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Topographic base map from:
U.S. Geological Survey topographic maps
Nebesna C-1 (1955 - minor revisions 1963)
Nebesna D-1 (1952 - minor revisions 1967)
Nebesna D-2 (1955 - minor revisions 1978)
Nebesna D-3 (1955 - minor revisions 1982)
Projection:
Universal Transverse Mercator Zone 7 North
Datum:
North American Datum of 1927

TABLE OF ENGINEERING-GEOLOGIC PROPERTIES

Map Label	Geologic Units	Surface drainage	Susceptibility to frost action	Permafrost and thaw stability	Slope stability	Suitability for construction	Potential engineering considerations
A1	Qa Qaa	Alluvium Active-floodplain Alluvium	Well-drained near steep stream banks and where water table is deep; seasonally flooded	Subject to deep dry freezing where coarse-grained and water table is deep; subject to intense frost action where silty	Unfrozen to discontinuously frozen with low to moderate ice content where silty; can be thaw unstable where perennially frozen and silty	Highly susceptible to lateral erosion and collapse near active channels	Excellent source of clean, sandy gravel aggregate and clean fill material; can be poorly graded; well-drained sand and gravel provide excellent foundation
A2	Qa1	Inactive-floodplain Alluvium	Generally poor due to shallow water table and shallow permafrost; moderate to good on natural levees and crevasse silt	Generally subject to intense frost action in fine-grained cover deposits and channel fills; not susceptible where coarse grained	Unfrozen in younger areas to discontinuous in older areas, generally with low to moderate ice content; high ice content in frozen organic sand and silt channel fills; thaw unstable where frozen and ice rich	Highly susceptible to lateral erosion and collapse near active channels; subject to differential settlement when thawed	Where thawed, excellent source of sandy gravel aggregate beneath silty surface layer; presence of permafrost and shallow water can limit potential as source of sandy gravel aggregate and suitability for foundation
A3	Qab	Abandoned-floodplain Alluvium	Generally poor due to widespread, shallow permafrost	Generally subject to intense frost action in fine-grained cover deposits and channel fills; not susceptible where coarse grained	Generally frozen with low to moderate ice content; high ice content in frozen surface peat; thaw unstable where frozen and ice rich	Susceptible to lateral erosion and collapse near active channels; subject to differential settlement when thawed	Widespread permafrost and shallow water table can limit potential as source of sandy gravel aggregate and suitability for foundation
A4	Qat Qqt	Terrace Alluvium	Good near descending scarps; fair to poor away from scarps; subject to local flooding; subject to groundwater emergence	Intense in fine-grained cover sediments and silty channel fills; not susceptible where coarse grained	Continuously to discontinuously frozen with low to moderate ice content; high ice content in frozen surface peat; thaw unstable where frozen and ice rich	Susceptible to lateral erosion and collapse near active channels; frozen zones subject to differential settlement when thawed	Excellent source of sand and gravel beneath fine-grained cover sediments, although shallow permafrost can limit depth of excavation; bedrock may be shallow in strath terrace; excellent foundation where thawed; subject to groundwater emergence
A5	Qaf	Alluvial-fan Deposits	Generally good, except in frozen distal zones	Intense in fine-grained cover deposits and silty zones, otherwise not frost susceptible	Unfrozen to discontinuously frozen, except in fine grained distal zones where permafrost is present; ice content low to moderate; thaw unstable where fine grained	Subject to lateral erosion and collapse near active channels	Engineering qualities variable but can be good, depending on rock quality upstream; generally unsuitable as aggregate source in proximal and distal areas due to numerous boulders, high silt content, and permafrost; moderate suitability for foundations
A6	Qar Qfs	Re transported Eolian Silt and Sand Slackwater Flood Deposits	Generally poor; can be seasonally flooded	Intense	Permafrost is discontinuous to continuous with moderate to high ice content; thaw unstable	Highly susceptible to gully and piping when vegetation is removed; subject to differential settlement when permafrost is preserved	Source of organic material for landscaping; generally unsuitable as an aggregate source; can be suitable for foundations when permafrost is preserved
F	Qfb Qfb Qfb	Jökulhlaup Deposits	Generally excellent to good, except moderate to poor in areas of groundwater emergence or where shallowly frozen	Intense in fine-grained cover sediments; otherwise, not susceptible	Unfrozen to discontinuously frozen with low to moderate ice content; generally thaw stable, except unstable where silty	Subject to lateral erosion and collapse near active channels	Good source of sand and gravel; large flood boulders locally abundant; excellent foundation material
C1	Qc Qca Qcd Qcf Qcg Qch Qci Qcj Qck Qcl	Colluvium Snow-avalanche Deposits Debris-flow Deposits Colluvium and Alluvium Tectonically Deformed Qcf Rock-cluster Deposits Rock-fall Deposits Talus Block Rubble	Generally good	Fine-grained cover sediments susceptible	Unfrozen to discontinuously frozen with low to moderate ice content; generally thaw stable, except where silty	Generally stable unless toe or margin of slope is removed; locally subject to sloughing and sliding; subject to snow avalanching and rock falls	Generally unsuitable as aggregate source because numerous large, angular fragments require special handling; rubble sheets can be suitable as a aggregate and rip-rap source locally; where frozen, can require ripping or blasting; poor foundation where boulders are loose and unsuitable to good foundation where coarse and fine fractions are mixed and stable
C2	Qcl	Landslide Deposits	Generally good	Fine-grained cover sediments susceptible	Unfrozen to discontinuously frozen with low to moderate ice content; generally thaw unstable where fine grained	Generally unstable; subject to rapid to slow downslope movement	Generally unsuitable for foundation and construction because of slope instability; suitability as an aggregate source is variable, depending on bedrock character
E1	Qe Qel	Eolian Deposits Loess	Generally good, except poorly drained where frozen	Intense where moist to wet; low where dry	Generally discontinuously to continuously frozen, except on upper south-facing slopes; moderate to high ice content on lower south-facing and on north-facing slopes; thaw unstable where ice content is moderate to high	Highly susceptible to gully and piping; subject to differential settlement upon thawing where frozen and ice rich	Source of organics and fine fractions for landscaping and mining; makes good foundation where thawed and dry
E2	Qes	Eolian Sand	Generally good, except poorly drained where covered with frozen silt	Generally unsusceptible, except in silty cover deposits	Generally unfrozen to frozen, except silty cover sediments are discontinuously to continuously frozen and locally ice rich	Highly susceptible to gully and deflation	Possible source of fines for landscaping and mining; makes good foundation where thawed and dry; compaction difficulties affect its utility as a foundation material
G1	Qgph Qgfy Qgfo Qgfp	Till of Holocene Glaciation Till of Donnelly Glaciation Till of Delta Glaciation Pre-Late Pleistocene Glacial Drift	Generally good on upland surfaces and poor in depressions	Generally low susceptibility where well drained; moderate to intense where matrix is silty and in silty slopewash deposits in depressions	Unfrozen to discontinuously frozen with low to moderate ice content, depending on silt content of matrix; generally thaw stable, except can be thaw unstable in silty tills and silty kettle fillings	Generally stable where frozen or dry; subject to instability where fine-grained tills are thawed and ice content is moderate to high	Highly variable but may be good local source of mixed coarse and fine fractions for fill; local sources of water-washed sand and gravel; good foundations where thawed and dry
G2	Qgfy Qgfo	Esker-kame Deposits of Donnelly Age Esker-kame Deposits of Delta Age	Generally good	Generally low susceptibility where drained	Unfrozen to discontinuously frozen with low ice content	Generally stable, except subject to raveling where steep gravel slopes are undercut	Highly variable but can be good source of water-washed sand and gravel; good foundation where thawed and dry
G3	Qgfy Qgfo Qgfp	Glacial Outwash of Holocene Age Glacial Outwash of Late-Donnelly Age Glacial Outwash of Donnelly Age Glacial Outwash of Delta Age	Good	Generally unsusceptible; can be intense in silty cover deposits	Unfrozen to discontinuously frozen with low ice content	Subject to lateral erosion and collapse near active channels; cut faces subject to raveling	Excellent source of sand and gravel; excellent foundation where thawed and well drained
L1	Qlb Qld	Lake Bottom Deposits Delta Deposits	Very poor; subject to seasonal flooding	Intense	Discontinuous to continuous permafrost with moderate to high ice content; thaw unstable	Near active channels subject to lateral thermo-erosion and collapse	Generally unsuitable as an aggregate source; generally unsuitable for foundations
L2	Qlr	Deposits of Ice-Shielded Ridges	Generally good, but variable	Intense if wet or moist	Unfrozen to discontinuously frozen with low to moderate ice content; thaw unstable where frozen and ice rich	Subject to differential settlement where frozen and ice rich	Possible low-volume source of sandy gravel and organic material for landscaping; generally unsuitable for foundations
H	Qhf	Artificial Fill	Generally good	Only where fine grained; otherwise not susceptible	Unfrozen to discontinuously frozen with low to moderate ice content; generally thaw stable, except where silty	Subject to lateral erosion and collapse near active channels	Fill material used for runways, taxiways, ramps, roads, building foundations, embankments, and artificial levees may be suitable for construction; may not be suitable for all uses
P	Qp	Swamp Deposits	Generally very poor; subject to seasonal flooding	Intense	Discontinuous to continuous permafrost with moderate to very high ice content; thaw unstable	Subject to lateral erosion and collapse near active channels; subject to subsidence when thawed	Source of organic material for landscaping; generally unsuitable as an aggregate source; generally unsuitable for foundations
B	b P (Qc) (Qd)	Bedrock Thinly Covered Bedrock	Generally poor, except where highly broken	Low, except where rock is highly weathered or fractured	Generally thaw stable, except where ice forms in extensive fracture spaces	Generally stable, except where orientation of joints, fractures, or foliation facilitate failure	Can be good source for crushed aggregate and rip rap where rock is hard, fresh, and not highly fractured; variable suitability as a foundation material depending on the character of the bedrock

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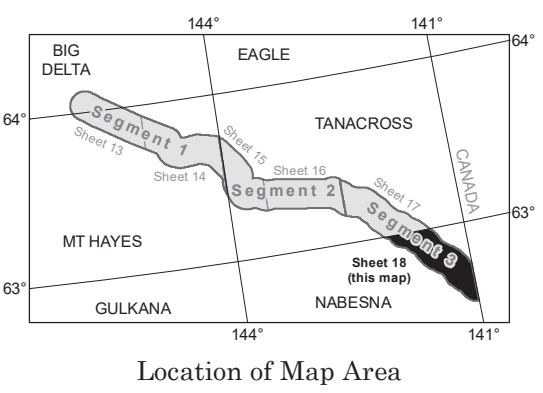
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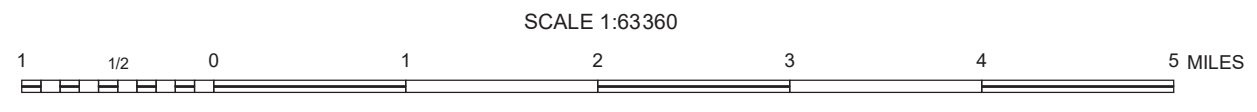
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ENGINEERING-GEOLOGIC MAP, ALASKA HIGHWAY CORRIDOR, DELTA JUNCTION, ALASKA, TO THE CANADA BORDER: SEGMENT 3 EAST

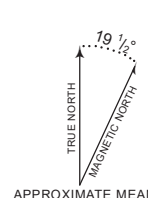


Location of Map Area

by
R.D. Reger¹ and T.D. Hubbard²
2021



NABESNA C-1 - CONTOUR INTERVAL 100 FEET
NABESNA D-1, D-2, AND D-3 - CONTOUR INTERVAL 50 FEET
NABESNA C-1 - SUPPLEMENTAL CONTOUR INTERVAL 10 FEET
NABESNA C-1, D-1, AND D-3 - DATUM IS MEAN SEA LEVEL
NABESNA D-2 - NATIONAL GEODETIC VERTICAL DATUM OF 1929



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