

LEELANAU COUNTY POPP ROAD RECYCLING DROP-OFF CENTER CIVIL SITE PLAN

AGENCIES

PLANNING/ZONING

LELAND TOWNSHIP
PO BOX 238
LAKE LEELANAU, MI 49653
Contact: TIM CYPHER, ZONING
Phone: (231) 256-7546, EXT 201

SOIL AND EROSION

LEELANAU CONSERVATION DISTRICT
8527 E GOVERNMENT CENTER DR, STE 205
SUTTONS BAY, MI 49682
Contact: STEVE CHRISTENSEN
Phone: (231) 256-9783, EXT 263

ROADS AND STREETS

LEELANAU COUNTY ROAD COMMISSION
10550 E ECKERLE ROAD
SUTTONS BAY, MI 49682
Contact: KEITH MOORE
Phone: (231) 271-3993

FIRE CODE

LELAND TOWNSHIP FIRE DEPARTMENT
203 S GRAND AVE
PO BOX 578
LELAND, MI 49654
Contact: CHIEF, DAN BESSON
Phone: (231) 256-7760

EGLE

MICHIGAN DEPT OF ENVIRONMENT, GREAT
LAKES, AND ENERGY
120 W CHAPIN ST
CADILLAC, MI 49601
Contact: SCOTT CONRADSON / AMY VAIL
Phone: (231) 775-3960

CABLE TELEVISION

SPECTRUM
1392 TRADE CENTER DR
TRAVERSE CITY, MI 49686
Contact: RICK ROUSSEAU
Phone: (231) 463-1941

TELEPHONE

AT&T TELECOM
205 E HARRIS ST
TRAVERSE CITY, MI 49684
Contact: JEFF SCHUSTER
Phone: (231) 779-8451

NATURAL GAS

MICHCON
1011 HASTINGS ST
TRAVERSE CITY, MI 49686
Contact: LAUREL HALL
Phone: (231) 932-2832

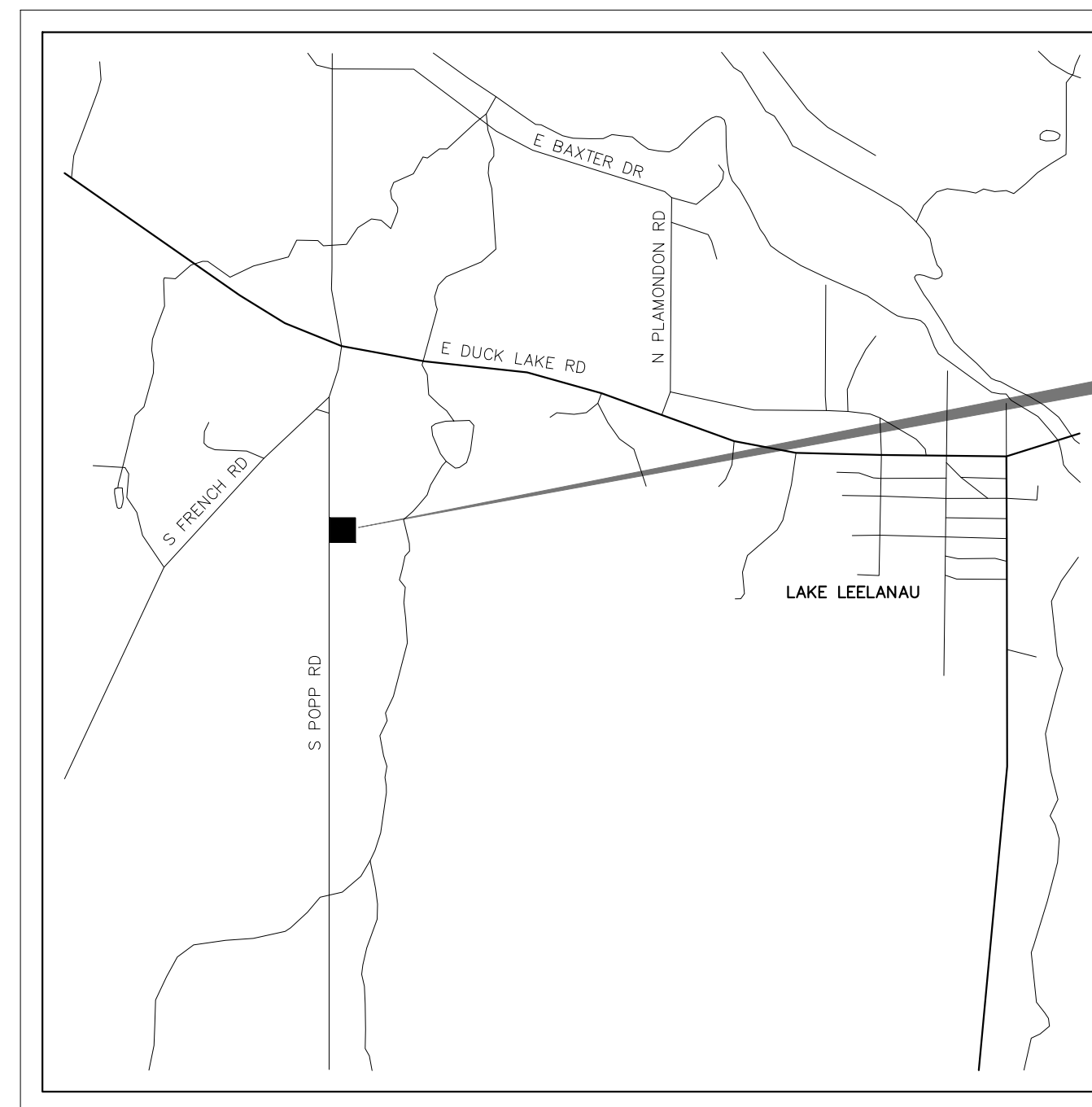
EMERGENCIES

POLICE DEPARTMENT: 9-1-1
FIRE DEPARTMENTS: 9-1-1
AMBULANCE: 9-1-1

ELECTRIC

CHERRLAND RURAL ELECTRIC CO-OP
5390 US-31 SOUTH
GRAWN, MI 49637
Contact: FRANK SIEPKER
Phone: (231) 486-9200, EXT 200

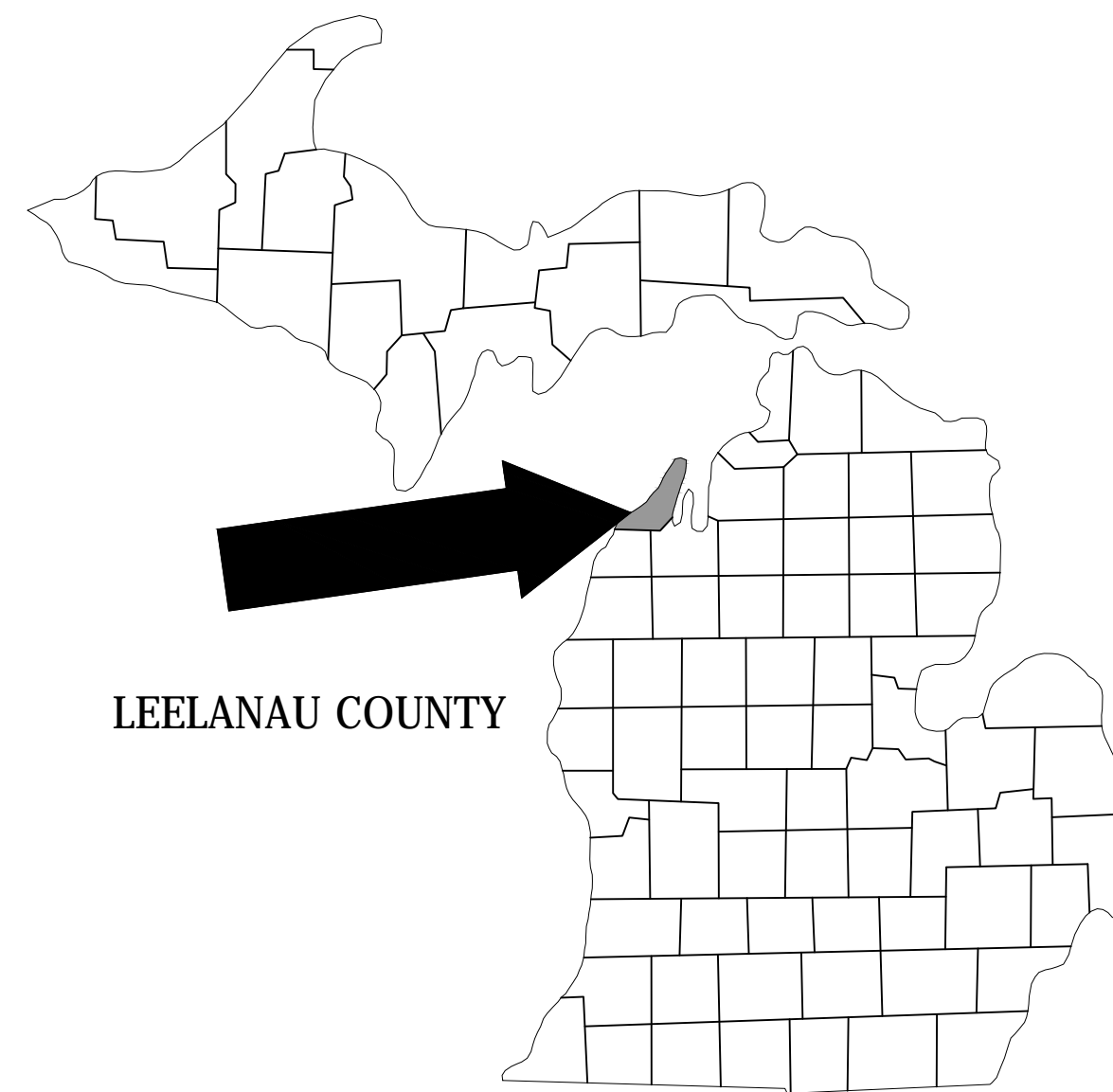
CONSUMERS ENERGY COMPANY ELECTRIC
821 HASTINGS ST
TRAVERSE CITY, MI 49686
Contact: CURTIS HANSEN
Phone: (231) 929-6265



PROJECT LOCATION

LOCATION MAP

SECTION 26, T30N, R12W, LELAND TOWNSHIP
NO SCALE



VICINITY MAP

SHEET INDEX

T1	COVER SHEET
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C3	GRADING, SOIL EROSION & STORMWATER CONTROL PLAN
C4	CONSTRUCTION DETAILS

OWNER/APPLICANT

LEELANAU COUNTY
8527 E GOVERNMENT CENTER DR, STE 101
SUTTONS BAY, MI 49682
ATTN: CHET JANIK, COUNTY ADMINISTRATOR



THE LOCATION OF THE EXISTING UTILITIES, AS SHOWN ON THIS PLAN, ARE APPROXIMATE ONLY. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ACTUAL LOCATION AND DEPTH OF ALL EXISTING UTILITIES. THE OWNER AND THE SURVEYOR SHALL NOT BE RESPONSIBLE FOR ANY OMISSION OR VARIATION FROM THE LOCATION SHOWN. THE CONTRACTOR SHALL NOTIFY "MISS DIG" AT 1 (800) 482-7171 OR 811 THREE (3) WORKING DAYS PRIOR TO THE START OF CONSTRUCTION

REGISTRATION:
I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER LAWS OF THE STATE OF MICHIGAN
PATRICK J. MACHIN
PRINT NAME
SIGNATURE
6201051471 EXP. 10/31/2022
REG. NO. DATE
MACHIN ENGINEERING, INC.
ORIGINAL DOCUMENT(S) ARE STORED AT



REV.	REVISION	DATE
A	REVIEW 30% DESIGN	03/04/2021
B	REVIEW 75% DESIGN	03/04/2021
C	REVIEW 100% DESIGN	03/04/2021
D	ISSUED FOR AGENCY REVIEW	03/04/2021
E	ISSUED FOR CONSTRUCTION	03/04/2021

DATE ISSUED: 03/04/2021
ISSUE PHASE: CONSTRUCTION

PROJECT TITLE:
LEELANAU COUNTY
POPP ROAD
RECYCLING
DROP-OFF CENTER

CLIENT:
LEELANAU COUNTY
8527 E GOVERNMENT CENTER DRIVE, SUITE 101
SUTTONS BAY, MI 49682

PROJECT LOCATION:
LELAND TOWNSHIP, MI

SHEET TITLE:
COVER SHEET

PROJECT NUMBER: 20196
SHEET NUMBER: T1

GENERAL NOTES

- ALL ELEVATIONS ARE BASED ON U.S.G.S. DATUM.
- ALL PROPERTY IRONS AND MONUMENTS, IF DISTURBED OR DESTROYED BY THE CONTRACTOR, SHALL BE REPLACED BY A MICHIGAN REGISTERED PROFESSIONAL SURVEYOR AT THE CONTRACTOR'S EXPENSE.
- LOCATION OF UTILITIES OR OTHER STRUCTURES SHOWN ON THE PLANS ARE TAKEN FROM UTILITY COMPANY OR OTHER RECORDS BELIEVED TO BE RELIABLE. THE OWNER AND ENGINEER ARE NOT RESPONSIBLE FOR ANY OMISSIONS OR VARIATIONS IN THE LOCATION OF THE UTILITIES ENCOUNTERED IN THE WORK.
- THE CONTRACTOR SHALL NOTIFY "MISS DIG" (800) 482-7171, A MINIMUM OF THREE WORKING DAYS PRIOR TO BEGINNING CONSTRUCTION IN THE AREA OF THE WORK.
- PRIOR TO THE INSTALLATION OF ANY PROPOSED UTILITIES, THE EXISTING UTILITIES WHICH CROSS THE PROPOSED UTILITY SHALL BE EXPOSED BY THE CONTRACTOR TO DETERMINE ANY POSSIBLE CONFLICTS WITH THE PROPOSED WORK.
- ALL EXISTING TRAFFIC SIGNS IN THE WAY OF CONSTRUCTION SHALL BE REMOVED AND RESET IN A TEMPORARY LOCATION PER THE LATEST EDITION OF MICHIGAN MANUAL OF UNIFIED TRAFFIC CONTROL DEVICES. THIS WORK SHALL BE INCIDENTAL TO THE PROJECT.
- EXISTING LOCAL TRAFFIC SHALL BE MAINTAINED AT ALL TIMES, INCLUDING VEHICLE AND PEDESTRIAN ACCESS TO RESIDENCES AND BUSINESSES, EXCEPT WHEN OTHERWISE SHOWN ON THE PLANS OR SPECIFIED.
- ALL TRAFFIC CONTROL AND DEVICES SHALL BE IN ACCORDANCE WITH THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.
- THE CONTRACTOR SHALL LIMIT HIS CONSTRUCTION TRAFFIC AND EQUIPMENT TO THE AREA DIRECTLY UNDER CONSTRUCTION TO PREVENT DAMAGE TO ANY EXISTING IMPROVEMENTS, AND SHALL PREVENT THE SPREAD OF CONSTRUCTION DEBRIS OUTSIDE OF THE CONSTRUCTION AREA.
- ANY UTILITIES, MAINS, SERVICES, UNDERDRAINS, OIL LINES, OR OTHER SIMILAR ITEMS DAMAGED BY THE CONTRACTOR DURING CONSTRUCTION SHALL BE REPAIRED OR REPLACED BY THE UTILITY OWNER IN A MANNER ACCEPTABLE TO THE UTILITY OWNER. ALL COSTS FOR REPAIR OR REPLACEMENT SHALL BE PAID BY THE CONTRACTOR, INCIDENTAL TO THE PROJECT.
- ALL TREES, SHRUBS AND LANDSCAPING NOT DESIGNATED TO BE REMOVED SHALL BE PROTECTED DURING CONSTRUCTION. ANY TREES, SHRUBS OR LANDSCAPING DAMAGED IN ANY WAY BY THE CONTRACTOR INCLUDING DAMAGING ROOTS, SHALL BE REPLACED WITH LIKE SPECIES AND SIZE AT THE CONTRACTOR'S EXPENSE.
- CONTRACTOR SHALL PROVIDE ADEQUATE SUPPORT FOR UTILITY POLES AS NECESSARY. CONTRACTOR SHALL CONSULT WITH THE UTILITY COMPANY PRIOR TO ANY DISTURBANCE OF UTILITY POLE OR ANCHORING SYSTEM.

CONSTRUCTION SEQUENCE

- INSTALL SOIL EROSION PREVENTION MEASURES (SILT FENCE): MAY, 2021
- STRIP GRAVEL AND REMOVE TOPSOIL: MAY, 2021
- GRADE SITE AND PLACE GRAVEL: MAY, 2021
- CONSTRUCT RETENTION BASIN: MAY, 2021
- PLACE ASPHALT: JUNE, 2021
- RE-SPREAD TOP SOIL AND GRASS SEED AND MULCH: JULY, 2021

SOIL EROSION AND STORM WATER CONTROL NOTES

- THE CONTRACTOR SHALL PROVIDE TEMPORARY SOIL EROSION CONTROL MEASURES PER P.A. 451 AS AMENDED. WITH THE USE OF SILT FENCE AND OTHER TEMPORARY MEASURES THE CONTRACTOR SHALL PROTECT THE ADJACENT AREA FROM ACCELERATED EROSION AND SEDIMENTATION FLOWS RESULTING FROM CONSTRUCTION. THE CONTRACTOR SHALL INSTALL ADDITIONAL TEMPORARY AND PERMANENT SOIL EROSION CONTROL MEASURES, IF DIRECTED BY THE ENGINEER OR SOIL EROSION CONTROL OFFICER, AT NO ADDITIONAL COST TO THE PROJECT.
- INSTALLATION AND MAINTENANCE OF TEMPORARY SOIL EROSION CONTROL MEASURES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- SHOULD ADDITIONAL SOIL EROSION CONTROL MEASURES BE DETERMINED TO BE NECESSARY BY EITHER THE SOIL EROSION CONTROL OFFICER OR THE OWNER'S ENGINEER THEY SHALL BE IN PLACE NO LATER THAN 24 HOURS FROM THE TIME OF NOTIFICATION TO THE GENERAL CONTRACTOR FOR THE PROJECT. IF NOT IN PLACE WITHIN 24 HOURS OR LESS, ALL ON SITE CONSTRUCTION WILL BE HALTED UNTIL SUCH MEASURES ARE INSTALLED AND APPROVED BY EITHER THE SOIL EROSION CONTROL OFFICER OR THE OWNER'S ENGINEER.
- ALL DISTURBED NON-HARD SURFACE AREAS TO BE STABILIZED WITH TOPSOIL, SEEDED, FERTILIZED AND MULCHED. DISTURBED AREAS SHALL BE TOPSOILED TO A DEPTH NOT LESS THAN FOUR (4) INCHES.
- THE CONTRACTOR SHALL REMOVE OR CAUSE TO BE REMOVED ALL SEDIMENT OR SOILS THAT HAVE BEEN DROPPED, WASHED ONTO OR TRACKED OUT ONTO PUBLIC RIGHT-OF-WAY OR PRIVATE ROADS IMMEDIATELY OR AFTER EACH RAIN EVENT ON NON-WORK DAYS.

SPECIFICATIONS

DIVISION 01 – GENERAL CONDITIONS

GENERAL

- ALL BOUNDARY SURVEY INFORMATION PROVIDED BY DOTZ SURVEYING & CONSTRUCTION, GRAND TRAVERSE MI. ENGINEER MAKES NO REPRESENTATION OR GUARANTEES TO ITS ACCURACY. CONTACT DOTZ SURVEYING & CONSTRUCTION (231) 329-1980 SHOULD ANY CONFLICTS WITH THIS INFORMATION ARISE.
- CONTACT MISS DIG AT 8-1-1 A MIN. OF 72 HOURS PRIOR TO COMMENCING WORK
- ALL DEMOLITION WORK SHALL BE COORDINATED AND SCHEDULED TO FACILITATE OTHER EFFORTS REQUIRED FOR THE PROJECT PER BID DOCUMENTS.
- CONTRACTOR SHALL MAKE THEMSELVES FAMILIAR WITH ALL ASPECTS OF THE WORK.
- IF DISCREPANCIES BETWEEN PHASES ARE IDENTIFIED CONTACT THE DESIGN ENGINEER PRIOR TO COMMENCING WORK.
- COMPLY WITH ALL OTHER GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT.
- CONTRACTOR SHALL MAINTAIN EXISTING STORM CONTROLS UNTIL PERMANENT CONTROLS ARE IN PLACE, UNLESS TEMPORARY ARRANGEMENTS ARE IN PLACE

DIVISION 02 – EXISTING CONDITIONS

GENERAL

- ALL ITEMS TO BE DEMOLISHED, OR IDENTIFIED FOR REMOVAL, SHALL BE REMOVED FROM SITE UNLESS OTHERWISE STATED IN THE BID.
- INSTALL TEMPORARY SOIL AND EROSION CONTROL MEASURES. REMOVE UPON COMPLETION OF PROJECT AND ONCE VEGETATION IS ESTABLISHED. MAINTAIN THESE MEASURES IN WORKING ORDER AT ALL TIMES.
- COMPLY WITH THE INDIVIDUAL REQUIREMENTS ON THE AGENCY PERMITS.

DIVISION 31 – EARTHWORK

SITE CLEARING

- CONTACT MISS DIG AT 8-1-1 A MIN. OF 72 HOURS PRIOR TO COMMENCING WORK
- INSTALL TEMPORARY SOIL AND EROSION CONTROL MEASURES. REMOVE UPON COMPLETION OF PROJECT AND ONCE VEGETATION IS ESTABLISHED. MAINTAIN THESE MEASURES IN WORKING ORDER AT ALL TIMES.
- COMPLY WITH THE INDIVIDUAL REQUIREMENTS ON THE AGENCY PERMITS.

EARTHWORK

- PROTECT ALL STRUCTURES AND THOSE AREAS DESIGNATED FOR PROTECTION.
- CONSTRUCT ALL GRADES TO THAT DESIGNATED ON THE PLANS. ANY DISCREPANCIES SHOULD BE IDENTIFIED AHEAD OF CONSTRUCTION TO THE ENGINEER. ENGINEER WILL NOT BE RESPONSIBLE FOR ANY DISCREPANCIES THAT ARE NOT DISCUSSED PRIOR TO CONSTRUCTION.
- ALL STORED MATERIALS SUCH AS FILL MATERIALS, TOPSOIL, AND ANY OTHER TEMP. STOCKPILES SHALL BE STORED ON OWNER'S PROPERTY IN DESIGNATED AREAS.
- MAINTAIN ALL SLOPES TO A MIN OF 3H:1V U.N.O. WHERE SLOPES ARE GREATER THAN 3H:1V, SLOPE STABILIZATION PRACTICES SHALL BE MAINTAINED UNTIL ADEQUATE VEGETATION IS ESTABLISHED.
- ALL SUBBASE MATERIAL SHALL BE MDT CLASS II.
- COMPACT ALL BACKFILLS AND FOUNDATIONS SOILS TO A MIN. OF 95% OF MAX. DRY DENSITY.
- CONTRACTOR IS RESPONSIBLE FOR ESTABLISHING GROUND COVER ON AREAS DISTURBED BY CONSTRUCTION AND SHALL REPAIR ALL WASHOUTS AND EROSION DURING THE GUARANTEE PERIOD ON ONE (1) YEAR AFTER GROUND COVER IS ESTABLISHED AT NO ADDITIONAL COST TO THE OWNER.
- MAINTAIN ALL WORK TO THE LIMITS STATED. NO DISTURBANCE TO WETLANDS ARE ALLOWED.

DIVISION 32 – EXTERIOR IMPROVEMENTS

LAWNS AND GRASSES

- PROCEED WITH PLANTING ONLY WHEN EXISTING AND FORECASTED WEATHER CONDITIONS PERMIT PLANTING TO BE PERFORMED WHEN BENEFICIAL AND OPTIMUM RESULTS MAY BE OBTAINED.
- SEEDING ON NON-MAINTAINED AREAS: CEREAL RYE MIX.
- SEEDING ON MAINTAINED AREAS: SEE SHEET 'C3'.
- FERTILIZER: 240 LBS/ACRE.
- MULCH: STRAW MULCH AT 2 TONS/ACRE OR SPRAY APPLIED TACKIFIER.
- EXCELSIOR MULCH BLANKETS: NORTH AMERICAN GREEN DS150 ON SLOPES GREATER THAN 3H:1V AND ALONG ALL TRAFFIC AREAS.
- USE TURF REINFORCEMENT MATS IN AREAS WHERE SLOPES ARE GREATER THAN 3H:1V
- ROLL AND RAKE TOPSOIL, REMOVE RIDGES, FILL DEPRESSIONS. REMOVE ALL DELETERIOUS DEBRIS, ROCKS GREATER THAN 1" IN DIA., CONSTRUCTION DEBRIS, ET CETERA.
- PROMPTLY CLEANUP DEBRIS FROM OPERATIONS.

DIVISION 33 – UTILITIES/STORMWATER

MATERIAL

- ALL STONE SHALL BE CLEAN, PER SIZE AND GRADATION REQUIRED.
- GEOTEXTILE FABRIC SHALL BE FREE DRAINING, NON-WOVEN WITH AN EQUIVALENT WEIGHT TO 60Z AS PRODUCED BY CSI GEOTEURF OR EQUAL.

CONSTRUCTION

- SYSTEM SHALL BE INSTALLED TO THE DIMENSIONS AND ELEVATIONS SHOWN ON THE PLANS.

DRAINAGE CALCULATIONS

Basin #1: (BUILDING, GRASS, PAVEMENT)

AREAS:	C
GRAVEL	= 6,722 SFT 0.95
ASPHALT	= 1,358 SFT 0.95
TOTAL	= 8,080 SFT

INFILTRATION RATE IS 1.0"/HR
DESIGN INTENSITY = 2.5"

Basin #1

$V_{REQUIRED} = (2.5" \times 1FT / 12") \times 8,080 SFT \times 0.95 = 1,599 CFT$

STORAGE VOLUME PROVIDED

BASIN 1
 $V_{STORAGE} = 1.5 FT \times (598 SFT + 1,143 SFT) / 2 = 1,306 CFT$

INFILTRATION VOLUME PROVIDED

$V_{INFILTRATION} = (598 SFT) (1"/HR + 1FT/12" \times 24HR) / 2 F.S. = 598 CFT$

TOTAL VOLUME PROVIDED

$V_{PROVIDED} = V_{STORAGE} + V_{INFILTRATION}$
 $V_{PROVIDED} = 1,306 CFT + 598 CFT = 1,904 CFT$
 $V_{PROVIDED} > V_{REQUIRED} = 1,904 CFT > 1,599 CFT$, THEREFORE O.K.

MAXIMUM DRAIN TIME FOR REQUIRED VOLUME

$72 > 12D/I = (12"/FT) \times (1.5')/1"/HR = 18.00 HR < 72 HRS$

LEGEND

	EXISTING	PROPOSED
WATERMAIN	---	---
SANITARY SEWER	---	---
STORM SEWER	---	---
SANITARY FORCEMAIN	---	---
PROPERTY LINE	---	---
RIGHT OF WAY	---	---
SECTION LINE	---	---
EASEMENT LINE	---	---
CONTOURS	100	100
GAS MAIN	---	---
UNDERGROUND ELECTRIC	---	---
OVERHEAD ELECTRIC	---	---
FIBER OPTIC	---	---
CABLE TELEVISION	---	---
OVERHEAD TELEPHONE	---	---
UNDERGROUND TELEPHONE	---	---
FENCE	---	---
SILT FENCE	---	---
SANITARY MANHOLE (MH)	○ MH	○ MH
STORM MANHOLE	○ MH	○ MH
CATCH BASIN (CB)	□ CB	□ CB
RISE	⊕	⊕
GATE VALVE	⊕	⊕
FIRE HYDRANT	⊕	⊕
UTILITY POLE	⊕	⊕
SIGN	⊕	⊕
CURB STOP & BOX	⊕	⊕
PROPOSED ASPHALT		▒
PROPOSED GRAVEL		▒



TRAVERSE CITY, MI PH 231.935.1530
www.machinengineering.net

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PATRICK J. MACHIN
PRINT NAME

6201051471 EXP. 10/31/2022
REG. NO. DATE

MACHIN ENGINEERING, INC.
ORIGINAL DOCUMENT(S) ARE STORED AT



REV#	REVISION	DATE
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E	ISSUED FOR CONSTRUCTION	04/01/2021

DATE ISSUED: 04/01/2021

DATE ISSUED: 03/04/2021

ISSUE PHASE: CONSTRUCTION

PROJECT TITLE:

LEELANAU COUNTY
POPP ROAD
RECYCLING
DROP-OFF CENTER

CLIENT:
LEELANAU COUNTY
8527 E GOVERNMENT CENTER DRIVE, SUITE 101
SUTTONS BAY, MI 49682

PROJECT LOCATION:

LELAND TOWNSHIP, MI

SHEET TITLE:

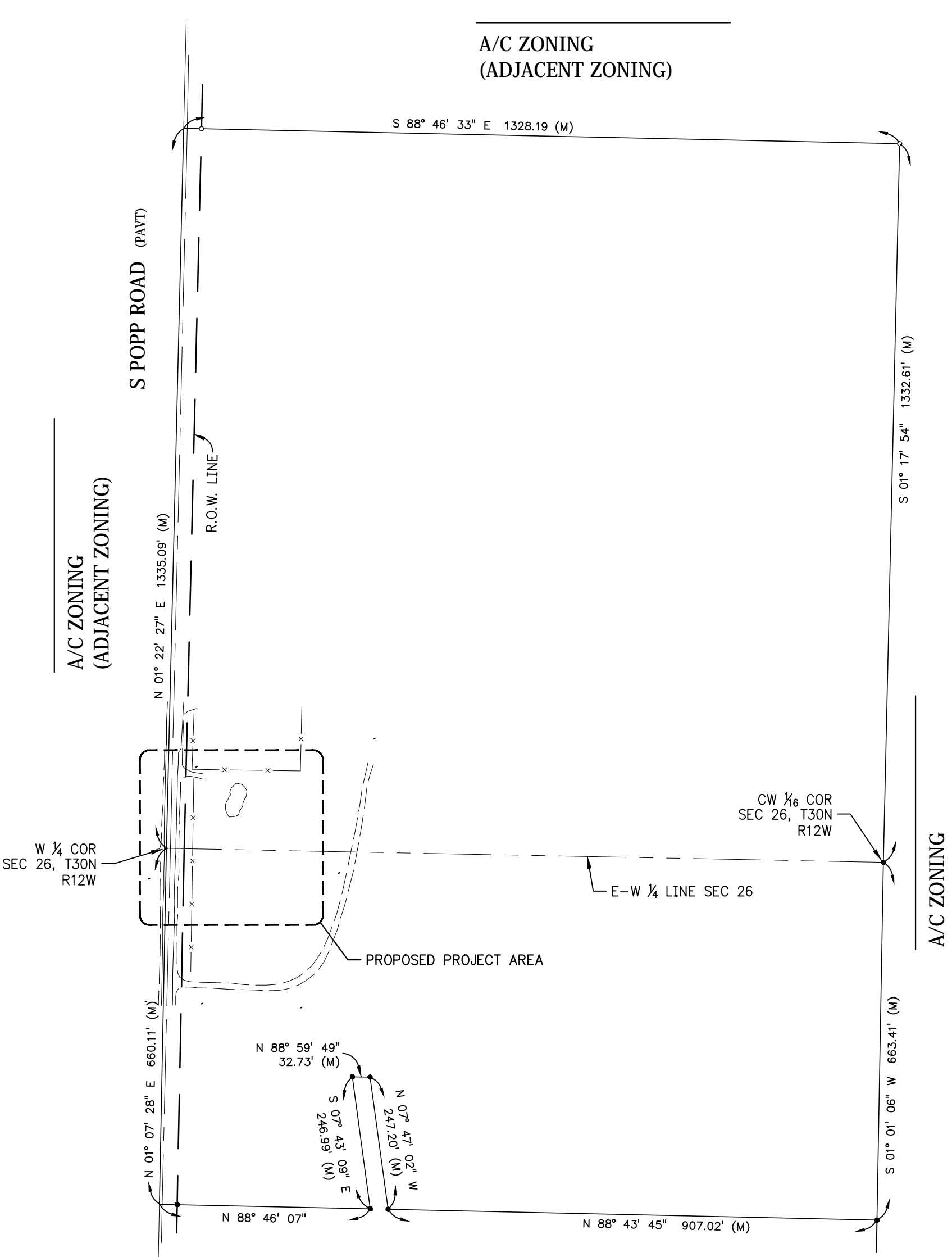
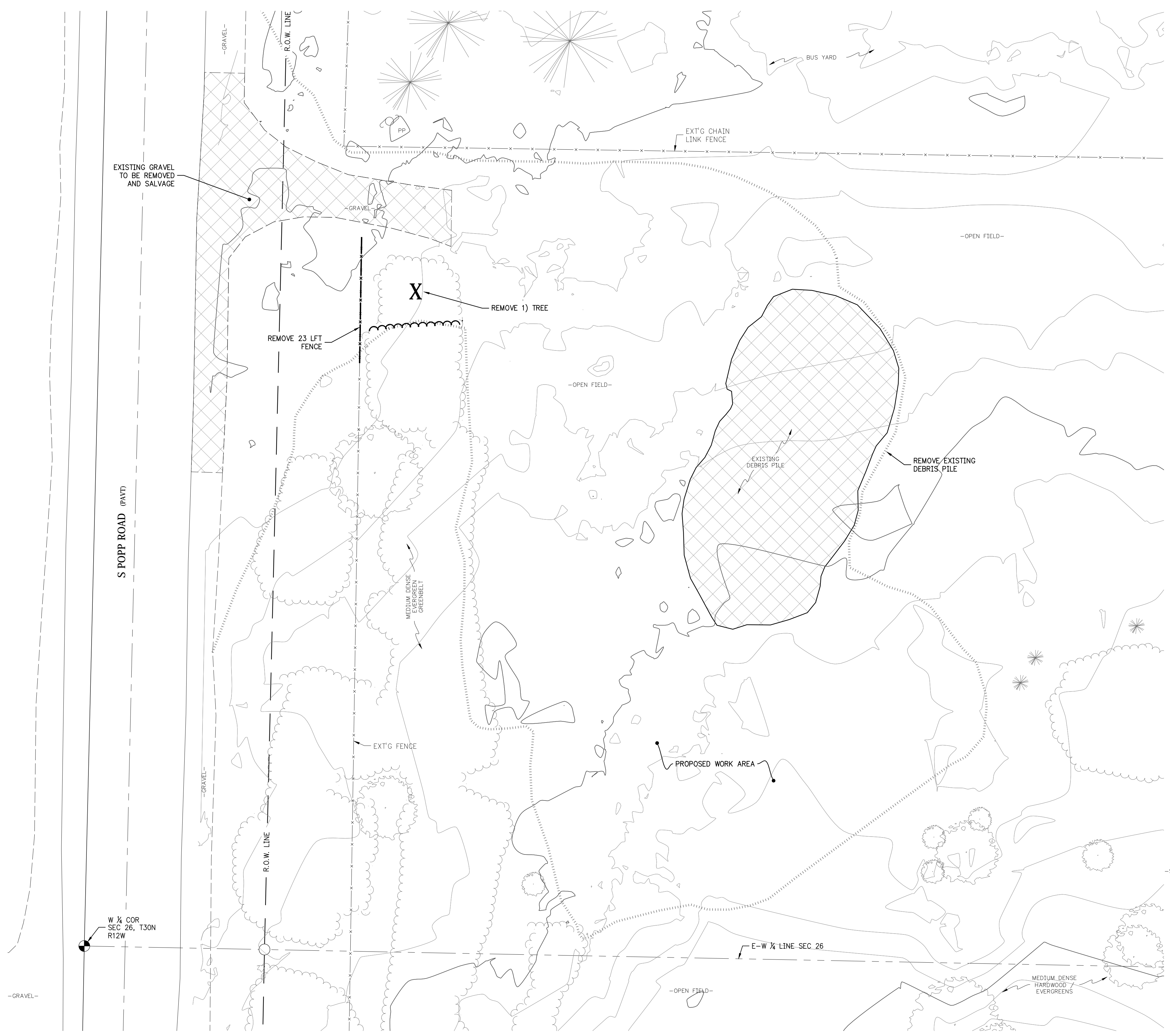
NOTES
&
SPECIFICATIONS

PROJECT NUMBER

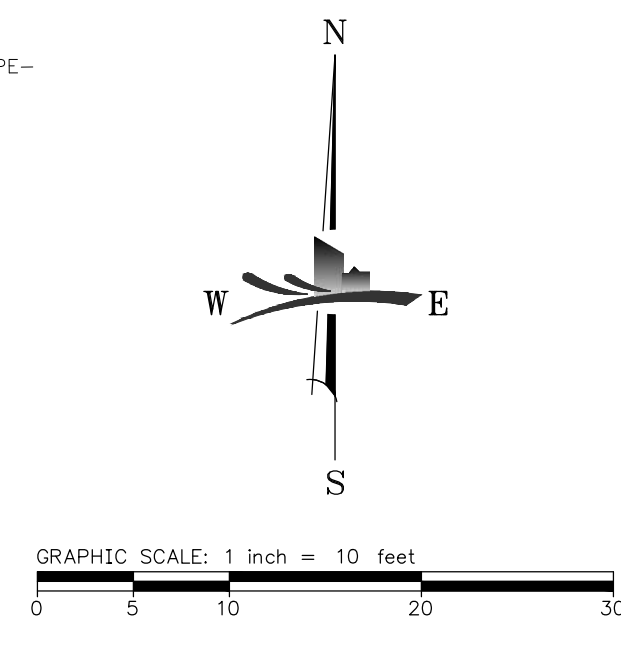
20196

SHEET NUMBER

R1



A/C ZONING (ADJACENT ZONING)
OVERALL SITE PLAN
 SCALE: 1"=200'-0"



NOTES

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LEGEND

- EXISTING GRAVEL TO BE SALVAGE
- EXISTING BIT., CONC., & GRAVEL TO BE REMOVED
- EXISTING CONTOURS
- REMOVE ITEM
- RELOCATE ITEM
- ADJUST ITEM
- PROTECTION ITEM
- SALVAGE ITEM
- REMOVAL

MACHINENGINEERING
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PATRICK J. MACHIN
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 ORIGINAL DOCUMENT(S) ARE STORED AT

4/05/2021
 STATE OF MICHIGAN
 PATRICK J. MACHIN
 ENGINEER
 No. 6201051471
 PROFESSIONAL ENGINEER

REV.	DESCRIPTION	DATE
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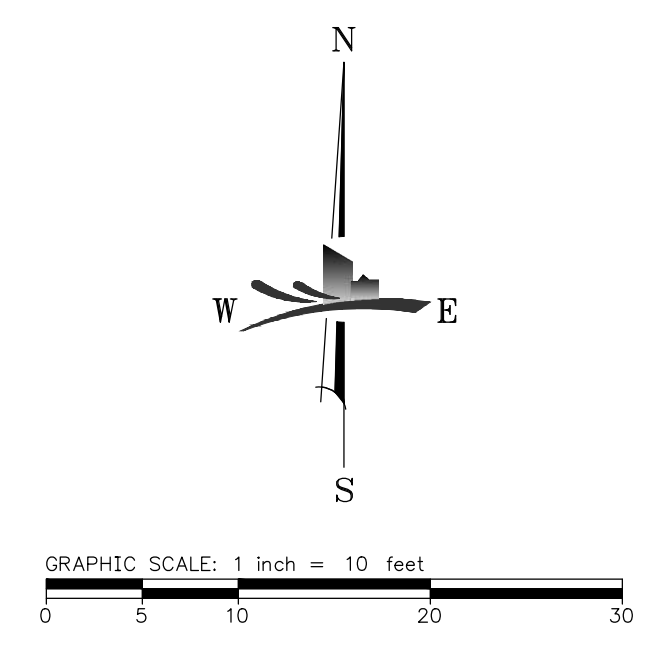
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**LEELANAU COUNTY
 POPP ROAD
 RECYCLING
 DROP-OFF CENTER**

CLIENT:
 LEELANAU COUNTY
 8527 E GOVERNMENT CENTER DRIVE, SUITE 101
 SUTTONS BAY, MI 49682

PROJECT LOCATION:
LELAND TOWNSHIP, MI

SHEET TITLE:
**OVERALL
 EXISTING
 CONDITIONS**

PROJECT NUMBER: **20196**
 SHEET NUMBER: **C1**



NOTES

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2. DEVELOPMENT OF THIS SITE SHALL BE IN ACCORDANCE WITH STATE, COUNTY AND TOWNSHIP REQUIREMENTS.
3. LANDSCAPING SHALL MEET THE TOWNSHIP REQUIREMENTS.
4. ALL DISTURBED AREAS SHALL BE TOPSOILED, SEEDED, MULCHED, AND FERTILIZED

PROJECT INFORMATION

APPLICANT
 LEELANAU COUNTY
 8527 E GOVERNMENT CENTER DRIVE, STE 101
 SUTTONS BAY, MI 49682
 CHET JANIK, COUNTY ADMINISTRATOR

LEGAL DESCRIPTION (AS SURVEYED)
 A PARCEL OF LAND SITUATED IN PART OF THE WEST ONE-HALF OF SECTION 26, T30N, R12W, LEELANAU TOWNSHIP, LEELANAU COUNTY, MICHIGAN BEING MORE PARTICULARLY DESCRIBED AS: COMMENCING AT THE NORTHWEST CORNER OF SAID SECTION 26; THENCE S0R22°27'W ALONG THE WEST LINE OF SECTION 26 A DISTANCE OF 1335.09 FEET TO THE NORTH ONE-SIXTEENTH LINE OF SECTION 26 AND THE POINT OF BEGINNING; THENCE S88°46'33"E ALONG THE NORTH ONE-SIXTEENTH LINE A DISTANCE OF 33.00 FEET TO THE EAST RIGHT-OF-WAY OF POPP ROAD; THENCE CONTINUING S88°46'33"E ALONG THE NORTH ONE-SIXTEENTH LINE A DISTANCE OF 1295.19 FEET TO THE NORTHWEST ONE-SIXTEENTH CORNER OF SECTION 26; THENCE S0R17°54'W ALONG THE WEST ONE-SIXTEENTH LINE OF SECTION 26 A DISTANCE OF 1332.61 FEET TO THE CENTER-WEST ONE-SIXTEENTH CORNER OF SECTION 26; THENCE S0R01°06'W A DISTANCE OF 663.41 FEET; THENCE N88°43'45"W A DISTANCE OF 907.02 FEET; THENCE N07°47'40"W A DISTANCE OF 247.20 FEET; THENCE N88°45'9"W A DISTANCE OF 32.73 FEET; THENCE S07°43'09"E A DISTANCE OF 246.99 FEET; THENCE N88°46'07"W A DISTANCE OF 358.06 FEET TO THE EAST RIGHT-OF-WAY OF POPP ROAD; THENCE CONTINUING N88°46'07"W A DISTANCE OF 33.07 FEET TO THE WEST LINE OF SECTION 26; THENCE NOR 07°28'E ALONG THE WEST LINE OF SECTION 26 A DISTANCE OF 660.11 FEET TO THE WEST ONE-QUARTER CORNER OF SECTION 26; THENCE NOR 22°27'E ALONG THE WEST LINE OF SECTION 26 A DISTANCE OF 1335.09 FEET TO THE POINT OF BEGINNING. PARCEL CONTAINS 60.73 ACRES, MORE OR LESS, AND IS SUBJECT TO ANY EASEMENTS, RESERVATIONS, OR RESTRICTIONS OF RECORD

SITE INFORMATION
 PARCEL CURRENT ZONING: A/C AGRICULTURAL CONSERVATION
 PROPOSED USE: RECYCLING SITE
 PARCEL ADDRESS: 441 S POPP ROAD, LAKE LEELANAU, MI 49653
 PROPERTY TAX ID: 45-009-026-024-00
 SECTION, TOWN, RANGE: SEC. 26, T30N, R12W
 GROSS AREA OF PARCELS: = 60.73 ACRES
 *NET AREA OF PARCELS: = 0.34 ACRES
 YARD SETBACKS:
 • FRONT 30'
 • REAR 30'
 • SIDE 10'

*NET AREA IS ESTIMATED AREA IMPACTED BY PROJECT

LOT COVERAGE CALCULATIONS
 PROPOSED:
 PROP PAVEMENT 1,358 SFT
 PROP GRAVEL 6,722 SFT
 TOTAL 8,080 SFT / 0.18 AC
 % COVERAGE = 0.20 AC / 0.34 AC = 59% BASED ON IMPACTED AREA

CONSTRUCTION NOTES

- 1 INSTALL BITUMINOUS PAVT SEE DETAIL '1/C4'
- 2 INSTALL 12" GRAVEL SEE DETAIL '2/C4'
- 3 6) PROPOSED 6'x8' RECYCLING BIN
- 4 EXISTING EVERGREEN GREEN BELT TO REMAIN
- 5 INSTALL COMMERCIAL DRIVEWAY APPROACH SEE DETAIL '12/C4'

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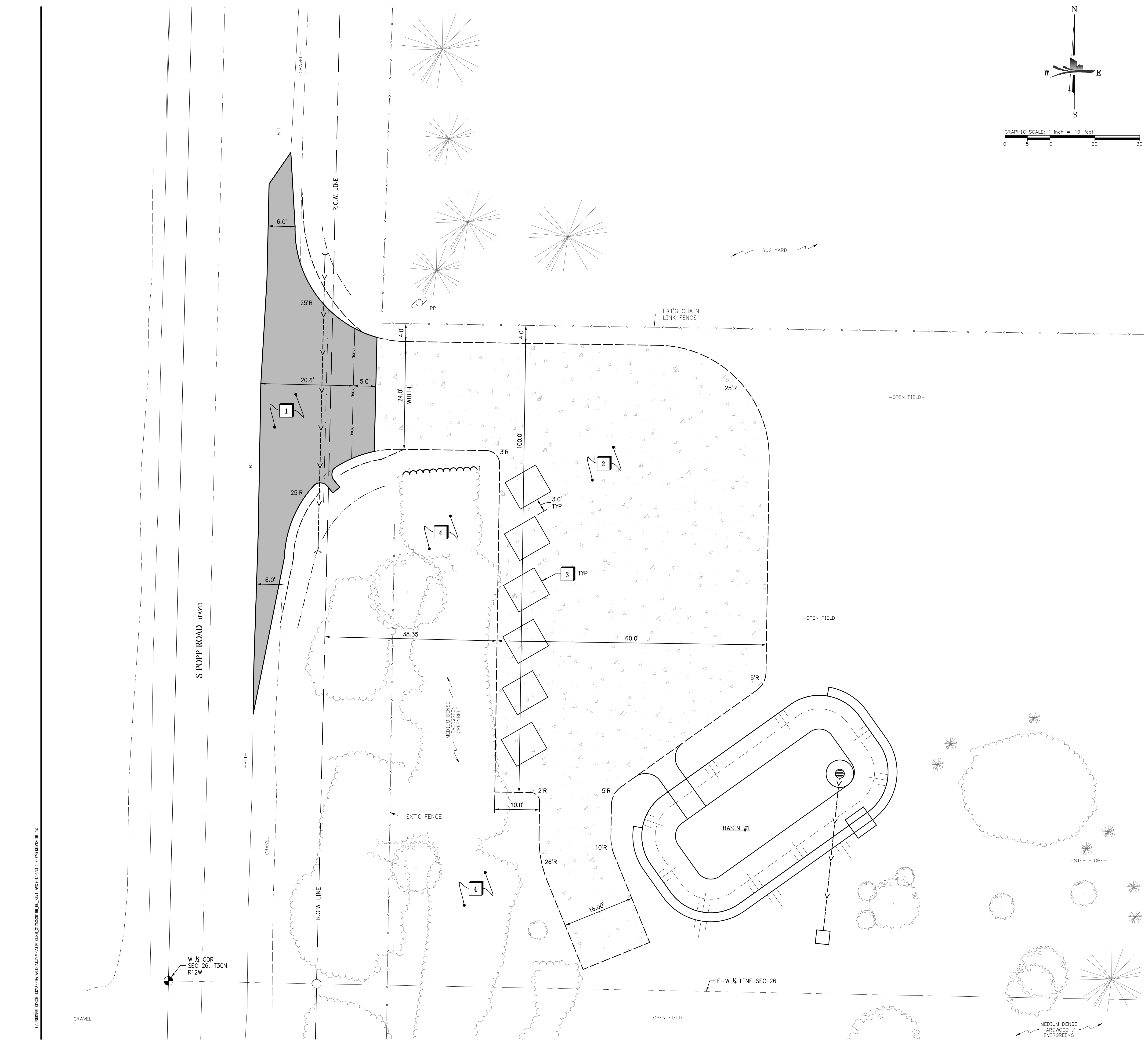
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 REC. NO. DATE
 MACHIN ENGINEERING, INC.
 ORIGINAL DOCUMENT(S) ARE STORED AT

4/05/2021
 STATE OF MICHIGAN
 PATRICK J. MACHIN
 ENGINEER
 No. 6201051471

DATE ISSUED: 03/04/2021
 ISSUE PHASE: CONSTRUCTION
 PROJECT TITLE:
 LEELANAU COUNTY
 POPP ROAD
 RECYCLING
 DROP-OFF CENTER

CLIENT:
 LEELANAU COUNTY
 8527 E GOVERNMENT CENTER DRIVE, SUITE 101
 SUTTONS BAY, MI 49682
 PROJECT LOCATION:
 LEELANAU TOWNSHIP, MI

SHEET TITLE:
 DIMENSIONAL
 SITE PLAN
 PROJECT NUMBER 20196
 SHEET NUMBER C2



C:\USERS\MJ\DESKTOP\PROJECTS\20196\20196_SITELAYOUT.dwg, 3/15/2021, 10:58:14 AM, PLOT: 20196_SITELAYOUT.dwg, 3/15/2021, 10:58:14 AM, PLOT: 20196_SITELAYOUT.dwg



NOTES

- ALL STRUCTURES SHALL BE KEPT FREE OF DEBRIS DURING CONSTRUCTION USING CATCH BASIN INLET FILTERS.
- ALL DISTURBED AREAS SHALL BE TOPSOILED, SEEDED, MULCHED, AND FERTILIZED.
- SEED SHALL BE PLACED OVER 4" TOPSOIL IN ALL PROPOSED LAWN AREAS AND ALL AREAS DISTURBED BY CONSTRUCTION. SEED MIXES SHALL BE AS FOLLOWS:
 10% TALL FESCUE
 20% PERENNIAL RYE GRASS
 30% CREEPING RED FESCUE
 40% KENTUCKY BLUEGRASS
 AT 6 LBS. PER 1000 SFT

③ DENOTES TEMPORARY PRACTICES
 ⑤ DENOTES PERMANENT PRACTICES

CATCH BASIN SCHEDULE
 CB#1 (2' DIA)
 RIM=738.25
 IE=736.25 (6" SW)

DRAINAGE CONSTRUCTION NOTES

- INSTALL 15" CMP CULVERT
SEE DETAIL '12/C4'
- INSTALL 6" SCH35 DRAIN
- INSTALL BASIN OVERFLOW STRUCTURE W/ STONE FILTER. SEE DETAIL '7/C4'
- EMERGENCY OUTLET IN STONE BED
SEE DETAIL '8/C4'
- EMERGENCY BASIN OVERFLOW
EL = 738.75'
- INSTALL 0.50 CYD 4"-8" RIP RAP ON GEOTEXTILE FABRIC
- INSTALL 2' BERM. TOP OF BERM
EL = 739.25'
- INSTALL DRAINAGE BASIN W/TRM P300 ARMOR
SEE DETAIL '13/C4'
- INSTALL STONE RIP-RAP APRON W/TRM P300 ARMOR
SEE DETAIL '4/C4'
- INSTALL BITUMINOUS SPILLWAY W/ RIP-RAP
SEE DETAIL '13/C4'

SE & SC KEYING SYSTEM

1	STRIPPING & STOCKING TOPSOIL	TOPSOIL MAY BE STOCKPILED ABOVE BORROW AREA TO ACT AS A EROSION STOPPER. SHOULD BE TEMPORARILY STOCKED TO BE SHELVED AND STOCKPILED IN A LOCATION DESIGNATED BY THE OWNER'S REPRESENTATIVE.
5	SEEDING	INDEPENDENT AND VERY EFFECTIVE. STABILIZES SOIL. THIS PROTECTS EROSION POINTS. RUNOFF TO DEEPER SOIL. REDUCING RUNOFF VOLUME SHOULD INCLUDE PREPARED TOPSOIL BED.
6	SEEDING W/MULCH OR MATTING	FACILITATES ESTABLISHMENT OF VEGETATIVE COVER. EFFECTIVE FOR DRAINAGEWAYS W/ LOW VELOCITY. EASILY PLACED IN SMALL QUANTITIES BY INDEPENDENT PERSONNEL. SHOULD INCLUDE PREPARED TOPSOIL BED.
14	AGGREGATE COVER	STABILIZES SOIL SURFACE. THIS MINIMIZES EROSION. PERMITS CONSTRUCTION TRAFFIC IN ADVERSE WEATHER. MAY BE USED AS PART OF PERMANENT BASE CONSTRUCTION OF PAVED AREAS.
15	PAVING	PROTECTS AREA WHICH OTHERWISE CANNOT BE PROTECTED. BUT INCREASES RUNOFF VOLUME AND VELOCITY. IRREGULAR SURFACE WILL HELP SLOW VELOCITY.
57	GEOTEXTILE SILT FENCE	USES GEOTEXTILE AND POSTS OR BALES MAY BE CONSTRUCTED OR PREPARED EASY TO CONSTRUCT AND LOCATE AS NECESSARY.
58		USE AT STORMWATER PALETS ESPECIALLY AT CONSTRUCTION SITES.

LEGEND

	PROPOSED ASPHALT
	PROPOSED GRAVEL
	EXISTING CONTOURS
	PROPOSED CONTOUR
	DIRECTION OF DRAINAGE
	PROP. SLOPE X.X%
	SPOT GRADE
	MATCH EXISTING
	PROP. STORM SEWER LINE
	DIRECTION OF DRAINAGE

MACHINENGINEERING
 incorporation
 TRAVERSE CITY, MI PH 231.935.1530
 www.machinengineering.net

REGISTRATION:
 I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATIONS, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER LAWS OF THE STATE OF MICHIGAN

PATRICK J. MACHIN
 PROFESSIONAL ENGINEER
 No. 6201051471

4/05/2021
 STATE OF MICHIGAN
 PROFESSIONAL ENGINEER

REV	BY	CHKD	DATE
A	REVIEW: SPS/BDK		03/04/2021
B	REVIEW: JYS/BDK		03/04/2021
C	REVIEW: PJK/BDK		03/04/2021
D	REVIEW: PJK/BDK		03/04/2021
E	REVIEW: PJK/BDK		03/04/2021

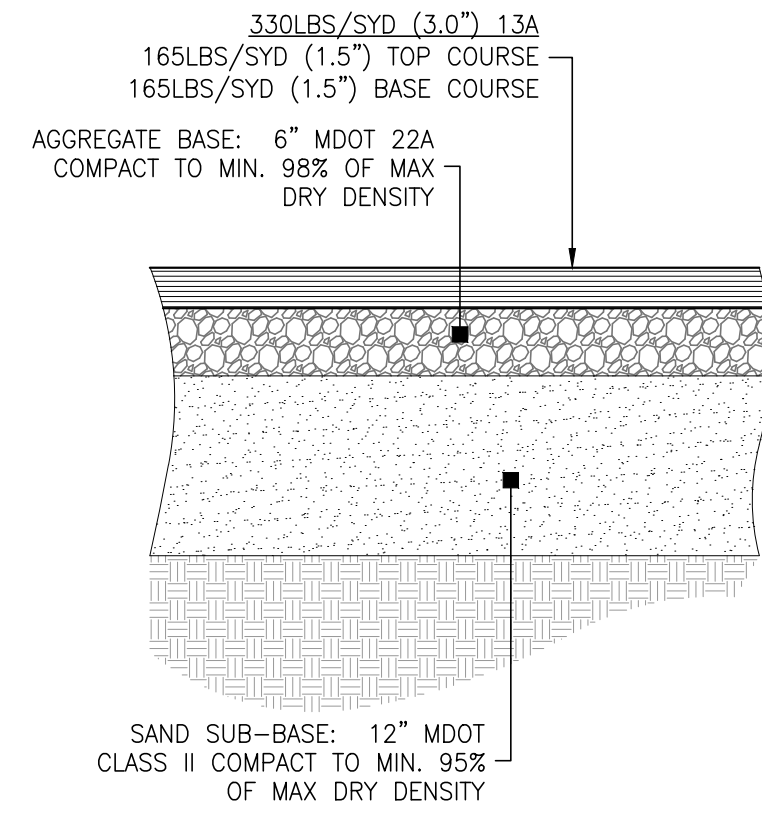
DATE ISSUED: 03/04/2021
 ISSUE PHASE: CONSTRUCTION
 PROJECT TITLE: LEELANAU COUNTY POPP ROAD RECYCLING DROP-OFF CENTER

CLIENT: LEELANAU COUNTY
 8527 E GOVERNMENT CENTER DRIVE, SUITE 101
 SUTTONS BAY, MI 49682

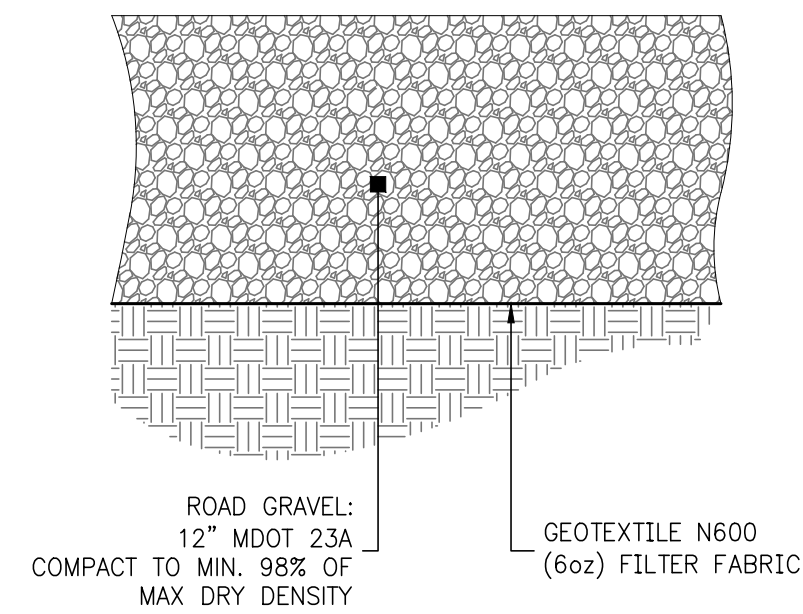
PROJECT LOCATION: LELAND TOWNSHIP, MI

SHEET TITLE: GRADING, SOIL EROSION & STORMWATER CONTROL PLAN

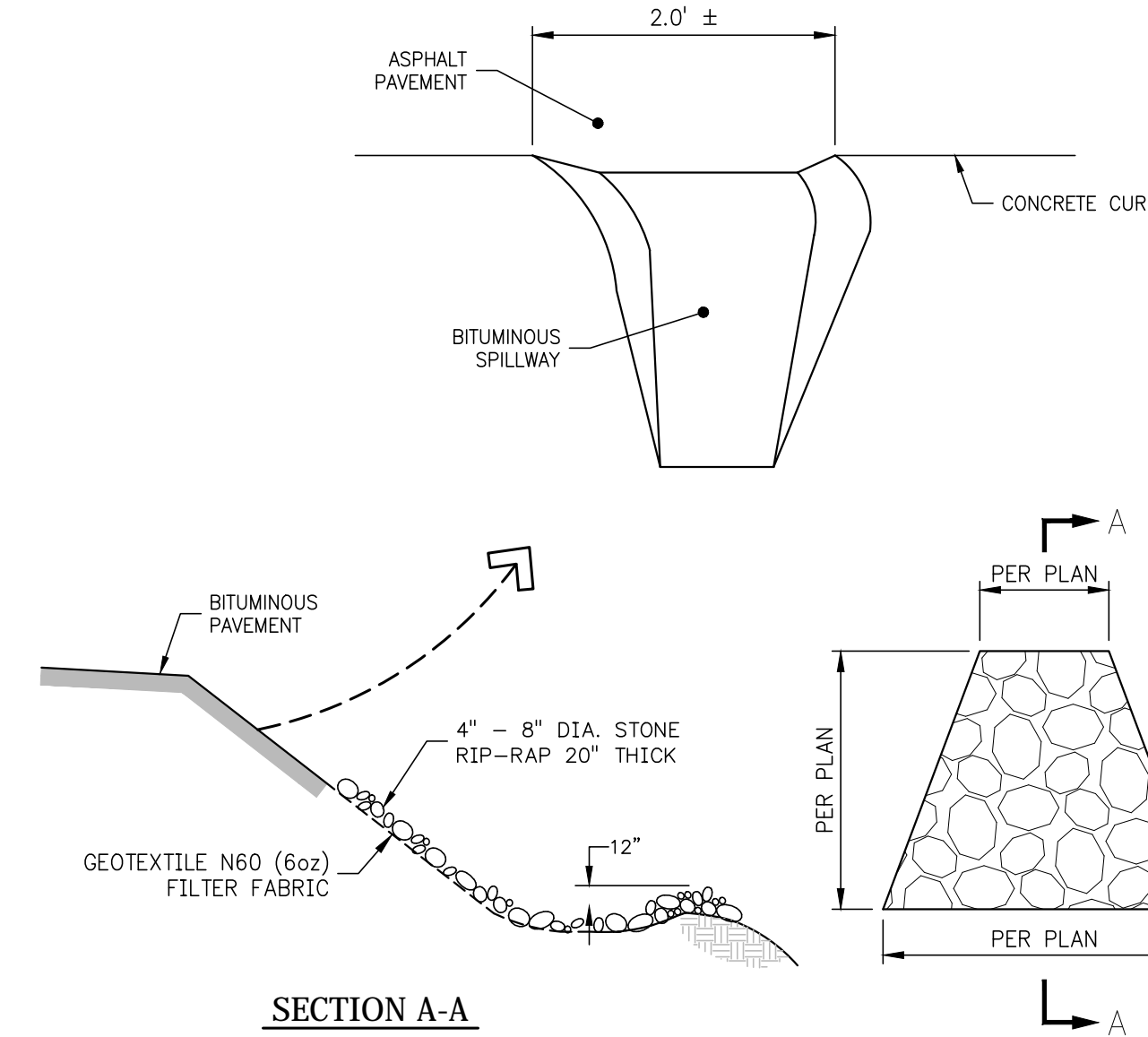
PROJECT NUMBER: 20196
 SHEET NUMBER: C3



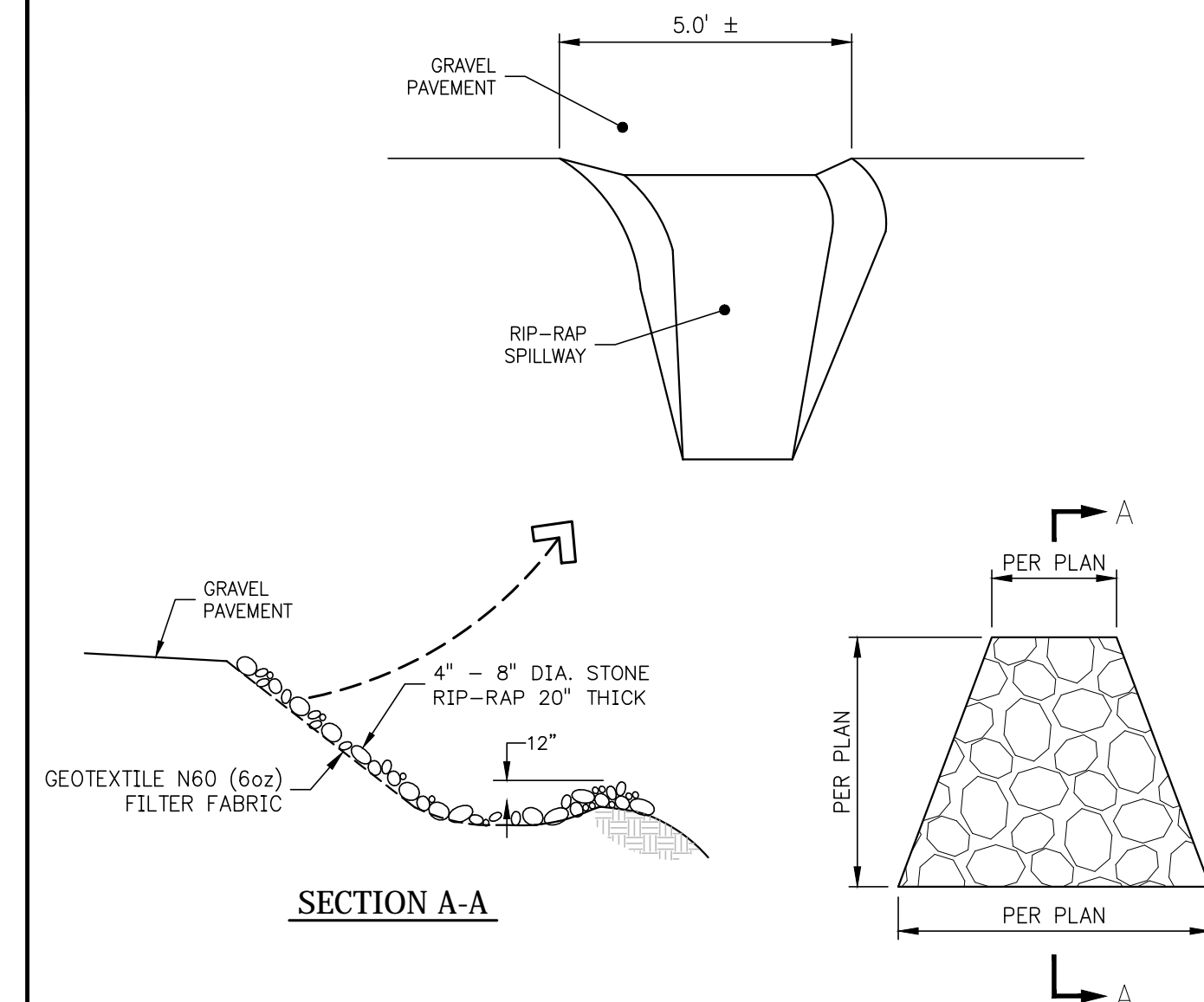
BITUMINOUS PAVEMENT DETAIL N.T.S. 1



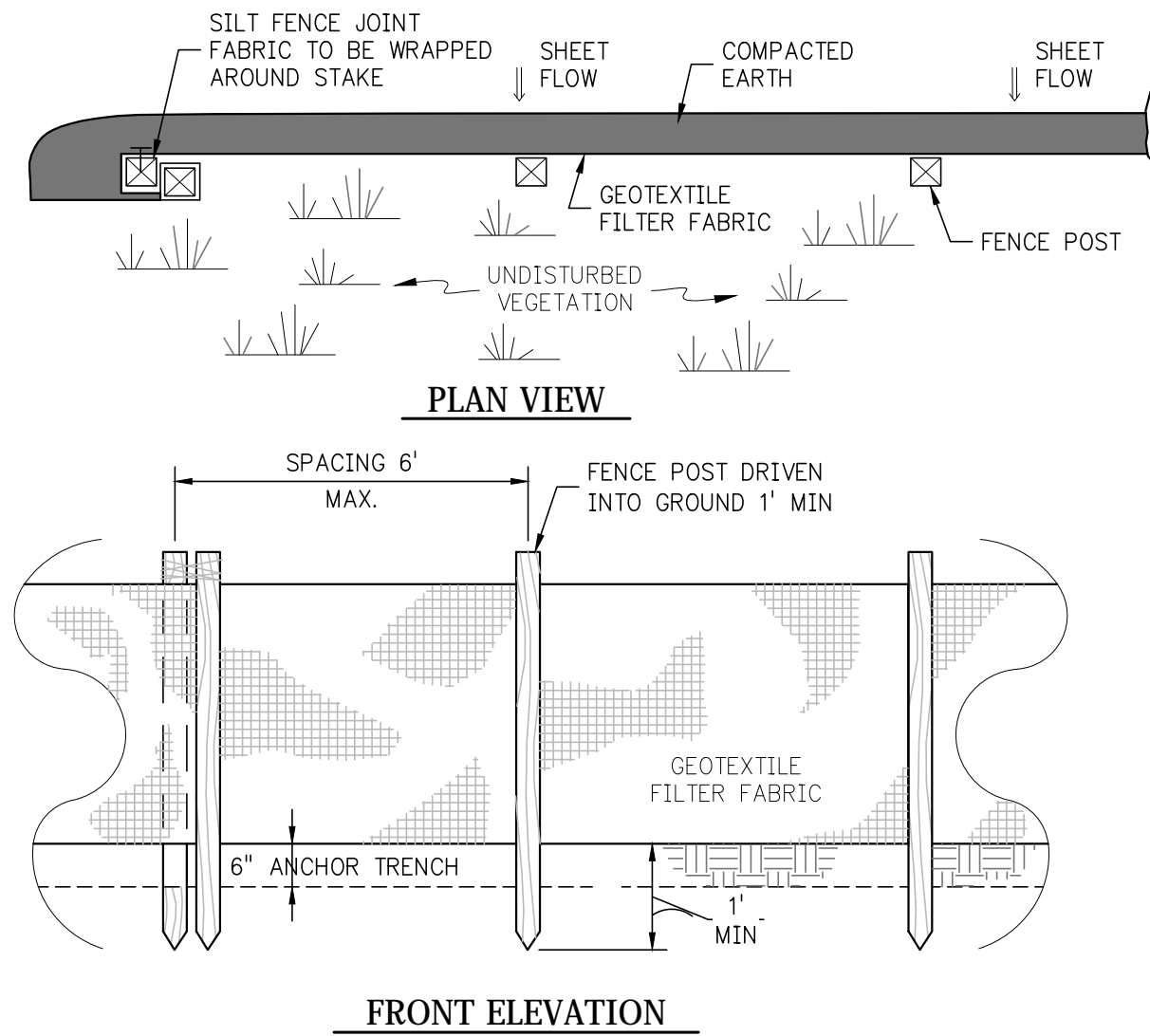
GRAVEL PAVEMENT DETAIL N.T.S. 2



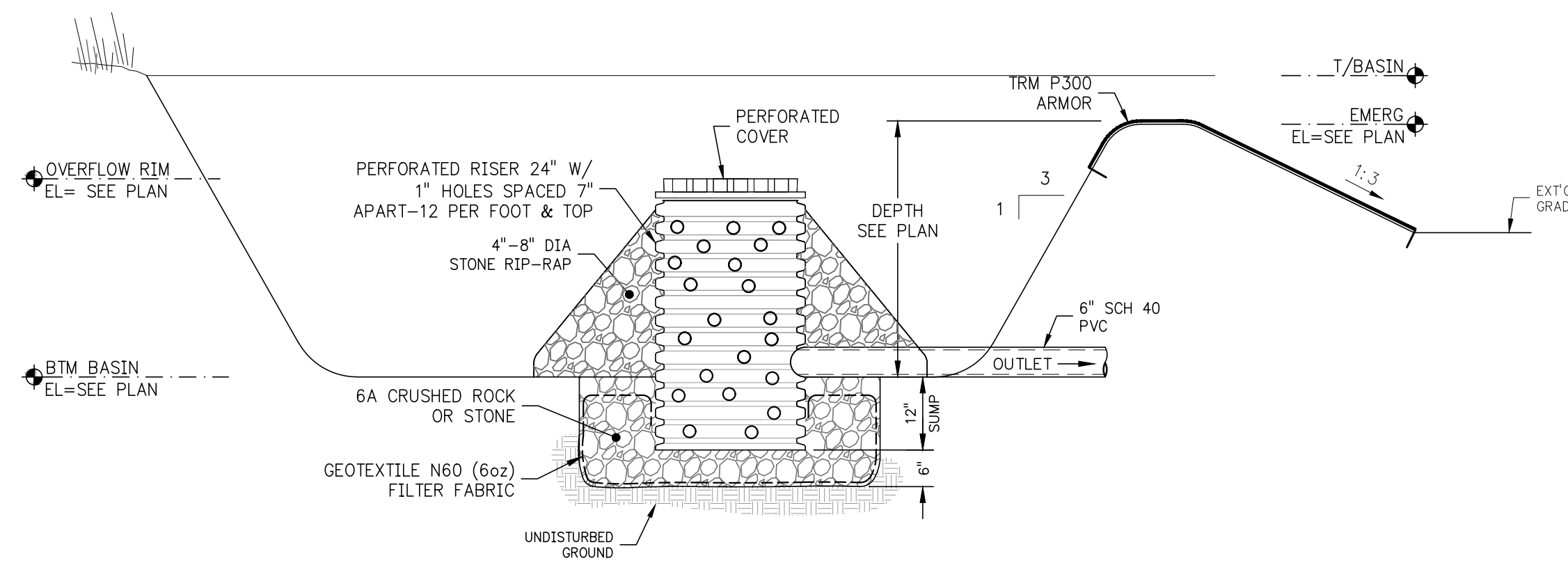
BITUMINOUS SPILLWAY & STONE RIP-RAP APRON DETAIL N.T.S. 3



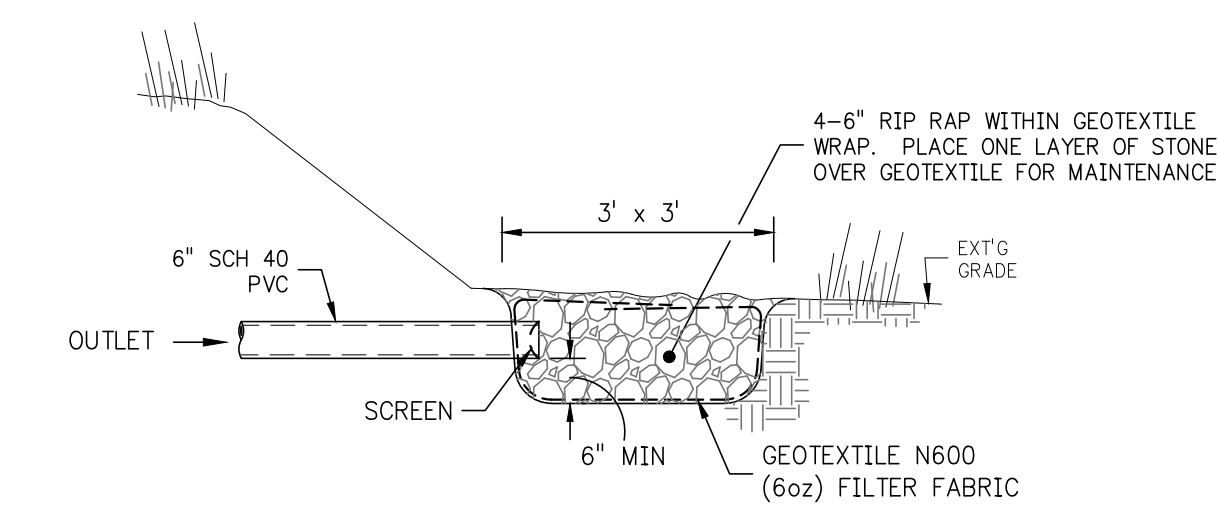
STONE RIP-RAP APRON DETAIL N.T.S. 4



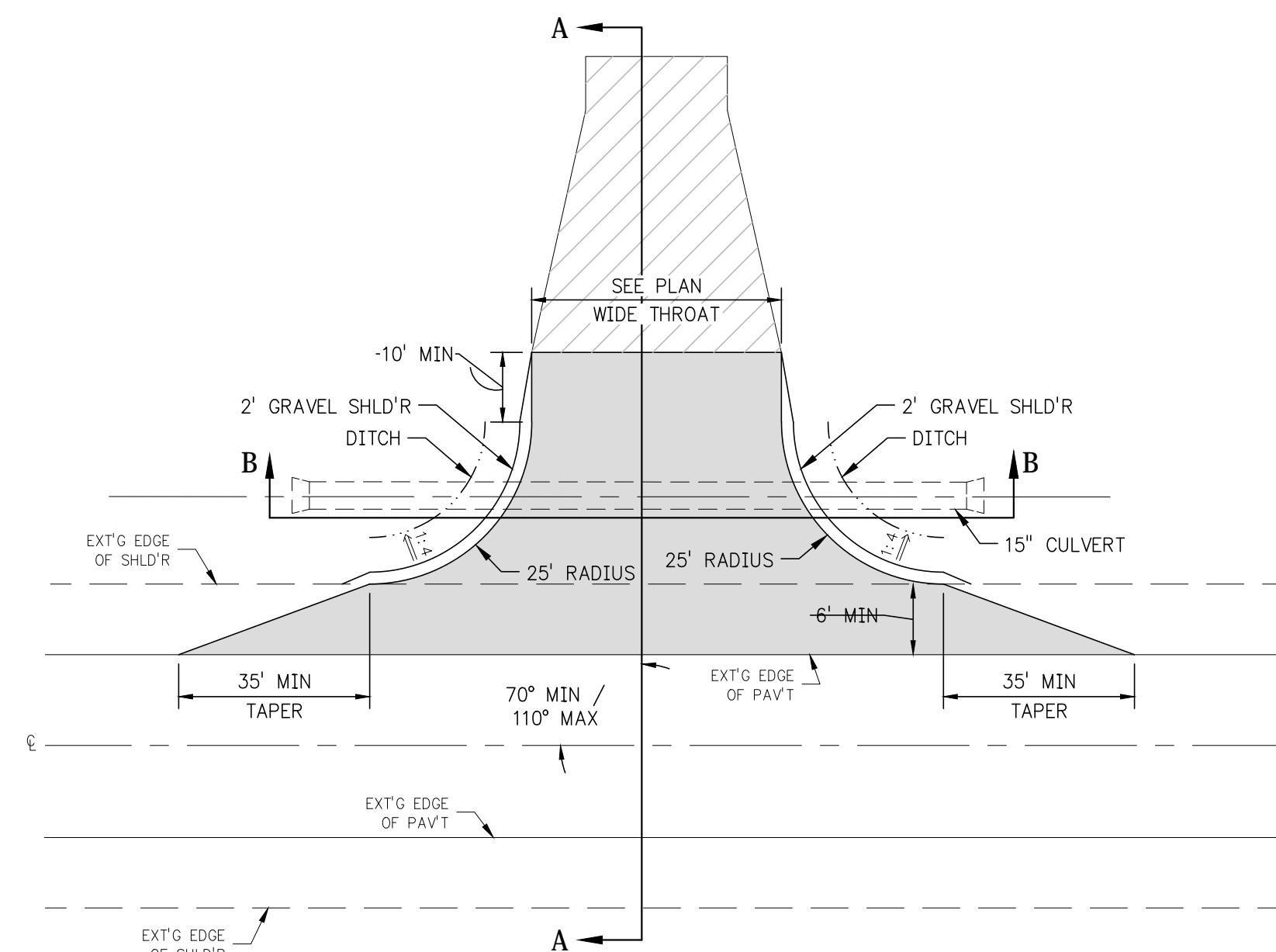
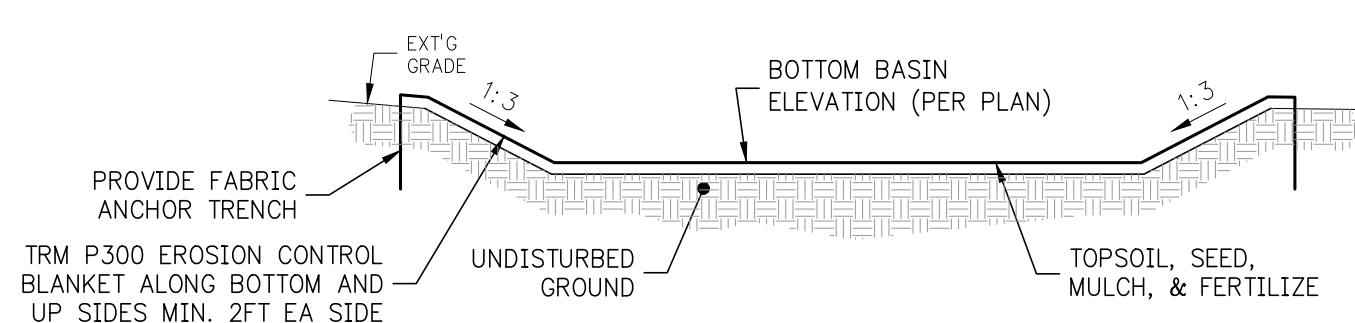
SILT FENCE N.T.S. 9



TYPICAL X-SECTION SEDIMENT/INFILTRATION BASIN N.T.S. 10



EMERGENCY OUTLET IN STONE BED DETAIL N.T.S. 8



COMMERCIAL DRIVEWAY APPROACH DETAIL N.T.S. 12

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PATRICK J. MACHIN
PRINT NAME
SIGNATURE
6201051471 EXP. 10/31/2022
REG. NO. DATE
MACHIN ENGINEERING, INC.
ORIGINAL DOCUMENT(S) ARE STORED AT



REV.	DESCRIPTION	DATE
A	REVIEW 30% DESIGN	03/04/2021
B	REVIEW 75% DESIGN	03/04/2021
C	REVIEW 90% DESIGN	03/04/2021
D	REVIEW FOR AGENCY REVIEW	03/04/2021
E	REVIEW FOR CONSTRUCTION	03/04/2021

REVISION:
DATE ISSUED: 03/04/2021
ISSUE PHASE: CONSTRUCTION

PROJECT TITLE:
**LEELANAU COUNTY
POPP ROAD
RECYCLING
DROP-OFF CENTER**

CLIENT:
LEELANAU COUNTY
8527 E GOVERNMENT CENTER DRIVE, SUITE 101
SUTTONS BAY, MI 49682

PROJECT LOCATION:
LELAND TOWNSHIP, MI

SHEET TITLE:
**CONSTRUCTION
DETAILS**

PROJECT NUMBER: 20196
SHEET NUMBER: C4