

MEMORIAL PARK EXPANSION

LOWER MAKEFIELD TOWNSHIP BUCKS COUNTY, PENNSYLVANIA

PENNSYLVANIA ACT 287 OF 1974 AS AMENDED UTILITY USERS LIST

COMPANY: PENNSYLVANIA AMERICAN WATER ADDRESS: 4 WELLINGTON BLVD WYOMISSING, PA. 19610 CONTACT: ALFONSO ROSSI EMAIL: alfonso.rossi@comwater.com	COMPANY: LEVEL 3 COMMUNICATIONS LLC ADDRESS: 1025 ELDORADO BLVD BLDG BROOMFIELD, CO. 80021 CONTACT: LEVEL 3 OPERATOR PERSONNEL EMAIL: RELO@LEVEL3.COM
COMPANY: COMCAST CABLEVISION ADDRESS: 55 INDUSTRIAL DRIVE WYLAND, PA. 18974 CONTACT: KATHIE BROWN	COMPANY: LOWER MAKEFIELD TOWNSHIP ADDRESS: 1100 EDGEWOOD RD YARDLEY, PA. 19067 CONTACT: R. KELLEY WATSON EMAIL: seweroperator1@mt.org
COMPANY: BUCKS COUNTY WATER AND SEWER AUTHORITY ADDRESS: 1275 ALMSHOUSE RD WARRINGTON, PA. 18976 CONTACT: JAMES NAPOLEON EMAIL: j.napoleon@bcwsa.net	COMPANY: SUNOCO PIPELINE LP ADDRESS: 525 FRITZTOWN RD SINKING SPRING, PA. 19608 CONTACT: ONE CALL DEPARTMENT EMAIL: sxdesignreviews@sunoco-logistics.com
COMPANY: VERIZON PENNSYLVANIA LLC ADDRESS: 15 MONTGOMERY AVENUE, FLOOR 2 PITTSBURGH, PA. 15212 CONTACT: DEBORAH BARUM EMAIL: deborah.d.delio@verizon.com	COMPANY: TRANSCONTINENTAL GAS/WILLIAMS GAS ADDRESS: 60 BACTON HILL RD FRAZER, PA. 19355 CONTACT: DAWN SONSINI EMAIL: dawn.sonsini@williams.com
COMPANY: PECO ENERGY C/O USIC ADDRESS: 450 S HENDERSON RD SUITE B KING OF PRUSSIA, PA. 19406 CONTACT: NIKKIA SIMPKINS EMAIL: NIKKIASIMPKINS@USICLLC.COM	COMPANY: FALLS AUTHORITY TOWNSHIP OF ADDRESS: 557 LINCOLN HWY FAIRLESS HILLS, PA. 19030 CONTACT: KEITH SUMMERSVILLE EMAIL: ksummersville@tofa-pa.com



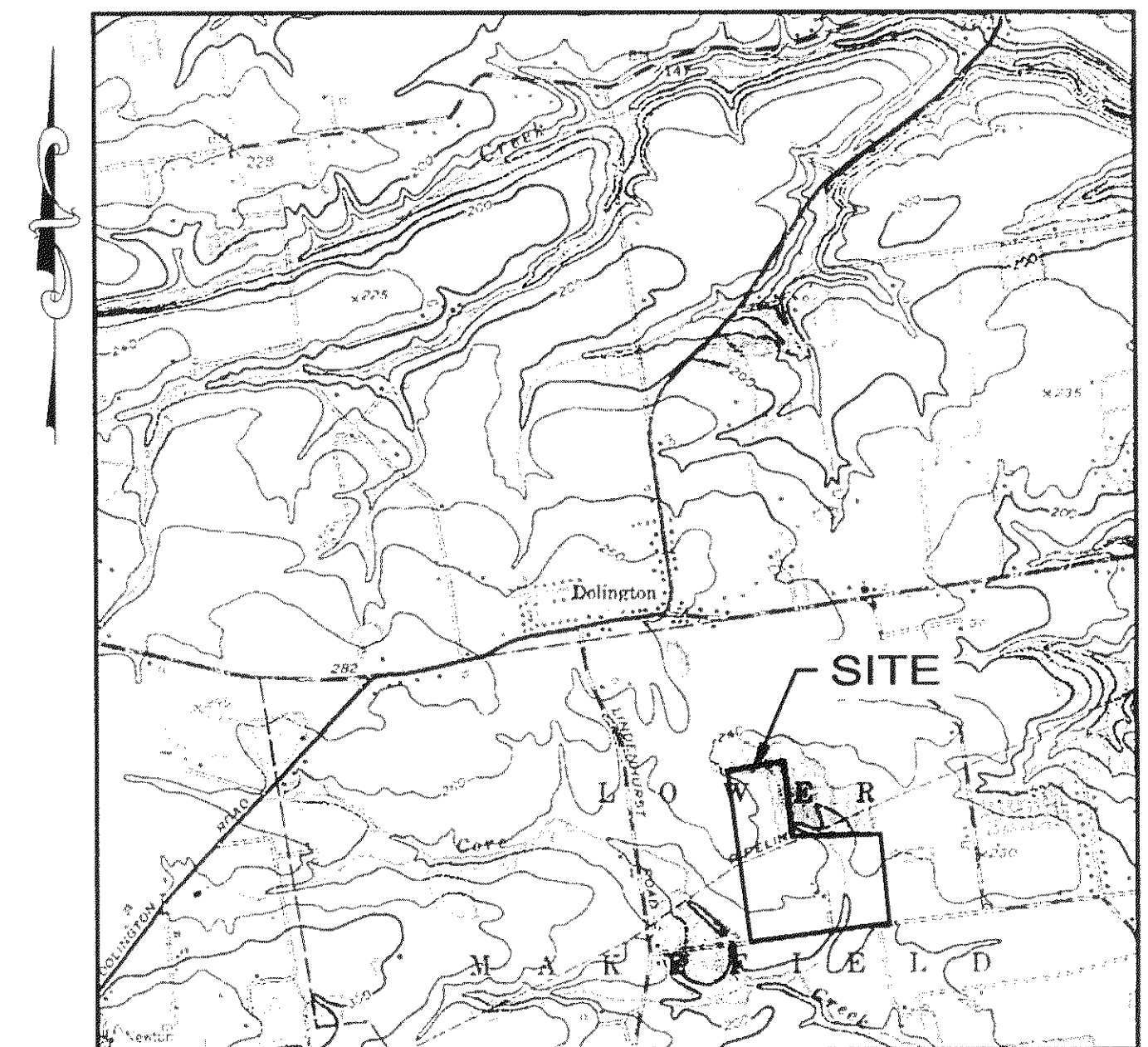
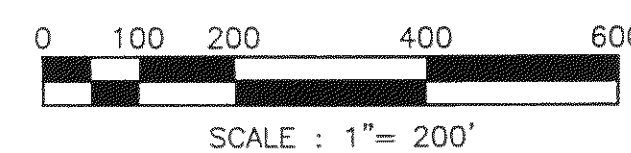
BEFORE YOU DIG ANYWHERE IN
PENNSYLVANIA CALL 1-800-242-1776
NON-MEMBERS MUST BE CONTACTED DIRECTLY
PA LAWS REQUIRES THREE WORKING DAYS
NOTICE TO UTILITIES BEFORE YOU EXCAVATE,
DRILL, BLAST OR DEMOLISH

20163092048

THE CONTRACTOR SHALL VERIFY THE LOCATION AND ELEVATION OF
ALL UNDERGROUND UTILITIES BEFORE THE START OF WORK.



OVERALL SITE



LOCATION MAP



SCALE: 1" = 2000'
SOURCE: U.S.G.S. QUAD SHEET LAMBERTVILLE, PA. - N.J.
PHOTOREVISED 1968 AND 1973

DRAWING INDEX

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12 OF 25	POST CONSTRUCTION STORMWATER MANAGEMENT PLAN - WEST	25 OF 25	CONSTRUCTION DETAILS
13 OF 25	POST CONSTRUCTION STORMWATER MANAGEMENT PLAN - EAST		

CIVIL ENGINEERS

Boucher & James, Inc.

CONSULTING ENGINEERS

1456 FERRY ROAD - BUILDING 500

DOYLES TOWN, PA 18901

VOICE: (215) 345-9400

FAX: (215) 345-9401

APPLICANT

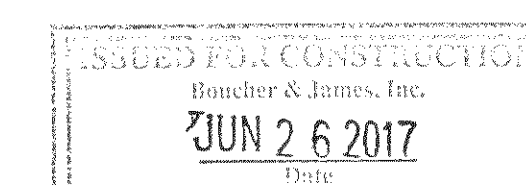
LOWER MAKEFIELD TOWNSHIP

1100 EGDEWOOD ROAD

YARDLEY, PA 19067

VOICE: (267) 274-1100

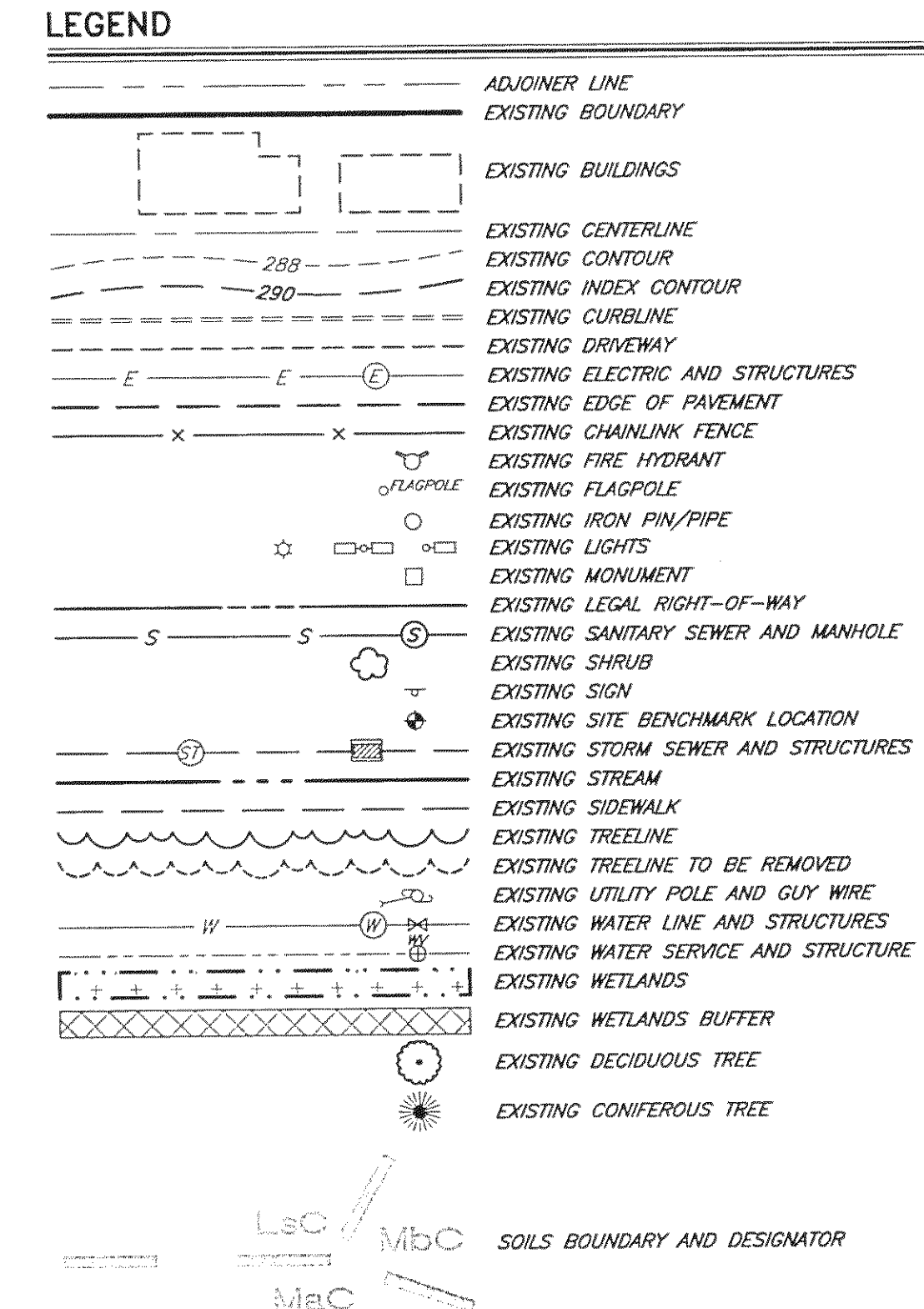
MEMORIAL PARK EXPANSION



BID SET
JOB NO. 1677058
FEBRUARY 24, 2017
LAST REVISED JUNE 22, 2017
SHEET 1 OF 25



- SITE NOTES:**
1. THE TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED UPON A FIELD SURVEY CONDUCTED BY BOUCHER & JAMES, INC. DURING JANUARY 2014 AND REPRESENTS EXISTING CONDITIONS AT THAT TIME.
 2. VERTICAL DATUM SHOWN HEREON IS BASED UPON NORTH AMERICAN VERTICAL DATUM 1988. BENCHMARK BEING A US COAST & GEODETIC DISK SET IN A CONCRETE MONUMENT STAMPED "TOWNSHIP 1840" (K15782) WITH AN ELEVATION OF 332.02, SAID MONUMENT BEING LOCATED AT NUMBER 10 CHADWICK CIRCLE IN A SUBDIVISION CALLED THE WOODS AT SAXONY.
 3. PROJECT BENCHMARKS (SEE PLAN FOR LOCATION AND ELEVATION AS DESIGNATED BY \odot ON THE PLANS).
 4. LOCATIONS OF EXISTING UTILITIES SHOWN HEREON ARE BASED UPON FIELD OBSERVATIONS DURING THE TIME OF SURVEY, OR DEVELOPED FROM RECORDS PROVIDED BY THE RESPECTIVE USERS RESPONDING TO PENNSYLVANIA ONE-CALL SYSTEM.
 5. BOUCHER & JAMES, INC. HAS NOT PERFORMED A VERIFICATION SURVEY TO DETERMINE THE EXISTENCE OF ANY UNDERGROUND UTILITY LINES WHICH MAY NOT HAVE BEEN VISIBLE AT THE TIME OF THE SURVEY.
 6. ANYONE USING THIS DRAWING FOR CONSTRUCTION IS ADVISED TO CALL 1-800-242-1776 PRIOR TO EXCAVATION IN ACCORDANCE WITH PA ACT NO. 287 OF 1974, AS AMENDED.
 7. ALL EXISTING FEATURES ARE TO REMAIN UNLESS OTHERWISE NOTED AS (TBR) ON THE EXISTING FEATURES/DEMOLITION PLAN.
 8. PRIOR TO STARTING CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE TO MAKE SURE THAT ALL REQUIRED PERMITS AND APPROVALS HAVE BEEN OBTAINED. NO CONSTRUCTION OR FABRICATION SHALL BEGIN UNTIL THE CONTRACTOR HAS RECEIVED AND THOROUGHLY REVIEWED ALL PLANS AND OTHER DOCUMENTS BY ALL OF THE PERMITTING AUTHORITIES.
 9. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS, AND THE REQUIREMENTS AND STANDARDS OF THE LOCAL GOVERNING AUTHORITY.
 10. SOLID WASTE TO BE DISPOSED OF BY CONTRACTOR IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REGULATIONS.
 11. ALL EXCAVATED UNSUITABLE OR EXCESS MATERIAL MUST BE TRANSPORTED TO AN APPROVED DISPOSAL LOCATION.



MAJOR SOIL PROPERTIES AND ESTIMATED DEGREE OF LIMITATION THAT INFLUENCE USE OF SOILS FOR CONSTRUCTION/DEVELOPMENT

MAP SYMBOL	SOIL	HYDROLOGIC SOIL GROUP	DEPTH TO		CONSTRUCTION MATERIALS				SOILS FEATURES THAT AFFECT:		
			HWT (FT)	BEDROCK (IN)	ROAD FILL	SAND	GRAVEL	TOPSOIL	SHALLOW EXCAVATIONS	LOCAL ROADS AND STREETS	EMBANKMENT, DIKES, AND LEVEES.
Bo	BOWMANVILLE-KNAUERS SILT LOAMS	C/D	0	>72"	POOR	POOR	POOR	POOR	VERY LIMITED; PONDING, FLOODING DUSTY, DEPTH TO SATURATED ZONE UNSTABLE EXCAVATION WALLS	VERY LIMITED; PONDING, DEPTH TO SATURATED ZONE, FROST ACTION, FLOODING, LOW STRENGTH	VERY LIMITED; DEPTH TO SATURATION ZONE, DUSTY, PIPING, SEEPAGE
CbA	CHALFONT SILT LOAM 0 TO 3 PERCENT SLOPES	D	12"	21"	POOR	POOR	POOR	FAIR	VERY LIMITED; DEPTH TO SATURATED ZONE, DUSTY, UNSTABLE EXCAVATION WALLS	VERY LIMITED; LOW STRENGTH, DEPTH TO SATURATED ZONE, FROST ACTION, DEPTH TO THIN CEMENTED PAN	VERY LIMITED; DEPTH TO SATURATION ZONE, DUSTY, PIPING,
CbB	CHALFONT SILT LOAM 3 TO 8 PERCENT SLOPES	D	12"	21"	POOR	POOR	POOR	FAIR	VERY LIMITED; DEPTH TO SATURATED ZONE, DUSTY, UNSTABLE EXCAVATION WALLS	VERY LIMITED; LOW STRENGTH, DEPTH TO SATURATED ZONE, FROST ACTION, DEPTH TO THIN CEMENTED PAN	VERY LIMITED; DEPTH TO SATURATION ZONE, DUSTY, PIPING,
DdA	DOYLESTOWN SILT LOAM 0 TO 3 PERCENT SLOPES	C/D	3"	22.5"	POOR	POOR	POOR	POOR	VERY LIMITED; DEPTH TO SATURATED ZONE, DUSTY, UNSTABLE EXCAVATION WALLS	VERY LIMITED; LOW STRENGTH, DEPTH TO SATURATED ZONE, FROST ACTION, DEPTH TO THIN CEMENTED PAN	VERY LIMITED; DEPTH TO SATURATION ZONE,
DuA	DUNCANNON SILT LOAM 3 TO 8 PERCENT SLOPES	B	>72"	>72"	POOR	POOR	POOR	FAIR	VERY LIMITED; DEPTH TO SATURATED ZONE, DUSTY, UNSTABLE EXCAVATION WALLS	FROST ACTION, LOW STRENGTH	VERY LIMITED; PIPING, DUSTY
LkA	LAWRENCEVILLE SILT LOAM 0 TO 3 PERCENT SLOPES	C	27"	25"	POOR	POOR	POOR	FAIR	VERY LIMITED; DEPTH TO SATURATED ZONE, DUSTY, UNSTABLE EXCAVATION WALLS	VERY LIMITED; LOW STRENGTH, DEPTH TO SATURATED ZONE, FROST ACTION, DEPTH TO THIN CEMENTED PAN	SOMEWHAT LIMITED; DEPTH TO SATURATION ZONE, DUSTY
LkB	LAWRENCEVILLE SILT LOAM 3 TO 8 PERCENT SLOPES	C	27"	25"	POOR	POOR	POOR	FAIR	VERY LIMITED; DEPTH TO SATURATED ZONE, DUSTY, UNSTABLE EXCAVATION WALLS	VERY LIMITED; LOW STRENGTH, DEPTH TO SATURATED ZONE, FROST ACTION, DEPTH TO THIN CEMENTED PAN	SOMEWHAT LIMITED; DEPTH TO SATURATION ZONE, DUSTY

SOURCE: WEB SOILS SURVEY, ACCESSED SEPTEMBER 26, 2016

LIMITATION RESOLUTIONS:

1. A PUMPED WATER FILTER BAG MAY BE REQUIRED DURING CONSTRUCTION TO REMOVE ACCUMULATED GROUNDWATER FROM AREAS OF EXCAVATION.
2. SHORING MAY BE REQUIRED WHERE EXCAVATIONS ARE DEEP, TO PROTECT AGAINST UNSTABLE EXCAVATION WALLS.

DISPOSAL/RECYCLING OF CONSTRUCTION MATERIAL

ALL CONSTRUCTION WASTES ARE TO BE RECYCLED TO THE GREATEST EXTENT PRACTICAL AND DISPOSED OF IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE, AND LOCAL MUNICIPALITY REQUIREMENTS AND GUIDELINES.

CLEAN FILL IS DEFINED AS: UNCONTAMINATED, NON-WATER SOLUBLE, NON-DECOMPOSABLE, INERT, SOLID MATERIAL. THE TERM INCLUDES SOIL, ROCK, STONE, DREDGED MATERIAL, USED ASPHALT, AND BRICK, BLOCK OR CONCRETE FROM CONSTRUCTION AND DEMOLITION ACTIVITIES THAT IS SEPARATE FROM OTHER WASTE AND IS RECOGNIZABLE AS SUCH. THE TERM DOES NOT INCLUDE MATERIALS PLACED IN OR ON THE WATERS OF THE COMMONWEALTH UNLESS OTHERWISE AUTHORIZED. (THE TERM "USED ASPHALT" DOES NOT INCLUDE MILLED ASPHALT OR ASPHALT THAT HAS BEEN PROCESSED FOR RE-USE.)

CLEAN FILL AFFECTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE: FILL MATERIALS AFFECTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE STILL QUALIFIES AS CLEAN FILL PROVIDED THE TESTING REVEALS THAT THE FILL MATERIAL CONTAINS CONCENTRATIONS OF REGULATED SUBSTANCES THAT ARE BELOW THE RESIDENTIAL LIMITS IN TABLES FP-1A AND FP-1B FOUND IN THE DEP'S POLICY "MANAGEMENT OF FILL". ANY PERSON PLACING CLEAN FILL THAT HAS BEEN AFFECTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE MUST USE FORM FP-001 TO CERTIFY THE ORIGIN OF THE FILL MATERIAL AND THE RESULTS OF THE ANALYTICAL TESTING TO QUALIFY THE MATERIAL AS CLEAN FILL. FORM FP-001 MUST BE RETAINED BY THE OWNER OF THE PROPERTY RECEIVING THE FILL.

ENVIRONMENTAL DUE DILIGENCE: INVESTIGATIVE TECHNIQUES, INCLUDING, BUT NOT LIMITED TO, VISUAL PROPERTY INSPECTIONS, ELECTRONIC DATA BASE SEARCHES, REVIEW OF PROPERTY OWNERSHIP, REVIEW OF PROPERTY USE HISTORY, SANBORN MAPS, ENVIRONMENTAL QUESTIONNAIRES, TRANSACTION SCREENS, ANALYTICAL TESTING, ENVIRONMENTAL ASSESSMENTS OR AUDITS. ANALYTICAL TESTING IS NOT A REQUIRED PART OF DUE DILIGENCE UNLESS VISUAL INSPECTION AND/OR REVIEW OF THE PAST LAND USE OF THE PROPERTY INDICATES THAT THE FILL MAY HAVE BEEN SUBJECT TO A SPILL OR RELEASE OF REGULATED SUBSTANCE. IF THE FILL MAY HAVE BEEN AFFECTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE, IT MUST BE TESTED TO DETERMINE IF IT QUALIFIES AS CLEAN FILL. TESTING SHOULD BE PERFORMED IN ACCORDANCE WITH APPENDIX A OF THE DEP'S POLICY "MANAGEMENT OF FILL".

FILL MATERIAL THAT DOES NOT QUALIFY AS CLEAN FILL IS REGULATED FILL. REGULATED FILL IS WASTE AND MUST BE MANAGED IN ACCORDANCE WITH THE DEP'S MUNICIPAL OR RESIDUAL WASTE REGULATIONS BASED ON 25 PA. CODE CHAPTERS 287 RESIDUAL WASTE MANAGEMENT OR 271 MUNICIPAL WASTE MANAGEMENT, WHICHEVER IS APPLICABLE.

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Written dimensions shall have priority over scaled dimensions. All dimensions, elevations, locations, and conditions shall be verified by the Contractor prior to construction, and the Owner and Boucher & James, Inc. shall be notified of any discrepancies with the information shown on drawings.

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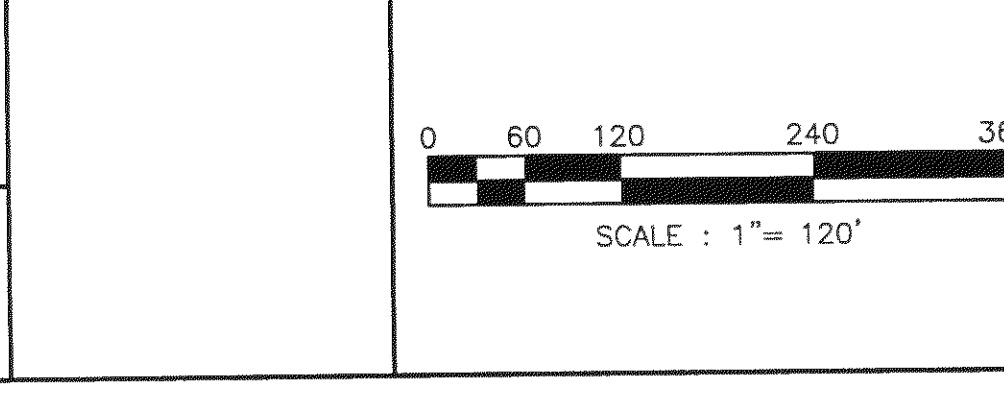
KNOW WHAT'S BELOW CALL BEFORE YOU DIG

UNLAWFUL TO EXCAVATE OR DISTURB ANY UNDERGROUND UTILITY LINES OR STRUCTURES WITHOUT THE WRITTEN PERMISSION OF PENNSYLVANIA ONE CALL SYSTEM, INC. 1-800-442-1776 OR 811 PA ONE-CALL SERIAL NO. 284800046 NOVEMBER 4, 2016

DATE	DESCRIPTION	DATE	DESCRIPTION
05/10/17	REFLECTS BID ALTERNATES		
06/05/17	GRADING REVISIONS FOR ADDENDUM		
06/22/17	REVISIONS FOR CONSTRUCTION		

PROJECT: MEMORIAL PARK EXPANSION
LOWER MAKEFIELD TOWNSHIP
BUCKS COUNTY, PENNSYLVANIA

APPLICANT: LOWER MAKEFIELD TOWNSHIP
1100 EDGEWOOD ROAD
YARDLEY, PA 19067



JOB NO.: 1677058

DATE: JUN 26 2017

DESIGNED BY: R.D.J.

CHECKED BY: M.W.E.

SCALE: 1" = 120'

PLAN STATUS: PRELIMINARY/FINAL

EXISTING FEATURES/DEMOLITION PLAN

Boucher & James, Inc.
CONSULTING ENGINEERS
DOYLESTOWN • STROUDSBURG • LEHIGH VALLEY
CORPORATE HEADQUARTERS: 1456 FERRY RD, BUILDING 500, DOYLESTOWN, PA 18901
VOICE: (215) 345-9400 FAX: (215) 345-9401
www.bjengineers.com

SHEET 2 OF 25

DATE: APRIL 14, 2017

MEMORIAL PARK EXPANSION - BID SET



LEGEND

	ADJACENT LINE
	EXISTING BOUNDARY
	EXISTING BUILDINGS
	EXISTING CENTERLINE
	EXISTING CONTOUR
	EXISTING INDEX CONTOUR
	EXISTING CURBLINE
	EXISTING DRIVEWAY
	EXISTING EDGE OF PAVEMENT
	EXISTING CHAINLINK FENCE
	EXISTING FIRE HYDRANT
	EXISTING FLAGPOLE
	EXISTING IRON PIN/PIPE
	EXISTING LIGHTS
	EXISTING MONUMENT
	EXISTING LEGAL RIGHT-OF-WAY
	EXISTING SANITARY SEWER AND MANHOLE
	EXISTING SHRUB
	EXISTING SIGN
	EXISTING SITE BENCHMARK LOCATION
	EXISTING STREAM
	EXISTING SIDEWALK
	EXISTING TREELINE
	EXISTING TREELINE TO BE REMOVED
	EXISTING UTILITY POLE AND GUY WIRE
	EXISTING WATER LINE AND STRUCTURES
	EXISTING WATER SERVICE AND STRUCTURE
	EXISTING WETLANDS
	EXISTING WETLANDS BUFFER
	EXISTING DECIDUOUS TREE
	EXISTING CONIFEROUS TREE
	SOILS BOUNDARY AND DESIGNATOR

SITE CAPACITY CALCULATIONS

BASE SITE AREA CALCULATIONS

GROSS SITE AREA:	64.08 ACRES
MINUS LANDS WITHIN RIGHT OF WAY:	1.61 ACRES
MINUS LANDS WITH COVENANTS/CONS. ESMTS:	1.82 ACRES
EQUALS BASE SITE AREA:	60.65 ACRES

RESOURCE PROTECTED LANDS

HYDROLOGIC SURFACE FEATURES:	NATURAL RESOURCE	I PERCENT OF RESOURCE TO BE PROTECTED	TOTAL NATURAL RESOURCE LAND IN ACRES	TOTAL RESOURCE PROTECTED LAND (I X III)	IV PROPOSED ACREAGE OF DISTURBANCE IN PROPOSED DEVELOPMENT	Vb PROPOSED RESOURCE PROTECTED LAND FOLLOWING DEVELOPMENT
FLOODPLAIN	100%	0	0	0	0 ACRES (0%)	0 ACRES (100%)
FLOODPLAIN SOILS (DELAWARE RIVER)	50%	0	0	0	0 ACRES (0%)	0 ACRES (100%)
LAKES OR PONDS	100%	0	0	0	0 ACRES (0%)	0 ACRES (100%)
WETLANDS*	100%	2.38	2.38	2.38	0.03 ACRES (1.6%)	2.35 ACRES (98.4%)
LAKE AND POND SHORELINE	100%	0	0	0	0 ACRES (0%)	0 ACRES (100%)
WETLAND AND WATERCOURSE BUFFER*	100%	6.74	6.74	6.74	0.75 ACRES (12.6%)	5.99 ACRES (87.4%)
SLOPES:	CLASS I STEEP SLOPE (8% TO LESS THAN 15%)	50%	0	0	0 ACRES (0%)	0 ACRES (100%)
	CLASS II STEEP SLOPE (15% TO 25%)	70%	0	0	0 ACRES (0%)	0 ACRES (100%)
	CLASS III STEEP SLOPE (GREATER THAN 25%)	100%	0	0	0 ACRES (0%)	0 ACRES (100%)
WOODLANDS:	WOODLAND ASSOCIATIONS	70%	6.81	4.77	0.93 ACRES (13.7%)	5.88 ACRES (86.3%)
TOTALS			15.93	13.89		

* PROPOSED DISTURBANCE OF 100% PROTECTED AREAS - VARIANCE REQUIRED.

NET BUILDABLE SITE AREA CALCULATIONS

BASE SITE AREA:	60.65 ACRES
MINUS RESOURCE PROTECTED LANDS:	13.89 ACRES
EQUALS NET BUILDABLE SITE AREA:	46.76 ACRES

PERCENTAGE OF BASE SITE AREA CLASSIFIED AS RESOURCE PROTECTED

TOTAL RESOURCE PROTECTED LANDS:	13.89 ACRES
DIVIDED BY BASE SITE AREA:	60.65 ACRES
EQUALS PERCENT RESOURCE PROTECTED:	22.90%

ISSUED FOR CONSTRUCTION
Boucher & James, Inc.
JUN 26 2017

NATURAL RESOURCE PROTECTION INVENTORY

NATURAL RESOURCE	TOTAL AREA ACRES (SF)	PROTECTION RATIO	REQUIRED PROTECTION - AC.	PROVIDED PROTECTION AC. (SF)	RESOURCES IN * SETBACK AREA NOT PROPOSED FOR DISTURBANCE
WETLANDS	2.38 (103,824)	100%	2.38	2.35 (98.39%) (102,151)	0.00 AC.
WETLANDS BUFFER	6.74 (298,756)	100%	6.74	5.99 (87.39%) (261,088)	0.00 AC.
SLOPES 8-15%	0	50%	0	N/A	N/A
SLOPES 15-25%	0	70%	0	N/A	N/A
SLOPES GREATER THAN 25%	0	100%	0	N/A	N/A
WOODLANDS	13.00 (566,309)	70%	9.10	11.56 (88.91%) (503,509)	0.00 AC.

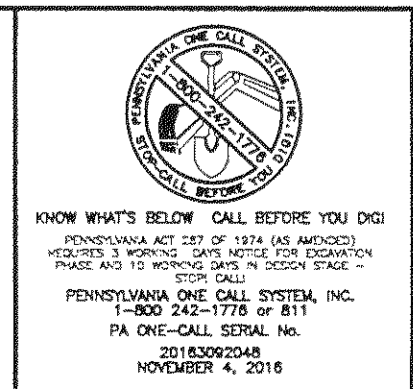
* DENOTES THOSE RESOURCES LOCATED WITHIN THE BUILDING SETBACK LINES NOT PROPOSED FOR DISTURBANCE, BUT INCLUDED IN DISTURBANCE CALCULATIONS AS REQUIRED BY ORDINANCE.

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Written dimensions shall have priority over scaled dimensions. All dimensions, elevations, locations, and conditions, shall be verified by the contractor prior to construction, and the Owner and Boucher & James, Inc. shall be notified of any discrepancies with the information shown on drawings.

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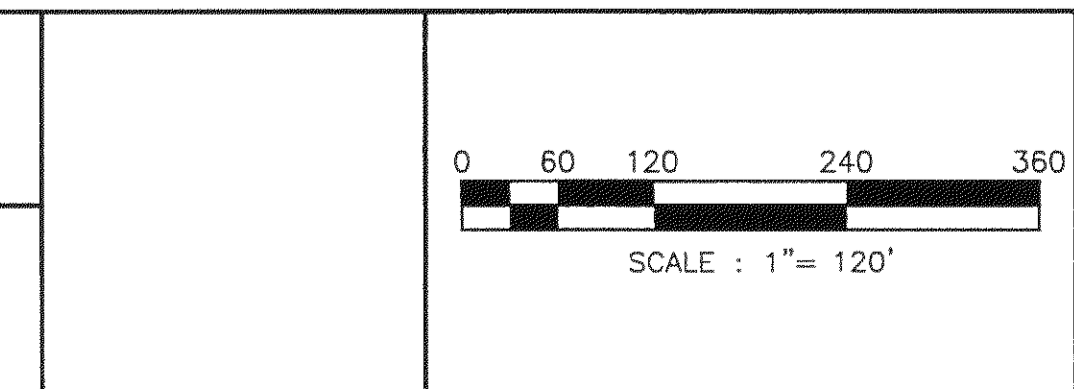


REVISIONS

DATE	DESCRIPTION	DATE	DESCRIPTION
05/10/17	REFLECTS BID ALTERNATES		
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PROJECT: MEMORIAL PARK EXPANSION
LOWER MAKEFIELD TOWNSHIP
BUCKS COUNTY, PENNSYLVANIA

APPLICANT: LOWER MAKEFIELD TOWNSHIP
1100 EDGEWOOD ROAD
YARDLEY, PA 19067



1677058 TITLE: **NATURAL RESOURCE PROTECTION PLAN**

DESIGNER: R.D.J.
CHECKED BY: M.W.E.

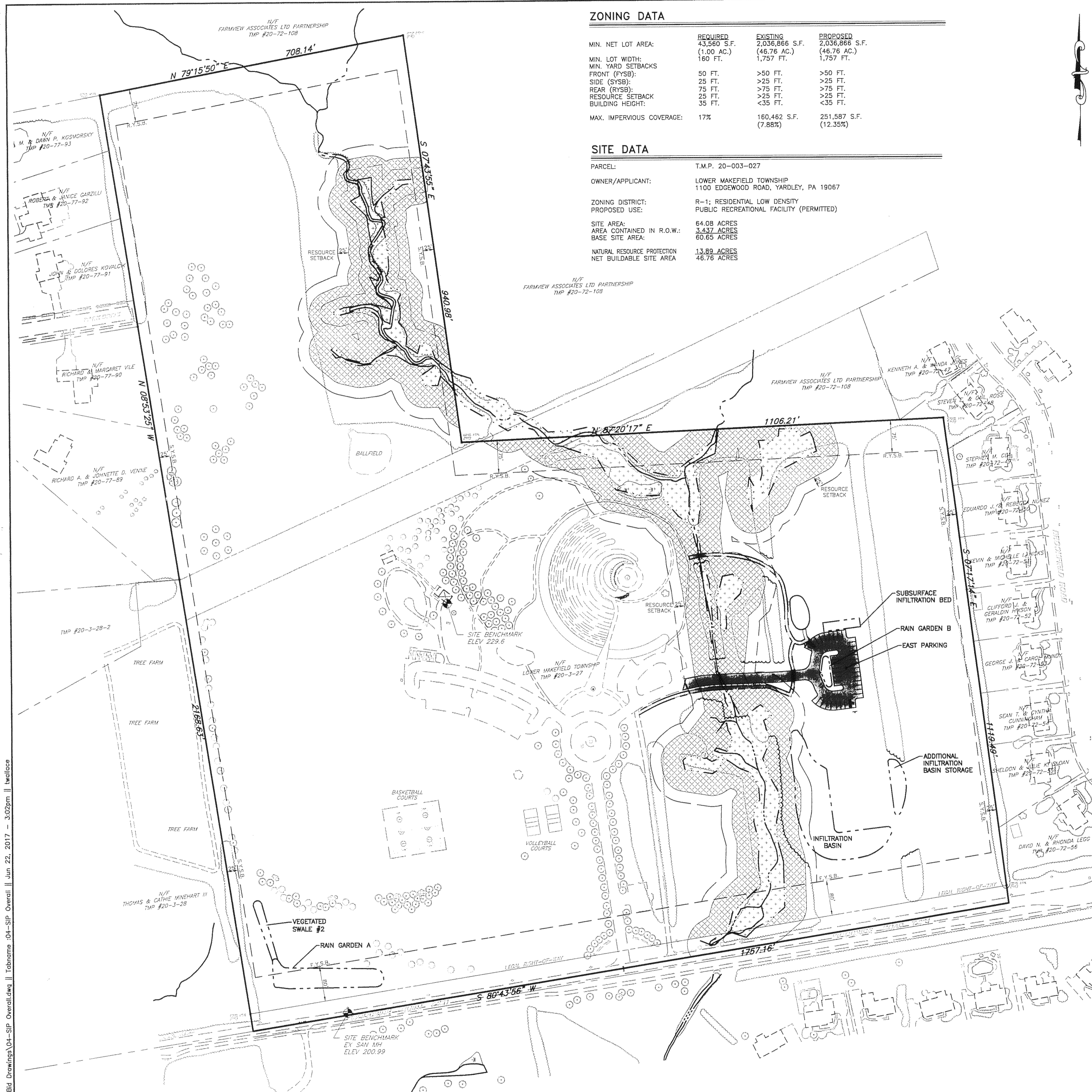
SCALE: 1" = 120'

PLAN STATUS: PRELIMINARY/FINAL

Boucher & James, Inc.
CONSULTING ENGINEERS
DOYLESTOWN • STROUDSBURG • LEHIGH VALLEY
CORPORATE HEADQUARTERS: 1456 FERRY RD, BUILDING 500, DOYLESTOWN, PA 18901
VOICE: (215) 345-9400 FAX: (215) 345-9401

MEMORIAL PARK EXPANSION - BID SET

SHEET **3 OF 25**
DATE: APRIL 14, 2017



ZONING DATA

MIN. NET LOT AREA:	REQUIRED 43,560 S.F. (1.00 AC.)	EXISTING 2,036,866 S.F. (46.76 AC.)	PROPOSED 2,036,866 S.F. (46.76 AC.)
MIN. LOT WIDTH:	160 FT.	175 FT.	175 FT.
MIN. YARD SETBACKS			
FRONT (FYSB):	50 FT.	>50 FT.	>50 FT.
SIDE (SYSB):	25 FT.	>25 FT.	>25 FT.
REAR (RYSB):	75 FT.	>75 FT.	>75 FT.
RESOURCE SETBACK	25 FT.	>25 FT.	>25 FT.
BUILDING HEIGHT:	35 FT.	<35 FT.	<35 FT.
MAX. IMPERVIOUS COVERAGE:	17%	160,462 S.F. (7.88%)	251,587 S.F. (12.35%)

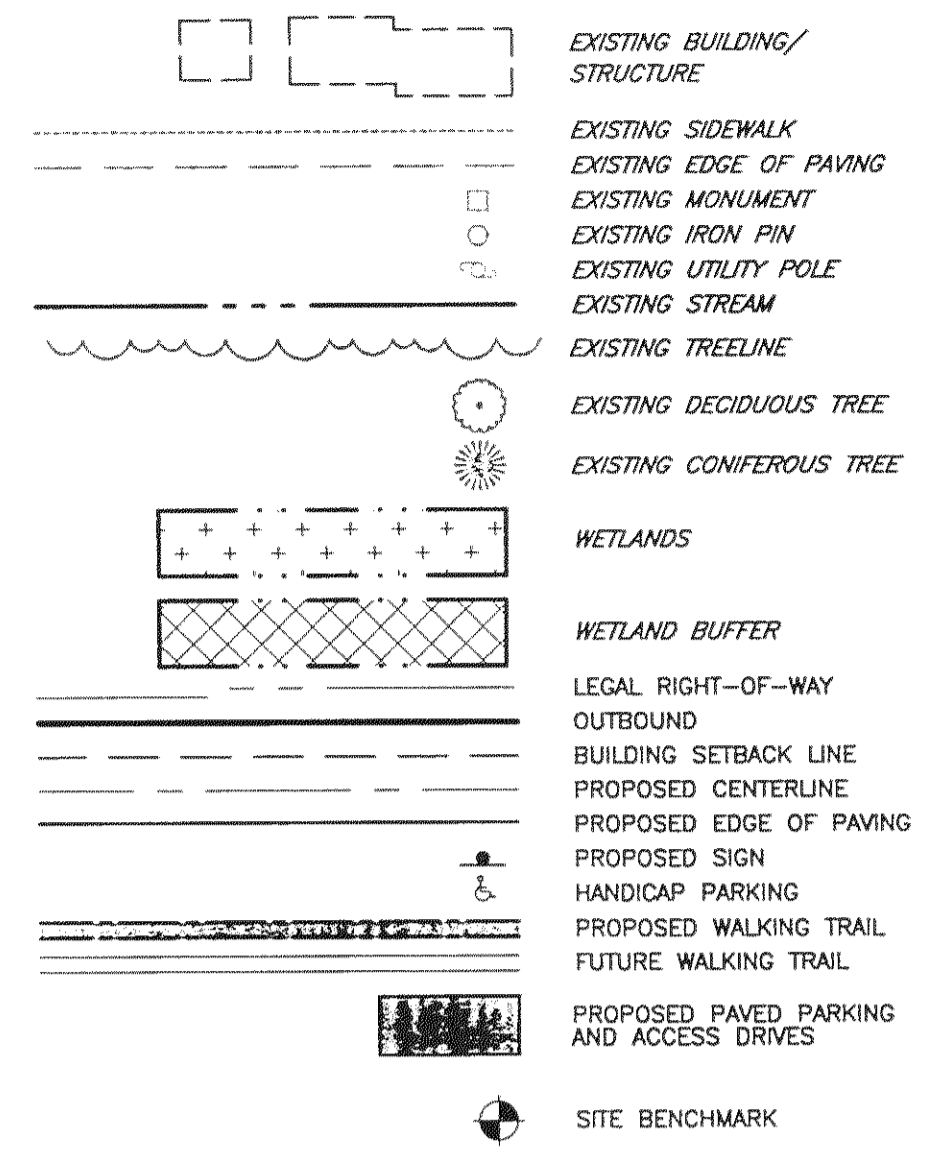
SITE DATA

PARCEL:	T.M.P. 20-003-027
OWNER/APPLICANT:	LOWER MAKEFIELD TOWNSHIP 1100 EDGEWOOD ROAD, YARDLEY, PA 19067
ZONING DISTRICT:	R-1; RESIDENTIAL LOW DENSITY
PROPOSED USE:	PUBLIC RECREATIONAL FACILITY (PERMITTED)
SITE AREA:	64.08 ACRES
AREA CONTAINED IN R.O.W.:	3.437 ACRES
BASE SITE AREA:	60.65 ACRES
NATURAL RESOURCE PROTECTION NET BUILDABLE SITE AREA:	13.89 ACRES 46.76 ACRES

GENERAL NOTES

- BOUNDARY DATA SHOWN HEREON IS BASED UPON A FIELD SURVEY CONDUCTED BY BOUCHER & JAMES, INC. DURING SEPTEMBER & OCTOBER, 2003 AND DEEDS OF RECORD, SUPPLEMENTED BY ADDITIONAL SURVEY CONDUCTED BY BOUCHER & JAMES, INC. DURING SEPTEMBER & OCTOBER, 2015.
- TOPOGRAPHIC INFORMATION IS TAKEN FROM EXISTING CONTOUR DATA AVAILABLE ON THE PASDA WEBSITE AND SUPPLEMENTAL FIELD SURVEY PERFORMED BY BOUCHER & JAMES, INC. DURING SEPTEMBER & OCTOBER, 2003. ADDITIONAL SUPPLEMENTAL SURVEY WAS CONDUCTED BY BOUCHER & JAMES, INC. DURING SEPTEMBER & OCTOBER, 2015.
- VERTICAL DATUM SHOWN HEREON IS BASED UPON NORTH AMERICAN VERTICAL DATUM 1988. BENCHMARK BEING A US COAST & GEODETIC DISK SET IN A CONCRETE MONUMENT STAMPED "NEWTOWN 1840" (KY5782) WITH AN ELEVATION OF 332.02, SAID MONUMENT BEING LOCATED AT NUMBER 10 CHADWICK CIRCLE IN A SUBDIVISION CALLED THE WOODS AT SAXONY.
- THIS PLAN IS SUBJECT TO ANY AND ALL RIGHTS-OF-WAY, EASEMENTS AND COVENANTS OF RECORD.
- BOUCHER & JAMES, INC. HAS UTILIZED THE PA ONE CALL SYSTEM FOR DESIGN PURPOSES (SEE TITLE BLOCK FOR SERIAL NUMBER). CONTRACTOR MUST PLACE A PA ONE CALL REQUEST NO LESS THAN 3 DAYS AND NO MORE THAN 10 DAYS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. BOUCHER & JAMES, INC. HAS NOT PERFORMED A VERIFICATION SURVEY TO DETERMINE THE EXISTENCE, LOCATION OR TYPE OF ANY UNDERGROUND UTILITY LINES OF A USER, SUCH AS A PUBLIC UTILITY, WHICH MAY NOT HAVE BEEN VISIBLE DURING THE SURVEY.
- ALL NEW UTILITIES SHALL BE PLACED UNDERGROUND.
- NOTHING SHALL BE PERMITTED TO BE PLACED, PLANTED, SET OR PUT WITHIN THE AREA OF A UTILITY OR SIGHT TRIANGLE EASEMENT EXCEPT LAWNS OR SUITABLE LOW GROUND COVER.
- MEMORIAL PARK IS SERVICED WITH A PUBLIC WATER SUPPLY AND PUBLIC SANITARY SEWERS.
- THE FEMA FLOOD INSURANCE RATE MAP FOR BUCKS CO., PA, MAP NUMBER 42017D030444, EFFECTIVE DATE OF MARCH 16, 2015 INDICATES, BY SCALED LOCATION OF THE SURVEYED PREMISES DURING THE MAP (NOT BASED ON ELEVATIONS), THAT THE SURVEYED PREMISES DOES NOT LIE WITHIN THE SPECIAL FLOOD HAZARD AREA INUNDATED BY 100-YEAR FLOOD - ZONE A.
- THESE PLANS ARE BASED UPON THE MASTER SITE PLAN - ALT. D. APPROVED BY THE LOWER MAKEFIELD TOWNSHIP BOARD OF SUPERVISORS AT A REGULAR MEETING HELD ON OCTOBER 20, 2003.
- PROJECT BENCHMARKS (SEE PLAN FOR LOCATION AND ELEVATION AS DESIGNATED BY ON THE PLANS).
- THE WETLANDS SHOWN HEREON HAVE BEEN DELINEATED BY SKELLY AND LOY ENGINEERS - ENVIRONMENTAL CONSULTANTS ON JUNE 26, 2002, AND WERE VERIFIED BY BOUCHER & JAMES, INC. DURING SUMMER 2016.
- ALL EXISTING FEATURES ARE TO REMAIN UNLESS OTHERWISE NOTED.
- ALL PAVEMENT MARKINGS SHALL BE SPRAY-APPLIED EPOXY, UNLESS OTHERWISE SPECIFIED BY THE ENGINEER OR CONSTRUCTION DOCUMENTS.
- PRIOR TO STARTING CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE TO MAKE SURE THAT ALL REQUIRED PERMITS AND APPROVALS HAVE BEEN OBTAINED. NO DISTURBANCE, CONSTRUCTION OR FABRICATION SHALL BEGIN UNTIL THE CONTRACTOR HAS RECEIVED AND THOROUGHLY REVIEWED ALL PLANS AND OTHER DOCUMENTS BY ALL OF THE PERMITTING AUTHORITIES.
- ALL DIMENSIONS SHOWN ON THE PLANS SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY ENGINEER IF ANY DISCREPANCIES EXIST PRIOR TO PROCEEDING WITH CONSTRUCTION FOR NECESSARY PLAN CHANGES. NO EXTRA COMPENSATION SHALL BE PAID TO THE CONTRACTOR FOR WORK HAVING TO BE REDONE DUE TO DIMENSIONS OR GRADES SHOWN INCORRECTLY ON THESE PLANS IF SUCH NOTIFICATION HAS NOT BEEN GIVEN.
- SOLID WASTE TO BE DISPOSED OF BY CONTRACTOR IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REGULATIONS.
- ALL EXCAVATED UNSUITABLE MATERIAL MUST BE TRANSPORTED TO AN APPROVED DISPOSAL LOCATION. CONTRACTOR SHALL BE RESPONSIBLE FOR IDENTIFYING IF EXCESSIVE EARTHEN EXCAVATED MATERIAL WILL RESULT FROM THE PROPOSED SITE GRADING, OR IF EXCESSIVE IMPORT OF FILL WILL BE REQUIRED FROM THE PROPOSED SITE GRADING. ANY SOILS TO BE REMOVED FROM THE PROJECT SITE SHALL BE DISPOSED OF THROUGH APPROVED AND REGULATED METHODS.
- CONTRACTOR IS RESPONSIBLE FOR ALL SHORING REQUIRED DURING EXCAVATION AND ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH CURRENT OSHA STANDARDS, AS WELL AS ADDITIONAL PROVISIONS TO ASSURE STABILITY OF CONTIGUOUS STRUCTURES, AS FIELD CONDITIONS DICTATE.
- THE DESIGN RUN-OFF FROM PROPOSED PROJECT WILL NOT ADVERSELY IMPACT NEIGHBORING PROPERTIES AND/OR THE RECEIVING DOWNSTREAM CHANNELS.
- SHEETS 1 THROUGH 25 INCLUSIVE, ON RECORD AT LOWER MAKEFIELD TOWNSHIP, SHALL BE CONSIDERED A PART OF THE APPROVED FINAL PLAN AS IF RECORDED WITH SAME.
- THE APPLICANT IS THE OWNER OF THE LAND PROPOSED TO BE DEVELOPED. THE LAND DEVELOPMENT SHOWN ON THE FINAL PLAN IS MADE WITH HIS OR THEIR FREE CONSENT AND DESIRES TO RECORD THE SAME.

LEGEND



CERTIFICATION OF APPROVAL BY THE BUCKS COUNTY PLANNING COMMISSION:

BCPC No. _____
 PROCESSED AND REVIEWED. REPORT PREPARED BY THE BUCKS COUNTY PLANNING COMMISSION IN ACCORDANCE WITH THE MUNICIPALITIES PLANNING CODE.
 CERTIFIED THIS DATE _____

(Executive Director, Bucks County Planning Commission)

CERTIFICATION OF APPROVAL BY THE LOWER MAKEFIELD TOWNSHIP BOARD OF SUPERVISORS:

APPROVED BY THE LOWER MAKEFIELD TOWNSHIP BOARD OF SUPERVISORS
 THIS _____ DAY OF _____, 20____

CERTIFICATION OF APPROVAL BY THE TOWNSHIP ENGINEER:

RECOMMENDED FOR APPROVAL BY THE LOWER MAKEFIELD TOWNSHIP ENGINEER
 THIS _____ DAY OF _____, 20____

RECORDING CERTIFICATION - COUNTY OF BUCKS

RECORDED IN THE OFFICE OF THE RECORDING OF DEEDS, BUCKS COUNTY, PENNSYLVANIA IN PLAN BOOK _____ PAGE _____ ON THE _____ DAY OF _____, 20____

(Recorder of Deeds)

OWNERS ACKNOWLEDGEMENT

TO ALL WHOM THESE PRESENTS MAY COME, KNOW YE THAT I/WE HAVE LAID UPON MY/OUR LAND SITUATED IN THE TOWNSHIP OF LOWER MAKEFIELD, COUNTY OF BUCKS, COMMONWEALTH OF PENNSYLVANIA CERTAIN IMPROVEMENTS ACCORDING TO THIS PLAN WHICH IS INTENDED TO BE FORTHWITH RECORDED. WITNESS OUR HAND THIS _____ DAY OF _____, 20____

BY: _____

COMMONWEALTH OF PENNSYLVANIA, COUNTY OF BUCKS

ON THE _____ DAY OF _____, 20____ BEFORE ME, THE SUBSCRIBER, A NOTARY PUBLIC OF THE COMMONWEALTH OF PENNSYLVANIA, RESIDING IN _____ PERSONALLY APPEARED _____ WHO ACKNOWLEDGED THIS PLAN TO BE THE OFFICIAL PLAN OF PROPERTY SHOWN THEREON, SITUATED IN THE TOWNSHIP OF LOWER MAKEFIELD, COUNTY OF BUCKS, COMMONWEALTH OF PENNSYLVANIA AND DESIRED THAT THIS PLAN BE RECORDED ACCORDING TO LAW. WITNESS MY HAND AND NOTARIAL SEAL, THE DAY AND YEAR AFORESAID.

NOTARY PUBLIC

MY COMMISSION EXPIRES _____ (SEAL)

PROFESSIONAL SURVEYOR CERTIFICATION

I, GLENN D. MONTELEONE, P.E., DO HEREBY CERTIFY THAT THE EXISTING FEATURES, TOPOGRAPHY AND BOUNDARY SHOWN ON THIS PLAN WAS CONFIRMED BY A FIELD SURVEY PERFORMED BY:

(Signature - Professional Engineer / Surveyor) (Registration Number)

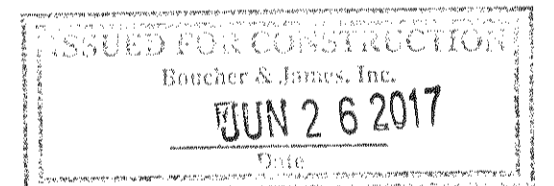
PROFESSIONAL ENGINEER CERTIFICATION (Date)

DO HEREBY CERTIFY TO THE BEST OF MY KNOWLEDGE, INFORMATION AND BELIEF, THAT THE INFORMATION CONTAINED IN THE ACCOMPANYING PLANS, SPECIFICATIONS, AND REPORTS HAS BEEN PREPARED IN ACCORDANCE WITH ACCEPTED ENGINEERING PRACTICE, IS TRUE AND CORRECT, AND IS IN CONFORMANCE WITH THE ZONING ORDINANCE, THE SUBDIVISION AND LAND DEVELOPMENT ORDINANCE AND THE STORMWATER MANAGEMENT ORDINANCE OF LOWER MAKEFIELD TOWNSHIP IN EFFECT AT THE TIME OF ORIGINAL PLAN SUBMISSION.

(Signature - PROFESSIONAL ENGINEER) (Registration Number) (Date)

PARKING SPACE CALCULATIONS

TOTAL CAPACITY: 1,092 PEOPLE (1 SPACE FOR EVERY 3 PERSONS)
 364 SPACES REQUIRED
 75 EXISTING SPACES (5 HC SPACES)
 39 PROPOSED SPACES (2 HC SPACES)
 250 FUTURE SPACES (FUTURE PHASES)



SALDO WAIVERS REQUESTED:

THE APPLICANT SEEKS THE FOLLOWING WAIVERS FROM NOTED PROVISIONS OF THE LOWER MAKEFIELD TOWNSHIP SUBDIVISION AND LAND DEVELOPMENT ORDINANCE:

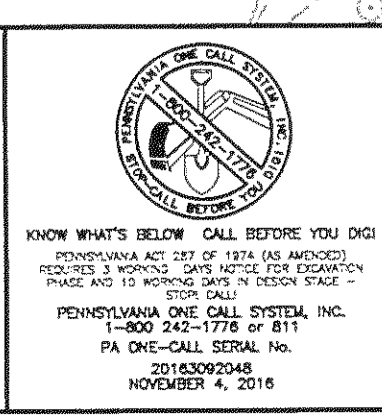
SECTION	REQUIREMENT SUMMARY
178.12.D	TO NOT REQUIRE SEPARATE PRELIMINARY AND FINAL PLAN SUBMISSIONS.
178.13.B	TO NOT BE REQUIRED TO PROVIDE A COMPREHENSIVE ANALYSIS OF EXISTING SITE CONDITIONS WITHIN 500 FEET OF THE SITE.
178.13.C	TO NOT REQUIRE A SITE VISIT.
178.13.D	TO NOT REQUIRE A PRE-PLAN CONFERENCE.
178.13.E	TO NOT BE REQUIRED TO CONFORM TO THE FOUR STEP DESIGN PROCESS, AND INCLUSIVE REQUIREMENTS.
178.20.C(9)	TO NOT BE REQUIRED TO DEPICT UNDERGROUND UTILITIES WITHIN TWO HUNDRED FEET OF THE SITE.
178.20.C(10)(b)	TO NOT BE REQUIRED TO DEPICT EXISTING TREES 8-INCHES IN CALIPER OR GREATER.
178.20.E(29)	TO NOT REQUIRE PAVEMENT CORE SAMPLES.
178.20.G	TO NOT REQUIRE AN ENVIRONMENTAL ASSESSMENT REPORT.
178.39	TO NOT REQUIRE AN OFF-SITE PUBLIC TRANSPORTATION IMPACT FEE.
178.47.A	TO NOT REQUIRE SIDEWALKS ALONG STREETS.
178.48.A	TO NOT REQUIRE THE ESTABLISHMENT OF A BIKE PATH.
178.50	TO NOT REQUIRE THE INSTALLATION OF STREET LIGHTS.
178.56.A	TO NOT REQUIRE AN EASEMENT FOR SANITARY SEWER AND STORM DRAINAGE.
178.56.E	TO NOT REQUIRE EASEMENTS TO BE MONUMENTED.
178.57.E	TO NOT REQUIRE THE INSTALLATION OF CURBING FOR PARKING LOTS.
178.83.A	TO NOT REQUIRE A VEGETATION STUDY FOR EXISTING VEGETATION BUFFERS.
178.85.H(4)	TO NOT REQUIRE REPLACEMENT TREES.
178.93.D(6)	TO PERMIT THE INFILTRATION BASIN SIDE SLOPES TO BE STEEPER THAN 4:1.
178.95.D(4)	TO NOT REQUIRE PROPOSED GRADE TO NOT EXCEED FOUR FEET HORIZONTAL TO ONE FOOT VERTICAL.

ZONING RELIEF REQUESTED:

THE APPLICANT SEEKS THE FOLLOWING RELIEF FROM NOTED PROVISIONS OF THE LOWER MAKEFIELD TOWNSHIP ZONING ORDINANCE:

SECTION	REQUIREMENT SUMMARY
200.51.B(4)(b)	TO ALLOW DISTURBANCE OF EXISTING WETLANDS. (A CHAPTER 105 GENERAL PERMIT WILL BE REQUIRED FROM PADEP)
200.51.B(4)(d)	TO ALLOW DISTURBANCE OF EXISTING WETLAND BUFFERS.

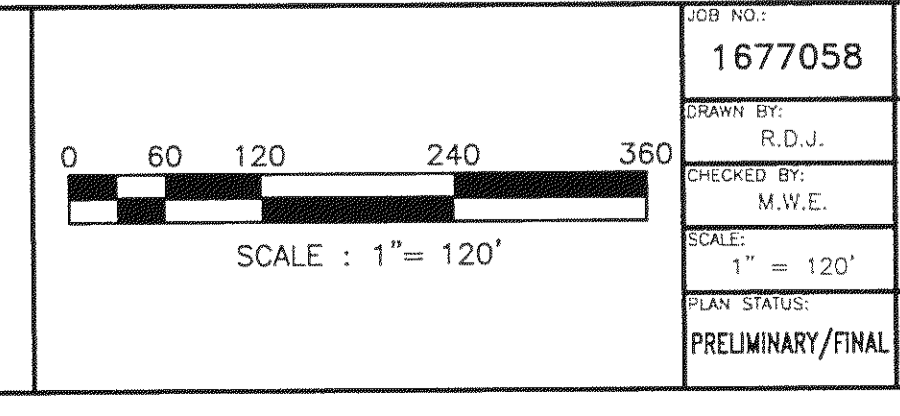
Written dimensions shall have priority over scaled dimensions. All dimensions, directions, locations, and conditions shall be verified by the Contractor prior to construction, and the Owner and Boucher & James, Inc. shall be notified of any discrepancies with the information shown on drawings.
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REVISIONS	DATE	DESCRIPTION
05/10/17		REFLECTS BID ALTERNATES
06/05/17		GRADING REVISIONS FOR ADDENDUM
06/22/17		REVISIONS FOR CONSTRUCTION

MEMORIAL PARK EXPANSION
 LOWER MAKEFIELD TOWNSHIP
 BUCKS COUNTY, PENNSYLVANIA

LOWER MAKEFIELD TOWNSHIP
 1100 EDGEWOOD ROAD
 YARDLEY, PA 19067



OVERALL SITE IMPROVEMENT PLAN

Boucher & James, Inc.
 CONSULTING ENGINEERS
 DOYLESTOWN • STROUDSBURG • LEHIGH VALLEY

CORPORATE HEADQUARTERS: 1456 FERRY RD, BUILDING 500, DOYLESTOWN, PA. 18901
 VOICE: (215) 345-9400 FAX: (215) 345-9401
 www.bjengineers.com

MEMORIAL PARK EXPANSION - BID SET

SHEET 4 OF 25
 APRIL 14, 2017



LEGEND

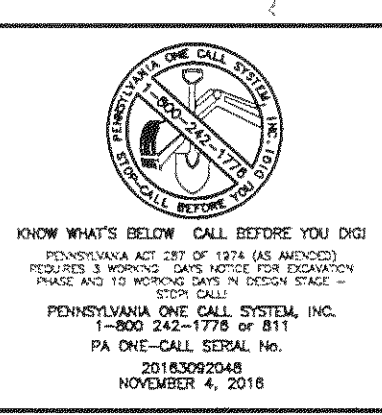
	EXISTING BUILDING/STRUCTURE
	EXISTING SIDEWALK
	EXISTING EDGE OF PAVING
	EXISTING MONUMENT
	EXISTING IRON PIN
	EXISTING UTILITY POLE
	EXISTING STREAM
	EXISTING TREELINE
	EXISTING DECIDUOUS TREE
	EXISTING CONIFEROUS TREE
	WETLANDS
	WETLAND BUFFER
	LEGAL RIGHT-OF-WAY
	OUTBOUND
	BUILDING SETBACK LINE
	PROPOSED CENTERLINE
	PROPOSED EDGE OF PAVING
	PROPOSED SIGN
	HANDICAP PARKING
	PROPOSED WALKING TRAIL
	FUTURE WALKING TRAIL
	PROPOSED PAVED PARKING AND ACCESS DRIVES

GENERAL NOTES

- ARBORETUM TRAIL HAS BEEN CONSTRUCTED PREVIOUSLY. TRAIL IS DEPICTED HEREON FOR PERMITTING PURPOSES.
- DETAILED INFORMATION REGARDING PARKING LOT DIMENSIONS AND ADA PARKING REQUIREMENTS IS PROVIDED ON THE SITE GRADING PLANS.

P:\2016\1677058\Drawings\05 SIP West.dwg | Jun 22, 2017 - 3:04pm | Wallace

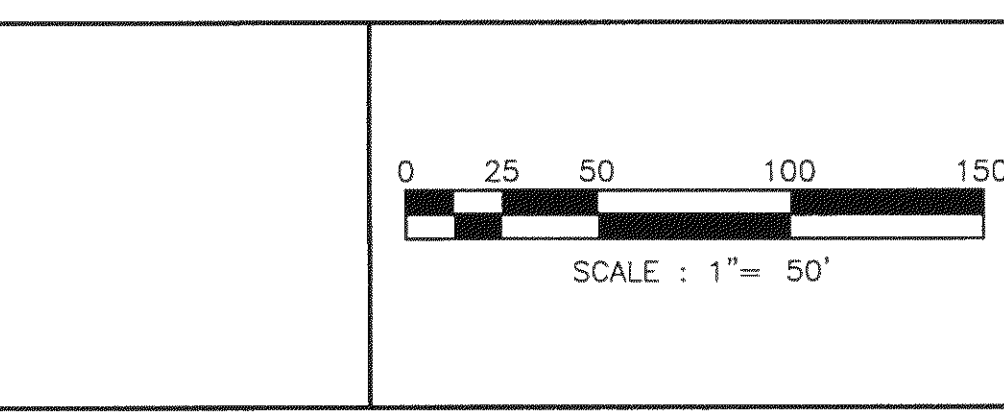
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REVISIONS :			
DATE	DESCRIPTION	DATE	DESCRIPTION
05/10/17	REFLECTS BID ALTERNATES		
06/05/17	GRADING REVISIONS FOR ADDENDUM		
06/22/17	REVISIONS FOR CONSTRUCTION		

PROJECT : **MEMORIAL PARK EXPANSION**
 LOWER MAKEFIELD TOWNSHIP
 BUCKS COUNTY, PENNSYLVANIA

APPLICANT : **LOWER MAKEFIELD TOWNSHIP**
 1100 EDGEWOOD ROAD
 YARDLEY, PA 19067

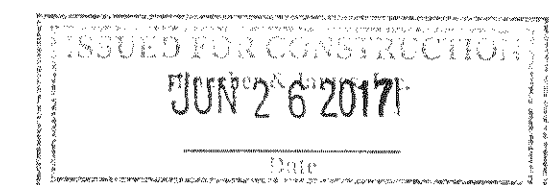


JOB NO.: 1677058
 DRAWN BY: R.D.J.
 CHECKED BY: M.W.E.
 SCALE: 1" = 50'
 PLAN STATUS: PRELIMINARY/FINAL

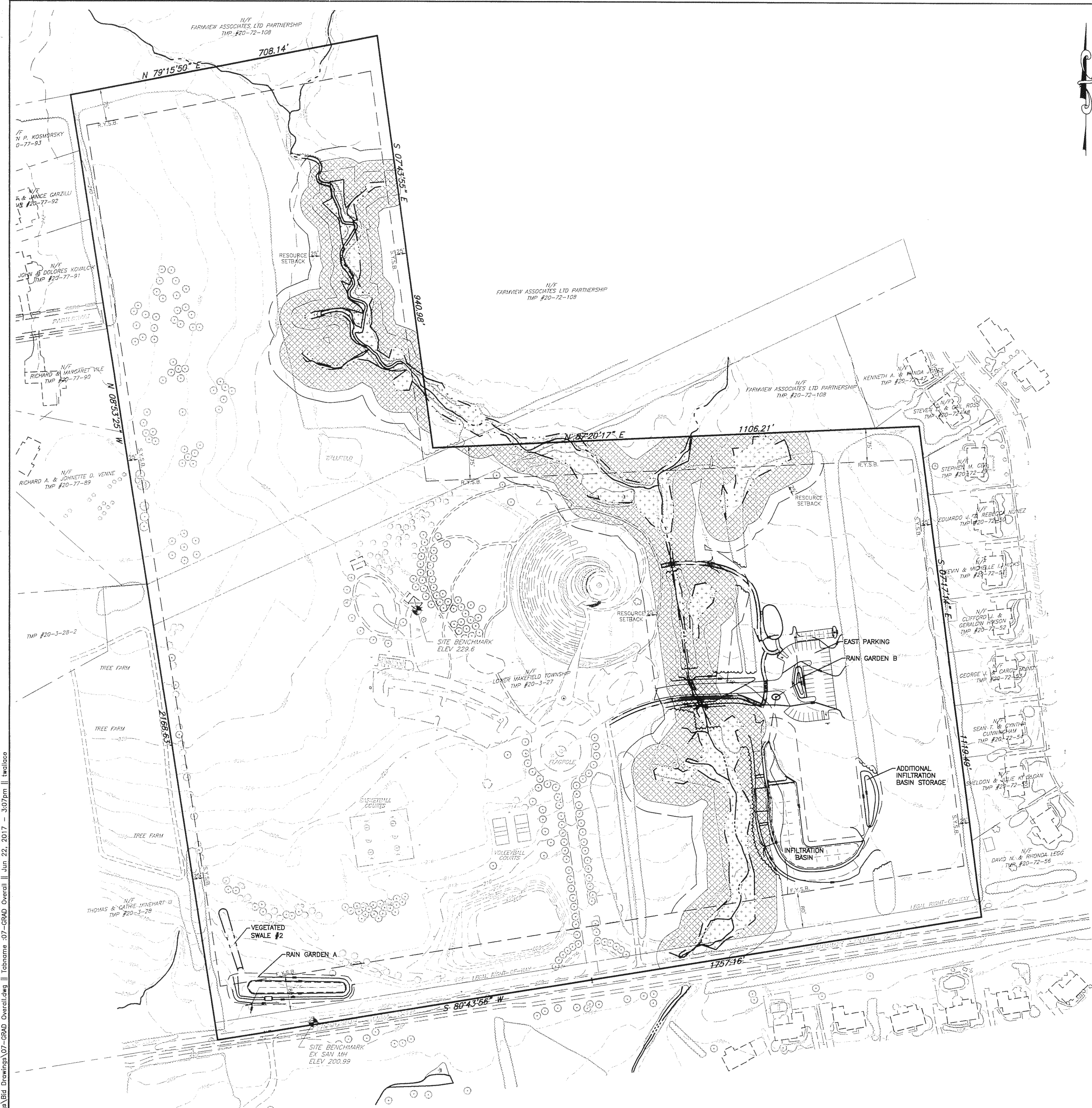
SITE IMPROVEMENT PLAN - WEST

Boucher & James, Inc.
 CONSULTING ENGINEERS
 DOYLESTOWN • STROUDSBURG • LEHIGH VALLEY
 CORPORATE HEADQUARTERS: 1456 FERRY RD, BUILDING 500, DOYLESTOWN, PA. 18901
 VOICE: (215) 345-9400 FAX: (215) 345-9401

PROJECT NAME : **MEMORIAL PARK EXPANSION - BID SET**



SHEET 5 OF 25
 DATE: APRIL 14, 2017

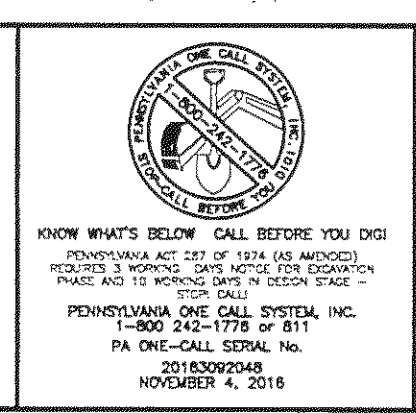


LEGEND	
	ADJOINER LINE
	EXISTING BOUNDARY
	EXISTING BUILDINGS
	EXISTING CENTERLINE
	EXISTING CONTOUR
	EXISTING INDEX CONTOUR
	EXISTING CURBLINE
	EXISTING DRIVEWAY
	EXISTING ELECTRIC AND STRUCTURES
	EXISTING EDGE OF PAVEMENT
	EXISTING EDGE OF STONE
	EXISTING CHAINLINK FENCE
	EXISTING FIRE HYDRANT
	EXISTING GAS LINE
	EXISTING IRON PIN/PIPE
	EXISTING LIGHTS
	EXISTING MONUMENT
	EXISTING LEGAL RIGHT-OF-WAY
	EXISTING SANITARY SEWER AND MANHOLE
	EXISTING SIGN
	EXISTING SITE BENCHMARK LOCATION
	EXISTING SPOT ELEVATIONS
	EXISTING STORM SEWER AND STRUCTURES
	EXISTING SIDEWALK
	EXISTING TREELINE
	EXISTING UTILITY POLE AND GUY WIRE
	EXISTING WATER LINE AND STRUCTURES
	EXISTING STREAM
	EXISTING WETLANDS
	EXISTING WETLANDS BUFFER
	EXISTING DECIDUOUS TREE
	EXISTING CONIFEROUS TREE
	PROPOSED WALKING TRAIL
	FUTURE WALKING TRAIL
	PROPOSED CONTOUR
	PROPOSED INDEX CONTOUR
	PROPOSED EDGE OF PAVEMENT
	PROPOSED TREELINE

- GRADING NOTES**
- SEE POST CONSTRUCTION STORMWATER MANAGEMENT PLAN NOTES AND DETAILS (SHEETS 14 AND 15) FOR GRADING INFORMATION REGARDING STORMWATER MANAGEMENT FEATURES.
 - GRADING OF ADA PARKING SPACES SHALL NOT EXCEED 2% IN ANY DIRECTION. IT IS RECOMMENDED THAT THE CONTRACTOR CHECK THE SLOPE OF THE PREPARED SUBGRADE BEFORE PLACING STONE BASE. IT IS FURTHER RECOMMENDED THAT THE CONTRACTOR CHECK THE GRADE OF EVERY PAVEMENT COURSE AS CONSTRUCTED TO VERIFY COMPLIANCE WITH THIS REQUIREMENT. LOWER MAKEFIELD TOWNSHIP RESERVES THE RIGHT TO REQUIRE THE CONTRACTOR TO REMOVE AND REPLACE THE ADA PAVEMENT AREAS (AT CONTRACTOR EXPENSE) IF THE FINAL GRADES FAIL TO MEET ADA STANDARDS.
 - THE GRADED AREA BETWEEN THE EAST PARKING LOT AND THE INFILTRATION BASIN IS THE SITE OF FUTURE TENNIS COURTS (NOT CONSTRUCTED AS PART OF THIS PROJECT). FINAL GRADES SHOWN ARE THE FINAL GRADES OF THE FUTURE COURT SURFACE. THIS FINAL GRADE IS ACHIEVED BY FINE GRADING TO A COMPACTED SUBGRADE ELEVATION AND PLACING TOPSOIL TO THE FINISHED SURFACE ELEVATIONS. SEE THE DETAIL ON SHEET 25 FOR FURTHER INFORMATION.

ISSUED FOR CONSTRUCTION
 JUN 26 2017

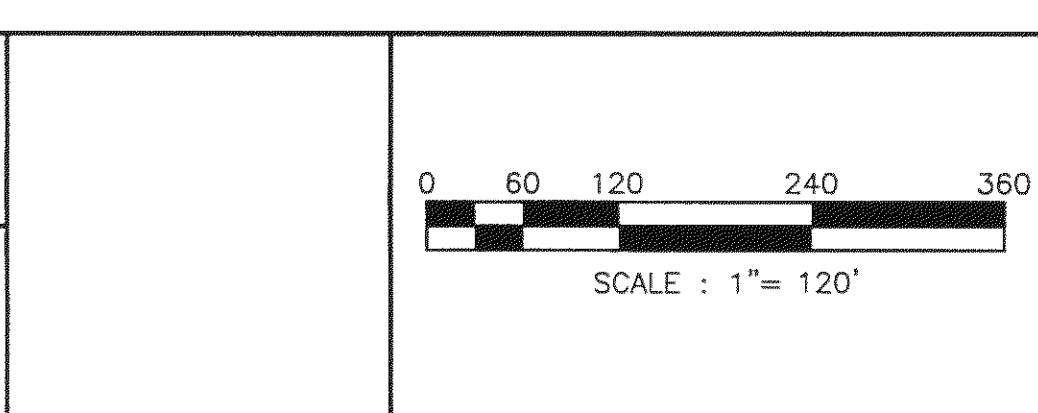
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REVISIONS:			
DATE	DESCRIPTION	DATE	DESCRIPTION
05/10/17	REFLECTS BID ALTERNATES		
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06/22/17	REVISIONS FOR CONSTRUCTION		

PROJECT: **MEMORIAL PARK EXPANSION**
 LOWER MAKEFIELD TOWNSHIP
 BUCKS COUNTY, PENNSYLVANIA

APPLICANT: **LOWER MAKEFIELD TOWNSHIP**
 1100 EDGEWOOD ROAD
 YARDLEY, PA 19067



JOB NO.: 1677058	TITLE: OVERALL GRADING AND DRAINAGE PLAN
DRAWN BY: R.D.J.	Boucher & James, Inc. CONSULTING ENGINEERS DOYLESTOWN • STROUDSBURG • LEHIGH VALLEY CORPORATE HEADQUARTERS: 1456 FERRY RD, BUILDING 500, DOYLESTOWN, PA. 18901 VOICE: (215) 345-9400 FAX: (215) 345-9401 www.bjengineers.com
CHECKED BY: M.W.E.	
SCALE: 1" = 120'	SHEET 7 OF 25
PLAN STATUS: PRELIMINARY/FINAL	PROJECT NAME: MEMORIAL PARK EXPANSION - BID SET
	DATE: APRIL 14, 2017

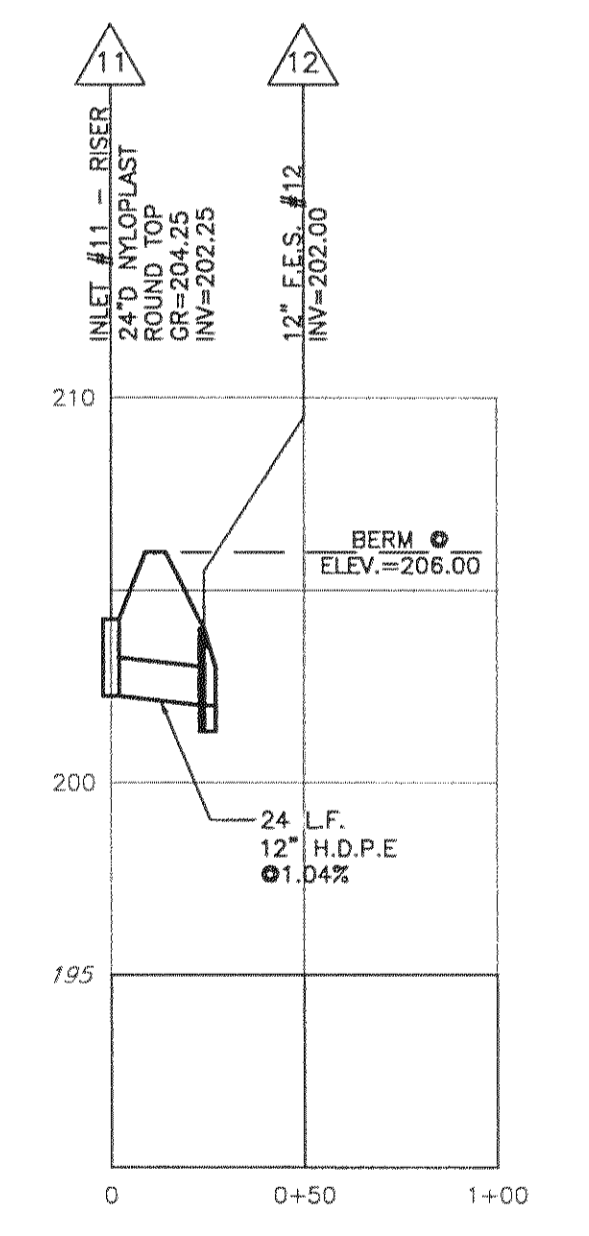
P:\2016\1677058\Draws\Bid Drawings\07-GRAD Overall.dwg | Tabname: 07-GRAD Overall | Jun 22, 2017 - 3:07pm | twalico



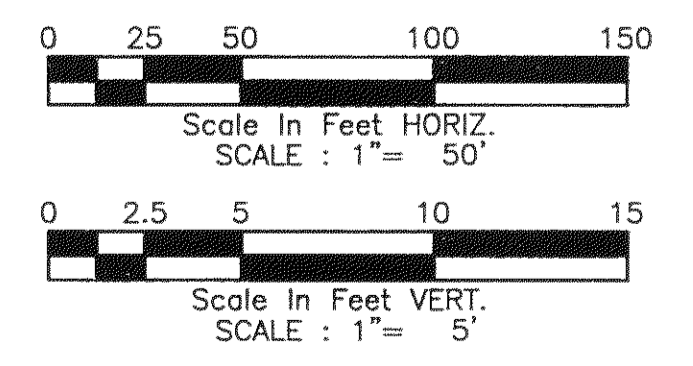
LEGEND

	ADJOINER LINE
	EXISTING BOUNDARY
	EXISTING BUILDINGS
	EXISTING CENTERLINE
	EXISTING CONTOUR
	EXISTING INDEX CONTOUR
	EXISTING CURBLINE
	EXISTING DRIVEWAY
	EXISTING ELECTRIC AND STRUCTURES
	EXISTING EDGE OF PAVEMENT
	EXISTING EDGE OF STONE
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	EXISTING GAS LINE
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	EXISTING SIGN
	EXISTING SITE BENCHMARK LOCATION
	EXISTING SPOT ELEVATIONS
	EXISTING STORM SEWER AND STRUCTURES
	EXISTING SIDEWALK
	EXISTING TREELINE
	EXISTING UTILITY POLE AND GUY WIRE
	EXISTING WATER LINE AND STRUCTURES
	EXISTING STREAM
	EXISTING WETLANDS BUFFER
	EXISTING DECIDUOUS TREE
	EXISTING CONIFEROUS TREE
	PROPOSED CONTOUR
	PROPOSED INDEX CONTOUR
	PROPOSED SPOT ELEVATION
	PROPOSED EDGE OF PAVEMENT
	PROPOSED STORM SEWER AND STRUCTURE
	PROPOSED TREELINE

- GRADING NOTES**
- NO DETAILS PROVIDED FOR VEGETATED SWALES.
 - VEGETATED SWALE #1 TO BE CONSTRUCTED AT 3.5% LONGITUDINAL SLOPE EXTENDING UP FROM EXISTING INLET BETWEEN PARKING ROWS. SIDESLOPES TO BE AS ESTABLISHED DUE TO FIELD CONDITIONS.
 - VEGETATED SWALE #1 SHALL BE LINED WITH EROSION CONTROL BLANKET FOLLOWING ROUGH GRADING ACTIVITIES.
 - VEGETATED SWALE #2 IS AN EXISTING DRAINAGE SWALE THAT WILL BE SUPPLEMENTED WITH NEW PLANTINGS FOR STORMWATER MANAGEMENT PURPOSES. NO NEW GRADING PROPOSED.



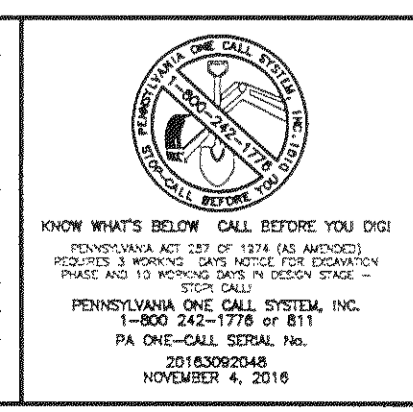
RAIN GARDEN 'A' OUTLET PIPE PROFILE



ISSUED FOR CONSTRUCTION
 Boucher & James, Inc.
 JUN 26 2017

P:\2016\1677058\Drawings\08 GRAD West.dwg | Tabname: 08 GRAD West.dwg | Jun 22, 2017 - 3:08pm | Wallace

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DATE	DESCRIPTION	DATE	DESCRIPTION
05/10/17	REFLECTS BID ALTERNATES		
05/05/17	GRADING REVISIONS FOR ADDENDUM		
06/22/17	REVISIONS FOR CONSTRUCTION		

PROJECT: MEMORIAL PARK EXPANSION
 LOWER MAKEFIELD TOWNSHIP
 BUCKS COUNTY, PENNSYLVANIA

APPLICANT: LOWER MAKEFIELD TOWNSHIP
 1100 EDGEWOOD ROAD
 YARDLEY, PA 19067

JOB NO.: 1677058

TITLE: GRADING AND DRAINAGE PLAN - WEST

DRAWN BY: R.D.J.

CHECKED BY: M.W.E.

SCALE: 1" = 50'

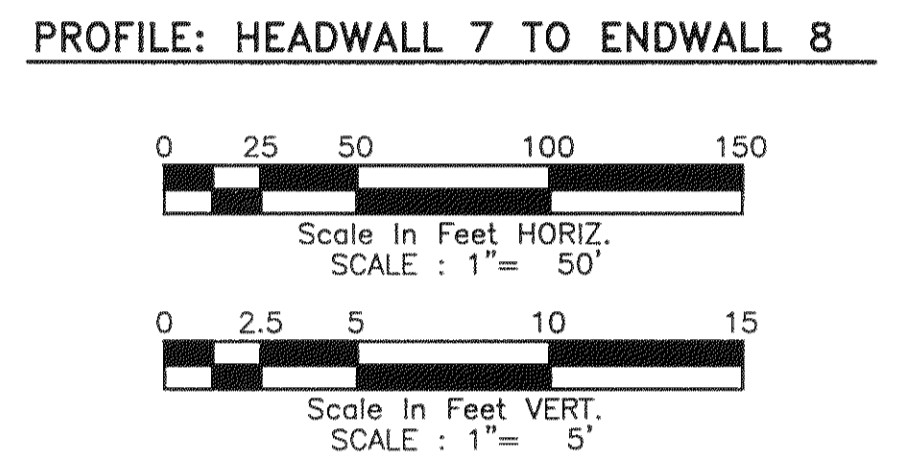
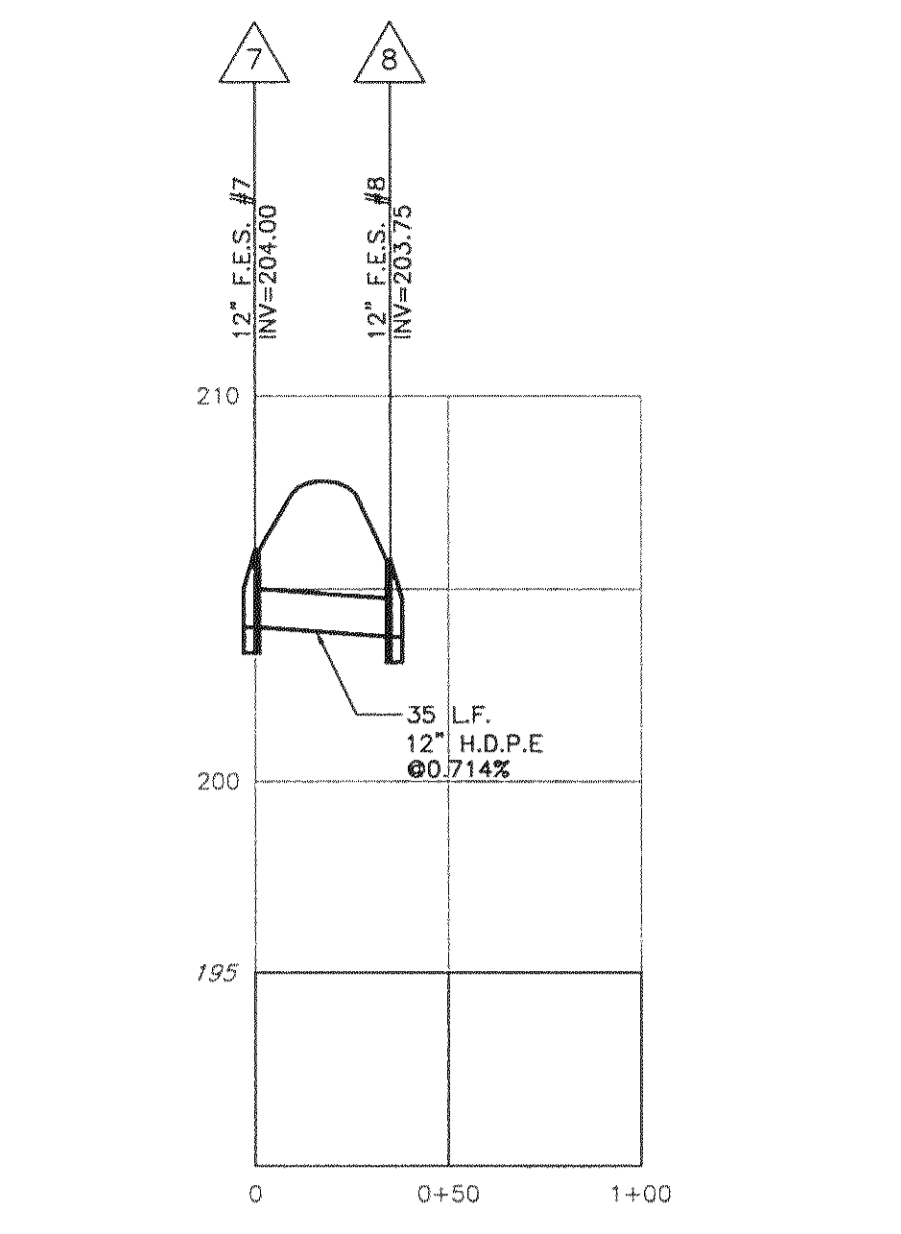
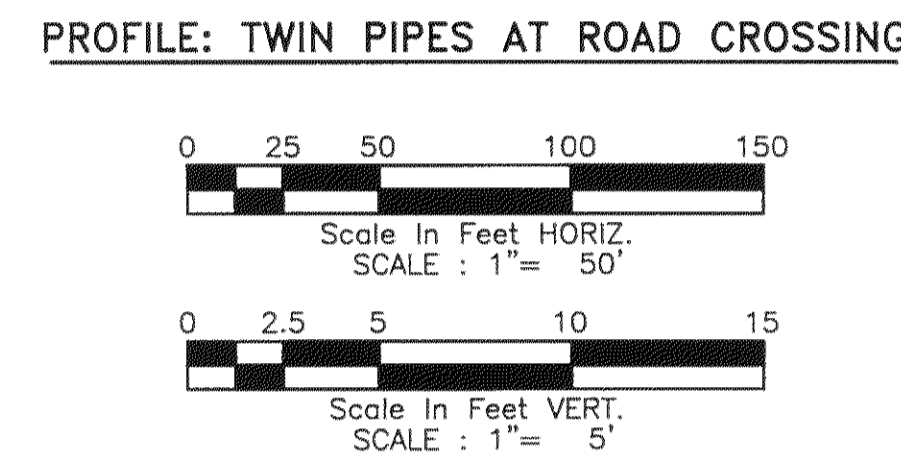
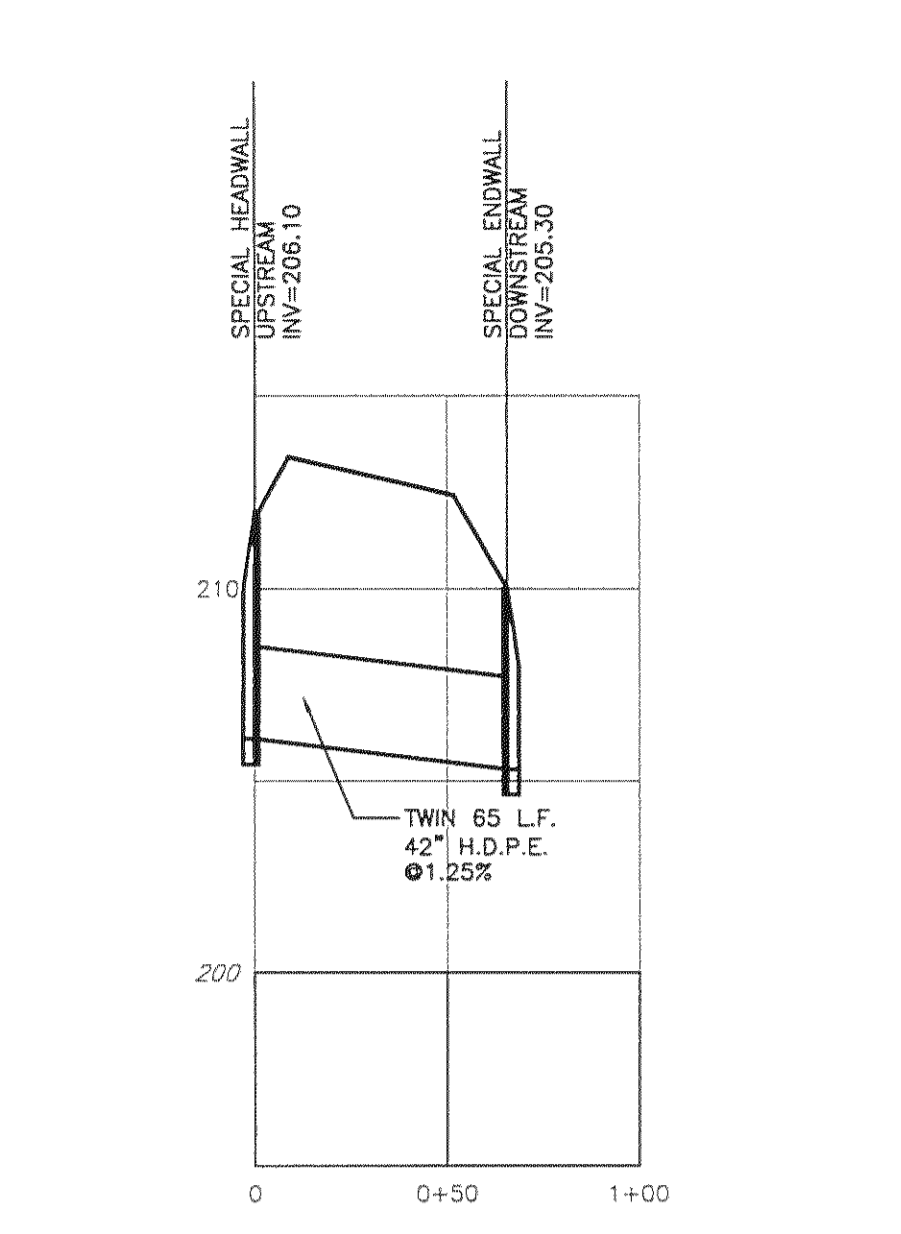
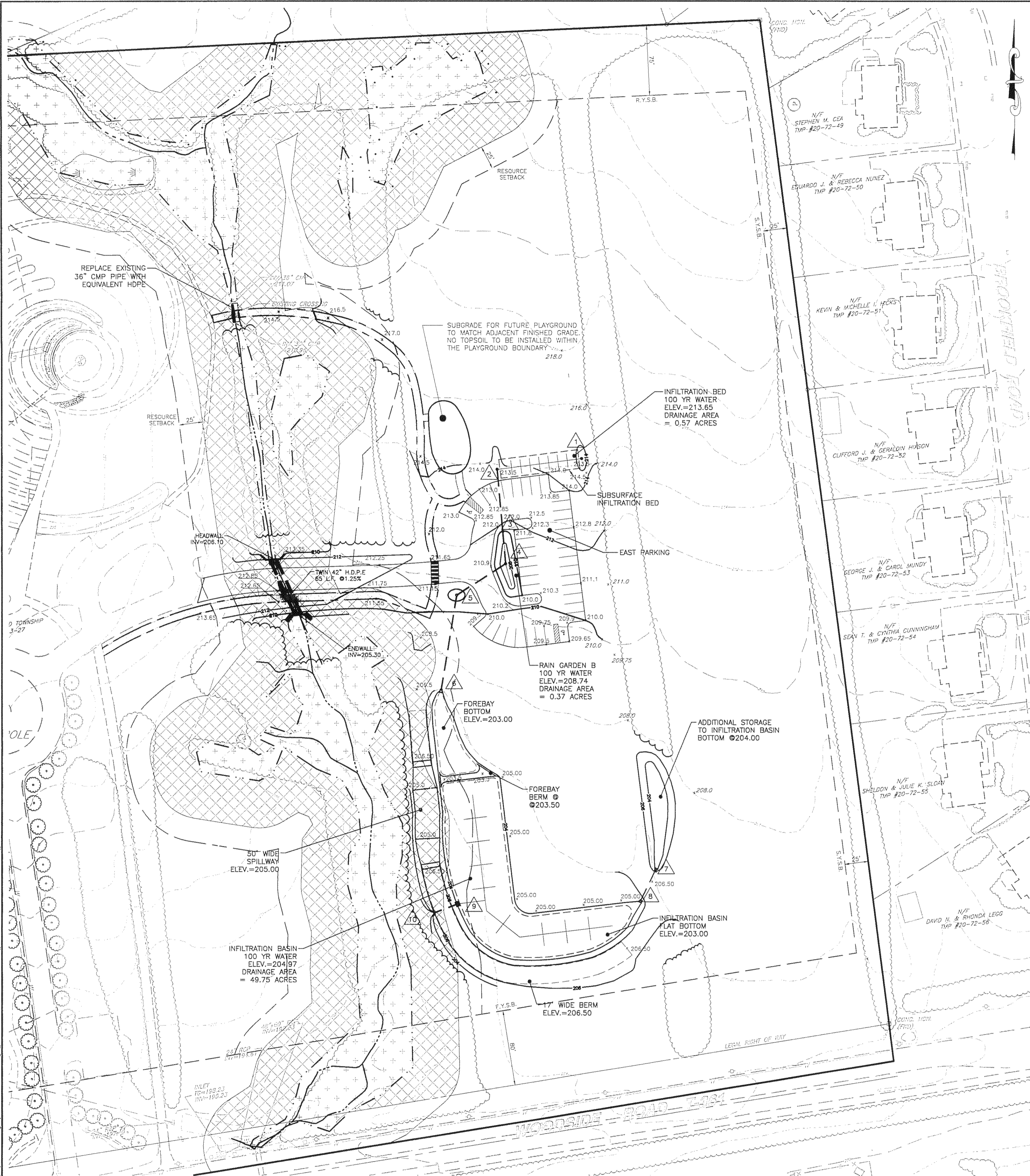
PLAN STATUS: PRELIMINARY/FINAL

PROJECT NAME: MEMORIAL PARK EXPANSION - BID SET

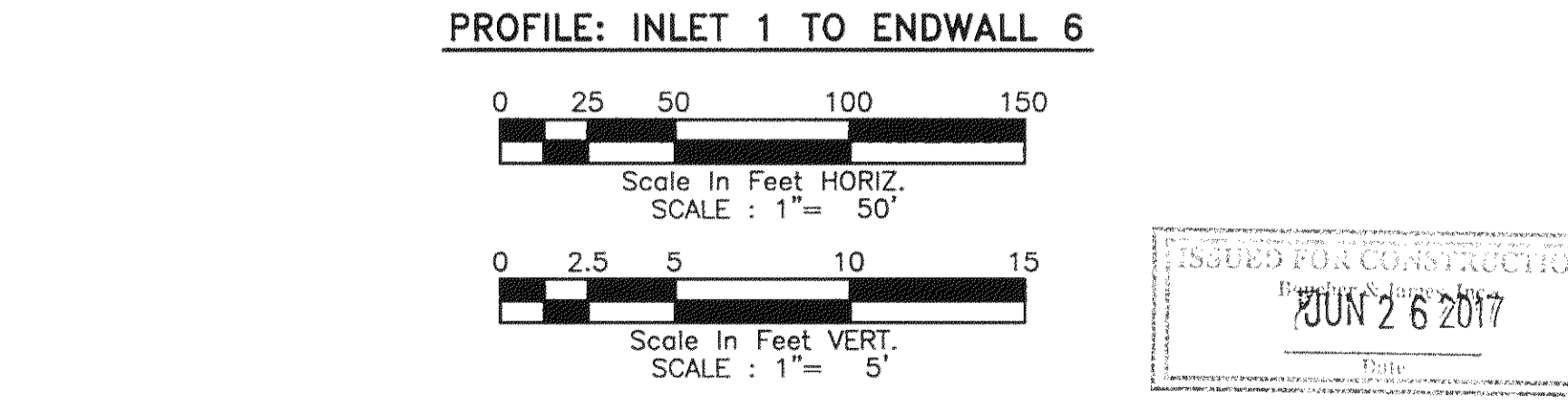
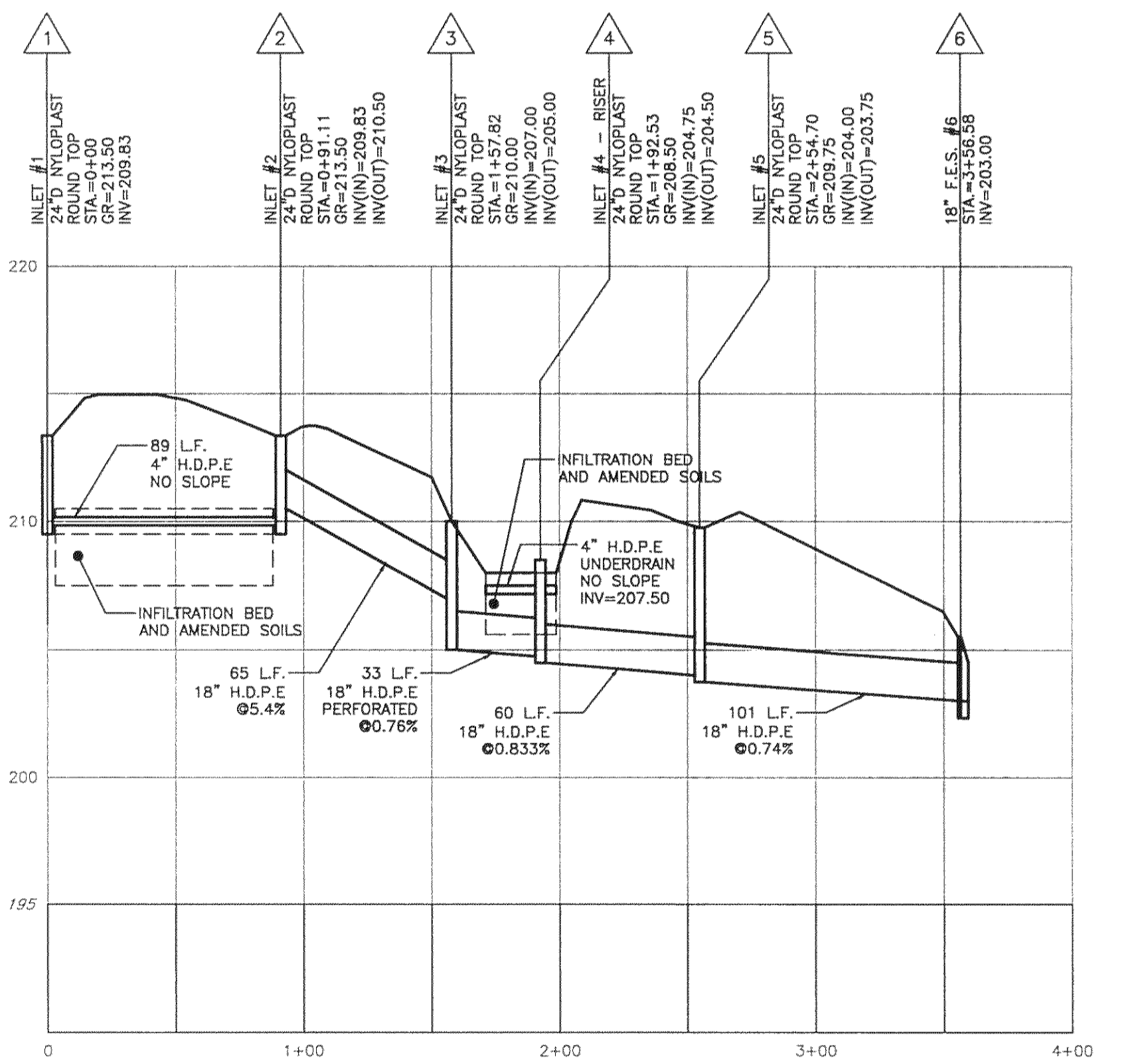
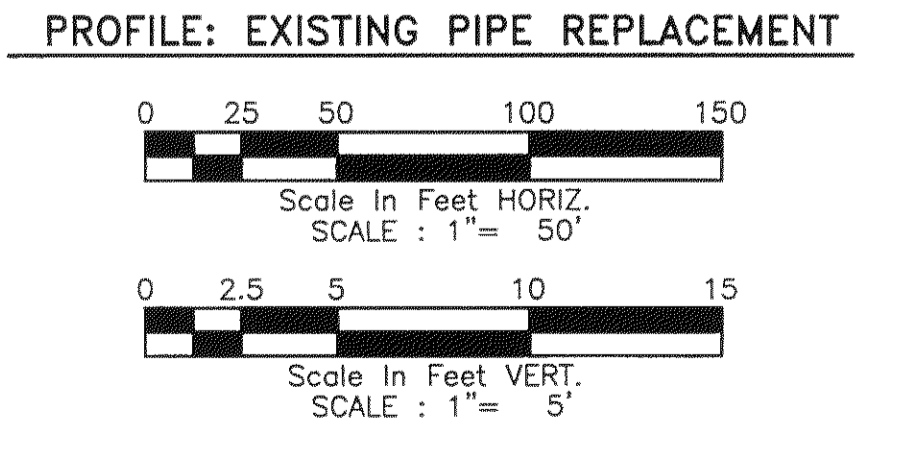
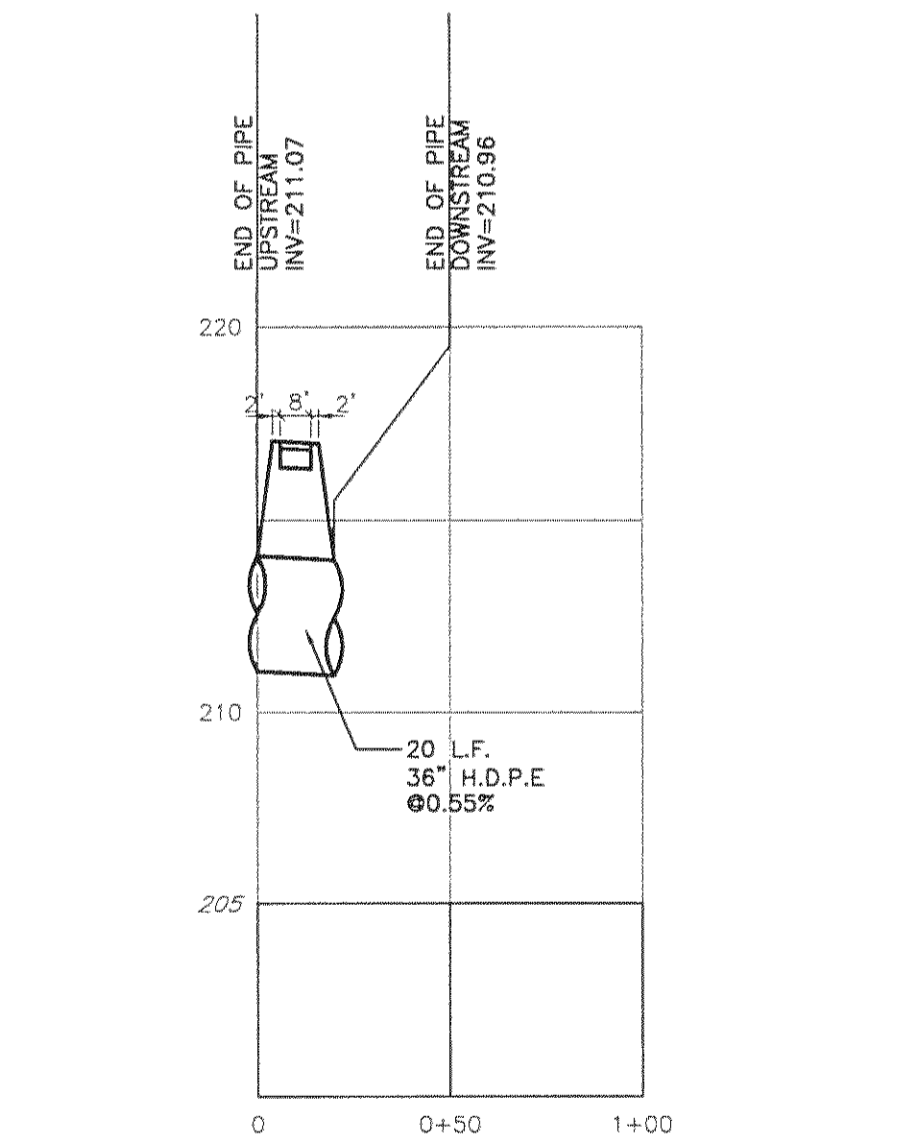
Boucher & James, Inc.
 CONSULTING ENGINEERS
 DOYLESTOWN • STROUDSBURG • LEHIGH VALLEY
 CORPORATE HEADQUARTERS: 1456 FERRY RD, BUILDING 500, DOYLESTOWN, PA. 18901
 VOICE: (215) 345-8400 FAX: (215) 345-9401

SHEET 8 OF 25

DATE: APRIL 14, 2017



LEGEND	
	ADJOINER LINE
	EXISTING BOUNDARY
	EXISTING BUILDINGS
	EXISTING CENTERLINE
	EXISTING CONTOUR
	EXISTING INDEX CONTOUR
	EXISTING CURBLINE
	EXISTING DRIVEWAY
	EXISTING ELECTRIC AND STRUCTURES
	EXISTING EDGE OF PAVEMENT
	EXISTING EDGE OF STONE
	EXISTING CHAINLINK FENCE
	EXISTING FIRE HYDRANT
	EXISTING GAS LINE
	EXISTING IRON PIN/PIPE
	EXISTING LIGHTS
	EXISTING MONUMENT
	EXISTING LEGAL RIGHT-OF-WAY
	EXISTING SANITARY SEWER AND MANHOLE
	EXISTING SIGN
	EXISTING SITE BENCHMARK LOCATION
	EXISTING SPOT ELEVATIONS
	EXISTING STORM SEWER AND STRUCTURES
	EXISTING SIDEWALK
	EXISTING TREELINE
	EXISTING UTILITY POLE AND GUY WIRE
	EXISTING WATER LINE AND STRUCTURES
	EXISTING STREAM
	EXISTING WETLANDS
	EXISTING WETLANDS BUFFER
	EXISTING DECIDUOUS TREE
	EXISTING CONIFEROUS TREE
	PROPOSED ELECTRIC CONDUIT
	PROPOSED WALKING TRAIL
	FUTURE WALKING TRAIL
	PROPOSED CONTOUR
	PROPOSED INDEX CONTOUR
	PROPOSED SPOT ELEVATION
	PROPOSED EDGE OF PAVEMENT
	PROPOSED STORM SEWER AND STRUCTURE
	PROPOSED TREELINE



ISSUED FOR CONSTRUCTION
JUN 26 2017

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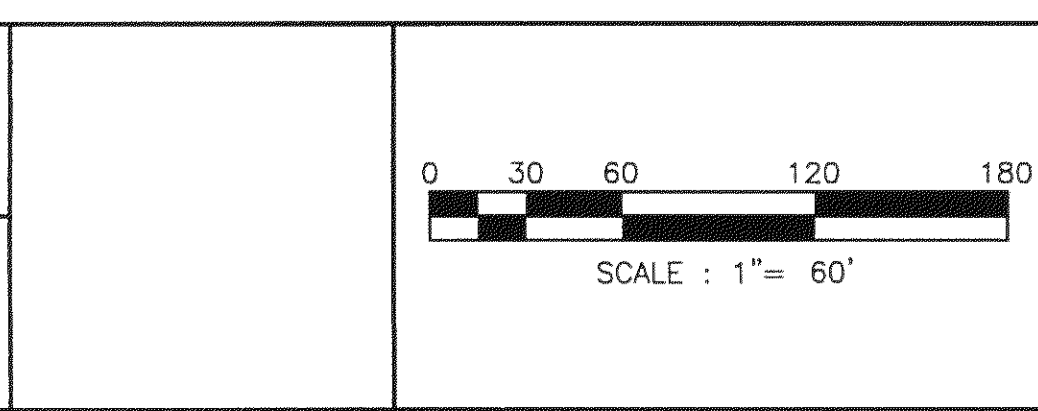
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HOW MANY'S BELOW CALL BEFORE YOU DIG
UNIVERSITY ACT 107 OF 1971 (AS AMENDED)
PENNSYLVANIA ACT 54 OF 2008
PENNSYLVANIA ONE CALL SYSTEM, INC.
PA ONE-CALL SERIAL No. 2018000008
NOVEMBER 4, 2016

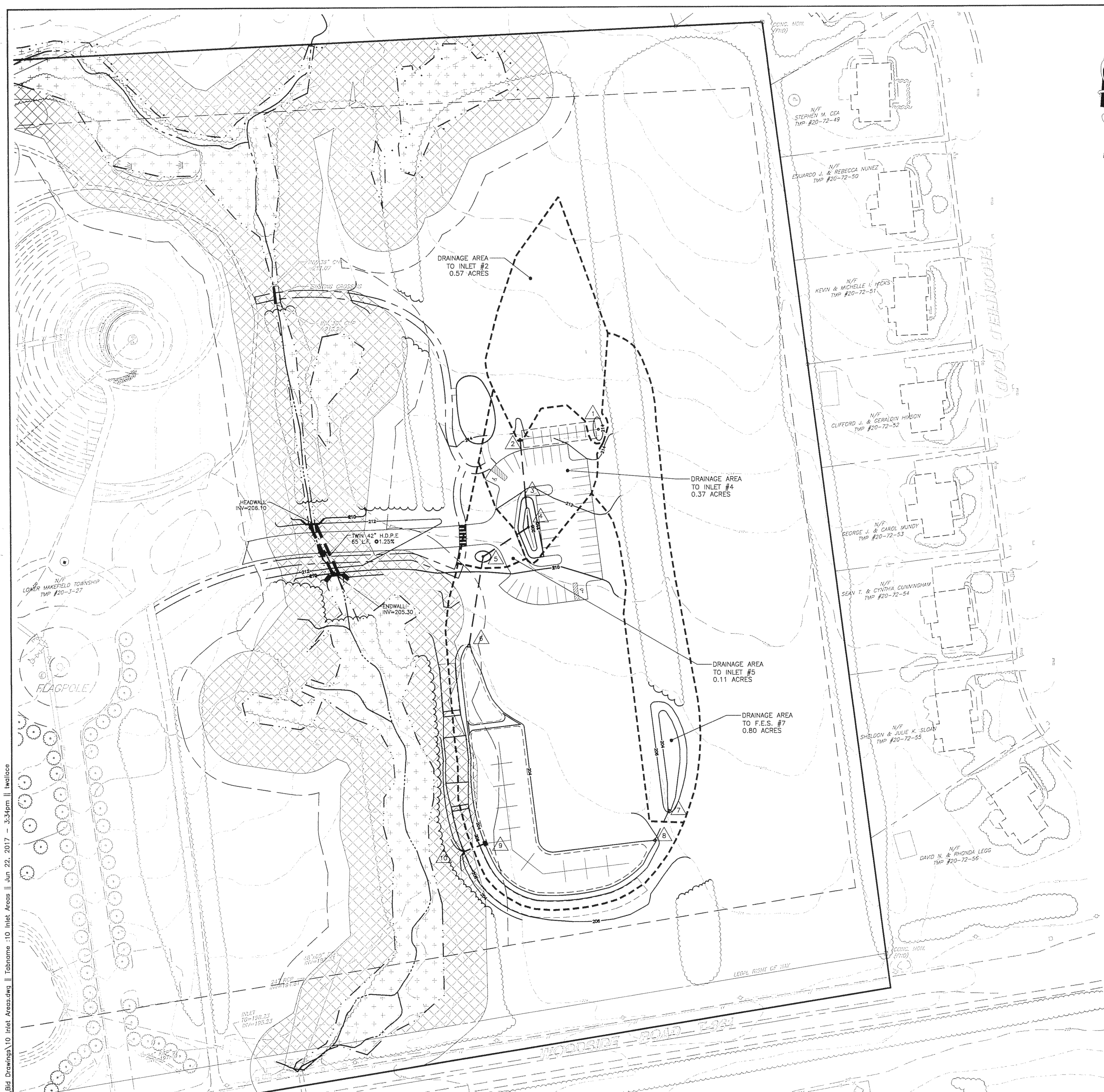
REVISIONS		DATE	DESCRIPTION
05/10/17	REFLECTS BID ALTERNATES		
06/05/17	GRADING REVISIONS FOR ADDENDUM		
06/22/17	REVISIONS FOR CONSTRUCTION		

PROJECT: MEMORIAL PARK EXPANSION
LOWER MAKEFIELD TOWNSHIP
BUCKS COUNTY, PENNSYLVANIA

APPLICANT: LOWER MAKEFIELD TOWNSHIP
1100 EDGEWOOD ROAD
YARDLEY, PA 19067



JOB NO.: 1677058	TITLE: GRADING AND DRAINAGE PLAN - EAST
DRAWN BY: R.D.J.	Boucher & James, Inc. CONSULTING ENGINEERS DOYLESTOWN • STROUDSBURG • LEHIGH VALLEY CORPORATE HEADQUARTERS: 1456 FERRY RD, BUILDING 500, DOYLESTOWN, PA. 18901 VOICE: (215) 345-9400 FAX: (215) 345-9401
CHECKED BY: M.W.E.	
SCALE: 1" = 60'	PROJECT NAME: MEMORIAL PARK EXPANSION - BID SET
PLAN STATUS: PRELIMINARY/FINAL	SHEET 9 OF 25 APRIL 14, 2017



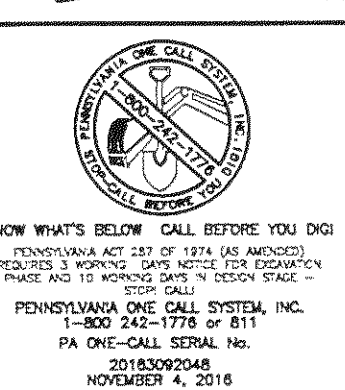
LEGEND

	ADJOINER LINE
	EXISTING BOUNDARY
	EXISTING BUILDINGS
	EXISTING CENTERLINE
	EXISTING CONTOUR
	EXISTING INDEX CONTOUR
	EXISTING CURBLINE
	EXISTING DRIVEWAY
	EXISTING ELECTRIC AND STRUCTURES
	EXISTING EDGE OF PAVEMENT
	EXISTING EDGE OF STONE
	EXISTING CHAINLINK FENCE
	EXISTING FIRE HYDRANT
	EXISTING GAS LINE
	EXISTING IRON PIN/PIPE
	EXISTING LIGHTS
	EXISTING MONUMENT
	EXISTING LEGAL RIGHT-OF-WAY
	EXISTING SANITARY SEWER AND MANHOLE
	EXISTING SIGN
	EXISTING SITE BENCHMARK LOCATION
	EXISTING SPOT ELEVATIONS
	EXISTING STORM SEWER AND STRUCTURES
	EXISTING SIDEWALK
	EXISTING TREELINE
	EXISTING UTILITY POLE AND GUY WIRE
	EXISTING WATER LINE AND STRUCTURES
	EXISTING DECIDUOUS TREE
	PROPOSED CENTERLINE
	HANDICAP PARKING
	PROPOSED WALKING TRAIL
	FUTURE WALKING TRAIL
	PROPOSED CONTOUR
	PROPOSED INDEX CONTOUR
	PROPOSED EDGE OF PAVEMENT
	PROPOSED STORM SEWER AND STRUCTURE
	PROPOSED TREELINE

DRAINAGE AREA TO TWIN PIPES UNDER ROAD CROSSING WAS DETERMINED USING STREAM-STATS FOR PENNSYLVANIA. SEE NARRATIVE.

P:\2016\1677058\Drawings\10 Inlet Areas.dwg | Tabname: 10 Inlet Areas.dwg | Jun 22, 2017 - 3:34pm | lwellicz

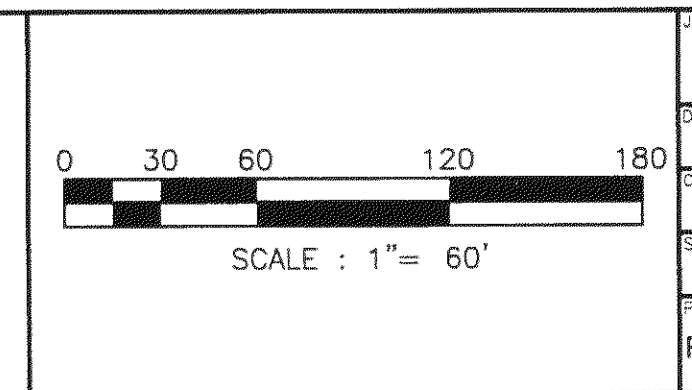
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PROJECT : MEMORIAL PARK EXPANSION
 LOWER MAKEFIELD TOWNSHIP
 BUCKS COUNTY, PENNSYLVANIA

APPLICANT : LOWER MAKEFIELD TOWNSHIP
 1100 EDGEWOOD ROAD
 YARDELY, PA 19067



JOB NO.: 1677058
DRAWN BY: R.D.J.
CHECKED BY: M.W.E.
SCALE: 1" = 60'
PLAN STATUS: PRELIMINARY/FINAL

1677058

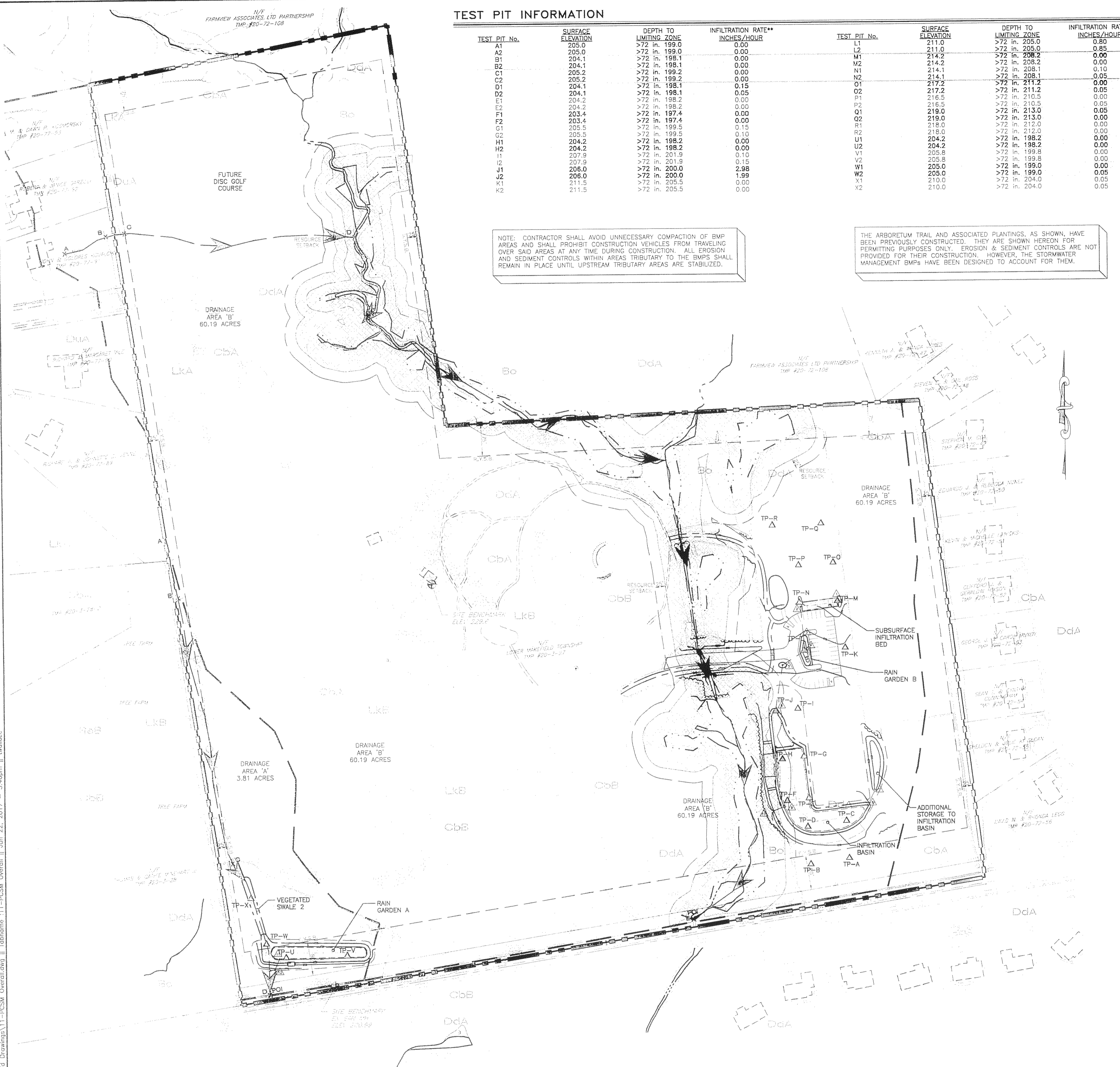
DRAINAGE MAP - INLET AREAS

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MEMORIAL PARK EXPANSION - BID SET

SHEET 10 OF 25
DATE: APRIL 14, 2017

ISSUED FOR CONSTRUCTION
 Boucher & James, Inc.
JUN 26 2017



TEST PIT INFORMATION

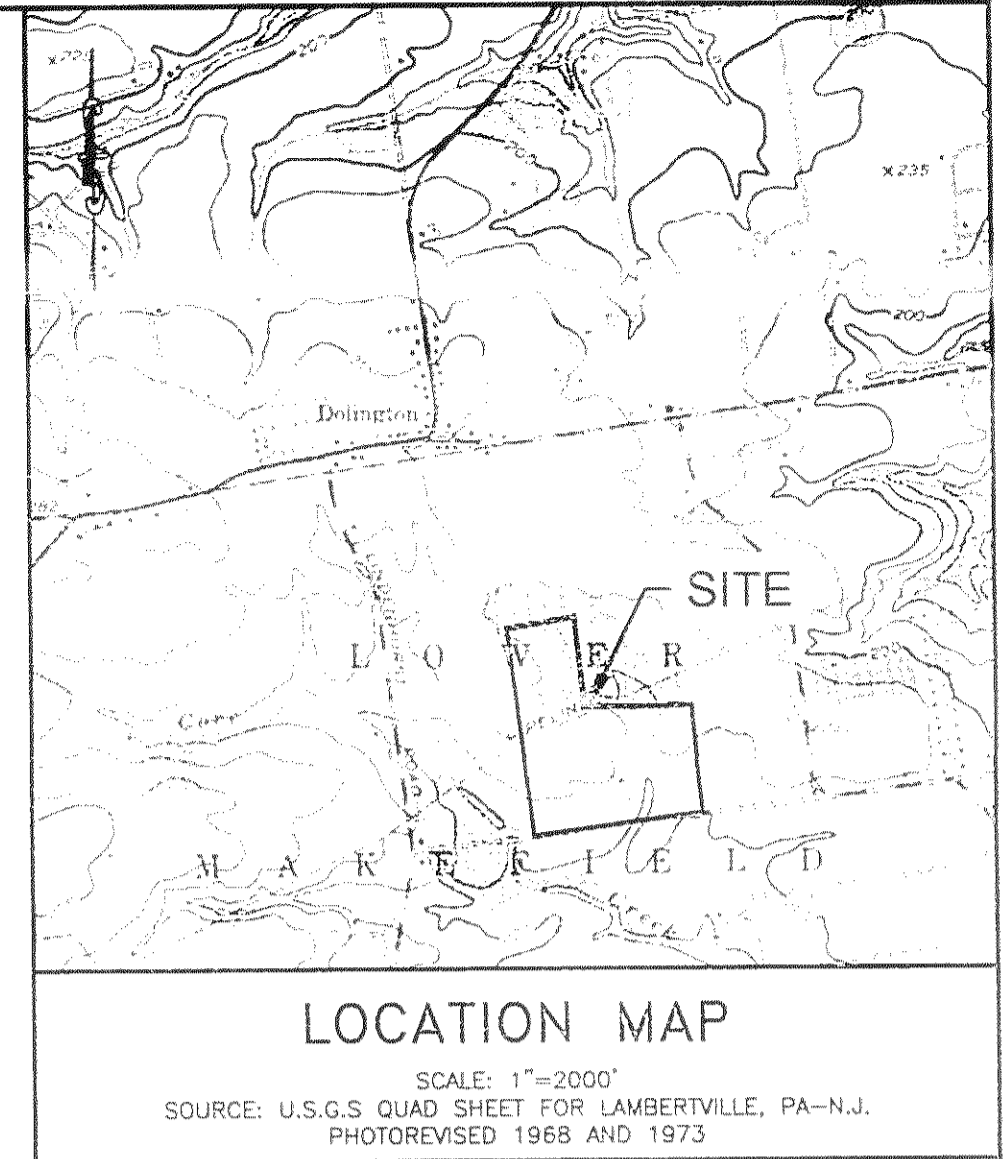
TEST PIT No.	SURFACE ELEVATION	DEPTH TO LIMITING ZONE	INFILTRATION RATE**	TEST PIT No.	SURFACE ELEVATION	DEPTH TO LIMITING ZONE	INFILTRATION RATE**
A1	205.0	>72 in. 199.0	0.00	L1	211.0	>72 in. 205.0	0.80
A2	205.0	>72 in. 199.0	0.00	L2	211.0	>72 in. 205.0	0.85
B1	204.1	>72 in. 198.1	0.00	M1	214.2	>72 in. 208.2	0.00
B2	204.1	>72 in. 198.1	0.00	M2	214.2	>72 in. 208.2	0.00
C1	205.2	>72 in. 199.2	0.00	N1	214.1	>72 in. 208.1	0.10
C2	205.2	>72 in. 199.2	0.00	N2	214.1	>72 in. 208.1	0.05
D1	204.1	>72 in. 198.1	0.15	O1	217.2	>72 in. 211.2	0.05
D2	204.1	>72 in. 198.1	0.05	O2	217.2	>72 in. 211.2	0.00
E1	204.2	>72 in. 198.2	0.00	P1	216.5	>72 in. 210.5	0.05
E2	204.2	>72 in. 198.2	0.00	P2	216.5	>72 in. 210.5	0.05
F1	203.4	>72 in. 197.4	0.00	Q1	219.0	>72 in. 213.0	0.00
F2	203.4	>72 in. 197.4	0.00	Q2	219.0	>72 in. 213.0	0.00
G1	205.5	>72 in. 199.5	0.15	R1	218.0	>72 in. 212.0	0.00
G2	205.5	>72 in. 199.5	0.10	R2	218.0	>72 in. 212.0	0.00
H1	204.2	>72 in. 198.2	0.00	U1	204.2	>72 in. 198.2	0.00
H2	204.2	>72 in. 198.2	0.00	U2	204.2	>72 in. 198.2	0.00
I1	207.9	>72 in. 201.9	0.10	V1	205.8	>72 in. 199.8	0.00
I2	207.9	>72 in. 201.9	0.15	V2	205.8	>72 in. 199.8	0.00
J1	206.0	>72 in. 200.0	2.98	W1	205.0	>72 in. 199.0	0.05
J2	206.0	>72 in. 200.0	1.99	W2	205.0	>72 in. 199.0	0.05
K1	211.5	>72 in. 205.5	0.00	X1	210.0	>72 in. 204.0	0.05
K2	211.5	>72 in. 205.5	0.00	X2	210.0	>72 in. 204.0	0.05

NOTE: CONTRACTOR SHALL AVOID UNNECESSARY COMPACTION OF BMP AREAS AND SHALL PROHIBIT CONSTRUCTION VEHICLES FROM TRAVELING OVER SAID AREAS AT ANY TIME DURING CONSTRUCTION. ALL EROSION AND SEDIMENT CONTROLS WITHIN AREAS TRIBUTARY TO THE BMP'S SHALL REMAIN IN PLACE UNTIL UPSTREAM TRIBUTARY AREAS ARE STABILIZED.

THE ARBORETUM TRAIL AND ASSOCIATED PLANTINGS, AS SHOWN, HAVE BEEN PREVIOUSLY CONSTRUCTED. THEY ARE SHOWN HEREON FOR PERMITTING PURPOSES ONLY. EROSION & SEDIMENT CONTROLS ARE NOT PROVIDED FOR THEIR CONSTRUCTION. HOWEVER, THE STORMWATER MANAGEMENT BMP'S HAVE BEEN DESIGNED TO ACCOUNT FOR THEM.

LEGEND

- ADJOINER LINE
- EXISTING BOUNDARY
- EXISTING BUILDINGS
- EXISTING CENTERLINE
- EXISTING CONTOUR
- EXISTING INDEX CONTOUR
- EXISTING CURBLINE
- EXISTING DRIVEWAY
- EXISTING ELECTRIC AND STRUCTURES
- EXISTING EDGE OF PAVEMENT
- EXISTING EDGE OF STONE
- EXISTING CHAINLINK FENCE
- EXISTING FIRE HYDRANT
- EXISTING GAS LINE
- EXISTING IRON PIN/PIPE
- EXISTING LIGHTS
- EXISTING MONUMENT
- EXISTING LEGAL RIGHT-OF-WAY
- EXISTING SANITARY SEWER AND MANHOLE
- EXISTING SIGN
- EXISTING SITE BENCHMARK LOCATION
- EXISTING SPOT ELEVATIONS
- EXISTING STORM SEWER AND STRUCTURES
- EXISTING SIDEWALK
- EXISTING TREELINE
- EXISTING UTILITY POLE AND GUY WIRE
- EXISTING WATER LINE AND STRUCTURES
- EXISTING WETLANDS
- EXISTING WETLANDS BUFFER
- EXISTING DECIDUOUS TREE
- EXISTING CONIFEROUS TREE
- PROPOSED CENTERLINE
- PROPOSED EDGE OF PAVEMENT
- PROPOSED WALKING TRAIL
- FUTURE WALKING TRAIL
- PROPOSED CONTOUR
- PROPOSED INDEX CONTOUR
- PROPOSED STORM SEWER AND STRUCTURE
- PROPOSED TREELINE
- PROPOSED LIMITS OF DISTURBANCE (15.96 ACRES)
- PROPOSED NPDES BOUNDARY (64.08 ACRES)
- DRAINAGE AREA TO P.O.I.
- TIME OF CONCENTRATION PATH
- TEST PIT LOCATIONS
- SOILS BOUNDARY AND DESIGNATOR
- PROPOSED SYSTEM DRAINAGE AREA



DISPOSAL/RECYCLING OF CONSTRUCTION MATERIAL

ALL CONSTRUCTION WASTES ARE TO BE RECYCLED TO THE GREATEST EXTENT PRACTICAL AND DISPOSED OF IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE, AND LOCAL MUNICIPALITY REQUIREMENTS AND GUIDELINES.

CLEAN FILL IS DEFINED AS: UNCONTAMINATED, NON-WATER SOLUBLE, NON-Biodegradable, INERT, SOLID MATERIALS. THE TERM INCLUDES SOIL, ROCK, STONE, DRESSED MATERIAL, USED ASPHALT, AND BRICK, BLOCK OR CONCRETE FROM CONSTRUCTION AND DEMOLITION ACTIVITIES THAT IS SEPARATE FROM OTHER WASTE AND IS RECOGNIZABLE AS SUCH. THE TERM DOES NOT INCLUDE MATERIALS PLACED IN OR ON THE WATERS OF THE COMMONWEALTH UNLESS OTHERWISE AUTHORIZED. (THE TERM "USED ASPHALT" DOES NOT INCLUDE MILLED ASPHALT OR ASPHALT THAT HAS BEEN PROCESSED FOR RE-USE.)

CLEAN FILL AFFECTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE: FILL MATERIAL AFFECTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE STILL QUALIFIES AS CLEAN FILL PROVIDED THE TESTING REVEALS THAT THE FILL MATERIAL CONTAINS CONCENTRATIONS OF REGULATED SUBSTANCES THAT ARE BELOW THE RESIDENTIAL LIMITS IN TABLES TP-1A AND TP-1B FOUND IN THE DEP'S POLICY "MANAGEMENT OF FILL". ANY PERSON PLACING CLEAN FILL THAT HAS BEEN AFFECTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE MUST USE FORM FP-501 TO CERTIFY THE ORIGIN OF THE FILL MATERIAL AND THE RESULTS OF THE ANALYTICAL TESTING TO QUALIFY THE MATERIAL AS CLEAN FILL. FORM FP-501 MUST BE RETAINED BY THE OWNER OF THE PROPERTY RECEIVING THE FILL.

ENVIRONMENTAL DUE DILIGENCE- INVESTIGATIVE TECHNIQUES, INCLUDING, BUT NOT LIMITED TO, VISUAL PROPERTY INSPECTIONS, ELECTRONIC DATA BASE SEARCHES, REVIEW OF PROPERTY OWNERSHIP, REVIEW OF PROPERTY USE HISTORY, SANBORN MAPS, ENVIRONMENTAL QUESTIONNAIRES, TRANSACTIONS SCREENS, ANALYTICAL TESTING, ENVIRONMENTAL ASSESSMENTS OR AUDITS. ANALYTICAL TESTING IS NOT A REQUIRED PART OF DUE DILIGENCE UNLESS VISUAL INSPECTION AND/OR REVIEW OF THE PAST LAND USE OF THE PROPERTY INDICATES THAT THE FILL MAY HAVE BEEN SUBJECTED TO A SPILL OR RELEASE OF REGULATED SUBSTANCE. IF THE FILL MAY HAVE BEEN AFFECTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE, IT MUST BE TESTED TO DETERMINE IF IT QUALIFIES AS CLEAN FILL. TESTING SHOULD BE PERFORMED IN ACCORDANCE WITH APPENDIX A OF THE DEP'S POLICY "MANAGEMENT OF FILL".

FILL MATERIAL THAT DOES NOT QUALIFY AS CLEAN FILL IS REGULATED FILL. REGULATED FILL MATERIAL THAT DOES NOT QUALIFY AS CLEAN FILL IS REGULATED FILL. REGULATED FILL MATERIAL IS WASTE AND MUST BE MANAGED IN ACCORDANCE WITH THE DEP'S MUNICIPAL OR RESIDUAL WASTE REGULATIONS BASED ON 25 PA. CODE CHAPTERS 287 RESIDUAL WASTE MANAGEMENT OR 271 MUNICIPAL WASTE MANAGEMENT, WHICHEVER IS APPLICABLE.

POST CONSTRUCTION STORMWATER MANAGEMENT PLAN NOI CHECKLIST NOTES

- GENERAL PCSM PLANNING AND DESIGN 102.8(f)
- THE FOLLOWING COMMENTS ARE CONSISTENT WITH THOSE INCLUDED WITHIN THE PCSM NARRATIVE, WHERE APPLICABLE.
- MINIMIZE IMPERVIOUS AREAS: THE TOTAL IMPERVIOUS AREA WILL BE INCREASED BY 2.18 ACRES. THIS REPRESENTS ABOUT 3.4% OF THE AREA OF THE PARKLANDS. IMPERVIOUS AREA HAS BEEN MINIMIZED TO THE GREATEST EXTENT POSSIBLE.
 - MAXIMIZE THE PROTECTION OF EXISTING DRAINAGE FEATURES AND EXISTING VEGETATION: A PORTION OF CORE CREEK RUNS THROUGH THE CENTER OF THE PARK. A LENGTH OF APPROXIMATELY 2,600 FEET WITHIN THE TRACT BOUNDARY, THE STREAM IS SURROUNDED BY DENSE WOODS AND BRUSH FOR MOST OF THIS RUN. THE PREVIOUS IMPROVEMENTS WERE CONSTRUCTED WITHOUT DISTURBANCE TO THE STREAM CHANNEL. THE PROPOSED IMPROVEMENTS WILL REQUIRE A ROADWAY AND TRAIL TO CROSS OVER THE STREAM CHANNEL. THIS CROSSING WILL AFFECT LESS THAN 100 FEET OF THE STREAM CHANNEL (LESS THAN 4% OF ITS LENGTH). EXISTING DRAINAGE CHANNELS WILL NOT BE AFFECTED BY THE PROPOSED IMPROVEMENTS. EXISTING DRAINAGE FEATURES AND EXISTING VEGETATION HAVE BEEN PROTECTED TO THE GREATEST EXTENT POSSIBLE.
 - MINIMIZE LAND CLEARING AND GRADING: MOST OF THE IMPROVEMENTS WILL BE PERFORMED WITHIN EXISTING AGRICULTURAL LANDS. CLEARING OF VEGETATION WILL BE LIMITED TO AREAS NEEDED FOR THE ROADWAYS AND TRAILS. GRADING WILL OCCUR MOSTLY WHERE NEEDED FOR CONSTRUCTION OF THE ROADS, TRAILS AND RECREATIONAL FACILITIES. WHERE POSSIBLE, GRADING HAS BEEN MINIMIZED TO THE GREATEST EXTENT POSSIBLE.
 - UTILIZE OTHER STRUCTURAL OR NONSTRUCTURAL BMP'S TO PREVENT OR MINIMIZE CHANGES IN STORMWATER RUNOFF: THE DESIGN EMPLOYS THE VOLUME CREDITS FOR MINIMIZING TOTAL DISTURBED AREA - GRADING IN SECTION 5.6.1 OF THE BMP MANUAL, AND FOR PROTECTING EXISTING TREES FOUND IN SECTION 5.6.3 OF THE BMP MANUAL.
- SOILS BOUNDARY AND DESIGNATOR 102.8(f)(2)
- THE FOLLOWING COMMENTS ARE CONSISTENT WITH THOSE INCLUDED WITHIN THE PCSM NARRATIVE, WHERE APPLICABLE.
- SITE CHARACTERIZATION OF SOIL AND GEOLOGY, INCLUDING APPROPRIATE INFILTRATION AND GEOLOGICAL STUDIES THAT IDENTIFY LOCATION, DEPTHS, AND METHODOLOGY: INFILTRATION TESTING WAS PERFORMED AND THE SOILS WERE FOUND TO BE POORLY DRAINING, YET THERE WAS GREATER THAN 6" TO LIMITING ZONES. TESTING WAS PERFORMED IN ACCORDANCE WITH THE BMP MANUAL. TEST PIT LOCATIONS CAN BE FOUND ON SHEET 11. RESULTS CAN BE FOUND AT THE END OF THE NARRATIVE.
 - GEOLOGIC MAPPING FEATURES ADDRESSED WHERE APPROPRIATE: THERE ARE NO GEOLOGIC MAPPING FEATURES THAT MAY HAVE THE POTENTIAL TO CAUSE POLLUTION; THEREFORE, NOTHING IS ADDRESSED HEREIN.
 - PROPOSED IMPERVIOUS AREAS MINIMIZED & SHOWN ON PLAN MAP(S): THE PROPOSED IMPERVIOUS AREA IS MINIMIZED TO THE GREATEST EXTENT POSSIBLE, GIVEN THAT A MAJORITY OF THE SITE IMPROVEMENTS CONSIST OF ASPHALT TRAILS AND PARKING LOTS. THE DESIGN DRAWINGS SHOW ALL AREAS OF PROPOSED IMPERVIOUS COVER.
- RECEIVING SURFACE WATERS 102.8(f)(5)
- THE FOLLOWING COMMENTS ARE CONSISTENT WITH THOSE INCLUDED WITHIN THE PCSM NARRATIVE, WHERE APPLICABLE.
- BOUNDARIES FOR HQ OR CV WATERSHEDS SHOWN ON PLAN MAP(S): THE PROJECT SITE CONTAINS NO HQ OR CV WATERSHEDS. THEREFORE, NO SUCH WATERSHEDS ARE PROVIDED WITHIN THE PLANS.
- RECYCLING AND DISPOSAL OF MATERIALS 102.8(f)(11)
- THE FOLLOWING COMMENTS ARE CONSISTENT WITH THOSE INCLUDED WITHIN THE PCSM NARRATIVE, WHERE APPLICABLE.
- PROJECT WASTES IDENTIFIED: ASIDE FROM WASTES FROM CONSTRUCTION MATERIALS, THERE ARE NO OTHER ANTICIPATED PROJECT WASTES. PROCEDURES FOR DISPOSAL AND/OR RECYCLING OF CONSTRUCTION MATERIALS CAN BE FOUND ON SHEET 11.
 - GEOLOGIC FORMATIONS OR SOIL CONDITIONS 102.8(f)(12): THE FOLLOWING COMMENTS ARE CONSISTENT WITH THOSE INCLUDED WITHIN THE PCSM NARRATIVE, WHERE APPLICABLE.
 - INSTRUCTIONS FOR PROPER HANDLING AND/OR DISPOSAL OF ALL MATERIALS WHICH COULD CAUSE POLLUTION: ASIDE FROM THE POSSIBLE AFFECTS OF SEDIMENT LADEN RUNOFF, THERE ARE NO MATERIALS WHICH COULD CAUSE POLLUTION PRESENT ON THE PROJECT SITE. ISSUES REGARDING SEDIMENT LADEN RUNOFF HAVE BEEN ADDRESSED THROUGH PROVISION OF AN EROSION AND SEDIMENT CONTROL PLAN AND NARRATIVE. AS SUCH, NO INSTRUCTION FOR PROPER HANDLING AND/OR DISPOSAL HAS BEEN PROVIDED.
 - TYPICAL DETAILS & INSTRUCTIONS PROVIDED FOR PROPER HANDLING AND/OR DISPOSAL OF ALL SUCH MATERIALS: ASIDE FROM THE POSSIBLE AFFECTS OF SEDIMENT LADEN RUNOFF, THERE ARE NO MATERIALS WHICH COULD CAUSE POLLUTION PRESENT ON THE PROJECT SITE. ISSUES REGARDING SEDIMENT LADEN RUNOFF HAVE BEEN ADDRESSED THROUGH PROVISION OF AN EROSION AND SEDIMENT CONTROL PLAN AND NARRATIVE. AS SUCH, NO DETAILS OR INSTRUCTIONS HAVE BEEN PROVIDED FOR THE PROPER HANDLING AND/OR DISPOSAL OF SUCH MATERIALS.
 - LOCATIONS OF ALL SUCH MATERIALS CLEARLY SHOWN ON PLAN MAP(S): ASIDE FROM THE POSSIBLE AFFECTS OF SEDIMENT LADEN RUNOFF, THERE ARE NO MATERIALS WHICH COULD CAUSE POLLUTION PRESENT ON THE PROJECT SITE. ISSUES REGARDING SEDIMENT LADEN RUNOFF HAVE BEEN ADDRESSED THROUGH PROVISION OF AN EROSION AND SEDIMENT CONTROL PLAN AND NARRATIVE. NO LOCATIONS ARE PROVIDED ON THE PLAN MAPS.
 - RIPARIAN FOREST BUFFER MANAGEMENT PLAN 102.8(f)(14): THE FOLLOWING COMMENTS ARE CONSISTENT WITH THOSE INCLUDED WITHIN THE PCSM NARRATIVE, WHERE APPLICABLE.
 - EXISTING AND/OR PROPOSED RIPARIAN FOREST BUFFERS SHOWN ON PLAN MAP(S): THERE ARE NO EXISTING AND/OR PROPOSED RIPARIAN FOREST BUFFERS PRESENT WITHIN THE PROJECT AREA, SO NONE ARE SHOWN ON THE PLAN MAP(S).
 - RIPARIAN BUFFER OFFSET AREAS SHOWN IF NECESSARY: WHILE CORE CREEK DOES RUN THROUGH THE PARK AREA, THERE IS NO RIPARIAN BUFFER EXISTING OR PROPOSED. YET, THERE ARE AREAS OF WETLANDS EXISTING WITHIN THE STREAM CHANNEL. THE LOWER MAKEFIELD TOWNSHIP ZONING ORDINANCE REQUIRES THE ESTABLISHMENT OF A WETLANDS BUFFER AROUND EXISTING WETLAND AREAS. THIS BUFFER IS REFLECTED ON THE SITE PLANS. HOWEVER, THERE ARE NO EXISTING AND/OR PROPOSED RIPARIAN BUFFERS PRESENT WITHIN THE PROJECT AREA, SO NO RIPARIAN BUFFER OFFSET AREA HAS BEEN PROVIDED.
 - RIPARIAN BUFFER OR RIPARIAN FOREST BUFFER EQUIVALENCY DEMONSTRATION INCLUDED IF NECESSARY: WHILE CORE CREEK DOES RUN THROUGH THE PARK AREA, THERE IS NO RIPARIAN BUFFER EXISTING OR PROPOSED. YET, THERE ARE AREAS OF WETLANDS EXISTING WITHIN THE STREAM CHANNEL. THE LOWER MAKEFIELD TOWNSHIP ZONING ORDINANCE REQUIRES THE ESTABLISHMENT OF A WETLANDS BUFFER AROUND EXISTING WETLAND AREAS. THIS BUFFER IS REFLECTED ON THE SITE PLANS. HOWEVER, THERE ARE NO EXISTING AND/OR PROPOSED RIPARIAN BUFFERS PRESENT WITHIN THE PROJECT AREA, SO NO RIPARIAN BUFFER OR RIPARIAN BUFFER EQUIVALENCY DEMONSTRATION HAS BEEN PROVIDED.

THE SITE IS WITHIN THE CORE CREEK WATER SHED (CHAPTER 93 DESIGNATION CWF, MF), AN UNNAMED TRIBUTARY RUNS THROUGH THE CENTER PORTION OF THE PROPERTY.

JUN 26 2017

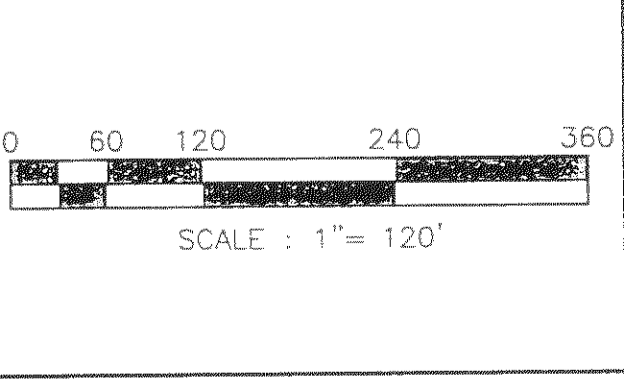
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REVISIONS	DATE	DESCRIPTION
05/10/17		REFLECTS BID ALTERNATES
06/05/17		GRADING REVISIONS FOR ADDENDUM
06/22/17		REVISIONS FOR CONSTRUCTION

MEMORIAL PARK EXPANSION
 LOWER MAKEFIELD TOWNSHIP
 BUCKS COUNTY, PENNSYLVANIA

LOWER MAKEFIELD TOWNSHIP
 1100 EDGEWOOD ROAD
 YARDLEY, PA 19067



OVERALL POST CONSTRUCTION STORMWATER MANAGEMENT PLAN

Boucher & James, Inc.
 CONSULTING ENGINEERS
 DOYLESTOWN • STROUDSBURG • LEHIGH VALLEY
 CORPORATE HEADQUARTERS: 1456 FERRY RD, BUILDING 500, DOYLESTOWN, PA 18901
 VOICE: (215) 345-9400 FAX: (215) 345-9401

PROJECT NO: 1677058
 SHEET: 11 of 25
 DATE: APRIL 14, 2017

MEMORIAL PARK EXPANSION - BID SET



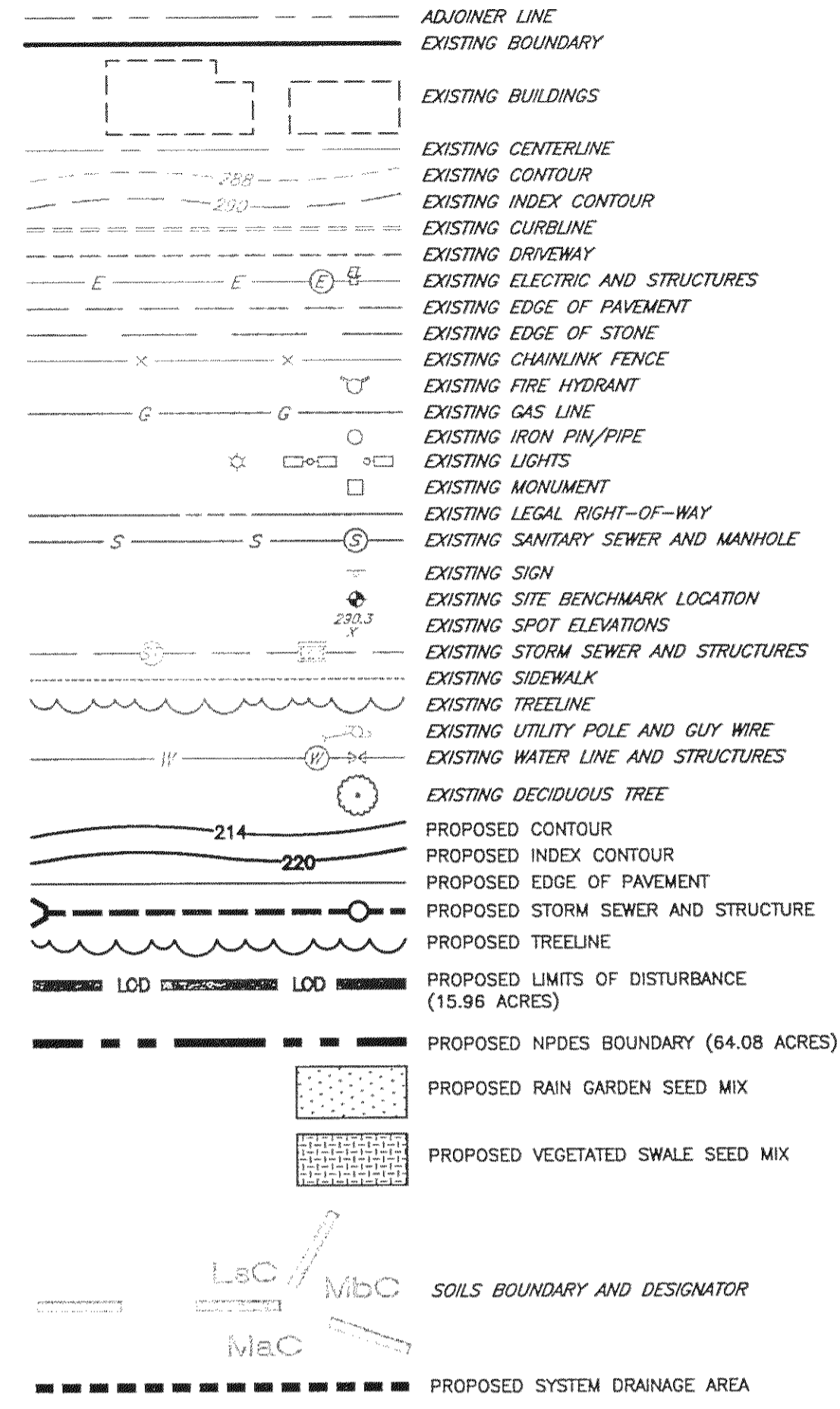
GENERAL CONSTRUCTION NOTES

1. AT LEAST SEVEN (7) DAYS BEFORE STARTING ANY EARTH DISTURBANCE ACTIVITY, THE O/RP SHALL INVITE ALL CONTRACTORS INVOLVED IN THAT ACTIVITY, THE LANDOWNER, ALL APPROPRIATE MUNICIPAL OFFICIALS, THE EROSION AND SEDIMENT CONTROL PLAN DESIGNER AND THE BUCKS COUNTY CONSERVATION DISTRICT TO A PRE-CONSTRUCTION MEETING. ALSO, AT LEAST THREE (3) DAYS BEFORE STARTING ANY EARTH DISTURBANCE ACTIVITY, ALL CONTRACTORS INVOLVED IN THAT ACTIVITY SHALL NOTIFY THE PENNSYLVANIA ONE-CALL SYSTEM INC. AT 1-800-242-1776 TO DETERMINE ANY UNDERGROUND UTILITIES LOCATIONS.
2. PLANS IDENTIFY THREE (3) SEPARATE AREAS OF CONSTRUCTION; CONSTRUCTION OF THE STORMWATER MANAGEMENT IMPROVEMENTS IN THE SOUTHWEST CORNER OF THE SITE, CONSTRUCTION OF THE WEST PARKING NORTH OF THE BASKETBALL COURTS, AND THE MAJOR PARK IMPROVEMENTS EAST OF THE ENTRANCE DRIVE. EACH OF THESE AREAS ARE CONSIDERED AS A PART OF THE MAIN SITE IMPROVEMENTS PROJECT. HOWEVER, EACH CAN BE CONSTRUCTED INDEPENDENTLY OF THE OTHERS. SEPARATE CONSTRUCTION SEQUENCES HAVE BEEN PROVIDED FOR EACH.

CONSTRUCTION SEQUENCE: S.W. CORNER STORMWATER MANAGEMENT BMPs

1. INSTALL CONSTRUCTION ENTRANCE FOR S.W. CORNER STORMWATER MANAGEMENT BMPs OFF OF WOODSIDE ROAD.
2. INSTALL TREE PROTECTION FENCING.
3. INSTALL 12" COMPOST FILTER SOCKS AS SHOWN.
4. STRIP AND STOCKPILE TOPSOIL EXCAVATED FROM AREAS TO BE DISTURBED.
5. **CONSTRUCT RAIN GARDEN 'A', INCLUDING AMENDED SOILS, OUTLET PIPE, SPILLWAY, AND PLANTINGS. CONSTRUCTION OF RAIN GARDEN SHALL BE CONSIDERED AS A CRITICAL STAGE OF BMP INSTALLATION FOR WHICH THE LICENSED ENGINEER RESPONSIBLE FOR THE DESIGN OF THE PLANS SHALL BE ON SITE DURING CONSTRUCTION.**
6. **CONSTRUCT VEGETATED SWALE. STABILIZE IMMEDIATELY. CONSTRUCTION OF THE VEGETATED SWALE WITHIN THE MADAWAN AREA SHALL BE CONSIDERED AS A CRITICAL STAGE OF BMP INSTALLATION FOR WHICH THE LICENSED ENGINEER RESPONSIBLE FOR THE DESIGN OF THE PLANS SHALL BE ON SITE DURING CONSTRUCTION.**
7. PROVIDE TOPSOIL, SEED AND MULCH OVER DISTURBED AREAS.
8. AFTER FINAL SITE STABILIZATION HAS BEEN ACHIEVED, ALL OF THE REMAINING TEMPORARY EROSION AND SEDIMENT CONTROLS MUST BE REMOVED AND THE SITE MUST BE PERMANENTLY STABILIZED. THE STANDARD FOR A STABILIZED, EROSION RESISTANT, PERENNIAL VEGETATIVE COVER WILL BE A UNIFORM COVERAGE OR DENSITY OF 70% ACROSS THE DISTURBED AREA. AREAS DISTURBED DURING THE REMOVAL OF THE TEMPORARY CONTROLS MUST BE STABILIZED IMMEDIATELY.

LEGEND



NOTE: CONTRACTOR SHALL AVOID UNNECESSARY COMPACTION OF BMP AREAS AND SHALL PROHIBIT CONSTRUCTION VEHICLES FROM TRAVELING OVER SAID AREAS AT ANY TIME DURING CONSTRUCTION. ALL EROSION AND SEDIMENT CONTROLS WITHIN AREAS TRIBUTARY TO THE BMPs SHALL REMAIN IN PLACE UNTIL UPSTREAM TRIBUTARY AREAS ARE STABILIZED.

THE SITE IS WITHIN THE CORE CREEK WATERSHED (CHAPTER 93 DESIGNATION CWF, M). AN UNNAMED TRIBUTARY RUNS THROUGH THE CENTER PORTION OF THE PROPERTY.

MAJOR SOIL PROPERTIES AND ESTIMATED DEGREE OF LIMITATION THAT INFLUENCE USE OF SOILS FOR CONSTRUCTION/DEVELOPMENT

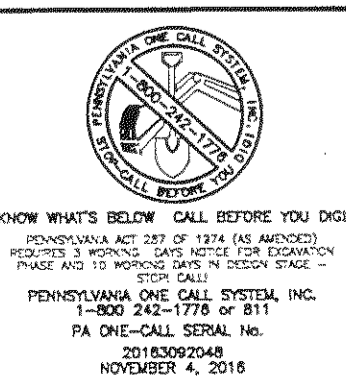
MAP SYMBOL	SOIL	HYDROLOGIC SOIL GROUP	DEPTH TO		CONSTRUCTION MATERIALS				SOILS FEATURES THAT AFFECT:		
			HWT (FT)	BEDROCK (IN)	ROAD FILL	SAND	GRAVEL	TOPSOIL	SHALLOW EXCAVATIONS	LOCAL ROADS AND STREETS	EMBANKMENT, DIKES, AND LEVEES.
B ₀	BOWMANSVILLE-KNAUERS SILT LOAMS	C/D	0	>72"	POOR	POOR	POOR	POOR	VERY LIMITED; PONDING, FLOODING, DUSTY, DEPTH TO SATURATED ZONE, UNSTABLE EXCAVATION WALLS	VERY LIMITED; PONDING, DEPTH TO SATURATED ZONE, FLOODING, LOW STRENGTH	VERY LIMITED; DEPTH TO SATURATION ZONE, DUSTY, PIPING, SEEPAGE
C _{0A}	CHALFONT SILT LOAM 0 TO 3 PERCENT SLOPES	D	12"	21"	POOR	POOR	POOR	FAIR	VERY LIMITED; DEPTH TO SATURATED ZONE, DUSTY, UNSTABLE EXCAVATION WALLS	VERY LIMITED; LOW STRENGTH, DEPTH TO SATURATED ZONE, FROST ACTION, DEPTH TO THIN CEMENTED PAN	VERY LIMITED; DEPTH TO SATURATION ZONE, DUSTY, PIPING
C _{0B}	CHALFONT SILT LOAM 3 TO 8 PERCENT SLOPES	D	12"	21"	POOR	POOR	POOR	FAIR	VERY LIMITED; DEPTH TO SATURATED ZONE, DUSTY, UNSTABLE EXCAVATION WALLS	VERY LIMITED; LOW STRENGTH, DEPTH TO SATURATED ZONE, FROST ACTION, DEPTH TO THIN CEMENTED PAN	VERY LIMITED; DEPTH TO SATURATION ZONE, DUSTY, PIPING
D _{0A}	DOYLESTOWN SILT LOAM 0 TO 3 PERCENT SLOPES	C/D	3"	22.5"	POOR	POOR	POOR	POOR	VERY LIMITED; DEPTH TO SATURATED ZONE, DUSTY, UNSTABLE EXCAVATION WALLS	VERY LIMITED; LOW STRENGTH, DEPTH TO SATURATED ZONE, FROST ACTION, DEPTH TO THIN CEMENTED PAN	VERY LIMITED; DEPTH TO SATURATION ZONE, DUSTY
D _{0A}	DUNCANNON SILT LOAM 3 TO 8 PERCENT SLOPES	B	>72"	>72"	POOR	POOR	POOR	FAIR	VERY LIMITED; DUSTY, UNSTABLE EXCAVATION WALLS	FROST ACTION, LOW STRENGTH	VERY LIMITED; PIPING, DUSTY
L _{0A}	LAWRENCEVILLE SILT LOAM 0 TO 3 PERCENT SLOPES	C	27"	25"	POOR	POOR	POOR	FAIR	VERY LIMITED; DEPTH TO SATURATED ZONE, DUSTY, UNSTABLE EXCAVATION WALLS	VERY LIMITED; LOW STRENGTH, DEPTH TO SATURATED ZONE, FROST ACTION, DEPTH TO THIN CEMENTED PAN	SOMEWHAT LIMITED; DEPTH TO SATURATION ZONE, DUSTY
L _{0B}	LAWRENCEVILLE SILT LOAM 3 TO 8 PERCENT SLOPES	C	27"	25"	POOR	POOR	POOR	FAIR	VERY LIMITED; DEPTH TO SATURATED ZONE, DUSTY, UNSTABLE EXCAVATION WALLS	VERY LIMITED; LOW STRENGTH, DEPTH TO SATURATED ZONE, FROST ACTION, DEPTH TO THIN CEMENTED PAN	SOMEWHAT LIMITED; DEPTH TO SATURATION ZONE, DUSTY

SOURCE: WEB SOILS SURVEY, ACCESSED SEPTEMBER 26, 2016

- LIMITATION RESOLUTIONS:**
1. A PUMPED WATER FILTER BAG MAY BE REQUIRED DURING CONSTRUCTION TO REMOVE ACCUMULATED GROUNDWATER FROM AREAS OF EXCAVATION.
 2. SHORING MAY BE REQUIRED WHERE EXCAVATIONS ARE DEEP, TO PROTECT AGAINST UNSTABLE EXCAVATION WALLS.

ISSUED FOR CONSTRUCTION
Boucher & James, Inc.
JUN 26 2017

Written dimensions shall have priority over scaled dimensions. All dimensions, elevations, locations, and conditions, shall be verified by the Contractor prior to construction, and the Owner and Boucher & James, Inc. shall be notified of any discrepancies with the information shown on drawings.
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DATE	DESCRIPTION	DATE	DESCRIPTION
05/10/17	REFLECTS BID ALTERNATES		
06/05/17	GRADING REVISIONS FOR ADDENDUM		
06/22/17	REVISIONS FOR CONSTRUCTION		

PROJECT:
MEMORIAL PARK EXPANSION
LOWER MAKEFIELD TOWNSHIP
BUCKS COUNTY, PENNSYLVANIA

APPLICANT:
LOWER MAKEFIELD TOWNSHIP
1100 EDGEWOOD ROAD
YARDLEY, PA 19067

JOB NO.: 1677058
TITLE: POST CONSTRUCTION STORMWATER MANAGEMENT PLAN - WEST

DRAWN BY: R.D.J.
CHECKED BY: M.W.E.
SCALE: 1" = 50'

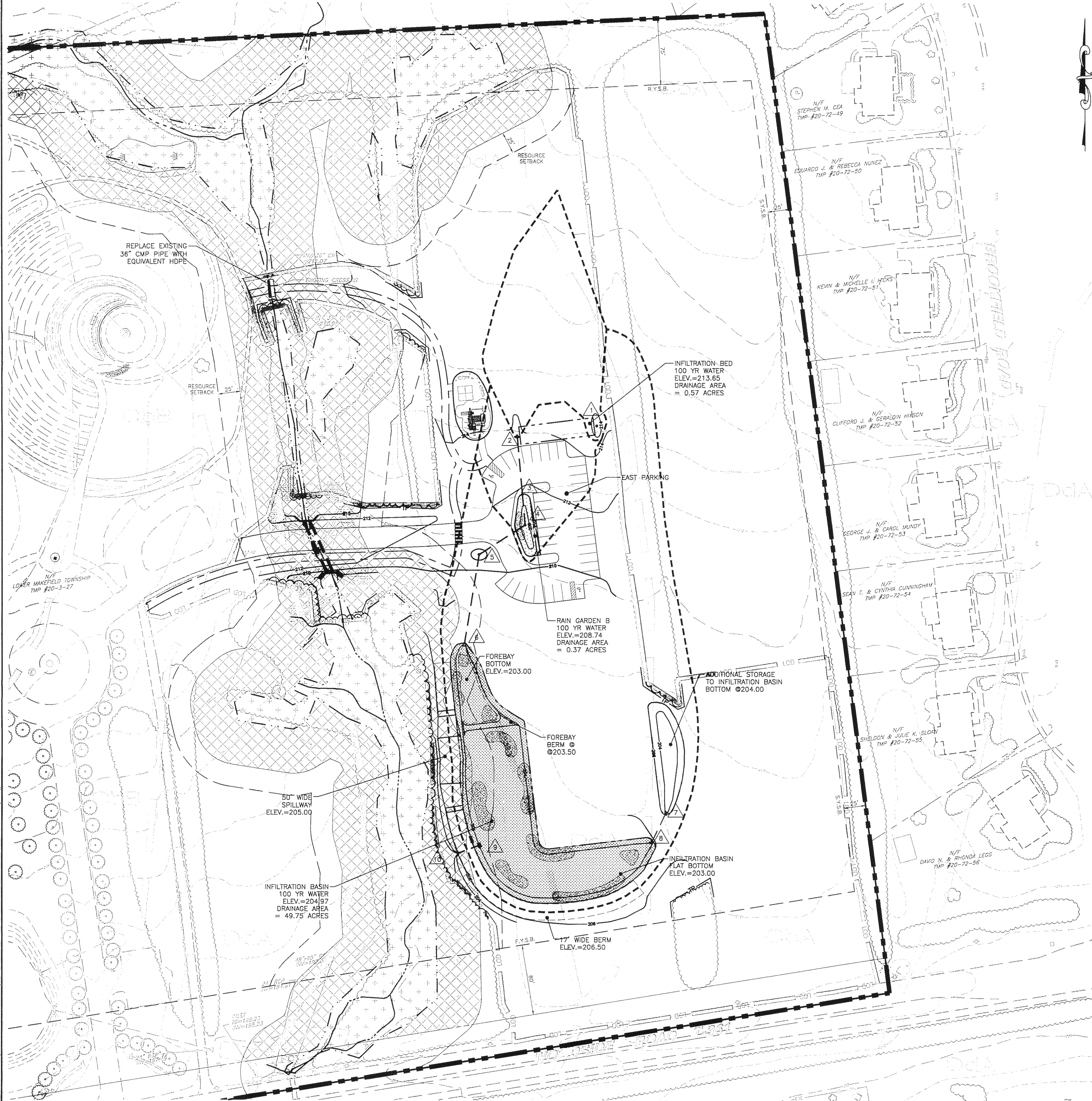
PLAN STATUS: PRELIMINARY/FINAL

Boucher & James, Inc.
CONSULTING ENGINEERS
DOYLESTOWN • STROUDSBURG • LEHIGH VALLEY
CORPORATE HEADQUARTERS: 1456 FERRY RD, BUILDING 500, DOYLESTOWN, PA. 18901
VOICE: (215) 345-9400 FAX: (215) 345-9401

SHEET
12 OF 25

APRIL 14, 2017

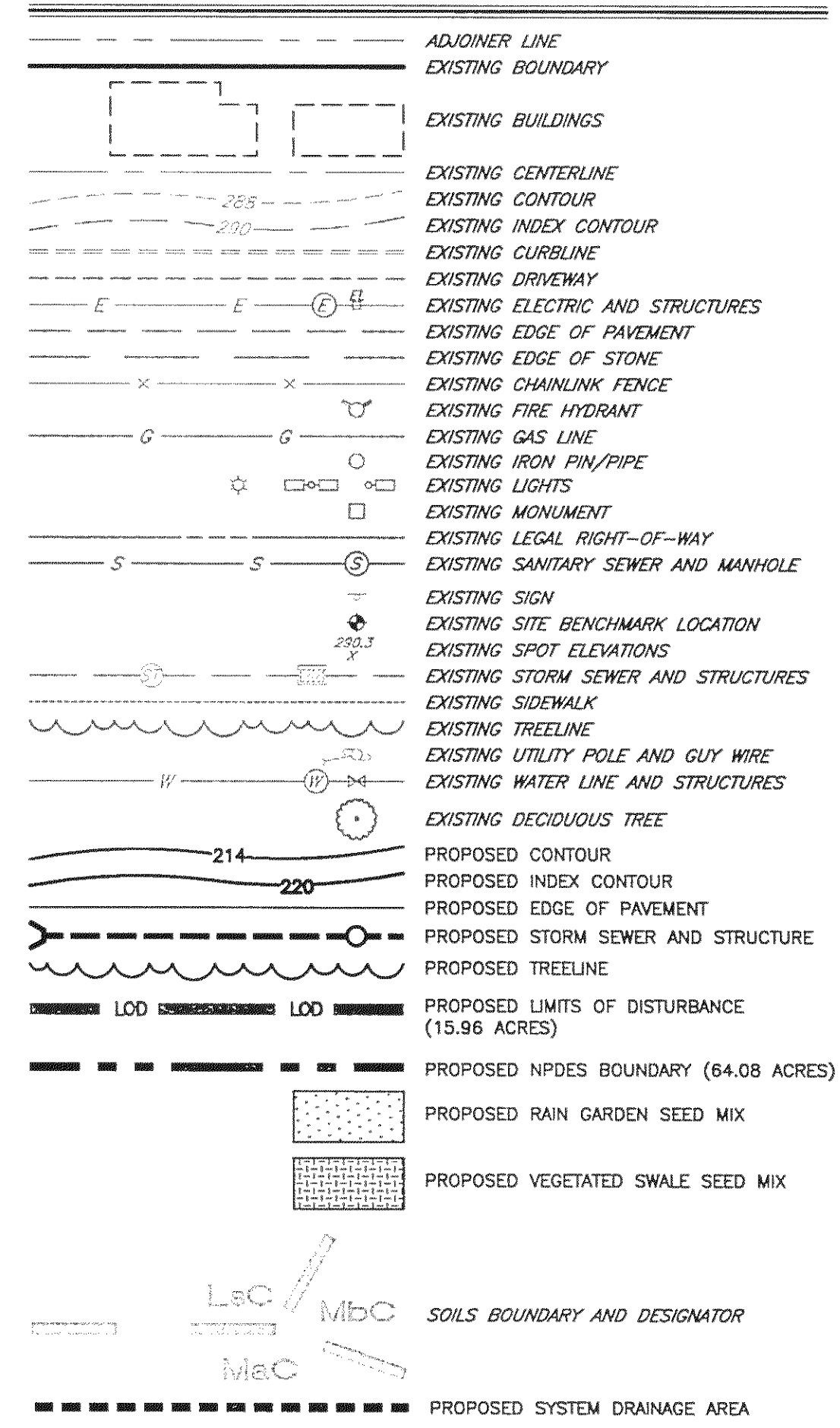
P:\2016\1677058\Drawings\12-PCS\12-PCS.Mxd | Tabname: 12-PCS.Mxd | Jun 23, 2017 | 10:30am | Wellbuck



CONSTRUCTION SEQUENCE: MAJOR PARK IMPROVEMENTS

1. INSTALL CONSTRUCTION ENTRANCE OFF OF WOODSIDE ROAD. NO CONSTRUCTION VEHICLES SHALL BE PERMITTED TO ACCESS THIS AREA OF CONSTRUCTION FROM THE EXISTING PARK DRIVES.
2. INSTALL TREE PROTECTION FENCING.
3. CLEAR AND GRUB EXISTING TREES TO BE REMOVED.
4. PROVIDE CONSTRUCTION FENCING AROUND PERIMETERS OF SUBSURFACE INFILTRATION BED AND RAIN GARDEN 'B' TO PREVENT VEHICULAR TRAFFIC FROM TRAVELING OVER THESE AREAS.
5. INSTALL 12" COMPOST FILTER SOCKS PER PLAN.
6. CONSTRUCT ROCK FILTER BERM WITHIN DRAINAGE CHANNEL BELOW PROPOSED ROAD CROSSING.
7. STRIP AND STOCKPILE TOP SOIL FROM THE SEDIMENT BASIN AREA.
8. CONSTRUCT TEMPORARY SEDIMENT BASIN, INCLUDING BERM (CONSTRUCTED WIDE FOR FUTURE TRAIL CONSTRUCTION), OUTLET PIPE AND RIPRAP APRON BELOW ENDWALL. PROVIDE 1" HOLES FOR DEMATERING PURPOSES (TO BE PLUGGED LATER). TEMPORARILY COVER MAIN ORIFICE. DO NOT CONSTRUCT AREA OF ADDITIONAL STORAGE AT THIS TIME.
9. STRIP AND STOCKPILE TOP SOIL FROM ALL REMAINING PROPOSED DISTURBED AREAS.
10. INSTALLED PUMP BYPASS SYSTEM AT ROAD CROSSING.
11. CONSTRUCT PROPOSED THIN PIPES AT ROAD CROSSING, INCLUDING RIPRAP APRON BELOW ENDWALL. ADJUST COMPOST FILTER SOCK PLACEMENT AS NEEDED.
12. INSTALL STORM DRAINAGE PIPES AND STRUCTURES FROM ENDWALL No. 6 TO INLET No. 2.
13. CONSTRUCT RAIN GARDEN 'B', INCLUDING AMENDED SOILS TO DESIGN DEPTH. CONSTRUCTION OF RAIN GARDEN SHALL BE CONSIDERED AS A CRITICAL STAGE OF BMP INSTALLATION FOR WHICH THE LICENSED ENGINEER RESPONSIBLE FOR THE DESIGN OF THE PLANS SHALL BE ON SITE DURING CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING CERTIFICATION THAT EXCAVATED SOILS WILL BE DEPOSITED AT AN APPROVED SITE.
14. VEGETATION FOR RAIN GARDEN 'B' SHOULD NOT BE INSTALLED AT THIS TIME. INSTALL INLET PROTECTION IMMEDIATELY UNTIL TOPSOIL, SEEDING & MULCHING OF DISTURBED AREAS HAS YIELDED 70% COVERAGE.
15. CONSTRUCT SUBSURFACE INFILTRATION BED, INCLUDING PIPES AND AMENDED SOILS TO DESIGN DEPTH. CONSTRUCTION OF INFILTRATION BED SHALL BE CONSIDERED AS A CRITICAL STAGE OF BMP INSTALLATION FOR WHICH THE LICENSED ENGINEER RESPONSIBLE FOR THE DESIGN OF THE PLANS SHALL BE ON SITE DURING CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING CERTIFICATION THAT EXCAVATED SOILS WILL BE DEPOSITED AT AN APPROVED SITE.
16. INSTALL INLET PROTECTION IMMEDIATELY UNTIL TOPSOIL, SEEDING & MULCHING OF DISTURBED AREAS HAS YIELDED 70% COVERAGE.
17. ROUGH GRADE AREAS FOR SITE IMPROVEMENTS.
18. INSTALL PIPE REPLACEMENT AT NORTHERN TRAIL CROSSING.
19. INSTALL STONE BASE COURSE AND ASPHALT BASE COURSE FOR ALL PAVED AREAS. INSTALL STONE BASE COURSE FOR TRAIL.
20. CONSTRUCT SUBSURFACE INFILTRATION BASIN, INCLUDING PIPE CONNECTION TO ADDITIONAL STORAGE AREA AND AMENDED SOILS TO DESIGN DEPTH. CONSTRUCTION OF INFILTRATION BASIN SHALL BE CONSIDERED AS A CRITICAL STAGE OF BMP INSTALLATION FOR WHICH THE LICENSED ENGINEER RESPONSIBLE FOR THE DESIGN OF THE PLANS SHALL BE ON SITE DURING CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING CERTIFICATION THAT EXCAVATED SOILS WILL BE DEPOSITED AT AN APPROVED SITE.
21. INSTALL PROPOSED VEGETATION, INCLUDING WITHIN STORMWATER MANAGEMENT BMPs.
22. TOPSOIL, SEED & MULCH ALL DISTURBED AREAS. REMOVE INLET PROTECTION ONCE ALL AREAS HAVE YIELDED 70% COVERAGE.
23. PLACE ASPHALT WEARING COURSE.
24. INSTALL ALL TRAFFIC CONTROL SIGNS AND STRIPING. STABILIZE ANY DISTURBED AREAS IMMEDIATELY.
25. AFTER FINAL SITE STABILIZATION HAS BEEN ACHIEVED, ALL OF THE REMAINING TEMPORARY EROSION AND SEDIMENT CONTROLS MUST BE REMOVED AND THE SITE MUST BE PERMANENTLY STABILIZED. THE STANDARD FOR A STABILIZED, EROSION RESISTANT, PERENNIAL VEGETATIVE COVER WILL BE A UNIFORM COVERAGE OR DENSITY OF 70% ACROSS THE DISTURBED AREA. AREAS DISTURBED DURING THE REMOVAL OF THE TEMPORARY CONTROLS MUST BE STABILIZED IMMEDIATELY.

LEGEND



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NOTE: CONTRACTOR SHALL AVOID UNNECESSARY COMPACTION OF BMP AREAS AND SHALL PROHIBIT CONSTRUCTION VEHICLES FROM TRAVELING OVER SAID AREAS AT ANY TIME DURING CONSTRUCTION. ALL EROSION AND SEDIMENT CONTROLS WITHIN AREAS TRIBUTARY TO THE BMPs SHALL REMAIN IN PLACE UNTIL UPSTREAM TRIBUTARY AREAS ARE STABILIZED.

MAJOR SOIL PROPERTIES AND ESTIMATED DEGREE OF LIMITATION THAT INFLUENCE USE OF SOILS FOR CONSTRUCTION/DEVELOPMENT

MAP SYMBOL	SOIL	HYDROLOGIC SOIL GROUP	DEPTH TO		CONSTRUCTION MATERIALS			SOILS FEATURES THAT AFFECT:			
			HWT (FT)	BEDROCK (IN)	ROAD FILL	SAND	GRAVEL	TOPSOIL	SHALLOW EXCAVATIONS	LOCAL ROADS AND STREETS	EMBANKMENT, DIKES, AND LEVEES.
Bo	BOWMANVILLE-KNAUERS SILT LOAMS	C/D	0	>72"	POOR	POOR	POOR	POOR	VERY LIMITED; PONDING, FLOODING DUSTY, DEPTH TO SATURATED ZONE, UNSTABLE EXCAVATION WALLS	VERY LIMITED; PONDING, DEPTH TO SATURATED ZONE, FROST ACTION, FLOODING, LOW STRENGTH	VERY LIMITED; DEPTH TO SATURATION ZONE, DUSTY, PIPING, SEEPAGE
CdA	CHALFONT SILT LOAM 0 TO 3 PERCENT SLOPES	D	12"	21"	POOR	POOR	POOR	FAIR	VERY LIMITED; DEPTH TO SATURATED ZONE, DUSTY, UNSTABLE EXCAVATION WALLS	VERY LIMITED; LOW STRENGTH, DEPTH TO SATURATED ZONE, FROST ACTION, DEPTH TO THIN CEMENTED PAN	VERY LIMITED; DEPTH TO SATURATION ZONE, DUSTY, PIPING,
CdB	CHALFONT SILT LOAM 3 TO 8 PERCENT SLOPES	D	12"	21"	POOR	POOR	POOR	FAIR	VERY LIMITED; DEPTH TO SATURATED ZONE, DUSTY, UNSTABLE EXCAVATION WALLS	VERY LIMITED; LOW STRENGTH, DEPTH TO SATURATED ZONE, FROST ACTION, DEPTH TO THIN CEMENTED PAN	VERY LIMITED; DEPTH TO SATURATION ZONE, DUSTY
DdA	DOYLESTOWN SILT LOAM 0 TO 3 PERCENT SLOPES	C/D	3"	22.5"	POOR	POOR	POOR	POOR	VERY LIMITED; DEPTH TO SATURATED ZONE, DUSTY, UNSTABLE EXCAVATION WALLS	VERY LIMITED; LOW STRENGTH, DEPTH TO SATURATED ZONE, FROST ACTION, DEPTH TO THIN CEMENTED PAN	VERY LIMITED; DEPTH TO SATURATION ZONE, DUSTY
DdA	DUNCANNON SILT LOAM 3 TO 8 PERCENT SLOPES	B	>72"	>72"	POOR	POOR	POOR	FAIR	VERY LIMITED; DUSTY, UNSTABLE EXCAVATION WALLS	FROST ACTION, LOW STRENGTH	VERY LIMITED; PIPING, DUSTY
LkA	LAWRENCEVILLE SILT LOAM 0 TO 3 PERCENT SLOPES	C	27"	25"	POOR	POOR	POOR	FAIR	VERY LIMITED; DEPTH TO SATURATED ZONE, DUSTY, UNSTABLE EXCAVATION WALLS	VERY LIMITED; LOW STRENGTH, DEPTH TO SATURATED ZONE, FROST ACTION, DEPTH TO THIN CEMENTED PAN	SOMEWHAT LIMITED; DEPTH TO SATURATION ZONE, DUSTY
LkB	LAWRENCEVILLE SILT LOAM 3 TO 8 PERCENT SLOPES	C	27"	25"	POOR	POOR	POOR	FAIR	VERY LIMITED; DEPTH TO SATURATED ZONE, DUSTY, UNSTABLE EXCAVATION WALLS	VERY LIMITED; LOW STRENGTH, DEPTH TO SATURATED ZONE, FROST ACTION, DEPTH TO THIN CEMENTED PAN	SOMEWHAT LIMITED; DEPTH TO SATURATION ZONE, DUSTY

SOURCE: WEB SOILS SURVEY, ACCESSED SEPTEMBER 26, 2016

ISSUED FOR CONSTRUCTION
Boucher & James, Inc.
JUN 26 2017

- LIMITATION RESOLUTIONS:**
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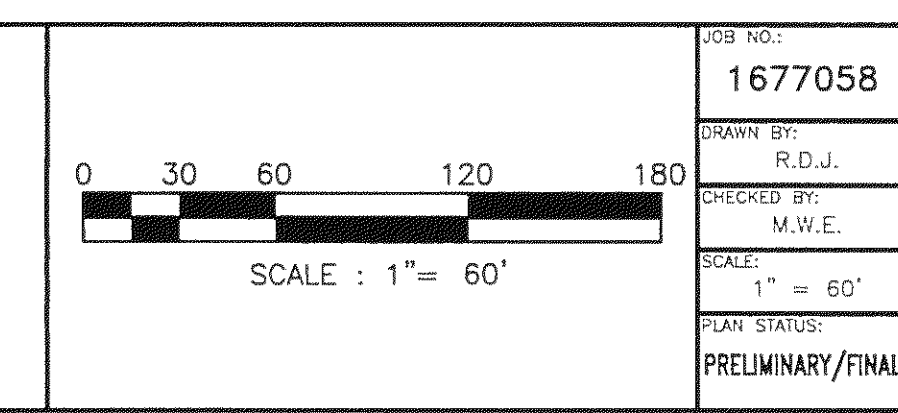
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PENNSYLVANIA ONE CALL SYSTEM, INC.
1-800-488-7888
PA ONE-CALL SERIAL NO. 2018092048
NOVEMBER 4, 2016

REVISIONS:		DATE	DESCRIPTION
05/10/17	REFLECTS BID ALTERNATES		
06/05/17	GRADING REVISIONS FOR ADDENDUM		
06/22/17	REVISIONS FOR CONSTRUCTION		

MEMORIAL PARK EXPANSION
LOWER MAKEFIELD TOWNSHIP
BUCKS COUNTY, PENNSYLVANIA

LOWER MAKEFIELD TOWNSHIP
1100 EDGEWOOD ROAD
YARDLEY, PA 19067



JOB NO: 1677058	TITLE: POST CONSTRUCTION STORMWATER MANAGEMENT PLAN - EAST
DRAWN BY: R.D.J.	Boucher & James, Inc. CONSULTING ENGINEERS DOYLESTOWN • STROUDSBURG • LEHIGH VALLEY CORPORATE HEADQUARTERS: 1456 FERRY RD, BUILDING 500, DOYLESTOWN, PA 18901 VOICE: (215) 345-9400 FAX: (215) 345-9401 www.bjengineers.com
CHECKED BY: M.W.E.	
SCALE: 1" = 60'	SHEET 13 OF 25
PLAN STATUS: PRELIMINARY/FINAL	PROJECT NAME: MEMORIAL PARK EXPANSION - BID SET
	DATE: APRIL 14, 2017

CREDITS FOR BMP 5.6.1 MINIMIZE TOTAL DISTURBED AREA - GRADING

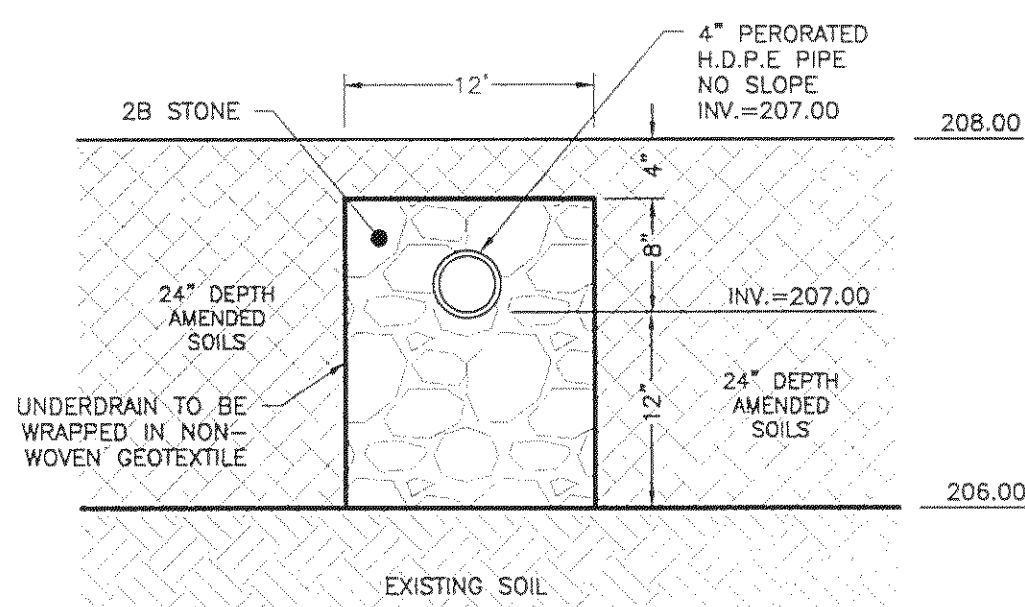
1. AREA SHALL NOT BE SUBJECT TO GRADING OR MOVEMENT OF EXISTING SOILS.
2. EXISTING NATIVE VEGETATION IN A HEALTHY CONDITION MAY NOT BE REMOVED.
3. INVASIVE NON-NATIVE VEGETATION MAY BE REMOVED.
4. PRUNING OR OTHER REQUIRED MAINTENANCE OF VEGETATION IS PERMITTED, ADDITIONAL PLANTING IS PERMITTED.
5. AREA SHALL BE PROTECTED BY HAVING THE LIMITS OF DISTURBANCE CLEARLY SHOWN ON ALL CONSTRUCTION DRAWINGS AND DELINEATED IN THE FIELD.
6. THE AREA NOT SUBJECT TO GRADING SHALL BE CLEARLY DELINEATED ON THE STORMWATER MANAGEMENT PLAN. IF FUTURE GRADING OR DISTURBANCE OF THIS AREA OCCURS, SUBSEQUENT STORMWATER MANAGEMENT MUST BE PROVIDED TO ADDRESS DISTURBANCE.
7. SHALL BE LOCATED ON THE DEVELOPMENT PROJECT.

CREDITS FOR BMP 5.6.2 MINIMIZE SOIL COMPACTION IN DISTURBED AREAS

1. AREA SHALL NOT BE STRIPPED OF EXISTING TOPSOIL.
2. AREA SHALL NOT BE SUBJECT TO EXCESSIVE EQUIPMENT MOVEMENT, VEHICLE MOVEMENT, STORAGE, OR EQUIPMENT/MATERIAL LAYDOWN SHALL NOT BE PERMITTED IN AREAS OF MINIMIZED DISTURBANCE/GRADING.
3. THE AREA SHALL BE PROTECTED BY HAVING THE LIMITS OF DISTURBANCE AND ACCESS CLEARLY SHOWN ON THE STORMWATER MANAGEMENT PLAN, ALL CONSTRUCTION DRAWINGS AND DELINEATED IN THE FIELD.
4. LAWN AND TURF GRASS ARE ACCEPTABLE USES. PLANTED MEADOW IS AN ENCOURAGED USE.
5. AREA SHALL BE LOCATED ON THE DEVELOPMENT PROJECT.

AMENDED SOILS NOTES

1. SOILS TESTING WITHIN THE PROJECT AREA REVEALED A HIGH DEPTH TO ANY LIMITING ZONE (GREATER THAN FIVE FEET), BUT POOR INFILTRATION RATES AT ALMOST ALL LOCATIONS. IT WAS DETERMINED THAT THE USE OF AN AMENDED SOIL BENEATH PROPOSED INFILTRATION SYSTEMS WOULD PROVIDE FOR WATER VOLUME AND QUALITY TREATMENT NOT AVAILABLE WITHIN THE IN-SITU SOILS.
2. RAIN GARDENS AND INFILTRATION BASIN SYSTEM SHALL BE PROVIDED WITH 24" DEPTH OF AMENDED SOILS PLACED BENEATH THE BOTTOM ELEVATION OF THE DESIGNED SYSTEM STORAGE VOLUME.
3. ALL AMENDED SOILS SHALL BE COMPRISED OF 50% TOPSOIL, 25% COMPOST, AND 25% SAND (BY VOLUME).
4. THE FULL VOLUME OF AMENDED SOILS SHALL BE WRAPPED WITH A CLASS B NON-WOVEN GEOTEXTILE (IN ACCORDANCE WITH PENNDOT PUBLICATION 408).
5. ALL AMENDED SOILS PLACED BENEATH INFILTRATION BMP SYSTEMS SHALL BE PROVIDED WITH UNDERDRAINS TO BE CERTAIN ANY ACCUMULATED GROUNDWATER HAS A METHOD TO CLEAR OUT OF THE AMENDED SOILS VOLUME BETWEEN STORM EVENTS. UNDERDRAINS TO BE PENN-IT-STONE SYSTEM WRAPPED IN CLASS B NON-WOVEN GEOTEXTILE (IN ACCORDANCE WITH PENNDOT PUBLICATION 408). SEE DETAILS FOR UNDERDRAINS.

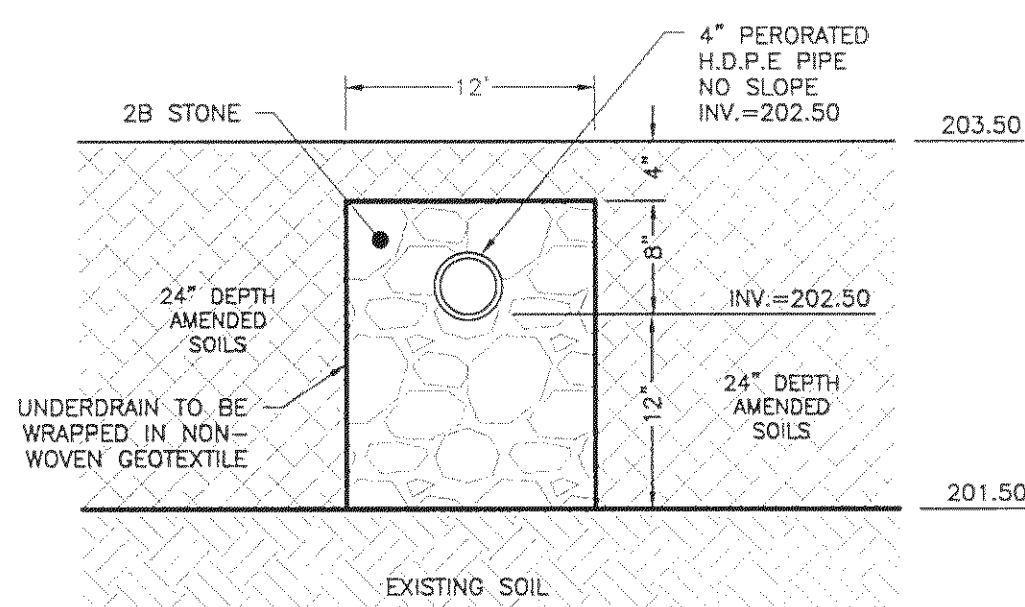


UNDERDRAIN NOTES

1. LONGITUDINAL PIPE LENGTHS TO BE CENTERED WITHIN BOTTOM OF RAIN GARDEN TO THE BEST DEGREE POSSIBLE.
2. ALL PIPES SHALL BE 4" PERFORATED H.D.P.E. AT LEVEL SLOPE. CAP ENDS.
3. 4" PERFORATED H.D.P.E. PIPE SHALL EXTEND FROM UNDERDRAIN SYSTEM (EXACT LOCATION TO BE DETERMINED IN THE FIELD) TO OUTLET STRUCTURE. PIPE LOCATION AS SHOWN MAY BE ADJUSTED IN FIELD DUE TO PIPE LAYOUT ISSUES.

INFILTRATION BASIN UNDERDRAIN - RAIN GARDEN B

NOT TO SCALE



UNDERDRAIN NOTES

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INFILTRATION BASIN UNDERDRAIN - RAIN GARDEN A

NOT TO SCALE

VEGETATED SWALE NOTES

1. VEGETATED SWALE No. 2 IS TO BE FORMED BY ADDING PLANTINGS TO AN EXISTING SWALE TO INCREASE THE WATER QUALITY TREATMENT OF THIS EXISTING DRAINAGE FEATURE. NO DETAIL IS PROVIDED. CALCULATIONS, AS PROVIDED WITHIN THE NARRATIVE, HAVE BEEN PROVIDED FOR AVERAGE SWALE SLOPE AND SIDE SLOPES. SEE SEEDING SPECIFICATIONS WITHIN LANDSCAPE PLANS AND PREVIOUS PLAN SHEET.

CONSTRUCTION SEQUENCE

1. BEGIN VEGETATED SWALE CONSTRUCTION ONLY WHEN THE UPGRADIENT TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES ARE IN PLACE. VEGETATED SWALES SHOULD BE CONSTRUCTED AND STABILIZED EARLY IN THE CONSTRUCTION SCHEDULE. PREFERABLY BEFORE MASS EARTHWORK AND PAVING INCREASE THE RATE AND VOLUME OF RUNOFF. (EROSION AND SEDIMENT CONTROL METHODS SHALL ADHERE TO THE PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION'S EROSION AND SEDIMENT POLLUTION CONTROL PROGRAM MANUAL, MARCH 2000 OF LATEST VERSION).
2. ROUGH GRADE THE VEGETATED SWALE. EQUIPMENT SHALL AVOID EXCESSIVE COMPACTION AND/OR LAND DISTURBANCE. EXCAVATING EQUIPMENT SHOULD OPERATE FROM THE SIDE OF THE SWALE AND NEVER ON THE BOTTOM. IF EXCAVATION LEADS TO SUBSTANTIAL COMPACTION OF THE SUBGRADE (WHERE AN INFILTRATION TRENCH IS NOT PROPOSED), 24 INCHES SHALL BE REMOVED AND REPLACED WITH A BLEND OF TOPSOIL AND SAND TO PROMOTE INFILTRATION AND BIOLOGICAL GROWTH. AT THE VERY LEAST, TOPSOIL SHALL BE THOROUGHLY DEEP PLOWED INTO THE SUBGRADE IN ORDER TO PENETRATE THE COMPACTIONED ZONE AND PROMOTE AERATION AND THE FORMATION OF MACROPORES. FOLLOWING THIS, THE AREA SHOULD BE DISKED PRIOR TO FINAL GRADING OF TOPSOIL.
3. CONSTRUCT CHECK DAMS, IF REQUIRED.
4. FINE GRADE THE VEGETATED SWALE. ACCURATE GRADING IS CRUCIAL FOR SWALES. EVEN THE SMALLEST NON-COMPACTIBLES MAY COMPROMISE FLOW CONDITIONS.
5. SEED, VEGETATE AND INSTALL PROTECTIVE LININGS AS PER APPROVED PLANS AND ACCORDING TO FINAL PLANTING LIST. PLANT THE SWALE AT A TIME OF YEAR WHEN SUCCESSFUL ESTABLISHMENT WITHOUT IRRIGATION IS MOST LIKELY. HOWEVER, TEMPORARY IRRIGATION MAY BE NEEDED IN PERIODS OF LITTLE RAIN OR DROUGHT. VEGETATION SHOULD BE ESTABLISHED AS SOON AS POSSIBLE TO PREVENT EROSION AND SOILUR.
6. ONCE ALL TRIBUTARY AREAS ARE SUFFICIENTLY STABILIZED, REMOVE TEMPORARY EROSION AND SEDIMENT CONTROLS. IT IS VERY IMPORTANT THAT THE SWALE BE STABILIZED BEFORE RECEIVING UPLAND STORMWATER FLOW.
7. FOLLOW MAINTENANCE GUIDELINES, AS DISCUSSED BELOW.

NOTE: IF A VEGETATED SWALE IS USED FOR RUNOFF CONVEYANCE DURING CONSTRUCTION, IT SHOULD BE REGRADED AND RESEEDED IMMEDIATELY AFTER CONSTRUCTION AND STABILIZATION HAS OCCURRED. ANY DAMAGED AREAS SHOULD BE FULLY RESTORED TO ENSURE FUTURE FUNCTIONALITY OF THE SWALE.

MAINTENANCE NOTES

- MAINTENANCE ACTIVITIES TO BE DONE ANNUALLY AND WITHIN 48 HOURS AFTER EVERY MAJOR STORM EVENT
1. INSPECT AND CORRECT EROSION PROBLEMS, DAMAGE TO VEGETATION, AND SEDIMENT AND DEBRIS ACCUMULATION (ADDRESS WHEN >3 INCHES AT ANY SPOT OR COVERING VEGETATION).
 2. INSPECT VEGETATION ON SIDE SLOPES FOR EROSION AND FORMATION OF RILLS OR GULLIES, CORRECT AS NEEDED.
 3. INSPECT FOR POOLS OF STANDING WATER; Dewater and DISCHARGE TO AN APPROVED LOCATION AND RESTORE TO DESIGN GRADE.
 4. MOW AND TRIM VEGETATION TO ENSURE SAFETY, AESTHETICS, PROPER SWALE OPERATION, OR TO SUPPRESS WEEDS AND INVASIVE VEGETATION; DISPOSE OF CUTTINGS IN A LOCAL COMPOSTING FACILITY; MOW ONLY WHEN SWALE IS DRY TO AVOID RUTTING.
 5. INSPECT FOR LITTER, REMOVE PRIOR TO MOWING.
 6. INSPECT FOR UNIFORMITY IN CROSS-SECTION AND LONGITUDINAL SLOPE, CORRECT AS NEEDED.
 7. INSPECT SWALE INLET (CURB CUTS, PIPES, ETC.) AND OUTLET FOR SIGNS OF EROSION OR BLOCKAGE, CORRECT AS NEEDED.

- RECOMMENDED WINTER MAINTENANCE FOR SWALES ADJACENT TO PAVEMENT
1. PLANT ALTERNATIVE GRASS SPECIES IN THE EVENT OF UNSUCCESSFUL ESTABLISHMENT.
 2. RESEED BARE AREAS; INSTALL APPROPRIATE EROSION CONTROL MEASURES WHEN NATIVE SOIL IS EXPOSED OR EROSION CHANNELS ARE FORMING.
 3. ROTOTILL AND REPLANT SWALE IF DRAW DOWN TIME IS MORE THAN 48 HOURS.
 4. INSPECT AND CORRECT CHECK DAMS WHEN SIGNS OF ALTERED WATER FLOW (CHANNELIZATION, OBSTRUCTIONS, EROSION, ETC.) ARE IDENTIFIED.
 5. WATER DURING DRY PERIODS, FERTILIZE, AND APPLY PESTICIDE ONLY WHEN ABSOLUTELY NECESSARY.

- RECOMMENDED WINTER MAINTENANCE FOR SWALES ADJACENT TO PAVEMENT
1. INSPECT SWALE IMMEDIATELY AFTER THE SPRING MELT; REMOVE RESIDUALS (E.G. SAND) AND REPLACE DAMAGED VEGETATION WITHOUT DISTURBING REMAINING VEGETATION.
 2. IF ROADSIDE OR PARKING LOT RUNOFF IS DIRECTED TO THE SWALE, MULCHING AND/OR SOIL AERATION/MANIPULATION MAY BE REQUIRED IN THE SPRING TO RESTORE SOIL STRUCTURE AND MOISTURE CAPACITY AND TO REDUCE THE IMPACTS OF DEICING AGENTS.
 3. USE NONTOXIC, ORGANIC DEICING AGENTS, APPLIED EITHER

RAIN GARDEN B CONSTRUCTION SEQUENCE

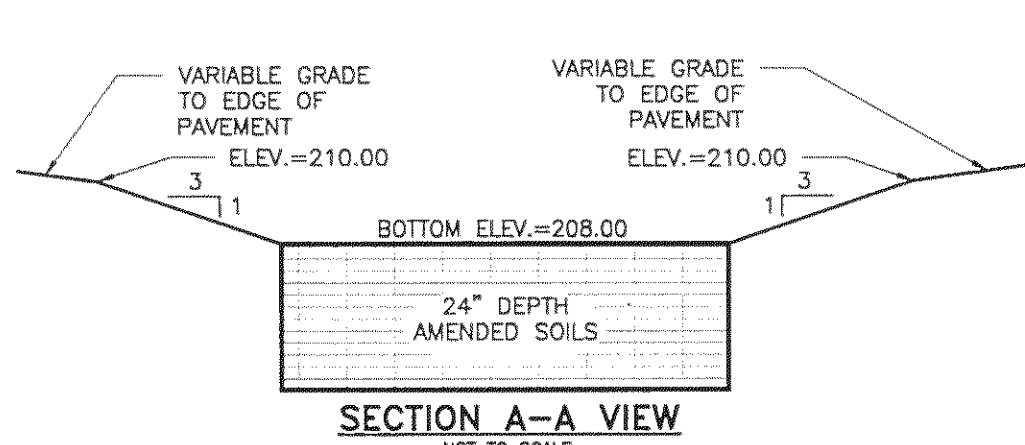
1. INSTALL TEMPORARY SEDIMENT CONTROL BMPs AS SHOWN ON THE PLANS.
2. COMPLETE SITE GRADING, IF APPLICABLE, CONSTRUCT CURB CUTS OR OTHER INFLOW ENTRANCE BUT PROVIDE PROTECTION SO THAT DRAINAGE IS PROHIBITED FROM ENTERING CONSTRUCTION AREA.
3. STABILIZE GRADING WITHIN THE LIMIT OF DISTURBANCE EXCEPT WITHIN THE RAIN GARDEN AREA. RAIN GARDEN BED AREAS MAY BE USED AS TEMPORARY SEDIMENT TRAPS PROVIDED THAT THE PROPOSED FINISH ELEVATION OF THE BED IS 12 INCHES LOWER THAN THE BOTTOM ELEVATION OF THE SEDIMENT TRAP.
4. EXCAVATE RAIN GARDEN TO PROPOSED INVERT DEPTH AND SCARIFY THE EXISTING SOIL SURFACES. DO NOT COMPACT IN-SITU SOILS.
5. BACKFILL RAIN GARDEN WITH AMENDED SOIL AS SHOWN ON PLANS AND SPECIFICATIONS. OVERFILLING IS RECOMMENDED TO ACCOUNT FOR SETTLEMENT. LIGHT HAND TAMPING IS ACCEPTABLE IF NECESSARY.
6. PRESOAK THE PLANTING SOIL PRIOR TO PLANTING VEGETATION TO AID IN SETTLEMENT.
7. COMPLETE FINAL GRADING TO ACHIEVE PROPOSED DESIGN ELEVATIONS, LEAVING SPACE FOR UPPER LAYER OF COMPOST, MULCH OR TOPSOIL AS SPECIFIED ON PLANS.
8. PLANT VEGETATION ACCORDING TO PLANTING PLAN.
9. MULCH AND INSTALL EROSION PROTECTION AT SURFACE FLOW ENTRANCES WHERE NECESSARY.

RAIN GARDEN B MAINTENANCE NOTES

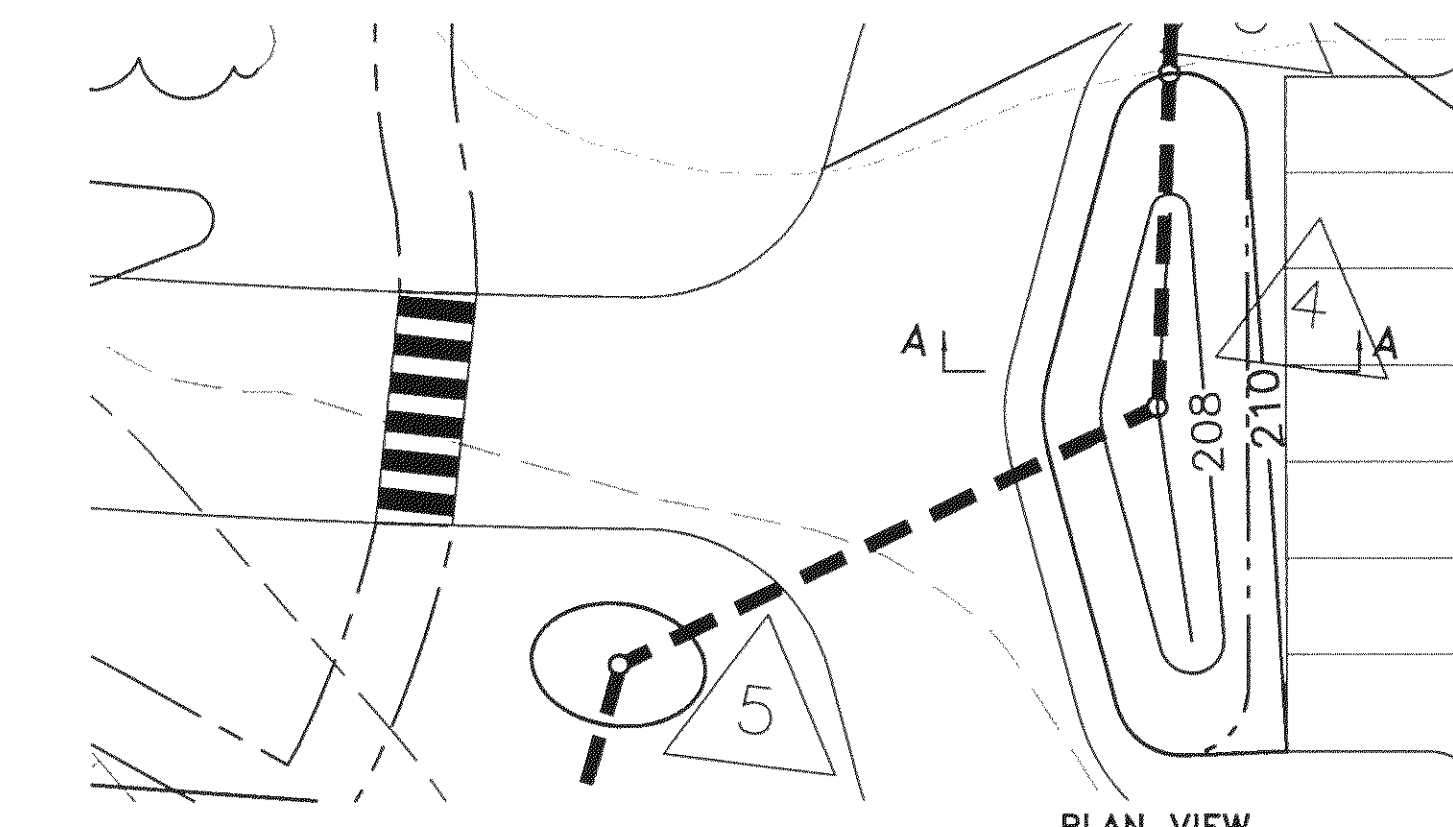
- PROPERLY DESIGNED AND INSTALLED BIORETENTION AREAS REQUIRE SOME REGULAR MAINTENANCE.
1. WHILE VEGETATION IS BEING ESTABLISHED, PRUNING AND WEEDING MAY BE REQUIRED.
 2. DETRITUS MAY ALSO NEED TO BE REMOVED EVERY YEAR. PERENNIAL PLANTINGS MAY BE CUT DOWN AT THE END OF THE GROWING SEASON.
 3. MULCH SHOULD BE RE-SPREAD WHEN EROSION IS EVIDENT AND BE REPLISHED AS NEEDED. ONCE EVERY 2 TO 3 YEARS THE ENTIRE AREA MAY REQUIRE MULCH REPLACEMENT.
 4. BIORETENTION AREAS SHOULD BE INSPECTED AT LEAST TWO TIMES PER YEAR FOR SEDIMENT BUILDUP, EROSION, VEGETATIVE CONDITIONS, ETC.
 5. DURING PERIODS OF EXTENDED DROUGHT, BIORETENTION AREAS MAY REQUIRE WATERING.
 6. TREES AND SHRUBS SHOULD BE INSPECTED TWICE PER YEAR TO EVALUATE HEALTH.

RAIN GARDEN 'B' NOTES AND DETAILS

SCALE: AS NOTED



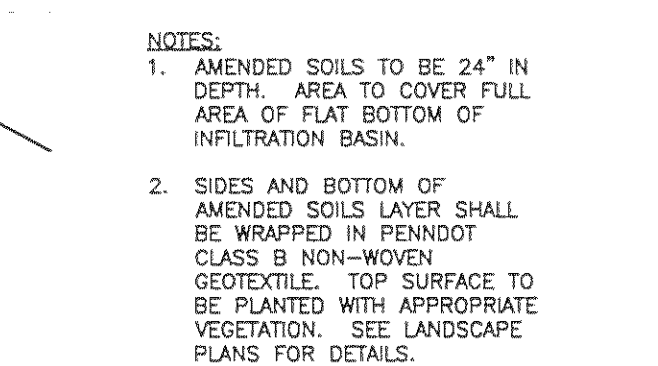
- NOTES:
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 2. SIDES AND BOTTOM OF AMENDED SOILS LAYER SHALL BE WRAPPED IN PENNDOT CLASS B NON-WOVEN GEOTEXTILE. TOP SURFACE TO BE PLANTED WITH APPROPRIATE VEGETATION. SEE LANDSCAPE PLANS FOR DETAILS.
 3. SEE UNDERDRAIN PLANS VIEW AND SECTION VIEW FOR INFORMATION SURROUNDING CONSTRUCTION OF UNDERDRAINS WITHIN AMENDED SOILS LAYER.



SCALE: 1" = 20'

OUTLET PIPE PROFILE

NOT TO SCALE



- NOTES:
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RAIN GARDEN A MAINTENANCE NOTES

PROPERLY DESIGNED AND INSTALLED BIORETENTION AREAS REQUIRE SOME REGULAR MAINTENANCE.

1. WHILE VEGETATION IS BEING ESTABLISHED, PRUNING AND WEEDING MAY BE REQUIRED.
2. DETRITUS MAY ALSO NEED TO BE REMOVED EVERY YEAR. PERENNIAL PLANTINGS MAY BE CUT DOWN AT THE END OF THE GROWING SEASON.
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4. BIORETENTION AREAS SHOULD BE INSPECTED AT LEAST TWO TIMES PER YEAR FOR SEDIMENT BUILDUP, EROSION, VEGETATIVE CONDITIONS, ETC.
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 3. SEE UNDERDRAIN PLANS VIEW AND SECTION VIEW FOR INFORMATION SURROUNDING CONSTRUCTION OF UNDERDRAINS WITHIN AMENDED SOILS LAYER.

RAIN GARDEN 'A' NOTES AND DETAILS

SCALE: AS NOTED

SUBSURFACE INFILTRATION BED CONSTRUCTION SEQUENCE

1. DUE TO THE NATURE OF CONSTRUCTION SITES, SUBSURFACE INFILTRATION SHOULD BE INSTALLED AT A TIME AS DIRECTED IN THE CONSTRUCTION SEQUENCE.
2. INSTALL AND MAINTAIN ADEQUATE EROSION AND SEDIMENT CONTROL MEASURES (AS PER THE PENNSYLVANIA EROSION AND SEDIMENTATION CONTROL PROGRAM MANUAL) DURING CONSTRUCTION.
3. THE EXISTING SUBGRADE UNDER THE BED AREAS SHOULD NOT BE COMPACTED OR SUBJECT TO EXCESSIVE CONSTRUCTION EQUIPMENT TRAFFIC PRIOR TO GEOTEXTILE AND STONE BED PLACEMENT.
4. WHERE EROSION OF SUBGRADE HAS CAUSED ACCUMULATION OF FINE MATERIALS AND/OR SURFACE FLOODING, THIS MATERIAL SHOULD BE REMOVED WITH LIGHT EQUIPMENT AND THE UNDERLYING SOILS SCARIFIED TO A MINIMUM DEPTH OF 6 INCHES WITH A YORK RAKE (OR EQUIVALENT) AND LIGHT TRACTOR. ALL FINE GRADING SHOULD BE DONE BY HAND. ALL BED BOTTOMS SHOULD BE AT LEVEL GRADE.
5. EARTHEN BERMS (IF USED) BETWEEN INFILTRATION BEDS SHOULD BE LEFT IN PLACE DURING EXCAVATION. THESE BERMS DO NOT REQUIRE COMPACTION IF PROVEN STABLE DURING CONSTRUCTION.
6. INSTALL UPSTREAM AND DOWNSTREAM CONTROL STRUCTURES, CLEANOUTS, PERFORATED PIPING, AND ALL OTHER NECESSARY STORMWATER STRUCTURES.
7. GEOTEXTILE AND BED AGGREGATE SHOULD BE PLACED IMMEDIATELY AFTER APPROVAL OF SUBGRADE PREPARATION AND INSTALLATION OF STRUCTURES. GEOTEXTILE SHOULD BE PLACED IN ACCORDANCE WITH MANUFACTURER'S STANDARDS AND RECOMMENDATIONS. ADJACENT STRIPS OF GEOTEXTILE SHOULD OVERLAP A MINIMUM OF 16 INCHES. IT SHOULD ALSO BE SECURED AT LEAST 4 FEET OUTSIDE OF BED IN ORDER TO PREVENT ANY RUNOFF OR SEDIMENT FROM ENTERING THE STORAGE BED. THIS EDGE STRIP SHOULD REMAIN IN PLACE UNTIL ALL BARE SOILS CONTIGUOUS TO BEDS ARE STABILIZED AND VEGETATED. AS THE SITE IS FULLY STABILIZED, EXCESS GEOTEXTILE ALONG BED EDGES CAN BE CUT BACK TO THE EDGE OF THE BED.
8. CLEAN-WASHED, UNIFORMLY GRADED AGGREGATE SHOULD BE PLACED IN THE BED IN MAXIMUM 8-INCH LIFTS. EACH LAYER SHOULD BE LIGHTLY COMPACTED, WITH CONSTRUCTION EQUIPMENT KEPT OFF THE BED BOTTOM AS MUCH AS POSSIBLE.
9. APPROVED SOIL MEDIA SHOULD BE PLACED OVER INFILTRATION BED IN MAXIMUM 6-INCH LIFTS.
10. SEED AND STABILIZE TOPSOIL.
11. DO NOT REMOVE INLET PROTECTION OR OTHER EROSION AND SEDIMENT CONTROL MEASURES UNTIL SITE IS FULLY STABILIZED.

SUBSURFACE INFILTRATION BED MAINTENANCE NOTES

SUBSURFACE INFILTRATION IS GENERALLY LESS MAINTENANCE INTENSIVE THAN OTHER PRACTICES OF ITS TYPE. GENERALLY SPEAKING, VEGETATION ASSOCIATED WITH SUBSURFACE INFILTRATION PRACTICES IS LESS SUBSTANTIAL THAN PRACTICES SUCH AS RECHARGE GARDENS AND VEGETATED SWALES AND THEREFORE REQUIRES LESS MAINTENANCE. MAINTENANCE ACTIVITIES REQUIRED FOR THE SUBSURFACE BED ARE SIMILAR TO THOSE OF ANY INFILTRATION SYSTEM AND FOCUS ON REGULAR SEDIMENT AND DEBRIS REMOVAL. THE FOLLOWING REPRESENTS THE RECOMMENDED MAINTENANCE EFFORTS.

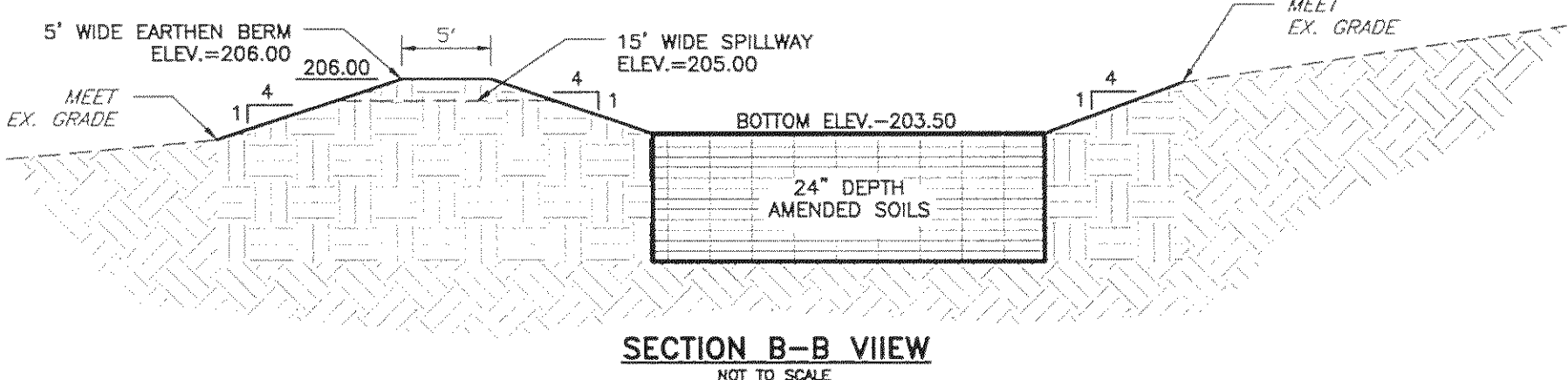
1. ALL CATCH BASINS AND INLETS SHOULD BE INSPECTED AND CLEANED AT LEAST 2 TIMES PER YEAR.
2. THE OVERLYING VEGETATION OF SUBSURFACE INFILTRATION FEATURES SHOULD BE MAINTAINED IN GOOD CONDITION, AND ANY BARE SPOTS REVEGETATED AS SOON AS POSSIBLE.
3. VEHICULAR ACCESS ON SUBSURFACE INFILTRATION AREAS SHOULD BE PROHIBITED, AND CARE SHOULD BE TAKEN TO AVOID EXCESSIVE COMPACTION BY MOWERS. IF ACCESS IS NEEDED, USE OF PERMEABLE, TURF REINFORCEMENT SHOULD BE CONSIDERED.

SUBSURFACE INFILTRATION BED NOTES AND DETAILS

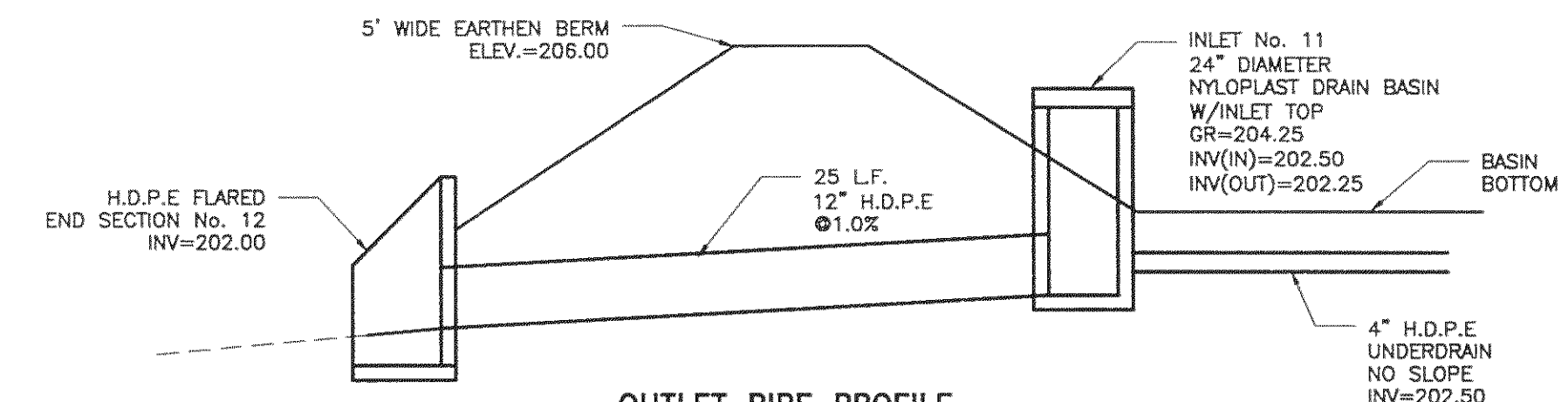
SCALE: 1" = 20'

RAIN GARDEN A CONSTRUCTION SEQUENCE

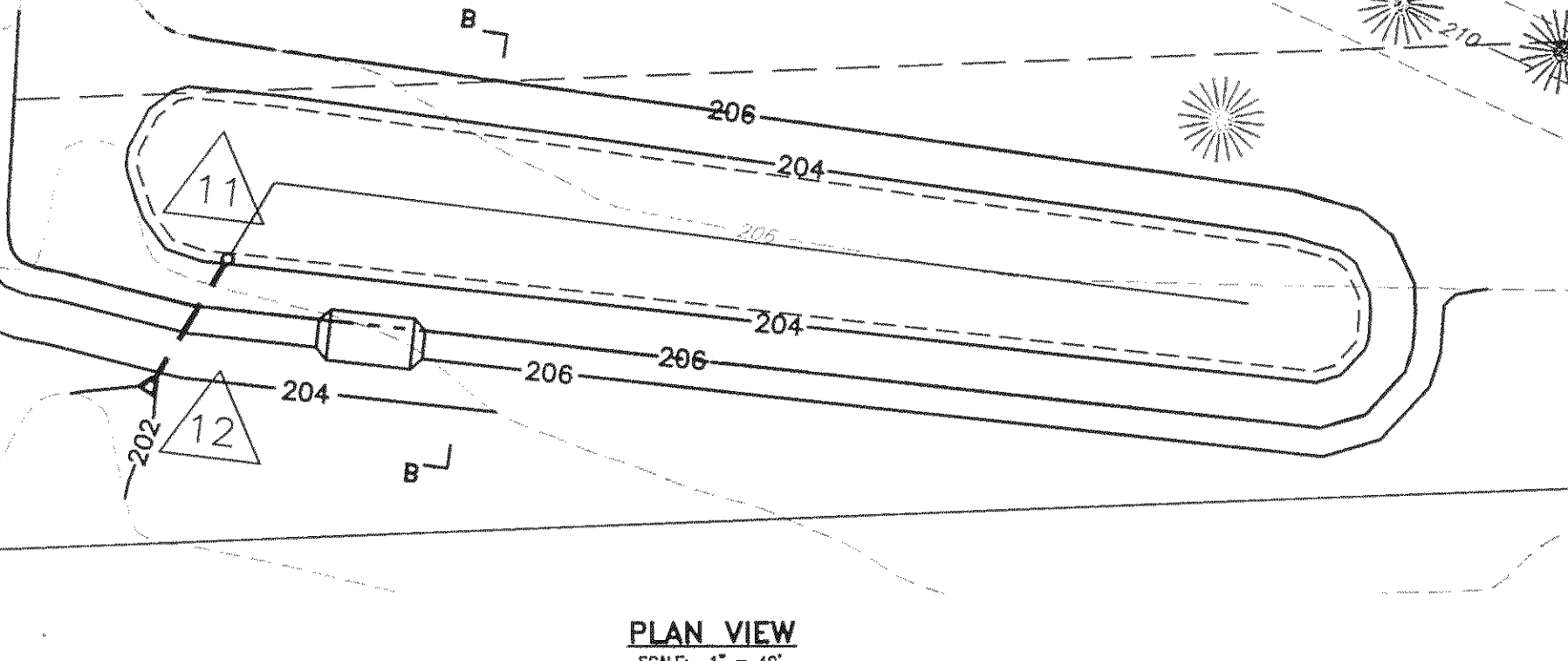
1. INSTALL TEMPORARY SEDIMENT CONTROL BMPs AS SHOWN ON THE PLANS.
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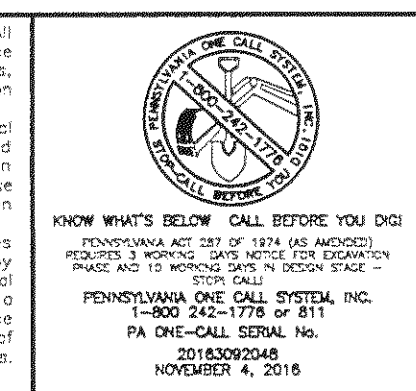
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SCALE: 1" = 40'



REVISIONS:		DATE	DESCRIPTION	DATE	DESCRIPTION
		05/10/17	REFLECTS BID ALTERNATES		
		06/05/17	GRADING REVISIONS FOR APPENDUM		
		06/22/17	REVISIONS FOR CONSTRUCTION		

PROJECT: MEMORIAL PARK EXPANSION
LOWER MAKEFIELD TOWNSHIP
BUCKS COUNTY, PENNSYLVANIA

APPLICANT: LOWER MAKEFIELD TOWNSHIP
1100 EDGEWOOD ROAD
YARDLEY, PA 19067

UNIFIED CONSTRUCTION
Boucher & James, Inc.
JUN 26 2017
Title

JOB NO.: 1677058
TITLE: POST CONSTRUCTION STORMWATER MANAGEMENT PLAN NOTES AND DETAILS (1 OF 2)

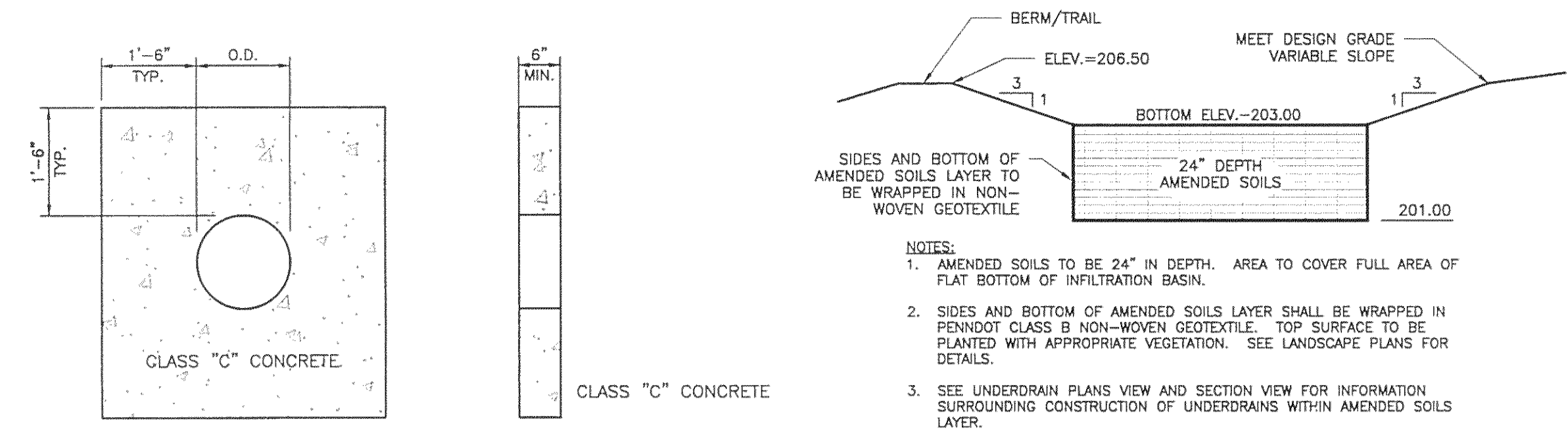
DESIGNED BY: R.D.J.
CHECKED BY: M.W.E.
SCALE: AS NOTED
PLAN STATUS: PRELIMINARY/FINAL

Boucher & James, Inc.
CONSULTING ENGINEERS
DOYLESTOWN • STROUDSBURG • LEHIGH VALLEY
CORPORATE HEADQUARTERS: 1456 FERRY RD, BUILDING 500, DOYLESTOWN, PA. 18901
VOICE: (215) 345-9400 FAX: (215) 345-9401

SHEET 14 OF 25
DATE: APRIL 14, 2017

MEMORIAL PARK EXPANSION - BID SET

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INFILTRATION BASIN AMENDED SOILS SECTION VIEW
NOT TO SCALE

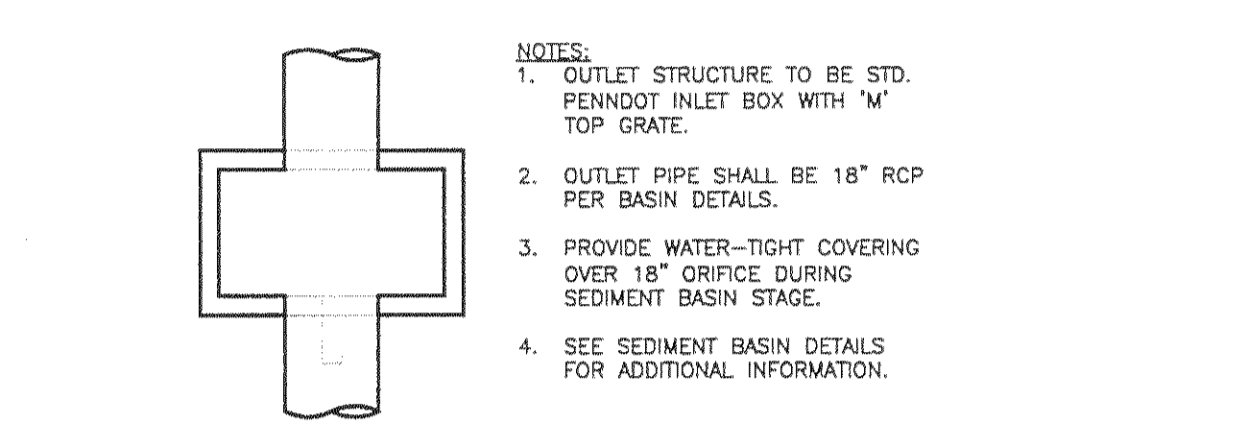
NOTES:

- AMENDED SOILS TO BE 24" IN DEPTH. AREA TO COVER FULL AREA OF FLAT BOTTOM OF INFILTRATION BASIN.
- SIDES AND BOTTOM OF AMENDED SOILS LAYER SHALL BE WRAPPED IN PENNDOT CLASS B NON-WOVEN GEOTEXTILE. TOP SURFACE TO BE PLANTED WITH APPROPRIATE VEGETATION. SEE LANDSCAPE PLANS FOR DETAILS.
- SEE UNDERDRAIN PLAN VIEW AND SECTION VIEW FOR INFORMATION SURROUNDING CONSTRUCTION OF UNDERDRAINS WITHIN AMENDED SOILS LAYER.

ELEVATION **END VIEW**

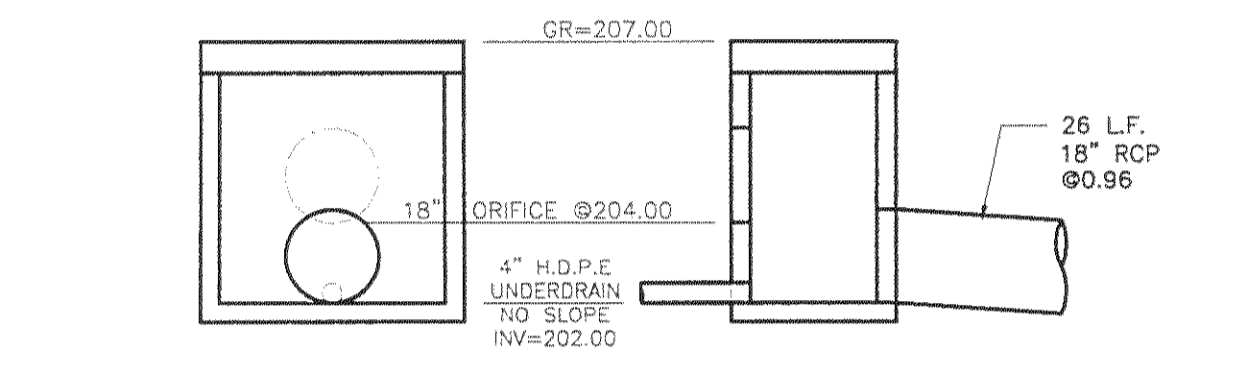
JOINT TO BE CAULKED WITH BITUMINOUS MASTIC AT TIME OF INSTALLATION.

ANTI-SEEP COLLAR
NOT TO SCALE



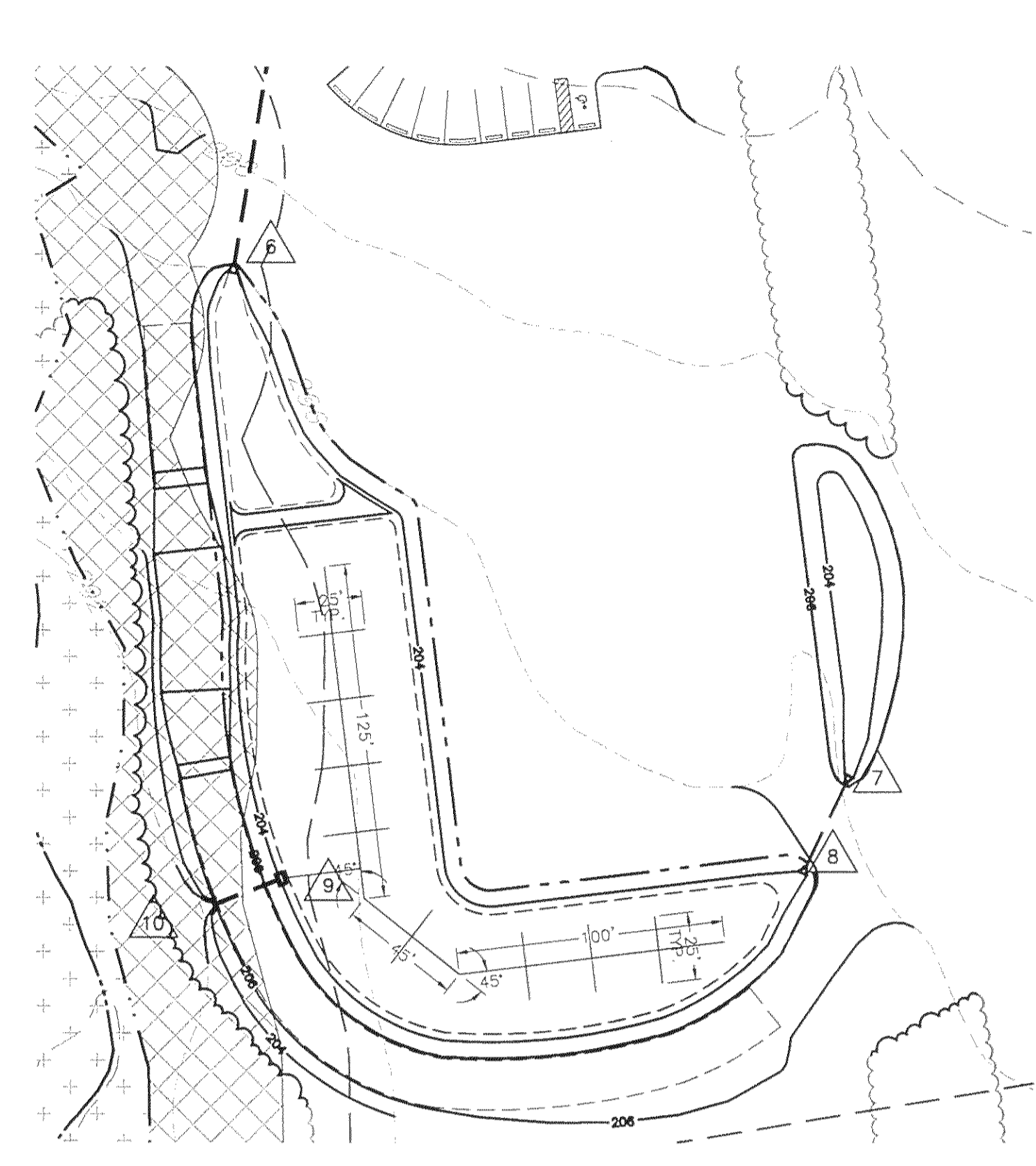
NOTES:

- OUTLET STRUCTURE TO BE STD. PENNDOT INLET BOX WITH 'M' TOP GRATE.
- OUTLET PIPE SHALL BE 18" RCP PER BASIN DETAILS.
- PROVIDE WATER-TIGHT COVERING OVER 18" ORIFICE DURING SEDIMENT BASIN STAGE.
- SEE SEDIMENT BASIN DETAILS FOR ADDITIONAL INFORMATION.



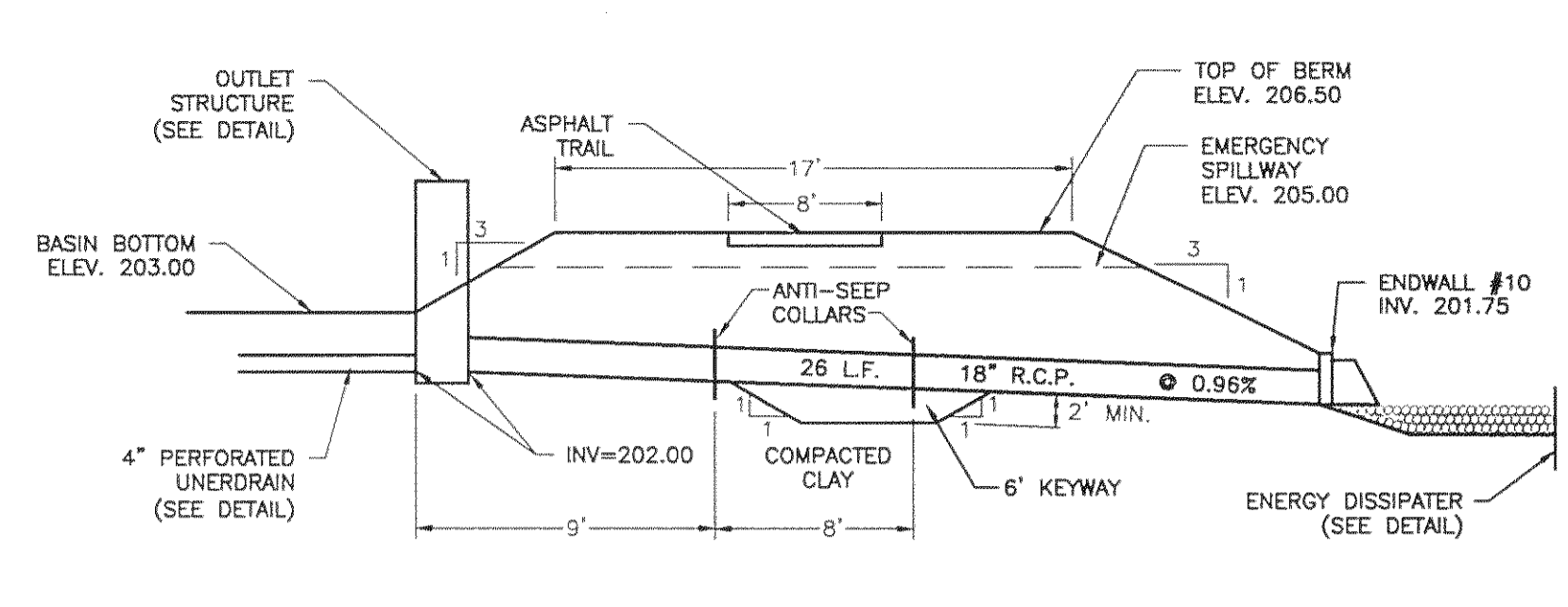
INFILTRATION BASIN UNDERDRAINS - SECTION VIEW
NOT TO SCALE

INFILTRATION BASIN OUTLET STRUCTURE
NOT TO SCALE



UNDERDRAIN NOTES

- LONGITUDINAL PIPE LENGTHS TO BE CENTERED WITHIN BOTTOM OF BASIN TO THE BEST DEGREE POSSIBLE.
- ALL PIPES SHALL BE 4" PERFORATED H.D.P.E. AT LEVEL SLOPE. CAP ENDS.
- 4" PERFORATED H.D.P.E. PIPE SHALL EXTEND FROM UNDERDRAIN SYSTEM (EXACT LOCATION TO BE DETERMINED IN THE FIELD) TO OUTLET STRUCTURE. PIPE LOCATION AS SHOWN MAY BE ADJUSTED IN FIELD DUE TO PIPE LAYOUT ISSUES.



OUTLET PIPE				
PIPE SIZE	PIPE LENGTH	INV. IN	INV. OUT	SLOPE (%)
18 HDPE	26 L.F.	202.00	201.75	0.96

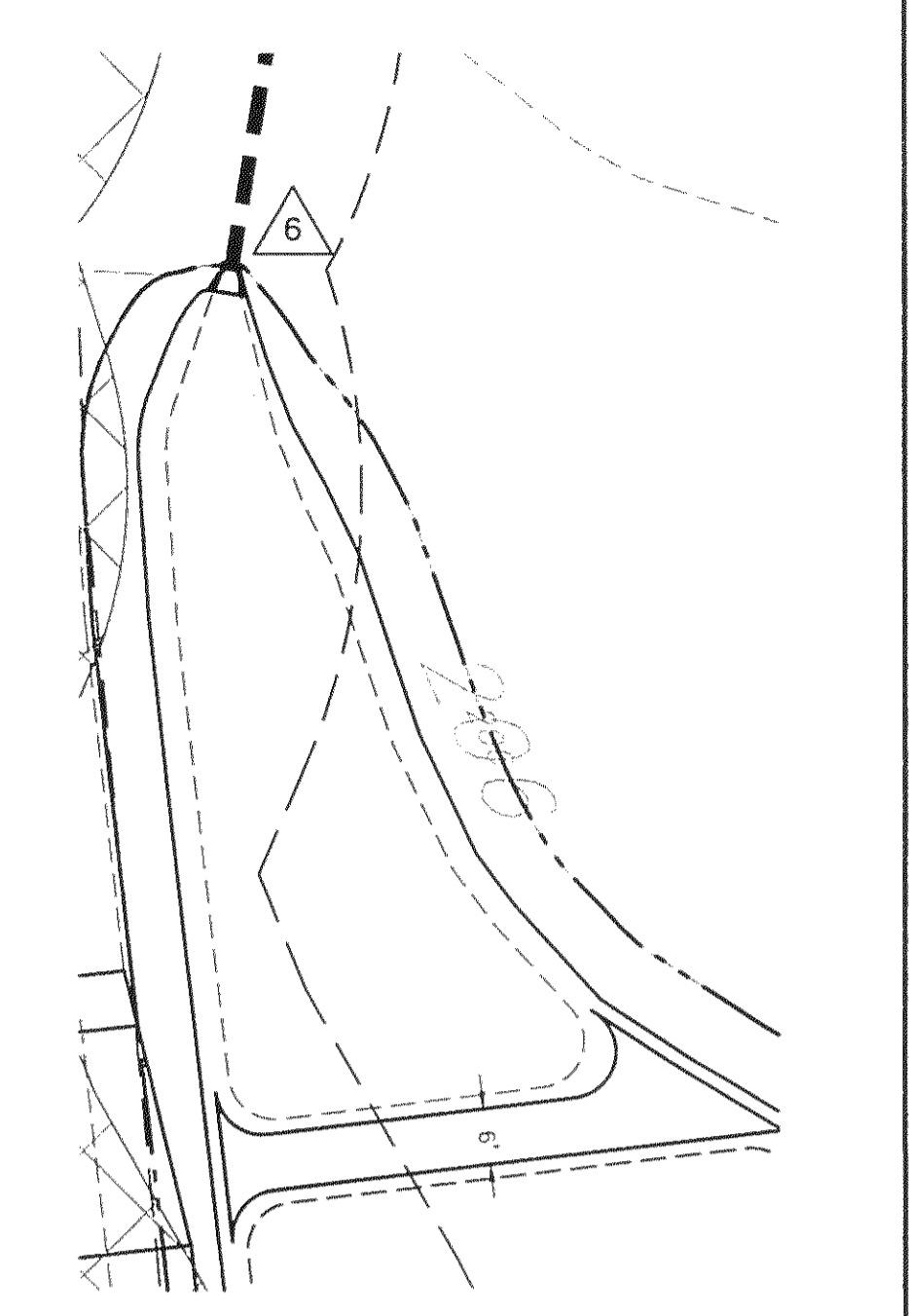
BASIN STRUCTURE				
BERM ELEV.	SPILLWAY ELEV.	100 YR. W.S. ELEV.	BASIN BOTTOM ELEV.	TEMP. BASIN BOTTOM
206.50	205.00	204.97	203.00	203.00

INFILTRATION BASIN MAINTENANCE NOTES

- PROPERLY DESIGNED AND INSTALLED BIORETENTION AREAS REQUIRE SOME REGULAR MAINTENANCE.
- CATCH BASINS AND INLETS (UPGRADIENT OF INFILTRATION BASIN) SHOULD BE INSPECTED AND CLEANED AT LEAST TWO TIMES PER YEAR AND AFTER RUNOFF EVENTS.
 - THE VEGETATION ALONG THE SURFACE OF THE INFILTRATION BASIN SHOULD BE MAINTAINED IN GOOD CONDITION, AND ANY BARE SPOTS REVEGETATED AS SOON AS POSSIBLE.
 - VEHICLES SHOULD NOT BE PARKED OR DRIVEN ON AN INFILTRATION BASIN, AND CARE SHOULD BE TAKEN TO AVOID EXCESSIVE COMPACTION BY MOWERS.
 - INSPECT THE BASIN AFTER RUNOFF EVENTS AND MAKE SURE THAT RUNOFF DRAINS DOWN WITHIN 72 HOURS. MOSQUITOS SHOULD NOT BE A PROBLEM IF THE WATER DRAINS IN 72 HOURS. MOSQUITOS REQUIRE A CONSIDERABLY LONG BREEDING PERIOD WITH RELATIVELY STATIC WATER LEVELS.
 - ALSO INSPECT FOR ACCUMULATION OF SEDIMENT, DAMAGE TO OUTLET CONTROL STRUCTURES, EROSION CONTROL MEASURES, SIGNS OF WATER CONTAMINATION/SPILLS, AND SLOPE STABILITY IN THE BERMS.
 - MOW ONLY AS APPROPRIATE FOR VEGETATIVE COVER SPECIES.
 - REMOVE ACCUMULATED SEDIMENT FROM BASIN AS REQUIRED. RESTORE ORIGINAL CROSS SECTION AND INFILTRATION RATE. PROPERLY DISPOSE OF SEDIMENT.

INFILTRATION BASIN CONSTRUCTION SEQUENCE

- PROTECT INFILTRATION BASIN AREA FROM COMPACTION PRIOR TO INSTALLATION.
- DUE TO THE NATURE OF CONSTRUCTION SITES, THE INFILTRATION BASIN SHOULD BE INSTALLED AT A TIME AS DIRECTED IN THE CONSTRUCTION SEQUENCE. AFTER INSTALLATION, PREVENT SEDIMENT-LADEN WATER FROM ENTERING INLETS AND PIPES.
- INSTALL AND MAINTAIN PROPER EROSION AND SEDIMENT CONTROL MEASURES DURING CONSTRUCTION.
- IF NECESSARY, EXCAVATE INFILTRATION BASIN BOTTOM TO AN UNCOMPACTED SUBGRADE FREE FROM ROCKS AND DEBRIS. DO NOT COMPACT SUBGRADE.
- INSTALL OUTLET CONTROL STRUCTURES.
- SEED AND STABILIZE TOPSOIL. (VEGETATE IF APPROPRIATE WITH NATIVE PLANTINGS.) SEE LANDSCAPE PLANS FOR INFORMATION OF VEGETATION.
- DO NOT REMOVE INLET PROTECTION OR OTHER EROSION AND SEDIMENT CONTROL MEASURES UNTIL SITE IS FULLY STABILIZED.



FOREBAY DETAIL
SCALE: 1" = 20"

FOREBAY NOTES

- FOREBAY SIDE SLOPES AT 3:1, SIMILAR TO BASIN (SEE BASIN DETAIL).
- SEPARATING BERM BETWEEN FOREBAY AND MAIN BASIN TO BE 6" WIDE EARTHEN BERM AT ELEVATION 203.50.
- SEE LANDSCAPE PLAN AND DETAILS FOR INFORMATION REGARDING VEGETATION WITHIN THE FOREBAY AND INFILTRATION BASIN.

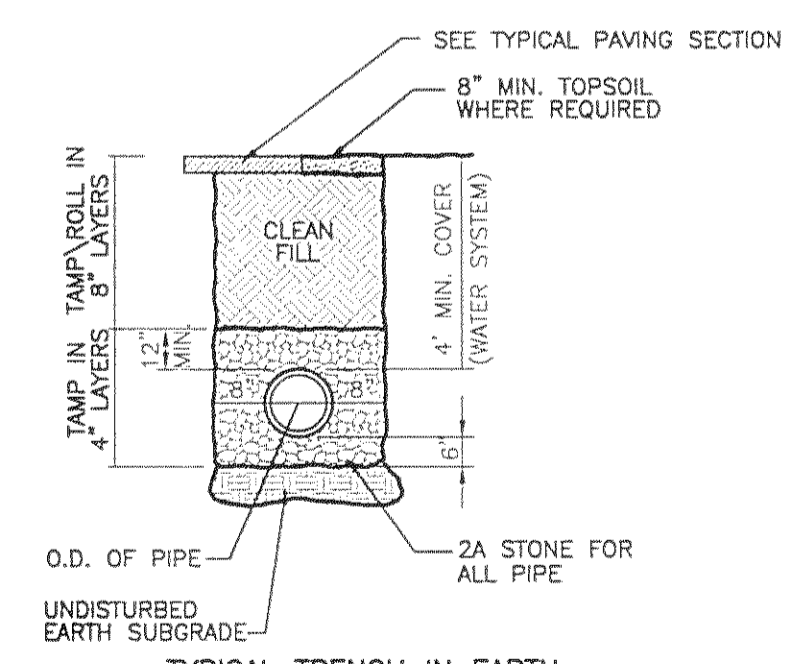
CROSS SECTION AT INFILTRATION BASIN BERM
NOT TO SCALE

ADDITIONAL DETAIL NOTES

- NOTE: THE FOLLOWING LIST OF DETAILS IS OFFERED FROM PENNDOT PUBLICATION 72M, OR OTHER SOURCES. THESE DETAILS SHALL BE CONSIDERED AS A PART OF THE APPROVED PLAN SET AS IF THEY WERE LOCATED ON THIS SHEET. HARD-COPIES OF THESE DETAILS CAN BE PROVIDED TO CONTRACTORS UPON REQUEST MADE TO THE TOWNSHIP ENGINEER.
- 18" CONCRETE D-W ENDWALL AT ENDWALL #10, PER RC-45, PENNDOT PUBLICATION 72M, JUNE 1, 2010.
 - PENNDOT 'M' TOP INLET AT INFILTRATION BASIN/SEDIMENT BASIN OUTLET STRUCTURE #9, PER RC-45M, PENNDOT PUBLICATION 72M, JUNE 1, 2010.
 - PENNDOT STANDARD INLET BOX AT INFILTRATION BASIN/SEDIMENT BASIN OUTLET STRUCTURE #9, PER RC-46M, PENNDOT PUBLICATION 72M, JUNE 1, 2010.

DETAILS REFERENCED BY NOTE

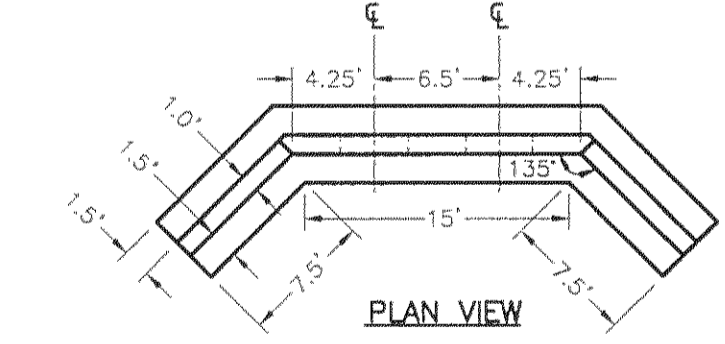
THE FOLLOWING PENNDOT STANDARD DETAILS (PER PUBLICATION 72M, LATEST VERSION) ARE HEREBY ACKNOWLEDGED TO BE A PART OF THIS DESIGN PLAN SETS AS IF THEY WERE PRESENT ON THE DETAIL SHEETS. CONTRACTOR SHALL BE REQUIRED TO PROVIDE CONSTRUCTION OF ALL REFERENCED, NOTED, OR SPECIFIED ADVENTS AS LISTED BELOW. CONTRACTOR MAY REQUEST A HARD-COPY OF REFERENCED DETAIL BY SENDING WRITTEN REQUEST TO LOWER MAKEFIELD TOWNSHIP.



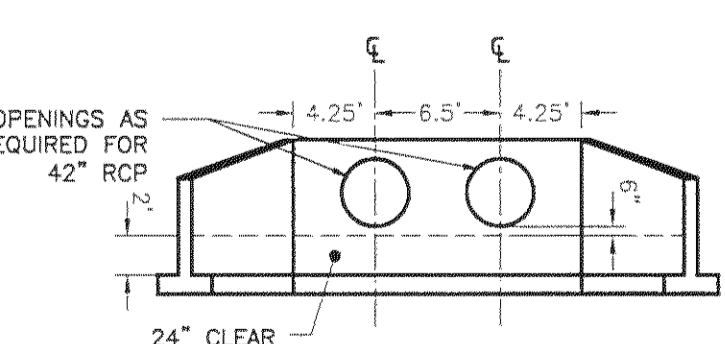
TYPICAL TRENCH IN EARTH

- NOTES:**
- ALL BACKFILL MATERIAL IS SUBJECT TO TOWNSHIP AND/OR AUTHORITY APPROVAL.
 - CLEAN FILL: CLEAN DRY EARTH WITH A MAXIMUM STONE SIZE OF 4 INCHES

TYPICAL TRENCH DETAIL
NOT TO SCALE



PLAN VIEW



ELEVATION VIEW

SPECIAL ENDWALL/HEADWALL - FOR TWIN 42" PIPES
NOT TO SCALE

NOTES:

- THE FOLLOWING DETAIL IS OFFERED FOR BOTH ENDWALLS/HEADWALLS AT THE ROAD CROSSING. THE DETAIL IS CONCEPTUAL ONLY, PROVIDED FOR BUDGETARY CONSIDERATIONS. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AN ENGINEERED DESIGN FOR REVIEW AND APPROVAL OF LOWER MAKEFIELD TOWNSHIP BEFORE THE ENDWALLS/HEADWALLS ARE ORDERED.
- ENDWALLS/HEADWALLS ARE TO BE CONSTRUCTED OF REINFORCED CLASS AA (PER PENNDOT) CONCRETE.
- OPENINGS TO BE PROVIDED (AS NECESSARY) FOR TWO (2) 42" DIAMETER RCP PIPES. DIMENSIONS PROVIDED TO CENTER OF EACH PIPE OPENING FROM EDGE OF THE WALL FACE.
- HEIGHT OF EACH WALL TO BE DETERMINED FROM FINAL ENGINEERED DESIGN. DIMENSIONS OFFERED FOR REFERENCE PURPOSES ONLY.

2499CGS
APPROX. DRAIN AREA = 194.69 SQ IN
APPROX. WEIGHT WITH FRAME = 124.00 LBS

NYLOPLAST 24" STANDARD GRATE ASSEMBLY - TYPE B

	A	B	C	D	E
RAIN GARDEN 'A'	206.00	205.00	15	205.43	4
INFILTRATION BASIN	206.50	205.00	50	205.40	20

EMERGENCY SPILLWAY
NOT TO SCALE

N.A.G. GEOTEXTILE, SC250 EXTEND TO TOE OF DISTURBED SLOPE OUTSIDE BMP, AND TO TOE OF SLOPE INSIDE BMP.

NYLOPLAST 24" DRAIN BASIN: 2824AG_X

NYLOPLAST 24" DRAIN BASIN QUICK SPEC INSTALLATION DETAIL

GRATE OPTIONS	LOAD RATING	PART #	DRAWING #
FEEDSTRAN	MEETS H-10	2499CGP	7001-110-218
STANDARD	MEETS H-20	2499CGS	7001-110-217
SOLID COVER	MEETS H-20	2499CGC	7001-110-218
DCME	N/A	2499CGD	7001-110-219
DROP IN GRATE	LIGHT DUTY	2431D	7001-110-075

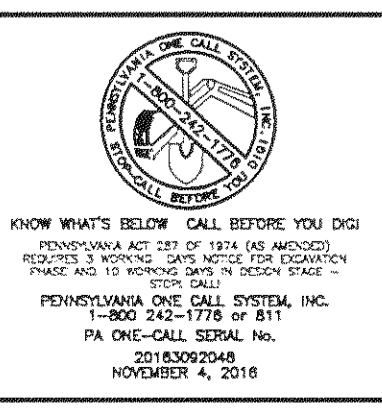
NYLOPLAST
24 IN DRAIN BASIN QUICK SPEC INSTALLATION DETAIL

NYLOPLAST
3130 VERONA AVE
BUFORD, GA 30518
PHN (770) 932-2443
FAX (770) 932-2440
www.nyloplast-usa.com

Written dimensions shall have priority over scaled dimensions. All dimensions, elevations, locations, and conditions, shall be verified by the contractor prior to construction, and the Owner and Boucher & James, Inc. shall be notified of any discrepancies with the information shown on drawings.

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REVISIONS:		DATE	DESCRIPTION
05/10/17	REFLECTS BID ALTERNATES		
06/05/17	GRADING REVISIONS FOR APPENDUM		
06/22/17	REVISIONS FOR CONSTRUCTION		

PROJECT: MEMORIAL PARK EXPANSION
LOWER MAKEFIELD TOWNSHIP
BUCKS COUNTY, PENNSYLVANIA

APPLICANT: LOWER MAKEFIELD TOWNSHIP
1100 EDGEWOOD ROAD
YARDLEY, PA 19067

ISSUED FOR CONSTRUCTION
Boucher & James, Inc.
JUN 2 6 2017

POST CONSTRUCTION STORMWATER MANAGEMENT PLAN NOTES AND DETAILS (2 OF 2)

Boucher & James, Inc.
CONSULTING ENGINEERS
DOYLESTOWN • STROUDSBURG • LEHIGH VALLEY
CORPORATE HEADQUARTERS: 1456 FERRY RD, BUILDING 500, DOYLESTOWN, PA 18901
VOICE: (215) 345-9400 FAX: (215) 345-9401

MEMORIAL PARK EXPANSION - BID SET

SHEET 15 OF 25
APRIL 14, 2017

MAJOR SOIL PROPERTIES AND ESTIMATED DEGREE OF LIMITATION THAT INFLUENCE USE OF SOILS FOR CONSTRUCTION/DEVELOPMENT

MAP SYMBOL	SOIL	HYDROLOGIC SOIL GROUP	DEPTH TO		CONSTRUCTION MATERIALS				SOILS FEATURES THAT AFFECT:		
			HMT (FT)	BEDROCK (IN)	ROAD FILL	SAND	GRAVEL	TOPSOIL	SHALLOW EXCAVATIONS	LOCAL ROADS AND STREETS	EMBANKMENT, DIKES, AND LEVEES.
Bo	BOWMANVILLE-KNAUERS SILT LOAMS	C/D	0	>72"	POOR	POOR	POOR	POOR	VERY LIMITED; PONDING, FLOODING DUSTY, DEPTH TO SATURATED ZONE UNSTABLE EXCAVATION WALLS	VERY LIMITED; PONDING, DEPTH TO SATURATED ZONE, FROST ACTION, FLOODING, LOW STRENGTH	VERY LIMITED; DEPTH TO SATURATION ZONE, DUSTY, PIPING, SEEPAGE
CbA	CHALFONT SILT LOAM 0 TO 3 PERCENT SLOPES	D	12"	21"	POOR	POOR	POOR	FAIR	VERY LIMITED; DEPTH TO SATURATED ZONE, DUSTY, UNSTABLE EXCAVATION WALLS	VERY LIMITED; LOW STRENGTH, DEPTH TO SATURATED ZONE, FROST ACTION, DEPTH TO THIN CEMENTED PAN	VERY LIMITED; DEPTH TO SATURATION ZONE, DUSTY, PIPING
CbB	CHALFONT SILT LOAM 3 TO 8 PERCENT SLOPES	D	12"	21"	POOR	POOR	POOR	FAIR	VERY LIMITED; DEPTH TO SATURATED ZONE, DUSTY, UNSTABLE EXCAVATION WALLS	VERY LIMITED; LOW STRENGTH, DEPTH TO SATURATED ZONE, FROST ACTION, DEPTH TO THIN CEMENTED PAN	VERY LIMITED; DEPTH TO SATURATION ZONE, DUSTY, PIPING
DdA	DOYLESTOWN SILT LOAM 0 TO 3 PERCENT SLOPES	C/D	3"	22.5"	POOR	POOR	POOR	POOR	VERY LIMITED; DEPTH TO SATURATED ZONE, DUSTY, UNSTABLE EXCAVATION WALLS	VERY LIMITED; LOW STRENGTH, DEPTH TO SATURATED ZONE, FROST ACTION, DEPTH TO THIN CEMENTED PAN	VERY LIMITED; DEPTH TO SATURATION ZONE, DUSTY
DuA	DUNCANNON SILT LOAM 3 TO 8 PERCENT SLOPES	B	>72"	>72"	POOR	POOR	POOR	FAIR	VERY LIMITED; DUSTY, UNSTABLE EXCAVATION WALLS	FROST ACTION, LOW STRENGTH	VERY LIMITED; PIPING, DUSTY
LkA	LAWRENCEVILLE SILT LOAM 0 TO 3 PERCENT SLOPES	C	27"	25"	POOR	POOR	POOR	FAIR	VERY LIMITED; DEPTH TO SATURATED ZONE, DUSTY, UNSTABLE EXCAVATION WALLS	VERY LIMITED; LOW STRENGTH, DEPTH TO SATURATED ZONE, FROST ACTION, DEPTH TO THIN CEMENTED PAN	SOMEWHAT LIMITED; DEPTH TO SATURATION ZONE, DUSTY
LkB	LAWRENCEVILLE SILT LOAM 3 TO 8 PERCENT SLOPES	C	27"	25"	POOR	POOR	POOR	FAIR	VERY LIMITED; DEPTH TO SATURATED ZONE, DUSTY, UNSTABLE EXCAVATION WALLS	VERY LIMITED; LOW STRENGTH, DEPTH TO SATURATED ZONE, FROST ACTION, DEPTH TO THIN CEMENTED PAN	SOMEWHAT LIMITED; DEPTH TO SATURATION ZONE, DUSTY

SOURCE: WEB SOILS SURVEY, ACCESSED SEPTEMBER 26, 2016

- LIMITATION RESOLUTIONS:
- A PUMPED WATER FILTER BAG MAY BE REQUIRED DURING CONSTRUCTION TO REMOVE ACCUMULATED GROUNDWATER FROM AREAS OF EXCAVATION.
 - SHORING MAY BE REQUIRED WHERE EXCAVATIONS ARE DEEP, TO PROTECT AGAINST UNSTABLE EXCAVATION WALLS.



LEGEND

	ADJOINER LINE
	EXISTING BOUNDARY
	EXISTING BUILDINGS
	EXISTING CONTOUR
	EXISTING INDEX CONTOUR
	EXISTING CURVILINEAR
	EXISTING DRIVEWAY
	EXISTING ELECTRIC AND STRUCTURES
	EXISTING EDGE OF PAVEMENT
	EXISTING CHAINLINK FENCE
	EXISTING FIRE HYDRANT
	EXISTING FLAGPOLE
	EXISTING IRON PIN/PIPE
	EXISTING LIGHTS
	EXISTING MONUMENT
	EXISTING LEGAL RIGHT-OF-WAY
	EXISTING SANITARY SEWER AND MANHOLE
	EXISTING SHRUB
	EXISTING SIGN
	EXISTING SITE BENCHMARK LOCATION
	EXISTING STORM SEWER AND STRUCTURES
	EXISTING STREAM
	EXISTING SIDEWALK
	EXISTING TREELINE
	EXISTING TREELINE TO BE REMOVED
	EXISTING UTILITY POLE AND GUY WIRE
	EXISTING WATER LINE AND STRUCTURES
	EXISTING WATER SERVICE AND STRUCTURE
	EXISTING WETLANDS
	EXISTING DECIDUOUS TREE
	EXISTING CONIFEROUS TREE
	EXISTING SOILS BOUNDARY AND DESIGNATOR
	PROPOSED EDGE OF PAVEMENT
	PROPOSED WALKING TRAIL
	FUTURE WALKING TRAIL
	PROPOSED CONTOUR
	PROPOSED INDEX CONTOUR
	PROPOSED STORM SEWER AND STRUCTURE
	PROPOSED TREELINE
	PROPOSED ROCK FILTER
	PROPOSED DRAINAGE AREA TO TEMPORARY CONTROLS
	PROPOSED LIMITS OF DISTURBANCE (15.96 ACRES)
	PROPOSED 12" COMPOST FILTER SOCK
	PROPOSED TREE PROTECTION FENCE
	PROPOSED INLET PROTECTION
	PROPOSED EROSION CONTROL BLANKET
	PROPOSED NPDES BOUNDARY (64.08 ACRES)
	PROPOSED RIP-RAP
	PROPOSED TOPSOIL STOCKPILE

THE SITE IS WITHIN THE CORE CREEK WATER SHED (CHAPTER 93 DESIGNATION CWF, MF). AN UNNAMED TRIBUTARY RUNS THROUGH THE CENTER OF THE PROPERTY.

ADDITIONAL AREAS OF DISTURBANCE HAVE BEEN PROVIDED SURROUNDING THE PERIMETER OF THE OPEN AREAS AT THE EASTERN END OF THE SITE. THESE FORMER FARM FIELDS ARE PROPOSED TO BE GRADED SMOOTH AND PROVIDED WITH A VEGETATED STABILIZATION. NO SPOT ELEVATIONS OR CONTOURS ARE PROVIDED FOR THIS WORK AS THE EXTENT OF SOILS PLACEMENT MAY VARY DUE TO EARTHWORK ACTIVITIES.

DISPOSAL/RECYCLING OF CONSTRUCTION MATERIAL

ALL CONSTRUCTION WASTES ARE TO BE RECYCLED TO THE GREATEST EXTENT PRACTICAL AND DISPOSED OF IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE, AND LOCAL MUNICIPALITY REQUIREMENTS AND GUIDELINES.

CLEAN FILL IS DEFINED AS: UNCONTAMINATED, NON-WATER SOLUBLE, NON-DECOMPOSABLE, INERT, SOLID MATERIAL. THE TERM INCLUDES SOIL, ROCK, STONE, DREDGED MATERIAL, USED ASPHALT, AND BRICK, BLOCK OR CONCRETE FROM CONSTRUCTION AND DEMOLITION ACTIVITIES THAT IS SEPARATE FROM OTHER WASTE AND IS RECOGNIZABLE AS SUCH. THE TERM DOES NOT INCLUDE MATERIALS PLACED IN OR ON THE WATERS OF THE COMMONWEALTH UNLESS OTHERWISE AUTHORIZED. (THE TERM "USED ASPHALT" DOES NOT INCLUDE MILLED ASPHALT OR ASPHALT THAT HAS BEEN PROCESSED FOR RE-USE.)

CLEAN FILL AFFECTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE: FILL MATERIALS AFFECTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE STILL QUALIFIES AS CLEAN FILL PROVIDED THE TESTING REVEALS THAT THE FILL MATERIAL CONTAINS CONCENTRATIONS OF REGULATED SUBSTANCES THAT ARE BELOW THE RESIDENTIAL LIMITS IN TABLES FP-1A AND FP-1B FOUND IN THE DEP'S POLICY "MANAGEMENT OF FILL". ANY PERSON PLACING CLEAN FILL THAT HAS BEEN AFFECTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE MUST USE FORM FP-001 TO CERTIFY THE ORIGIN OF THE FILL MATERIAL AND THE RESULTS OF THE ANALYTICAL TESTING TO QUALIFY THE MATERIAL AS CLEAN FILL. FORM FP-001 MUST BE RETAINED BY THE OWNER OF THE PROPERTY RECEIVING THE FILL.

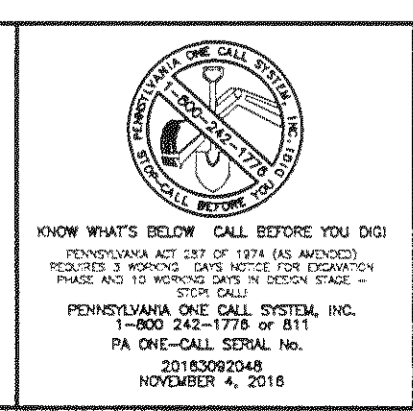
ENVIRONMENTAL DUE DILIGENCE: INVESTIGATIVE TECHNIQUES, INCLUDING, BUT NOT LIMITED TO, VISUAL PROPERTY INSPECTIONS, ELECTRONIC DATA BASE SEARCHES, REVIEW OF PROPERTY OWNERSHIP, REVIEW OF PROPERTY USE HISTORY, SANBORN MAPS, ENVIRONMENTAL QUESTIONNAIRES, TRANSACTION SCREENS, ANALYTICAL TESTING, ENVIRONMENTAL ASSESSMENTS OR AUDITS. ANALYTICAL TESTING IS NOT A REQUIRED PART OF DUE DILIGENCE UNLESS VISUAL INSPECTION AND/OR REVIEW OF THE PAST LAND USE OF THE PROPERTY INDICATES THAT THE FILL MAY HAVE BEEN SUBJECT TO A SPILL OR RELEASE OF REGULATED SUBSTANCE. IF THE FILL MAY BE AFFECTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE, IT MUST BE TESTED TO DETERMINE IF IT QUALIFIES AS CLEAN FILL. TESTING SHOULD BE PERFORMED IN ACCORDANCE WITH APPENDIX A OF THE DEP'S POLICY "MANAGEMENT OF FILL". FILL MATERIAL THAT DOES NOT QUALIFY AS CLEAN FILL IS REGULATED FILL. REGULATED FILL IS WASTE AND MUST BE MANAGED IN ACCORDANCE WITH THE DEP'S MUNICIPAL OR RESIDUAL WASTE REGULATIONS BASED ON 25 PA. CODE CHAPTERS 287 RESIDUAL WASTE MANAGEMENT OR 271 MUNICIPAL WASTE MANAGEMENT, WHICHEVER IS APPLICABLE.

ISSUED FOR CONSTRUCTION
Boucher & James, Inc.
JUN 2 6 2017

Written dimensions shall have priority over scaled dimensions. All dimensions, elevations, locations, and conditions shall be verified by the Contractor prior to construction, and the Owner and Boucher & James, Inc. shall be notified of any discrepancies with the information shown on drawings.

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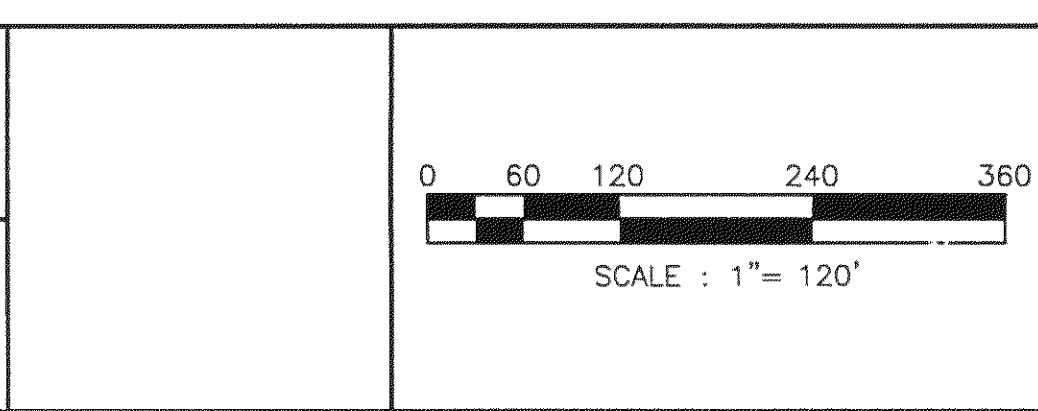
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DATE	DESCRIPTION	DATE	DESCRIPTION
05/10/17	REFLECTS BID ALTERNATES		
06/05/17	GRADING REVISIONS FOR ADDENDUM		
06/22/17	REVISIONS FOR CONSTRUCTION		

PROJECT: **MEMORIAL PARK EXPANSION**
LOWER MAKEFIELD TOWNSHIP
BUCKS COUNTY, PENNSYLVANIA

APPLICANT: **LOWER MAKEFIELD TOWNSHIP**
1100 EDGEWOOD ROAD
YARDLEY, PA 19067



JOB NO.: 1677058	TITLE: OVERALL EROSION AND SEDIMENT CONTROL PLAN
DRAWN BY: R.D.J.	Boucher & James, Inc. CONSULTING ENGINEERS DOYLESTOWN • STROUDSBURG • LEHIGH VALLEY CORPORATE HEADQUARTERS: 1456 FERRY RD, BUILDING 500, DOYLESTOWN, PA. 18901 VOICE: (215) 345-9400 FAX: (215) 345-9401 www.bjengeers.com
CHECKED BY: M.W.E.	
SCALE: 1" = 120'	SHEET: 16 OF 25
PLAN STATUS: PRELIMINARY/FINAL	PROJECT NAME: MEMORIAL PARK EXPANSION - BID SET
	DATE: APRIL 14, 2017



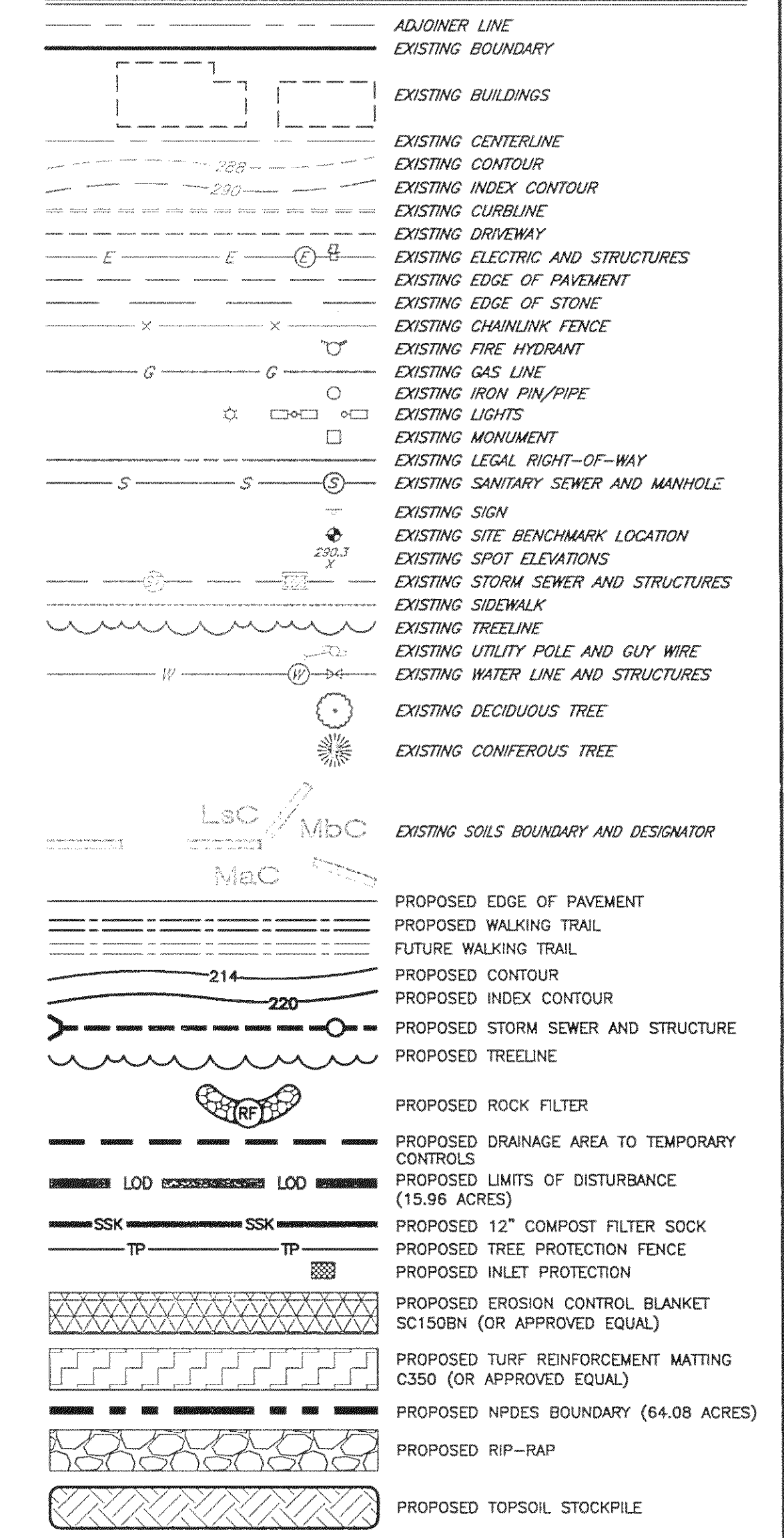
GENERAL CONSTRUCTION NOTES

1. AT LEAST SEVEN (7) DAYS BEFORE STARTING ANY EARTH DISTURBANCE ACTIVITY, THE O/R/P SHALL NOTIFY ALL CONTRACTORS INVOLVED IN THAT ACTIVITY, THE LANDOWNER, ALL APPROPRIATE MUNICIPAL OFFICIALS, THE EROSION AND SEDIMENT CONTROL PLAN DESIGNER AND THE BUCKS COUNTY CONSERVATION DISTRICT TO A PRE-CONSTRUCTION MEETING. ALSO, AT LEAST THREE (3) DAYS BEFORE STARTING ANY EARTH DISTURBANCE ACTIVITY, ALL CONTRACTORS INVOLVED IN THAT ACTIVITY SHALL NOTIFY THE PENNSYLVANIA ONE-CALL SYSTEM INC. AT 1-800-242-1776 TO DETERMINE ANY UNDERGROUND UTILITIES LOCATIONS.
2. PLANS IDENTIFY THREE (3) SEPARATE AREAS OF CONSTRUCTION: CONSTRUCTION OF THE STORMWATER MANAGEMENT IMPROVEMENTS IN THE SOUTHWEST CORNER OF THE SITE, CONSTRUCTION OF THE WEST PARKING NORTH OF THE BASKETBALL COURTS, AND THE MAJOR PARK IMPROVEMENTS EAST OF THE ENTRANCE DRIVE. EACH OF THESE AREAS ARE CONSIDERED AS A PART OF THE MAIN SITE IMPROVEMENTS PROJECT. HOWEVER, EACH CAN BE CONSTRUCTED INDEPENDENTLY OF THE OTHERS. SEPARATE CONSTRUCTION SEQUENCES HAVE BEEN PROVIDED FOR EACH.

CONSTRUCTION SEQUENCE: S.W. CORNER STORMWATER MANAGEMENT BMPs

1. INSTALL CONSTRUCTION ENTRANCE FOR S.W. CORNER STORMWATER MANAGEMENT BMPs OFF OF WOODSIDE ROAD.
2. INSTALL TREE PROTECTION FENCING.
3. INSTALL 12" COMPOST FILTER SOCKS AS SHOWN.
4. STRIP AND STOCKPILE TOPSOIL EXCAVATED FROM AREAS TO BE DISTURBED.
5. **CONSTRUCT RAIN GARDEN "A", INCLUDING AMENDED SOILS, OUTLET PIPE, SPILLWAY AND PLANTINGS. CONSTRUCTION OF RAIN GARDEN SHALL BE CONSIDERED AS A CRITICAL STAGE OF BMP INSTALLATION FOR WHICH THE LICENSED ENGINEER RESPONSIBLE FOR THE DESIGN OF THE PLANS SHALL BE ON SITE DURING CONSTRUCTION.**
6. **CONSTRUCT VEGETATED SWALE. STABILIZE IMMEDIATELY. CONSTRUCTION OF THE VEGETATED SWALE WITHIN THE MEADOW AREA SHALL BE CONSIDERED AS A CRITICAL STAGE OF BMP INSTALLATION FOR WHICH THE LICENSED ENGINEER RESPONSIBLE FOR THE DESIGN OF THE PLANS SHALL BE ON SITE DURING CONSTRUCTION.**
7. PROVIDE TOPSOIL, SEED AND MULCH OVER DISTURBED AREAS.
8. AFTER FINAL SITE STABILIZATION HAS BEEN ACHIEVED, ALL OF THE REMAINING TEMPORARY EROSION AND SEDIMENT CONTROLS MUST BE REMOVED AND THE SITE MUST BE PERMANENTLY STABILIZED. THE STANDARD FOR A STABILIZED, EROSION RESISTANT, PERENNIAL VEGETATIVE COVER WILL BE A UNIFORM COVERAGE OR DENSITY OF 70% ACROSS THE DISTURBED AREA. AREAS DISTURBED DURING THE REMOVAL OF THE TEMPORARY CONTROLS MUST BE STABILIZED IMMEDIATELY.

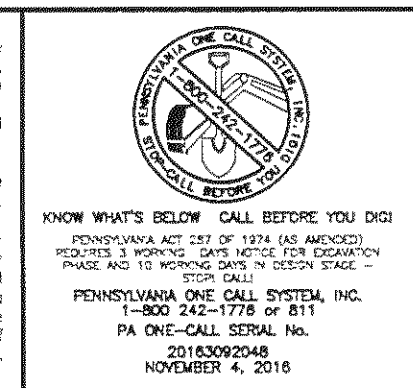
LEGEND



THE SITE IS WITHIN THE CORE CREEK WATERSHED (CHAPTER 93 DESIGNATION CWF, MF). AN UNNAMED TRIBUTARY RUNS THROUGH THE CENTER PORTION OF THE PROPERTY.

ISSUED FOR CONSTRUCTION
Boucher & James, Inc.
JUN 26 2017

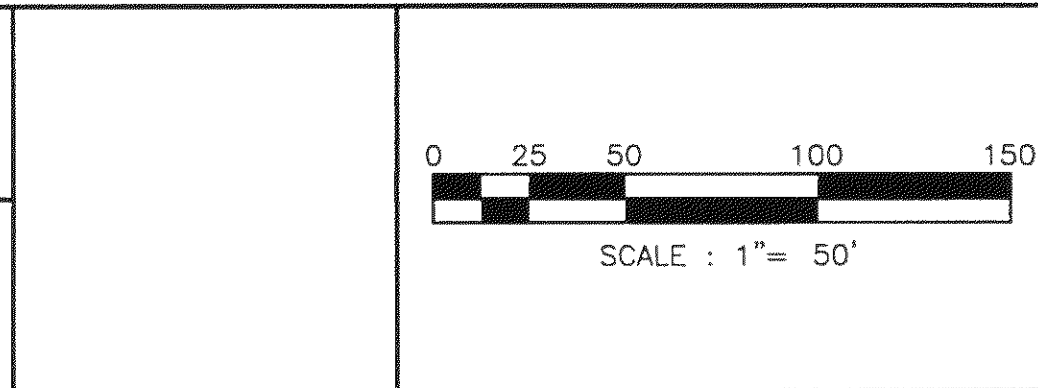
Written dimensions shall have priority over scaled dimensions. All dimensions, elevations, locations, and conditions, shall be verified by the Contractor prior to construction, and the Owner and Boucher & James, Inc. shall be notified of any discrepancies with the information shown on drawings.
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REVISIONS:		DATE	DESCRIPTION
05/10/17	REFLECTS BID ALTERNATES		
06/05/17	GRADING REVISIONS FOR ADDENDUM		
06/22/17	REVISIONS FOR CONSTRUCTION		

PROJECT: MEMORIAL PARK EXPANSION
LOWER MAKEFIELD TOWNSHIP
BUCKS COUNTY, PENNSYLVANIA

APPLICANT: LOWER MAKEFIELD TOWNSHIP
1100 EDGEWOOD ROAD
YARDLEY, PA 19067



JOB NO.:	1677058	TITLE:	EROSION AND SEDIMENT CONTROL PLAN - WEST
DRAWN BY:	R.D.J.	CHECKED BY:	M.W.E.
SCALE:	1" = 50'	PROJECT NAME:	MEMORIAL PARK EXPANSION - BID SET
PLAN STATUS:	PRELIMINARY/FINAL	DATE:	APRIL 14, 2017

Boucher & James, Inc.
CONSULTING ENGINEERS
DOYLESTOWN • STROUDSBURG • LEHIGH VALLEY
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SHEET 17 of 25

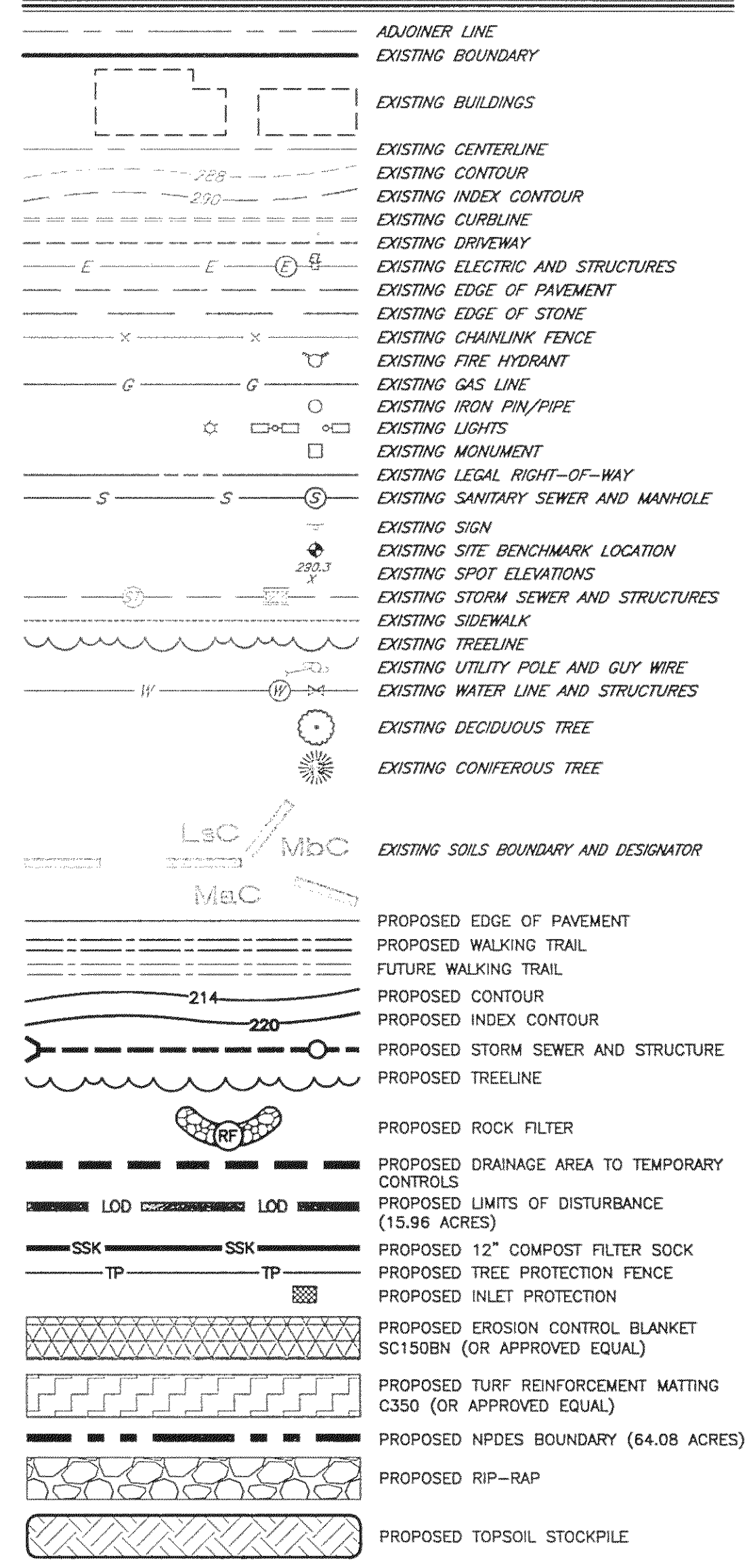
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CONSTRUCTION SEQUENCE: MAJOR PARK IMPROVEMENTS

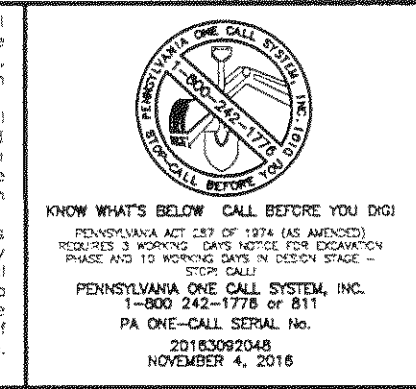
- INSTALL CONSTRUCTION ENTRANCE OFF OF WOODSIDE ROAD. NO CONSTRUCTION VEHICLES SHALL BE PERMITTED TO ACCESS THIS AREA OF CONSTRUCTION FROM THE EXISTING PARK DRIVES.
- INSTALL TREE PROTECTION FENCING.
- CLEAR AND GRUB EXISTING TREES TO BE REMOVED.
- PROVIDE CONSTRUCTION FENCING AROUND PERIMETERS OF SUBSURFACE INFILTRATION BED AND RAIN GARDEN 'B' TO PREVENT VEHICULAR TRAFFIC FROM TRAVELING OVER THESE AREAS.
- INSTALL 12" COMPOST FILTER SOCKS PER PLAN.
- CONSTRUCT ROCK FILTER BERM WITHIN DRAINAGE CHANNEL BELOW PROPOSED ROAD CROSSING.
- STRIP AND STOCKPILE TOP SOIL FROM THE SEDIMENT BASIN AREA.
- CONSTRUCT TEMPORARY SEDIMENT BASIN, INCLUDING BERM (CONSTRUCTED WIDE FOR FUTURE TRAIL CONSTRUCTION), OUTLET PIPE AND RIPRAP APRON BELOW ENDWALL. PROVIDE 1" HOLES FOR DEWATERING PURPOSES (TO BE PLUGGED LATER). TEMPORARILY COVER MAIN ORIFICE. DO NOT CONSTRUCT AREA OF ADDITIONAL STORAGE AT THIS TIME.
- STRIP AND STOCKPILE TOP SOIL FROM ALL REMAINING PROPOSED DISTURBED AREAS.
- INSTALLED PUMP BYPASS SYSTEM AT ROAD CROSSING.
- CONSTRUCT PROPOSED TWIN PIPES AT ROAD CROSSING, INCLUDING RIPRAP APRON BELOW ENDWALL. ADJUST COMPOST FILTER SOCK PLACEMENT AS NEEDED.
- INSTALL STORM DRAINAGE PIPES AND STRUCTURES FROM ENDWALL No. 6 TO INLET No. 2.
- CONSTRUCT RAIN GARDEN 'B' INCLUDING AMENDED SOILS TO DESIGN DEPTH. CONSTRUCTION OF RAIN GARDEN SHALL BE CONSIDERED AS A CRITICAL STAGE OF BMP INSTALLATION FOR WHICH THE LICENSED ENGINEER RESPONSIBLE FOR THE DESIGN OF THE PLANS SHALL BE ON SITE DURING CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING CERTIFICATION THAT EXCAVATED SOILS WILL BE DEPOSITED AT AN APPROVED SITE.
- VEGETATION FOR RAIN GARDEN 'B' SHOULD NOT BE INSTALLED AT THIS TIME. INSTALL INLET PROTECTION IMMEDIATELY UNTIL TOPSOIL, SEEDING & MULCHING OF DISTURBED AREAS HAS YIELDED 70% COVERAGE.
- CONSTRUCT SUBSURFACE INFILTRATION BED, INCLUDING PIPES AND AMENDED SOILS TO DESIGN DEPTH. CONSTRUCTION OF INFILTRATION BED SHALL BE CONSIDERED AS A CRITICAL STAGE OF BMP INSTALLATION FOR WHICH THE LICENSED ENGINEER RESPONSIBLE FOR THE DESIGN OF THE PLANS SHALL BE ON SITE DURING CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING CERTIFICATION THAT EXCAVATED SOILS WILL BE DEPOSITED AT AN APPROVED SITE.
- INSTALL INLET PROTECTION IMMEDIATELY UNTIL TOPSOIL, SEEDING & MULCHING OF DISTURBED AREAS HAS YIELDED 70% COVERAGE.
- ROUGH GRADE AREAS FOR SITE IMPROVEMENTS.
- INSTALL PIPE REPLACEMENT AT NORTHERN TRAIL CROSSING.
- INSTALL STONE BASE COURSE AND ASPHALT BASE COURSE FOR ALL PAVED AREAS. INSTALL STONE BASE COURSE FOR TRAIL.
- CONSTRUCT SUBSURFACE INFILTRATION BASIN, INCLUDING PIPE CONNECTION TO ADDITIONAL STORAGE AREA AND AMENDED SOILS TO DESIGN DEPTH. CONSTRUCTION OF INFILTRATION BASIN SHALL BE CONSIDERED AS A CRITICAL STAGE OF BMP INSTALLATION FOR WHICH THE LICENSED ENGINEER RESPONSIBLE FOR THE DESIGN OF THE PLANS SHALL BE ON SITE DURING CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING CERTIFICATION THAT EXCAVATED SOILS WILL BE DEPOSITED AT AN APPROVED SITE.
- INSTALL PROPOSED VEGETATION, INCLUDING WITHIN STORMWATER MANAGEMENT BMPs.
- TOPSOIL, SEED & MULCH ALL DISTURBED AREAS. REMOVE INLET PROTECTION ONCE ALL AREAS HAVE YIELDED 70% COVERAGE.
- PLACE ASPHALT WEARING COURSE.
- INSTALL ALL TRAFFIC CONTROL SIGNS AND STRIPING. STABILIZE ANY DISTURBED AREAS IMMEDIATELY.
- AFTER FINAL SITE STABILIZATION HAS BEEN ACHIEVED, ALL OF THE REMAINING TEMPORARY EROSION AND SEDIMENT CONTROLS MUST BE REMOVED AND THE SITE MUST BE PERMANENTLY STABILIZED. THE STANDARD FOR A STABILIZED, EROSION RESISTANT, PERENNIAL VEGETATIVE COVER WILL BE A UNIFORM COVERAGE OR DENSITY OF 70% ACROSS THE DISTURBED AREA. AREAS DISTURBED DURING THE REMOVAL OF THE TEMPORARY CONTROLS MUST BE STABILIZED IMMEDIATELY.

LEGEND



THE SITE IS WITHIN THE CORE CREEK WATERSHED (CHAPTER 93 DESIGNATION CWF, WF). AN UNNAMED TRIBUTARY RUNS THROUGH THE CENTER PORTION OF THE PROPERTY.

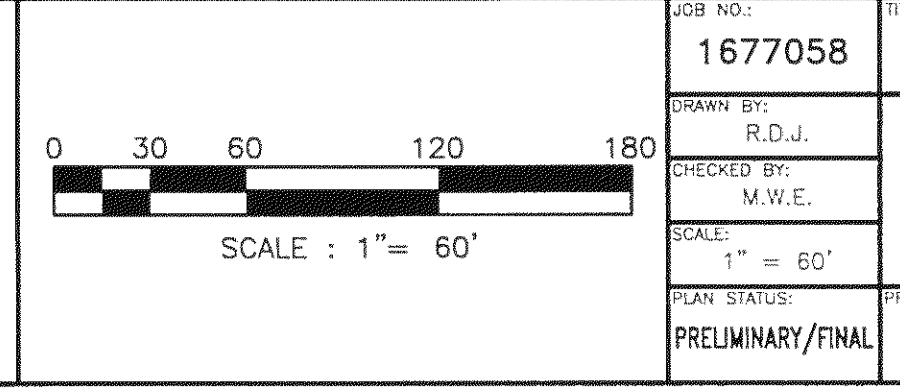
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DATE	DESCRIPTION	DATE	DESCRIPTION
05/10/17	REFLECTS BID ALTERNATES		
06/05/17	GRADING REVISIONS FOR ADDENDUM		
06/22/17	REVISIONS FOR CONSTRUCTION		

PROJECT : **MEMORIAL PARK EXPANSION**
 LOWER MAKEFIELD TOWNSHIP
 BUCKS COUNTY, PENNSYLVANIA

APPLICANT : **LOWER MAKEFIELD TOWNSHIP**
 1100 EDGEWOOD ROAD
 YARDLEY, PA 19067



ISSUED FOR CONSTRUCTION
JUN 26 2017

JOB NO.: 1677058
 TITLE: **EROSION AND SEDIMENT CONTROL PLAN - EAST**

DESIGN BY: R.D.J.
 CHECKED BY: M.W.E.
 SCALE: 1" = 60'

PLAN STATUS: PRELIMINARY/FINAL

Boucher & James, Inc.
 CONSULTING ENGINEERS
 DOYLESTOWN • STROUDSBURG • LEHIGH VALLEY
 CORPORATE HEADQUARTERS: 1456 FERRY RD., BUILDING 500, DOYLESTOWN, PA. 18901
 VOICE: (215) 345-9400 FAX: (215) 345-9401

SHEET 18 OF 25

DATE: APRIL 14, 2017

PROJECT NAME: **MEMORIAL PARK EXPANSION - BID SET**

WHEN DIMENSIONS SHALL HAVE PRIORITY OVER SCALED DIMENSIONS. ALL DIMENSIONS, ELEVATIONS, LOCATIONS, AND CONDITIONS, SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION, AND THE OWNER AND BOUNDER & JAMES, INC. SHALL BE NOTIFIED OF ANY DISCREPANCIES WITH THE INFORMATION SHOWN ON DRAWINGS.

ONLY THOSE PLANS INCORPORATING THE REDDED OR RED INK PROFESSIONAL SEAL SHALL BE CONSIDERED OFFICIAL AND RELIED UPON. ALL IDEAS, DESIGNS AND CONCEPTS PRESENTED HEREON WERE DEVELOPED FOR USE ON, AND IN CONNECTION WITH, THE SPECIFIC PROJECT BEING PREPARED FOR THE OWNER. THESE PLANS MAY NOT BE REPRODUCED OR COPIED WITHOUT THE EXPRESSED WRITTEN PERMISSION OF Boucher & James, Inc.

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NOVEMBER 4, 2016

EROSION AND SEDIMENT CONTROL PLAN NOI CHECKLIST NOTES

E&S PLAN PLANNING AND DESIGN 102.4(B)(4)
 THE FOLLOWING COMMENTS ARE CONSISTENT WITH THOSE INCLUDED WITHIN THE E&S NARRATIVE, WHERE APPLICABLE.

- E&S PLAN MINIMIZES EXTENT AND DURATION OF EARTH DISTURBANCES:** THE MAJORITY OF PROPOSED IMPROVEMENTS ARE KEPT TO THE EASTERN HALF OF THE PROJECT SITE WHILE THE AREA IS APPROXIMATELY 64 ACRES. DISTURBANCE IS ONLY PROPOSED OVER 12 ACRES, LESS THAN 20%. DISTURBANCE HAS BEEN LIMITED TO THE GREATEST EXTENT POSSIBLE. THE CONSTRUCTION DURATION WILL BE KEPT TO THE MINIMUM AS NEEDED TO CONSTRUCT THE PROPOSED IMPROVEMENTS.
- E&S PLAN MAXIMIZES PROTECTION OF EXISTING DRAINAGE FEATURES AND VEGETATION:** THERE IS A PROPOSED ROADWAY CROSSING OF THE EXISTING STREAM CHANNEL, REQUIRING THAT A CHAPTER 105 GP-7 BE OBTAINED FROM THE PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION (PADEP). A PROPOSED TRAIL CROSSING WILL BE SET AT A LOCATION WHERE AN EXISTING CULVERT IS PRESENT TO MINIMIZE DISTURBANCE OF THE STREAM CHANNEL. REMOVAL OF EXISTING VEGETATION WILL BE LIMITED TO THAT REQUIRED TO CONSTRUCT THE PROPOSED IMPROVEMENTS.
- E&S PLAN MINIMIZES SOIL COMPACTION:** SOIL COMPACTION WILL BE REQUIRED FOR ALL PROPOSED FEATURES. STORMWATER MANAGEMENT WILL BE PROVIDED BY INFILTRATION BMPs WITH MINIMAL COMPACTION IN THESE AREAS. THE LIMIT OF DISTURBANCE TO LESS THAN 20% OF THE PROPERTY WILL FURTHER MINIMIZE SOIL COMPACTION.
- E&S PLAN UTILIZES OTHER MEASURES OR CONTROLS THAT PREVENT OR MINIMIZE GENERATION OF INCREASED STORMWATER RUNOFF:** INCREASED RUNOFF FROM THE PROPOSED IMPROVEMENTS WILL BE MITIGATED THROUGH THE CONSTRUCTION OF VEGETATED SWALES, RAIN GARDENS, AND AN INFILTRATION BASIN, AS WELL AS MAINTAINING THE EXISTING STREAM CHANNEL, WETLANDS, AND WETLANDS BUFFER TO THE GREATEST EXTENT POSSIBLE.

RECYCLING OR DISPOSAL OF MATERIALS 102.4(B)(5)(x)
 THE FOLLOWING COMMENTS ARE CONSISTENT WITH THOSE INCLUDED WITHIN THE E&S NARRATIVE, WHERE APPLICABLE.

- ANTICIPATED CONSTRUCTION WASTES IDENTIFIED:** ASIDE FROM WASTES FROM CONSTRUCTION MATERIALS, THERE ARE NO OTHER ANTICIPATED PROJECT WASTES. PROCEDURES FOR DISPOSAL AND/OR RECYCLING OF CONSTRUCTION MATERIALS CAN BE FOUND ON THIS SHEET.
- INSTRUCTIONS PROVIDED FOR PROPER RECYCLING/DISPOSAL OF MATERIALS PROVIDED:** ASIDE FROM WASTES FROM CONSTRUCTION MATERIALS, THERE ARE NO OTHER ANTICIPATED PROJECT WASTES. PROCEDURES FOR DISPOSAL AND/OR RECYCLING OF CONSTRUCTION MATERIALS CAN BE FOUND ON THIS SHEET.

GEOLOGIC FORMATIONS/SOIL CONDITIONS THAT MAY HAVE THE POTENTIAL TO CAUSE POLLUTION 102.4(B)(5)(xii)
 THE FOLLOWING COMMENTS ARE CONSISTENT WITH THOSE INCLUDED WITHIN THE E&S NARRATIVE, WHERE APPLICABLE.

- GEOLOGIC/SOIL CONDITIONS ADDRESSED:** THERE ARE NO GEOLOGIC FORMATIONS THAT MAY HAVE THE POTENTIAL TO CAUSE POLLUTION; THEREFORE, NOTHING IS ADDRESSED HEREIN.

8. **WHERE POTENTIAL FOR POLLUTION IDENTIFIED, MEASURES PROVIDED TO AVOID/MINIMIZE/OR MITIGATE:** NO POTENTIAL FOR POLLUTION HAS BEEN IDENTIFIED. THEREFORE, NO MEASURES HAVE BEEN PROVIDED TO AVOID/MINIMIZE/ OR MITIGATE SAME.

POTENTIAL THERMAL IMPACTS TO SURFACE WATERS 102.4(B)(5)(xiii)
 THE FOLLOWING COMMENTS ARE CONSISTENT WITH THOSE INCLUDED WITHIN THE E&S NARRATIVE, WHERE APPLICABLE.

9. **POTENTIAL FOR THERMAL IMPACTS ADDRESSED:** THE CONSTRUCTION OF AN ASPHALT TRAIL AND PARKING AREAS, IN ADDITION WITH THE REDUCTION OF WOODED COVER, MAY CREATE THE POTENTIAL FOR A THERMAL IMPACT. THE DESIGN CALLS FOR THE CONSTRUCTION OF VEGETATED SWALES, RAIN GARDENS, AND AN INFILTRATION BASIN WITH FOREBAY. IN ADDITION, THE EXISTING WOODED AREAS AND WETLANDS WILL CONTINUE TO PROVIDE THEIR BENEFIT TOWARDS THERMAL IMPACT REDUCTION.

10. **WHERE POTENTIAL FOR THERMAL IMPACTS EXIST, MEASURES PROVIDED TO AVOID/MINIMIZE/OR MITIGATE:** THE CONSTRUCTION OF AN ASPHALT TRAIL AND PARKING AREAS, IN ADDITION WITH THE REDUCTION OF WOODED COVER, MAY CREATE THE POTENTIAL FOR A THERMAL IMPACT. THE DESIGN CALLS FOR THE CONSTRUCTION OF VEGETATED SWALES, RAIN GARDENS, AND AN INFILTRATION BASIN WITH FOREBAY. IN ADDITION, THE EXISTING WOODED AREAS AND WETLANDS WILL CONTINUE TO PROVIDE THEIR BENEFIT TOWARDS THERMAL IMPACT REDUCTION.

E&S PLAN DESIGNED AND IMPLEMENTED TO BE CONSISTENT WITH POSM PLAN 102.4(B)(5)(xiv)
 THE FOLLOWING COMMENTS ARE CONSISTENT WITH THOSE INCLUDED WITHIN THE E&S NARRATIVE, WHERE APPLICABLE.

- EXISTING/PROPOSED RIPARIAN BUFFERS OUTSIDE LIMITS OF DISTURBANCE:** THERE ARE NO EXISTING/PROPOSED RIPARIAN BUFFERS OUTSIDE THE LIMITS OF DISTURBANCE; SO NONE ARE SHOWN.
- PROPOSED INFILTRATION BMPs OUTSIDE PROPOSED GRADING AREAS:** THERE ARE NO PROPOSED INFILTRATION BMPs OUTSIDE PROPOSED GRADING AREAS; SO NONE ARE SHOWN.

EXISTING/PROPOSED RIPARIAN FOREST BUFFERS 102.4(B)(5)(xv)
 THE FOLLOWING COMMENTS ARE CONSISTENT WITH THOSE INCLUDED WITHIN THE E&S NARRATIVE, WHERE APPLICABLE.

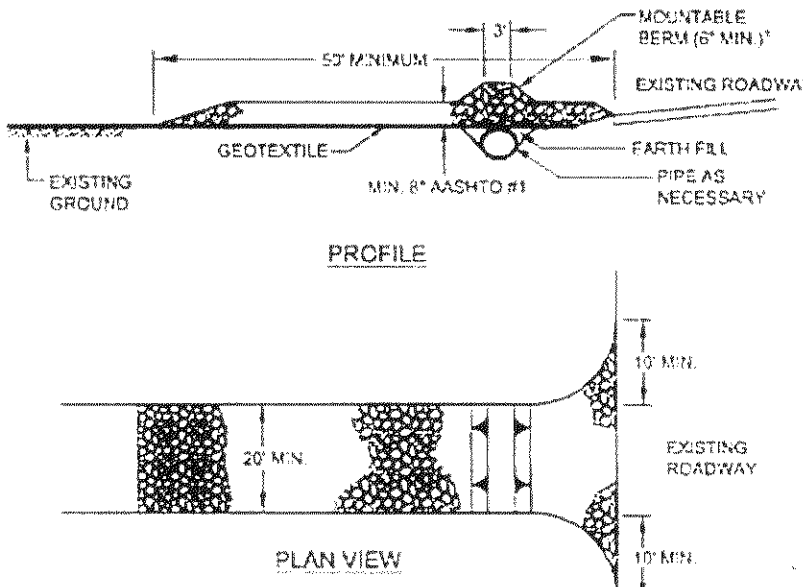
- EXISTING/PROPOSED RIPARIAN FOREST BUFFERS SHOWN ON THE PLAN MAP(S):** THERE ARE NO EXISTING/PROPOSED RIPARIAN FOREST BUFFERS ASSOCIATED WITH THIS PROJECT.

14. **EXISTING/PROPOSED RIPARIAN FOREST BUFFERS OUTSIDE OF LIMITS OF DISTURBANCE:** THERE ARE NO EXISTING/PROPOSED RIPARIAN FOREST BUFFERS ASSOCIATED WITH THIS PROJECT.

15. **PROTECTION PROVIDED FOR WETLANDS WITHIN RIPARIAN FOREST BUFFER:** WETLANDS LOCATED WITHIN THE PROJECT SCOPE DO NOT LIE WITHIN ESTABLISHED RIPARIAN FOREST BUFFERS. DISTURBANCE OF WETLANDS FOR THE TRAIL CROSSINGS WILL BE DONE IN ACCORDANCE WITH EXISTING REQUIREMENTS FROM THE PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION, AND ALL NECESSARY PERMITS WILL BE OBTAINED.

16. **RIPARIAN BUFFER OFFSET SHOWN, IF NECESSARY:** THERE ARE NO EXISTING/PROPOSED RIPARIAN FOREST BUFFERS ASSOCIATED WITH THIS PROJECT.

**STANDARD CONSTRUCTION DETAIL # 3-1
 Rock Construction Entrance**



Modified from Maryland DOE
 Remove topsoil prior to installation of rock construction entrance. Extend rock over full width of entrance.

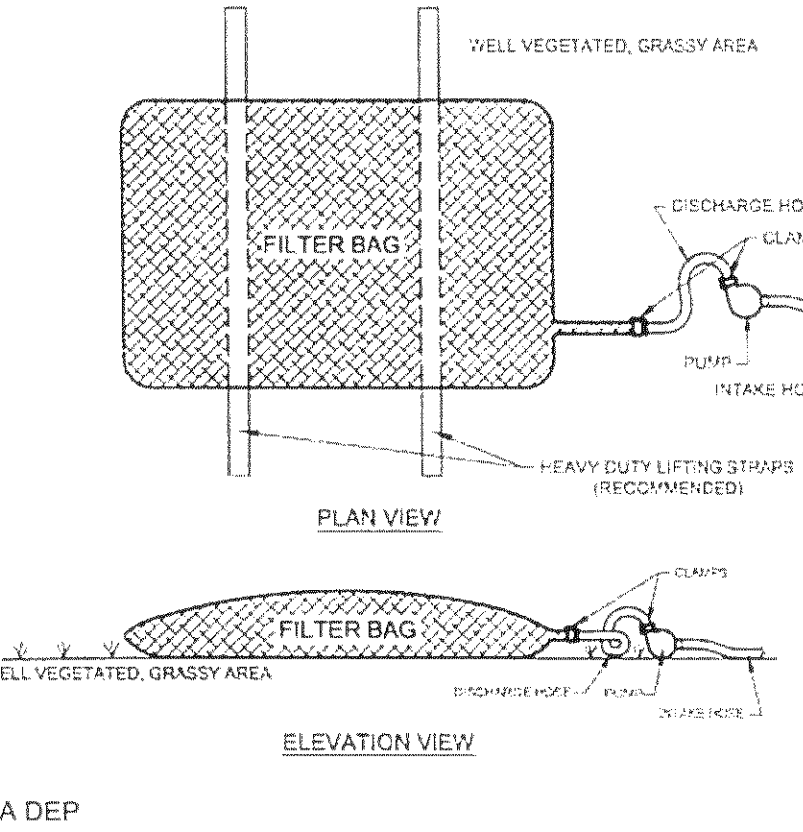
Runoff shall be diverted from roadway to a suitable sediment removal BMP prior to entering rock construction entrance.

Mountable berm shall be installed wherever optional culvert pipe is used and proper pipe cover as specified by manufacturer is not otherwise provided. Pipe shall be sized appropriately for size of ditch being crossed.

MAINTENANCE: Rock construction entrance thickness shall be constantly maintained to the specified dimensions by adding rock. A stockpile shall be maintained on site for this purpose. All sediment deposited on paved roadways shall be removed and returned to the construction site immediately. If excessive amounts of sediment are being deposited on roadway, extend length of rock construction entrance by 50 foot increments until condition is alleviated or install wash rack. Washing the roadway or sweeping the deposits into roadway ditches, sewers, culverts, or other drainage courses is not acceptable.

ROCK CONSTRUCTION ENTRANCE SHALL BE INSPECTED ONCE PER WEEK AND AFTER EACH RAINFALL EVENT. CONTRACTOR (RESPONSIBLE PERSON) SHALL MAINTAIN ADEQUATE MAINTENANCE RECORDS ON SITE, IDENTIFYING THE DATE AND TYPE OF EACH INSPECTION, AND THE NATURE OF ANY AND ALL REPAIRS, RESTORATIONS, OR REPLACEMENTS OF THIS BMP.

**STANDARD CONSTRUCTION DETAIL # 3-16
 Pumped Water Filter Bag**



Low volume filter bags shall be made from non-woven geotextile material sewn with high strength, double stitched "J" type seams. They shall be capable of trapping particles larger than 150 microns. High volume filter bags shall be made from woven geotextiles that meet the following standards:

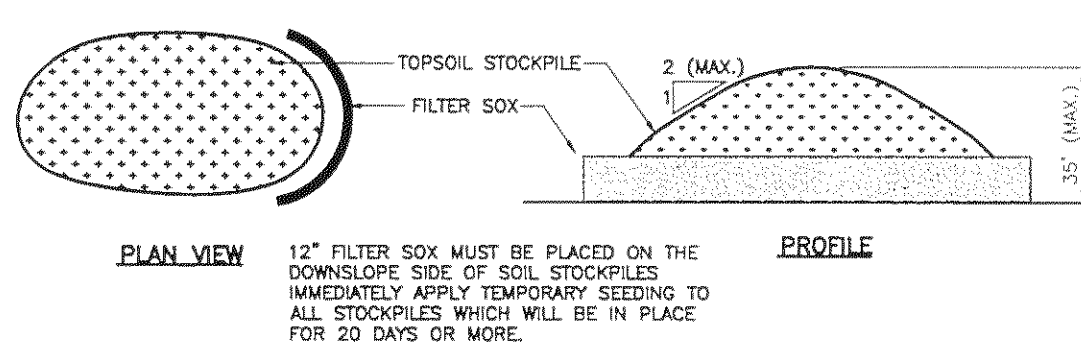
Property	Test Method	Minimum Standard
Avg. Wide Width Strength	ASTM D-4884	60 lb/in
Grab Tensile	ASTM D-4632	205 lb
Puncture	ASTM D-4833	110 lb
Mullen Burst	ASTM D-3786	350 psi
UV Resistance	ASTM D-4355	70%
AOS % Retained	ASTM D-4751	80 Sieve

A suitable means of accessing the bag with machinery required for disposal purposes shall be provided. Filter bags shall be replaced when they become 1/3 full of sediment. Spare bags shall be kept available for replacement of those that have failed or are filled. Bags shall be placed on straps to facilitate removal unless bags come with lifting straps already attached.

Bags shall be located in well-vegetated (grassy) area, and discharge onto stable, erosion resistant areas. Where this is not possible, a geotextile underlayment and flow path shall be provided. Bags may be placed on filter stone to increase discharge capacity. Bags shall not be placed on slopes greater than 5%. For slopes exceeding 5%, clean rock or other non-erodible and non-polluting material may be placed under the bag to reduce slope steepness.

No downslope sediment barrier is required for most installations. Compost berm or compost filter sock shall be installed below bags located in HQ or EV watersheds, within 50 feet of any receiving surface water or where grassy area is not available.

PUMPED WATER FILTER BAG SHALL BE INSPECTED ONCE PER WEEK AND AFTER EACH RAINFALL EVENT. CONTRACTOR (RESPONSIBLE PERSON) SHALL MAINTAIN ADEQUATE MAINTENANCE RECORDS ON SITE, IDENTIFYING THE DATE AND TYPE OF EACH INSPECTION, AND THE NATURE OF ANY AND ALL REPAIRS, RESTORATIONS, OR REPLACEMENTS OF THIS BMP.

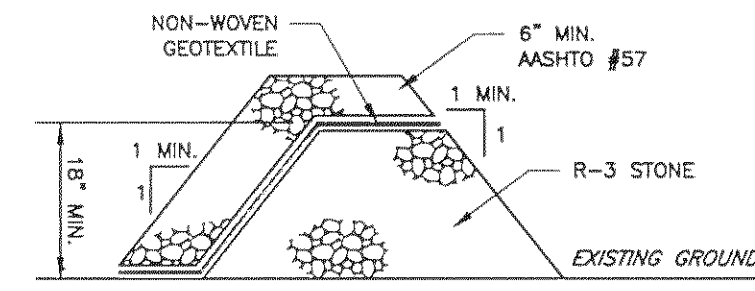


TOPSOIL STOCKPILE AREA DETAIL

N.T.S.

SEEDING SPECIFICATIONS

TEMPORARY:	FERTILIZER:
A. ANNUAL RYEGRASS: 100%: 1 LB/1,000 SQ.FT. MARCH 1 - JUNE 15 AUGUST 15 - SEPTEMBER 15	TEMPORARY - 5-5-1,000 LBS/ACRE PERMANENT - 10-20-20 1,000 LBS/ACRE
B. WINTER RYE: 100%: 3.5 LB/1,000 SQ.FT. AUGUST 15 - OCTOBER 15	LIME: TEMPORARY - 1 TON/ACRE PERMANENT - 2-3 TON/ACRE
C. ANNUAL RYEGRASS: 25%: 2 LB/1,000 SQ.FT. SPRING OATS: 75% MARCH 1 - JUNE 15	NOTES: 1. LIME, FERTILIZER, SEED AND MULCH 20 DAYS PRIOR TO THE END OF EACH SEEDING PERIOD AS INDICATED ABOVE.
PERMANENT:	2. DISTURBED AREAS ON WHICH ACTIVITIES HAVE CEASED AND WHICH WILL REMAIN EXPOSED FOR MORE THAN 20 DAYS MUST BE SEEDED AND MULCHED IMMEDIATELY. DURING NON-GERMINATING PERIODS (OCTOBER 15 THRU MARCH 1) MULCH MUST BE APPLIED AT THE RECOMMENDED RATES. DISTURBED AREAS WHICH ARE NOT AT FINISHED GRADE AND WHICH WILL BE REDISTURBED WITHIN ONE YEAR MAY BE SEEDED AND MULCHED WITH A QUICK GROWING TEMPORARY SEEDING MIXTURE AND MULCH. DISTURBED AREAS WHICH ARE EITHER AT FINISHED GRADE OR WILL NOT BE DISTURBED WITHIN ONE YEAR MUST BE SEEDED AND MULCHED WITH A PERMANENT SEED MIXTURE AND MULCH. AREAS MULCHED DURING THOSE PERIODS MUST BE LIME, FERTILIZED, SEEDING AND MULCHED WITHIN 20 DAYS OF THE ENDING OF THOSE PERIODS.
A. KENTUCKY 31 TALL FESCUE: 38%: 1-2 LB/1,000 SQ.FT. MARCH 1 - MAY 20 15 CREEPING RED FESCUE: 50% RED TOP: 12 (3) JULY 25 - SEPTEMBER	
B. KENTUCKY 31 TALL FESCUE: 55%: 1/2-1 LB/1,000 SQ.FT. OR REED CANARY GRASS OR SMOOTH BROME GRASS AND BIRDSFOOT TREFLOID: 45% (1,2,3) APRIL 1 - JUNE 15	
MULCH: TEMPORARY AND PERMANENT - HAY/STRAW 3 TONS/ACRE	



ROCK FILTER BERM

N.T.S.

ROCK FILTER BERM SHALL BE INSPECTED ONCE PER WEEK AND AFTER EACH RAINFALL EVENT. CONTRACTOR (RESPONSIBLE PERSON) SHALL MAINTAIN ADEQUATE MAINTENANCE RECORDS ON SITE, IDENTIFYING THE DATE AND TYPE OF EACH INSPECTION, AND THE NATURE OF ANY AND ALL REPAIRS, RESTORATIONS, OR REPLACEMENTS OF THIS BMP.

The maximum slope length above a compost filter sock should not exceed those shown in Figure 4.2. **NOTE:** Slope length is not addressed by use of multiple rows of compost socks. The anticipated functional life of a biodegradable filter sock should be 6 months; for photodegradable socks it is 1 year. Some other types may last longer. Projects with disturbances anticipated to last longer than the functional life of a sock should plan to replace the socks periodically or use another type of BMP.

Upon stabilization of the tributary area, the filter sock may be left in place and vegetated or removed. In the latter case, the mesh is typically cut open and the mulch spread as a soil supplement. In either case, the stakes should be removed.

Filter socks using other fillers may be approved on a case-by-case basis if sufficient supporting information (including manufacturer's specs and independent test data) is provided. However, they might not qualify as ABACTs. Wherever compost socks are used, Table 4.1 should be placed on a detail sheet.

Material Type	3 mil HDPE	5 mil HDPE	5 mil HDPE	Multi-Filament Polypropylene (MFPP)	Heavy Duty Multi-Filament Polypropylene (HDMFPP)
Material Characteristics	Photo-degradable	Photo-degradable	Bio-degradable	Photo-degradable	Photo-degradable
Sock Diameters	12" 18"	12" 18" 24" 32"	12" 18" 24" 32"	12" 18" 24" 32"	12" 18" 24" 32"
Mesh Opening	3/8"	3/8"	3/8"	3/8"	1/8"
Tensile Strength		26 psi	26 psi	44 psi	202 psi
Ultraviolet Stability % Original Strength (ASTM G-155)	23% at 1000 hr.	23% at 1000 hr.		100% at 1000 hr.	100% at 1000 hr.
Minimum Functional Longevity	6 months	9 months	6 months	1 year	2 years
Two-ply systems					
Inner Containment Netting	HDPE biaxial net				
	Continuously wound				
	Fusion-welded junctures				
Outer Filtration Mesh	3/4" X 3/4" Max. aperture size				
	Composite Polypropylene Fabric (Woven layer and non-woven fleeces mechanically fused via needle punch)				
	3/16" Max. aperture size				
Sock fabrics composed of burlap may be used on projects lasting 6 months or less.					

Compost should be a well decomposed, weed-free organic matter derived from agriculture, food, stump grindings, and yard or wood/bark organic matter sources. The compost should be aerobically composted. The compost should possess no objectionable odors and should be reasonably free (<1% by dry weight) of man-made foreign matter. The compost product should not resemble the raw material from which it was derived. Wood and bark chips, ground construction debris or reprocessed wood products are not acceptable as the organic component of the mix.

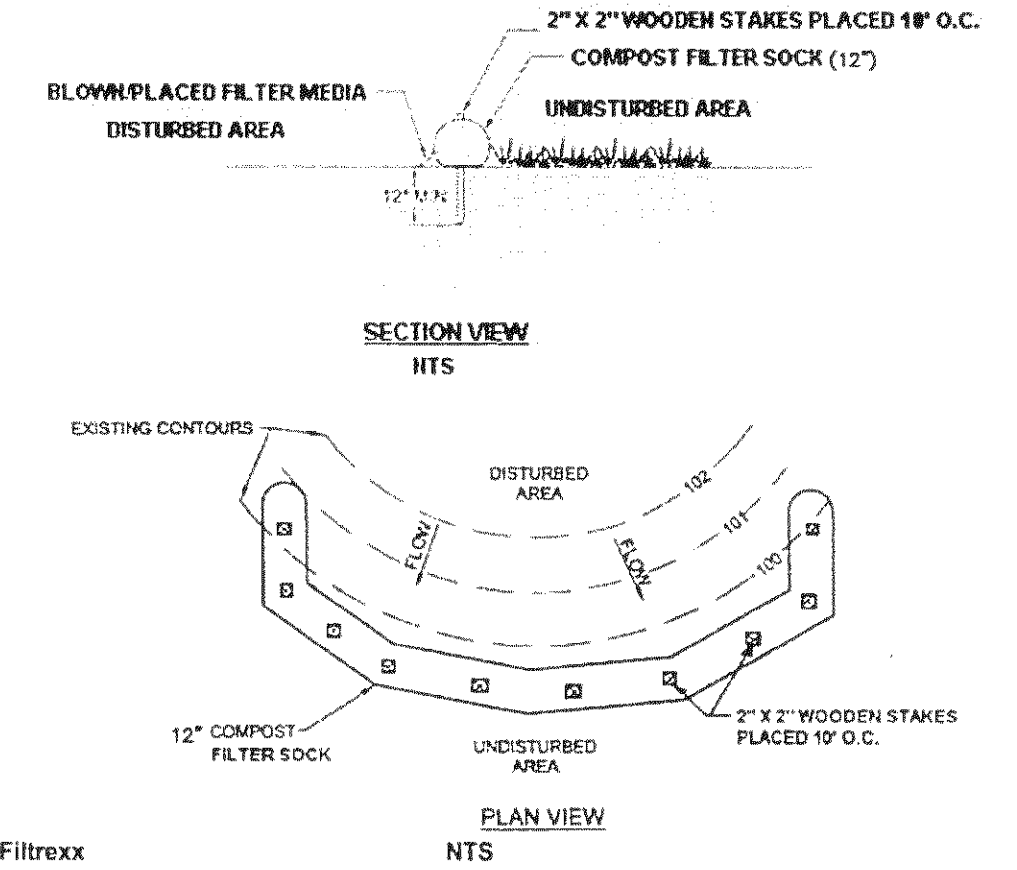
The physical parameters of the compost should comply with the standards in Table 4.2. The standards contained in the PennDOT Publication 408 are an acceptable alternative.

Parameter	Standard
Organic Matter Content	80% - 100% (dry weight basis)
Organic Portion	Fibrous and elongated
pH	5.5 - 8.0
Moisture Content	35% - 55%
Particle Size	98% pass through 1" screen
Soluble Salt Concentration	5.0 dS/m (mmhos/cm) Maximum

BUCKS COUNTY CONSERVATION DISTRICT STANDARD NOTES

- STOCKPILE HEIGHTS MUST NOT EXCEED 35 FEET; STOCKPILE SLOPES MUST NOT EXCEED 2:1.
- THE OPERATOR/RESPONSIBLE PERSON (O/RP) ON SITE SHALL ASSURE THAT THE APPROVED EROSION AND SEDIMENT CONTROL PLAN IS PROPERLY AND COMPLETELY IMPLEMENTED.
- IMMEDIATELY UPON DISCOVERING UNFORESEEN CIRCUMSTANCES POSING THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION, THE O/RP SHALL IMPLEMENT APPROPRIATE BEST MANAGEMENT PRACTICES (BMPs) TO ELIMINATE THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION.
- THE O/RP SHALL ASSURE THAT AN EROSION AND SEDIMENT CONTROL PLAN HAS BEEN PREPARED AND APPROVED BY THE BUCKS COUNTY CONSERVATION DISTRICT AND IS BEING IMPLEMENTED AND MAINTAINED FOR ALL SOLS AND/OR ROCK SPILL AND BORROW AREAS REGARDLESS OF THEIR LOCATIONS.
- ALL PUMPING OF SEDIMENT-LADEN WATER SHALL BE THROUGH A SEDIMENT CONTROL BMP SUCH AS A PUMPED WATER FILTER BAG DISCHARGING OVER AN UNDISTURBED AREA.
- A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN MUST BE AVAILABLE ON THE PROJECT SITE AT ALL TIMES.
- EROSION AND SEDIMENT BMPs MUST BE CONSTRUCTED, STABILIZED AND FUNCTIONAL BEFORE SITE DISTURBANCE BEGINS WITHIN THE TRIBUTARY AREAS OF THOSE BMPs.
- AFTER FINAL SITE STABILIZATION HAS BEEN ACHIEVED, TEMPORARY EROSION AND SEDIMENT BMP CONTROLS MUST BE REMOVED. AREAS DISTURBED DURING THE REMOVAL OF THE BMPs MUST BE STABILIZED IMMEDIATELY.
- AT LEAST SEVEN (7) DAYS BEFORE STARTING ANY EARTH DISTURBANCE ACTIVITY, THE O/RP SHALL INVITE ALL CONTRACTORS INVOLVED IN THAT ACTIVITY, THE LANDOWNER, ALL APPROPRIATE MUNICIPAL OFFICIALS, THE EROSION AND SEDIMENT CONTROL PLAN DESIGNER AND THE BUCKS COUNTY CONSERVATION DISTRICT TO A PRE-CONSTRUCTION MEETING. ALSO, AT LEAST THREE (3) DAYS BEFORE STARTING ANY EARTH DISTURBANCE ACTIVITY, ALL CONTRACTORS INVOLVED IN THAT ACTIVITY SHALL NOTIFY THE PENNSYLVANIA ONE-CALL SYSTEM INC. AT 1-800-245-1778 TO DETERMINE ANY UNDERGROUND UTILITIES LOCATIONS.
- IMMEDIATELY AFTER EARTH DISTURBANCE ACTIVITY CEASES, THE O/RP SHALL STABILIZE ANY AREAS DISTURBED BY THE ACTIVITY. DURING NON-GERMINATING PERIODS, MULCH MUST BE APPLIED AT SPECIFIED RATES. DISTURBED AREAS THAT ARE NOT FINISHED GRADE AND WHICH WILL BE RE-DISTURBED WITHIN ONE YEAR MUST BE STABILIZED IN ACCORDANCE WITH TEMPORARY VEGETATIVE STABILIZATION SPECIFICATIONS.
- DISTURBED AREAS THAT ARE AT A FINISHED GRADE OR WHICH WILL NOT BE RE-DISTURBED WITHIN ONE YEAR MUST BE STABILIZED IN ACCORDANCE WITH PERMANENT VEGETATIVE STABILIZATION SPECIFICATIONS.
- AN AREA SHALL BE CONSIDERED TO HAVE ACHIEVED FINAL STABILIZATION WHEN IT HAS A MINIMUM UNIFORM 70% VEGETATIVE OR OTHER PERMANENT NON-VEGETATIVE COVER WITH A DENSITY SUFFICIENT TO RESIST ACCELERATED SURFACE EROSION AND SUBSURFACE CHARACTERISTICS SUFFICIENT TO RESIST SLIDING AND OTHER MOVEMENTS.
- UPON THE INSTALLATION OF TEMPORARY SEDIMENT BASIN RISER(S), A QUALIFIED SITE REPRESENTATIVE SHALL CONDUCT AN IMMEDIATE INSPECTION OF THE RISER(S), WHEREUPON THE BUCKS COUNTY CONSERVATION DISTRICT SHALL BE NOTIFIED IN WRITING THAT THE RISER IS SEALED (WATER-TIGHT).
- AT STREAM CROSSINGS, A 50-FOOT BUFFER SHALL BE MAINTAINED ON BUFFERS, CLEARINGS, SOD DISTURBANCES AND EXCAVATIONS, EQUIPMENT TRAFFIC SHOULD BE MINIMIZED. ACTIVITY SUCH AS STACKING LOGS, BURNING CLEARED BRUSH, DISCHARGED RAINWATER FROM TRENCHES, WELDING PIPE SECTIONS, REFUELING AND MAINTAINING EQUIPMENT SHOULD BE AVOIDED WITHIN BUFFER ZONES.
- UNTIL A SITE IS STABILIZED, ALL EROSION AND SEDIMENT BMPs MUST BE MAINTAINED PROPERLY. MAINTENANCE MUST INCLUDE INSPECTIONS OF ALL EROSION CONTROL BMPs AFTER EACH RUNOFF EVENT AND ON A WEEKLY BASIS. ALL PREVENTATIVE AND REMEDIAL MAINTENANCE WORK, INCLUDING CLEANOUT, REPAIR, REPLACEMENT, RE-GRADING, RE-SEEDING, RE-MULCHING AND RESETTING MUST BE PERFORMED IMMEDIATELY. IF EROSION AND SEDIMENT CONTROL BMPs FAIL TO PERFORM AS EXPECTED, REPLACEMENT BMPs, OR MODIFICATIONS OF THOSE INSTALLED, WILL BE REQUIRED.
- SEDIMENT REMOVED FROM BMPs SHALL BE DISPOSED OF ON-SITE IN LANDSCAPED AREAS OUTSIDE OF STEEP SLOPES, WETLANDS, FLOODPLAINS OR DRAINAGE SWALES AND IMMEDIATELY STABILIZED OR PLACED IN SOIL STOCKPILES AND STABILIZED.
- ALL BUILDING MATERIAL AND WASTES MUST BE REMOVED FROM THE SITE AND RECYCLED IN ACCORDANCE WITH DEP'S SOLID WASTE REGULATIONS (25 PA CODE 260.1 ET SEQ., 271.1 ET SEQ., AND 287.1 ET SEQ.) AND/OR ANY ADDITIONAL LOCAL, STATE OR FEDERAL REGULATIONS. NO BUILDING MATERIALS (USED OR UNUSED) OR WASTE MATERIALS SHALL BE BURNED, BURIED, DUMPED, OR DISCHARGED AT THE SITE.
- IT IS HEREBY NOTED THAT THE ABOVE NOTES REPRESENT THE STANDARD NOTES TAKEN FROM THE WEBSITE OF THE BUCKS COUNTY CONSERVATION DISTRICT AND REPEATED HEREON. SOME NOTES MAY NOT BE APPLICABLE TO THIS SPECIFIC PROJECT. HOWEVER, THEY ARE INCLUDED FOR PERMITTING PURPOSES ONLY.

**STANDARD CONSTRUCTION DETAIL #4-1
 Compost Filter Sock**

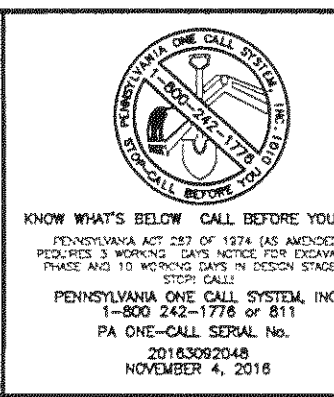


Sock fabric shall meet standards of Table 4.1. Compost shall meet the website of Table 4.2. Compost filter sock shall be placed at existing level grade. Both ends of the sock shall be extended at least 8 feet up slope at 45 degrees to the main sock alignment (Figure 4.1). Maximum slope length above any sock shall not exceed that shown on Figure 4.2. Stakes may be installed immediately downslope of the sock if so specified by the manufacturer.

Traffic shall not be permitted to cross filter socks. Accumulated sediment shall be removed when it reaches half the aboveground height of the sock and disposed in the manner described elsewhere in the plan. Socks shall be inspected weekly and after each runoff event. Damaged socks shall be repaired according to manufacturer's specifications or replaced within 24 hours of inspection. Biodegradable filter socks shall be replaced after 6 months; photodegradable socks after 1 year. Polypropylene socks shall be replaced according to manufacturer's recommendations. Upon stabilization of the area tributary to the sock, stakes shall be removed. The sock may be left in place and vegetated or removed. In the latter case, the mesh shall be cut open and the mulch spread as a soil supplement.

COMPOST FILTER SOCKS SHALL BE INSPECTED ONCE PER WEEK AND AFTER EACH RAINFALL EVENT. CONTRACTOR (RESPONSIBLE PERSON) SHALL MAINTAIN ADEQUATE MAINTENANCE RECORDS ON SITE, IDENTIFYING THE DATE AND TYPE OF EACH INSPECTION, AND THE NATURE OF ANY AND ALL REPAIRS, RESTORATIONS, OR REPLACEMENTS OF THIS BMP.

Written dimensions shall have priority over sound dimensions. All dimensions, elevations, locations, and conditions, shall be verified by the Contractor prior to construction, and the Owner and Boucher & James, Inc. shall be notified of any discrepancies with the information shown on drawings. Only those plans incorporating the raised or red ink professional seal shall be considered official and binding and arrangements presented herein were developed for use on, and in connection with, the specified project using prepared for the Owner. These plans may not be reproduced or altered without the express written permission of Boucher & James, Inc. Information shown on this plan represents professional services expressing ideas and designs developed, owned and copyrighted by Boucher & James, Inc. Reproduction of this plan without written approval of Boucher & James, Inc. is not permitted. Unauthorized reproduction of this plan for any purpose will be considered a violation of the copyright laws and a theft of corporate assets. Unauthorized alterations of the plan will be considered a violation of the professional code of ethics. Any violation will be prosecuted to the fullest extent of current statutes.



REVISIONS:	DATE	DESCRIPTION
05/10/17		REFLECTS BID ALTERNATES
06/05/17		GRADING REVISIONS FOR ADDENDUM
06/22/17		REVISIONS FOR CONSTRUCTION

PROJECT: **MEMORIAL PARK EXPANSION**
 LOWER MAKEFIELD TOWNSHIP
 BUCKS COUNTY, PENNSYLVANIA

APPLICANT: **LOWER MAKEFIELD TOWNSHIP**
 1100 EDGEWOOD ROAD
 YARDLEY, PA 19067

JOB NO.: 1677058
 DRAWN BY: R.D.J.
 CHECKED BY: J.S.G.
 SCALE: 1" = 50'
 PLAN STATUS: PRELIMINARY/FINAL

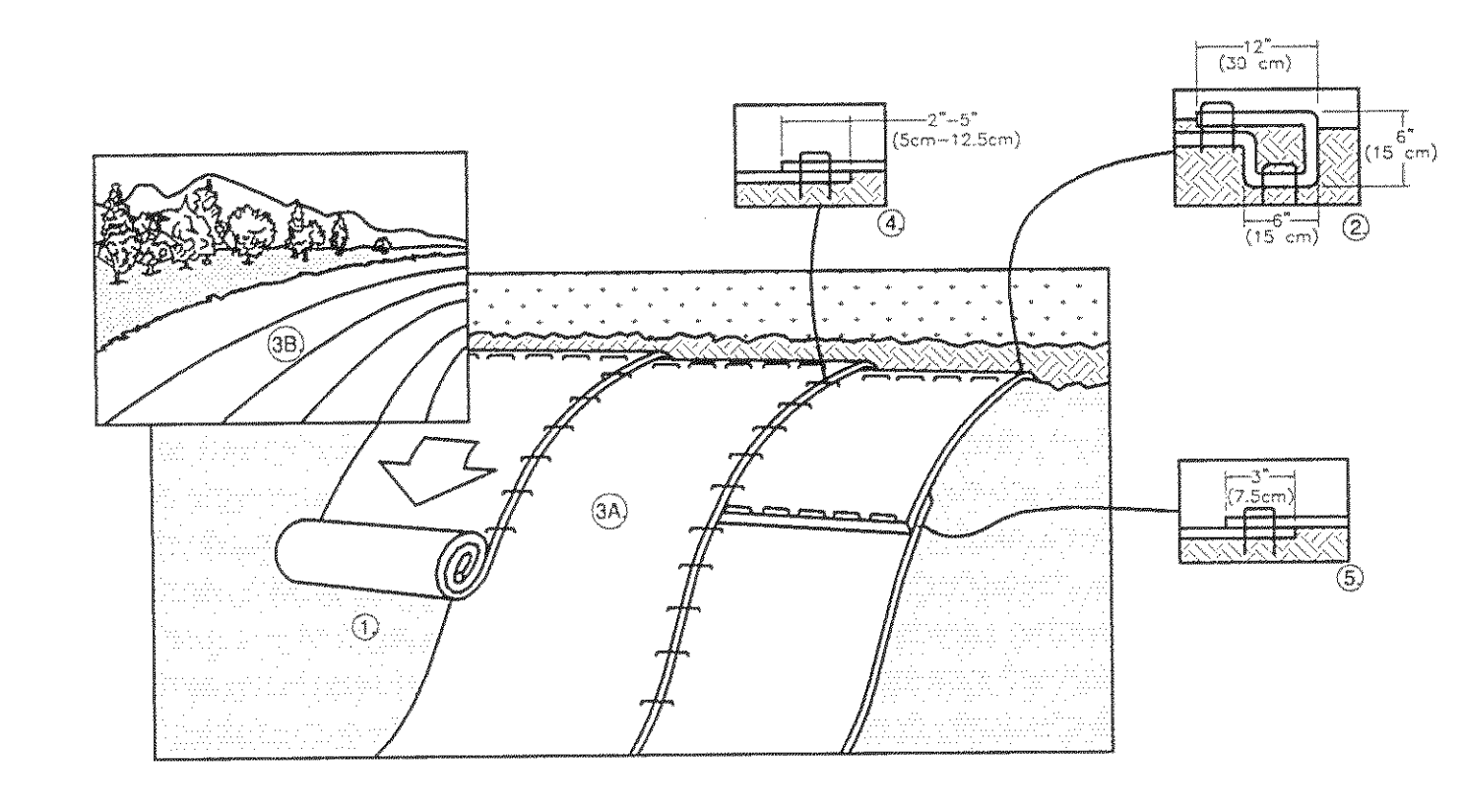
0 25 50 100 150
 SCALE: 1" = 50'

EROSION AND SEDIMENT CONTROL PLAN NOTES & DETAILS (1 OF 2)

Boucher & James, Inc.
 CONSULTING ENGINEERS
 DOYLESTOWN • STROUDSBURG • LEHIGH VALLEY
 CORPORATE HEADQUARTERS: 1456 FERRY RD, BUILDING 500, DOYLESTOWN, PA. 18901
 VOICE: (215) 345-9400 FAX: (215) 345-9401

MEMORIAL PARK EXPANSION - BID SET

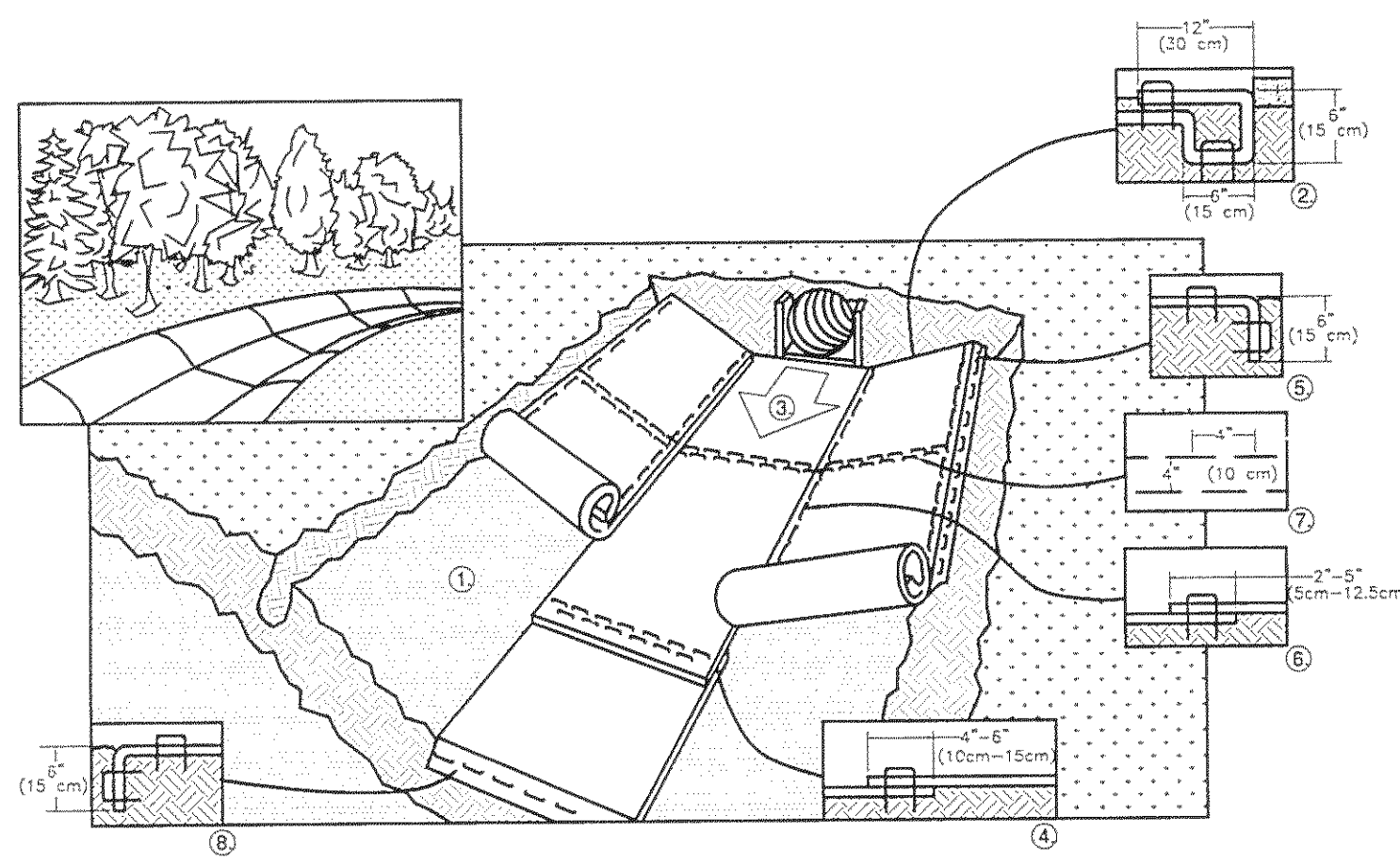
SHEET **19** OF **25**
 DATE: APRIL 14, 2017



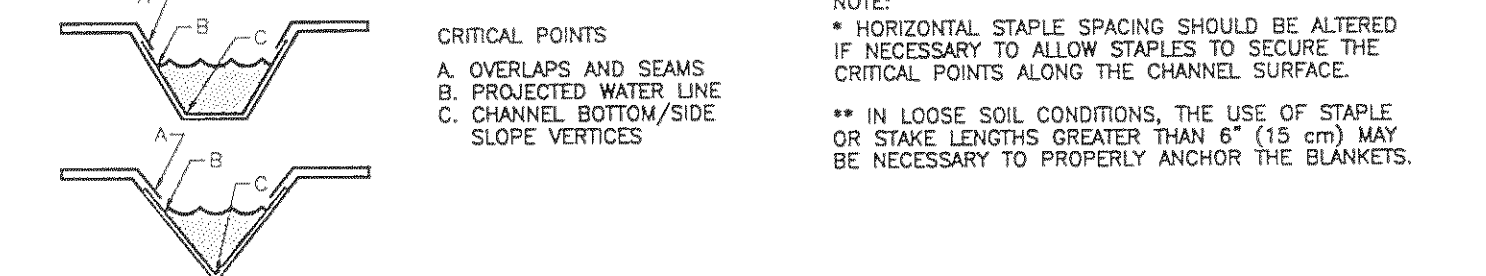
- PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED. NOTE: WHEN USING CELL-0-SEED DO NOT SEED PREPARED AREA. CELL-0-SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.
- BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET IN A 6" (15cm) DEEP X 6" (15cm) WIDE TRENCH WITH APPROXIMATELY 12" (30cm) OF BLANKET EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30cm) APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" (30cm) PORTION OF BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" (30cm) APART ACROSS THE WIDTH OF THE BLANKET.
- ROLL THE BLANKETS (A) DOWN OR (B) HORIZONTALLY ACROSS THE SLOPE. BLANKETS WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL BLANKETS MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING OPTIONAL DOT SYSTEM*, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
- THE EDGES OF PARALLEL BLANKETS MUST BE STAPLED WITH APPROXIMATELY 2"-5" (5cm-12.5cm) OVERLAP (DEPENDING ON BLANKET TYPE). TO ENSURE PROPER SEAM ALIGNMENT, PLACE THE EDGE OF THE OVERLAPPING BLANKET (BLANKET BEING INSTALLED ON TOP) EVEN WITH THE COLORED SEAM STITCH ON THE PREVIOUSLY INSTALLED BLANKET.
- CONSECUTIVE BLANKETS SPICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" (7.5cm) OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" (30cm) APART ACROSS ENTIRE BLANKET WIDTH.

NOTE: *IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" (15cm) MAY BE NECESSARY TO PROPERLY SECURE THE BLANKETS.

EROSION CONTROL BLANKET SLOPE INSTALLATION DETAIL
NOT TO SCALE

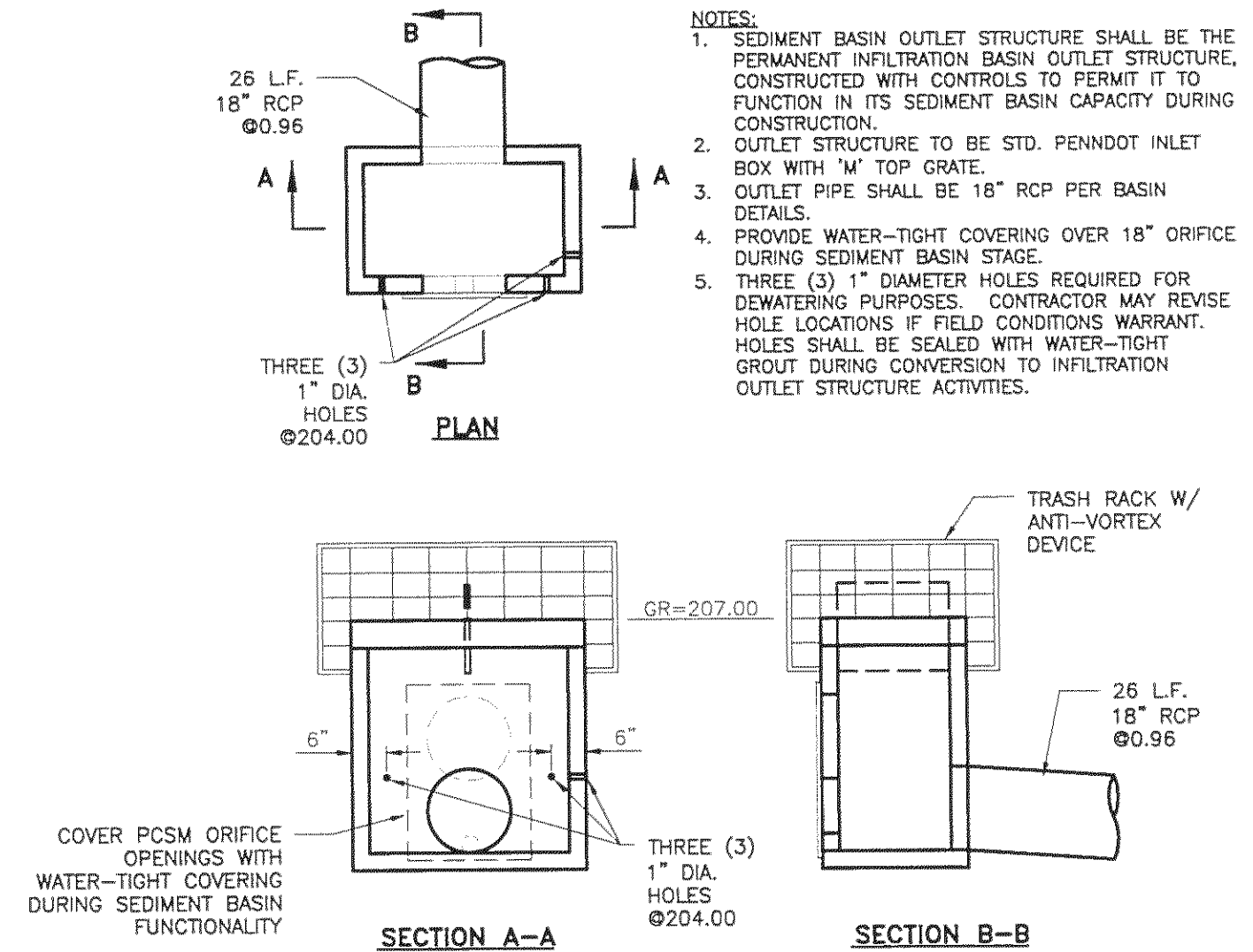


- PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED. NOTE: WHEN USING CELL-0-SEED DO NOT SEED PREPARED AREA. CELL-0-SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.
- BEGIN AT THE TOP OF THE CHANNEL BY ANCHORING THE BLANKET IN A 6" (15cm) DEEP X 6" (15cm) WIDE TRENCH WITH APPROXIMATELY 12" (30cm) OF BLANKET EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30cm) APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" (30cm) PORTION OF BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" (30cm) APART ACROSS THE WIDTH OF THE BLANKET.
- ROLL CENTER BLANKET IN DIRECTION OF WATER FLOW IN BOTTOM OF CHANNEL. BLANKETS WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL BLANKETS MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING OPTIONAL DOT SYSTEM*, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
- PLACE CONSECUTIVE BLANKETS END OVER END (SHINGLE STYLE) WITH A 4"-6" (10cm-15cm) OVERLAP. USE A DOUBLE ROW OF STAPLES STAGGERED 4" (10cm) APART AND 4" (10cm) ON CENTER TO SECURE BLANKETS.
- FULL LENGTH EDGE OF BLANKETS AT TOP OF SIDE SLOPES MUST BE ANCHORED WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30cm) APART IN A 6" (15cm) DEEP X 6" (15cm) WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
- ADJACENT BLANKETS MUST BE OVERLAPPED APPROXIMATELY 2"-5" (5cm-12.5cm) (DEPENDING ON BLANKET TYPE) AND STAPLED. TO ENSURE PROPER SEAM ALIGNMENT, PLACE THE EDGE OF THE OVERLAPPING BLANKET (BLANKET BEING INSTALLED ON TOP) EVEN WITH THE COLORED SEAM STITCH ON THE BLANKET BEING OVERLAPPED.
- IN HIGH FLOW CHANNEL APPLICATIONS, A STAPLE CHECK SLOT IS RECOMMENDED AT 30 TO 40 FOOT (9m-12m) INTERVALS. USE A DOUBLE ROW OF STAPLES STAGGERED 4" (10cm) APART AND 4" (10cm) ON CENTER OVER ENTIRE WIDTH OF THE CHANNEL.
- THE TERMINAL END OF THE BLANKETS MUST BE ANCHORED WITH ROW OF STAPLES/STAKES APPROXIMATELY 12" (30cm) APART IN A 6" (15cm) DEEP X 6" (15cm) WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.



EROSION CONTROL BLANKET CHANNEL INSTALLATION DETAIL
NOT TO SCALE

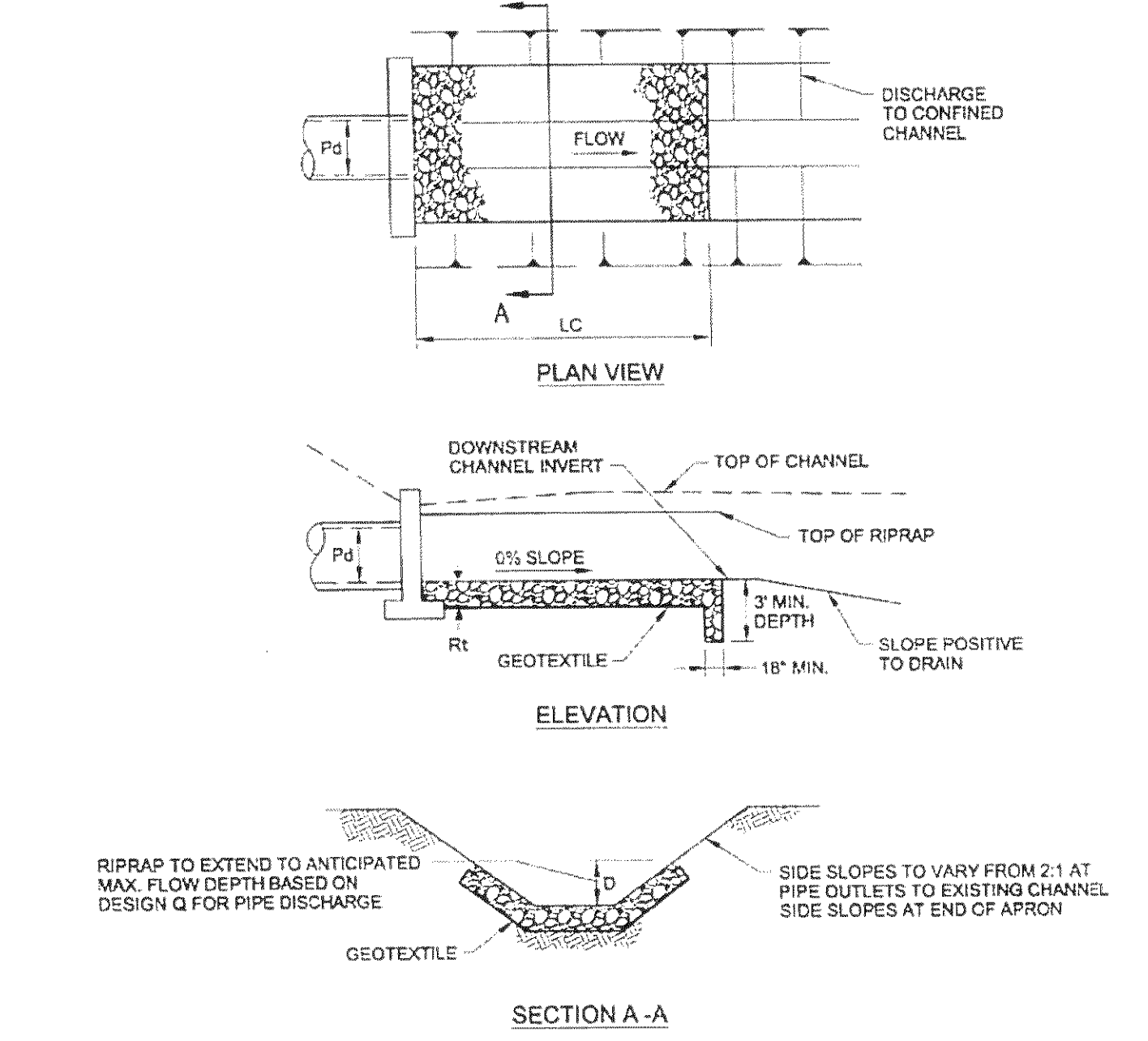
- EROSION CONTROL BLANKETS - USAGE:**
- UTILIZE NORTH AMERICAN GREEN C350 TURF REINFORCEMENT MATTING (OR APPROVED EQUAL) ON EMERGENCY SPILLWAYS.
 - UTILIZE NORTH AMERICAN GREEN SC150BN EROSION CONTROL BLANKET (OR APPROVED EQUAL) ON SLOPES AND CHANNELS.



SEDIMENT BASIN OUTLET STRUCTURE
NOT TO SCALE

- SEDIMENT BASIN OUTLET STRUCTURE SHALL BE THE PERMANENT INFILTRATION BASIN OUTLET STRUCTURE, CONSTRUCTED WITH CONTROLS TO PERMIT IT TO FUNCTION IN ITS SEDIMENT BASIN CAPACITY DURING CONSTRUCTION.
- OUTLET STRUCTURE TO BE STD. PENNDOT INLET BOX WITH "M" TOP GRATE.
- OUTLET PIPE SHALL BE 18" RCP PER BASIN DETAILS.
- PROVIDE WATER-TIGHT COVERING OVER 18" ORIFICE DURING SEDIMENT BASIN STAKE.
- THREE (3) 1" DIA. HOLES REQUIRED FOR DEWATERING PURPOSES. CONTRACTOR MAY REVISE HOLE LOCATIONS IF FIELD CONDITIONS WARRANT. HOLES SHALL BE SEALED WITH WATER-TIGHT GROUT DURING CONVERSION TO INFILTRATION OUTLET STRUCTURE ACTIVITIES.

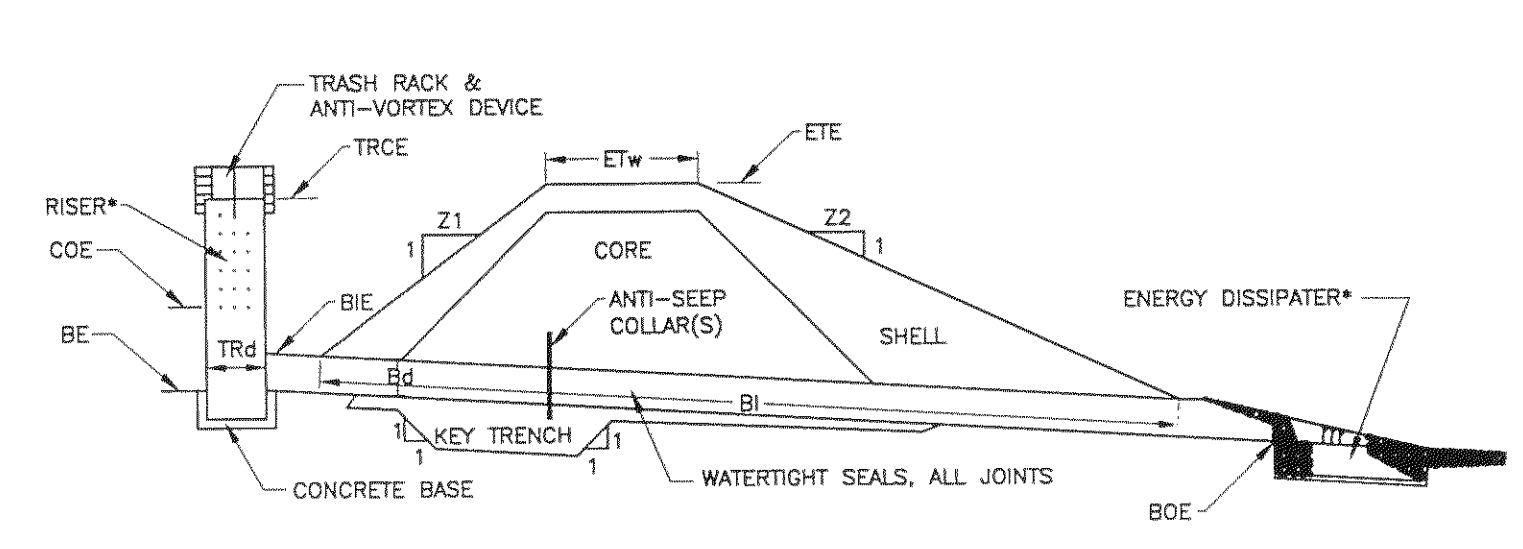
STANDARD CONSTRUCTION DETAIL # 9-3
Riprap Apron at Pipe Outlet to an Existing Channel



Adapted from USDA NRCS
NOTE: This table is intentionally blank and should be filled in by the plan preparer.

OUTLET NO.	PIPE DIA Pd (IN)	THICK. R1 (IN)	LENGTH LC (FT)	APRON			SIDE SLOPES H:V		
				INITIAL BOTTOM WIDTH (at Endwall)(FT)	END WIDTH (FT)	END TOP WIDTH (at Endwall)(FT)			
6	18	4	18	10	4.5 FT.	14.5	4.5 FT.	14.5	3:1
8	12	4	18	10	3 FT.	13	3 FT.	13	3:1
10	18	4	18	10	4.5 FT.	14.5	4.5 FT.	14.5	N/A
12	12	4	18	10	3 FT.	13	3 FT.	13	N/A

All aprons shall be constructed to the dimensions shown. Terminal widths shall be adjusted as necessary to match receiving channels.
All aprons shall be inspected at least weekly and after each runoff event. displaced riprap within the apron shall be replaced immediately.
RIPRAP APRONS SHALL BE INSPECTED ONCE PER WEEK AND AFTER EACH RAINFALL EVENT. CONTRACTOR (RESPONSIBLE PERSON) SHALL MAINTAIN ADEQUATE MAINTENANCE RECORDS ON SITE, IDENTIFYING THE DATE AND TYPE OF EACH INSPECTION, AND THE NATURE OF ANY AND ALL REPAIRS, RESTORATIONS, OR REPLACEMENTS OF THIS BMP.



EMBANKMENT SECTION ALONG PRINCIPAL SPILLWAY*

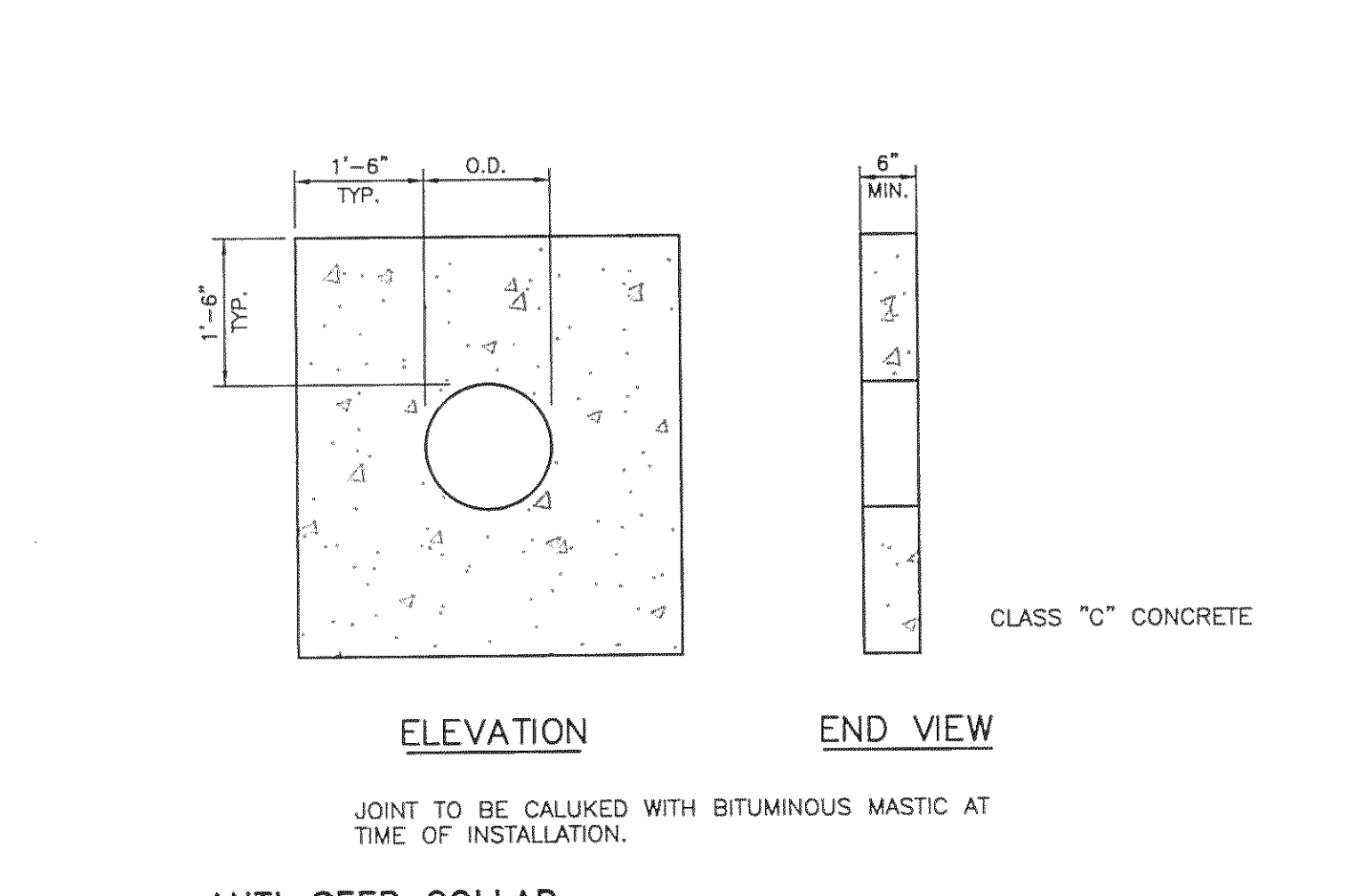
BASIN NO.	Z1 (FT)	Z2 (FT)	DIA TRC (IN)	CREST ELEV (FT)	MAT'L	DIA Bd (IN)	INLET ELEV (FT)	DIA BIE (FT)	LENGTH BI (FT)	OUTLET ELEV BOE (FT)	EMBANKMENT TOP ELEV ETE (FT)	TOP WIDTH ETW (FT)	CLEAN OUT ELEV COE (FT)	BOTTOM ELEV BE (FT)

* ALSO REFER TO SEDIMENT BASIN TEMPORARY RISER, EMERGENCY SPILLWAY, ENERGY DISSIPATER, TRASH RACK & ANTI-VORTEX DEVICE, AND SEDIMENT STORAGE DEWATERING FACILITY DETAILS.
A CLEAN OUT STAKE SHALL BE PLACED NEAR THE CENTER OF EACH BASIN. ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT HAS REACHED THE CLEAN OUT ELEVATION ON THE STAKE (204.00).

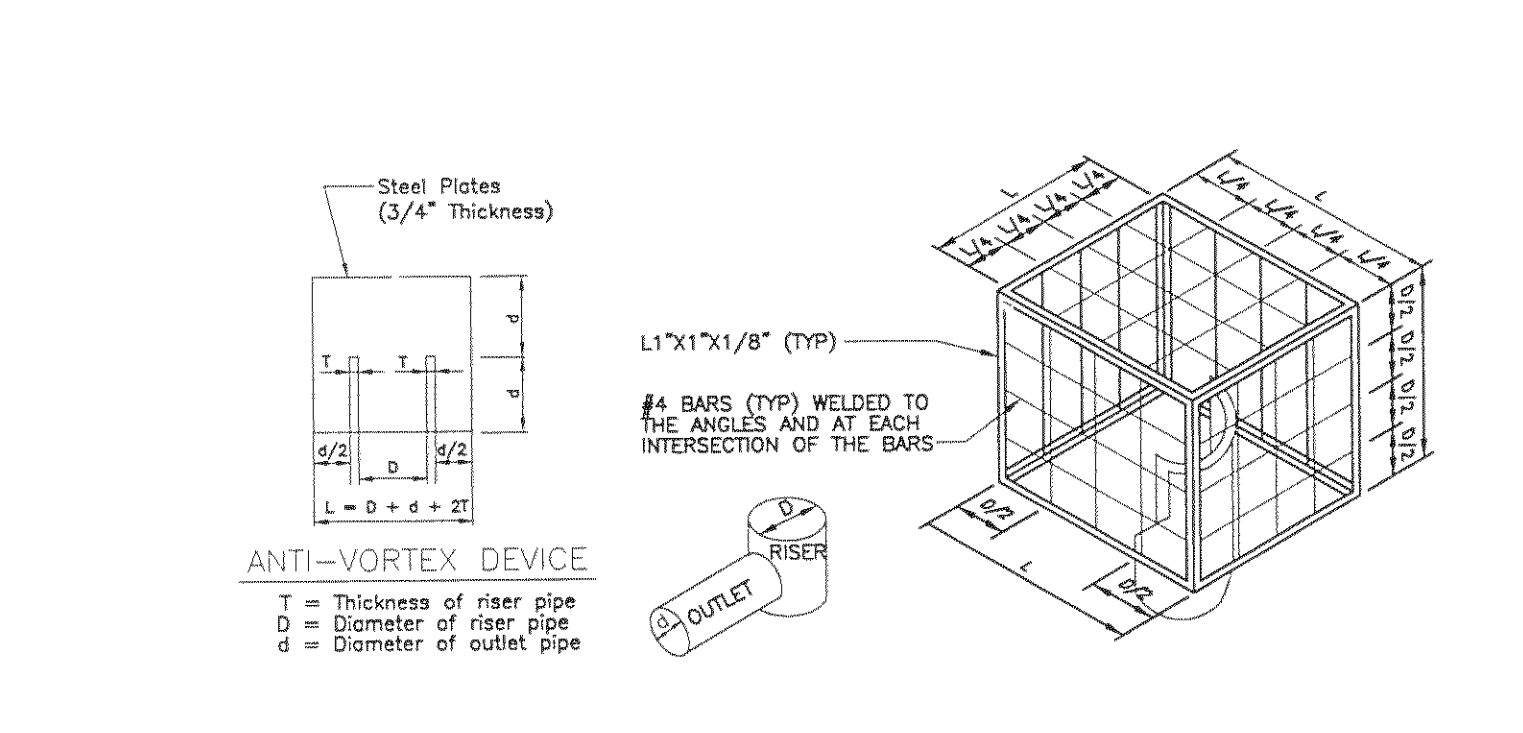
- NOTES:
- TEMPORARY SEDIMENT BASIN SHALL BE CONVERTED TO PERMANENT INFILTRATION BASIN. SOME FEATURES WILL REQUIRE ADJUSTMENTS AT APPROPRIATE POINT DURING CONSTRUCTION.
 - SEDIMENT BASIN RISER AND OUTLET PIPE SHALL BE CONSTRUCTED IN ACCORDANCE WITH DESIGN AND SPECIFICATIONS FOR PERMANENT BASIN OUTLET STRUCTURE. NO TEMPORARY RISER IS PROPOSED.
 - CONTRACTOR SHALL PROVIDE THREE (3) 1" DIA. HOLES AT ELEVATION 204.00 FOR SEDIMENT STORAGE ZONE. THESE HOLES SHALL BE SEALED WITH WATER-TIGHT GROUT DURING CONVERSION TO PERMANENT BASIN SPECIFICATIONS.

SEDIMENT BASIN
N.T.S.

SEDIMENT SHALL BE INSPECTED ONCE PER WEEK AND AFTER EACH RAINFALL EVENT. CONTRACTOR (RESPONSIBLE PERSON) SHALL MAINTAIN ADEQUATE MAINTENANCE RECORDS ON SITE, IDENTIFYING THE DATE AND TYPE OF EACH INSPECTION, AND THE NATURE OF ANY AND ALL REPAIRS, RESTORATIONS, OR REPLACEMENTS OF THIS BMP.

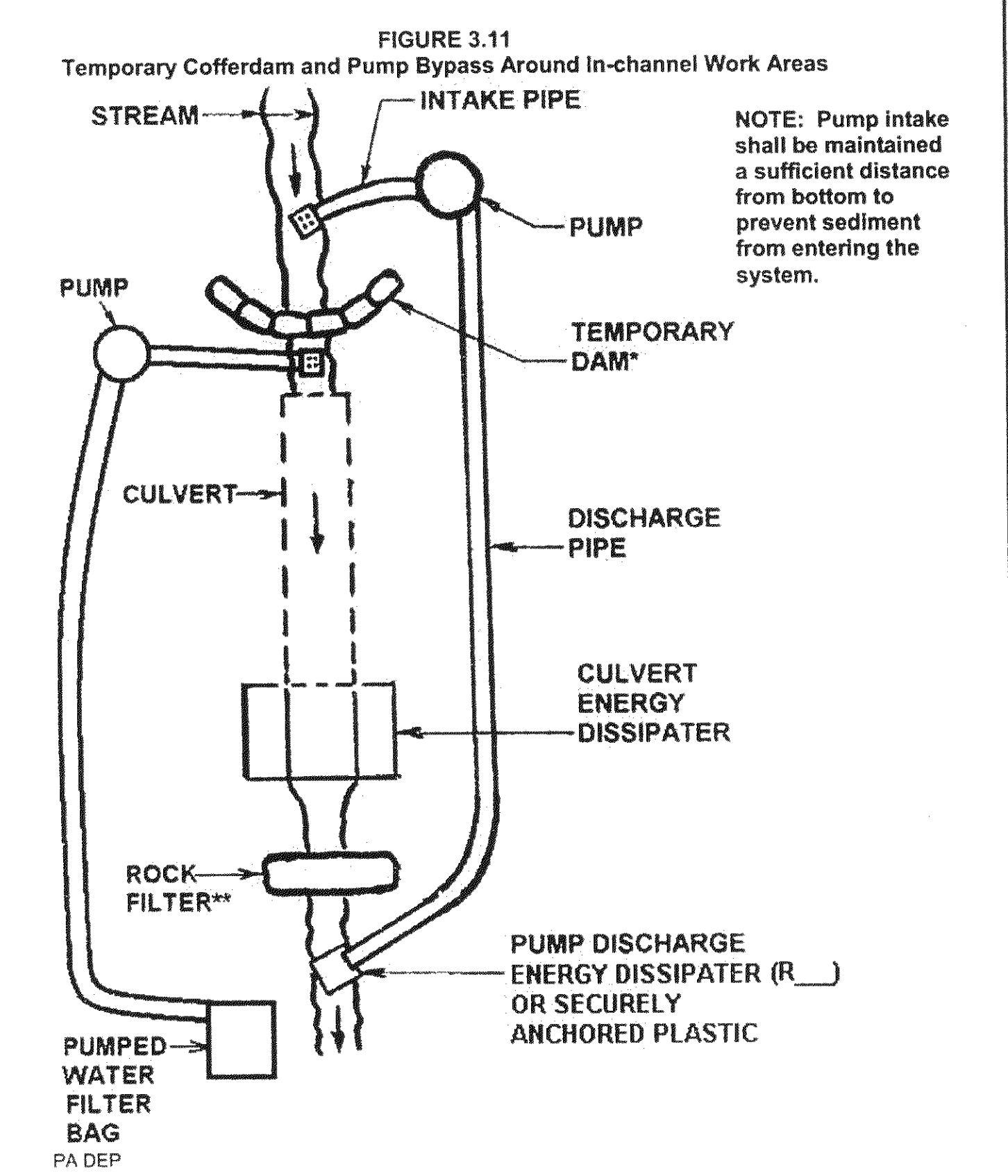


ANTI-SEEP COLLAR
NOT TO SCALE



TRASH RACK AND ANTI-VORTEX DEVICE
N.T.S.

NOTE: TRASH RACK AND ANTI-VORTEX DEVICE AS SHOWN TAKEN FROM EAS MANUAL. DIMENSIONS SHALL BE REVISED AS NECESSARY TO FIT ONTO STANDARD PENNDOT INLET BOX.

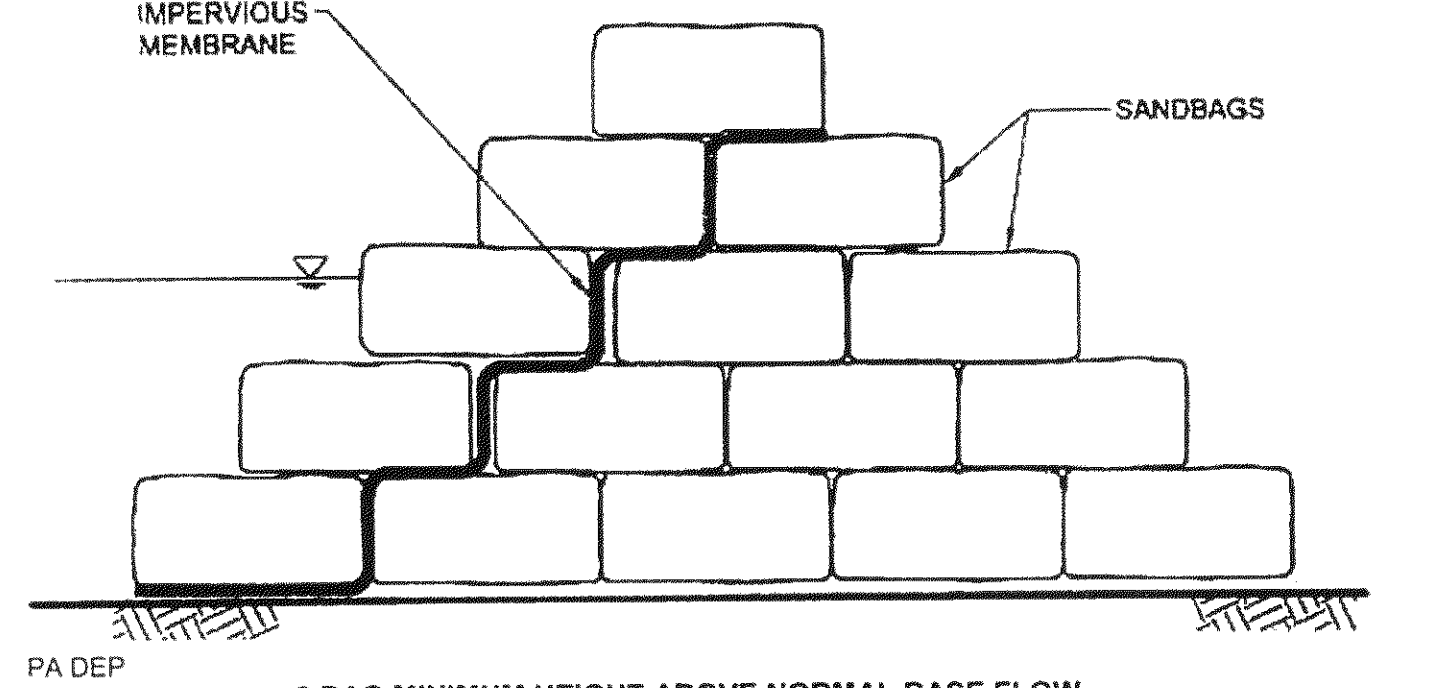


NOTE: Pump intake shall be maintained a sufficient distance from bottom to prevent sediment from entering the system.

TEMPORARY BYPASS FOR INSTALLATION OF TWIN PIPES
NOT TO SCALE

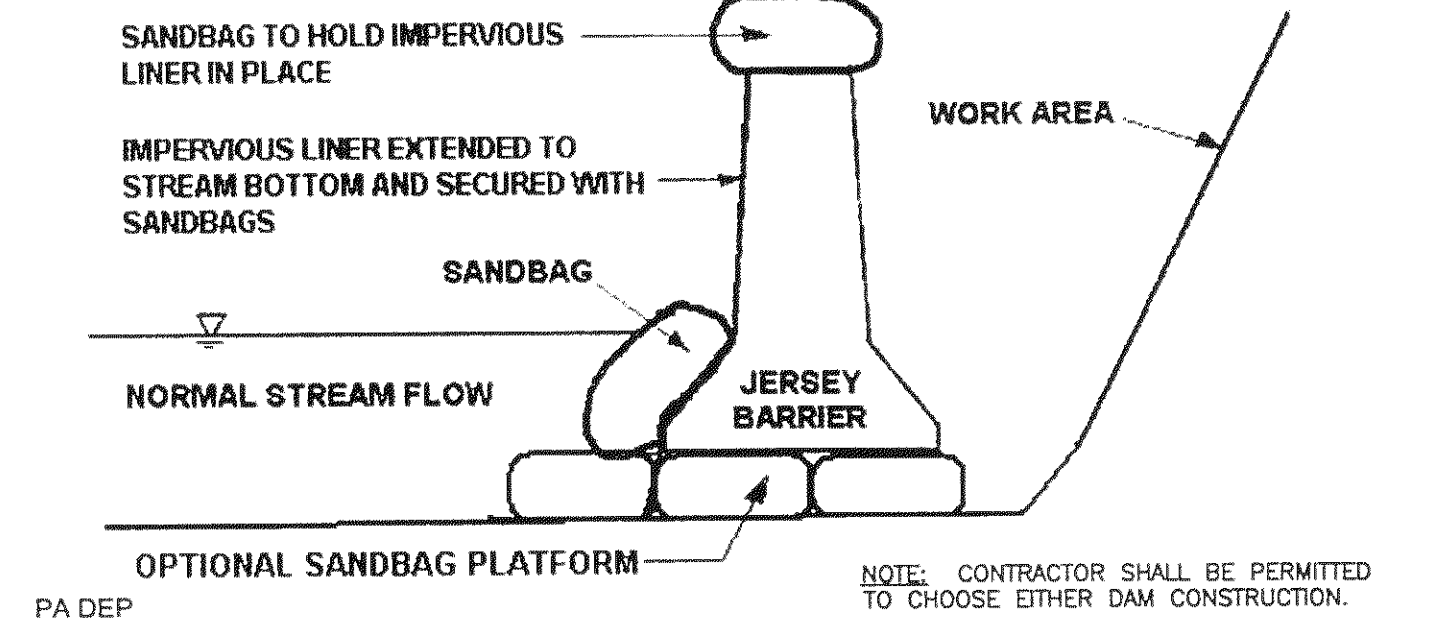
PUMP BYPASS BE INSPECTED ONCE PER WEEK AND AFTER EACH RAINFALL EVENT. CONTRACTOR (RESPONSIBLE PERSON) SHALL MAINTAIN ADEQUATE MAINTENANCE RECORDS ON SITE, IDENTIFYING THE DATE AND TYPE OF EACH INSPECTION, AND THE NATURE OF ANY AND ALL REPAIRS, RESTORATIONS, OR REPLACEMENTS OF THIS BMP.

STANDARD CONSTRUCTION DETAIL #3-15
Sandbag Diversion Dam or Cofferdam



2 BAG MINIMUM HEIGHT ABOVE NORMAL BASE FLOW
PA DEP

FIGURE 3.13
Jersey Barrier Cofferdam - End View

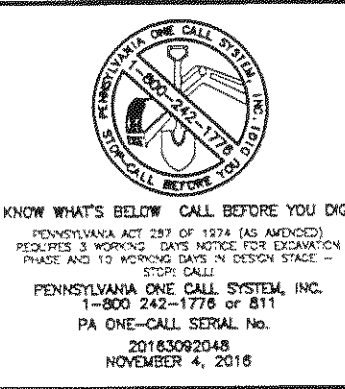


NOTE: CONTRACTOR SHALL BE PERMITTED TO CHOOSE EITHER DAM CONSTRUCTION.
PA DEP

TEMPORARY DAM FOR BYPASS INSTALLATION
NOT TO SCALE

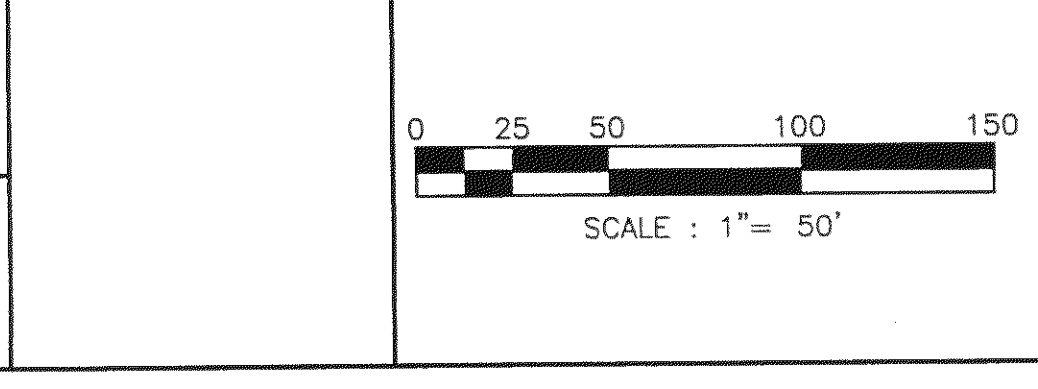
P:\2016\1677058\DWG\Final\Drawings\19 E&S NOTES AND DETAILS.dwg | Tabname: 20-E&S DET 2 | Jun 26, 2017 - 11:58am | ltwilcox

Written dimensions shall have priority over stated dimensions. All dimensions, elevations, locations, and conditions shall be verified by the Contractor prior to construction, and the Owner and Boucher & James, Inc. shall be notified of any discrepancies with the information shown on drawings.
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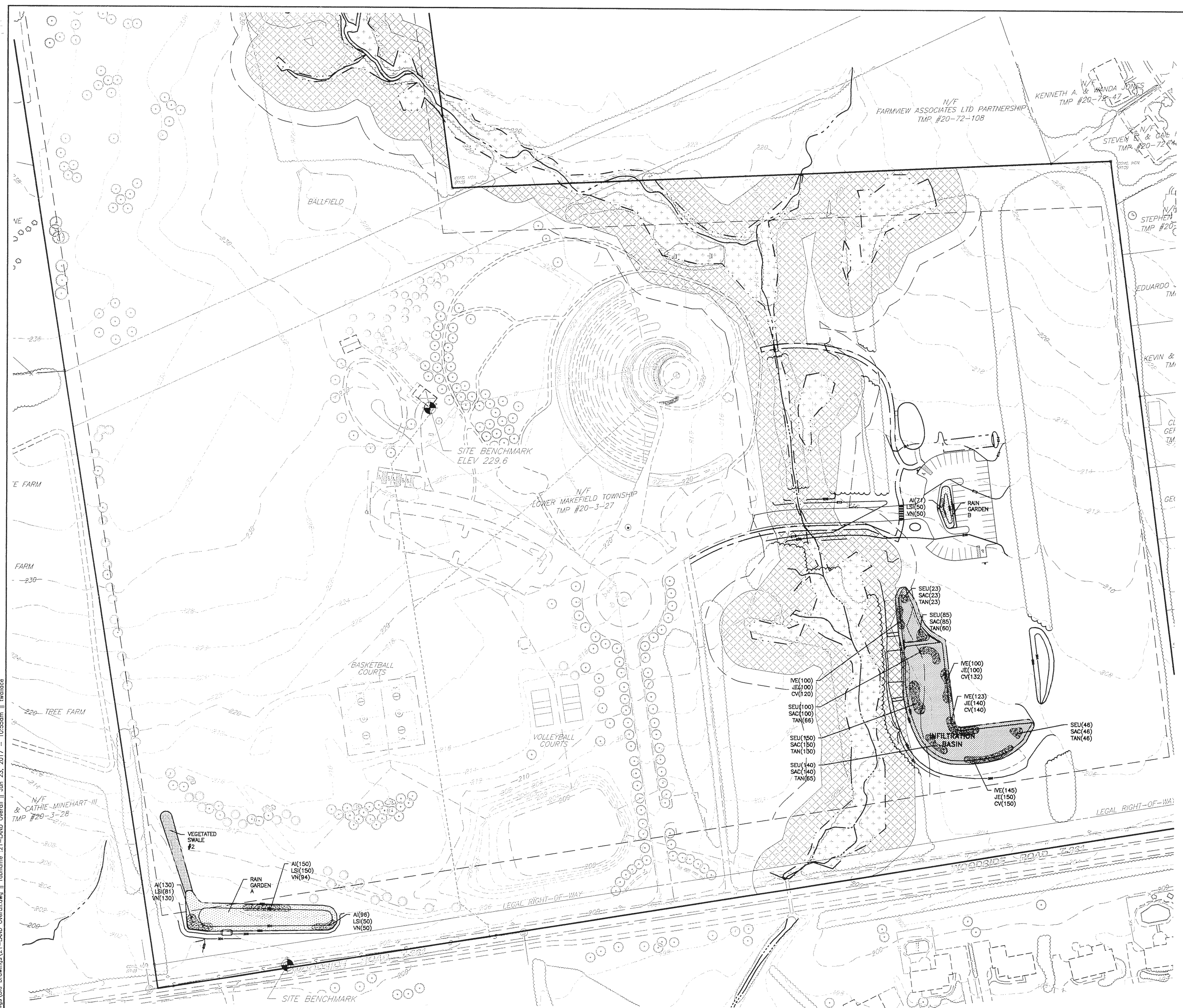
DATE	DESCRIPTION	DATE	DESCRIPTION
03/10/17	REFLECTS BID ALTERNATES		
06/05/17	GRADING REVISIONS FOR ADDENDUM		
06/22/17	REVISIONS FOR CONSTRUCTION		

PROJECT: MEMORIAL PARK EXPANSION
LOWER MAKEFIELD TOWNSHIP
BUCKS COUNTY, PENNSYLVANIA
APPLICANT: LOWER MAKEFIELD TOWNSHIP
1100 EDGEWOOD ROAD
YARDLEY, PA 19067



ISSUED FOR CONSTRUCTION
Boucher & James, Inc.
JUN 26 2017
DATE

JOB NO: 1677058
TITLE: EROSION AND SEDIMENT CONTROL PLAN NOTES & DETAILS (2 OF 2)
DRAWN BY: R.D.J.
CHECKED BY: J.S.G.
SCALE: 1" = 50'
PLAN STATUS: PRELIMINARY/FINAL
PROJECT NAME: MEMORIAL PARK EXPANSION - BID SET
SHEET: 20 of 25
DATE: APRIL 14, 2017



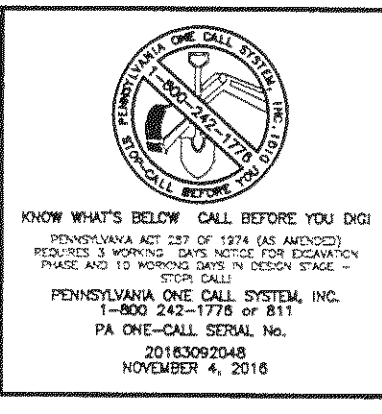
LEGEND	
	EXISTING BUILDING/STRUCTURE
	EXISTING CENTERLINE
	EXISTING SIDEWALK
	EXISTING EDGE OF PAVING
	EXISTING MONUMENT
	EXISTING IRON PIN
	EXISTING SIGN
	EXISTING UTILITY POLE
	EXISTING STREAM
	WETLANDS
	WETLAND BUFFER
	EXISTING TREELINE
	EXISTING TREELINE TO BE REMOVED
	EXISTING SHRUB
	EXISTING DECIDUOUS TREE
	EXISTING CONIFEROUS TREE
	LEGAL RIGHT-OF-WAY
	OUTBOUND
	BUILDING SETBACK LINE
	PROPOSED CENTERLINE
	PROPOSED EDGE OF PAVING
	PROPOSED SIGN
	HANDICAP PARKING
	PROPOSED WALKING TRAIL
	FUTURE WALKING TRAIL
	PROPOSED PAVED PARKING AND ACCESS DRIVES
	PROPOSED TREELINE
	OBL WETLAND SEED MIX - ERNMX-131
	RAIN GARDEN SEED MIX - ERNMX-180
	NO-MOW COVER MIX - PDOT-L
	PLUG AREAS

PA 2016A 1677058 Dwg) Bid Drawings\21-LAND Overall.dwg | Tabname: 21-LAND Overall | Jun 23, 2017 - 10:55am | twellisc

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DATE	DESCRIPTION	DATE	DESCRIPTION
05/10/17	REFLECTS BID ALTERNATES		
06/05/17	GRADING REVISIONS FOR ADDENDUM		
06/22/17	REVISIONS FOR CONSTRUCTION		

PROJECT: MEMORIAL PARK EXPANSION
LOWER MAKEFIELD TOWNSHIP
BUCKS COUNTY, PENNSYLVANIA

APPLICANT: LOWER MAKEFIELD TOWNSHIP
1100 EDGEWOOD ROAD
YARDLEY, PA 19067

SCALE: 1" = 80'

0 40 80 160 240

JOB NO: 1677058

FILE: OVERALL LANDSCAPE DESIGN PLAN

DRAWN BY: R.D.J.

CHECKED BY: M.W.E.

SCALE: 1" = 80'

PLAN STATUS: PRELIMINARY/FINAL

OVERALL LANDSCAPE DESIGN PLAN

Boucher & James, Inc.
CONSULTING ENGINEERS
DOYLESTOWN • STROUDSBURG • LEHIGH VALLEY
CORPORATE HEADQUARTERS: 1456 FERRY RD, BUILDING 500, DOYLESTOWN, PA. 18901
VOICE: (215) 345-9400 FAX: (215) 345-9401

ISSUED FOR CONSTRUCTION
JUN 26 2017

SHEET 21 OF 25

DATE: APRIL 14, 2017

PROJECT NAME: MEMORIAL PARK EXPANSION - BID SET



LEGEND	
[Symbol]	EXISTING BUILDING/STRUCTURE
[Symbol]	EXISTING CENTERLINE
[Symbol]	EXISTING SIDEWALK
[Symbol]	EXISTING EDGE OF PAVING
[Symbol]	EXISTING MONUMENT
[Symbol]	EXISTING IRON PIN
[Symbol]	EXISTING SIGN
[Symbol]	EXISTING UTILITY POLE
[Symbol]	EXISTING STREAM
[Symbol]	WETLANDS
[Symbol]	WETLAND BUFFER
[Symbol]	EXISTING TREELINE
[Symbol]	EXISTING SHRUB
[Symbol]	EXISTING DECIDUOUS TREE
[Symbol]	EXISTING CONIFEROUS TREE
[Symbol]	LEGAL RIGHT-OF-WAY
[Symbol]	OUTBOUND
[Symbol]	BUILDING SETBACK LINE
[Symbol]	PROPOSED CENTERLINE
[Symbol]	PROPOSED EDGE OF PAVING
[Symbol]	PROPOSED SIGN
[Symbol]	HANDICAP PARKING
[Symbol]	PROPOSED RAIN GARDEN SEED MIX - ERNMX-180
[Symbol]	PROPOSED FLUG AREAS
[Symbol]	NO-MOW COVER MIX - PDDT-L

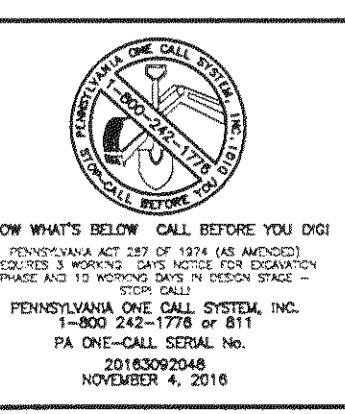
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 Boucher & James, Inc.
 JUN 26 2017

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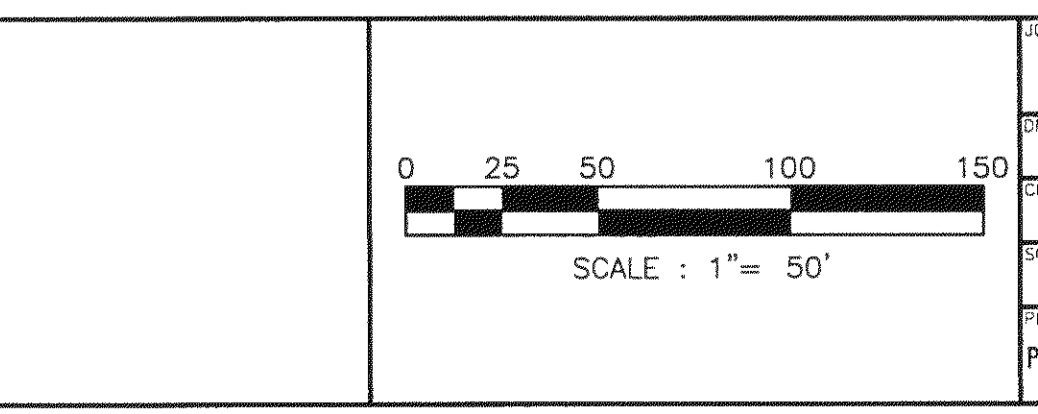
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REVISIONS		DATE	DESCRIPTION
05/10/17	REFLECTS BID ALTERNATES		
06/05/17	GRADING REVISIONS FOR ADDENDUM		
06/22/17	REVISIONS FOR CONSTRUCTION		

PROJECT: **MEMORIAL PARK EXPANSION**
 LOWER MAKEFIELD TOWNSHIP
 BUCKS COUNTY, PENNSYLVANIA

APPLICANT: **LOWER MAKEFIELD TOWNSHIP**
 1100 EDGEWOOD ROAD
 YARDLEY, PA 19067



JOB NO.: 1677058
 DRAWN BY: R.D.J.
 CHECKED BY: M.W.E.
 SCALE: 1" = 50'
 PLAN STATUS: PRELIMINARY/FINAL

TITLE: **LANDSCAPE DESIGN PLAN - WEST**

Boucher & James, Inc.
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PROJECT NAME: **MEMORIAL PARK EXPANSION - BID SET**

SHEET **22 OF 25**

DATE: **APRIL 14, 2017**



LEGEND

- EXISTING BUILDING/STRUCTURE
- EXISTING CENTERLINE
- EXISTING SIDEWALK
- EXISTING EDGE OF PAVING
- EXISTING MONUMENT
- EXISTING IRON PIN
- EXISTING SIGN
- EXISTING UTILITY POLE
- EXISTING STREAM
- WETLANDS
- WETLAND BUFFER
- EXISTING TREELINE
- EXISTING SHRUB
- EXISTING DECIDUOUS TREE
- EXISTING CONIFEROUS TREE
- LEGAL RIGHT-OF-WAY
- OUTBOUND
- BUILDING SETBACK LINE
- PROPOSED CENTERLINE
- PROPOSED EDGE OF PAVING
- PROPOSED CHAINLINK FENCE
- PROPOSED SANITARY SEWER MAIN AND STRUCTURE
- PROPOSED WATER MAIN
- PROPOSED SIGN
- HANDICAP PARKING
- PROPOSED WALKING TRAIL
- FUTURE WALKING TRAIL
- PROPOSED TREELINE
- OBL WETLAND SEED MIX - ERNMK-131
- RAIN GARDEN SEED MIX - ERNMK-180
- NO-MOW COVER MIX - PDOT-L
- PLUG AREAS

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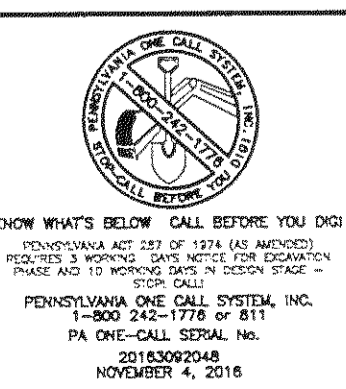
ISSUED FOR CONSTRUCTION
 Boucher & James, Inc.
 JUN 26 2017

- NOTES**
- ALL AREAS TO THE EAST OF THE TREELINE, NORTH OF THE PARKING AREA, AND SOUTH OF THE STORMWATER BASIN TO BE SEEDED WITH ERNMK-117 WARM SEASON GRASS MIX
 - FUTURE TENNIS COURT AREA TO BE SEEDED WITH A COVER CROP OF GRAIN RYE.

Written dimensions shall have priority over scaled dimensions. All dimensions, elevations, locations, and conditions, shall be verified by the Contractor prior to construction, and the Owner and Boucher & James, Inc. shall be notified of any discrepancies with the information shown on drawings.

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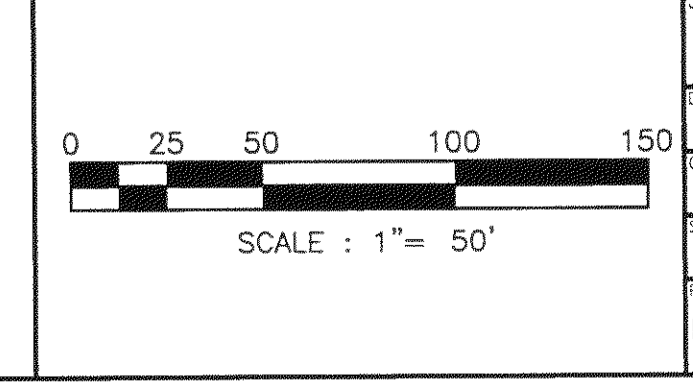
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05/10/17	REFLECTS BID ALTERNATES		
06/05/17	GRADING REVISIONS FOR ADDENDUM		
06/22/17	REVISIONS FOR CONSTRUCTION		

PROJECT : MEMORIAL PARK EXPANSION
 LOWER MAKEFIELD TOWNSHIP
 BUCKS COUNTY, PENNSYLVANIA

APPLICANT : LOWER MAKEFIELD TOWNSHIP
 1100 EDGEWOOD ROAD
 YARDLEY, PA 19067



JOB NO.: 1677058

DRAWN BY: R.D.J.

CHECKED BY: M.W.E.

SCALE: 1" = 50'

PLAN STATUS: PRELIMINARY/FINAL

TITLE : LANDSCAPE DESIGN PLAN - EAST

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 CORPORATE HEADQUARTERS: 1456 FERRY RD, BUILDING 500, DOYLESTOWN, PA. 18901
 VOICE: (215) 345-9400 FAX: (215) 345-9401

SHEET 23 of 25

DATE: APRIL 14, 2017

PROJECT NAME : MEMORIAL PARK EXPANSION - BID SET

PROTECTION OF EXISTING TREES

1. INSTALLATION OF TREE PROTECTION FENCING
 - 1.1. TREE PROTECTION FENCING SHALL BE INSTALLED ON THE SITE IN ACCORDANCE WITH THE TREE PROTECTION ZONE AND TREE PROTECTION FENCING SHOWN IN THE LANDSCAPE PLAN.
 - 1.2. FORTY-EIGHT (48) INCH HIGH SNOW FENCE OR OTHER SUITABLE FENCE, SUCH AS SUPER SILT FENCE, MOUNTED ON STEEL POSTS LOCATED EIGHT FEET ON CENTER, SHALL BE PLACED ALONG THE BOUNDARY OF THE TREE PROTECTION ZONE. STANDARD 18" SILT FENCE SHALL NOT BE ACCEPTABLE TO BE USED AS TREE PROTECTION FENCING.
 - 1.3. WHEN TREE PROTECTION FENCING HAS BEEN INSTALLED, IT SHALL BE INSPECTED AND APPROVED BY THE OWNER OR THEIR REPRESENTATIVE PRIOR TO COMMENCING CLEARING AND FURTHER CONSTRUCTION.
 - 1.4. TREE PROTECTION FENCING DEMARCATING THE TREE PROTECTION ZONE SHALL BE MAINTAINED UNTIL ALL WORK AND CONSTRUCTION HAS BEEN COMPLETED. ANY DAMAGES TO THE PROTECTIVE FENCING SHALL BE REPLACED AND REPAIRED BEFORE CONSTRUCTION SHALL CONTINUE.
2. PROTECTION OF TREES DURING CONSTRUCTION
 - 2.1. TREES BEING REMOVED SHALL NOT BE FELLED, PUSHED, OR PULLED INTO THE TREE PROTECTION ZONE OR INTO TREES OR OTHER VEGETATION THAT IS TO BE PRESERVED.
 - 2.2. GRADE CHANGES AND EXCAVATIONS SHALL NOT ENCRONCH UPON THE TREE PROTECTION ZONE.
 - 2.3. NO TOXIC MATERIALS, INCLUDING PETROLEUM PRODUCTS, SHALL BE STORED LESS THAN ONE HUNDRED (100) FEET FROM A TREE PROTECTION ZONE OR A WATERCOURSE. IF FIELD CONDITIONS WARRANT, A GREATER DISTANCE MAY BE REQUIRED.
 - 2.4. THE AREA WITHIN THE TREE PROTECTION ZONE SHALL NOT BE BUILT UPON NOR SHALL ANY MATERIALS BE STORED THERE EITHER TEMPORARILY OR PERMANENTLY. VEHICLES AND EQUIPMENT SHALL NOT BE PARKED IN THE TREE PROTECTION ZONE.
 - 2.5. SEDIMENT, RETENTION, AND DETENTION BASINS SHALL NOT DISCHARGE INTO THE TREE PROTECTION ZONE.
 - 2.6. TREES SHALL NOT BE USED FOR ROPING, CABLES, SIGNS, OR FENCING, AND NAILS AND SPIKES SHALL NOT BE DRIVEN INTO TREES, WITH THE EXCEPTION OF BRACING OR SUPPORT STRUCTURES SPECIFICALLY INSTALLED BY AN ISA CERTIFIED ARBORIST FOR THE SUPPORT OF THE TREE.
 - 2.7. WHEN TREE STUMPS ARE LOCATED WITHIN TEN (10) FEET OF THE TREE PROTECTION ZONE, THE STUMPS SHALL BE REMOVED BY MEANS OF A STUMP GRINDER TO MINIMIZE THE EFFECT ON SURROUNDING ROOT SYSTEMS.
 - 2.8. TREE ROOTS SHALL BE PRUNED BY USE OF A TRENCH ONE (1) FOOT FROM THE LIMIT OF DISTURBANCE. TREE ROOTS WHICH MUST BE SEVERED SHALL BE CUT CLEANLY USING A VIBRATORY KNIFE OR OTHER ACCEPTABLE EQUIPMENT. ALL CUTS SHALL BE MADE RADIAL TO THE TREE(S).
3. TREES DAMAGED DURING CONSTRUCTION
 - 3.1. ANY ROOTS SEVERED INDIVIDUALLY AS A RESULT OF EXCAVATION SHALL BE TRIMMED SO THAT THE EDGES ARE SMOOTH AND CUT BACK TO A LATERAL ROOT IF EXPOSED.
 - 3.2. WITHIN FOUR HOURS OF ANY SEVERANCE OF ROOTS, ALL TREE ROOTS THAT HAVE BEEN EXPOSED AND/OR DAMAGED SHALL BE TRIMMED CLEANLY AND COVERED TEMPORARILY WITH MOIST PEAT MOSS, NATURAL BURLAP OR OTHER BIODEGRADABLE MATERIAL TO KEEP THEM FROM DRYING OUT UNTIL PERMANENT COVER CAN BE INSTALLED.
 - 3.3. DAMAGED BRANCHES SHALL BE PRUNED IN ACCORDANCE WITH THE STANDARDS SPECIFIED BY THE TREE CARE INDUSTRY ASSOCIATION IN THE LATEST EDITION OF "AMERICAN NATIONAL STANDARD FOR TREE CARE OPERATIONS" ANSI A300 (PART 1) - 2008 PRUNING OR LATEST EDITION. ALL CUTS SHALL BE MADE SUFFICIENTLY CLOSE TO THE TRUNK OR PARENT LIMB WITHOUT CUTTING INTO THE BRANCH COLLAR OR LEAVING A PROTRUDING STUB. ALL NECESSARY PRUNING CUTS SHALL BE MADE TO PREVENT BARK FROM BEING TORN FROM THE TREE AND TO FACILITATE RAPID HEALING.
 - 3.4. ANY OTHER WOUNDS OR DAMAGE THAT OCCURS TO TREES TO BE PRESERVED SHALL BE ADDRESSED BY AN ISA CERTIFIED ARBORIST.

WARM SEASON GRASS MIX - ERNMX-117

PCT.	BOTANICAL NAME	COMMON NAME
70%	AVENA SATIVA	OATS
15%	SCHIZACHYRIUM SCOPARIUM	LITTLE BLUESTEM -PA ECOTYPE
5%	ANDROPOGON GERARDII, "NIAGARA"	BIG BLUESTEM "NIAGARA"
5%	PANICUM VIRGATUM, "SHELTER"	SWITCHGRASS "SHELTER"
5%	SORGHASTRUM NUTANS, PA ECOTYPE	INDIANGRASS PA ECOTYPE

WARM SEASON GRASS MIX SEEDING & MAINTENANCE NOTES

1. SEED AREAS:
 - ALL AREAS TO THE EAST OF THE TREELINE, NORTH OF THE PARKING AREA, AND SOUTH OF THE STORMWATER BASIN TO BE SEEDDED WITH ERNMX-117 WARM SEASON GRASS MIX.
2. SITE PREPARATION:
 - REMOVE AND CONTROL WEEDY GROWTH BY THE APPLICATION OF HERBICIDAL GLYPHOSATE SOLUTION (ROUNDUP, RODEO, ETC.) BY A LICENSED TECHNICIAN, ACCORDING TO MANUFACTURERS RECOMMENDED RATES.
 - DEEP ROOTED PERENNIALS AND WOODY SPECIES MAY REQUIRE SPECIAL REMOVAL AND CONTROL MEASURES.
 - TILL SOIL TO A DEPTH OF 2" FOLLOWED BY ROLLING OR TRACKING TO CREATE A FIRM SEEDBED.
 - RETURN TOPSOIL TO THE SITE.
3. SEEDING:
 - SEEDING MAY BE CONDUCTED BETWEEN APRIL 1 THROUGH JUNE 15 -OR- SEPTEMBER 15 THROUGH NOVEMBER 1.
 - SEED AT RATE SPECIFIED FOR THE SPECIFIC SEED MIX.
 - INSTALL SEED MIX USING DRILL SEEDING (PLANTING DEPTH OF EQUIPMENT AT THE RATE SPECIFIED FOR THE SEED MIX LISTED ABOVE).
 - SEED TAGS SHALL BE PROVIDED TO THE OWNER OR OWNERS PROJECT REPRESENTATIVE PRIOR TO THE INSTALLATION OF THE SPECIFIED MIX.
 - ALL SEED SHALL BE LABELED UPON DELIVERY.
 - DO NOT SEED AREAS IN EXCESS OF WHICH CAN BE MULCHED IN THE SAME DAY.
 - APPLY THIN LAYER OF STRAW MULCH OVER ALL NEWLY INSTALLED SEED AT A RATE OF 50 LBS PER ACRE.
 - DO NOT INSTALL SEED IMMEDIATELY FOLLOWING EXCESSIVE RAINFALL EVENTS.
 - A MINIMUM OF 1" OF WATER PER WEEK SHALL BE PROVIDED FOR ALL SEED MIXES THROUGH DECEMBER 1ST. RAINFALL MAY BE DEDUCTED FROM THE REQUIRED AMOUNT OF WATERING FOR THAT SAME WEEK IN WHICH THE RAIN EVENT OCCURS.
 - CONTRACTOR SHALL WARRANTY SEED MIX INSTALLATION FOR ONE YEAR AFTER DATE OF ACCEPTANCE.
 - ACCEPTANCE IS BASED UPON A MINIMUM OF 80% GERMINATION RATE WHERE EXPOSED GRADE IS NOT GREATER THAN A 3-FOOT BY 3-FOOT AREA ANYWHERE IN THE PROJECT AREA. GERMINATION RATES WILL BE DETERMINED BY FIELD INSPECTION AND VISUAL ESTIMATE CONDUCTED BY THE LANDSCAPE ARCHITECT RESPONSIBLE FOR THESE PLANS.
4. MAINTENANCE:
 - FIRST YEAR MAINTENANCE: WHEN VEGETATION REACHES 12 TO 18" IN HEIGHT, MOW TO NO LESS THAN 6" WITH A MOWER OR WEED EATER TO PREVENT WEEDS FROM GOING TO SEED. DO NOT MOW WITH A LAWN MOWER. DO NOT MOW BETWEEN APRIL 1 AND JUNE 20 EACH YEAR TO PROTECT GROUND NESTING SITES AND PROVIDE COVER AND FOOD FOR YOUNG ANIMALS.
 - SECOND YEAR MAINTENANCE: MOW ONCE, AS CLOSE TO THE GROUND AS POSSIBLE, IN EARLY SPRING DO NOT MOW WITH A LAWN MOWER. DO NOT MOW BETWEEN APRIL 1 AND JUNE 20 EACH YEAR TO PROTECT GROUND NESTING SITES AND PROVIDE COVER AND FOOD FOR YOUNG ANIMALS.
 - GENERAL MAINTENANCE: INSPECT AND SPOT TREAT SEEDDED AREAS FOR INVASIVE SPECIES. RESEED ANY BARE OR DISTURBED AREAS WITH SEED MIX AND COVER CROP AT THE RATES INDICATED ABOVE. MOW ONCE PER YEAR IN EARLY SPRING AS NEEDED.

NO-MOW COVER MIX - PDOT-L

AREA TO BE SEEDDED WITH ERNST CONSERVATION SEED COMPANY NO-MOW COVER MIX - PDOT-L NO-MOW COVER MIX PDOT-L OR APPROVED EQUAL AT A RATE OF 233 LBS. PER ACRE APPROX. 0.18 AC. OF SEEDDED AREA PROPOSED. APPROX. 42 LBS. OF NO-MOW COVER MIX PDOT-L REQUIRED.

PCT.	BOTANICAL NAME	COMMON NAME
35%	FESTUCA RUBRA	CREeping RED FESCUE
27.5%	FESTUCA BREVIPILO, 'BEACON'	HARD FESCUE 'BEACON'
27.5%	FESTUCA BREVIPILO, 'HARPOON'	HARD FESCUE 'HARPOON'
10%	LOLIUM MULTIFLORUM (L. PERENNE VAR. ITALICUM)	ANNUAL RYEGRASS

VEGETATED SWALE #2 SEEDING NOTES

1. SITE PREPARATION:
 - MOW TO A HEIGHT OF 2". TWO WEEKS PRIOR TO APPLICATION OF HERBICIDE.
 - PROTECT DESIRABLE SHRUBS AND TREES ADJACENT TO AREAS WHERE NON-SELECTIVE HERBICIDE IS TO BE APPLIED.
 - REMOVAL AND CONTROL OF WEEDY GROWTH BY SPRAYING OF APPROVED NON-SELECTIVE HERBICIDE (GLYPHOSPHATE) SHALL BE CONDUCTED BY LICENSED SPRAY TECHNICIAN. GOOD PRE-SEEDING WEED CONTROL MAY REQUIRE SPRAYING TWO APPLICATIONS OF GLYPHOSPHATE (AT LEAST TWO WEEKS APART). DEEP ROOTED PERENNIALS AND WOODY SPECIES MAY REQUIRE SPECIAL REMOVAL AND CONTROL MEASURES.
 - VERTICUT DEAD TURF/WEED AREAS TO SCARIFY SURFACE PRIOR TO SEED APPLICATION.
 - DEAD TURF IS TO REMAIN IN PLACE TO LIMIT EROSION DURING SEED GERMINATION PERIOD.
2. SEEDING:
 - SEEDING MAY BE CONDUCTED DURING THE FALL (DORMANT) SEASON ANY TIME AFTER THE FIRST HARD FROST AND BEFORE THE GROUND FREEZES OR IN SPRING AFTER THE LAST HARD FROST AND BEFORE THE 15TH OF JUNE.
 - USE COMBINATION VERTICUTER-SEEDER/AEROTATCH-SEEDER WITH SEED AGITATING MECHANISM (FOR EVEN DISTRIBUTION OF MIXED SEED SIZES) TO SCARIFY DEAD TURF AND APPLY SEED MIX.
 - SCARIFY AND APPLY SEED IN TWO (2) CROSSCUT DIRECTIONS ANGLED AS CLOSE TO 90 DEGREES TO THE ANGLE OF SLOPE ALONG SWALES AND ON HILLSIDES TO LIMIT EROSION AND SEED LOSS.
 - SEED AT RATE SPECIFIED FOR EACH SPECIFIC SEED MIX.
 - MIX SEED MIX WITH GRAIN OATS (FOR SPRING SEEDING) OR GRAIN RYE (FOR FALL SEEDING) AT A RATE OF 20 - 30 LBS/ACRE AS A SEED DISPERSAL AGENT AND COVER CROP.
 - INCORPORATE "PAM-12" EROSION CONTROL GRANULES (OR EQUIVALENT) INTO SEED MIX PRIOR TO SPREADING AS A SEED DISPERSAL, EROSION CONTROL AND MOISTURE CONTROL AGENT AT A RATE OF 250 LBS/ACRE. "PAM-12" EROSION CONTROL GRANULES (OR EQUIVALENT) MAY ALSO BE BROADCAST OR HAND SPREAD AFTER SCARIFICATION-SEEDING IS COMPLETED.
 - SEED SHALL BE SPREAD IN AREAS WHERE PLUGS ARE ALSO SPECIFIED.

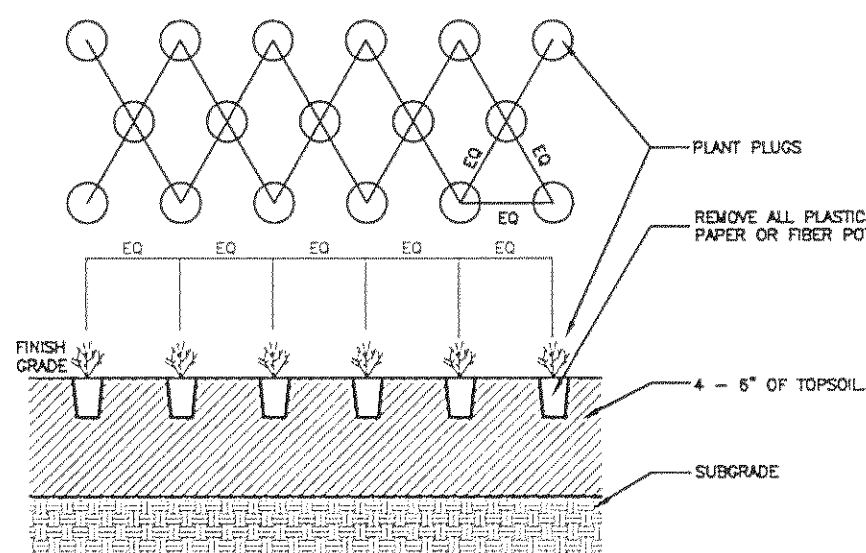
GRAIN RYE COVER CROP SEEDING

PCT.	BOTANICAL NAME	COMMON NAME
100%	SECALE CEREALE	GRAIN RYE

GRAIN RYE COVER CROP SEEDING NOTES

1. SEED AREAS:
 - FUTURE TENNIS COURT AREA TO BE SEEDDED WITH A COVER CROP OF GRAIN RYE.
2. SITE PREPARATION:
 - PREPARE AREA TO BE SEEDDED AS SPECIFIED FOR THE COVER CROP SEED.
 - REMOVAL AND CONTROL OF WEEDY GROWTH BY SPRAYING OF APPROVED NON-SELECTIVE HERBICIDE (GLYPHOSPHATE) SHALL BE CONDUCTED BY LICENSED SPRAY TECHNICIAN. GOOD PRE-SEEDING WEED CONTROL MAY REQUIRE SPRAYING TWO APPLICATIONS OF GLYPHOSPHATE (AT LEAST TWO WEEKS APART). DEEP ROOTED PERENNIALS AND WOODY SPECIES MAY REQUIRE SPECIAL REMOVAL AND CONTROL MEASURES.
2. SEEDING:
 - SEEDING MAY BE CONDUCTED BETWEEN SEPTEMBER 15TH AND NOVEMBER 1.
 - SEED AT RATE SPECIFIED FOR THE SPECIFIC SEED MIX.
 - SEED TAGS SHALL BE PROVIDED TO THE OWNER OR OWNERS PROJECT REPRESENTATIVE PRIOR TO THE INSTALLATION OF THE SPECIFIED MIX.
 - ALL SEED SHALL BE LABELED UPON DELIVERY.
 - APPLY THIN LAYER OF STRAW MULCH OVER ALL NEWLY INSTALLED SEED AT A RATE OF 50 LBS PER ACRE.
 - DO NOT INSTALL SEED IMMEDIATELY FOLLOWING EXCESSIVE RAINFALL EVENTS.
 - A MINIMUM OF 1" OF WATER PER WEEK SHALL BE PROVIDED FOR ALL SEED MIXES THROUGH DECEMBER 1ST. RAINFALL MAY BE DEDUCTED FROM THE REQUIRED AMOUNT OF WATERING FOR THAT SAME WEEK IN WHICH THE RAIN EVENT OCCURS.
 - CONTRACTOR SHALL WARRANTY SEED MIX INSTALLATION FOR ONE YEAR AFTER DATE OF ACCEPTANCE.
 - ACCEPTANCE IS BASED UPON A MINIMUM OF 80% GERMINATION RATE WHERE EXPOSED GRADE IS NOT GREATER THAN A 3-FOOT BY 3-FOOT AREA ANYWHERE IN THE PROJECT AREA. GERMINATION RATES WILL BE DETERMINED BY FIELD INSPECTION AND VISUAL ESTIMATE CONDUCTED BY THE LANDSCAPE ARCHITECT RESPONSIBLE FOR THESE PLANS.

NOTE: PLANTS MUST BE PLANTED IN SEEDING MIX OR TOPSOIL MIX IN MULCH SPACE PLANTS ON-CENTER AS INDICATED IN NURSERY STOCK SCHEDULE.



TYPICAL PLUG PLANTING DETAIL
NOT TO SCALE

PLUG PLANTING SCHEDULE

SYMBOL	QTY.	KEY	BOTANICAL NAME	COMMON NAME	MINIMUM SIZE	REMARKS
			PLUGS			
	447	AI	ASCLEPIAS INCARNATA	SWAMP MILKWEED	2" PLUG	18" O.C.
	542	CV	CAREX VULPINOIDEA	FOX SEDGE	2" PLUG	18" O.C.
	468	VE	IRIS VERSICOLOR	BLUE FLAG IRIS	2" PLUG	18" O.C.
	490	JE	JUNCUS EFFUSUS	SOFT RUSH	2" PLUG	18" O.C.
	331	LSI	LOBELIA SIPHILITICA	BLUE LOBELIA	2" PLUG	18" O.C.
	644	SAC	SCRIPUS ACUTUS	BULLRUSH, HARD-STEM	2" PLUG	18" O.C.
	544	SEU	SPARGANIUM EURYCARPUM	OGON BUR-REED	2" PLUG	18" O.C.
	390	TAN	TYPHIA ANGUSTIFOLIA	CATTAIL	2" PLUG	18" O.C.
	324	VNI	VERNONIA NOBILORACENSIS	NEW YORK IRONWEED	2" PLUG	18" O.C.

GENERAL SEEDING & PLUG INSTALLATION

1. SITE PREPARATION:
 - PREPARE AREA TO BE SEEDDED AS SPECIFIED FOR EACH SEED MIXTURE.
 - PROTECT DESIRABLE SHRUBS AND TREES ADJACENT TO AREAS WHERE NON-SELECTIVE HERBICIDE IS TO BE APPLIED.
 - REMOVAL AND CONTROL OF WEEDY GROWTH BY SPRAYING OF APPROVED NON-SELECTIVE HERBICIDE (GLYPHOSPHATE) SHALL BE CONDUCTED BY LICENSED SPRAY TECHNICIAN. GOOD PRE-SEEDING WEED CONTROL MAY REQUIRE SPRAYING TWO APPLICATIONS OF GLYPHOSPHATE (AT LEAST TWO WEEKS APART). DEEP ROOTED PERENNIALS AND WOODY SPECIES MAY REQUIRE SPECIAL REMOVAL AND CONTROL MEASURES.
2. SEEDING:
 - SEEDING MAY BE CONDUCTED DURING THE FALL (DORMANT) SEASON ANY TIME AFTER THE FIRST HARD FROST AND BEFORE THE GROUND FREEZES OR IN SPRING AFTER THE LAST HARD FROST AND BEFORE THE 15TH OF JUNE.
 - SEED AT RATE SPECIFIED FOR EACH SPECIFIC SEED MIX.
 - INCORPORATE "PAM-12" EROSION CONTROL GRANULES (OR EQUIVALENT) INTO SEED MIX PRIOR TO SPREADING AS A SEED DISPERSAL, EROSION CONTROL AND MOISTURE CONTROL AGENT AT A RATE OF 250 LBS/ACRE. "PAM-12" EROSION CONTROL GRANULES (OR EQUIVALENT) MAY ALSO BE BROADCAST OR HAND SPREAD AFTER SEEDING IS COMPLETED.
 - MIX SEED MIXES WITH GRAIN OATS (FOR SPRING SEEDING) OR GRAIN RYE (FOR FALL SEEDING) AT A RATE OF 20 - 30 LBS/ACRE AS A SEED DISPERSAL AGENT AND COVER CROP.
 - SEED SHALL BE SPREAD IN AREAS WHERE PLUGS AND OTHER LANDSCAPING IS EXISTING OR SPECIFIED.
 - ALL SEED MIXES SHALL BE STORED IN SEALED DRY CONTAINERS AND KEPT IN A COOL DRY LOCATION. DAMAGED SEED PACKAGING IS NOT ACCEPTABLE.
 - SEED TAGS SHALL BE PROVIDED TO THE OWNER OR OWNERS PROJECT REPRESENTATIVE PRIOR TO THE INSTALLATION OF THE SPECIFIED MIX.
 - ALL SEED SHALL BE LABELED UPON DELIVERY.
 - DO NOT SEED AREAS IN EXCESS OF WHICH CAN BE MULCHED IN THE SAME DAY.
 - APPLY THIN LAYER OF STRAW MULCH OVER ALL NEWLY INSTALLED SEED AT A RATE OF 50 LBS PER ACRE.
 - DO NOT INSTALL SEED IMMEDIATELY FOLLOWING EXCESSIVE RAINFALL EVENTS.
 - A MINIMUM OF 1" OF WATER PER WEEK SHALL BE PROVIDED FOR ALL SEED MIXES THROUGH DECEMBER 1ST. RAINFALL MAY BE DEDUCTED FROM THE REQUIRED AMOUNT OF WATERING FOR THAT SAME WEEK IN WHICH THE RAIN EVENT OCCURS.
 - CONTRACTOR SHALL WARRANTY SEED MIX INSTALLATION FOR ONE YEAR AFTER DATE OF ACCEPTANCE.
 - ACCEPTANCE IS BASED UPON A MINIMUM OF 80% GERMINATION RATE WHERE EXPOSED GRADE IS NOT GREATER THAN A 3-FOOT BY 3-FOOT AREA ANYWHERE IN THE PROJECT AREA. GERMINATION RATES WILL BE DETERMINED BY FIELD INSPECTION AND VISUAL ESTIMATE CONDUCTED BY THE LANDSCAPE ARCHITECT RESPONSIBLE FOR THESE PLANS.
3. PLUG INSTALLATION:
 - INSTALLATION OF HERBACEOUS PLUG MATERIAL IS BEST CONDUCTED IN THE EARLY SPRING (APRIL AND MAY) OR IN THE FALL (SEPTEMBER TO NOVEMBER).
 - ALL LIVE PLANT MATERIALS SHALL BE PROTECTED AT ALL TIMES FROM TEMPERATURE EXTREMES AND DESICCATION PRIOR TO AND DURING PLANTING OPERATIONS.
 - INSTALL 2" PLANT PLUG MATERIAL IN AREAS WHERE SPECIFIED PER PLANTING PLAN.
 - INSTALLATION SHOULD BE COMPLETED AFTER SEEDING.
 - INSTALL 2" PLANT PLUGS AT 18" ON CENTER.
 - ALL PLANTINGS SHOULD BE THOROUGHLY WATERED IMMEDIATELY UPON INSTALLATION.
 - IF RAIN WATER IS INSUFFICIENT TO SETTLE IN THE PLUG MATERIAL FOR THE FIRST GROWING SEASON, SUPPLEMENTAL WATER MAY BE NECESSARY DURING DRY CONDITIONS.
 - WATERING OF THE BASIN AND SWALE AREAS SHOULD NOT BE NECESSARY ONCE THE PLANTS ARE ESTABLISHED.
 - PLUG AREAS SHALL BE MAINTAINED PER THE MAINTENANCE INSTRUCTIONS LISTED BELOW.

MAINTENANCE NOTES FOR ALL SEEDDED AREAS

1. MAINTENANCE FIRST YEAR
 - MARK PLUG PLANT AREAS TO PREVENT MOWING IN FIRST YEAR.
 - IN AUGUST OR SEPTEMBER OF THE FIRST GROWING SEASON, MOW TO 4 - 6" WITH A MOWER OR WEED EATER TO PREVENT WEEDS FROM GOING TO SEED. DO NOT MOW WITH A LAWN MOWER. MOWING TOO CLOSE WILL ENCOURAGE WEEDY SPECIES.
 - MOW APPROXIMATELY ONCE PER MONTH TO ALLOW NATIVE PLANTS TO GROW DEEPER ROOTS THAN STEMS AND TOPS IN THE FIRST YEAR.
 - IF, AFTER THE SUMMER SEASON, GRASS AND WEEDS HAVE NOT DEVELOPED SEED HEADS, DO NOT MOW IN THE FALL. ALLOW TALL FALL VEGETATION TO STAND UNTIL EARLY SPRING.
 - MONITOR MONTHLY FOR WEEDY/INVASIVE SPECIES AND REMOVE MECHANICALLY, IF POSSIBLE, OR WITH CAREFUL SPOT TREATMENTS OF HERBICIDE. PROTECT ADJACENT DESIRABLE PLANT MATERIAL FROM HERBICIDE SPRAY.
 - MONITOR MONTHLY FOR MOWING, ANIMAL OR INSECT DAMAGE.
 - LEAVE AN UNKNOWN BUFFER AROUND TREES AND SHRUBS TO PROTECT THESE SPECIES. REMOVE INVASIVE SPECIES BY HAND IN THESE AREAS AS NECESSARY.
 - CONDUCT NORMAL BASIN MAINTENANCE FOR SEDIMENT BUILDUP.
2. MAINTENANCE SECOND YEAR
 - MOW ONCE IN EARLY SPRING TO 4 - 6 INCHES BEFORE APRIL 1. DO NOT MOW BETWEEN APRIL 1 AND JUNE 20 EACH YEAR TO PROTECT GROUND NESTING SITES AND PROVIDE COVER AND FOOD FOR YOUNG ANIMALS.
 - MOW AGAIN IN LATE JUNE OR EARLY JULY.
 - MONITOR FOR WEEDY/INVASIVE SPECIES AND REMOVE MECHANICALLY, IF POSSIBLE, OR WITH CAREFUL SPOT TREATMENTS OF HERBICIDE. PROTECT ADJACENT DESIRABLE PLANT MATERIAL FROM HERBICIDE SPRAY.
 - MONITOR FOR MOWING, ANIMAL OR INSECT DAMAGE.
 - CONDUCT NORMAL BASIN MAINTENANCE FOR SEDIMENT BUILDUP.
3. MAINTENANCE THIRD YEAR AND ONGOING
 - MOW ONCE IN EARLY SPRING TO 4 - 6 INCHES BEFORE APRIL 1. DO NOT MOW BETWEEN APRIL 1 AND JUNE 20 EACH YEAR TO PROTECT GROUND NESTING SITES AND PROVIDE COVER AND FOOD FOR YOUNG ANIMALS.
 - A SECOND MOWING CAN BE DONE IN FALL IF THERE IS A CONSIDERABLE AMOUNT OF WEED SPECIES THAT NEED CONTROL.
 - THE BASINS SHOULD BE MONITORED FOR STRESS FROM POLLUTANTS IN RUNOFF. CONDUCT SOIL TESTS IF FERTILITY IS A CONCERN.
 - REMOVE WOODY SPECIES TO PREVENT SUCCESSION.
 - CONDUCT NORMAL BASIN MAINTENANCE FOR SEDIMENT BUILDUP.
 - IF REPLACEMENT PLANTS ARE NECESSARY OR CONTINUING ENHANCEMENT IS DESIRED, CHOOSE GRASS, PERENNIAL AND FERN PLUGS BASED ON IMMEDIATE SITE CONDITIONS AND ANTICIPATED HYDROLOGIC ZONE LOCATIONS PER THE PA BWP NATIVE PLANT LIST.

RAIN GARDEN SEED MIX - ERNMX-180

PCT.	BOTANICAL NAME	COMMON NAME
38%	CHASMANTHUM LATIFOLIUM	RIVER OATS PA/VA ECOTYPE BLEND
20%	ELYMUS VIRGINICUS	VIRGINIA WILDRYE, PA ECOTYPE
10%	CAREX VULPINOIDEA	FOX SEDGE PA ECOTYPE
4%	ECHINACEA PURPUREA	PURPLE CONEFLOWER
3%	PANSTEMON DIGITALIS	TALL WHITE BEARTOUNGE
3%	RUDEBECKIA HIRTA	BLACKEYED SUSAN
3%	COREOPSIS LANCEOLATA	LANCELEAF COREOPSIS
2%	TRIDACANTIA OHIENSIS	OHIO SPIDERWORT PA ECOTYPE
1%	HELIOPSIS HELIANTHOIDES	OXEYE SUNFLOWER
2%	AGROSTIS PERENNANS	AUTUMN BENTGRASS
2%	CHAMAECRISTA FASCICULATA CASSIA F.	PATRIDGE PEA
2%	LIATRIS SPICATA	MAKSH (DENSE) BLAZING STAR
1.5%	ASTER LAEVIS	SMOOTH BLUE ASTER
1%	SENA HEBCARPA	WILD SENNA VA & WV ECOTYPE
1%	ASTELER INAEGLIAE	NEW ENGLAND ASTER
1%	ASCLEPIAS ANGLATIA	SWAMP MILKWEED
1%	JUNCUS TENUIS	SOFT RUSH
1%	JUNCUS EFFUSUS	PATH RUSH
1%	MORARIA FISTULOSA	WILD BEGONIA PA ECOTYPE
0.5%	EUPATORIUM COELESTINUM	MISLEFLOWER VA ECOTYPE
0.5%	BAPTISIA AUSTRALIS	BLUE FALSE INDIGO
0.5%	SOLIDAGO JUNCEA	EARLY GOLDENROD
0.5%	PHYCNANTHEMUM TENUIFOLIUM	SLENDER MOUNTAINMINT

OBL WETLAND SEED MIX - ERNMX-131

PCT.	BOTANICAL NAME	COMMON NAME
35%	Carex vulpinoidea, PA Ecotype	Fox Sedge, PA Ecotype
20%	Carex lurida, PA Ecotype	Lurid (Shallow) Sedge, PA Ecotype
7%	Scirpus atrovirens, PA Ecotype	Green Bulrush, PA Ecotype
7%	Carex lupulina, PA Ecotype	Hop Sedge, PA Ecotype
6%	Carex scoparia, PA Ecotype	Giant Broom Sedge, PA Ecotype
4%	Sparganium eurycarpum, PA Ecotype	Blunt Bur Reed, PA Ecotype
4%	Verbena hastata, PA Ecotype	Blue Verbain, PA Ecotype
3%	Juncus effusus	Soft Rush
2%	Glyceria canadensis, PA Ecotype	Rattletanek Grass, PA Ecotype
2%	Sparganium americanum	Eastern Bur Reed
1%	Carex crinita, PA Ecotype	Fringed (Nodding) Sedge
1%	Asclepias incarnata, PA Ecotype	Swamp Milkweed, PA Ecotype
1%	Mimulus ringens, PA Ecotype	Square Stemmed Monkeyflower
1%	Scirpus validus, PA Ecotype	Softstem Bulrush, PA Ecotype
1%	Onoclea sensibilis	Sensitive Fern
1%	Scirpus cyperinus, PA Ecotype	Woolgrass, PA Ecotype
0.5%	Penthorum sedoides, PA Ecotype	Ditch Stonecrop, PA Ecotype
0.5%	Eupatorium perfoliatum, PA Ecotype	Boneset, PA Ecotype
0.5%	Eupatorium fistulosum, PA Ecotype	Joe Pye Weed, PA Ecotype
0.5%	Alisma subcordatum (A. plantago-aquatica)	Water Plantain, PA Ecotype
0.5%	Iris versicolor, PA Ecotype	Blueflag, PA Ecotype
0.5%	Bidens cernua, PA Ecotype	Nodding Bur Marigold, PA Ecotype
0.5%	Ludwigia alternifolia, PA Ecotype	Seedbox, PA Ecotype
0.5%	Solidago patula, PA Ecotype	Roughleaf Goldenrod, PA Ecotype

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DATE	DESCRIPTION	DATE	DESCRIPTION
05/10/17	REFLECTS BID ALTERNATES		
06/05/17	GRADING REVISIONS FOR ADDENDUM		
06/22/17	REVISIONS FOR CONSTRUCTION		

PROJECT: **MEMORIAL PARK EXPANSION**
LOWER MAKEFIELD TOWNSHIP
BUCKS COUNTY, PENNSYLVANIA

APPLICANT: **LOWER MAKEFIELD TOWNSHIP**
1100 EDGEWOOD ROAD
YARDLEY, PA 19067

JOB NO.: **1677058**

DESIGNED BY: **V.L.L.**

CHECKED BY: **J.S.G.**

SCALE: **NTS**

PLAN STATUS: **PRELIMINARY/FINAL**

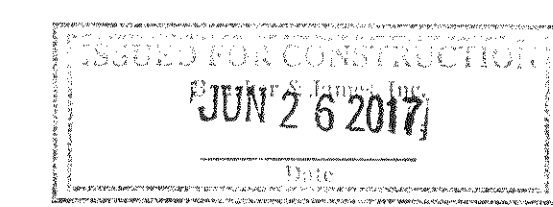
LANDSCAPE NOTES AND DETAILS

Boucher & James, Inc.
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DOYLESTOWN • STROUDSBURG • LEHIGH VALLEY
CORPORATE HEADQUARTERS: 1456 FERRY RD, BUILDING 500, DOYLESTOWN, PA 18901
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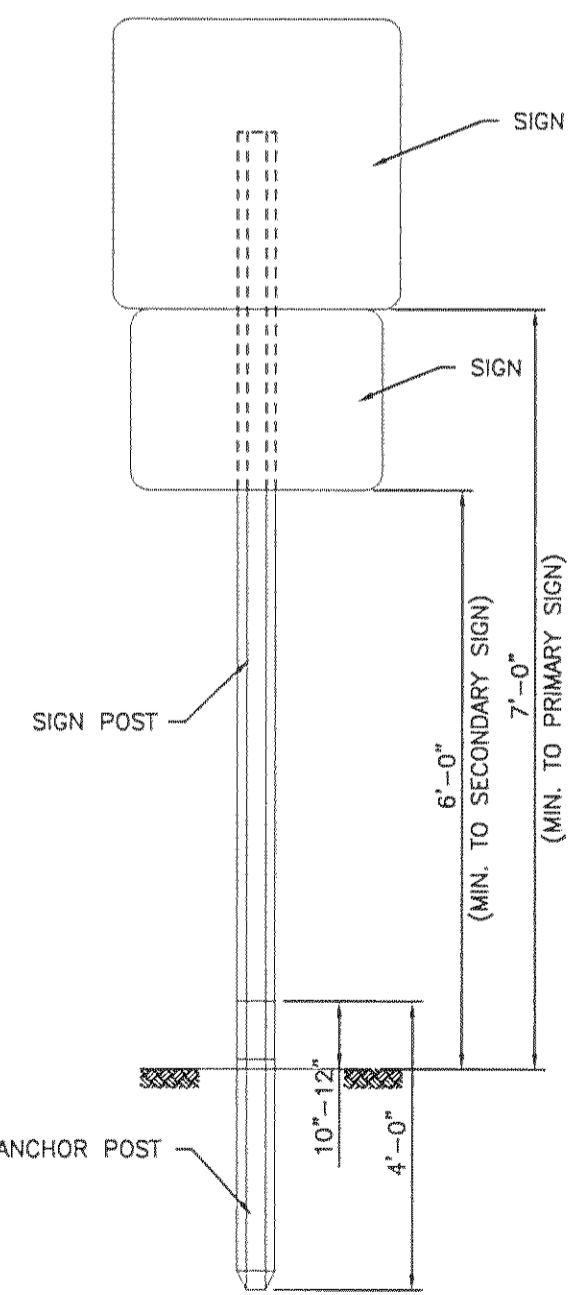
MEMORIAL PARK EXPANSION - BID SET

SHEET **24 OF 25**

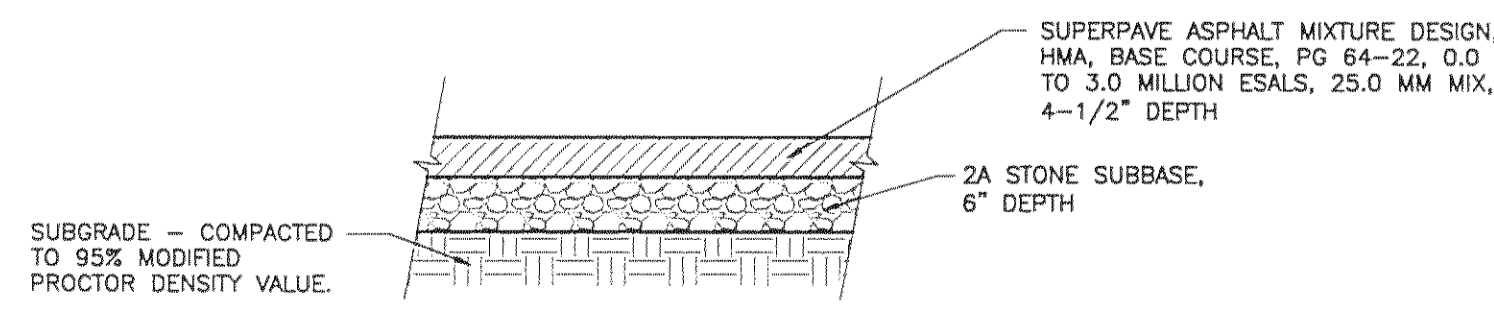
DATE: **APRIL 14, 2017**



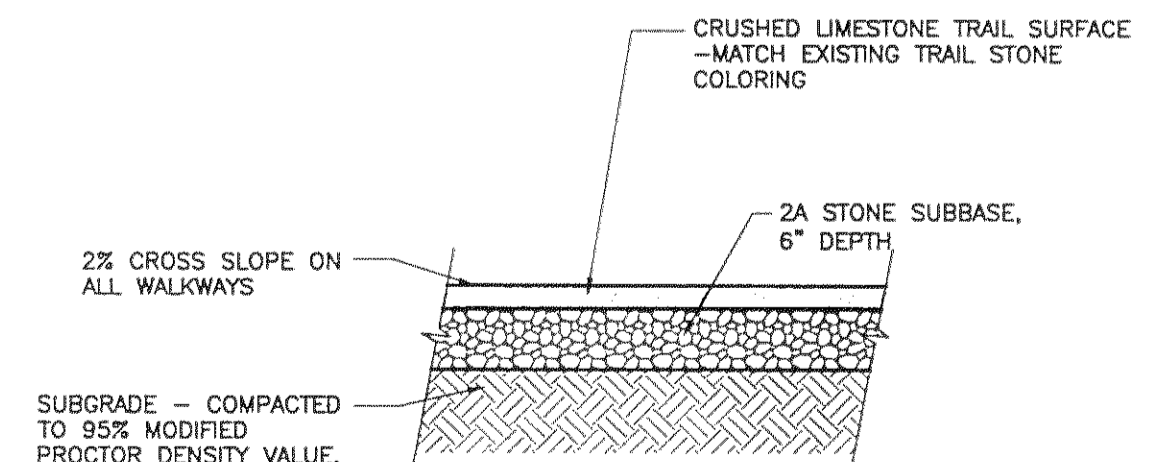
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SIGN POST INSTALLATION DETAIL
NOT TO SCALE

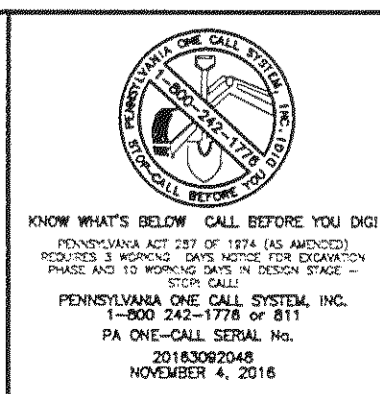


BITUMINOUS PAVEMENT - SECTION
NOT TO SCALE



BITUMINOUS PAVEMENT WALKWAY AND TRAIL - SECTION
NOT TO SCALE

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ISSUED FOR CONSTRUCTION
Boucher & James, Inc.
JUN 26 2017
Date

JOB NO.:	1677058
TITLE :	CONSTRUCTION DETAILS
DRAWN BY:	V.L.L.
CHECKED BY:	J.S.G.
SCALE:	NTS
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DATE:
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