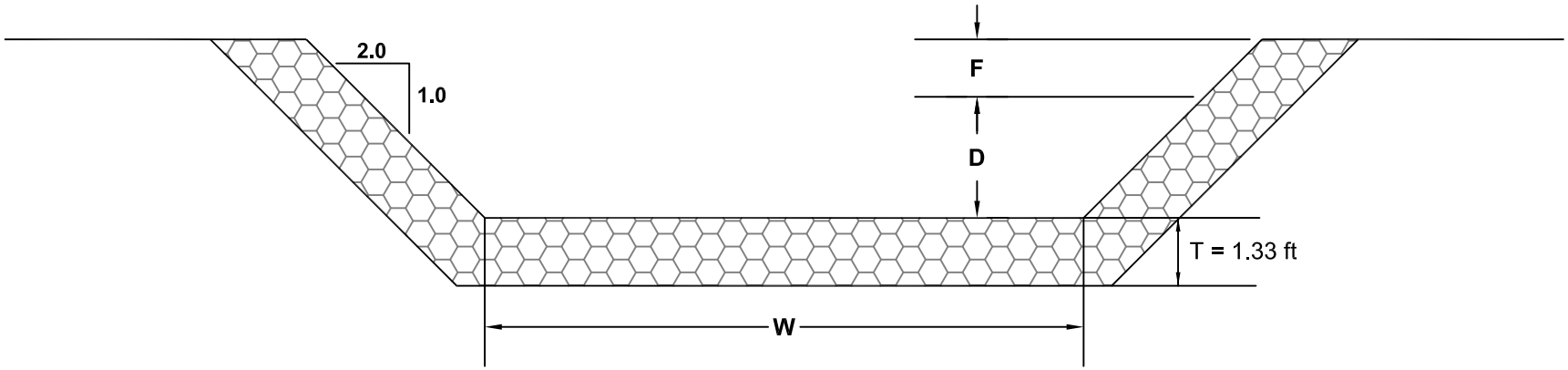
COMPANY: Birmingham Coal & Coke Co., Inc.

MINE NAME: Knight Mine

PERMIT #: P-3970

CHANNEL DESCRIPTION: BASIN 038P CONTROL SECTION

CLASS II RIPRAP LINED CHANNEL CROSS-SECTION



DISCHARGE: 2.0 CFS
CHANNEL BED SLOPE: 2.0%

CHANNEL WIDTH (W):	12 FT.
FLOW DEPTH (D):	0.12 FT.
FREEBOARD (F):	1.0 FT.
TOTAL CHANNEL DEPTH (D + F):	1.12 FT.

DSM
DESIGN GROUP, LLC
ENGINEERING / SURVEYING
1400 VIKING DRIVE
JASPER, ALABAMA 35501
TELEPHONE: (205) 221-6262

Birmingham Coal and Coke Co., Inc. - Knight Mine, P-39--, Basin 038P Emergency Spillway Control Section

Material: Riprap

Trapezoidal Channel

Bottom Width (ft)	Left Sideslope Ratio	Right Sideslope Ratio	Slope (%)	Freeboard Depth (ft)	Freeboard % of Depth	Freeboard Mult. x (VxD)
12.00	2.0:1	2.0:1	2.0	1.00		

Simons/OSM Method - Mild Slope Design

	w/o Freeboard	w/ Freeboard
Design Discharge:	2.00 cfs	
Depth:	0.12 ft	1.12 ft
Top Width:	12.48 ft	16.48 ft
Velocity:	1.35 fps	
X-Section Area:	1.48 sq ft	
Hydraulic Radius:	0.118 ft	
Froude Number:	0.69	
Manning's n:	0.0377	
Dmin:	2.00 in	
D50:	9.00 in	
Dmax:	12.00 in	

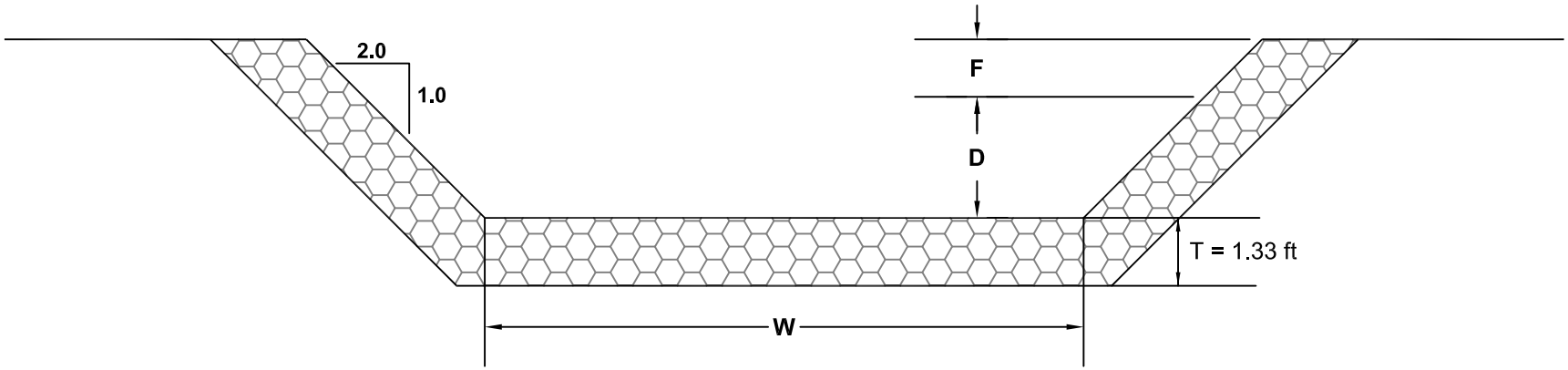
COMPANY: Birmingham Coal & Coke Co., Inc.

MINE NAME: Knight Mine

PERMIT #: P-3970

CHANNEL DESCRIPTION: BASIN 038P TAIL DITCH SECTION

CLASS II RIPRAP LINED CHANNEL CROSS-SECTION



DISCHARGE: 2.0 CFS
CHANNEL BED SLOPE: 5%

CHANNEL WIDTH (W):	**12 FT.**
FLOW DEPTH (D):	**0.07 FT.**
FREEBOARD (F):	**1.0 FT.**
TOTAL CHANNEL DEPTH (D + F):	**1.07 FT.**

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Birmingham Coal and Coke Co., Inc. - Knight Mine, P-39--, Basin 038P Emergency Spillway Tail Section

Material: Riprap

Trapezoidal Channel

Bottom Width (ft)	Left Sideslope Ratio	Right Sideslope Ratio	Slope (%)	Freeboard Depth (ft)	Freeboard % of Depth	Freeboard Mult. x (VxD)
12.00	2.0:1	2.0:1	5.0	1.00		

Simons/OSM Method - Steep Slope Design

	w/o Freeboard	w/ Freeboard
Design Discharge:	2.00 cfs	
Depth:	0.07 ft	1.07 ft
Top Width:	12.27 ft	16.27 ft
Velocity*:		
X-Section Area:	0.82 sq ft	
Hydraulic Radius:	0.067 ft	
Froude Number*:		
Manning's n*:		
Dmin:	1.00 in	
D50:	3.00 in	
Dmax:	3.75 in	

Velocity and Manning's n calculations may not apply for this method.