## Design Considerations **Choosing an Appropriate Rock Anchor**

## **Design Considerations**

## **Choosing an Appropriate Soil Anchor**

s the anchor working load

less than 50 kips?



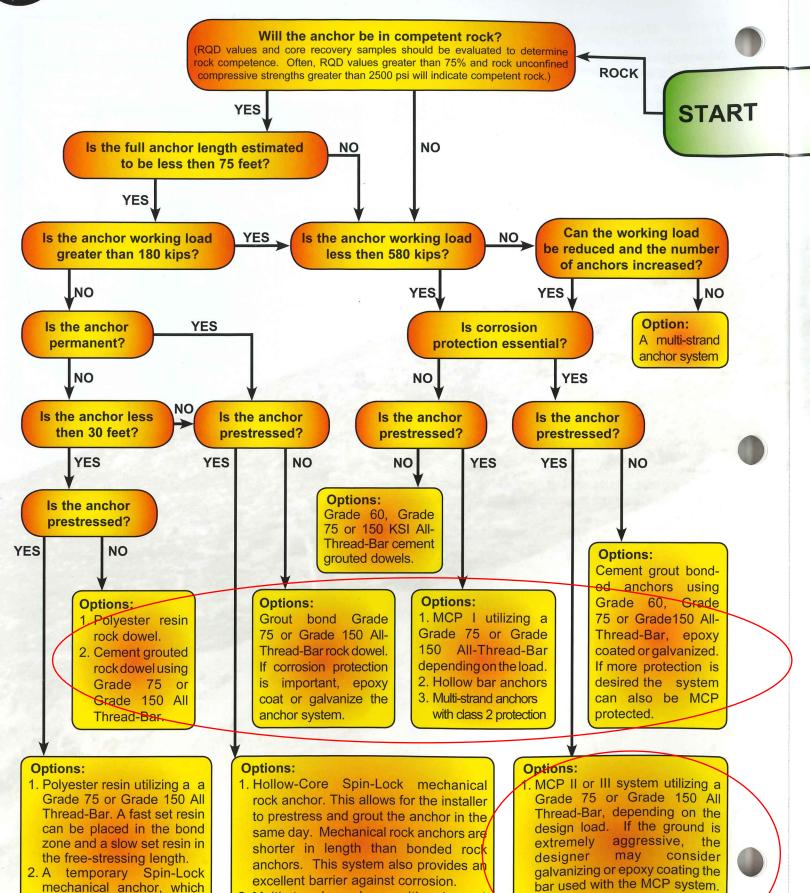
Option: A multi-strand

levels of corrosion protection depending on the

Multi-strand anchors with class 1 corrosion protection.

aggressivity of the soil environment.

anchor system



2. Multi-strand anchors with class 1

corrosion protection.

2. Multi-strand system with class 1

corrosion protection.

SOIL Will the anchor be in NO YES rock or soil? NO Is the anchor Is the anchor working load prestressed? less then 580 kips? YES YES Can the load be Is corrosion reduced and the number protection essential? of anchors increased? NO YES YES Is corrosion protection essential? **YES** NO Options: . Grade 75 bar with a Manta Ray or Sting YES Is the anchor Is the anchor Ray anchor assembly prestressed? prestressed? Grout bonded Grade 60 or Grade 75 All NO YES NO Tread Rebar dowel. . Hollow Bar Anchor Options: Options: Grade 60, Grade 1. MCP I utilizing a Grade 1. Grout bonded epoxy coated or 75 or 150 All-75 or Grade 150 Allgalvanized Grade 75 bar with the option of MCP type protection. Thread cement Thread-Bar depending Galvanized Manta Ray or Sting Ray grouted dowel. on the anchor load. 2. Hollow bar anchors earth anchor system. **Options: Options:** 1. MCP II or III system utilizing a Grade 75 or Grade 150 Grade 60, Grade 75 or Grade 150 All-Thread-Bar All-Thread-Bar. Williams MCP systems have variable grouted dowel, either epoxy coated or galvanized. If

## Notes:

This flow chart is meant to be a quick reference. A designer should consider that flow charts such as this can not incorporate every variable relevant to the design of earth anchors. For additional help in choosing an anchor system please contact your nearest Williams representative.

- 1. Certain rock strata may require consolidation grouting prior to rock anchor installation in order to minimize the difficulties associated with grouting anchors in fractured rock.
- For low temperature and high impact applications, Williams can manufacture Spin-Lock anchors using ASTM A193 grade B7 material or an ASTM A320 grade L7 material.
- The term MCP refers to Williams (M)ultiple (C)orrosion (P)rotection anchor systems, which are shown on pages 20-24.
- Most of Williams All-Thread Bars come in stock lengths of 50 ft. For longer anchors, Williams Stop-Type Couplings are often used for a mechanical connection between bars. Williams couplers develop 100% of the bars ultimate strength
- 5. Williams can manufacture anchors using stainless steel bars if anchoring into highly aggressive rock or soil.

more protection is desired, the system can also be

sleeved and pre-grouted as a MCP anchor system/



allows for a shorter length.

3. Hollow bar anchors

