FARKHOURY ACADEMY TAIKWONDO

CIVIL ENGINEERING SITE PLANNING

1019 BERKLEY RD.

HENDERSON COUNTY, NORTH CAROLINA

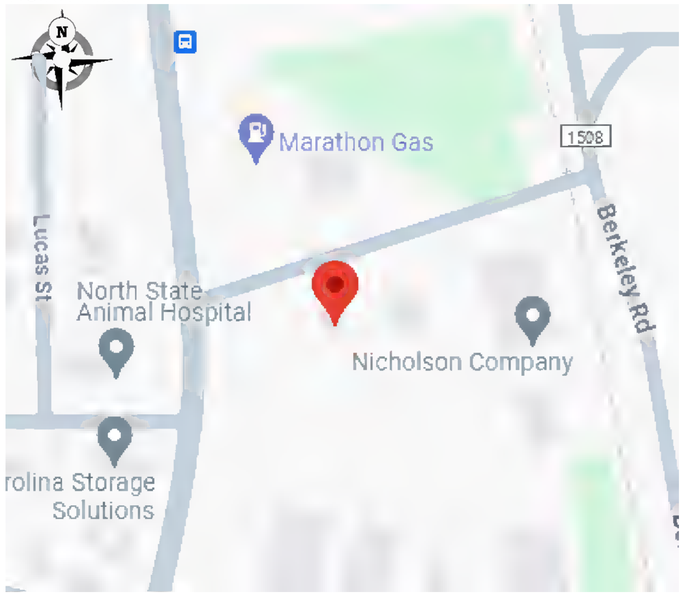
GENERAL NOTES:

1. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROTECT ALL ADJACENT PROPERTIES, UNDERGROUND AND ABOVE GROUND UTILITIES, STRUCTURES, MONUMENTS, AND ANY OTHER INFRASTRUCTURE AT THE SUBJECT SITE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ANY DAMAGES THAT RESULT FROM CONSTRUCTION ACTIVITIES.
2. UTILITY LOCATIONS ARE BASED ON SURVEY AND PUBLICLY AVAILABLE INFORMATION AND ARE CONSIDERED APPROXIMATE. THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMING ALL UTILITY LOCATIONS, ELEVATIONS, TYPES, SIZES, AND ANY OTHER FACTORS THAT MAY AFFECT CONSTRUCTION OR DESIGN FUNCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY IF ANY CONDITIONS ARE RECOGNIZED THAT DIFFER FROM WHAT IS SHOWN IN THE PLANS.
3. ANY DISTURBANCE TO STREAMS, BUFFERS, WETLANDS, OR ANY WATERS OF THE US REQUIRE PERMITTING WITH THE ARMY CORPS OF ENGINEERS AND THE DEPARTMENT OF ENVIRONMENTAL QUALITY. NO DISTURBANCE TO THESE AREAS SHALL OCCUR WITHOUT PERMITS IN PLACE.
4. INSTALLATION AND MAINTENANCE OF THE EROSION CONTROL MEASURES IS THE RESPONSIBILITY OF THE CONTRACTOR. NO SEDIMENT SHALL LEAVE THE SITE OR BE TRACKED ONTO THE ROADS.
5. EXCESS CUT MATERIAL THAT MUST BE HAULED OF SITE SHALL BE HAULED TO A LOCATION WITH AN APPROVED EROSION CONTROL PERMIT. CONTRACTOR SHAPP PROVIDE THOSE PERMITS PRIOR TO HAULING MATERIAL OFF SITE.
6. ANY CHANGES TO THE APPROVED PLANS MUST FIRST BE APPROVED IN WRITING BY THE ENGINEER AND THE REGULATORY AUTHORITIES.
7. THE ENGINEER IS IN NO WAY RESPONSIBLE FOR ENSURING THAT CONSTRUCTION IS COMPLETED IN A SAFE AND APPROPRIATE MANNER. ALL LIABILITY FOR CONSTRUCTION PRACTICES AND COMPLAINCE WITH APPROVED PERMITS AND REGULATIONS IS THE RESPONSIBILITY OF THE CONTRACTOR. THE ENGINEER IN NO WAY GUARANTEES THE WORK OF ANY CONTRACTOR.

INSPECTION SCHEDULE:

1. PRE-CONSTRUCTION MEETINGS ARE REQUIRED BEFORE COMMENCING ANY WORK AT THE SITE. THE OWNER, CONTRACTOR, ENGINEER, AND REGULATORY AUTHORITIES SHALL BE PRESENT AT THE PRE-CONSTRUCTION MEETING.
2. SHOP DRAWINGS FOR ANY INFRASTRUCTURE THAT IS NOT SPECIFICALLY CALLED OUT IN THE PLANS SHALL BE SUBMITTED FOR REVIEW AND APPROVAL BY THE ENGINEER PRIOR TO INSTALLATION.
3. THE ENGINEER SHALL BE INFORMED OF CONSTRUCTION SCHEDULING AND PROGRESS AS WELL AS ANY ISSUES THAT ARISE WHEN THEY ARISE. THE ENGINEER SHALL BE NOTIFIED AND ALLOWED THE OPPORTUNITY TO INSPECT SUBSURFACE INFRASTRUCTURE BEFORE IT IS BURIED.

VICINITY MAP



RIVER BASIN AND STREAM

Surface Water Classifications:

Stream Index:	6-55
Stream Name:	Mud Creek
Description:	From source to French Broad River
Classification:	C
Date of Class.:	March 31, 1996
What does this Class. mean?	View
River Basin:	French Broad

OWNER:

KEVIN FARKHOURY
kevin.farkhoury@gmail.com
PHONE# 828-808-2003
24 COUNTRY RD.
HENDERSONVILLE, NC 28791

ENGINEER:

EDSEL ENGINEERING, PLLC
WYATT EDSEL, PE
wyatt@edselengineering.com
828-707-6120
104 HIAWASSEE AVE.
BLACK MOUNTAIN, NC 28711

SURVEYOR:

FREELAND-CLINKSCALES & ASSOCIATES, INC.
FULTON V. CLINKSCALES. JR.
828-697-6539
201 2nd AVE. EAST
HENDERSONVILLE, NC 28792

DEVELOPMENT DATA

PROPERTY ADDRESS:	1019 BERKELEY ROAD HENDERSONVILLE, NC 28792
PROPERTY OWNER & CONTACT:	KEVIN FAKHOURY
ADDRESS:	24 COUNTRY RD. HENDERSONVILLE, NC 28791
EMAIL:	kevin.farkhoury@gmail.com
PHONE:	(828) 674-6267
PIN NUMBERS:	9569-48-5695
ZONING:	C-3 HIGHWAY BUSINESS
PROPERTY SIZE:	2.08 ACRES
DISTURBED AREA:	1.5 ACRES (SESC APPROVAL REQUIRED BY HENDERSON COUNTY)
BUILDING HEIGHT:	29' TO PEAK OF ROOF
SOIL TYPES:	HyC
CITES DEED:	4106-174
LAT/LONG:	35.34576341043784, -82.47311204410711
FEMA FLOOD PANEL:	9569
EFFECTIVE DATE:	10/2/2008

SHEET INDEX:

811 Know what's below. Call before you dig. Dial 811. North Carolina 811, Inc.

COVER C-0.0

1019 BERKELEY ROAD CIVIL ENGINEERING & SITE PLANNING

FOR OK CONSTRUCTION
TOWN OF HENDERSONVILLE, HENDERSON COUNTY

No.	REVISIONS	Date
1	SUBMIT TO CLIENT	01-08-24
2	FOR SUBMITTAL	02-14-24
3	RESUBMITTAL	03-26-24

PRELIMINARY - NOT FOR CONSTRUCTION

EDSEL ENGINEERING, PLLC
NORTH CAROLINA
CERT# P-2878

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 045409 WYATT DENTLEY EDSEL

EDSEL ENGINEERING, PLLC
104 HIAWASSEE AVENUE
BLACK MOUNTAIN, NC 28711

EDSEL ENGINEERING

DEVELOPMENT DATA

PROPERTY ADDRESS:	1019 BERKELEY ROAD HENDERSONVILLE, NC 28792
PROPERTY OWNER & CONTACT:	KEVIN FAKHOURY
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SDW AND JHW, LLC
D.B. 3434, Pg. 276
Plat Slide 14470
PIN: 9569-49-5002
ZONING: C-3

Berkeley Road (SR 1511)
65' Public Right of Way

Asheville Highway
(U.S. Highway 25 Business)
80' Public Right of Way

EXISTING DRIVEWAY

S19°11'38"E 64.89'

S73°24'36"W 111.37'

EXISTING DRIVEWAY

35' Setback*(See Note)

15' Setback*(See Note)

20' Setback*(See Note)

City of Hendersonville Limits

Henderson County Limits

30" Maple

24" Maple
12" Oak
18" Maple
8" Poplar
12" Oak
12" Poplar
12" Sycamore
10" Maple
18" Oak
15" Sycamore
12" Oak
12" Oak
8" Sycamore
18" Oak
15" Oak
Double Maple
15" Oak
15" Sycamore
15" Maple
18" Oak
12" Oak
12" Oak
8" Oak
8" Maple
24" Maple
18" Oak
24" Maple
18" Maple
7 Trunk Maple
18" Maple
18" Maple
30" Oak
18" Maple
18" Maple

S86°48'15"W 113.60'

One Thousand and Fifteen, LLC
D.B. 3696, Pg. 681
Plat Slide 12078
PIN: 9568-48-7639
ZONING: C-2SU

Hyder & Justus
D.B. 1010, Pg. 406
PIN: 9568-48-5251
ZONING: PCD

EXISTING INLET

EXISTING 18" CMP UNDER BERKELY ROAD

EXISTING CURB INLET ELEV=2154.95' INV.=2143.72'

EXISTING WATER METER

SUBJECT PROPERTY BOUNDARY

NCDOT ROW DISK

EXISTING OVERHEAD POWER POLE

OVERHEAD POWER LINES

HIGHWAY UTILITY BOX

EXISTING OVERHEAD POWER POLE

NCDOT ROW DISK

EXISTING DRIVEWAY ENTRANCE

EXISTING GUY WIRE

EXISTING POWER POLE

EXISTING STREET SIGN

EXISTING OVERHEAD ELECTRIC LINE

STREET SIGN "CITY OF HENDERSONVILLE"

¾" REBAR

EXISTING POWER POLE

PROPERTY CORNER (NOT RECOVERED)

TEMPORARY BENCHMARK ELEV. = 2140.10'

STREET SIGN

EXISTING ½" REBAR

ADJOINING PROPERTY LINE (TYP.)

FOUND NAIL IN PAVEMENT

EXISTING OVERHEAD POWER POLE

EXISTING OVERHEAD POWER LINE

EXISTING DRIVEWAY ENTRANCE

EXISTING 2' CONTOURS FROM SURVEY (TYP)

EXISTING 10' CONTOURS FROM SURVEY (TYP)

FORMER PROPERTY BOUNDARY - PARCELS TO BE COMBINED AND ANNEXED INTO CITY OF HENDERSONVILLE

PROPOSED NEW CITY BOUNDARY LINE

EXISTING TREES (TYP.)

EXISTING TREE TO BE REMOVED (TYP.)

EXISTING TREE TO REMAIN (TYP.)

EXISTING FENCE (POSSIBLE ENCROACHMENT)

¾" REBAR

ADJOINING PROPERTY LINE (TYP.)

0 20 40 60

SCALE: 1"= 20

EXISTING CONDITIONS LEGEND

- EXIST. BOUNDARY
- EXIST. ADJOINER
- EXIST. RIGHT OF WAY
- E-W EXIST. WATER LINE
- E-ST EXIST. STORM DRAIN
- EXIST. CURB INLET
- ELEV EXIST. MINOR CONTOUR
- ELEV EXIST. MAJOR CONTOUR
- EXIST. OVERHEAD UTILITY
- E-FEN EXIST. FENCE LINE
- W EXIST. WATER METER
- EXIST. PROPERTY CORNER
- EXIST. STREET SIGN
- EXIST. GUY WIRE
- EXIST. POWER POLE

*SETBACK NOTE:
REFER TO SECTION 5-18-4.2 OF CITY OF HENDERSONVILLE CODE OF ORDINANCES REGIARDING SETBACKS: Setbacks shall be the same as for the underlying zoning district provided, however, one or more principal structures may be authorized within the setback under the following circumstances:

a)Such principal structure(s) is not situated within ten feet of the projected right-of-way line of an entry corridor roadway;
b)Parking for the site is placed to the side or rear of such structure(s) so that it is screened from view from the entry corridor by means of such structure(s) and landscaping, as necessary;
c)When siting principal structures within the setback, the developer is encouraged to design the site, including any proposed structures, in such a way as to protect and preserve the aesthetics of the entry corridor, thereby furthering the purpose of this section.

EXISTING SITE COND.

C1.0

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NORTH CAROLINA
CERT # P-2678

NORTH CAROLINA
PROFESSIONAL ENGINEER
SEAL
049408
WYATT DENTLEY EDSEL

EDSEL ENGINEERING, PLLC
104 HIAWASSEE AVENUE
BLACK MOUNTAIN, NC 28711

EDSEL ENGINEERING

DEVELOPMENT DATA

PROPERTY ADDRESS:	1019 BERKELEY ROAD HENDERSONVILLE, NC 28792
PROPERTY OWNER & CONTACT:	KEVIN FAKHOURY
ADDRESS:	24 COUNTRY RD. HENDERSONVILLE, NC 28791
EMAIL:	kevin.farkhoury@gmail.com
PHONE:	(828) 674-6267
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PARKING DATA

PER TABLE 6-5-2 OF CITY OF HENDERSONVILLE CODE OF ORDINANCES,RECREATIONAL FACILITIES REQURE 1 PARKING SPACE / 200SF GROSS FLOOR AREA

PROPOSED BUILDING SF = 10000 SF
REQUIRED SPACES = 47 SPACES
(REDUCED FROM 50 PER SECTION 6-5 OF CHAPTER 5-18-4.7 REGARDING ENTRY CORRIDOR)

PER ADA STANDARDS FOR ACCESSIBLE DESIGN, 26-50 SPACES REQUIRE MIN 2 SPACES

H'CAP SPACES PROVIDED = 2 SPACES

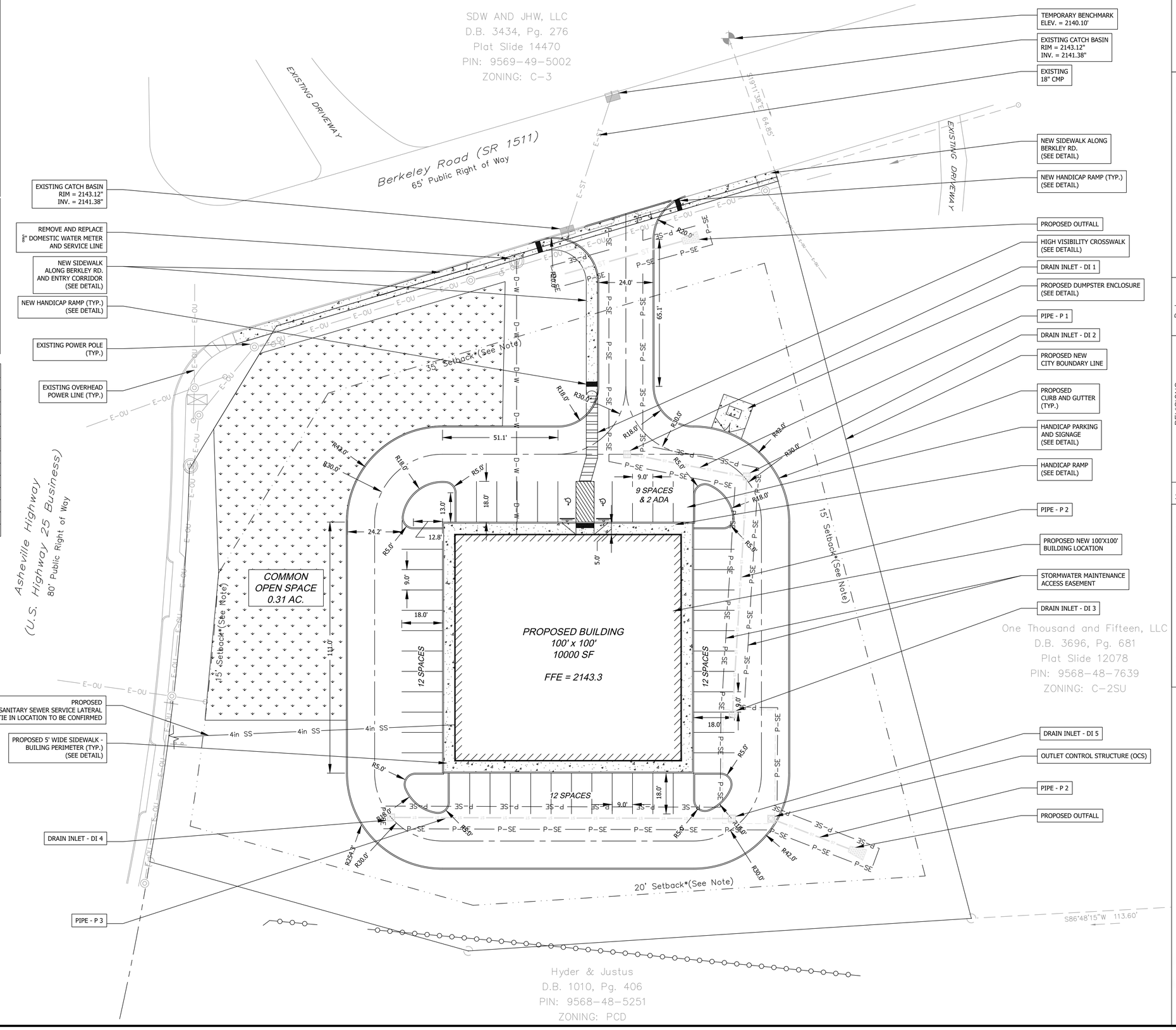
PROPOSED DEVELOPMENT DISTURBANCE DATA

TOTAL PROJECT AREA:		2.08	
UNDISTRUBED AREA (ac.)		0.58	27.9%
LIMITS OF DISTURBANCE (ac.)		1.5	72.1%
PERVIOUS AREA (ac.)		1.14	54.8%
IMPERVIOUS AREA (ac.)		0.94	45.2%
PROPOSED LOT AREAS		N/A	
STREETS AND PARKING (ac.)		0.60	28.7%
COMMON OPEN SPACE		0.31	14.9%
OTHER FACILITIES		N/A	
BUILDING COVERAGE (SF)		10000	11.0%
PRE DEVELOPMENT IMPERVIOUS AREA (ac.)		0.43	20.5%
POST DEVELOPMENT IMPERVIOUS AREA (ac.)		0.90	43.0%

SCALE: 1"= 20

SITE AND UTILITY LEGEND

- EXIST. BOUNDARY
- EXIST. ADJOINER
- EXIST. RIGHT OF WAY
- ST — PROPOSED STORM DRAINAGE
- D–W — PROPOSED DOMESTIC WATER SERVICE
- P–SE — PROPOSED STORM EASEMENT
- 6inSS — PROPOSED SEWER SERVICE
- PROPOSED CATCH BASIN
- PROPOSE RIP RAP OUTLET
- PROPOSED CONCRETE SIDEWALK
- E–W — EXIST. WATER LINE
- E–ST — EXIST. STORM DRAIN
- EXIST. CURB INLET
- EXIST. MINOR CONTOUR
- EXIST. MAJOR CONTOUR
- EXIST. OVERHEAD UTILITY
- EXIST. FENCE LINE
- EXIST. WATER METER
- EXIST. PROPERTY CORNER
- EXIST. STREET SIGN
- EXIST. GUY WIRE
- EXIST. POWER POLE
- COMMON OPEN SPACE



SITE & UTILITY PLAN

C-2.0

1019 BERKELEY ROAD CIVIL ENGINEERING & SITE PLANNING

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CERT # P-2678

NORTH CAROLINA PROFESSIONAL SEAL 045408 ENGINEER MATTHEW GENTLEY EDSEL

EDSEL ENGINEERING, PLLC
104 HIAWASSEE AVENUE
BLACK MOUNTAIN, NC 28711

EDSEL ENGINEERING

GENERAL NOTES:

1. WATER CONSTRUCTION ON THIS SITE IS AUTHORIZED BY PERMITS ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY (NCDEQ) AND AUTHORIZED BY THE CITY OF HENDERSONVILLE. THE WORK IS SUBJECT TO INSPECTIONS AT ALL TIMES BY REPRESENTATIVES OF NCDEQ, THE CITY OF HENDERSONVILLE, THE OWNER OR THE ENGINEER. THE PERMITS REQUIRE CERTIFICATION OF COMPLETION OF THE WATER SYSTEMS BY THE ENGINEER AND THE APPLICANT PRIOR TO ISSUANCE OF FINAL OPERATION APPROVAL.
2. MATERIALS AND INSTALLATION FOR WATER CONSTRUCTION SHALL CONFORM TO THE LATEST VERSIONS OF CITY SPECIFICATION AND DETAILS AND AWWA STANDARDS AND REQUIREMENTS.
3. CONTRACTOR SHALL NOTIFY NC811 & APPROPRIATE UTILITIES AGENCIES PRIOR TO PERFORMING ANY WORK.
4. REGULAR WORKING HOURS SHALL BE FROM 7:00 AM TO 5:00 PM MONDAY THROUGH FRIDAY, EXCEPT IN CASES OF EMERGENCY OR OTHERWISE APPROVED IN WRITING BY THE CITY OR AUTHORIZED REPRESENTATIVES. THE CONTRACTOR SHALL ENSURE THE CONSTRUCTION SITE IS SAFE FOR ANY PERSONS WHO MAY BE ON SITE DURING NON–WORKING HOURS.
5. ALL PERSONS SHALL BE COURTEOUS AND RESPECTFUL TO THE PUBLIC. CURSING OUR FOUL LANGUAGE IS NOT PERMITTED AND WILL NOT BE TOLERATED.
6. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING TRAFFIC CONTROL ON ALL ROADWAYS DURING THE PROJECT. THE CONTRACTOR SHALL NOTIFY LOCAL EMERGENCY, SCHOOL AND OTHER NECESSARY AUTHORITIES PRIOR TO ANY STREET CLOSING OR TRAFFIC CHANGE.
7. THE CONTRACTOR AT HIS OWN EXPENSE SHALL KEEP THE CONSTRUCTION SITE AND ADJACENT PUBLIC AND PRIVATE ROADWAYS CLEAN DURING THE PROJECT. THE CONTRACTOR IS ALSO RESPONSIBLE FOR CONTROLLING DUST WITHIN THE PROJECT AREA.
8. THE CONTRACTOR IS RESPONSIBLE FOR ALL CONSTRUCTION IN ACCORDANCE WITH THE LINES, GRADES AND ELEVATIONS SHOWN ON THE PLANS OR AS GIVEN BY THE ENGINEER IN THE FIELD.
9. CONTRACTOR SHALL VERIFY THE EXACT LOCATION AND THE ELEVATION FOR ALL UTILITIES, DRAINAGE AND OTHER UNDERGROUND FACILITIES BOTH EXISTING AND PROPOSED, AND SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES OR CONFLICTS PRIOR TO CONSTRUCTION.
10. CONTRACTOR SHALL PROTECT EXISTING UTILITIES DURING CONSTRUCTION. REPAIRS SHALL BE MADE IN ACCORDANCE WITH APPLICABLE STANDARDS OF APPROPRIATE AGENCIES AT THE CONTRACTOR'S EXPENSE.
11. DURING CONSTRUCTION THE CONTRACTOR SHALL MAINTAIN THE OPERATION OF EXISTING UTILITIES WITH THE LEAST AMOUNT OF SERVICE INTERRUPTION POSSIBLE IN COORDINATION WITH THE CITY OF HENDERSONVILLE. CONTINUOUS SERVICE, PUBLIC HEALTH AND SAFETY CONSIDERATIONS SHALL EXCEED ALL OTHERS AND CONTRACTOR'S SCHEDULE, PLANS AND WORK SHALL AT ALL TIMES BE SUBJECT TO ALTERATION AND REVISION IF NECESSARY FOR THESE CONSIDERATIONS.
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE TEMPORARY OR PERMANENT RELOCATION OF STRUCTURES AND UTILITIES, INCLUDING BUT NOT LIMITED TO POLES, SIGNS, FENCES, HYDRANTS, VALVES, PIPING, CONDUITS AND GRADES THAT INTERFERE WITH THE POSITIONING OF THE WORK AS SHOWN ON THE DRAWINGS.
13. CONTRACTOR SHALL BE REQUIRED TO CONFORM AND COMPLY WITH ALL RESTRICTIONS AND EASEMENT CONDITIONS AND IS RESPONSIBLE FOR ALL RELATED INCIDENTAL COSTS INVOLVED.
14. EXISTING WATER SERVICES SHALL BE REPLACED TO THE EXISTING METER UNLESS OTHERWISE APPROVED IN WRITING BY THE CITY. SPLICING OF THE WATER SERVICE ON THE DOWNSTREAM SIDE OF THE METER IS NOT PERMITTED.
15. ALL DISTURBED AREAS, INCLUDING BUT NOT LIMITED TO ASPHALT, CONCRETE, DRIVEWAYS, ROADS, LANDSCAPING, SHALL BE REPAIRED TO EQUAL OR BETTER CONDITION THAN THE ORIGINAL SITE. GRASS AND LANDSCAPED AREAS FILL MATERIAL MUST BE REPLACED IN TRENCH TO GRADE AS SOON AS WATERLINE CONSTRUCTION ALLOWS. ADEQUATE SEEDING AND MULCH OR SOD SHALL THEN BE APPLIED TO THE DISTURBED TRENCH AREA. ADDITIONAL FILL AND SITE RESTORATION MAY BE REQUIRED WITHIN THE WARRANTY PERIOD AT THE CITY'S DISCRETION.
16. CONTRACTOR SHALL PROVIDE EROSION CONTROL DEVICES TO CONTROL RUNOFF AS REQUIRED. THE CONTRACTOR IS RESPONSIBLE FOR ANY FINES THAT MAY BE LEVIED DUE TO RUNOFF FROM CONSTRUCTION.
17. IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO FOLLOW ALL APPLICABLE FEDERAL, STATE AND LOCAL HEALTH AND SAFETY REGULATIONS PERTAINING TO CONSTRUCTION OPERATIONS.
18. ALL WATER MAINS SHALL HAVE 3 FEET MINIMUM COVER.
19. INSTALL FERROUS MATERIAL PIPING FOR BOTH WATER AND SEWER WITHIN 10 FT. OF A CROSSING IF:

19.1. SEWER LINE CROSSES OVER WATER, OR

19.2. VERTICAL CLEARANCE BETWEEN WATER AND SEWER IS LESS THAN 18 INCHES.

19.3. MAINTAIN 10 FEET HORIZONTAL SEPARATION BETWEEN SEWER AND WATER MAINS UNLESS LAID IN SEPARATE TRENCHES WITH THE BOTTOM OF THE WATER LINE AT LEAST 18 INCHES ABOVE THE TOP OF THE SEWER LINE OR USE FERROUS MATERIAL FOR BOTH WATER AND SEWER.

20. MAINTAIN 18 INCHES VERTICAL SEPARATION BETWEEN STORM DRAIN AND WATER, OR INSTALL FERROUS MATERIAL WATER LINE WITHIN 10 FEET EACH SIDE OF CROSSING.
21. TAPS GREATER THAN ONE–INCH IN DIAMETER IN EXISTING, ACTIVE WATER MAIN ARE TO BE PERFORMED BY THE CITY UNLESS OTHERWISE APPROVED IN WRITING BY THE CITY. TAPS IN NEW CONSTRUCTION ARE TO BE PERFORMED BY THE CONTRACTOR IN ACCORDANCE WITH CITY REQUIREMENTS.
22. ALL WATER METERS WILL BE SET BY CITY STAFF UNLESS THE CONTRACTOR IS GRANTED WRITTEN PERMISSION BY THE CITY.

22.1. THE CONTRACTOR WILL PROVIDE THE CITY NOTICE OF 10 WORKING DAYS MINIMUM PRIOR TO THE DATE OF METER INSTALLATION.

22.2. THE CONTRACTOR WILL PROVIDE A LICENSED PLUMBER DURING THE METER INSTALLATION TO VERIFY LINE SERVICES IN ALL MULTI–METER BOXES.

23. ALL PUBLIC WATER MAIN CONSTRUCTION SHALL BE PERFORMED BY A NORTH CAROLINA LICENSED UTILITY CONTRACTOR.
24. ALL WATER APPURTENANCES ARE TO BE MADE USING LEAD FREE MATERIALS. PIPE, FITTINGS, VALVES, HYDRANTS, PIPE CLAMPS, RESTRAINTS, FLANGES, CASTINGS, REBAR, HATCHES, INLETS, METER BOXES AND ALL OTHER CAST IRON COMPONENTS SHALL BE MANUFACTURED IN THE USA.
25. RESTRAINED JOINTS BY AN APPROVED PIPE MANUFACTURER ARE TO BE USED FOR ALL PUBLIC WATER LINES WHERE THRUST RESTRAINING IS REQUIRED IN ACCORDANCE WITH THE PLANS AND MANUFACTURER'S SPECIFICATION. CONCRETE THRUST BLOCKS ARE PERMITTED ONLY WHERE CONNECTIONS ARE MADE TO EXISTING WATER LINES OR WHERE THE USE OF MECHANICAL RESTRAINT IS NOT FEASIBLE.
26. ALL FIRE HYDRANTS, VALVES, BACKFLOW PREVENTERS, HOT BOXES AND METER WATERS ARE TO BE INSTALLED ON RELATIVELY FLAT AREAS OUTSIDE OF PAVEMENT.
27. TAMPERING WITH OR ILLEGAL USE OF THE PUBLIC WATER SUPPLY WILL RESULT IN SUSPENSION OF WATER SERVICE, INCLUDING DOMESTIC AND COMMERCIAL, UNTIL FINAL APPROVAL BY THE CITY IS ISSUED. A PERSON FOUND TO BE USING WATER ILLEGALLY SHALL BE SUBJECT TO PENALTIES OR FINES, AS PRESCRIBED AND APPROVED BY CITY COUNCIL.

TESTING & INSPECTION:

1. NOTIFY THE CITY OF HENDERSONVILLE AND ENGINEER AT LEAST 5 WORKING DAYS BEFORE STARTING CONSTRUCTION OF WATER FACILITIES TO SCHEDULE A PRE–CONSTRUCTION CONFERENCE. THE ENGINEER SHALL PERIODICALLY INSPECT THE PROGRESS OF INSTALLATION AT A MINIMUM AND SHALL COMPLETE A FINAL WATER CERTIFICATION.
2. ALL CHANGES TO THE APPROVED CONSTRUCTION PLANS AND SUBMITTALS MUST BE APPROVED IN WRITING BY THE CITY PRIOR TO IMPLEMENTATION IN THE FIELD.
3. THE CONTRACTOR SHALL FURNISH SECURE AND PROVIDE ALL NECESSARY TESTING MATERIALS, EQUIPMENT, LABOR. THE CONTRACTOR SHALL COORDINATE TESTING, FLUSHING, DISINFECTION, AND BACTERIOLOGICAL SAMPLING WITH CITY INSPECTOR.
4. THE ENGINEER OR CONTRACTOR SHALL NOTIFY THE CITY CONSTRUCTION INSPECTORS 72 HOURS (MINIMUM) PRIOR TO ANY WATER MAIN OR TESTING OPERATIONS. AT A MINIMUM CITY STAFF SHALL BE NOTIFIED PRIOR TO TAPS, TESTING, FLUSHING, DISINFECTION, AND SAMPLING.
5. PRESSURE TEST WATER MAINS TO 200 PSI MIN. FOR A MINIMUM OF TWO HOURS IN ACCORDANCE WITH CITY REQUIREMENTS AND AWWA C600.
6. DISINFECT WATER LINES AND PROVIDE ACCEPTABLE BACTERIOLOGICAL TEST FROM A CERTIFIED TESTING LABORATORY IN ACCORDANCE WITH CITY REQUIREMENTS AND AWWA C651. THE CONTRACTOR MAY ELECT TO USE THE CITY'S CERTIFIED TESTING LABORATORY.
7. PRIVATELY OWNED FIRE SYSTEMS SHALL BE APPROVED BY THE APPROPRIATE LOCAL PERMITTING AUTHORITY. THE CITY ENGINEERING OR WATER AND SEWER DEPARTMENTS ARE NOT RESPONSIBLE FOR ENSURING COMPLIANCE WITH APPROPRIATE FIRE PROTECTION REGULATIONS. THE CITY DOES NOT PROVIDE ANY GUARANTEE OF ITS WATER SYSTEM'S CAPABILITY TO DELIVER WATER FLOW AND RESIDUAL PRESSURE THE FIRE PERMITTING AUTHORITY MAY REQUIRE.
8. ALL BACKFLOW PREVENTION ASSEMBLIES SHALL BE USC APPROVED AND REVIEWED BY THE CITY'S ENVIRONMENTAL COMPLIANCE COORDINATOR. PROTECTION OF THE PUBLIC WATER DISTRIBUTION SYSTEM SHALL BE ASSURED BY INSPECTION OF THE INSTALLATION AND TESTING OF BACKFLOW PREVENTION DEVICES IN ACCORDANCE WITH APPROPRIATE LOCAL, STATE, AND FEDERAL REGULATIONS.
9. CONSTRUCTION WATER SOURCING MUST BE APPROVED IN WRITING BY THE CITY. CONSTRUCTION WATER CONNECTIONS SHALL BE PAIRED WITH AN IRRIGATION METER AND APPROVED BACKFLOW PREVENTION ASSEMBLY. THE ASSEMBLY INSTALLATION MUST BE TESTED BY A LICENSED PLUMBER AND TEST RESULTS SUBMITTED TO THE CITY BEFORE USE OF CONSTRUCTION WATER.
10. SECURE FINAL WRITTEN ACCEPTANCE FROM THE CITY OF HENDERSONVILLE PRIOR TO ACTIVATION OF THE SYSTEM. WATER SERVICE WILL NOT BE PROVIDED UNTIL WRITTEN ACCEPTANCE OF THE SYSTEM IS ISSUED BY THE CITY.
11. THE ENGINEER SHALL SUPPLY THE CITY WITH FINAL AS–BUILT DRAWINGS AND COMPLETE ALL PROJECT CLOSE OUT REQUIREMENTS.

DISCLAIMER:

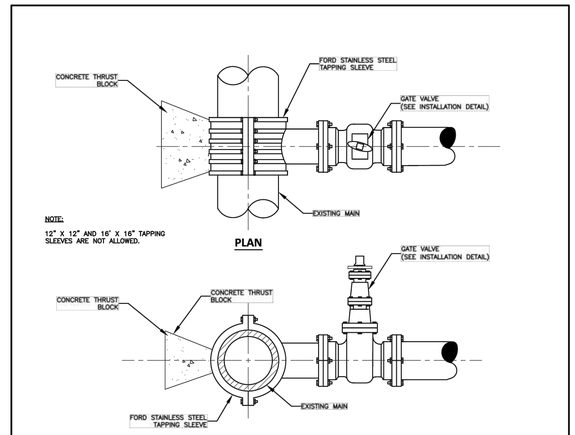
THE STANDARD WATER DETAILS ARE FOR THE SOLE USE OF PROJECTS DIRECTLY FOR, OR THOSE PROJECTS IN WHICH OWNERSHIP WILL BE TRANSFERRED TO THE CITY OF HENDERSONVILLE. THESE TYPICALS ARE INTENDED TO SHOW THE CITY OF HENDERSONVILLE'S EXPECTATIONS FOR THE GENERAL LAYOUT, ARRANGEMENT, AND THE QUALITY OF EQUIPMENT AND MATERIALS FOR WATER DISTRIBUTION SYSTEM ITEMS AND THEIR RELATED APPURTENANCES. IT REMAINS THE SOLE RESPONSIBILITY OF THE ENGINEER IN RESPONSIBLE CHARGE (ERC) OF EACH APPLICATION TO DETERMINE, DESIGN TO, AND CERTIFY TO THE DESIGN PARAMETERS FOR EACH INSTALLATION. THE ERC MUST ALSO ENSURE THE DESIGN COMPLIES WITH THE MINIMUM DESIGN CRITERIA OF NC DIVISION OF ENVIRONMENTAL QUALITY AND ALL LOCAL AND STATE LAWS AND REGULATIONS.

DATE: 05/22/2023 WD DWG. NO. 1
SCALE: NOT TO SCALE

City of Hendersonville Engineering Department
305 Williams Street
Hendersonville, NC 28792
(828) 697-3000 (office)
www.cityofhendersonville.org

WATER DETAILS
GENERAL NOTES

H:\DETAILS\-Current Standard Details\Water Only\Updated_Water_Details-BulletinsMark-52223.dwg, 5/22/2023 10:22:50 AM



NOTE:
12" X 12" AND 16" X 16" TAPPING SLEEVES ARE NOT ALLOWED.

TABLE A–1
TBD

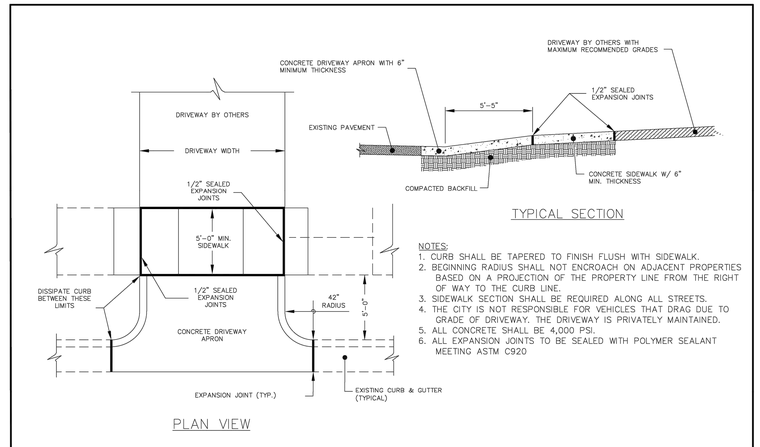
NOTE:
1. CONCRETE SHALL BE 3000 PSI.
2. CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL JOINT FITTINGS BY THE INSTALLATION OF POLYETHYLENE FILM PLACED BETWEEN THE FITTINGS AND POURED CONCRETE.
3. SEE TABLE A–1 FOR AREA OF CONCRETE REQUIRED FOR MAIN SIZED 6–INCH THROUGH 16–INCH.

DATE: 01/12/2019 WD DWG. NO. 6
SCALE: NOT TO SCALE

City of Hendersonville Engineering Department
305 Williams Street
Hendersonville, NC 28792
(828) 697-3000 (office)
www.cityofhendersonville.org

STANDARD TAPPING SLEEVE AND VALVE ASSEMBLY

4/30/2019 11:02:39 AM, mpomraning



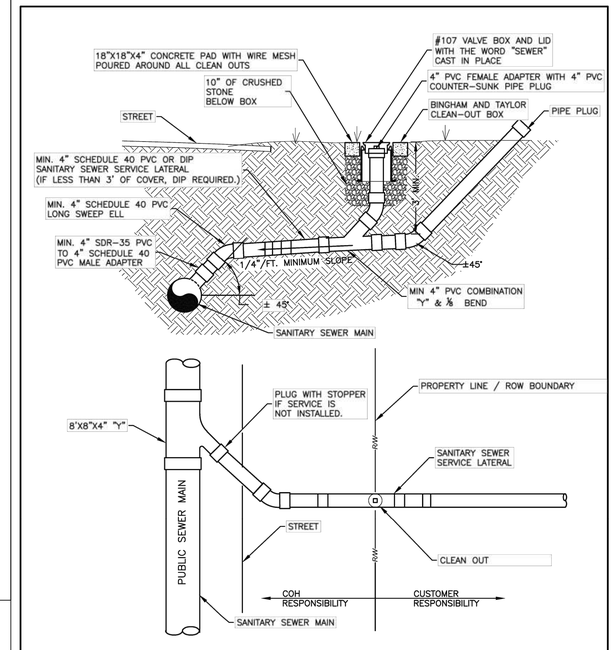
NOTES:
1. CURB SHALL BE TAPERED TO FINISH FLUSH WITH SIDEWALK.
2. BEGINNING RADIUS SHALL NOT ENCROACH ON ADJACENT PROPERTIES BASED ON A PROJECTION OF THE PROPERTY LINE FROM THE RIGHT OF WAY TO THE CURB LINE.
3. SIDEWALK SECTION SHALL BE REQUIRED ALONG ALL STREETS.
4. THE CITY IS NOT RESPONSIBLE FOR VEHICLES THAT DRAG DUE TO GRADE OF DRIVEWAY. THE DRIVEWAY IS PRIVATELY MAINTAINED.
5. ALL CONCRETE SHALL BE 4,000 PSI.
6. ALL EXPANSION JOINTS TO BE SEALED WITH POLYMER SEALANT MEETING ASTM C920

DATE: 05/19/2023
SCALE: NOT TO SCALE WD DWG. NO. 02

City of Hendersonville Engineering Department
305 Williams Street
Hendersonville, NC 28792
(828) 697-3000 (office)
www.cityofhendersonville.org

DRIVEWAY APRON TYPE I & II

H:\DETAILS\-Current Standard Details\PublicWorksDetails\COH_PW_Details.dwg, PW-02 DRIVEWAY APRON TYPE 1 AND 2



DATE: 10/19/2023 SS-D DWG. NO. 04
SCALE: NOT TO SCALE

City of Hendersonville Engineering Department
305 Williams Street
Hendersonville, NC 28792
(828) 697-3000 (office)
www.cityofhendersonville.org

STANDARD SERVICE CONNECTION
LATERAL AND CLEANOUT

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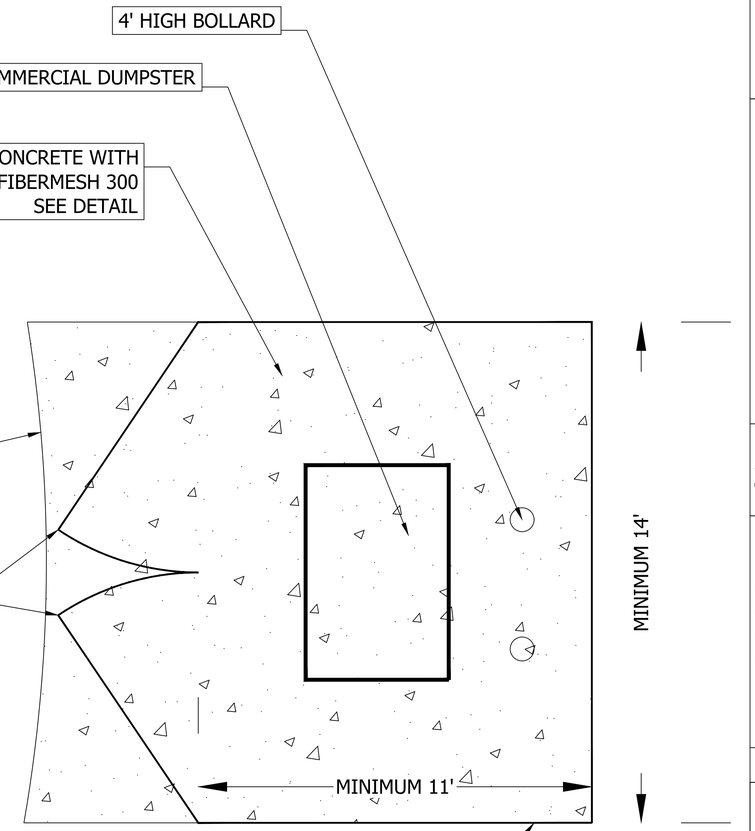
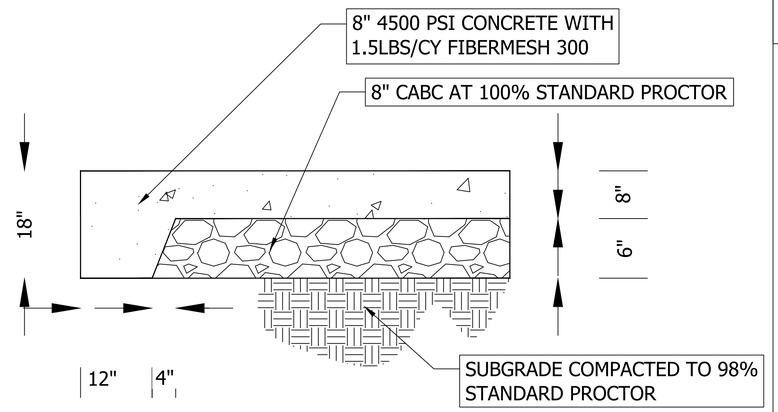




DUMPSTER ENCLOSURE DETAILS

UTILITY DETAILS
C-2.1

1019 BERKELEY ROAD
CIVIL ENGINEERING & SITE PLANNING

FOR OK CONSTRUCTION
TOWN OF HENDERSONVILLE, HENDERSON COUNTY

No.	REVISIONS	Date
1	SUBMIT TO CLIENT	01–08–24
2	FOR SUBMITTAL	02–14–24
3	RESUBMITTAL	03–26–24

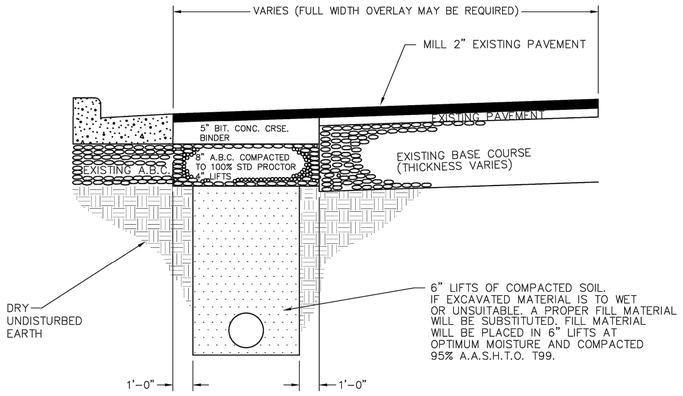
PRELIMINARY - NOT FOR CONSTRUCTION

EDSEL ENGINEERING, PLLC
NORTH CAROLINA
CERT # P–2678

NORTH CAROLINA
PROFESSIONAL ENGINEER
SEAL
045408
WYATT DONTLEY EDSEL

EDSEL ENGINEERING, PLLC
104 HIAWASSEE AVENUE
BLACK MOUNTAIN, NC 28711

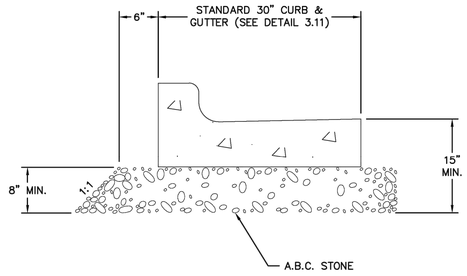
EDSEL ENGINEERING



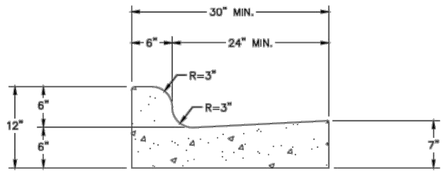
NOTE:

1. EDGES TO BE SAWED WITH A CONCRETE SAW TO A NEAT SQUARED EDGE BROOMED CLEAN OF DUST AND DRY BEFORE TACK COAT IS APPLIED.
2. EDGES AND OVERLAY AREAS TO BE TACKED WITH CRS-1OR CRD-2.
3. 6" LIFTS OR SUITABLE SOIL OR ABC AT OPTIMUM MOISTURE COMPACTED 100% A.A.S.H.T.O. T99, ALL WET OR UNSUITABLE MATERIAL TO BE REMOVED FROM SITE PRIOR TO BACKFILL.
4. N.C.D.O.T. APPROVED PATCH DETAIL.
5. ALL O.S.H.A. REQUIREMENTS SHALL BE ADHERED TO FOR TRENCHING OPERATIONS.

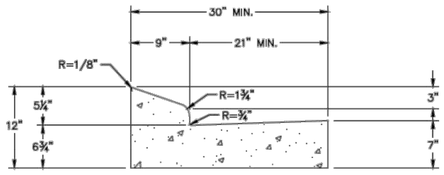
PAVEMENT REMOVAL AND REPLACEMENT



A.B.C. UNDER 2'-6" CURB & GUTTER

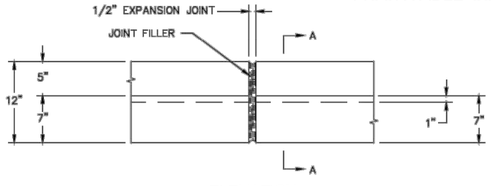


CURB & GUTTER SECTION AA



CURB & GUTTER SECTION AA

MOUNTABLE CURB AND GUTTER

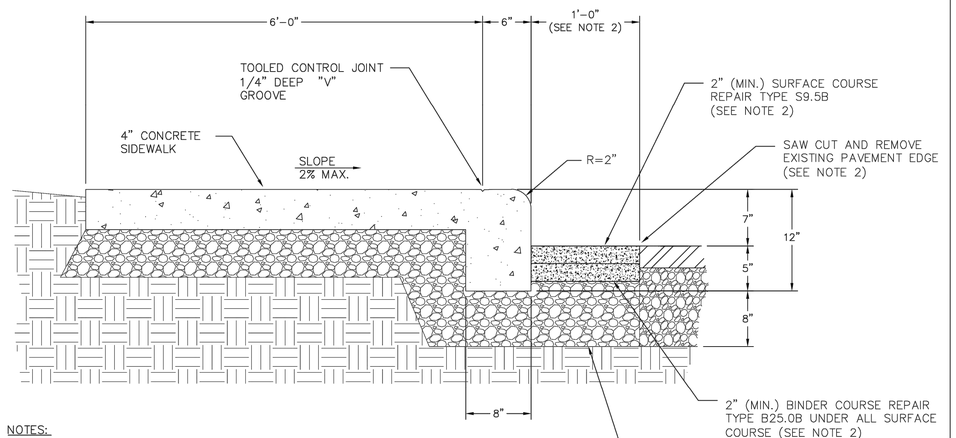


ELEVATION

NOTES:

1. CONCRETE SHALL BE 4,000 P.S.I.
2. A 1/2 INCH EXPANSION JOINT FILLED WITH JOINT FILLER SHALL BE PLACED NO FARTHER THAN 50 FEET APART OR AT ALL RIGID OBJECTS.
3. JOINT MATERIALS SHALL BE ACCORDANCE WITH THE JOINT MATERIALS SECTION OF THE MOST CURRENT NCDOT STANDARD SPECIFICATIONS FOR ROAD STRUCTURES MANUAL.
4. A NON SEALED 3/4 INCH DEEP TOOL JOINT SHALL BE PLACED EVERY 10 FEET UNLESS CONSTRUCTED WITH SIDEWALK THAT ABUTS BACK OF CURB, THEN TOOL JOINT SHALL BE PLACED AS SPACED AND INLINE WITH SIDEWALK TOOL JOINT.

STANDARD CONCRETE CURB AND GUTTER



NOTES:

1. THE CITY TRAFFIC ENGINEER TO APPROVE THE USE OF MONOLITHIC CURB SIDEWALK.
2. THE 1'-0" SAW CUT, REMOVAL, AND THE REPAIR OF ABC STONE, BINDER, SURFACE COURSE FROM FACE OF CURB IS ONLY FOR THE INSTALLATION OF THE MONOLITHIC CURB & SIDEWALK ADJACENT TO AN EXISTING STREET.

MONOLITHIC CURB & SIDEWALK

SITE DETAILS

C-2.2

1019 BERKELEY ROAD
CIVIL ENGINEERING & SITE PLANNING

FOR OK CONSTRUCTION
TOWN OF HENDERSONVILLE, HENDERSON COUNTY

No.	REVISIONS	Date
1	SUBMIT TO CLIENT	01-08-24
2	FOR SUBMITTAL	02-14-24
3	RESUBMITTAL	03-26-24

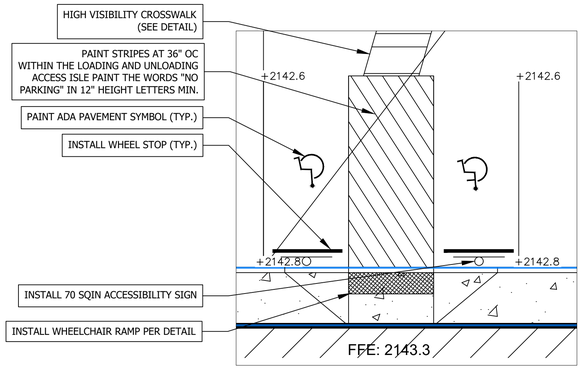
PRELIMINARY - NOT FOR CONSTRUCTION

EDSEL ENGINEERING, PLLC
NORTH CAROLINA
CERT # P-2678

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 045408 BRANDY GENTLEY EDSEL

EDSEL ENGINEERING, PLLC
104 HIAWASSEE AVENUE
BLACK MOUNTAIN, NC 28711

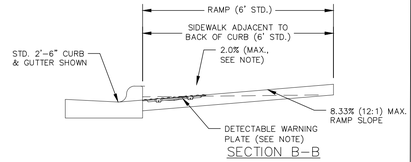
EDSEL ENGINEERING

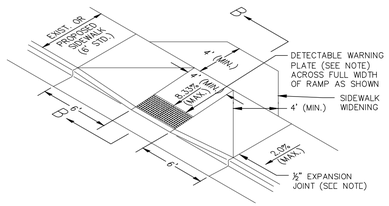


VAN ACCESSIBLE PARKING SPACE

Notes:

1. Parking space identification sign with the international symbol of accessibility complying with 703.7.2.1 mounted 60 inches minimum above the ground surface measured to the bottom of the sign.
2. If the accessible route is located in front of the parking space, install wheel stops to keep vehicles from reducing the clear width of the accessible route below 36 inches
3. ~~Two parking spaces may share an access aisle except for angled parking spaces (see below)~~ Access aisle width is at least 96 inches, must be at the same level and the same length as the adjacent parking space(s) it serves, maximum slope in all directions is 1:48, and access aisle must connect to an accessible route to the building. Ramps must not extend into the access aisle.
4. Parking space shall be 96 inches wide minimum, marked to define the width, and maximum slope in all directions is 1:48.
5. Boundary of the access aisle must be clearly marked so as to discourage parking in it. (State or local laws may address the color and manner that parking spaces and access aisles are marked.)





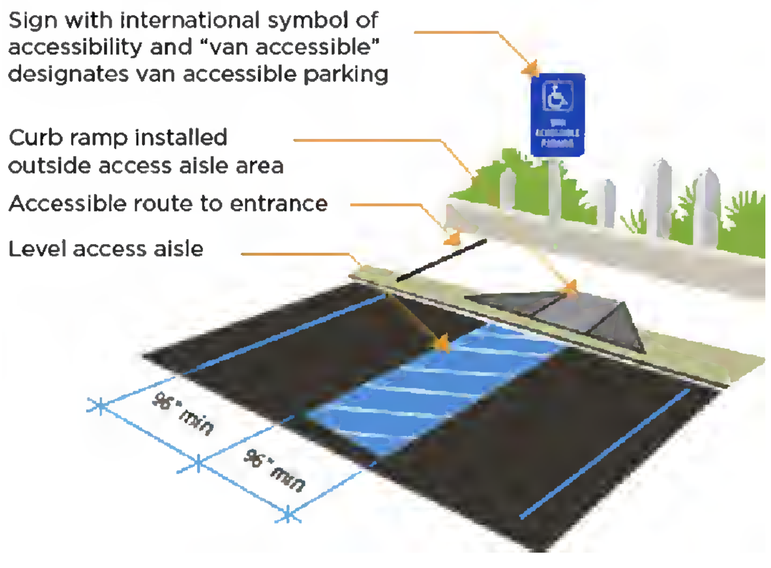
DETECTABLE WARNING PLATE:
USE NEENAH FOUNDRY COMPANY R-4984 DETECTABLE WARNING PLATE OR EQUAL AND MUST COMPLIES WITH ADAAG (AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES) AND ARCHITECTURAL BARRIER ACT 1968 GUIDELINES.

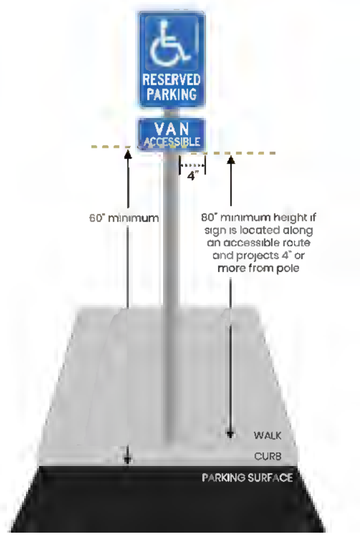
EXPANSION JOINT:
½ INCH EXPANSION JOINTS TO BE FILLED WITH JOINT FILLER AND SEALER PLACED BETWEEN ALL RIGID OBJECTS AS SHOWN EXTENDING TO THE FULL DEPTH OF THE CONCRETE WITH THE TOP OF THE FILLER ½ INCH BELOW THE FINISHED SURFACE. JOINT FILLER MATERIALS SHALL BE IN ACCORDANCE WITH THE JOINT MATERIALS SECTION OF THE MOST CURRENT NCDOT STANDARD SPECIFICATIONS FOR ROAD STRUCTURES MANUAL.

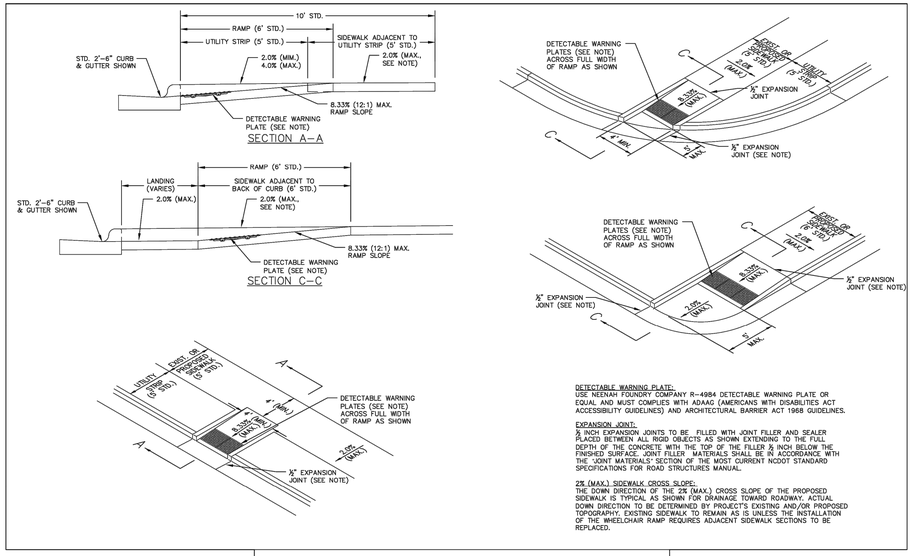
2% (MAX.) SIDEWALK CROSS SLOPE:
THE DOWN DIRECTION OF THE 2% (MAX.) CROSS SLOPE OF THE PROPOSED SIDEWALK IS TYPICAL AS SHOWN FOR DRAINAGE TOWARD ROADWAY. ACTUAL DOWN DIRECTION TO BE DETERMINED BY PROJECT'S EXISTING AND/OR PROPOSED TOPOGRAPHY. EXISTING SIDEWALK TO REMAIN AS IS UNLESS THE INSTALLATION OF THE WHEELCHAIR RAMP REQUIRES ADJACENT SIDEWALK SECTIONS TO BE REPLACED.

STANDARD WHEELCHAIR RAMP

ADA PARKING DETAILS





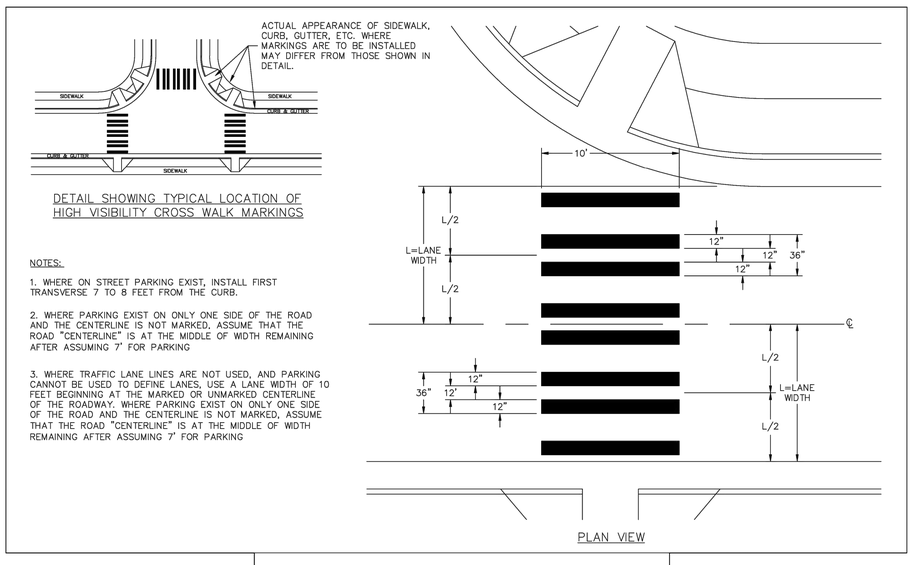


DETECTABLE WARNING PLATE:
USE NEENAH FOUNDRY COMPANY R-4984 DETECTABLE WARNING PLATE OR EQUAL AND MUST COMPLIES WITH ADAAG (AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES) AND ARCHITECTURAL BARRIER ACT 1968 GUIDELINES.

EXPANSION JOINT:
½ INCH EXPANSION JOINTS TO BE FILLED WITH JOINT FILLER AND SEALER PLACED BETWEEN ALL RIGID OBJECTS AS SHOWN EXTENDING TO THE FULL DEPTH OF THE CONCRETE WITH THE TOP OF THE FILLER ½ INCH BELOW THE FINISHED SURFACE. JOINT FILLER MATERIALS SHALL BE IN ACCORDANCE WITH THE JOINT MATERIALS' SECTION OF THE MOST CURRENT NCDOT STANDARD SPECIFICATIONS FOR ROAD STRUCTURES MANUAL.

2% (MAX.) SIDEWALK CROSS SLOPE:
THE DOWN DIRECTION OF THE 2% (MAX.) CROSS SLOPE OF THE PROPOSED SIDEWALK IS TYPICAL AS SHOWN FOR DRAINAGE TOWARD ROADWAY. ACTUAL DOWN DIRECTION TO BE DETERMINED BY PROJECT'S EXISTING AND/OR PROPOSED TOPOGRAPHY. EXISTING SIDEWALK TO REMAIN AS IS UNLESS THE INSTALLATION OF THE WHEELCHAIR RAMP REQUIRES ADJACENT SIDEWALK SECTIONS TO BE REPLACED.

STANDARD WHEELCHAIR RAMP



HIGH VISABILTY CROSS WALK

ADA DETAILS C-2.3

1019 BERKELEY ROAD
CIVIL ENGINEERING & SITE PLANNING

FOR OK CONSTRUCTION
TOWN OF HENDERSONVILLE, HENDERSON COUNTY

No.	REVISIONS	Date
1	SUBMIT TO CLIENT	01-08-24
2	FOR SUBMITTAL	02-14-24
3	RESUBMITTAL	03-26-24

PRELIMINARY - NOT FOR CONSTRUCTION

EDSEL ENGINEERING, PLLC
NORTH CAROLINA CERT. #P-2978

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 045408 WYATT DENTLEY EDSEL

EDSEL ENGINEERING, PLLC
104 HIAWASSEE AVENUE
BLACK MOUNTAIN, NC 28711

EDSEL ENGINEERING

CONSTRUCTION SEQUENCE

1. THIS PROJECT IS A DEVELOPMENT FOR A COMMERCIAL STORAGE FACILITY. IT INVOLVES PLACING AND COMPACTING SOIL TO REACH THE FINISHED GRADES AND PROVIDING THE DRAINAGE FEATURES AS SHOWN ON THE PLANS.
2. HOLD A PRE-CONSTRUCTION MEETING PRIOR TO OBTAINING A LAND DISTURBING PERMIT FROM REGULATORY AUTHORITY. OBTAIN PERMIT.
3. SURVEY AND DELINEATE THE LIMITS OF DISTURBANCE.
4. SCHEDULE PRE-CONSTRUCTION MEETING WITH ENGINEER AT LEAST 48 HOURS PRIOR TO PROJECT ACTIVATION. INCLUDE LOCAL REGULATORY AUTHORITY EROSION CONTROL DEPARTMENT IN THE PRE-CONSTRUCTION MEETING INVITE.
5. INSTALL RAIN GAUGE ON SITE. NO MAJOR GRADING ACTIVITIES OR BASIN CONSTRUCTION ARE TO TAKE PLACE DURING WE WEATHER OR PERIODS OF PREDICTED WET WEATHER.
6. INSTALL PERMIT BOX (INSPECTION REPORTS AND PERMITS TO BE PLACED IN BOX).
7. INSTALL CONSTRUCTION ENTRANCE / EXITS.
8. INSTALL ALL PERIMETER DEVICES IN THE FORM OF SILT FENCES.
9. HAVE THE SITE INSPECTED BY THE ENGINEER AND REGULATORY AUTHORITY EROSION CONTROL DEPARTMENT PRIOR TO PROCEEDING WITH MASS GRADING.
10. CONTINUE WITH CLEARING TO REMOVE ALL VEGETATION, INCLUDING ROOT MATS, FROM THE PROPOSED LIMITS OF DISTURBANCE.
11. TUB GRIND ALL VEGETATION AND STOCKPILE MATERIAL.
12. DURING MASS GRADING, BEGIN TO INSTALL PERMANENT RUNOFF CONVEYANCE SYSTEMS SUCH AS STORM DRAINAGE, INLETS, DITCHES, AND PERMANENT DIVERSION.
13. INSTALL REMAINING STORM DRAINAGE SYSTEM AND INLET AND OUTLET PROTECTION DEVICES SIMULTANEOUSLY.
14. INSTALL WADDLES, WATER BARS, AND SLOPE MAPPING ON ALL CUT AND FILL SLOPES IN ACCORDANCE WITH PERMIT TIME REQUIREMENTS.
15. MONITOR DUST DURING EARTH MOVING ACTIVITIES. IF DUST FORMS, WET SITE TO ELIMINATE LOSS OF DUST SEDIMENT.
16. BRING ALL FILL AREAS TO FINAL GRADE. A GEOTECH MUST MONITOR ALL FILL BANKS AND MATERIAL FORMING THE ROAD BASE AND ALL CUT AND FILL SLOPES GREATER THAN 3:1.
17. FINE GRADE ROADS.
18. INSTALL STONE AND BINDER ON ROAD AREAS.
19. PROVIDE PERMANENT VEGETATION FOR THE REMAINDER OF THE SITE.
20. THE SITE SHOULD BE STABILIZED WITH ALL E&SC MEASURES REMOVED PRIOR TO REQUESTING A CLOSE OUT INSPECTION FROM THE LQS INSPECTOR. CONTACT EROSION CONTROL INSPECTOR AND REQUEST CLOSEOUT OF THE CONSTRUCTION ACTIVITIES PERMIT. ONCE APPROVED, REMOVE ALL SEDIMENT FENCE, COLLECTED SEDIMENT, INLET PROTECTION, ETC. AND DISPOSE IN PERMITTED CONSTRUCTION DEBRIS LANDFILL.

DEVELOPMENT DATA

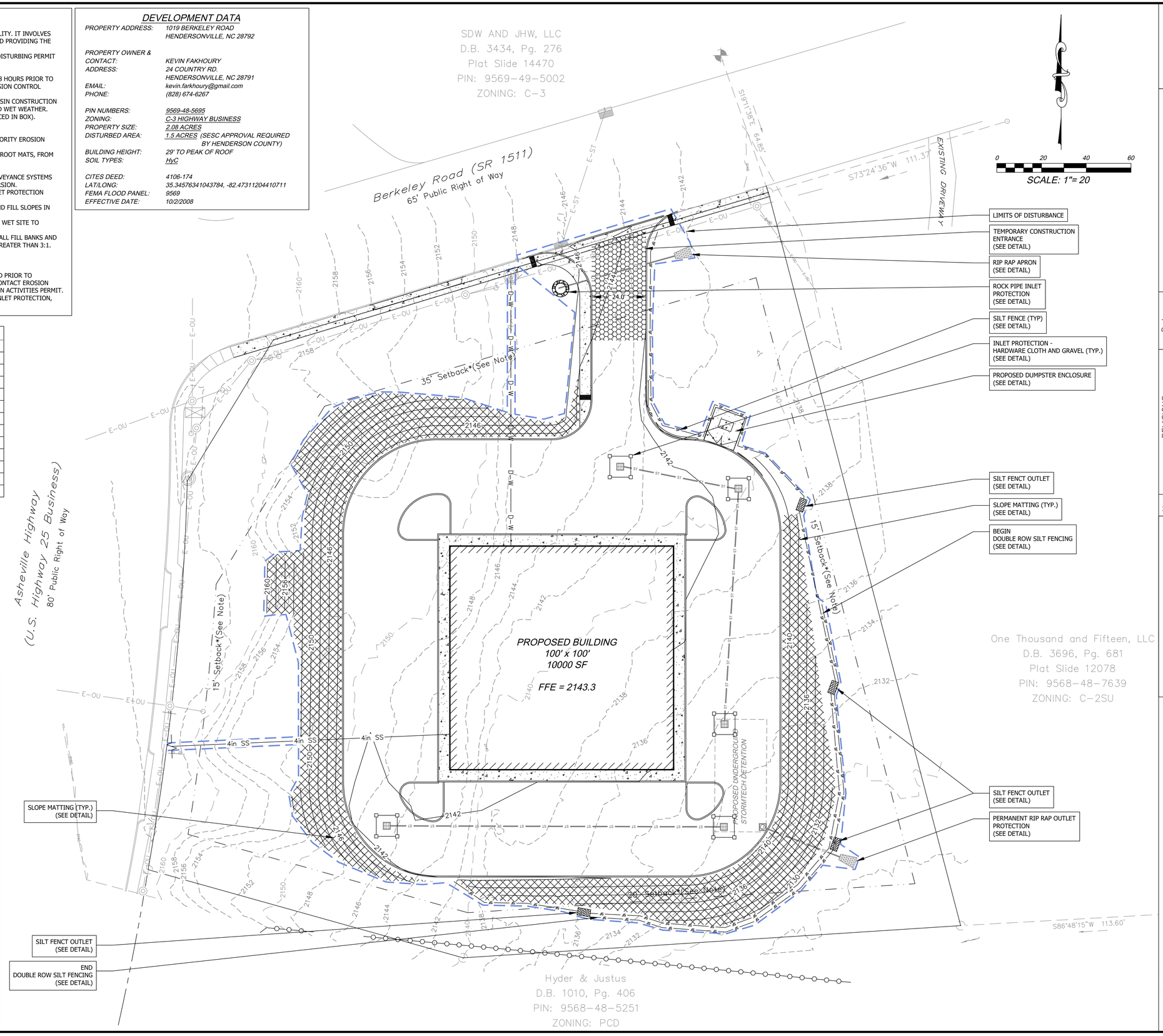
PROPERTY ADDRESS:	*1019 BERKELEY ROAD HENDERSONVILLE, NC 28792*
PROPERTY OWNER & CONTACT:	*KEVIN FAKHOURY*
ADDRESS:	*24 COUNTRY RD. HENDERSONVILLE, NC 28791*
EMAIL:	*kevin.farkhoury@gmail.com*
PHONE:	*(828) 674-6267*
PIN NUMBERS:	*9569-48-5695*
ZONING:	*C-3 HIGHWAY BUSINESS*
PROPERTY SIZE:	*2.08 ACRES*
DISTURBED AREA:	*1.5 ACRES (SESC APPROVAL REQUIRED BY HENDERSON COUNTY)*
BUILDING HEIGHT:	*29' TO PEAK OF ROOF*
SOIL TYPES:	*HyC*
CITES DEED:	*4106-174*
LAT/LONG:	*35.34576341043784, -82.47311204410711*
FEMA FLOOD PANEL:	*9569*
EFFECTIVE DATE:	*10/2/2008*

PROPOSED DEVELOPMENT DISTURBANCE DATA

TOTAL PROJECT AREA:		2.08	
UNDISTRUBED AREA (ac.)		0.58	27.9%
LIMITS OF DISTURBANCE (ac.)		1.5	72.1%
PERVIOUS AREA (ac.)		1.14	54.8%
IMPERVIOUS AREA (ac.)		0.94	45.2%
PROPOSED LOT AREAS		N/A	
STREETS AND PARKING (ac.)		0.60	28.7%
COMMON OPEN SPACE		0.31	14.9%
OTHER FACILITIES		N/A	
BUILDING COVERAGE (SF)		10000	11.0%
PRE DEVELOPMENT IMPERVIOUS AREA (ac.)		0.43	20.5%
POST DEVELOPMENT IMPERVIOUS AREA (ac.)		0.90	43.0%

EROSION CONTROL LEGEND

- EXIST. BOUNDARY
- EXIST. ADJOINER
- EXIST. RIGHT OF WAY
- ST — PROPOSED STORM DRAINAGE
- D–W — PROPOSED DOMESTIC WATER SERVICE
- 6inSS — PROPOSED SEWER SERVICE
- LIMITS OF DISTURBANCE
- TEMP. SILT FENCE
- TEMP. CONSTRUCTION ENTRANCE
- TEMP. ROCK INLET PIPE PROTECTION
- TEMP. REINFORCED STABILIZED OUTLET
- TEMP. HARDWARE CLOTH AND GRAVEL INLET PROTECTION
- TEMP. HARDWARE CLOTH AND GRAVEL INLET PROTECTION
- PROPOSED CATCH BASIN
- PROPOSED RIP RAP OUTLET
- PROPOSED CONCRETE SIDEWALK
- E–W — EXIST. WATER LINE
- E–ST — EXIST. STORM DRAIN
- EXIST. CURB INLET
- ELEV — EXIST. MINOR CONTOUR
- ELEV — EXIST. MAJOR CONTOUR
- EXIST. OVERHEAD UTILITY
- EXIST. FENCE LINE
- W — EXIST. WATER METER
- EXIST. PROPERTY CORNER
- EXIST. STREET SIGN
- EXIST. GUY WIRE
- EXIST. POWER POLE



ESC & GRADING PLAN

C-3.0

1019 BERKELEY ROAD CIVIL ENGINEERING & SITE PLANNING

FOR OK CONSTRUCTION
TOWN OF HENDERSONVILLE, HENDERSON COUNTY

No.	REVISIONS	Date
1	SUBMIT TO CLIENT	01-08-24
2	FOR SUBMITTAL	02-14-24
3	RESUBMITTAL	03-26-24

PRELIMINARY - NOT FOR CONSTRUCTION

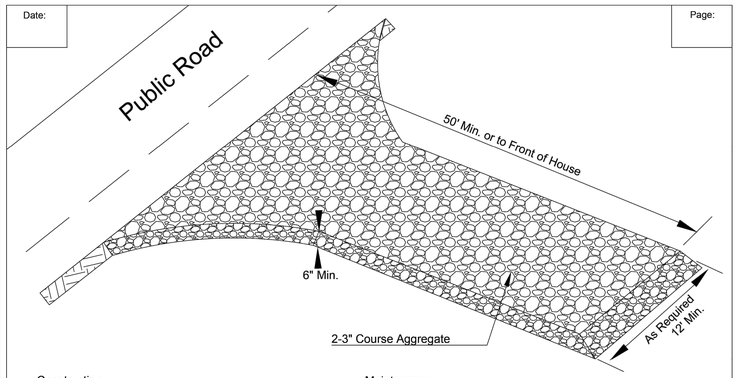
EDSEL ENGINEERING, PLLC
NORTH CAROLINA
CERT # P-2876

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT SEAL 04540 WYATT GENTLEY EDSEL

EDSEL ENGINEERING, PLLC
104 HIAWASSEE AVENUE
BLACK MOUNTAIN, NC 28711

EDSEL ENGINEERING

Date: Page:



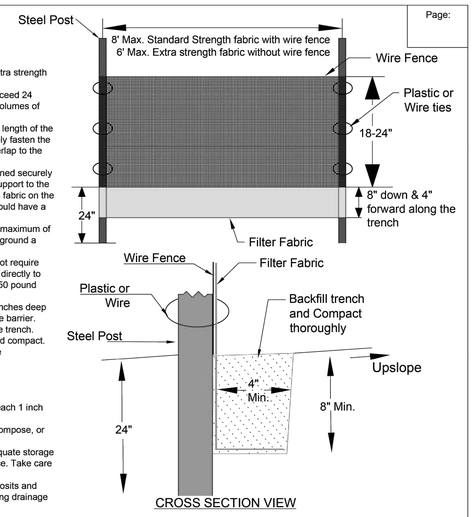
Construction:
1. Clear the entrance and exit area of all vegetation, roots, and other objectionable material and properly grade it.
2. Place the gravel to the specific grade and dimensions shown on the plans, and smooth it.
3. Provide drainage to carry water to a sediment trap or other suitable outlet.
4. Use geotextile fabrics in order to improve stability of the foundation in locations subject to seepage or high water table.

Maintenance:
1. Per NCG-01 inspect at least once a week and after each 1 inch or greater rainfall; make any required repairs immediately.
2. Maintain the gravel pad in a condition to prevent mud or sediment from leaving the construction site. This may require periodic topdressing with 2 inch stone.
3. Immediately remove all objectionable materials spilled, washed or tracked onto public roadways.

NORTH CAROLINA Environmental Quality
EFFECTIVE DATE:11/12/2020

CONSTRUCTION ENTRANCE / EXIT

Date: Page:



Construction:
1. Construct the sediment barrier of standard strength or extra strength synthetic filter fabrics.
2. Ensure that the height of the sediment fence does not exceed 24 inches above the ground. (Higher fences may impound volumes of water sufficient to cause failure of the structure.)
3. Construct the filter fabric from a continuous roll cut to the length of the barrier to avoid joints. When joints are necessary, securely fasten the filter cloth only at a support post with 4 feet minimum overlap to the next post.
4. Support standard strength filter fabric by wire mesh fastened securely to the upslope side of the posts. Extend the wire mesh support to the bottom of the trench. Fasten the wire reinforcement, then fabric on the upslope side of the fence post. Wire or plastic zip ties should have a minimum 50 pound tensile strength.
5. When a wire mesh support fence is used, space posts a maximum of 8 feet apart. Supports should be driven securely into the ground a minimum of 24 inches.
6. Extra strength filter fabric with 6 feet post spacing does not require wire mesh support fence. Securely fasten the filter fabric directly to posts. Wire or plastic zip ties should have a minimum of 50 pound tensile strength.
7. Excavate the trench approximately 4 inches wide and 8 inches deep along the proposed line of the posts and upslope from the barrier.
8. Place 12 inches of fabric along the bottom and side of the trench.
9. Backfill the trench with soil placed over the filter fabric and compact. Thorough compaction of the backfill is critical to silt fence performance.
10. Do not attach filter fabric to existing trees.

Maintenance:
1. Inspect sediment fences at least once a week and after each 1 inch rainfall. Make any required repairs immediately.
2. Should the fabric of a sediment fence collapse, tear, decompose, or become ineffective, replace it promptly.
3. Remove sediment deposits as necessary to provide adequate storage volume for the next rain and reduce pressure on the fence. Take care to avoid undermining the fence during cleanout.
4. Remove all fencing materials and unstable sediment deposits and bring the area to grade and stabilize it after the contributing drainage area has been properly stabilized.

NORTH CAROLINA Environmental Quality
EFFECTIVE DATE: 11/12/2020

SILT FENCE

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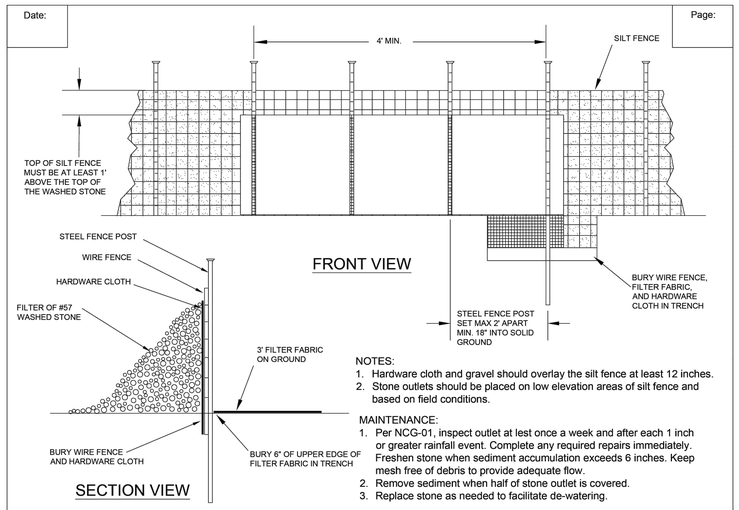


NOTES:
1. Hardware cloth and gravel should overlay the silt fence at least 12 inches.
2. Stone outlets should be placed on low elevation areas of silt fence and based on field conditions.

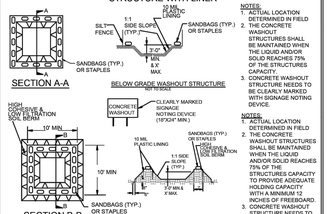
MAINTENANCE:
1. Per NCG-01, inspect outlet at lest once a week and after each 1 inch or greater rainfall event. Complete any required repairs immediately. Freshen stone when sediment accumulation exceeds 6 inches. Keep mesh free of debris to provide adequate flow.
2. Remove sediment when half of stone outlet is covered.
3. Replace stone as needed to facilitate de-watering.

NORTH CAROLINA Environmental Quality
EFFECTIVE DATE: 11/12/2020

SILT FENCE OUTLET

Date: Page:

ONSITE CONCRETE WASHOUT STRUCTURE WITH LINER



CONCRETE WASHOUTS
1. Do not discharge concrete or cement slurry from the site.
2. Dispose of, or recycle settled, hardened concrete residue in accordance with local and state solid waste regulations and at an approved facility.
3. Manage washout from mortar mixers in accordance with the above item and in addition place the mixer and associated materials on impervious barrier and within lot perimeter silt fence.
4. Install temporary concrete washouts per local requirements, where applicable. If an alternate method or product is to be used, contact your approval authority for review and approval. If local standard details are not available, use one of the two types of temporary concrete washouts provided on this detail.
5. Do not use concrete washouts for dewatering or storing defective curb or sidewalk sections. Stormwater accumulated within the washout may not be pumped into or discharged to the storm drain system or receiving surface waters. Liquid waste must be pumped out and removed from project.
6. Locate washouts at least 50 feet from storm drain inlets and surface waters unless it can be shown that no other alternatives are reasonably available. At a minimum, install protection of storm drain inlet(s) closest to the washout which could receive spills or overflow.
7. Locate washouts in an easily accessible area, on level ground and install a stone entrance pad in front of the washout. Additional controls may be required by the approving authority.
8. Install at least one sign directing concrete trucks to the washout within the project limits. Post signage on the washout itself to identify this location.
9. Remove leavings from the washout when at approximately 75% capacity to limit overflow events. Replace the tarp, sand bags or other temporary structural components when no longer functional. When utilizing alternative or proprietary products, follow manufacturer's instructions.
10. At the completion of the concrete work, remove remaining leavings and dispose of in an approved disposal facility. Fill pit, if applicable, and stabilize any disturbance caused by removal of washout.

PORTABLE TOILETS
1. Install portable toilets on level ground, at least 50 feet away from storm drains, streams or wetlands unless there is no alternative reasonably available. If 50 foot offset is not attainable, provide relocation of portable toilet behind silt fence or place on a gravel pad and surround with sand bags.
2. Provide staking or anchoring of portable toilets during periods of high winds or in high foot traffic areas.
3. Monitor portable toilets for leaking and properly dispose of any leaked material. Utilize a licensed sanitary waste hauler to remove leaking portable toilets and replace with properly operating unit.

PAINT AND OTHER LIQUID WASTE
1. Do not dump paint and other liquid waste into storm drains, streams or wetlands.
2. Locate paint washouts at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
3. Contain liquid wastes in a controlled area.
4. Containment must be labeled, sized and placed appropriately for the needs of site.
5. Prevent the discharge of soaps, solvents, detergents and other liquid wastes from construction sites.

HAZARDOUS AND TOXIC WASTE
1. Create designated hazardous waste collection areas on-site.
2. Place hazardous waste containers under cover or in secondary containment.
3. Do not store hazardous chemicals, drums or bagged materials directly on the ground.

LITTER, BUILDING MATERIAL AND LAND CLEARING WASTE
1. Never bury or burn waste. Place litter and debris in approved waste containers.
2. Provide a sufficient number and size of waste containers (e.g dumpster, trash receptacle) on site to contain construction and domestic wastes.
3. Locate waste containers at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
4. Locate waste containers on areas that do not receive substantial amounts of runoff from upland areas and does not drain directly to a storm drain, stream or wetland.
5. Cover waste containers at the end of each workday and before storm events or provide secondary containment. Repair or replace damaged waste containers.
6. Anchor all lightweight items in waste containers during times of high winds.
7. Empty waste containers as needed to prevent overflow. Clean up immediately if containers overflow.
8. Dispose waste off-site at an approved disposal facility.
9. On business days, clean up and dispose of waste in designated waste containers.

NORTH CAROLINA Environmental Quality
EFFECTIVE DATE: 11/12/2020

NCG-01 MATERIALS HANDLING

Date: Page:

TEMPORARY SEEDING RECOMMENDATIONS FOR LATE WINTER AND EARLY SPRING

Seeding Mixture

Species	Rate (lb/acre)
Rye (grain)	120
Annual lespedeza (Kobe in Piedmont and Coastal Plain, Korean in Mountains)	50

Omit annual lespedeza when duration of temporary cover is not to extend beyond June.

Seeding Dates
Mountains—Above 2500 feet: Feb. 15 - May 15
Below 2500 feet: Feb. 1- May 1
Piedmont—Jan. 1 - May 1
Coastal Plain—Dec. 1 - Apr. 15

Mulch
Apply 4,000 lb/acre straw. Anchor straw by tacking with asphalt, netting, or a mulch anchoring tool. A disk with blades set nearly straight can be used as a mulch anchoring tool.

Maintenance
Refertilize if growth is not fully adequate. Reseed, refertilize and mulch immediately following erosion or other damage.

TEMPORARY SEEDING RECOMMENDATIONS FOR SUMMER

Seeding Mixture

Species	Rate (lb/acre)
German millet	40

In the Piedmont and Mountains, a small-stemmed Sudangrass may be substituted at a rate of 50 lb/acre.

Seeding Dates
Mountains—May 15 - Aug. 15
Piedmont—May 1 - Aug. 15
Coastal Plain—Apr. 15 - Aug. 15

Mulch
Apply 4,000 lb/acre straw. Anchor straw by tacking with asphalt, netting, or a mulch anchoring tool. A disk with blades set nearly straight can be used as a mulch anchoring tool.

Maintenance
Refertilize if growth is not fully adequate. Reseed, refertilize and mulch immediately following erosion or other damage.

TEMPORARY SEEDING RECOMMENDATIONS FOR FALL

Seeding Mixture

Species	Rate (lb/acre)
Rye (grain)	120

Seeding Dates
Mountains—Aug. 15 - Dec. 15
Coastal Plain and Piedmont—Aug. 15 - Dec. 31

Mulch
Apply 4,000 lb/acre straw. Anchor straw by tacking with asphalt, netting, or a mulch anchoring tool. A disk with blades set nearly straight can be used as a mulch anchoring tool.

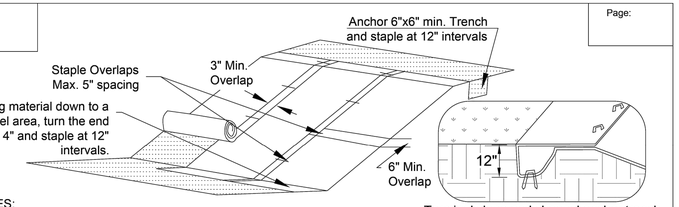
Maintenance
Repair and refertilize damaged areas immediately. Topdress with 50 lb/acre of nitrogen in March. If it is necessary to extend temporary cover beyond June 15, overseed with 50 lb/acre Kobe (Piedmont and Coastal Plain) or Korean (Mountains) lespedeza in late February or early March.

SEED BED PREPARATION:
LIMING- Apply lime according to soil test recommendations. If the pH (acidity) of the soil is not known, an application of ground agricultural limestone at the rate of 1 to 1 ½ tons/acre on coarse-textured soils and 2-3 tons/acre on fine-textured soils is usually sufficient. Apply limestone uniformly and incorporate into the top 4-6 inches of soil. Soils with a pH of 6 or higher need not be limed.
FERTILIZER- Base application rates on soil tests. When these are not possible, apply a 10-10-10 grade fertilizer at 700-1,000 lb/acre. Both fertilizer and lime should be incorporated into the top 4-6 inches of soil. If a hydraulic seeder is used, do not mix seed and fertilizer more than 30 minutes before application.
SURFACE ROUGHENING- If recent tillage operations have resulted in a loose surface additional roughening may not be required, except to break up large clods. If rainfall causes the surface to become sealed or crusted, loosen it just prior to seeding by raking, harrowing, or other suitable methods for fine grading. The finished grade shall be a smooth even soil surface with a loosen uniformly fine texture. All ridges and depressions shall be removed and filled to provide the approved surface drainage. Planting is to be done immediately after finished grades are obtained and seedbed preparation is completed.

NORTH CAROLINA Environmental Quality
EFFECTIVE DATE: 11/12/2020

TEMPORARY SEEDING RECOMMENDATIONS

Date: Page:



NOTES:
1. Lime, fertilizer and seed before installation. Planting of shrubs,trees, etc. should occur after installation
2. Slope surface shall be smooth before placement for proper soil contact.
3. For installation on a slope, place RECP 2-3 feet over the top of the slope and into an excavated end trench measuring approximately 12 inches deep by 6 inches wide. Pin the RECP at 1 foot intervals along the bottom of the trench, backfill and compact. Unroll the RECP down the slope maintaining direct contact between the soil and RECP.
4. Pin RECP to the ground using staples or pins in a 3 foot center-to-center pattern.
5. Design velocities exceeding 2 feet/second require temporary blankets, mats or similar liners to protect seed and soil until vegetation becomes established.
6. If there is a berm at the top of slope, anchor upslope of the berm.
7. Staking or stapling layout per manufacturers specification.
8. 11 gauge, at least 6 inch by 1 inch staples or 12 inch minimum length wooden stakes are recommended for anchoring.
9. Do not stretch blankets/matting tight, allow the rolls to conform to any irregularities.
10. For slopes less than 3H:1V, rolls may be placed in horizontal strips.

MAINTENANCE:
1. Inspect Rolled Erosion Control Products at least weekly and after each rain 1.0 inch or greater; repair immediately.
2. Good contact with the ground must be maintained, and erosion must not occur beneath the RECP.
3. Any areas of the RECP that are damaged or not in close contact with the ground shall be repaired and stapled.
4. If erosion occurs due to poorly controlled drainage, the problem shall be fixed and eroded area protected.
5. Monitor and repair the RECP as necessary until ground cover is established.

NOTE: USE SC150BN OR APPROVED EQUAL FOR SLOPE MATTING MATERIAL

NORTH CAROLINA Environmental Quality
EFFECTIVE DATE:11/12/2020

ROLLED EROSION CONTROL PRODUCTS (RECP) FOR SLOPES

ESC DETAILS

C-3.1

1019 BERKELEY ROAD CIVIL ENGINEERING & SITE PLANNING

FOR OK CONSTRUCTION
TOWN OF HENDERSONVILLE, HENDERSON COUNTY

No.	REVISIONS	Date
1	SUBMIT TO CLIENT	01-08-24
2	FOR SUBMITTAL	02-14-24
3	RESUBMITTAL	03-26-24

PRELIMINARY - NOT FOR CONSTRUCTION

EDSEL ENGINEERING, PLLC
NORTH CAROLINA PROFESSIONAL SEAL 045408 ENGINEER BRIAN DENTLEY EDSEL
CERT # P-2572

EDSEL ENGINEERING, PLLC
104 HIAWASSEE AVENUE
BLACK MOUNTAIN, NC 28711

EDSEL ENGINEERING

PERMANENT SEEDING

General Notes

All seeding to be in accordance with NCDEQ STD #6.11

SEEDING AND MULCHING.

SEEDING AND MULCHING SHALL BE APPLIED IMMEDIATELY FOLLOWING THE COMPLETION OF ANY PHASE OF GRADING. REFER TO CHAPTER 3 OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL AND NATURAL RESOURCES (NCDENR) EROSION AND SEDIMENTATION CONTROL PLANNING AND DESIGN MANUAL FOR MORE DETAILS CONCERNING SEEDING AND MULCHING PROCEDURES. IF ACTIVE CONSTRUCTION CEASES IN ANY AREA FOR MORE THAN 14 DAYS, GROUND COVER IS REQUIRED TO ALL DISTURBED AS DESCRIBED IN "APPENDIX C: GROUND COVER".

Seeding Area, Dates & Types				
Area Type	Seeding Dates & Types			
	August 1–June 1		May 1–September 1	
	lbs/acre	Seed Type & Fertilizer	lbs/acre	Seed Type & Fertilizer
Shoulders and Median	20	Kentucky Blue Grass	20	Kentucky Blue Grass
	75	Hard Fescue	75	Hard Fescue
	25	Rye Grain	10	German or Blossom Millet
	500	Fertilizer	500	Fertilizer
	4000	Limestone	4000	Limestone
Areas Beyond the Mowing Pattern Weir, and Borrow Areas	100	Tall Fescue	100	Tall Fescue
	15	Kentucky Blue Grass	15	Kentucky Blue Grass
	30	Hard Fescue	30	Hard Fescue
	25	Rye Grain	10	German or Blossom Millet
	500	Fertilizer	500	Fertilizer
	4000	Limestone	4000	Limestone

Table 7-1 Seeding and Mulching" continued on next page.

Approved Cultivars						
Cultivar Type	Cultivar Names					
Tall Fescue	2nd Millennium	Coyote	Inferno	Olympic Gold	Sigma	
	Avenger	Davinci	Justice	Padre	Silverstar	
	Barlexas	Dynasty	Jaguar 3	Paraiso	Southern Choice II	
	Barlexas II	Dominion	Kalahari	Picasso	Stetson	
	Barrera	Duster	Kentucky 31	Piedmont	Tarheel	
	Barrington	Endeavor	Kitty Hawk	Pure Gold	Titan Ltd	
	Biltmore	Escalade	Kitty Hawk 2000	Prospect	Titanium	
	Bingo	Falcon II III IV & V	Leanjan	Quest	Tomahawk	
	Brave	Fidelity	Magellan	Rebel Exeda	Tracer	
	Cayenne	Finesse II	Masterpiece	Rebel Sentry	Trooper	
	Chapel Hill	Forebird	Matador	Regiment II	Turbo	
	Chesapeake	Focus	Matador GT	Rembrandt	Ultimate	
	Constitution	Grande II	Millennium	Rendition	Watchdog	
	Chipper	Greenkeeper	Montauk	Scorpion	Wolfpack	
	Coronado	Greyzone	Mustang 3	Shelby		
Kentucky Bluegrass	Alpine	Award	Champagne	Midnight	Showcase	
	Apollo	Barrin	Chicago II	Midnight II	Sonoma	
	Arcadia	Bedazzled	Envicta	Rugby		
	Arrow	Bordeaux	Impact	Rugby II		

Note Consult Soil Conservation Service for additional information concerning other alternatives for vegetation of denuded areas. The above vegetation rates are those which do well under local conditions

Temporary Seeding. Fertilizer shall be the same analysis as specified for Seeding and Mulching and applied at the rate of 400 pounds and seeded at the rate of 50 pounds per acre. German Millet or Browntop Millet shall be used in summer months and rye grain during the remainder of the year. The Engineer will determine the exact dates for using each kind of seed.

Fertilizer Topdressing. Fertilizer used for topdressing shall be 16-8-8 grade and shall be applied at the rate of 500 pounds per acre. A different analysis of fertilizer may be used provided the 2-1-1 ratio is maintained and the rate of application adjusted to provide the same amount of plant food as 16-8-8 analysis and as directed

Supplemental Seeding. The kinds of seed and proportions shall be the same as specified for Seeding and Mulching, and the rate of [illegible] the Contractor will be notified in writing of the rate per acre, total quantity needed, and areas on which to apply the supplemental seed. Minimum tillage equipment, consisting of a sod seeder shall be used for incorporating seed into the soil so to prevent disturbance of existing vegetation. A cloddrusher (ball and chain) may be used where degree of slope prevents the use of a sod seeder.

Mowing. The maximum mowing height shall be six inches

Fertilizer Topdressing

SOIL AMENDMENTS AND FERTILIZER MUST BE APPLIED BASED ON SOIL TESTS.

All areas to be seeded or planted shall be tilled a depth of 12". Ripping consists of creating fissures in a criss–cross pattern over the entire surface area, utilizing an implement that will not glaze the side walls of the fissures. Site preparation that does not comply with these documents shall not be acceptable. The depth of soil preparation may be established as a range based on the approval of the reviewing state or local agency. Once tilled or ripped according to the approved plan, all areas are to be returned to the approved final grade. pH modifiers and/or other soil amendments can be added during the soil preparation procedure or as described below. Till or disc the prepared areas to be seeded to a minimum depth of four (4) inches. Remove stones larger than three (3) inches on any side, sticks roots and other extraneous materials that surface. If not incorporated during the soil preparation process, add pH modifier and fertilizers. Spread up to 6" of excess topsoil over the entire area if available. Re–compact the area utilizing a cultipacker roller. The finished grade shall be a smooth even soil surface with a loose, uniformly fine texture. All ridges and depressions shall be removed and filled to provide the approved surface drainage. Seeding of graded areas is to be done immediately after finished grades are obtained and seedbed preparation is completed.

Prepare the seed be as described in above in soil preparation. Apply seed at rates specified on the plans, and/or as recommended above, with a cyclone seeder, prop type spreader, drill, or hydroseeder on and/or into the prepared bed. Incorporate the seed into the seed bed as specified. Provide finished grades as specified on the approved plan and carefully culti–pack the seedbed as terrain allows. Mulch immediately.

Q PERMANENT SEEDING

SCALE-NTS

Date:

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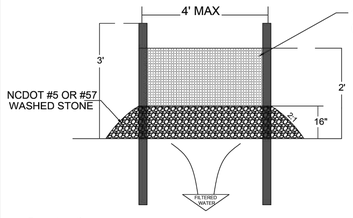
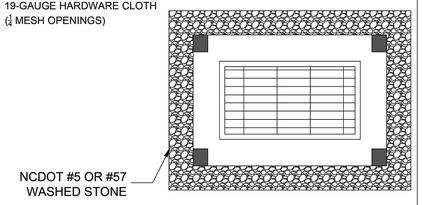




Construction:

1. Uniformly grade a shallow depression approaching the inlet.
2. Drive 5-foot steel posts 2 feet into the ground surrounding the inlet. Space posts evenly around the perimeter of the inlet, a maximum of 4 feet apart.
3. Surround the posts with wire mesh hardware cloth. Secure the wire mesh to the steel posts at the top, middle, and bottom. Placing a 2-foot flap of the wire mesh under the gravel for anchoring is recommended.
4. Place clean gravel (NC DOT #5 or #57 stone) on a 2:1 slope with a height of 16 inches around the wire, and smooth to an even grade.
5. Once the contributing drainage area has been stabilized, remove accumulated sediment, and establish final grading elevations.
6. Compact the area properly and stabilize with groundcover.

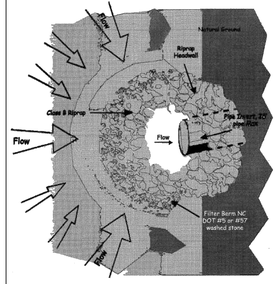
Maintenance:

1. Inspect sediment fences at least once a week and after each 1 inch or greater rainfall. Make any required repairs immediately.
2. Clear the mesh wire of any debris or other objects to provide adequate flow for subsequent rains. Take care not to damage or undercut the mesh during sediment removal.
3. Replace stone as needed.

NORTH CAROLINA Environmental Quality

EFFECTIVE DATE: 11/12/2020

INLET PROTECTION



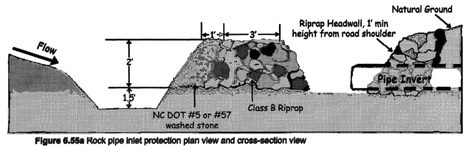


Figure 6.05a Rock pipe inlet protection plan view and cross-section view

Construction Specifications

1. Clear the area of all debris that might hinder excavation and disposal of spoil.
2. Install the Class B or Class 1 riprap in a semi-circle around the pipe inlet. The stone should be built up higher on each end where it ties into the embankment. The minimum crest width of the riprap should be 3 feet, with a minimum bottom width of 11 feet. The minimum height should be 2 feet, but also 1 foot lower than the shoulder of the embankment or diversions.
3. A 1 foot thick layer of NC DOT #5 or #57 stone should be placed on the outside slope of the riprap.
4. The sediment storage area should be excavated around the outside of the stone horseshoe 18 inches below natural grade.
5. When the contributing drainage area has been stabilized, fill depression and establish final grading elevations, compact area properly, and stabilize with ground cover.

MAINTENANCE

Inspect rock pipe inlet protection at least weekly and after each significant (Y2 inch or greater) rainfall event and repair immediately. Remove sediment and restore the sediment storage area to its original dimensions when the sediment has accumulated to one-half the design depth of the trap. Place the sediment that is removed in the designated disposal area and replace the contaminated part of the gravel facing.

Check the structure for damage. Any riprap displaced from the stone horseshoe must be replaced immediately. After all the sediment-producing areas have been permanently stabilized, remove the structure and all the unstable sediment. Smooth the area to blend with the adjoining areas and provide permanent ground cover (Surface Stabilization).

ROCK PIPE INLET PROTECTION

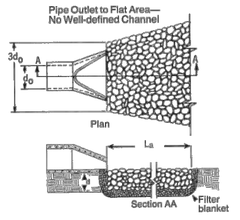


Figure 6.41c Riprap outlet protection (modified from Va SWCC).

Notes

1. L_a is the length of the riprap apron.
2. d = 1.5 times the maximum stone diameter but not less than 6".
3. In a well-defined channel extend the apron up the channel banks to an elevation of 6" above the maximum tailwater depth or to the top of the bank, whichever is less.
4. A filter blanket or filter fabric should be installed between the riprap and soil foundation.

Construction Specifications

1. Ensure that the subgrade for the filter and riprap follows the required lines and grades shown in the plan. Compact any fill required in the subgrade to the density of the surrounding undisturbed material. Low areas in the subgrade on undisturbed soil may also be filled by increasing the riprap thickness.
2. The riprap and gravel filter must conform to the specified grading limits shown on the plans.
3. Filter cloth, when used, must meet design requirements and be properly protected from punching or tearing during installation. Repair any damage by removing the riprap and placing another piece of filter cloth over the damaged area. All connecting joints should overlap so the top layer is above the downstream layer a minimum of 1 foot. If the damage is extensive, replace the entire filter cloth.
4. Riprap may be placed by equipment, but take care to avoid damaging the filter.
5. The minimum thickness of the riprap should be 1.5 times the maximum stone diameter.
6. Riprap may be field stone or rough quarry stone. It should be hard, angular, highly weather-resistant and well graded.
7. Construct the apron on zero grade with no overfill at the end. Make the top of the riprap at the downstream end level with the receiving area or slightly below it.
8. Ensure that the apron is properly aligned with the receiving stream and preferably straight throughout its length. If a curve is needed to fit site conditions, place it in the upper section of the apron.
9. Immediately after construction, stabilize all disturbed areas with vegetation (Practices 6.10, *Temporary Seeding*, and 6.11, *Permanent Seeding*).

Maintenance

Inspect riprap outlet structures weekly and after significant (1/2 inch or greater) rainfall events to see if any erosion around or below the riprap has taken place, or if stones have been dislodged. Immediately make all needed repairs to prevent further damage.

RIP RAP OUTLET PROTECTION SIZING

NO.	Do	3Do	D50 STONE SIZE	APRON THICKNESS	PAD LENGTH	PAD WIDTH
#1	15 in	45 in	6 in	9 in	10 ft	15 ft
#2	24 in	72 in	6 in	12 in	12 ft	18 ft

RIP RAP OUTLET PROTECTION

ESC DETAILS

C-3.2

1019 BERKELEY ROAD
CIVIL ENGINEERING & SITE PLANNING

FOR OK CONSTRUCTION

TOWN OF HENDERSONVILLE, HENDERSON COUNTY

No.	REVISIONS	Date
1	SUBMIT TO CLIENT	01–08–24
2	FOR SUBMITTAL	02–14–24
3	RESUBMITTAL	03–26–24

PRELIMINARY - NOT FOR CONSTRUCTION

EDSEL ENGINEERING, PLLC
NORTH CAROLINA
CERT # P–2578

NORTH CAROLINA
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SEAL
045408
ENGINEER
WYATT DENTLEY EDSEL

EDSEL ENGINEERING, PLLC
104 HIAWASSEE AVENUE
BLACK MOUNTAIN, NC 28711

EDSEL ENGINEERING

GROUND STABILIZATION AND MATERIALS HANDLING PRACTICES FOR COMPLIANCE WITH THE NCG01 CONSTRUCTION GENERAL PERMIT

Implementing the details and specifications on this plan sheet will result in the construction activity being considered compliant with the Ground Stabilization and Materials Handling sections of the NCG01 Construction General Permit (Sections E and F, respectively). The permittee shall comply with the Erosion and Sediment Control plan approved by the delegated authority having jurisdiction. All details and specifications shown on this sheet may not apply depending on site conditions and the delegated authority having jurisdiction.

SECTION E: GROUND STABILIZATION

Required Ground Stabilization Timeframes

Site Area Description	Stabilize within this many calendar days after ceasing land disturbance	Timeframe variations
(a) Perimeter dikes, swales, ditches, and perimeter slopes	7	None
(b) High Quality Water (HQW) Zones	7	None
(c) Slopes steeper than 3:1	7	If slopes are 10' or less in length and are not steeper than 2:1, 14 days are allowed
(d) Slopes 3:1 to 4:1	14	-7 days for slopes greater than 50' in length and with slopes steeper than 4:1 -7 days for perimeter dikes, swales, ditches, perimeter slopes and HQW Zones -10 days for Falls Lake Watershed
(e) Areas with slopes flatter than 4:1	14	-7 days for perimeter dikes, swales, ditches, perimeter slopes and HQW Zones -10 days for Falls Lake Watershed unless there is zero slope

Note: After the permanent cessation of construction activities, any areas with temporary ground stabilization shall be converted to permanent ground stabilization as soon as practicable but in no case longer than 90 calendar days after the last land disturbing activity. Temporary ground stabilization shall be maintained in a manner to render the surface stable against accelerated erosion until permanent ground stabilization is achieved.

GROUND STABILIZATION SPECIFICATION

Stabilize the ground sufficiently so that rain will not dislodge the soil. Use one of the techniques in the table below:

Temporary Stabilization	Permanent Stabilization
◦ Temporary grass seed covered with straw or other mulches and tackifiers ◦ Hydroseeding ◦ Rolled erosion control products with or without temporary grass seed ◦ Appropriately applied straw or other mulch ◦ Plastic sheeting	◦ Permanent grass seed covered with straw or other mulches and tackifiers ◦ Geotextile fabrics such as permanent soil reinforcement matting ◦ Hydroseeding ◦ Shrubs or other permanent plantings covered with mulch ◦ Uniform and evenly distributed ground cover sufficient to restrain erosion ◦ Structural methods such as concrete, asphalt or retaining walls ◦ Rolled erosion control products with grass seed

POLYACRYLAMIDES (PAMS) AND FLOCCULANTS

1. Select flocculants that are appropriate for the soils being exposed during construction, selecting from the NC DWR List of Approved PAMS/Flocculants .
2. Apply flocculants at or before the inlets to Erosion and Sediment Control Measures.
3. Apply flocculants at the concentrations specified in the NC DWR List of Approved PAMS/Flocculants and in accordance with the manufacturer's instructions.
4. Provide ponding area for containment of treated Stormwater before discharging offsite.
5. Store flocculants in leak-proof containers that are kept under storm-resistant cover or surrounded by secondary containment structures.

EQUIPMENT AND VEHICLE MAINTENANCE

1. Maintain vehicles and equipment to prevent discharge of fluids.
2. Provide drip pans under any stored equipment.
3. Identify leaks and repair as soon as feasible, or remove leaking equipment from the project.
4. Collect all spent fluids, store in separate containers and properly dispose as hazardous waste (recycle when possible).
5. Remove leaking vehicles and construction equipment from service until the problem has been corrected.
6. Bring used fuels, lubricants, coolants, hydraulic fluids and other petroleum products to a recycling or disposal center that handles these materials.

LITTER, BUILDING MATERIAL AND LAND CLEARING WASTE

1. Never bury or burn waste. Place litter and debris in approved waste containers.
2. Provide a sufficient number and size of waste containers (e.g dumpster, trash receptacle) on site to contain construction and domestic wastes.
3. Locate waste containers at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
4. Locate waste containers on areas that do not receive substantial amounts of runoff from upland areas and does not drain directly to a storm drain, stream or wetland.
5. Cover waste containers at the end of each workday and before storm events or provide secondary containment. Repair or replace damaged waste containers.
6. Anchor all lightweight items in waste containers during times of high winds.
7. Empty waste containers as needed to prevent overflow. Clean up immediately if containers overflow.
8. Dispose waste off-site at an approved disposal facility.
9. On business days, clean up and dispose of waste in designated waste containers.

PAINT AND OTHER LIQUID WASTE

1. Do not dump paint and other liquid waste into storm drains, streams or wetlands.
2. Locate paint washouts at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
3. Contain liquid wastes in a controlled area.
4. Containment must be labeled, sized and placed appropriately for the needs of site.
5. Prevent the discharge of soaps, solvents, detergents and other liquid wastes from construction sites.

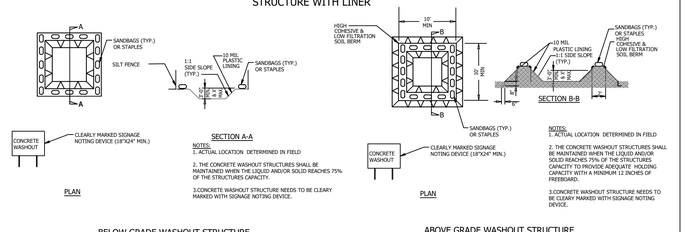
PORTABLE TOILETS

1. Install portable toilets on level ground, at least 50 feet away from storm drains, streams or wetlands unless there is no alternative reasonably available. If 50 foot offset is not attainable, provide relocation of portable toilet behind silt fence or place on a gravel pad and surround with sand bags.
2. Provide staking or anchoring of portable toilets during periods of high winds or in high foot traffic areas.
3. Monitor portable toilets for leaking and properly dispose of any leaked material. Utilize a licensed sanitary waste hauler to remove leaking portable toilets and replace with properly operating unit.

EARTHEN STOCKPILE MANAGEMENT

1. Show stockpile locations on plans. Locate earthen-material stockpile areas at least 50 feet away from storm drain inlets, sediment basins, perimeter sediment controls and surface waters unless it can be shown no other alternatives are reasonably available.
2. Protect stockpile with silt fence installed along toe of slope with a minimum offset of five feet from the toe of stockpile.
3. Provide stable stone access point when feasible.
4. Stabilize stockpile within the timeframes provided on this sheet and in accordance with the approved plan and any additional requirements. Soil stabilization is defined as vegetative, physical or chemical coverage techniques that will restrain accelerated erosion on disturbed soils for temporary or permanent control needs.

ONSITE CONCRETE WASHOUT STRUCTURE WITH LINER



CONCRETE WASHOUTS

1. Do not discharge concrete or cement slurry from the site.
2. Dispose of, or recycle settled, hardened concrete residue in accordance with local and state solid waste regulations and at an approved facility.
3. Manage washout from mortar mixers in accordance with the above item and in addition place the mixer and associated materials on impervious barrier and within lot perimeter silt fence.
4. Install temporary concrete washouts per local requirements, where applicable. If an alternate method or product is to be used, contact your approval authority for review and approval. If local standard details are not available, use one of the two types of temporary concrete washouts provided on this detail.
5. Do not use concrete washouts for dewatering or storing defective curb or sidewalk sections. Stormwater accumulated within the washout may not be pumped into or discharged to the storm drain system or receiving surface waters. Liquid waste must be pumped out and removed from project.
6. Locate washouts at least 50 feet from storm drain inlets and surface waters unless it can be shown that no other alternatives are reasonably available. At a minimum, install protection of storm drain inlet(s) closest to the washout which could receive spills or overflow.
7. Locate washouts in an easily accessible area, on level ground and install a stone entrance pad in front of the washout. Additional controls may be required by the approving authority.
8. Install at least one sign directing concrete trucks to the washout within the project limits. Post signage on the washout itself to identify this location.
9. Remove leavings from the washout when at approximately 75% capacity to limit overflow events. Replace the tarp, sand bags or other temporary structural components when no longer functional. When utilizing alternative or proprietary products, follow manufacturer's instructions.
10. At the completion of the concrete work, remove remaining leavings and dispose of in an approved disposal facility. Fill pit, if applicable, and stabilize any disturbance caused by removal of washout.

HERBICIDES, PESTICIDES AND RODENTICIDES

1. Store and apply herbicides, pesticides and rodenticides in accordance with label restrictions.
2. Store herbicides, pesticides and rodenticides in their original containers with the label, which lists directions for use, ingredients and first aid steps in case of accidental poisoning.
3. Do not store herbicides, pesticides and rodenticides in areas where flooding is possible or where they may spill or leak into wells, stormwater drains, ground water or surface water. If a spill occurs, clean area immediately.
4. Do not stockpile these materials onsite.

HAZARDOUS AND TOXIC WASTE

1. Create designated hazardous waste collection areas on-site.
2. Place hazardous waste containers under cover or in secondary containment.
3. Do not store hazardous chemicals, drums or bagged materials directly on the ground.

NCG01 GROUND STABILIZATION AND MATERIALS HANDLING

EFFECTIVE: 04/01/19

1019 BERKELEY ROAD
CIVIL ENGINEERING & SITE PLANNING

NCG01-1

C-3.3

FOR OK CONSTRUCTION
TOWN OF HENDERSONVILLE, HENDERSON COUNTY

No.	REVISIONS	Date
1	SUBMIT TO CLIENT	01-08-24
2	FOR SUBMITTAL	02-14-24
3	RESUBMITTAL	03-26-24

PRELIMINARY - NOT FOR CONSTRUCTION

EDSEL ENGINEERING, PLLC
NORTH CAROLINA
CERT # C-2876

NORTH CAROLINA
PROFESSIONAL ENGINEER
045409
BRETT BENTLEY EDSEL

EDSEL ENGINEERING, PLLC
104 HIAWASSEE AVENUE
BLACK MOUNTAIN, NC 28711

EDSEL ENGINEERING

PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION A: SELF-INSPECTION

Self-inspections are required during normal business hours in accordance with the table below. When adverse weather or site conditions would cause the safety of the inspection personnel to be in jeopardy, the inspection may be delayed until the next business day on which it is safe to perform the inspection. In addition, when a storm event of equal to or greater than 1.0 inch occurs outside of normal business hours, the self-inspection shall be performed upon the commencement of the next business day. Any time when inspections were delayed shall be noted in the Inspection Record.

Inspect	Frequency (during normal business hours)	Inspection records must include:
(1) Rain gauge maintained in good working order	Daily	Daily rainfall amounts. If no daily rain gauge observations are made during weekend or holiday periods, and no individual-day rainfall information is available, record the cumulative rain measurement for those un-(anc this will determine if a site inspection is needed). Days on which no rainfall occurred shall be recorded as "zero." The permittee may use another rain-monitoring device approved by the Division.
(2) E&SC Measures and within 24 hours of a rain event > 1.0 inch in 24 hours	At least once per 7 calendar days and within 24 hours of a rain event > 1.0 inch in 24 hours	1. Identification of the measures inspected, 2. Date and time of the inspection, 3. Name of the person performing the inspection, 4. Indication of whether the measures were operating properly, 5. Description of maintenance needs for the measure, 6. Description, evidence, and date of corrective actions taken.
(3) Stormwater discharge outfalls (SDCs)	At least once per 7 calendar days and within 24 hours of a rain event > 1.0 inch in 24 hours	1. Identification of the discharge outfalls inspected, 2. Date and time of the inspection, 3. Name of the person performing the inspection, 4. Evidence of indicators of stormwater pollution such as oil sheen, floating or suspended solids or discoloration, 5. Indication of visible sediment leaving the site, 6. Description, evidence, and date of corrective actions taken.
(4) Perimeter of site	At least once per 7 calendar days and within 24 hours of a rain event > 1.0 inch in 24 hours	If visible sedimentation is found outside site limits, then a record of the following shall be made: 1. Actions taken to clean up or stabilize the sediment that has left the site limits, 2. Description, evidence, and date of corrective actions taken, and 3. An explanation as to the actions taken to control future
(5) Streams or wetlands onsite or offsite (where accessible)	At least once per 7 calendar days and within 24 hours of a rain event > 1.0 inch in 24 hours	If the stream or wetland has increased visible sedimentation or a stream has visible increased turbidity from the construction activity, then a record of the following shall be made: 1. Description, evidence and date of corrective actions taken, and 2. Records of the required reports to the appropriate Division Regional Office per Part III, Section C, Item (2)(a) of this permit.
(6) Ground stabilization measures	After each phase of grading	1. The phase of grading (installation of perimeter E&SC measures, clearing and grubbing, installation of storm drainage facilities, completion of all land-disturbing activity, construction or redevelopment, permanent ground cover). 2. Documentation that the required ground stabilization measures have been provided within the required timeframe or an assurance that they will be provided as soon as possible.

NOTE: The rain inspection resets the required 7 calendar day inspection requirement.

PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION B: RECORDKEEPING

1. E&SC Plan Documentation

The approved E&SC plan as well as any approved deviation shall be kept on the site. The approved E&SC plan must be kept up-to-date throughout the coverage under this permit. The following items pertaining to the E&SC plan shall be kept on site and available for inspection at all times during normal business hours.

Item to Document	Documentation Requirements
(a) Each E&SC measure has been installed and does not significantly deviate from the locations, dimensions and relative elevations shown on the approved E&SC plan. plan. This documentation is required upon the initial installation of the E&SC measures or if the E&SC measures are modified after initial installation.	Initial and date each E&SC measure on a copyof the approved E&SC plan or complete, date and sign an inspection report that lists each E&SC measure shown on the approved E&SC plan. This documentation is required upon the initial installation of the E&C measures or if the E&SC measures are modified after initial installation.
(b) A phase of grading has been completed. Initial and date a copy of the approved E&SC plan or complete, date and sign an inspection report to indicate completion of the construction phase.	Initial and date a copy of the approved E&SC plan or complete, date and sign an inspection report to indicate completion of the construction phase.
(c) Ground cover is located and installed in accordance with the approved E&SC plan.	Initial and date a copy of the approved E&SC plan or complete, date and sign an inspection report to indicate compliance with approved ground cover specifications.
(d) The maintenance and repair requirements for all E&SC measures have been performed.	Complete, date and sign an inspection report.
(e) Corrective actions have been taken to E&SC measures. report to indicate the completion of the corrective action.	Initial and date a copy of the approved E&SC plan or complete, date and sign an inspection report to indicate the completion of the corrective action.

2. Additional Documentation to be Kept on Site

In addition to the E&SC plan documents above, the following items shall be kept on the site and available for inspectors at all times during normal business hours, unless the Division provides a site-specific exemption based on unique site conditions that make this requirement not practical:

(a) This General Permit as well as the Certificate of Coverage, after it is received.

(b) Records of inspections made during the previous twelve months. The permittee shall record the required observations on the Inspection Record Form provided by the Division or a similar inspection form that includes all the required elements. Use of electronically-available records in lieu of the required paper copies will be allowed if shown to provide equal access and utility as the hard-copy records.

3. Documentation to be Retained for Three Years

All data used to complete the e-NOI and all inspection records shall be maintained for a period of three years after project completion and made available upon request [40 CFR 122.41]

PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION C: REPORTING

1. Occurrences that Must be Reported

Permittees shall report the following occurrences:

(a) Visible sediment deposition in a stream or wetland.

(b) Oil spills if:

- They are 25 gallons or more,
- They are less than 25 gallons but cannot be cleaned up within 24 hours,
- They cause sheen on surface waters (regardless of volume), or
- They are within 100 feet of surface waters (regardless of volume).

(c) Releases of hazardous substances in excess of reportable quantities under Section 311 of the Clean Water Act (Ref: 40 CFR 110.3 and 40 CFR 117.3) or Section 102 of CERCLA (Ref: 40 CFR 302.4) or G.S. 143-215.85.

(d) Anticipated bypasses and unanticipated bypasses.

(e) Noncompliance with the conditions of this permit that may endanger health or the environment.

2. Reporting Timeframes and Other Requirements

After a permittee becomes aware of an occurrence that must be reported, he shall contact the appropriate Division regional office within the timeframes and in accordance with the other requirements listed below. Occurrences outside normal business hours may also be reported to the Department's Environmental Emergency Center personnel at (800) 858-0368.

Occurrence	Reporting Timeframes (After Discovery) and Other Requirements
(a) Visible sediment deposition in a stream or wetland	• Within 24 hours, an oral or electronic notification. • Within 7 calendar days, a report that contains a description of the sediment and actions taken to address the cause of the deposition. Division staff may waive the requirement for a written report on a case-by-case basis. • If the stream is named on the NC 303(d) list as impaired for sediment-related causes, the permittee may be required to perform additional monitoring, inspections or apply more stringent practices if staff determine that additional requirements are needed to assure compliance with the federal or state impaired-waters conditions.
(b) Oil spills and release of hazardous substances per Item 1(b)-(c) above	• Within 24 hours, an oral or electronic notification. The notification shall include information about the date, time, nature, volume and location of the spill cr release.
(c) Anticipated bypasses [40 CFR 122.41(m)(3)]	• A report at least ten days before the date of the bypass, if possible. The report shall include an evaluation of the anticipated quality and effect of the bypass.
(d) Unanticipated bypasses [40 CFR 122.41(m)(3)]	• Within 24 hours, an oral or electronic notification. • Within 7 calendar days, a report that includes an evaluation of the quality and effect of the bypass.
(e) Noncompliance with the conditions of this permit that may endanger health or the environment[40 CFR 122.41(1)(7)1	• Within 24 hours, an oral or electronic notification. • Within 7 calendar days, a report that contains a description of the noncompliance, and its causes; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time noncompliance is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. [40 CFR 122.41(1)(6).

PART II, SECTION G, ITEM (4)
DRAW DOWN OF SEDIMENT BASINS FOR MAINTENANCE OR CLOSE OUT

Sediment basins and traps that receive runoff from drainage areas of one acre or more shall use outlet structures that withdraw water from the surface when these devices need to be drawn down for maintenance or close out unless this is infeasible. The circumstances in which it is not feasible to withdraw water from the surface shall be rare (for example, times with extended cold weather). Non-surface withdrawals from sediment basins shall be allowed only when all of the following criteria have been met:

(a) The E&SC plan authority has been provided with documentation of the non-surface withdrawal and the specific time periods or conditions in which it will occur. The non-surface withdrawal shall not commence until the E&SC plan authority has approved these items,
(b) The non-surface withdrawal has been reported as an anticipated bypass in accordance with Part III, Section C, Item (2)(c) and (d) of this permit,
(c) Dewatering discharges are treated with controls to minimize discharges of pollutants from stormwater that is removed from the sediment basin. Examples of appropriate controls include properly sited, designed and maintained dewatering tanks, weir tanks, and filtration systems,
(d) Vegetated, upland areas of the sites or a properly designed stone pad is used to the extent feasible at the outlet of the dewatering treatment devices described in Item (c) above,
(e) Velocity dissipation devices such as check dams, sediment traps, and riprap are provided at the discharge points of all dewatering devices, and
(f) Sediment removed from the dewatering treatment devices described in Item (c) above is disposed of in a manner that does not cause deposition of sediment into waters of the United States.

NORTH CAROLINA
Environmental Quality

NCG01 SELF-INSPECTION, RECORDKEEPING AND REPORTING

EFFECTIVE: 04/01/19

NCG0A-2

C-3.4

1019 BERKELEY ROAD
CIVIL ENGINEERING & SITE PLANNING

FOR OK CONSTRUCTION
TOWN OF HENDERSONVILLE, HENDERSON COUNTY

No.	REVISIONS	Date
1	SUBMIT TO CLIENT	01-08-24
2	FOR SUBMITTAL	02-14-24
3	RESUBMITTAL	03-26-24

PRELIMINARY - NOT FOR CONSTRUCTION

EDSEL ENGINEERING, PLLC
104 HIAWASSEE AVENUE
BLACK MOUNTAIN, NC 28711

EDSEL ENGINEERING

DEVELOPMENT DATA

PROPERTY ADDRESS:	1019 BERKELEY ROAD HENDERSONVILLE, NC 28792
PROPERTY OWNER & CONTACT:	KEVIN FAKHOURY
ADDRESS:	24 COUNTRY RD. HENDERSONVILLE, NC 28791
EMAIL:	kevin.farkhoury@gmail.com
PHONE:	(828) 674-6267
PIN NUMBERS:	9569-48-5695
ZONING:	C-3 HIGHWAY BUSINESS
PROPERTY SIZE:	2.08 ACRES
DISTURBED AREA:	1.5 ACRES (SESC APPROVAL REQUIRED BY HENDERSON COUNTY)
BUILDING HEIGHT:	29' TO PEAK OF ROOF
SOIL TYPES:	HyC
CITES DEED:	4106-174
LAT/LONG:	35.34576341043784, -82.47311204410711
FEMA FLOOD PANEL:	9569
EFFECTIVE DATE:	10/2/2008

PROPOSED DEVELOPMENT DISTURBANCE DATA

TOTAL PROJECT AREA:		2.08	
UNDISTRUBED AREA (ac.)		0.58	27.9%
LIMITS OF DISTURBANCE (ac.)		1.5	72.1%
PERVIOUS AREA (ac.)		1.14	54.8%
IMPERVIOUS AREA (ac.)		0.94	45.2%
PROPOSED LOT AREAS		N/A	
STREETS AND PARKING (ac.)		0.60	28.7%
COMMON OPEN SPACE		0.31	14.9%
OTHER FACILITIES		N/A	
BUILDING COVERAGE (SF)		10000	11.0%
PRE DEVELOPMENT IMPERVIOUS AREA (ac.)		0.43	20.5%
POST DEVELOPMENT IMPERVIOUS AREA (ac.)		0.90	43.0%

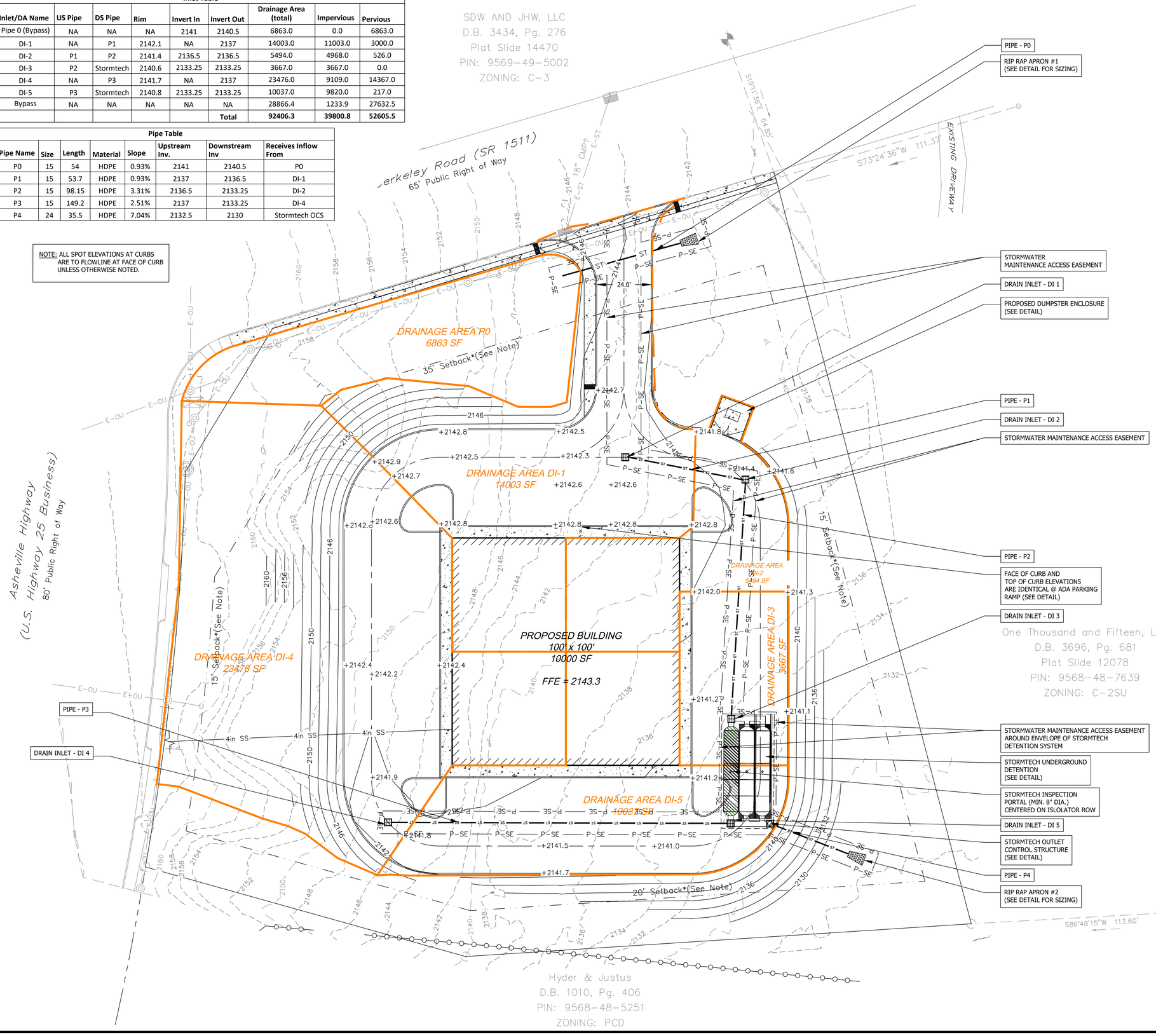
Inlet Table

Inlet/DA Name	US Pipe	DS Pipe	Rim	Invert In	Invert Out	Drainage Area (total)	Impervious	Pervious
Pipe 0 (Bypass)	NA	NA	NA	2141	2140.5	6863.0	0.0	6863.0
DI-1	NA	P1	2142.1	NA	2137	14003.0	11003.0	3000.0
DI-2	P1	P2	2141.4	2136.5	2136.5	5494.0	4968.0	526.0
DI-3	P2	Stormtech	2140.6	2133.25	2133.25	3667.0	3667.0	0.0
DI-4	NA	P3	2141.7	NA	2137	23476.0	9109.0	14367.0
DI-5	P3	Stormtech	2140.8	2133.25	2133.25	10037.0	9820.0	217.0
Bypass	NA	NA	NA	NA	NA	28866.4	1233.9	27632.5
					Total	92406.3	39800.8	52605.5

Pipe Table

Pipe Name	Size	Length	Material	Slope	Upstream Inv.	Downstream Inv	Receives Inflow From
P0	15	54	HDPE	0.93%	2141	2140.5	P0
P1	15	53.7	HDPE	0.93%	2137	2136.5	DI-1
P2	15	98.15	HDPE	3.31%	2136.5	2133.25	DI-2
P3	15	149.2	HDPE	2.51%	2137	2133.25	DI-4
P4	24	35.5	HDPE	7.04%	2132.5	2130	Stormtech OCS

NOTE: ALL SPOT ELEVATIONS AT CURBS ARE TO FLOWLINE AT FACE OF CURB UNLESS OTHERWISE NOTED.



0 20 40 60

SCALE: 1"= 20

STORMWATER LEGEND

- EXIST. BOUNDARY
- EXIST. ADJOINER
- EXIST. RIGHT OF WAY
- ST — PROPOSED STORM DRAINAGE
- DRAINAGE AREA
- PROPOSED CATCH BASIN
- PROPOSED RIP RAP OUTLET
- +000.0 SPOT ELEVATION
- PROPOSED CONCRETE SIDEWALK
- E-W — EXIST. WATER LINE
- E-ST — EXIST. STORM DRAIN
- EXIST. CURB INLET
- ELEV — EXIST. MINOR CONTOUR
- ELEV — EXIST. MAJOR CONTOUR
- EXIST. OVERHEAD UTILITY
- EXIST. FENCE LINE
- EXIST. WATER METER
- EXIST. PROPERTY CORNER
- EXIST. STREET SIGN
- EXIST. GUY WIRE
- EXIST. POWER POLE

STORM WATER PLAN — C-4.0

1019 BERKELEY ROAD CIVIL ENGINEERING & SITE PLANNING

FOR OK CONSTRUCTION
TOWN OF HENDERSONVILLE, HENDERSON COUNTY

No.	REVISIONS	Date
1	SUBMIT TO CLIENT	01-08-24
2	FOR SUBMITTAL	02-14-24
3	RESUBMITTAL	03-26-24

PRELIMINARY - NOT FOR CONSTRUCTION

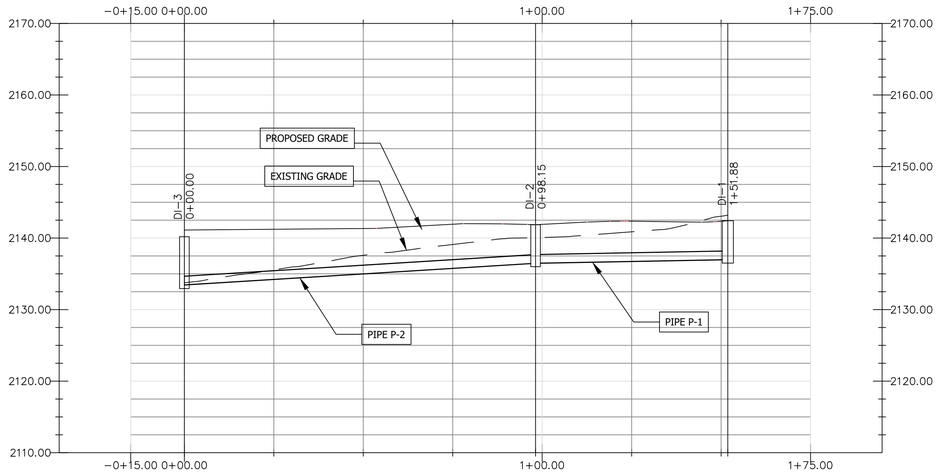
EDSEL ENGINEERING, PLLC
NORTH CAROLINA
CERT # P-2578

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 045408 MATTHEW GENTLEY EDSEL

EDSEL ENGINEERING, PLLC
104 HIAWASSEE AVENUE
BLACK MOUNTAIN, NC 28711

EDSEL ENGINEERING

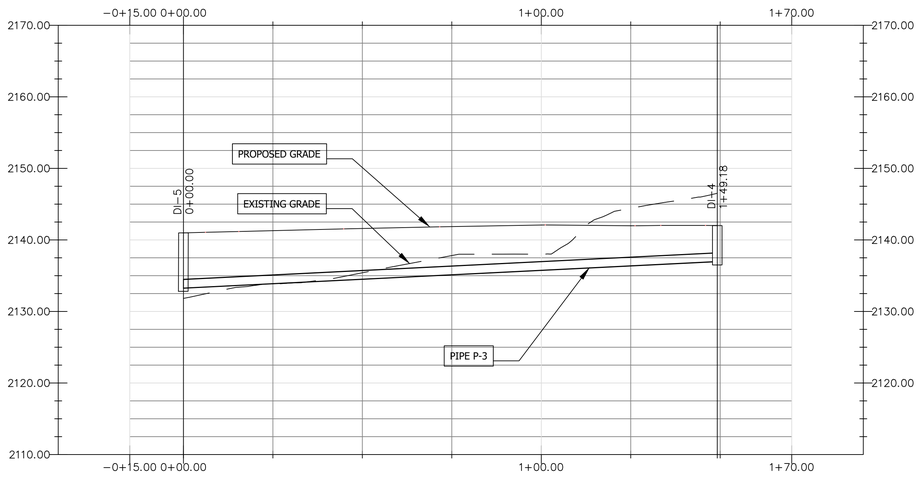
NORTH STORM DRAIN



Inlet Table								
Inlet/DA Name	**US Pipe**	**DS Pipe**	**Rim**	**Invert In**	**Invert Out**	**Drainage Area (total)**	**Impervious**	**Pervious**
Pipe 0 (Bypass)	NA	NA	NA	2141	2140.5	6863.0	0.0	6863.0
DI-1	NA	P1	2142.1	NA	2137	14003.0	11003.0	3000.0
DI-2	P1	P2	2141.4	2136.5	2136.5	5494.0	4968.0	526.0
DI-3	P2	Stormtech	2140.6	2133.25	2133.25	3667.0	3667.0	0.0
DI-4	NA	P3	2141.7	NA	2137	23476.0	9109.0	14367.0
DI-5	P3	Stormtech	2140.8	2133.25	2133.25	10037.0	9820.0	217.0
Bypass	NA	NA	NA	NA	NA	28866.4	1233.9	27632.5
					Total	**92406.3**	**39800.8**	**52605.5**

Pipe Table							
Pipe Name	**Size**	**Length**	**Material**	**Slope**	**Upstream Inv.**	**Downstream Inv**	**Receives Inflow From**
P0	15	54	HDPE	0.93%	2141	2140.5	P0
P1	15	53.7	HDPE	0.93%	2137	2136.5	DI-1
P2	15	98.15	HDPE	3.31%	2136.5	2133.25	DI-2
P3	15	149.2	HDPE	2.51%	2137	2133.25	DI-4
P4	24	35.5	HDPE	7.04%	2132.5	2130	Stormtech OCS

SOUTH STORM DRAIN



STORM WATER PROFILES

C-4.1

1019 BERKELEY ROAD
CIVIL ENGINEERING & SITE PLANNING

FOR OK CONSTRUCTION
TOWN OF HENDERSONVILLE, HENDERSON COUNTY

No.	REVISIONS	Date
1	SUBMIT TO CLIENT	01−08−24
2	FOR SUBMITTAL	02−14−24
3	RESUBMITTAL	03−26−24

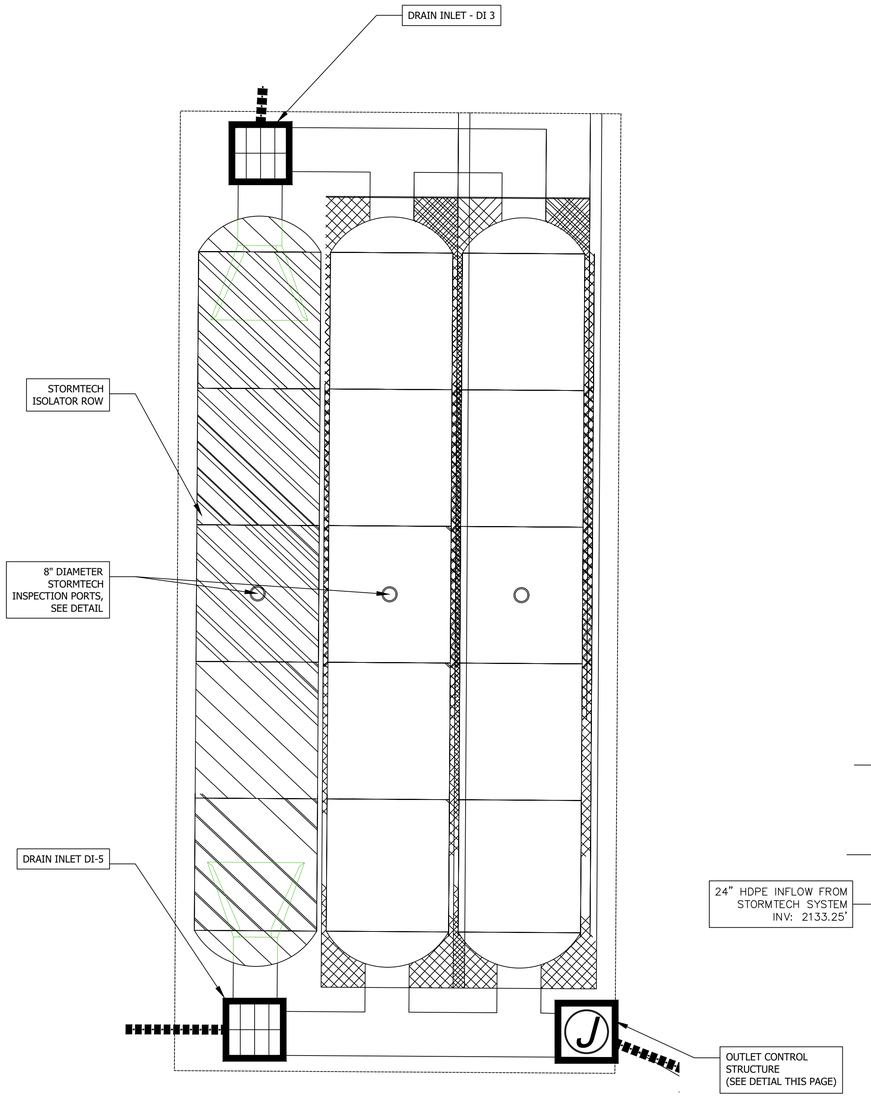
PRELIMINARY - NOT FOR CONSTRUCTION

EDSEL ENGINEERING, PLLC
NORTH CAROLINA
CERT # P−2678

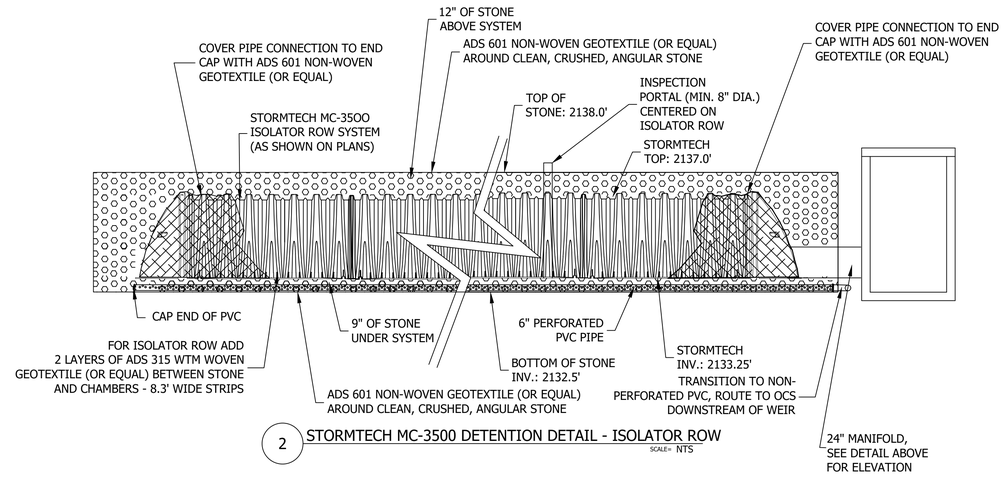
NORTH CAROLINA
REGISTERED
SEAL
049408
ENGINEER
WYATT DENTLEY EDSEL

EDSEL ENGINEERING, PLLC
104 HIAWASSEE AVENUE
BLACK MOUNTAIN, NC 28711

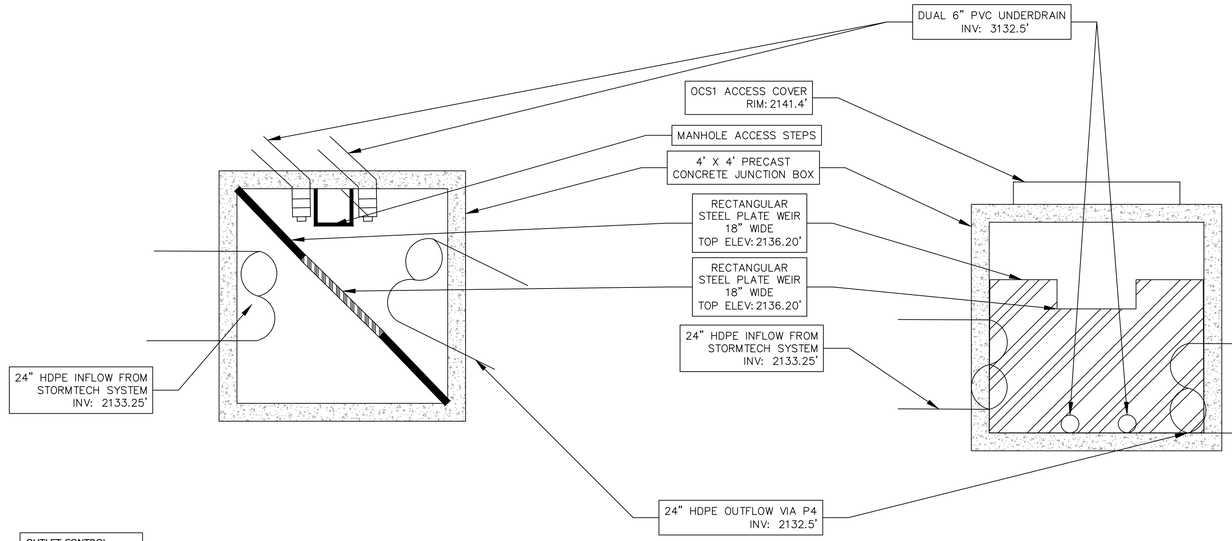
EDSEL ENGINEERING



1 STORMTECH PLAN VIEW
SCALE= NTS



2 STORMTECH MC-3500 DETENTION DETAIL - ISOLATOR ROW
SCALE= NTS



2.0 OUTLET CONTROL STRUCTURE 1, OCS 1 - PLAN VIEW
SCALE= NTS

2.1 OUTLET CONTROL STRUCTURE 2 OCS 2 - PROFILE VIEW
SCALE= NTS

STORM WATER DETAILS

C-4.2

1019 BERKELEY ROAD CIVIL ENGINEERING & SITE PLANNING

FOR OK CONSTRUCTION
TOWN OF HENDERSONVILLE, HENDERSON COUNTY

No.	REVISIONS	Date
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EDSEL ENGINEERING, PLLC NORTH CAROLINA CERT # P-2518

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 045409 PATRICK BENTLEY EDSEL

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104 HIAWASSEE AVENUE
BLACK MOUNTAIN, NC 28711

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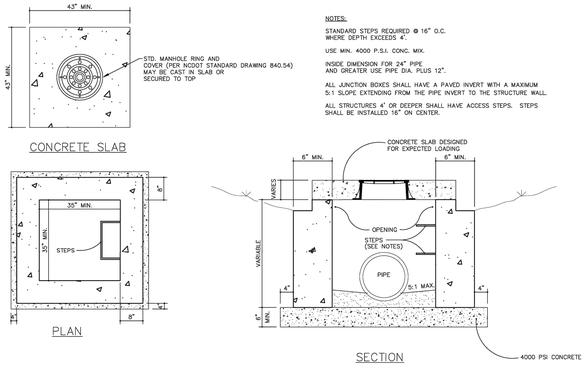


NOTES:

STANDARD STEPS REQUIRED @ 16" O.C. WHERE DEPTH EXCEEDS 4'.

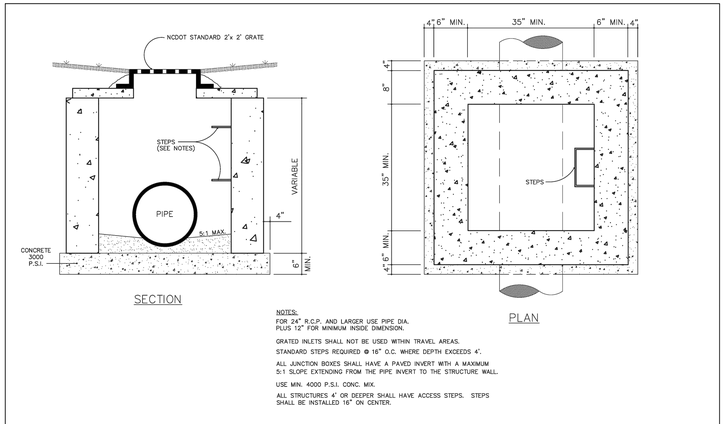
USE MIN. 4000 P.S.I. CONC. MIX.

INSIDE DIMENSION FOR 24" PIPE AND GREATER USE PIPE DIA. PLUS 12".

ALL JUNCTION BOXES SHALL HAVE A PAVED INVERT WITH A MAXIMUM 5:1 SLOPE EXTENDING FROM THE PIPE INVERT TO THE STRUCTURE WALL.

ALL STRUCTURES 4' OR DEEPER SHALL HAVE ACCESS STEPS. STEPS SHALL BE INSTALLED 16" ON CENTER.

STANDARD YARD INLET WITH CONCRETE SLAB



NOTES:

FOR 24" R.C.P. AND LARGER USE PIPE DIA. PLUS 12" FOR MINIMUM INSIDE DIMENSION.

GRATED INLETS SHALL NOT BE USED WITHIN TRAVEL AREAS.

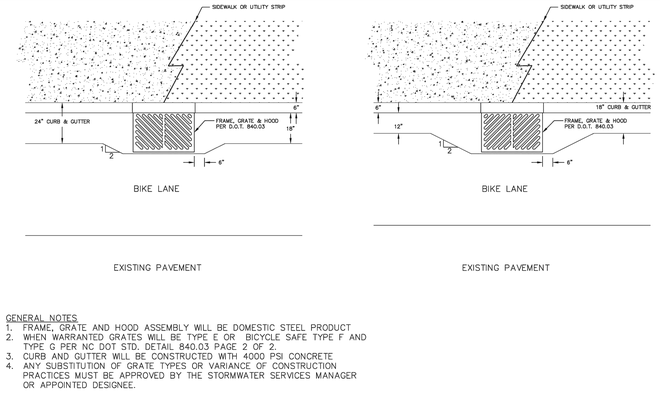
STANDARD STEPS REQUIRED @ 16" O.C. WHERE DEPTH EXCEEDS 4'.

ALL JUNCTION BOXES SHALL HAVE A PAVED INVERT WITH A MAXIMUM 5:1 SLOPE EXTENDING FROM THE PIPE INVERT TO THE STRUCTURE WALL.

USE MIN. 4000 P.S.I. CONC. MIX.

ALL STRUCTURES 4' OR DEEPER SHALL HAVE ACCESS STEPS. STEPS SHALL BE INSTALLED 16" ON CENTER.

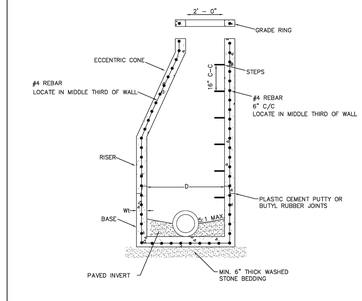
STANDARD YARD INLET WITH GRATE AND FRAME



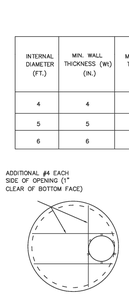
GENERAL NOTES

1. FRAME, GRATE AND HOOD ASSEMBLY WILL BE DOMESTIC STEEL PRODUCT
2. WHEN WARRANTED GRATES WILL BE TYPE E OR BICYCLE SAFE TYPE F AND TYPE G PER NC DOT STD. DETAIL 840.03 PAGE 2 OF 2.
3. CURB AND GUTTER WILL BE CONSTRUCTED WITH 4000 PSI CONCRETE
4. ANY SUBSTITUTION OF GRATE TYPES OR VARIANCE OF CONSTRUCTION PRACTICES MUST BE APPROVED BY THE STORMWATER SERVICES MANAGER OR APPOINTED DESIGNEE.

CURB INLETS FOR 18" & 24" CURB & GUTTER



INTERNAL DIAMETER (FT.)	MIN. WALL THICKNESS (W1) (IN.)	MIN.BOTTOM SLAB THICKNESS (B1) (IN.)	MIN. CIRCUMFERENTIAL AREA OF STEEL PER VERTICAL FT. (SQ. IN.)
4	4	6	0.12
5	5	8	0.15
6	6	8	0.18



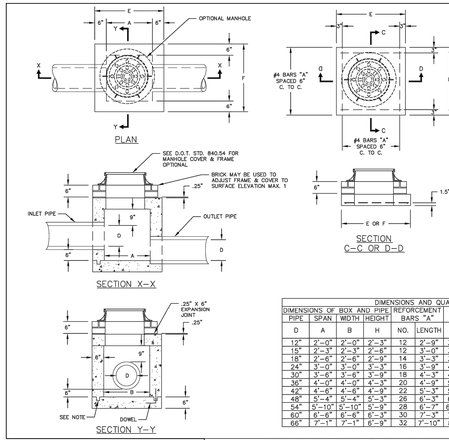
GENERAL NOTES

USE 4,000 psi MINIMUM COMPRESSIVE STRENGTH CONCRETE.

ALL STRUCTURES 4' OR DEEPER SHALL HAVE ACCESS STEPS. STEPS SHALL BE INSTALLED 16" ON CENTER.

BOLT ANCHOR LID RING.

PRECAST CONCRETE MANHOLE JUNCTION BOX



GENERAL NOTES:

CHAMPHER ALL EXPOSED CORNERS 1"

USE CLASS "B" CONCRETE THROUGHOUT.

OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2" KEYWAY, OR #4 BAR DOWELS AT 12" CENTER AS DIRECTED BY THE ENGINEER.

USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.

IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON D.O.T. STD. NO. 840.00.

PROVIDE ALL CATCH BASINS OVER 4" IN DEPTH WITH STEPS 16" ON CENTER. USE STEPS WHICH COMPLY WITH D.O.T. STD. DRAWING 840.66

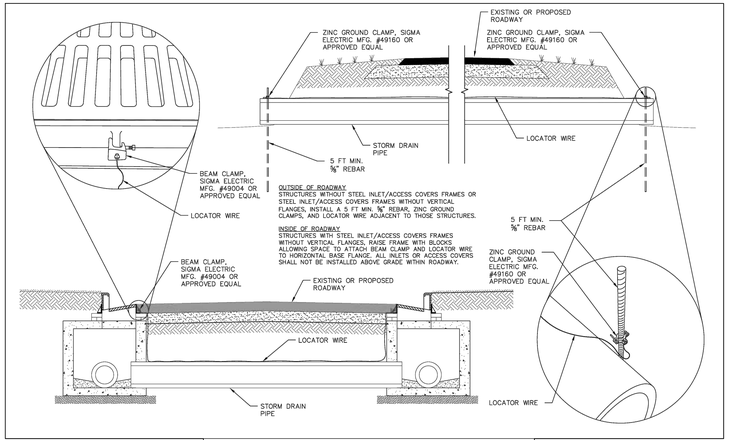
ADJUST THE STEEL, CONCRETE AND BRICK MASONRY QUANTITIES TO INCLUDE THE ADDITION OF THE MANHOLE (I.E. DIAGONAL BARS SHORTENED AROUND OPENING IN TOP SLAB). ADDITIONAL VARIABLE HEIGHT BRICK MASONRY, OPENING IN TOP (SLAB.)

MAX. DEPTH OF THIS STRUCTURE FROM TOP OF BOTTOM SLAB TO TOP ELEVATION IS 12 FEET.

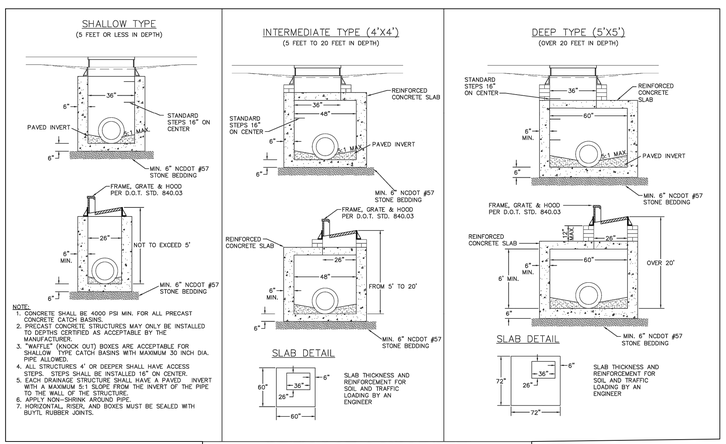
SEAL RISER ALL BOX AND RISER JOINTS WITH PLASTIC CEMENT PUTTY OR BUTYL RUBBER JOINTS.

DIMENSIONS OF BOX AND PIPE				REINFORCEMENT BARS "A"		TOP SLAB DIMENSION		CU. YDS. IN BOX			TOTAL QUANTITIES BOX AND SLABS		DEDUCTIONS ONE PIPE	
PIPE SPAN	WIDTH	HEIGHT		NO.	LENGTH	E	F	TOP SLAB	BOTTOM SLAB	WALL	LBS. REINF.	CU. YDS. MIN. H	C.M.	R.C.
D	A	B	H							(FT. OF W)				
12"	2'-0"	2'-0"	2'-3"	12	2'-9"	3'-0"	3'-0"	0.167	0.167	0.185	22	0.750	0.015	0.024
15"	2'-3"	2'-3"	2'-6"	12	3'-0"	3'-3"	3'-3"	0.196	0.196	0.204	24	0.902	0.023	0.036
18"	2'-6"	2'-6"	2'-9"	14	3'-3"	3'-6"	3'-6"	0.227	0.227	0.222	30	1.065	0.033	0.049
24"	3'-0"	3'-0"	3'-3"	16	3'-9"	4'-0"	4'-0"	0.296	0.296	0.259	40	1.434	0.059	0.085
30"	3'-6"	3'-6"	3'-9"	18	4'-3"	4'-6"	4'-6"	0.375	0.375	0.296	51	1.860	0.092	0.127
36"	4'-0"	4'-0"	4'-3"	20	4'-9"	5'-0"	5'-0"	0.463	0.463	0.333	64	2.341	0.132	0.178
42"	4'-6"	4'-6"	4'-9"	22	5'-3"	5'-6"	5'-6"	0.560	0.560	0.370	77	2.878	0.180	0.243
48"	5'-4"	5'-4"	5'-3"	26	6'-3"	6'-4"	6'-4"	0.743	0.743	0.407	111	3.623	0.235	0.317
54"	5'-10"	5'-10"	5'-9"	28	6'-7"	6'-10"	6'-10"	0.865	0.865	0.444	126	4.283	0.297	0.401
60"	6'-6"	6'-6"	6'-3"	30	7'-3"	7'-6"	7'-6"	1.042	1.042	0.481	145	5.090	0.367	0.495
66"	7'-1"	7'-1"	6'-9"	32	7'-10"	8'-1"	8'-1"	1.210	1.210	0.518	169	5.917	0.444	0.589

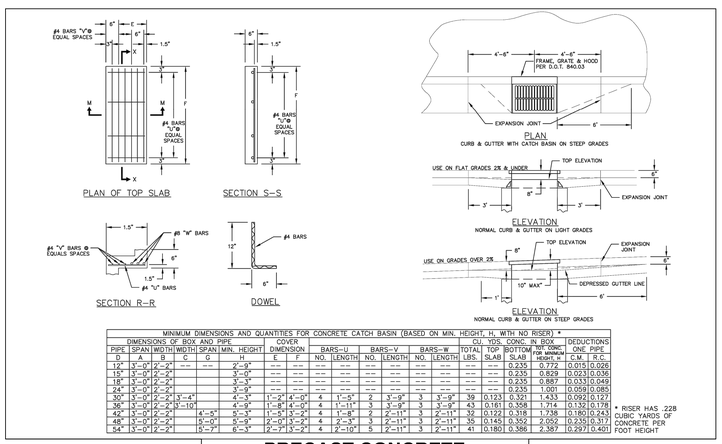
PRECAST CONCRETE JUNCTION BOX



STORM DRAIN PIPE LOCATION DEVICES



PRECAST CONCRETE CATCH BASIN



MINIMUM DIMENSIONS AND QUANTITIES FOR CONCRETE CATCH BASIN (BASED ON MIN. HEIGHT, H, WITH NO RISER) *																			
DIMENSIONS OF BOX AND PIPE							COVER		BARS-U		BARS-V		BARS-W			CU. YDS. CONC. IN BOX		DEDUCTIONS	
PIPE SPAN	WIDTH	WIDTH	SPAN	MIN. HEIGHT		DIMENSION		NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	TOTAL LBS.	TOP SLAB	BOTTOM SLAB	TOP CONC. IN WALL (FT. OF WALL)	ONE PIPE C.M.	R.C.
D	A	B	C	G	H	E	F												
12"	3'-0"	2'-2"	---	---	2'-9"	---	---	---	---	---	---	---	---	---	0.235	0.772	0.015	0.026	
15"	3'-0"	2'-2"			3'-0"	---	---	---	---	---	---	---	---	---	0.235	0.829	0.023	0.036	
18"	3'-0"	2'-2"			3'-3"	---	---	---	---	---	---	---	---	---	0.235	0.887	0.033	0.049	
24"	3'-0"	2'-2"			3'-9"	---	---	---	---	---	---	---	---	---	0.235	1.001	0.059	0.085	
30"	3'-0"	2'-2"	3'-4"		4'-3"	1'-2"	4'-0"	4	1'-5"	2	3'-9"	3	3'-9"	39	0.123	0.321	1.433	0.092	0.127
36"	3'-0"	2'-2"	3'-10"		4'-9"	1'-8"	4'-0"	4	1'-11"	3	3'-9"	3	3'-9"	43	0.161	0.358	1.714	0.132	0.178
42"	3'-0"	2'-2"		4'-5"	5'-3"	1'-5"	3'-2"	4	1'-8"	2	2'-11"	3	2'-11"	32	0.122	0.318	1.738	0.180	0.243
48"	3'-0"	2'-2"		5'-0"	5'-9"	2'-0"	3'-2"	4	2'-3"	3	2'-11"	3	2'-11"	35	0.145	0.352	2.052	0.235	0.317
54"	3'-0"	2'-2"		5'-7"	6'-3"	2'-7"	3'-2"	4	2'-10"	5	2'-11"	3	2'-11"	41	0.180	0.386	2.387	0.297	0.401

* RISER HAS .228 CUBIC YARDS OF CONCRETE PER FOOT HEIGHT

PRECAST CONCRETE CATCH BASIN

STORM WATER DETAILS

C-4.3

1019 BERKELEY ROAD CIVIL ENGINEERING & SITE PLANNING

FOR OK CONSTRUCTION
TOWN OF HENDERSONVILLE, HENDERSON COUNTY

No.	REVISIONS	Date
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PRELIMINARY - NOT FOR CONSTRUCTION

EDSEL ENGINEERING, PLLC
NORTH CAROLINA CERT.# P-2879

045403 REGISTERED PROFESSIONAL ENGINEER MATT DENTLEY EDSEL

EDSEL ENGINEERING, PLLC
104 HIAWASSEE AVENUE
BLACK MOUNTAIN, NC 28711

EDSEL ENGINEERING

LANDSCAPING PLAN NOTES:

THE TYPE OF PLANTS USED SHALL BE LIMITED TO THOSE ON THE APPROVED "SPECIES LIST" WHICH SHALL BE PUBLISHED AND REVISED FROM TIME TO TIME BY THE HENDERSONVILLE PLANNING DIRECTOR IN CONSULTATION WITH THE TREE BOARD. PLANT MATERIAL. PLANT MATERIALS USED FOR INSTALLATION SHALL CONFORM TO THE STANDARDS ESTABLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN IN THE "AMERICAN STANDARD FOR NURSERY STOCK," FOR EACH TYPE (I.E., CANOPY TREE, SHRUB, ETC.) WITH MINIMUM SIZE AS APPROPRIATE FOR THE MINIMUM CALIPER SIZE DESIGNATED:
1)BROADLEAF CANOPY TREES: ONE AND ONE-HALF TO TWO-INCH CALIPER;
2)ALL OTHER TREES: FIVE TO SIX FEET IN HEIGHT;
3)ALL SHRUBS: HEIGHT OR SPREAD OF 18 TO 24 INCHES.

NO BUFFER REQUIRED BECAUSE PROPERTY ZONING IS C-3 WITH PROPOSED COMMERCIAL USE AND ALL SURROUNDING PROPERTIES ARE COMMERCIAL USE.

SCREENING IS PROVIDED FOR THE DUMPSTER THROUGH THE ENCLOSURE AND IN A PLANTING AREA WHICH IS TO BE AT LEAST FIVE FEET WIDE.

LANDSCAPING FOR VEHICULAR USE AREAS:
THERE ARE APPROXIMATELY 0.71 ACRES OF 30927 SQFT OF VEHICULAR USE AREAS. VEHICULAR USE AREAS MUST BE PLANTED WITH AT LEAST ONE TREE AND TWO SHRUBS FOR EVERY 4,000 SQUARE FEET OF VEHICULAR USE AREA, WHICH REQUIRES 8 TREES AND 16 SHRUBS. TREES SHALL BE SPACED SO THAT NO PARKING SPACE IS MORE THAN 63 FEET FROM A TREE. AT LEAST 75 PERCENT OF THE REQUIRED PARKING LOT TREES MUST BE BROADLEAF CANOPY TREES. BECAUSE THE DEVELOPMENT CONTAINS 20 OR MORE PARKING SPACES, 50 PERCENT OF THE TREES AND SHRUBS ARE TO BE PLANTED IN ISLANDS OR MEDIANS LOCATED WITHIN THE PARKING LOT.

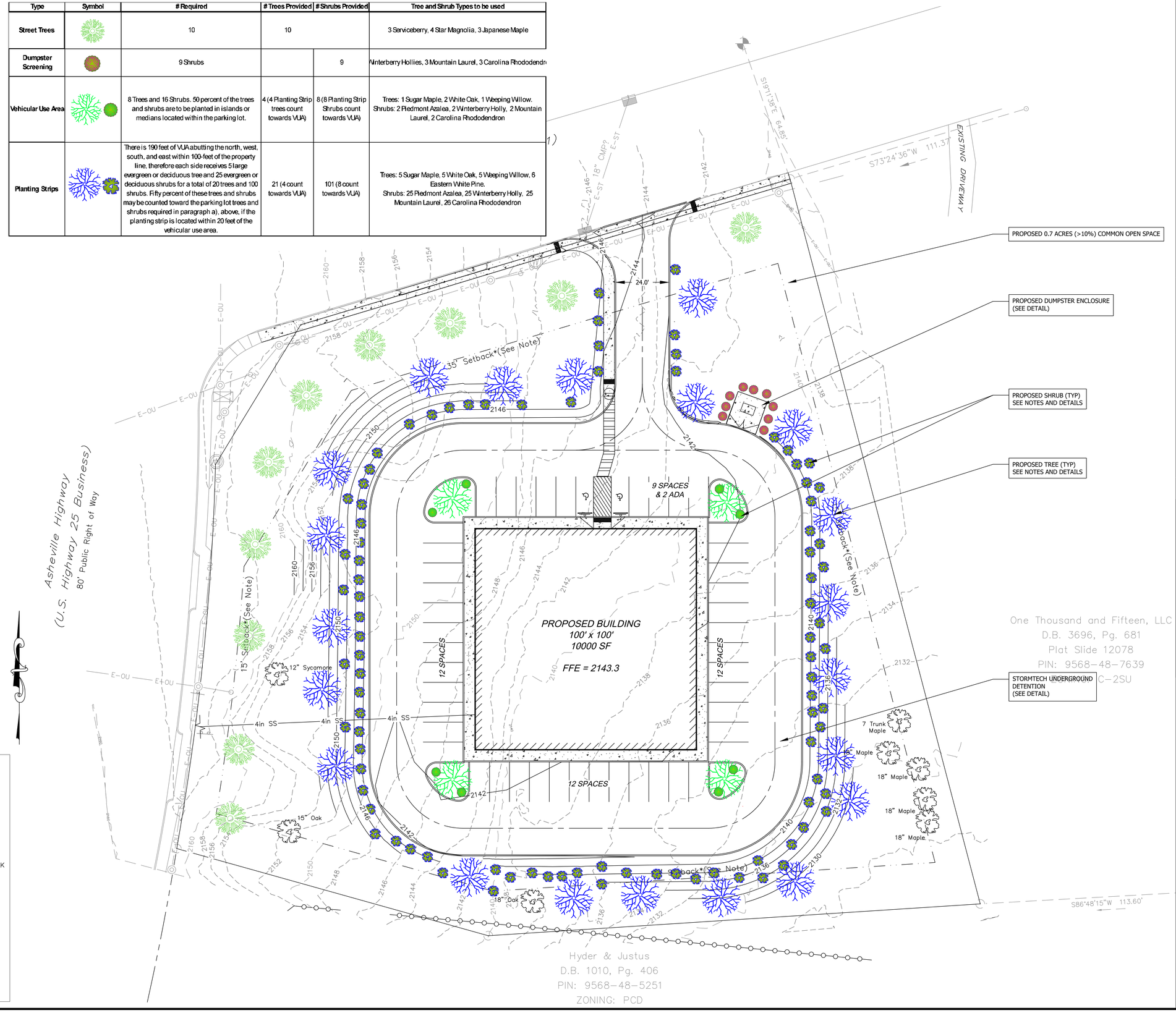
PLANTING STRIPS. WHEN A VEHICULAR USE AREA (VUA) IS LOCATED WITHIN 100 FEET OF AN ABUTTING PROPERTY AND NO BUFFERYARD IS REQUIRED, A PLANTING STRIP WHICH IS A MINIMUM OF FIVE FEET WIDE SHALL BE PLANTED BETWEEN THE VUA AND THE ABUTTING PROPERTY, EXCEPT ALONG APPROVED DRIVEWAY OPENINGS WHICH RUN PERPENDICULAR TO THE PLANTING STRIP. ONE LARGE EVERGREEN OR DECIDUOUS TREE AND FIVE EVERGREEN OR DECIDUOUS SHRUBS SHALL BE PLANTED FOR EVERY 40 LINEAR FEET OF PROPERTY LINE THAT PARALLELS THE VEHICULAR USE AREA. FIFTY PERCENT OF THESE TREES AND SHRUBS MAY BE COUNTED TOWARD THE PARKING LOT TREES AND SHRUBS REQUIRED IN PARAGRAPH A), ABOVE, IF THE PLANTING STRIP IS LOCATED WITHIN 20 FEET OF THE VEHICULAR USE AREA. THERE IS 190 FEET OF VUA ABUTTING THE NORTH, WEST, SOUTH, AND EAST WITHIN 100-FEET OF THE PROPERTY LINE, THEREFORE EACH SIDE RECEIVES 5 LARGE EVERGREEN OR DECIDUOUS TREE AND 25 EVERGREEN OR DECIDUOUS SHRUBS.

5-18-4.8. STREET TREES. STREET TREES SHALL BE REQUIRED AT THE RATE OF ONE SMALL-MATURING TREE (<25 FEET IN HEIGHT) FOR EVERY 40 LINEAR FEET OF PROPERTY ABUTTING A STREET IF OVERHEAD UTILITY LINES ARE PRESENT. TREES DO NOT NEED TO BE SPACED EVENLY. THEY MAY BE CLUSTERED WITH A MINIMUM SPACING OF 15 FEET AND A MAXIMUM SPACING OF 75 FEET.

0 20 40 60

SCALE: 1"= 20

Type	Symbol	# Required	# Trees Provided	# Shrubs Provided	Tree and Shrub Types to be used
Street Trees		10	10		3 Serviceberry, 4 Star Magnolia, 3 Japanese Maple
Dumpster Screening		9 Shrubs		9	Winterberry Hollies, 3 Mountain Laurel, 3 Carolina Rhododendr
Vehicular Use Area		8 Trees and 16 Shrubs. 50 percent of the trees and shrubs are to be planted in islands or medians located within the parking lot.	4 (4 Planting Strip trees count towards VUA)	8 (8 Planting Strip Shrubs count towards VUA)	Trees: 1 Sugar Maple, 2 White Oak, 1 Weeping Willow. Shrubs: 2 Piedmont Azalea, 2 Winterberry Holly, 2 Mountain Laurel, 2 Carolina Rhododendron
Planting Strips		There is 190 feet of VUA abutting the north, west, south, and east within 100-feet of the property line, therefore each side receives 5 large evergreen or deciduous tree and 25 evergreen or deciduous shrubs for a total of 20 trees and 100 shrubs. Fifty percent of these trees and shrubs may be counted toward the parking lot trees and shrubs required in paragraph a), above, if the planting strip is located within 20 feet of the vehicular use area.	21 (4 count towards VUA)	101 (8 count towards VUA)	Trees: 5 Sugar Maple, 5 White Oak, 5 Weeping Willow, 6 Eastern White Pine. Shrubs: 25 Piedmont Azalea, 25 Winterberry Holly, 25 Mountain Laurel, 26 Carolina Rhododendron



STORMWATER LEGEND

- EXIST. BOUNDARY
- EXIST. ADJOINER
- EXIST. RIGHT OF WAY
- ST — PROPOSED STORM DRAINAGE
- DRAINAGE AREA
- PROPOSED CATCH BASIN
- PROPOSED RIP RAP OUTLET
- +000.0 SPOT ELEVATION
- PROPOSED CONCRETE SIDEWALK
- E-W — EXIST. WATER LINE
- E-ST — EXIST. STORM DRAIN
- EXIST. CURB INLET
- ELEV — EXIST. MINOR CONTOUR
- ELEV — EXIST. MAJOR CONTOUR
- EXIST. OVERHEAD UTILITY
- EXIST. FENCE LINE
- EXIST. WATER METER
- EXIST. PROPERTY CORNER
- EXIST. STREET SIGN
- EXIST. GUY WIRE
- EXIST. POWER POLE

LAND-SCAPE PLAN — C-5.0

1019 BERKELEY ROAD
CIVIL ENGINEERING & SITE PLANNING

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NORTH CAROLINA
CERT. # P-2578

NORTH CAROLINA PROFESSIONAL SEAL 045408 ENGINEER WYATT GENTLEY EDSEL

EDSEL ENGINEERING, PLLC
104 HIAWASSEE AVENUE
BLACK MOUNTAIN, NC 28711

EDSEL ENGINEERING

LANDSCAPING PLAN RECOMMENDED PLANT SPECIES

Landscaping Plant Lists

TREES AND SHRUBS FOR SCREENING AND BEAUTIFICATION

LARGE MATURING TREES >50' TALL

Common Name	Botanical/Scientific Name
Autumn Blaze Maple[X]	*Acer x freemanii*
Armstrong Maple[K]	*Acer rubrum* 'Armstrong'
October Glory Maple[K]	*Acer rubrum* 'October Glory'
Red Sunset Maple[K]	*Acer rubrum* 'Red Sunset'
Sugar Maple[K]	*Acer saccharum*
River Birch[K]	*Betula nigra*
Deodar Cedar[X]	*Cedrus deodara*
Katsura Tree[X]	*Cercidiphyllum japonicum*
American Beech[K]	*Fagus grandifolia*
European Beech[X]	*Fagus sylvatica*
Ginkgo (male)[X]	*Gingko biloba*
Honey Locust	*Gleditsia triacanthos*
Kentucky Coffee Tree	*Gymnocladus dioicus*
Fruitless Sweetgum	*Liquidambar styraciflua* 'Rotundiloba'
Tulip Tree[K]	*Liriodendron tulipifera*
Cucumber Tree	*Magnolia acuminata*
Southern Magnolia	*Magnolia grandiflora*
Bigleaf Magnolia	*Magnolia macrophylla*
Dawn Redwood[X]	*Metasequoia glyptostroboides*
Eastern White Pine[K]	*Pinus strobus*
London Plane Tree[X]	*Platanus x acerifolia*
Sycamore[K]	*Platanus occidentalis*
White Oak[K]	*Quercus alba*
Scarlet Oak[K]	*Quercus coccinea*
Pin Oak[K]	*Quercus palustris*
Willow Oak[K]	*Quercus phellos*
Northern Red Oak[K]	*Quercus rubra*
Weeping Willow[X]	*Salix babylonica*
Japanese Pagoda Tree[X]	*Sophora japonica*
Bald Cypress	*Taxodium distichum*
Canadian Hemlock	*Tsuga canadensis*
Carolina Hemlock	*Tsuga caroliniana*
Chinese / Lacebark Elm[X]	*Ulmus parvifolia* 'Allee'
Village Green Japanese Zelkova[X]	*Zelkova serrata* 'Village Green'

X - Non-native – not indigenous to southeastern U.S.
K – Keystone Plant

MEDIUM MATURING TREES 25' - 50' TALL

Common Name	Botanical/Scientific Name
Norwegian Sunset Maple[X]	*Acer truncatum x A. platanoides* 'Keithsform'
Upright European Hornbeam[X]	*Carpinus betulus* 'Fastigiata'
American Hornbeam	*Carpinus caroliniana*
American Yellowwood	*Cladrastis kentukea*
Franklinia	*Franklinia alatamaha*
Carolina Silverbell	*Halesia carolina*
Savannah Holly	*Ilex x attenuata* 'Savannah'
American Holly[K]	*Ilex opaca*
Eastern Red Cedar[K]	*Juniperus virginiana*
Goldenrain Tree[X]	*Koelreuteria paniculata*
Galaxy Saucer Magnolia[X]	*Magnolia liliiflora 'Nigra' x Magnolia sprengeri 'Diva'*
Saucer Magnolia[X]	*Magnolia x soulangeana*
Sweetbay Magnolia	*Magnolia virginiana*
Black Gum[K]	*Nyssa sylvatica*
Sourwood[K]	*Oxydendrum arboreum*
Norway Spruce[X]	*Picea abies*
Japanese Black Pine[X]	*Pinus thunbergii*
Chinese Pistache[X]	*Pistacia chinensis*
Okame Cherry[X]	*Prunus okame*
Japanese Stewartia[X]	*Stewartia pseudocamellia*
Nigra American Arborvitae[X]	*Thuja occidentalis* 'Nigra'
Littleleaf Linden[X]	*Tilia cordata*
Greenspire Little Leaf Linden[X]	*Tilia cordata* 'Greenspire'

SMALL MATURING TREES < 25' TALL

Common Name	Botanical/Scientific Name
Japanese Maple[X]	*Acer palmatum*
Eastern / Canadian Serviceberry	*Amelanchier canadensis*
Allegheny Serviceberry[K]	*Amelanchier laevis*
Cole's Select Serviceberry	*Amelanchier x grandiflora* 'Cole's Select'
Allegheny Chinkapin	*Castanea pumila*
Eastern Redbud[K]	*Cercis canadensis*
Pagoda Dogwood	*Cornus alternifolia*
Appalachian Blush Dogwood	*Cornus florida*
Appalachian Mist Dogwood	*Cornus florida*
Appalachian Spring Dogwood	*Cornus florida*
Flowering Dogwood[K]	*Cornus florida*
Kousa Dogwood[X]	*Cornus kousa*
Spring Glory Cornelian Cherry / Dogwood	*Cornus mas*
Washington Hawthorn[K]	*Crataegus phaenopyrum*
Green Hawthorn	*Crataegus viridis*

X - Non-native – not indigenous to southeastern U.S.
K – Keystone Plant

Foster Holly	*Ilex x attenuata* 'Fosteri'
Nellie R. Stevens Holly[X]	*Ilex x* 'Nellie R. Stevens'
Natchez Crape Myrtle[X]	*Lagerstroemia faurei* 'Natchez'
Sugar Tyme Crabapple[X]	*Malus hybrids*
Sargent's Crabapple[X]	*Malus sargentii*
Flowering / Southern Crabapple[K]	*Malus angustifolia*
Redleaf Plum[X]	*Prunus cerasifera*
Japanese Cherry[X]	*Prunus serrulata*
Weeping Cherry[X]	*Prunus x subhirtella* 'Pendula'
Japanese Snowbell[X]	*Styrax japonicus*
Nannyberry Viburnum[X]	*Viburnum lentago*

SHRUBS

Common Name	Botanical/Scientific Name
Bottlebrush Buckeye[K]	*Aesculus parviflora*
Devil's Walking Stick	*Aralia spinosa*
Red Chokeberry[K]	*Aronia arbutifolia*
European Boxwood[X]	*Buxus sempervirens*
American Beautyberry[K]	*Callicarpa americana*
Sweetshrub/Carolina Allspice[K]	*Calycanthus floridus*
New Jersey Tea[K]	*Ceanothus americanus*
Button Bush[K]	*Cephalanthus occidentalis*
Clethra / Summersweet	*Clethra alnifolia*
American Hazelnut	*Corylus americana*
Southern Bush Honeysuckle	*Diervilla sessilifolia*
Hearts-a-Bustin'[K]	*Euonymus americanus*
Dwarf Fothergilla	*Fothergilla gardenii*
Witchhazel	*Hamamelis virginiana*
Native Hydrangeas	*Hydrangea spp.*
St. Johnswort	*Hypericum spp.*
Glossy Abelia[X]	*Linnaea x grandiflora*
Convexa Japanese Holly[X]	*Ilex crenata* 'Convexa'
Hetzi Japanese Holly[X]	*Ilex crenata* 'Hetzi'
Winterberry Hollies[K]	*Ilex spp.*
Itea / Virginia Sweetspire[K]	*Itea Virginica*
Hetz Blue Juniper[X]	*Juniperus chinensis* 'Hetzii Glauca'
Mountain Laurel[K]	*Kalmia latifolia*
Doghobble / Fetterbush	*Leucothoe fontanesia*
Spicebush[K]	*Lindera benzoin*
Eastern Ninebark[K]	*Physocarpus opulifolius*
Japanese Andromeda[X]	*Pieris japonica*
Carolina Rhododendron[K]	*Rhododendron minus*

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K – Keystone Plant

Hybrid Rhododendron[X]	*Rhododendron x hybridum*
Native Azaleas & Rhododendrons[K]	*Rhododendron spp.*
Sumacs[K]	*Rhus spp.*
Blackberry/Dewberry/Rasberry	*Rubus spp.*
Willow Shrubs: Pussy Willow, Silky Willow, Prairie Willow[K]	*Salix discolor, Salix sericea, Salix humilis*
American Elderberry[K]	*Sambucus canadensis*
Spiraeas	*Spiraea spp.*
Japanese Yew[X]	*Taxus cuspidata*
Blueberries[K]	*Vaccinium spp.*
Doublefile Viburnum[X]	*Viburnum plicatum f. tomentosum*
Leatherleaf Viburnum[X]	*Viburnum rhytidophyllum*
Sandankwa Viburnum[X]	*Viburnum suspensum*

INVASIVE PLANTS – DO NOT PLANT

Please also see the NC Invasive Plant Council's list of "Invasive Plants found in the Mountains of North Carolina" for additional unsuitable plant species. ***These plants are prohibited by developments approved by the City of Hendersonville.***

Common Name	Botanical/Scientific Name
Norway Maple[X]	*Acer platanoides*
Silver Maple	*Acer saccharinum*
Mimosa[X]	*Albizia julibrissin*
Porcelain Berry[X]	*Ampelopsis brevipedunculata*
Oriental Bittersweet[X]	*Celastrus orbiculatus*
Russian Olive[X]	*Elaeagnus angustifolia*
Thorny Olive[X]	*Elaeagnus pungens*
Autumn Olive[X]	*Elaeagnus umbellata*
Burning Bush Euonymus[X]	*Euonymus alata*
Wintercreeper[X]	*Euonymus fortunei*
English Ivy[X]	*Hedera helix*
Japanese Privetx	*Ligustrum japonicum*
Chinese Privet[X]	*Ligustrum sinense*
Japanese Honeysuckle[X]	*Lonicera japonica*
Oregon Grape[X]	*Berberis bealei*
Japanese Stilt Grass[X]	*Microstegium vimineum*
Chinese Silvergrass[X]	*Miscanthus sinensis*
Princess Tree[X]	*Paulownia tomentosa*
Bradford Pear[X]	*Prunus calleryana* 'Bradford'
Multiflora Rose[X]	*Rosa multiflora*
Common Periwinkle[X]	*Vinca minor*
Large Leaf Periwinkle[X]	*Vinca major*
Japanese Wisteria[X]	*Wisteria floribunda*

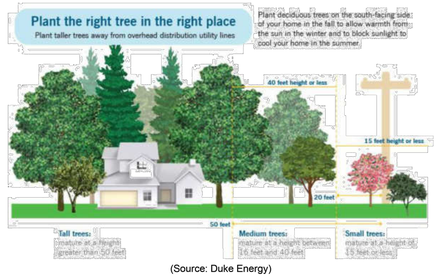
X - Non-native – not indigenous to southeastern U.S.
K – Keystone Plant

Chinese Wisteria[X]	*Wisteria sinensis*

TREES AND SHRUBS FOR PLANTING UNDER UTILITY LINES

SMALL MATURING TREES < 25' TALL

Common Name	Botanical/Scientific Name
Japanese Maple[X]	*Acer palmatum (selected cultivars)*
Tatar / Tatarian Maple[X]	*Acer tataricum*
Bottlebrush Buckeye[K]	*Aesculus parviflora*
Serviceberry[K]	*Amelanchier canadensis*
Cornelian Cherry[X]	*Conus mas*
Fragrant Winterhazel[X]	*Corylopsis glabrescens*
American Hazelnut / Filbert	*Corylus americana*
Common Smoketree[X]	*Cotinus coggygria*
Star Magnolia[X]	*Magnolia stellata*
Japanese Flowering Apricot[X]	*Prunus mume*



(Source: Duke Energy)

DROUGHT TOLERANT TREES AND SHRUBS

LARGE MATURING TREES >50' TALL

Common Name	Botanical/Scientific Name
Autumn Blaze Maple[X]	*Acer x freemanii*
Pignut Hickory[K]	*Carya glabra*

X - Non-native – not indigenous to southeastern U.S.
K – Keystone Plant

Mockernut Hickory[K]	*Carya tomentosa*
Deodar Cedar[X]	*Cedrus deodara*
Sweetgum[K]	*Liquidambar stvraciflua*
Lacebark Pine[X]	*Pinus bungeana*
White Oak[K]	*Quercus alba*
Pin Oak[K]	*Quercus palustris*
Bald Cypress	*Taxodium distichum*
Urban American Elm[K]	*Ulmus americana* 'Urban'
Chinese / Lacebark Elm[X]	*Ulmus parvifolia*

SMALL - MEDIUM MATURING TREES < 50' TALL

Common Name	Botanical/Scientific Name
Trident Maple[X]	*Acer buergerianum*
Red Buckeye[K]	*Aesculus pavia*
Eastern Redbud[K]	*Cercis canadensis*
American Yellowwood	*Cladrastis kentukea*
Kousa Dogwood[X]	*Cornus kousa*
American Smoke Tree	*Cotinus obovatus*
Winter King Green Hawthorn	*Crataegus viridis* 'Winter King'
Dwarf Loblolly Pine	*Pinus taeda* 'Nana'
Chinese Pistache[X]	*Pistacia chinensis*

SHRUBS

Common Name	Botanical/Scientific Name
Red Chokeberry[K]	*Aronia arbutifolia*
American Beautyberry[K]	*Callicarpa americana*
Bluebeard[X]	*Caryopteris x clandonensis*
Japanese Plum Yew[X]	*Cephalotaxus harringtonia*
Dwarf Hinoki False Cypress[X]	*Chamaecyparis obtusa*
Southern Bush Honeysuckle	*Diervilla sessilifolia*
Dwarf Fothergilla	Fothergilla gardenii
Aaron's Beard / St. Johnswort[X]	*Hypericum calycinum*
Carissa Chinese Holly[X]	*Ilex cornuta* 'Carissa'
Winterberry Holly[K]	*Ilex verticillata*
Yaupon Holly[K]	*Ilex vomitoria*
Itea / Virginia Sweetspire[K]	*Itea virginica*
Hollywood Juniper[X]	*Juniperus chinensis* 'Kaizuka'
Redleaf Loropetalum[X]	*Loropetalum chinense f. rubrum*
Wax Myrtle	*Myrica cerifera*
Summer Wine Ninebark[K]	*Physocarpus opulifolius* 'Summer Wine'
Firethorn[X]	*Pyracantha* spp.
Piedmont Azalea[K]	*Rhododendron canescens*

X - Non-native – not indigenous to southeastern U.S.
K – Keystone Plant

LAND-SCAPE PLAN

C-5.1

1019 BERKELEY ROAD
CIVIL ENGINEERING & SITE PLANNING

FOR OK CONSTRUCTION
TOWN OF HENDERSONVILLE, HENDERSON COUNTY

No.	REVISIONS	Date
1	SUBMIT TO CLIENT	01-08-24
2	FOR SUBMITTAL	02-14-24
3	RESUBMITTAL	03-26-24

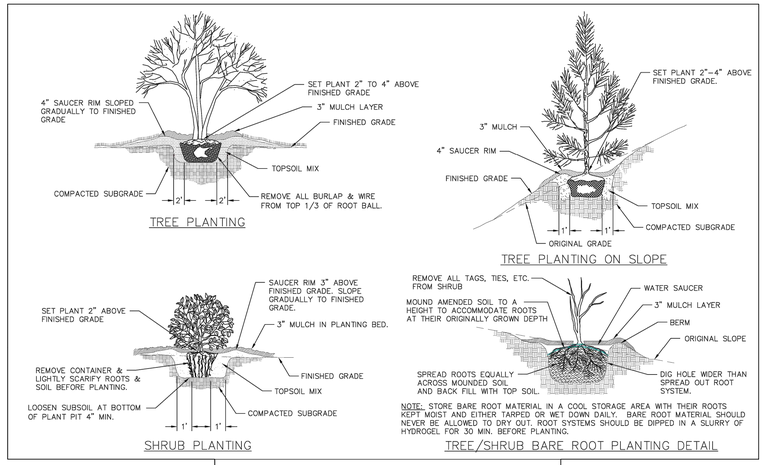
PRELIMINARY - NOT FOR CONSTRUCTION

EDSEL ENGINEERING, PLLC
NORTH CAROLINA
CERT # P-2578

NORTH CAROLINA
PROFESSIONAL ENGINEER
SEAL
045408
MATT DENTLEY EDSEL

EDSEL ENGINEERING, PLLC
104 HIAWASSEE AVENUE
BLACK MOUNTAIN, NC 28711

EDSEL ENGINEERING

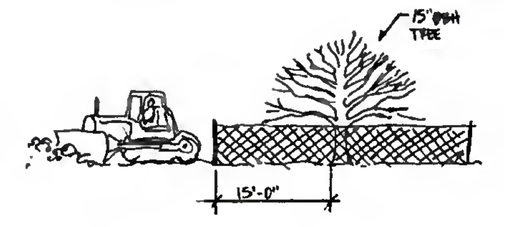


TREE & SHRUB PLANTING DETAIL

a *Placement of protective barriers.* Barricades shall be placed around the critical root zone of preserved trees that are within 50 feet of any grading or construction activity. The critical root zone is a circle extending around the tree with a one-foot radius for every one inch of tree diameter. All protective barriers must include clear and visible signage that describes the delineated area as a "Tree Protection Area" or equivalent. All protective barriers and signs must be maintained throughout the building construction process.

b *Protective barriers shall consist of either*

A fence which is at least three feet high and constructed in a post and rail configuration, using two by four posts and one by four rails, or



tree/fence

c *Prohibited activities.* All contractors must be made aware of the areas designated for protection. No disturbance can occur within the tree protection area including:

Grading

Filling

Parking

Storage of debris or materials, including topsoil

Sedimentation and erosion control measures

Disposal of hazardous wastes or concrete washout

Attaching of nails, ropes, cables, signs, or fencing to any preserved tree

d *Permissible encroachments.* Where physical site constraints exist, utilities may encroach into the tree protection area provided they are tunneled at least two feet directly below the tree roots to minimize root damage. A construction detail shall be required.

Other encroachments various in nature may be permitted provided that the contractor follows- through on the written recommendation of a certified arborist or consulting arborist to minimize any potential impact and certify that the activity will not damage the tree under normal circumstances.

e *Silt fencing.* If silt fencing is required to control sedimentation, the fencing must be placed along the uphill edge of a tree protection zone in order to prevent sediment from accumulating in the critical root zone area (refer to the City of Asheville's Standards and Specifications Manual for details).

TREE PROTECTION FENCE DETAIL

LAND-SCAPE PLAN

C-5.2

1019 BERKELEY ROAD
CIVIL ENGINEERING & SITE PLANNING

FOR OK CONSTRUCTION

TOWN OF HENDERSONVILLE, HENDERSON COUNTY

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PRELIMINARY - NOT FOR CONSTRUCTION

EDSEL ENGINEERING, PLLC
NORTH CAROLINA
CERT # P-2678

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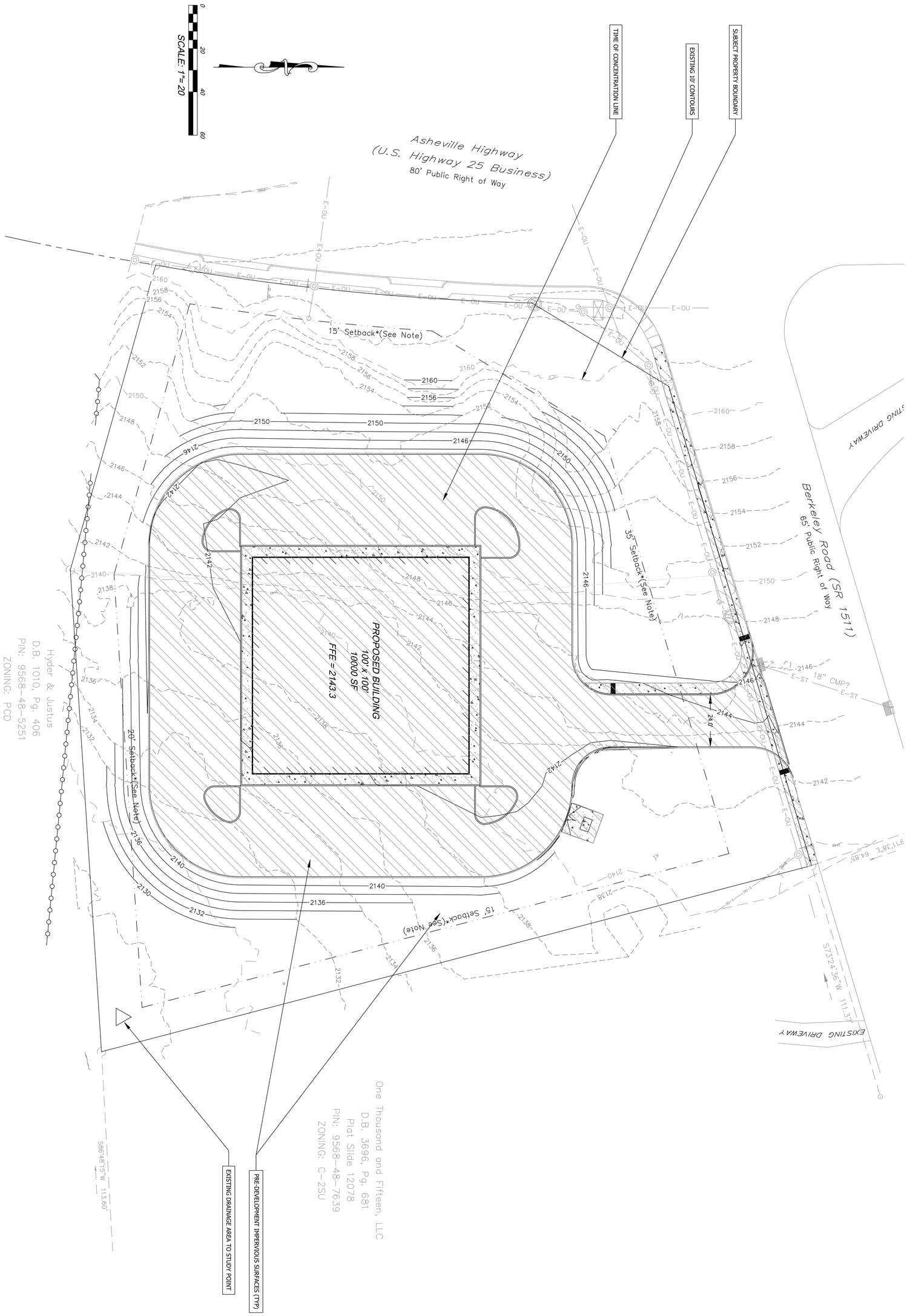
1019 BERKELEY ROAD CIVIL ENGINEERING & SITE PLANNING

FOR OK CONSTRUCTION
TOWN OF HENDERSONVILLE, HENDERSON COUNTY

DA MAP PRE DEV.

C-6.0



EDSEL ENGINEERING

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BLACK MOUNTAIN, NC 28711

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FOR OK CONSTRUCTION
TOWN OF HENDERSONVILLE, HENDERSON COUNTY

DA MAP POST DEV.

C-6.1