

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

***PREPARED FOR THE DAVIS APPLIED TECHNOLOGY COLLEGE***



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

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## 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 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 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 one-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 one-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
<hr/>		
<b>TOTAL</b>	<b>42,450 NSF</b>	<b>57,450 GSF</b>

### HEAVY DUTY DIESEL PROGRAM SPACE TYPES:

• Service Bay	20 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	3 Total

### INDUSTRIAL AUTOMATION MAINTENANCE PROGRAM SPACE TYPES:

• Shop Area	1 Total
• Classrooms	4 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. It's focus is on providing open-entry/open-exit, and 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 loop road on the east side of the campus. This location is currently a large field, see the following aerial site photograph. **(The existing Davis Applied Technology College infrastructure does not have sufficient capacity to support this new building.)**





# SITE ANALYSIS

AERIAL SITE PHOTO





## 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.





## SITE ANALYSIS

### *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.

## **PHYSICAL CHARACTERISTICS**

### *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.





## SITE ANALYSIS

### *VIEWS OF 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.

Located on the east side of the campus loop road, the proposed site is adjacent to an existing parking lot only east of the existing Diesel Compound and Service Yard (see Photos of Views into the Site).

The site selected for the new Haven J. & Bonnie Rae Barlow Manufacturing Technology Building is located in the northeast corner of the DATC campus. The proposed site, currently used as a sod farm, is on the east side of the campus loop road.

Directly east of the existing Diesel Compound and Service Yard, access between the two sites is through an existing parking lot which is on the west side of the campus loop road and adjacent to the proposed site (see the following photos).



# 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 the following photos of views out of the site).





## SITE ANALYSIS

### SITE ORIENTATION

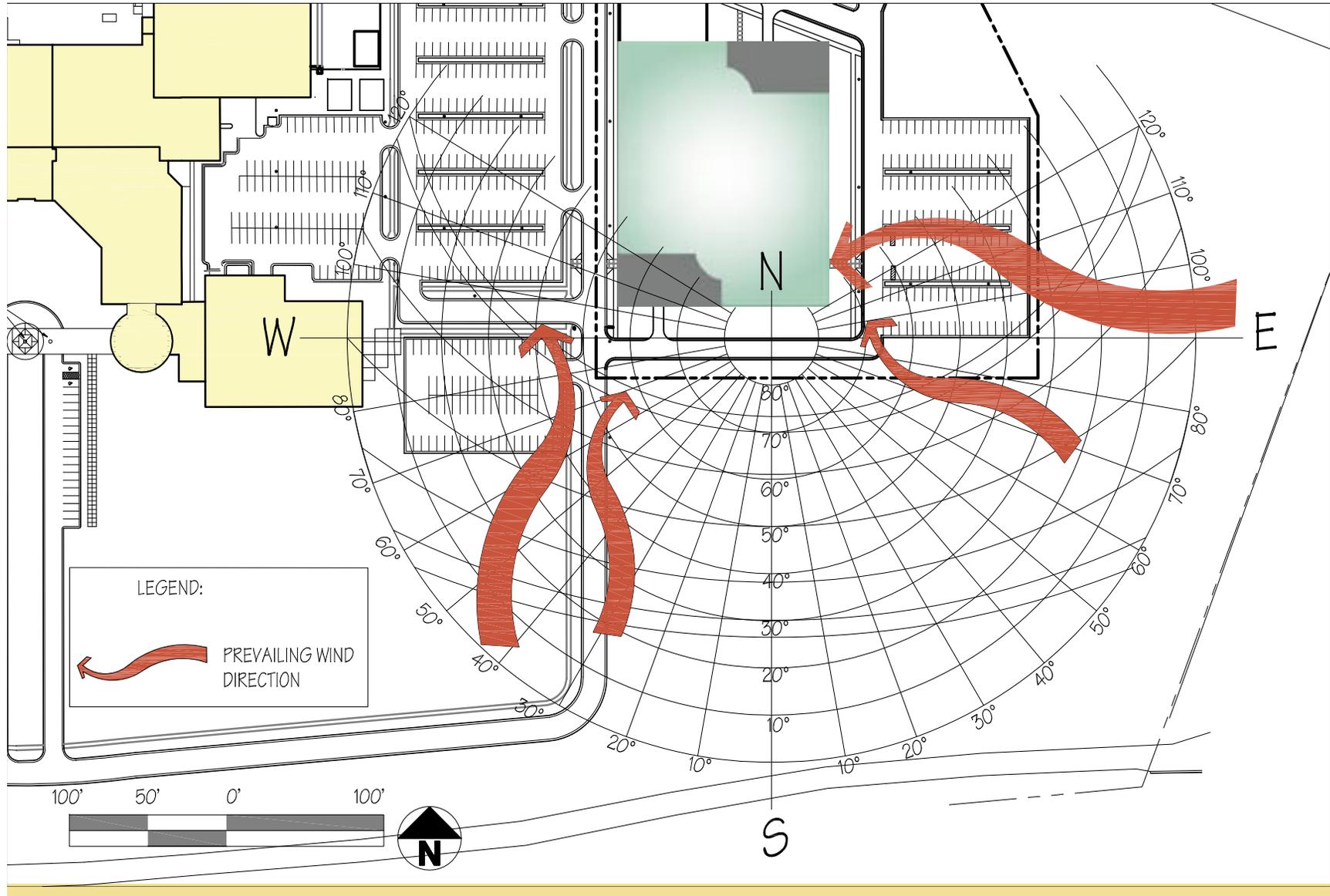
#### CLIMATE

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).





## SOLAR EXPOSURE & PREVAILING WINDS





## SITE ANALYSIS

### SITE CIRCULATION & RELATIONSHIPS

#### *EXISTING VEHICULAR ACCESS*

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

The new Haven J. & Bonnie Rae Barlow Manufacturing Technology Building site will include a new adjacent parking lot on the south side of the building. The service entrance to the new building will be on the north side and will include a new service yard compound.

Additional parking for the new building will be in the existing Parking Lot located across the perimeter loop road, west of the site. Additional accessible stalls will be added in the new Parking Lot and adjacent to the new building.

It has been determined that a traffic study is not required during the Programming phase of this project.

#### *EXISTING PEDESTRIAN ACCESS*

The pattern for pedestrian circulation from the new Haven J. & Bonnie Rae Barlow Manufacturing Technology Building to the existing main campus building will be, temporarily, across the existing perimeter loop road. As indicated on the current Campus Master Plan, this road will eventually be re-routed around this building on the north and east sides.

#### *EXISTING SERVICE AND EMERGENCY ACCESS*

Service vehicles and emergency access to the site will be from the existing campus perimeter loop road on the north, around the building, and from the campus perimeter loop road from the south.



# BUILDING REQUIREMENTS



## 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.

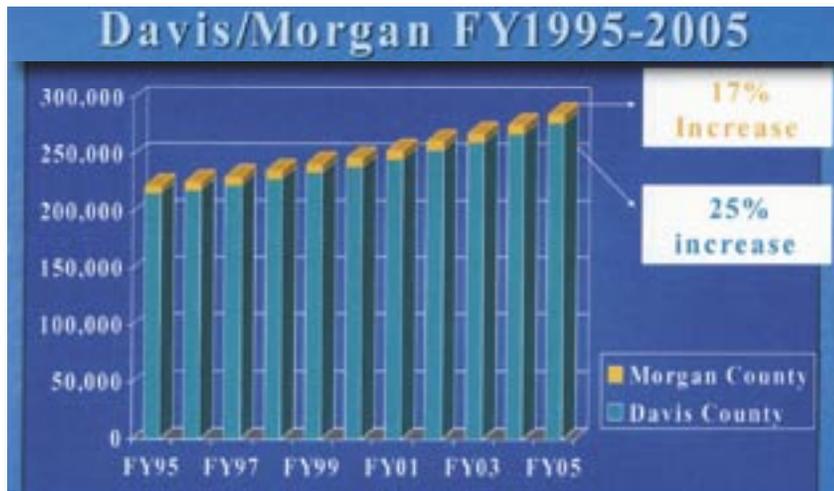


# BUILDING REQUIREMENTS



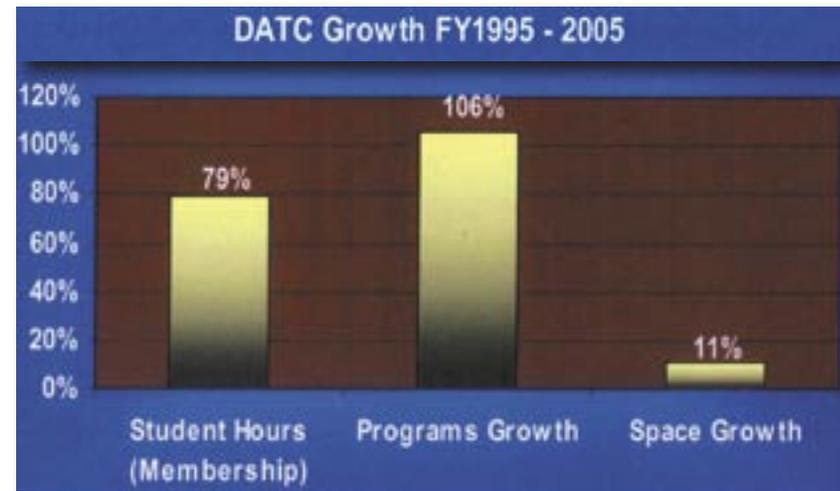
## REGIONAL GROWTH

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 REQUIREMENTS



## 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 break rooms 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>	
President and 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.



# BUILDING REQUIREMENTS



## 2006 INTERNATIONAL BUILDING CODE REVIEW

<i>OCCUPANCY</i> (Chapter 3)	B, F-1, S-1	<i>ALLOWABLE BUILDING AREA</i> Programmed Area Basic Allowable Area (507.4)	57,450 SF Unlimited
<i>OCCUPANCY SEPARATION</i> (Table 508.3.3)	Not Required	<i>FIRE-RESISTIVE REQUIREMENTS</i> Structural Frame Including columns, girders, tresses: Bearing Walls	(Table 601) 0
<i>TYPE OF CONSTRUCTION</i> (Chapter 6)	II B	Exterior Walls: Interior Walls: Non-Bearing Walls and Partitions	0 0 0
<i>FRONTAGE</i> (Section 506.2)	60'-0" Minimum	Exterior Walls (Table 602) Interior Walls (Section 602) Floor Construction	0 0 0
<i>OCCUPANCY SEPARATION REQUIRED</i>	NO	Including supporting beams and Joists: Roof Construction	0 0
<i>FIRE SPRINKLERS</i>	YES	Including supporting beams and joists:	0
<i>STORIES ALLOWED</i> (Table 503)	B: 4 F-1: 2 S-1: 3		





# 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. The level of user comfort as determined by the acoustic and vibration sensitivity of the structure also should be addressed.

### STRUCTURAL / SERVICE COORDINATION

Layout of the structural grid will need to respect the classroom, office, and shop area functions established for the various building functions. During the design phase, a completely integrated approach to building systems is recommended. Distribution of HVAC, plumbing and electrical services must be carefully coordinated with the structural elements, particularly at framing intersections and major crossover points. This close coordination must be achieved in order to avoid conflicts and limit penetrations of major structural members.

### CODES & STANDARDS

Codes and standards that apply to the design of this building are:

- 2006 International Building Code
- DFCM Design Criteria for Architects and Engineers, May 25, 2005
- American Institute of Steel Construction (AISC) with Commentary
- CI 318 Building Code Requirements for Reinforced Concrete
- ACI 530 Building Code Requirements for Masonry Structures
- American Iron and Steel Institute (AISI) Specifications for the design of Cold-Formed Steel Structural Members
- American Welding Society (ANSI/AWS) D1.1 Structural Welding Code
- Steel Joist Institute (SJI) for open web Joists and Girders
- Steel Deck Institute (SDI) for Metal floor and roof Decks

### GEOTECHNICAL CRITERIA

A site specific geotechnical investigation has not been completed at this time. A geotechnical investigation that was completed for the DATC Entrepreneurial Center dated April 26, 2005 has been provided for use in determining preliminary geotechnical criteria. This report indicates that the subsurface conditions consist of reddish-brown, medium to stiff, sandy silt and loose to medium dense, silty sand. Groundwater was encountered at an elevation of 25' below the ground surface. Weber county liquefaction maps indicate that the site is in an area of "moderate" liquefaction potential. However, the report indicates that the liquefaction potential for the site would be low based on groundwater levels and soil characteristics en-





countered in the borings. The report indicates that the site should be given a seismic site classification of Class D. Based on this information it appears that the building may be supported on conventional spread footings proportioned for an allowable soil bearing pressure of 2,500 psf.

Once the final building size, configuration, structural system, number of levels above and below grade, and column loads have been determined, the project geotechnical consultant shall review the following items to verify the assumptions in the geotechnical report conform with the final proposed design of the facility:

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

## DESIGN CRITERIA

The structural systems in the facility shall be designed to meet the requirements of the 2006 International Building Code (IBC) and the Design Criteria Manual adopted by the Utah State Building Board. The following minimum requirements should be anticipated:

- Occupancy Category Category II
- Wind Loads
  - Wind Velocity: 90 mph, (3 second Gust)
  - Exposure Type: "B" or "C", for the building structure, as appropriate to the site. Exposure "C" shall be used for elements and components including the exterior window wall systems
  - Wind Importance Factor,  $I_w$  1.0
- Seismic Loads
  - Short Period Mapped Acceleration  $S_s = 1.373$
  - Long Period Mapped Acceleration  $S_1 = 0.575$
  - Site Class D
  - Seismic Design Category D
  - Seismic Importance Factor,  $I_e$  1.0
- Roof Loads
  - Ground snow,  $p_g$  43 psf
  - Calculate roof snow load as specified in the Utah Uniform Building Standard Act Rules R156-56 issued January 1, 2002. Design for snowdrift where appropriate. Roof live loads shall not be less than that specified in IBC 1607.11.





# BUILDING REQUIREMENTS

Snow Importance Factor,  $I_s$  1.0

- Floor Live Loads  
Floor design live loads shall be in accordance with the latest edition of the DFCM Design Criteria Manual and the 2006 International Building Code and as follows:
  1. 80 psf, unreduced, except for column and footing designs
  2. 15 psf movable partition load
  3. Areas of concentrated standard file storage - 125 psf
  4. Floor areas supporting high density rolling files – 225 psf, or actual load
  5. Paper storage areas – 250 to 350 psf as appropriate
  6. UPS Battery Storage areas – 250 to 450 psf as appropriate
  7. Mechanical Equipment Rooms – 125 psf minimum or more as required by the final design

Areas where heavy load concentrations exceed the normal loading requirements shall be designed for the specific load case.

Note: The more stringent requirement between the 2006 IBC, the DFCM Design Criteria Manual, and the loads given above shall govern.

## FLOOR VIBRATION CRITERIA

Control of suspended floor and roof structure vibrations due to human and mechanically induced excitation forces shall be considered in the selection of the building structural floor and roof framing systems

It is not anticipated that any activities or equipment that are sensitive to floor vibrations will be located within this facility. This should be verified as part of the final design. Should vibration sensitive activities or equipment become necessary within the facility then structural system compatibility should be carefully evaluated.

## STRUCTURAL SYSTEM SELECTION COST COMPARISON

The structural system chosen for the building shall be selected based upon the following criteria:

- A cost comparison of at least two structural systems shall be investigated. The comparison should be broken down in detail with each component of cost significance being listed separately.
- Various structural systems comparing building construction time, material availability, coordination of various trades, lead times for ordering materials, appearance, owner preference, maintenance costs, flexibility for future remodeling, and compatibility with surrounding buildings should be considered when choosing the final structural systems for the building.



# BUILDING REQUIREMENTS



- Damage to the building structure and its contents due to lateral earthquake and/or wind loads should be evaluated between various structural systems. Damage control to building non-structural systems is a pertinent and important consideration when selecting the building structural system.

More rigid shear wall and/or braced frame lateral force resisting systems provide greater damage control to a building's non-structural systems than does a more flexible moment frame type lateral force resisting system. However, a moment frame lateral force resisting system provides almost unlimited programmatic and planning flexibility initially and during the life of the building.

All cost comparisons between structural systems should include interface costs between other building components such as architectural finishes, exterior enclosure systems, mechanical systems, and electrical systems.

Life cycle costing methods should be used where applicable.

## *FUTURE BUILDING EXPANSION*

The A/E designers of the building shall not consider potential future horizontal and/or vertical expansions because:

- Future vertical expansion is not anticipated.
- Future horizontal expansion of the structure is not anticipated.

## *TESTING & INSPECTIONS*

The Architect/Engineer, and the selected testing lab, shall perform 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 perform 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

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

### GENERAL MECHANICAL

The design and construction shall comply with the current Utah State Division of Facilities and Construction Management Architect Engineer Design Guide and the Davis Applied Technology Design Standards.

The mechanical systems for the building shall be energy conserving and suitable for the building occupancy. Systems and equipment shall have a proven history of providing efficiency and optimal energy conservation. Mechanical systems shall be designed to help the building comply with the State of Utah High Performance Building Standard.

Automatic temperature controls shall be suitable for the building systems and occupancy. The control system shall be an electronic DDC system linked to the campus central CSI (Utah Controls) control system.

Provide complete O & M Manuals at the completion of the project.

All equipment, piping and duct work shall be clearly identified and labeled.

### 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.

### HEATING SYSTEM

Heating source hot water shall be provided from a hot water boiler. 180°F hot water shall be distributed through a two pipe, direct return system to coils located in the Air Handling Units, VAV Boxes, and hot water unit heaters located throughout the building.

Hot water system shall consist of two 100% redundant hot water distribution pumps with variable frequency drives, air eliminator, bladder type expansion tank complete with automatic make-up water system. Boiler shall be a bent tube steel boiler.

Shop areas shall have a combination of gas fired radiant tube heaters, with auxiliary supplemental hot water space unit heaters.

### COOLING SYSTEM

Cooling source shall be chilled water provided by a water-cooled chiller. Chilled water supply piping shall supply 45°F chilled water to the coils located in the air handling units. Condenser water from the cooling tower shall supply indirect cooling coils located in the air handling units.

The cooling tower shall be located exterior to the building on a concrete mechanical pad. The chiller, chilled water distribution pumps, condenser water pumps shall be located within the building's mechanical equipment room. The tower fans shall have variable frequency drives.

Coil circulating in line pumps shall be provided for each air handling unit.

Chilled water system shall consist of air eliminator, bladder type

# BUILDING REQUIREMENTS



expansion tank, cooling tower, two 100% redundant chilled water pumps with variable frequency drives, two 100% redundant condenser water pumps with variable frequency drives, and an automatic make-up water system.

Condenser water shall be piped to indirect cooling coils at each air handling unit.

## **AIR SYSTEM**

Air system for the building shall be a combination of central station VAV air handling units. The number and location shall be determined by space location requirements and economics. Air handling units shall be of the VAV type with variable frequency drives to assist in varying the air flow and maintaining space static pressure. Air handler shall have a chilled water coil, and indirect cooling coil, and a hot water preheat coil. Each control zone shall be provided with a VAV box, reheat coil and controlling thermostat.

Provide indirect gas fired make-up air units with evaporative cooling in shop areas with dedicated exhaust.

Provide roof mounted evaporative coolers in shop areas.

Outside air ventilation shall be CO2 controlled with a minimum outside air position under normal occupied operating conditions, and comply with ASHRAE Standard 62-1 2004.

Shop areas shall have dedicated exhaust. Exhaust shall be controlled by a CO sensor, with a manual over-ride switch.

## **PLUMBING SYSTEM**

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

Domestic hot water shall be heated by a gas-fired hot water boiler. The number and location shall be determined by space location requirements and economics. Provide the necessary domestic hot water storage tank, re-circulating pumps, mixing valves, etc.

Plumbing fixtures shall be from the same manufacturer. Provide ADA compliant fixtures as required by code, and where called out in the individual space requirements. Provide sinks and other fixtures as detailed in the individual space requirements.

Provide an emergency eyewash/drench showers in shop areas. Locate in close proximity to a floor drain.

Provide floor mounted mop sinks in the custodial closets indicated in the individual space requirements.

Provide compressed air to shop areas. The number and location of air compressors shall be determined by space location requirements and economics.

Water treatment for chilled, heating, and condenser water systems shall be provided by an owner approved Water Treatment Service Organization.





# BUILDING REQUIREMENTS

## **FIRE PROTECTION SYSTEM**

Fire sprinkler protection is to be provided suitable for the building type and occupancy. The entire building shall be sprinkled. System shall comply with NFPA, Campus Fire Marshal and State of Utah Fire Marshal requirements.

Fire alarm main panel shall be installed by the main front entrance used by the fire department, and the exact placement shall be decided in conjunction with the campus Fire Marshal.

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

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

The fire alarm contractor shall provide a "dry" set of contacts to tie into the central campus enunciator panel.

All fire rated doors shall be supplied with a magnetic door hold open that is tied into the fire alarm system. Upon activation of a fire alarm or power failure, they shall release.

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

## **COMPUTER ROOMS**

Provide dedicated packaged computer room cooling units for each computer room.

## **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: 4,300 Ft.
- Latitude/Longitude: 41°01' N, 111°55' W
- Ambient: (ASHRAE 2-1/2%, 97%):
  - ▶ Summer 95°F DB 66°F WB
  - ▶ Winter 2°F DB
- Indoor Conditions:
  - ▶ Summer 76°F
  - ▶ Winter 72°F
- Ventilation Rates: ASHRAE 62-1 - 2004
- Internal Heat Gain:
  - ▶ People: ASHRAE Estimates for Level Activity
  - ▶ Equipment, ASHRAE Estimates for Following:
    - ◆ Computers
    - ◆ Copy Machines
    - ◆ TV Monitors
- Lights: Coordinate with electrical design





## BUILDING SYSTEMS DESIGN CRITERIA - ELECTRICAL SYSTEMS

### APPLICABLE CODES

The mechanical system throughout the building shall be designed and installed in accordance with the most current Utah adopted version of following codes and standards:

- Life Safety Code
- International Building Code (IBC) including all appendices
- International Mechanical Code (IMC)
- International Plumbing Code (IPC)
- International Fuel Gas Code (IFGC)
- National Electrical Code (NEC)
- National Fire Protection Association (NFPA)
- ASHRAE 90.1
- ASHRAE Standard for Ventilation 62
- ASHRAE Guides and Standards (ASHRAE)
- State of Utah Boiler and Pressure Vessel Rules and Regulations
- American Society of Mechanical Engineers (ASME)
- American Standards Association (ASA)
- American Society of Testing Materials (ASTM)
- Sheet Metal and Air conditioning Contractors National Association (SMACNA)
- Occupational Safety and Health Administration (OSHA)
- Utah State Division of Facilities and Construction Management (DFCM) ~ Architect / Engineer Design Guide.
- DFCM Indoor Air Quality Criteria
- DFCM High Performance Building Standard

### CODES & STANDARDS

Codes directly applicable to the design of the electrical system are the 2005 National Electrical Code, 2006 International Building Code, the International Fire Code, applicable standards of ASHRAE for energy conservation. Standards of UL, the National Electrical Manufacturer's Association, and OSHA should be incorporated in the design of the electrical systems.

### LIGHTING SYSTEMS

Lighting systems for the facility shall maximize energy efficiency while providing adequate illumination for performance of specified tasks. A balance shall be achieved between the quality and energy efficiency of the lighting. Lighting levels should be in conformance with the Recommended Illuminance Categories and Illuminance Values for Lighting Design, 8<sup>th</sup> edition, IES Lighting Handbook. Total lighting load for the facility should not exceed the calculated lighting power budget as determined by ASHRAE standards. Where applicable, task lighting systems should be employed to minimize energy consumption.

### ECONOMIC COMPARISONS

Initial and life cycle costs shall be compared for major system types, with emphasis on maximizing efficiencies of light sources and utilizing the most efficient luminaires suitable for the task involved.

### BALLASTS FOR FLUORESCENT SYSTEMS

Ballasts for full-sized fluorescent lamps (non-compact fluorescent) shall be electronic, Class P, A rated with a total harmonic current distortion of less than 20% and power factor above 95%. Light regulation must be limited to 1% for a +/-10% input voltage fluctu-





# BUILDING REQUIREMENTS

ation. Ballasts for compact fluorescent lamps (where used) should be electronic, high power factor type.

### LAMPS

Full-size fluorescent lamps shall be T-8, “thick coat” tri-phosphor lamps with color rendering index greater than 80, suitable for operation on ballasts indicated above. T5 lamps will be considered where it can be shown that they provide superior performance or where better suitability for the application can be demonstrated. High output and other lamps may be used where economic analyses show their superior life-cycle performance. Where applicable for lighting of small areas, for task lighting in control rooms, and for accent lighting, tungsten halogen lamp technologies should be employed. Encapsulated PAR lamps are preferable to A-shape lamps.

### DESIGN STRATEGIES

Design of “artificial” lighting systems shall compliment daylight available to interior spaces to maximize energy efficiency. Luminance ratio for interior spaces will be in compliance with IES RP-24, particularly in areas where use of VDT’s is likely. Lamp sources shall be specified to minimize variations in color temperature.

### EXTERIOR LIGHTING SYSTEMS

Exterior lighting shall be compatible with lighting levels in the surrounding area, sufficient for security of the building, and sufficient for walkways and parking, as applicable. Campus standards for exterior lighting shall be adhered to. The college has standardized on particular manufacturers for walkway, parking lot and building mounted lighting fixtures. Exterior lighting for this project shall match the existing standardized fixtures.

### EXIT SIGNS

Provide green LED exit signs at appropriate locations.

### CONTROL SYSTEMS

Consideration shall be given to multi-level switching systems, load shedding, occupancy sensors, and other energy reducing techniques.

### EXISTING UTILITIES

#### TELECOMMUNICATIONS

The College distributes telephone cable, fiber-optic data cable, cable TV signal, fire alarm, and building management network wiring around Campus via an underground utility tunnel. Each system is run in a separate conduit within the tunnel. Cable TV and fire alarm originate from the Heating Plant. Telephone originates from the Administration Building, and data originates from the Library.

Several solutions will need to be studied during design to determine how best to provide an interconnection between the Campus Tunnel system and the new building.

### POWER DISTRIBUTION SYSTEMS

#### SERVICE

The facility shall be served from the Rocky Mountain Power distribution system. A new pad mounted transformer shall be located outside the facility and meet the requirements of Rocky Mountain Power. Secondary voltage will be 277/480 volt.





Service Entrance equipment shall be circuit breaker type. Future capacity and expandability are of prime importance. Time-current system coordination and coordinated ground fault protection will be studied to insure minimum system outage due to malfunction. A balance must be achieved between system reliability and economic constraints.

Distribution equipment shall be circuit breaker type. Equipment shall be provided with copper bussing.

## *RACEWAY*

Galvanized Rigid Conduit (GRC) - Use in all hazardous locations as required by the NEC.

Intermediate Metal Conduit (IMC) - Use for main and subfeeders in all areas other than buried under floor or below grade; branch circuits in masonry and concrete walls with one side in contact with the earth.

Electrical Metallic Tubing (EMT) - Use for branch circuits in dry walls and ceilings.

Rigid Plastic Conduit - Use for main feeders, subfeeders, and branch circuits buried under floor or below grade. All underground conduit exterior to the building shall be a minimum size of 1 inch, buried at a depth of not less than 2 feet below grade.

## *CONDUCTORS*

All conductors shall be copper with THHN/THWN insulation. Conductors used for branch circuits in areas where the ambient conditions exceed 60 degrees C shall be provided with an insulation approved for that temperature. All conductors to be sized per NEC with a minimum size of #12. Conductors #8 and larger to be stranded.

## *EMERGENCY POWER SYSTEM*

Emergency power shall be provided for life safety functions. Life safety functions include means of egress lighting, lighting in certain critical spaces, and power for the fire alarm, telephone, security system.

A diesel-driven engine generator shall be provided with adequate capacity for life safety and emergency loads. Each area of the facility should be served from an emergency power panel as dictated by load.

Locate generator exterior to the building on a concrete pad and with a weather protective enclosure. Include a skid mounted double walled fuel tank with a minimum capacity of 24 hour fuel supply at full load.





# BUILDING REQUIREMENTS

## SPECIAL SYSTEMS

### TELEPHONE RACEWAY SYSTEM

A system of telephone outlets, raceways, backboards, grounding, etc. will be required throughout the facility for a complete telephone raceway system. In accordance with campus standards, where telephone outlets are required, provide 3/4" raceways from the cable tray (see paragraph 2 below for cable tray system) to a 4" square box with a single gang plaster ring and blank cover. Each such outlet will then serve as a combination telephone and data outlet. See individual space outline sheets for outlet requirements.

### TELECOMMUNICATIONS/DATA RACEWAY SYSTEM

Raceway systems for signal cabling will be required throughout the facility. Data outlets are to be incorporated as a portion of a combined telephone/data outlet as described in paragraph 1 above, and/or in accordance with Campus telecommunications standards. A trunk cable tray system with conduit branches to individual outlets should be provided. Cable trays should circulate throughout the facility and terminate on each floor in stacked telecommunications closets. Radius all telecommunications raceways to allow the use of fibre optic cabling. The Owner will provide and install all voice and data cabling.

### CLOCK SYSTEM

Provide clocks in all public areas as well as areas designated by the individual space outline sheets. Installer shall match the existing Campus clock system by Rauland System and tie to the Campus master clock system.

### FIRE ALARM SYSTEM

Provide an addressable, ADA compliant fire alarm system in accordance with code requirements and requirements of the Utah State Fire Marshal. In addition, provide smoke detectors in electrical rooms, elevator equipment rooms, and other areas where appropriate. Manufacturer shall match the existing Campus fire alarm system. The building fire alarm panel shall tie to the Campus master fire alarm.

### LINE CONDITIONING

Provide transient over voltage and "noise" protection on the service entrance, and on selected panel boards in the facility which are likely to serve microprocessor based equipment and/or other electronic equipment sensitive to voltage spikes.

### SECURITY SYSTEM

A security system shall be provided for each department. Exterior doors shall be monitored by door security switches. Security system shall report alarms to an off-site central station.

### PUBLIC ADDRESS/PAGING SYSTEM

A public address system shall be provided. The system shall serve public spaces and be arranged for voice paging and announcements.





## BUILDING SYSTEMS DESIGN CRITERIA - DATA & TECHNOLOGY SYSTEMS

### CODES AND STANDARDS

Codes and standards directly applicable to the design of the data and technology systems are the 2005 National Electrical Code, 2006 International Building Code, BICSI's Telecommunications Distribution Methods Manual 9<sup>th</sup> Edition, 2000, ANSI/TIA/EIA-568-A Commercial Building Telecommunications Cabling Standard, ANSI/TIA/EIA-569-A Commercial Building Standard for Telecommunications Pathways and Spaces.

### TELECOMMUNICATIONS SYSTEM

Provide a telecommunications cabling system that meets current Campus Telecommunications Standards. The system shall tie back into the campus systems located in the Administration Building, Library and Heating Plant.

Several solutions will need to be studied during design to determine how best to provide an interconnection between the Campus and the new building

Special consideration should be taken during design to ensure that the Equipment Room and Telecommunications Rooms (TR) are placed with-in the facility to meet the cable distance requirements and are placed to eliminate any EMI sources from electrical distribution equipment. Telecommunications Rooms located on the individuals floor should be stacked one above the other to facilitate routing of distribution cabling. All TR rooms shall be provided with easy access for maintenance of equipment. Provide cable management pathways that facilitate easy changes to equipment and cable plant.

### TECHNOLOGY SYSTEMS

Provide technology systems equipment that allow for interface with the telecommunications system for production and display of teaching materials to enhance the learning experience of the students and facilitate the exchange of information from the instructors. Special consideration should be placed on providing equipment that meets the current needs of the facility and has the ability to meet the changing requirements of technology.

#### **INSTRUCTIONAL LABS SHOULD INCLUDE THE FOLLOWING EQUIPMENT:**

- Cabinet for mounting of control equipment for Video/Data projector, VCR, DVD Player, Video/Computer switching, Assisted Listening System and storage of movable equipment ie: slide and film projectors, document camera, etc.
- Video/Data Projector mounted at ceiling
- Document Camera
- Lighting Controls at entrance door and Instructors Table
- Instructors Table with connection to facility network and control of equipment

#### **CLASSROOMS SHOULD INCLUDE THE FOLLOWING EQUIPMENT:**

- Cabinet for mounting of control equipment for Video/Data projector, VCR, DVD Player, Video/Computer switching, Assisted Listening System and storage of movable equipment ie: slide and film projectors, document camera, etc.
- Video/Data Projector mounted at ceiling
- Document Camera
- Lighting Controls at entrance door and Instructors Table
- Instructors Table with connection to facility network and control of equipment





# BUILDING REQUIREMENTS

## LANDSCAPE DESIGN CRITERIA

### OUTDOOR SPACE TYPES & FEATURES

Create a variety of campus space types: quiet/active, green/paved, open/closed, shaded/sunny, etc. Limit hardscape areas to those that will attract large gatherings; in principal most outdoor spaces should not be hardscape. The building and site must provide for quality key open space. The building site offers an opportunity to create additional outdoor activity areas and to enhance the existing outdoor activity areas/green spaces. Provide fixed and movable site furniture at strategic quiet and busy locations to accommodate both quiet lounging and interactions.

The landscaping should follow the concentric grid lines from the master plan and these lines have their radial origin in the center of the main entrance rotunda. These circles increase in 40 foot radial increments from that point and should be included in the landscaping an circulation projects. Smaller concentric grid lines are for campus entry signage, water feature/artwork.

### SITE ACCESSIBILITY

Paths to building entrances shall meet ADA criteria for slope and landings. Wherever possible, all other site paths shall meet ADA criteria. If that is unfeasible in a particular location, provide elevator access within the Haven J. & Bonnie Rae Barlow Manufacturing Technology Building that will allow wheelchair users to transition the non-compliant grade condition. All usable outdoor spaces shall be fully accessible.

### BICYCLES

Provide for bicycle usage along the pedestrian corridors, and secure 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 or 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).



# BUILDING REQUIREMENTS



## *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.

## *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.





# BUILDING REQUIREMENTS

## 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.

### ***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.



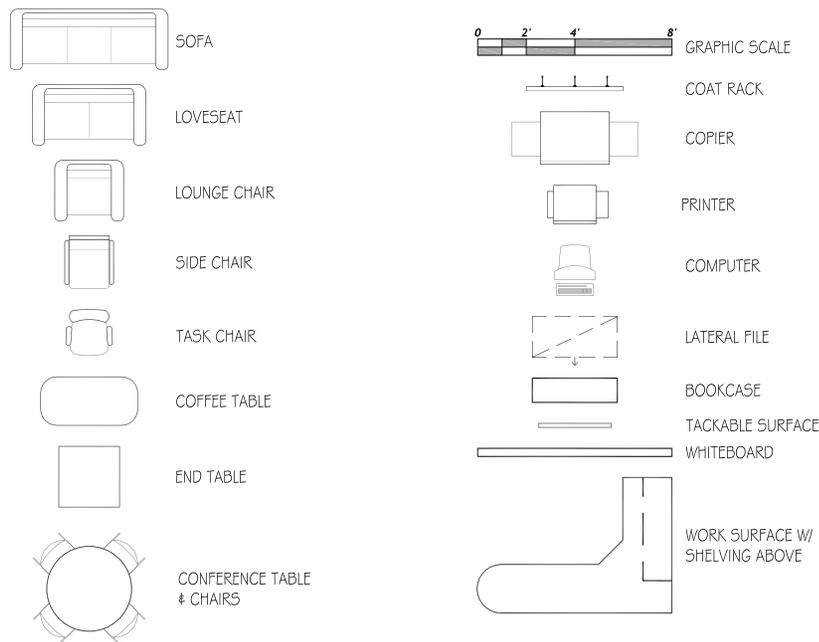


## INDIVIDUAL SPACE OUTLINE FORMAT

### 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.

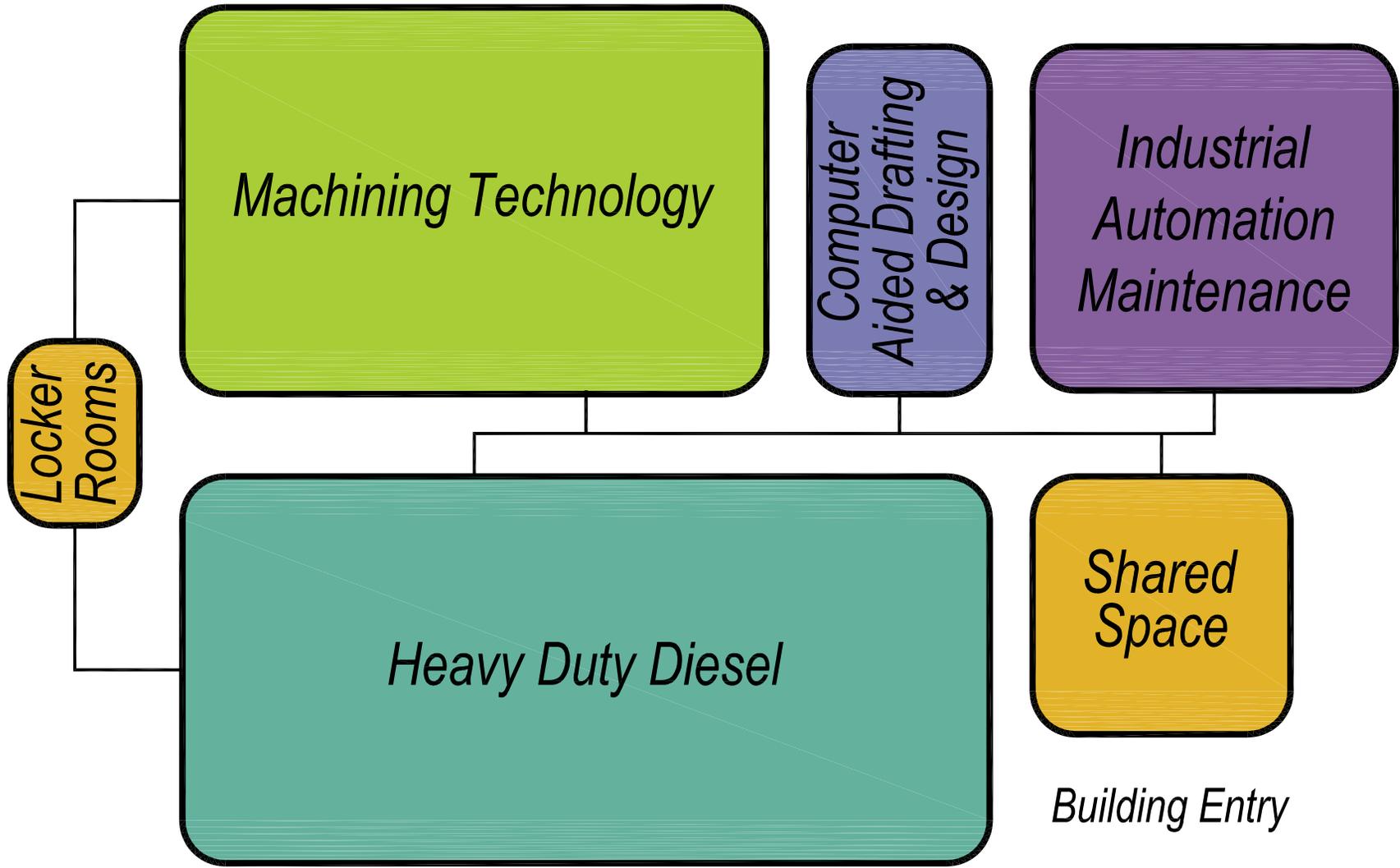
A dimensioning grid is in the background of each space drawing. The increments between the dots represent 1'-0".





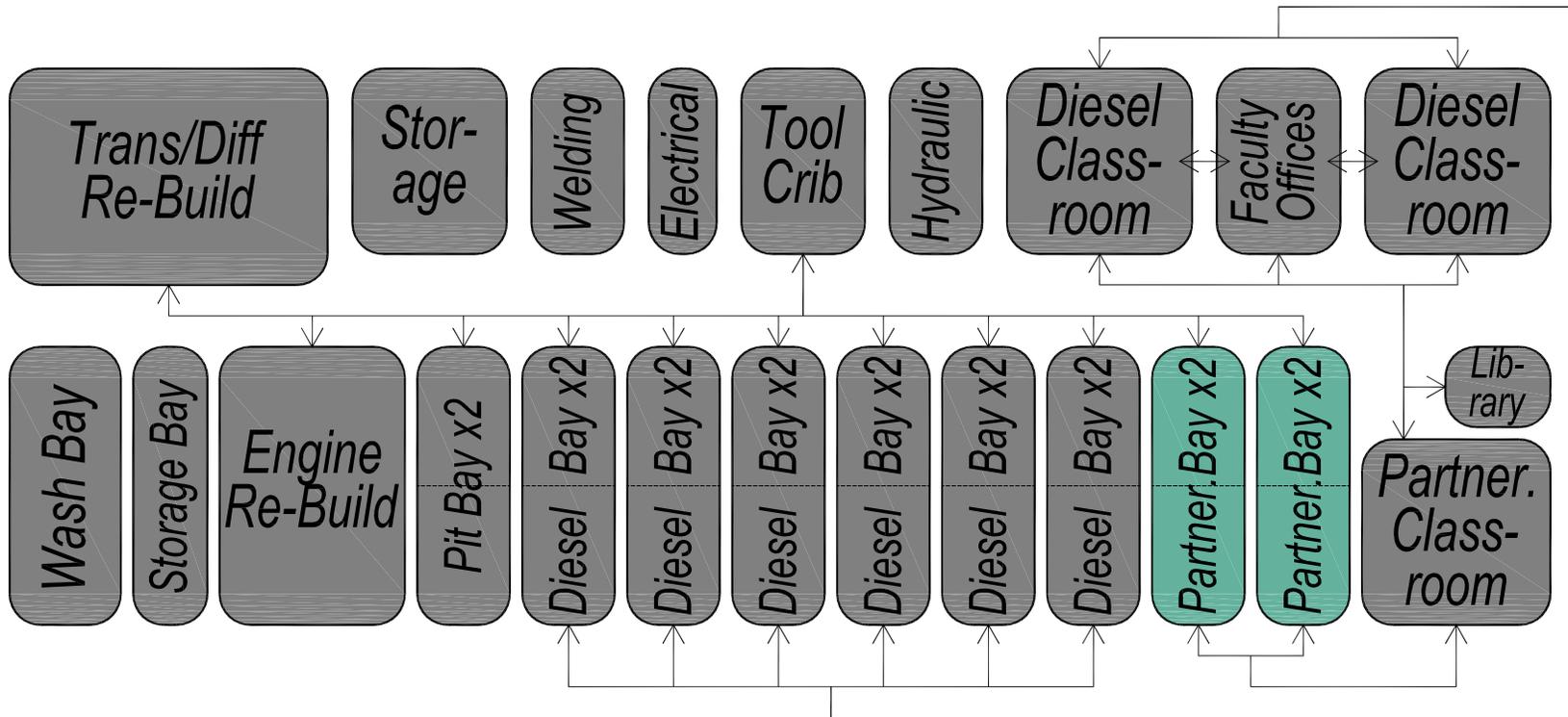
# INDIVIDUAL SPACE REQUIREMENTS

FIRST FLOOR RELATIONSHIP DIAGRAM



# INDIVIDUAL SPACE REQUIREMENTS

## HEAVY DUTY DIESEL RELATIONSHIP DIAGRAM

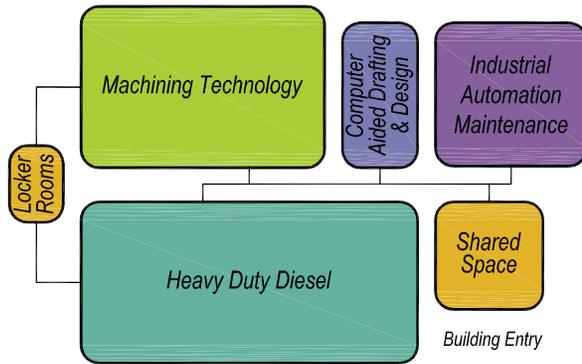


School of Transportation

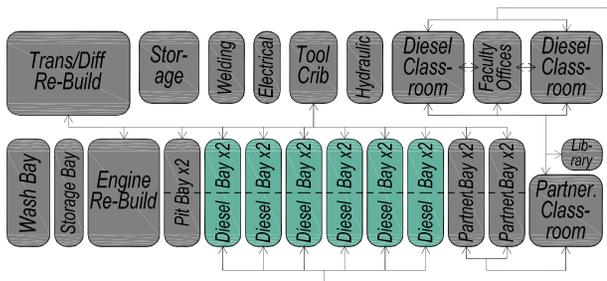




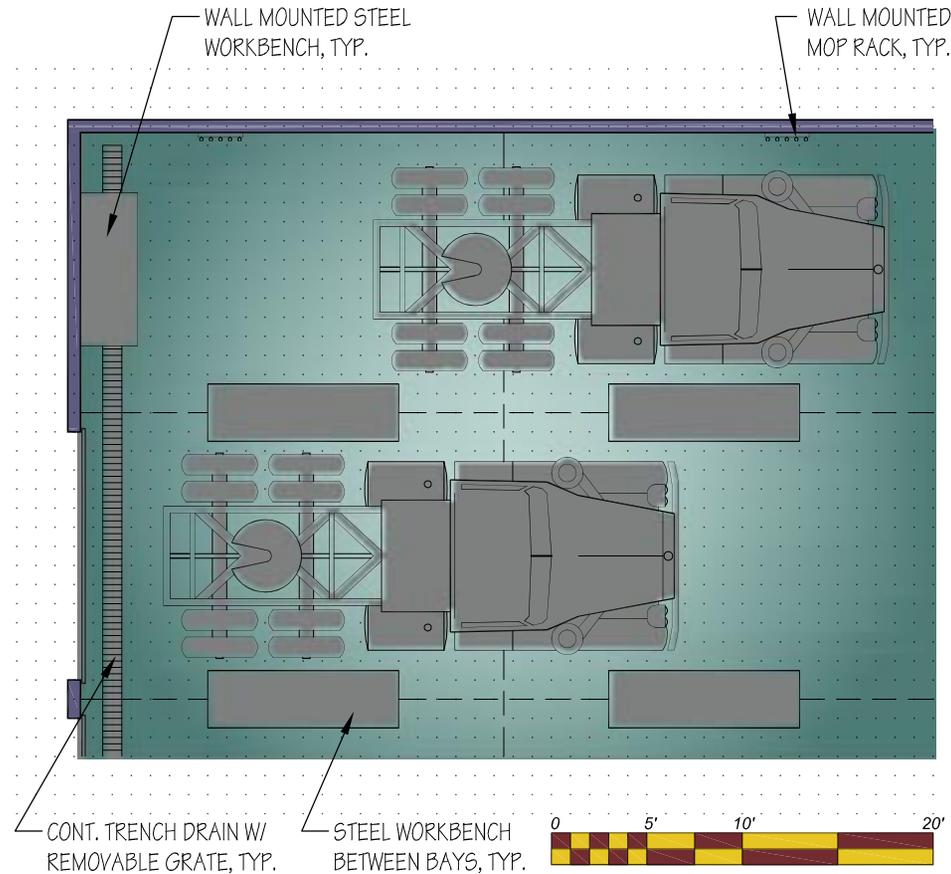
# INDIVIDUAL SPACE DIAGRAMS



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, one per two bays
- 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 ea)
- Mop & broom rack: (1 for every two bays) 24"

### FURNISHINGS

- Benches: (12 ea) 120"Wx34"Hx36"D
- Solvent storage cabinet: (1 ea) 18"x65"
- Oil filter crusher: (1 ea) 24"x60"
- Waste can: (12 ea) 18" diameter

**Note: Bays shown double stacked, but could be designed as single stacked**

## 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: Metal halide industrial
- Task Light: None required
- Foot Candles: 50
- Controls: Relay control w/ local override

### EQUIPMENT (NIC)

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

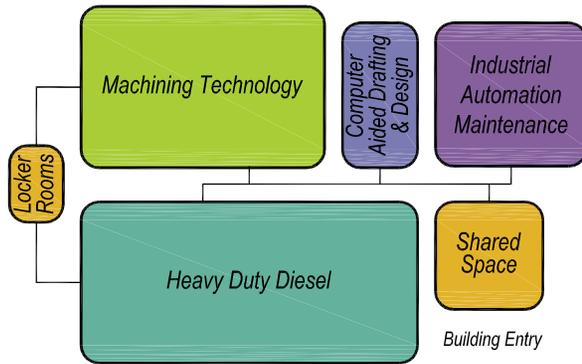
## DIESEL SERVICE BAYS

Heavy Duty Diesel Program - School of Transportation

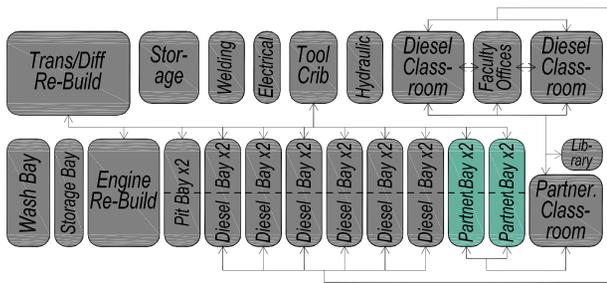




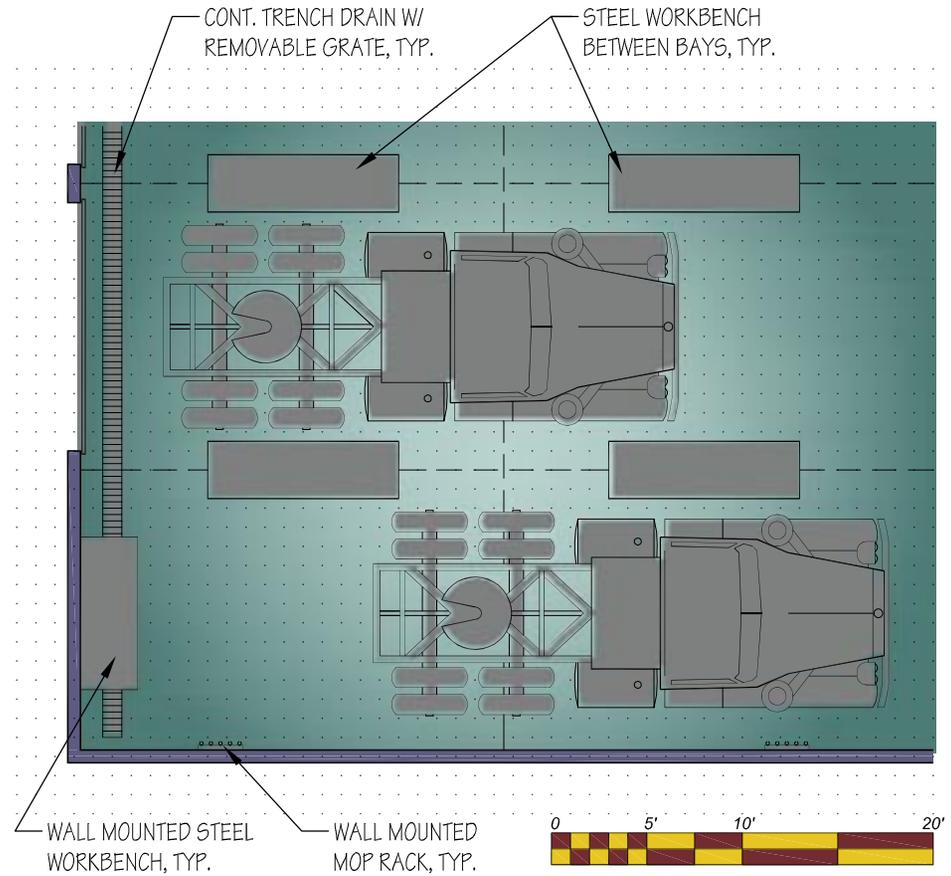
# INDIVIDUAL SPACE DIAGRAMS



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, one per two bays
- 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
- Waste can: (4 ea) 18" diameter

**Note: Bays shown double stacked, but could be designed as single stacked**

## 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: Metal halide industrial
- Task Light: None required
- Foot Candles: 50
- Controls: Relay control w/ local override

### EQUIPMENT (NIC)

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

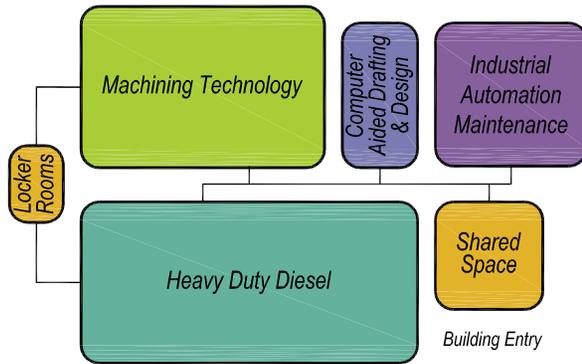
## PARTNERSHIP SERVICE BAYS

Heavy Duty Diesel Program - School of Transportation

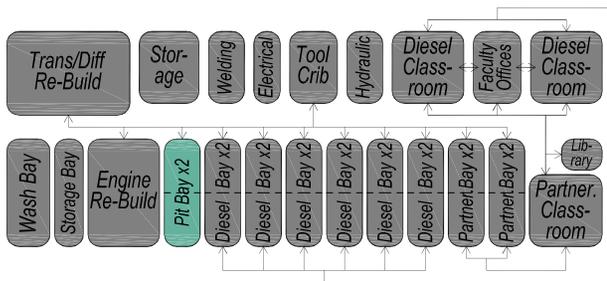




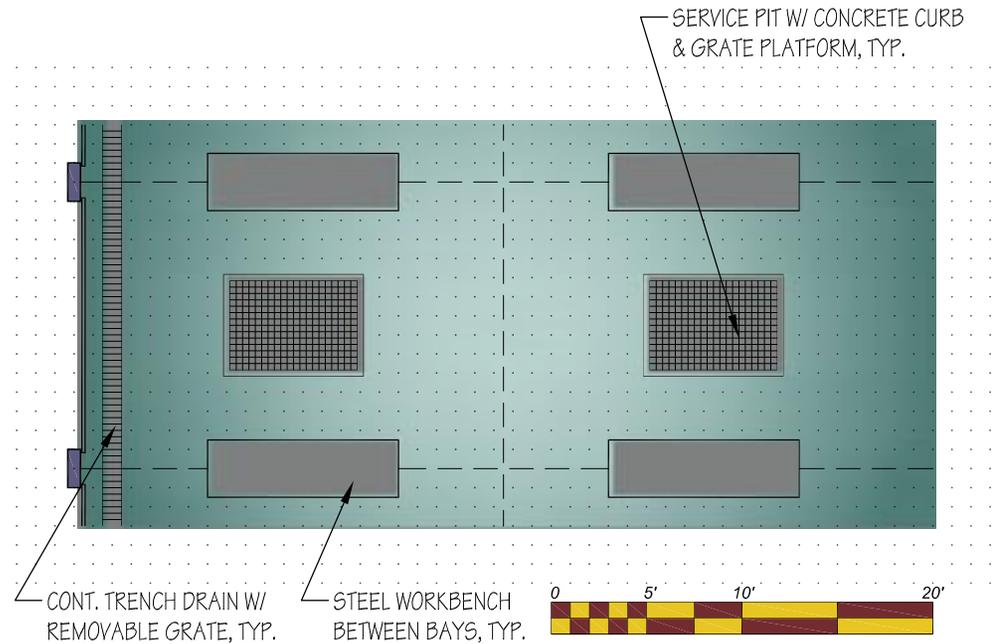
# INDIVIDUAL SPACE DIAGRAMS



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
- Waste can: (2 ea) 18" diameter

### SPECIAL CONSTRUCTION

- Recessed Service Pit: (2 ea) 42"W"x20"Lx48"D w/ lighting on all sides & from below, metal grate platform, floor drain, oil interceptor, hose bib & power outlets

**Note: Bays shown double stacked, but could be designed as single stacked**

## 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: Metal halide industrial
- Task Light: Required in pit
- Foot Candles: 50
- Controls: Relay control w/ local override

### EQUIPMENT (NIC)

- Alignment Machine: (1 ea)

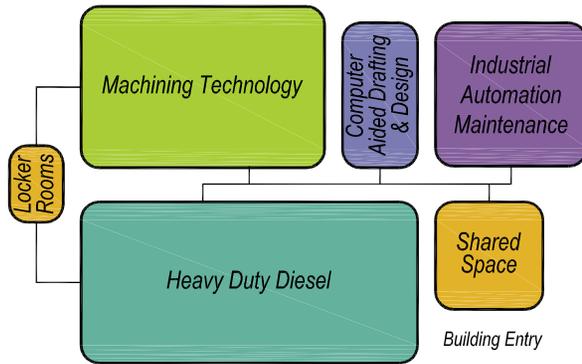
## PIT BAY

Heavy Duty Diesel Program - School of Transportation

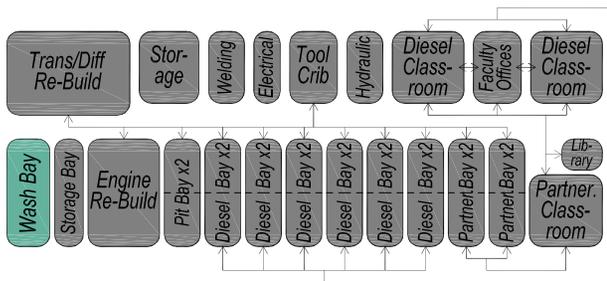




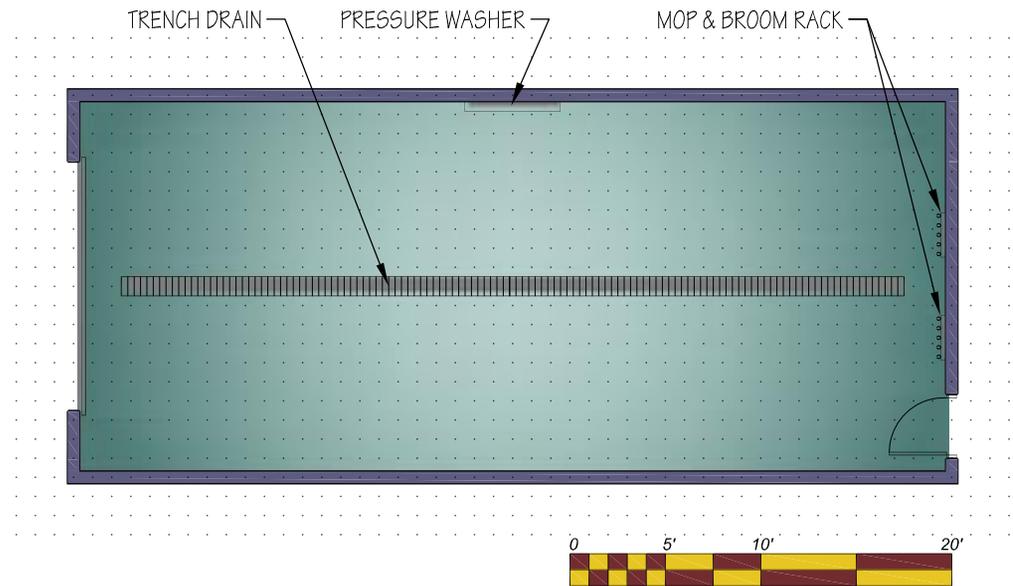
# INDIVIDUAL SPACE DIAGRAMS



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

- Waste can: (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)

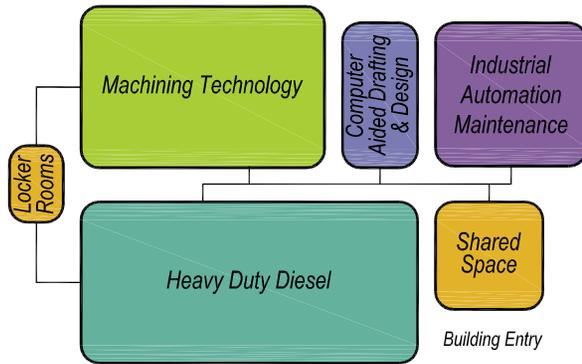
## ENCLOSED WASH BAY

Heavy Duty Diesel Program - School of Transportation

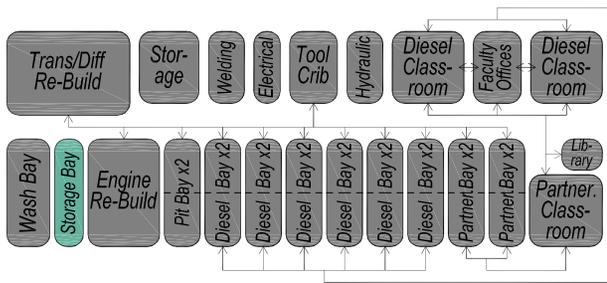




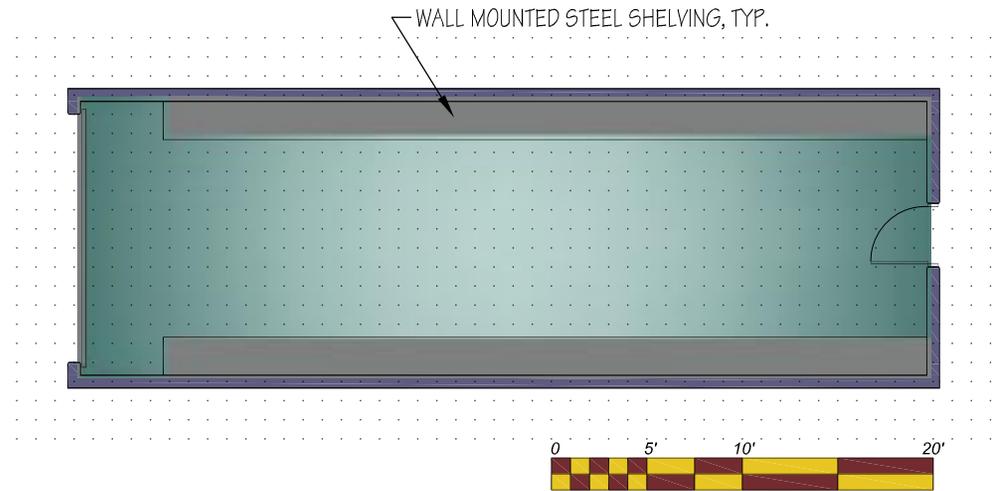
# INDIVIDUAL SPACE DIAGRAM



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: (26 ea) 36"Wx84"Hx18"D

## 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.

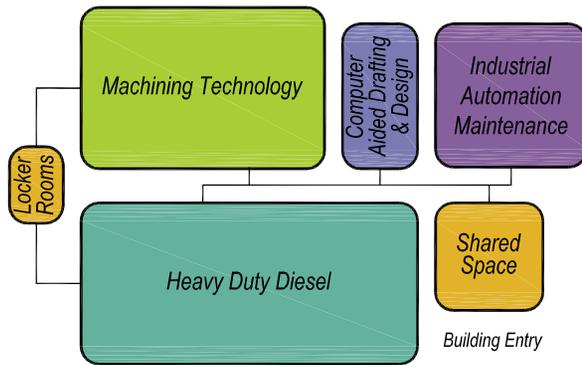
## ENCLOSED STORAGE BAY

Heavy Duty Diesel Program - School of Transportation

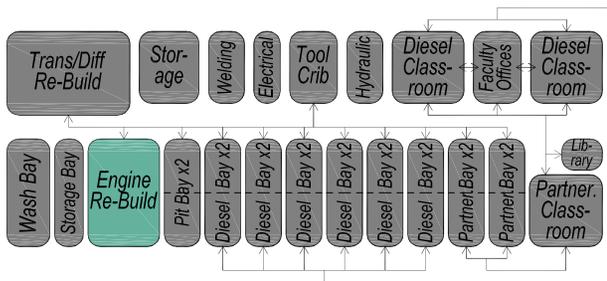




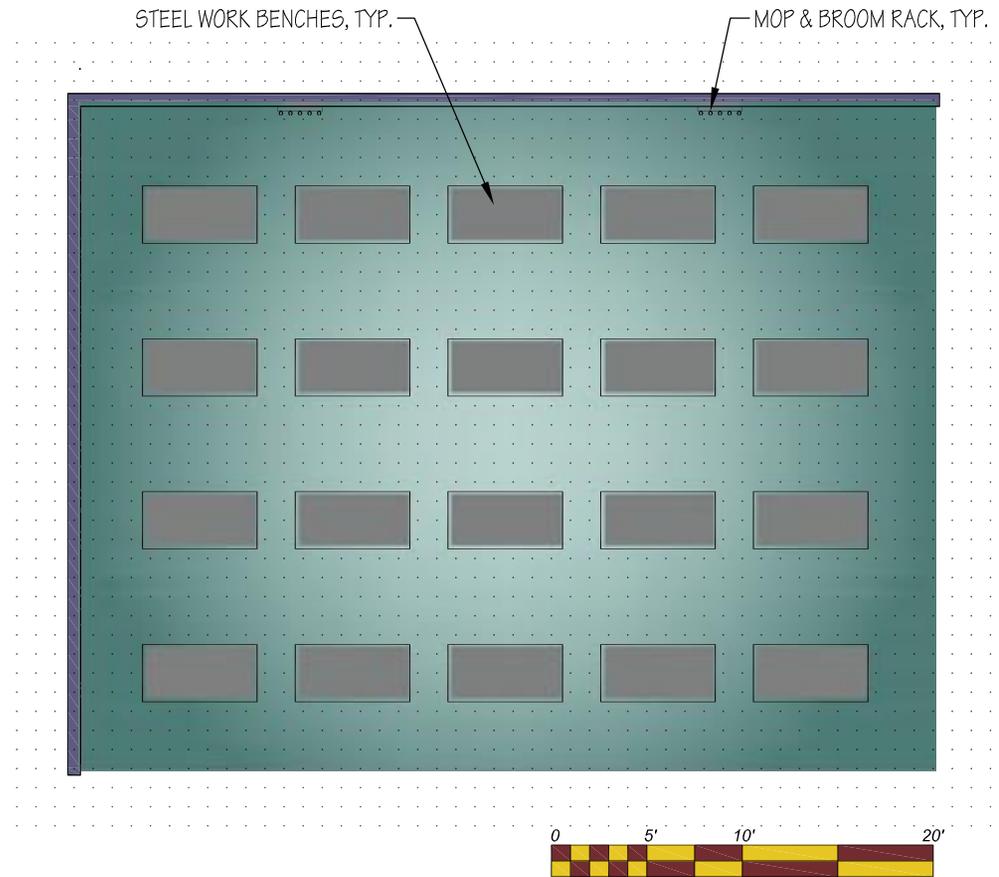
# INDIVIDUAL SPACE DIAGRAMS



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: (20 ea) 72"Wx34"Hx36"D
- Engines: (20 ea) size varies
- Waste can: (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: Metal halide industrial
- Task Light: None required
- Foot Candles: 60
- Controls: Relay control w/ local override

### EQUIPMENT (NIC)

- None required.

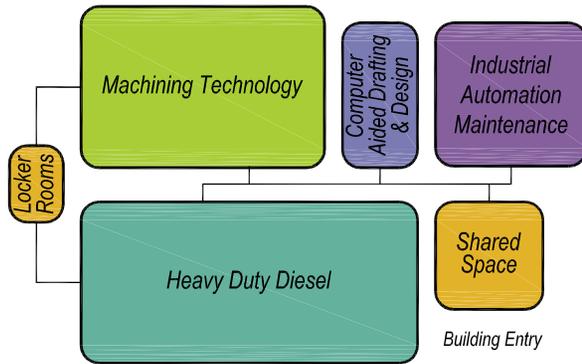
## ENGINE RE-BUILD AREA

Heavy Duty Diesel Program - School of Transportation

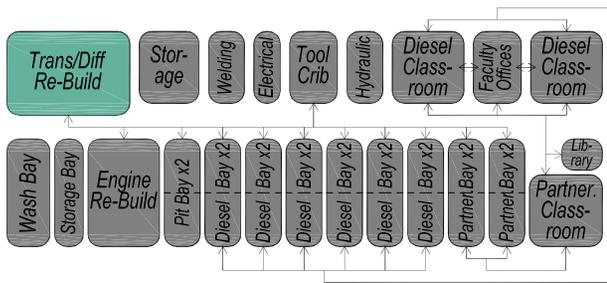




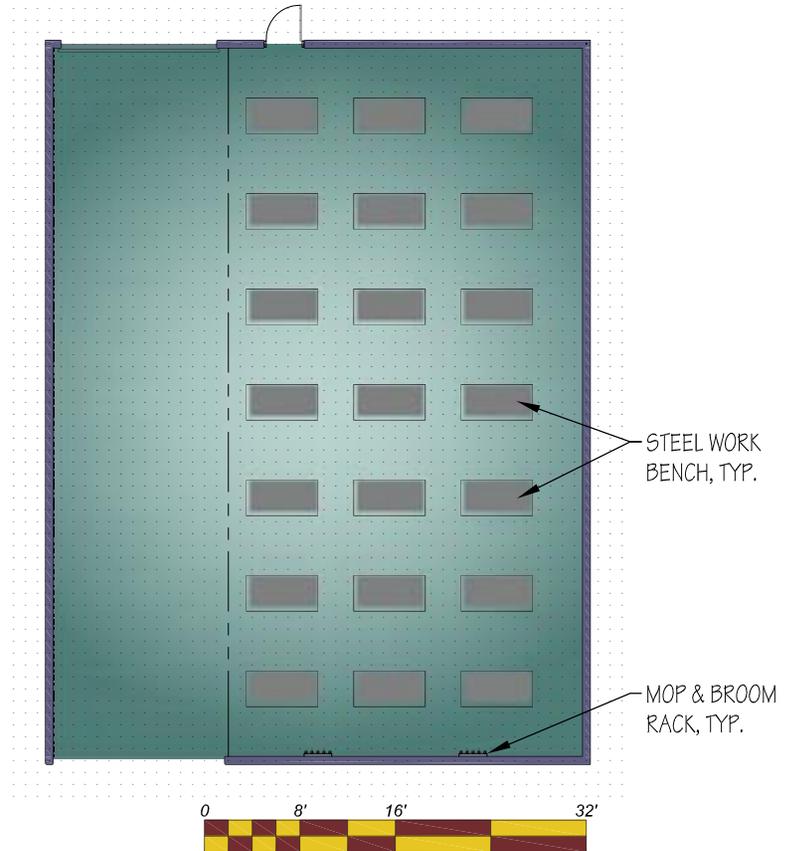
# INDIVIDUAL SPACE DIAGRAMS



First Floor Relationship Diagram



Heavy Duty Diesel Relationship Diagram



# 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: (21 ea) 72"Wx34"Hx36"D
- Trans/Diff assemblies: (21 ea) size varies
- Waste can: (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: Metal halide industrial
- Task Light: None required
- Foot Candles: 60
- Controls: Relay control w/ local override

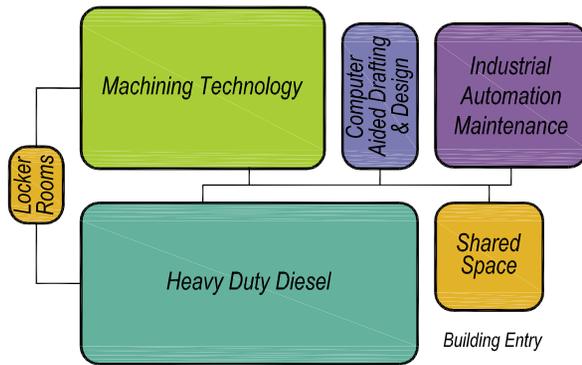
### EQUIPMENT (NIC)

- None required.

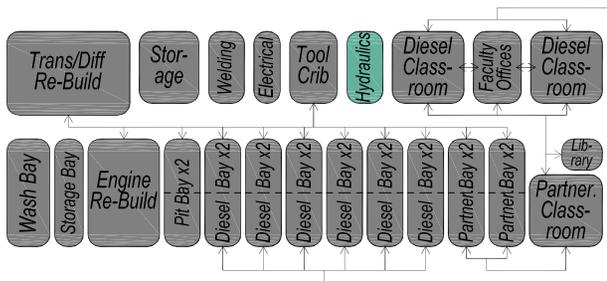




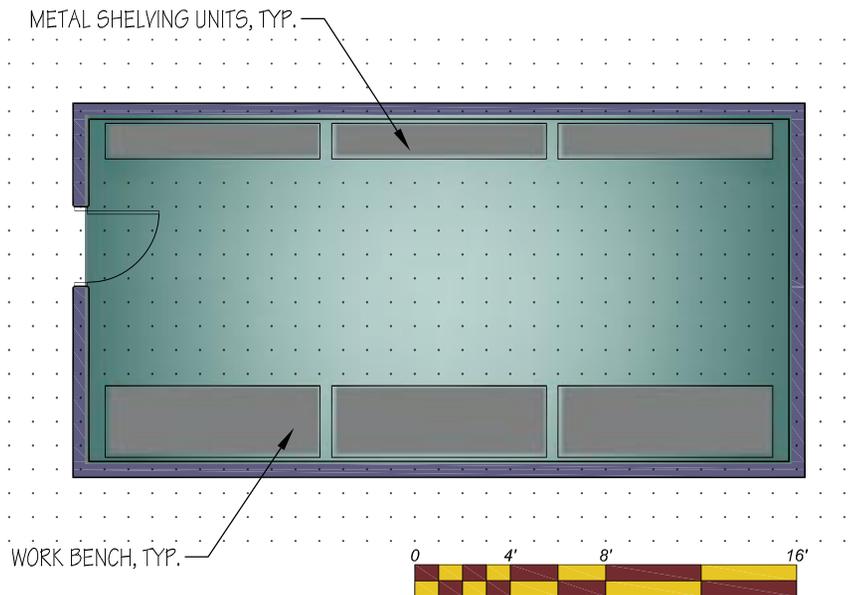
# INDIVIDUAL SPACE DIAGRAMS



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
- Waste can: (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.

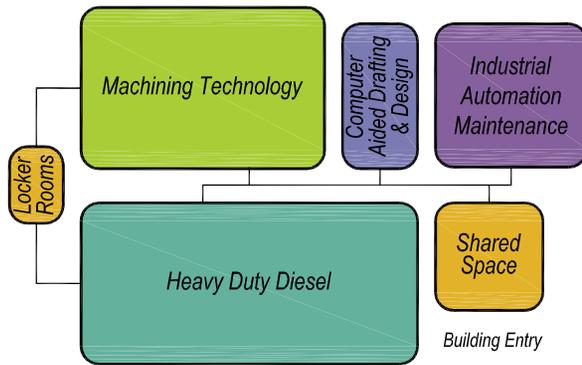
## HYDRAULICS MAINTENANCE ROOM

Heavy Duty Diesel Program - School of Transportation

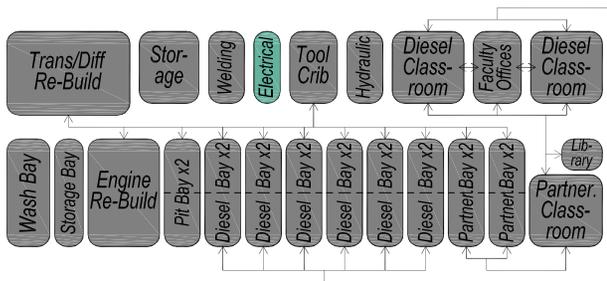




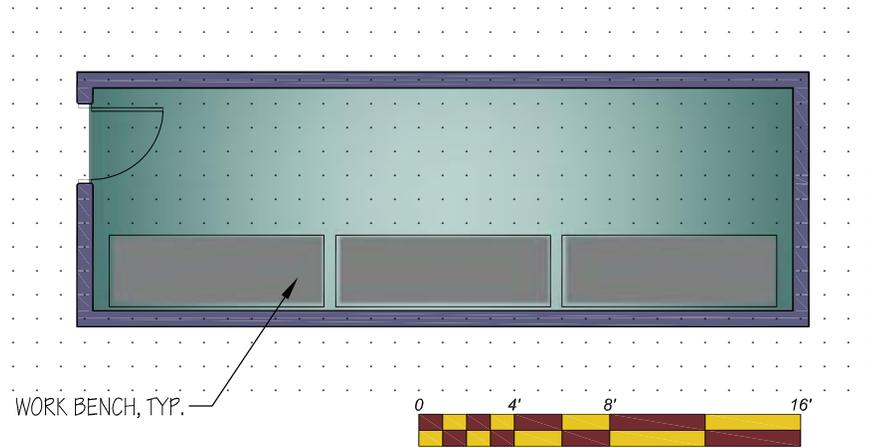
# INDIVIDUAL SPACE DIAGRAMS



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
- Waste can: (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"

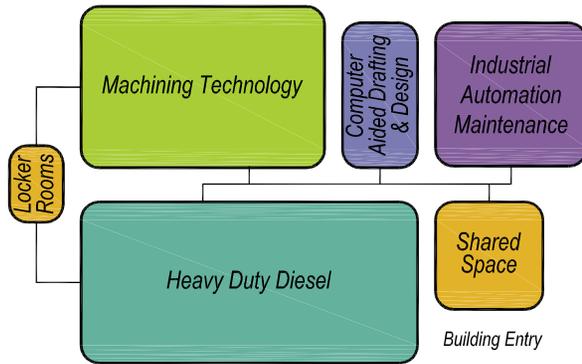
## ELECTRICAL MAINTENANCE ROOM

Heavy Duty Diesel Program - School of Transportation

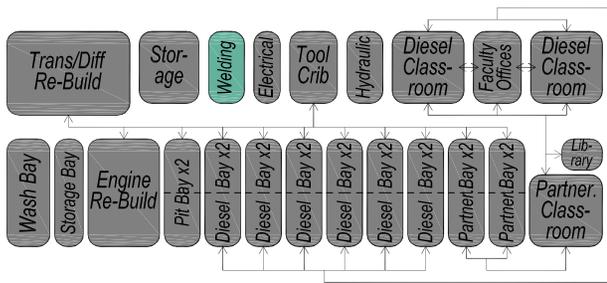




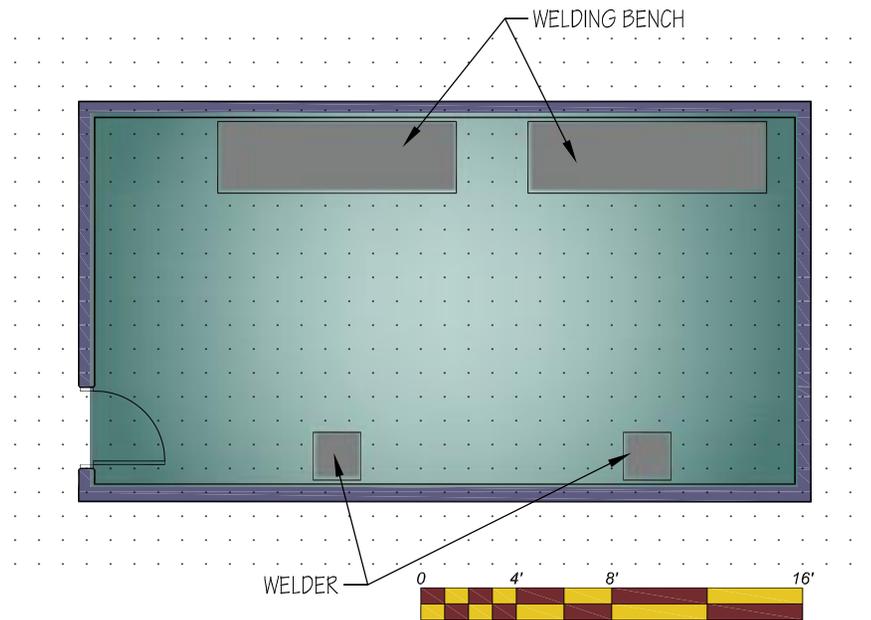
# INDIVIDUAL SPACE DIAGRAMS



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
- Waste can: (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) 36"x60"x36"

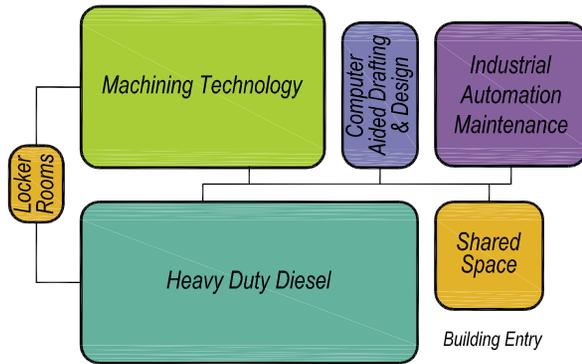
## WELDING ROOM

Heavy Duty Diesel Program - School of Transportation

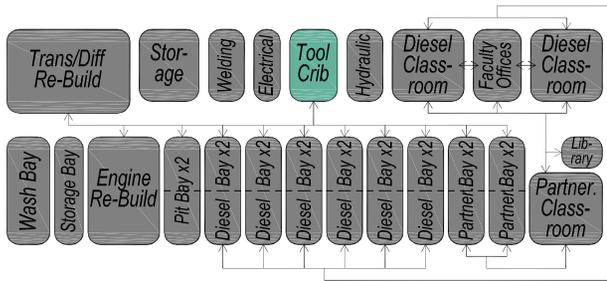




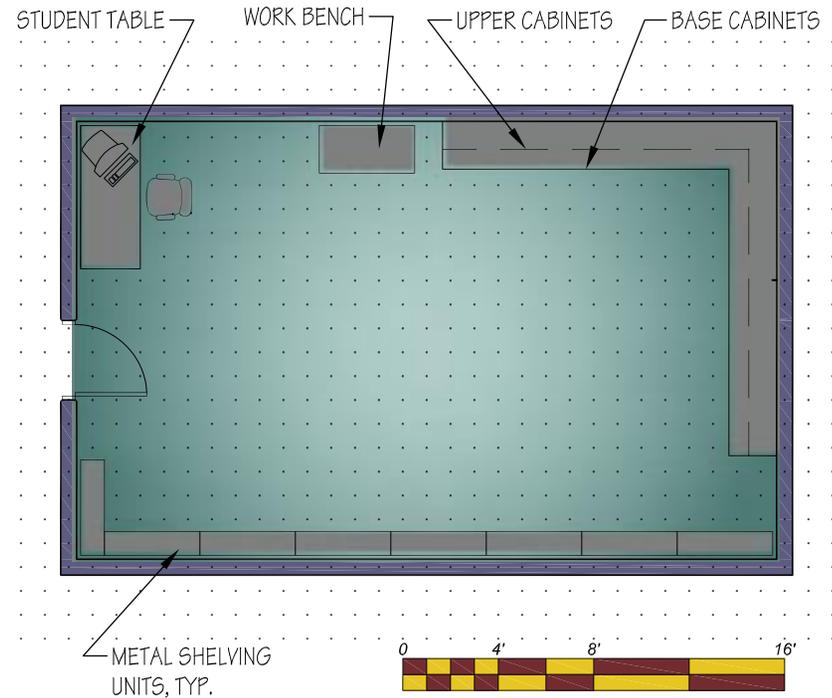
# INDIVIDUAL SPACE DIAGRAMS



First Floor Relationship Diagram



Heavy Duty Diesel Relationship Diagram



# INDIVIDUAL SPACE OUTLINE



## GENERAL REQUIREMENTS

### SPACE SUMMARY

- Space Type: 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: (7 ea) 18"x18"x36
- Metal storage cabinet:(1 ea) 24"Wx62"Hx18"D
- Bench: (1 ea) 48"Wx34"Hx24"D
- Student table: (1 ea) 42"Wx27"Hx24"D
- Task chair: (1 ea) 18"Wx18"Hx16"D
- Waste can: (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.

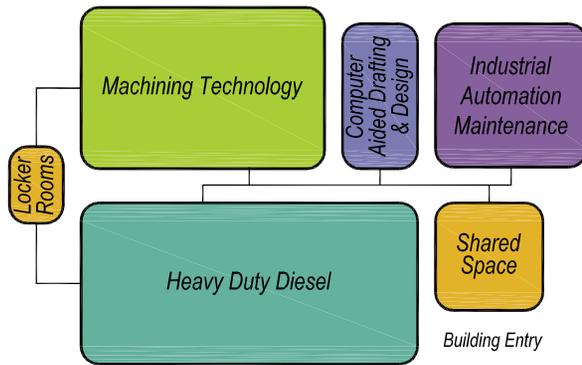
## TOOL CRIB

Heavy Duty Diesel Program - School of Transportation

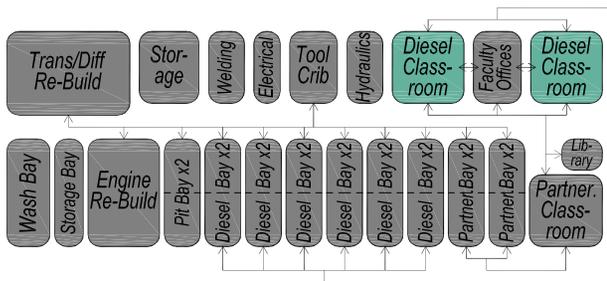




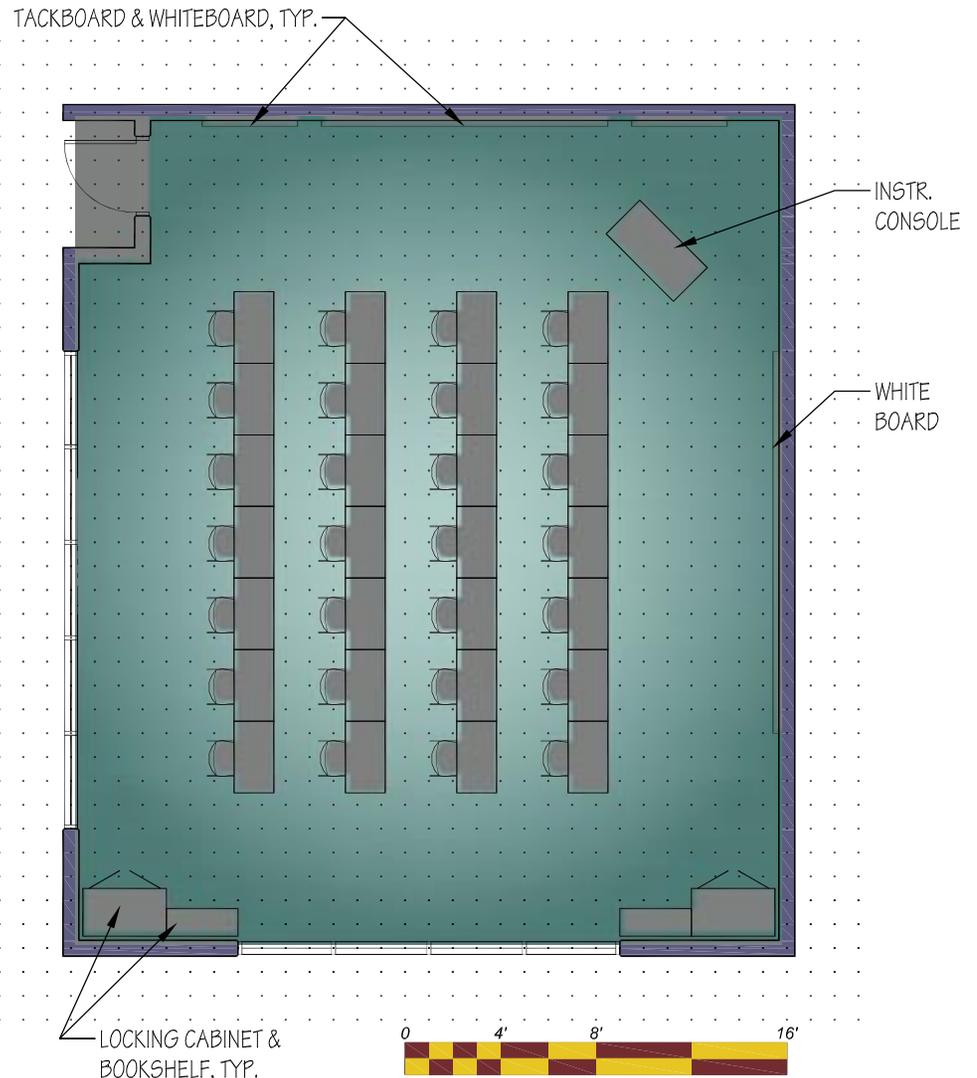
# INDIVIDUAL SPACE DIAGRAMS



First Floor Relationship Diagram



Heavy Duty Diesel Relationship Diagram



## 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
- Waste can: (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.

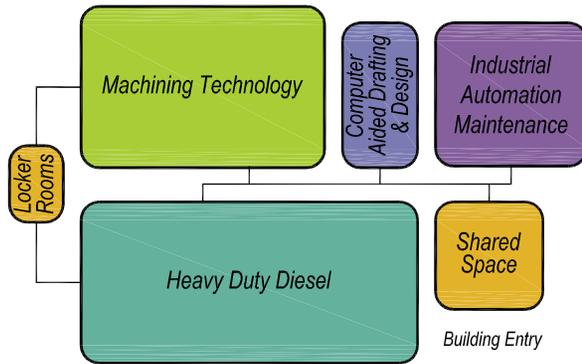
## DIESEL CLASSROOMS

Heavy Duty Diesel Program - School of Transportation

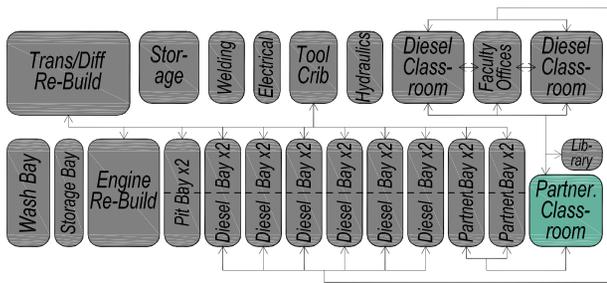




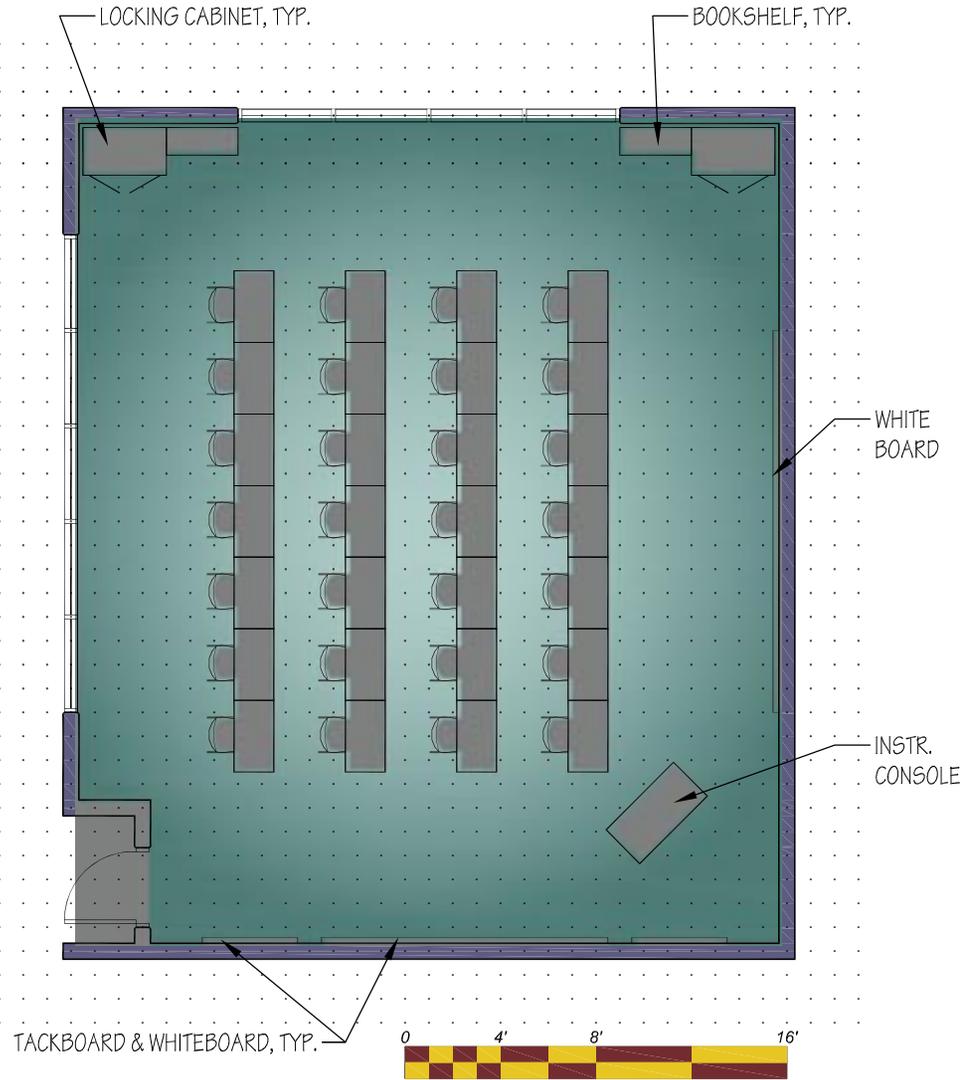
# INDIVIDUAL SPACE DIAGRAMS



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
- Waste can: (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.

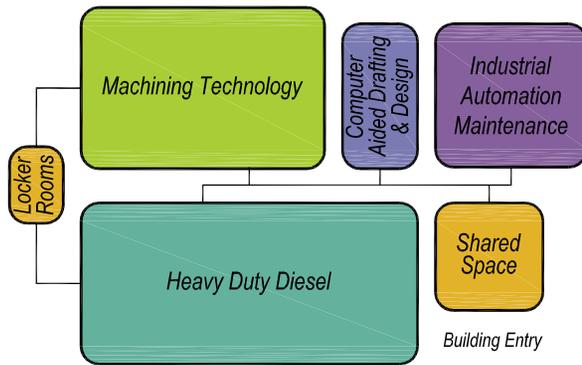
## PARTNERSHIP CLASSROOM

Heavy Duty Diesel Program - School of Transportation

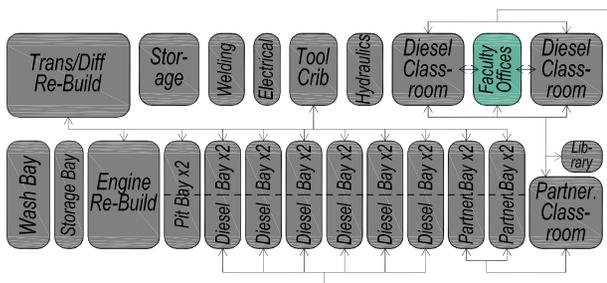




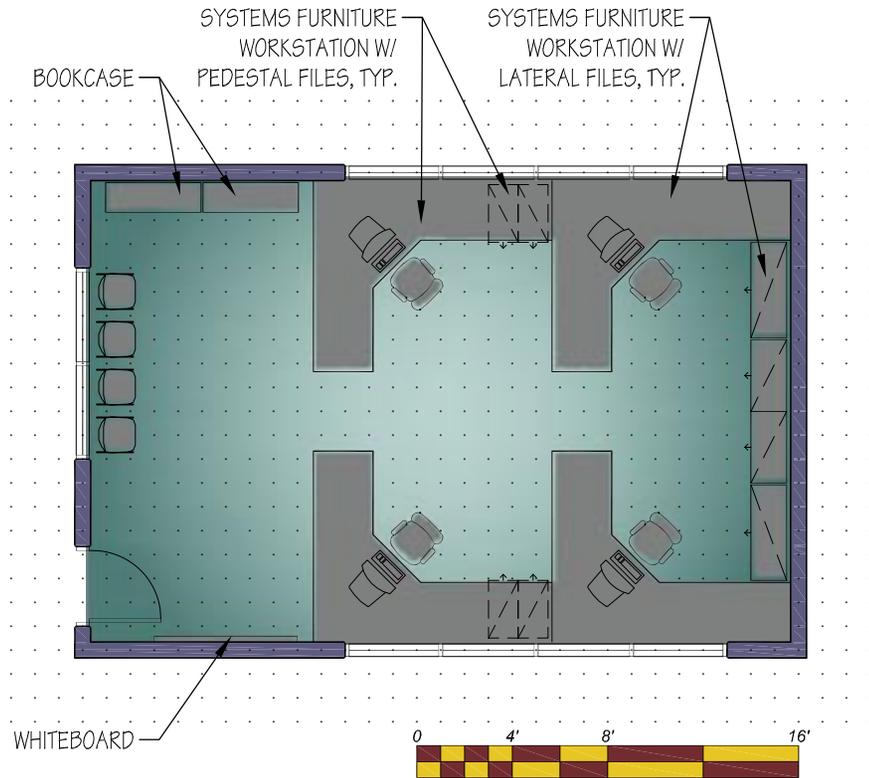
# INDIVIDUAL SPACE DIAGRAMS



First Floor Relationship Diagram



Heavy Duty Diesel Relationship Diagram



## FACULTY OFFICE / WORKROOM

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
- Waste can: (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

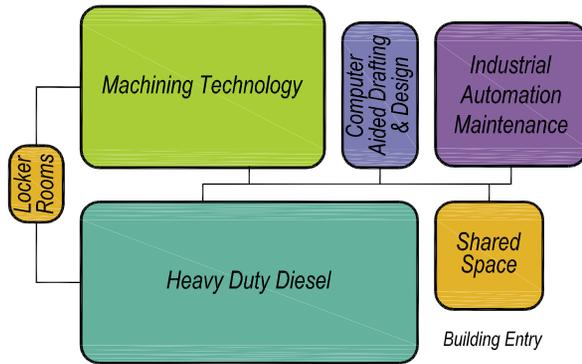
### EQUIPMENT (NIC)

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

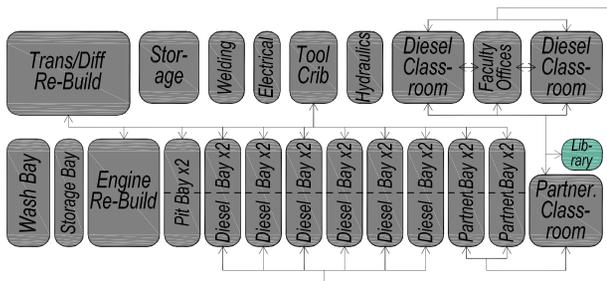




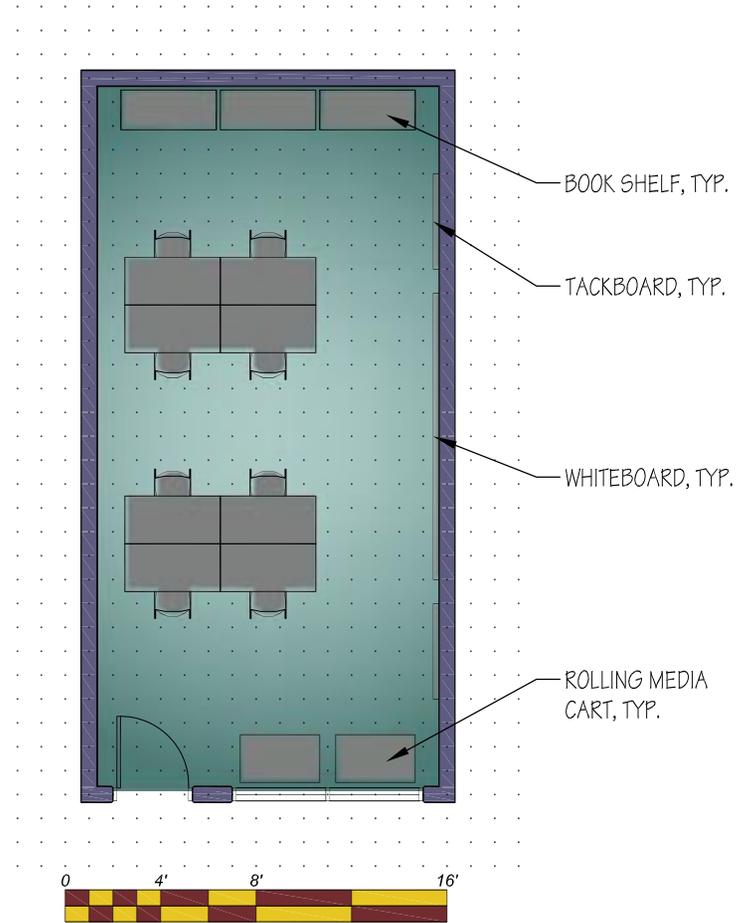
# INDIVIDUAL SPACE DIAGRAMS



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) 24Wx48"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
- Waste can: (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

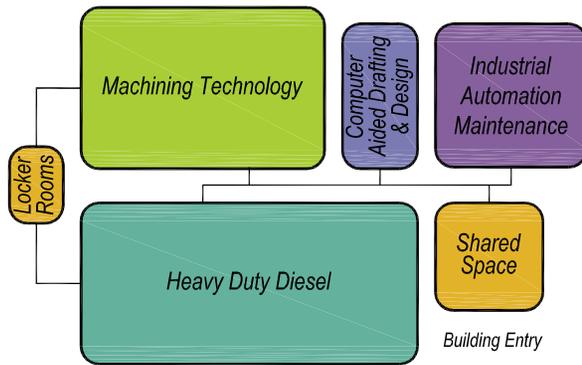
## MEDIA / VIDEO LIBRARY

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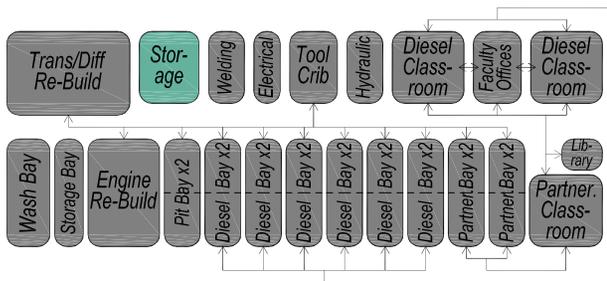




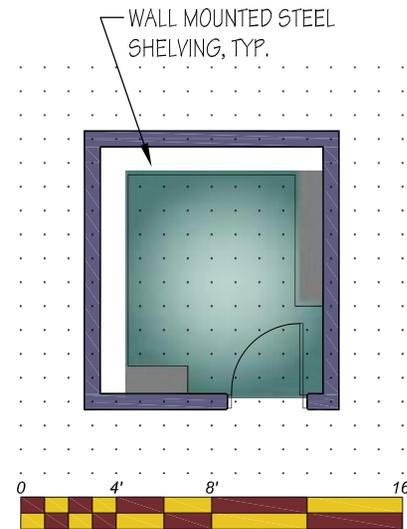
# INDIVIDUAL SPACE DIAGRAMS



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: (6 ea) 48"Wx84"Hx18"D

## 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

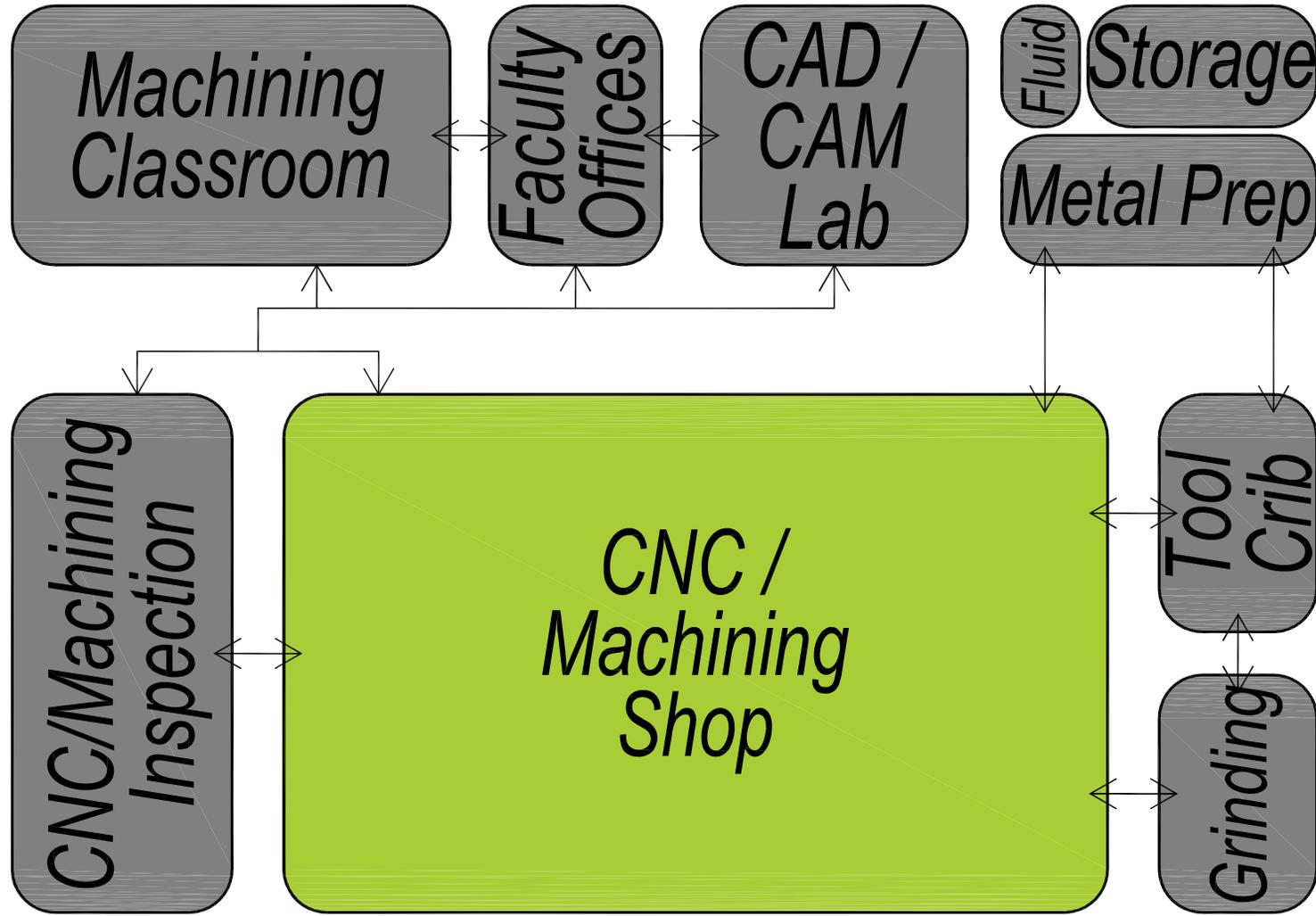
Heavy Duty Diesel Program - School of Transportation





# INDIVIDUAL SPACE REQUIREMENTS

## MACHINING TECHNOLOGY RELATIONSHIP DIAGRAM

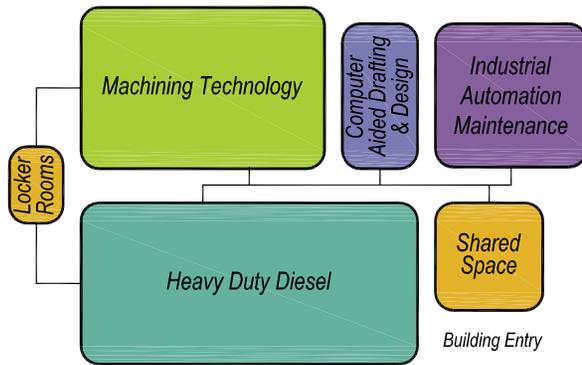


School of Manufacturing

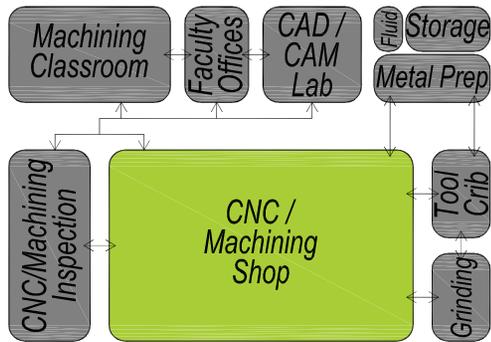




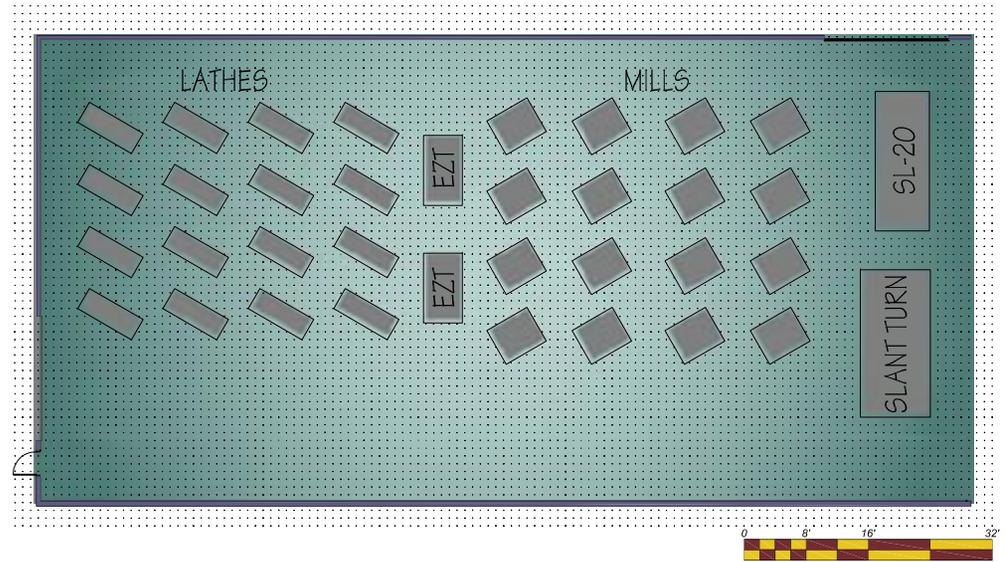
# INDIVIDUAL SPACE DIAGRAMS



First Floor Relationship Diagram



Machining Technology Relationship Diagram



## 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
- Waste can: (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: Metal halide 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.

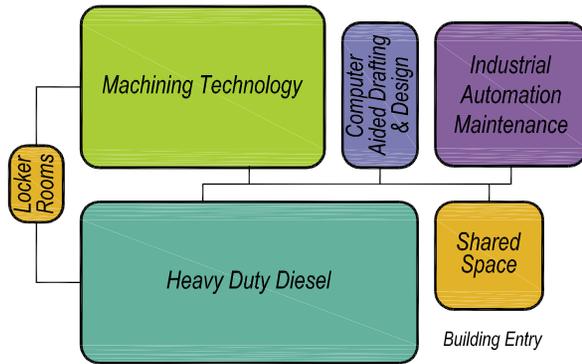
## CNC / MACHINING SHOP

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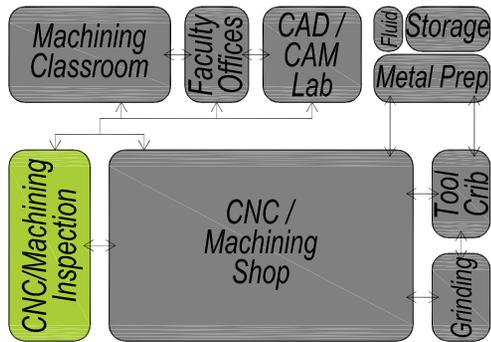




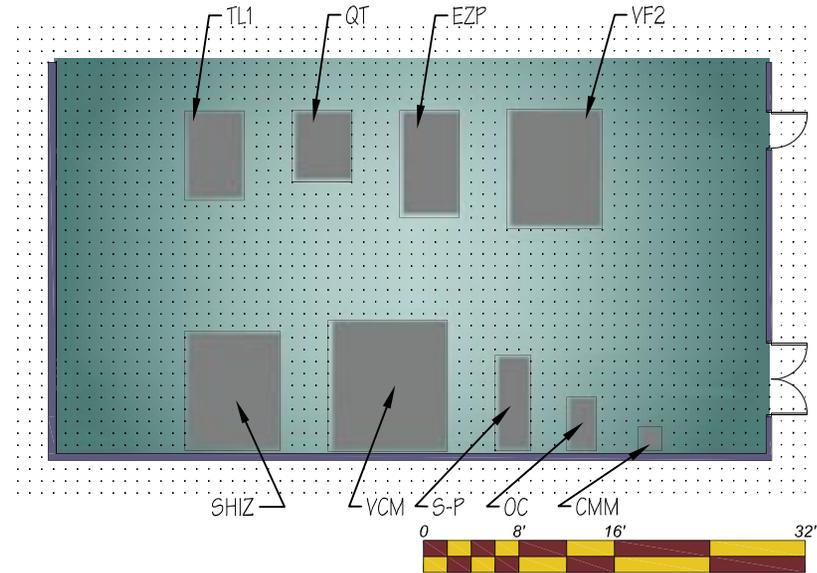
# INDIVIDUAL SPACE DIAGRAMS



First Floor Relationship Diagram



Machining Technology Relationship Diagram



## CNC / MACHINING INSPECTION AREA

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): 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
- Waste can: (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: Metal halide industrial
- Task Light: None required
- Foot Candles: 70/100
- Controls: Relay control w/ local override

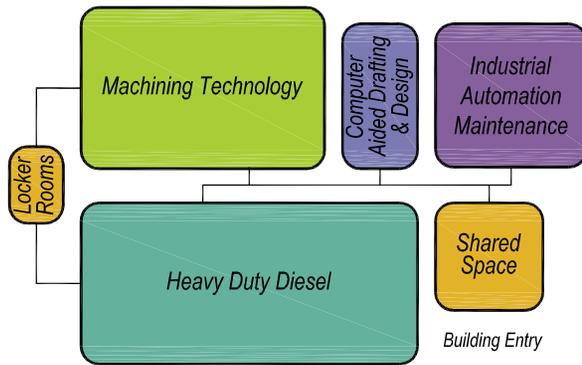
### EQUIPMENT (NIC)

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

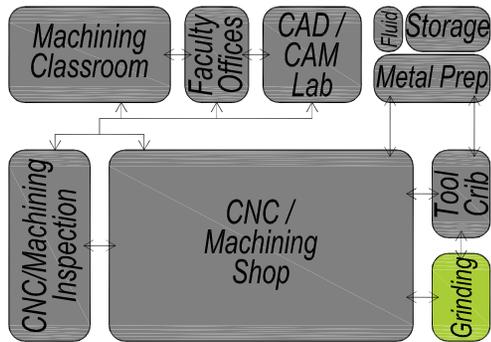




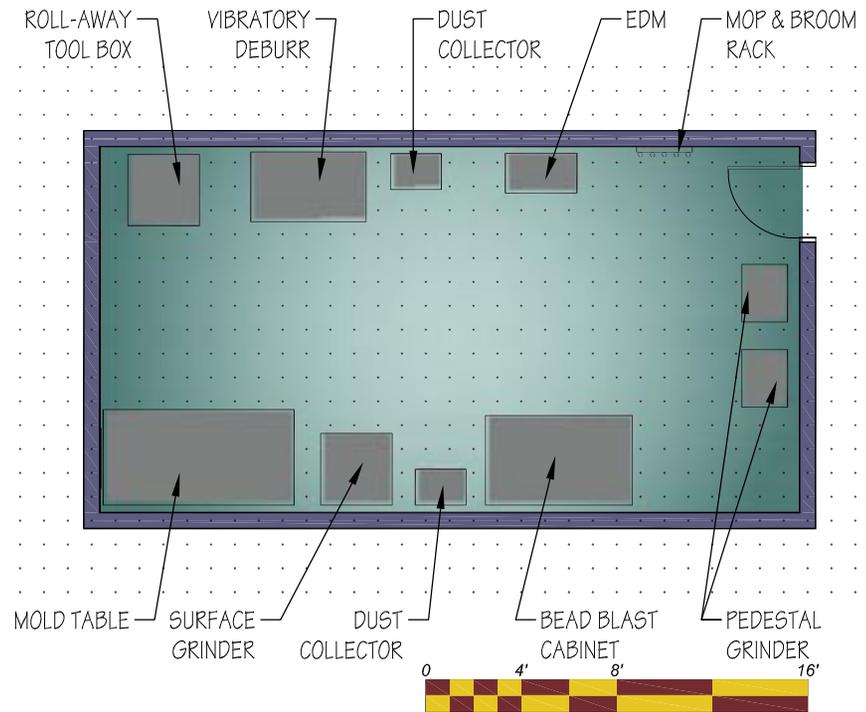
# INDIVIDUAL SPACE DIAGRAMS



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) 37"Wx18"D
- Bead blast cabinet: (1 ea) 36"Wx30"D
- Mold table: (1 ea) 96"Wx48"D
- Roll-away toolbox: (1 ea) 36"Wx36"D
- Waste can: (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.

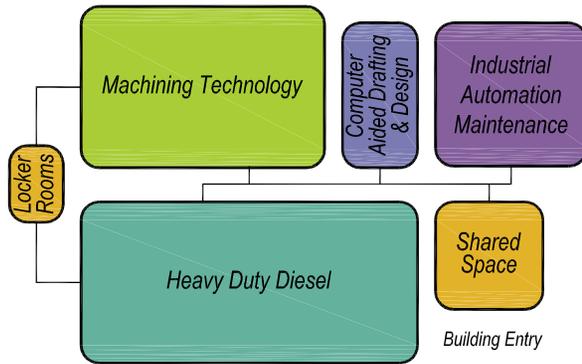
## GRINDING & EDM ROOM

Machining Technology Program - School of Manufacturing

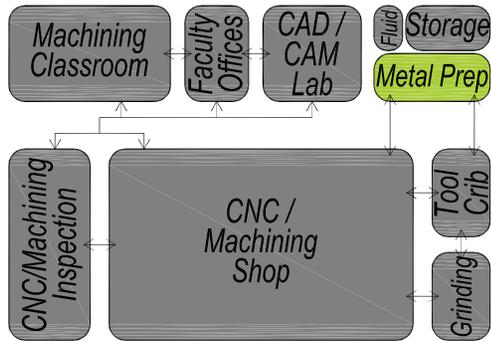




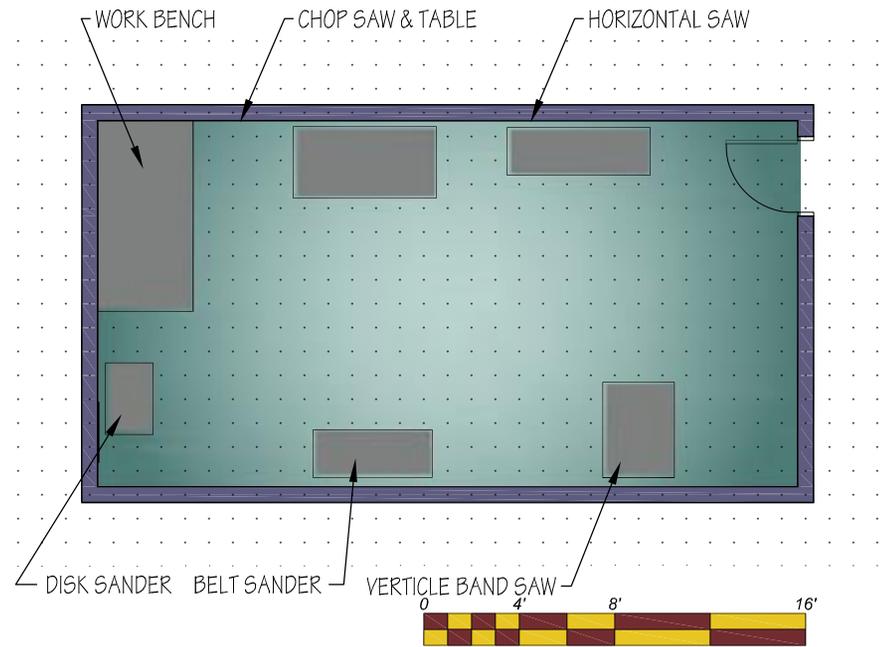
# INDIVIDUAL SPACE DIAGRAMS



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
- Waste can: (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.

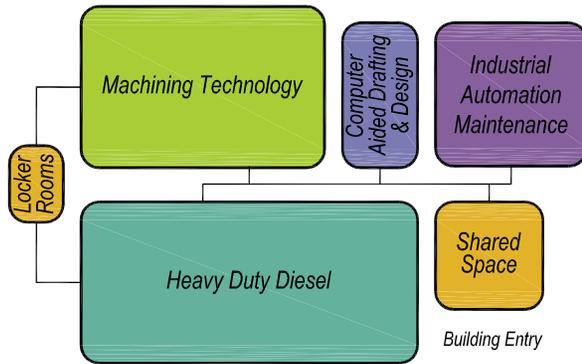
## METAL PREP & DEBURR AREA

Machining Technology Program - School of Manufacturing

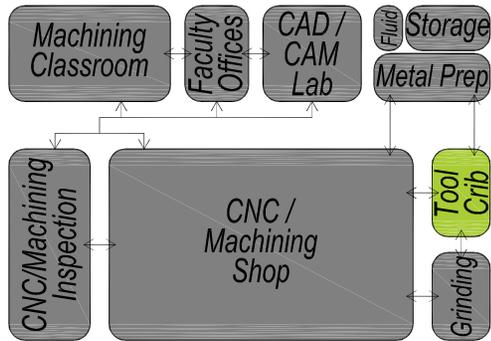




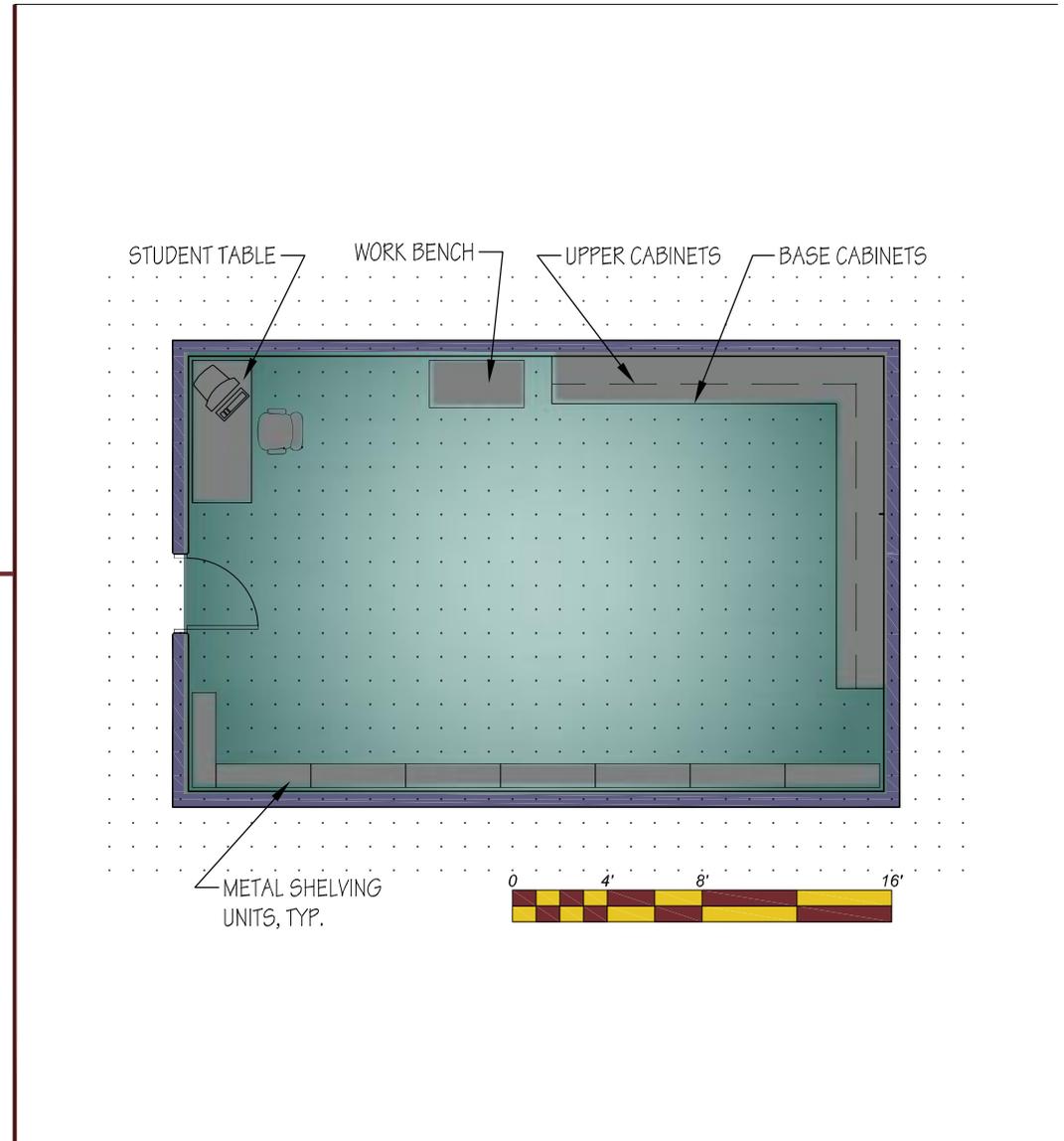
# INDIVIDUAL SPACE DIAGRAMS



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: (2 sets) 96"Wx73"Hx18"D
- Metal storage cabinet: (3 ea) 36"Wx18"D
- Student table: (1 ea) 42"Wx27"Hx24"D
- Task chair: (1 ea) 18"Wx18"Hx16"D
- Waste can: (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)

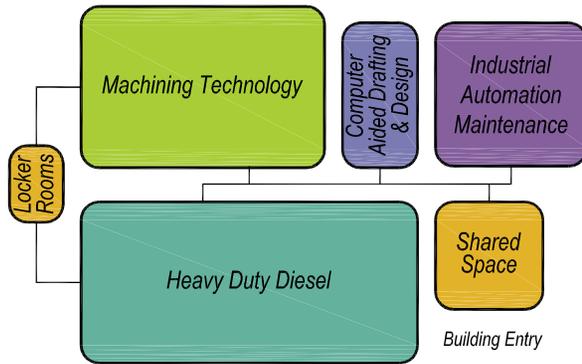
- Desktop computer and printer.

## TOOL CRIB

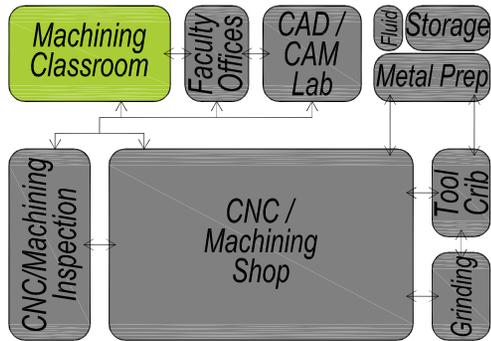




# INDIVIDUAL SPACE DIAGRAMS



First Floor Relationship Diagram



Machining Technology Relationship Diagram



# 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"
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### 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
• Waste can:	(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)

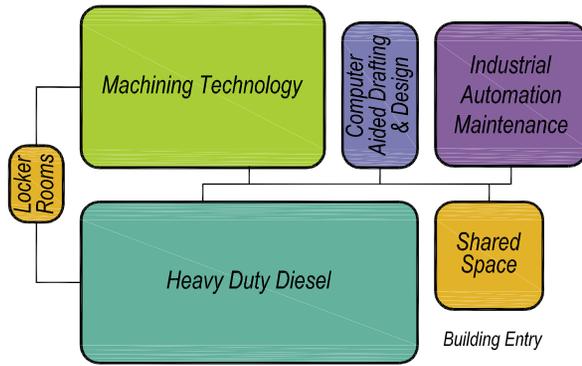
• Capacity for (4) desktop computers, overhead, opaque, slide & film projectors, VHS & DVD players, audio devices, laser printer, scanner.
• (1) Elmo desktop presentation unit.

## CLASSROOM

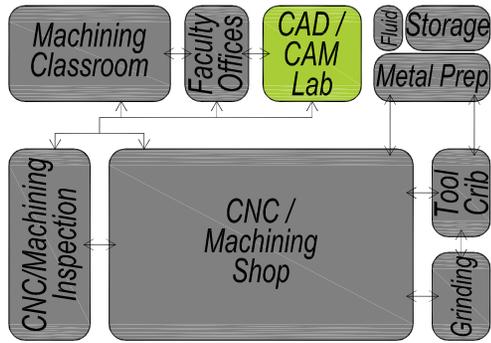




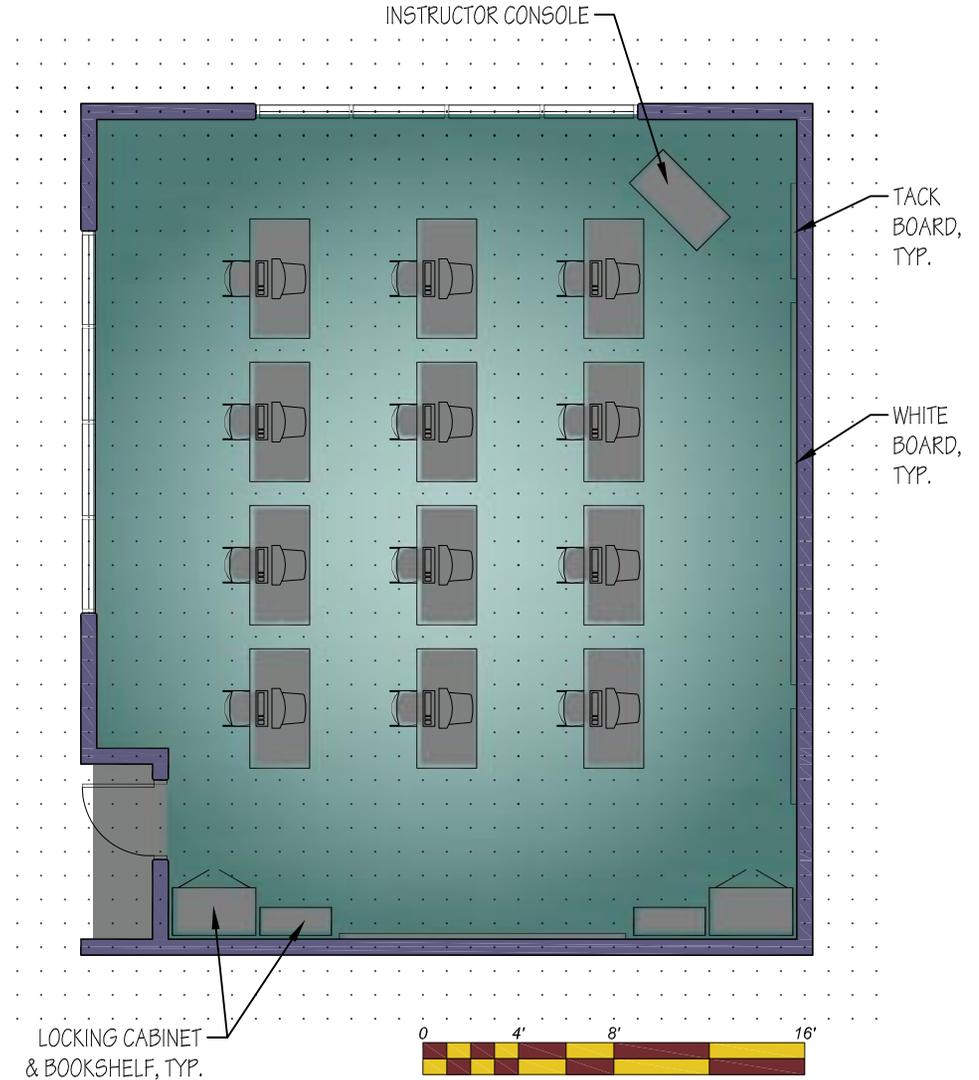
# INDIVIDUAL SPACE DIAGRAMS



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
- Waste can: (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.

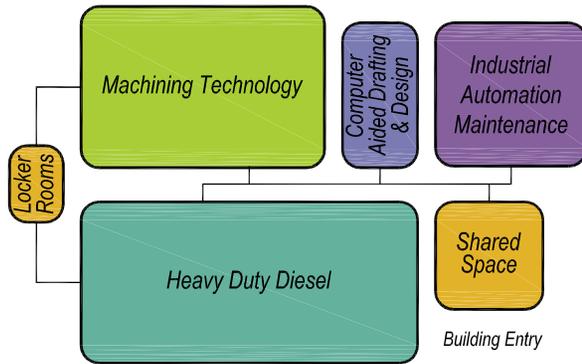
## CAD / CAM LAB

Machining Technology Program - School of Manufacturing

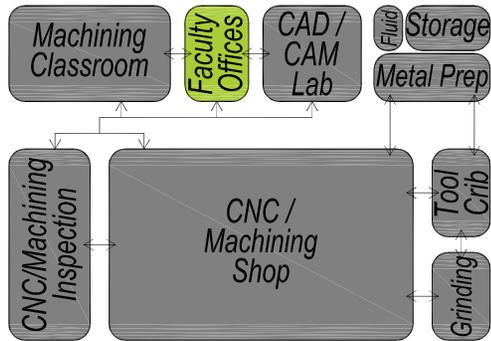




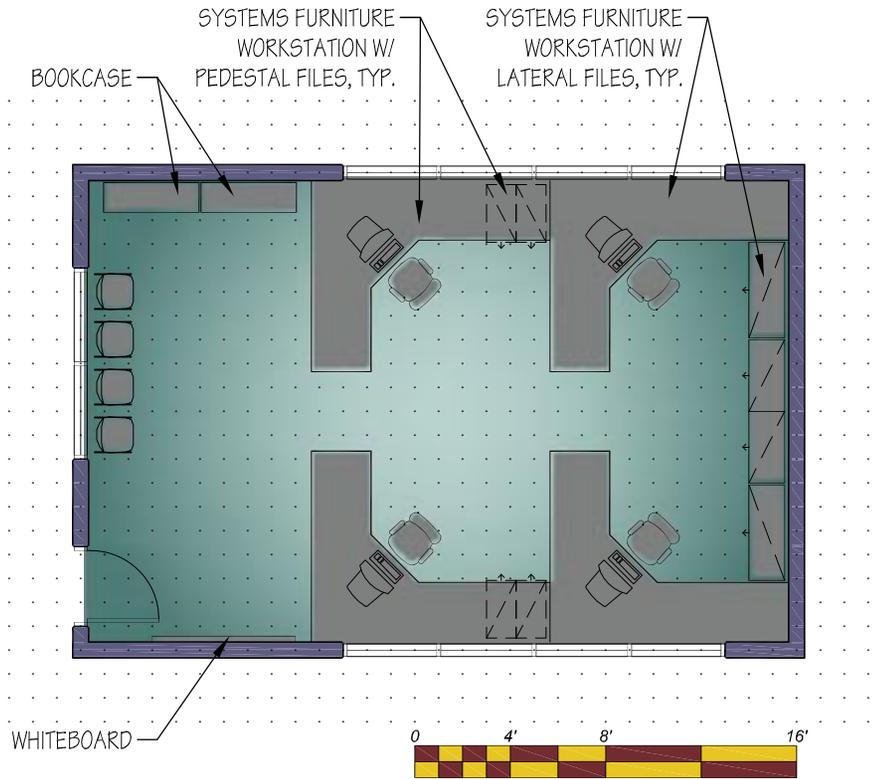
# INDIVIDUAL SPACE DIAGRAMS



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
- Waste can: (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

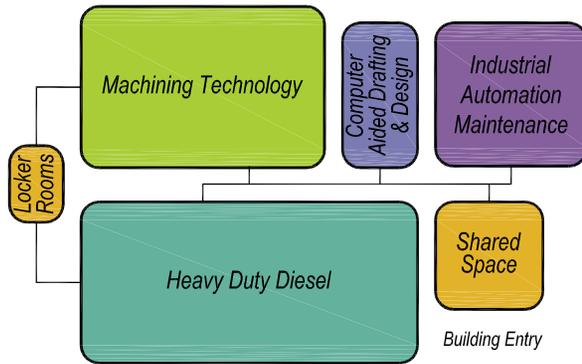
### EQUIPMENT (NIC)

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

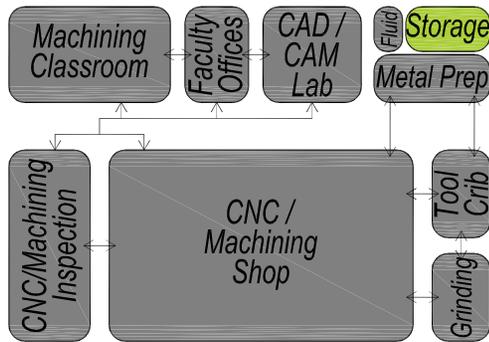




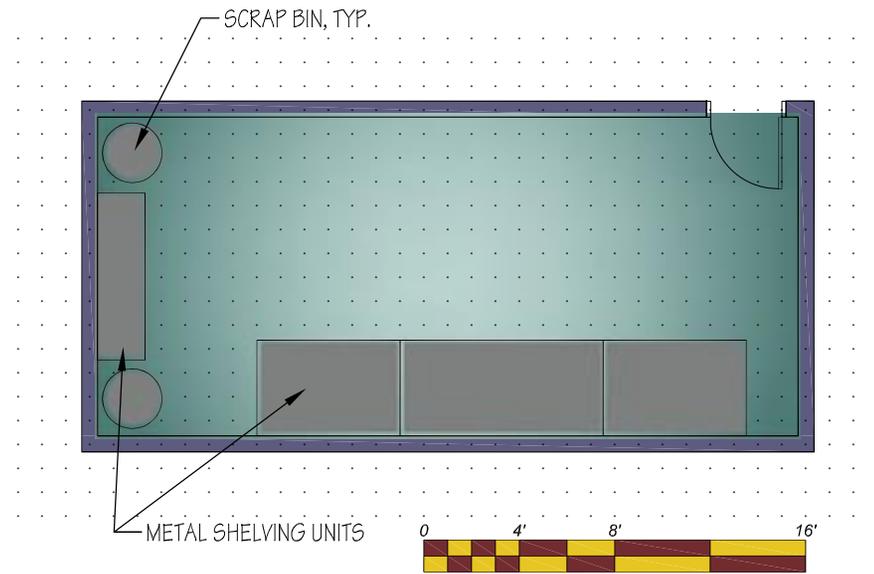
# INDIVIDUAL SPACE DIAGRAMS



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

### EQUIPMENT (NIC)

- None required.

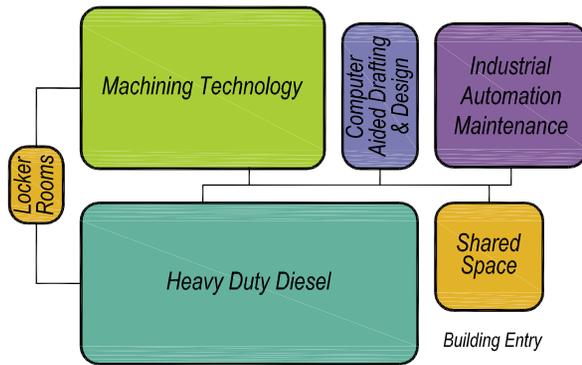
## METAL STORAGE ROOM

Machining Technology Program - School of Manufacturing

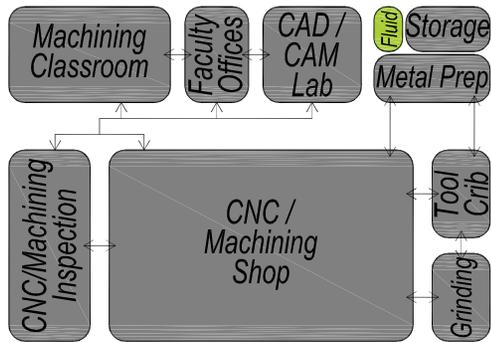




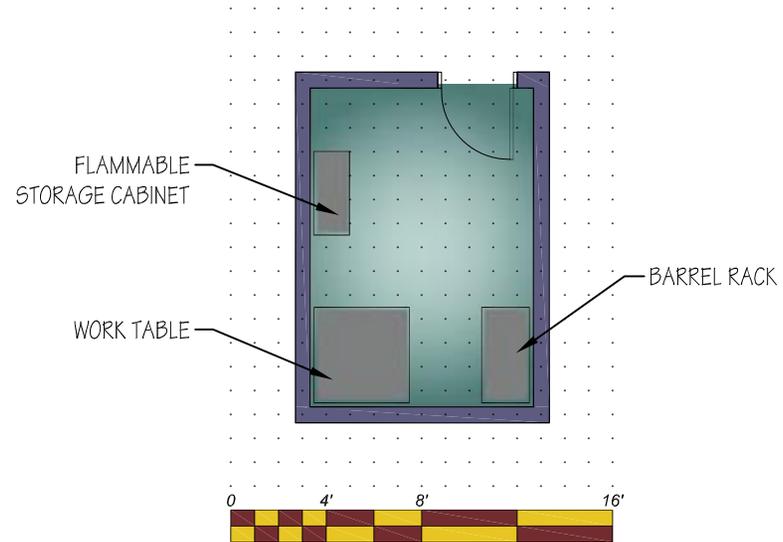
# INDIVIDUAL SPACE DIAGRAMS



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

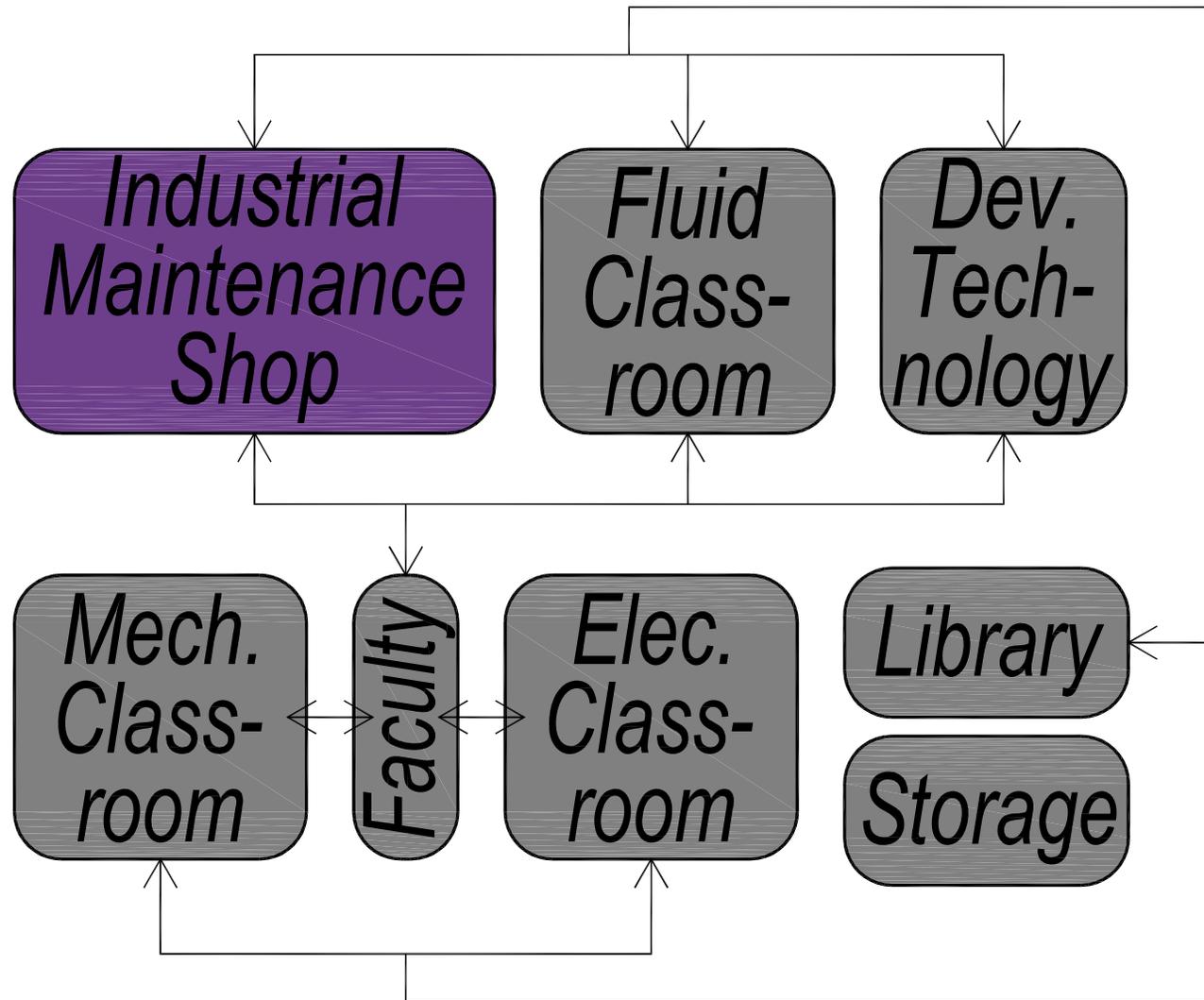




# INDIVIDUAL SPACE REQUIREMENTS



## INDUSTRIAL AUTOMATION MAINTENANCE RELATIONSHIP DIAGRAM

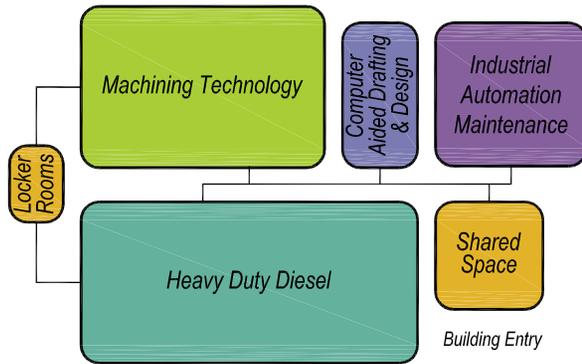


School of Manufacturing

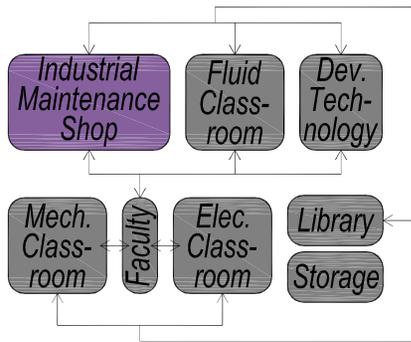




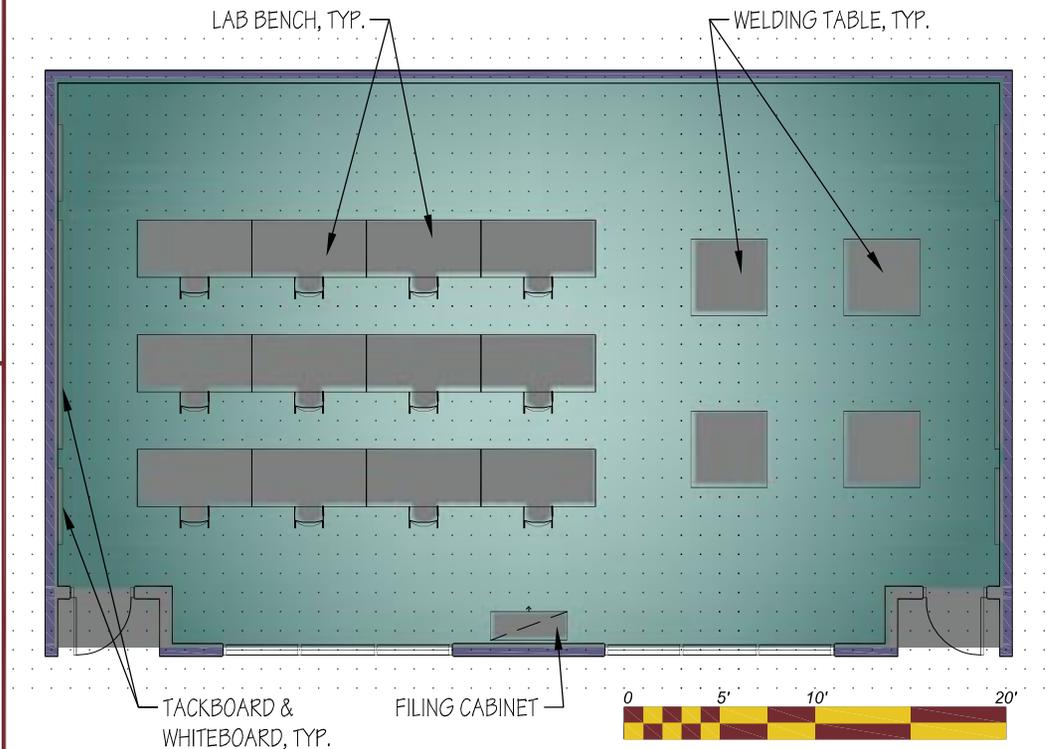
# INDIVIDUAL SPACE DIAGRAM



First 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: First 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
- Waste can: (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: ESD/ventilation for soldering  
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)

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

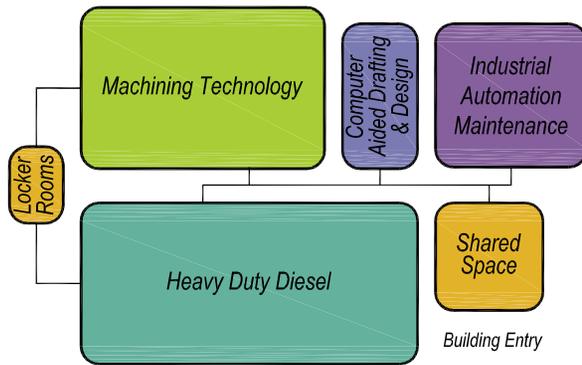
## INDUSTRIAL MAINTENANCE SHOP

Industrial Automation Maintenance Program - School of Manufacturing

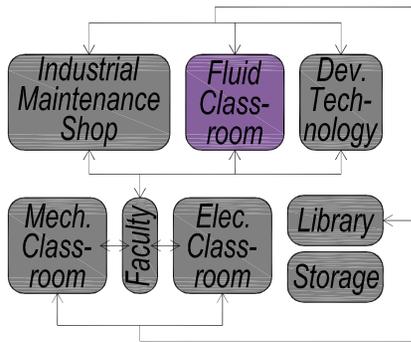




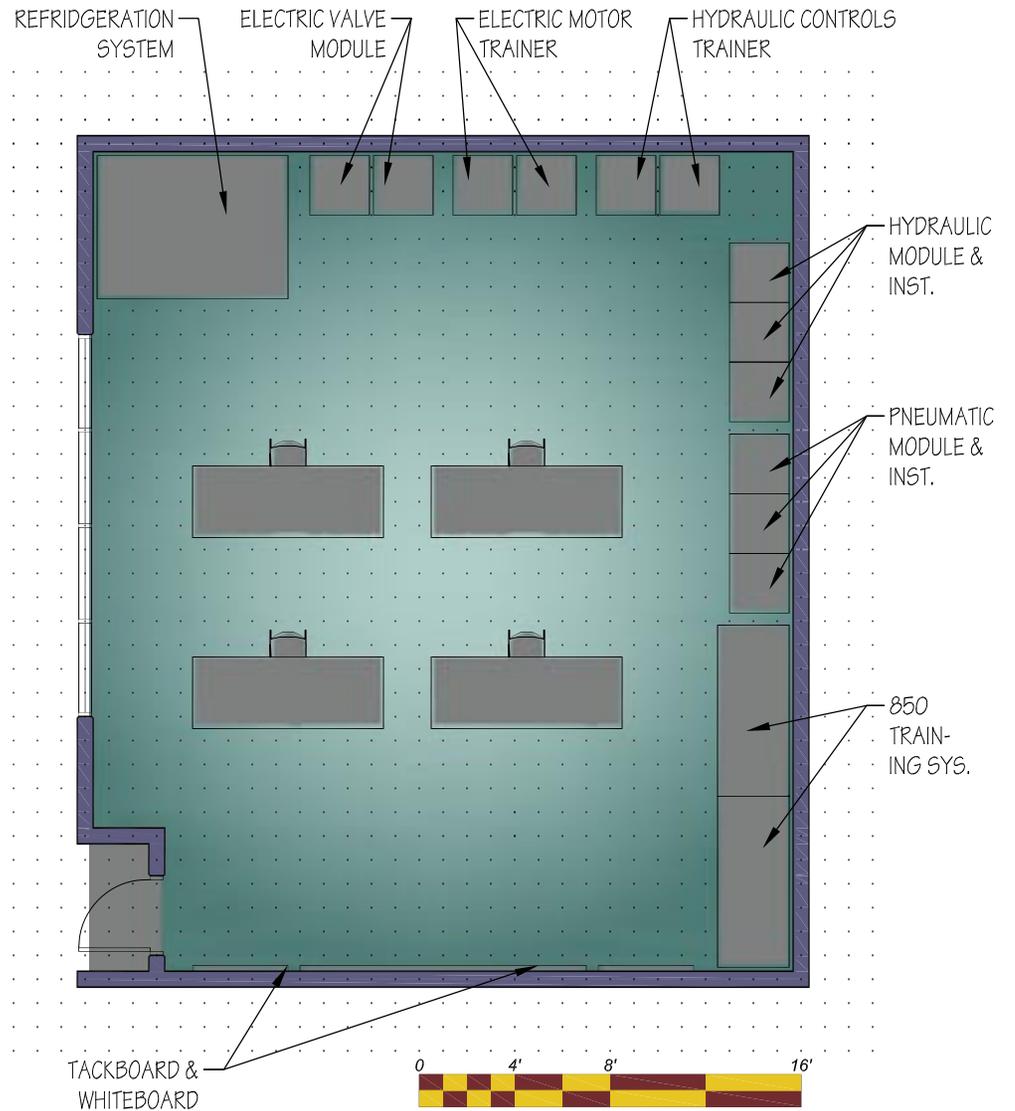
# INDIVIDUAL SPACE DIAGRAMS



First 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: First 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
- Waste can: (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

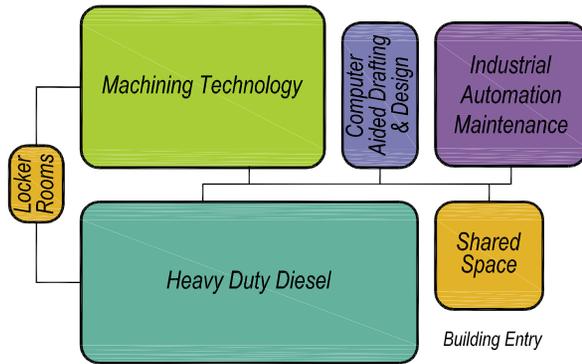
## FLUID TRAINING CLASSROOM

Industrial Automation Maintenance Program - School of Manufacturing

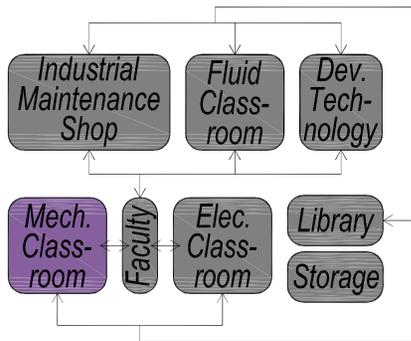




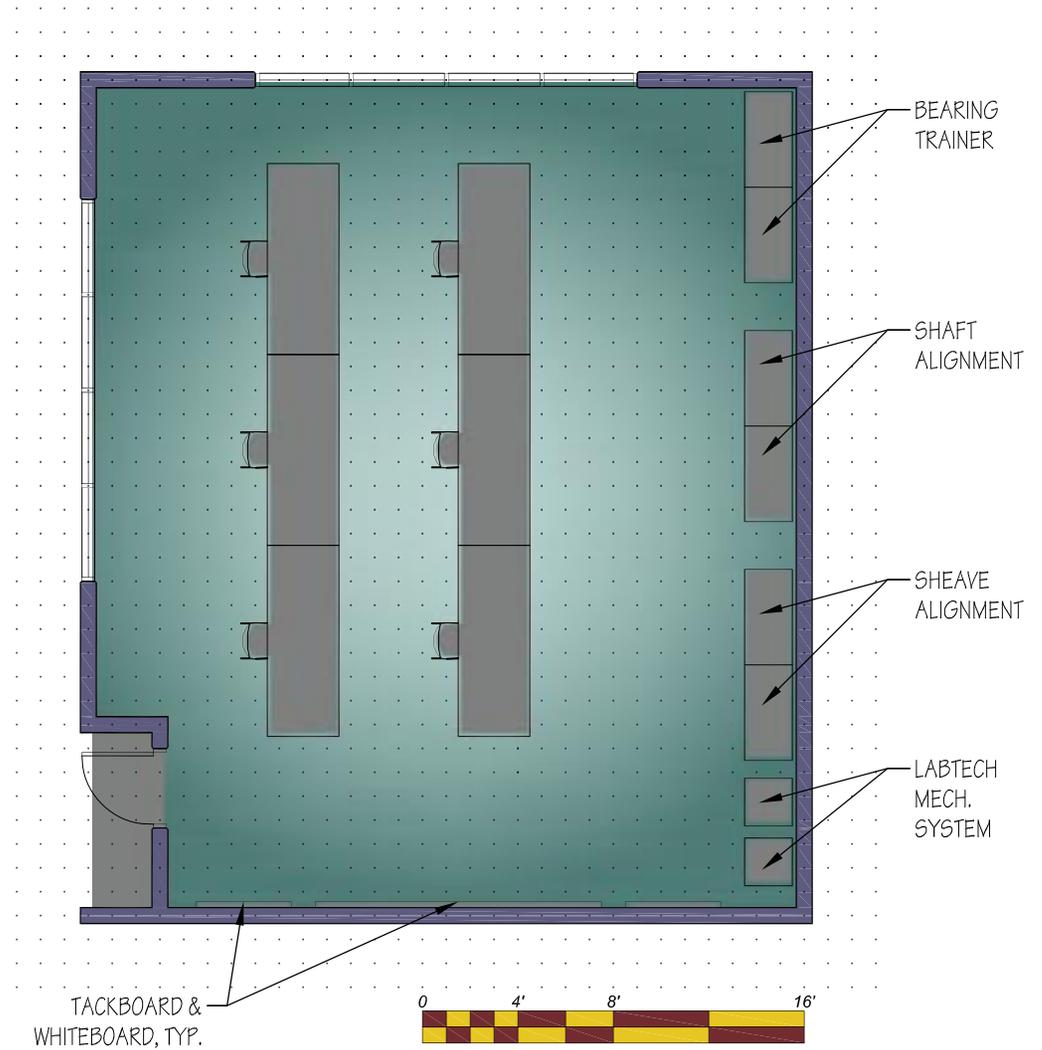
# INDIVIDUAL SPACE DIAGRAMS



First 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: First 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
- Waste can: (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)

- (2) Sheave alignment trns., (2) shaft alignment, (2) bearing trainers, (2) mechanical trainers.

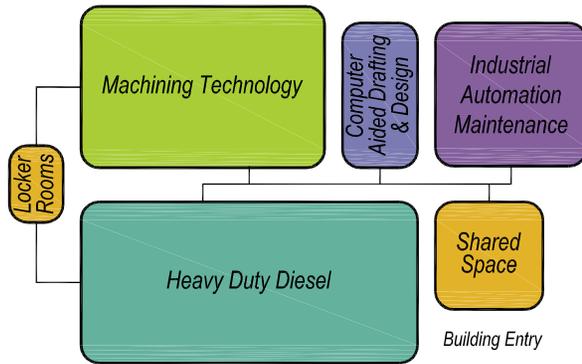
## MECHANICAL TRAINING CLASSROOM

Industrial Automation Maintenance Program - School of Manufacturing

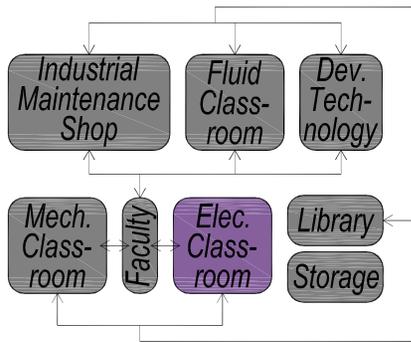




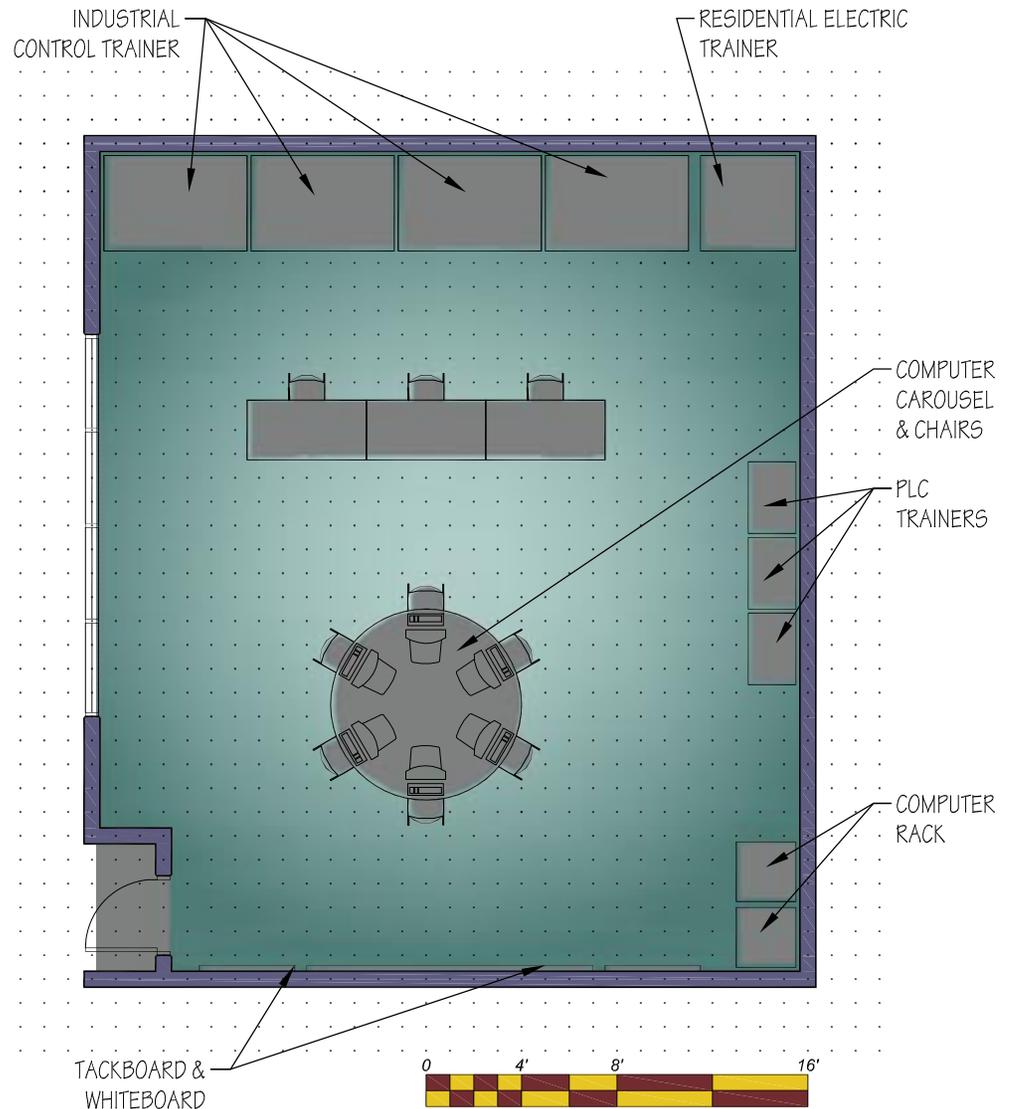
# INDIVIDUAL SPACE DIAGRAMS



First 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: First 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
- Waste can: (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, (6) computers.

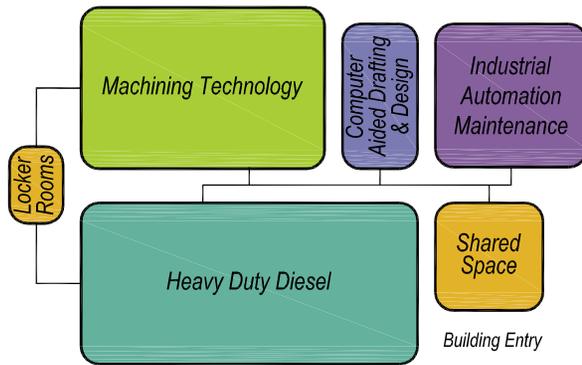
## ELECTRICAL TRAINING CLASSROOM

Industrial Automation Maintenance Program - School of Manufacturing

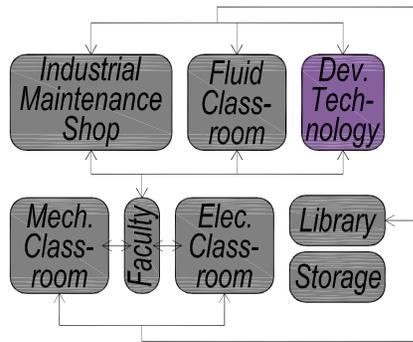




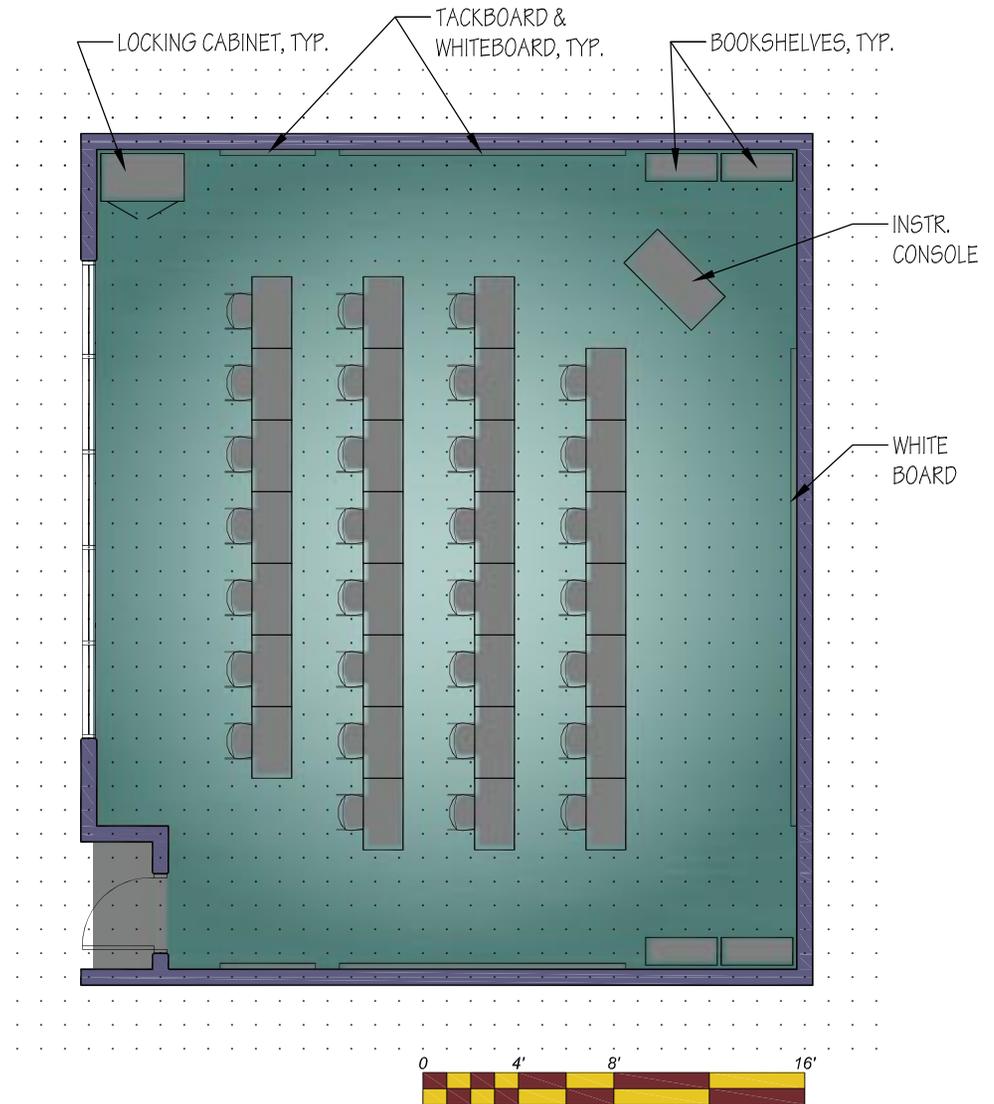
# INDIVIDUAL SPACE DIAGRAMS



First 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:	First 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"
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### 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
• Waste can:	(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.

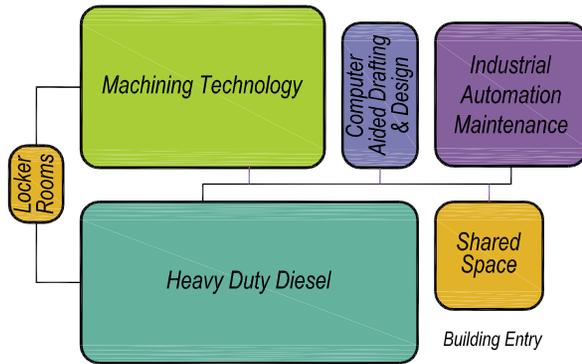
## DEVELOPING TECHNOLOGIES CLASSROOM

Industrial Automation Maintenance Program - School of Manufacturing

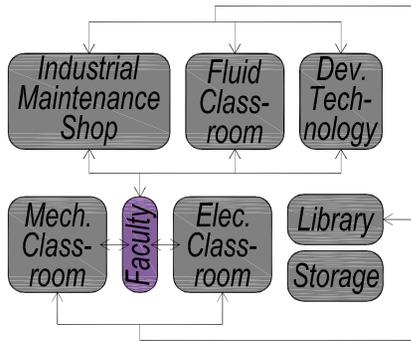




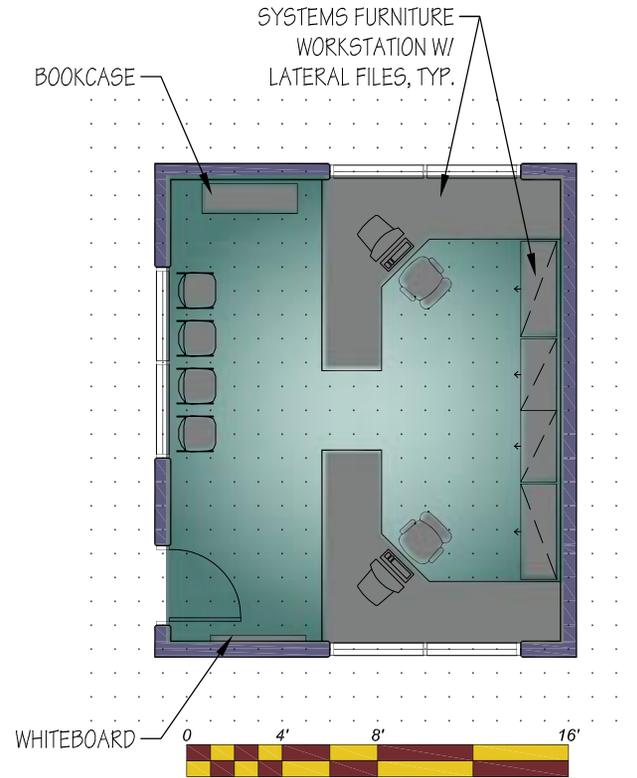
# INDIVIDUAL SPACE DIAGRAMS



First 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: 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: 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
- Waste can: (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.

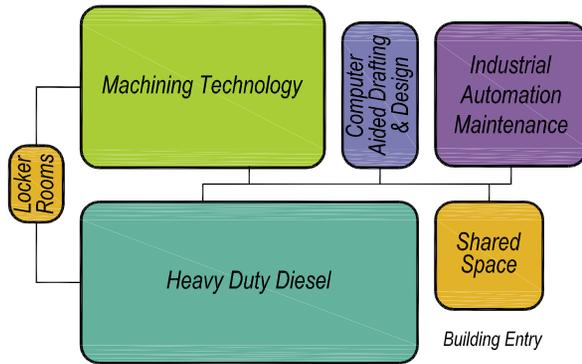
## FACULTY OPEN OFFICE / WORKROOM

Industrial Automation Maintenance Program - School of Manufacturing

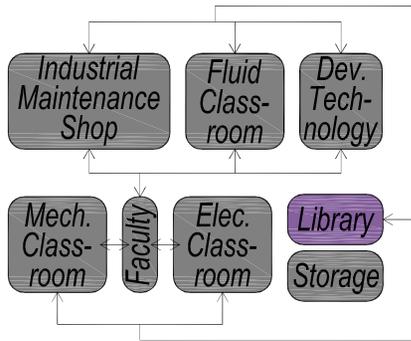




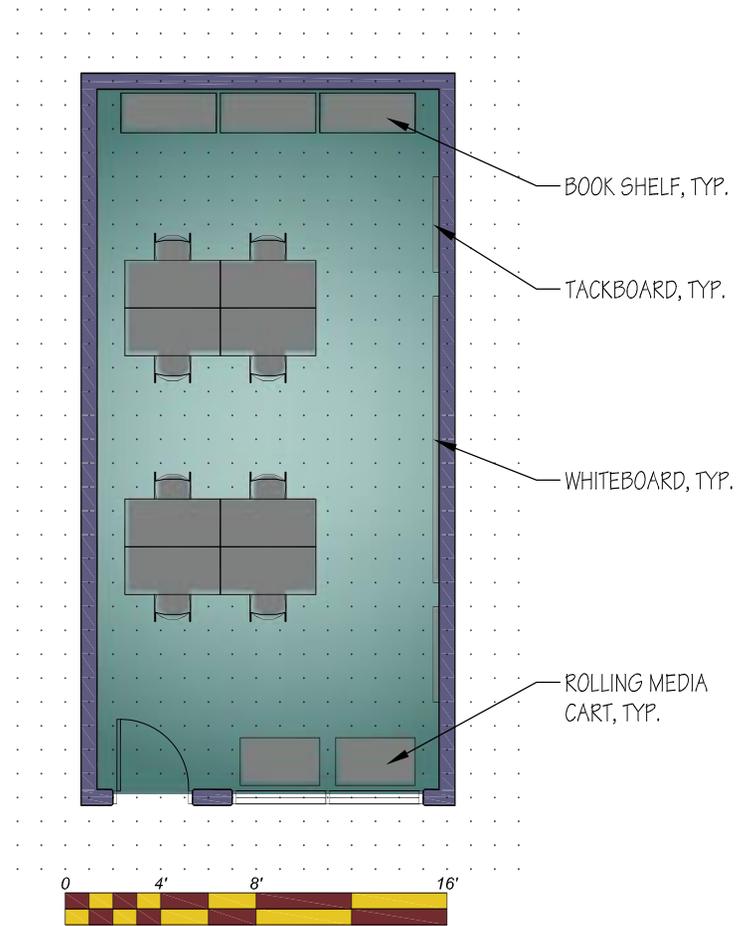
# INDIVIDUAL SPACE DIAGRAMS



First 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:	First 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"
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### DOORS

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

### WINDOWS

• Natural Light:	Desirable
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### CASEWORK / FIXED EQUIPMENT

• Whiteboard, map rail, tray:	(1 ea) 48"Wx48"H
• Tackboard w/ frame:	(2 ea) 24Wx48"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
• Waste can:	(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, (1) smart board, (1) media projector.
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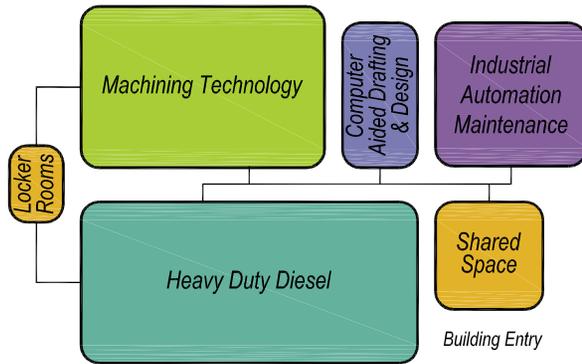
## MEDIA / VIDEO LIBRARY

Industrial Automation Maintenance Program - School of Manufacturing

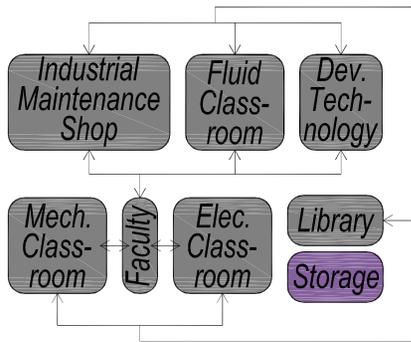




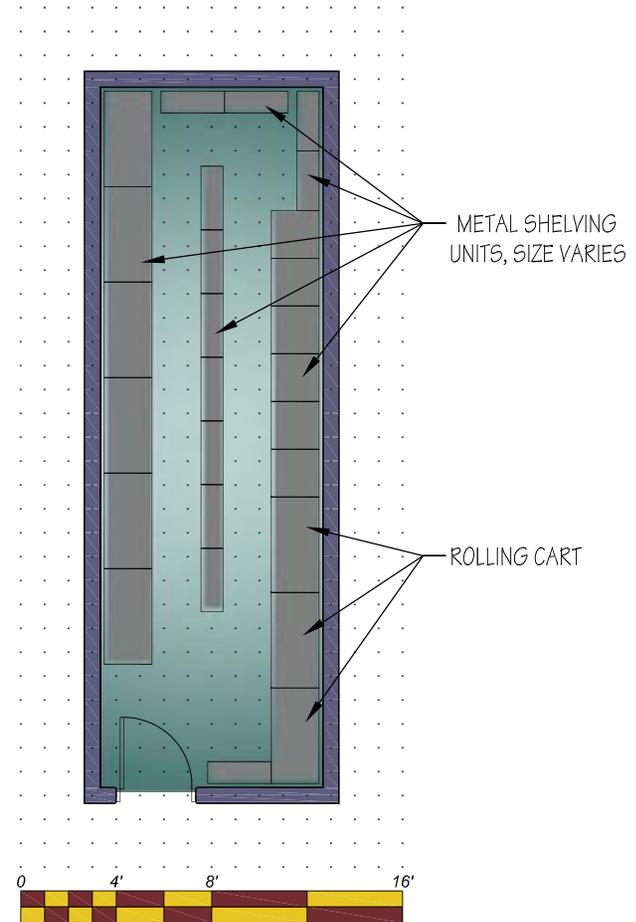
# INDIVIDUAL SPACE DIAGRAMS



First 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: Second 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: Dutch/split door

### WINDOWS

- Natural Light: Not required

### CASEWORK / FIXED EQUIPMENT

- None required.

### FURNISHINGS

- Metal shelving units: (45 lf) 24"D
- Rolling Carts: (3 ea) 24"Wx48"LX36"H

## 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.

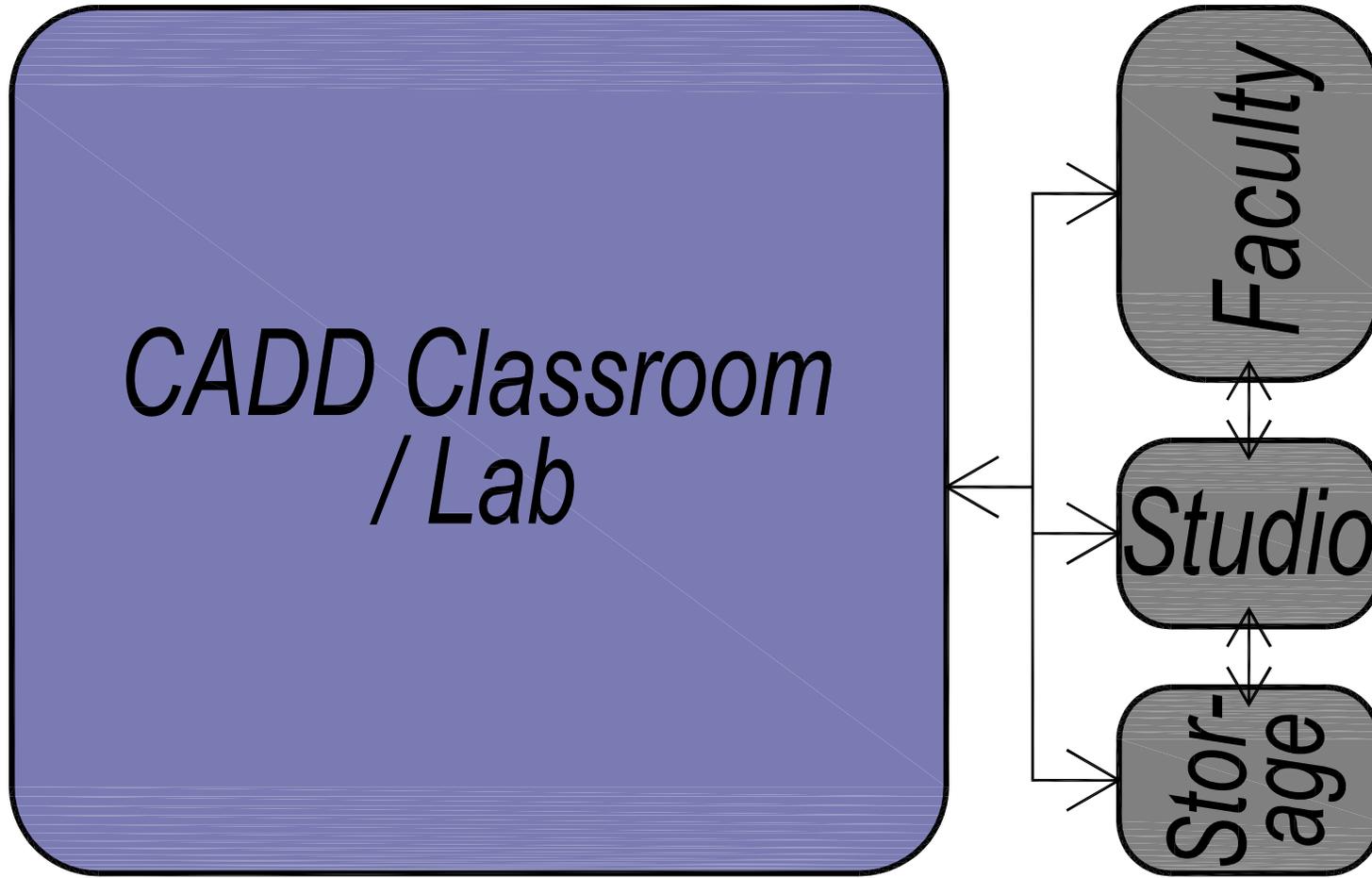
## STORAGE ROOM





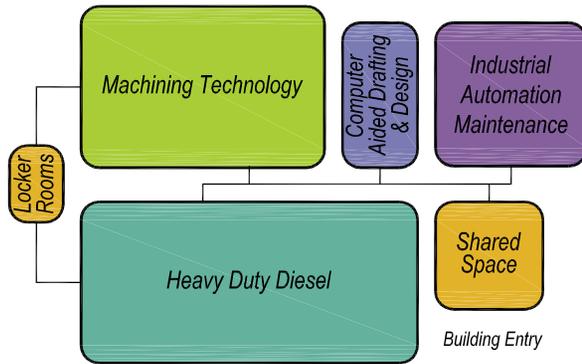
# INDIVIDUAL SPACE REQUIREMENTS

## COMPUTER AIDED DRAFTING & DESIGN RELATIONSHIP DIAGRAM

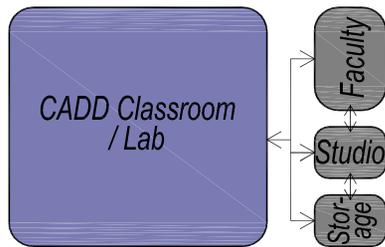




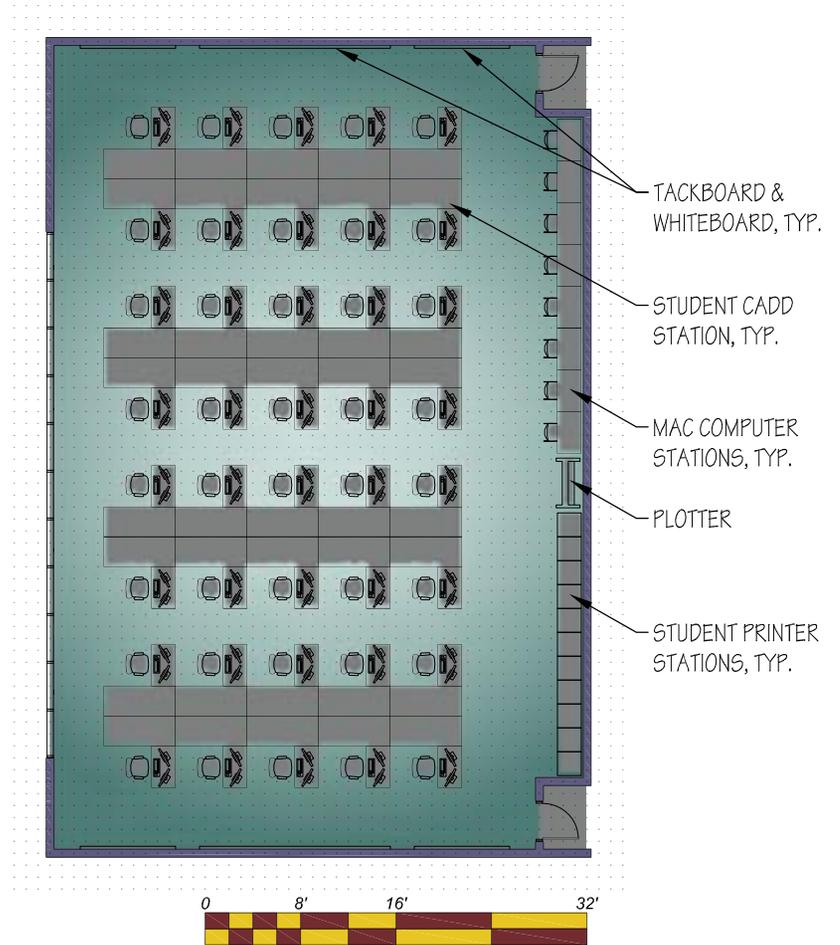
# INDIVIDUAL SPACE DIAGRAMS



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
- Waste can: (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: Occupany sensor w/ local override

### EQUIPMENT (NIC)

- Capacity for (50) desktop computers, LCD projector, (1) smart board, (1) 42" plotter.
- (1) Elmo desktop presentation unit.

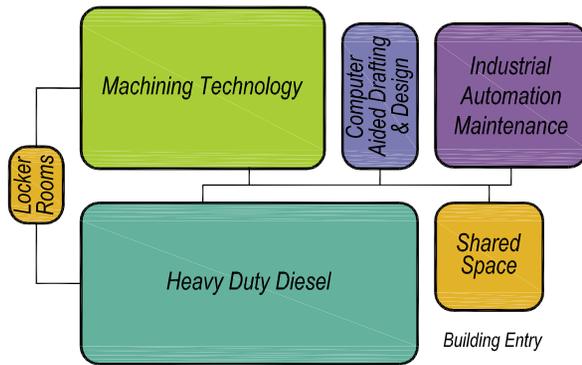
## CADD CLASSROOM / LAB

Computer Aided Drafting & Design Program - School of Manufacturing

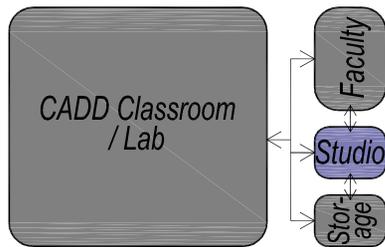




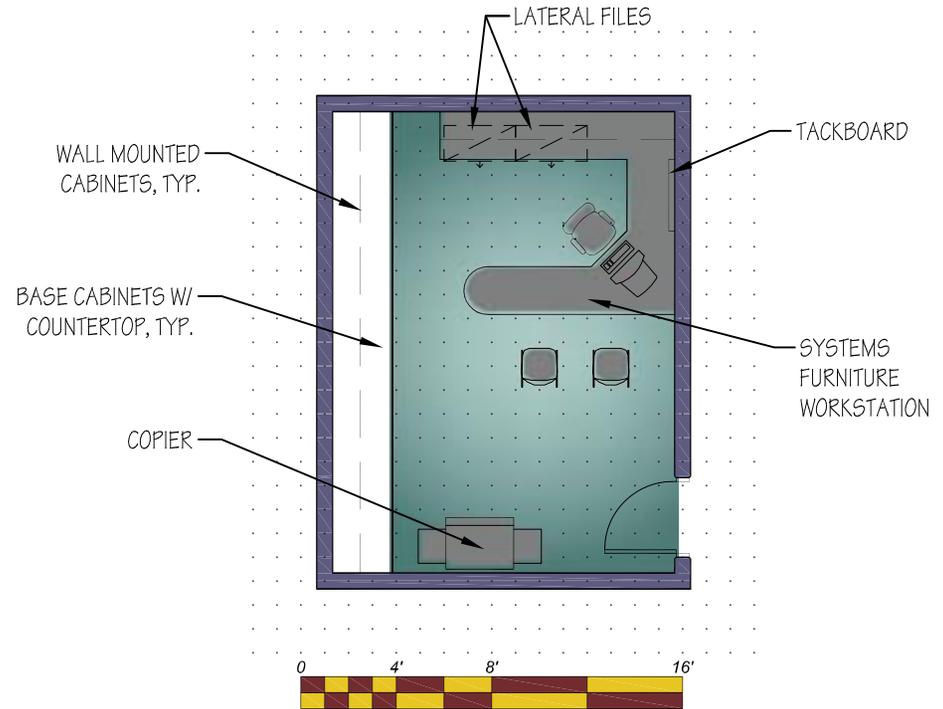
# INDIVIDUAL SPACE DIAGRAMS



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
- Waste can: (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.

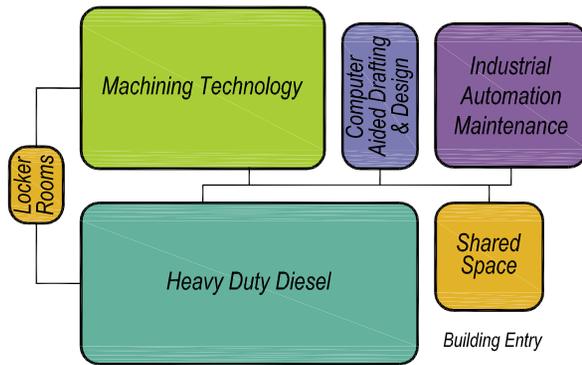
## MULTI-MEDIA STUDIO

Computer Aided Drafting & Design Program - School of Manufacturing

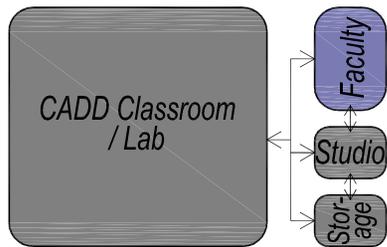




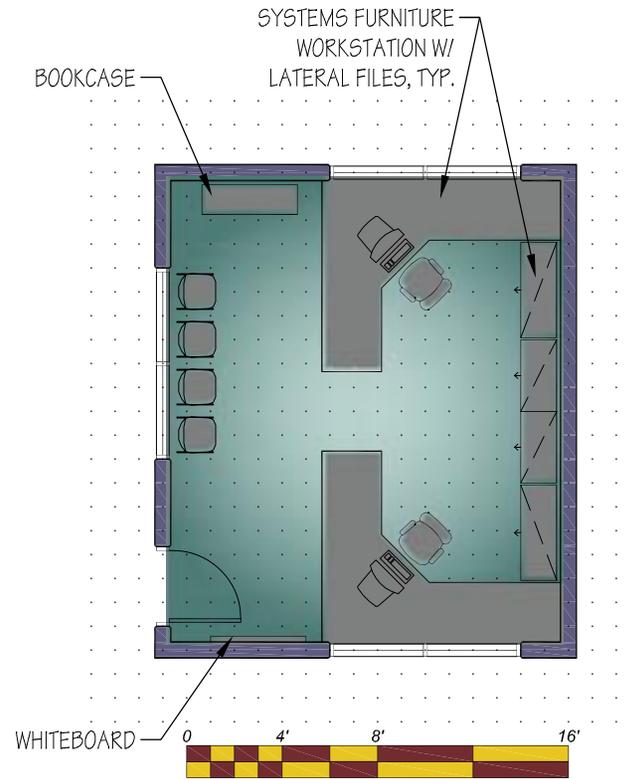
# INDIVIDUAL SPACE DIAGRAMS



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
- Waste can: (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.

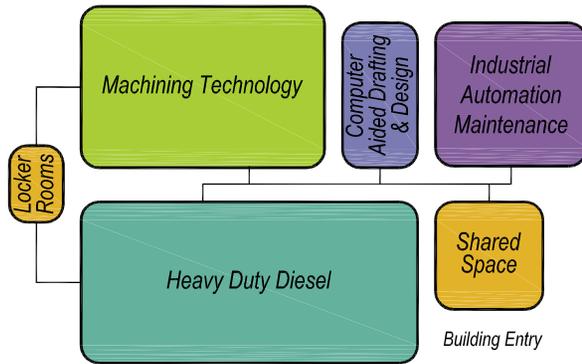
## FACULTY OPEN OFFICE / WORKROOM

Computer Aided Drafting & Design Program - School of Manufacturing

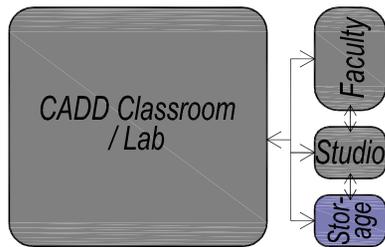




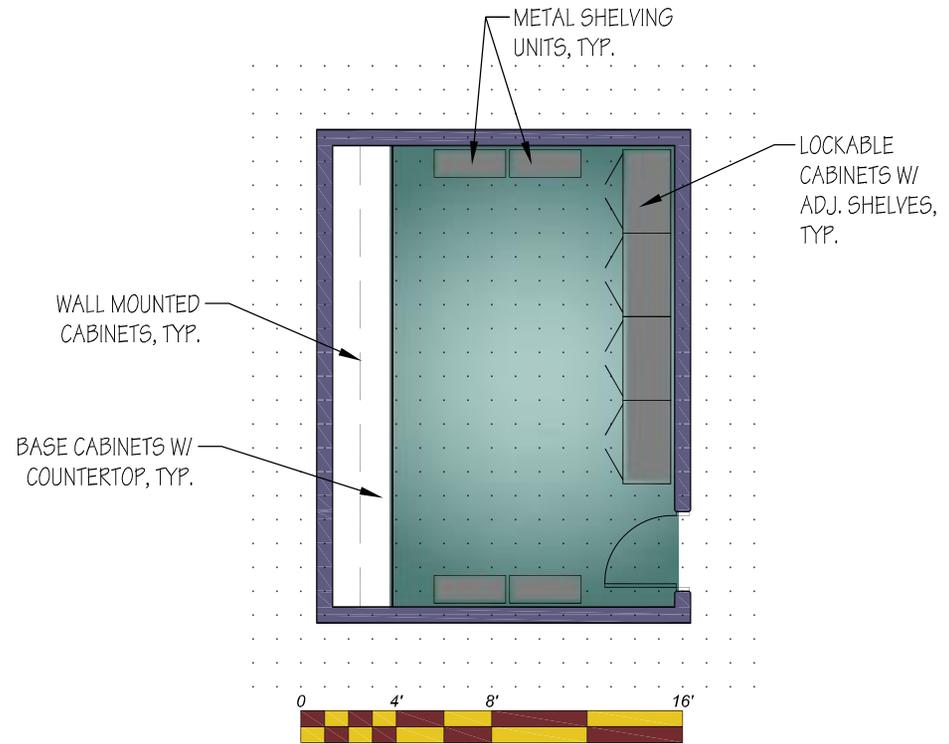
# INDIVIDUAL SPACE DIAGRAMS



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: 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: None required
- Proximity: Public circulation areas
- 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
- Type: Aluminum frame
- Glazing: Insulated w/ low-e coating

### 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
- Waste can: (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 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: Shared Meeting Room
- 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
- Visitors: 20

### FUNCTION / TASKS

- Provide shared conference area.

### RELATIONSHIPS

- Location: First Floor
- Adjacency: None required
- Proximity: Public circulation areas
- 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
- Type: Aluminum frame
- Glazing: Insulated w/ low-e coating

### CASEWORK / FIXED EQUIPMENT

- Whiteboard (alum. frame & tray); (1) 48"x96"
- Projection screen: 72"W
- Base cabinet, p.lam surface: (8 lf) 24"Dx34"H lockable w/ adjustable shelving
- Projector mounts/ports & cable connection: (1)

### FURNISHINGS

- Wood conference table: (1 ea) 60"x12'-0"
- Upholstered conference chair: (20 ea) 20"x20"
- Waste can: (1 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: 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  
and dimming

### 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: Enclosed Public Restroom
- Number Required: 1 per gender
- Number Additional (expansion): 0
- Total Number: 2

### NET AREA SUMMARY

- Area (each): As required by plumbing code

### OCCUPANT SUMMARY

- Assigned Occupants: 0

### FUNCTION / TASKS

- Building support space

### RELATIONSHIPS

- Location: First Floor
- Adjacency: Centrally located
- Proximity: Public circulation
- Separation: Quiet spaces

## ARCHITECTURAL REQUIREMENTS

### FINISHES

- Floor: Ceramic tile, slope to floor drain
- Walls: Ceramic tile
- Ceiling: Susp. gypsum board w/ acoustic tile
- Sound: None required
- Fixtures: Vitreous china

### CEILING HEIGHT

- Above Finish Floor (min.): 8'-0" (min.)

### DOORS

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

### WINDOWS

- Natural Light: Not required

### CASEWORK / FIXED EQUIPMENT

- Water closet: As required
- Urinal: As required
- Lavatory: As required
- Toilet partition, phenolic: 32"x56"
- Urinal screen, phenolic: 24"x18"
- Mirror w/ stainless steel shelf: As required
- Grab bars, stainless steel: As required
- Dispensers: As required
- West receptacles, stainless steel: As required

### FURNISHINGS

- None required.

## TECHNICAL REQUIREMENTS

### MECHANICAL

- Outdoor Air: 15 CFM per person (min.)
- Air Circulation: 15 CFM per person (min.)
- Summer Design Temp.: 72° F
- Winter Design Temp.: 70° F
- Controls: DDC individual controls
- Sound Criteria: 40 (NC/RC)
- Special Systems: 5 min. air exchange exhaust
- Plumbing: Wall hung flush valve water closets  
Wall hung flush valve urinals  
Wall hung lavatories  
Floor drains  
Water, waste & venting

### ELECTRICAL

- Power: One GFCI duplex outlet per wall
- Data: None required
- Phone: None required
- Video: None required
- Intercom: None required

### LIGHTING

- Fixture Types: Fluorescent w/ electronic ballast
- Task Light: Required at mirrors
- Foot Candles: 30
- Controls: Auto sensor

### EQUIPMENT (NIC)

- Electric hand driers (optional)





## 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
<b><i>Heavy Duty Diesel Total</i></b>			<b><i>17,070 sf</i></b>

<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
<b><i>Machining Technology Total</i></b>			<b><i>12,650 sf</i></b>





# AREA SUMMARY

<i>INDUSTRIAL AUTOMATED MAINTENANCE PROGRAM</i>			
<i>Space Description</i>	<i>Quantity</i>	<i>Size</i>	<i>Total Area</i>
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
<i>Industrial Automated Maintenance Total</i>			<i>6,000 sf</i>

<i>COMPUTER AIDED DRAFTING &amp; DESIGN PROGRAM</i>			
<i>Space Description</i>	<i>Quantity</i>	<i>Size</i>	<i>Total Area</i>
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
<i>COMPUTER AIDED DRAFTING &amp; DESIGN TOTAL</i>			<i>3,580 sf</i>

<i>BUILDING COMMON SPACES</i>			
<i>Space Description</i>	<i>Quantity</i>	<i>Size</i>	<i>Total Area</i>
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
<i>BUILDING COMMON SPACES TOTAL</i>			<i>3,150 sf</i>



## 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>



