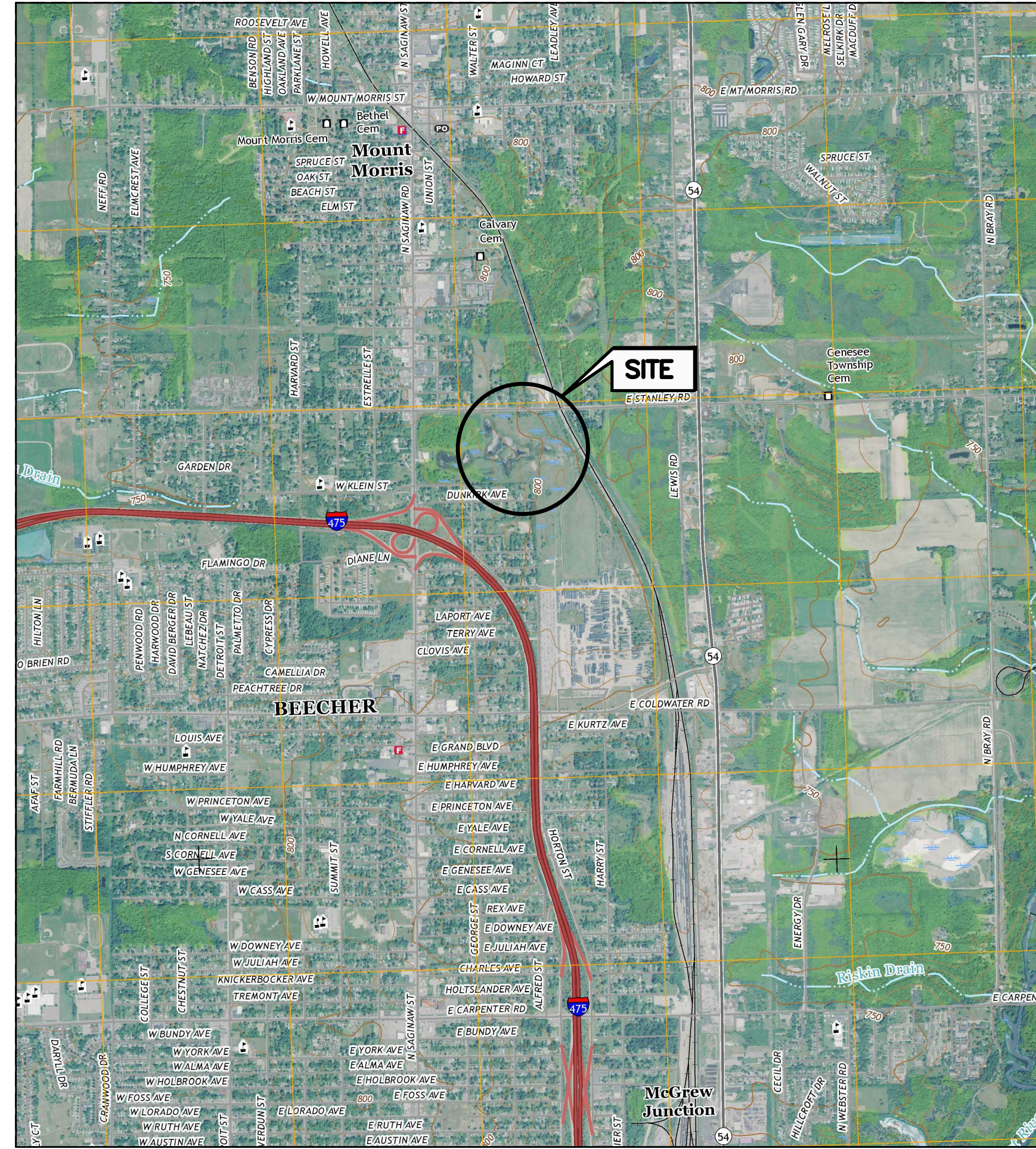


CONTRACT DRAWINGS

RACER TRUST COLDWATER ROAD FACILITY STORMWATER MANAGEMENT IMPROVEMENTS



ADAPTED FROM FLINT NORTH, MICHIGAN USGS 7.5 MINUTE SERIES QUADRANGLE

SITE LOCATION MAP

1" = 2000'

FLINT, MICHIGAN

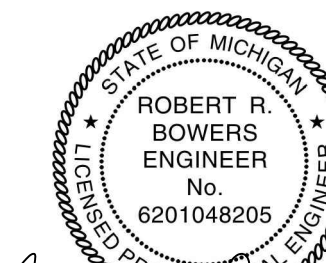
MAY 2020



O'BRIEN & GERE ENGINEERS, INC.

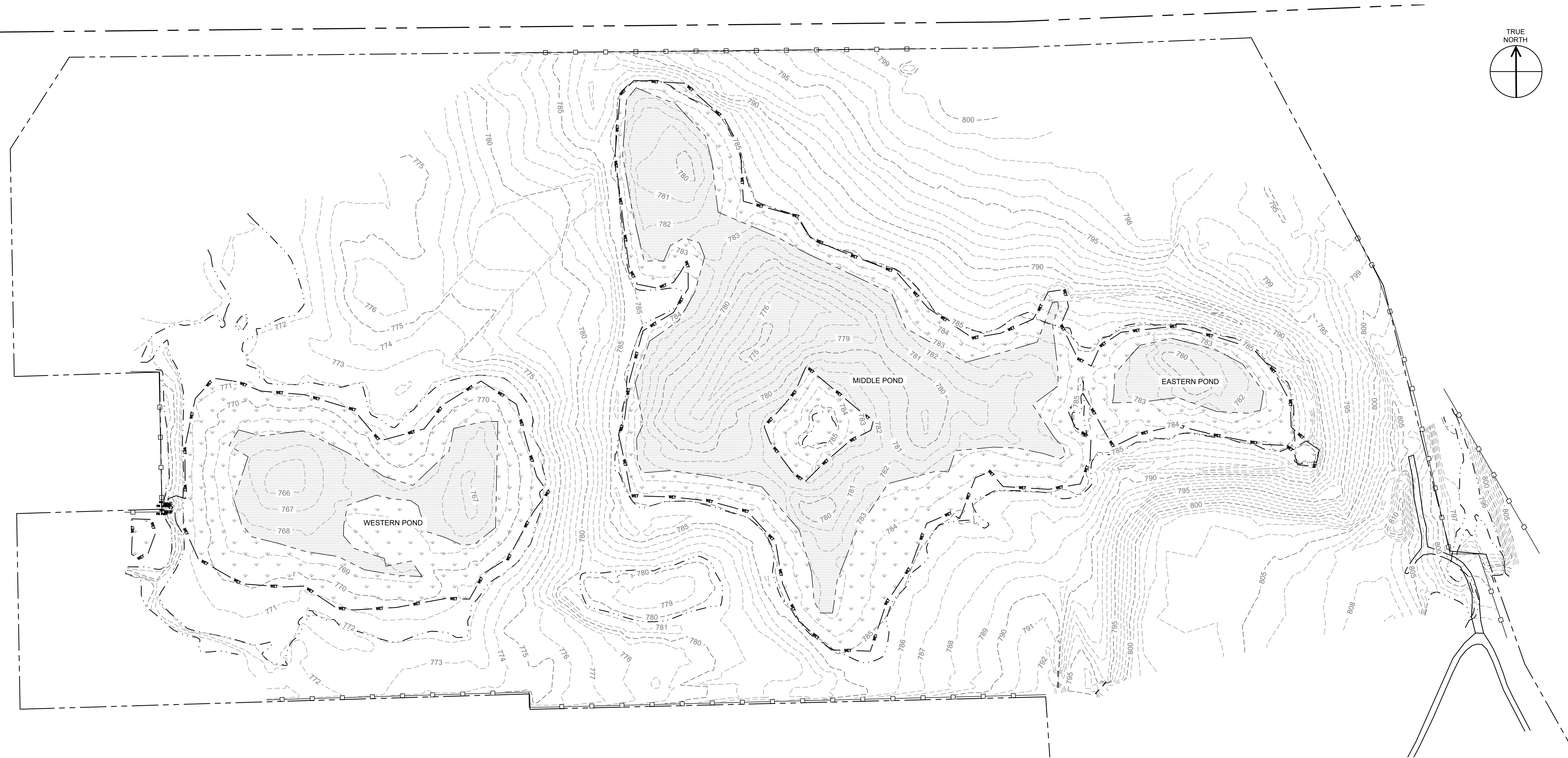
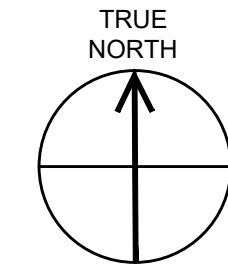
INDEX TO DRAWINGS

	TITLE SHEET
C-1	EXISTING CONDITIONS PLAN
C-2	OVERALL GRADING PLAN
C-3	PARTIAL PLAN AND PROFILE - SOUTH ACCESS DRIVE EMBANKMENT
C-4	PARTIAL PLAN AND PROFILE - STORMWATER BERM SHEET 1 OF 2
C-5	PARTIAL PLAN AND PROFILE - STORMWATER BERM SHEET 2 OF 2
C-6	PARTIAL PLAN AND PROFILE - NORTH ACCESS DRIVE EMBANKMENT
C-7	CIVIL CROSS-SECTIONS - SHEET 1 OF 3
C-8	CIVIL CROSS-SECTIONS - SHEET 2 OF 3
C-9	CIVIL CROSS-SECTIONS - SHEET 3 OF 3
C-10	TYPICAL SECTIONS
C-11	PARTIAL PLAN AND PROFILE - DRAINAGE IMPROVEMENTS
C-12	MISCELLANEOUS CONSTRUCTION DETAILS
C-13	OVERALL SOIL EROSION & SEDIMENTATION CONTROL PLAN
C-14	ENLARGED SESC PLAN - SHEET 1 OF 2
C-15	ENLARGED SESC PLAN - SHEET 2 OF 2
C-16	SOIL EROSION & SEDIMENTATION CONTROL PLAN NOTES
C-17	SOIL EROSION & SEDIMENTATION CONTROL PLAN DETAILS



Robert R. Bowers

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LEGEND

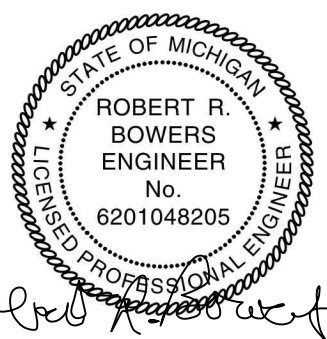
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- EXISTING FENCELINE
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- EDGE OF WATER AT TIME OF SURVEY
- AREA OF DELINEATED WETLANDS
- AREA OF DELINEATED OPEN WATER

EXISTING CONDITIONS PLAN



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EAST NORRITON, PENNSYLVANIA

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COLDWATER ROAD FACILITY

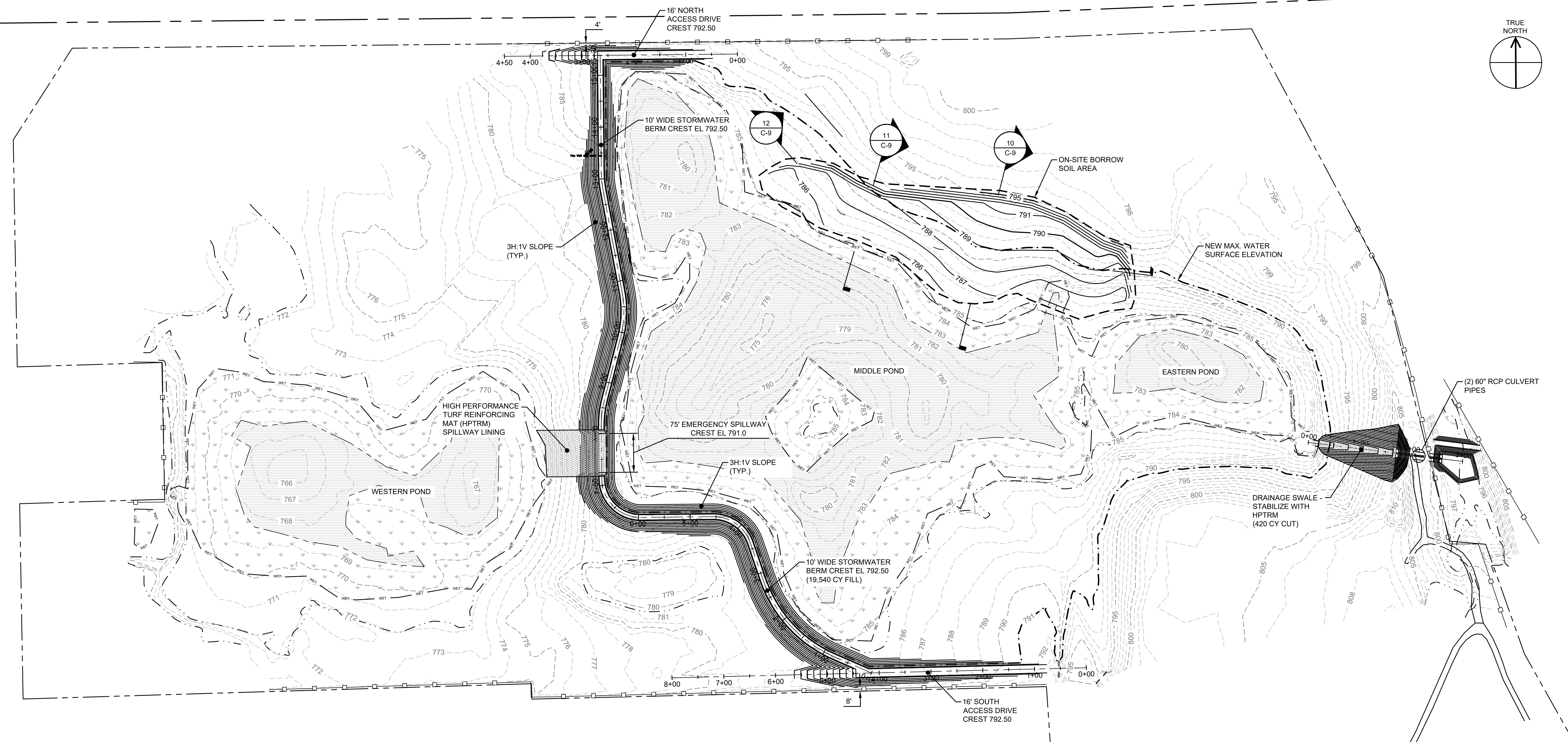
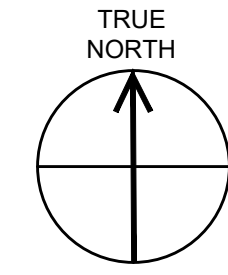
FLINT, MICHIGAN

CIVIL
STORMWATER MANAGEMENT IMPROVEMENTS

EXISTING CONDITIONS PLAN

FILE NO.	15388.72202-002
DATE	MAY 2020

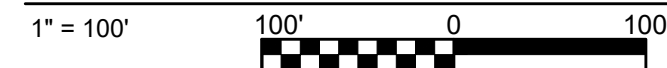
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LEGEND

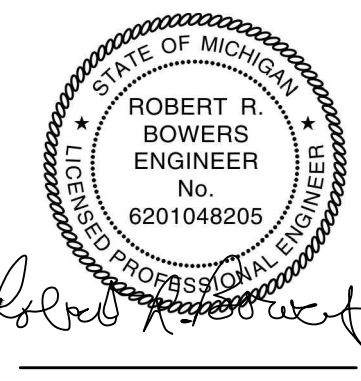
- EXISTING PROPERTY LINE
- EXISTING FENCELINE
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- EDGE OF WATER AT TIME OF SURVEY
- AREA OF DELINEATED WETLANDS
- AREA OF DELINEATED OPEN WATER
- NEW MAJOR CONTOUR
- NEW MINOR CONTOUR
- NEW MAXIMUM WATER SURFACE
- BORROW AREA
- HPTRM LINING

OVERALL GRADING PLAN



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		B	03/30/20	ISSUED FOR BID
		A	12/06/19	REVISED PER GCDC REVIEW
		NO.	DATE	REVISION
				INT.

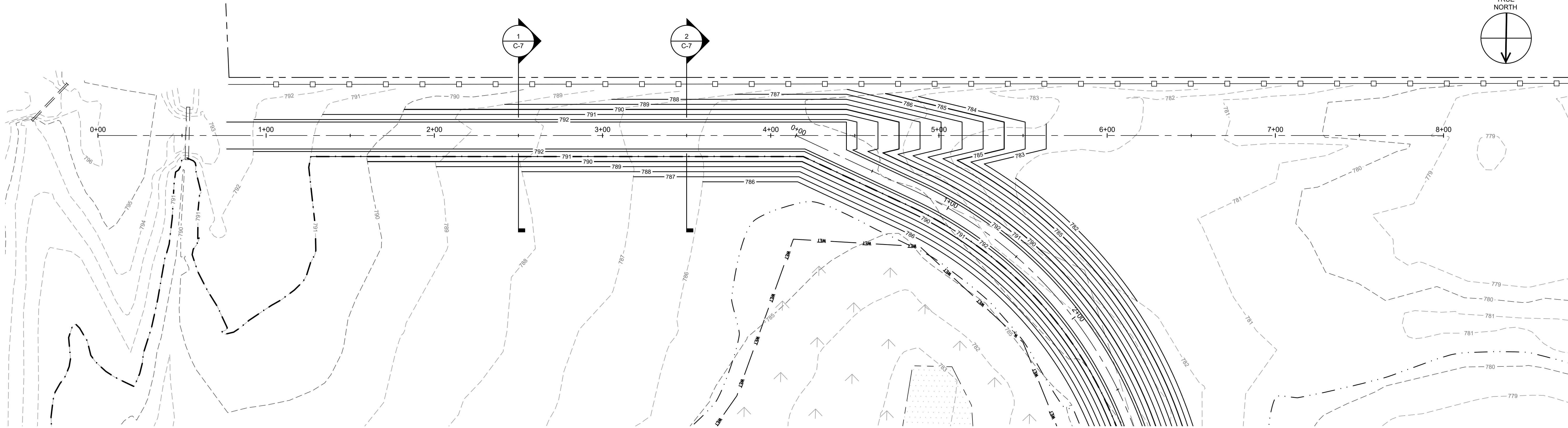
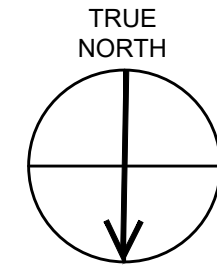
O'BRIEN & GERE ENGINEERS, INC
EAST NORRITON, PENNSYLVANIA

RACER TRUST
COLDWATER ROAD FACILITY
FLINT, MICHIGAN

CIVIL
STORMWATER MANAGEMENT IMPROVEMENTS
OVERALL GRADING PLAN

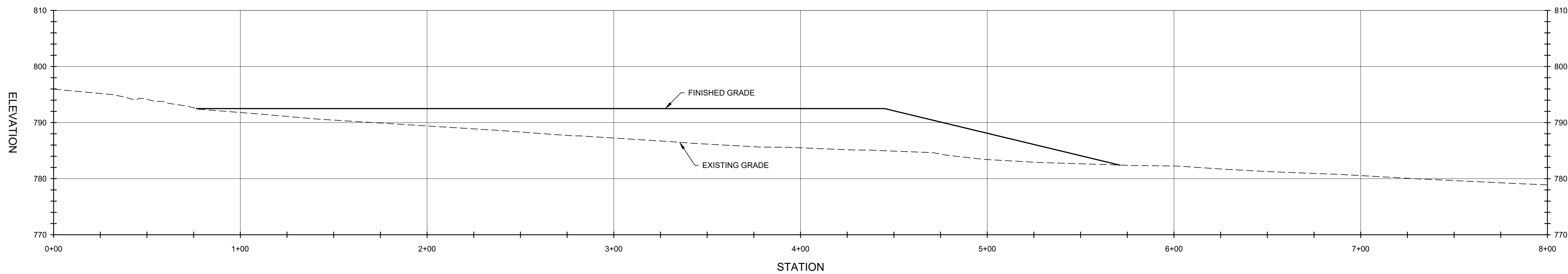
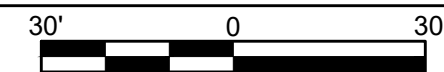
FILE NO.	15388.72202-003
DATE	MAY 2020

C-2



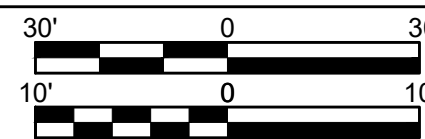
PARTIAL GRADING PLAN - SOUTH ACCESS DRIVE EMBANKMENT

1" = 30'

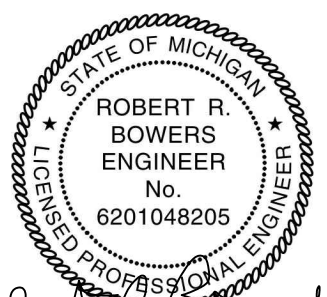


PARTIAL PROFILE - SOUTH ACCESS DRIVE CENTERLINE

SCALE: HORIZ. 1"=30'
VERT. 1"=10'



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DRAWN BY	SMS	A	12/06/19	REVISED PER GCDC REVIEW	NJA
		NO.	DATE	REVISION	INT.

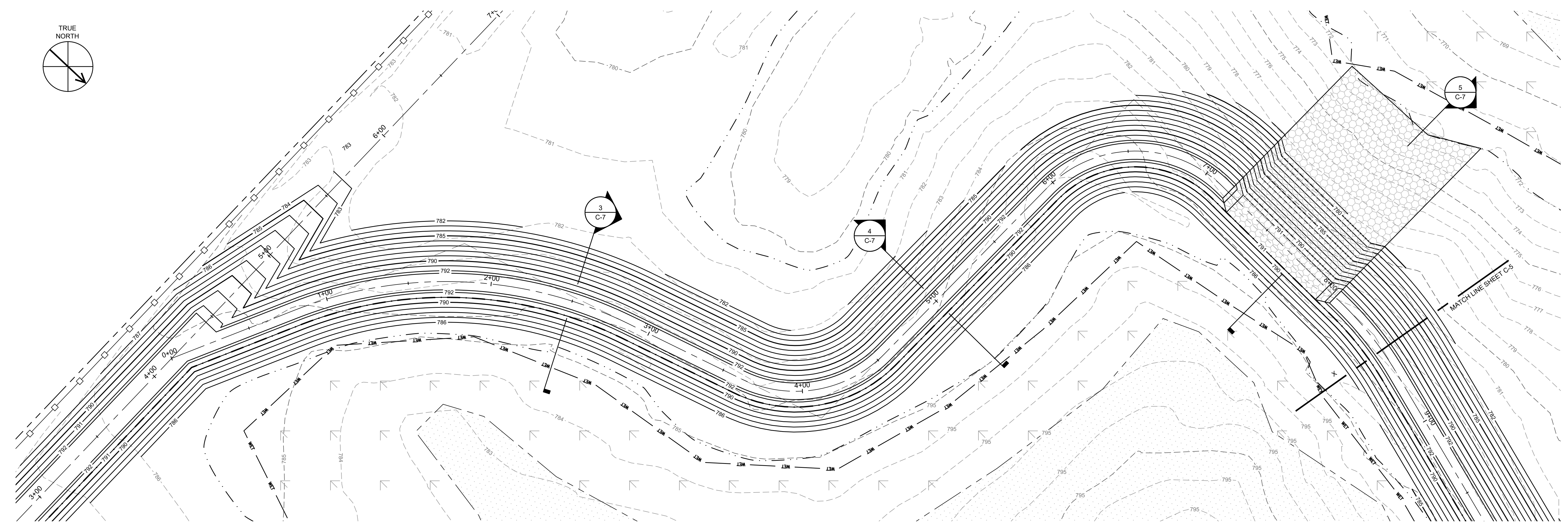
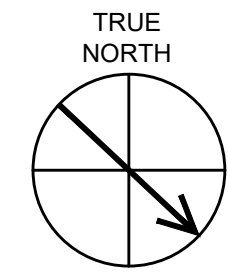


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FLINT, MICHIGAN**

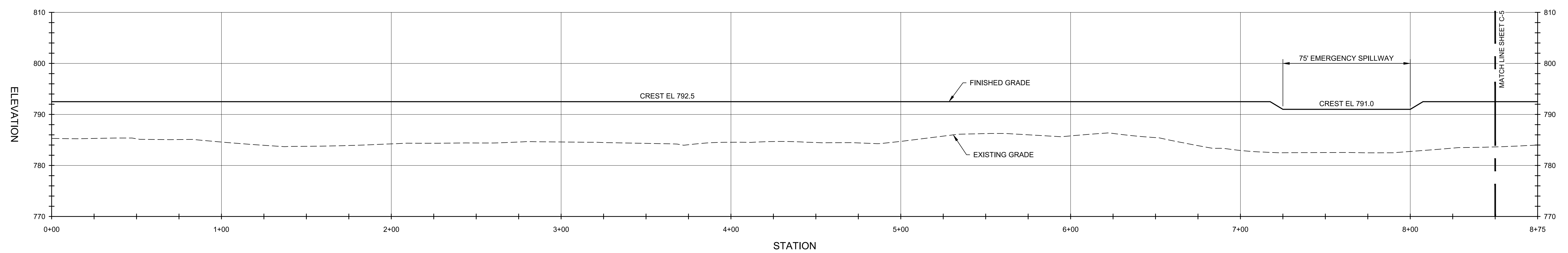
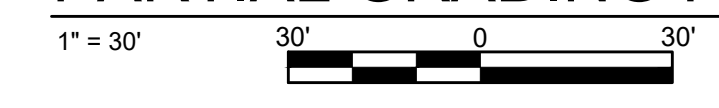
CIVIL
**STORMWATER MANAGEMENT IMPROVEMENTS
PARTIAL PLAN AND PROFILE - SOUTH
ACCESS DRIVE EMBANKMENT**

FILE NO.	15388.72202-004
DATE	MAY 2020

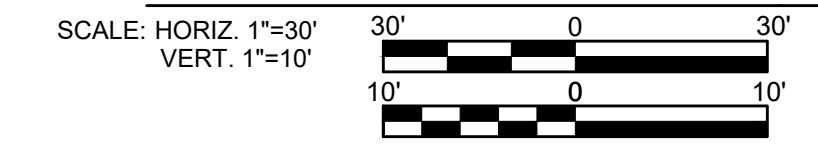
C-3



PARTIAL GRADING PLAN - STORMWATER BERM

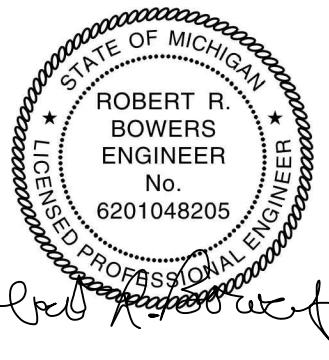


PARTIAL PROFILE - STORMWATER BERM CENTERLINE



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		NO.	DATE	REVISION
				CSY
				NJA
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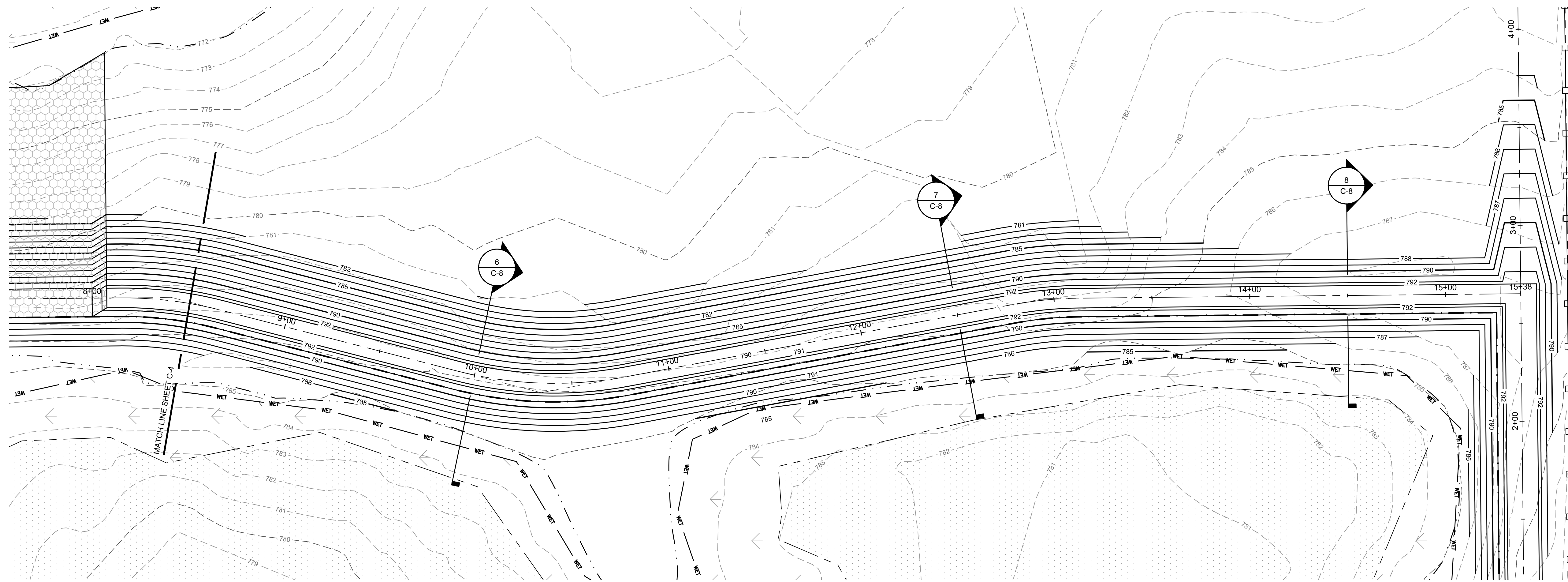


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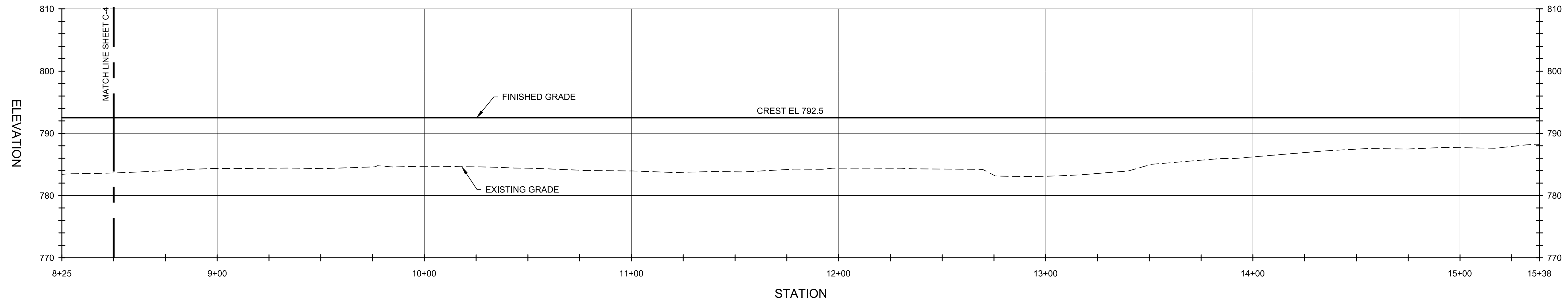
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STORMWATER MANAGEMENT IMPROVEMENTS
PARTIAL PLAN AND PROFILE -
STORMWATER BERM SHEET 1 OF 2

FILE NO.	15388.72202 -005
DATE	MAY 2020

C-4



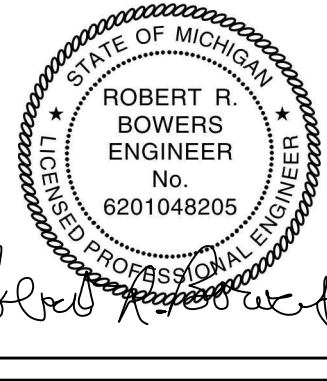
PARTIAL GRADING PLAN - STORMWATER BERM



PARTIAL PROFILE - STORMWATER BERM CENTERLINE



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		NO.	DATE	REVISION	INT.

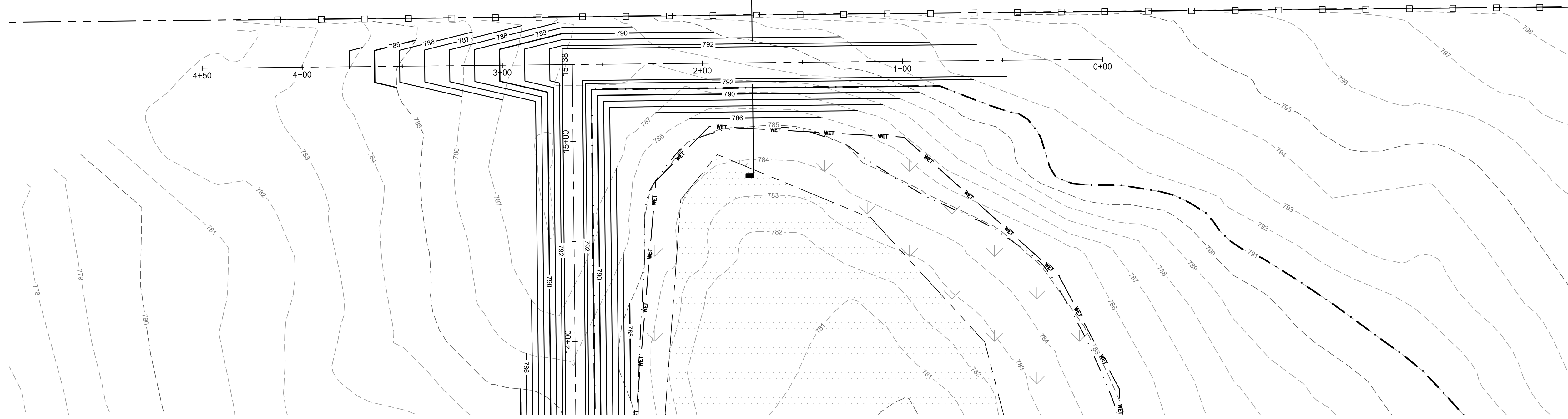
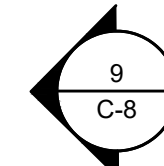
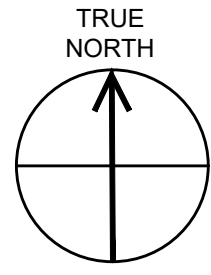
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CIVIL
STORMWATER MANAGEMENT IMPROVEMENTS
PARTIAL PLAN AND PROFILE -
STORMWATER BERM SHEET 2 OF 2

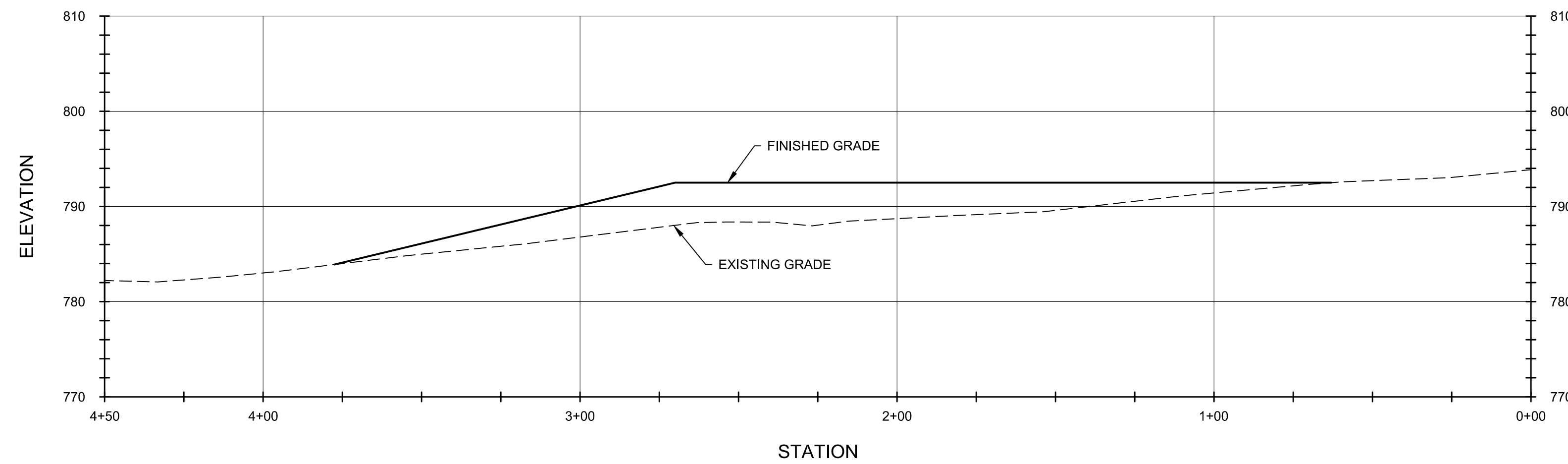
FILE NO.	15388.72202-006
DATE	MAY 2020

C-5



PARTIAL GRADING PLAN - NORTH ACCESS DRIVE EMBANKMENT

1" = 30' 30' 0 30'



PARTIAL PROFILE - NORTH ACCESS DRIVE CENTERLINE

SCALE: HORIZ. 1"=30'
VERT. 1"=10'



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FLINT, MICHIGAN

CIVIL
STORMWATER MANAGEMENT IMPROVEMENTS
PARTIAL PLAN AND PROFILE - NORTH
ACCESS DRIVE EMBANKMENT

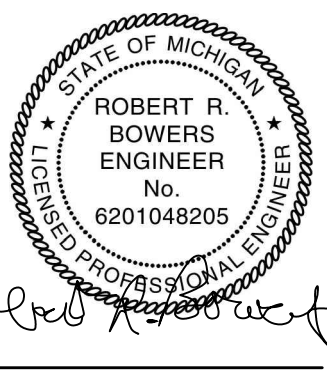
FILE NO.
15388.72202-007
DATE
MAY 2020

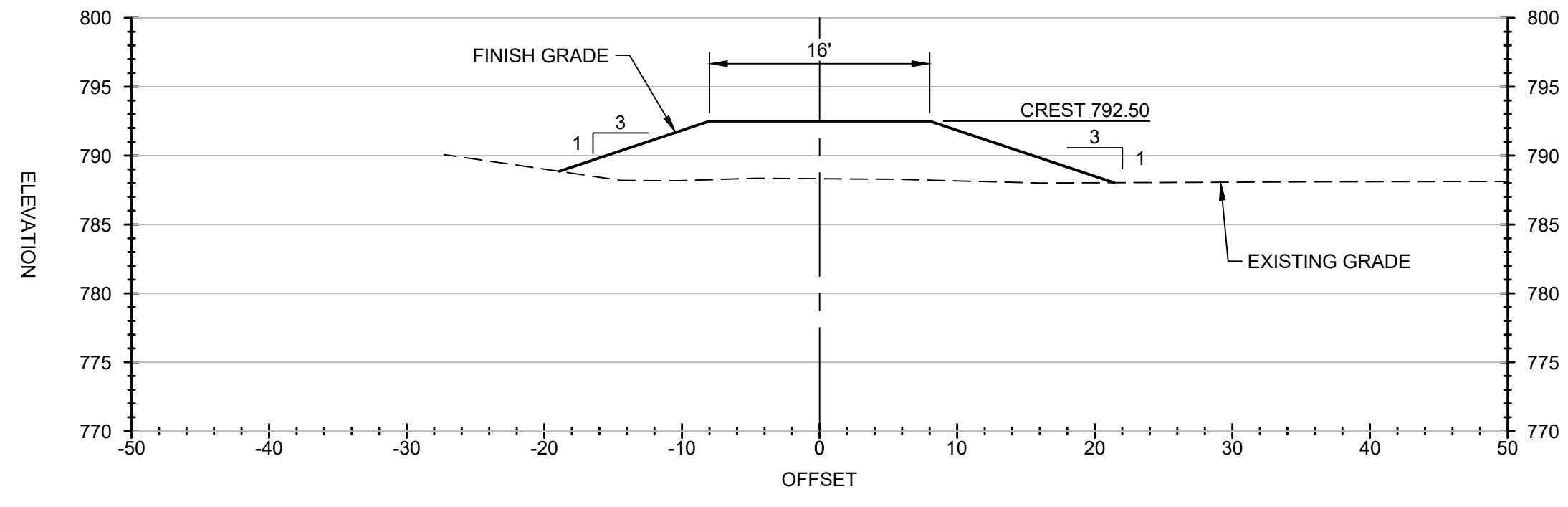
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EGLE-WD
WP202008 v1.0
Approved
Issued On:06/12/2020
Expires On:06/12/2020

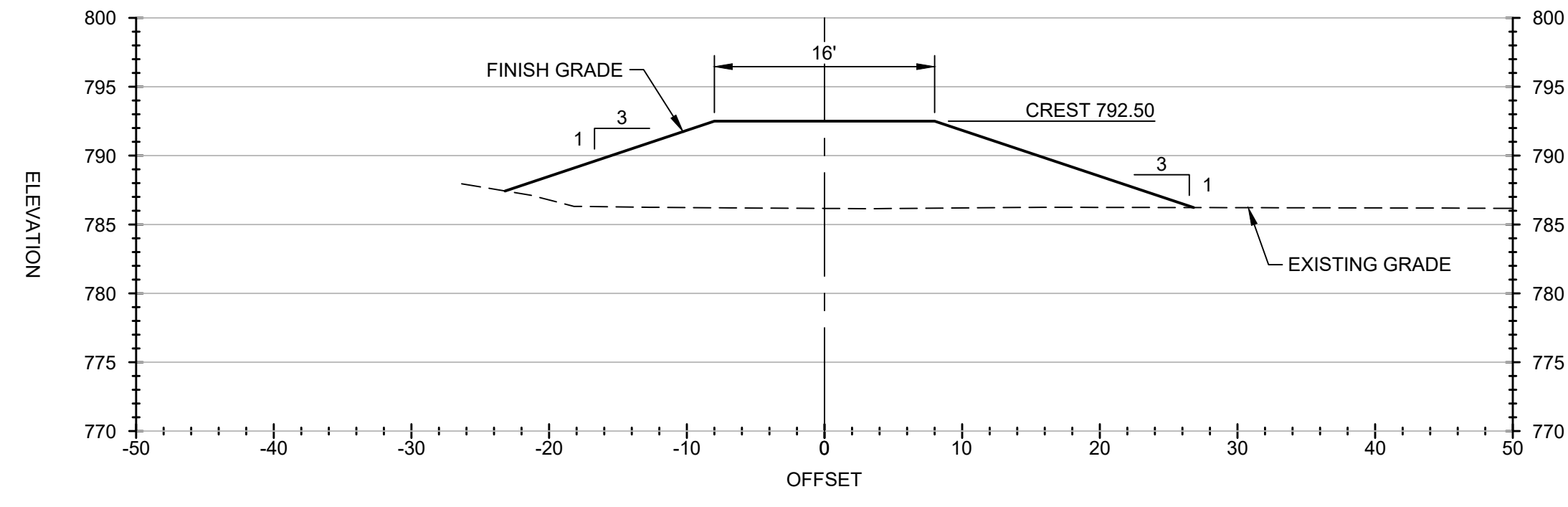
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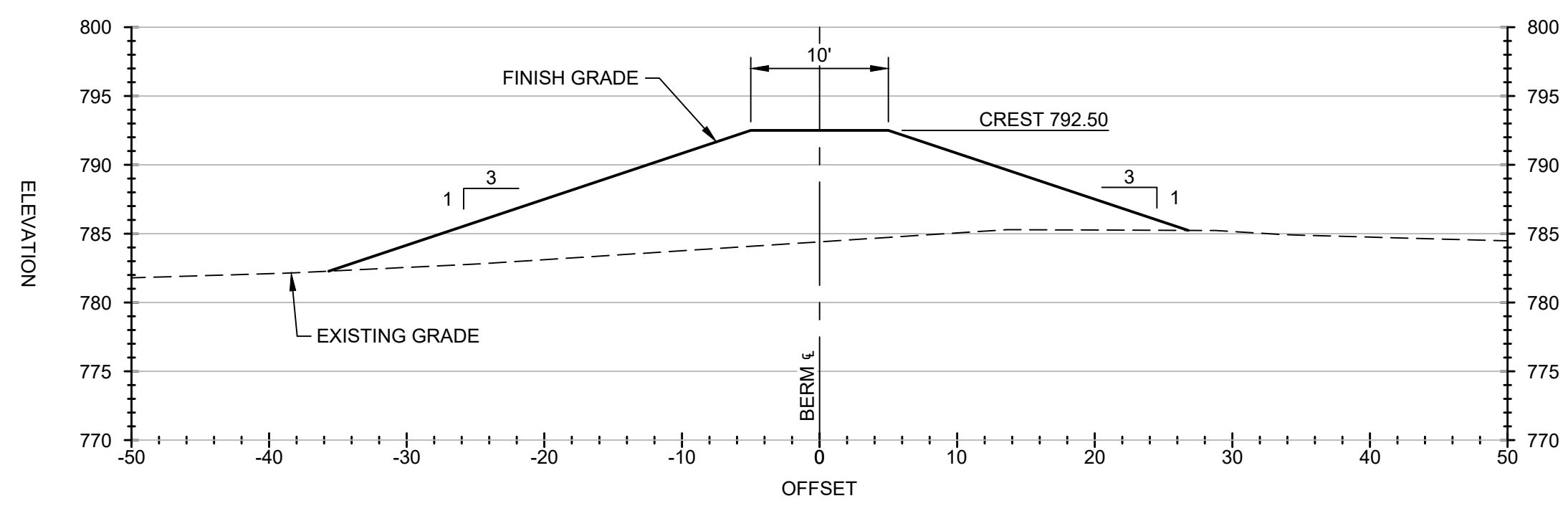




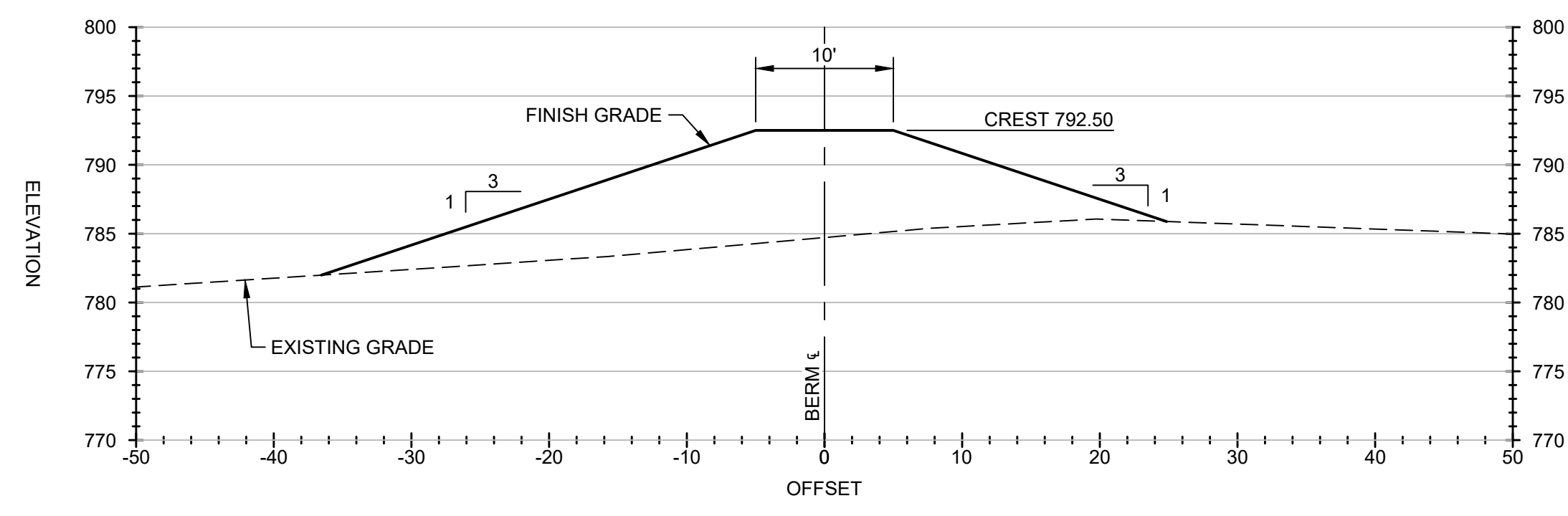
1 SECTION - SOUTH ACCESS DRIVE EMBANKMENT
 C-3 1" = 10'



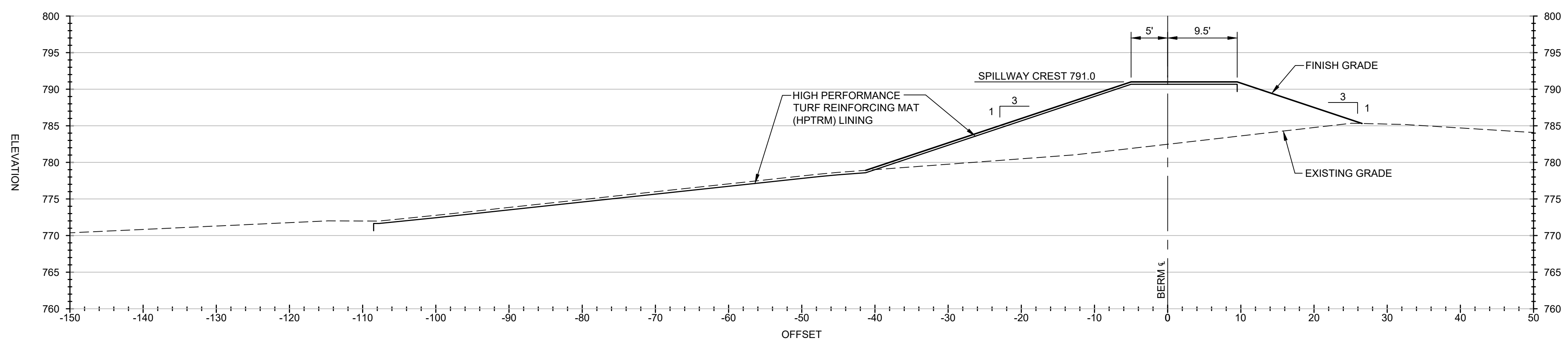
2 SECTION - SOUTH ACCESS DRIVE EMBANKMENT
 C-3 1" = 10'



3 SECTION - STORMWATER MANAGEMENT BERM
 C-4 1" = 10'

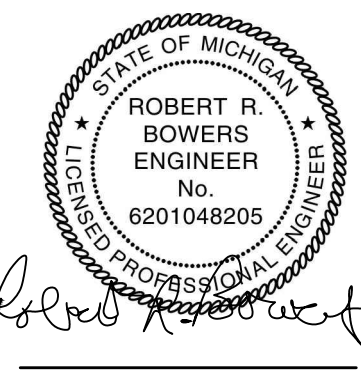


4 SECTION - STORMWATER MANAGEMENT BERM
 C-4 1" = 10'



5 SECTION - STORMWATER MANAGEMENT BERM
 C-4 1" = 10'

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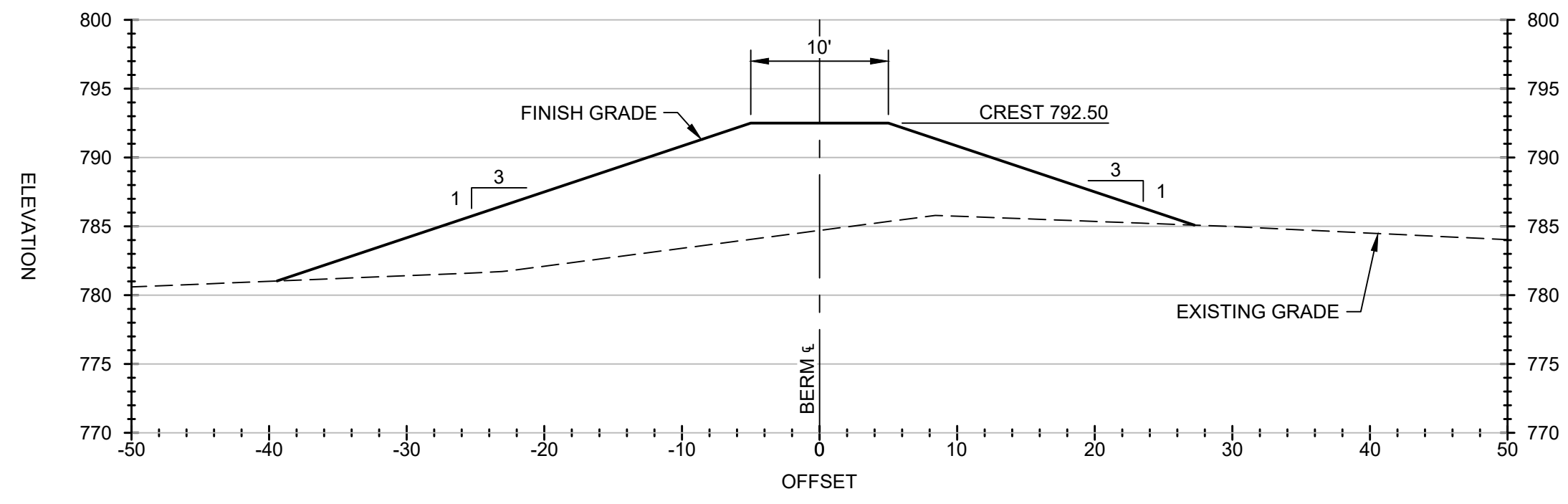


RACER TRUST
 COLDWATER ROAD FACILITY
 FLINT, MICHIGAN

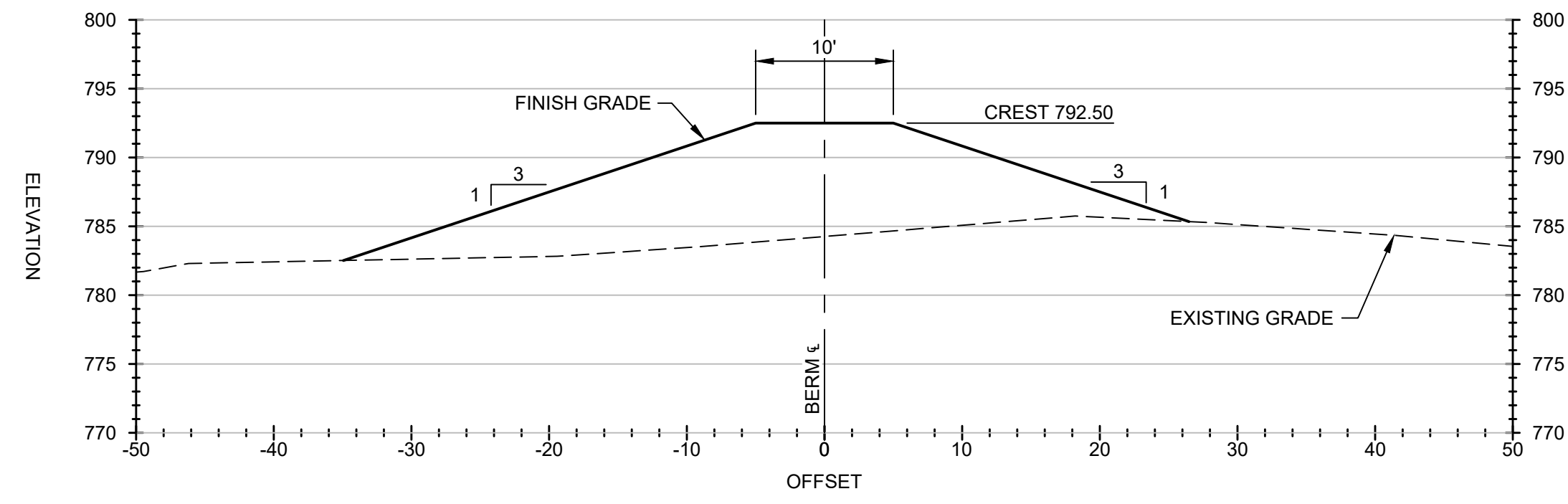
CIVIL
 STORMWATER MANAGEMENT IMPROVEMENTS
 CIVIL CROSS-SECTIONS - SHEET 1 OF 3

FILE NO.	15388.72202-008
DATE	MAY 2020

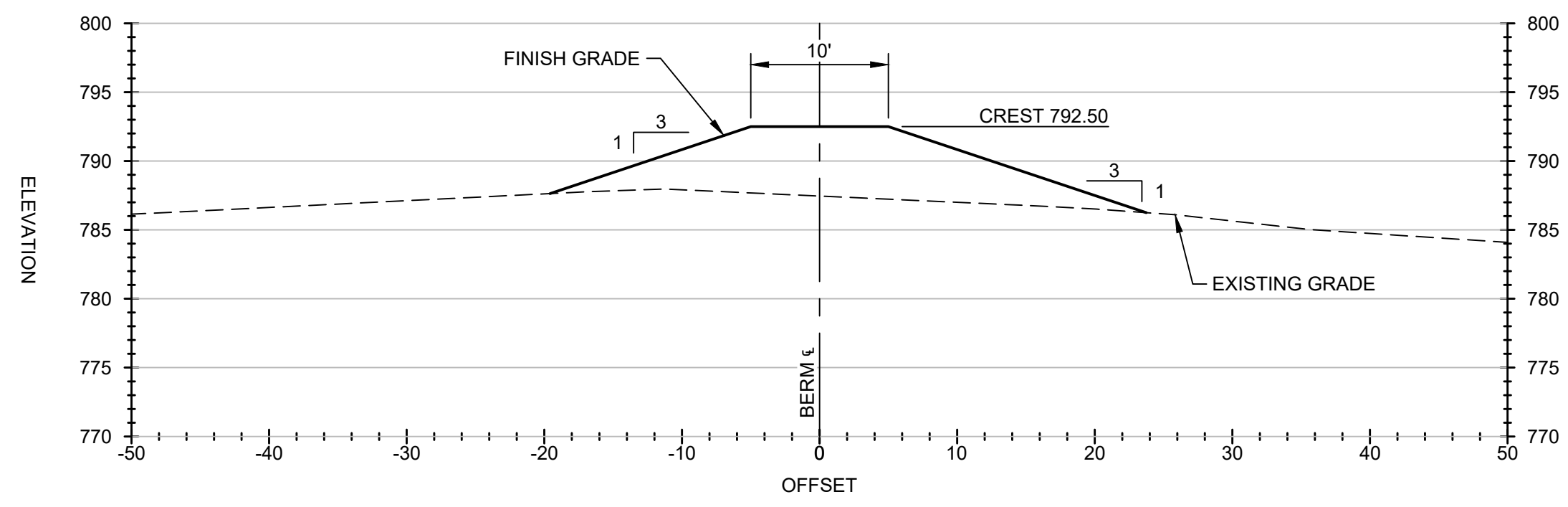
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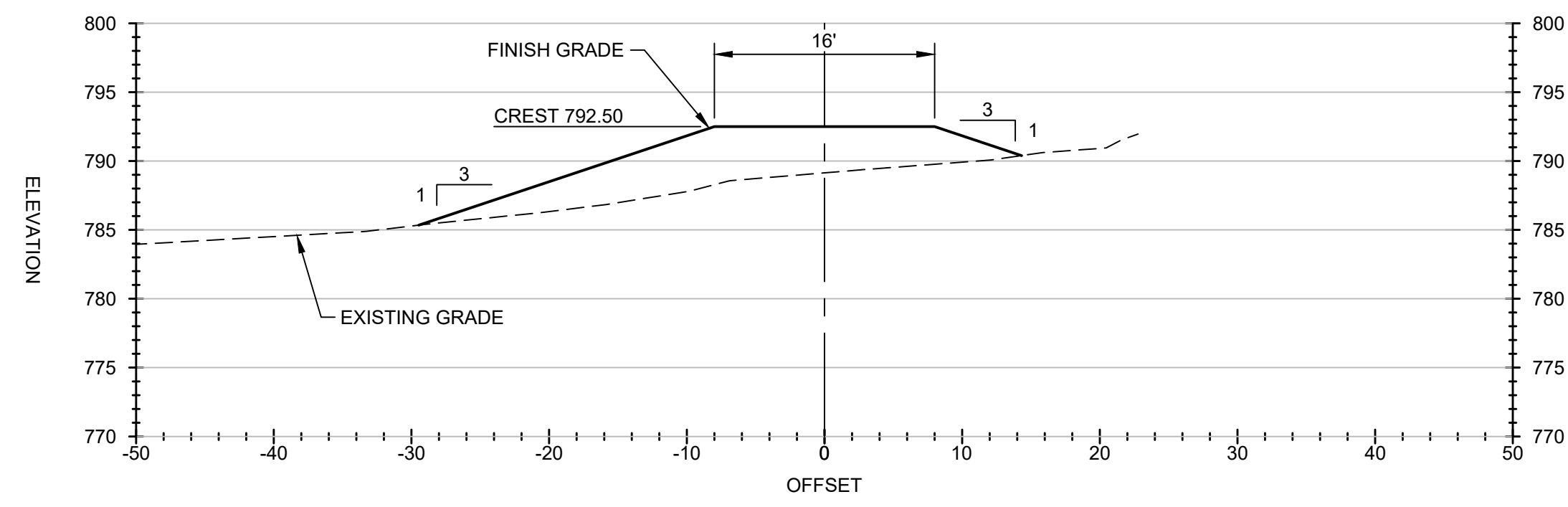
6 SECTION - STORMWATER MANAGEMENT BERM
C-5 1" = 10'



7 SECTION - STORMWATER MANAGEMENT BERM
C-5 1" = 10'

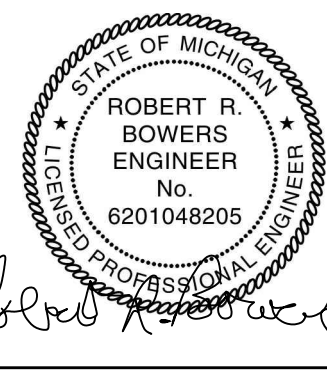


8 SECTION - STORMWATER MANAGEMENT BERM
C-5 1" = 10'

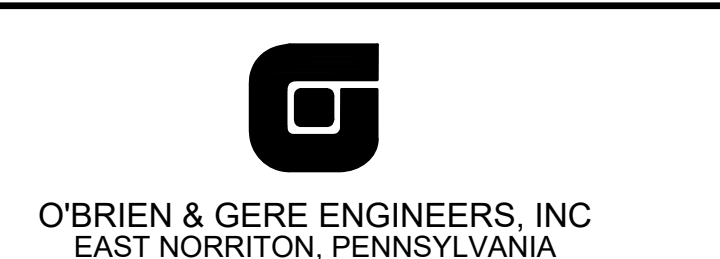


9 SECTION - NORTH ACCESS DRIVE EMBANKMENT
C-6 1" = 10'

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				NJA
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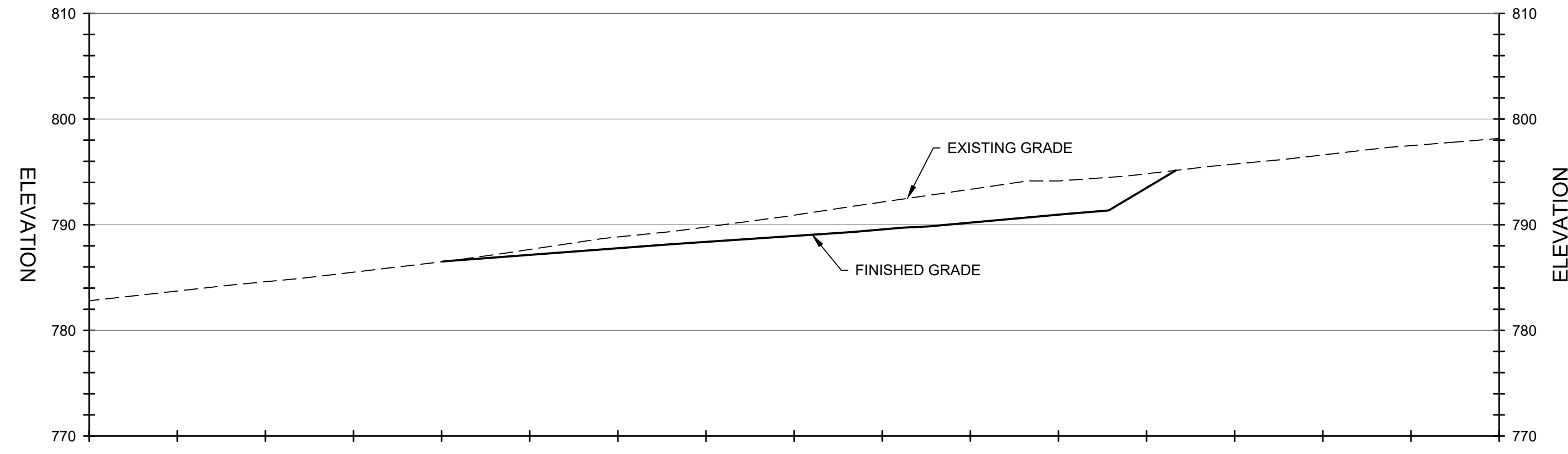


RACER TRUST
COLDWATER ROAD FACILITY
FLINT, MICHIGAN

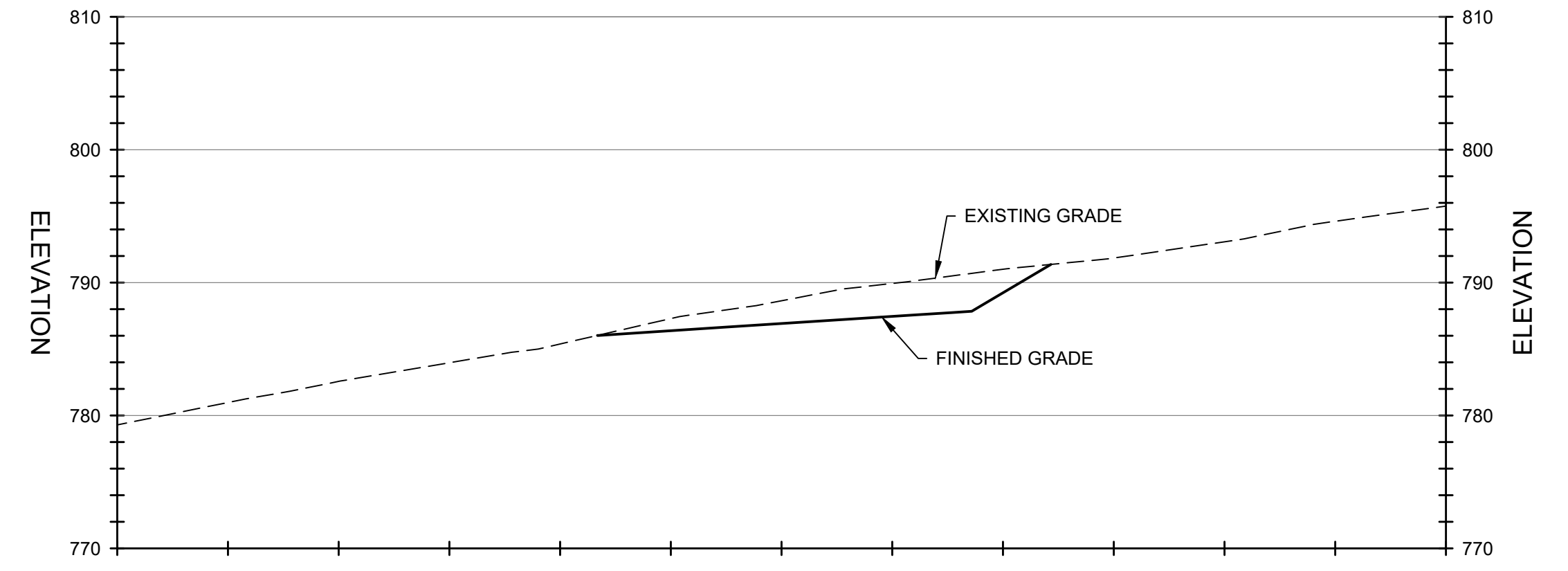
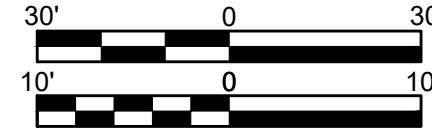
CIVIL
STORMWATER MANAGEMENT IMPROVEMENTS
CIVIL CROSS-SECTIONS - SHEET 2 OF 3

FILE NO.	15388.72202-009
DATE	MAY 2020

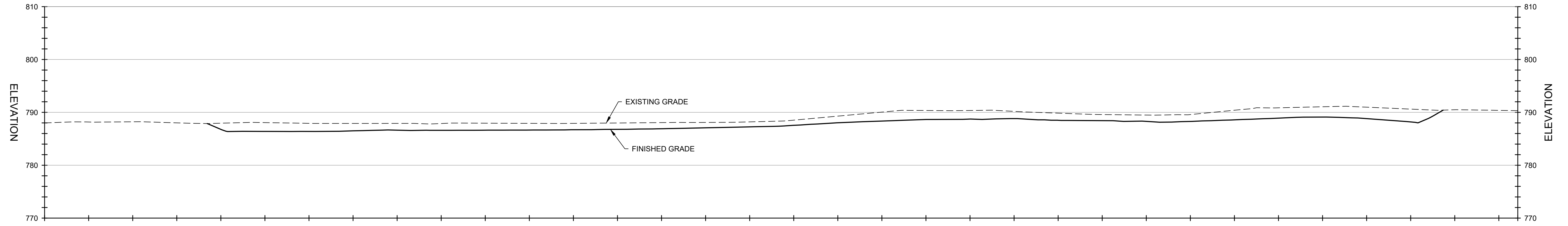
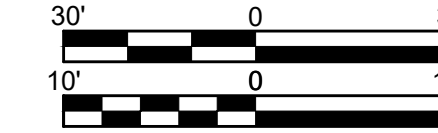
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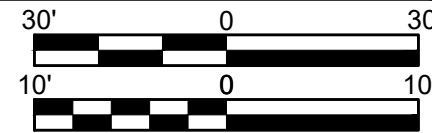
10
C-2 SECTION - BORROW AREA
SCALE: HORIZ. 1"=30'
VERT. 1"=10'



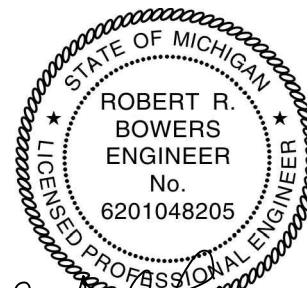
11
C-2 SECTION - BORROW AREA
SCALE: HORIZ. 1"=30'
VERT. 1"=10'



12
C-2 SECTION - BORROW AREA
SCALE: HORIZ. 1"=30'
VERT. 1"=10'



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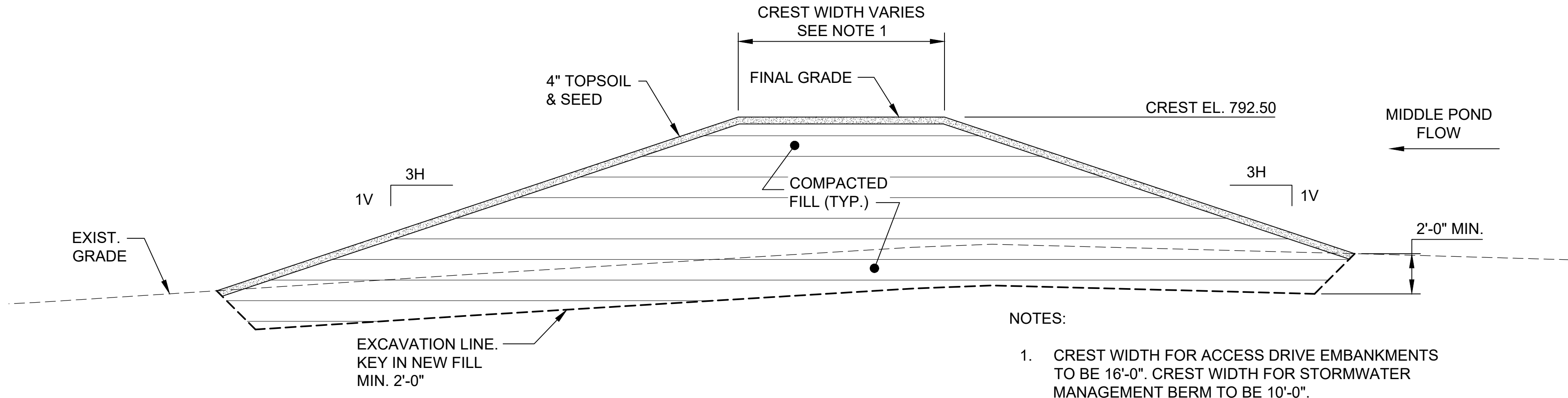


RACER TRUST
COLDWATER ROAD FACILITY
FLINT, MICHIGAN

CIVIL
STORMWATER MANAGEMENT IMPROVEMENTS
CIVIL CROSS-SECTIONS - SHEET 3 OF 3

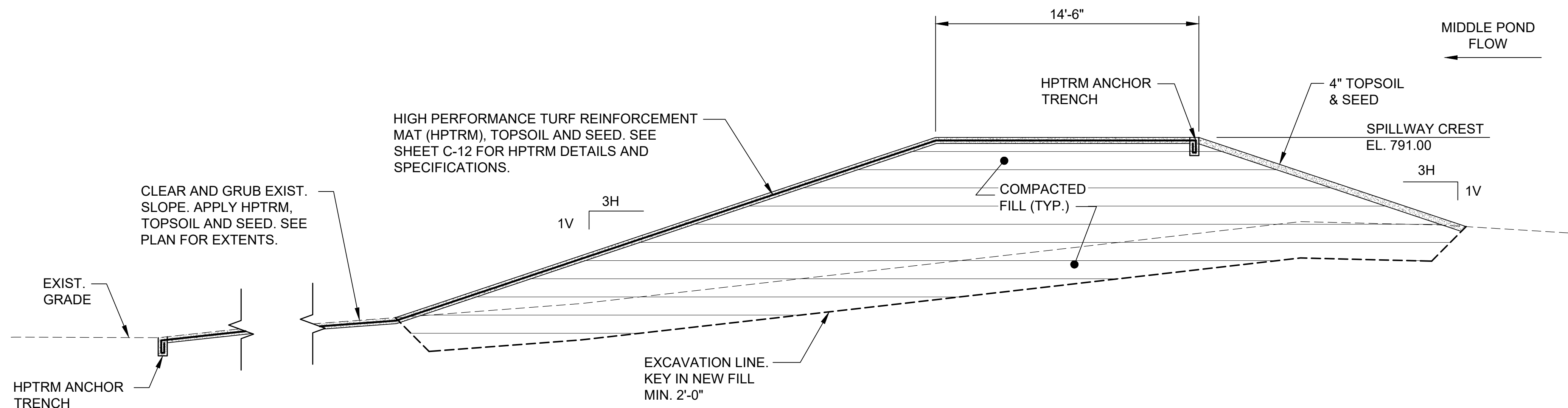
FILE NO.	15388.72202-020
DATE	MAY 2020

C-9



TYPICAL SECTION - NEW EMBANKMENT

1/4" = 1'-0"
 4' 2' 0 2' 4'



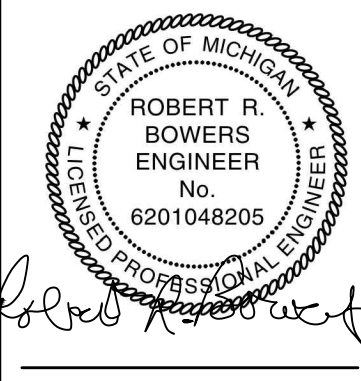
TYPICAL SECTION - EMERGENCY SPILLWAY

1/4" = 1'-0"
 4' 2' 0 2' 4'

EARTHWORK NOTES AND SPECIFICATIONS:

1. EXCAVATIONS:
 - A. EXCAVATIONS SHALL BE MADE TO THE ELEVATIONS OR SUBGRADES SHOWN ON THE DRAWINGS AND SHALL ONLY BE OF SUFFICIENT SIZE TO ALLOW ROOM FOR THE PROPER CONSTRUCTION OF PERMANENT IMPROVEMENTS INCLUDING ALLOWANCES FOR SHEETING, DEWATERING AND OTHER SIMILAR WORK NECESSARY FOR THE COMPLETION OF THE WORK.
 - B. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR PROPERLY SLOPING OR SHORING ALL EXCAVATIONS.
 - C. THE CONTRACTOR SHALL PROVIDE PROPER AND SATISFACTORY METHODS OF REMOVING ALL WATER ENTERING EXCAVATIONS.
 - D. EXCAVATED SOIL SHALL BE STOCKPILED ON-SITE FOR LATER REUSE.
 - E. EXCAVATED SOIL DEEMED UNSUITABLE FOR REUSE SHALL BE PLACED ON-SITE IN AN AREA TO BE DESIGNATED BY THE OWNER.
2. EARTH FILL MATERIALS:
 - A. EARTH FILL MATERIAL SHALL CONSIST OF ON-SITE OR IMPORTED SOILS CLASSIFIED AS SW-SM, SW-SC, GW-GM, GW-GC, GM, GC, SM, SC, ML OR CL ACCORDING TO THE UNIFIED SOIL CLASSIFICATION SYSTEM.
 - B. FILL MATERIAL SHALL CONTAIN NO SOD, BRUSH, ROOTS OR OTHER PERISHABLE MATERIALS. MAXIMUM PARTICLE SIZE SHALL NOT EXCEED 4 INCHES.
 - C. THE OWNER SHALL PROVIDE THE SOIL MATERIAL IN TWO STOCKPILE AREAS AND ARRANGE FOR THE CONTRACTOR TO HAVE ACCESS. THE CONTRACTOR SHALL PROVIDE ANY NECESSARY EROSION CONTROL MEASURES AT THE STOCKPILES INCLUDING A STABILIZED CONSTRUCTION ENTRANCE AND SILT FENCING AS NEEDED.
 - D. THE ENGINEER SHALL PROVIDE TEST REPORTS ON THE OFF-SITE BORROW MATERIAL INCLUDING SOIL CLASSIFICATION TESTS AND COMPACTION CURVES FOR ALL PROPOSED EARTH FILL MATERIAL. TEST REPORTS SHALL INDICATE THE OPTIMUM MOISTURE CONTENT AND MAXIMUM DRY DENSITY AS DETERMINED BY THE STANDARD PROCTOR COMPACTION TEST - ASTM D698 FOR ALL PROPOSED FILL MATERIAL.
3. FOUNDATION PREPARATION
 - A. SOFT OR EXCESSIVELY YIELDING SUBGRADES TO RECEIVE FILL THAT CANNOT BE STABILIZED IN PLACE SHALL BE UNDERCUT TO SATISFACTORY BEARING MATERIAL AT THE DIRECTION OF THE ENGINEER.
 - B. THE CONTRACTOR SHALL MINIMIZE HEAVY TRAFFIC ON FOUNDATION SURFACES PRIOR TO THE PLACEMENT OF EMBANKMENT FILLS. EXCESSIVE RUTTING OF FOUNDATION SURFACES SHALL BE SCARIFIED TO A DEPTH OF SIX INCHES AND COMPACTED PRIOR TO THE PLACEMENT OF NEW FILL.
 - C. EARTH FOUNDATIONS TO RECEIVE FILL SHALL BE SCARIFIED TO A DEPTH OF SIX INCHES, MOISTURE CONDITIONED TO OPTIMUM MOISTURE RANGE AND RECOMPACTED AS SPECIFIED FOR EARTH FILL.
 - D. SLOPES TO RECEIVE EMBANKMENT FILLS SHALL BE EXCAVATED AS INDICATED ON THE CONTRACT DRAWINGS, SCARIFIED, MOISTENED AS NECESSARY AND RECOMPACTED PRIOR TO FILL PLACEMENT TO ENSURE BONDING OF THE NEW FILL AND THE ADJACENT SLOPES.
4. PLACEMENT OF EARTH FILL:
 - A. FILL SHALL NOT BE PLACED UNTIL THE REQUIRED EXCAVATION AND FOUNDATION PREPARATIONS HAVE BEEN COMPLETED AND THE BEARING STRATA HAS BEEN INSPECTED AND APPROVED.
 - B. FILL SHALL NOT BE PLACED ON A FROZEN SURFACE. SNOW, ICE OR OTHER FROZEN MATERIAL SHALL NOT BE INCORPORATED INTO THE FILL.
 - C. FILL SHALL BE PLACED IN HORIZONTAL LAYERS. THE LOOSE THICKNESS OF EACH LAYER BEFORE COMPACTION IF USING LARGE SELF-PROPELLED ROLLERS SHALL NOT EXCEED TWELVE (12) INCHES. HAND COMPACTED FILL, INCLUDING FILL COMPACTED BY MANUALLY DIRECTED POWER TAMPERS, SHALL BE PLACED IN LIFTS NOT TO EXCEED FOUR (4) INCHES. THE USE OF VIBRATING PLATE TAMPERS WILL ONLY BE ALLOWED IF THE CONTRACTOR DEMONSTRATES FULL COMPACTION THROUGHOUT THE LIFT THICKNESS.
 - D. ALL EARTH FILLS SHALL BE COMPACTED TO 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY THE STANDARD PROCTOR COMPACTION TEST - ASTM D698.
 - E. FILLS SHALL BE PLACED WITHIN AN ALLOWABLE RANGE FROM 2% BELOW TO 4% ABOVE THE CALCULATED OPTIMUM MOISTURE CONTENT. IF REQUIRED, THE CONTRACTOR SHALL ADD SUFFICIENT WATER DURING COMPACTION TO ASSURE THE SPECIFIED MAXIMUM DENSITY OF THE FILL. IF, DUE TO RAIN OR OTHER CAUSES, THE MATERIAL EXCEEDS THE OPTIMUM MOISTURE CONTENT, THE CONTRACTOR SHALL ALLOW THE MATERIAL TO DRY, ASSISTED IF NECESSARY, PRIOR TO RESUMING FILLING OR COMPACTION OPERATIONS.
 - F. THE CONTRACTOR SHALL PERFORM QUALITY CONTROL TESTS ON ALL FILL MATERIAL, INCLUDING FIELD DENSITY TESTS OF ALL FILL LAYERS. THE CONTRACTOR SHALL RETAIN AN APPROVED TESTING AGENCY, ACCEPTABLE TO THE OWNER AND ENGINEER, TO PERFORM A MINIMUM OF ONE IN-PLACE DENSITY TEST PER LIFT OF COMPACTED FILL PER 100 FEET OF STATIONING. HANDWRITTEN COPIES OF FIELD TEST REPORTS SHALL BE SUBMITTED TO THE CONTRACTOR AND RESIDENT ENGINEER WITHIN 2 HOURS OF COMPLETION, BUT IN NO EVENT SHALL THE TECHNICIAN LEAVE THE SITE WITHOUT PROVIDING THE CONTRACTOR AND RESIDENT ENGINEER A COPY OF THE TEST RESULTS. THE FIELD REPORT SHALL INCLUDE MEASURED DENSITY, % MOISTURE, PLAN LOCATION, ELEVATION, COMMENTS AND ANY OTHER RELEVANT DATA.
 - G. THE CONTRACTOR SHALL APPROVE EACH SUBGRADE AND FILL LAYER BEFORE PROCEEDING TO THE NEXT LAYER. ANY AREA WHICH DOES NOT MEET THE REQUIRED DENSITY OR OTHER REQUIREMENTS SHALL BE REWORKED AND RETESTED BY THE CONTRACTOR AT HIS OWN EXPENSE.

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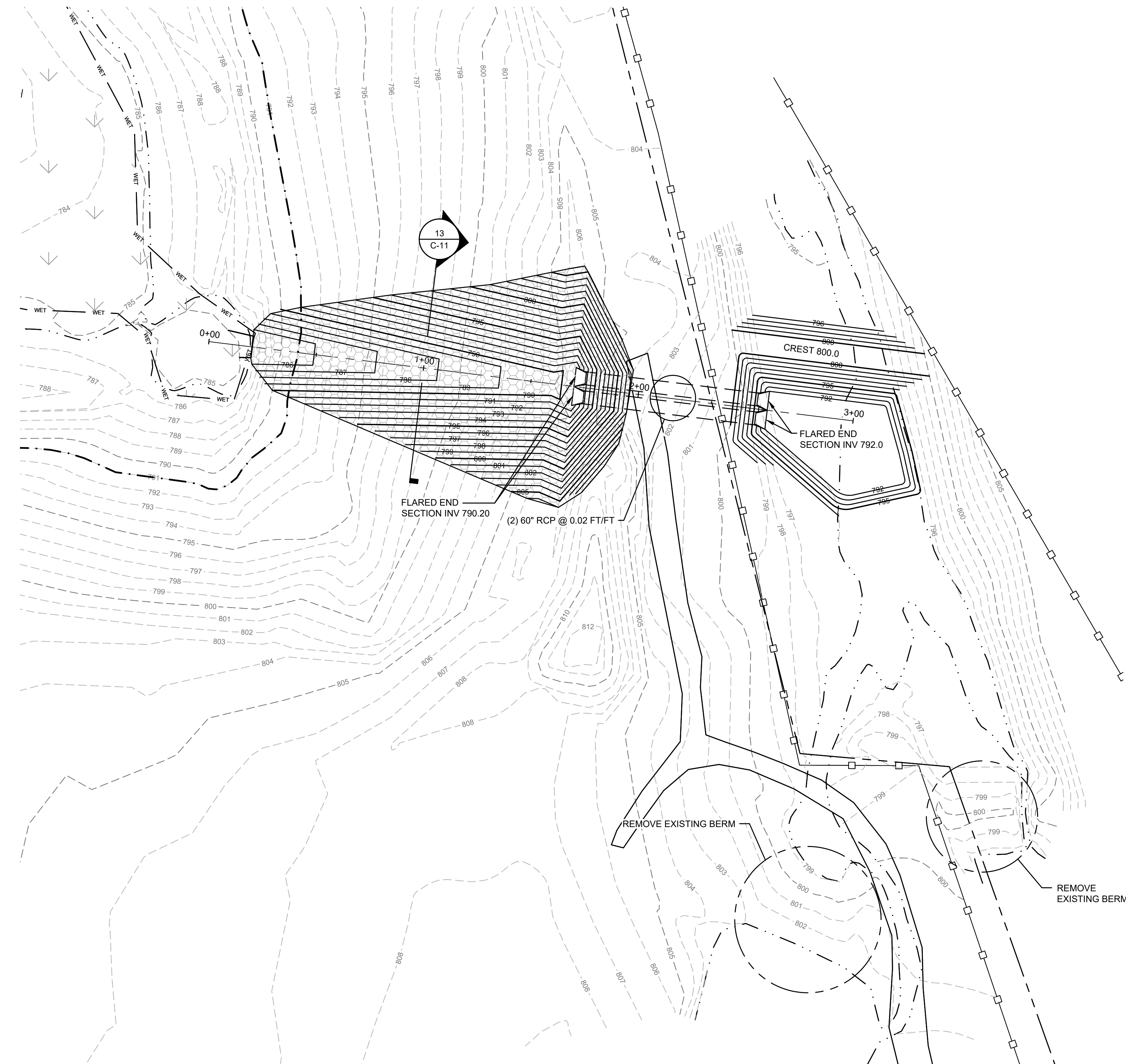
O'BRIEN & GERE ENGINEERS, INC
 EAST NORRITON, PENNSYLVANIA

RACER TRUST
COLDWATER ROAD FACILITY
 FLINT, MICHIGAN

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STORMWATER MANAGEMENT IMPROVEMENTS
TYPICAL SECTIONS

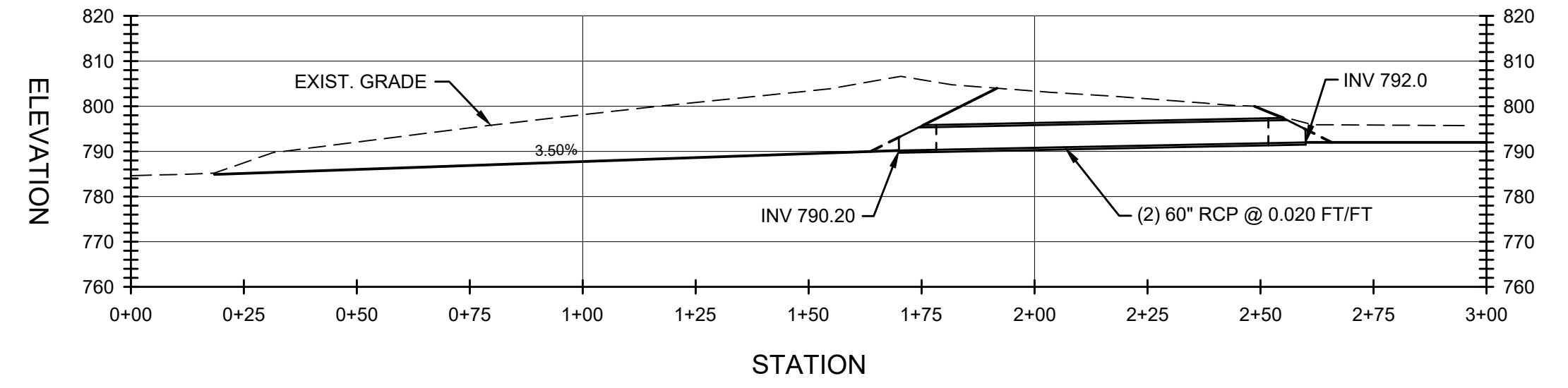
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DATE	MAY 2020

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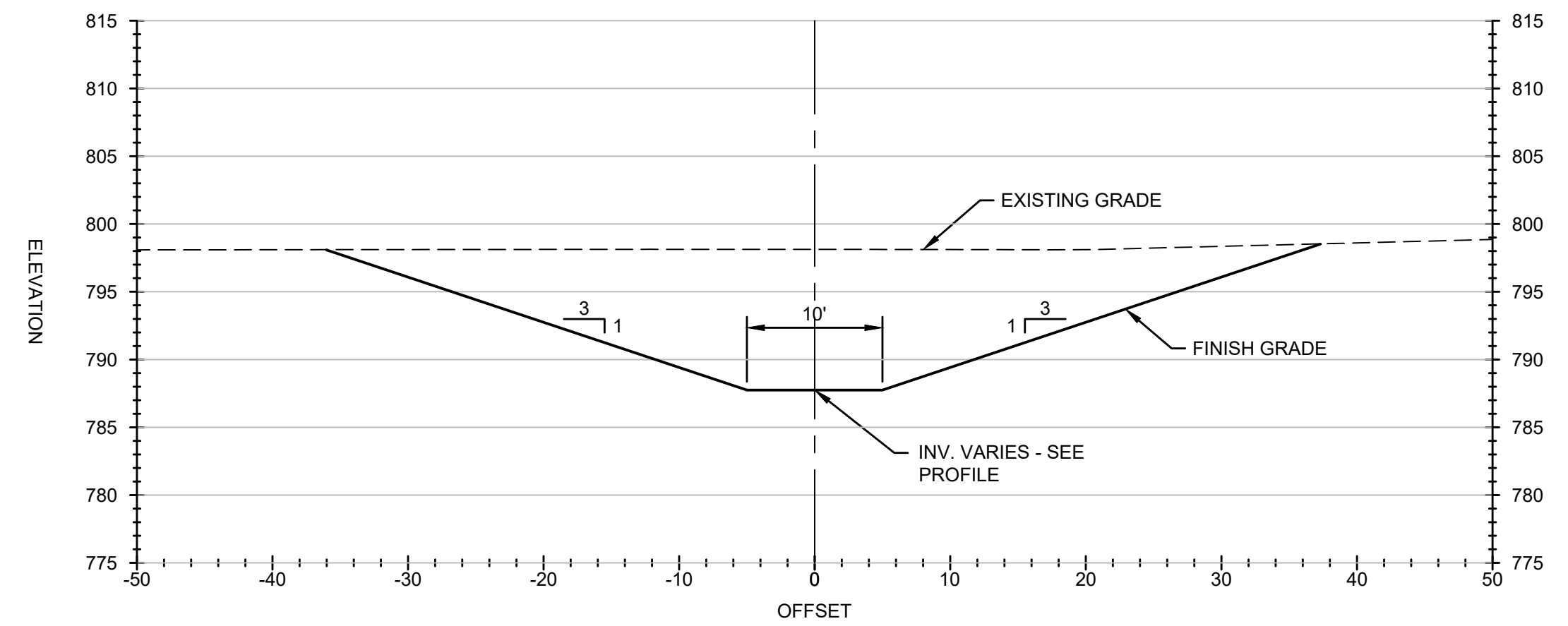
PARTIAL GRADING AND DRAINAGE PLAN

1" = 30'



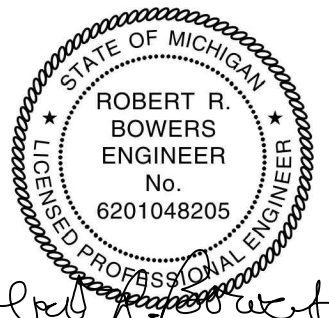
PROFILE - SWALE AND CULVERT CENTERLINE

1" = 30'



SECTION - DRAINAGE SWALE

1" = 10'



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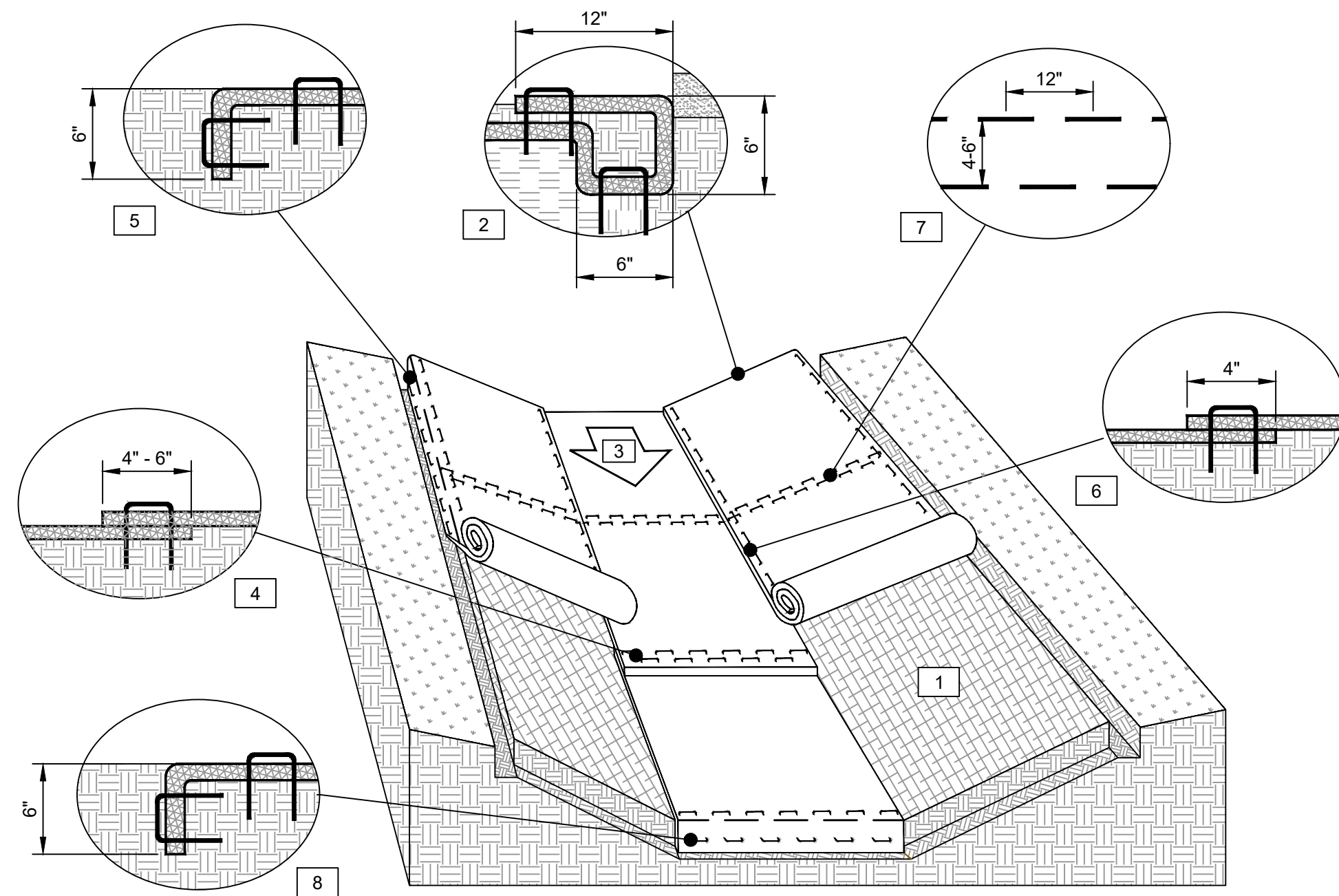


RACER TRUST
COLDWATER ROAD FACILITY
 FLINT, MICHIGAN

CIVIL
STORMWATER MANAGEMENT IMPROVEMENTS
PARTIAL PLAN AND PROFILE -
DRAINAGE IMPROVEMENTS

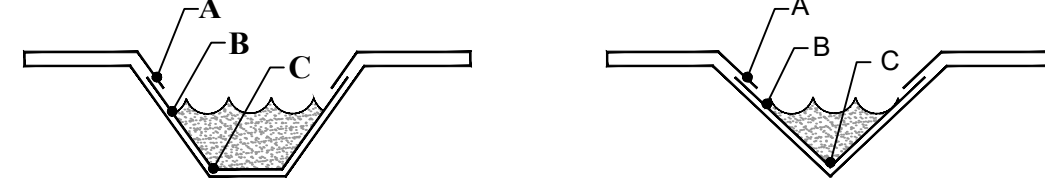
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DATE	MAY 2020

C-11
 EGLE-WRD
 WRP020-05 v1.0
 Approved
 Issued 06/12/2020
 Expires On: 06/12/2020



CRITICAL POINTS

- A. Overlaps and Seams
- B. Projected Water Line
- C. Channel Bottom/Side Slope Vertices



NOTES:

*HORIZONTAL STAPLE SPACING SHOULD BE ALTERED IF NECESSARY TO ALLOW STAPLES TO SECURE THE CRITICAL POINTS ALONG THE CHANNEL SURFACE.

**IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" MAY BE NECESSARY TO PROPERLY SECURE THE HPTRM'S.

GENERAL INSTALLATION

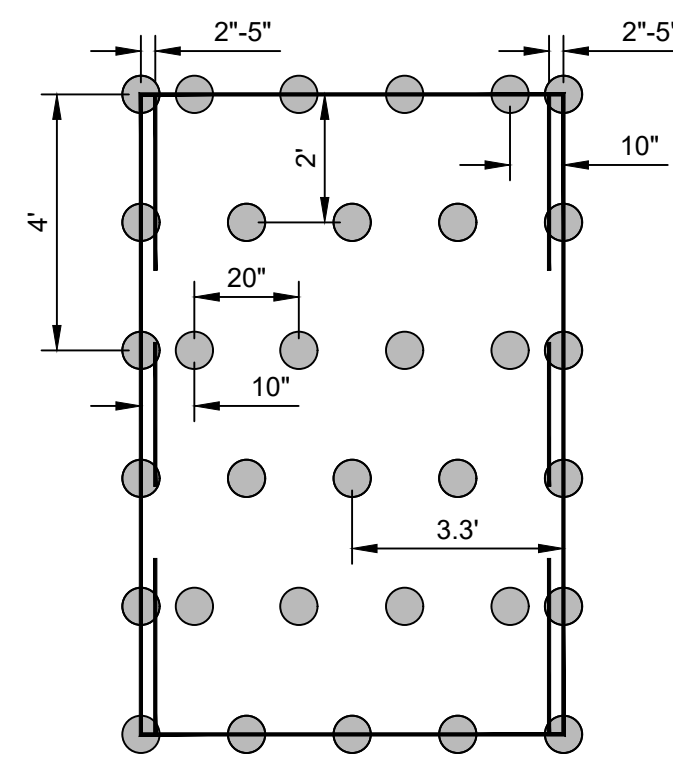
1. PREPARE SOIL BEFORE INSTALLING HPTRM, INCLUDING ANY NECESSARY APPLICATION OF SOIL AMENDMENTS SUCH AS LIME OR FERTILIZER. SEED SOIL SURFACE WITH THE SPECIFIED SEED MIXTURE.
2. BEGIN AT THE TOP OF THE CHANNEL BY ANCHORING THE HPTRM IN A 6" DEEP X 6" WIDE TRENCH WITH APPROXIMATELY 12" OF HPTRM EXTENDED BEYOND THE UPSLOPE PORTION OF THE TRENCH. ANCHOR THE HPTRM WITH A ROW OF ANCHORS/STAPLES/STAKES APPROXIMATELY 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. COMPACT SOIL AND FOLD THE REMAINING 12" PORTION OF HPTRM BACK OVER THE COMPACTED SOIL. SECURE HPTRM OVER COMPACTED SOIL WITH A ROW OF ANCHORS/STAPLES/STAKES SPACED APPROXIMATELY 12" APART ACROSS THE WIDTH OF THE HPTRM.
3. ROLL CENTER HPTRM IN DIRECTION OF WATER FLOW IN BOTTOM OF CHANNEL/SPILLWAY. HPTRM'S WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL HPTRM'S MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING ANCHORS/STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE ANCHORING DETAIL.
4. PLACE CONSECUTIVE HPTRM'S END-OVER-END (SHINGLE STYLE) WITH A 4"-6" OVERLAP. USE A DOUBLE ROW OF STAPLES/STAKES STAGGERED 12" APART AND 12" ON CENTER TO SECURE HPTRM'S.
5. FULL LENGTH EDGE OF HPTRM'S AT TOP OF SIDE SLOPES MUST BE ANCHORED WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN A 6" DEEP X 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
6. ADJACENT HPTRM'S MUST BE OVERLAPPED APPROXIMATELY 4" AND STAPLED.
7. INSTALL A STAPLE CHECK SLOT AT 30 TO 40 FOOT INTERVALS. USE A DOUBLE ROW OF STAPLES STAGGERED 4" APART AND 12" ON CENTER OVER ENTIRE WIDTH OF THE CHANNEL/SPILLWAY.
8. THE TERMINAL END OF THE HPTRM'S MUST BE ANCHORED WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN A 6" DEEP X 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
9. BROADCAST SEED THE DESIGNATED SEED MIXTURE ONTO THE TOP OF THE HPTRM MATRIX AND UNIFORMLY SPREAD 1/2 INCH TO 3/4 INCH TOPSOIL ON TOP OF THE HPTRM. LIGHTLY RAKE THE TOPSOIL INTO THE HPTRM VOIDS TO FILL THE HPTRM MATRIX ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.
10. PROPERLY MAINTAIN AND PROTECT THE HPTRM UNTIL THE PROJECT HAS ACHIEVED FINAL STABILIZATION. DO NOT OPERATE EQUIPMENT ON THE HPTRM SURFACE AFTER INSTALLATION. HOLES OR TEARS IN THE HPTRM SHALL BE REPAIRED IMMEDIATELY IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

HIGH PERFORMANCE TURF REINFORCING MAT (HPTRM) INSTALLATION DETAIL

NOT TO SCALE

HIGH PERFORMANCE TURF REINFORCEMENT MAT (HPTRM) SPECIFICATIONS:

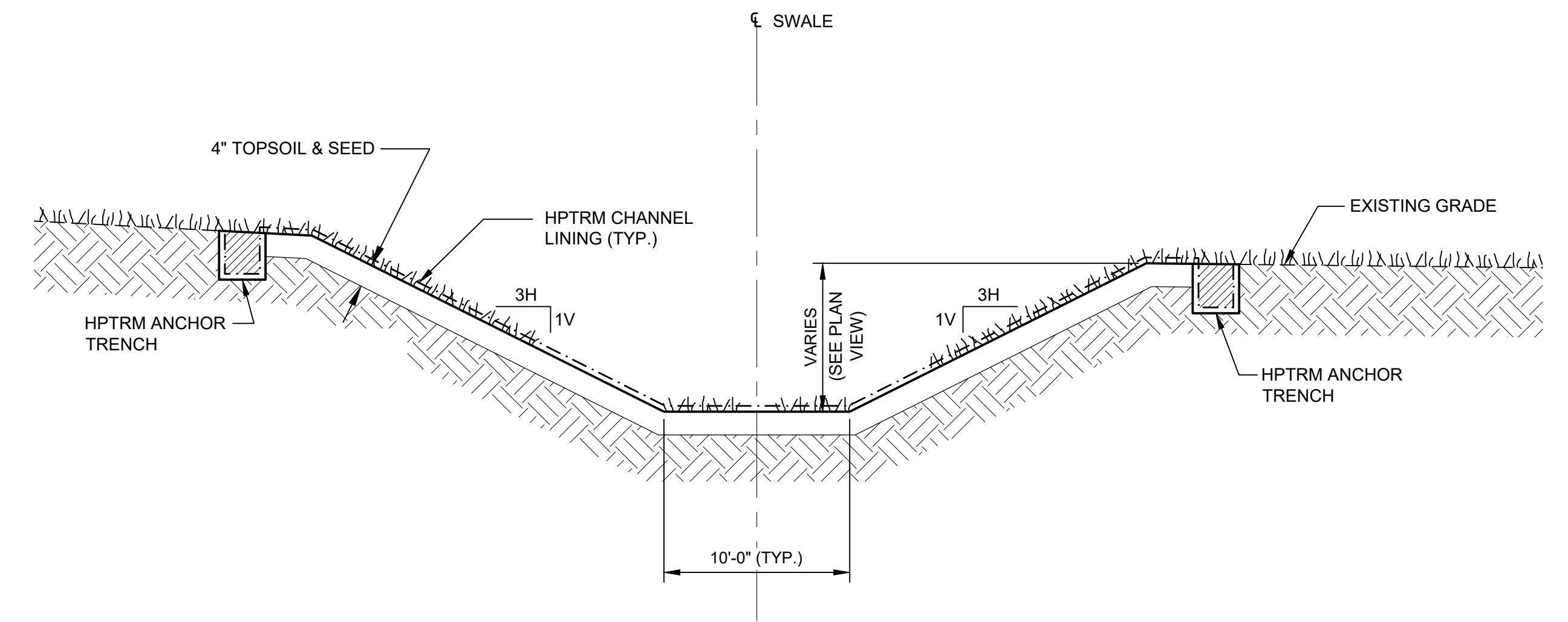
1. HIGH PERFORMANCE TURF REINFORCEMENT MAT (HPTRM) SHALL BE A MACHINE-PRODUCED MAT OF 100% UV STABLE POLYPROPYLENE FIBER MATRIX INCORPORATED INTO A THREE-DIMENSIONAL TURF REINFORCEMENT MATTING. THE MATRIX SHALL BE EVENLY DISTRIBUTED ACROSS THE ENTIRE WIDTH OF THE MATTING AND STITCH BONDED BETWEEN HEAVY DUTY UV STABILIZED NETTINGS ON THE TOP AND BOTTOM AND A HEAVY DUTY UV STABILIZED, DRAMATICALLY CORRUGATED (CRIMPED) INTERMEDIATE NETTING IN THE CENTER.
2. HPTRM SHALL MEET TYPE 5A, 5B AND 5C SPECIFICATION REQUIREMENTS ESTABLISHED BY THE EROSION CONTROL TECHNOLOGY COUNCIL (ECTC) AND THE FEDERAL HIGHWAY ADMINISTRATION (FHWA) FP-03 SECTION 713.18.
3. HPTRM SHALL BE RATED FOR THE FOLLOWING:
 - A. UNVEGETATED DESIGN SHEAR STRESS (SHORT TERM): 4.0 PSF
 - B. FULLY VEGETATED DESIGN SHEAR STRESS (LONG TERM): 12.0 PSF
 - C. VEGETATED FLOW VELOCITY: 25 FPS
4. ACCEPTABLE PRODUCTS INCLUDE:
 - A. VMAX P550 TURF REINFORCEMENT MAT AS MANUFACTURED BY TENSAR NORTH AMERICAN GREEN
 - B. T-RECS TURF REINFORCEMENT MAT AS MANUFACTURED BY EAST COAST EROSION CONTROL
 - C. PYRAMAT 25 TURF REINFORCEMENT MAT AS MANUFACTURED BY PROPEX GEOSYNTHETICS
 - D. APPROVED EQUAL AS DETERMINED BY ENGINEER.
5. SUBMITTALS: CONTRACTOR SHALL SUBMIT MANUFACTURER'S TECHNICAL DATA, CUT SHEETS, AND ALL INSTALLATION INSTRUCTIONS AND REQUIREMENTS, INCLUDING THE MANUFACTURER'S RECOMMENDED STAPLE PATTERN FOR THE SPECIFIED GRADES.
6. ANCHORING DEVICES FOR HPTRM SHALL BE AS RECOMMENDED BY THE MANUFACTURER.



3.75 STAPLES PER SQ. YD.

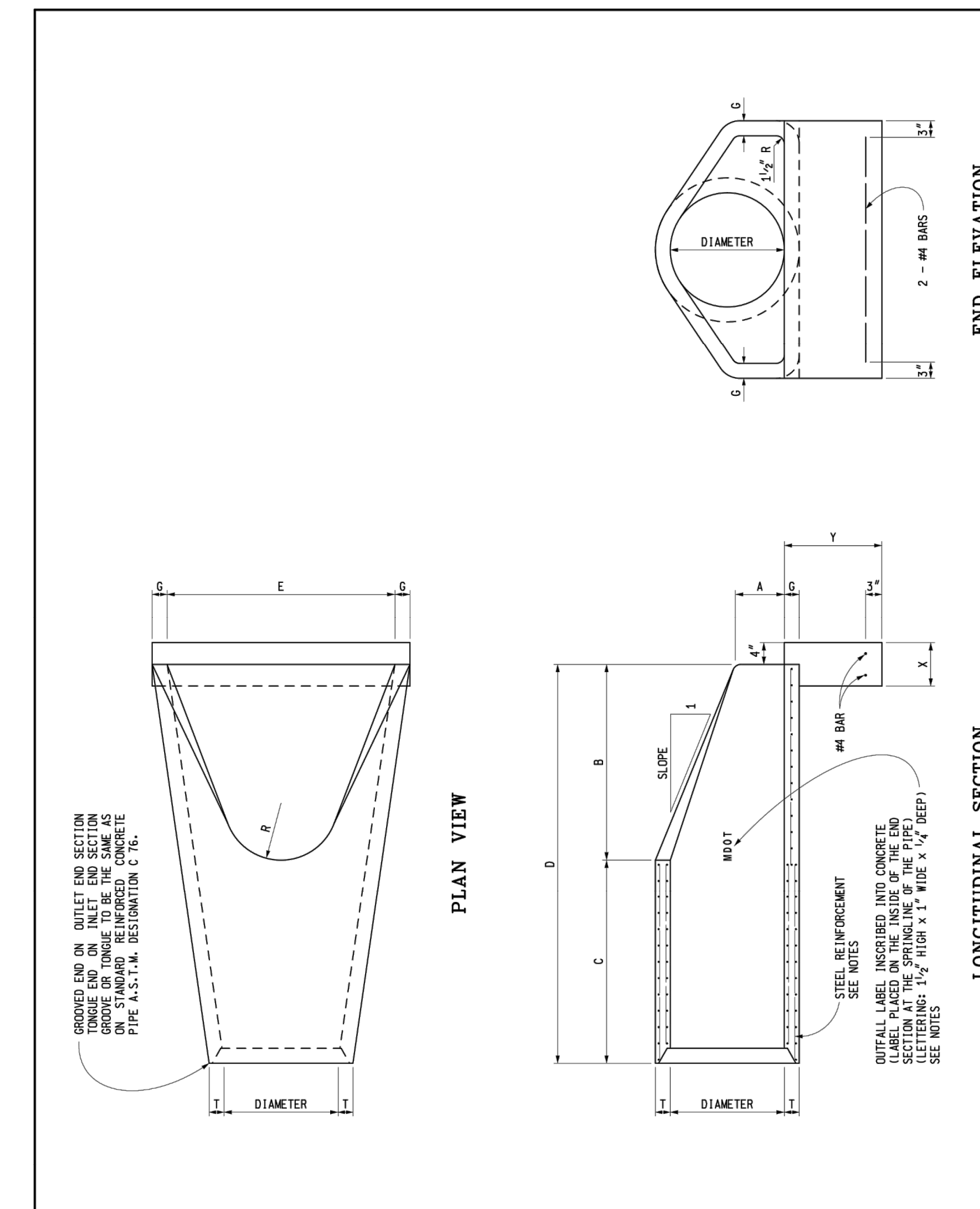
HPTRM ANCHORAGE DETAIL

NOT TO SCALE



DRAINAGE SWALE TYPICAL SECTION

NOT TO SCALE



DEPARTMENT DIRECTOR Mark T. Stouder		MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN FOR	
PREPARED BY: DESIGN DIVISION		PRECAST CONCRETE END SECTION FOR PIPE CULVERT	
DRAWN BY: J.L.L.		9-13-2018 PLAN DATE	
CHECKED BY: M.K.F.		R-86-F SHEET 1 OF 2	

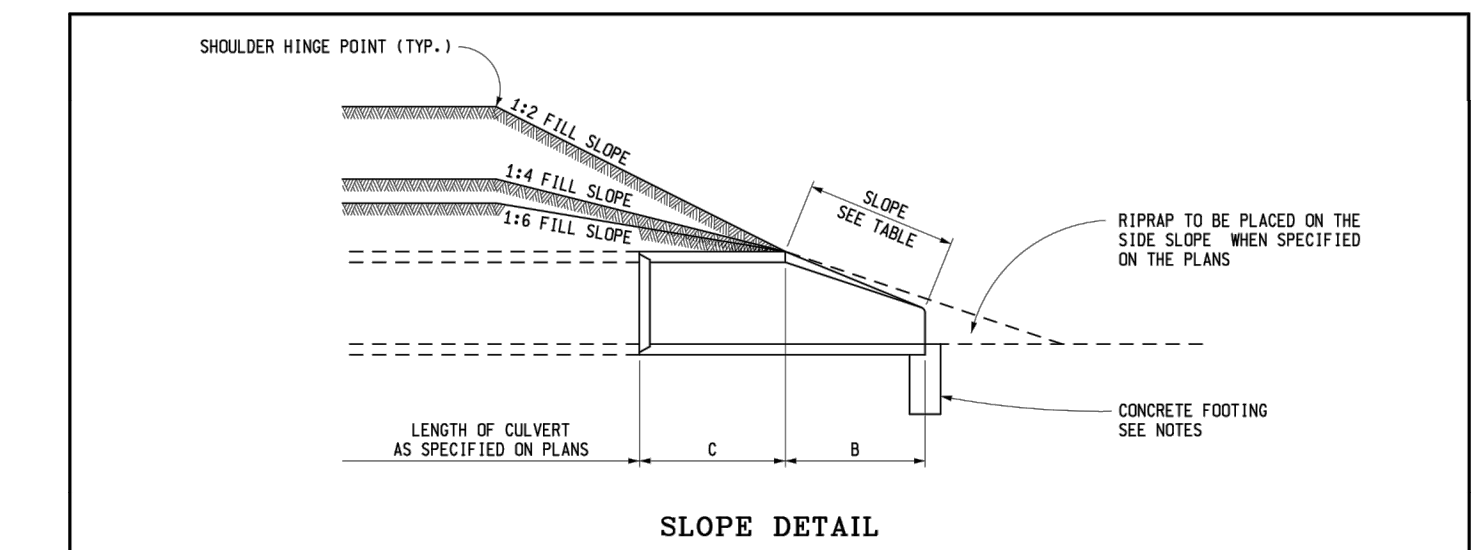


TABLE OF DIMENSIONS											
PIPE DIAMETER (INCHES)	APPROX. SLOPE	T (INCHES)	A (INCHES)	B (INCHES)	C (INCHES)	D (INCHES)	E (INCHES)	G (INCHES)	R (INCHES)	Y (INCHES)	
12	2.4 to 1	2	4	24	49	73	24	2	9	8	18
15	2.4 to 1	2 1/4	6	27	46	73	30	2 1/4	11	8	18
18	2.5 to 1	2 1/2	9	27	46	73	36	2 1/2	12	8	18
21	2.4 to 1	2 3/4	9	36	37 1/2	73 1/2	42	2 3/4	13	8	18
24	2.5 to 1	3	9 1/2	43 1/2	30 1/2	73 1/2	48	3	14	8	18
27	2.5 to 1	3 1/4	10 1/2	49 1/4	24 1/2	73 1/2	54	3 1/4	14 1/2	8	18
30	2.5 to 1	3 1/2	12	54	19 1/4	73 1/2	60	3 1/2	15	8	18
36	2.5 to 1	4	15	63	34 1/4	97 1/4	72	4	20	8	18
42	2.5 to 1	4 1/2	21	63	35	98	78	4 1/2	22	10	24
48	2.5 to 1	5	24	72	26	98	84	5	22	10	24
54	2.0 to 1	5 1/2	27	65	33 1/4	98 1/4	90	5 1/2	24	10	24
60	1.9 to 1	6	35	60	39	99	96	6	24	10	24
66	1.7 to 1	6 1/2	30	72	27	99	102	6 1/2	24	10	24
72	1.8 to 1	7	36	78	21	99	108	7	24	10	24
78	1.8 to 1	7 1/2	36	90	21	111	114	7 1/2	24	10	24
84	1.6 to 1	8	36	90 1/2	21	111 1/2	120	8	24	10	24

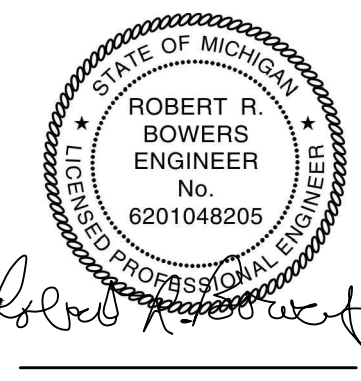
NOTES:
 CONCRETE IN THESE END SECTIONS SHALL BE THE SAME GRADE AND STRENGTH AS SPECIFIED FOR REINFORCED CONCRETE PIPE, A.S.T.M. DESIGNATION C 76 CLASS II, EXCEPT AS MODIFIED BY THE STANDARD SPECIFICATION.
 REINFORCEMENT IN THE "C" PORTION SHALL BE THE SAME AS SPECIFIED FOR REINFORCED CONCRETE, A.S.T.M. DESIGNATION C 76 CLASS II FOR THE SIZE OF CONNECTING PIPE.
 REINFORCEMENT IN THE "B" PORTION SHALL HAVE A CROSS-SECTIONAL AREA EQUAL TO THAT OF ONE LAYER OF STEEL IN THE "C" PORTION.
 THE END OF THE PIPE CULVERT SHALL BE PLACED IN THE CONCRETE END SECTION SO THAT THE FLOW LINES ARE FLUSH. THE JOINT MUST BE COMPLETELY FILLED WITH MORTAR ON THE INSIDE AND OUTSIDE AND STRUCK FLUSH. THE JOINT MUST BE WRAPPED WITH GEOTEXTILE BLANKET 36" WIDE WITH A 12" OVERLAP.
 TO CHANGE THE FILL SLOPE TO THE SLOPE OF THE END SECTION USE A TRANSITION SLOPE OF APPROXIMATELY 10' IN LENGTH TO PROVIDE A PLEASING APPEARANCE.
 VARIATIONS IN DIMENSIONS - THE THICKNESS OF CONCRETE, THE POSITION OF STEEL, AND THE INTERNAL DIAMETER OF THE PIPE SHALL CONFORM WITH THE VARIATIONS IN DIMENSIONS AS PROVIDED IN THE SPECIFICATIONS FOR REINFORCED CONCRETE CULVERT, STORM DRAINS, AND SEWER PIPE, A.S.T.M. DESIGNATION C 76.
 PLACE CONCRETE FOOTING AS SHOWN.
 OUTFALL LABEL TO BE USED ONLY WHERE STORMWATER WILL DISCHARGE DIRECTLY TO THE WATERS OF THE STATE.

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN FOR	
PRECAST CONCRETE END SECTION FOR PIPE CULVERT	
9-13-2018 PLAN DATE	
R-86-F SHEET 2 OF 2	

MDOT PIPE CULVERT END SECTION DETAIL

NOT TO SCALE

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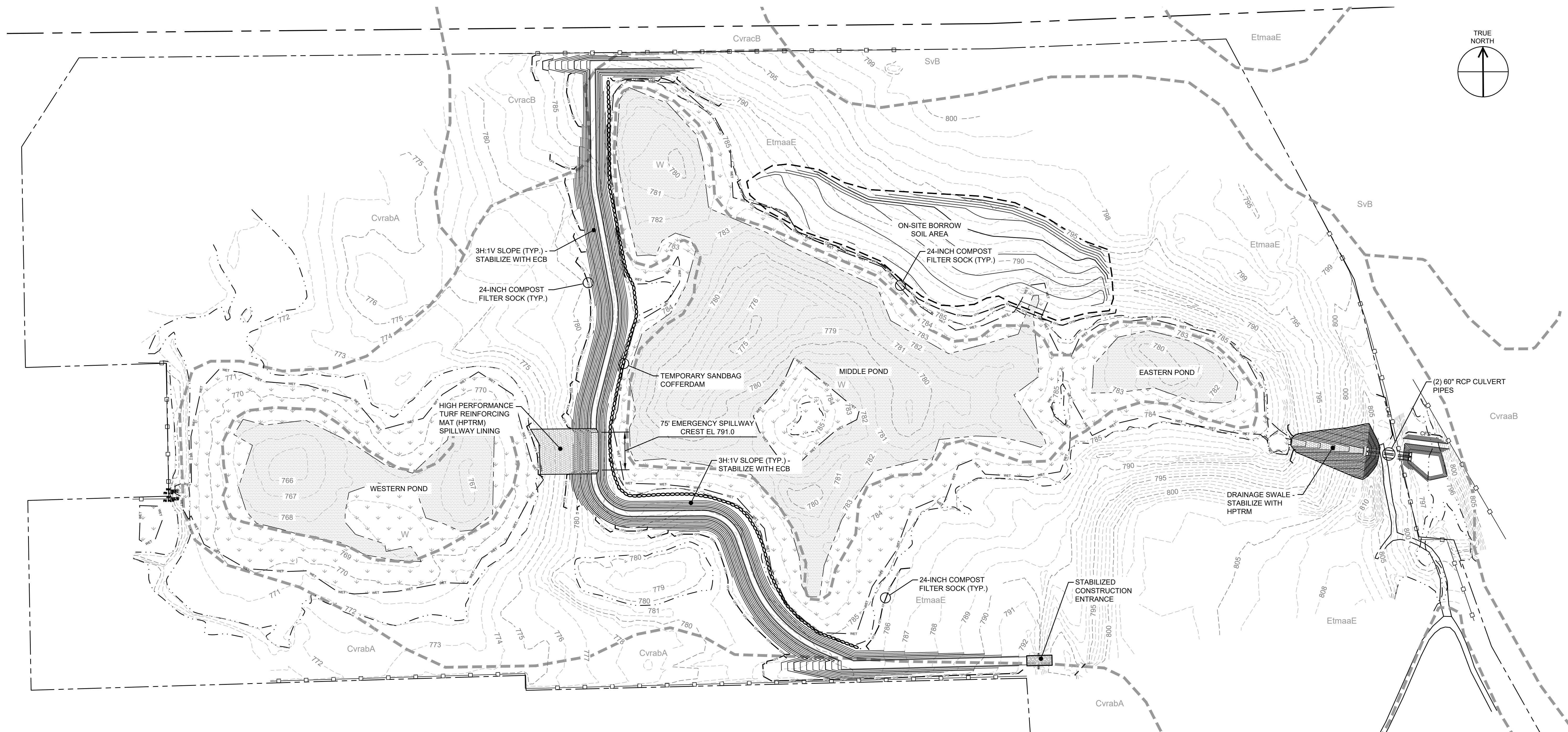
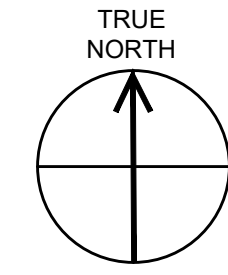
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O'BRIEN & GERE ENGINEERS, INC
 EAST NORRITON, PENNSYLVANIA

RACER TRUST
 COLDWATER ROAD FACILITY
 FLINT, MICHIGAN

CIVIL
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 MISCELLANEOUS CONSTRUCTION
 DETAILS

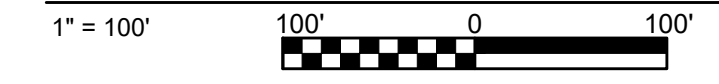
FILE NO.
 15388.72202-012
 DATE
 MAY 2020
C-12



LEGEND

- EXISTING PROPERTY LINE
- - - EXISTING FENCELINE
- - - EXISTING MAJOR CONTOUR
- - - EXISTING MINOR CONTOUR
- - - EDGE OF WATER AT TIME OF SURVEY
- WET AREA OF DELINEATED WETLANDS
- W AREA OF DELINEATED OPEN WATER
- - - NEW MAJOR CONTOUR
- - - NEW MINOR CONTOUR
- - - NEW MAXIMUM WATER SURFACE
- - - BORROW AREA
- HPTRM LINING
- SOIL TYPE BOUNDARY
- - - 24-INCH COMPOST FILTER SOCK
- SANDBAG COFFERDAM
- STABILIZED CONSTRUCTION ENTRANCE

OVERALL EROSION & SEDIMENTATION CONTROL PLAN

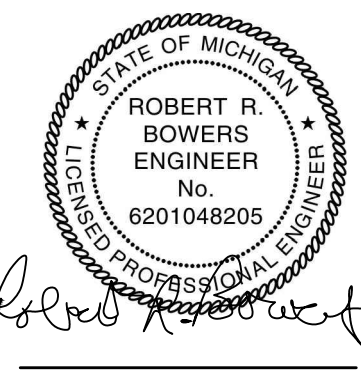


SITE SOILS TABLE		
SYMBOL	NAME	HYDROLOGIC SOIL GROUP
CvraaB	CONOVER LOAM, 0 TO 4 PERCENT SLOPES	C/D
CvrabA	CONOVER LOAM, 0 TO 3 PERCENT SLOPES	C/D
CvracB	CONOVER-WILLIAMSTOWN LOAMS, 0 TO 6 PERCENT SLOPES	C/D
EtmaaE	UDORTHTENTS AND UDIPSAMMENTS, NEARLY LEVEL TO HILLY	C
SvB	SPINKS-OAKVILLE LOAMY SANDS, 2 TO 6 PERCENT SLOPES	A
W	WATER	---



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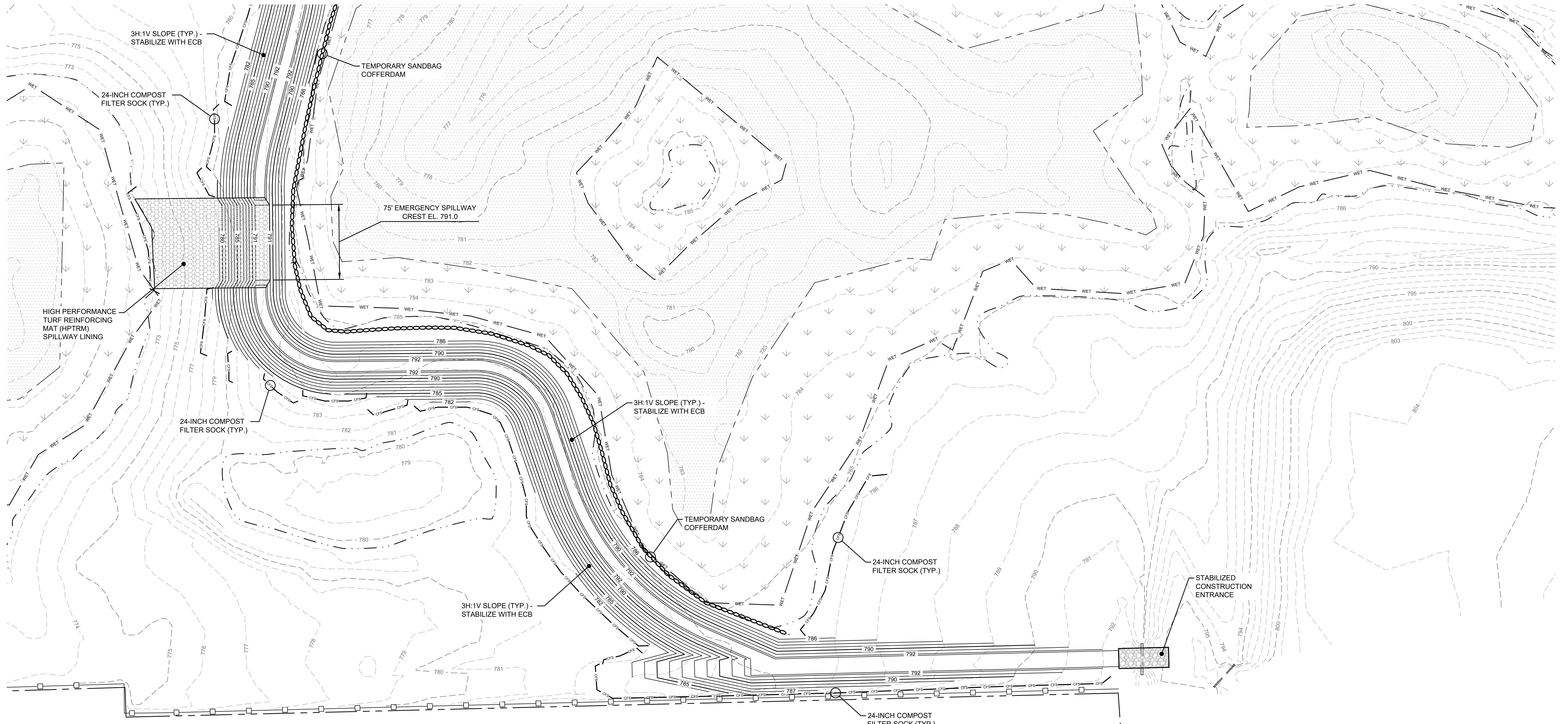
O'BRIEN & GERE ENGINEERS, INC
EAST NORRITON, PENNSYLVANIA

RACER TRUST
COLDWATER ROAD FACILITY
FLINT, MICHIGAN

CIVIL
STORMWATER MANAGEMENT IMPROVEMENTS
OVERALL SOIL EROSION & SEDIMENTATION CONTROL PLAN

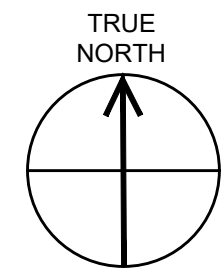
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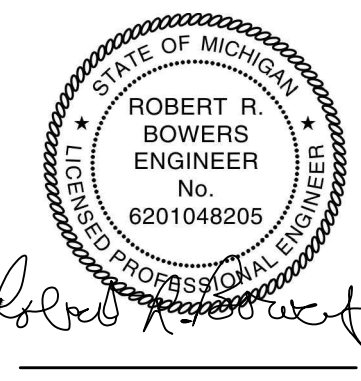
LEGEND

- EXISTING PROPERTY LINE
- - - EXISTING FENCELINE
- - - EXISTING MAJOR CONTOUR
- - - EXISTING MINOR CONTOUR
- - - EDGE OF WATER AT TIME OF SURVEY
- WET AREA OF DELINEATED WETLANDS
- OW AREA OF DELINEATED OPEN WATER
- NEW MAJOR CONTOUR
- - - NEW MINOR CONTOUR
- - - NEW MAXIMUM WATER SURFACE
- BORROW AREA
- HPTRM LINING
- SOIL TYPE BOUNDARY
- CFS- 24-INCH COMPOST FILTER SOCK
- SANDBAG COFFERDAM
- STABILIZED CONSTRUCTION ENTRANCE



ENLARGED PARTIAL SOIL EROSION & SEDIMENTATION CONTROL PLAN

1" = 50'
 50' 0 50'



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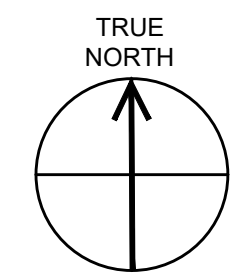
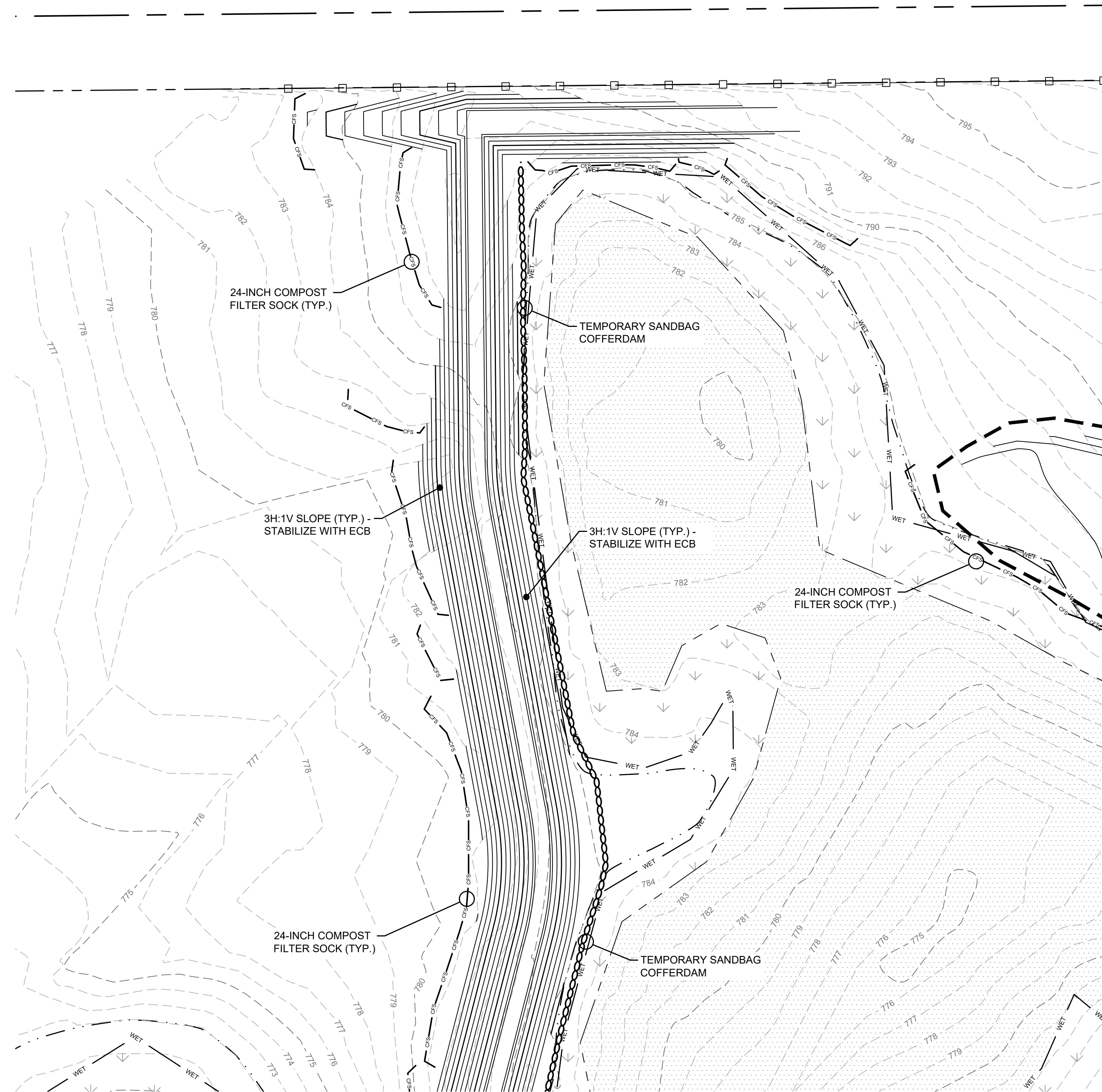
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ENLARGED SESC PLAN - SHEET 1 OF 2

FILE NO.	15388.72202-014
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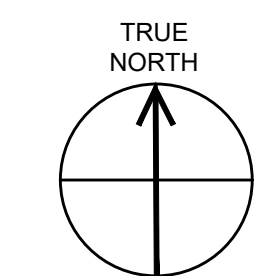
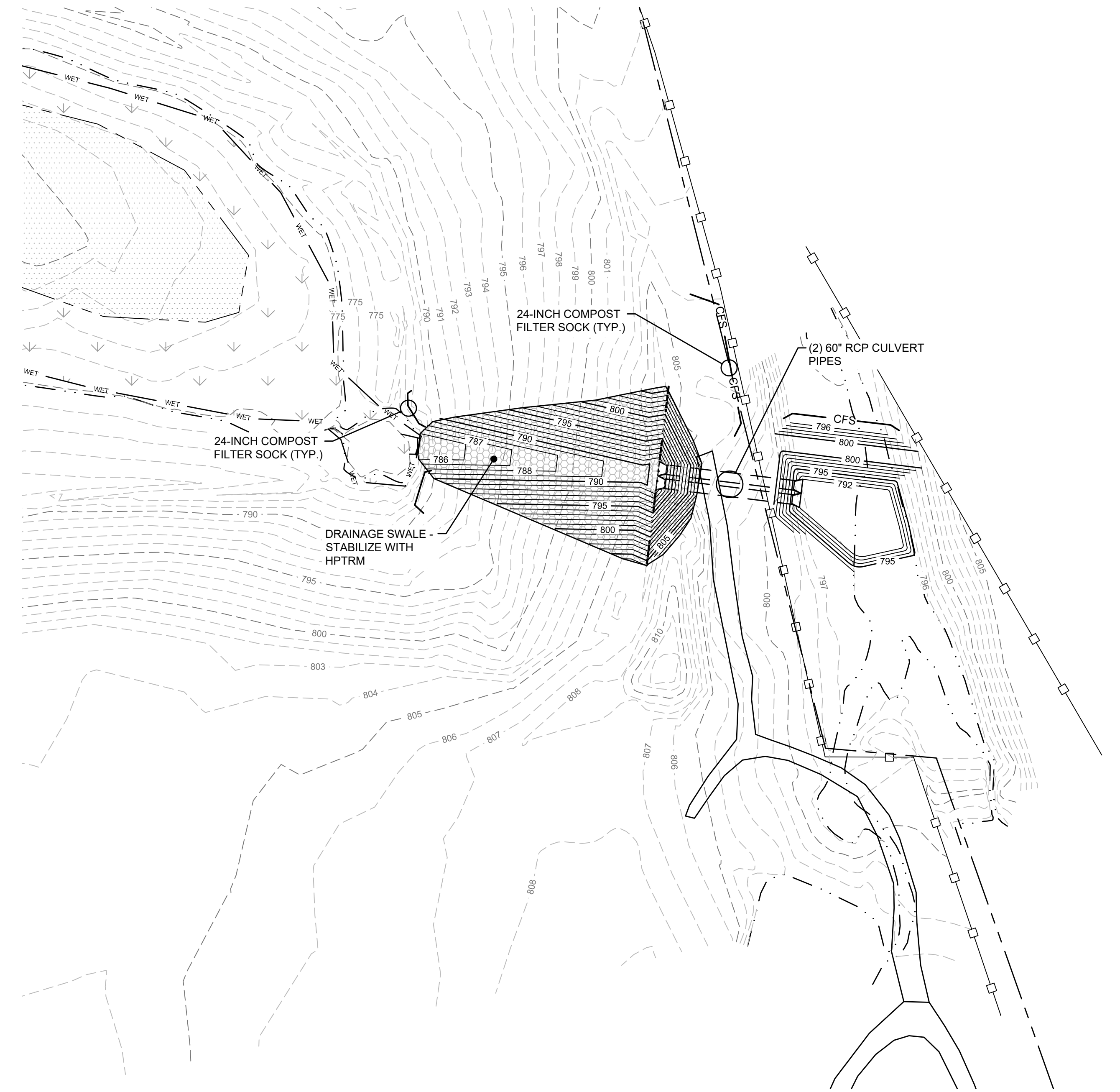
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 Expires On: 06/12/2020



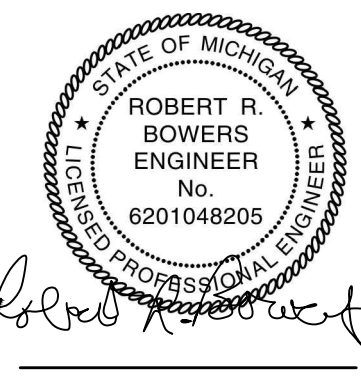
ENLARGED PARTIAL SOIL EROSION & SEDIMENTATION CONTROL PLAN

1" = 50'



ENLARGED PARTIAL SOIL EROSION & SEDIMENTATION CONTROL PLAN

1" = 50'



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ENLARGED SESC PLAN - SHEET 2 OF 2

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STANDARD EROSION AND SEDIMENT CONTROL PLAN NOTES:

- ALL EARTH DISTURBANCES, INCLUDING CLEARING AND GRUBBING AS WELL AS CUTS AND FILLS SHALL BE DONE IN ACCORDANCE WITH THE APPROVED EROSION AND SEDIMENTATION CONTROL PLAN. A COPY OF THE APPROVED DRAWINGS (STAMPED, SIGNED AND DATED BY THE REVIEWING AGENCY) MUST BE AVAILABLE AT THE PROJECT SITE AT ALL TIMES. THE REVIEWING AGENCY SHALL BE NOTIFIED OF ANY CHANGES TO THE APPROVED PLAN PRIOR TO THE IMPLEMENTATION OF THOSE CHANGES. THE REVIEWING AGENCY MAY REQUIRE A WRITTEN SUBMITTAL OF THOSE CHANGES FOR REVIEW AND APPROVAL AT ITS DISCRETION.
- PRIOR TO COMMENCING ANY EARTH DISTURBANCE ACTIVITIES, THE CONTRACTOR WILL INVITE ANY AND ALL SUBCONTRACTORS INVOLVED IN THE PROJECT TO THE APPROVED EROSION AND SEDIMENTATION CONTROL PLAN PREPARER, THE MDEQ WATER RESOURCES DIVISION AND THE GDCD-WWS TO AN ON-SITE PRECONSTRUCTION MEETING.
- AT LEAST 3 DAYS PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES, OR EXPANDING INTO AN AREA PREVIOUSLY UNMARKED, THE CONTRACTOR SHALL NOTIFY THE MISS DIG 811 UTILITY PROTECTION SERVICE (1-800-482-7171 OR 811) TO VERIFY THE LOCATION OF EXISTING UNDERGROUND UTILITIES. THE CONTRACTOR SHALL ASSUME RESPONSIBILITY FOR THE PROTECTION OF ALL EXISTING UTILITIES DURING CONSTRUCTION. ANY UTILITIES DAMAGED DURING CONSTRUCTION SHALL BE PROPERLY REPAIRED IN ACCORDANCE WITH THE UTILITY OWNER'S REQUIREMENTS.
- THE CONTRACTOR SHALL COMPLY WITH ALL PROVISIONS OF PART 91, ACT 451 OF P.A. 1994 FOR SOIL EROSION AND SEDIMENTATION CONTROL AND WILL BE RESPONSIBLE FOR ALL MAINTENANCE UNTIL THE FINAL ACCEPTANCE OF THE PERMANENT CONTROL MEASURES BY GDCD-WWS.
- THE CONTRACTOR SHALL OBTAIN THE SERVICES OF A CERTIFIED STORM WATER OPERATOR AND COMPLY WITH THE PROVISIONS OF THE NPDES AND SESC PERMITS. THE CONTRACTOR SHALL MAINTAIN DITCH DRAINAGE DURING CONSTRUCTION AND SHALL NOT OBSTRUCT SLUMP PUMP LEADS DISCHARGING INTO THE DITCH. THE CONTRACTOR SHALL TAKE ALL MEASURES NECESSARY TO PROTECT ALL STORM WATER FACILITIES, SUCH AS CATCH BASINS AND CULVERTS, DURING THE WORK. CULVERTS AND CATCH BASINS CONTAMINATED DURING THE WORK SHALL BE CLEANED.
- ALL WORK, WORK PRACTICE AND MATERIALS SHALL COMPLY WITH ALL APPLICABLE STATE AND FEDERAL SAFETY GUIDELINES, OCCUPATION, HEALTH AND ENVIRONMENTAL REGULATIONS AND ALSO NFPA AND ANSI CODES AS APPLICABLE.
- ALL EARTH DISTURBANCE ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THE SEQUENCE PROVIDED ON THE PLAN DRAWINGS. DEVIATION FROM THAT SEQUENCE MUST BE APPROVED IN WRITING FROM THE GDCD-WWS PRIOR TO IMPLEMENTATION.
- AREAS TO BE FILLED ARE TO BE CLEARED, GRUBBED, AND STRIPPED OF TOPSOIL TO REMOVE TREES, VEGETATION, ROOTS AND OTHER OBJECTIONABLE MATERIAL.
- CLEARING, GRUBBING AND TOPSOIL STRIPPING SHALL BE LIMITED TO THOSE AREAS DESCRIBED IN EACH STAGE OF THE CONSTRUCTION SEQUENCE. GENERAL SITE CLEARING, GRUBBING AND TOPSOIL STRIPPING MAY NOT COMMENCE IN ANY STAGE OR PHASE OF THE PROJECT UNTIL THE E&S BMPs SPECIFIED BY THE BMP SEQUENCE FOR THAT STAGE OR PHASE HAVE BEEN INSTALLED AND ARE FUNCTIONING AS DESCRIBED IN THIS E&S PLAN.
- AT NO TIME SHALL CONSTRUCTION VEHICLES BE ALLOWED TO ENTER AREAS OUTSIDE THE LIMIT OF DISTURBANCE BOUNDARIES SHOWN ON THE PLAN MAPS. THESE AREAS MUST BE CLEARLY MARKED AND FENCED OFF BEFORE CLEARING AND GRUBBING OPERATIONS BEGIN.
- TOPSOIL REQUIRED FOR THE ESTABLISHMENT OF VEGETATION SHALL BE STOCKPILED AT THE LOCATION(S) SHOWN ON THE PLAN MAPS IN THE AMOUNT NECESSARY TO COMPLETE THE FINISH GRADING OF ALL EXPOSED AREAS THAT ARE TO BE STABILIZED BY VEGETATION. STOCKPILE HEIGHTS SHALL NOT EXCEED 35 FEET. STOCKPILE SLOPES SHALL BE 2H:1V OR FLATTER.
- IMMEDIATELY UPON DISCOVERING UNFORESEEN CIRCUMSTANCES POSING THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION, THE OPERATOR SHALL IMPLEMENT APPROPRIATE BEST MANAGEMENT PRACTICES TO MINIMIZE THE POTENTIAL FOR EROSION AND SEDIMENT POLLUTION AND NOTIFY THE GDCD-WWS.
- ALL BUILDING MATERIALS AND WASTES SHALL BE REMOVED FROM THE SITE AND RECYCLED OR DISPOSED OF IN ACCORDANCE WITH ALL COUNTY, STATE AND FEDERAL REGULATIONS. NO BUILDING MATERIALS OR WASTES OR UNUSED BUILDING MATERIALS SHALL BE BURNED, BURIED, DUMPED, OR DISCHARGED AT THE SITE.
- UNTIL THE SITE IS STABILIZED, ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED PROPERLY. MAINTENANCE SHALL INCLUDE INSPECTIONS OF ALL EROSION AND SEDIMENT CONTROL MEASURES AFTER EACH RUNOFF EVENT AND ON A WEEKLY BASIS. ALL PREVENTATIVE AND REMEDIAL MAINTENANCE WORK, INCLUDING CLEANOUT, REPAIR, REPLACEMENT, REGRADING, RESEEDING AND RENEWING MUST BE PERFORMED IMMEDIATELY. IF THE E&S CONTROL MEASURES FAIL TO PERFORM AS EXPECTED, REPLACEMENT OF DEFICIENT CONTROL MEASURES OR MODIFICATIONS OF THOSE INSTALLED WILL BE REQUIRED.
- A LOG SHOWING THE DATES THAT THE E&S CONTROL MEASURES WERE INSPECTED, AS WELL AS ANY DEFICIENCIES FOUND AND THE DATE THEY WERE CORRECTED, SHALL BE MAINTAINED ON THE SITE AND BE MADE AVAILABLE TO REGULATORY AGENCY OFFICIALS AT THE TIME OF INSPECTION.
- SEDIMENT TRACKED ONTO ANY PUBLIC ROADWAY OR SIDEWALK SHALL BE RETURNED TO THE CONSTRUCTION SITE BY THE END OF EACH WORK DAY AND DISPOSED OF IN THE MANNER DESCRIBED IN THIS PLAN. IN NO CASE SHALL THE SEDIMENT BE WASHED, SHOVELED, OR SWEEPED INTO ANY ROADSIDE DITCH, STORM SEWER OR SURFACE WATER.
- AREAS WHICH ARE TO BE TOPSOILED SHALL BE SCARIFIED TO A MINIMUM DEPTH OF 3 TO 5 INCHES - 6 TO 12 INCHES ON COMPACTED SOILS - PRIOR TO PLACEMENT OF TOPSOIL. AREAS TO BE VEGETATED SHALL HAVE A MINIMUM 4 INCHES OF TOPSOIL IN PLACE PRIOR TO SEEDING AND MULCHING.
- ALL FILLS SHALL BE COMPACTED IN ACCORDANCE WITH THE APPROVED PROJECT SPECIFICATIONS AND AS REQUIRED TO REDUCE EROSION, SLIPPAGE, SETTLEMENT, SUBSIDENCE OR OTHER RELATED PROBLEMS. EARTHEN FILLS SHALL BE PLACED IN COMPACTED LAYERS NOT TO EXCEED THE THICKNESS SPECIFIED IN THE APPROVED SPECIFICATIONS. FILL MATERIALS SHALL BE FREE OF FROZEN PARTICLES, BRUSH, ROOTS, SOD OR OTHER FOREIGN OR OBJECTIONABLE MATERIALS THAT WOULD INTERFERE WITH OR PREVENT CONSTRUCTION OF SATISFACTORY FILLS. FROZEN MATERIALS OR SOFT, MUCKY, OR HIGHLY COMPRESSIBLE MATERIALS SHALL NOT BE INCORPORATED INTO FILLS. FILL SHALL NOT BE PLACED ON SATURATED OR FROZEN SURFACES.
- ALL GRADED AREAS SHALL BE PERMANENTLY STABILIZED IMMEDIATELY UPON REACHING FINISHED GRADE. SLOPES OF 3:1 (HORIZONTAL TO VERTICAL) OR STEEPER, OR AS OTHERWISE SHOWN ON THE PLAN DRAWINGS, SHALL BE STABILIZED WITH EROSION CONTROL BLANKETS ACCORDING TO THE STANDARDS OF THIS PLAN.
- IMMEDIATELY AFTER EARTH DISTURBANCE ACTIVITIES CEASE IN ANY AREA OR SUBAREA OF THE PROJECT, THE OPERATOR SHALL STABILIZE ALL DISTURBED AREAS.
- PERMANENT STABILIZATION IS DEFINED AS A MINIMUM UNIFORM, PERENNIAL 70% VEGETATIVE COVER OR OTHER PERMANENT NON-VEGETATIVE COVER WITH A DENSITY SUFFICIENT TO RESIST ACCELERATED EROSION. CUT AND FILL SLOPES SHALL BE CAPABLE OF RESISTING FAILURE DUE TO SLUMPING, SLIDING, OR OTHER MOVEMENTS.
- AFTER FINAL SITE STABILIZATION HAS BEEN ACHIEVED, ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES MUST BE REMOVED. AREAS DISTURBED DURING THE REMOVAL OF THE TEMPORARY CONTROL MEASURES SHALL BE STABILIZED IMMEDIATELY. IN ORDER TO ENSURE RAPID REVEGETATION OF THE DISTURBED AREAS, SUCH REMOVALS ARE TO BE PERFORMED ONLY DURING THE GERMINATING SEASON.
- THE CONTRACTOR SHALL PROVIDE APPROPRIATE MEASURES TO CONTROL DUST AT THE SITE. SUCH MEASURES MAY INCLUDE SPRINKLING/IRRIGATION, VEGETATIVE COVER, TEMPORARY STRAW MULCH OR OTHER SURFACE COVER, BUT SHALL NOT INCLUDE THE USE OF SPRAY-ON OR OTHER CHEMICAL SOIL TREATMENTS.

SEQUENCE OF CONSTRUCTION:

THE FOLLOWING IS A GENERAL SEQUENCE OF CONSTRUCTION INTENDED AS A GENERAL OUTLINE OF THE PROJECT EARTH DISTURBANCE ACTIVITIES AND INSTALLATION OF EROSION AND SEDIMENT CONTROL MEASURES. THE CONTRACTOR MAY ADJUST THE TIMING AND SEQUENCING OF CERTAIN ACTIVITIES AS NECESSARY, PROVIDED THAT THE INTENDED EROSION CONTROL MEASURES ARE IN PLACE AND FUNCTIONAL PRIOR TO EARTH DISTURBANCE ACTIVITIES OCCURRING.

CONSTRUCTION WILL BEGIN AFTER THE RECEIPT OF ALL NECESSARY FEDERAL, STATE, COUNTY AND LOCAL PERMITS OR AUTHORIZATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT ALL PERMITS OR AUTHORIZATIONS HAVE BEEN OBTAINED AND THAT COPIES ARE AVAILABLE ON THE PROJECT SITE.

- DELINEATE THE APPROVED LIMITS OF DISTURBANCE, INCLUDING ON SITE STAGING AND STORAGE AREAS AND EQUIPMENT OPERATING AND ACCESS ROUTES.
- INSTALL STABILIZED CONSTRUCTION ENTRANCE AS INDICATED ON THE PLAN DRAWINGS. CONSTRUCT TEMPORARY ROADWAYS, STAGING AND LAYDOWN AREAS.
- INSTALL 24-INCH COMPOST FILTER SOCKS AND TEMPORARY DIVERSIONS OR OTHER CONTROL OF WATER MEASURES AS INDICATED ON THE APPROVED PLANS.
- CLEAR AND GRUB VEGETATION WITHIN THE PROJECT AREA OF EXCAVATION, STRIP TOPSOIL AND STOCKPILE IN THE DESIGNATED STOCKPILE AREA FOR REUSE.
- EXCAVATE SOIL MATERIAL FOR KEY TRENCH AND FOUNDATION OF THE NEW STORMWATER BERM AND ACCESS RAMPS. UNSUITABLE FOUNDATION MATERIAL SHALL BE EXCAVATED AND REPLACED WITH SUITABLE MATERIAL.
- PLACE EMBANKMENT FILL MATERIAL IN COMPACTED LIFTS AS INDICATED ON THE APPROVED PLANS AND DETAILS. AS EMBANKMENTS REACH FINAL GRADE, STABILIZE WITH TOPSOIL, SEEDING AND EROSION CONTROL BLANKETS. STABILIZE SPILLWAY WITH TOPSOIL, SEEDING AND HIGH PERFORMANCE TURF REINFORCING MAT.
- EXCAVATE FOR AND INSTALL NEW DRAINAGE SWALE, CULVERTS AND HEADWALLS ACCORDING TO THE APPROVED PLANS AND DETAILS. WORK TO PROCEED FROM DOWNSTREAM TO UPSTREAM. STABILIZE DRAINAGE SWALE WITH TOPSOIL, SEEDING AND HIGH PERFORMANCE TURF REINFORCING MAT.
- ONCE THE SITE HAS ACHIEVED A MINIMUM UNIFORM DENSITY OF 80% VEGETATIVE OR OTHER PERMANENT NON-VEGETATIVE COVER WITH A DENSITY SUFFICIENT TO RESIST ACCELERATED SURFACE EROSION, REMOVE ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES, INCLUDING COMPOST FILTER SOCKS, TEMPORARY DIVERSIONS AND STABILIZED CONSTRUCTION ENTRANCE. ANY AREA DISTURBED DURING REMOVAL OF A TEMPORARY EROSION CONTROL MEASURE SHALL BE STABILIZED IMMEDIATELY WITH SEEDING AND MULCHING OR EROSION CONTROL BLANKET.

EROSION CONTROL BLANKET (ECB) SPECIFICATIONS:

- TEMPORARY EROSION CONTROL BLANKETS (ECB) SHALL BE A MAHINE-PRODUCED MAT OF 100% STRAW WITH A FUNCTIONAL LONGEVITY OF 12 MONTHS. THE BLANKET SHALL BE A CONSISTENT THICKNESS WITH THE STRAW DISTRIBUTED OVER THE ENTIRE AREA OF THE MAT. THE BLANKET SHALL BE COVERED ON THE TOP AND BOTTOM WITH A 100% BIODEGRADABLE WOVEN NATURAL FIBER NETTING.
- ACCEPTABLE PRODUCTS INCLUDE:
 - BIONET S150BN EROSION CONTROL BLANKET AS MANUFACTURED BY TENSAR NORTH AMERICAN GREEN
 - ECS-2B DOUBLE NET STRAW BIODEGRADABLE ROLLED EROSION CONTROL PRODUCT AS MANUFACTURED BY EAST COAST EROSION CONTROL
 - LANDLOK S2 EROSION CONTROL BLANKET AS MANUFACTURED BY PROPEX GEOSYNTHETICS
 - APPROVED EQUAL AS DETERMINED BY ENGINEER.
- SUBMITTALS: CONTRACTOR SHALL SUBMIT MANUFACTURER'S TECHNICAL DATA, CUT SHEETS, AND ALL INSTALLATION INSTRUCTIONS AND REQUIREMENTS, INCLUDING THE MANUFACTURER'S RECOMMENDED STAPLE PATTERN FOR THE SPECIFIED GRADES.
- ANCHORING DEVICES FOR ECB SHALL BE AS RECOMMENDED BY THE MANUFACTURER.
- INSTALLATION:
 - PREPARE FINAL TOPSOILED, GRADED AND DRESSED SOIL SURFACES. SURFACE SHALL BE FREE OF ROCKS OR OTHER OBSTRUCTIONS THAT WOULD PREVENT THE ECB FROM LYING IN DIRECT UNIFORM CONTACT WITH THE SOIL.
 - SEED SOIL SURFACE WITH THE SPECIFIED SEED MIXTURE.
 - UNROLL, PLACE AND ANCHOR THE ECB EVENLY AND SMOOTHLY, WITHOUT STRETCHING, TO CONFORM TO THE SHAPE OF AND BE IN DIRECT CONTACT WITH THE SOIL SURFACE. USE APPROPRIATE ANCHORING DEVICES AND ANCHOR TRENCHES FOLLOWING ALL MANUFACTURER RECOMMENDED INSTALLATION INSTRUCTIONS.

SEEDING SPECIFICATIONS:

- SEEDING SHALL BE AS SPECIFIED IN THE GENESSEE COUNTY DRAIN COMMISSIONER WATER & WASTE SERVICES (GDCD-WWS) STANDARD SPECIFICATIONS & DETAILS FOR SOIL EROSION & SEDIMENTATION CONTROL (SESC) MANUAL, LATEST EDITION.
- A SITE SPECIFIC SOILS TEST SHALL BE PERFORMED TO DETERMINE THE NUTRIENT AND pH LEVELS IN THE TOPSOIL. APPLY SOIL SUPPLEMENTS AS RECOMMENDED BY THE SOILS TEST RESULTS.
- PROVIDE SEED MIXTURES COMPOSED OF CERTIFIED SEED OF THE PURITY, GERMINATION AND PROPORTIONS BY WEIGHT AS INDICATED.
- DISTURBED AREAS TO BE STABILIZED WITH VEGETATION SHALL BE SEEDED OR SODDED AS SOON AS POSSIBLE AFTER FINAL GRADING. STRAW MULCH OR EROSION CONTROL MATTING IS TO BE USED FOR PROTECTION UNTIL VEGETATION IS ESTABLISHED. DO NOT SEED AREAS IN EXCESS OF THAT WHICH CAN BE MULCHED OR MATTED ON THE SAME DAY.
- DO NOT SOW IMMEDIATELY FOLLOWING RAIN, WHEN GROUND IS TOO DRY OR DURING WINDY PERIODS OR WHEN WINDS ARE OVER 12 MPH.
- SEED SHALL BE SOWN BY A MECHANICAL SEEDER, OPERATING IN TWO DIRECTIONS, AND LIGHTLY RAKED INTO THE SURFACE AND ROLLED ONCE WITH A LIGHT HAND ROLLER. SEEDS SHALL BE THOROUGHLY WATERED WITH A FINE SPRAY IN SUCH A MANNER AS NOT TO WASH OUT THE SEED. THE CONTRACTOR SHALL USE CARE IN RAKING, NOT TO DESTROY THE FINISH GRADE NOR TO DISTURB UNIFORM DISTRIBUTION OF SEED.
- PERFORM PERMANENT SEEDING BETWEEN MAY 1 AND JUNE 15, OR BETWEEN AUGUST 15 AND OCTOBER 10, UNLESS OTHERWISE APPROVED BY THE GDCD-WWS.
- THE CONTRACTOR MAY PROPOSE TO STABILIZE DISTURBED AREAS WITH HYDROSEEDING USING SEED, FERTILIZER AND MULCH IN A SLURRY WITH A HYDRAULIC SEEDER EVENLY IN TWO INTERSECTING DIRECTIONS.
 - HYDROSEED MIXTURES SHALL CONTAIN A WOOD CELLULOSE MULCH, ADDED AFTER THE SEED AND FERTILIZER HAVE BEEN THOROUGHLY MIXED.
 - HYDROSEED WITH A PUMP RATED AND OPERATED AT NO LESS THAN 100 GPM AND NO LESS THAN 100 PSI WITH A MECHANICAL AGITATOR THAT WILL ENSURE UNIFORM SUSPENSION OF SEED, FERTILIZER AND MULCH IN WATER.
 - EACH 1,000 GALLONS OF SLURRY MIX SHALL CONTAIN 1,500 LBS OF APPROVED CELLULOSE FIBER, 200 LBS OF THE SPECIFIED SEED MIXTURE AND 500 LBS OF AN APPROVED COMMERCIAL FERTILIZER. APPLY SEED, FERTILIZER AND MULCH AT A RATE OF NOT LESS THAN 1,000 GALLONS OF SLURRY PER ACRE.
- MAINTENANCE:
 - WATER NEWLY SEEDDED AREAS AS NECESSARY TO PREVENT GRASS AND SOIL FROM DRYING OUT.
 - PROTECT SEEDDED AREAS FROM TRAFFIC AND IMMEDIATELY RESEED AREAS WHICH SHOW BARE SPOTS. REPAIR RILLS, WASHOUTS AND GULLIES AND IMMEDIATELY RESEED.
 - MAINTAIN SEEDDED AREAS IMMEDIATELY AFTER PLACEMENT AND UNTIL GRASS IS WELL-ESTABLISHED AND EXHIBITS A VIGOROUS GROWING CONDITION.

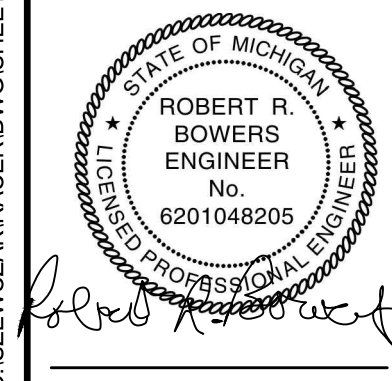
SEED MIXTURE			
SEEDS	MIN. PURITY	MIN. GERMINATION	% OF MIX
KENTUCKY BLUEGRASS	98%	85%	10%
CREeping RED FESCUE	97%	85%	40%
PERENNIAL RYE	96%	85%	20%
HARD FESCUE	97%	85%	30%

SEED MIXTURE AS SPECIFIED BY THE GENESSEE COUNTY DRAIN COMMISSIONER WATER & WASTE SERVICES. SEED MIXTURE SHALL BE SOWN AT A RATE OF 100 POUNDS PER ACRE.

TOPSOILING SPECIFICATIONS:

- TOPSOIL SHALL BE OBTAINED FROM THE STOCKPILE OF ONSITE, STRIPPED TOPSOIL. THE IMPORT OF TOPSOIL IS NOT ANTICIPATED.
- TOPSOIL SHALL BE UNFROZEN, FRIABLE LOAM REASONABLY FREE FROM CLAY LUMPS, STONES, ROOTS, STICKS, STUMPS, BRUSH OR FOREIGN OBJECTS LARGER THAN 2 INCHES IN ANY DIMENSION, LITTER AND/OR OTHER MATERIAL UNSUITABLE OR HARMFUL TO PLANT GROWTH. TOPSOIL SHALL CONTAIN NOT LESS THAN 2% NOR MORE THAN 10% ORGANIC MATTER AS DETERMINED BY AASHTO T194.
- INSTALLATION:
 - AREAS TO RECEIVE TOPSOIL SHALL BE FINAL GRADED TO THE DEPTH OF TOPSOIL AS SHOWN ON THE DRAWINGS.
 - ALL DEBRIS AND INORGANIC MATERIAL SHALL BE REMOVED AND THE SURFACE LOOSENED FOR A MINIMUM DEPTH OF 3 TO 5 INCHES, 6 TO 12 INCHES ON HIGHLY COMPACTED SOILS PRIOR TO PLACING THE TOPSOIL.
 - TOPSOIL SHALL NOT BE PLACED UNTIL THE SUBGRADE IS IN SUITABLE CONDITION AND FREE OF EXCESSIVE MOISTURE OR FROST. DO NOT PLACE TOPSOIL ON A FROZEN SURFACE.
 - SATISFACTORY TOPSOIL SHALL BE PLACED ON THE PREPARED SUBGRADE TO THE DEPTH REQUIRED. TOPSOIL SHALL NOT BE PLACED IN A FROZEN OR MUDDY CONDITION.
 - THE FINISHED SURFACE SHALL CONFORM TO THE LINES AND GRADES ON THE APPROVED DRAWINGS. ANY IRREGULARITIES SHALL BE CORRECTED BEFORE THE PLACEMENT OF SOIL AMENDMENTS AND SEED.

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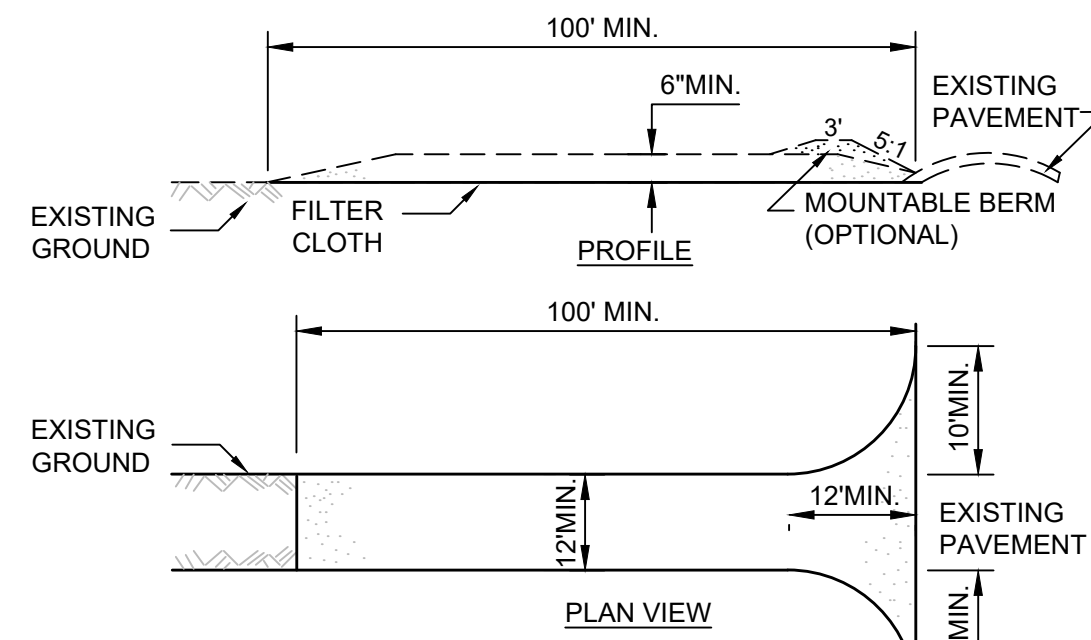


**RACER TRUST
COLDWATER ROAD FACILITY
FLINT, MICHIGAN**

**CIVIL
STORMWATER MANAGEMENT IMPROVEMENTS
SOIL EROSION & SEDIMENTATION
CONTROL PLAN NOTES**

FILE NO.	15388.72202-017
DATE	MAY 2020

C-16

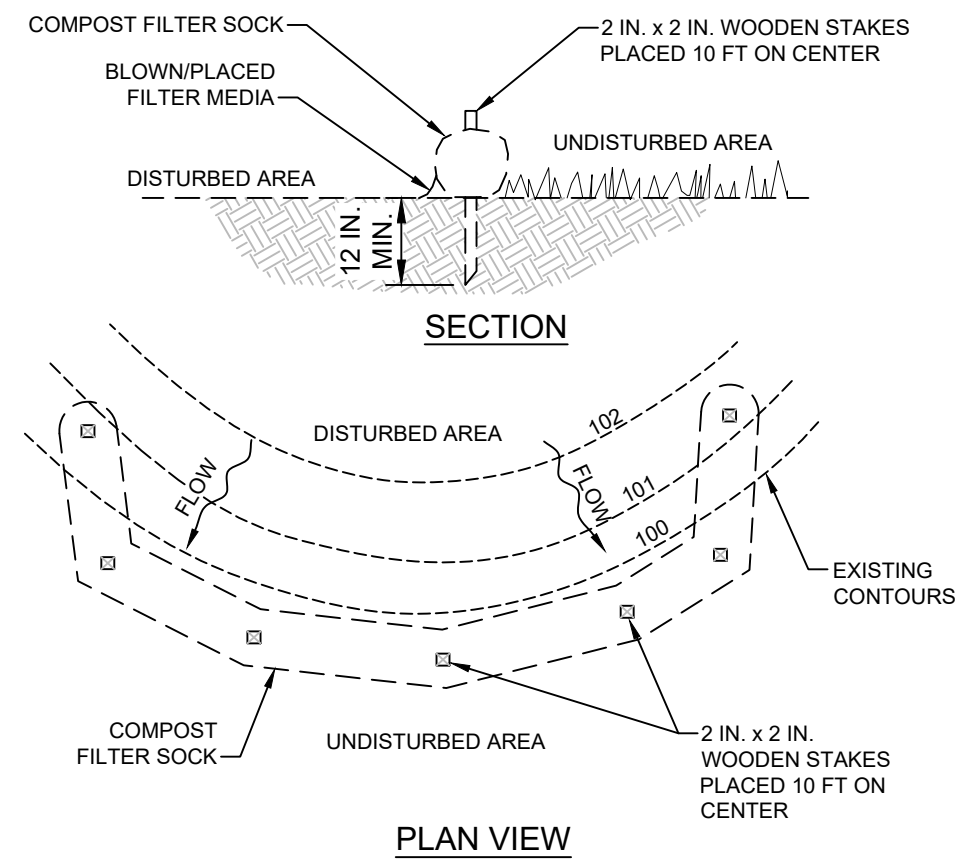


CONSTRUCTION SPECIFICATIONS

1. STONE SIZE - USE 2" STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - NOT LESS THAN 100 FEET (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 25 FOOT MINIMUM LENGTH WOULD APPLY).
3. THICKNESS - NOT LESS THAN SIX (6) INCHES.
4. WIDTH - TWELVE (12) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.
5. FILTER CLOTH - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY, ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

STABILIZED CONSTRUCTION ENTRANCE

NOT TO SCALE



NOTES:

SOCK FABRIC SHALL BE A PHOTODEGRADABLE HIGH DENSITY POLYETHYLENE OR MULTI-FILAMENT POLYPROPYLENE WITH A MINIMUM FUNCTIONAL LONGEVITY OF 12 MONTHS. SOCKS SHALL BE REPLACED AFTER ONE YEAR.

COMPOST SHALL BE A WELL DECOMPOSED, WEED-FREE ORGANIC MATTER DERIVED FROM AGRICULTURE, FOOD, STUMP GRINDINGS AND YARD OR WOOD/BARK SOURCES, AEROBICALLY COMPOSTED. THE COMPOST SHALL BE REASONABLY FREE OF MAN-MADE FOREIGN MATTER, WOOD AND BARK CHIPS, GROUND CONSTRUCTION DEBRIS OR REPROCESSED WOOD PRODUCTS ARE NOT SUITABLE AS COMPOST.

COMPOST FILTER SOCK SHALL BE PLACED AT EXISTING LEVEL GRADE. BOTH ENDS OF THE BARRIER SHALL BE EXTENDED AT LEAST 8 FEET UP SLOPE AT 45 DEGREES TO THE MAIN BARRIER ALIGNMENT. MAXIMUM SLOPE LENGTH ABOVE ANY BARRIER SHALL NOT EXCEED THAT SPECIFIED FOR THE SIZE OF THE SOCK AND THE SLOPE OF ITS TRIBUTARY AREA.

TRAFFIC SHALL NOT BE PERMITTED TO CROSS COMPOST FILTER SOCKS.

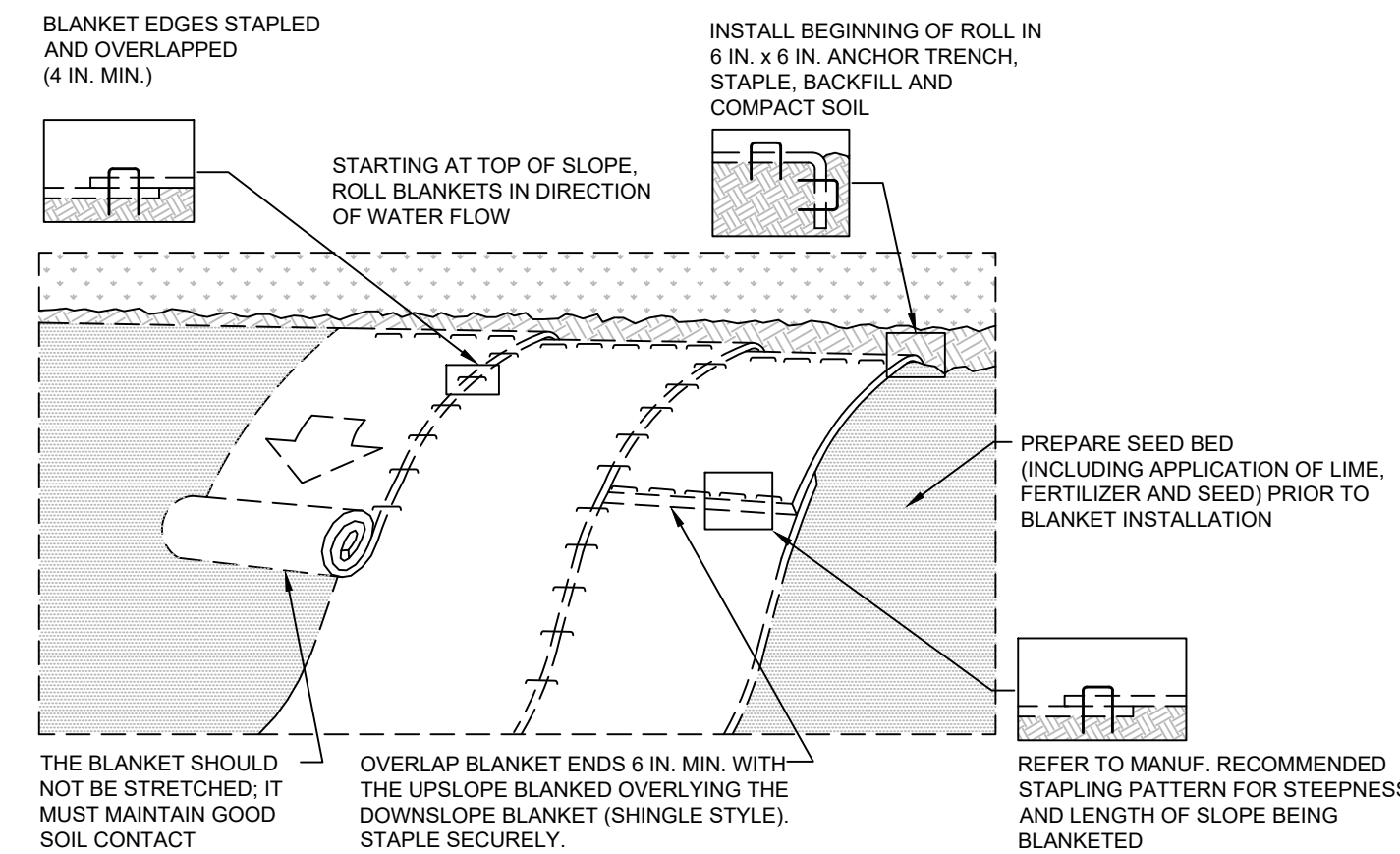
ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT REACHES 1/2 THE ABOVE GROUND HEIGHT OF THE BARRIER AND DISPOSED IN THE MANNER DESCRIBED ELSEWHERE IN THE PLAN.

COMPOST FILTER 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.

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 SOCK

NOT TO SCALE



NOTES:

SEED AND SOIL AMENDMENTS SHALL BE APPLIED ACCORDING TO THE RATES IN THE PLAN DRAWINGS PRIOR TO INSTALLING THE BLANKET.

PROVIDE ANCHOR TRENCH AT TOE OF SLOPE IN SIMILAR FASHION AS AT TOP OF SLOPE.

SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS, AND GRASS.

BLANKET SHALL HAVE GOOD CONTINUOUS CONTACT WITH UNDERLYING SOIL THROUGHOUT ENTIRE LENGTH. LAY BLANKET LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH SOIL. DO NOT STRETCH BLANKET.

THE BLANKET SHALL BE STAPLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

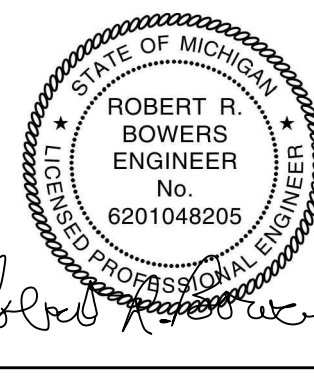
BLANKETED AREAS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT UNTIL PERENNIAL VEGETATION IS ESTABLISHED TO A MINIMUM UNIFORM 70% COVERAGE THROUGHOUT THE BLANKETED AREA. DAMAGED OR DISPLACED BLANKETS SHALL BE RESTORED OR REPLACED WITHIN 4 CALENDAR DAYS.

EROSION CONTROL BLANKET

NOT TO SCALE

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED ENGINEER, TO ALTER THIS DOCUMENT.

THIS DRAWING WAS PREPARED AT THE SCALE INDICATED. INACCURACIES IN THE STATED SCALE MAY BE INTRODUCED WHEN DRAWINGS ARE REPRODUCED BY ANY MEANS. USE THE GRAPHIC SCALE BAR TO DETERMINE THE ACTUAL SCALE. DRAWING IS NOT SCALABLE IF NO SCALE BAR IS PRESENT.



IN CHARGE OF	CSY			
DESIGNED BY	SMS			
CHECKED BY	NJA	B	03/30/20	ISSUED FOR BID
DRAWN BY	SMS	A	12/06/19	REVISED PER GCDC REVIEW
		NO.	DATE	REVISION
				CSY
				NJA
				INT.



RACER TRUST
COLDWATER ROAD FACILITY
FLINT, MICHIGAN

CIVIL
STORMWATER MANAGEMENT IMPROVEMENTS
SOIL EROSION & SEDIMENTATION
CONTROL PLAN DETAILS

FILE NO.	15388.72202-019
DATE	MAY 2020

C-17