Request for Approval with Assurances
Montana Big Sky Pathways (Programs of Study)

The Carl D. Perkins Career and Technical Education Act of 2006 (Perkins IV) calls for states to offer “career and technical programs of study,” known as Big Sky Pathways in Montana, as an option to students and their parents when planning for and completing future coursework. These programs, at a minimum, must:

- Incorporate and align secondary and postsecondary education elements.
- Include academic and CTE content in a coordinated, non-duplicative progression of courses.
- Offer the opportunity, where appropriate, for secondary students to acquire postsecondary credits, and
- Lead to an industry-recognized credential or certificate at the postsecondary level, or an associate or baccalaureate degree.

Assurances:

By my signature on this form, I assure that to the best of my ability the proposed Big Sky Pathway submitted for approval by this high school/college satisfies the 10 stated requirements. For approval, all 10 requirements must be checked. NOTE: only the OPI Specialist has the authority to approve.

Name of Big Sky Pathway (cluster level):
Name of High School: Gardner High School
Names of Secondary Lead Teacher and Counselor: Michael Wagner, Julie Reinertson

The Lead Secondary Practitioner will be contacted if OPI has questions about this request
Lead Teacher's email address: m Wagner@gardnerhs.org
Lead Teacher's phone number: (406) 846-7661

Name of College:
Gallatin College

Name of College Program:
Drafting Technology

Name of College Lead Faculty Member:
Jason Arndt

Requirements for Approval

1. Includes all state and local graduation requirements
2. Identifies the appropriate secondary CTE, academic, and recommended elective courses offered by this high school which will prepare the student for college-level courses without remediation
3. Outlines a non-duplicative sequence of courses from grades 9-12 and from secondary to postsecondary education
4. Prepares students for entry into a postsecondary program or apprenticeship
5. Leads to an industry-recognized postsecondary credential, degree or employment
6. Includes appropriate state standards and/or industry skills standards, identify standards used: NCCER, NTEA
7. Aligns with an AAS program offered by a Montana college (college of technology, community college, tribal college, NSU-Northern, MSU-B College of Technology)
8. Links with a well-crafted guidance delivery system such as MCL
9. When applicable, dual enrollment opportunities have been identified:
10. When applicable, Advanced Placement (AP), CTE, and YCE ( statewide articulations) have been identified: CAPP 120, CST, 100, 120 WLDG 110, 111

High School Principal's Signature: [Signature]
Date: 1-24-12

H.S. Advisory Committee Member's Signature: [Signature]
Date: 1-24-12

College Chief Academic Officer's Signature: [Signature]
Date: 1-24-12

College Lead Faculty Member's Signature: [Signature]
Date: 1-24-12

Please submit this Request for Approval form and a copy of the Big Sky Pathway Proposal to:
OPI, Career and Technical Education, P.O. Box 202501, Helena, Montana 59620-2501

OPI Specialist Approval:

Date of Approval:

GCEA Approval:

Date of Approval:

Both the college and the high school will receive a signed copy when the BSP is approved.
**Pathway Options:**
- Design/Pre-Construction
- Construction
- Maintenance/Operations

**Occupation Examples:**
- Architect
- Carpenter
- Civil Engineer
- Construction Foreman/Manager
- Contractor
- Demolition Engineer
- Drafter
- Drywall Installer
- Electrician
- Electronic Systems Technician
- Equipment/Material Manager
- General Contractor/Builder
- Heating, Ventilation, Air Conditioning and Refrigeration Mechanic
- Interior Designer
- Painter
- Paperhanger
- Plumber
- Project Estimator
- Project Inspector
- Roofer
- Safety Director
- Sheet Metal Worker
- Tile and Marble Setter

For a complete listing, go to: http://online.onetcenter.org/find/career?c=2&q=Go

**Recommended CTE Cluster Foundation Course(s):**
- Intro to technology
- Drafting I, Drafting II
- Manufacturing and Construction I, II

**Recommended CTE Pathway Courses:**
- Power and Transportation

**Other Recommended CTE Courses:**
- Technology Student Association (TSA)

**ADVANCED LEARNING OPPORTUNITIES**
High School to College/Career Linkages

**CTE START courses:** DT 0115, DT 0120

**Advanced Placement or IB courses:** A.P., Government, A.P. Europe, A.P. Calculus

**Dual Enrollment courses:**

**Online courses:** Montana Digital Academy

**Other:**

**POSTSECONDARY PROGRAM OF STUDY**

<table>
<thead>
<tr>
<th>Math</th>
<th>English</th>
<th>Major</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>13-Semester 1</td>
<td>WRIT 101</td>
<td>DT 0115, 0125, DRFT 120, 131, 156, ETCC 173</td>
<td>PSYX 100, COMM 0110, COMM 135, CAPP120</td>
</tr>
<tr>
<td>Semester</td>
<td>Course Code</td>
<td>Course Description</td>
<td>College/Program</td>
</tr>
<tr>
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</tr>
<tr>
<td>13—Semester 2</td>
<td>M151 M108</td>
<td>MT 0220 WRIT 101</td>
<td>CET 0230,0210 DT 0278 DRFT 132,140,186</td>
</tr>
<tr>
<td>14—Semester 1</td>
<td>M 121,145,152, OR 153</td>
<td>ETCC 310 DT 0204 ENGR 2300 CET 0234 DRFT 166,201,256 MFTG 205</td>
<td></td>
</tr>
<tr>
<td>14—Semester 2</td>
<td></td>
<td>DT0205 DRFT 297,298 OR DRFT 205,244,266</td>
<td>ETCC 235,236,292 CET 0237 CAPP 156 ITS 280</td>
</tr>
</tbody>
</table>

**Montana Postsecondary Opportunities**

*Montana University System Degree and Program Inventory: [http://www.homepage.montana.edu/~mus/drainy/](http://www.homepage.montana.edu/~mus/drainy/)
Your Guide to Montana's Certificate and Associate Degree Programs: [http://mus.edu/twoyear/YourGuide.html](http://mus.edu/twoyear/YourGuide.html)*

Colleges of Technology:
- BLCOT—Billings; GCCOT—Great Falls; HCCOT—Helena; TECHCOT—Butte; UMCOT—Missoula; GCP—Bozeman

Community Colleges:
- DCC—Gradnede; FVCC—Kalispell; MCC—Missoula City

Tribal Colleges:
- BFCC—Browning; CDKC—Lame Deer; FBCC—Harlem; FPCC—Poplar; LBHC—Crow Agency; SCC—Box Elder; SKCC—Pablo

Four Year Colleges/Universities:
- MSU—Bozeman; MSUB—Billings; MSU-Missoula; EWU; TECH—Butte; UM—Missoula; UM—all

**Military**
- Requires diploma or GED
- 17 with parental consent; 18 without

Air Force, Air Guard, Army, Coast Guard, Marines, and Navy

For more information: [http://todaysmilitary.com](http://todaysmilitary.com)

**Professional Certificate**
- Requires diploma or GED
- Less than 30 credits; little/no general ed credits
- Complete in one year or less

Cabinet & Furniture Technology — FVCC
Line Professional/Utility Line Worker — TECHCOT

**Apprenticeship**
- Requires diploma or GED
- Must be at least 18
- Minimum 2,000 hours of supervised experience

Bricklayers, Building Maintenance Workers, Carpenters, Cement Masons, Electricians, Glaziers, Plumbers, Pipefitters, Roofers, Sheet Metal Workers, Tile Setters

See the MT Dept of Labor website for more information: [http://wsg时间为ld.mt.gov/apprenticeship/default.asp](http://wsg时间为ld.mt.gov/apprenticeship/default.asp)

**Certificate of Applied Science**
- Requires diploma or GED
- 30-45 credits; limited general education credits
- Complete in one year or less

Building Maintenance — UMCOT
Building Technology & Trades — FVCC, MCC, FPCC, BFCC
Carpentry — HCCOT, UMCOT, TECH COT, GCCOT, MSUN, FBCOL
Construction Technology — SCC
Heating, Ventilation, Air Conditioning — FVCC
Line Professional/Utility Line Worker — FPCC
Plumbing Technology — FVCC

**Associate's of Applied Science Degree**
- Requires diploma or GED
- 60-72 credits; includes 15-25 general ed credits
- Complete in two years (if prepared academically in math and English)

Building Technology & Trades — FVCC, MCC, FPCC
Carpentry — UMCOT, BLCOT, TECH COT, MSUN, FPCC
Construction Technology — HCCOT, BFCC
Plumbing Technology — MSUN

**Baccalaureate Degree**
- Requires 4-year college prep for admission
- 128 credits (approximately)
- Complete in four years

Civil Engineering — TECH
Construction Engineering Technology — MSU
Environmental Design/Architecture — MSU

Degree and Program Inventory above may not be all inclusive.


**PATHWAY DESCRIPTION**

Design/Pre-Construction Pathway: People with careers in design/pre-construction create our future! They turn a concept into a set of plans. Their plans guide other construction professionals as they continue the building process.

**C. CLUSTER (FOUNDATION) KNOWLEDGE AND SKILLS**

The following Cluster (Foundation) Knowledge and Skill statements apply to all careers in the Architecture and Construction Cluster. Persons preparing for careers in the Architecture and Construction Cluster should be able to demonstrate these skills in addition to those found on the Essential Knowledge and Skills Chart.

**Cluster Topic**

**ACC01**

**ACADEMIC FOUNDATIONS:** Achieve additional academic knowledge and skills required to pursue the full range of career and postsecondary education opportunities within a career cluster.

**ACC01.01**

Perform math operations such as estimating and distributing materials and supplies to complete jobsite/workplace tasks.

**ACC01.01.01**

Use basic math functions to complete jobsite/workplace tasks.

*Sample Indicators*

- Identify whole numbers, decimals, fractions, complex numbers, and polynomials.
- Apply basic arithmetic add, subtract, multiply, and divide operations.
- Apply relational (equal, not equal, greater than, less than, etc.) and logical operators in a logical expression.

**ACC01.01.02**

Use geometric formulas to determine areas and volumes of various structures.

*Sample Indicators*

- Calculate areas and volumes of structures.
- Estimate materials and supplies needed.

**ACC01.01.03**

Use appropriate formulas to determine percentages /decimals.
**Sample Indicators**  Calculate percentages/decimals.

Use percentages/decimals to perform measurement tasks.

**ACC01.01.04**  Use appropriate formulas to determine ratios, fractions, and proportion measures.

**Sample Indicators**  Calculate ratios, fractions and proportion measures.

Use ratios, fractions and proportion measures to perform measurement tasks.

**ACC01.01.05**  Use appropriate formulas to determine measurements of dimensions, spaces and structures.

**Sample Indicators**  Measure dimensions, spaces and structures using U.S. Standard unit.

Measure dimensions, spaces and structures using Metric units.

Use dimensions, spaces and structures calculations to estimate materials and supplies needed.

**ACC01.01.06**  Conceptualize a three-dimensional form from a two-dimensional drawing to visualize proposed work.

**Sample Indicators**  Build Create three-dimensional form models.

**ACC01.02**  **Apply principles of physics as they relate to worksite/jobsite situations to work with materials and load applications.**

**ACC01.02.01**  Apply basic concepts of statics and loads to planning.

**Sample Indicators**  Use the basic concepts of static and load calculations for rigging and moving loads.

**ACC01.02.02**  Identify the physical properties present when using common construction materials in order to use the materials safely, effectively and efficiently.

**Sample Indicators**  Use the basic concepts of physics when working with common construction materials.
### Cluster Topic: ACC02 - COMMUNICATIONS

**Use oral and written communication skills in creating, expressing and interpreting information and ideas including technical terminology and information.**

<table>
<thead>
<tr>
<th>ACC02.01</th>
<th>Use vocabulary and visual cues commonly used in design and construction to be successful in workplace/jobsite communications.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample Indicators</td>
<td>Use correct terminology to convey verbal and visual.</td>
</tr>
<tr>
<td>ACC02.01.01</td>
<td>Match vocabulary and visual cues to workplace/jobsite situations.</td>
</tr>
<tr>
<td>Sample Indicators</td>
<td>Confirm understanding of verbal and visual instructions. Ask questions concerning details of instructions. Perform assignments as requested.</td>
</tr>
<tr>
<td>ACC02.01.02</td>
<td>Utilize vocabulary and visual cues in context of design and construction situations.</td>
</tr>
</tbody>
</table>

### Cluster Topic: ACC03 - PROBLEM-SOLVING AND CRITICAL THINKING

**Solve problems using critical thinking skills (analyze, synthesize, and evaluate) independently and in teams. Solve problems using creativity and innovation.**

<table>
<thead>
<tr>
<th>ACC03.01</th>
<th>Create and implement project plans considering available resources and requirements of a project/problem to accomplish realistic planning in design and construction situations.</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACC03.01.01</td>
<td>Plan, organize, schedule and manage a project/job to optimize workflow and outcome.</td>
</tr>
<tr>
<td>Sample Indicators</td>
<td>Report results of the project/job. Manage the schedule of a project/job.</td>
</tr>
<tr>
<td>ACC03.01.02</td>
<td>Identify timeline required to complete a project/job. Evaluate efficiency and effectiveness of a project/job.</td>
</tr>
</tbody>
</table>

### Table

<table>
<thead>
<tr>
<th>I-D1, I-I2T R-M/C</th>
<th>I-DRFT 140, E-DRFT 298, E-297</th>
</tr>
</thead>
<tbody>
<tr>
<td>I-D1, I-I2T R-M/C</td>
<td>I-ETCC 173, R-DRFT 201, R-DRFT 263</td>
</tr>
<tr>
<td>I-M/C</td>
<td>I DT 0204</td>
</tr>
<tr>
<td>I-D1, I-M/C</td>
<td>I DT 0250</td>
</tr>
<tr>
<td>I-D1, I-I2T R-M/C</td>
<td>I-DRFT 156, R-DRFT 132, E-DRFT 201</td>
</tr>
<tr>
<td>I-D1, I-I2T R-M/C</td>
<td>R-DRFT 156,186,266, E-DRFT 201</td>
</tr>
<tr>
<td>I-M/C</td>
<td>E DT 0205, DT 0260</td>
</tr>
<tr>
<td>I-D1, I-I2T R-M/C</td>
<td>E DT 0255</td>
</tr>
</tbody>
</table>
ACC03.01.03  Estimate resources/materials required for a specific project or problem.

Sample Indicators
Estimate correct amount of required resources/materials.
Create a budget.

ACC03.01.04  Use available resources/materials effectively while completing a project or resolving a problem with a project plan.

Sample Indicators
Evaluate waste of resources/materials.
Evaluate necessity for additional resources/materials.

ACC03.01.05  Determine alternative solutions for a specific project/problem.

Sample Indicators
Evaluate feasibility of alternative suggestions.
Implement appropriate alternatives.

ACC03.02  Evaluate and adjust design and construction project plans and schedules to respond to unexpected events and conditions.

ACC03.02.01  Incorporate potential job disruptions into planning time lines.

Sample Indicators
Identify potential events and conditions that disrupt the completion of a job.
Solve situational problems involved with unexpected events and conditions.

ACC03.02.02  Adjust project plans and schedules when presented with unexpected information.

Sample Indicators
Modify existing plans to reflect an unexpected change.
Modify existing schedules to reflect an unexpected change.
Modify existing budget to reflect unexpected change.

ACC03.02.03  Identify and assess critical situations as they arise to resolve issues.

Sample Indicators
Evaluate potential solutions and determine best solution.
Appraise critical situations and implement appropriate response.

ACC03.02.04  Generate a project update that tracks changes necessitated by unexpected events and conditions.

Sample Indicators
Present an oral and/or written status report on the project.
**Cluster Topic ACC04**

**INFORMATION TECHNOLOGY APPLICATIONS:** Use information technology tools specific to the career cluster to access, manage, integrate, and create information. 

*No additional statements in this topic beyond those found in the Essential Knowledge and Skills Chart.*

**Cluster Topic ACC05**

**SYSTEMS:** Understand roles within teams, work units, departments, organizations, inter-organizational systems, and the larger environment. Identify how key organizational systems affect organizational performance and the quality of products and services. Understand global context of industries and careers.

<table>
<thead>
<tr>
<th>ACC05.01</th>
<th>Comply with regulations and applicable codes to establish a legal and safe workplace/jobsite.</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACC05.01.01</td>
<td>Identify governmental regulations and national, state and/or local building codes that apply to a given workplace/jobsite.</td>
</tr>
<tr>
<td><strong>Sample Indicators</strong></td>
<td>Follow governmental regulations and building codes. Follow industry regulations and building codes. Follow jurisdictional regulations and building codes. Use information given in regulations and codes correctly. Pass job inspections and comply with regulations at all times. Pass required substance abuse screening.</td>
</tr>
<tr>
<td>ACC05.01.02</td>
<td>Evaluate workplace/jobsite activities for compliance with governmental and other applicable safety regulations such as EPA and OSHA.</td>
</tr>
<tr>
<td><strong>Sample Indicators</strong></td>
<td>Read and discuss information on OSHA, EPA and other safety regulations. Pass safety inspections and comply with regulations at all times.</td>
</tr>
<tr>
<td>ACC05.01.03</td>
<td>Use MSDS (Material Safety Data Sheets) information for the management, use and disposal of materials.</td>
</tr>
</tbody>
</table>

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<thead>
<tr>
<th>I-Vid Pro</th>
<th>I CAPP 131, CAPP 158</th>
<th>ALL</th>
</tr>
</thead>
<tbody>
<tr>
<td>I-I2T</td>
<td>R - DRFT 140, R - DRFT 297</td>
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</tr>
<tr>
<td>I-D1</td>
<td>R - ETCC 173</td>
<td></td>
</tr>
<tr>
<td>I-D1,I-I2T</td>
<td>I DT 0255</td>
<td>E - DRFT 201</td>
</tr>
<tr>
<td>I-M/C</td>
<td>I</td>
<td>E - DRFT 201</td>
</tr>
<tr>
<td>I-M/C</td>
<td>NA</td>
<td></td>
</tr>
</tbody>
</table>
**Sample Indicators**

Obtain, understand and follow MSDS (Material Safety Data Sheets) information. Use materials safely.

**ACC05.01.04** Identify workplace/jobsite environmental hazards of a given situation.

**Sample Indicators**

Follow safe practices relating to environmental hazards.

**ACC05.02** Examine how the roles and responsibilities among trades/professions work in relationship to complete a project/job.

ACC05.02.01 Describe how relationships between trades/professions can facilitate smooth workflow and outcome to meet project goals.

**Sample Indicators**

Coordinate work between trades.

ACC05.02.02 Explain how the hierarchy of roles on a jobsite facilitate smooth workflow and outcome to meet project goals.

**Sample Indicators**

Incorporate job functions in the reporting chain of supervision.

Evaluate the safety issues and responsibilities managed by each level of supervision.

**ACC05.03** Examine all factors effecting the project and the planning process.

ACC05.03.01 Understand social, environmental and political factors that affect the project.

**Sample Indicators**

Label all systems on a set of construction documents.

Discuss the interrelationship of the systems in the built environment.

Use the concept of "Critical Path Method (CPM)" and/or similar sequential methods so that work progresses efficiently.

ACC05.03.02 Understand the context of the projects.

**ACC05.04** Understand and manage union-management relationships and contracts to create a cooperative work environment.

ACC05.04.01 Analyze a proposed contract in terms of the company's position and union's position in labor contract negotiations.

**Sample Indicators**

Document how quality improves profitability.

Report on issues that affect quality.

ACC05.04.02 Assess a situation for compliance with terms of a contract.
<table>
<thead>
<tr>
<th>Cluster Topic</th>
<th>ACC06</th>
<th>LEADERSHIP AND TEAMWORK: Use leadership and teamwork skills in collaborating with others to accomplish organizational goals and objectives.</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACC06.01</td>
<td>Assess and control the types and sources of workplace hazards to ensure a safe workplace and jobsite.</td>
<td></td>
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<tr>
<td></td>
<td>ACC06.01.01</td>
<td>Demonstrate methods to correct common design and construction hazards.</td>
</tr>
<tr>
<td></td>
<td>Sample indicators</td>
<td>Identify and describe common hazards in the workplace. Identify and describe major sources of information about hazards in the workplace (e.g., Material Safety Data Sheets (MSDS), work procedures, exposure control plans, training materials, labels, and signage). Identify sources of combustible/flammable materials, fire and emergencies to establish a fire safe environment. Interpret safety signs and symbols. Identify methods for disposing of hazardous materials.</td>
</tr>
<tr>
<td></td>
<td>ACC06.01.02</td>
<td>Identify types and sources of workplace hazards common to design and construction situations.</td>
</tr>
<tr>
<td></td>
<td>ACG06.01.03</td>
<td>Demonstrate personal and group health and safety practices.</td>
</tr>
<tr>
<td></td>
<td>Sample indicators</td>
<td>Demonstrate principals of safe physical movement to avoid slips, trips, and spills. Inspect and use personal protective equipment (PPE).</td>
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<tr>
<td></td>
<td>I-2T</td>
<td>I-ETCC 173, R-MFTG 205</td>
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<td>E</td>
<td>DT 0205, DT 0260</td>
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</tbody>
</table>
**Cluster Topic**  
ETHICS AND LEGAL RESPONSIBILITIES: Know and understand the importance of professional ethics and legal responsibilities.

<table>
<thead>
<tr>
<th>ACC08.01</th>
<th>Recognize legal and ethical relationships between employees and employers to establish workplace/jobsite rules, regulations and guidelines in a design and/or construction setting.</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACC08.01.01</td>
<td>Access appropriate resources to identify the roles, rights and responsibilities of an employee and an employer.</td>
</tr>
<tr>
<td>Sample Indicators</td>
<td>Practice workplace/jobsite conduct incorporating employee and employer roles, rights and responsibilities.</td>
</tr>
<tr>
<td>ACC08.01.02</td>
<td>Examine insurance documentation to determine liability issues associated with a job.</td>
</tr>
<tr>
<td>Sample Indicators</td>
<td>Describe liability issues as needed.</td>
</tr>
<tr>
<td>ACC08.01.03</td>
<td>Comply with employer policies, procedures, and job specific agreements such as sexual harassment avoidance and substance abuse control to prevent ethical and legal problems.</td>
</tr>
<tr>
<td>Sample Indicators</td>
<td>Comply with employer policies and procedures.</td>
</tr>
<tr>
<td>Comply with project labor agreements.</td>
<td></td>
</tr>
<tr>
<td>ACC08.02</td>
<td>Read regulations and contracts to ensure ethical and safety elements are observed.</td>
</tr>
<tr>
<td>ACC08.02.01</td>
<td>Study regulations and codes to identify those applicable to the local area.</td>
</tr>
<tr>
<td>Sample Indicators</td>
<td>Locate and implement regulations and codes applicable to tasks and projects.</td>
</tr>
<tr>
<td>Comply with local, state and Federal codes.</td>
<td></td>
</tr>
</tbody>
</table>
ACC08.02.02  Explain the various aspects of service contracts to ensure compliance.

<table>
<thead>
<tr>
<th>Sample Indicators</th>
<th>ETCC 0235</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaluate and follow service contracts.</td>
<td></td>
</tr>
</tbody>
</table>

ACC08.02.03  Recognize the relationship and responsibilities of various parties to a contract.

<table>
<thead>
<tr>
<th>Sample Indicators</th>
<th>ETCC 0235</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fulfill contractual roles and responsibilities.</td>
<td></td>
</tr>
<tr>
<td>Monitor relationships with other parties.</td>
<td></td>
</tr>
</tbody>
</table>

ACC08.02.04  Recognize the definition of specialized words or phrases to fully understand documents and contracts.

<table>
<thead>
<tr>
<th>Sample Indicators</th>
<th>ETCC 0235</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use industry jargon or terminology appropriately.</td>
<td></td>
</tr>
<tr>
<td>Use industry acronyms correctly.</td>
<td></td>
</tr>
<tr>
<td>Use words with multiple meanings correctly in context.</td>
<td></td>
</tr>
</tbody>
</table>

ACC08.03  Use ethical and legal standards to avoid conflicts of interest in a design and/or construction setting.

ACC08.03.01  Identify conflicts of interest relating to a job or project to prevent ethical or legal problems.

<table>
<thead>
<tr>
<th>Sample Indicators</th>
<th>ETCC 0235</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resolve issues relating to any potential conflicts of interest.</td>
<td></td>
</tr>
</tbody>
</table>

**EMPLOYABILITY AND CAREER DEVELOPMENT:***

Know and understand the importance of employability skills. Explore, plan, and effectively manage careers. Know and understand the importance of entrepreneurship skills.

ACC09.01  Explain written organizational policies, rules and procedures common in design and construction settings to help employees perform their jobs.

ACC09.01.01  Locate appropriate information on organizational policies in handbooks and manuals.

<table>
<thead>
<tr>
<th>Sample Indicators</th>
<th>ETCC 0235</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify the contents of various organizational publications.</td>
<td></td>
</tr>
<tr>
<td>Select the appropriate document(s) as reference for the situation.</td>
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</tbody>
</table>

ACC09.01.02  Discuss how specific organizational policies and rules influence a specific work situation.

<table>
<thead>
<tr>
<th>I - DRFT 140</th>
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<tbody>
<tr>
<td>E - DRFT 140, R - DRFT 297</td>
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<thead>
<tr>
<th>MT 0220</th>
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<tbody>
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<td>I</td>
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</table>
**Sample Indicators**

Locate and identify specific organizational policy, rule or procedure to assist with a given situation.

**ACC09.02**

Recognize the responsibilities and personal characteristics to develop individual goals for professionalism.

**ACC09.02.01**

Identify appropriate responsibilities and personal characteristics by researching workplace/jobsite information.

Sample Indicators

Practice the responsibilities and characteristics of a professional craftsperson.

Identify all critical/important functions.

Document customer satisfaction.

**ACC09.02.01**

Present a professional image in the workplace/jobsite.

Sample Indicators

Maintain appropriate professional memberships.

Follow rules, regulations and guidelines.

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**Cluster Topic**

**ACC10**

TECHNICAL SKILLS: Use the technical knowledge and skills required to pursue the targeted careers for all pathways in the career cluster, including knowledge of design, operation, and maintenance of technological systems critical to the career cluster.

**ACC10.01**

Read, interpret, and use technical drawings, documents, and specifications to plan a project.

**ACC10.01.01**

Interpret drawings used in project planning.

Sample Indicators

Recognize elements and symbols of blueprints and drawings.

**ACC10.01.02**

Describe written standards and that specifications that apply.

Sample Indicators

Interpret and explain standards and specifications.

**ACC10.01.03**

Recognize how specifications and standards are arranged for proper access.

Sample Indicators

Use specifications and standards.

Apply specifications and standards appropriately.

<table>
<thead>
<tr>
<th>I-D1, R-D2</th>
<th>I - DRFT 120</th>
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<tbody>
<tr>
<td>I</td>
<td>I, R</td>
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<td>DT 0250, DT 0255</td>
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<td>I, E</td>
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<td></td>
<td>ETCC 0235, DT 0260</td>
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</tbody>
</table>
D. PATHWAY KNOWLEDGE AND SKILLS

The following knowledge and skill statements apply to all careers in the Design/Pre-Construction Pathway. The statements are organized within six topics.

Pathway Topic ACPA01 ACADEMICS

ACPA01.01 Employ basic methods of data collection and analysis to provide information for projects.

Sample Indicators Use available research methods when project planning and problem-solving.

ACPA01.01.01 Use available research methods when project planning and problem-solving.

Sample Indicators Select and employ proper method for a given project.

ACC10.01.04 Use architect's plan, manufacturer's illustrations and other materials to communicate specific data and visualize proposed work.

Sample Indicators Sketch/draw/illustrate concepts and ideas.

Draw or sketch plan/layout to be completed.

Use proper measurements to determine layout.

ACC10.02 Use and maintain appropriate tools, machinery, equipment, and resources to accomplish project goals.

ACC10.02.01 Select tools, machinery, equipment, and resources that match requirements of the job.

Sample Indicators Operate tools, machinery and equipment in a safe manner.

Properly maintain and care for tools, machines and equipment.

Safety use tools, machines, and equipment productively and efficiently in alignment with industry standards.

ACC10.02.02 Identify sources of information concerning state-of-the-art tools, equipment, materials, technologies and methodologies.

Sample Indicators Read current periodicals, industry publications and manufacturer’s catalogs.

Use state-of-the-art tools, equipment, materials, technologies and methodologies.

ACC10.02.03 Demonstrate use of tools, machinery, equipment and other resources commonly used in design and construction.

I,R E- DT 0260

I-2T, R-M/C ALL

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**ACPA01.01.02**  Provide appropriate precedents for development of a project.  
*Sample Indicators* Articulate logical rationale for use of chosen precedents.

<table>
<thead>
<tr>
<th>Pathway</th>
<th>COMMUNICATIONS</th>
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<tbody>
<tr>
<td><strong>Topic ACPA02</strong></td>
<td></td>
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<tr>
<td><strong>ACPA02.01</strong></td>
<td>Use communication skills and strategies to work effectively with potential clients.</td>
</tr>
</tbody>
</table>
| **ACPA02.01.01** | Deliver a presentation that explains a concept of design or preconstruction.  
  *Sample Indicators* Show project plans for visual impact.  
  Evaluate customer comprehension.  
  Employ facilitation skills while leading meetings that involve a variety of clients and agencies.  
  *Sample Indicators* Identify types of client/agency needs.  
  Mediate diversity to meet needs. |

<table>
<thead>
<tr>
<th>Pathway</th>
<th>SYSTEMS</th>
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<tbody>
<tr>
<td><strong>Topic ACPA03</strong></td>
<td></td>
</tr>
<tr>
<td><strong>ACPA03.01</strong></td>
<td>Integrate structural, environmental, safety, building envelopes and building service systems to design and construct buildings and structures.</td>
</tr>
</tbody>
</table>
| **ACPA03.01.01** | Describe building systems and their interrelationships.  
  *Sample Indicators* Select and integrate building systems. |
| **ACPA03.01.02** | Develop design criteria for building systems in a given scenario. |
| **ACPA03.02** | Review traditional project phases and various roles within them to plan for and implement phases within a project. |
| **ACPA03.02.01** | Explain the relationship of traditional project phases and the various roles within them to a current project.  
  *Sample Indicators* Work through project phases. |
Pathway Topic ACPA04
SAFETY, HEALTH, AND ENVIRONMENTAL

ACPA04.01 Apply the suitable practices of environmental impact to enhance project acceptance and quality.
Sample Indicators
ACPA04.01.01 Evaluate the sustainable design elements of a given project.
ACPA04.01.02 Align sustainable design elements of a given project.
ACPA04.02 Apply objective construction guidelines for the accommodation of people with varying physical abilities to meet accessibility requirements.
Sample Indicators
ACPA04.02.01 Explain how the Americans with Disabilities Act influences the compliance requirements for project designs.
ACPA04.02.02 Design project plans that comply with OSHA standards.
Sample Indicators
ACPA04.02.03 Demonstrate comprehensive knowledge and application of OSHA Standards.

Pathway Topic ACPA05
LEADERSHIP AND TEAMWORK

ACPA05.01 Appreciate the diversity of needs, values and social patterns in project design to appropriately meet client needs.

ACPA05.01.01 Identify the geographic and cultural issues related to project design in a given situation.
Sample Indicators
ACPA05.01.02 Participate in appropriate trade and professional associations.

Pathway Topic ACPA06
TECHNICAL

ACPA06.01 Develop technical drawings drafted by hand and computer-generated plans to design structures.
ACPA06.01.01 Identify client requirements.
Sample Indicators
ACPA06.01.02 Use communication skills and strategies to work effectively with people (including clients, team members, and others).
ACPA06.01.03 Draw and sketch by hand to communicate ideas effectively.
ACPA06.01.04 Learn to read and produce technical drawings, understanding the significance of each line in a drawing.

**ACPA06.02**
**Employ appropriate representational media to communicate concepts and design.**

**ACPA06.02.01** Convey graphic information using multi-dimensional drawings.
Sample Indicators
Employ basic drawing skills.
Convey three-dimensional information in two dimensional drawings.

**ACPA06.02.02** Build models using referenced drawings and sketches.
Sample Indicators
Employ basic model building techniques.
Verify accuracy of model based on drawings and sketches used.

**ACPA06.02.03** Utilize computer technology when communicating concepts and designs.
Sample Indicators
Employ basic computer modeling techniques.

**ACPA06.03**
**Employ principles, conventions, standards, applications and restrictions pertaining to the manufacture and use of construction materials, components and assemblies to incorporate into project design.**

**ACPA06.03.01** Select building materials and assemblies upon evaluation that meet project specifications.
Sample Indicators
Develop and communicate a given building assembly.

**ACPA06.03.02** Use appropriate combinations of building materials and components that satisfy the requirements of building programs.
Sample Indicators
Select the more appropriate building assembly.

**ACPA06.04**
**Apply basic organizational, spatial, structural and constructional principles to the design of interior and exterior space so that design plans are effective.**

**ACPA06.04.01** Develop design alternatives that address a given problem.
Sample Indicators
Evaluate and select the most appropriate solution.