Project:

Location:

Design By: ____ Checked By: ____

SECTION 1: PAVEMENT DESIGN

1. Strength Design: (Ref: TM 5-822-5 unless otherwise noted)

a. Road Class = _ (Table 1 or 2 in TM 5-822-2)

b. Traffic Category = ___ (Para 3-2a & b)

c. Design Index = _ (Para 3-2c)

d. CBR = __ (Laboratory Test Results)

e. Design Thickness = ____ inches (Fig. 8-1 - Flexible Pavement Design Curve for Roads Streets, Open Storage and Parking Areas.

2. Frost Design: (Ref: TM 5-822-5)

a. Limited Subgrade Frost Penetration Method (LSFP): (NOTE: All quantities in parentheses are to be assumed if more exacting values are not known or are not available.)

(1) Design Freezing Index = ___ (Fig 18-2)

(2) Base Course Water Content = (4%)

(3) Dry Unit Weight of Base = ___ pcf

(4) Total Frost Penetration = a = ____ inches (Fig 18-3)

(5) Surface Course Thickness = p = ____ inches (Table 6-1)

(6) Base Thickness for Zero Frost Penetration into Subgrade C = a - p = ____ inches

(7) Ratio of Subgrade Water Content to Base Water Content = r = _

(8) Design Base Thickness = b = ____ inches (Fig 18-4)

(9) Subgrade Frost Penetration = s = ____ inches (Fig 18-4)

(10) Design Thickness = b + p = ____ + ____ = ____ inches

(11) Depth of Subgrade Preparation = 1/2(a)-(b+p) = ____ inches

b. Reduce Subgrade Strength Method (RSS):

(1) Design Index = _ (from 1c above)

(2) Soil Frost Group = __ (Table 18-2)

(3) Frost Area Soil Support Indice = ___ (Table 18-3)

(4) Design Thickness = ____ inches (Enter Fig. 8-1, Flexible Pavement Design Curve for Roads, Streets, Open Storage and Parking Areas with Frost Area Soil Support Indice as the abscissa)

(5) Depth of Subgrade Preparation = 1/2(a)-RSS Design Thickness = ____ - ____ = ____ inches

The frost design is controlled by either 2a(10) or 2b(4), whichever is less, but in no case will the pavement section be less than that required by the strength design. For this pavement the **(RSS)(LSFP)** method governs for the frost design.

3. Final Pavement Section: The final pavement design section will be the thicker of the Strength Design section (1) and the governing section for the Frost Design method (2). For this pavement, the **(RSS)(LSFP)(STRENGTH)** design provides the stronger section.

"BITUMINOUS CONCRETE (ROAD)(DRIVE)(PARKING AREA) PAVEMENT SECTION":

___" Bituminous Concrete Wearing Course
Tack Coat
___" Bituminous Concrete (Wearing)(Binder) Course
Prime Coat
____" Dense Graded Aggregate (DGA) Base Course
____" Rapid Drainage Material (RDM) Base Course
____" Dense Graded Aggregate (DGA) Base Course

SECTION 2: SUBGRADE AND SUBDRAINAGE REQUIREMENTS FOR INCORPORATION INTO PLANS & SPECIFICATIONS

1. Subgrade Preparation Requirements:

a. Compaction Requirements: (Ref: TM 5-822-5, Design Index = __ , Fig 2)

(1) **COHESIVE SOILS: (Soils with PI > 5 and LL > 25)**

Percent Compaction:	(Fig 2) Depth Below Pavement Surface (inches)	Total Pavement Thickness (inches)	Req'd Depth of Subgrade Compaction to % Shown (inches)	Depth of Subgrade Compaction In-place (6" max)	Depth of Subgrade Removal and Recompaction (inches)
100%				---	
95%					
90%					
85%					
80%					

Total depth of cohesive subgrade removal & recompaction: _____

(2) **COHESIONLESS SOILS: (Soils with PI ≤ 5 and LL ≤ 25)**

Percent Compaction:	(Fig 2) Depth Below Pavement Surface (inches)	Total Pavement Thickness (inches)	Req'd Depth of Subgrade Compaction to % Shown (inches)	Depth of Subgrade Compaction In-place (12" max)	Depth of Subgrade Removal and Recompaction (inches)
100%				---	
95%					
90%					
85%					
80%					

Total depth of cohesionless subgrade removal & recompaction: _____

(3) (In-situ CBR tests)(Interpretation of drilling data) indicate a natural subgrade density of approximately (__%)(85%) maximum laboratory density (ASTM D 1557, Method C). Since there (is)(is not) sufficient overlying base course and bituminous surfacing to meet the higher pavement compaction percentage requirements (90% to 100%), in-place compaction of the in-situ subgrade (will only be required to a depth of 6-inches.)(and its removal and recompaction will be required to the depths below pavement subgrade elevation as shown in the above tables for cohesive and cohesionless soils.)

b. Depth of Subgrade Preparation due to Frost Penetration: Refer to paragraph 3. [No subgrade preparation due to frost penetration is required since the governing frost design thickness plus its subgrade preparation depth is less than the strength design thickness.][The governing frost design method is **(RSS, para 2b(5), Section 1)(LSFP, para 2a(11), Section 1)** with a required depth of subgrade preparation of ____ -inches. (The depth of frost penetration is small enough that special subgrade preparation is not necessary.)(Therefore, the subgrade needs to be excavated to a depth of ____ -inches, thoroughly mixed to insure a uniform blend of subgrade soils and recompacted. This blending of all subgrade soils types is necessary to insure uniform frost heave resulting from the penetration of frost into the subgrade soils.)]

c. Required Subgrade Preparation:

(Refer to para 3, Section 1 & para 1a & b, Section 2)

Subgrade Earthwork Required	Depth Below Pavement Subgrade Elevation: Cohesive Depth (in)	Cohesive % (*)	Cohesionless Depth (in)	Cohesionless % (*)
Removal/Replacement Of Subgrade Soils				
Recompacted thickness of blended soils:				
Recompacted thickness without blending:				
Subgrade Compacted In-Place:				

(* Note: Percentage of Laboratory Max Density ;ASTM D 1557, Method C.)

2. Subdrainage Requirements: The soils at the proposed construction sites are both frost susceptible and moisture sensitive. Therefore with the high in-place soil moisture contents and the high seasonally perched water conditions encountered at these sites, the subgrade soils will require a pavement subdrainage system. The subdrains will consist of a 6-inch minimum diameter pipe surrounded by a minimum of 3 inches of ASTM C33, #57 crushed stone on the bottom, 6 inches (minimum) on each side, and sufficient crushed stone above the top of the pipe to extend to the Rapid Drainage Material (RDM) Base Course

within the pavement structure. The crushed stone filter material will be completely enveloped in a filter fabric. Refer to Specification **Section 02710**: **SUBDRAINAGE** for filter fabric requirements.

3. SUBGRADE STABILIZATION NOTE: Subgrade stabilization is required in all paved areas. The stone stabilization layer, consisting of **[ASTM C33, #2 crushed stone][RDM (#57) base course material]** shall extend a minimum of 5 feet beyond all edges of the paved areas. The Contractor shall remove any surface mud and place the stabilization fabric directly on the undisturbed subgrade. The fabric shall extend up to the top of the sidewalls of the excavation required to install the stone stabilization layer and a minimum of 2 feet beyond the top of the excavated area. If more than one roll width of fabric is required, overlap the two widths a minimum of 2 feet. Do not drive directly on the fabric. Back dump the stone stabilization material onto the stabilization fabric. Spread out the aggregate in the direction of any overlap of the fabric while maintaining a minimum of 12 inches of aggregate cover over the fabric at all times. All of the above work shall be done with tracked vehicles. Pneumatic-tired vehicles shall be kept to the minimum necessary to completely place the stone stabilization material on the stabilization fabric. The Contractor shall operate on the stabilization layer at all times and shall minimize contamination of the surface with mud, soil, or construction debris. If the top of the stabilization layer is no longer essentially free draining at the time of placement of the overlying pavement base course layers, the Contractor shall remove the top 6 inches within these areas and replace it with satisfactory stone stabilization material at no additional cost to the Government. "Free draining" shall mean that when a 1 gallon jug of water is poured slowly onto the surface of the stabilization layer, that quantity of water will drain through the surface within 1 minute; leaving a wetted surface area not greater than 1 square foot. Until the stabilization layers can be tied into the permanent subdrainage system, excavate temporary drainage trenches along the low end of the perimeter of the work areas to insure drainage of surface or subsurface water which collects in the stabilization layer. Refer to Specification **Section 02241: DGA AND RDM BASE COURSES** for stabilization fabric requirements.