LIMITING SOIL CHARACTERISTICS LEGEND

Map Symbol	Soil Name	Cutbanks Cave	Corrosive to Concrete/ Steel	Droughty	Easily Erodible	Flooding	Depth to Saturated Zone/ Seasonal High Water Table	Hydric / Hydric Inclusions	Low Strength / Landslide Prone	Slow Percolation	Piping	Poor Source of Topsoil	Frost Action	Shrink - Swell	Potential Sinkhole	Ponding	Wetness	Min. Depth to Bedrock	pH
AaB2	Albrights channery loam, 3 to 8 percent slopes moderately eroded	X	C/S	X	X		X	X	X	X	X	X	X				X	X	X
AbA	Albrights silt loam, 0 to 3 percent slopes	X	C/S	X	X		X	X	X	X	X	X	X				X	X	X
AbB2	Albrights silt loam 3 to 8 percent slopes moderately eroded	X	C/S	X	X		X	X	X	X	X	X	X				X	X	X
AcB	Albrights very stony loam, 0 to 8 percent slopes	X	C/S	X	X		X	X	X	X	X	X	X				X	X	X
AdB2	Allenwood gravelly loam and silt loam, 3 to 8 percent slopes, moderately eroded	X	C/S					X	X	X	X	X	X					X	X
AfB	Allenwood silt loam, 3 to 8 percent slopes	X	C/S					X	X	X	X	X	X						X
Ag	Alluvial land	X	C/S			X	X		X	X	X	X	X		X		X	X	
AlB	Alton gravelly loam, 3 to 8 percent slopes	X	C	X						X			X					X	X
AmC3	Allenwood gravelly silty clay loam, 8 to 15 percent slopes, severely eroded	X	C/S					X	X	X	X	X	X					X	X
AnA	Andover-Buchanan gravelly loams, 0 to 3 percent slopes	X	C/S	X	X		X	X	X	X	X	X	X				X	X	X
AnB	Akira gravelly silt loam, 0 to 8 percent slopes	X	C/S	X	X		X	X	X	X	X	X	X				X	X	X
AoB	Andover-Buchanan gravelly loams, 0 to 8 percent slopes, extremely stony	X	C/S	X	X		X	X	X	X	X	X	X				X	X	X
AvB	Amot-Rock outcrop complex, 0 to 8 percent slopes	X	C	X	X			X	X			X	X					X	X
AyD	Amot-Rock outcrop complex, 8 to 25 percent slopes	X	C	X	X			X	X			X	X					X	X
AzA	Akira and Shelmadine silt loams, 0 to 3 percent slopes	X	C/S	X			X	X	X	X	X	X	X				X	X	X
ASF	Amot-Rock outcrop complex, steep	X	C	X	X			X	X			X	X					X	X
At	Atherton silt loam, gray subsoil variant	X	S				X	X	X			X	X			X	X		X
AtB	Akira and Shelmadine very stony silt loams, 0 to 8 percent slopes	X	C/S	X	X		X	X	X	X	X	X	X				X	X	X
BfB	Bedington-Berks complex, 3 to 8 percent slopes	X	C	X	X				X	X		X	X					X	X
BhD	Buchanan very stony loam, 8 to 25 percent slopes	X	C/S	X			X	X	X	X	X	X	X				X	X	X
BkA	Berks-Weikert complex, 0 to 3 percent slopes	X	C	X	X			X		X	X	X						X	
BkB	Berks-Weikert complex, 3 to 8 percent slopes	X	C	X	X			X		X	X	X						X	X
BlC	Berks-Weikert complex, 8 to 15 percent slopes	X	C	X	X			X		X	X	X						X	X
BlD	Berks-Weikert complex, 15 to 25 percent slopes	X	C	X	X			X		X	X	X						X	X
BlF	Berks-Weikert complex, 25 to 60 percent slopes	X	C	X	X			X		X	X	X						X	X
BrB	Braceville gravelly loam, 3 to 8 percent slopes	X	C/S	X	X		X	X	X	X	X	X	X				X	X	X
BrC	Braceville gravelly loam, 8 to 15 percent slopes	X	C/S	X	X		X	X	X	X	X	X	X				X	X	X
BtA	Brinkerton-Comly silt loams, 0 to 3 percent slopes	X	C/S	X	X		X	X	X	X	X	X	X	X			X	X	
BtB	Brinkerton-Comly silt loams, 3 to 8 percent slopes	X	C/S	X	X		X	X	X	X	X	X	X	X			X	X	
BuB	Buchanan gravelly loam, 3 to 8 percent slopes	X	C/S	X	X		X	X	X	X	X	X	X				X	X	X
BvB	Buchanan gravelly loam, 0 to 8 percent slopes, extremely stony	X	C/S	X	X		X	X	X	X	X	X	X				X	X	X
CaB	Califon loam, 3 to 8 percent slopes	X	C/S				X		X	X		X	X				X	X	
CbB	Califon loam, 0 to 8 percent slopes, extremely stony	X	C/S						X	X			X					X	
CF	Cut and fill land	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA
ChB	Chenango gravelly loam, 3 to 8 percent slopes	X	C	X		X	X	X		X	X	X	X					X	X
ChC	Chenango gravelly loam, 8 to 15 percent slopes	X	C	X		X	X	X		X	X	X	X					X	X
CIA	Chippewa silt loam, 0 to 3 percent slopes	X	C/S	X	X		X	X	X	X	X	X		X		X		X	
CIB	Clarksburg silt loam, 3 to 8 percent slopes	X	C/S		X		X	X	X	X	X	X	X	X	X		X	X	
CmB	Clarksburg silt loam, 3 to 8 percent slopes	X	C/S		X		X	X	X	X	X	X	X	X	X			X	
CmB2	Comly silt loam, 3 to 8 percent slopes, moderately eroded	X	C/S	X	X		X	X		X	X	X	X					X	X
CnB	Chippewa very stony silt loam, 0 to 8 percent slopes	X	C/S	X	X		X	X	X	X	X	X		X	X		X	X	
CoB	Colkesbury-Califon channery silt loams, 0 to 8 percent slopes, very stony	X								X	X		X					X	X
CpA	Comly silt loam, 0 to 3 percent slopes	X	C/S	X	X		X	X			X	X	X					X	
CpB	Comly silt loam, 3 to 8 percent slopes	X	C/S	X	X		X	X			X	X	X					X	
CrB	Comly silt loam, 0 to 8 percent slopes, extremely stony	X	C/S	X	X			X			X	X	X					X	X
CsA	Conotton gravelly loam, 0 to 3 percent slopes	X	C/S	X	X		X	X	X	X	X	X	X					X	
DaA	Delaware fine sandy loam, 0 to 3 percent slopes	X	C			X			X				X						
DaB	Delaware fine sandy loam, 3 to 8 percent slopes	X	C			X		X	X				X						
DdB	Dekalb extremely stony sandy loam, 0 to 8 percent slopes	X	C	X				X	X	X	X	X	X					X	X
DdD	Dekalb extremely stony sandy loam, 8 to 25 percent slopes	X	C	X				X	X	X	X	X	X					X	X
DeD	Dekalb very stony loam, 8 to 25 percent slopes	X	C	X				X	X	X	X	X	X					X	X
DEF	Dekalb extremely stony sandy loam, steep	X	C	X				X	X	X	X	X	X					X	X
DeF	Dekalb very stony loam, 25 to 100 percent slopes	X	C	X				X	X	X	X	X	X					X	X
DgC	Duffield-Ryder silt loams, 8 to 15 percent slopes	X	C/S		X			X	X	X	X	X	X	X	X		X	X	X
DrA	Drifton loam, 0 to 3 percent slopes	X	C/S		X		X	X	X	X	X	X	X					X	X
DrB2	Drifton loam, 3 to 8 percent slopes, moderately eroded	X	C/S		X		X	X	X	X	X	X	X					X	X
DsB	Drifton very stony loam, 0 to 8 percent slopes	X	C/S		X		X	X	X	X	X	X	X					X	X
DuA	Duffield silt loam, 0 to 3 percent slopes	X	C/S		X			X	X	X	X	X	X	X	X		X	X	
DuB	Duffield silt loam, 3 to 8 percent slopes	X	C/S		X			X	X	X	X	X	X	X	X		X	X	
DxB	Dekalb extremely stony loam, 0 to 8 percent slopes	X	C	X				X	X	X	X	X	X					X	X
DxE	Dekalb extremely stony loam, 25 to 60 percent slopes	X	C	X				X	X	X	X	X	X					X	X
FI	Fluvaquents	X	C/S	X	X	X	X	X	X		X		X						
FkC2	Fleetwood sandy loam, 8 to 15 percent slopes, moderately eroded	X	C	X				X				X	X				X	X	X
FvD	Fleetwood very stony loam, shallow, 8 to 25 percent slopes	X	C	X				X				X	X				X	X	X
FvF	Fleetwood very stony loam, shallow, 25 to 100 percent slopes	X	C	X				X				X	X				X	X	X
FwB	Fleetwood very stony sandy loam, 0 to 8 percent slopes	X	C	X				X				X	X				X	X	X
FwD	Fleetwood very stony sandy loam, 8 to 25 percent slopes	X	C	X				X				X	X				X	X	X
Gb	Gibraltar silt loam	X	C/S		X	X	X	X	X	X			X					X	X
GlB	Gladstone gravelly loam, 3 to 8 percent slopes	X	C		X			X		X			X	X				X	
GlC	Gladstone gravelly loam, 8 to 15 percent slopes	X	C		X			X		X			X	X				X	
GmD	Gladstone gravelly loam, 8 to 25 percent slopes, very bouldery	X	C		X			X		X			X	X				X	X
GmF	Gladstone gravelly loam, 25 to 55 percent slopes, very bouldery	X	C		X			X		X			X	X				X	X
GnD	Gladstone-Parker gravelly loams, 15 to 25 percent slopes	X	C		X			X		X			X	X				X	
GP	Gravel pits	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA
GrB	Glenville silt loam, 3 to 8 percent slopes	X	C/S				X	X	X	X	X	X	X				X	X	X
HaA	Hartleton channery silt loam, 0 to 3 percent slopes	X	C	X					X	X	X	X	X					X	X
HaB2	Hartleton channery silt loam, 3 to 8 percent slopes, moderately eroded	X	C	X					X	X	X	X	X					X	X
HaC2	Hartleton channery silt loam, 8 to 15 percent slopes, moderately eroded	X	C	X					X	X	X	X	X					X	X
HaC3	Hartleton channery silt loam, 8 to 15 percent slopes, severely eroded	X	C	X					X	X	X	X	X					X	X
HeB	Hazleton very channery loam, 0 to 8 percent slopes, extremely stony	X	C	X	X			X	X	X	X	X	X					X	X
HeD	Hazleton very channery loam, 8 to 25 percent slopes, extremely stony	X	C	X	X			X	X	X	X	X	X					X	X
HgF	Hazleton-Rubble land complex, 25 to 60 percent slopes	X	C	X	X			X	X	X	X	X	X					X	X
Ho	Holly silt loam	X	C/S			X	X		X	X	X	X	X			X	X	X	
HrA	Hazleton loam, 0 to 3 percent slopes	X	C	X	X				X	X	X	X	X	X				X	X
HrB	Hazleton loam, 3 to 8 percent slopes	X	C	X	X				X	X	X	X	X	X				X	X
HtB2	Hazleton loam, 3 to 8 percent slopes, moderately eroded	X	C	X	X				X	X	X	X	X	X				X	X
HvB	Hazleton very stony loam, 0 to 8 percent slopes	X	C	X	X				X	X	X	X	X	X				X	X
HvD	Hazleton very stony loam, 8 to 25 percent slopes	X	C	X	X				X	X	X	X	X	X				X	X
Ud	Udorthents, highway complex	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA
UaB	Urban land-Udorthents, smooth complex, 0 to 8 percent slopes	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA
UbB	Urban land-Udorthents, schist and gneiss complex, 0 to 8 percent slopes	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA
UcB	Urban land-Udorthents, schist and gneiss complex, 8 to 25 percent slopes	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA
UudB	Urban land-Udorthents, shale and sandstone complex, 0 to 8 percent slopes	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA
VaF	Very stony land, 25 to 120 percent slopes	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA
VoB	Volusia channery silt loam, 0 to 8 percent slopes	X	C/S	X	X		X	X	X	X	X	X	X					X	X
VsB	Volusia very stony loam, 0 to 8 percent slopes	X	C/S	X	X		X	X	X	X	X	X	X					X	X
VtB	Volusia very stony silt loam, 0 to 8 percent slopes	X	C/S	X	X		X	X	X	X	X	X	X					X	X
VvC	Volusia very stony silt loam, 8 to 15 percent slopes	X	C/S	X	X		X	X	X	X	X	X	X					X	X
WaA	Washington silt loam, 0 to 3 percent slopes	X	S					X	X	X	X	X	X	X	X			X	X
WaD	Washington silt loam, 15 to 25 percent slopes	X	S					X	X	X	X	X	X	X	X			X	X
WaB	Washington silt loam, 3 to 8 percent slopes	X	S					X	X	X	X	X	X	X	X			X	X
WaC	Washington silt loam, 8 to 15 percent slopes	X	S					X	X	X	X	X	X	X	X			X	X
WxB2	Watson silt loam, 3 to 8 percent slopes, moderately eroded	X	C/S	X				X	X	X	X	X	X	X	X			X	X
W	Water	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA
Wa	Wayland silt loam	X	S				X	X	X	X	X	X	X	X	X			X	X
WeB	Weikert and Klinesville channery silt loams, 3 to 8 percent slopes	X	C/S		X			X	X	X	X	X	X	X	X			X	X
WkD	Weikert-Berks complex, 15 to 25 percent slopes	X	C/S		X			X	X	X	X	X	X	X	X			X	X
WkB	Weikert-Berks complex, 3 to 8 percent slopes	X	C/S		X			X	X	X	X	X	X	X	X			X	X
WkC	Weikert-Berks complex, 8 to 15 percent slopes	X	C/S		X			X	X	X	X	X	X	X	X			X	X
WKE	Weikert and Klinesville soils, steep	X	C/S		X			X	X	X	X	X	X	X	X			X	X
WfD	Wellsboro channery silt loam, 15 to 25 percent slopes	X	C/S	X	X		C	X	X	X	X	X	X					X	X
WfB	Wellsboro channery silt loam, 3 to 8 percent slopes	X	C/S	X	X		C	X	X	X	X	X	X				X	X	X
WfC	Wellsboro channery silt loam, 8 to 15 percent slopes	X	C/S	X	X		X	X	X	X	X	X	X				X	X	X
WmD	Wellsboro very stony silt loam, 8 to 25 percent slopes	X	C/S	X	X		X	X	X	X	X	X	X				X	X	X
WtD	Wurtsboro channery loam, 15 to 25 percent slopes	X	C/S				X	X	X			X	X	X	X			X	X
WtB	Wurtsboro channery loam, 3 to 8 percent slopes	X	C/S				X	X	X			X	X	X	X			X	X
WtC	Wurtsboro channery loam, 8 to 15 percent slopes	X	C/S				X	X	X			X	X	X	X			X	X
WtE	Wurtsboro extremely stony loam, 3 to 8 percent slopes	X	C/S				X	X	X			X	X	X	X			X	X
WtD	Wurtsboro extremely stony loam, 8 to 25 percent slopes	X	C/S				X	X	X			X	X	X	X			X	X
WxB	Wurtsboro very stony loam, 0 to 8 percent slopes	X	C/S				X	X	X			X	X	X	X			X	X
WyD	Wyoming gravelly loam, 15 to 25 percent slopes	X	C	X				X	X			X			X			X	X
WyF	Wyoming gravelly loam, 25 to 60 percent slopes	X	C	X				X	X			X			X			X	X

LIMITING SOIL CHARACTERISTICS LEGEND

Map Symbol	Soil Name	Cutbanks Cave	Corrosive to Concrete/ Steel	Droughty	Easily Erodible	Flooding	Depth to Saturated Zone/ Seasonal High Water Table	Hydric / Hydric Inclusions	Low Strength / Landslide Prone	Slow Percolation	Piping	Poor Source of Topsoil	Frost Action	Shrink - Swell	Potential Sinkhole	Ponding	Wetness	Min. Depth to Bedrock	pH
UudB	Urban land-Udorthents, limestone complex, 0 to 8 percent slopes	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	X	
UudD	Urban land-Udorthents, limestone complex, 8 to 25 percent slopes	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	X	
UupB	Urban land-Udorthents, schist and gneiss complex, 0 to 8 percent slopes	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	X	X
UupD	Urban land-Udorthents, schist and gneiss complex, 8 to 25 percent slopes	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	X	X
UusB	Urban land-Udorthents, shale and sandstone complex, 0 to 8 percent slopes	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	X	
VaF	Very stony land, 25 to 120 percent slopes	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	X	X
VoB	Volusia channery silt loam, 0 to 8 percent slopes	X	C/S	X	X		X	X	X	X	X	X	X					X	X
VsB	Volusia very stony loam, 0 to 8 percent slopes	X	C/S	X	X		X	X	X	X	X	X	X					X	X
VtB	Volusia very stony silt loam, 0 to 8 percent slopes	X	C/S	X	X		X	X	X	X	X	X	X					X	X
VvC	Volusia very stony silt loam, 8 to 15 percent slopes	X	C/S	X	X		X	X	X	X	X	X	X					X	X
WaA	Washington silt loam, 0 to 3 percent slopes	X	S					X	X	X	X	X	X	X	X			X	X
WaD	Washington silt loam, 15 to 25 percent slopes	X	S					X	X	X	X	X	X	X	X			X	X
WaB	Washington silt loam, 3 to 8 percent slopes	X	S					X	X	X	X	X	X	X	X			X	X
WaC	Washington silt loam, 8 to 15 percent slopes	X	S					X	X	X	X	X	X	X	X			X	X
WxB2	Watson silt loam, 3 to 8 percent slopes, moderately eroded	X	C/S	X				X	X	X	X	X	X	X	X			X	X
W	Water	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA
Wa	Wayland silt loam	X	S				X	X	X	X	X	X	X	X	X			X	X
WeB	Weikert and Klinesville channery silt loams, 3 to 8 percent slopes	X	C/S		X			X	X	X	X	X	X	X	X			X	X
WkD	Weikert-Berks complex, 15 to 25 percent slopes	X	C/S		X			X	X	X	X	X	X	X	X			X	X
WkB	Weikert-Berks complex, 3 to 8 percent slopes	X	C/S		X			X	X	X	X	X	X	X	X			X	X
WkC	Weikert-Berks complex, 8 to 15 percent slopes	X	C/S		X			X	X	X	X	X	X	X	X			X	X
WKE	Weikert and Klinesville soils, steep	X	C/S		X			X	X	X	X	X	X	X	X			X	X
WfD	Wellsboro channery silt loam, 15 to 25 percent slopes	X	C/S	X	X		C	X	X	X	X	X	X					X	X
WfB	Wellsboro channery silt loam, 3 to 8 percent slopes	X	C/S	X	X		C	X	X	X	X	X	X				X	X	X
WfC	Wellsboro channery silt loam, 8 to 15 percent slopes	X	C/S	X	X		X	X	X	X	X	X	X				X	X	X
WmD	Wellsboro very stony silt loam, 8 to 25 percent slopes	X	C/S	X	X		X	X	X	X	X	X	X				X	X	X
WtD	Wurtsboro channery loam, 15 to 25 percent slopes	X	C/S				X	X	X			X	X	X	X			X	X
WtB	Wurtsboro channery loam, 3 to 8 percent slopes	X	C/S				X	X	X			X	X	X	X			X	X
WtC	Wurtsboro channery loam, 8 to 15 percent slopes	X	C/S				X	X	X			X	X	X	X			X	X
WtE	Wurtsboro extremely stony loam, 3 to 8 percent slopes	X	C/S				X	X	X			X	X	X	X			X	X
WtD	Wurtsboro extremely stony loam, 8 to 25 percent slopes	X	C/S				X	X	X			X	X	X	X			X	X
WxB	Wurtsboro very stony loam, 0 to 8 percent slopes	X	C/S				X	X	X			X	X	X	X			X	X
WyD	Wyoming gravelly loam, 15 to 25 percent slopes	X	C	X				X	X			X			X			X	X
WyF	Wyoming gravelly loam, 25 to 60 percent slopes	X	C	X				X	X			X			X			X	X

THE SOIL LIMITATIONS SHALL BE ADDRESSED AS FOLLOWS:

LIMITATIONS AND RESOLUTIONS:

LIMITATION: CUTBANKS CAVE, LOW STRENGTH - CUTBANKS HAVE POTENTIAL TO CAVE AND MANY SOILS ARE LOW STRENGTH.
RESOLUTION: CONTRACTOR SHALL BE AWARE OF POTENTIAL ISSUES AND FOLLOW OSHA GUIDELINES FOR OPEN TRENCHING. LOW SOIL STRENGTH IS NOT A CONCERN DUE TO THE NATURE OF THE PROPOSED PROJECT. UTILITY TRENCHING WILL NOT BE ADVERSELY EFFECTED BY POOR SOIL STRENGTH.

LIMITATION: CORROSIVE TO STEEL - SOILS CORROSIVE TO STEEL.
RESOLUTION: IF STEEL PIPE IS USED RUST PROTECTION BY COATINGS AND/OR USE OF CATHODIC PROTECTION IS RECOMMENDED

LIMITATION: DROUGHTY - SOILS EXHIBITING A POOR MOISTURE-HOLDING CAPACITY, WHICH MAY LIMIT THE VEGETATIVE STABILIZATION ABILITY OF THE SOIL.
RESOLUTION: FOR DROUGHTY SOILS, CONTRACTOR TO REFER TO "TABLE 11-3: PLANT TOLERANCES OF SOIL LIMITATION FACTORS" TO SELECT APPROPRIATE VEGETATION. EROSION CONTROL BLANKETS CAN HELP HOLD SOIL PARTICLES IN PLACE AND RETAIN SOIL MOISTURE, PROMOTING SEED GERMINATION.

LIMITATION: EASILY ERODIBLE
RESOLUTION: SPECIAL ATTENTION SHALL BE GIVEN TO MAINTAINING EXISTING VEGETATION IN EASILY ERODIBLE SOILS, TO THE EXTENT POSSIBLE. EASILY ERODIBLE SOILS WITHIN 50 FEET OF A SURFACE WATER SHOULD BE BLANKETED. WHEREVER ERODIBLE SOILS ARE PRESENT, OR WHERE THERE IS NOT A SUFFICIENT VEGETATIVE FILTER STRIP BETWEEN THE WATERBAR AND A RECEIVING SURFACE WATER, THE WATERBAR SHOULD BE PROVIDED WITH A TEMPORARY PROTECTIVE LINER.

LIMITATION: FLOODING - ANY SOIL SUBJECT TO INUNDATION DURING A 2-YEAR/24HR STORM EVENT.
RESOLUTION: (SEE WET SOILS)

LIMITATION: HIGH WATER TABLE, POTENTIALLY HYDRIC - HIGH WATER TABLE IS TO BE EXPECTED AND MANY OF THE SOILS ARE POTENTIALLY HYDRIC.
RESOLUTION: FOLLOW E&S PLAN WITH REGARD TO PUMPING AND DEWATERING. DISCHARGE OF SEDIMENT LADEN WATER IS PROHIBITED UNLESS WITHOUT FIRST PASSING THRU A "PUMPED WATER FILTER BAG".

LIMITATION: HYDRIC / HYDRIC INCLUSIONS - A SOIL THAT IS SATURATED, FLOODED, OR PONDED LONG ENOUGH DURING THE GROWING SEASON TO DEVELOP ANAEROBIC-CONDITIONS. WHEN SUCH A SOIL IS LOCATED IN AN AREA THAT HAS HYDROPHYTIC VEGETATION AND WETLAND HYDROLOGY, A WETLAND IS PRESENT.
RESOLUTION: HYDRIC SOILS THAT ARE DELINEATED TO THE EXTENT POSSIBLE. STAGING AREAS SHOULD BE LOCATED 50 FEET FROM THE EDGE OF WETLAND. MOVEMENT OF VEHICLES ACROSS WETLAND MUST BE MINIMIZED. WHERE VEHICLES NEED TO CROSS WETLANDS, THE USE OF TEMPORARY TIMBER MATS SHALL BE USED DUE TO THE POTENTIAL FOR RUTTING. TRENCH PLUGS SHALL BE INSTALLED TO PREVENT THE TRENCH FROM DRAINING THE WETLANDS OR CHANGING THE HYDROLOGY.

LIMITATION: LOW STRENGTH / LANDSLIDE PRONE - SOILS WITH LOW STRENGTH HAVE A LESSER ABILITY TO RESIST SLOPE FAILURE, SUCH AS SLUMPING, FLOWING, ETC. MATERIALS WITH LOW SHEAR STRENGTH ARE MORE SUSCEPTIBLE TO LANDSLIDES AND EMBANKMENT FAILURES.
RESOLUTION: PRECAUTIONS SHOULD BE TAKEN TO PREVENT SLOPE FAILURES DUE TO IMPROPER CONSTRUCTION PRACTICES SUCH AS OVER-STEEPENING AND OVERLOADING SLOPES, REMOVAL OF LATERAL SUPPORT, AND FAILURE TO PREVENT SATURATION OF SLOPES. SETBACKS SHOULD COMPLY WITH THE STANDARDS CONTAINED IN CHAPTER 16 OF THE, "PADEP - EROSION AND SEDIMENT CONTROL PROGRAM MANUAL." UNLESS IT CAN BE SHOWN THAT PROPOSED CUTS AND FILLS DO NOT POSE A HAZARD TO PUBLIC SAFETY OR SURFACE WATERS. ALSO, ROAD FILL MATERIAL WILL LIKELY NEED TO BE IMPORTED IN AREAS WHERE SOILS HAVE LOW STRENGTH.

LIMITATION: SLOW PERCOLATION - PERMEABILITY RATE LESS THAN OR EQUAL TO 0.2 INCHES/HR.
RESOLUTION: BMPS TO BE INSPECTED AFTER RUNOFF EVENTS, MAKE SURE THERE IS AN ADEQUATE AREA FOR PUMPED WATER DISCHARGE.

LIMITATION: PIPING
RESOLUTION: PIPING POTENTIAL IN THE SOIL WILL BE MINIMIZED BY THE USE OF TRENCH PLUGS. FURTHERMORE, ANY PLANNED EMBANKMENTS OR PERMANENT IMPOUNDMENTS SUSCEPTIBLE TO PIPING SHALL UTILIZE ANTI-SEEP COLLARS OR FILTER DIAPHRAMS ON OUTLET BARRELS.

LIMITATION: LIMITED AVAILABLE TOPSOIL
RESOLUTION: ANY EXCAVATED TOPSOIL WILL BE STOCKPILED AND REUSED. IF NECESSARY, ADDITIONAL TOPSOIL WILL BE BROUGHT ON-SITE.

LIMITATION: FROST ACTION - THE LIKELIHOOD OF UPWARD OR LATERAL EXPANSION OF THE SOIL CAUSED BY THE FORMATION OF SEGREGATED ICE LENSES, OR FROST HEAVE, AND THE SUBSEQUENT COLLAPSE OF THE SOIL AND LOSS OF STRENGTH ON THAWING, WHICH CAN DAMAGE ROADS, BUILDINGS, AND OTHER STRUCTURES AS WELL AS PLANT ROOTS.
RESOLUTION: PRECAUTIONS ARE NEEDED TO PREVENT DAMAGE TO ROADWAYS.

LIMITATION: WET SOILS - SOME SOILS MAY EXHIBIT A HIGH WATER TABLE OR PONDING.
RESOLUTION: IF HIGH WATER TABLE IS ENCOUNTERED, TRENCH DEWATERING WILL BE EMPLOYED.

LIMITATION: MIN. DEPTH TO BEDROCK - SOME SOILS HAVE A MIN DEPTH OF BEDROCK LESS THAN THE THE TYPICAL TRENCH DEPTH OF 7 FT (ASSUMES 3 FT OF COVER, PIPE DIAMETER, AND BEDDING DEPTH OF 1 FT).
RESOLUTION: CONTRACTOR TO PLAN FOR ROCK REMOVAL DURING TRENCHING OPERATIONS. FOR SEDIMENT BARRIERS REQUIRING STAKING (E.G. SILT FENCES, ETC.), DEPTH TO BEDROCK LESS THAN 2 FT CAN IMPACT ABILITY TO DRIVE STAKE AND/OR POLE (FOR SUPER SILT FENCE). IN THESE AREAS, COMPOST FILTER SOCK OR OTHER APPLICABLE BMP NOT REQUIRING STAKING MAY BE CONSIDERED.

LIMITATION: pH - SOME SOILS HAVE pH VALUES LESS THAN 5.5, WHICH MAY LIMIT THE VEGETATIVE STABILIZATION ABILITY OF THE SOIL.
RESOLUTION: AS IS TYPICAL FOR THESE TYPE OF SOILS, LIME WILL BE ADDED AS NEEDED TO PRODUCE VEGETATIVE STABILITY.

LIMITATION: LOW FERTILITY
RESOLUTION: IF NECESSARY TO PRODUCE VEGETATIVE STABILITY OF THE SOIL, FERTILIZER OR NUTRIENT SUPPLEMENTS WILL BE ADDED TO THE SOIL TO PRODUCE VEGETATIVE STABILITY. FOR LOW FERTILITY SOILS, CONTRACTOR TO REFER TO "TABLE 11-3: PLANT TOLERANCES OF SOIL LIMITATION FACTORS" TO SELECT APPROPRIATE VEGETATION. EROSION CONTROL BLANKETS SHOULD ALSO BE CONSIDERED IN SOIL CONDITIONS THAT MAKE REVEGETATION DIFFICULT (E.G. LOW FERTILITY). WHEN INSTALLED PROPERLY, EROSION CONTROL BLANKETS CAN HELP HOLD SOIL PARTICLES IN PLACE AND RETAIN SOIL MOISTURE, PROMOTING SEED GERMINATION.

PROFILE

THE LOCATION OF TRENCH PLUGS AND WATERBARS ARE INTENDED TO BE USED AS A GUIDELINE ONLY. EXACT LOCATIONS TO BE DETERMINED IN THE FIELD AS DIRECTED BY THE CHIEF INSPECTOR.

WATERBAR SPACING	
SLOPE (%)	SPACING (FT)
<5	250
5 - 15	150
>15 - 30	100
>30	50

TRENCH PLUG SPACING	
SLOPE (%)	SPACING (FT)
<5	1000
5 - 15	500
>15 - 25	300
>25 - 35	200
35 - 100	100
>100	50

TRENCH PLUGS ARE REQUIRED AT ALL WATERBODY AND WETLAND CROSSINGS REGARDLESS OF SLOPE.

WATERSHED LEGEND

SYM	DESCRIPTION
CWF	COLD WATER FISHERY
EV	EXCEPTIONAL VALUE
HQ	HIGH QUALITY
TSF	TROUT STOCKING FISHERY
WWF	WARM WATER FISHERY

WATERBODY CROSSING METHOD LEGEND

BX = CONVENTIONAL BORE CROSSING
CD = COFFERDAM CROSSING; SEE FIG. 24, 24A, 24B, & 24C
DPX = DAM-AND-PUMP CROSSING; SEE FIG. 20
DX-NF = DRY CROSSING IF NO FLOW
FX = FLUME CROSSING; SEE FIG. 19
HDD = HDD CROSS