

TABLE 1 - OFF-SITE CALCULATIONS

	Watershed ID	Area, ac	L, ft	S, ft/ft	ToC, min	CN
Off-Site	ODA-1	523.649	4,265	0.016	41.6	79
	ODA-2	356.428	6,307	0.012	38.7	79
	Sum	880.077				

TABLE 2 - ON-SITE PRE-DEVELOPMENT CONDITION CALCULATIONS

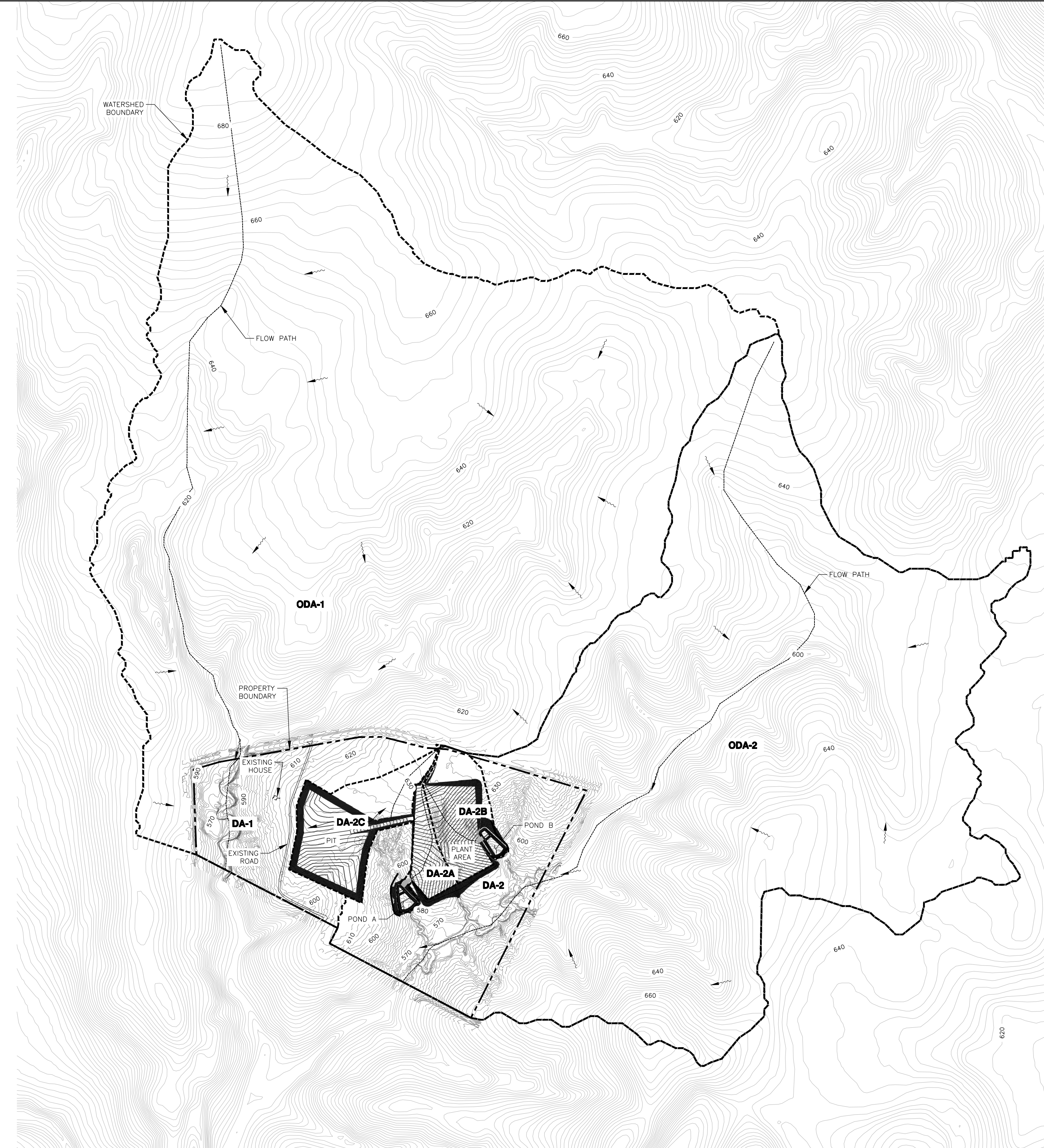
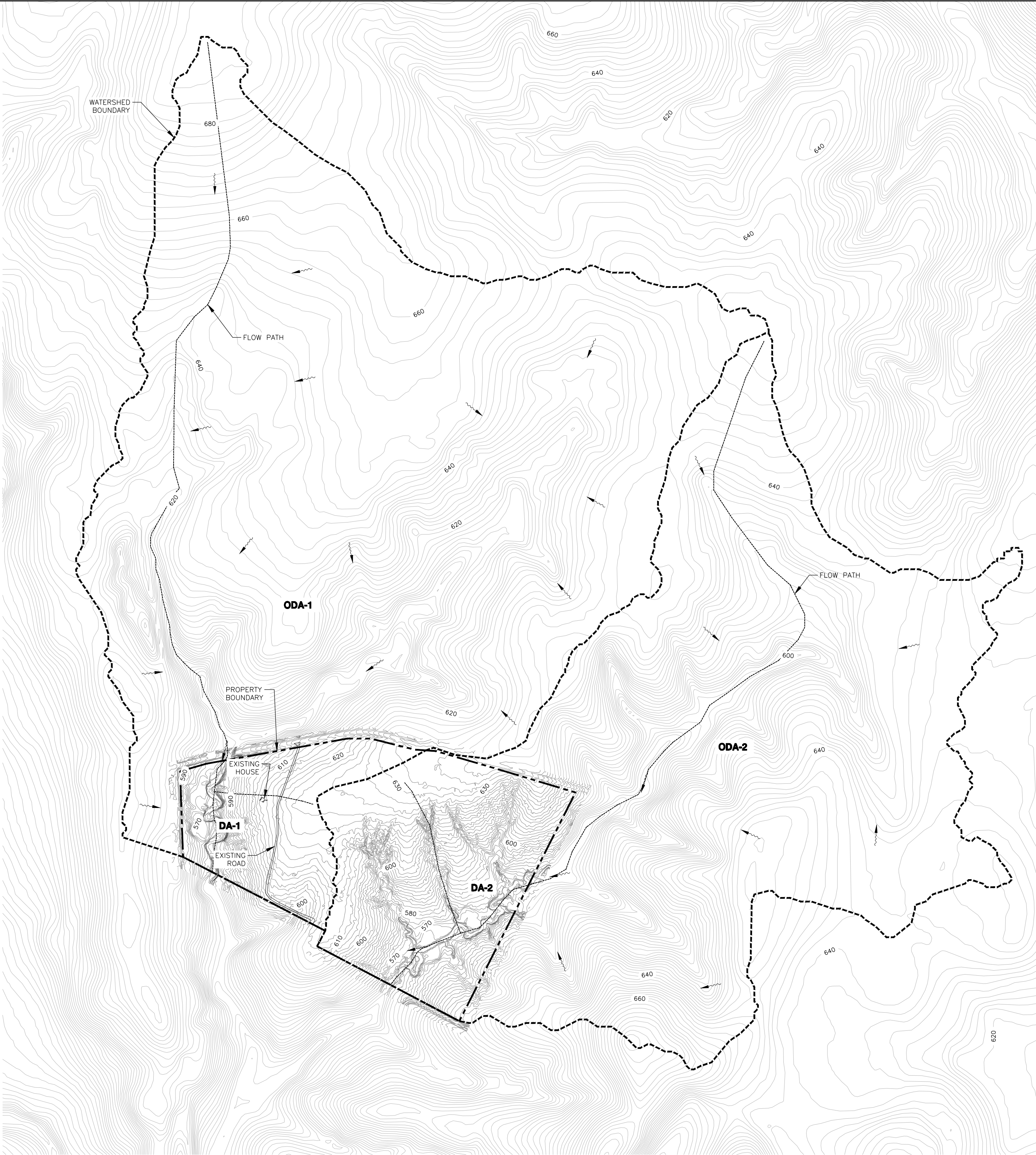
	Watershed ID	Area, ac	L, ft	S, ft/ft	ToC, min	CN
On-Site	DA-1	41.645	1,592	0.042	7.6	79
	DA-2	77.730	2,201	0.033	14.4	79
	Sum	119.375				

TABLE 3 - ON-SITE POST-DEVELOPMENT CONDITION CALCULATIONS

	Watershed ID	Area, ac	L, ft	S, ft/ft	ToC, min	CN
On-Site	DA-1	33.530	1,592	0.083	7.6	79
	DA-2	49.027	2,201	0.033	14.4	79
	DA-A	6.029	927	0.028	5.0	96*
	DA-B	12.264	806	0.036	5.0	91*
	DA-C (pit area)	18.525	783	0.015	11.9	90*

TABLE 4 - TOTAL ON-SITE / OFF-SITE DISCHARGE CALCULATIONS

Total Site	Q2, cfs	Q10, cfs	Q25, cfs	Q100, cfs
Pre-Conditions	928	2334	3186	4613
Post-Conditions	888	2283	3116	4505
Change	-40	-51	-71	-108



CONTOUR OFF-SITE:
1. ON-SITE: DRONE SURVEY
2. OFF-SITE: NED 10M

EXISTING CONDITIONS
SCALE: 1" = 600'

PROPOSED CONDITIONS
SCALE: 1" = 600'

TRAVIS COUNTY DEVELOPMENT PERMIT BARR LANE TRACT

	Acres	Square Feet	Percentage
Total Area of the Site	119.33	5,197,798	--
Impervious Cover	12.24	450,584	8.67%

TABLES 4: OFF-SITE DISCHARGE CALCULATIONS (NO CHANGE)

Watershed ID	Q2, cfs	Q10, cfs	Q25, cfs	Q100, cfs
ODA-1	443	1114	1521	2203
ODA-2	313	786	1074	1555
Sum	756	1900	2595	3758

TABLES 5: PRE-CONDITIONS ON-SITE DISCHARGE CALCULATIONS

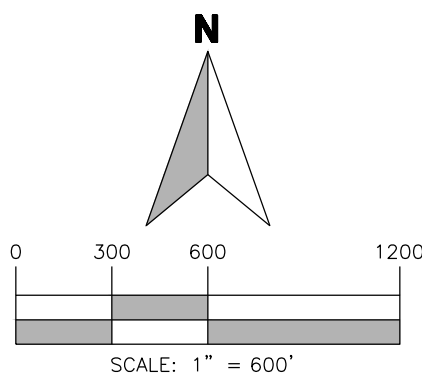
Watershed ID	Q2, cfs	Q10, cfs	Q25, cfs	Q100, cfs
DA-1	68	172	234	338
DA-2	104	262	358	517
Sum	172	434	591	855

TABLES 6: POST-CONDITIONS ON-SITE DISCHARGE CALCULATIONS

Watershed ID	Q2, cfs	Q10, cfs	Q25, cfs	Q100, cfs
DA-1	55	138	188	272
DA-2	66	165	225	326
DA-A	6	27	36	49
DA-B	5	52	71	100
DA-C (pit area)	0	0	0	0
Sum	132	383	521	747

TABLE 7 - TOTAL ON-SITE / OFF-SITE PRE & POST DISCHARGE CALCULATIONS

Total Site	Q2, cfs	Q10, cfs	Q25, cfs	Q100, cfs
Pre-Conditions	928	2334	3186	4613
Post-Conditions	888	2283	3116	4505
Change	-40	-51	-71	-108



LEGEND

- 900 — EXISTING MAJOR CONTOUR
- 600 — EXISTING MINOR CONTOUR
- - - - - WATERSHED BOUNDARY
- — — — — DEVELOPED AREA
- - - - - DRAINAGE BOUNDARY
- - - - - PROPERTY BOUNDARY
- FLOW ARROW

Reviewed By: _____ Date: _____

Travis County Transportation and Natural Resources

Development Permit Number: _____ Date: _____

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No.	Revision Description	Reviewed By:	Date

IMAGE: N/A

ISSUE DATE: 06/15/2020

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SCALE: 1" = 600'

JOB NO.: 11034-008

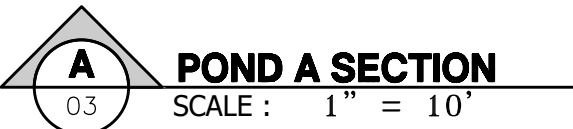
SHEET NO.: 02 OF 17

WESTWARD
Environmental Engineering, Natural Resources,
P.O. Box 2205 Boerne, Texas 78006
(830) 249-8284 Fax: (830) 249-0221
TBPE REG. NO.: F-4524
TBPE REG. NO.: 50112

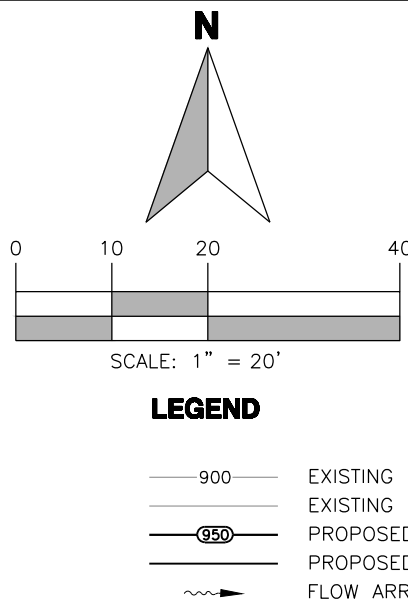
DESCRIPTION	REV	DATE

STATE OF TEXAS
CURT GARRETT CAMPBELL
106851
LICENSED PROFESSIONAL ENGINEER
6/15/2020
Curt G. Campbell, P.E.
License No. 106851

WATER QUALITY / DRAINAGE PLAN
SITE PLAN APPLICATION – BARR LANE TRACT
CAPITAL CITY CRUSHING, LLC
AUSTIN, TRAVIS COUNTY, TX



Pond A Stage-Storage			
Stage	Stage I Volume (ac-ft)	Stage II Volume (ac-ft)	Total Volume (ac-ft)
570.00	0.000	0.000	0.000
571.00	0.000	0.240	0.240
571.50	0.004	0.396	0.399
572.00	0.012	0.559	0.571
573.00	0.052	0.909	0.961
574.00	0.105	1.263	1.398
575.00	0.172	1.715	1.888
576.00	0.254	2.175	2.429
577.00	0.347	2.667	3.014
578.00	0.453	3.192	3.644



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Travis County Transportation and Natural Resources			Date _____
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	Acres	Square Feet	Percentage
Total Area of the Site	119.33	5,197,798	--
Impervious Cover	12.24	450,584	8.67%

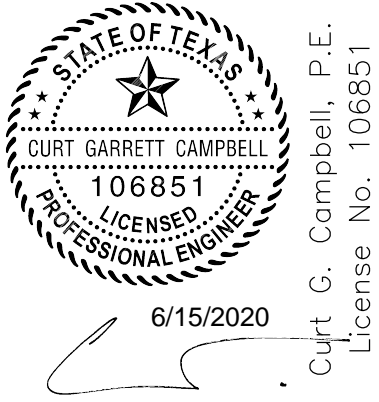
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SCALE: 1" =	600'
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03

OF 17

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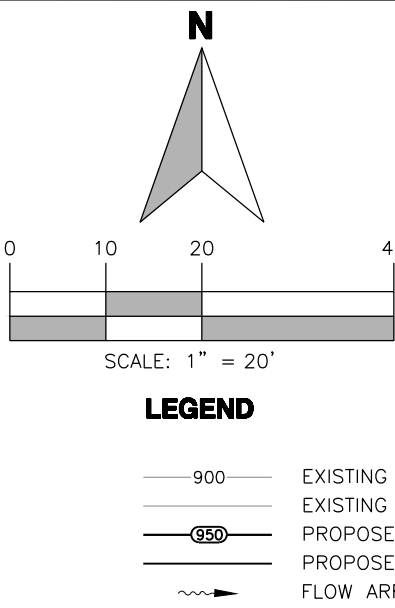
WATER QUALITY / DRAINAGE PLAN
SITE PLAN APPLICATION – BARR LANE TRACT
CAPITAL CITY CRUSHING, LLC
AUSTIN, TRAVIS COUNTY, TX

TRAVIS COUNTY DEVELOPMENT PERMIT
BARR LANE TRACT

	Acres	Square Feet	Percentage
Total Area of the Site	119.33	5,197,798	--
Impervious Cover	12.24	450,584	8.67%

TABLE 1 - POND STAGE STORAGE

Pond B Stage-Storage			
Stage	Stage I Volume (ac-ft)	Stage II Volume (ac-ft)	Total Volume (ac-ft)
580.00	0.000	0.000	0.000
581.00	0.044	0.289	0.333
582.00	0.077	0.610	0.687
582.50	0.122	0.793	0.905
583.00	0.171	0.965	1.136
584.00	0.282	1.353	1.635
584.50	0.344	1.560	1.904
585.00	0.410	1.778	2.188
586.00	0.555	2.241	2.796
587.00	0.716	2.736	3.452
588.00	0.894	3.265	4.159



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Travis County Transportation and Natural Resources

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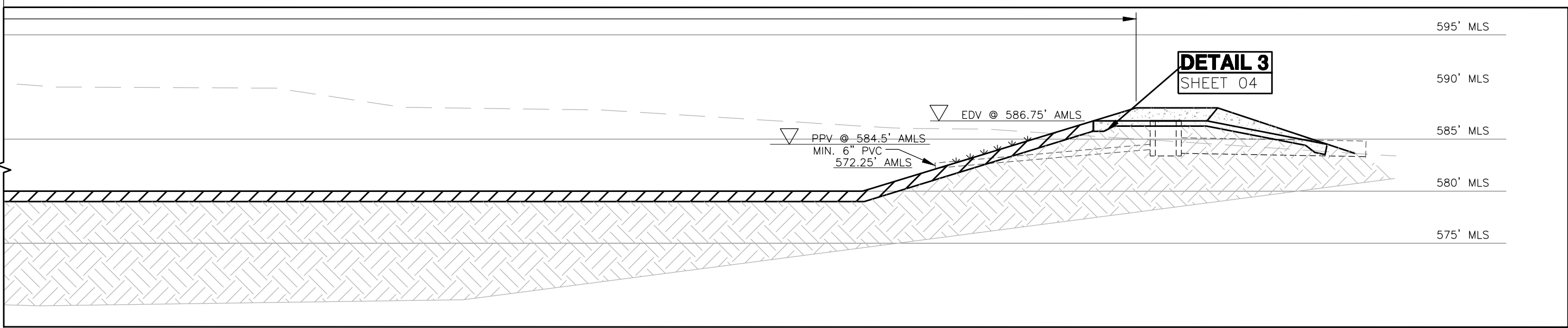
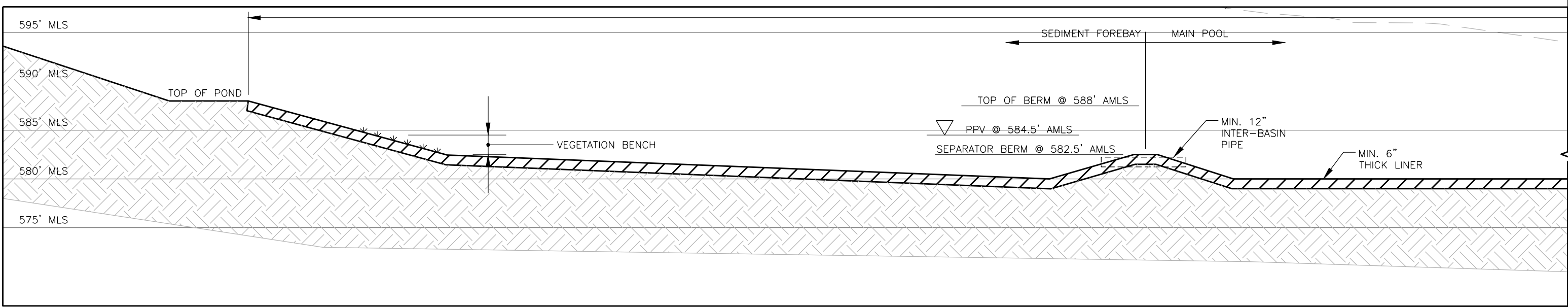
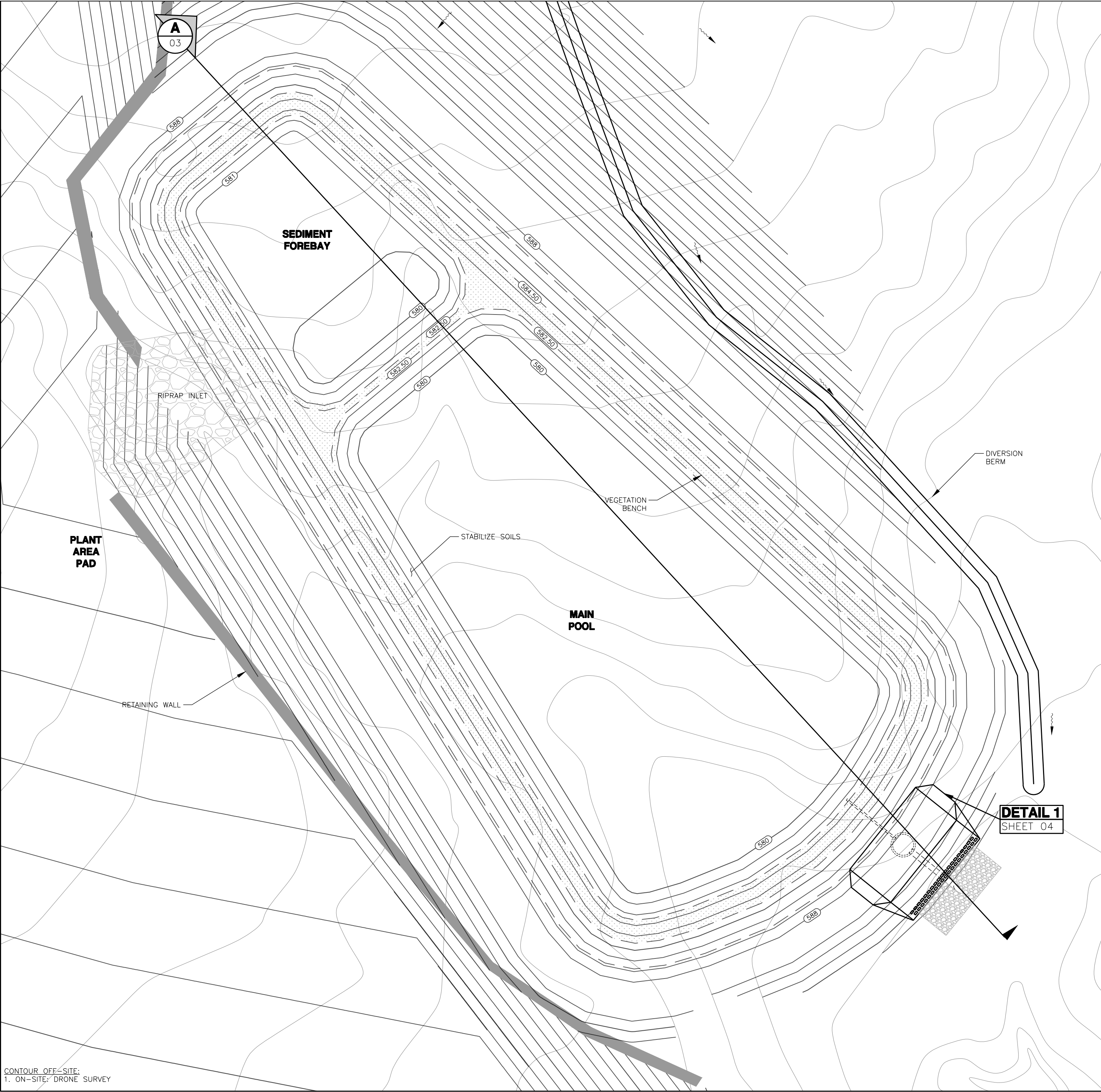


IMAGE:	N/A
ISSUE DATE:	06/15/2020
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SCALE:	1" = AS SHOWN
JOB NO.:	11034-008

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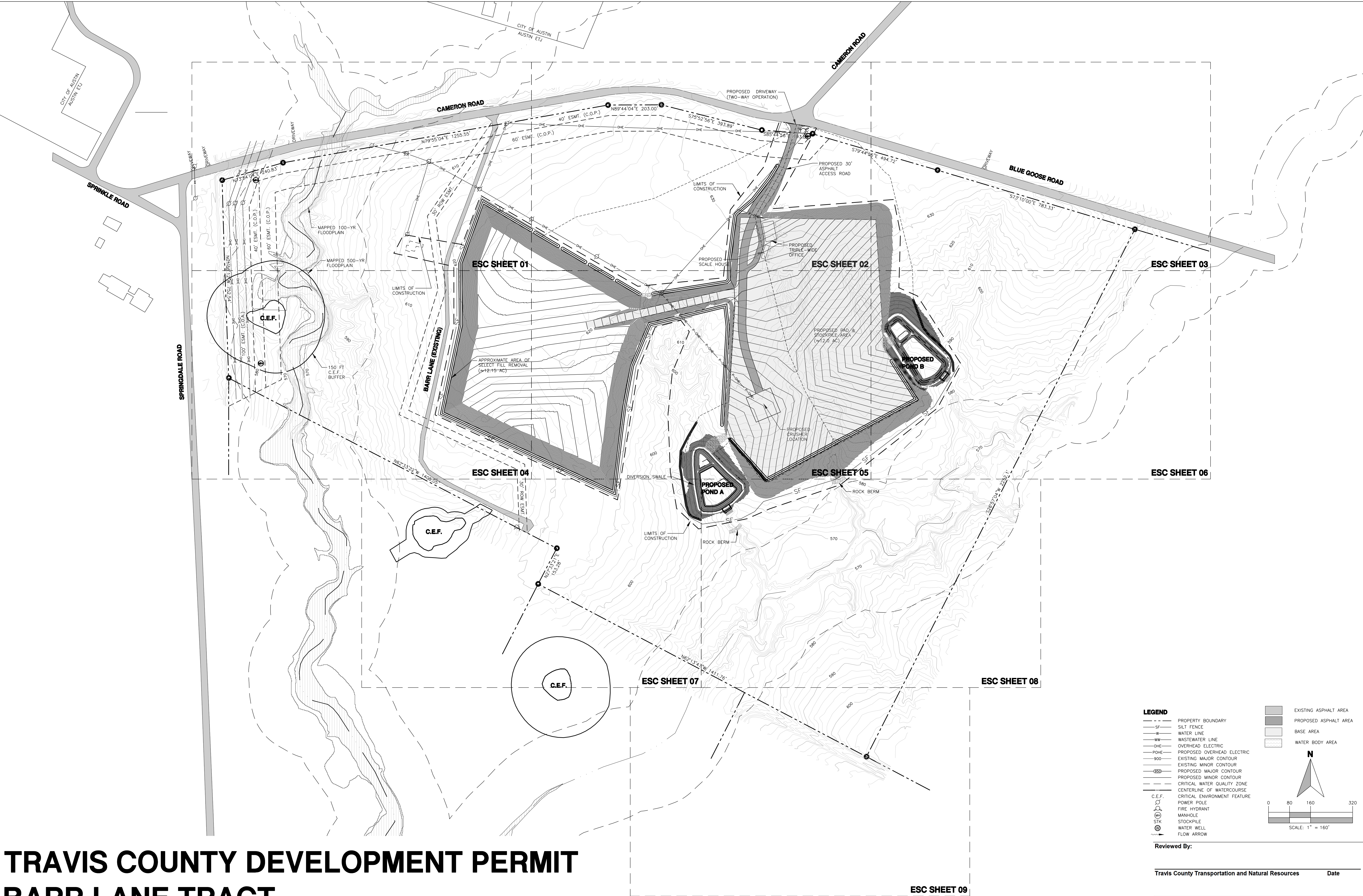
REV	DESCRIPTION	BY	DATE



POND B PLAN AND DETAILS
SITE PLAN APPLICATION – BARR LANE TRACT
CAPITAL CITY CRUSHING, LLC
AUSTIN, TRAVIS COUNTY, TX

TRAVIS COUNTY DEVELOPMENT PERMIT
BARR LANE TRACT

	Acres	Square Feet	Percentage
Total Area of the Site	119.33	5,197,798	--
Impervious Cover	12.24	450,584	8.67%



LEGEND

- PROPERTY BOUNDARY
- S- SILT FENCE
- W- WATER LINE
- WW- WASTEWATER LINE
- OHE- OVERHEAD ELECTRIC
- POHE- PROPOSED OVERHEAD ELECTRIC
- 900- EXISTING MAJOR CONTOUR
- 950- EXISTING MINOR CONTOUR
- 950- PROPOSED MAJOR CONTOUR
- 950- PROPOSED MINOR CONTOUR
- C- CRITICAL WATER QUALITY ZONE
- C- CENTERLINE OF WATERCOURSE
- C.E.F. CRITICAL ENVIRONMENT FEATURE
- POWER POLE
- FIRE HYDRANT
- MANHOLE
- STOCKPILE
- WATER WELL
- FLOW ARROW

EXISTING ASPHALT AREA
PROPOSED ASPHALT AREA
BASE AREA
WATER BODY AREA

Scale: 1" = 160'

North Arrow: N

Reviewed By: _____

Travis County Transportation and Natural Resources _____ Date _____

Development Permit Number _____ Date _____

Travis County Revision Block (cover sheet):

No.	Revision Description	Reviewed By:	Date

IMAGE: N/A	
ISSUE DATE:	06/15/2020
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SCALE:	1" = 160'
JOB NO.:	11034-008

SHEET NO.: **05** OF 17

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(830) 249-8284 Fax: (830) 249-0221
TBP REG. NO.: F-4524
TBP REG. NO.: 50112

REV.	DESCRIPTION	BY	DATE

STATE OF TEXAS
Curt G. Campbell
106851
LICENSED PROFESSIONAL ENGINEER
6/15/2020
Curt G. Campbell, P.E.
License No. 106851

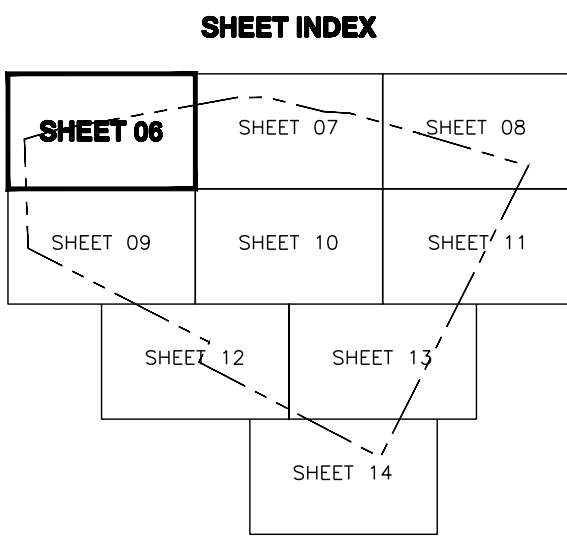
EROSION / SEDIMENTATION CONTROL PLAN - GENERAL
SITE PLAN APPLICATION - BARR LANE TRACT
CAPITAL CITY CRUSHING, LLC
10506 BARR LN. AUSTIN, TRAVIS COUNTY, TX



TRAVIS COUNTY DEVELOPMENT PERMIT

BARR LANE TRACT

	Acres	Square Feet	Percentage
Total Area of the Site	119.33	5,197,798	--
Impervious Cover	12.24	450,584	8.67%



LEGEND

- PROPERTY BOUNDARY
- SILT FENCE
- WATER LINE
- WASTEWATER LINE
- OVERHEAD ELECTRIC
- PROPOSED OVERHEAD ELECTRIC
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- CRITICAL WATER QUALITY ZONE
- CENTERLINE OF WATERCOURSE
- EARTHEN BERM (TOP & TOE OF SLOPE)
- LIMITS OF CONSTRUCTION

C.E.F.

- POWER POLE
- FIRE HYDRANT
- MANHOLE
- STOCKPILE
- WATER WELL
- FLOW ARROW

EXISTING ASPHALT AREA

PROPOSED ASPHALT AREA

BASE AREA

WATER BODY AREA

SCALE: 1" = 40'

Reviewed By:

Travis County Transportation and Natural Resources **Date**

Development Permit Number **Date**

Travis County Revision Block (cover sheet):

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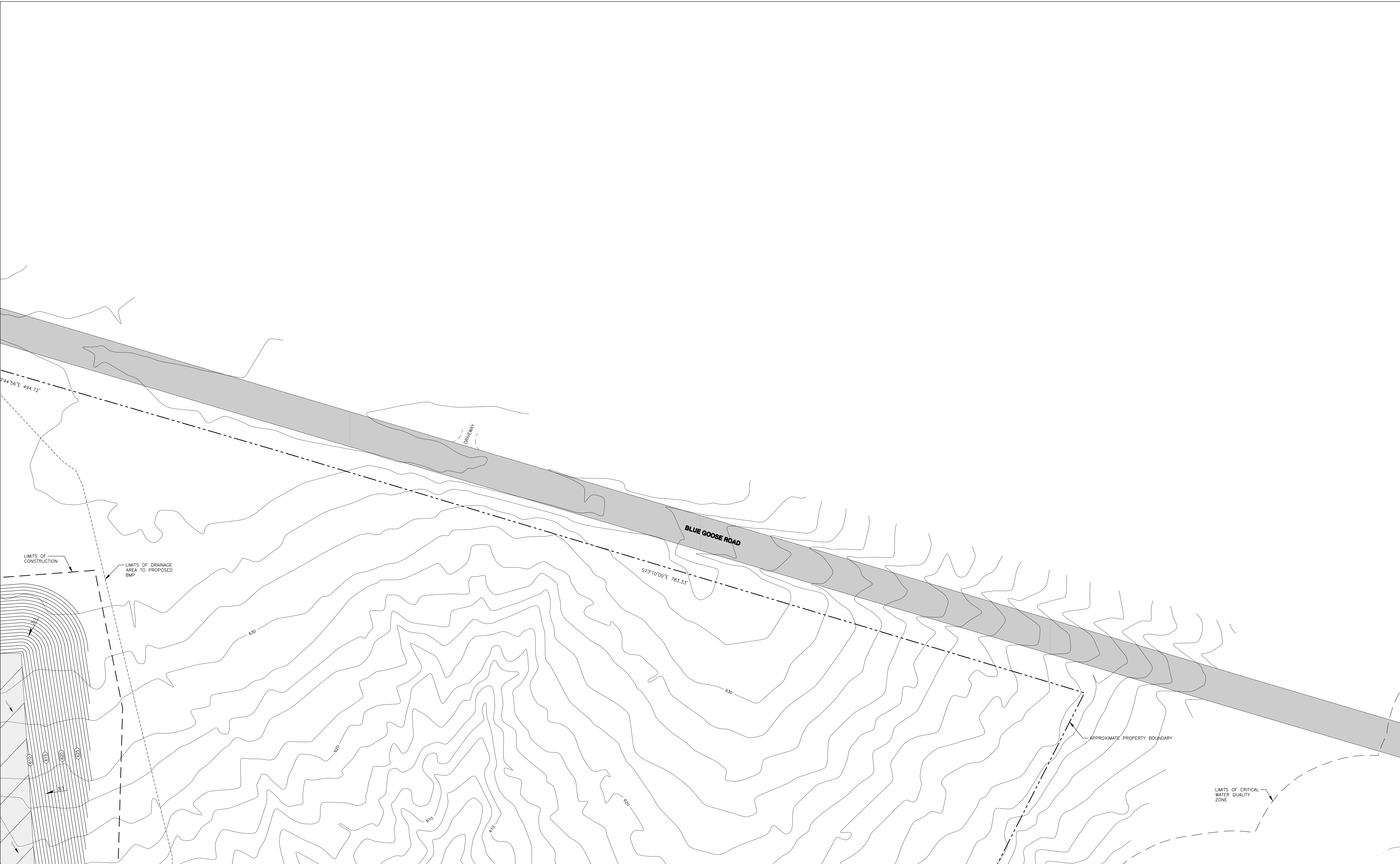
WESTWARD
Environmental Engineering, Natural Resources,
P.O. Box 2205 Boerne, Texas 78006
(830) 249-8284 Fax: (830) 249-0221
TBPE REG. NO.: F-4524
TBPE REG. NO.: 50112

EROSION / SEDIMENTATION CONTROL PLAN - 01
SITE PLAN APPLICATION - BARR LANE TRACT
CAPITAL CITY CRUSHING, LLC
10506 BARR LN. AUSTIN, TRAVIS COUNTY, TX

STATE OF TEXAS
Curt G. Campbell
106851
LICENSED PROFESSIONAL ENGINEER
6/15/2020
License No. 106851

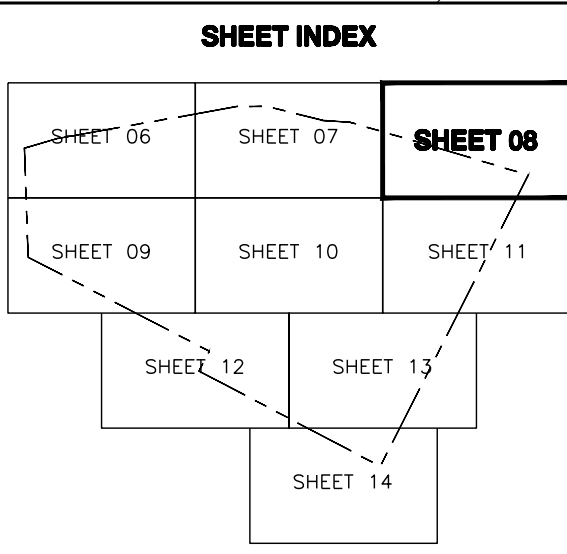
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ISSUE DATE: 06/15/2020
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SCALE: 1" = 40'
JOB NO.: 11034-008

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06
OF 17



TRAVIS COUNTY DEVELOPMENT PERMIT BARR LANE TRACT

	Acres	Square Feet	Percentage
Total Area of the Site	119.33	5,197,798	--
Impervious Cover	12.24	450,584	8.67%



LEGEND

- PROPERTY BOUNDARY
- SILT FENCE
- WATER LINE
- WASTEWATER LINE
- OVERHEAD ELECTRIC
- PROPOSED OVERHEAD ELECTRIC
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- CRITICAL WATER QUALITY ZONE
- CENTERLINE OF WATERCOURSE
- EARTHEN BERM (TOP & TOE OF SLOPE)
- LIMITS OF CONSTRUCTION

C.E.F.

- POWER POLE
- FIRE HYDRANT
- MANHOLE
- STOCKPILE
- WATER WELL
- FLOW ARROW

CRITICAL ENVIRONMENT FEATURE

- EXISTING ASPHALT AREA
- PROPOSED ASPHALT AREA
- BASE AREA
- WATER BODY AREA

Scale: 1" = 40'

North Arrow: N

Reviewed By:

Travis County Transportation and Natural Resources **Date**

Development Permit Number **Date**

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No.	Revision Description	Reviewed By:	Date

IMAGE: N/A

ISSUE DATE: 06/15/2020

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JOB NO.: 11034-008

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OF 17

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TBPE REG. NO.: F-4524

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REV	DESCRIPTION	BY	DATE

STATE OF TEXAS

CURT GARRETT CAMPBELL

106851

Professional Engineer

6/15/2020

Curt G. Campbell, P.E.

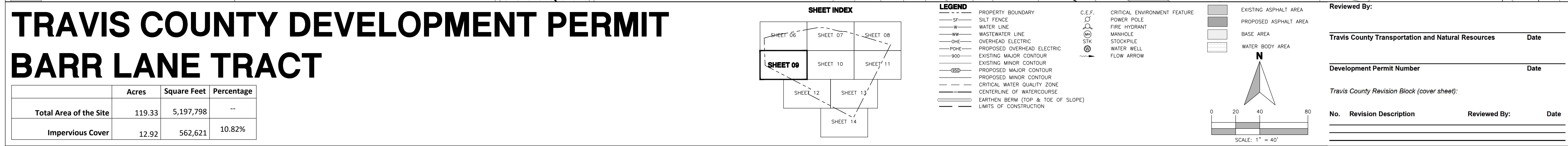
License No. 106851

EROSION / SEDIMENTATION CONTROL PLAN - 03

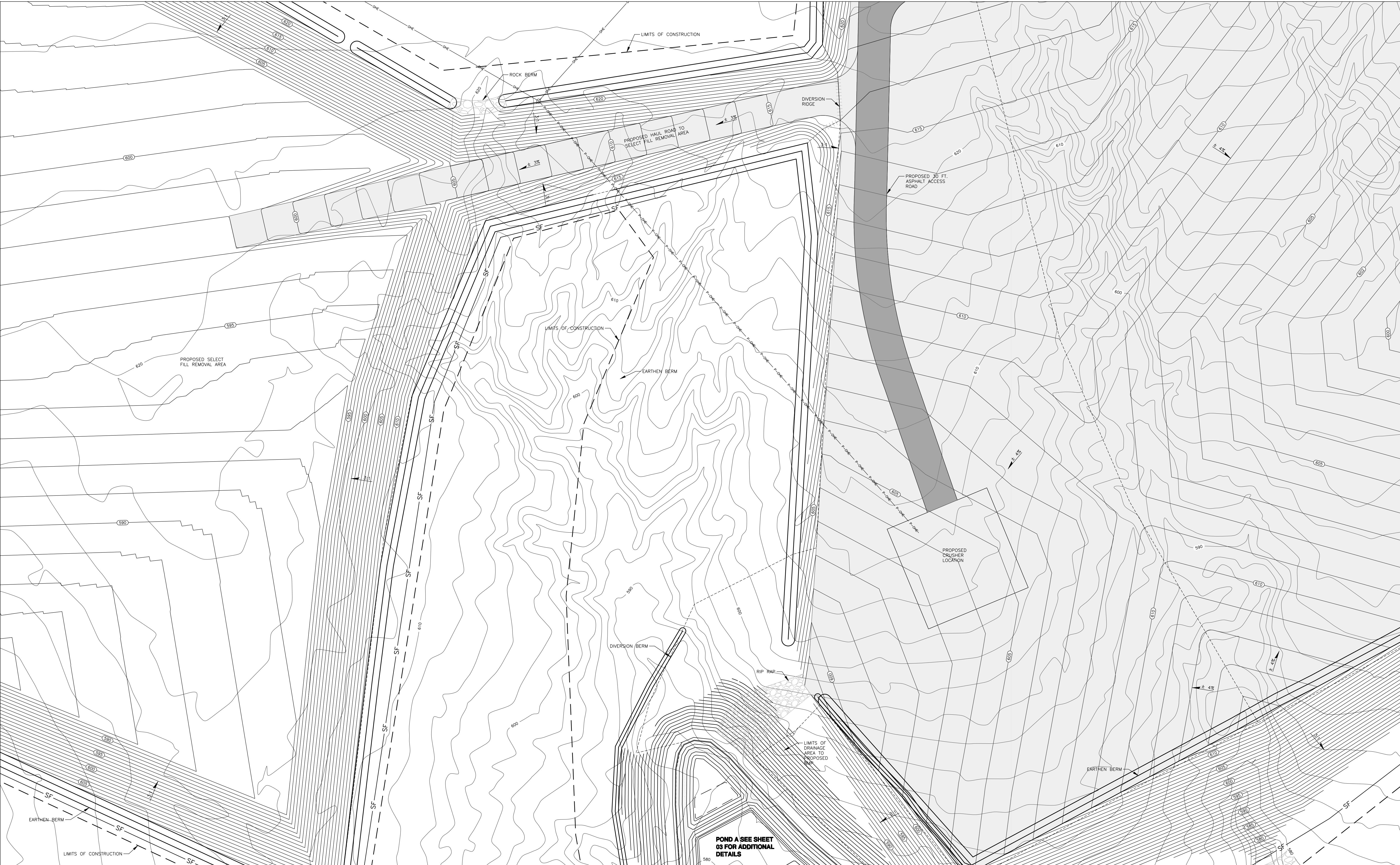
SITE PLAN APPLICATION - BARR LANE TRACT

CAPITAL CITY CRUSHING, LLC

10506 BARR LN. AUSTIN, TRAVIS COUNTY, TX



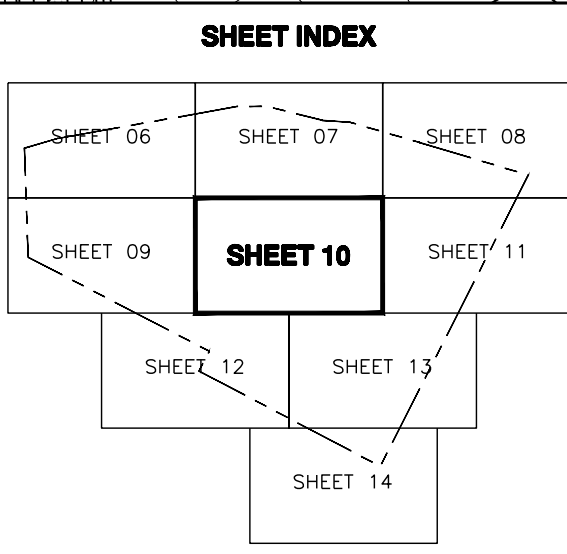
EROSION / SEDIMENTATION CONTROL PLAN - 04
SITE PLAN APPLICATION – BARR LANE TRACT
CAPITAL CITY CRUSHING, LLC
10506 BARR LN. AUSTIN, TRAVIS COUNTY, TX



TRAVIS COUNTY DEVELOPMENT PERMIT

BARR LANE TRACT

	Acres	Square Feet	Percentage
Total Area of the Site	119.33	5,197,798	--
Impervious Cover	12.24	450,584	8.67%



LEGEND

- PROPERTY BOUNDARY
- SILT FENCE
- WATER LINE
- WASTEWATER LINE
- OVERHEAD ELECTRIC
- PROPOSED OVERHEAD ELECTRIC
- EXISTING MAJOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- CRITICAL WATER QUALITY ZONE
- CENTERLINE OF WATERCOURSE
- EARTHEN BERM (TOP & TOE OF SLOPE)
- LIMITS OF CONSTRUCTION

C.E.F.

- POWER POLE
- FIRE HYDRANT
- MANHOLE
- STOCKPILE
- WATER WELL
- FLOW ARROW

CRITICAL ENVIRONMENT FEATURE

- EXISTING ASPHALT AREA
- PROPOSED ASPHALT AREA
- BASE AREA
- WATER BODY AREA

North Arrow

Scale: 1" = 40'

Reviewed By:

Travis County Transportation and Natural Resources **Date**

Development Permit Number **Date**

Travis County Revision Block (cover sheet):

No.	Revision Description	Reviewed By:	Date

IMAGE: N/A

ISSUE DATE: 06/15/2020

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SCALE: 1" = 40'

JOB NO.: 11034-008

SHEET NO.: **10**

OF 17

WESTWARD

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TBPE REG. NO.: 50112

REV.	DESCRIPTION	BY	DATE

STATE OF TEXAS

CURT GARRETT CAMPBELL

106851

LICENSED PROFESSIONAL ENGINEER

6/15/2020

Curt G. Campbell, P.E.

License No. 106851

EROSION / SEDIMENTATION CONTROL PLAN - 05

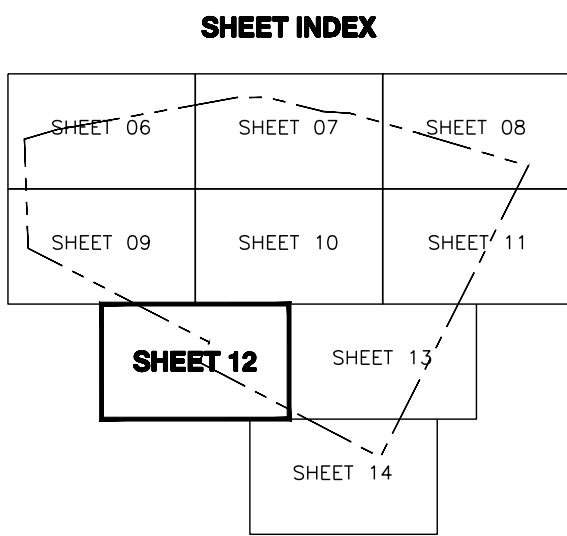
SITE PLAN APPLICATION - BARR LANE TRACT

CAPITAL CITY CRUSHING, LLC

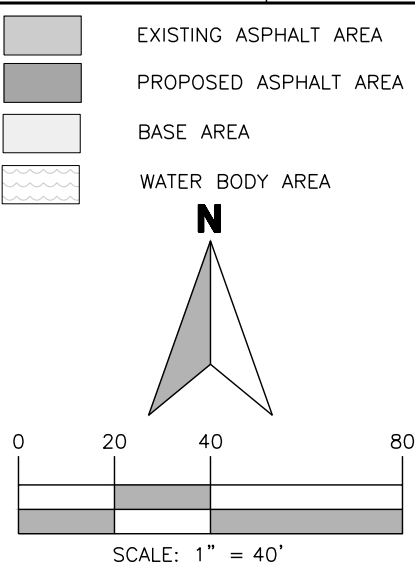
10506 BARR LN. AUSTIN, TRAVIS COUNTY, TX

TRAVIS COUNTY DEVELOPMENT PERMIT
BARR LANE TRACT

	Acres	Square Feet	Percentage
Total Area of the Site	119.33	5,197,798	--
Impervious Cover	12.24	450,584	8.67%



- LEGEND
- PROPERTY BOUNDARY
 - SILT FENCE
 - WATER LINE
 - WASTEWATER LINE
 - OVERHEAD ELECTRIC
 - PROPOSED OVERHEAD ELECTRIC
 - EXISTING MAJOR CONTOUR
 - PROPOSED MAJOR CONTOUR
 - PROPOSED MINOR CONTOUR
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 - EARTHEN BERM (TOP & TOE OF SLOPE)
 - LIMITS OF CONSTRUCTION
 - C.E.F. (Curt Garrett Campbell, P.E.)
 - CRITICAL ENVIRONMENT FEATURE
 - POWER POLE
 - FIRE HYDRANT
 - MANHOLE
 - STOCKPILE
 - WATER WELL
 - FLOW ARROW



Reviewed By:

Travis County Transportation and Natural Resources

Date

Development Permit Number

Date

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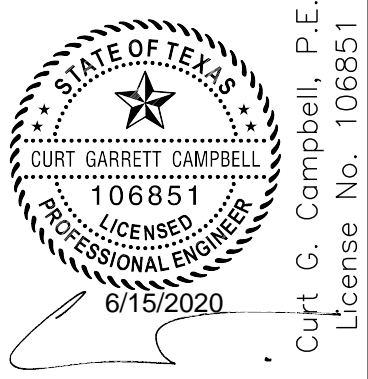
No.	Revision Description	Reviewed By:	Date

EROSION / SEDIMENTATION CONTROL PLAN - 07

SITE PLAN APPLICATION - BARR LANE TRACT

CAPITAL CITY CONSTRUCTIO, LLC

10506 BARR LN. AUSTIN, TRAVIS COUNTY, TX



REV.	DESCRIPTION	BY	DATE

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Environmental Engineering, Natural Resources,

P.O. Box 2205 Boerne, Texas 78006

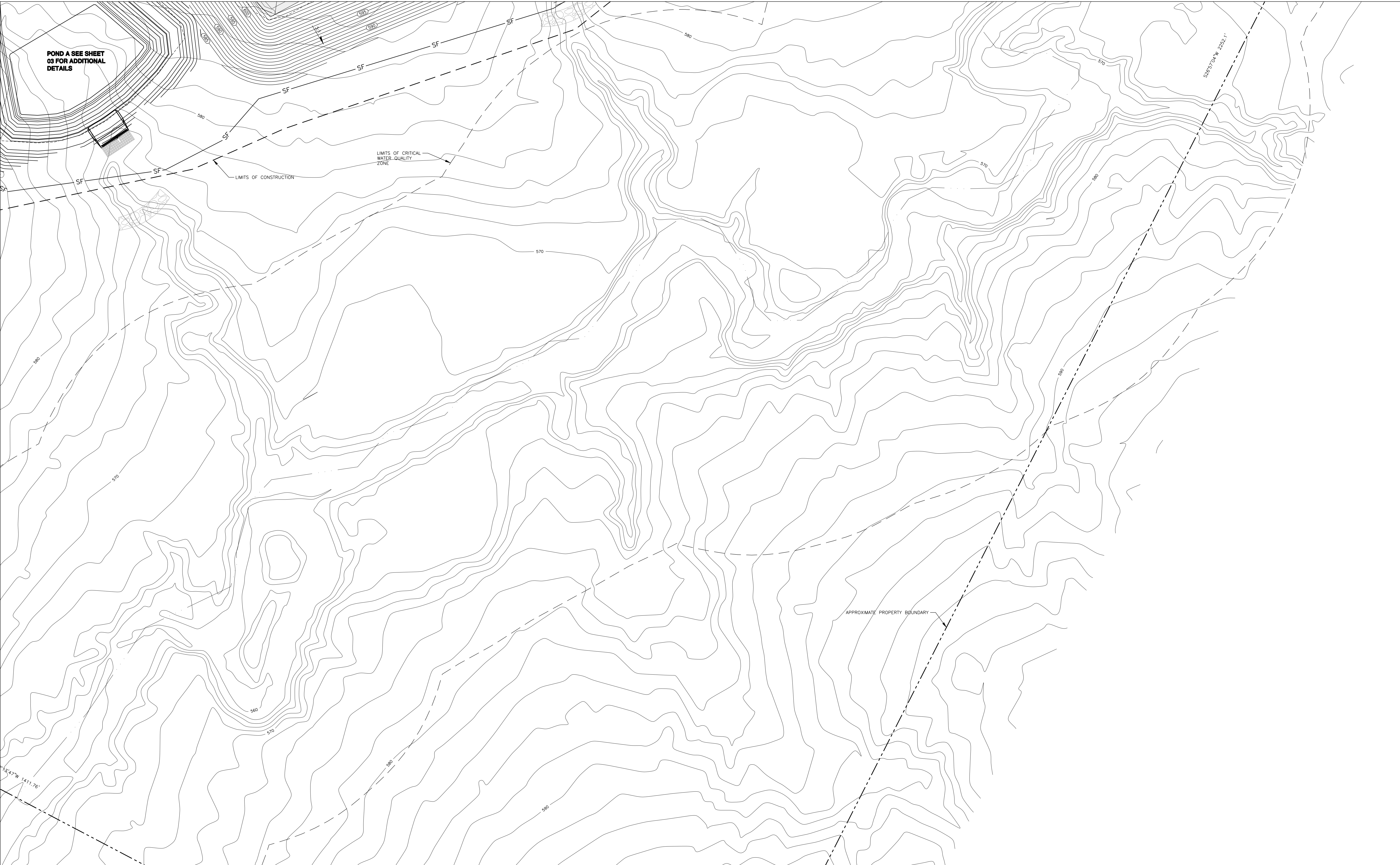
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TBPE REG. NO.: F-4524

TBPG REG. NO.: 50112

SHEET NO.:
12
OF 17

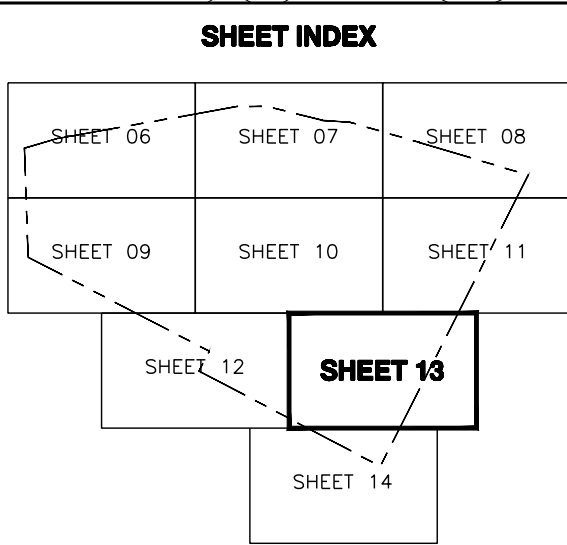
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CHECKED BY:	CCG
SCALE:	1" = 40'
JOB NO.:	11034-008



TRAVIS COUNTY DEVELOPMENT PERMIT

BARR LANE TRACT

	Acres	Square Feet	Percentage
Total Area of the Site	119.33	5,197,798	--
Impervious Cover	12.24	450,584	8.67%



LEGEND

- PROPERTY BOUNDARY
- SILT FENCE
- WATER LINE
- WASTEWATER LINE
- OVERHEAD ELECTRIC
- PROPOSED OVERHEAD ELECTRIC
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- CRITICAL WATER QUALITY ZONE
- CENTERLINE OF WATERCOURSE
- EARTHEN BERM (TOP & TOE OF SLOPE)
- LIMITS OF CONSTRUCTION

C.E.F.

- POWER POLE
- FIRE HYDRANT
- MANHOLE
- STOCKPILE
- WATER WELL
- FLOW ARROW

EXISTING ASPHALT AREA

PROPOSED ASPHALT AREA

BASE AREA

WATER BODY AREA

SCALE: 1" = 40'

Reviewed By:

Travis County Transportation and Natural Resources **Date**

Development Permit Number **Date**

Travis County Revision Block (cover sheet):

No.	Revision Description	Reviewed By:	Date

IMAGE: N/A

ISSUE DATE: 06/15/2020

DRAWN BY: JUS

CHECKED BY: CGC

SCALE: 1" = 40'

JOB NO.: 11034-008

SHEET NO.: **13**

OF 17

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TBPE REG. NO.: F-4524

TBPE REG. NO.: 50112

REV.	DESCRIPTION	BY	DATE

Curt G. Campbell, P.E.

License No. 106851

EROSION / SEDIMENTATION CONTROL PLAN - 08

SITE PLAN APPLICATION – BARR LANE TRACT

CAPITAL CITY CRUSHING, LLC

10506 BARR LN. AUSTIN, TRAVIS COUNTY, TX



EROSION / SEDIMENTATION CONTROL PLAN - 09
SITE PLAN APPLICATION – BARR LANE TRACT
CAPITAL CITY CRUSHING, LLC
10506 BARR LN. AUSTIN, TRAVIS COUNTY, TX

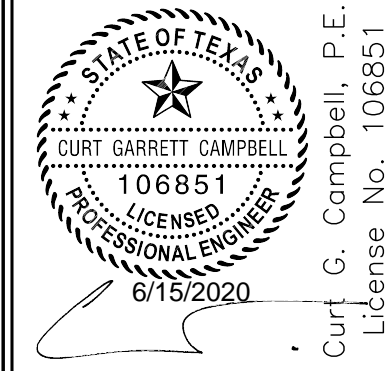


	Acres	Square Feet	Percentage
Total Area of the Site	119.33	5,197,798	--
Impervious Cover	12.24	450,584	8.67%

IMAGE: N/A	
ISSUE DATE:	06/15/2020
DRAWN BY:	JJS
CHECKED BY:	CGC
SCALE: 1" =	160'
JOB NO.:	11034-008

SHEET NO.:
15
OF 17

 **WESTWARD**
Environmental, Engineering, Natural Resources.
P.O. Box 2205 Boerne, Texas 78006
(830) 249-8284 Fax: (830) 249-0221
TBE REG. NO.: F-4524
TBPB REG. NO.: 50112

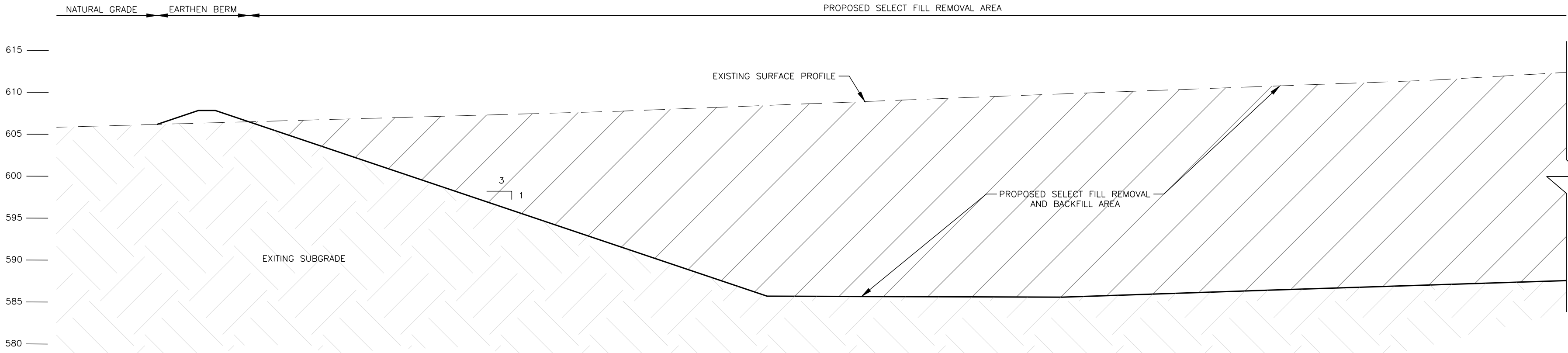
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SLOPE & TOPOGRAPHIC MAP
SITE PLAN APPLICATION – BARR LANE TRACT
CAPITAL CITY CRUSHING, LLC
10506 BARR LN. AUSTIN, TRAVIS COUNTY, TX



TRAVIS COUNTY PERMIT BARR LANE TRACT

	Acres	Square Feet	Percentage
Total Area of the Site	119.33	5,197,798	--
Impervious Cover	12.24	450,584	8.67%



PROPOSED PIT CROSS SECTION

SCALE: 1" = 10'

RECLAMATION

UPON COMPLETION OF SELECT FILL EXTRACTION, OPERATOR MAY OPT TO BACKFILL REMAINING PIT IN ACCORDANCE WITH THE FOLLOWING CRITERIA. OTHERWISE THE EXCAVATION AREA WILL BE STABILIZED IN ACCORDANCE WITH THE SITE EROSION AND SEDIMENTATION CONTROL PLAN.

SELECT FILL PIT BACKFILL CRITERIA

- PIT SIDE SLOPES IN COMPETENT ROCK MAY BE STABILIZED AS VERTICAL FACES.
- BACKFILL MATERIAL, IF THE PIT IS TO BE BACKFILLED, THEN ONLY UNCONTAMINATED EARTHEN MATERIAL OR INERT MATERIAL FROM THE SITE MAY BE USED TO BACKFILL THE QUARRY PIT. ALL POTENTIAL RECHARGE FEATURES GREATER THAN ONE SQUARE FOOT OR ONE FOOT DIAMETER IN AREA LOCATED ON THE PIT FLOOR MUST BE SEALED PRIOR TO THE PLACEMENT OF BACKFILL. ALL BACKFILL MATERIAL MUST MEET THE CRITERIA OF INERT AND ESSENTIALLY INSOLUBLE. CHEMICAL ANALYSES BY A CERTIFIED LABORATORY MAY BE REQUIRED IF THE MATERIAL HAS AN ODOR, TEXTURE OR APPEARANCE INDICATING THAT IT IS NOT INERT AND ESSENTIALLY INSOLUBLE. THE OPERATOR WILL OBTAIN A BACKFILL LOAD CERTIFICATE OF ALL MATERIAL PLACED AS BACKFILL FROM EACH VEHICLE DRIVER. BACKFILL LOAD CERTIFICATES MUST BE KEPT ONSITE AND AVAILABLE FOR INSPECTION BY THE CITY OF AUSTIN. POST A SIGN NEAR THE BACKFILL AREA STATING THAT ONLY UNCONTAMINATED EARTHEN MATERIAL MAY BE ACCEPTED.
- FILL MATERIAL SHALL BE COMPACTED FROM THE BOTTOM OF THE EXCAVATION TO WITHIN FIVE (5) FEET OF FINAL GRADE. MATERIAL SHALL BE PLACED IN LIFTS AND ROLLER COMPACTED IN ACCORDANCE WITH RECOMMENDATIONS OF THE GEOTECHNICAL ENGINEER BASED ON FINAL DESIRED USE.
- IN AN OPEN PIT THAT IS PARTIALLY BACKFILLED, THE SLOPE OF THE BACKFILLED AREA MUST BE RESTORED TO A FINAL SLOPE OF 3-HORIZONTAL TO 1-VERTICAL UNIT RATIO (3 H:1 V) OR AS A SERIES OF BENCHES WITH MAXIMUM HEIGHT OF 4 FEET IN ORDER TO PREVENT EROSION AND TO DISPERSE RUNOFF BACK TO SHEET FLOW. (LDC 25-8-185 OR ATCSR 30-5-185)
- THE FINAL GRADE OF BACKFILLED AREAS MAY NOT EXCEED THE PRE-EXISTING NATURAL GRADE OF THE SITE PRIOR TO THE INITIATION OF EXTRACTION OPERATIONS UNLESS A VARIANCE IS OBTAINED FROM THE LAND USE COMMISSION.

ADDITIONAL NOTES:

- BERM HEIGHT WILL NOT EXCEED 3 FEET (UNLESS REQUIRED FOR MSHA COMPLIANCE).
- IF DISTURBED AREA IS NOT TO BE WORKED ON FOR MORE THAN 14 DAYS, DISTURBED AREA NEEDS TO BE STABILIZED BY REVEGETATION, MULCH, TARP OR REVEGETATION MATTING. [ECM 1.4.4.B.3, SECTION 5, I.]

ENVIRONMENTAL INSPECTOR HAS THE AUTHORITY TO ADD AND/OR MODIFY EROSION/SEDIMENTATION CONTROLS ON SITE TO KEEP PROJECT IN-COMPLIANCE WITH THE CITY OF AUSTIN RULES AND REGULATIONS. [LDC 25-8-183]

CONTRACTOR SHALL UTILIZE DUST CONTROL MEASURES DURING SITE CONSTRUCTION SUCH AS IRRIGATION TRUCKS AND MULCHING AS PER ECM 1.4.5(A), OR AS DIRECTED BY THE ENVIRONMENTAL INSPECTOR.

THE CONTRACTOR WILL CLEAN UP SPOILS THAT MIGRATE ONTO THE ROADS A MINIMUM OF ONCE DAILY. [ECM 1.4.4.D.4]
- UPON COMPLETION OF THE PROPOSED SITE IMPROVEMENTS, AND PRIOR TO THE RELEASE OF THE CERTIFICATE OF OCCUPANCY BY THE DEVELOPMENT SERVICES DEPARTMENT, THE DESIGN ENGINEER SHALL CERTIFY IN WRITING THAT THE PROPOSED DETENTION AND FILTRATION FACILITIES WERE CONSTRUCTED IN CONFORMANCE WITH THE APPROVED PLANS.

LEGEND

- PROPERTY BOUNDARY
- SF- SILT FENCE
- W- WATER LINE
- WW- WASTEWATER LINE
- OHC- OVERHEAD ELECTRIC
- POHC- PROPOSED OVERHEAD ELECTRIC
- 900- EXISTING MAJOR CONTOUR
- 920- EXISTING MINOR CONTOUR
- 930- PROPOSED MAJOR CONTOUR
- 940- PROPOSED MINOR CONTOUR
- 950- CRITICAL WATER QUALITY ZONE
- 960- CENTERLINE OF WATERCOURSE
- 970- CRITICAL ENVIRONMENT FEATURE
- 980- POWER POLE
- 990- FIRE HYDRANT
- 1000- WASTEWATER MANHOLE
- 1010- STOCKPILE
- 1020- WATER WELL
- 1030- FLOW ARROW

- EXISTING ASPHALT AREA
- PROPOSED ASPHALT AREA
- BASE AREA
- WATER BODY AREA

N

0 80 160 320

SCALE: 1" = 160'

Reviewed By:

Travis County Transportation and Natural Resources			Date
Development Permit Number			Date
Travis County Revision Block (cover sheet):			
No.	Revision Description	Reviewed By:	Date

RESOURCE EXTRACTION / RECLAMATION PLAN
SITE PLAN APPLICATION – BARR LANE TRACT
CAPITAL CITY CRUSHING, LLC
10506 BARR LN. AUSTIN, TRAVIS COUNTY, TX



REV	DESCRIPTION	BY	DATE

SHEET NO.:
16
OF 17

WESTWARD
Environmental Engineering, Natural Resources,
P.O. Box 2205 Boerne, Texas 78006
(830) 249-8284 Fax: (830) 249-0221
TBPB REG. NO.: F-4524
TBPB REG. NO.: 50112

IMAGE:	N/A
ISSUE DATE:	06/15/2020
DRAWN BY:	JUS
CHECKED BY:	CCG
SCALE:	1" = AS NOTED
JOB NO.:	11034-008

CITY OF AUSTIN STANDARD EROSION CONTROL NOTES:

1. THE CONTRACTOR SHALL INSTALL EROSION/SEDIMENTATION CONTROLS, TREE/NATURAL AREA PROTECTIVE FENCING, AND CONDUCT "PRE-CONSTRUCTION" TREE FERTILIZATION (IF APPLICABLE) PRIOR TO ANY SITE PREPARATION WORK (CLEARING, GRUBBING OR EXCAVATION).
2. THE PLACEMENT OF EROSION/SEDIMENTATION CONTROLS SHALL BE IN ACCORDANCE WITH THE ENVIRONMENTAL CRITERIA MANUAL AND THE APPROVED EROSION AND SEDIMENTATION CONTROL PLAN. THE COA SHALL BE CONSULTED AND USED AS THE BASIS FOR A TYPES REQUIRED SWPPP. IF A SWPPP IS REQUIRED, IT SHALL BE AVAILABLE FOR REVIEW BY THE CITY OF AUSTIN ENVIRONMENTAL INSPECTOR AT ALL TIMES DURING CONSTRUCTION, INCLUDING AT THE PRE-CONSTRUCTION MEETING. THE CHECKLIST BELOW CONTAINS THE BASIC ELEMENTS THAT SHALL BE REVIEWED FOR PERMIT APPROVAL BY COA STAFF, AS WELL AS COA EV INSPECTORS.
3. TREE AND NATURAL AREA PROTECTION PLAN IS NOT REQUIRED.
4. A PRE-CONSTRUCTION CONFERENCE SHALL BE HELD ON-SITE WITH THE CONTRACTOR, DESIGN ENGINEER/PERMIT APPLICANT AND ENVIRONMENTAL INSPECTOR AFTER INSTALLATION OF THE EROSION/SEDIMENTATION CONTROLS, TREE/NATURAL AREA PROTECTION MEASURES AND "PRE-CONSTRUCTION" TREE FERTILIZATION (IF APPLICABLE) PRIOR TO BEGINNING ANY SITE PREPARATION WORK. THE OWNER OR OWNER'S REPRESENTATIVE SHALL NOTIFY THE DEVELOPMENT SERVICES DEPARTMENT, 512-974-2278 OR BY EMAIL AT ENVIRONMENTALINSPECTIONS@AUSTINTEXAS.GOV, AT LEAST THREE DAYS PRIOR TO THE MEETING DATE. COA APPROVED ESC PLAN AND TPDES SWPPP (IF REQUIRED) SHOULD BE REVIEWED BY COA EV INSPECTOR AT THIS TIME.
5. ANY MAJOR VARIATION IN MATERIALS OR LOCATIONS OF CONTROLS OR FENCES FROM THOSE SHOWN ON THE APPROVED PLANS WILL REQUIRE A REVISION AND MUST BE APPROVED BY THE REVIEWING ENGINEER, ENVIRONMENTAL SPECIALIST OR CITY ARBORIST AS APPROPRIATE. MAJOR REVISIONS MUST BE APPROVED BY AUTHORIZED COA STAFF. MINOR CHANGES TO BE MADE AS FIELD REVISIONS TO THE EROSION AND SEDIMENTATION CONTROL PLAN MAY BE REQUIRED BY THE ENVIRONMENTAL INSPECTOR DURING THE COURSE OF CONSTRUCTION TO CORRECT CONTROL INADEQUACIES.
6. THE CONTRACTOR IS REQUIRED TO PROVIDE A CERTIFIED INSPECTOR THAT IS EITHER A LICENSED ENGINEER (OR PERSON DIRECTLY SUPERVISED BY THE LICENSED ENGINEER) OR CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL (CPESC OR CPESC - IT), CERTIFIED EROSION, SEDIMENT AND STORMWATER INSPECTOR (CESSWI OR CESSWI - IT) OR CERTIFIED INSPECTOR OF SEDIMENTATION AND EROSION CONTROLS (IOSEC OR IOSEC - IT) CERTIFICATION TO INSPECT THE CONTROLS AND FENCES AT WEEKLY OR BI-WEEKLY INTERVALS AND AFTER ONE-HALF (½) INCH OR GREATER RAINFALL EVENTS TO INSURE THAT THEY ARE FUNCTIONING PROPERLY. THE PERSON(S) RESPONSIBLE FOR MAINTENANCE OF CONTROLS AND FENCES SHALL IMMEDIATELY MAKE ANY NECESSARY REPAIRS TO DAMAGED AREAS. SILT ACCUMULATION AT CONTROLS MUST BE REMOVED WHEN THE DEPTH REACHES SIX (6) INCHES OR ONE-THIRD (⅓) OF THE INSTALLED HEIGHT OF THE CONTROL WHICHEVER IS LESS.
7. PRIOR TO FINAL ACCEPTANCE BY THE CITY, HAUL ROADS AND WATERWAY CROSSINGS CONSTRUCTED FOR TEMPORARY CONTRACTOR ACCESS MUST BE REMOVED, ACCUMULATED SEDIMENT REMOVED FROM THE WATERWAY AND THE AREA RESTORED TO THE ORIGINAL GRADE AND REVEGETATED. ALL LAND CLEARING DEBRIS SHALL BE DISPOSED OF IN APPROVED SPOIL DISPOSAL SITES.
8. ALL WORK MUST STOP IF A VOID IN THE ROCK SUBSTRATE IS DISCOVERED WHICH IS; ONE SQUARE FOOT IN TOTAL AREA; BLOWS AIR FROM WITHIN THE SUBSTRATE AND/OR CONSISTENTLY RECEIVES WATER DURING ANY RAIN EVENT. AT THIS TIME IT IS THE RESPONSIBILITY OF THE PROJECT MANAGER TO IMMEDIATELY CONTACT A CITY OF AUSTIN ENVIRONMENTAL INSPECTOR FOR FURTHER INVESTIGATION.
9. TEMPORARY AND PERMANENT EROSION CONTROL: ALL DISTURBED AREAS SHALL BE RESTORED AS NOTED BELOW:
- A. ALL DISTURBED AREAS TO BE REVEGETATED ARE REQUIRED TO PLACE A MINIMUM OF SIX (6) INCHES OF TOPSOIL [SEE STANDARD SPECIFICATION ITEM NO. 6015.3(A)]. DO NOT ADD TOPSOIL WITHIN THE CRITICAL ROOT ZONE OF EXISTING TREES.
- B. TOPSOIL SALVAGED FROM THE EXISTING SITE IS ENCOURAGED FOR USE, BUT IT SHOULD MEET THE STANDARDS SET FORTH IN 6015.
- C. AN OWNER/ENGINEER MAY PROPOSE USE OF ONSITE SALVAGED TOPSOIL, WHICH DOES NOT MEET THE CRITERIA OF STANDARD SPECIFICATION 6015 BY PROVIDING A SOIL ANALYSIS AND A WRITTEN STATEMENT FROM A QUALIFIED PROFESSIONAL IN SOILS, LANDSCAPE ARCHITECTURE, OR ARBORICULTURE INDICATING THE ONSITE TOPSOIL WILL PROVIDE AN EQUIVALENT GROWTH MEDIA AND SPECIFYING WHETHER, IF ANY, SOIL AMENDMENTS ARE REQUIRED. SOIL AMENDMENTS SHALL BE WORKED INTO THE EXISTING ONSITE TOPSOIL WITH A DISC OR TILLER TO CREATE A WELL-BLENDED MATERIAL.

- TEMPORARY VEGETATIVE STABILIZATION:
1. FROM SEPTEMBER 15 TO MARCH 1, SEEDING SHALL BE WITH OR INCLUDE A COOL SEASON COVER CROP: (WESTERN WHEATGRASS (PASCOPYRUM SMITHII) AT 5.6 POUNDS PER ACRE, OATS (AVENA SATIVA) AT 4.0 POUNDS PER ACRE, CEREAL RYE GRASS (SECALAE CEREALE) AT 45 POUNDS PER ACRE. CONTRACTOR MUST ENSURE THAT ANY SEED APPLICATION REQUIRING A COOL SEASON COVER CROP DOES NOT UTILIZE ANNUAL RYEGRASS (LOLIUM MULTIFLORUM) OR PERENNIAL RYEGRASS (LOLIUM PERENNE). COOL SEASON COVER CROPS ARE NOT PERMANENT EROSION CONTROL.
2. FROM MARCH 2 TO SEPTEMBER 14, SEEDING SHALL BE WITH HULLED BERWUDA AT A RATE OF 45 POUNDS PER ACRE OR A NATIVE PLANT SEED MIX CONFORMING TO ITEM 6045 OR 6095.
- D. FERTILIZER SHALL BE APPLIED ONLY IF WARRANTED BY A SOIL TEST AND SHALL CONFORM TO ITEM NO. 8065. FERTILIZER, FERTILIZATION SHOULD NOT OCCUR WHEN RAINFALL IS EXPECTED OR DURING SLOW PLANT GROWTH OR DORMANCY. CHEMICAL FERTILIZER MAY NOT BE APPLIED IN THE CRITICAL WATER QUALITY ZONE.
- E. HYDROMULCH SHALL COMPLY WITH TABLE 1, BELOW.
- F. TEMPORARY EROSION CONTROL SHALL BE ACCEPTABLE WHEN THE GRASS HAS GROWN AT LEAST 1½ INCHES HIGH WITH A MINIMUM OF 95% TOTAL COVERAGE SO THAT ALL AREAS OF A SITE THAT RELY ON VEGETATION FOR TEMPORARY STABILIZATION ARE UNFORMALLY VEGETATED, AND PROVIDED THERE ARE NO BARE SPOTS LARGER THAN 10 SQUARE FEET.
- G. WHEN REQUIRED, NATIVE PLANT SEEDING SHALL COMPLY WITH REQUIREMENTS OF THE CITY OF AUSTIN ENVIRONMENTAL CRITERIA MANUAL, AND STANDARD SPECIFICATION 6045 OR 6095.

3. TABLE 1. HYDROMULCHING FOR TEMPORARY VEGETATIVE STABILIZATION

MATERIAL	DESCRIPTION	LONGEVITY	TYPICAL APPLICATIONS	APPLICATION RATES
100% OR ANY BLEND OF WOOD, CELLULOSE, STRAW, AND/OR COTTON PLANT MATERIAL	70% OR GREATER WOOD/STRAW 30% OR LESS PAPER OR NATURAL FIBERS	0-3 MONTHS	MODERATE SLOPES; FROM FLAT TO 3:1	1,500 TO 2,000 LBS PER ACRE

OWNER: BUFFALO BILL FARMS, LLC ADDRESS: 8127 INDUSTRIAL DRIVE, GRAND BLANC, MICHIGAN 48439 PHONE #: 810-241-2955

OWNER'S REPRESENTATIVE RESPONSIBLE FOR PLAN ALTERATIONS: WESTWARD ENVIRONMENTAL, INC. ADDRESS: P.O. BOX 2205 BOERNE, TX 78006 PHONE #: (830)246-8284

PERSON OR FIRM RESPONSIBLE EROSION/SEDIMENTATION CONTROL MAINTENANCE: CAPITAL CITY CRUSHING, LLC ADDRESS: 5415 MCKINNEY FALLS PKWY AUSTIN, TEXAS 78744 PHONE #: 810-241-2955

ADDITIONAL NOTES:

1. BERM HEIGHT WILL NOT EXCEED 3 FEET (UNLESS REQUIRED FOR MSHA COMPLIANCE).
2. IF DISTURBED AREA IS NOT TO BE WORKED ON FOR MORE THAN 14 DAYS, DISTURBED AREA NEEDS TO BE STABILIZED BY REVEGETATION, MULCH, TARP OR REVEGETATION MATTING [ECM 1.4.4.B.3, SECTION 5.1]. ENVIRONMENTAL INSPECTOR HAS THE AUTHORITY TO ADD AND/OR MODIFY EROSION/SEDIMENTATION CONTROLS ON SITE TO KEEP PROJECT IN-COMPLIANCE WITH THE CITY OF AUSTIN RULES AND REGULATIONS. [LDC 25-6-183]
- CONTRACTOR SHALL UTILIZE DUST CONTROL MEASURES DURING SITE CONSTRUCTION SUCH AS IRRIGATION TRUCKS AND MULCHING AS PER ECM 1.4.4.A(4), OR AS DIRECTED BY THE ENVIRONMENTAL INSPECTOR.
- THE CONTRACTOR WILL CLEAN UP SPOILS THAT MIGRATE ONTO THE ROADS A MINIMUM OF ONCE DAILY. [ECM 1.4.4.D.4]
3. UPON COMPLETION OF THE PROPOSED SITE IMPROVEMENTS, AND PRIOR TO THE RELEASE OF THE CERTIFICATE OF OCCUPANCY BY THE DEVELOPMENT SERVICES DEPARTMENT, THE DESIGN ENGINEER SHALL CERTIFY IN WRITING THAT THE PROPOSED DETENTION AND FILTRATION FACILITIES WERE CONSTRUCTED IN CONFORMANCE WITH THE APPROVED PLANS, 4. INTERNAL ROADS DESIGNED TO SUPPORT THE LOADS IMPOSED BY HEAVY FIRE DEPARTMENT APPARATUS.
5. PIT GRADING MAY VARY BASED ON MATERIAL AVAILABILITY AND TO ACCOMMODATE OPERATIONAL NEEDS.

DETAILED SEQUENCE OF CONSTRUCTION:

SILT FENCE WILL BE INSTALLED PRIOR TO CLEARING, GRUBBING AND SITE PREPARATION WORK. CLEARING AND GRUBBING WILL TAKE PLACE PRIOR TO EXCAVATION FOR THE PROPOSED WET BASINS AND SELECT FILL REMOVAL AREA (PIT). EXCAVATION OF THE WET BASINS AND SELECT FILL REMOVAL AREA WILL OCCUR SIMULTANEOUSLY. TOPSOIL WILL BE USED TO CONSTRUCT BERMS ALONG THE SOUTHERN, DOWNGRADE/INT. LIMITS OF THE PROPOSED PIT. AN APPROXIMATELY FIVE ACRE AREA WILL BE EXCAVATED TO A MINIMUM DEPTH OF TWO FEET, AT WHICH POINT THE PIT AREA WILL CONTAIN THE 10-YEAR 24-HOUR STORM FROM ITS CONTRIBUTING DRAINAGE AREA. PROPOSED SITE GRADING AND BERMS WILL BE ESTABLISHED TO DIRECT ALL STORMWATER RUNOFF FROM THE DISTURBED AREAS OF THE SITE INTO THE TWO LINED WET BASINS OR FILL REMOVAL PIT. THE WET BASINS HAVE BEEN DESIGNED TO ACCOMMODATE THE 100-YEAR 24-HOUR STORM. THE PRIMARY PROPOSED WATER QUALITY CONTROLS WITHIN THE SUBJECT AREA, IN COMPLIANCE WITH THE LDC 25-8-211 AND THE ENVIRONMENTAL CRITERIA MANUAL (ECM), ARE SITE GRADING, SILT FENCE, ROCK FILTER BERMS, DIVERSION BERMS, AND LINED WET BASINS.

TRAVIS COUNTY DEVELOPMENT PERMIT BARR LANE TRACT

	Acres	Square Feet	Percentage
Total Area of the Site	119.33	5,197,798	--
Impervious Cover	12.24	450,584	8.67%

SILT FENCE

A SILT FENCE IS A BARRIER CONSISTING OF GEOTEXTILE FABRIC SUPPORTED BY METAL POSTS TO PREVENT SOIL AND SEDIMENT LOSS FROM A SITE. WHEN PROPERLY USED, SILT FENCES CAN BE HIGHLY EFFECTIVE AT CONTROLLING SEDIMENT FROM DISTURBED AREAS. THEY CAUSE RUNOFF TO POND, ALLOWING HEAVIER SOLIDS TO SETTLE OUT. IF NOT PROPERLY INSTALLED, SILT FENCES ARE NOT LIKELY TO BE EFFECTIVE. A SCHEMATIC ILLUSTRATION OF A SILT FENCE IS SHOWN IN FIGURE 3-20.

THE PURPOSE OF A SILT FENCE IS TO INTERCEPT AND DETAIN WATER-BORNE SEDIMENT FROM UNPROTECTED AREAS OF A LIMITED EXTENT. SILT FENCE IS USED DURING THE PERIOD OF CONSTRUCTION NEAR THE PERIMETER OF A DISTURBED AREA TO INTERCEPT SEDIMENT WHILE ALLOWING WATER TO PERCOLATE THROUGH. THIS FENCE SHOULD REMAIN IN PLACE UNTIL THE DISTURBED AREA IS PERMANENTLY STABILIZED. SILT FENCE SHOULD NOT BE USED WHERE THERE IS A CONCENTRATION OF WATER IN A CHANNEL OR DRAINAGE WAY. IF CONCENTRATED FLOW OCCURS AFTER FENCE INSTALLATION, CORRECTIVE ACTION MUST BE TAKEN SUCH AS PLACING A ROCK BERM IN THE AREAS OF CONCENTRATED FLOW. SILT FENCING WITHIN THE SITE MAY BE TEMPORARILY MOVED DURING THE DAY TO ALLOW CONSTRUCTION ACTIVITY PROVIDED IT IS REPLACED AND PROPERLY ANCHORED TO THE GROUND AT THE END OF THE DAY. SILT FENCES ON THE PERIMETER OF THE SITE OR AROUND DRAINAGE WAYS SHOULD NOT BE MOVED AT ANY TIME.

USE J-HOOKS TO TRAP AND POND RUNOFF FLOWING ALONG UPHILL SIDE OF SILT FENCE AS SHOWN IN FIGURE 3-21 OF THE LORA HIGHLAND LAKES WATERSHED ORDINANCE WATER QUALITY MANAGEMENT TECHNICAL MANUAL. THIS WILL FILTER OR SETTLE OUTFLOWS AND PREVENT RUNOFF FROM ESCAPING AROUND THE SIDES OF THE FENCE.

MATERIALS:

- SILT FENCE MATERIAL SHOULD BE POLYPROPYLENE, POLYETHYLENE OR POLYAMIDE WOVEN OR NONWOVEN FABRIC. THE FABRIC WIDTH SHOULD BE 36 INCHES, WITH A MINIMUM UNIT WEIGHT OF 4 OZ/YD, ULTRAVIOLET STABILITY EXCEEDING 70%, AND MINIMUM APPARENT OPENING SIZE OF U.S. SIEVE NO. 30.
- FENCE POSTS SHOULD BE MADE OF HOT ROLLED STEEL, AT LEAST 4 FEET LONG WITH TEE OR YBAR CROSS SECTION, SURFACE PAINTED OR GALVANIZED, MINIMUM NOMINAL WEIGHT 1.25 LB/FT², AND BRINELL HARDNESS EXCEEDING 140.
- WOVEN WIRE BACKING TO SUPPORT THE FABRIC SHOULD BE GALVANIZED 2" X 4" WELDED WIRE, 12 GAUGE MINIMUM.

INSTALLATION:

- STEEL POSTS, WHICH SUPPORT THE SILT FENCE, SHOULD BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST MUST BE EMBEDDED A MINIMUM OF 1- FOOT DEEP AND SPACED NOT MORE THAN 8 FEET ON CENTER, WHERE WATER CONCENTRATES, THE MAXIMUM SPACING SHOULD BE 6 FEET.
- LAY OUT FENCING DOWN-SLOPE OF DISTURBED AREA, FOLLOWING THE CONTOUR AS CLOSELY AS POSSIBLE. UTILIZE J-HOOKS AS NECESSARY AS SHOWN IN FIGURE 3-21 . THE FENCE SHOULD BE SITED SO THAT THE MAXIMUM DRAINAGE AREA IS ¼ ACRE/100 FEET OF FENCE.
- THE TOE OF THE SILT FENCE SHOULD BE TRENCHED IN WITH A SPADE OR MECHANICAL TRENCHER, SO THAT THE DOWN-SLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW, WHERE FENCE CANNOT BE TRENCHED IN (E.G., PAVEMENT OR ROCK OUTCROP), WEIGHT FABRIC FLAP WITH 3 INCHES OF PEA GRAVEL ON UPHILL SIDE TO PREVENT FLOW FROM SEEPING UNDER FENCE.
- THE TRENCH MUST BE A MINIMUM OF 6 INCHES DEEP AND 6 INCHES WIDE TO ALLOW FOR THE SILT FENCE FABRIC TO BE LAID IN THE GROUND AND BACKFILLED WITH COMPACTED MATERIAL.
- SILT FENCE SHOULD BE SECURELY FASTENED TO EACH STEEL SUPPORT POST OR TO WOVEN WIRE, WHICH IS IN TURN ATTACHED TO THE STEEL FENCE POST. THERE SHOULD BE A 3-INCH OVERLAP, SECURELY FASTENED WHERE ENDS OF FABRIC MEET.
- SILT FENCE SHOULD BE REMOVED WHEN THE SITE IS COMPLETELY STABILIZED SO AS NOT TO BLOCK OR IMPIDE STORM FLOW OR DRAINAGE.

COMMON TROUBLE POINTS:

- FENCE NOT INSTALLED ALONG THE CONTOUR CAUSING WATER TO CONCENTRATE AND FLOW OVER THE FENCE.
- FABRIC NOT SEATED SECURELY TO GROUND (RUNOFF PASSING UNDER FENCE)
- FENCE NOT INSTALLED PERPENDICULAR TO FLOW LINE (RUNOFF ESCAPING AROUND SIDES)
- FENCE TREATING TOO LARGE AN AREA, OR EXCESSIVE CHANNEL FLOW (RUNOFF OVERTOPS OR COLLAPSES FENCE)

INSPECTION AND MAINTENANCE GUIDELINES:

- INSPECT ALL FENCING WEEKLY, AND AFTER ANY RAINFALL IN EXCESS OF 0.5 INCH OR MORE.
- REMOVE SEDIMENT WHEN BUILDUP REACHES 6 INCHES.
- REPLACE ANY TORN FABRIC.
- REPLACE OR REPAIR ANY SECTIONS CRUSHED OR COLLAPSED IN THE COURSE OF CONSTRUCTION ACTIVITY. IF A SECTION OF FENCE IS OBSTRUCTING VEHICULAR ACCESS, CONSIDER RELOCATING IT TO A SPOT WHERE IT WILL PROVIDE EQUAL PROTECTION, BUT WILL NOT OBSTRUCT VEHICLES. A TRIANGULAR FILTER DICE MAY BE PREFERABLE TO A SILT FENCE AT COMMON VEHICLE ACCESS POINTS.
- WHEN CONSTRUCTION IS COMPLETE, THE SEDIMENT SHOULD BE DISPOSED OF IN A MANNER THAT WILL NOT CAUSE ADDITIONAL SILTATION AND THE PRIOR LOCATION OF THE SILT FENCE SHOULD BE REVEGETATED. THE FENCE ITSELF SHOULD BE DISPOSED OF IN AN APPROVED LANDFILL.

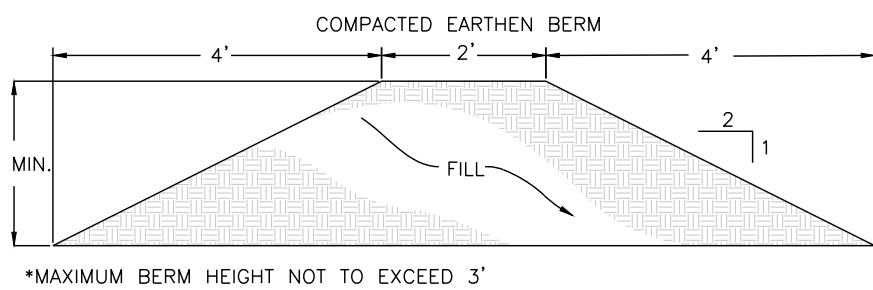
SILT FENCE SPACING ON SLOPING SITES

SLOPE ANGLE	SILTY SOILS	CLAYS	SANDY SOILS
VERY STEEP (1:1)	50 FT.	75 FT.	100 FT.
STEEP (2:1)	75 FT.	100 FT.	125 FT.
MODERATE (4:1)	100 FT.	125 FT.	150 FT.
SLIGHT (10:1)	125 FT.	150 FT.	200 FT.

COMPACTED EARTHEN BERM

INSTALLATION: COMPRISED OF SOIL AND OVERBURDEN MATTER EITHER GENERATED ONSITE OR DELIVERED FROM OFFSITE. COMPACT WITH HEAVY EQUIPMENT IN 12" (MAX) LIFTS.

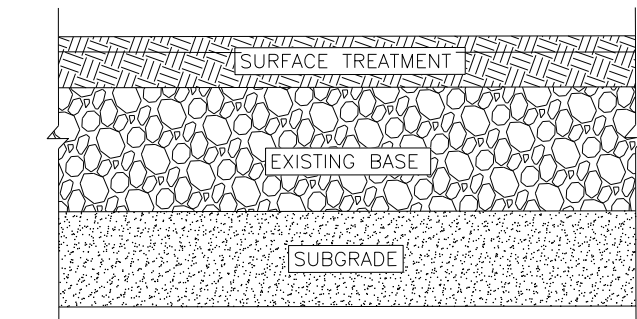
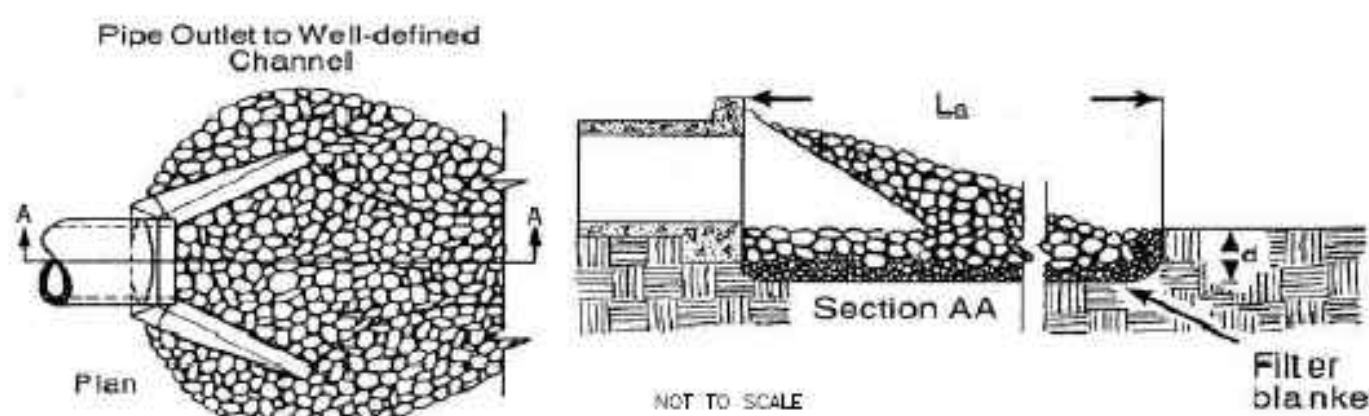
MAINTENANCE (TEMPORARY): INSPECT BERMS ONCE A MONTH UNTIL SUFFICIENTLY VEGETATED. REPLACE AS NECESSARY.



OUTLET STABILIZATION

THE GOAL OF OUTLET STABILIZATION IS TO PREVENT EROSION AT THE OUTLET OF A CHANNEL OR CONDUIT BY REDUCING THE VELOCITY OF FLOW AND DISPERSED MATTER. THIS PRACTICE APPLIES WHERE THE DISCHARGE VELOCITY OF A PIPE, BOX CULVERT, DIVERSION, OPEN CHANNEL, OR OTHER WATER CONVEYANCE STRUCTURE EXCEEDS THE PERMISSIBLE VELOCITY OF THE RECEIVING CHANNEL OR DISPOSAL AREA.

THE OUTLETS OF CHANNELS, CONDUITS, AND OTHER STRUCTURES ARE POINTS OF HIGH EROSION POTENTIAL, BECAUSE THEY FREQUENTLY CARRY HIGH VELOCITIES THAT EXCEED THE ALLOWABLE LIMIT FOR THE AREA DOWNSTREAM. TO PREVENT SCOUR AND UNDERMINING, AN OUTLET STABILIZATION STRUCTURE IS NEEDED TO ABSORB THE IMPACT OF THE FLOW AND REDUCE THE VELOCITY TO NONEROSIVE LEVELS. A RIPRAP-LINED APRON IS THE MOST COMMONLY USED PRACTICE FOR THIS PURPOSE BECAUSE OF ITS RELATIVELY LOW COST AND EASE OF INSTALLATION. THE RIPRAP APRON SHOULD BE EXTENDED DOWNSTREAM UNTIL STABLE CONDITIONS ARE REACHED EVEN THOUGH THIS MAY EXCEED THE LENGTH CALCULATED FOR DESIGN VELOCITY CONTROL.



NOTE: CONTRACTOR TO VERIFY FINAL PAVEMENT DESIGN FOLLOWING GEOTECHNICAL ANALYSIS.

PAVEMENT MATERIAL SCALE: NOT TO SCALE

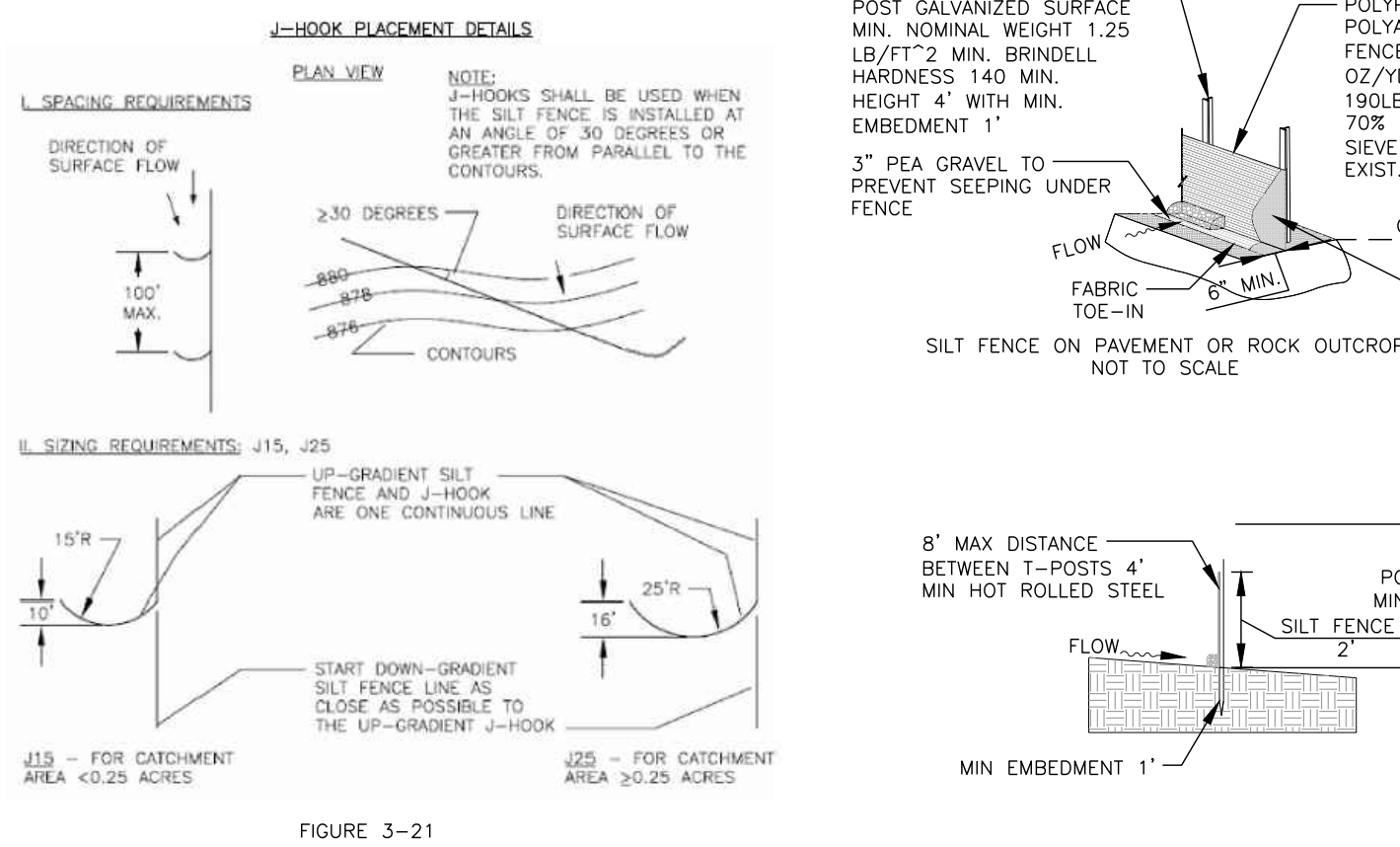


FIGURE 3-21

ROCK BERMS

THE PURPOSE OF A ROCK BERM IS TO SERVE AS A CHECK DAM IN AREAS OF CONCENTRATED FLOW, TO INTERCEPT SEDIMENT-LADEN RUNOFF, DETAIN THE SEDIMENT AND RELEASE THE WATER IN SHEET FLOW. THE ROCK BERM SHOULD BE USED WHEN THE CONTRIBUTING DRAINAGE AREA IS LESS THAN 5 ACRES. ROCK BERMS ARE USED IN AREAS WHERE THE VOLUME OF RUNOFF IS TOO GREAT FOR A SILT FENCE TO CONTAIN. THEY ARE LESS EFFECTIVE FOR SEDIMENT REMOVAL THAN SILT FENCES, PARTICULARLY FOR FINE PARTICLES, BUT ARE ABLE TO WITHSTAND HIGHER FLOWS THAN A SILT FENCE. AS SUCH, ROCK BERMS ARE OFTEN USED IN AREAS OF CHANNEL FLOWS (DITCHES, CULLIES, ETC.). ROCK BERMS ARE MOST EFFECTIVE AT REDUCING BED LOAD IN CHANNELS AND SHOULD NOT BE SUBSTITUTED FOR OTHER EROSION AND SEDIMENT CONTROL MEASURES FARTHER UP THE WATERSHED.

MATERIALS:

- THE BERM STRUCTURE SHOULD BE SECURED WITH A WOVEN WIRE SHEATHING HAVING MAXIMUM DIAMETER OF 1/2 INCH AND A MAXIMUM WIRE DIAMETER OF 20 GAUGE GALVANIZED AND SHOULD BE SECURED WITH SHOT RINGS.
- CLEAN, OPEN GRADED 3- TO 5-INCH DIAMETER ROCK SHOULD BE USED, EXCEPT IN AREAS WHERE HIGH VELOCITIES OR LARGE VOLUMES OF FLOW ARE EXPECTED, WHERE 5- TO 8-INCH DIAMETER ROCKS MAY BE USED.

INSTALLATION:

- LAY OUT THE WOVEN WIRE SHEATHING PERPENDICULAR TO THE FLOW LINE. THE SHEATHING SHOULD BE 20 GAUGE WOVEN WIRE MESH WITH 1 INCH OPENINGS.
- BERM SHOULD HAVE A TOP WIDTH OF 2 FEET MINIMUM WITH SIDE SLOPES BEING 2:1 (H:V) OR FLATTER.

- PLACE THE ROCK ALONG THE SHEATHING AS SHOWN IN THE DIAGRAM (FIGURE 3-23), TO A HEIGHT NOT LESS THAN 18".
- WRAP THE WIRE SHEATHING AROUND THE ROCK AND SECURE WITH TIE WIRE SO THAT THE ENDS OF THE SHEATHING OVERLAP AT LEAST 2 INCHES, AND THE BERM RETAINS ITS SHAPE WHEN WALKED UPON.
- BERM SHOULD BE BUILT ALONG THE CONTOUR AT ZERO PERCENT GRADE OR AS NEAR AS POSSIBLE.
- THE ENDS OF THE BERM SHOULD BE TIED INTO EXISTING UPSLOPE GRADE AND THE BERM SHOULD BE BURIED IN A TRENCH APPROXIMATELY 3 TO 4 INCHES DEEP TO PREVENT FAILURE OF THE CONTROL.

COMMON TROUBLE POINTS:

- INSUFFICIENT BERM HEIGHT OR LENGTH (RUNOFF QUICKLY ESCAPES OVER THE TOP OR AROUND THE SIDES OF BERM)
- BERM NOT INSTALLED PERPENDICULAR TO FLOW LINE (RUNOFF ESCAPING AROUND ONE SIDE)

INSPECTION AND MAINTENANCE GUIDELINES:

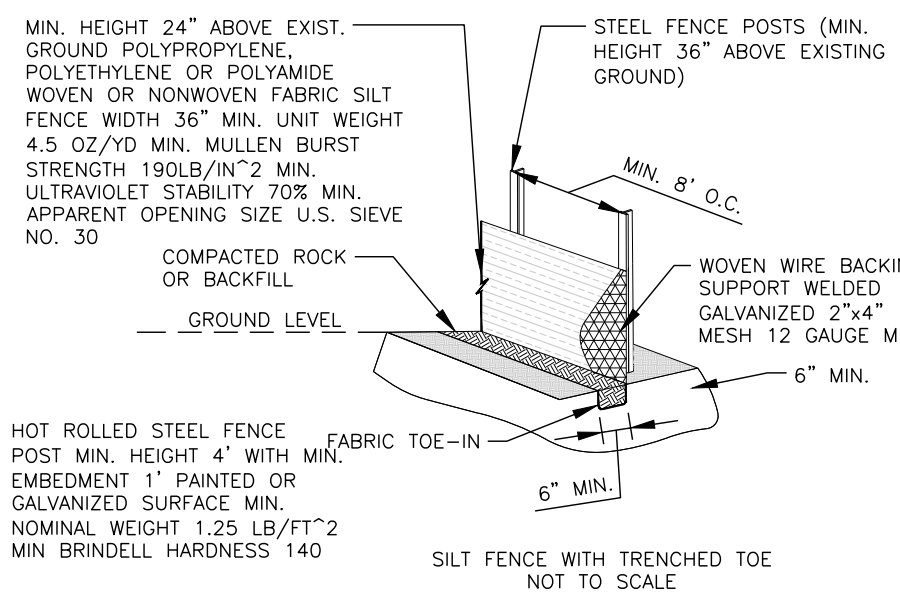
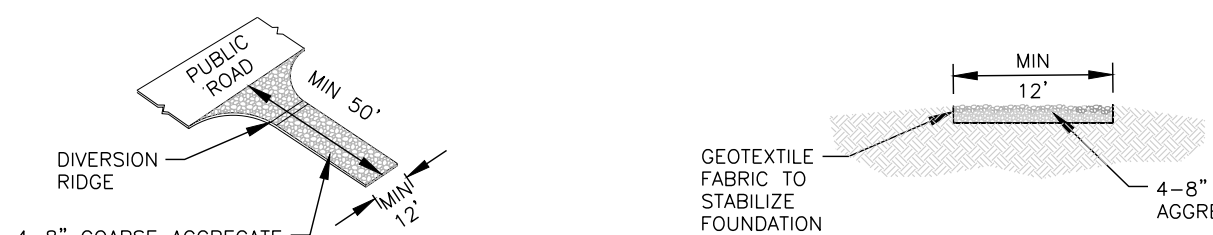
- INSPECTION SHOULD BE MADE WEEKLY AND AFTER EACH RAINFALL BY THE RESPONSIBLE PARTY. FOR INSTALLATIONS IN STREAMBEDS, ADDITIONAL DAILY INSPECTIONS SHOULD BE MADE.
- REMOVE SEDIMENT AND OTHER DEBRIS WHEN BUILDUP REACHES 6 INCHES AND DISPOSE OF THE ACCUMULATED SILT IN AN APPROVED MANNER THAT WILL NOT CAUSE ANY ADDITIONAL SILTATION.
- REPAIR ANY LOOSE WIRE SHEATHING.
- THE BERM SHOULD BE RESHAPED AS NEEDED DURING INSPECTION.
- THE BERM SHOULD BE REPLACED WHEN THE STRUCTURE CEASES TO FUNCTION AS INTENDED DUE TO SILT ACCUMULATION AMONG THE ROCKS, WASHOUT, CONSTRUCTION TRAFFIC DAMAGE, ETC.
- THE ROCK BERM SHOULD BE LEFT IN PLACE UNTIL ALL UPSTREAM AREAS ARE STABILIZED AND ACCUMULATED SILT REMOVED.

STABILIZED CONSTRUCTION ENTRANCE

INSTALLATION:

- AVOID CURVES ON PUBLIC ROADS AND STEEP SLOPES. REMOVE VEGETATION AND OTHER OBJECTIONABLE MATERIAL FROM THE FOUNDATION AREA. GRADE CROWN FOUNDATION FOR POSITIVE DRAINAGE.
- THE MINIMUM WIDTH OF THE ENTRANCE/EXIT SHOULD BE 12' OR THE FULL WIDTH OF EXIT ROADWAY, WHICHEVER IS GREATER.
- THE CONSTRUCTION ENTRANCE SHOULD BE 50' LONG.
- IF THE SLOPE TOWARD THE ROAD EXCEEDS 2%, CONSTRUCT A RIDGE, 6-8" HIGH WITH 3:1 (H:V) SIDE SLOPES, ACROSS THE FOUNDATION APPROXIMATELY 15 FEET FROM THE ENTRANCE TO DIVERT RUNOFF AWAY FROM THE PUBLIC ROAD.
- PLACE GEOTEXTILE FABRIC AND GRADE FOUNDATION TO IMPROVE STABILITY, ESPECIALLY WHERE WET CONDITIONS ARE ANTICIPATED.
- PLACE STONE TO DIMENSION AND GRADE SHOWN ON PLANS. LEAVE SURFACE SMOOTH AND SLOPE FOR DRAINAGE.
- INSTALL A PIPE UNDER PAD AS NEEDED TO MAINTAIN PROPER PUBLIC ROAD DRAINAGE.

MAINTENANCE: INSPECT WEEKLY. REPLACE STONE AS NECESSARY TO PREVENT TRACKING OFF-SITE.



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