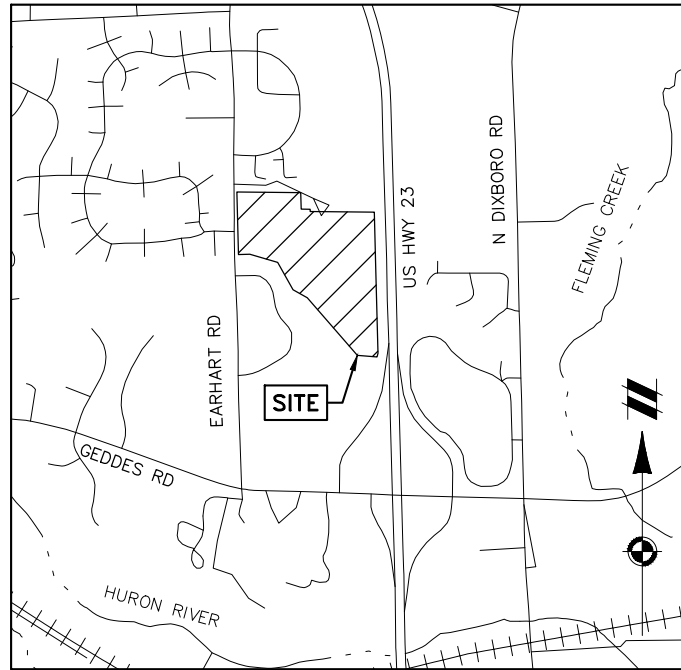
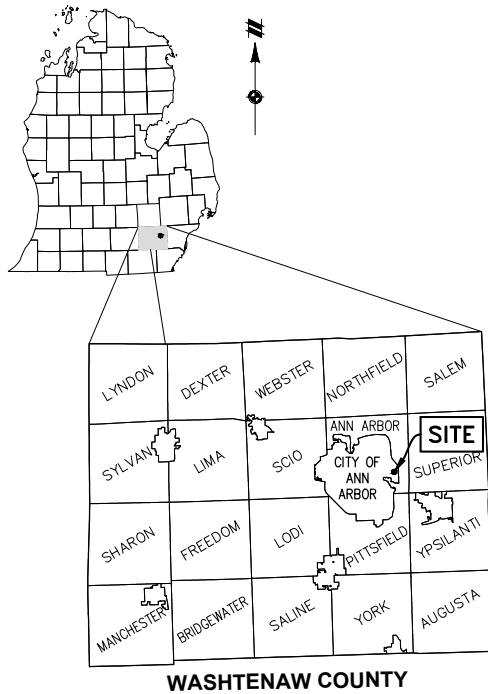


CONCORD PINES OF ANN ARBOR

A SINGLE FAMILY RESIDENTIAL DEVELOPMENT
CITY OF ANN ARBOR, WASHTENAW COUNTY, MI
EGLE WETLAND IMPACT PLANS



PROJECT DEVELOPER

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26200 TOWN CENTER DR. SUITE 200
NOVI MICHIGAN 48375
PHONE: 231.675.0224
ATTN: SCOTT HANSEN
EMAIL: SHANSEN@TOLLBROTHERS.COM

WETLAND CONSULTANT

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810.225.0539
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PROJECT ENGINEER

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EMAIL: MBUSH@ATWELL-GROUP.COM

PROJECT SURVEYOR

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EMAIL: MEMBREE@ATWELL-GROUP.COM

SHEET INDEX

01	SITE LOCATION MAP	10	STORMWATER PLAN
02	SITE PLAN OF DEVELOPMENT	11	DETENTION A PROFILE & CALCS
03	WETLAND IMPACT PLAN	12	DETENTION B PROFILE & CALCS
04	WETLAND IMPACT 1 PLAN	13	DETENTION C PROFILE & CALCS
05	CROSS SECTION A1	14	DETENTION C CALCS
06	CROSS SECTION A2	15	BMP NOTES
07	WETLAND IMPACT 2 PLAN	16	SESC NOTES
08	CROSS SECTION B1	17	SESC NOTES
09	CROSS SECTION B2		

VERTICAL DATUM

VERTICAL DATUM IS BASED ON NAVD88.
REFERENCE CONTROL POINTS: AAGRS NO.
0008A & 0005B

BASIS OF BEARING

BEARINGS ARE BASED ON MICHIGAN STATE
PLANE COORDINATES (NAD83), SOUTH ZONE,
GROUND DISTANCES, INTERNATIONAL FEET.



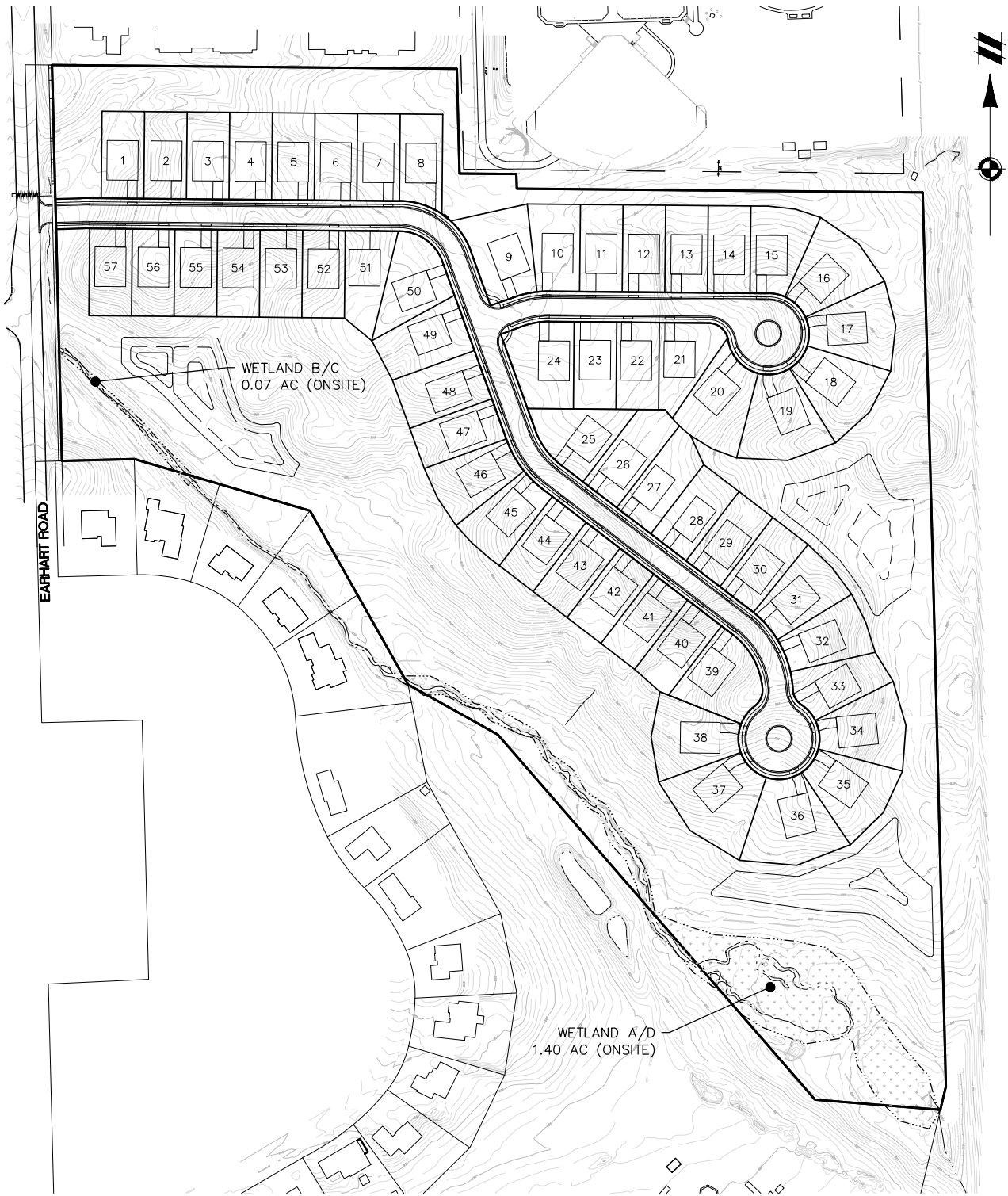
CONCORD PINES OF ANN ARBOR
EGLE IMPACT PLANS
SITE LOCATION MAP

SECTION: 25	CITY OF ANN ARBOR
TOWN, RANGE: 02S, 16W	WASHTENAW COUNTY, MI



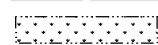
JOB: 20003119
DATE: SEPT. 22, 2021
REV: --

SHEET NO. **01** OF **10**
E-VRD
P031893 v1.0

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LEGEND

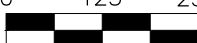
-  PROJECT BOUNDARY (±34.1 ACRES)
-  EXISTING GRADE
-  EXISTING WETLAND



CONCORD PINES OF ANN ARBOR
EGLE IMPACT PLANS
SITE PLAN OF DEVELOPMENT

SECTION: 25	CITY OF ANN ARBOR
TOWN, RANGE: 02S, 16W	WASHTENAW COUNTY, MI

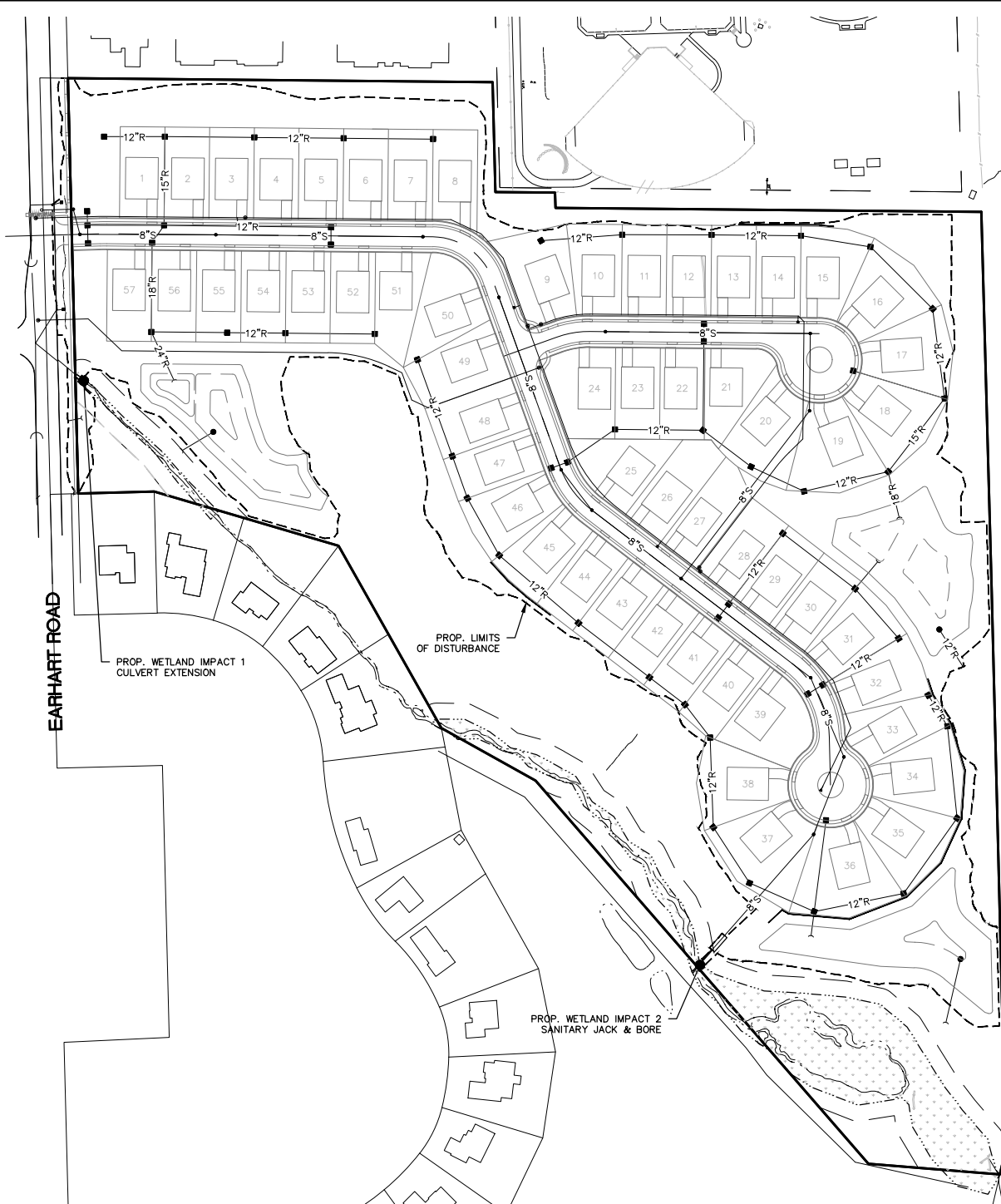
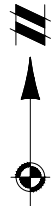
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DATE: SEPT. 22, 2021
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02P031893 v1.0

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Impact No.	Nature Feature	Natural Feature Type	Impact Type (Permanent)	Impact Type (Temporary)	Pipe Type	Pipe Length inside Natural Feature (LF)	Permanent Impact Area (SF)	Permanent Impact Area (AC)	Avg Depth	Permanent Fill (CY)	Permanent Cut (CY)	RipRap (CY)	Total Fill
Impact 1	Wetland B/C	Scrub-Shrub/ Emergent/Forested	Fill for Road Grading		42" Box Culvert	10	123.0	0.003	7.3	33	-	8.0	
Impact 2	Wetland A/D	Scrub-Shrub/ Emergent/Forested	-	Jack and Bore	8" PVC SCH 40 @ 5.00%	6	-	-	-	-	-	-	-
Project Totals						16	123	0.003 AC		33 CY	0 CY	8 CY	41 CY

LEGEND

- PROJECT BOUNDARY (±34.1 ACRES)
- EXISTING GRADE
- EXISTING WETLAND



CONCORD PINES OF ANN ARBOR
EGLE IMPACT PLANS
WETLAND IMPACT PLAN

SECTION: 25 CITY OF ANN ARBOR
TOWN, RANGE: 02S, 16W WASHTENAW COUNTY, MI

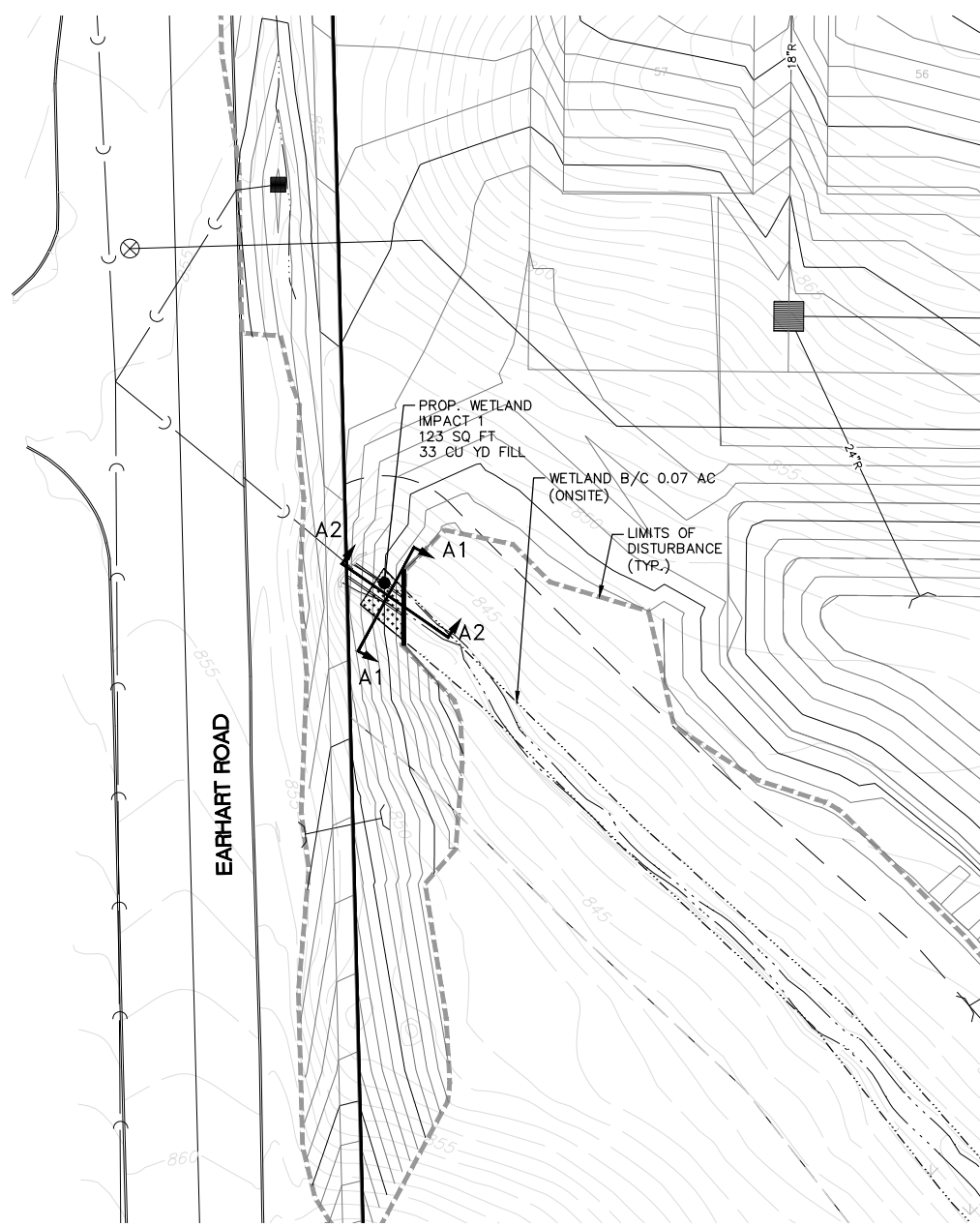
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1" = 250 FEET

JOB: 20003119
DATE: SEPT. 22, 2021
REV: --

SHEET NO. E-WRD
03 P031893 v1.0

Approved
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Expires On: 12/20/2026

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LEGEND

- PROJECT BOUNDARY (±34.1 ACRES)
- EXISTING GRADE
- EXISTING WETLAND
- PROPOSED WETLAND IMPACT

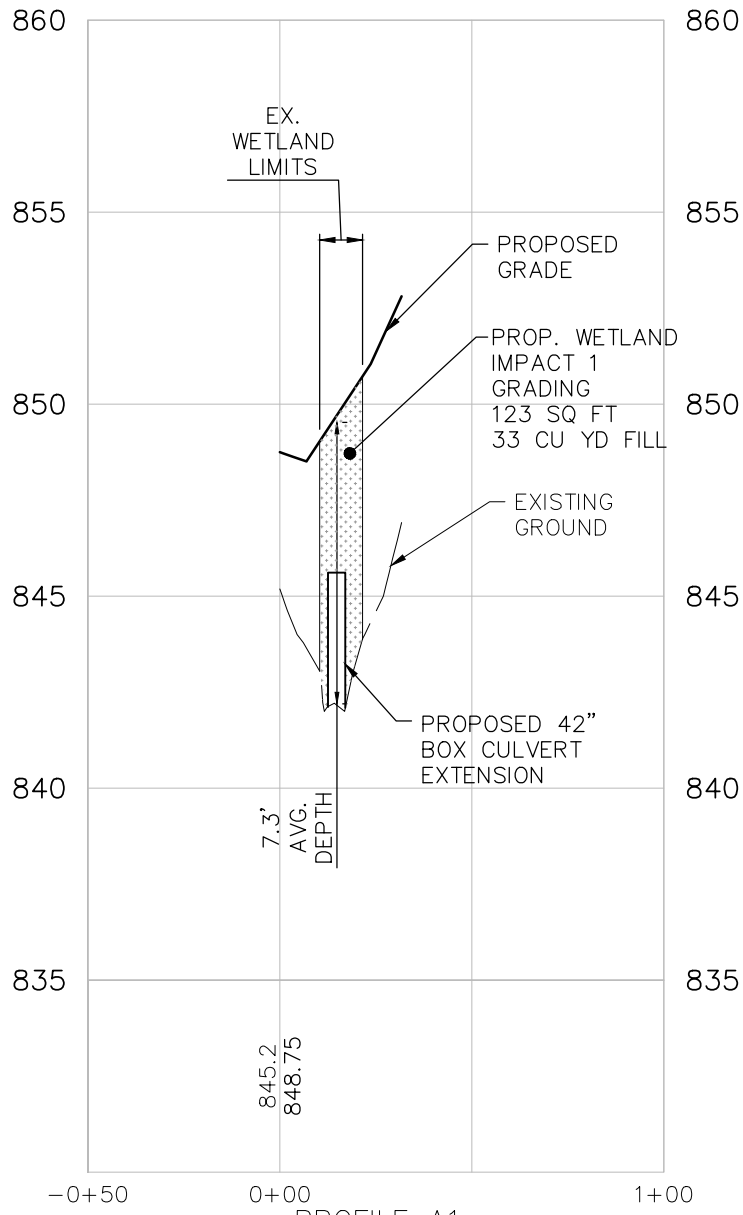


CONCORD PINES OF ANN ARBOR EGLE IMPACT PLANS WETLAND IMPACT 1 PLAN	
SECTION: 25	CITY OF ANN ARBOR
TOWN, RANGE: 02S, 16W	WASHTENAW COUNTY, MI

SCALE 0 25 50 1" = 50 FEET	
JOB: 20003119 DATE: SEPT. 22, 2021 REV: --	SHEET NO. 04

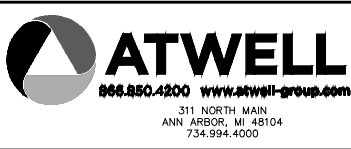
04
 Approved
 Issued On: 12/20/2021
 Expires On: 12/20/2026

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PROFILE A1
 VERT: 1"=5'
 HORZ: 1"=50'

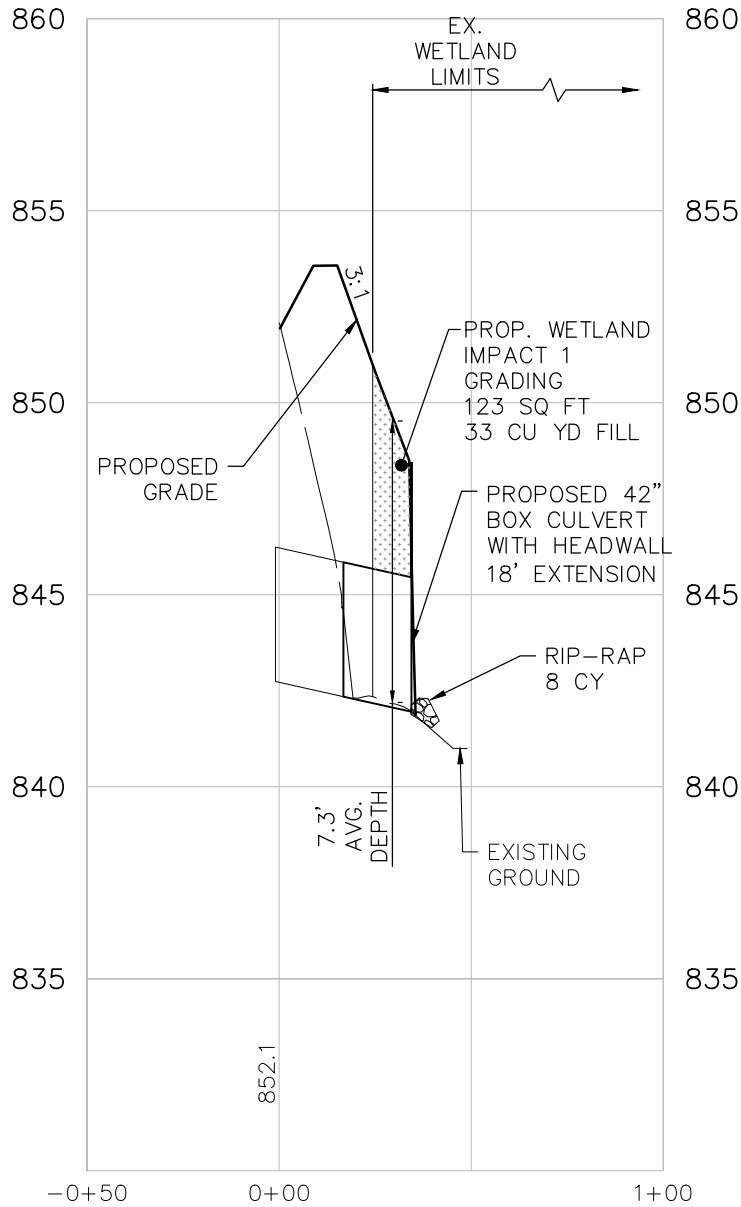
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CONCORD PINES OF ANN ARBOR EGLE IMPACT PLANS CROSS SECTION A1	
SECTION: 25	CITY OF ANN ARBOR
TOWN, RANGE: 02S, 16W	WASHTENAW COUNTY, MI

SCALE 0 25 50 1" = 50 FEET	JOB: 20003119 DATE: SEPT. 22, 2021 REV: --	SHEET NO. 05
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PROFILE A2
VERT: 1"=5'
HORZ: 1"=50'

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CONCORD PINES OF ANN ARBOR
EGLE IMPACT PLANS
CROSS SECTION A2

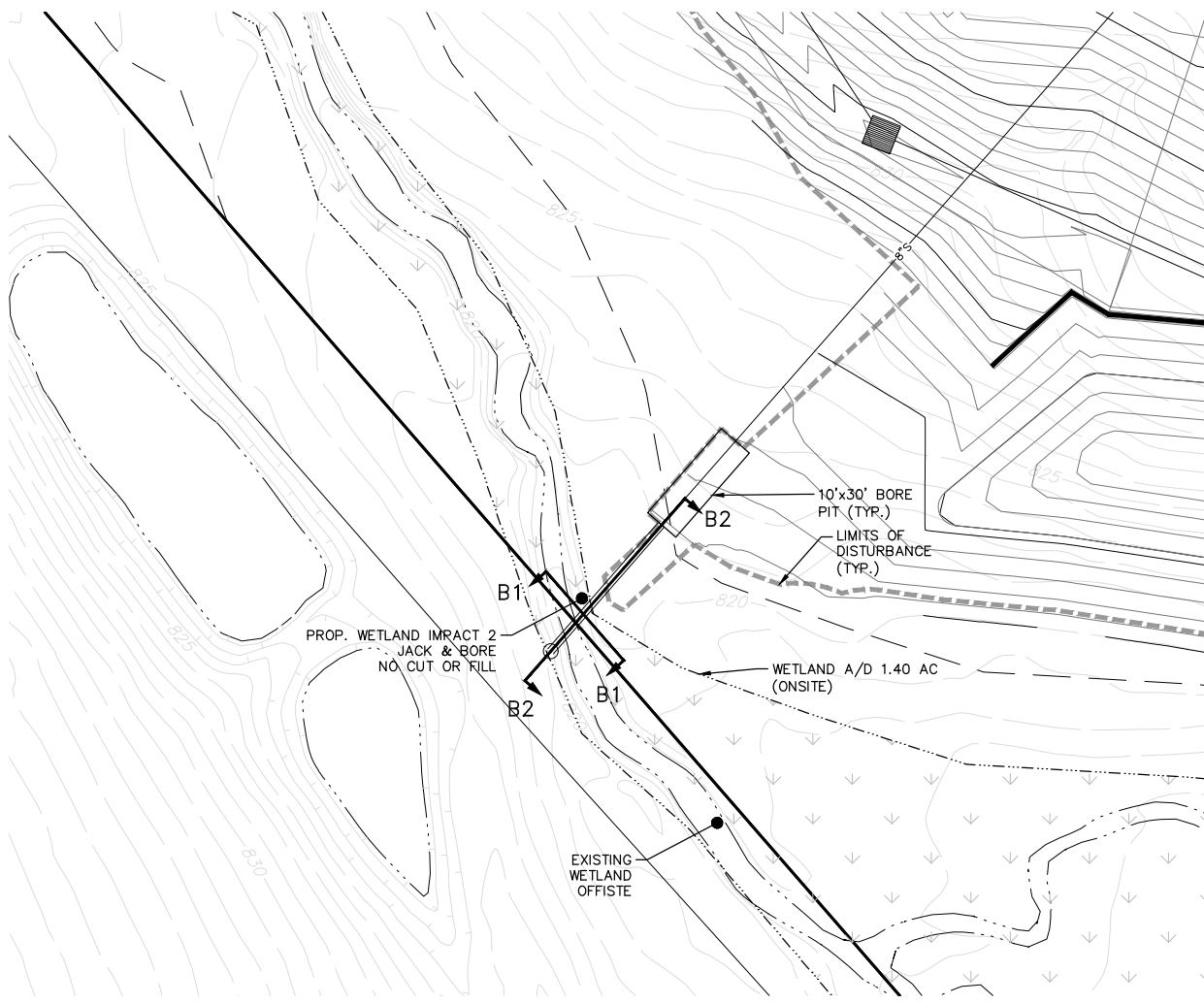
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TOWN, RANGE: 02S, 16W	WASHTENAW COUNTY, MI

SCALE 0 25 50
1" = 50 FEET

JOB: 20003119
DATE: SEPT. 22, 2021
REV: --

SHEET NO. **06**
EGL-VRD
P031893 v1.0

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Expires On: 12/20/2026



LEGEND

- PROJECT BOUNDARY (±34.1 ACRES)
- - - EXISTING GRADE
- ⋯ EXISTING WETLAND
- ▨ PROPOSED WETLAND IMPACT



CONCORD PINES OF ANN ARBOR
 EGLE IMPACT PLANS
 WETLAND IMPACT 2 PLAN

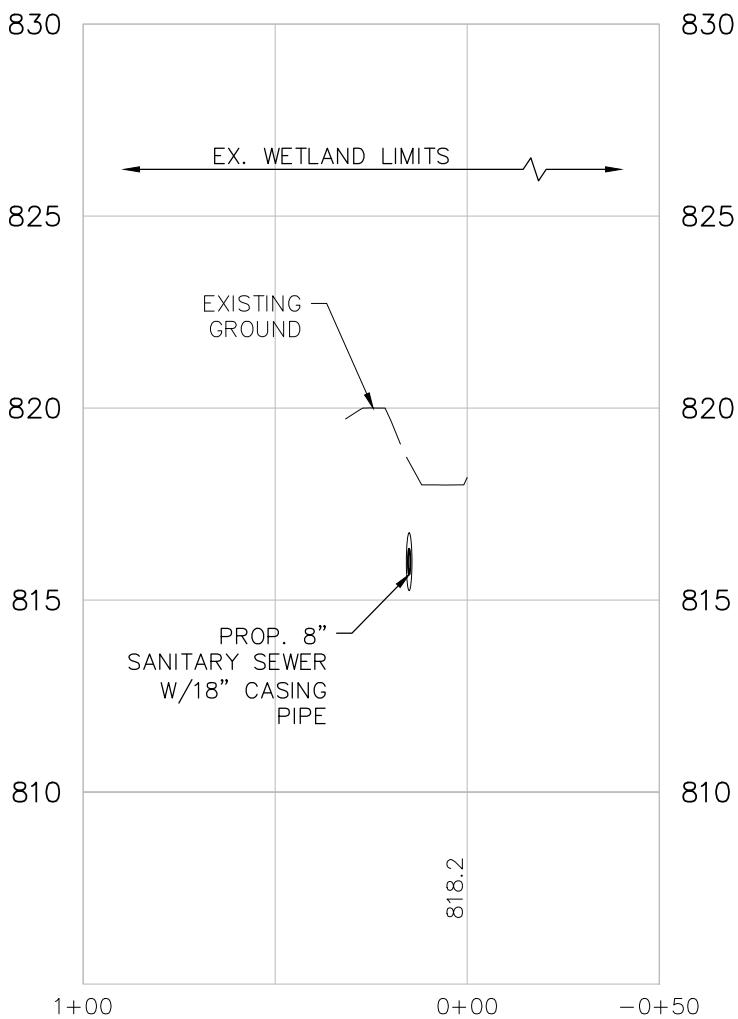
SECTION: 25	CITY OF ANN ARBOR
TOWN, RANGE: 02S, 16W	WASHTENAW COUNTY, MI

SCALE 0 25 50
 1" = 50 FEET

JOB: 20003119	SHEET NO. 07
DATE: SEPT. 22, 2021	DATE: 12/20/2021
REV: --	REV: --

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PROFILE B1
 VERT: 1"=5'
 HORZ: 1"=50'

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CONCORD PINES OF ANN ARBOR
 EGLE IMPACT PLANS
 CROSS SECTION B1

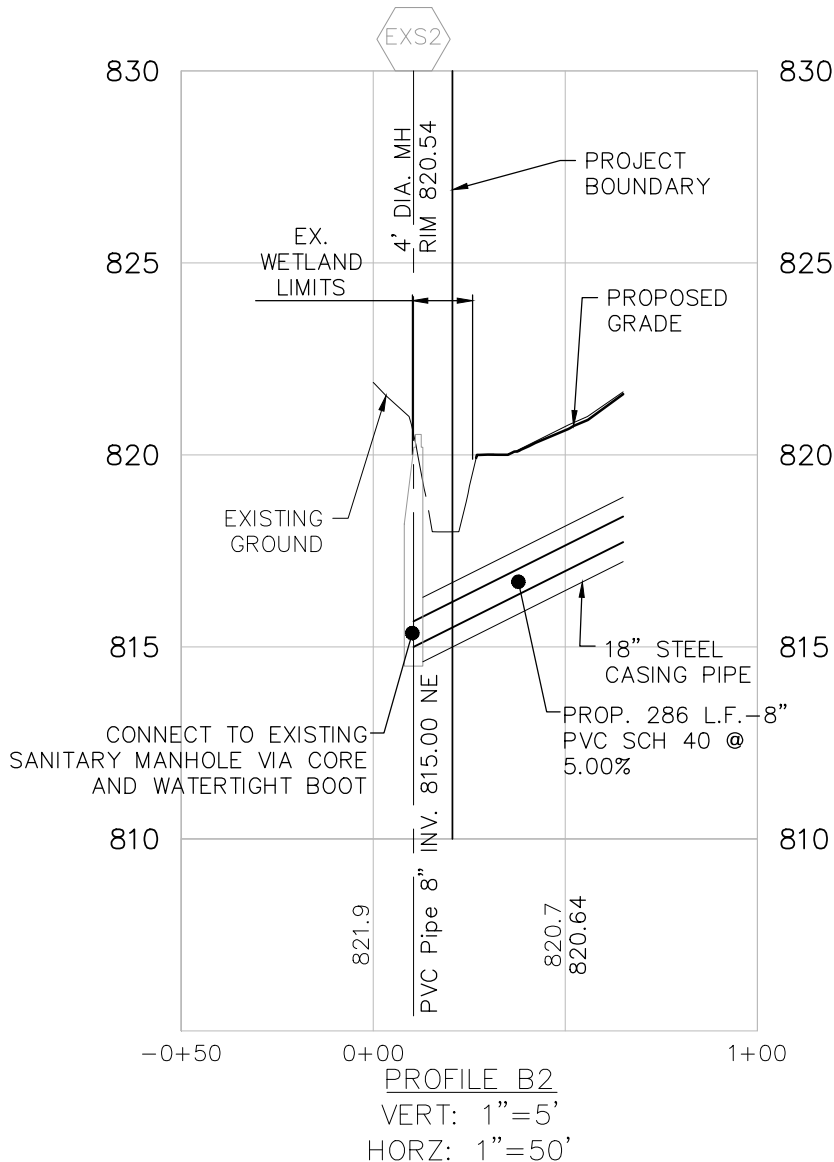
SECTION: 25	CITY OF ANN ARBOR
TOWN, RANGE: 02S, 16W	WASHTENAW COUNTY, MI

SCALE 0 25 50
 1" = 50 FEET

JOB: 20003119
 DATE: SEPT. 22, 2021
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SHEET NO. **08**
08 P031893 v1.0

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PROFILE B2
 VERT: 1"=5'
 HORZ: 1"=50'

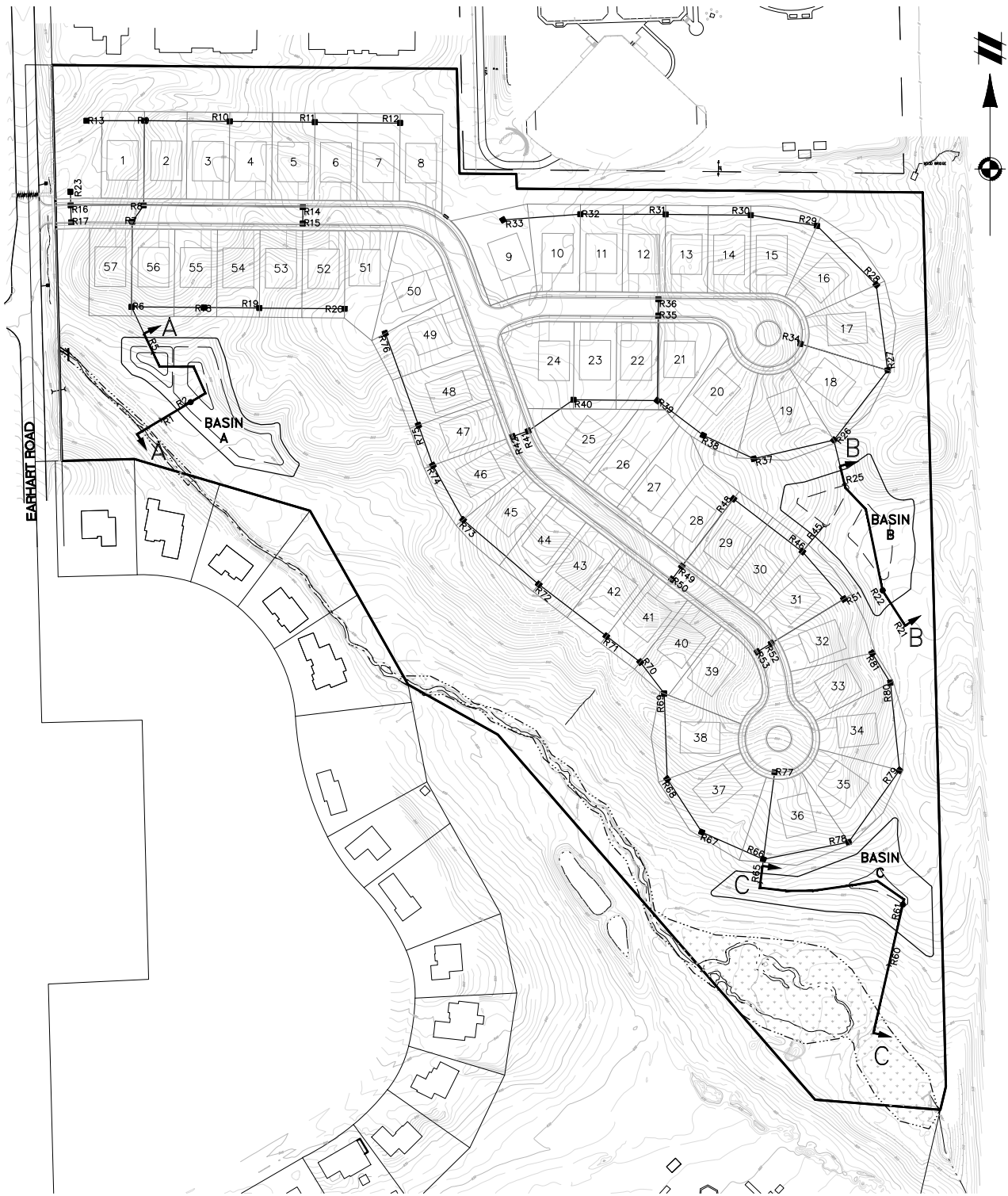
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CONCORD PINES OF ANN ARBOR EGLE IMPACT PLANS CROSS SECTION B2	
SECTION: 25	CITY OF ANN ARBOR
TOWN, RANGE: 02S, 16W	WASHTENAW COUNTY, MI

SCALE 0 25 50 1" = 50 FEET	JOB: 20003119 DATE: SEPT. 22, 2021 REV: --
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SHEET NO. 09
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 Expires On: 12/20/2026



LEGEND

-  PROJECT BOUNDARY (±34.1 ACRES)
-  EXISTING GRADE
-  EXISTING WETLAND



CONCORD PINES OF ANN ARBOR
 EGLE IMPACT PLANS
 STORMWATER PLAN

SCALE 0 125 250
 1" = 250 FEET

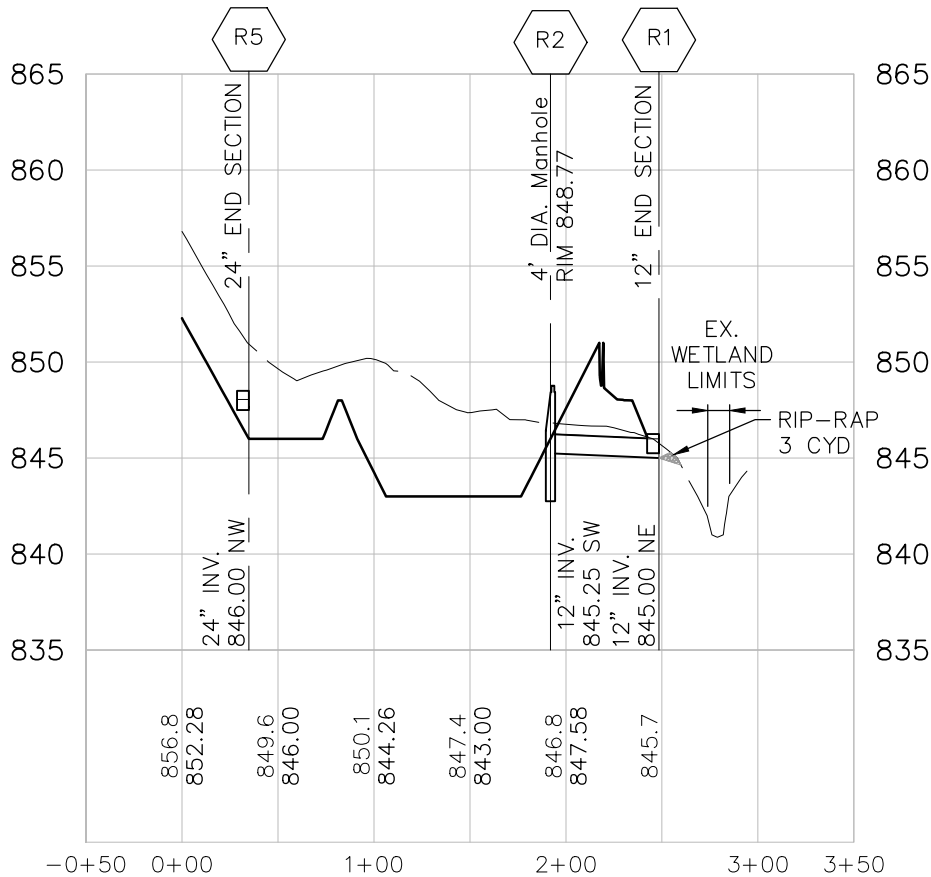
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TOWN, RANGE: 02S, 16W	WASHTENAW COUNTY, MI

JOB: 20003119
 DATE: SEPT. 22, 2021
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DETENTION A
 VERT: 1"=10'
 HORZ: 1"=100'

BASIN A OUTLET CALCULATIONS:

Elevation	Surface Area (SF)	Depth (FT)	Forebay Only Volume (CF)	Detention Basin Only Volume (CF)	Cumulative Volume (CF)	First Flush Z _{ff}	Bank Full Z _{bf}	100-Year Z ₁₀₀
843.00	1,735							
844.00	2,960							
845.00	5,400							
Z _o 846.00	7,890	0	0	0	0	13,465	19,972	38,639
847.00	10,580	1.0	1,640.0	9,235	10,875	-	-	-
848.00	13,540	1.0	2,620.0	12,060	25,555	847.18	847.62	-
849.00	20,650	1.0	0.0	17,095	42,650	-	-	848.77
850.00	24,620	1.0	0.0	22,635	65,285	-	-	-
851.00	28,785	1.0	0.0	26,703	91,988	-	-	-

Design Elevations: 847.20 847.65 848.77

Total Basin Volume Provided to EL 851 = 91,988 cf
 Freeboard Provided = Top of Bank - Z₁₀₀ = 2.23 ft
 Bankfull Pond Area = Area @ Z_{bf} = 0.26 ac

1. Standpipe outlet holes sizing - "first flush" runoff
 First Flush runoff infiltrates - Therefore no holes required

2. Standpipe outlet holes sizing - "Bankfull flood" discharge
 Bankfull runoff infiltrates - Therefore no holes required

3. Standpipe outlet holes sizing - "100-yr flood" discharge

Q₁₀₀ = Q_a
 $A = Q_{100} / (.62 \times \text{sqrt}(2 \times 32.2 \times h))$
 Selected Orifice Diameter =
 Area of each orifice =
 Number of orifice holes required =

Q₁₀₀ = 1.14 cfs
 A(required) = 0.22 sf
 Selected Orifice Diameter = 1 in
 Area of each orifice = 0.0055 sf
 Number of orifice holes required = 6 holes at elev. 846.00

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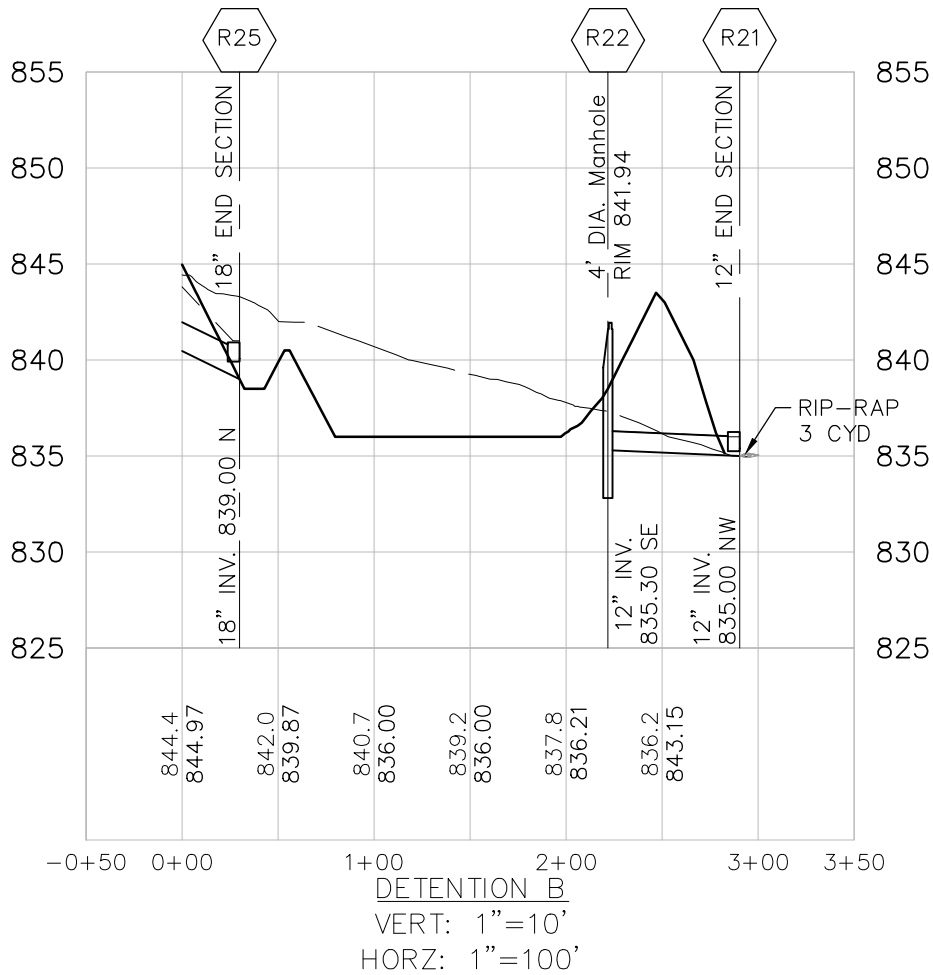
CONCORD PINES OF ANN ARBOR
 EGLE IMPACT PLANS
 DETENTION A PROFILE & CALCS
 SECTION: 25 CITY OF ANN ARBOR
 TOWN, RANGE: 02S, 16W WASHTENAW COUNTY, MI

SCALE 0 50 100
 1" = 100 FEET

JOB: 20003119
 DATE: SEPT. 22, 2021
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BASIN B OUTLET CALCULATIONS:

Elevation	Surface Area (SF)	Depth (FT)	Forebay Only Volume (CF)	Detention Basin Only Volume (CF)	Cumulative Volume (CF)	First Flush Zff	Bank Full Zbf	100-Year Z100
836.00	5,185							
837.00	6,880							
838.00	8,825							
Zo 838.50	9,850	0	0	0	0	21,124	33,563	65,517
839.00	11,210	0.5	1,561.3	5,265	6,826	-	-	-
840.00	13,745	1.0	4,077.5	12,478	23,381	839.86	-	-
840.50	15,085	0.5	2,546.3	7,208	33,135	-	-	-
841.00	22,625	0.5	-	9,428	42,563	-	840.52	-
842.00	26,080	1.0	-	24,353	66,915	-	-	841.94
843.00	29,764	1.0	-	27,922	94,837	-	-	-
843.5	31,665	0.5	-	15,357	110,194	-	-	-
Design Elevations:						839.86	840.52	841.94

Total Basin Volume Provided to EL 843.5 = = 110,194 cf
 Freeboard Provided = Top of Bank - Z100 = 1.56 ft
 Bankfull Pond Area = Area @ Zbf = 0.35 ac

- Standpipe outlet holes sizing - "first flush" runoff**
First Flush runoff infiltrates - Therefore no holes required
- Standpipe outlet holes sizing - "Bankfull flood" discharge**
Bankfull runoff infiltrates - Therefore no holes required
- Standpipe outlet holes sizing - "100-yr flood" discharge**
 $Q_{100} = Q_a$
 $A = Q_{100} / (.62 \times \text{sqrt}(2 \times 32.2 \times h))$
 Selected Orifice Diameter = 1 in
 Area of each orifice = 0.0055 sf
 Number of orifice holes required = 8 holes at elev. **838.50**

$Q_{100} =$ 1.65 cfs
 $A(\text{required}) =$ 0.28 sf
1 in
 0.0055 sf
 = 8 holes at elev. **838.50**



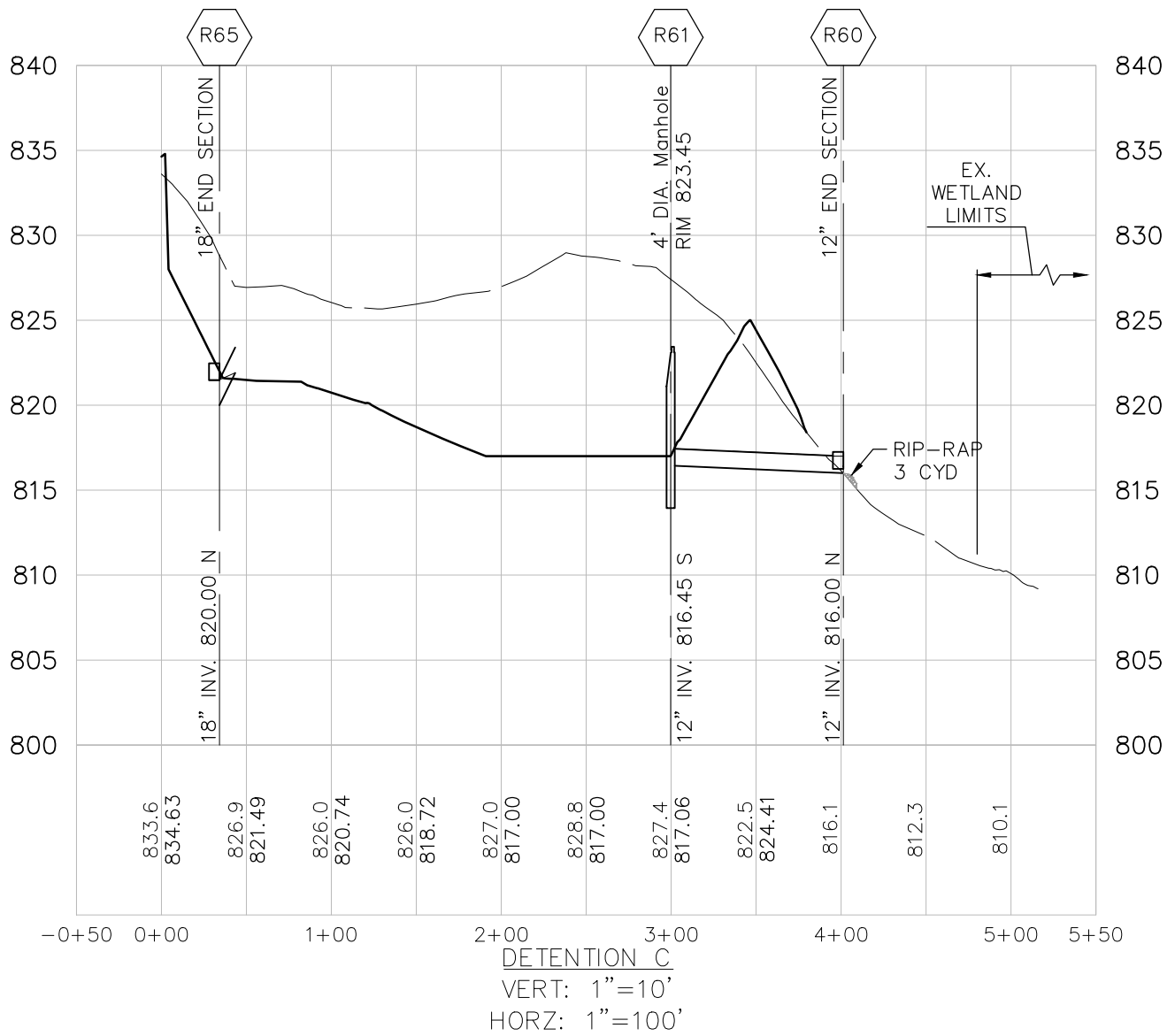
CONCORD PINES OF ANN ARBOR
 EGLE IMPACT PLANS
 DETENTION B PROFILE & CALCS
 SECTION: 25 CITY OF ANN ARBOR
 TOWN, RANGE: 02S, 16W WASHTENAW COUNTY, MI

SCALE 0 50 100
 1" = 100 FEET

JOB: 20003119
 DATE: SEPT. 22, 2021
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V12P031893 v1.0
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CONCORD PINES OF ANN ARBOR
 EGLE IMPACT PLANS
 DETENTION C PROFILE & CALCS

SECTION: 25	CITY OF ANN ARBOR
TOWN, RANGE: 02S, 16W	WASHTENAW COUNTY, MI

SCALE 0 50 100
 1" = 100 FEET

JOB: 20003119	SHEET NO. 13
DATE: SEPT. 22, 2021	FILE-WRD
REV: --	P031893 v1.0

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 Issued On: 12/20/2021
 Expires On: 12/20/2026

BASIN C OUTLET CALCULATIONS:

Elevation	Surface Area (SF)	Depth (FT)	Forebay Only Volume (CF)	Detention Basin Only Volume (CF)	Cumulative Volume (CF)	First Flush Zff	Bank Full Zbf	100-Year Z100
Zo 817.00	2,080	0	0	0	0	11,137	17,395	64,397
818.00	3,745	1.0	0	2,913	2,913	-	-	-
819.00	5,796	1.0	0	4,771	7,683	-	-	-
820.00	8,205	1.0	0	7,001	14,684	819.45	-	-
821.00	10,760	1.0	0	9,483	24,166	-	820.29	-
822.00	13,550	1.0	1,087.5	12,155	37,409	-	-	-
823.00	16,565	1.0	2,647.5	15,058	55,114	-	-	-
824.00	24,690	1.0	0	20,628	75,741	-	-	823.45
825.00	29,630	1.0	0	27,160	102,901	-	-	-

Design Elevations: **819.45** **820.29** **823.45**

Total Basin Volume Provided to EL 825 = 102,901 cf
 Freeboard Provided = Top of Bank - Z100 = 1.55 ft
 Bankfull Pond Area = Area @ Zbf = 0.46 ac

1. Standpipe outlet holes sizing - "first flush" runoff

First Flush discharge should be released from in 24 hours

Qff = Vff / 24 hrs / 3600 sec Qff = 0.129 cfs
 hff(ave) = 2/3 x (Zff - Zo) hff(ave) = 1.633 ft
 Aff(required) = Qff / 0.62 x sqrt(2*32.2*h) A(required) = 0.020 sf
 Selected Orifice Diameter = **1 in**
 Area of each orifice = 0.0055 sf
 Number of orifice holes provided = **3 holes at elev. 817.00**

Check First Flush discharge release time

Aff(actual) = 0.0164 ft²
 Qff = A x 0.62 x sqrt(2*32.2*h) = 0.1040 cfs
 Tff = Vff / (Qff x 3600) = 29.7 hrs O.K.

2. Standpipe outlet holes sizing - "Bankfull flood" discharge

Bankfull should discharge within 36 to 48 hours

Check release from first flush holes only

hbf(ave) = 2/3 x (Zbf - Zo) hbf(ave) = 2.19 ft
 Qbf = A x 0.62 x sqrt(2*32.2*h) = 0.120 cfs
 Tbf = Vbf / (Qbf x 3600) = 40.1 hr O.K.

Bankfull detained between 36-48 hrs using First Flush holes only - no add'l holes required

3. Standpipe outlet holes sizing - "100-yr flood" discharge

Q100 = Qa Q100 = 0.89 cfs
 Release from above holes
 hff = (Z100 - Zo) hff = 6.45 ft
 hbf = (Z100 - Zff) hbf = 4.00 ft
 Q = A x 0.62 x sqrt(64.4*hff) + A x 0.62 x sqrt(64.4*hbf) = 0.21 cfs
 Remaining flow = 0.68 cfs
 A = Q100 / (.62 x sqrt(2*32.2*h)) A(required) = 0.08 sf
 Selected Orifice Diameter = **2 in**
 Area of each orifice = 0.0218 sf
 Number of orifice holes required = **3 holes at elev. 820.29**

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CONCORD PINES OF ANN ARBOR
 EGLE IMPACT PLANS
 DETENTION C CALCS

SCALE 0 125 250
 1" = 250 FEET

SECTION: 25 CITY OF ANN ARBOR
 TOWN, RANGE: 02S, 16W WASHTENAW COUNTY, MI

JOB: 20003119
 DATE: SEPT. 22, 2021
 REV: --

SHEET NO. E-WRD
 14 P031893 v1.0

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LOCAL AND STATE CONDITIONS AND CLARIFICATIONS:

- THE REQUIREMENTS AND SPECIFICATIONS OF THE LOCAL AUTHORITY AND THE MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES & ENERGY (GLLE) ARE TO BE FOLLOWED. ALL MATERIALS AND WORKMANSHIP INVOLVED IN THE IMPROVEMENTS SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE LOCAL AUTHORITY AND GLLE. THE IMPROVEMENTS SHALL BE SUBJECT TO THE FOLLOWING SPECIFICATIONS, AS MODIFIED BY THE FOLLOWING SPECIFICATION, OR BY THE CONSTRUCTION DETAILS SET FORTH HEREIN.
- THE CONTRACTOR (AND ALL SUBCONTRACTORS) SHALL BE SOLELY RESPONSIBLE FOR COMPLYING WITH ALL FEDERAL, STATE, AND LOCAL EMPLOYEES AND PROPERTY. IT IS ALSO SOLELY THE RESPONSIBILITY OF THE CONTRACTOR AND SUBCONTRACTOR TO INITIATE, MAINTAIN, AND SUPERVISE ALL SAFETY REQUIREMENTS, PRECAUTIONS, AND PROGRAMS IN CONNECTION WITH WORK CONSTRUCTION. LAND DISTURBING ACTIVITIES SHALL NOT COMMENCE UNTIL APPROVAL TO DO SO HAS BEEN RECEIVED BY GOVERNING AUTHORITIES. THE CONTRACTOR SHALL COMPLY WITH ALL REQUIREMENTS AND SPECIAL CONDITIONS OF THE PROJECT.
- THE CONTRACTOR SHALL CAUSE NOTICE TO BE GIVEN TO MISS DIG (811) A MINIMUM OF THREE (3) WORKING DAYS PRIOR TO THE START OF CONSTRUCTION.
- ALL DRAIN TILE AND STORM SEWERS NOT NOTED TO BE REMOVED/RE-ROUTED WHICH ARE DAMAGED, DISTURBED, OR REMOVED AS A RESULT OF CONSTRUCTION SHALL BE REPAIRED AND DRAIN TILE SHALL BE Laid ON COMPACTED BEDDING EQUAL IN DENSITY TO SURROUNDING STRATUM. REPLACEMENT SHALL BE DONE AT THE TIME OF THE BACKFILL OPERATION.
- THE FLOW IN ALL SEWERS, DRAINS, AND WATERCOURSES ENCOUNTERED SHALL BE MAINTAINED BY THE CONTRACTOR AT HIS OWN EXPENSE, AND WHENEVER SUCH WATERCOURSES AND DRAINS ARE DISTURBED OR DESTROYED DURING THE PROSECUTION OF THE WORK, THEY SHALL BE REPAIRED TO ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE.
- THE CONTRACTOR SHALL RETURN ALL GRADES TO ORIGINAL CONDITIONS WITHIN THE LIMITS OF DISTURBANCE TO ORIGINAL CONDITION, MATING UNDISTURBED AREAS, SO AS TO MAINTAIN ORIGINAL DRAINAGE.
- DAILY INSPECTION SHALL BE MADE BY THE CONTRACTOR FOR EFFECTIVENESS OF EROSION AND SEDIMENTATION CONTROL MEASURES, AND ANY NECESSARY REPAIRS SHALL BE PERFORMED WITHOUT DELAY. DEFICIENCIES SHALL BE CORRECTED BY THE CONTRACTOR WITHIN 24 HOURS (7) DAYS AND WITHIN 24 HOURS OF A CERTIFIED STORM WATER OPERATOR AT LEAST ONCE EVERY FREQUENTLY IF REQUIRED BY GOVERNING NPDES GENERAL PERMIT. ALL MAINTENANCE REQUIRED BY INSPECTION SHALL COMMENCE WITHIN 24 HOURS AND BE COMPLETED WITHIN 48 HOURS OF REPORT.
- ALL VEHICLES MUST BE MONITORED AND MAINTAINED BY A TRAINED REPRESENTATIVE OF THE CONTRACTOR. THE CONTRACTOR MUST UPON REQUEST, RECORDS OF SELF-MONITORING AND PROVIDE THEM TO THE LOCAL AUTHORITIES, EGLE, OR OTHER INSPECTING AUTHORITY AS REQUIRED.
- ANY SEDIMENTATION FROM WORK ON THIS SITE SHALL BE CONTAINED ON THE SITE AND NOT ALLOWED TO COLLECT ON ANY OFF-SITE AREAS OR IN WATERWAYS.
- APPROPRIATE MEASURES SHALL BE PUT IN PLACE TO PREVENT POLLUTANTS - SEDIMENT, TRASH, FUEL, SOLVENTS, ETC. - FROM LEAVING THE SITE. POLLUTANTS AND MATERIALS SHALL BE MAINTAINED AT ALL TIMES AND SPILL PREVENTION AND CLEAN-UP PLANS SHALL BE IN PLACE PRIOR TO DIRECTION ON MATERIALS ON-SITE.
- CONTRACTOR SHALL APPLY TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES WHEN REQUIRED AND AS DIRECTED ON THESE PLANS. HE/SHE SHALL REMOVE TEMPORARY MEASURES AS SOON AS PERMANENT STABILIZATION (90% VEGETATIVE COVER) HAS BEEN ACHIEVED.
- STOCKPILE BLANKETS MUST BE USED ON 3:1 SLOPES OR GREATER.
- ALL EXPOSED AREAS SHALL BE STABILIZED AS SPECIFIED IMMEDIATELY FOLLOWING THE CONCLUSION FINAL GRADING IN THE DESIGNATED AREA.
- AREAS OF DISTURBED SOIL THAT REMAIN INACTIVE FOR 14 DAYS MUST HAVE TEMPORARY OR PERMANENT STABILIZATION IN PLACE. UNDESIRABLE SOILS SHALL BE COVERED WITH STOCKPILE BLANKETS. STOCKPILE BLANKETS SHALL ALSO INCLUDE AGGREGATE COVER, EROSION CONTROL BLANKETS, TURF MATS, OR OTHER APPROPRIATE STABILIZATION PRACTICES.
- THIS PLAN SHALL NOT BE CONSIDERED ALL INCLUSIVE AS THE GENERAL CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PREVENT SOIL SEDIMENT AND/OR POLLUTANTS FROM LEAVING THE SITE.
- ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES WILL BE INSTALLED IF DEEMED NECESSARY BY ON-SITE INSPECTION.
- GENERAL CONTRACTOR SHALL BE RESPONSIBLE TO TAKE WHATEVER MEANS NECESSARY TO ESTABLISH PERMANENT SOIL STABILIZATION.
- SEDIMENT SHALL BE REMOVED FROM SITES IN A MANNER TO ENSURE THAT EROSION CONTROL MEASURES ARE NOT DISTURBED.
- CONTRACTOR SHALL PAY ALL FEES AND POST AN EROSION CONTROL PERFORMANCE BOND, IF REQUIRED, PRIOR TO ANY EARTH CHANGE.
- CONSTRUCTION OPERATION SHALL BE SCHEDULED AND PERFORMED SO THAT PREVENTATIVE SOIL EROSION CONTROL MEASURES ARE IN PLACE PRIOR TO EXCAVATION IN CRITICAL AREAS AND TEMPORARY STABILIZATION MEASURES ARE IN PLACE IMMEDIATELY FOLLOWING COMPLETION OF OPERATIONS.
- DISPOSAL AND FILL DISPOSAL AREAS WILL BE SELECTED BY THE CONTRACTOR WITH FULL CONSIDERATION FOR SOIL EROSION AND SEDIMENT CONTROL.
- SPECIAL PRECAUTIONS WILL BE TAKEN IN THE USE OF CONSTRUCTION EQUIPMENT TO PREVENT SITUATIONS THAT PROMOTE EROSION.
- PERMANENT STABILIZATION IS ACHIEVED ONCE THE LOCAL AUTHORITIES PERFORM A FINAL INSPECTION OF THE COMPLETED PROJECT ONCE THE PROJECT HAS PASSED LOCAL INSPECTION. A NOTICE OF TERMINATION (NOTI) SHALL BE FILED BY THE CONTRACTOR WITH THE EGLE ONCE PERMANENT STABILIZATION IS ACHIEVED. A NOTICE OF TERMINATION (NOTI) SHALL BE FILED BY THE CONTRACTOR WITH THE EGLE.
- CONTRACTOR SHALL DEMOTE LOCATION OF CONCRETE WASHOUT AREAS (IF USED) ON THE SWPPP.

MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES & ENERGY.

- CONSTRUCTION PERMITTEE(S) THAT HAS AUTHORIZATION TO DISCHARGE UNDER A NATIONAL PERMIT (NPDES) SHALL COMPLY WITH THE FOLLOWING REQUIREMENTS:
 - NO DIRECT OR INDIRECT DISCHARGE OF WASTES SUCH AS DISCARDED BUILDING MATERIALS, CONCRETE TRUCK WASHOUT, CHEMICALS, LUBRICANTS, FUELS, LITTER, SANITARY WASTE, OR ANY OTHER SUBSTANCE AT THE CONSTRUCTION SITE INTO WATERS OF THE STATE IN VIOLATION OF PART 31 OF THE 1994 PA 451, MCL 324-3101 ET SEQ., AND RULES PROMULGATED UNDER THE ACT.
 - BE IN COMPLIANCE WITH A SOIL EROSION AND SEDIMENTATION CONTROL PERMIT FOR THE SITE OR, IF THE CONSTRUCTION ACTIVITY IS APPLICABLE TO THE SITE.
 - PROPERLY MAINTAIN AND OPERATE THE SOIL EROSION CONTROL MEASURES.
 - HAVE THE SOIL EROSION CONTROL MEASURES UNDER THE SPECIFIC SUPERVISION AND CONTROL OF A STORM WATER OPERATOR WHO HAS BEEN CERTIFIED BY THE DEPARTMENT AS PROPERLY QUALIFIED TO OPERATE THE SOIL EROSION CONTROL MEASURES. THE CERTIFICATION SHALL BE MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD.
 - AFTER EVERY PRECIPITATION EVENT THAT RESULTS IN A DISCHARGE FROM THE SITE, AND ENSURE THAT ANY NEEDED CORRECTIVE ACTIONS ARE CARRIED OUT. A LOG OF THE INSPECTIONS AND CORRECTIVE ACTIONS SHALL BE MAINTAINED ON FILE BY THE CONSTRUCTION PERMITTEE FOR REVIEW AND SHALL BE RETAINED BY THE CONSTRUCTION PERMITTEE FOR A PERIOD OF THREE (3) YEARS FROM THE DATE OF CONSTRUCTION.
 - LOCATIONS OF CORRECTIVE ACTIONS SHALL BE SET FORTH IN SPILLAGE OF OIL AND POLLUTING MATERIALS, BEING PART 5 OF THESE (MICHIGAN PERMIT-BY-RULE) RULES, PROVIDE FACILITIES AND COMPLY WITH REPORTING PROCEDURES FOR CONTAINMENT OF ANY ACCIDENTAL LOSSES OF OIL OR OTHER POLLUTING MATERIALS.
 - CONTROL OF STORM WATER IN COMPLIANCE WITH APPLICABLE STATE LAWS AND REGULATIONS AND IN A MANNER THAT PREVENTS ANY DISCHARGE BY LAW, FOR THE PURPOSE OF THIS RULE, UPON PRESENTATION OF CREDENTIALS AND OTHER DOCUMENTS AS MAY BE REQUIRED AS SET FORTH IN SUBRULE (5) OF THIS RULE, UPON PRESENTATION OF CREDENTIALS AND OTHER DOCUMENTS AS MAY BE REQUIRED BY LAW, FOR THE PURPOSE OF THIS RULE.
 - ALLOW THE DEPARTMENT TO ENTER UPON THE SITE AT ANY REASONABLE TIME BEFORE THE EXPIRATION OF THE AUTHORIZATION TO DISCHARGE AS SET FORTH IN SUBRULE (5) OF THIS RULE, FOR THE PURPOSE OF INSPECTING CONDITIONS RELATING TO THE POLLUTION OF ANY WATERS OR DETERMINING COMPLIANCE WITH THE PROVISIONS OF THIS RULE.
 - UPON REQUEST, MAKE AVAILABLE FOR PUBLIC INSPECTION OR PROVIDE TO THE DEPARTMENT ALL REPORTS OR LOSS PREPARED PURSUANT TO THIS RULE.
 - FILE A RECESS NOTICE OF COVERAGE IN COMPLIANCE WITH THE PROVISIONS OF SUBRULE (1) OF THIS RULE BEFORE ANY EXPANSION OF THE CONSTRUCTION ACTIVITY OR CHANGE IN THE SOIL EROSION CONTROL MEASURES THAT REQUIRES A CHANGE IN THE SOIL EROSION AND SEDIMENTATION PERMIT.

BMP MAINTENANCE NOTES TO CONTRACTOR:

- ALL MEASURES STATED ON THIS PLAN SHALL BE MAINTAINED IN FULLY FUNCTIONAL CONDITION UNTIL NO LONGER REQUIRED FOR A COMPLETED PHASE OF WORK OR FINAL STABILIZATION. SEDIMENTATION CONTROL MEASURES SHALL BE CHECKED BY A QUALIFIED PERSON IN ACCORDANCE WITH THE CONTRACT DOCUMENTS (WHO IS ALSO A CERTIFIED STORM WATER OPERATOR), AND REPAIRED IN ACCORDANCE WITH THE FOLLOWING:
- ALL SEEDED AREAS SHALL BE CHECKED REGULARLY TO SEE THAT A GOOD STAND IS MAINTAINED. AREAS SHOULD BE FERTILIZED, WATERED, SILT FENCES SHALL BE REPAIRED TO THEIR ORIGINAL CONDITIONS IF DAMAGED. SEDIMENT SHALL BE REMOVED FROM THE SILT FENCES WHEN IT REACHES ONE-THIRD THE HEIGHT OF THE SILT FENCE.
- NO SOLID OR LIQUID WASTE SHALL BE DISCHARGED INTO STORM WATER RUNOFF.
- ALL EROSION AND SEDIMENT CONTROL PRACTICES MUST CONFORM TO THE REQUIREMENTS OF MICHIGAN'S PERMIT-BY-RULE FOR CONSTRUCTION ACTIVITIES. PERMANENT STABILIZATION SHALL BE MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD. INSPECTIONS MUST BE MADE BY A CERTIFIED STORM MAINTENANCE AND INSPECTIONS MUST BE KEPT THROUGHOUT THE CONSTRUCTION PERIOD. INSPECTIONS MUST BE MADE BY A CERTIFIED STORM WATER OPERATOR ONCE EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS AFTER EVERY PRECIPITATION EVENT THAT RESULTS IN A DISCHARGE FROM THE SITE. PROVIDED WILL BE THE NAME OF STORM WATER OPERATOR, CERTIFICATION NUMBER, MAJOR OBSERVATIONS, DATE OF INSPECTION AND CORRECTIVE MEASURES TAKEN. AN EGLE "SOIL EROSION AND SEDIMENTATION CONTROL INSPECTION LOG" SHALL BE FILLED BY THE CONTRACTOR. EROSION CONTROL MEASURES SHALL BE CHECKED ON A DAILY BASIS BY THE CONTRACTOR AND MISSING OR DEFICIENT ALL TEMPORARY EROSION CONTROL MEASURES SHALL BE REPLACED OR REPAIRED IMMEDIATELY.
- THE CONSTRUCTION ACCESS POINTS SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOW OF MUD ONTO PUBLIC RIGHTS-OF-WAY.
- EXCESS DIRT/FILL IS NOT TO BE PLACED ON ANY AREAS OR ADJACENT TO THE SITE BEYOND THE LIMITS OF DISTURBANCE SHOWN ON THE CONSTRUCTION PLANS. EXCESS DIRT/FILL SHALL BE PROPERLY PLACED AND ACCEPTED BY THE CONTRACTOR OWNER AND AGREED TO BY THE DEVELOPER.
- PRIOR TO LEAVING THE SITE, ALL VEHICLES SHALL BE CLEANED OF DEBRIS. ANY DEBRIS AND/OR SEDIMENT REACHING THE PUBLIC STREET SHALL BE CLEANED IMMEDIATELY BY A METHOD OTHER THAN FLUSHING.

BEST MANAGEMENT PRACTICES SEQUENCE:

NOTE: THE FOLLOWING SECS SEQUENCE AND MEASURES ARE GENERAL TO EACH STRUCTURE LOCATION. ADDITIONAL MEASURES AND PHASING MAY BE REQUIRED TO PROTECT SENSITIVE AREAS. THE CONTRACTOR SHALL MAINTAIN RECORDS OF ALL BEST MANAGEMENT PRACTICES (BMPs) AND THE PLANS) ARE FOR REFERENCE ONLY. CONTRACTOR MAY ADJUST ACTUAL LOCATION AS NECESSARY TO BEST MAINTAIN EXISTING DRAINAGE COURSES AND MINIMIZE IMPACTS TO THE EXISTING CONDITIONS SURROUNDING EACH WORK AREA. ALL EARTH DISTURBANCES ARE TO OCCUR ONLY WITHIN THE PERMITTED EASEMENT.

PULL ALL NECESSARY LOCAL COUNTY AND STATE PERMITS. THE CONTRACTOR SHALL CONTACT THE EGLE IF NECESSARY TO Amend THE NOTICE OF COVERAGE (NOC) WITH THE NAME AND CERTIFICATION NUMBER OF THE STORM WATER OPERATOR CHARGED WITH CONDUCTING THE REQUIRED INSPECTIONS. WRITTEN NOTIFICATION FROM THE EGLE APPROVING THE CHANGE TO THE NOC SHALL BE INCLUDED IN THE INSPECTION LOG. INSTALL SILT FENCING AS CALLED FOR ON PLANS OR AS SPECIFIC SITE CONDITIONS DICTATE. ONLY CLEAR AREAS NECESSARY TO DISTURB FENCING. FENCING SHALL BE ERECTED PRIOR TO DEMOLITION OF THE EXISTING STRUCTURE(S) AND SHALL BE MAINTAINED UNTIL THE DISTURBED AREAS AND SPOIL STOCKPILE AT THE INDIVIDUAL LOCATION ARE STABILIZED (90% VEGETATIVE COVER). SILT FENCE SHALL NOT BE PLACED ACROSS CRIB AREAS UNLESS NECESSARY TO ALLOW FOR PLACEMENT OF FOUNDATION SPOOLS.

REMOVE EXISTING STRUCTURE(S) & FOUNDATION(S) AS NECESSARY. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF MATERIALS/CONCRETE DEMOLISH EXISTING STRUCTURE(S) & FOUNDATION(S) AS NECESSARY. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF MATERIALS/CONCRETE STOCKPILE TOPSOIL AND EXCAVATE FOUNDATION. STOCKPILE SPOIL MATERIAL AND GRADE ADJACENT TO EXCAVATION AS SHOWN ON THE SITE DETAILS. NO DEMOLITION OF EXCAVATED AREAS ARE ANTICIPATED, HOWEVER IF NECESSARY, PLANS WILL BE PROVIDED.

COMPLETE CONSTRUCTION OF NEW STRUCTURE AND REPAIR SURROUNDING AREAS AS NECESSARY.

INSPECT DISTURBED AREA WEEKLY FOR VEGETATIVE GROWTH, RESEED AS NECESSARY.

ONCE THE AREA HAS ACHIEVED A MINIMUM OF 90% VEGETATIVE COVER, REMOVE SILT FENCE (AND/OR OTHER REMAINING TEMPORARY EROSION AND SEDIMENT CONTROL DEVICES). STABILIZE ANY AREAS DISTURBED BY THE REMOVAL OF BMPs. SILT FENCE AND OTHER BMPs WHICH ARE STILL IN PLACE SHALL BE MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD. MAINTAIN TEMPORARY SOIL EROSION AND SEDIMENTATION CONTROL MEASURES UNTIL PERMANENT SOIL EROSION CONTROL MEASURES ARE IN PLACE AND THE AREA IS STABILIZED. AREAS TEMPORARILY STABILIZED DURING THE NON-GROWING SEASON WILL BE PERMANENTLY STABILIZED IMMEDIATELY FOLLOWING THE COMMENCEMENT OF THE NEXT PLANTING SEASON. ALL STRAW OR HAY MULCH WILL BE REMOVED OR DEEPLY INCORPORATED INTO THE SOIL BEFORE PROVIDING PERMANENT STABILIZATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PERMANENT STABILIZATION OF DISTURBED AREAS FOR ONE YEAR.

LANDOWNER WILL BE RESPONSIBLE FOR PERMANENT STABILIZATION OF DISTURBED AREAS FOR ONE YEAR.

FINAL PROJECT CLOSEOUT (ALL PROPOSED IMPROVEMENTS ARE COMPLETE)

ONCE ALL PERMANENT SOIL EROSION CONTROL MEASURES ARE COMPLETED AND PERMANENT VEGETATION ESTABLISHED, THE CONTRACTOR SHALL COMPLY WITH THE FOLLOWING REQUIREMENTS:

- THE PROJECT SHALL BE MAINTAINED IN FULLY FUNCTIONAL CONDITION UNTIL NO LONGER REQUIRED FOR A COMPLETED PHASE OF WORK OR FINAL STABILIZATION.
- NO FURTHER EARTH DISTURBANCE CAN OCCUR WITHOUT NEW PERMIT.
- THE NOTICE OF COVERAGE PERMITTEE SHALL FILE A NOTICE OF TERMINATION (NOTI) WITH THE EGLE AND RETAIN SE.C.S. LOGS (HARD COPIES & ELECTRONICALLY) FOR A MINIMUM OF 5 YEARS.

PROHIBITED CONSTRUCTION ACTIVITIES:

- THE CONTRACTOR SHALL NOT USE CONSTRUCTION ACTIVITIES, PROCEEDINGS, OR OPERATIONS THAT MAY UNNECESSARILY IMPACT THE NATURAL ENVIRONMENT OR BE DANGEROUS TO HEALTH AND SAFETY. PROHIBITED CONSTRUCTION ACTIVITIES, PROCEEDINGS OR OPERATIONS INCLUDE BUT ARE NOT LIMITED TO:
- DISPOSING OF EXCESS OR UNSUITABLE EXCAVATED MATERIALS IN WETLANDS OR FLOODPLAINS, EVEN WITH THE PERMISSION OF THE PROPERTY OWNER(S) WITHOUT WETLAND AND/OR FLOODPLAIN FILL PERMIT.
 - INDISCRIMINATE, ARBITRARY, OR CAPRICIOUS OPERATION OF EQUIPMENT IN ANY STREAM CORRIDOR, TRIBUTARY, WATERS, WETLANDS, OR ANY AREAS OUTSIDE OF THE CORRIDOR.
 - PUMPING OF SEDIMENT-LADEN WATER FROM EXCAVATIONS INTO ANY SURFACE WATERS, STREAM CORRIDORS, WETLANDS, OR STORM DRAINS.
 - DISCHARGING OF POLLUTANTS SUCH AS CHEMICALS, FUEL, LUBRICANTS, BITUMINOUS MATERIALS, RAW SEWAGE, AND OTHER HARMFUL WASTE INTO OR ALONGSIDE STREAM, RIVERS, FLOODPLAIN OR INTO NATURAL OR MAN-MADE CHANNELS LEADING THERETO.
 - DAMAGING OF VEGETATION OUTSIDE OF THE PROPOSED WORK LIMITS, WITHIN NO-BUILD, TREE PRESERVATION AND GREEN ZONES.
 - DAMAGING OF TREES, BRUSH AND OTHER DEBRIS IN ANY STREAM CORRIDORS, WETLANDS SURFACE WATERS, OR ANY OTHER UNSPECIFIED LOCATION WITHOUT A PERMITS.
 - PERMANENCE OF PROJECT DEBRIS WITHOUT A PERMIT.
 - STORAGE OF CONSTRUCTION EQUIPMENT AND VEHICLES AND/OR STOCKPILING CONSTRUCTION MATERIALS ON PROPERTY, PUBLIC OR PRIVATE, NOT PREVIOUSLY SPECIFIED AND APPROVED FOR THE SAID PURPOSE.
 - DISPOSAL OF CHIP WOOD IN SUCH A MANNER THAT WOULD ALLOW CHIP WOOD DECOMPOSITION AND LEACHATE WATER TO FLOW TO ANY SURFACE WATER.
 - TRACKING OF MUD AND OTHER CONSTRUCTION RELATED DEBRIS ONTO ROADWAY OR FLUSHING SEDIMENT FROM ROADWAY WITH WATER.



CONCORD PINES OF ANN ARBOR		SCALE 0	
EGLE IMPACT PLANS			
BMP NOTES			
SECTION: 25	CITY OF ANN ARBOR		
TOWN, RANGE: 02S, 16W	WASHTENAW COUNTY, MI		

JOB: 20003119
DATE: SEPT. 22, 2021
REV: -



SHEET NO. E-WRD

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CONSTRUCTION DEWATERING PLAN

1.0 DEWATERING

DEFINITION: DEWATERING CONSISTS OF THE REMOVAL OF SURFACE WATER AND/OR GROUNDWATER BY DIVERTING AND/OR REMOVING CONSTRUCTION AREAS WITHIN WATER FEATURES (I.E. WETLANDS, WATERCOURSE, AND/OR WATERSHED), AS NEEDED FOR CONSTRUCTION.

A. GENERAL:

1. DEWATERING ACTIVITIES SHALL CONFORM TO APPLICABLE PART 91, SOIL EROSION AND SEDIMENTATION CONTROL (SESC), OF THE NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION ACT (NREPA), 1994 PA 451, AS AMENDED.
2. DURING DEWATERING ACTIVITIES, THE SEDIMENT LADEN WATER CANNOT BE DIRECTLY DISCHARGED TO SURFACE WATERS. OPTIONS FOR REDUCING THE TURBIDITY OF THE WATER INCLUDE:
 - a) CONSTRUCTING A TEMPORARY SEDIMENT TRAP FOR TURBID WATER DISCHARGE PRE-TREATMENT.
 - b) USE OF A PORTABLE SEDIMENT CONTAINMENT SYSTEM SUCH AS DUMPSTERS.
 - c) APPLICATION OF NATURAL BASED FLOCCULENT TECHNOLOGY SUCH AS CHITOSAN IN SEDIMENT TRAPS OR A SERIES OF DITCH CHECKS TO CONTAIN SEDIMENT.
 - d) DISCHARGE WATER THROUGH A SERIES OF FIBER LOGS OR A ROCK WEEPER INTO A LARGE VEGETATED BUFFER AREA.
 - e) ENERGY DISSIPATION SHOULD BE PROVIDED AT ALL DISCHARGE POINTS.
 - f) DEWATERING OR BASIN DRAINING ACTIVITIES SHOULD NOT CAUSE EROSION IN RECEIVING CHANNELS OR ADVERSELY IMPACT WETLANDS.

B. POLLUTANTS CONTROLLED AND IMPACTS:

1. PROPER DEWATERING TECHNIQUES WILL FILTER WATER OF SEDIMENT, OILS, AND OTHER CHEMICALS, THUS PREVENTING THESE POLLUTANTS FROM ENTERING THE SURFACE WATERS.

C. APPLICATION:

1. DEWATER ACCUMULATED GROUND WATER OR STORMWATER VIA PUMP, DEWATERING BAG AND ENSURE DISCHARGED WATER DOES NOT CONTRIBUTE SEDIMENTATION TO RECEIVING WATERS.

D. WHEN TO APPLY:

1. APPLY AT THE BEGINNING OF AND DURING CONSTRUCTION WHEN IT IS NECESSARY TO LOWER THE WATER LEVELS WITHIN THE CONSTRUCTION AREA. PUMPING NEEDS TO BE MAINTAINED TO KEEP UTILITY DITCHES AND COFFERDAMS DRY UNTIL ALL UNDERGROUND WORK IS COMPLETED.

E. WHERE TO APPLY:

1. APPLY ON CONSTRUCTION SITES, WHERE APPROPRIATE, OR ANYWHERE ELSE DEWATERING IS NEEDED.

a) WHEN CONSTRUCTION ENCOUNTERS UNCONTAMINATED GROUND WATER / SPRING WATER:

- 1) CLEAN WATER SHOULD BE PUMPED FROM THE GROUND AND DISCHARGED THROUGH HOSES TO DEWATERING BAGS OR OTHER ADEQUATE ENERGY DISSIPATION PRIOR TO DISCHARGING TO RECEIVING WATERS. THESE BEST MANAGEMENT PRACTICES (BMPs) SHALL BE EMPLOYED AS APPROPRIATE AND APPLICABLE TO LOCAL PERMITS AND REGULATIONS.

b) WHEN CONSTRUCTION ENCOUNTERS UNCONTAMINATED EXCAVATION DEWATERING:

- 1) CLEAN WATER SHOULD BE DISCHARGED TO A VEGETATED AREA, DITCHES OR OTHER CONVEYANCE VIA HOSE. ENERGY DISSIPATION SHOULD BE APPLIED TO THE DISCHARGE LOCATION TO MINIMIZE SCOUR. ALTERNATIVELY, UNCONTAMINATED WATER COULD BE DISCHARGED TO RECEIVING WATERS AS ALLOWED BY LOCAL PERMITS AND REGULATIONS OR AS LONG AS POSITIVE DRAINAGE IS PROVIDED, THE WATER COULD BE DISCHARGED INTO THE SURROUNDING AGRICULTURAL FIELDS AND ALLOWED TO INFILTRATE OR DRAIN ALONG EXISTING DRAINAGE PATTERNS PROVIDED THAT THE WATER DOES NOT CAUSE FLOODING OR CROP DAMAGE.

F. RELATIONSHIP WITH OTHER BMPs:

1. DEWATERING IS OFTEN IMPLEMENTED IN CONJUNCTION WITH DEEP FOUNDATION INSTALLATION, SEDIMENT BASINS AND FILTERS SHOULD BE CONSIDERED TO HELP FILTER THE DEWATERED WATER BEFORE IT IS DISCHARGED TO A SURFACE WATER WITHIN UPLANDS.
2. UTILIZE EROSION BLANKETS, EROSION CONTROL FENCING, STRAW BALES, LEVEL SPREADERS, SILT FENCING, ETC., WHERE NECESSARY TO MITIGATE POTENTIAL EXCESSIVE EROSION AND SEDIMENTATION. ENSURE ANY MATERIALS PLACED IN SURFACE WATER BODIES ARE FREE FROM SILT AND OTHER SUCH PARTICLES. KEEP EXTRA EROSION AND SEDIMENT CONTROL MATERIALS ON SITE (E.G., HEAVY DUTY SILT FENCING, STRAW BALES).
3. CHITOSAN AND CHITIN BASED ADDITIVES HAVE BEEN SHOWN TO SIGNIFICANTLY INCREASE THE EFFECTIVENESS OF FILTRATION AND SETTLING. CHITOSAN (POLY-D-D-GLUCOSAMINE) IS A LOW-TOXICITY PRODUCT EXTRACTED FROM CHITIN (POLY-N-ACETYL-D-GLUCOSAMINE), A BY-PRODUCT OF THE SHELLFISH INDUSTRY. OTHER PRODUCTS SUCH AS ANIONIC POLYACRYLAMIDE (ANIONIC PAM) ARE COMMERCIALY AVAILABLE TO INCREASE SETTLING. OFTEN THESE ARE UTILIZED THROUGH WET OR DRY DOSING MECHANISMS OR AS WATER RUNS OVER A GEL BLOCK UPSTREAM OF A SETTLING OR FILTRATION PRACTICE. EACH PRODUCT SHOULD BE UTILIZED WITHIN THE MANUFACTURERS' SPECIFICATIONS AND TAILORED TO THE SOIL AND SITE CONDITIONS.
4. PARTICULATE FILTER UNITS UTILIZING CARTRIDGES OR ENCLOSED FILTER BAGS CAN REMOVE SMALLER PARTICLES DEPENDING ON THE FILTER SIZE. THIS TYPE OF MEASURE IS USUALLY NECESSARY TO TREAT CLAYS. FILTERS MAY NEED TO BE CHANGED DAILY OR MORE FREQUENTLY.
5. CHECK THAT EROSION CONTROL TOOLS ARE IN GOOD REPAIR AND PROPERLY FUNCTIONING PRIOR TO CONDUCTING DAILY WORK AND RE-INSTALL OR REPAIR AS REQUIRED PRIOR TO COMMENCING DAILY CONSTRUCTION ACTIVITIES.
6. KEEP SEDIMENT AND EROSION CONTROL MEASURES IN PLACE UNTIL DISTURBED AREAS HAVE BEEN STABILIZED (I.E., RE-VEGETATED).

G. DESIGN SPECIFICATIONS:

1. DEWATERING MUST BE DONE SO THAT THE VELOCITY OF THE DISCHARGED WATER DOES NOT CAUSE SCOURING OF THE RECEIVING AREA. IF THE RECEIVING AREA IS A STRUCTURAL BMP (I.E. BASIN OR SUMP), THE DESIGN OF THE BMP SHOULD BE BASED ON THE ANTICIPATED FLOW FROM THE DEWATERED AREA.
2. SEDIMENT-LADEN WATER FROM COFFERDAMS, TRENCHES, FOUNDATION EXCAVATIONS, AND OTHER AREAS WHICH NEED TO BE DEWATERED SHOULD BE PUMPED THROUGH A GEOTEXTILE MATERIAL BEFORE THE WATER IS DISCHARGED TO A SURFACE WATER BODY. THE FILTER BAG SHOULD BE DISPOSED OF BY THE CONTRACTOR AT AN UPLAND SITE.
3. IF THE DEWATERED WATER IS DISCHARGED THROUGH A FILTER TO A COUNTY OR INTER COUNTY DRAIN, PERMISSION MUST BE OBTAINED FROM THE DRAIN COMMISSIONER OR DRAIN BOARD.
4. TEMPORARY SUMP AND ROCK BASE SHOULD BE USED WHERE A TEMPORARY PUMP IS INSTALLED TO DEWATER AN AREA OF ACCUMULATED WATER. IF A ROCK BASE CANNOT BE USED, THE PUMP INTAKE SHALL BE ELEVATED TO DRAW WATER FROM THE TOP OF THE WATER COLUMN AND BE PROTECTED FROM SCOUR.
5. IMPLEMENT DEWATERING OF FOUNDATIONS AS NEEDED. A TEMPORARY SUMP AND ROCK BASE SHOULD BE USED WHERE A TEMPORARY PUMP IS INSTALLED TO DEWATER AN AREA OF ACCUMULATED WATER.
6. OUTLETS PUMPS SHALL BE PROTECTED FROM SCOUR EITHER BY RIPRAP PROTECTION, FABRIC LINER, AND/OR OTHER ACCEPTABLE METHODS FOR OUTLET PROTECTION.
 - a) ENERGY DISSIPATION (RIPRAP) SHOULD BE APPLIED TO THE DISCHARGE AREA OF THE PUMP HOSE. THE WATER SHOULD BE DISCHARGED TO A LARGE FLAT VEGETATED AREA FOR FILTRATION / INFILTRATION PRIOR TO FLOWING INTO RECEIVING WATERS OF CONVEYANCES / DITCHES. IF DISCHARGE WATER IS TURBID, DEWATERING BAGS, TEMPORARY TRAPS AND ROCK WEEPERS OR OTHER ADEQUATE BMP IS NEEDED TO CONTROL SEDIMENT DISCHARGE.

7. PROPOSED BMPs AND WATER TREATMENT

a) GEOTEXTILE FILTER BAGS

- 1) GEOTEXTILE FILTER BAGS REMOVE SEDIMENT FROM DEWATERING DISCHARGE AND ARE PUMPED INTO A FILTER BAG CHOSEN FOR THE PREDOMINANT SEDIMENT SIZE. FILTER BAGS ARE MANUFACTURED PRODUCTS MADE TYPICALLY FROM WOVEN MONOFILAMENT POLYPROPYLENE TEXTILE (COARSE MATERIALS, E.G. SANDS) OR NON-WOVEN GEOTEXTILE (SILTS/CLAYS). THEY ARE SINGLE USE PRODUCTS THAT MUST BE REPLACED WHEN THEY BECOME CLOGGED OR HALF-FULL OF SEDIMENT.
- 2) GEOTEXTILE FILTER BAGS ARE GENERALLY CONSIDERED HIGH FLOW PRODUCTS, WHICH HAVE LIMITED ABILITY TO TREAT FINE-GRAINED SEDIMENTS. GRAVITY DRAINED FILTER BAGS SHOULD APPLY THE FOLLOWING: 1) THE FILTER BAGS SHOULD BE PLACED OUTSIDE OF A VEGETATED FILTER AREA AND NOT IN CLOSE PROXIMITY TO THE STREAM OR WATER RESOURCE; 2) THEY MUST SIT ON A RELATIVELY FLAT GRADE TO PREVENT EROSION CAUSED BY WATER LEAVING THE BAG; 3) THE PLACEMENT OF THE BAG OVERLAIN A FLAT BED OF AGGREGATE WILL MAXIMIZE THE FLOW AND USEFUL SURFACE AREA OF THE BAG; 4) THEY SHOULD BE USED IN CONJUNCTION WITH A LARGE VEGETATIVE BUFFER OR SECONDARY POND AND/OR BARRIER.
- 3) FILTER BAGS SHOULD BE MADE FROM NON-WOVEN GEOTEXTILE MATERIAL SEWN WITH HIGH STRENGTH DOUBLE-STITCHED "J" TYPE SEAMS CAPABLE OF TRAPPING PARTICLES LARGER THAN 150 MICRONS.
- 4) FILTER BAGS SHALL BE LOCATED IN WELL-VEGETATED (GRASSY) AREAS AND DISCHARGE ONTO STABLE, EROSION RESISTANT SURFACES/AREAS. BAGS SHALL NOT BE PLACED ONTO SLOPES GREATER THAN 5%.
- 5) THE PUMP DISCHARGE HOSE SHALL BE INSERTED INTO THE FILTER BAG IN THE MANNER SPECIFIED BY THE MANUFACTURER AND SECURELY CLAMPED.
- 6) A SUITABLE MEANS OF ACCESSING THE BAG WITH MACHINERY REQUIRED FOR DISPOSAL PURPOSES MUST BE PROVIDED. FILTER BAGS SHALL BE REPLACED WHEN THEY BECOME HALF FULL. SPARE REPLACEMENT BAGS SHALL BE KEPT AVAILABLE FOR REPLACEMENT OF THOSE THAT HAVE FAILED AND/OR ARE HALF FULL.
- 7) THE MONITORING FOR TURBIDITY OF THE FILTER BAG DISCHARGE SHOULD OCCUR ON A REGULAR BASIS. IF TURBID WATER IS OBSERVED PUMPING SHALL CEASE IMMEDIATELY AND NOT RESUME UNTIL THE PROBLEM HAS BEEN RESOLVED. BAGS SHALL BE REMOVED IMMEDIATELY UPON COMPLETION OF PUMPING ACTIVITIES.

H. MAINTENANCE:

1. THE DEWATERING SITE SHOULD BE INSPECTED SEVERAL TIMES DAILY TO ENSURE THAT THE PUMPING PROCEDURE IS ADEQUATELY CONTROLLING THE EXCESS WATER, TO ENSURE THE FILTER BAG IS NOT CLOGGED, AND THAT THE VEGETATIVE FILTER, WHERE USED, IS STILL RETAINING SEDIMENT. IF THE FILTER BAG BECOMES CLOGGED, REPLACE WITH A NEW ONE.



CONCORD PINES OF ANN ARBOR EGLE IMPACT PLANS	
SESC NOTES	
SECTION: 25	CITY OF ANN ARBOR
TOWN, RANGE: 025, 16W	WASHTENAW COUNTY, MI

SCALE 0

JOB: 20003119
DATE: SEPT. 22, 2021
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SHEET NO. E-WRD
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SEEDING SPECIFICATION

GENERAL SEEDING CAN BE USED FOR TEMPORARY OR PERMANENT STABILIZATION. DISTURBED AREAS OF THE SITE WHERE THE SOIL IS NOT SUITABLE FOR PLANTING SHALL BE RECLAIMED BY PERMANENTLY SEEDING IMMEDIATELY WHERE FINAL GRADING HAS BEEN COMPLETED. TEMPORARY AND/OR PERMANENT SEEDING SHALL BE COMPLETED WITHIN FIVE (5) DAYS FOLLOWING THE CONCLUSION OF GRADING ACTIVITIES (WEATHER PERMITTING) AND MUST BE COMPLETED WITHIN FIVE (5) DAYS. TEMPORARY AND PERMANENT SEED MIXTURES ARE SPECIFIED BELOW. TEMPORARY SEED MIX SHALL ALSO BE APPLIED DURING THE APPLICATION OF THE PERMANENT SEED MIX TO ENSURE TIMELY VEGETATIVE COVER OF EXPOSED AREAS.

IMMEDIATELY AFTER SEEDING, MULCH ALL SEEDED AREAS WITH UNWEATHERED SMALL GRAIN STRAW OR HAY UNIFORMALLY AT THE RATE OF 1-1/2 TONS TO 2 TONS PER ACRE OR 100 POUNDS PER 1000 SQUARE FEET. ANCHOR MULCH WITH DISC-TYPE ANCHORING TOOL OR OTHER MEANS APPROVED BY THE LOCAL REGULATORY AGENCY.

SEEDING MIXTURES: USE SEED MIXES IN TEMPORARY & PERMANENT SEED CHARTS.
 SLOPES FLATTER THAN 3:1 (NOT INCLUDING BASINS)
 APPLY 17-17-17 COMMERCIAL ORGANIC FERTILIZER AT A RATE OF 20 LBS PER 1000 SQ/FT. SEED IN ACCORDANCE WITH THE FOLLOWING SCHEDULE:

TEMPORARY SEEDING/PLANTING DATES	SEED VARIETY
IMMEDIATELY FOLLOWING APPLICATION RATE	(SEE CHART BELOW)
LAST DISTURBANCE OR WITHIN 14 DAYS	
PERMANENT SEEDING/PLANTING DATES	SEED VARIETY
PREFERABLE EARLY SPRING ON EARLY FALL	(SEE CHART BELOW)

SLOPES 3:1 OR GREATER (NOT INCLUDING BASINS)
 APPLY 17-17-17 COMMERCIAL ORGANIC FERTILIZER AT A RATE OF 20 LBS PER 1000 SQ/FT. AND SEED IN ACCORDANCE WITH THE FOLLOWING SCHEDULE:

TEMPORARY SEEDING/PLANTING DATES	SEED VARIETY
IMMEDIATELY FOLLOWING APPLICATION RATE	(SEE CHART BELOW)
LAST DISTURBANCE OR WITHIN 5 DAYS	
PERMANENT SEEDING/PLANTING DATES	SEED VARIETY
PREFERABLE EARLY SPRING ON EARLY FALL	(SEE CHART BELOW)

TEMPORARY SEED	PERMANENT SEED
SEED: 60 LBS PER ACRE	SEED: 80 LBS PER ACRE
MIX: 25% KENTUCKY 31 TALL FESCUE	MIX: 70% TRUE BLUE KENTUCKY (BROOKLAWN, BOUTIQUE, GROME, AND H92-203 KENTUCKY BLUEGRASS)
22% CREEPING RED FESCUE	30% PERENNIAL RYE GRASS (MANHATTAN 4, CHARGER, Q10ATION 4, AND PIZZAZZ PERENNIAL RYE GRASS)
11% TIMOTHY MATTER	
1.0% OTHER CROP	
0.01% WEED SEED	

SEED BED PREPARATION (PERMANENT SEEDING)
 SURFACE WATER CONTROL MEASURES SHALL BE IN PLACE. AREA TO BE SEEDDED SHALL BE RIPPED AND SPREAD WITH AVAILABLE TOPSOIL. TOTAL SEEDBED PREPARED DEPTH SHOULD BE AT LEAST 4 INCHES. LOOSE ROCKS, ROOTS, AND OTHER OBSTRUCTIONS NEED TO BE REMOVED FROM THE SURFACE SO THAT THEY WILL NOT BE COVERED BY SEED. SEEDBED SHOULD BE PREPARED TO A FINISH GRADE AND BE REASONABLY SMOOTH AND UNIFORM. PREPARATION SHOULD BE AT FINISH GRADE AND BE REASONABLY SMOOTH AND UNIFORM.

IF NO SOIL TEST IS TAKEN, FERTILIZER AND LIME SHOULD BE USED ACCORDING TO SEEDING SPECIFICATIONS. IF SOIL TEST IS TAKEN, APPLY FERTILIZER AND LIME ACCORDING TO SOIL TEST REPORT. FERTILIZER AND LIME SHALL BE APPLIED UNIFORMALLY TO THE ENTIRE SEEDING AREA. SEEDS SHOULD BE CHECKED FOR PURITY AND GERMINATION MUST BE CHECKED PRIOR TO SEEDING.

SEEDING SHALL BE ACCOMPLISHED IN TWO DIRECTIONS AND AT RIGHT ANGLES TO EACH OTHER. LAWN AREAS MECHANICAL CULTI-PACKER SEEDER TO COVER THE SEED AND FORM THE SEEDBED IN ONE OPERATION. IF BROADCAST SEEDER IS USED, THE SEEDING RATE SHALL BE TWO (2) TIMES THE DRILL RATE. IN INACCESSIBLE AREAS, THE SEED SHALL BE LIGHTLY RAKED WITH FLEXIBLE RAKES AND ROLLED WITH A WATER BALLAST ROLLER AFTER ROLLING SEEDED AREAS SHALL BE MULCHED ACCORDING TO SPECIFICATION. IN HYDRO-SEED, OPERATION IS USED... SEEDING RATE SHALL BE FIVE (5) TIMES THE DRILL RATE INDICATED ON THE DRAWINGS.

IF SEEDING CAN NOT BE ACCOMPLISHED DUE TO SEASONAL CONSTRAINTS, APPLY STRAW MULCH AND TACKIFIER TO ALL SLOPES AND DISTURBED AREAS UNTIL PERMANENT SEEDING IS ALLOWED. IN THE EVENT SEEDING OCCURS OUT OF SEASON, MAINTENANCE SHOULD BE MAINTAINED THROUGHOUT THE FOLLOWING GROWING SEASON UNTIL PERMANENT SEEDING IS COMPLETED. PERMANENT AND TEMPORARY SEEDING SHALL BE ACCOMPLISHED THROUGHOUT THE CONSTRUCTION PROCESS.

INSPECTION: SEEDED AREAS FREQUENTLY. IF SEEDED AREAS FAIL TO GERMINATE, OR TO PROVIDE ADEQUATE GRASS COVER, THE AREA SHALL BE RE-SEEDDED UNTIL FINAL STABILIZATION IS ACHIEVED.

GENERAL EROSION AND SEDIMENT CONTROL NOTES:

- CONTRACTOR SHALL IMPLEMENT BEST MANAGEMENT PRACTICES AS REQUIRED BY THE PLANS. ADDITIONAL BEST MANAGEMENT PRACTICES SHALL BE IMPLEMENTED AS DICTATED BY CONDITIONS AT NO ADDITIONAL COST OF OWNER THROUGHOUT ALL PHASES OF CONSTRUCTION.
- APPLICABLE EROSION CONTROL MEASURES SHALL BE INSTALLED IMMEDIATELY UPON OBTAINING PERMITS OR MANUAL OF PRACTICE, AS APPLICABLE. CONTRACTOR SHALL IMPLEMENT ADDITIONAL EROSION CONTROL MEASURES AS DIRECTED BY PERMITTING AGENCY OR OWNER.
- CONTRACTOR SHALL MINIMIZE CLEARING TO THE MAXIMUM EXTENT PRACTICAL OR AS REQUIRED BY THE GENERAL PERMIT.
- ALL WASH WATER (CONCRETE TRUCKS, VEHICLE CLEANING, EQUIPMENT CLEANING, ETC.) SHALL BE DETAINED AND PROPERLY TREATED OR DISPOSED. DUST ON THE SITE SHALL BE CONTROLLED. THE USE OF MOTOR OILS AND OTHER PETROLEUM BASED OR TOXIC LIQUIDS FOR DUST SUPPRESSION OPERATIONS IS PROHIBITED.
- SEEDING, MULCH, GARBAGE, LITTER, OR OTHER SUCH MATERIALS SHALL BE DEPOSITED INTO SEALED CONTAINERS. MATERIALS SHALL BE PREVENTED FROM LEAVING THE PREMISES THROUGH THE ACTION OF WIND OR STORMWATER DISCHARGE INTO DRAINAGE DITCHES OR WATERS OF THE STATE.
- ALL DENuded AREAS THAT WILL BE INACTIVE FOR 14 DAYS OR MORE, MUST BE STABILIZED TEMPORARILY WITH THE USE OF FAST-GERMINATING ANNUAL GRASS/GRIM VARIETIES, STRAW/HAY MULCH, WOOD CELLULOSE FIBERS, TACKIFIERS, NETTING OR BLANKETS.
- ALL MUD/DIRT/MATERIALS SPILLED, DROPPED, WASHED, OR TRACKED FROM VEHICLES ONTO PUBLIC ROADWAYS OR INTO WATER COURSES SHALL BE IMMEDIATELY REMOVED BY THE CONTRACTOR.
- EROSION CONTROL MEASURES SHALL BE INSTALLED AND PERMITTED IN ACCORDANCE WITH GENERAL MANAGEMENT PRACTICES. STOCKPILE AND BORROW AREA LOCATIONS SHALL BE NOTED ON THE SITE MAP AND PERMITTED IN ACCORDANCE WITH GENERAL PERMIT REQUIREMENTS.
- ALL STOCKPILED SOILS SHALL BE MAINTAINED IN SUCH A WAY AS TO PREVENT EROSION FROM THE WORK AREA.
- UNNECESSARY TO LIMIT DISTURBANCE OF SITE IN STRICT ACCORDANCE WITH EROSION CONTROL SEQUENCING SHOWN ON THIS PLAN. NO EROSION AND ANY SEDIMENTATION FROM WORK ON THIS SITE SHALL BE CONTAINED ON THE SITE AND NOT ALLOWED TO COLLECT ON ANY OFF-SITE AREAS OR IN WATERWAYS. WATERWAYS INCLUDE BOTH NATURAL AND MAN-MADE OPEN DITCHES, STREAMS, STORM DRAINS, LAKES AND PONDS.
- CONTRACTOR SHALL APPLY TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES WHEN REQUIRED. HE SHALL REMOVE TEMPORARY MEASURES AS SOON AS PERMANENT STABILIZATION OF SLOPES, STOCKPILES AND OTHER EARTH CHANGES HAVE BEEN ACCOMPLISHED.
- CONTRACTOR SHALL MAINTAIN ACCESS TO ALL UTILITIES AND SHALL CONFORM TO ALL PERMIT REQUIREMENTS OF THE CITY OF ANN ARBOR.
- ALL SOIL EROSION AND SEDIMENTATION CONTROL WORK SHALL CONFORM TO THE PERMIT REQUIREMENTS OF THE CITY OF ANN ARBOR.
- ALL GRADING TO BE PERFORMED AS NOT TO OBSTRUCT UPSTREAM DRAINAGE.
- SITES WILL BE INSPECTED WEEKLY-ANY AREAS OF OFF-SITE EROSION WILL BE CORRECTED WITHIN 2 BUSINESS DAYS.
- TIMBER CROSSING MATS WILL BE USED AS SHOWN TO MINIMIZE DISRUPTION TO WETLAND AREAS.

SEQUENCE OF CONSTRUCTION FOR SOIL EROSION CONTROL (FOR EACH SITE)

START DAY	END DAY	SCHEDULE TO BE FILLED OUT BY CONTRACTOR.
		1. PULL ALL NECESSARY PERMITS & LICENSES.
		2. INSTALL SILT AND PROTECTIVE FENCING.
		3. CLEAR AND GRUB WORK AREA
		4. COMPLETELY REMOVE EXISTING STRUCTURE & FOUNDATION.
		5. STRIP AND STOCKPILE TOPSOIL.
		6. EXCAVATE FOR PROPOSE STRUCTURE, STOCKPILE SPOILS AND GRADE ACCORDINGLY
		7. BEGIN FOUNDATION CONSTRUCTION OF NEW STRUCTURE.
		8. REPLACE TOPSOIL, SEED AND STABILIZE DISTURBED AREAS.
		9. REMOVE SILT FENCE, REPAIR DISTURBED AREAS AS NECESSARY.
		10. COORDINATE WITH PERMITTING AGENCIES FOR CLOSEOUT INSPECTION.

NOTE: IF SEEDING CAN NOT BE ACCOMPLISHED DUE TO SEASONAL CONSTRAINTS, APPLY STRAW MULCH AND TACKIFIER TO ALL SLOPES AND DISTURBED AREAS UNTIL PERMANENT SEEDING IS ALLOWED. IN THE EVENT SEEDING OCCURS OUT OF SEASON, MAINTENANCE SHOULD BE MAINTAINED THROUGHOUT THE FOLLOWING GROWING SEASON FOR ALL AREAS LEFT UNSTABILIZED DUE TO SEASONAL CONSTRAINTS. FINAL STABILIZATION SHALL BE ACHIEVED BY APRIL 15TH.

PERMANENT STABILIZATION

AREA REQUIRING PERMANENT STABILIZATION	TIME FRAME TO APPLY EROSION CONTROLS
ANY AREAS THAT WILL BE DORMANT FOR ONE YEAR OR MORE	WITHIN FIVE (5) CALENDAR DAYS OF THE MOST RECENT DISTURBANCE
ANY AREAS WITHIN 50 FEET OF A STREAM AND AT FINAL GRADE	WITHIN 2 CALENDAR DAYS OF REACHING FINAL GRADE
ANY OTHER AREAS AT FINAL GRADE	WITHIN FIVE (5) CALENDAR DAYS OF REACHING FINAL GRADE WITHIN THAT AREA

TEMPORARY STABILIZATION

AREA REQUIRING TEMPORARY STABILIZATION	TIME FRAME TO APPLY EROSION CONTROLS
ANY DISTURBED AREAS WITHIN 50 FEET OF STREAM AND NOT AT FINAL GRADE	IMMEDIATELY FOLLOWING (2) DAYS MAX. THE MOST RECENT DISTURBANCE. SEEDING WILL REMAIN IDLE FOR MORE THAN 14 DAYS
FOR ALL CONSTRUCTION ACTIVITIES, ANY DISTURBED AREAS THAT WILL BE DORMANT FOR MORE THAN 14 DAYS SHALL BE TEMPORARILY SEEDED AND WATERED OR STABILIZED IN ANOTHER APPROPRIATE WAY AS SOON AS POSSIBLE.	
DISTURBED AREAS THAT WILL BE IDLE OVER WINTER	PRIOR TO THE ONSET OF WINTER WEATHER (NOVEMBER 1)

WHERE VEGETATIVE STABILIZATION TECHNIQUES MAY CAUSE STRUCTURAL INSTABILITY OR ARE OTHERWISE UNOBTAINABLE, ALTERNATIVE STABILIZATION TECHNIQUES MUST BE USED SUCH AS GEOTEXTILES, TACKIFIERS, TURF REINFORCEMENT MATS, OR OTHER STABILIZATION PRACTICE.



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