CARRIAGE PARK
SECTION 3, TOWN 2, RANGE 3
LIBERTY TOWNSHIP
BUTLER COUNTY, OHIO

SITE PLAN APPROVED CONSTRUCTION DRAWINGS

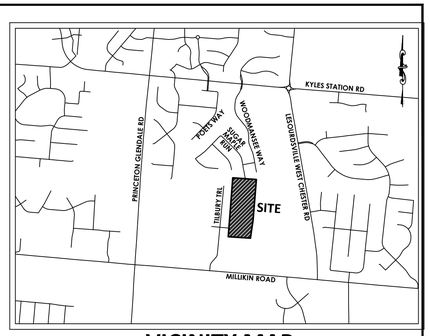
KLR
9/20/2021

OWNER

DOUGLAS P GRONAUER
5376 MILLIKIN ROAD
HAMILTON, OH 45011

APPLICANT

DREES HOMES, INC.
211 GRANDVIEW DRIVE, SUITE 300
FT MITCHELL, KY 41017



VICINITY MAP

SCALE: 1" = 2,000'

DEVELOPMENT SUMMARY

PARCEL NUMBER:	D2010003000028
GROSS AREA:	24.637
AREA IN R/W:	3.631
NET AREA:	21.006
OPEN SPACE AREA:	6.355
OPEN SPACE PERCENTAGE:	25.8%
LOT YIELD:	42
GROSS DENSITY:	1.70 UNITS / ACRE
NET DENSITY:	2.20 UNITS / ACRE
TYPICAL LOT SIZE:	90'x140'

SETBACKS:

FRONT	30'
SIDE	8' (16'TOTAL)
REAR	30'

PHASING SUMMARY

PHASE	YEAR	BUILDABLE LOTS	OPEN SPACE LOTS	TOTAL LOTS	TOTAL AREA	AREA IN R/W	OPEN SPACE AREA
1	2021	19	2	21	11.376	1.309	3.663
2	2022	23	2	25	13.261	2.322	2.692
	TOTAL	42	4	46	24.637	3.631	6.355

INDEX OF SHEETS

1	COVER SHEET
2-3	IMPROVEMENT PLAN
4-5	GRADING & SWP3 PLAN
6-7	PROFILES
8-10	DETAILS

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 2019 STANDARDS OR BUTLER COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS. WHEN IN CONFLICT, THE COUNTY REQUIREMENTS SHALL PREVAIL.

SUMP COLLECTOR LINES SHALL BE CONSTRUCTED SDR 35 PVC 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 HEREON 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.

THE CONTRACTOR SHALL COORDINATE LOCATION OF PURITY TEST STATIONS WITH BCWS INSPECTOR.

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 WATER AND SEWER DEPARTMENT.

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

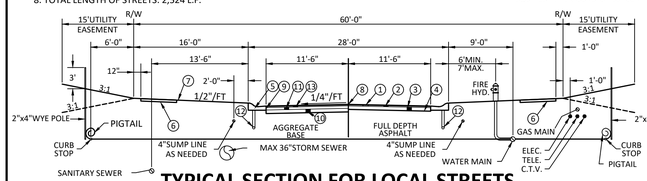
MULCH - 3 BALES OF STRAW PER 1000 SQ. FT.

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.

GENERAL NOTES

1. ALL STREETS & IMPROVEMENTS ARE TO BE IN ACCORDANCE WITH BUTLER COUNTY STANDARDS & SPECIFICATIONS.
2. PROJECT SHALL COMPLY WITH OHIO ENVIRONMENTAL PROTECTION AGENCY (OEPA) NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT FOR STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITY.
3. CONTOUR INTERVAL IS ONE FOOT.
4. TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED ON AN AERIAL TOPOGRAPHIC SURVEY PREPARED JUNE 2021 BY MAN MAPPING, INC.
5. BOUNDARY BASED ON DEEDS & SURVEYS OF RECORD.
6. ALL LOTS SHALL BE SERVED BY PUBLIC SANITARY SEWERS AND WATER.
7. IMPROVEMENTS TO MILLIKIN ROAD AT TILBURY TRAIL SHALL BE CONSTRUCTED IN ACCORDANCE WITH A TRAFFIC IMPACT STUDY AS APPROVED BY THE BUTLER COUNTY ENGINEER'S OFFICE.
8. TOTAL LENGTH OF STREETS: 2,524 L.F.



TYPICAL SECTION FOR LOCAL STREETS

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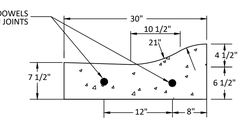

NOTES:
GENERAL: THIS DRAWING SHOWS THE STANDARD TYPE OF CURB THAT SHOULD BE USED ON MOST TYPES OF PAVEMENT. TYPICAL SECTION OF PROJECT SHOWS THE TYPE TO BE USED. ALSO THE THICKNESS OF THE EDGE OF THE PAVEMENT OR THE EDGE OF THE CURB AND GUTTER SECTION.

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.

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, 5' 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

   TACK COAT SHALL BE APPLIED TO FRONT FACE OF CURB PRIOR TO THE INSTALLATION OF
9. 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

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.

STATE OF OHIO JAMES H. WATSON 49886 REGISTERED PROFESSIONAL ENGINEER

James H Watson

Revision	By	Date
UPDATE	BC	08/13/21
BCWS COMMENTS	BC	08/23/21
BCEO COMMENTS	BC	09/08/21

CARRIAGE PARK
SECTION 3, TOWN 2, RANGE 3
LIBERTY TOWNSHIP
BUTLER COUNTY, OHIO
COVER SHEET

Date	07/16/21
Scale	AS NOTED
Drawn By	BC
Proj. Mgr.	JW
Survey Database	N/A
DWG	16565004-IMP
X-Ref(s)	
Project Number	16565.00
File No.	Sheet No. 1 / 10

MSP DESIGN
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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"
11 1/4° UP BEND	6'
11 1/4° DOWN BEND	11'
22 1/2° UP BEND	12'
22 1/2° DOWN BEND	22'
45° UP BEND	24'
45° DOWN BEND	45'
DEAD END	54'

VERTICAL

LENGTH OF PIPE TO BE RESTRAINED IN EACH DIRECTION FROM CENTERLINE OF BEND, EXCEPT AS NOTED BELOW	
DESCRIPTION	8"
90° BEND	59'
45° BEND	35'
22 1/2° BEND	12'
11 1/4° BEND	6'
8" x 6" TEE	41' BRANCH

HORIZONTAL

PIPE RESTRAINTS SCHEDULE FOR JOINTS

OHIO Utilities Protection SERVICE
Call Before You Dig
1-800-362-2764
CALL TWO WORKING DAYS BEFORE YOU DIG
(NON MEMBERS MUST BE CALLED DIRECTLY)

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VERTICAL **HORIZONTAL**

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SCALE IN FEET
0 25 50 100 150

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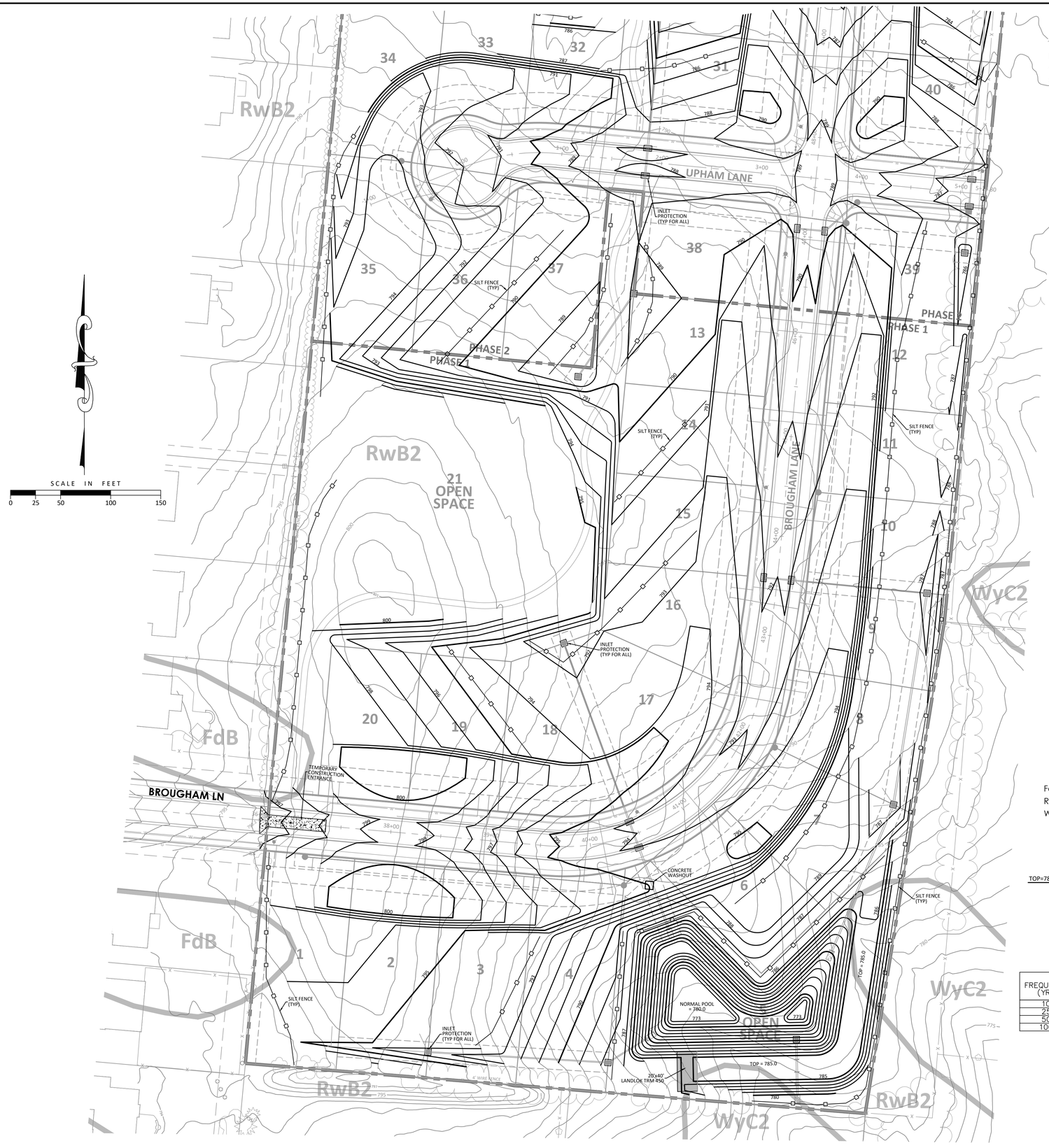


ESTABLISH VEGETATION ON ALL BARE AREAS AS PER O.E.P.A. N.P.D.E.S. REGULATIONS.

CONTRACTOR IS RESPONSIBLE FOR N.P.D.E.S.

GENERAL NOTES

1. PROJECT INVOLVES THE CONSTRUCTION OF ROADS, HOUSES AND UTILITIES FOR A SINGLE FAMILY SUBDIVISION.
2. AREA TO BE DISTURBED IS APPROXIMATELY 22 ACRES.
3. PRE-CONSTRUCTION RUNOFF COEFFICIENT IS 0.30. POST-CONSTRUCTION RUNOFF COEFFICIENT IS 0.46.
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: APPLICATION TO BE MADE
7. PROJECT DURATION: THRU 2022
8. SITE OPERATOR: DREES HOMES, INC.
   211 GRANDVIEW DRIVE, SUITE 100
   FORT MITCHELL, KY 41017
   (859) 578-4200
9. SWPPP CONTACT: DREES HOMES, INC.
   211 GRANDVIEW DRIVE, SUITE 100
   FORT MITCHELL, KY 41017
   (859) 578-4200
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. OHC000005- "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 RE-ESTABLISHED. 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.

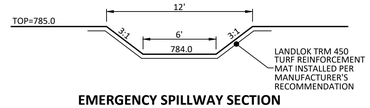
CONSTRUCTION SEQUENCE

1. INSTALL EROSION AND SEDIMENT CONTROL MEASURES BEFORE UPSLOPE CLEARING AND GRADING
2. GRADING AND STRIPPING OF THE REMAINING AREAS OF THE DEVELOPMENT SITE OR PROJECT AREA
3. INSTALL STORMWATER MANAGEMENT SYSTEM
4. TEMPORARY VEGETATIVE STABILIZATION OF EROSION AND SEDIMENT CONTROL MEASURES
5. GRADING OF SUBDIVISION STREET
6. INSTALLATION OF ALL UTILITIES
7. SITE CONSTRUCTION
8. FINAL GRADING, STABILIZATION, AND LANDSCAPING
9. REMOVAL OF EROSION AND SEDIMENT CONTROLS MEASURES

* DUE TO THE DYNAMICS AND STAGING OF EARTH MOVEMENT. CONTRACTOR MAY NEED TO ALTER THE EROSION CONTROL MEASURES AS SHOWN HEREON. CONTRACTOR TO APPLY (B.M.P.) BEST MANAGEMENT PRACTICES IN ORDER TO CONTROL THE RUNOFF OF SILT AND SEDIMENT.
* ADDITIONAL SILT FENCE MAY BE REQUIRED AS SITE CONDITIONS DETERMINE.
* IF A TEMPORARY STOCKPILE IS CREATED, SILT FENCE SHALL BE PLACED AT THE TOE OF SLOPE.
* A DETAILED MAINTENANCE PLAN THAT DESCRIBES PROCEDURES (E.G. INSPECTIONS SEE SECTION 2.18 INSPECTION OF STORM WATER CONTROLS/INTERNAL INSPECTIONS) NEEDED TO ENSURE THE CONTINUED PERFORMANCE OF CONTROL PRACTICES SHALL BE LOCATED AT THE ENTRANCE OF THE DEVELOPMENT AREA OR AT THE JOB TRAILER IN A WELL-MARKED CONTAINER ACCESSIBLE AT ALL TIMES. SUCH PLANS MUST ENSURE THAT POLLUTANTS COLLECTED WITHIN STRUCTURAL POST-CONSTRUCTION PRACTICES, BE DISPOSED OF IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS.

SOILS LEGEND

FdB	FINCASTLE SILT LOAM, 2-6%
RwB2	RUSSELL-MIAMIAN SILT LOAM, 2-6%
WyC2	WYNN SILT LOAM, 6-12%



EMERGENCY SPILLWAY SECTION
N.T.S.

SOUTH BASIN PERFORMANCE DATA

FREQUENCY (YR.)	Q_{OUT} (CFS)	Q_{ALLOW} (CFS)	PEAK ELEV. (ABOVE MSL)	STORAGE VOLUME (C.F.)
10	1.8	3.1	782.2	31,200
25	2.1	3.1	782.5	37,100
50	2.3	3.1	782.8	41,700
100	2.5	3.1	783.1	48,000

STATE OF OHIO
JAMES H. WATSON
49886
REGISTERED PROFESSIONAL ENGINEER

James H Watson

CARRIAGE PARK

SECTION 3, TOWN 2, RANGE 3
LIBERTY TOWNSHIP
BUTLER COUNTY, OHIO
GRADING & S.W.P.P. PLAN

Revision	By	Date
BCEO COMMENTS	BC	09/08/21

Date	07/16/21
Scale	AS NOTED
Drawn By / Proj. Mgr.	BC / JW
Survey Database	N/A
DWG	16565004-IMP
X-Ref(s)	
Project Number	16565.00
File No. / Sheet No.	4 / 10

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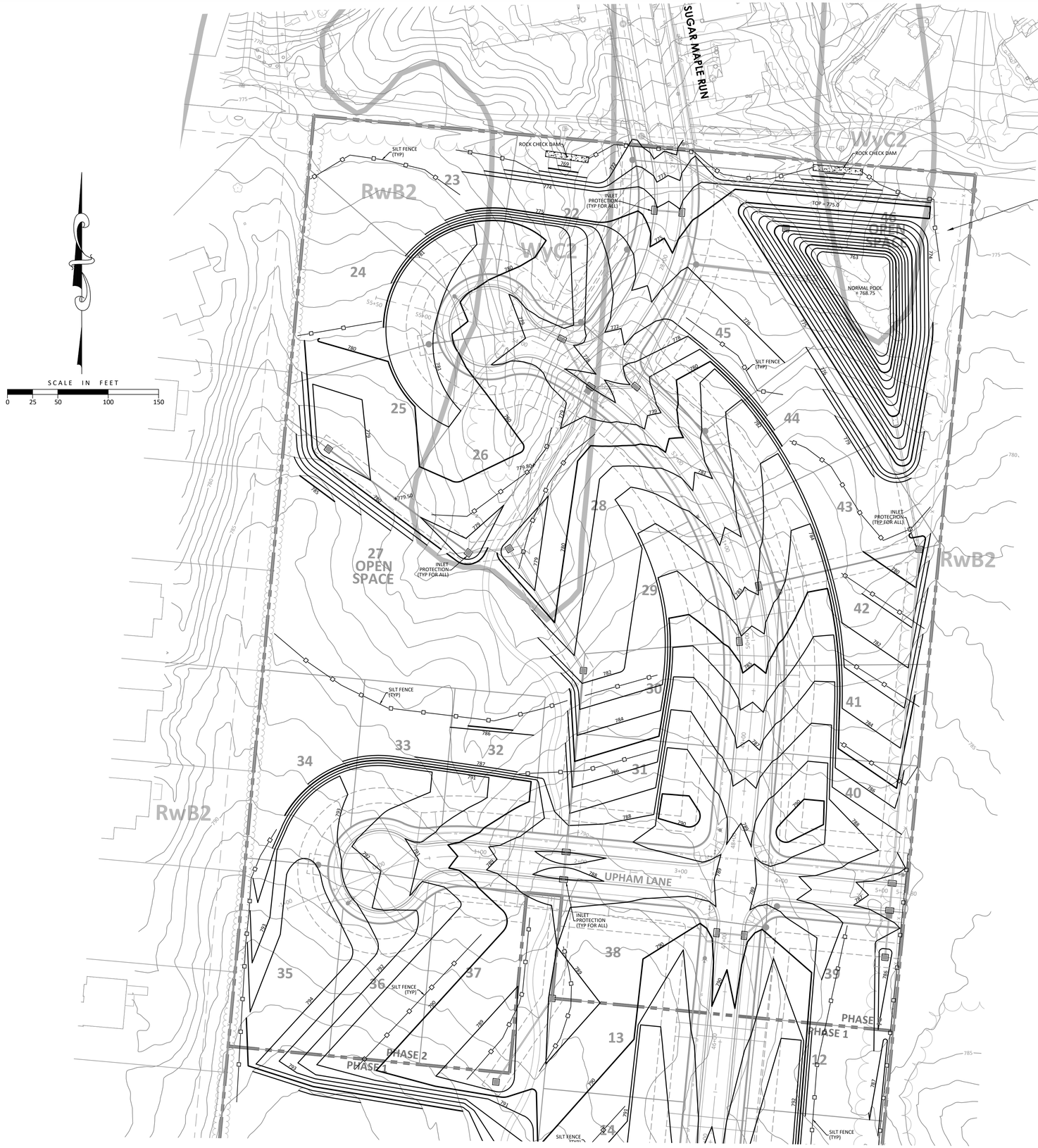

SOILS LEGEND

FdB	FINCASTLE SILT LOAM, 2-6%
RwB2	RUSSELL-MIAMIAN SILT LOAM, 2-6%
WyC2	WYNN SILT LOAM, 6-12%

NORTH BASIN PERFORMANCE DATA

FREQUENCY (YR.)	Q_{OUT} (CFS)	Q_{ALLOW} (CFS)	PEAK ELEV. (ABOVE MSL)	STORAGE VOLUME (C.F.)
10	8.5	9.0	773.2	71,100
25	15.0	33.4	773.7	82,500
50	20.0	37.8	773.9	88,300
100	25.3	43.3	774.3	97,500

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Revision	By	Date
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BCEO COMMENTS	BC	09/08/21

CARRIAGE PARK

SECTION 3, TOWN 2, RANGE 3
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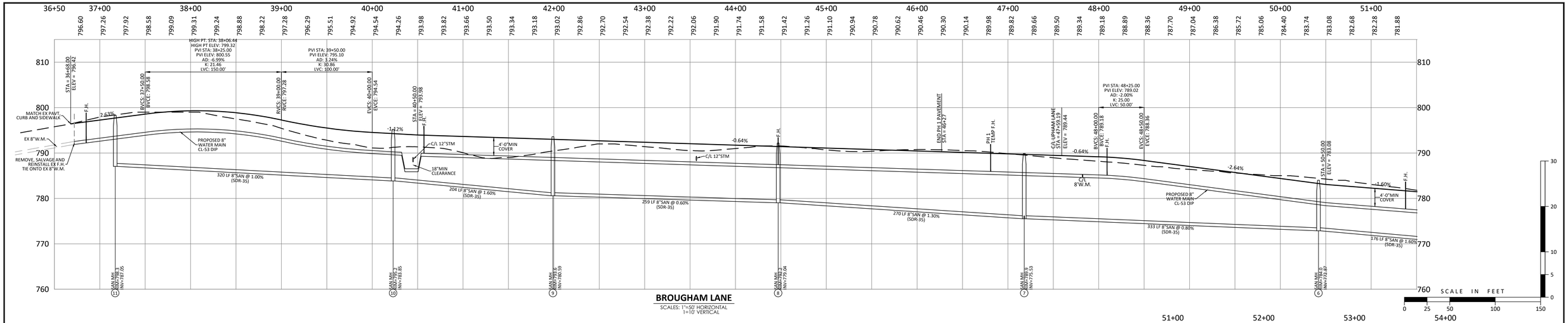
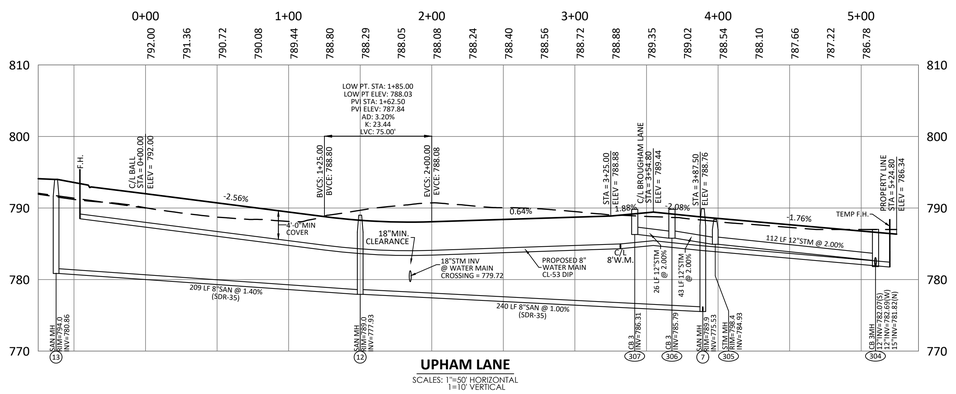
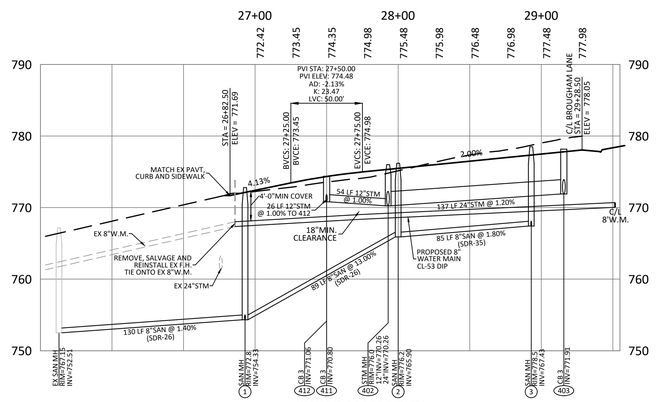


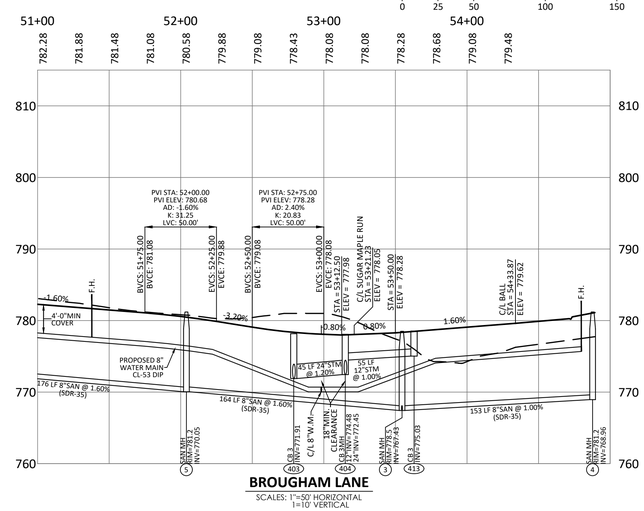
BROUGHAM LANE
SCALES: 1"=50' HORIZONTAL
1=10' VERTICAL



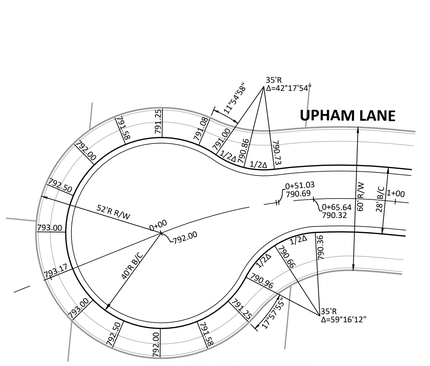
UPHAM LANE
SCALES: 1"=50' HORIZONTAL
1=10' VERTICAL



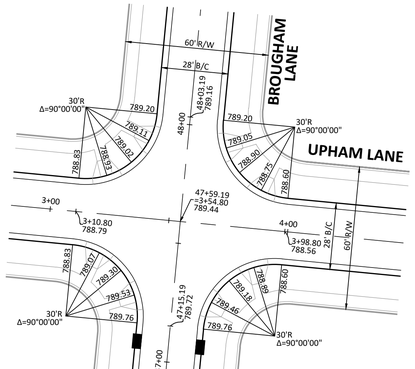
SUGAR MAPLE RUN
SCALES: 1"=50' HORIZONTAL
1=10' VERTICAL



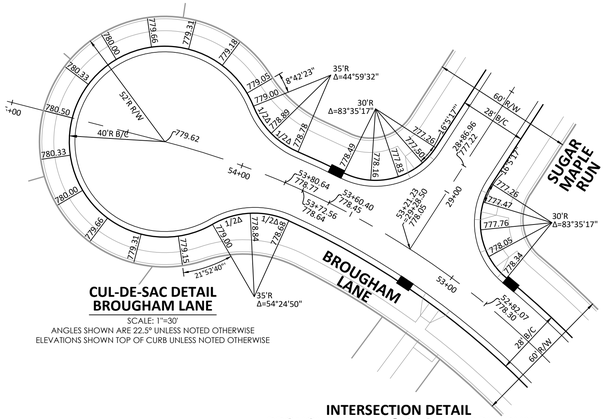
BROUGHAM LANE
SCALES: 1"=50' HORIZONTAL
1=10' VERTICAL



CUL-DE-SAC DETAIL
UPHAM LANE
SCALE: 1"=30'
ANGLES SHOWN ARE 22.5° UNLESS NOTED OTHERWISE
ELEVATIONS SHOWN TOP OF CURB UNLESS NOTED OTHERWISE



INTERSECTION DETAIL
BROUGHAM LANE & UPHAM LANE
SCALE: 1"=30'
ANGLES SHOWN ARE 22.5° UNLESS NOTED OTHERWISE
ELEVATIONS SHOWN TOP OF CURB UNLESS NOTED OTHERWISE



CUL-DE-SAC DETAIL
BROUGHAM LANE
SCALE: 1"=30'
ANGLES SHOWN ARE 22.5° UNLESS NOTED OTHERWISE
ELEVATIONS SHOWN TOP OF CURB UNLESS NOTED OTHERWISE

INTERSECTION DETAIL
BROUGHAM LANE & SUGAR MAPLE RUN
SCALE: 1"=30'
ANGLES SHOWN ARE 22.5° UNLESS NOTED OTHERWISE
ELEVATIONS SHOWN TOP OF CURB UNLESS NOTED OTHERWISE

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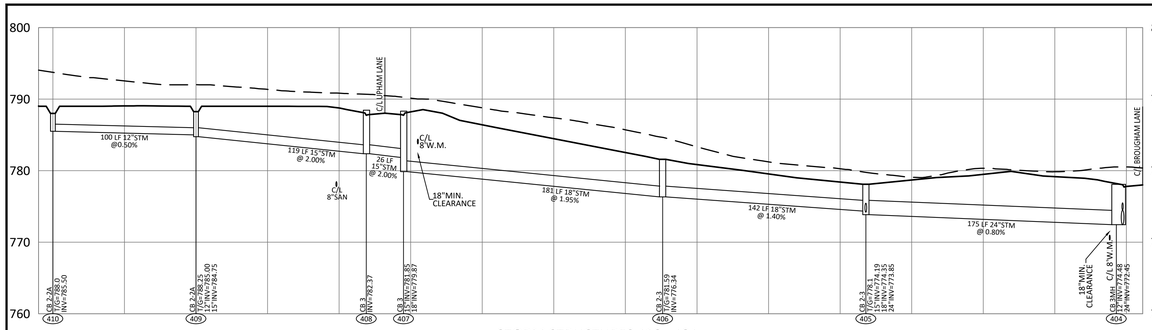
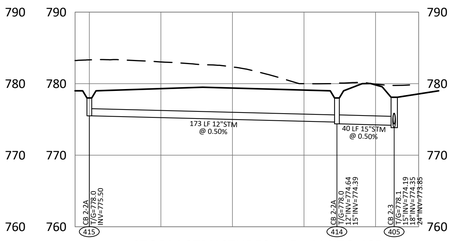
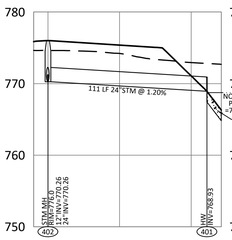


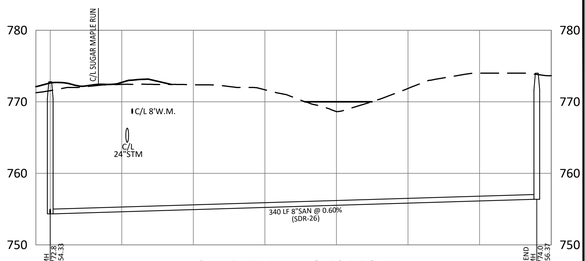
STORM STRUCTURES 410 - 404
SCALES: 1"=50' HORIZONTAL
1=10' VERTICAL



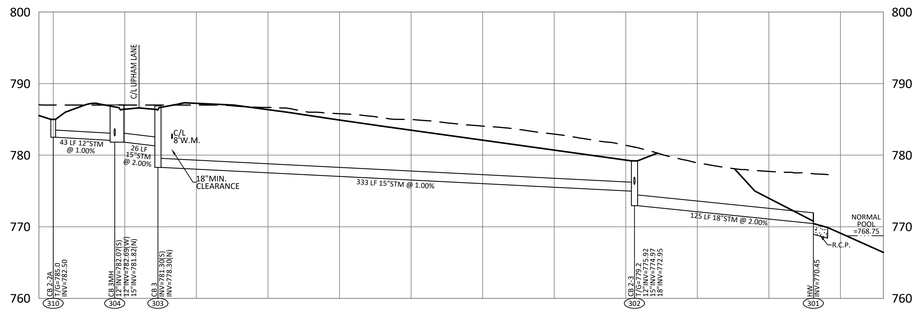
STORM STRUCTURES 415 - 414 TO 405
SCALES: 1"=50' HORIZONTAL
1=10' VERTICAL



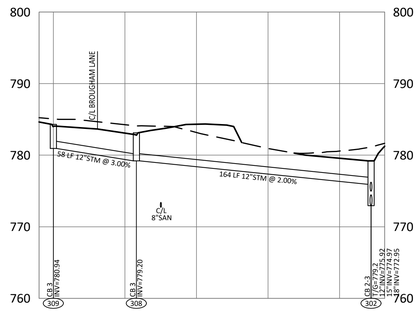
STORM STRUCTURES 402 - 401
SCALES: 1"=50' HORIZONTAL
1=10' VERTICAL



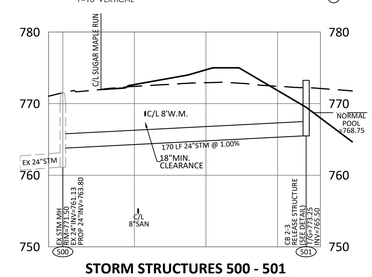
SANITARY MANHOLES 1 TO 14
SCALES: 1"=50' HORIZONTAL
1=10' VERTICAL



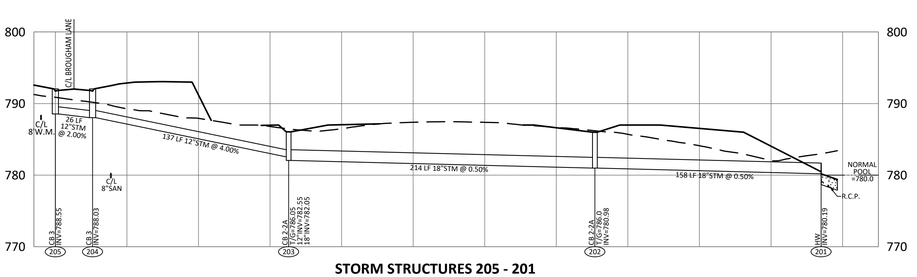
STORM STRUCTURES 310 T0 304 - 301
SCALES: 1"=50' HORIZONTAL
1=10' VERTICAL



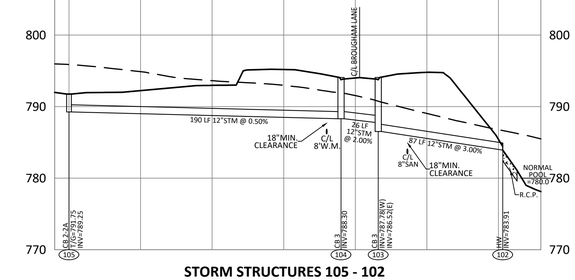
STORM STRUCTURES 309 - 308 TO 302
SCALES: 1"=50' HORIZONTAL
1=10' VERTICAL



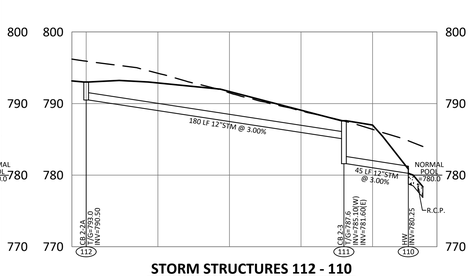
STORM STRUCTURES 500 - 501
SCALES: 1"=50' HORIZONTAL
1=10' VERTICAL



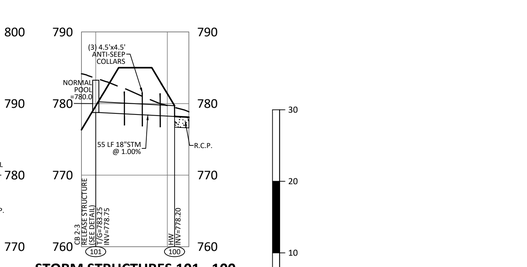
STORM STRUCTURES 205 - 201
SCALES: 1"=50' HORIZONTAL
1=10' VERTICAL



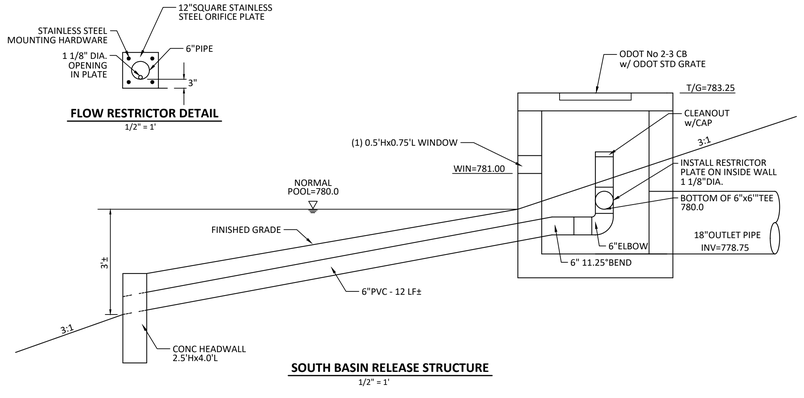
STORM STRUCTURES 105 - 102
SCALES: 1"=50' HORIZONTAL
1=10' VERTICAL



STORM STRUCTURES 112 - 110
SCALES: 1"=50' HORIZONTAL
1=10' VERTICAL

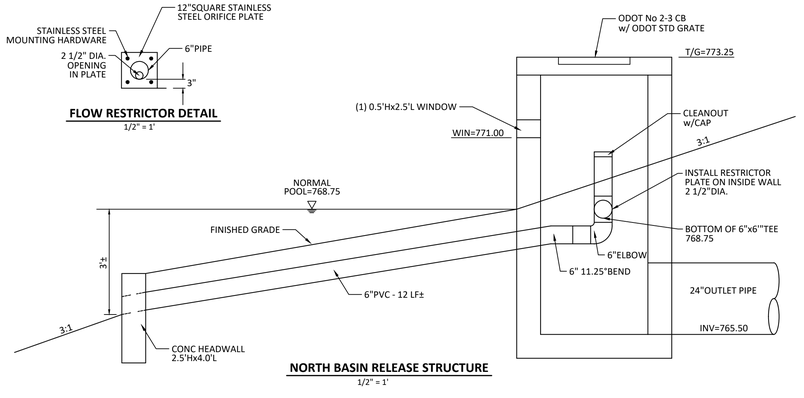


STORM STRUCTURES 101 - 100
SCALES: 1"=50' HORIZONTAL
1=10' VERTICAL



FLOW RESTRICTOR DETAIL
1/2" = 1'

SOUTH BASIN RELEASE STRUCTURE
1/2" = 1'



FLOW RESTRICTOR DETAIL
1/2" = 1'

NORTH BASIN RELEASE STRUCTURE
1/2" = 1'

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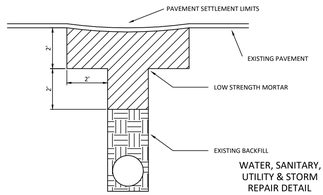
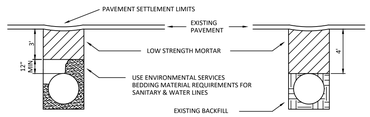
SETTLEMENT REPAIR FOR PIPE GREATER THAN 4' IN DEPTH



WATER, SANITARY, UTILITY & STORM REPAIR DETAIL

SETTLEMENT REPAIR PIPE 4' OR LESS IN DEPTH



WATER, SANITARY & UTILITY REPAIR DETAIL

STORM SEWER REPAIR DETAIL

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.

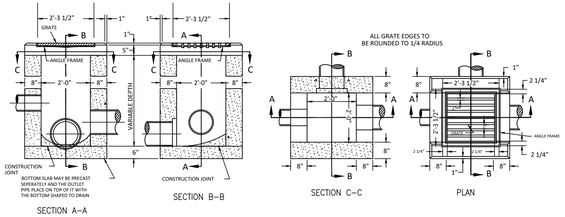
ADJUSTMENTS OF THE PROPORTIONS MAY BE MADE BY THE ENGINEER PROVDING THE TOTAL ABSOLUTE VOLUME OF THE MATERIALS IS MAINTAINED. THIS ITEM WILL BE INCLUDED IN THE STANDARD 603 INSULATION, THIS WILL NOT BE AN ADDITIONAL PAY ITEM, BUT REPLACEMENT FOR THE NORMAL BACKFILL.

REVISIONS	DATE

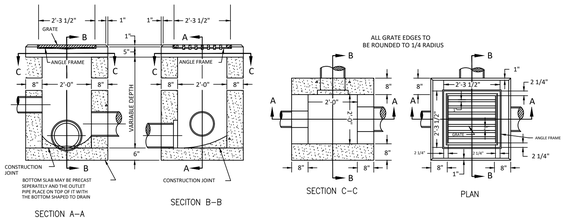
ROADWAY SETTLEMENT REPAIR STANDARD

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

BUTLER COUNTY ENGINEERS OFFICE AND OPERATIONS FACILITY
1921 FAIRGROVE AVENUE - HAMILTON, OHIO 45011
PHONE 867-5744



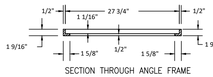
STANDARD 2-2A CATCH BASIN



STANDARD NO. 2-2B CATCH BASIN

NOTES

GRATING AND FRAME: Shall meet the requirements of 604. The design shall be essentially the same and equally as strong as the one shown hereon.
Weight of grate, minimum , 120 lbs.
Weight of frame, minimum, 40 lbs.
CONCRETE: Cast in place to be class "C".
BRICK OR CONCRETE BLOCK: Side walls, when used in place of concrete, shall be 8 inches nominal thickness. When catch basin above the flow line of the side opening shall be constructed of Portland Cement Concrete.
No. 2-2A: Side inlets to be placed 4 to 6 inches below normal elevations of median or ditch flow line, returning to normal 10 feet each side of the basin.
No. 2-2B: Grate elevation to be placed 4 to 6 inches below normal ditch returning to normal 10 feet each side of basin.
SIDE INLETS: Shall be provided on both sided of the No. 2-2A catch basin in sags and on upstream side only where the ditch has a continuous down grade past the catch basin.
MAXIMUM PIPE SIZE IS 21".
MAXIMUM DEPTH IS 4 FEET.
STEPS: Shall be provided where the depth exceeds 48" and shall meet the requirements of drawing MH-1.



REVISIONS	DATE	C-10

CATCH BASIN
CB 2-2A
CB 2-2B

CHK. BY: C.A.H. EFFECTIVE DATE: 1-1-94

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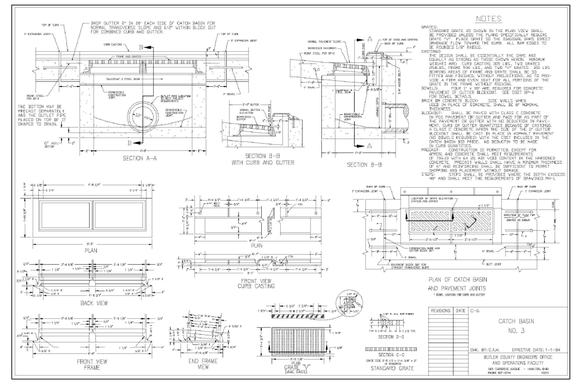
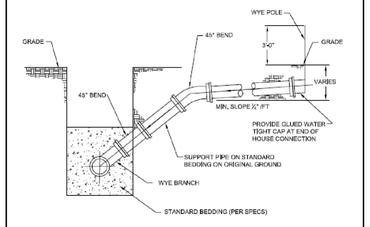
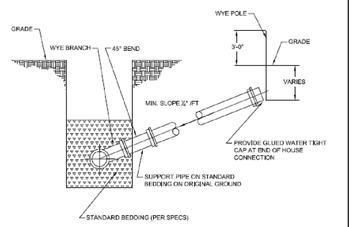
PHONE 867-5744





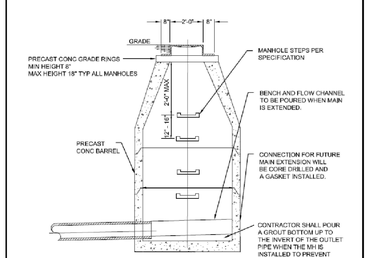
HOUSE CONNECTION FOR DEEP SEWER

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



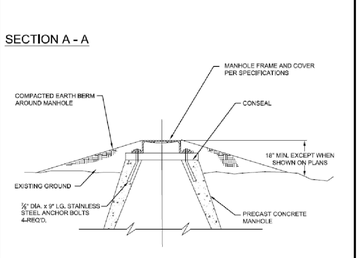
HOUSE CONNECTION FOR SHALLOW SEWER

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



DEAD END MANHOLE DETAIL

BUTLER COUNTY WATER AND SEWER
130 HIGH STREET
HAMILTON, OH 45011
TELEPHONE: 513-887-3066
FAX: 513-887-3777
6190



ELEVATED MANHOLE DETAIL

BUTLER COUNTY WATER AND SEWER
130 HIGH STREET
HAMILTON, OH 45011
TELEPHONE: 513-887-3066
FAX: 513-887-3777
6170

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STATE OF OHIO
JAMES H. WATSON
49886
REGISTERED PROFESSIONAL ENGINEER

James H Watson

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Revision	By	Date

CARRIAGE PARK

SECTION 3, TOWN 2, RANGE 3
LIBERTY TOWNSHIP
BUTLER COUNTY, OHIO
DETAILS

Date	07/16/21
Scale	AS NOTED
Drawn By	BC
Proj. Mgr.	JW
Survey Database	N/A
DWG	16565004-IMP
X-Ref(s)	
Project Number	16565.00
File No.	Sheet No. 8 / 10

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3700 Park 42 Drive
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Cincinnati OH 45241
Phone 513.759.0004
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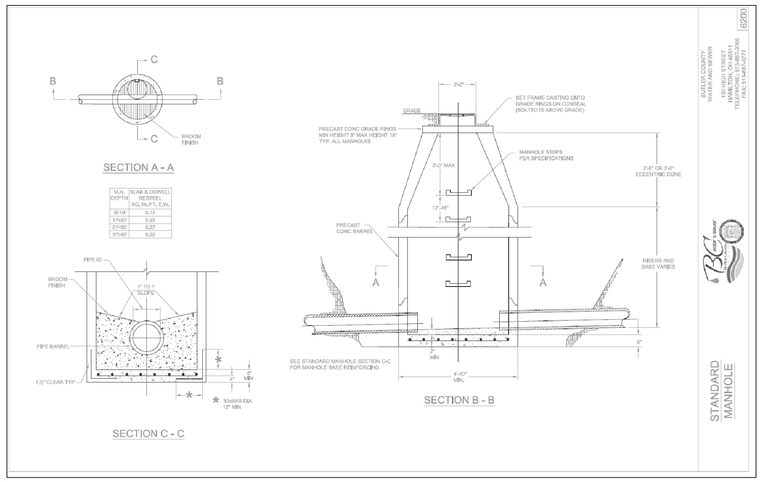
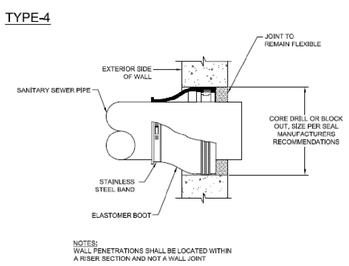
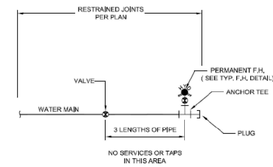
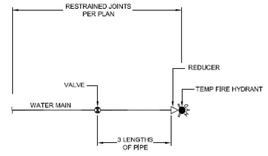




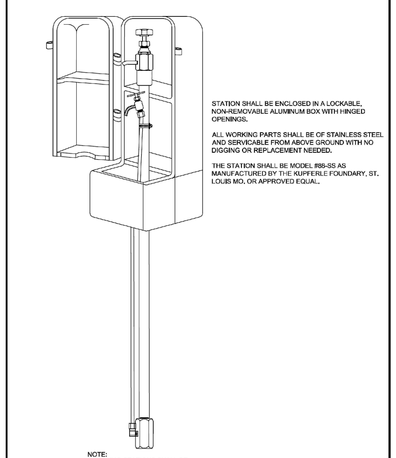
CONNECTION TO EXISTING MANHOLE — BUTLER COUNTY WATER AND SEWER — 130 HIGH STREET HAMILTON, OH 45011 TELEPHONE: 513-887-3066 FAX: 513-887-3777 — 6150



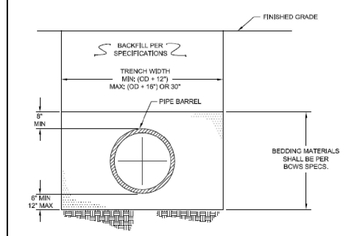
DEAD END DETAIL W/ PERMANENT F.H. — BUTLER COUNTY WATER AND SEWER — 130 HIGH STREET HAMILTON, OH 45011 TELEPHONE: 513-887-3066 FAX: 513-887-3777 — 5130



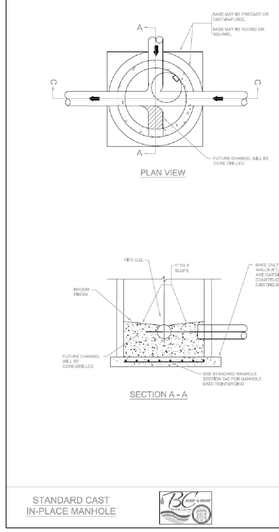
DEAD END DETAIL W/ TEMP F.H. — BUTLER COUNTY WATER AND SEWER — 130 HIGH STREET HAMILTON, OH 45011 TELEPHONE: 513-887-3066 FAX: 513-887-3777 — 5140

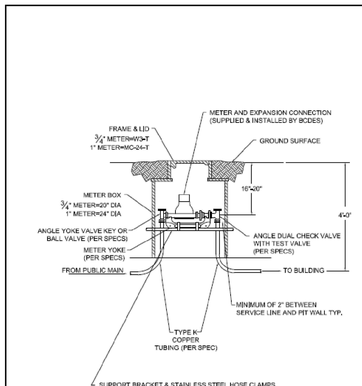


PERMANENT LAB SAMPLING STATION — BUTLER COUNTY WATER AND SEWER — 130 HIGH STREET HAMILTON, OH 45011 TELEPHONE: 513-887-3066 FAX: 513-887-3777 — 5270

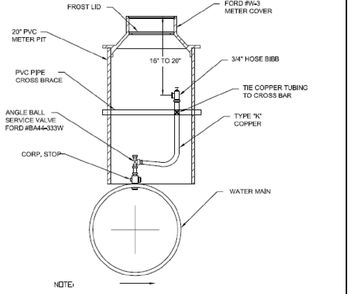


TYPICAL TRENCH DETAIL SEWER INSTALLATION — BUTLER COUNTY WATER AND SEWER — 130 HIGH STREET HAMILTON, OH 45011 TELEPHONE: 513-887-3066 FAX: 513-887-3777 — 6270

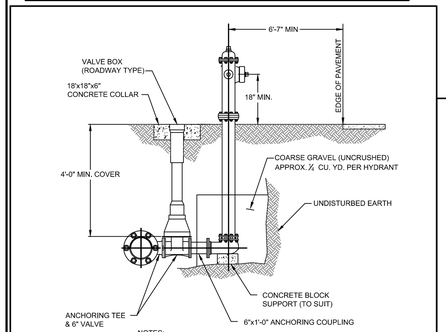




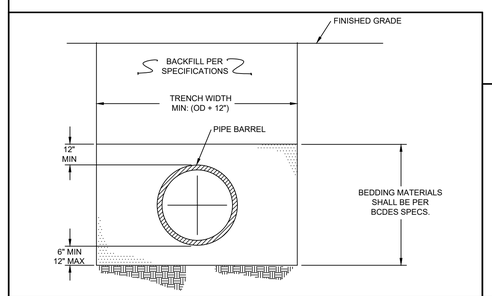
STANDARD INSTALLATION FOR 3/4" AND 1" WATER METER SETTINGS — BUTLER COUNTY WATER AND SEWER — 130 HIGH STREET HAMILTON, OH 45011 TELEPHONE: 513-887-3066 FAX: 513-887-3777 — 5150



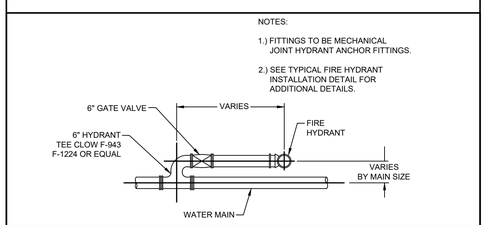
MANUAL AIR RELEASE VALVE DETAIL — BUTLER COUNTY WATER AND SEWER — 130 HIGH STREET HAMILTON, OH 45011 TELEPHONE: 513-887-3066 FAX: 513-887-3777 — 5290



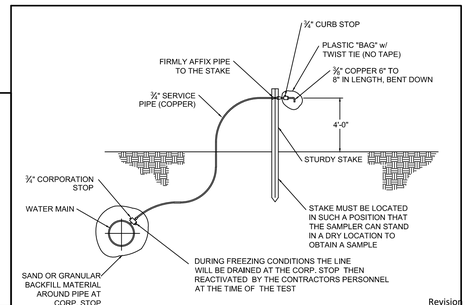
TYPICAL FIRE HYDRANT INSTALLATION — BUTLER COUNTY DEPARTMENT OF ENVIRONMENTAL SERVICES — 130 HIGH STREET HAMILTON, OH 45011 TELEPHONE: 513-887-3066 FAX: 513-887-3777 — 5110



TYPICAL TRENCH DETAIL WATER MAIN INSTALLATION — BUTLER COUNTY DEPARTMENT OF ENVIRONMENTAL SERVICES — 130 HIGH STREET HAMILTON, OH 45011 TELEPHONE: 513-887-3066 FAX: 513-887-3777 — 5280



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



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

Revision

By	Date

STATE OF OHIO
JAMES H. WATSON
49886
REGISTERED
PROFESSIONAL ENGINEER

James H Watson

CARRIAGE PARK
SECTION 3, TOWN 2, RANGE 3
LIBERTY TOWNSHIP
BUTLER COUNTY, OHIO
DETAILS

Date	07/16/21
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Survey Database	N/A
DWG	16565004-IMP
X-Ref(s)	
Project Number	16565.00
File No. / Sheet No.	9 / 10

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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.

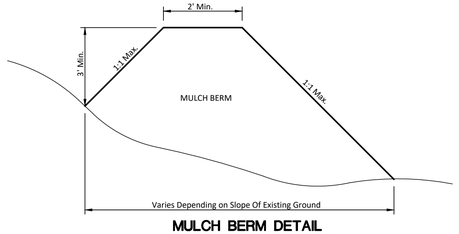
IRRIGATION

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.



MULCH BERM DETAIL

N.T.S.

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. 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-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-Agriculturul 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

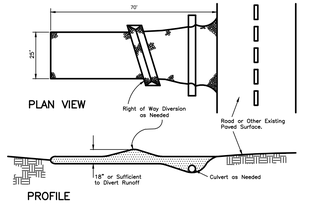
1. In the absence of adequate rainfall, watering shall be performed daily or as often as necessary during the first week and in sufficient quantities to maintain moist soil to a depth of 4 in.

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.

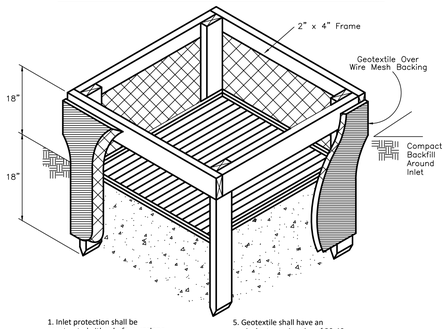
7. Water Bar-A water bar shall be constructed as part of the construction entrance if needed to prevent surface runoff from flowing the length of the construction entrance and out onto paved surfaces.

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.

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.

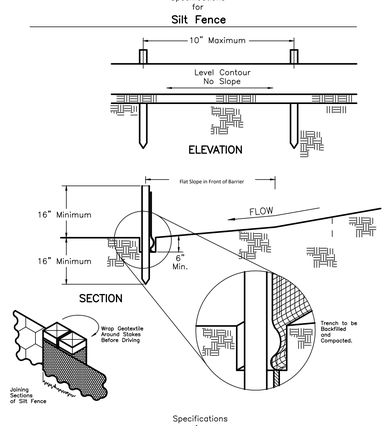
5. Geotextile shall have an equivalent opening size of 20-40 sieve and be resistant to sunlight. It shall be stretched tightly around the frame and fastened securely. It shall extend from the top of the frame to 18 in. below the inlet notch elevation. The geotextile shall overlap across one side of the 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

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.

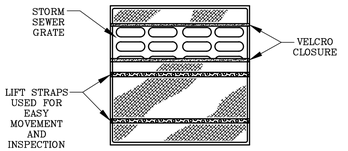
Criteria for Silt Fence Materials

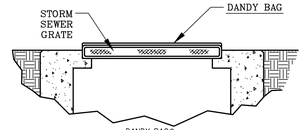
1. Fence Posts-The length shall be a minimum of 32 in. long. Wood posts will be 2-by-2 in. of hardwood of sound quality. The maximum spacing between posts shall be 10 ft.

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 sec. $^{-1}$

DANDY BAG®





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

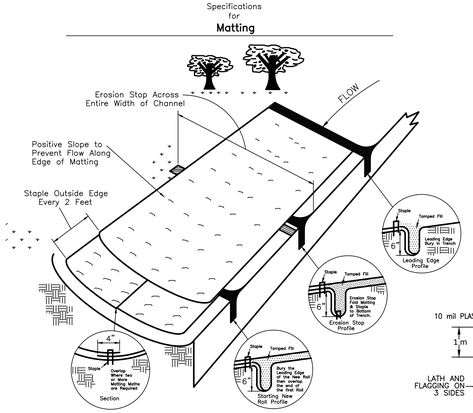
HI-FLOW DANDY BAG® (SAFETY ORANGE)

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

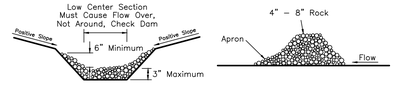
* Erosion stops shall extend beyond the channel liner to the full design width of the channel. This will check any rills that might form outside or along the edge of the channel lining.

* 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.

Specifications for

Check Dam



CROSS SECTION

1. The check dam shall be constructed of 4-8 in. diameter stone, placed so that it completely covers the width of the channel.

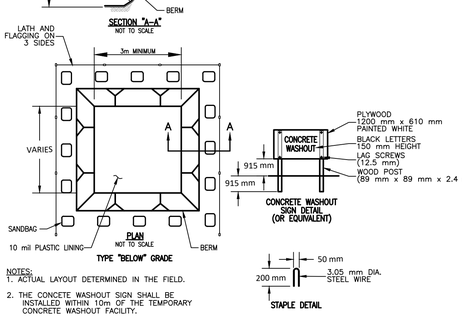
2. The top of the check dam shall be constructed so that the center is approximately 6 in. lower than the outer edges, so water will flow across the center and not around the ends.

PROFILE

3. The maximum height of the check dam at the center of the weir shall not exceed 3 ft.

4. Spacing between dams shall be as shown in the plans or by the following table:

Check Dam Spacing				
Dam Height (ft.)	Channel Slope			
	< 5%	5 – 10%	10 – 15 %	15 – 20%
1	65 ft.	30 ft.	20 ft.	15 ft.
2	130 ft.	65 ft.	40 ft.	30 ft.
3	200 ft.	100 ft.	65 ft.	50 ft.



NOTES:
1. ACTUAL LAYOUT DETERMINED IN THE FIELD.
2. THE CONCETE WASHOUT SIGN SHALL BE INSTALLED WITHIN 10m OF THE TEMPORARY CONCRETE WASHOUT FACILITY.

CONCRETE WASHOUT DETAIL

N.T.S.

STATE OF OHIO
JAMES H. WATSON
49886
REGISTERED PROFESSIONAL ENGINEER

James H Watson

CARRIAGE PARK

SECTION 3, TOWN 2, RANGE 3
LIBERTY TOWNSHIP
BUTLER COUNTY, OHIO

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Revision	By	Date
BCEO COMMENTS	BC	09/08/21

Date	07/16/21
Scale	AS NOTED
Drawn By	BC Proj. Mgr. JW
Survey Database	N/A
DWG	16565004-IMP
X-Ref(s)	
Project Number	16565.00
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