FINAL DEVELOPMENT PLAN FOR ARBOR PARK

LIBERTY TOWNSHIP, BUTLER COUNTY, OHIO

SANITARY SEWER & WATER MAIN GENERAL NOTES:

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.

IF METER PITS CANNOT BE INITIALLY INSTALLED AT THE LOCATION SHOWN ON THE TYPICAL SECTION, A CURB STOP CAN BE SETUP AT THIS LOCATION.

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 FOUR (4') MINIMUM COVER.

SANITARY SEWER MATERIALS AND INSTALLATION TO BE PER BUTLER COUNTY SPECIFICATIONS SECTION 3110 FOR PVC, SDR-35 & 26 PIPE; SECTION 3140 FOR ABS OR PVC COMPOSITE PIPE. SECTION 3410 FOR MANHOLES.

ROOF DRAINS, FOUNDATION DRAINS, AND OTHER CLEAN WATER CONNECTIONS TO THE SANITARY SEWER SYSTEM ARE PROHIBITED.

ALL BUILDINGS TO BE SERVED BY THE PUBLIC SEWER SYSTEM SHALL BE CONSTRUCTED SO TO PROVIDE A MINIMUM OF FOUR (4') FEET OF VERTICAL SEPARATION BETWEEN THE PUBLIC SANITARY SEWER SYSTEM, 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 (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 WATER AND SEWER DEPARTMENT.

BUTLER COUNTY WATER AND SEWER DEPARTMENT DOES NOT ACCEPT ANY RESPONSIBILITY FOR THE RELOCATION, REPAIR, OR REPLACEMENT OF ANY UTILITY INSTALLED WITHIN FIVE (5') FEET OF THE CENTER LINE OF ANY SANITARY SEWER MAIN OR WATER MAIN.

ALL WATER MAIN VALVES TO HAVE A MINIMUM DEPTH OF TWO AND ONE HALF (2.5') AND A MAXIMUM OF 4.0 FEET FROM PROPOSED GRADE TO THE TOP OF THE VALVE OPERATING NUT.

ALL SANITARY SEWERS LATERALS SHALL BE AT LEAST FOUR (4') FEET BELOW THE BASEMENT FLOOR ELEVATION AT THE POINT OF CONNECTION TO THE SEWER MAIN AND SHALL NOT EXCEED THE DEPTH OF TWELVE (12') FEET BELOW THE FINISHED GRADE AT THE END OF THE LATERAL AT THE RIGHT-OF-WAY UNLESS SPECIFICALLY AUTHORIZED BY THE COUNTY.

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 AND PIPING THAT EXTEND OUT FROM THE MAIN BARREL OF THE SEWER MAIN.

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 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.

PROPERTY IS IN ZONE "X" AS SHOWN ON THE FEMA FLOOD INSURANCE RATE MAP #39017C0217E & #39017C0219E DATED DECEMBER 17, 2010.

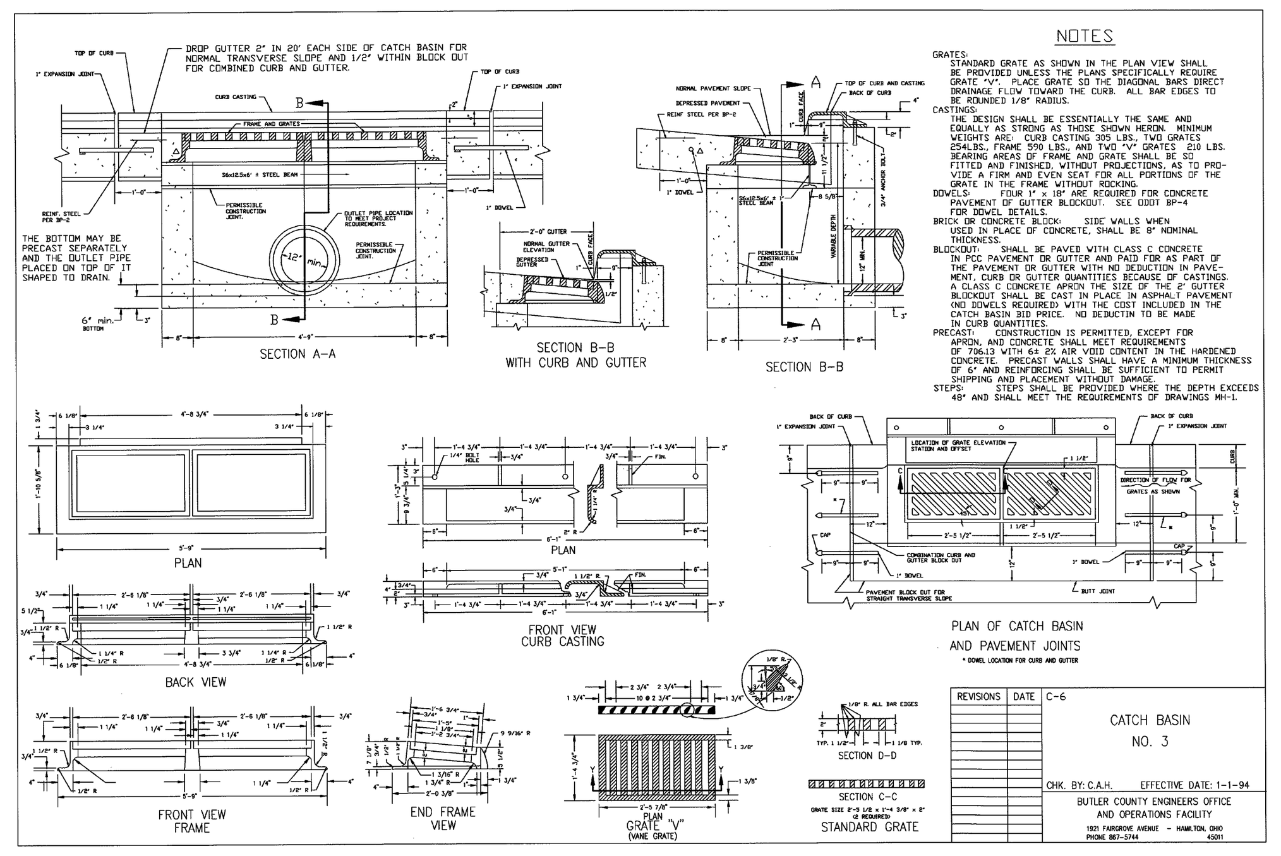
BUTLER COUNTY BENCHMARK #99FC66A IS LOCATED ON THE NORTH SIDE OF KYLES STATION ROAD AT THE INTERSECTION OF LIBERTY WOODS ROAD ELEV.=722.303'

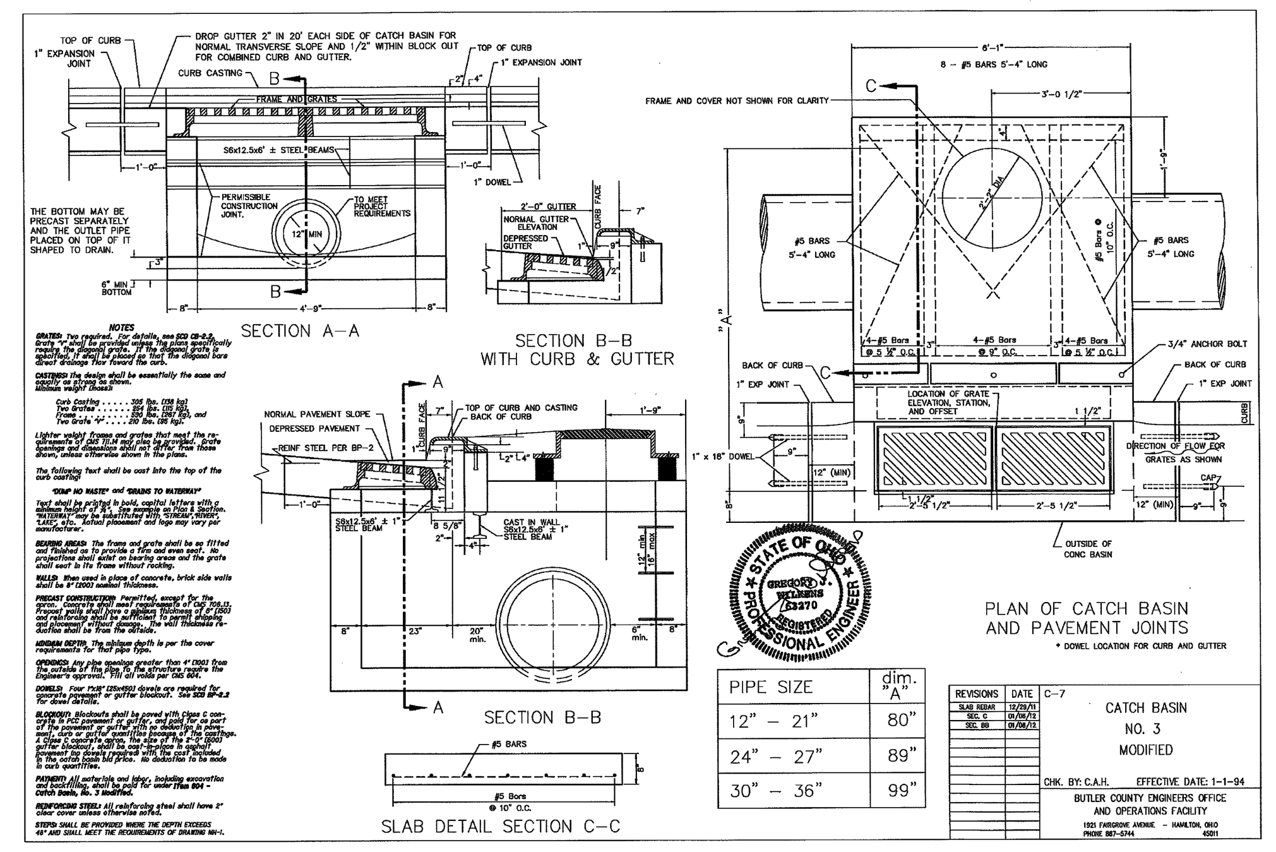
EX. ZONING – "R-SE"
PROP. ZONING – "R-PUD"

FRONT YARD SETBACK = 30'
FRONT YARD SETBACK CUL-DE-SACS = 35'
SIDE YARD SETBACK = 5'
REAR YARD SETBACK = 25'
LOTS 1 & 44 – 50' SETBACK FROM YANKEE ROAD

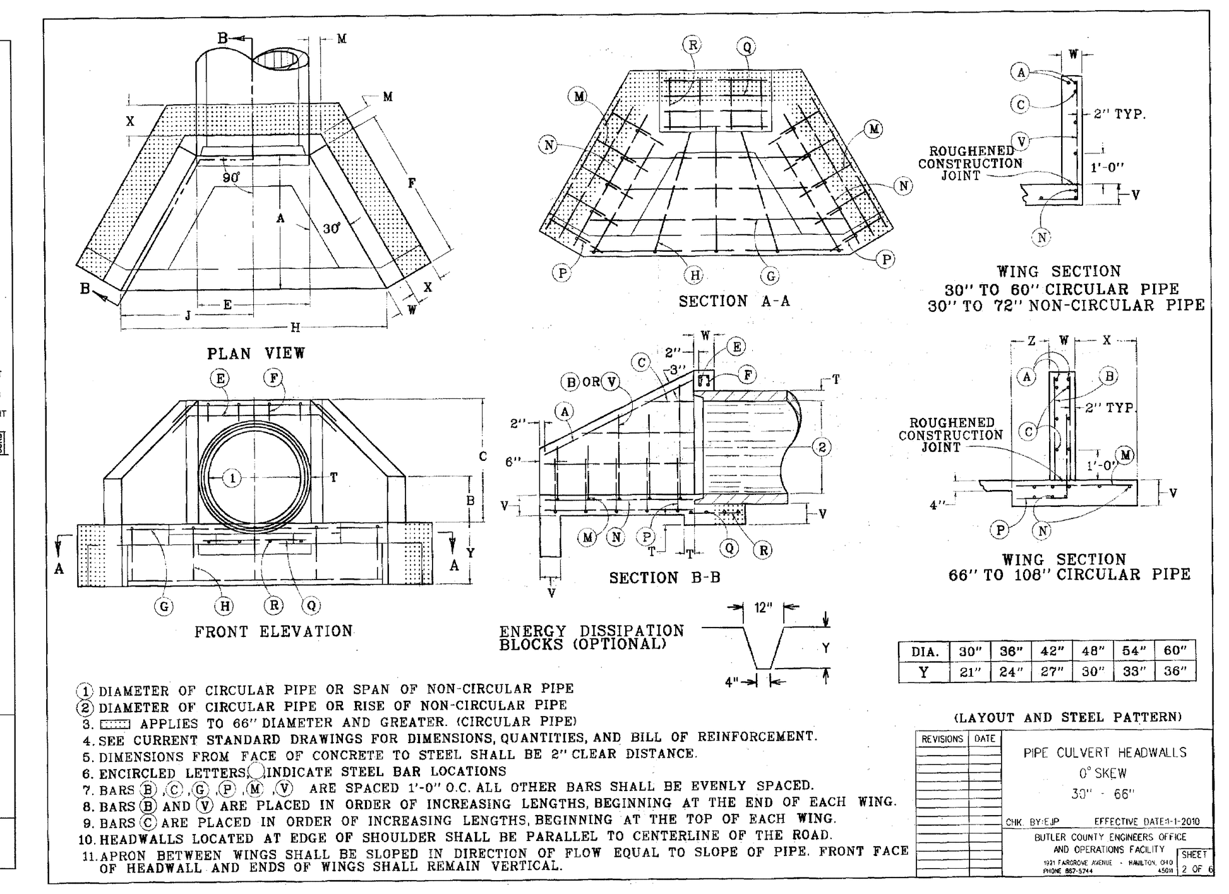
GROSS AREA = 17.7864 ACRES
YANKEE ROAD R/W = 0.8521 ACRES
PARCEL "C" = 0.1405 ACRES
NET AREA = 16.7938 ACRES
PROVIDED OPEN SPACE = 3.4822 ACRES
DENSITY = 44 LOTS/16.794 ACRES=2.62 LOTS/ACRE
LINEAR FEET OF NEW STREETS = 1,758.93 L.F.

PIDN – D2010-019-000-070

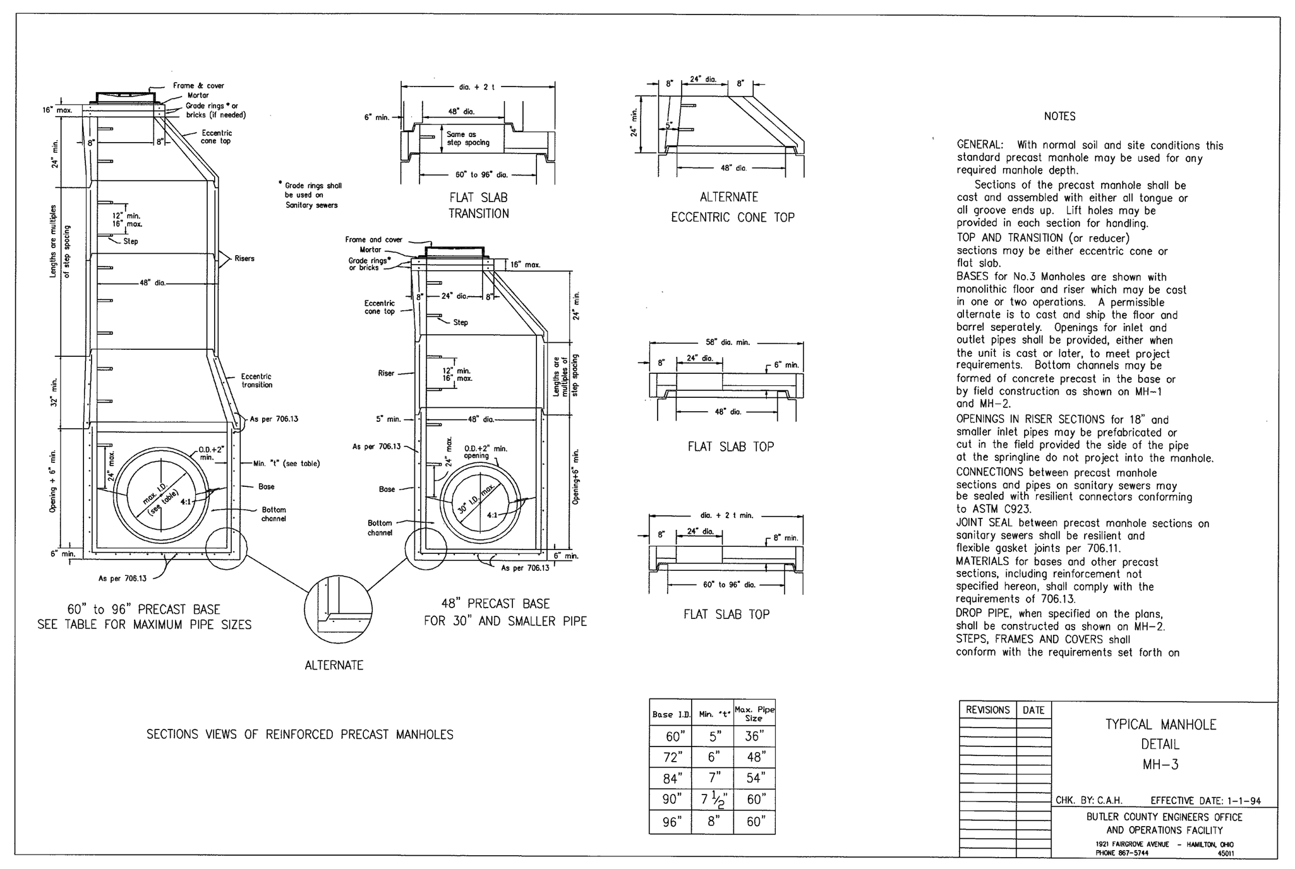




PIPE SIZE	dim. "A"
12" – 21"	80"
24" – 27"	89"
30" – 36"	99"



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



Base I.D.	Min. "t"	Max. Pipe Size
60"	5"	36"
72"	6"	48"
84"	7"	54"
90"	7 1/2"	60"
96"	8"	60"

NOTES

GENERAL: With normal soil and site conditions this standard precast manhole may be used for any required manhole depth. Sections of the precast manhole shall be cast and assembled with either all tongue or all groove ends up. Lift holes may be provided in each section for handling. TOP AND TRANSITION (or reducer) sections may be either eccentric cone or flat slab. BASES for No.3 Manholes are shown with monolithic floor and riser which may be cast in one or two operations. A permissible alternate is to cast and ship the floor and base separately. Openings for inlet and outlet pipes shall be provided, either when the unit is cast or later, to meet project requirements. Bottom channels may be formed of concrete precast in the base or by field construction as shown on MH-1 and MH-2. OPENINGS IN RISER SECTIONS for 18" and smaller inlet pipes may be prefabricated or cut in the field provided the side of the pipe at the springline do not project into the manhole. CONNECTIONS between precast manhole sections and pipes on sanitary sewers may be sealed with resilient connectors conforming to ASTM C923. JOINT SEAL between precast manhole sections on sanitary sewers shall be resilient and flexible gasket joints per 706.11. MATERIALS for bases and other precast sections, including reinforcement not specified hereon, shall comply with the requirements of 706.13. DROP PIPE, when specified on the plans, shall be constructed as shown on MH-2. STEPS, FRAMES AND COVERS shall conform with the requirements set forth on

BILL OF REINFORCEMENT 30" TO 66" DIAMETER CIRCULAR PIPE HEADWALLS 0° SKEW

30"

MARK	SIZE	NO. (1)	LGTH FT	LGTH IN	K FT	K IN
A	5	4	4	8		
C1	4	2	2	4		
C2	4	2	2	4		
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"

MARK	SIZE	NO. (1)	LGTH FT	LGTH IN	K FT	K IN
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"

MARK	SIZE	NO. (1)	LGTH FT	LGTH IN	K FT	K IN
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"

MARK	SIZE	NO. (1)	LGTH FT	LGTH IN	K FT	K IN
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"

MARK	SIZE	NO. (1)	LGTH FT	LGTH IN	K FT	K IN
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"

MARK	SIZE	NO. (1)	LGTH FT	LGTH IN	K FT	K IN
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"

MARK	SIZE	NO. (1)	LGTH FT	LGTH IN	K FT	K IN
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 0. TO 0. OF BARS.
3. ALL BARS ARE STRAIGHT EXCEPT THOSE SHOWN BELOW.

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

USE WITH SHEET 2 OF 6

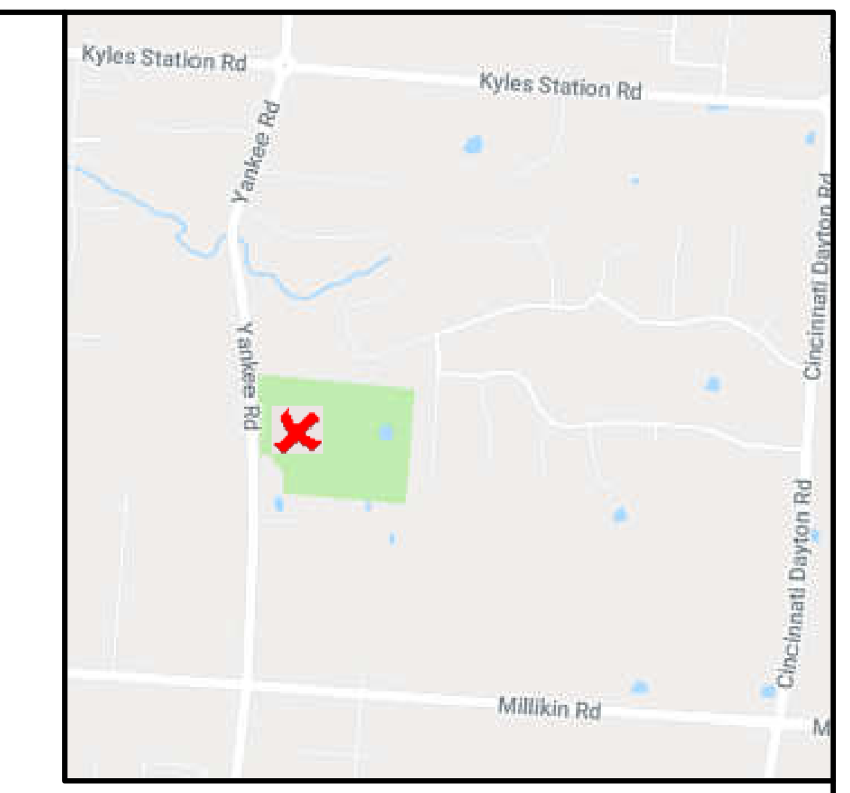
BILL OF REINFORCEMENT 30" TO 66" DIAMETER CIRCULAR PIPE HEADWALLS 0° SKEW
CHK. BY:EJP EFFECTIVE DATE:1-1-2010
BUTLER COUNTY ENGINEERS OFFICE AND OPERATIONS FACILITY
1921 FAIRGROVE AVENUE - HAMILTON, OHIO 45011 PHONE 867-5744
SHEET 5 OF 6

DIMENSION	30"	36"	42"	48"	54"	60"	66"	DIMENSION
	DIAMETER OF PIPE							
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

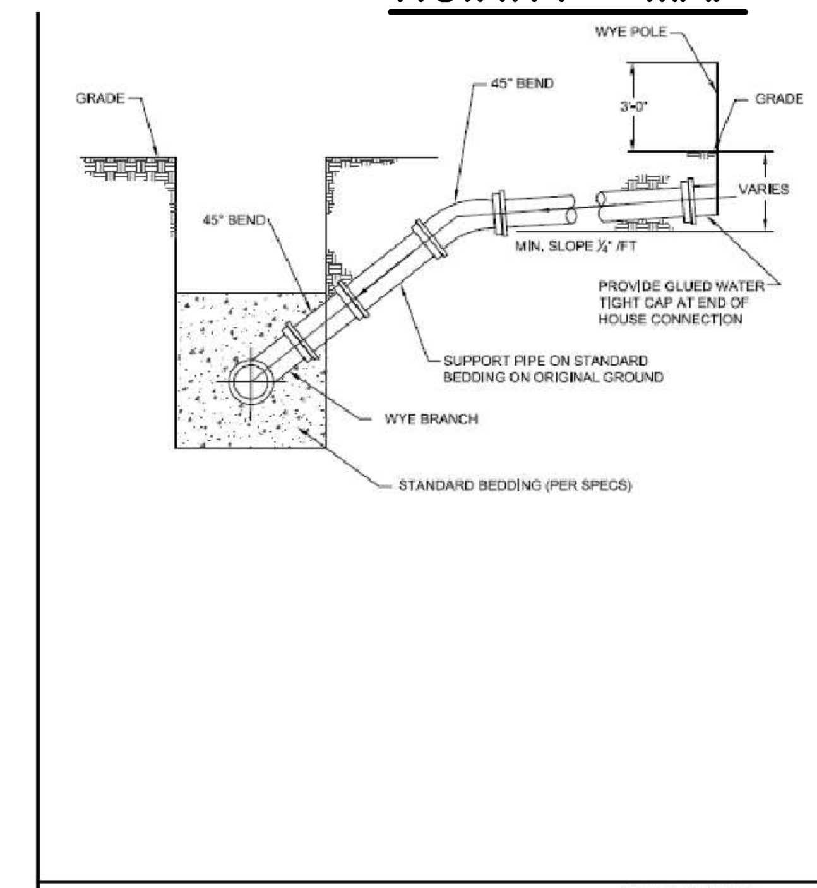
DIMENSIONS & QUANTITIES 30"-66" HEADWALLS CIRCULAR PIPE, 0° SKEW
CHK. BY:EJP EFFECTIVE DATE:1-1-2010
BUTLER COUNTY ENGINEERS OFFICE AND OPERATIONS FACILITY
SHEET 3 OF 6



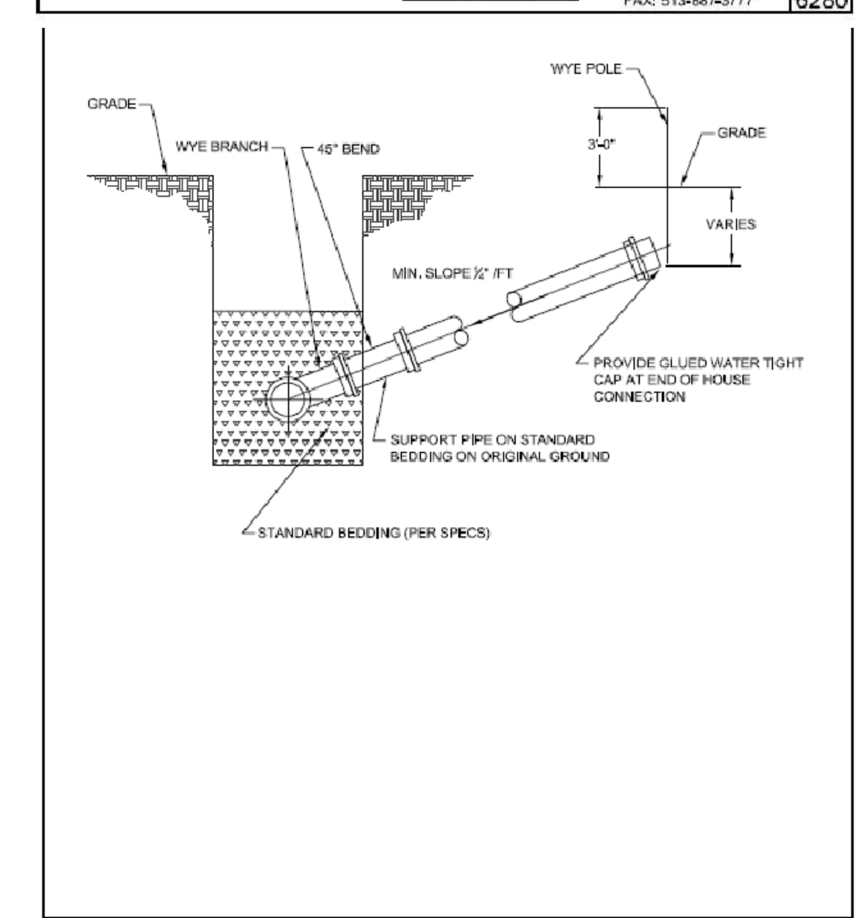
VICINITY MAP

SUBDIVISION ★ CONSTRUCTION ★ DRAWINGS ★ APPROVED

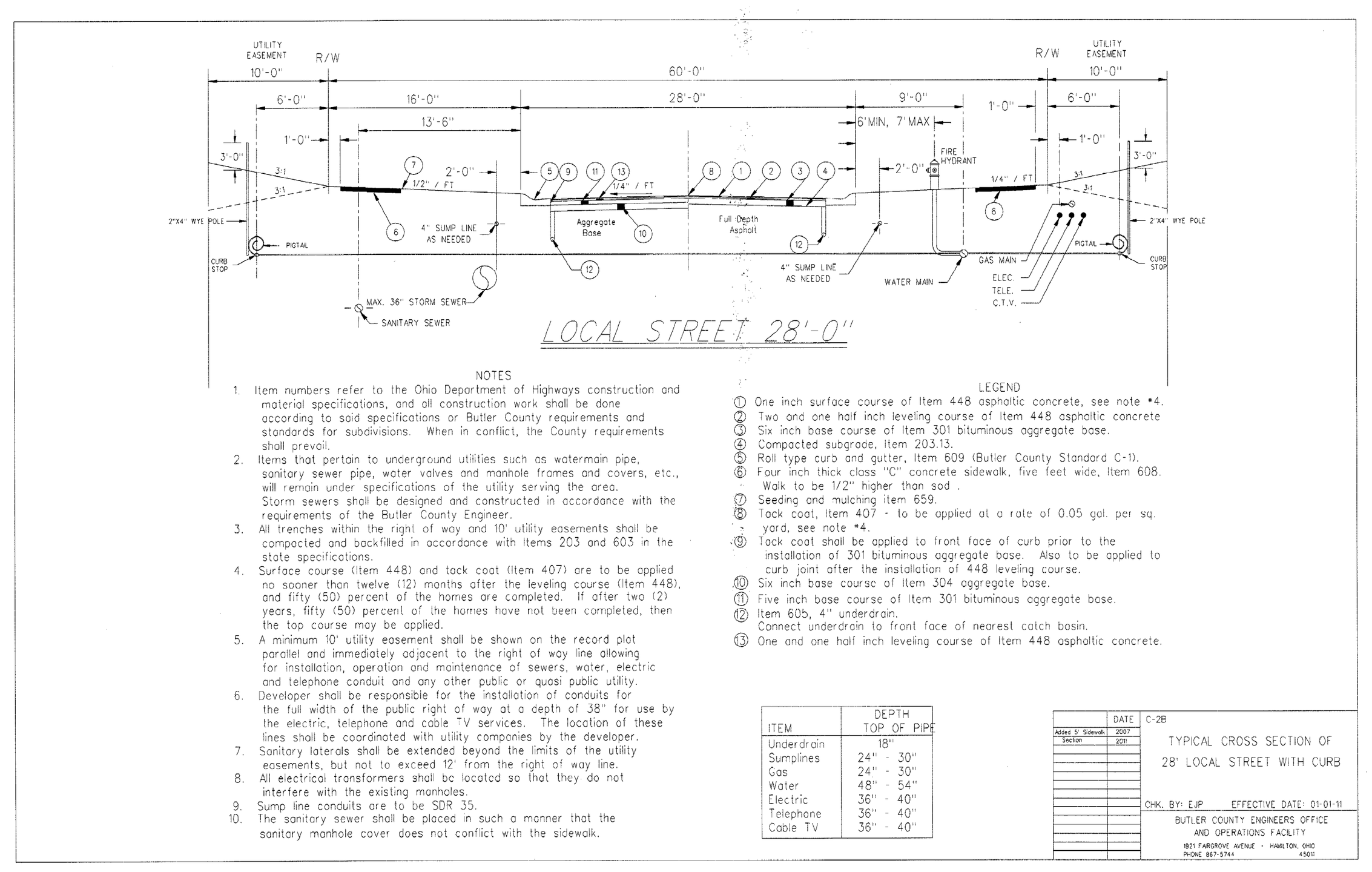
EJP 09/12/18
BCEO SUB
#1587



HOUSE CONNECTION FOR DEEP SEWER
BUTLER COUNTY WATER AND SEWER
130 HIGH STREET HAMILTON, OH 45011 TELEPHONE: 513-887-3066 FAX: 513-887-3777
6280



HOUSE CONNECTION FOR SHALLOW SEWER
BUTLER COUNTY WATER AND SEWER
130 HIGH STREET HAMILTON, OH 45011 TELEPHONE: 513-887-3066 FAX: 513-887-3777
6290

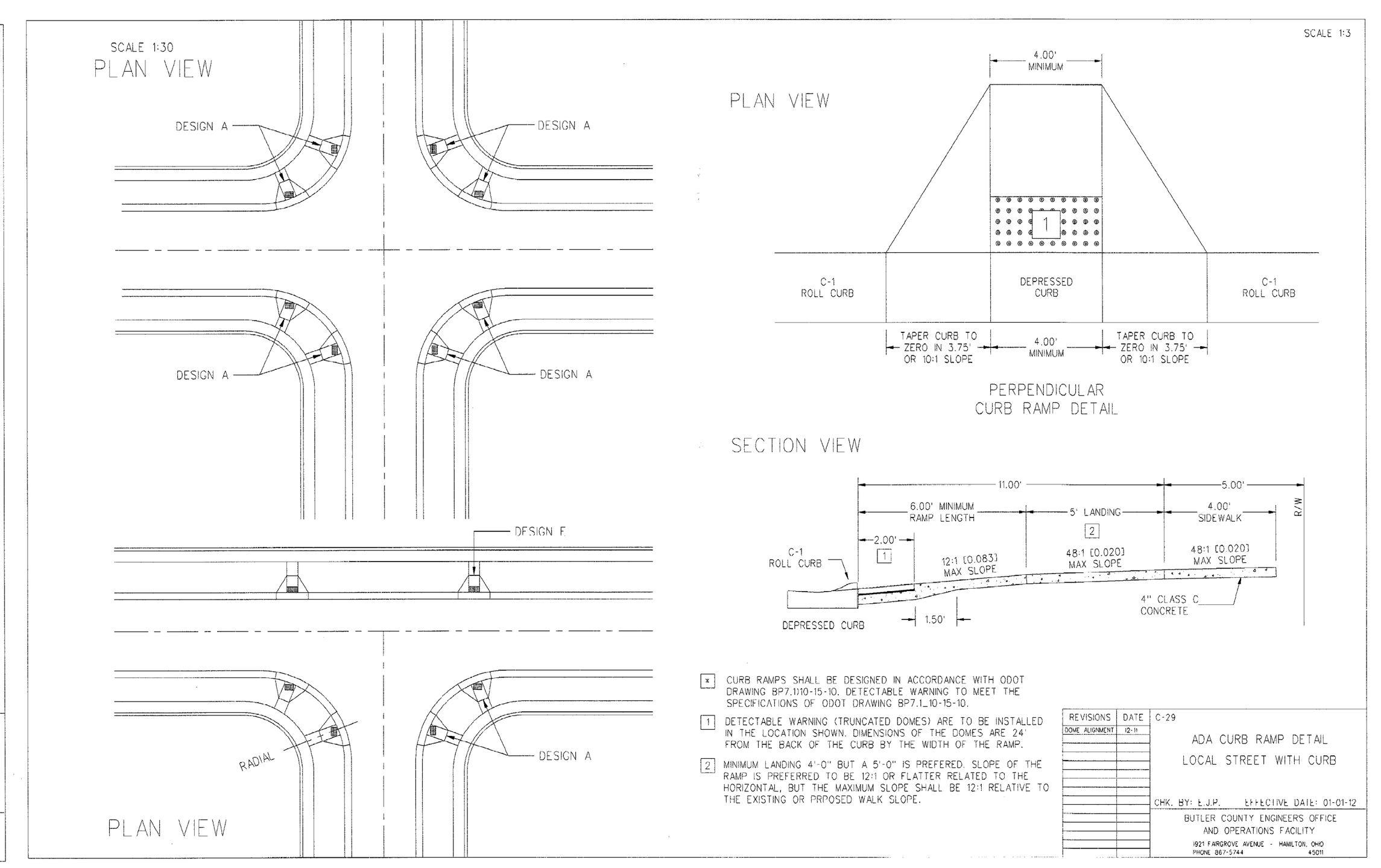


NOTES
1. Item numbers refer to the Ohio Department of Highways construction and material specifications, and all construction work shall be done according to said specifications or Butler County requirements and standards for subdivisions. When in conflict, the County requirements shall prevail.
2. Items 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 easements shall be compacted and backfilled in accordance with Items 203 and 603 in the state specifications.
4. 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.
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 conduit 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 38" for use by the electric, telephone and cable TV services. The location of these lines shall be coordinated with utility companies by the developer.
7. Sanitary laterals shall be extended beyond the limits of the utility easements, but not to exceed 12' from the right of way line.
8. All electrical transformers shall be located so that they do not interfere with the existing manholes.
9. Sump line conduits are to be SDR 35.
10. The sanitary sewer shall be placed in such a manner that the sanitary manhole cover does not conflict with the sidewalk.

LEGEND
1. One inch surface course of Item 448 asphaltic concrete, see note *4.
2. Two and one half inch leveling course of Item 448 asphaltic concrete
3. Six inch base course of Item 301 bituminous aggregate base.
4. Compacted subgrade, Item 203.13.
5. Roll type curb and gutter, Item 609 (Butler County Standard C-1).
6. Four inch thick class "C" concrete sidewalk, five feet wide, Item 608. Walk to be 1/2" higher than sod.
7. Seeding and mulching Item 659.
8. Tack coat, Item 407 - to be applied at a rate of 0.05 gal. per sq. yard, see note *4.
9. Tack coat shall be applied to front face of curb prior to the installation of 301 bituminous aggregate base. Also to be applied to curb joint after the installation of 448 leveling course.
10. Six inch base course of Item 304 aggregate base.
11. Five inch base course of Item 301 bituminous aggregate base.
12. Item 605, 4" underdrain. Connect underdrain to front face of nearest catch basin.
13. One and one half inch leveling course of Item 448 asphaltic concrete.

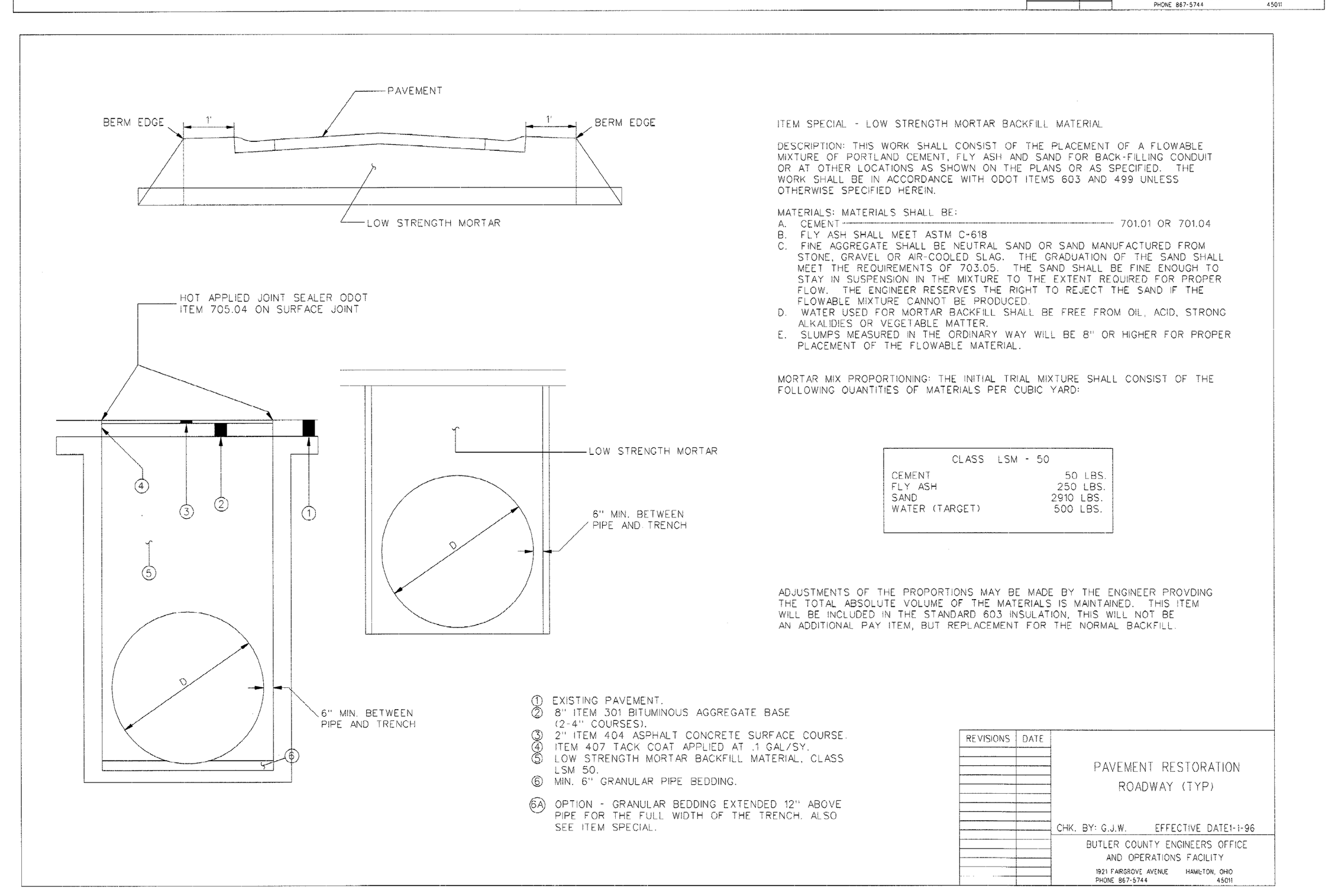
ITEM	DEPTH TOP OF PIPE
Underdrain	18"
Sumplines	24" - 30"
Gas	24" - 30"
Water	48" - 54"
Electric	36" - 40"
Telephone	36" - 40"
Cable TV	36" - 40"

TYPICAL CROSS SECTION OF 28' LOCAL STREET WITH CURB
CHK. BY: EJP EFFECTIVE DATE: 01-01-11
BUTLER COUNTY ENGINEERS OFFICE AND OPERATIONS FACILITY



CURB RAMPS SHALL BE DESIGNED IN ACCORDANCE WITH ODOT DRAWING BP7.1/10-15-10. DETECTABLE WARNING TO MEET THE SPECIFICATIONS OF ODOT DRAWING BP7.1_10-15-10.
1. DETECTABLE WARNING (TRUNCATED DOMES) ARE TO BE INSTALLED IN THE LOCATION SHOWN. DIMENSIONS OF THE DOMES ARE 24" FROM THE BACK OF THE CURB BY THE WIDTH OF THE RAMP.
2. MINIMUM LANDING 4'-0" BUT A 5'-0" IS PREFERED. SLOPE OF THE RAMP IS PREFERRED TO BE 12:1 OR FLATTER RELATED TO THE HORIZONTAL, BUT THE MAXIMUM SLOPE SHALL BE 12:1 RELATIVE TO THE EXISTING OR PROPOSED WALK SLOPE.

ADA CURB RAMP DETAIL LOCAL STREET WITH CURB
CHK. BY: E.J.P. EFFECTIVE DATE: 01-01-12
BUTLER COUNTY ENGINEERS OFFICE AND OPERATIONS FACILITY



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 ALKALIDIES OR VEGETABLE MATTER.
E. SLUMPS MEASURED IN THE ORDINARY WAY WILL BE 8" OR HIGHER FOR PROPER PLACEMENT OF THE FLOWABLE MATERIAL.

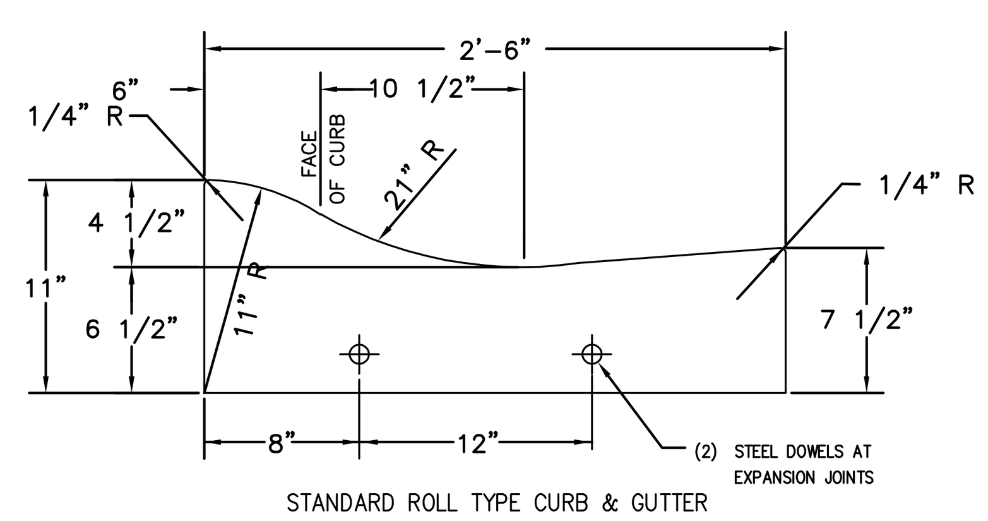
MORTAR MIX PROPORTIONING: THE INITIAL TRIAL MIXTURE SHALL CONSIST OF THE FOLLOWING QUANTITIES OF MATERIALS PER CUBIC YARD:

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

ADJUSTMENTS OF THE PROPORTIONS MAY BE MADE BY THE ENGINEER PROVDING 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.

1. EXISTING PAVEMENT.
2. 8" ITEM 301 BITUMINOUS AGGREGATE BASE (2-4" COURSES).
3. 2" ITEM 404 ASPHALT CONCRETE SURFACE COURSE.
4. ITEM 407 TACK COAT APPLIED AT .1 GAL/SY.
5. LOW STRENGTH MORTAR BACKFILL MATERIAL, CLASS LSM 50.
6. MIN. 6" GRANULAR PIPE BEDDING.
6A. OPTION - GRANULAR BEDDING EXTENDED 12" ABOVE PIPE FOR THE FULL WIDTH OF THE TRENCH. ALSO SEE ITEM SPECIAL.

PAVEMENT RESTORATION ROADWAY (TYP)
CHK. BY: G.J.W. EFFECTIVE DATE:1-1-96
BUTLER COUNTY ENGINEERS OFFICE AND OPERATIONS FACILITY

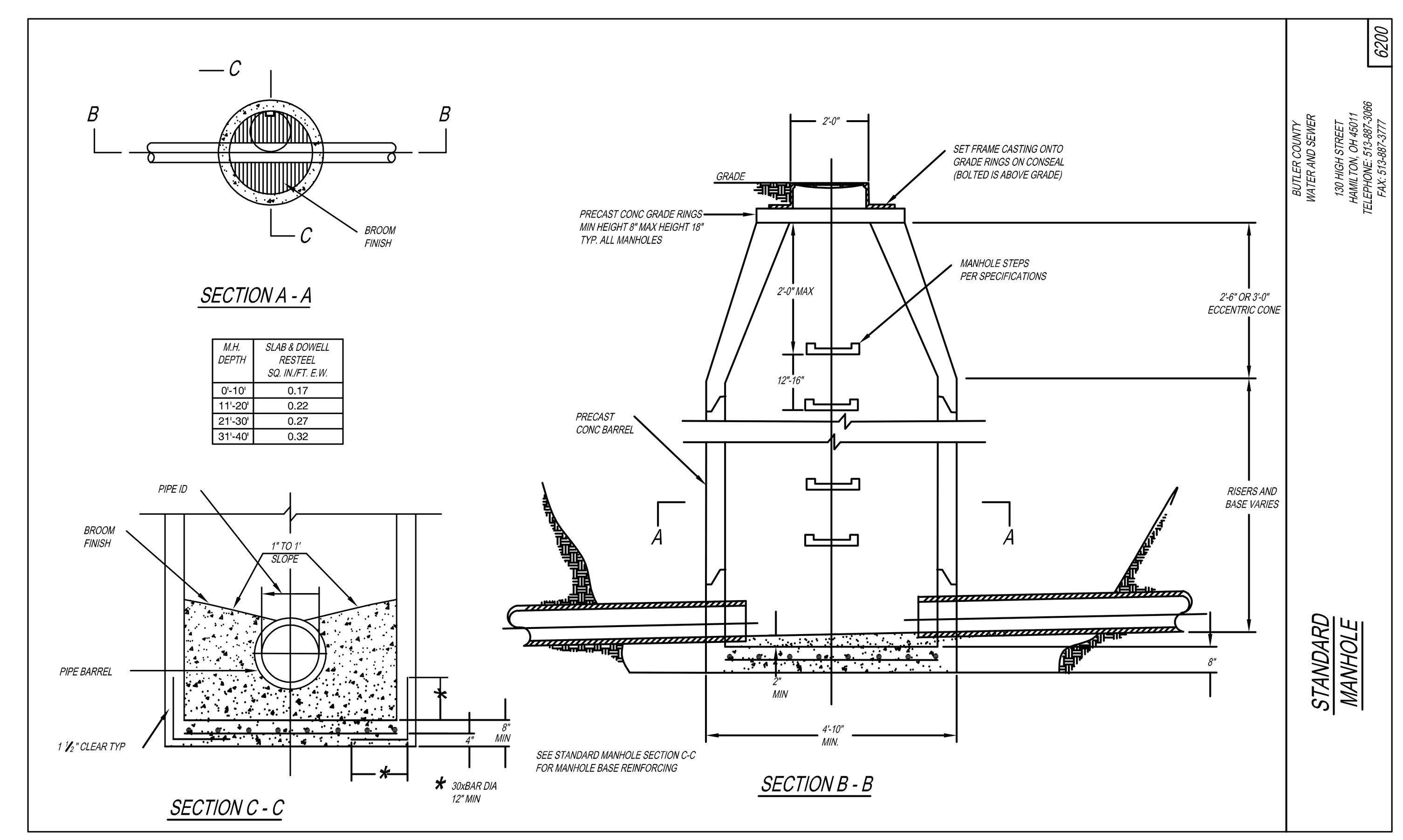


STANDARD ROLL TYPE CURB & GUTTER
C-1

NOTES

GENERAL: This drawing shows the standard type of curb that should be used on most types of pavement. Typical section of project shows the type to be used, also the thickness of the edge of the pavement or the edge of the curb and gutter section.

JOINTS: One inch expansion joints shall extend up to top of the curb and shall be constructed in the curb and gutter section in such a manner that the joint seal will extend the full width of the gutter and into the curb face a sufficient distance to seal the joint to an elevation of at least two (2) inches above the flow line of the gutter section at expansion joints. All joints shall be constructed perpendicular to the edge of the curb and to the surface of the pavement. Transverse expansion joint material shall meet the requirements of 705.03. expansion material and joint sealer is not required when curb is adjacent to flexible type pavement.



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

STANDARD MANHOLE
BUTLER COUNTY WATER AND SEWER 130 HIGH STREET HAMILTON, OH 45011 TELEPHONE: 513-887-3066 FAX: 513-887-3777
6200

DEVELOPER:
M/I HOMES OF CINCINNATI, LLC
9349 WATERSTONE BOULEVARD
SUITE 100
CINCINNATI, OHIO 45249

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ARBOR PARK

Date	Drawn By	Checked By	Scale
7-20-18	D.L.	B.R.	NONE

REVISIONS
8-1-18, Water & Sewer Revisions
8-15-18, BCEO Revisions & Bid Set

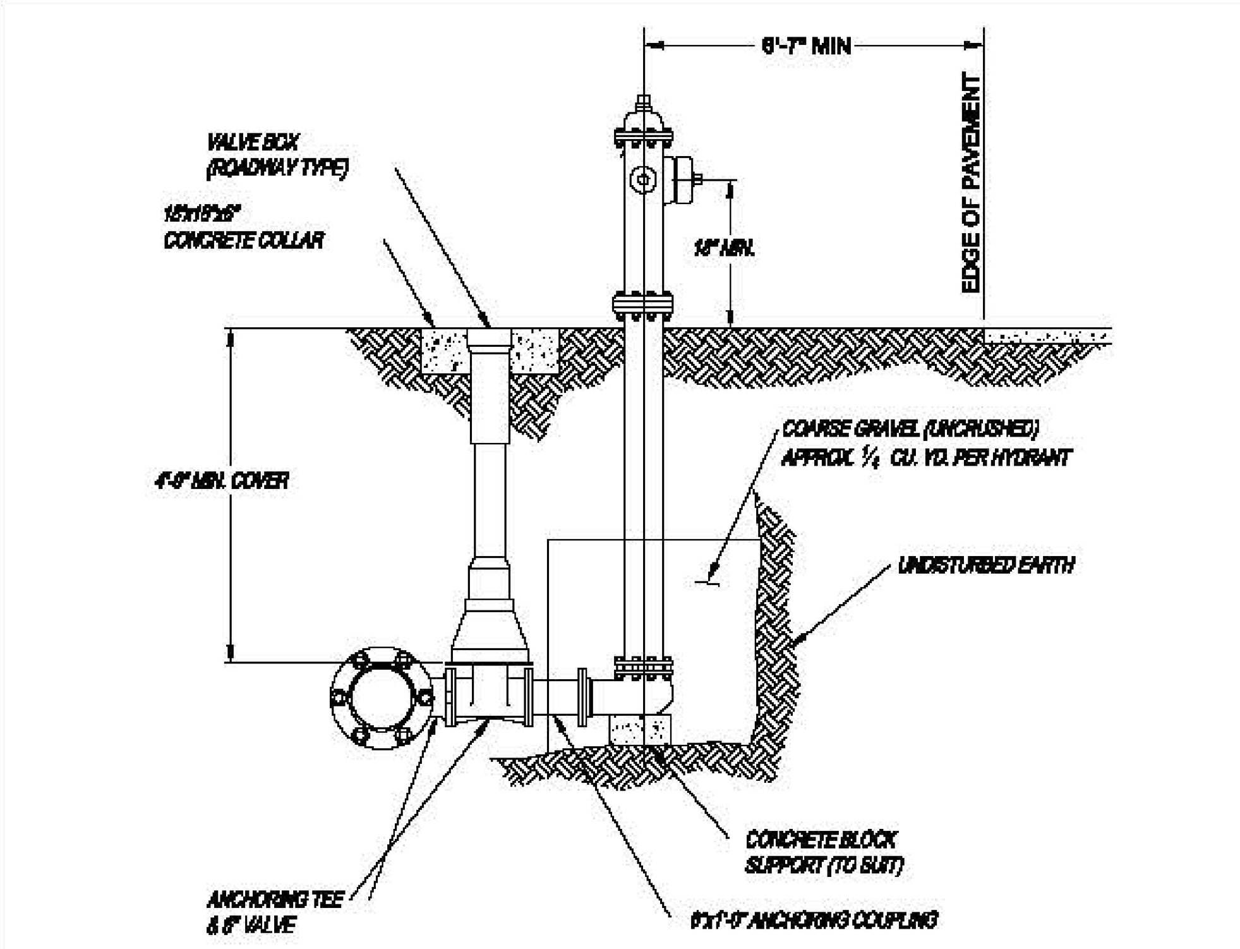
DWG: 18-0013DSGN\DL-DSGN

Sheet Title: TITLE SHEET

Project Title: ARBOR PARK SECTION-21, TOWN-3, RANGE-3 LIBERTY TOWNSHIP BUTLER COUNTY, OHIO

Abercrombie & Associates, Inc.
Civil Engineering + Surveying
3377 Compton Road, Suite 120
Cincinnati, Ohio 45251
513-385-5757
www.abercrombie-associates.com

Job No. 18-0013



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

BUTLER COUNTY
WATER AND SEWER

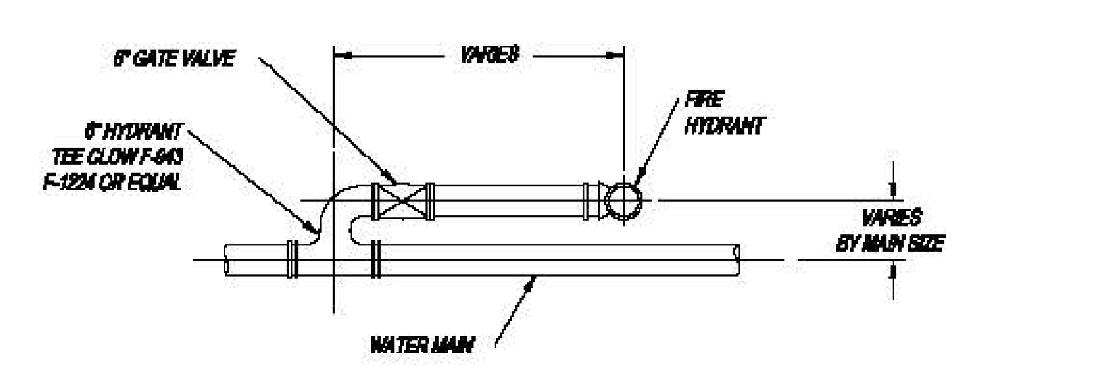
130 HIGH STREET
HAMILTON, OH 45011
TELEPHONE: 513-887-3066
FAX: 513-887-3777

5110

NOTES:

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

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

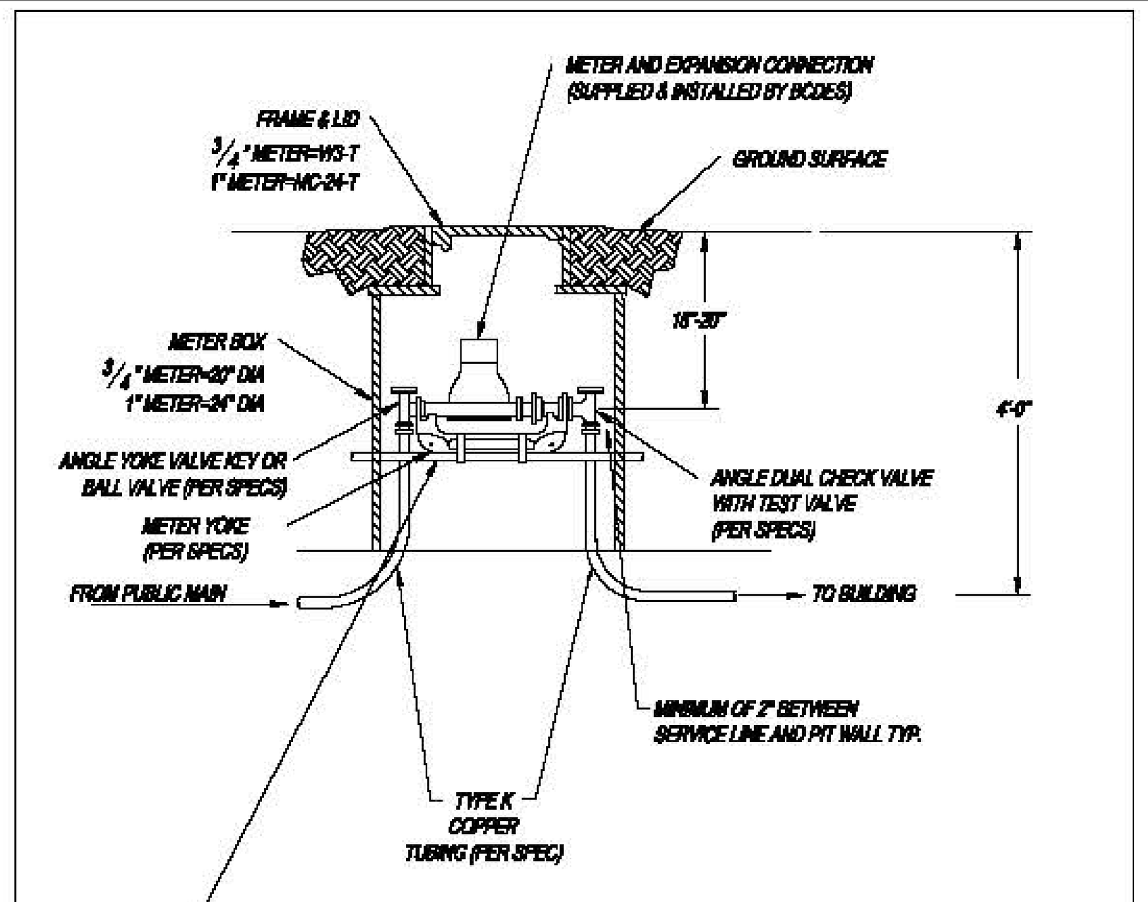


SETTING FOR HYDRANT ADJACENT TO MAIN

BUTLER COUNTY
WATER AND SEWER

130 HIGH STREET
HAMILTON, OH 45011
TELEPHONE: 513-887-3066
FAX: 513-887-3777

5120



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.

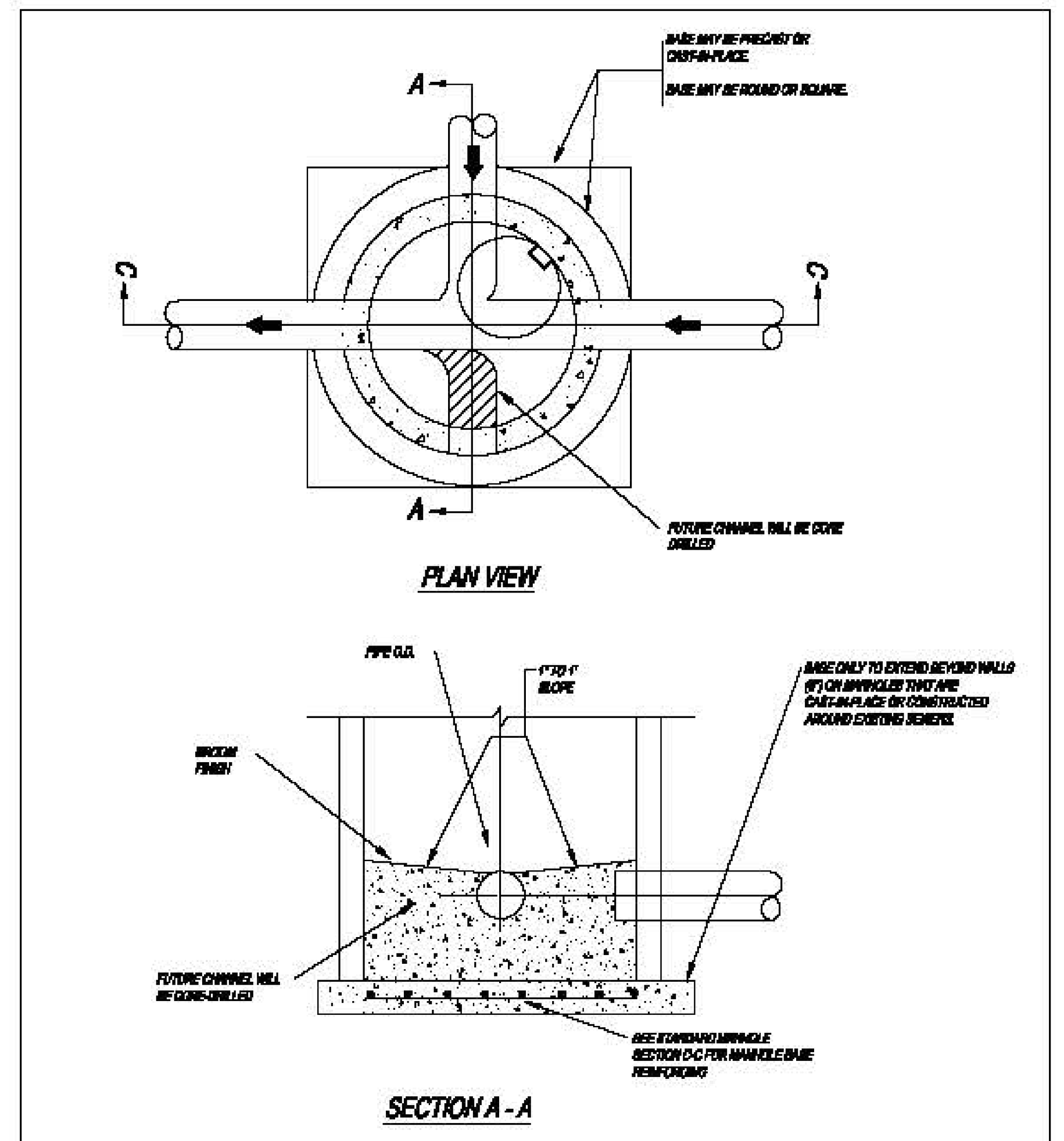
SUPPORT BRACKET SHOULD BE A MINIMUM OF 1/2" PVC PENETRATING BOTH SIDES OF THE PIT WALL AND ATTACHED SECURELY TO THE BOTTOM OF THE YOKE BAR.

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

BUTLER COUNTY
WATER AND SEWER

130 HIGH STREET
HAMILTON, OH 45011
TELEPHONE: 513-887-3066
FAX: 513-887-3777

5150

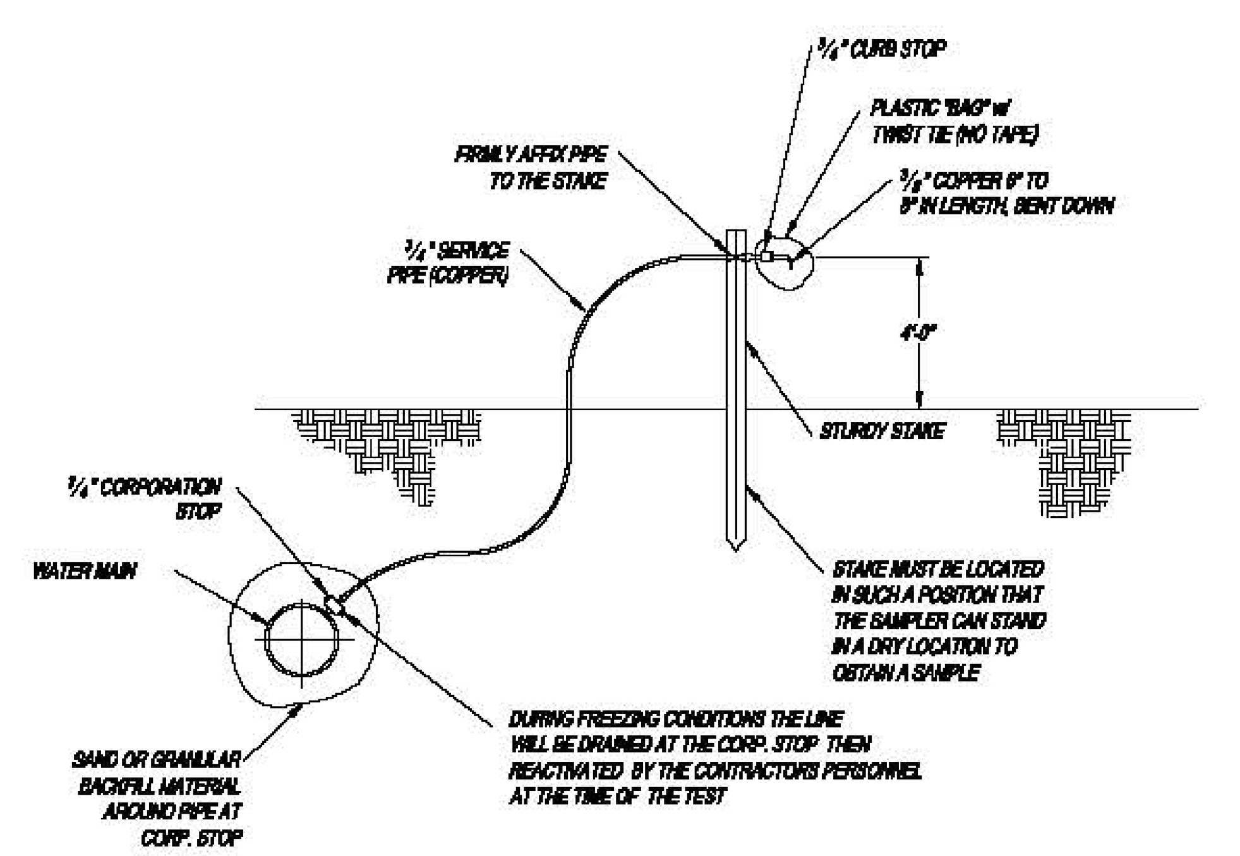


STANDARD CAST IN-PLACE MANHOLE

BUTLER COUNTY
WATER AND SEWER

130 HIGH STREET
HAMILTON, OH 45011
TELEPHONE: 513-887-3066
FAX: 513-887-3777

6130

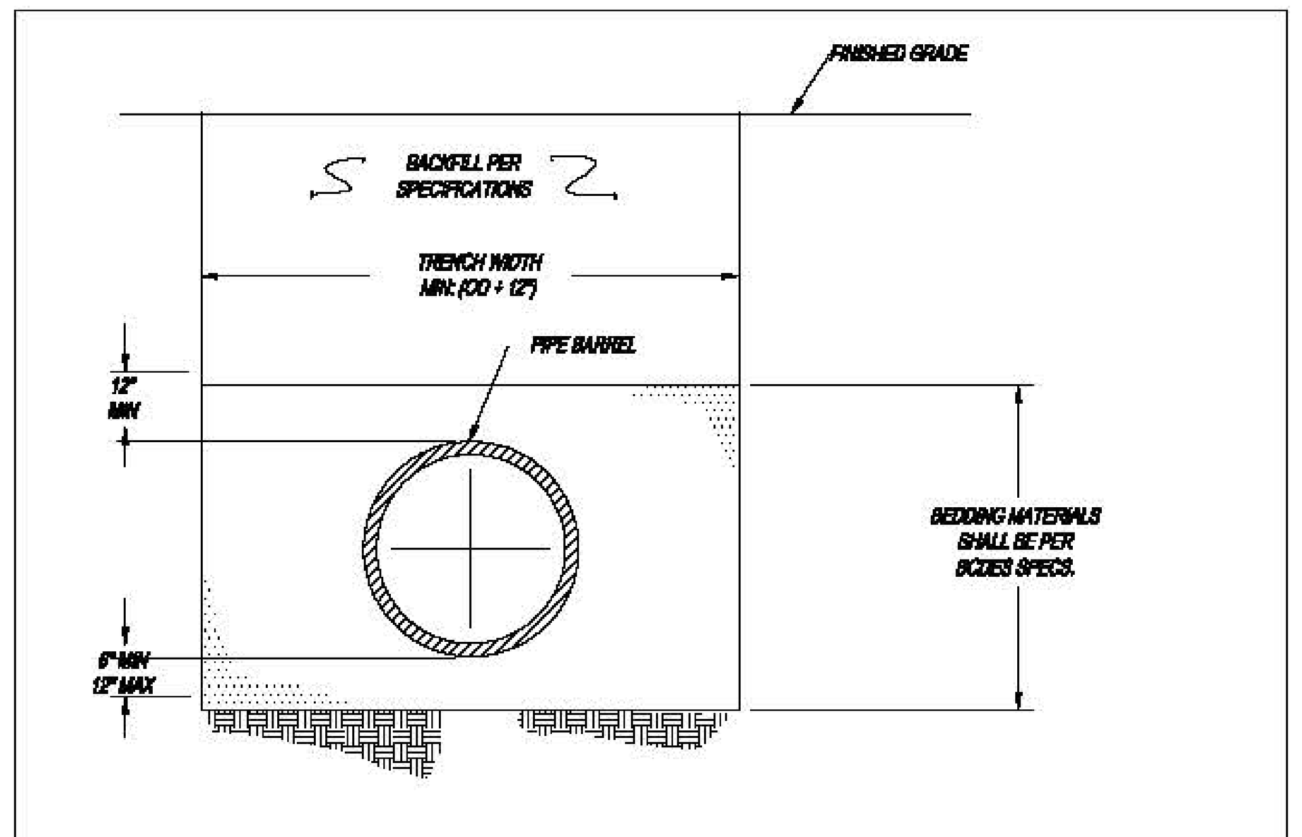


TEMP. PURITY TEST STATION

BUTLER COUNTY
WATER AND SEWER

130 HIGH STREET
HAMILTON, OH 45011
TELEPHONE: 513-887-3066
FAX: 513-887-3777

5260

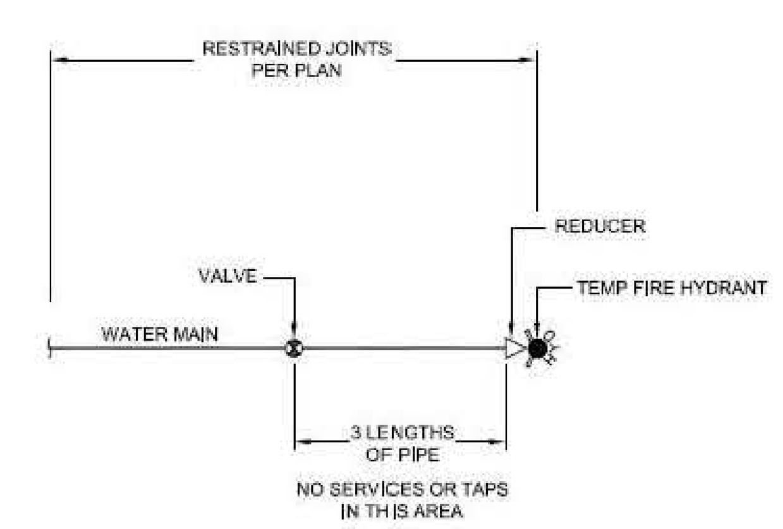


TYPICAL TRENCH DETAIL WATER MAIN INSTALLATION

BUTLER COUNTY
WATER AND SEWER

130 HIGH STREET
HAMILTON, OH 45011
TELEPHONE: 513-887-3066
FAX: 513-887-3777

5280

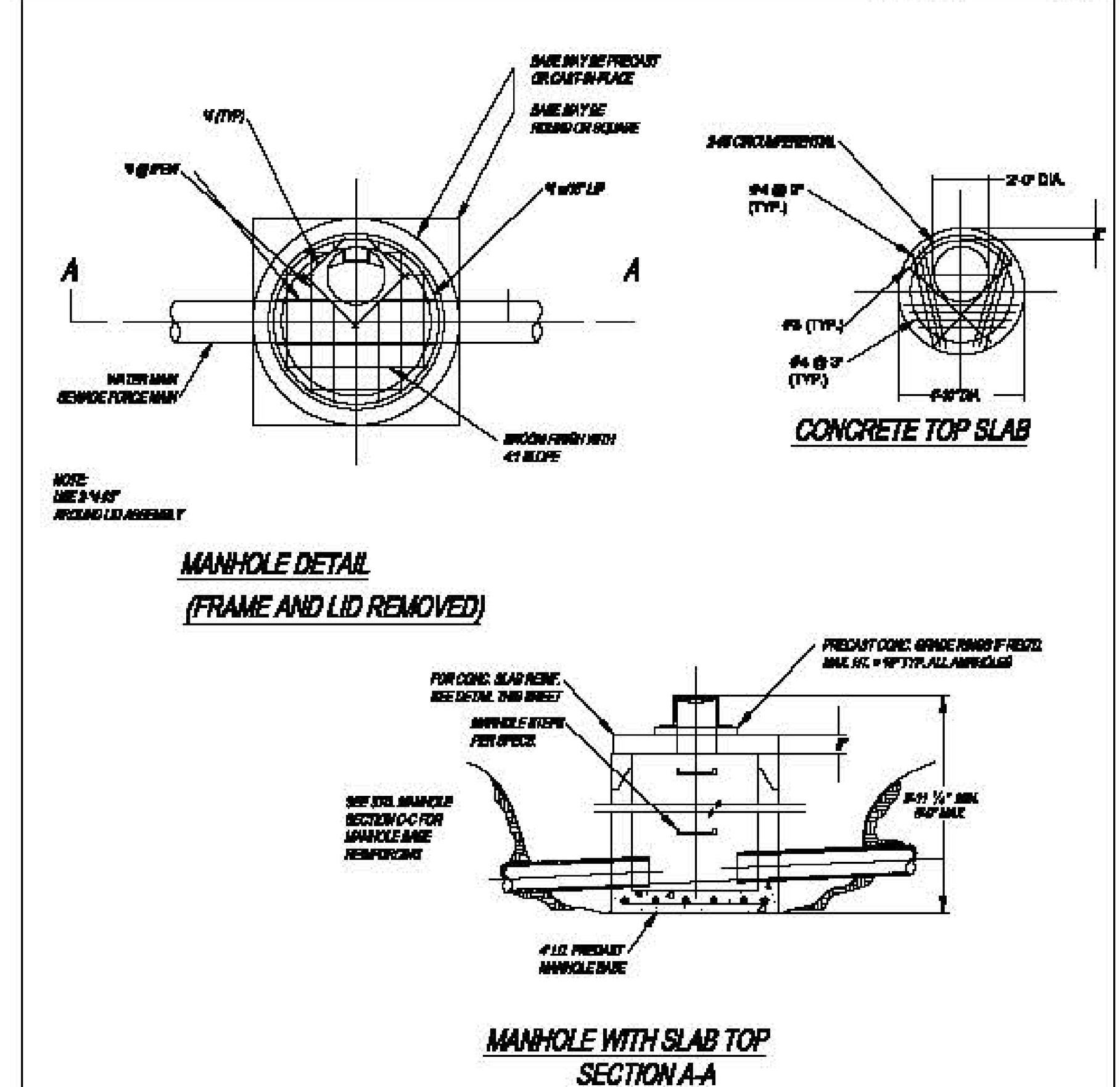


DEAD END DETAIL W/ TEMP F.H.

BUTLER COUNTY
WATER AND SEWER

130 HIGH STREET
HAMILTON, OH 45011
TELEPHONE: 513-887-3066
FAX: 513-887-3777

5140

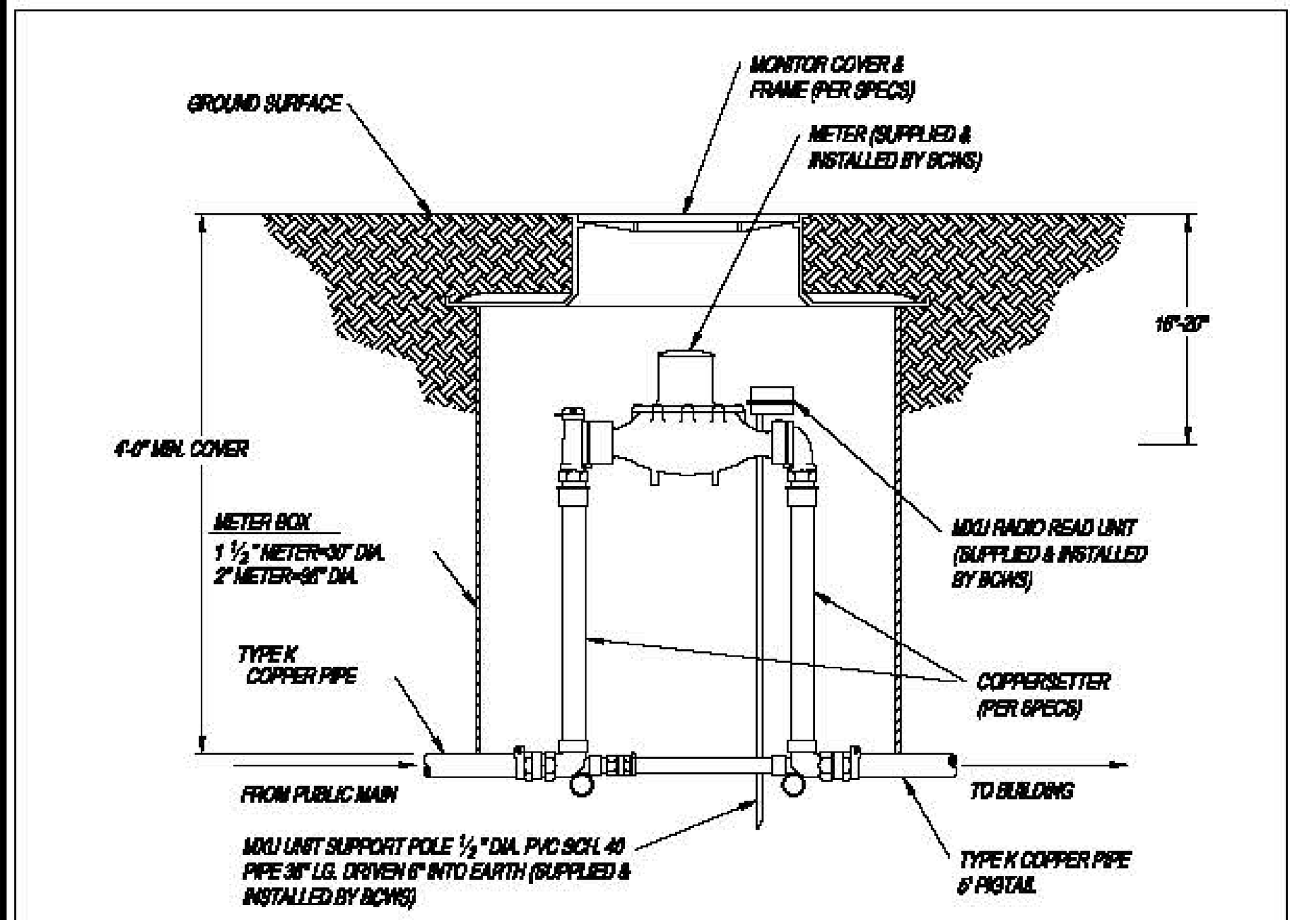


MANHOLE WITH WITH SLAB TOP DETAIL

BUTLER COUNTY
WATER AND SEWER

130 HIGH STREET
HAMILTON, OH 45011
TELEPHONE: 513-887-3066
FAX: 513-887-3777

6210



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 1/4"
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.

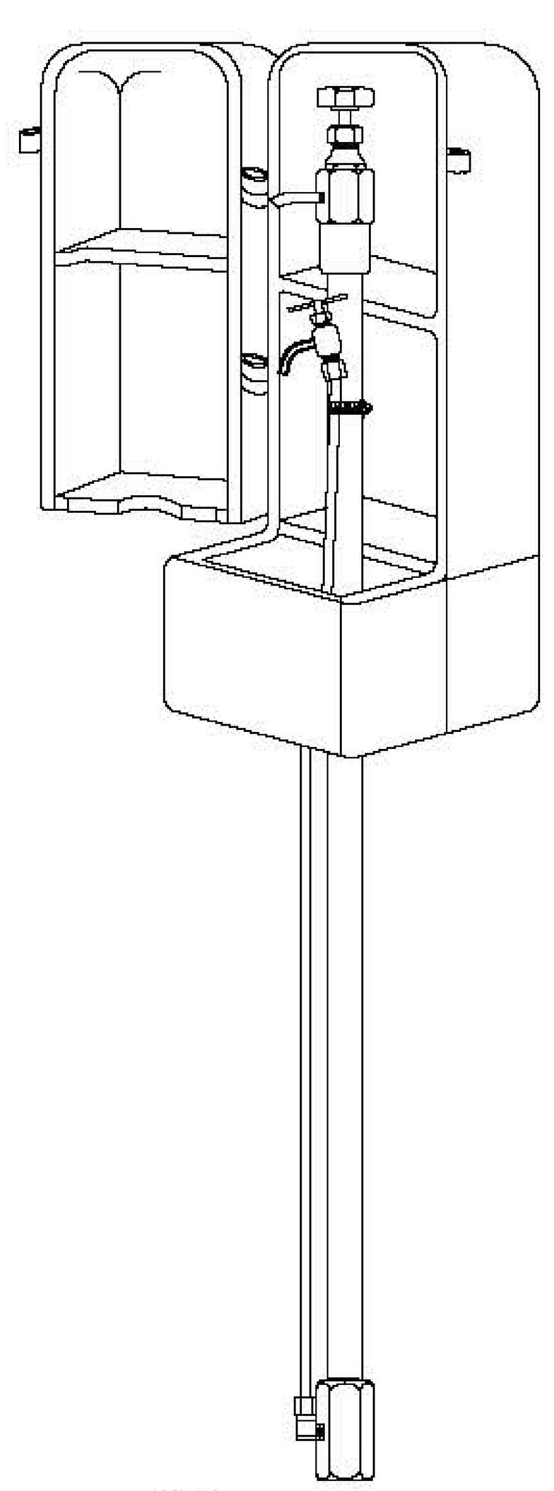
3) BUTLER COUNTY ORDERS 2" C2 OMNI METERS WITH A 17" LAYING LENGTH TO ACCOMODATE THE STANDARD COPPERSETTER. IF THE FACTORY ORDERED SIZE IS UTILIZED AN ADAPTER FLANGE PLATE WILL BE REQUIRED.

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

BUTLER COUNTY
WATER AND SEWER

130 HIGH STREET
HAMILTON, OH 45011
TELEPHONE: 513-887-3066
FAX: 513-887-3777

5170



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.

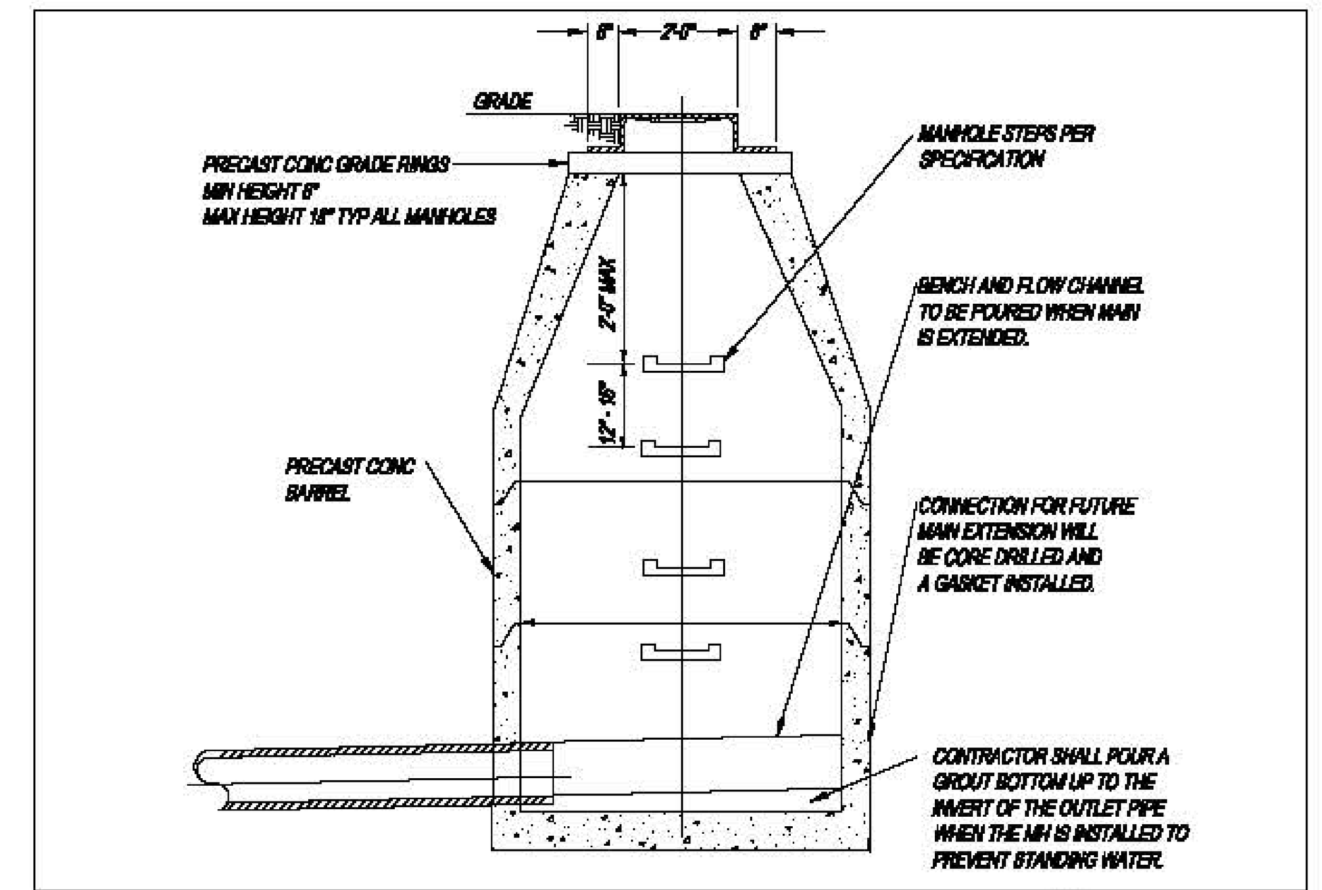
NOTE:
SAMPLING STATIONS SHALL BE INSTALLED PER BCWS SPECS.

PERMANENT LAB SAMPLING STATION

BUTLER COUNTY
WATER AND SEWER

130 HIGH STREET
HAMILTON, OH 45011
TELEPHONE: 513-887-3066
FAX: 513-887-3777

5270



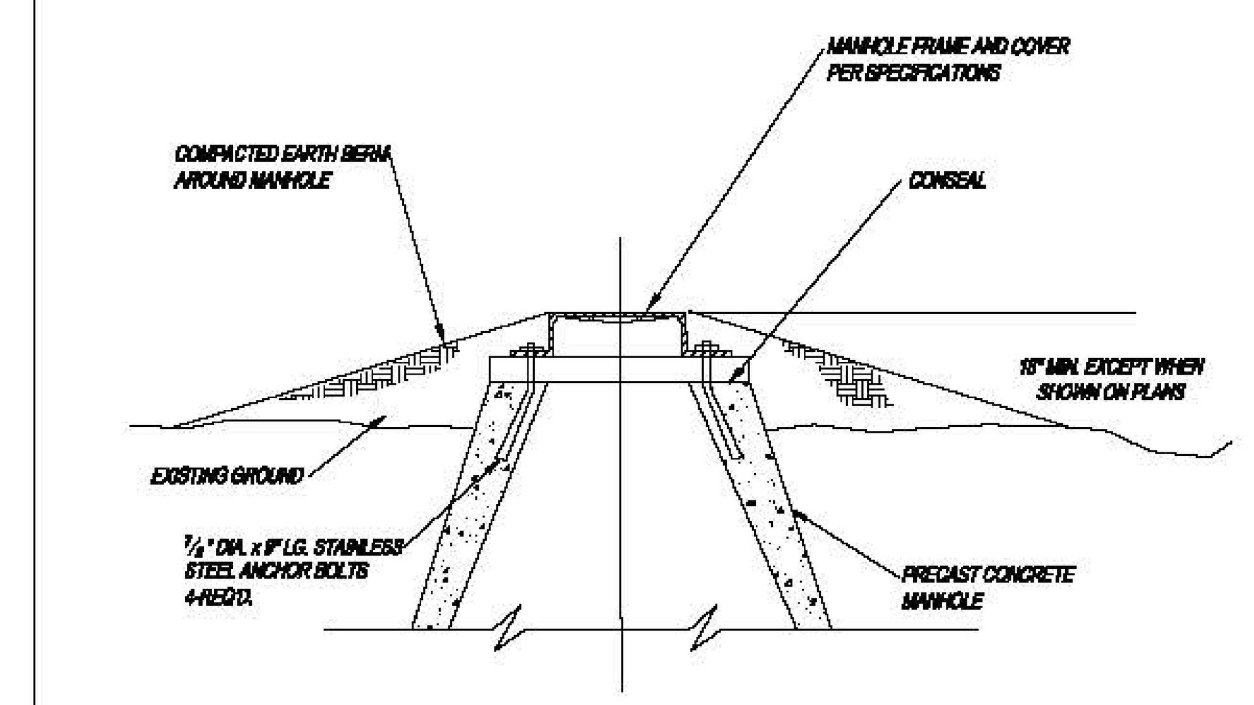
DEAD END MANHOLE DETAIL

BUTLER COUNTY
WATER AND SEWER

130 HIGH STREET
HAMILTON, OH 45011
TELEPHONE: 513-887-3066
FAX: 513-887-3777

6190

SECTION A - A



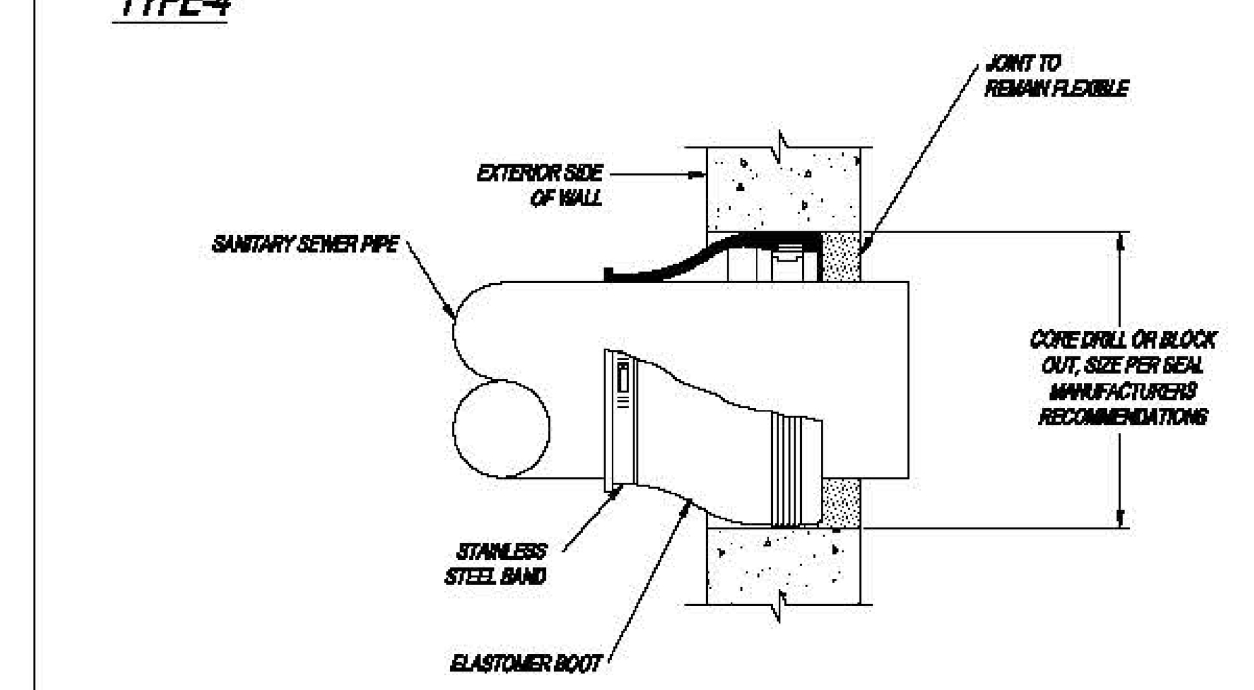
ELEVATED MANHOLE DETAIL

BUTLER COUNTY
WATER AND SEWER

130 HIGH STREET
HAMILTON, OH 45011
TELEPHONE: 513-887-3066
FAX: 513-887-3777

6170

TYPE-4



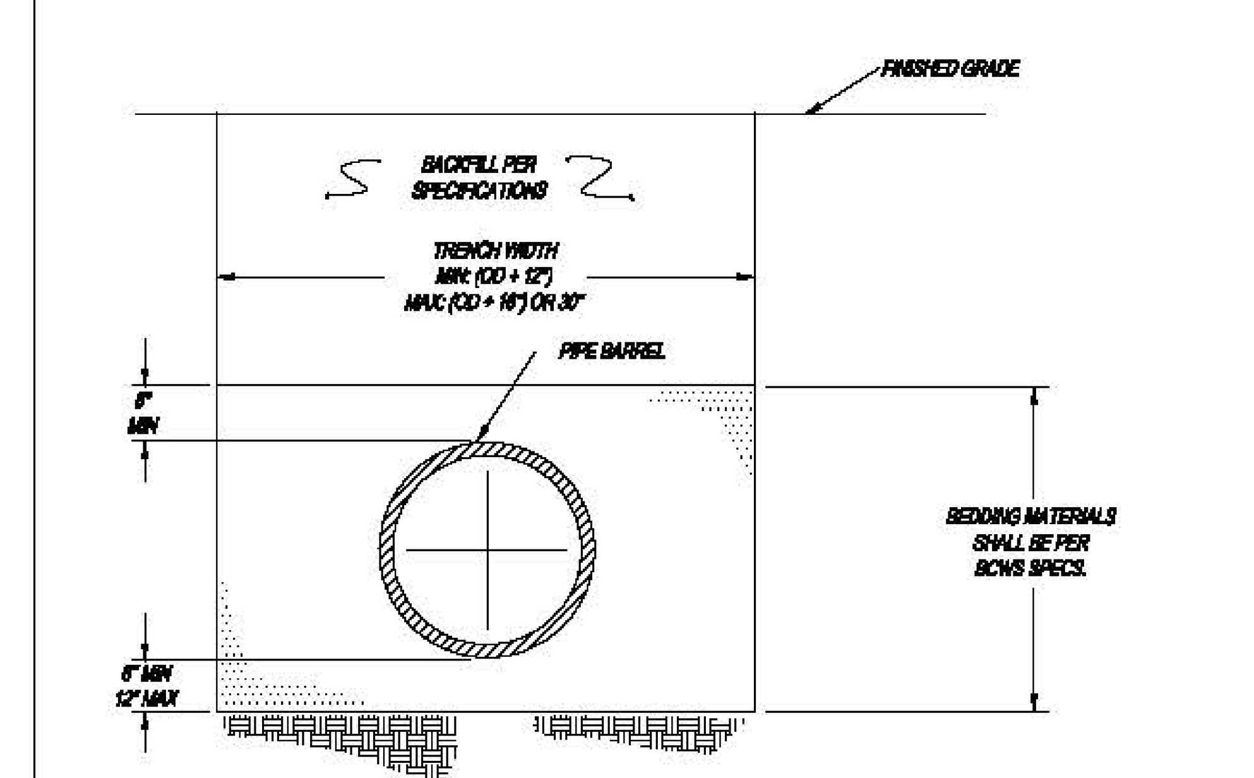
NOTES:
WALL PENETRATIONS SHALL BE LOCATED WITHIN A RISER SECTION AND NOT A WALL JOINT

CONNECTION TO EXISTING MANHOLE

BUTLER COUNTY
WATER AND SEWER

130 HIGH STREET
HAMILTON, OH 45011
TELEPHONE: 513-887-3066
FAX: 513-887-3777

6150



TYPICAL TRENCH DETAIL SEWER INSTALLATION

BUTLER COUNTY
WATER AND SEWER

130 HIGH STREET
HAMILTON, OH 45011
TELEPHONE: 513-887-3066
FAX: 513-887-3777

6270

ARBOR PARK

Date 7-20-18
Drawn By D.L.
Checked By B.R.
Scale NONE

REVISIONS
8-1-18, Water & Sewer Revisions
8-15-18, BCEQ Revisions & Bid Set

DWG: 18-0013DSGN\DL-DSGN

Sheet Title: DETAIL SHEET

Project Title: ARBOR PARK
SECTION-21, TOWN-3, RANGE-3
LIBERTY TOWNSHIP
BUTLER COUNTY, OHIO

Abercrombie & Associates, Inc.
Civil Engineering + Surveying
3377 Compton Road, Suite 120
Cincinnati, Ohio 45251
513-385-5757
www.abercrombie-associates.com

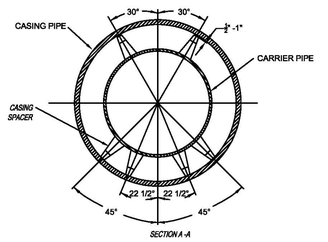
Job No. 18-0013

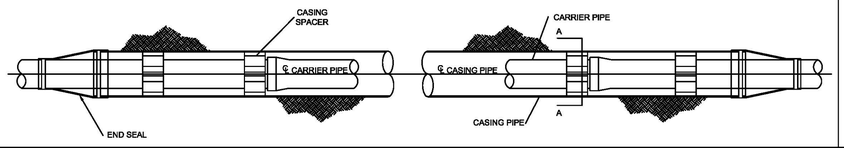
1) THE CARRIER PIPE SHALL BE BRACED WITHIN THE CASING PIPE WITH CASING SPACERS THAT PLACE THE CARRIER PIPE IN A "RESTRAINED" POSITION TO PRECLUDE POSSIBLE FLOATATION WHILE PROVIDING 1/2-1" CLEARANCE BETWEEN THE TOP RUNNERS AND THE CASING PIPE.

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.





BUTLER COUNTY WATER AND SEWER
130 HIGH STREET
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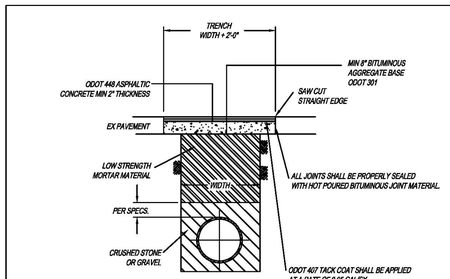
FAX: 513-887-3777

SEWER FORCE MAIN & WATER MAIN ENCASEMENT DETAIL

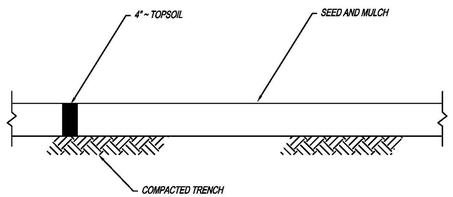
4370



ASPHALT CONCRETE ROADWAY PAVEMENT REPLACEMENT DETAIL

BUTLER COUNTY WATER AND SEWER
130 HIGH STREET
HAMILTON, OH 45011
TELEPHONE: 513-887-3066
FAX: 513-887-3777

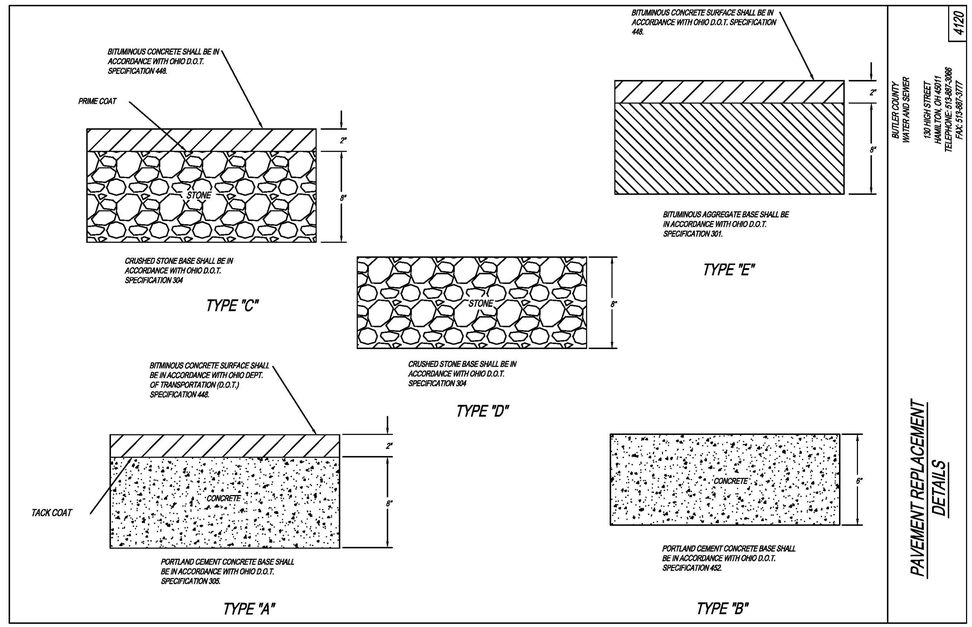
4030



YARD RESTORATION DETAIL

BUTLER COUNTY WATER AND SEWER
130 HIGH STREET
HAMILTON, OH 45011
TELEPHONE: 513-887-3066
FAX: 513-887-3777

4025



BUTLER COUNTY WATER AND SEWER
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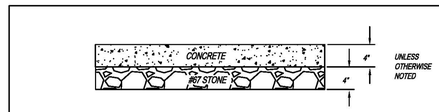
HAMILTON, OH 45011
TELEPHONE: 513-887-3066
FAX: 513-887-3777

PAVEMENT REPLACEMENT DETAILS

4120



SIDE WALK RESTORATION DETAIL

BUTLER COUNTY WATER AND SEWER
130 HIGH STREET
HAMILTON, OH 45011
TELEPHONE: 513-887-3066
FAX: 513-887-3777

4010

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ARBOR PARK

Date: 7-20-18
Drawn By: D.L.
Checked By: B.R.
Scale: NONE

REVISIONS
8-1-18, Water & Sewer Revisions
8-15-18, BCEO Revisions & Bal Sal

DWG: 18-0013DSGN\DL-DSGN

Sheet Title: DETAIL SHEET

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Civil Engineering + Surveying
3377 Commercial Road, Suite 120
Cincinnati, Ohio 45241
513-385-5757
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Job No. 18-0013

EROSION AND SEDIMENT CONTROL

A) STABILIZATION/NONSTRUCTURAL PRACTICES: THE OPERATOR SHALL INSTALL ALL PERIMETER & EROSION CONTROL MEASURES POSSIBLE, BEFORE PROJECT BEGINS AND AS NEEDED DURING THE CONSTRUCTION PROCESS AND INITIATE APPROPRIATE VEGETATIVE PRACTICES ON ALL DISTURBED AREAS WITHIN SEVEN (7) DAYS IF THEY ARE TO REMAIN DORMANT (UNDISTURBED) FOR MORE THAN FORTY-FIVE (45) DAYS. FOR AREAS WITHIN FIFTY (50) FEET OF ANY STREAM, FIRST ORDER OR LARGER, SOIL STABILIZATION PRACTICES SHALL BE INITIATED WITHIN TWO (2) DAYS ON ALL INACTIVE, DISTURBED AREAS. 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. WHEN SEASONAL CONDITIONS PROHIBIT THE APPLICATION OF TEMPORARY OR PERMANENT SEEDING, NON-VEGETATIVE SOIL STABILIZATION PRACTICES SUCH AS MULCHING AND MATTING SHALL BE USED.

B) STRUCTURAL PRACTICES: STRUCTURAL PRACTICES SHALL BE USED TO CONTROL EROSION AND TRAP SEDIMENT FROM ALL SITES REMAINING DISTURBED FOR MORE THAN FOURTEEN (14) DAYS. SUCH PRACTICES MAY INCLUDE AMONG OTHERS SEDIMENT TRAPS, SEDIMENT BASINS, SILT FENCES, EARTH DIVERSION DIKES, CHECK DAMS AND STORM DRAIN INLET PROTECTION.

C) THIS PLAN SHALL NOT BE CONSIDERED ALL INCLUSIVE AS THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PREVENT SOIL SEDIMENT FROM LEAVING THE SITE. ADDITIONAL EROSION AND SEDIMENTATION CONTROL MEASURES WILL BE INSTALLED IF DEEMED NECESSARY BY AN ON-SITE INSPECTION.

1. 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 UP SLOPE DEVELOPMENT AREA IS DESTABILIZED.

2. SETTLING PONDS: CONCENTRATED STORM WATER RUNOFF FROM DISTURBED AREAS FLOWING AT RATES WHICH EXCEED THE DESIGN CAPACITY OF SEDIMENT FENCES OR DIVERSIONS DIRECTING RUNOFF TO SETTLING FACILITIES, SHALL PROTECT ADJACENT PROPERTIES AND WATER RESOURCES FROM SEDIMENT TRANSPORTED BY SHEET FLOW.

3. SEDIMENT BARRIERS: SHEET FLOW RUNOFF FROM DENUDED AREAS SHALL BE INTERCEPTED BY SEDIMENT BARRIERS. SEDIMENT BARRIERS, SUCH AS SEDIMENT FENCES OF DIVERSIONS DIRECTING RUNOFF TO SETTLING FACILITIES, SHALL PROTECT ADJACENT PROPERTIES AND WATER RESOURCES FROM SEDIMENT TRANSPORTED BY SHEET FLOW.

4. STREAM PROTECTION: STRUCTURAL PRACTICES SHALL BE DESIGNED AND IMPLEMENTED ON SITE TO PROTECT ALL ADJACENT STREAMS, FIRST ORDER AND LARGER, FROM THE IMPACTS OF SEDIMENT RUNOFF.

5. OTHER EROSION AND SEDIMENT CONTROL PRACTICES SHALL PREVENT SEDIMENT LADEN WATER FROM ENTERING STORM DRAIN SYSTEMS, UNLESS THE STORM DRAIN SYSTEM DRAINS TO A SETTLING POND. THESE PRACTICES SHALL DIVERT RUNOFF FROM DISTURBED AREAS AND STEEP SLOPES WHERE PRACTICABLE AND STABILIZE CHANNELS AND OUTFALLS FROM EROSIVE FLOWS.

MAINTENANCE ALL TEMPORARY AND PERMANENT CONTROL PRACTICES SHALL BE MAINTAINED AND REPAIRED AS NEEDED TO ASSURE CONTINUED PERFORMANCE OF THEIR INTENDED FUNCTION. THE POLLUTION PREVENTION PLAN SHALL BE DESIGNED TO MINIMIZE MAINTENANCE REQUIREMENTS. THE APPLICANT SHALL PROVIDE A DESCRIPTION OF MAINTENANCE PROCEDURES NEEDED TO ASSURE THE CONTINUED PERFORMANCE OF CONTROL PRACTICES.

INSPECTIONS AT A MINIMUM, PROCEDURES IN A PLAN SHALL PROVIDE THAT ALL EROSIONS AND SEDIMENT CONTROLS ON THE SITE ARE INSPECTED AT LEAST ONCE EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN 0.5 INCH OF RAIN PER 24 HOUR PERIOD. IN ADDITION, QUALIFIED INSPECTION PERSONNEL (PROVIDED BY THE PERMITTEE) SHALL CONDUCT A WEEKLY INSPECTION OF THE CONSTRUCTION SITE TO IDENTIFY AREAS CONTRIBUTING TO STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITY AND EVALUATE WHETHER MEASURES TO PREVENT EROSION AND CONTROL POLLUTANT LOADINGS IDENTIFIED IN A STORM WATER POLLUTION PREVENTION PLAN ARE 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 IDENTIFIED IN THE PLAN 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.

THE PERMITTEE SHALL MAINTAIN FOR TWO (2) YEARS FOLLOWING THE SUBMITTAL OF THE N.O.T. A RECORD SUMMARIZING THE RESULTS OF THE INSPECTION, NAME(S) AND QUALIFICATIONS OF PERSONNEL MAKING THE INSPECTION, THE DATE(S) OF THE INSPECTION, MAJOR OBSERVATIONS RELATING TO THE IMPLEMENTATION OF THE STORM WATER POLLUTION PREVENTION PLAN AND A CERTIFICATION THAT THE FACILITY IS IN COMPLIANCE WITH THE PLAN AND THE PERMIT AND IDENTIFY ANY INCIDENTS OF NON-COMPLIANCE.

TECHNICAL STANDARD AND SPECIFICATIONS
CRITICAL AREA PLANTING – TEMPORARY SEEDING (TS)
STANDARD
DEFINITION

THE ESTABLISHMENT OF A TEMPORARY VEGETATIVE COVER ON DISTURBED AREAS BY SEEDING WITH THE APPROPRIATE RAPID GROWING PLANTS.

PURPOSES

1. TO REDUCE THE EROSION AND SEDIMENTATION BY STABILIZING DISTURBED AREAS WILL NOT BE BROUGHT TO FINAL GRADE FOR A YEAR OR LESS.

2. TO REDUCE PROBLEMS ASSOCIATED WITH MUD OR DUST FROM BARE SOIL SURFACES DURING CONSTRUCTION.

3. TO REDUCE SEDIMENT RUNOFF TO DOWNSTREAM AREAS AND IMPROVE THE VISUAL RESOURCES OF THE CONSTRUCTION AREA.

CONDITIONS WHERE PRACTICE APPLIES

ON EXPOSED SOIL SURFACES WHERE ADDITIONAL WORK (GRADING, ETC.) IS NOT SCHEDULED FOR A PERIOD OF THREE WEEKS TO LESS THAN ONE YEAR.

PLANNING CONSIDERATIONS

1. PROTECT THE AREA FROM EXCESS RUNOFF AS NECESSARY WITH DIVERSIONS, TERRACES, OR SEDIMENT BASINS.

2. EVALUATE THE CAPABILITIES AND LIMITATIONS OF THE SOIL TO BE SEEDED SPECIAL ATTENTION NEEDS TO BE GIVEN TO SOIL pH, TEXTURE, INTERNAL WATER MOVEMENT, STEEPNESS, AND STABILITY IN ORDER TO PLAN THE APPROPRIATE TREATMENT.

3. PLANT SPECIES SHOULD BE SELECTED ON THE BASIS OF QUICK GERMINATION, GROWTH, AND TIME OF YEAR TO BE SEEDED.

4. FERTILIZER, LIME, SEEDBED PREPARATION, SEED COVERAGE, MULCH, AND IRRIGATION SHOULD BE USED AS NECESSARY TO

SPECIFICATIONS

I. SITE PREPARATION

A. GRADE AS NEEDED AND FEASIBLE TO PERMIT THE USE OF CONVENTIONAL EQUIPMENT FOR SEEDBED PREPARATION, SEEDING, MULCH APPLICATION, AND ANCHORING.

B. INSTALL THE NEEDED EROSION CONTROL PRACTICES PRIOR TO SEEDING SUCH AS DIVERSIONS, TEMPORARY WATERWAYS FOR DIVERSIONS OUTLETS, AND SEDIMENT BASINS.

II. SEEDBED PREPARATION

A. LIME (IN LIEU OF A SOIL TEST RECOMMENDATION) ON ACID SOIL (pH 5.5 OR LOWER) AND SUBSOIL AT A RATE OF 100 POUNDS PER 1000 SQUARE FEET OR TWO TONS PER ACRE OF AGRICULTURAL GROUND LIMESTONE. FOR BEST RESULTS MAKE A SOIL TEST.

B. FERTILIZER (IN LIEU OF A SOIL TEST RECOMMENDATION) SHALL BE APPLIED AT A RATE OF 12-15 POUNDS PER 1000 SQUARE FEET OR 500-600 POUNDS PER ACRE OF 10-10-10 OR 12-12-12 ANALYSIS OR EQUIVALENT.

C. WORK THE LIME AND FERTILIZER INTO THE SOIL WITH A DISK HARROW, SPRINGTOOTH HARROW, OR SIMILAR TOOLS TO A DEPTH OF TWO INCHES. ON SLOPING AREAS THE FINAL OPERATION SHALL BE ON THE CONTOUR.

III. SEEDING

A. SPECIES SELECTION 1	PER 1000 SQUARE FEET	PER ACRE
MARCH 1 TO AUGUST 15TH		
1. OATS OR	3 LBS.	4 BU.
2. PERENNIAL RYEGRASS	1 LB.	40 LBS.
3. TALL FESCUE	1 LB.	40 LBS.
AUGUST 16 TO NOVEMBER 12		
1. RYE OR	3 LBS.	2 BU.
2. WHEAT OR	3 LBS.	2 BU.
3. PERENNIAL RYEGRASS	1 LB.	40 LBS.
4. TALL FESCUE	1 LB.	40 LBS.

1) OTHER SEED SPECIES MAY BE SUBSTITUTED CHECK WITH THE LOCAL SCS OFFICE FOR RECOMMENDATIONS.

2) AFTER NOVEMBER 1, USE MULCH ONLY. SEE STANDARD AND SPECIFICATIONS FOR MULCHING.

B. APPLY THE SEED UNIFORMLY WITH A CYCLONE SEEDER, DRILL, CULTIPACKER SEEDER, OR HYDROSEEDER, (SLURRY MAY INCLUDE SEED AND FERTILIZER) PREFERABLY ON A FIRM, MOIST SEEDBED. SEED WHEAT OR RYE NO DEEPER THAN ONE INCH. SEED RYEGRASS NO NO DEEPER THAN ONE-FOURTH INCH.

C. WHEN FEASIBLE, EXCEPT WHERE A CULTIPACKER TYPE SEEDER IS USED, THE SEEDBED SHOULD BE FIRMED FOLLOWING SEEDING OPERATIONS WITH A CULTIPACKERM, ROLLER, OR LIGHT DRAG. ON SLOPING LAND SEEDING OPERATIONS SHOULD BE ON THE CONTOUR WHEREVER POSSIBLE.

IV. MULCHING

A. MULCHING SHALL BE APPLIED TO PROTECT THE SOIL AND PROVIDE A BETTER ENVIRONMENT FOR PLANT GROWTH.

B. MULCH SHALL CONSIST OF SMALL GRAIN STRAW (PREFERABLY WHEAT OR RYE) AND SHALL BE APPLIED AT THE RATE OF TWO TONS PER ACRE OR 100 POUNDS (TWO TO THREE BALES) PER 1000 SQUARE

C. SPREAD THE MULCH UNIFORMLY BY HAND OR MECHANICALLY SO THE SOIL SURFACE IS COVERED.

D. MULCH ANCHORING METHODS:

1. MECHANICAL – USE A DISK, CRIMPER, OR SIMILAR TYPE TOOL SET STRAIGHT TO PUNCH OR ANCHOR THE MULCH MATERIAL INTO INTO THE SOIL.

2. ASPHALT EMULSION – APPLY AT THE RATE OF 160 GALLONS PER ACRE INTO THE MULCH AS IT IS BEING APPLIED.

3. MULCH NETTINGS – USE ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS. USE IN AREAS OF WATER CONCENTRATION TO HOLD MULCH IN PLACE.

V. IRRIGATION

IF SOIL MOISTURE IS DEFICIENT, SUPPLY NEW SEEDINGS WITH ADEQUATE WATER FOR PLANT GROWTH UNTIL THEY ARE FIRMLY ESTABLISHED. THIS IS ESPECIALLY TRUE WHEN SEEDINGS ARE MADE LATE IN THE PLANTING SEASON, IN ABNORMALLY DRY OR HOT SEASONS, OR ON ADVERSE SITES.

TECHNICAL STANDARD AND SPECIFICATIONS
CRITICAL AREA PLANTING – PERMANENT SEEDING (PS)
– DORMANT SEEDING (DS)
STANDARD
DEFINITION

THE ESTABLISHMENT OF PERENNIAL VEGETATION ON DISTURBED AREAS BY PLANTING SEED.

PURPOSES

1. TO REDUCE THE EROSION AND DECREASE SEDIMENT YIELD FROM DISTURBED AREAS.

2. TO PERMANENTLY STABILIZE DISTURBED AREAS IN A MANNER THIS IS ECONOMICAL, ADAPTABLE TO SITE CONDITIONS, AND ALLOWS SELECTION OF THE MOST APPROPRIATE PLANT MATERIALS.

CONDITIONS WHERE PRACTICE APPLIES

1. DISTURBED AREAS WHERE PERMANENT, LONG LIVED VEGETATIVE COVER IS NEEDED TO STABILIZE THE SOIL.

2. ROUGH GRADED AREAS WHICH WILL NOT BE BROUGHT TO FINAL GRADE FOR SEVERAL MONTHS OR MORE.

PLANNING CONSIDERATIONS

1. PROTECT THE AREA FROM EXCESS RUNOFF AS NECESSARY WITH DIVERSIONS, GRASSED WATERWAYS, TERRACES, OR SEDIMENT BASINS.

2. EVALUATE THE CAPABILITIES AND LIMITATIONS OF THE SOIL TO BE SEEDED. SPECIAL ATTENTION NEEDS TO BE GIVEN TO SOIL pH, TEXTURE, INTERNAL WATER MOVEMENT, STEEPNESS, AND STABILITY IN ORDER TO PLAN THE APPROPRIATE TREATMENT.

3. PLANT SPECIES SHOULD BE SELECTED ON THE BASIS OF SOIL TYPE, PLANNED USE OF THE AREA, AND THE AMOUNT OR DEGREE OF MAINTENANCE THAT CAN BE DEVOTED TO THE AREA IN THE FUTURE.

4. FERTILIZER, LIME, SEEDBED PREPARATION, SEED COVERAGE, MULCH, AND IRRIGATION SHOULD BE USED AS NECESSARY TO PROMOTE QUICK PLANT GROWTH.

5. VEGETATION CANNOT NOT BE EXPECTED TO PROVIDE EROSION CONTROL COVER AND PREVENT SOIL SLIPPAGE ON A SOIL THAT IS NOT STABLE DUE TO ITS STRUCTURE, WATER MOVEMENT, OR EXCESSIVE SLOPE.

SPECIFICATIONS

I. SITE PREPARATION

A. SOIL MATERIAL SHOULD CONSIST OF AT LEAST 25 PERCENT SILT AND CLAY TO PROVIDE AN ADEQUATE AMOUNT OF MOISTURE HOLDING CAPACITY. AN EXCESSIVE AMOUNT OF POROUS SAND WILL CONSISTENTLY PROVIDE SUFFICIENT MOISTURE FOR GOOD GROWTH GROWTH REGARDLESS OF OTHER SOIL FACTORS.

B. WHERE COMPACTED SOILS OCCUR, THEY SHOULD BE BROKEN UP SUFFICIENTLY TO CREATE A FAVORABLE ROOTING DEPTH OF 6-8 INCHES.

C. STOCKPILE TOPSOIL TO APPLY TO SITES THAT ARE OTHERWISE UNSUITED FOR ESTABLISHING VEGETATION.

D. GRADE AS NEEDED AND FEASIBLE TO PERMIT THE USE OF CONVENTIONAL EQUIPMENT FOR SEEDBED PREPARATION, SEEDING, MULCHING APPLICATION AND ANCHORING, AND MAINTENANCE. AFTER THE GRADING OPERATION SPREAD TOPSOIL WHERE NEEDED.

E. INSTALL THE NEEDED EROSION CONTROL PRACTICES SUCH AS DIVERSIONS, GRASSED WATERWAYS, AND SEDIMENT BASINS.

II. SEEDBED PREPARATION

A. LIME (IN LIEU OF A SOIL TEST RECOMMENDATION) ON ACID SOIL AND SUBSOIL, 100 POUNDS PER 1000 SQUARE FEET OR TWO TONS PER ACRE OF AGRICULTURAL GROUND LIMESTONE. FOR BEST RESULTS MAKE A SOIL TEST.

B. FERTILIZER (IN LIEU OF A SOIL TEST RECOMMENDATION) APPLY 25 POUNDS PER 1000 SQUARE FEET OR 1000 POUNDS PER ACRE OF 10-10-10 OR 12-12-12 ANALYSIS. FOR BEST RESULTS MAKE A SOIL TEST.

C. WORK THE LIME AND FERTILIZER INTO THE SOIL WITH A DISK HARROW, SPRINGTOOTH HARROW, OR OTHER SUITABLE FIELD EQUIPMENT TO A DEPTH OF THREE INCHES. ON SLOPING LAND THE FINAL OPERATION SHALL BE ON THE CONTOUR.

III. SEEDING

A. SELECT A SPECIES OR MIXTURE APPROPRIATE FOR THE SITE.

1. PERMANENT SEEDING

KIND OF SEED 1/	SEEDING DATES 2/	PER 1000 SQUARE FT.	PER ACRE
A. CREEPING RED FESCUE, PLUS	MARCH-MAY AUG.-SEPT.	1/2 LB. 3/	20 LBS.
DOMESTIC RYGRASS PLUS		1/4 LB.	10 LBS.
KENTUCKY BLUEGRASS		1/4 LB.	10 LBS.
B. TALL FESCUE	MARCH-MAY AUG.-SEPT.	1 LB. 3/	40 LBS.
C. DWARF (TURF-TYPE) FESCUE 4/	MARCH-MAY AUG.-SEPT.	1 LB.3/	40 LBS. 3/

2. SPECIAL SEEDINGS-STEEP BANKS OR CUTS

KIND OF SEED 1/	SEEDING DATES 2/	PER 1000 SQUARE FT.	PER ACRE
A. TALL FESCUE	MARCH-MAY AUG.-SEPT.	1 LB.	40 LBS.
B. CROWNVETCH PLUS	MARCH-MAY AUG.-SEPT.	1/4 LB.	10 LBS.
C. FLAT PEA PLUS 4/ TALL FESCUE	MARCH-MAY AUGUST	1/2 LB.	20 LBS.
3. WATERWAYS AND ROAD DITCHES			
A. TALL FESCUE	MARCH-MAY	1 LB.	40 LBS.

1) OTHER SEED SPECIES MAY BE SUBSTITUTED FOR THESE MIXTURES. CHECK WITH LOCAL SCS OFFICE FOR RECOMMENDATIONS.

2) THESE SEEDING DATES ARE IDEAL. WITH THE USE OF MULCH AND IRRIGATION, SEEDINGS COULD BE MADE ANY TIME THROUGHOUT THE GROWING SEASON.

3) THE SEEDING RATES NEED TO BE INCREASED TWO TO THREE TIMES IF THE MIXTURE IS TO BE USED AS A LAWN.

4) THE DWARF OR TURF-TYPE FESCUES ARE MUCH SHORTER AND HAVE FINER LEAVES THAN THE TALL FESCUES. IT IS MUCH BETTER SUITED FOR LAWN-TYPE AREAS THAN TALL FESCUES.

B. DORMANT SEEDING

SEEDINGS SHOULD NOT BE PLANTED FROM OCTOBER 1 THROUGH NOVEMBER 20. DURING THIS PERIOD THE SEEDS ARE LIKELY TO GERMINATE BUT PROBABLY WILL NOT BE ABLE TO SURVIVE THE WINTER.

THE FOLLOWING METHODS MAY BE USED TO MAKE A "DORMANT SEEDING":

1. FROM OCTOBER 1 THROUGH NOVEMBER 20, PREPARE THE SEEDBED, ADD THE REQUIRED AMOUNTS OF LIME AND FERTILIZER THEN MULCH AND ANCHOR. AFTER NOVEMBER 20. AND BEFORE MARCH 15, THE SELECTED SEED MIXTURE. INCREASE THE SEEDING RATES BY SEED MIXTURE. INCREASE THE SEEDING RATES BY 50 PERCENT FOR THIS TYPE SEEDING.

2. FROM NOVEMBER 20 THROUGH MARCH 15, WHEN SOIL CONDITIONS PERMIT, PREPARE THE SEEDBED, LIME AND FERTILIZE, APPLY THE SELECTED SEED MIXTURE, AND MULCH AND ANCHOR. INCREASE THE SEEDING RATES BY 50 PERCENT FOR THIS TYPE OF SEEDING.

C. APPLY SEED UNIFORMLY WITH A CYCLONE SEEDER, DRILL, CULTIPACKER SEEDER, OR HYDROSEEDER (SLURRY MAY INCLUDE SEED AND FERTILIZER) ON A FIRM, MOIST SEEDBED. COVER TO A DEPTH OF 1/4 TO 1/2 INCH.

D. WHERE FEASIBLE, EXCEPT WHEN A CULTIPACKER TYPE SEEDER IS USED, THE SEEDBED SHOULD BE FIRMED FOLLOWING SEEDING OPERATIONS WITH A CULTIPACKER, ROLLER, OR LIGHT DRAG. ON SLOPING LAND SEEDING OPERATION'S SHOULD BE ON THE CONTOUR WHERE FEASIBLE.

IV. MULCHING

A. MULCH SHALL BE APPLIED TO PROTECT THE SOIL AND PROVIDE A BETTER ENVIRONMENT FOR PLANT GROWTH.

B. MULCH SHALL CONSIST OF SMALL GRAIN STRAW (PREFERABLY WHEAT OR RYE) AND SHALL BE APPLIED AT THE RATE OF TWO TONS PER ACRE OR 100 POUNDS (TWO TO THREE BALES) PER 1000 SQUARE FEET.

C. SPREAD THE MULCH UNIFORMLY BY HAND OR MECHANICALLY SO THE SOIL SURFACE IS COVERED.

1. MECHANICAL – USE A DISK, CRIMPER, OR SIMILAR TYPE TOOL SET STRAIGHT TO PUNCH OR ANCHOR THE MULCH MATERIAL INTO THE SOIL.

2. ASPHALT EMULSION – APPLY AT A RATE OF 160 GALLONS PER ACRE INTO THE MULCH AS IT IS BEING APPLIED.

3. MULCH NETTINGS – USE ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS. USE IN AREAS OF WATER CONCENTRATION TO HOLD MULCH IN PLACE.

V. MAINTENANCE

1) MAINTENANCE IS A VITAL FACTOR IN MAINTAINING AN ADEQUATE VEGETATIVE EROSION CONTROL COVER.

2) IF STAND IS OVER 60 PERCENT DAMAGED, REESTABLISH FOLLOWING ORIGINAL LIME, FERTILIZER, SEEDBED PREPARATION, SEEDING RECOMMENDATIONS, AND MULCHING RECOMMENDATIONS.

TABLE 1
MAINTENANCE FERTILIZATION AND MOWING FOR PERMANENT SEEDING

MIXTURE	FORMULA	FERTILIZER RATE LBS.AC.	FERTILIZER RATE LBS./1000	TIME	MOWING
CREEPING RED FESCUE, RYEGRASS KENTUCKY BLUEGRASS	10-10-10	500	12	FALL, YEARLY OR AS NEEDED	NOT CLOSER THAN 3"
TALL FESCUE	10-10-10	500	12	FALL, YEARLY OR AS NEEDED	NOT CLOSER THAN 4"
DWARF TURF	10-10-10	500	12	FALL, YEARLY OR AS NEEDED	NOT CLOSER THAN 2"
FLAT PEA AND CROWNVETCH WITH FESCUE	0-20-20	400	10	SPRING YEARLY FOLLOWING ESTABLISHMENT AND EVERY 4-7 YEARS THEREAFTER	DO NOT MOW

GRADING AND EROSION CONTROL SCHEDULE

AUGUST 2018 – INSTALL PERIMETER EROSION CONTROLS. COMMENCE CLEARING AND GRUBBING. ALL MEASURES TO TRAP SEDIMENT SHALL BE CONSTRUCTED AND COMPLETED BEFORE UPSLOPE CLEARING AND GRADING ACTIVITIES ARE PERMITTED TO TAKE PLACE.

AUGUST 2018 – BEGIN GRADING ON SITE.

AUGUST TO SEPTEMBER 2018 – CONTINUE GRADING & MAINTAIN EROSION CONTROL & SEDIMENT CONTROLS.

SEPTEMBER 2018 TO NOVEMBER 2018 – UTILITY INSTALLATION & FINAL GRADING.

NOVEMBER 2018 – FINAL GRADING & PAVING, FINAL STABILIZATION OF EROSION & SEDIMENT CONTROLS PRIOR TO HOME CONSTRUCTION.

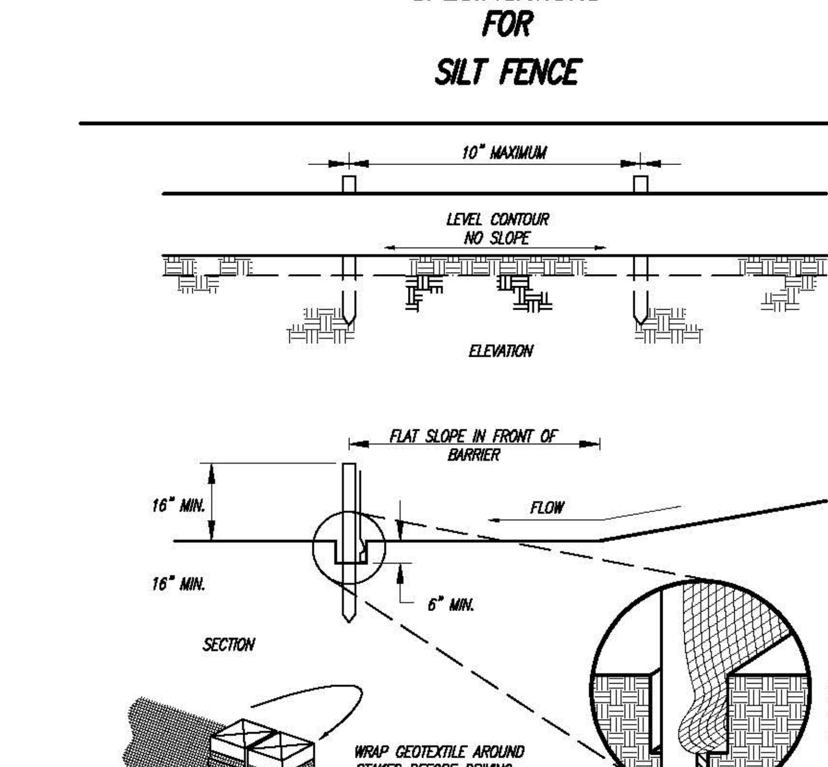
MAINTENANCE TIMELINES

IF AN INSPECTION REVEALS THAT A CONTROL PRACTICE IS IN NEED OF REPAIR OR MAINTENANCE, WITH THE EXCEPTION OF A SETTLING POND IT MUST BE REPAIRED OR MAINTAINED WITHIN THREE DAYS OF INSPECTION. SEDIMENT SETTLING PONDS MUST BE REPAIRED OR MAINTAINED WITHIN TEN DAYS OF THE INSPECTION.

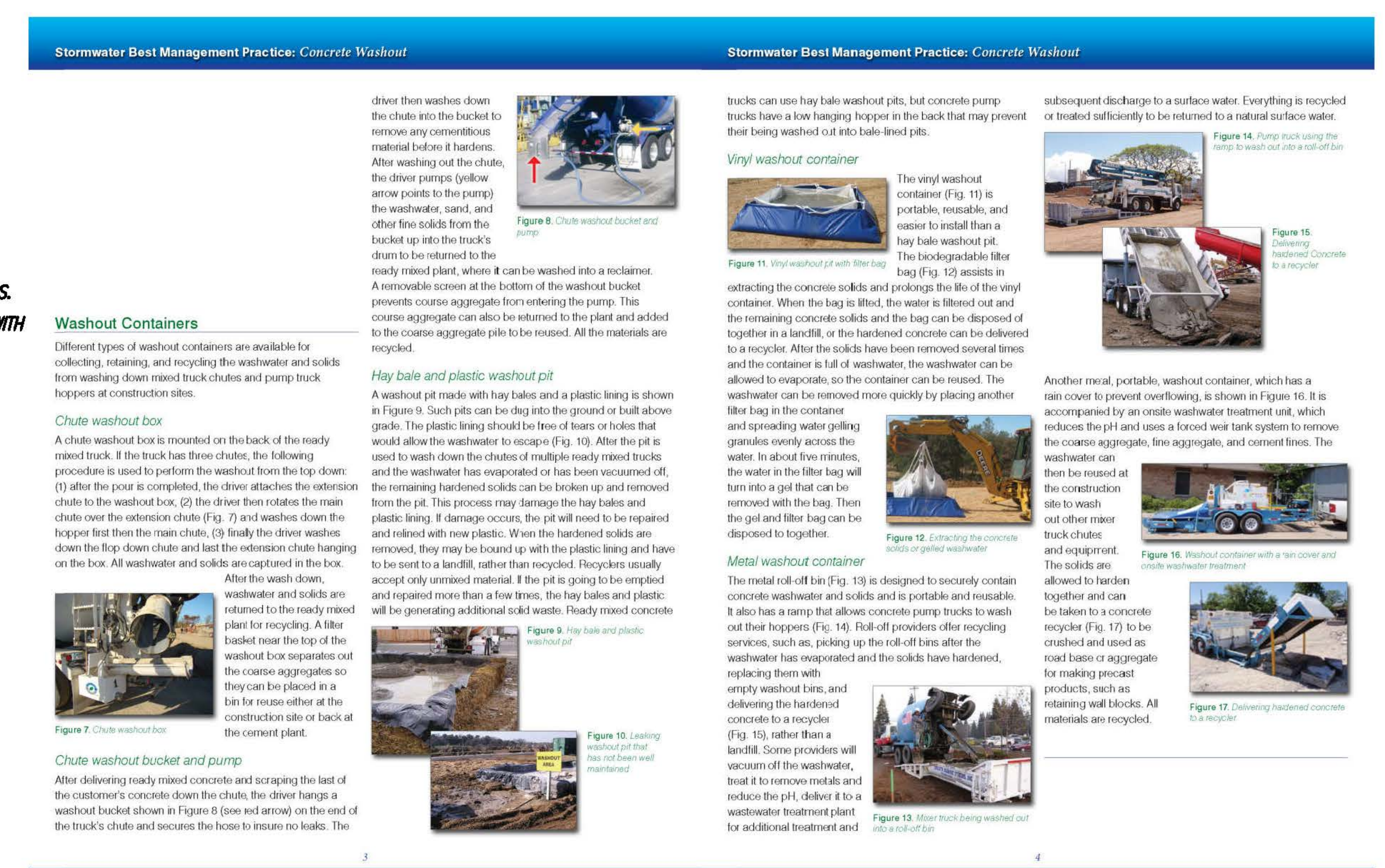
IF THE INSPECTION REVEALS THAT A CONTROL PRACTICE FAILS TO PERFORM ITS INTENDED FUNCTION AND THAT ANOTHER, MORE APPROPRIATE CONTROL PRACTICE IS REQUIRED, THE SWP3 MUST BE AMENDED AND THE NEW CONTROL PRACTICE MUST BE INSTALLED WITHIN TEN DAYS OF THE INSPECTION.

IF THE INSPECTION REVEALS THAT A CONTROL PRACTICE HAS NOT BEEN IMPLEMENTED IN ACCORDANCE WITH THE SCHEDULE CONTAINED IN PART III.G.1.g OF THE OHIO EPA GENERAL PERMIT, THE CONTROL PRACTICE MUST BE IMPLEMENTED WITHIN 10 DAYS FROM THE DATE OF THE INSPECTION. IF THE INSPECTION REVEALS THAT THE PLANNED CONTROL PRACTICE IS NOT NEEDED, THE RECORD MUST CONTAIN A STATEMENT OF EXPLANATION AS TO WHY THE CONTROL PRACTICE IS NOT NEEDED.

SPECIFICATIONS FOR SILT FENCE



SEE PAGES 117-121 OF THE RAINWATER AND LAND DEVELOPMENT, OHIO'S STANDARDS FOR STORMWATER MANAGEMENT, LAND DEVELOPMENT AND URBAN STREAM PROTECTION, SECOND EDITION 1996, MANUAL FOR SILT FENCE SPECIFICATIONS.


Stormwater Best Management Practice: Concrete Washout

Washout Containers

Different types of washout containers are available for collecting, retaining, and recycling the washwater and solids from washing down mixed truck chutes and pump truck hoppers at construction sites.

Chute washout box

A chute washout box is mounted on the back of the ready mixed truck. If the truck has three chutes, the following procedure is used to perform the washout from the top down: (1) after the pour is completed, the driver attaches the extension chute to the washout box, (2) the driver then rotates the main chute over the extension chute (Fig. 7) and washes down the hopper first then the main chute, (3) finally the driver washes down the flop down chute and last the extension chute hanging on the box. All washwater and solids are captured in the box. After the wash down, washwater and solids are returned to the ready mixed plant for recycling. A filter basket near the top of the washout box separates out the coarse aggregates so they can be placed in a bin for reuse either at the construction site or back at the cement plant.

Figure 7. Chute washout box

Chute washout bucket and pump

After delivering ready mixed concrete and scraping the last of the customer's concrete down the chute, the driver hangs a washout bucket shown in Figure 8 (see red arrow) on the end of the truck's chute and secures the hose to insure no leaks. The driver then washes down the chute into the bucket to remove any cementitious material before it hardens. After washing out the chute, the driver pumps (yellow arrow points to the pump) the washwater, sand, and other fine solids from the bucket up into the truck's drum to be returned to the ready mixed plant, where it can be washed into a reclaimer. A removable screen at the bottom of the washout bucket prevents course aggregate from entering the pump. This course aggregate can also be returned to the plant and added to the coarse aggregate pile to be reused. All the materials are recycled.

Figure 8. Chute washout bucket and pump

Hay bale and plastic washout pit

A washout pit made with hay bales and a plastic lining is shown in Figure 9. Such pits can be dug into the ground or built above grade. The plastic lining should be free of tears or holes that would allow the washwater to escape (Fig. 10). After the pit is used to wash down the chutes of multiple ready mixed trucks and the washwater has evaporated or has been vacuumed off, the remaining hardened solids can be broken up and removed from the pit. This process may damage the hay bales and plastic lining. If damage occurs, the pit will need to be repaired and relined with new plastic. When the hardened solids are removed, they may be bound up with the plastic lining and have to be sent to a landfill, rather than recycled. Recyclers usually accept only unmixed material. If the pit is going to be emptied and repaired more than a few times, the hay bales and plastic will be generating additional solid waste. Ready mixed concrete

Figure 9. Hay bale and plastic washout pit

Figure 10. Leaking washout pit that has not been well maintained

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trucks can use hay bale washout pits, but concrete pump trucks have a low hanging hopper in the back that may prevent their being washed out into bale-lined pits.

Vinyl washout container

The vinyl washout container (Fig. 11) is portable, reusable, and easier to install than a hay bale washout pit. The biodegradable filter bag (Fig. 12) assists in extracting the concrete solids and prolongs the life of the vinyl container. When the bag is lifted, the water is filtered out and the remaining concrete solids and the bag can be disposed of together in a landfill, or the hardened concrete can be delivered to a recycler. After the solids have been removed several times and the container is full of washwater, the washwater can be allowed to evaporate, so the container can be reused. The washwater can be removed more quickly by placing another filter bag in the container and spreading water gelling granules evenly across the water. In about five minutes, the water in the filter bag will turn into a gel that can be removed with the bag. Then the gel and filter bag can be disposed to together.

Figure 11. Vinyl washout pit with filter bag

Figure 12. Extracting the concrete solids or gelled washwater

Metal washout container

The metal roll-off bin (Fig. 13) is designed to securely contain concrete washwater and solids and is portable and reusable. It also has a ramp that allows concrete pump trucks to wash out their hoppers (Fig. 14). Roll-off providers offer recycling services, such as, picking up the roll-off bins after the washwater has evaporated and the solids have hardened, replacing them with empty washout bins, and delivering the hardened concrete to a recycler (Fig. 15), rather than a landfill. Some providers will vacuum off the washwater, treat it to remove metals and reduce the pH, deliver it to a wastewater treatment plant for additional treatment and subsequent discharge to a surface water. Everything is recycled or treated sufficiently to be returned to a natural surface water.

Figure 13. Mixer truck being washed out into a roll-off bin

Figure 14. Pump truck using the ramp to wash out into a roll-off bin

Figure 15. Delivering hardened Concrete to a recycler

Another metal, portable, washout container, which has a rain cover to prevent overflowing, is shown in Figure 16. It is accompanied by an onsite washwater treatment unit, which reduces the pH and uses a forced weir tank system to remove the coarse aggregate, fine aggregate, and cement fines. The washwater can then be reused at the construction site to wash out other mixer truck chutes and equipment. The solids are allowed to harden together and can be taken to a concrete recycler (Fig. 17) to be crushed and used as road base or aggregate for making precast products, such as retaining wall blocks. All materials are recycled.

Figure 16. Washout container with a rain cover and onsite washwater treatment

Figure 17. Delivering hardened concrete to a recycler

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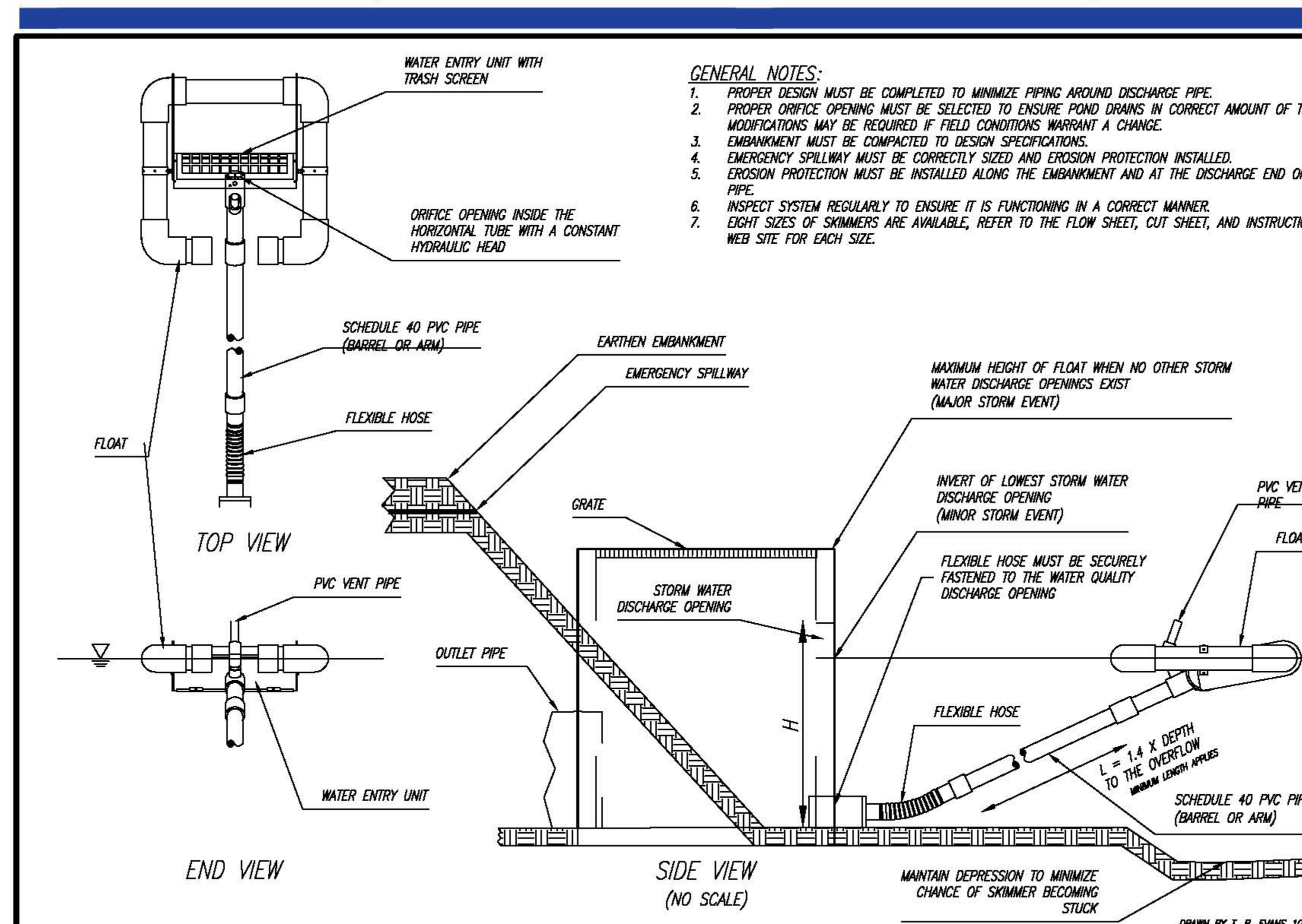

GENERAL NOTES:
1. PROPER DESIGN MUST BE COMPLETED TO MINIMIZE PIPING AROUND DISCHARGE PIPE.
2. PROPER ORIFICE OPENING MUST BE SELECTED TO ENSURE POND DRAINS IN CORRECT AMOUNT OF TIME. MODIFICATIONS MAY BE REQUIRED IF FIELD CONDITIONS WARRANT A CHANGE.
3. EMBANKMENT MUST BE COMPACTED TO DESIGN SPECIFICATIONS.
4. EMERGENCY SPILLWAY MUST BE CORRECTLY SIZED AND EROSION PROTECTION INSTALLED.
5. EROSION PROTECTION MUST BE INSTALLED ALONG THE EMBANKMENT AND AT THE DISCHARGE END OF THE PIPE.
6. INSPECT SYSTEM REGULARLY TO ENSURE IT IS FUNCTIONING IN A CORRECT MANNER.
7. EIGHT SIZES OF SKIMMERS ARE AVAILABLE, REFER TO THE FLOW SHEET, CUT SHEET, AND INSTRUCTIONS ON WEB SITE FOR EACH SIZE.

FAIRCLOTH SKIMMER DISCHARGE SYSTEM WITH OUTLET STRUCTURE

J. W. FAIRCLOTH & SON INC.
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EROSION CONTROL INSPECTION NOTE:

THE DEVELOPER AND/OR CONTRACTOR SHALL CONDUCT AND DOCUMENT WEEKLY EROSION CONTROLS INSPECTIONS OR AFTER EACH 0.25" OR GREATER RAIN EVENT. THE INSPECTION REPORTS SHALL BE KEPT FOR THREE YEARS AFTER THE NOTICE OF TERMINATION HAS BEEN FILED WITH OHIO EPA.

CONSTRUCTION ENTRANCE AND STREET SWEEPING NOTE:

THE CONTRACTOR SHALL TOP-DRESS THE CONSTRUCTION ENTRANCE ON A REGULAR BASIS AND IMPLEMENT STREET SWEEPING AS NEEDED. THE CONTRACTOR SHALL NOT CREATE A PUBLIC SAFETY PROBLEM BY TRACKING SEDIMENT ONTO TRAVELED WAYS. THE CONTRACTOR SHALL NOT HAUL MATERIALS DURING RAIN DAYS.

A. EROSION AND SEDIMENT CONTROLS. THE CONTRACTOR SHALL DESIGN, INSTALL AND MAINTAIN EFFECTIVE EROSION CONTROLS AND SEDIMENT CONTROLS TO MINIMIZE THE DISCHARGE OF POLLUTANTS. AT A MINIMUM, SUCH CONTROLS SHALL BE INSTALLED AND MAINTAINED TO:

1. CONTROL STORM WATER VOLUME AND VELOCITY WITHIN THE SITE TO MINIMIZE SOIL EROSION;

2. CONTROL STORM WATER DISCHARGES, INCLUDING BOTH PEAK FLOWRATES AND TOTAL STORM WATER VOLUME, TO MINIMIZE EROSION AT OUTLETS AND TO MINIMIZE DOWNSTREAM CHANNEL AND STREAMBANK EROSION;

3. MINIMIZE THE AMOUNT OF SOIL EXPOSED DURING CONSTRUCTION ACTIVITY;

4. MINIMIZE THE DISTURBANCE OF STEEP SLOPES;

5. MINIMIZE SEDIMENT DISCHARGES FROM THE SITE. THE DESIGN, INSTALLATION AND MAINTENANCE OF EROSION AND SEDIMENT CONTROLS SHALL ADDRESS FACTORS SUCH AS THE AMOUNT, FREQUENCY, INTENSITY AND DURATION OF PRECIPITATION, THE NATURE OF RESULTING STORM WATER RUNOFF, AND SOIL CHARACTERISTICS, INCLUDING THE RANGE OF SOIL PARTICLE SIZES EXPECTED TO BE PRESENT ON THE SITE;

6. MINIMIZE SOIL COMPACTION AND, UNLESS INFEASIBLE, PRESERVE TOPSOIL.

B. SOIL STABILIZATION. STABILIZATION OF DISTURBED AREAS SHALL, AT A MINIMUM, BE INITIATED IN ACCORDANCE WITH THE TIME FRAMES SPECIFIED IN THE FOLLOWING TABLES.

TABLE 1: PERMANENT STABILIZATION

AREA REQUIRING PERMANENT STABILIZATION	TIME FRAME TO APPLY EROSION CONTROLS
ANY AREAS THAT WILL LIE DORMANT FOR ONE YEAR OR MORE	WITHIN SEVEN DAYS OF THE MOST RECENT DISTURBANCE
ANY AREAS WITHIN 50 FEET OF A SURFACE WATER OF THE STATE AND AT FINAL GRADE	WITHIN TWO DAYS OF REACHING FINAL GRADE
ANY OTHER AREAS AT FINAL GRADE	WITHIN SEVEN DAYS OF REACHING FINAL GRADE WITHIN THAT AREA

TABLE 2: TEMPORARY STABILIZATION

AREA REQUIRING TEMPORARY STABILIZATION	TIME FRAME TO APPLY EROSION CONTROLS
ANY DISTURBED AREAS WITHIN 50 FEET OF A SURFACE WATER OF THE STATE AND NOT AT FINAL GRADE	WITHIN TWO DAYS OF THE MOST RECENT DISTURBANCE IF THE AREA WILL REMAIN IDLE FOR MORE THAN 14 DAYS
FOR ALL CONSTRUCTION ACTIVITIES, ANY DISTRUCBED AREAS THAT WILL BE DORMANT FOR MORE THAN 14 DAYS BUT LESS THAN ONE YEAR, AND NOT WITHIN 50 FEET OF A SURFACE WATER OF THE STATE	WITHIN SEVEN DAYS OF THE MOST RECENT DISTURBANCE WITHIN THE AREA FOR RESIDENTIAL SUBDIVISIONS, DISTURBED AREAS MUST BE STABILIZED AT LEAST SEVEN DAYS PRIOR TO TRANSFER OF PERMIT COVERAGE FOR THE INDIVIDUAL LOT(S)
DISTURBED AREAS THAT WILL BE IDLE OVER WINTER	PRIOR TO THE ONSET OF WINTER WEATHER

WHERE VEGETATIVE STABILIZATION TECHNIQUES MAY CAUSE STRUCTURAL INSTABILITY OR ARE OTHERWISE UNOBTAINABLE, ALTERNATIVE STABILIZATION TECHNIQUES MUST BE EMPLOYED. PERMANENT AND TEMPORARY STABILIZATION ARE DEFINED IN PART VII.

C. DEWATERING. DISCHARGES FROM DEWATERING ACTIVITIES, INCLUDING DISCHARGES FROM DEWATERING OF TRENCHES AND EXCAVATIONS, ARE PROHIBITED UNLESS MANAGED BY APPROPRIATE CONTROLS.

D. POLLUTION PREVENTION MEASURES. INSTALL, IMPLEMENT AND MAINTAIN EFFECTIVE POLLUTION PREVENTION MEASURES TO MINIMIZE THE DISCHARGE OF POLLUTANTS. AT A MINIMUM, SUCH MEASURES MUST BE INSTALLED, IMPLEMENTED AND MAINTAINED TO:

1. MINIMIZE THE DISCHARGE OF POLLUTANTS FROM EQUIPMENT AND VEHICLE WASHING, WHEEL WASH WATER, AND OTHER WASH WATERS. WASH WATERS SHALL BE TREATED IN A SEDIMENT BASIN OR ALTERNATIVE CONTROL THAT PROVIDES EQUIVALENT OR BETTER TREATMENT PRIOR TO DISCHARGE;

2. MINIMIZE THE EXPOSURE OF BUILDING MATERIALS, BUILDING PRODUCTS, CONSTRUCTION WASTES, TRASH, LANDSCAPE MATERIALS, FERTILIZERS, PESTICIDES, HERBICIDES, DETERGENTS, SANITARY WASTE AND OTHER MATERIALS PRESENT ON THE SITE TO PRECIPITATION AND TO STORM WATER; AND

3. MINIMIZE THE DISCHARGE OF POLLUTANTS FROM SPILLS AND LEAKS AND IMPLEMENT CHEMICAL SPILL AND LEAK PREVENTION AND RESPONSE PROCEDURES.

E. PROHIBITED DISCHARGES. THE FOLLOWING DISCHARGES ARE PROHIBITED:

1. WASTEWATER FROM WASHOUT OF CONCRETE, UNLESS MANAGED BY AN APPROPRIATE CONTROL;

2. WASTEWATER FROM WASHOUT AND CLEANOUT OF STUCCO, PAINT, FORM RELEASE OILS, CURING COMPOUNDS AND OTHER CONSTRUCTION MATERIALS;

3. FUELS, OILS, OR OTHER POLLUTANTS USED IN VEHICLE AND EQUIPMENT OPERATION AND MAINTENANCE; AND

4. SOAPS OR SOLVENTS USED IN VEHICLE AND EQUIPMENT WASHING.

g. OTHER CONTROLS.

i. NON-SEDIMENT POLLUTANT CONTROLS. NO SOLID (OTHER THAN SEDIMENT) OR LIQUID WASTE, INCLUDING BUILDING MATERIALS, SHALL BE DISCHARGED IN STORM WATER RUNOFF. THE PERMITTEE MUST IMPLEMENT ALL NECESSARY BMPS TO PREVENT THE DISCHARGE OF NON-SEDIMENT POLLUTANTS TO THE DRAINAGE SYSTEM OF THE SITE OR SURFACE WATERS OF THE STATE. UNDER NO CIRCUMSTANCE SHALL WASTEWATER FROM THE WASHOUT OF CONCRETE TRUCKS, STUCCO, PAINT, FORM RELEASE OILS, CURING COMPOUNDS, AND OTHER CONSTRUCTION MATERIALS BE DISCHARGED DIRECTLY INTO A DRAINAGE CHANNEL, STORM SEWER OR SURFACE WATERS OF THE STATE. ALSO, NO POLLUTANTS FROM VEHICLE FUEL, OILS, OR OTHER VEHICLE FLUIDS CAN BE DISCHARGED TO SURFACE WATERS OF THE STATE. NO EXPOSURE OF STORM WATER TO WASTE MATERIALS IS RECOMMENDED. THE CONTRACTOR SHALL IMPLEMENT MEASURES TO PREVENT AND RESPOND TO CHEMICAL SPILLS AND LEAKS.

i. OFF-SITE TRAFFIC. OFF-SITE VEHICLE TRACKING OF SEDIMENTS AND DUST GENERATION SHALL BE MINIMIZED. THE CONTRACTOR SHALL IMPLEMENT METHODS TO MINIMIZE THE DISCHARGE OF POLLUTANTS FROM EQUIPMENT AND VEHICLE WASHING, WHEEL WASH WATER, AND OTHER WASH WATERS. NO DETERGENTS MAY BE USED TO WASH VEHICLES. WASH WATERS SHALL BE TREATED IN A SEDIMENT BASIN OR ALTERNATIVE CONTROL THAT PROVIDES EQUIVALENT TREATMENT PRIOR TO DISCHARGE.

ii. TRENCH AND GROUND WATER CONTROL. THERE SHALL BE NO TURBID DISCHARGES TO SURFACE WATERS OF THE STATE RESULTING FROM DEWATERING ACTIVITIES. IF TRENCH OR GROUND WATER CONTAINS SEDIMENT, IT SHALL PASS THROUGH A SEDIMENT SETTLING POND OR OTHER EQUALLY EFFECTIVE SEDIMENT CONTROL DEVICE, PRIOR TO BEING DISCHARGED FROM THE CONSTRUCTION SITE. ALTERNATIVELY, SEDIMENT MAY BE REMOVED BY SETTLING IN PLACE OR BY DEWATERING INTO A SUMP PIT, FILTER BAG OR COMPARABLE PRACTICE. GROUND WATER WHICH DOES NOT CONTAIN SEDIMENT OR OTHER POLLUTANTS IS NOT REQUIRED TO BE TREATED PRIOR TO DISCHARGE. HOWEVER, CARE MUST BE TAKEN WHEN DISCHARGING GROUND WATER TO ENSURE THAT IT DOES NOT BECOME POLLUTANT- LADEN BY TRAVERSING OVER DISTURBED SOILS OR OTHER POLLUTANT SOURCES.

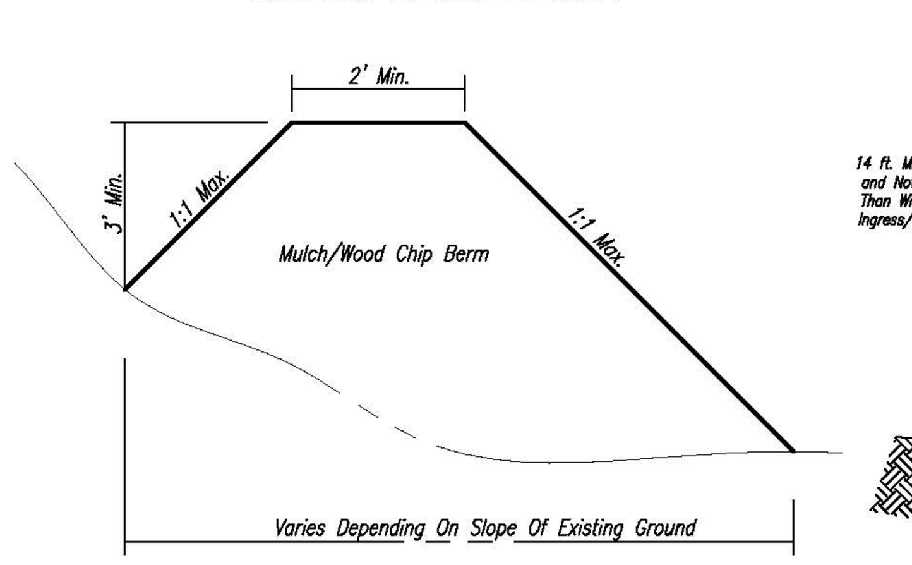
iii. CONTAMINATED SEDIMENT. WHERE CONSTRUCTION ACTIVITIES ARE TO OCCUR ON SITES WITH CONTAMINATION FROM PREVIOUS ACTIVITIES, OPERATORS SHALL BE AWARE THAT CONCENTRATIONS OF MATERIALS THAT MEET OTHER CRITERIA (IS NOT CONSIDERED A HAZARDOUS WASTE, MEETING VAP STANDARDS, ETC.) MAY STILL RESULT IN STORM WATER DISCHARGES IN EXCESS OF OHIO WATER QUALITY STANDARDS. SUCH DISCHARGES ARE NOT AUTHORIZED BY THIS PERMIT. APPROPRIATE BMPS INCLUDE, BUT ARE NOT LIMITED TO:

- THE USE OF BERMS, TRENCHES, AND PITS TO COLLECT CONTAMINATED RUNOFF AND PREVENT DISCHARGES;
- PUMPING RUNOFF INTO A SANITARY SEWER (WITH PRIOR APPROVAL OF THE SANITARY SEWER OPERATOR) OR INTO A CONTAINER FOR TRANSPORT TO AN APPROPRIATE TREATMENT/DISPOSAL FACILITY; AND
- COVERING AREAS OF CONTAMINATION WITH TARPS OR OTHER METHODS THAT PREVENT STORM WATER FROM COMING INTO CONTACT WITH THE MATERIAL.

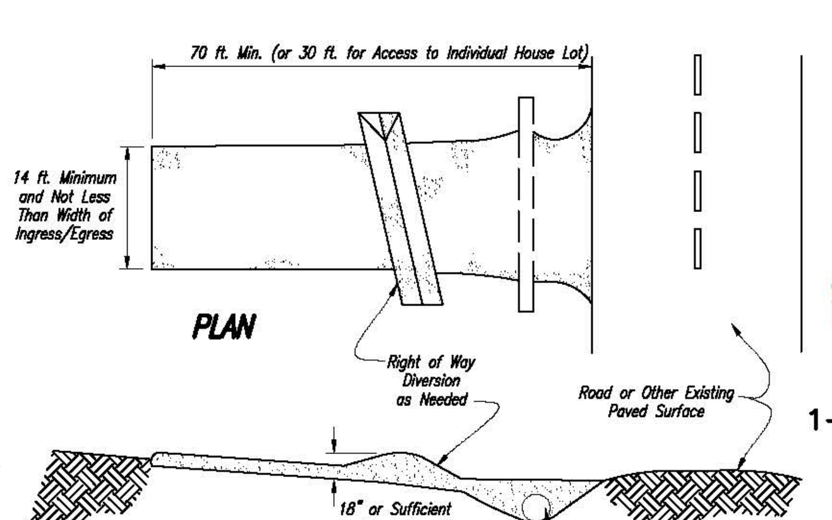
B. MAINTENANCE. ALL TEMPORARY AND PERMANENT CONTROL PRACTICES SHALL BE MAINTAINED AND REPAIRED AS NEEDED TO ENSURE CONTINUED PERFORMANCE OF THEIR INTENDED FUNCTION. ALL SEDIMENT CONTROL PRACTICES MUST BE MAINTAINED IN A FUNCTIONAL CONDITION UNTIL ALL UP SLOPE AREAS THEY CONTROL ARE PERMANENTLY STABILIZED.

C. INSPECTIONS. AT A MINIMUM, THE CONTRACTOR SHALL ENSURE THAT ALL CONTROLS ON THE SITE ARE 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. THE INSPECTION FREQUENCY MAY BE REDUCED TO AT LEAST ONCE EVERY MONTH IF THE ENTIRE SITE IS TEMPORARILY STABILIZED OR RUNOFF IS UNLIKELY DUE TO WEATHER CONDITIONS (E.G., SITE IS COVERED WITH SNOW, ICE, OR THE GROUND IS FROZEN). ONCE A DEFINABLE AREA IS FINALLY STABILIZED, THE AREA MAY BE MARKED ON THE PLAN AND NO FURTHER INSPECTION REQUIREMENTS APPLY TO THAT PORTION OF THE SITE. THE PERMITTEE SHALL ASSIGN "QUALIFIED INSPECTION PERSONNEL" TO CONDUCT THESE INSPECTIONS TO ENSURE THAT THE CONTROL PRACTICES ARE FUNCTIONAL.

MULCH BERM DETAIL



CONSTRUCTION ENTRANCE DETAIL



SEE THE RAINWATER AND LAND DEVELOPMENT, OHIO'S STANDARDS FOR STORMWATER MANAGEMENT, LAND DEVELOPMENT AND URBAN STREAM PROTECTION, CURRENT EDITION, MANUAL FOR CONSTRUCTION ENTRANCE SPECIFICATIONS.

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Date	Drawn By	Checked By	Scale
7-20-18	D.L.	B.R.	1" = 50'

REVISIONS
8-1-18, Water & Sewer Revisions
8-15-18, BCEO Revisions & Bid Set

DWG: 18-0013DSGN\DL-DSGN

Sheet Title: DETAIL SHEET

Project Title: ARBOR PARK
SECTION-21, TOWN-3, RANGE-3
LIBERTY TOWNSHIP
BUTLER COUNTY, OHIO

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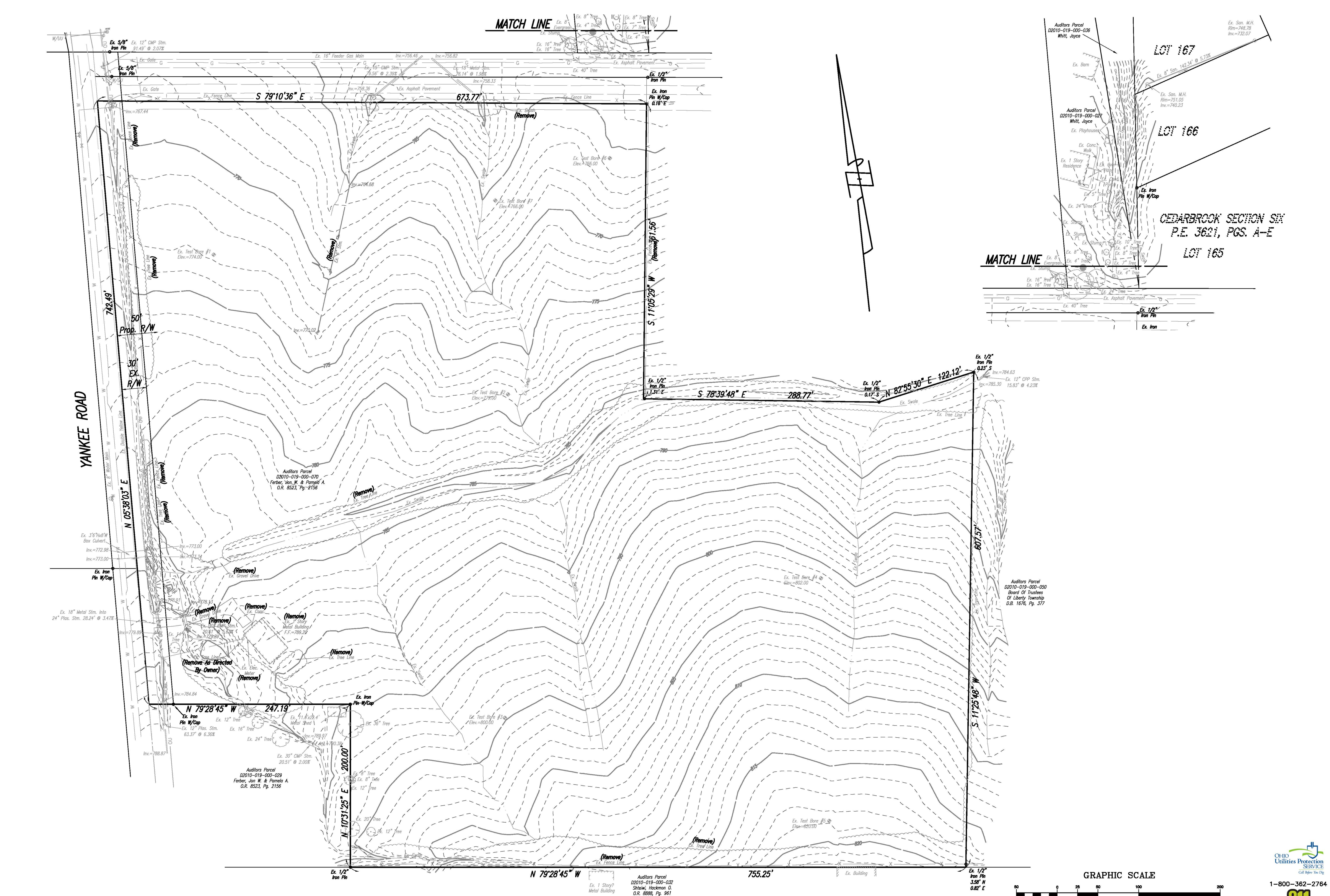

ARBOR PARK

Sheet Title: EX. CONDITIONS & DEMO PLAN

Project Title: ARBOR PARK
SECTION-21, TOWN-3, RANGE-3
LIBERTY TOWNSHIP
BUTLER COUNTY, OHIO

REVISIONS
8-1-18, Water & Sewer Revisions
8-15-18, BZO Revisions & Bid Set

DWG: 18-0013DSGN\DL-DSGN

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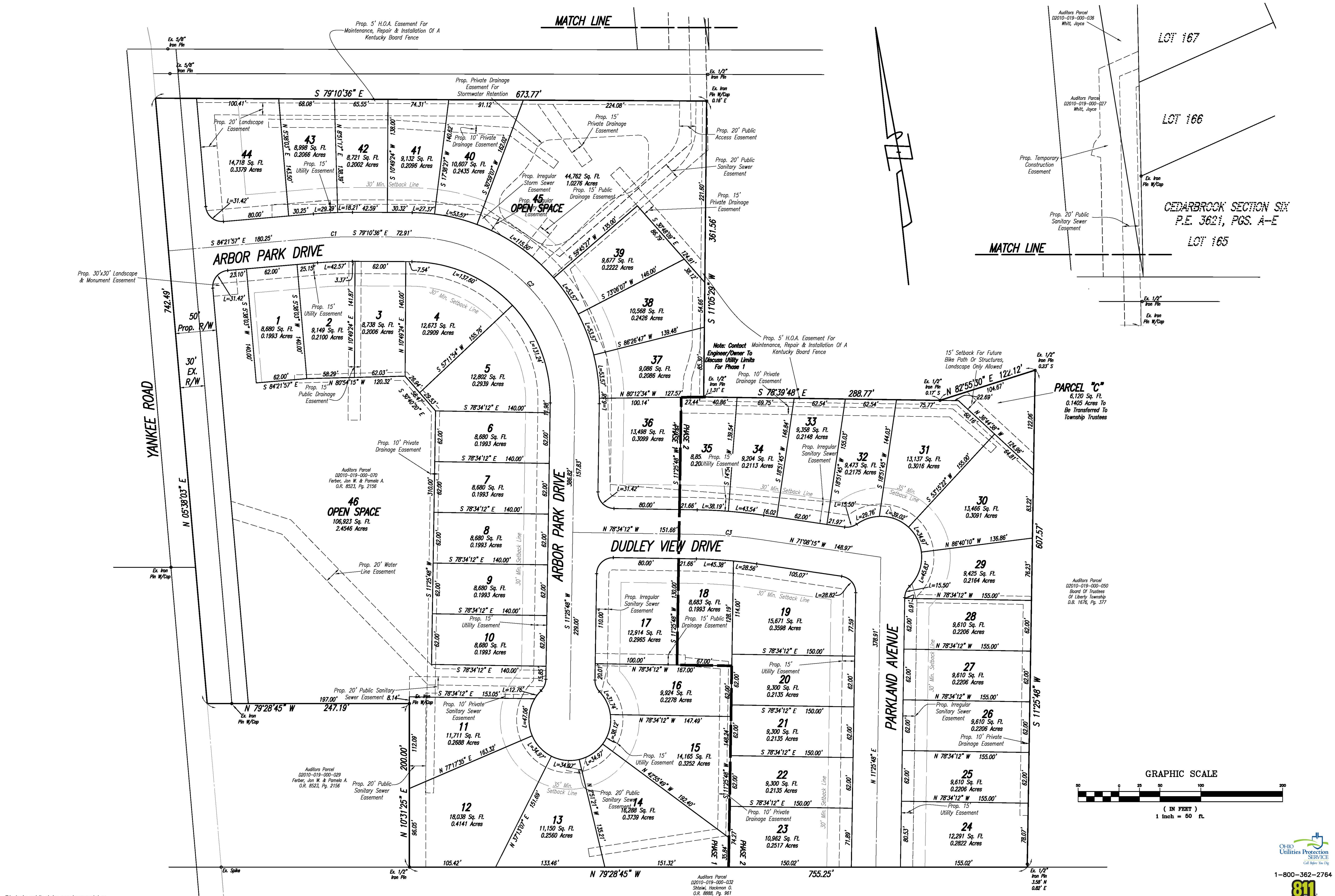

DIMENSION PLAN

ARBOR PARK
SECTION-21, TOWN-3, RANGE-3
LIBERTY TOWNSHIP
BUTLER COUNTY, OHIO

Date	7-20-18
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Checked By	B.R.
Scale	1" = 50'

REVISIONS
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8-15-18, BZO Revisions & Bid Set

DWG: 18-0013DSGN\DL-DSGN

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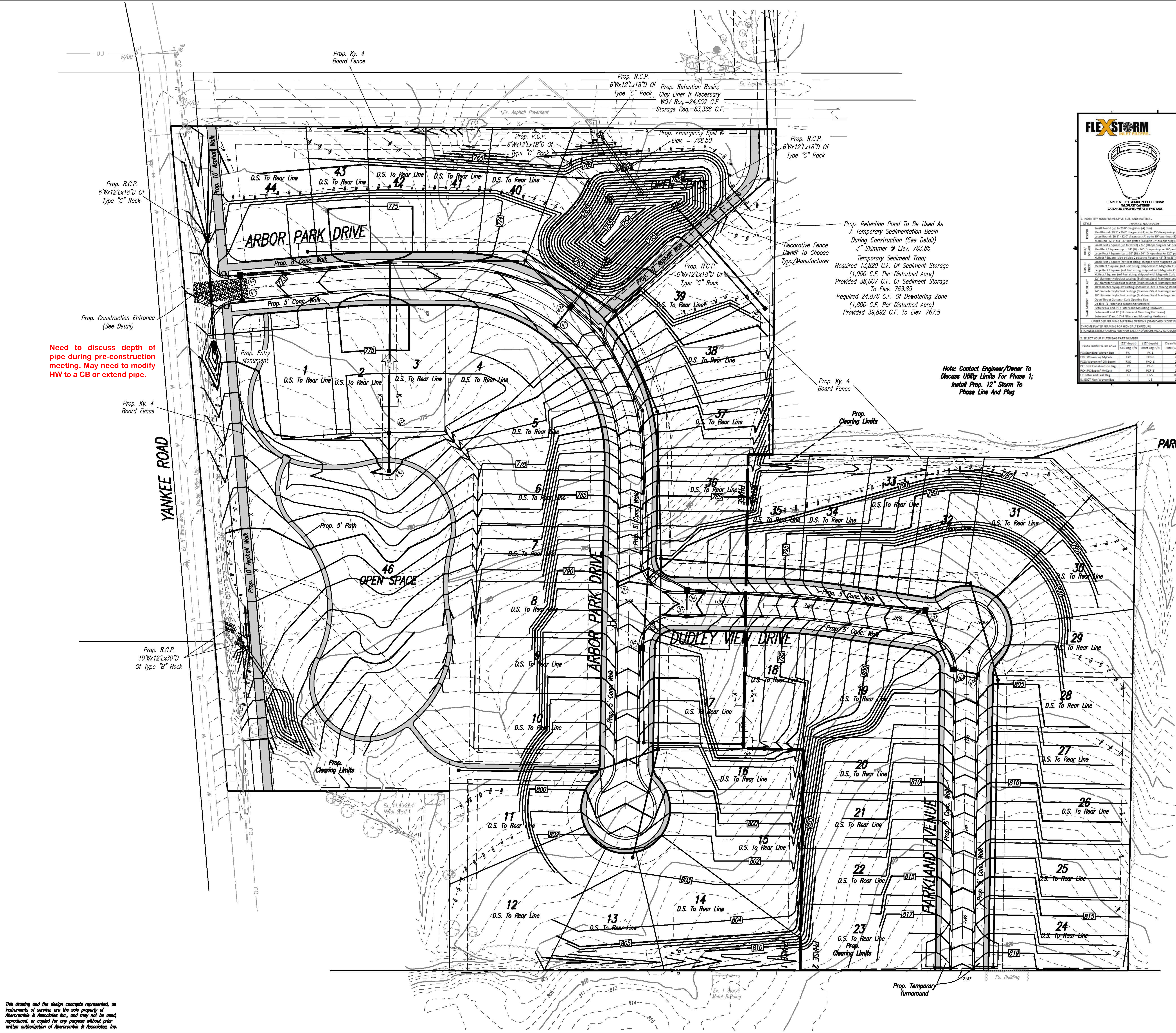

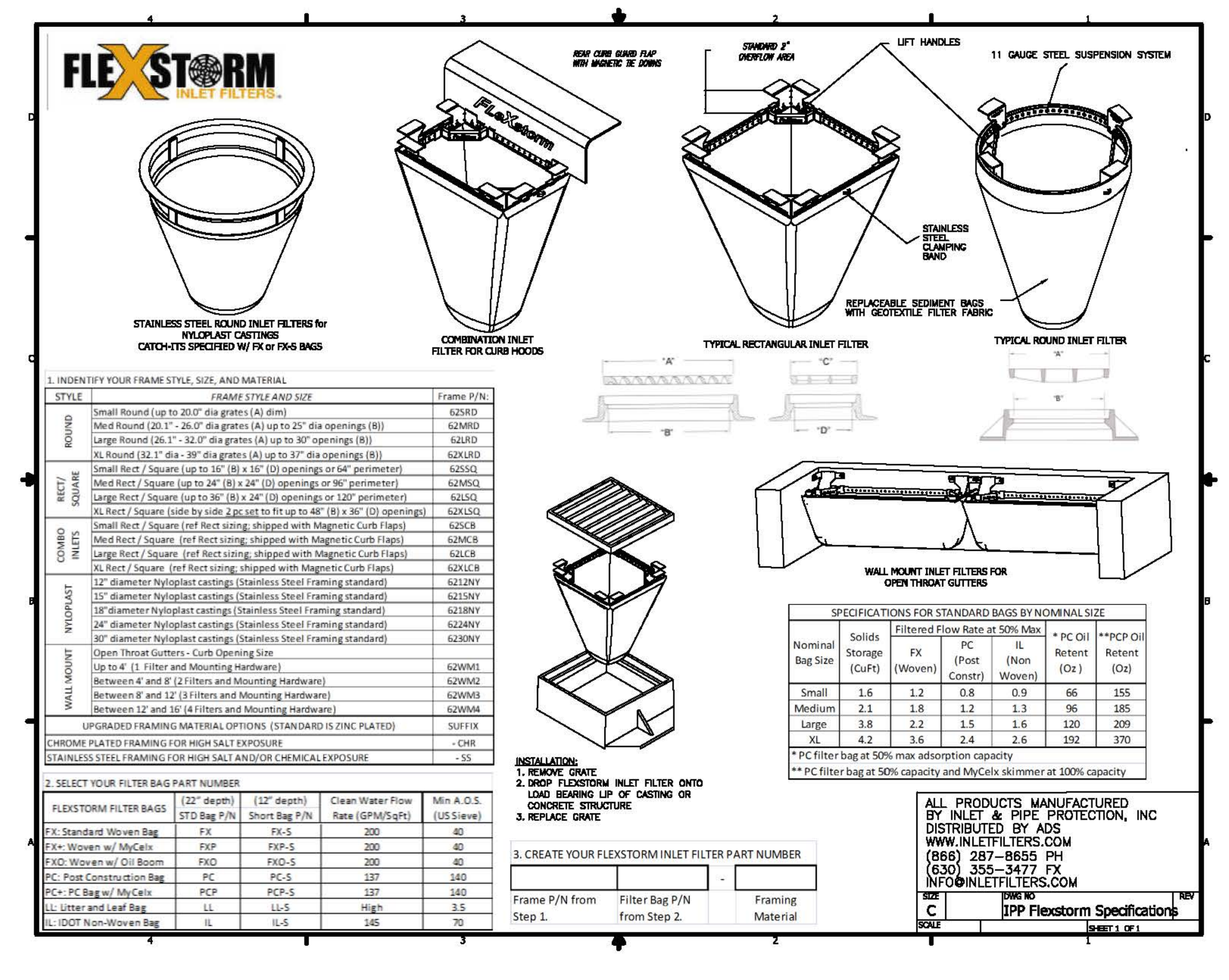

FLEXSTORM INLET FILTERS

STAINLESS STEEL ROUND INLET FILTERS for NYLOPLAST CASTINGS CATCH-ITS SPECIFIED W/ FX or FX-S BAGS

COMBINATION INLET FILTER FOR CURB HOODS

TYPICAL RECTANGULAR INLET FILTER

TYPICAL ROUND INLET FILTER

REAR CURB GUARD FLAP WITH MAGNETIC TIE DOWNS · STANDARD 2" OVERFLOW AREA · LIFT HANDLES · 11 GAUGE STEEL SUSPENSION SYSTEM · STAINLESS STEEL CLAMPING BAND · REPLACEABLE SEDIMENT BAGS WITH GEOTEXTILE FILTER FABRIC

WALL MOUNT INLET FILTERS FOR OPEN THROAT GUTTERS

1. INDENTIFY YOUR FRAME STYLE, SIZE, AND MATERIAL

STYLE	FRAME STYLE AND SIZE	Frame P/N:
ROUND	Small Round (up to 20.0" dia grates (A) dim)	62SRD
	Med Round (20.1" - 26.0" dia grates (A) up to 25" dia openings (B))	62MRD
	Large Round (26.1" - 32.0" dia grates (A) up to 30" openings (B))	62LRD
	XL Round (32.1" dia - 39" dia grates (A) up to 37" dia openings (B))	62XLRD
RECT/SQUARE	Small Rect / Square (up to 16" (B) x 16" (D) openings or 64" perimeter)	62SSQ
	Med Rect / Square (up to 24" (B) x 24" (D) openings or 96" perimeter)	62MSQ
	Large Rect / Square (up to 36" (B) x 24" (D) openings or 120" perimeter)	62LSQ
	XL Rect / Square (side by side 2 pc set to fit up to 48" (B) x 36" (D) openings)	62XLSQ
COMBO INLETS	Small Rect / Square (ref Rect sizing; shipped with Magnetic Curb Flaps)	62SCB
	Med Rect / Square (ref Rect sizing; shipped with Magnetic Curb Flaps)	62MCB
	Large Rect / Square (ref Rect sizing; shipped with Magnetic Curb Flaps)	62LCB
	XL Rect / Square (ref Rect sizing; shipped with Magnetic Curb Flaps)	62XLCB
NYLOPLAST	12" diameter Nyloplast castings (Stainless Steel Framing standard)	6212NY
	15" diameter Nyloplast castings (Stainless Steel Framing standard)	6215NY
	18" diameter Nyloplast castings (Stainless Steel Framing standard)	6218NY
	24" diameter Nyloplast castings (Stainless Steel Framing standard)	6224NY
	30" diameter Nyloplast castings (Stainless Steel Framing standard)	6230NY
WALL MOUNT	Open Throat Gutters - Curb Opening Size	
	Up to 4' (1 Filter and Mounting Hardware)	62WM1
	Between 4' and 8' (2 Filters and Mounting Hardware)	62WM2
	Between 8' and 12' (3 Filters and Mounting Hardware)	62WM3
	Between 12' and 16' (4 Filters and Mounting Hardware)	62WM4
UPGRADED FRAMING MATERIAL OPTIONS (STANDARD IS ZINC PLATED)		SUFFIX
CHROME PLATED FRAMING FOR HIGH SALT EXPOSURE		- CHR
STAINLESS STEEL FRAMING FOR HIGH SALT AND/OR CHEMICAL EXPOSURE		- SS

2. SELECT YOUR FILTER BAG PART NUMBER

FLEXSTORM FILTER BAGS	(22" depth) STD Bag P/N	(12" depth) Short Bag P/N	Clean Water Flow Rate (GPM/SqFt)	Min A.O.S. (US Sieve)
FX: Standard Woven Bag	FX	FX-S	200	40
FX+: Woven w/ MyCelx	FXP	FXP-S	200	40
FXO: Woven w/ Oil Boom	FXO	FXO-S	200	40
PC: Post Construction Bag	PC	PC-S	137	140
PC+: PC Bag w/ MyCelx	PCP	PCP-S	137	140
LL: Litter and Leaf Bag	LL	LL-S	High	3.5
IL: IDOT Non-Woven Bag	IL	IL-S	145	70

INSTALLATION:
1. REMOVE GRATE
2. DROP FLEXSTORM INLET FILTER ONTO LOAD BEARING LIP OF CASTING OR CONCRETE STRUCTURE
3. REPLACE GRATE

3. CREATE YOUR FLEXSTORM INLET FILTER PART NUMBER

		-	
Frame P/N from Step 1.	Filter Bag P/N from Step 2.		Framing Material

SPECIFICATIONS FOR STANDARD BAGS BY NOMINAL SIZE

Nominal Bag Size	Solids Storage (CuFt)	Filtered Flow Rate at 50% Max: FX (Woven)	PC (Post Constr)	IL (Non Woven)	* PC Oil Retent (Oz)	**PCP Oil Retent (Oz)
Small	1.6	1.2	0.8	0.9	66	155
Medium	2.1	1.8	1.2	1.3	96	185
Large	3.8	2.2	1.5	1.6	120	209
XL	4.2	3.6	2.4	2.6	192	370

* PC filter bag at 50% max adsorption capacity
** PC filter bag at 50% capacity and MyCelx skimmer at 100% capacity

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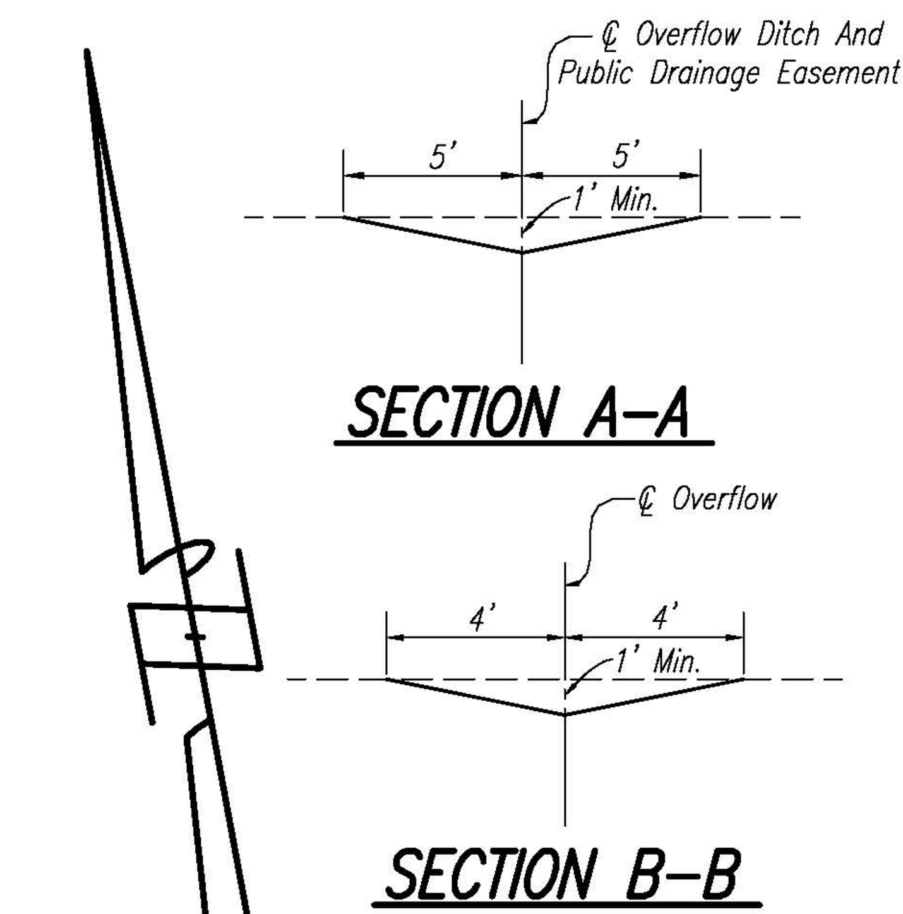
SIZE C · DWG NO IPP Flexstorm Specifications · REV · SCALE · SHEET 1 OF 1

(IP) Denotes Inlet Protection During Construction; "FLEXSTORM" Construction Phase Bag Or Approved Equal.

—#—#—#—#— Denotes Silt Fence/Mulch Berm (See Detail)



SECTION A–A

SECTION B–B

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

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REVISIONS
8–1–18, Water & Sewer Revisions
8–15–18, BCEO Revisions & Bid Set
8-21-18, Grading Revision Lots 12 thru 14 (BCEO)

DWG: 18–0013DSGN\DL–DSGN

Sheet Title: GRADING PLAN

Project Title: ARBOR PARK
SECTION–21, TOWN–3, RANGE–3
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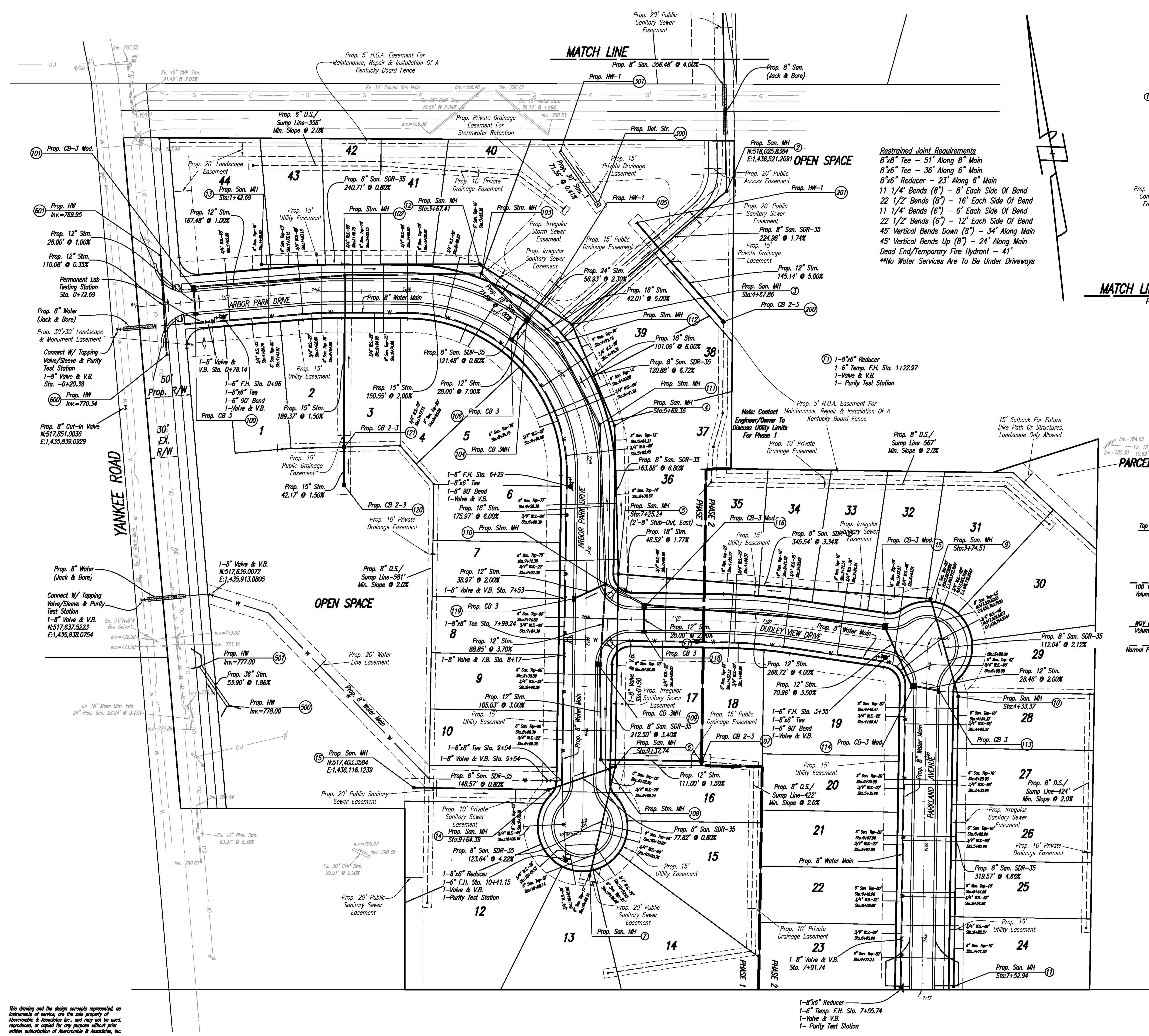
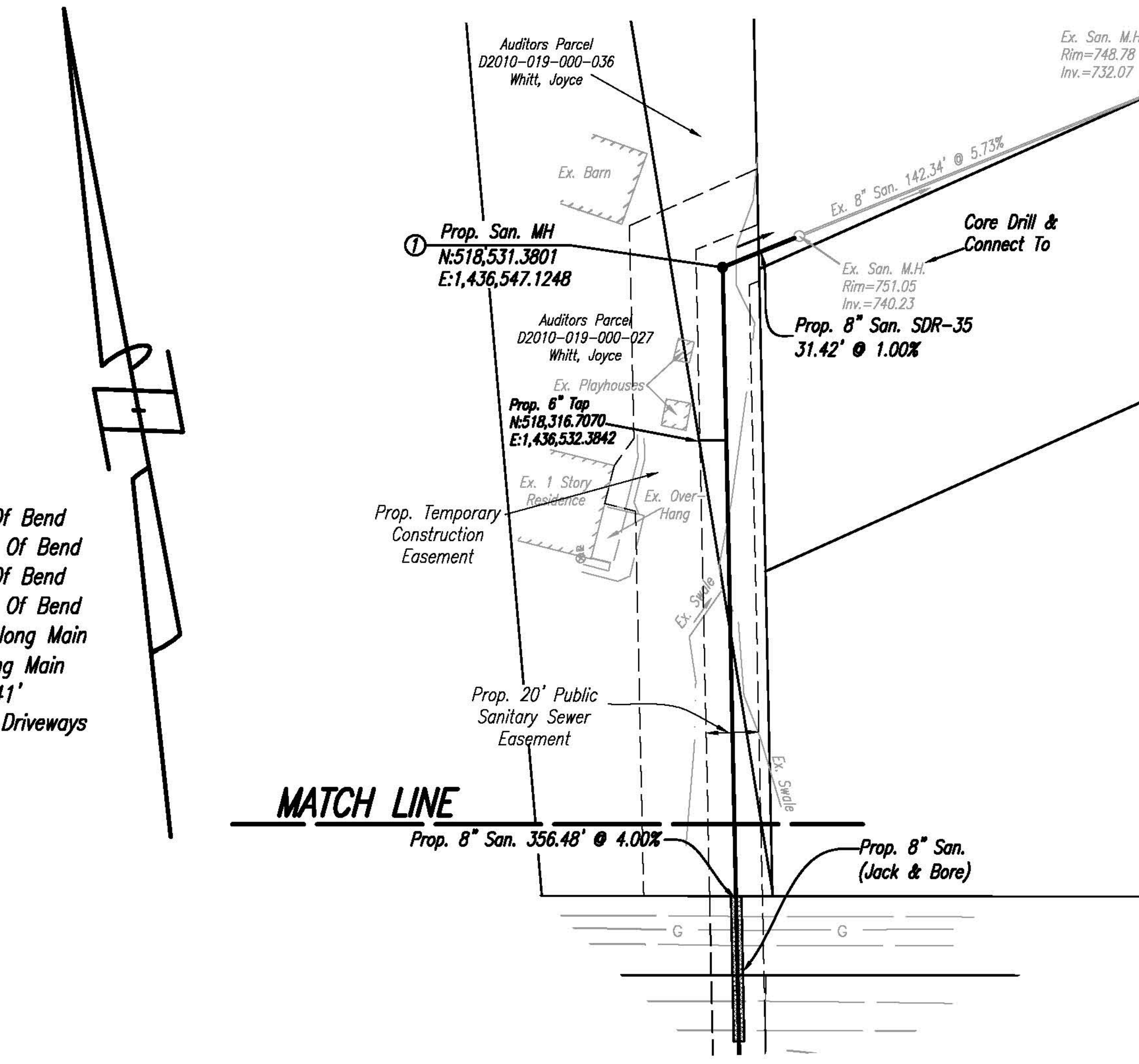
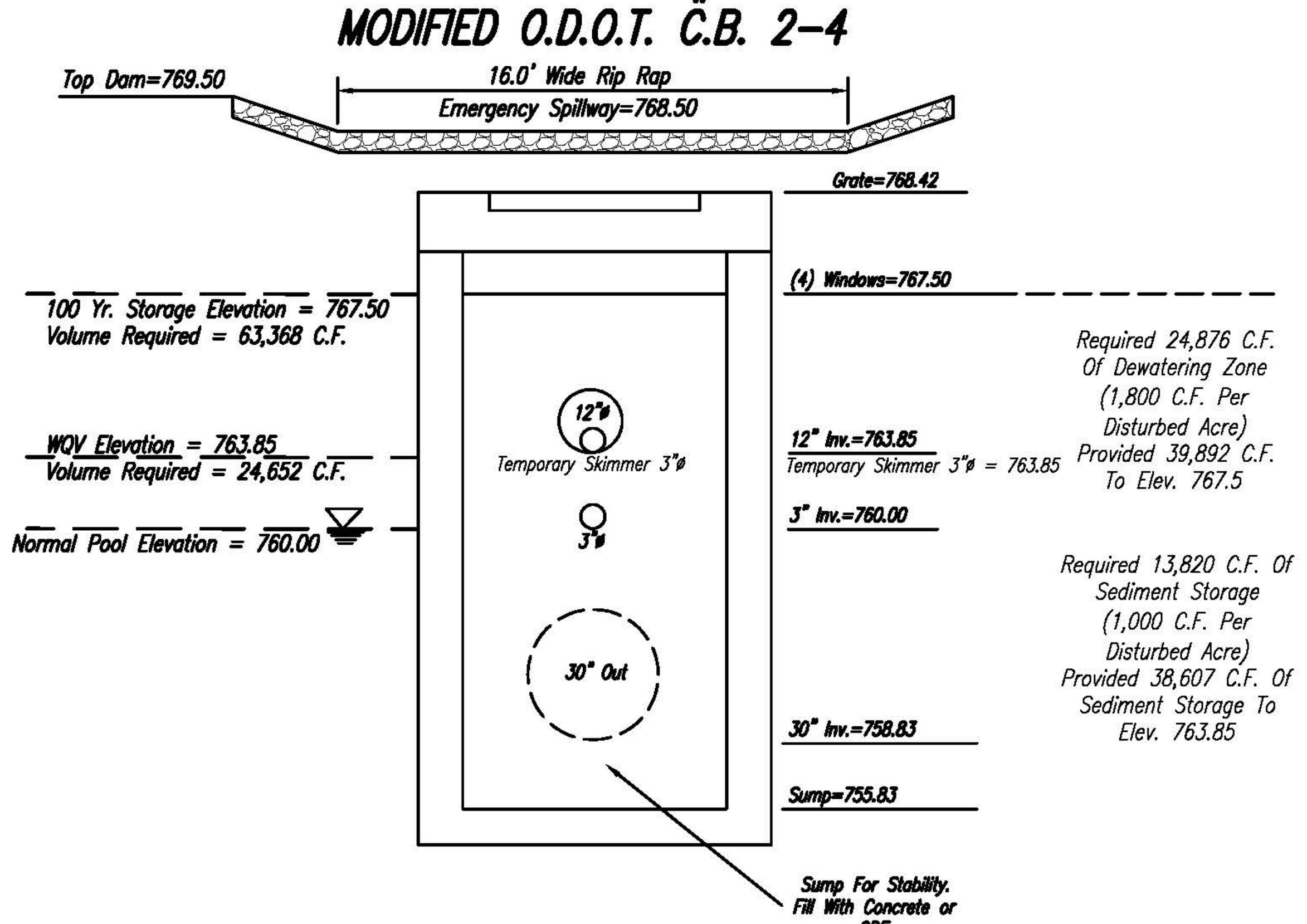


Restrained Joint Requirements

8"x8" Tee – 51' Along 8" Main
8"x6" Tee – 36' Along 6" Main
8"x6" Reducer – 23' Along 6" Main
11 1/4° Bends (8") – 8' Each Side Of Bend
22 1/2° Bends (8") – 16' Each Side Of Bend
11 1/4° Bends (6") – 6' Each Side Of Bend
22 1/2° Bends (6") – 12' Each Side Of Bend
45° Vertical Bends Down (8") – 34' Along Main
45° Vertical Bends Up (8") – 24' Along Main
Dead End/Temporary Fire Hydrant – 41'
**No Water Services Are To Be Under Driveways



DETENTION STRUCTURE #300 DETAIL
MODIFIED O.D.O.T. C.B. 2-4



Required 24,876 C.F. Of Dewatering Zone (1,800 C.F. Per Disturbed Acre) Provided 39,892 C.F. To Elev. 767.5

Required 13,820 C.F. Of Sediment Storage (1,000 C.F. Per Disturbed Acre) Provided 38,607 C.F. Of Sediment Storage To Elev. 763.85

RETENTION FACILITY TABLE

HIGHWATER ELEVATION	PRE-DEV Q1 (C.F.S.)	QCR (C.F.S.) 10-YEAR STORM	POST-DEV Q100 (C.F.S.)	REQUIRED STORAGE VOLUME (C.F.)
767.50	7.16	31.72	54.84	63,368

OEPA WATER QUALITY VOLUME
WQv STORAGE = 24,652

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

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8-15-18, BCEO Revisions & Bid Set

DWG: 18-0013DSGN\DL-DSGN

Sheet Title: UTILITY PLAN

Project Title: ARBOR PARK
SECTION-21, TOWN-3, RANGE-3
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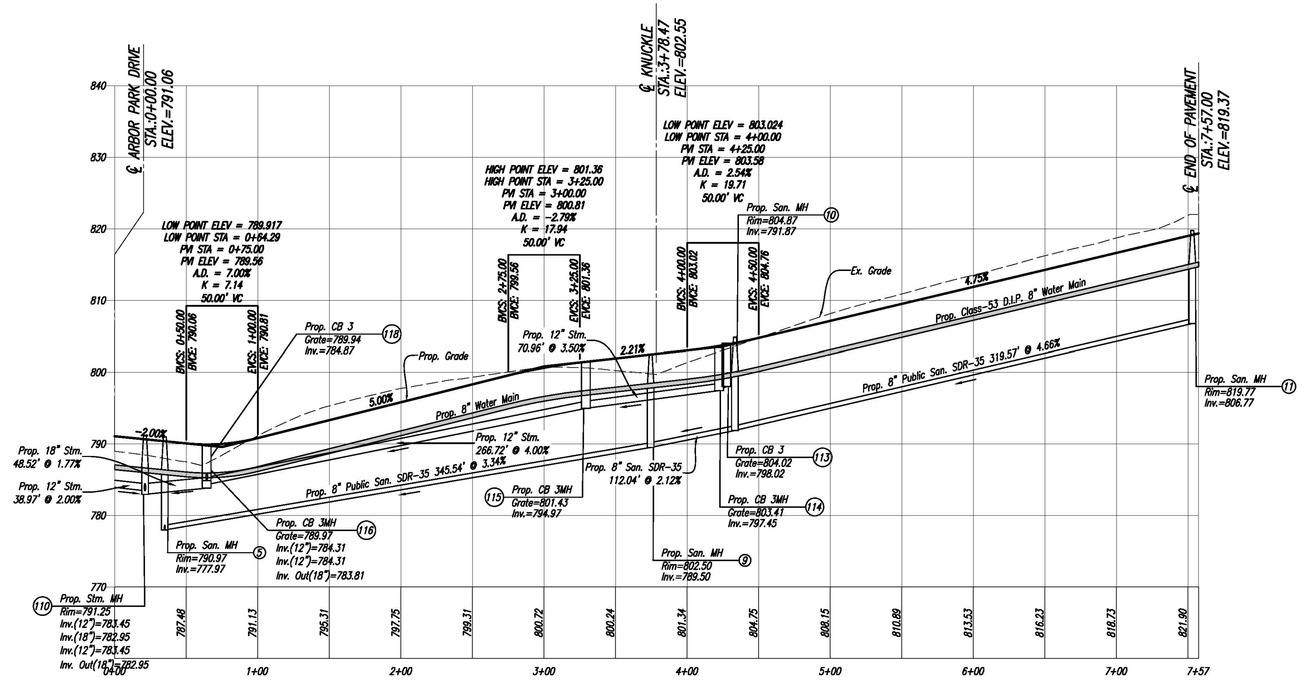
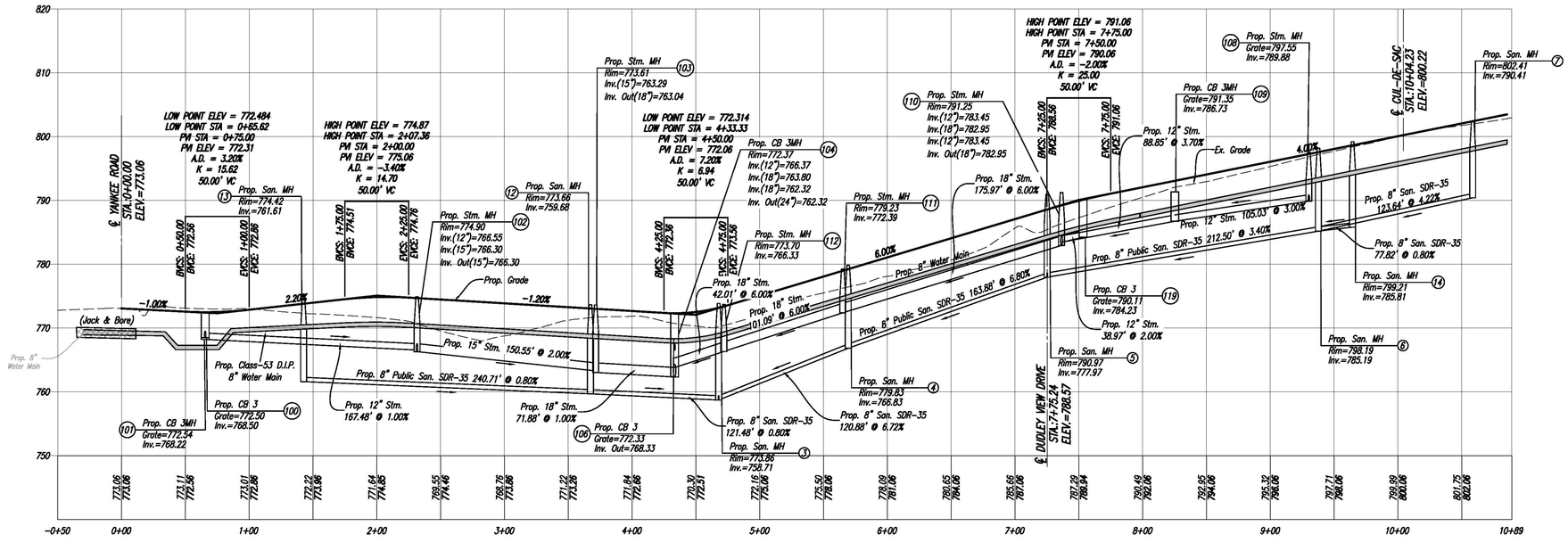


DUDLEY VIEW DRIVE/PARKLAND AVENUE



ARBOR PARK DRIVE

GRAPHIC SCALE

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GRAPHIC SCALE

0 10 20

(IN FEET)
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REVISIONS
6-7-18 Water & Sewer Revisions
6-15-18 EPCO Revisions & Bld Set

DWG: 18-0013DSGN\DL-DSGN

Sheet Title: PROFILE SHEET

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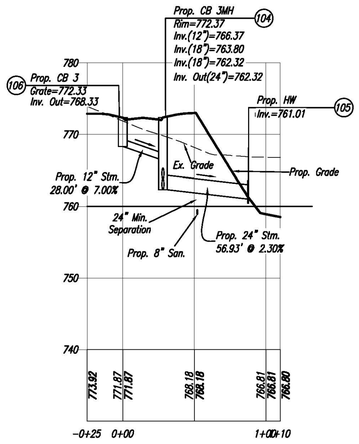
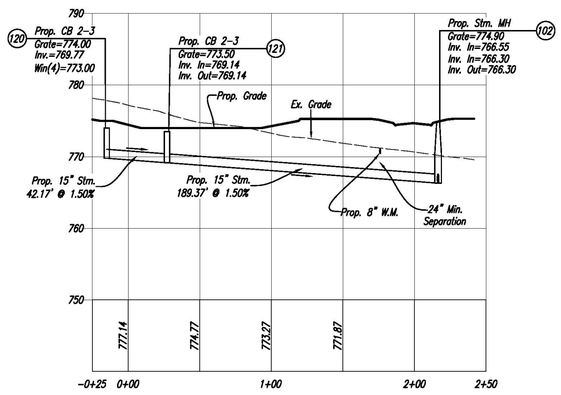
9 / 10



PROP. STM #105 TO #106



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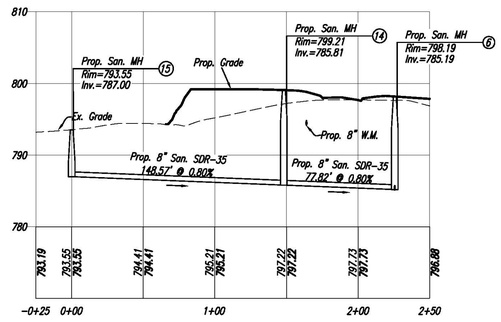
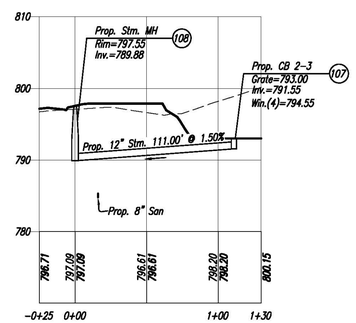


PROP. SAN. MH#15 TO MH#6



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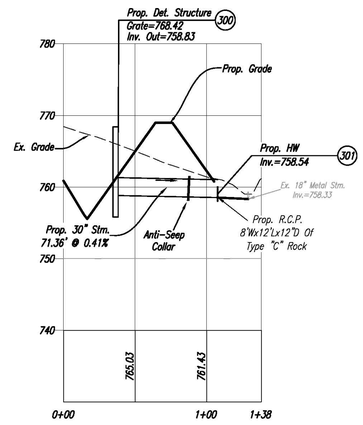
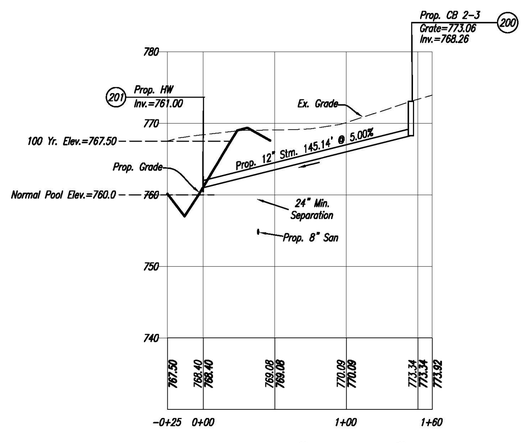


STORM SEWER FROM
D.S.#300 TO HW#301



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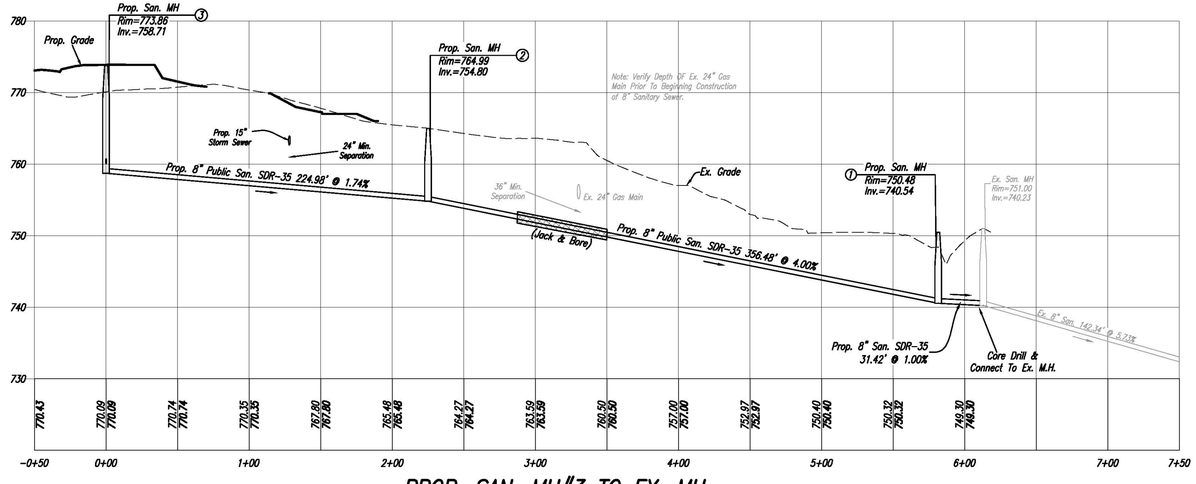

PROP. SAN. MH#3 TO EX. MH

GRAPHIC SCALE

(IN FEET)
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GRAPHIC SCALE

(IN FEET)
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