CARRIAGE HILL
SECTION 7

SECTION 32, TOWN 3, RANGE 3
LIBERTY TOWNSHIP
BUTLER COUNTY, OHIO

SETBACKS

SECTION	LOTS	MINIMUM WIDTH	TYPICAL AREA	FRONT	SIDE	TOTAL BOTH SIDES	REAR
7	129-147	60'	8,000 S.F.	20'	-	8'	20'
7	148-157	50'	6,000 S.F.	20	-	8'	20'
7	164-173	50'	6,000 S.F.	20	-	8'	20'

GENERAL NOTES

ALL WORK SHALL BE DONE UNDER THE SUPERVISION OF THE BUTLER COUNTY ENGINEER AND THE AUTHORITY HAVING RESPONSIBILITY FOR UTILITIES IN THE AREA AND IN ACCORDANCE WITH THE RULES AND REGULATIONS FOR SUBDIVISION.

STORM SEWERS SHALL BE A MATERIAL WITH A MANUFACTURER'S MANNINGS "N" OF 0.011 OR LOWER AND A MATERIAL AS NOTED IN APPENDIX D, TABLE D-6 IN THE BUTLER COUNTY SUBDIVISION REGULATIONS ADOPTED NOVEMBER 24, 1997. (NOTE – CORRUGATED METAL PIPE NOT INCLUDED)

STEPS SHALL BE INSTALLED IN CATCH BASINS AND MANHOLES IN EXCESS OF FOUR FEET.

CONSTRUCTION WORK SHALL BE IN ACCORDANCE WITH THE OHIO DEPARTMENT OF TRANSPORTATION "CONSTRUCTION AND MATERIAL SPECIFICATIONS" ODOT 1997 STANDARDS OR BUTLER COUNTY REQUIREMENTS AND STANDARDS FOR SUBDIVISIONS. WHEN IN CONFLICT, THE COUNTY REQUIREMENTS SHALL PREVAIL.

SUMP COLLECTOR LINES SHALL BE CONSTRUCTED SDR 35 PVC, ARMCO 2000 OR APPROVED EQUAL.

A PRE-CONSTRUCTION MEETING IS REQUIRED WITH THE BUTLER COUNTY ENGINEER'S OFFICE PRIOR TO THE START OF CONSTRUCTION.

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

THE UPSTREAM TERMINUS OF THE SANITARY SEWER LATERALS SHOWN HERE ON ARE TO BE 12 FEET BELOW OF THE ELEVATION OF THE BACK OF CURB.

WATER MAIN SHALL HAVE 4' MINIMUM DEPTH TO TOP OF PIPE.
ALL WATER MAINS TO BE DUCTILE IRON PIPE, CL. 53 AWWA C-151.
WATER MAIN MATERIALS, VALVES, FIRE HYDRANTS, FITTINGS, APPURTENANCES, AND INSTALLATION TO BE AS BUTLER COUNTY SPECIFICATIONS, AND SHALL HAVE RESTRAINED JOINTS. ALL WATER MAIN VALVES TO HAVE A MINIMUM DEPTH OF 2.5 AND A MAXIMUM OF 4.0' FROM PROPOSED GRADE TO THE TOP OF THE VALVE OPERATING NUT.

WATER MAIN SHALL HAVE 10' HORIZONTAL, & 18" VERTICAL SEPARATION (OUTSIDE EDGE TO EDGE) WITH ALL OTHER PIPE.

ALL DOWNSPOUT LINES SHALL BE ON SPLASHBLOCKS AND MAY NOT BE CONNECTED TO THE CURB.

ALL TRENCHES WITHIN THE RIGHT-OF-WAY AND UTILITY EASEMENTS SHALL BE COMPACTED AND BACKFILLED IN ACCORDANCE WITH ITEM 203 AND 603 IN THE CURRENT OHIO DEPARTMENT OF TRANSPORTATION CONSTRUCTION AND MATERIAL SPECIFICATIONS MANUAL.

THE DEVELOPER SHALL BE RESPONSIBLE FOR THE INSTALLATION OF CONDUITS OF THE FULL WIDTH OF THE PUBLIC RIGHT-OF-WAY AS CALLED FOR ON THE TYPICAL SECTION FOR USE BY THE ELECTRIC, TELEPHONE, AND CABLE TELEVISION SERVICES. THE DEVELOPER SHALL COORDINATE THE LOCATION OF THE LINES WITH EACH UTILITY COMPANY.

ALL ELECTRICAL TRANSFORMERS SHALL BE LOCATED SO THAT THEY DO NOT INTERFERE WITH EXISTING MANHOLES OR WATER MAIN APPURTENANCES.

STORM SEWER PIPE SHALL BE TYPE "B" & "C" CONDUIT, 707.42 PVC, ALL DIA. (CONTECH A200 OR EQUAL), 707.33 PVC, UP TO & INCLUDING 24" DIA (HANCOR, ADS, OR EQUAL), 707.01 CMP, ALL DIA., 706.02, REINFORCED CONCRETE PIPE, ALL DIA.

BUTLER COUNTY WATER & SEWER DOES NOT ACCEPT ANY RESPONSIBILITY FOR THE RELOCATION, REPAIR OR REPLACEMENT OF ANY OTHER UTILITY INSTALLED WITHIN FIVE (5) FEET OF THE CENTERLINE OF ANY SANITARY MAIN SEWER OR WATER 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 EASEMENT AREAS FOR THE PUBLIC UTILITIES. SHOULD THIS OCCUR, THE PROPERTY OWNER WILL BE HELD RESPONSIBLE FOR THE PROTECTION AND REPAIR OF AND FOR PROVIDING ACCESS TO ANY CURB STOPS, METER PITS, MANHOLES, CLEANOUTS, 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.

LOCATION OF EXISTING UTILITIES SHOWN ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY GROUND CONDITIONS AND EXISTING UTILITIES PRIOR TO START OF CONSTRUCTION.

THE EXISTING UTILITIES SHOWN ARE FOR CONTRACTOR'S CONVENIENCE ONLY. THERE MAY BE OTHER UTILITIES NOT SHOWN ON THESE PLANS. THE OWNER ASSUMES NO RESPONSIBILITY FOR THE LOCATION OF ALL UTILITIES WITHIN THE LIMITS OF THE WORK. ALL DAMAGE MADE TO EXISTING UTILITIES BY THE CONTRACTOR SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

BUTLER COUNTY ASSUMES NO MAINTENANCE RESPONSIBILITY FOR PRIVATE DRIVES.

BUTLER COUNTY WILL NOT BE RESPONSIBLE FOR ANY PAVEMENT OR STORM SEWER REPAIRS RESULTING FROM WATER MAIN REPAIRS. BUTLER COUNTY ALSO WILL NOT BE RESPONSIBLE FOR ADJUSTING VALVES, FIRE HYDRANTS, METER PITS, ETC. AS A RESULT OF GRADE CHANGES. THE GRANTOR SHALL BE RESPONSIBLE FOR THE PROPER ADJUSTMENT OF VALVES, FIRE HYDRANTS, METER PITS, ETC., TO THE SATISFACTION OF BUTLER COUNTY, DUE TO GRADE CHANGES, PAVING, REPAVING, ETC., INITIATED BY THE GRANTOR.

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 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 SANITARY ENGINEER.

SANITARY SEWER LATERALS, WHICH SHALL INCLUDE ALL PIPE AND APPURTENANCES FROM THE BUILDING TO THE PUBLIC SEWER MAIN, AND CONNECTION TO THE PUBLIC SEWER MAIN SHALL BE CONSIDERED PRIVATE AND THE RESPONSIBILITY OF THE PROPERTY OWNER TO MAINTAIN. THE CONNECTION TO THE SEWER WOULD BE ANY PIPING THAT EXTENDS OUT FROM THE MAIN BARREL OF THE SEWER MAIN.

ALL GROUND SURFACE AREAS THAT HAVE BEEN EXPOSED OR LEFT BARE AS A RESULT OF CONSTRUCTION AND ARE TO FINAL GRADE AND ARE TO REMAIN SO, SHALL BE SEEDED AND MULCHED AS SOON AS PRACTICAL IN ACCORDANCE WITH STATE OF OHIO SPECIFICATIONS, ITEM 659.

THE CONTRACTOR SHALL SEED AND MULCH DISTURBED GRASS AREAS WITH:
3 LBS. WHEAT OR RYE PER 1000 SQ. FT.
10 LBS. 12-12-12 FERTILIZER PER 1000 SQ. FT.
2 OR 3 BALES OF STRAW PER 1000 SQ. FT.

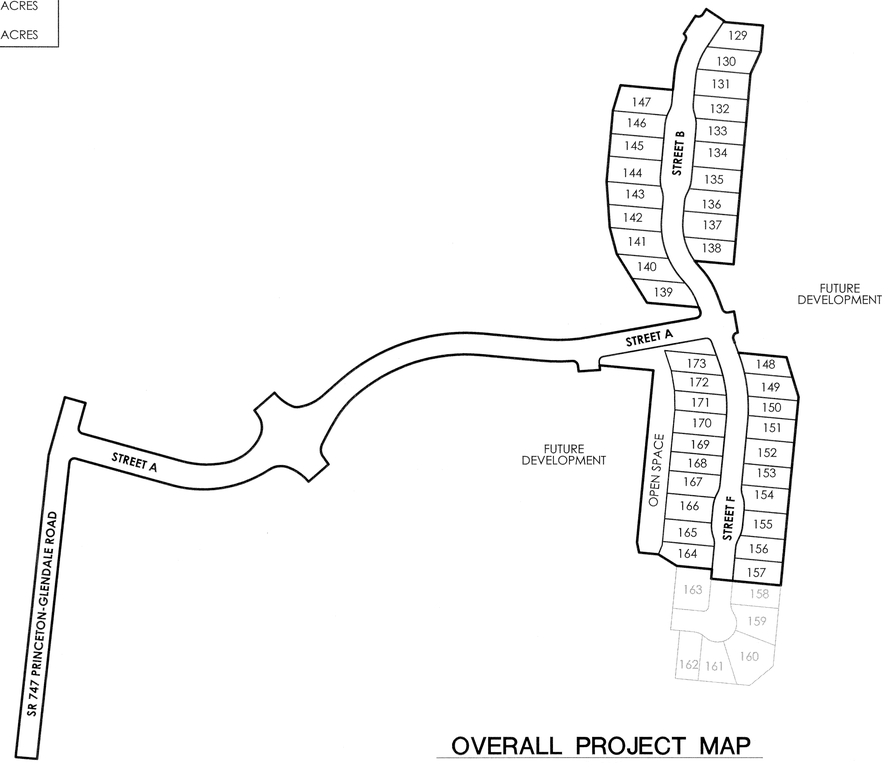
THE CONTRACTOR SHALL ALSO PROVIDE OTHER EROSION CONTROL MEASURES AS MAY BE REQUIRED BY BUTLER COUNTY ENGINEER DURING THE CONSTRUCTION PHASE.

SEEDING-- SPECIFICATIONS AT DETENTION BASIN:

RED FESCUE	1 LB. PER 1000 SQ. FT
KENTUCKY BLUEGRASS	1/2 LB. PER 1000 SQ. FT.
PERENNIAL RYEGRASS	1/2 LB. PER 1000 SQ. FT.

FERTILIZER: 12 – 12 – 12
MULCH – 3 BALES OF STRAW PER 1000 SQ. FT.
MULCH TIE DOWN: LIQUID ASPHALT (R.C. 70, 25 OR 800) 40 GALS. PER 1000 SQ. YDS. OR PLASTIC MULCH NETTING, STAPLED IN PLACE.
SOD: TO BE STAKED IN PLACE.

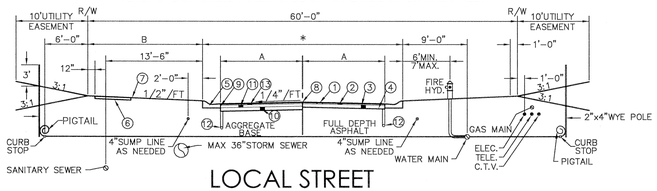
SECTION 7	
PROJECT AREA	18.28 ACRES
AREA IN BUILDING LOTS	9.51 ACRES
AREA IN OPEN SPACE LOTS	1.12 ACRES
AREA IN R/W	7.65 ACRES



OVERALL PROJECT MAP

1"=200'

NOTE: 6' CONCRETE WALK TO BE ON ONE SIDE OF LOCAL STREET.



LOCAL STREET

DIMENSION SCHEDULE		
*	28 FT	25 FT
A	11'-6"	10'-0"
B	16'-0"	17'-6"

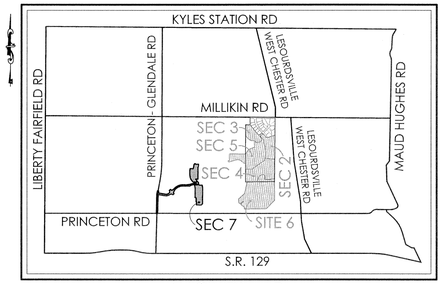
① 1"SURFACE COURSE OF ITEM 448 ASPHALTIC CONCRETE, SEE NOTE #4
② 2 1/2" LEVELING COURSE OF ITEM 448 ASPHALTIC CONCRETE
③ 6" BASE COURSE OF ITEM 301 BITUMINOUS AGGREGATE BASE
④ COMPACTED SUBGRADE, ITEM 203.13
⑤ ROLL TYPE CURB & GUTTER, ITEM 609 (BUTLER CO. STANDARD C-1)
⑥ 4" THICK CLASS "C" CONCRETE WALK, 6' WIDE, ITEM 608
WALK TO BE 1/2"HIGHER THAN SOD
⑦ SEEDING & 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 THE 301 BITUMINOUS AGGREGATE BASE.
ALSO TO BE APPLIED TO THE CURB JOINT AFTER THE INSTALLATION OF 448 LEVELING COURSE
⑩ 6" BASE COURSE OF ITEM 304 AGGREGATE BASE
⑪ 5" BASE COURSE OF ITEM 301 BITUMINOUS AGGREGATE BASE
⑫ ITEM 605, 4" UNDERDRAIN
CONNECT UNDERDRAIN TO FRONT FACE OF NEAREST CATCH BASIN
⑬ 1 1/2"LEVELING COURSE OF ITEM 448 ASPHALTIC CONCRETE

SERVICES

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"

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 NINE (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.



VICINITY MAP
N.T.S.

APPLICANT
LIBERTY LAND COMPANY, LLC.
6306 PRINCETON-GLENDALE ROAD
LIBERTY TOWNSHIP, OHIO 45011

OWNERS
LIBERTY LAND COMPANY, LLC.
6306 PRINCETON-GLENDALE ROAD
LIBERTY TOWNSHIP, OHIO 45011

TERRY LAND INVESTMENT, LLC
6306 PRINCETON-GLENDALE ROAD
LIBERTY TOWNSHIP, OHIO 45011

NANCY LAUREN TERRY
6312 PRINCETON-GLENDALE ROAD
LIBERTY TOWNSHIP, OHIO 45011

PHILLIP RANDY & PATRICIA A. TERRY
6306 PRINCETON-GLENDALE ROAD
LIBERTY TOWNSHIP, OHIO 45011

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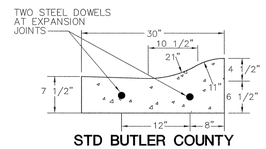

STD BUTLER COUNTY CURB & GUTTER
N. T. S.

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.

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OHIO UTILITIES PROTECTION SERVICE (OUPS)
CALL...800-925-0988 (Toll Free)
OHIO OIL & GAS PRODUCERS UNDERGROUND PROTECTION SERVICE (OGPUPS)
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3700 Park 42 Drive ▪ Suite 190B
Cincinnati, Ohio 45241-2097
Tel 513.759.0004 ▪ Fax 513.563.7099
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Drawn By	NAK
Project Mgr.	RA
Drawing File	04476014-IMP-SECTION 7
X-Reference Files	princeton-Adjusted-to-Ground-10-24-11
Date	06/21/13

No.	Revision/Issue	By	Date

CARRIAGE HILL
SECTION 7

SECTION 32, TOWN 3, RANGE 3
LIBERTY TOWNSHIP
BUTLER COUNTY, OHIO

Sheet Title: COVER SHEET
Project No.: 04476.01
Scale: AS NOTED
Sheet No.: 1/15
File No.: 04-476

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NO DRIVEWAY MAY BE PLACED OVER WATER SERVICE.
NO DRIVEWAY MAY BE PLACED OVER SANITARY SEWER MANHOLE.

R.J.P. = RESTRAINED JOINT PIPE

LENGTH OF PIPE TO BE RESTRAINED IN EACH DIRECTION FROM CENTERLINE OF BEND, EXCEPT AS NOTED BELOW

DESCRIPTION	8"	10"
11 1/4° UP BEND	6'	7'
11 1/4° DOWN BEND	11'	13'
22 1/2° UP BEND	12'	14'
22 1/2° DOWN BEND	22'	26'
45° UP BEND	24'	30'
45° DOWN BEND	45'	55'
DEAD END	54'	67'

VERTICAL

LENGTH OF PIPE TO BE RESTRAINED IN EACH DIRECTION FROM CENTERLINE OF BEND, EXCEPT AS NOTED BELOW

DESCRIPTION	8"	10"
90° BEND	59'	72'
45° BEND	24'	30'
22 1/2° BEND	12'	14'
11 1/4° BEND	6'	7'
10" x 8" TEE	54' BRANCH	
8" x 6" TEE	41' BRANCH	

HORIZONTAL

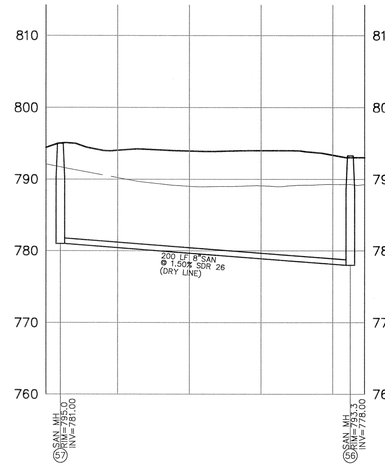
PIPE RESTRAINTS SCHEDULE FOR JOINTS

NOTE: HIGH WATER TABLES ARE APPARENT IN THIS AREA. IF BASEMENTS ARE CONSTRUCTED, IT IS THE RESPONSIBILITY OF THE BUILDER TO TAKE SPECIAL PRECAUTION TO ENSURE THE BASEMENTS STAY DRY.

UNLESS OTHERWISE DESIGNATED ON THE RECORD PLAT, A (10) FOOT PRIVATE DRAINAGE EASEMENT SHALL EXIST ALONG ALL COMMON LOT LINES. THE COMMON LOT LINE BEING THE CENTERLINE OF SAID EASEMENT.

CURVE TABLE					
Curve #	RADIUS	LENGTH	CHD LENGTH	CHD BEARING	DELTA
C1	14.00'	21.99'	19.80'	S29°28'08"E	090°00'00"
C2	270.00'	124.50'	123.40'	S87°40'45"E	026°25'14"
C3	134.00'	126.20'	121.59'	N52°07'51"E	053°57'35"
C4	59.00'	63.54'	60.51'	N05°42'05"W	061°42'17"
C5	230.00'	16.51'	16.50'	N34°29'52"W	004°06'42"
C6	134.00'	62.12'	61.56'	S52°29'38"E	026°33'33"
C7	134.00'	62.12'	61.56'	S52°29'38"E	026°33'33"
C8	34.00'	20.04'	19.75'	S82°39'20"E	033°45'50"
C9	470.00'	127.13'	126.75'	N87°39'20"E	015°29'54"
C10	14.00'	24.43'	21.45'	N29°54'23"E	100°00'00"
C11	14.00'	21.17'	19.21'	N12°46'04"W	086°37'33"
C12	14.00'	21.99'	19.80'	N78°55'09"E	090°00'00"
C13	170.00'	22.00'	21.99'	S39°51'54"E	007°24'57"
C14	14.00'	19.55'	18.00'	S60°05'37"E	080°00'00"
C15	14.00'	24.43'	21.45'	S29°54'23"W	100°00'00"

LINE TABLE		
Line #	BEARING	LENGTH
L1	N48°36'42"E	74.47'
L2	N20°05'37"W	12.00'
L3	N05°04'10"E	40.15'
L4	N33°55'09"E	18.31'
L5	S56°04'51"E	60.00'
L6	S33°55'09"W	3.11'



SANITARY SEWERS 56-57

1"=50' HOR. / 1"=10' VERT.

SEE SHEET 3 FOR CONTINUATION

UNDERGROUND UTILITIES

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Drawn By NAK Project Mgr. RA
Drawing File 04476014-IMP-00-SECTION 7
X-Reference Files princeton-Adjusted-to-Ground-10-24-11
Date 06/21/13

No.	Revision/Issue	By	Date

CARRIAGE HILL
SECTION 7

SECTION 32, TOWN 3, RANGE 3
LIBERTY TOWNSHIP
BUTLER COUNTY, OHIO

Sheet Title
IMPROVEMENT PLAN

Project No.	04476.01
Scale	1"=50'
Sheet No.	2/15
File No.	04-476

NO DRIVEWAY MAY BE PLACED OVER WATER SERVICE.
NO DRIVEWAY MAY BE PLACED OVER SANITARY SEWER MANHOLE.

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LENGTH OF PIPE TO BE RESTRAINED IN EACH DIRECTION FROM CENTERLINE OF BEND, EXCEPT AS NOTED BELOW

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VERTICAL **HORIZONTAL**

PIPE RESTRAINTS SCHEDULE FOR JOINTS

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C13	170.00'	22.00'	21.99'	S39°51'54"E	007°24'57"
C14	14.00'	19.55'	18.00'	S60°05'37"E	080°00'00"
C15	14.00'	24.43'	21.45'	S29°54'23"W	100°00'00"

LINE TABLE

Line #	BEARING	LENGTH
L1	N48°36'42"E	74.47'
L2	N20°05'37"W	12.00'
L3	N05°04'10"E	40.15'
L4	N33°55'09"E	18.31'
L5	S56°04'51"E	60.00'
L6	S33°55'09"W	3.11'

SCALE IN FEET
0 25 50 100 150

UNDERGROUND UTILITIES
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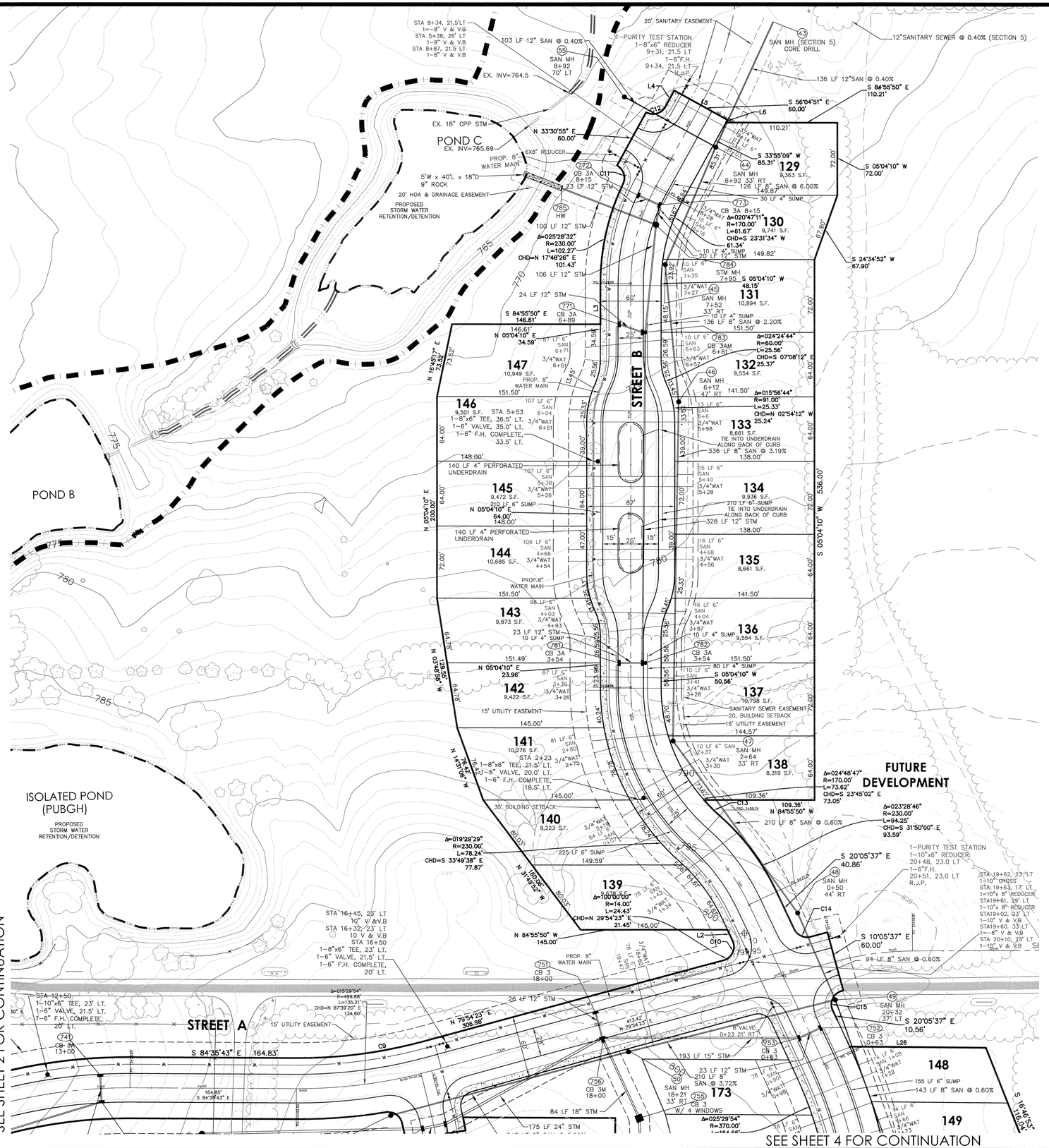

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Drawn By NAK Project Mgr. RA
Drawing File 04476014-IMP-00-SECTION 7
X-Reference Files princeton-Adjusted-to-Ground-10-24-11
Date 06/21/13

No.	Revision/Issue	By	Date

CARRIAGE HILL
SECTION 7

SECTION 32, TOWN 3, RANGE 3
LIBERTY TOWNSHIP
BUTLER COUNTY, OHIO

Sheet Title
IMPROVEMENT PLAN

Project No. 04476.01
Scale 1"=50'
Sheet No. 3/15
File No. 04-476

NO DRIVEWAY MAY BE PLACED OVER WATER SERVICE.
NO DRIVEWAY MAY BE PLACED OVER SANITARY SEWER MANHOLE.

R.J.P. = RESTRAINED JOINT PIPE

LENGTH OF PIPE TO BE RESTRAINED IN EACH DIRECTION FROM CENTERLINE OF BEND, EXCEPT AS NOTED BELOW

DESCRIPTION	8"	10"
11 1/4° UP BEND	6'	7'
11 1/4° DOWN BEND	12'	13'
22 1/2° UP BEND	11'	14'
22 1/2° DOWN BEND	24'	26'
45° UP BEND	24'	30'
45° DOWN BEND	50'	55'
DEAD END	61'	67'

LENGTH OF PIPE TO BE RESTRAINED IN EACH DIRECTION FROM CENTERLINE OF BEND, EXCEPT AS NOTED BELOW

DESCRIPTION	8"	10"
90° BEND	57'	72'
45° BEND	24'	30'
22 1/2° BEND	11'	14'
11 1/4° BEND	7'	7'
10" x 8" TEE	54' BRANCH	
8" x 6" TEE	41' BRANCH	

VERTICAL **HORIZONTAL**

PIPE RESTRAINTS SCHEDULE FOR JOINTS

NOTE: HIGH WATER TABLES ARE APPARENT IN THIS AREA. IF BASEMENTS ARE CONSTRUCTED, IT IS THE RESPONSIBILITY OF THE BUILDER TO TAKE SPECIAL PRECAUTION TO ENSURE THE BASEMENTS STAY DRY.

UNLESS OTHERWISE DESIGNATED ON THE RECORD PLAT, A (10) FOOT PRIVATE DRAINAGE EASEMENT SHALL EXIST ALONG ALL COMMON LOT LINES. THE COMMON LOT LINE BEING THE CENTERLINE OF SAID EASEMENT.

CURVE TABLE					
Curve #	RADIUS	LENGTH	CHD LENGTH	CHD BEARING	DELTA
C1	14.00'	21.99'	19.80'	S29°28'08"E	090°00'00"
C2	270.00'	124.50'	123.40'	S87°40'45"E	026°25'14"
C3	134.00'	126.20'	121.59'	N52°07'51"E	053°57'35"
C4	59.00'	63.54'	60.51'	N05°42'05"W	061°42'17"
C5	230.00'	16.51'	16.50'	N34°29'52"W	004°06'42"
C6	134.00'	62.12'	61.56'	S52°29'38"E	026°33'33"
C7	134.00'	62.12'	61.56'	S52°29'38"E	026°33'33"
C8	34.00'	20.04'	19.75'	S82°39'20"E	033°45'50"
C9	470.00'	127.13'	126.75'	N87°39'20"E	015°29'54"
C10	14.00'	24.43'	21.45'	N29°54'23"E	100°00'00"
C11	14.00'	21.17'	19.21'	N12°46'04"W	086°37'33"
C12	14.00'	21.99'	19.80'	N78°55'09"E	090°00'00"
C13	170.00'	22.00'	21.99'	S39°51'54"E	007°24'57"
C14	14.00'	19.55'	18.00'	S60°05'37"E	080°00'00"
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L6	S33°55'09"W	3.11'

SCALE IN FEET
0 25 50 100 150

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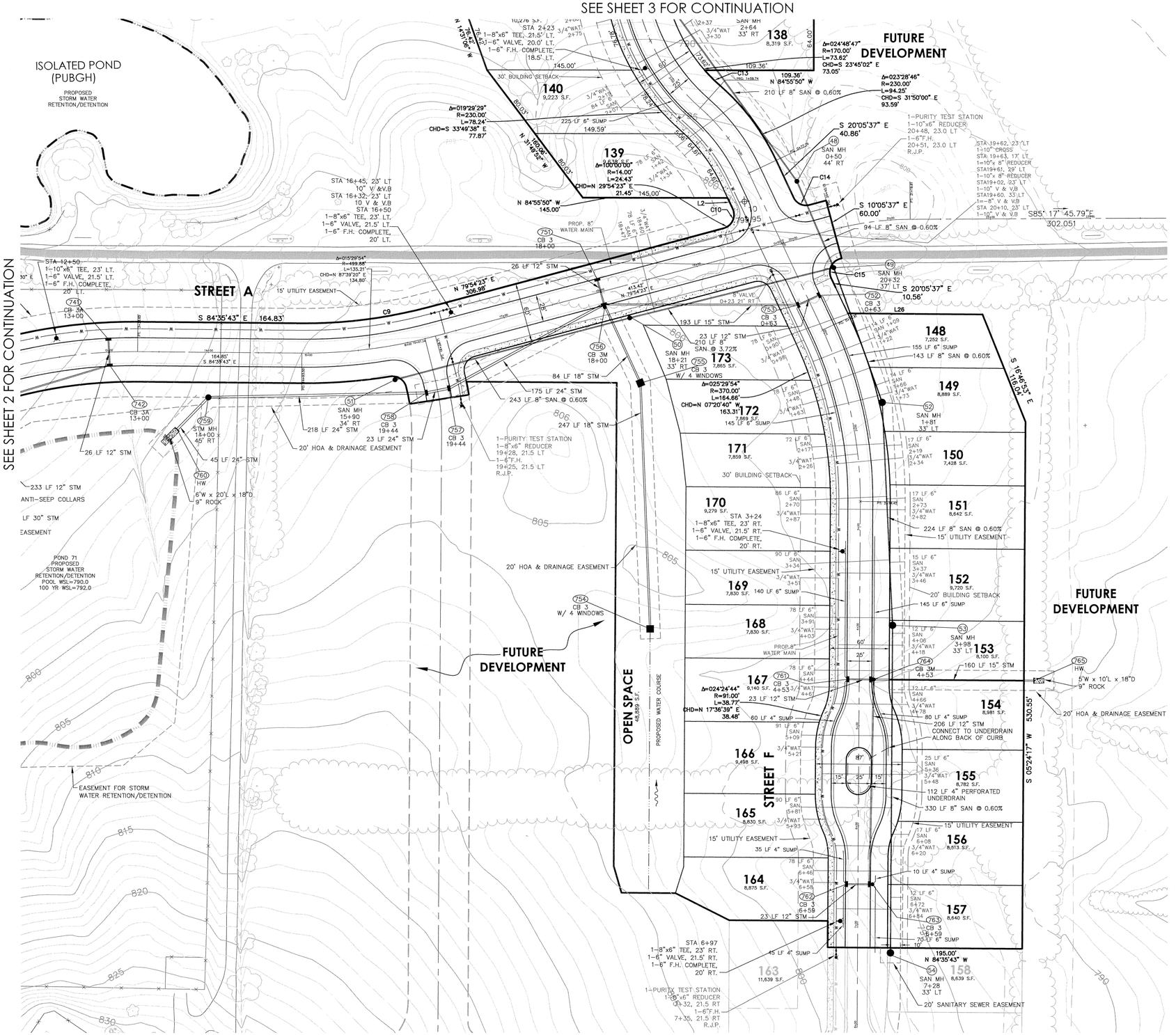

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CARRIAGE HILL
SECTION 7

SECTION 32, TOWN 3, RANGE 3
LIBERTY TOWNSHIP
BUTLER COUNTY, OHIO

Sheet Title
IMPROVEMENT PLAN

Project No. 04476.01
Scale 1"=50'
Sheet No. 4/15
File No. 04-476

STORM WATER QUALITY VOLUME REQUIREMENT

POND 71 = 27.7 ACRES
RUNOFF COEFFICIENT = 0.4
PRECIPITATION DEPTH = 0.75 INCHES
VOLUME= 27.7 x 0.4 x 0.75 x 43560 / 12 = 30,165 CUBIC FEET
LESS DEDUCTION FOR WET PONDS
30,165 – (0.25 x 30,165) = 22,624 CUBIC FEET

STORM WATER QUALITY VOLUME AVAILABLE
IN POND 71 = 31,000 CUBIC FEET

STORM WATER QUALITY VOLUME REQUIREMENT

POND 72 = 17.1 ACRES
RUNOFF COEFFICIENT = 0.35
PRECIPITATION DEPTH = 0.75 INCHES
VOLUME= 17.1 x 0.35 x 0.75 x 43560 / 12 = 16,294 CUBIC FEET
LESS DEDUCTION FOR WET PONDS
16,294 – (0.25 x 16,294) = 12,221 CUBIC FEET

STORM WATER QUALITY VOLUME AVAILABLE
IN POND 72 = 17,000 CUBIC FEET

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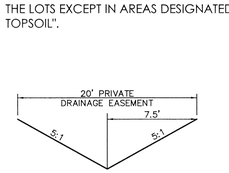

TYPICAL SECTION
EMERGENCY FLOOD ROUTE
N.T.S.

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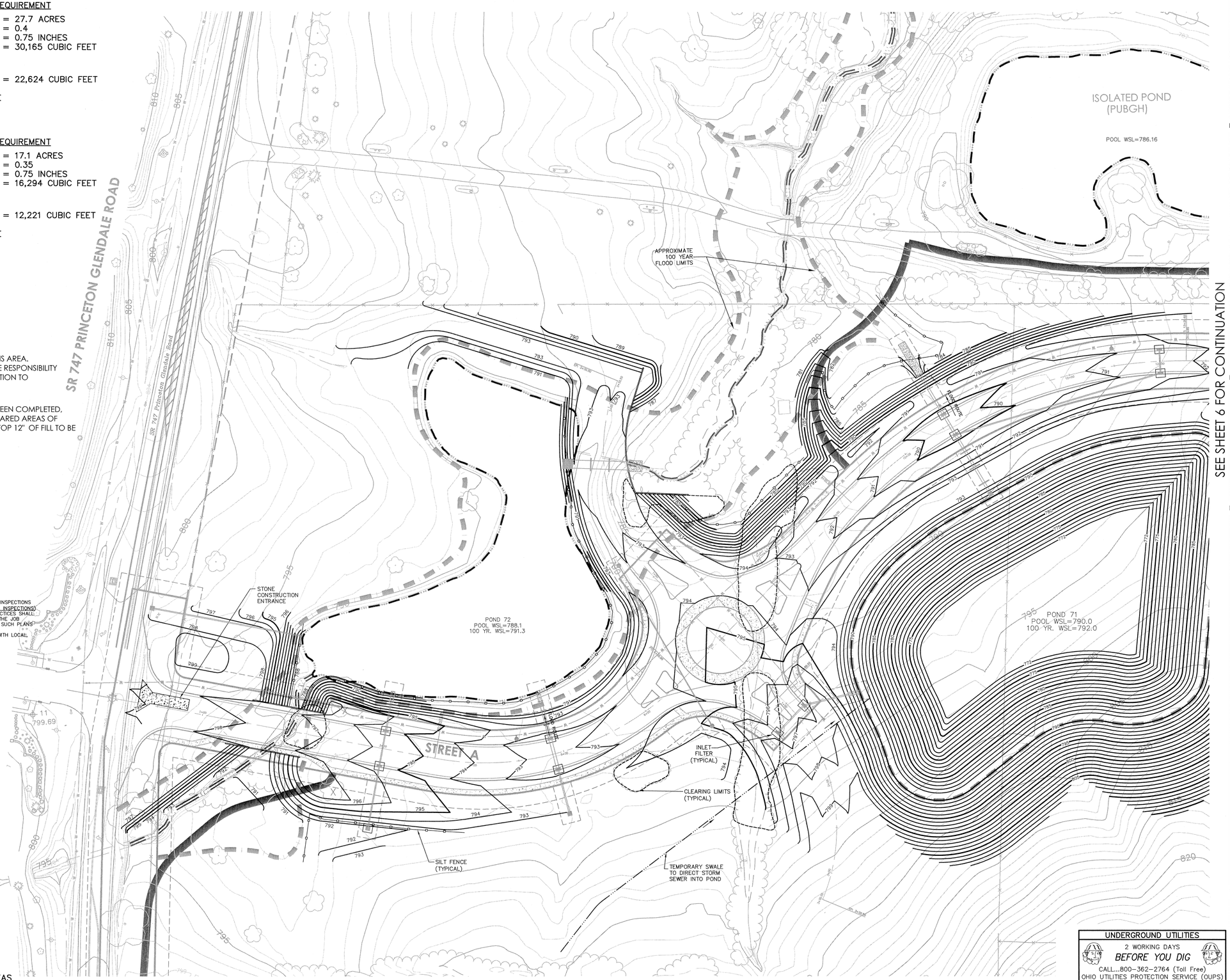

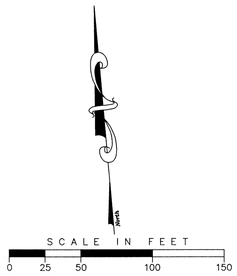

ESTABLISH VEGETATION ON ALL BARE AREAS AS PER O.E.P.A. N.P.D.E.S. REGULATIONS.

CONTRACTOR IS RESPONSIBLE FOR N.P.D.E.S. INSPECTIONS DURING CONSTRUCTION PERIOD.

SEE SHEET 6 FOR CONTINUATION

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X-Reference Files princeton-Adjusted-to-Ground-10-24-11
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CARRIAGE HILL
SECTION 7

SECTION 32, TOWN 3, RANGE 3
LIBERTY TOWNSHIP
BUTLER COUNTY, OHIO

Sheet Title: GRADING & SWPP PLAN

Project No. 04476.01
Scale 1"=50'
Sheet No. 5/15
File No. 04-476

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GENERAL NPDES NOTES

1. PROJECT INVOLVES THE CONSTRUCTION OF ROADS, HOUSES AND UTILITIES FOR A SINGLE FAMILY SUBDIVISION.
2. AREA TO BE DISTURBED IS APPROXIMATELY 29 ACRES.
3. PRE–CONSTRUCTION RUNOFF COEFFICIENT IS 0.30.
   POST–CONSTRUCTION RUNOFF COEFFICIENT IS 0.42.
4. THE PREDOMINATE SOIL TYPE IS RUSSELL – MIAMIAN SILT LOAM.
5. STONY RUN IS THE FIRST NAMED STREAM RECEIVING RUNOFF FROM THIS SITE. RUNOFF IS ULTIMATELY RECEIVED BY GREGORY CREEK.
6. NPDES STORM WATER GENERAL PERMIT NUMBER: 1GC04588*AG.
7. PROJECT DURATION: THRU 2015
8. SITE OPERATOR: LIBERTY LAND COMPANY, LLC.
   6306 PRINCETON–GLENDALE ROAD
   LIBERTY TOWNSHIP, OH 45011
   (513) 894–4455
9. SWPPP CONTACT: LIBERTY LAND COMPANY, LLC.
   6306 PRINCETON–GLENDALE ROAD
   LIBERTY TOWNSHIP, OH 45011
   (513) 894–4455
10. UNLESS OTHERWISE NOTED, STANDARDS AND SPECIFICATIONS ESTABLISHED IN THE LATEST EDITION OF THE OHIO DEPARTMENT OF NATURAL RESOURCES "RAINWATER AND LAND DEVELOPMENT" MANUAL, CURRENT EDITION, SHALL GOVERN THE EROSION AND SEDIMENT CONTROL INSTALLATIONS SPECIFIED ON THIS PLAN.
11. THE DEVELOPER AND CONTRACTOR SHALL ABIDE BY THE RULES AND REGULATIONS SET FOURTH IN THE OHIO EPA PERMIT NO. OHC000002– "AUTHORIZATION FOR STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITY" UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES).
12. PRIOR TO COMMENCEMENT OF CONSTRUCTION OPERATIONS, ALL SEDIMENTATION AND EROSION CONTROL FEATURES SHALL BE IN PLACE.
13. SEDIMENT CONTROL STRUCTURES SHALL BE FUNCTIONAL THROUGHOUT THE COURSE OF EARTH DISTURBING ACTIVITY. AND SHALL CONTINUE TO FUNCTION UNTIL THE UP SLOPE DEVELOPMENT AREA IS RESTABLISHED. AS CONSTRUCTION PROGRESSES AND THE TOPOGRAPHY IS ALTERED, APPROPRIATE CONTROLS MUST BE CONSTRUCTED OR EXISTING CONTROLS ALTERED TO ADDRESS THE CHANGING DRAINAGE PATTERNS.
14. ALL GROUND SURFACE AREAS THAT HAVE BEEN EXPOSED OR LEFT BARE AS A RESULT OF DEMOLITION AND ARE TO FINAL GRADE AND TO REMAIN SO, SHALL BE SEEDED AND MULCHED AS SOON AS PRACTICAL IN ACCORDANCE WITH STATE OF OHIO SPECIFICATION ITEM 659, AND IN ACCORDANCE WITH THE CONDITIONS OF THE NPDES STORM WATER GENERAL PERMIT.

MAINTENANCE OF CONTROLS:

1. SILT FENCE AND FILTER BARRIERS SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND DAILY DURING A PROLONGED RAINFALL. ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY.
2. SHOULD THE FABRIC ON A FENCE OR FILTER BARRIER DECOMPOSE OR BECOME INEFFECTIVE AND THE BARRIER IS STILL NECESSARY, THE FABRIC SHALL BE REPLACED PROMPTLY.
3. SEDIMENT DEPOSITS SHALL BE REMOVED WHEN DEPOSITS REACH APPROXIMATELY ONE–HALF THE HEIGHT OF THE BARRIER.
4. ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE FENCE OR FILTER BARRIER IS NO LONGER REQUIRED SHALL BE DRESSED TO CONFORM WITH THE EXISTING GRADE AND PREPARED FOR SEEDING.

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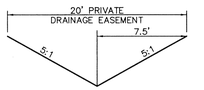

TYPICAL SECTION
EMERGENCY FLOOD ROUTE
N.T.S.

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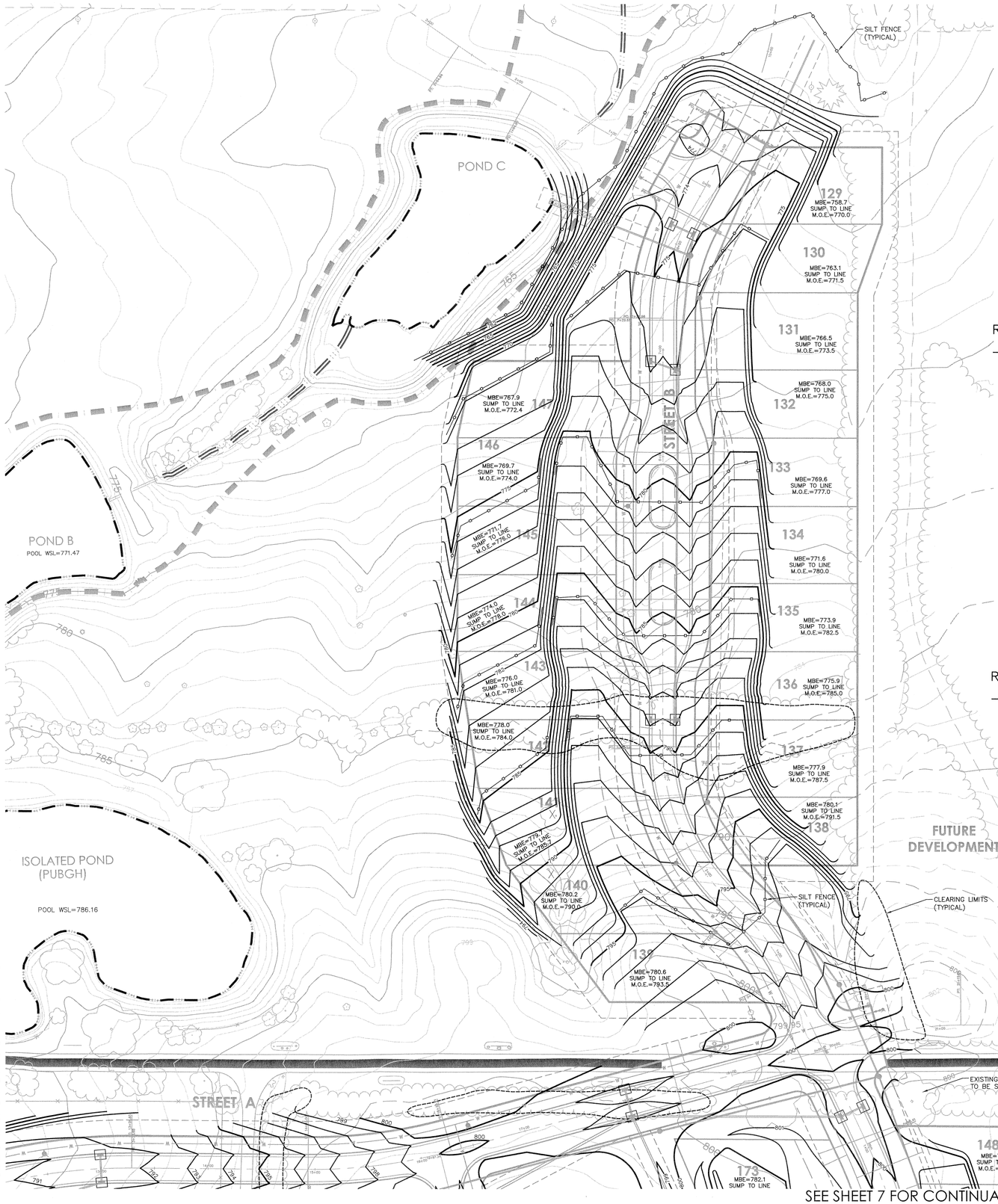
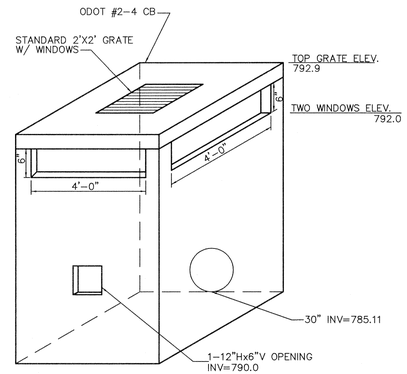
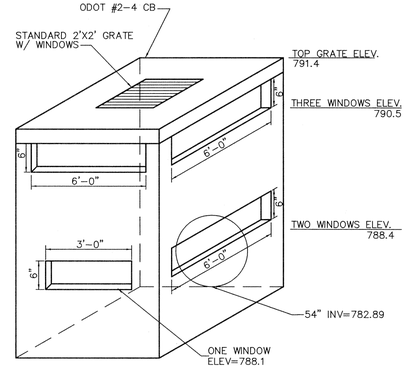


SEE SHEET 5 FOR CONTINUATION

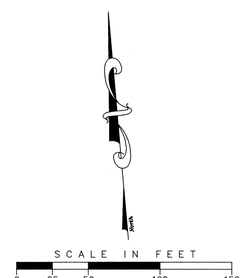
SEE SHEET 7 FOR CONTINUATION



RETENTION/DETENTION POND 71
RELEASE STRUCTURE 743
NOT TO SCALE



RETENTION/DETENTION POND 72
RELEASE STRUCTURE 706
NOT TO SCALE



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SECTION 7

SECTION 32, TOWN 3, RANGE 3
LIBERTY TOWNSHIP
BUTLER COUNTY, OHIO

Sheet Title
GRADING & SWPP PLAN

Project No.	04476.01
Scale	1"=50'
Sheet No.	6/15
File No.	04-476

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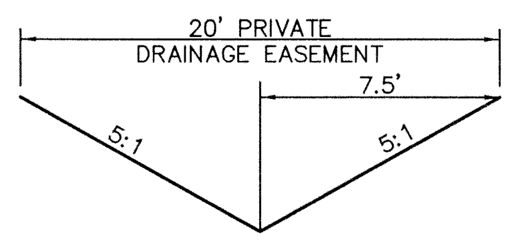

TYPICAL SECTION
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N.T.S.

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SEE SHEET 6 FOR CONTINUATION

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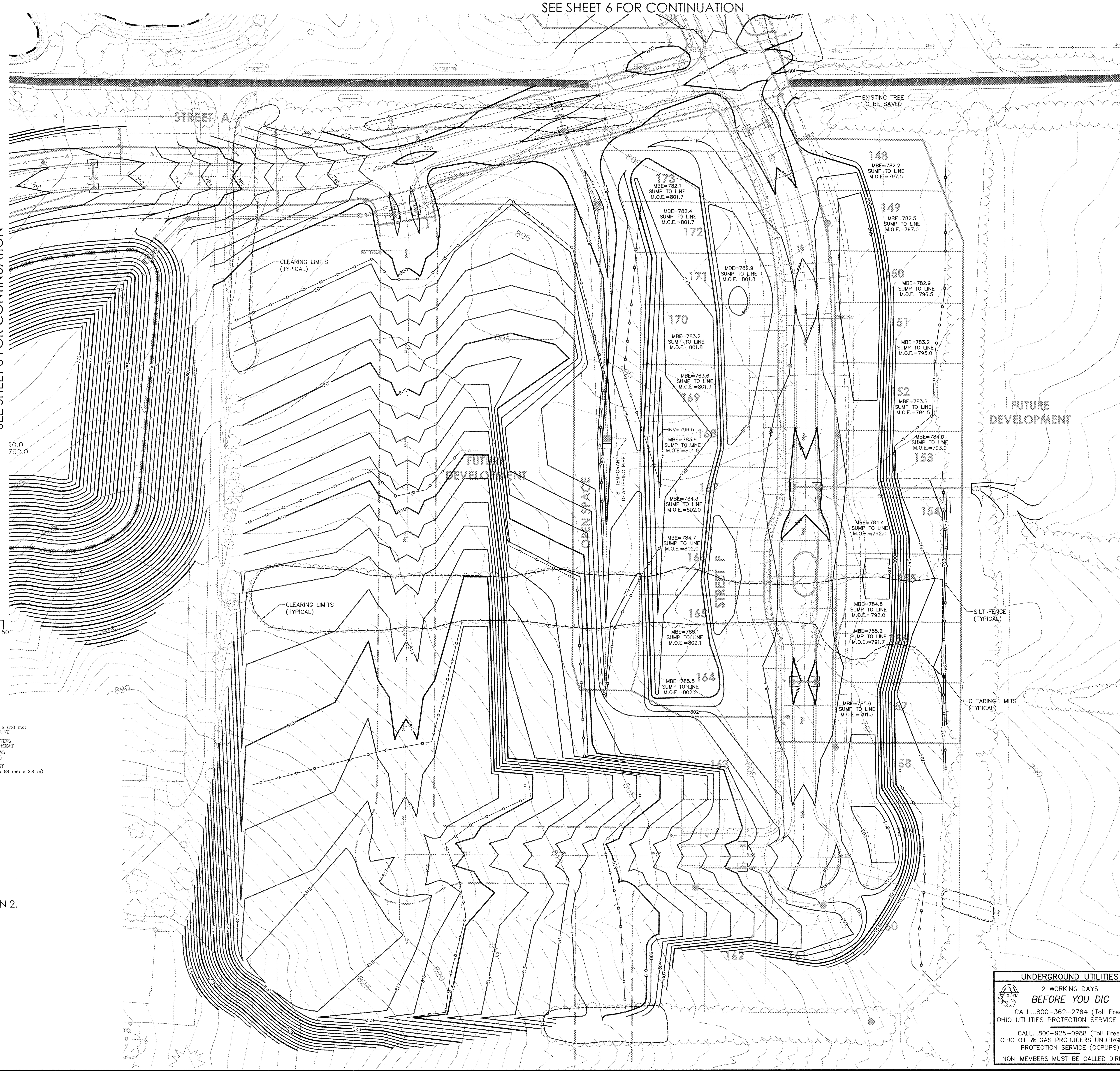

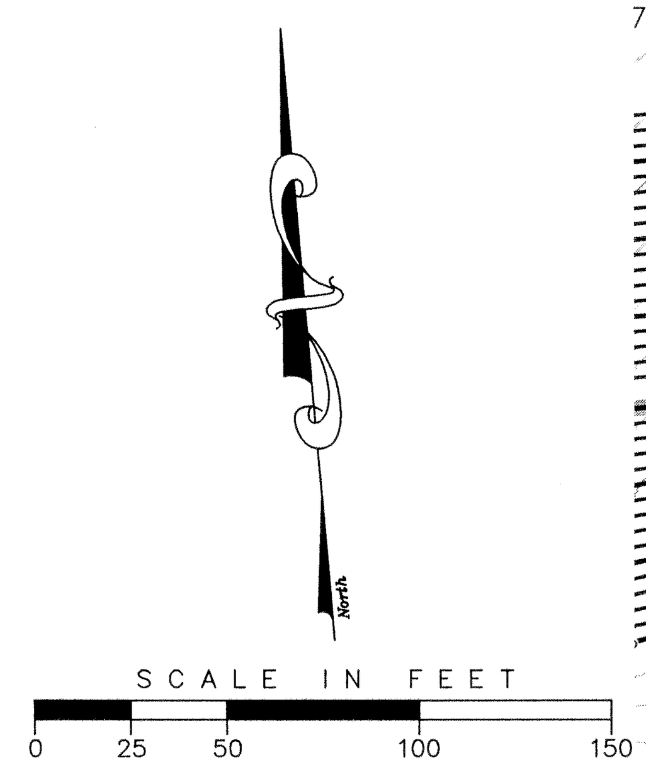

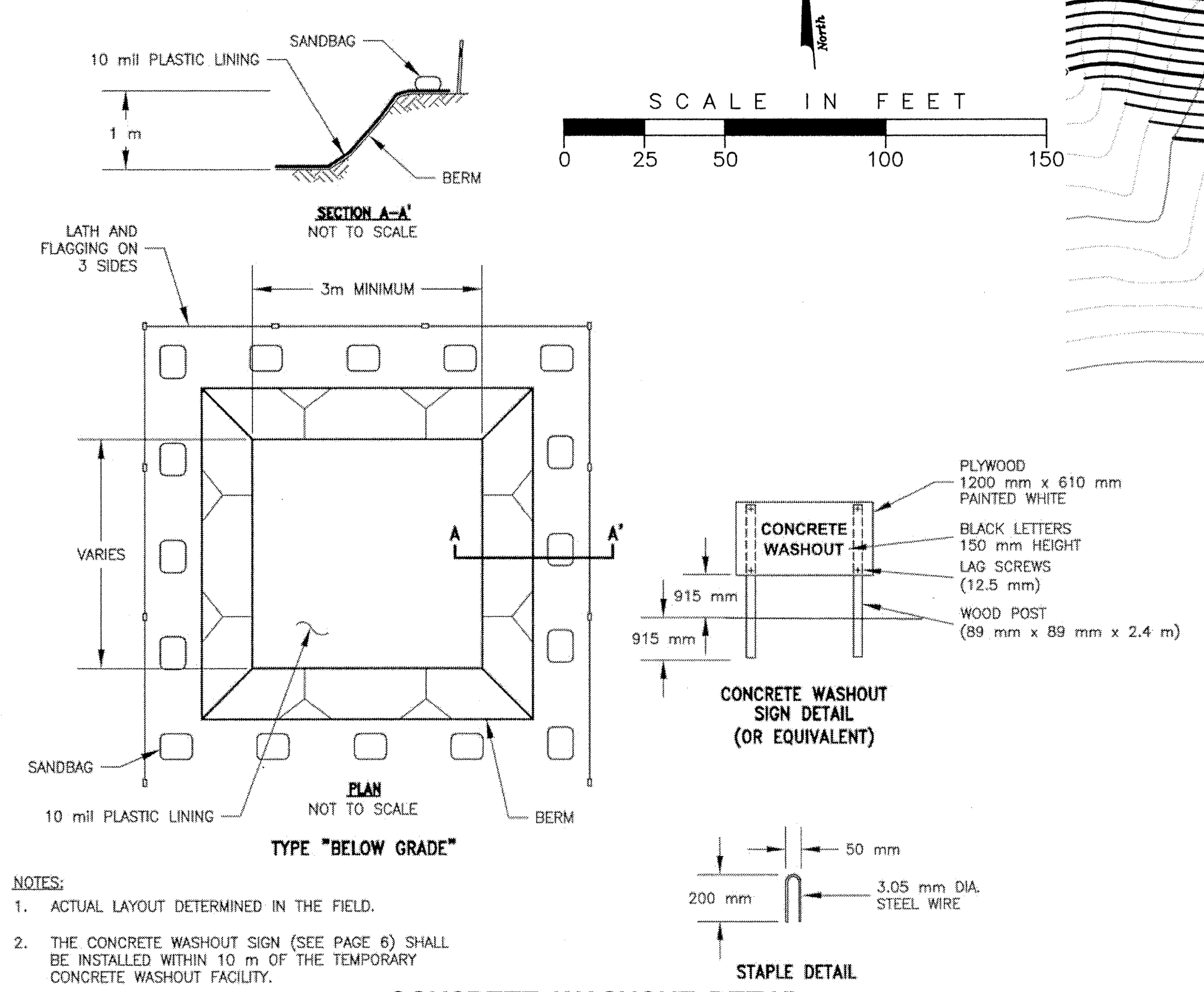

NOTES:
1. ACTUAL LAYOUT DETERMINED IN THE FIELD.
2. THE CONCRETE WASHOUT SIGN (SEE PAGE 6) SHALL BE INSTALLED WITHIN 10 m OF THE TEMPORARY CONCRETE WASHOUT FACILITY.

CONCRETE WASHOUT DETAIL
N.T.S.

NOTE: CONCRETE WASHOUT IS LOCATED ON LOT 20 IN SECTION 2.

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SECTION 32, TOWN 3, RANGE 3
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BUTLER COUNTY, OHIO

Sheet Title	GRADING & SWPP PLAN
Project No.	04476.01
Scale	1"=50'
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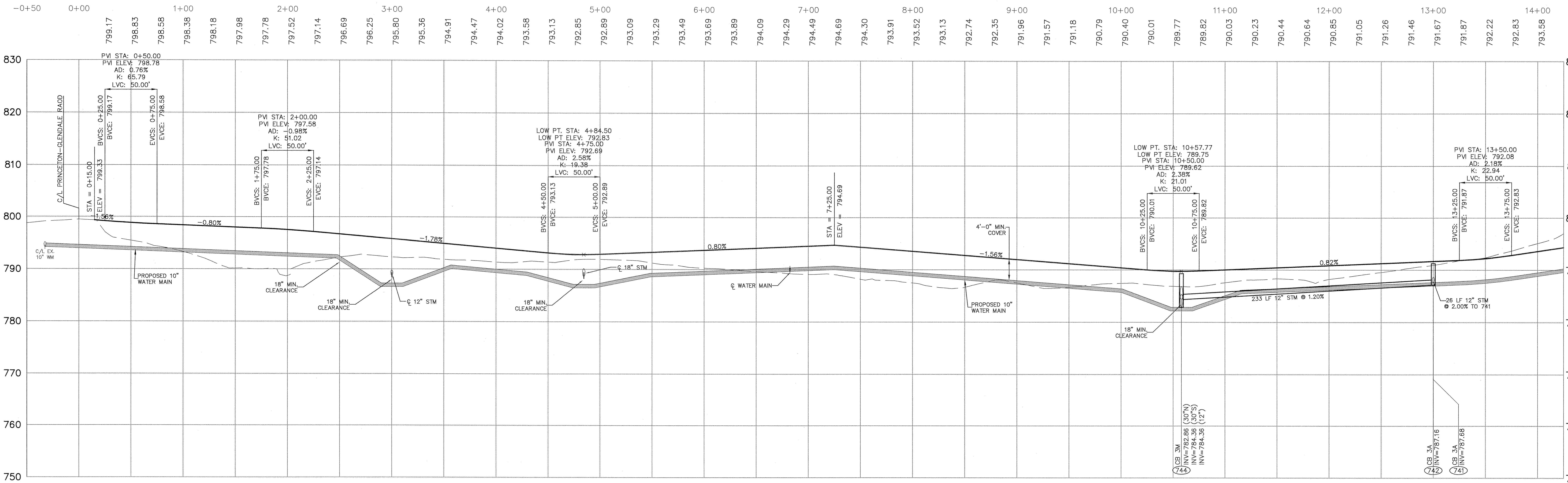
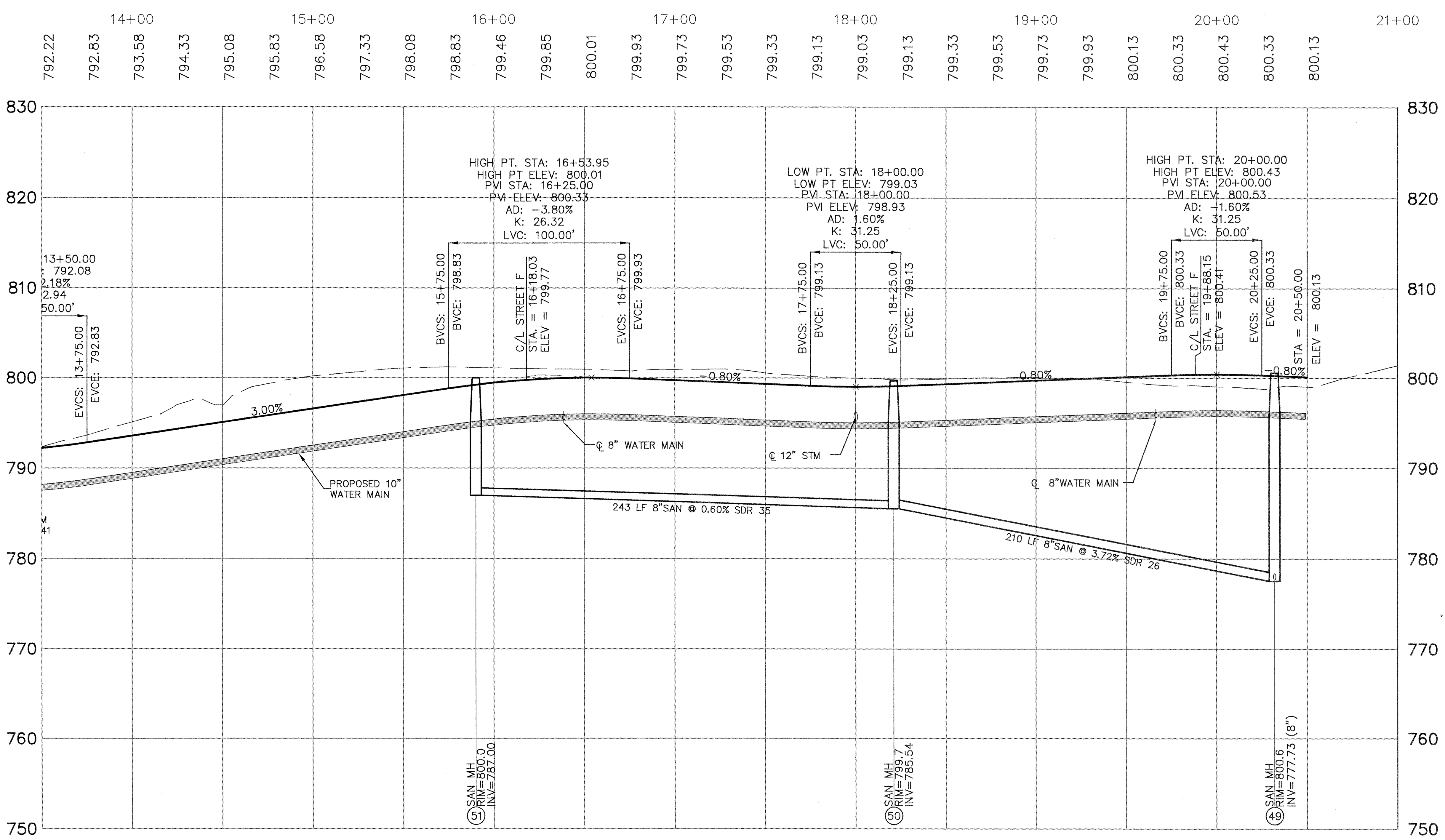


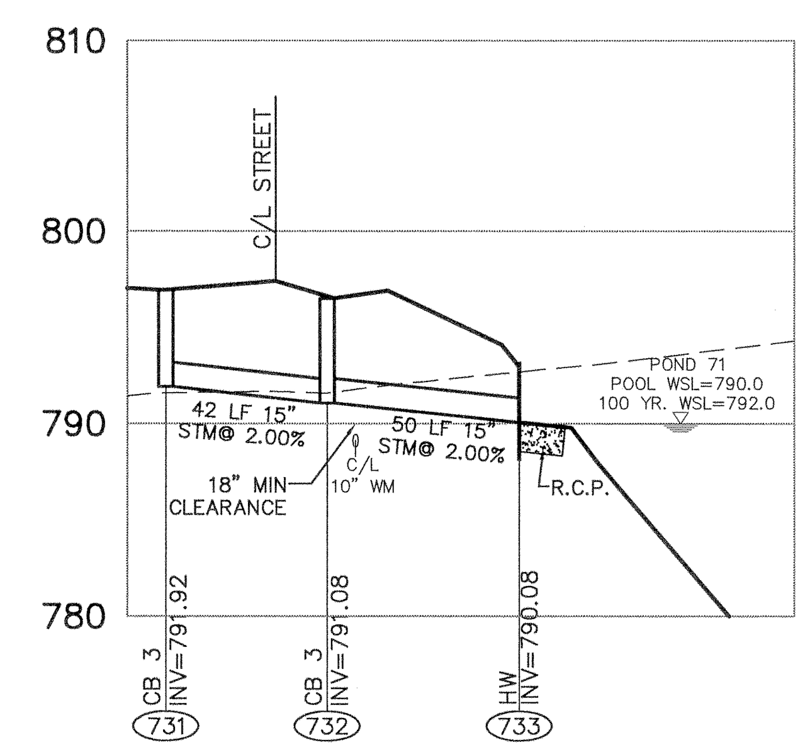
STREET A - ENTRANCE ROAD

1"=50' HOR. / 1"=10' VERT.



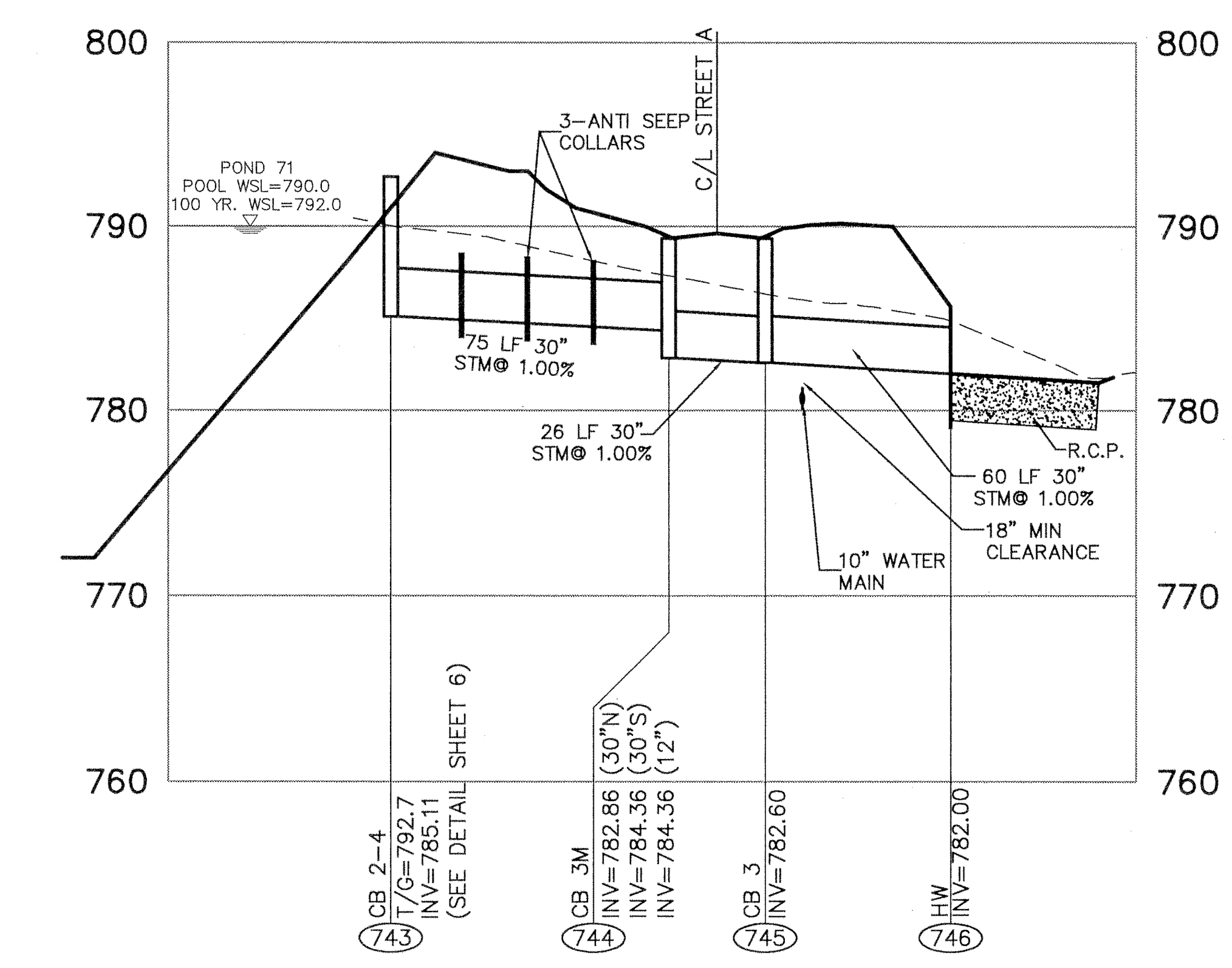
STREET A - ENTRANCE ROAD

1"=50' HOR. / 1"=10' VERT.



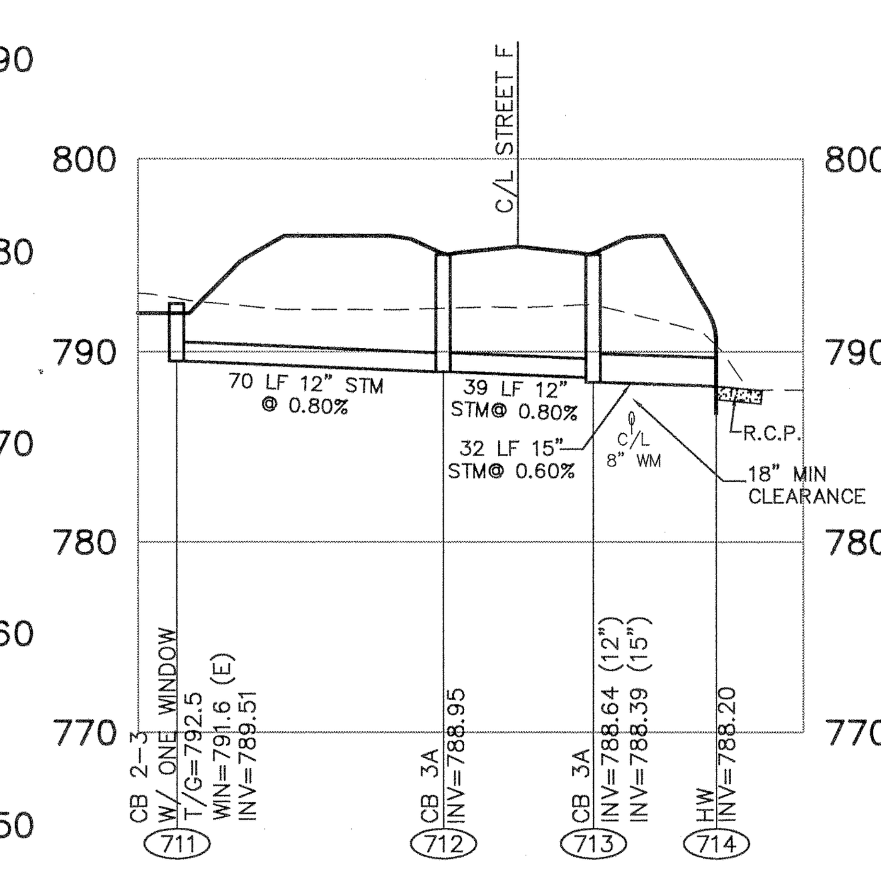
STORM STRUCTURES 731-733

1"=50' HOR. / 1"=10' VERT.



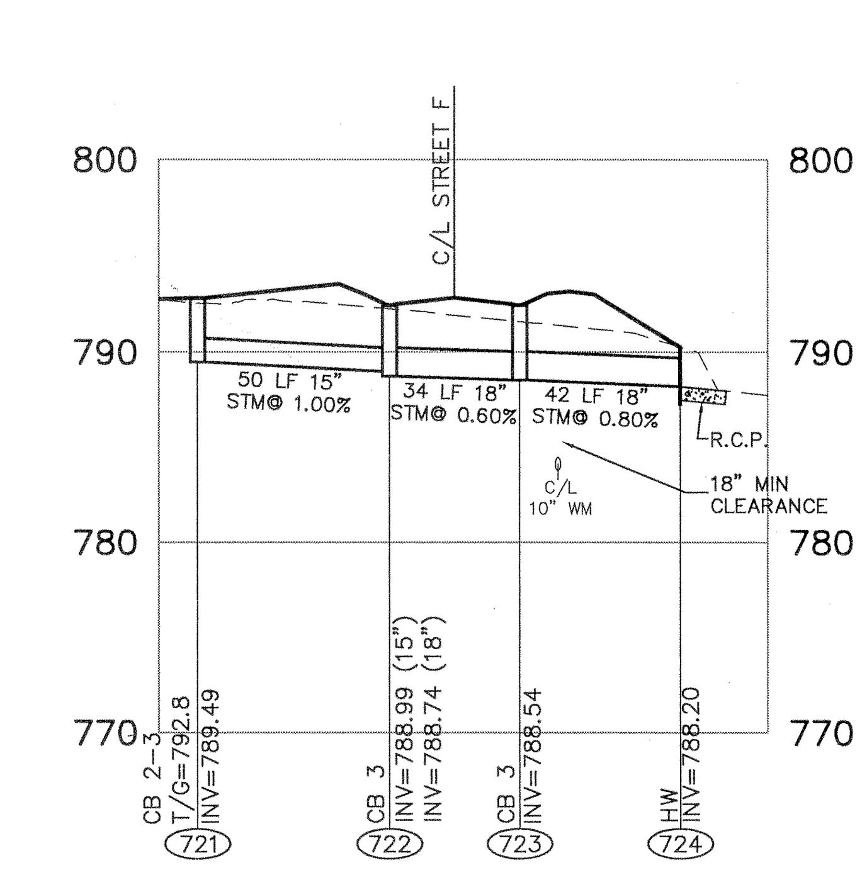
STORM SEWERS 743-746

1"=50' HOR. / 1"=10' VERT.



STORM SEWERS 711-714

1"=50' HOR. / 1"=10' VERT.



STORM SEWERS 721-724

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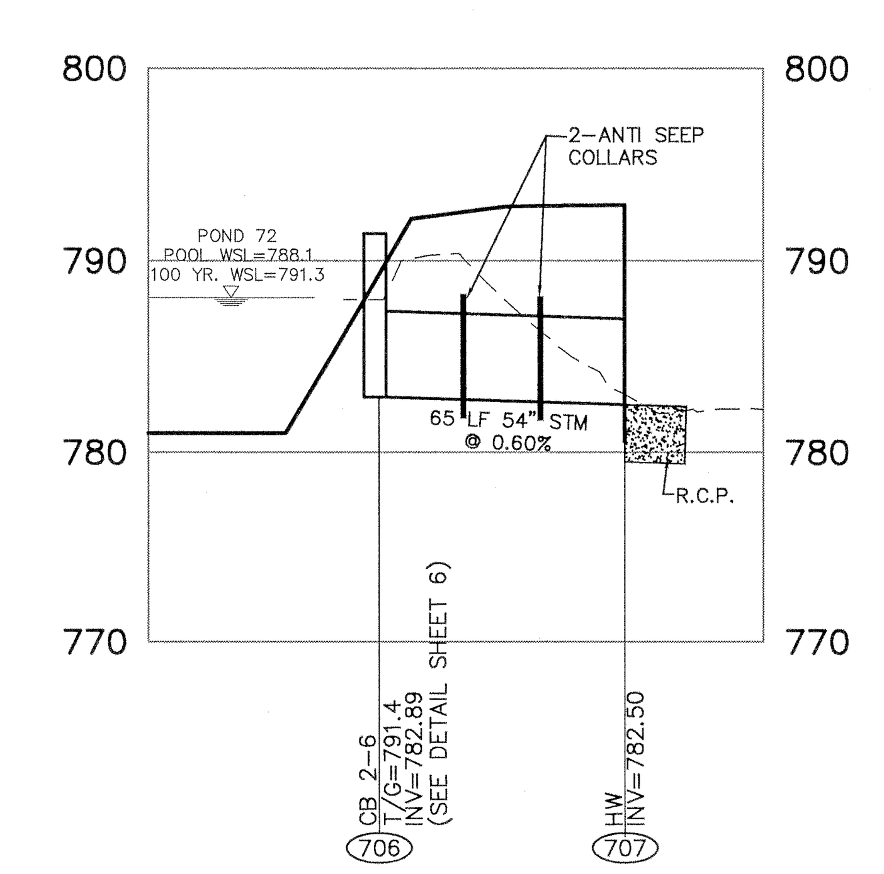

STORM STRUCTURES 706-707

1"=50' HOR. / 1"=10' VERT.

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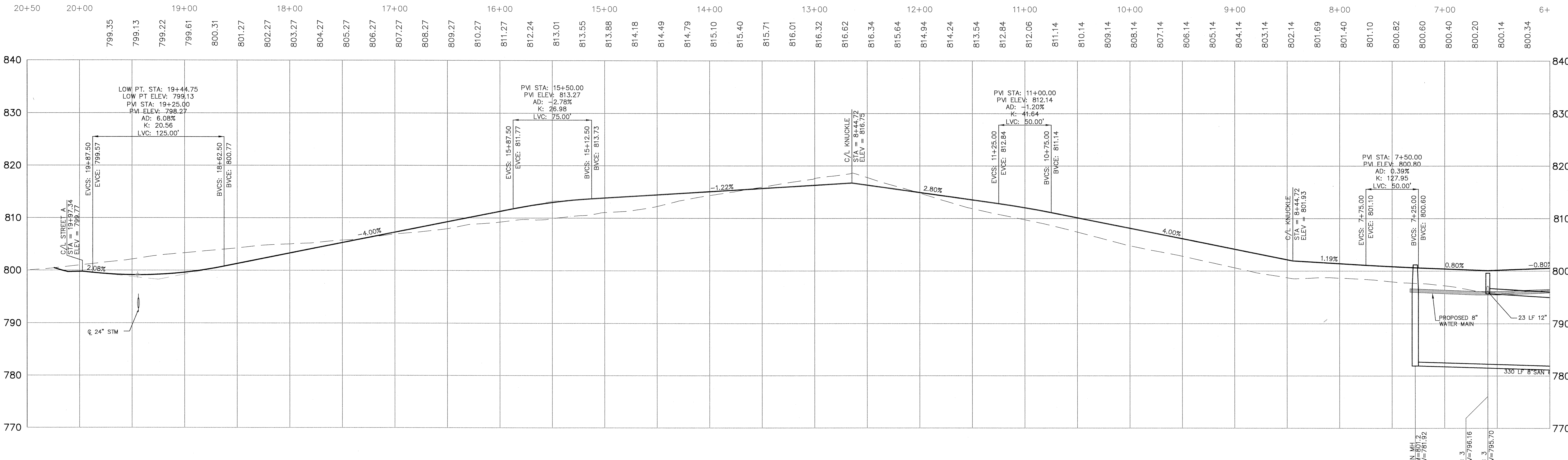
Drawn By	DMT
Project Mgr.	RA
Drawing File	04476014-IMP-00-SECTION 7
X-Reference Files	N/A
Date	06/21/13
No. Revision/Issue	By Date

CARRIAGE HILL
SECTION 7

SECTION 32, TOWN 3, RANGE 3
LIBERTY TOWNSHIP
BUTLER COUNTY, OHIO

Sheet Title	PROFILES
Project No.	04476.01
Scale	AS NOTED
Sheet No.	8 /15
File No.	04-476



STREET F-SECTION 7

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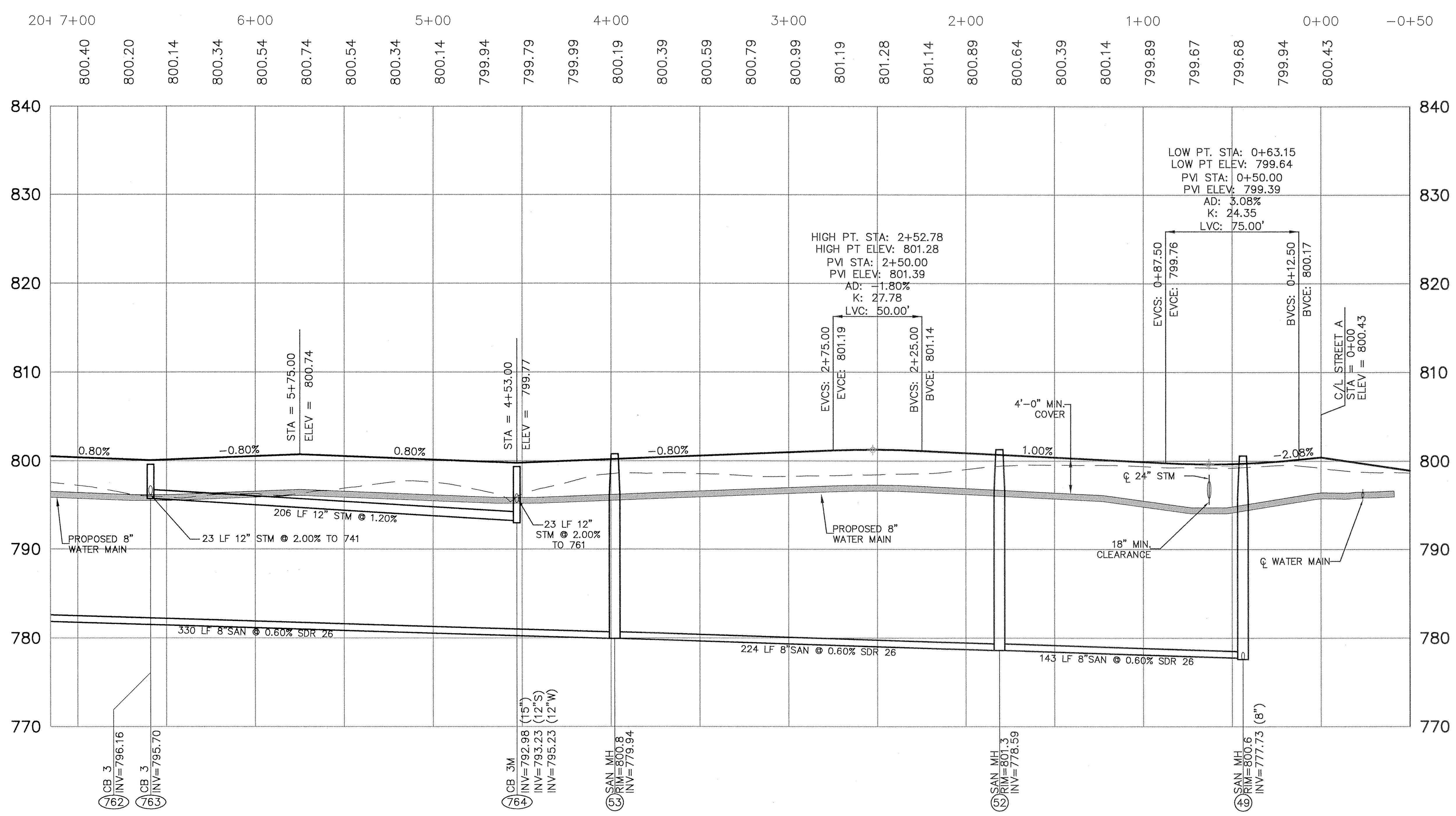
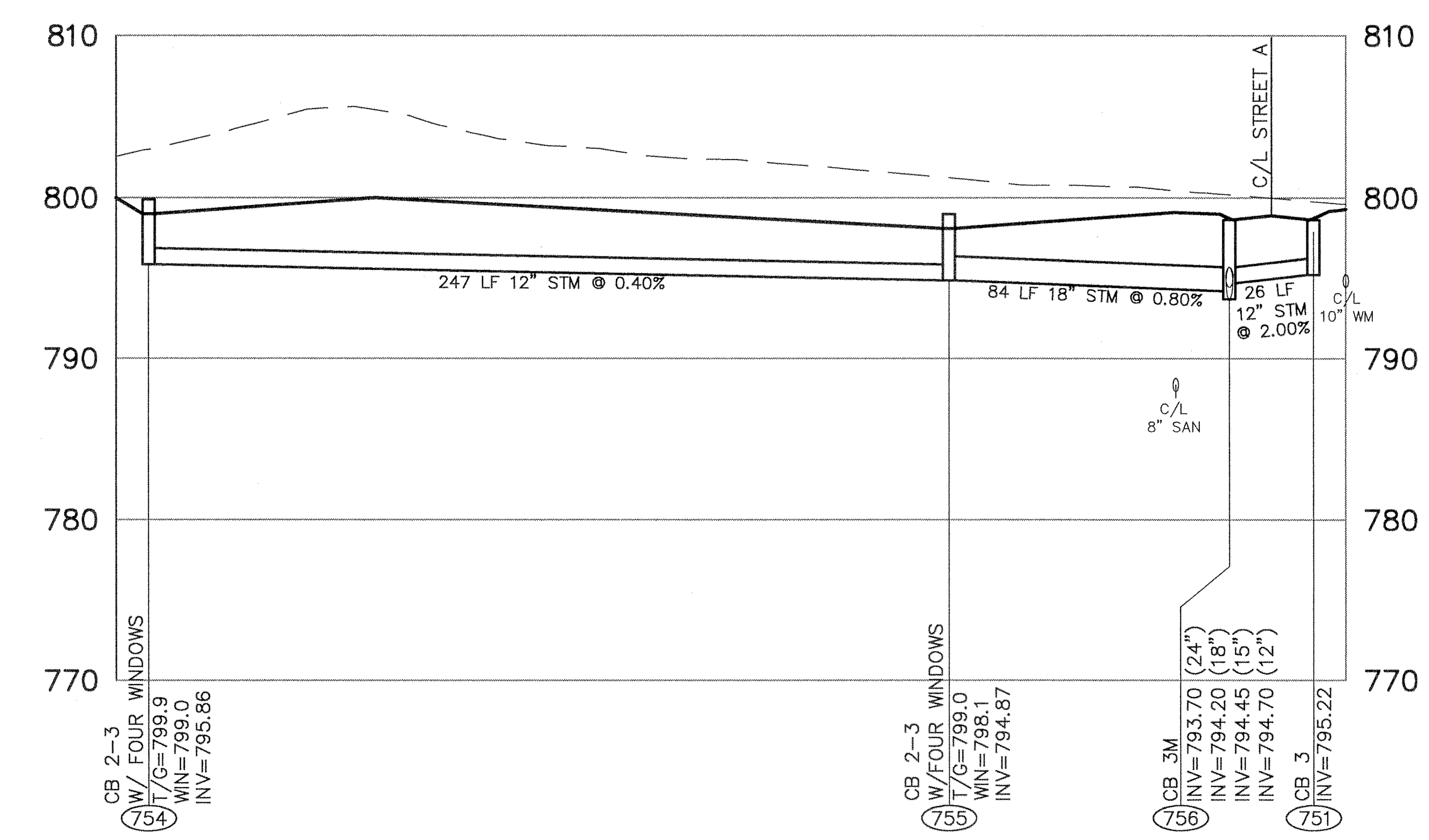


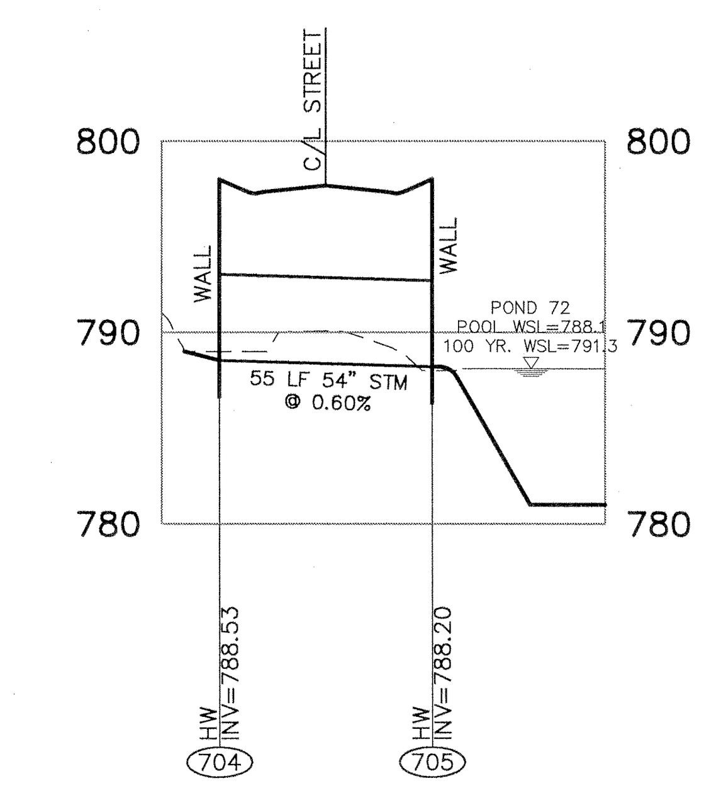
STREET F-SECTION 7

1"=50' HOR. / 1"=10' VERT.



STORM STRUCTURES 751 & 754-756

1"=50' HOR. / 1"=10' VERT.



STORM STRUCTURES 704-705

1"=50' HOR. / 1"=10' VERT.

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Project Mgr.	RA
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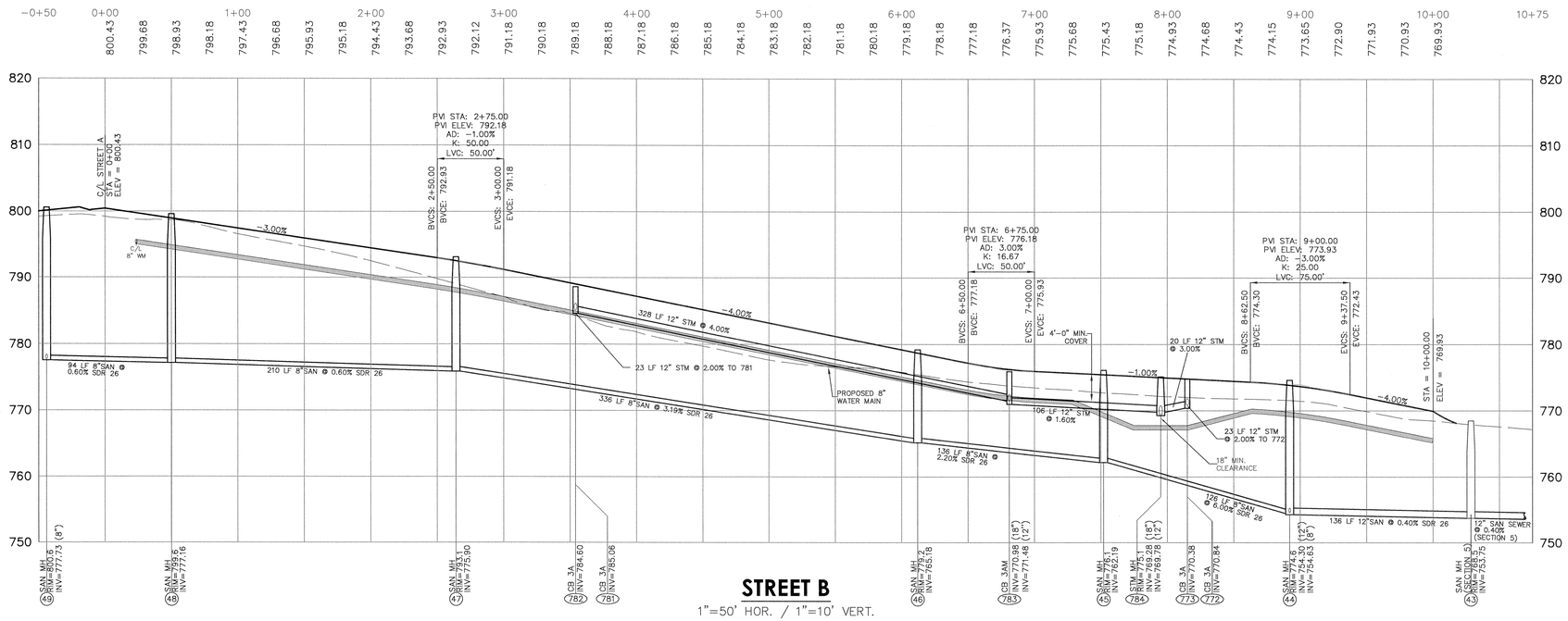
No. Revision/Issue | By | Date

CARRIAGE HILL
SECTION 7

SECTION 32, TOWN 3, RANGE 3
LIBERTY TOWNSHIP
BUTLER COUNTY, OHIO

Sheet Title	PROFILES
Project No.	04476.01
Scale	AS NOTED
Sheet No.	9 /15
File No.	04-476



STREET B

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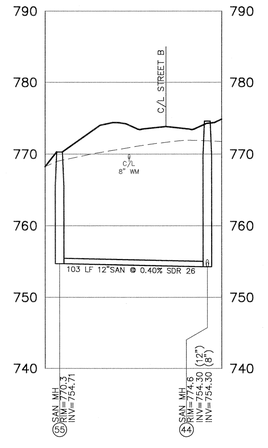
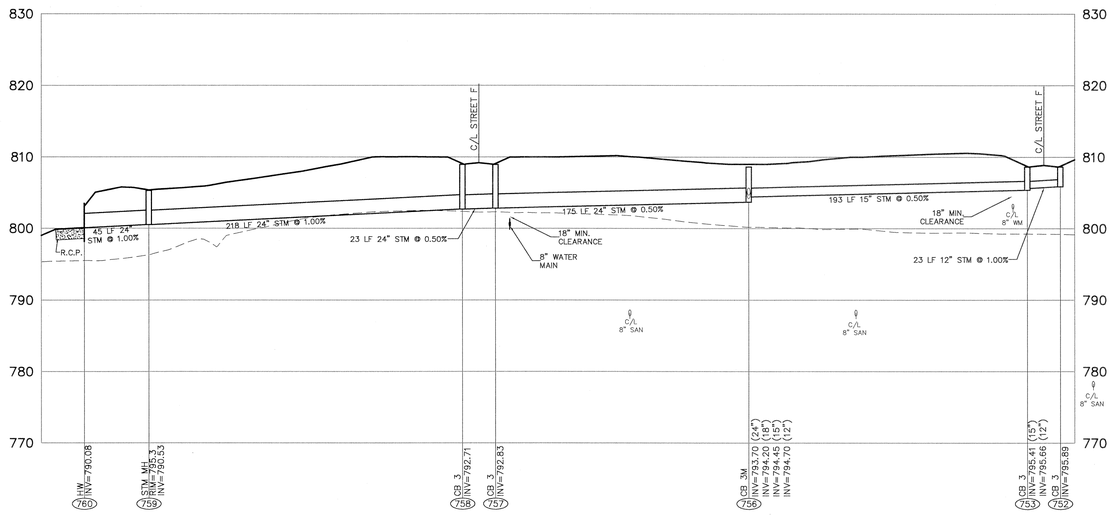


SANITARY SEWERS MH 55 TO MH 44

1"=50' HOR. / 1"=10' VERT.



STORM STRUCTURES 752-753 & 756-760 (1)

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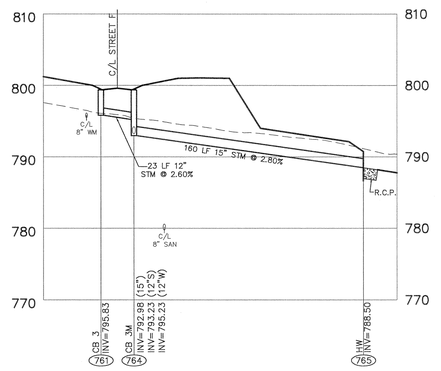

STORM STRUCTURES 761 & 764-765

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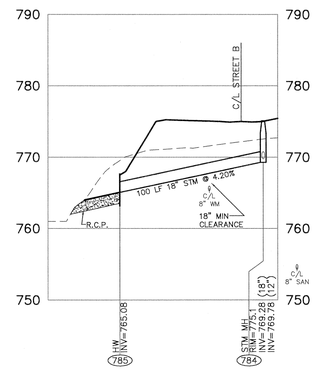

STORM STRUCTURES 784-785

1"=50' HOR. / 1"=10' VERT.

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Drawn By	DMT
Project Mgr.	RA
Drawing File	04476014-IMP-00-SECTION 7
X-Reference Files	N/A
Date	06/21/13

No.	Revision/Issue	By	Date

CARRIAGE HILL
SECTION 7

SECTION 32, TOWN 3, RANGE 3
LIBERTY TOWNSHIP
BUTLER COUNTY, OHIO

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Scale	AS NOTED
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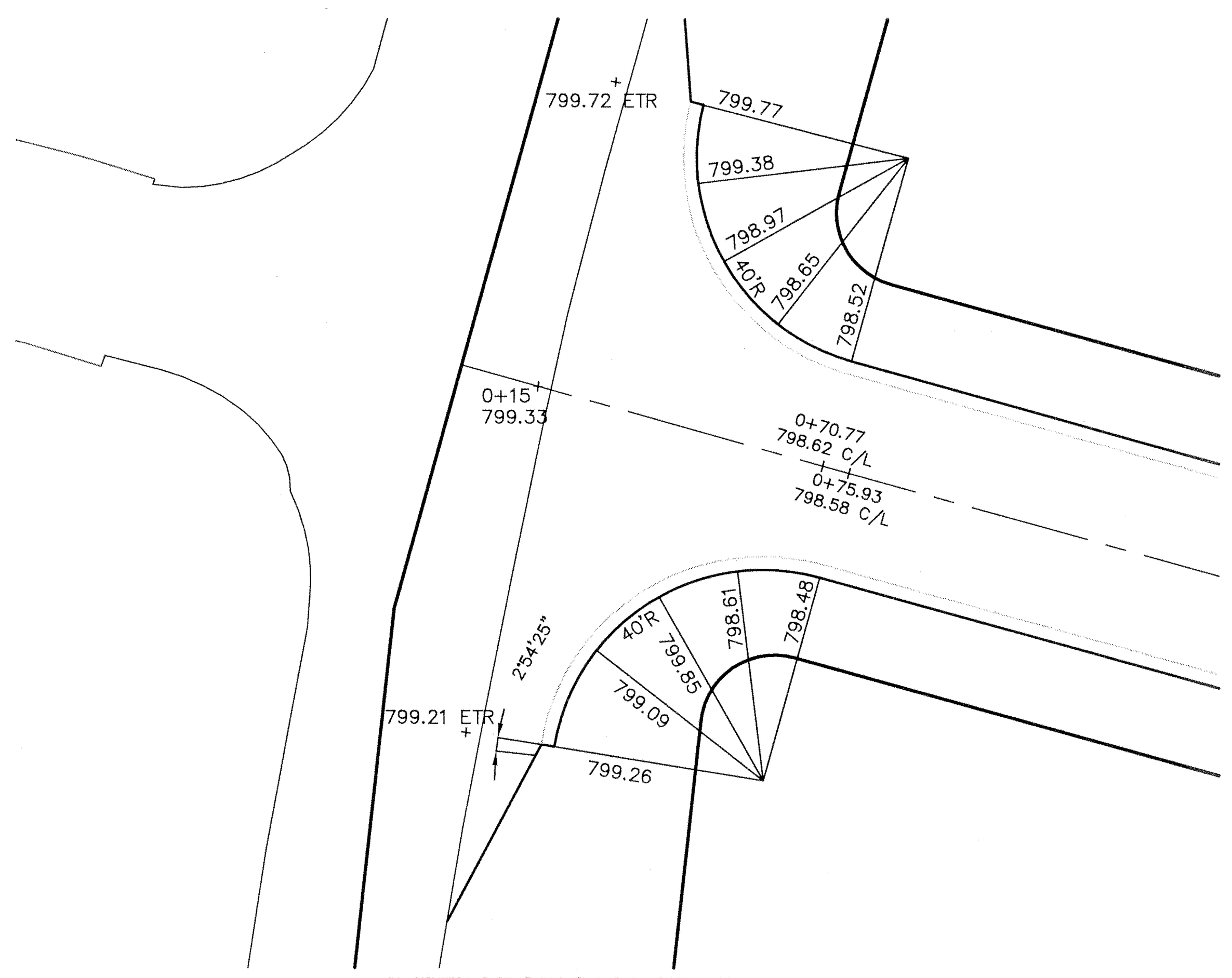
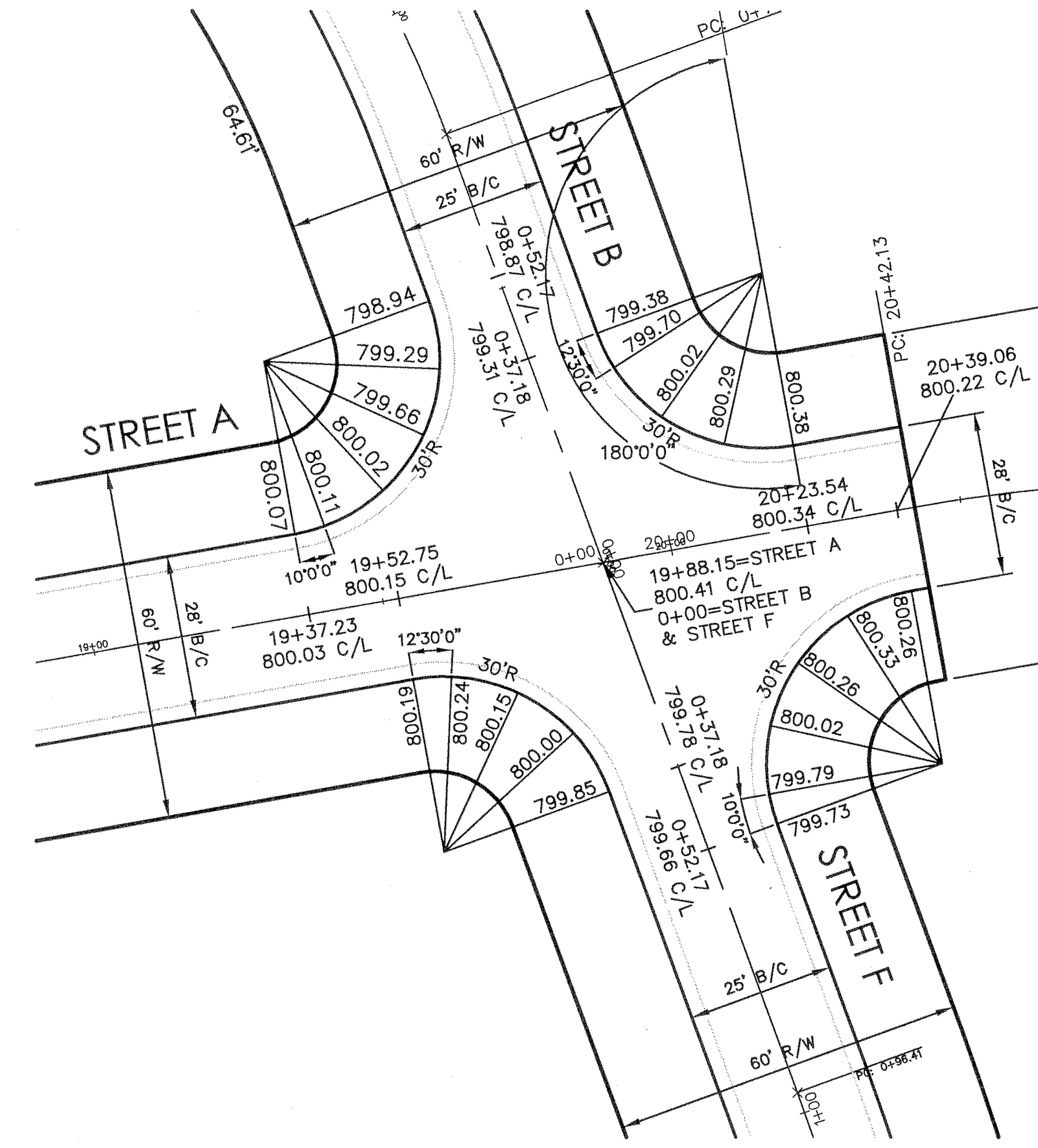
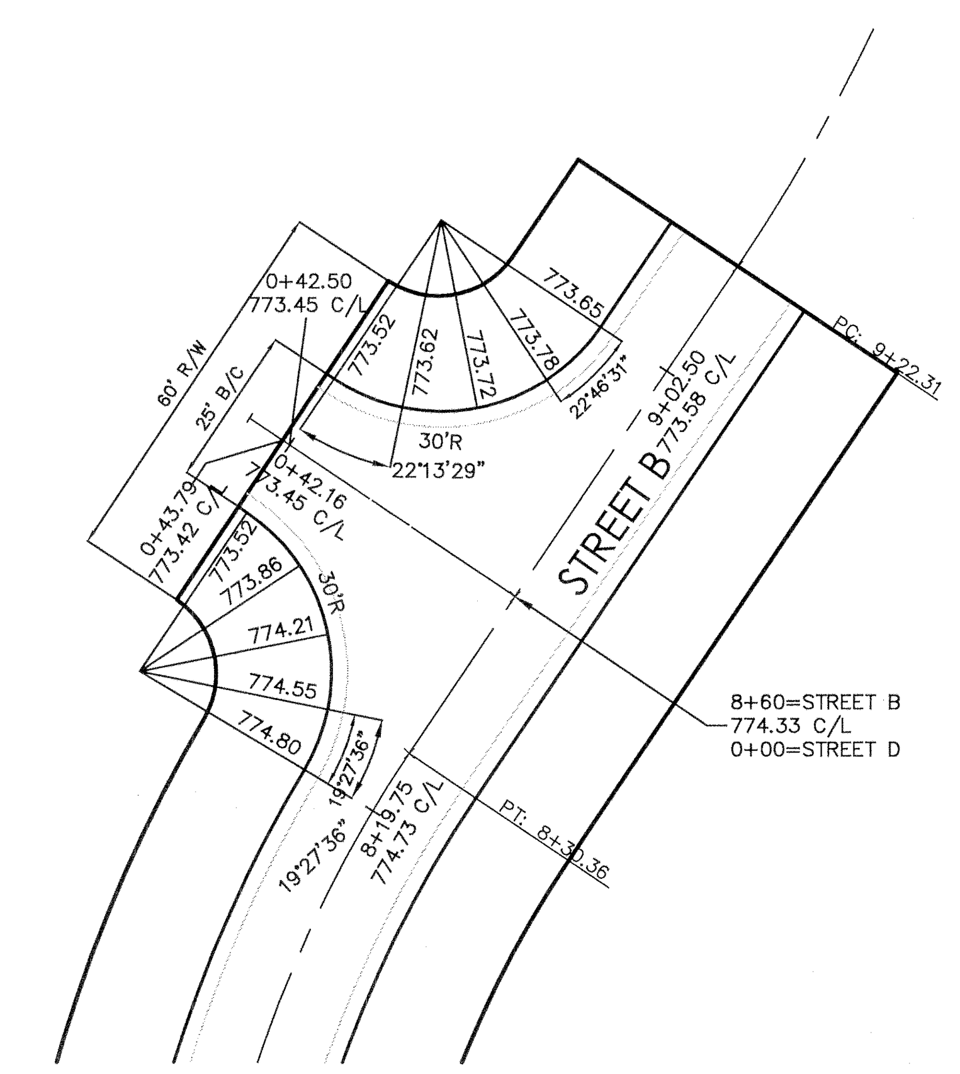
File No.	04-476



INTERSECTION DETAIL
STREET A & SR 747 PRINCETON GLENDALE ROAD
ANGLES SHOWN ARE 22.5° UNLESS NOTED OTHERWISE
ELEVATIONS SHOWN TOP OF CURB UNLESS NOTED OTHERWISE
SCALE: 1"=30'



INTERSECTION DETAIL
STREET A, STREET B,
& STREET F
ANGLES SHOWN ARE 22.5° UNLESS NOTED OTHERWISE
ELEVATIONS SHOWN TOP OF CURB UNLESS NOTED OTHERWISE
SCALE: 1"=30'



INTERSECTION DETAIL
STREET B & STREET D
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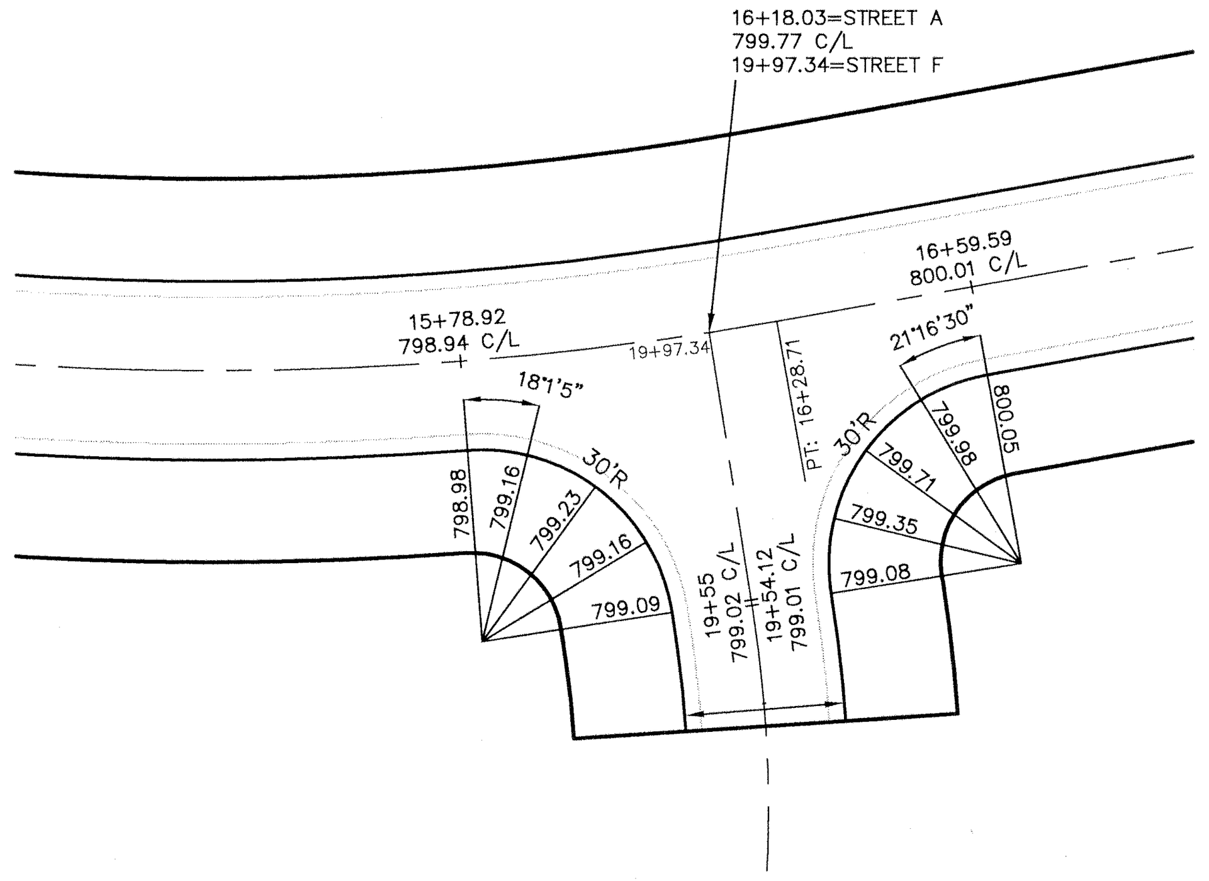
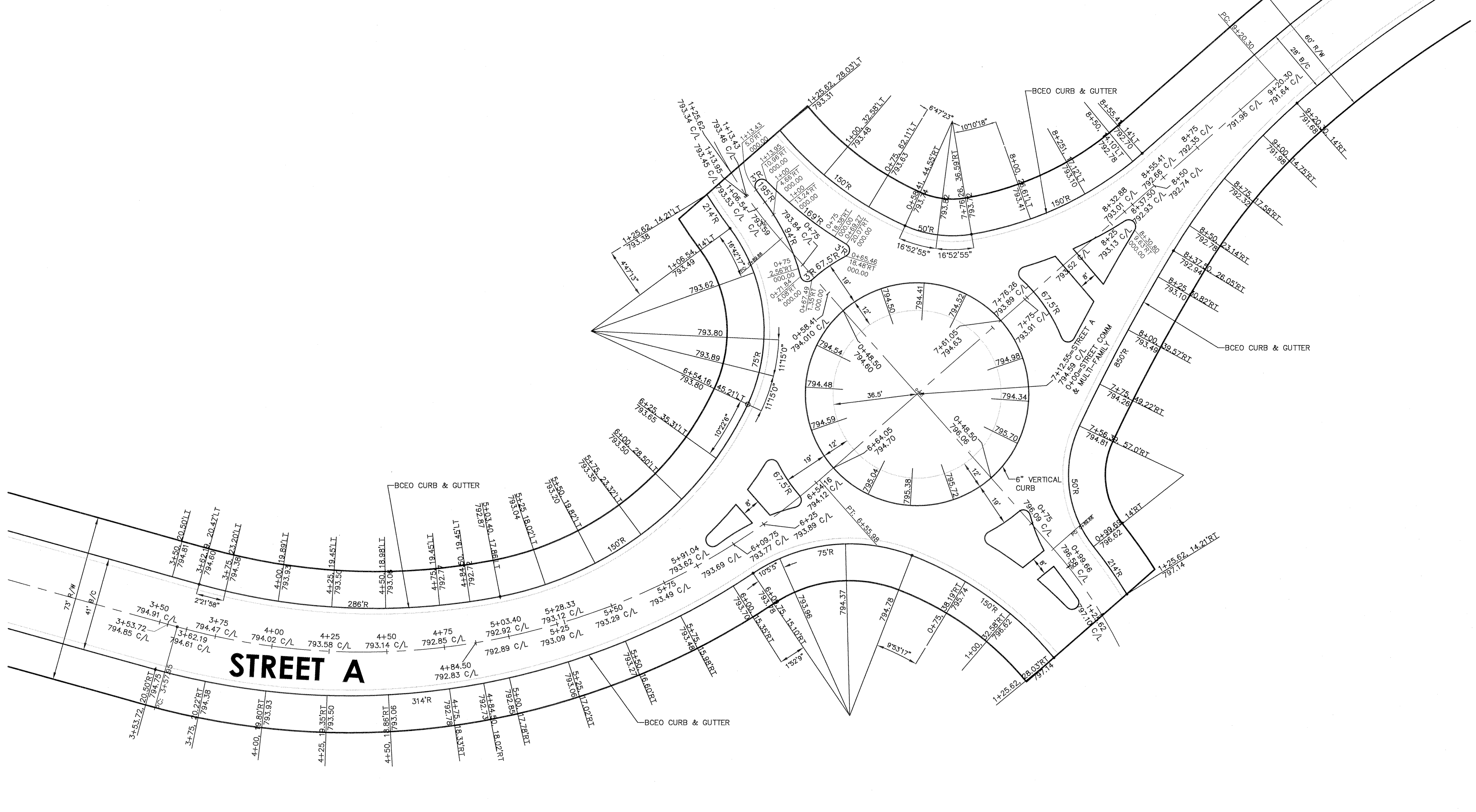
ELEVATIONS SHOWN TOP OF CURB UNLESS NOTED OTHERWISE
SCALE: 1"=30'



INTERSECTION DETAIL
STREET A & STREET F
ANGLES SHOWN ARE 22.5° UNLESS NOTED OTHERWISE
ELEVATIONS SHOWN TOP OF CURB UNLESS NOTED OTHERWISE
SCALE: 1"=30'



INTERSECTION DETAIL
STREET A & ?
ANGLES SHOWN ARE 22.5° UNLESS NOTED OTHERWISE
ELEVATIONS SHOWN TOP OF CURB UNLESS NOTED OTHERWISE
SCALE: 1"=30'

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Drawn By DMT	Project Mgr. RA
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X-Reference Files	N/A
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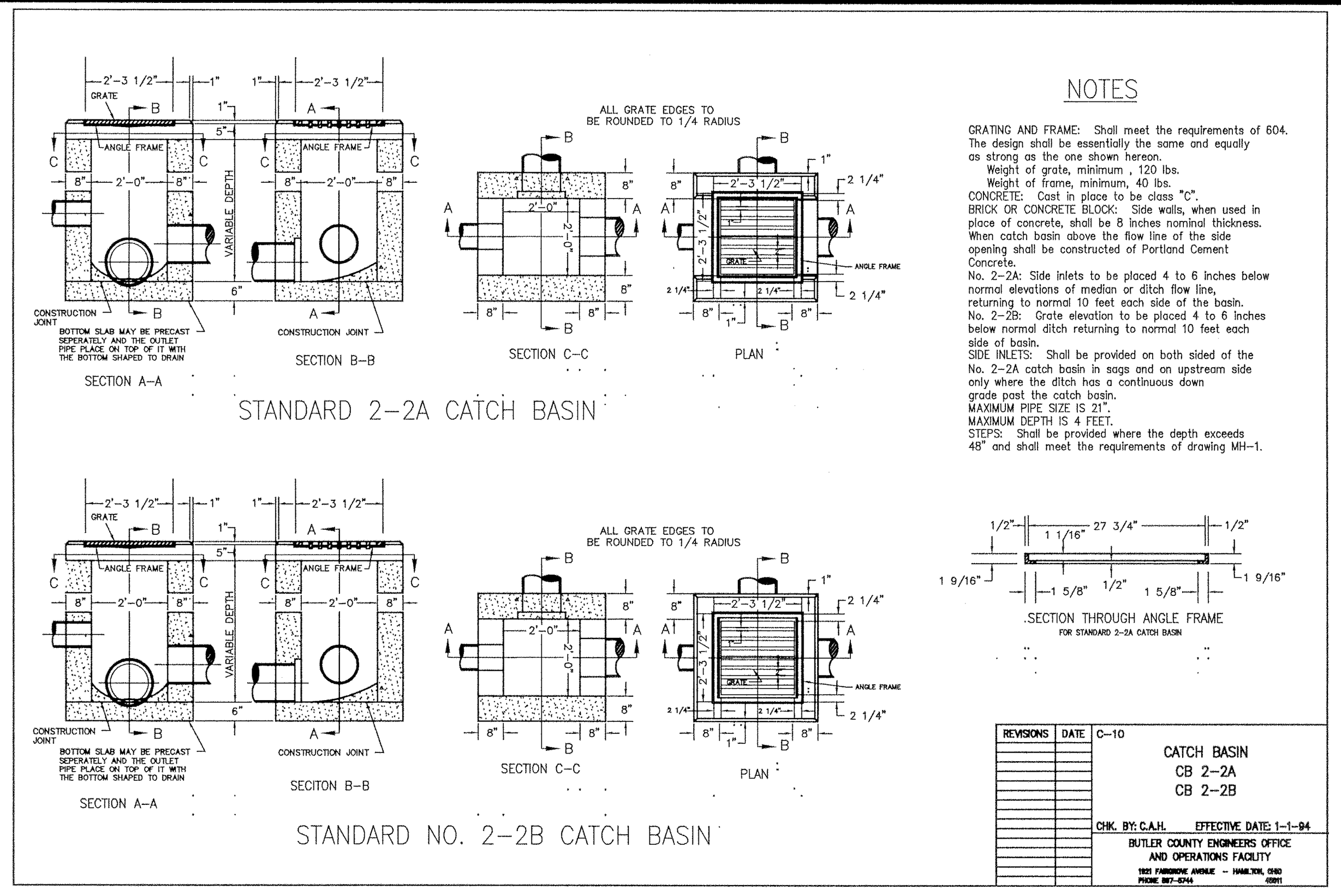
No.	Revision/Issue	By	Date

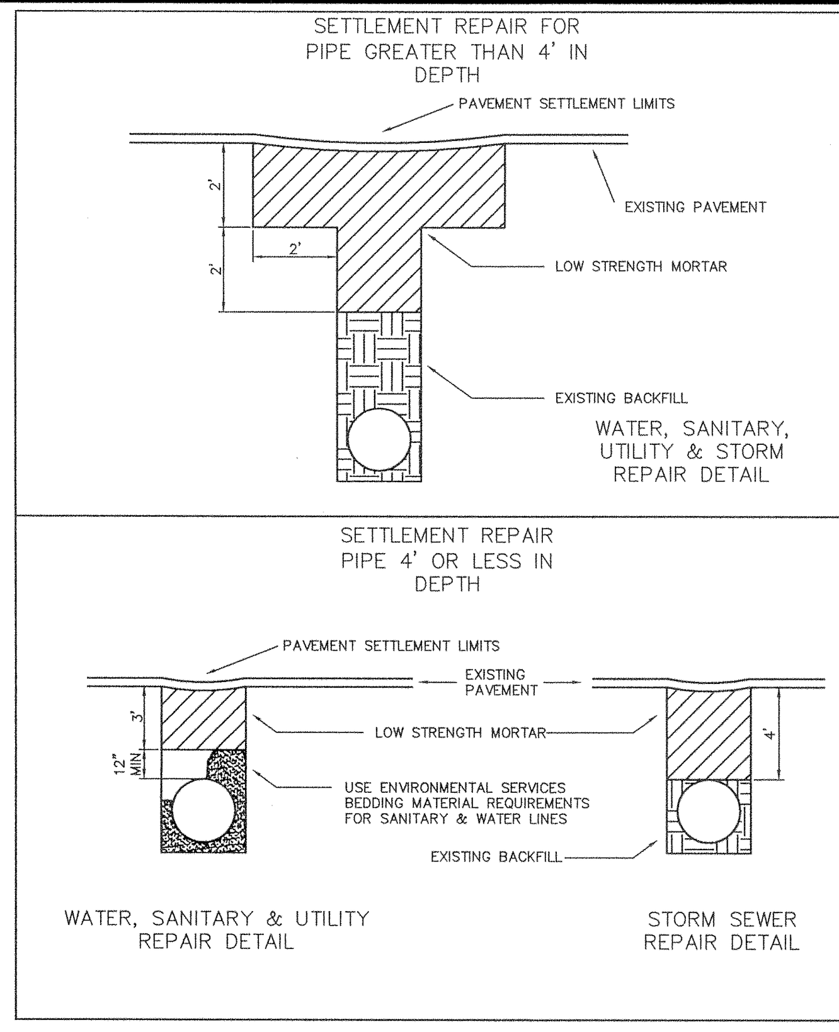
CARRIAGE HILL
SECTION 7

SECTION 32, TOWN 3, RANGE 3
LIBERTY TOWNSHIP
BUTLER COUNTY, OHIO

Sheet Title
INTERSECTION DETAILS

Project No.	04476.01
Scale	AS NOTED
Sheet No.	11/15
File No.	04-476





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.

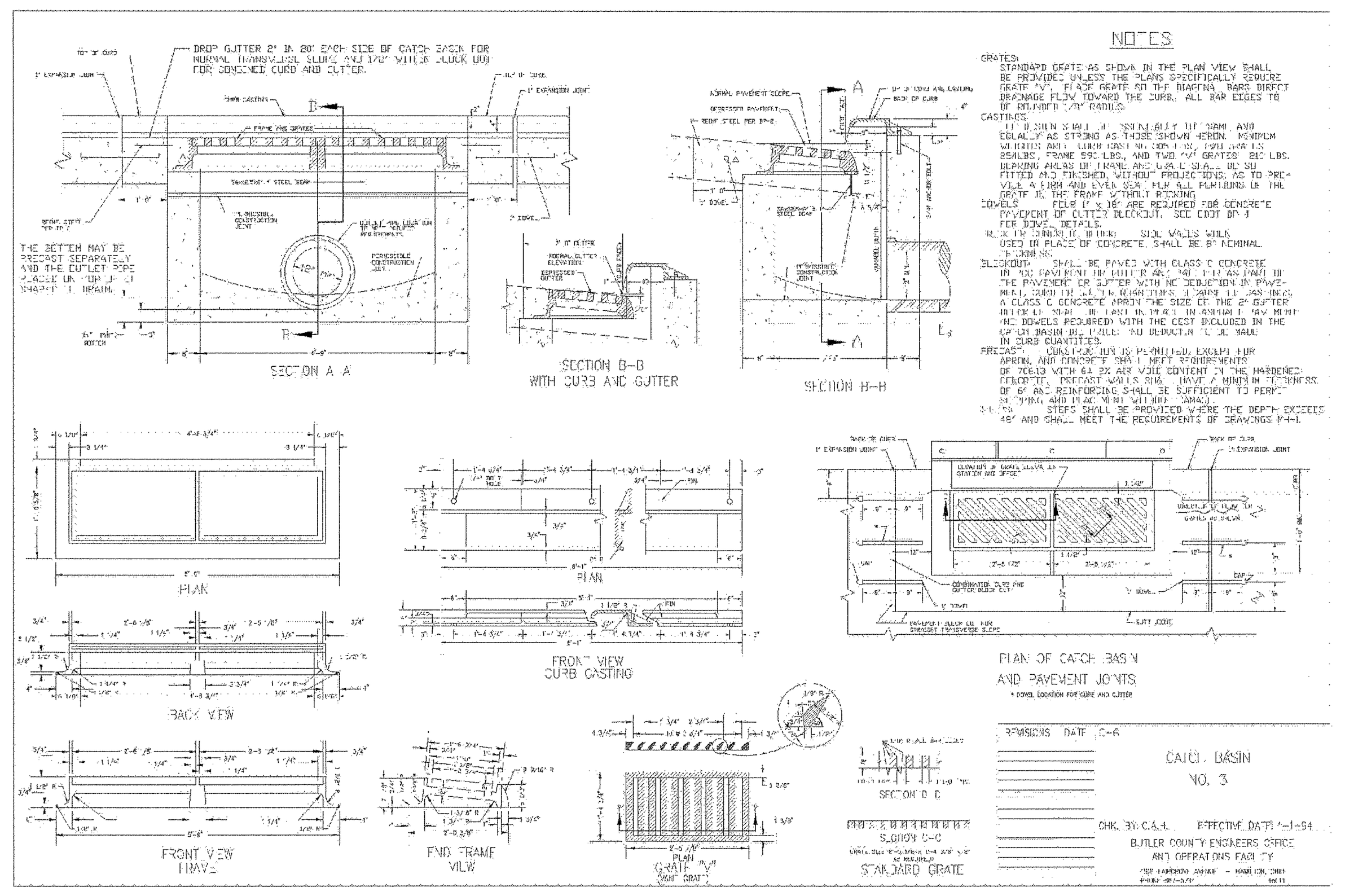
REVISIONS | DATE

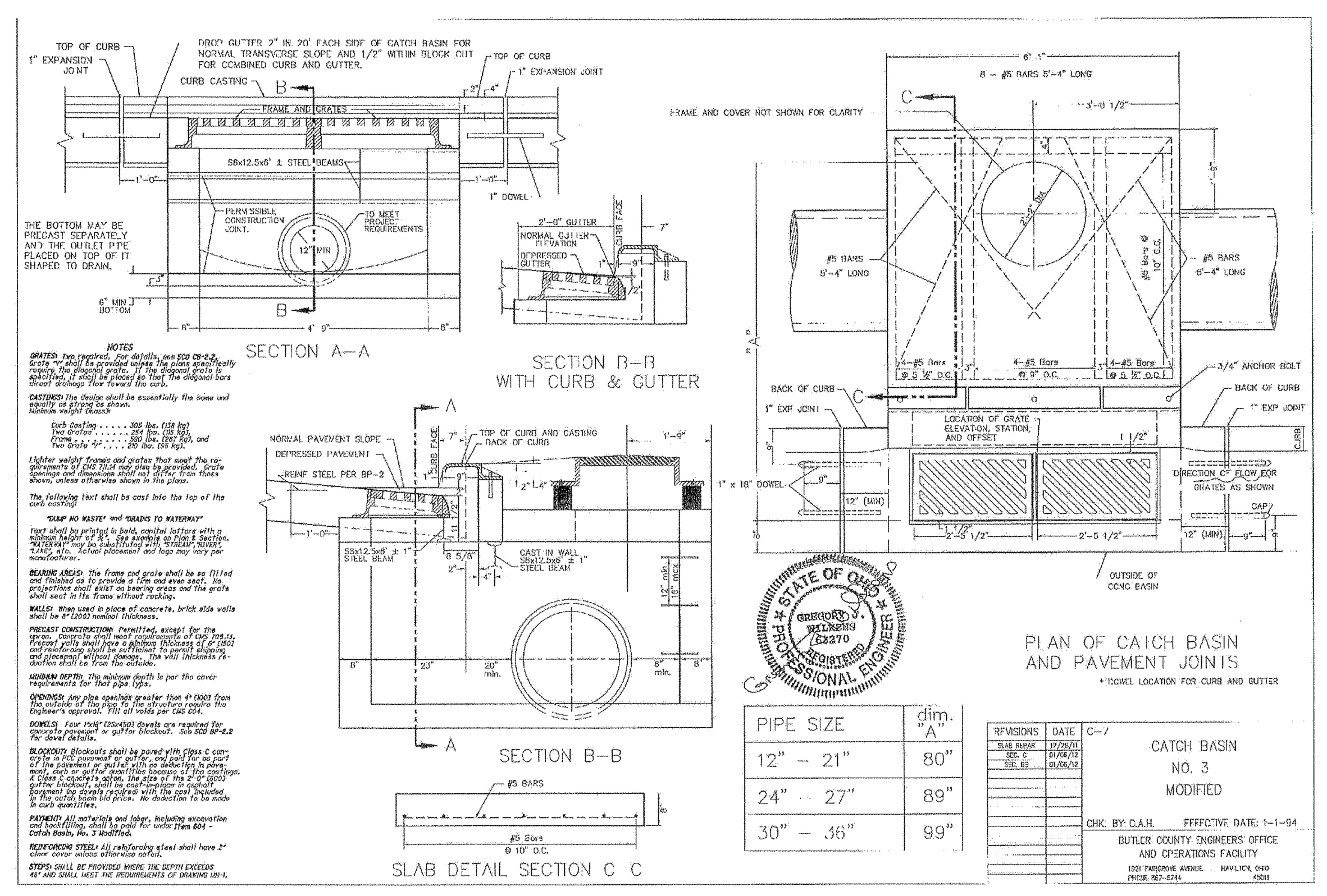
ROADWAY SETTLEMENT REPAIR STANDARD

CHK. BY: G.J.W. EFFECTIVE DATE: 1-1-2003

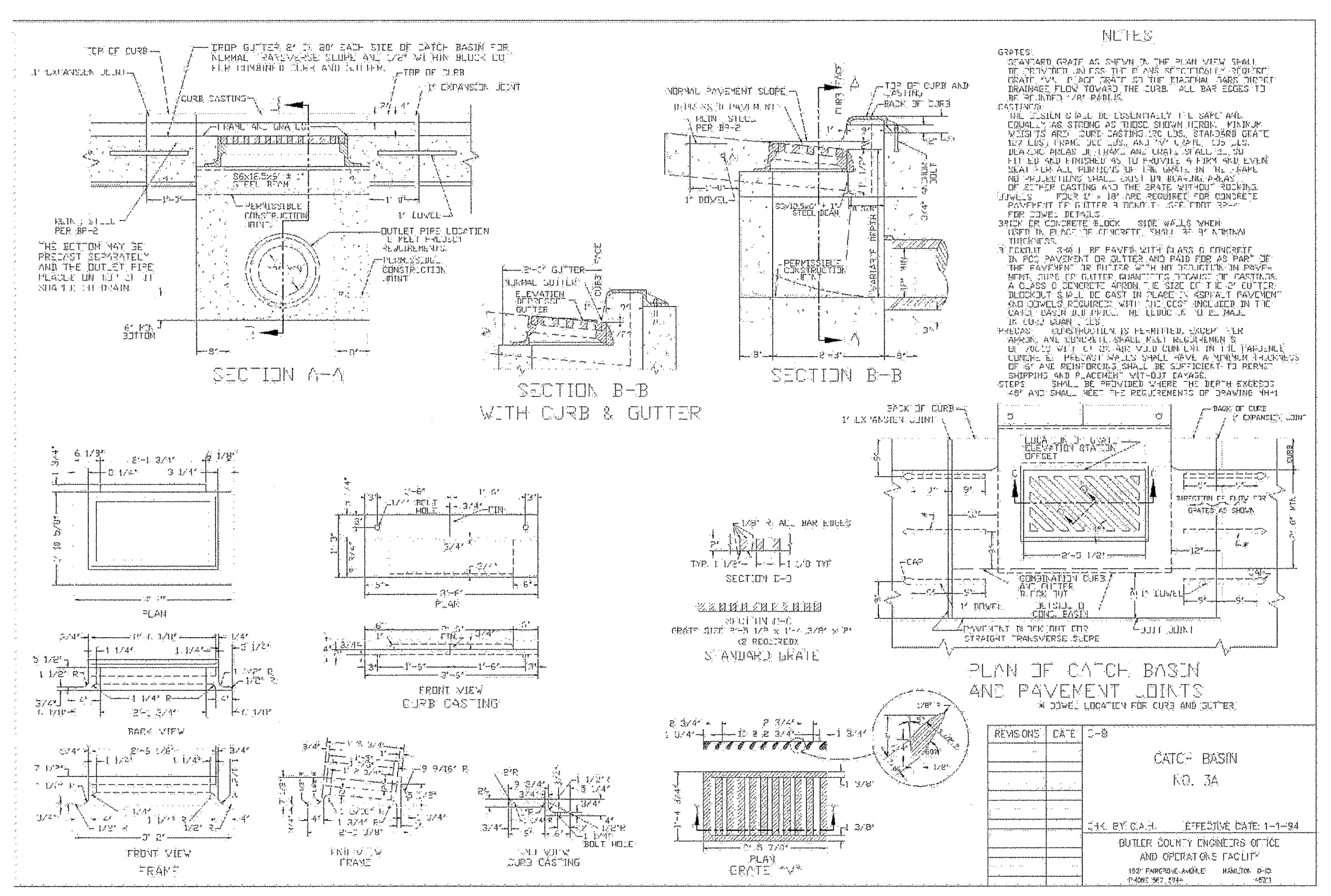
BUTLER COUNTY ENGINEERS OFFICE AND OPERATIONS FACILITY

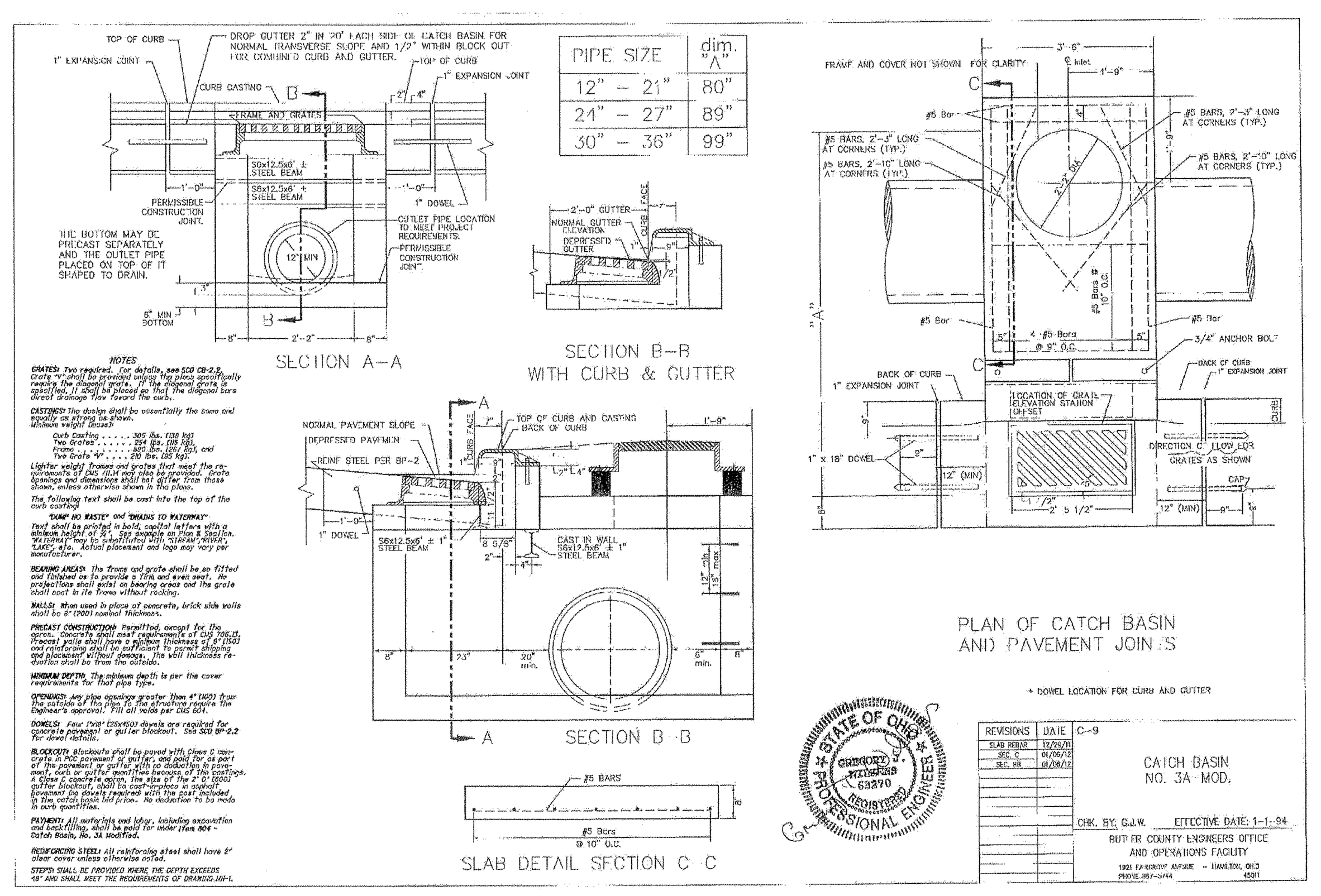
1921 FAIRGROVE AVENUE HAMILTON, OHIO PHONE 867-5744 45011



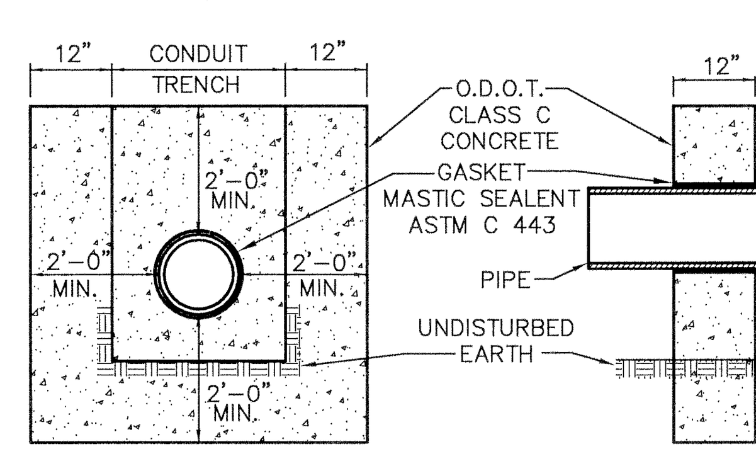


PIPE SIZE	dim. "A"
12" – 21"	80"
24" – 27"	89"
30" – 36"	99"



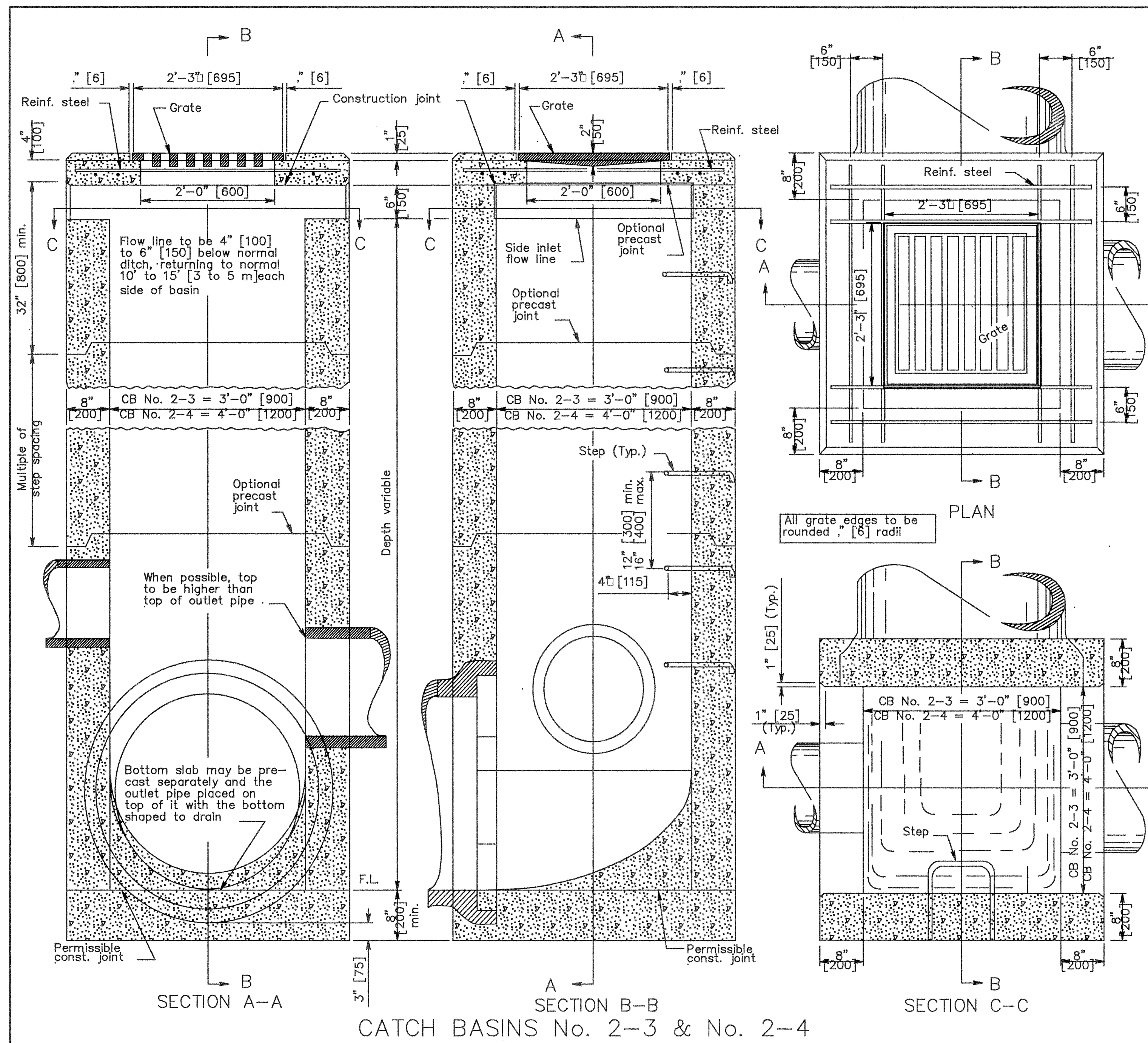


PIPE SIZE	dim. "A"
12" – 21"	80"
24" – 27"	89"
30" – 36"	99"



ANTI-SEEP COLLAR DETAIL

N.T.S.



NOTES

GRATE: See details on SCD CB-1.1.

If necessary, bicycle safe grates shall be specifed in the plans. Bicycle safe grates shall be Neenah No. R-4859-C or East Jordan No. 5110 Type M3 or approved equals.

As of January 1, 2003, the following text shall be cast into the top of the grate:

"DUMP NO WASTE" and "DRAINS TO WATERWAY"

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

WALLS: Brick or cast-in-place walls shall have a nominal thickness of 8" [200]. Precast walls shall have a minimum thickness of 6" [150] and be reinforced sufficiently to permit shipping and handling without damage. Precast tops shall be 8" [200] thick.

STEPS: Steps shall be provided where the depth exceeds 6' [1.8 m] and shall meet the requirements ofSCD MH-1.1.

CONCRETE: Cast-in-place concrete is to be Class C. All precast concrete shall meet the requirements of CMS 706.13 and be marked with the catch basin number.

REINFORCEMENT: Reinforcing in the top is to be #4 [#13M] bars spaced at 6" [150] center to center. For Catch Basin No. 2-3 use eight bars and for Catch Basin No. 2-4 use twelve bars.

INLETS OVER 12 FEET [3.5 m] IN DEPTH: Shall be precast or cast-in place concrete; reinforced with #4 [#13M] bars on 12" [300] centers both vertically and horizontally with 2" [50] clearance from inside wall face.

PRECAST BASE: If a precast base is used, it shall be set deep enough so that the top can be placed on the base to provide the grate elevation specified in the plans. Layers of brick shall not be used to adjust the top elevation.

LOCATION AND ELEVATION: When given on the plans, the location and the elevation are at the top center of the grate. When side openings are provided, the elevation shall be at the flow line of the side inlet.

MINIMUM DEPTH: The minimum depth of CB No. 2-3 and CB No. 2-4 shall be the outside diameter (O.D.) of the outlet pipe plus 7" [175].

OPENINGS: Pipe openings shall be the O.D. of the pipe being supplied plus 2" [50] when prefabricated or field cut. Fill any voids per CMS 601.

SIDE INLETS: Inlets shall be provided on both sides of the No. 2-3 and 2-4 catch basin in sags and on upstream side only where the ditch has a continuous down grade past the catch basin. Catch basins with side inlets shall not be used within the Clear Zone.

PAYMENT: All materials and labor, including excavation and backfill, shall be paid for under Item 604 – Catch Basin, No. 2-3 or Item 604 – Catch Basin No. 2-4.

CATCH BASIN	OUTLET PIPE SIZE
2-3	12" to 33" [300 to 825]
2-4	36" to 42" [900 to 1050]

OHIO DEPARTMENT OF TRANSPORTATION — STATE HYDRAULIC ENGINEER

DATE: 7-20-01, 7-19-02, 7-15-05

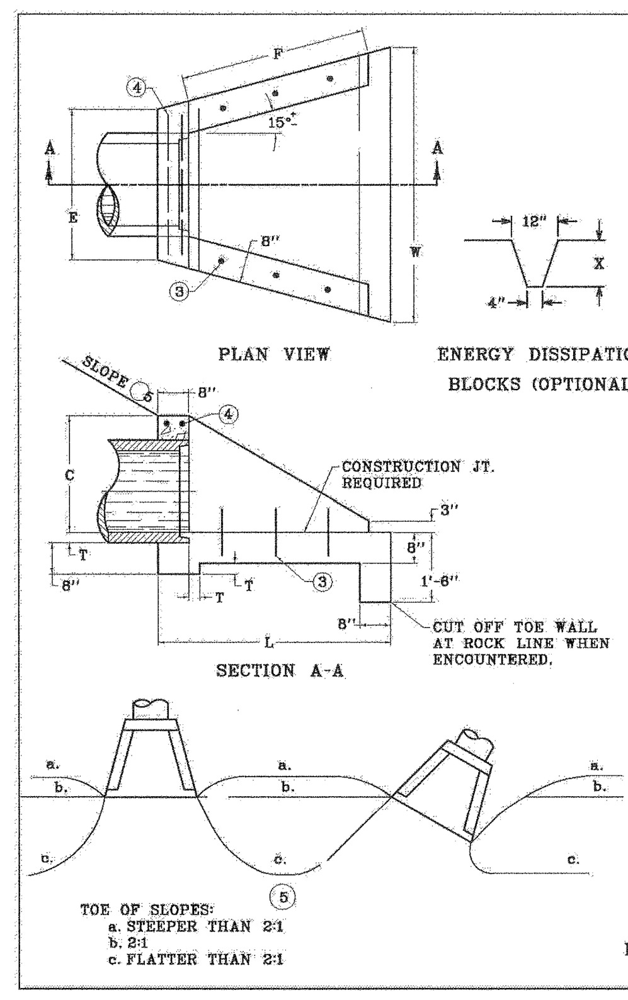
HYDRAULIC ENGINEER: M. Wawszkiewicz

All metric dimensions (in brackets [ ]) are in millimeters unless otherwise noted.

OFFICE OF STRUCTURAL ENGINEERING

STANDARD HYDRAULIC CONSTRUCTION DRAWING — CATCH BASINS No's 2-3 & 2-4

NUMBER: CB-1.2 — 1/1



PIPE DIA. OR EQUIV. DIA.	PIPE SHAPE (9)	DIMENSIONS C	E	F	L	W	T	X	CLASS A CONC C. Y.	REINF STEEL LBS.
12"	round	1'-9"	2'-6"	2'-3"	3'-6"	4'-0"	2"	12"	0.58	7
15"	round	2'-0"	2'-9"	2'-9"	4'-0"	4'-9"	2¼"	13½"	0.75	
	elliptical	1'-9"	3'-0"	2'-6"	3'-6"	4'-9"			0.68	8
18"	round	2'-3"	3'-0"	3'-6"	4'-6"	5'-3"	2½"	15"	0.93	
	elliptical	2'-0"	3'-6"	3'-0"	4'-0"	5'-6"	2¾"		0.89	
21"	round	2'-6"	3'-3"	4'-0"	5'-0"	6'-0"			1.14	
	elliptical	2'-3"	3'-0"	3'-6"	4'-6"	6'-0"			1.07	9
24"	round	2'-9"	3'-6"	4'-6"	5'-6"	6'-6"	3"	18"	1.35	8
	elliptical	2'-6"	4'-0"	4'-0"	5'-0"	6'-9"	3¼"		1.30	9
27"	round	3'-0"	3'-9"	5'-0"	6'-0"	7'-0"			1.57	
	elliptical	2'-9"	4'-6"	4'-3"	5'-3"	7'-3"	3½"		1.51	10

NOTES

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

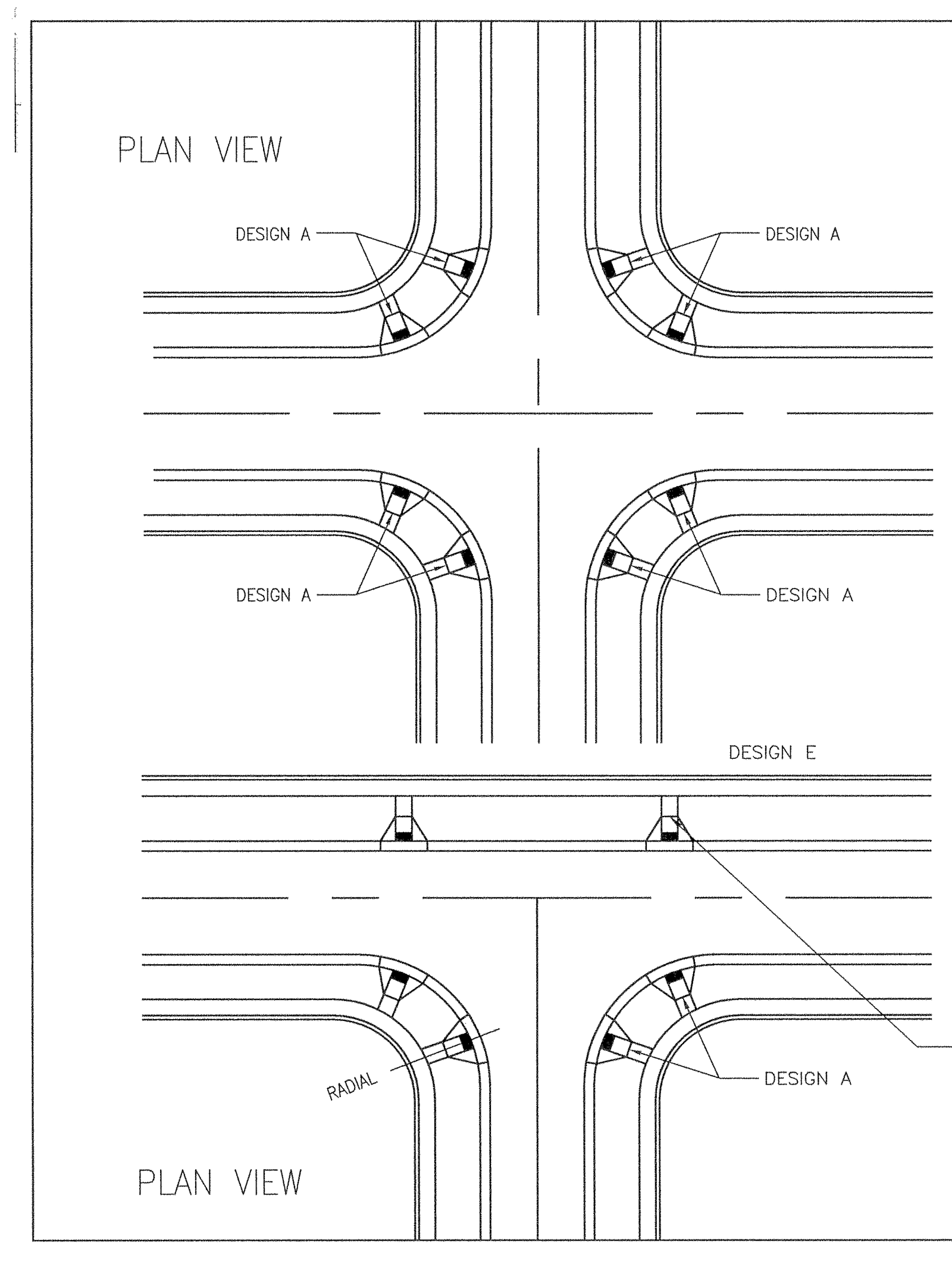
REVISIONS | DATE | C-13A

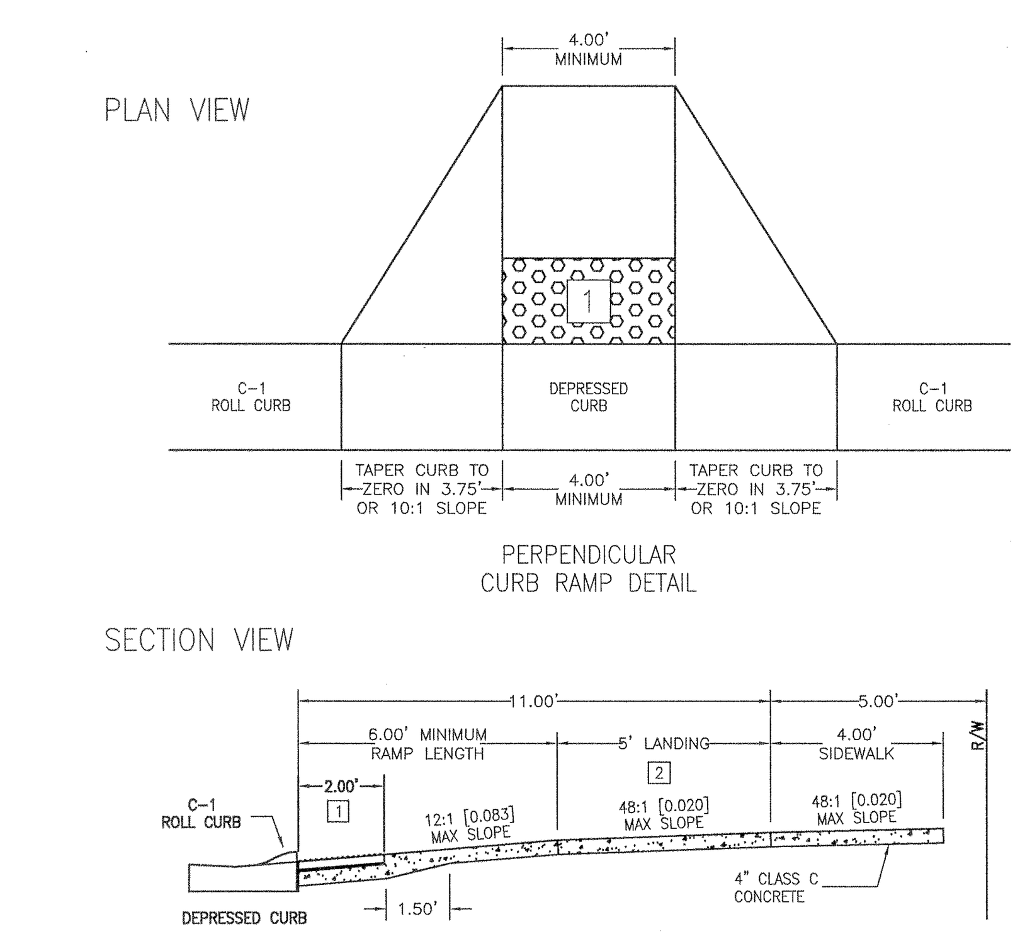
12" - 27" SLOPE/HILLSIDE

CHK. BY: EJP EFFECTIVE DATE: 1-1-2010

BUTLER COUNTY ENGINEERS OFFICE AND OPERATIONS FACILITY

1921 FAIRGROVE AVENUE - HAMILTON, OHIO PHONE 867-5744 45011 — SHEET 1 OF 6





[*] CURB RAMPS SHALL BE DESIGN A OR DESIGN E PER ODOT DRAWING 7-12-02, SHEETS 1 THRU 3. TRUNCATED DOMES ARE TO MEET THE SPECIFICATIONS OF ODOT DRAWING 7-12-02 SHEET 3.

[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 PRPOSED WALK SLOPE.

REVISIONS | DATE | C-2

TYPICAL CROSS SECTION OF LOCAL STREET WITH CURB

CHK. BY: C.A.H. EFFECTIVE DATE: 06-16-04

BUTLER COUNTY ENGINEERS OFFICE AND OPERATIONS FACILITY

1921 FAIRGROVE AVENUE – HAMILTON, OHIO PHONE 867-5744 45011

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OHIO UTILITIES PROTECTION SERVICE (OUPS)

CALL...800-925-0988 (Toll Free)
OHIO OIL & GAS PRODUCERS UNDERGROUND PROTECTION SERVICE (OGPUPS)

NON-MEMBERS MUST BE CALLED DIRECTLY

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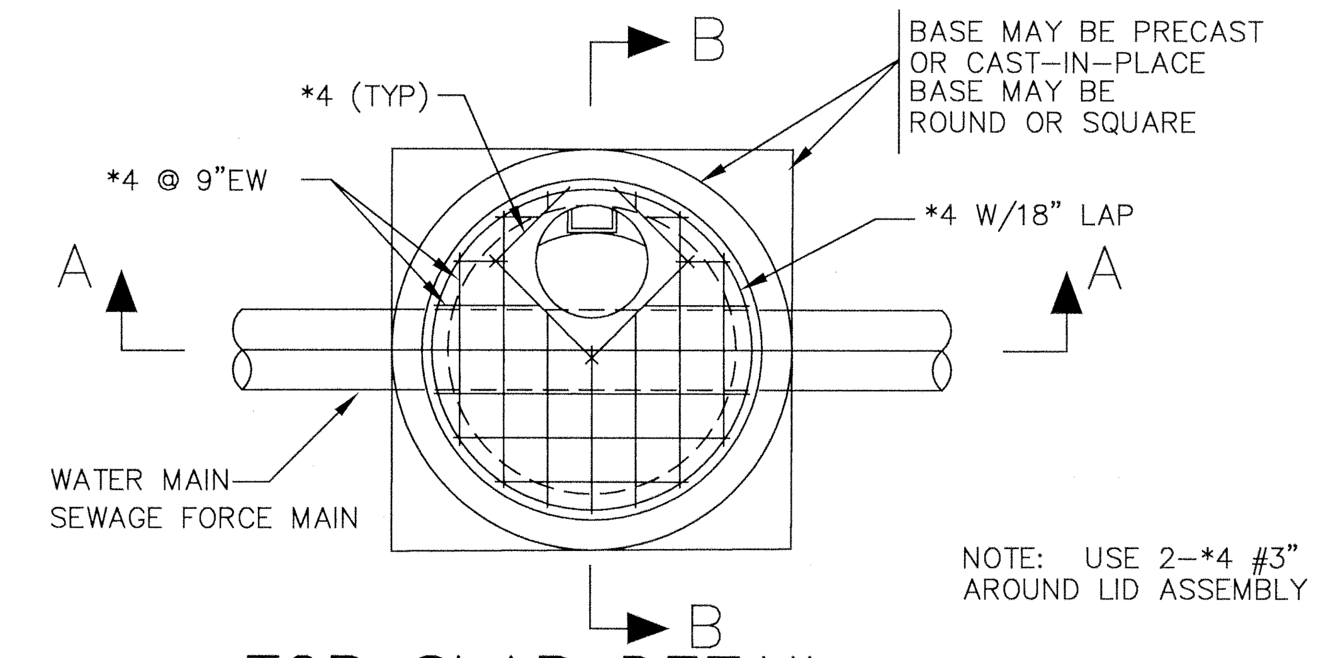
Drawn By	DMT
Project Mgr.	JA
Drawing File	04476014-IMP-00-SECTION 7
X-Reference Files	N/A
Date	06/21/13

No.	Revision/Issue	By	Date

CARRIAGE HILL SECTION 7

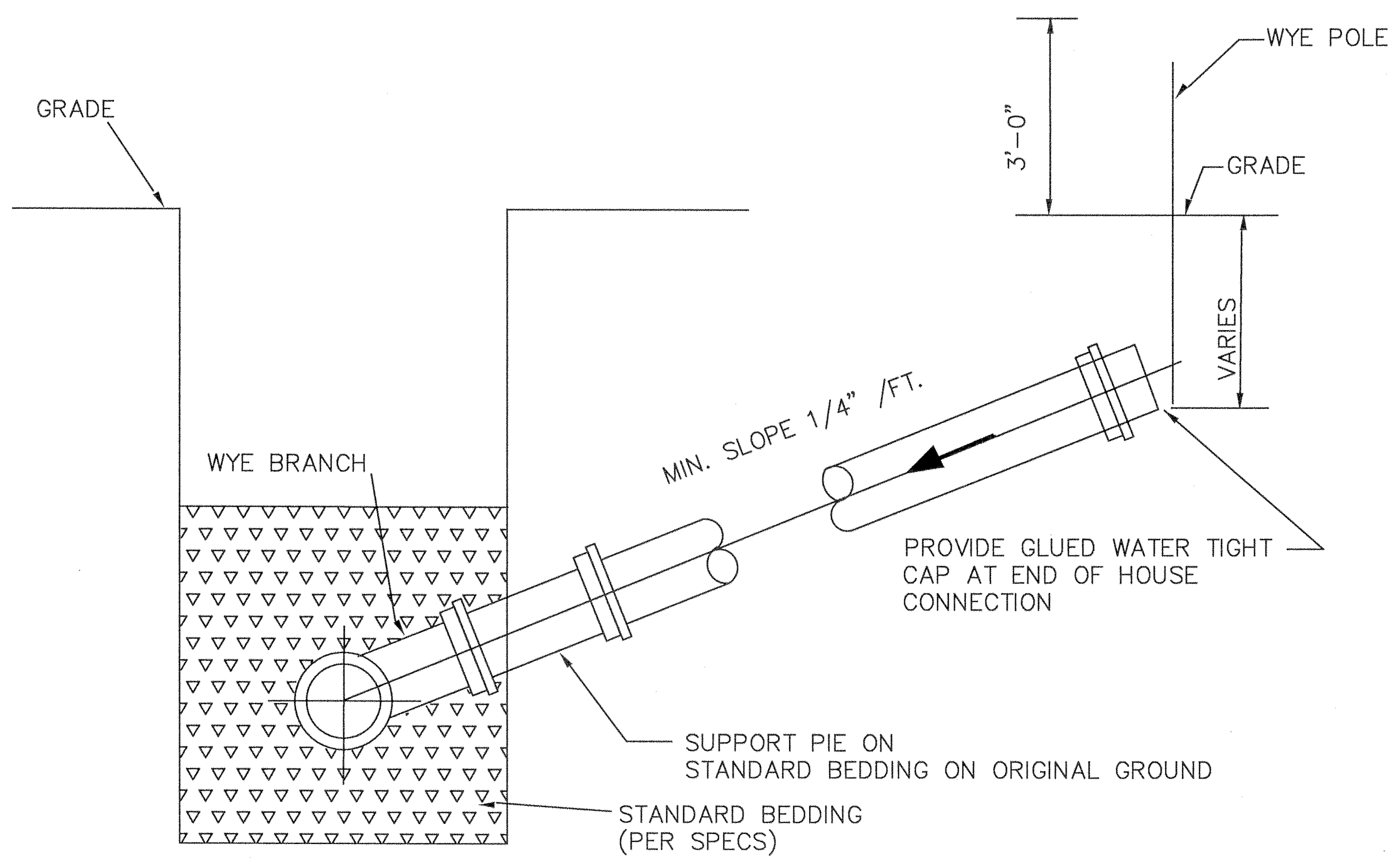
SECTION 32, TOWN 3, RANGE 3
LIBERTY TOWNSHIP
BUTLER COUNTY, OHIO

Sheet Title	STANDARD DETAILS
Project No.	04476.01
Scale	AS NOTED
Sheet No.	12 /15
File No.	04-476



TOP SLAB DETAIL (FRAME AND LID REMOVED)

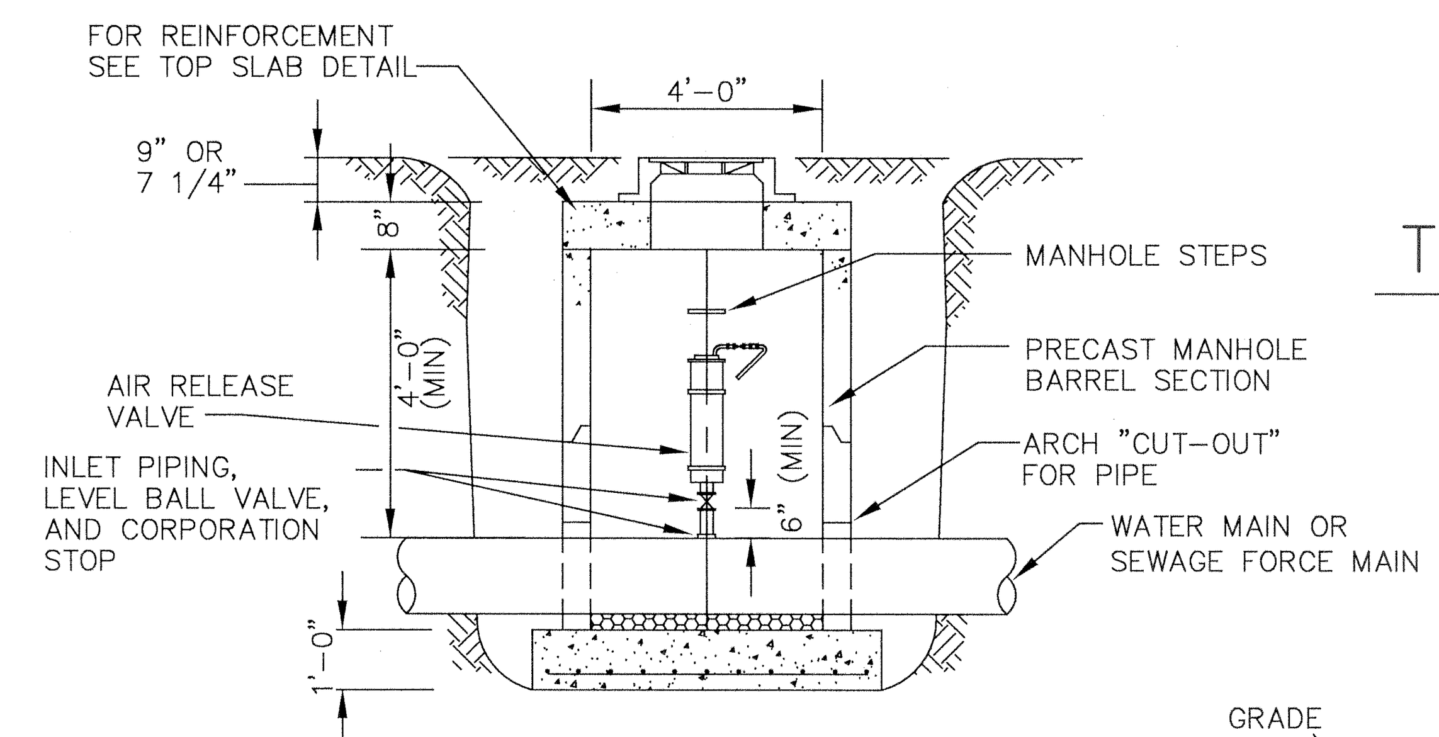
NOT TO SCALE



TYPICAL SERVICE CONNECTION–SHALLOW SEWER

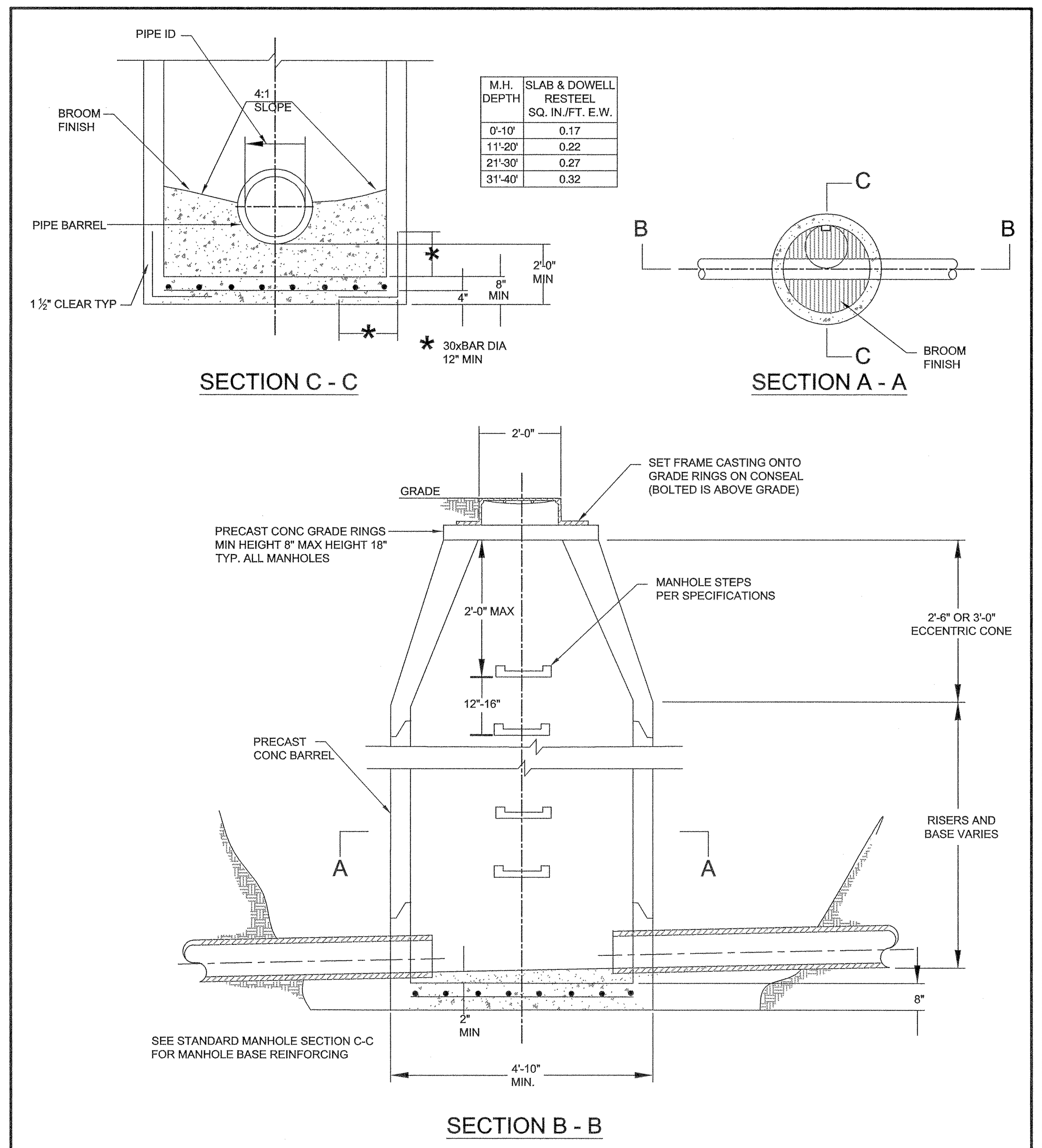
NOT TO SCALE

NOTE:
CONTRACTOR SHALL SUBMIT FOR APPROVAL SHOP DRAWINGS DETAILING THE TYPE OF AUGER STOP TO BE USED AT EACH BORE AND JACK LOCATION



AIR RELEASE VALVE SETTING SECTION A–A

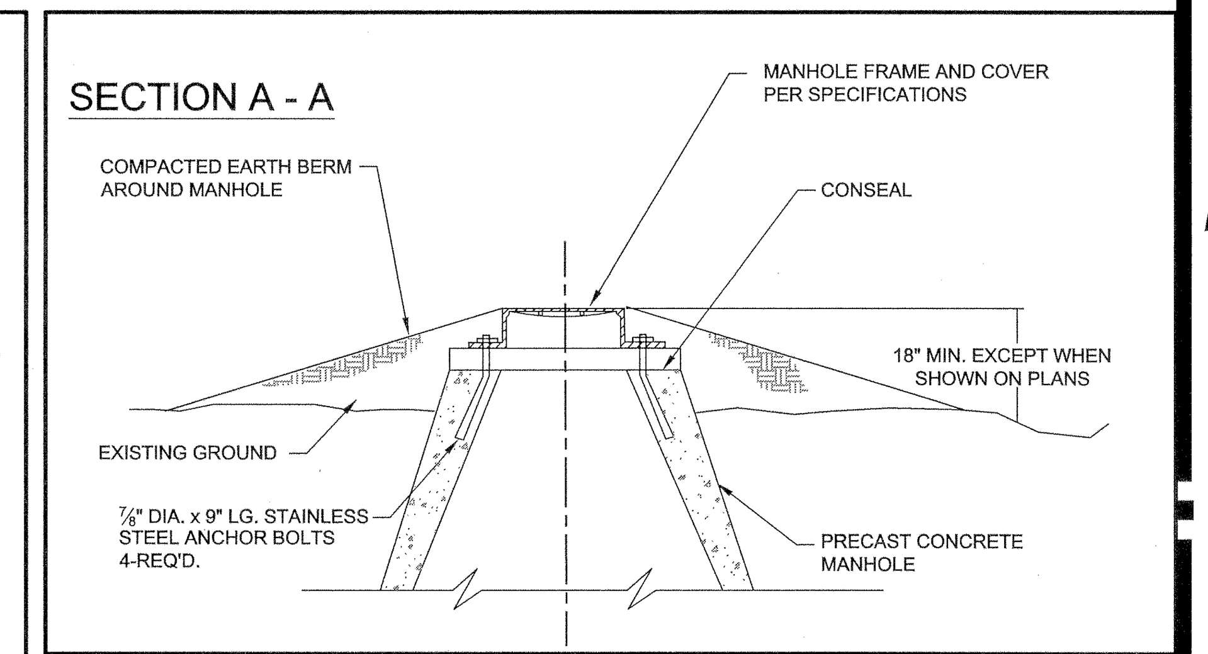
NOT TO SCALE



STANDARD MANHOLE

BUTLER COUNTY DEPARTMENT OF ENVIRONMENTAL SERVICES
130 HIGH STREET
HAMILTON, OH 45011
TELEPHONE: 513-887-3066
FAX: 513-887-3777

6200



ELEVATED MANHOLE DETAIL

BUTLER COUNTY DEPARTMENT OF ENVIRONMENTAL SERVICES
130 HIGH STREET
HAMILTON, OH 45011
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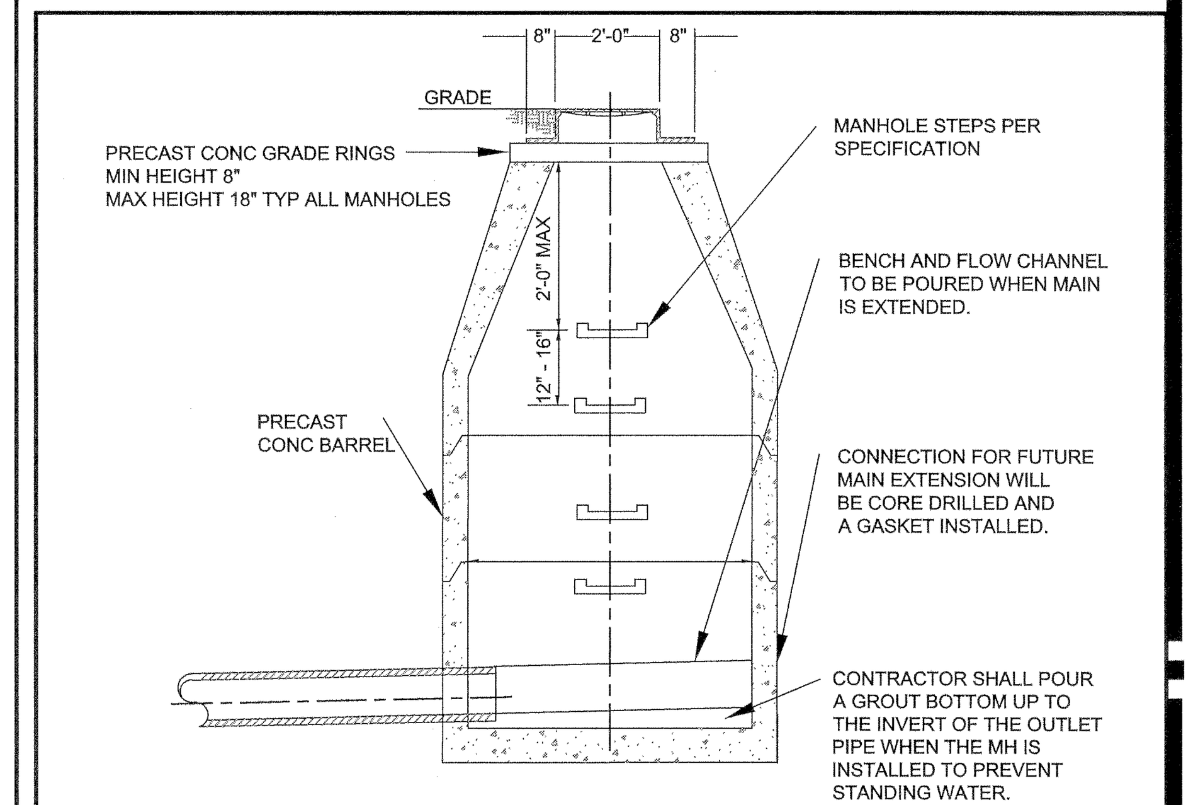
FAX: 513-887-3777

6170



DEAD END MANHOLE DETAIL

BUTLER COUNTY DEPARTMENT OF ENVIRONMENTAL SERVICES
130 HIGH STREET
HAMILTON, OH 45011
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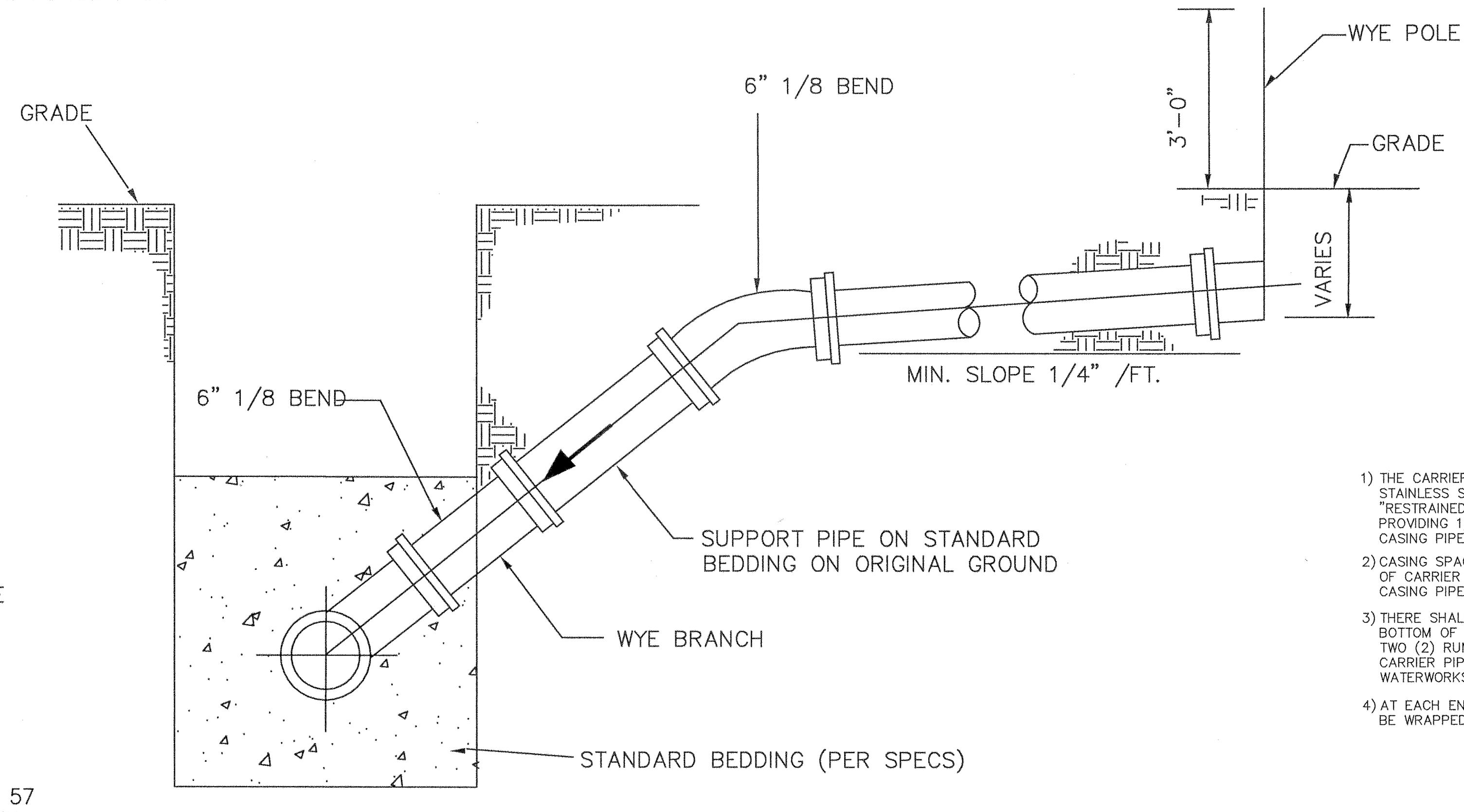
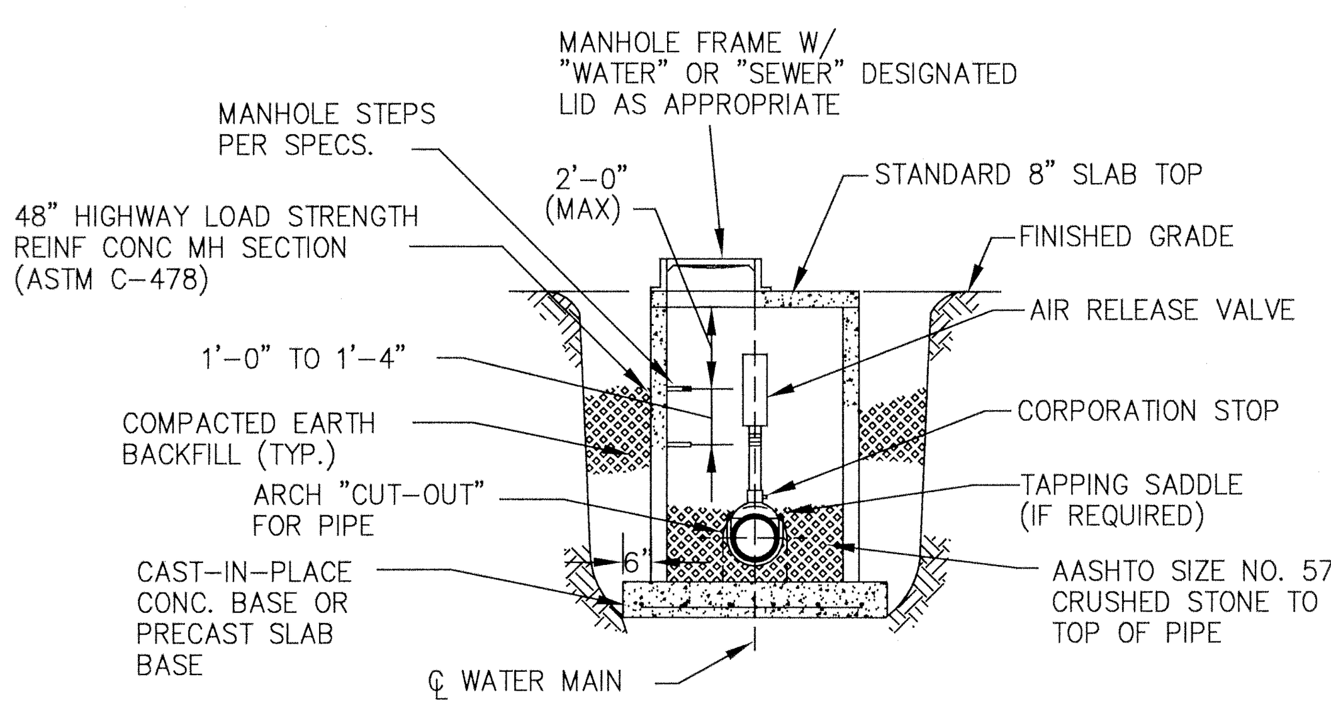
FAX: 513-887-3777

6190



TYPICAL SERVICE CONNECTION–DEEP SEWER

NOT TO SCALE

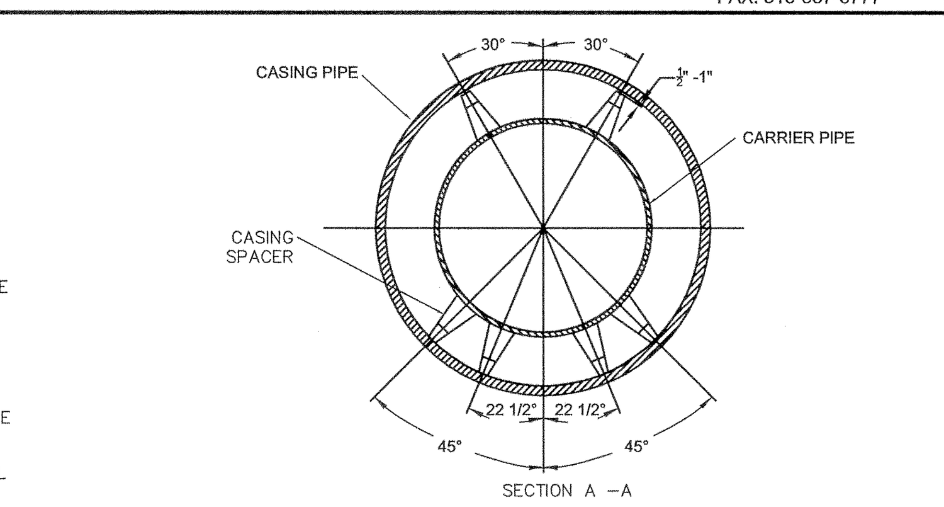


SECTION B–B

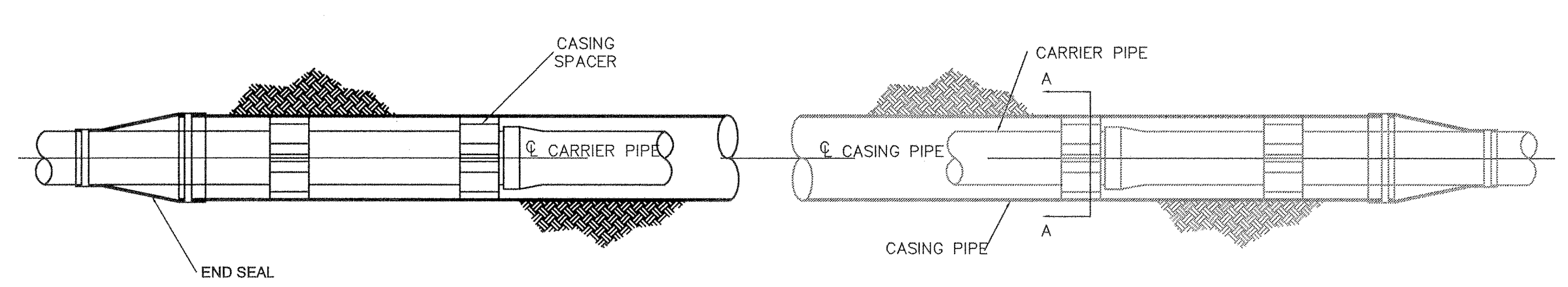
NOTES:
1. APPLIES TO AIR RELEASE FOR WATER MAINS
2. PROVIDE PLASTIC MH STEPS WITH 12" TO 16" SPACING.
3. AIR RELEASE VALVE, CORPORATION STOP, BALL VALVES & PIPING SIZES AS BID OR AS RECOMMENDED BY ARV MANUFACTURER.

TYPICAL AIR & VACUUM RELEASE VALVE SETTING

NOT TO SCALE

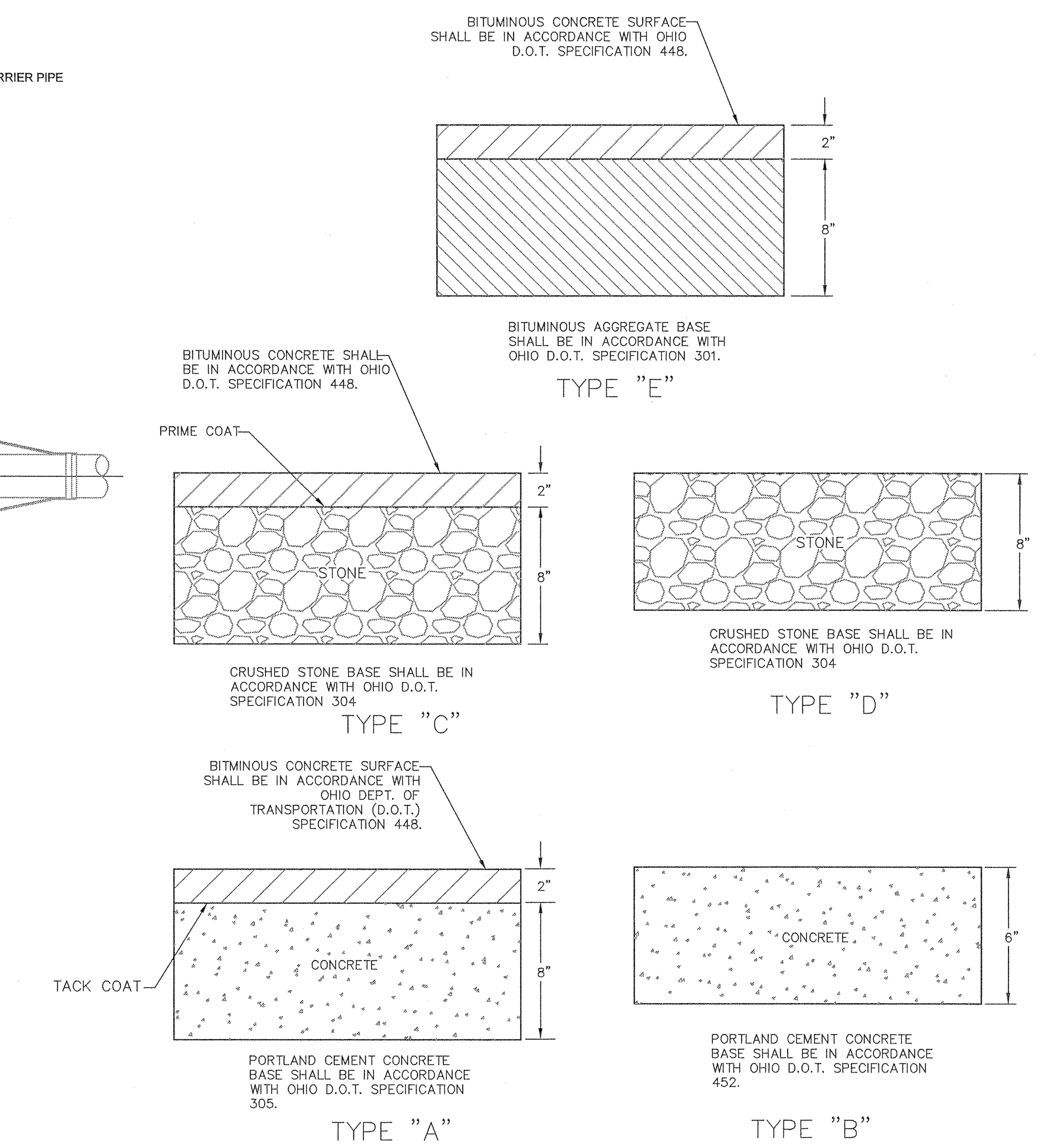


1) THE CARRIER PIPE SHALL BE BRACED WITHIN THE CASING PIPE WITH STAINLESS STEEL CASING SPACERS THAT PLACE THE CARRIER PIPE IN A "RESTRAINED" POSITION TO PRECLUDE POSSIBLE FLOATATION WHILE PROVIDING 1/2–1" CLEARANCE BETWEEN THE TOP RUNNERS AND THE CASING PIPE.
2) CASING SPACERS SHALL BE INSTALLED WITHIN 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". CASING SPACERS SHALL BE CASCADE WATERWORKS MODEL CSS.
4) AT EACH END OF THE CASING PIPE, THE CARRIER AND CASING PIPE SHALL BE WRAPPED WITH CASCADE WATERWORKS MODEL CCES END SEALS.



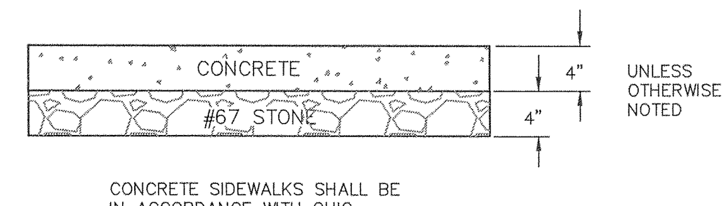
ENCASEMENT PIPE DETAIL

NOT TO SCALE



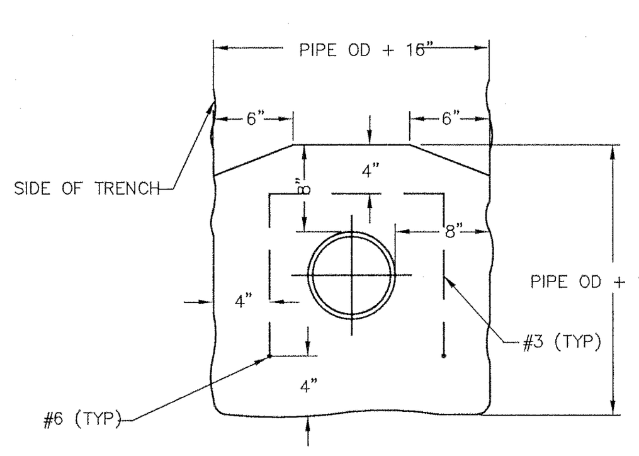
PAVEMENT REPLACEMENT DETAILS

NOT TO SCALE



WALK REPLACEMENT DETAILS

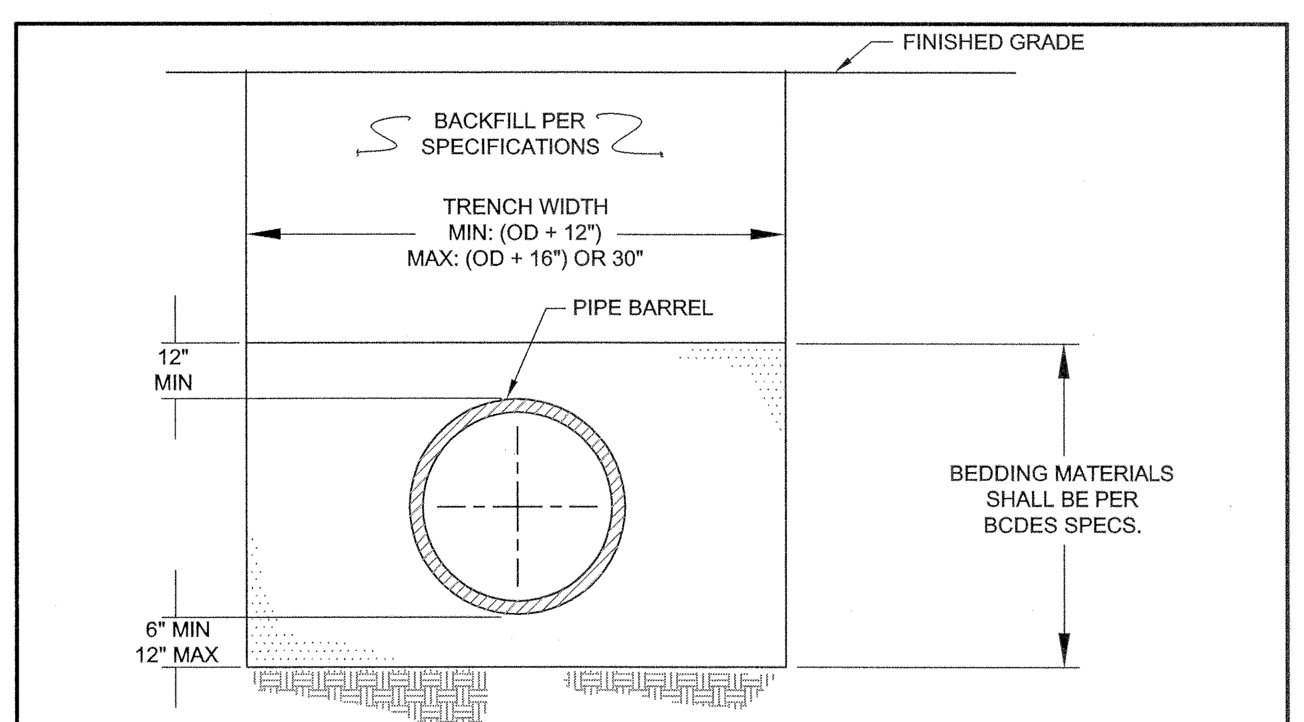
NOT TO SCALE



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

CONCRETE ENCASEMENT

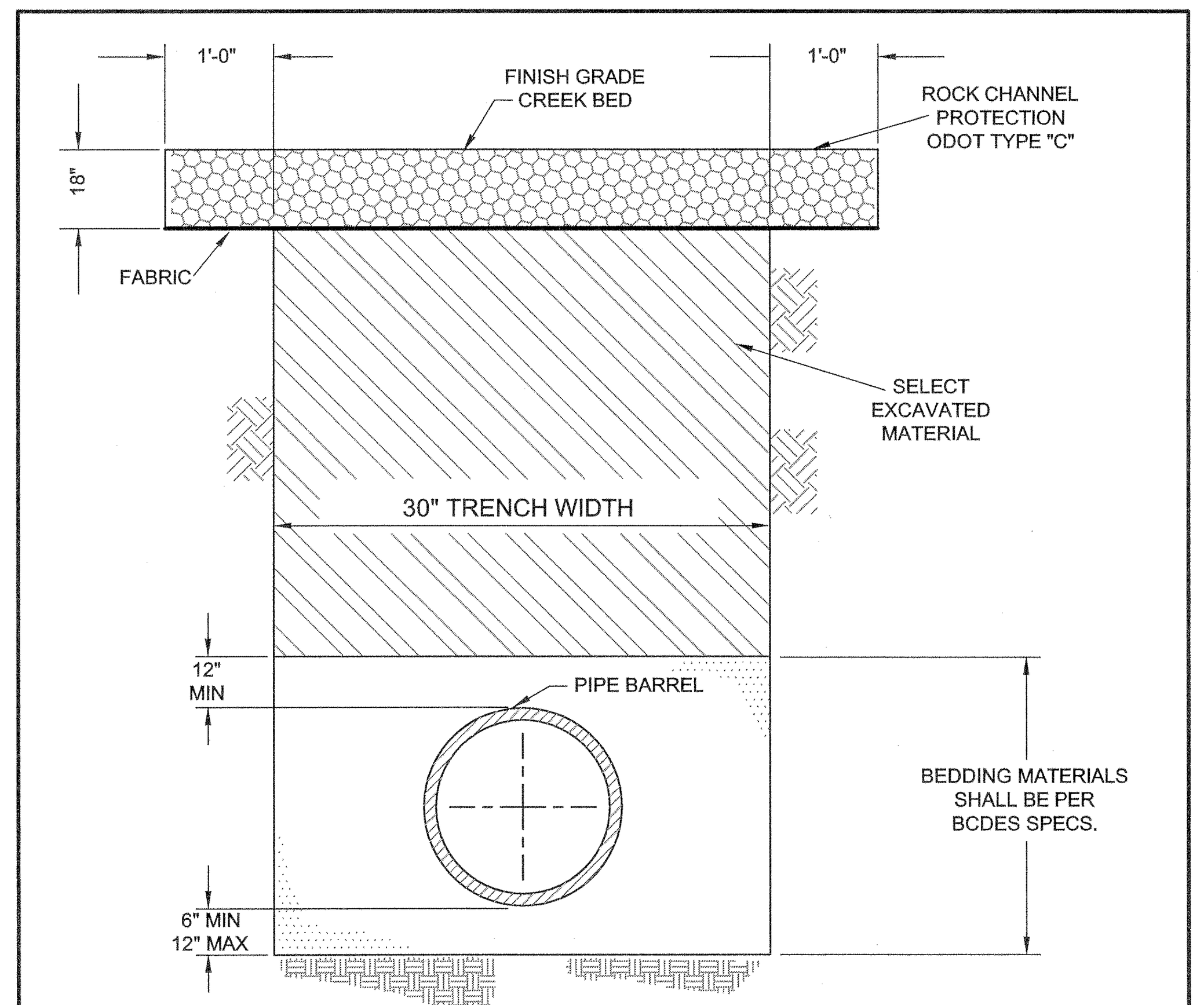
NOT TO SCALE



TYPICAL TRENCH DETAIL SEWER INSTALLATION

BUTLER COUNTY DEPARTMENT OF ENVIRONMENTAL SERVICES
130 HIGH STREET
HAMILTON, OH 45011
TELEPHONE: 513-887-3066
FAX: 513-887-3777

6270



TYPICAL TRENCH DETAIL SEWER INSTALLATION CREEK CROSSING

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Drawn By	NAK
Project Mgr.	JJC
Drawing File	04476014-IMP-00-SECTION 7
X-Reference Files	N/A
Date	06/21/13

No.	Revision/Issue	By	Date

CARRIAGE HILL
SECTION 7

SECTION 32, TOWN 3, RANGE 3
LIBERTY TOWNSHIP
BUTLER COUNTY, OHIO

Sheet Title	BUTLER COUNTY WATER & SEWER STANDARD DETAILS
Project No.	04476.01
Scale	AS NOTED
Sheet No.	13 / 15
File No.	04-476

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.

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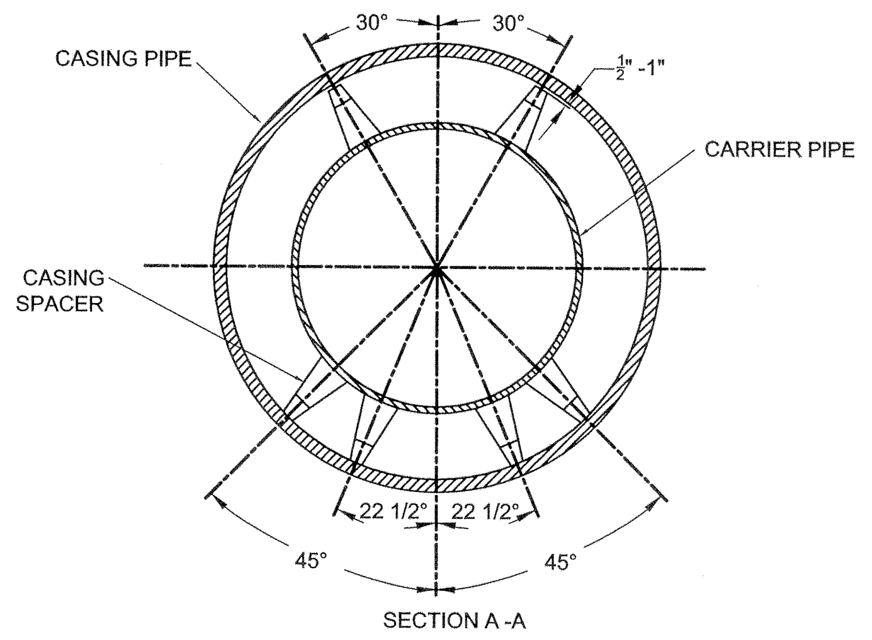
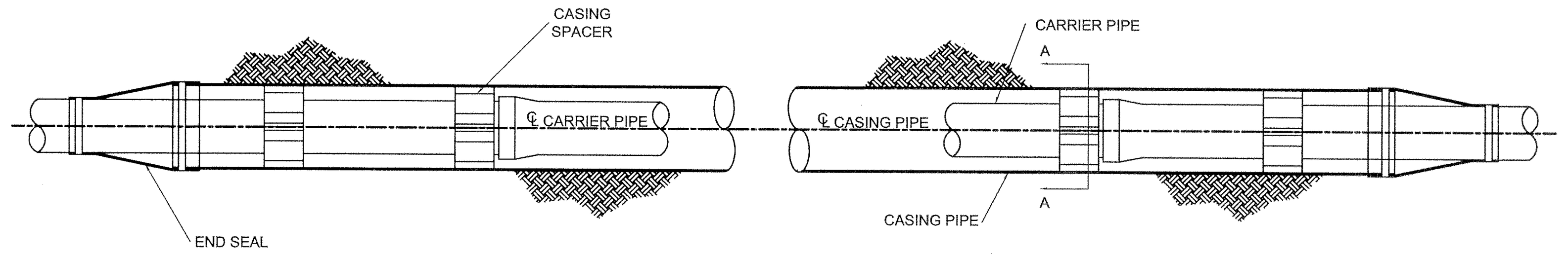
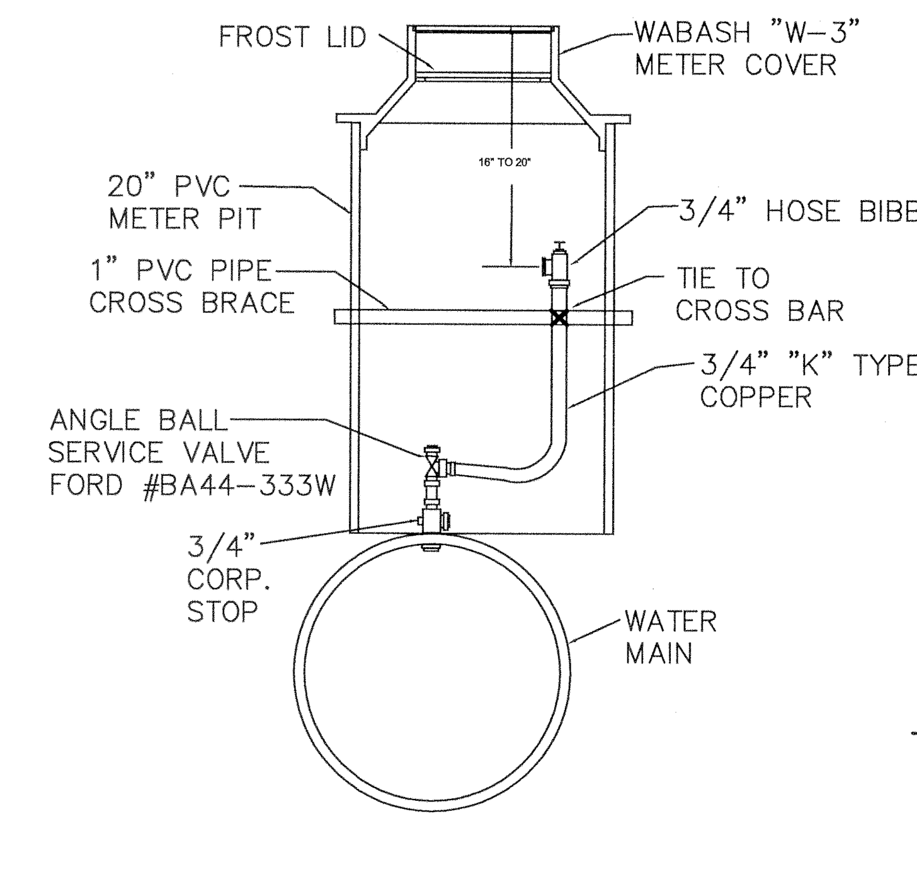




SEWER FORCE MAIN & WATER MAIN ENCASEMENT DETAIL

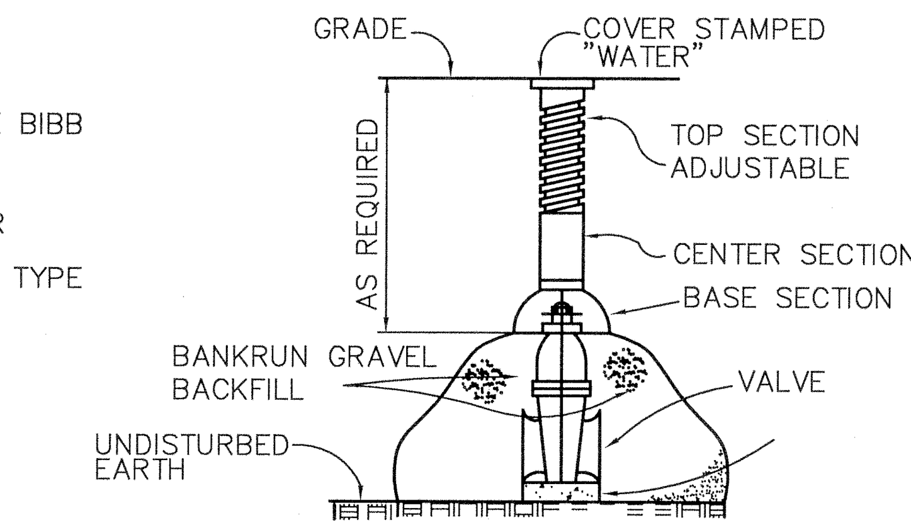
BUTLER COUNTY DEPARTMENT OF ENVIRONMENTAL SERVICES
130 HIGH STREET
HAMILTON, OH 45011
TELEPHONE: 513-887-3066
FAX: 513-887-3777

4370



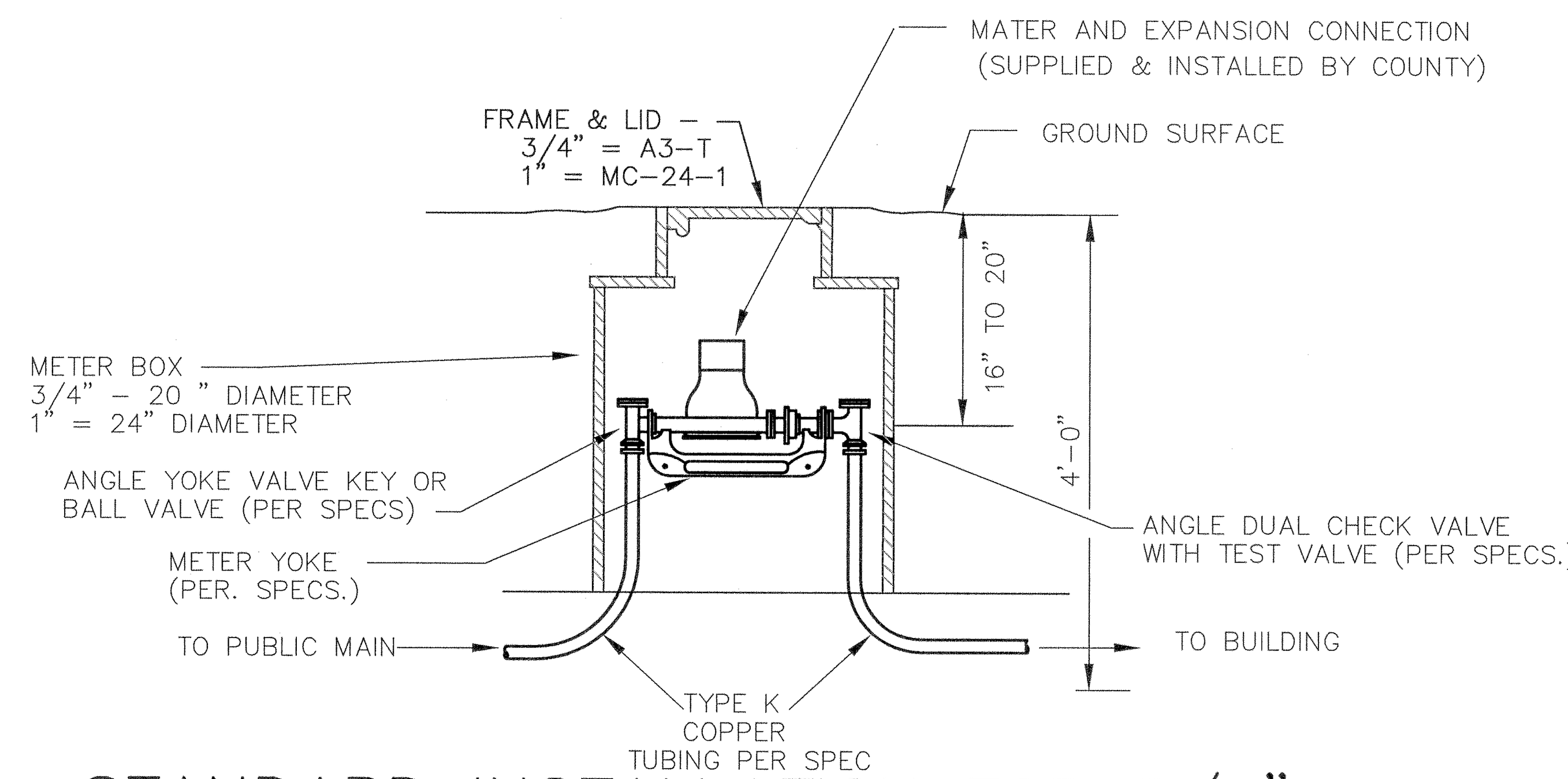
AIR RELEASE VALVE

(NOT TO SCALE)

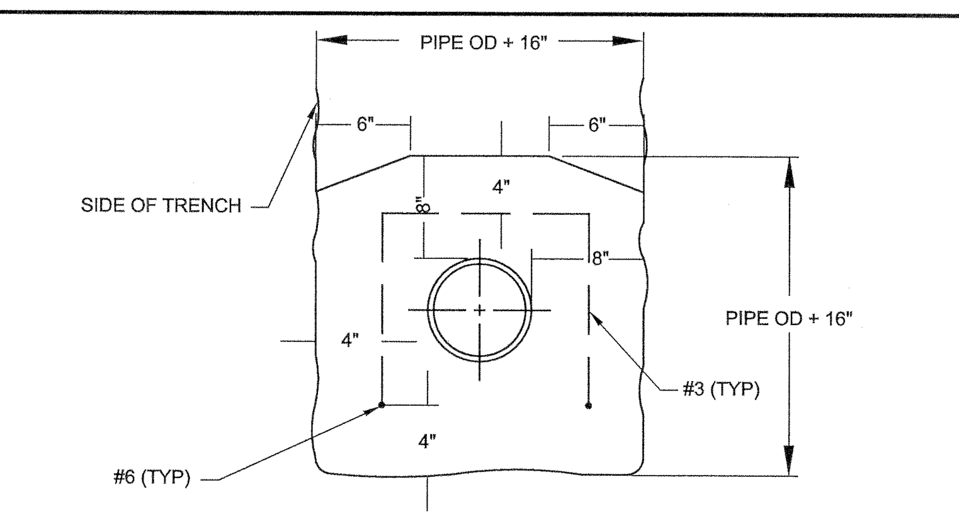


ROADWAY & AUXILLARY VALVE BOX DETAIL

(NOT TO SCALE)



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



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CONCRETE ENCASEMENT DETAIL

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130 HIGH STREET
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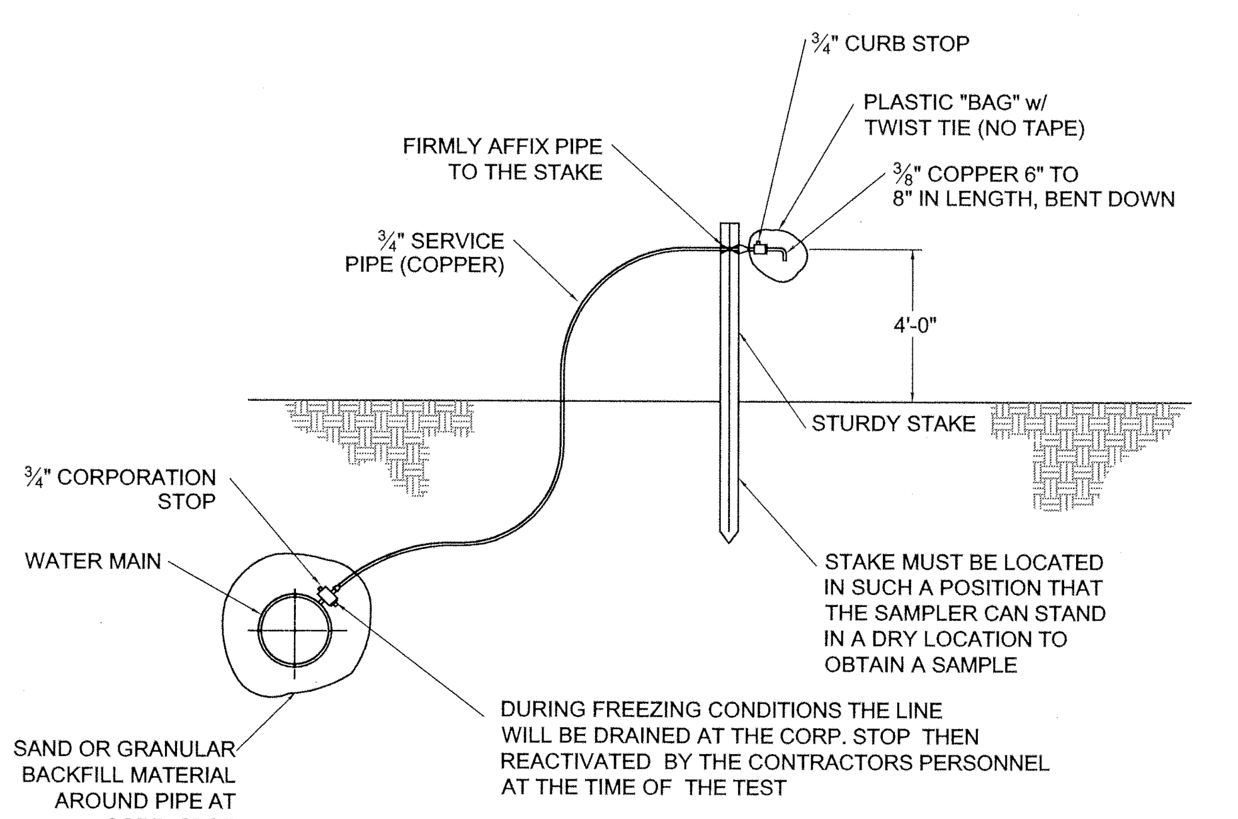
FAX: 513-887-3777

6240



TEMP. PURITY TEST STATION

BUTLER COUNTY DEPARTMENT OF ENVIRONMENTAL SERVICES
130 HIGH STREET
HAMILTON, OH 45011
TELEPHONE: 513-887-3066
FAX: 513-887-3777

5260

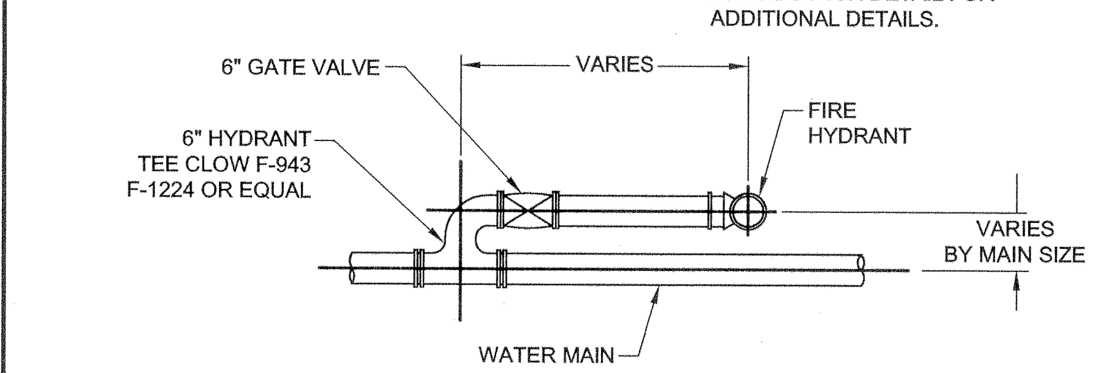
PURITY TEST STATION

(NOT TO SCALE)

NOTES:

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

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

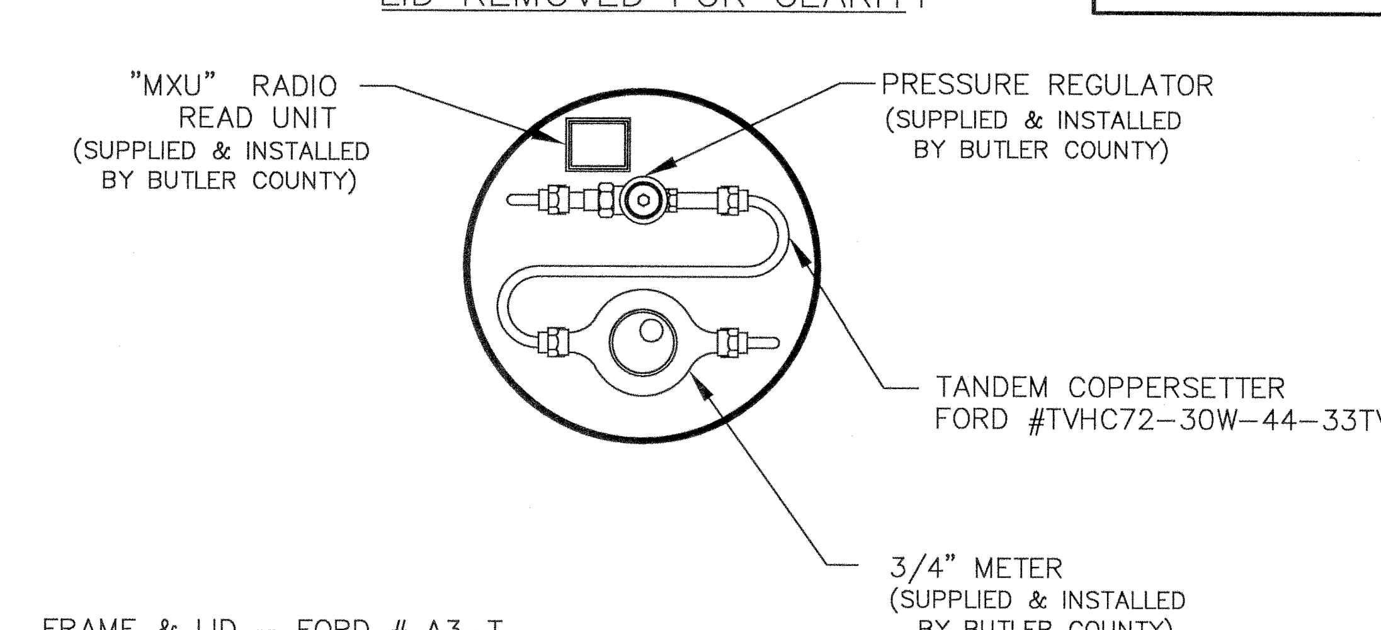


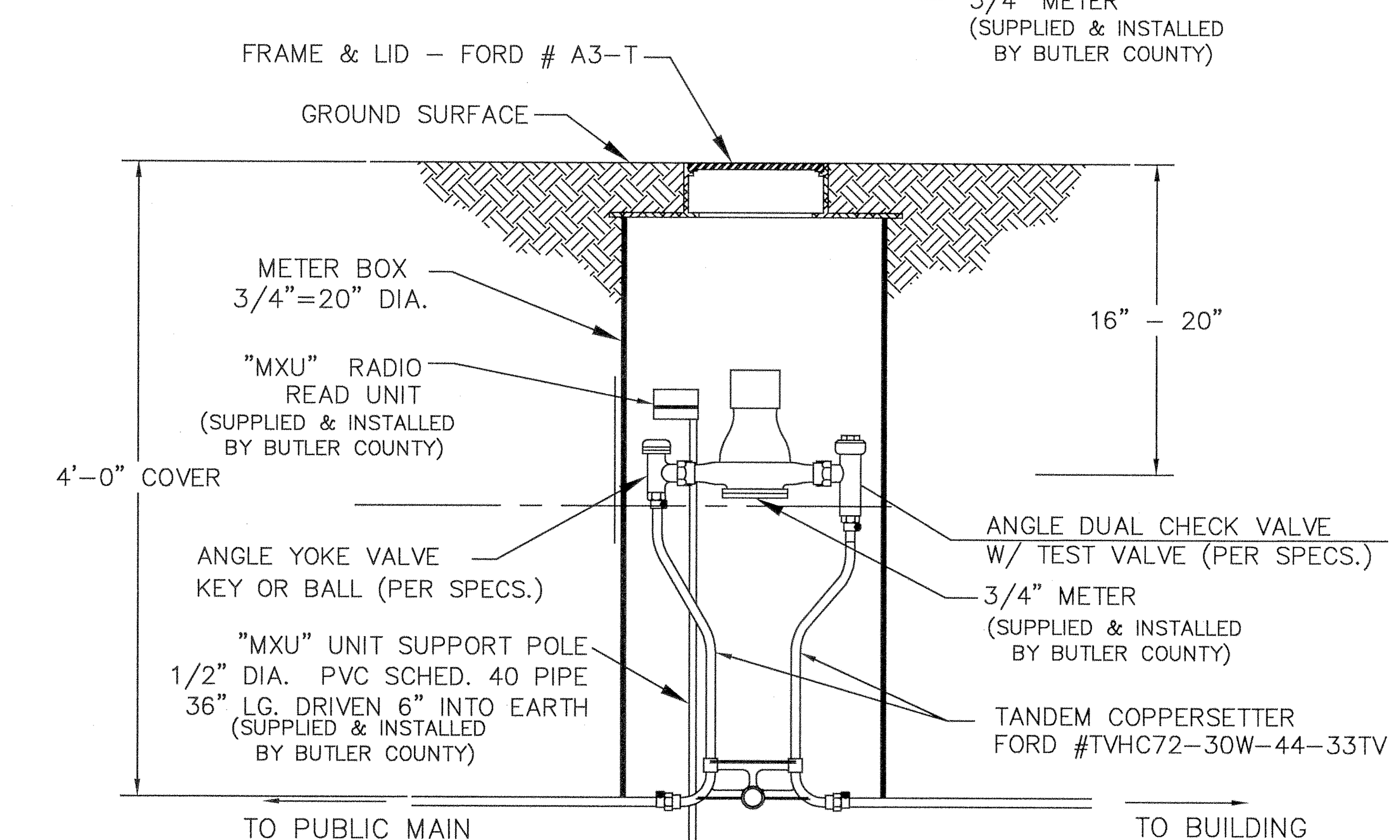
SETTING FOR HYDRANT ADJACENT TO MAIN

BUTLER COUNTY DEPARTMENT OF ENVIRONMENTAL SERVICES
130 HIGH STREET
HAMILTON, OH 45011
TELEPHONE: 513-887-3066
FAX: 513-887-3777

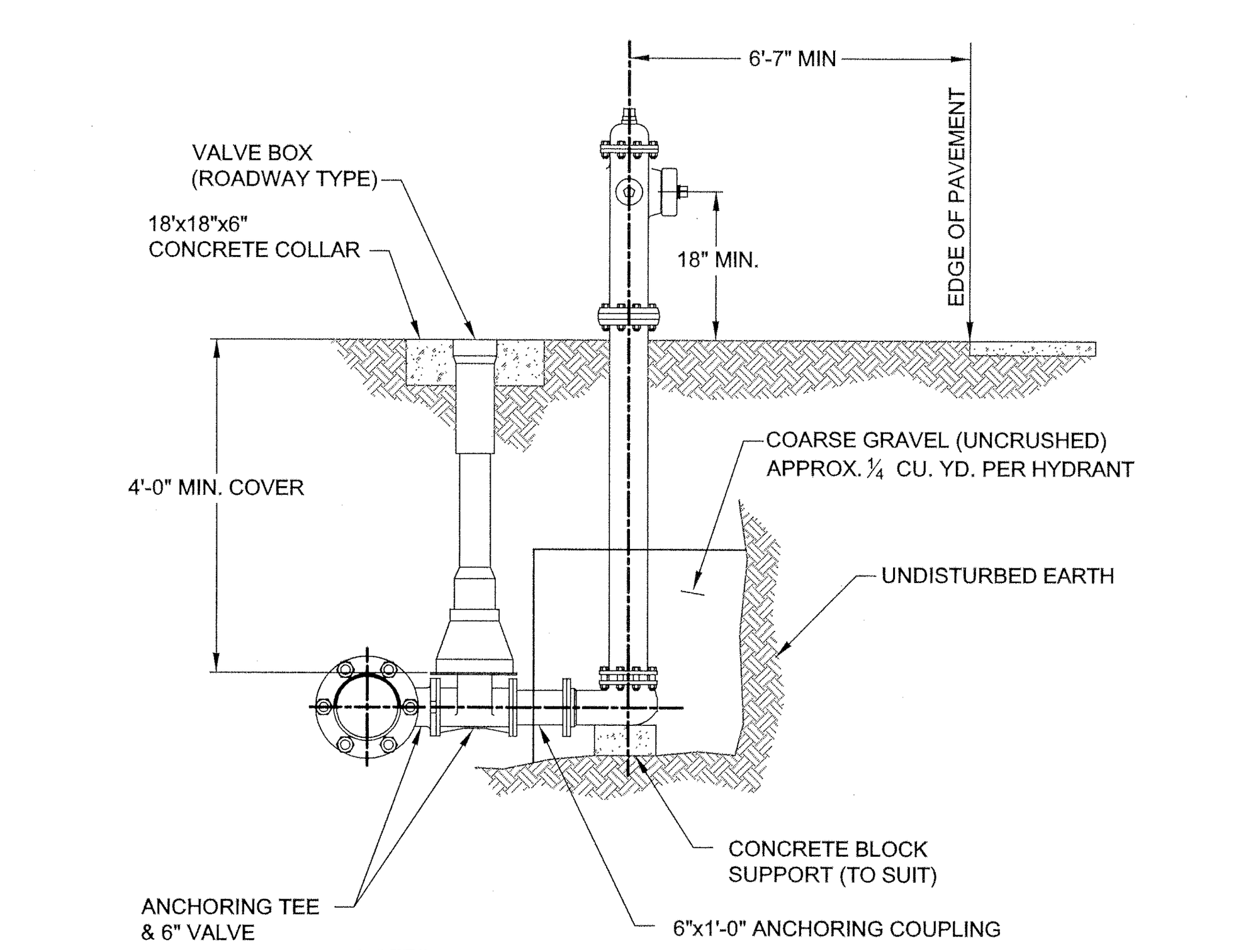
5120

LID REMOVED FOR CLARITY





TANDEM COPPERSETTER INSTALLATION FOR 3/4" METER & PRESSURE REGULATOR



NOTES:

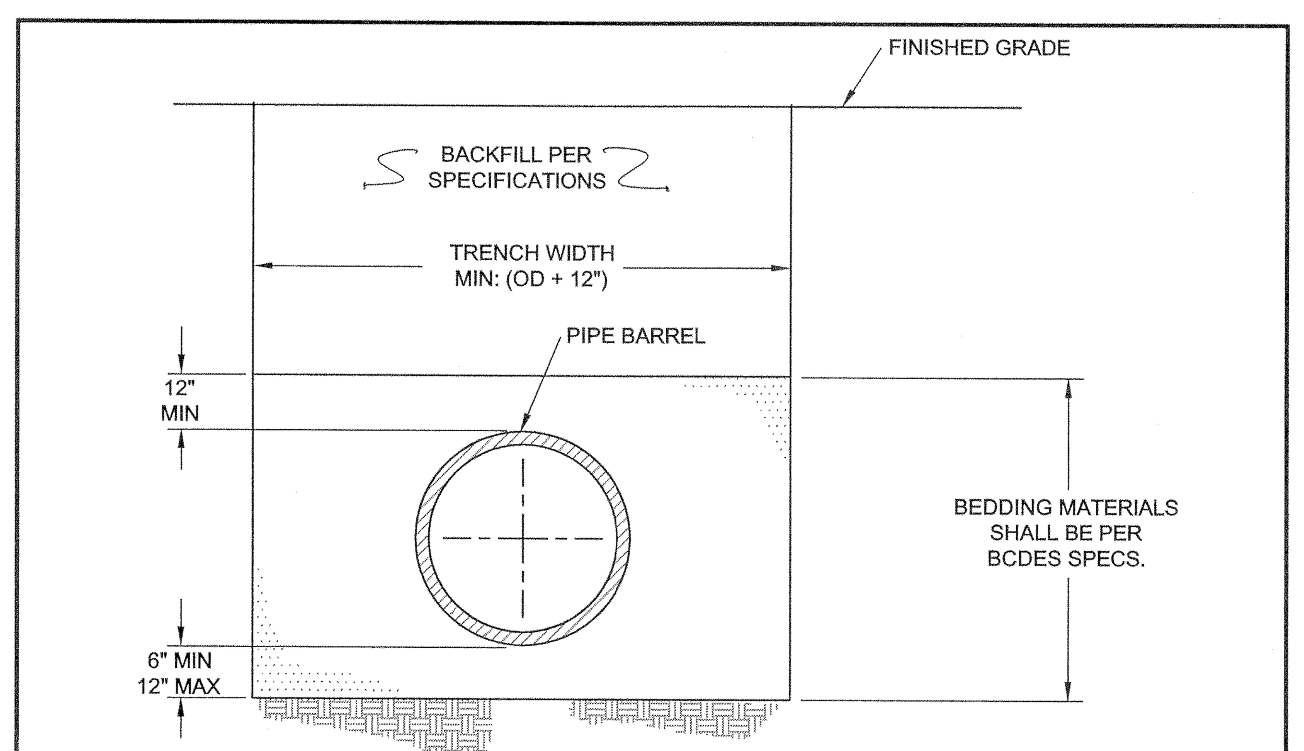
1.) VERIFY LOCATION OF F.H. RELATIVE TO WATER MAIN ON PLANS.

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

TYPICAL FIRE HYDRANT INSTALLATION

BUTLER COUNTY DEPARTMENT OF ENVIRONMENTAL SERVICES
130 HIGH STREET
HAMILTON, OH 45011
TELEPHONE: 513-887-3066
FAX: 513-887-3777

5110



TYPICAL TRENCH DETAIL WATER MAIN INSTALLATION

BUTLER COUNTY DEPARTMENT OF ENVIRONMENTAL SERVICES
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HAMILTON, OH 45011
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Drawn By NAK	Project Mgr. JJC
Drawing File	04476014-IMP-00-SECTION 7
X-Reference Files	N/A
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CARRIAGE HILL
SECTION 7

SECTION 32, TOWN 3, RANGE 3
LIBERTY TOWNSHIP
BUTLER COUNTY, OHIO

Sheet Title	BUTLER COUNTY WATER & SEWER STANDARD DETAILS
Project No.	04476.01
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Specifications for

Permanent Seeding

SITE PREPARATION

1. A subsoiler, plow or other implement shall be used to reduce soil compaction and allow maximum infiltration. (Maximizing infiltration will help control both runoff rate and water quality.) Subsoiling should be done when the soil moisture is low enough to allow the soil to crack or fracture. Subsoiling shall not be done on slip-prone areas where soil preparation should be limited to what is necessary for establishing vegetation.

2. The site shall be graded as needed to permit the use of conventional equipment for seedbed preparation and seeding.

3. Resoil shall be applied where needed to establish vegetation.

SEEDBED PREPARATION

1. Lime–Agricultural ground limestone shall be applied to acid soil as recommended by a soil test. In lieu of a soil test, lime shall be applied at the rate of 100 lbs./1,000 sq. ft. or 2 tons/ac.

2. Fertilizer–Fertilizer shall be applied as recommended by a soil test. In lieu of a soil test, fertilizer shall be applied at a rate of 12 lb./1,000 sq. ft. or 500 lb./ac/ of 10–10–10 or 12–12–12 analysis.

3. The lime and fertilizer shall be worked into the soil with a disk harrow, spring–tooth harrow, or other suitable field implement to a depth of 3 in. On sloping land the soil shall be worked on the contour.

SEEDING DATES AND SOIL CONDITIONS

Seeding should be done March 1 to May 31 or Aug. 1 to September 30. These seeding dates are ideal but, with the use of additional mulch and irrigation, seedings may be made any time throughout the growing season. Tillage/ seedbed preparation should be done when the soil is dry enough to crumble and not form ribbons when compressed by hand. For winter seeding, see the following section on dormant seeding.

DORMANT SEEDINGS

1. Seedings shall 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.

2. The following methods may be used for "Dormant Seeding":

* From October 1 through November 20, prepare the seedbed, and the required amounts of lime and fertilizer, then mulch and anchor. After November 20, and before March 15, broadcast the selected seed mixture, mulch and anchor. Increase the seeding rates by 50% for this type of seeding.

* From November 20 through March 15, when soil conditions permit, prepare the seedbed, lime and fertilize, apply the selected seed mixture, mulch and anchor. Increase the seeding rates by 50% for this type of seeding.

* Apply seed uniformly with a cyclone seeder, drill, cultipacker seeder, or hydro–seeder (slurry may include seed and fertilizer) on a firm, moist seedbed.

* 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 operations should be on the contour where feasible.

MULCHING

1. Mulch material shall be applied immediately after seeding. Seedings made during optimum seeding dates and with favorable soil conditions and on very flat areas may not need mulch to achieve adequate stabilization. Dormant seeding shall be mulched.

2. Materials

* Straw–If straw is used it shall be unrotted small–grain straw applied at the rate of 2 tons/ac. or 90 lb./1,000 sq. ft. (two to three bales). The mulch shall be spread uniformly by hand or mechanically so the soil surface is covered. For uniform distribution of hand–spread mulch, divide area into approximately 1,000–sq.–ft. sections and spread two 45–lb. bales of straw in each section.

* Hydroseeders–If wood cellulose fiber is used, it shall be used at 2,000 lb./ac/ or 46 lb./1,000 sq. ft.

* Other–Other acceptable mulches include mulch mattings applied according to manufacturer's recommendations or wood chips applied at 6 tons/ac.

3. Straw Mulch Anchoring Methods

Straw mulch shall be anchored immediately to minimize loss by wind or water.

* Mechanical–A disk, crimper, or similar type tool shall be set straight to punch or anchor the mulch material into the soil. Straw mechanically anchored shall not be finely chopped but, generally, be left longer than 6 in.

* Mulch Nettings–Netting shall be used according to the manufacturer's recommendations. Netting may be necessary to hold mulch in place in areas of concentrated runoff and on critical slopes.

* Asphalt Emulsion–Asphalt shall be applied as recommended by the manufacturer or at the rate of 160 gal. /ac.

* Synthetic Binders–Synthetic binders such as Acrylic DLR (Agri–Tac), DCA–70, Petroset, Terra Tack or equivalent may be used at rates recommended by manufacturer.

* Wood Cellulose Fiber–Wood cellulose fiber binder shall be applied at a net dry weight of 750 lb./ac. The wood cellulose fiber shall be mixed with water and the mixture shall contain a maximum of 50 lbs./100 gal.

IRRIGATION

1. Permanent seeding shall include irrigation to establish vegetation during dry or hot weather or on adverse site conditions as needed for adequate moisture for seed germination and plant growth.

2. Excessive irrigation rates shall be avoided and irrigation monitored to prevent erosion and damage from runoff.

Permanent Seeding			
Seed Mix	Seeding Rate		Notes:
	lb./ac.	lb./1,000 ft.^{2}	
General Use			
Creeping Red Fescue Domestic Ryegrass Kentucky Bluegrass	20–40 10–20 10–20	1/2–1 1/4–1/2 1/4–1/2	
Tall Fescue	40	1	
Dwarf Fescue	40	1	
Steep Banks or Cut Slopes			
Tall Fescue	40	1	
Crown Vetch Tall Fescue	10 20	1/4 1/2	Do not seed later than August
Flat Pea Tall Fescue	20 20	1/2 1/2	Do not seed later than August
Road Ditches and Swales			
Tall Fescue	40	1	
Dwarf Fescue Kentucky Bluegrass	90 5	2 1/4	
Lawns			
Kentucky Bluegrass Perennial Ryegrass	60 60	1 1/2 1 1/2	
Kentucky Bluegrass Creeping Red Fescue	60 60	1 1/2 1 1/2	For shaded areas

Note: Other approved seed species may be substituted.

Specifications for

Permanent Seeding

1. Permanent seeding shall not be considered established for at least 1 full year from the time of planting. Seeded areas shall be inspected for failure and reestablished as needed. Depending on site conditions, it may be necessary to irrigate, fertilize, overseed, or reestablish plantings in order to provide permanent vegetation for adequate erosion control.

2. Maintenance fertilization rates shall be established by soil test recommendations or by using the rates shown in the following table.

Maintenance for Permanent Seedings
Fertilization and Mowing

Mixture	Formula	lb./ac.	lb./1,000 ft.^{2}	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		Not closer than 4"
Dwarf Fescue	10–10–10	500	12		Not closer than 2"
Crown Verch Fescue	0–20–20	400	10	Spring, yearly following establishment and every 4–7 yr. thereafter.	Do not mow
Flat Pea Fescue	0–20–20	400	10		Do not mow

Note: Following soil test recommendations is preferred to fertilizer rates shown above.

Specifications for

Temporary Seeding

Temporary Seeding Species Selection

Seeding Dates	Species	lb./1,000 ft.^{2}	Per Ac.
March 1 to August 15	Oats Tall Fescus Annual Ryegrass	3 1 1	4 bushel 40 lb. 40 lb.
	Perennial Ryegrass Tall Fescus Annual Ryegrass	1 1 1	40 lb. 40 lb. 40 lb.
August 16 to November 1	Rye Tall Fescus Annual Ryegrass	3 1 1	2 bushel 40 lb. 40 lb.
	Wheat Tall Fescus Annual Ryegrass	3 1 1	2 bushel 40 lb. 40 lb.
	Perennial Ryegrass Tall Fescus Annual Ryegrass	1 1 1	40 lb. 40 lb. 40 lb.
November 1 to Spring Seeding	Use mulch only, sodding practices or domant seeding		

Note: Other approved seed species may be substituted.

1. Structural erosion and sediment control practices such as diversions and sediment traps shall be installed and stabilized with temporary seeding prior to grading the rest of the construction site.

2. Temporary seed shall be applied between construction operations on soil that will not be graded or reworked for 21 days or more. These idle areas should be seeded as soon as possible after grading or shall be seeded within 7 days. Several applications of temporary seeding are necessary on typical construction projects.

3. The seedbed should be pulverized and loose to ensure the success of establishing vegetation. However, temporary seeding shall not be postponed if ideal seedbed preparation is not possible.

4. Soil Amendments–Applications of temporary vegetation shall establish adequate stands of vegetation that may require the use of soil amendments. Soil tests should be taken on the site to predict the need for lime and fertilizer.

5. Seeding Method–Seed shall be applied uniformly with a cyclone seeder, drill, cultipacker seeder, or hydroseeder. When feasible, seed that has been broadcast shall be covered by raking and dragging and then lightly tamped into place using a roller or cultipacker. If hydroseeding is used, the seed and fertilizer will be mixed on site and the seeding shall be done immediately and without interruption.

MULCHING TEMPORARY SEEDING

1. Applications of temporary seeding shall include mulch that shall be applied during or immediately after seeding. Seedings made during optimum seeding dates and with favorable soil conditions and on very flat areas may not need mulch to achieve adequate stabilization.

2. Materials:

* Straw–If straw is used, it shall be unrotted small–grain straw applied at the rate of 2 tons/ac/ 90 lbs./1,000 sq. ft. (two to three bales). The mulch shall be spread uniformly by hand or mechanically so the soil surface is covered. For uniform distribution of hand–spread mulch, divide area into approximately 1,000 sq. ft. sections and spread two 45 lb. bales of straw in each section.

* Hydroseeders–If wood cellulose fiber is used, it shall be used at 2,000 lb./ac. or 46 lb./1,000 sq. ft.

* Other–Other acceptable mulches include mulch matting applied according to manufacturer's recommendations or wood chips applied at 6 tons/ac.

3. Straw mulch shall be anchored immediately to minimize loss by wind or water.

4. Anchoring Methods:

* Mechanical–A disk, crimper, or similar type tool shall be set straight to punch or anchor the mulch material into the soil. Straw mechanically anchored shall not be finely chopped but generally, be left longer than 6 in.

* Mulch Nettings–Netting shall be used according to the manufacturer's recommendations. Netting may be necessary to hold mulch in place in areas of concentrated runoff and on critical slopes.

* Asphalt Emulsion–Asphalt shall be applied as recommended by the manufacturer or at the rate of 160 gal. /ac.

* Synthetic Binders–Synthetic binders such as Acrylic DLR (Agri–Tac), DCA–70, Petroset, Terra Tack or equivalent may be used at rates recommended by manufacturer.

* Wood Cellulose Fiber–Wood cellulose fiber binder shall be applied at a net dry weight of 750 lb./ac. The wood cellulose fiber shall be mixed with water and the mixture shall contain a maximum of 50 lbs./100 gal.

Specifications for

Mulching

1. Mulch and/or other appropriate vegetative practices shall be applied to disturbed areas within 7 days of grading if the area is to remain dormant (undisturbed) for more than 45 days or on areas and portions of the site which can be brought to final grade.

2. Mulch shall consist of one of the following:

* Straw–Straw shall be unrotted small–grain straw applied at the rate of 2 tons/ac. or 90 lbs./1,000 sq. ft. (two to three bales). The mulch shall be spread uniformly by hand or mechanically so the soil surface is covered. For uniform distribution of hand–spread mulch, divide area into approximately 1,000 sq. ft. sections and spread two 45 lb. bales of straw in each section.

* Hydroseeders–Wood cellulose fiber should be used at 2,000 lb./ac. or 46 lbs./1,000 sq. ft.

* Other–Other acceptable mulches include mulch matting applied according to manufacturer's recommendations or wood chips applied at 10–20 tons/ac.

3. Mulch Anchoring–Mulch shall be anchored immediately to minimize loss by wind or runoff. The following are accepted methods for anchoring mulch:

* Mechanical–Use a disk, crimper, or similar type tool set straight to punch or anchor the mulch material into the soil. Straw mechanically anchored shall not be finely chopped but generally be left longer than 6 in.

* Mulch Nettings–Use according to the manufacturer's recommendations, following all placement and anchoring suggestions. Use in areas of water concentration and steep slopes to hold mulch in place.

* Asphalt Emulsion–For straw mulch, apply at the rate of 160 gal. /ac. (0.1 gal. /sy) into the mulch as it is being applied or as recommended by the manufacturer.

* Synthetic Binders–For straw mulch, synthetic binders such as Acrylic DLR (Agri–Tac), DCA–70, Petroset, Terra Tack or equivalent may be used at rates recommended by manufacturer.

* Wood Cellulose Fiber–Wood cellulose fiber may be used for anchoring straw. The fiber binder shall be applied at a net dry weight of 750 lb./acre. The wood cellulose fiber shall be mixed with water and the mixture shall contain a maximum of 50 lbs./100 gal.

Specifications for

Sodding

MATERIALS

1. Sod shall be harvested, delivered and installed within a period of 48 hrs. Sod not transplanted within this period shall be inspected and approved prior to installation.

2. The sod shall be kept moist and covered during hauling and preparation for placement on the sod bed.

3. Sod shall be machine cut at a uniform soil thickness of 0.75 in., plus or minus 0.25 in., at the time of cutting. Measurements for thickness shall exclude top growth and thatch.

SITE PREPARATION

1. A subsoiler, plow or other implement shall be used to reduce soil compaction and allow maximum infiltration. (Maximizing infiltration will help control both runoff rate and water quality.) Subsoiling shall not be done on slip–prone areas where soil preparation should be limited to what is necessary for establishing vegetation.

2. The area shall be graded and resoiling shall be done where needed.

3. Soil Amendments:

* Lime–Agricultural ground limestone shall be applied to acid soil as recommended by a soil test. In lieu of a soil test, lime shall be applied at the rate of 100 lbs./1,000 sq. ft. or 2 tons/ac.

* Fertilizer–Fertilizer shall be applied as recommended by a soil test. In lieu of a soil test, fertilizer shall be applied at a rate of 12 lb./1,000 sq. ft. or 500 lb./ac. of 10–10–10 or 12–12–12 analysis.

* The lime and fertilizer shall be worked into the soil with a disk harrow, spring–tooth harrow, or other suitable field implement to a depth of 3 in.

4. Before laying sod, the surface shall be uniformly graded and cleared of all debris, stones and clods larger than 3 in. in diameter.

SOD INSTALLATION

1. During periods of excessively high temperatures, the soil shall be lightly irrigated immediately prior to laying the sod.

2. Sod shall not be placed on frozen soil.

3. The first row of sod shall be laid in a straight line with subsequent rows placed parallel to and tightly wedged against each other. Lateral joints shall be staggered in a brick–like pattern. Ensure that sod is not stretched or overlapped and that all joints are butted tight in order to prevent voids which would dry the roots.

4. On sloping areas where erosion may be a problem, sod shall be laid with the long edge parallel to the contour and with staggered joints. The sod shall be secured with pegs or staples.

5. As sodding is completed in any one section, the entire area shall be rolled or tamped to ensure solid contact of roots with the soil surface. Sod shall be watered immediately after rolling or tamping until the sod and soil surface below the sod is thoroughly wet. The operations of laying, tamping and irrigating for any place of sod shall be completed within 8 hrs.

SOD MAINTENANCE

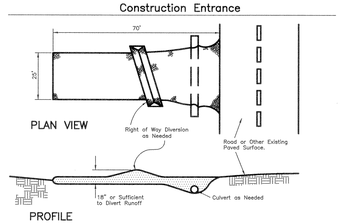
1. In the absence of adequate rainfall, watering shall be performed daily or as often as necessary during the first week and in sufficient quantities to maintain moist soil to a depth of 4 in.

2. After the first week, sod shall be watered as necessary to maintain adequate moisture and to ensure establishment.

3. The first mowing shall not be attempted until sod is firmly rooted.

Specifications for

Construction Entrance



1. Stone Size–Two–inch stone shall be used, or recycled concrete equivalent.

2. Length–The construction entrance shall be 70' long.

3. Thickness–The stone layer shall be at least 6 in. thick.

4. Width–The entrance shall be 25'wide.

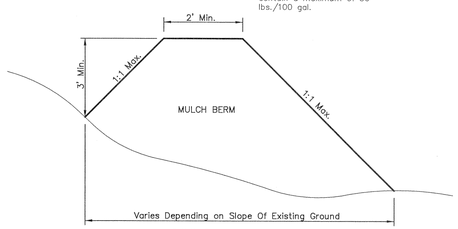
5. Bedding–A geotextile shall be placed over the entire area prior to placing stone. It shall have a Grab Tensile Strength of at least 200 lb. and a Mullen Burst Strength of at least 190 lbs.

6. Culvert–A pipe or culvert shall be constructed under the entrance if needed to prevent surface water flowing across the entrance from being directed out onto paved surfaces.

7. Water Bar–A water bar shall be constructed as part of the construction entrance if needed to prevent surface runoff from flowing the length of the construction entrance and out onto paved surfaces.

8. Maintenance–Top dressing of additional stone shall be applied as conditions demand. Mud spilled, dropped, washed or tracked onto public roads, or any surface where runoff is not checked by sediment controls, shall be removed immediately. Removal shall be accomplished by scraping or sweeping.

9. Construction entrances shall not be relied upon to remove mud from vehicles and prevent off–site tracking. Vehicles that enter and leave the construction site shall be restricted from muddy areas.

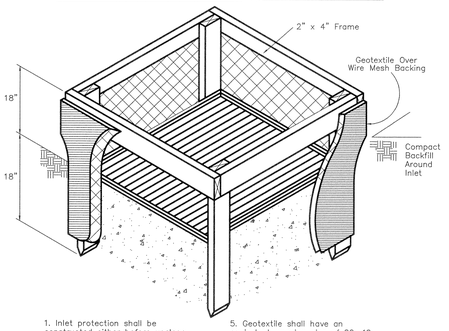


MULCH BERM DETAIL

N.T.S.

Specifications for

Inlet Protection in Swales, Ditch Lines or Yard Inlets



1. Inlet protection shall be constructed either before upslope land disturbance begins or before the storm drain becomes operational.

2. The earth around the inlet shall be excavated completely to a depth of at least 18 in.

3. The wooden frame shall be constructed of 2–by–4 in. construction grade lumber. The 2–by–4 in. posts shall be driven 1 ft. into the ground at four corners of the inlet and the top portion of 2–by–4 in. frame assembled using the overlap joint shown. The top of the frame shall be at least 6 in. below adjacent roads if ponded water would pose a safety hazard to traffic.

4. Wire mesh shall be of sufficient strength to support fabric with water fully impounded against it. It shall be stretched tightly around the frame and fastened securely to the frame.

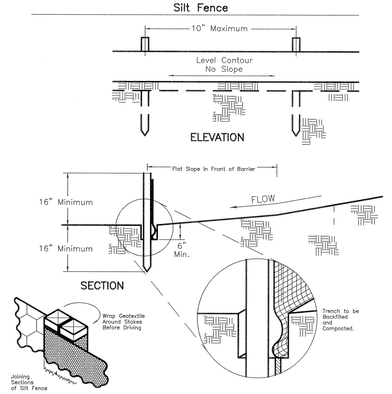
5. Geotextile shall have an equivalent opening size of 20–40 sieve and be resistant to sunlight. It shall be stretched tightly around the frame and fastened securely. It shall extend from the top of the frame to 18 in. below the inlet notch elevation. The geotextile shall overlap across one side of the inlet so the ends of the cloth are not fastened to the same post.

6. Backfill shall be placed around the inlet in compacted 6–in. layers until the earth is even with notch elevation on ends and top elevation on sides.

7. A compacted earth dike or a check dam shall be constructed in the ditch line below the inlet if the inlet is not in a depression and if runoff bypassing the inlet will not flow to a settling pond. The top of the earth dikes shall be at least 6 in. higher than the top of the frame.

Specifications for

Silt Fence



Specifications for

Silt Fence

1. Silt fence shall be constructed before upslope land disturbance begins.

2. All silt fences shall be placed as close to the contour as possible so that water will not concentrate at low points in the fence and so that small swales or depressions, which may carry small concentrated flows to the silt fence, are dissipated along its length.

3. To prevent water ponded by the silt fence from flowing around the ends, each end shall be constructed upslope so that the ends are at a higher elevation.

4. Where possible, silt fence shall be placed on the flattest area available.

5. Where possible, vegetation shall be preserved for 5 ft. (or as much as possible) upslope from the silt fence. If vegetation is removed, it shall be reestablished within 7 days from the installation of the silt fence.

6. The height of the silt fence shall be a minimum of 16 in. above the original ground surface.

7. The silt fence shall be placed in a trench cut a minimum of 6 in. deep. The trench shall be cut with a trencher, cable laying machine, or other suitable device that will ensure an adequately uniform trench depth.

8. The silt fence shall be placed with the stakes on the downslope side of the geotextile and so that 8–in. of cloth are below the ground surface. Excess material shall lie on the bottom of the 6–in. deep trench. The trench shall be backfilled and compacted.

9. Seams between section of silt fence shall be overlapped with the end stakes of each section wrapped together before driving into the ground.

10. Maintenance–Silt fence shall allow runoff to pass only as diffuse flow through the geotextile. If runoff overtops the silt fence, flows under or around ends, or in any other way becomes a concentrated flow, on of the following shall be performed, as appropriate: 1) The layout of the silt fence shall be changed, 2) Accumulated sediment shall be removed, or 3) Other practices shall be installed.

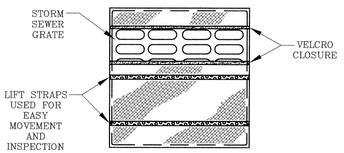
Criteria for Silt Fence Materials

1. Fence Posts–The length shall be a minimum of 32 in. long. Wood posts will be 2–by–2 in. of hardwood of sound quality. The maximum spacing between posts shall be 10 ft.

2. Silt Fence Fabric shall be ODOT Type C Geotextile Fabric or as described by the chart below:

Fabric Properties	
Minimum Tensile Strength	120 lbs.
Maximum Elongation at 60 lbs	50%
Minimum Puncture Strength	50 lbs
Minimum Tear Strength	40 lbs.
Minimum Burst Strength	200 psi
Apparent Opening Size	≤ 0.84 mm
Minimum Permittivity	1 x 10^{-2} sec^{-1}
Ultraviolet Exposure Strength Retention	70 %

DANDY BAG®



DANDY BAG® SPECIFICATIONS

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

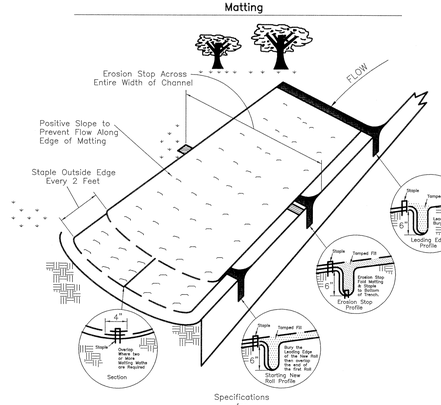
HI–FLOW DANDY BAG® (SAFETY ORANGE)

Mechanical Properties	Test Method	Units	MARV
Grab Tensile Strength	ASTM D 4632	kN (lbs)	1.62 (365) X 0.89 (200)
Grab Tensile Elongation	ASTM D 4632	%	24 X 10
Puncture Strength	ASTM D 4833	kN (lbs)	0.40 (90)
Mullen Burst Strength	ASTM D 3786	kPa (psi)	3097 (450)
Trapezoid Tear Strength	ASTM D 4533	kN (lbs)	0.51 (115) X 0.33 (75)
UV Resistence	ASTM D 4355	%	90
Apparent Opening Size	ASTM D 4751	Mm (US Std Sieve)	0.425 (40)
Flow Rate	ASTM D 4491	l/min/m^2 (gal/min/ft^2)	5907 (145)
Permitivity	ASTM D 4491	Sec^{-1}	2.1

*Note: All Dandy Bags® can be ordered with our optional oil absorbent pillows

Specifications for

Matting



Specifications for

Matting

1. Material–Excelsior matting shall be 48 in. wide and weigh an average of 0.75 lb./sq. yd. or greater. Jute matting shall be 48 in. wide and weigh and average of 1.2 lb./yd. or greater. Matting made of other material and providing equal or greater stabilization than the above may be substituted.

2. Site Preparation–After the site has been shaped and graded, a seedbed shall be prepared that is relatively free of foreign material, clods or rocks that are greater than 1.5 in. in diameter. The site shall be prepared to ensure that the matting has good soil contact and the matting will not "bridge" or "tent" over obstructions.

3. Matting shall be held in place as recommended by the manufacturer as adequate for the site conditions or with sod staples. Sod staples are U–shaped wire staples used for fastening sod, jute or excelsior matting and other erosion–control materials to the soil surface. Sod staples shall be No. 11 gauge or heavier and be 6–10 in., in length. In loose or sandy soils, longer staples shall be used.

4. Planting–Lime and fertilizer shall be used according to the recommendation of a soil test or the seeding plan. Seed according to the manufacturer's recommendations; or, for excelsior matting, seed area to be protected before installation; or, when using jute matting, apply half the seed before and half the seed after installation.

5. Matting shall be installed as specified by the manufacturer as appropriate for the site conditions or the following procedure may be used:

* After the site is prepared and erosion stops are installed, start laying the mat from the top of the slope or channel and unroll the matting allowing 4 in. overlaps at the edges.

* Secure the matting by burying the top ends in a trench 6 in. deep and staple the folded ends to the bottom of the trench. Backfill and tamp firmly to the established grade.

* Staple matting every 12–in. across the width beginning at the edges and every 2 ft. in rows the entire length of the matting. Every other row of staples running the length of the matting should be staggered.

* To join two rolls together, cut a trench to anchor the end of the new roll and secure it the same as the top roll. Overlap the end of the previous roll 18–in. over the new roll. Continue to staple as described above.

* When using excelsior matting, the plastic netting shall be on top of the wood fiber.

6. Erosion stops shall be used where recommended by the matting manufacturer and on areas specified where high–erosion potential may cause undermining and gullies to form beneath the matting.

* Erosion stops shall be made of strips of matting placed in narrow trenches 6–12 in. deep that cover the full cross section of the channel. They shall be spaced according to the manufacturer's recommendations or by the following:
* 3 ft. down the channel from each point of entry of concentrated flow,
* at points where change in gradient or direction of channel occurs, and
* on long slopes at spacing from 20–100 ft. depending on the erodibility of the soil, velocity and volume of flow.

* Erosion stops shall extend beyond the channel liner to the full design width of the channel. This will check any rills that might form outside or along the edge of the channel lining.

* Erosion stops shall be constructed with a 6 in. deep trench, backfilled and tamped firmly to conform to the cross section of the channel.

* If seeding has been done prior to installation of erosion stops, reseed disturbed areas prior to placement of channel liner.

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Drawn By NAK Project Mgr. RA

Drawing File 04476014-IMP-00-SECTION 7

X-Reference Files princeton-Adjusted-to-Ground-10-24-11

Date 06/21/13

No.	Revision/Issue	By	Date

CARRIAGE HILL SECTION 7

SECTION 32, TOWN 3, RANGE 3
LIBERTY TOWNSHIP
BUTLER COUNTY, OHIO

Sheet Title: EROSION CONTROL NOTES & DETAILS

Project No. 04476.01

Scale N.T.S.

Sheet No. 15/15

File No. 04-476