 14 DAYS.
6. ALL MUD OR DEBRIS TRACKED ON EXISTING STREETS SHALL BE CLEANED AT THE END OF EACH DAY OR AS DIRECTED BY WARREN COUNTY OR THE OWNER. PERIODIC STREET SWEEPING MAY BE REQUIRED.
7. IN ADDITION TO ANY TEMPORARY EROSION, MUD, AND DEBRIS CONTROL DETAILS AND NOTES SHOWN ON THE PLANS, THE CONTRACTOR SHOULD PLACE TEMPORARY OR PERMANENT SEEDING, MULCHING AND/OR MULCH NETTING OR ANY OTHER GENERALLY ACCEPTED METHODS TO PREVENT EROSION, MUD, AND DEBRIS FROM BEING DEPOSITED ON OTHER PROPERTY, ON NEWLY CONSTRUCTED OR EXISTING ROADS, OR INTO EXISTING SEWERS OR NEW SEWERS WITHIN THE DEVELOPMENT. THE CONTRACTOR SHOULD CONTINUALLY MONITOR THE CONSTRUCTION PROGRESS AND MAKE ANY NECESSARY TEMPORARY ADJUSTMENTS TO MAINTAIN THIS CONTROL.
8. AFTER THE VEGETATION HAS BECOME WELL ESTABLISHED, TEMPORARY EROSION AND SEDIMENT CONTROLS CAN BE REMOVED.

SWPPP SUMMARY

1. THE CONSTRUCTION ACTIVITY WILL CONSIST OF MASS EARTHWORK, UTILITY INSTALLATION, CURB AND PAVEMENT CONSTRUCTION, AND HOME BUILDING FOR A RESIDENTIAL DEVELOPMENT.
2. ACREAGE:
   - SECTION FIVE 16.665 ACRES
   - DISTURBED AREA 2.067 ACRES (MASS EARTHWORK FOR SECTION FIVE DEVELOPMENT)
3. PRIOR LAND USE: WOODS
4. IMPERVIOUS CALCULATIONS:
   - IMPERVIOUS AREA
     - PRE-DEVELOPED 0.0 ACRES
     - POST-DEVELOPED 0.21 ACRES (SECTION FIVE ONLY)
   - IMPERVIOUS PERCENTAGE
     - PRE-DEVELOPED 0.0 %
     - POST-DEVELOPED 10 % (SECTION FIVE ONLY)
5. EXISTING SOIL DATA:

SYMBOL	SOIL NAME	HSG
EdE2	EDEN SILTY CLAY LOAM, 15 TO 25% SLOPES MODERATELY ERODED	D
WyB	WYNN SILT LOAM, 2 TO 6% SLOPES	C
WyC2	WYNN SILT LOAM, 6 TO 12% SLOPES MODERATELY ERODED	C

6. POSSIBLE PREVIOUS CONTAMINATIONS: FERTILIZER AND CHEMICALS TO CONTROL WEEDS.
7. SECTION FOUR DRAINS TO WEST PROPERTY LINE AND THEN SOUTHWEST INTO THE BASIN.
8. RUNOFF COEFFICIENT:
   - PRE-CONSTRUCTION 0.30
   - POST-CONSTRUCTION 0.50
9. OHIO EPA NPDES PERMIT NUMBER:



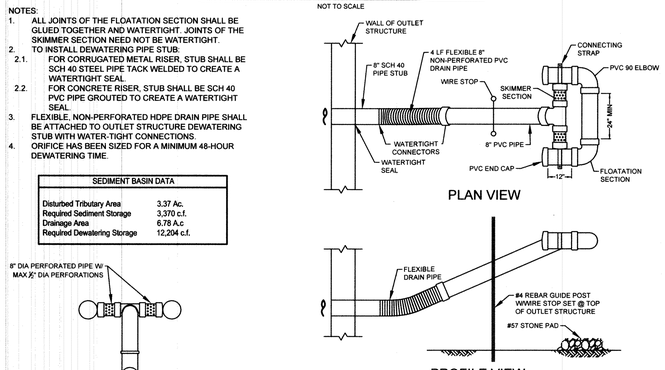
WEST SWALE TYPICAL SECTION

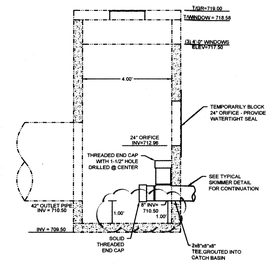
NOT TO SCALE

TYPICAL SKIMMER DEWATERING DEVICE

NOTES:
1. ALL JOINTS OF THE FLOATATION SECTION SHALL BE GLUED TOGETHER AND WATERTIGHT. JOINTS OF THE SKIMMER SECTION NEED NOT BE WATERTIGHT.
2. TO INSTALL DEWATERING PIPE STUB:
   - 2.1. FOR CORRUGATED METAL RISER, STUB SHALL BE SCH 40 STEEL PIPE TACK WELDED TO CREATE A WATERTIGHT SEAL
   - 2.2. FOR CONCRETE RISER, STUB SHALL BE SCH 40 PVC PIPE GROUTED TO CREATE A WATERTIGHT SEAL
3. FLEXIBLE, NON-PERFORATED HDPE DRAIN PIPE SHALL BE ATTACHED TO OUTLET STRUCTURE DEWATERING STUB WITH WATER-TIGHT CONNECTIONS.
4. ORIFICE HAS BEEN SIZED FOR A MINIMUM 48-HOUR DEWATERING TIME.

SEDIMENT BASIN DATA	
Disturbed Tributary Area	3.37 Ac.
Required Sediment Storage	3,370 c.f.
Drainage Area	6.78 A.c.
Required Dewatering Storage	12,204 c.f.





EAST BASIN - TEMP SEDIMENT BASIN RETROFIT

NOT TO SCALE

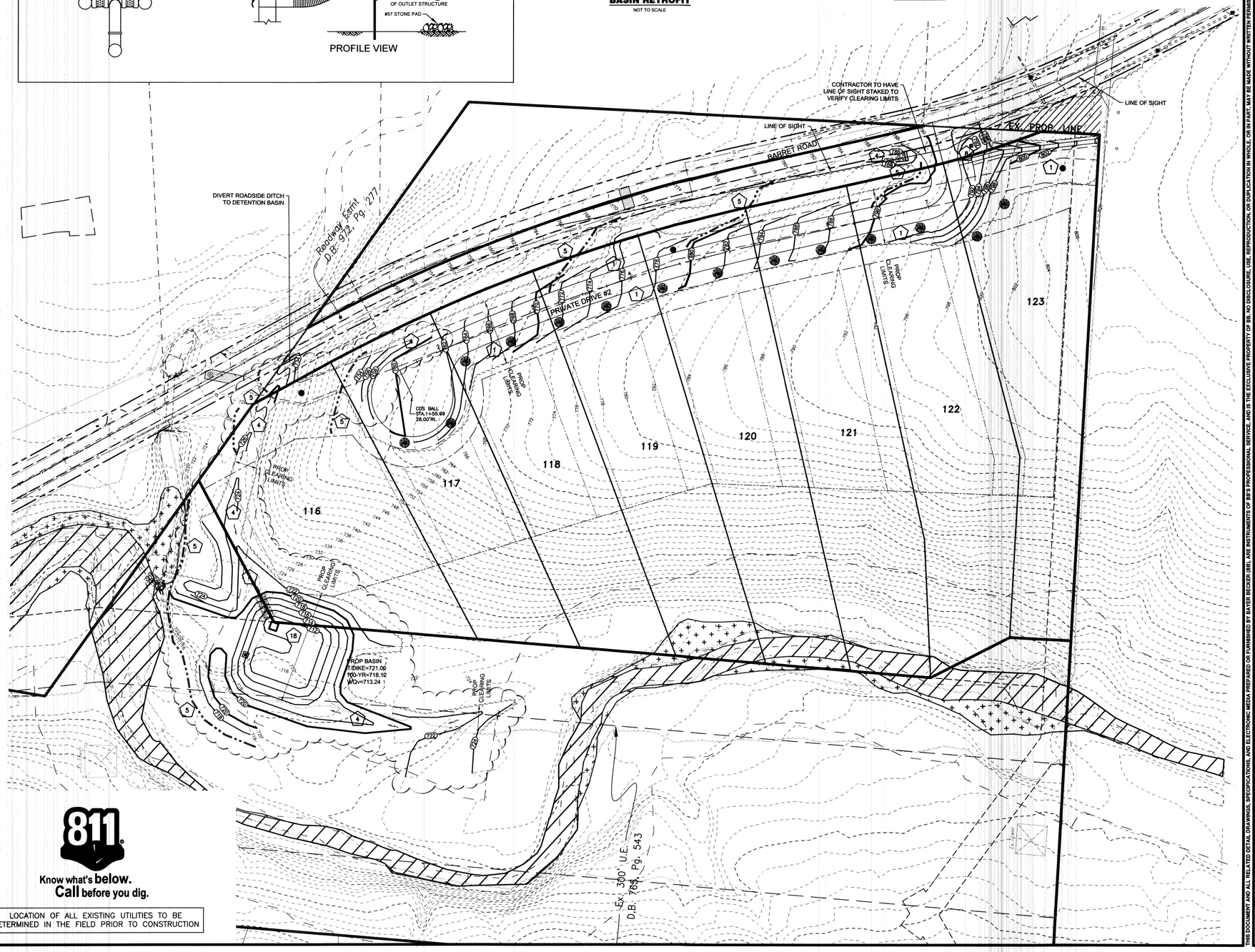
LEGEND

1	SEEDING & MULCHING
4	DITCH CHECK
5	SILT FENCE OR MULCH BERM
8	DANDY BAG/CURB (OR APPROVED EQUAL)
11	GEOTEXTILE INLET PROTECTION
18	SEDIMENT TRAP
21	CONSTRUCTION ENTRANCE
28	CONCRETE WASHOUT
MFOE	MINIMUM FRONT OPENING ELEVATION
	NO TREE CLEARING OR WORK TO BE COMPLETED WITHIN THIS AREA

Basis of Bearing: State Plane NAD83 GPS Observations

0 50 75

SCALE: 1" = 50'



811 Know what's below. Call before you dig.

LOCATION OF ALL EXISTING UTILITIES TO BE DETERMINED IN THE FIELD PRIOR TO CONSTRUCTION

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Item	Revision Description	Date	Drwn:	Chk:
1	REVISE PER CLIENT COMMENTS	07-12-19	AJW	JSD
2	REVISED PRIVATE DRIVE LAYOUT, UTILITIES, AND EARTHWORK	10-10-19	CJD	JSD
3	REVISED PER BCVS COMMENTS	10-17-19	CJD	JSD
4	REVISED PER BCEO COMMENTS	10-12-19	CJD	JSD
5				
6				
7				
8				
9				

THE OAKS OF WEST CHESTER SECTION FIVE (PHASE EIGHT)

SECTION 22, TOWN 3, RANGE 2
WEST CHESTER TOWNSHIP
BUTLER COUNTY, OHIO

GRADING AND EROSION CONTROL PLAN

bayer becker
www.bayerbecker.com
6900 Tylersville Road, Suite A
Mason, OH 45040 - 513.336.6600

Drawing: 06F158-005 CD
Drawn by: LDF
Checked By: JSD
Issue Date: 08-13-19
Sheet: C5.0

Plot time: Nov 12, 2019 - 5:53pm
Drawing name: J:\2006\06F158-005\CV\DWG\06F158-005 CD.dwg - Layout Tab: C5.0 GRADING

GENERAL NOTES

EROSION AND SEDIMENT CONTROLS

Vegetative practices
Such practices may include: temporary seeding, permanent seeding, mulching, matting, sod stabilization, vegetative buffer strips, phasing and protection of trees. The contractor shall initiate appropriate vegetative practices on all disturbed areas within seven (7) days if they are to remain dormant (undisturbed) for more than fourteen (14) days. Permanent or temporary soil stabilization shall be applied to disturbed areas within seven (7) days after final grade is reached on any portion of the site.

Structural Practices
Structural practices shall be used to control erosion and trap sediment from all sites remaining disturbed for more than fourteen (14) days.

Timing
Sediment control structures shall be functional throughout earth disturbing activity. Sediment ponds and perimeter sediment barriers shall be implemented as the first step of grading and within seven days from the start of grubbing. They shall continue to function until the upslope development area is restabilized.

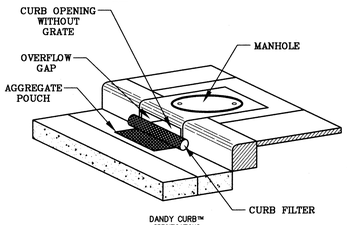
Sediment Barriers
Sheet flow runoff from denuded areas shall be intercepted by sediment barriers. Sediment barriers, such as sediment fences or diversions direction runoff to settling facilities, shall protect adjacent properties and water resources from sediment transported by sheet flow.

Erosion and sediment control practices used to satisfy the conditions of this plan shall meet the standards and specifications in the current edition of Water Management and Sediment Control in Urbanized Areas (Soil Conservation Service.)

Waste Disposal
No solid or liquid waste, including building materials, shall be discharged in storm water runoff. Off-site vehicle tracking of sediments shall be minimized. The plan shall ensure and demonstrate compliance and applicable State of local waste disposal, sanitary sewer or septic system regulations.

Maintenance
All temporary and permanent control practices shall be maintained and repaired as needed to assure continued performance of their intended function. The contractor shall be responsible for the maintenance described above.

8 DANDY CURB™



DANDY CURB™ SPECIFICATIONS

NOTE: THE DANDY CURB™ WILL BE MANUFACTURED IN THE U.S.A. FROM A WOVEN MONOFILAMENT FABRIC THAT MEETS OR EXCEEDS THE FOLLOWING SPECIFICATIONS:

DANDY CURB™ (SAFETY ORANGE)

Mechanical Properties	Test Method	Units	MARV
Grab Tensile Strength	ASTM D 4632	kN (lbs)	1.62 (365) X 0.89 (200)
Grab Tensile Elongation	ASTM D 4632	%	24 X 10
Puncture Strength	ASTM D 4833	kN (lbs)	0.40 (90)
Mullen Burst Strength	ASTM D 3786	kPa (psi)	3097 (450)
Trapezoid Tear Strength	ASTM D 4533	kN (lbs)	0.51 (115) X 0.33 (75)
UV Resistance	ASTM D 4355	%	90
Apparent Opening Size	ASTM D 4751	Mm (US Std Sieve)	0.425 (40)
Flow Rate	ASTM D 4491	l/min/m²(gal/min/ft²)	5907 (145)
Permittivity	ASTM D 4491	Sec-1	2.1

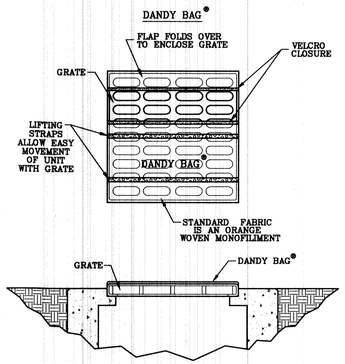
*Note: All Dandy Curbs™ can be ordered with our optional oil absorbents

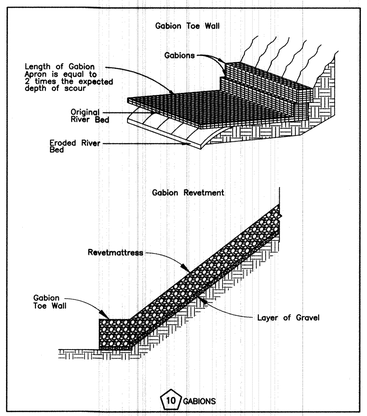
8 DANDY BAG®

Installation and Maintenance Guidelines

Installation: The empty Dandy Bag® should be placed over the grate as the grate stands on end. If using optional oil absorbents; place absorbent pillow in pouch, on the bottom (below-grade side) of the unit. Attach absorbent pillow to tether loop. Tuck the enclosure flap inside to completely enclose the grate. Holding the lifting devices (do not rely on lifting devices to support the entire weight of the grate), place the grate into its frame.

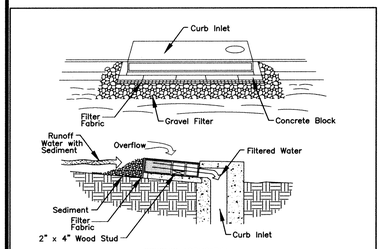
Maintenance: Remove all accumulated sediment and debris from surface and vicinity of unit after each storm event. Remove sediment that has accumulated within the containment area of the Dandy Bag® as needed. If using optional oil absorbents; remove and replace absorbent pillow when near saturation.





10 GABIONS

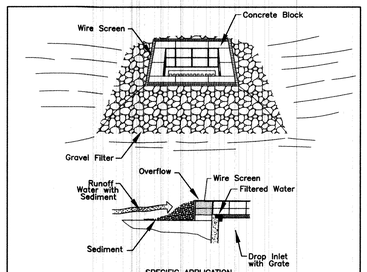
Source: Adapted from product literature of Bekaert Gabions.



SPECIFIC APPLICATION

This method of inlet protection is applicable at curb inlets where an overflow capability is necessary to prevent excessive ponding in front of the structure.

14 BLOCK AND GRAVEL CURB INLET SEDIMENT FILTER

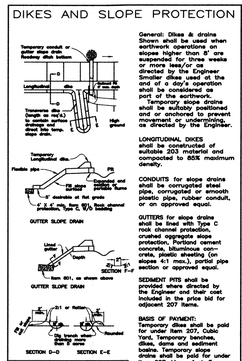


SPECIFIC APPLICATION

This method of inlet protection is applicable where heavy flows are expected and where an overflow capacity is necessary to prevent excessive ponding around the structure.

9 BLOCK AND DROP INLET SEDIMENT FILTER

DIKES AND SLOPE PROTECTION



General: Dikes & drains Shown shall be used when earthwork operations on slopes higher than 8' are suspended for three weeks or more less/or as directed by the Engineer. Smaller dikes used on the job at the end of operation shall be considered as part of the earthwork.

Temporary slope drains shall be suitably positioned and or anchored to prevent movement or undermining, as directed by the Engineer.

LONGITUDINAL DIKES shall be constructed of suitable 203 material and compacted to 85% maximum density.

CONDUITS for slope drains shall be corrugated steel pipe, corrugated or smooth plastic pipe, rubber conduit, or an approved equal.

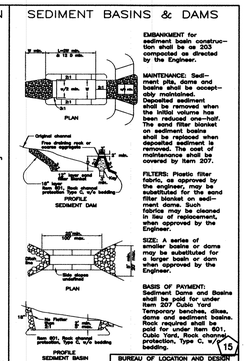
GUTTERS for slope drains shall be Type A, Type C rock channel protection, crushed aggregate slope protection, Portland cement concrete, bituminous concrete, plastic sheeting (on slopes 4:1 max.), partial pipe section or approved equal.

SEDIMENT PITS shall be provided where directed by the Engineer and their cost included in the price bid for adjacent 207 items.

BASIS OF PAYMENT:
Temporary dikes shall be paid for under Item 207, Cubic Yard. Temporary benches, dikes, drains and sediment basins, Temporary slope drains shall be paid for under Item 207, Linear foot, Temporary slope drains. Rock required shall be paid for under Item 601, rock channel protection, Type C, w/o bedding.

16 Not to scale

SEDIMENT BASINS & DAMS



EMBANKMENT for sediment basin construction shall be as 203 compacted as directed by the Engineer.

MAINTENANCE: Sediment pits, dams and basins shall be acceptably maintained. Deposited sediment shall be removed when the initial volume has been reduced by one-half. The sand filter blanket on sediment basins shall be replaced when deposited sediment is removed. The cost of maintenance shall be covered by item 207.

FILTERS: Pisello filter fabric, as approved by the engineer, may be substituted for the sand filter blanket on sediment dams. Such fabrics may be cleaned rather than replaced, when approved by the Engineer.

SIZE: A series of smaller basins or dams may be substituted for a larger basin or dam when approved by the Engineer.

BASIS OF PAYMENT:
Sediment Dams and Basins shall be paid for under Item 207 Cubic Yard Temporary benches, dikes, dams and sediment basins. Rock required shall be paid for under Item 601, Cubic Yard, Rock channel protection, Type C, w/o bedding.

15

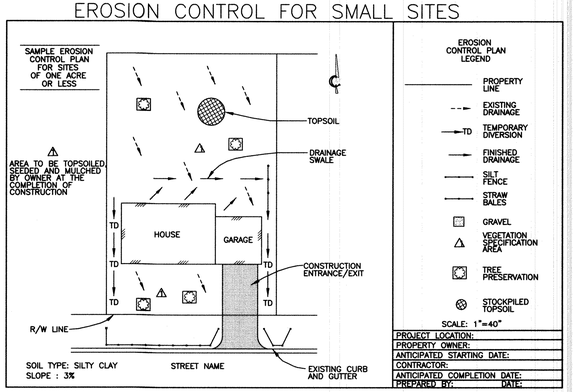
BUREAU OF LOCATION AND DESIGN
OHIO DEPARTMENT OF TRANSPORTATION

TEMPORARY EROSION CONTROL

STANDARD CONSTRUCTION DRAWING MC-11

Not to scale

EROSION CONTROL FOR SMALL SITES

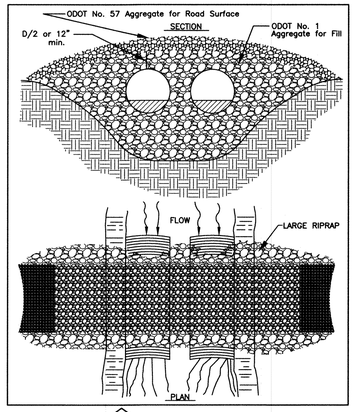


WARNING! Extra measures may be needed if your site:

- Is within 300 feet of a stream or wetland
- Is within 1000 feet of a lake
- Is steep (slopes of 12% or more)
- Receives runoff from 10,000 sq. ft. or more of adjacent land
- Has more than an acre of disturbed ground

Typical Lawn Seed Mixtures

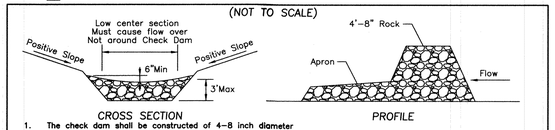
Grass	Sunny Site	Shady Site
Kentucky bluegrass	65%	15%
Fine fescue	20%	70%
Perennial ryegrass	15%	15%
Seeding rate		
Seeding rate (lb./1000 sq. ft.)	3–4	4–5



7 TEMPORARY STREAM CROSSING

7 ROCK CHECK DAM

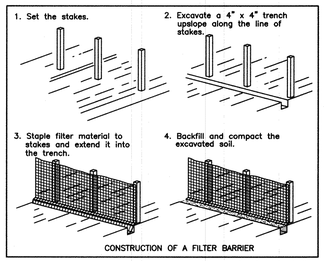
(NOT TO SCALE)



CROSS SECTION — PROFILE

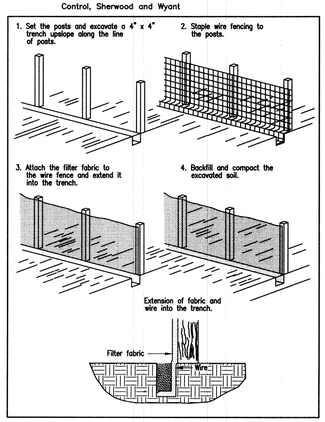
1. The check dam shall be constructed of 4–8 inch diameter stone, placed so that it completely covers the width of the channel. ODOT Type D stone is acceptable, but should be underlain with a gravel filter consisting of ODOT No. 3 or 4 or suitable filter fabric.
2. Maximum height of check dam shall not exceed 3.0 feet.
3. The midpoint of the rock check dam shall be a minimum of 6 inches lower than the sides in order to direct across the center and away from the channel sides.
4. The base of the check dam shall be entrenched approximately 6 inches.
5. Spacing of check dams shall be in a manner such that the toe of the upstream dam is at the same elevation as the top of the downstream dam.
6. A Splash Apron shall be constructed where check dams are expected to be in use for an extended period of time, a stone apron shall be constructed immediately downstream of the check dam to prevent flows from undercutting the structure. The apron should be 6 in. thick and its length two times the height of the dam.
7. Stone placement shall be performed either by hand or mechanically as long as the center of check dam is lower than the sides and extends across entire channel.
8. Side slopes shall be a minimum of 2:1.

5 SILT FENCE DETAILS

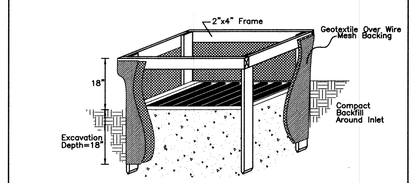


CONSTRUCTION OF A FILTER BARRIER

Source: Installation of Straw and Fabric Filter Barriers for Sediment Control, Sherwood and Wyant



Source: Adapted from Installation of Straw and Fabric Filter Barriers for Sediment Control, Sherwood and Wyant



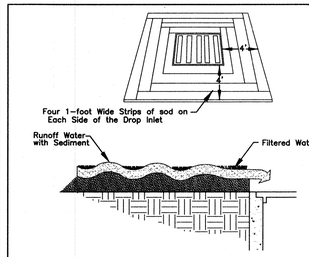
11 GEOTEXTILE INLET PROTECTION

SPECIFICATIONS FOR
INLET PROTECTION IN SWALES, DITCH LINES OR YARD INLETS

1. Inlet protection shall be constructed either before upslope land disturbance begins or before the storm drain becomes operational.
2. The earth around the inlet shall be excavated completely to a depth at least 18 in.
3. The wooden frame shall be constructed of 2–by–4–in construction–grade lumber. The 2–by–4–in posts shall be driven 1 ft into the ground at four four corners of the inlet and the top portion of 2–by–4–in frame assembled using the overlap joint shown. The top of the frame shall be at least 6 in below adjacent roads if ponded water would pose a safety hazard to traffic.
4. Wire mesh shall be of sufficient strength to support fabric with water fully impounded against it. It shall be stretched tightly around the frame and fastened securely to the frame.
5. Geotextile shall have an equivalent opening size of 20–40 sieve and be resistant to sunlight. It shall be stretched tightly around the frame and fastened securely. It shall extend from the top of the frame to 18 in below the inlet notch elevation. The geotextile shall overlap across one side of the inlet so the ends of the cloth are not fastened to the same post.
6. Backfill shall be placed around the inlet in compacted 6–in layers until the earth is even with notch elevation on ends and top elevation on sides.
7. A compacted earth dike or a check dam shall be constructed in the ditch line below the inlet if the inlet is not in a depression and if runoff bypassing the inlet will not flow to a settling pond. The top of earth dikes shall be at least 6 in. higher than the top of the frame

INLET PROTECTION – PAGE 125

Source: Rainwater and Land Development, Ohio's Standards for Stormwater Management, Land Development, and Urban Stream Protection. Second Edition–1996

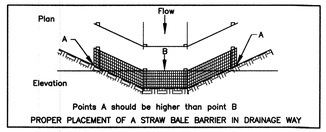


SPECIFIC APPLICATION

This method of inlet protection is applicable only at the time of permanent seeding, to protect the inlet from sediment and mulch materials until permanent vegetation has become established.

12 SOD DROP INLET SEDIMENT FILTER

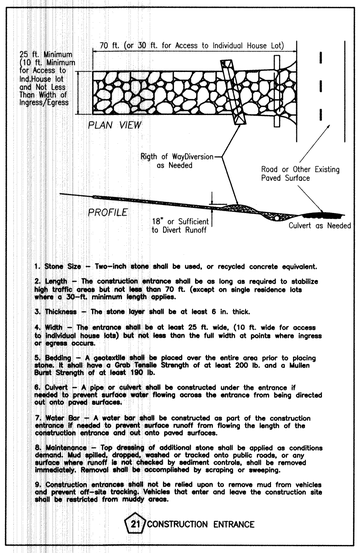
4 DITCH CHECK



Points A should be higher than point B

PROPER PLACEMENT OF A STRAW BALE BARRIER IN DRAINAGE WAY

Source: Adapted from Installation of Straw and Fabric Filter Barriers for Sediment Control, Sherwood and Wyant



1. Stone Size – Two–inch stone shall be used, or recycled concrete equivalent.
2. Length – The construction entrance shall be as long as required to stabilize high traffic areas but not less than 70 ft. (except on single residence lots where a 30–ft. minimum length applies.
3. Thickness – The stone layer shall be at least 6 in. thick.
4. Width – The entrance shall be at least 25 ft. wide, (10 ft. wide for access to individual house lots) but not less than the full width at points where ingress or egress occurs.
5. Bedding – A geotextile shall be placed over the entire area prior to placing stone. It shall have a Grab Tensile Strength of at least 200 lb. and a Mullen Burst Strength of at least 190 lb.
6. Culvert – A pipe or culvert shall be constructed under the entrance if needed to prevent surface water flowing across the entrance from being directed out onto paved surfaces.
7. Water Bar – A water bar shall be constructed as part of the construction entrance if needed to prevent surface runoff from flowing the length of the construction entrance and out onto paved surfaces.
8. Maintenance – Top dressing of additional stone shall be applied as conditions demand. Mud spilled, dropped, washed or tracked onto public roads, or any surface where runoff is not checked by sediment controls, shall be removed immediately. Removal shall be accomplished by scraping or sweeping.
9. Construction entrances shall not be relied upon to remove mud from vehicles and prevent off–site tracking. Vehicles that enter and leave the construction site shall be restricted from muddy areas.

21 CONSTRUCTION ENTRANCE

1 REVEGETATION
Seed, sod or mulch bare soil as soon as possible
SEEDING AND MULCHING
Spread 4 to 6 inches of topsoil. Fertilize according to soil test (or apply 10 lb./1000 sq. ft. of 20–10–10 or 10–10–10 fertilizer.) Seed with an appropriate mix for the site (see table.) Rake lightly to cover seed with 1/4" of soil. Roll lightly. Mulch with straw (70–90 lb. or one bale per 1000 sq. ft.) Anchor mulch by punching 2 inches into the soil with a dull, weighted disk or by using netting or other measures on steep slopes, or windy areas. Water gently every day or two to keep soil moist. Less watering is needed once grass is 2 inches tall.

2 SODDING
Spread 4 to 6 inches of topsoil. Fertilize according to soil test (or apply 10lb./1000 sq. ft. of 20–10–10 or 10–10–10 fertilizer.) Lightly water the soil. Lay sod. Tamp or roll lightly. On slopes, lay sod starting at the bottom and work toward the top. Peg each piece down in several places. Initial watering should wet soil 6 inches deep (or until water stands 1 inch deep in a straight–sided container.) Then water lightly every day or two for 2 weeks. If construction is completed after October 31, seeding or sodding may be delayed. Applying mulch or temporary seed (such as rye or winter wheat) is recommended if weather permits. Straw bale or silt fences must be maintained until final seeding or sodding is completed in spring March 15– May 31.

3 PRESERVING EXISTING VEGETATION
Wherever possible, preserve existing trees, shrubs, and other vegetation. To prevent root damage, do not grade, place soil piles, or park vehicles near trees marked for preservation. Place plastic mesh or snow fence barriers around trees to protect the area below their branches.

4 OR 5 STRAW BALE, SILT FENCE or MULCH BERM
Put up before any other work is done. Install on downslope side(s) of site with ends extended up sideslopes a short distance. Place parallel to the contour of the land to allow water to pond behind fence. Entrench 4 inches deep (see back page.) Stake (2 stakes per bale OR 1 stake every 3 feet for silt fence.) Leave no gaps between bales or sections of silt fence. Inspect and repair once a week and after every 1/2 inch rain. Remove sediment if deposits reach half the fence or straw bale height. Maintain until a lawn is established.

6 SOIL PILES
Located away from any downslope street, driveway, stream, lake, wetland, ditch or drainageway. Temporary seed such as annual rye is recommended for topsoil piles. Surround with straw bales or silt fence.
GRAVEL DRIVE
Install a single access drive using 3 to 5 inch aggregate over a geotextile material. Lay gravel 6 inches deep and 10 feet wide from the foundation to the street. Use to prevent tracking dirt onto the road by all vehicles. Maintain throughout construction until driveway is paved. Park all construction vehicles on the street and off of the site.
SEDIMENT CLEANUP
By the end of each work day, sweep or scrape up soil tracked onto the road. By the end of the next work day after a storm, clean up soil washed off–site, and check straw bales and silt fence for damage or sediment buildup.
DOWNSPOUT EXTENDERS
Not required, but highly recommended. Install as soon as gutters and downspouts are completed. Route water to a grassed or paved area. Maintain until a lawn is established.

Item	Revision Description	Date	Drwn.	Chk.
1				
2				
3				
4				
5				
6				
7				
8				
9				

THE OAKS OF WEST CHESTER SECTION FIVE (PHASE EIGHT)

SECTION 22, TOWN 3, RANGE 2
WEST CHESTER TOWNSHIP,
BUTLER COUNTY, OHIO

SOIL AND EROSION CONTROL DETAILS

bayer becker
www.bayerbecker.com
6900 Tylersville Road, Suite A
Mason, OH 45040 - 513.336.6600

Drawing: 06F158-005 CD
Drawn by: LDF
Checked By: JSD
Issue Date: 08-13-19
Sheet: C5.1

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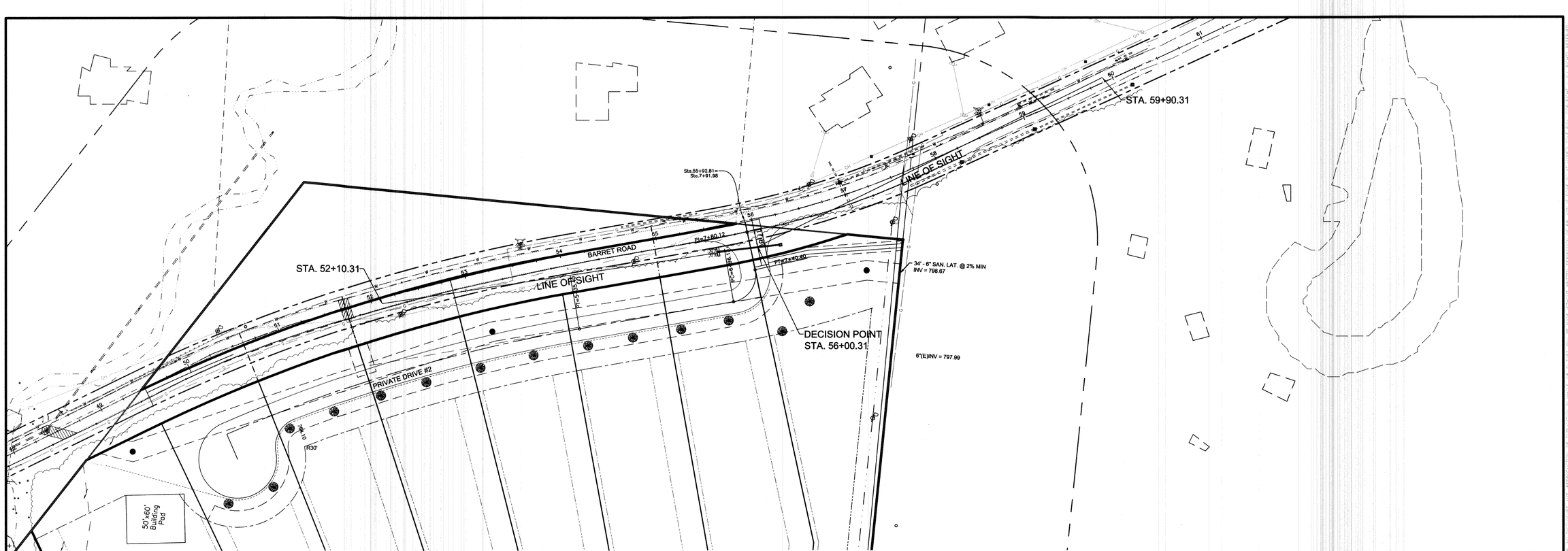
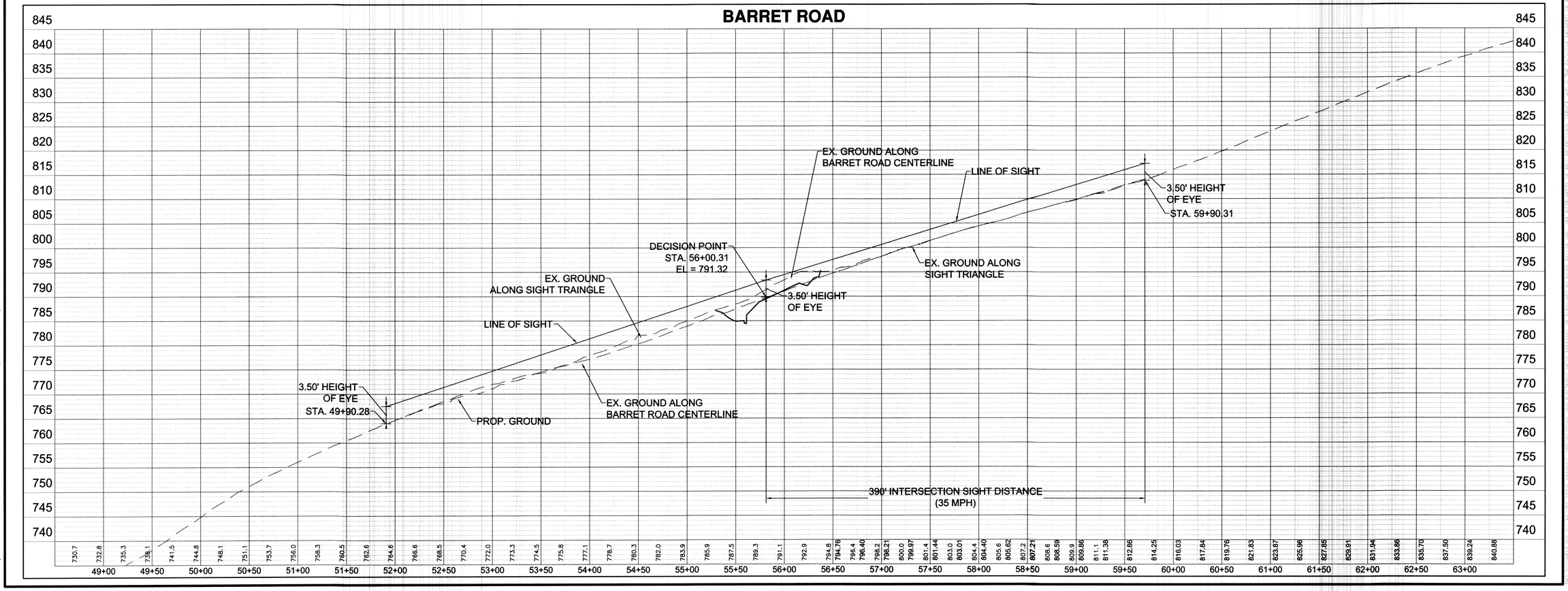
Plot time: Oct 09, 2019 - 5:12pm
Drawing name: J:\2006\06F158-005\CV\DWG\06F158-005 CD.dwg - Layout Tab: C5.1 EROSION DETAILS





Basis of Bearing:
State Plane NAD83 GPS Observations

0 50 75
SCALE: 1" = 50'

HOR.1"=50'
VER.1"=10'

Item	Revision Description	Date	Dwn.	Chk.

THE OAKS OF WEST CHESTER SECTION FIVE (PHASE EIGHT)

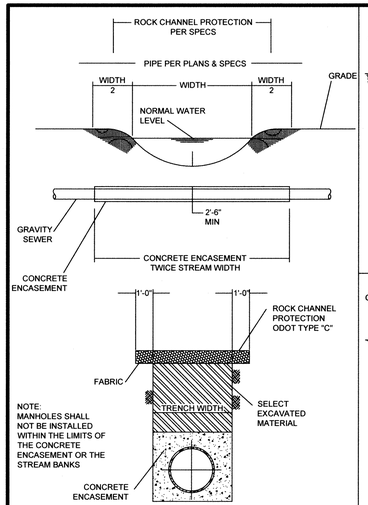
SECTION 22, TOWN 3, RANGE 2
WEST CHESTER TOWNSHIP,
BUTLER COUNTY, OHIO

SIGHT DISTANCE EXHIBIT

bayer becker
www.bayerbecker.com
8800 Tylersville Road
Mason, Ohio 45040 513.336.6600

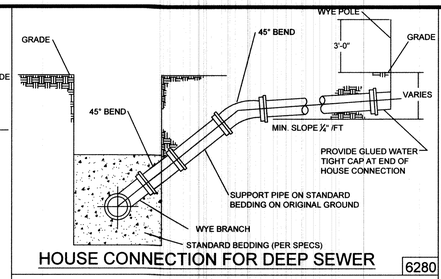
Drawing: 06F158-005 SIGHT DISTANCE
Drawn by: SC
Checked By:
Issue Date: 08-13-19
Sheet: C6.0

Plot time: Oct 10, 2019 – 9:47pm – Login Name: clintoliver
Drawing name: J:\2006\06F158-005\CV\DWG\06F158-005 Sight Distance.dwg – Layout Tab: Int. Site Distance



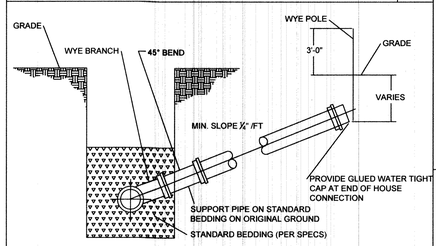
TYPICAL CREEK CROSSING FOR GRAVITY SEWERS

6260



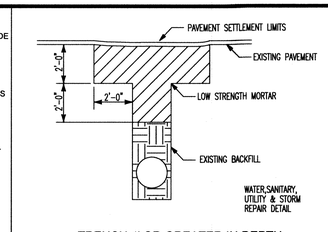
HOUSE CONNECTION FOR DEEP SEWER

6280

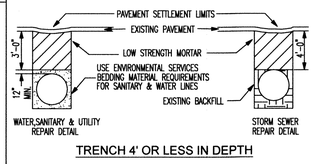


HOUSE CONNECTION FOR SHALLOW SEWER

6290



TRENCH 4' OR GREATER IN DEPTH



TRENCH 4' OR LESS IN DEPTH

SETTLEMENT REPAIR

ITEM SPECIAL – LOW STRENGTH MORTAR BACKFILL MATERIAL.

DESCRIPTION: THIS WORK SHALL CONSIST OF THE PLACEMENT OF A FLOWABLE MIXTURE OF PORTLAND CEMENT, FLY ASH, AND SAND FOR BACK-FILLING CONDUIT OR AT OTHER LOCATIONS AS SHOWN ON THE PLANS OR AS SPECIFIED. THE WORK SHALL BE IN ACCORDANCE WITH ODOT ITEMS 603 AND 499 UNLESS OTHERWISE SPECIFIED HEREIN.

MATERIALS: MATERIALS SHALL BE:
A. CEMENT 701.01 OR 701.04
B. FLY ASH SHALL MEET ASTM C-618
C. FINE AGGREGATE SHALL BE NEUTRAL SAND OR SAND MANUFACTURED FROM STONE, GRAVEL, OR AIR-COOLED SLAG. THE GRADUATION OF THE SAND SHALL MEET THE REQUIREMENTS OF 703.05. THE SAND SHALL BE FINE ENOUGH TO STAY IN SUSPENSION IN THE MIXTURE TO THE EXTENT REQUIRED FOR PROPER FLOW. THE ENGINEER RESERVES THE RIGHT TO REJECT THE SAND IF THE FLOWABLE MIXTURE CANNOT BE PRODUCED.
D. WATER USED FOR MORTAR BACKFILL SHALL BE FREE FROM OIL, ACID, STRONG ALKALIDES OR VEGETABLE MATTER.
E. SLUMPS MEASURED IN THE ORDINARY WAY WILL BE 8" OR HIGHER FOR PROPER PLACEMENT OF THE FLOWABLE MATERIAL.

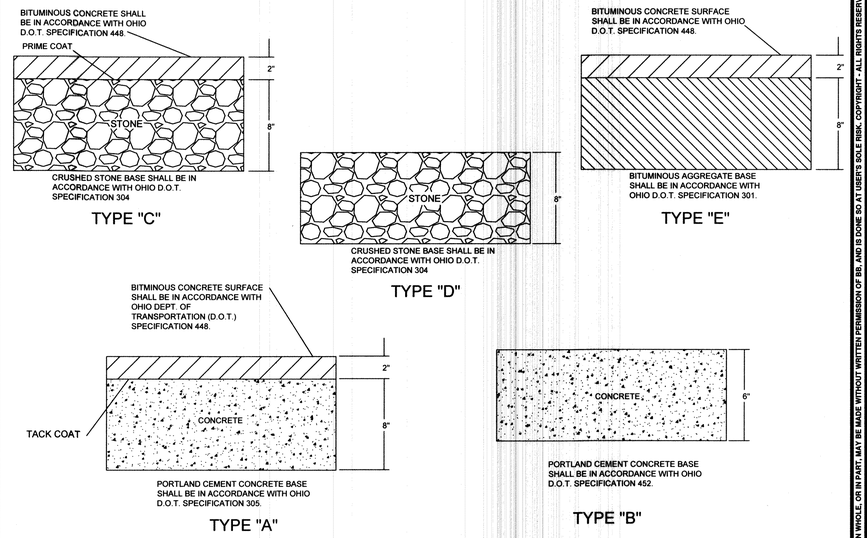
MORTAR MIX PROPORTIONING: THE INITIAL TRIAL MIXTURE SHALL CONSIST OF THE FOLLOWING QUANTITIES OF MATERIALS PER CUBIC YARD:

CLASS LSM – 50	
CEMENT	50 LBS.
FLY ASH	250 LBS.
SAND	2910 LBS.
WATER (TARGET)	500 LBS.

ADJUSTMENTS TO THE PROPORTIONS MAY BE MADE BY THE ENGINEER PROVIDING THE TOTAL ABSOLUTE VOLUME OF THE MATERIALS IS MAINTAINED. THIS ITEM WILL BE INCLUDED IN THE STANDARD 603 INSULATION, THIS WILL NOT BE AN ADDITIONAL PAY ITEM, BUT REPLACEMENT FOR THE NORMAL BACKFILL.

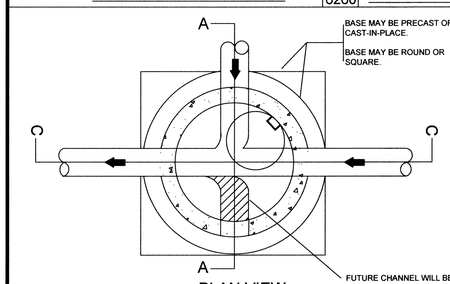
SIDEWALK RESTORATION DETAIL

4010

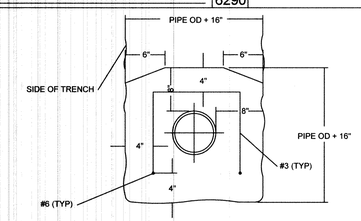


PAVEMENT REPLACEMENT DETAILS

4120



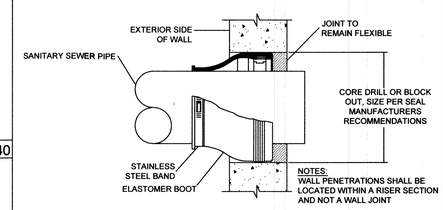
PLAN VIEW



PIPE SIZE	CY CONC PER LIN FT	LENGTH OF NO 3 BARS	SPACING (FT) BETWEEN NO 3 BARS
6"	0.121	3'-9"	1.64
8"	0.139	4'-3"	1.25
10"	0.157	4'-9"	1.12
12"	0.177	5'-3"	1.02
16"	0.200	6'-3"	0.85
18"	0.247	6'-10"	0.78
20"	0.270	7'-5"	0.72
24"	0.315	8'-6"	0.63
30"	0.540	10'-0"	0.57

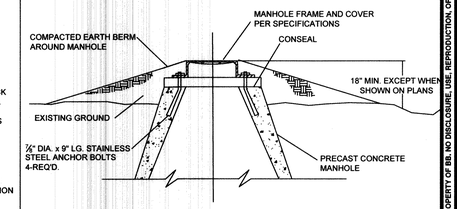
CONCRETE ENCASEMENT DETAIL

6240



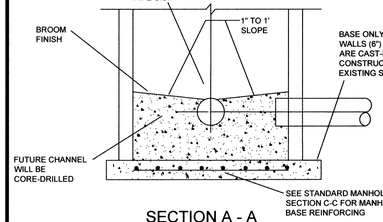
CONNECTION TO EXISTING MANHOLE

6150



ELEVATED MANHOLE DETAIL

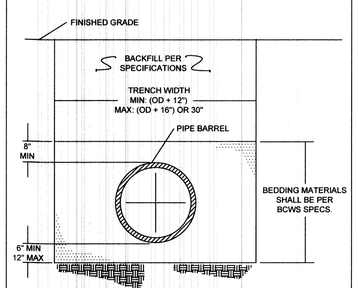
6170



SECTION A - A

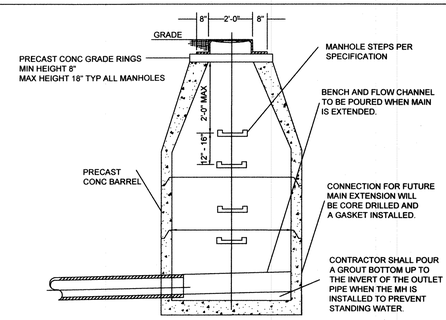
STANDARD CAST IN-PLACE MANHOLE

6130



TYPICAL TRENCH DETAIL SEWER INSTALLATION

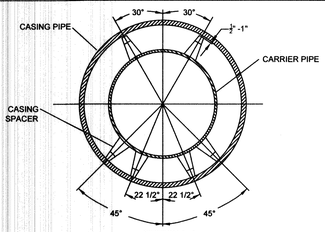
6270

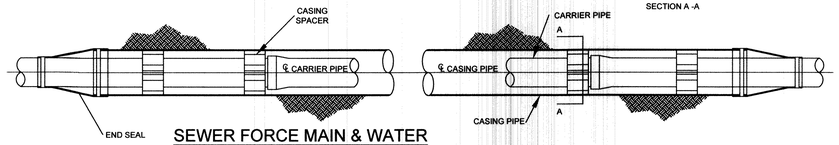


DEAD END MANHOLE DETAIL

6190

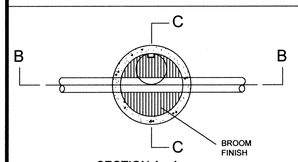
NOTE:
1) THE CARRIER PIPE SHALL BE BRACED WITHIN THE CASING PIPE WITH CASING SPACERS THAT PLACE THE CARRIER PIPE IN A "RESTRAINED" POSITION TO PRECLUDE POSSIBLE FLOATATION WHILE PROVIDING 1/2-1" CLEARANCE BETWEEN THE TOP RUNNERS AND THE CASING PIPE.
2) CASING SPACERS SHALL BE INSTALLED WITHIN ONE (1) FOOT OF EACH SIDE OF CARRIER PIPE JOINTS, WITHIN ONE (1) FOOT OF EACH END OF THE CASING PIPE AND ON 6 FOOT CENTERS THEREAFTER.
3) THERE SHALL BE TWO (2) RUNNERS ON TOP AND TWO (2) RUNNERS ON BOTTOM OF CASING SPACER FOR CARRIER PIPE DIAMETERS OF 4-12" OR TWO (2) RUNNERS ON TOP AND FOUR (4) RUNNERS ON BOTTOM FOR CARRIER PIPE DIAMETERS OF 14-36".
4) AT EACH END OF THE CASING PIPE, THE CARRIER AND CASING PIPE SHALL BE WRAPPED WITH END SEALS.





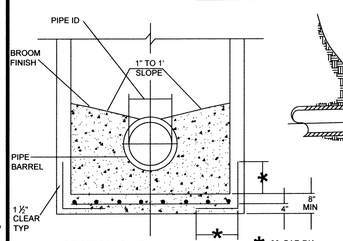
SEWER FORCE MAIN & WATER MAIN ENCASEMENT DETAIL

4370

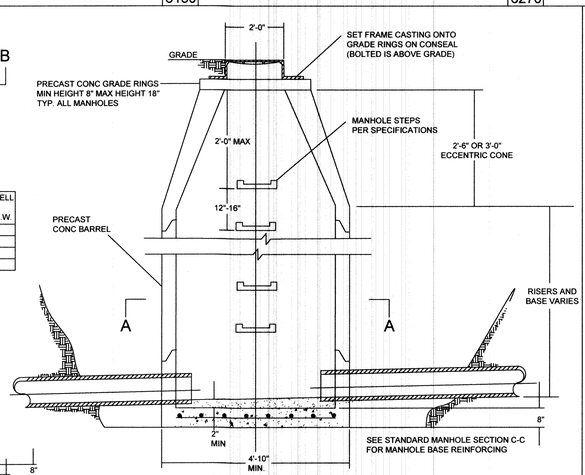


SECTION A - A

M.H. DEPTH	SLAB & DOWELL RESTEEL SQ. IN /FT. E.W.
0'-10'	0.17
11'-20'	0.22
21'-30'	0.27
31'-40'	0.32



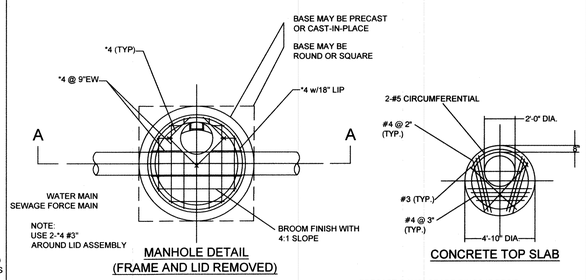
SECTION C - C



SECTION B - B

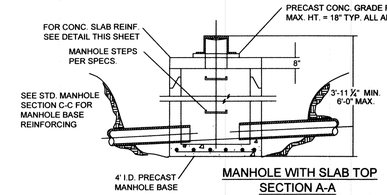
STANDARD MANHOLE

6200



MANHOLE DETAIL (FRAME AND LID REMOVED)

CONCRETE TOP SLAB



MANHOLE WITH SLAB TOP SECTION A-A

MANHOLE WITH WITH SLAB TOP DETAIL

6210

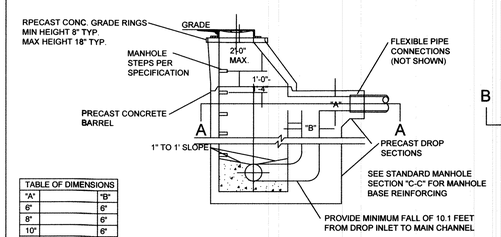
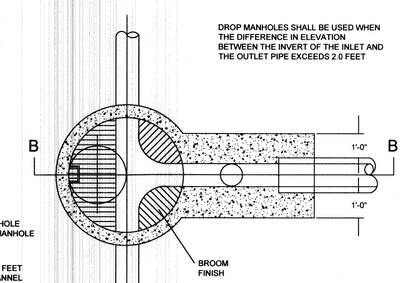


TABLE OF DIMENSIONS	
"A"	"B"
6"	6"
8"	6"
10"	6"
12"	8"
15"	8"
18"	10"
21"	10"
24"	12"
27"	15"
30"	18"

OUTSIDE DROP MANHOLE SECTION "B-B"



OUTSIDE DROP MANHOLE SECTION "A-A"

OUTSIDE DROP MANHOLE DETAIL

6140

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Item	Revision Description	Date	Drwn:	Chk:
1	REVISED PER BCWS/BCEO REVIEWS	03-14-19	AMB	JSD

THE OAKS OF WEST CHESTER SECTION FIVE (PHASE EIGHT)

SECTION 22, TOWN 3, RANGE 2
WEST CHESTER TOWNSHIP,
BUTLER COUNTY, OHIO

BUTLER COUNTY SANITARY DETAILS

bayer becker
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6900 Tylersville Road, Suite A
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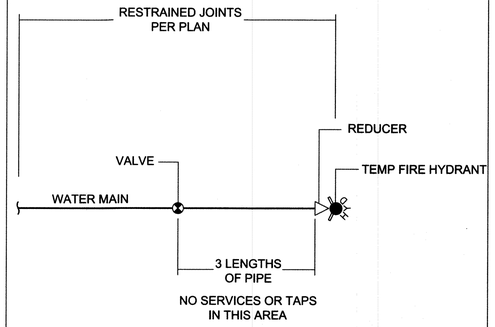
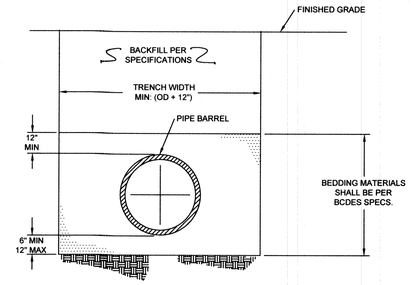
Drawing: 06F158-005 CD
Drawn by: LDF
Checked By: JSD
Issue Date: 08-13-19
Sheet: C7.0

Plot time: Oct 09, 2019 - 5:15pm
Drawing name: J:\2006\06F158-005\CV\DWG\06F158-005 CD.dwg - Layout Tab: C7.0 SANITARY DETAILS



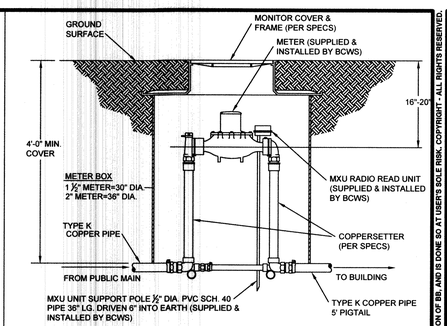
DEAD END DETAIL WITH TEMPORARY FIRE HYDRANT

5140



TYPICAL TRENCH DETAIL WATER MAIN INSTALLATION

5280



METER TYPE	LAYING LENGTH
1 1/2" C2 OMNI	13"
1 1/2" T2 OMNI	13"
2" C2 OMNI AS SUPPLIED BY BUTLER COUNTY SEE NOTE 3	17"
2" C2 OMNI FACTORY ORDERED	15 1/2"
2" T2 OMNI	17"

NOTE:
1) FOR METERS 3" AND LARGER, REFER TO THE STD. INSTALLATION FOR 3" AND LARGER WATER METERS.

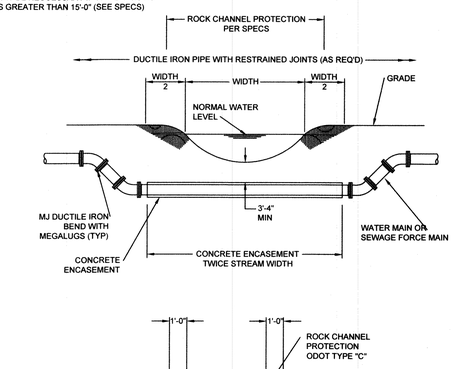
2) ALL DOMESTIC WATER METERS SHALL BE SENSUS OMNI C2 TYPES FOR SIZES OF 1 1/2" AND LARGER. NON-DOMESTIC, (IE: DEDUCT, IRRIGATION), MAY BE EITHER SENSUS OMNI T2 OR C2 TYPES FOR SIZES OF 1 1/2" AND LARGER.

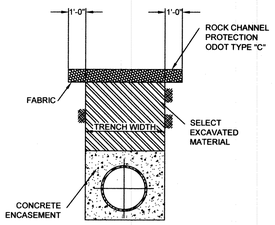
3) BUTLER COUNTY ORDERS 2" C2 OMNI METERS WITH A 17" LAYING LENGTH TO ACCOMODATE THE STANDARD COPPERSETTER. IF THE FACTORY ORDERED SIZE IS UTILIZED AN ADAPTER FLANGE PLATE WILL BE REQUIRED.

STANDARD INSTALLATION FOR 1-1/2" & 2" WATER METER SETTINGS

5170

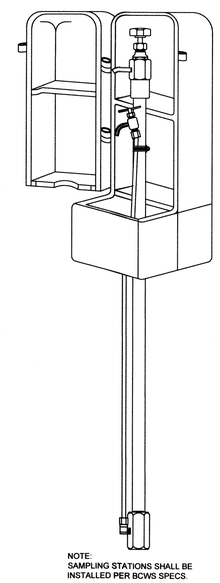
NOTE:
FOR WATER MAINS ONLY:
MODIFICATIONS FROM THIS DETAIL
MAY BE NECCESSARY IF WATER WIDTH
IS GREATER THAN 15'-0" (SEE SPECS)





TYPICAL CREEK CROSSING & TRENCH DETAIL FOR WATER & SEWER FORCE MAINS

4170



STATION SHALL BE ENCLOSED IN A LOCKABLE, NON-REMOVABLE ALUMINUM BOX WITH HINGED OPENINGS.

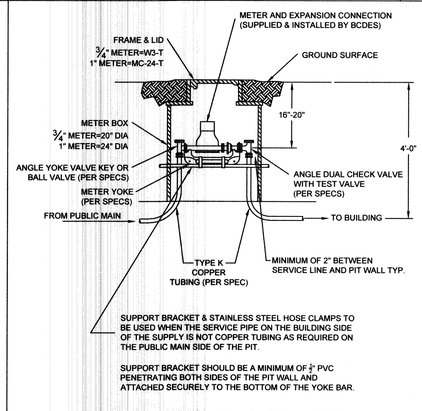
ALL WORKING PARTS SHALL BE OF STAINLESS STEEL AND SERVICABLE FROM ABOVE GROUND WITH NO DIGGING OR REPLACEMENT NEEDED.

THE STATION SHALL BE MODEL #88-SS AS MANUFACTURED BY THE KUPFERLE FOUNDARY, ST. LOUIS MO. OR APPROVED EQUAL.

NOTE:
SAMPLING STATIONS SHALL BE
INSTALLED PER BCWS SPECS.

PERMANENT LAB SAMPLING STATION

5270

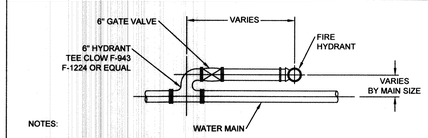


SUPPORT BRACKET & STAINLESS STEEL HOSE CLAMPS TO BE USED WHEN THE SERVICE PIPE ON THE BUILDING SIDE OF THE SUPPLY IS NOT COPPER TUBING AS REQUIRED ON THE PUBLIC MAIN SIDE OF THE PIT.

SUPPORT BRACKET SHOULD BE A MINIMUM OF 1/4" PVC PENETRATING BOTH SIDES OF THE PIT WALL AND ATTACHED SECURELY TO THE BOTTOM OF THE YOKE BAR.

STANDARD INSTALLATION FOR 3/4" AND 1" WATER METER SETTINGS

5150



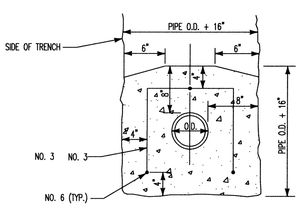
NOTES:

1.) FITTINGS TO BE MECHANICAL JOINT HYDRANT ANCHOR FITTINGS.

2.) SEE TYPICAL FIRE HYDRANT INSTALLATION DETAIL FOR ADDITIONAL DETAILS (#5110)

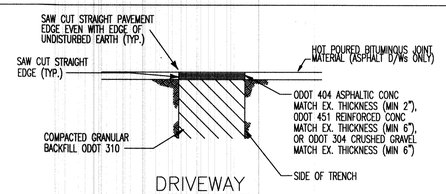
SETTING FOR HYDRANT ADJACENT TO MAIN

5120

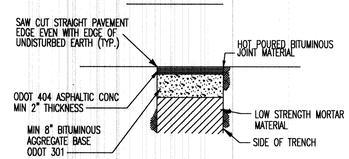


PIPE SIZE	C.Y. CONC. PER LIN. FT.	LENGTH OF NO. 3 BARS	SPACING (FT) BETWEEN NO. 3 BARS
6"	0.121	3'-9"	1.64
8"	0.139	4'-3"	1.25
10"	0.157	4'-9"	1.12
12"	0.177	5'-3"	1.02
16"	0.200	6"-3"	0.85
18"	0.247	6'-10"	0.78
20"	0.270	7'-5"	0.72
24"	0.315	8'-6"	0.63
30"	0.540	10'-0"	0.57

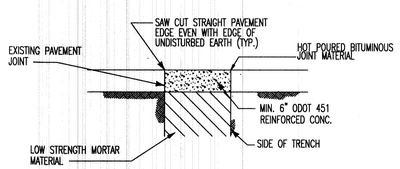
CONCRETE ENCASEMENT



DRIVEWAY

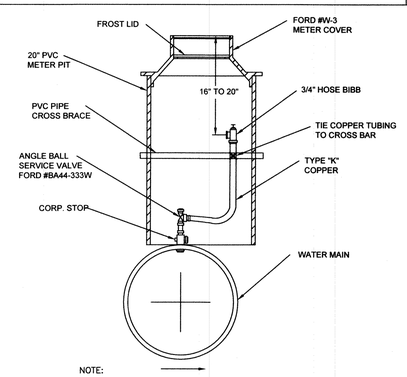


ASPHALTIC CONCRETE ROADWAY



CONCRETE ROADWAY

PAVEMENT REPLACEMENT DETAILS



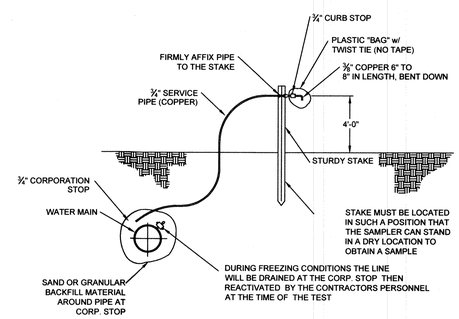
NOTE:

1) PIPE LESS THAN OR EQUAL TO 12"ø MUST USE 3/4" CORP. STOP, ANGLE BALL VALVE AND SERVICE PIPE.

2) PIPE GREATER THAN 12"ø TO USE 1" CORP. STOP, ANGLE BALL VALVE AND SERVICE PIPE.

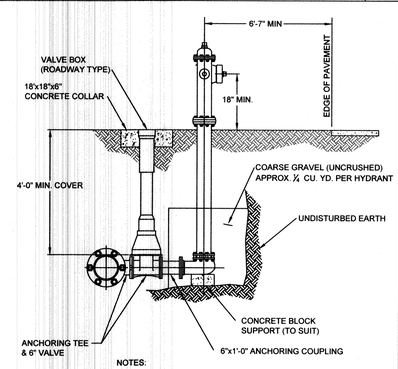
AIR RELEASE VALVE DETAIL

5290



TEMPORARY PURITY TEST STATION

5260



NOTES:

1.) VERIFY LOCATION OF F.H. RELATIVE TO WATER MAIN ON PLANS.

2.) CHECK STREET DETAILS FOR RELATIONSHIP BETWEEN MAIN, STREET AND F.H.

TYPICAL FIRE HYDRANT INSTALLATION

5110

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Item	Revision Description	Date	Drwn:	Chk:
1	REVISED PER BCWS/BCEO REVIEWS	03-14-19	AMB	JSD

THE OAKS OF WEST CHESTER SECTION FIVE

SECTION 22, TOWN 3, RANGE 2
WEST CHESTER TOWNSHIP,
BUTLER COUNTY, OHIO

BUTLER COUNTY WATER DETAILS

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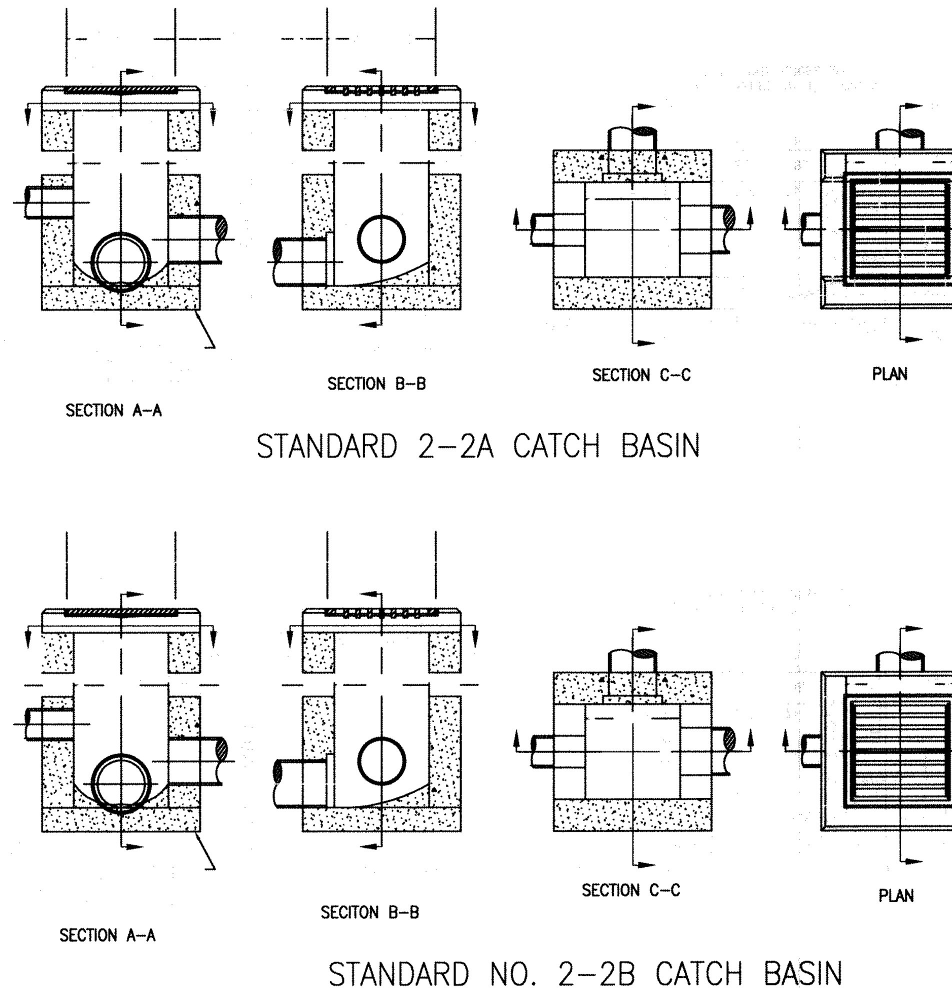
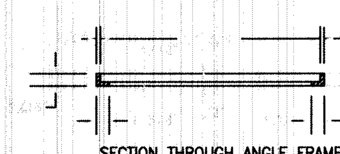
Drawing:	06F158-005 CD
Drawn by:	LDF
Checked By:	JSD
Issue Date:	08-13-19
Sheet:	C7.1

Plot time: Oct 09, 2019 - 5:15pm
Drawing name: J:\2006\06F158-005\CV\DWG\06F158-005 CD.dwg - Layout Tab: C7.0 SANITARY DETAILS



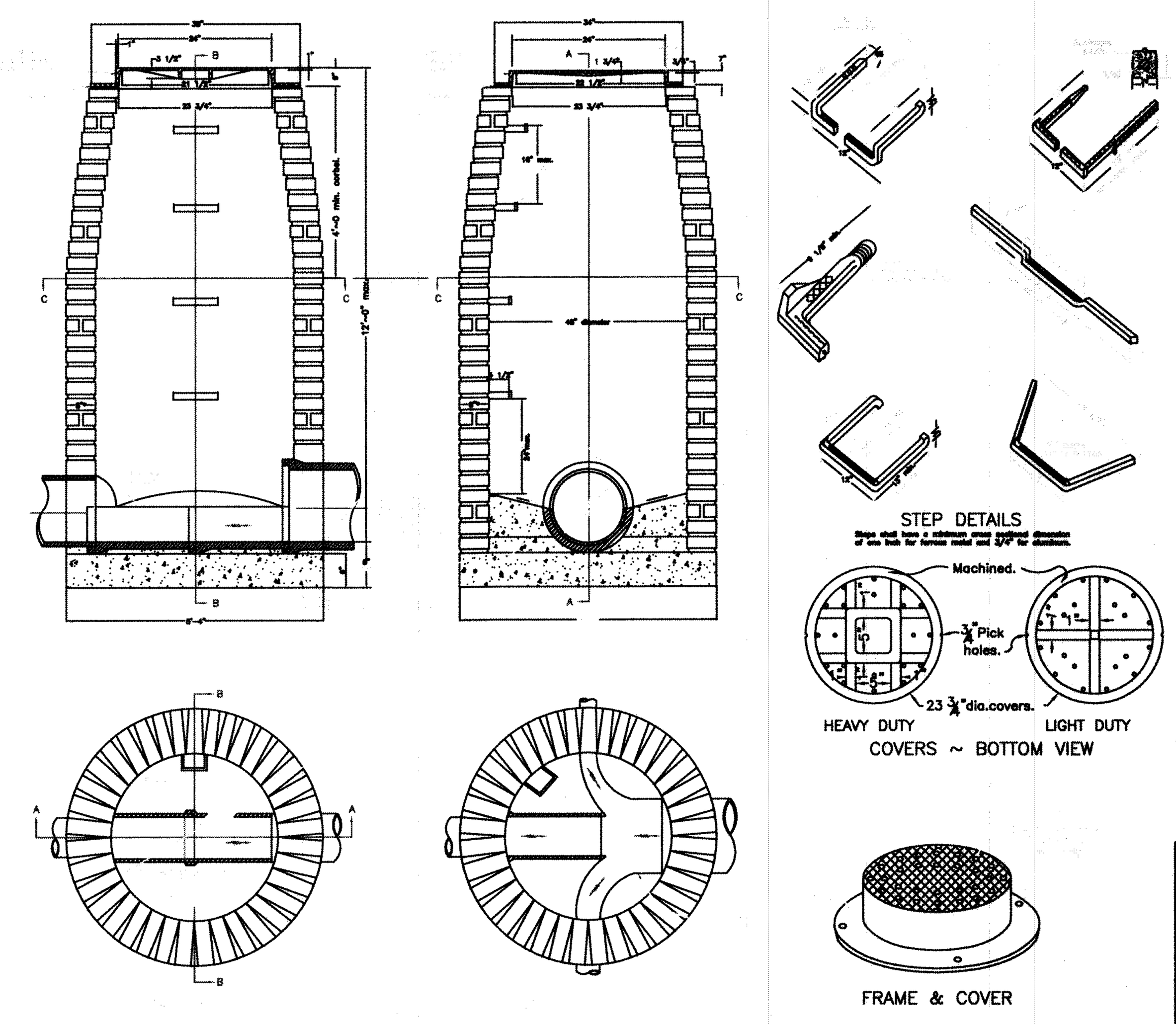
NOTES

GRATING AND FRAME: Shall meet the requirements of 604. The design shall be essentially the same and equally as strong as the one shown hereon.
Weight of grate, minimum , 120 lbs.
Weight of frame, minimum, 40 lbs.
CONCRETE: Cast in place to be class "C".
BRICK OR CONCRETE BLOCK: Side walls, when used in place of concrete, shall be 8 inches nominal thickness. When catch basin above the flow line of the side opening shall be constructed of Portland Cement Concrete.
No. 2–2A: Side inlets to be placed 4 to 6 inches below normal elevations of median or ditch flow line, returning to normal 10 feet each side of the basin.
No. 2–2B: Grate elevation to be placed 4 to 6 inches below normal ditch returning to normal 10 feet each side of basin.
SIDE INLETS: Shall be provided on both sided of the No. 2–2A catch basin in sags and on upstream side only where the ditch has a continuous down grade past the catch basin.
MAXIMUM PIPE SIZE IS 21".
MAXIMUM DEPTH IS 4 FEET.
STEPS: Steps are to be installed in storm structures over 4' in depth and shall meet the requirements of drawing MH–1.



SECTION THROUGH ANGLE FRAME
FOR STANDARD 2–2A CATCH BASIN

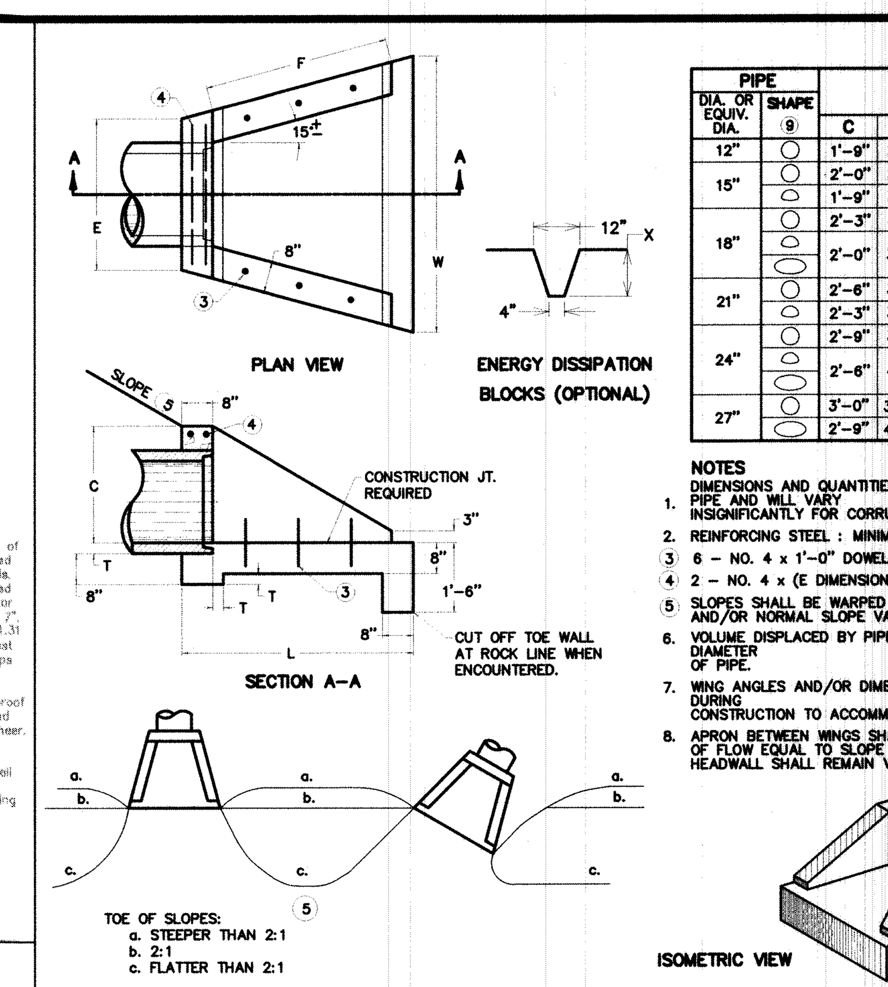
REVISIONS	DATE	C–10
		CATCH BASIN CB 2–2A CB 2–2B
		CHK. BY: C.A.H. EFFECTIVE DATE: 1–1–94
		BUTLER COUNTY ENGINEERS OFFICE AND OPERATIONS FACILITY 1921 FAIRGROVE AVENUE – HAMILTON, OHIO 45011 PHONE 867–5744



NOTES

CONSTRUCTION: No.1 manhole is for sewers 30" diameter or less. The design shown is for brick construction with every sixth course a stretcher course. The 6" bottom may be precast or cast in place concrete. The bottom channel sections shall be built with concrete and lined with split pipe or brick except curved channels may be formed in the concrete.
Precast solid concrete radial blocks or cast in place concrete reinforced with No.4 bars on 12" centers both vertically and horizontally, may be used with a wall thickness of 6" or greater. Precast manholes detailed on MH–3 or MH–5 may be used in lieu of the design shown hereon unless otherwise required by the plans.
FRAME AND COVERS shall be of heavy design (475 lbs. min. total weight) when the manhole is placed within the limits of the pavement or shoulder, otherwise the light design shall be finished smooth and fitted so as to provide a firm and even seat to all portions of the cover in the frame. Each cover shall seat in its frame without rocking and shall be marked as a matched frame and cover before delivery to the project. The base of the frame shall be set in a full bed of Portland cement mortar, and so adjusted to conform to the finished pavement or shoulder elevation and slope. Castings meeting item 604 requirements and designed essentially the same and equally as strong those shown hereon shall be provided.
STEPS shall conform to the material requirements of specification 604. All steps shall have a depressed tread or a 1/2" minimum cleat height at the ends. Steps installed in fresh concrete shall be embedded to minimum depth of 4". Steps installed in mortar joints shall be embedded to a minimum depth of 7". Friction–fit steps meeting the requirements of 711.31 with a 1/2" diameter rebar may be used in precast manholes. The receiving holes for friction–fit steps shall not penetrate the manhole wall.
The Engineer may require the contractor to test load a maximum of one step per manhole to a proof load of 400 lbs. in direct pull. The equipment and method used shall meet the approval of the Engineer. If the selected step fails the pullout test, the remaining steps in that manhole shall also be tested. All steps not passing the pullout test shall be removed and a new step installed and tested to the satisfaction of the Engineer. Cost of testing shall be incidental to the unit price bid for the manhole.
DROP PIPE, when specified on the plans, shall be constructed as shown on MH–2.
SANITARY SEWER COVERS shall be without the pick and vent holes shown hereon and shall include a sealing gasket affixed to the bearing surface. Bolt–down covers shall not be used unless specified in the plans.

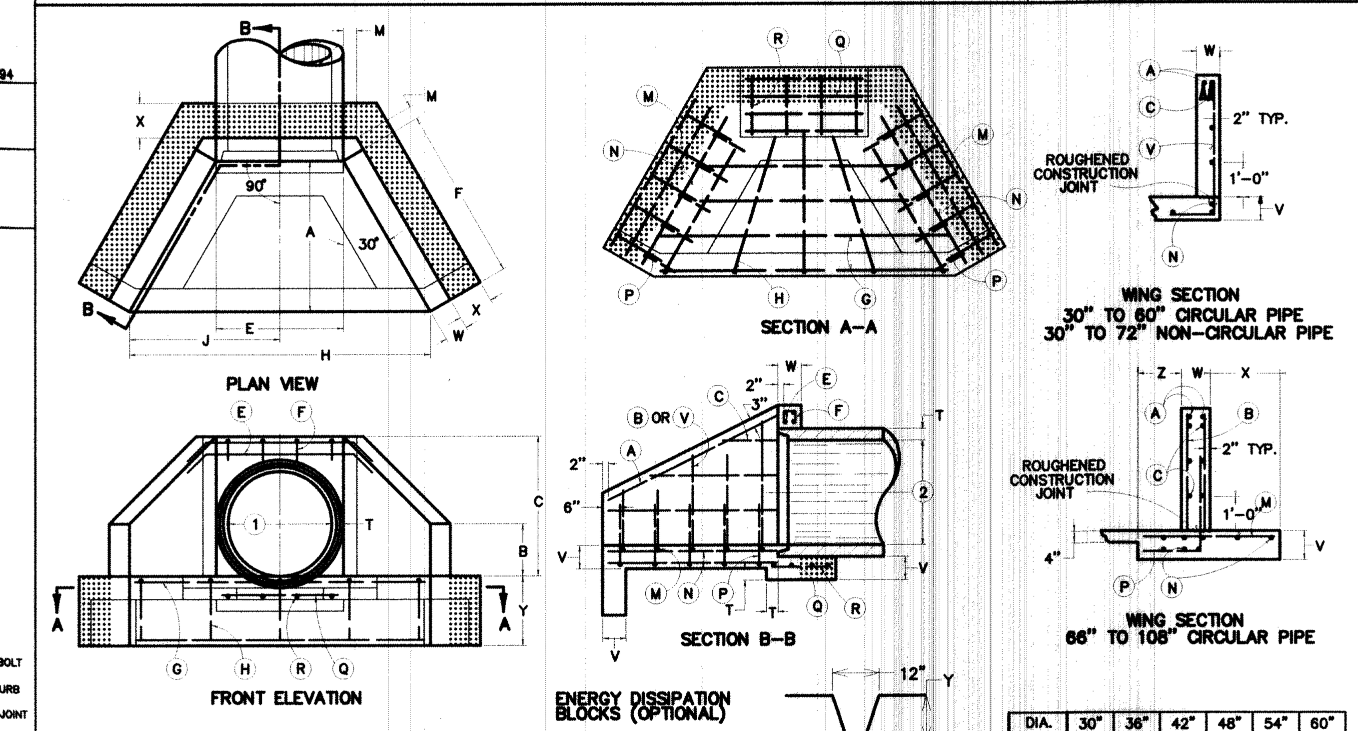
REVISIONS	DATE	
		TYPICAL MANHOLE DETAIL MH–1
		CHK. BY: C.A.H. EFFECTIVE DATE: 1–1–94
		BUTLER COUNTY ENGINEERS OFFICE AND OPERATIONS FACILITY 1921 FAIRGROVE AVENUE – HAMILTON, OHIO 45011 PHONE 867–5744



PIPE DIA. OR EQUIV. DIA.	SHAPE (9)	C	E	F	L	W	T	X	CLASS A CONC C. Y.	REINF STEEL LBS.
12"	○	1'-9"	2'-6"	2'-3"	3'-6"	4'-0"	2"	12"	0.58	7
15"	○	2'-0"	2'-9"	2'-9"	4'-0"	4'-9"	21/4"	131/2"	0.75	
	⌓	1'-9"	3'-0"	2'-6"	3'-6"	4'-9"			0.68	
18"	○	2'-3"	3'-0"	3'-6"	4'-6"	5'-3"	21/2"	15"	0.93	8
	⌓ / ⬭	2'-0"	3'-6"	3'-0"	4'-0"	5'-6"	23/4"		0.89	
21"	○	2'-6"	3'-3"	4'-0"	5'-0"	6'-0"			1.14	
	⌓	2'-3"	3'-0"	3'-6"	4'-6"	6'-0"			1.07	9
24"	○	2'-9"	3'-6"	4'-6"	5'-6"	6'-6"	3"	18"	1.35	8
	⌓ / ⬭	2'-6"	4'-0"	4'-0"	5'-0"	6'-9"	31/4"		1.30	9
27"	○	3'-0"	3'-9"	5'-0"	6'-0"	7'-0"			1.57	
	⬭	2'-9"	4'-6"	4'-3"	5'-3"	7'-3"	31/2"		1.51	10

NOTES
1. DIMENSIONS AND QUANTITIES ARE BASED ON CONCRETE PIPE AND WILL VARY INSIGNIFICANTLY FOR CORRUGATED METAL PIPE.
2. REINFORCING STEEL : MINIMUM GRADE 40, BARS EVENLY SPACED.
3. 6 – NO. 4 x 1'–0" DOWEL BARS.
4. 2 – NO. 4 x (E DIMENSION MINUS 4").
5. SLOPES SHALL BE WARPED TO FIT HEADWALL WHEN PIPE IS SKEWED AND/OR NORMAL SLOPE VARIES FROM 2:1.
6. VOLUME DISPLACED BY PIPE COMPUTED USING INSIDE DIAMETER OF PIPE.
7. WING ANGLES AND/OR DIMENSIONS MAY BE ALTERED DURING CONSTRUCTION TO ACCOMMODATE FLOW OF WATER.
8. APRON BETWEEN WINGS SHALL BE SLOPED IN DIRECTION OF FLOW EQUAL TO SLOPE OF PIPE. FRONT FACE OF HEADWALL SHALL REMAIN VERTICAL.

REVISIONS	DATE	C–13A
		12" – 27" SLOPE/HILLSIDE
		CHK. BY: EJP EFFECTIVE DATE: 1–1–2010
		BUTLER COUNTY ENGINEERS OFFICE AND OPERATIONS FACILITY 1921 FAIRGROVE AVENUE – HAMILTON, OHIO 45011 PHONE 867–5744 SHEET 1 OF 6



DIA.	30"	36"	42"	48"	54"	60"
Y	21"	24"	27"	30"	33"	36"

(LAYOUT AND STEEL PATTERN)

1. DIAMETER OF CIRCULAR PIPE OR SPAN OF NON–CIRCULAR PIPE
2. DIAMETER OF CIRCULAR PIPE OR RISE OF NON–CIRCULAR PIPE
3. ▒▒ APPLIES TO 66" DIAMETER AND GREATER. (CIRCULAR PIPE)
4. SEE CURRENT STANDARD DRAWINGS FOR DIMENSIONS, QUANTITIES, AND BILL OF REINFORCEMENT.
5. DIMENSIONS FROM FACE OF CONCRETE TO STEEL SHALL BE 2" CLEAR DISTANCE.
6. ENCIRCLED LETTERS, ◯ ,INDICATE STEEL BAR LOCATIONS
7. BARS (B), (C), (G), (P), (M), (V) ARE SPACED 1'–0" O.C. ALL OTHER BARS SHALL BE EVENLY SPACED.
8. BARS (B) AND (V) ARE PLACED IN ORDER OF INCREASING LENGTHS, BEGINNING AT THE END OF EACH WING.
9. BARS (C) ARE PLACED IN ORDER OF INCREASING LENGTHS, BEGINNING AT THE TOP OF EACH WING.
10. HEADWALLS LOCATED AT EDGE OF SHOULDER SHALL BE PARALLEL TO CENTERLINE OF THE ROAD.
11. APRON BETWEEN WINGS SHALL BE SLOPED IN DIRECTION OF FLOW EQUAL TO SLOPE OF PIPE. FRONT FACE OF HEADWALL AND ENDS OF WINGS SHALL REMAIN VERTICAL.

REVISIONS	DATE	
		PIPE CULVERT HEADWALLS 0° SKEW 30" – 66"
		CHK. BY: EJP EFFECTIVE DATE: 1–1–2010
		BUTLER COUNTY ENGINEERS OFFICE AND OPERATIONS FACILITY 1921 FAIRGROVE AVENUE – HAMILTON, OHIO 45011 PHONE 867–5744 SHEET 2 OF 6

BILL OF REINFORCEMENT
30" TO 66" DIAMETER
CIRCULAR PIPE HEADWALLS
0° SKEW
CHK. BY: EJP EFFECTIVE DATE: 1–1–2010
BUTLER COUNTY ENGINEERS OFFICE AND OPERATIONS FACILITY
USE WITH SHEET 2 OF 6

MARK	SIZE	NO (1)	LGTH FT	LGTH IN	K FT	K IN
30"						
A	5	4	4	8		
C1	4	2	2	4		
C2	4	2	4	2		
E1	5	2	6	4	3	4
E2	5	2	6	8	3	8
F	4	3	1	3	0	4
G1	4	2	3	10		
G2	4	3	6	2		
H	4	4	5	1	3	5
N	4	6	4	2		
Q	4	2	2	9		
R	4	3	0	8		
V1	5	4	3	1	1	10
V2	5	4	4	1	2	10
36"						
A	5	4	5	5		
C1	4	2	1	7		
C2	4	2	3	8		
C3	4	2	4	10		
E1	5	2	6	11	3	11
E2	5	2	7	3	4	3
F	4	4	1	3	0	4
G1	4	3	5	0		
G2	4	3	7	4		
H	4	5	5	8	4	0
N	4	6	4	10		
Q	4	2	3	4		
R	4	4	0	8		
V1	5	4	3	4	2	1
V2	5	4	4	4	3	1
V3	5	2	5	4	4	1
42"						
A	5	4	6	2		
C1	4	2	2	9		
C2	4	2	4	9		
C3	4	2	5	6		
E1	5	2	7	6	4	6
E2	5	2	7	10	4	10
F	4	4	1	3	0	4
G1	4	3	6	4		
G2	4	3	8	7		
H	4	5	6	3	4	7
N	4	6	5	6		
Q	4	2	3	11		
R	4	4	0	9		
V1	5	4	3	6	2	3
V2	5	4	4	6	3	3
V3	5	4	5	6	4	3
48"						
A	5	4	6	11		
C1	4	2	1	10		
C2	4	2	3	10		
C3	4	2	5	10		
C4	4	2	6	2		
E1	5	2	8	1	5	1
E2	5	2	8	5	5	5
F	4	5	1	3	0	4
G1	4	1	4	0		
G2	4	3	7	5		
G3	4	3	9	9		
H	4	6	6	10	5	2
N	4	6	6	2		
Q	4	2	4	6		
R	4	5	0	9		
V1	5	4	3	9	2	6
V2	5	4	4	9	3	6
V3	5	4	5	9	4	6
54"						
A	5	4	7	7		
C1	4	2	0	11		
C2	4	2	3	0		
C3	4	2	5	1		
C4	4	4	6	10		
E1	5	2	8	8	5	8
E2	5	2	9	0	6	0
F	4	6	1	3	0	4
G1	4	1	5	3		
G2	4	3	8	9		
G3	4	3	11	0		
H	4	6	7	5	5	9
N	4	6	6	10		
Q	4	2	5	1		
R	4	6	0	10		
V1	5	4	4	0	2	9
V2	5	4	5	0	3	9
V3	5	4	6	0	4	9
V4	5	2	7	0	5	9
60"						
A	5	4	8	4		
C1	4	2	2	1		
C2	4	2	4	2		
C3	4	2	6	3		
C4	4	4	7	7		
E1	5	2	9	3	6	3
E2	5	2	9	7	6	7
F	4	6	1	3	0	4
G1	4	2	6	6		
G2	4	3	10	0		
G3	4	3	12	4		
H	4	7	8	0	6	4
N	4	6	7	7		
Q	4	2	5	8		
R	4	6	0	10		
V1	5	4	4	3	3	0
V2	5	4	5	3	4	0
V3	5	4	6	2	4	11
V4	5	4	7	2	5	11
66"						
A	5	4	9	4		
B1	5	8	2	10		
B2	5	8	3	10		
B3	5	8	4	9		
B4	5	8	5	9		
C1	4	4	1	5		
C2	4	4	3	5		
C3	4	4	5	6		
C4	4	4	7	7		
C5	4	8	8	4		
E1	5	2	11	9	6	10
E2	5	2	12	3	7	4
F	4	7	1	9	0	6
G1	4	3	8	0		
G2	4	3	11	4		
G3	4	3	13	10		
H	4	7	9	3	7	1
M	4	16	3	9		
N	4	14	8	4		
P	5	16	5	0	3	3
Q	5	3	6	2		
R	5	7	2	7		

NOTES
1. NUMBER OF BARS IN ONE HEADWALL.
2. DIMENSIONS ARE O. TO O. OF BARS.
3. ALL BARS ARE STRAIGHT EXCEPT THOSE SHOWN BELOW.

BENT BAR SHAPES
BARS (E): K = 1'-6" (30"– 60"), 2'-6" (66"– 108"); TO BE FIELD BENT
BARS (F): 0'-6" (30"–60"), 0'-8" (66"–108")
BARS (H): 1'-6" (30"–60"), 2'-3" (66"–84"), 2'-9" (90"–108")
BARS (P) AND (V): 1'-3" (30"–60"), 1'-9" (66"–84"), 2'-3" (90"–108")

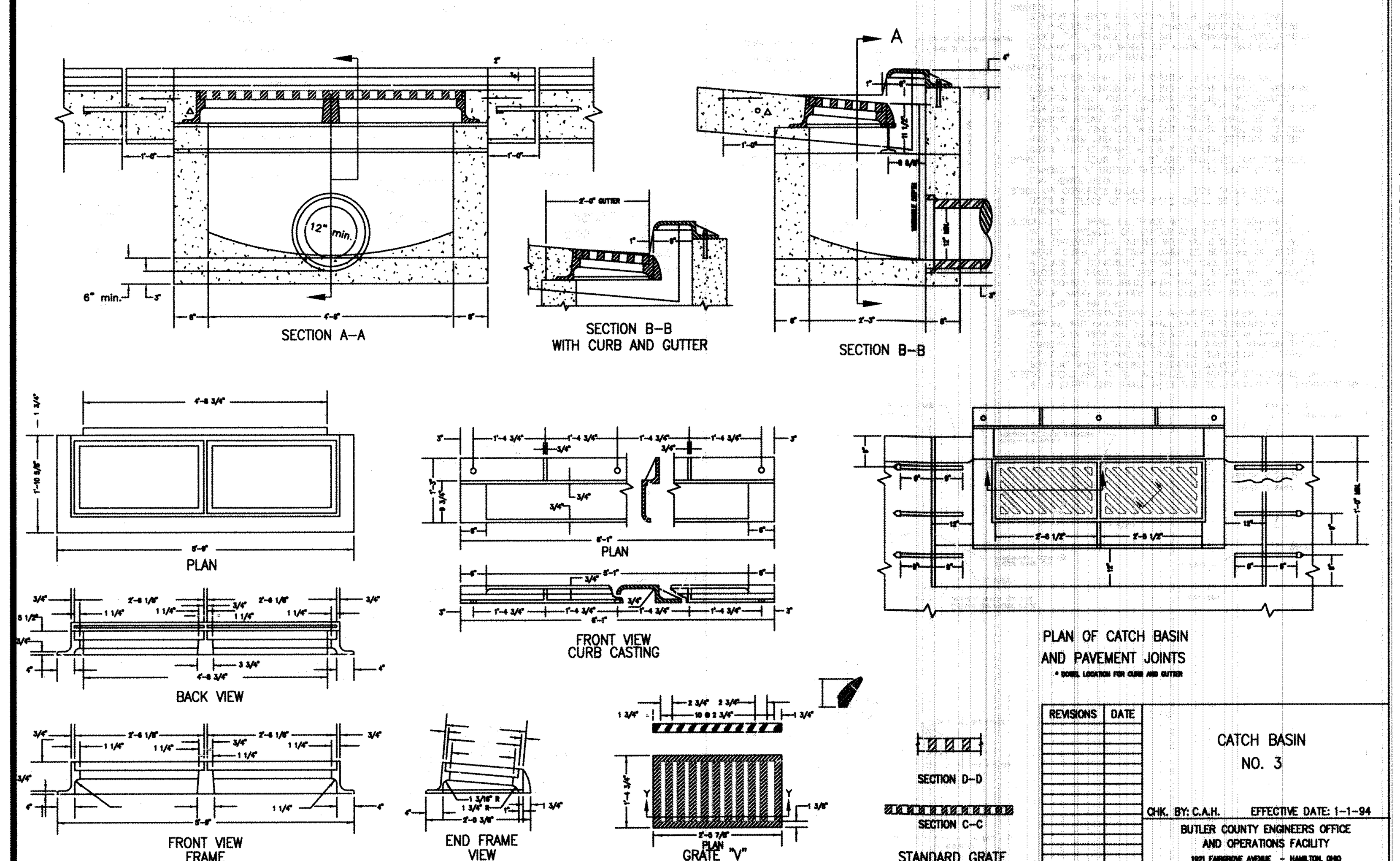
DIMENSION	30"	36"	42"	48"	54"	60"	66"	DIMENSION
A	3'–9"	4'–4"	4'–11"	5'–6"	6'–1"	6'–8"	7'–5"	A
B	1'–3"	1'–6"	1'–9"	2'–0"	2'–3"	2'–6"	2'–9"	B
C	3'–6"	4'–0"	4'–7"	5'–1"	5'–8"	6'–2"	7'–0"	C
E	3'–1"	3'–8"	4'–3"	4'–10"	5'–5"	6'–0"	6'–7"	E
F	4'–4"	5'–0"	5'–8"	6'–4"	7'–0"	7'–8"	8'–7"	F
H	7'–6"	8'–8"	10'–0"	11'–2"	12'–6"	13'–8"	15'–2"	H
J	3'–9"	4'–4"	5'–0"	5'–7"	6'–3"	6'–10"	7'–7"	J
M	0'–5"						0'–6"	M
T	0'–3.5"	0'–4.0"	0'–4.5"	0'–5.0"	0'–5.5"	0'–6.0"	0'–6.5"	T
V	0'–8"						1'–0"	V
W	0'–8"						0'–10"	W
X	––––						2'–0"	X
Y	2'–0"						2'–6"	Y
Z	––––						1'–3"	Z
CU. YDS. CONC. 2 HEADWALLS	3.36	4.30	5.35	6.53	7.82	9.22	18.76	CU. YDS. CONC. 2 HEADWALLS
LBS. STEEL 2 HEADWALLS	281	363	430	496	583	687	1320	LBS. STEEL 2 HEADWALLS

DIMENSIONS AND QUANTITIES ARE BASED ON CONCRETE PIPE AND WILL VARY SLIGHTLY FOR CORRUGATED METAL PIPE.

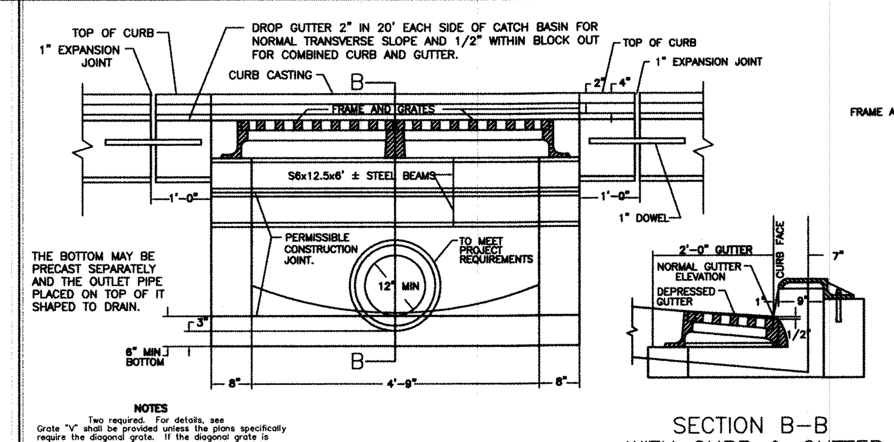
USE WITH SHEET 2 OF 6
DIMENSIONS & QUANTITIES 30"–66" HEADWALLS CIRCULAR PIPE, 0 SKEW

NOTE:
FOR ADDITIONAL SPECIFICATIONS ON SIZING AND BILL OF REINFORCEMENT FOR NON–CIRCULAR PIPES, SEE COMPLETE 6 PAGE DETAIL C–13A IN APPENDIX C OF THE BUTLER COUNTY SUBDIVISION REGULATIONS

REVISIONS	DATE	C–13A
		HILLSIDE HEADWALLS
		BUTLER COUNTY ENGINEERS OFFICE AND OPERATIONS FACILITY 1921 FAIRGROVE AVENUE – HAMILTON, OHIO 45011 PHONE 867–5744



REVISIONS	DATE	
		CATCH BASIN NO. 3
		CHK. BY: C.A.H. EFFECTIVE DATE: 1–1–94
		BUTLER COUNTY ENGINEERS OFFICE AND OPERATIONS FACILITY 1921 FAIRGROVE AVENUE – HAMILTON, OHIO 45011 PHONE 867–5744



NOTES
Two required. For details, see Grate "V" shall be provided unless the plans specifically require the diagonal grate. If the diagonal grate is specified, it shall be placed so that the diagonal bars direct drainage flow toward the curb.

The design shall be essentially the same and equally as strong as shown.
Minimum weight [mass]:

Curb Casting . . . . . 305 lbs. [138 kg]
Two Grates . . . . . 254 lbs. [115 kg]
Frame . . . . . 590 lbs. [267 kg], and
Two Grate "V" . . . . 210 lbs. [95 kg]

Lighter weight frames and grates that meet the requirements of CMS 711.14 may also be provided. Grate openings and dimensions shall not differ from those shown, unless otherwise shown in the plans.

The following text shall be cast into the top of the

"DUMP NO WASTE" and "DRAINS TO WATERWAY"

Text shall be printed in bold, capital letters with a minimum height of 1". See example on Plan & Section. "WATERWAY" may be substituted with "STREAM", "RIVER", "LAKE", etc. Actual placement and logo may vary per

The frame and grate shall be so fitted and finished as to provide a firm and even seat. No projections shall exist on bearing areas and the grate shall seat in its frame without rocking.

When used in place of concrete, brick side walls shall be 8" [200] nominal thickness.

PRECAST CONSTRUCTION: Permitted, except for the apron. Concrete shall meet requirements of CMS 706.13. Precast walls shall have a minimum thickness of 6" [150] and reinforcing shall be sufficient to permit shipping and placement without damage. The wall thickness reduction shall be from the outside.

The minimum depth is per the cover requirements for that pipe type.

Any pipe openings greater than 4" [100] from the outside of the pipe to the structure require the Engineer's approval. Fill all voids per CMS 604.

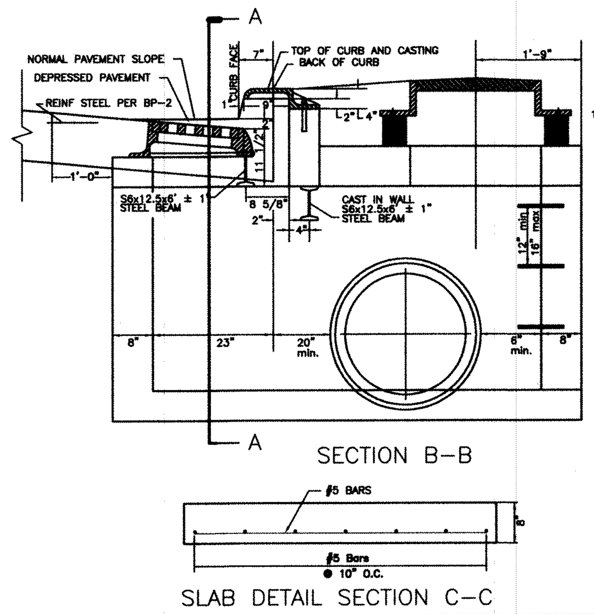
Four 1"x18" [25x450] dowels are required for concrete pavement or gutter blockout. See

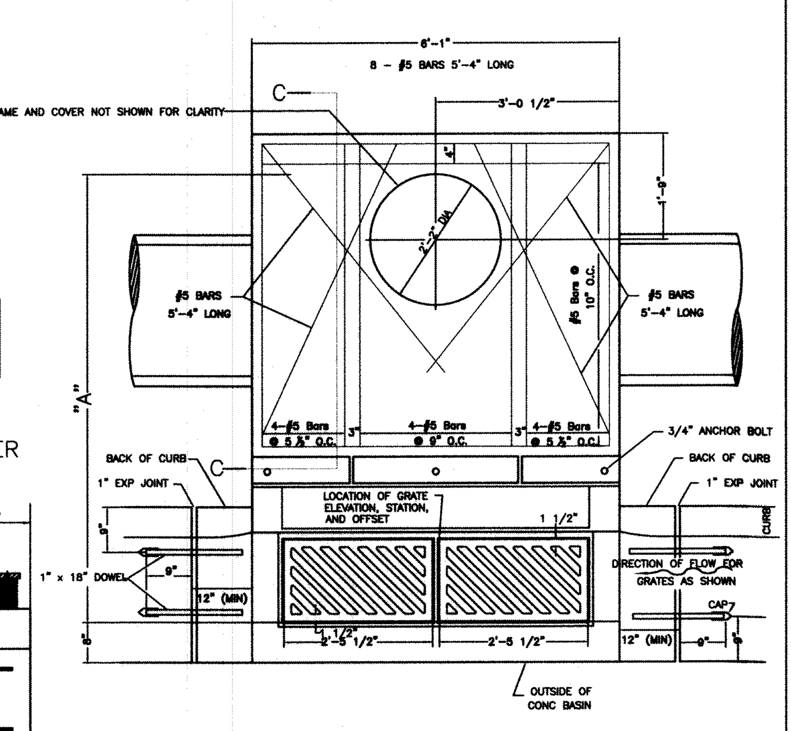
Blockouts shall be paved with Class C concrete in PCC pavement or gutter, and paid for as part of the pavement or gutter with no deduction in pavement, curb or gutter quantities because of the castings. A Class C concrete apron, the size of the 2'–0" [600] gutter blockout, shall be cast–in–place in asphalt pavement (no dowels required) with the cost included in the catch basin bid price. No deduction to be made

All materials and labor, including excavation and backfilling, shall be paid for under Catch Basin, No. 3 Modified.

REINFORCING STEEL: All reinforcing steel shall have 2" clear cover unless otherwise noted.

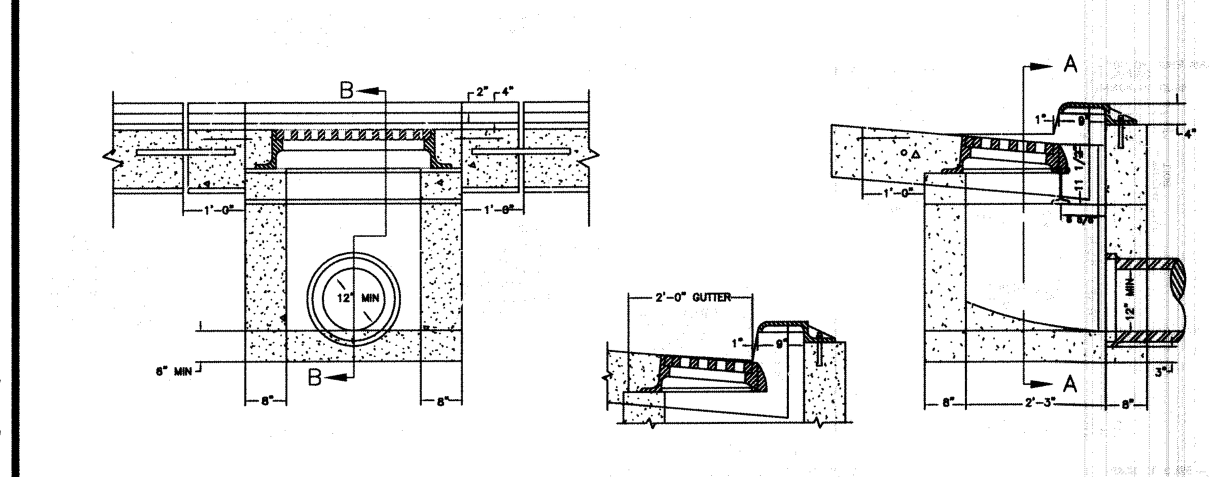
SHALL BE PROVIDED WHERE THE DEPTH EXCEEDS 48" AND SHALL MEET THE REQUIREMENTS OF DRAWING MH–1.



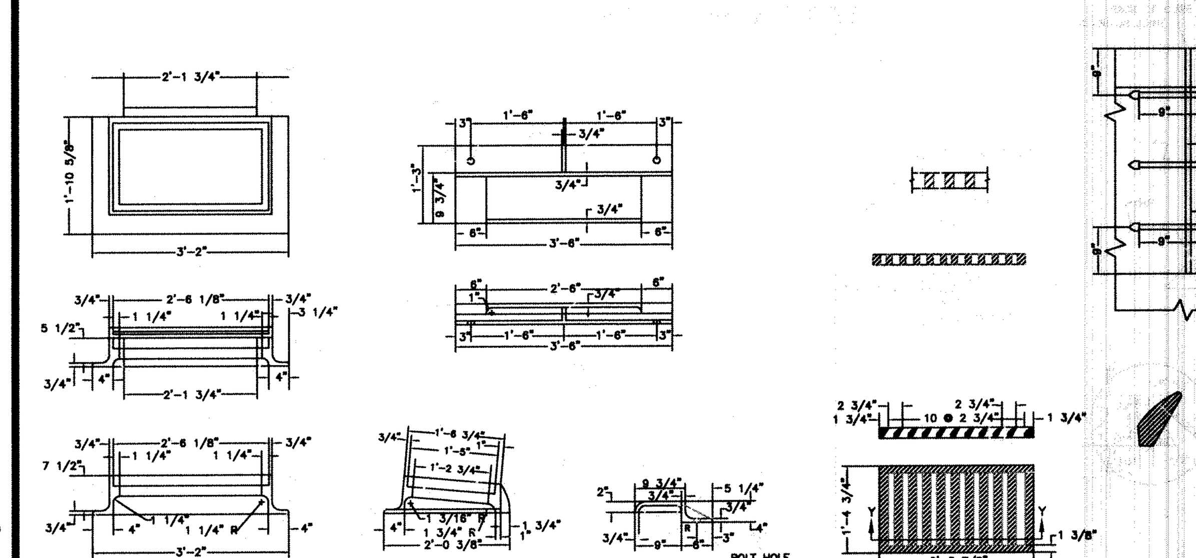


PIPE SIZE	dim. "A"
12" – 21"	80"
24" – 27"	89"
30" – 36"	99"

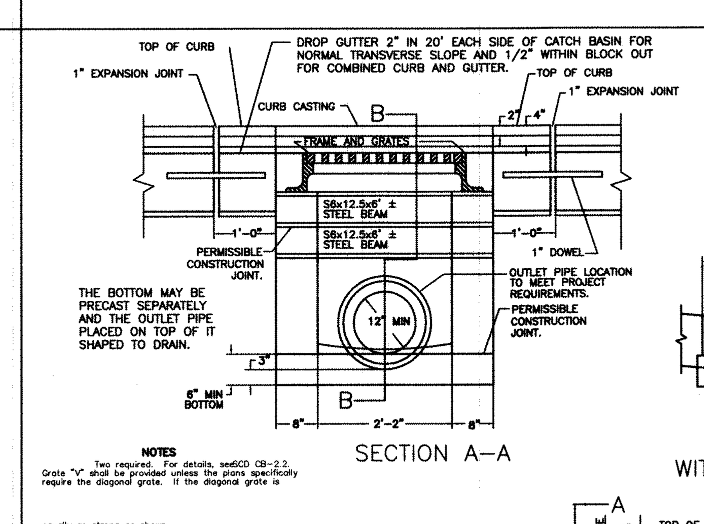
REVISIONS	DATE	C–7
SLAB REBAR	12/28/11	CATCH BASIN NO. 3 MODIFIED
SEC. C	01/06/12	
SEC. BB	01/06/12	
		CHK. BY: C.A.H. EFFECTIVE DATE: 1–1–94
		BUTLER COUNTY ENGINEERS OFFICE AND OPERATIONS FACILITY 1921 FAIRGROVE AVENUE – HAMILTON, OHIO 45011 PHONE 867–5744



GRATES:
STANDARD GRATE AS SHOWN IN THE PLAN VIEW SHALL BE PROVIDED UNLESS THE PLANS SPECIFICALLY REQUIRE GRATE "V". PLACE GRATE SO THE DIAGONAL BARS DIRECT DRAINAGE FLOW TOWARD THE CURB. ALL BAR EDGES TO BE ROUNDED 1/8" RADIUS.
CASTINGS:
THE DESIGN SHALL BE ESSENTIALLY THE SAME AND EQUALLY AS STRONG AS THOSE SHOWN HERON. MINIMUM WEIGHTS ARE: CURB CASTING 170 LBS., STANDARD GRATE 127 LBS., FRAME 320 LBS., AND "V" GRATE 105 LBS. BEARING AREAS OF FRAME AND GRATE SHALL BE SO FITTED AND FINISHED AS TO PROVIDE A FIRM AND EVEN SEAT FOR ALL PORTIONS OF THE GRATE IN THE FRAME. NO PROJECTIONS SHALL EXIST ON BEARING AREAS OF EITHER CASTING AND THE GRATE WITHOUT ROCKING.
DOWELS: FOUR 1" x 18" ARE REQUIRED FOR CONCRETE PAVEMENT OF GUTTER BLOCKOUT. SEE ODOT BP–4 FOR DOWEL DETAILS.
BRICK OR CONCRETE BLOCK SIDE WALLS WHEN USED IN PLACE OF CONCRETE, SHALL BE 8" NOMINAL THICKNESS.
BLOCKOUT SHALL BE PAVED WITH CLASS C CONCRETE IN PCC PAVEMENT OR GUTTER AND PAID FOR AS PART OF THE PAVEMENT OR GUTTER WITH NO DEDUCTION IN PAVEMENT, CURB OR GUTTER QUANTITIES BECAUSE OF CASTINGS. A CLASS C CONCRETE APRON THE SIZE OF THE 2' GUTTER BLOCKOUT SHALL BE CAST IN PLACE IN ASPHALT PAVEMENT (NO DOWELS REQUIRED) WITH THE COST INCLUDED IN THE CATCH BASIN BID PRICE. NO DEDUCTIN TO BE MADE IN CURB QUANTITIES.
PRECAST CONSTRUCTION IS PERMITTED, EXCEPT FOR APRON, AND CONCRETE SHALL MEET REQUIREMENTS OF 708.13 WITH 6± 2% AIR VOID CONTENT IN THE HARDENED CONCRETE. PRECAST WALLS SHALL HAVE A MINIMUM THICKNESS OF 6" AND REINFORCING SHALL BE SUFFICIENT TO PERMIT SHIPPING AND PLACEMENT WITHOUT DAMAGE.
STEPS STEPS ARE TO BE INSTALLED IN STORM STRUCTURES OVER 4' IN DEPTH AND SHALL MEET THE REQUIREMENTS OF DRAWING MH–1.



REVISIONS	DATE	
		CATCH BASIN NO. 3A
		CHK. BY: C.A.H. EFFECTIVE DATE: 1–1–94
		BUTLER COUNTY ENGINEERS OFFICE AND OPERATIONS FACILITY 1921 FAIRGROVE AVENUE – HAMILTON, OHIO 45011 PHONE 867–5744



PIPE SIZE	dim. "A"
12" – 21"	80"
24" – 27"	89"
30" – 36"	99"

NOTES
Two required. For details, see CD CB–2.2. Grate "V" shall be provided unless the plans specifically require the diagonal grate. If the diagonal grate is

equally as strong as shown.

Curb Casting . . . . . 305 lbs. [138 kg]
Two Grates . . . . . 254 lbs. [115 kg]
Frame . . . . . 590 lbs. [267 kg], and
Two Grate "V" . . . . 210 lbs. [95 kg]

Lighter weight frames and grates that meet the requirements of CMS 711.14 may also be provided. Grate openings and dimensions shall not differ from those shown, unless otherwise shown in the plans.

The following text shall be cast into the top of the

and "DRAINS TO WATERWAY"

Text shall be printed in bold, capital letters with a See example on Plan & Section. "WATERWAY" may be substituted with "STREAM", "RIVER", "LAKE", etc. Actual placement and logo may vary per

The frame and grate shall be so fitted and finished as to provide a firm and even seat. No projections shall exist on bearing areas and the grate shall seat in its frame without rocking.

When used in place of concrete, brick side walls shall be 8" [200] nominal thickness.

Permitted, except for the apron. Concrete shall meet requirements of CMS 706.13. Precast walls shall have a minimum thickness of 6" [150] and reinforcing shall be sufficient to permit shipping and placement without damage. The wall thickness reduction shall be from the outside.

The minimum depth is per the cover requirements for that pipe type.

Any pipe openings greater than 4" [100] from the outside of the pipe to the structure require the Engineer's approval. Fill all voids per CMS 604.

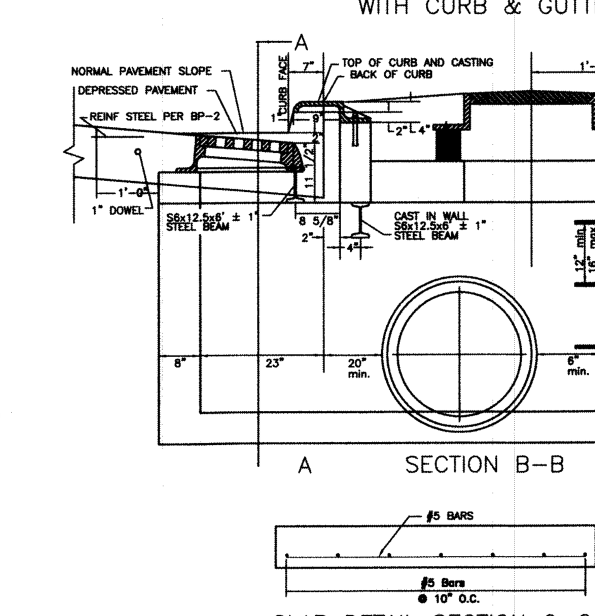
Four 1"x18" [25x450] dowels are required for concrete pavement or gutter blockout. See

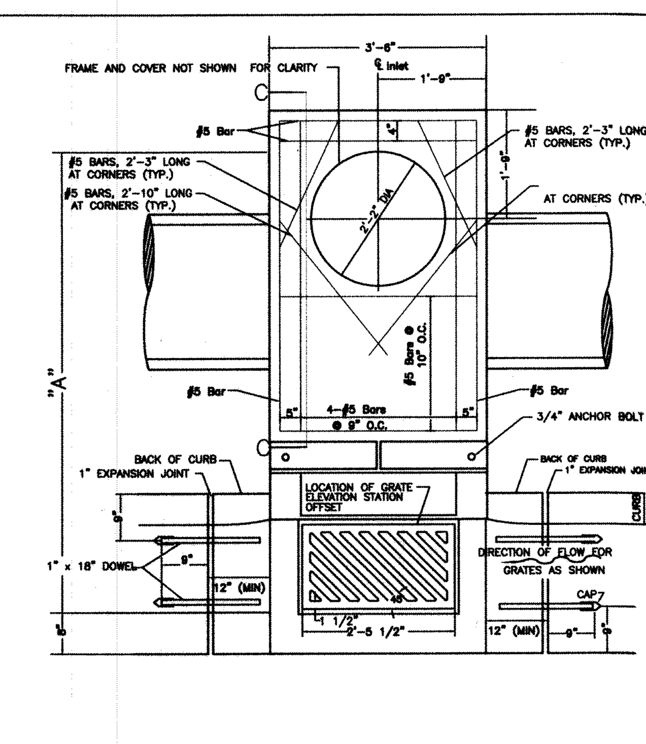
Blockouts shall be paved with Class C concrete in PCC pavement or gutter, and paid for as part of the pavement or gutter with no deduction in pavement, curb or gutter quantities because of the castings. A Class C concrete apron, the size of the 2'–0" [600] gutter blockout, shall be cast–in–place in asphalt pavement (no dowels required) with the cost included in the catch basin bid price. No deduction to be made

All materials and labor, including excavation and backfilling, shall be paid for under Catch Basin, No. 3A Modified.

All reinforcing steel shall have 2" clear cover unless otherwise noted.

SHALL BE PROVIDED WHERE THE DEPTH EXCEEDS 48" AND SHALL MEET THE REQUIREMENTS OF DRAWING MH–1.





PLAN OF CATCH BASIN AND PAVEMENT JOINTS
* DOWEL LOCATION FOR CURB AND GUTTER

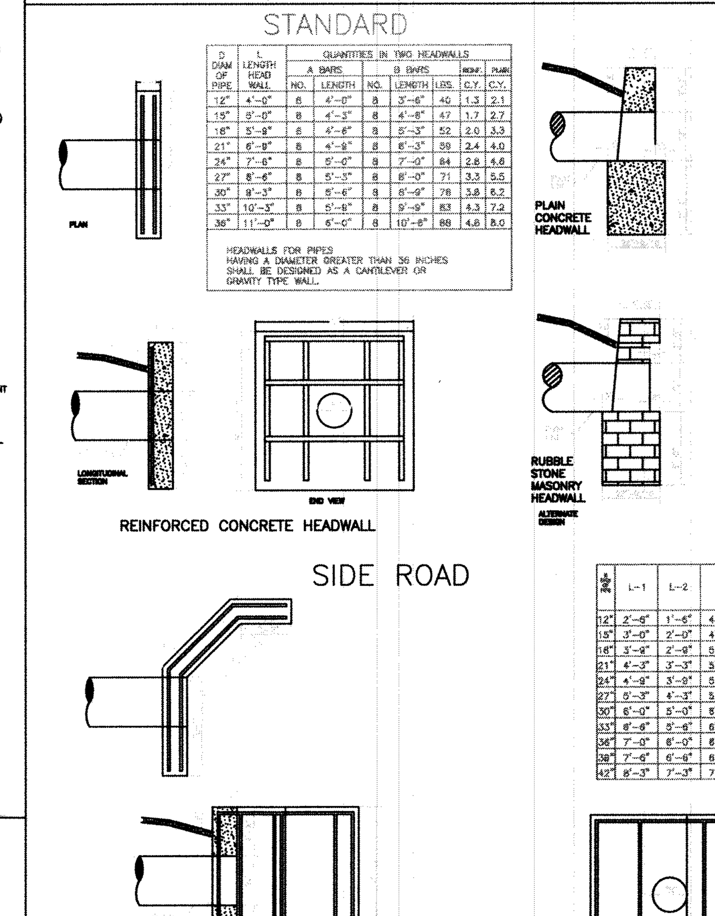
REVISIONS	DATE	C–9
SLAB REBAR	12/28/11	CATCH BASIN NO. 3A–MOD.
SEC. C	01/06/12	
SEC. BB	01/06/12	
		CHK. BY: G.J.W. EFFECTIVE DATE: 1–1–94
		BUTLER COUNTY ENGINEERS OFFICE AND OPERATIONS FACILITY 1921 FAIRGROVE AVENUE – HAMILTON, OHIO 45011 PHONE 867–5744

STANDARD

D DIAM OF PIPE	L LENGTH HEAD WALL	A BARS NO.	A BARS LENGTH	B BARS NO.	B BARS LENGTH	REINF. LBS.	C.Y.	PLAIN C.Y.
12"	4'–0"	8	4'–0"	8	3'–6"	40	1.3	2.1
15"	5'–0"	8	4'–3"	8	4'–6"	47	1.7	2.7
18"	5'–9"	8	4'–6"	8	5'–3"	52	2.0	3.3
21"	6'–9"	8	4'–9"	8	6'–3"	59	2.4	4.0
24"	7'–6"	8	5'–0"	8	7'–0"	64	2.8	4.6
27"	8'–6"	8	5'–3"	8	8'–0"	71	3.3	5.5
30"	9'–3"	8	5'–6"	8	8'–9"	76	3.8	6.2
33"	10'–3"	8	5'–9"	8	9'–9"	83	4.3	7.2
36"	11'–0"	8	6'–0"	8	10'–6"	89	4.8	8.0

QUANTITIES IN TWO HEADWALLS

HEADWALLS FOR PIPES HAVING A DIAMETER GREATER THAN 36 INCHES SHALL BE DESIGNED AS A CANTILEVER OR GRAVITY TYPE WALL.

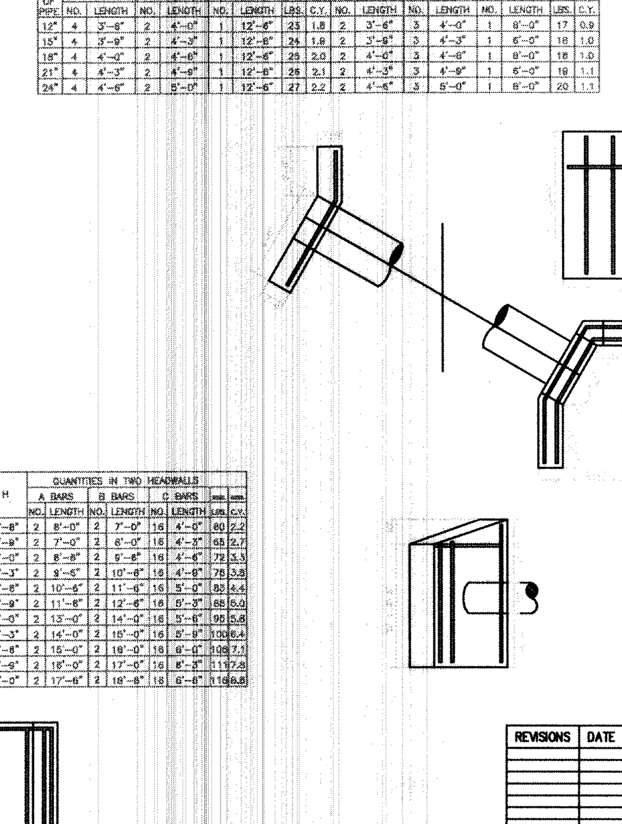


HILLSIDE

D DIAM OF PIPE	Inlet A BARS NO.	LENGTH	B BARS NO.	LENGTH	D BARS NO.	LENGTH	STEEL LBS.	CONC. C.Y.	Outlet A BARS NO.	LENGTH	B BARS NO.	LENGTH	C BARS NO.	LENGTH	STEEL LBS.	CONC. C.Y.
12"	4	3'–6"	2	4'–0"	1	12'–6"	23	1.8	2	3'–6"	3	4'–0"	1	8'–0"	17	0.9
15"	4	3'–9"	2	4'–3"	1	12'–6"	24	1.8	2	3'–9"	3	4'–3"	1	6'–0"	18	1.0
18"	4	4'–0"	2	4'–6"	1	12'–6"	25	2.0	2	4'–0"	3	4'–6"	1	8'–0"	18	1.0
21"	4	4'–3"	2	4'–9"	1	12'–6"	26	2.1	2	4'–3"	3	4'–9"	1	6'–0"	19	1.1
24"	4	4'–6"	2	5'–0"	1	12'–6"	27	2.2	2	4'–6"	3	5'–0"	1	8'–0"	20	1.1

QUANTITIES IN ONE INLET WALL / QUANTITIES IN ONE OUTLET WALL

NOTES
REINFORCING STEEL PROVIDED FOR ON THIS DRAWING SHALL BE 1/2" ROUND BARS OR BARS OF EQUIVLENT AREA.
CONCRETE FOR HEADWALLS SHALL BE CLASS "C".



D DIAM OF PIPE	L–1	L–2	H	A BARS NO.	LENGTH	B BARS NO.	LENGTH	C BARS NO.	LENGTH	LBS.	C.Y.
12"	2'–9"	1'–6"	4'–8"	2	8'–0"	2	7'–0"	16	4'–0"	60	2.2
15"	3'–0"	2'–0"	4'–9"	2	7'–0"	2	6'–0"	16	4'–3"	65	2.7
18"	3'–9"	2'–9"	5'–0"	2	8'–8"	2	9'–6"	16	4'–6"	72	3.3
21"	4'–3"	3'–3"	5'–3"	2	9'–6"	2	10'–6"	16	5'–0"	76	3.8
24"	4'–9"	3'–9"	5'–6"	2	10'–6"	2	11'–6"	16	5'–0"	83	4.4
27"	5'–3"	4'–3"	5'–9"	2	11'–6"	2	12'–6"	16	5'–3"	88	5.0
30"	6'–0"	5'–0"	6'–0"	2	13'–0"	2	14'–0"	16	5'–6"	95	5.8
33"	6'–6"	5'–6"	6'–3"	2	14'–0"	2	15'–0"	16	5'–9"	100	6.4
36"	7'–0"	6'–0"	6'–6"	2	15'–0"	2	16'–0"	16	6'–0"	108	7.1
39"	7'–6"	6'–6"	6'–9"	2	16'–0"	2	17'–0"	16	6'–3"	111	7.8
42"	8'–3"	7'–3"	7'–0"	2	17'–6"	2	18'–6"	16	6'–6"	118	8.5

QUANTITIES IN TWO HEADWALLS

REVISIONS	DATE	
		HEADWALLS HW–D
		CHK. BY: C.A.H. EFFECTIVE DATE: 1–1–94
		BUTLER COUNTY ENGINEERS OFFICE AND OPERATIONS FACILITY 1921 FAIRGROVE AVENUE – HAMILTON, OHIO 45011 PHONE 867–5744

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Item	Revision Description	Date	Drwn:	Chk:

THE OAKS OF WEST CHESTER SECTION FIVE

SECTION 22, TOWN 3, RANGE 2
WEST CHESTER TOWNSHIP,
BUTLER COUNTY, OHIO

BUTLER COUNTY STORM DETAILS

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Mason, OH 45040 - 513.336.6600

Drawing: 06F158-005 CD
Drawn by: LDF
Checked By: JSD
Issue Date: 08-13-19
Sheet: C7.2

Plot time: Oct 09, 2019 - 5:16pm
Drawing name: J:\2006\06F158-005\CV\DWG\06F158-005 CD.dwg - Layout Tab: C7.0 SANITARY DETAILS