



STATE OF UTAH - DEPARTMENT OF ADMINISTRATIVE SERVICES

**Division of Facilities Construction and Management**

**DFCM**

# **Request for Proposals for Design/Build Services Stage I**

July 2, 2007

## **HAVEN J. AND BONNIE RAE BARLOW TECHNOLOGY/MANUFACTURING BUILDING DAVIS ATC CAMPUS**

### **UTAH COLLEGE OF APPLIED TECHNOLOGY KAYSVILLE, UTAH**

**DFCM Project No. 07036220**

# TABLE OF CONTENTS

	<u>Page Numbers</u>
Title Sheet	1
Table of Contents	2
Notice to Design / Build Teams	3
Description of the Work	4
Procurement Process	6
Project Schedule	13
Performance Bond	14
Payment Bond	15

Current copies of the following documents are hereby made part of this Request for Proposals for Design/Build Services by reference. These documents are available on the DFCM web site at <http://dfcm.utah.gov> or are available upon request from DFCM.

DFCM Design Manual dated March 15, 2006  
DFCM General Conditions dated May 25, 2005  
Program  
Project Site Plan

Note The following document will be issued with the Stage II documents:

Design/Build Agreement

**The Agreement and General Conditions dated May 25, 2005 have been updated from versions that were formally adopted and in use prior to this date. The changes made to the General Conditions are identified in a document entitled Revisions to General Conditions that is available on DFCM's web site at <http://dfcm.utah.gov>**

## **NOTICE TO DESIGN / BUILD TEAMS MULTI-STAGE COMPETITION**

The Division of Facilities Construction and Management (DFCM) intends to hire a Design/Build Team comprised of a general contractor supported by subcontractors and an architect with supporting technical consultants to design and construct the following project:

**HAVEN J. AND BONNIE RAE BARLOW TECHNOLOGY/MANUFACTURING BUILDING**  
**DAVIS ATC CAMPUS - UTAH COLLEGE OF APPLIED TECHNOLOGY – KAYSVILLE, UTAH**  
**DFCM PROJECT NO. 07036220**

The project estimated cost is \$11,596,000. This design/build project will provide 57,450 square feet of premier training and high-bay work space for the following programs: Heavy Duty Diesel, Moldmaker Machinist, Industrial Automation Maintenance, Machining Technology and Computer Aided Drafting & Design.

The Design/Build Team for this work will be selected by a Value Based Selection RFP method. A **MANDATORY** pre-submittal meeting for all Design/Build Teams will be held at 2:00 PM on Thursday, July 12, 2007 in the Board Room at the Davis ATC Campus, 550 East 300 South, Kaysville, Utah. All Contractors and Architects wishing to submit on this project must attend this meeting.

The RFP documents will be available in electronic format only from DFCM, 4110 State Office Building, Salt Lake City, Utah 84114 and on the DFCM web page at <http://dfcm.utah.gov> at 12:00 Noon on Monday, July 2, 2007. For questions and directions regarding this project, please contact Lyle Knudsen, DFCM, at (801) 538-3275. No others are to be contacted regarding this project.

The Stage I proposal documents that are requested in the RFP must be submitted to DFCM at 4110 State Office Building, Salt Lake City, Utah, 84114 by 12:00 Noon on Friday, July 20, 2007. Additional information may be required at other times. Note: Submittals must be received at 4110 State Office Building by the specified times.

A Bid Bond in the amount of five percent (5%) of the proposal amount, made payable to the Division of Facilities Construction and Management on the DFCM bid bond form, shall accompany the cost proposal that must be submitted in Stage II per the RFP.

The Division of Facilities Construction & Management reserves the right to reject any or all proposals or to waive any formality or technicality in any proposal in the interest of the State.

DIVISION OF FACILITIES CONSTRUCTION AND MANAGEMENT  
MARLA WORKMAN, CONTRACT COORDINATOR  
4110 State Office Bldg., Salt Lake City, Utah 84114

## DESCRIPTION OF THE WORK

The Haven J. and Bonnie Rae Barlow Technology/Manufacturing Building will link education and skills with economic growth within the entire Northern Utah region and beyond. This facility will provide 57,450 square feet of premier training and high-bay work space for the following programs: Heavy Duty Diesel, Moldmaker Machinist, Industrial Automation Maintenance, Machining Technology and Computer Aided Drafting & Design.

High demand for skilled employees and industry growth are reasons this facility is necessary for the college. This building will provide spaces that are adequate for the education and training for the various programs. The current high-bay space is not designed for current training programs and industry required equipment. This new building will be provide safe and adequate space for students to learn.

The new Haven J. and Bonnie Rae Barlow Technology/Manufacturing Building will be designed from the industry partner's input. Information from advisory teams will be used to design spaces necessary for the particular programs. They have indicated the amount and type of space required and the environment needed for an industrial setting. This facility will provide the training opportunities for individuals to be prepared to work at the level needed by employers. The new building will allow the college to respond to employment needs within the area.

This building supports industry by training skilled employees needed to expand the economic growth within the region served by the Davis ATC Campus. It will be a great asset to the economic growth of the area by providing space conducive to teaching and learning which is sufficient to accommodate those wishing to enroll. The facility will also provide a strong emphasis on safety within each program while focusing on the industry standard for employability. This building is a top priority for the college since it will provide enhanced learning opportunities and economic benefits to the region.

A two acre site east of the current automotive and diesel programs has been identified as the location for the building and will be constructed as a combined high-bay and two-story facility.

The Davis ATC Campus has maintained and updated a Campus Master Plan for its 28-year history. The proposed building is consistent with the direction taken in the Regional Master Plan for Career and Technology Education (CTE) and supports the Davis ATC Campus partnerships within the Davis and Morgan regions.

### Space Requirement Summary

The Haven J. and Bonnie Rae Barlow Technology/Manufacturing Building will be a new two-story, high-bay, 66,000 gross square feet (GSF) facility. The programs to be housed in this new facility are Heavy Duty Diesel, Machining Technology, Industrial Automation Maintenance, and Computer Aided Drafting & Design. The project is currently programmed at:

● Heavy Duty Diesel	17,070 NSF	23,102 GSF
● Machining Technology	12,650 NSF	17,120 GSF
● Industrial Automation Maintenance	6,000 NSF	8,120 GSF
● Computer Aided Drafting & Design	3,580 NSF	4,845 GSF
● Building Support Spaces	3,150 NSF	4,263 GSF
<b>TOTAL</b>	<b>42,450 NSF</b>	<b>57,450 GSF</b>

**Heavy Duty Diesel Program Space Types:**

- Service Bay 19 Total
- Open Shop Area 2 Total
- Repair/Maintenance Room 3 Total
- Classrooms 3 Total
- Faculty Open Office Workroom 1 Total
- Media/Video Library 1 Total
- Storage 3 Total

**Machining Technology Program Space Types:**

- Open Shop Area 2 Total
- Repair/Maintenance/Prep Room 2 Total
- Classrooms 2 Total
- Faculty Open Office Workroom 1 Total
- Storage 4 Total

**Industrial Automation Maintenance Program Space Types:**

- Classrooms 5 Total
- Faculty Open Office Workroom 1 Total
- Media/Video Library 1 Total
- Storage 1 Total

**Computer Aided Drafting & Design Space Types:**

- Classroom/Computer Lab 1 Total
- Multi-Media Studio 1 Total
- Faculty Open Office Workroom 1 Total
- Storage 1 Total

**Project Risk Factors**

The Design/Build Teams will be selected using the Value Based Selection method consisting of the following stages:

- Stage I. The Selection Committee will select three finalist teams based on the criteria described in this RFP. Please note that no price proposal is required.
- Stage II. Following the selection of three finalists, each Design/Build Team will receive a Stage II RFP with RFP requirements, guidelines, and applicable portions of master plan, building program, site and utility surveys, geotechnical report, design standards, and other pertinent information. Each Design/Build Team will submit a preliminary design and cost proposal in conformance with Stage II RFP requirements and guidelines. Following the VBS Selection Committee's determination of the Design/Build Team whose proposal provides the greatest value to the State, a stipend of \$50,000.00 will be awarded to two of the final three other finalists who met all submittal requirements, but were not selected. In return for accepting the stipend, the Proposers agree that the State can incorporate portions or ideas from the proposals in to the final project. Upon successful completion of contract negotiations, an Agreement will be provided to the selected team. A notice to proceed will be issued when the Agreement is signed and returned to DFCM.

# PROCUREMENT PROCESS

The State of Utah intends to enter into an agreement with a firm to provide Design/Build services as described. The selection of the Design/Build Team will be made using a Value Based Selection (VBS) system.

## 1. Request for Proposals Documents for Design/Build Team

The Request for Proposals for Design/Build Services (RFP) consists of all of the documents listed in the Table of Contents and all said documents are incorporated in this RFP by reference. The RFP also includes the Stage II documents and all documents incorporated by reference therein. The RFP will be available at DFCM per the attached schedule and on the DFCM web site at <http://dfcm.utah.gov>.

## 2. Contact Information

Except as authorized by the DFCM Representative or as otherwise stated in the RFP or the pre-submittal meeting, communication during the selection process shall be directed to the specified DFCM Representative. In order to maintain the fair and equitable treatment of everyone, Design/Build Teams shall not unduly contact or offer gifts or gratuities to DFCM, any Board officer, employee or agent of the State of Utah, users or Selection Committee members in an effort to influence the selection process or in a manner that gives the appearance of influencing the selection process. This prohibition applies before the RFP is issued as the project is developed, and extends through the award of a contract. Failure to comply with this requirement may result in a disqualification in the selection process. Design/Build Teams should be aware that Selection Committee members will be required to certify that they have not been contacted by any of the Design/Build Teams in an attempt to influence the selection process.

## 3. Requests for Information

All requests for information regarding this project shall be in writing and directed to:

Lyle Knudsen (DFCM Representative)  
Division of Facilities Construction and Management  
4110 State Office Building  
Salt Lake City, Utah 84114  
E-mail: [lknudsen@utah.gov](mailto:lknudsen@utah.gov)  
Facsimile: 801-538-3267

## 4. Project Schedule

The Project Schedule lists the important events, dates, times and locations of meetings and submittals. The terms of the project schedule are hereby incorporated by reference and must be met by the selected team.

## 5. Mandatory Pre-Submittal Meeting

A mandatory pre-submittal meeting will be held on the date and time and at the location listed on the Project Schedule.

A representative from each interested general contractor firm and each interested prime design firm is required to attend. During the meeting, a presentation will be made to describe the overall scope of work and intended schedule. Interested firms may ask questions and request clarification about the project and the procurement process.

Subconsultants and subcontractors are invited to attend this meeting but it is not mandatory for them.

**The prime construction and prime design firms absence from the pre-submittal meeting and/or failure to register precludes participation as a submitting firm on this project.**

**6. Submittal Due Dates and Times**

All required submittals must be delivered to, and be received by DFCM prior to the date and time indicated in the Project Schedule. Submittals received after the specified time will not be accepted. Please allow adequate time for delivery. If using a courier service, the Design/Build Team is responsible for ensuring that delivery will be made directly to the required location. It is your responsibility to allow for the time needed to park on Capitol Hill as recent construction activity has made the parking more difficult. Identification is required to enter the building.

**7. Last Day to Submit Questions**

All questions must be received at the office of DFCM no later than the time and dated listed in the Project Schedule. Questions must be submitted in writing to Lyle Knudsen at DFCM.

**8. Listing of Subcontractors**

Listing of Subcontractors shall be as required by the Request for Proposals and as summarized in the "Instructions and Subcontractor's List Form", which are included as part of this RFP, except that only subcontractors that need to be listed are those that have been identified at the time of submission. A listing of subcontractors is not required at the time of submission in a design/build delivery, but is required to be submitted to DFCM at the time subcontractor selection is completed by the general contractor. As additional subcontractors are identified, the subcontractor list shall be updated and submitted to the DFCM Representative.

DFCM retains the right to audit or take other steps necessary to confirm compliance with requirements for the listing and changing of subcontractors. Any contractor who is found to not be in compliance with these requirements is subject to a debarment hearing and may be debarred from consideration for award of contracts for a period of up to three years.

**9. Addendum**

All responses to questions and requests for clarification will be in writing and issued as addenda to the Request for Proposals. Addenda will be posted on DFCM/s web site at <http://dfcm.utah.gov>. Any addenda issued prior to the submittal deadline shall become part of the Request for Proposals and any information required shall be included in your proposal.

**10. Past Performance and References**

As each DFCM project is completed, DFCM, the Contractor and Architect will evaluate each other and will also be evaluated by the using agency/institution. It is the intent of DFCM that this process will be the major source for evaluating past performance.

Contractors and Architects shall submit past performance and reference information by the time indicated on the Project Schedule.

For all DFCM projects completed in the last five years identify the project by name, number and DFCM project manager. Each prime contractor and each prime design firm wishing to compete for this project that has not completed at least three DFCM projects in the last five years, will be required to provide one copy of a list of references on additional similar projects for a total of three projects.

For non-DFCM projects provide the following information:

Point of Contact:	Person who will be able to answer any customer satisfaction questions.
Phone Number:	Phone number of the contact we will be surveying.
User Name:	Name of Company / Institution that purchased the construction work.
Project Name:	Name of the project.
Date Completed:	Date of when the work was completed.
Address:	Street, city and state where the work was performed.
Size:	Size of project in dollars.
Duration:	Duration of the project / construction in months.
Type:	Type of the project (i.e.: School, Offices, Warehouse, etc)

**11. Statements of Qualifications**

The submitting Design/Build Team shall provide seven copies of the Statements of Qualifications. The Statement of Qualifications is a short document that addresses the selection criteria. It indicates the experience and qualifications of the Design/Build Team, the construction project manager, the lead designer, and other critical members of the team. It describes what talents their team brings to the project, how their knowledge of the subject will provide benefit to the process, how the team has been successful in the past and how that relates to this project. It should include information on similar projects that have been completed by the Design/Build Team, construction project manager, lead designer, and other team members. Include the experience and special qualifications that are applicable to this project and/or are part of the project specific selection criteria.

**12. Preliminary Management Plan**

The Design/Build Team shall submit seven copies of a Preliminary Management Plan by the time indicated on the Project Schedule. The Preliminary Management Plan should demonstrate how the Design/Build Team is organized, the role of team members, and how the team will work together to achieve the objectives of the project. It should identify decision making authority and point of contact.

The Preliminary Management Plan should address in a general manner how the Team will accomplish the objectives of the project, mitigate the project risks that are noted in the RFP as well as others identified by the Team, and address any other selection criteria not addressed elsewhere in the Team's submittals. It should include a preliminary project schedule indicating how the Team will accomplish the desired completion timeframe.

The Preliminary Management Plan should be concise yet contain sufficient information for evaluation by the Selection Committee. Teams that are included in the shortlist for Stage II will be required to submit a more definitive management plan in their Stage II submittals.

**13. Time**

One of the selection criteria will be proposed contract time. The Design/Build Team will include in the Preliminary Management Plan the schedule for completing the work including any items required by DFCM or the A/E. A completion date prior to February 2, 2009 is requested, but not mandatory.

It is anticipated that an Agreement will be given to the contractor for signature following concurrence of the design and accepted scope of work, including any accepted deviations from the program and accepted cost adjustment, if required. The actual notice to proceed will be promptly issued following the return of the signed Agreement and bonds by the contractor. The actual completion date will be based on the contractor's proposed schedule and any adjustments that are required due to the refined scope of work established following award, which are documented in the Agreement; all as agreed to by DFCM.

All plans, schedules, and the cost proposals are required to reflect the proposed design and construction time. Non-compliance with the schedule will not result in automatic disqualification; it will be evaluated by the Selection Committee in determining the final selection.

**14. Termination or Debarment Certifications**

The general contractor and prime design firm of the design build team must submit a certification that neither it nor its principals are presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from soliciting work by any governmental department or agency. These firms must also certify that neither the firm nor its principals have been terminated during the performance of a contract or withdrew from a contract to avoid termination. If the firm cannot certify these two statements, the firm shall submit a written explanation of the circumstances for review by DFCM. Design/Build Teams are to submit these certifications with their Statement of Qualifications.

## **15. Selection Committee**

The Selection Committee will be composed of individuals from the Utah State Building Board, DFCM, the User Agency / Institution, representatives from the design and construction disciplines, and others deemed appropriate by DFCM.

## **16. Interviews**

Interviews will be conducted with all responsive and responsible Design/Build Teams except as follows. If more than nine Design/Build Teams submit proposals and meet other requirements, DFCM may convene the Selection Committee to develop a list of contractors to be invited to interviews. This evaluation will be made using the selection criteria noted below. The information provided by the past performance/references, Preliminary Management Plan and Statement of Qualifications will be the basis for this evaluation.

The purpose of the interview is to allow the Design/Build Team to present its qualifications, past performance and preliminary management plan. It will also provide an opportunity for the Selection Committee to seek clarification of the Team's proposal.

The proposed primary project management personnel, including the project manager and Architect, should be in attendance. The project manager is the Design/Build Team's representative who will have full responsibility for the design and construction of the project. The project manager has overall job authority, will be in attendance at all job meetings, and is authorized by the contractor to negotiate and sign any and all change orders in the field, if necessary. Unless otherwise noted, the attendance of subconsultants and subcontractors is at the discretion of the contractor.

The method of presentation is at the discretion of the Design/Build Team. The interviews will be held on the date and at the place specified in the Project Schedule.

## **17. Selection Criteria**

The following criteria will be used in arriving at a shortlist of three teams. The short listed teams will be those that represent the best value for the state. The criteria are not listed in any priority order. The Selection Committee will consider all criteria in performing a comprehensive evaluation of the proposal. Weights have been assigned to each criteria in the form of points.

- A. **DFCM Past Performance Rating. 20 POINTS.** The lead construction firm and design firm for each Design/Build Team will be given a past performance rating. The rating will be based first on how well the team members did on past projects with DFCM. If a minimum of three DFCM past performance ratings are not available a rating will be established using any DFCM past performance ratings that are available, supplemented by references supplied by the Design/Build Teams at the time the Statement of Qualifications and Organization is submitted.

- B. Strength of Team. **30 POINTS** Based on the Statements of Qualifications, Preliminary Management Plan, and the interview, the Selection Committee shall evaluate the expertise and experience of the team and the project lead as it relates to this project in size, complexity, quality, duration, etc. Consideration will also be given to the strength brought to the team by critical consultants/ subcontractors including how they were or will be selected and the success the team has had in the past in similar projects. The Selection Committee will also evaluate how the members of the Design/Build Team will work together to achieve project objectives. This will include any experience the team members have in working together.
  
- C. Project Management Approach. **35 POINTS** Based on the information provided in the Preliminary Management Plan and information presented in the interview, the Selection Committee will evaluate how each team plans to design and construct the project in the location and time frames presented. The Selection Committee will also evaluate the degree to which risks to the success of the project have been identified and a reasonable solution has been presented.
  
- D. Schedule and Building Flexibility. **15 POINTS** The following criteria are project specific. They are added to the above criteria in determining the selection that represents the best value for the state. Items to be considered are schedule and building flexibility,

**TOTAL POINTS POSSIBLE: 100 POINTS.**

**18. Award of Contract**

The selection of the Design/Build Team will be made using the Value Based Selection system (VBS). The award of the Contract shall be in accordance with the criteria set forth in the Request for Proposals (RFP). The State of Utah intends to enter into an agreement with the prime contractor to construct the project as outlined. Individual contractors or alliances between two or more contractors are allowed in this process. The State will contract with only one legal entity.

**19. Contract and Bond**

The Design/Build Agreement will be in the form included in the Stage II documents. The contract time will be as indicated in the proposal. The selected contractor, simultaneously with the execution of the Agreement, will be required to furnish a performance bond and a payment bond, both bearing original signatures, upon the forms provided in the RFP. The performance and payment bonds shall be for an amount equal to one hundred percent (100%) of the Agreement sum and secured from a company that meets the requirements specified in the requisite forms. Subcontractors are not required to be bonded unless a specific requirement for such is included in the RFP documents.

**20. Licensure**

The Design/Build Team shall comply with and require all of its A/E, consultants, subconsultants, and subcontractors to comply with the license laws as required by the State of Utah.

**21. Permits**

In concurrence with the requirements for permitting in the general conditions, it is the responsibility of the contractor to obtain the fugitive dust plan requirements from the Utah Division of Air Quality and the SWPPP requirements from the Utah Department of Environmental Quality and submit the completed forms and pay any permit fee that may be required for this specific project. Failure to obtain the required permit may result in work stoppage and/or fines from the regulating authority that will be the sole responsibility of the contractor. Any delay to the project as a result of any such failure to obtain the permit or noncompliance with the permit shall not be eligible for any extension in the Contract Time.

**22. Financial Responsibility of Contractors and Subcontractors**

Contractors shall respond promptly to any inquiry in writing by DFCM to any concern of financial responsibility of the contractor or subcontractor.

**23. Withdrawal of Proposals**

Proposals may be withdrawn on written request received from proposer until the notice of selection is issued.

**24. Time is of the Essence**

Time is of the essence in regard to all the requirements of the contract documents.

**25. Right to Reject Proposals**

DFCM reserves the right to reject any or all proposals.

**PROJECT SCHEDULE**

<b>PROJECT NAME: HAVEN J. AND BONNIE RAE BARLOW TECHNOLOGY/ MANUFACTURING BUILDING – DAVIS ATC CAMPUS UTAH COLLEGE OF APPLIED TECHNOLOGY – KAYSVILLE, UTAH</b>				
<b>DFCM PROJECT NO. 07036220</b>				
<b>Event</b>	<b>Day</b>	<b>Date</b>	<b>Time</b>	<b>Place</b>
RFP for Design/Build Teams Stage I Available	Monday	July 2, 2007	12:00 NOON	DFCM 4110 State Office Bldg SLC, UT and the DFCM web site *
<b>Mandatory</b> Pre-submittal Meeting	Thursday	July 12, 2007	2:00 PM	Board Room Davis ATC Campus 550 East 300 South Kaysville, UT
Last Day to Submit Questions	Tuesday	July 17, 2007	4:00 PM	Lyle Knudsen – DFCM E-mail lknudsen@utah.gov Fax (801)-538-3267
Addendum Deadline (exception for bid delays)	Wednesday	July 18, 2007	2:00 PM	DFCM web site*
Management Plans, References, Statements of Qualifications, and Termination/Debarment Certifications Due	Friday	July 20, 2007	12:00 NOON	DFCM 4110 State Office Bldg SLC, UT
Short List for Stage II	Thursday	August 2, 2007	TBA	
Announcement of Finalists	Friday	August 3, 2007	4:00 PM	DFCM web site *
Stage II RFP Documents Available	Monday	August 6, 2007	TBA	DFCM 4110 State Office Bldg SLC, UT
Stage II Meeting with Users	Friday	August 10, 2007	1:30 PM	Board Room Davis ATC Campus 550 East 300 South Kaysville, UT
Stage II Proposals Due	Friday	September 14, 2007	12:00 NOON	DFCM 4110 State Office Bldg SLC, UT
Substantial Completion Date	Monday	February 2, 2009		

\* DFCM's web site address is <http://dfcm.utah.gov>.

**PERFORMANCE BOND**

(Title 63, Chapter 56, U. C. A. 1953, as Amended)

That \_\_\_\_\_ hereinafter referred to as the "Principal" and \_\_\_\_\_, a corporation organized and existing under the laws of the State of \_\_\_\_\_, with its principal office in the City of \_\_\_\_\_ and authorized to transact business in this State and U. S. Department of the Treasury Listed (Circular 570, Companies Holding Certificates of Authority as Acceptable Securities on Federal Bonds and as Acceptable Reinsuring Companies); hereinafter referred to as the "Surety," are held and firmly bound unto the State of Utah, hereinafter referred to as the "Obligee, " in the amount of \_\_\_\_\_ DOLLARS (\$ \_\_\_\_\_) for the payment whereof, the said Principal and Surety bind themselves and their heirs, administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

**WHEREAS**, the Principal has entered into a certain written Contract with the Obligee, dated the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, to construct \_\_\_\_\_ in the County of \_\_\_\_\_, State of Utah, Project No. \_\_\_\_\_, for the approximate sum of \_\_\_\_\_ Dollars (\$ \_\_\_\_\_), which Contract is hereby incorporated by reference herein.

**NOW, THEREFORE**, the condition of this obligation is such that if the said Principal shall faithfully perform the Contract in accordance with the Contract Documents including, but not limited to, the Plans, Specifications and conditions thereof, the one year performance warranty, and the terms of the Contract as said Contract may be subject to Modifications or changes, then this obligation shall be void; otherwise it shall remain in full force and effect.

No right of action shall accrue on this bond to or for the use of any person or corporation other than the state named herein or the heirs, executors, administrators or successors of the Owner.

The parties agree that the dispute provisions provided in the Contract Documents apply and shall constitute the sole dispute procedures of the parties.

**PROVIDED, HOWEVER**, that this Bond is executed pursuant to the Provisions of Title 63, Chapter 56, Utah Code Annotated, 1953, as amended, and all liabilities on this Bond shall be determined in accordance with said provisions to the same extent as if it were copied at length herein.

**IN WITNESS WHEREOF**, the said Principal and Surety have signed and sealed this instrument this \_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

**WITNESS OR ATTESTATION:**

**PRINCIPAL:**

\_\_\_\_\_

\_\_\_\_\_

By: \_\_\_\_\_  
(Seal)

Title: \_\_\_\_\_

**WITNESS OR ATTESTATION:**

**SURETY:**

\_\_\_\_\_

\_\_\_\_\_

By: \_\_\_\_\_  
Attorney-in-Fact (Seal)

STATE OF \_\_\_\_\_ )  
 ) ss.  
COUNTY OF \_\_\_\_\_ )

On this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, personally appeared before me \_\_\_\_\_, whose identity is personally known to me or proved to me on the basis of satisfactory evidence, and who, being by me duly sworn, did say that he/she is the Attorney in-fact of the above-named Surety Company and that he/she is duly authorized to execute the same and has complied in all respects with the laws of Utah in reference to becoming sole surety upon bonds, undertakings and obligations, and that he/she acknowledged to me that as Attorney-in-fact executed the same.

Subscribed and sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

My commission expires: \_\_\_\_\_

Resides at: \_\_\_\_\_

\_\_\_\_\_  
NOTARY PUBLIC

**Agency:** \_\_\_\_\_  
**Agent:** \_\_\_\_\_  
**Address:** \_\_\_\_\_  
**Phone:** \_\_\_\_\_

Approved As To Form: May 25, 2005  
By Alan S. Bachman, Asst Attorney General

**PAYMENT BOND**

(Title 63, Chapter 56, U. C. A. 1953, as Amended)

**KNOW ALL PERSONS BY THESE PRESENTS:**

That \_\_\_\_\_ hereinafter referred to as the "Principal," and \_\_\_\_\_, a corporation organized and existing under the laws of the State of \_\_\_\_\_ authorized to do business in this State and U. S. Department of the Treasury Listed (Circular 570, Companies Holding Certificates of Authority as Acceptable Securities on Federal Bonds and as Acceptable Reinsuring Companies); with its principal office in the City of \_\_\_\_\_, hereinafter referred to as the "Surety," are held and firmly bound unto the State of Utah hereinafter referred to as the "Obligee," in the amount of \_\_\_\_\_ Dollars (\$ \_\_\_\_\_) for the payment whereof, the said Principal and Surety bind themselves and their heirs, administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

**WHEREAS**, the Principal has entered into a certain written Contract with the Obligee, dated the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, to construct \_\_\_\_\_ in the County of \_\_\_\_\_, State of Utah, Project No. \_\_\_\_\_ for the approximate sum of \_\_\_\_\_ Dollars (\$ \_\_\_\_\_), which contract is hereby incorporated by reference herein.

**NOW, THEREFORE**, the condition of this obligation is such that if the said Principal shall pay all claimants supplying labor or materials to Principal or Principal's Subcontractors in compliance with the provisions of Title 63, Chapter 56, of Utah Code Annotated, 1953, as amended, and in the prosecution of the Work provided for in said Contract, then, this obligation shall be void; otherwise it shall remain in full force and effect.

That said Surety to this Bond, for value received, hereby stipulates and agrees that no changes, extensions of time, alterations or additions to the terms of the Contract or to the Work to be performed thereunder, or the specifications or drawings accompanying same shall in any way affect its obligation on this Bond, and does hereby waive notice of any such changes, extensions of time, alterations or additions to the terms of the Contract or to the Work or to the specifications or drawings and agrees that they shall become part of the Contract Documents.

**PROVIDED, HOWEVER**, that this Bond is executed pursuant to the provisions of Title 63, Chapter 56, Utah Code Annotated, 1953, as amended, and all liabilities on this Bond shall be determined in accordance with said provisions to the same extent as if it were copied at length herein.

**IN WITNESS WHEREOF**, the said Principal and Surety have signed and sealed this instrument this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

**WITNESS OR ATTESTATION:**

**PRINCIPAL:**

\_\_\_\_\_

\_\_\_\_\_

By: \_\_\_\_\_ (Seal)

Title: \_\_\_\_\_

**WITNESS OR ATTESTATION:**

**SURETY:**

\_\_\_\_\_

\_\_\_\_\_

By: \_\_\_\_\_ (Seal)  
Attorney-in-Fact

STATE OF \_\_\_\_\_ )  
 ) ss.  
COUNTY OF \_\_\_\_\_ )

On this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, personally appeared before me \_\_\_\_\_, whose identity is personally known to me or proved to me on the basis of satisfactory evidence, and who, being by me duly sworn, did say that he/she is the Attorney-in-fact of the above-named Surety Company, and that he/she is duly authorized to execute the same and has complied in all respects with the laws of Utah in reference to becoming sole surety upon bonds, undertakings and obligations, and that he/she acknowledged to me that as Attorney-in-fact executed the same.

Subscribed and sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

My commission expires: \_\_\_\_\_  
Resides at: \_\_\_\_\_

\_\_\_\_\_  
NOTARY PUBLIC

**Agency:** \_\_\_\_\_  
**Agent:** \_\_\_\_\_  
**Address:** \_\_\_\_\_  
**Phone:** \_\_\_\_\_

Approved As To Form: May 25, 2005  
By Alan S. Bachman, Asst Attorney General

**HAVEN J. & BONNIE RAE BARLOW  
MANUFACTURING TECHNOLOGY BUILDING  
ARCHITECTURAL PROGRAM**

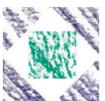
**PREPARED FOR THE DAVIS APPLIED TECHNOLOGY COLLEGE**



01 June 2007  
DFCM #07036220



**HAVEN J. & BONNIE RAE BARLOW MANUFACTURING TECHNOLOGY BUILDING**  
DFCM #07036220  
HFSArchitects  
Davis Applied Technology College



***HFS ARCHITECTS***  
***1484 SOUTH STATE STREET***  
***SALT LAKE CITY, UTAH 84115***  
***801 • 596 • 0691***

# SIGNATURE SHEET



## DAVIS APPLIED TECHNOLOGY COLLEGE

We, the representatives for Davis Applied Technology College, have reviewed the Haven J. & Bonnie Rae Barlow Manufacturing Technology Building Program and hereby sanction that this Program adequately represents our request for a facility to fulfill our mission and programmatic needs. We further acknowledge that all appropriate parties involved in the programming effort have reviewed this document for completeness and accuracy.

\_\_\_\_\_  
Brent V. Petersen, VP of Student & Facility Services      Date  
Davis Applied Technology College

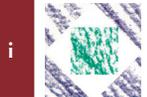
\_\_\_\_\_  
Michael J. Bouwhuis, Campus President      Date  
Davis Applied Technology College

\_\_\_\_\_  
Lyle Knudsen, Program Director      Date  
Division of Facilities Construction & Management

\_\_\_\_\_  
F. Keith Stepan, Director      Date  
Division of Facilities Construction and Management

**HAVEN J. & BONNIE RAE BARLOW MANUFACTURING TECHNOLOGY BUILDING**  
Davis Applied Technology College

**HFSArchitects**





# ACKNOWLEDGMENTS



## *STEERING COMMITTEE*

Michael J. Bouwhuis, President  
Brent Petersen, Vice President of Student & Facility Services  
Kent Thorsted, Facilities Services Manager

## *PROGRAMMING TEAM - HFS ARCHITECTS*

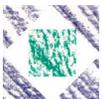
Barry Smith, Principal In Charge  
Robyn L. Smith, Programming Architect  
Stacy Meyer, Intern Architect

## *DAVIS APPLIED TECHNOLOGY COLLEGE BOARD*

Barbara Smith, Chair	William Farr
Michael E. Jensen, Vice-Chair	K.O. Murdock
David Beck	William H. Prows
Donald L. Cazel II	Sean Slatter
Nolan Karras	Jerry Stevenson
Joey Skinner	Jay Taggart

## *DAVIS APPLIED TECHNOLOGY COLLEGE FOUNDATION BOARD*

Gary V. Smith, Chair	Dean Collinwood
Lloyd Carr, Vice Chair	Jay B. Dansie
Paul Morrell, Treasurer	Jean Madsen
Bruce Jensen, Secretary	Dannie McConkie
Bill Farr, College Board Liason	Merrill B. Pugmire
Kathleen Alder	David Simmons
Margaret Anderson	Kent Sulser
Haven J. Barlow	Gary Wright





# ACKNOWLEDGEMENTS

## *DIESEL TECHNOLOGY EMPLOYER ADVISORY TEAM*

Mark Hadley, Central Refrigeration  
Bill Jesse, Ryder Transport  
Sam Paget, Albertsons  
Myron Nelson, Nelson Diesel  
Randy Sperry, Rocky Mountain Cummins  
Jim Wanczyk, A & W Diesel  
Craig Banyard, Wheeler Machinery Co. Power Systems Group

## *MACHINE TOOL TECHNOLOGY EMPLOYER ADVISORY TEAM*

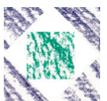
Justin Knighton, Williams International  
Scott Roberts, DGI  
Randy Macardi, Lifetime Products  
Kevin Tumia, Newport Tool  
Marshall Mitchie, Skydandee Manufacturing  
Henry Pollock, Innovative Precision LCC  
Howard Olsen, Todd Machinery  
Craig Dangerfield, Petersen, Inc.  
Dave Farrell, ProMold/Orbit Irrigation  
Craig McKinnon, Enviro Tech

## *INDUSTRIAL AUTOMATED MAINTENANCE ADVISORY TEAM*

Randy Peterson, Hill Air Force Base - PMEL Lab  
Lavon E Allen, Kennecott Utah Copper Corporation  
Rich Brady, Fresenius Medical Care  
Leroy Martinez, LSI Corporation / Hill Air Force Base  
Brent Stephens, Lifetime Products  
Nasir Khan, Lagoon Theme Park

## *COMPUTER AIDED DRAFTING & DESIGN ADVISORY TEAM*

Pete Petersen, Boise Building Solutions  
Dave Hall, Flying J Inc.  
Mark VanDyken, NUCOR Steel Building Systems Group  
Alan Bennion, Reeves & Associates  
Daryl Zadok Budd, Zadok Design  
Patrick McReaken, P.E., Mac Construction of Utah  
Mark Mangum, Setpoint Engineered Systems 1  
Steve Scoville, Designer



# TABLE OF CONTENTS



## SIGNATURE SHEET

## ACKNOWLEDGMENTS

## TABLE OF CONTENTS

## EXECUTIVE SUMMARY

- Project Justification
- Space Requirement Summary
- Cost Model

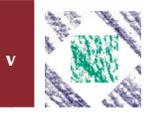
## SITE ANALYSIS

- Location
- Site Planning Principals
- Physical Characteristics
- Site Orientation
- Site Circulation & Relationships

## BUILDING REQUIREMENTS

- Project Identification
- Justification
- History & Growth
- Project Vision & Principles
- Architectural Planning Issues
- Codes, Regulations & Safety
- 2006 International Building Code Review
- Building Systems Design Criteria - Structural Systems
- Building Systems Design Criteria - Mechanical, Plumbing & Fire Protection Systems
- Building Systems Design Criteria - Electrical Systems
- Vertical Transportation
- Landscape Design Criteria
- Value Engineering
- Sustainable Design

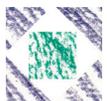
i	<b>INDIVIDUAL SPACE REQUIREMENTS</b>	
iii	• Individual Space Outline Format	43
v	• First Floor Relationship Diagram	44
	• Second Floor Relationship Diagram	45
	• Vertical Relationship Diagram	46
1		
2	<b>HEAVY-DUTY DIESEL PROGRAM</b>	47
3	• Diesel Service Bay	49
	• Partnership Service Bay	51
5	• Pit Bay	53
8	• Enclosed Wash Bay	55
9	• Enclosed Storage Bay	57
14	• Engine Re-Build Area	59
15	• Transmission / Differential Re-Build Area	61
	• Hydraulics Maintenance Room	63
	• Electrical Maintenance Room	65
17	• Welding Room	67
18	• Tool Crib	69
18	• Diesel Classroom	71
20	• Partnership Classroom	73
21	• Faculty Open Office / Workroom	75
25	• Media / Video Library	77
27	• Storage Room	79
28		
30		
33		
38		
38		
40		
40		





# TABLE OF CONTENTS

<i>MACHINING TECHNOLOGY PROGRAM</i>	81	<i>SHARED COMMON SPACES</i>	
• CNC / Machining Shop	83	• Shared Classroom	133
• CNC / Machining Inspection Area	85	• Conference Room	135
• Grinding & EDM Room	87	• Men's Toiler & Locker	137
• Metal Prep & Deburr Area	89	• Women's Toilet & Locker	139
• Tool Crib	91		
• Machining Classroom	93	<i>AREA SUMMARY</i>	141
• CAD / CAM Lab	95	<i>COST MODEL</i>	145
• Faculty Open Office / Workroom	97		
• Metal Storage	99		
• Fluid Storage	101		
<i>INDUSTRIAL AUTOMATION MAINTENANCE PROGRAM</i>	103		
• Industrial Maintenance Shop	105		
• Fluid Training Classroom	107		
• Mechanical Training Classroom	109		
• Electrical Training Classroom	111		
• Developing Technologies Classroom	113		
• Faculty Open Office / Workroom	115		
• Media / Video Library	117		
• Storage	119		
<i>COMPUTER AIDED DRAFTING &amp; DESIGN PROGRAM</i>	121		
• CADD Classroom / Lab	123		
• Multi-Media Studio	125		
• Faculty Open Office / Workroom	127		
• Storage	129		





## PROJECT JUSTIFICATION

The Haven J. and Bonnie Rae Barlow Manufacturing Technology Building will link education and skills with economic growth within the entire Northern Utah region and beyond. This facility will provide 66,000 square feet of premier training and high-bay work space for the following programs: Heavy Duty Diesel, Moldmaker Machinist, Industrial Automation Maintenance, Machining Technology and Computer Aided Drafting & Design.

High demand for skilled employees and industry growth are reasons this facility is necessary for the College. This building will provide spaces that are adequate for the education and training for the various programs. The current high bay space is not designed for current training programs and industry required equipment. This new building will provide safe and adequate space for students to learn.

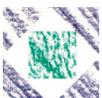
The new Haven J. & Bonnie Rae Barlow Manufacturing Technology Building will be designed from the industry partner's input. Information from Advisory Teams will be used to design spaces necessary for the particular programs. They have indicated the amount and type of space required and the environment needed for an industrial setting. This facility will provide the training opportunities for individuals to be prepared to work at the level needed by employers. The new building will allow the College to respond to employment needs within the area.

This building supports industry by training skilled employees needed to expand the economic growth within the region served by the Davis Applied Technology College. It will be a great asset to the economic growth of the area by providing space conducive to teaching and learning which is sufficient to accommodate those

wishing to enroll. The facility will also provide a strong emphasis on safety within each program while focusing on the industry standard for employability. This building is a top priority for the College since it will provide enhanced learning opportunities and economic benefits to the region.

A two acre site east of the current automotive and diesel programs has been identified as the location for the building and will be constructed as a combined high-bay and two-story facility.

Davis Applied Technology College has maintained and updated a Campus Master Plan for its twenty-eight year history. The proposed building is consistent with the direction taken in the Regional Master Plan for Career and Technology Education (CTE) and supports Davis Applied Technology College partnerships within the Davis and Morgan regions.





# EXECUTIVE SUMMARY

## SPACE REQUIREMENT SUMMARY

The Haven J. & Bonnie Rae Barlow Manufacturing Technology Building will be a new two-story, high-bay, 57,450 gross square feet (Gsf) facility. The programs to be housed in this new facility are Heavy Duty Diesel, Machining Technology, Industrial Automation Maintenance, and Computer Aided Drafting and Design. The project is currently programmed at:

• Heavy Duty Diesel	17,070 NSF	23,102 GSF
• Machining Technology	12,650 NSF	17,120 GSF
• Industrial Automation Maintenance	6,000 NSF	8,120 GSF
• Computer Aided Drafting & Design	3,580 NSF	4,845 GSF
• Building Support Spaces	3,150 NSF	4,263 GSF
<b>TOTAL</b>	<b>42,450 NSF</b>	<b>57,450 GSF</b>

### HEAVY DUTY DIESEL PROGRAM SPACE TYPES:

• Service Bay	19 Total
• Open Shop Area	2 Total
• Repair / Maintenance Room	3 Total
• Classroom	3 Total
* Faculty Open Office Workroom	1 Total
• Media / Video Library	1 Total
• Storage	3 Total

### MACHINING TECHNOLOGY PROGRAM SPACE TYPES:

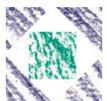
• Open Shop Area	2 Total
• Repair / Maintenance / Prep Room	2 Total
• Classroom	2 Total
• Faculty Open Office Workroom	1 Total
• Storage	4 Total

### INDUSTRIAL AUTOMATION MAINTENANCE PROGRAM SPACE TYPES:

• Classrooms	5 Total
• Faculty Open Office Workroom	1 Total
• Media / Video Library	1 Total
• Storage	1 Total

### COMPUTER AIDED DRAFTING & DESIGN SPACE TYPES:

• Classroom / Computer Lab	1 Total
• Multi-Media Studio	1 Total
• Faculty Open Office Workroom	1 Total
• Storage	1 Total



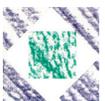


## OVERVIEW

The Davis Applied Technology College main campus is located in Kaysville, Utah. Its focus is on providing open-entry/open-exit, competency based programs. Training programs are designed to prepare students for employment in a specific job or occupation. Many programs are offered year round. The College draws students from both Davis and Morgan Counties.

## LOCATION

The proposed location for the Haven J. & Bonnie Rae Barlow Manufacturing Technology Building is on the east side of the Jeep road on the east side of the campus. This location is a large Parking Lot, most of which will be lost by the construction of this new building, see the following site photography. **(The existing Davis Applied Technology College infrastructure has sufficient capacity to support this new building.)**





# SITE ANALYSIS

**HAVEN J. & BONNIE RAE BARLOW MANUFACTURING TECHNOLOGY BUILDING**  
Davis Applied Technology College

HFS Architects

OVERALL CAMPUS MAP

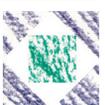


Master Plan





*AERIAL SITE PHOTO*





# SITE ANALYSIS

## SITE PLANNING PRINCIPLES

### SHADE AND SHADOW

Minimize building shadowing of habitable outdoor spaces in winter, spring and fall -- maximize shade in summer. Utilize mature deciduous tree canopies as much as possible to achieve this end. Allow areas of un-shaded seating to extend the useful seasons into late fall and early spring.

### VIEWS

Preserve/enhance existing view opportunities to north and east. Prioritize views from very public outdoor and public indoor spaces over those from private spaces. Create "viewing platforms" as well as peripheral views out of the campus open spaces. Link campus spaces together with selective views from one to the other. Planning should encourage view corridors or direct views away from undesirable views, such as the service/deck area.

### OUTDOOR SPACES

Create linked outdoor spaces or "outdoor rooms," with both spatial closure and views outward. Create a variety of campus space types, quiet/active, green/paved, open/closed, shaded/sunny, etc. Limit hardscape areas to those which will attract large gatherings; in principal most outdoor spaces should not be hardscape. Provide connections, links, and other methods of integration to the Diesel Compound utilizing open spaces and pathways.

Exterior space can be used as an extension of the interior learning environment and is the area which will tie the campus together. Smaller informal gathering spaces with benches should be provided between buildings for the interaction of students and faculty from adjacent corroborative programs.

### BUILDING SPIRIT

Create a building that is a partner to the existing Diesel Compound and characteristics inspired by physically, functionally, and symbolically. The new Haven J. & Bonnie Rae Barlow Manufacturing Technology Building must have an open, shared nature to express the interactive nature of its programs. The landscape adjacent to the building should extend this character into adjacent circulation paths and campus spaces.

### BUILDING IDENTITY

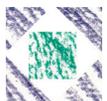
Create an external identity associated with the existing Diesel Compound building. Create internal building identities associated with particular departments and programs. Identify existing identity context and develop a strategy for the new building to truly be perceived as a part of the campus.

### BUILDING ACCESS

Express the public shared nature of this building by connecting the internal circulation to external circulation through multiple entries at multiple grade elevations, with extensive views in and out, etc. Provide strong functional connections between interior program spaces (particularly social spaces and meeting rooms), and exterior spaces.

### LOADING AND SERVICE

It is recommended to locate the loading and service area on the north end of the east side. For this type of building, this area should be minimal, but still needs to be accommodated.





**PHYSICAL CHARACTERISTICS**

*EMERGENCY AND NON-ROUTINE SERVICE ACCESS*

In accordance with the Davis Applied Technology College’s management and maintenance practice, design paths and walkways to accommodate emergency vehicles and occasional non-routine service access. Design access in such a way as to prevent private vehicles from using these paths.

*ACCESSIBILITY*

Wherever possible, all site paths shall meet ADA criteria for slope and landings. All usable outdoor campus spaces shall be fully accessible.





## SITE ANALYSIS

### *GEOTECHNICAL INVESTIGATION REPORT*

A geotechnical report has not been provided during Programming and will shall be completed prior to the Design Phase.

Once the final building size, configuration, structural system, number of levels above and below grade, and column loads have been defined in more detail, the project geotechnical consultant shall provide guidance on the following design criteria as well as any other criteria deemed by the geotechnical consultant to be important.

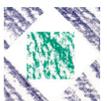
- Soil bearing capacity.
- Structural fill requirements.
- Potential differential settlements.
- Potential for expansion or collapse of soils due to moisture changes.
- Liquefaction potential.
- Groundwater characteristics and restrictions.
- Seismic considerations, coefficients, fault traces, etc.
- Lateral bearing pressures - active and passive.
- Alternate foundation systems.
- Pavement sections.

### *TOPOGRAPHIC SURVEY*

Prior to the start of design, a topographic survey of this site will be contracted by the State of Utah, Division of Facilities Construction and Management. It is anticipated that this survey will document all existing conditions of the site including surface and subsurface improvements. This survey will be made available for use during the design/build phase of the project.

### *ENVIRONMENTAL IMPACT ISSUES*

There are no anticipated environmental impact issues with the design and construction of the Haven J. & Bonnie Rae Barlow Manufacturing Technology Building.





## Views Into The Site

The proposed site for the new Haven J. & Bonnie Rae Barlow Manufacturing Technology Building is in the northeast corner of the DATC campus, directly east of the Diesel Compound and Service Yard (see Photos of Views into the Site).



View of northeast side of Diesel Bay parking lot from the southwest.



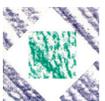
View north at the Diesel Bay from the south.



View of north side of the Diesel Bay from the south.



View of north side of the Diesel Bay from the south.





# SITE ANALYSIS

## Views Out Of The Site

The proposed building site for the new Haven J. & Bonnie Rae Barlow Manufacturing Technology Building offers spectacular views of the northern Wasatch Front to the north and east. Views from the site to the north and east

foothills are spectacular and panoramic. The location of the new building will not have a significant impact on the view corridors of any of the existing buildings at the present time (see Photos of Views Out of the Site).



View of northeast side of the Diesel Bay parking lot from southwest.



View north at the Diesel Bay from the south.



View of east side of Diesel Bay parking lot from the west.



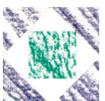
View of east side of the Diesel Bay parking lot from the west.



## SITE ORIENTATION

### CLIMATE

The climate of the site (Kaysville, Utah) ranges from winter low temperatures of 5-25 degrees F to summer lows of 70 degrees and highs of over 100 degrees F. However, typical relative humidity is low, ranging from 15-30%. In general, the prevailing winds will come from the south (both southwest and southeast), and winter storms approach from the west. There are several months during the year where the micro-climate on the site is not conducive to outdoor activity. There are also unique canyon winds from the east that create very cold conditions during the winter. For these reasons, protected exterior spaces will be critical in working with the climate of the site (see Solar Exposure & Prevailing Winds).



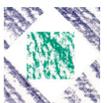


# SITE ANALYSIS

SOLAR EXPOSURE & PREVAILING WINDS

**HAVEN J. & BONNIE RAE BARLOW MANUFACTURING TECHNOLOGY BUILDING**  
Davis Applied Technology College

**HFS Architects**





## SITE CIRCULATION & RELATIONSHIPS

### EXISTING VEHICULAR ACCESS

Vehicular access to the new Haven J. & Bonnie Rae Barlow Manufacturing Technology Building will be from ?? \_\_\_\_\_ ?? to ?? \_\_\_\_\_ ?? to the campus perimeter loop road. The primary vehicle access to the site will be from perimeter loop road on the north and east sides.

The new Haven J. & Bonnie Rae Barlow Manufacturing Technology Building will eliminate existing parking on the campus. Initially, the existing Parking Lot located on the south side of the site will be utilized for parking for the new building. However, the construction of a new Parking Lot, to be located on the east side of the building, is planned for the future.

Additional accessible stalls will be added in the existing Parking Lot and adjacent to the new building. The existing accessible stalls in this Parking Lot are adjacent to the main entries of the existing DATC building.

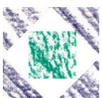
It has been determined that a traffic study is not required during the Programming phase of this project (see Existing Site Circulation).

### EXISTING PEDESTRIAN ACCESS

The pattern for pedestrian circulation around the existing Alumni Center and Promontory Tower Building is relatively straight forward, with pedestrians having the options of entering from only on the sides adjacent to Parking Lot RW3 (see Existing Site Circulation).

### EXISTING SERVICE AND EMERGENCY ACCESS

Service vehicles and emergency access currently utilize the Parking Lot on the east side of the campus to access the Diesel Compound and Service Yard. It is anticipated that this relationship of emergency access and service access will be re-routed, providing access to the new building; as well as, the existing Diesel Compound and Service Yard, from the campus perimeter loop road on the north and from the campus perimeter loop road through the existing Parking Lot on the south.

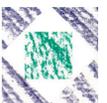




# SITE ANALYSIS

**HAVEN J. & BONNIE RAE BARLOW MANUFACTURING TECHNOLOGY BUILDING**  
Davis Applied Technology College

**HFS Architects**





## PROJECT IDENTIFICATION

The purpose of the new Haven J. & Bonnie Rae Manufacturing Technology Building is to house programs which support local industry by providing highly skilled employees which are needed to expand the economic growth within the region served by the Davis Applied Technology College.

The proposed building will provide learning areas specifically designed for the various programs to be which will be moved into the new building. The additional space provided by the construction of this building, will provide the resources the College needs in order to respond to current industry growth and to fill employment vacancies. This building will become the new home of the:

- **HEAVY DUTY DIESEL PROGRAM**

A Heavy Duty Diesel Mechanic performs all of the duties associated with preventive maintenance and electrical troubleshooting for diesel semi trucks. In addition, the mechanics receive further training in the areas of transmissions, differentials, brakes, steering, suspension, wheel alignment, engine rebuild, basic hydraulics, and heavy duty HVAC.

- **MACHINING TECHNOLOGY PROGRAM**

The CNC and Conventional Machinist program provides entry level jobs in machining and mold making. Students learn to machine parts on lathes, mills, drill presses, surface grinders and Computer Numerical Controlled (CNC) machines. They also learn related skills in math, blueprint reading and mechanical inspection methods.

- **INDUSTRIAL AUTOMATION MAINTENANCE PROGRAM**

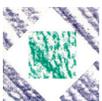
The Industrial Automation Maintenance program prepares students to meet the technical requirements of Utah's manufacturing and service industries. This program emphasizes practical electronics experiments that reinforce electronic systems concepts, theories, and applications.

- **COMPUTER AIDED DRAFTING & DESIGN PROGRAM**

The Computer Aided Drafting and Design program helps students develop the skills and knowledge needed to communicate the ideas of engineers, architects and designers. Students receive training in entry-level skills such as lettering, geometric construction, multi-view projection, pictorial representations, and dimensioning techniques. Students also receive instruction and hands-on experience using Computer-Aided Drafting (CAD) Technology.

### DAVIS APPLIED TECHNOLOGY COLLEGE MISSION

The mission of the College is to create "a trusted learning community embracing technical education to promote economic growth and student development." The College values training by promoting career and educational pathways by providing hands-on, competency-based training. Their curriculum reflects the most recent technological and theoretical developments to meet employer and student needs.





## BUILDING REQUIREMENTS

### JUSTIFICATION

The new Haven J. & Bonnie Rae Barlow Manufacturing Technology Building will support the region and the state's economic growth particularly in the critical areas of the manufacturing industry. This project will fully support the following programs: "Jobs Now Initiative" Machine Tool Technology and Composite Material Technology.

The Utah Defense Alliance Strategic Plan identified programs affected by this project as being essential for meeting the needs of HAFB. The demand for training at HAFB has increased from 6 courses to 45 courses in the last two years. The new building is essential for support of the Department of Labor Application for \$1.2M grant to provide training in the Composites Material Technology program. This grant is endorsed by the Governor's Office of Economic Development, United States Air Force, University of Utah, State Division of Workforce Services, along with 19 industry partners.

This new facility will be designed and equipped specifically for the designated training functions and will provide a safer training environment than presently exists. A minimum of 11,000 square feet is needed to house required training equipment. The current space has severely restricted access for emergencies and no access to a second floor for oversized equipment.

By providing increased capacity through increased space and training stations for critical industry required equipment, programs will be more effective to meet employer demands. The Diesel Technology employer advisory team predicts double the job openings in the next fiscal year. The machine tool technology employer advisory team predicts more than 250 job openings in FY07.

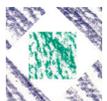
### HISTORY & GROWTH

#### HISTORY

The Davis Applied Technology College is striving to become a leader in the delivery of economic development services by facilitating the training of individual students and businesses primarily in Davis and Morgan Counties, as well as for the State of Utah.

During the past year, several sectors of the economy rebounded very rapidly, placing a significant demand on some of their training programs and services. This is expected to increase even more dramatically across other sectors of the economy in 2006, providing excellent opportunities for students.

The current facility at the Davis Applied Technology College is a contiguous 200,000 square foot building, housing 33 technical programs. The existing facilities do not provide the space necessary to meet current and projected employer demands for the programs involved in this project.

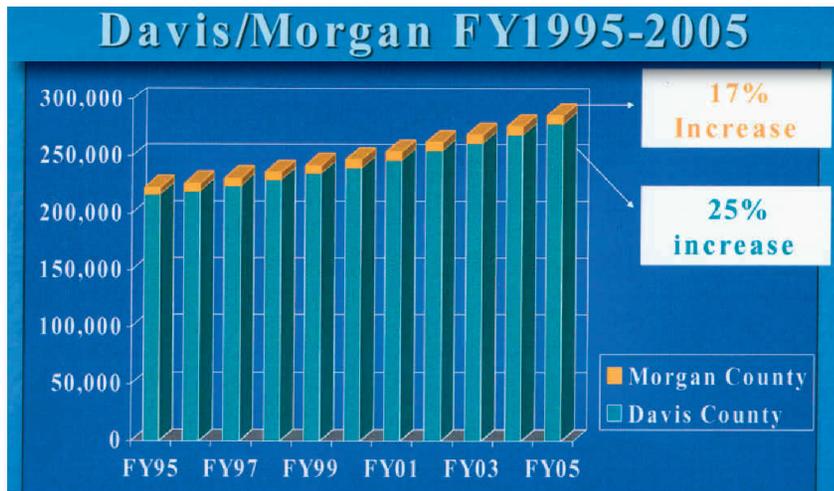


# BUILDING REQUIREMENTS



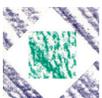
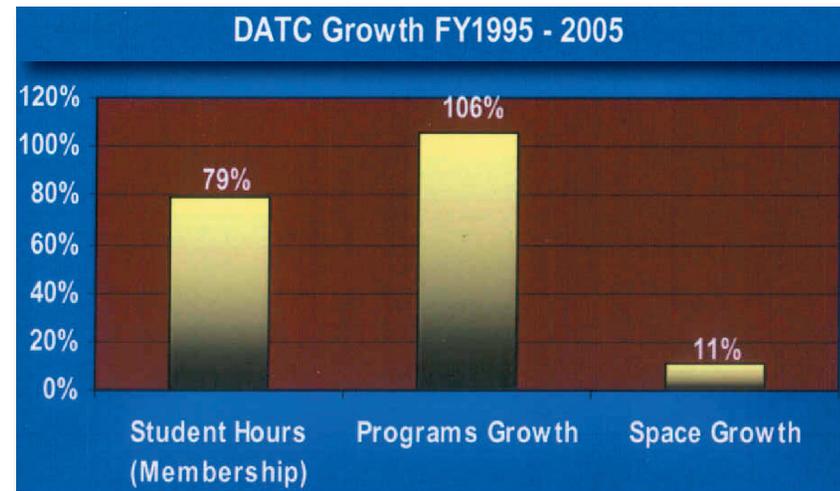
## REGIONAL GROWTH

Davis and Morgan Counties have grown steadily in the past two decades and, according to the Governor's Office of Planning and Budget, will continue to grow through the foreseeable future. This growth is revealed in the current population, which shows 276,374 residents. Projections call for a total Davis County population of nearly 440,000 citizens by 2030. Similarly, Morgan County will more than double its population, from less than 5,000 in 1980 to more than 12,000 in 2030. According to the Utah Population estimates 6 out of the 12 fastest growing cities are in Davis County. Between Fiscal Years 1995 and 2005, Davis County population increased by 25% and Morgan County increased by 17%. The Department of Workforce Services reports that the economy of Davis and Morgan County continues to perform well. In July of 2005, DWS reported that the job growth in Davis County was 5.6%, July of '06 was 4.1%. In addition, Morgan County's job growth was at 5.4% in 2005 and 2.4% in 2006.



## DAVIS APPLIED TECHNOLOGY COLLEGE GROWTH

Historically, the Davis Applied Technology College has shown a pattern of growth which exceeds that of the county population. During FY95 to FY05, membership hours have increased from 623,297 to 1,115,576. This indicates an increase of 79%. During the same time period, technical training programs have increased from 17 to 35 programs, which is a 106% increase. Also, during this time period the square footage of the campus facilities has increased from 199,000 to 225,000 square feet, which is an increase of 11%.





# BUILDING REQUIREMENTS

## MANUFACTURING INDUSTRY GROWTH

Department of Workforce Services projects 18,900 new Utah manufacturing positions in Utah, and the U.S. Bureau of Labor Statistics projects over 128,000 composite and 77,000 machinist nationwide positions by 2012. Despite this demand, a recent survey conducted by the National Association of Manufacturers and Utah Manufacturing Association stated that 80% of manufacturing employers have serious problems finding qualified candidates for the highly technical world of modern manufacturing. This concern is evidenced further from Boeing and Prime Machine.

Boeing requested over 30 new employees in July 2006 from DATC, and forecasts the need for 5 machinists each month for the next 3 years. Tammy Eva, HR Director, states she turned to Applied Technology Colleges for employees because they only hire certified machinists that have quality training. Boeing recruited every qualified student from the DATC but still couldn't fill their demand. For that reason, they have targeted high school graduates, military machinists and temporary workers and increased employee overtime by 20-30% to meet project demands. Boeing would like DATC to handle all the Custom Fit trainings.

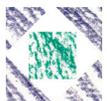
Prime Machine - Doug Murray, President, requested over 10 certified machinists within the past 2 months from the DATC; 6 were DATC students. Prime Machine has been unable to fill the remaining 4 positions. Prime Machine is deeply concerned with the lack of qualified machinists and the practice of machine shops stealing one another's employees with incentives and higher wages. Prime would like to add 2-3 new product lines, but cannot due to a lack of qualified employees.

## PROJECT VISION & PRINCIPLES

### VISION & PRINCIPLES FOR THE HAVEN J. & BONNIE RAE BARLOW MANUFACTURING TECHNOLOGY BUILDING

The following Vision Statements and Principles for the new Haven J. & Bonnie Rae Barlow Manufacturing Technology Building were identified by the Steering Committee:

- **EXPANSION**  
The new Haven J. & Bonnie Rae Barlow Manufacturing Technology Building has not been programmed for a future building expansion.
- **GENERAL MODULE SYSTEM DESIGN**  
The new Haven J. & Bonnie Rae Barlow Manufacturing Technology Building should be designed, as far as possible, with an economical, repetitive modular planning system. This system should be used for all building systems in an integrated design strategy including structural, mechanical, electrical and architectural systems.
- **BUILDING MODULE PLANNING & FLEXIBILITY**  
Use movable furniture unless built-ins provide a significant advantage. Provide for ongoing changes to all major systems and spaces. All mechanical and electrical maintenance items shall be accessible and capable of replacement without demolition of architectural systems. Utilize drywall construction for partitions that are easily removed and replaced. Oversize elevators, corridors and key doorways to accommodate movement of large items of equipment. Plan the building architectural, mechanical, and electrical systems with a consistent modular strategy that allows for change without disrupting adjacent spaces.





## ARCHITECTURAL PLANNING ISSUES

### *BUILDING MASSING & FORM, IMAGE & QUALITY*

The designated location for the new Haven J. & Bonnie Rae Barlow Manufacturing Technology Building is east of the existing Diesel Compound and Service Yard. The architectural image of this building should be significant for both its location and long term durability. The new building should blend in with the traditional architecture of the buildings located around the site; as well as, explore new and modern materials that are found on some of the recent buildings completed on campus.

#### ***THE BUILDING SHOULD BE PLACED IN A WAY THAT RESPECTS:***

- The existing setting and environment. The campus steps up from Kaysville's Main Street toward the northeast. The building should follow the topography of the site and graduate in height keeping the high bay area in the rear (north and east) of campus
- The principle of development at a human scale.
- An organizational grid system and it's relationship to solar grid and view grid orientations.

#### ***THE BUILDING RELATIONSHIPS SHOULD:***

- Be visually apparent, with a strong connection to the existing buildings.
- Stimulate interaction among students, faculty, staff, alumni and donors.
- Be manifested in direct pedestrian access routes through and connecting the buildings.

#### ***THE BUILDING CHARACTER SHOULD REFLECT:***

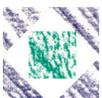
- A timeless design that will not become dated.
- An emphasis on consistency of attitude and scale rather than uniformity of design style.

#### ***THE BUILDING MASSING AND INTERIOR:***

- Should be based on a 30'-0" structural grid and a 5'-0" planning grid to provide flexibility and continuity.
- Circulation should be designed for flexibility.

#### ***THE BUILDING ENTRIES SHOULD:***

- Be inviting, open and easily accessible.
- Be well-lit, with accent lighting throughout.
- Lead to a clear circulation path that provides a sense of orientation.





# BUILDING REQUIREMENTS

## *BUILDING SPACE UTILIZATION EFFICIENCY*

The program uses a net-to-gross efficiency ratio of .67. This is typical and appropriate for classroom buildings. The areas not included in the net square footage are:

- Restrooms
- Circulation
- Walls, Columns, Structure, and Partitions
- Unassigned Storage and Maintenance Areas
- Stairs
- Elevators
- Mechanical, Electrical, & Communication Shafts and Spaces

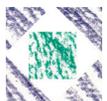
## *NATURAL LIGHT & VIEWS*

As far as possible every space shall have natural light and views. In general nowhere in the building should be more than 35 feet from natural light.

The building should take advantage of daylight to promote connection to the exterior natural environment. Day lighting is to be incorporated into the design of spaces to supplement and supplant artificial lighting. Either skylights or clerestory windows are to be used in the high-bay areas of the building to take advantage of the views and create more day lighting in these spaces.

Daylight should be integrated into building circulation to reinforce connections to the exterior and relieve interior spaces.

Views as identified are to be incorporated into the design of the building. The goal is to take advantage of these views from the most public areas of the building.





## BUILDING CIRCULATION

### INTERNAL CIRCULATION

- Maximize interactions and efficiency by utilizing “branching” single corridors/routes wherever possible in lieu of multiple parallel corridors/routes.
- Locate interior entry lobby in close relation to outdoor public spaces, to strengthen the indoor/outdoor relationship and encourage activities to continue from one space to the other.
- Locate high use areas such as the workrooms and breakrooms in central location nodes, for ease of access and maximum chance of encounters.

### EXTERNAL CIRCULATION

- Use outdoor pedestrian pathways in combination with outdoor public spaces, to allow for a maximum number of casual encounters.
- Locate pathways as an organizing way finding device for building entries.
- Use deciduous trees and landscaping to delineate pathways, and have shade in the summertime.

## APPROACH TO MATERIALS & FINISHES

As a vital campus facility the Haven J. & Bonnie Rae Barlow Manufacturing Technology Building is to be planned as a long term investment. Materials and finishes are to be selected for durability as well as aesthetics. In additions, building systems, materials and finished life-cycle costs should be assessed in comparison with the project’s financial projections and value engineering considerations. It is anticipated that CMU block will be the dominant interior material and Atlas brick with precast concrete elements will be the dominant exterior material. The use of architectural concrete, glass and

metal could also be used in limited quantities. Due to the types of spaces programmed, extensive use of skylights, clerestory and glass for day-lighting and views would also be appropriate.

### BUILDING EXTERIOR MATERIALS AND FINISH GOALS:

- Exterior wall finishes and structure to be 100-year materials.
- Exterior wall fenestration to be 50-year materials.
- Roofing and waterproofing to be 20-year materials.
- Below-grade waterproofing to be 10-year materials.

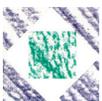
## BUILDING SECURITY

### PROGRAMMATIC BUILDING SECURITY REQUIREMENTS AS FOLLOWS:

- The building’s security system shall provide for separate security for the main functions of the building.
  - ▶ Pedestrian Circulation
  - ▶ Meeting Rooms
  - ▶ Offices
  - ▶ Classrooms
- The door unlocking system for all interior spaces shall follow Davis Applied Technology College’s Design Guidelines.

## TESTING & INSPECTIONS

The Architect/Engineer, and the selected testing lab shall preform periodic construction observations, testing, and special inspections, as outlined in the DFCM Design Criteria for Architects and Engineers. The design engineer shall list all required special inspections on the contract drawings, and preform periodic construction observations as required by the A/E agreement. Costs for special inspections and testing services will be paid for directly by the owner.





# BUILDING REQUIREMENTS

## SPACE TYPE SUMMARY

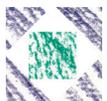
The types of spaces to be provided in the new Haven J. & Bonnie Rae Barlow Manufacturing Technology Building are as follows:

SPACE TYPES		
SPACE TYPE	NUMBER	NET AREA
Faculty Open Office/Workrooms	4	1,800 sf
Classrooms	12	13,780 sf
Work Rooms	1	300 sf
Service Bays	19	6,875 sf
Open Shop Areas	4	10,575 sf
Repair/Maintenance Rooms	5	2,175 sf
Media / Video Rooms	2	900 sf
Conference Room	1	450 sf
Locker Rooms	2	1,800 sf
Storage Rooms	8	3,475 sf

## SPACE STANDARDS

The standardization of space allocations for equivalent functions has been a goal of the programming process. Since Davis Applied Technology College does not currently have a policy concerning this, every attempt was made to comply with the standards established by the State of Utah (adopted, August 1994).

SPACE STANDARDS	
<b>PRIVATE OFFICES</b>	
Vice President	250 sf
Dean	220 sf
Executive Director / Assistant Vice President	200 sf
Director	180 sf
Supervisor / Coordinator	150 sf
Professional Staff	120 sf
Staff	100 sf
<b>GROUP SPACES</b>	
Large Group Conference (per person >20)	20 sf
Small Group Conference (per person <20)	25 sf





## CODES, REGULATIONS & SAFETY

### GENERAL

The materials, design and construction of the Haven J. & Bonnie Rae Barlow Manufacturing Technology Building will conform to the standards established by Davis Applied Technology College and the Utah State Division of Facilities Construction and Management (DFCM). Furthermore, it will conform to all building, accessibility, and energy codes adopted by the State of Utah at the time of design and construction, whether or not they are specifically referenced in this document.

It is the responsibility of the Design Team and the Architect of Record to verify and utilize all the latest revisions, editions and adopted versions. If there are conflicting standards, code provisions and/or regulations, the most stringent will govern unless such requirement is waived in writing by the Utah State Division of Facilities Construction and Management.

In addition, the Design Team and Architect of Record will be required to coordinate their efforts with Davis Applied Technology College Facilities Management and DFCM.

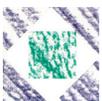
The following represents a partial list of currently applicable codes and standards.

### APPLICABLE CODES & STANDARDS

- International Building Code (IBC) 2006 w/ Utah Amendments
- International Mechanical Code (IMC) 2006
- International Plumbing Code (IPC) 2006
- National Electric Code (NEC) w/ Utah Amendments 2005
- Life Safety Code NFPA 101 w/ Utah Amendments

- International Fire Code (IFC) 2006
- Laws, Rules, & Regulations of the Utah State Fire Marshal
- Americans w/ Disabilities Act Title III, 1991/1998 (ADA)
- Planning & Design Criteria to Prevent Architectural Barriers for Aged & Physically Handicapped (4th Revision, w/ lever hardware amendment)
- International Energy Conservation Code 2006
- International Fuel Gas Code (IFGC)
- EIA/TIA, Electronics Industries Association / Telecommunications Industry Association.
- IEEE 1100-1999, Recommended Practice for Power & Grounding Electronic Equipment
- IESNA, Illuminating Engineering Society of North America
- NFPA, National Fire Protection Association (applicable sections including but not limited to): NFPA 70, National Electrical Code & NFPA 72, National Fire Alarm Code
- ASHRAE Indoor Air Quality 62-2001 & Addendum 62n
- Utah Code for Energy Conservation in New Building Construction (ASHRAE Standard 90.1-1989)
- American Society of Heating, Refrigeration & Air Conditioning (ASHREA)
- Occupational Safety & Health Administration (OSHA)
- Sheet Metal & Air Conditioning Contractor National Association (SMACNA)
- Underwriters Laboratory (UL)
- American Society of Testing Materials (ASTM)
- American Standards Association (ASA)
- DFCM Design Criteria for Architects & Engineers
- DFCM Indoor Air Quality Criteria
- State of Utah Boiler & Pressure Vessel Rules & Regulations

Also recommended: ANSI/ASHRAE Z9.5





## BUILDING REQUIREMENTS

### *OCCUPANCY CLASSIFICATION*

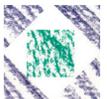
The occupancy determination must be confirmed by the Architect of Record with the State Fire Marshall at the time of design.

Davis Applied Technology College Facilities Management is the representative of the College with authority over all aspects of the design and construction process. All contact should be directed through the Project Manager from Davis Applied Technology College.

### *ADA ACCESSIBILITY*

The new Haven J. & Bonnie Rae Barlow Manufacturing Technology Building is required to be in compliance with the American with Disabilities Act, Title III, 1991/1998 (ADA). The Utah State Building Board has adopted the following additional requirements:

- All public entries to the building will be ADA compliant with automatic door operators including required vestibule doors.
- One set of accessible restroom doors shall be equipped with automatic door operators including vestibule doors if applicable.
- ADA compliant parking shall be provided.





## 2006 INTERNATIONAL BUILDING CODE REVIEW

### OCCUPANCY

(Chapter 3)

(section 304)

(section 303)

### OCCUPANCY SEPARATION

(Table 302.3.3)

### TYPE OF CONSTRUCTION

(Chapter 6)

### FRONTAGE

(Section 506.2)

### OCCUPANCY SEPARATION REQUIRED

### FIRE SPRINKLERS

### STORIES ALLOWED

(Table 503)

### ALLOWABLE BUILDING AREA

Occupancy

Programmed Area

Basic Allowable Area (503)

(Note: per floor)

Frontage Increase (506.2)

Multi-Story Increase (503.3)

(Note: up to 3x)

Sprinkler Increase (506.3)

(Note: up to 3x)

Total Allowable Area

Actual / Allowable (302.3.3)

Total: 0.?? is less than 1

### FIRE-RESISTIVE REQUIREMENTS

(Table 601)

Structural Frame

Including columns, girders, trusses:

Bearing Walls

Exterior Walls:

Interior Walls:

Non-Bearing Walls and Partitions

Exterior Walls (Table 602)

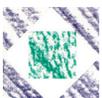
Interior Walls (Section 602)

Floor Construction

Including supporting beams and Joists:

Roof Construction

Including supporting beams and joists:





# BUILDING REQUIREMENTS

## BUILDING SYSTEMS DESIGN CRITERIA - STRUCTURAL SYSTEMS

### OVERVIEW

The structural design for this project should provide a building system which will integrate with the program requirements for space layout, as well as with the architectural and building service needs, while meeting current code standards for vertical and horizontal load carrying capacity. User needs in terms of current flexibility of the spaces and future adaptability of use should be considered.

### FOUNDATION SYSTEM

A soils report for the project is not yet available. However, it is anticipated that the foundation system will be of conventional spot and continuous footings bearing on suitable, natural, undisturbed soils or on compacted fill extending to suitable, natural, undisturbed soils. The allowable soil bearing pressure will likely range from about 2,000 psf to 3,000 psf. The actual allowable soil bearing pressure will be determined by the Soils Engineer. The frost cover to be provided from final exterior grades to the bottom of exterior footings will be a minimum of 30 inches. Interior footings will likely have a minimum embedment depth of about 18 inches below final interior slab on grade elevations.

The slab on grade is anticipated to be a minimum of 4" thick. The slab on grade should be reinforced with at least 0.001 ratio of deformed reinforcing steel in two directions based upon the gross section of concrete. The slab will likely be placed over 4" of free draining granular fill and appropriate moisture barriers. Slabs will be designed and detailed with control and construction joints spaced such that cracking is minimized.

Elevator pits will need to be incorporated into the foundation design.

### FLOOR SYSTEM

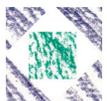
The suspended floors of the new building is anticipated to be of 3-1/2" of lightly reinforced normal weight concrete over 3" composite galvanized steel deck (6-1/2" total thickness) supported by composite steel beams. The floors are to be designed to limit vibrations to those expected for typical office and educational floors. The steel beams will be supported on steel columns. This is also a very efficient and economical framing system. The floors will need to accommodate openings for elevators and mechanical shafts.

### ROOF SYSTEM

The roof system is anticipated to be 1-1/2 inch, 20 gauge, type "B" galvanized steel roof deck over open web steel joists and steel beams. The steel joists will be supported on steel girders. The steel girders and steel beams will be supported on steel columns. This is a very efficient and economical framing system. The roof will need to be designed to support snow loads, snow drifts and any miscellaneous mechanical loads (including penthouses or screen walls). The roof will need to be designed to accommodate the loads and openings of the elevator equipment.

### LATERAL FORCE RESISTING SYSTEM

The lateral force resisting system is anticipated to be for the roof and floor systems steel roof deck acting as diaphragms which will distribute the lateral loads to the vertical force resisting system. The vertical force resisting system is anticipated to be a steel frame with





Atlas brick veneer. The project redundancy factor is less than 1.1. The lateral forces will then be delivered into the foundation system by the vertical force resisting system. The foundation system will be designed for both overturning and sliding forces.

## *STRUCTURAL DESIGN CRITERIA & MATERIAL STRENGTHS*

The final design criteria and material strengths are to be clearly shown on the final structure documents. Listed below are the minimum required structural design and material strengths. The criteria and strengths will continue to be evaluated as the design progresses. The structural design will be according to the 2003 International Building Code (IBC 2003). The building is to be classified as a Category III building per the IBC 2003.

### *DESIGN CRITERIA*

1. Roof Snow Load  
Snow Ground Load  
Snow Importance Factor  
Exposure Factor  
Thermal Factor  
Flat Roof Snow Loads
2. Seismic Loads  
Short Period Mapped Acceleration  
Long Period Mapped Acceleration  
Soil Site Class  
Short Period Site Coefficient  
Long Period Site Coefficient  
Design Spectral Response Acceleration  
Design Spectral Response Acceleration

Seismic Importance Factor  
Response Modification Coefficient  
Seismic Response Coefficient  
(with Dead Loads of Structure)  
Building Seismic Design Category  
Base Shear

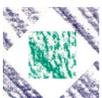
3. Wind Loads  
Basic Wind Velocity (3 Second Gust)  
Exposure Type  
Importance Factor

### *WORKING STRESS FOR MATERIALS*

1. Concrete (28 day strength):  
Footings  
Foundation Walls  
Interior Slabs on Grade  
Concrete over Steel Deck  
Exterior Slabs on Grade
2. Reinforcing Steel ASTM 615 Grade 60
3. Structural Steel  
Wide Flange Shapes  
Other Shapes and Plates  
Steel Tube Columns

### *MISCELLANEOUS*

1. Blast loading was not a required design parameter for this project.
2. Future expansion of the building was not a design parameter for this project and is not anticipated.





# BUILDING REQUIREMENTS

## BUILDING SYSTEMS DESIGN CRITERIA - MECHANICAL, PLUMBING & FIRE PROJECTION SYSTEMS

### GENERAL MECHANICAL

The design and construction of the new Haven J. & Bonnie Rae Barlow Manufacturing Technology Building shall comply with the current Utah State Division of Facilities and Construction Management’s updated Design Criteria as well as the current Davis Applied Technology College Design Standards.

The mechanical and plumbing systems for the buildings shall be energy conservative and suitable for the building occupancy. Systems and equipment shall have a proven history of providing efficiency and optimal energy conservation. Per the Governor’s directive, the building systems shall be 20% more energy efficient than current codes. Building shall be designed to meet the state High Performance Building Standard as outlined in the DFCM Design Requirements manual.

Automatic temperature controls shall be suitable for the building systems and occupancy. The control system shall be an electronic DDC system tied to the central campus control system. The new controls shall be 100% compatible and integrated with existing campus system.

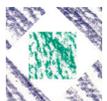
Provide complete operation and maintenance manuals at the completion of the project as well as a complete set of record drawings and specifications.

All equipment shall be clearly labeled. Equipment, piping and duct work shall be painted and labeled as required by Davis Applied Technology College design guidelines.

### DESIGN CONDITIONS

The mechanical system shall be designed to maintain comfort condition in accordance with the Utah State Energy Code, DFCM A/E Design Guide, and Davis Applied Technology College Design and Construction Standards.

- Elevation: 4,453 Ft.
- Latitude/Longitude: 41°01’ N, 111°55’ W
- Ambient: (ASHRAE 2-1/2%, 97%):
  - ▶ Summer 95°F DB 65°F WB
  - ▶ Winter 5°F DB
- Indoor Conditions:
  - ▶ Summer 75°F
  - ▶ Winter 72°F
- Envelope U-Values:
  - ▶ Building envelope shall be designed in coordination with mechanical systems in order to achieve energy performance of 20% better than ASHRAE 90.1 - 2001 and meet the High Performance Building standard
- Ventilation Rates: ASHRAE 2-1 - 2001
- Internal Heat Gain:
  - ▶ People: ASHRAE Estimates for Level Activity
  - ▶ Equipment, ASHRAE Estimates for Following:
    - ◆ Computers
    - ◆ Copy Machines
    - ◆ TV Monitors
- Lights: Assume 2.5 Watts / Sq. Ft. general  
Adjust for special occupancy or task requirements



# BUILDING REQUIREMENTS



## HEATING, VENTILATING & AIR CONDITIONING

The building shall be heated, cooled and ventilated with systems suitable for the building function and occupancy in accordance with ASHRAE and DFCM standards. HVAC systems must compare with other mechanical systems designed for assembly, office and administrative areas. The primary system for the Haven J. & Bonnie Rae Barlow Manufacturing Technology Building shall be VAV with reheat.

### HEATING SYSTEMS

Heating shall be a hot water system served by the College central boiler system.

Heating water shall be distributed to re-heat coils at the individual VAV boxes, and to a pre-heat coil at each air handler. Heating water distribution system shall be connected to the central system. Heating water pumps shall be sized for 100% pump redundancy, with variable frequency drives for each pump.

### COOLING SYSTEMS

Cooling shall be provided by a cooling tower tied to the College's central system.

### AIR SYSTEMS

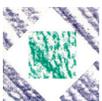
Air system for the building shall be a combination of variable volume air handling units, with VAV boxes for individual zones. Each assembly area/conference room shall have a dedicated VAV box. Individual rooms in each of the administrative/department

areas shall be zoned together with other rooms of similar loading, function, outdoor exposure, etc. No more than 3 individual offices shall be combined on the same VAV box. The number of air handling units and their locations shall be determined by space location and usage, individual zone requirements, and economics. Each air handling unit shall be provided with hot water pre-heat coils and chilled water cooling coils. Each air handling unit shall have 100% economizer capability. The use of return/relief fans shall be determined during design. Return fans are encouraged where there are large pressure drops through return air systems, or where additional control of the building static pressure will be required.

Roof mounted belt driven exhaust fans shall be provided for the toilet rooms, custodial closets, copy room, elevator rooms and kitchens. Rooms with similar use, function and schedule may be combined in the same fan systems. The exact number and location of the fans shall be determined during the design. Exhaust ducts shall be routed to roof fans. Building exhaust fans shall be controlled via the BMS.

Outside air ventilation shall comply with ASHRAE Standard 62-1 2001. Outside air shall be controlled by carbon dioxide sensors to provide adequate ventilation, as well as improved energy efficiency. The systems shall be capable of 100% outside air and 100% relief air in economizer load. The number and location of fresh air inlets, and relief air outlets shall be determined during design.

The air handling system shall be controlled by a DDC control system that is 100% integrated into the campus central control system. Building air handling system controls shall include air han-





# BUILDING REQUIREMENTS

handler VFD control with duct static pressure re-set, air handler discharge temperature control, outside air damper control, etc. Additional specifics of the controls system shall be coordinated with the College during design.

All duct work shall be insulated metal duct with volume dampers for each diffuser or grille. Assembly and office air distribution systems shall be designed to provide a quiet and comfortable working environment. Provide sound “boots” on each return air grill.

## PLUMBING SYSTEMS

Plumbing systems shall be designed to meet the International Plumbing Code as adopted by the State of Utah, DFCM Guidelines and Davis Applied Technology College Design and Construction Standards.

Domestic hot water shall be provided by the campus distribution system.

Plumbing fixtures shall be manufactured by the same source. Provide the ADA complaint fixtures as required by code, and where called out in the individual space requirements. Provide water closets, sinks, lavatories, and any other fixtures as detailed in the Individual Space Outlines.

Provide floor mounted service sinks in the custodial closets indicated in the Individual Space Outlines. Provide mixing valves on the ADA bathroom fixtures.

As required by the design, lavatories shall be either cabinet mount-

ed or wall mounted self supporting fixtures.

Water closets shall be mounted flush valve type with elongated bowl and open front seat.

Floor drains shall be provided in all bathrooms, custodial closets, mechanical equipment rooms and kitchens. Provide trap primers for all floor drains and sinks per IPC. Provide trap primers in an accessible location for maintenance.

Exterior Hydrants shall be provided for landscape and hose connections.

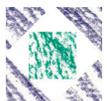
## FIRE PROTECTION SYSTEMS

Fire sprinkler protection shall be provided suitable for the building type and occupancy. The entire building shall be sprinkled. The system shall comply with the NFPA and the Utah State Fire Marshall standards and requirements.

The main fire alarm panels shall be installed adjacent to the building's primary front entrance, which will be used by the fire department. The exact location shall be determined during design after reviewing and consulting with Davis Applied Technology College and Utah State Fire Marshall.

The fire sprinkler test for the inspector shall be piped into a drain or sewer to prevent water damage.

The fire sprinkler test for the inspector shall be of the simulated sprinkler head type, and not the glass bulb type.



# BUILDING REQUIREMENTS



## BUILDING SYSTEMS DESIGN CRITERIA - ELECTRICAL SYSTEMS

The fire alarm contractor shall provide a dry set of contacts to tie into DATC's central campus annunciator panel.

All fire related doors shall be supplied with a magnetic door hold open and tied into DATC's campus fire alarm system. Upon activation of a fire alarm or a power failure, they shall release.

The contractor shall provide documentation of the acceptability of all fire-safing materials used.

### *MECHANICAL SYSTEM COMMISSIONING*

In order to comply with 1999 ASHRAE 90.1, commission the mechanical system in accordance with the 1996 ASHRAE Guideline 1 "The HVAC Commissioning Process". A commissioning authority will be hired directly by the State to oversee the commissioning.

### *POWER DISTRIBUTION SYSTEM*

The main electrical room should be constructed to house a 480/277 volt and a 208/120 main distribution switchboard.

This room should be located as close as possible to the pad-mounted high voltage transformers to reduce the length of feeder conduit and conductors.

The 480/277 volt main distribution switchboard should be free standing and equipped with Square D. "Powerlogic"- type digital metering and should be tied to the campus central power monitoring system via a data line.

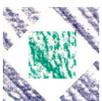
The 480/277 volt main distribution switchboard should be utilized to provide power to branch lighting panel boards, 480 volt machines, elevators and large mechanical equipment such as air handlers, pumps, chillers, fans, etc.

The 208/120 volt main distribution switchboard should be utilized to provide power to branch power distribution panel boards for computer equipment, owner furnished equipment, duplex outlets, small mechanical equipment, etc.

Electrical rooms should be constructed on each floor to house the 480/277-volt and 208/120 volt branch panel boards.

Electrical rooms should be stacked on top of each other to reduce length of feeder runs.

Electrical rooms should have a minimum of 25% additional space for future growth.





## BUILDING REQUIREMENTS

Separate branch panel boards should be installed to feed power to computer equipment. Computers and any sensitive equipment should be tied to separate panel boards to isolate them from other equipment such as small mechanical equipment and general-purpose duplex outlets. Main distribution switchboards and branch panel boards should have 50% excess capacity for future growth and flexibility.

Transient voltage surge suppressors should be provided for 480/277 volt and 208/120 volt main distribution switchboards, also for computer equipment branch panel boards.

All conductors should be copper. Conductors for branch circuits should be sized to prevent voltage drop exceeding 3% at the farthest point with 80% or circuit breaker demand load (duplex outlets, equipment, etc.) The total voltage drop on both feeders and branch circuits should not exceed 5%.

All conductors shall be installed in conduit. Minimum size of the conduit to be 3/4". Type MC cable may not be used for light fixture whips. Fixture whips are to be premanufactured or 3/8" flex steel conduit with #14 THHn STE wire. Provide pull strings in all empty conduit.

A fault current and selective device coordination study should be done to indicate available fault current at all points in the 15 kV and building power distribution system. New switchboards, panel boards, etc., should be adequately rated for the available fault current. Fuses and circuit breakers with adjustable long time, short time, instantaneous and/or ground fault setting shall be set at levels for optimum system coordination.

Mechanical equipment requiring variable frequency drives (VFD's) should comply with DFCM standards for VFD's included in the "Design Criteria for Architects and Engineers" posted on the web.

### *STANDBY POWER DISTRIBUTION SYSTEM*

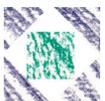
Provide a standby diesel engine generator with a skid mounted fuel tank and walk-around sound attenuated enclosure to support new building life safety equipment, network equipment, A/C equipment for network computer equipment, outlets in IDF rooms, and other standby outlets as designed by the users. Standby diesel engine generator should have approximately 20% excess capacity for future growth and flexibility.

New engine generator should be equipped with demand power meters alarm indicating control panel. Dry contacts should be available for remote monitoring of engine and fuel system alarms.

Fuel tank should be sized for 24 hours of engine operation at 100% load. College campus should have the ability to refill the tank during an extended commercial power outage.

A separate automatic transfer switch should be provided for life safety equipment.

A stand-by power generator is already existing. If a larger one will be required. The Contractor is to remove the existing generator and deliver it to WSU for future use in another location.





## OUTLETS

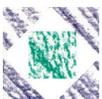
Locations and number of outlets should be coordinated for each space with users and comply with their needs and requirements. The following is to be used as general guidance:

- *Offices:* For each workstation, provide two duplex outlets dedicated to computer terminals and one additional normal outlet for every 10'-0" of wall space.
- *Conference Rooms:* One outlet for every 10'-0" of wall space, plus one outlet dedicated to computer terminals on all walls. Provide floor outlets underneath conference room tables.
- *Commons, Waiting, Reception & Pre-Function Areas:* Provide power outlets for laptop computers, at least one four-plex for each group of four seats, but no less than one outlet per each 6' of wall space. Provide floor outlets where stations or equipment cannot be served directly from the wall without crossing aisle space.
- *Break rooms:* GFI outlets on dedicated circuits every 4' on counter top plus dedicated outlets for refrigerator, microwave, and disposal (switched at counter top), plus one outlet for every 10'-0 or other wall space in room.
- *Counter tops & Work surfaces (in general):* One outlet every 4', GFI within 8' of a sink.
- *Telecommunication Rooms:* Provide emergency source outlets for equipment and a normal power duplex outlet for general purpose use.
- *Electrical Rooms:* At least one outlet on emergency power, designated by a red outlet with a red cover plate and labeled "EMERGENCY POWER". Lighting to be tied to the emergency backup system.
- *Restrooms:* One GFI outlet near each lavatory counter top.
- *Corridors:* Provide at least one outlet every 25'-0", on alternating sides of the corridor.
- *Lobby:* Provide at least one outlet every 10'-0", on alternating sides of the lobby.
- *Stairs:* One outlet at the landing of each level.
- *Storage Rooms:* One duplex outlet per wall.
- *Janitors Closets:* Two duplex outlets.
- *Building Exterior:* One WP/GFI outlet near each entrance and adequately spaced on the outside of the building to accommodate signage, display and student interaction areas.
- *Grounding:* Grounding conductors shall be installed with all feeder and branch circuits. Provide a grounding riser system throughout the telecommunication rooms with grounding bus bars mounted on the wall in each room.

## LIGHTING GENERAL

Lighting design should comply with illuminance levels and uniformity criteria of IESNA and its recommended practices. Comply with RP1-93 "Office Lighting", RP3-00 "Lighting for Educational Facilities", and RP-33-99 "Lighting for Exterior Environments". Specify maximum 20% THD electronic ballasts. In addition, design lighting with a CRI exceeding 82, except in storage, mechanical, electrical, and similar non-public applications. Where appropriate, different lamp types should be minimized. Use 4' T-8 lamps with CRI of 86 or greater wherever possible. Lamps should be specified to comply with EPA TCLP requirements.

Comply with ASHRAE 90.1 requirements, except the overall energy





# BUILDING REQUIREMENTS

target requirements should be exceeded by 15%. Design lighting control to harvest day lighting were practical, to control based upon occupancy, and according to programmable scheduling as applicable to the application.

Only campus standard lighting fixtures should be used for walkways, compatible with the campus surroundings. Exterior lighting should be controlled by combination photocell and time schedule.

## INTERIOR LIGHTING

In general, low-glare fluorescent lighting with electronic ballasts should be utilized. Pendant indirect lighting should be strongly considered, but must be carefully coordinated in rooms with projectors so that the fixtures will not interfere with the projected image. Select luminaries for areas where VDTs are planned which are designed to minimize veiling reflections, and provide multi-level lighting control and task lighting to reduce the illuminance on the VDT. In addition, in rooms with audio/visual, provide lighting with variable or switched levels as indicated with a separate controlled zone to reduce glare and illuminance on the audio/visual display. In rooms with projectors, provide a separate bank of lighting control switches or station near the instructor position for ease of controlling lighting during presentations. Comply with RP-3-00 for classroom lighting, except increase illuminance to 75 fc (variable). Comply with RP-1-93 for office lighting. In the high bay areas, provide metal halide lighting.

Occupancy sensors should be used for the appropriate applications and control for daylight harvesting. Specify dual technology ceiling mounted directional sensors in private offices and classrooms with

manual off-switches. Ultrasonic sensors should be in rest rooms. Programmable lighting control with manual timed overrides should be in all common areas such as open offices, corridors, lobbies, and similar areas.

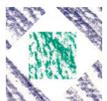
Provide exit lighting to comply with IBC. Emergency lighting should be designed for means of egress to 1 fc minimum to comply with IBC. Include emergency lighting in restrooms, electrical rooms, communication rooms, etc.

Provide emergency lighting in the exterior of the building to comply with IBC.

## FIRE ALARM SYSTEM

Fire alarm system should be designed to comply with Utah State Fire Marshall's "Rules and Regulations" and Davis Applied Technology College Design Standards. An addressable fire alarm system shall be designed capable of networking with the campus system and reporting back to central campus fire alarm system. Design strobes visible from all locations except private offices.

Horn installation should comply with NFPA including for higher ambient noise requirements. Where smoke control systems are required, the integration of the fire alarm with the smoke control systems should be coordinated. Provide duct detectors and fan shut-down where required by NFPA and the IMC, including detection of smoke at all return air shafts servicing multiple floors. Coordinate location of the building fire alarm control panel and annunciator panel with Utah State Fire Marshall. Sub-metering will be required for electrodes tied into the Campus system.



# BUILDING REQUIREMENTS



## TELECOMMUNICATION SYSTEM

Four (4) 4" conduit should be installed between the MDF room.

IDF rooms should be constructed on each floor and should be stacked on top of each other. Cable length between IDF and Voice/Data outlets should not exceed 285 feet (90 meters).

Size of the MDF and IDF rooms should be coordinated with Davis Applied Technology College telecommunication group.

Four (4) 4" conduit should be installed between MDF room and IDF room.

All the walls in the MDF room and IDF room should be constructed with 3/4" plywood and painted with two (2) coats of fire retardant paint.

Cable tray should be installed in the corridors and should tie to cable trays in the IDF and MDF rooms.

J-boxes for all voice/data jacks should be 4"x4"x2 3/8" with single gang mud rings. Two (2) 1" conduit should run from each J-box to the cable trays or directly to IDF or MDF room, whichever is closest.

Pull box should be provided after total of 180' bend in each conduit run. Maximum conduit distance from each voice/data outlet to cable tray should not exceed 50 feet.

## SECURITY SYSTEMS

Security system should comply with campus standards. Security system should annunciate alarm condition to, and be completely monitored by the Davis Applied Technology College campus police department.

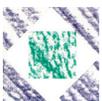
DDC control system shall be tied into the Campus system. The security system shall report to the company specified by Davis Applied Technology College.

## CLOCK SYSTEM

Simplex clock system should be provided throughout the building in common areas; locations should be coordinated with the users.

## ELECTRICAL SYSTEM COMMISSIONING

Complete commissioning specifications are required for this project to ensure that the products specified are tuned and adjusted properly. Commissioning shall include testing and adjusting all electrical and systems equipment, preparing documentation of the testing results, preparing O&M manuals, and providing owner training as specified in each section of the electrical and systems specifications.





# BUILDING REQUIREMENTS



bicycle storage adjacent to the entrance. Bicycle racks, rather than bicycle lockers, should be located conveniently near building entrances.

## *TRASH AND RECYCLING CONTAINERS*

Locate receptacles near building entrances and in areas where people are encouraged to congregate. Recycle bins should be located adjacent to trash bins to encourage use.

## *PLANT MATERIALS*

Indigenous plant materials should constitute a majority of the plant palette and be able to withstand drought conditions during the heat of summer months. Deciduous trees are encouraged along pedestrian walks and in plaza areas to provide shade. Mass shrub plantings should avoid creating areas of security hazard (i.e. along pedestrian walks and entry ways).

## *IRRIGATION*

Irrigation should not be considered as the primary source of plant vitality. Limited focal areas may be considered for irrigation, with consideration of minimal water consumption. Large expansive lawns are to be avoided due to the limited water availability. High drought tolerant grass species should be specified. Alteration of the topography to concentrate water in plant beds and lawn areas instead of storm drains should be considered. Xeriscape design concepts should be incorporated and coordinated with Davis Applied Technology College Facilities Management.

## *SITE LIGHTING*

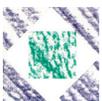
Lighting is to be provided along pedestrian walks for security. High cut-off fixtures should be used to avoid light wash pollution to adjacent buildings and the sky.

## *PAVING ALTERNATIVES*

Consider using pavements in areas of low pedestrian concentration or tertiary circulation patterns. Permeable pavements potentially reduce the amount of storm water run-off.

## *DESIGNATED SMOKING AREAS*

Exterior designated smoking areas should be provided that offer shelter from the elements.





# BUILDING REQUIREMENTS

## VALUE ENGINEERING

Davis Applied Technology College may conduct a Value Engineering Workshops with the Design/Build Contractor at the end of the Schematic Design and Design Development phases. The VE sessions should include a presentation of the project by the Design Team, and evaluation/recommendations by the Design/Build Contractor and Owner. The College may also invite a “cold team” to participate in these workshops.

## SUSTAINABLE DESIGN

### DEFINITION

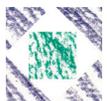
The American Institute of Architects defines sustainability as “the ability of society to continue functioning in the future without being forced into decline through exhaustion or overloading of the key resources on which that system depends.” In simple terms it is the principal of accommodating human needs without diminishing the health and productivity of natural systems.

Current building practices do not represent a sustainable approach to design. The reality is that buildings consume nearly a third of America’s energy-- much of it wasted by inefficient design-- while land-use decisions influence another third used in transportation. However, sustainable design practices represent a healthy balance between human needs and natural systems described above.

This balance can be put into two categories, Resource Efficiency and Community Sensitivity. Resource Efficiency is the practice of utilizing resources such as land, water, soils, minerals, fossil fuels and electricity to their fullest capability. Community or cultural sensitivity connects people to places, nature, and other people.

### BENEFITS

Sustainable design can lead to a variety of benefits, many of which are economic. These benefits can include reduced capital costs of some building components. There are also the obvious reduced operating and maintenance costs that come from a reduction in energy and water costs that come from an efficient design. The reduced operating costs range from 10-50% less than traditional building methods and designs.





There are also numerous studies that link healthy, day lit buildings to decreased absenteeism and increased productivity as much as 2 to 15 percent. Sustainable buildings also provide reduced liability risks by limiting occupant exposure to poor indoor air quality and other known chemical pollutants.

Finally, sustainable buildings can provide opportunities for positive relations through education programs showing positive solutions and examples of successful buildings.

## *SUSTAINABLE DESIGN COMPONENTS*

### *RESTORATIVE SITE DEVELOPMENT STRATEGIES*

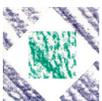
1. Reduce pollution and land development impacts from automobile use by providing and accommodating alternatives such as public transportation, pedestrian links to other campus buildings, and bicycle transportation.
2. Encourage opportunities for urban wildlife by developing and restoring landscaped areas with native and compatible adaptive plant species.
3. Maximize landscaped areas to minimize peak storm flows, increase on-site filtration of solids and phosphorous contaminants.
4. Reduce the negative effects of urban heat-islands by providing shade on paved areas with canopy trees and light colored paving materials.
5. Use high-reflectance (Energy Star) roof and paving materials to reduce heat-island effects.
6. Provide safe & uniform exterior lighting with no off site light trespass.

### *ENHANCED WATER EFFICIENCY*

1. Limit the use of potable water for landscape irrigation by designing high-efficiency irrigation systems and grouping plants with like water requirements to reduce irrigation requirements.
2. Include plumbing fixtures with proven history of reduced water use.

### *ENERGY SAVING DESIGN OPPORTUNITIES*

1. Verify and ensure that fundamental building elements and systems are designed, installed and calibrated to operate as intended by engaging an independent commissioning authority.
2. Reduce design energy costs compared to code-required levels by a minimum of 20%.
3. Building envelope design to reduce energy use (solar orientation, shading devices at eaves and glazing, high R-value roof and wall assemblies).
4. Design fenestration to provide daylight in occupied spaces to reduce need for artificial illumination.
5. Design electrical switch gear to accommodate future renewable energy devices such as photo-voltaic panels.
6. Building design to include opportunities for future renewable energy devices such as photo-voltaic panels.
7. Reduce ozone depletion and support early compliance with the Montreal Protocol by designing refrigeration systems that do not contain CFC's, HCFC's or Halon.
8. Provide for the ongoing optimization of building energy and water consumption performance over time by including measurement and verification technology.





# BUILDING REQUIREMENTS

## *MATERIALS TO FACILITATE HEALTHY ENVIRONMENTS*

1. Provide multiple recycling areas to accommodate the collection, separation and removal of recyclables to reduce waste that is disposed of in landfills.
2. Divert construction debris from landfill disposal by developing and implementing a waste management plan for construction activities.
3. Prioritize the potential use of building materials with recycled content (tiles, masonry units, steel, carpeting, etc.)
4. Reduce effects of transportation and support local economy by specifying materials manufactured and assembled locally.
5. Encourage environmentally responsible forest management by using wood-based materials certified in accordance with the Forest Stewardship Council Guidelines.

## *INDOOR ENVIRONMENTAL QUALITY*

1. Provide for a thermally comfortable environment that supports the productive and healthy performance of the building occupants.
2. Reduce air contaminants coming from building materials by creating a construction indoor air quality plan.
3. Include capacity for indoor air quality monitoring (CO2) for occupant health and comfort.
4. Provide increased quantities of fresh air to support health, safety and comfort of building occupants.
5. Specify low V. O. C. emitting paints, adhesives, sealants, and other products to enhance the health benefits to occupants.
6. Minimize cross-contamination of pollutants in occupied spaces by separating potentially hazardous chemicals.

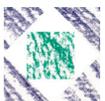
7. Provide a connection between indoor and outdoor environments through the introduction of sunlight and views into the occupied areas of the building.

## *COMMUNITY OUTREACH*

1. Utilize the opportunity to provide outreach and education for site and building green design features.

## *COLLEGE SUPPORT*

Davis Applied Technology College supports the goal of sustainable design which incorporates energy savings, while meeting Program and Facilities needs within scope and budget.



# INDIVIDUAL SPACE REQUIREMENTS

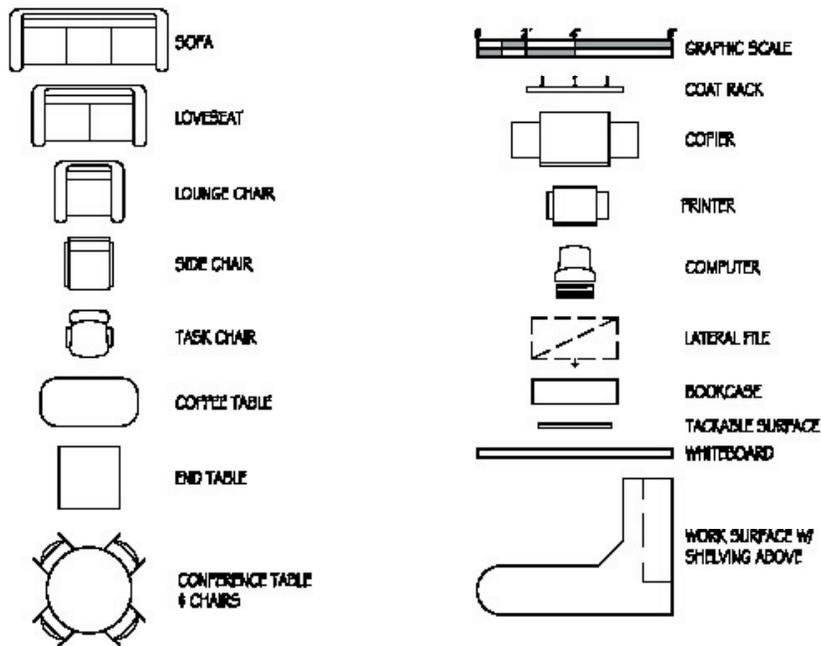


## INDIVIDUAL SPACE OUTLINE FORMAT

### OVERVIEW

The following sections contain the building program space summaries for all the required spaces in the new Haven J. & Bonnie Rae Barlow Manufacturing Technology Building. It is organized into sub-sections that are broken down by major departmental areas and categories of space type. On the following pages, is comprehensive and detailed information regarding the size, character, contents and technical requirements for each space which comprise the department or category.

### SYMBOL LEGEND



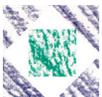
### TERMINOLOGY

The terminology used in this program is standard terminology used by Architects. Terms such as NSF and GSF are related to the square footage of spaces described in the program. NSF is the Net Square Footage or the area a function will occupy. GSF is the Gross Square Footage which includes corridor systems, wall widths and miscellaneous support spaces such as mechanical rooms, restrooms, etc. Typically in education facilities the GSF can be derived from the NSF by using a multiplying factor. This factor is based on historical trends in education facilities and standards used by the State of Utah. The factor used in this program is 1.48 or 67.7% of the GSF is the NSF for new construction. This is an average factor of utilization; however, the Architect should take extra care to achieve the most efficient use of space.

The term **FULL SOUND CONSTRUCTION** refers to a particular construction assembly. This assembly is defined as: Metal studs extending from the floor to the structure above, with sound batts between studs, resilient channel on one side of the studs, and one layer of 5/8" gypsum board on both sides. All penetrations are to be sealed. All return air grilles are to have sound boots. As well as, all penetrations through sound walls. Lay-in ceiling panels in rooms required to have full sound construction should be a foil faced cast tile. All doors in sound walls should be gasketed (i.e., **SOUND ISOLATION**).

All furnishings shown in the offices and suites is to be systems type furniture. Lineal foot dimensions for work surfaces have been taken along the user side.

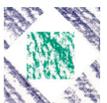
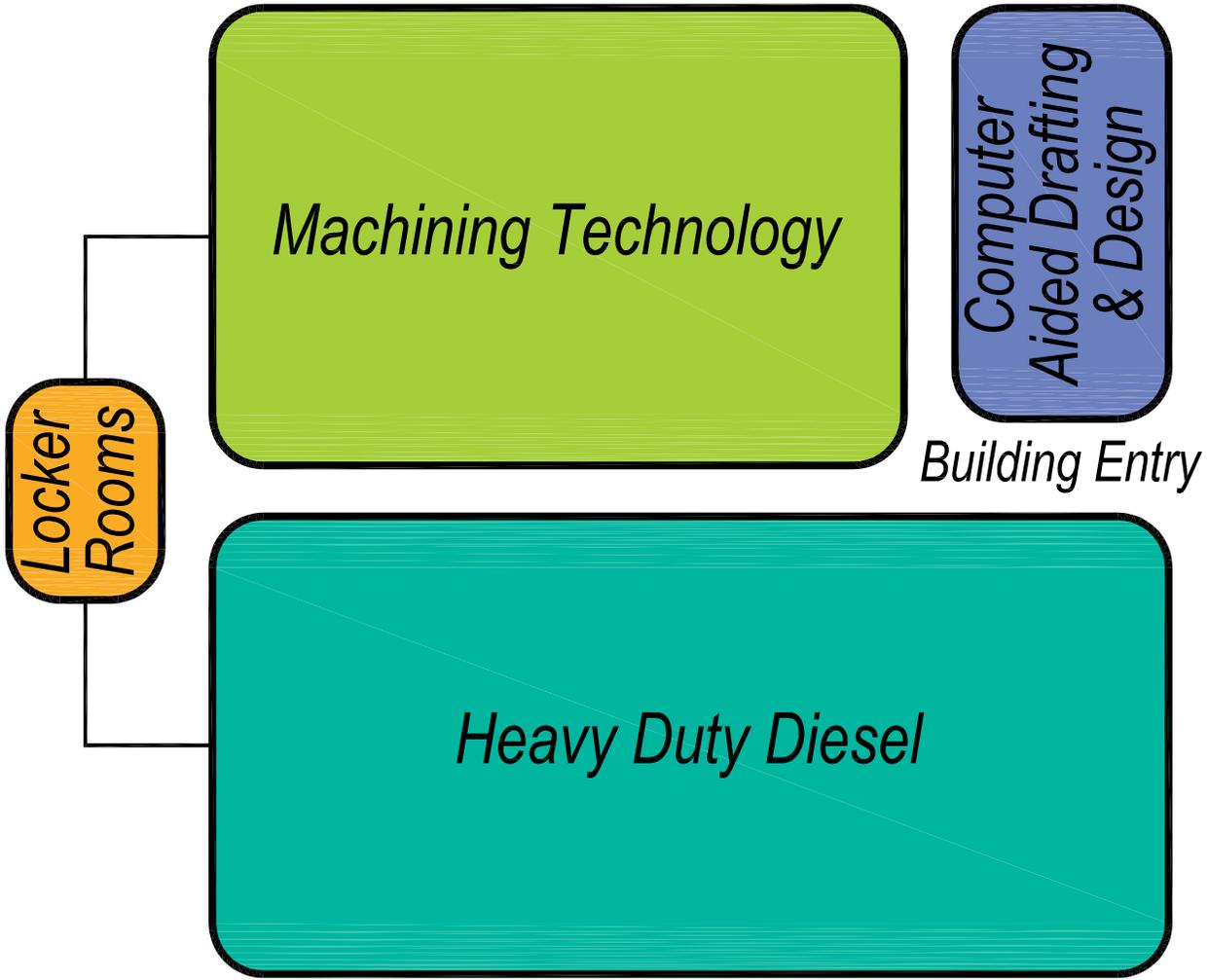
A dimensioning grid is in the background of each space drawing. The increments between the dots represent 1'-0".





# INDIVIDUAL SPACE REQUIREMENTS

FIRST FLOOR RELATIONSHIP DIAGRAM

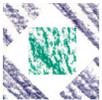


# INDIVIDUAL SPACE REQUIREMENTS

## SECOND FLOOR RELATIONSHIP DIAGRAM

*Industrial Automation  
Maintenance*

*Shared  
Space*



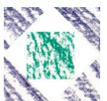


# INDIVIDUAL SPACE REQUIREMENTS

## VERTICAL RELATIONSHIP DIAGRAM

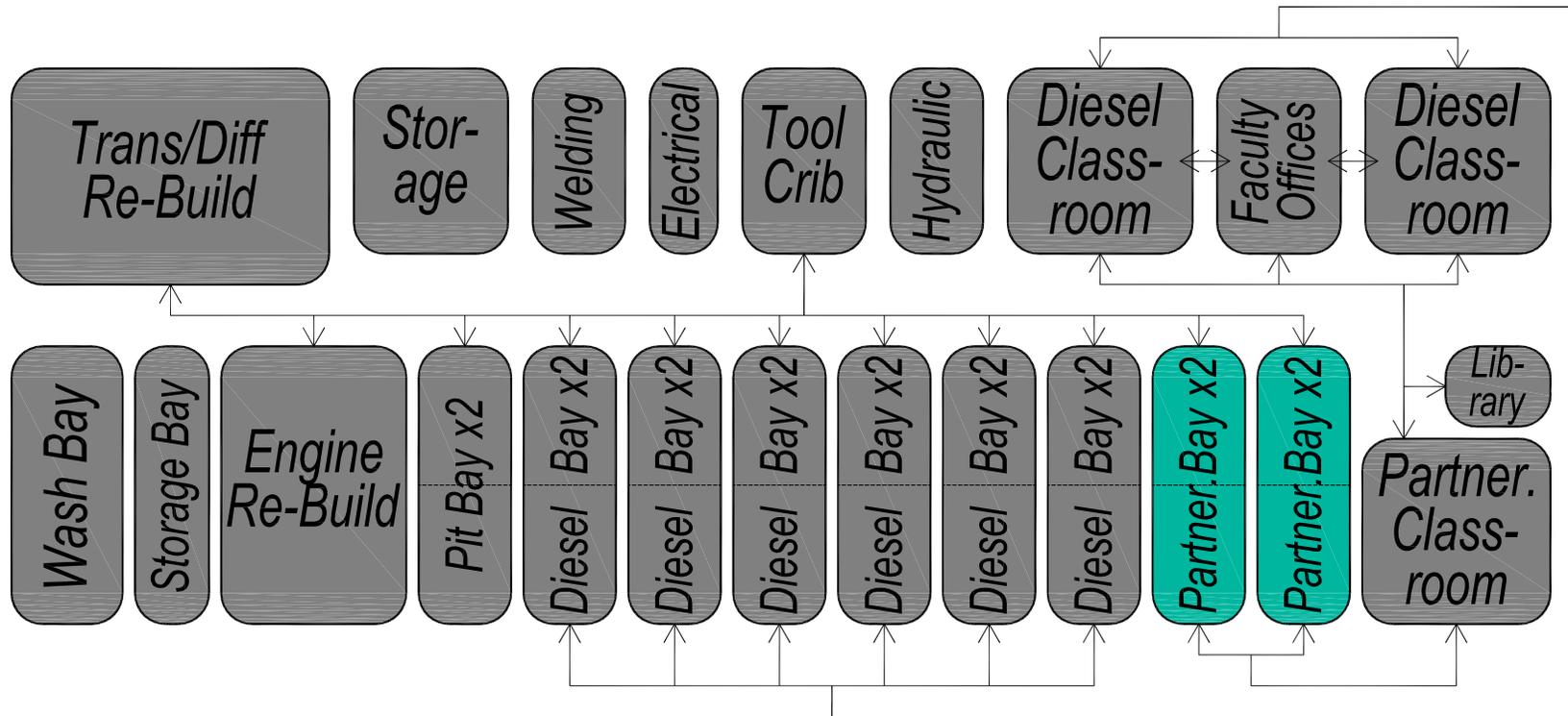
**HAVEN J. & BONNIE RAE BARLOW MANUFACTURING TECHNOLOGY BUILDING**  
Davis Applied Technology College

**HFS Architects**

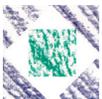


# INDIVIDUAL SPACE REQUIREMENTS

## HEAVY DUTY DIESEL RELATIONSHIP DIAGRAM

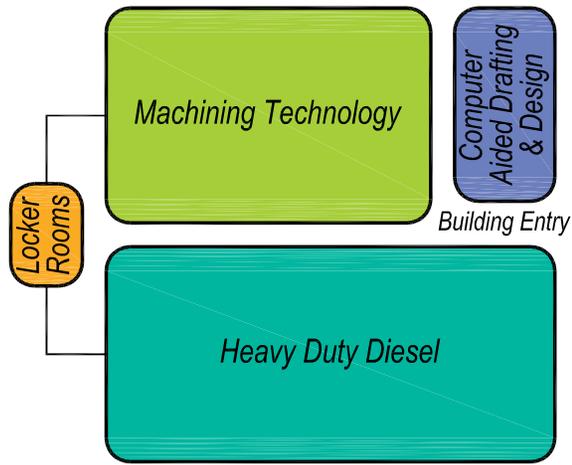


School of Transportation

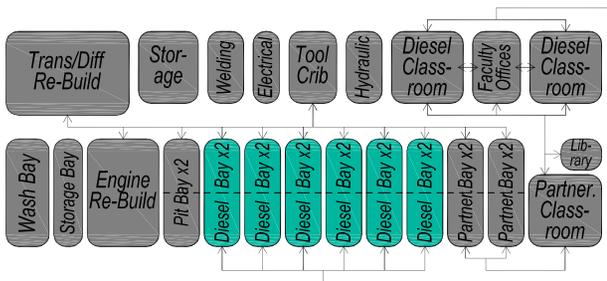




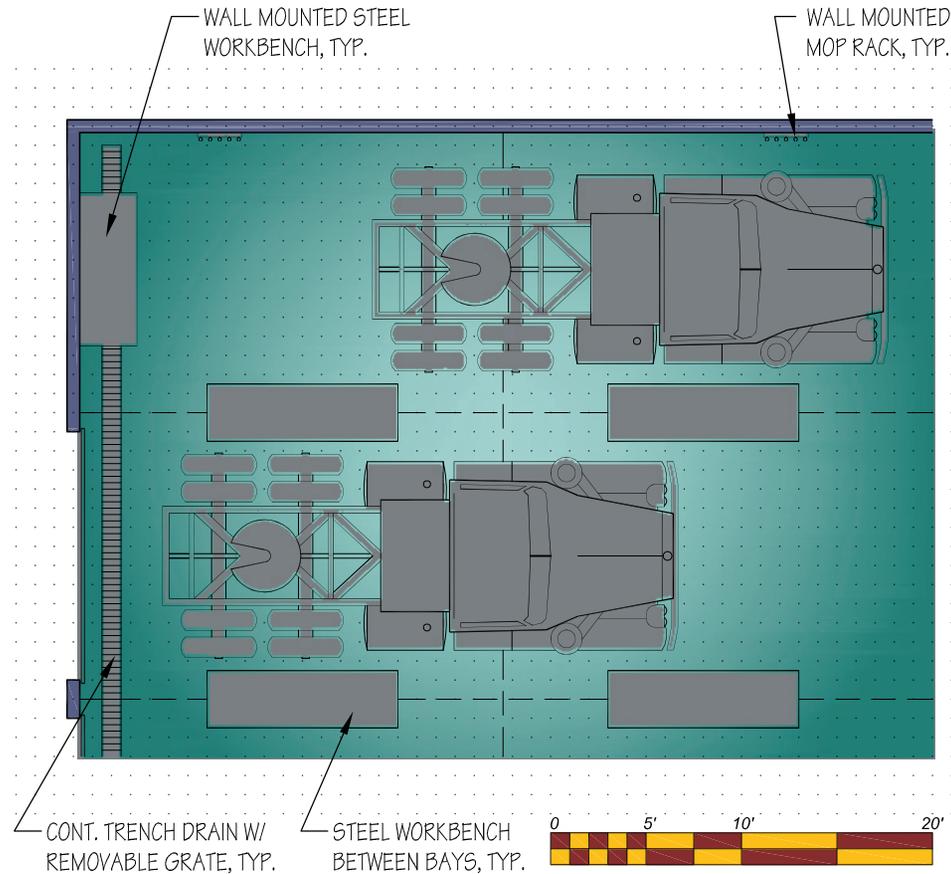
# INDIVIDUAL SPACE DIAGRAMS



First Floor Relationship Diagram



Heavy Duty Diesel Relationship Diagram



## DIESEL SERVICE BAYS

Heavy Duty Diesel Program - School of Transportation

# INDIVIDUAL SPACE OUTLINE



## GENERAL REQUIREMENTS

### SPACE SUMMARY

- Space Type: High Bay Shop Space
- Number Required: 12
- Number Additional: 0
- Total Number: 12

### NET AREA SUMMARY

- Area (each): 337.5 sf
- Subtotal Required Area: 4,050 sf
- Subtotal Additional Area: 0 sf
- Total Area: 4,050 sf

### OCCUPANT SUMMARY

- Student Stations: 6
- Area Per Station: 56 sf

### FUNCTION / TASKS

- Provide an open, flexible and interactive shop-type space.

### RELATIONSHIPS

- Location: First Floor
- Adjacency: Tool Crib, Diesel Classrooms, Faculty Offices
- Proximity: Engine & Trans/Diff Re-Build Areas, Pit Bay, Locker Rooms
- Separation: Quiet areas, busy public areas

## ARCHITECTURAL REQUIREMENTS

### FINISHES

- Floor: Sealed concrete
- Walls: Painted CMU
- Ceiling: Exposed structure painted
- Sound: Full sound construction

### CEILING HEIGHT

- Above Finish Floor (min.): N/A

### DOORS

- Exterior: Powder-coated metal w/ insul'd. core
- Interior: Ptd. hollow core metal w/ vision panel
- Overhead: Motorized, powder-coated metal w/ insul'd. core
- Frame: Painted hollow metal
- Special: Sound isolation on interior doors

### WINDOWS

- Natural Light: Required
- Type: Skylights w/ aluminum frame
- Glazing: Insulated w/ low-e coating

### CASEWORK / FIXED EQUIPMENT

- Overhead crane (5 ton): (1 shared) ??lf of track
- Mop & broom rack: (1 for every two bays) 24"

### FURNISHINGS

- Benches: (12 ea) 120"Wx34"Hx36"D
- Solvent storage cabinet: (1 ea) ?"x?"
- Oil filter crusher: (1 ea) ?"x?"
- Electric lifts: (? ea) ?"x?"
- Wastecan: (12 ea) 18" diameter

## TECHNICAL REQUIREMENTS

### MECHANICAL

- Outdoor Air: Make-up for exhaust  
Must comply w/ ASHRAE 62.1-2004 (min.)
- Air Circulation: Candy cane exhaust 4-6" tip  
(2) Exhaust fans on switch/CO level  
Exhaust for flammable cabinet
- Summer Design Temp.: 80° F
- Winter Design Temp.: 72° F
- Controls: DDC, Space temperature  
CO sensor, push button override
- Sound Criteria: None required
- Special Systems: Compressed air
- Plumbing: Hose bibb, trench drain, sand/oil  
interceptor, eye wash, hand sink, oil drain
- Cooling: Evaporative cooler
- Heating: Radiant tube heater

### ELECTRICAL

- Power: Duplex receptacles @ 6'-0" o.c.  
Additional capacity for equipment listed
- Data: Wireless airport  
Additional capacity for equipment listed
- Phone: Minimum two
- Video: Rough-in for future capacity
- Intercom: Required

### LIGHTING

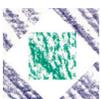
- Fixture Types: T-8 Fluorescent industrial
- Task Light: None required
- Foot Candles: 50
- Controls: Relay control w/ local override

### EQUIPMENT (NIC)

- Time clock: (1)
- Welder: (2)

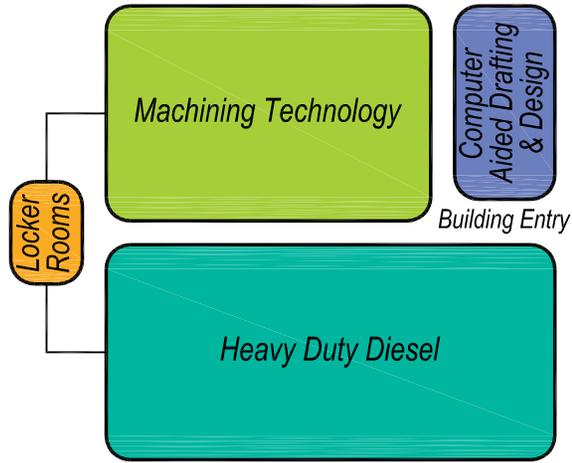
## DIESEL SERVICE BAYS

Heavy Duty Diesel Program - School of Transportation

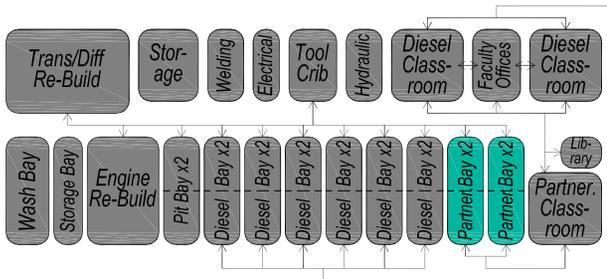




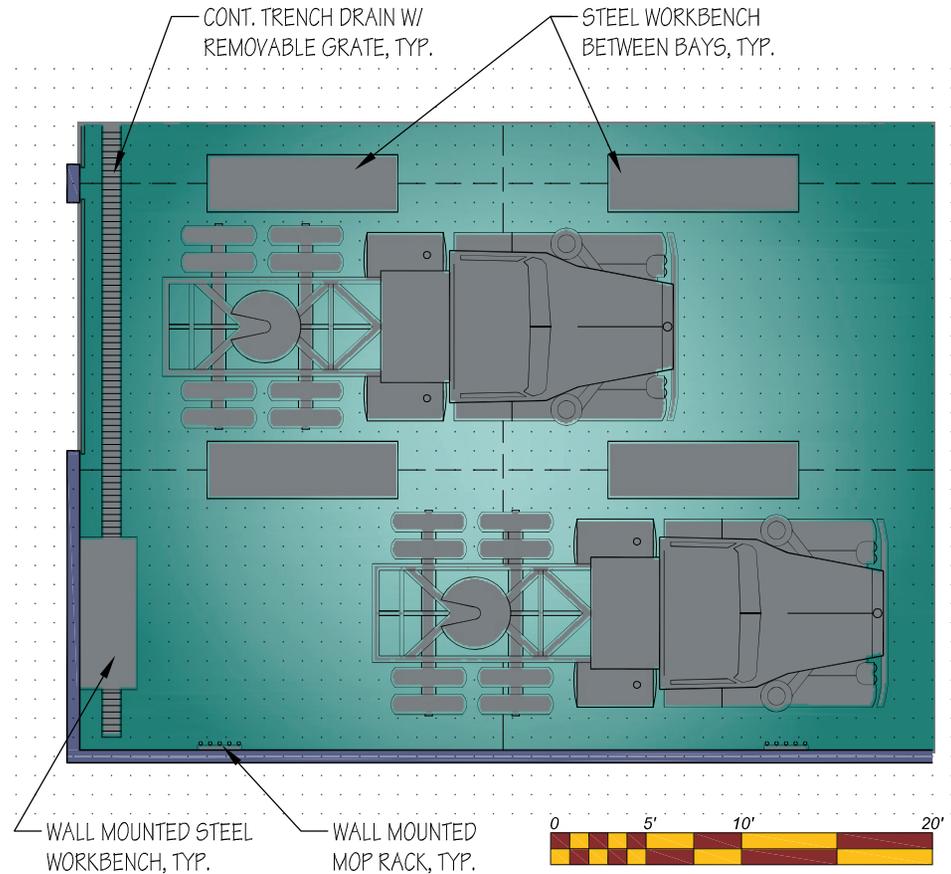
# INDIVIDUAL SPACE DIAGRAMS



First Floor Relationship Diagram



Heavy Duty Diesel Relationship Diagram



## PARTNERSHIP SERVICE BAYS

Heavy Duty Diesel Program - School of Transportation

# INDIVIDUAL SPACE OUTLINE



## GENERAL REQUIREMENTS

### SPACE SUMMARY

- Space Type: High Bay Shop Space
- Number Required: 4
- Number Additional: 0
- Total Number: 4

### NET AREA SUMMARY

- Area (each): 337.5 sf
- Subtotal Required Area: 1,350 sf
- Subtotal Additional Area: 0 sf
- Total Area: 1,350 sf

### OCCUPANT SUMMARY

- Student Stations: 6
- Area Per Station: 56 sf

### FUNCTION / TASKS

- Provide an open, flexible and interactive shop-type space.

### RELATIONSHIPS

- Location: First Floor
- Adjacency: Tool Crib, Partnership Classrooms, Faculty Offices
- Proximity: Engine & Trans/Diff Re-Build Areas, Pit Bay, Locker Rooms
- Separation: Quiet areas, busy public areas

## ARCHITECTURAL REQUIREMENTS

### FINISHES

- Floor: Sealed concrete
- Walls: Painted CMU
- Ceiling: Exposed structure painted
- Sound: Full sound construction

### CEILING HEIGHT

- Above Finish Floor (min.): N/A

### DOORS

- Exterior: Powder-coated metal w/ insul'd. core
- Overhead: Motorized, powder-coated metal w/ insul'd. core
- Frame: Painted hollow metal
- Special: None required

### WINDOWS

- Natural Light: Required
- Type: Skylights w/ aluminum frame
- Glazing: Insulated w/ low-e coating

### CASEWORK / FIXED EQUIPMENT

- Mop & broom rack: (1 for every two bays) 24"

### FURNISHINGS

- Benches: (4 ea) 120"Wx34"Hx36"D
- Wastecan: (4 ea) 18" diameter

## TECHNICAL REQUIREMENTS

### MECHANICAL

- Outdoor Air: Make-up for exhaust  
Must comply w/ ASHRAE 62.1-2004 (min.)
- Air Circulation: Candy cane exhaust 4-6" tip  
(1) Exhaust fans on switch/CO level  
Exhaust for flammable cabinet
- Summer Design Temp.: 80° F
- Winter Design Temp.: 72° F
- Controls: DDC, Space temperature  
CO sensor, push button override
- Sound Criteria: None required
- Special Systems: Compressed air
- Plumbing: Hose bibb, trench drain, sand/oil  
interceptor, eye wash, hand sink, oil drain
- Cooling: Evaporative cooler
- Heating: Radiant tube heater

### ELECTRICAL

- Power: Duplex receptacles @ 6'-0" o.c.  
Additional capacity for equipment listed
- Data: Wireless airport  
Additional capacity for equipment listed
- Phone: Minimum one
- Video: Rough-in for future capacity
- Intercom: Required

### LIGHTING

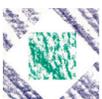
- Fixture Types: T-8 Fluorescent industrial
- Task Light: None required
- Foot Candles: 50
- Controls: Relay control w/ local override

### EQUIPMENT (NIC)

- Time clock: (1)
- Welder: (2)

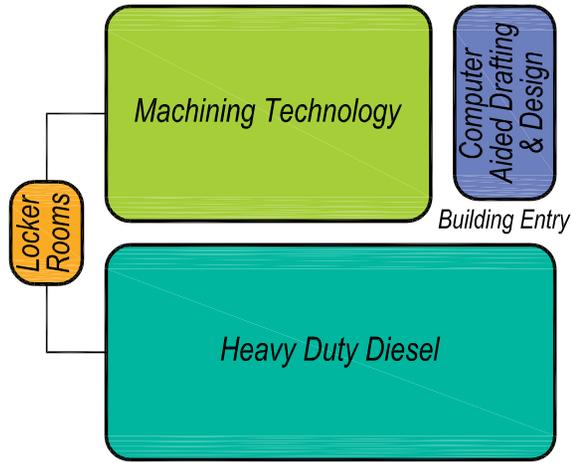
## PARTNERSHIP SERVICE BAYS

Heavy Duty Diesel Program - School of Transportation

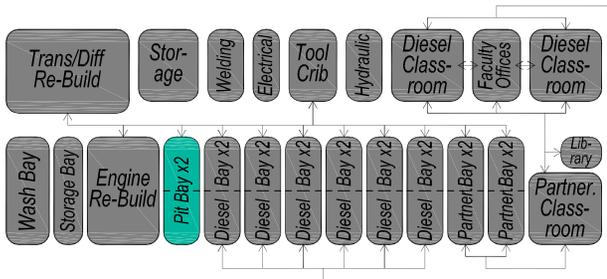




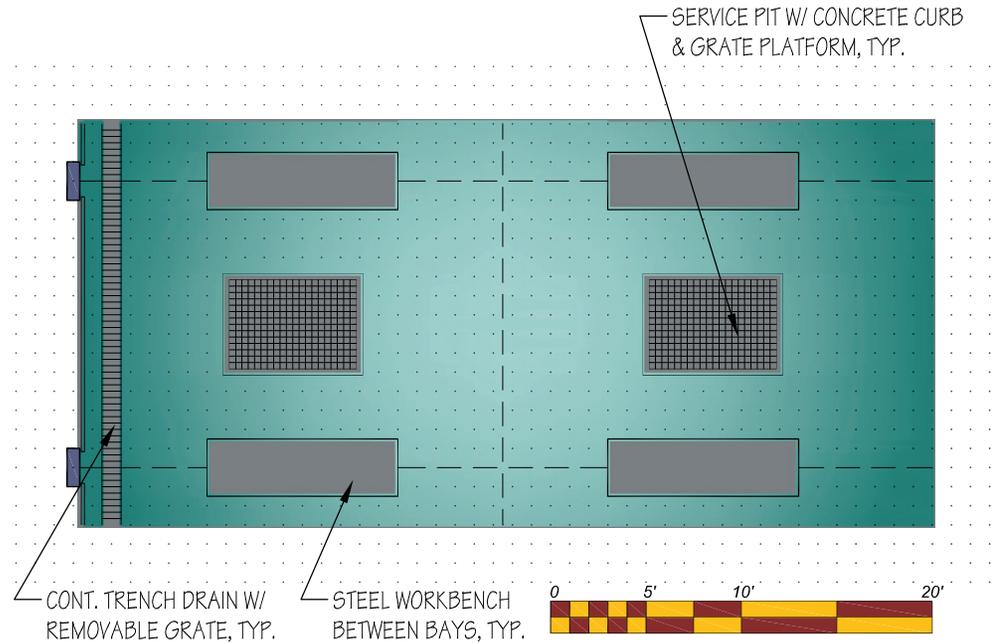
# INDIVIDUAL SPACE DIAGRAMS



First Floor Relationship Diagram



Heavy Duty Diesel Relationship Diagram



# INDIVIDUAL SPACE OUTLINE



## GENERAL REQUIREMENTS

### SPACE SUMMARY

- Space Type: High Bay Shop Space
- Number Required: 2
- Number Additional (expansion): 0
- Total Number: 2

### NET AREA SUMMARY

- Area (each): 337.5 sf
- Subtotal Required Area: 675 sf
- Subtotal Additional Area: 0 sf
- Total Area: 675 sf

### OCCUPANT SUMMARY

- Student Stations: 2
- Area Per Station: 60 sf

### FUNCTION / TASKS

- Provide an open, flexible and interactive shop-type space.

### RELATIONSHIPS

- Location: First Floor
- Adjacency: Tool Crib, Service Bays, Classrooms, Faculty Offices
- Proximity: Locker Rooms
- Separation: Quiet areas  
High traffic public areas

## ARCHITECTURAL REQUIREMENTS

### FINISHES

- Floor: Sealed concrete
- Walls: Painted CMU
- Ceiling: Exposed structure painted
- Sound: Full sound construction

### CEILING HEIGHT

- Above Finish Floor (min.): N/A

### DOORS

- Overhead: Motorized, powder-coated metal w/ insul'd. core
- Frame: None required
- Special: None required

### WINDOWS

- Natural Light: Required
- Type: Skylights w/ aluminum frame
- Glazing: Insulated w/ low-e coating

### CASEWORK / FIXED EQUIPMENT

- Mop & broom rack: (1 for every two bays) 24"

### FURNISHINGS

- Benches: (2 ea) 120"Wx34"Hx36"D
- Wastecan: (2 ea) 18" diameter

### SPECIAL CONSTRUCTION

- Recessed Service Pit: (2 ea) ??"x??" w/ lighting on all sides & from below, metal grate platform, floor drain, oil interceptor, hose bib & power outlets

## TECHNICAL REQUIREMENTS

### MECHANICAL

- Outdoor Air: Make-up for exhaust  
Must comply w/ ASHRAE 62.1-2004 (min.)
- Air Circulation: Candy cane exhaust 4-6" tip  
(1) Exhaust fans on switch/CO level
- Summer Design Temp.: 80° F
- Winter Design Temp.: 72° F
- Controls: DDC, Space temperature  
CO sensor, push button override
- Sound Criteria: None required
- Special Systems: Compressed air
- Plumbing: Hose bibb, floor drain  
Sand/oil interceptor, oil drain
- Cooling: Evaporative cooler
- Heating: Radiant tube heater

### ELECTRICAL

- Power: Duplex receptacles @ 6'-0" o.c.  
Additional capacity for equipment listed
- Data: Rough-in for future capacity
- Phone: Rough-in for future capacity
- Video: Rough-in for future capacity
- Intercom: Required

### LIGHTING

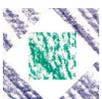
- Fixture Types: T-8 Fluorescent industrial
- Task Light: Required in pit
- Foot Candles: 50
- Controls: Relay control w/ local override

### EQUIPMENT (NIC)

- Alignment Machine: (2 ea) ??"x??"

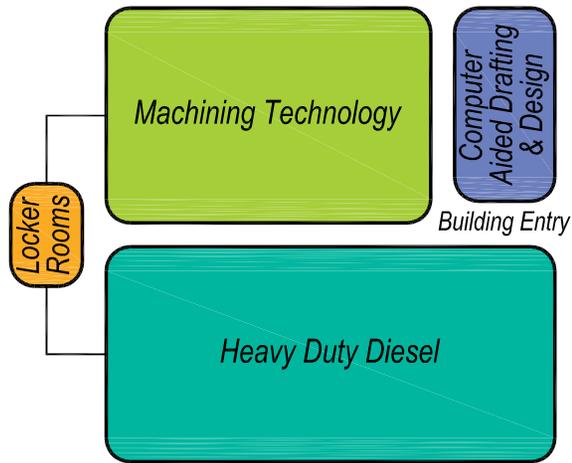
## PIT BAY

Heavy Duty Diesel Program - School of Transportation

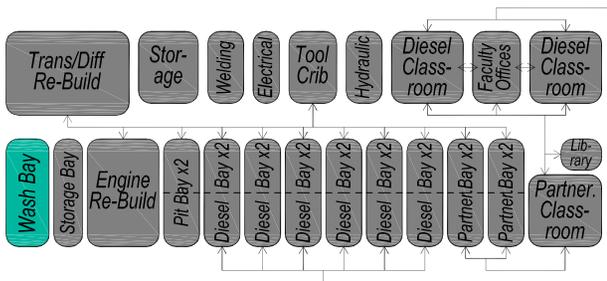




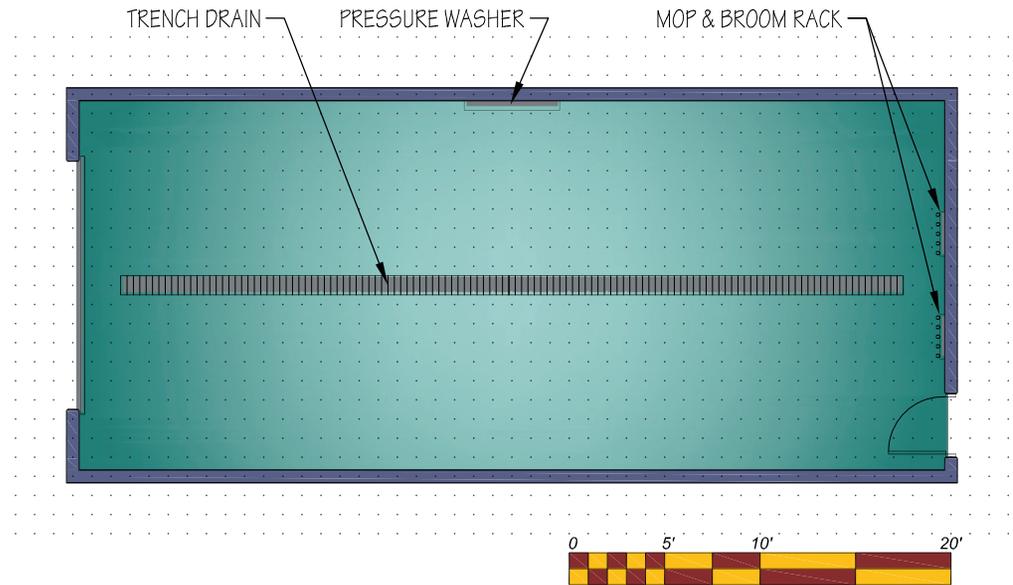
# INDIVIDUAL SPACE DIAGRAMS



First Floor Relationship Diagram



Heavy Duty Diesel Relationship Diagram



## ENCLOSED WASH BAY

Heavy Duty Diesel Program - School of Transportation

# INDIVIDUAL SPACE OUTLINE



## GENERAL REQUIREMENTS

### SPACE SUMMARY

- Space Type: Enclosed Vehicle Wash Room
- Number Required: 1
- Number Additional (expansion): 0
- Total Number: 1

### NET AREA SUMMARY

- Area (each): 800 sf
- Subtotal Required Area: 800 sf
- Subtotal Additional Area: 0 sf
- Total Area: 800 sf

### OCCUPANT SUMMARY

- Assigned Occupants: 0
- Users: Faculty / Students

### FUNCTION / TASKS

- Provide enclosed area to wash vehicles.

### RELATIONSHIPS

- Location: First Floor
- Adjacency: Service Bays, Engine & Trans/Diff Re-Build Area
- Proximity: Faculty Offices, Classrooms Locker Rooms
- Separation: None required

## ARCHITECTURAL REQUIREMENTS

### FINISHES

- Floor: Sealed concrete
- Walls: Epoxy painted CMU
- Ceiling: Epoxy painted exposed structure
- Sound: None required

### CEILING HEIGHT

- Above Finish Floor (min.): N/A

### DOORS

- Exterior: Powder-coated metal w/ insul'd. core
- Interior: Ptd. hollow core metal w/ vision panel
- Overhead: Motorized, powder-coated metal w/ insul'd. core
- Frame: Painted hollow metal
- Special: None required

### WINDOWS

- Natural Light: Required
- Type: Skylights w/ aluminum frame
- Glazing: Insulated w/ low-e coating

### CASEWORK / FIXED EQUIPMENT

- Mop & broom rack: (3 ea) 24"

### FURNISHINGS

- Wastecan: (1 ea) 18" diameter

## TECHNICAL REQUIREMENTS

### MECHANICAL

- Outdoor Air: Make-up for exhaust
- Air Circulation: Overhead exhaust on switch CO monitor, min. 10 air changes per hour
- Summer Design Temp.: N/A no cooling
- Winter Design Temp.: 72° F
- Controls: DDC, Space temperature
- Sound Criteria: None required
- Special Systems: Compressed air
- Plumbing: Hose bibb, Floor drain- 4" minimum waste line w/ grate
- Cooling: None required
- Heating: Radiant tube heater

### ELECTRICAL

- Power: Power to presser washer
- Data: Rough-in for future capacity
- Phone: Rough-in for future capacity
- Video: Rough-in for future capacity
- Intercom: Required

### LIGHTING

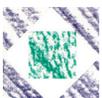
- Fixture Types: T-8 Fluorescent enclosed
- Task Light: None required
- Foot Candles: 45
- Controls: Relay control w/ local override

### EQUIPMENT (NIC)

- Pressure Washer: (1 ea) ??'x??'

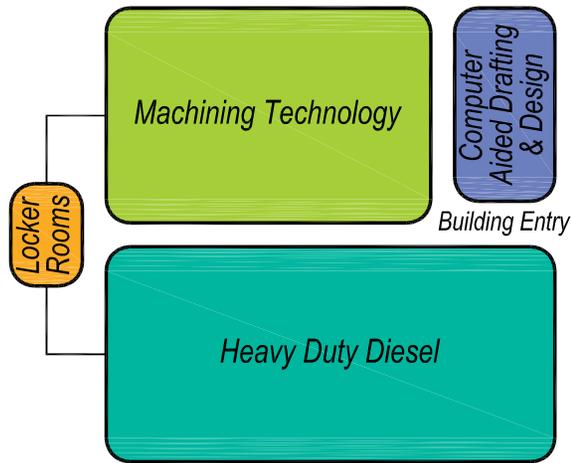
## ENCLOSED WASH BAY

Heavy Duty Diesel Program - School of Transportation

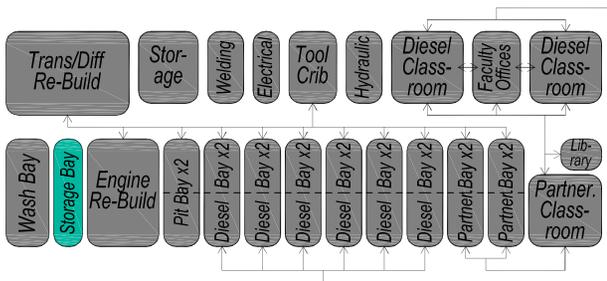




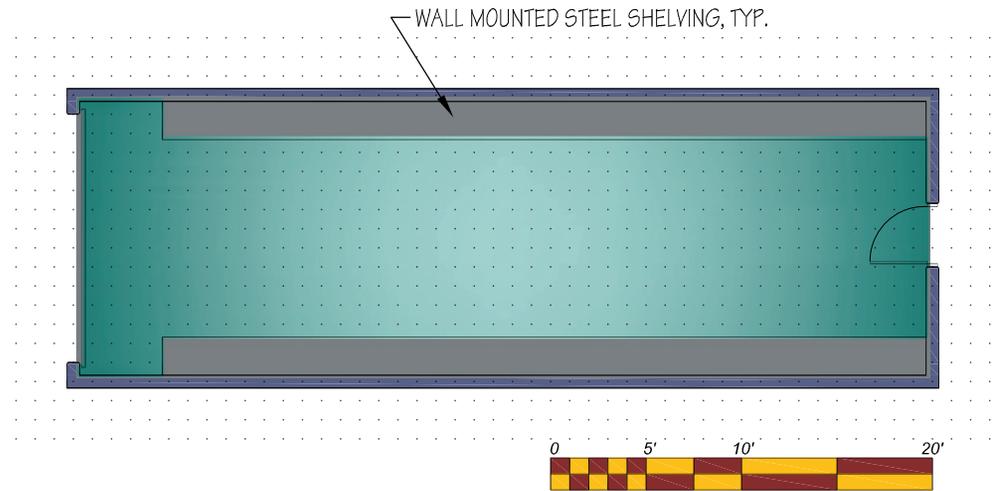
# INDIVIDUAL SPACE DIAGRAM



First Floor Relationship Diagram

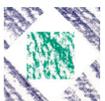


Heavy Duty Diesel Relationship Diagram



## ENCLOSED STORAGE BAY

Heavy Duty Diesel Program - School of Transportation



# INDIVIDUAL SPACE OUTLINE



## GENERAL REQUIREMENTS

### SPACE SUMMARY

- Space Type: Storage
- Number Required: 1
- Number Additional (expansion): 0
- Total Number: 1

### NET AREA SUMMARY

- Area (each): 520 sf
- Subtotal Required Area: 520 sf
- Subtotal Additional Area: 0 sf
- Total Area: 520 sf

### OCCUPANT SUMMARY

- Assigned Occupants: 0
- Users: Faculty

### FUNCTION / TASKS

- Provide secure storage for tools and mechanical parts.

### RELATIONSHIPS

- Location: First Floor
- Adjacency: Service Bays, Engine & Trans/Diff Re-Build Areas
- Proximity: Faculty Offices, Tool Crib
- Separation: None required

## ARCHITECTURAL REQUIREMENTS

### FINISHES

- Floor: Sealed concrete
- Walls: Painted CMU
- Ceiling: Exposed structure painted
- Sound: None required

### CEILING HEIGHT

- Above Finish Floor (min.): N/A

### DOORS

- Type: Painted hollow core metal
- Frame: Painted hollow metal
- Special: None required

### WINDOWS

- Natural Light: Not required

### CASEWORK / FIXED EQUIPMENT

- None required.

### FURNISHINGS

- Metal shelving units: (?? ea) ??'x??'x??'

## TECHNICAL REQUIREMENTS

### MECHANICAL

- Outdoor Air: Make-up for exhaust  
Must comply w/ ASHRAE 62.1-2004 (min.)
- Air Circulation: (6) air changes per hour
- Summer Design Temp.: 80° F
- Winter Design Temp.: 72° F
- Controls: DDC, Space temperature
- Sound Criteria: None required
- Special Systems: Compressed air
- Plumbing: Hose bibb, floor drain
- Cooling: Pump cooler
- Heating: Radiant tube heater

### ELECTRICAL

- Power: Duplex receptacles @ 10'-0" o.c.  
One per wall (min.)
- Data: Minimum one
- Phone: Minimum one
- Video: Rough-in for future capacity
- Intercom: Rough-in for future capacity

### LIGHTING

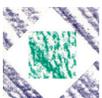
- Fixture Types: T-8 Fluorescent industrial
- Task Light: None required
- Foot Candles: 30
- Controls: Occupancy sensor w/ local override

### EQUIPMENT (NIC)

- None required.

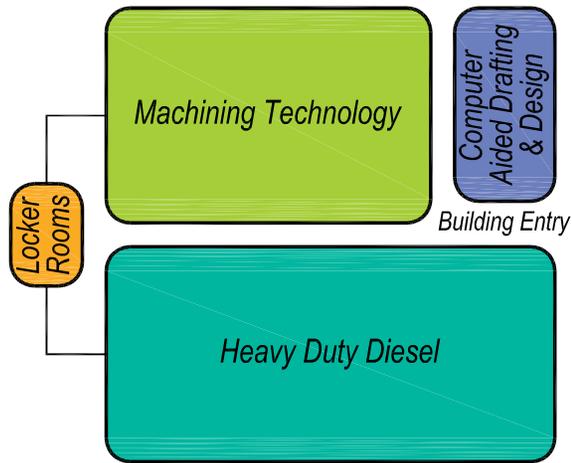
## ENCLOSED STORAGE BAY

Heavy Duty Diesel Program - School of Transportation

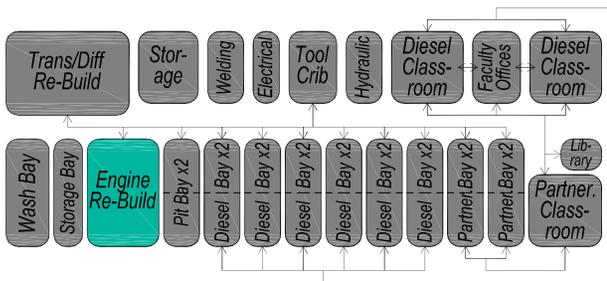




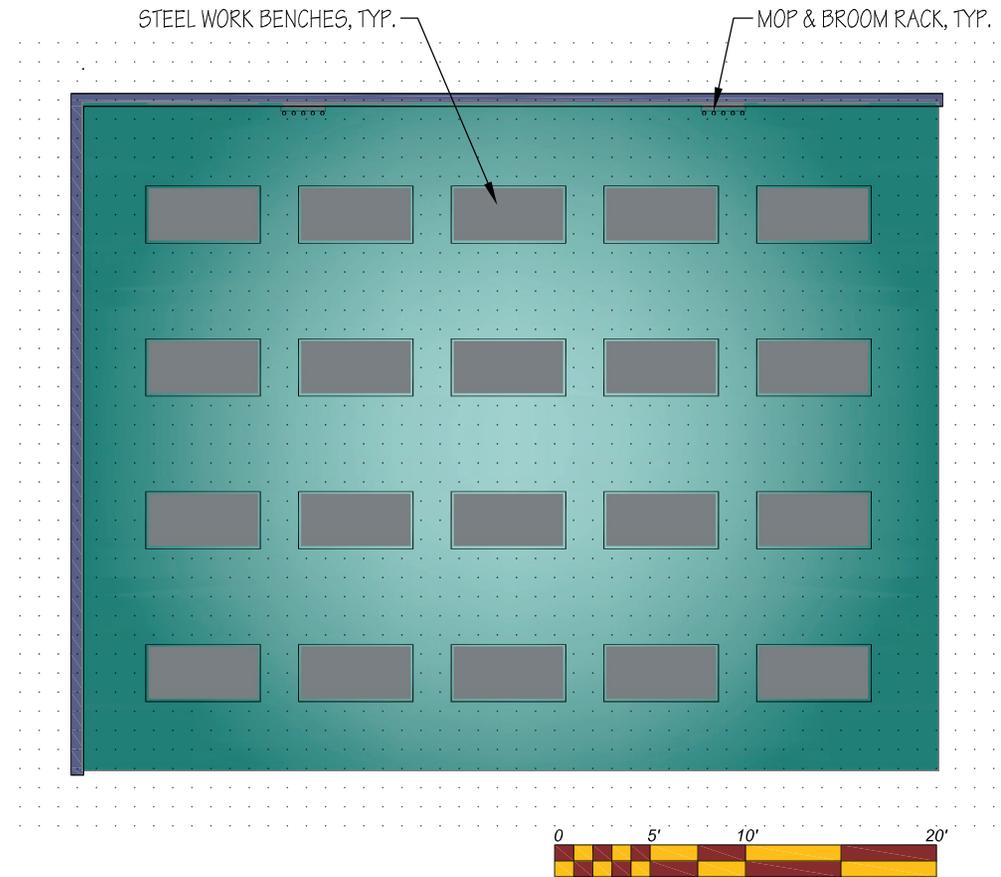
# INDIVIDUAL SPACE DIAGRAM



First Floor Relationship Diagram



Heavy Duty Diesel Relationship Diagram



## ENGINE RE-BUILD AREA

Heavy Duty Diesel Program - School of Transportation

# INDIVIDUAL SPACE OUTLINE



## GENERAL REQUIREMENTS

### SPACE SUMMARY

- Space Type: High Bay Shop Space
- Number Required: 1
- Number Additional (expansion): 0
- Total Number: 1

### NET AREA SUMMARY

- Area (each): 1,575 sf
- Subtotal Required Area: 0 sf
- Subtotal Additional Area: 1,575 sf
- Total Area: 1,575 sf

### OCCUPANT SUMMARY

- Student Stations: 15
- Area Per Station: 100 sf

### FUNCTION / TASKS

- Provide an open, flexible and interactive shop-type space.

### RELATIONSHIPS

- Location: First Floor
- Adjacency: Tool Crib, Service Bays
- Proximity: Faculty Offices, Classrooms, Locker Rooms
- Separation: None required

## ARCHITECTURAL REQUIREMENTS

### FINISHES

- Floor: Sealed concrete
- Walls: Painted CMU
- Ceiling: Exposed structure painted
- Sound: None required

### CEILING HEIGHT

- Above Finish Floor (min.): N/A

### DOORS

- None required.

### WINDOWS

- Natural Light: Required
- Type: Skylights w/ aluminum frame
- Glazing: Insulated w/ low-e coating

### CASEWORK / FIXED EQUIPMENT

- Overhead crane (5 ton): (1 shared) ??lf of track
- Mop & broom rack: (1 ea) 24"

### FURNISHINGS

- Benches: (15 ea) 72"Wx34"Hx36"D
- Engines: (15 ea) ??x??"
- Wastecan: (3 ea) 18" diameter

## TECHNICAL REQUIREMENTS

### MECHANICAL

- Outdoor Air: Make-up for exhaust  
Must comply w/ ASHRAE 62.1-2004 (min.)
- Air Circulation: Overhead exhaust  
CO sensor w/ push button override
- Summer Design Temp.: 80° F
- Winter Design Temp.: 72° F
- Controls: DDC, Space temperature
- Sound Criteria: None required
- Special Systems: Compressed air
- Plumbing: Hose bibb, trench drain, sand/oil  
interceptor, eye wash, hand sink, oil drain
- Cooling: Evaporative cooler
- Heating: Radiant tube heater

### ELECTRICAL

- Power: Duplex receptacles @ 6'-0" o.c.  
Additional capacity for equipment listed
- Data: Wireless airport  
Additional capacity for equipment listed
- Phone: Minimum one
- Video: Rough-in for future capacity
- Intercom: Required

### LIGHTING

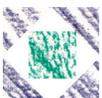
- Fixture Types: T-8 Fluorescent industrial
- Task Light: None required
- Foot Candles: 60
- Controls: Relay control w/ local override

### EQUIPMENT (NIC)

- None required.

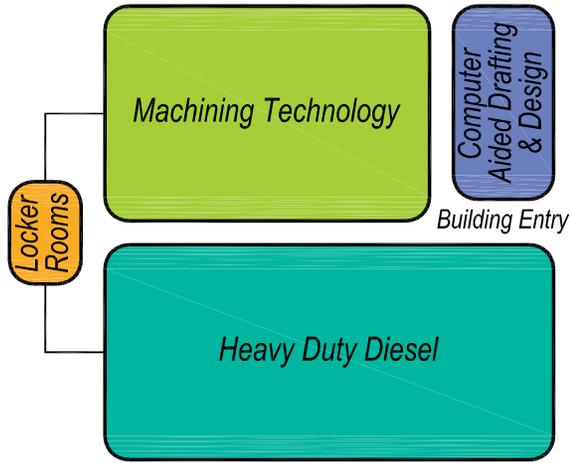
## ENGINE RE-BUILD AREA

Heavy Duty Diesel Program - School of Transportation

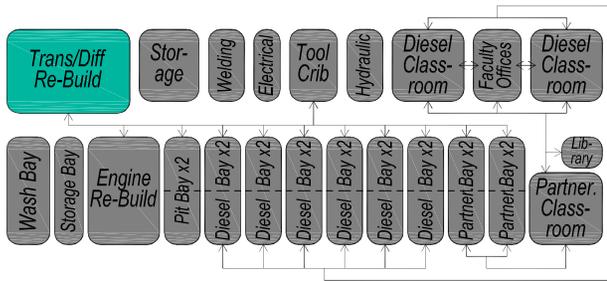




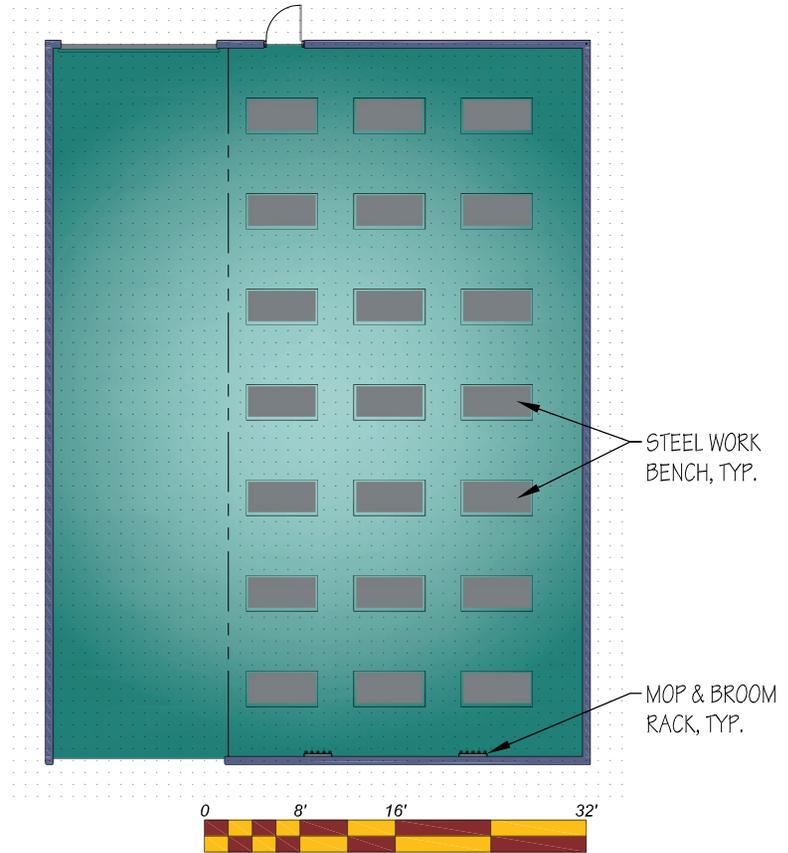
# INDIVIDUAL SPACE DIAGRAMS



First Floor Relationship Diagram



Heavy Duty Diesel Relationship Diagram



## TRANSMISSION / DIFFERENTIAL RE-BUILD AREA Heavy Duty Diesel Program - School of Transportation

# INDIVIDUAL SPACE OUTLINE



## GENERAL REQUIREMENTS

### SPACE SUMMARY

- Space Type: High Bay Shop Space
- Number Required: 1
- Number Additional (expansion): 0
- Total Number: 1

### NET AREA SUMMARY

- Area (each): 1,800 sf
- Subtotal Required Area: 0 sf
- Subtotal Additional Area: 1,800 sf
- Total Area: 1,800 sf

### OCCUPANT SUMMARY

- Student Stations: 18
- Area Per Station: 100 sf

### FUNCTION / TASKS

- Provide an open, flexible and interactive shop-type space.

### RELATIONSHIPS

- Location: First Floor
- Adjacency: Tool Crib, Service Bays
- Proximity: Faculty Offices, Classrooms, Locker Rooms
- Separation: None required

## ARCHITECTURAL REQUIREMENTS

### FINISHES

- Floor: Sealed concrete
- Walls: Painted CMU
- Ceiling: Exposed structure painted
- Sound: None required

### CEILING HEIGHT

- Above Finish Floor (min.): N/A

### DOORS

- None required.

### WINDOWS

- Natural Light: Required
- Type: Skylights w/ aluminum frame
- Glazing: Insulated w/ low-e coating

### CASEWORK / FIXED EQUIPMENT

- Hydraulic Press: (1 ea) 50 ton
- Mop & broom rack, wall mounted: (1 ea) 24"

### FURNISHINGS

- Benches: (18 ea) 72"Wx34"Hx36"D
- Trans/Diff assemblies: (18 ea) ??"x??"
- Wastecan: (3 ea) 18" diameter

## TECHNICAL REQUIREMENTS

### MECHANICAL

- Outdoor Air: Make-up for exhaust  
Must comply w/ ASHRAE 62.1-2004 (min.)
- Air Circulation: Overhead exhaust  
CO sensor w/ push button override
- Summer Design Temp.: 80° F
- Winter Design Temp.: 72° F
- Controls: DDC, Space temperature
- Sound Criteria: None required
- Special Systems: Compressed air
- Plumbing: Hose bibb, trench drain, sand/oil  
interceptor, eye wash, hand sink, oil drain
- Cooling: Evaporative cooler
- Heating: Radiant tube heater

### ELECTRICAL

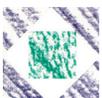
- Power: Duplex receptacles @ 6'-0" o.c.  
Additional capacity for equipment listed
- Data: Wireless airport  
Additional capacity for equipment listed
- Phone: Minimum one
- Video: Rough-in for future capacity
- Intercom: Required

### LIGHTING

- Fixture Types: T-8 Fluorescent industrial
- Task Light: None required
- Foot Candles: 60
- Controls: Relay control w/ local override

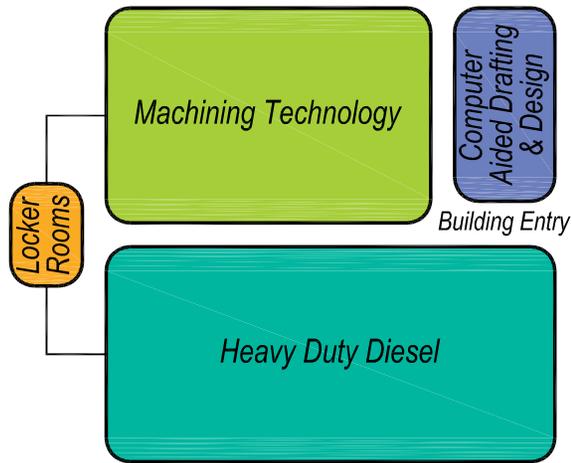
### EQUIPMENT (NIC)

- None required.

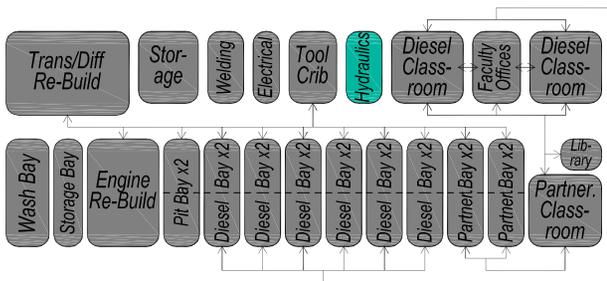




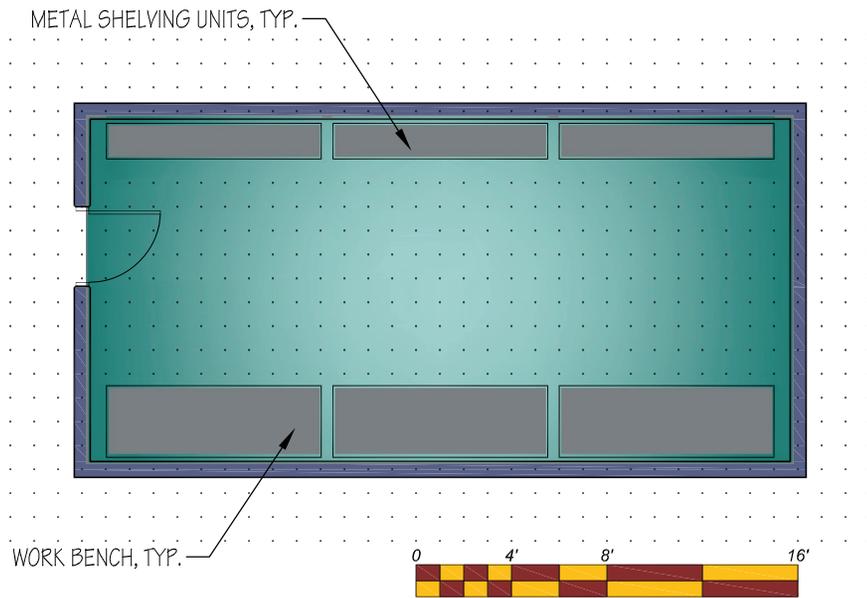
# INDIVIDUAL SPACE DIAGRAMS



First Floor Relationship Diagram



Heavy Duty Diesel Relationship Diagram



## HYDRAULICS MAINTENANCE ROOM

Heavy Duty Diesel Program - School of Transportation

# INDIVIDUAL SPACE OUTLINE



## GENERAL REQUIREMENTS

### SPACE SUMMARY

- Space Type: Enclosed
- Number Required: 1
- Number Additional (expansion): 0
- Total Number: 1

### NET AREA SUMMARY

- Area (each): 450 sf
- Subtotal Required Area: 450 sf
- Subtotal Additional Area: 0 sf
- Total Area: 450 sf

### OCCUPANT SUMMARY

- Assigned Occupants: 0
- Users: Faculty / Students

### FUNCTION / TASKS

- Provide professional workroom for hydraulic repair and maintenance.

### RELATIONSHIPS

- Location: First Floor
- Adjacency: Tool Crib, Service Bays
- Proximity: Faculty Offices, Classrooms, Storage Rooms, Locker Rooms
- Separation: None required

## ARCHITECTURAL REQUIREMENTS

### FINISHES

- Floor: Sealed concrete
- Walls: Painted CMU
- Ceiling: Exposed structure painted
- Sound: None required

### CEILING HEIGHT

- Above Finish Floor (min.): N/A

### DOORS

- Type: Ptd. hollow core metal w/ vision panel
- Frame: Painted hollow metal
- Special: None required

### WINDOWS

- Natural Light: Not required

### CASEWORK / FIXED EQUIPMENT

- None required.

### FURNISHINGS

- Benches: (6 ea) 120"Wx34"Hx36"D
- Wastecan: (1 ea) 18" diameter

## TECHNICAL REQUIREMENTS

### MECHANICAL

- Outdoor Air: Make-up for exhaust  
Must comply w/ ASHRAE 62.1-2004 (min.)
- Air Circulation: Overhead exhaust  
CO sensor w/ push button override
- Summer Design Temp.: 80° F
- Winter Design Temp.: 72° F
- Controls: DDC, Space temperature
- Sound Criteria: None required
- Special Systems: Compressed air
- Plumbing: Hose bibb, floor drain
- Cooling: Evaporative cooler
- Heating: Radiant tube heater

### ELECTRICAL

- Power: Duplex receptacles @ 10'-0" o.c.  
Additional capacity for equipment listed
- Data: One per wall (min.)
- Phone: Minimum one
- Video: Rough-in for future capacity
- Intercom: Required

### LIGHTING

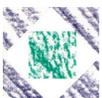
- Fixture Types: T-8 Fluorescent industrial
- Task Light: None required
- Foot Candles: 60
- Controls: Relay control w/ local override

### EQUIPMENT (NIC)

- None required.

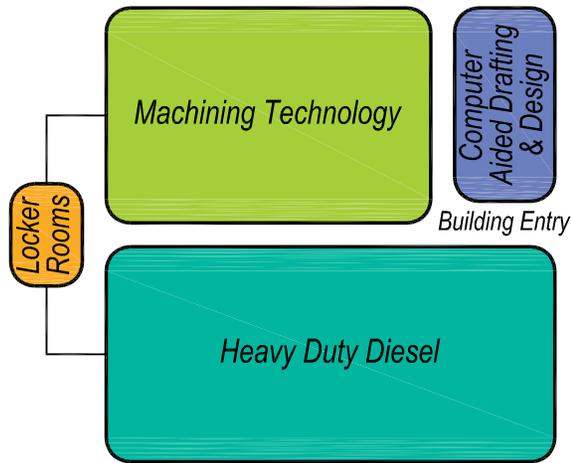
## HYDRAULICS MAINTENANCE ROOM

Heavy Duty Diesel Program - School of Transportation

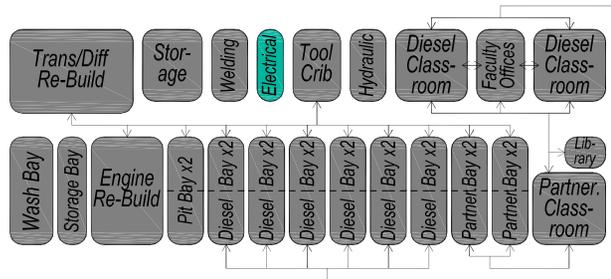




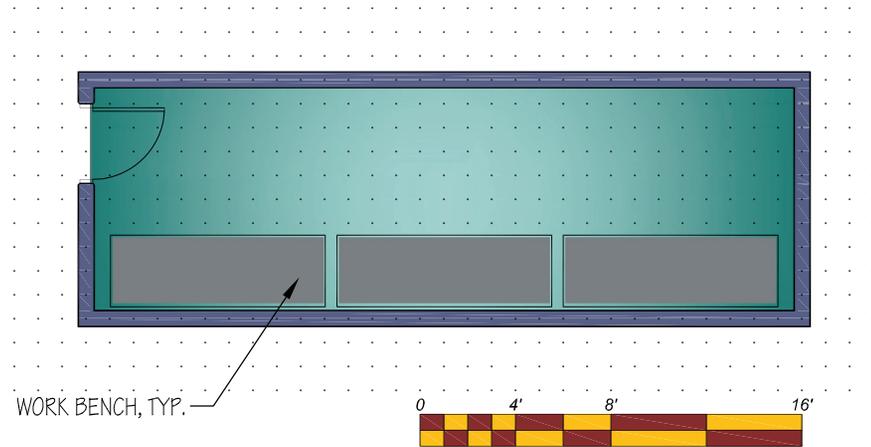
# INDIVIDUAL SPACE DIAGRAMS



First Floor Relationship Diagram

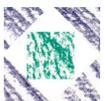


Heavy Duty Diesel Relationship Diagram



## ELECTRICAL MAINTENANCE ROOM

Heavy Duty Diesel Program - School of Transportation



# INDIVIDUAL SPACE OUTLINE



## GENERAL REQUIREMENTS

### SPACE SUMMARY

- Space Type: Enclosed
- Number Required: 1
- Number Additional (expansion): 0
- Total Number: 1

### NET AREA SUMMARY

- Area (each): 300 sf
- Subtotal Required Area: 300 sf
- Subtotal Additional Area: 0 sf
- Total Area: 300 sf

### OCCUPANT SUMMARY

- Assigned Occupants: 0
- Users: Faculty / Students

### FUNCTION / TASKS

- Provide professional workroom for electrical/ electronic repair and maintenance.

### RELATIONSHIPS

- Location: First Floor
- Adjacency: Tool Crib, Service Bays
- Proximity: Faculty Offices, Classrooms, Storage Rooms, Locker Rooms
- Separation: None required

## ARCHITECTURAL REQUIREMENTS

### FINISHES

- Floor: Sealed concrete
- Walls: Painted CMU
- Ceiling: Exposed structure painted
- Sound: None required

### CEILING HEIGHT

- Above Finish Floor (min.): N/A

### DOORS

- Type: Ptd. hollow core metal w/ vision panel
- Frame: Painted hollow metal
- Special: None required

### WINDOWS

- Natural Light: Not required

### CASEWORK / FIXED EQUIPMENT

- None required.

### FURNISHINGS

- Benches: (6 ea) 120"Wx34"Hx36"D
- Wastecan: (1 ea) 18" diameter

## TECHNICAL REQUIREMENTS

### MECHANICAL

- Outdoor Air: Make-up for exhaust  
Must comply w/ ASHRAE 62.1-2004 (min.)
- Air Circulation: Overhead exhaust  
CO sensor w/ push button override
- Summer Design Temp.: 80° F
- Winter Design Temp.: 72° F
- Controls: DDC, Space temperature
- Sound Criteria: None required
- Special Systems: Compressed air
- Plumbing: Hose bibb, floor drain
- Cooling: Evaporative cooler
- Heating: Radiant tube heater

### ELECTRICAL

- Power: Duplex receptacles @ 10'-0" o.c.  
(1) 220v outlet  
Additional capacity for equipment listed
- Data: One per wall (min.)
- Phone: Minimum one
- Video: Rough-in for future capacity
- Intercom: Required

### LIGHTING

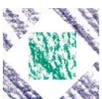
- Fixture Types: T-8 Fluorescent industrial
- Task Light: None required
- Foot Candles: 50
- Controls: Relay control w/ local override

### EQUIPMENT (NIC)

- Starter/Alternator simulator: (1 ea) 24"x36"
- Electrical training board: (4 ea) 24"x24"
- Electrical wiring schematic: (1 ea) 48"x96"

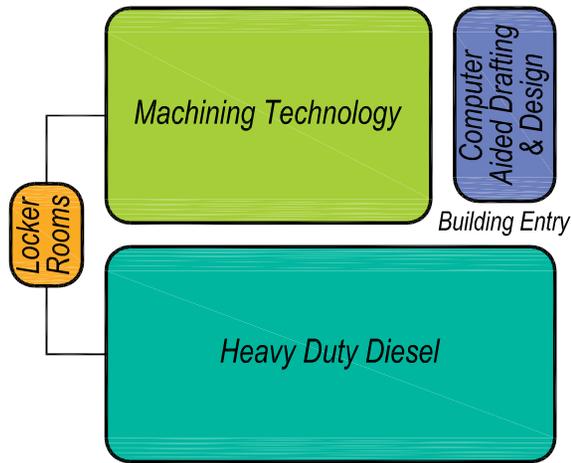
## ELECTRICAL MAINTENANCE ROOM

Heavy Duty Diesel Program - School of Transportation

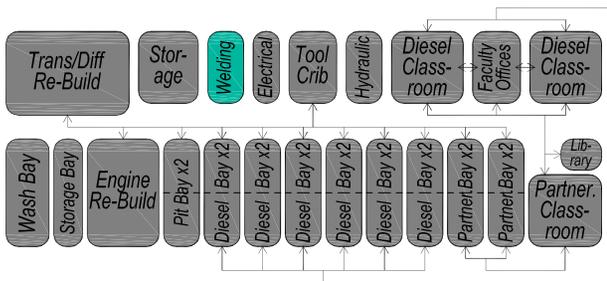




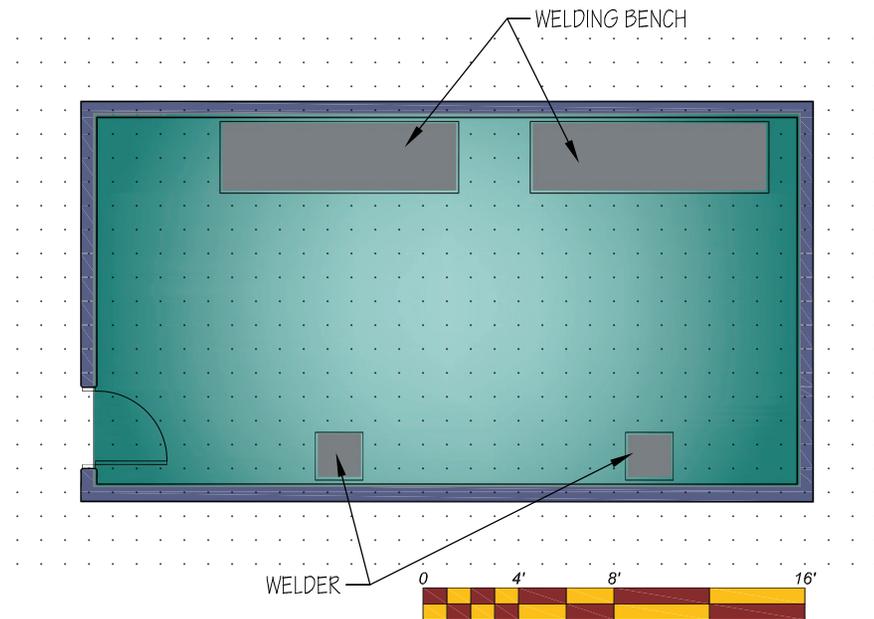
# INDIVIDUAL SPACE DIAGRAMS



First Floor Relationship Diagram



Heavy Duty Diesel Relationship Diagram



## WELDING ROOM

Heavy Duty Diesel Program - School of Transportation

# INDIVIDUAL SPACE OUTLINE



## GENERAL REQUIREMENTS

### SPACE SUMMARY

- Space Type: Enclosed
- Number Required: 1
- Number Additional (expansion): 0
- Total Number: 1

### NET AREA SUMMARY

- Area (each): 450 sf
- Subtotal Required Area: 450 sf
- Subtotal Additional Area: 0 sf
- Total Area: 450 sf

### OCCUPANT SUMMARY

- Assigned Occupants: 0
- Users: Faculty / Students

### FUNCTION / TASKS

- Provide professional workroom for welding.

### RELATIONSHIPS

- Location: First Floor
- Adjacency: Tool Crib, Service Bays
- Proximity: Faculty Offices, Classrooms, Storage Rooms, Locker Rooms
- Separation: None required

## ARCHITECTURAL REQUIREMENTS

### FINISHES

- Floor: Sealed concrete
- Walls: Painted CMU
- Ceiling: Exposed structure painted
- Sound: None required

### CEILING HEIGHT

- Above Finish Floor (min.): N/A

### DOORS

- Type: Ptd. hollow core metal w/ vision panel
- Frame: Painted hollow metal
- Special: None required

### WINDOWS

- Natural Light: Not required

### CASEWORK / FIXED EQUIPMENT

- None required.

### FURNISHINGS

- Welding benches: (2 ea) 120"Wx34"Hx36"D
- Wastecan: (1 ea) 18" diameter

## TECHNICAL REQUIREMENTS

### MECHANICAL

- Outdoor Air: Make-up for exhaust  
Must comply w/ ASHRAE 62.1-2004 (min.)
- Air Circulation: (6) air changes per hour  
Dedicated welding exhaust, coordinate welding exhaust w/ welding equipment mfr.
- Summer Design Temp.: 80° F
- Winter Design Temp.: 72° F
- Controls: DDC, Space temperature
- Sound Criteria: None required
- Special Systems: Compressed air
- Plumbing: Hose bibb, floor drain
- Cooling: Evaporative cooler
- Heating: Radiant tube heater

### ELECTRICAL

- Power: Duplex receptacles @ 10'-0" o.c.  
(2) 220v 50 amp outlets  
Additional capacity for equipment listed
- Data: One per wall (min.)
- Phone: Minimum one
- Video: Rough-in for future capacity
- Intercom: Required

### LIGHTING

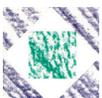
- Fixture Types: T-8 Fluorescent industrial
- Task Light: None required
- Foot Candles: 50
- Controls: Relay control w/ local override

### EQUIPMENT (NIC)

- Welders: (2 ea) ?? "x??'

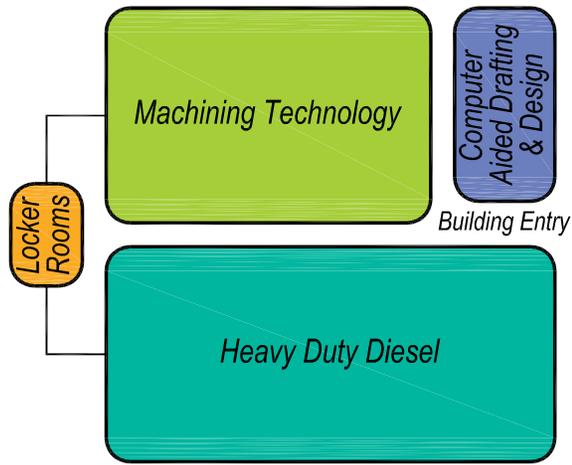
## WELDING ROOM

Heavy Duty Diesel Program - School of Transportation

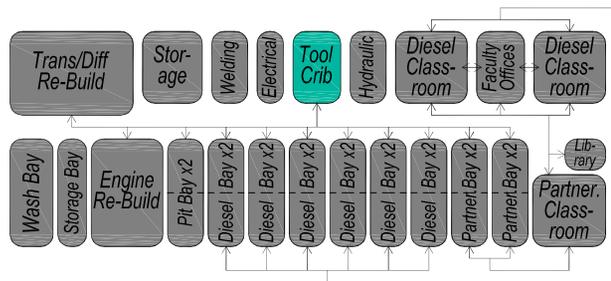




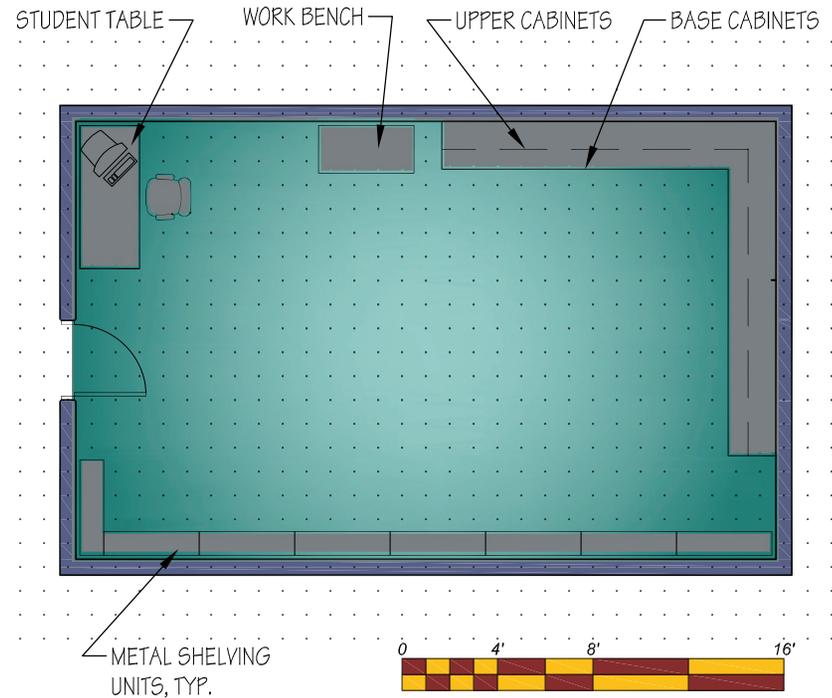
# INDIVIDUAL SPACE DIAGRAMS



First Floor Relationship Diagram



Heavy Duty Diesel Relationship Diagram



## TOOL CRIB

Heavy Duty Diesel Program - School of Transportation

# INDIVIDUAL SPACE OUTLINE



## GENERAL REQUIREMENTS

### SPACE SUMMARY

- Space Type: Storage
- Number Required: 1
- Number Additional (expansion): 0
- Total Number: 1

### NET AREA SUMMARY

- Area (each): 600 sf
- Subtotal Required Area: 600 sf
- Subtotal Additional Area: 0 sf
- Total Area: 600 sf

### OCCUPANT SUMMARY

- Assigned Occupants: 0
- Users: Faculty / Students

### FUNCTION / TASKS

- Provide secure storage for tools.

### RELATIONSHIPS

- Location: First Floor
- Adjacency: Service Bays, Pit Bay
- Proximity: Engine & Trans/Diff Re-Build Areas,
- Separation: None required

## ARCHITECTURAL REQUIREMENTS

### FINISHES

- Floor: Sealed concrete
- Walls: Painted CMU
- Ceiling: Exposed structure painted
- Sound: None required

### CEILING HEIGHT

- Above Finish Floor (min.): N/A

### DOORS

- Type: Painted hollow core metal
- Frame: Painted hollow metal
- Special: Dutch/split door

### WINDOWS

- Natural Light: Not required

### CASEWORK / FIXED EQUIPMENT

- None required.

### FURNISHINGS

- Metal shelving units: (?? ea) ??'x??'x??
- Metal storage cabinet: (1 ea) ??'x??"
- Bench: (1 ea) 48"Wx34"Hx24"D
- Student table: (1 ea) 42"Wx27"Hx24"D
- Task chair: (1 ea) 18"Wx18"Hx16"D
- Wastecan: (1 ea) 14" diameter

## TECHNICAL REQUIREMENTS

### MECHANICAL

- Outdoor Air: Make-up for exhaust  
Must comply w/ ASHRAE 62.1-2004 (min.)
- Air Circulation: (6) air changes per hour
- Summer Design Temp.: 80° F
- Winter Design Temp.: 72° F
- Controls: DDC, Space temperature
- Sound Criteria: None required
- Special Systems: Compressed air
- Plumbing: Hose bibb, floor drain
- Cooling: Pump cooler
- Heating: Radiant tube heater

### ELECTRICAL

- Power: Duplex receptacles 10'-0" o.c.  
One per wall (min.)  
Additional capacity for equipment listed
- Data: Capacity for two computers (min.)
- Phone: Minimum one
- Video: Rough-in for future capacity
- Intercom: Required

### LIGHTING

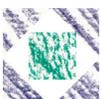
- Fixture Types: T-8 Fluorescent industrial
- Task Light: Required at all work surfaces
- Foot Candles: 40
- Controls: Occupancy sensor w/ local override

### EQUIPMENT (NIC)

- Desktop computer and printer.

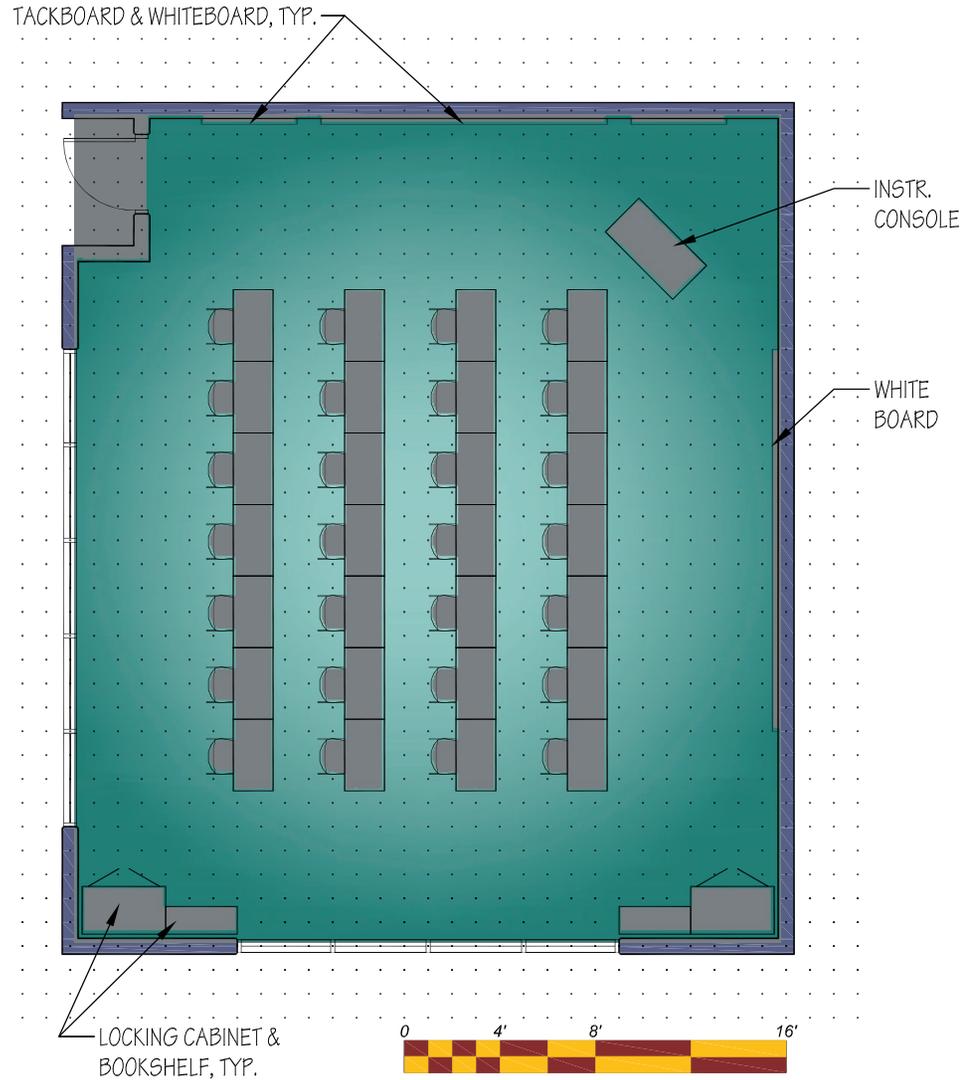
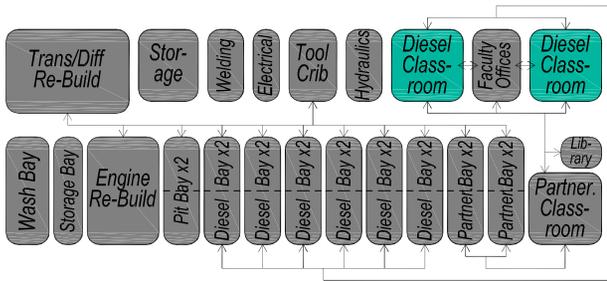
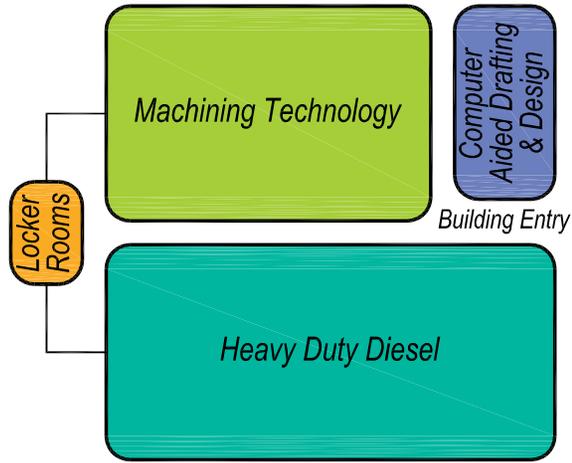
## TOOL CRIB

Heavy Duty Diesel Program - School of Transportation





# INDIVIDUAL SPACE DIAGRAMS



## DIESEL CLASSROOMS

Heavy Duty Diesel Program - School of Transportation

# INDIVIDUAL SPACE OUTLINE



## GENERAL REQUIREMENTS

### SPACE SUMMARY

- Space Type: Classroom
- Number Required: 2
- Number Additional (expansion): 0
- Total Number: 2

### NET AREA SUMMARY

- Area (each): 900 sf
- Subtotal Required Area: 1,800 sf
- Subtotal Additional Area: 0 sf
- Total Area: 1,800 sf

### OCCUPANT SUMMARY

- Student Stations: 30
- Area Per Station: 30 sf

### FUNCTION / TASKS

- Provide a flexible multipurpose classroom.

### RELATIONSHIPS

- Location: First Floor
- Adjacency: Faculty Offices, Partnership Classroom, Media / Video Library
- Proximity: Service Bays, Hydraulic & Electrical Maintenance Rooms, Welding Room
- Separation: Mechanical & Elevator Rooms  
Other noisy functions

## ARCHITECTURAL REQUIREMENTS

### FINISHES

- Floor: Static-free carpet w/ 4" rubber base
- Walls: Painted gypsum board w/ chair rail
- Ceiling: Susp. 2x2 grid w/ acoustical panels
- Sound: Full sound construction

### CEILING HEIGHT

- Above Finish Floor (min.): 10'-0"

### DOORS

- Type: Painted hollow core metal
- Frame: Ptd. hollow metal w/ glazed sidelight
- Special: Sound isolation

### WINDOWS

- Natural Light: Desirable
- Interior Windows: 192"Wx48"H ptd. HM frame

### CASEWORK / FIXED EQUIPMENT

- Whiteboard, map rail, tray: (2 ea) 144"Wx48"H
- Tackboard w/ frame: (4 ea) 48"Wx48"H
- Instructor console: (1 ea) 36"Wx42"Hx30"D
- Bookshelves: (2 ea) 36"Wx88"Hx14"D
- Cabinet (full height) w/ adjustable shelves & lockable doors: (1) 36"Wx88"Hx24"D
- Clock: (1)
- Project mounts/ports & cable connections: (1)

### FURNISHINGS

- Student tables: (30 ea) 42"Wx27"Hx24"D
- Task chair: (30 ea) 18"Wx18"Hx16"D
- Wastecan: (2 ea) 14" diameter

## TECHNICAL REQUIREMENTS

### MECHANICAL

- Outdoor Air: 10 cfm/person + 0.12 cfm/sf
- Air Circulation: VAV w/ reheat
- Summer Design Temp.: 76° F
- Winter Design Temp.: 72° F
- Controls: DDC, Space temperature
- Sound Criteria: NC - 35
- Special Systems: 10+ Computers
- Plumbing: None required

### ELECTRICAL

- Power: Duplex receptacles two each wall  
Additional capacity for equipment listed
- Data: Two per wall (min.)  
Wireless airport
- Phone: Minimum one
- Video: Ceiling recessed LCD projector  
w/ classroom sound amplification system
- Intercom: Required

### LIGHTING

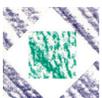
- Fixture Types: T-8 Fluorescent lay-in
- Task Light: None required
- Foot Candles: 45-50
- Controls: Occupancy sensor w/ local override

### EQUIPMENT (NIC)

- Capacity for laptop computers, video monitors, overhead, opaque, slide & film projectors, VHS & DVD players, audio devices, laser printer.
- (1) Elmo desktop presentation unit.

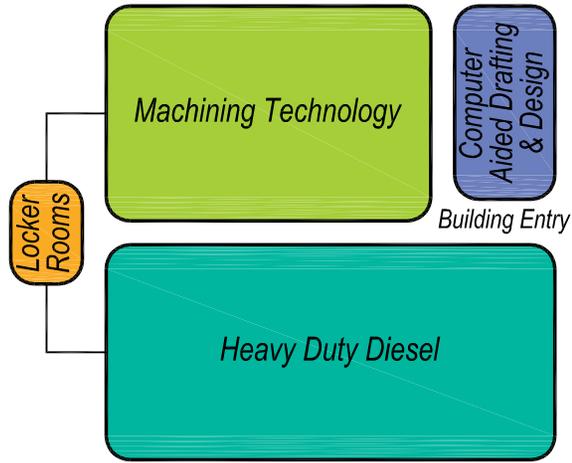
## DIESEL CLASSROOMS

Heavy Duty Diesel Program - School of Transportation

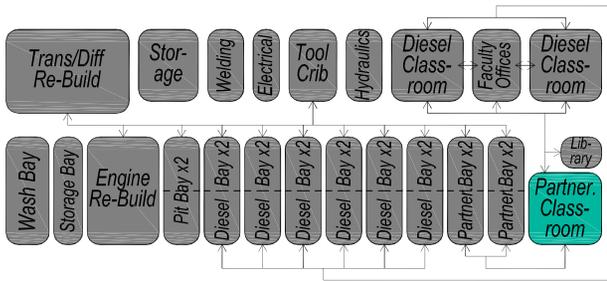




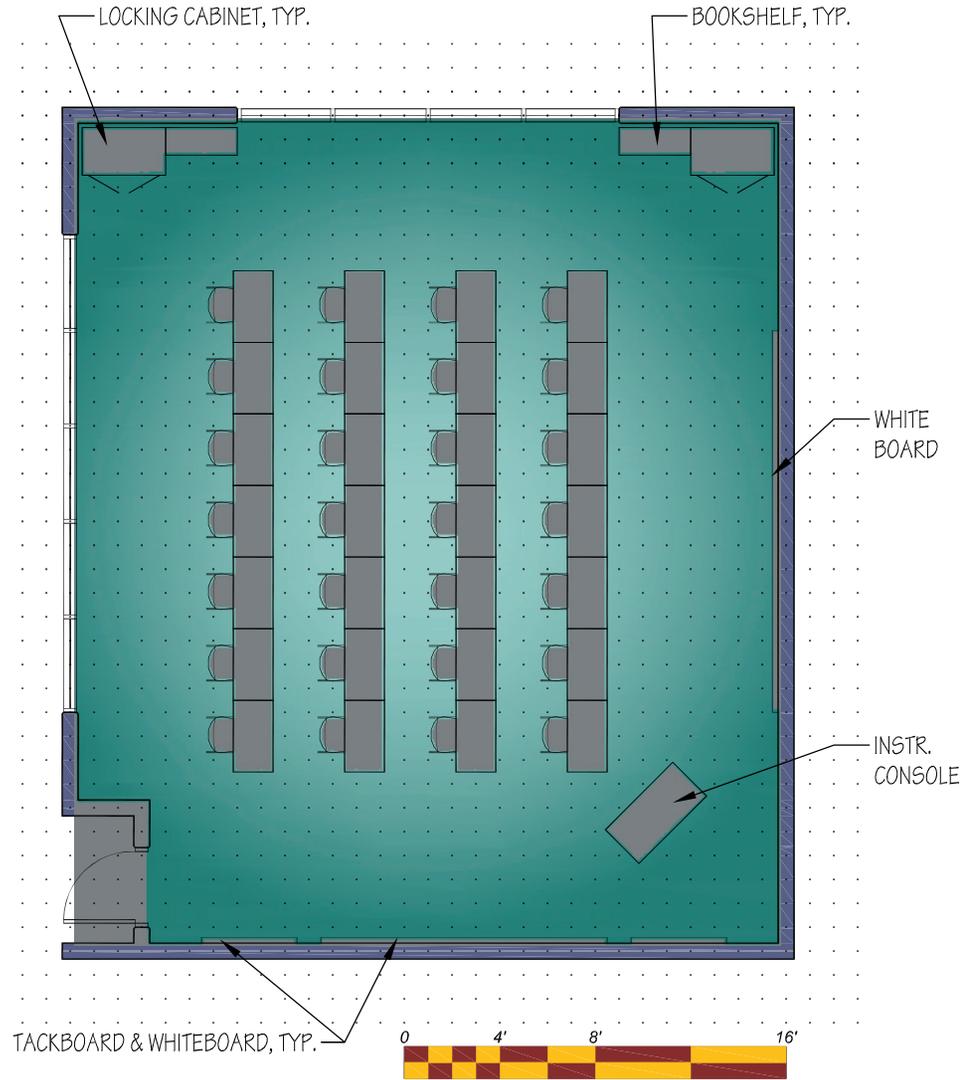
# INDIVIDUAL SPACE DIAGRAMS



First Floor Relationship Diagram

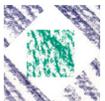


Heavy Duty Diesel Relationship Diagram



## PARTNERSHIP CLASSROOM

Heavy Duty Diesel Program - School of Transportation



# INDIVIDUAL SPACE OUTLINE



## GENERAL REQUIREMENTS

### SPACE SUMMARY

- Space Type: Classroom
- Number Required: 1
- Number Additional (expansion): 0
- Total Number: 1

### NET AREA SUMMARY

- Area (each): 900 sf
- Subtotal Required Area: 900 sf
- Subtotal Additional Area: 0 sf
- Total Area: 900 sf

### OCCUPANT SUMMARY

- Student Stations: 30
- Area Per Station: 30 sf

### FUNCTION / TASKS

- Provide a flexible multipurpose classroom.

### RELATIONSHIPS

- Location: First Floor
- Adjacency: Faculty Offices, Diesel Classrooms, Media / Video Library
- Proximity: Service Bays, Hydraulic & Electrical Maintenance Rooms, Welding Room
- Separation: Mechanical & Elevator Rooms  
Other noisy functions

## ARCHITECTURAL REQUIREMENTS

### FINISHES

- Floor: Static-free carpet w/ 4" rubber base
- Walls: Painted gypsum board w/ chair rail
- Ceiling: Susp. 2x2 grid w/ acoustical panels
- Sound: Full sound construction

### CEILING HEIGHT

- Above Finish Floor (min.): 10'-0"

### DOORS

- Type: Painted hollow core metal
- Frame: Ptd. hollow metal w/ glazed sidelight
- Special: Sound isolation

### WINDOWS

- Natural Light: Desirable
- Interior Windows: 192"Wx48"H ptd. HM frame

### CASEWORK / FIXED EQUIPMENT

- Whiteboard, map rail, tray: (2 ea) 144"Wx48"H
- Tackboard w/ frame: (4 ea) 48"Wx48"H
- Instructor console: (1 ea) 36"Wx42"Hx30"D
- Bookshelves: (2 ea) 36"Wx88"Hx14"D
- Cabinet (full height) w/ adjustable shelves & lockable doors: (1) 36"Wx88"Hx24"D
- Clock: (1)
- Project mounts/ports & cable connections: (1)

### FURNISHINGS

- Student tables: (30 ea) 42"Wx27"Hx24"D
- Task chair: (30 ea) 18"Wx18"Hx16"D
- Wastecan: (2 ea) 14" diameter

## TECHNICAL REQUIREMENTS

### MECHANICAL

- Outdoor Air: 10 cfm/person + 0.12 cfm/sf
- Air Circulation: VAV w/ reheat
- Summer Design Temp.: 76° F
- Winter Design Temp.: 72° F
- Controls: DDC, Space temperature
- Sound Criteria: NC - 35
- Special Systems: 10+ Computers
- Plumbing: None required

### ELECTRICAL

- Power: Duplex receptacles two each wall  
Additional capacity for equipment listed
- Data: Two per wall (min.)  
Wireless airport
- Phone: Minimum one
- Video: Ceiling recessed LCD projector  
w/ classroom sound amplification system
- Intercom: Required

### LIGHTING

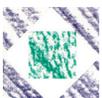
- Fixture Types: T-8 Fluorescent lay-in
- Task Light: None required
- Foot Candles: 45-50
- Controls: Occupancy sensor w/ local override

### EQUIPMENT (NIC)

- Capacity for laptop computers, video monitors, overhead, opaque, slide & film projectors, VHS & DVD players, audio devices, laser printer.
- (1) Elmo desktop presentation unit.

## PARTNERSHIP CLASSROOM

Heavy Duty Diesel Program - School of Transportation





# INDIVIDUAL SPACE OUTLINE



## GENERAL REQUIREMENTS

### SPACE SUMMARY

- Space Type: Enclosed
- Number Required: 1
- Number Additional (expansion): 0
- Total Number: 1

### NET AREA SUMMARY

- Area (each): 600 sf
- Subtotal Required Area: 600 sf
- Subtotal Additional Area: 0 sf
- Total Area: 600 sf

### OCCUPANT SUMMARY

- Assigned Occupants: 4
- Visitors: 2

### FUNCTION / TASKS

- Provide professional workspace for general office work and conferencing.

### RELATIONSHIPS

- Location: First Floor
- Adjacency: Service Bays, Classrooms
- Proximity: Media / Video Library
- Separation: Mechanical & Elevator Rooms  
Other noisy functions

## ARCHITECTURAL REQUIREMENTS

### FINISHES

- Floor: Static-free carpet w/ 4" rubber base
- Walls: Painted gypsum board
- Ceiling: Susp. 2x2 grid w/ acoustical panels
- Sound: Full sound construction

### CEILING HEIGHT

- Above Finish Floor (min.): 10'-0"

### DOORS

- Type: Painted hollow core metal
- Frame: Ptd. hollow metal w/ glazed sidelight
- Special: Sound isolation

### WINDOWS

- Natural Light: Desirable
- Interior Windows: 96"Wx48"H ptd. HM frame

### CASEWORK / FIXED EQUIPMENT

- Whiteboard, map rail, tray: (1 ea) 48"Wx48"H
- Tackboard w/ frame: (2 ea) 248Wx48"H
- Clock: (1)

### FURNISHINGS

- System furniture workstation: (4 ea) 64 sf
- Task chair: (4 ea) 18"Wx18"Hx16"D
- Side chair: (2 ea) 16"Wx18"Hx16"D
- Wastecan: (4 ea) 14" diameter

## TECHNICAL REQUIREMENTS

### MECHANICAL

- Outdoor Air: 5 cfm/person + 0.06 cfm/sf
- Air Circulation: VAV w/ reheat
- Summer Design Temp.: 76° F
- Winter Design Temp.: 73° F
- Controls: DDC, Space temperature
- Sound Criteria: NC - 35
- Special Systems: HVAC loads (4+ computers)
- Plumbing: None required

### ELECTRICAL

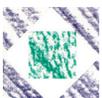
- Power: Duplex receptacles @ 10'0" o.c.  
Fourplex receptacles one per workstation  
Additional capacity for equipment listed
- Data: Minimum two per workstation
- Phone: Minimum one per workstation
- Video: Rough-in for future capacity
- Intercom: Required

### LIGHTING

- Fixture Types: T-8 Fluorescent lay-in
- Task Light: Required at all work surfaces
- Foot Candles: 45-50
- Controls: Occupancy sensor w/ local override

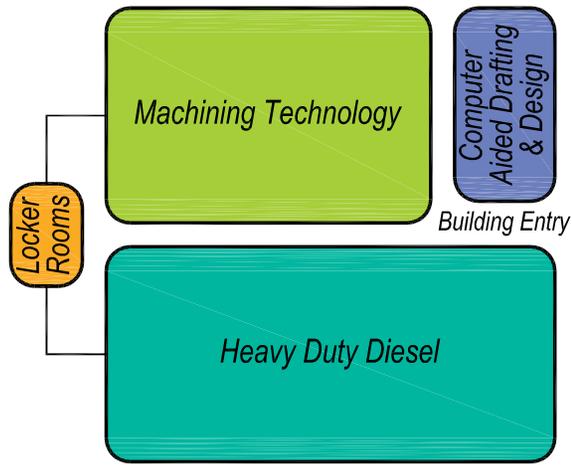
### EQUIPMENT (NIC)

- Capacity for desktop computer, laser printer & scanner at each workstation.

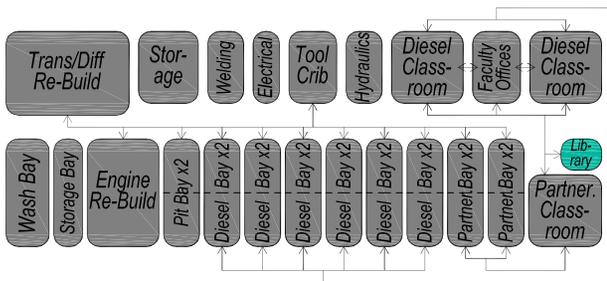




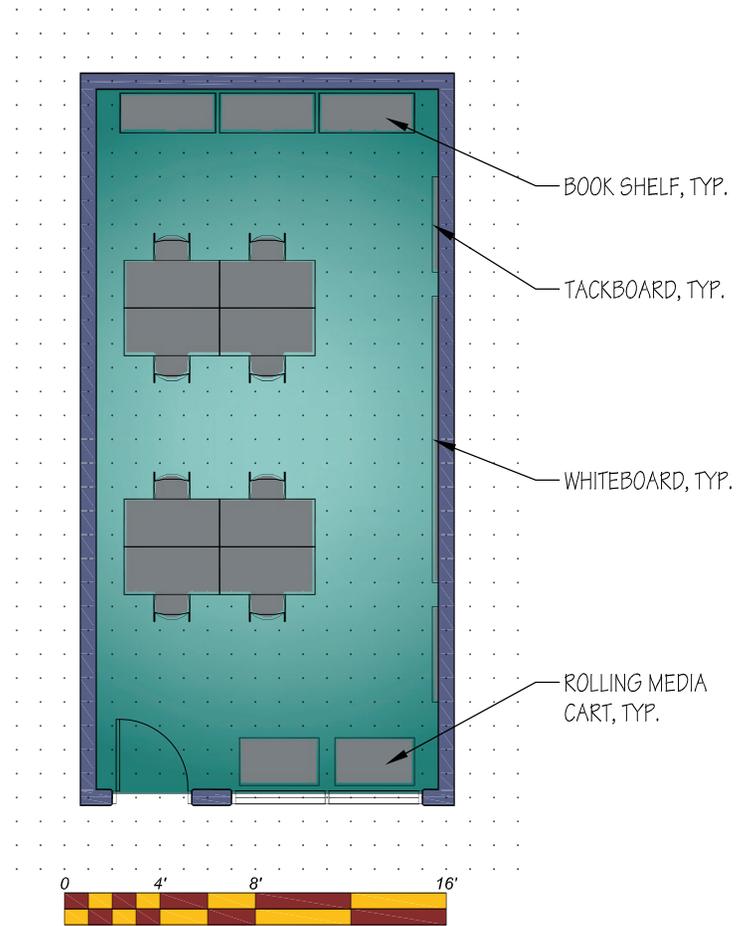
# INDIVIDUAL SPACE DIAGRAMS



First Floor Relationship Diagram



Heavy Duty Diesel Relationship Diagram



## MEDIA / VIDEO LIBRARY

Heavy Duty Diesel Program - School of Transportation

# INDIVIDUAL SPACE OUTLINE



## GENERAL REQUIREMENTS

### SPACE SUMMARY

• Space Type:	Enclosed
• Number Required:	1
• Number Additional (expansion):	0
• Total Number:	1

### NET AREA SUMMARY

• Area (each):	220 sf
• Subtotal Required Area:	220 sf
• Subtotal Additional Area:	0 sf
• Total Area:	220 sf

### OCCUPANT SUMMARY

• Assigned Occupants:	0
• Users:	Faculty / Students

### FUNCTION / TASKS

- Provide area for the storage and viewing of various kinds of media / video files.

### RELATIONSHIPS

• Location:	First Floor
• Adjacency:	Faculty Offices, Classrooms
• Proximity:	Locker Rooms, public circulation
• Separation:	Mechanical & Elevator Rooms Other noisy functions

## ARCHITECTURAL REQUIREMENTS

### FINISHES

• Floor:	Static-free carpet w/ 4" rubber base
• Walls:	Painted gypsum board
• Ceiling:	Susp. 2x2 grid w/ acoustical panels
• Sound:	Not required

### CEILING HEIGHT

• Above Finish Floor (min.):	10'-0"
------------------------------	--------

### DOORS

• Type:	Painted hollow core metal
• Frame:	Ptd. hollow metal w/ glazed sidelight
• Special:	Not required

### WINDOWS

• Natural Light:	Desirable
------------------	-----------

### CASEWORK / FIXED EQUIPMENT

• Whiteboard, map rail, tray:	(1 ea) 48"Wx48"H
• Tackboard w/ frame:	(2 ea) 248Wx48"H
• Bookshelves:	(2 ea) 36"Wx88"Hx14"D
• Cabinet (full height) w/ adjustable shelves & lockable doors:	(1) 36"Wx88"Hx24"D
• Clock:	(1)

### FURNISHINGS

• Student tables:	(6 ea) 42"Wx27"Hx24"D
• Task chair:	(6 ea) 18"Wx18"Hx16"D
• Wastecan:	(1 ea) 14" diameter

## TECHNICAL REQUIREMENTS

### MECHANICAL

• Outdoor Air:	5 cfm/person + 0.06 cfm/sf
• Air Circulation:	VAV w/ reheat
• Summer Design Temp.:	76° F
• Winter Design Temp.:	73° F
• Controls:	DDC, Space temperature
• Sound Criteria:	NC - 35
• Special Systems:	Computers - mini lab
• Plumbing:	None required

### ELECTRICAL

• Power:	Duplex receptacles @ 10'0" o.c. One per wall (min.) Additional capacity for equipment listed
• Data:	One per wall (min.) Additional capacity for equipment listed
• Phone:	Minimum one
• Video:	Rough-in for future capacity
• Intercom:	Required

### LIGHTING

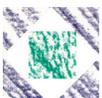
• Fixture Types:	T-8 Fluorescent lay-in
• Task Light:	Required at all work surfaces
• Foot Candles:	35-40
• Controls:	Occupancy sensor w/ local override

### EQUIPMENT (NIC)

• (6 ea) desktop computer, laser printer, scanner, television, VHS & DVD player, audio devices
--

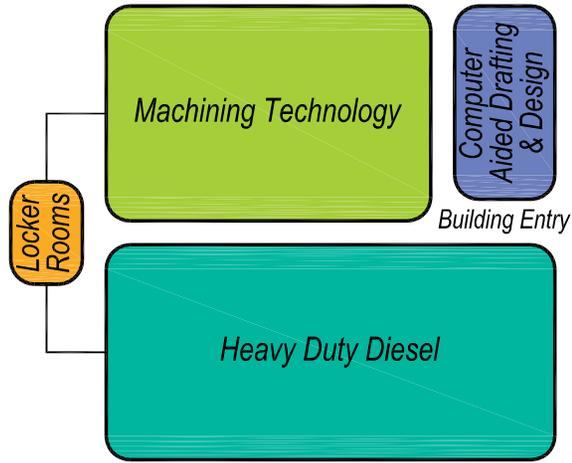
## MEDIA / VIDEO LIBRARY

Heavy Duty Diesel Program - School of Transportation

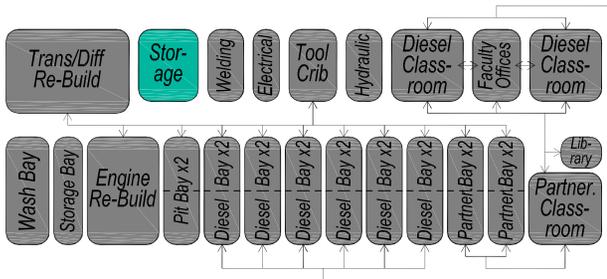




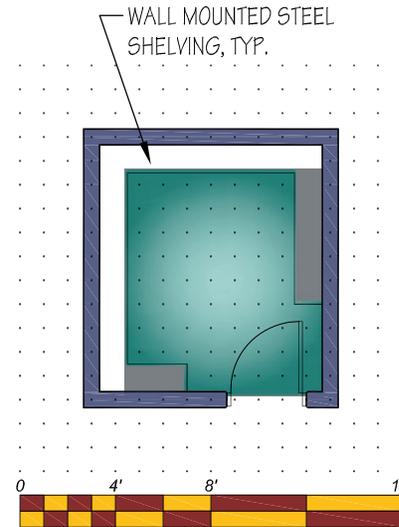
# INDIVIDUAL SPACE DIAGRAMS



First Floor Relationship Diagram

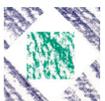


Heavy Duty Diesel Relationship Diagram



## STORAGE ROOM

Heavy Duty Diesel Program - School of Transportation



# INDIVIDUAL SPACE OUTLINE



## GENERAL REQUIREMENTS

### SPACE SUMMARY

- Space Type: Storage
- Number Required: 1
- Number Additional (expansion): 0
- Total Number: 1

### NET AREA SUMMARY

- Area (each): 750 sf
- Subtotal Required Area: 750 sf
- Subtotal Additional Area: 0 sf
- Total Area: 750 sf

### OCCUPANT SUMMARY

- Assigned Occupants: 0
- Users: Faculty

### FUNCTION / TASKS

- Provide secure storage for parts and supplies.

### RELATIONSHIPS

- Location: First Floor
- Adjacency: Service Bays, Engine & Trans/Diff Re-Build Areas, Tool Crib
- Proximity: Faculty Offices
- Separation: None required

## ARCHITECTURAL REQUIREMENTS

### FINISHES

- Floor: Sealed concrete
- Walls: Painted CMU
- Ceiling: Exposed structure painted
- Sound: None required

### CEILING HEIGHT

- Above Finish Floor (min.): N/A

### DOORS

- Type: Painted hollow core metal
- Frame: Painted hollow metal
- Special: None required

### WINDOWS

- Natural Light: Not required

### CASEWORK / FIXED EQUIPMENT

- None required.

### FURNISHINGS

- Metal shelving units: (?? ea) ??'x??'x??'

## TECHNICAL REQUIREMENTS

### MECHANICAL

- Outdoor Air: Make-up for exhaust  
Must comply w/ ASHRAE 62.1-2004 (min.)
- Air Circulation: (6) air changes per hour
- Summer Design Temp.: 80° F
- Winter Design Temp.: 72° F
- Controls: DDC, Space temperature
- Sound Criteria: None required
- Special Systems: Compressed air
- Plumbing: Hose bibb, floor drain
- Cooling: Pump cooler
- Heating: Radiant tube heater

### ELECTRICAL

- Power: Duplex receptacles @ 10'-0" o.c.  
One per wall (min.)
- Data: Minimum one
- Phone: Minimum one
- Video: Rough-in for future capacity
- Intercom: Rough-in for future capacity

### LIGHTING

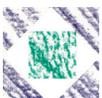
- Fixture Types: T-8 Fluorescent industrial
- Task Light: None required
- Foot Candles: 30
- Controls: Occupancy sensor w/ local override

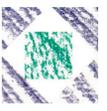
### EQUIPMENT (NIC)

- None required.

## STORAGE ROOM

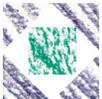
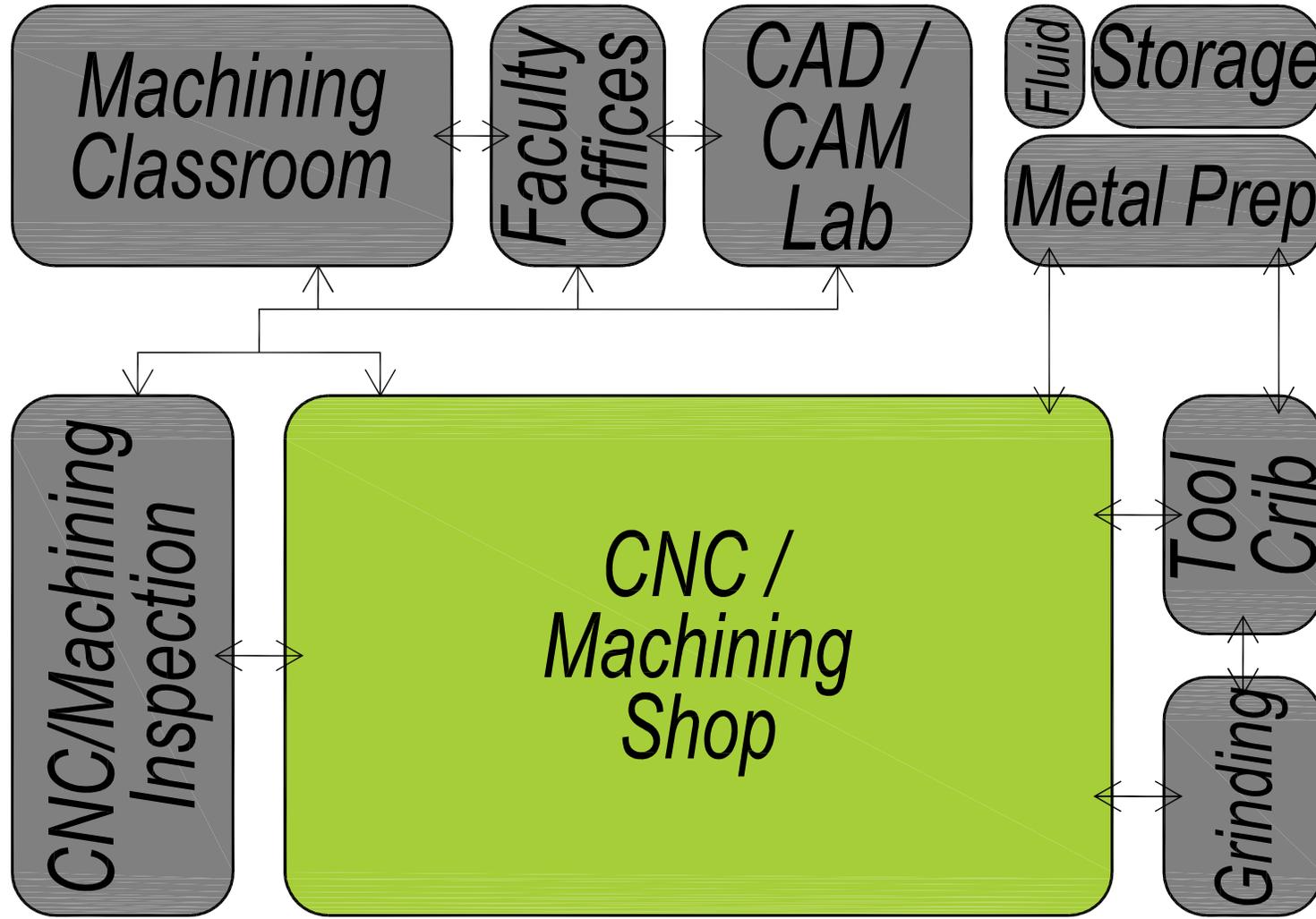
Heavy Duty Diesel Program - School of Transportation





# INDIVIDUAL SPACE REQUIREMENTS

## MACHINING TECHNOLOGY RELATIONSHIP DIAGRAM

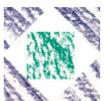




# INDIVIDUAL SPACE DIAGRAMS

**HAVEN J. & BONNIE RAE BARLOW MANUFACTURING TECHNOLOGY BUILDING**  
Davis Applied Technology College

**HFS Architects**



## **CNC / MACHINING SHOP**

*Machining Technology Program - School of Manufacturing*

# INDIVIDUAL SPACE OUTLINE



## GENERAL REQUIREMENTS

### SPACE SUMMARY

- Space Type: High Bay Shop Space
- Number Required: 1
- Number Additional (expansion): 0
- Total Number: 1

### NET AREA SUMMARY

- Area (each): 5,700 sf
- Subtotal Required Area: 5,700 sf
- Subtotal Additional Area: 0 sf
- Total Area: 5,700 sf

### OCCUPANT SUMMARY

- Student Stations: 42
- Area Per Station: 135 sf

### FUNCTION / TASKS

- Provide an open, flexible and interactive shop-type space.

### RELATIONSHIPS

- Location: First Floor
- Adjacency: CNC/Machining Inspection Area, Faculty Offices, Classrooms, Tool Crib
- Proximity: Grinding & EDM Room, Metal Prep & Deburr Area, Locker Rooms
- Separation: Quiet areas, busy public areas

## ARCHITECTURAL REQUIREMENTS

### FINISHES

- Floor: Sealed concrete
- Walls: Painted CMU
- Ceiling: Exposed structure painted
- Sound: Full sound construction

### CEILING HEIGHT

- Above Finish Floor (min.): N/A

### DOORS

- Exterior: Powder-coated metal w/ insul'd. core
- Interior: Ptd. hollow core metal w/ vision panel
- Frame: Painted hollow metal
- Special: Sound isolation on interior doors

### WINDOWS

- Natural Light: Required
- Type: Skylights w/ aluminum frame
- Glazing: Insulated w/ low-e coating

### CASEWORK / FIXED EQUIPMENT

- Mop & broom rack: (3 ea) 24"

### FURNISHINGS

- Table: (1 ea) 96"Wx34"Hx48"D
- Task chair: (2 ea) 18"Wx18"Hx16"D
- Tool Boxes: (3 ea) 36"Wx24"D
- Wastecan: (6 ea) 18" diameter

## TECHNICAL REQUIREMENTS

### MECHANICAL

- Outdoor Air: Make-up for exhaust  
Must comply w/ ASHRAE 62.1-2004 (min.)
- Air Circulation: VAV w/ reheat, exhaust (smoke producing areas), exhaust for flammable cabinet
- Summer Design Temp.: 76° F
- Winter Design Temp.: 72° F
- Controls: DDC, Space temperature  
Switched fan exhaust
- Sound Criteria: NC = 35
- Special Systems: Compressed air
- Plumbing: (2) bird-bath type hand sinks  
Emergency shower, (2) eye washes, service sink

### ELECTRICAL

- Power: Duplex receptacles @ 6'-0" o.c.  
Additional capacity for equipment listed
- Data: Outlets @ 24'-0" o.c.  
Additional capacity for equipment listed
- Phone: Minimum two
- Video: Rough-in for future capacity
- Intercom: Required

### LIGHTING

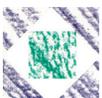
- Fixture Types: T-8 Fluorescent industrial
- Task Light: None required
- Foot Candles: 75
- Controls: Relay control w/ local override

### EQUIPMENT (NIC)

- (3) CNC machining center, (1) CNC turning center QT, (1) CNC turning center w/ bar feed, (2) CNC Lathe TL-1, (2) CNC mills trak, (8) engine lathes, (10) manual mills, (2) haas simulators, (1) drill press, (1) arbor press, (1) hydro press, (1) slant turn CNC lathe.

## CNC / MACHINING SHOP

Machining Technology Program - School of Manufacturing

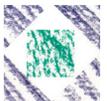




# INDIVIDUAL SPACE DIAGRAMS

**HAVEN J. & BONNIE RAE BARLOW MANUFACTURING TECHNOLOGY BUILDING**  
Davis Applied Technology College

HFS Architects



# INDIVIDUAL SPACE OUTLINE



## GENERAL REQUIREMENTS

### SPACE SUMMARY

- Space Type: High Bay Shop Space
- Number Required: 1
- Number Additional (expansion): 0
- Total Number: 1

### NET AREA SUMMARY

- Area (each): 1,500 sf
- Subtotal Required Area: 1,500 sf
- Subtotal Additional Area: 0 sf
- Total Area: 1,500 sf

### OCCUPANT SUMMARY

- Assigned Occupants: 0
- Users: Faculty / Students

### FUNCTION / TASKS

- Provide an open, flexible and interactive shop-type space.

### RELATIONSHIPS

- Location: First Floor
- Adjacency: CNC/Machining Shop, Faculty Offices, Classrooms, Tool Crib
- Proximity: Grinding & EDM Room
- Separation: Quiet areas, busy public areas

## ARCHITECTURAL REQUIREMENTS

### FINISHES

- Floor: Sealed concrete
- Walls: Painted CMU
- Ceiling: Exposed structure painted
- Sound: None required

### CEILING HEIGHT

- Above Finish Floor (min.): N/A

### DOORS

- None required.

### WINDOWS

- Natural Light: Required
- Type: Skylights w/ aluminum frame
- Glazing: Insulated w/ low-e coating

### CASEWORK / FIXED EQUIPMENT

- None required.

### FURNISHINGS

- Vidmar cabinet: (2 ea) 36"Wx36"D
- Wastecan: (1 ea) 18" diameter

## TECHNICAL REQUIREMENTS

### MECHANICAL

- Outdoor Air: Make-up for exhaust  
Must comply w/ ASHRAE 62.1-2004 (min.)
- Air Circulation: VAV w/ reheat
- Summer Design Temp.: 76° F
- Winter Design Temp.: 72° F
- Controls: DDC, Space temperature
- Sound Criteria: NC = 35
- Special Systems: Compressed air
- Plumbing: None required

### ELECTRICAL

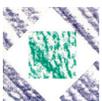
- Power: Duplex receptacles @ 6'-0" o.c.  
Additional capacity for equipment listed
- Data: Outlets @ 12'-0" o.c.  
Additional capacity for equipment listed
- Phone: Minimum one
- Video: Rough-in for future capacity
- Intercom: Required

### LIGHTING

- Fixture Types: T-8 Fluorescent industrial
- Task Light: None required
- Foot Candles: 70/100
- Controls: Relay control w/ local override

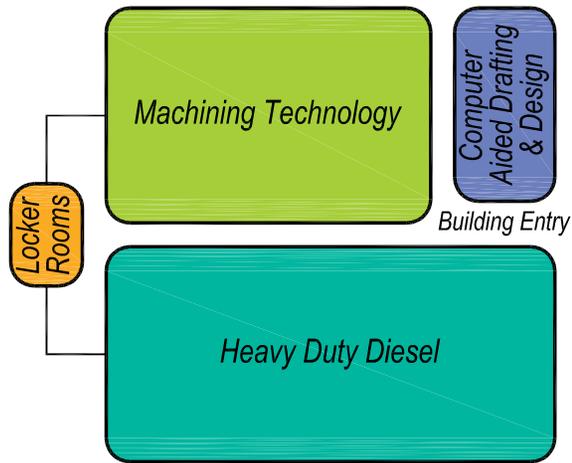
### EQUIPMENT (NIC)

- (1) surface plate, (1) coordinate measuring machine, (1) optical comparator.

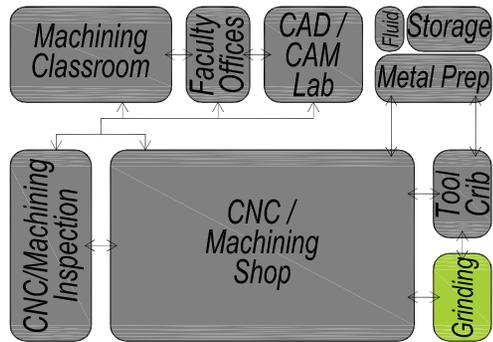




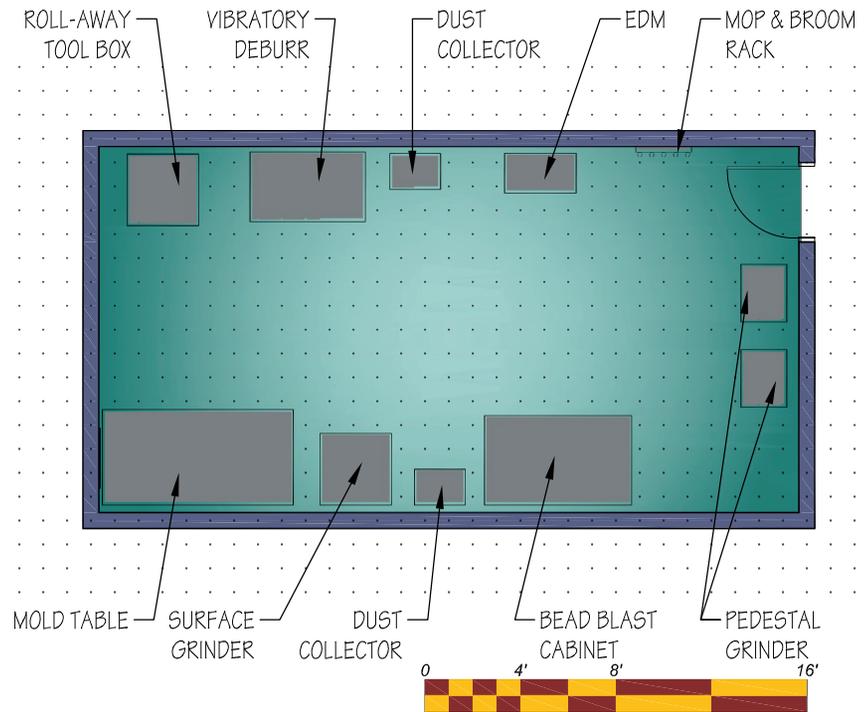
# INDIVIDUAL SPACE DIAGRAMS



First Floor Relationship Diagram

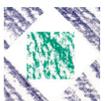


Machining Technology Relationship Diagram



## GRINDING & EDM ROOM

Machining Technology Program - School of Manufacturing



# INDIVIDUAL SPACE OUTLINE



## GENERAL REQUIREMENTS

### SPACE SUMMARY

- Space Type: Enclosed
- Number Required: 1
- Number Additional (expansion): 0
- Total Number: 1

### NET AREA SUMMARY

- Area (each): 450 sf
- Subtotal Required Area: 450 sf
- Subtotal Additional Area: 0 sf
- Total Area: 450 sf

### OCCUPANT SUMMARY

- Assigned Occupants: 0
- Users: Faculty / Students

### FUNCTION / TASKS

- Provide professional workroom for metal grinding and finishing.

### RELATIONSHIPS

- Location: First Floor
- Adjacency: CNC/Machining Shop, CNC/Machining Inspection Area, Metal Prep & Deburr Area,
- Proximity: Faculty Offices, Tool Crib
- Separation: Quiet areas, busy public areas

## ARCHITECTURAL REQUIREMENTS

### FINISHES

- Floor: Sealed concrete
- Walls: Epoxy painted CMU
- Ceiling: Epoxy painted exposed structure
- Sound: None required

### CEILING HEIGHT

- Above Finish Floor (min.): N/A

### DOORS

- Type: Ptd. hollow core metal w/ vision panel
- Frame: Painted hollow metal
- Special: None required

### WINDOWS

- Natural Light: Not required

### CASEWORK / FIXED EQUIPMENT

- Mop & broom rack: (1 ea) 24"

### FURNISHINGS

- Storage cabinet: (1 ea) ??x??
- Bead blast cabinet: (1 ea) 36"Wx30"D
- Mold table: (1 ea) 96"Wx48"D
- Roll-away toolbox: (1 ea) 36"Wx36"D
- Wastecan: (1 ea) 18" diameter

## TECHNICAL REQUIREMENTS

### MECHANICAL

- Outdoor Air: Make-up for exhaust  
Must comply w/ ASHRAE 62.1-2004 (min.)
- Air Circulation: VAV w/ reheat
- Summer Design Temp.: 76° F
- Winter Design Temp.: 72° F
- Controls: DDC, Space temperature
- Sound Criteria: NC = 35
- Special Systems: Compressed air  
Exhaust for EDM machine
- Plumbing: Hose bibb

### ELECTRICAL

- Power: Duplex receptacles @ 6'-0" o.c.  
Two 220 v outlets  
Additional capacity for equipment listed
- Data: One per wall (min.)  
Additional capacity for equipment listed
- Phone: Minimum one
- Video: Rough-in for future capacity
- Intercom: Required

### LIGHTING

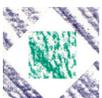
- Fixture Types: T-8 Fluorescent industrial
- Task Light: None required
- Foot Candles: 70-75
- Controls: Relay control w/ local override

### EQUIPMENT (NIC)

- (1) EDM, (1) surface grinder, (2) pedestal grinders, (1) vibratory deburr, (2) dust collectors.

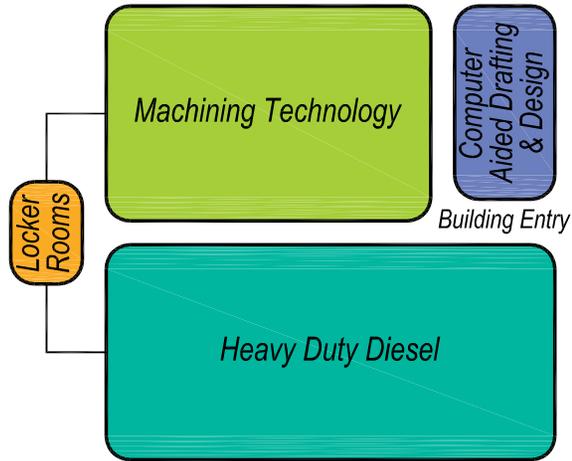
## GRINDING & EDM ROOM

Machining Technology Program - School of Manufacturing

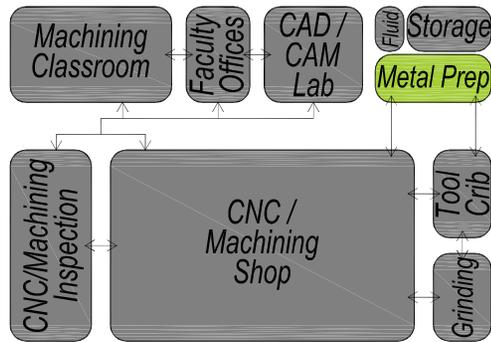




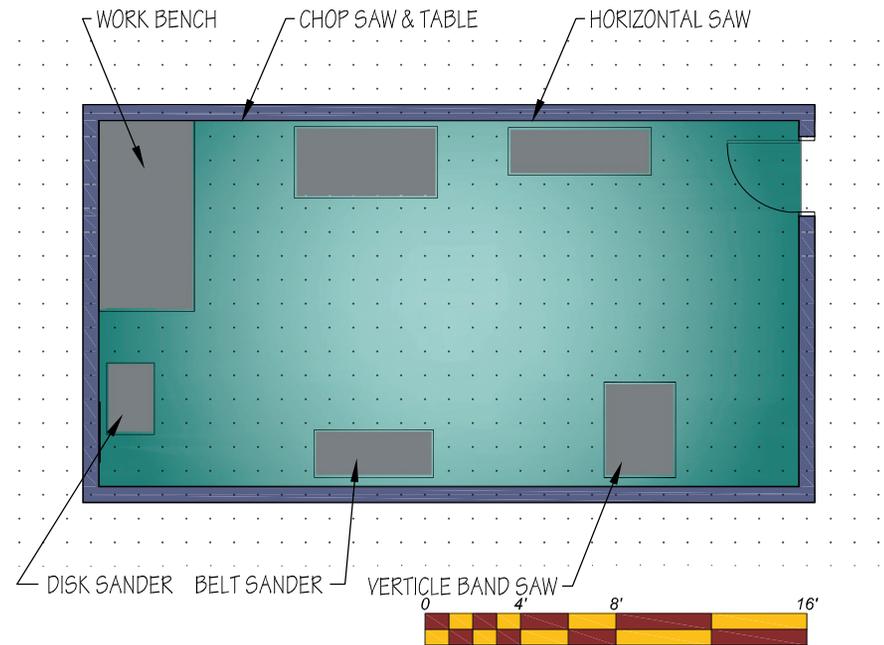
# INDIVIDUAL SPACE DIAGRAMS



First Floor Relationship Diagram

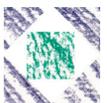


Machining Technology Relationship Diagram



## METAL PREP & DEBURR AREA

Machining Technology Program - School of Manufacturing



# INDIVIDUAL SPACE OUTLINE



## GENERAL REQUIREMENTS

### SPACE SUMMARY

- Space Type: Open
- Number Required: 1
- Number Additional (expansion): 0
- Total Number: 1

### NET AREA SUMMARY

- Area (each): 525 sf
- Subtotal Required Area: 525 sf
- Subtotal Additional Area: 0 sf
- Total Area: 525 sf

### OCCUPANT SUMMARY

- Assigned Occupants: 0
- Users: Faculty / Students

### FUNCTION / TASKS

- Provide professional space for accepting deliveries & preparing metal for storage.

### RELATIONSHIPS

- Location: First Floor
- Adjacency: CNC/Machining Shop, Grinding & EDM Room, Storage Rooms
- Proximity: Faculty Offices, Tool Crib
- Separation: Quiet areas, busy public areas

## ARCHITECTURAL REQUIREMENTS

### FINISHES

- Floor: Sealed concrete
- Walls: Painted CMU
- Ceiling: Exposed structure painted
- Sound: None required

### CEILING HEIGHT

- Above Finish Floor (min.): N/A

### DOORS

- Type: Powder-coated metal w/ insul'd. core
- Overhead: Motorized, powder-coated metal w/ insul'd. core
- Frame: Painted hollow metal
- Special: None required

### WINDOWS

- Natural Light: Not required

### CASEWORK / FIXED EQUIPMENT

- None required.

### FURNISHINGS

- Work bench: (1 ea) 96"Wx48"D
- Chop saw table: (1 ea) 72"Wx36"D
- Wastecan: (1 ea) 18" diameter

## TECHNICAL REQUIREMENTS

### MECHANICAL

- Outdoor Air: 5 cfm/person + 0.06 cfm/sf
- Air Circulation: VAV w/ reheat
- Summer Design Temp.: 76° F
- Winter Design Temp.: 72° F
- Controls: DDC, Space temperature
- Sound Criteria: NC = 35
- Special Systems: Compressed air
- Plumbing: None required

### ELECTRICAL

- Power: Duplex receptacles @ 6'-0" o.c.  
Two 220 v 3-phase outlets  
Additional capacity for equipment listed
- Data: Minimum one
- Phone: Minimum one
- Video: Rough-in for future capacity
- Intercom: Required

### LIGHTING

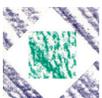
- Fixture Types: T-8 Fluorescent industrial
- Task Light: None required
- Foot Candles: 45-50
- Controls: Occupancy sensor w/ local override

### EQUIPMENT (NIC)

- (2) Bench vices, (1) horizontal saw, (1) vertical band saw, (1) belt sander & disc sander, (1) chop saw.

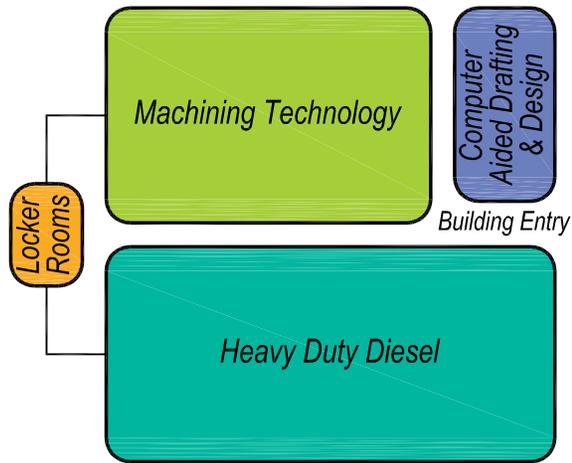
## METAL PREP & DEBURR AREA

Machining Technology Program - School of Manufacturing

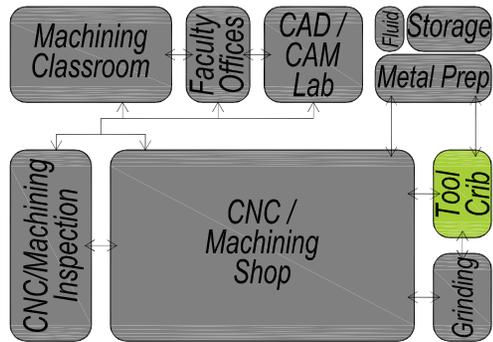




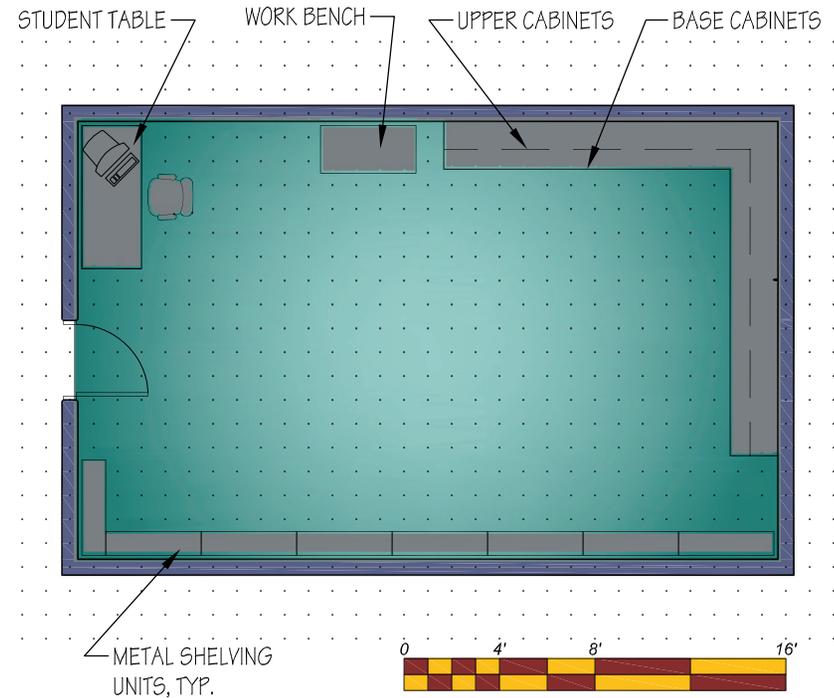
# INDIVIDUAL SPACE DIAGRAMS



First Floor Relationship Diagram

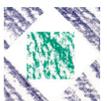


Machining Technology Relationship Diagram



## TOOL CRIB

Machining Technology Program - School of Manufacturing



# INDIVIDUAL SPACE OUTLINE



## GENERAL REQUIREMENTS

### SPACE SUMMARY

- Space Type: Storage
- Number Required: 1
- Number Additional (expansion): 0
- Total Number: 1

### NET AREA SUMMARY

- Area (each): 450 sf
- Subtotal Required Area: 450 sf
- Subtotal Additional Area: 0 sf
- Total Area: 450 sf

### OCCUPANT SUMMARY

- Assigned Occupants: 0
- Users: Faculty / Students

### FUNCTION / TASKS

- Provide secure storage for tools.

### RELATIONSHIPS

- Location: First Floor
- Adjacency: CNC/Machining Shop,
- Proximity: Grinding & EDM Room, Metal Prep & Deburr Area
- Separation: None required

## ARCHITECTURAL REQUIREMENTS

### FINISHES

- Floor: Sealed concrete
- Walls: Painted CMU
- Ceiling: Exposed structure painted
- Sound: None required

### CEILING HEIGHT

- Above Finish Floor (min.): N/A

### DOORS

- Type: Painted hollow core metal
- Frame: Painted hollow metal
- Special: Dutch/split door

### WINDOWS

- Natural Light: Not required

### CASEWORK / FIXED EQUIPMENT

- None required.

### FURNISHINGS

- Metal shelving units: (?? ea) ??'x??'x??
- Metal storage cabinet: (?? ea) ??'x??'
- Student table: (1 ea) 42"Wx27"Hx24"D
- Task chair: (1 ea) 18"Wx18"Hx16"D
- Wastecan: (1 ea) 14" diameter

## TECHNICAL REQUIREMENTS

### MECHANICAL

- Outdoor Air: 5 cfm/person + .06 cfm/sf
- Air Circulation: VAV w/ reheat
- Summer Design Temp.: 76° F
- Winter Design Temp.: 73° F
- Controls: DDC, Space temperature
- Sound Criteria: NC = 35
- Special Systems: Dryer for compressed air
- Plumbing: None required

### ELECTRICAL

- Power: Duplex receptacles 10'-0" o.c.  
One per wall (min.)  
Additional capacity for equipment listed
- Data: Capacity for two computers (min.)
- Phone: Minimum one
- Video: Rough-in for future capacity
- Intercom: Required

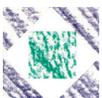
### LIGHTING

- Fixture Types: T-8 Fluorescent industrial
- Task Light: Required at all work surfaces
- Foot Candles: 40
- Controls: Occupancy sensor w/ local override

### EQUIPMENT (NIC)

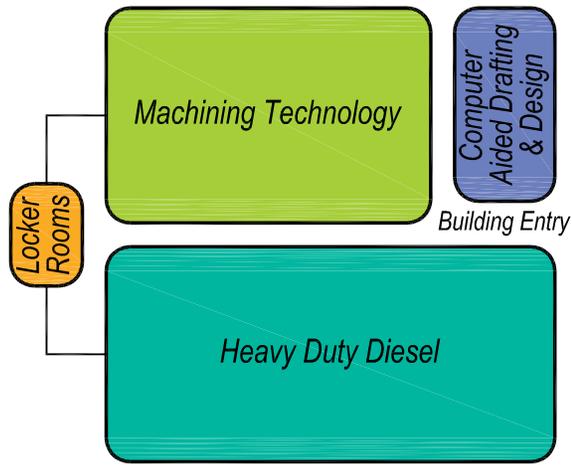
- Desktop computer and printer.

## TOOL CRIB

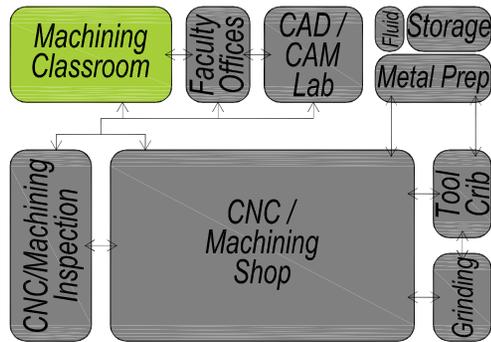




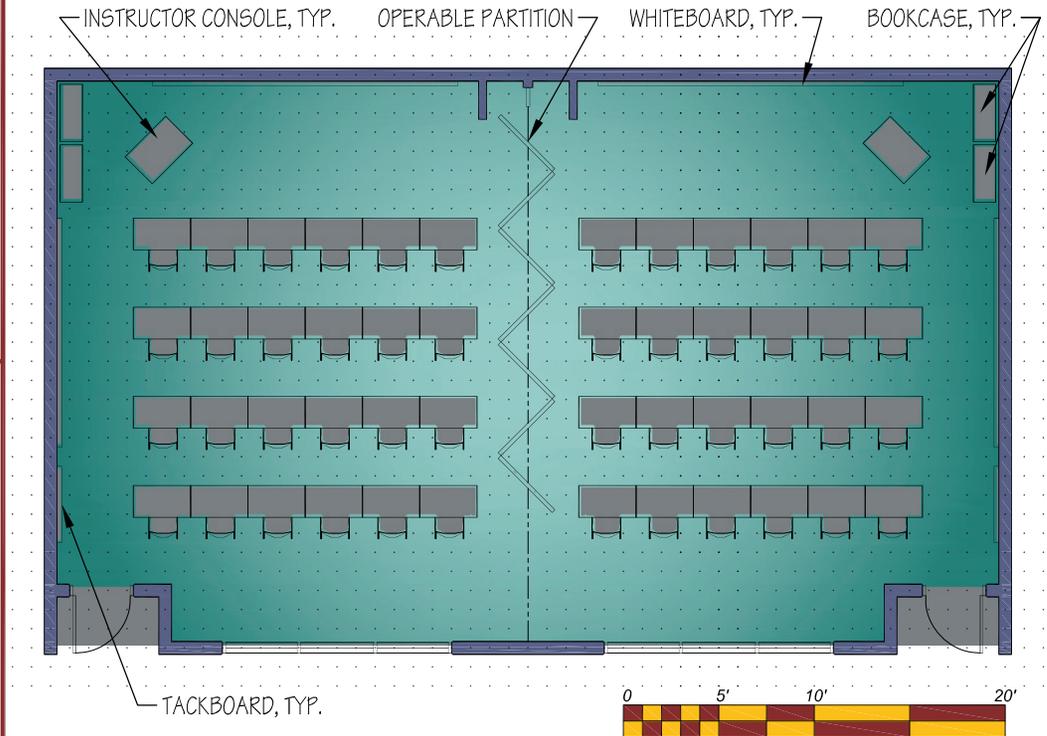
# INDIVIDUAL SPACE DIAGRAMS



First Floor Relationship Diagram

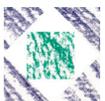


Machining Technology Relationship Diagram



## CLASSROOM

Machining Technology Program - School of Manufacturing



# INDIVIDUAL SPACE OUTLINE



## GENERAL REQUIREMENTS

### SPACE SUMMARY

• Space Type:	Classroom
• Number Required:	1
• Number Additional (expansion):	0
• Total Number:	1

### NET AREA SUMMARY

• Area (each):	1,500 sf
• Subtotal Required Area:	1,500 sf
• Subtotal Additional Area:	0 sf
• Total Area:	1,500 sf

### OCCUPANT SUMMARY

• Student Stations:	50
• Area Per Station:	30 sf

### FUNCTION / TASKS

- Provide a flexible multipurpose classroom.

### RELATIONSHIPS

• Location:	First Floor
• Adjacency:	Faculty Offices, CAD/CAM Lab
• Proximity:	CNC Machining Shop
• Separation:	Mechanical & Elevator Rooms Other noisy functions

## ARCHITECTURAL REQUIREMENTS

### FINISHES

• Floor:	Static-free carpet w/ 4" rubber base
• Walls:	Painted gypsum board w/ chair rail
• Ceiling:	Susp. 2x2 grid w/ acoustical panels
• Sound:	Full sound construction

### CEILING HEIGHT

• Above Finish Floor (min.):	10'-0"
------------------------------	--------

### DOORS

• Type:	Painted hollow core metal
• Frame:	Ptd. hollow metal w/ glazed sidelight
• Special:	Sound isolation
• Operable Partition:	(1 ea) equal to the length of the room , STC 53

### WINDOWS

• Natural Light:	Desirable
• Interior Windows:	(2 ea) 144"Wx48"H painted hollow metal frame

### CASEWORK / FIXED EQUIPMENT

• Whiteboard, map rail, tray:	(4 ea) 144"Wx48"H
• Tackboard w/ frame:	(8 ea) 48"Wx48"H
• Instructor console:	(1 ea) 36"Wx42"Hx30"D
• Bookshelves:	(2 ea) 36"Wx88"Hx14"D
• Cabinet (full height) w/ adjustable shelves & lockable doors:	(1) 36"Wx88"Hx24"D
• Clock:	(1)
• Project mounts/ports & cable connections:	(1)

### FURNISHINGS

• Student tables:	(30 ea) 42"Wx27"Hx24"D
• Task chair:	(30 ea) 18"Wx18"Hx16"D
• Wastecan:	(2 ea) 14" diameter

## TECHNICAL REQUIREMENTS

### MECHANICAL

• Outdoor Air:	10 cfm/person + 0.12 cfm/sf
• Air Circulation:	VAV w/ reheat
• Summer Design Temp.:	76° F
• Winter Design Temp.:	72° F
• Controls:	DDC, Space temperature
• Sound Criteria:	NC = 35
• Special Systems:	10+ Computers
• Plumbing:	None required

### ELECTRICAL

• Power:	Duplex receptacles two each wall Additional capacity for equipment listed
• Data:	Two per wall (min.)
• Phone:	Minimum one
• Video:	Ceiling recessed LCD projector w/ classroom sound amplification system
• Intercom:	Required

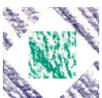
### LIGHTING

• Fixture Types:	T-8 Fluorescent lay-in
• Task Light:	None required
• Foot Candles:	45-50
• Controls:	Occupancy sensor w/ local override

### EQUIPMENT (NIC)

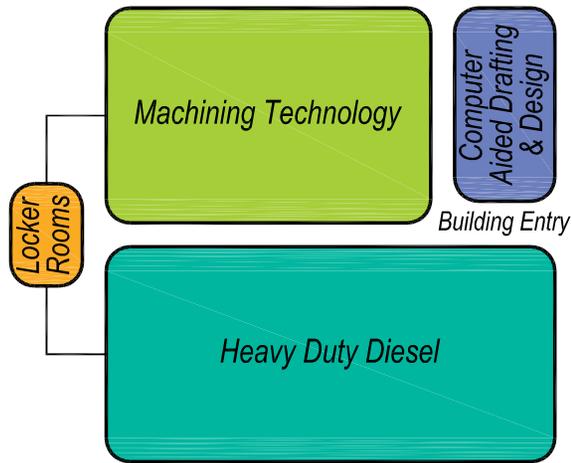
• Capacity for (4) desktop computers, overhead, opaque, slide & film projectors, VHS & DVD players, audio devices, laser printer, scanner.
• (1) Elmo desktop presentation unit.

## CLASSROOM

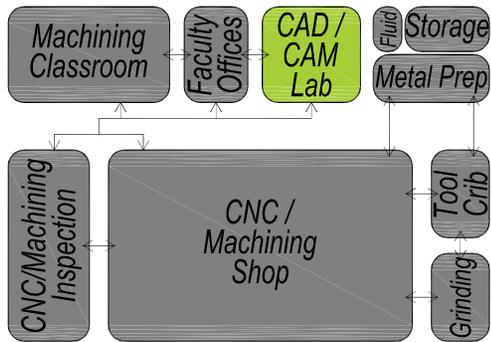




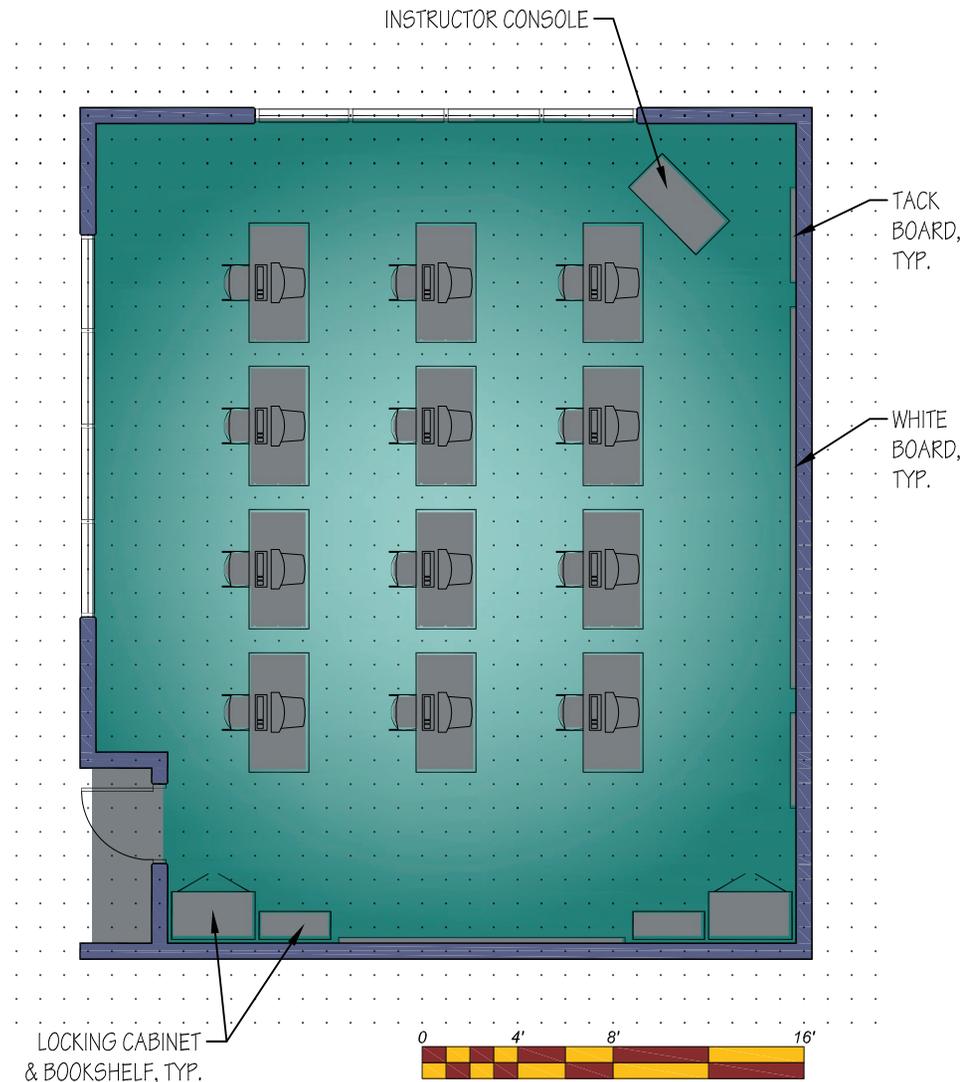
# INDIVIDUAL SPACE DIAGRAMS



First Floor Relationship Diagram



Machining Technology Relationship Diagram



## CAD / CAM LAB

Machining Technology Program - School of Manufacturing

# INDIVIDUAL SPACE OUTLINE



## GENERAL REQUIREMENTS

### SPACE SUMMARY

• Space Type:	Classroom
• Number Required:	1
• Number Additional (expansion):	0
• Total Number:	1

### NET AREA SUMMARY

• Area (each):	900 sf
• Subtotal Required Area:	900 sf
• Subtotal Additional Area:	0 sf
• Total Area:	900 sf

### OCCUPANT SUMMARY

• Student Stations:	20
• Area Per Station:	45 sf

### FUNCTION / TASKS

- Provide a flexible multipurpose computer lab.

### RELATIONSHIPS

• Location:	First Floor
• Adjacency:	Faculty Offices, Classroom
• Proximity:	CNC Machining Shop
• Separation:	Mechanical & Elevator Rooms Other noisy functions

## ARCHITECTURAL REQUIREMENTS

### FINISHES

• Floor:	Static-free carpet w/ 4" rubber base
• Walls:	Painted gypsum board w/ chair rail
• Ceiling:	Susp. 2x2 grid w/ acoustical panels
• Sound:	Full sound construction

### CEILING HEIGHT

• Above Finish Floor (min.):	10'-0"
------------------------------	--------

### DOORS

• Type:	Painted hollow core metal
• Frame:	Ptd. hollow metal w/ glazed sidelight
• Special:	Sound isolation

### WINDOWS

• Natural Light:	Desirable
• Interior Window:	192"Wx48"H ptd. HM frame

### CASEWORK / FIXED EQUIPMENT

• Whiteboard, map rail, tray:	(2 ea) 144"Wx48"H
• Tackboard w/ frame:	(4 ea) 48"Wx48"H
• Instructor console:	(1 ea) 36"Wx42"Hx30"D
• Bookshelves:	(2 ea) 36"Wx88"Hx14"D
• Cabinet (full height) w/ adjustable shelves & lockable doors:	(1) 36"Wx88"Hx24"D
• Cabinet (full height) w/ adjustable shelves & lockable doors:	(1) 36"Wx88"Hx24"D
• Clock:	(1)
• Project mounts/ports & cable connections:	(1)

### FURNISHINGS

• Student tables:	(20 ea) 42"Wx27"Hx24"D
• Task chair:	(20 ea) 18"Wx18"Hx16"D
• Wastecan:	(2 ea) 14" diameter

## TECHNICAL REQUIREMENTS

### MECHANICAL

• Outdoor Air:	10 cfm/person + 0.12 cfm/sf
• Air Circulation:	VAV w/ reheat
• Summer Design Temp.:	76° F
• Winter Design Temp.:	72° F
• Controls:	DDC, Space temperature
• Sound Criteria:	NC = 35
• Special Systems:	20 Computers
• Plumbing:	None required

### ELECTRICAL

• Power:	Duplex receptacles @ 12'-0" o.c. One fourplex receptacle per station Additional capacity for equipment listed
• Data:	One per station (min.) Additional capacity for equipment listed
• Phone:	Minimum one
• Video:	Ceiling recessed LCD projector w/ classroom sound amplification system
• Intercom:	Required

### LIGHTING

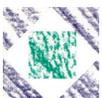
• Fixture Types:	T-8 Fluorescent indirect lay-in
• Task Light:	None required
• Foot Candles:	55-60
• Controls:	Occupany sensor w/ local override

### EQUIPMENT (NIC)

• Capacity for (20) desktop computers, overhead, opaque, slide & film projectors, VHS & DVD players, audio devices, laser printer.
• (1) Smart board.
• (1) Elmo desktop presentation unit.

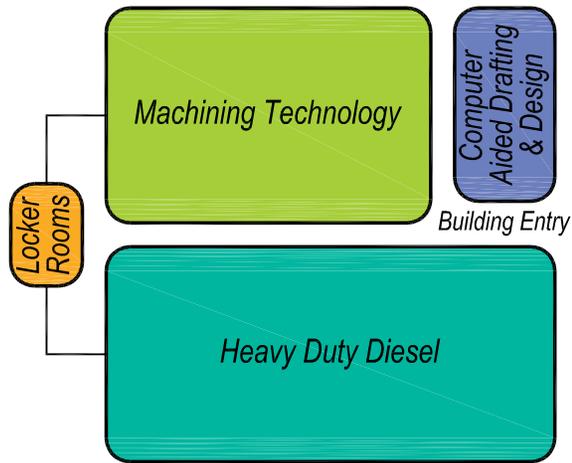
## CAD / CAM LAB

Machining Technology Program - School of Manufacturing

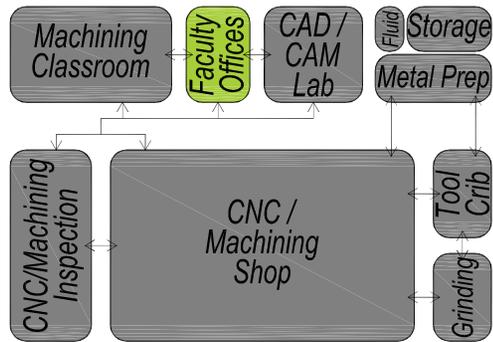




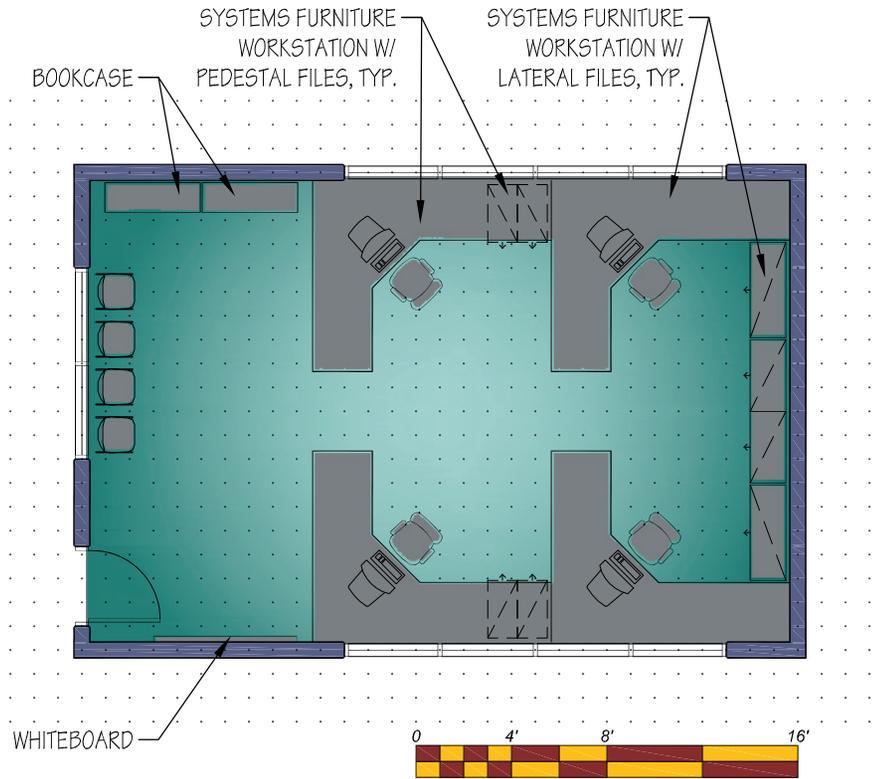
# INDIVIDUAL SPACE DIAGRAMS



First Floor Relationship Diagram

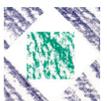


Machining Technology Relationship Diagram



## FACULTY OFFICE / WORKROOM

Machining Technology Program - School of Manufacturing



# INDIVIDUAL SPACE OUTLINE



## GENERAL REQUIREMENTS

### SPACE SUMMARY

- Space Type: Enclosed
- Number Required: 1
- Number Additional (expansion): 0
- Total Number: 1

### NET AREA SUMMARY

- Area (each): 600 sf
- Subtotal Required Area: 600 sf
- Subtotal Additional Area: 0 sf
- Total Area: 600 sf

### OCCUPANT SUMMARY

- Assigned Occupants: 4
- Visitors: 2

### FUNCTION / TASKS

- Provide professional workspace for general office work and conferencing.

### RELATIONSHIPS

- Location: First Floor
- Adjacency: CNC Machining Shop, Classrooms  
CAD/CAM Lab
- Proximity: Tool Crib, Storage Rooms
- Separation: Mechanical & Elevator Rooms  
Other noisy functions

## ARCHITECTURAL REQUIREMENTS

### FINISHES

- Floor: Static-free carpet w/ 4" rubber base
- Walls: Painted gypsum board
- Ceiling: Susp. 2x2 grid w/ acoustical panels
- Sound: Full sound construction

### CEILING HEIGHT

- Above Finish Floor (min.): 10'-0"

### DOORS

- Type: Painted hollow core metal
- Frame: Ptd. hollow metal w/ glazed sidelight
- Special: Sound isolation

### WINDOWS

- Natural Light: Desirable
- Interior Windows: 96"Wx48"H ptd. HM frame

### CASEWORK / FIXED EQUIPMENT

- Whiteboard, map rail, tray: (1 ea) 48"Wx48"H
- Tackboard w/ frame: (2 ea) 248Wx48"H
- Clock: (1)

### FURNISHINGS

- System furniture workstation: (4 ea) 64 sf
- 2-Drawer lateral file: (4 ea) 42"Wx24"Hx18"D
- Task chair: (4 ea) 18"Wx18"Hx16"D
- Side chair: (2 ea) 16"Wx18"Hx16"D
- Wastecan: (4 ea) 14" diameter

## TECHNICAL REQUIREMENTS

### MECHANICAL

- Outdoor Air: 5 cfm/person + 0.06 cfm/sf
- Air Circulation: VAV w/ reheat
- Summer Design Temp.: 76° F
- Winter Design Temp.: 73° F
- Controls: DDC, Space temperature
- Sound Criteria: NC - 35
- Special Systems: HVAC loads (4+ computers)
- Plumbing: None required

### ELECTRICAL

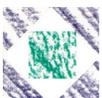
- Power: Duplex receptacles @ 10'0" o.c.  
Fourplex receptacles one per workstation  
Additional capacity for equipment listed
- Data: Minimum two per workstation  
Additional capacity for equipment listed
- Phone: Minimum one per workstation
- Video: Rough-in for future capacity
- Intercom: Required

### LIGHTING

- Fixture Types: T-8 Fluorescent lay-in
- Task Light: Required at all work surfaces
- Foot Candles: 45-50
- Controls: Occupancy sensor w/ local override

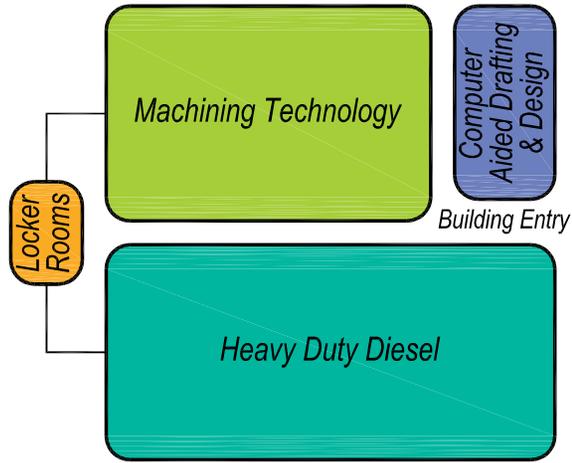
### EQUIPMENT (NIC)

- Capacity for desktop computer, laser printer & scanner at each workstation.
- (2) Desktop copiers.

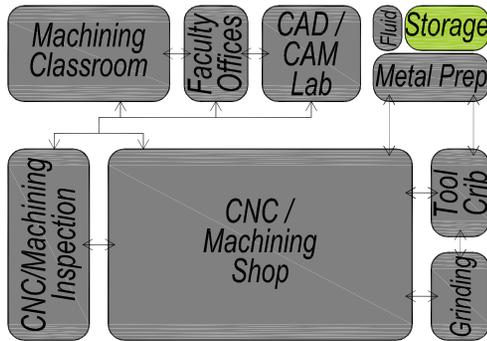




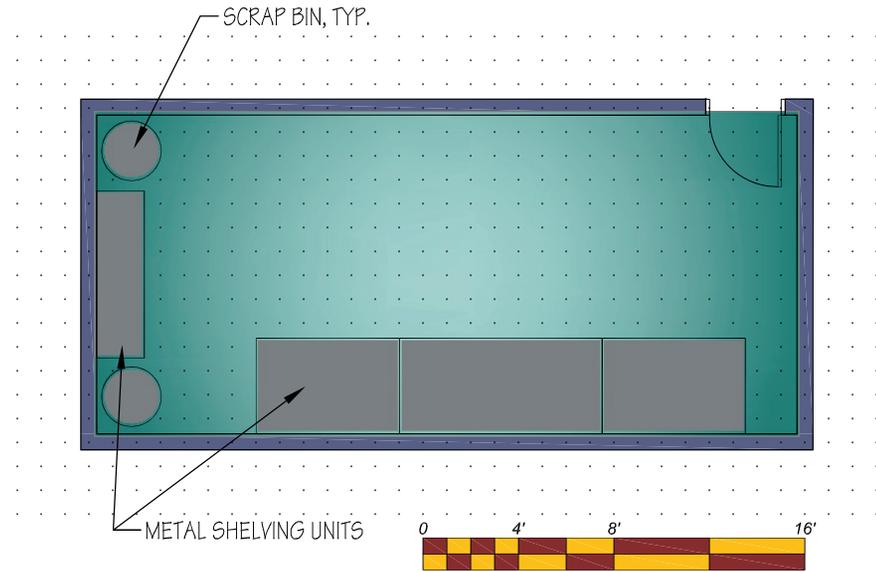
# INDIVIDUAL SPACE DIAGRAMS



First Floor Relationship Diagram



Machining Technology Relationship Diagram



## METAL STORAGE ROOM

Machining Technology Program - School of Manufacturing

# INDIVIDUAL SPACE OUTLINE



## GENERAL REQUIREMENTS

### SPACE SUMMARY

- Space Type: Storage
- Number Required: 1
- Number Additional (expansion): 0
- Total Number: 1

### NET AREA SUMMARY

- Area (each): 375 sf
- Subtotal Required Area: 375 sf
- Subtotal Additional Area: 0 sf
- Total Area: 375 sf

### OCCUPANT SUMMARY

- Assigned Occupants: 0
- Users: Faculty / Students

### FUNCTION / TASKS

- Provide secure storage for metal stock & supplies.

### RELATIONSHIPS

- Location: First Floor
- Adjacency: Metal Prep & Deburr Room, Fluid Storage
- Proximity: CNC Machining Shop, Grinding & EDM Room
- Separation: None required

## ARCHITECTURAL REQUIREMENTS

### FINISHES

- Floor: Sealed concrete
- Walls: Painted CMU
- Ceiling: Exposed structure painted
- Sound: None required

### CEILING HEIGHT

- Above Finish Floor (min.): N/A

### DOORS

- None required.
- Special: (20 lf) Chain link fencing & gate

### WINDOWS

- Natural Light: Not required

### CASEWORK / FIXED EQUIPMENT

- None required.

### FURNISHINGS

- Metal shelving unit: (2 ea) 72"Wx48"D
- Metal shelving unit: (1 ea) 102"Wx48"D
- Metal shelving unit: (1 ea) 84"Wx24"D
- Scrap bin: (2 ea) 30" diameter

## TECHNICAL REQUIREMENTS

### MECHANICAL

- Outdoor Air: 5 cfm/person + 0.06 cfm/sf
- Air Circulation: VAV w/ reheat
- Summer Design Temp.: 76° F
- Winter Design Temp.: 73° F
- Controls: DDC, Space temperature
- Sound Criteria: NC - 35
- Special Systems: None required
- Plumbing: None required

### ELECTRICAL

- Power: Duplex receptacles @ 10'-0" o.c. One per wall (min.)
- Data: Minimum one
- Phone: Minimum one
- Video: Rough-in for future capacity
- Intercom: Rough-in for future capacity

### LIGHTING

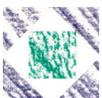
- Fixture Types: T-8 Fluorscent industrial
- Task Light: None required
- Foot Candles: 30
- Controls: Occupancy sensor w/ local override

### EQUIPMENT (NIC)

- None required.

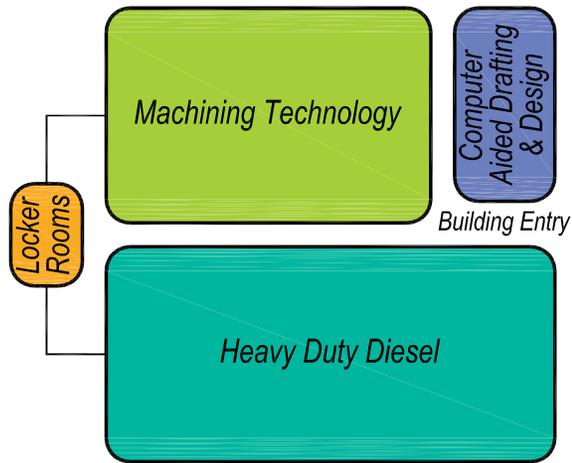
## METAL STORAGE ROOM

Machining Technology Program - School of Manufacturing

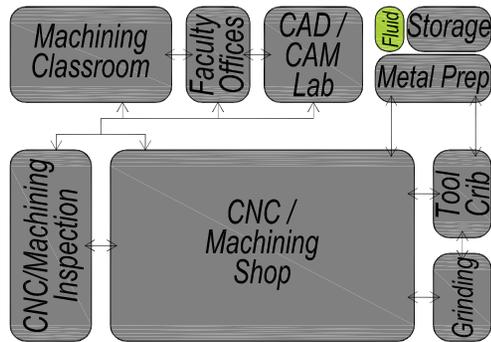




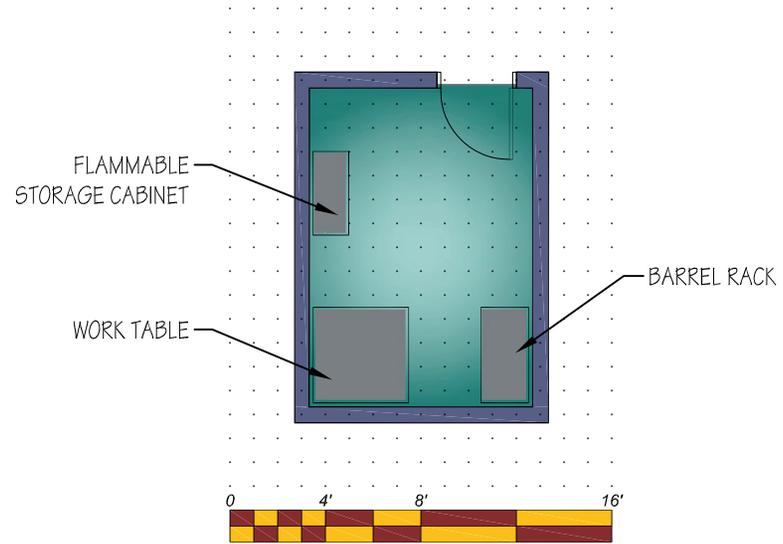
# INDIVIDUAL SPACE DIAGRAMS



First Floor Relationship Diagram



Machining Technology Relationship Diagram



## FLUID STORAGE ROOM

Machining Technology Program - School of Manufacturing

# INDIVIDUAL SPACE OUTLINE



## GENERAL REQUIREMENTS

### SPACE SUMMARY

- Space Type: Storage
- Number Required: 1
- Number Additional (expansion): 0
- Total Number: 1

### NET AREA SUMMARY

- Area (each): 150 sf
- Subtotal Required Area: 150 sf
- Subtotal Additional Area: 0 sf
- Total Area: 150 sf

### OCCUPANT SUMMARY

- Assigned Occupants: 0
- Users: Faculty / Students

### FUNCTION / TASKS

- Provide secure storage for solvents.

### RELATIONSHIPS

- Location: First Floor
- Adjacency: Metal Prep & Deburr Room, Metal Storage
- Proximity: CNC Machining Shop, Grinding & EDM Room
- Separation: None required

## ARCHITECTURAL REQUIREMENTS

### FINISHES

- Floor: Sealed concrete
- Walls: Painted CMU
- Ceiling: Exposed structure painted
- Sound: None required

### CEILING HEIGHT

- Above Finish Floor (min.): N/A

### DOORS

- Type: Painted hollow core metal
- Frame: Ptd. hollow metal w/ glazed sidelight
- Special: None required

### WINDOWS

- Natural Light: Not required

### CASEWORK / FIXED EQUIPMENT

- None required.

### FURNISHINGS

- Barrel rack: (1 ea) 48"Wx24"D
- Flammable storage cabinet: (1 ea) 42"Wx18"D
- Work table: (1 ea) 48"Wx48"D

## TECHNICAL REQUIREMENTS

### MECHANICAL

- Outdoor Air: Make-up for exhaust  
Must comply w/ ASHRAE 62.1-2004 (min.)
- Air Circulation: VAV w/ reheat  
Exhaust for flammable cabinet
- Summer Design Temp.: 76° F
- Winter Design Temp.: 72° F
- Controls: DDC, Space temperature
- Sound Criteria: None required
- Special Systems: Compressed air
- Plumbing: Hose bibb, mop sink, floor drain

### ELECTRICAL

- Power: Duplex receptacles @ 10'-0" o.c.  
One per wall (min.)
- Data: Minimum one
- Phone: Minimum one
- Video: Rough-in for future capacity
- Intercom: Rough-in for future capacity

### LIGHTING

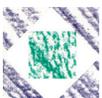
- Fixture Types: T-8 Fluorscent industrial
- Task Light: None required
- Foot Candles: 30
- Controls: Occupancy sensor w/ local override

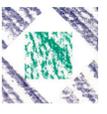
### EQUIPMENT (NIC)

- None required.

## FLUID STORAGE ROOM

Machining Technology Program - School of Manufacturing

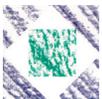
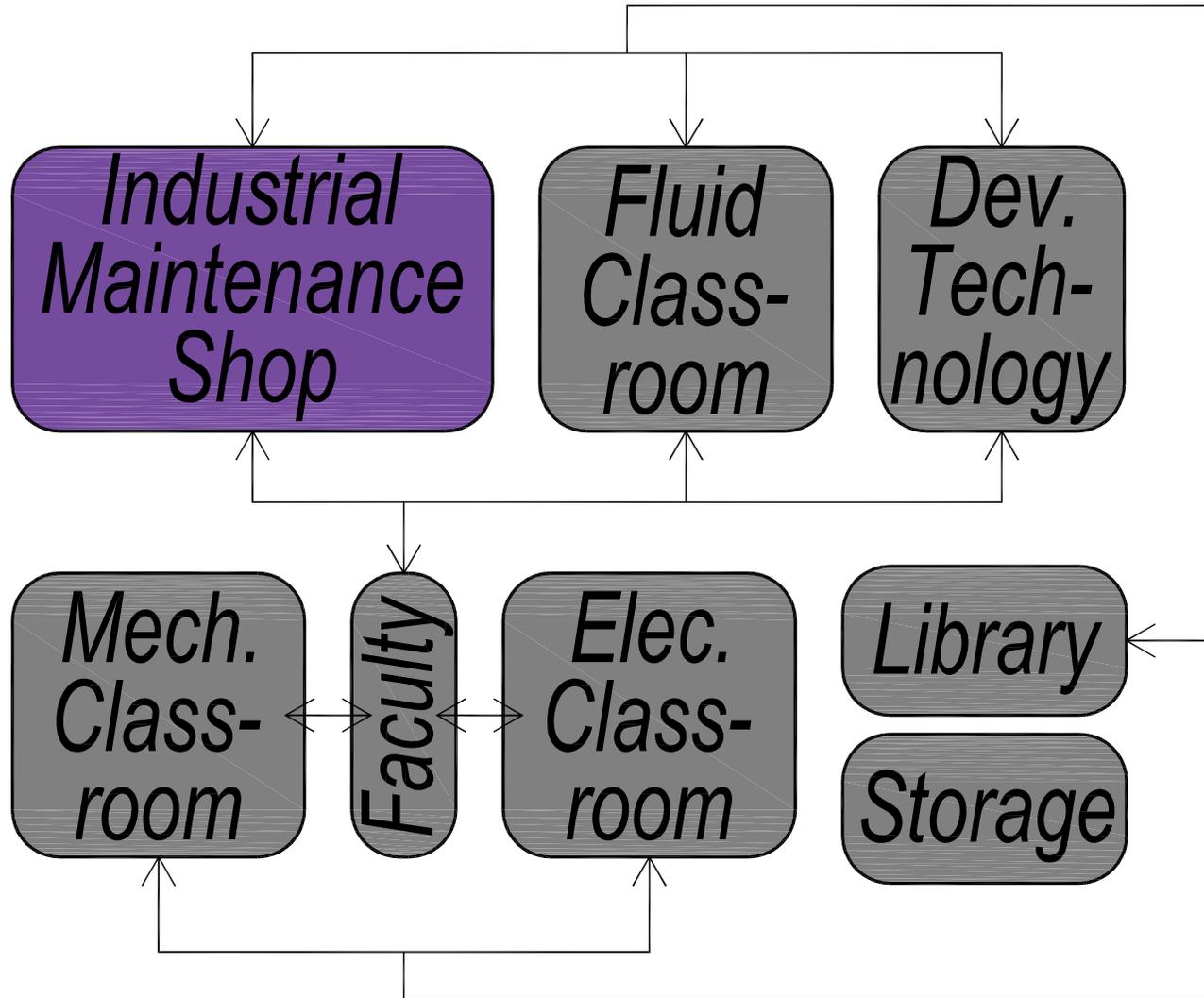




# INDIVIDUAL SPACE REQUIREMENTS



INDUSTRIAL AUTOMATION MAINTENANCE RELATIONSHIP DIAGRAM

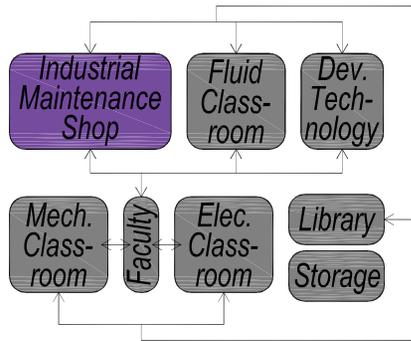




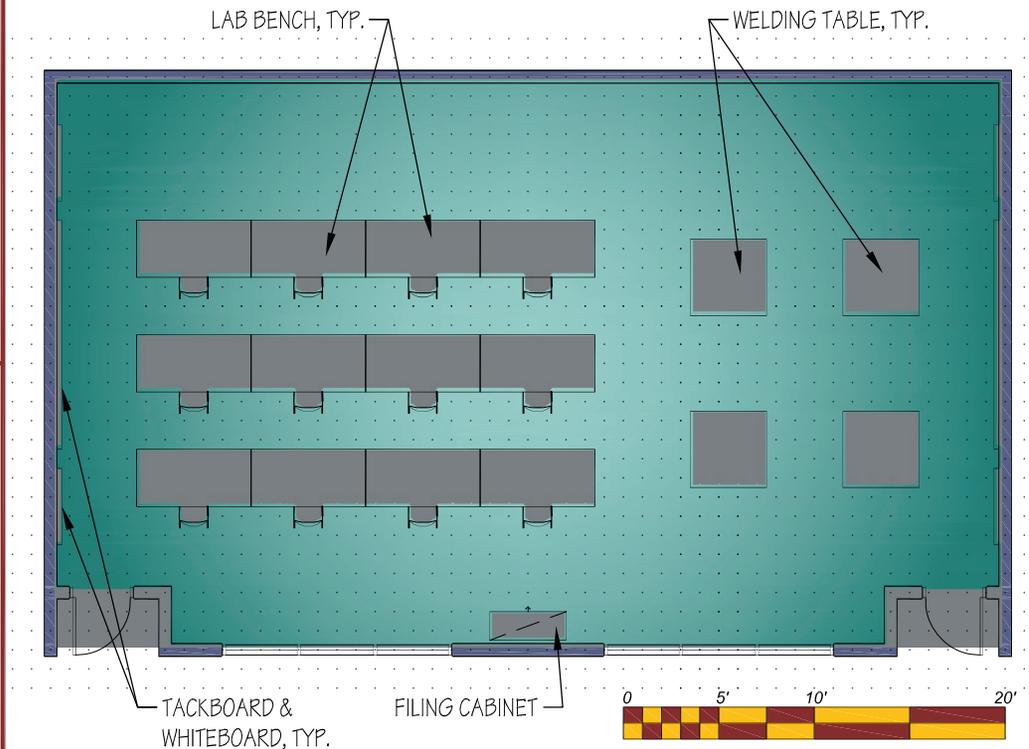
# INDIVIDUAL SPACE DIAGRAMS



Second Floor Relationship Diagram



Industrial Automation Maintenance Relationship Diagram



## INDUSTRIAL MAINTENANCE SHOP

Industrial Automation Maintenance Program - School of Manufacturing

# INDIVIDUAL SPACE OUTLINE



## GENERAL REQUIREMENTS

### SPACE SUMMARY

- Space Type: Classroom
- Number Required: 1
- Number Additional (expansion): 0
- Total Number: 1

### NET AREA SUMMARY

- Area (each): 1,500 sf
- Subtotal Required Area: 1,500 sf
- Subtotal Additional Area: 0 sf
- Total Area: 1,500 sf

### OCCUPANT SUMMARY

- Student Stations: 20
- Area Per Station: 75 sf

### FUNCTION / TASKS

- Provide an open, flexible and interactive shop-type space.

### RELATIONSHIPS

- Location: Second Floor
- Adjacency: Faculty Offices, Other IAM Classrooms
- Proximity: Storage, Media/Video Library
- Separation: None required

## ARCHITECTURAL REQUIREMENTS

### FINISHES

- Floor: Sealed concrete
- Walls: Painted CMU
- Ceiling: Exposed structure painted
- Sound: Full sound construction

### CEILING HEIGHT

- Above Finish Floor (min.): N/A

### DOORS

- Type: Painted hollow core metal
- Frame: Ptd. hollow metal
- Special: Sound isolation

### WINDOWS

- Natural Light: Required
- Type: Skylights w/ aluminum frame
- Glazing: Insulated w/ low-e coating
- Interior Windows: 48" high painted HM frame

### CASEWORK / FIXED EQUIPMENT

- None required.

### FURNISHINGS

- 3-Drawer fire cabinet (1 ea) 29"Wx29"Hx18"D
- Lab tables: (12 ea) 72"Wx30"D
- Lab chairs: (12 ea) 18"Wx18"D
- Wastecan: (2 ea) 14" diameter

## TECHNICAL REQUIREMENTS

### MECHANICAL

- Outdoor Air: 10 cfm/person + 0.12 cfm/sf
- Air Circulation: VAV w/ reheat
- Summer Design Temp.: 76° F
- Winter Design Temp.: 72° F
- Controls: DDC, Space temperature
- Sound Criteria: NC = 35
- Special Systems: 10+ Computers
- Plumbing: None required

### ELECTRICAL

- Power: Duplex receptacles @ 6'-0" o.c.  
Additional capacity for equipment listed
- Data: Two per wall (min.)  
Wireless airport
- Phone: Minimum one
- Video: Ceiling recessed LCD projector  
w/ classroom sound amplification system
- Intercom: Required

### LIGHTING

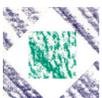
- Fixture Types: T-8 Fluorescent lay-in
- Task Light: None required
- Foot Candles: 50
- Controls: Occupany sensor w/ local override

### EQUIPMENT (NIC)

- (4) Soldering stations, (10) electronic sets.

## INDUSTRIAL MAINTENANCE SHOP

Industrial Automation Maintenance Program - School of Manufacturing

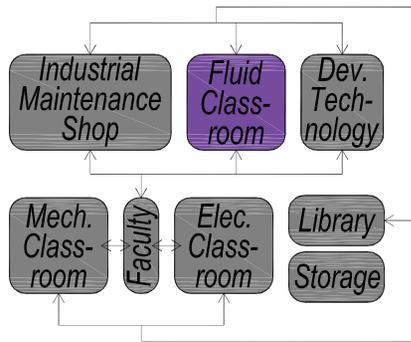




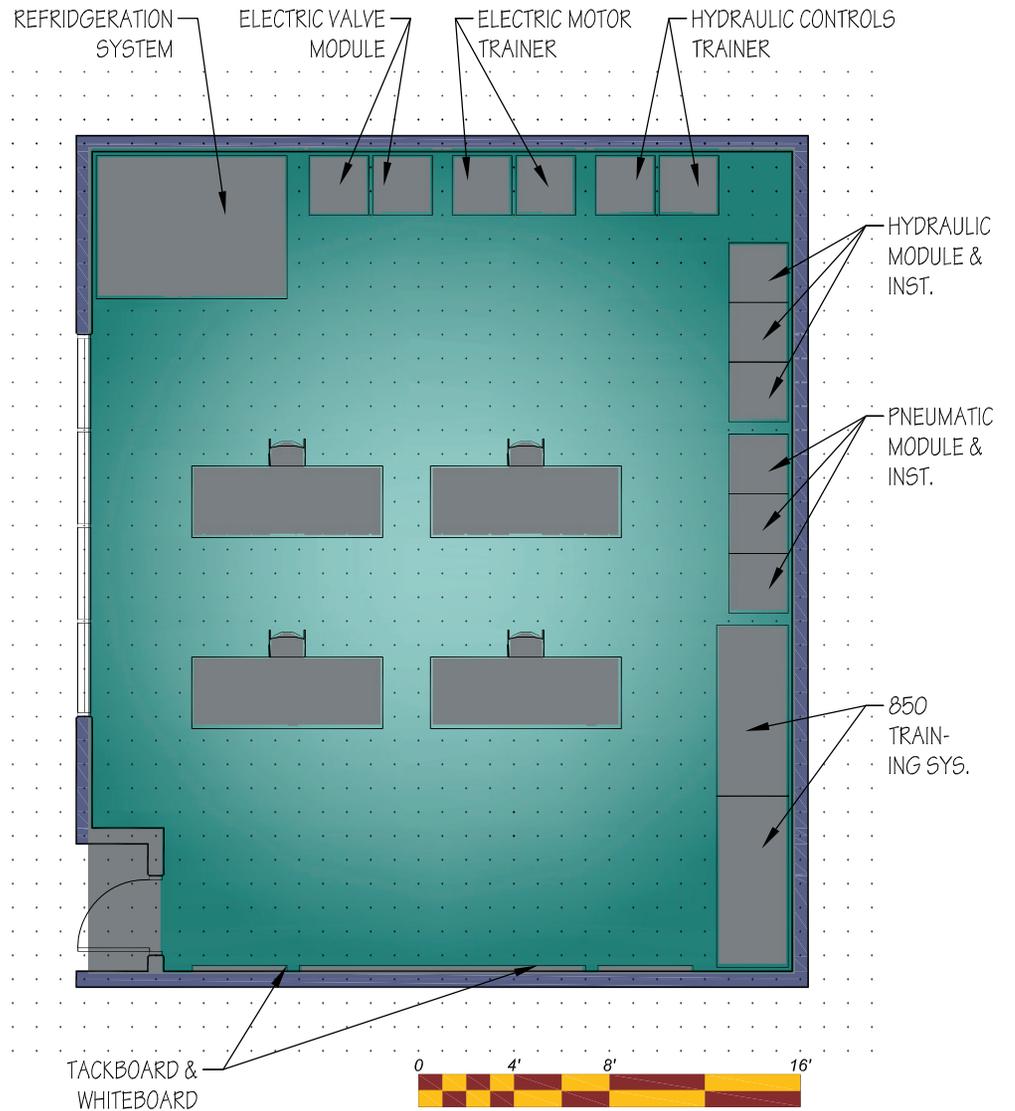
# INDIVIDUAL SPACE DIAGRAMS



Second Floor Relationship Diagram



Industrial Automation Maintenance Relationship Diagram



## FLUID TRAINING SHOP

Industrial Automation Maintenance Program - School of Manufacturing

# INDIVIDUAL SPACE OUTLINE



## GENERAL REQUIREMENTS

### SPACE SUMMARY

- Space Type: Classroom
- Number Required: 1
- Number Additional (expansion): 0
- Total Number: 1

### NET AREA SUMMARY

- Area (each): 900 sf
- Subtotal Required Area: 900 sf
- Subtotal Additional Area: 0 sf
- Total Area: 900 sf

### OCCUPANT SUMMARY

- Student Stations: 18
- Area Per Station: 50 sf

### FUNCTION / TASKS

- Provide an open, flexible and interactive shop-type space.

### RELATIONSHIPS

- Location: Second Floor
- Adjacency: Faculty Offices, Other IAM Classrooms
- Proximity: Storage, Media/Video Library
- Separation: None required

## ARCHITECTURAL REQUIREMENTS

### FINISHES

- Floor: Sealed concrete
- Walls: Painted CMU
- Ceiling: Exposed structure painted
- Sound: Full sound construction

### CEILING HEIGHT

- Above Finish Floor (min.): N/A

### DOORS

- Type: Painted hollow core metal
- Frame: Ptd. hollow metal
- Special: Sound isolation

### WINDOWS

- Natural Light: Required
- Type: Skylights w/ aluminum frame
- Glazing: Insulated w/ low-e coating
- Interior Windows: 48" high painted HM frame

### CASEWORK / FIXED EQUIPMENT

- None required.

### FURNISHINGS

- Lab tables: (4 ea) 96"Wx36"D
- Lab chairs: (4 ea) 18"Wx18"D
- Wastecan: (2 ea) 14" diameter

## TECHNICAL REQUIREMENTS

### MECHANICAL

- Outdoor Air: 10 cfm/person + 0.12 cfm/sf
- Air Circulation: VAV w/ reheat
- Summer Design Temp.: 76° F
- Winter Design Temp.: 72° F
- Controls: DDC, Space temperature
- Sound Criteria: NC = 35
- Special Systems: Compressed air
- Plumbing: Sink, floor drain

### ELECTRICAL

- Power: Duplex receptacles @ 6'-0" o.c.  
Additional capacity for equipment listed
- Data: Two per wall (min.)  
Wireless airport
- Phone: Minimum one
- Video: Ceiling recessed LCD projector  
w/ classroom sound amplification system
- Intercom: Required

### LIGHTING

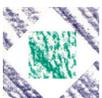
- Fixture Types: T-8 Fluorescent lay-in
- Task Light: None required
- Foot Candles: 50
- Controls: Occupany sensor w/ local override

### EQUIPMENT (NIC)

- (3) Pneumatic module, (2) electrical valve module, (1) electrical motor trainer, (3) hydraulic module, (3) hydraulic controls, (2) 850 training system, (1) refrigeration system trainer

## FLUID TRAINING CLASSROOM

Industrial Automation Maintenance Program - School of Manufacturing

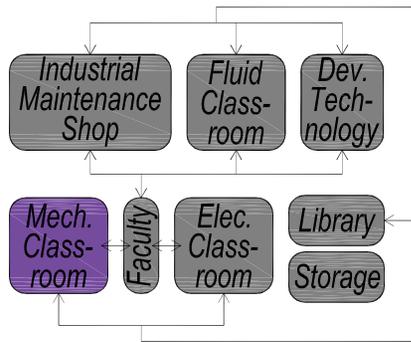




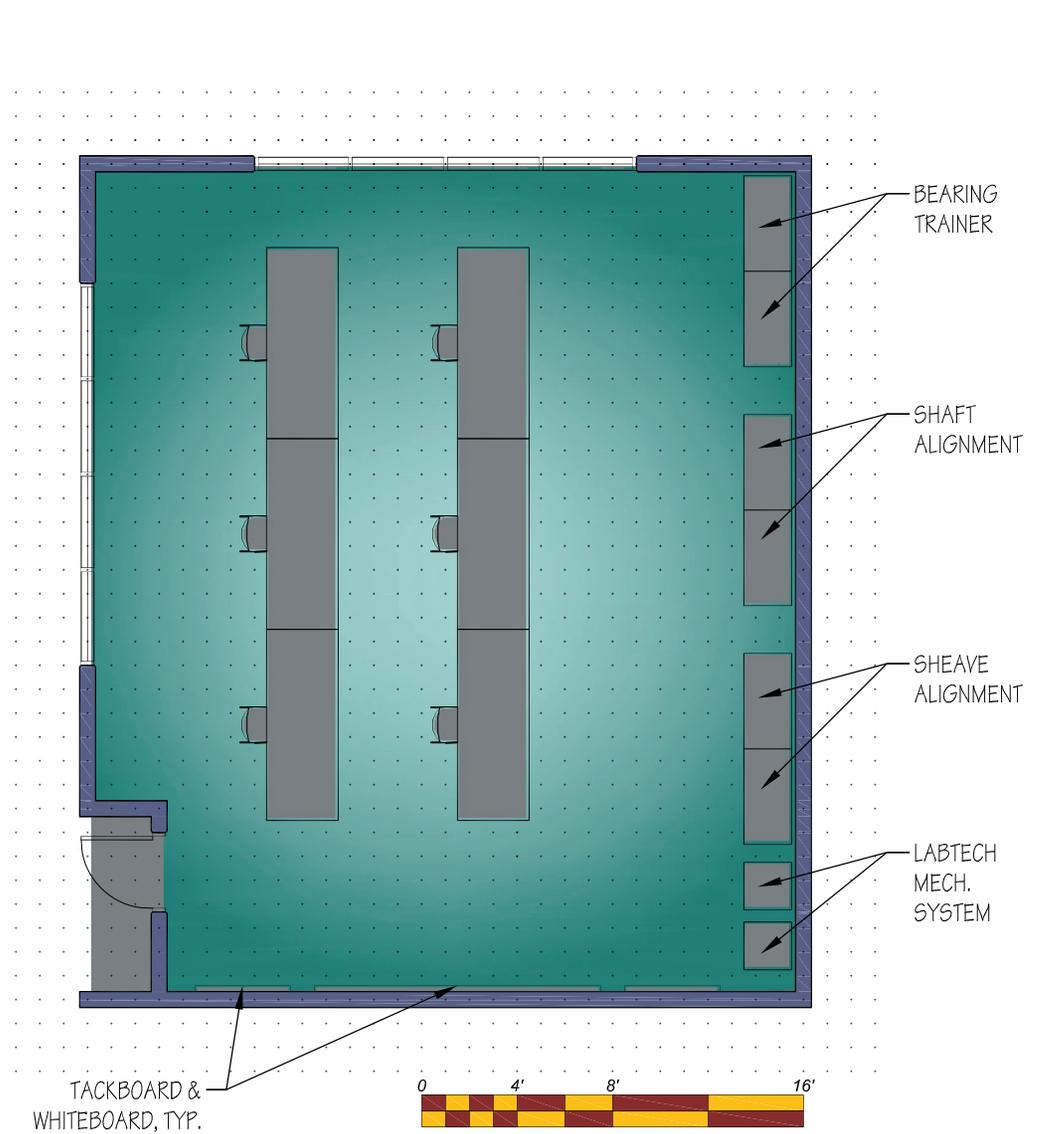
# INDIVIDUAL SPACE DIAGRAMS



Second Floor Relationship Diagram



Industrial Automation Maintenance Relationship Diagram



## MECHANICAL TRAINING SHOP

Industrial Automation Maintenance Program - School of Manufacturing

# INDIVIDUAL SPACE OUTLINE



## GENERAL REQUIREMENTS

### SPACE SUMMARY

• Space Type:	Classroom
• Number Required:	1
• Number Additional (expansion):	0
• Total Number:	1

### NET AREA SUMMARY

• Area (each):	900 sf
• Subtotal Required Area:	900 sf
• Subtotal Additional Area:	0 sf
• Total Area:	900 sf

### OCCUPANT SUMMARY

• Student Stations:	18
• Area Per Station:	50 sf

### FUNCTION / TASKS

- Provide an open, flexible and interactive shop-type space.

### RELATIONSHIPS

• Location:	Second Floor
• Adjacency:	Faculty Offices, Other IAM Classrooms
• Proximity:	Storage, Media/Video Library
• Separation:	None required

## ARCHITECTURAL REQUIREMENTS

### FINISHES

• Floor:	Sealed concrete
• Walls:	Painted CMU
• Ceiling:	Exposed structure painted
• Sound:	Full sound construction

### CEILING HEIGHT

• Above Finish Floor (min.):	N/A
------------------------------	-----

### DOORS

• Type:	Painted hollow core metal
• Frame:	Ptd. hollow metal
• Special:	Sound isolation

### WINDOWS

• Natural Light:	Required
• Type:	Skylights w/ aluminum frame
• Glazing:	Insulated w/ low-e coating
• Interior Windows:	48" high painted HM frame

### CASEWORK / FIXED EQUIPMENT

- None required.

### FURNISHINGS

• Lab table:	(6 ea) 96"Wx36"D
• Lab chair:	(6 ea) 18"Wx18"D
• Wastecan:	(2 ea) 14" diameter

## TECHNICAL REQUIREMENTS

### MECHANICAL

• Outdoor Air:	10 cfm/person + 0.12 cfm/sf
• Air Circulation:	VAV w/ reheat
• Summer Design Temp.:	76° F
• Winter Design Temp.:	72° F
• Controls:	DDC, Space temperature
• Sound Criteria:	NC = 35
• Special Systems:	10+ Computers
• Plumbing:	None required

### ELECTRICAL

• Power:	Duplex receptacles @ 6'-0" o.c. Additional capacity for equipment listed
• Data:	Two per wall (min.) Wireless airport
• Phone:	Minimum one
• Video:	Ceiling recessed LCD projector w/ classroom sound amplification system
• Intercom:	Required

### LIGHTING

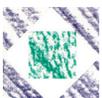
• Fixture Types:	T-8 Fluorescent lay-in
• Task Light:	None required
• Foot Candles:	50
• Controls:	Occupany sensor w/ local override

### EQUIPMENT (NIC)

- 

## MECHANICAL TRAINING CLASSROOM

Industrial Automation Maintenance Program - School of Manufacturing

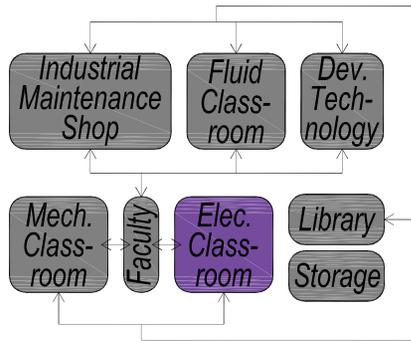




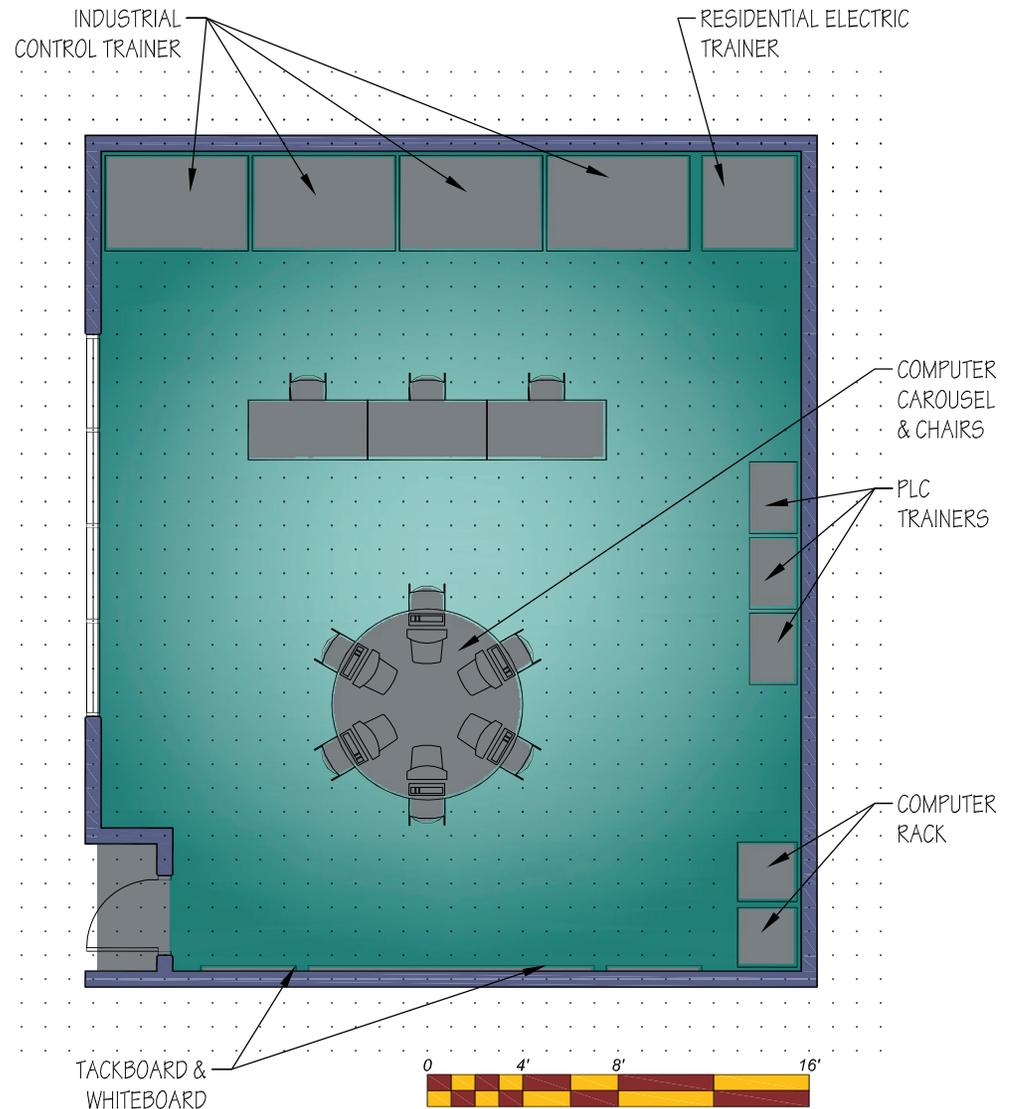
# INDIVIDUAL SPACE DIAGRAMS



Second Floor Relationship Diagram



Industrial Automation Maintenance Relationship Diagram



## ELECTRICAL TRAINING SHOP

Industrial Automation Maintenance Program - School of Manufacturing

# INDIVIDUAL SPACE OUTLINE



## GENERAL REQUIREMENTS

### SPACE SUMMARY

- Space Type: Classroom
- Number Required: 1
- Number Additional (expansion): 0
- Total Number: 1

### NET AREA SUMMARY

- Area (each): 900 sf
- Subtotal Required Area: 900 sf
- Subtotal Additional Area: 0 sf
- Total Area: 900 sf

### OCCUPANT SUMMARY

- Student Stations: 18
- Area Per Station: 50 sf

### FUNCTION / TASKS

- Provide an open, flexible and interactive shop-type space.

### RELATIONSHIPS

- Location: Second Floor
- Adjacency: Faculty Offices, Other IAM Classrooms
- Proximity: Storage, Media/Video Library
- Separation: None required

## ARCHITECTURAL REQUIREMENTS

### FINISHES

- Floor: Sealed concrete
- Walls: Painted CMU
- Ceiling: Exposed structure painted
- Sound: Full sound construction

### CEILING HEIGHT

- Above Finish Floor (min.): N/A

### DOORS

- Type: Painted hollow core metal
- Frame: Ptd. hollow metal
- Special: Sound isolation

### WINDOWS

- Natural Light: Required
- Type: Skylights w/ aluminum frame
- Glazing: Insulated w/ low-e coating
- Interior Windows: 48" high painted HM frame

### CASEWORK / FIXED EQUIPMENT

- None required.

### FURNISHINGS

- Lab tables: (3 ea) 96"Wx36"D
- Lab chairs: (3 ea) 18"Wx18"D
- Computer carousel: (1 ea) 96" diameter
- Computer chairs: (6 ea) 24"Wx24"D
- Computer rack: (1 ea) 30"Wx40"H
- Computer rack: (1 ea) 30"Wx80"H
- Wastecan: (2 ea) 14" diameter

## TECHNICAL REQUIREMENTS

### MECHANICAL

- Outdoor Air: 10 cfm/person + 0.12 cfm/sf
- Air Circulation: VAV w/ reheat  
Switched exhaust fans
- Summer Design Temp.: 76° F
- Winter Design Temp.: 72° F
- Controls: DDC, Space temperature
- Sound Criteria: NC = 35
- Special Systems: 10+ Computers
- Plumbing: Eye wash

### ELECTRICAL

- Power: Duplex receptacles @ 6'-0" o.c.  
Additional capacity for equipment listed
- Data: Two per wall (min.)  
Wireless airport
- Phone: Minimum one
- Video: Ceiling recessed LCD projector  
w/ classroom sound amplification system
- Intercom: Required

### LIGHTING

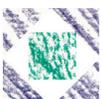
- Fixture Types: T-8 Fluorescent lay-in
- Task Light: None required
- Foot Candles: 50
- Controls: Occupancy sensor w/ local override

### EQUIPMENT (NIC)

- (4) Industrial control trainers, (1) residential electrical trainer, (3) PLC trainers.

## ELECTRICAL TRAINING CLASSROOM

Industrial Automation Maintenance Program - School of Manufacturing

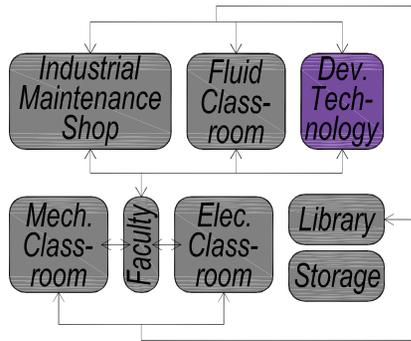




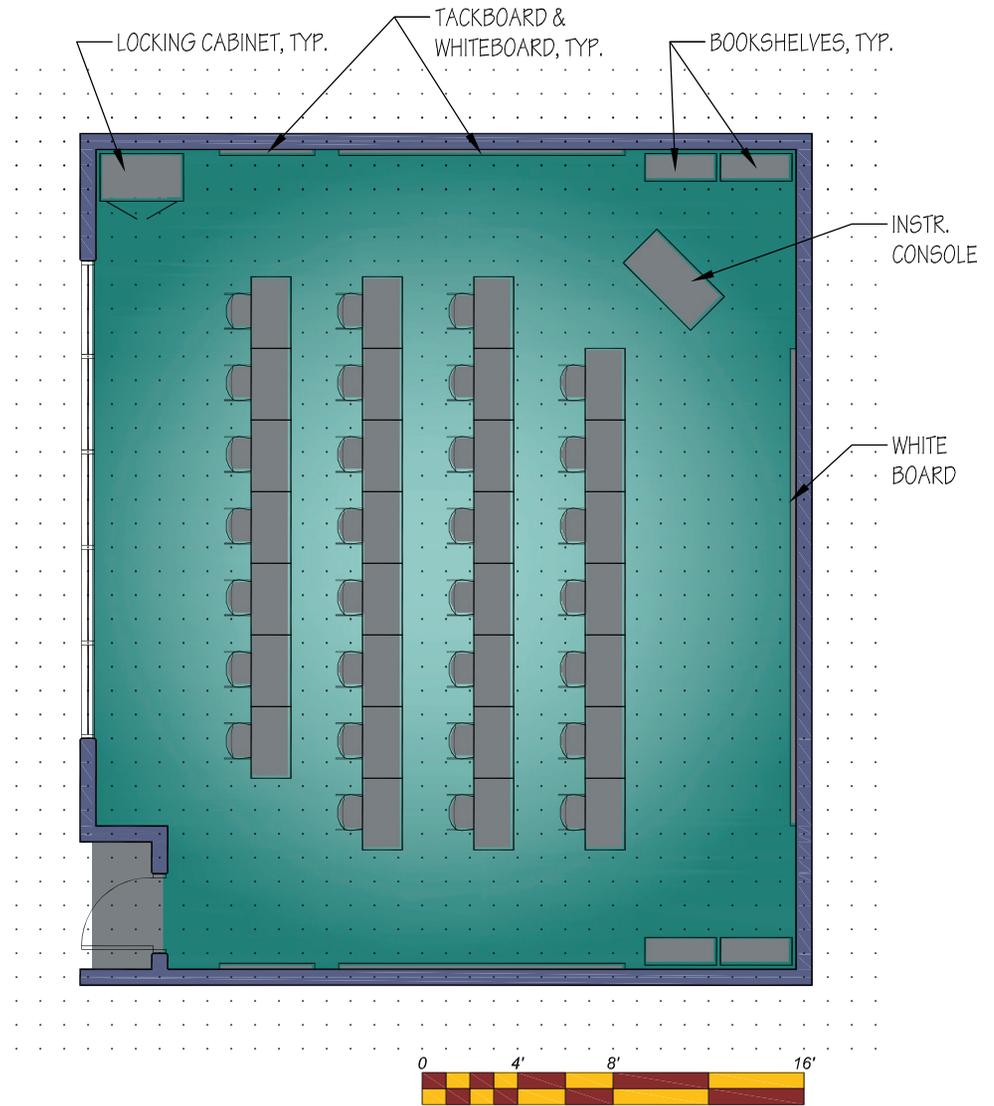
# INDIVIDUAL SPACE DIAGRAMS



Second Floor Relationship Diagram



Industrial Automation Maintenance Relationship Diagram



## DEVELOPING TECHNOLOGIES ROOM

Industrial Automation Maintenance Program - School of Manufacturing

# INDIVIDUAL SPACE OUTLINE



## GENERAL REQUIREMENTS

### SPACE SUMMARY

• Space Type:	Classroom
• Number Required:	1
• Number Additional (expansion):	0
• Total Number:	1

### NET AREA SUMMARY

• Area (each):	900 sf
• Subtotal Required Area:	900 sf
• Subtotal Additional Area:	0 sf
• Total Area:	900 sf

### OCCUPANT SUMMARY

• Student Stations:	30
• Area Per Station:	30 sf

### FUNCTION / TASKS

- Provide an open, flexible and interactive classroom space.

### RELATIONSHIPS

• Location:	Second Floor
• Adjacency:	Faculty Offices, Other IAM Classrooms
• Proximity:	Storage, Media/Video Library
• Separation:	None required

## ARCHITECTURAL REQUIREMENTS

### FINISHES

• Floor:	Static-free carpet w/ 4" rubber base
• Walls:	Painted gypsum board w/ chair rail
• Ceiling:	Susp. 2x2 grid w/ acoustical panels
• Sound:	Full sound construction

### CEILING HEIGHT

• Above Finish Floor (min.):	10'-0"
------------------------------	--------

### DOORS

• Type:	Painted hollow core metal
• Frame:	Ptd. hollow metal w/ glazed sidelight
• Special:	Sound isolation

### WINDOWS

• Natural Light:	Desirable
• Interior Windows:	48" high painted HM frame

### CASEWORK / FIXED EQUIPMENT

• Whiteboard, map rail, tray:	(2 ea) 144"Wx48"H
• Tackboard w/ frame:	(4 ea) 48"Wx48"H
• Instructor console:	(1 ea) 36"Wx42"Hx30"D
• Bookshelves:	(2 ea) 36"Wx88"Hx14"D
• Cabinet (full height) w/ adjustable shelves & lockable doors:	(1) 36"Wx88"Hx24"D
• Clock:	(1)
• Project mounts/ports & cable connections:	(1)

### FURNISHINGS

• Student tables:	(30 ea) 42"Wx27"Hx24"D
• Task chair:	(30 ea) 18"Wx18"Hx16"D
• Wastecan:	(2 ea) 14" diameter

## TECHNICAL REQUIREMENTS

### MECHANICAL

• Outdoor Air:	10 cfm/person + 0.12 cfm/sf
• Air Circulation:	VAV w/ reheat
• Summer Design Temp.:	76° F
• Winter Design Temp.:	72° F
• Controls:	DDC, Space temperature
• Sound Criteria:	NC = 35
• Special Systems:	10+ Computers
• Plumbing:	None required

### ELECTRICAL

• Power:	Duplex receptacles @ 6'-0" o.c. Additional capacity for equipment listed
• Data:	Two per wall (min.) Wireless airport
• Phone:	Minimum one
• Video:	Ceiling recessed LCD projector w/ classroom sound amplification system
• Intercom:	Required

### LIGHTING

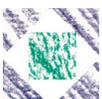
• Fixture Types:	T-8 Fluorescent lay-in
• Task Light:	None required
• Foot Candles:	50
• Controls:	Occupancy sensor w/ local override

### EQUIPMENT (NIC)

• Capacity for laptop computers, video monitors, overhead, opaque, slide & film projectors, VHS & DVD players, audio devices, laser printer.
• (1) Elmo desktop presentation unit.

## DEVELOPING TECHNOLOGIES CLASSROOM

Industrial Automation Maintenance Program - School of Manufacturing

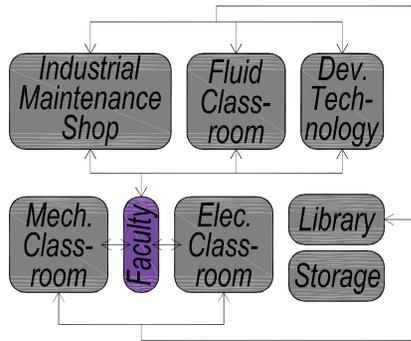




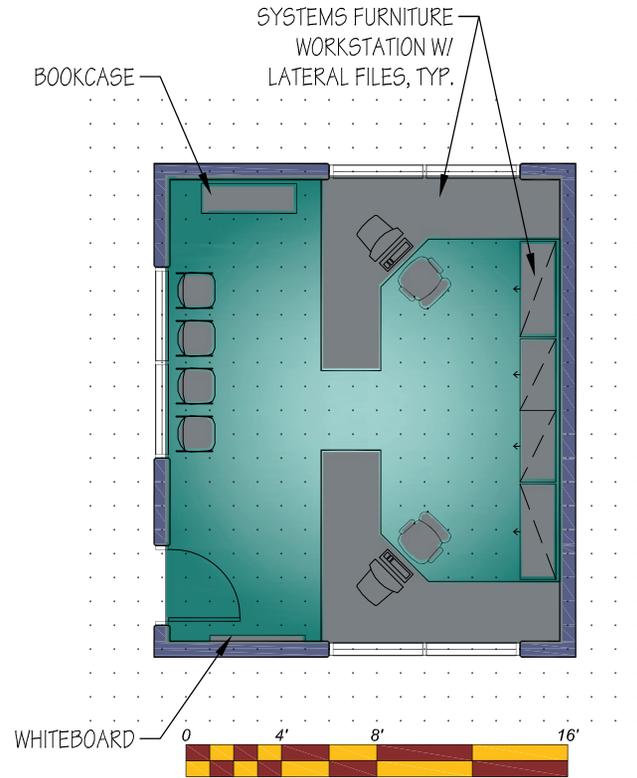
# INDIVIDUAL SPACE DIAGRAMS



Second Floor Relationship Diagram



Industrial Automation Maintenance Relationship Diagram



## FACULTY OFFICE / WORKROOM

Industrial Automation Maintenance Program - School of Manufacturing

# INDIVIDUAL SPACE OUTLINE



## GENERAL REQUIREMENTS

### SPACE SUMMARY

- Space Type: Enclosed
- Number Required: 1
- Number Additional (expansion): 0
- Total Number: 1

### NET AREA SUMMARY

- Area (each): 300 sf
- Subtotal Required Area: 300 sf
- Subtotal Additional Area: 0 sf
- Total Area: e00 sf

### OCCUPANT SUMMARY

- Assigned Occupants: 2
- Visitors: 2

### FUNCTION / TASKS

- Provide professional workspace for general office work and conferencing.

### RELATIONSHIPS

- Location: Second Floor
- Adjacency: Classrooms
- Proximity: Media/Video Library
- Separation: Mechanical & Elevator Rooms  
Other noisy functions

## ARCHITECTURAL REQUIREMENTS

### FINISHES

- Floor: Static-free carpet w/ 4" rubber base
- Walls: Painted gypsum board
- Ceiling: Susp. 2x2 grid w/ acoustical panels
- Sound: Full sound construction

### CEILING HEIGHT

- Above Finish Floor (min.): 10'-0"

### DOORS

- Type: Painted hollow core metal
- Frame: Ptd. hollow metal w/ glazed sidelight
- Special: Sound isolation

### WINDOWS

- Natural Light: Desirable
- Interior Windows: 96"Wx48"H ptd. HM frame

### CASEWORK / FIXED EQUIPMENT

- Whiteboard, map rail, tray: (1 ea) 48"Wx48"H
- Tackboard w/ frame: (2 ea) 248Wx48"H
- Clock: (1)

### FURNISHINGS

- System furniture workstation: (2 ea) 64 sf
- Task chair: (2 ea) 18"Wx18"Hx16"D
- Side chair: (4 ea) 16"Wx18"Hx16"D
- Wastecan: (2 ea) 14" diameter

## TECHNICAL REQUIREMENTS

### MECHANICAL

- Outdoor Air: 5 cfm/person + 0.06 cfm/sf
- Air Circulation: VAV w/ reheat
- Summer Design Temp.: 76° F
- Winter Design Temp.: 73° F
- Controls: DDC, Space temperature
- Sound Criteria: NC - 35
- Special Systems: HVAC loads (4+ computers)
- Plumbing: None required

### ELECTRICAL

- Power: Duplex receptacles @ 10'0" o.c.  
Fourplex receptacles one per workstation  
Additional capacity for equipment listed
- Data: Minimum two per workstation  
Additional capacity for equipment listed
- Phone: Minimum one per workstation
- Video: Rough-in for future capacity
- Intercom: Required

### LIGHTING

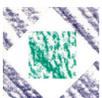
- Fixture Types: T-8 Fluorescent lay-in
- Task Light: Required at all work surfaces
- Foot Candles: 45-50
- Controls: Occupancy sensor w/ local override

### EQUIPMENT (NIC)

- Capacity for desktop computer, laser printer & scanner at each workstation.
- (1) Desktop copier.

## FACULTY OPEN OFFICE / WORKROOM

Industrial Automation Maintenance Program - School of Manufacturing

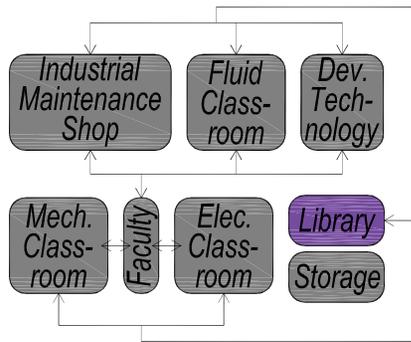




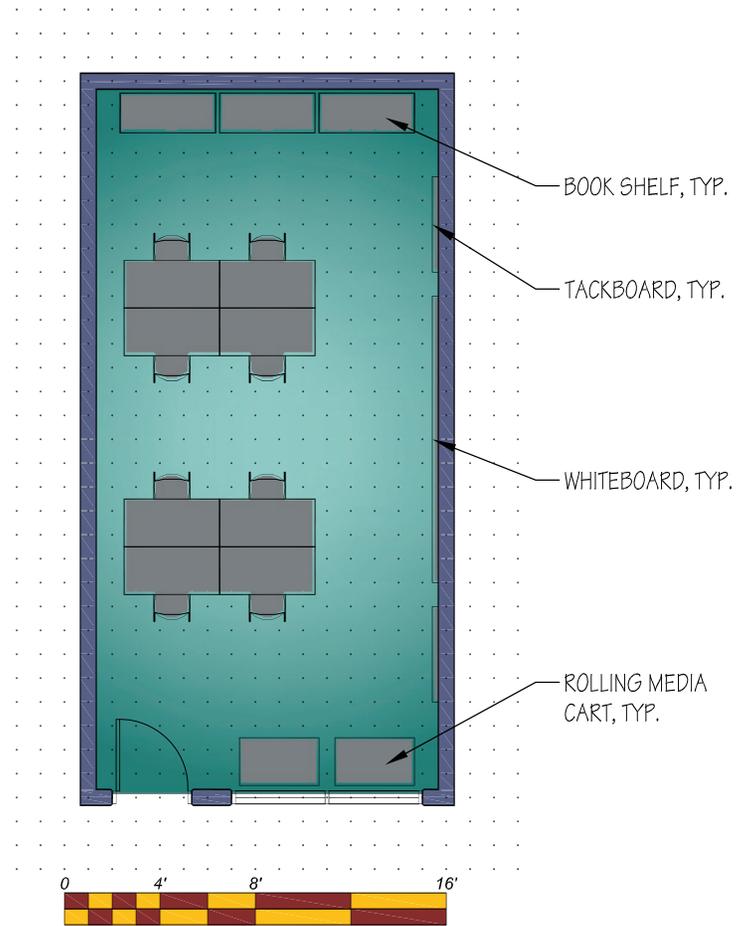
# INDIVIDUAL SPACE DIAGRAMS



Second Floor Relationship Diagram



Industrial Automation Maintenance Relationship Diagram



## MEDIA / VIDEO LIBRARY

Industrial Automation Maintenance Program - School of Manufacturing

# INDIVIDUAL SPACE OUTLINE



## GENERAL REQUIREMENTS

### SPACE SUMMARY

• Space Type:	Enclosed
• Number Required:	1
• Number Additional (expansion):	0
• Total Number:	1

### NET AREA SUMMARY

• Area (each):	450 sf
• Subtotal Required Area:	450 sf
• Subtotal Additional Area:	0 sf
• Total Area:	450 sf

### OCCUPANT SUMMARY

• Assigned Occupants:	0
• Users:	Faculty / Students

### FUNCTION / TASKS

- Provide area for the storage and viewing of various kinds of media / video files.

### RELATIONSHIPS

• Location:	Second Floor
• Adjacency:	Faculty Offices, Classrooms
• Proximity:	Storage
• Separation:	Mechanical & Elevator Rooms Other noisy functions

## ARCHITECTURAL REQUIREMENTS

### FINISHES

• Floor:	Static-free carpet w/ 4" rubber base
• Walls:	Painted gypsum board
• Ceiling:	Susp. 2x2 grid w/ acoustical panels
• Sound:	Not required

### CEILING HEIGHT

• Above Finish Floor (min.):	10'-0"
------------------------------	--------

### DOORS

• Type:	Painted hollow core metal
• Frame:	Ptd. hollow metal w/ glazed sidelight
• Special:	Not required

### WINDOWS

• Natural Light:	Desirable
------------------	-----------

### CASEWORK / FIXED EQUIPMENT

• Whiteboard, map rail, tray:	(1 ea) 48"Wx48"H
• Tackboard w/ frame:	(2 ea) 248Wx48"H
• Bookshelves:	(2 ea) 36"Wx88"Hx14"D
• Cabinet (full height) w/ adjustable shelves & lockable doors:	(1) 36"Wx88"Hx24"D
• Clock:	(1)

### FURNISHINGS

• Student tables:	(6 ea) 42"Wx27"Hx24"D
• Task chair:	(6 ea) 18"Wx18"Hx16"D
• Wastecan:	(1 ea) 14" diameter

## TECHNICAL REQUIREMENTS

### MECHANICAL

• Outdoor Air:	5 cfm/person + 0.06 cfm/sf
• Air Circulation:	VAV w/ reheat
• Summer Design Temp.:	76° F
• Winter Design Temp.:	73° F
• Controls:	DDC, Space temperature
• Sound Criteria:	NC - 35
• Special Systems:	Computers - mini lab
• Plumbing:	None required

### ELECTRICAL

• Power:	Duplex receptacles @ 10'0" o.c. One per wall (min.) Additional capacity for equipment listed
• Data:	One per wall (min.) Additional capacity for equipment listed
• Phone:	Minimum one
• Video:	Rough-in for future capacity
• Intercom:	Required

### LIGHTING

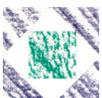
• Fixture Types:	T-8 Fluorescent lay-in
• Task Light:	Required at all work surfaces
• Foot Candles:	35-40
• Controls:	Occupancy sensor w/ local override

### EQUIPMENT (NIC)

• (6 ea) desktop computer, laser printer, scanner, television, VHS & DVD player, audio devices
--

## MEDIA / VIDEO LIBRARY

Industrial Automation Maintenance Program - School of Manufacturing

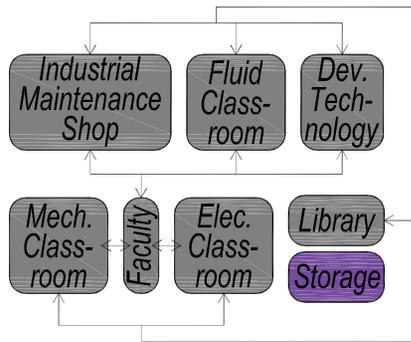




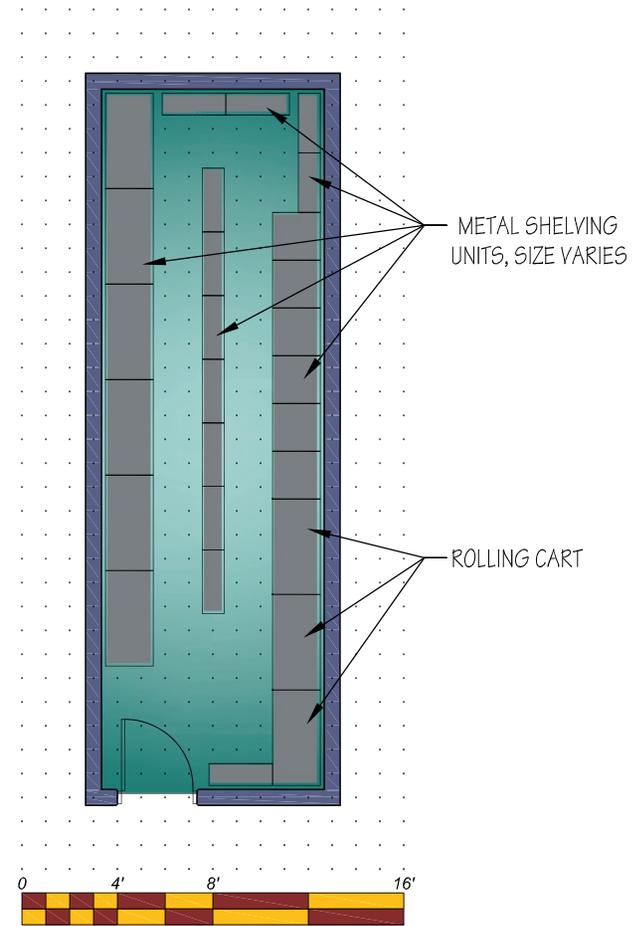
# INDIVIDUAL SPACE DIAGRAMS



Second Floor Relationship Diagram



Industrial Automation Maintenance Relationship Diagram



## STORAGE ROOM

Industrial Automation Maintenance Program - School of Manufacturing

# INDIVIDUAL SPACE OUTLINE



## GENERAL REQUIREMENTS

### SPACE SUMMARY

- Space Type: Storage
- Number Required: 1
- Number Additional (expansion): 0
- Total Number: 1

### NET AREA SUMMARY

- Area (each): 300 sf
- Subtotal Required Area: 300 sf
- Subtotal Additional Area: 0 sf
- Total Area: 300 sf

### OCCUPANT SUMMARY

- Assigned Occupants: 0
- Users: Faculty

### FUNCTION / TASKS

- Provide secure storage for parts and supplies.

### RELATIONSHIPS

- Location: Secon Floor
- Adjacency: Media/Video Library
- Proximity: Faculty Offices  
Classrooms
- Separation: None required

## ARCHITECTURAL REQUIREMENTS

### FINISHES

- Floor: Sealed concrete
- Walls: Painted CMU
- Ceiling: Exposed structure painted
- Sound: None required

### CEILING HEIGHT

- Above Finish Floor (min.): N/A

### DOORS

- Type: Painted hollow core metal
- Frame: Painted hollow metal
- Special: None required

### WINDOWS

- Natural Light: Not required

### CASEWORK / FIXED EQUIPMENT

- None required.

### FURNISHINGS

- Metal shelving units: (?? ea) ??'x??'x??'

## TECHNICAL REQUIREMENTS

### MECHANICAL

- Outdoor Air: 5 cfm/person + 0.06 cfm/sf
- Air Circulation: VAV w/ reheat
- Summer Design Temp.: 76° F
- Winter Design Temp.: 73° F
- Controls: DDC, Space temperature
- Sound Criteria: NC - 35
- Special Systems: None required
- Plumbing: None required

### ELECTRICAL

- Power: Duplex receptacles @ 10'-0" o.c.  
One per wall (min.)
- Data: Minimum one
- Phone: Minimum one
- Video: Rough-in for future capacity
- Intercom: Rough-in for future capacity

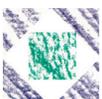
### LIGHTING

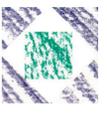
- Fixture Types: T-8 Fluorscent industrial
- Task Light: None required
- Foot Candles: 30
- Controls: Occupancy sensor w/ local override

### EQUIPMENT (NIC)

- None required.

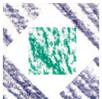
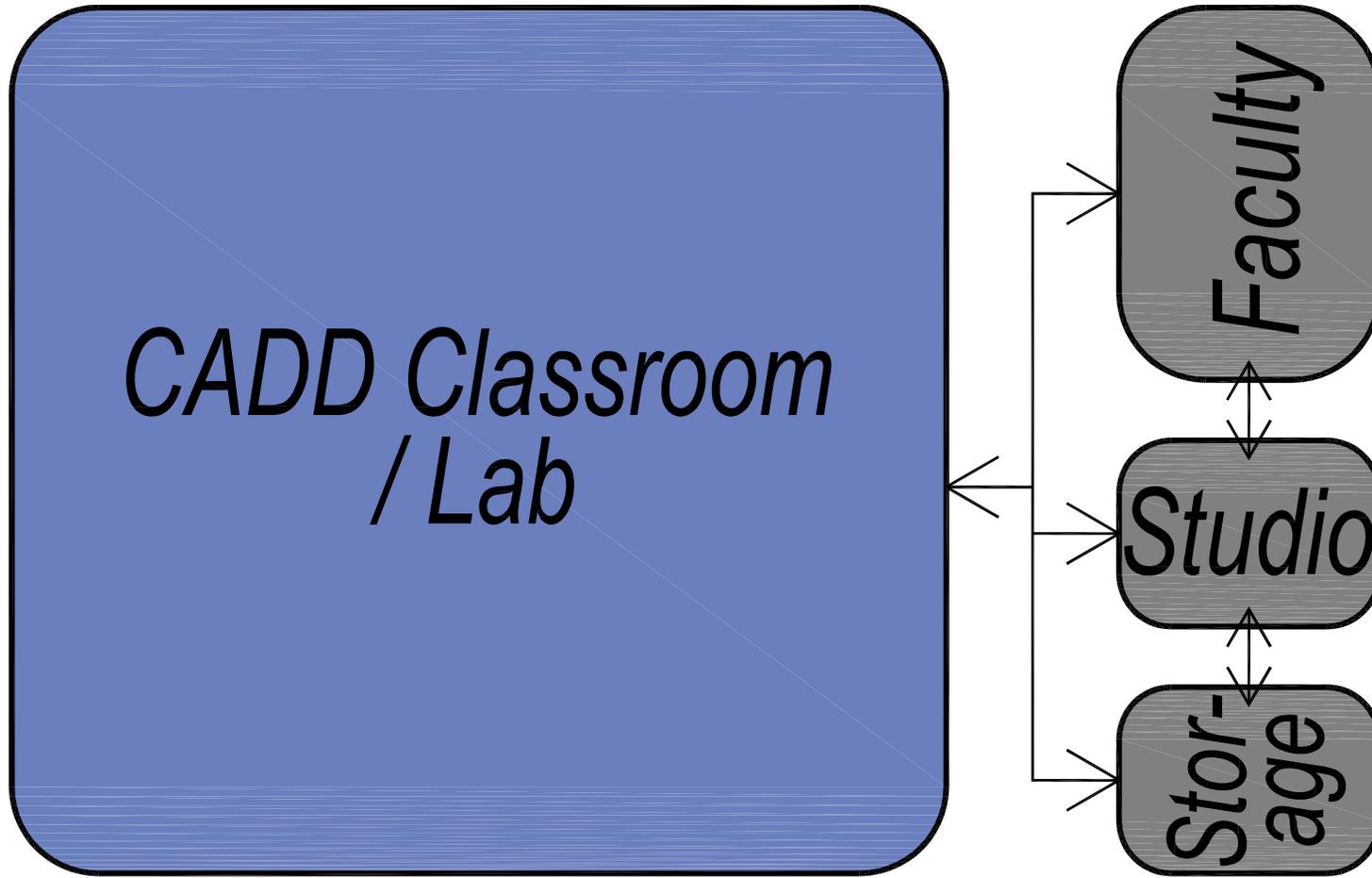
## STORAGE ROOM





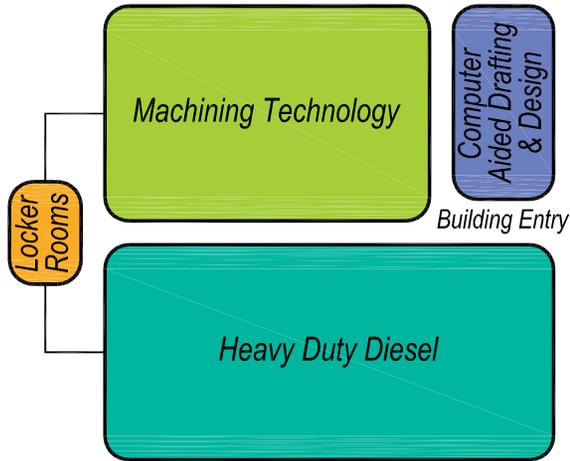
# INDIVIDUAL SPACE REQUIREMENTS

## COMPUTER AIDED DRAFTING & DESIGN RELATIONSHIP DIAGRAM

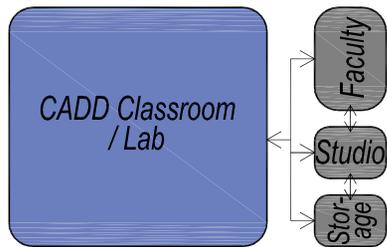




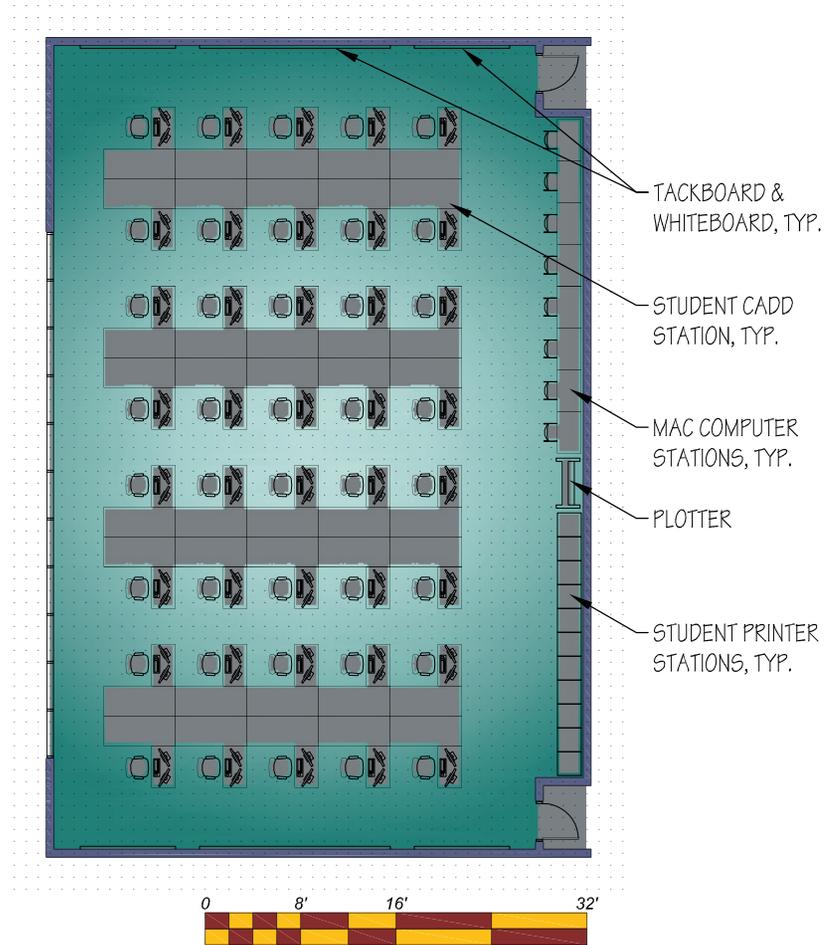
# INDIVIDUAL SPACE DIAGRAMS



First Floor Relationship Diagram



Computer Aided Drafting & Design Relationship Diagram



## CADD CLASSROOM / LAB

Computer Aided Drafting & Design Program - School of Manufacturing

# INDIVIDUAL SPACE OUTLINE



## GENERAL REQUIREMENTS

### SPACE SUMMARY

• Space Type:	Classroom
• Number Required:	1
• Number Additional (expansion):	0
• Total Number:	1

### NET AREA SUMMARY

• Area (each):	2,680 sf
• Subtotal Required Area:	2,680 sf
• Subtotal Additional Area:	0 sf
• Total Area:	2,680 sf

### OCCUPANT SUMMARY

• Student Stations:	50
• Area Per Station:	45 sf

### FUNCTION / TASKS

- Provide a flexible multipurpose computer lab.

### RELATIONSHIPS

• Location:	First Floor
• Adjacency:	Faculty Offices
• Proximity:	Multi-Media Studio
• Separation:	Mechanical & Elevator Rooms Other noisy functions

## ARCHITECTURAL REQUIREMENTS

### FINISHES

• Floor:	Static-free carpet w/ 4" rubber base
• Walls:	Painted gypsum board w/ chair rail
• Ceiling:	Susp. 2x2 grid w/ acoustical panels
• Sound:	Full sound construction

### CEILING HEIGHT

• Above Finish Floor (min.):	10'-0"
------------------------------	--------

### DOORS

• Type:	Painted hollow core metal
• Frame:	Ptd. hollow metal w/ glazed sidelight
• Special:	Sound isolation

### WINDOWS

• Natural Light:	Required, provide adequate light control for computer use
• Type:	Aluminum frame
• Glazing:	Insulated w/ low-e coating
• Interior Window:	(3) 192"Wx48"H painted hollow metal frame

### CASEWORK / FIXED EQUIPMENT

• Whiteboard, map rail, tray:	(2 ea) 144"Wx48"H
• Tackboard w/ frame:	(4 ea) 48"Wx48"H
• Instructor console:	(1 ea) 36"Wx42"Hx30"D
• Bookshelves:	(2 ea) 36"Wx88"Hx14"D
• Cabinet (full height) w/ adjustable shelves & lockable doors:	(1) 36"Wx88"Hx24"D
• Clock:	(1)
• Project mounts/ports & cable connections:	(1)

### FURNISHINGS

• Student tables:	(20 ea) 42"Wx27"Hx24"D
• Task chair:	(20 ea) 18"Wx18"Hx16"D
• Wastecan:	(2 ea) 14" diameter

## TECHNICAL REQUIREMENTS

### MECHANICAL

• Outdoor Air:	10 cfm/person + 0.12 cfm/sf
• Air Circulation:	VAV w/ reheat
• Summer Design Temp.:	76° F
• Winter Design Temp.:	72° F
• Controls:	DDC, Space temperature
• Sound Criteria:	NC = 35
• Special Systems:	50+ Computers
• Plumbing:	None required

### ELECTRICAL

• Power:	Duplex receptacles @ 12'-0" o.c. One fourplex receptacle per station One 208v 1-phase receptacle at plotter Additional capacity for equipment listed
• Data:	One per station (min.) Additional capacity for equipment listed
• Phone:	Minimum one
• Video:	Ceiling recessed LCD projector w/ classroom sound amplification system
• Intercom:	Required

### LIGHTING

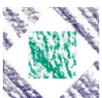
• Fixture Types:	T-8 Fluorescent indirect lay-in
• Task Light:	None required
• Foot Candles:	55-60
• Controls:	Occupancy sensor w/ local override

### EQUIPMENT (NIC)

• Capacity for (50) desktop computers, LCD projector, (1) smart board, (1) 42" plotter.
• (1) Elmo desktop presentation unit.

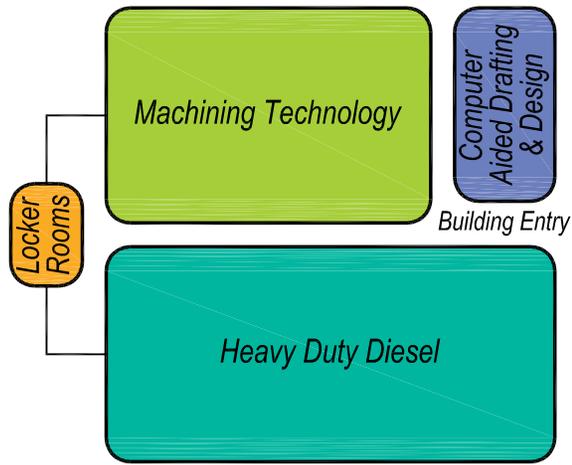
## CADD CLASSROOM / LAB

Computer Aided Drafting & Design Program - School of Manufacturing

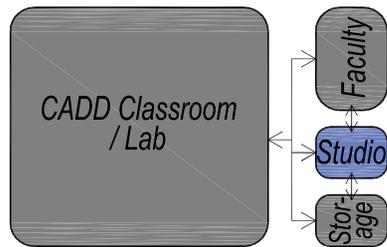




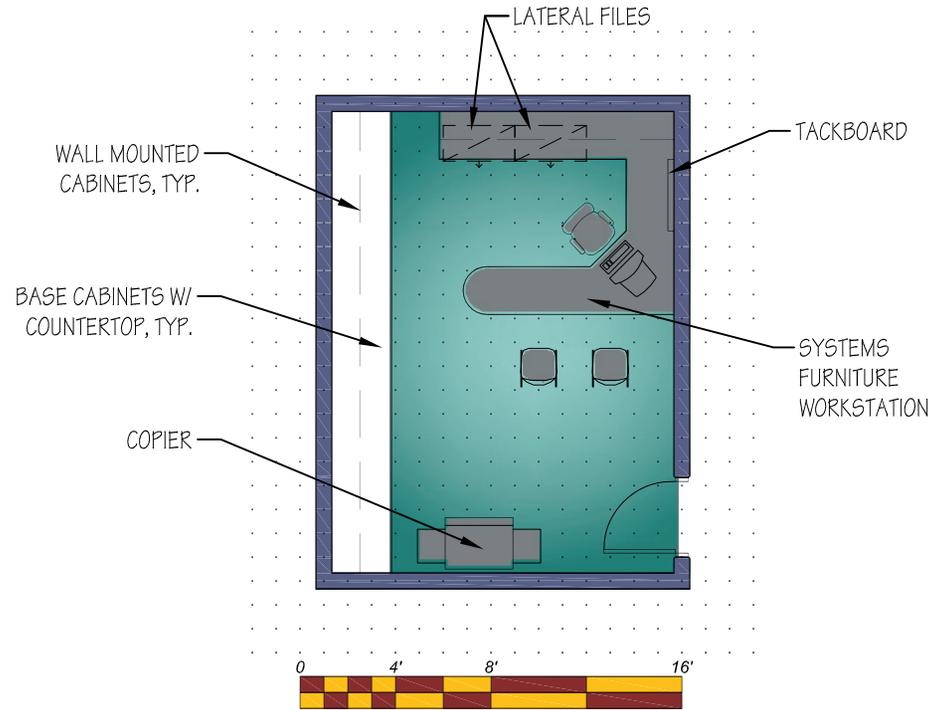
# INDIVIDUAL SPACE DIAGRAMS



First Floor Relationship Diagram

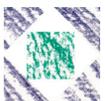


Computer Aided Drafting & Design Relationship Diagram



## MULTI-MEDIA STUDIO

Computer Aided Drafting & Design Program - School of Manufacturing



# INDIVIDUAL SPACE OUTLINE



## GENERAL REQUIREMENTS

### SPACE SUMMARY

• Space Type:	Enclosed
• Number Required:	1
• Number Additional (expansion):	0
• Total Number:	1

### NET AREA SUMMARY

• Area (each):	150 sf
• Subtotal Required Area:	150 sf
• Subtotal Additional Area:	0 sf
• Total Area:	150 sf

### OCCUPANT SUMMARY

• Assigned Occupants:	0
• Users:	Faculty / Students

### FUNCTION / TASKS

- Provide workspace for multi-media computer design and storage.

### RELATIONSHIPS

• Location:	First Floor
• Adjacency:	CADD Classroom
• Proximity:	Faculty Offices
• Separation:	None required

## ARCHITECTURAL REQUIREMENTS

### FINISHES

• Floor:	Static-free carpet w/ 4" rubber base
• Walls:	Painted gypsum board
• Ceiling:	Susp. 2x2 grid w/ acoustical panels
• Sound:	None required

### CEILING HEIGHT

• Above Finish Floor (min.):	10'-0"
------------------------------	--------

### DOORS

• Type:	Painted hollow core metal
• Frame:	Ptd. hollow metal w/ glazed sidelight
• Special:	None required

### WINDOWS

• Natural Light:	Desirable
------------------	-----------

### CASEWORK / FIXED EQUIPMENT

• Whiteboard, map rail, tray:	(1 ea) 48"Wx48"H
• Tackboard w/ frame:	(2 ea) 24"Wx48"H
• Bookshelves:	(2 ea) 36"Wx88"Hx14"D
• Cabinet (full height) w/ adjustable shelves & lockable doors:	(1) 36"Wx88"Hx24"D

• Clock:	(1)
----------	-----

### FURNISHINGS

• System furniture workstation:	(1 ea) 64 sf
• 2-Drawer lateral file:	(1 ea) 42"Wx24"Hx18"D
• Task chair:	(1 ea) 18"Wx18"Hx16"D
• Side chair:	(2 ea) 16"Wx18"Hx16"D
• Wastecan:	(1 ea) 14" diameter

## TECHNICAL REQUIREMENTS

### MECHANICAL

• Outdoor Air:	5 cfm/person + 0.06 cfm/sf
• Air Circulation:	VAV w/ reheat
• Summer Design Temp.:	76° F
• Winter Design Temp.:	73° F
• Controls:	DDC, Space temperature
• Sound Criteria:	NC - 35
• Special Systems:	None required
• Plumbing:	None required

### ELECTRICAL

• Power:	Duplex receptacles @ 10'-0" o.c. Two per wall (min.) Additional capacity for equipment listed
• Data:	One per wall (min.) Additional capacity for equipment listed
• Phone:	Minimum one
• Video:	Rough-in for future capacity
• Intercom:	Required

### LIGHTING

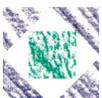
• Fixture Types:	T-8 Fluorescent indirect lay-in
• Task Light:	Required at all work surfaces
• Foot Candles:	35-40
• Controls:	Occupancy sensor w/ local override

### EQUIPMENT (NIC)

• Capacity for desktop computer, (2) monitors, laser printer, scanner, desktop copier.
--

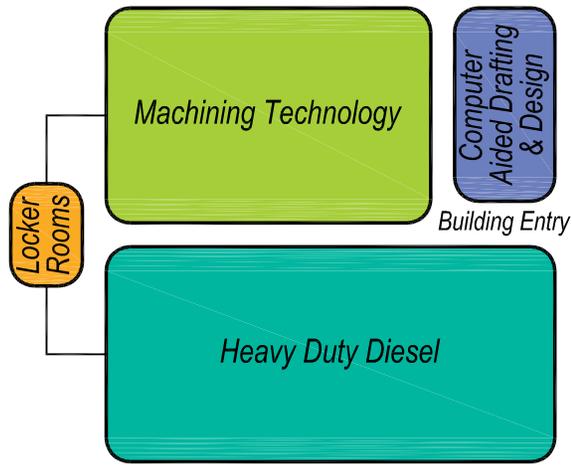
## MULTI-MEDIA STUDIO

Computer Aided Drafting & Design Program - School of Manufacturing

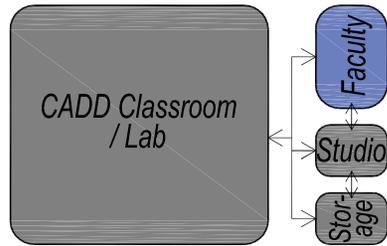




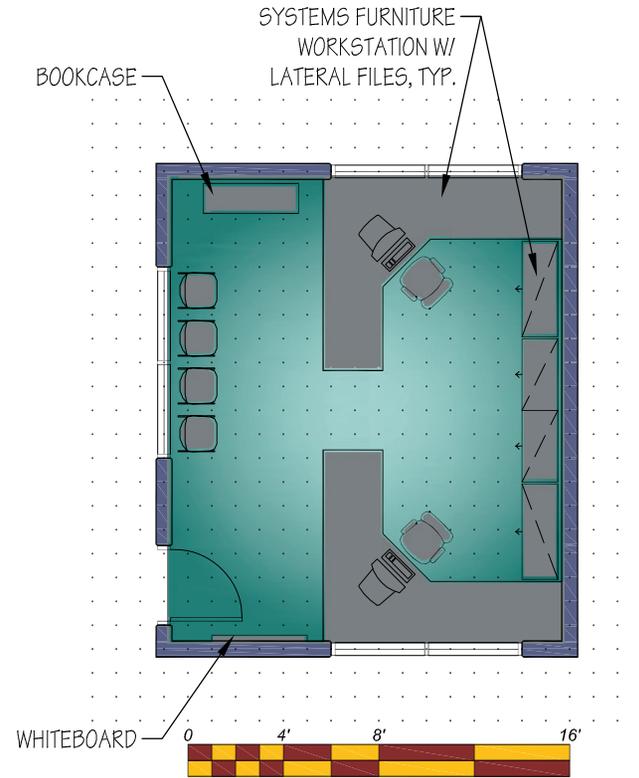
# INDIVIDUAL SPACE DIAGRAM



First Floor Relationship Diagram

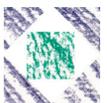


Computer Aided Drafting & Design Relationship Diagram



## FACULTY OFFICE / WORKROOM

Computer Aided Drafting & Design Program - School of Manufacturing



# INDIVIDUAL SPACE OUTLINE



## GENERAL REQUIREMENTS

### SPACE SUMMARY

- Space Type: Enclosed
- Number Required: 1
- Number Additional (expansion): 0
- Total Number: 1

### NET AREA SUMMARY

- Area (each): 300 sf
- Subtotal Required Area: 300 sf
- Subtotal Additional Area: 0 sf
- Total Area: 300 sf

### OCCUPANT SUMMARY

- Assigned Occupants: 2
- Visitors: 2

### FUNCTION / TASKS

- Provide professional workspace for general office work and conferencing.

### RELATIONSHIPS

- Location: First Floor
- Adjacency: CADD Classroom, Multi-Media Studio
- Proximity: Storage Room
- Separation: Mechanical & Elevator Rooms  
Other noisy functions

## ARCHITECTURAL REQUIREMENTS

### FINISHES

- Floor: Static-free carpet w/ 4" rubber base
- Walls: Painted gypsum board
- Ceiling: Susp. 2x2 grid w/ acoustical panels
- Sound: Full sound construction

### CEILING HEIGHT

- Above Finish Floor (min.): 10'-0"

### DOORS

- Type: Painted hollow core metal
- Frame: Ptd. hollow metal w/ glazed sidelight
- Special: Sound isolation

### WINDOWS

- Natural Light: Desirable
- Interior Windows: 48"Wx48"H ptd. HM frame

### CASEWORK / FIXED EQUIPMENT

- Whiteboard, map rail, tray: (1 ea) 48"Wx48"H
- Tackboard w/ frame: (2 ea) 24"Wx48"H
- Clock: (1)

### FURNISHINGS

- System furniture workstation: (2 ea) 64 sf
- 2-Drawer lateral file: (2 ea) 42"Wx24"Hx18"D
- Task chair: (2 ea) 18"Wx18"Hx16"D
- Side chair: (2 ea) 16"Wx18"Hx16"D
- Wastecan: (2 ea) 14" diameter

## TECHNICAL REQUIREMENTS

### MECHANICAL

- Outdoor Air: 5 cfm/person + 0.06 cfm/sf
- Air Circulation: VAV w/ reheat
- Summer Design Temp.: 76° F
- Winter Design Temp.: 73° F
- Controls: DDC, Space temperature
- Sound Criteria: NC - 35
- Special Systems: None required
- Plumbing: None required

### ELECTRICAL

- Power: Duplex receptacles @ 10'0" o.c.  
Fourplex receptacles one per workstation  
Additional capacity for equipment listed
- Data: Minimum two per workstation  
Additional capacity for equipment listed
- Phone: Minimum one per workstation
- Video: Rough-in for future capacity
- Intercom: Required

### LIGHTING

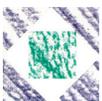
- Fixture Types: T-8 Fluorescent lay-in
- Task Light: Required at all work surfaces
- Foot Candles: 45-50
- Controls: Occupancy sensor w/ local override

### EQUIPMENT (NIC)

- Capacity for desktop computer, laser printer & scanner at each workstation.

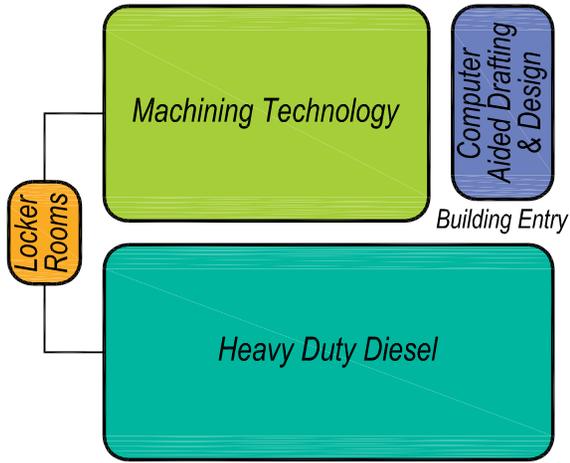
## FACULTY OPEN OFFICE / WORKROOM

Computer Aided Drafting & Design Program - School of Manufacturing

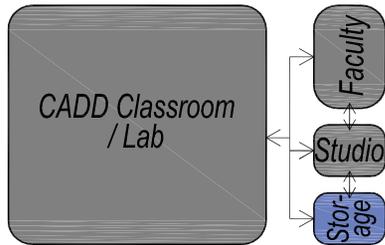




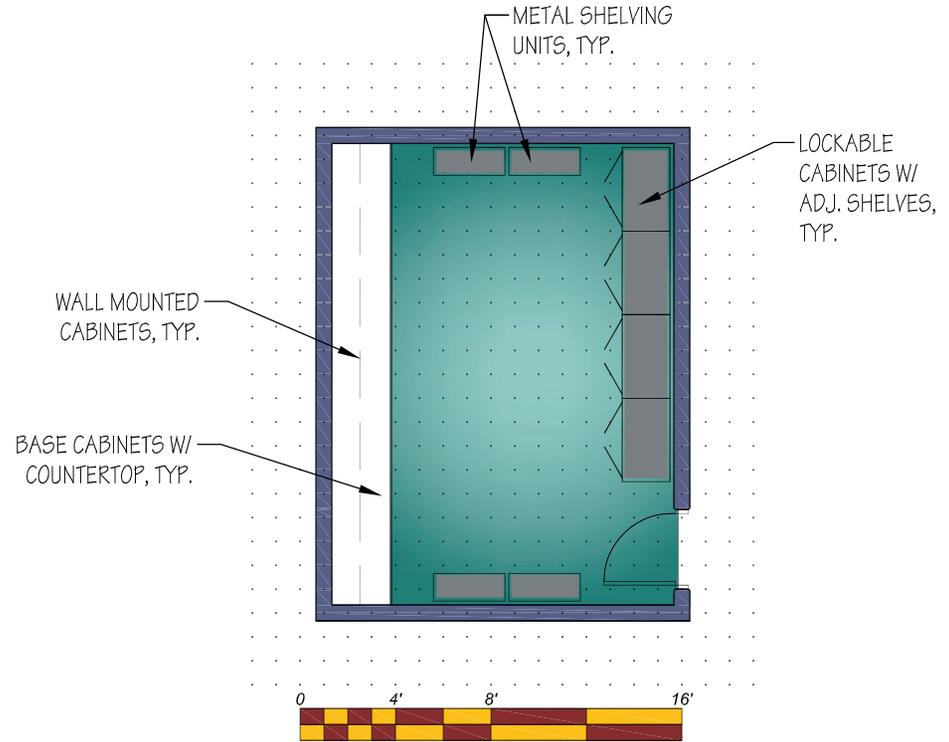
# INDIVIDUAL SPACE DIAGRAMS



First Floor Relationship Diagram

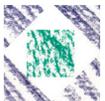


Computer Aided Drafting & Design Relationship Diagram



## STORAGE ROOM

Computer Aided Drafting & Design Program - School of Manufacturing



# INDIVIDUAL SPACE OUTLINE



## GENERAL REQUIREMENTS

### SPACE SUMMARY

- Space Type: Storage
- Number Required: 1
- Number Additional (expansion): 0
- Total Number: 1

### NET AREA SUMMARY

- Area (each): 180 sf
- Subtotal Required Area: 180 sf
- Subtotal Additional Area: 0 sf
- Total Area: 180 sf

### OCCUPANT SUMMARY

- Assigned Occupants: 0
- Users: Faculty

### FUNCTION / TASKS

- Provide secure storage for files and supplies.

### RELATIONSHIPS

- Location: First Floor
- Adjacency: CADD Classroom  
Multi-Media Studio
- Proximity: Faculty Offices
- Separation: None required

## ARCHITECTURAL REQUIREMENTS

### FINISHES

- Floor: Sealed concrete
- Walls: Painted CMU
- Ceiling: Exposed structure painted
- Sound: None required

### CEILING HEIGHT

- Above Finish Floor (min.): N/A

### DOORS

- Type: Painted hollow core metal
- Frame: Painted hollow metal
- Special: None required

### WINDOWS

- Natural Light: Not required

### CASEWORK / FIXED EQUIPMENT

- Base cabinets w/ countertop:(15 lf) 34"Hx30"D w/ lockable doors & adjustable shelves
- Wall cabinets: (15 lf) 28"Hx14"D w/ lockable doors & adjustable shelves
- Cabinet (full height): (1) 36"Wx88"Hx24"D w/ adjustable shelves & lockable doors:

### FURNISHINGS

- Metal shelving units:(? ea) 48"W"x72"H"x24"D
- Metal shelving units:(? ea) 48"W"x72"H"x36"D

## TECHNICAL REQUIREMENTS

### MECHANICAL

- Outdoor Air: 5 cfm/person + 0.06 cfm/sf
- Air Circulation: VAV w/ reheat
- Summer Design Temp.: 76° F
- Winter Design Temp.: 73° F
- Controls: DDC, Space temperature
- Sound Criteria: NC - 35
- Special Systems: None required
- Plumbing: None required

### ELECTRICAL

- Power: Duplex receptacles @ 10'-0" o.c.  
One per wall (min.)
- Data: Minimum one
- Phone: Minimum one
- Video: Rough-in for future capacity
- Intercom: Rough-in for future capacity

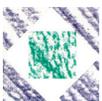
### LIGHTING

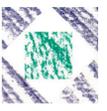
- Fixture Types: T-8 Fluorscent industrial
- Task Light: None required
- Foot Candles: 30
- Controls: Occupancy sensor w/ local override

### EQUIPMENT (NIC)

- None required.

## STORAGE ROOM





# INDIVIDUAL SPACE OUTLINE



## GENERAL REQUIREMENTS

### SPACE SUMMARY

- Space Type:
- Number Required:
- Number Additional (expansion):
- Total Number:

### NET AREA SUMMARY

- Area (each):
- Subtotal Required Area:
- Subtotal Additional Area:
- Total Area:

### OCCUPANT SUMMARY

- Assigned Occupants:
- Visitors:

### FUNCTION / TASKS

- 

### RELATIONSHIPS

- Location:
- Adjacency:
- Proximity:
- Separation:

## ARCHITECTURAL REQUIREMENTS

### FINISHES

- Floor:
- Walls:
- Ceiling:
- Sound:

### CEILING HEIGHT

- Above Finish Floor (min.):

### DOORS

- Type:
- Frame:
- Special:

### WINDOWS

- Natural Light:
- Type:
- Glazing:

### CASEWORK / FIXED EQUIPMENT

- 

### FURNISHINGS

- 

## TECHNICAL REQUIREMENTS

### MECHANICAL

- Outdoor Air: 10 cfm/person + 0.12 cfm/sf
- Air Circulation: VAV w/ reheat
- Summer Design Temp.: 76° F
- Winter Design Temp.: 72° F
- Controls: DDC, Space temperature
- Sound Criteria: NC = 35
- Special Systems: 10+ Computers
- Plumbing: None required

### ELECTRICAL

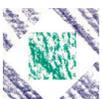
- Power: Duplex receptacles two each wall  
Additional capacity for equipment listed
- Data: Two per wall (min.)
- Phone: Minimum one
- Video: Ceiling recessed LCD projector  
w/ classroom sound amplification system
- Intercom: Required

### LIGHTING

- Fixture Types: T-8 Fluorescent lay-in
- Task Light: None required
- Foot Candles: 45-50
- Controls: Occupany sensor w/ local override

### EQUIPMENT (NIC)

- Capacity for laptop computers, overhead, opaque, slide & film projectors, VHS & DVD players, audio devices, laser printer, scanner.
- (1) Elmo desktop presentation unit.





# INDIVIDUAL SPACE OUTLINE

## GENERAL REQUIREMENTS

### SPACE SUMMARY

- Space Type:
- Number Required:
- Number Additional (expansion):
- Total Number:

### AREA SUMMARY

- Area (each):
- Subtotal Required Area:
- Subtotal Additional Area:
- Total Area:

### OCCUPANT SUMMARY

- Assigned Occupants:
- Visitors:

### FUNCTION / TASKS

### RELATIONSHIPS

- Location:
- Adjacency:
- Proximity:
- Separation:

## ARCHITECTURAL REQUIREMENTS

### FINISHES

- Floor:
- Walls:
- Ceiling:
- Sound:

### CEILING HEIGHT

- Above Finish Floor (min.):

### DOORS

- Type:
- Frame:
- Special:

### WINDOWS

- Natural Light:
- Type:
- Glazing:

### CASEWORK / FIXED EQUIPMENT

### FURNISHINGS

- 

## TECHNICAL REQUIREMENTS

### MECHANICAL

- Outdoor Air: 10 cfm/person + 0.12 cfm/sf
- Air Circulation: VAV w/ reheat
- Summer Design Temp.: 76° F
- Winter Design Temp.: 72° F
- Controls: DDC, Space temperature
- Sound Criteria: NC = 35
- Special Systems: None required
- Plumbing: None required

### ELECTRICAL

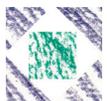
- Power: Duplex receptacles two per wall  
Additional capacity for equipment listed
- Data: Two per wall (min.)
- Phone: Minimum one
- Video: Ceiling recessed LCD projector  
w/ classroom sound amplification system
- Intercom: Required

### LIGHTING

- Fixture Types: T-8 Fluorescent lay-in
- Accent Lighting: Incandescent
- Foot Candles: 45-50
- Controls: Occupancy sensor w/ local override

### EQUIPMENT (NIC)

- Capacity for laptop computers, overhead, opaque, slide & film projectors, VHS & DVD players, audio devices.



# INDIVIDUAL SPACE OUTLINE



## GENERAL REQUIREMENTS

### SPACE SUMMARY

- Space Type:
- Number Required:
- Number Additional (expansion):
- Total Number:

### NET AREA SUMMARY

- Area (each):
- Subtotal Required Area:
- Subtotal Additional Area:
- Total Area:

### OCCUPANT SUMMARY

- Assigned Occupants:
- Visitors:

### FUNCTION / TASKS

- 

### RELATIONSHIPS

- Location:
- Adjacency:
- Proximity:
- Separation:

## ARCHITECTURAL REQUIREMENTS

### FINISHES

- Floor:
- Walls:
- Ceiling:
- Sound:

### CEILING HEIGHT

- Above Finish Floor (min.):

sf 

### DOORS

- Type:
- Frame:
- Special:

sf 

### WINDOWS

- Natural Light:
- Type:
- Glazing:

### CASEWORK / FIXED EQUIPMENT

- 

### FURNISHINGS

- 

## TECHNICAL REQUIREMENTS

### MECHANICAL

- Outdoor Air:
- Air Circulation:
- Summer Design Temp.:
- Winter Design Temp.:
- Controls:
- Sound Criteria:
- Special Systems:
- Plumbing:

### ELECTRICAL

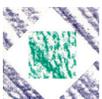
- Power:
- Data:
- Phone:
- Video:
- Intercom:

### LIGHTING

- Fixture Types:
- Task Light:
- Foot Candles:
- Controls:

### EQUIPMENT (NIC)

- 





# INDIVIDUAL SPACE OUTLINE

## GENERAL REQUIREMENTS

### SPACE SUMMARY

- Space Type:
- Number Required:
- Number Additional (expansion):
- Total Number:

### AREA SUMMARY

- Area (each):
- Subtotal Required Area:
- Subtotal Additional Area:
- Total Area:

### OCCUPANT SUMMARY

- Assigned Occupants:
- Visitors:

### FUNCTION / TASKS

### RELATIONSHIPS

- Location:
- Adjacency:
- Proximity:
- Separation:

## ARCHITECTURAL REQUIREMENTS

### FINISHES

- Floor:
- Walls:
- Ceiling:
- Sound:

### CEILING HEIGHT

- Above Finish Floor (min.):

### DOORS

- Type:
- Frame:
- Special:

### WINDOWS

- Natural Light:
- Type:
- Glazing:

### CASEWORK / FIXED EQUIPMENT

### FURNISHINGS

- 

## TECHNICAL REQUIREMENTS

### MECHANICAL

- Outdoor Air:
- Air Circulation:
- Summer Design Temp.:
- Winter Design Temp.:
- Controls:
- Sound Criteria:
- Special Systems:
- Plumbing:

### ELECTRICAL

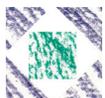
- Power:
- Data:
- Phone:
- Video:
- Intercom:

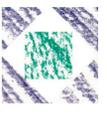
### LIGHTING

- Fixture Types:
- Task Light:
- Foot Candles:
- Controls:

### EQUIPMENT (NIC)

- 



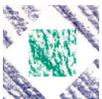


## AREA SUMMARY



<i>HEAVY DUTY DIESEL PROGRAM</i>			
<i>Space Description</i>	<i>Quantity</i>	<i>Size</i>	<i>Total Area</i>
Diesel Service Bay	12	337.5 sf	4,050 sf
Partnership Service Bay	4	337.5 sf	1,350 sf
Pit Bay	2	337.5 sf	675 sf
Enclosed Wash Bay	1	800 sf	800 sf
Enclosed Storage Bay	1	520 sf	520 sf
Engine Re-Build Area	1	1,575 sf	1,575 sf
Transmission/Diff Re-Build	1	1,800 sf	1,800 sf
Hydraulics Maintenance Room	1	450 sf	450 sf
Electrical Maintenance Room	1	300 sf	300 sf
Welding Room	1	450 sf	450 sf
Tool Crib	1	600 sf	600 sf
Diesel Classrooms	2	900 sf	1,800 sf
Partnership Classroom	1	900 sf	900 sf
Faculty Open Office / Workroom	1	600 sf	600 sf
Media / Video Library	1	450 sf	450 sf
Storage Room	1	750 sf	750 sf
<i>Heavy Duty Diesel Total</i>			<i>17,070 sf</i>

<i>MACHINING TECHNOLOGY PROGRAM</i>			
<i>Space Description</i>	<i>Quantity</i>	<i>Size</i>	<i>Total Area</i>
CNC / Machining Shop	1	5,700 sf	5,700 sf
CNC / Machining Inspection	1	1,500 sf	1,500 sf
Grinding & EDM Room	1	450	450 sf
Metal Prep & Deburr Area	1	525 sf	525 sf
Tool Crib	1	600	600 sf
Classroom	1	1,500 sf	1,500 sf
CAD / Cam Lab	1	900 sf	900 sf
Faculty Open Office / Workroom	1	600 sf	600 sf
Metal Storage Room	1	375 sf	375 sf
Fluid Storage Room	1	150 sf	150 sf
Storage Room	1	500 sf	500 sf
<i>Machining Technology Total</i>			<i>12,650 sf</i>





# AREA SUMMARY

## INDUSTRIAL AUTOMATED MAINTENANCE PROGRAM

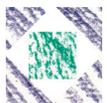
Space Description	Quantity	Size	Total Area
Industrial Maintenance Shop	1	1,500 sf	1,500 sf
Fluid Training Classroom	1	900 sf	900 sf
Mechanical Training Classroom	1	900 sf	900 sf
Electrical Training Classroom	1	900 sf	900 sf
Developing Technologies	1	900 sf	750 sf
Faculty Open Office / Workroom	1	300 sf	300 sf
Media / Video Library	1	450 sf	450 sf
Storage Room	1	300 sf	300 sf
<b>Industrial Automated Maintenance Total</b>			<b>6,000 sf</b>

## COMPUTER AIDED DRAFTING & DESIGN PROGRAM

Space Description	Quantity	Size	Total Area
CADD Classroom / Lab	1	2,680 sf	2,680 sf
Multi-Media Studio	1	300 sf	300 sf
Faculty Open Office / Workroom	1	300 sf	300 sf
Storage Room	1	300 sf	300 sf
<b>COMPUTER AIDED DRAFTING &amp; DESIGN TOTAL</b>			<b>3,580 sf</b>

## BUILDING COMMON SPACES

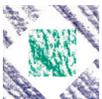
Space Description	Quantity	Size	Total Area
Shared Multi-Purpose Classroom	1	900 sf	900 sf
Shared Conference Room	1	450	450 sf
Women's Toilet & Locker Room	1	900 sf	900 sf
Men's Toilet & Locker Room	1	900 sf	900 sf
<b>BUILDING COMMON SPACES TOTAL</b>			<b>3,150 sf</b>

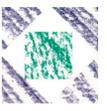


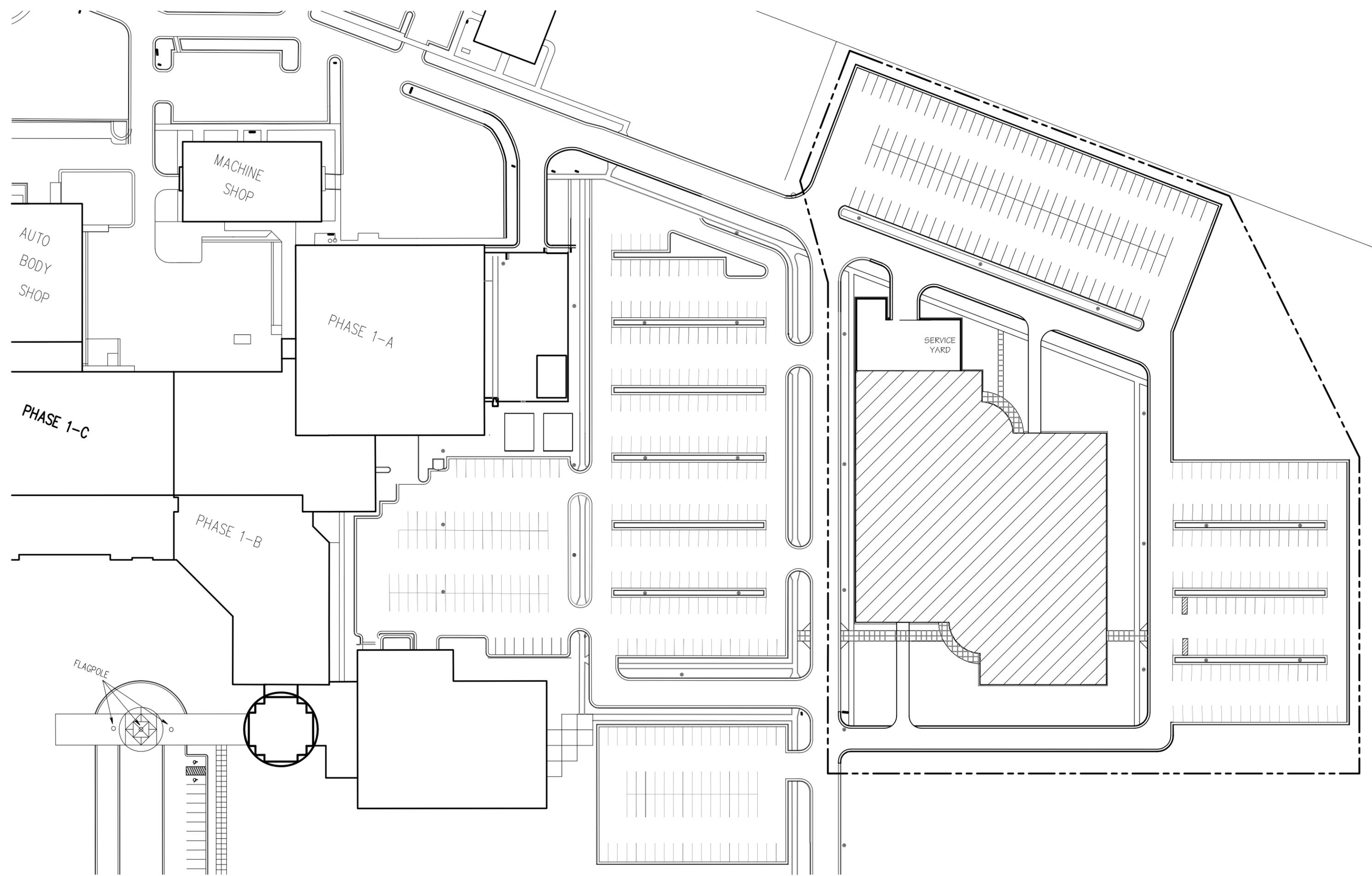
## AREA SUMMARY



<i>BUILDING SUPPORT SPACES</i>			
<i>Space Description</i>	<i>Quantity</i>	<i>Size</i>	<i>Total Area</i>
Mechanical Room	1	1,500 sf	1,500 sf
Electrical Room	1	200 sf	200 sf
Telecommunications Room	1	100 sf	100 sf
Elevator Equipment Room	1	100 sf	100 sf
Open Vending Area	1	450 sf	450 sf
Custodial Closet	2	100 sf	200 sf
Electrical Closet	2	100 sf	200 sf
Telecommunication Closet	2	100 sf	200 sf
<b><i>Building Support Spaces Total</i></b>			<b><i>2,950 sf</i></b>
Assigned Spaces Subtotal			42,450 sf
Unassigned Spaces (74% Efficiency Factor) Total			15,000 sf
<b><i>Manufacturing Technology Building Total</i></b>			<b><i>57,450 sf</i></b>







A1 SITE PLAN  
SCALE: 1"=40'-0"

