

HYDROVIEW No 2

A Water Industry VIEWPOINT from HYDROGOLD
INT'L WATER MANAGEMENT CONSULTANTS



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DESIGN AND CONSTRUCT CONTRACTS

Introduction...

In the Hydroview No 1, we broke the path to a successful irrigation project into 5 phases:



These fundamental phases can be combined contractually in a number of ways.

It is common (normal) to combine the Product and Installation into the one Supply and Install Contract.

Sometimes the Design, Product and Installation are combined into a "Design and Construct" (D 'n' C) Contract.

The Turnkey Contract combines Planning, Design, Product and Installation and sometimes the Maintenance phases.

In this issue of Hydroview, we review these different options from the Owner's perspective.

1 SEPARATE CONTRACTS FOR EACH PHASE

The Owner can choose to implement the project by assigning each of the above phases to separate parties. This give them the maximum control over their project. It also has the highest in-house project management cost but can lead to a lower Total Cost of Ownership.

Typically the Owner's staff do not have the specialist knowledge of a Water Management Consultant. Including the Water Management Consultant during the planning phase will result in better planning and downstream savings.

2 SUPPLY AND INSTALL CONTRACT

This combines the Product and Installation Phases. It is the most common format since it has been proven time and again to be the most effective in most circumstances.

There are several advantages to this type of Contract:

The Owner Retains Control - By employing the Irrigation Consultant to do the Design, the Owner retains control over the quality of the project. The Irrigation Technical Specifications specify the Products and Installation Standards. The Owner is in control of the bid process, not the Contractors.

Reduced Overall Project Cost - The Contractor makes a profit on both the supply of the products and the installation. This way, their overall margin can be lower. They also get a higher discount for their higher volume of trade. The Owner (typically) has one project but a good Contractor is continually involved with many projects. Their industry knowledge and networking also help.

Combined Responsibility for Product Quality and Installation - This is a key issue. When there is a failure on an irrigation system, the prime question is "Was it a product failure or was it installation?". By combining both the Product Supply and Installation under the one contract, the Owner is able to instruct the Contractor to "Fix it". It is then up to the Contractor to take up the product issue (if any) with the Supplier. One big headache removed from the Owner's responsibility!

The Contractor is Responsible for the Bill of Quantities - This is important for controlling the budget and a smooth running project. In a Lump Sum project (the most common type), the Contractor is responsible for ensuring that the project is completed without product surpluses and that there are sufficient materials to complete the project ("overs and unders"). Material take-offs (for the same design) can vary depending on the installation methods, allowances for minor on-site changes, wastage and shrinkage (kind word for theft).

Project Maxims - Words Project Managers Live By - Part 1

The first 90% of a project takes 90% of the time the last 10% takes the other 90%.

Fast - cheap - good: you can have any two.

You can build a reputation on what you're going to do.

If you fail to plan, you are planning to fail.

There's never enough time to do it right first time but there's always enough time to go back and do it again.

It takes one woman nine months to have a baby. It cannot be done in one month by impregnating nine women.

Continued...

Project Maxims - Words Project Managers Live By - Part 2

Nothing is impossible for the person who doesn't have to do it.

You can con a Contractor into committing to an impossible deadline, but you cannot con him into meeting it.

The conditions attached to a promise are forgotten, only the promise is remembered.

A verbal contract isn't worth the paper it's written on.

What is not on paper has not been said.

If it happens once it's ignorance, if it happens twice it's neglect, if it happens three times it's policy.

Meetings are events at which minutes are kept and hours are lost.

3 DESIGN AND CONSTRUCT CONTRACT

In a Design and Construct project, the Owner appoints a Contractor to do the ***Design***, supply the ***Products*** and do the ***Installation***.

This form of contract takes the concept of combining the supply of Products and Installation one step further. The prime objective of this is to eliminate the up-front design costs but the common outcome is significantly higher downstream costs.

By giving control of the Design to the Contractor, the Owner loses control of the quality of the Design, Products and Installation standards. The Contractors are in control during the tender process (see below).

There are ***many pitfalls to this approach:***

Design What are the qualifications and experience of the designer used by the Contractor? The Owner's interests are secondary to the Contractor's.

Products There is a tendency to select lower quality products that will last for the Defects Liability Period but not the expected (say) 20-year life of the system.

Installation Who checks the installation standards? Who checks the quality control?

"Apples to Apples" Comparison

When tendering such a project, the Owner will be offered a different design from each Contractor. There may be 3 different designs, none of which really does what the Owner wants (or needs). And comparing them can be so difficult that the Owners often just select the lowest price without regard to the quality and the downstream costs. The Owner has lost control to the Contractors.

Note The normal Contractor approach with this scenario is to not provide full design details to the Owner. Aside from making it more difficult for assessments, it also allows the Contractor to retrospectively tailor the irrigation system to suit the negotiated budget.

In a picture...

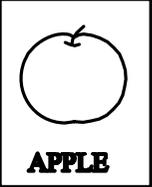
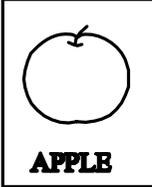
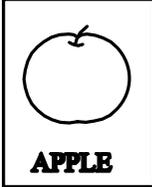
COMPARING DESIGN AND CONSTRUCT OPTIONS

THE BEST OPTION

INDEPENDENT DESIGN BY CONSULTANT.
CONTRACTORS CONSTRUCT TO SAME DESIGN.

WITH OUR DOCUMENTATION, YOU ARE IN CONTROL.
GET THE SYSTEM YOU NEED AT THE RIGHT PRICE.



\$ 900,000	\$ 925,000	\$ 950,000
		
APPLE	APPLE	APPLE
CONTRACTOR 1	CONTRACTOR 2	CONTRACTOR 3

THE ALTERNATIVE

EACH CONTRACTOR DESIGNS AND CONSTRUCTS
DIFFERENTLY. DIFFICULT TO COMPARE.

CONTRACTORS ARE IN CONTROL.
NO SYSTEM MEETS YOUR NEEDS.



\$ 1,000,000	\$ 1,050,000	\$ 1,200,000
		
PEAR	ORANGE	BANANA
CONTRACTOR 1	CONTRACTOR 2	CONTRACTOR 3



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DRAWING No 415-A4
DESIGN & CONSTRUCT OPTIONS
"APPLES TO APPLES COMPARISON"



Example of a Design and Construct Project - Singapore's Changi Airport - Terminal 3

This US\$ 1.2 billion terminal opened on 9 January 2008 featuring a 15 m (50 ft) high, 300 m (1,000 ft) long Green Wall. Hydrogold did the design for this high pressure 68.92 Bar (1,000 PSI) mist irrigation system for the Contractor.

In this instance, the Contractor used the reputation of Hydrogold to enhance their credibility with the Owner to win their trust and the Design and Construct contract.

4 TURNKEY PROJECT

In this alternative, the Owner places the Contractor in full control of the first 4 phases of the project (Planning, Design, Product and Installation) and sometimes the Maintenance. There needs to be an exceptionally high level of trust for this to work. With this scenario we have:

- ‡ Lower Up-Front Cost to the Owner
- ‡ Maximum profit for the Contractor
- ‡ Minimal Control by the Owner on Quality
- ‡ Highest Total Cost of Ownership

5 IN SUMMARY...

At the beginning (Planning Phase) of the project, the Owner has several options on how to structure the project. By separating each phase of the project, the Owner has maximum control. Combining phases under the one Contractor (typically) leads to lower up-front costs. However, the lack of control (typically) results in a shorter system life and higher maintenance costs (a higher Total Cost of Ownership). Finding the balance is the key.

The optimum choice (typically) is to combine the Product and Installation into a Supply and Install Contract. When the contract values (and therefore risks) are low (typical in Residential Irrigation), Design and Construct contracts are often effective. However, ***as contract values (and risks) increase, it becomes critical that the Owner retain more control and not use a Design and Construct contract.***