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 203 and 603 in the state specifications.
4. 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.
5. 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 TV services. The location of the lines shall be coordinated with utility companies by the developer.
6. All electrical transformers shall be located so that they do not interfere with the existing manholes or water main appurtenances.
7. Water main materials, valves, fire hydrant, fittings and appurtenances and installation to be as per Butler County specifications using class 53 Ductile Iron as per AWWA C-151 with 4' minimum cover.
8. Sanitary sewer materials and installation to be as per Butler County Environmental Services specifications using Section 3110 for PVC, SDR 35 & 26 pipe; Section 3140 for ABS or PVC composite pipe, Section 3410 for manholes.
9. Minimum 10" horizontal, 18" vertical separation between Water Main and Sanitary and/or Storm Sewer.(see note * at left)
10. Storm sewer pipe to be A.D.S. N-12 plastic or equal unless otherwise noted on plans. Bedding to be first class. All sewers to be installed as per Butler County specifications.
11. Roof drains, foundation drains, and other clean water connections to the sanitary sewer system are prohibited.
12. All catch basins with a depth greater than 4.5' 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.
13. 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. In addition, said building level shall be at least one foot (1') 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 Enviromental Services.
14. Butler County Department of Environmental Services 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.
15. All water main valves to have a minimum depth of 2.5' and a maximum depth of 4 feet from proposed grade to the top of the Valve Operating Nut.
16. Sanitary laterals shall be extended to at least ten (10) feet beyond the property/right-of-way line or to the edge of the easement, whichever is greater.
17. 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.
18. All sanitary sewer laterals shall be at least 4 feet below a proposed basement floor elevation at the point of connection to the sewer main 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 Butler County Department of Environmental Services.

* 10' horizontal separation from outside edges of water line and sanitary/storm sewer required. If the water main crosses either over or under the sanitary/storm sewer pipe, 18" vertical distance between the outside edges of the water and sewer lines shall be provided. Where water line crosses under the sewer, structural support shall be provided for the sewer pipe to prevent damage to the water main and to maintain line and grade of the sewer pipe. Where 18" of seperation is not possible, the sewer shall be either encased or constructed to water main standards for a minimum of 10" on each side of the water main.

NOTES:

1. A 20' Sanitary Sewer Easement, 15' Water Line Easement, and Ingress-Egress Easement to be provided on Easement Plat.
2. Pedestrian walkway is to be 6' wide and composed of item 304 - 6" aggregate base, item 402 - 1 1/2" asphalt concrete, and item 404 - 1 1/2" asphalt concrete.

As-builts
Sanitary 10-23-01
Water 10-23-01
Storm 10-23-01

BENCHMARK

TOP OF CONC. MONUMENT #833 AT S.E. CORNER OF McGINNIS PARK, COX RD. ELEV. = 882.78

SUPPLEMENTAL PRINTS OF STANDARD CONSTRUCTION DRAWINGS
CB - 3A CATCH BASIN
CB - 3A (MOD.) CATCH BASIN
CB - 1 CATCH BASIN
CB 2-2-A CATCH BASIN
STD. MANHOLE 1A
HEADWALL HW-4

CONSTRUCTION APPROVAL	DATE
Zoning Commision	11/18/96

These plans are not for construction until ALL approval dates have been filled in.

PHASE 3 PROJECT SUMMARY

Number of Units	42
Clubhouse	1
Parking	
Required:	44
Provided:	59
Ratio:	1:1.34
Acreage:	
Gross (Incl. R/W)	7.17 ACRES
Right-of-Way	0 ACRES
Net	7.17 ACRES
Open Space	20%
Zoning:	R-PUD

OWNER/DEVELOPER

Chesterwood Village, Inc.
4195 Hamilton Mason Road
Indian Springs, Ohio 45011

ISSUED
JUN 28 2002

STATE OF OHIO
PROFESSIONAL ENGINEER

FINAL PUD PLAN

INDEX TO SHEETS

General Notes & Layout Plan	1
Utility Plan	2
Grading Plan	3
Profiles	4
Soil Erosion & Sedimentation Details	5
Standard Sanitary Detail Sheet	6
Standard Water Detail Sheet	7

CHESTERWOOD RETIREMENT COMMUNITY
PHASE THREE
SECTION 11, TOWN 3, RANGE 2
UNION TOWNSHIP
BUTLER COUNTY, OHIO

LAYOUT PLAN

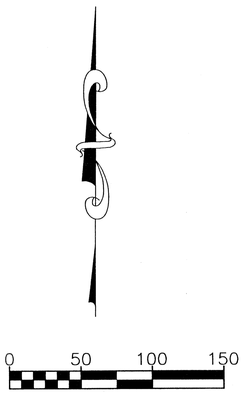
DATE:	REVISION/COMMENT
5/31/01	Revised Bldg. 5 & cul-de-sac
5/31/01	Revised Buildings
5/21/01	Revised per BCDES
DESIGNED: CLM/MAR	DRAWING: 9579-1.DWG
DRAWN: TAB	DATE: 10/31/96
CHECKED: CAR	SCALE: 1"=40'
JOB NUMBER: 9579	SHEET NO: 1 OF 7

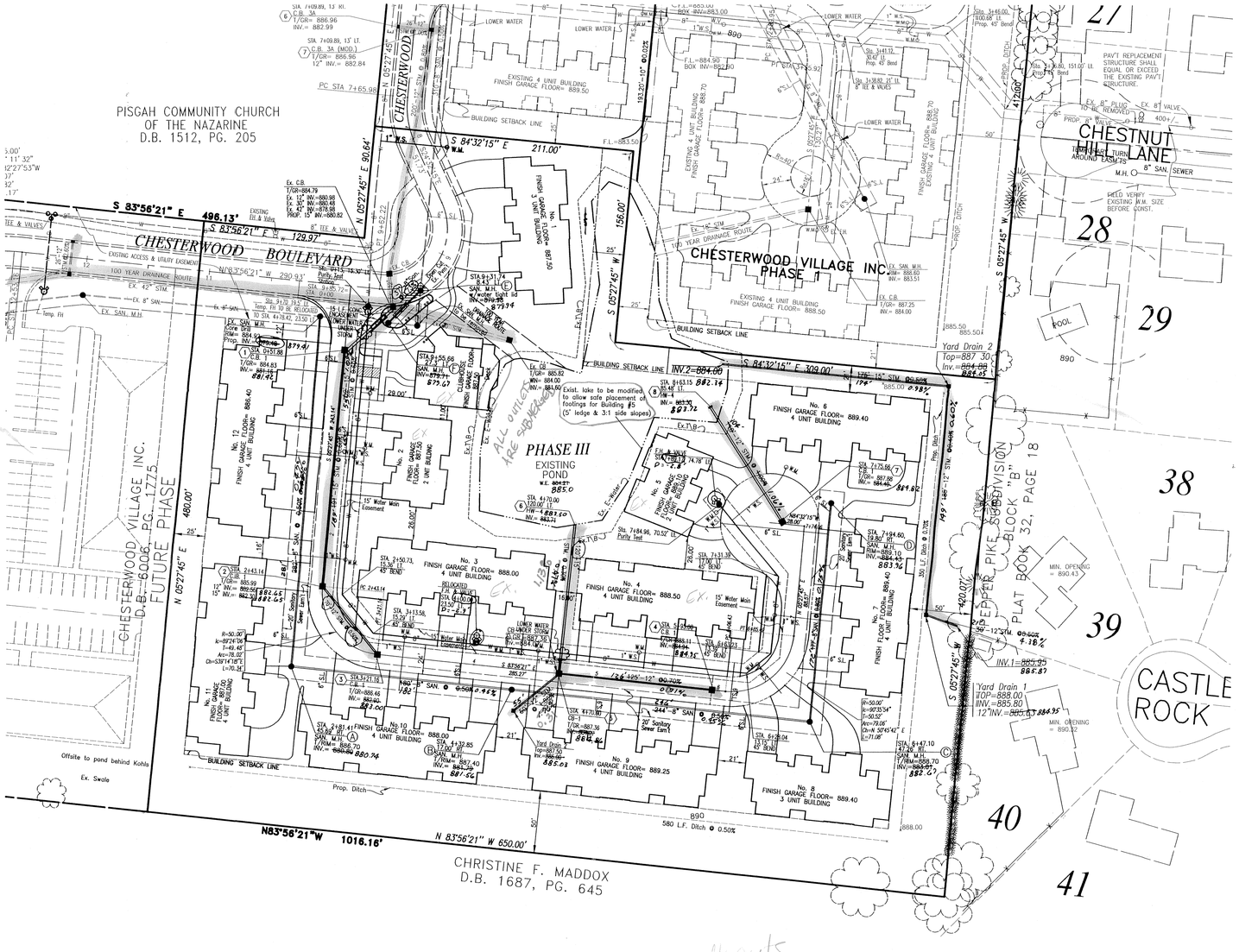
engineers planners surveyors
bayer becker engineers
1230 belleview dr., lawrenceburg indiana 47025-1912
812-537-9064

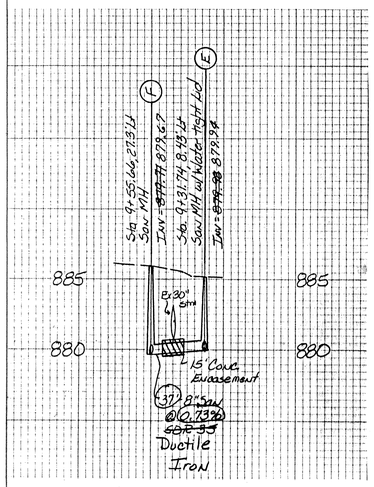
RECEIVED
JUL 22 2002
BUTLER COUNTY ENGINEER'S OFFICE

APPROVED
WEST CHESTER TOWNSHIP
DEPT. OF PLANNING & ZONING
DATE 7/16/02 INIT. VB

Plans 7-22-02







NOTE:
(1) 18" MIN. VERTICAL CLEARANCE OD TO OD TO BE MAINTAINED BETWEEN WATER MAIN AND STORM AND SANITARY SEWERS AT CROSSOVERS.
(2) LOWER WATER SERVICES AS NEEDED TO AVOID CONFLICTS WITH STORM WITH MIN. 4' COVER.
(3) LOCATION OF ALL EXISTING UTILITIES TO BE DETERMINED IN THE FIELD PRIOR TO WORK BEGINNING.
(4) 48 HOUR NOTICE TO BE PROVIDED TO PROPERTY OWNERS AFFECTED BY SHUTDOWN OF WATER MAIN.

no walkouts

STATE OF OHIO
TITIAN R. KISS
6-30-98
REGISTERED
PROFESSIONAL ENGINEER

engineers planners surveyors
bayer becker engineers
1230 KELLER DR. LAWRENCEBURG, IN. 47025-1912
812-537-9064

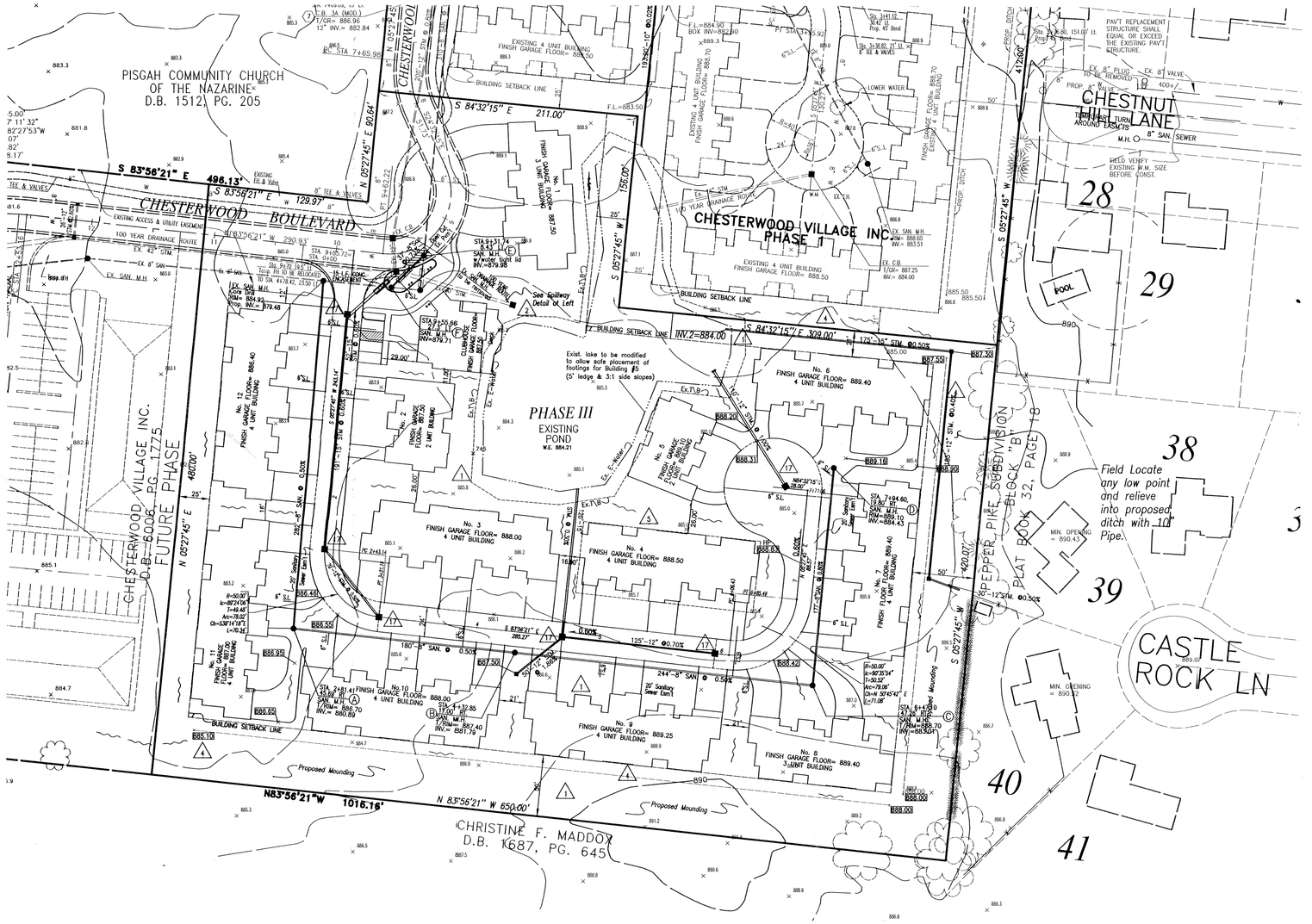
CHESTERWOOD RETIREMENT COMMUNITY
PHASE THREE

UTILITY PLAN

ITEM	REVISIONS	DATE
7	Rev. cul-de-sac, bldg 5 location, utils, dims.	7/03/01
6	Rev. San. Alignment at clubhouse	6/18/01
5	Revised Buildings	5/31/01
4	Revised per BCDES	5/21/01
3	Revised per Butler County & BCDES	5/11/01
2	Revised per Butler County	3/4/97
1	Revised per Owners Request	3/4/97

AutoCAD Drawing Name: M9579.DWG

DATE: 10-30-96



SEDIMENTATION CONTROL NOTES

The project has been designed to control erosion and prevent damange 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 materials to be retained on site.

All areas disturbed by the construction of the roadways, ditches and sedimentation basins shall be seeded. Payment will be by the number of square yards disturbed as per the grading plan.

METHOD

Straw bales are to be utilized to create temporary dams to catch the silt. These are to be installed at points where the flow is concentrated.

Surface water is to be directed into these temporary silt basins by means of temporary swales and ditches.

As the installation of the storm sewer progress, staw bales are to be placed at the inlet and outlet of sewers to control the silt.

Payment for the above shall be included in items Excavation, Embankment.

"All sediment and erosion control measures must be visually inspected and the appropriate maintenance and repair actions taken whenever precipitation exceeds 1/2 inch in any 24 hour period."

EROSION CONTROL LEGEND

△1	SEEDING AND MULCHING
△2	SODDING
△3	PRESERVING EXISTING VEGETATION
△4	STRAW BALE
△5	SILT FENCE
△6	SOIL PILES
△7	TEMPORARY STREAM CROSSING
△8	GRAVEL CURB INLET SEDIMENT FILTER
△9	BLOCK & GRAVEL DROP INLET SEDIMENT FILTER
△10	CABIONS
△11	STRAW BALE DROP INLET SEDIMENT FILTER
△12	SOD DROP INLET SEDIMENT FILTER
△13	GRAVEL & WIRE MESH DROP INLET SEDIMENT FILTER
△14	BLOCK & GRAVEL CURB INLET SEDIMENT FILTER
△15	SEDIMENT BASINS & DAMS
△16	DIKES & SLOPE PROTECTION
△17	ROLLED GRAVEL CURB INLET SED. FILTER (SEE SOIL EROSION & SEDIMENTATION CONTROL DETAIL SHEET) SHEET 6
~~	DENOTES PROPOSED SWALE

NOTE: A SILT FENCE SHALL BE PLACED DOWNHILL ALONG THE PERIMETER OF ALL GROUND TO BE DISTURBED BEFORE ANY GRADING BEGINS

Section Through Spillway Between Building 1 & Clubhouse

TYPICAL DITCH SECTION

TYPICAL MOUND SECTION

ETTA M. REED
E-61606

bayer becker engineers
engineers planners surveyors
1230 BELLEVUE DR. LAWRENCEBURG IN. 47025-1912
812-537-9064

CHESTERWOOD RETIREMENT COMMUNITY
PHASE THREE

GRADING AND EROSION CONTROL PLAN

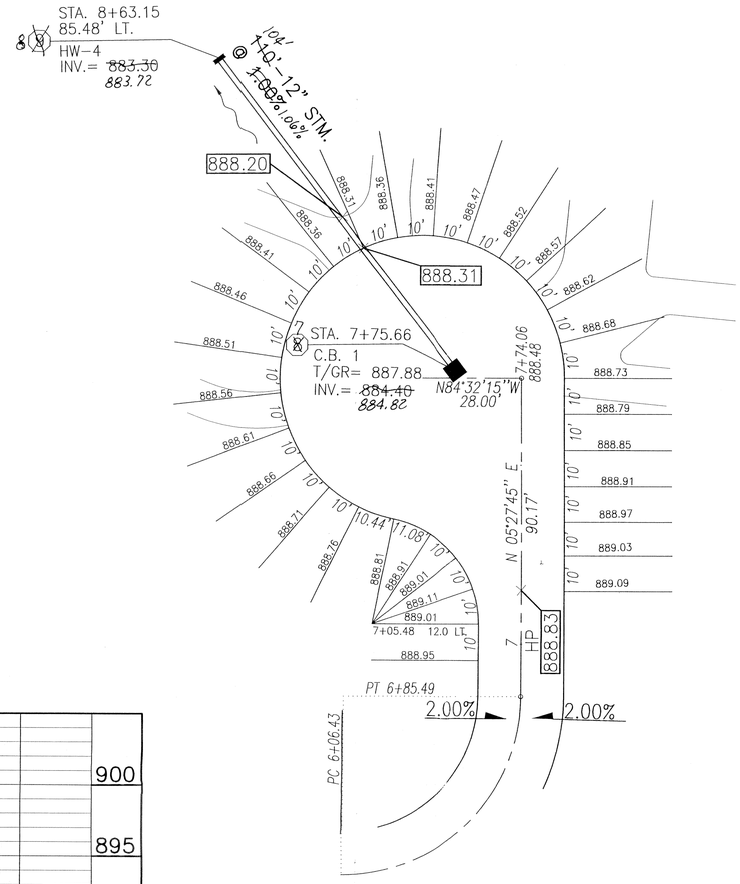
ITEM	REVISIONS	DATE
7	Rev. cul-de-sac, bldg 5 location, utils, dims.	7/03/01
6	Rev. San. Alignment at clubhouse	6/18/01
5	Revised Buildings	5/31/01
4	Revised per BCDES	5/21/01
3	Revised per Butler County & BCDES	5/11/01
2	Revised per Owners Request	3/4/97
1	Complete for Union Township Submittal	11/4/96

AutoCAD
Drawing Name: M9579.DWG

DATE: 10-30-96

3 OF 7

J:\95\9579\RESTORE\Ph3\M9579.DWG, 06/28/2002 07:49:56 AM, J.L.G.



Cul-de-sac Detail

Road Profile

STATE OF OHIO
STEVEN FRED BECKER
REGISTERED
PROFESSIONAL ENGINEER

bayer becker engineers
engineers planners surveyors
1220 BELLEMEAD DR. LAWRENCEBURG IN. 47025-1912
812-537-9064

CHESTERWOOD RETIREMENT COMMUNITY
PHASE THREE

PROFILE & DETAILS

ITEM	REVISIONS	DATE
7		
6	Rev. cul-de-sac, bldg 5 location, utils, dims.	7/03/01
5	Revised per BCDES	5/21/01
4	Revised per Butler County & BCDES	5/11/01
3	Revised Cul-de-sac Detail	9/8/97
2	Revised per Owners Request	3/4/97
1	Complete for Union Township Submittal	11/4/96

AutoCAD Drawing Name: M9579.DWG

DATE: 10-30-96

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 initiateappropriate vegetative practices on all disturbed areas within seven (7) days if they are to remain dormant (undisturbed) for more than forty-five (45) 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.

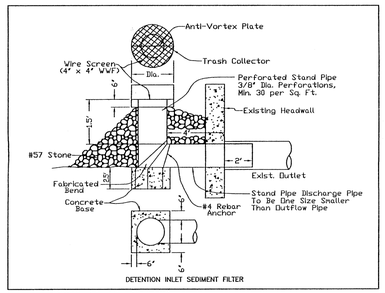
Timing
Sediment control structures shall be functional throughout earth disturbing activity. Sediment ponds and perimeter sediment barriers shall be implemented as the first step of grading and within seven days from the start of grubbing. They shall continue to function until the upslope development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

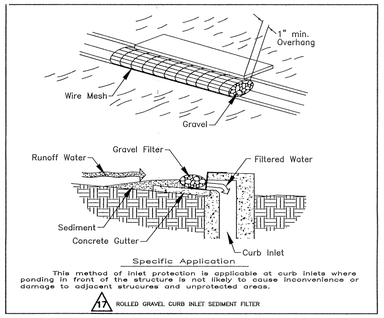
Erosion and sediment control practices used to satisify the conditions of this plan shall meet the standards and specifications in the current edition of Water Management and Sediment Control in Urbanized Areas (Soil Conservation Service.)

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.



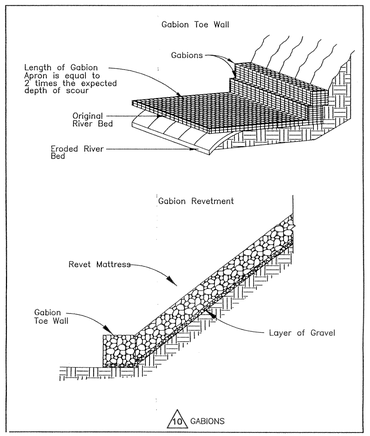
DETENTION INLET SEDIMENT FILTER



Specific Application

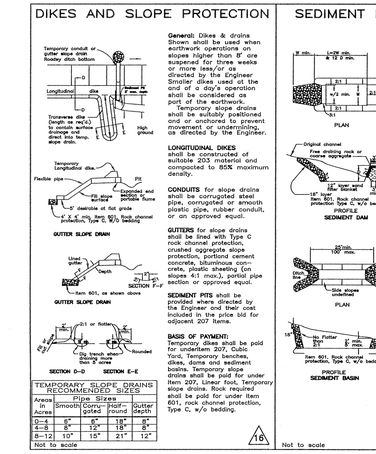
This method of inlet protection is applicable at curb inlets where ponding in front of the structure is not likely to cause inconvenience or damage to adjacent strucures and unprotected areas.

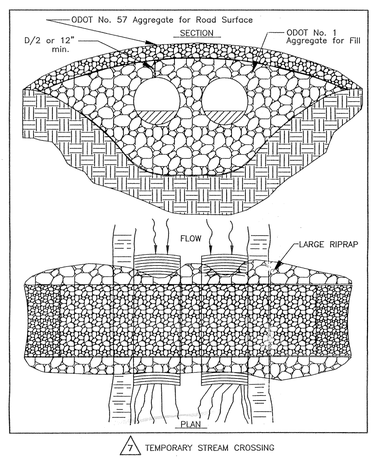
17 ROLLED GRAVEL CURB INLET SEDIMENT FILTER



10 GABIONS

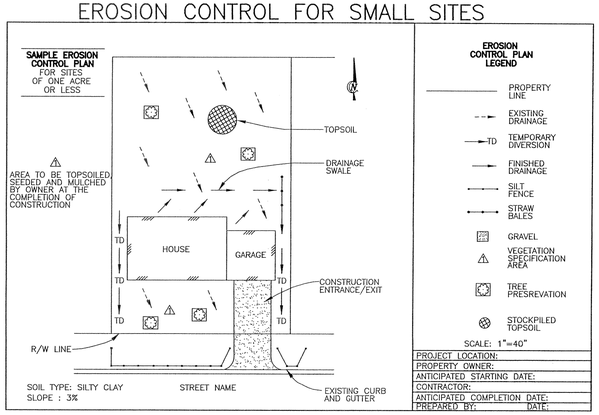
Source: Adapted from product literature of Bekaert Gabions.





7 TEMPORARY STREAM CROSSING

EROSION CONTROL FOR SMALL SITES

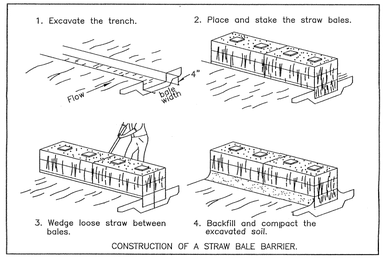


WARNING! Extra measures may be needed if your site:
- Is within 300 feet of a stream or wetland
- Is within 1000 feet of a lake
- Is steep (slopes of 12% or more)
- Receives runoff from 10,000 sq. ft. or more of adjacent land
- Has more than an acre of disturbed ground

Typical Lawn Seed Mixtures

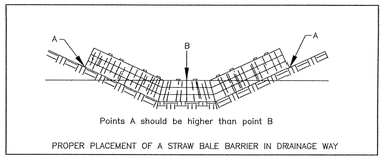
Grass	Sunny Site	Shady Site
Kentucky bluegrass	65%	15%
Fine fescue	20%	70%
Perennial ryegrass	15%	15%
Seeding rate		
Seeding rate (lb./1000 sq. ft.)	3-4	4-5

4 STRAW BALE DETAILS



CONSTRUCTION OF A STRAW BALE BARRIER.

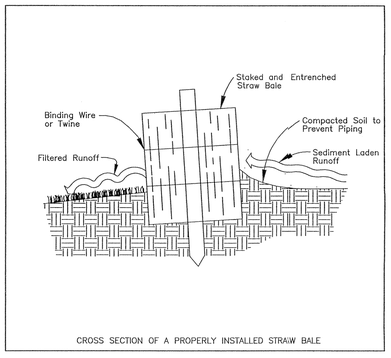
Source: Adapted from Installation of Straw and Filter Barriers for Sediment control, Sherwood and Wyant.



Points A should be higher than point B

PROPER PLACEMENT OF A STRAW BALE BARRIER IN DRAINAGE WAY

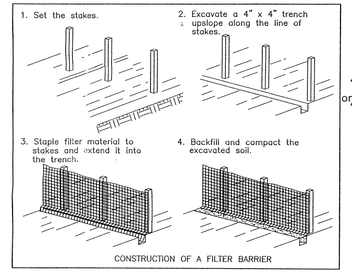
Source: Installation of Straw and Filter Barriers for Sediment Control, Sherwood and Wyant.



CROSS SECTION OF A PROPERLY INSTALLED STRAW BALE

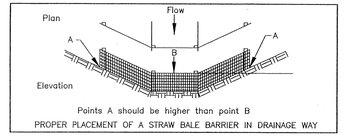
Source: Michigan Soil Erosion and Sedimet Control Guidebook, 1975

5 SILT FENCE DTEAILS



CONSTRUCTION OF A FILTER BARRIER

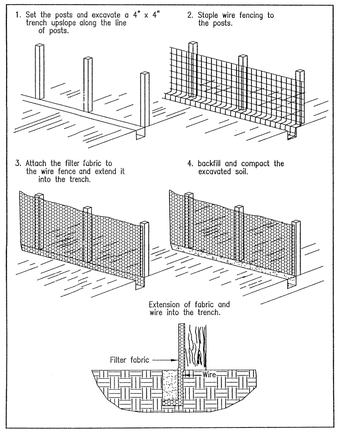
Source: Installation of Straw and Fabric Filter Barriers for Sediment Control, Sherwood and Wyant



Points A should be higher than point B

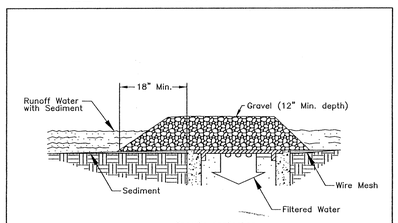
PROPER PLACEMENT OF A STRAW BALE BARRIER IN DRAINAGE WAY

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



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

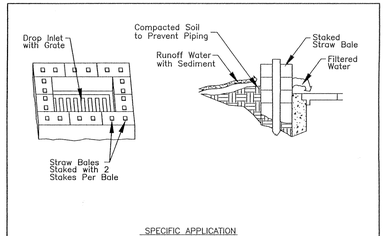
INLET PROTECTION DETAILS



Specific Application

This method of inlet protection is applicable where heavy concetrated flows are expected, but not where ponding around the structure might cause excessive inconvenience or damage to adjacent structures and unprotected areas.

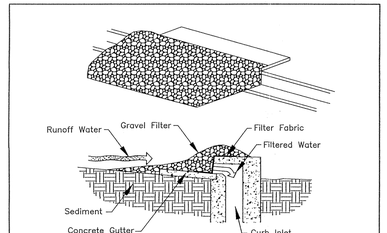
13 GRAVEL AND WIRE MESH DROP INLET SEDIMENT FILTER.



SPECIFIC APPLICATION

This method of inlet protection is applicable where the inlet drains a relatively flat area (slope no greater than 5 percent) where sheet or overland flows not exceeding 0.5 cfs) are typical.

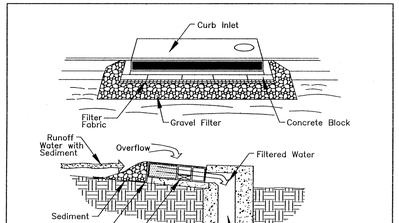
11 STRAW BALE DROP INLET SEDIMENT FILTER



SPECIFIC APPLICATION

This method of inlet protection is applicable at curb inlets where ponding in front of the structure is not likely to cause inconvenience or damage to adjacent structures and unprotected areas.

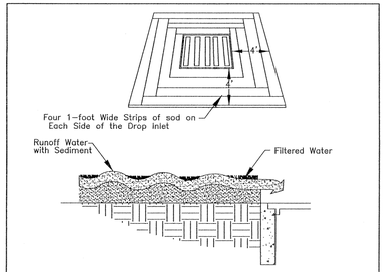
8 GRAVEL CURB INLET SEDIMENT FILTER



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.

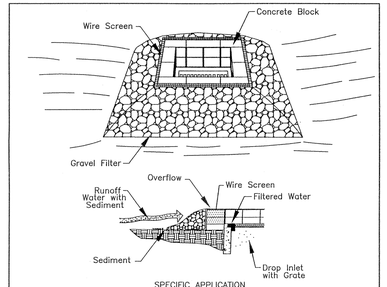
14 BLOCK AND GRAVEL CURB INLET SEDIMENT FILTER



SPECIFIC APPLICATION

This method of inlet protection is applicable 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



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

REVEGETATION
Seed, sod or mulch bare soil as soon as possible

1 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 STRAW BALE or SILT FENCE or **5**
Put up before any other work is done.
Install on downslope side(s) of site with ends extended up sidesloses 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.

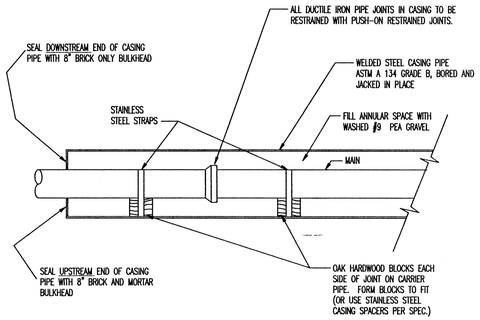
6 SOIL PILES
Located away from any downslope street, driveway, stream, lake, wetland, ditch or drainageway.
Temporary seed such as annual rye is recommended for topsoil piles.
Surround with straw bales or silt fence.

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.

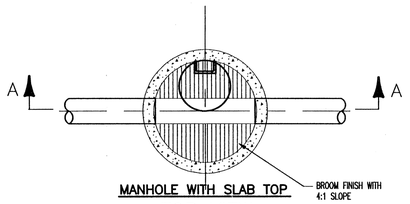
DOWNSPOUT EXTENDERS
Not required, but highly recommended.
Install as soon as gutters and downspouts are completed.
Route water to a grassed or paved area.
Maintain until a lawn is established.

bayer becker engineers
engineers
planners
architects
surveyors
700 Nilles Rd. Fairfield, OH 45014 513-829-2149



ENCASEMENT PIPE DETAIL

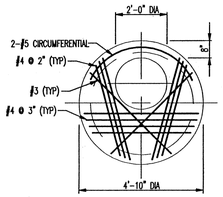
NTS



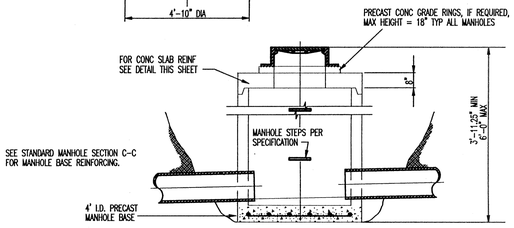
MANHOLE WITH SLAB TOP

TOP VIEW

(FRAME, LID, & SLAB TOP REMOVED)

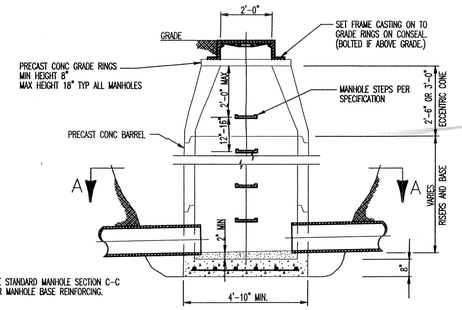


CONCRETE TOP SLAB



MANHOLE WITH SLAB TOP

SECTION A – A



STANDARD MANHOLE

SECTION B – B

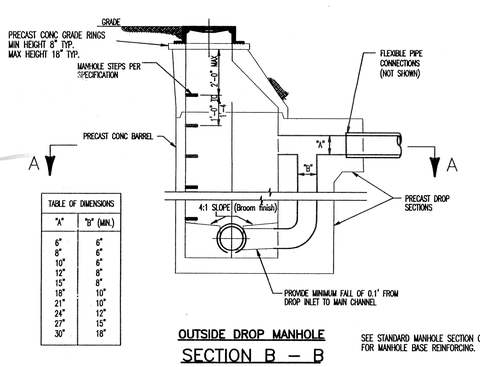
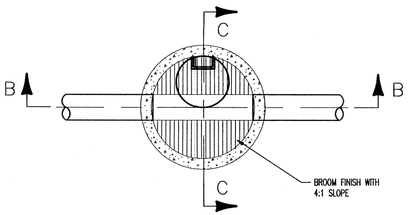


TABLE OF DIMENSIONS	
"A"	"B" (MIN.)
6"	6"
8"	6"
10"	6"
12"	8"
15"	8"
18"	10"
21"	10"
24"	12"
27"	15"
30"	18"

OUTSIDE DROP MANHOLE

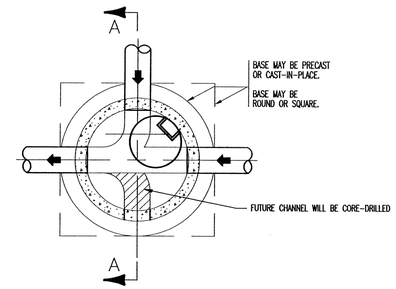
SECTION B – B

SEE STANDARD MANHOLE SECTION C-C FOR MANHOLE BASE REINFORCING.



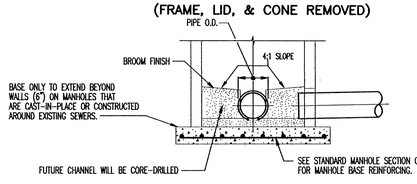
STANDARD MANHOLE

SECTION A – A



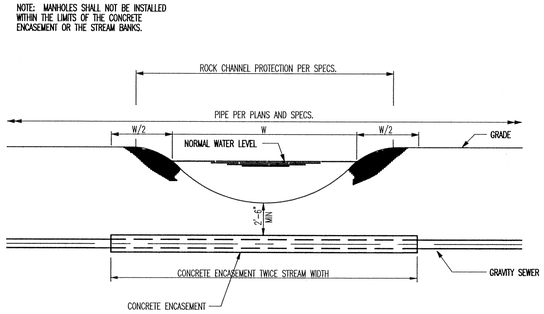
STANDARD CAST-IN-PLACE MANHOLE – PLAN

(FRAME, LID, & CONE REMOVED)



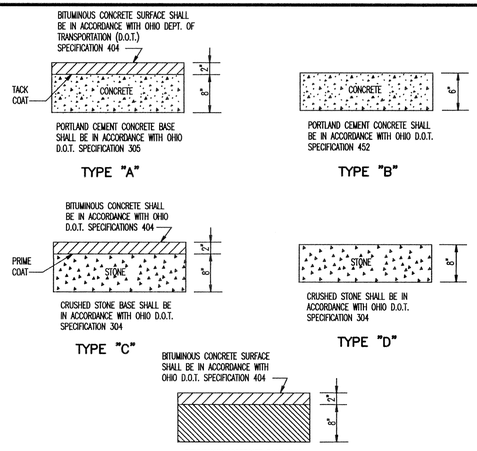
CAST-IN-PLACE MANHOLE

SECTION A – A



TYPICAL CREEK CROSSING FOR GRAVITY SEWERS

NTS

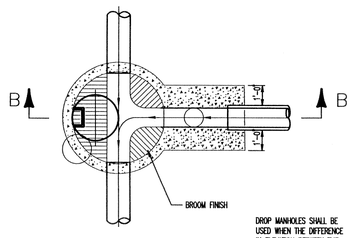


PAVEMENT REPLACEMENT DETAILS

NTS

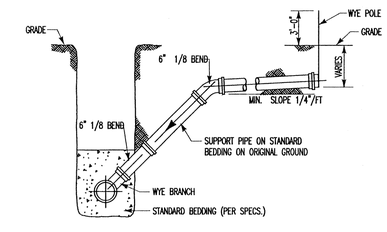
WALK REPLACEMENT DETAIL

NTS

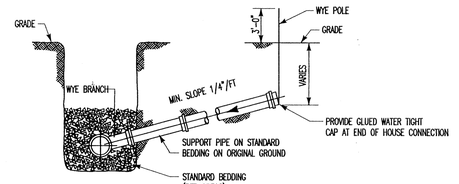


OUTSIDE DROP MANHOLE

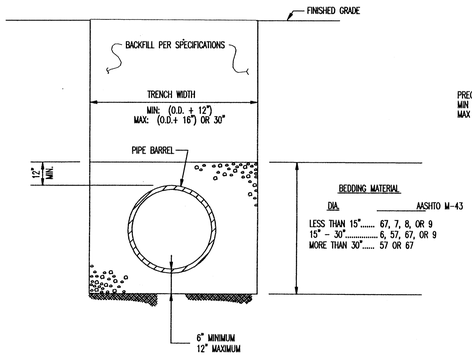
SECTION A – A



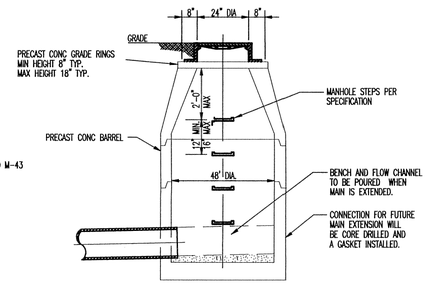
HOUSE CONNECTION FOR DEEP SEWER



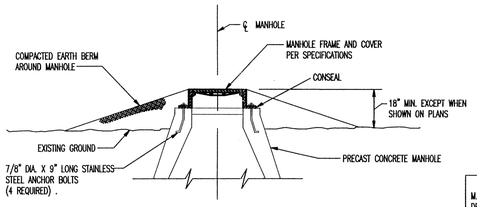
HOUSE CONNECTION FOR SHALLOW SEWER



TYPICAL TRENCH DETAIL SEWER INSTALLATION



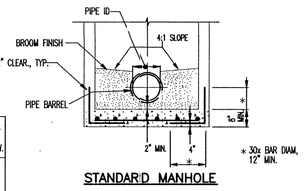
DEAD END MANHOLE DETAIL



ELEVATED MANHOLE DETAIL

(OFF HIGHWAY EASEMENT AREAS)

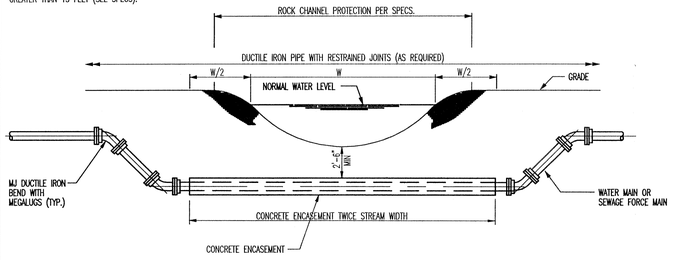
M.H. DEPTH	SLAB & DOWEL RESTED. SQ. IN./FT. E.W.
0'-10'	0.17
11'-20'	0.22
21'-30'	0.27
31'-40'	0.32



STANDARD MANHOLE

SECTION C – C

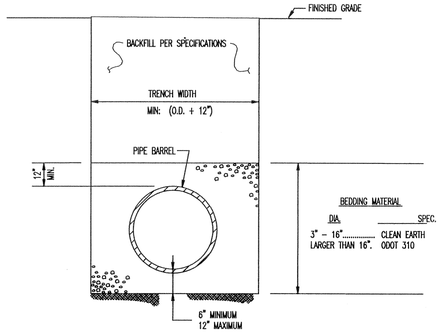
NOTE: FOR WATER MAINS ONLY. MODIFICATIONS FROM THIS DETAIL MAY BE NECESSARY IF W IS GREATER THAN 15 FEET (SEE SPECS).



TYPICAL CREEK CROSSING

FOR WATER MAINS & SEWAGE FORCE MAINS

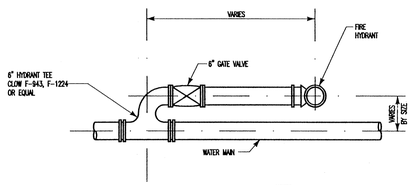
NTS



TYPICAL TRENCH DETAIL

WATER MAIN INSTALLATION

NTS

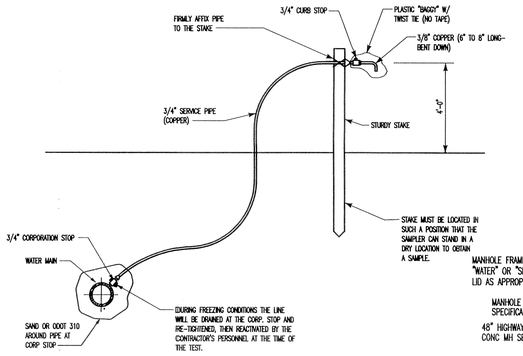


NOTES:

1. FITTINGS TO BE MECHANICAL JOINT HYDRANT ANCHOR FITTINGS.
2. SEE TYPICAL FIRE HYDRANT INSTALLATION DETAIL FOR ADDITIONAL DETAILS.

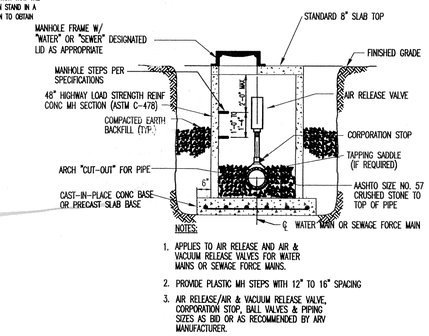
SETTING FOR HYDRANT ADJACENT TO MAIN

NTS



PURITY TEST STATION

NTS



NOTES:

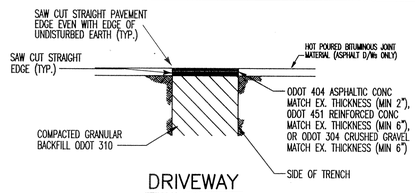
1. APPLIES TO AIR RELEASE AND AIR & VACUUM RELEASE VALVES FOR WATER MAINS OR SEWAGE FORCE MAINS.
2. PROVIDE PLASTIC MH STEPS WITH 12" TO 16" SPACING
3. AIR RELEASE/AIR & VACUUM RELEASE VALVE, CORPORATION STOP, BALL VALVES & PIPING SIZES AS BID OR AS RECOMMENDED BY ARV MANUFACTURER.

TYPICAL AIR OR AIR & VACUUM

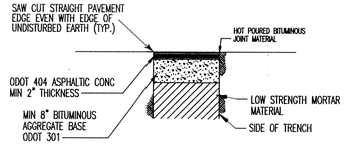
RELEASE VALVE SETTING

SECTION B – B

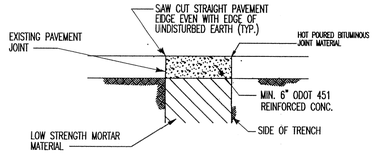
NTS



DRIVEWAY



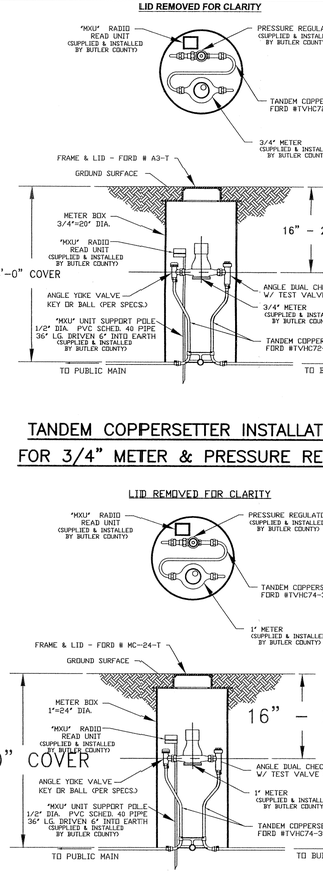
ASPHALTIC CONCRETE ROADWAY



CONCRETE ROADWAY

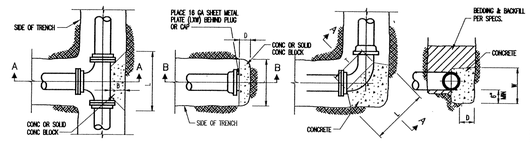
PAVEMENT REPLACEMENT DETAILS

LID REMOVED FOR CLARITY



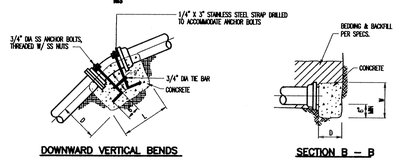
TANDEM COPPERSETTER INSTALLATION

FOR 3/4" METER & PRESSURE REGULATOR



CONCRETE THRUST BLOCKS

NTS



CONCRETE ANCHOR BLOCKS

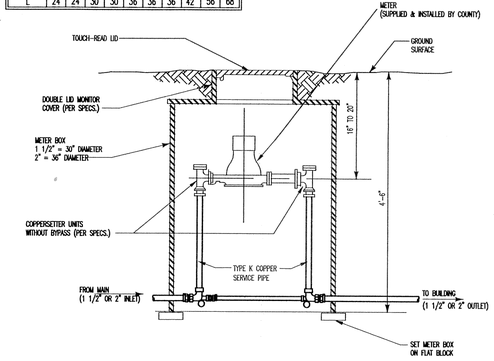
NTS

PLUGS, CAPS & TEES									
SIZE	6"	8"	10"	12"	16"	18"	20"	24"	30"	36"
D	6"	6"	6"	6"	10"	12"	14"	18"	24"	30"
L & W	20"	22"	24"	24"	32"	36"	40"	54"	76"	102"
45° EIGHTH BENDS										
SIZE	6"	8"	10"	12"	16"	18"	20"	24"	30"	36"
D	6"	6"	6"	6"	6"	8"	8"	10"	12"	16"
L	18"	20"	22"	24"	34"	40"	45"	58"	72"	98"
T	16"	16"	18"	18"	28"	33"	37"	46"	52"	58"
W	12"	14"	16"	18"	22"	25"	28"	36"	48"	76"
90° QUARTER BENDS										
SIZE	6"	8"	10"	12"	16"	18"	20"	24"	30"	36"
D	8"	10"	12"	12"	16"	20"	20"	24"	26"	
L	24"	27"	30"	34"	48"	51"	54"	78"	92"	144"
T	16"	18"	20"	22"	36"	40"	44"	50"	56"	62"
W	12"	16"	20"	24"	28"	34"	40"	50"	68"	96"

VERTICAL BEND & STRAIGHT PIPE									
SIZE	6"	8"	10"	12"	16"	18"	20"	24"	30"	36"
D	15"	15"	18"	18"	21"	21"	24"	24"	32"	38"
L	24"	24"	30"	30"	36"	36"	36"	42"	56"	68"

NOTES:

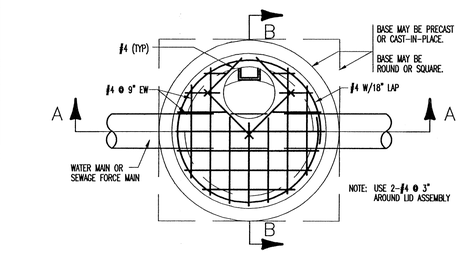
1. ANCHORS TO BE FULL WIDTH OF TRENCH
2. DEPTH "D" MAY BE GREATER THAN SPECIFIED TO ALLOW WORKING SPACE. CONC MUST BE PLACED AGAINST UNDISTURBED EARTH.
3. THESE ARE REPRESENTATIVE BLOCKING DIMENSIONS OTHER BENDS WILL ALSO NEED BLOCKING IF NOT UTILIZING RESTRAINED JOINTS.
4. ENCASE ALL JOINTS, BOLTS, & NUTS WITH POLYETHYLENE BEFORE PLACING CONCRETE
5. CONCRETE TYPE AND STRENGTH PER SPECS.
6. ALL ANCHOR BOLTS, NUTS, AND STRAPS TO BE STAINLESS STEEL.
7. UPWARD VERTICAL BENDS TO HAVE THRUST BLOCKS WITH SAME DIMENSIONS AS FOR HORIZONTAL BENDS.
8. 11 1/4 DEGREE AND 22 1/2 DEGREE BENDS TO HAVE THRUST BLOCKS WITH SAME DIMENSIONS AS FOR 45 DEGREE BENDS.



STANDARD INSTALLATION FOR 1 1/2"

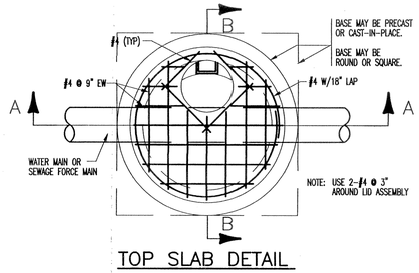
AND 2" WATER METER SETTINGS

NTS



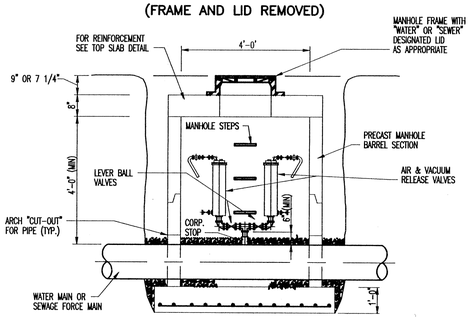
TOP SLAB DETAIL

(FRAME AND LID REMOVED)



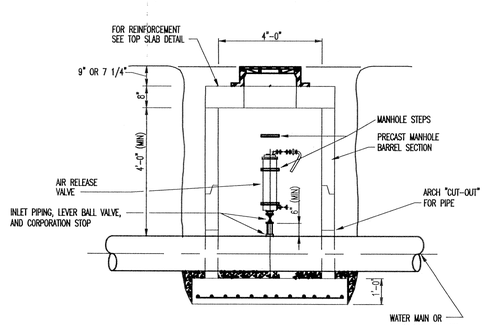
TOP SLAB DETAIL

(FRAME AND LID REMOVED)



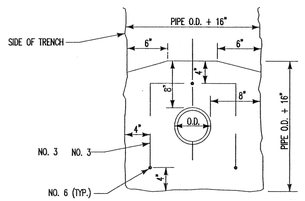
AIR & VACUUM RELEASE VALVE SETTING

SECTION A – A



AIR RELEASE VALVE SETTING

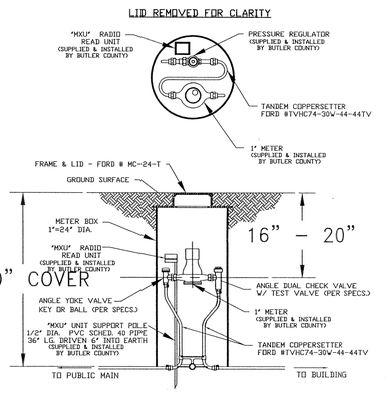
SECTION A – A



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

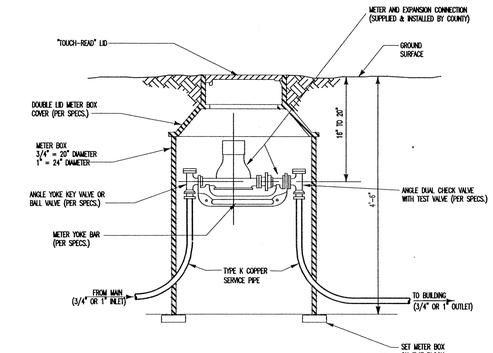
CONCRETE ENCASEMENT

NTS



TANDEM COPP'ERSETTER INSTALLATION

FOR 1" METER & PRESSURE REGULATOR



STANDARD INSTALLATION FOR 3/4"

AND 1" WATER METER SETTINGS

NTS