



Warehouse Design for the Modern Mover



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Greenfield Solution



WAREHOUSE DESIGN FOR THE MODERN MOVER

Lease Solution



WAREHOUSE DESIGN FOR THE MODERN MOVER

Site Selection



Success Is ...

building Suits
the Process

Room for
Expansion

Good Access

Operations
Focus
The
Customer

Flexible Design



Client is Pleased



Profits



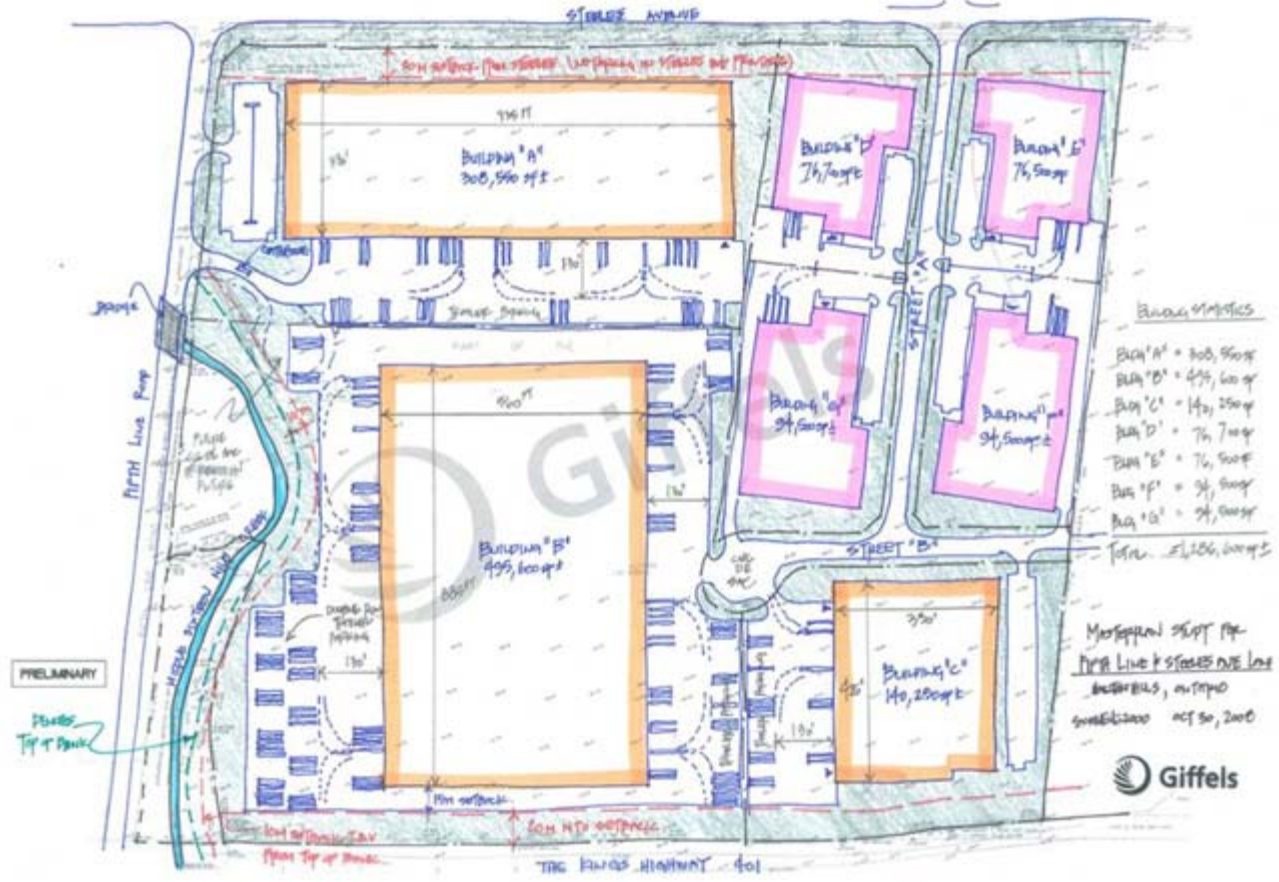
Site Selection

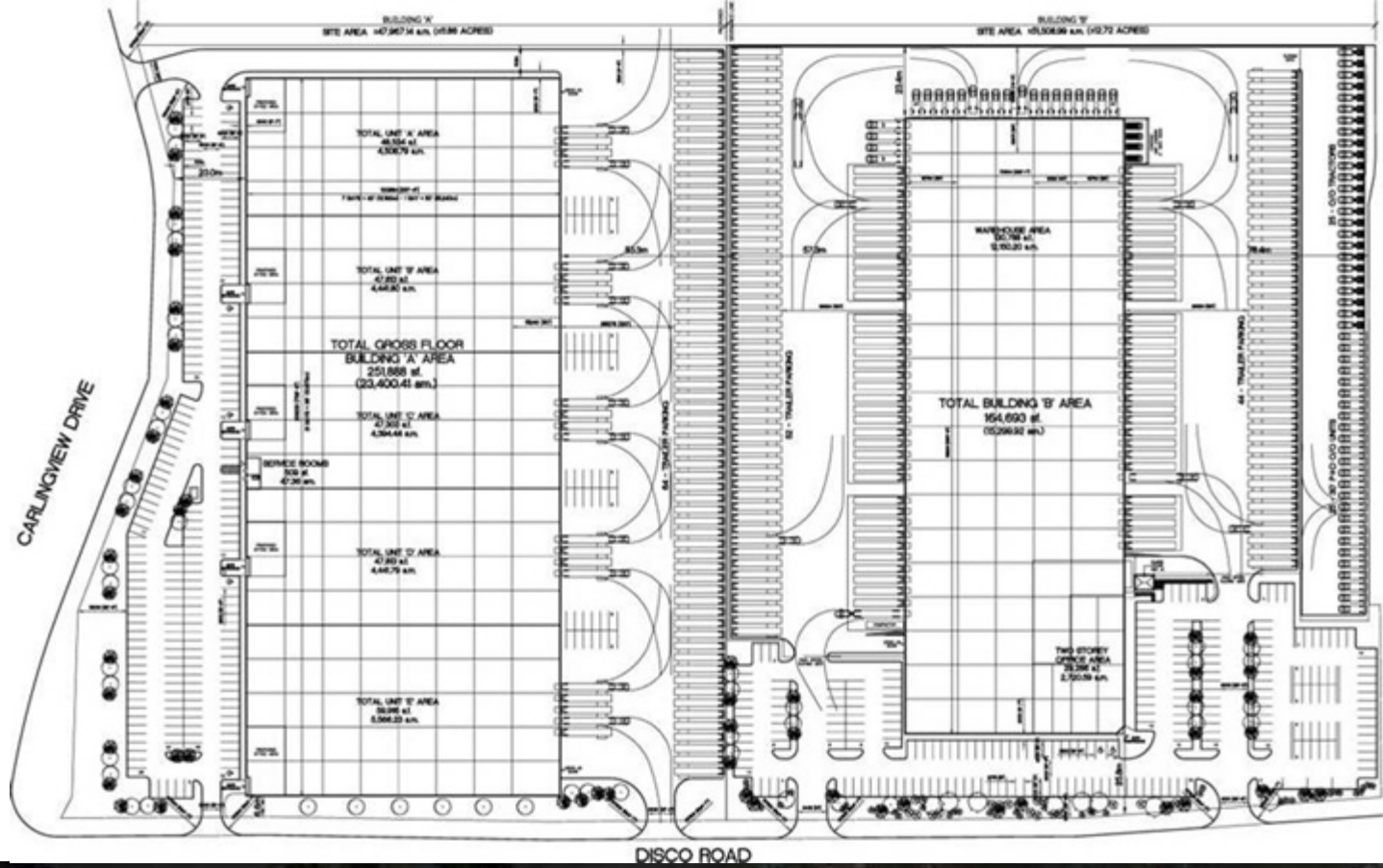


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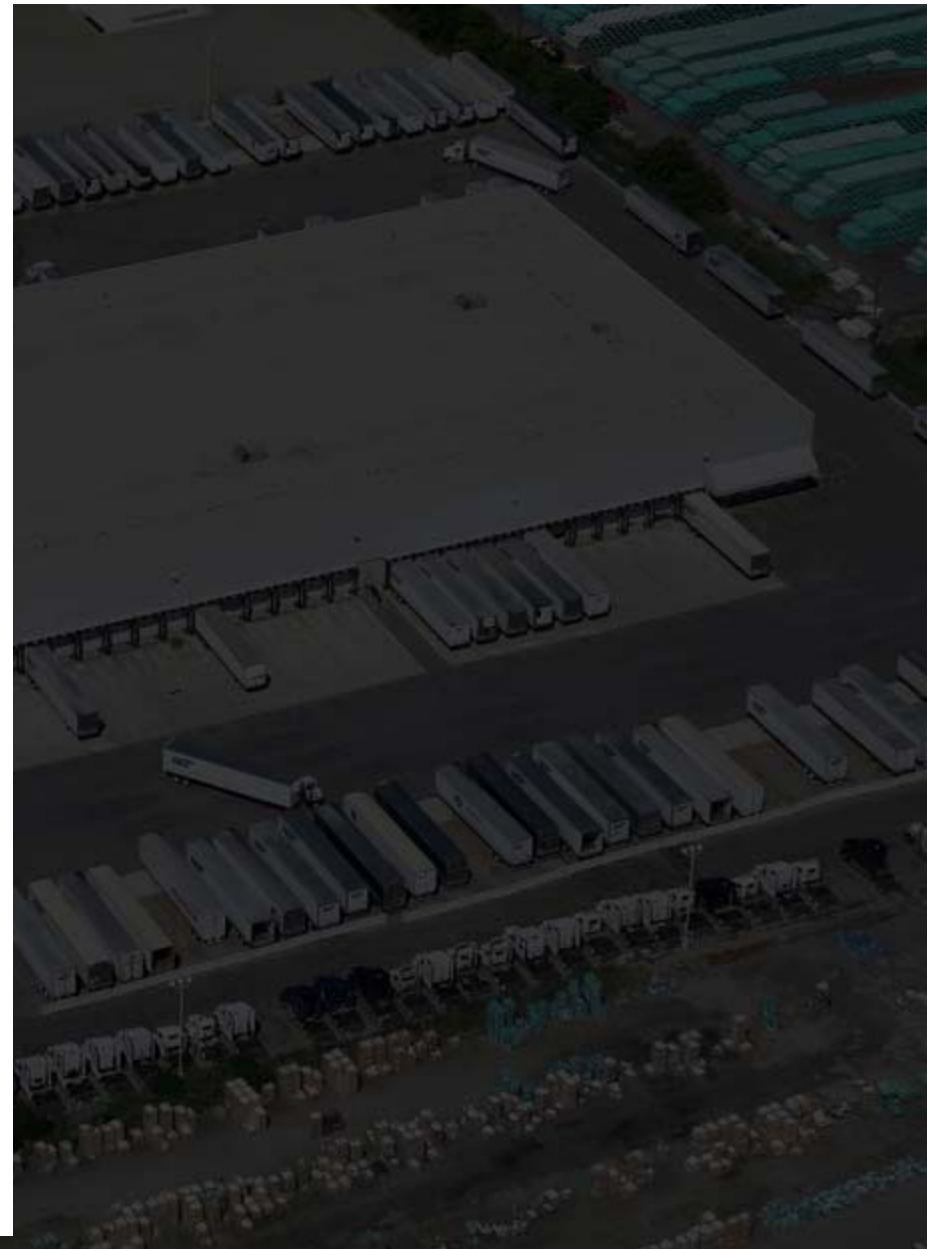
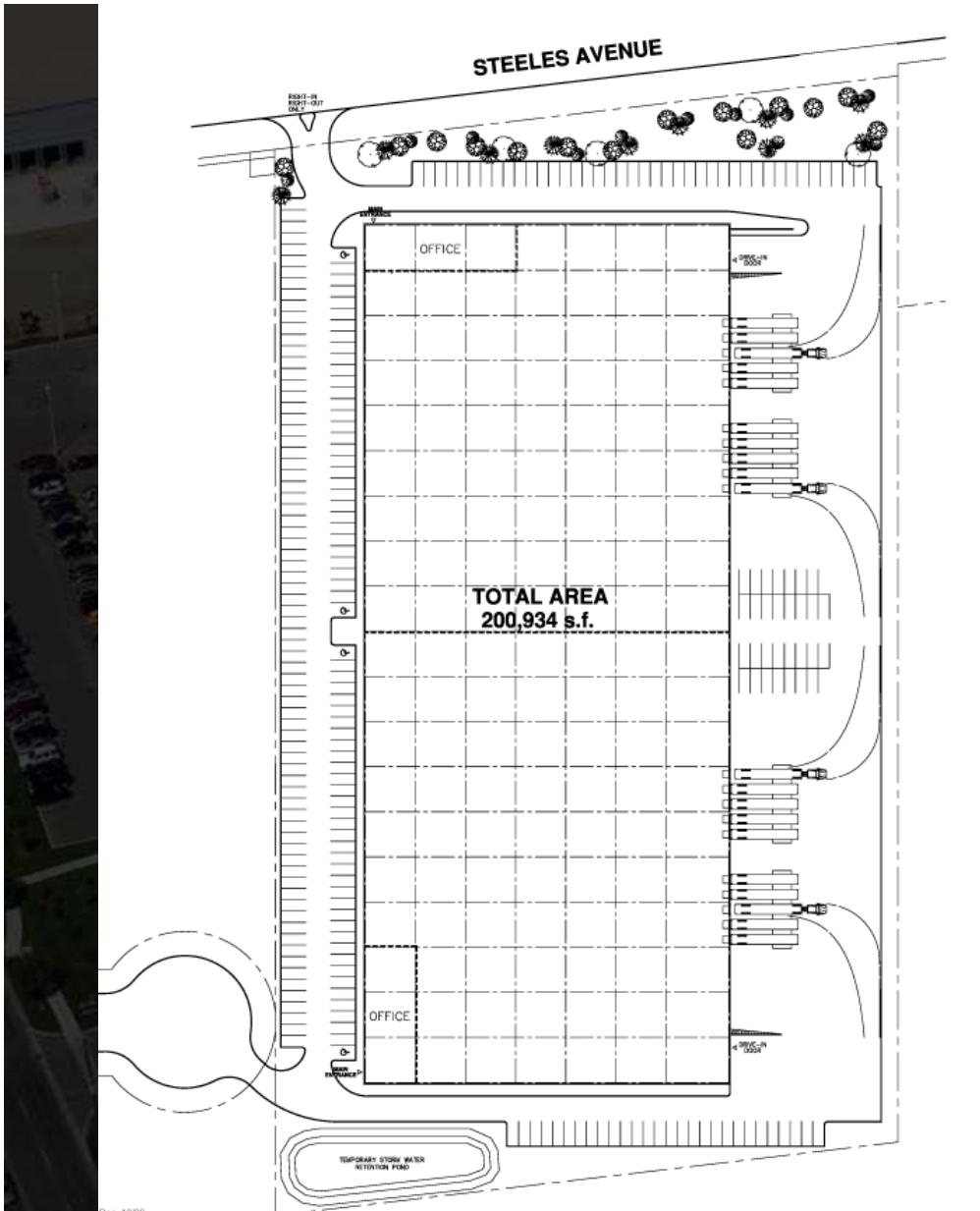
Additional Site Criteria

- Due Diligence
 - Soils Investigation
 - Environmental Report
 - Planning and Traffic
 - Authorities
- Entrances
- Circulation
- Building Orientation
- Turning Radius
- Rail

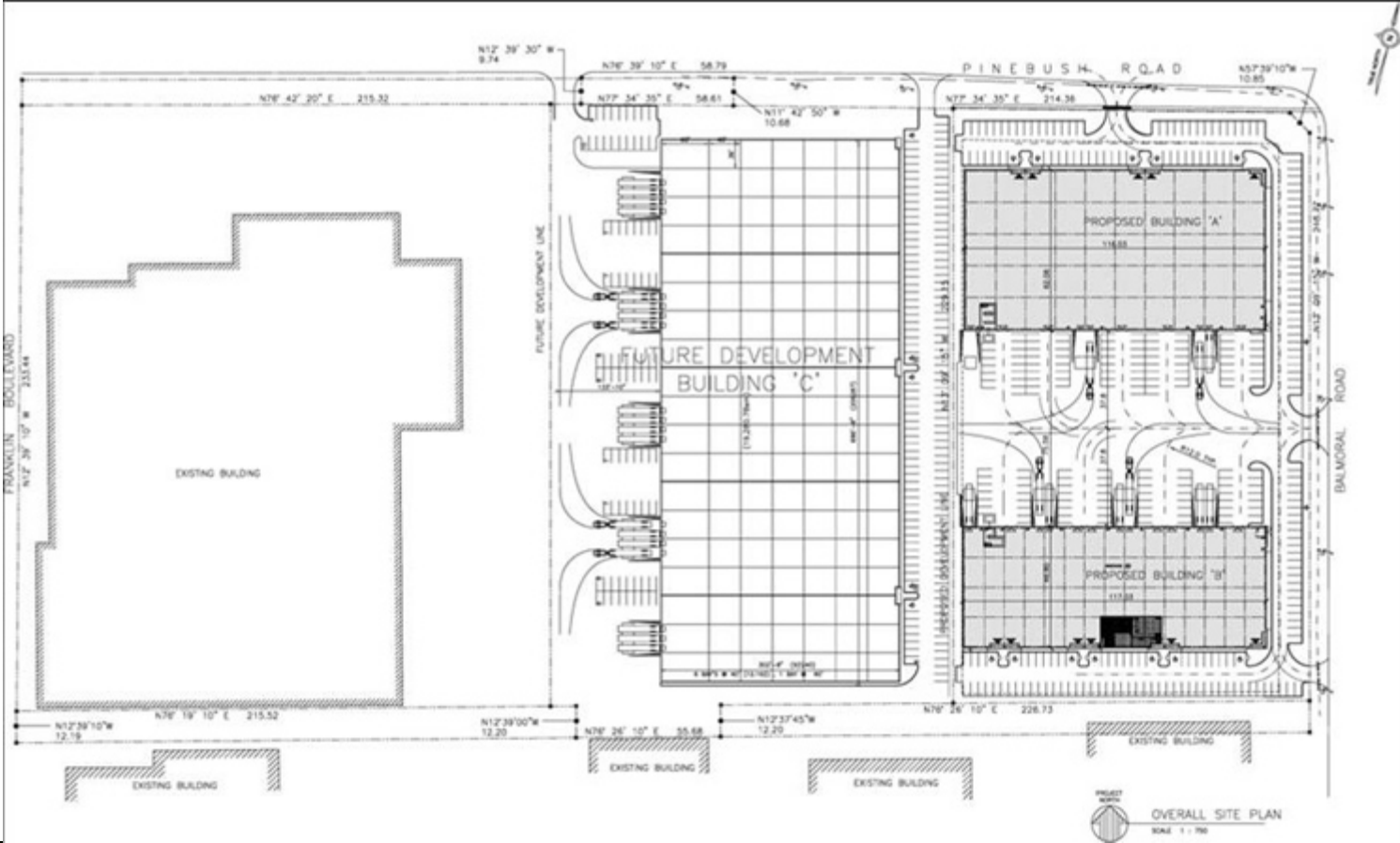




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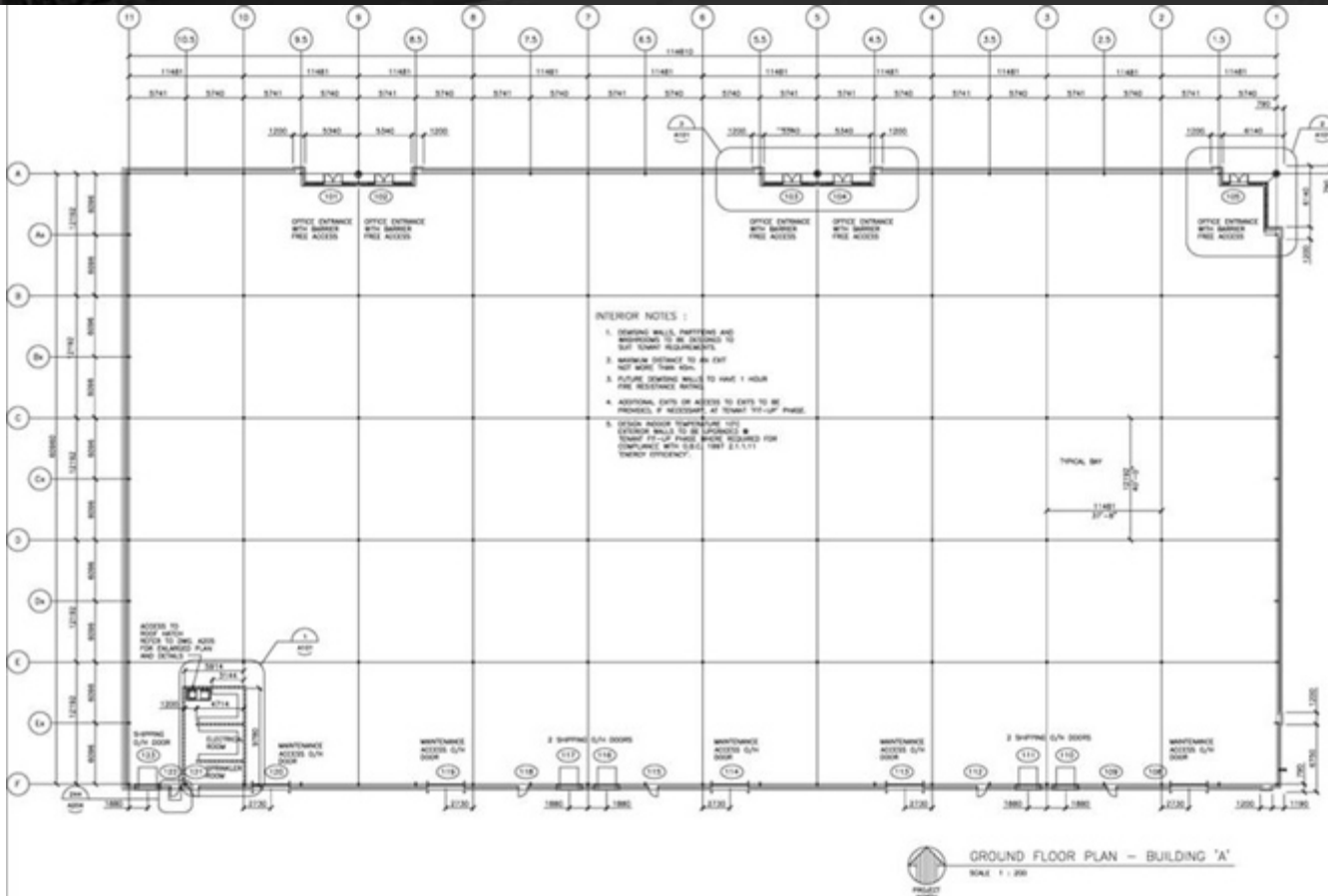


Lease Solution



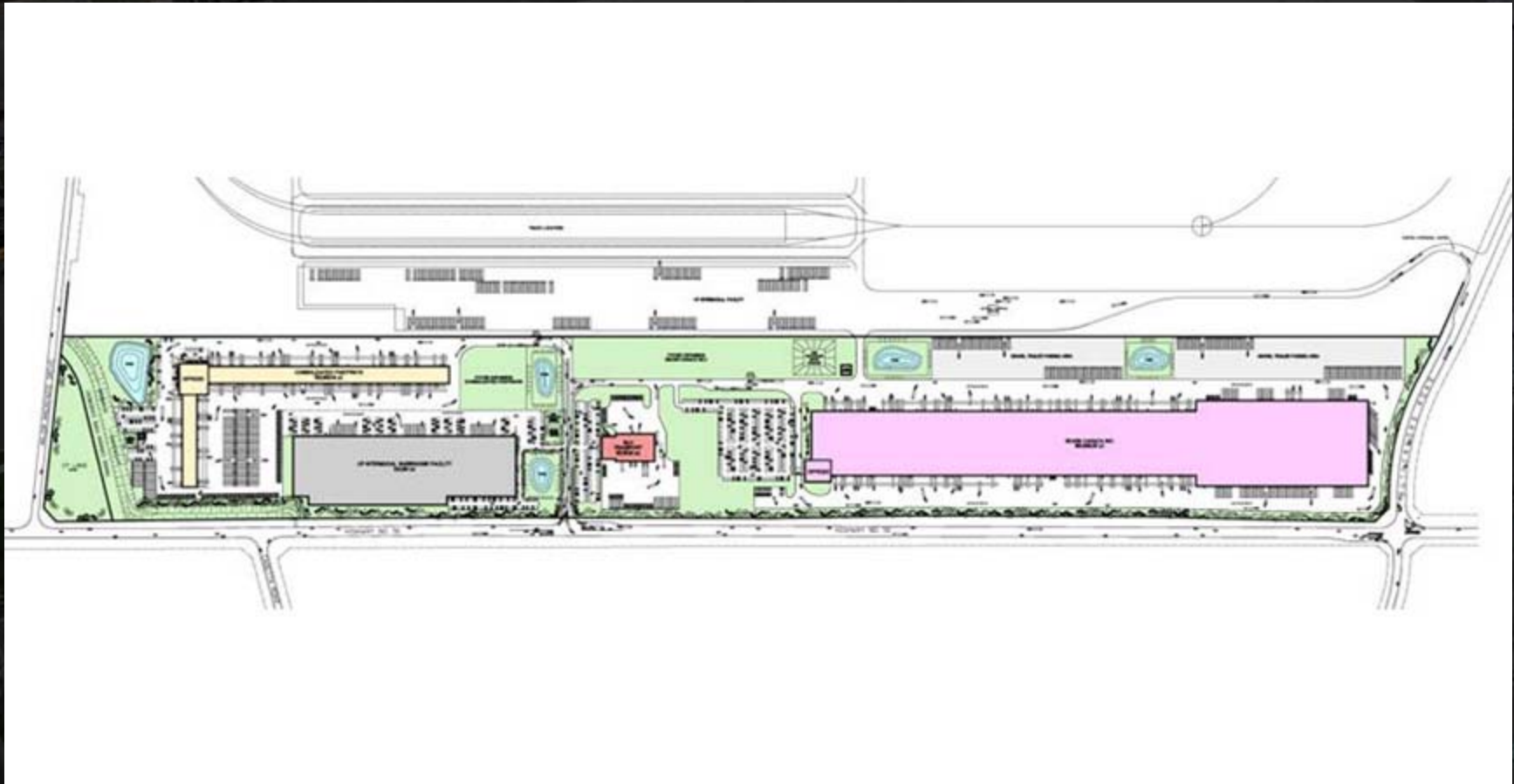
WAREHOUSE DESIGN FOR THE MODERN MOVER

10,000 sq. ft. or more



WAREHOUSE DESIGN FOR THE MODERN MOVER

Types of Facilities





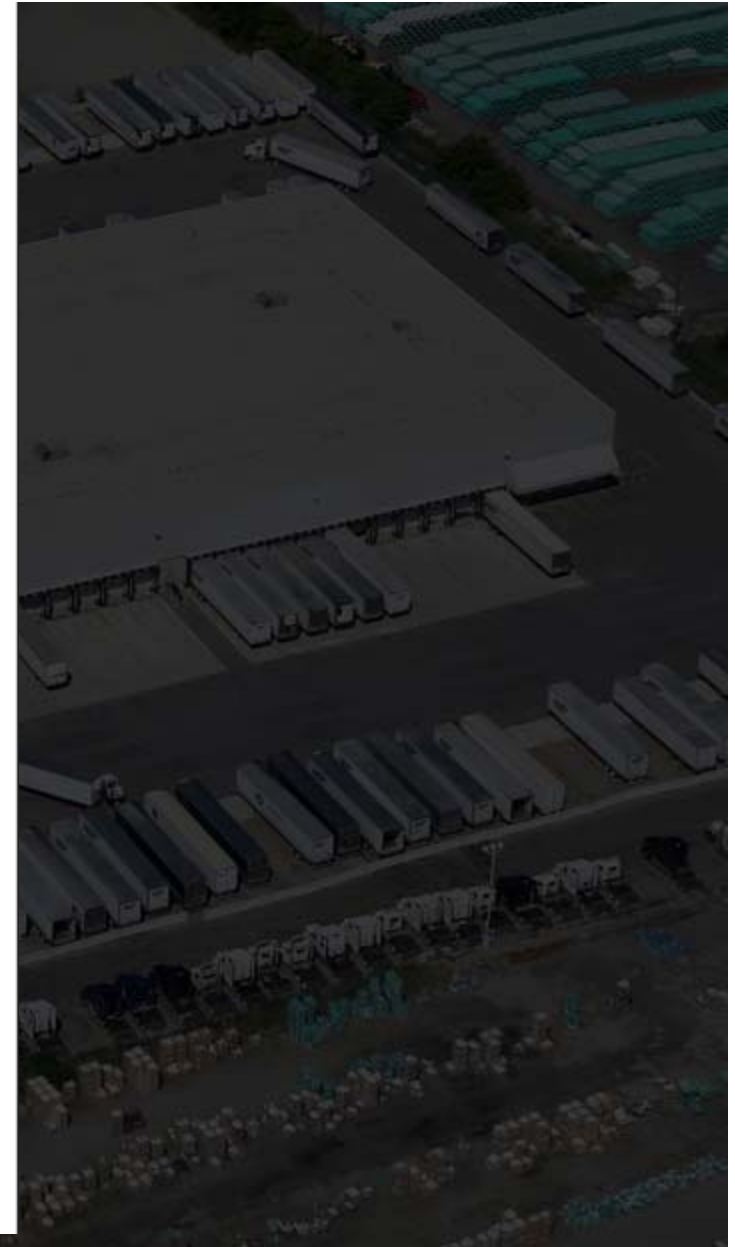
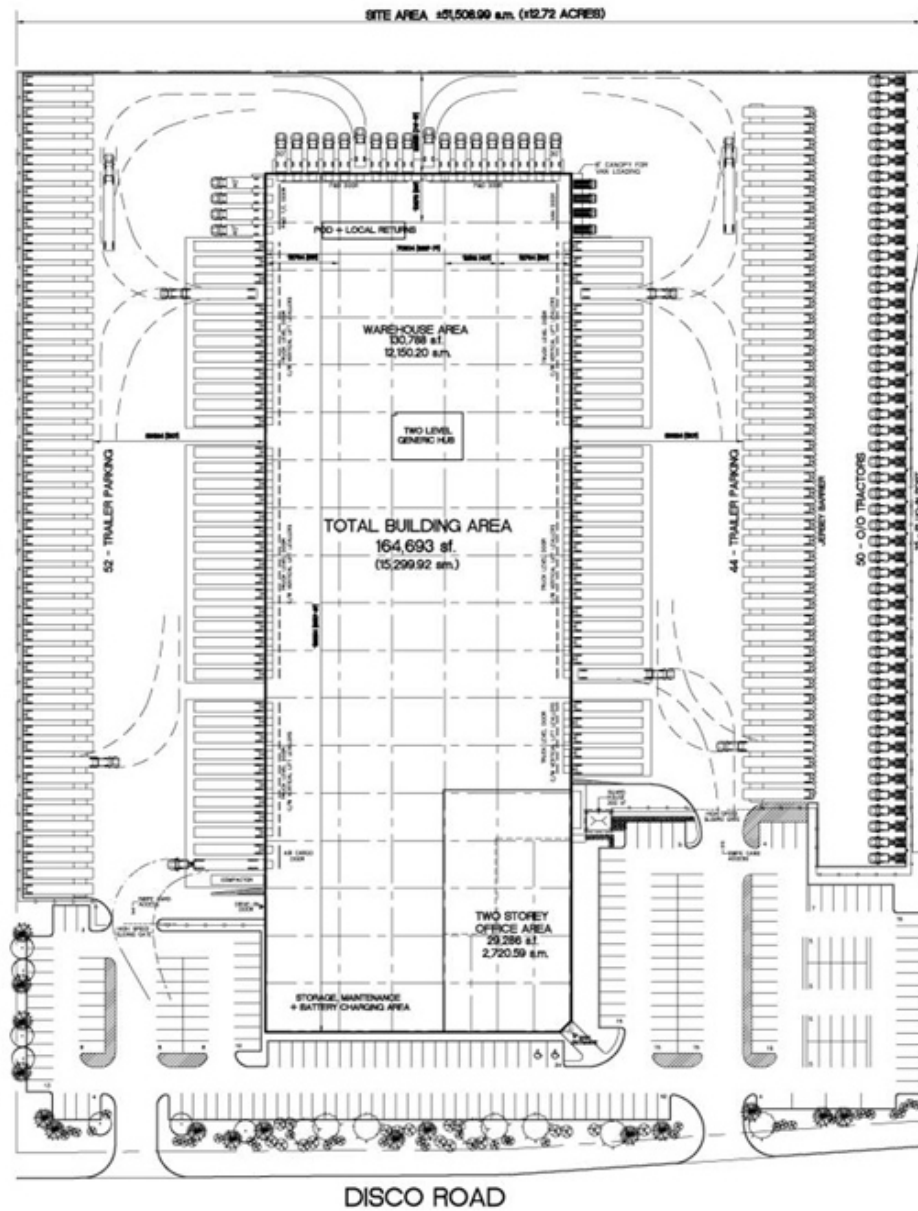




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Concept Development

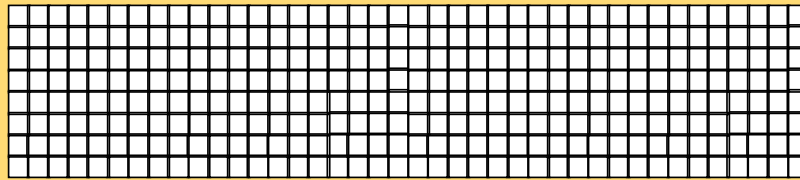
- The consultant can supply the broker/client:
 - Facility Planning
 - Right Sizing
 - Budgeting
 - Layout Assistance
- Sometimes the work is confidential
 - perhaps frustrating to vendors
 - element of trust

The Structure

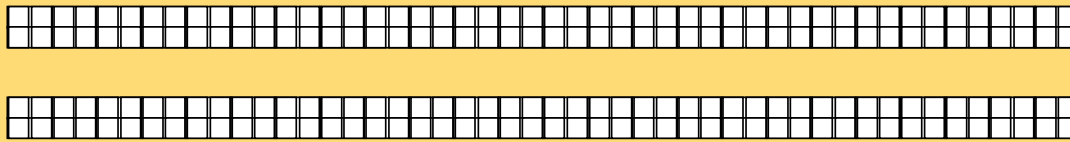
- Precast concrete walls
- Flat built-up membrane roof, R20
- 28 feet clear to underside of joists (depends on footprint of building)
 - 4 to 5 pallets high
- 7 inch concrete floor with or without fibre reinforcing (loading)
- Sealed with a penetrating floor sealer

Concept Development

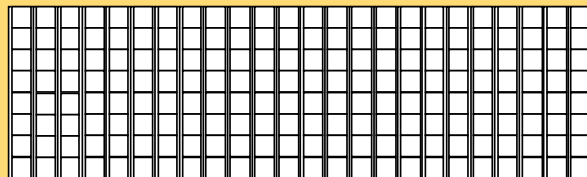
Relative Space Requirements Alternative Storage Medium



3 high bulk stack
960 pallet spaces
4,433 sq ft

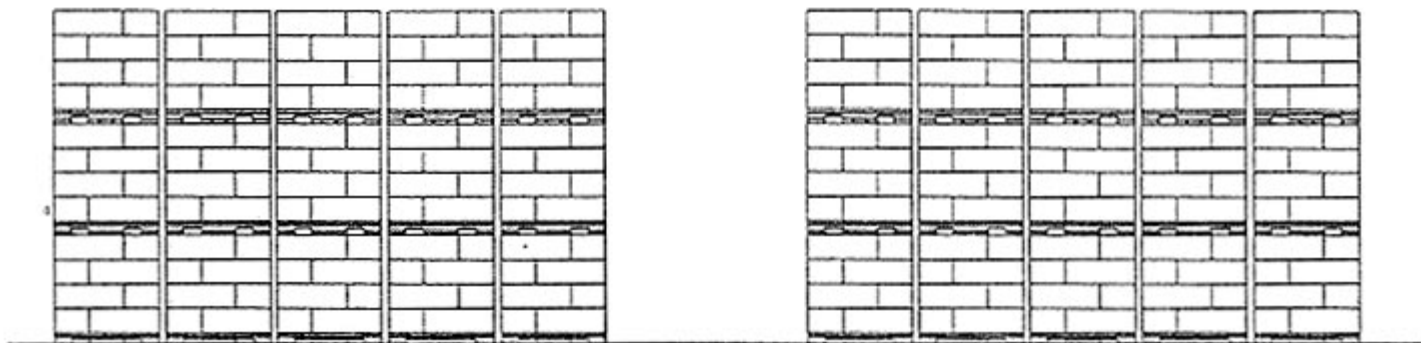


**5 high standard
pallet rack**
960 pallet spaces
4,992 sq ft

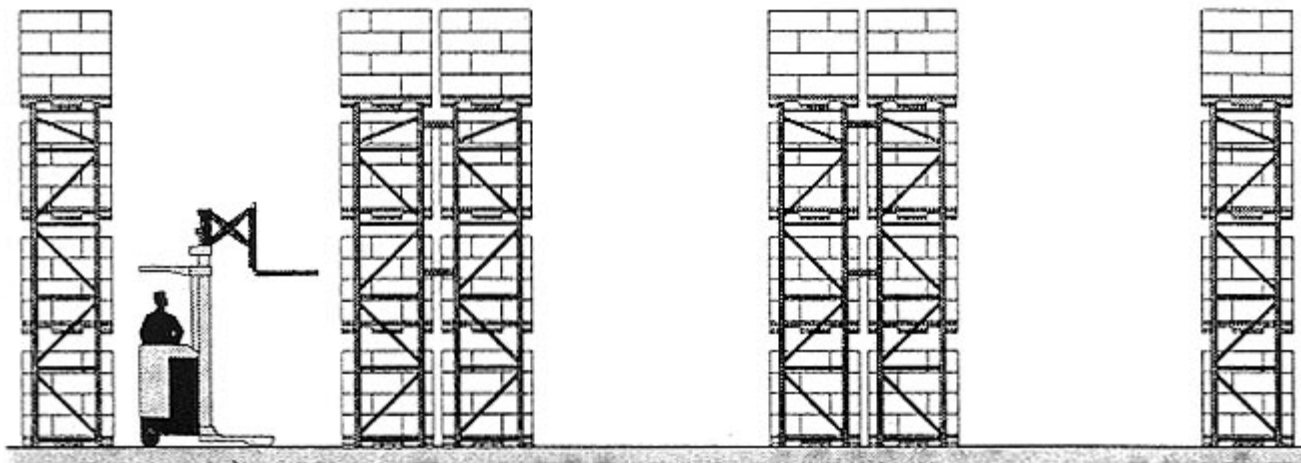


5 high drive-in rack
960 pallet spaces
3,478 sq ft

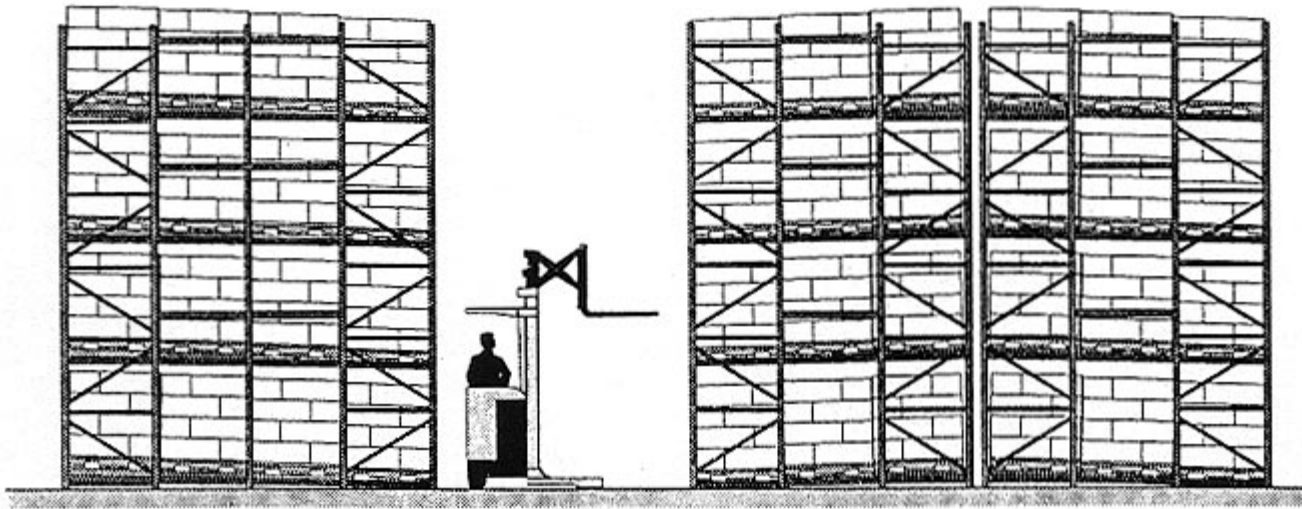
BULK FLOOR STACKING



STANDARD SELECTIVE RACK



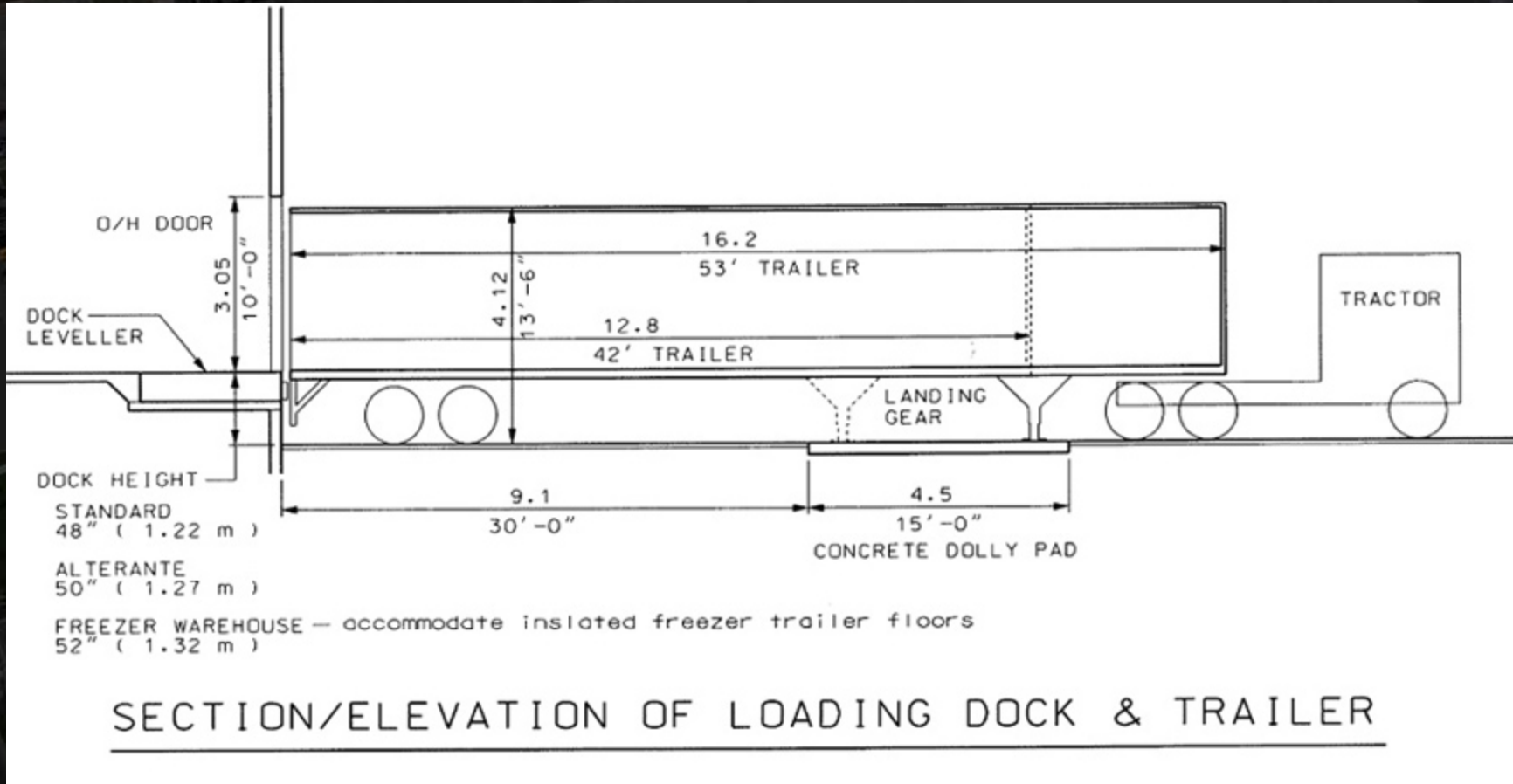
PUSHBACK RACKING



Shipping Doors

- All doors to be 9 ft. x 10 ft.
- Shelters or seals at doors
- Dock levelers to be electric, hydraulic rated at minimum 27,000 lbs. with 18 inch lip
- Wheel chocks
- Protective bollards each side of doors (typically on drive in doors only)
- Truck articulated lights at each door
- Optional - Truck restraints, back up lighting package, inflatable seals, power doors

Dock Heights





WAREHOUSE DESIGN FOR THE MODERN MOVER



The Building

- 20,000 sq. ft. up to 1,000,000 sq. ft.
- Travel depth becomes a factor, fire corridors (egress)
- Narrow Width or finger design - cross dock
- Large quantity of Doors
- Bay Size
 - 38 ft. by 40 ft. Reach Trucks
 - 30 ft. by 40 ft Turret Trucks
- First bay behind shipping to be 60 to 70 ft. deep (marshalling)
- 120 ft. from truck doors to end of asphalt
- Concrete dolly pads 15 ft. wide or concrete truck apron 65 ft. deep

The Building Interior

- Protective bollards at doors, electrical equipment, all water and gas pipes
- Lighting at 35 FTC based on open concept until Racking configuration is known
- Battery charging area with floor drain (possible acid neutralizer) and power distribution
- Finished office area as required
- Optional Items - Paint all interior walls, deck and structure, shipper's office, Truckers washrooms and secure area etc.

Mechanical, Electrical & Fire Protection

- Lighting - 35 FTC open concept unless racking layout available
- Battery Charging Area - power and panel to area
- Circulation Fans in Warehouse, usually 1 per 5,000 sq. ft.
- Unit Gas Fired Heaters most economical, however Infrared heating for dock doors often preferred
- ESFR Sprinkler system required for 28 ft. clear to u/s of deck

Quality Features of a Crossdock Fulfillment Centre

- Clear Span for facility – typically 80 ft.
- Infrared heating due to constant door opening
- Dry Sprinkler system – minimum temperature
- Palletized receipts inbound
- Less than pallet/case quantity outbound
- Possible in larger facilities
 - 3 level pick towers or cross dock conveyor systems
 - quick response pick lanes

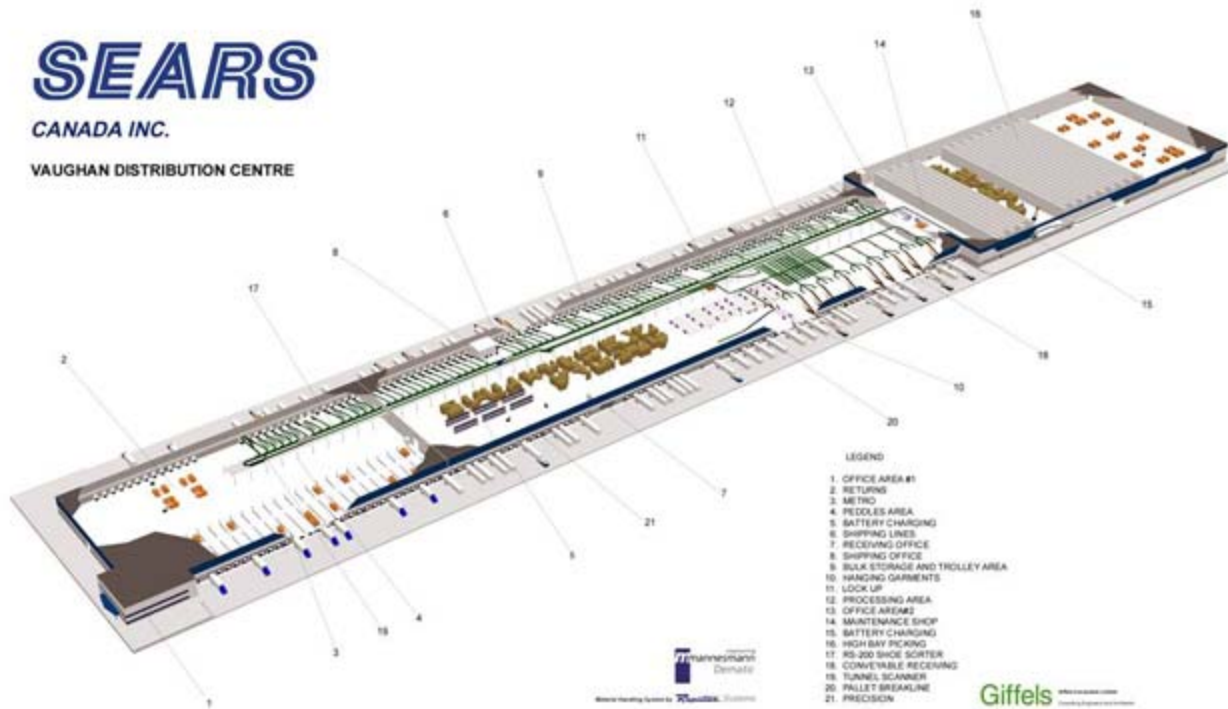


Facility Examples

SEARS

CANADA INC.

VAUGHAN DISTRIBUTION CENTRE



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FUTURE SHOP

BRAMPTON DISTRIBUTION CENTER

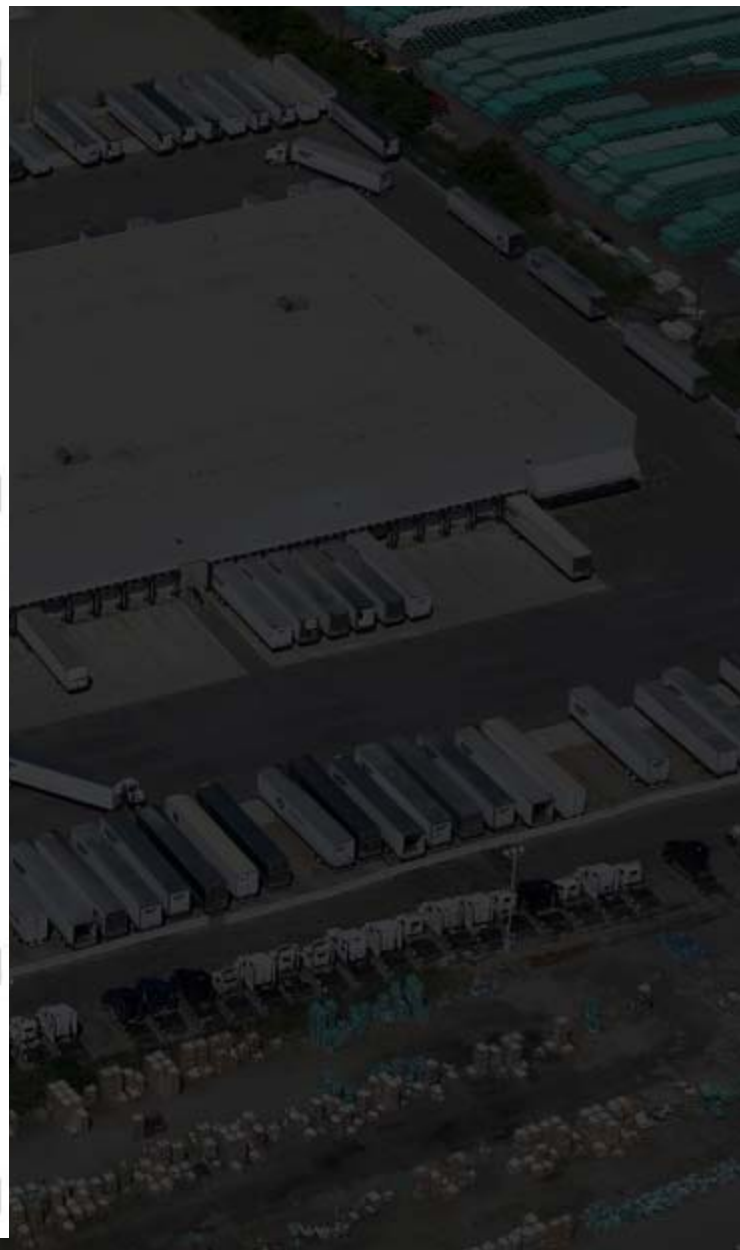


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continued...

Yes	?	No		
4		7	Materials & Resources	11 Points
Y			Prereq 1	Storage & Collection of Recyclables Required
		1	Credit 1.1	Building Reuse: Maintain 25% of Existing Walls, Floors & Roof 1
		1	Credit 1.2	Building Reuse: Maintain 50% of Existing Walls, Floors & Roof 1
		1	Credit 1.3	Building Reuse: Maintain 75% of Interior Non-Structural Elements 1
1			Credit 2.1	Construction Waste Management: Divert 50% from Disposal 1
		1	Credit 2.2	Construction Waste Management: Divert 75% from Disposal 1
		1	Credit 3	Materials Reuse: 1% 1
1			Credit 4.1	Recycled Content: 10% (post-consumer + ½ pre-consumer) 1
1			Credit 4.2	Recycled Content: 20% (post-consumer + ½ pre-consumer) 1
1			Credit 5.1	Regional Materials: 10% Extracted, Processed & Manufactured Regionally 1
		1	Credit 5.2	Regional Materials: 20% Extracted, Processed & Manufactured Regionally 1
		1	Credit 6	Certified Wood 1
Yes	?	No		
4		8	Indoor Environmental Quality	11 Points
Y			Prereq 1	Minimum IAQ Performance Required
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control Required
		1	Credit 1	Outdoor Air Delivery Monitoring 1
		1	Credit 2	Increased Ventilation 1
1			Credit 3	Construction IAQ Management Plan: During Construction 1
1			Credit 4.1	Low-Emitting Materials: Adhesives & Sealants 1
1			Credit 4.2	Low-Emitting Materials: Paints & Coatings 1
		1	Credit 4.3	Low-Emitting Materials: Carpet Systems 1
		1	Credit 4.4	Low-Emitting Materials: Composite Wood & Agrifiber Products 1
1			Credit 5	Indoor Chemical & Pollutant Source Control 1
		1	Credit 6	Controllability of Systems: Thermal Comfort 1
		1	Credit 7	Thermal Comfort: Design 1
		1	Credit 8.1	Daylight & Views: Daylight 75% of Spaces 1
		1	Credit 8.2	Daylight & Views: Views for 90% of Spaces 1
Yes	?	No		
3		2	Innovation & Design Process	5 Points
1			Credit 1.1	Innovation in Design: Recycled Content 1
1			Credit 1.2	Innovation in Design: Water Usage 1
		1	Credit 1.3	Innovation in Design: 1
		1	Credit 1.4	Innovation in Design: 1
1			Credit 2	LEED® Accredited Professional 1
Yes	?	No		
25	1	31	Totals (pre-certification estimates)	61

Certified: 23 to 27 points, Silver: 28 to 33 points, Gold: 34 to 44 points, Platinum: 45 to 61 points



Schedule by Method

DESIGN/GENERAL CONTRACT

CONCEPT DESIGN

DETAILED DESIGN

TENDERING

CONSTRUCTION

DESIGN/CONSTRUCTION MANAGEMENT, DESIGN/BUILD, or TURNKEY

CONCEPT DESIGN

DETAILED DESIGN

TENDERING

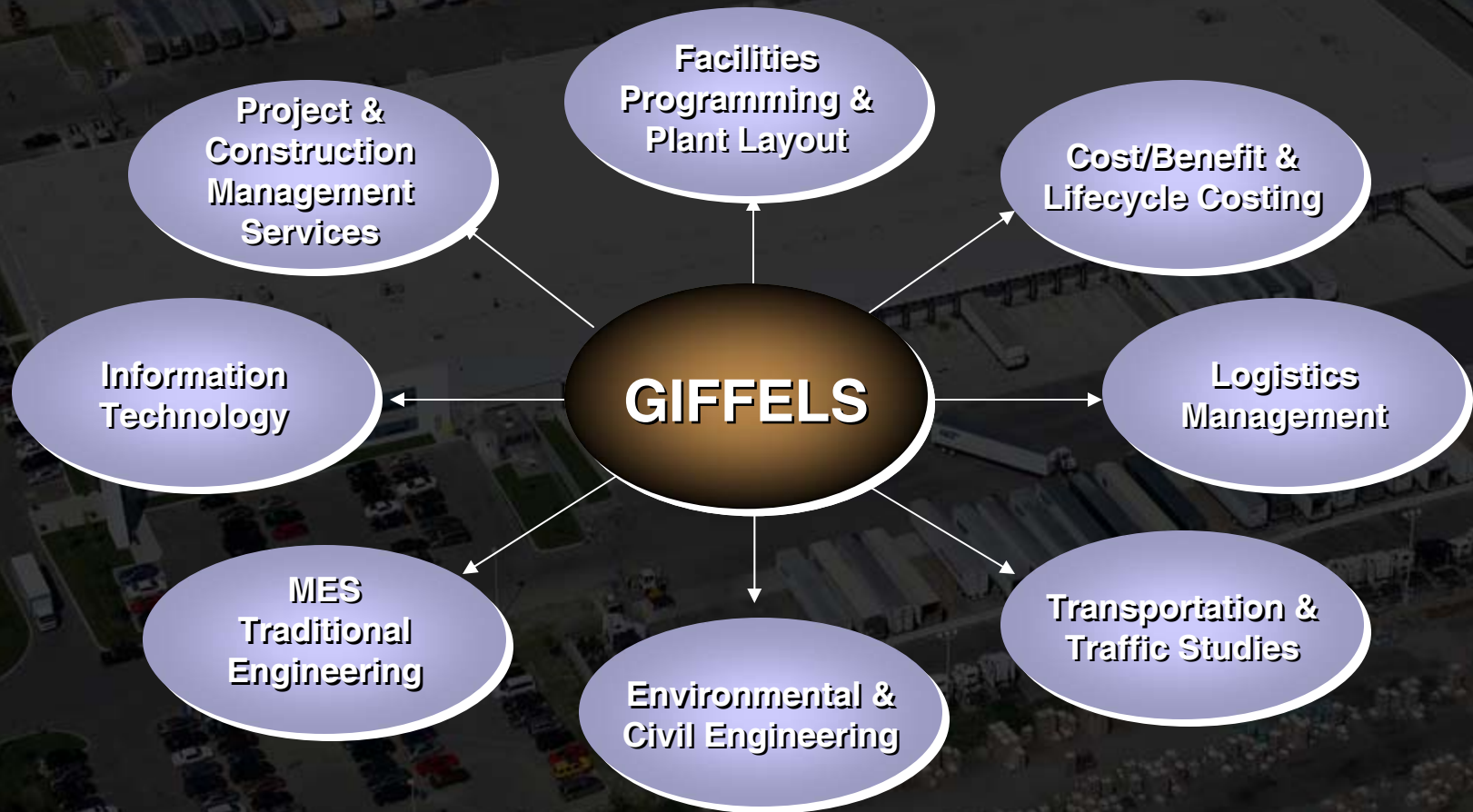
CONSTRUCTION

Time & Money Saved

Benefits of Turnkey

- Costs estimated & guaranteed early in process
- Guaranteed delivery
- Non-adversarial approach between parties & owner
- Single point of contact
- Cost effective per functional square foot
- Fast-track potential
- Broader professional input early in process

Shameless Corporate Promotion



Thank You

BUILDING SUCCESS INTO NEW FACILITIES

YOU CAN MAKE A DIFFERENCE

YOU WILL BE THE BIGGEST BENEFACTOR



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