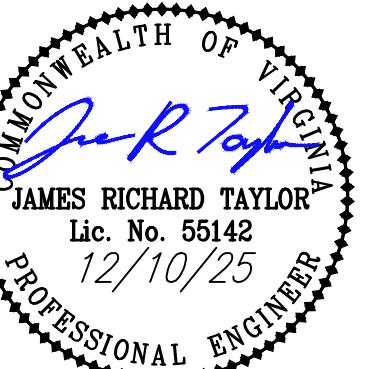




**BALZER
& ASSOCIATES**
PLANNERS / ARCHITECTS
ENGINEERS / SURVEYORS

Roanoke / Richmond
New River Valley
Shenandoah Valley
www.balzer.cc
80 College Street
Suite H
Christiansburg, VA 24073
540.381.4290



FIVE STARS C-STORE CHRISTIANSBURG

240 ROANOKE STREET
GRADING PLAN

SHAWNEE MAGISTERIAL DISTRICT
TOWN OF CHRISTIANSBURG, VIRGINIA

DRAWN BY
AWC
AWC
JRT
8/21/24
CHECKED BY
DATE
8/21/24
SCALE
AS STATED
REVISIONS
10/29/24
12/12/24
12/10/25

STANDARD GRADING NOTES

- CONTRACTOR TO ENSURE POSITIVE DRAINAGE AWAY FROM ALL STRUCTURES.
- REFER TO BUILDING PLANS FOR SUBGRADE AND UTILITY TRENCHES WITHIN 5' OF THE BUILDING ENVELOPE.
- SHAPE SURFACE WALKS AND PAVEMENTS TO LINE, GRADE, AND CROSS SECTION, WITH NOT MORE THAN 1/2" ABOVE OR BELOW REQUIRED SUBGRADE ELEVATION.
- FINISH LAWN AREAS TO WITHIN ONE INCH ABOVE OR BELOW REQUIRED SUBGRADE ELEVATIONS, TILL OR SCARIFY THE TOP 2 TO 3 INCHES OF SUBGRADE THEN TAKE STEPS TO AVOID HEAVY EQUIPMENT AND COMPACTION OVER THE AREA.
- SPREAD TOPSOIL TO A UNIFORM DEPTH OF 2" ON 3:1 OR STEEPER SLOPES AND 4" OVER ALL OTHER DISTURBED AREAS NOT RECEIVING WALKS, PAVEMENT, WALLS OR BUILDING INCLUSIONS (SEE TABLE 3.30-A). CARE SHOULD BE TAKEN TO ENSURE PROPER BONDING AND TO NOT DAMAGE TOPSOIL. TOPSOIL ON TWO SOILS HAVE CONTRASTING TEXTURES (CLAYEY VS. SANDY). IMMEDIATELY FOLLOWING PLACEMENT OF TOPSOIL, DISK THE ENTIRE TOPSOILED AREA AND RAKE FREE OF STONES AND DEBRIS OVER 1/2" IN ANY DIMENSION. PROVIDE A FINISHED SURFACE FREE OF DEPRESSIONS OR HIGH SPOTS. SEED IMMEDIATELY.
- YARD DRAINS SHALL BE INSTALLED WHEN POSITIVE DRAINAGE (5.0% MINIMUM SLOPE) AWAY FROM BUILDINGS CAN NOT BE ACHIEVED OR IN DOUBT. DRAINS TO OUTFALL INTO PROPOSED STORM SEWER. CONTRACTOR MAY ADD ADDITIONAL DRAINS IF SITE CONDITIONS ALLOW/REQUIRE AS NEEDED.
- ALL ROOF DOWNSPOUTS SHALL DISCHARGE TO A 6" HDPE ROOF DRAIN. ROOF DRAINS SHALL CONNECT UNDERGROUND TO AN 8" MIN. HDPE COLLECTION PIPE. DRAIN PIPES SHALL HAVE A MINIMUM SLOPE OF 1.0% AND DISCHARGE INTO STORM SEWER.
- YARD DRAINS SHALL BE 12" NYLOPLAST INLINE DRAINS WITH STANDARD GRATE OR EQUIVALENT.
- MINIMUM COVER OVER COLLECTION PIPES SHALL CONFORM TO MANUFACTURER'S STANDARD.
- HANDICAP PARKING AREA SHALL HAVE A MAXIMUM SLOPE OF 1:48 IN ANY DIRECTION.
- HANDICAP ACCESS ROUTE SHALL HAVE A MAXIMUM RUNNING SLOPE OF 1:20 AND A MAXIMUM CROSS SLOPE OF 1:48 IN ACCORDANCE WITH ADA GUIDELINES. RAMPS SHALL BE IN ACCORDANCE WITH THE ADA STANDARDS FOR ACCESSIBLE DESIGN, LATEST EDITION.

STRUCTURE SCHEDULE

1 37.71 LF OF 12" TYPE "S" HDPE @ 0.40%
INV. UPPER=2152.00 INV. LOWER=2151.85

2 8" NYLOPLAST DRAINAGE BASIN W/ SOLID TOP
TOP=2155.07 H=3.07"

3 12" HDPE IN=2152.00
12" HDPE OUT=2152.00

4 83.54 LF OF 12" TYPE "S" HDPE @ 0.40%
INV. UPPER=2152.38 INV. LOWER=2152.05

5 24" NYLOPLAST DRAINAGE BASIN W/ SOLID TOP
TOP=2155.51 H=3.13"

6 12" HDPE IN=2152.43
12" HDPE OUT=2152.33

7 9.02 LF OF 15" TYPE "S" HDPE @ 0.40%
INV. UPPER=2150.57 INV. LOWER=2150.53

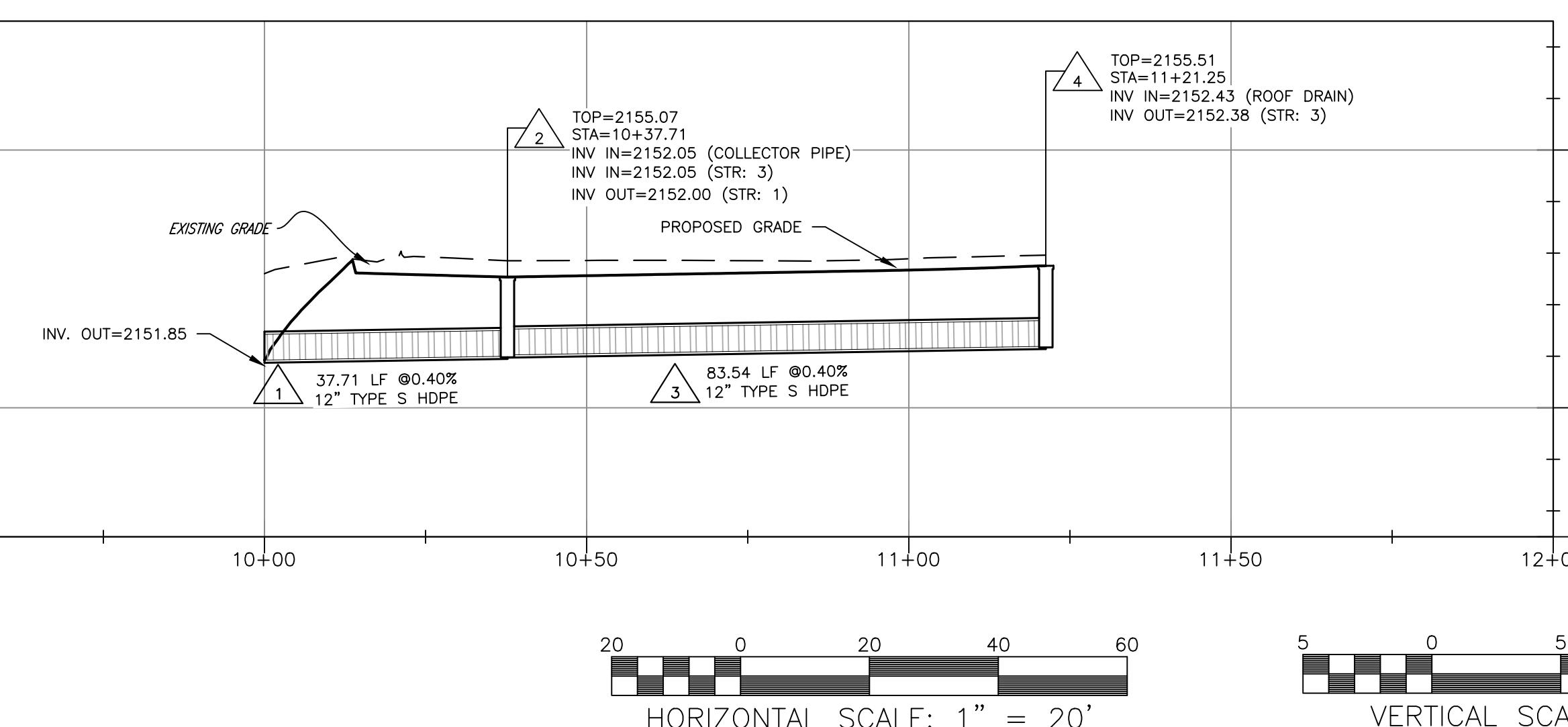
8 LOW CLEARANCE CAST IN PLACE DI-7
TOP=2152.92 H=2.35"

9 15" HDPE OUT=2150.57

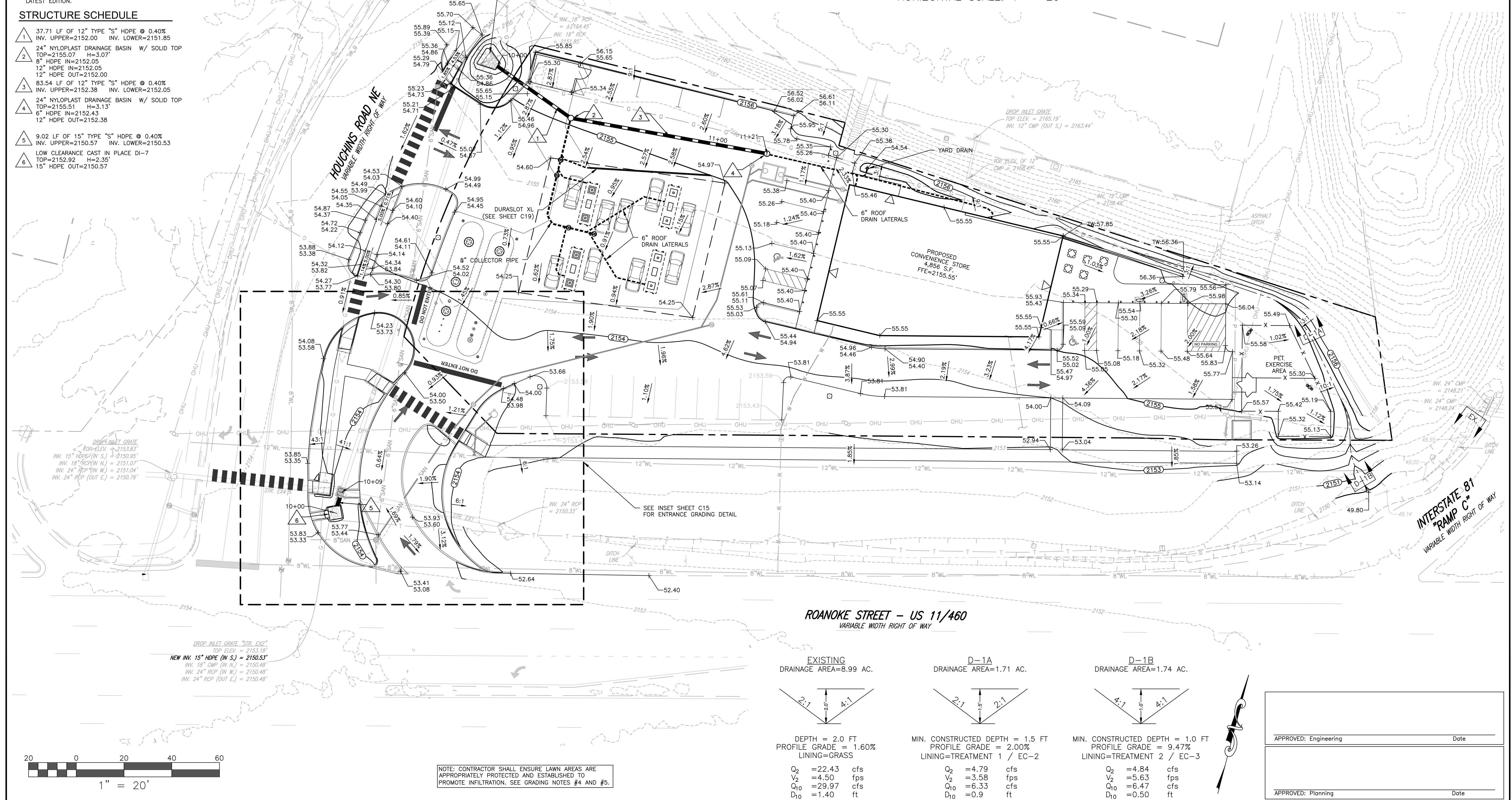
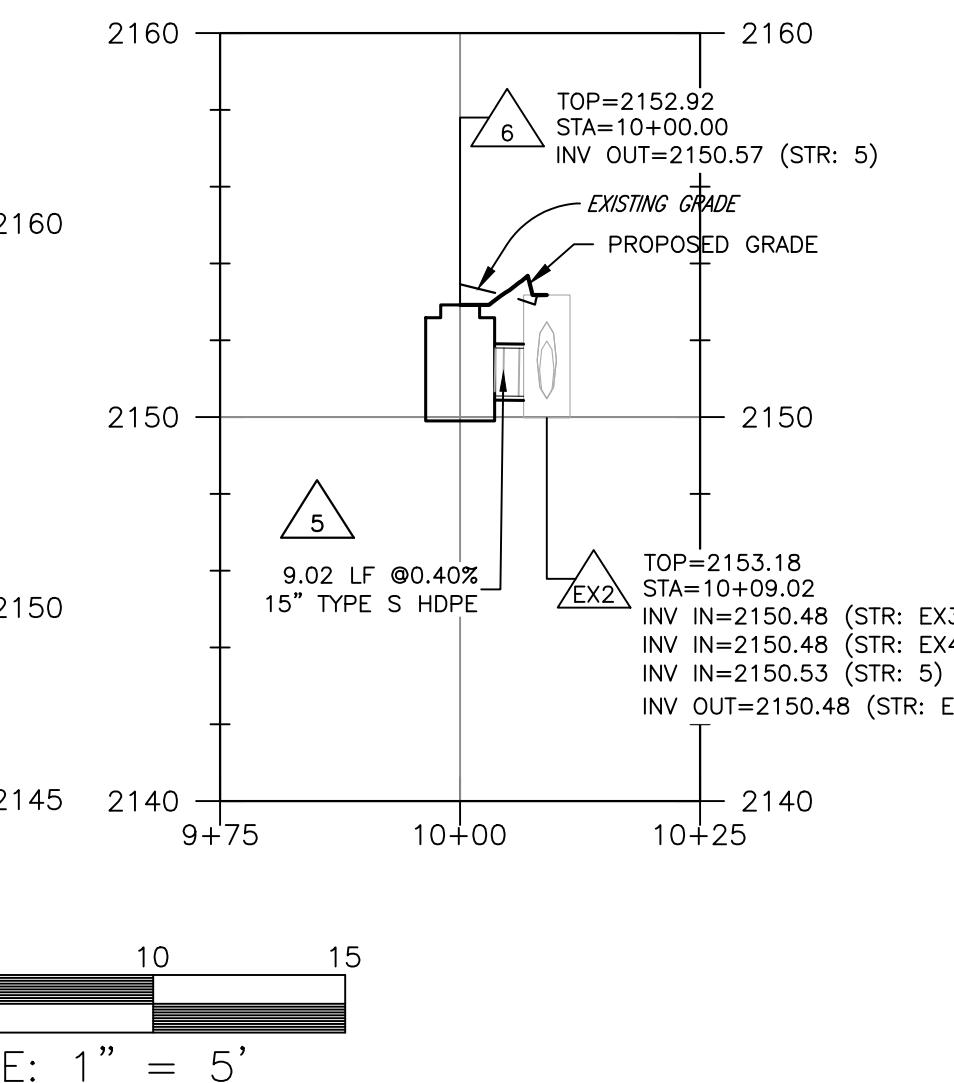
STORM SEWER INSTALLATION NOTES

- THE MINIMUM DEPTH OF COVER FOR ALL STORM SEWER PIPE 4" TO 48" DIAMETER SHALL BE 12 INCHES FROM THE TOP OF THE PIPE TO THE BOTTOM OF FLEXIBLE PAVEMENT (OR TOP OF RIGID PAVEMENT). FOR 54" AND 60" DIAMETER PIPE, THE MINIMUM DEPTH OF COVER SHALL BE 24".
- ALL STORM INLET/MANHOLE BOTTOMS SHALL HAVE INLET SHAPING (S-1) PER VDOT STANDARDS. NYLOPLAST BASINS SHALL HAVE THE SUMP FILLED WITH CONCRETE.
- ALL PIPE CROSSINGS SHALL MEET THE VERTICAL SEPARATION REQUIREMENTS IN ACCORDANCE WITH THE TOWN'S WATER AND SANITARY SEWER SPECIFICATIONS. THE GENERAL CONTRACTOR SHALL NOTIFY THE CIVIL ENGINEER OF THE VERTICAL SEPARATION OF UTILITIES IN THE FIELD PRIOR TO INSTALLATION. SHOULD ANY CONFLICTS WITH PROPOSED AND/OR EXISTING UTILITIES ARISE, THE CONTRACTOR SHALL NOTIFY THE DESIGN ENGINEER IMMEDIATELY.

STORM A PROFILE



STORM B PROFILE



ROANOKE STREET - US 11/460

VARIABLE WIDTH RIGHT OF WAY

EXISTING
DRAINAGE AREA=8.99 AC.

D-1A
DRAINAGE AREA=1.71 AC.

D-1B
DRAINAGE AREA=1.74 AC.

DEPTH = 2.0 FT
PROFILE GRADE = 1.60%
LINING=GRASS

$Q_2 = 22.43 \text{ cfs}$
 $V_2 = 4.50 \text{ fps}$
 $Q_{10} = 29.97 \text{ cfs}$
 $D_{10} = 1.40 \text{ ft}$

MIN. CONSTRUCTED DEPTH = 1.5 FT
PROFILE GRADE = 2.00%
LINING=TREATMENT 1 / EC-2

$Q_2 = 4.79 \text{ cfs}$
 $V_2 = 3.58 \text{ fps}$
 $Q_{10} = 6.33 \text{ cfs}$
 $D_{10} = 0.9 \text{ ft}$

MIN. CONSTRUCTED DEPTH = 1.0 FT
PROFILE GRADE = 9.47%
LINING=TREATMENT 2 / EC-3

$Q_2 = 4.84 \text{ cfs}$
 $V_2 = 5.63 \text{ fps}$
 $Q_{10} = 6.47 \text{ cfs}$
 $D_{10} = 0.50 \text{ ft}$

APPROVED: Engineering	Date
APPROVED: Planning	Date