Design Considerations

Choosing an Appropriate Rock Anchor

- Will the anchor be in competent rock?
- Is the anchor working load greater than 150 kips?
- Is the load prestressed?
- Can the working load be reduced and the number of anchors increased?
- Is corrosion protection essential?

Options:
1. Polyester resin rock dowel.
2. Cement grouted rock dowel using Grade 75 or Grade 150 All-Thread-Bar.
3. Grade 75 bar with a Manta Ray or Sting Ray anchor assembly.
4. Grout bonded Grade 60 or Grade 75 All-Thread Rebar dowel.
5. Grade 60, Grade 75 or 150 KSI All-Thread-Bar cement grouted dowels.
6. Grout bonded epoxy coated or galvanized Grade 75 bar with the option of MCP type protection.
7. Grout bonded epoxy coated or galvanized Grade 60 or Grade 75 All-Thread-Bar epoxy coated or galvanized.
8. Galvanized Manta Ray earth anchor system.
10. Multi-strand anchor system...

Choosing an Appropriate Soil Anchor

- Is the anchor working load less than 50 kips?
- Is the anchor prestressed?
- Can the load be reduced and the number of anchors increased?
- Is corrosion protection essential?

Options:
1. Grade 75 bar with a Manta Ray or Sting Ray anchor assembly.
2. Grout bonded Grade 60 or Grade 75 All-Thread Rebar dowel.
3. Grade 60, Grade 75 or 150 All-Thread-Bar cement grouted dowels.
4. Grade 60, Grade 75 or 150 All-Thread-Bar epoxy coated or galvanized.
5. Galvanized Manta Ray earth anchor system.
7. Multi-strand anchor system...

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.
2. For low temperature and high impact applications, Williams can manufacture Spin-Lock anchors using ASTM A-193 grade B7 material or an ASTM A-320 grade L7 material.
3. The term MCP refers to Williams (Multiple Corrosion Protection) anchor systems, which are shown on pages 18-22.
4. 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.