A CSI Proposal
For
Celerity Systems, Inc.

Prepared for

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By

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Response to Celerity Systems Request for Proposal T6000

Contract Systems Integration claims the following to be proprietary in nature and no portion of the content contained herein is to be shared regardless of the outcome of Celerity's Request for Proposal.

Introduction

Contract Systems Integration (CSI), in response to Celerity's Request for Proposal for the T6000 Digital Set-Top Box, is pleased to submit the following high-level process solution based on information provided from Celerity and certain manufacturers who's support will be required for successful implementation of this process. Also, where there was a lack of information, certain assumptions were made and will be clearly noted in this proposal.

CSI will use its expertise in systems integration and field population tracking to offer a complete solution to Celerity's expressed objectives. CSI is a world class electronic contract manufacturing service providing state-of-the-art manufacturing, engineering, worldwide sourcing services and solutions to the Telecommunication, Computer, Industrial and Emerging Technology industries.

CSI utilizes a web-enabled information exchange system which is the next major Information Technology tool for contract manufacturers and full system integrators. This relatively new technology benefits users by providing global accessibility, operational efficiency, greater user-responsiveness, and continuous improvement in quality and on-time deliveries. CSI currently allows their customers and suppliers to access real-time quality data via the Internet from anywhere in the world, 24 hours a day. CSI also gives customers access to finished goods inventory levels, and is now developing the code to allow access to daily, weekly and quarterly production schedules.

CSI's interactive web page is hosted on-site at CSI with a 24/7 connection to the Internet via an xDSL Dedicated Line with the capability to transmit data at 1.5M/384K. CSI's web site is secured by a firewall that allows only authorized users to access predetermined locations on the web server. CSI is currently using Cold Fusion for their database linkages and MS Access as well as Fourth Shift for database management. The code is written with end user software compatibility in mind, allowing all major web browsers to interact with CSI's site. CSI's web page can be easily modified to give Celerity a ***customized*** access page where the following information can be made available:

- Shipping Information by Celerity PO Number
- Production Schedules/Forecasts
- Quantity and Type of Product in WIP
- Quantity and Type of Product in Finished Goods
- Field Population Tracking by Serial Number
- Field Population Warranty Tracking at Component Level
- Final Inspection and Test Results
- Customer Complaint Notifications (CCN's) by Problem Type

CSI will assign a dedicated Program Manager to the Celerity T-6000 program. In addition, CSI will add additional Manufacturing/Test Engineers to the project as the need warrants. CSI's proposal includes the utilization of its current Incoming Inspection and Final Inspection and Test departments and respective data collection systems. Software will be modified to account for the level of detail the Celerity program requires. Product volume will determine the need for additional human resources required to support the inspection and data collection functions. This proposal also contains costs associated with the Stockroom, Facilities, Kitting, and Shipping activities within CSI's facility.

CSI is registered with Underwriter's Laboratories (UL) and is very familiar with the Initial Product Inspection (IPI) process. In addition, CSI is ISO 9002 compliant and is targeting ISO Registration in Q1 2000. An uncontrolled copy of CSI's Tier-1 Quality Manual is attached to this proposal for reference.

Life Cycle testing will be performed by a third party provider. The costs associated for this service are not reflected in this proposal. Additional information on the product profile as related to environmental operating conditions that the product will encounter will be required to start the costing process.

Manufacturing Plan

CSI has made the following assumptions for creating Table 1.1:

Assembly Time/ Unit	.2 Hrs
Test Time / Unit	.3 Hrs
Units / Test Bank	4 Units Concurrently

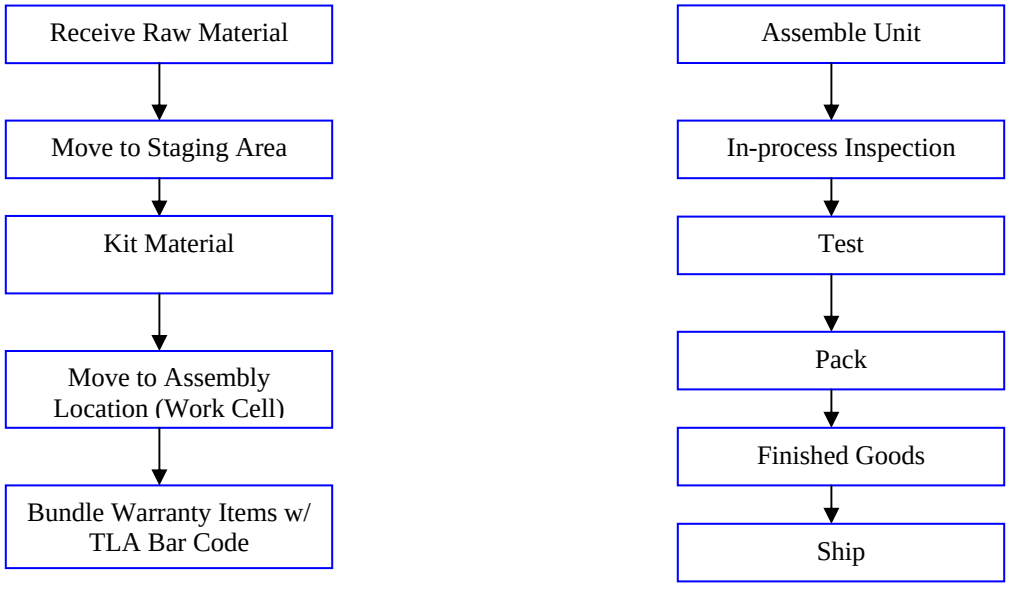
Table 1.1

	Estimated Monthly Usage			
	1000	**5000**	**10,000**	**20,000**
Units/Day	46	230	460	920
Operators Required	1.2	5.75	11.5	23
Technicians Required **1** Test Bank (4 units per)	.5			
Technicians Required **2** Test Banks (4 units per)				
Technicians Required **3** Test Banks (4 units per)		2.5		
Technicians Required **5** Test Banks (4 units per)			5	10 *

* Based on a test rate of .3 hrs, volumes above 10,000 Units/Month will require 2 shifts for testing when using only 5 Test Banks, assuming each Test Bank can test 4 units concurrently.

Calculations made using units per day per test technician to size the number of technicians and test units required. The number of technicians can never exceed the number of test units without running additional shifts. Test banks possessing 2 or more concurrent test fixtures increases the output by a ratio of 2-1, 4-1, etc.

Manufacturing Flow Chart



Receipt of Material

Material will be procured by CSI using only the suppliers predetermined and mutually agreed upon by both Celerity and CSI. CSI will procure material based on Celerity's forecasts, maintaining enough inventory to satisfy 150 percent of Celerity's requirements at any given time. Upon receipt, CSI will verify Supplier, Part Number, Purchase Order Number, and Quantity of incoming material. After an incoming lot of material meets the above criteria, it will be stored in a designated staging area on CSI's manufacturing floor. Material will be stored using a "point of use" methodology which minimizes material handling, thus reducing the time required to turn orders into finished products. Material will be stored using traditional FIFO methods.

It is important to note that once unit volumes exceed 1000 pcs / month, incoming material will bypass CSI's conventional receiving inspection procedures. Based on a relatively small labor standard of .2 hrs / unit, the amount of time to rework a defective component discovered at Test is justified when considering the extensive amount of time saved by not having to inspect thousands of incoming parts.

Suppliers of electrical components (PCBs and Power Supplies) will be required to perform tests on every board prior to shipment, including a "bed of nails" test for continuity. All electronic assemblies will require a Certificate of Conformance (CofC) indicating that test results comply with Celerity's written specifications.

In addition, all warranty items will require a bar coded serial number label containing supplier and date code information.

WIP Staging

Raw material will be stored in a designated area separate from the manufacturing area. This WIP Staging area will be equipped ESD carts and containers and on-line instructions for proper kitting configuration.

Kitting

Staging personnel will be responsible for unpacking and kitting all raw material. ESD material carts will be configured with raw material as predetermined by Process Engineering.

Assembly

ESD Metro Carts will be moved to the appropriate workstation using a basic Kan Ban system. As Metro Carts are emptied, workstations will be replenished with loaded carts. Each workstation will be sized to accommodate two carts of raw material, and one cart containing finished product.

Assembly – Bar Code Tracking

Operators will assemble the T-6000 using tightly controlled on-line work instructions. The initial step of the work instructions will be to apply a bar coded serial number label (TLA Bar Code) to the rear exterior of the unit. The label will contain all the information outlined in Celerity's RFQ T-6000, Section 19.1. Operators will first wand in the TLA Bar Code, and then wand all warranty item bar codes. This will bundle all warranty items with the TLA Bar Code, or Top Level Assembly. CSI's Data Collection System will also track Operator IDs, and assembly time, in addition to warranty information.

After assembly is complete, units will be stored on ESD Metro Carts designated for finished units. These carts will accommodate twelve finished units. Carts are then transported to Test.

In-process Inspection

CSI QC personnel will perform random in-process inspections on the Celerity T-6000 products. Inspectors will ensure that Operators are following their assembly instructions and data collection procedures. Inspectors will also be assessing general workmanship and component specification compliancy.

Test

CSI will perform a functional test on 100% of the T-6000 product using test equipment and software designated by Celerity Systems. Equipment can be procured by CSI or consigned to CSI by Celerity, depending upon Celerity's preference.

Due to the high projected volumes for the T-6000, CSI recommends test banks which can test multiple units, thereby reducing the number of technicians required to perform the tests. As stated previously in this proposal, CSI assumes test banks capable of testing four units concurrently, requiring one technician per test bank. If the final configuration differs from this scenario, adjustments to the proposal will be made accordingly, however, the manufacturing and testing methodology will remain the same.

CSI's manufacturing plan does not utilize conveyors to move material through the assembly and test process. Material carts equipped with anti-ESD padding and ground straps will be used to move both raw material and finished product. Once a completed assembly is set onto the material cart, it will not leave the cart until its ready for packaging, thereby reducing handling operations and increasing efficiencies.

Each cart will transport 12 finished units of the T-6000. As carts are filled with completed assemblies, they will be wheeled into the testing area and tested in

multiples of four without leaving the cart. Carts will be grounded using the attached ground strap.

Once the T-6000 is tested, results will be recorded in CSI's on-line data collection system using bar code scanners as well as keyboard interfaces. Data will include but is not limited to the following:

- Date Code
- Serial Number of TLA
- Pass / Fail
- Defect Code(s)
- Technician's ID

When a unit fails it will be troubleshooted to identify the root cause of failure. The TLA serial number will identify the serial numbers of all electronic sub-assemblies within the defective T-6000. This will allow CSI to isolate defective boards by date code when necessary.

When units pass test and are stamped indicating QC acceptance, ESD carts are transported to the packing area.

Pack

Packaging personnel will pack all T-6000s per Celerity's packing specifications. No unit will be packed without confirmation of QC acceptance stamp.

The packaging area will contain all the Celerity T-6000 accessories, including remote control, keyboard, manuals, etc. Per CSI's on-line documentation system, packing personnel will pack units with the proper accessories and wand in serial numbers of both the T-6000 product and the accessories it contains.

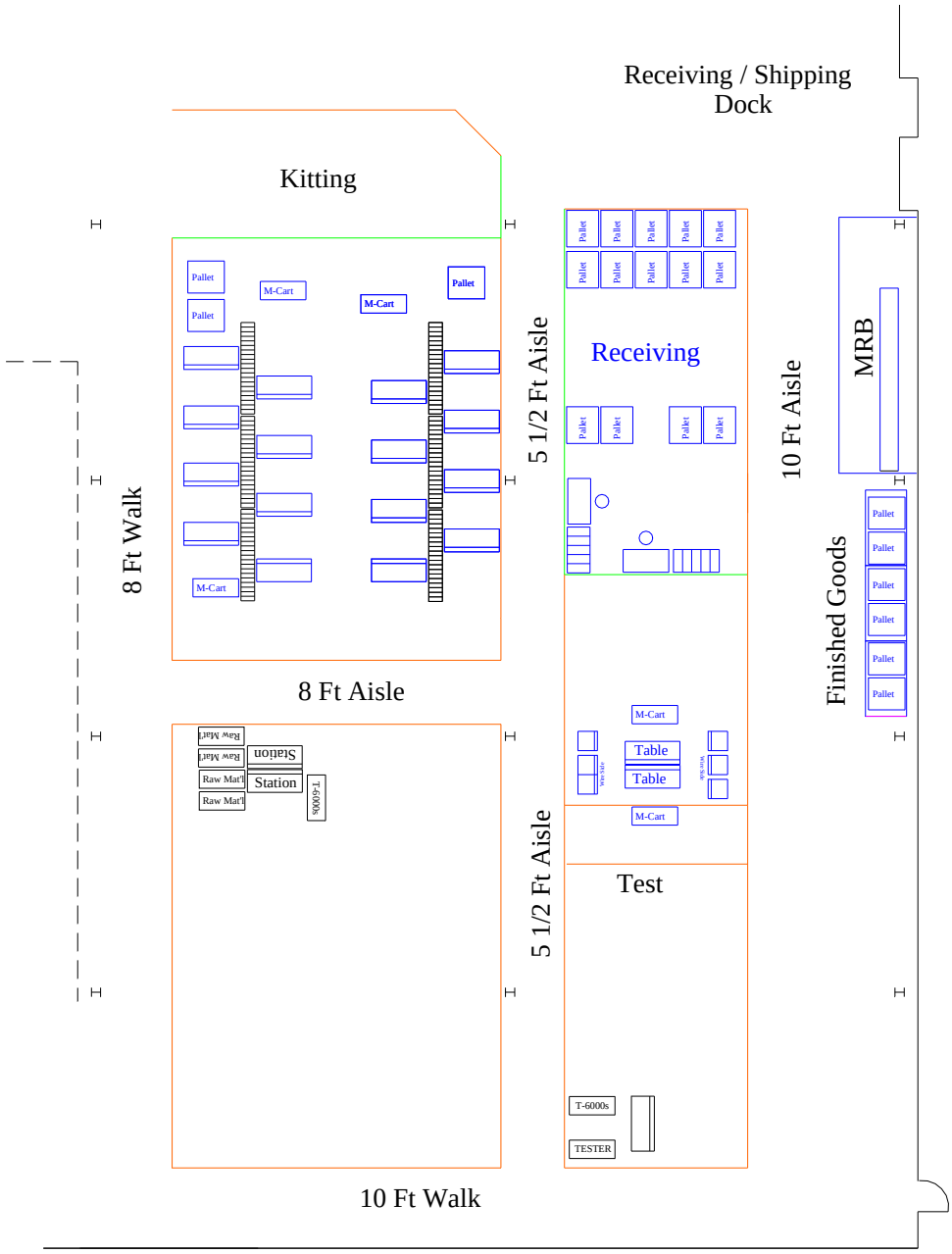
The packaging label will then be printed and applied to the exterior of the shipping carton. The label will display the TLA serial number, which will bundle all warranty components and accessories contained inside the box.

Finished Goods

The T-6000 product will have a designated area for storage. CSI will maintain a predetermined amount of finished good inventory at all times. Real-time inventory data will be available internally to CSI and to designated Celerity personnel, containing information down to the warranty component and accessory level. This will allow CSI / Celerity to quickly isolate units in finished goods containing suspect components or accessories if problems arise in the field.

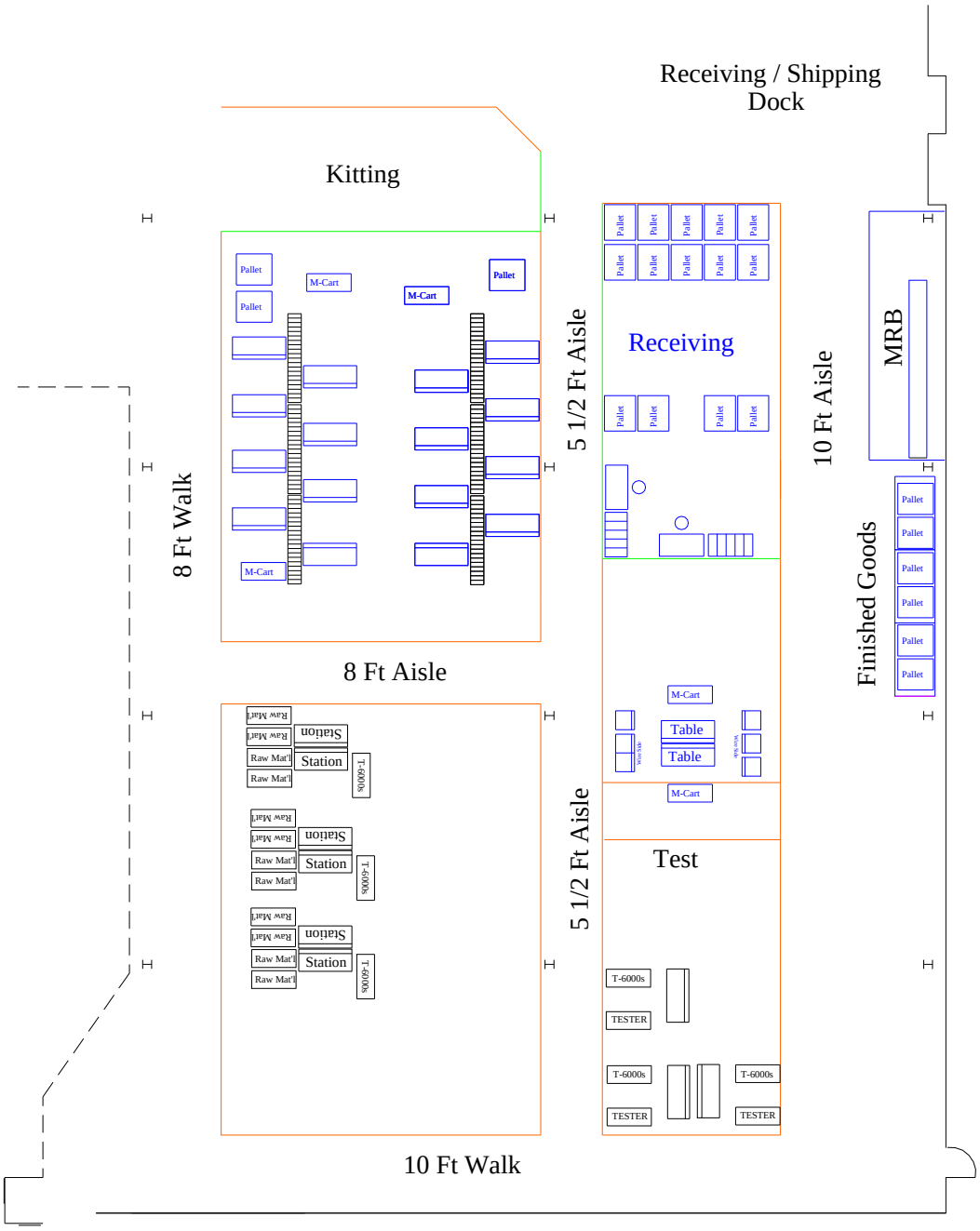
Floor Layout – 1,000 Units / Month

- Blue Indicates Existing Footprint
- Green Indicates 5 ft. Partitions
- Dotted Line is Temporary Wall
- Black Represents Celerity Program



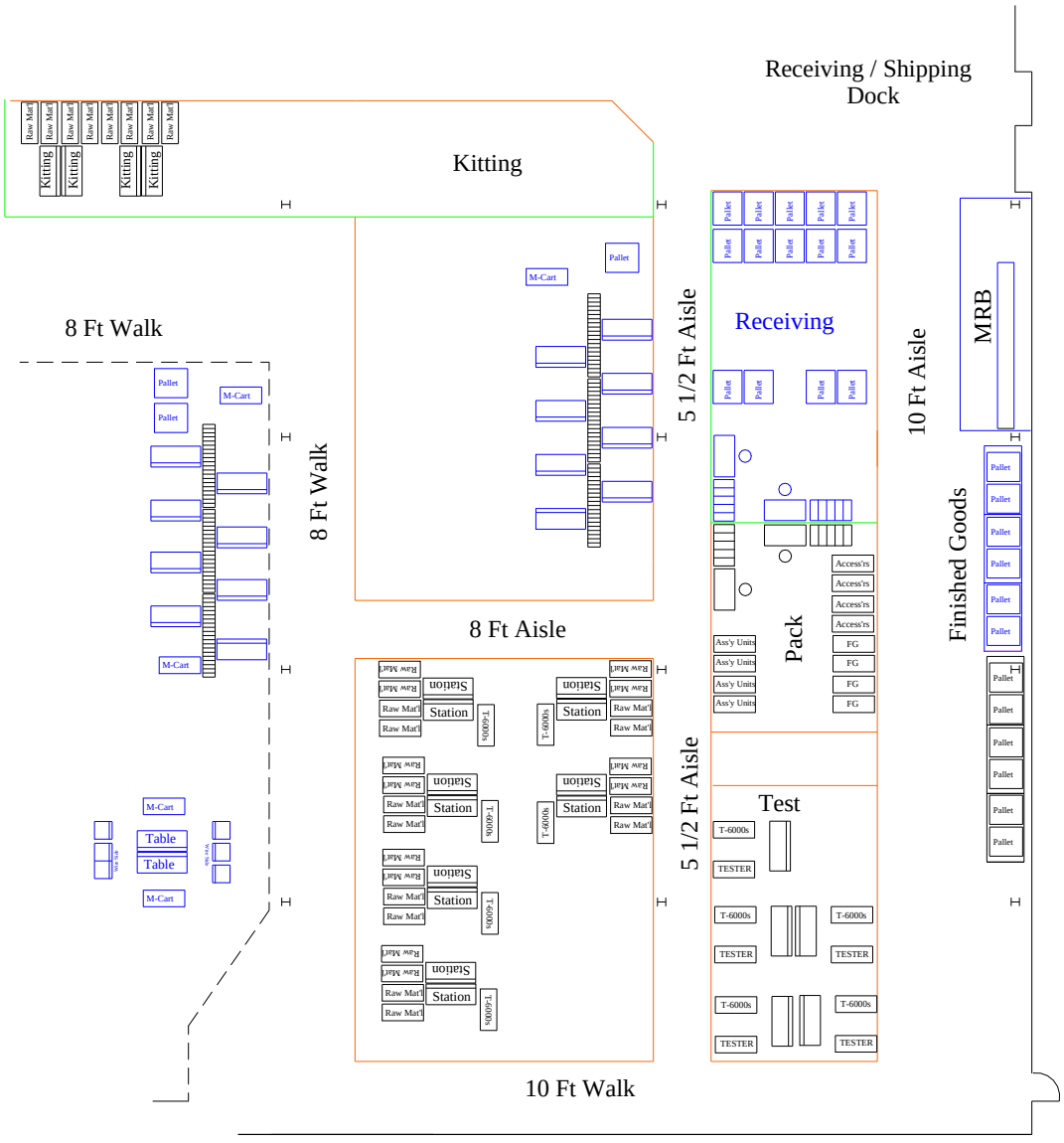
Floor Layout – 5,000 Units / Month

- Blue Indicates Existing Footprint
- Green Indicates 5 ft. Partitions
- Dotted Line is Temporary Wall
- Black Represents Celerity Program



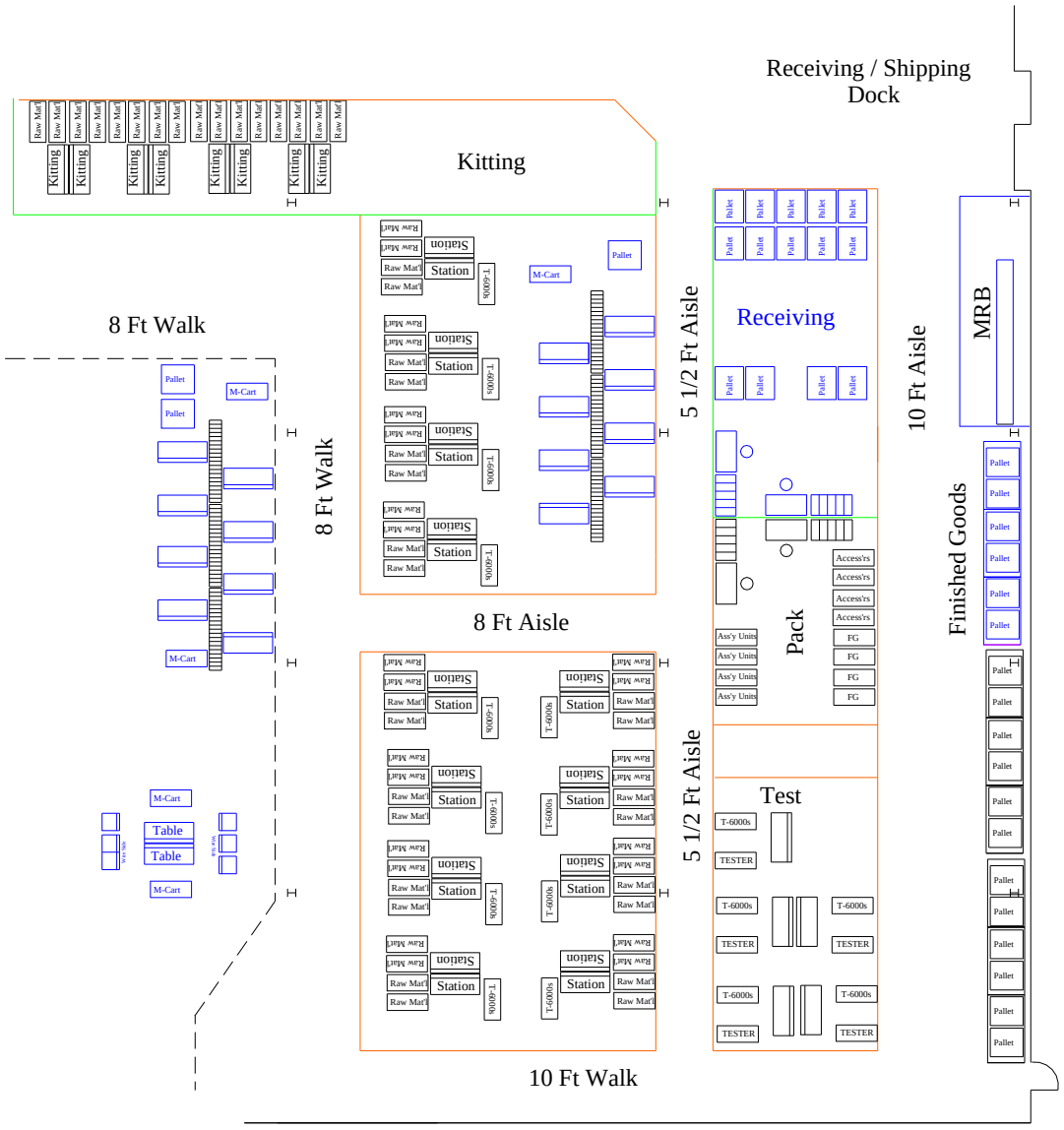
Floor Layout – 10,000 Units / Month

- Blue Indicates Existing Footprint
- Green Indicates 5 ft. Partitions
- Dotted Line is Temporary Wall
- Black Represents Celerity Program



Floor Layout – 20,000 Units / Month

- Blue Indicates Existing Footprint
- Green Indicates 5 ft. Partitions
- Dotted Line is Temporary Wall
- Black Represents Celerity Program



Field Population Tracking

CSI will create a database exclusively for Celerity Systems' T-6000 product. The database will be an MS Access database containing all pertinent information regarding the procurement, management, and distribution of components and systems supporting the T-6000 program for Celerity.

Celerity will have special access to CSI's secured web site. By entering PIN numbers, individuals from Celerity will be able to get a tremendous amount of information regarding the Celerity T-6000 product. Based on surveys of CSI's current customer base, Celerity will have better visibility of their own products after CSI acquires all manufacturing responsibilities. The following is just a sample of the type of information CSI will make available via its secured web site:

- Shipping Information by Celerity PO Number
- Production Schedules/Forecasts
- Quantity of Product in WIP
- Quantity and Configuration of Products and Accessories in Finished Goods
- Field Population Tracking by Serial Number
- Field Population Warranty Tracking at Component Level
- Software Licensing Tracking by Serial Number
- Final Inspection and Test Results
- Customer Complaint Notifications (CCN's) by Problem Type

Service and Support

Warranty service will be provided by CSI. Costs associated with this service are included in this proposal as a percentage of the per unit cost. As the level of service and detailed responsibilities are identified by Celerity, the markup for warranty may be adjusted up or down.

A help desk for technical support / troubleshooting is not a service currently offered by CSI. This function could be set up as an operation independent of CSI, however, help desk personnel would have real-time access to CSI's interactive web site for inventory and production schedule information. Any returns would be sent directly to CSI for repair.

Costs for Field Population Tracking are not included in this proposal. Depending on the level of information and detail required, a one-time set-up fee would be charged to Celerity for web site upgrades. Addition charges for ongoing maintenance will be applied as a per unit cost.

Pricing

CSI's quote reflects pricing obtained for each component using only Celerity approved suppliers where applicable. CSI's labor cost and material overhead markup is also reflected in the following per unit price. CSI used the aforementioned assumptions when calculating pricing. Pricing is broken down in Estimated Monthly Usage (EMU). A costed Bill of Material is attached to this document reflecting the four different estimated quantities.

1,000 EMU	5,000 EMU	10,000 EMU	20,000 EMU

- First Delivery 3 Weeks from Longest Lead-time Item
- Packaging Costs Not Included
- FOB Origin
- Payment terms net 30 days