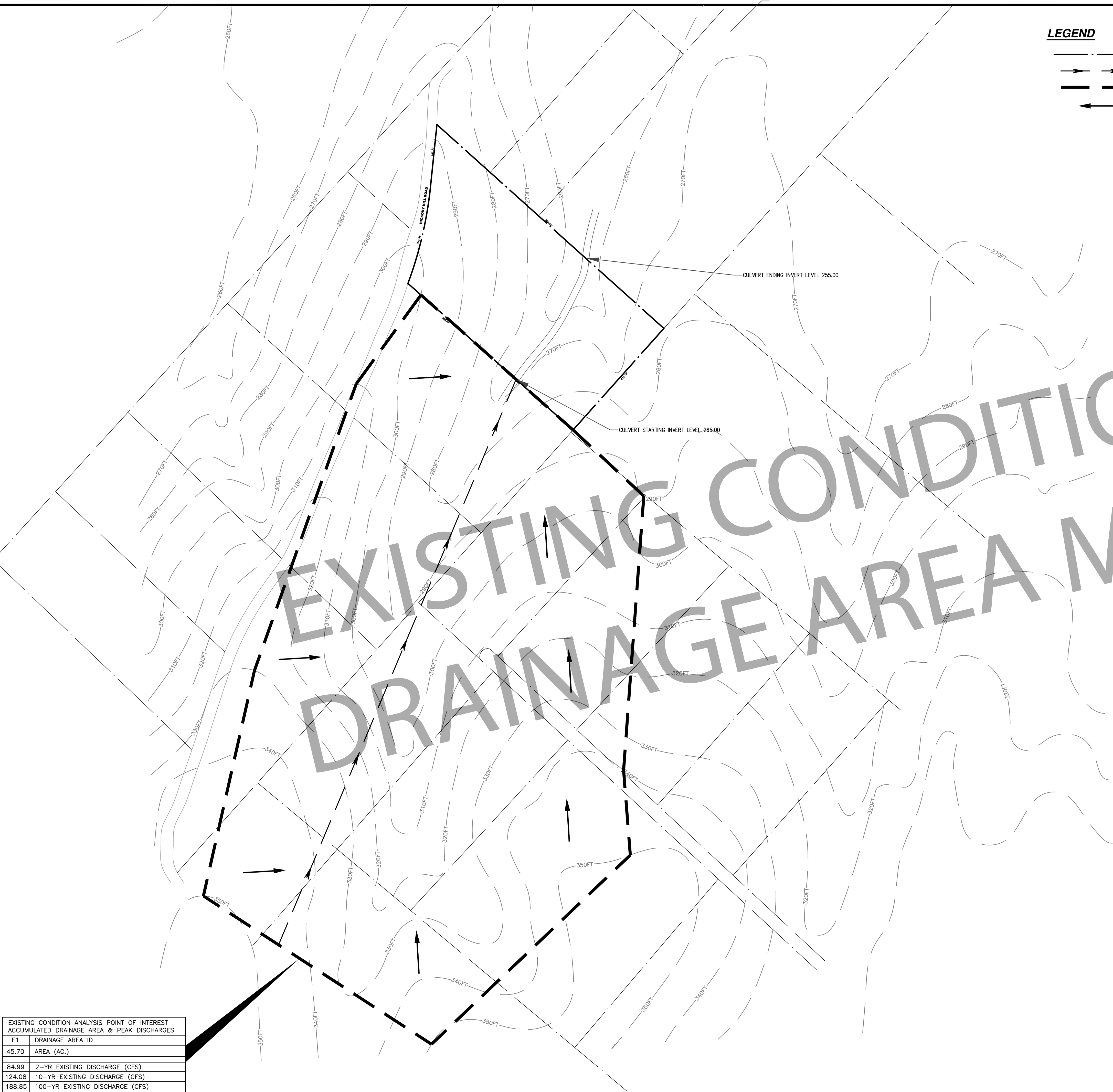


EXISTING CONDITION ANALYSIS POINT OF INTEREST ACCUMULATED DRAINAGE AREA & PEAK DISCHARGES	
E1	DRAINAGE AREA ID
45.70	AREA (AC.)
84.99	2-YR EXISTING DISCHARGE (CFS)
124.08	10-YR EXISTING DISCHARGE (CFS)
188.85	100-YR EXISTING DISCHARGE (CFS)



LEGEND

	PROPERTY LINE
	HIGH POINT (H.P.)
	DRAINAGE AREA BOUNDARY
	DIRECTION OF FLOW

SITEWORKS NOTES:

- CONTRACTOR SHALL FIELD VERIFY LOCATION AND ELEVATION OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION OF PROPOSED FACILITIES. NOTIFY ENGINEER IMMEDIATELY OF ANY DISCREPANCIES.
- CONTRACTOR SHALL NOTIFY THE APPROPRIATE UTILITY COMPANY 48 HOURS PRIOR TO EXCAVATING NEAR THEIR UTILITY.
- CONTRACTOR SHALL TAKE ALL DUE PRECAUTIONS TO PROTECT EXISTING FACILITIES FROM DAMAGE. ANY DAMAGE TO EXISTING FACILITIES INCURRED AS A RESULT OF CONSTRUCTION OPERATIONS WILL BE REPAIRED BY THE CONTRACTOR AT HIS OWN EXPENSE.
- CONTRACTOR SHALL TAKE EXTRA CARE TO PROTECT TREES IN AREAS ADJACENT TO CONSTRUCTION.
- CONTRACTOR SHALL CONFIRM NO CONFLICTS BETWEEN EXISTING AND PROPOSED DRY/WET UTILITIES IN PUBLIC R.O.W., BEFORE STARTING SITE WORK CONSTRUCTION.

CONSTRUCTION NOTE:

CONTRACTOR SHALL CONFIRM NO CONFLICTS BETWEEN EXISTING AND PROPOSED DRY/WET UTILITIES IN PUBLIC R.O.W., BEFORE STARTING SITE WORK CONSTRUCTION.

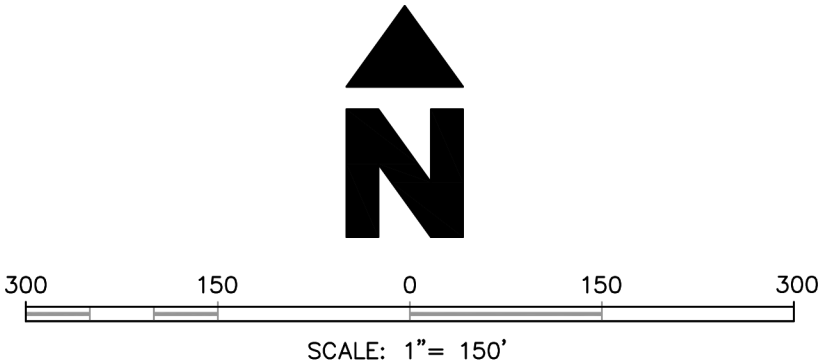
CONTRACTOR SHALL HYDROMULCH ALL NEWLY GRADED AREAS AND EXPOSED SOILS UPON PAVING COMPLETION.

EXCESS SOIL MATERIAL IS THE RESPONSIBILITY OF THE CONTRACTOR & IS TO BE DISPOSED OFFSITE RESPONSIBLY AT NO SEPARATE PAY.

Drainage Area 'E1' - Existing Conditions Peak Runoff Calculations

The Intensity, Duration, Frequency Factors are based on NOAA Atlas 14

Time of Concentration Calculations		Peak Runoff Calculations	
T_{c1}	= Sheet flow time	T_c	= 10.00 minutes
T_{c1}	= $\frac{0.007 (n_o L_{sh})^{0.8}}{(P)^{0.5} (S_{sh})^{0.4}}$	A	= 45.7 acre
n_o	= 0.15 Roughness Coefficient	Cw	= 0.35
L_{sh}	= 100 Sheet flow length (ft.)	Q	= $C \times I \times A$
P	= 4.79 2-Yr, 24 hr, ATLAS-14 Rainfall depth (in.)	2-Yr IDF	
S_{sh}	= 0.06 Sheet flow slope (ft/ft)	b	= 61.96
T_{c1}	= 0.086 hour	d	= 12.06
T_{c1}	= 5.16 minutes	e	= 0.79
T_{c2}	= Shallow Concentrated Flow Time	I(2-Yr)	= 5.31
T_{c2}	= $\frac{D_f}{60V}$	Q(2-Yr)	= 84.99 cfs
D_f	= 195 Flow Distance (ft)	10-Yr IDF	
S	= 0.06 Shallow concentrated slope (ft/ft)	b	= 84.59
V	= 3.95 Shallow concentrated flow velocity (ft/s) (unpaved)	d	= 12.26
T_{c2}	= 0.82 minutes	e	= 0.77
T_c	= $T_{c1} + T_{c2}$ = 5.98 minutes	I(10-Yr)	= 7.76
T_c used	= 10.00 minutes	Q(10-Yr)	= 124.08 cfs
		100-Yr IDF	
		b	= 119.48
		d	= 13.11
		e	= 0.74
		I(100-Yr)	= 11.81
		Q(100-Yr)	= 188.85 cfs



HICKORY HILL ROAD,
CLEVELAND, TX 77328

DRAINAGE AREA MAP

DESIGNED BY:

DWN BY:

CHK BY:

SHEET
REFERENCE:

C.01

Culvert Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc.

Saturday, Feb 21 2026

Circular Culvert

Invert Elev Dn (ft) = 255.00
Pipe Length (ft) = 220.00
Slope (%) = 4.55
Invert Elev Up (ft) = 265.00
Rise (in) = 36.0
Shape = Circular
Span (in) = 36.0
No. Barrels = 1
n-Value = 0.011
Culvert Type = Circular Culvert
Culvert Entrance = Smooth tapered inlet throat
Coeff. K,M,c,Y,k = 0.534, 0.555, 0.0196, 0.9, 0.2

Embankment

Top Elevation (ft) = 270.00
Top Width (ft) = 200.00
Crest Width (ft) = 220.00

Calculations

Qmin (cfs) = 84.93
Qmax (cfs) = 188.90
Tailwater Elev (ft) = (dc+D)/2

Highlighted

Qtotal (cfs) = 84.93
Qpipe (cfs) = 78.44
Qovertop (cfs) = 6.49
Veloc Dn (ft/s) = 11.25
Veloc Up (ft/s) = 11.55
HGL Dn (ft) = 257.88
HGL Up (ft) = 267.75
Hw Elev (ft) = 270.05
Hw/D (ft) = 1.68
Flow Regime = Inlet Control

