

Modular Healthcare Facility Construction
Feasibility Study

Division of Facilities Planning and Construction
Office of Environmental Health and Engineering

Indian Health Service

August 2013

(September 2014 Revision)



1. Background

In the 2010 Reauthorization of the Indian Healthcare Improvement Act (IHCIA) several new requirements were set forth for execution by the Indian Health Service (IHS). Among these was the requirement for establishment of The Indian Country Modular Component Facilities Demonstration Program (ICMCFDP). The language of the act is as follows:

SEC. 312. INDIAN COUNTRY MODULAR COMPONENT FACILITIES DEMONSTRATION PROGRAM.

- (a) **DEFINITION OF MODULAR COMPONENT HEALTH CARE FACILITY.**—In this section, the term ‘modular component health care facility’ means a health care facility that is constructed—
- (1) off-site using prefabricated component units for subsequent transport to the destination location; and
 - (2) represents a more economical method for provision of health care facility than a traditionally constructed health care building.
- (b) **ESTABLISHMENT.**—The Secretary, acting through the Service, shall establish a demonstration program under which the Secretary shall award no less than 3 grants for purchase, installation and maintenance of modular component health care facilities in Indian communities for provision of health care services.
- (c) **SELECTION OF LOCATIONS.**—
- (1) **PETITIONS.**—
 - (A) **SOLICITATION.**—The Secretary shall solicit from Indian tribes petitions for location of the modular component health care facilities in the Service areas of the petitioning Indian tribes.
 - (B) **PETITION.**—To be eligible to receive a grant under this section, an Indian tribe or tribal organization must submit to the Secretary a petition to construct a modular component health care facility in the Indian community of the Indian tribe, at such time, in such manner, and containing such information as the Secretary may require.
 - (2) **SELECTION.**— In selecting the location of each modular component health care facility to be provided under the demonstration program, the Secretary shall give priority to projects already on

- the Indian Health Service facilities construction priority list and petitions which demonstrate that erection of a modular component health facility-
- (A) is more economical than construction of a traditionally constructed health care facility;
 - (B) can be constructed and erected on the selected location in less time than traditional construction; and
 - (C) can adequately house the health care services needed by the Indian population to be served.
- (3) EFFECT OF SELECTION.—A modular component health care facility project selected for participation in the demonstration program shall not be eligible for entry on the facilities construction priorities list entitled 'IHS Health Care Facilities FY 2011 Planned Construction Budget' and dated May 7, 2009 (or any successor list).
- (d) ELIGIBILITY.—
- (1) IN GENERAL.—An Indian tribe may submit a petition under subsection (c)(1)(B) regardless of whether the Indian tribe is a party to any contract or compact under the Indian Self-Determination and Education Assistance Act (25 U.S.C. 450 20 et seq.).
 - (2) ADMINISTRATION.—At the election of an Indian tribe or tribal organization selected for participation in the demonstration program, the funds provided for the project shall be subject to the provisions of the Indian Self-Determination and Education Assistance Act.
- (e) REPORTS.—Not later than 1 year after the date on which funds are made available for the demonstration program and annually thereafter, the Secretary shall submit to Congress a report describing—
- (1) each activity carried out under the demonstration program, including an evaluation of the success of the activity; and
 - (2) the potential benefits of increased use of modular component health care facilities in other Indian communities.
- (f) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated \$50,000,000 to carry out the demonstration program under this section for the first 5 fiscal years, and such sums as may be necessary to carry out the program in subsequent fiscal years.

IHS requested and received \$1 million in the FY 2012 budget to conduct a feasibility study on this provision. The Budget language states:

These funds will permit the IHS to assess the feasibility of modular health care facilities. These funds would be used to fund a review of industry standards and available modular design options and to survey and assess modular facilities already constructed by other agencies and the private sector. As a part of this study, the information obtained would be used to develop criteria and metrics for evaluating the efficiency and effectiveness of acquiring modular facilities as this compares to other acquisition methods.

2. What is Modular Construction?

Modular Construction, or Modular Component Construction, also known as Offsite Construction is simply a construction method wherein a building is manufactured in an offsite location, and then transported and installed on the site of the new or expanded facility.

These facilities can be permanent or temporary depending on the requirements of the user. The temporary facilities we are all familiar with in the form of construction site offices, temporary expansion building located next to over-utilized facilities, emergency trailers to provide medical care in a disaster response, etc. While these are useful in their proper application, they are not the sort of construction we are looking into in this program. This program is also not referring to the recent expansion of utilizing steel cargo containers, or “connexes” to build facilities out of.

This program is intended to provide permanent healthcare facilities, built to the highest industry standards, and virtually indistinguishable from other methods of construction. Permanent facilities, constructed using Modular techniques, promise to provide many benefits to future programs. This technique offers many promising potential benefits in both time and money over the conventional “stick built” methods we currently employ.

The modular concept is not new. For many years, builders have been improving the construction process by purchasing factory-assembled components such as pre-hung doors and windows, cabinet modules and roof trusses. These components allow builders to build faster and better.

Modern modular construction is simply a natural extension of this process, in which larger components are pre-built in a manufacturing facility with the same materials used on-site and adhering to the same construction codes.

In Permanent Modular Construction, all or some of the components of a facility are manufactured in a factory setting, indoors, where all portions of the module are assembled prior to transport to the site. The floor, walls, windows, electrical, plumbing, sinks, fixtures, lights, ceilings, roofs, skylights, shingles, carpets, etc., are all built simultaneously in a controlled environment with standard jigs and tools. With the proper application of standards, this can result in construction equal or greater in quality to that of stick built facilities.

Once the modules are completed, they are loaded onto semi-trailers and transported to the site, where the site is complete and ready to receive them. This reduces the construction schedule greatly by allowing the site and foundation work to happen concurrently with the majority of the building construction. The modules are attached to the foundations and ground piping, and then finishes are applied to complete the structure.

3. What are they made of?

Modular construction is a technique; a process, not a product. That can be made of anything you specify – steel, concrete, wood, whatever -- to whatever standards that are required.

Built to Code with Quality Materials: Modular buildings are built to meet or exceed the same building codes and standards as site-built structures, and the same architect-specified materials used in conventionally constructed buildings are used in modular construction projects – wood, concrete and steel.

The same construction industry standards that govern traditional construction methods apply to facilities constructed using site-built methods. Specification is key to ensuring quality construction using any method, and modular is no different in this regard. Guidance and standard specifications for modular construction exist and are available through various organizations such as the *Modular Buildings Institute*, the *Construction Specifications Institute*, and the *US Green Building Council*. Modular buildings are quite capable of being constructed to LEED gold standards, and with the reduced impact to the site, reduced waste in construction materials, and the greater flexibility in choice of materials, LEED points can be easier to obtain.

4. What are the benefits of Modular Construction, compared to other acquisition methods?

- **Quicker** -- Site work and construction can happen concurrently. Assembly line construction also decreases the fabrication time. Once the modules are completed and transported to the building site, the modular healthcare building can take as little as one day to assemble on site, depending on the size of the facility. Received estimates from manufacturers have predicted approximately 15 months from concept to completion for a “typical” IHS health care center, which took over two years using conventional “stick-built” methods.



- **Less susceptible to weather/seasons** (Indoor construction)
 - Winter Construction is possible in most any locale
 - Fewer Down Days
 - All components are built indoors – Roof, walls, etc.
- **Safer Construction** - The indoor construction environment reduces the risks of accidents and related liabilities for workers.
- **Greener** - Modular construction capitalizes on the ability to move product in controlled manufacturing conditions, and on tight inventory control and project schedules. It is inherently waste conscious and can have minimum site impact if delivered carefully and strategically with respect to site constraints. In addition, since modular builders work in a factory controlled environment, they can have many construction projects underway simultaneously in one location, so they are better able to re-inventory materials that may have been allocated to one project, for use in another. With site built construction, a general contractor would send any overage to the recycle bin or to the dump
- **Less Site Disturbance** - The modular structure is constructed off-site simultaneous to foundation and other site work, thereby reducing the time and impact on the surrounding site environment, as well as reducing the number of vehicles and equipment needed at the site.
- **Potentially Higher Quality** - In a manufacturing facility, modular manufacturers have access to tools, jigs, tables and material handling equipment which are not viable on a field construction site. These tools and equipment allow us to fabricate a stronger and more durable structure while controlling labor costs.
- Can be “unbuilt” and moved, if needed.
- Can be utilized for seamless expansion.
- **Cost Savings** – According to literature, conventional site built construction can cost from \$150 - \$250 per square foot. Modular construction can range from \$90 to \$150 per square

foot. The cost savings comes from assembly line efficiency. A received analysis from a manufacturer for the construction of a recently completed “typical” IHS health care center, estimates a 22% reduction in overall cost for design and construction.¹

- **Portability** - Modular buildings are considered permanent structures but if necessary the large modules can be unassembled.

5. What are the Detriments of Modular Construction?

- **Strong Coordination Required** - Extra planning and communication required between site work team and modular factory. Everything must be well coordinated to avoid potentially costly mismatches. This can be overcome by and experiences competent fabrication and construction team.
- **Limited Time for Design Modifications** - Flexibility is very limited for last-minute changes. Designs and plans must be good at the outset.
- **Limited Local Opportunity** - For local construction firms and local tribal and TERO employees, the amount of on-site construction is minimal. This construction methodology would likely reduce opportunity for these locals. Not very helpful to local builders and tradesmen
- **Limited Customization** - Modular buildings can be customized to a certain extent. If you want a totally original appearance modular buildings will not be able to deliver. They follow a variety of designs that can be changed and customized. But these designs do have limits on dramatic changes to the shape or look.
- **Limited Service Area** - Since the modules are constructed in a factory and then shipped to the building site, the building site should be within 500 miles of the factory. The costs and transportation difficulties greatly increase for building sites farther than 500 miles.
- **Confusing Zoning Rules** - Since modular buildings are just now becoming popular. Local zoning boards are becoming better informed about modular buildings. Thus you may find some outdated and confusing zoning rules.

¹ The “typical” IHS facility presented to the manufacturer was a recently completed 6,130 m² (65,983 ft²) primary care health center featuring 18 exam rooms and 15 dental operatories. Design and construction cost estimates for this facility totaled \$25.1 million, with a design and construction schedule of 28 months, vs the \$19.5 million and 15 month timeline for a similar modular project. See Appendix 2.

6. Implementation Options

- **New Construction** – Newly designed facilities can be built with a high degree of quality, in less time, and for less money.
- **Remodels** -- One of the interesting areas of potential is renovation work. You have the opportunity to prefabricate components before demolition begins, so that as demolition is occurring on site, components are being built off site. As soon as demolition is completed, these pieces could be inserted. You would minimize disruptions in the building and gain a lot of efficiencies.
- **Additions** -- Similarly, expansion work can be accomplished to a much less disruptive degree. A site can be cleared and footing poured while modules are completed off-site. These are then brought to the site with minimal construction interruption to the facility. These modules can then be finished in such a way to blend in with the existing facility so as to be indistinguishable from original construction
- **Mobile Units** – The modules can be configured in such a way that when the need arises the facility and be “unbuilt” and moved to a new location. This is generally not feasible with traditional construction methods.

7. Who Else Uses Modular Construction?

- Federal Agencies currently using modular for some of its facilities include but are not limited to the US Air Force, Army, Army Corps of Engineers, Center for Disease Control, US Coast Guard, Department of Agriculture, Department of Environmental Protection, Department of Justice, Department of Veteran Affairs, Federal Law Enforcement, FEMA, National Guard, National Park Service, the US Navy, and the US Postal Service.
- Additionally, many state and local municipalities have been employing modular techniques with great success.
- Several Modular Construction companies are now listed in the GSA schedule, making procurement of these products and services easier for federal agencies to come by.
- IHS is primarily interested in application of this method for the provision of healthcare facilities and housing. Many government agencies have constructed inpatient facilities, outpatient primary care centers, specialty & referral centers, and dental clinics. Additionally these agencies have found great utility in using this method for provision of schools, offices and administrative buildings, housing, and retail and hospitality facilities.

8. Factors to Consider in Determining the Practicality of Modular Construction.

The use of modular construction should be considered by the Indian Health Service during the early planning stage for health care facilities. The decision to use modular construction should be based upon the quality of construction, cost, and project schedule. The use of modular construction shall be determined on a case-by-case basis because of the remote location of some of our projects. The following factors should be considered when modular construction is contemplated:

- What is the proximity of factories to the proposed project site? Distance from the factories may translate to higher transportation costs.
- In relation to proximity of the factory to the project site consider the quality of the road network. Are the road surfaces in great shape? If not, units could weaken during transport over bumpy highways, paved or unpaved and thus compromise the structural integrity of the unit.
- Are there several nearby factories to promote competitiveness for potential lower pricing of the modular units?
- Does a portion of the project lend itself to repetitiveness? If so, modular units should be considered for cost effectiveness for that portion of the project.
- Visit the factory under consideration for assessment of construction practices during construction and quality of the finished products.

9. Conclusions

Modular (Site-Built) Construction shows great promise as an affordable and timely method of providing quality healthcare facilities to the service areas of IHS. This system of construction promises to be an option in the selection process of new facilities planning and construction for IHS.

Case Study: Miami Valley Hospital, Dayton Ohio



500,000 sq. ft., 12-story addition to Miami Valley Hospital in Dayton, Ohio. It is believed to be the first major hospital construction project in the U.S. using prefabrication of all major mechanical, electrical and plumbing components. At Miami Valley, prefabrication yielded higher quality construction, a safer work environment, and a faster construction schedule. The success of this project raises the question, if prefabrication can be used on a large-scale hospital project, what other complex construction projects can it be used for?

Photos of Modular Constructed Hospitals/Health Centers



Facility 1 - Oasis Family Health Center, Casa Grande, AZ



Facility 2 - Hereford Health Center, Hereford, TX



Facility 3 - Sierra Kings District Hospital, Reedley CA



Facility 4 - Healdsburg General Hospital, Healdsburg CA



Facility 5 - St Anthony's Health Center, St Petersburg FL

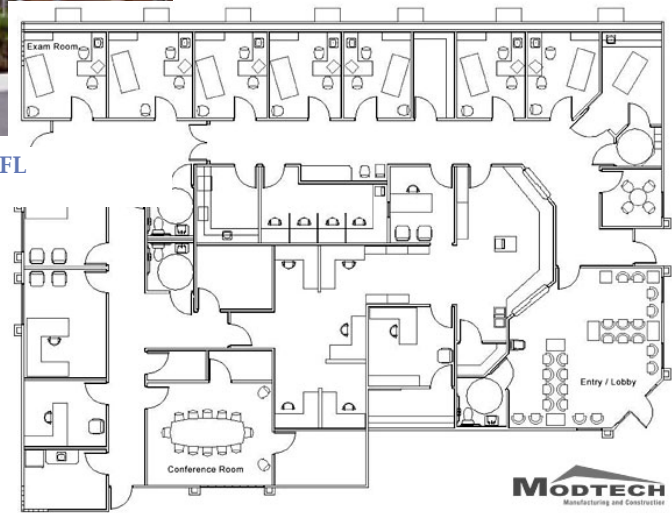


Figure 6 - University of California San Diego Cancer Center



Mercy Hospital in Joplin Missouri was built in response to the destructive results of a disastrous tornado event. It is a 150,000 square foot inpatient facility which includes a two-story inpatient wing that can accommodate more than 100 patients. It was completed within 8½ months from the date the contract was signed.



Sample Manufacturers/Suppliers

NRB, Inc.

440 Wenger Drive
Ephrata, PA 17522

Phone: (717) 733-1794

E-Mail: inquiries@nrb-inc.com

ModSpace Baltimore

920 Todds Lane
Baltimore MD 21237

Phone: (410) 686 9440

Email: BR2420@modspace.com

Triumph Modular Construction

194 Ayer Road
Littleton, MA 01460

Phone: 800-727-2813

Email: ccort@triumphmodular.com

Gibraltar Building Systems

1421 Brier Park Crescent
Medicine Hat, Alberta

T1C 1T8, Canada

<http://gibraltarbuidingsystems.com>

Modular Genius, Inc.

1201 South Mountain Road
Joppa, Maryland 21085

Phone: (410) 420-7586

US Modular Group East, Inc.

3102 Morningside Court
Baldwin, Maryland 21013

Phone: (866) 90 USMGE

Local: (410) 557-6563

ModSpace (Medbuild Space Solutions)

2505 Aurora Place
Waldorf MD 20601

Phone: (301) 372 1282

Email: BR2499@modspace.com

Energistx

Phone: 866-733-8686

Email: info@transmodularhospital.com

References

NRB Modular Building Specialists: <http://www.nrb-inc.com>

Modular Building Institute: <http://www.modular.org>

Building Design & construction Magazine Article -- *Prefab Trailblazer*:
<http://www.bdcnetwork.com/prefab-trailblazer>

Gibraltar Building Systems: <http://gibraltarbuildingsystems.com>

Satellite Shelters: <http://www.satelliteco.com>

Aspen St. Architects, Inc.: <http://www.aspenstreetarchitects.com>

Transmodular Hospitals: <http://www.transmodularhospital.com/>

MedBuild Space Solutions: <http://www.modspace.com/index.php?id=28>

Triumph Modular: <http://www.triumphmodular.com/boone-imaging-clinic.php>

<http://www.triumphmodular.com/modular-addition-emergency-room.php>

Wilmot Modular Structures, Inc.: <http://www.wilmotmodular.com>

Appendices

Appendix 1: Report of Site Visit to NRB Modular Construction Facility

Appendix 2: Letters of Cost Estimate and Schedule for a “Typical” IHS Health Center

Appendix 3: Sample Layout of a Modular Outpatient Health Center

Appendix 4: Sample Layout of a Modular Dental Clinic

Appendix 1

Report of Site Visit to NRB Modular Construction Facility

Trip Report: Visit to NRB Modular construction site, Ephrata, PA, December 6, 2012.

Ray Cooke and John Longstaff arrived at Noon at the NRB manufacturing site in Ephrata, PA, and met with Mr. Bill Brown, the Director of Sales and Business Development.

After a brief meeting discussing the advantages of *Modular Construction*, sometimes referred to as *Off-site Construction*, we toured two small healthcare facilities currently under construction. One two-story healthcare facility bound for Philadelphia, and a single story facility headed for Brooklyn, NY.



Each building was constructed in such a way as to be whole onsite, but to then be separated into manageable pieces and transported to its final home, there to be reassembled on the waiting foundation and site work.

Two Story Philadelphia Health Center



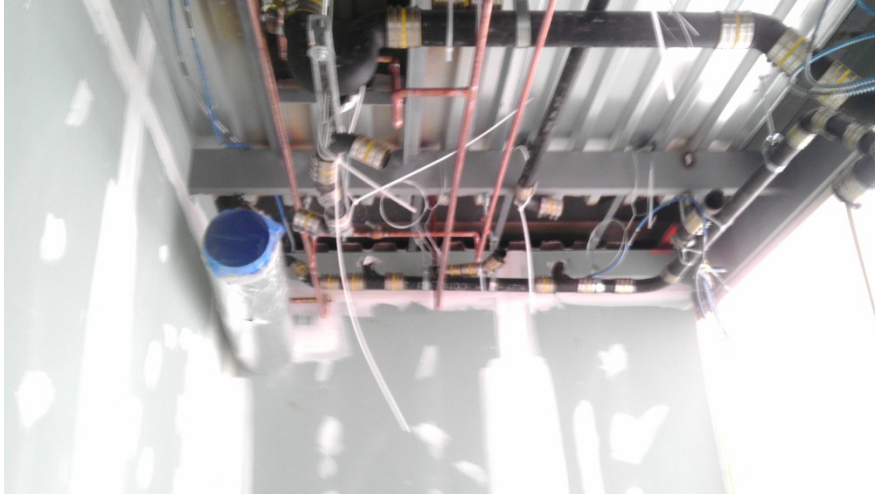
Front of Brooklyn Clinic



Steel Framework for New Module

Our first stop was the steel work shop, where a framework of structural steel is constructed, roughly the size of a tractor-trailer. This is performed indoors, in a climate controlled environment. Once completed, the module can be joined with others to form the basic skeleton of the building.





Next we went to the two facilities under construction. Each facility was near completion, with concrete flooring, insulation, drywall, acoustic tile, fully plumbed, electrical wiring installed, HVAC ducting, wall outlets, lights and switches, even the bathroom fixtures.



Upon entry to each facility we were immediately struck by how normal everything seemed so far as facility construction was concerned. Other than the fact that the facility was off of the ground several feet, from the inside it was indistinguishable from any ordinary stick-built building in look and feel.



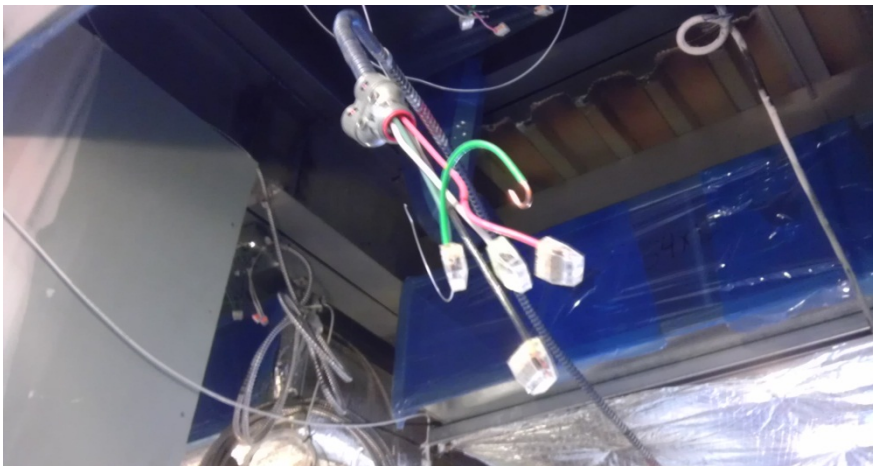


Cut Wall and Ceiling

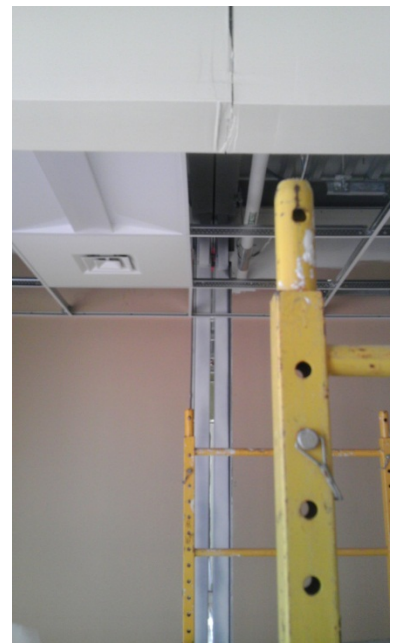
Once the facility is completed, it is separated into its component modules by cutting walls and floors in line with the steel framing. These are wrapped, packaged, and loaded onto trucks for transport to the site. During this construction, the site has been simultaneously undergoing foundation work and site plumbing. These modules will be reassembled onto this foundation and tied into the in-ground utilities. Several ingenious techniques were demonstrated that facilitate the reassembly once the facility is on site. Ducting is pre-aligned with connecting holes, plumbing can be reconnected with simple couplings, and the electrical ends are outfitted with simple plug-and-socket snap-together connectors.



Cut Wall, Ceiling, and Piping



Electrical Connections





Modules After Initial Framing



Modules Wrapped and Ready for Transport



Once reassembled on site, final outside and inside finishes are applied to the building, as well as landscaping, steps, etc. This leaves a completed building, indistinguishable from a standard stick-built facility, except that this probably has a stronger structure due to the steel cage around each section.

Since the visit, this manufacturer and one other have been given sample design documents from an IHS health care facility, and have been asked to estimate a cost and time frame for construction of a similar facility using modular methods.

Appendix 2

Letters of Cost Estimate and Schedule for a “Typical” IHS Health Center



March 18, 2013

Indian Health Service
801 Thompson St, TMP Suite 600
Rockville, Maryland 20852

Attention: John Longstaff, P.E., MSCE, CDT

RE: TYPICAL IHS OUTPATIENT HEALTHCARE FACILITY

Proposed Preliminary Schedule: (Dependent on site work by others)

- Preliminary Design / Shop Drawings: 12 weeks after receipt of NTP
- Customer Review: 4 weeks
- Drawing/Design Corrections: 4 weeks
- Final Customer Approval: 4 weeks
- Third Party Review and Approval: 2-4 weeks after receipt of Customer's approval
- NRB Submittals: 2-3 weeks
- Off-Site Fabrication After Approval: 24 weeks (Site/Foundation work concurrent)
- Delivery to Site: 1 week
- Module Installation at Site: 2 weeks
- Estimated Site Completion 10-12 weeks

This schedule shall be based on the following clarifications:

Schedule Notes:

1. **Total duration for design and completion of modular building = Approximately 15 months**
2. Compliance by all parties with the milestone dates as issued by the team is critical to achieve the Preliminary Schedule Durations.
3. CM/GC must execute an AIA type contract to NRB within the time frame necessary to allow NRB to meet milestone schedule dates outlined in bid documents. Delays to award, authorization to proceed, or delays in approval of our shop drawings or submittals may affect all milestone schedule dates.
4. Submittals for approval will be staggered and continuous and generally submitted in the order in which NRB is required to begin production. It will be necessary for the owner to review and approve the submittals within 10 calendar days of their being issued by NRB (ie: Structural steel drawings will be issued for review and approval first, and in advance of all other drawings so we may procure material and begin fabrication immediately.)

NRB (USA), Inc. 440 Wenger Drive Ephrata, PA 17522 Tel: 717-733-1794 Fax: 717-733-2412
Website: www.nrb-inc.com Email: inquiries@nrb-inc.com



5. The CM/GC must coordinate with NRB and ensure that the site is ready to receive the building modules when they are scheduled to ship. Delays due to the site not being ready will affect overall completion schedule. .
6. The building is to be inspected by the Owner or its authorized representative prior to leaving the NRB facility.

Sincerely,
NRB (USA), Inc.

A handwritten signature in black ink, appearing to read "Joe Shimp". The signature is fluid and cursive, written over a white background.

Joe Shimp
Senior Sales Estimator



March 18, 2013

Indian Health Service
801 Thompson St, TMP Suite 600
Rockville, Maryland 20852

Attention: John Longstaff, P.E., MSCE, CDT

RE: TYPICAL IHS OUTPATIENT HEALTHCARE FACILITY

Dear John:

We are pleased to submit the following **Schematic Program Budget** for your consideration:

NRB Permanent "Off-Site" constructed, steel framed, with poured concrete floor buildings, as required, in accordance with the Program of Requirements dated July 2010, and terms and conditions outlined herein.

Typical Design/Build Outpatient Healthcare Facility – Approximately 66,000 SF

Total, F.O.B*, Site TBD

\$ 19,500,000.00**

* Transportation, routing, and applicable permits are included

**Does not include Federal, State, or Local taxes

Notes:

1. NRB (USA) will utilize only AIA Contract Documents, including Schedule of Values, for this project.
2. This project is subject to monthly progress billings and payments in accordance with the standard AIA Schedule of Values, to be issued and utilized from the beginning of the project thru to completed engineering, during fabrication period at the plant and on to site installation until the completion of the project.
3. Budgetary prices are based on this quotation only. Any changes deemed necessary due to final engineering, customer review, and code requirements not yet identified and outlined in the specifications, requirements of a local or other regulatory body, etc., may be considered extra to this proposal.
4. NRB will not accept any "liquidated damage" charges
5. **Notable items not included in our scope include: any site civil work, building foundation, landscaping, parking area, curbing, sidewalks, site drainage requirements, and site improvements required. Also, any building plaques and signage, flagpole, window shades, furnishings, a/v equipment.**

NRB (USA), Inc. 440 Wenger Drive Ephrata, PA 17522 Tel: 717-733-1794 Fax: 717-733-2412
Website: www.nrb-inc.com Email: inquiries@nrb-inc.com



Price includes:

- Submittal of design drawings and calculations for Architect/Owner approval
- Appropriate Architectural seal on NRB's design drawings
- Appropriate PE seal on NRB's structural drawings only
- MEP designs for the Modular building
- Appropriate PE seal on NRB's MEP drawings only
- Third Party inspections only at factory with Third Party Insignias for inspection and code compliance only
- Delivery of building to site and craning/rigging of units onto a foundation by others

Price excludes:

- Any changes required to building due to Local codes or authorities and/or local code compliances, reviews, submittals, and/or approvals
- Any foundations to adequately support the modular building and any site improvement
- Building permits and related fees
- Federal, State, or Local Taxes
- Other exclusions or notations as noted in this proposal or as attached

Delivery:

- Site must be clear of any obstructions for delivery of units.
- Depending on site restrictions and accessibility to the local area in general, if delivery to an off-site staging area for off-load/reload and shunting to site is required, or if the trucks are waiting in queue beyond their 2 hour off-load time limit, this additional time or work will be considered extra to the price.
- While all due care will be taken for trucks and cranes moving in and out of the site, any unavoidable damage to lawns, curbs etc. during the installation process shall be restored or repaired by others.

Milestone Schedule Requirements: (Detailed schedule to be submitted on award of contract)

- We confirm that we will meet the milestone dates as to be determined and agreed upon by Customer and NRB (USA), pending final determination of specs and scope. This schedule shall be based on the following clarifications.

Schedule Notes:

1. Compliance by all parties with the milestone dates as issued by the owner is critical to achieve the owner's required completion.
2. Customer must execute an AIA type contract to NRB within the time frame necessary to allow NRB to meet milestone schedule dates outlined in bid documents. Delays to award, authorization to proceed, or delays in approval of our shop drawings or submittals may affect all milestone schedule dates.
3. Submittals for approval will be staggered and continuous and generally submitted in the order in which NRB is required to begin production. It will be necessary for the owner to review and approve the submittals within 10 calendar days of their being issued by NRB (ie: Structural



- steel drawings will be issued for review and approval first, and in advance of all other drawings so we may procure material and begin fabrication immediately.)
4. The Owner must coordinate with NRB and ensure that the site is ready to receive the building modules when they are scheduled to ship. Delays due to the site not being ready will affect overall completion schedule.
 5. If any building units are delayed in shipping to the site and as a result must be stored at NRB facilities, the purchaser is fully responsible for the insurance, care and protection during the storage period, and shall be responsible for any related costs arising from any requested additional protection measures and repairs required due to weather conditions. Storage and/or moving charges may apply after 30 days.
 6. The building is to be inspected by the Owner or its authorized representative prior to leaving the NRB facility.

Please carefully review all information in this cover letter, our specifications, and all other information provided and notify in writing of any discrepancies. Should you require additional information, please feel free to call.

Sincerely,
NRB (USA), Inc.

A handwritten signature in black ink, appearing to read "Joe Shimp". The signature is fluid and cursive, written over a white background.

Joe Shimp
Senior Sales Estimator

Cc: Bill Brown, Director of Sales and Business Development

Appendix 3

Sample Layout of a Modular Outpatient Health Center

Sample layout of a 9,504 ft² modular healthcare facility.

16 Exam Rooms

4 Procedure Rooms

4 Physician Office 1 Business Office

1 Break Room 4 Restroom

1 Waiting Area

1 Nurses Station

2 Labs

1 Records Room

1 Clean Linens Room

1 Soiled Linens Room

1 Utility Closet

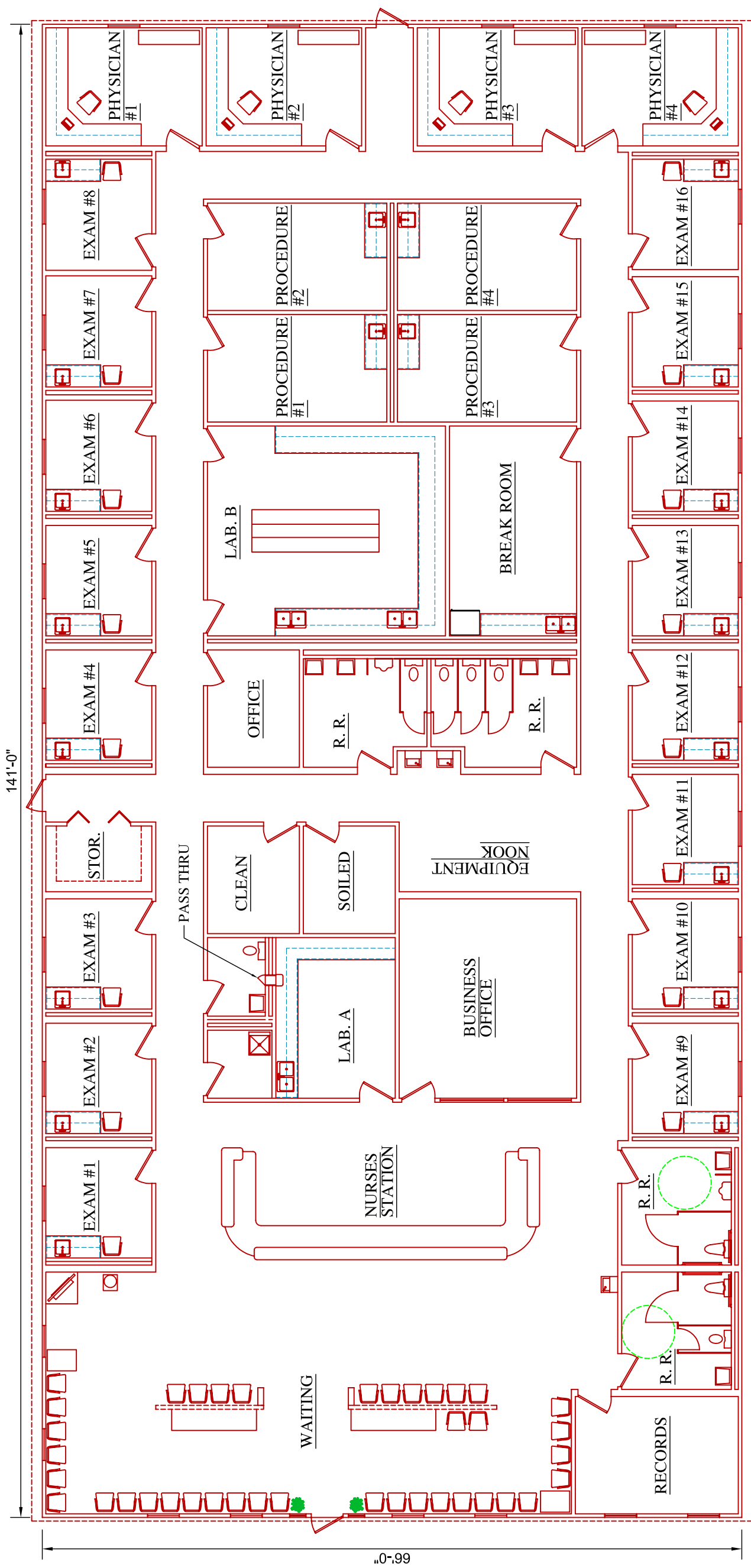
GENERAL BUILDING INFORMATION:

DRAWING NUMBER: HC12
 NOMINAL BUILDING SIZE: 144'x66'
 SQUARE FOOTAGE: 9504
 BUILDING USE: HEALTH CARE

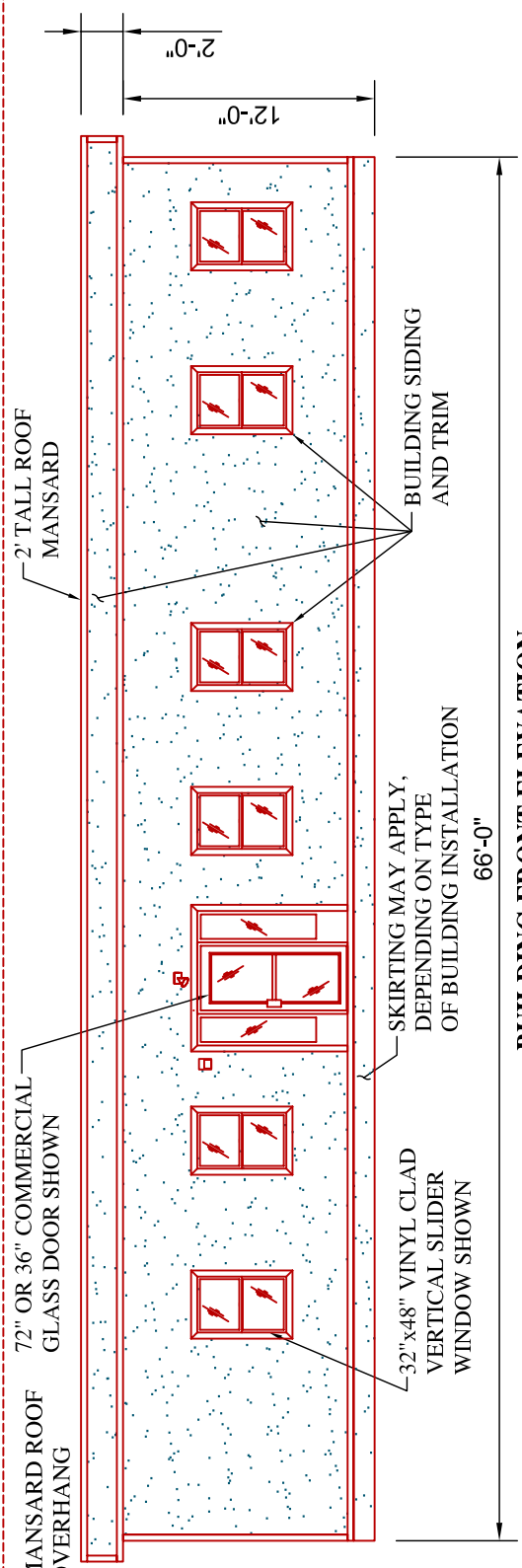
www.modulargenius.com
 (888)420-1113

GENERAL CODE INFORMATION:

- THE MINIMUM AND MAXIMUM NUMBER OF WINDOWS AND DOORS CODE SHALL BE LIMITED. CONSIDERATION MAY BE TAKEN TO THE CODE REQUIREMENTS FOR EGRESS AND ENERGY CONSERVATION.
- REQUIRED PLUMBING FIXTURES ARE SUBJECT TO THE ADOPTED PLUMBING CODE. CONSIDERATION MAY BE TAKEN FOR EXISTING RESTROOMS ON SITE.
- THE BUILDING SQUARE FOOTAGE SHALL BE LIMITED TO THE REQUIREMENTS OF THE ADOPTED BUILDING CODE.
- THE BUILDING SHALL BE SET WITH A PERMANENT OR TEMPORARY FOUNDATION SYSTEM AND APPROVED BY THE LOCAL OFFICIAL HAVING JURISDICTION.
- THE FINAL LAYOUT IS SUBJECT TO REVIEW FOR COMPLIANCE WITH THE BUILDING CODE ENFORCED IN THE AREA THE BUILDING WILL BE LOCATED.



BUILDING PLAN



GENERAL DESIGN NOTES:
 EXAM ROOMS, OFFICES, CLOSETS, ETC. CAN BE ADDED, DELETED, MOVED OR RESIZED TO MEET YOUR SPECIFIC SPACE REQUIREMENTS.
 WINDOWS AND DOORS CAN BE ADDED OR REMOVED BASED ON YOUR SITE REQUIREMENTS.
 MECHANICAL, ELECTRICAL AND PLUMBING WILL BE SIZED TO MEET THE USE AND OCCUPANCY REQUIREMENTS.



BUILDING FRONT ELEVATION

ASK ABOUT GREEN, SUSTAINABLE BUILDING OPTIONS

Appendix 4

Sample Layout of a Modular Dental Clinic

Sample layout of a 9,075 ft² modular Dental facility.

Square Feet: 9,075

Size: 151 x 60

Multiple Treatment Rooms

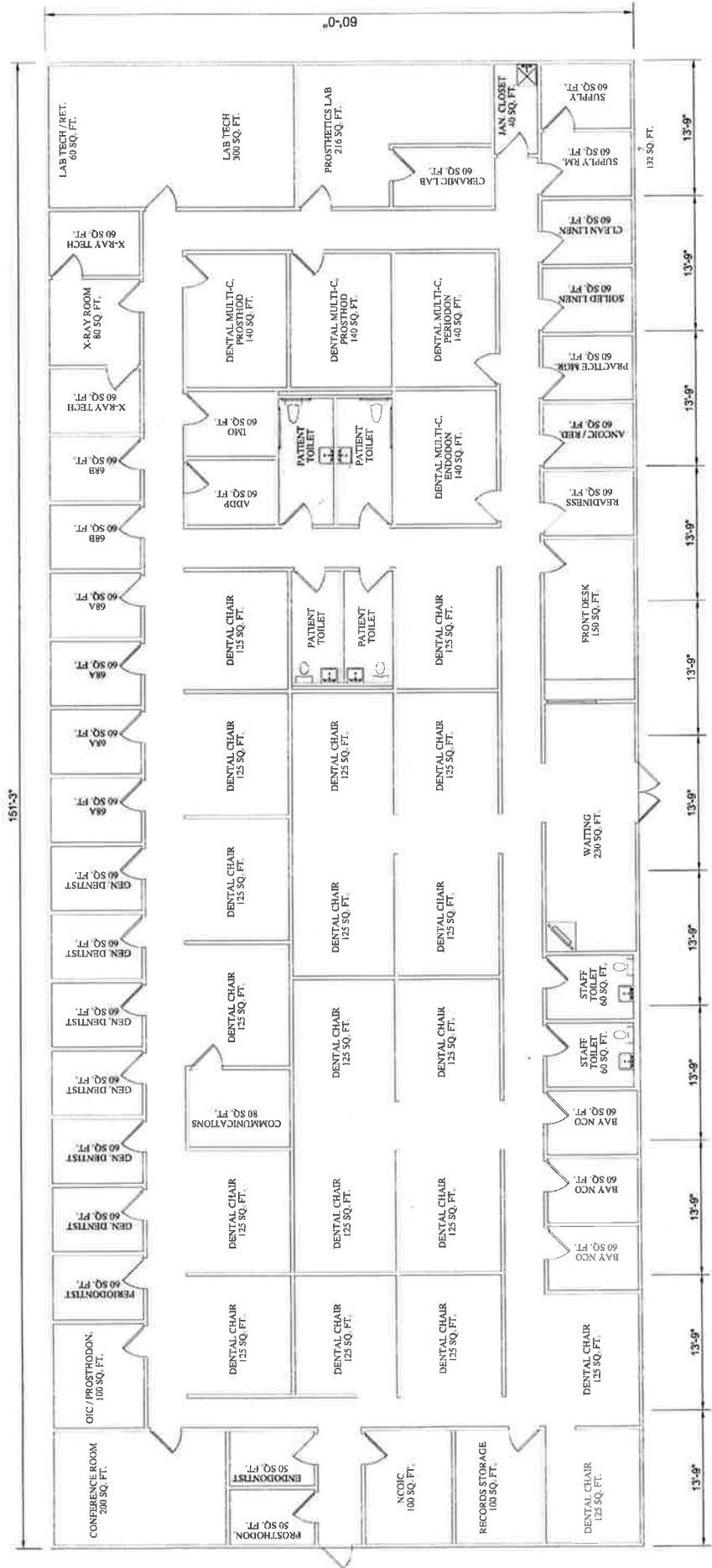
Dental Lab

Reception area

Locker & Restrooms

X-Ray Suite

Other misc. rooms



FLOOR PLAN



ASK ABOUT GREEN, SUSTAINABLE BUILDING OPTIONS

