onto a delivery vehicle, an item to be delivered to a first sort destination advancing the delivery vehicle along a path to the first output bin; determining that the sort destination cannot receive the item; advancing the delivery vehicle along a path to an alternate sort destination; and at the alternate sort destination, discharging the item from the delivery vehicle into the alternate sort destination.

[006] The step of determining comprises operating at least one sensor of the delivery vehicle to detect that the first sort destination cannot receive additional items.

[007] In some embodiments, the method further includes operating the at least one sensor to determine that the alternate sort destination can receive the item and may further include transmitting to a controller, from the delivery vehicle, a notification that the first sort destination cannot receive the item.

[008] In an embodiment, the method further includes receiving at the delivery vehicle, an instruction from the controller identifying a location of an alternate sort destination. and transmitting to a controller, from the delivery vehicle, a notification that the item has been delivered to the alternate sort destination.

[009] In embodiments, the method further includes receiving at the delivery vehicle, an instruction from the controller identifying a first output bin as a primary destination and a second output bin as a secondary destination. The determining may comprise operating at least one sensor of the delivery vehicle to detect that the first output bin is missing.

[010] In another embodiment, a method of sorting items using a dynamically reconfigurable sorting array system, the system including a plurality of destination areas arranged into a series of columns extending generally vertically, a plurality of delivery vehicles, and an event annunciation system, wherein the method comprises transferring, onto a delivery vehicle, an item to be delivered to a first destination area of the plurality of destination areas; driving the delivery vehicle along a path to the first destination area; initiating discharge of the item to the first destination area; upon detection of a first event associated with operation of the sorting array system, operating the event annunciation system to provide a first visible alert; and/or upon detection of a second event, operating the alert indicating system to at least one of discontinue the first visible alert or provide a second visible alert visibly distinguishable from the first visible alert.

CLAIMS

What is claimed is:

1. A method of sorting items to a dynamically reconfigurable sort array structure defining columns of sort destinations, comprising the steps of:

receiving, onto a delivery vehicle, an item to be delivered to a first sort destination;

advancing the delivery vehicle along a path to the first output bin;

determining that the sort destination cannot receive the item, wherein the step of determining comprises operating at least one sensor of the delivery vehicle to detect that the first sort destination cannot receive additional items;

advancing the delivery vehicle along a path to an alternate sort destination;

at the alternate sort destination, discharging the item from the delivery vehicle into the alternate sort destination.

2. The method of claim 1, further including operating the at least one sensor to determine that the alternate sort destination can receive the item.

3. The method of any of claims 1-2, further including transmitting to a controller, from the delivery vehicle, a notification that the first sort destination cannot receive the item.

4. The method of claim 3, further including receiving at the delivery vehicle, an instruction from the controller identifying a location of an alternate sort destination.

5. The method of any of claims 1-4, further including transmitting to a controller, from the delivery vehicle, a notification that the item has been delivered to the alternate sort destination.

6. The method of any of claims 1-5, further including receiving at the delivery vehicle, an instruction from the controller identifying a first output bin as a primary destination and a second output bin as a secondary destination.

7. The method of any of claims 1-6, wherein the determining comprises operating at least one sensor of the delivery vehicle to detect that the first output bin is missing.

8. A method of sorting items using a dynamically reconfigurable sorting array system, wherein the system includes a plurality of destination areas arranged into a series of columns extending generally vertically, a plurality of delivery vehicles, and an event annunciation system, the method comprising:

transferring, onto a delivery vehicle, an item to be delivered to a first destination area of the plurality of destination areas;

driving the delivery vehicle along a path to the first destination area;

initiating discharge of the item to the first destination area;

upon detection of a first event associated with operation of the sorting array system, operating the event annunciation system to provide a first visible alert;

upon detection of a second event, operating the alert indicating system to at least one of discontinue the first visible alert or provide a second visible alert visibly distinguishable from the first visible alert.

9. The method of claim 8, further including operating a sensor of the material handling system to detect the first event.

10. The method of claim 9, wherein the first event detected by the sensor is delivery of a last item required to complete a grouping of items at the first destination area.

11. A material handling system for sorting a plurality of items into groups of one or more items, comprising:

a plurality of destination areas arranged into a series of columns extending generally vertically;

a plurality of visible indicators, wherein at least one visible indicator of the plurality of visible indicators is adjacent to a corresponding destination area of the plurality of destination areas;

a plurality of delivery vehicles each dimensioned and arranged to receive a respective item of a plurality of items and operable to transport a received item to any destination area of the plurality of destination areas, wherein each vehicle comprises

a power source for driving the vehicle, and

a transfer mechanism operative to transfer a received item to a selected destination area;

a controller including a processor to executing instructions, stored in memory, for activating a first visible indicator adjacent to the first destination area when a destination area has accumulated a complete group of items.

12. The material handling system of claim 11, wherein the memory further includes instructions executable by the processor for deactivating the first visible indicator when the complete group of items has been removed from the first destination area.

13. The material handling system of claim 12, wherein the memory further includes instructions executable by the processor for re-assigning the first destination area to enable accumulation of items for a second group.

14. The material handling system of claim 12, wherein the memory further includes instructions executable by the processor for controlling the movement and operation of each delivery vehicle.

15. The material handling system of any of claims 11-14, further including a destination module operable to identify the selected destination area.

16. The material handling system of claim 15, wherein the destination module identifies the destination area based on a marking on the item.

17. The material handling system of any of claims 11-16, wherein the plurality of destination areas are arranged into a first series of columns extending generally vertically and a second series of columns extending vertically, the system further including a track for guiding the delivery vehicles to the destination areas, wherein the track is positioned between the first series of columns and the second series of columns so that a delivery vehicle can move vertically between the first series of columns and the second series of columns, and wherein when a delivery vehicle is stopped at a point along the track, the transfer mechanism can transfer an item forwardly between the vehicle and a destination area in the first series of

columns and the transfer mechanism can transfer an item rearwardly between the vehicle and a destination in the second series of columns.