

AS-BUILT/RECORD DRAWINGS

WARREN WILSON COLLEGE STREAM MITIGATION SITE

SWANNANOVA, BUNCOMBE COUNTY, NC

AS-BUILT/RECORD
DRAWING SET

ONE INCH
AT FULL SIZE, IF NOT ONE
INCH SCALE ACCORDINGLY



DESIGNED BY: A. BREWSTER
DRAWN BY: T. GRIGAS-STAVINOHA
CHECKED BY: S. STAVINOHA
APPROVED BY: J. DRURY
SCALE: AS NOTED
DATE: AUGUST 2020

ANCHOR QEA
Anchor QEA of North Carolina, PLLC
231 Haywood Street
Asheville, North Carolina 28801
(828) 281-3350

REV	DATE	BY	APPD	DESCRIPTION

COVER SHEET
WARREN WILSON COLLEGE
STREAM MITIGATION SITE
SWANNANOVA, NORTH CAROLINA

G-1
PROJ. #: C71672-01.01

SURVEYORS CERTIFICATION(S)

Surveyor's disclaimer: No attempt was made to locate any cemeteries, wetlands, hazardous material sites, underground utilities or any other features above, or below ground other than those shown. However, no visible evidence of cemeteries or utilities, aboveground or otherwise, was observed by the undersigned (other than those shown).

I certify that the survey is of an existing parcel or parcels of land or one or more existing easements and does not create a new street or change an existing street.

I, **JOHN A. RUDOLPH**, certify that this plat was prepared under my supervision from an actual field survey made under my supervision, of as-built conditions.

That the boundaries not surveyed are clearly indicated as such and were plotted from information as referenced herein; That the ratio of precision as calculated was 1:7,500+ and that the global navigational satellite system (GNSS) was used to perform this survey and the following information was used:
 Class of Survey: CLASS B (HORIZONTAL) CLASS B (VERTICAL)
 Positional Accuracy: 0.12 feet (HORIZONTAL)
 Type of GPS field procedure: RTK
 Dates of survey: January - June 2020
 Datum/Epoch: NAD 1983(2011)
 Published/Fixed Control Use: OPUS
 Geoid Model: 2018 CONUS
 Combined Grid Factor: 0.99990680 GROUND TO GRID
 Units: US SURVEY FEET

That this plat meets the requirements of the standards of practice for land surveying in North Carolina. Witness my hand and seal this 24 day of June, 2020

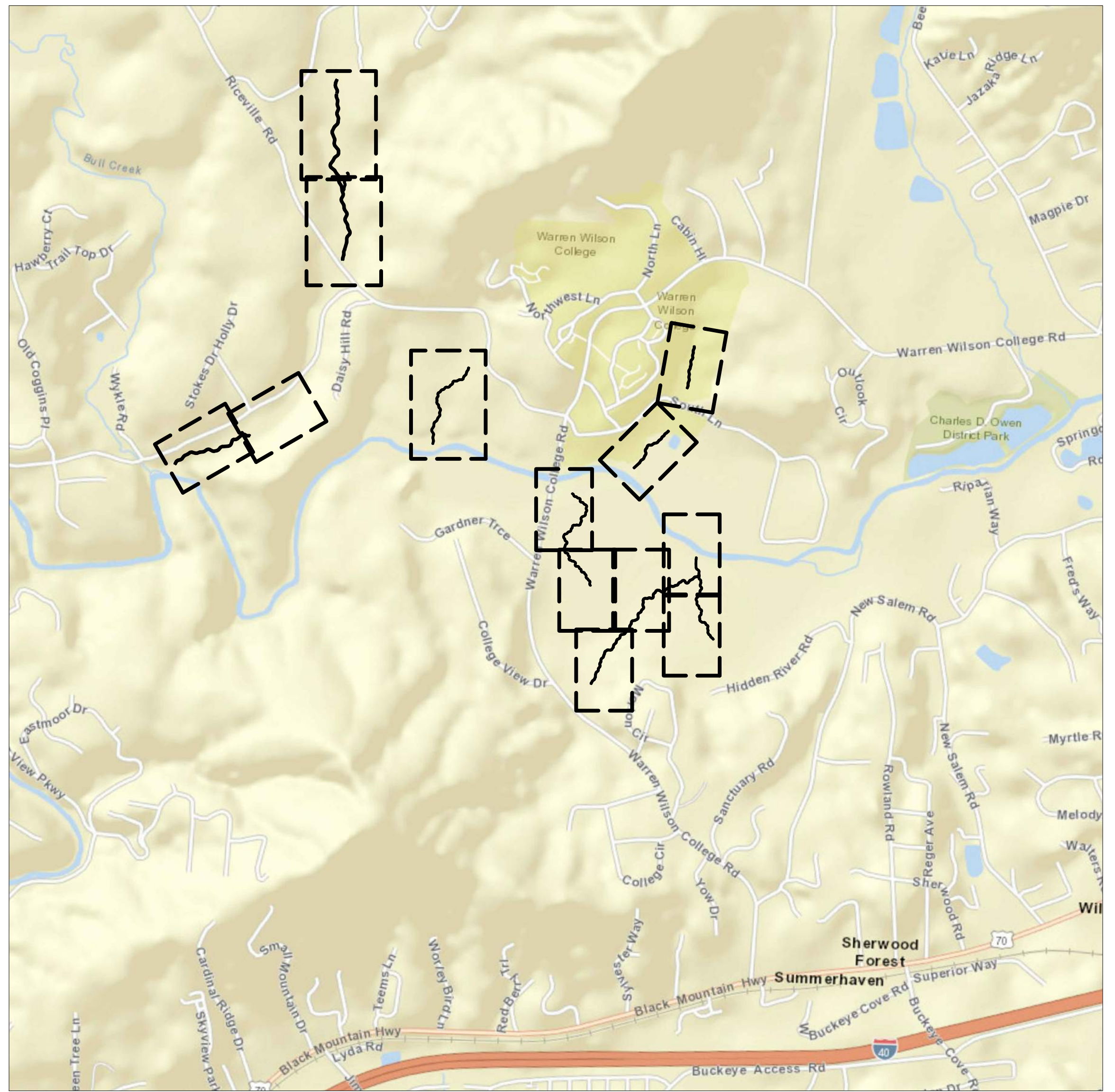
SEAL OR STAMP



Professional Land Surveyor License Number **L-4194**

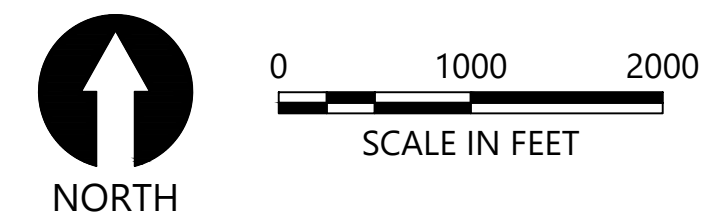
DRAWING INDEX	
DWG #	TITLE
G-1	COVER SHEET
G-2	SHEET INDEX
P-1	AS-BUILT PLANTING TABLE
AB-1.0	UT-1 LOWER LAYOUT AND STRUCTURES AS-BUILT
AB-2.0	UT-1 UPPER LAYOUT AND STRUCTURES AS-BUILT
AB-3.0	UT-3 LOWER LAYOUT AND STRUCTURES AS-BUILT
AB-3.1	UT-3 LOWER LAYOUT AND STRUCTURES AS-BUILT
AB-4.0	UT-3 UPPER/UT-4 LAYOUT AND STRUCTURES AS-BUILT
AB-4.1	UT-3 UPPER/UT-4 LAYOUT AND STRUCTURES AS-BUILT
AB-5.0	UT-5 LAYOUT AND STRUCTURES AS-BUILT
AB-6.0	UT-6 LAYOUT AND STRUCTURES AS-BUILT
AB-6.1	UT-6 LAYOUT AND STRUCTURES AS-BUILT
AB-7.0	UT-7 & UT-8 LAYOUT AND STRUCTURES AS-BUILT
AB-7.1	UT-7 LAYOUT AND STRUCTURES AS-BUILT
AB-7.2	UT-7 LAYOUT AND STRUCTURES AS-BUILT
AB-7.3	UT-8 LAYOUT AND STRUCTURES AS-BUILT

ABBREVIATIONS	
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
CONT	CONTINUED OR CONTINUOUS
CMP	CORRUGATED METAL PIPE
CP	CONTROL POINT (SURVEYED)
DGPS	DIFFERENTIAL GLOBAL POSITIONING SYSTEM
DIA	DIAMETER
DWG	DRAWING
EA	EACH
EL, ELEV	ELEVATION
EX	EXISTING
FT	FOOT OR FEET
HDPE	HIGH-DENSITY POLYETHYLENE
IE	INVERT ELEVATION
IN	INCH OR INCHES
MAX	MAXIMUM
MIN	MINIMUM
NAD	NORTH AMERICAN DATUM
PE	PROFESSIONAL ENGINEER, POLYETHYLENE
PVC	POLYVINYL CHLORIDE
RCP	REINFORCED CONCRETE PIPE
STA	STATION
TYP	TYPICAL
UT	UNNAMED TRIBUTARY



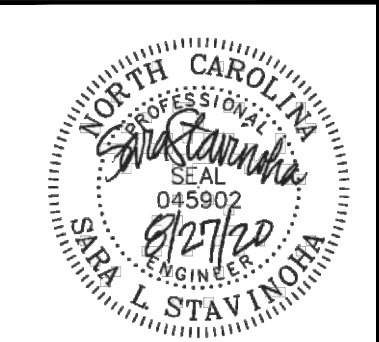
SOURCE: BING MAPS

VICINITY MAP





AS-BUILT/RECORD
DRAWING SET



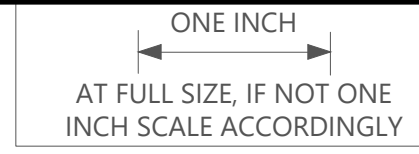
DESIGNED BY: S. STAVINOKHA
DRAWN BY: T. GRIGA/S. STAVINOKHA
CHECKED BY: S. STAVINOKHA
APPROVED BY: T. DRURY
SCALE: AS NOTED
DATE: AUGUST 2020

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SHEET INDEX
WARREN WILSON COLLEGE
STREAM MITIGATION SITE
SWANNANOVA, NORTH CAROLINA

G-2
PROJ. #: C71672-01.01



Planted Bare Root Woody Vegetation

Species	Total*
Acres	19.64
<i>Betula nigra</i>	2808 2800
<i>Carpinus caroliniana</i>	418^
<i>Cephalanthus occidentalis</i>	54 50
<i>Clethra alnifolia</i>	41^
<i>Cornus amomum</i>	3848 3900*
<i>Diospyros virginiana</i>	418 500
<i>Fraxinus pennsylvanica</i>	3794 3800
<i>Liriodendron tulipifera</i>	836 900
<i>Platanus occidentalis</i>	5615 5600
<i>Salix nigra</i>	1999*
<i>Quercus alba</i>	4212 4200
<i>Quercus nigra</i>	4212 4200
<i>Sambucus candensis</i>	41*
<i>Vaccinium corymbosum</i>	27^
<i>Viburnum nudum</i>	27^
TOTALS	28,349 25,950*

*Approximately 5000 live stakes of willow (*Salix* spp.), elderberry (*Sambucus candensis*), silky dogwood (*Cornus amomum*), and ninebark (*Physocarpus opulifolius*) were planted, but are not included in this table.

^Unplanted trees were due to unavailable species. Additional species will be added yearly outside of monitoring plots

DESIGNED BY: A. BREW/M. GESCHEN
DRAWN BY: T. GRIGA/S. STAVINOHHA
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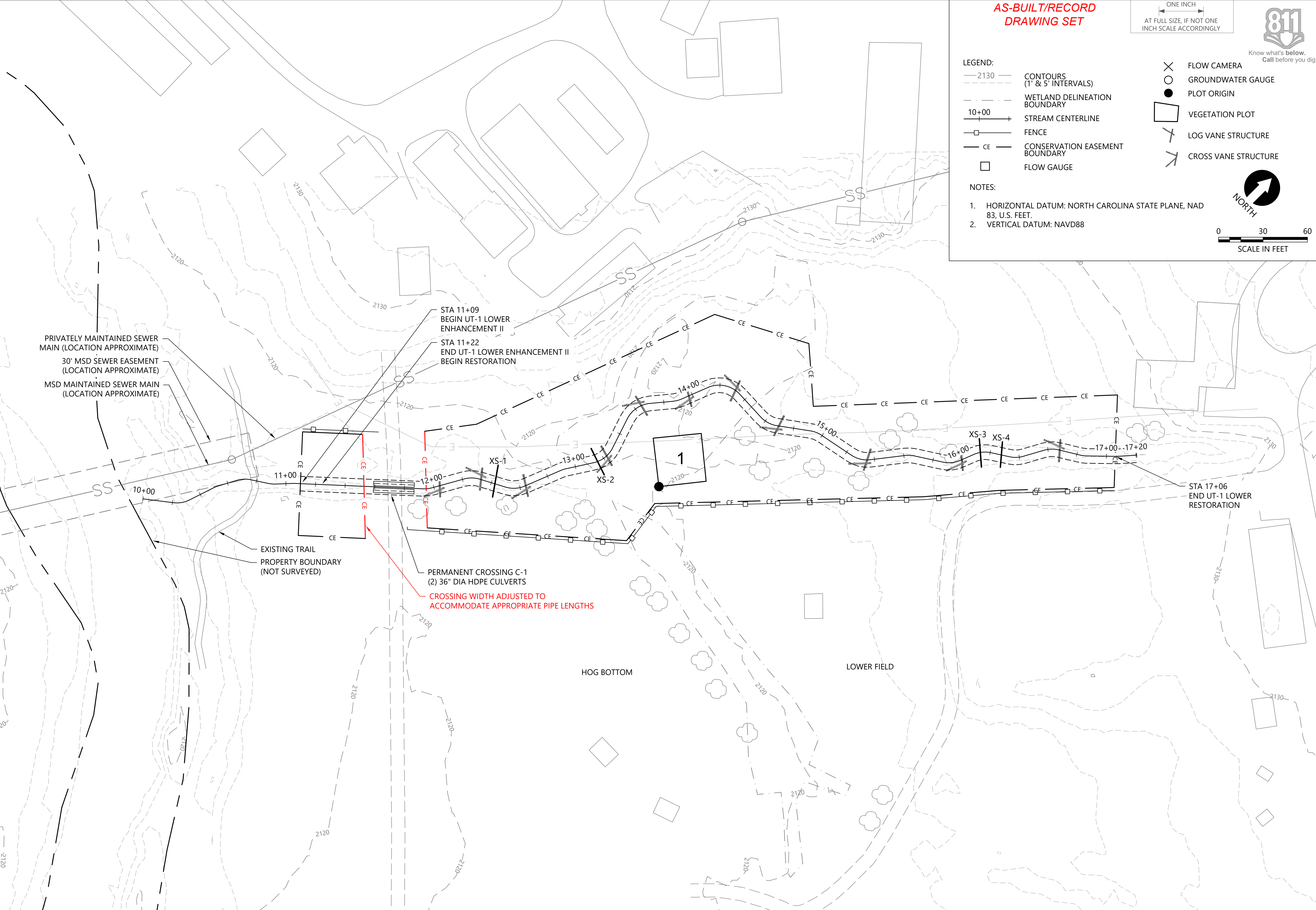
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AS-BUILT PLANTING TABLE
WARREN WILSON COLLEGE
STREAM MITIGATION SITE
SWANNANOVA, NORTH CAROLINA

P-1
PROJ. #: C71672-01.01

Aug 27, 2020 2:23pm stavinoha \\ashville1\ashville\projects\Restoration_Systems\Warren Wilson College Stream Mitigation\CAADD\As-Built\C71672-PL-Design-UT1.dwg AB-1.0



**AS-BUILT/RECORD
DRAWING SET**

ONE INCH
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INCH SCALE ACCORDINGLY

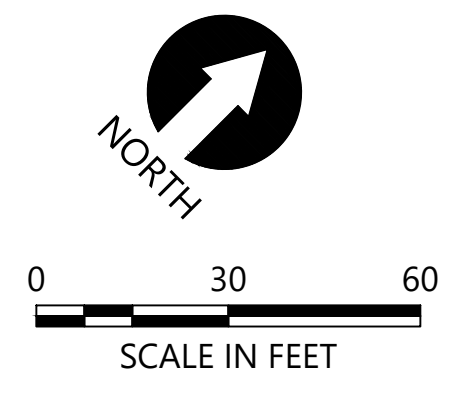


LEGEND:

- 2130— CONTOURS (1' & 5' INTERVALS)
- - - WETLAND DELINEATION BOUNDARY
- 10+00 → STREAM CENTERLINE
- FENCE
- CE— CONSERVATION EASEMENT BOUNDARY
- FLOW GAUGE
- ✕ FLOW CAMERA
- GROUNDWATER GAUGE
- PLOT ORIGIN
- VEGETATION PLOT
- ⊥ LOG VANE STRUCTURE
- ⊥ CROSS VANE STRUCTURE

NOTES:

1. HORIZONTAL DATUM: NORTH CAROLINA STATE PLANE, NAD 83, U.S. FEET.
2. VERTICAL DATUM: NAVD88



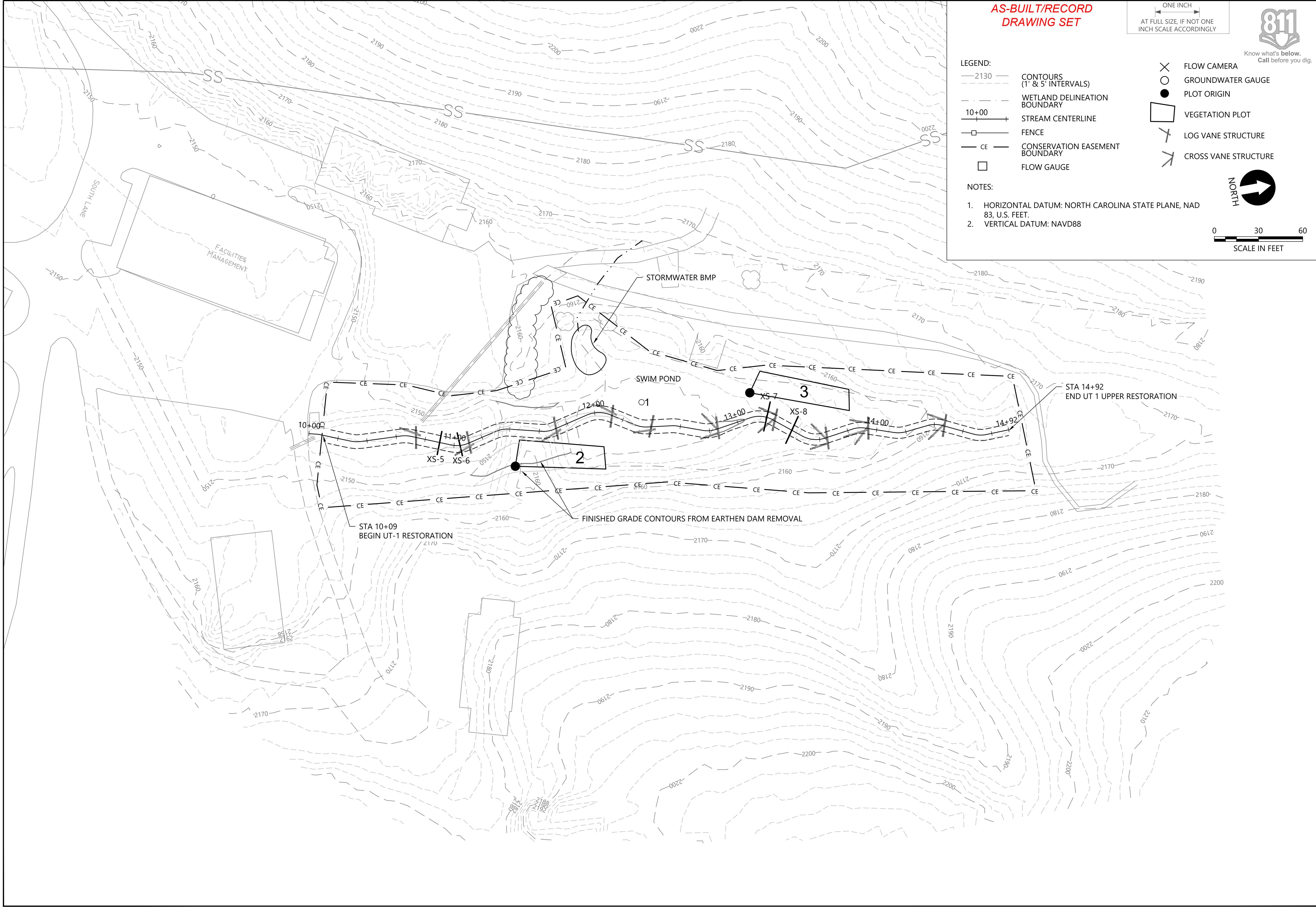
DESIGNED BY: A. BREW/M. GIESCHEN
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**UT-1 LOWER LAYOUT AND
STRUCTURES AS-BUILT**
WARREN WILSON COLLEGE
STREAM MITIGATION SITE
SWANNANOVA, NORTH CAROLINA

AB-1.0
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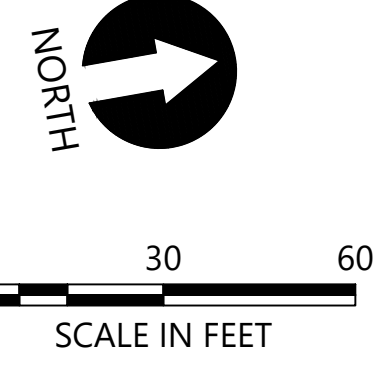


LEGEND:

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- - - - WETLAND DELINEATION BOUNDARY
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- FENCE
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- FLOW GAUGE
- ⊗ FLOW CAMERA
- GROUNDWATER GAUGE
- PLOT ORIGIN
- VEGETATION PLOT
- ⊥ LOG VANE STRUCTURE
- ⊥ CROSS VANE STRUCTURE

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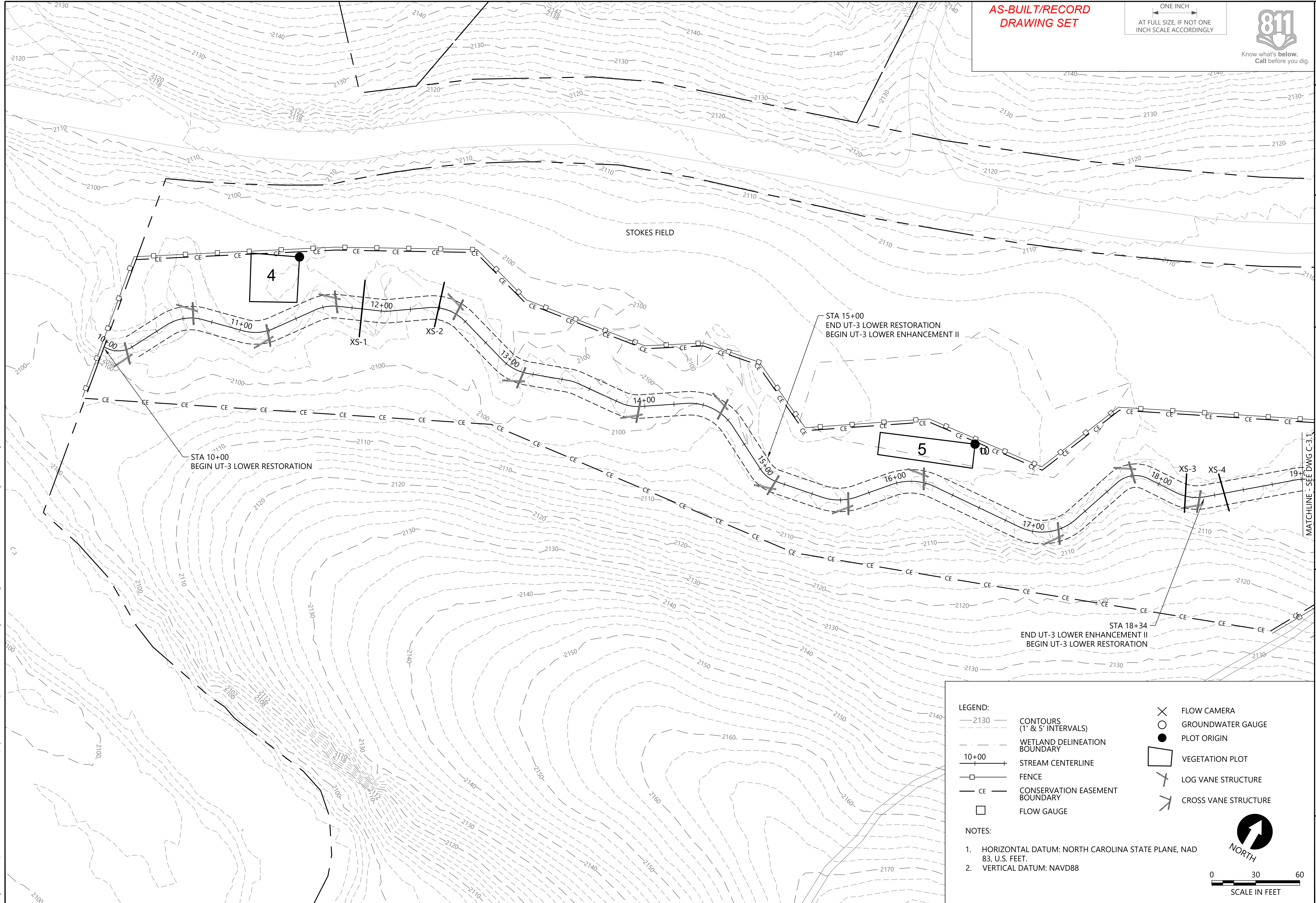
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**UT-1 UPPER LAYOUT AND
STRUCTURES AS-BUILT**
WARREN WILSON COLLEGE
STREAM MITIGATION SITE
SWANNANOVA, NORTH CAROLINA

AB-2.0
PROJ. #: C71672-01.01

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**AS-BUILT/RECORD
DRAWING SET**

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DESIGNED BY: S. STAVINOKHA
DRAWN BY: I. GRIGA/S. STAVINOKHA
CHECKED BY: S. STAVINOKHA
APPROVED BY: I. DRURY
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DATE: AUGUST 2020

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**UT-3 LOWER LAYOUT AND
STRUCTURES AS-BUILT**
WARREN WILSON COLLEGE
STREAM MITIGATION SITE
SWANNANOA, NORTH CAROLINA

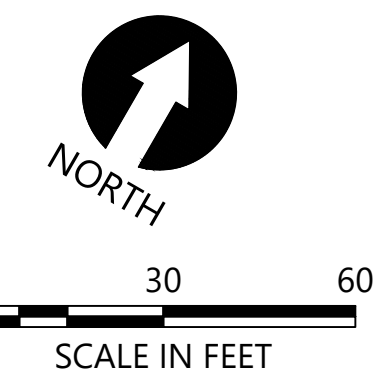
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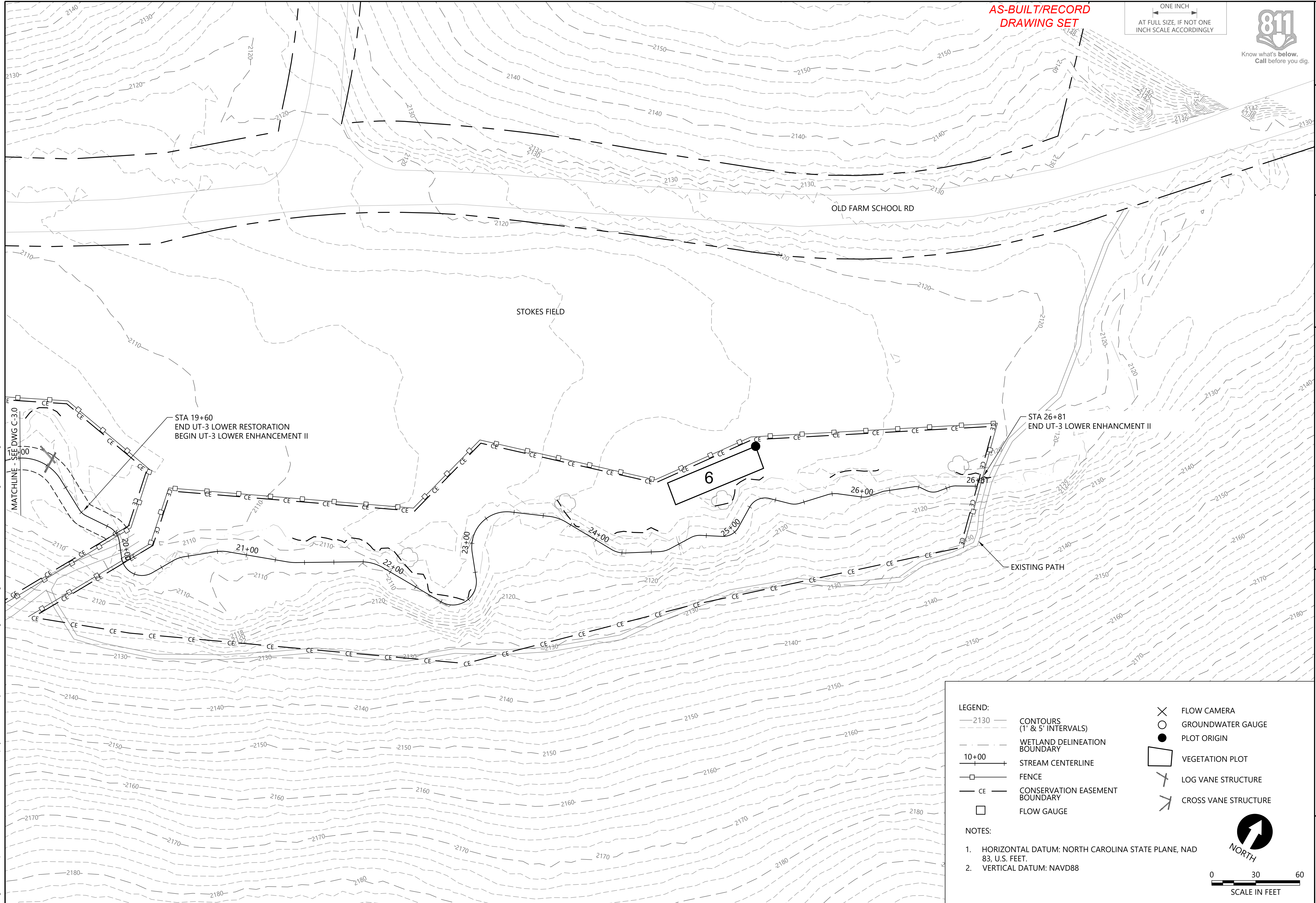
- 2130 — CONTOURS (1' & 5' INTERVALS)
- - - WETLAND DELINEATION BOUNDARY
- 10+00 → STREAM CENTERLINE
- |— FENCE
- CE — CONSERVATION EASEMENT BOUNDARY
- FLOW GAUGE
- ⊗ FLOW CAMERA
- GROUNDWATER GAUGE
- PLOT ORIGIN
- VEGETATION PLOT
- ⊥ LOG VANE STRUCTURE
- ⊥ CROSS VANE STRUCTURE

NOTES:

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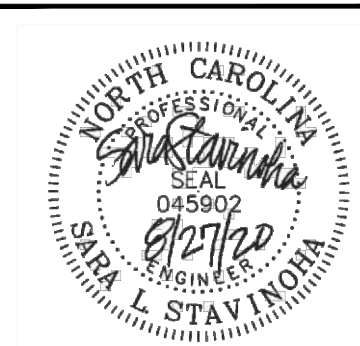


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 DRAWN BY: T. GRIGA/S. STAVINOKHA
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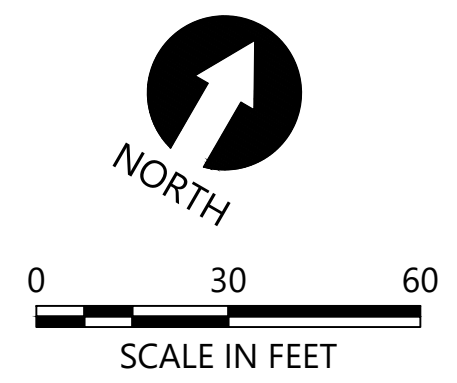
AB-3.1
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- 10+00 — WETLAND DELINEATION BOUNDARY
- 10+00 — STREAM CENTERLINE
- □ — FENCE
- CE — CONSERVATION EASEMENT BOUNDARY
- FLOW GAUGE
- ✕ FLOW CAMERA
- GROUNDWATER GAUGE
- PLOT ORIGIN
- VEGETATION PLOT
- ✂ LOG VANE STRUCTURE
- ✂ CROSS VANE STRUCTURE

NOTES:

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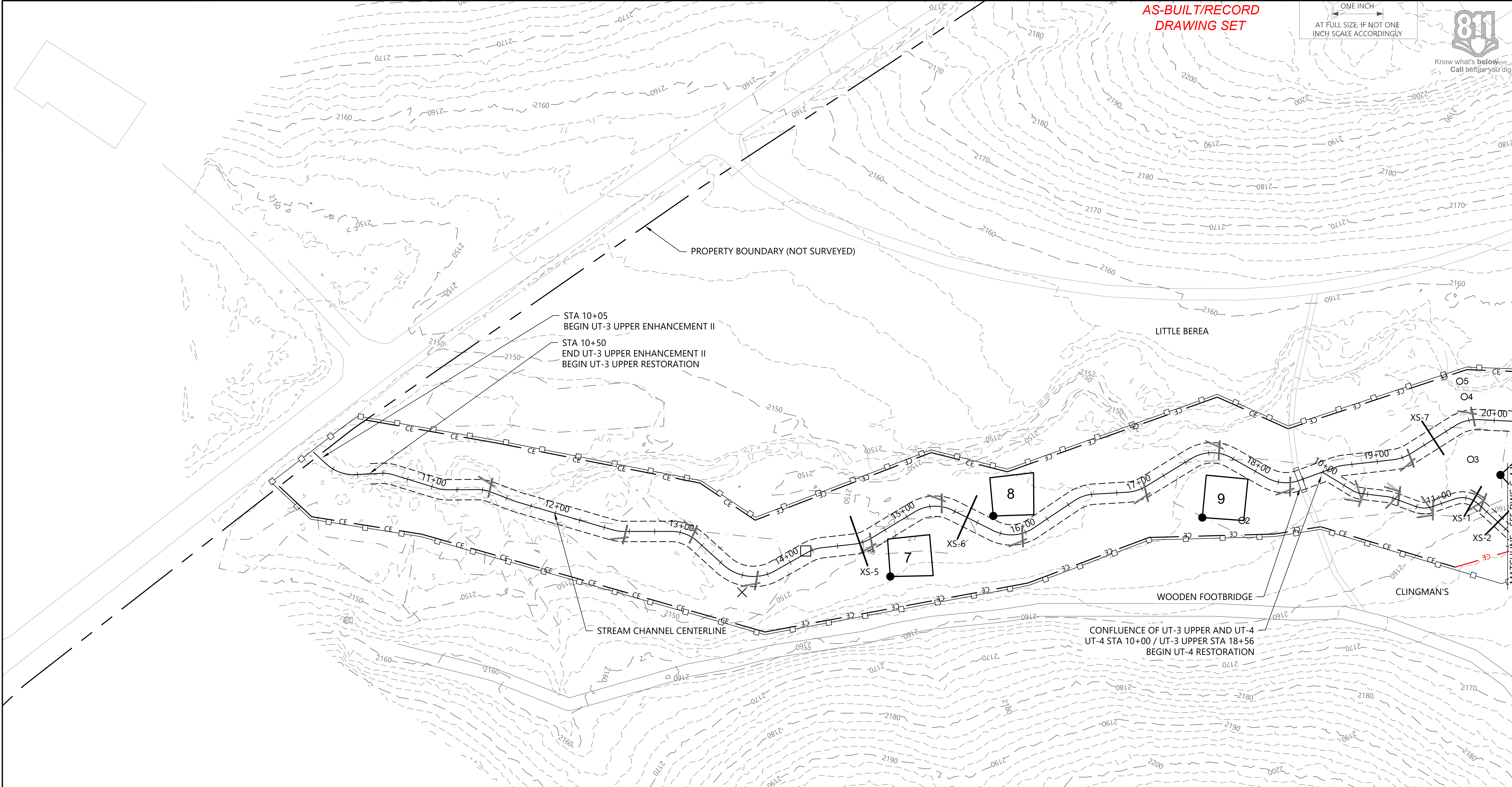
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STA 10+05
BEGIN UT-3 UPPER ENHANCEMENT II
STA 10+50
END UT-3 UPPER ENHANCEMENT II
BEGIN UT-3 UPPER RESTORATION

PROPERTY BOUNDARY (NOT SURVEYED)

LITTLE BEREA

WOODEN FOOTBRIDGE

CLINGMAN'S

CONFLUENCE OF UT-3 UPPER AND UT-4
UT-4 STA 10+00 / UT-3 UPPER STA 18+56
BEGIN UT-4 RESTORATION

STREAM CHANNEL CENTERLINE

LEGEND:

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- |— FENCE
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- VEGETATION PLOT
- ⊥ LOG VANE STRUCTURE
- ⊥ CROSS VANE STRUCTURE

NOTES:

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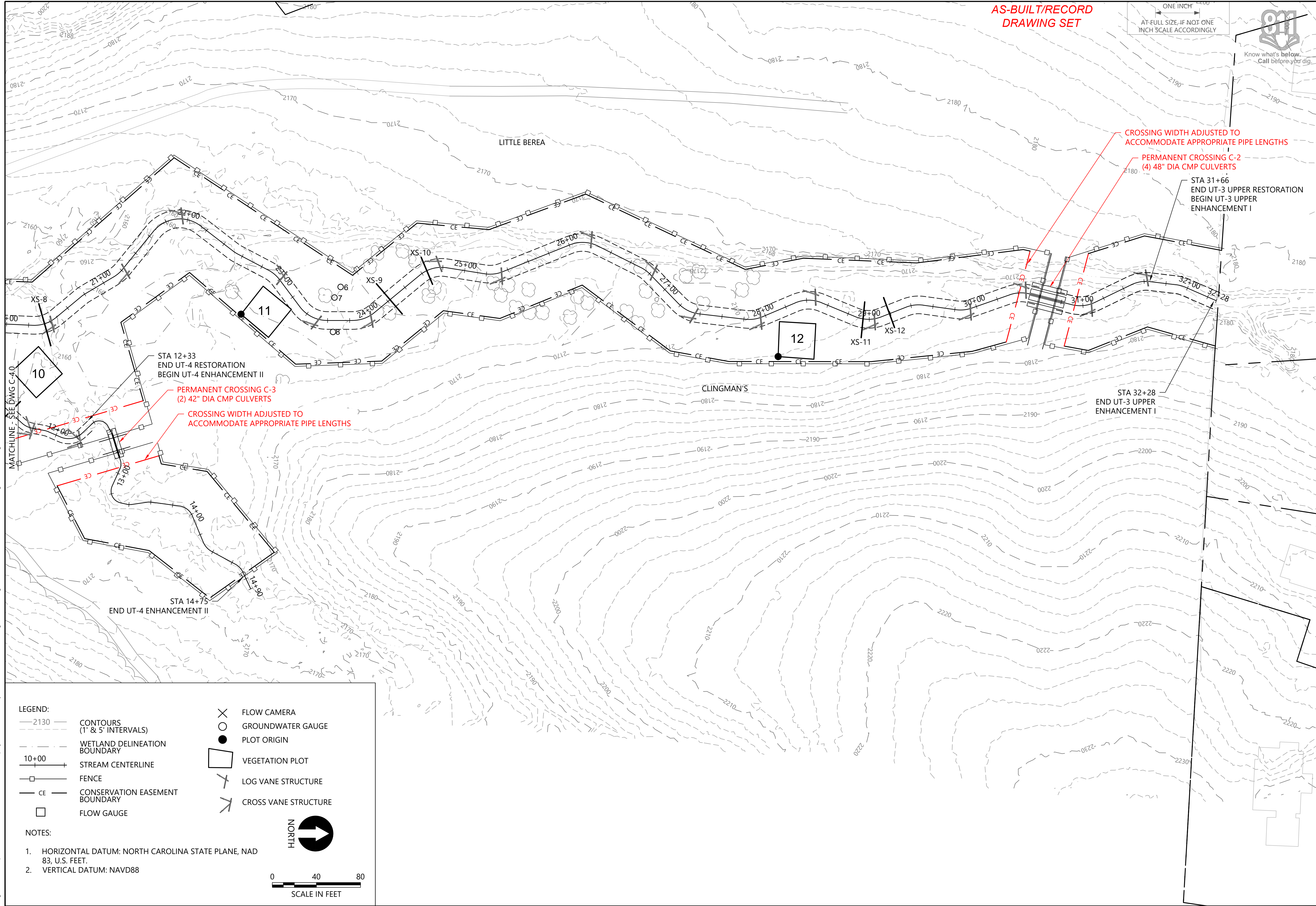


REV	DATE	BY	APPD	DESCRIPTION

UT-3 UPPER/UT-4 LAYOUT AND STRUCTURES AS-BUILT
WARREN WILSON COLLEGE
STREAM MITIGATION SITE
SWANNANOA, NORTH CAROLINA

AB-4.0
PROJ. #: C71672-01.01

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AS-BUILT/RECORD
DRAWING SET

ONE INCH = 200 FEET
AT FULL SIZE, IF NOT ONE
INCH SCALE ACCORDINGLY



Know what's below.
Call before you dig.

CROSSING WIDTH ADJUSTED TO
ACCOMMODATE APPROPRIATE PIPE LENGTHS

PERMANENT CROSSING C-2
(4) 48" DIA CMP CULVERTS

STA 31+66
END UT-3 UPPER RESTORATION
BEGIN UT-3 UPPER
ENHANCEMENT I

STA 12+33
END UT-4 RESTORATION
BEGIN UT-4 ENHANCEMENT II

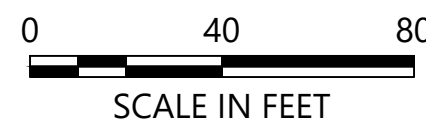
PERMANENT CROSSING C-3
(2) 42" DIA CMP CULVERTS
CROSSING WIDTH ADJUSTED TO
ACCOMMODATE APPROPRIATE PIPE LENGTHS

STA 14+75
END UT-4 ENHANCEMENT II

STA 32+28
END UT-3 UPPER
ENHANCEMENT I

- LEGEND:
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 - GROUNDWATER GAUGE
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 - ⊥ LOG VANE STRUCTURE
 - ⊥ CROSS VANE STRUCTURE

- NOTES:
- HORIZONTAL DATUM: NORTH CAROLINA STATE PLANE, NAD 83, U.S. FEET.
 - VERTICAL DATUM: NAVD88



DESIGNED BY: A. BREW/M. GESCHEN
 DRAWN BY: I. GRIGA/S. STAVINOKHA
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REVISIONS

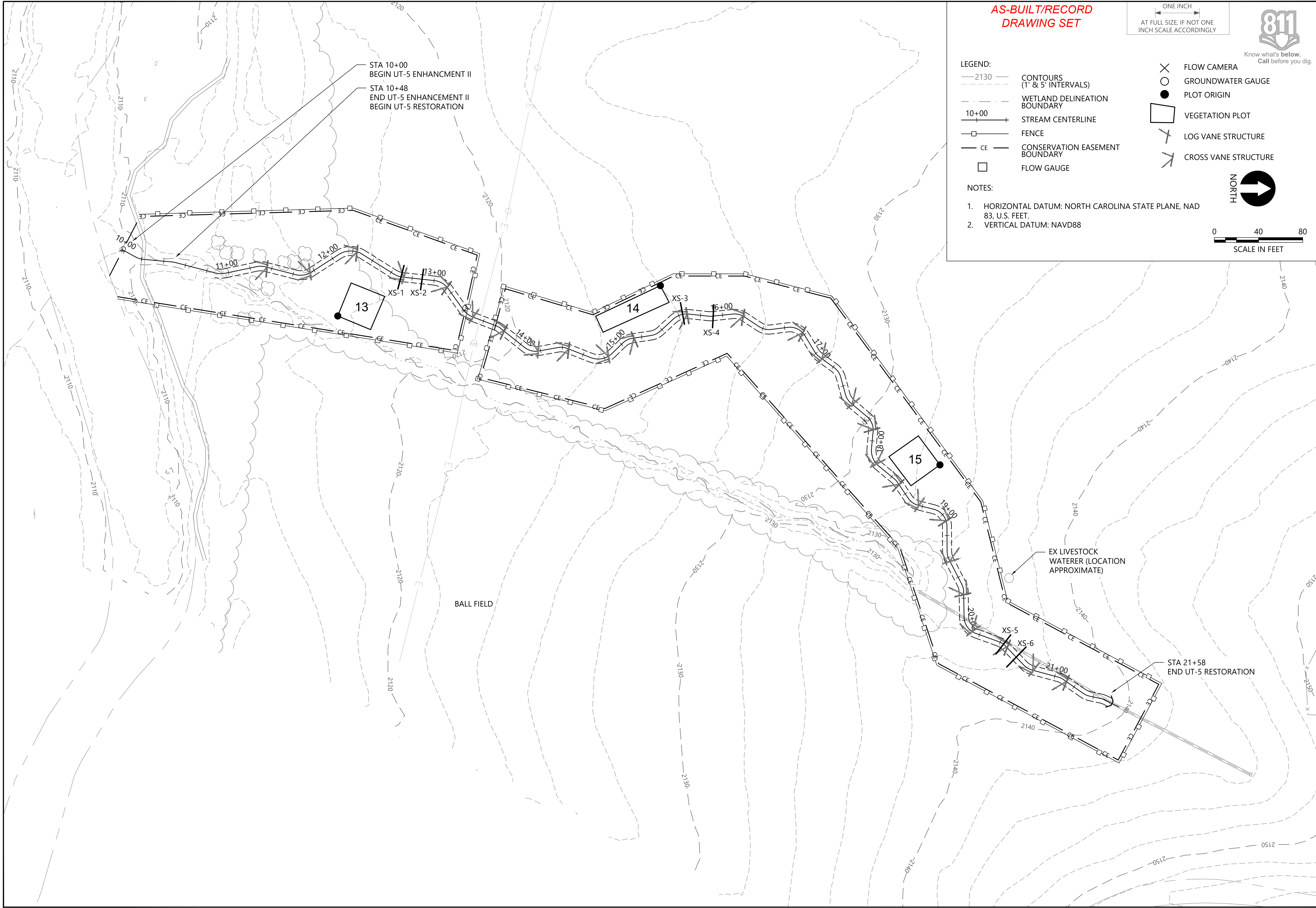
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UT-3 UPPER/UT-4 LAYOUT AND
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AB-4.1

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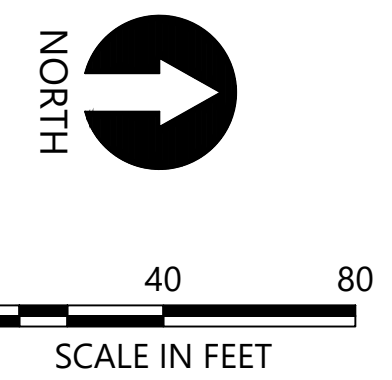


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- ⊥ CROSS VANE STRUCTURE

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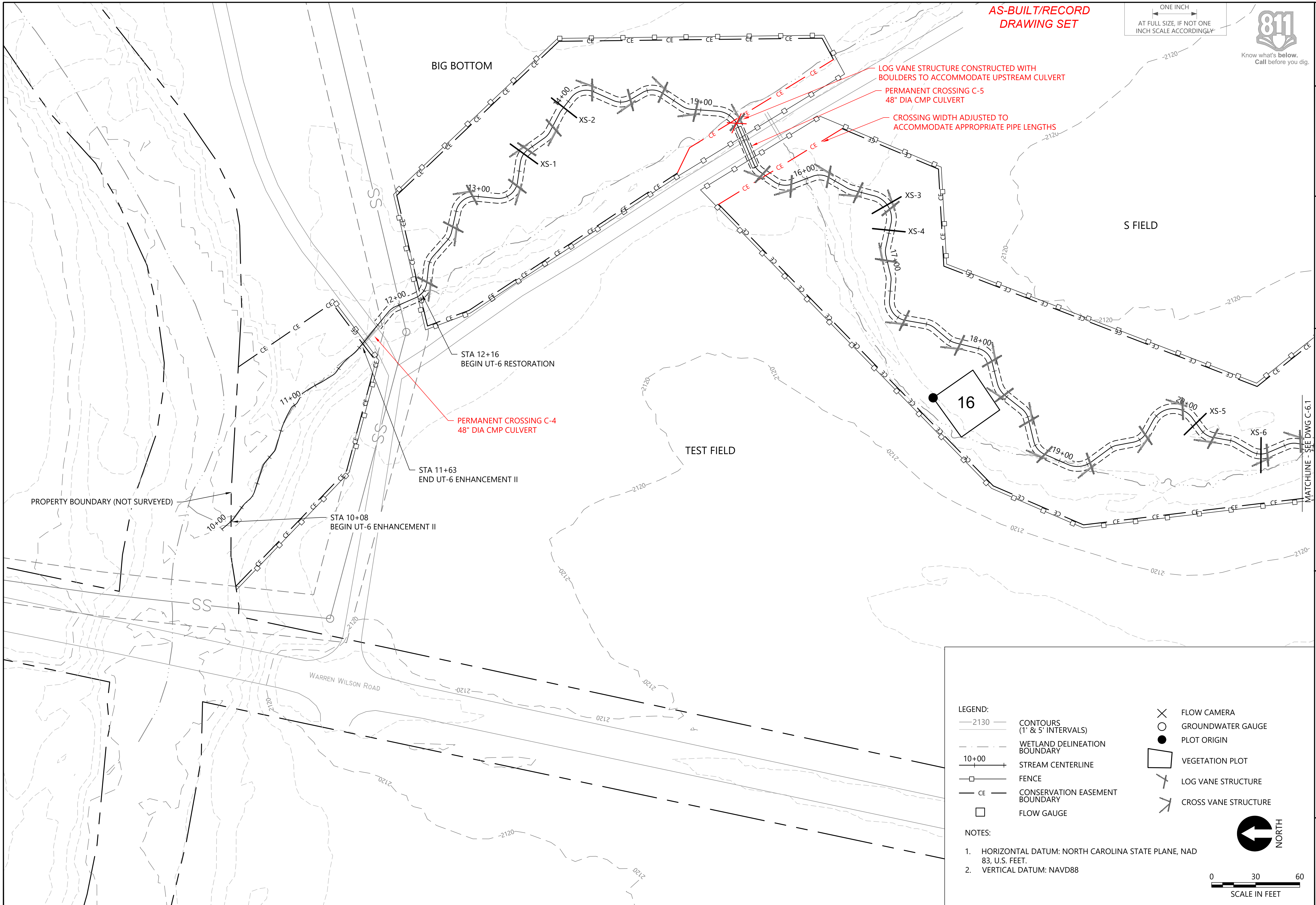
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**UT-5 LAYOUT AND
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WARREN WILSON COLLEGE
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SWANNANOVA, NORTH CAROLINA

AB-5.0
PROJ. #: C71672-01.01

Aug 27, 2020 2:33pm stavinoha \\ashville1\ashville\projects\Restoration_Systems\Warren Wilson College Stream Mitigation\CADD\As-Built\C71672-PL-Design\UT6.dwg AB-6.0



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UT-6 LAYOUT AND STRUCTURES AS-BUILT
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 STREAM MITIGATION SITE
 SWANNANOVA, NORTH CAROLINA

AB-6.0
 PROJ. #: C71672-01.01

LEGEND:

— 2130 —	CONTOURS (1' & 5' INTERVALS)	⊗	FLOW CAMERA
- - - - -	WETLAND DELINEATION BOUNDARY	○	GROUNDWATER GAUGE
10+00	STREAM CENTERLINE	●	PLOT ORIGIN
— —	FENCE	□	VEGETATION PLOT
—CE—	CONSERVATION EASEMENT BOUNDARY	⊥	LOG VANE STRUCTURE
□	FLOW GAUGE	⊥	CROSS VANE STRUCTURE

NOTES:

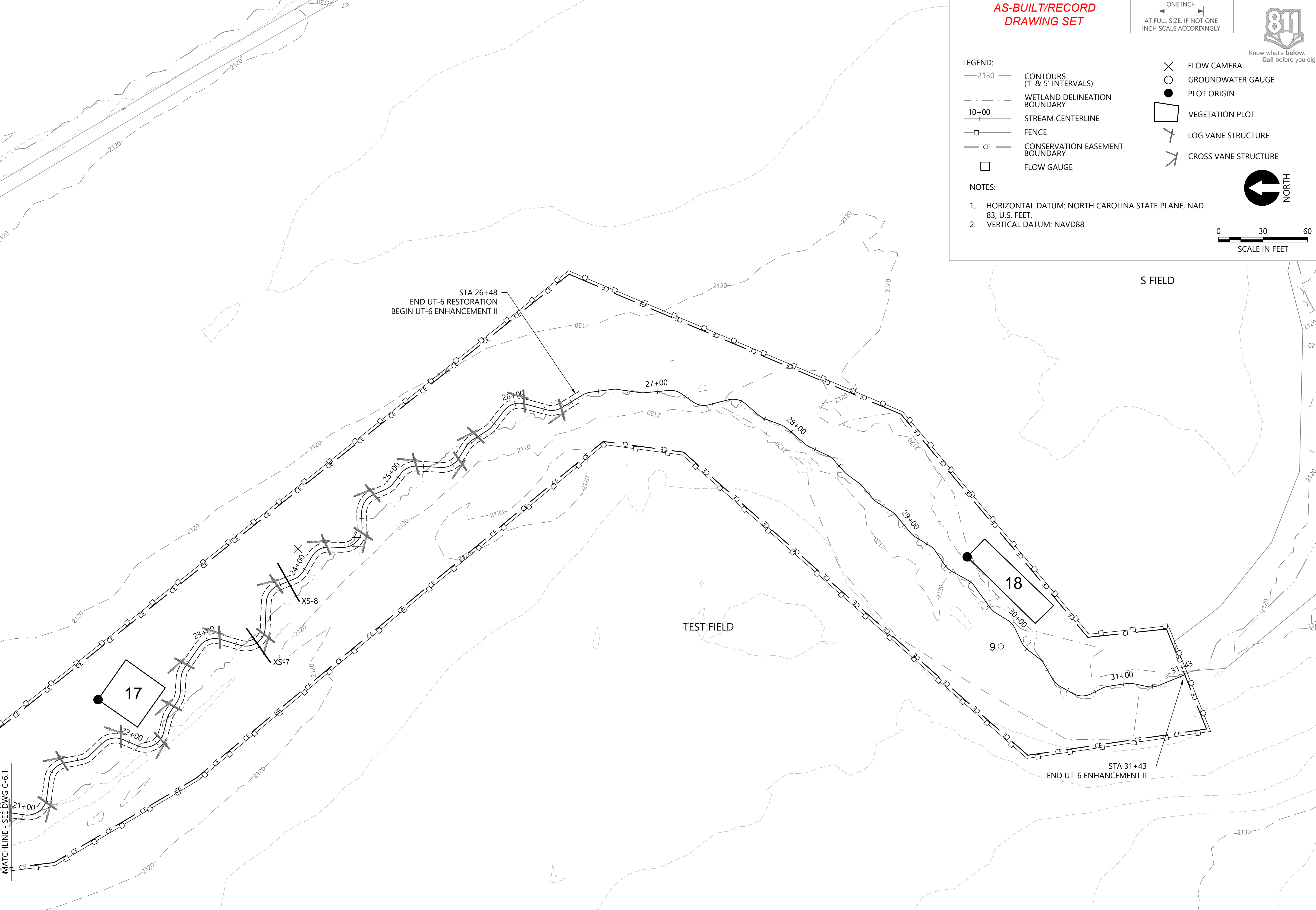
- HORIZONTAL DATUM: NORTH CAROLINA STATE PLANE, NAD 83, U.S. FEET.
- VERTICAL DATUM: NAVD88

0 30 60
SCALE IN FEET

NORTH

MATCHLINE - SEE DWG C-6.1

Aug 27, 2020 2:33pm stavinoha \\ashville1\ashville\projects\Restoration_Systems\Warren Wilson College Stream Mitigation\CAADD\As-Built\C71672-PL-Design-UT6.dwg AB-6.1



**AS-BUILT/RECORD
DRAWING SET**

ONE INCH
AT FULL SIZE, IF NOT ONE
INCH SCALE ACCORDINGLY

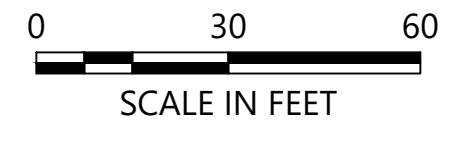


LEGEND:

- 2130— CONTOURS (1' & 5' INTERVALS)
- - - WETLAND DELINEATION BOUNDARY
- 10+00 → STREAM CENTERLINE
- FENCE
- CE — CONSERVATION EASEMENT BOUNDARY
- FLOW GAUGE
- ✕ FLOW CAMERA
- GROUNDWATER GAUGE
- PLOT ORIGIN
- VEGETATION PLOT
- ✕ LOG VANE STRUCTURE
- ✕ CROSS VANE STRUCTURE

NOTES:

1. HORIZONTAL DATUM: NORTH CAROLINA STATE PLANE, NAD 83, U.S. FEET.
2. VERTICAL DATUM: NAVD88



DESIGNED BY: S. STAVINOKHA
DRAWN BY: T. GRIGA/S. STAVINOKHA
CHECKED BY: S. STAVINOKHA
APPROVED BY: T. DRURY
SCALE: AS NOTED
DATE: AUGUST 2020

ANCHOR QEA
Anchor QEA of North Carolina, PLLC
231 Haywood Street
Asheville, North Carolina 28801
(828) 281-3350

REV	DATE	BY	APPD	DESCRIPTION

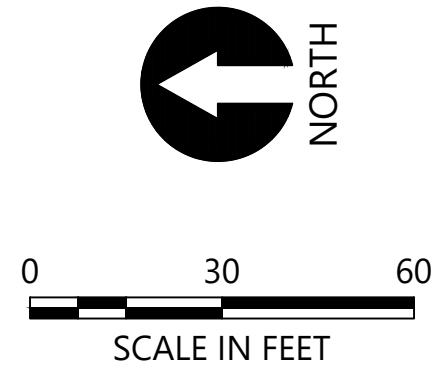
**UT-6 LAYOUT AND
STRUCTURES AS-BUILT**
WARREN WILSON COLLEGE
STREAM MITIGATION SITE
SWANNANOA, NORTH CAROLINA

AB-6.1
PROJ. #: C71672-01.01

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- LEGEND:**
- 2130 — CONTOURS (1' & 5' INTERVALS)
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 - ⊗ FLOW CAMERA
 - GROUNDWATER GAUGE
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 - VEGETATION PLOT
 - ⊗ LOG VANE STRUCTURE
 - ⊗ CROSS VANE STRUCTURE

- NOTES:**
- HORIZONTAL DATUM: NORTH CAROLINA STATE PLANE, NAD 83, U.S. FEET.
 - VERTICAL DATUM: NAVD88



AS-BUILT/RECORD DRAWING SET

ONE INCH
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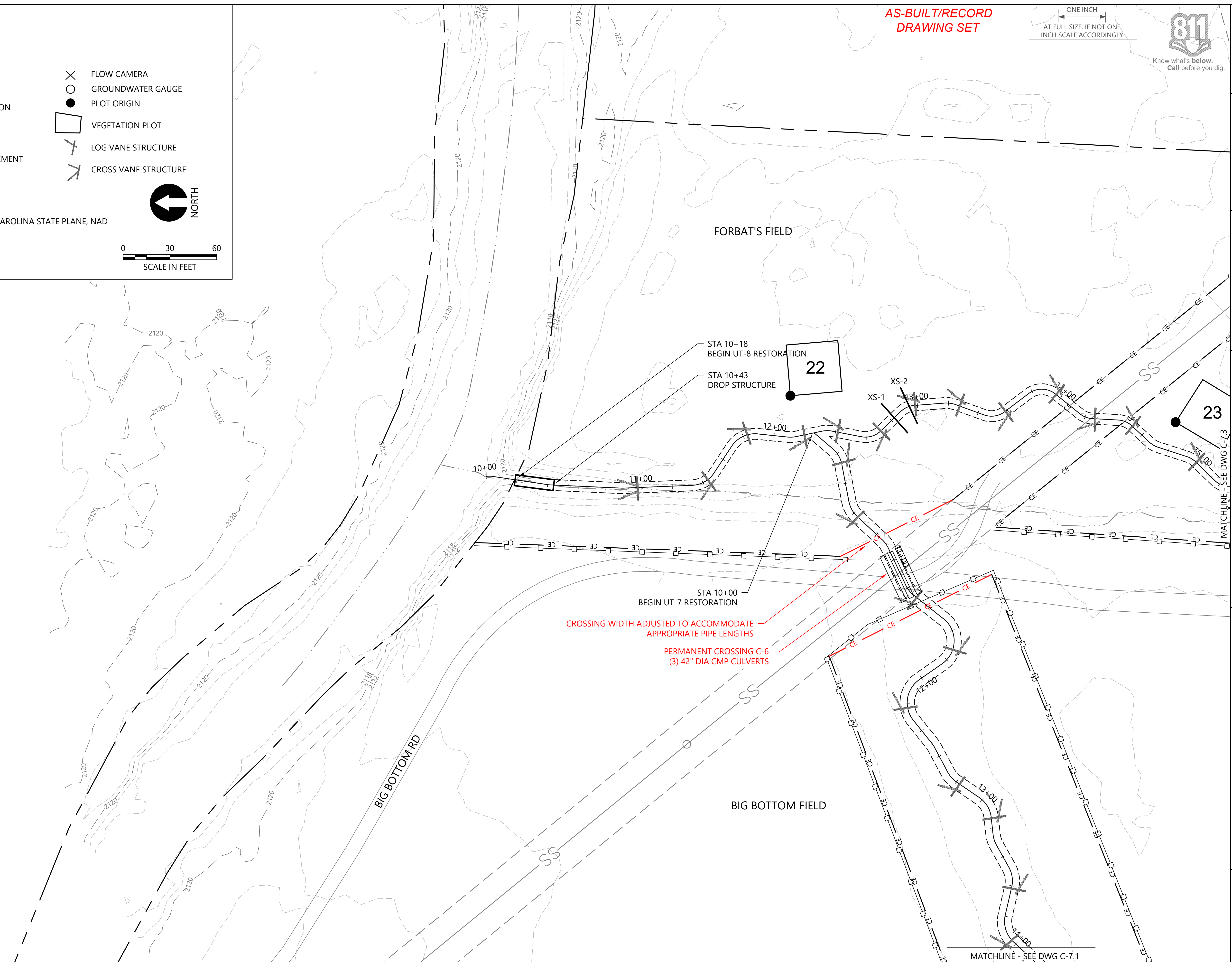
DESIGNED BY: A. BREWSTER
 DRAWN BY: I. GRIGA/S. STAVINOKHA
 CHECKED BY: S. STAVINOKHA
 APPROVED BY: I. DRURY
 SCALE: AS NOTED
 DATE: AUGUST 2020

ANCHOR QEA
 Anchor QEA of North Carolina, PLLC
 231 Haywood Street
 Asheville, North Carolina 28801
 (828) 281-3350

REV	DATE	BY	APPD	DESCRIPTION

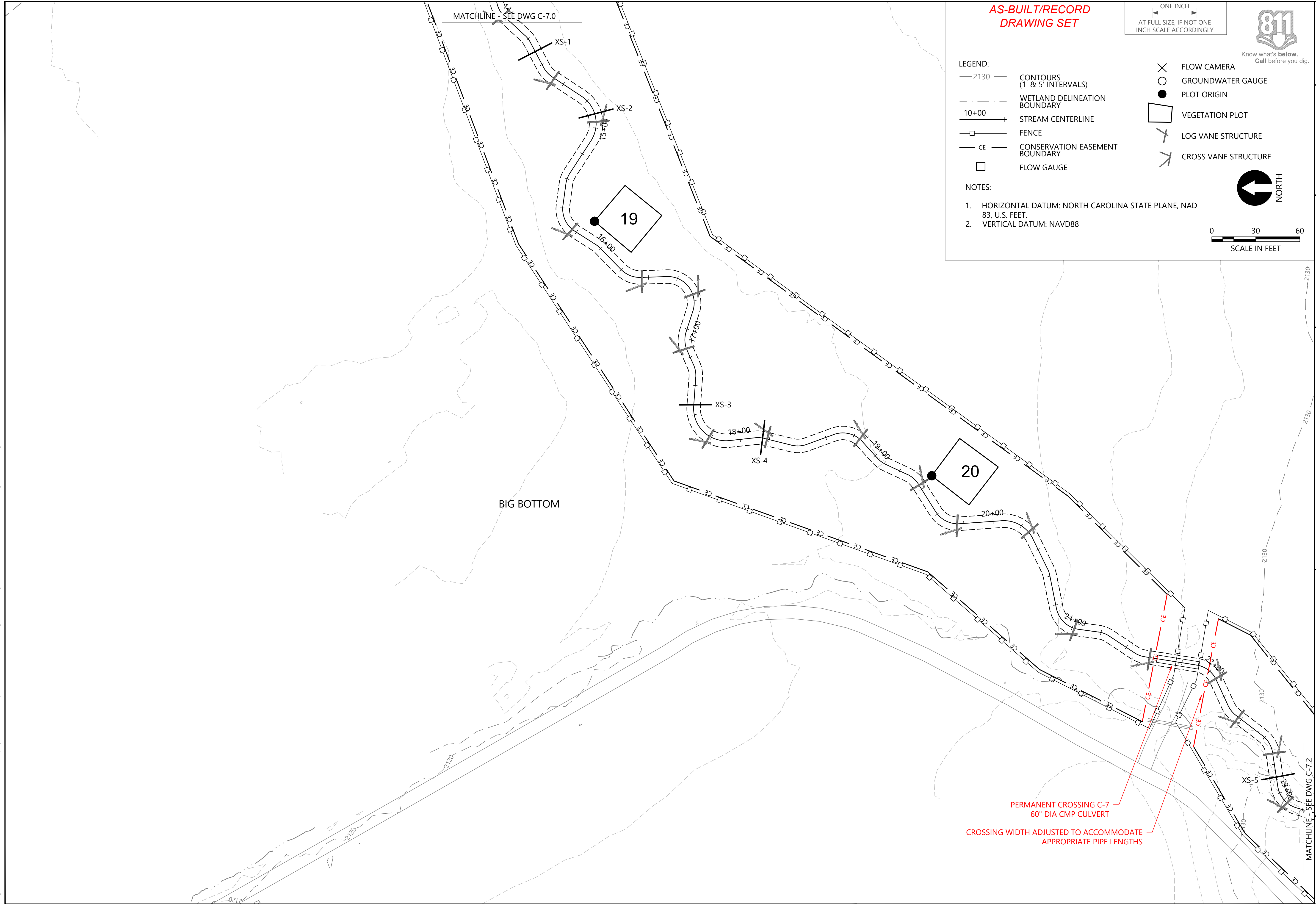
UT-7 & UT-8 LAYOUT AND STRUCTURES AS-BUILT
 WARREN WILSON COLLEGE
 STREAM MITIGATION SITE
 SWANNANOVA, NORTH CAROLINA

AB-7.0
 PROJ. #: C71672-01.01



MATCHLINE - SEE DWG C-7.3

MATCHLINE - SEE DWG C-7.1



**AS-BUILT/RECORD
DRAWING SET**

ONE INCH
AT FULL SIZE, IF NOT ONE
INCH SCALE ACCORDINGLY

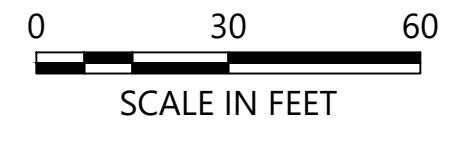


LEGEND:

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- PLOT ORIGIN
- VEGETATION PLOT
- ⊗ LOG VANE STRUCTURE
- ⊗ CROSS VANE STRUCTURE

NOTES:

1. HORIZONTAL DATUM: NORTH CAROLINA STATE PLANE, NAD 83, U.S. FEET.
2. VERTICAL DATUM: NAVD88



DESIGNED BY: A. BREW/M. GERSCHEN
 DRAWN BY: T. GRIGA/S. STAVINOKHA
 CHECKED BY: S. STAVINOKHA
 APPROVED BY: T. DRURY
 SCALE: AS NOTED
 DATE: AUGUST 2020

ANCHOR QEA
 Anchor QEA of North Carolina, PLLC
 231 Haywood Street
 Asheville, North Carolina 28801
 (828) 281-3350

REV	DATE	BY	APPD	DESCRIPTION

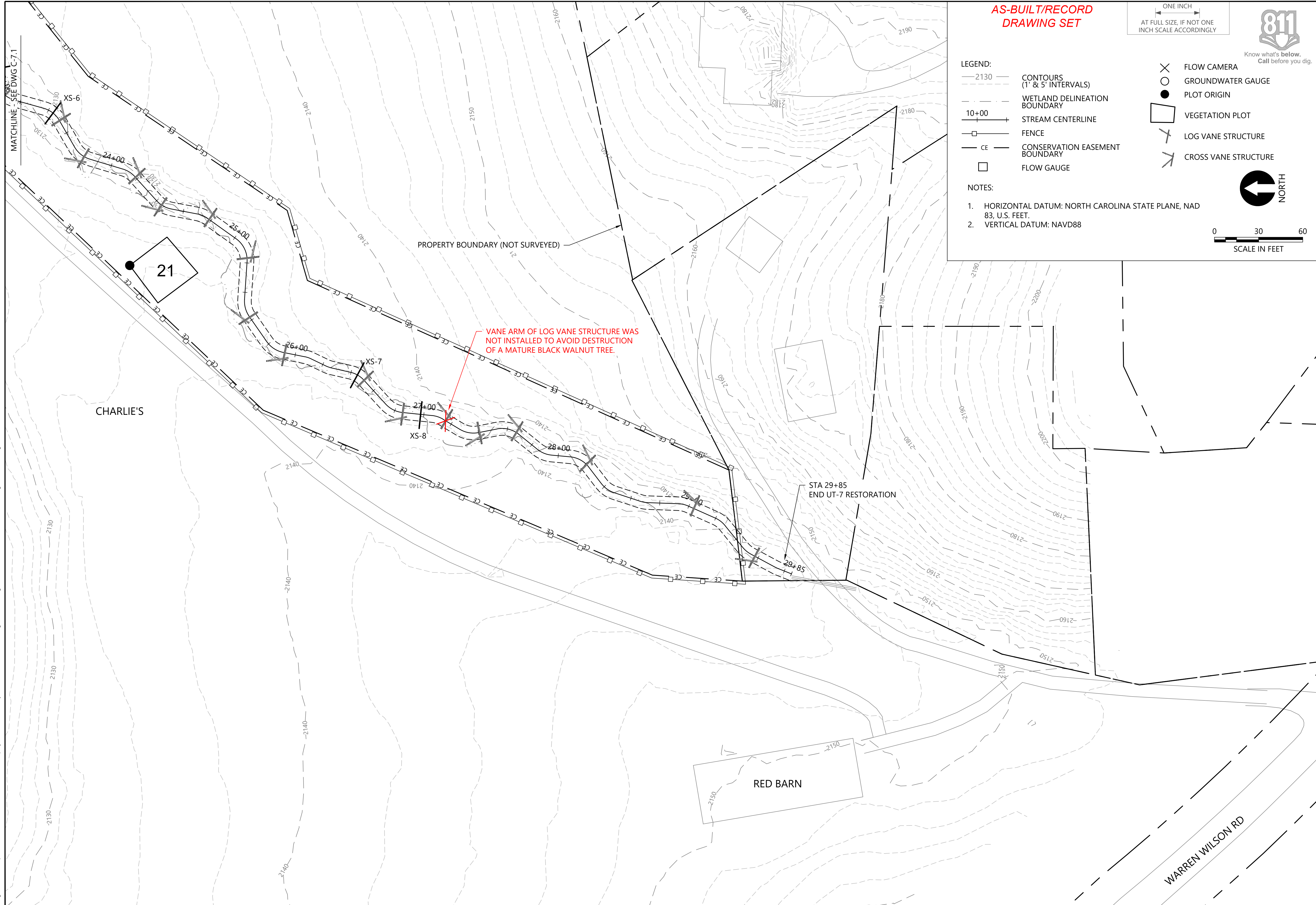
**UT-7 LAYOUT AND
STRUCTURES AS-BUILT**
 WARREN WILSON COLLEGE
 STREAM MITIGATION SITE
 SWANNANOA, NORTH CAROLINA

AB-7.1
 PROJ. #: C71672-01.01

PERMANENT CROSSING C-7
 60" DIA CMP CULVERT
 CROSSING WIDTH ADJUSTED TO ACCOMMODATE
 APPROPRIATE PIPE LENGTHS

MATCHLINE - SEE DWG C-7.0

MATCHLINE - SEE DWG C-7.2



**AS-BUILT/RECORD
DRAWING SET**

ONE INCH
AT FULL SIZE, IF NOT ONE
INCH SCALE ACCORDINGLY

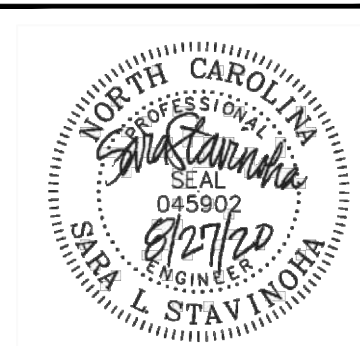
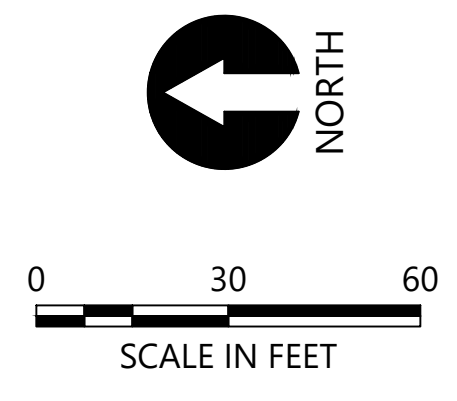


LEGEND:

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- ⋈ LOG VANE STRUCTURE
- ⋈ CROSS VANE STRUCTURE

NOTES:

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2. VERTICAL DATUM: NAVD88



DESIGNED BY: A. BREWSTER
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DATE: AUGUST 2020

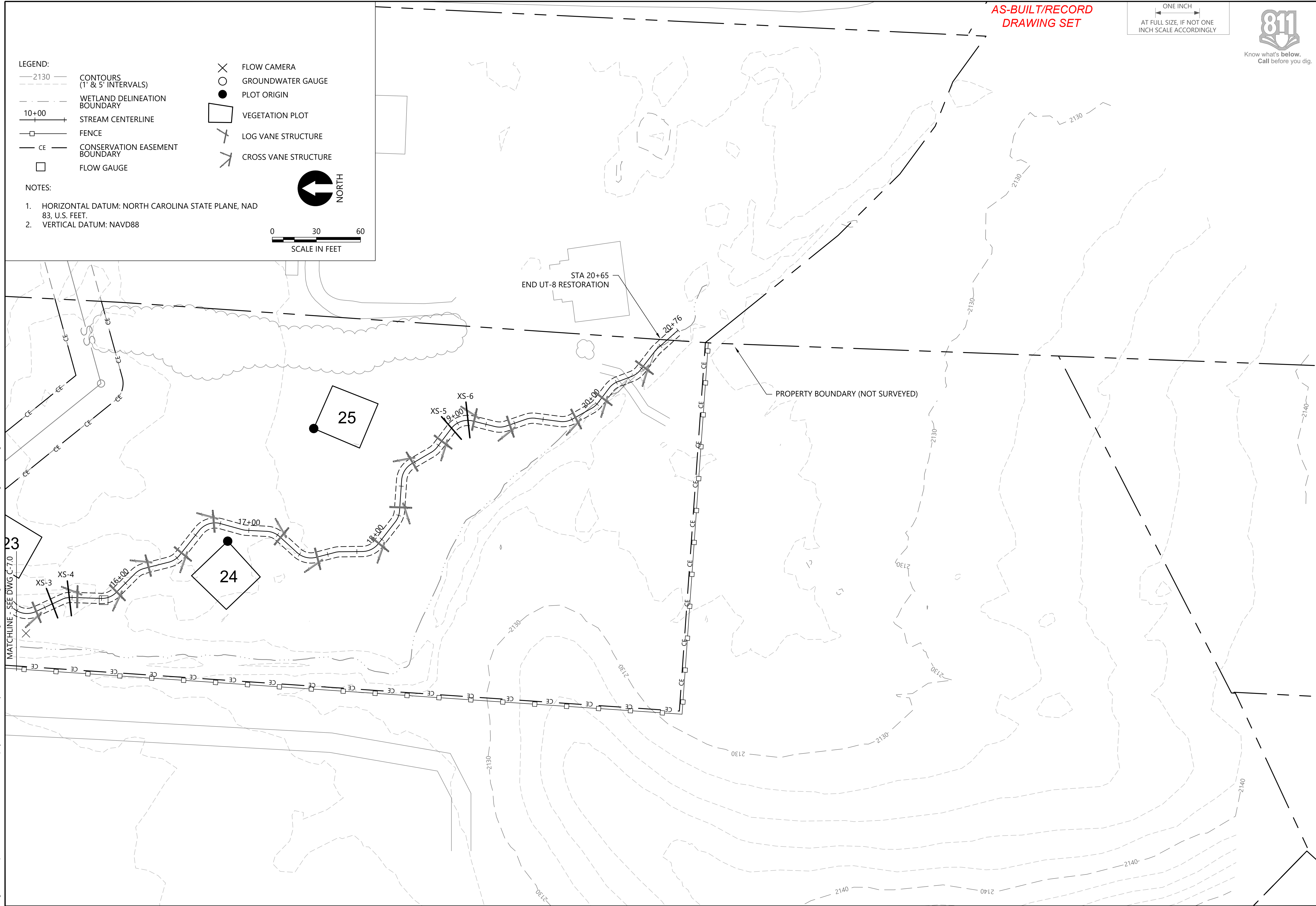
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231 Haywood Street
Asheville, North Carolina 28801
(828) 281-3350

REV	DATE	BY	APPD	DESCRIPTION

**UT-7 LAYOUT AND
STRUCTURES AS-BUILT**
WARREN WILSON COLLEGE
STREAM MITIGATION SITE
SWANNANOVA, NORTH CAROLINA

AB-7.2
PROJ. #: C71672-01.01

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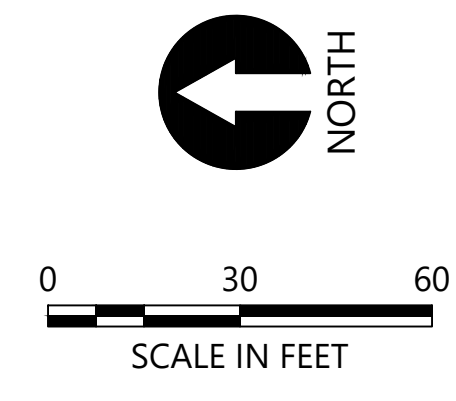
AS-BUILT/RECORD
DRAWING SET

ONE INCH
AT FULL SIZE, IF NOT ONE
INCH SCALE ACCORDINGLY



- LEGEND:**
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 - ⊗ CROSS VANE STRUCTURE

- NOTES:**
- HORIZONTAL DATUM: NORTH CAROLINA STATE PLANE, NAD 83, U.S. FEET.
 - VERTICAL DATUM: NAVD88



DESIGNED BY: A. BREW/M. GESCHEN
 DRAWN BY: T. GRIGA/S. STAVINOKHA
 CHECKED BY: S. STAVINOKHA
 APPROVED BY: T. DRURY
 SCALE: AS NOTED
 DATE: AUGUST 2020

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REV	DATE	BY	APPD	DESCRIPTION

UT-8 LAYOUT AND STRUCTURES AS-BUILT
 WARREN WILSON COLLEGE
 STREAM MITIGATION SITE
 SWANNANOVA, NORTH CAROLINA

AB-7.3
 PROJ. #: C71672-01.01