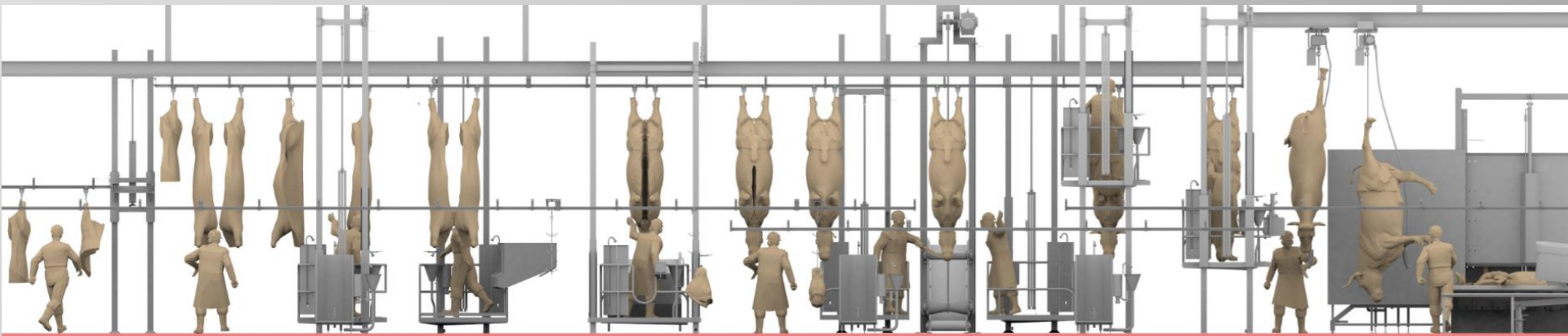


Pre-engineered Meat Plants



Contents

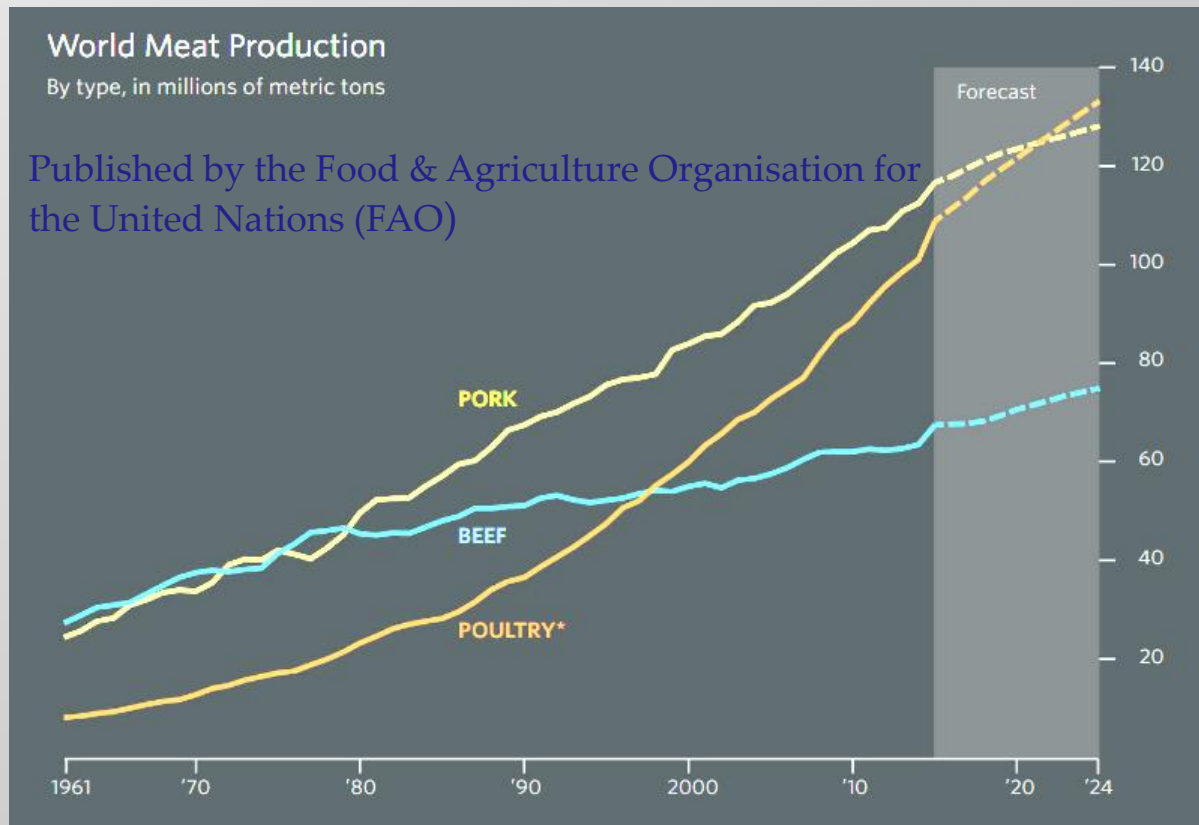
- 1. Context**
- 2. PE Meat Plants**
- 3. Project Implementation**
- 4. Modular Expansion**
- 5. Carcass Dressing**

Context



GM Steel Ltd specialise in fitting out Abattoirs and Food processing plants on an international basis. Including all aspects of the design and construction.

The Growth in World Meat Consumption



Meat consumption in developing countries has been continuously increasing from a modest average annual per capita consumption of 10 kg in the 1960s to 26 kg in 2000 and will reach 37 kg around the year 2030 according to (FAO) projections.

The Growth in World Meat Consumption

- There is an increasing demand in the developing world for safe to eat, long shelf-life meat products and a growing awareness that existing production methods need to be improved.
- Designers, builders and equipment suppliers, with the skill and understanding required to make these changes, are often not available.

The Growth in World Meat Consumption

- Foreign consultants are reluctant to operate in developing countries.
- These consultants are also perceived to be very expensive and still do not always produce the desired results, unless they are prepared to provide meticulous on-site project management.
- Even today, there are meat plants being constructed that do not comply with basic food production requirements.

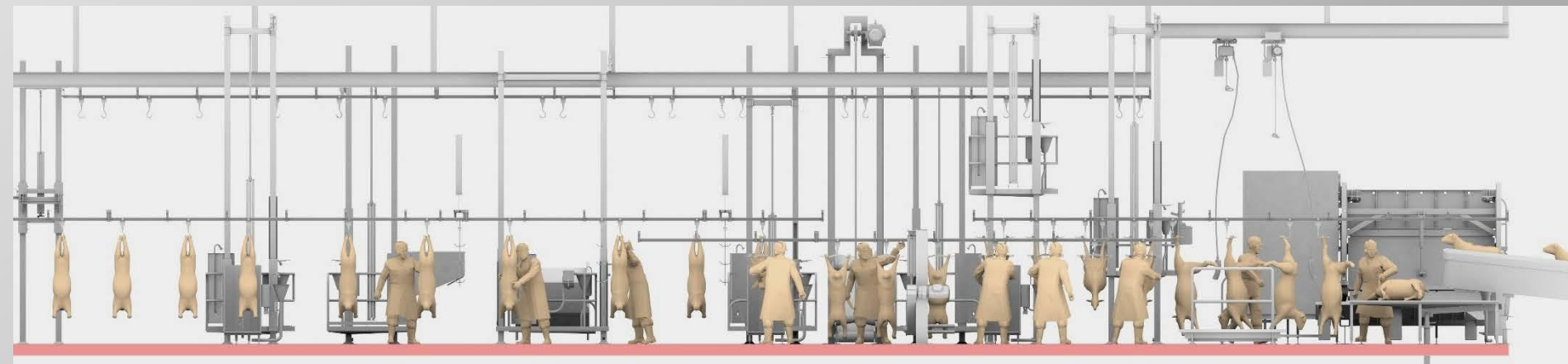
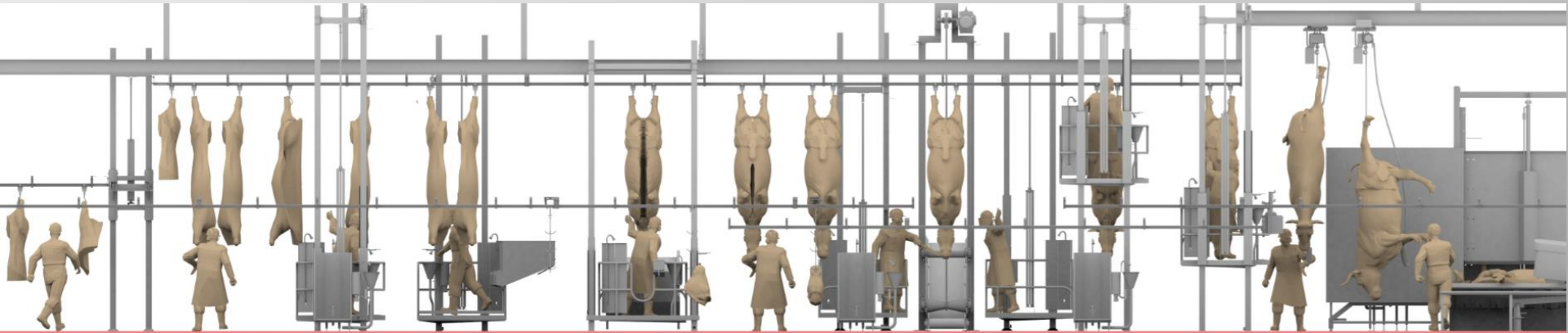
Sub Standard Slaughterhouse



Standards Compared



Pre-engineered (PE) Meat Plants



- Pre-engineered Slaughter houses and meat processing modules can be delivered to any part of the world in standard shipping containers
- They can be quickly erected on site by a specialised team
- Complete with Galvanised steel frame, pre-fabricated drainage system, coving, external grade insulated sandwich panels, mechanical and electrical services, processing equipment, IT package and hand tools
- Providing a turnkey solution

Ready to go

Each pre-engineered module is delivered and assembled as a stand alone unit, complete with all necessary processing equipment and services.

To be provided by client

Reinforced concrete sub-floor

Finished floor

Main drainage connections

Single point service connections for electrical power, hot and cold water and compressed air

Lairage

Staff amenities

Offices

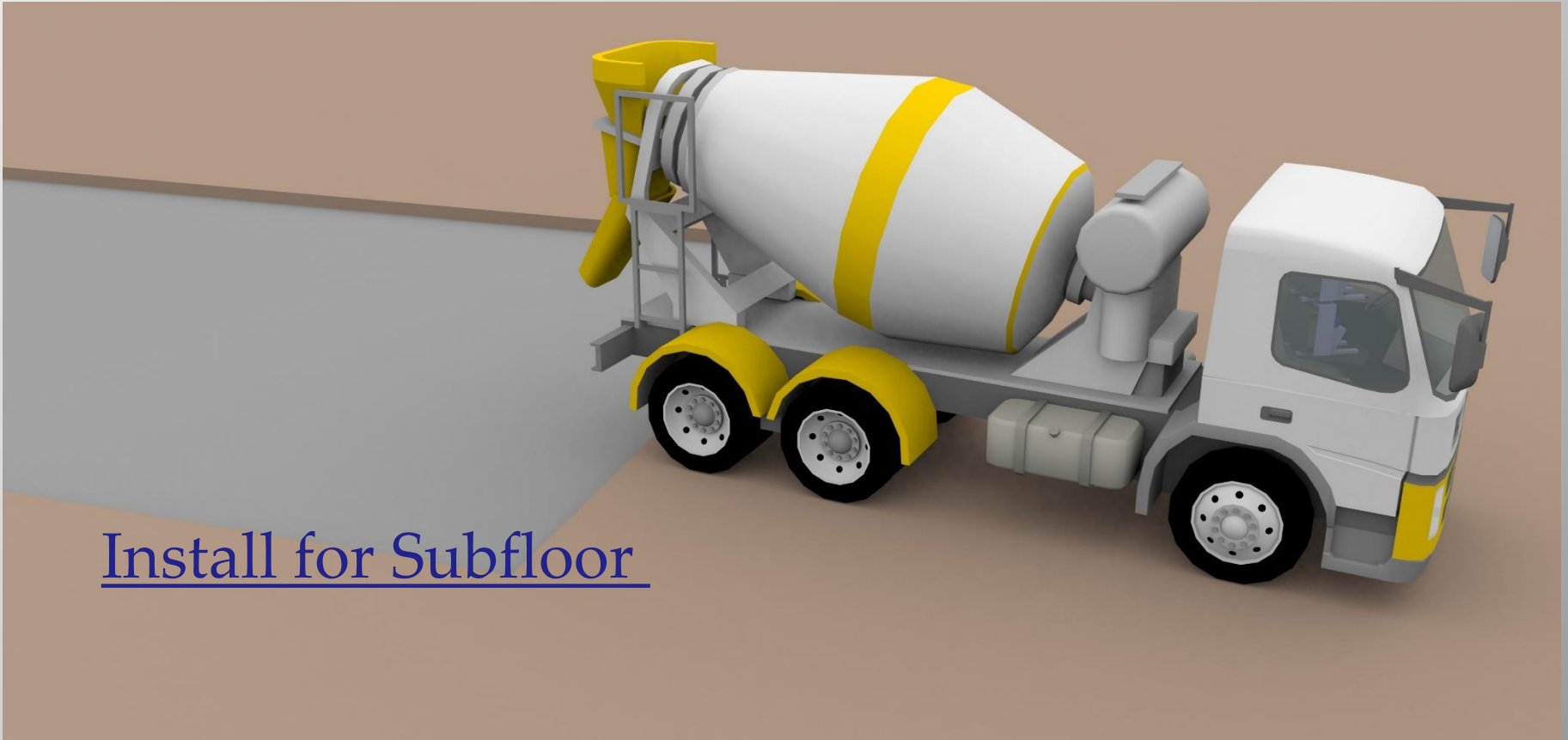
Site works

Construction Sequence

Excavate for Subfloor



Construction Sequence



Install for Subfloor

Construction Sequence



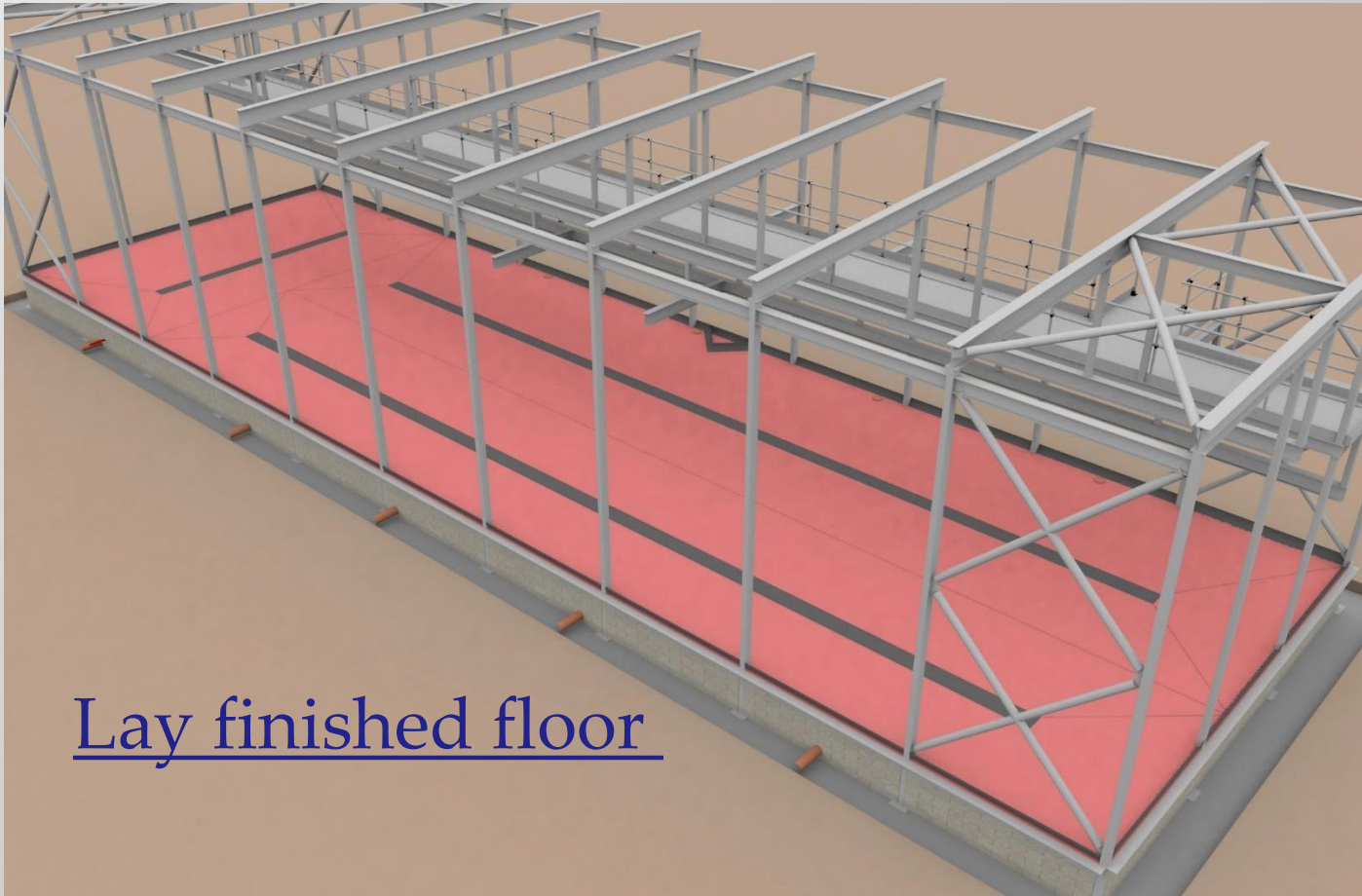
Erect galvanised steel frame

Construction Sequence



Install pre-fabricated drainage and coving

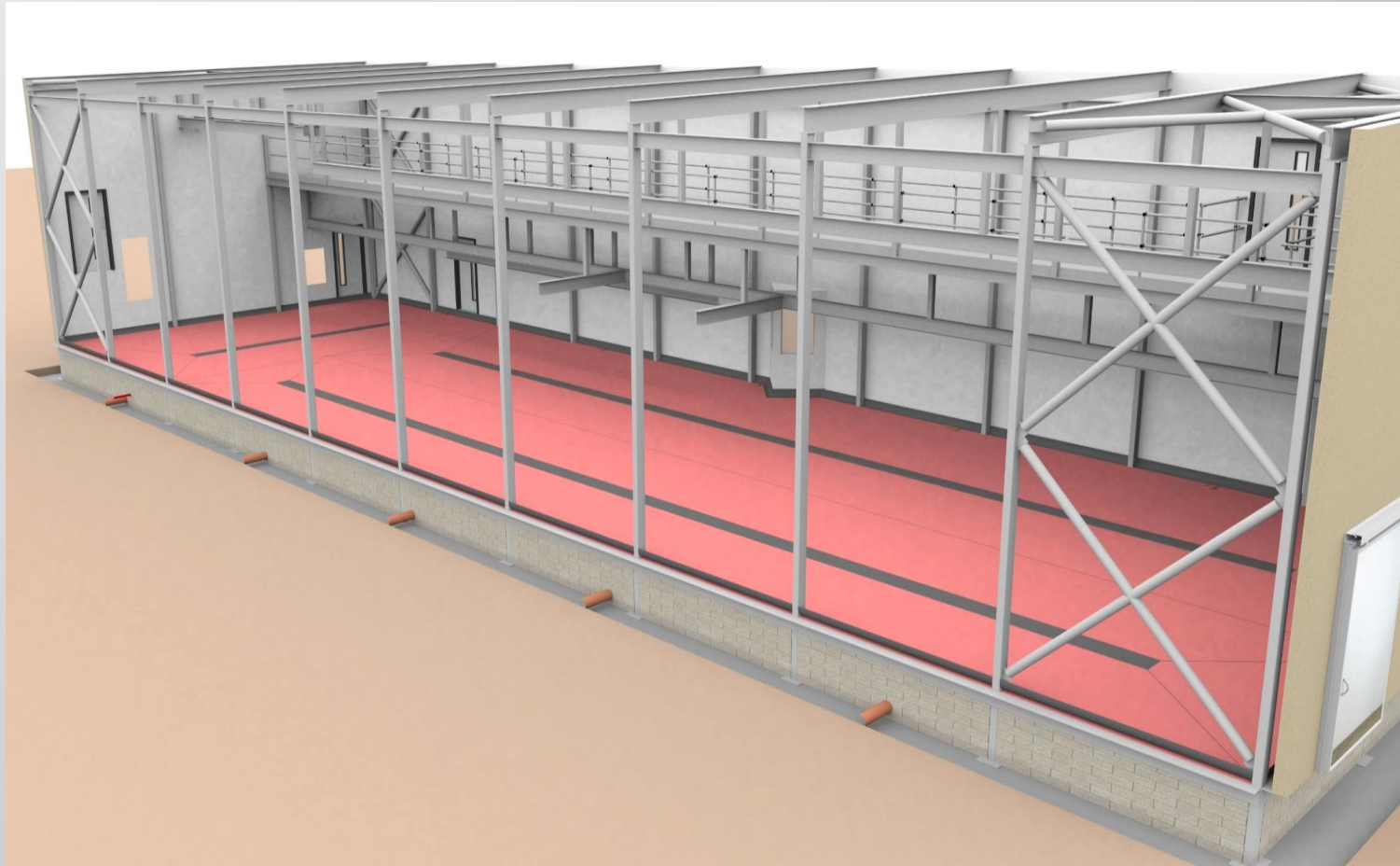
Construction Sequence



Lay finished floor

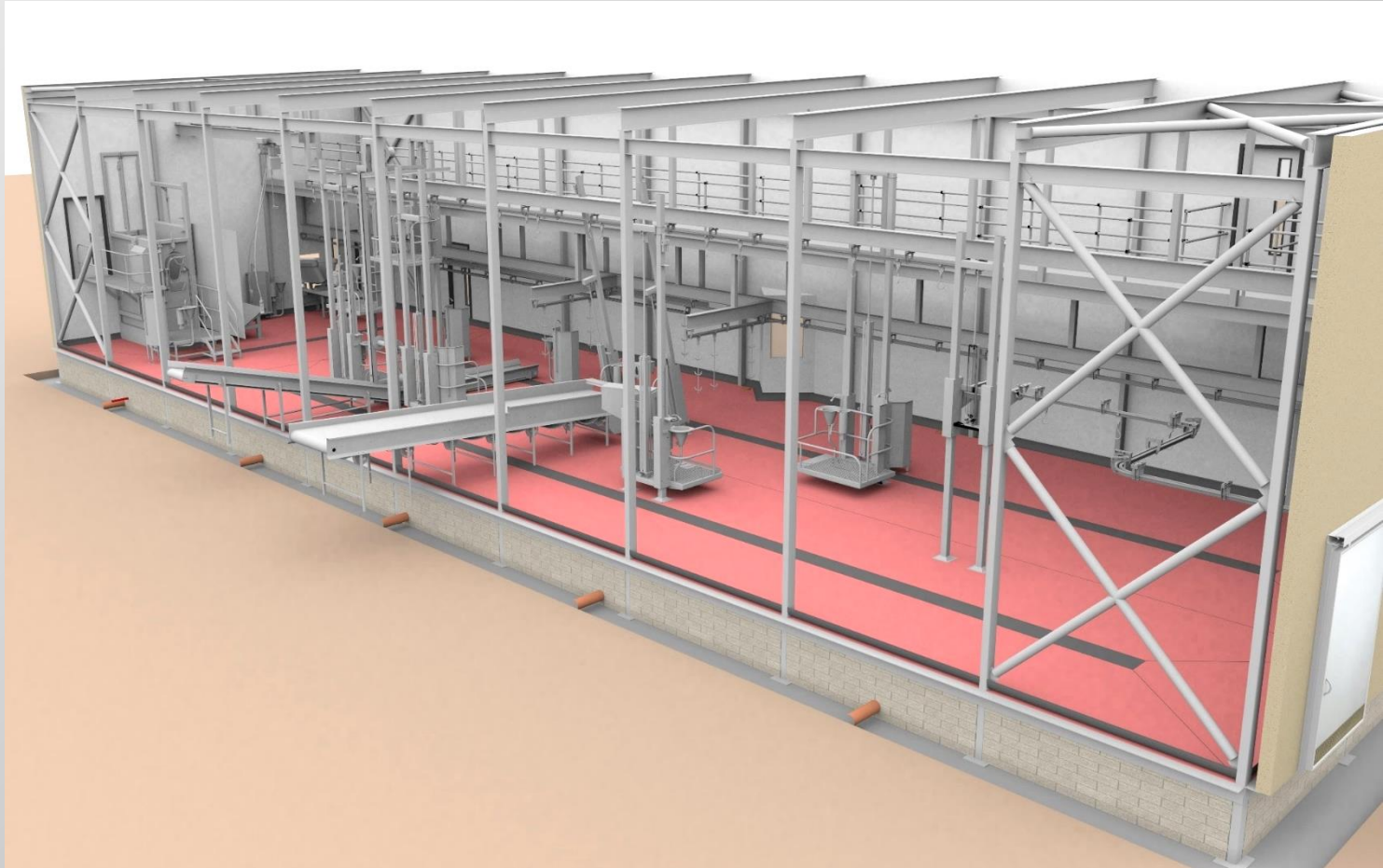
Concrete laid between coving and drainage channels

Construction Sequence



Erect panels and install doors

Construction Sequence



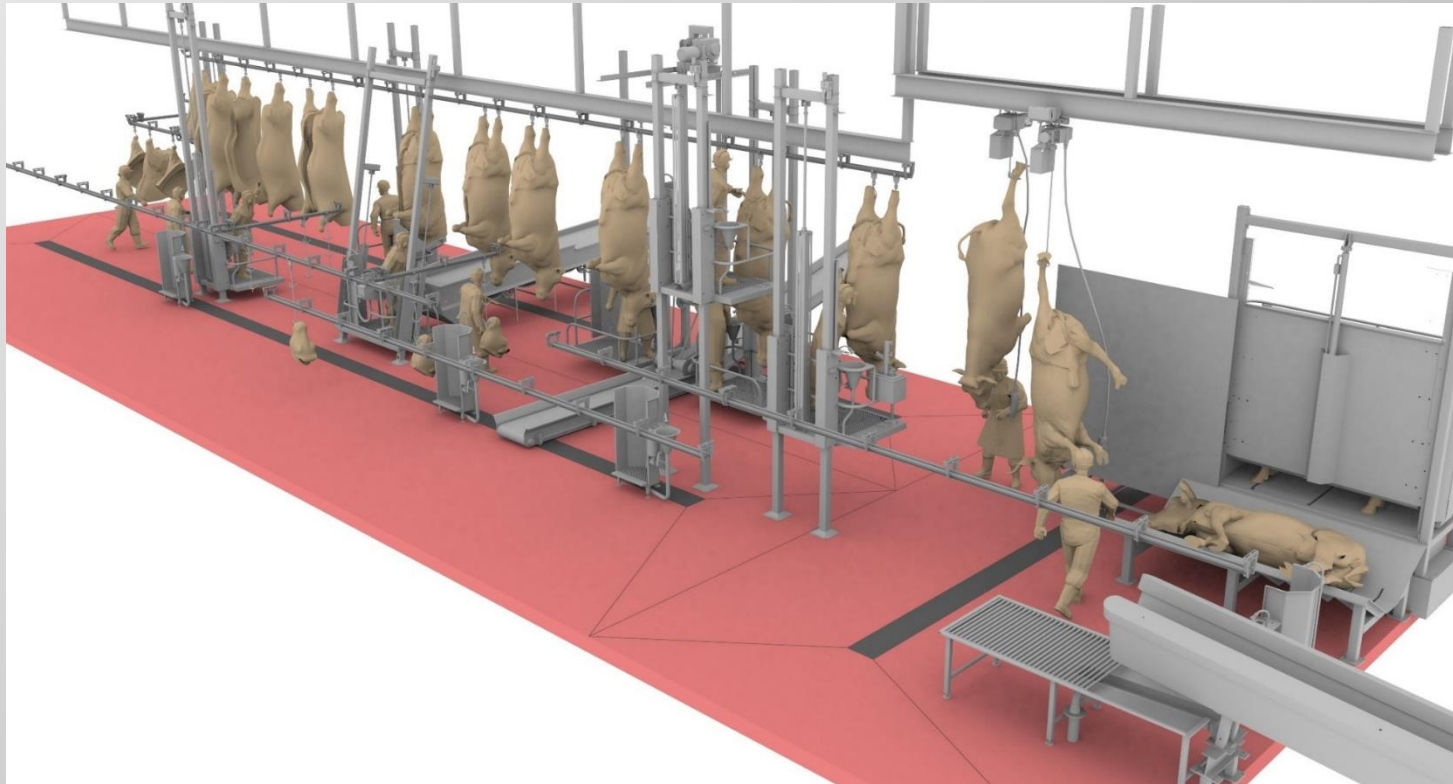
Install equipment and services

GM Steel Ltd

Operational Facilities

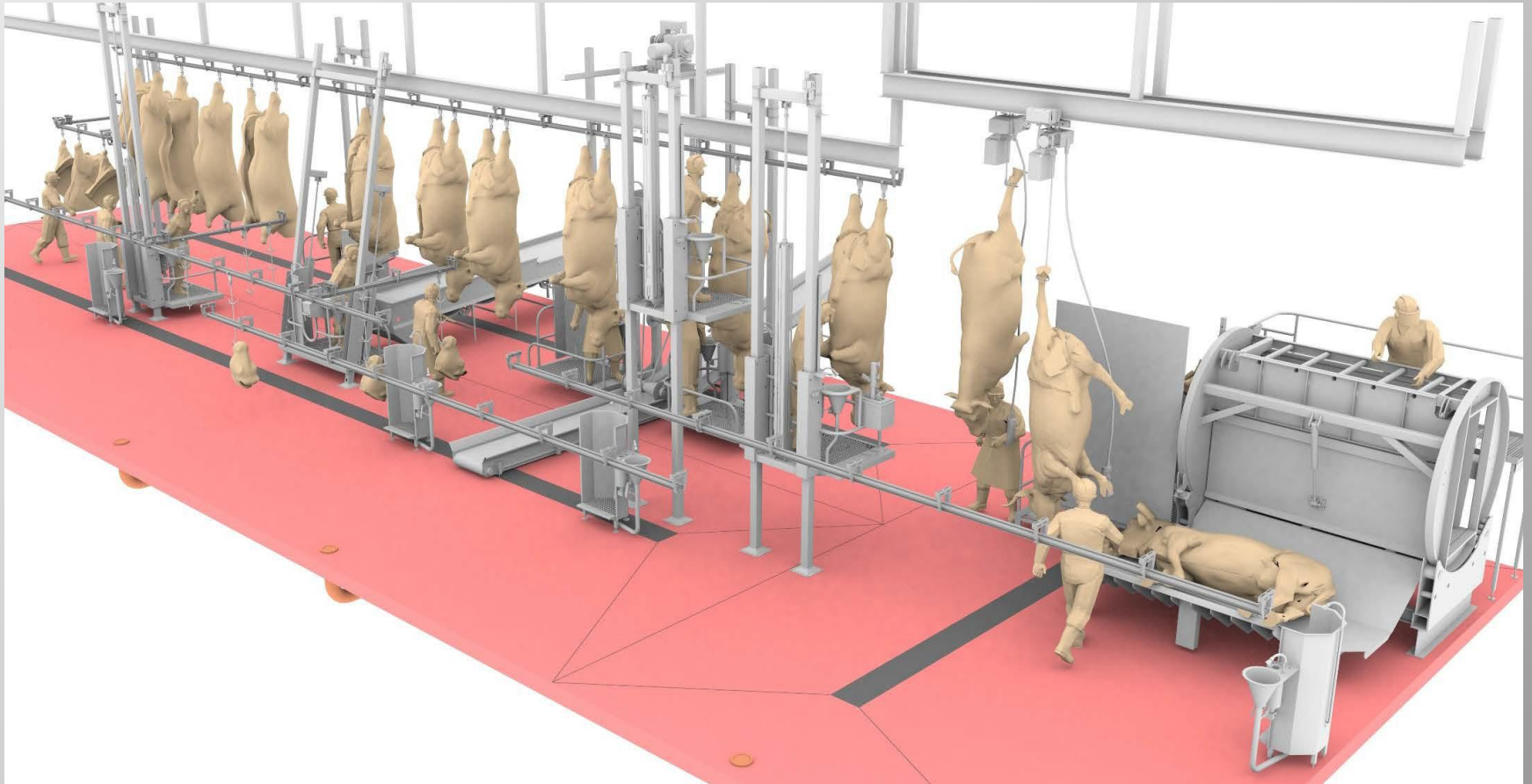


Operational Facilities



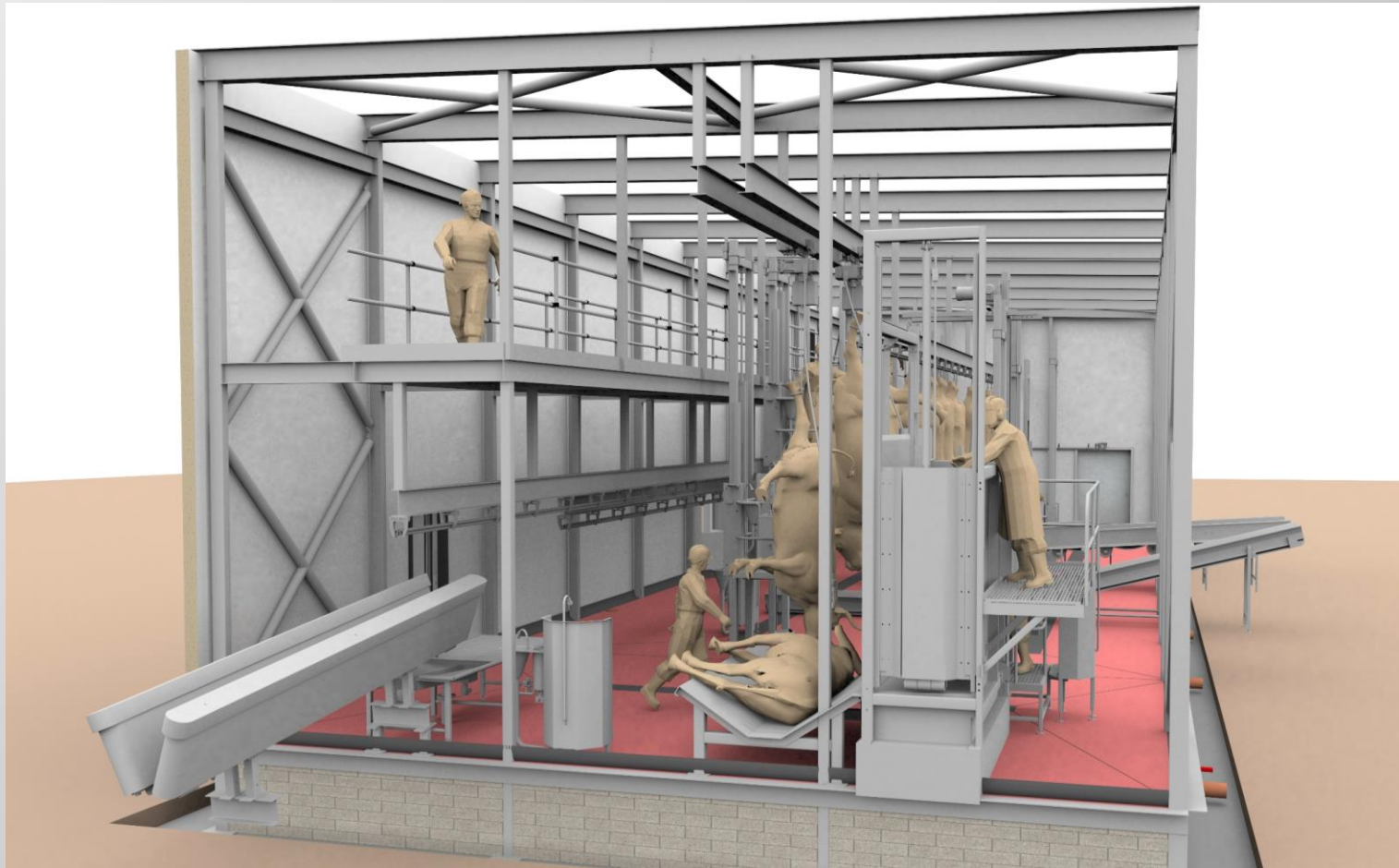
Cattle Dressing Equipment (15 per hr)

Operational Facilities



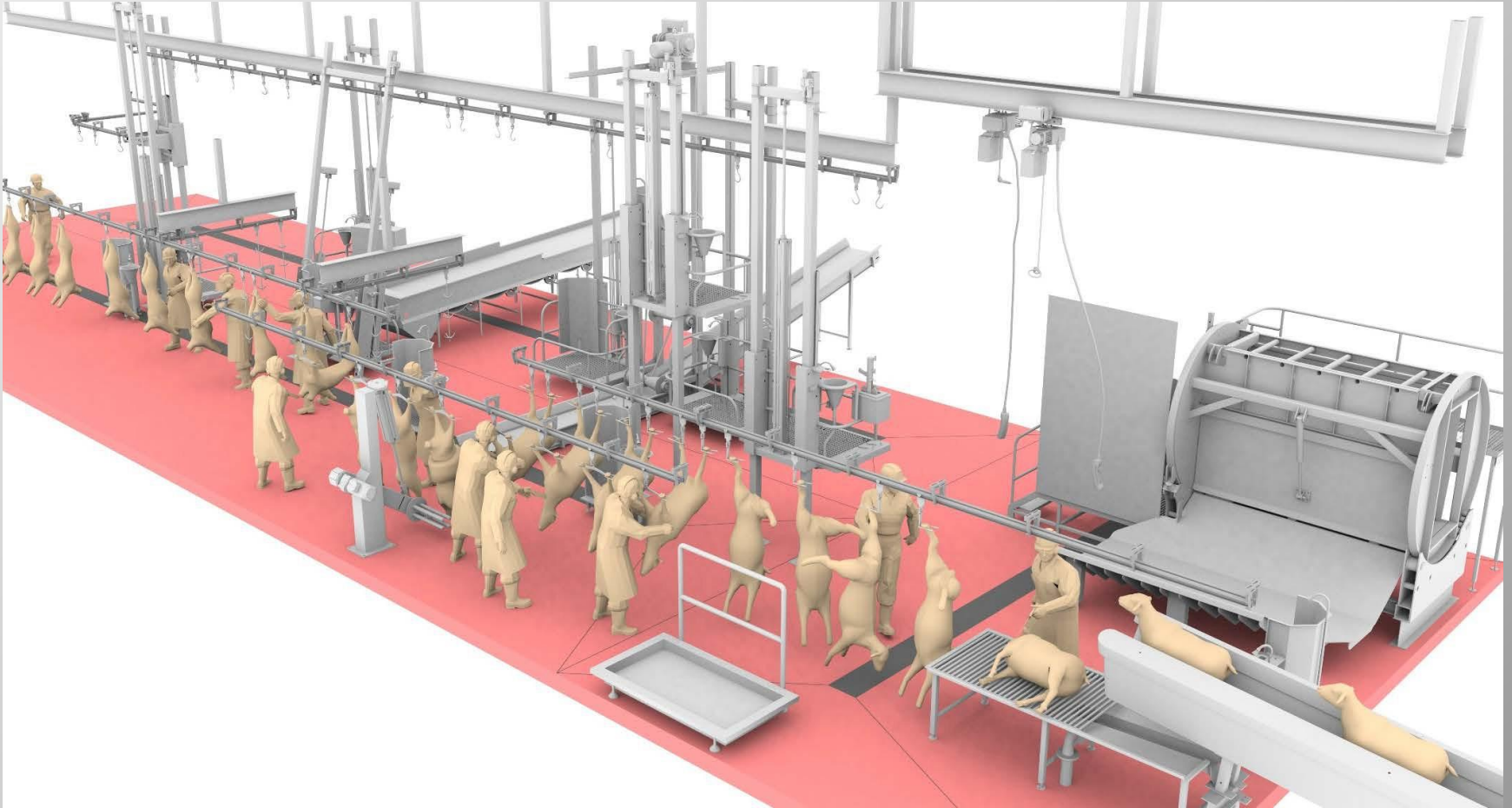
Cattle Dressing Equipment (Ritual Slaughter)

Operational Facilities



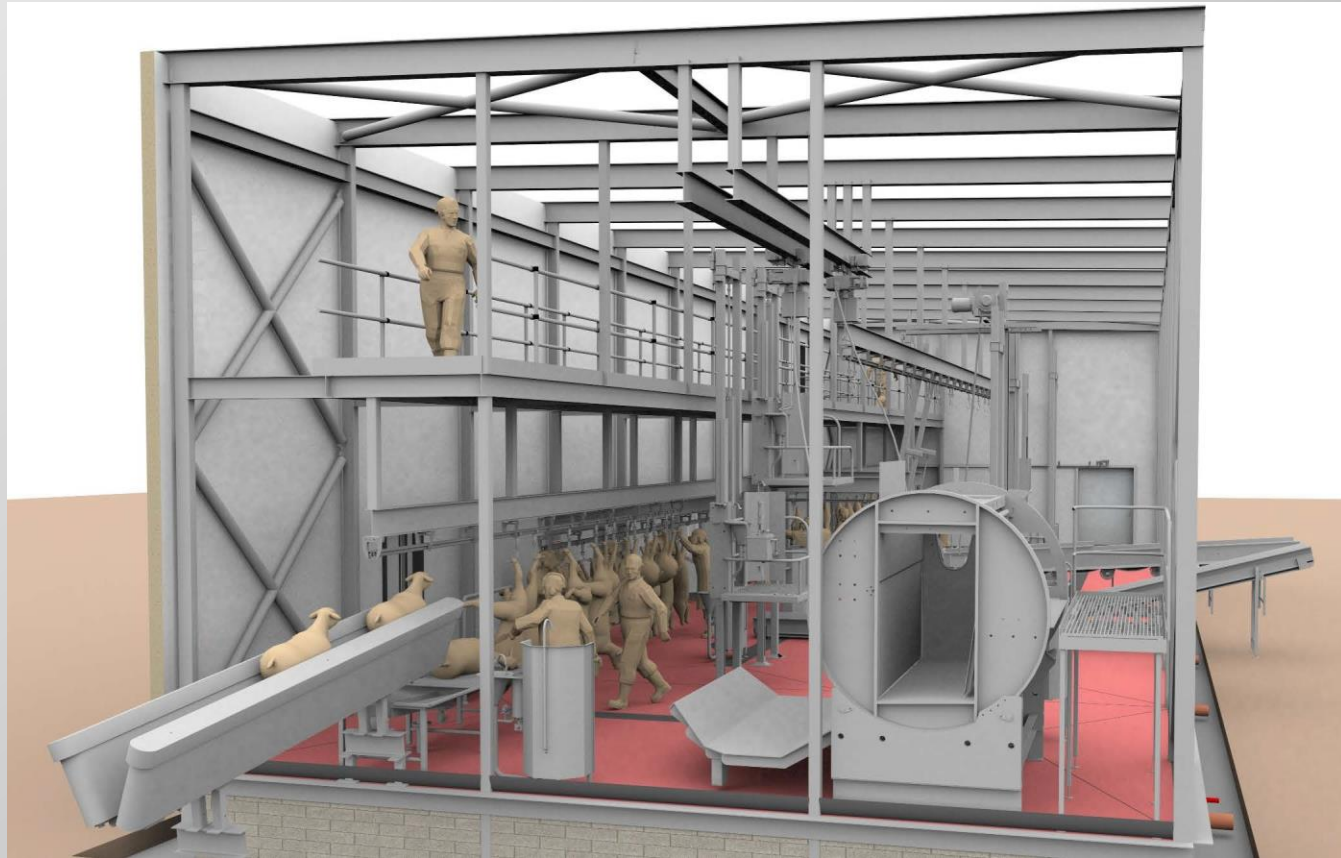
End view including services gantry and cattle dressing line

Operational Facilities



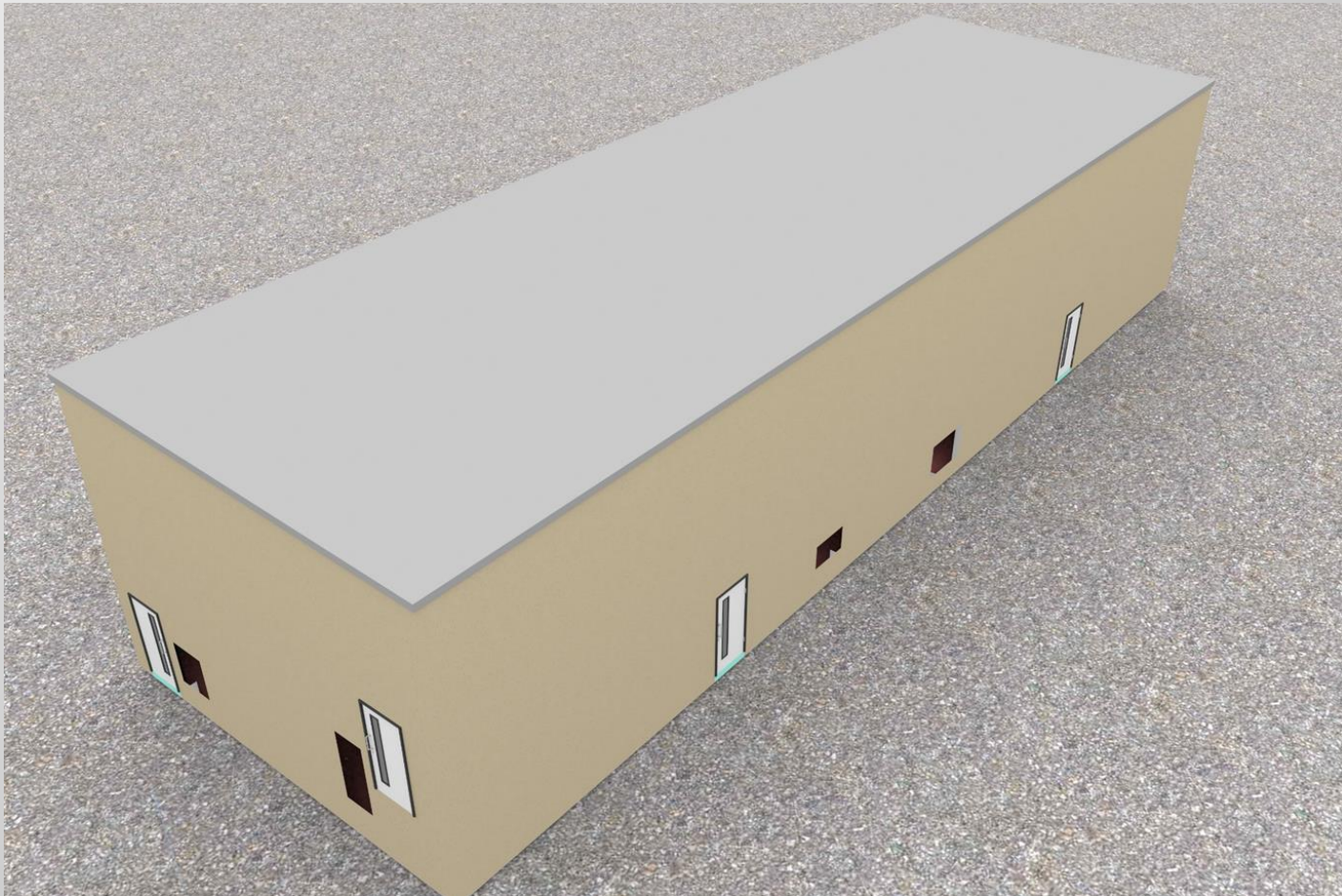
Sheep Dressing Equipment

Operational Facilities



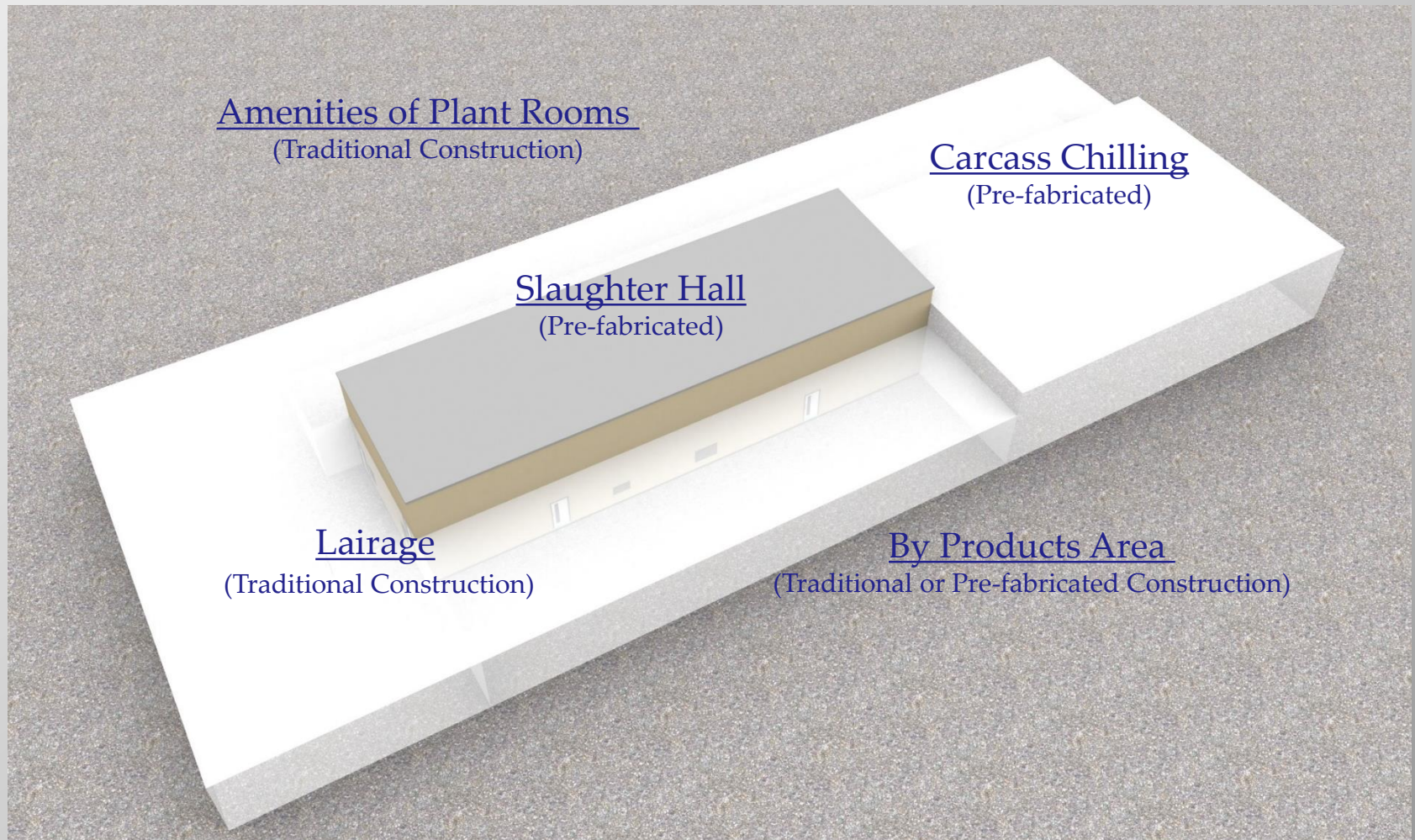
End view including services gantry and sheep dressing line

Completed Slaughter Module



Weathered finish: no roof or cover required

Facility Overview



Suitability

Our pre-engineered slaughterhouse modules are suitable for processing various animal species –

- Cattle and Buffalo
- Sheep and Goats
- Poultry

Our units can be designed to incorporate various processing elements such as-

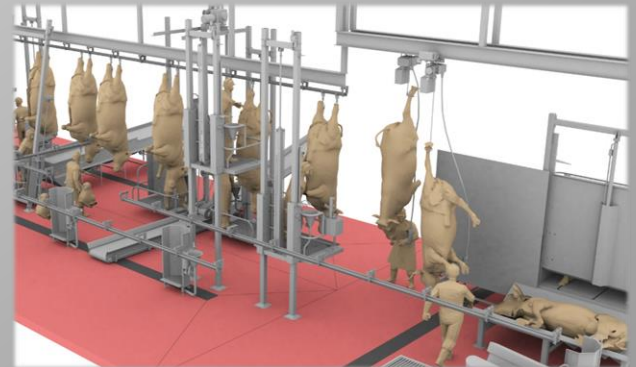
- Slaughtering and carcass dressing
- Carcass chilling and dispatch
- Boning and packing
- By-product processing

Typical Plant Capacities

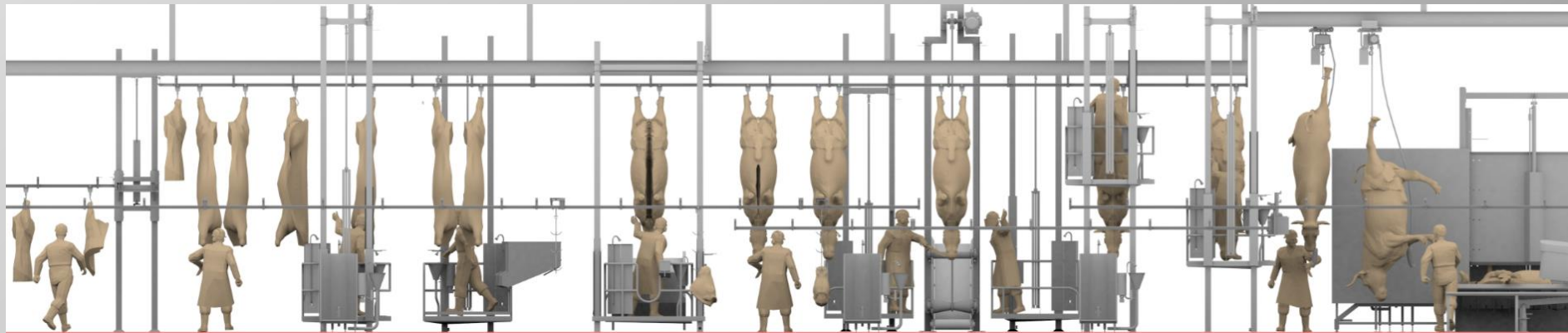
Species	Module width	No of 6m bays	Total length	Animals per hour	Chilling included
Cattle/ buffalo	9 metres	5	30 metres	15	X
Cattle/ buffalo	9 metres	7	42 metres	30	X
Sheep/ goats	9 metres	5	30 metres	50	X
Poultry	9 metres	5	30 metres	1,000	Water chilling
Other	9 metres	7	42 metres	50	X

Advantages of PE Modular abattoir

- **Guaranteed fit for purpose processing facility-**
 - without reliance on highly skilled local labour
 - without dependence on intensive supervision
- **Insulated and air conditioned slaughterhall-**
 - providing optimum processing environment
 - and long shelf life product
- **Quick project delivery**
- **Fixed lump sum price**
- **System designed for modular growth**
- **Turnkey solution**

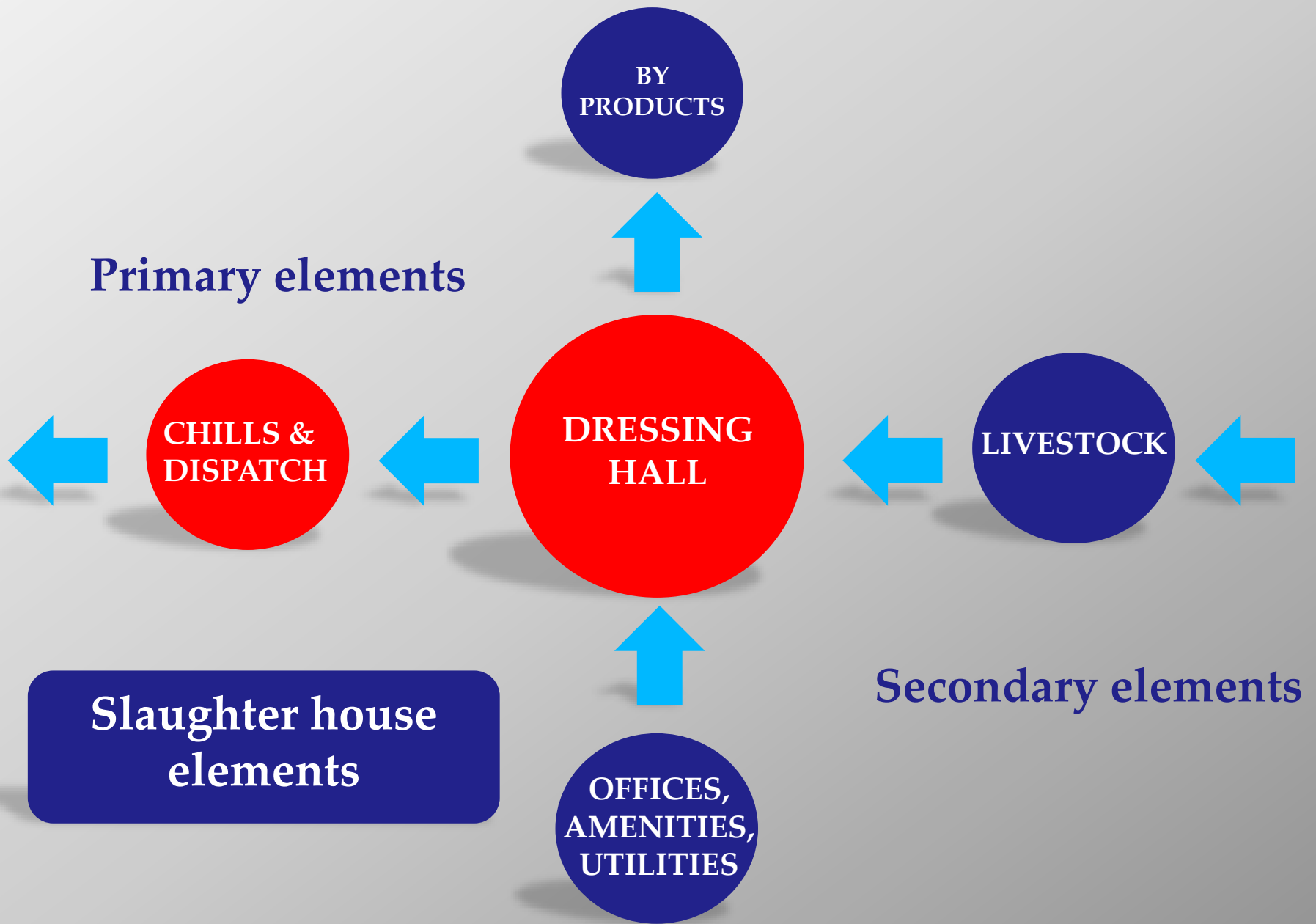


Project Implementation



Overall Project Design by GM Steel Ltd.

- Based on more than thirty year's experience in the meat industry
- State of the art facilities
- Design and construction in compliance with the highest European standards



Primary Elements

Delivered in 'Turn Key' pre-engineered format.

- Insuring total compliance with European Food Manufacturing Regulations
- Eliminating any requirement for local construction expertise
- Eliminating requirement for expensive supervision
- Quick project delivery
- Fixed lump sum price

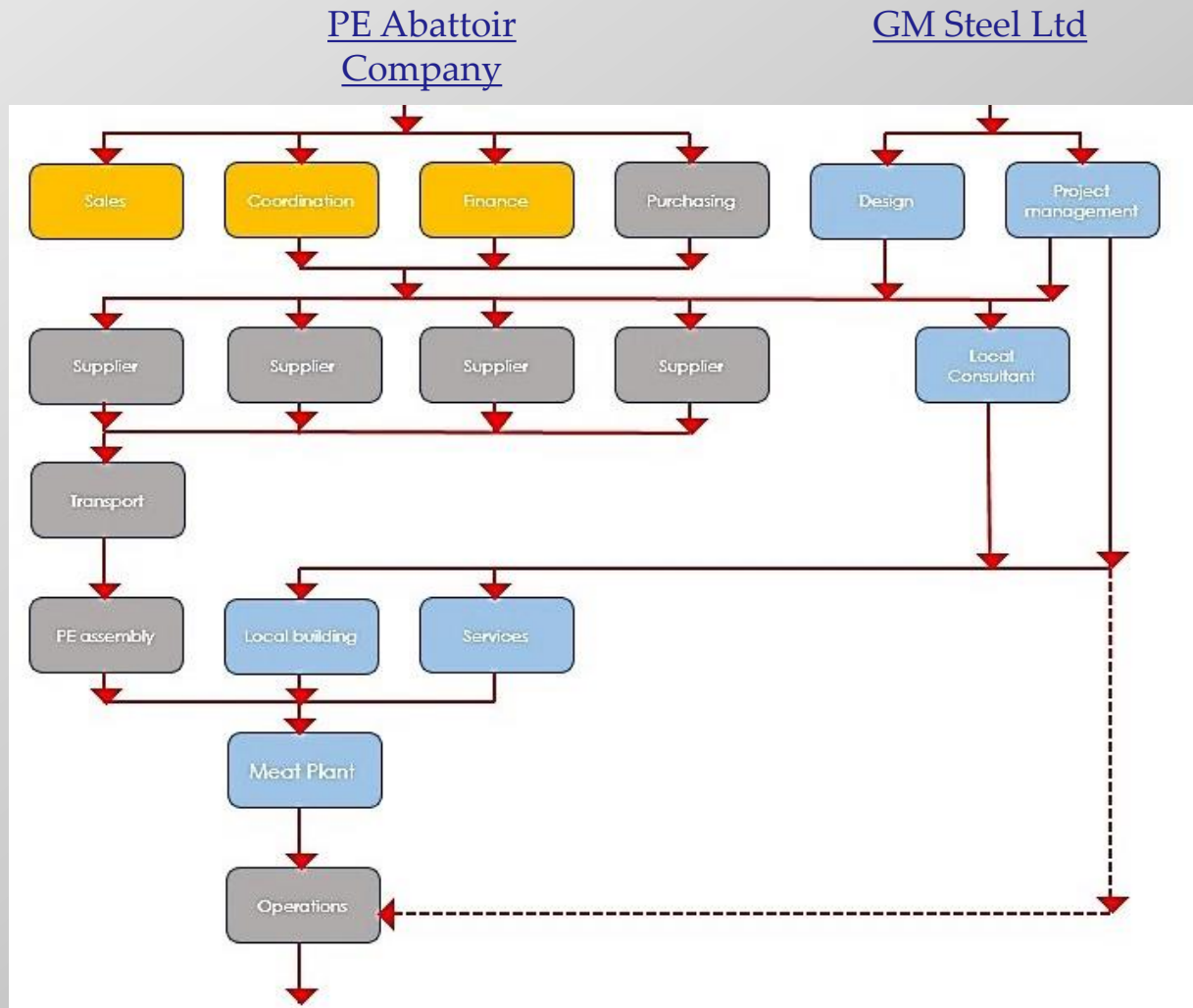


Secondary Elements Provided by local contractors

- Utilising traditional construction methods
- Reducing cost where specialist expertise is not required



Pre-engineered Project Organisation



Team activities / responsibilities

GM Steel Ltd.

- Overall design
- Project management including –
 - Construction
 - Fit out
 - Commissioning
 - Staff training
- Collaborate with local consultant teams

Supplier of turn-key elements (slaughterhall, chills and dispatch)

- Galvanised structural steel frame
- External insulated panel envelope
- Stainless steel drainage system
- Stainless steel coving and screeds
- Processing equipment
- All mechanical and electrical services within the modular units

Team activities / responsibilities

Local Consultant Team

(To be licenced to practice in specific plant location and to work in collaboration with GM Steel Ltd.)

- Obtain all necessary building permits
- Provide designs for external works and primary services including-
 - Emergency generators
 - Power
 - Water
 - Waste water treatment
- Prepare construction drawings for parts of development to be constructed by local contractor including-
 - Offices
 - Staff amenities
 - Plant rooms
- Prepare tender documents
- Administer contracts
- Site inspections
- Coordination of work

Team activities / responsibilities

Local Building Contractor (Licenced to practice in specific location)

- Execute the on site works as designed and specified by the local consultant including-

Construction of sub floor and preparation of site for assembly of modular parts of the project

Lay finished floor

Construction and fit out of offices

Construction and fit out of staff amenities

Construction of plant rooms

- Provide primary services including-

Emergency generators

Power supply

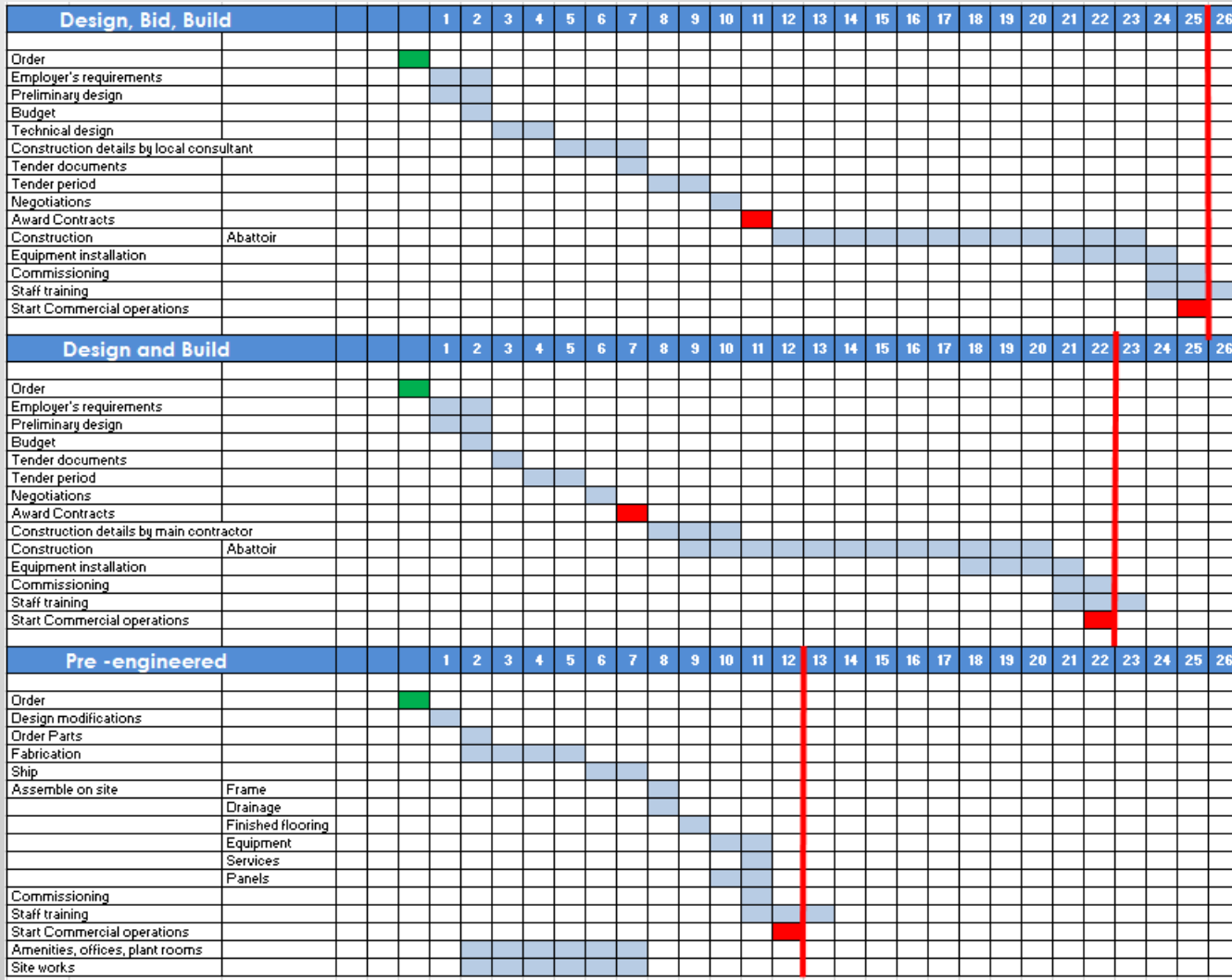
Boiler

Air compressor

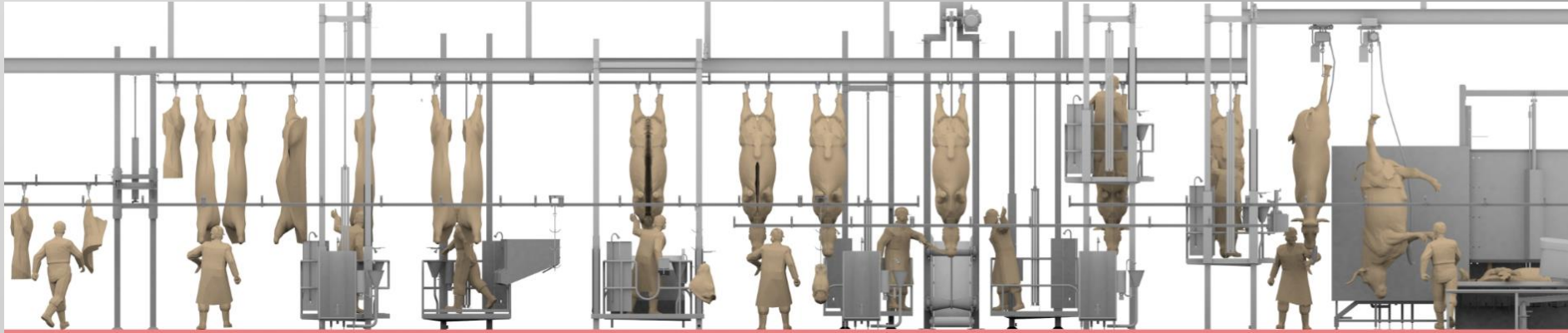
Water

Waste water treatment

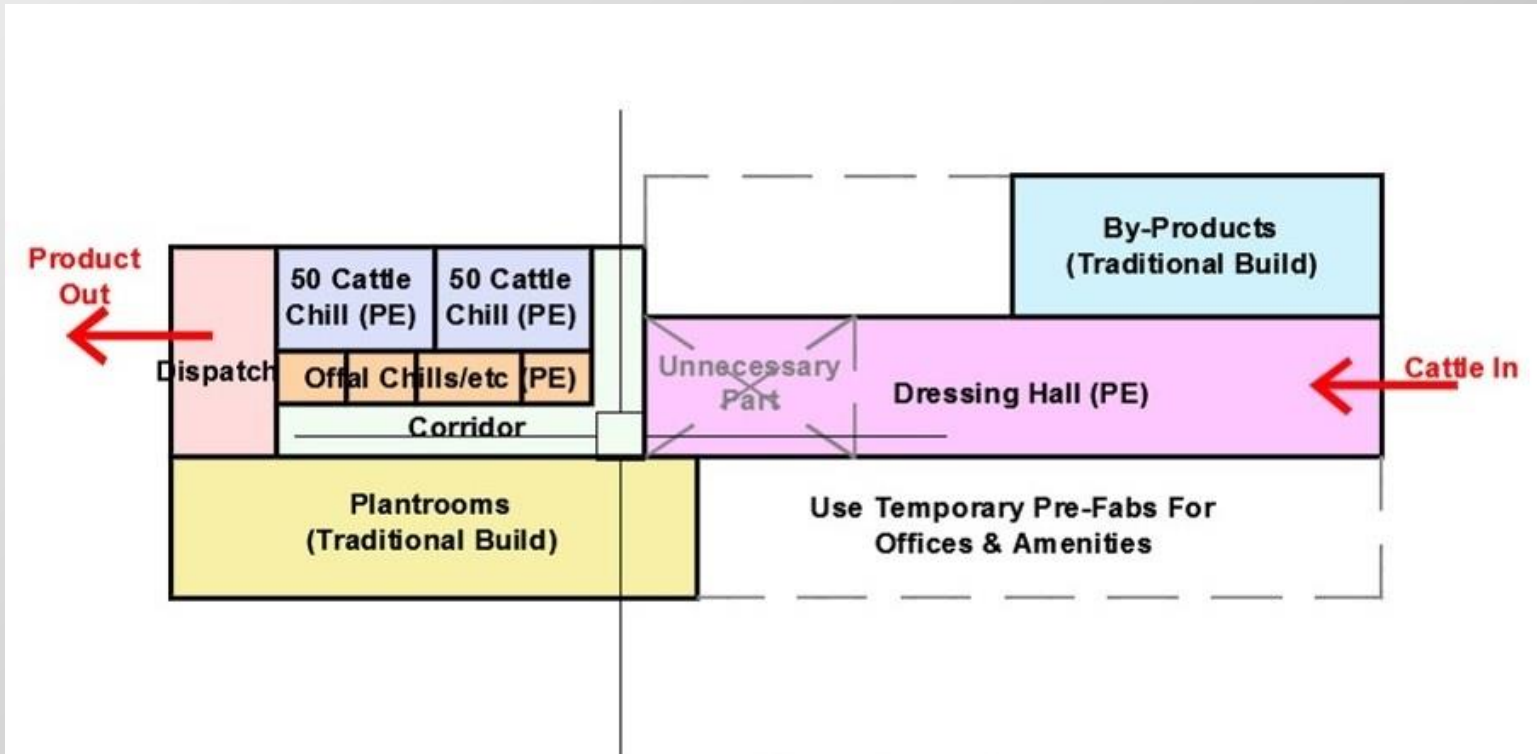
Project Timeframes Compared



Establish and grow Meat Processing Plants using pre-engineered modular buildings

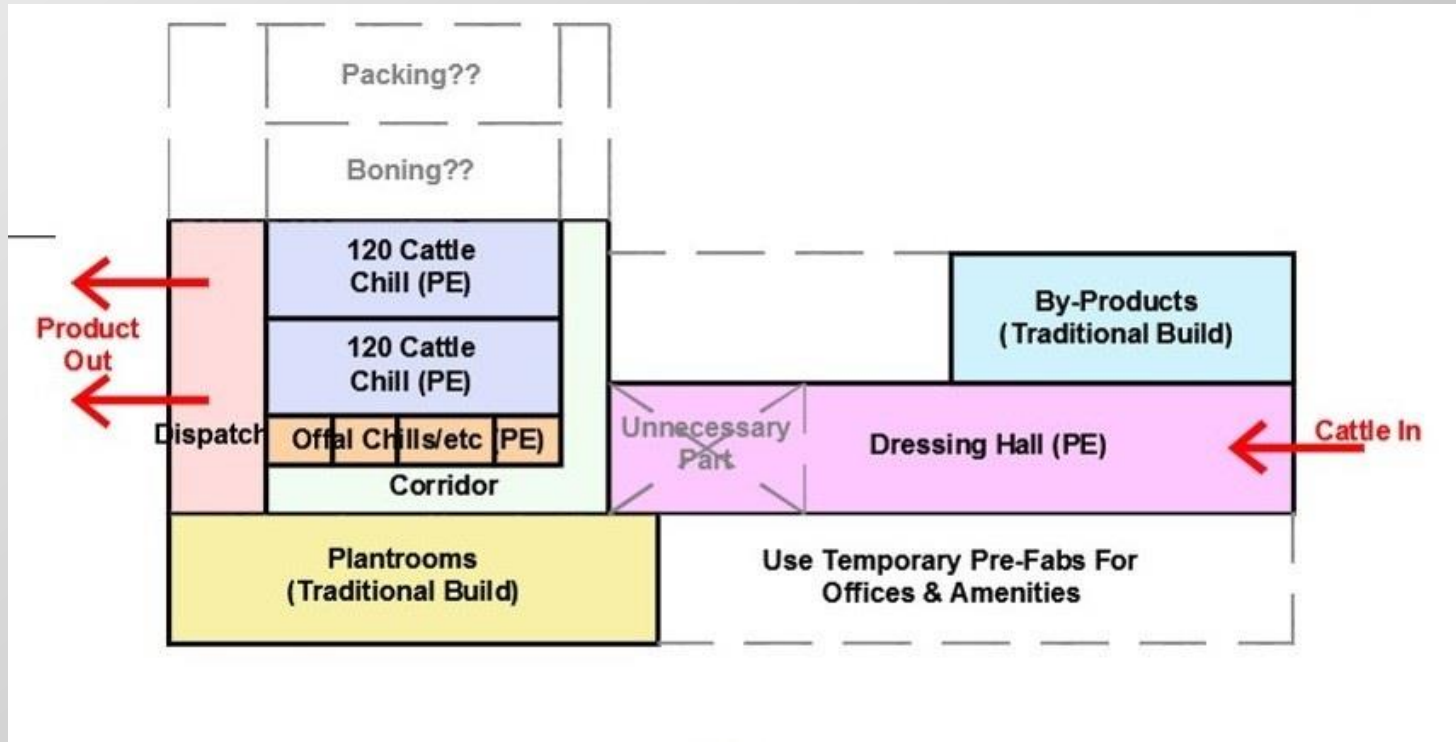


Start Up



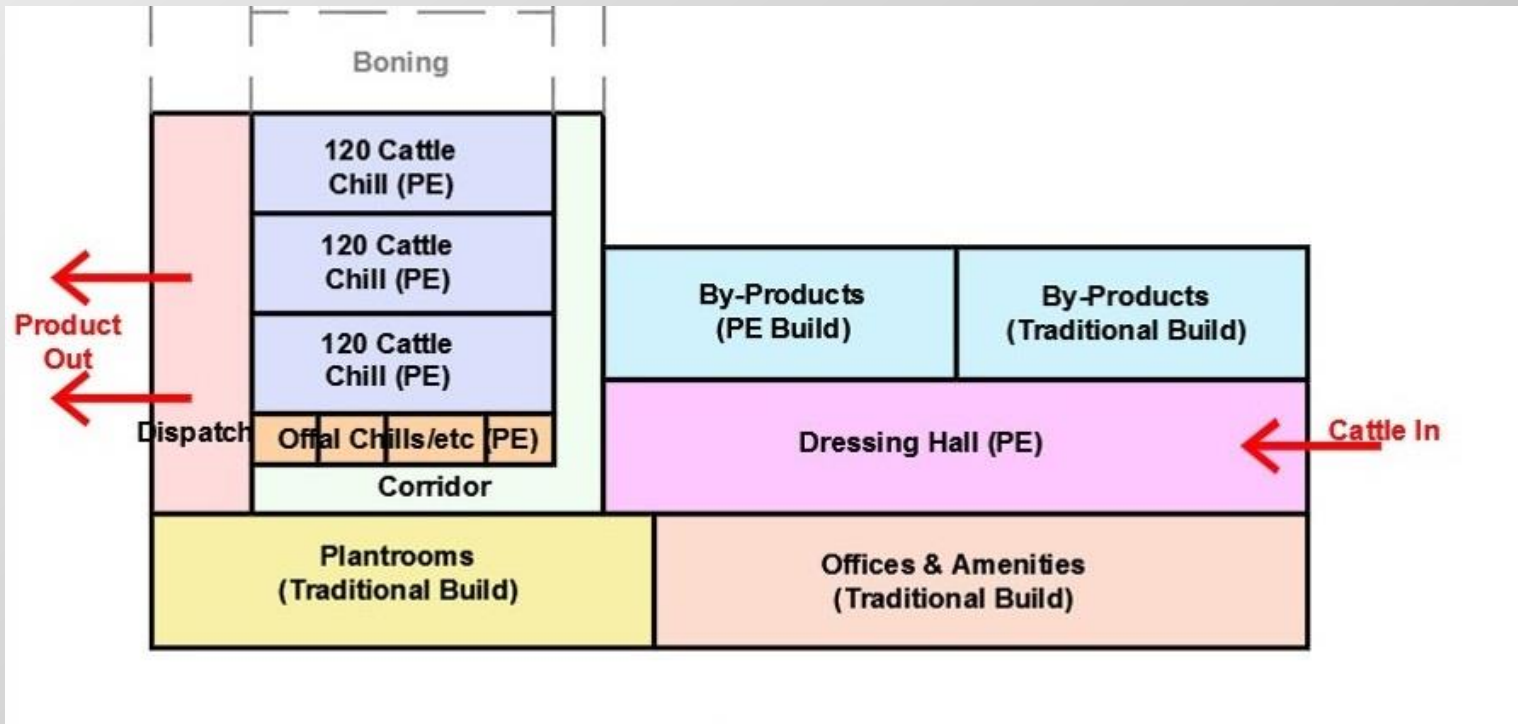
Phase	Capacity					Development			
	Head/hour	Head/shift	Shifts/day	Head per day		PE modules	Temporary accommodation	Traditional construction	Boning + packing
One	7	50	1	50		Amenities + offices	Plant rooms	PE as required	

Phase Two



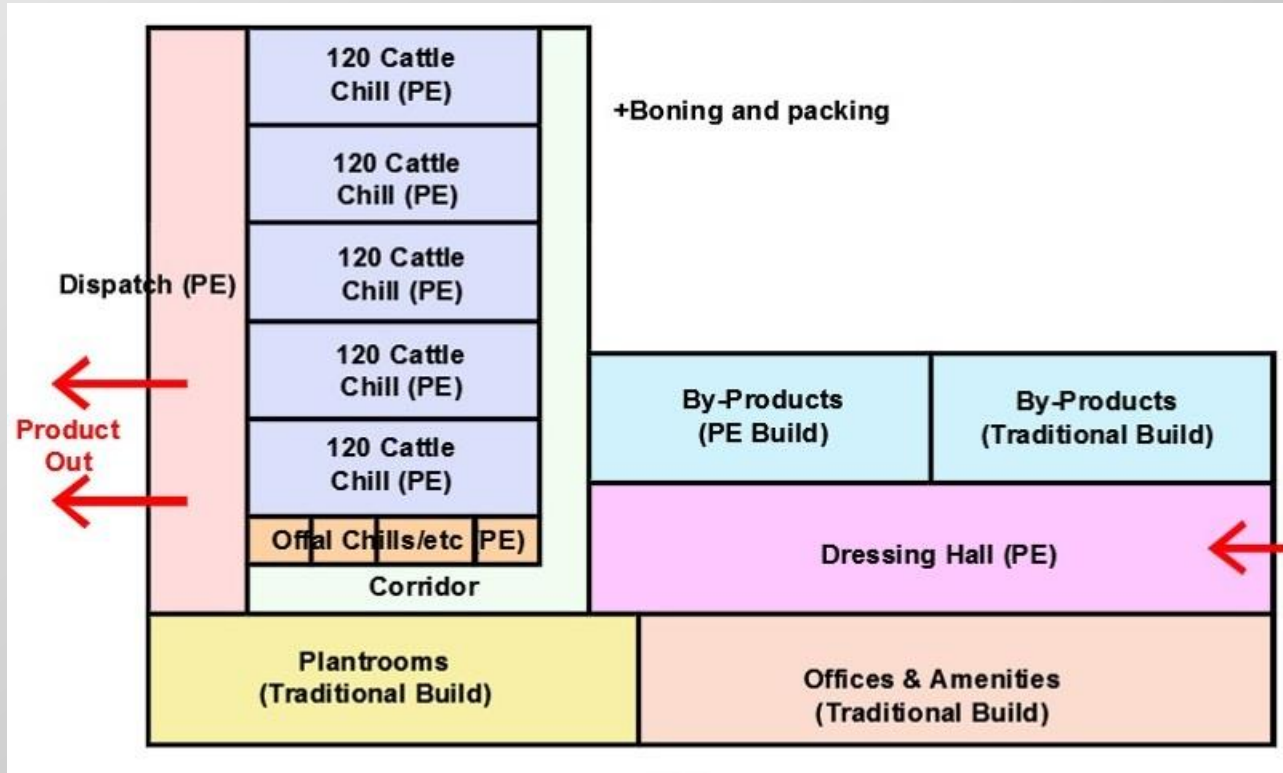
Phase	Capacity					Development			
	Head/ hour	Head/ shift	Shifts / day	Head per day		PE modules	Temporary accommodation	Traditional construction	Boning + packing
Two	15	120	1	120		Dressing Hall + two carcass chills	Amenities + offices	Plant rooms	PE as required

Phase Three



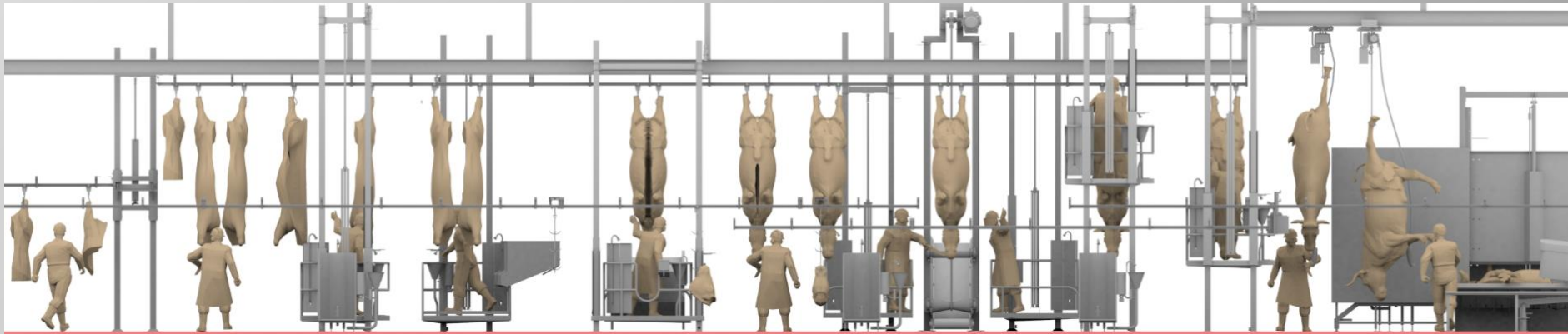
Phase	Capacity					Development			
	Head/hour	Head/shift	Shifts/day	Head per day		PE modules	Temporary accommodation	Traditional construction	Boning + packing
Three	30	240	1	240		Dressing Hall + three carcass chills		Plant rooms + amenities + offices	PE as required

Phase Four



Phase	Capacity					Development			
	Head/hour	Head/shift	Shifts/day	Head per day		PE modules	Temporary accommodation	Traditional construction	Boning + packing
Four	30	240	2	480			Plant rooms + amenities + offices	PE as required	

Carcass Dressing



Dressing Hall Manning Levels

Cattle per hour	60	30	15	5
Drover	1	1		1
Shooter			1	
Shackle, Sick	1	1		
Halal slaughter	1	1	1	
Clip	1	1	1	1
Clip	1			
Tag input			1	
Horn removal	1	1		
First Leg	1	1	1	
Helper	1	1		
Second Leg	1			
Front feet	1	1	included	1
Bung and tail	1	1	included	
Flanking	1	included	included	
Rod, tie wizard	1	included	included	
Hide puller	1	1	1	
Hide puller	1	1	1	
Head and tongue	1	1	included	1
Second cut, brisket	1			
Eviscerate	1	1	1	
Red offal	1			
Split	1			
SRM	1	1	1	
Neck, skirt	1	1	2	1
Weigh	1			
Trim	1	2		
Trim	1			
Trim	1			
Grading	1	2	1	
Q.C	1			
Q.C	1			
washing	1			
Total	30	19	12	5
Cattle per hour/ per man	2.0	1.6	1.3	1.0

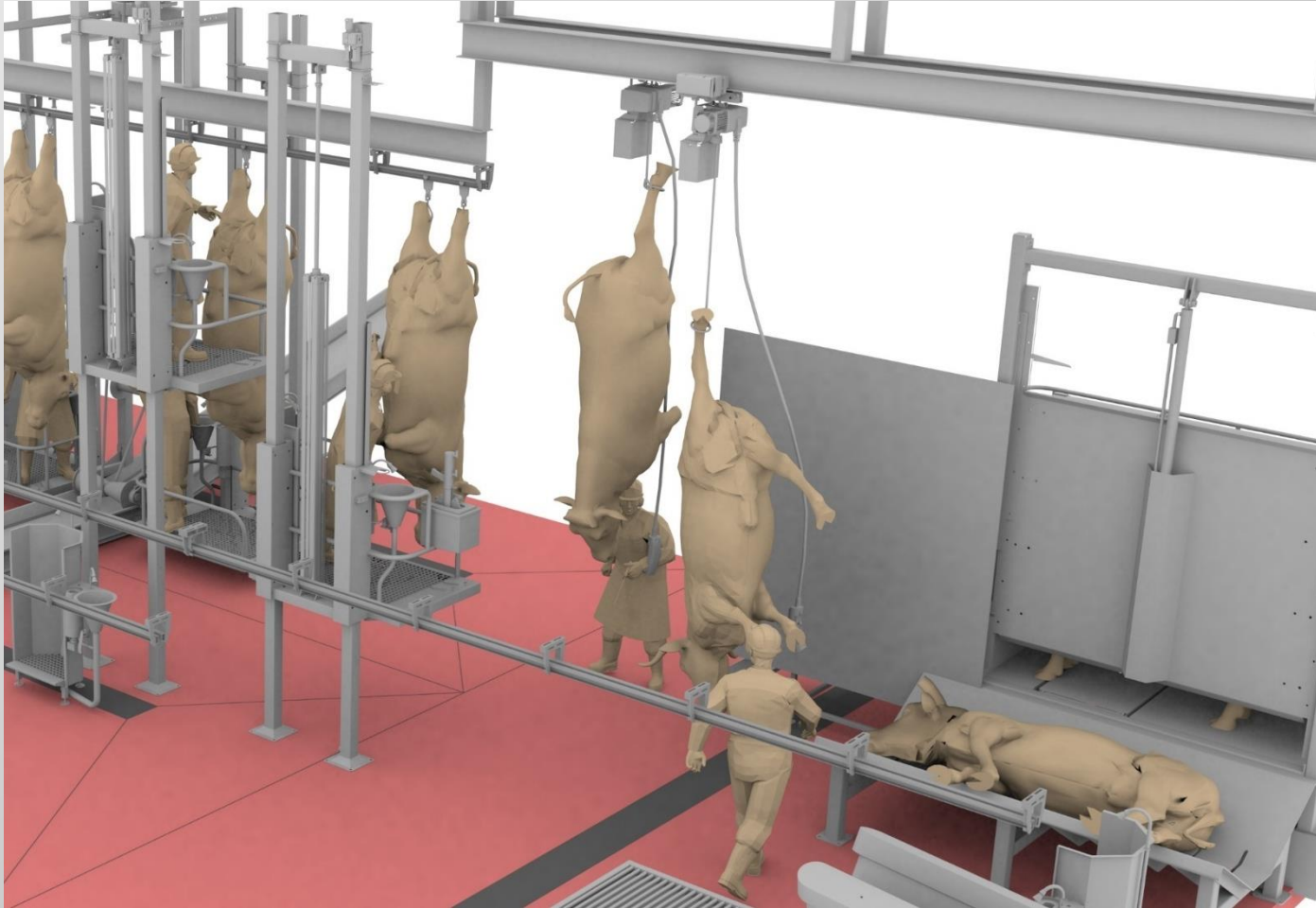
Slaughter & Carcass Dressing Stage 1

Activities (15 per hr)

- Conventional or ritual slaughter
- Shackle and hoist to bleed rail
- 6 minute bleed time



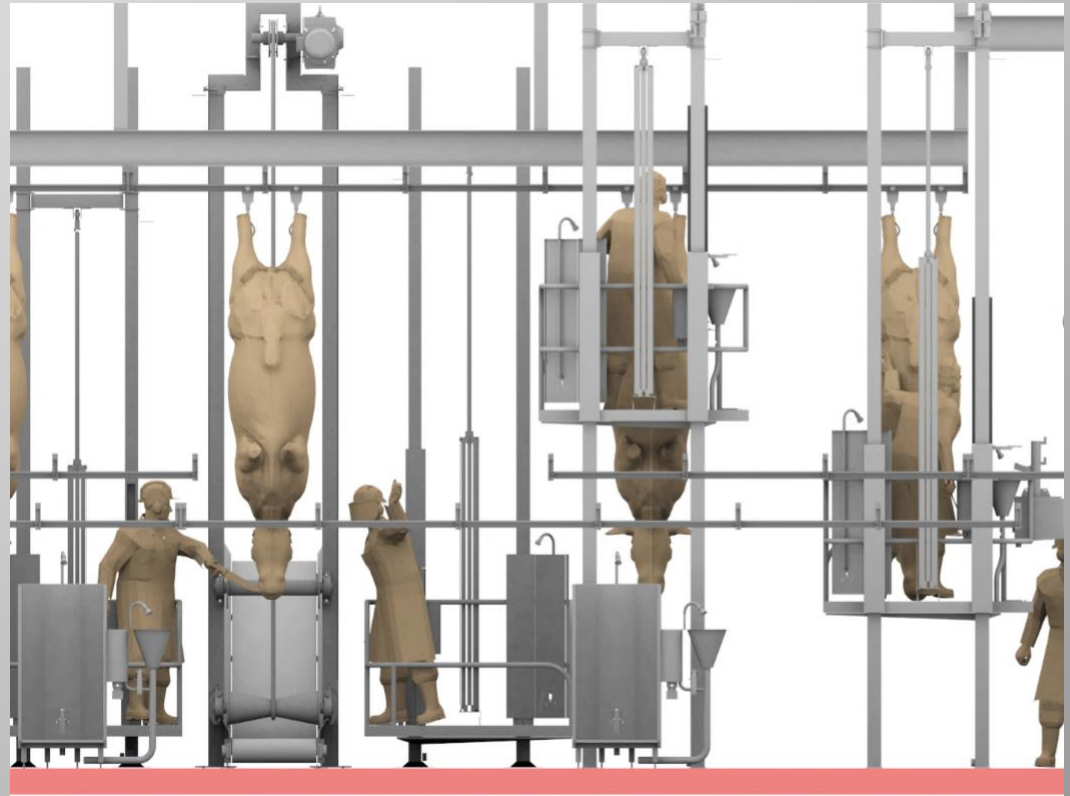
Operational Facility



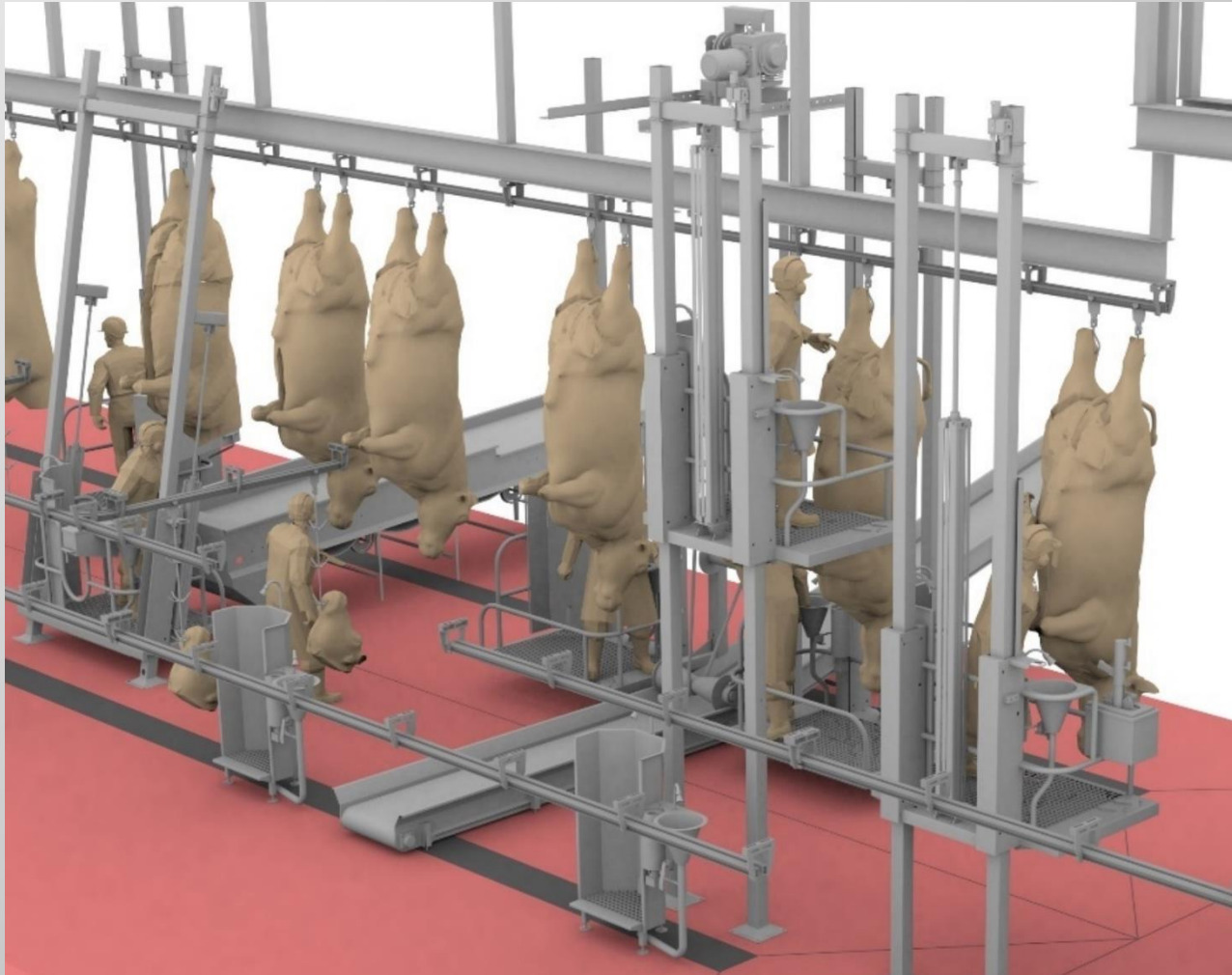
Slaughter & Carcass Dressing Stage 2

Activities (15 per hr)

- Transfer carcass to dressing line
- Skin and remove hind feet
- Clear bung and skin tail
- Clear flanks
- Rod and tie weasand
- Remove front feet
- Remove horns
- Clear front
- Remove hide



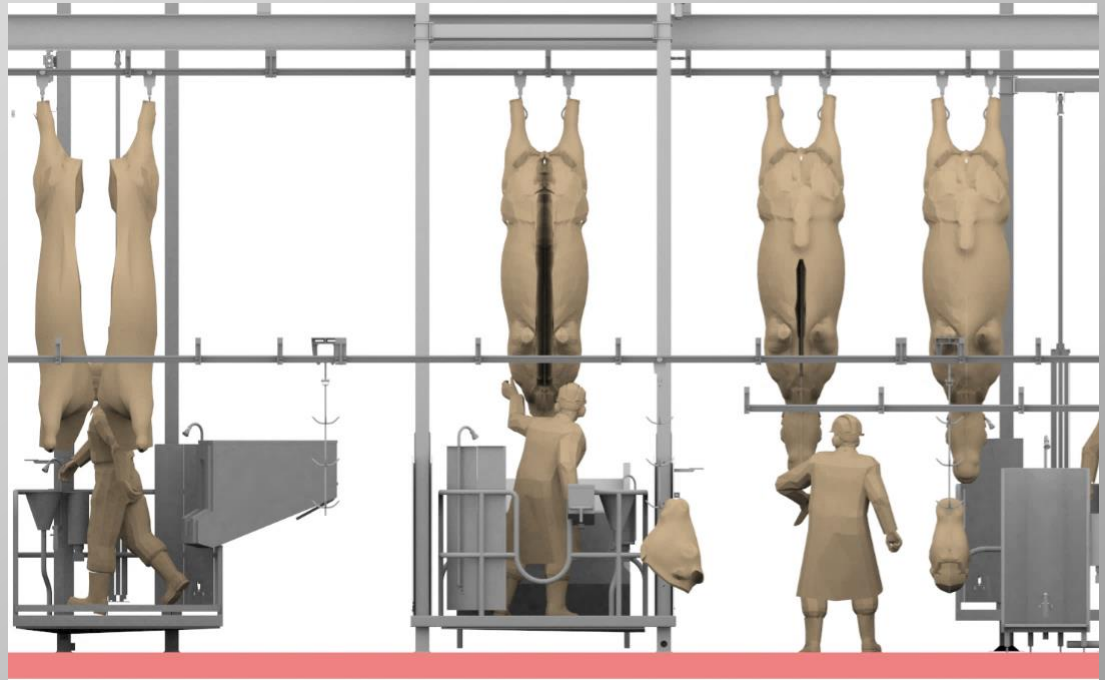
Operational Facility



Slaughter & Carcass Dressing Stage 3

Activities (15 per hr)

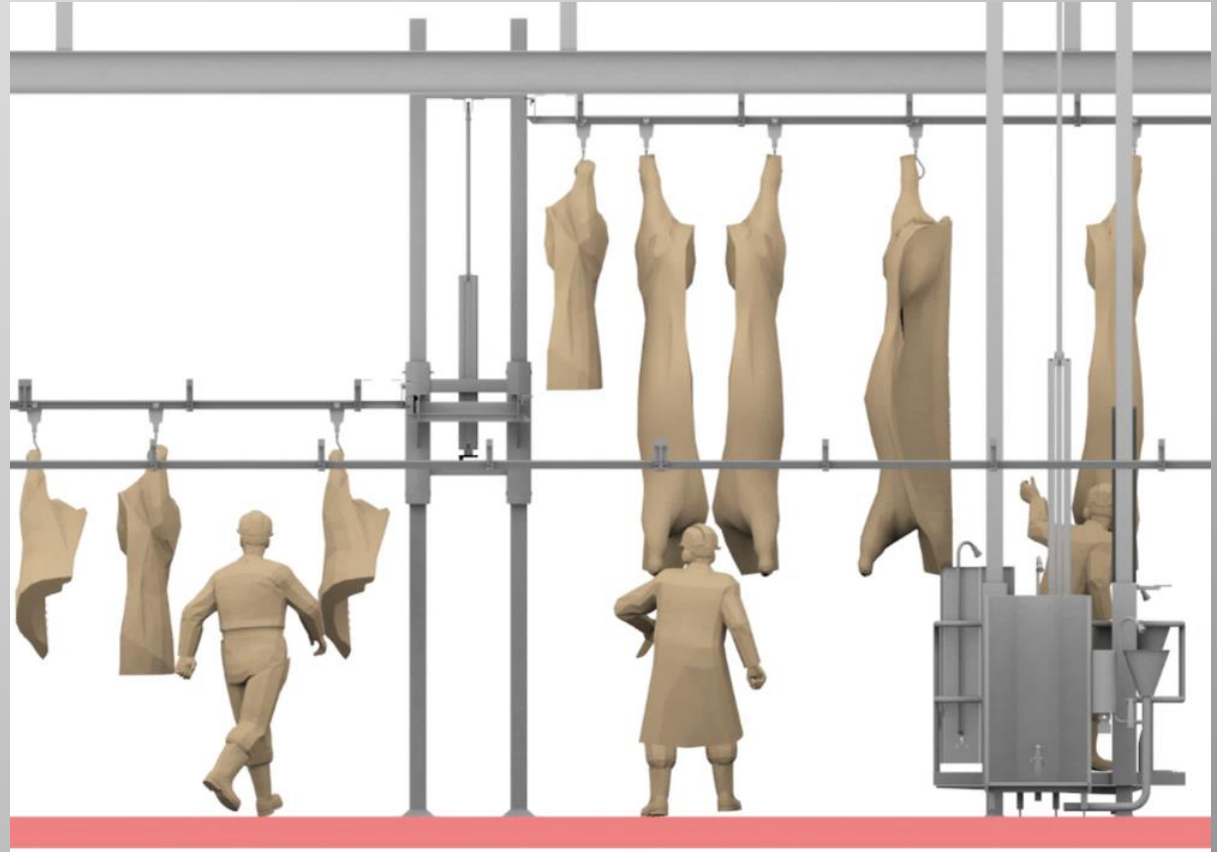
- Remove head and hang onto rail
- Saw brisket
- Eviscerate
- Remove red offal and hang on rail
- Split carcass
- Remove SRM



Slaughter & Carcass Dressing Stage 4

Activities (15 per hr)

- Trim
- Check
- Weigh
- Wash
- Quarter and push to carcass chill



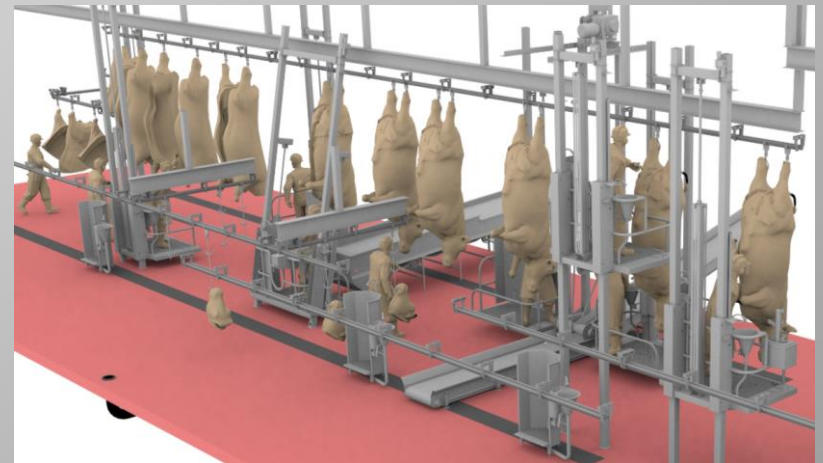
Slaughter & Carcass Dressing Stage 4



Thank you

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