

. . . silo and intake structures . . .

New innovative silo and intake structures save capital costs and operational costs whilst significantly reducing the risk of malfunction and water ingress.

Dermot F M Knight

Ascon Africa

PrEng CEng BSc(Eng) FICE FZwIE MIEZ MSAICE

Allan G Benn

HHO Engineers

PrEng CEng BSc(Eng) GDE MStructE M(SA)ICE



FEED MILL

Machava, Maputo Mozambique

24m x 8m x 20m high industrial steel building to house new mill equipment.
Alterations to the existing warehouse.
New concrete foundations and lift pit inside existing floor.
Supports to new delivery conveyor.



ELEVATED CONCRETE SILO BASES

Maputo, Mozambique

Concrete base slabs for 5 new 5,000 ton grain silos.



WHEAT MILL STRUCTURE

Antananarivo, Madagascar

Steel framed building for new mill equipment.
Designed for 195km/hr hurricane winds.
Corrosion protection for 2 months at sea and site storage.





ELEVATOR TOWER

Maputo Mozambique

Steel frame structure for
elevator tower on concrete
piles..



WEIGHBRIDGE STRUCTURE

Maputo, Mozambique

Twin concrete chambers and conveyor pits.



GEOTECHNICAL ASSESSMENTS

Maputo, Mozambique

Assessment of ground conditions for new raft and piled foundations.

WHEAT MILL BUILDING AND BIN STRUCTURES

Socimol Maputo Mozambique

Concrete and steel framed building for new mill.

Support frame for conditioning and product bins.

Concrete loading platform.

Concrete piles and elevator pits.



Costs and savings in Silo design

1. RING BEAM

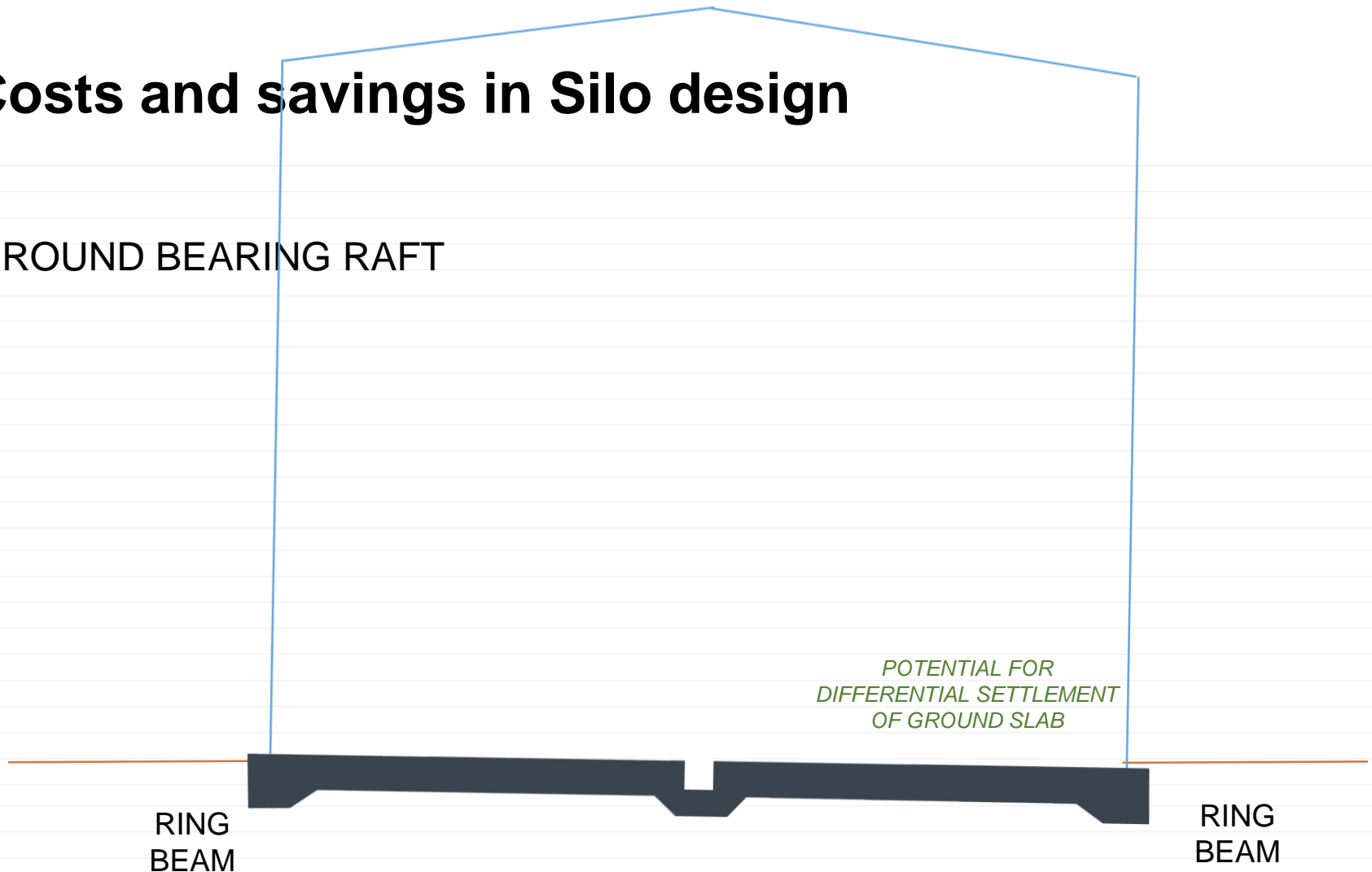


RETURN CONVEYOR TUNNEL

*BURIED TUNNEL IS AT RISK OF WATER
INGRESS AND MAKES ACCESS TO THE
CONVEYOR DIFFICULT FOR
INSTALLATION, OPERATION AND
MAINTENANCE*

Costs and savings in Silo design

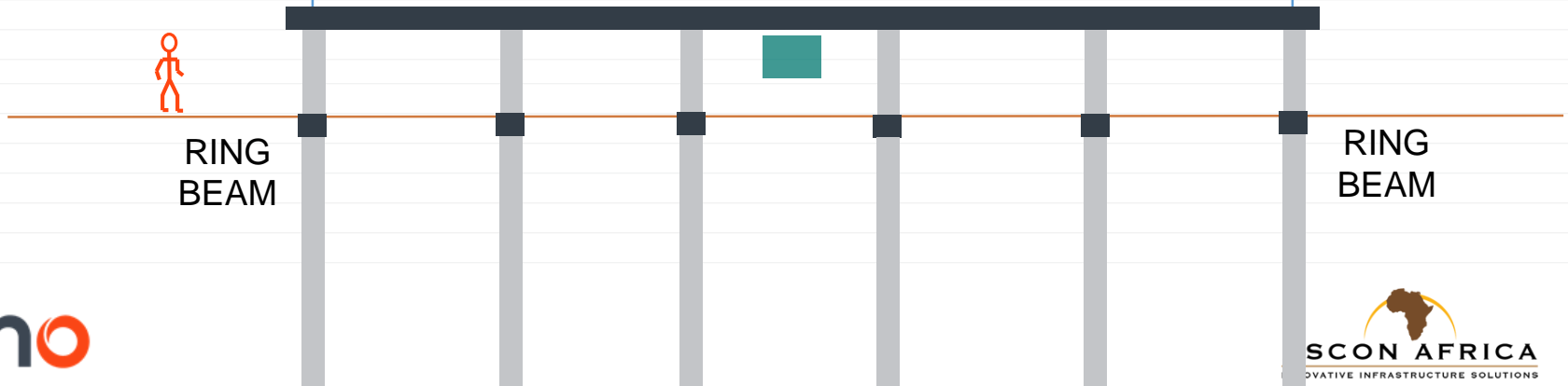
2. GROUND BEARING RAFT



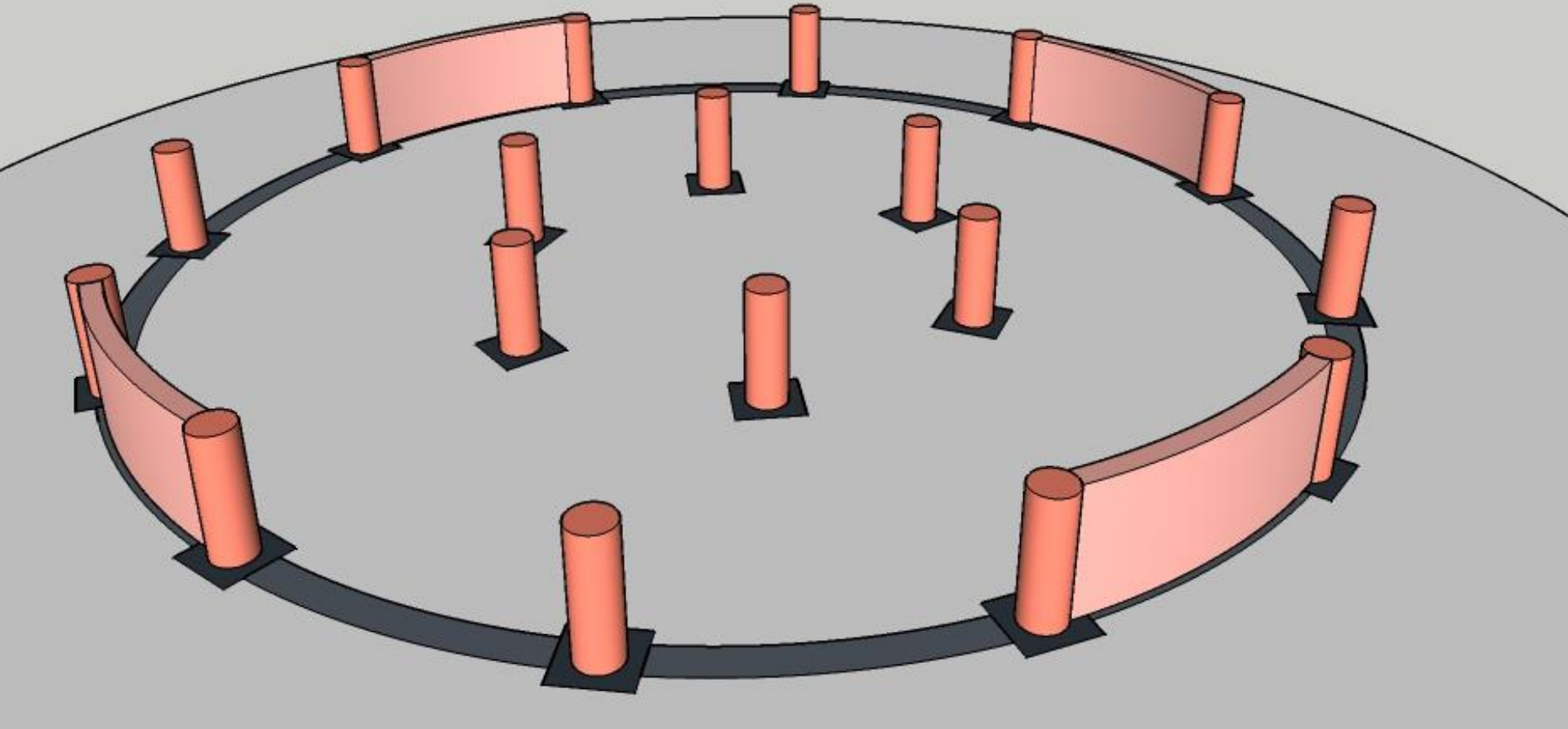
Costs and savings in Silo design

3. ELEVATED BASE

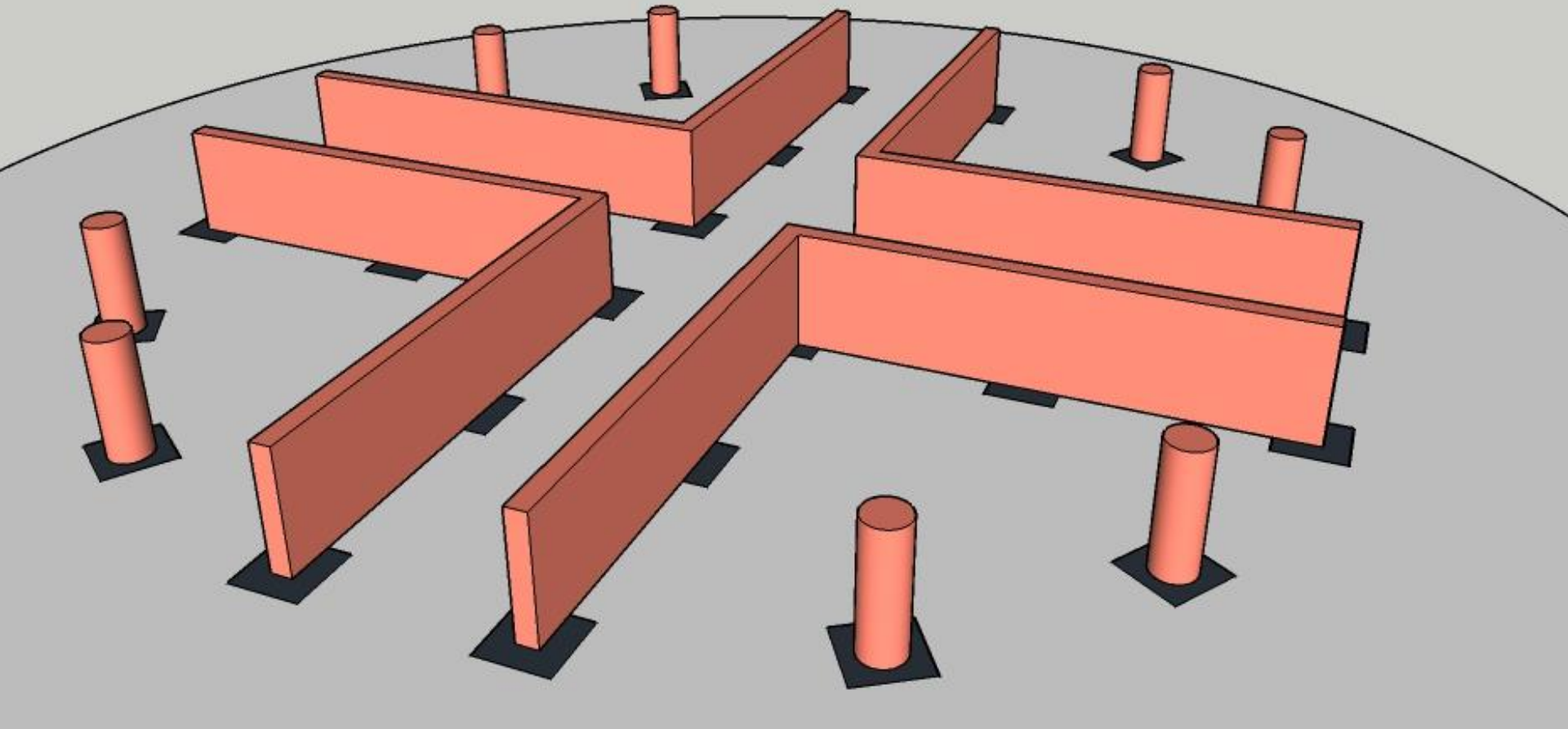
AN ELEVATED BASE ALLOWS EASY ACCESS TO THE RETURN CONVEYOR FOR INSTALLATION, OPERATION AND MAINTENANCE. IF WELL DESIGNED, THE ELEVATED BASE IS NO MORE EXPENSIVE THAN ONE AT GROUND LEVEL, BUT HAS MANY ADVANTAGES.



*THERE ARE A NUMBER OF COLUMN ARRANGEMENTS
FOR AN ELEVATED BASE SLAB*



WALLS PROVIDE LATERAL STABILITY
AND VERTICAL SUPPORT



THE ELEVATED SLAB CAN CONTAIN
AERATION CHANNELS





ELEVATED BASE SLABS DURING CONSTRUCTION



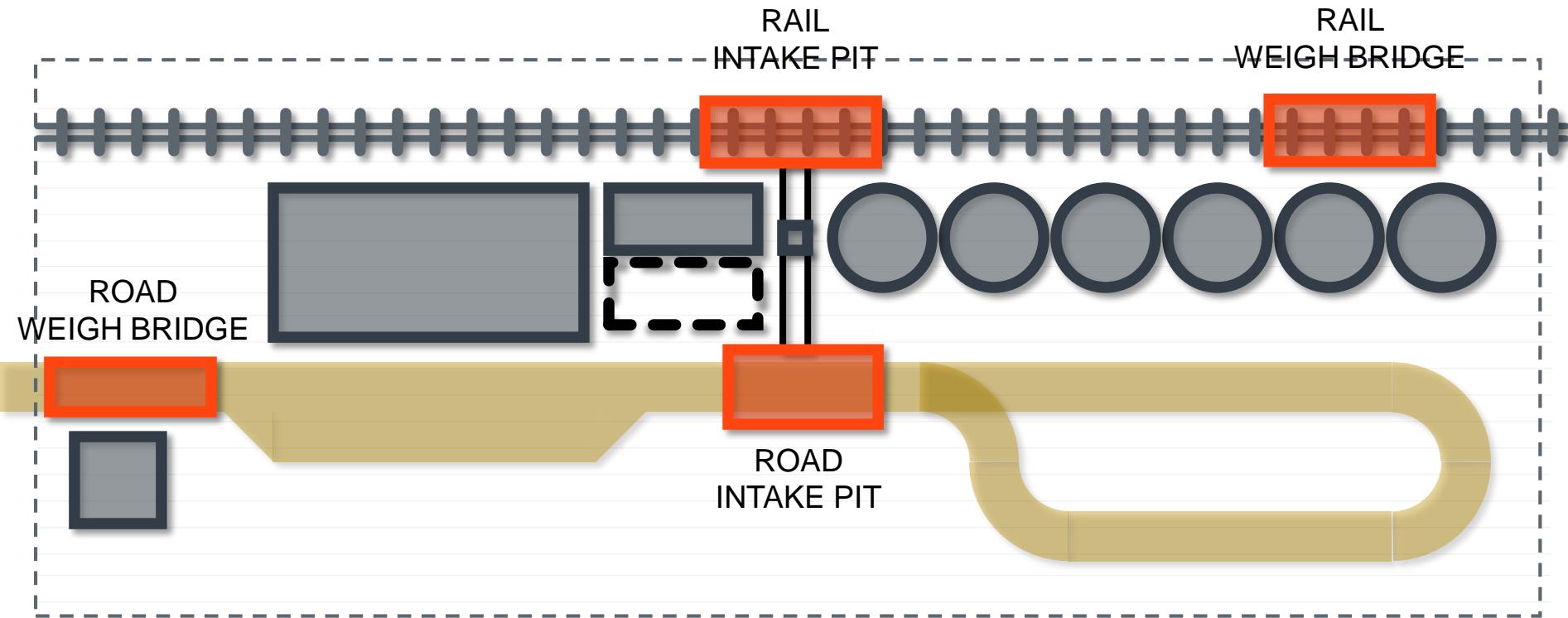
THE COMPLETED ELEVATED BASE SLABS
WITH SILOS IN OPERATION



VIDEO SHOWING CLEAN AND CLEAR SPACE UNDER THE
BASE SLABS WITH EASY ACCESS TO THE RETURN
CONVEYORS



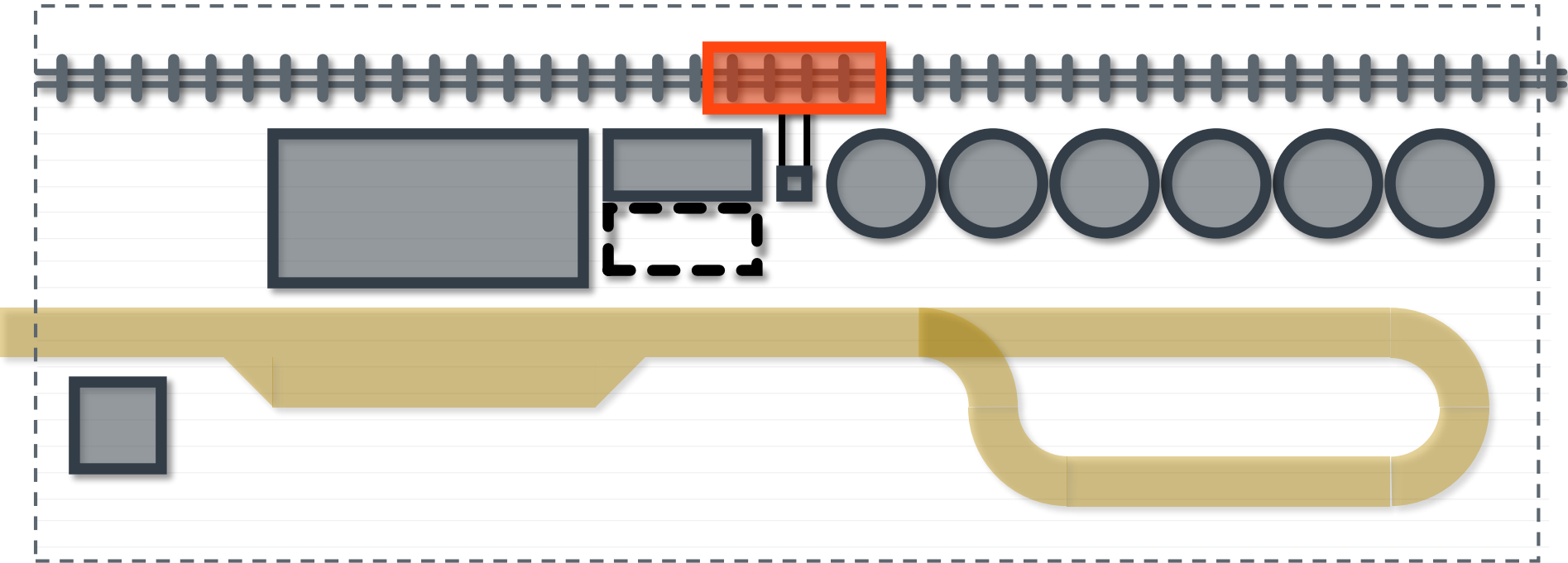
Costs and savings in Loading Structure design



FOUR STRUCTURES ARE NEEDED FOR RECEIVING BULK GRAIN VIA ROAD AND RAIL AND ANOTHER TWO ARE NEEDED FOR LOADING. MANY OPERATIONS RESULT IN SLOW TURNAROUND TIMES AND HIGH COSTS

Costs and savings in Loading Structure design

COMBINED WEIGH BRIDGE FOR
LOADING AND UNLOADING
OF ROAD AND RAIL DELIVERY



OUR SINGLE STRUCTURE CAN LOAD AND UNLOAD AND
DO LIVE WEIGHING OF BOTH ROAD AND RAIL.
THIS HAS ENORMOUS SAVINGS FOR TURNAROUND TIME
AND THE ASSOCIATED COSTS



CONCRETE BASE OF THE COMBINED HOPPER
WEIGHBRIDGE DURING CONSTRUCTION

STEEL STRUCTURE ABOVE CONTAINS
THE BINS AND LOADING EQUIPMENT

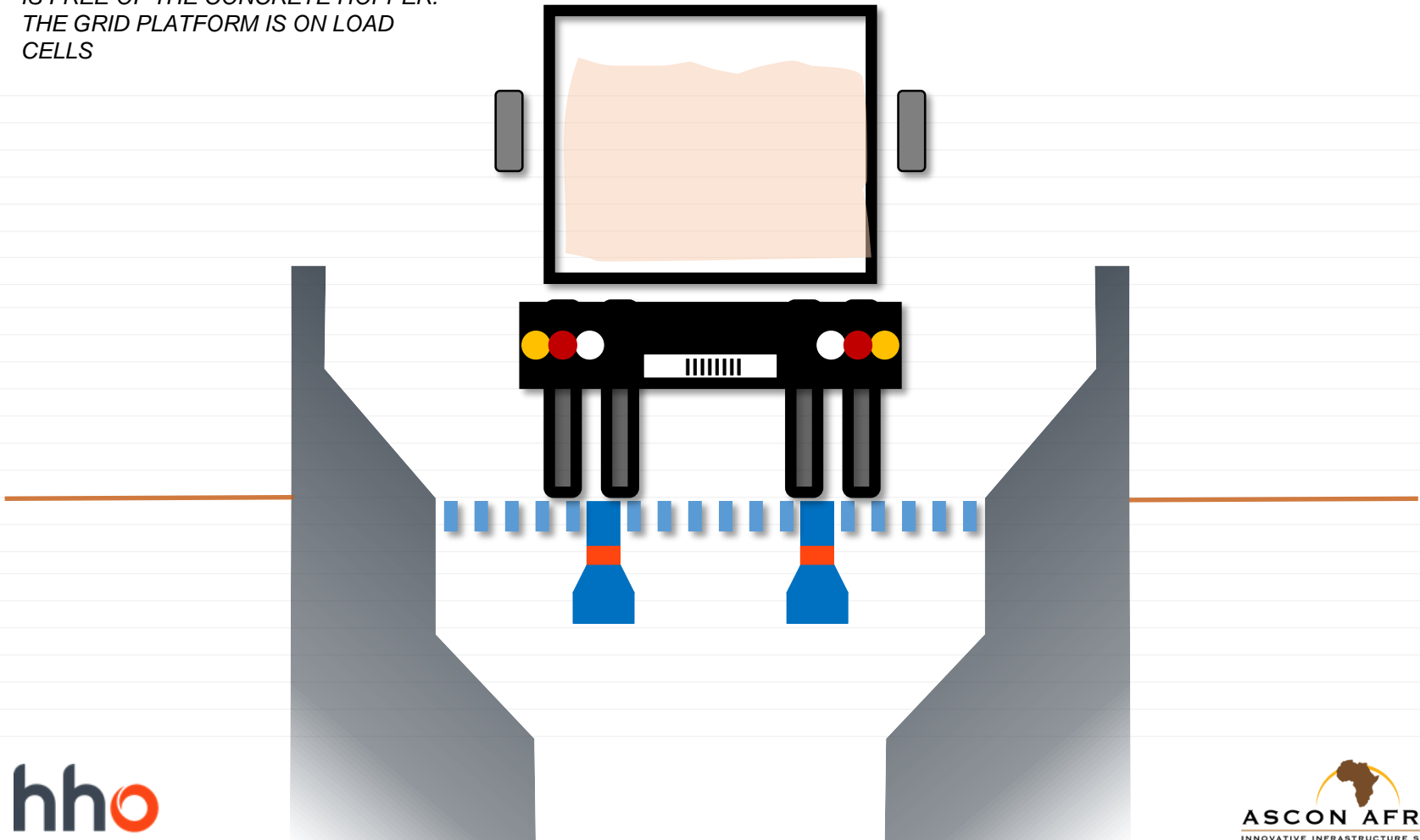




COMPLETED HOPPER WEIGHBRIDGE IN OPERATION.
SWIVEL LOADING SPOUTS ARE VISIBLE.

Costs and savings in Loading Structure design

*GRID PLATFORM CONTAINS RAILS AND
IS FREE OF THE CONCRETE HOPPER.
THE GRID PLATFORM IS ON LOAD
CELLS*



Costs and savings in Masterplanning

CONCEPT
DESIGN

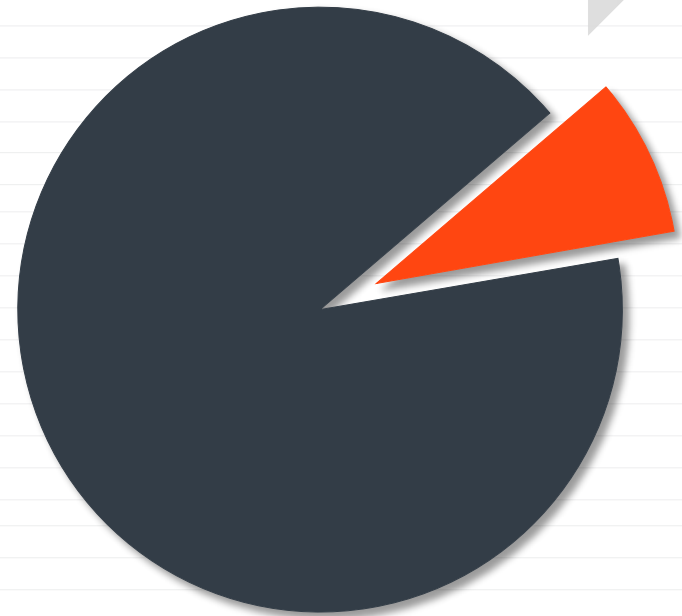
DETAIL
DESIGN

FABRICATION
AND
CONSTRUCTION

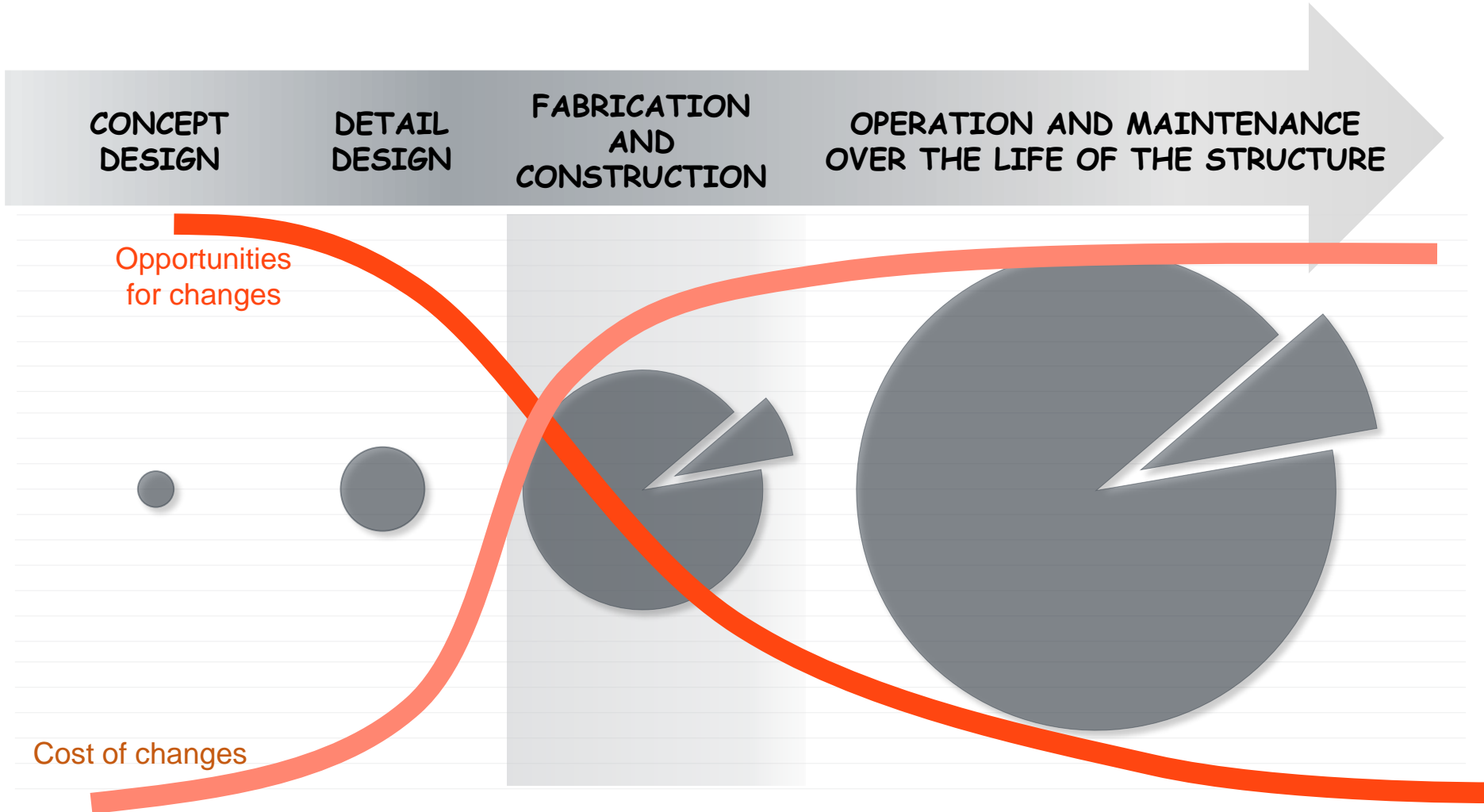
OPERATION AND MAINTENANCE
OVER THE LIFE OF THE STRUCTURE

*GOOD DETAIL DESIGN CAN
RESULT IN CONSTRUCTION
SAVINGS THAT OFFSET
THE DESIGN COSTS*

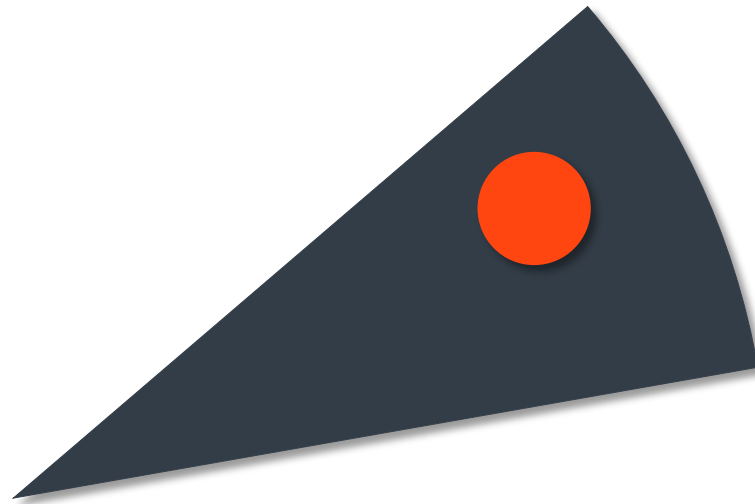
*GOOD MASTERPLANNING (SCHEME DESIGN)
CAN RESULT IN ENORMOUS SAVINGS
DURING THE LIFE OF THE FACILITY*



Costs and savings in Masterplanning



Successful projects don't happen by chance – they're the result of experience, good communication, good design that understands the whole process, and a passion for excellence.





Dermot F. M. Knight

PrEng CEng BSc(Eng) FICE FZwIE MIEZ MSAICE

Dermot Knight has 40 years experience in planning and managing grain handling and milling projects in Southern Africa.

Dermot is skilled in strategic and logistic planning of grain facilities. He is experienced in the management of industrial and commercial projects in the grain storage, processing and handling industry.

He has been chairman and director of engineering companies Scott Wilson and Ascon and is well respected in the field of design engineering.

Dermot has worked with the major suppliers of milling equipment and grain handling equipment in over 250 projects in Southern Africa – all of these projects delivered on time and budget. The number increases to 500 when all food handling projects are considered.

Dermot has also been appointed Consultant to the IFC as part of the Botswana Government transaction advisory team. He is also mentor and turnaround agent for ABSA Incubator Fund.



Allan G. Benn

PrEng CEng BSc(Eng)civil G.D.E. MSAICE MStructE

Allan Benn is a civil and structural engineer with over 25 years experience in designing structures in Southern Africa and Europe.

Allan's specialities are structural scheme designs in reinforced concrete, steelwork and masonry.

He is experienced in adapting designs to accommodate site and delivery constraints and in creative thinking to find cost effective solutions within time and budget constraints.

Allan has worked on large structural schemes in the grain and water industries and has run his own engineering consultancy service specializing in alterations to existing structures. Much of this work has been built on the ability to analyse and successfully communicate structural engineering issues in projects.