GENERALIZED DESCRIPTION OF MAP UNITS IN THE COLEEN QUADRANGLE, ALASKA

Map symbol	Name	Description	Distribution and thickness	Topography and vegetation	Permafrost	Susceptibility to frost action	Drainage: Surface	Drainage: Subsurface (if thawed)	Susceptibility to erosion	Suitability for construction uses	Problems
		U N C O N S O L I D A T E D						D E P O S I T S			
Qfg	Flood plain gravel	Gravel and sand with minor amounts of silt and clay. Gravel clasts well rounded to subrounded of diverse rock types derived from Brooks Range. Imbricate structure of cobbles and pebbles common.	Present along the Sheenjek and Coleen Rivers; thickness unknown.	Flood plain, flat with braided drainage channels; relief generally less than 10 feet. Vegetation generally absent.	Generally free of permafrost near surface. Probably present at some (unknown) depth.	Low	Good	Good	High because of proximity to river channels.	Excellent, primarily as coarse aggregate; presence of some chert objectionable.	Subject to erosion and flooding during times of high runoff (spring breakup). Depth of river scour must be determined before pipe or cable is buried in gravel. Local aufeis conditions occur. Shallow ground-water table would be a problem during excavation.
Qc	Colluvium, undifferentiated	Poorly sorted, sand, silt and clay derived from local upslope sources. May contain minor amounts of coarse material. Generally consists of a mixture of soil and other fine-grained materials that are subject to slow downslope creep when thawed.	Present at only one small locality on north edge of map west of the Sheenjek River; probably less than 20 feet thick.	Generally smooth slopes along the base of steeper slopes; low shrubs and grasses common.	----------do----------	High	Poor	Poor	High	Unsuitable	Occasionally subject to surface movement. Generally this material is present at or near the base of steeper slopes and represents the accumulation of debris derived by slow flowage from upslope.
Qsm	Solifluction mantle	----------do----------	Widespread throughout map area; less than 5 feet thick on upslope margins, thickening to as much as 50 feet downslope.	Generally smooth, but occasionally lobate slopes; marked by characteristic "horsetail" drainage patterns; low shrubs and grasses common.	----------do----------	High	Poor	Poor	High, subject to creep when thawed.	Unsuitable	This unit is similar to the Qc, colluvium, except that it commonly mantles a slope rather than occurring predominantly at the base of slopes. This is the most widespread unit in the map area, occupying perhaps as much as 50 percent of it.
Qvg	Vegetated gravel	Gravel and sand with minor amounts of silt and clay. Gravel clasts well rounded to subrounded. Commonly mantled with 1 to 3 feet of carbonaceous silt.	Local deposits along the major rivers and creeks; less than 50 feet thick.	Low, flat terraces bordering and sometimes surrounded by younger flood plain gravels (Qfg). Almost everywhere covered by tundra or low brush vegetation.	----------do----------	Low, except in silt-rich cover	Good	Good	High, because of proximity to major rivers.	Good when stripped of thin silt overburden. However, materials would generally have to be thawed before being excavated. Presence of some chert objectionable.	Flooding and erosion common during high runoff. Shallow ground-water table limits depth of excavation.
Qtg	Terrace gravel	Gravel and sand with minor amounts of silt and clay. Gravel clasts well rounded to subrounded. Commonly mantled with 1 to 3 feet of carbonaceous silt.	Occurs as low terraces along the Sheenjek and Coleen Rivers, as well as Pass and Strangle Woman Creeks; probably 10 to 20 feet thick.	Generally flat terrace bounded by scarps of 4 to 10 feet high; tundra and brush vegetation.	Present within 2 feet of surface; ice wedge(?) polygons observable on the terraces on the east side of the Coleen River.	High in silty overburden; low in underlying gravel and sand.	Fair to poor	Good	High in areas next to river flood plains.	Fair; silty overburden and permafrost are problems.	Flooding and erosion in areas near active flood plains. Shallow ground-water table limits depth of excavation.
Qog	Outwash gravel	Gravel and sand with minor amounts of silt and clay. Gravel clasts well rounded to subrounded. Mantled with 1 to 5 feet of carbonaceous silt.	Occurs as terraces along the Sheenjek River and Pass and Strangle Woman Creeks; 20 to 40 feet thick.	Flat terrace bounded by scarps 6 to 15 feet high; much of the old terraces are covered by solifluction mantle (Qsm) along Pass and Strangle Woman Creeks; tundra vegetation.	Present within 2 feet of surface.	Low, except in silt-rich cover	Good	Good	Low	----------do----------	Permafrost must be thawed before gravel can be excavated.
Qt_1	Till	Sandy, bouldery gravel. Gravel clasts subrounded. Covered with 1 to 5 feet of silt.	Occurs at one locality on the north boundary of the map area west of the Sheenjek River; 5 to 20 feet thick.	Smooth slopes; tundra vegetation.	----------do----------	High in silty overburden	Fair	Good	Low	----------do----------	----------do----------
Qs	Sand and silt	Carbonaceous sand, silt and clay of multiple origin; primarily residual, eolian and colluvial in nature.	Present in the low, flat areas around Grayling Lake, near the mouth of Monument Creek and along the lower stretches of Strangle Woman Creek; probably 20 to 50 feet thick.	Very flat slopes; tundra vegetation, low spruce trees.	Present within 2 feet of surface; ice wedge(?) polygons observable on the surface of this material; particularly common around Grayling Lake.	High	Poor	Poor	High due to thawing around lake margins and near edge of river flood plains.	Unsuitable	High ice-content makes this material subject to extreme settlement and flowage even on gentle slopes if enclosed ice melts.
Qat	Altiplanation terrace	Generally flat surfaces cut on metamorphic bedrock mantled with thin veneer of rock rubble.	Present only in the extreme eastern part of the map area; rock rubble less than 5 feet thick.	Flat or very slightly sloping surfaces; tundra vegetation.	Ice in voids and fractures in bedrock.	Low	Good	Good	Low	Unsuitable	
		B E D R O C K									
JPc	Chert	Green, gray and red chert, argillite and shale.	Occurs as a few small outcrops in the western part of the map area; thickness unknown.	Gentle to moderately steep slopes; tundra vegetation.	Where soils are in excess of 2 feet in thickness, ice-rich permafrost is probably present in the soils. Ice in voids and fractures in consolidated rock.	Low	Good	Good	Low	Poor; may have some use as riprap and coarse fill.	
Jqs	Quartzite and shale	Dark-gray phyllite and schistose siltstone; dark-gray very fine grained slightly foliated quartzite; sandstone to granule conglomerate. Minor gray and green sandstone.	Present in two localities near the mouth of Strangle Woman Creek along the south border of the map area; thickness unknown.	Moderate to steep slopes; tundra vegetation.	----------do----------	Low	Good	Good	Low	----------do----------	
Jm	Mafic rocks	Gabbro, basalt and quartz diorite sills.	Exposed almost exclusively in the western part of the map area.	Moderate to steep slopes; tundra vegetation.	----------do----------	Low	Good	Good	Low	Riprap and coarse fill	
Psc	Shale and chert	Black silt and clay shale; red and green argillite; red, green, and black chert; fine-grained pyritic calcareous sandstone with minor amount of K-feldspar.	Exposed in western part of map area associated with mafic rocks, may be as much as 2,000 feet thick.	----------do----------	----------do----------	Low	Good	Good	Low	----------do----------	
PMl and Ml	Lisburne Group	Gray cherty bioclastic limestone, dark-gray fine-grained laminated limestone and black laminated chert.	Occurs as scattered outcrops throughout map area; thickness unknown.	Steep to moderately steep slopes; generally bare of vegetation.	----------do----------	Low	Good	Good	Low	Limestone excellent for riprap, coarse fill, base course and surface course.	
Msq	Shale and quartzite	Black silty shale and black chert; light gray very fine- to fine-grained laminated sandstone.	Occurs as a single outcrop south of Grayling Lake; less than 500 feet thick.	----------do----------	----------do----------	Low	Good	Good	Low		Of too limited extent to be of much use.
Ms	Siltstone	Black laminated silicified siltstone; chert; black shaly phosphatic limestone with horn corals.	Outcrops in low hills between the Sheenjek and Coleen Rivers; about 1,200 feet thick.	----------do----------	----------do----------	Low	Good	Good	Low	Could be used for riprap and coarse fill.	
Mky	Kayak Shale	Black shale, black laminated siltstone and chert; orange-weathering crinoidal limestone.	Exposed in only two localities in the area between the Sheenjek and Coleen Rivers; about 500 feet thick.	----------do----------	----------do----------	Low	Good	Good	Low	Unsuitable	
Mss	Sandstone	Coarse-grained conglomeratic quartz sandstone with minor K-feldspar. Cement is carbonate, silica, hematite.	Occurs in only one locality north of Strangle Woman Creek; up to 300 feet thick.	----------do----------	----------do----------	Low	Good	Good	Low		Of too limited extent to be of much use.
MDkk	Kekiktuk and Kanayut Conglomerates, undifferentiated	Quartz-chert pebble conglomerate and sandstone.	Occurs on the divide between Pass Creek and the Coleen River; thickness unknown.	----------do----------	----------do----------	Low	Good	Good	Low	Conglomerate good for riprap and coarse fill.	
Dk	Kanayut Conglomerate	Light-gray to yellow fine- to medium-grained quartzite and quartz-chert pebble conglomerate; greenish-gray very fine grained thin-bedded sandstone.	Occurs only in the extreme western part of the map area; thickness unknown.	Gentle to moderately steep slopes; generally bare of vegetation or some tundra.	----------do----------	Low	Good	Good	Low	Conglomerate and sandstone good for riprap and coarse fill.	
Ds	Shale and sandstone	Olive- and brown-weathering shale and siltstone and black shale; interbedded limonitic partly calcareous fine- to medium-grained sandstone; fine-grained micaceous graywacke and chert-slate pebble conglomerate.	----------do----------	----------do----------	----------do----------	Low	Good	Good	High	----------do----------	Locally contains limestone unit (Dsl).
Dsl	Limestone	Orange- and gray-weathering argillaceous limestone.	Occurs as thin beds within the shale and sandstone unit (Ds) in western part of map area.	----------do----------	----------do----------	Low	Good	Good	High		Of too limited extent to be of much use.
Ꞓsc	Schistose sandstone	Ferruginous coarse-grained sandstone and conglomerate; minor green calcareous sandstone.	Occurs on the low divide between Pass Creek and the Coleen River; thickness unknown.	----------do----------	----------do----------	Low	Good	Good	High	Riprap and coarse fill.	
Ꞓq	Quartzite	Light-gray to pale-orange, fine- to very fine-grained orthoquartzite, partly limonitic, locally micaceous; minor schistose ferruginous and greenish-gray silt shale.	Present in the eastern part of the map area in the drainage of Strangle Woman Creek; thickness unknown.	----------do----------	----------do----------	Low	Good	Good	High	----------do----------	
Ꞓm	Metamorphic rocks	Semischist and phyllite, dark-gray, micaceous, silty and gray to greenish-gray very fine-grained quartzose; some laminated phyllite; includes thin layers of greenstone (Ꞓmg).	----------do----------	----------do----------	----------do----------	Low	Good	Good	High	----------do----------	