CLAIMS

1. A system for the transfer, storage and distribution of intermodal containers of a plurality of lengths, the system comprising:

a first storage area comprising a first plurality of vertically oriented container storage shafts arranged in a grid pattern along a first and second axis, wherein the shafts disposed in rows along the first axis are configured to store intermodal containers of a plurality of lengths and wherein the shafts disposed in a given row along the second axis are configured to store intermodal containers of a corresponding length;

a plurality of gantry cranes slidably movable along the first axis and extending beyond the first storage area, the plurality of gantry cranes each configured to attach to and transport an intermodal container from a first location outside of the first storage area to one of a plurality of platforms slidably movable along the first axis, the platforms being located outside of the first storage area and positioned to deliver the intermodal container to one of the rows of the shafts along the first axis based on the length of the intermodal container;

a roof structure is positioned over the first storage area a distance above the plurality of shafts, the roof structure comprises a plurality of tracks corresponding to the rows of the shafts along the second axis, wherein the plurality of gantry cranes are movably disposed on top of the roof structure; and

a plurality of overhead cranes slidably associated with the plurality of tracks and disposed below the roof structure, the overhead cranes each configured to attach to and transport the intermodal container from the platforms to either one of the shafts or to a second location along the second axis.

2. The system of claim 1, wherein the shafts disposed in each row corresponding to the second axis are configured to store intermodal containers of uniform lengths.

3. The system of claim 1, wherein the shafts disposed in at least one row along the second axis are configured to store intermodal containers within a range of lengths.

4. The system of claim 1, wherein one of a plurality of the platforms is assigned to

one of a plurality of the gantry cranes.

5. A system for the transfer, storage and distribution of intermodal containers of a plurality of lengths, the system comprising:

a storage area comprising a roof structure and a plurality of vertically-oriented container storage shafts disposed under the roof structure, each storage shaft comprising a modular rectangular configuration of uniformly-sized container cell bays, the storage shafts arranged in a grid pattern along a first and second axis, wherein the shafts disposed in rows along the first axis are configured to store intermodal containers having different lengths and wherein the shafts disposed in a given row along the second axis are configured to store intermodal containers of a uniform length;

a plurality of gantry cranes disposed above the roof structure and slidably movable thereon along the first axis and extending beyond the storage area, the plurality of gantry cranes each configured to attach to and transport an intermodal container from a first location outside of the storage area to one of a plurality of platforms slidably movable along the first axis and disposed outside of the ~~first~~ storage area, the platforms being positioned to deliver the intermodal container to one of the rows of the shafts along the first axis based on the length of the intermodal container;

a plurality of overhead cranes disposed below the roof structure and slidably movable on along the second axis to attach to and transport the intermodal container from the platforms to either one of the shafts or to a second location along the second axis; and

one or more tunnel cars disposed within the storage area below the overhead cranes and slidably movable along the first axis to transport intermodal containers between shafts disposed in rows along the first axis.

6. The system as recited in claim 5 wherein one of a plurality of the platforms is assigned to one of a plurality of the gantry cranes.

7. The system of claim 5 further comprising a land-side docking area comprising a rail train, wherein the rail train comprises a plurality of carbodies each sized to accommodate at least one intermodal container, wherein the carbodies are arranged so that the size of each carbody corresponds with the arrangement of the lengths of the

intermodal containers contained in at least a subset of the row of storage shafts along the first axis.

8. A system for moving and storing containers comprising:

a first storage area comprising a plurality of vertically-oriented storage shafts arranged in a grid pattern along a first and second axis;

one or more gantry cranes disposed above the first storage area and movable along the first axis for attaching to and moving a container from a location outside of the first storage area to a platform disposed along the first axis, wherein the platform is slidably movable along the first axis; and

one or more overhead cranes movable along the second axis for attaching to and moving a container from the platform to either one of the shafts or to a location along the second axis, wherein the one or more gantry cranes are located above the one or more overhead cranes.

9. The system as recited in claim 8 wherein the shafts disposed in rows along the first axis are configured to store containers of different lengths, and wherein the shafts disposed in a given row along the second axis are configured to store containers of an equal length.

10. The system as recited in claim 8 comprising a roof structure positioned over the first storage area, wherein the one of more gantry cranes are disposed above the roof structure.

11. The system as recited in claim 10 comprising tracks connected with the roof structure, wherein the one or more overhead cranes are slidably disposed on the tracks.

12. A system for transferring and storing containers of different lengths comprising:

a storage area comprising a roof structure and a plurality of vertically-oriented container storage shafts disposed thereunder, the storage shafts arranged in a grid pattern along a first and second axis, wherein the shafts disposed in rows along the first axis are configured to store containers having different lengths and wherein the shafts

disposed in a given row along the second axis are configured to store containers of a uniform length;

a gantry crane disposed above the roof structure and movable along the first axis to move and deliver containers to shafts along the first axis; and

an overhead crane disposed below the roof structure and movable along the second axis to move and deliver containers to shafts along the second axis.

13. The system as recited in claim 12 wherein the gantry crane is used to move a container from a first location outside of the storage area to one of a plurality of platforms, wherein at least one of the plurality of platforms are slidably movable along the first axis and disposed outside of the first storage area, the platforms being positioned to deliver the container to one of the rows of the shafts along the first axis based on the length of the intermodal container.

14. A system for moving and storing containers comprising:

a first storage area comprising a plurality of storage shafts arranged in a grid pattern along a first and second axis, each shaft comprising vertically stacked containers of the same dimension;

one or more gantry cranes positioned above the first storage area and movable along the first axis for attaching to and moving a container from a location outside of the first storage area to a location along the first axis;

one or more overhead cranes within the first storage area movable along the second axis for attaching to and moving a container from the location along the first axis to either one of the shafts or to a location along the second axis, wherein the one or more gantry cranes are positioned above the one or more overhead cranes; and

a carrier within the first storage area for traversing the rows of shafts on the first axis for moving a container in a direction parallel to the first axis, wherein the carrier is disposed below the one or more overhead cranes.

15. A method for moving and storing a container comprising the steps of:

moving a container from a first location positioned outside of a storage area by use of a gantry crane inwardly towards the storage area, wherein the gantry crane

delivers the container onto a movable platform;

moving the platform along a first axis of the storage area along rows of storage shafts; and

removing the container from the platform and moving the container along a second axis that is perpendicular to the first axis and placing the container into a selected storage shaft for accommodating the container therein, wherein the step of removing is performed by an overhead crane disposed within the storage area and movable along the second axis, and that is disposed below the gantry crane.

16. The method as recited in claim 15 wherein during the step of moving the platform along the first axis, the platform passes along a plurality of rows that each extend along the second axis, wherein each of the rows comprise vertically-oriented storage shafts that are each sized to accommodate the same length container.

17. The method as recited in claim 15 further comprising moving the gantry crane along the first axis to a position of a different container and moving the different container to one of the existing platform that has been moved along the first axis to a new position, or to a new platform.

18. A method for moving and storing containers comprising the steps of:

moving a container from a first location outside of a storage area by use of a gantry crane disposed over the storage area, wherein the gantry crane moves the container inwardly towards the storage area, and wherein the storage area comprises a grid pattern of vertically-oriented stacks for accommodating containers, wherein running along a first axis of the grid the vertically-oriented stacks are sized to accommodate containers of different lengths, and wherein running along a second axis of the grid perpendicular to the first axis the vertically-oriented stacks are sized to accommodate containers of similar lengths;

moving the container along the first axis of the storage area to a row of storage shafts that are sized having a length that accommodates the container; and

moving the container along the second axis by use of an overhead crane that is disposed below the gantry crane and placing the container into a selected storage

shaft for accommodating the container therein.

19. The method as recited in claim 18 further comprising placing the container on a carrier and moving the container within the storage area parallel with the first axis across the rows of shafts on a carrier.

20. A method for moving and storing containers comprising the steps of:

moving a container from a first location outside of a storage area to a position adjacent the storage area by use of a gantry crane, wherein the gantry crane is movably disposed above the storage area; and

moving the container from the position to a storage shaft by use of an overhead crane that is disposed within the storage area below the gantry crane, wherein the storage shaft is sized to accommodate the length of the containers and other containers of similar size;

wherein the storage area comprises a grid comprising storage shafts running along a first axis sized to accommodate containers of similar length, and storage shafts running along a second axis sized to accommodate containers of different lengths.