



**Community Colleges
of Spokane**

DISTRICT FACILITIES

CONSTRUCTION STANDARDS

2015

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A: INTRODUCTION

(Revision Date: 03/11/16)

INTENT OF THESE CONSTRUCTION STANDARDS

These Community Colleges of Spokane Construction Standards are a compilation of past experiences, known requirements, stated preferences, and standard practices recognized by the CCS District Facilities Department. It is the intent of these Construction Standards to set minimum construction standards for specific components of new construction and remodel projects for Spokane Community College, Spokane Falls Community College, the Institute for Extended Learning, and at other facilities managed by Washington State Community College District 17. Compiling these Standards in a single publication is intended to provide an easy, manageable tool to share this information with District and College staff, and Consultants hired by the District.

These Construction Standards are not intended to restrict the architects' and engineers' creativity in suggesting approaches or solutions to specific problems. These Standards do not repeat Building Code requirements or local zoning restrictions. The Consultants are still required to comply with all of the laws and regulations governing public works. When an issue arises where following the suggested Standard is in conflict with the other regulations, or does not appear to solve the problem, please discuss the issue and the preferred solution with the Project Manager.

Community Colleges of Spokane is the largest community college district in the state of Washington, in terms of geographical area, and second largest community college district in number of students. This results in a large number of buildings to be managed. At the present time, there are more than 85 buildings with approximately 1,726,000 square feet of area, for which District Facilities is responsible. As such, the long term maintenance considerations weigh heavily on these Standards.

Every attempt will be made by District Facilities to keep these Standards up to date. They are subject to change as new experiences, relearned lessons, and new technologies emerge. Those using these Standards are encouraged to share their thoughts and ideas with the District Director of Facilities.

ORGANIZATION

Consultants using these Construction Standards will normally be hired by the state of Washington, Department of General Administration, Division of Engineering & Architectural Services (E&AS), on behalf of the District. E&AS will assign an Architect, Senior Architect, or Engineer to administer each project. The District will also assign a single point contact for each project, the Project Manager. The Project Manager will normally be the District Director of Capital Projects, but may be the District Construction Manager or the District Director of Maintenance, depending upon the nature of the project.

While contractual matters are the responsibility of the E&AS Architect, all program, design, and construction coordination issues will be handled through the Project Manager. During the preplanning and design stages of the project, the Project Manager may direct the Consultant to work directly with the Design Committee Chair on program issues.

PROJECT DELIVERY

Projects for Community Colleges of Spokane take several different forms. In general, projects fall into the following categories:

Major Capital Projects

These projects are usually new buildings, major renovations, or major building additions. These projects are designed by Consultants hired for the specific project. Funding is normally appropriated by the state Legislature. However, funding may also come from District sources such as student activity fees and

business enterprise funds. These projects are administered by E&AS on behalf of the District. Projects in this classification usually must comply with the “Instructions for Architects and Engineers Doing Business with Division of Engineering and Architectural Services” issued by E&AS. Often, projects must also comply with the “Major Projects Predesign Manual” prepared by the Office of Financial Management.

Minor Capital Projects

These projects are usually a grouping of smaller, limited scope projects that often involve multiple buildings on a given campus. Work ranges from small additions and limited interior remodeling, to mechanical system upgrades and roof repairs. Smaller individual projects also fall into this category. These projects are designed by Consultants who are hired for the specific project. Funds include those approved by the state Legislature for use in “minor capital projects” or “repair capital projects”, as well as District funds. These projects are administered by E&AS on behalf of the District. Projects in this classification usually must comply with the “Instructions for Architects and Engineers Doing Business with Division of Engineering and Architectural Services” issued by E&AS.

Small Projects

These projects are undertaken and administered by District Facilities. These projects are usually limited issues involving a single construction trade or subcontractor.

PROJECT IDENTIFICATIONS

Community Colleges of Spokane has developed several conventions over the years to help keep information segregated between the various projects, buildings, and campuses.

All buildings managed by District Facilities are assigned to either Spokane Community College or to Spokane Falls Community College even if the building in question is not physically on the campus. For example, the Adult Education Center is assigned to Spokane Falls Community College. The Hillyard Center is assigned to Spokane Community College.

All buildings have assigned building numbers. These numbers are not necessarily unique to the building. Both the Spokane Community College campus, and the Spokane Falls Community College campus duplicate some numbers between 1 and 20. For remodel and addition projects, the existing building number will remain unchanged. For new buildings, a new building number will be assigned by the District. Consult the Project Manager.

All rooms in existing buildings have been numbered. Any changes to room numbering must be assigned by the District. Room numbers for new buildings will be assigned by the District. Room numbers shown on all plans are to include three digits (i.e.104), with any additional alpha character used to identify rooms accessed only through another room (i.e.104A). Stair landings will be numbered using the same convention as the level below the landing. Consult the Project Manager.

HVAC units and electrical panels in existing buildings have established numbers. Where new HVAC units or new panels are being added, coordinate numbering so that duplication of numbers does not occur.

Project Manuals, Operations and Maintenance Manuals, Predesign Submittals, Studies, and other bound information should be color coded by campus.

For projects at SCC, binders are to be blue.

For projects at SFCC, binders are to be red.

For projects for IEL facilities, binders are to be:

blue if facility is supported by SCC.

red if facility is supported by SFCC.

Architectural and engineering contract document drawings should be identified by a compound sheet number that includes the building number, such as 18 – A2.4 or 602 – E1, where the first number represents the building number, and the rest of the number uses the consultant’s standard sheet numbering system. The use of compound sheet numbering should be consistent throughout the entire

project, including drawings issued by addenda or as part of a change order. Using this system provides the District with a method to easily associate a drawing with the corresponding building.

For projects involving multiple buildings, all information for a specific building should be on separate sheets of drawings. If details are common to more than one building, the details may be combined on one or more sheets that the District can reproduce for each building when as-built copies are made. This allows the drawing set to be broken apart by building while still providing complete information for future reference. All drawings must include the Project Title and the assigned State Project Number.

All project correspondence should include the assigned Project Title and State Project Number.

All submittals must always identify the State Project Number, campus, building number, and where appropriate, room number.

COMPUTER AIDED DESIGN GUIDELINES

Consultants shall prepare all construction plans and record documents in accordance with the standards set forth in the "Policies and Procedures" issued by E&AS. When required, transfer the field measurements and changes recorded on the "as-built" Project Record Documents received from the Contractor, into the CAD files, and deliver files in CD or Thumb-drive format to the Project Manager.

END OF INTRODUCTION

B: DEFINITIONS

(Revision Date: 03/11/16)

The following is a list of terms and abbreviations used throughout these Standards, with their definition.

Campus: Either the campus of Spokane Community College, the campus of Spokane Falls Community College, or facilities of the Institute of Extended Learning.

CCS: Community Colleges of Spokane

College: Refers to either the Project Manager or the District Facilities Department.

Commissioning (Cx): Is a systematic and documented process of ensuring that the owner's operational needs are met, building systems perform efficiently, and building operators are properly trained.

Commissioning Agent (CxA): The commissioning agent is responsible for coordinating and carrying out the commissioning process. Refers to the commissioning provider who is an independent third party contractor hired by the owner and is contractually independent of the construction firm, sub-contractors or equipment suppliers.

Consultant: Architectural or engineering firm hired by E&AS on behalf of the District.

Contractor: The prime contractor, whether a general contractor, a mechanical contractor, an electrical contractor, or one of the many specialty contractors licensed by the state and under contract to accomplish a specific project.

Design Committee Chair: Chair of the committee or similar group responsible for making program decisions during the design process. The chair is usually the campus administrator responsible for the area affected by the project.

District: Washington State Community College District No. 17, composed of Spokane Community College, Spokane Falls Community College, the Institute for Extended Learning, and the District Administration Office; also known collectively as Community Colleges of Spokane.

E&AS: The Division of Engineering and Architectural Services, a part of the Department of General Administration for the state of Washington.

E&AS Architect: Architect, Senior Architect, or Engineer assigned by E&AS to administer a project.

IEL: Institute for Extended Learning.

O&M: Operations and maintenance. Usually used as O&M manuals or O&M information.

Owner: The District.

Project Manager: The single point contact assigned by the District for all program, design, and construction coordination issues.

Project Manual: The bound volume including the Bidding & Contracting Requirements (including General Conditions and Prevailing Wage Rates), and the technical specifications.

SCC: Spokane Community College.

SFCC: Spokane Falls Community College.

END OF DEFINITIONS

C: DESIGN FEATURES

(Revision Date: 03/11/16)

There are many design features that Community Colleges of Spokane would like to have become “standard” in all new construction. While most of these are discussed in Divisions 01 through 33 that follow in this volume, there are several that are more generalized in nature and that affect the planning of new work from the earliest stages of a project. These include the following:

A Facilities Office is required in every new building and should be a minimum of 120 square feet.

Accessibility is required in all new construction. This includes meeting the spirit as well as the letter of the regulations. Exterior stairs are to be avoided on campus. Anywhere they must occur, ramps must also be constructed in as close proximity as possible. When construction features are not present, utilize 6” square clear anodized aluminum posts for mounting this automatic door operator switch outside of door entrances, direct wired, not battery operated. Concealed mounting is preferable. A 5” square x 42” high with 1/8” wall thickness steel post is also acceptable. This model should have powder coating. The push button controller should be direct wired and not a battery operated wireless.

Design main floor restrooms without entry doors whenever possible. Also, include door pulls at ADA height on the inside and outside of doors for the ADA toilet compartments.

Custodial Rooms should be a minimum size of 8’-0” by 10’-0”. When opening into a rated corridor, the door into the room should be equipped with a magnetic hold-open connected to the building fire alarm system to permit the door to be left open without the use of a wedge. Each custodial room should include a floor mounted mop sink, mop rack, dry mop and broom rack, paper towel dispenser, a 12” deep x 16” wide x 72” high lockable steel locker with at least one shelf and mounted on a treated wood or concrete base and 24” deep adjustable steel storage shelving also mounted on a treated wood or concrete base. Flooring should be sealed concrete with standard rubber base. Electrical panels are not to be located in these rooms.

Custodial Storage is preferred in all new construction, and should be a minimum of 100 square feet of clear floor space. Consult with the Project Manager during programming.

Daylighting of new buildings, remodeled buildings and additions to buildings is encouraged to enhance building lighting.

Electrical Panels are to be located in dedicated electrical rooms or closets, and not in custodial rooms. Provide three feet minimum of clearance in front of the panels.

Knox Box Rapid Entry System is required at the main building entry. Knox Box, 3200 Series, recessed, heavy duty, lift off door, tamper switch (tied to security system). Color to be selected by architect.

Mechanical Rooms should be designed for each building’s major mechanical equipment. Enclosed mechanical penthouses with access from inside the building are appropriate as are on-grade or below grade mechanical rooms. Unitary rooftop equipment is to be considered only as a last resort to solve HVAC needs.

Passive Radon Collection Systems below slabs are required for new buildings and major building additions.

Roof Access is to be provided from the interior of the building by way of either a stair leading through a mechanical penthouse to a roof access door, or by way of a ladder through a roof hatch. All ladders are to be metal, and are to be provided with a ladder extension device. Provide lighting to illuminate any ceiling or interstitial space the ladder passes through. Roof hatches are to include an interior padlock hasp to

accommodate an owner provided padlock. Connection of the roof access door or access hatch to the building security system is required. Consult with the Project Manager.

Safety for students, staff, and visitors, and security for equipment and buildings is of the highest priority. Provide adequate lighting at all entrances and around buildings. Avoid creating blind corners and potential hiding places, even within landscaping.

Standard Floor Finishes listed below are to serve as a guide. Program needs may dictate other solutions. All floor finish materials should be reviewed with the Project Manager.

Break rooms: Rubber tile or linoleum

Classrooms: Linoleum, or rubber tile.

Conference rooms: carpet tile

Corridors: terrazzo, rubber tile, or Linoleum, or stained concrete.

Custodial rooms: sealed concrete with rubber base

Electrical rooms: sealed concrete

Food preparation areas (low volume): sheet vinyl

Food service kitchens (high volume): quarry tile

Mechanical rooms: Fluid applied traffic membrane at areas where water/liquids will be present with floor drains and floor sloped to positively drain, sealed concrete at all dry areas.

Offices: carpet

Restrooms: ceramic tile

Seminar rooms: carpet

Sustainability should be considered in all designs and components.

Telecommunication Rooms should be a minimum size of 8'-0" by 10'-0", and should be provided on every floor of a building. All areas of all spaces must be within 300' of a telecommunications room. This may require more than one on a floor. Doors to the rooms should be located 18" clear from the corner of the room to permit backboards located behind the door to be usable. All walls are to be covered with ¾" plywood to a height of 8'-0". Plywood is to be painted bare unless code requires fire rated paint. A cable tray system above the backboards will normally be required for data and voice cables entering the room. Telecommunications rooms are to be connected by either cable tray or conduit to all other telecommunications rooms in the building. One telecommunications room on the lowest level of the building is to be connected to the campus electrical duct bank system. Consult with the Project Manager about special HVAC requirements necessary to maintain maximum temperature. Refer to Section 27 00 000.

Vestibules should be designed at every main entrance whenever possible.

Walk off mats should be built-in type at each entry and be a minimum of three strides deep.

END OF DESIGN FEATURES

DIVISION 00 - PROCUREMENT & CONTRACTING REQUIREMENTS

(Revision Date 03/11/16)

ADVERTISEMENT FOR BIDS

- A. The Advertisement for Bids is prepared by the Consultant, following the most current format provided by DES (Department of Enterprise Services). The Advertisement for Bids is reviewed for approval by the CCS Project Manager and is placed for publication by DES.

INSTRUCTIONS TO BIDDERS

- A. The Instructions to Bidders is a standard document provided by DES.

BID FORMS

- A. The Bid Forms are standard documents provided by DES, and information pertinent to the specific project is inserted by the Consultant.
- B. Necessary information includes:
 - 1. Project Name
 - 2. State Project Number
 - 3. Alternate Number and Title for any Alternates
 - 4. Time for Completion (number of calendar days, or fixed date)
 - 5. Liquidated Damages (\$ 300 for each consecutive calendar day)
- C. The Bid Form may be in multiple parts to respond to requirements imposed by the state Legislature.

PAYMENT AND PERFORMANCE BOND

- A. The Bond Form is a standard document provided by DES.

CERTIFICATE OF INSURANCE

- A. The Certificate of Insurance is a standard document provided by DES.

GENERAL CONDITIONS

- A. The General Conditions for Washington State Facilities Construction is a standard document provided by DES.

SUPPLEMENTAL CONDITIONS

- A. The Supplemental Conditions for Washington State Facilities Construction is a standard document provided by DES.

PREVAILING WAGE RATES

- A. The Washington State Prevailing Wage Rates for Public Contracts is a multi-part document normally updated March 3rd and September 3rd of each year.
- B. The document includes:
 - a. Prevailing wage rates for the county where the work is being done.
 - b. Benefit Code Key.
 - c. Supplemental wage rates for other counties for items prefabricated off site.
- C. The wage rates in effect on the day of the bid opening must be included in the Project Manual. This may affect the scheduling of the bid opening since the updated version is often not available prior to the issue date.
- D. The Consultant should obtain the current wage rates from DES.

OCCUPANCY PERMITS

- A. For phased construction projects where the construction area will be partially or wholly occupied during the course of construction, work for each phase must be scheduled and performed so that a temporary occupancy permit can be issued by the Building Official and that phase of the project may be occupied without dependency upon completion of another phase of work or the whole project.

END OF DIVISION 00

DIVISION 01 - GENERAL REQUIREMENTS

(Revision Date: 10-20-15)

SECTION 01 10 00 SUMMARY**SECTION 01 20 00 PRICE AND PAYMENT PROCEDURES****01 11 00 SUMMARY OF WORK**

- A. The general building permit shall be paid directly to the permitting agency by the Owner. It is the responsibility of the contractor to obtain all other permits and local business licenses necessary for the execution of the work and pay permit, utility and misc. fees required by the appropriate Authority Having Jurisdiction (AHJ). Reference DES General Conditions, Section 5.02.
- B. The initial cost of public utility hookup shall be a direct reimbursement to the Contractor or paid directly to the permitting agency by the Owner. The owner will not reimburse the Contractor for additional charges due to the Contractor's lack of coordination, timelines, or schedules and payment of charges.
- C. Site utilities including water, gas, and electrical services will be available to the Contractor for use on a limited basis on CCS Campuses. Connection to these services is the responsibility of the Contractor as approved by the Owner. Reference Constructions Standards Section 01 50 00.

01 23 00 ALTERNATES

- A. All Alternates are to be developed as additions to the Base Bid. The Owner suggests structuring the base bid at 95% of the MACC (Maximum Allowable Construction Cost).
- B. Alternates should be kept as simple as possible
- C. All Alternates should be fully defined, describing conditions under the Base Bid, and changes made if the Alternate is accepted. It is often helpful to provide guidance as to where work involved in the Alternate is specified.
- D. There should be a maximum of five Alternates on any bid form.

01 29 73 SCHEDULE OF VALUES

- A. In addition to requirements found in the General Conditions, the Contractor's Schedule of Values must be broken down by project phase on projects involving multiple phases, and by individual buildings on projects involving more than one building, for the benefit of the Owner's budget tracking.
- B. The General Conditions require separate figures for demobilization, record documents, O&M manuals, and other project closeout issues. Additional line items for project start-up, temporary facilities, construction superintendence, bonds and insurance, and cleanup should be required. It is recommended that project start-up costs be limited, and sufficient funds reserved for project closeout including completion of record documents and O&M manuals, by requiring closeout values to be equal to project start-up costs or a minimum percentage of the total Contract. Consult with the Project Manager. It is recommended that mobilization and demobilization costs balance each other.
- C. Note that retainage is not to be used for punch list correction or project closeout issues.
- D. Building permit costs, if any, should not be included in the base bid. Those costs will be paid to the contractor as a direct reimbursable after the contract is awarded or will be paid directly by Owner. Any other permit cost, i.e. mechanical or electrical, shall be included in the base bid.
- E. The Contractor shall submit the project construction schedule in electronic format utilizing Microsoft Project software.
- F. Construction schedule updates shall be submitted electronically utilizing Microsoft Project software.
- G. Pay requests are submitted to the Consultant for preliminary review. Consultant shall submit a copy to the Owner for review and comment prior to submittal of final approved copies to

- DES Contract Administrator for review and approval. DES Contract Administrator will forward to the Owner for payment processing.
- H. Letter of Recommendation of Acceptance by the consultant shall be submitted to the Project Manager for approval prior to final issuance.

SECTION 01 30 00 ADMINISTRATIVE REQUIREMENTS

01 31 00 PROJECT MANAGEMENT AND COORDINATION

- A. Coordination of the work, including activities of subcontractors, project layout and utility locating is the responsibility of the Contractor.
- B. The Contractor should designate a prime mechanical subcontractor who will be responsible to the Contractor for coordination of all work specified in DIVISION 22 – PLUMBING and DIVISION 23 - HEATING VENTILATING AND AIR CONDITIONING.
- C. The Contractor should designate a prime electrical subcontractor who will be responsible to the Contractor for coordination of all work specified in DIVISION 26 - ELECTRICAL.

01 31 19 PROJECT MEETINGS

- A. A Preconstruction Conference is required for state projects. It is to be held prior to the start of work on site.
- B. Construction Progress Meetings are typically to be held weekly for the duration of the project. It is recommended that these meetings continue until all punch list work is complete, and Record Documents and O&M manuals have been turned over to the Consultant by the Contractor.
- C. The Consultant should provide an outline of the suggested agenda for these meetings to keep them on track.
- D. The Consultant is to record and distribute meeting minutes to the DES, CCS Project Manager, and the Contractor. The Contractor will be responsible for distribution to subcontractors. Distribution in electronic format is preferred.

01 33 23 SUBMITTALS/SHOP DRAWINGS

- A. Require the Contractor to include the Project Title and State Project Number on all submittals. On projects involving multiple buildings, the building number, and where appropriate the room number, should also be required.
- B. Electronic submittals are preferred.
- C. If hard copies are presented, require the Contractor to provide enough copies so that the CCS Project Manager and the Consultant can each retain a set.
- D. The Consultant is to forward one copy of all approved submittals to the CCS Project Manager when they are returned to the Contractor.
- E. Submittal logging shall be completed by the Consultant and number using Division and submittal number format (ex. 230913-001).

01 35 23 SPECIAL REQUIREMENTS/OWNER SAFETY

- A. SAFETY EQUIPMENT: On projects over \$5 million, the Contractor is to provide to the Project Manager for the Owners' use and final ownership, the following safety equipment: 4 MSA brand V-Guard hard hats with ratchet suspension, color as selected by the CCS Project Manager; 1 SALA brand vest type full-body construction harness with belt loops and shock absorbing single leg lanyard, Size XL; 2 boxes (1 box of small and 1 box of large) of 10 Bilsom NRR 27 dB reusable corded ear plugs; 6 pr. ULINE brand Versa-Lens safety glasses, Model S19900; 1 box of 10 P95 particulate dust respirators with exhalation valve.
- B. CHEMICALS: handling, safe disposal, management plan, MSDS. The Contractor is required to comply with all federal, state and local rules and regulations regarding the safe handling of any and all chemicals on District property. The Contractor shall legally dispose of any surplus, used or unused chemicals. The Contractor shall submit and follow a plan for the safe

- use, handling and disposal of chemicals including the submittal of material safety data sheets (MSDS) for all chemical brought on site.
- C. HAZARDOUS MATERIALS REMEDIATION See SECTION 01 35 43 ENVIRONMENTAL PROCEDURES.
 - D. Contractors and their subcontractors are responsible for compliance with all Washington Administrative Code (WAC) regulations dealing with employee/employer health and safety issues.
 - E. Some of the regulations that affect most projects include, but are not limited to, the following:
 - F. Chapter 296-45 WAC – Safety Standard for Electrical Workers
 - G. Chapter 296-62-145 WAC – Confined Spaces
 - H. Chapter 296-155-650 WAC – Excavation, Trenching, and Shoring
 - I. Each Contractor must follow the applicable standards, including the preparation of written plans when required by one or more regulation.

01 35 43 ENVIRONMENTAL PROCEDURES

- A. Asbestos Abatement:
 - 1. Asbestos Containing Materials (ACM's) are present in most of the older buildings in the region, including many buildings on the campuses of Community Colleges of Spokane.
 - 2. A survey for Asbestos Containing Materials is required prior to beginning demolition or remodeling remodel work. The survey may be an extra service to the Consultant's agreement.
 - 3. Abatement of asbestos that will be disturbed by a remodel project will be included in the construction Contract where possible.
 - 4. The Contractor shall have employees available who have the necessary state training and/or certification, or shall have an asbestos abatement subcontractor available, so that should ACM be damaged during demolition project phases, it can be legally removed and disposed of without causing delays to the project. In the event that such action is necessary, the College will authorize the Contractor to proceed using Field Authorization or Change Order Proposal forms. Obtaining Labor & Industries and Spokane Regional Clean Air Agency abatement permits will be the Contractor's responsibility.
 - 5. The Contractor shall notify the Owner a minimum of 48 hours prior to commencing ACM removal work. The Owner shall post the District notification form at each building entrance 24 hours prior to beginning any work.
- B. Lead Paint:
 - 1. Lead based paints are present in most of the older buildings in the region, including many buildings on the campuses of Community Colleges of Spokane.
 - 2. Sampling and testing of suspect areas may be required prior to beginning remodel work. The survey may be an extra service to the Consultant's agreement. Verify with the Project Manager.
- C. PCB's:
 - 1. PCB contaminated oil is present in some of the older electrical transformers on the campuses of Community Colleges of Spokane. Verify with the Owner if testing has occurred on any transformers to be modified or relocated during a specific project

01 35 53 SECURITY PROCEDURES

- A. The Contractor is responsible for security of the construction site, trailer, equipment, and materials used on the project.
- B. The Contractor is responsible for closing doors and locking gates into the project area.
- C. College security patrols will make routine patrols around the perimeter of the construction area, consistent with their normal procedures, but the Owner does not assume responsibility for the security of the project area.
- D. Keys:
 - 1. Keys to existing facilities will be issued only to the General Contractor, and only for authorized use associated with the project.

2. The Contractor is responsible for control of the issued keys, and is required to surrender the keys on demand.
3. Return of any/all keys issued is a requirement for project acceptance.
4. Any special keys furnished as part of the contract shall be tagged and labeled as to exactly what/where the key accesses. All such keys shall then be formally transmitted to the Project Manager at or near substantial completion.
5. All keys shall be issued ONLY after the CCS Facilities Vendor / Contractor Key Check-Out form CCS 1442 (9/11) is completed by the Contractor and approved by District Facilities Administration.

SECTION 1 40 00 QUALITY REQUIREMENTS

01 45 16 FIELD QUALITY CONTROL PROCEDURES

- A. The Contractor is responsible for quality control and shall establish and maintain an effective quality control system in compliance with the project specifications.
- B. The Contractor shall employ a competent superintendent who has the authority to act for the Contractor, is satisfactory to the Owner, and will directly supervise the work.
- C. The Contractor is required to have the superintendent on site at all times while persons employed by the contractor or by his tiered subcontractors are present and/or working on the project.
- D. Quality Control is the sole responsibility of the Contractor. Quality Assurance is the responsibility of the A/E and Owner.

01 45 23 SPECIAL TESTING AND INSPECTIONS

- A. Special Testing and Inspections required by the Building Code or the Local Building Official will be made by an approved independent agency. These tests and inspections are paid for by the Owner, either as an extra service under the Consultant's agreement or through separate agreement with the approved agency.
- B. Additional testing beyond that required by the Building Code should be required when there are safety concerns affecting staff or students. These might include:
 1. Testing of radiation shielding around rooms containing x-ray equipment.
 2. Testing air flow at fume hoods.
- C. Testing of earth compaction should be included under the work of the testing agency.
- D. The testing agency is to send copies of all reports to:
 1. Owner/Project Manager
 2. Contractor
 3. Consultant
 4. Structural Engineer
 5. Local Building Official

SECTION 01 50 00 TEMPORARY FACILITIES AND CONTROLS

01 51 13 TEMPORARY ELECTRICITY

- A. The College will typically furnish 120V power for use by the Contractor. The source will be from a designated service point in the building for remodels and additions, or at an adjacent building for new construction.
- B. This power is to be used for lighting and small tools only. Temporary power will not be furnished for the purposes of heating the partially finished work, or for welding.
- C. The Contractor shall make connections to the designated service point, and disconnect the same when power is no longer needed. Metering of electricity used on the project is not required.
- D. The Contractor shall provide and maintain temporary wiring necessary to provide general lighting of not less than 10 foot-candles of light in stairways, passages, corridors, and windowless areas.

01 51 23 TEMPORARY HEATING, COOLING, VENTILATING

- A. The Contractor shall furnish temporary heat for the unfinished structure.
- B. The permanent heating system may be used to heat the work only if and when all of the following conditions have been met:
 - 1. The structure is fully enclosed and fully insulated. All doors, windows and glass must be in place.
 - 2. All return air grilles are equipped with temporary air filters to prevent dust from entering the system.
 - 3. Permanent heating equipment has been properly installed by the mechanical and electrical subcontractors, and all start-up procedures required by the project specifications or the equipment manufacturer have been met.
 - 4. Use of the equipment does not reduce the warranty period for the benefit of the Owner.
 - 5. Permission has been granted by the Project Manager.
 - 6. Temporary filters are changed regularly during the course of construction and again at the time of basic completion prior to balancing of the HVAC system.

01 51 33 TEMPORARY TELECOMMUNICATIONS (Field office data/comm)

- A. The Owner will provide, at no cost to the Contractor, up to two phone lines connected to the campus telephone system for use by the Contractor and all those associated with the work. One line is intended for voice communication, one for a fax machine. Verify requirements with the Project Manager.
- B. These phone lines can receive all incoming phone calls and provide local outgoing service only. Long distance calls on these lines are blocked. Any necessary long distance calls will have to be made using a public pay phone located elsewhere on campus or by Contractor's cell phone.
- C. Internet connection, hook-up, and service, shall be the sole responsibility of the contractor.

01 52 13 TEMPORARY FIELD OFFICE

- A. The Contractor shall provide a weather-tight, temperature conditioned field office, usually in the form of a construction trailer, on site for use by all of those connected with the work. The field office must be kept clean by way of weekly cleaning and organized. The field office may not be required for smaller projects.
- B. When approved by the Consultant, the field office can be removed from the site. With approval of the Project Manager, space within the building can be assigned for limited use by the Contractor during completion of the punch list.

01 52 19 TEMPORARY SANITARY FACILITIES

- A. The Contractor shall provide adequate toilet facilities for all personnel associated with the project.
- B. The Contractor, subcontractors, and their employees are prohibited from using toilet facilities in existing buildings. On smaller projects of limited scope, the Owner may allow the Contractor access to existing toilet facilities. Verify requirements with the Project Manager.

01 55 00 VEHICULAR ACCESS AND PARKING

- A. A limited supply of temporary "Construction" parking permits will be issued to the Contractor at the start of the project. This will permit parking in spaces designated for student or unmetered visitor use only.
- B. The permits must be issued, signed, and dated by the Facilities' Capital Construction office to be valid. Permits are NOT to be duplicated by the contractor or design team(s) but may be transferable if used within the dates shown on the permit.
- C. It shall be the responsibility of the contractor, as well as design team (architect/consultants) to obtain a new permit before reaching the expiration date shown on the permit.
- D. Parking permits are required even if vehicles are permanently identified with the Contractor's (or subcontractor's) company name.

1. Parking in metered spaces requires payment regardless of a displayed permit.
 2. Daily parking permits can be purchased from kiosks on campus.
- E. Parking tickets will be issued for any construction vehicle parked in a posted "State Disabled Permit Required" or "D' Permit Required" parking space.
 - F. All campus traffic rules shall be observed by the Contractor.
 - G. Parking ticket violation issued to any vehicle without permit or in violation of campus traffic rules shall be paid for by the Contractor. Facilities does not have the authority to waive violation fees. CCS Security is located in Building 1 on the SCC Campus, Building 16 on the SFCC Campus.

01 56 13 FIRE SEPARATION BARRIERS

- A. All construction activities on building additions and major interior remodeling are to be separated from the occupied areas by temporary one-hour rated fire separation partitions.
- B. Locations of temporary fire separation partitions should be shown on the drawings.
- C. Construct temporary fire separation partitions from steel studs with 5/8" type 'X' gypsum board each side.
- D. Doors through temporary fire separation partitions shall be solid core wood or hollow metal, self-closing, and equipped with weather-stripping.
- E. Temporary partitions separating heated portions of buildings from unheated construction areas shall be insulated. Review required U-value with the Project Manager.
- F. Permanent fire separation partitions constructed in accordance with building code requirements are to be installed as soon as progress allows.

01 56 16 TEMPORARY DUST BARRIERS

- A. Dust partitions are to be installed where necessary to control construction dust.
- B. For major remodel projects, locations of dust partitions should be shown on the plans.
- C. Construct dust partitions from wood or steel studs covered with plastic sheeting and gypsum wallboard or plywood. All joints are to be sealed with duct tape. Reinforce plastic with duct tape at points of attachment.
- D. Remove dust partitions when no longer needed.
- E. Provide and install "gloves" or covers for the smoke detectors prior to any demolition work.

01 56 26 CONSTRUCTION FENCING AND BARRICADES

- A. The Contractor is responsible for providing all necessary barricades. Barricades belonging to the Owner are not to be used.
- B. Where practical, the project site is to be fenced with construction fencing. Use of galvanized steel posts set in lean concrete or concrete piers with an 8 ft. chain link fencing fabric is preferred. The Contractor is to provide a gate with a chain and lock for his use. The Owner will also provide a lock for emergency access.

01 56 33 TEMPORARY SECURITY BARRIERS

- A. Where new exterior openings are created through exterior walls of existing buildings, an insulated, plywood covered closure wall is required to be installed for security and weather protection. Closure wall shall be maintained, and securely anchored in place at the end of every day, until new construction offers equal protection.

01 58 00 PROJECT IDENTIFICATION

- A. On projects over \$3 million, the contractor will provide one 4' x 8' temporary project sign indicating the project title, the design team, and construction team. No other contractor signs will be allowed.
- B. The contractor(s) will be responsible for providing all safety signage including but not limited to "construction / hard hat areas", "safe travel routes", "no smoking", "hazardous materials", etc.

SECTION 01 60 00 PRODUCT REQUIREMENTS**01 61 00 COMMON PRODUCT REQUIREMENTS**

- A. Electrical Components: All electrical components in buildings constructed for the State of Washington are required to be UL listed.

SECTION 01 70 00 EXECUTION AND CLOSEOUT REQUIREMENTS**01 73 16 ERECTION**

- A. Equipment and Tools: The Contractor is expected to furnish all equipment and tools necessary to complete the work. Use of College owned equipment and tools by the Contractor is prohibited.

01 77 19 CLOSEOUT REQUIREMENTS

- A. Construction Completion Checklist (required to be recorded by Contractor and A/E, per GC form 006518.F-1):
- B. Certification of punch list completion:
 - 1. Require the Contractor to certify that all work on the punch lists has been completed, prior to the submission of the final pay request.
 - 2. Letter of Recommendation of Acceptance by the Consultant shall be submitted to the Owner for approval prior to final acceptance.
- C. Emergency Service during warranty period.
 - 1. Require the Contractor to provide a list of names and phone numbers for 24 hour emergency response for service of essential equipment and systems.
 - 2. This list is to be provided to the Owner before the College occupies or accepts the project, and is also to be included in the O&M manual.
- D. Certificate of Occupancy.
 - 1. Require the Contractor to obtain the Certificate of Occupancy from the local Building Official, and deliver the original Certificate to the Owner.
- E. Restoration of Contractor lay-down area.
- F. Correction of non-conforming work.
- G. After Substantial Completion but prior to Final Completion, Final Payment, and release of Retainage:
 - 1. The Contractor shall return all outstanding Change Order Proposals and Field Authorizations with backup as requested.
 - 2. The Contractor shall notify the Architect that the work is ready for final inspection.
 - 3. The Architect and Engineers will inspect the project for compliance with plans and specifications, completion of the punch-list items, and completion of clean-up requirements.
 - 4. If the work is acceptable, the Architect will issue a letter of inspection to the Owner stating the work has been completed and punch-list items corrected. The Architect will also issue a final Certificate of Payment for Final Payment and release of Retainage. (Contractor to submit appropriate applications for payment for Final Payment and Retainage.)
 - 5. The Owner, upon determining that the work is satisfactorily completed, shall formally accept the project and issue a formal resolution.
- H. Prior to final payment being made, the following must be submitted:
 - 1. Contractor's affidavits that all taxes, payrolls, bills for materials, and equipment and other indebtedness have been paid.
 - 2. Copies of Contractor's affidavits filed with the Department of Labor and Industries for (1) Intent to Pay Prevailing Wages and (2) Wages Paid.
 - 3. Consent of surety to Final Payment and release of Retainage.
 - 4. Release or waiver of liens from all subcontractors and suppliers or receipt of like amount of Contractor's bond.
 - 5. Receipt of General Construction "As-Built/Record" Drawings (one set of marked-up prints showing all changes).

6. Receipt of three (3) each Operations and Maintenance Manuals as described in Section 01 78 00.
7. Mechanical Requirements as described in Divisions 20 - 24 and as follows:
 - a. Completion and Acceptance of all equipment start-ups and related instructional sessions. Obtain written sign-off from Owner and Commissioning Agent for all instructional sessions.
 - b. Receipt of Mechanical "As-Built" Drawings (one set of marked-up prints showing all changes).
 - c. Receipt of three (3) copies of each Operations and Maintenance Manuals. (See Divisions 20 - 24 requirements.)
 - d. Completion of independent commissioning of all mechanical systems – which will be undertaken by Owner through third party. Contractor must get approval from Commissioning Agent that all commissioning activities are complete before Owner accepts final payment request.
8. Electrical Requirements as described in Division 25-29 and as follows:
 - a. Completion of all equipment start-ups, and instructional sessions. Obtain written sign-off from Owner for all instructional sessions.
 - b. Receipt of "As-Built" showing all underground site work and all equipment outlets in locations other than shown on Drawings. (One set of marked-up prints showing all changes).
 - c. Receipt of three (3) copies each of Operations and Maintenance Manuals. (See Division 25-29 requirements.)
 - d. Letter or Certification from electrical inspector with jurisdiction.
9. Signed receipt for all keys furnished to the Owner. This receipt must list all keys furnished and be accompanied by a letter of transmittal for inclusion in the O&M manual..
10. Completion of the Air Balancing.
11. Verification of any liens filed with Owner.
12. Occupancy permits (by Building Official). Advise Owner on coordination of shifting insurance coverages, including proof of extended coverage as required.
13. Certification with Commissioning Agent and Owner's representative's co-signature that all instructional sessions have been completed to instruct Owner's personnel and maintenance personnel. Provide list of required instructional sessions and attendance sheets.
14. Written verification with Owner's representative's signature that all maintenance stock materials have been provided to the Owner, indicating when and to whom. Provide list of required maintenance stock materials.
15. Provide as-built schematic for all irrigation zones on 8-1/2" x 11 drawing, one per zone.
16. Provide Owner list of contacts (names, phone numbers) for emergency contacts for essential equipment and systems. Include list in O&M Manual, and provide separately to Project Manager.
- I. After submission of the above the Owner shall:
 1. Notify the state Department of Revenue and the state Department of Employment Security that the work has been completed. Upon determination that all state taxes due or to become due have been paid in full, these departments will so certify and transmit a copy of such certification to the Owner.
 2. E&AS will issue a Notice of Final Acceptance. This notice initiates the statutory 45 day lien period. Contract retainage cannot be paid to the contractor until the statutory lien period has expired, any liens filed have been satisfied, and letters of release have been received from Departments of L&I, Revenue, and Employment Security.
 3. Liens filed by subcontractors or material suppliers are received, processed, and tracked by the Contracts Section of E&AS. Any liens delivered to the Consultant should be promptly forwarded to E&AS. The Consultant is not normally involved in the process of resolving liens.
 4. At this time Final Payment and release of Retainage will occur.

- J. Letter of Recommendation of Acceptance by the Consultant shall be submitted to the Project Manager for approval prior to final issuance.

01 78 23 OPERATION AND MAINTENANCE MANUALS

A. Operation and Maintenance Manuals:

1. Operation and Maintenance Manuals are to be provided for all work. Preliminary manuals shall be provided prior to Substantial Completion and are required, present, for all Training. Final manuals shall be completed and approved prior to project acceptance.
2. The Contractor shall submit draft O&M manuals for review prior to Substantial Completion. After review by the Consultant, draft O&M manuals are also to be reviewed by the Project Manager. Following review, they will be returned to the Contractor for correction.
3. For major capital projects involving new buildings or substantial remodels totaling \$500,000 or more, the Contractor shall provide two copies each of a separate General, Mechanical, and Electrical O&M manuals. Each category may be separated into a volume set. Special systems such as elevators and fire systems should be given their own manuals.
4. For minor repair and remodel projects totaling less than \$499,999 or involving a single trade within a single building, the Contractor shall provide two copies each of a comprehensive O&M manual.
5. For minor repair and remodel projects totaling less than \$499,999 or involving a single trade within several buildings, the Contractor shall provide two copies each of comprehensive O&M manuals for each building. This requirement should be emphasized in the Contract Documents since it will impact the Contractor's project cost.
6. For projects located outside of the City of Spokane or the City of Spokane Valley, two copies of all O&M manuals will be required.
7. Manuals are to be 8½" x 11", three "D" slant ring notebook style, with clear plastic sleeve for inserts at cover and spine; maximum thickness to be 3", Manuals can be split into volumes of 2 or more where necessary.
8. ***For projects at SCC***, binders are to be Navy BLUE. ***For projects at SFCC***, binders are to be Cardinal RED.
9. Cover inserts shall identify the Project Name, State Project Number, Campus, Building Name and Number, Year built, and Content (Comprehensive, General, Mechanical, Electrical, or other).
10. Spine inserts shall identify the Content, Project Name, State Project Number, Campus Building Name and Number, and Year built.
11. Contents are to be clearly marked to show specific products and equipment used. Where information on multiple items is shown, cross out items that do not apply and use arrows to identify specifics. Using ink highlighting to identify information is not acceptable.
12. Pages are to be copied on two sides wherever possible.
13. Provide divider tabs to separate information into Parts & Sections. Section tabs are to be identified by project specification **Section Number and Title**.
14. Each Section shall include a Title and Index page with the name, address, phone number, and email address of each subcontractor and supplier/distributor of the products or equipment as well as contents of the section.
15. For ALL projects, the Contractor shall provide an edited, paged, and fully bookmarked electronic, .pdf, copy of the O&M Manuals.

B. Contents for the **GENERAL (and Comprehensive) O&M Manual** are to include the following:

1. **Title Page:** Project Name, State Project Number, Campus, Building Name and Number, Architect, Structural Engineer, Mechanical Engineer, Electrical Engineer, and General Contractor.
2. **Table of Contents:** Complete listing of contents of the O&M manual, including all volumes if applicable.

3. **Content:** Label each with "Part No." as noted:
- Part 1:** Listing of all Contractors, subcontractors, and sub-subcontractors for all tiers. Information to include: Contact name, Street address, Phone number, Email address, and area/scope of work. Also include emergency service information required in SECTION 01 70 00 CLOSEOUT PROCEDURES above.
 - Part 2:** Finish Schedule to include: Material manufacturers, Model names, Model numbers, Colors, Location used.
 - Part 3:** Copies of all signed general construction building permits and inspection reports.
 - Part 4:** Copies of all warranties and guarantee forms, and any specified special guarantees, fully executed. Include all contractors and manufacturers.
 - Part 5:** Provide a Divider Tab for every applicable project specification section, Divisions 2 – 49 (trades sections for Comprehensive) in the Project Manual. For every Section provide the following information:
 - a. Index listing materials and equipment used.
 - b. List of suppliers with address, phone number, and email address.
 - c. Catalog cuts, data sheets, engineering calculations, schedules, wiring diagrams, and complete parts lists for all products and equipment incorporated into the project. Literature shall be clearly marked to indicate each specific item. Include copies of approved submittal data as part of this information.
 - d. Approved submittal shop drawings for all nonstructural items.
 - e. Manufacturer's printed operating instructions for all equipment. Include trouble shooting and emergency instructions
 - f. Sequence of operation for each system.
 - g. Cleaning and maintenance instructions.
 - Part 6:** (For Comprehensive Manual only, if applicable) provide the following:
 - a. Mechanical valve schedule, including location, system, and function for each scheduled valve.
 - b. Mechanical filter schedule, including equipment item, filter type, size, for each filter used on the project.
 - Part 7:** (For Comprehensive Manual only, if applicable) provide the following:
 - a. Mechanical Equipment Schedule, including equipment item labeled with approved CCS Facility Department Inventory Data Collection Categories, Room number, and Equipment model number; followed by **Equipment Data Sheets for each equipment item installed and removed.** See Form 006510.F – CCS Equipment Data Sheet.
 - Part 8:** (For Comprehensive Manual only, if applicable) provide the following:
 - a. Equipment start-up records, test records, and certifications. Include certification and test results for the disinfection of domestic water piping under this divider tab.
 - Part 9:** (For Comprehensive Manual only, if applicable) provide the following:
 - a. Schedule listing fixture type, fixture source, lamp type, and lamp source for all fixtures used on the project
 - b. Operational Data:
 - 1) Record the following for each motor and equipment item connected
 - i. Nameplate data (volts, amps, phase, HP).
 - ii. Actual current drawn by each equipment item and each motor larger than 1/3 HP when operating at or near normal load.
 - iii. Rating and catalog number of each thermal overload device finally selected for each motor over 1/3 HP.
 - 2) Record the voltage between phases and between each phase and neutral at the Main Switchboard.

- 3) Record the voltage between phases, the voltage between each phase and neutral, and the actual current in each phase at each panel with normal load applied.

c. Copies of all panel schedules, type written and accurate to installation.

NOTE: *Testing and balancing reports shall be included under separate cover by TAB contracting agency.*

C. Contents for the **MECHANICAL O&M Manual** are to include the following:

1. **Title Page:** Project Name, State Project Number, Campus, Building Name and Number, Architect, Structural Engineer, Mechanical Engineer, Electrical Engineer, General Contractor, and Prime Mechanical Contractor.

2. **Table of Contents:** Complete listing of contents of this O&M manual, including all volumes if applicable.

Part 1: Listing of Prime Mechanical Contractor, all mechanical subcontractors, sub-subcontractors for all tiers, and suppliers. For each include: Contact name, Street address, Phone number, Email address, and area/scope of work. Also include emergency service information required in SECTION 01 77 00 CLOSEOUT PROCEDURES above.

Part 2: Copies of **all** signed mechanical construction building permits and inspection reports.

Part 3: Copies of **all** warranty and guarantee forms, and any specified special guarantees, fully executed. Include all contractors and manufacturers.

Part 4: Provide a Divider Tab for every applicable project specification section, Divisions 20 - 24 in the Project Manual. For every Section provide the following information:

- a. Index listing materials and equipment used.
- b. List of suppliers with address, phone number, and email address.
- c. Catalog cuts, data sheets, engineering calculations, schedules, wiring diagrams, and complete parts lists for all products and equipment incorporated into the project. Literature shall be clearly marked to indicate each specific item. Include copies of approved submittal data as part of this information.
- d. Approved submittal shop drawings for all nonstructural items.
- e. Manufacturer's printed operating instructions for all equipment and systems, including:
 - 1) Initial start-up procedures and break-in routine.
 - 2) Normal operating instructions.
 - 3) Regulation, control, stopping, and shut-down.
 - 4) Trouble shooting and emergency instructions.
 - 5) Seasonal operating instructions.
- f. Cleaning, lubrication, and preventive maintenance instructions.
- g. Disassembly, repair, and reassembly instructions, including alignment and adjustment instructions.

Part 5: Valve schedule, including location, system, and function for each scheduled valve.

Part 6: Filter schedule, including equipment item, filter type, size, for each filter used on the project.

Part 7: Mechanical Equipment Schedule, including equipment item labeled with approved CCS Facility Department Inventory Data Collection Categories, Room number, and Equipment model number; followed by **Equipment Data Sheets for each equipment item installed AND removed.** See Form 006510.F – CCS Equipment Data Sheet.

Part 8: Equipment start-up records, test records, and certifications. Include certification and test results for the disinfection of domestic water piping under this divider tab.

NOTE: *Testing and balancing reports shall be included under separate cover by TAB contracting agency.*

- D. Contents for the **ELECTRICAL O&M Manual** are to include the following:
1. **Title Page:** Project Name, State Project Number, campus, building name and number, Architect, General Contractor, Electrical Engineer, and Prime Electrical Contractor.
 2. **Table of Contents:** Complete listing of contents of this O&M manual.
 - Part 1:** Listing of Prime Electrical Contractor, all electrical subcontractors, all electrical suppliers and vendors. Information to include: names, addresses, phone numbers, FAX numbers, and areas of work or what was supplied. Also include a copy of the emergency service information required in SECTION 01 77 00 CLOSEOUT PROCEDURES above.
 - Part 2:** Copies of all signed electrical construction building permits and inspection reports.
 - Part 3:** Copies of all manufacturers' warranty and guarantee forms, and any specified special guarantees, fully executed. Include all contractors and manufacturers.
 - Part 4:** Provide a divider tab for every applicable Section in Division 26 in the Project Manual. For every Section provide the following information:
 - a. Index listing materials and equipment used.
 - b. List of suppliers with address, phone numbers, and FAX numbers.
 - c. Catalog cuts, data sheets, engineering calculations, schedules, wiring diagrams, and complete parts lists for all products and equipment incorporated into the project. Literature shall be clearly marked to indicate each specific item. Include approved submittal data as part of this information.
 - d. Approved submittal shop drawings for all nonstructural items.
 - e. Manufacturer's printed operating instructions for all equipment and systems, including:
 - 1) Initial start-up procedures and break-in routine.
 - 2) Normal operating instructions.
 - 3) Regulation, control, stopping, and shut-down.
 - 4) Trouble shooting and emergency instructions.
 - 5) Seasonal operating instructions.
 - f. Cleaning, lubrication, and preventive maintenance instructions.
 - g. Disassembly, repair, and reassembly instructions, including alignment and adjustment instructions.
 - Part 5:** Operational Data
 - b. Record the following for each motor and equipment item connected:
 - 1) Nameplate data (volts, amps, phase, HP).
 - 2) Actual current drawn by each equipment item and each motor larger than 1/3 HP when operating at or near normal load.
 - 3) Rating and catalog number of each thermal overload device finally selected for each motor over 1/3 HP.
 - c. Record the voltage between phases and between each phase and neutral at the Main Switchboard.
 - d. Record the voltage between phases, the voltage between each phase and neutral, and the actual current in each phase at each panel with normal load applied.
 - Part 6:** Equipment start-up records, test records, and certifications.
 - Part 7:** Mechanical Equipment Schedule, including equipment item labeled with approved CCS Facility Department Inventory Data Collection Categories, Room number, and Equipment model number; followed by **Equipment Data Sheets for each equipment item installed AND removed.** See Form 006510.F – CCS Equipment Data Sheet.

Part 8: Schedule listing fixture type, fixture source, lamp type, and lamp source for all fixtures used on the project.

Part 9: Copies of all panel schedules.

01 78 36 WARRANTIES

- A. Special warranties are to be required as an extension of the traditional one-year warranty of construction whenever there is a reasonable benefit to the Owner, with limited or no additional cost to the project. This includes extended warranties that are offered standard by a manufacturer.
 - 1. Roof warranty: TPO Systems 25 years minimum; Elastomeric Coating Systems 10 years minimum; Other Systems 5 years minimum or as specified by the CCS Project Manager. Review with the Owner any costs associated with a longer warranty before specifying.
 - 2. Mechanical Equipment:
 - a. Compressors: manufacturer's extended 5 year warranty.
 - b. Boilers: manufacturer's extended 5 year warranty.
 - 3. Electrical Equipment:
 - a. Electronic ballasts: manufacturer's extended 5 year warranty.
 - 4. Other miscellaneous guarantees:
 - a. Interior wood doors: manufacturer's warranty for the life of the original installation.
 - b. Door closers: manufacturer's extended 5 year warranty.
 - c. Exterior windows: manufacturer's standard.

01 78 43 SPARE PARTS

- A. The Contractor shall deliver required spare parts to the College at a location on Campus designated by the Project Manager. Contractor shall prepare a list of spare parts on a letter of transmittal, and when delivered, obtain a written receipt. Furnish copies of those receipts to the Consultant and include in O&M manuals.
- B. Loaned Keys:
 - 1. The Contractor shall return to the Project Manager, all keys issued to the Contractor for use on this project. When delivered, obtain a written receipt. See Section 01 35 53 Security Procedures.
- C. New Keys:
 - 1. The Contractor shall turn over to the Project Manager, all new keys for all equipment and specialties. When delivered, obtain a written receipt. Furnish a copy of receipts to the Consultant.
 - 2. Keys for new door locks are to be shipped directly to the Owner by the factory. See SECTION 08 70 00 HARDWARE.

01 78 46 EXTRA STOCK MATERIALS

- A. The Contractor shall deliver required extra stock materials to the College at a location on Campus designated by the CCS Project Manager. Contractor shall prepare a list of extra stock materials on a letter of transmittal, and when delivered, obtain a written receipt. Furnish copies of those receipts to the Consultant and include in O&M manuals.

01 78 39 PROJECT RECORD DOCUMENTS

- A. Signed Permits:
 - 1. The Contractor shall maintain a notebook on site with copies of all permits and inspection reports made by the local building department. Signed copies of these permits and inspection reports are to be included in the project O&M manuals as required above.
- B. Contractor shall deliver Project Record Documents/As-Builts to the Consultant. The Project Record Documents, as defined in the General Conditions, include copies of the Drawings and Specifications, including addenda, marked to show all actual construction, actual suppliers, manufacturers, trade names, models of supplied equipment, and changes made by Change Orders and/or RFI.

- C. Ensure that the Mechanical As-Builts accurately reference total system volume.
- D. The Consultant will be requested to transfer the as-built corrections into both PDF (Adobe) and DWG (AutoCAD) formats as well as onto 2 copies of 20 lb. bond paper; fully reproducible.

01 79 00 DEMONSTRATION AND TRAINING

- A. Demonstrations:
 - 1. The Contractor shall conduct demonstrations of all equipment and systems in the project. These demonstrations shall not take place until after the punch list has been prepared by the Consultant, and the draft of the O&M manuals have been submitted.
 - 2. Demonstrations are to be scheduled by the Contractor at a time agreeable to the Project Manager. This is intended to allow the appropriate personnel to be in attendance at these demonstrations.
 - 3. The Community Colleges of Spokane reserves the right to disprove the training provided based on quality, quantity, and accuracy of the materials and substance presented. If initial training is not acceptable for the reasons listed above, it will be the contractor's responsibility to coordinate the rescheduling of adequate training at their expense; this may be up to and including reimbursement to the college for personnel down time.
 - 4. The Contractor shall make a list of attendees of all demonstrations, and shall furnish copies to the Consultant.
 - a. Demonstrations are required for the following:
 - b. Irrigation systems.
 - c. Special doors including automatic entrances, counter fire shutters, etc.
 - d. Operable partitions.
 - e. Equipment.
 - f. Heating, ventilation and air conditioning equipment and systems. This includes running through the complete control sequences for all equipment.
 - g. Engine generator systems.
 - h. Special lighting systems.
 - i. Fire alarm systems.
 - j. Electrical components, such as motor controller, surge suppressors, relay systems, and other maintenance items.
 - k. Security systems.
 - l. Permanently installed safety or life safety equipment.
 - m. Fire sprinkler systems.
 - n. Access control or intrusion alarm systems.
 - 5. The Contractor shall be responsible for coordinating and providing professional quality video recording of all training sessions and providing professionally prepared DVD media to the consultant for review and approval.

END OF DIVISION 01



21 00 00

Fire Suppression Systems

FPM FIRE PROTECTION SPRINKLER MANIFOLD (INCLUDES WET AND DRY SYSTEM MANIFOLDS)

22 00 00

Plumbing Equipment Data Collection

ACP AIR COMPRESSOR

BFP BACKFLOW PREVENTER (INCLUDES **RPBP**, REDUCED PRESSURE BACKFLOW PREVENTER)

DW DISHWASHER (DOMESTIC)

ETW EXPANSION TANK (DOMESTIC HW)

HWRP DHW RECIRCULATION/CIRCULATION PUMP (**CP**)

HWT WATER HEATER/DOMESTIC WATER STORAGE TANK

PMPS SUMP PUMP (UNIT)

SHWC SOLAR HOT WATER COLLECTOR (ALL FLAT PANEL, EVACUATED TUBE AND BATCH COLLECTORS)

SST SOLAR HOT WATER STORAGE TANK

TMV THERMOSTATIC MIXING VALVE (BUILDING SYSTEM OR WHOLE BUILDING VALVES, DOES NOT INCLUDE POINT OF SERVICE VALVES AT FAUCETS).

VP VACUUM PUMP

WS WATER SOFTENER (STAND ALONE)



23 00 00

HVAC Equipment Data Collection

ACU	AIR CONDITIONING UNIT (WINDOW TYPE, SPLIT SYSTEM, DUCTLESS, OR THROUGH WALL PACKAGED ROOM AIR CONDITIONING SYSTEMS)
AHR	AIR HEAT RECOVERY SYSTEM (ALL)
AHU	AIR HANDLER UNIT
BF	BYPASS FEEDER (MAY INCLUDE POTS, AUTOMATIC VALVES, PIPE INSERTION DEVICES AND TAPS)
BLR	BOILER (GAS/OIL)
BP	BOILER PUMPS
CASF	COMBUSTION AIR SUPPLY FAN
CDU	CONDENSING UNITS
CFS	CHEMICAL FEED SYSTEMS
CTU	CHILLED BEAM TERMINAL UNIT (PASSIVE AND ACTIVE)
CHL	CHILLER
CLT	COOLING TOWER
CP	COOLING PUMP aka CHILLED WATER CIRCULATION Pump- CWP
CUH	CABINET UNIT HEATER
DE	DEHUMIDIFIER (ALL, INCLUDING DESICCANT AND DIRECT EVAPORATIVE)
FSD	FIRE/SMOKE DAMPER
DH	DUCT HEATER (GAS OR ELECTRIC)
DIWS	DEIONIZING SYSTEM (PACKAGED PURE WATER SYSTEM UNITS)
DRY	AIR DRYERS (USUALLY CHILD OF ACP)



DTC	DUST COLLECTOR
EF	EXHAUST FAN (INCLUDES LEF , LAB EXHAUST FAN, ROOFTOP AND IN LINE EXHAUST FANS DOES NOT INCLUDE BATHROOM EXHAUST FANS OR FRACTIONAL HP FANS)
EFH	EXHAUST FUME HOODS (INCLUDES LFH , LAB FUME HOOD)
ERU	ENERGY RECOVERY UNIT (PACKAGED UNIT W/ HEAT EXCHANGER OR HEAT WHEEL)
ETC	EXPANSION TANK (COOLING)
ETH	EXPANSION TANK (HEATING)
ETHR	EXPANSION TANK (HEAT RECOVERY)
EVP	EVAPORATIVE COOLER (INCLUDES SWAMP COOLERS AND GREENHOUSE EVAPORATIVE COOLING SYSTEMS)
FCU	FAN COIL UNIT
FLW	FILTER (WATER)
FNA	AIR CURTAIN
FUR	FURNACE 0-150 BTUs (ELECTRIC OR GAS RESIDENTIAL STYLE)
FWA	FAN WALL (MULTIPLE SUPPLY OR RETURN FANS IN FAN WALL CONFIGURATION ON AHU'S)
GF	GLYCOL FEEDER
HP	HEATING (WATER CIRCULATING) PUMP
HRP	HEAT RECOVERY PUMP
HTP	HEAT PUMP – HEAT/COOL (PACKAGE UNIT ANY SOURCE, WATER/AIR)
HX	HEAT EXCHANGER
HUM	HUMIDIFIER



IAC	INDEPENDENT AIR CLEANER (SMOKE EATER)
ICP	ISOLATED CIRC PUMP
IP	INJECTION PUMP
LEF	LAB EXHAUST FAN (MAIN EXHAUST FAN ASSEMBLY SERVING LABORATORY SPACES Point of service exhaust fans in an individual lab are labeled as an exhaust fans.)
MAU	MAKE-UP AIR UNIT
RAD	RADIANT HEATING SYSTEM (IN FLOOR OR IN SLAB) INCLUDES MANIFOLDS, INJECTION PUMPS, INJECTOR PUMPS, AND ASSOCIATED SENSORS/ CONTROLS)
RF	RETURN AIR FAN (INCLUDES RETURN AIR FANS OVER 5 HP THAT ARE PART OF AHU'S, DOES NOT INCLUDE FAN WALLS ON AHU'S) Place label on outside of AHU/RTU with the main unit tag.
RLF	RELIEF AIR FAN (INCLUDES RETURN AIR FANS OVER 5 HP THAT ARE PART OF AHU'S, DOES NOT INCLUDE FAN WALLS ON AHU'S) Place label on outside of AHU/RTU with the main unit tag.
RHG	RADIANT UNIT HEATER (I.E. CORAY VAC)
SCR	AIR SCRUBBER
SF	SUPPLY FAN (INCLUDES FANS IN AHU'S OVER 5 HP AND IN LINE DUCT SUPPLY FANS. DOES NOT INCLUDE FAN WALL AHU FANS) Place label on outside of AHU/RTU with the main unit tag.
SPF	SMOKE PRESSURIZATION FAN
TU	TERMINAL UNITS (FAN POWERED OR CONSTANT VOLUME TERMINALS)
UH	UNIT HEATER (GAS, ELECTRIC, STEAM, HW)
VFD	VARIABLE FREQUENCY DRIVE (AKA VARIABLE SPEED DRIVES – VSD)
VAV	VARIABLE AIR VOLUME TERMINAL UNITS
VCC	CENTRAL VACUUM



26 00 00

Electrical Equipment Data Collection

BKR	CIRCUIT BREAKER-HV Air HV Oil
BTB	WET BATTERY SYSTEM AND CHARGER
CP	CATHODIC PROTECTION SYSTEM
DOE	DOOR OPENER, ELECTRIC
GEN	EMERGENCY GENERATOR (PACKAGED ENGINE GENERATOR SYSTEMS)
LCA	LIGHTING CONTROL PANEL, AUTOMATIC (OR SUB PANEL) - ONLY USED FOR AUTOMATIC DAY LIGHTING/DIMMING CONTROL PANELS, NOT LIGHTING MAIN PANELS WITH BREAKERS
MCC	MOTOR CONTROL CENTER
MDS	MAIN DISTRIBUTION SERVICE
MTR	ELECTRIC MOTOR (10 HP AND ABOVE)
PWC	POWER STABILIZER
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSION SYSTEM
UPS	UNINTERRUPTIBLE POWER SYSTEM
XFMR	TRANSFORMER-Oil, Air
SWITCHES	
ATS	AUTOMATIC TRANSFER SWITCH
MTS	MANUAL TRANSFER SWITCH
SWG	SWITCH GEAR- HV Air, HV Oil, Interrupt HV, Fused Air, HV W/Aux Fuses, Air

28 00 00



Electronic Safety and Security Data Collection

- FACP** FIRE ALARM CONTROL PANEL (MAY ALSO INCLUDE REMOTE ANNUNCIATOR PANELS)

- SCP** SECURITY CONTROL PANEL

DIVISION 02 - EXISTING CONDITIONS

(Revision Date: 10-20-15)

SECTION 02 01 00 MAINTENANCE OF EXISTING CONDITIONS

02 01 00 MAINTENANCE OF EXISTING CONDITIONS

- A. Protect all surfaces, finishes, and equipment that are to remain, from damage during construction activities. Contractor to repair or replace if deemed appropriate at no cost to the owner.

SECTION 02 20 00 ASSESSMENT

02 21 00 SURVEYS

- A. Utility systems on the Spokane Community College campus and the Spokane Falls Community College campus are for the most part considered privately owned. The traditional "One Call Service" usually limits its locating activity to the public utility side of the system. Therefore, require the Contractor to hire and use a private utility locator company in addition to the "One Call Service".
 1. CCS has used Advanced Underground Utility Locating Inc.
Shawn Rushing
509-710-2621
- B. Request that the Contractor notify the Owner so that College personnel can be involved in the location process.

SECTION 02 40 00 DEMOLITION AND STRUCTURE MOVING

02 42 91 REMOVAL AND SALVAGE OF CONSTRUCTION MATERIALS

- A. Unless otherwise instructed by the Owner, CCS maintains first rights to all specialties, equipment, and materials removed during demolition or remodeling projects.
- B. The Contractor shall deliver salvage selected by the College, to a designated location on the Campus, and shall obtain a receipt.
- C. The Contractor shall remove all other specialties, equipment, and materials not selected by CCS, and all debris from the project, and shall legally dispose of them.

SECTION 02 80 00 FACILITY REMEDIATION

02 82 00 ASBESTOS ABATEMENT

- A. See information in SECTION 01 35 43 HAZARDOUS MATERIAL REMEDIATION regarding removal of existing asbestos containing materials.
- B. Contactor is responsible for notifying the Owner to post a notification at all building entrances. See Construction Standards Section 01 35 43 for additional information.

END OF DIVISION 2

DIVISION 03 - CONCRETE

(Revision Date: 03/11/16)

SECTION 03 30 00 CAST-IN-PLACE CONCRETE

See also Division 32 – Exterior Improvements

Reference City of Spokane, Engineering Services Standard Plans
Washington State Department of Transportation Standard Plans

Floor Slabs:

- A. The Contractor is to verify that new floor slabs are “flat”, and do not deviate more than $\frac{1}{4}$ ” in 10’, non-cumulative in all directions, before covering with floor covering.
- B. Floor slabs are to be enclosed, and protected from standing water from all sources, for a period of 30 days prior to the installation of floor coverings. Moisture and alkali testing required per manufacture.
- C. Interior expansion and control joints in floor slabs on grade are to be sealed with an epoxy sealant to limit penetration of Radon gas into the building.
- D. Interior slabs to be a minimum of 4” over a 6” base course of $\frac{5}{8}$ ” minus. Place vapor barrier directly under slab or directly under ridged insulation.
- E. Depress foundation wall at openings to allow for finished slab to cover into opening flush with the outside face of the foundation wall. Top of slab exposed to the exterior of the building shall be finished and slope away from building. The joint between floor slab and sidewalks shall be a preformed, recessed filler filled with urethane sealant.

Sidewalks/Equipment Pads:

- A. Sidewalks that provide vehicle accesses to buildings for service access are to be 6” thick, reinforced with #4 bars at 18”o.c. each way, and placed over 6” compacted, crushed rock base.
- B. Sidewalks that are too narrow for vehicles, or are configured such that vehicles are prevented from traveling on them, are to be 4” thick with 4” base course.
- C. Sidewalks should be sloped $\frac{1}{4}$ ” per foot to drain.
- D. Separate sidewalk from walls with $\frac{1}{2}$ ” expansion joint material full depth of concrete.
- E. Provide score joints to divide sidewalks into approximately square sections, with a maximum dimension of 10’. Provide expansion joints at no more than 30’o.c.
- F. Provide rebar slip dowels at all expansion and cold joints.
- G. Sidewalks, equipment pads, exterior ramps, and stairs are to be given a heavy “broom finish” with tooled edges. Texture is to be across the direction of pedestrian travel.
- H. Curbs are to be formed separately from sidewalks.
- I. All exterior concrete walks, curbs and drive aprons shall have 7% minimum air entrainment
- J. All exterior concrete walks shall be sealed with L & M Construction Chemicals, Inc. Pentane 40 penetrating Silane Treatment, Euclid Baracade WB 244, or approved equal
- K. Particular attention must be paid to the curing of all concrete in accordance with ACI 301.

Mow Strips:

- A. Mow strips are to be provided where fences adjoin lawn or landscaped areas.
- B. Mow strips are to be 12” wide, 4” deep and sloped $\frac{1}{4}$ ” per foot away from building walls.
- C. Separate mow strips from walls with $\frac{1}{2}$ ” expansion joint material.
- D. Provide construction joints at no more than 10’o.c. and expansion joints at no more than 30’o.c.
- E. Finish with a light broom finish and tooled edges.

Irrigation Sleeves:

- A. Irrigation sleeves are to be provided under all new hard surfaced paving. All lawn and planter areas are to be connected to all adjacent lawn and planter areas to provide routing for current and future irrigation needs. Verify location of sleeves with the Project Manager.

- B. Sleeves are to be a minimum of 6" diameter PVC pipe, located approximately 18" below the surface to the top of the pipe. Extend 12" minimum beyond the edge of hard surfacing. Sleeves placed for future use are to be capped at both ends.
- C. Concrete walks, curbs, and mow strips are to be marked with a 2" high 'X' at the edge over top of each end of the irrigation sleeve. The 'X' may be either tooled into the surface for the green concrete, or saw cut after the concrete cures.

Other Sleeves:

- A. Provide additional sleeves under sidewalks for future use by the District. Consult with the Project Manager for project requirements.
- B. Sleeves in this category are not to be used by the project for irrigation purposes.
- C. Sleeves are to be a minimum of 6" diameter PVC pipe, located approximately 18" below the surface to the top of the pipe. Extend 12" minimum beyond the edge of hard surfacing. Cap both ends.
- D. Concrete walks, curbs, and mow strips are to be marked with a 2" high 'X' at the edge over top of each end of the irrigation sleeve. The 'X' may be either tooled into the surface for the green concrete, or saw cut after the concrete cures.

END OF DIVISION 03

DIVISION 04 – MASONRY

(Revision Date: 03/11/16)

SECTION 04 00 00 MASONRY

- A. All lintels, brick ties, veneer anchors including screws, and miscellaneous hardware installed in masonry assemblies shall be hot-dipped galvanized, following requirements of the Uniform Building Code, International Building Code, and recommendations of the Brick Institute of America.
- B. Water repellent coatings for concrete masonry units and fired clay (brick) masonry shall be siloxane based products. Verify product selection with manufacturer to insure formulation is appropriate for the substrate.
- C. Water repellents are not to be installed until after all exterior caulking has been done.
- D. Windows, doors and other finished surfaces are to be protected by masking and covering during applications.
- E. The use of "Dry-Block" masonry and waterproof mortar may be used with the Project Manager's prior approval. It is the consultant's responsibility to assure the proper masonry units and mortar admixtures are used on the job site.
- F. Masonry erection during cold weather must incorporate protective measures recommended by the masonry manufacturer. Use of antifreeze is prohibited.
- G. Brick masonry should be allowed to cure as long as possible over the hot summer months to burn off any efflorescence prior to sealing with siloxane based product.
- H. Anti-graffiti sealer shall be applied to light toned stone or masonry surfaces from grade up to 8 ft. high

END OF DIVISION 04

DIVISION 05 - METALS

(Revision Date: 03/11/16)

SECTION 05 50 00 METAL FABRICATIONS**PART 1 GENERAL**

Exterior Ferrous Metals:

- A. All ferrous metals exposed to weather are to be galvanized, except for metal coping, which may be galvanized.

Handrails and Guardrails:

- A. Exterior handrails and guardrails are to be fabricated from steel pipe, galvanized, or powder coated. All welds are to be ground smooth.
- B. Interior handrails are to be stainless steel, aluminum, or powder coated.

Ceiling Hung Toilet Partitions:

- A. Provide C-channel support framing for ceiling hung toilet partitions. See SECTION 10 21 13 TOILET COMPARTMENTS.
- B. All metals scheduled for paint shall be primed using rust inhibiting paint

Use of dissimilar metals:

- A. Dissimilar metals must be isolated to prevent electrolysis. This includes using the correct type of fasteners and isolation grommets or shims.

END OF DIVISION 05

DIVISION 06 – WOOD, PLASTICS AND COMPOSITES

(Revision Date: 3-2-11)

SECTION 06 10 00 ROUGH CARPENTRY

Communication Backboards:

- A. Communication backboards are to be provided at all new telecommunications rooms. Backboards are to be $\frac{3}{4}$ " A-C plywood and must be FSC Certified per LEED requirements.
- B. Backboards are to cover walls to a height of 8'-0".
- C. Backboards shall be painted to match adjacent room finish and/or as directed by the architect prior to cabinet installation.
- D. Provide backing for securing top and bottom of upper cabinets and top of lower cabinets, toilet partitions, stair rails and elsewhere as needed.

SECTION 06 20 00 FINISH CARPENTRY

- A. Provide backing and secure with construction adhesive or screw and plug depending on size of finish trim. Provide consistency with wood grain selections.
- B. MDF paneling must be FSC Certified per LEED requirements.

SECTION 06 40 00 ARCHITECTURAL WOODWORK

06 41 00 ARCHITECTURAL WOOD CASEWORK

Cabinet Construction:

- A. Use of plywood with a minimum five ply construction is the preferred core material for all plastic laminate faced cabinets based on the ability of the College to make repairs and modifications over the life of the installation. Cabinet suppliers have been increasingly resistant to following this requirement because of the lower quality plywood on the market, and the plywood's tendency to warp. The Architectural Woodwork Institute in the 7th Edition of the Architectural Woodwork Quality Standards no longer recognizes the use of plywood as a core material in laminate-faced cabinets. Armor-Core board and other hybrid products have been used successfully on several projects. If particle board core material is used, it shall be medium density (45 lbs. per cubic foot) industrial grade particle board composed of wood chips with urea resin binders. Formaldehyde emissions shall not exceed .030 ppm.
- B. Countertops at sinks are to have cores of either $\frac{3}{4}$ " exterior grade veneer core plywood, or moisture resistant phenolic resin particle board (Type 2-M-2 moisture resistant).
- C. Seal edges, base supports and back of casework from moisture.

06 41 16 PLASTIC LAMINATE-CLAD ARCHITECTURAL CABINETS

- A. Edge banding of laminate faced cabinets is to be PVC a minimum of .125" thick at drawers, doors, end panels, and exposed construction. Minimum thickness for semi-exposed construction is .024".
- B. All exposed panel faces (as defined in the AWI Standards) are to have a plastic laminate finish. This includes open adjustable shelving. Semi-exposed panel faces may have a melamine overlay finish.
- C. All shelves, whether located inside of cabinets or as open adjustable shelving, are to be edge banded on all sides.
- D. Provide backsplashes at all countertops in wet areas. Scribe counter tops to walls in other areas. Backsplashes and counter tops are to be caulked to the walls. See SECTION 07 92 00 JOINT SEALANTS.
- E. Use of solid surfacing materials (Corian, epoxies, etc.) in areas with very harsh conditions should be discussed with the Project Manager.
- F. Shelving in faculty offices should be at least 12" deep to handle three ring notebook binders.

- G. Coordinate backing requirements with SECTION 06 10 00 ROUGH CARPENTRY or SECTION 09 22 16 NON-STRUCTURAL METAL FRAMING as appropriate to the type of construction.

Cabinet Hardware:

- A. All cabinet locks are to be provided by the hardware supplier, and keyed similar to the architectural hardware. See SECTION 08 71 00 DOOR HARDWARE.
1. Olympus 721 small format I.C. Core Compatible. Owner will supply and install permanent cores.
- B. Cabinet hinges:
1. European style in office areas equal to Blum 170° clip hinge.
 2. Knuckle hinges in classroom and lab areas: RPC 374, 375, or 376
- C. Pulls:
1. Wire type with 3 ½" centers, Stanley 4483 ½ wire pull USGD finish.
- D. Drawer Slides:
1. Blum 230 series ¾ extension with 75 lbs rating.
 2. File guide standard: Accuride 3832 series, full extension.
 3. File drawers: Accuride 3005
 4. Wide drawers: Accuride 4032, full extension.
- E. Magnetic Catches:
1. Ives SP326
- F. Shelf supports:
1. Inside casework use holes drilled at 1" o.c. in the side of casework, with KV 346, 345 or similar shelf support clips.
 2. For adjustable shelving in offices and custodial rooms, use heavy-duty double slotted KV #85 standards with KV #185 brackets.
- G. Grommets:
1. Hafele 63 mm or Doug Mockett & Company TG series or TM series and size as required by drawings.
- H. Elbow Catches:
1. Ives SP2A14

END OF DIVISION 06

DIVISION 07 - THERMAL AND MOISTURE PROTECTION

(Revision Date: 03/11/16)

SECTION 07 20 00 THERMAL PROTECTION

07 21 00 THERMAL INSULATION

- A. Insulation of exterior walls and soffits shall provide continuous coverage.
- B. At exterior walls, locate insulation so that any piping in the wall assembly is on the warm side (room side) of the vapor barrier and insulation.

07 26 00 VAPOR RETARDERS

- A. Vapor barriers covering insulation at exterior walls and soffits shall provide continuous coverage. Locate on the warm side (room side) of the insulation.
- B. Any piping located in the wall assembly shall be located on the warm side (room side) of the vapor barrier and insulation.

07 30 05 Roofing Felt and Underlayment

- A. In place of organic felt underlayment consider a breathable synthetic underlayment similar to Titanium UDL -30 and Titanium UDL 50 by Interwrap Inc.

SECTION 07 50 00 MEMBRANE ROOFING

- A. For new membrane roofing, and re-roofing, the use of the Tremco Burmastic System should be considered. Choice of roof membrane type may be dictated by the aquifer protection requirements in "Spokane County Guidelines for Stormwater Management" and requirements for "208" drainage swales that conflict with the available site. Verify options with the Project Manager. Single-ply roof EPDM membranes (45-60 mil thickness) will be considered on a case-by case basis. Acceptable brands are Sarnafil, Trocal, and Gensco. Firestone. TPO systems and manufactures preferred are Carlisle Sure-weld, Johns Manville International and Firestone UltraPly TPO.
- B. Many of the roofs throughout the District currently have warranties. Verify type of roof, and criteria necessary to maintain the warranty, when doing remodel projects affecting the roof.
- C. For existing roofs, require the Contractor to provide 24 hour notice to the Project Manager prior to starting work on the roof, in order to permit the College to shut down outside air intakes for interior spaces that might be affected.

SECTION 07 70 00 ROOF AND WALL SPECIALTIES AND ACCESSORIES

- A. Provide a roof hatch accessed from the interior of the building, for access to all major roof areas. Roof hatch shall include an interior padlock hasp to accommodate an owner provided padlock. NOTE: Provide lighting to illuminate any ceiling or interstitial space that roof access ladder passes through. Coordinate with electrical.
- B. Include a ladder extension similar to the Bilco LadderUp Safety Post at all hatch ladders.
- C. Provide contacts for connection to building security system. Coordinate with SECTION 28 00 ELECTRONIC SAFETY AND SECURITY.
- D. On roofs with slopes greater than 1/12 and without a parapet over 42" high, install a WISHA approved cable type roof safety system. Check with safety support system suppliers for specific requirements.

SECTION 07 90 00 JOINT PROTECTION

07 92 00 JOINT SEALANTS

- A. All construction joints, expansion joints, control joints, penetrations, and the perimeter of slabs on grade are to be sealed with an epoxy sealant to limit Radon gas infiltration into the building.
- B. The bottoms of all hollow metal door frames are to be caulked to the flooring.
- C. Plumbing fixtures and toilet accessories are to be caulked with a mildew resistant sealant.
- D. Backsplashes and counter tops of cabinets are to be caulked to walls with silicone sealant.

END OF DIVISION 07

DIVISION 08 – DOORS AND WINDOWS

(Revision Date: 03/18/16)

SECTION 08 10 00 DOORS AND FRAMES

08 11 13 HOLLOW METAL DOORS AND FRAMES

- A. All interior and exterior hollow metal door frames are to be 16 gauge steel.
- B. Interior door frames are not to be grouted, except when installed in masonry.
- C. In stud framed construction, gypsum wallboard shall extend behind the edge of the frame.
- D. Secure bottom of jamb to the slab
- E. At exterior doors, provide contacts for connection to building security system. Coordinate with DIVISION 28 ELECTRONIC SAFETY AND SECURITY.

08 14 16 FLUSH WOOD DOORS

- A. Wood veneer faces are preferred over plastic laminate faces due to ability of College to make repairs when damaged. Hardwood veneers shall be plain sliced.
- B. Provide small relites, sized to ADA standards, for all offices. Locate relite in wall beside door if possible. Otherwise, locate in the door.

SECTION 08 40 00 ENTRANCES, STOREFRONTS, AND CURTAIN WALLS

- A. Typical one or two person office.
 - 1. Key to get in initially. The key will not unlock the lock permanently.
 - 2. A thumb turn button on inside lever will unlock outside lever so key is not needed to come back in if button has been disengaged.
- B. Typical Classroom.
 - 1. Key to get in initially. The key will not unlock the lock permanently.
 - 2. A thumb turn button on inside lever will unlock outside lever so key is not needed to come back in if button has been disengaged.
 - 3. If Classroom requires an Exit Device (panic push bar) then a thumb turn on the Exit device will dog the door latch open.
 - 4. If this door is fire rated and must always be latched a thumb turn on the inside will unlock the lock.
- C. Conference Room, Computer Room or Classroom with a Card Reader.
 - 1. Same as above. The key or Card will not unlock the lock permanently. A thumb turn of some kind on the inside is required to allow the door to swing or open free. An electronic retractable latch is preferred on Exit Devices instead of electronic strikes. If an electronic strike is used with a lever handle and the door swings out a latch guard plate must be installed on the exterior of the door.
- D. Exterior Doors
 - 1. Doors will preferably have Exit device (panic push bar) that cannot be manually dogged open. An interior key may allow dogging. A key cylinder and pull are on the exterior. The exterior key will not permanently unlock the door.
 - 2. Doors that have levers for exit must not be able to unlock the exterior.
- E. Exterior Door with Card Readers and electronic locks.
 - 1. Electronic retractable latches are required on all doors that open out. If an electronic strike is pre-approved by the Project manager, a security cover plate must be installed.
 - 2. Some Mechanical Room or special doors with Card Readers that open in may use an electronic strike and levered handle.

SECTION 08 41 13 ALUMINUM FRAMED ENTRANCES AND STOREFRONTS

- A. Major building entrances to have aluminum doors and frames. vestibules
- B. Aluminum doors should be wide stile. Consideration should be given to the use of heavier wall thickness (Kawneer Tuffline) at all entries.
- C. Use of continuous hinges is preferred Use Pemco #CFS/DFS HD or Select # SL21 HD. Do not use pivot hinges without consulting with the Project Manager.
- D. Paired exterior doors will usually require the use of exit devices with removable mullions. See SECTION 08 71 00 DOOR HARDWARE, below. Electronic latches for both doors.
- E. All major building entries are to incorporate an automatic powered door opening device for ADA access. Use of a single leaf swinging door is preferred over sliding doors. Swinging doors in series at vestibule entries should be separately controlled. See SECTION 08 71 00 HARDWARE, below. All activation pads shall be hardwired where possible.
- F. At exterior doors, provide contacts for connection to building security system. Coordinate with DIVISION 28 ELECTRONIC SAFETY AND SECURITY.

SECTION 08 50 00 WINDOWS

Windows at new construction are to provide a minimum of one operable section in all offices and classrooms. Not all windows need be operable. Operable windows require a special locking device.

- A. New windows are to have a thermal break.
- B. For safety and security, windows should be equipped with a stop to limit the opening size to a maximum of 6".

SECTION 08 62 14 INSULATED SKYLIGHTS

- A. Provide translucent fiberglass face sheets that have been manufactured from glass fiber reinforced thermoset resins formulated specifically for architectural use.
 1. Thermoplastic (e.g. polycarbonate, acrylic) faces maybe acceptable if approved by the A/E and the Owner.

SECTION 08 70 00 HARDWARE

ARCHITECT PLEASE PLACE DOOR, WINDOW, AND HARDWARE SCHEDULE ON THE DRAWINGS.

08 71 00 DOOR HARDWARE

Locks/Cores:

- A. Cylindrical Leversets, acceptable manufacturers:
 1. Marks USA Survivor Series, American Style lever: 195RAB/26D-G3 On older existing buildings retro fits use Schlage 195AB.
 2. Schlage ND-Series, Rhodes Style lever: RHOND92BD
- B. Deadbolts:
 1. Marks USA Defender Series Deadbolt 145 Series.
 2. Schlage B-Series Deadbolt, 600 series.
- C. For new construction and renovations, unless otherwise specified and approved by the Owner, all locks shall be capable of receiving a Small Format Interchangeable Core (SFIC)
- D. Both Classroom and Office leversets shall be the models as noted above.
- E. Specify use of compression rings at all exterior mortise cylinders.
- F. On all projects, the Owner will furnish and install permanent cylinders. Contractor to provide temporary construction cylinders.

- G. On some projects, the Owner will require that additional locksets be specified as maintenance materials. Verify need, quantity, and lock functions with the Project Manager.
- H. Emergency exit doors providing secondary egress to the building exterior, and intended to provide an exit only function, shall have blank trim on the outside. unless PM specifies a keyed cylinder on the exterior.

Exit Devices:

- A. Exit devices are to be Von Duprin, Series 99.
 - 1. SD-QEL99+ preferred exit device on both leaves of exterior egress doors.
- B. On fire rated doors, exit devices are to be Von Duprin 99L-F-2.
- C. Exit devices shall be capable of being "dogged down" using a 5/32" hex key similar to Von Duprin #227 Dog Key (standard style). All interior Classroom exit devices shall include a Thumb-turn Panic Hardware Dogging Device. Similar to the Von Duprin CD Retrofit Kit U528 and ILCO STD 625 Thumb-turn Mortice Cylinder. On Classroom Fire doors Use Von Duprin Fire bar with thumb turn that does not dog the bar but can lock door from the interior.
- D. Provide IC cylinder housing, Von Duprin, removable center mullions at exterior paired doors and other locations where paired doors are equipped with exit devices and where the full width of the opening may be needed for the movement of furniture and equipment. These mullion devices shall be equipped with a cylinder housing to receive small format interchangeable core.

Closers:

- A. Provide LCN series 4010 or 4110.
- B. Corridor doors are to be equipped with closers as required by the Building Code. Use of magnetic door holders at specific doors should be discussed with the Project Manager and staff. See Magnetic Holders below.
- C. All door closers are to be surface mounted. Do not use concealed closers built into the floor, door, or frame.

Door Operators:

- A. Major entrances are to incorporate an automatic powered door device for ADA access.
- B. Door operators will be switched with an LCN switch, 3 position, model 8310-806R for Senior Swing ADA model 9540 & 9550. (No keyed switch, must be 3 position rocker switch).
- C. Push button activation, hard wired preferred if possible. Model: LCN Senior Swing, model 9540, 9550.

Stops:

- A. Provide stops for all doors. Consider overhead stops sometime in combination with closures
- B. Avoid the use of floor mounted stops, except on exterior doors. Recommend Ives FS18L or FS18S for exterior floor mounted stops. Verify exceptions with the Project Manager

Magnetic Holders:

- A. Magnetic holders connected to the building fire alarm system are to be provided at the following locations:
 - 1. Cross-corridor doors separating building additions at fire rated area separation walls.
 - 2. Doors in fire rated corridor walls opening into computer and other resource labs that do not have scheduled classes.
 - 3. Doors in fire rated corridor walls opening into custodial rooms.
 - 4. All meeting areas of high attendance, such as theaters and lecture rooms.
- B. Use at additional doors should be discussed with the Project Manager and staff. When the budget permits, it is preferred that all corridor doors be provided with magnetic holders to limit the use of wooden wedges by building occupants.

Cabinet Locks:

- A. Cabinet locks are to be supplied by the cabinet supplier, compatible with small format IC cylinder.
- B. Locks are to be Olympus 721 I.C. core compatible, small format cabinet door and drawer locks only, less the cylinders. (No exceptions)

Finish:

- A. The standard finish is to be satin chrome plated Schlage 626 (US26D).
- B. Kick plates and door pulls shall be stainless steel US32D. PM may consider laminate kick plates in some cases.

SECTION 08 80 00 GLAZING

- A. Insulating glass is required at all new windows.
- B. Use of Heat Mirror glazing or other system should be considered in rooms where glare on computer monitor screens would be objectionable.

END OF DIVISION 08

DIVISION 09 - FINISHES

(Revision Date: 10-20-15)

SECTION 09 20 00 PLASTER AND GYPSUM BOARD

09 22 00 SUPPORTS FOR PLASTER AND GYPSUM BOARD

- A. Provide proper backing and blocking for support of the following:
 - 1. Wall hung cabinets,
 - 2. Grab bars at toilet rooms
 - 3. Wall hung shelving
 - 4. Wall stops for swinging doors
 - 5. Magnetic door holders
 - 6. Wall mounted specialties and equipment
- B. Provide doubled 20 gauge studs at door frames.
- C. In general, maximum stud spacing to be 24" o.c.
- D. At walls with ceramic tile, provide 20 gauge studs at 16" o.c.
- E. Provide blocking at strategic locations in all faculty offices to accommodate future additional book shelving.
- F. See SECTION 05 50 00 METAL FABRICATIONS for support framing for ceiling hung toilet partitions.

SECTION 09 30 00 TILING

- A. Provide ceramic tile floors in public and staff restrooms
- B. All floor tile to have Epoxy grout.
- C. Provide ceramic tile for the full height of walls in public and staff restrooms of major buildings, where the project budget allows.
- D. Do not seal ceramic mosaic tile floors.
- E. Cleaning of all tile surfaces, free from all grout haze, is to be done by the Contractor. Acid solutions are not to be used.
- F. Contractor to provide repair and replacement tile in every color and shape used on the project, at a rate of 1% of the installed area. Boxes are to be substantial, and in good condition. Boxes are to be marked with campus, building name and number, and room number(s). When delivered to the College, obtain a written receipt. Furnish a copy of the receipt at project closeout.

SECTION 09 50 00 CEILINGS

09 51 00 ACOUSTICAL CEILINGS

- A. In general, acoustical ceilings are to be based on 2' x 4' grid systems with standard face profiles, 15/16" to face of grid. Ceiling tiles are to be Armstrong "Cortega" style with square cut edges. Do not use tegular edged panels.
- B. Contractor to provide replacement ceiling tile or panels in every type and color used on the project, at a rate of 1% of the installed area. Boxes are to be substantial, and in good condition. Boxes are to be marked with campus, building name and number, and where appropriate, room numbers. When delivered to the Owner, obtain a written receipt. Furnish a copy of the receipt at project closeout.

SECTION 09 60 00 FLOORING

09 65 00 RESILIENT FLOORING

- A. See information in SECTION 02 80 00 FACILITY REMEDIATION regarding removal of existing asbestos containing floor coverings.

- B. Rubber base: Use roll stock, 1/8" gauge, 4" height, with preformed exterior corners. The use of brown, brown-black, or black base is preferred; Johnsonite #63 Burnt Umber and #43 Brown are common. Do not use white or light beige base. Corners are to be installed with contact cement.
- C. Rubber Tile: Use 24" x 24" x 1/8" rubber tile meeting ASTM F1344.
- D. Vinyl composition tile: Use 12" x 12" x 1/8" minimum thickness, with marbleized through chip color.
- E. Sheet vinyl shall be either inlaid construction, or homogeneous construction, depending on the use of the space. Specify installation with heat welded seams where possible. Consult with the Project Manager before making the final product selection.
- F. Cleaning of resilient flooring is to be done by the Contractor immediately prior to occupancy of the area by the College. Sealing and waxing of new resilient flooring will be done by the College.
- G. Require the Contractor to provide repair and replacement floor tile, sheet vinyl, base, etc. in every color and pattern used on the project, at a rate of:
 - 1. Rubber Tile: 5% of the installed area.
 - 2. Vinyl composition tile: 1 carton per 2,000 square feet of installed area.
 - 3. Sheet vinyl: 2% of the installed area.
 - 4. Base: 2% of installed length, plus 2% of preformed corners.Boxes are to be substantial, and in good condition. Boxes are to be marked with campus, building name and number, and where appropriate, room number. When delivered to the District, obtain a written receipt. Furnish a copy of the receipt at project closeout.

09 66 00 TERRAZZO FLOORING

- A. Use of terrazzo floors is preferred in major corridors, where the project budget allows.
- B. Do not use terrazzo base due to the difficulties caused for future remodeling.
- C. Include cleaning and sealing of terrazzo with a penetrating sealer within the contract.

09 68 00 CARPETING

- A. The use of carpet squares in lieu of roll goods is preferred.
- B. Minimum carpet construction shall be Lee's Faculty IV, Innerface, or equivalent:
 - 1. Antron nylon with static control and stain/soiling resistance
 - 2. 20 oz face weight
 - 3. Unibond construction
 - 4. Minimum average tuft bind of 20 lbs when installed with direct glue methods
- C. Use of vinyl backed carpet is preferred at high traffic areas.
- D. Carpet is not to be used in rooms where food or beverages are expected. Provide a minimum of 3 ft. of resilient flooring between sinks and carpet.
- E. Use of carpet borders is strongly discouraged. They will be allowed only with the express approval of the Project Manager.
- F. Walkoff mats at vestibule entries: Lees Step Up DD769; or Coral Brush, manufactured by Bonar Floors; or approved equal.
- G. Require the Contractor to provide replacement carpet in every color and pattern used on the project. Provide at a rate of 5% of the installed area, with a minimum of 10' x 12'. Material is to be in full widths, and in one piece per color. Each piece is to be marked with the manufacturer's identification information, including pattern name and number, color name and number, registration number and dye lot number. Also mark each piece with campus, building name and number, and room number. When delivered to the District, obtain a written receipt. Furnish a copy of the receipt at project closeout.

SECTION 09 70 00 WALL FINISHES

09 72 00 WALL COVERINGS

- A. Use of a Class A fire rated rigid vinyl wainscot similar to Koroseal by Korogard is encouraged in corridors and other high abuse areas, where the project budget allows. Use at drinking fountains and public phones is of particular interest.

- B. Other vinyl wall covering is to be used only in areas approved by the Project Manager. Where used, vinyl wall covering shall be specified as “strippable”.
- C. New gypsum board surfaces are to be primed prior to installation of wall covering.
- D. Contractor to provide repair and replacement wall covering in every pattern and color used on the project. Provide at a rate of 1% of the installed area, with a minimum of one full roll required. Mark rolls with campus, building name and number. When delivered to the District, obtain a written receipt. Furnish a copy of the receipt at project closeout.

SECTION 09 80 00 ACOUSTIC TREATMENT

09 81 00 ACOUSTIC INSULATION

- A. Acoustical Insulation shall be provided at the following locations:
 - a. Classrooms
 - b. Offices
 - c. Conference/Seminar rooms

SECTION 09 90 00 PAINTING AND COATING

- A. The standard paint for interior walls and ceilings shall be a 100% acrylic latex eggshell enamel: SW 4W Pro Mar 200 OVOC Eggshell or Semi- Gloss (water born)
- B. The standard paint for interior hollow metal door frames is 100% acrylic latex eggshell enamel. SW 7020 Black Fox DTM Semi-Gloss (water born)
- C. Occasionally, SW 6258 Tricorn Black Pro Industrial is used to match existing metals.
- D. The District will consider non-standard colors for “public impact” spaces, e.g., lobbies, conference rooms, auditoriums, division offices, cashiering and registration. Consult with the Project Manager.
- E. Light poles at SCC are painted with a black color.
- F. The standard paint for exterior metal coatings:
 - 1. One coat industrial corrosion and rust inhibiting primer (Columbia 05-550)
 - 2. Two coats industrial silicone alkyd high gloss enamel (Columbia 07-588)
 - 3. Acceptable application methods - roll, brush, or spray.
 - a. Use appropriate protection of other finishes. Take care to direct overspray from other surfaces, building entrances, and pedestrian traffic ways.
- G. The standard application for all interior painting shall be 1 coat primer, 2 coats finish.
- H. The District does not want touch up paint provided for future use.
- I. Above ground gas piping from meters to the building and equipment shall be painted with system noted above for exterior metal coating. Colors shall match existing or blend with the building exterior color.
- J. Piping may be hot dipped galvanized with the exposed non-treated threaded joints painted with a galvanizing paint.
- K. Exterior handrails and guard rails may be powder coated in lieu of galvanizing or painting with coating system noted above.
- L. All surfaces to receive paint are to be primed. Product and application method shall be specified by the architect.

END OF DIVISION 09

DIVISION 10 - SPECIALTIES

(Revision Date: 3/11/16)

SECTION 10 10 00 INFORMATION SPECIALTIES

10 11 00 VISUAL DISPLAY SURFACES

- A. When used, chalkboards shall have 24 gauge steel faces with vitreous porcelain finish for smooth writing and clean erasing.
- B. Tack boards shall be vinyl covered ¼" thick cork, over ¼" hardboard.
- C. Marker boards (whiteboards) all have 24 gauge steel faces with white porcelain finish, suitable for use with dry markers and for projection. Due to rising concerns about indoor air quality, verify with the Design Committee Chair that marker boards are required.
- D. Provide extruded aluminum trim at all sides of all boards. Trim at top shall include map hook extrusion, with map hooks provided at a rate of one hook per 3' of length, and a minimum of 2 per board. Provide continuous extruded aluminum chalk trough at bottom edge of chalkboards and marker boards.
- E. All boards are to be installed to the wall using mechanical anchorage. Adhesive anchorage is prohibited.
- F. Consult with CCS project manager for specifications regarding smart boards,

10 14 00 ACRYLIC PANEL SIGNS AND FRAMES

GENERAL

QUALITY ASSURANCE

- A. Manufacturer Qualifications: Sign manufacturer shall not have less than ten (10) years experience in the manufacturing of architectural and Americans with Disabilities Act (ADA) signs of the type specified herein.
- B. Installer Qualifications: Performed by installers specialized and experienced in work similar to that required for this project.
- C. Single Source Responsibility: Manufactured signs shall be completed units including necessary mounting accessories, fittings and fasteners.
- D. Regulatory Requirements: Comply with the Americans with Disabilities Act (ADA) Guidelines and with code provisions as adopted by regulatory authorities having jurisdiction.

PRODUCTS

MANUFACTURERS

- A. Approved Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the work include the manufacturers specified:
 - 1. Sign Solutions
596 Ravenwood Dr.
Stevenville MT 59870
Gregg Wicker – 406-777-1004
 - 2. Correctional Industries
Kevin McMicheal – 306 725 9120
- B. Basis of Design Product: Innerface Architectural Signage.

ACRYLIC PANEL SIGNS

Exterior signage identifying buildings will be provided by the College.

Interior building signage is to match the District's in-house signage program. SEE APPENDIX AP-1 INCLUDED IN THESE CONSTRUCTION STANDARDS FOR SIGNAGE DETAILS TYPE A, B, C, D, & E. The signage schedule including all text is to be reviewed with the CCS Project Manager and/or CCS Project Coordinator for approval prior to placing the sign order.

- A. General: Provide panel signs fabricated from cast acrylic sheets for changeable message inserts and ADA compliance using the manufacturer's standards indicated for materials, thickness, colors, designs, shapes, sizes and details of construction.
1. Produce smooth, acrylic panel sign surfaces constructed to remain flat under installed conditions and within tolerance of plus or minus .015" when measured diagonally.
 2. All interior signs are to have ½" radius corners. Square corner edge may also be specified.
 3. Mount interior signs to walls with double-faced tape
 4. Mount Sign Types A and B 60" above finished floor to the baseline of the highest tactile character, 2" from the strike side of the door frame. Mount Sign Types C, D, & E at 60" above finished floor to the baseline of the highest tactile character on the upper sign. The lower sign is to be mounted directly below and in line with the upper sign.
 5. Signage to identify accessible parking stalls (i.e. "State Disabled Parking Permit Required" with the access graphic) is to be all weather, screen printed on .090" thickness mill finish aluminum, and provided by the Contractor
- B. Acrylic Panel Signs: Manufacturer's standard product and as follows:
- Standard faceplate panel material shall be constructed with a 0.062" thick, non-glare cast acrylic sheet and finished with a 0.25" subsurface opaque color outer border and a 0.125" subsurface opaque white inner border. Standard faceplate panel material shall be permanently bonded to a 0.125" thick, colored acrylic backer plate with 0.0625" black urethane foam tape that is flush on three (3) sides allowing for stock changeable message insert between the faceplate and the backer. Backer plates are to be color-matched, fabricated from 1/8" thick non-glare, clear acrylic, painted on the back surface. The color-matched back plates will ensure that the sign colors appear consistent even if the color inserts are removed.
1. Colors: Standard signage color to match Kroy K125 Arch Grey (AG) PMS Equivalent 426U; ADA signage shall match Kroy ADA Blue PMS Equivalent 654C.
 2. Standard frame profiles selected shall not exceed a 0.50" outside.
 3. ADA faceplate panel material shall be constructed with a 0.060" PETG acrylic photopolymer faceplate for interior sign applications with raised tactile graphics, text and copy as provided by architect. Pictogram and tactile lettering must comply with the most current ADA standards.
 4. Fabricated acrylic panel materials shall be precision laser cut and of consistent color with smooth edges finished and polished to conform to manufacturer's standard requirements.
 5. Changeable message inserts shall be selected from the manufacturer's full array of applicable materials and available (Lettered) or (Unlettered) for graphics, text and messages. Materials and colors required for changeable message inserts shall be selected by the architect from the manufacturer's full array.
 6. Changeable message inserts shall be precision die cut from integrally colored 0.020" thick polystyrene for surface applied vinyl graphics, text and copy.
 7. Changeable message inserts shall be laser and ink jet compatible, perforated paper stock for computer-generated graphics, text and copy.
- C. Sign Types:
1. Sign Type A: Room identification plaques shall be 8 ¾" x 8 ¾", based on Innerface Architectural Signage Plaque Module 6.0). This signage is to include tactile lettering and Grade II Braille. The lettering and Braille are to be chemically welded to the surface for vandal resistance. The room number is to include the building number followed by a hyphen and the three digit room number and any alpha character extension. Provide blank insert for color match with other signs.
 2. Sign Type B: Office room number and function plaques are to be 8 ¾" x 8 ¾", based on the Innerface Architectural Signage Plaque Module 6.1. This signage is considered permanent, and is to include tactile lettering and Braille. The lettering and Braille are to

be chemically welded to the surface for vandal resistance. The room number is to include the building number followed by a hyphen and the three digit room number and any alpha character extension. Provide both blank inserts, one header and one strip, for color match with other signs. A visible, subsurface border between the header and strip inserts shall be color matched to the inserts, backer plate, and outer border color. See Signage Type "B" on the details to these Standards.

3. Sign Types C, D, & E: Room function plaques for Toilet Rooms shall be two signs. The upper sign shall be 4 ½" x 8 ¾", based on Innerface Architectural Signage Plaque Module 5.5. The lower sign shall be 8 ¾" x 8 ¾", based on Innerface Architectural Signage Plaque Module 6.0. In addition to tactile characters the lower sign must also include pictograms for "Men", "Women", or "Restroom" (for unisex) along with the accessibility symbol. See Signage Types "C", "D", & "E" detail in these Standards. These signs shall be colored per IBC Section 1101.2.9 (in the State Amendments) which requires the International Symbol of Accessibility (the wheelchair guy) to be white on a blue background.
4. The Contractor shall furnish and install signs type A, B, C, D & E. SEE APPENDIX INCLUDED IN THESE CONSTRUCTION STANDARDS FOR SIGNAGE DETAILS TYPE "A", "B", "C", "D", & "E". The Contractor will submit manufacturers full color array to the Consultant. Final color selection and approval will be made by the CCS Project Manager and/or CCS Project Coordinator. The Contractor shall provide and install all color inserts for all sign types.

INSTALLATION

- A. General: Locate signs and accessories where indicated, using mounting methods of types described and in compliance with the manufacturer's written instructions.
 1. Install signs level, plumb, and at heights indicated with sign surfaces free from distortion and other defects in appearance. Follow all current ADA regulations.
 2. Interior Wall Signs: Install signs on walls adjacent to latch side of door where applicable. Where not indicated or possible, such as double doors, install signs on nearest adjacent walls. Locate to allow approach within 3 inches of sign without encountering protruding objects or standing within swing of the door.
- B. Wall Mounted Panel Signs: Attach panel signs to wall surfaces using the methods indicated below:
 1. Foam-Tape Mounting: Use double-sided foam tape to mount signs to smooth, non-porous surfaces.

SECTION 10 20 00 INTERIOR SPECIALTIES

10 21 13 TOILET COMPARTMENTS

- A. Toilet compartments shall be floor mounted. Panel material shall be high density polyethylene (HDPE), solid color, equivalent to Santana, EVCO Bradley Scranton, .
- B. Specify support framing in SECTION 05 50 00 METAL FABRICATIONS.
- C. Door latches shall have a lever or other shape which does not require tight grasping, pinching or twisting to operate. Doors shall also be capable of unlocking from the outside.
- D. Include an interior coat hook, often integrated into the door stop, as a requirement.
- E. Verify that toilet partition panels are properly supported and reinforced at ambulatory accessible toilet stalls and other locations where grab bars are supported by the panels.
- F. Where screens are provided at urinals, locate with a minimum spacing of 2'-6" o.c. Consider continuous corner brackets for support of non-floor mounter screens.

10 26 00 WALL AND DOOR PROTECTION

- A. Provide Stainless Steel corner guards at

10 28 00 TOILET, BATH, AND LAUNDRY SPECIALTIES

Consult with Project Manager for specific requirements for each building. Some equipment may be Owner provided Contractor installed. Take distances in to consideration when designing laundry areas, specifically for dryers. Do not use booster fans at dryer vents.

- A. Paper Towel Dispensers: Contractor provided, contractor installed. Von Drehle 8861-B Paper towel dispensers shall be provided in classrooms with sinks, breakrooms, and janitors closets. When a program requires a folded towel in lieu of our standard roll towel, the fold style shall be single fold and not C-fold or multi-fold.
- B. Soap Dispensers: Furnished and installed by Owner.
- C. Toilet Paper Dispensers: For SCC: Surface mounted Royce Rolls Ringer Model TP-3, available from Royce Rolls Ringer Company, Grand Rapids, Michigan, (800)-253-9638 toilet rooms expected to receive heavy usage, use of Model TP-4 may be advisable. Consult with the Project Manager. For SFCC: Bay West Silhouette #88700, smoke black.
- D. Waste Baskets: Provided by the Owner. NOTE: a 32 gallon size plastic garbage can will be used in public restrooms. Sufficient floor space must be provided for in the design.
- E. Sanitary Napkin/Tampon Dispensers: Single coin operated, set for \$.25. Provide in all public women's restrooms.
- F. Sanitary Napkin/Tampon Disposal: Surface mounted Bobrick B-270 or approved equal.
- G. Mop rack: 4 mop type. Provide in all Custodial Rooms, one at mop sinks for wet mops, and one for dry mops and brooms.
- H. Mirrors: Roll formed stainless steel frames with glass reflective surface. Mirror to have a 15 year guarantee against silver spoilage.
- I. Shelves: 8" deep stainless steel, separate from mirrors. Provide one 2' long shelf over each urinal. Provide one additional 3' long shelf for every four stalls, in all public toilet rooms to hold books.
- J. Mounting heights shall comply with Washington State Regulations for Barrier-Free Facilities. Mount mop racks at 72" above finish floor.
- K. Electric Hand Dryers: Dyson Airblade AB04. 110-120 V AC, single phase 60 Hz., or Mitsubishi Jet Towel Hand Dryer, JT-SB116EH-G-UL. Contractor shall provide and install where located on the drawings and/or equipment schedule. Use GFCI breakers with local keyed disconnects.
- L. ADA accessible stalls shall have handles on the outside and inside mounted at ADA guideline height.

SECTION 10 40 00 SAFETY SPECIALTIES**10 41 16 KNOX BOX**

- A. For new buildings, furnish and install Knox-Box, Model 3200, heavy duty, medium capacity, recessed with RMK, black tamper switch,. Color of box to be determined by AE. Contact the Fire Chief of the Fire District in which the project is located. The Fire Chief will furnish signed authorization forms for ordering the Knox-Box. Coordinate with mason for exact location. Coordinate with electrical for power and tamper switch wiring to fire alarm panel and security system.

10 44 13 FIRE EXTINGUISHER CABINETS

- A. Fire extinguisher cabinets shall be locked, either the break glass type with attached break glass hammer, or furnished with a proprietary brake-away mechanism. Cabinets shall be sized for minimum of 10 pound ABC dry chemical extinguisher.
- B. Locks for fire extinguisher cabinets shall be Series 3000 disc tumbler cam locks as manufactured by the Fort Lock Corporation of Elk Grove, Illinois, (708) 456-1100, and available from KDL Hardware Supply, 1621 Eighth Avenue, Seattle, Washington 98111, (800) 926-7716. Specific lock may be #C- 23058-LA-CA-2K BF 1816-9 or similar as required

by the cabinet. Lock & Supply, 4304 S. 131st St. Place, Seattle WA 98168 and Allied Safe & Lock in Spokane.

- C. Fire extinguisher cabinets are to be installed with the inside top of box at 5'-0" above finish floor.

Locks shall be keyed to a 54G200 key. Provide two keys for each lock. These locks are also available from American

10 44 16 FIRE EXTINGUISHERS

- A. Extinguishers shall have a red epoxy paint finish, shall be equipped with hose and horn, and are to be furnished and installed by the Contractor. 10 pound ABC dry chemical is the standard extinguisher.

END OF DIVISION 10

DIVISION 11 - EQUIPMENT

(Revision Date: 03/11/16)

SECTION 11 50 00 EDUCATIONAL AND SCIENTIFIC EQUIPMENT**11 52 00 AUDIO-VISUAL EQUIPMENT**

- A. Verify AV screen type, size, and locations on all projects with the Design Committee Chair. The following information is a guide only.
- B. AV screens shall have a high grain surface with black masking board on mildew and flame resistant seamless fiberglass fabric.
- C. Screens for classroom use shall be electrically operated, in a fully enclosed metal housing. Screens shall be 84" x 84". Mount with wall bracket that is long enough to allow the screen to clear the whiteboard tray, or wall mounted whiteboard lighting fixture, when the screen is down. Mount screens just below the finished ceiling when finished ceiling is 9'-6" or lower.
- D. Screens for large lecture rooms and auditoriums shall be sized based on ceiling height. Use of ceiling mounted, motor operated screens should be considered.
- E. Desired whiteboard projector system is the Smartboard SBD685ix Interactive Whiteboard System with Projector Model UX60.

END OF DIVISION 11

DIVISION 12 - FURNISHINGS

(Revision Date: 3/11/16)

SECTION 12 20 00 WINDOW FURNISHINGS

12 21 00 WINDOW TREATMENTS

Window Blinds:

- A. Provide horizontal mini-blinds at all exterior windows and at interior borrowed light windows at offices and at corridors.
- B. Use of vertical louver blinds should be avoided.
- C. Horizontal mini-blinds are to have nominal 1" slats with a baked enamel finish. Head rails are to be a minimum of 1" high x 1½" wide. Levelour brand.

SECTION 12 50 00 FURNITURE

- A. For Furniture requirements see AP-4 - CCS Furniture Standards: Standards for New Construction and STANDARDS).

END OF DIVISION 12

DIVISION 14 – CONVEYING EQUIPMENT

(Revision Date: 03/11/16)

SECTION 14 20 00 ELEVATORS

- A. An elevator is required in all new construction containing offices or teaching space above or below the main level.
- B. Verify the naming of floors or building levels with the Project Manager.
- C. Verify fire recall assignments with the Project Manager.
- D. Emergency communication devices within the elevator cab are the Campus Security Services phone number or monitoring service as designated by the Project to be programmed to call Manager. Consult with Project Manager for wording of programmed message.
- E. Require the Contractor to provide two sets of reset/bypass keys for each elevator.
- F. Include signage meeting ADA requirements (including tactile lettering and Braille) to direct building occupants to use stairs in the event of a fire.
- G. Either provide emergency power to the elevator, or include a battery powered elevator lowering option as part of the elevator package.
- H. Provide an elevator large enough to comply with ADA turning requirements.
- I. Provide the elevator software “key” as part of maintenance stock to facilitate operation by maintenance contractor.
- J. Approved Elevator Manufacturers for CCS supply and service:
 - 1. Otis Elevator Company
 - 2. Schindler Elevator Corporation
 - 3. Equal approved by A/E and Owner.
 - 4. ThyssenKrupp Elevators are NOT allowed.

END OF DIVISION 14

DIVISION 21 – FIRE SUPPRESSION

(Revision Date: 03/11/16)

SECTION 21 00 00 FIRE SUPPRESSION**GENERAL**

- A. Provide for fire protection of building and site per UFC, and NFPA requirements. Fire Sprinkler systems are encouraged. Coordinate with Project Manager during preliminary design.
- B. NOTE: Simplex Grinnell Products and service NOT allowed.

SECTION 21 10 00 WATER-BASED FIRE-SUPPRESSION SYSTEMS**21 11 00 FACILITY FIRE-SUPPRESSION WATER-SERVICE PIPING**

- A. Provide for fire hydrant protection of building and site. Hydrants shall be compliant with local fire department requirements.

21 12 00 FIRE-SUPPRESSION STANDPIPES

- A. Provide for wet and/or dry standpipe systems as required by Code.

21 13 00 FIRE-SUPPRESSION SPRINKLER SYSTEMS

- A. Provide for hydraulically calculated fire sprinkler systems. Coordinate locations of sprinkler heads and piping with structural, mechanical and electrical systems. Indicate if sprinkler heads are to be centered in ceiling tiles or lined up with specific items.

END OF DIVISION 21

DIVISION 22 - PLUMBING

(Revision Date: 03/11/16)

GENERAL

- A. Design criteria shall include a study indicating the construction cost on a life cycle cost analysis. Consult with Project Manager for appropriate level of analysis. Conservation of energy and efficiency of operation shall be considered.

DRAWINGS

- A. Drawings shall be clear and concise, and for clarity, plumbing plans shall be shown on separate sheets from heating and ventilating and/or air conditioning. Where heating and air conditioning are two separate systems and overlay each other, detail drawings at not less than 1/4" scale shall be drawn to show that sufficient space is available. Mechanical and electrical plans must be coordinated along with structural plans to make sure all work called for can be located in space allocated. All mechanical rooms shall be detailed at 1/4" scale. Indicate all necessary sections to show relative positions and clearances. Provide a valve schedule and drawing indicating location of all valves and shut offs. Post in Mechanical room.

CODES AND STANDARDS

- A. Plumbing work shall conform to the requirements of the latest edition of the Uniform Plumbing Code.
- B. Heating and cooling coils shall be A.R.I. rated and certified.
- C. All work shall comply with applicable local codes and ordinances.

APPROVAL OF MATERIALS AND EQUIPMENT

- A. All mechanical materials and equipment must be submitted by the contractor and approved by the design engineer before being released for shipment. One approved copy of submittal data shall be provided to the Project Manager. Coordinate with Division 1 requirements.

COMMISSIONING

- A. Coordinate requirements for Commissioning of building with the Project Manager.

MECHANICAL DEMOLITION AND RETROFIT

- A. Provide for demolition of existing systems being removed. Coordinate with Project Manager during design for salvage of existing equipment.
- B. For asbestos and lead paint removal, see SECTION 02 80 00 FACILITIES REMEDIATION.

FIRESTOPPING

- A. Provide for firestopping of penetrations through fire-rated wall and ceiling assemblies.

SECTION 22 00 00 PLUMBING**22 05 19 METERS, GAGES, AND REGULATORS**

- A. Provide pressure gauges of proper range at both sides of pumps and at both sides of pressure reducing valve stations.
- B. Provide thermometers of proper range at inlet and outlet of all heat generating equipment (boilers, chillers, domestic water heaters, etc). (and cooling)
- C. Provide for drain valves at low points of piping systems to allow for maintenance and repair of systems. Bleed valves at high points of piping and isolation valves at both sides of certain equipment.
- D. Provide Badger Meter, Model M120RTR, sized to water piping.
- E. Provide Elster American Meter, Model TRVP – Rotary gas meter CMTC with Remote Volume Pulsar, sized for gas system.
- F. Provide Fisher or Pietro Forientini gas regulators for PRV locations as required.
- G. Oversized vents for regulators if needed and individual regulators on boilers.

22 05 23 GENERAL-DUTY VALVES FOR PLUMBING PIPING

- A. Provide valves on systems to isolate each individual equipment or fixture and to shut off groups of equipment or fixtures for service and maintenance. Use appropriate valve type and style for system utilizing gate, ball, globe or butterfly valves, with ball or butterfly valves preferred. Valves shall be rated for intended use. (Gate valves shall be used only if ball or butterfly valves will not work with other options.)
 - 1. Ball Valves – provide ball valves with stainless steel ball; chromed balls are not acceptable unless used for gas and are UL842 rated.
 - a. Ball valves must contain an independent packing nut.
 - b. Acceptable manufacturers:
 - 1) Milwaukee
 - 2) Nebico
 - 3) Hammon
 - 4) CF Fluid Control
- B. Use check valves as required to prevent backflow through coils, pumps, etc.
- C. Provide backflow prevention (double check, reduced pressure, or atmospheric) to protect domestic water systems per APWA Cross Connection Control Manual.
 - 2. Acceptable manufacturers include:
 - a. Wilkins
 - b. Equal approved by A/E and Owner prior to bid.
 - c. Watts backflow preventers are not allowed.
 - d. Provide frost-free hose bib valve on the roof.
- D. Assure that valves are easily accessible for maintenance.
- E. Provide for tagging of valves as follows:
 - 1. Tag all shut-off and control valves except at terminal connections to equipment and fixtures. List each tagged valve by system and function in valve the schedule and Record Drawings.
 - 2. Provide valve schedule in the O&M manual.
 - 3. Valve tags shall be 1 1/4" diameter polished brass with stamp engraved piping system abbreviation in 1/4" high letters and sequenced valve numbers 1/2" high. Secure tags to valves with brass chain or S-hooks of proper size.

22 05 29 HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT

- A. Provide for proper support of piping and equipment.
- B. Cold piping shall have insulation with vapor barrier continuous through pipe hangers and supports. Avoid locating Equipment located above electrical, data or communication devices.

22 05 48 VIBRATION AND SEISMIC CONTROLS FOR PLUMBING PIPING AND EQUIPMENT

- A. Provide for sound and vibration control and seismic bracing as required for each portion of the project, per ASHRAE "Sound and Vibration Control," Chapter 43, 1995 HVAC Applications.
- B. Roof mounted equipment shall not transmit vibration or sound to occupied space.
- C. Floor mounted equipment per manufacture.
- D. No radiant heating manifolds above ceiling grids.

22 05 53 IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT

- A. Provide for identification of all mechanical equipment, valves, etc.
- B. Provide & install on ceiling grid, clear plastic labels with black lettering to identify piping & equipment above ceiling
- C. Coordinate identification nomenclature and equipment numbers with Project Manager and electrical consultant during design. Identification of equipment for energy management control system (EMCS) acronyms shall work with existing systems.
- D. Nameplates shall be fabricated from black acrylic plastic, with 1/4" or 3/8" engraved white letters.
- E. Provide new nameplates as required for existing equipment.
- F. If pipes, conduit, equipment, ducts, etc., are requested to be painted, the following COLOR CODE for pipe colors shall be used in unfinished rooms. All lines above furred ceiling grid

shall be color coded with colored tape, 1" wide, at not more than ten foot centers. Verify the requirements for each project with the Project Manager. Include flow direction arrows and Domestic Water, Hot and Cold supply and return labeling as well.

<u>Service</u>	<u>Color</u>
High pressure steam (over 25 lbs.)	Red orange
Low pressure steam	Yellow orange
Condensate return	Yellow
Cold water and flushometer	Light blue
Laboratory cold water	Light blue with yellow stripe at 10 feet
Laboratory hot water	Dark blue with yellow stripe at 10 feet
Domestic hot water	Dark blue
Domestic hot water, recirculated	Dark blue with "Recirculated" label
Air	Light gray
Fire lines	Vermilion
Waste and vent lines	Brown
Acid or chemical wastes	Red purple
Vacuum	Maroon
Electrical conduit (120/208V; 227/480V)	Vermilion with white stripe at 10 feet
Electrical conduit (4160V)	Vermilion with three white stripes at 10 feet
Equipment	Gray
Vent ducts	Gray
Fans	Gray
Exhaust steam	Silver
Gas pipes	Black
Soft water	Light blue with single white stripe at 10 feet
Demineralized water	Light blue with double white stripes at 10 feet
Hot water heat	Yellow and blue banding with flow arrows
Chilled water supply and return	Green with flow arrows
Scavenger system	Green with yellow banding at 10 foot centers and flow arrows

SECTION 22 10 00 PLUMBING PIPING AND PUMPS

22 11 00 FACILITY WATER DISTRIBUTION

- A. Normal tests shall be specified for all piping systems. All tests shall be witnessed by a representative of the College before any of the work is concealed. Provide test certificates signed indicating the test results for each system, with copies included in Operation and Maintenance Manuals.

22 11 13 FACILITY WATER DISTRIBUTION PIPING

- A. All domestic water lines shall be disinfected in conformance with the American Water Works Association Standard C601-68, D10Z-64, A100-66, (A1-10) or other standard acceptable to the Project Manager. All sterilization tests shall be made with a designated College representative present and approved by him/her. The water must be sampled and shown to be bacteriologically safe before use will be permitted. Provide signed certification that disinfection has been completed, with copies included in Operation and Maintenance Manuals. As well as required Certifications from local code official.

22 11 16 DOMESTIC WATER PIPING

- A. Provide for piping materials for all piping systems to be utilized in each specific project including, but not limited to:
1. Water service piping
 2. Domestic water piping (inside building)
 3. Domestic water piping (buried)
 4. Fire protection piping
 5. Building sewer piping

6. Waste and vent piping (inside building)
 7. Storm drain piping
 8. Rainwater leader piping (inside building)
 9. Acid resisting waste and vent piping
 10. Condensate drainage piping
 11. Natural gas piping
 12. Heating water piping
 13. Steam and condensate piping
 14. Chilled water piping
 15. Condenser water piping
 16. Refrigerant piping
 17. Building compressed air piping
 18. Oxygen piping
 19. Acetylene piping
 20. Medical gas piping
 21. Other special systems piping (as required)
- B. Where ABS or PVC waste and vent piping is utilized, care shall be taken with routing and insulation of piping to minimize noise transmitted to space from piping system, and with provisions for expansion of piping.
 - C. Piping serving rooftop equipment shall generally be run inside building and penetrate roof inside roof curb for curb mounted equipment, or adjacent to equipment for other equipment. Coordinate piping above roof with Project Manager during design. Piping installed exposed on roofs shall be supported by UV resistant, closed cell polyethylene foam pipe supports as manufactured by Pipe Pier (www.pipepier.com) or equal. PEX at cold or hard to reach areas is acceptable.
 - D. Water distribution piping (domestic, heating, cooling, etc.) shall not be routed buried below floor slab if possible to route above slab. Coordinate underground piping with Project Manager during design.
 - E. Chilled water or other buried piping outside the building shall be installed in pre-insulated piping systems where possible. Coordinate with Project Manager during design. Consider a three way valve so that the exterior loop can circulate independent.
 - F. Pipe joints shall be standard normally used for the specific pipe material and system involved.
 - G. All piping for freezable liquids located in exterior walls, ceilings, or floors shall be located at the room (warm) side of the building insulation, with the insulation continuing uninterrupted at the exterior of the piping.
 - H. Roof overflow scuppers and piping should be located away from windows, doors, or vehicular and pedestrian traffic ways. Avoid locating the outlets of these drainage systems into small or narrow landscaped areas adjacent to walkways that subject to freezing when water is allowed to drain across because the water cannot percolate into frozen soil
 - I. Water hammer arrestors should be located where they can be accessed for servicing or an access door of sufficient size shall be provided for servicing. Near as possible to the last fixture in a series.
 - J. The use of dissimilar piping is not acceptable.
 - K. Water piping shall be run in ceiling spaces where possible. Avoid buried water piping below floor slabs. Piping in walls shall be secured every 6 ft. vertically (cardinal direction and not diagonally) Avoid long branches off of pump recirculated lines for hot water.

SECTION 22 40 00 PLUMBING FIXTURES

- A. Water closets: Zurn 5615, 1.28 GPF elongated wall hung. American Standard and Kohler are acceptable brands as well. Fixture support carrier must be securely anchored to the floor utilizing 4 mounting bolts of not less than ½ inch in diameter. Bolt length to be determined by the consultant to suit field conditions. Water closet at ADA accessible stalls: Zurn 5640, 1.6 GPF elongated, floor mounted, rear discharge. Water closet automatic flush valves, hard wired, Zurn Model ZERS6000, 1.6 gpf, TPO, and P6000-HW6 (Hardwire converter); OR Sloan Model 110/111ES-S. To be mounted on wall.
- B. Urinals: Zurn wall hung, siphon jet. Flush valve Zurn Model ZEMS6003-WS1-OB-HW6; OR Sloan Model 186 ES-S. To be mounted on wall.

- C. Laboratory Faucet: Hard wired. American Standard or Sloan acceptable.
- D. Drinking fountains: Electric water cooler, dual level units, ADA approved.
- E. All wall hung fixtures shall utilize chair carriers, heavy-duty type, and shall be securely mounted to wall.
- F. Exterior wall hydrants shall be non-freeze style with integral backflow preventer and automatic drain.
- G. Hot water heaters shall be central gas fired where possible, electric where applicable. Hot water recirculation pumps shall be bronze fitted and sized for the specific installation with pipe erosion being considered. Water heaters shall be complete with potable water expansion tank. Where practical, install separate gas pressure regulator for domestic hot water heater. Vent gas at side walls if not visible as opposed to roof?
- H. Automatic flush valves and faucets shall be considered on toilets, urinals, and lavatories where budget allows. Coordinate with Project Manager during design.
- I. Provide for a Keyed interior hose bib with hose thread outlet under one lavatory, hot water only, in each restroom.
- J. No keyed valves under interior fixtures except at Restroom hose bib and exterior hose bib.
- K. Use ¼ turn keyless valves.
- L. Fixtures shall be ADA compliant as required.
- M. One custodial closet per floor should include a deep sink in addition to the floor mounted mop sink, assuming budget and space will allow. Provide a floor drain in each custodial closet.
- N. Use Rehau brand fittings on Propex tubing for radiant floors.
- O. Pan under glycol feeder sized to accommodate the entire contents of the feeder tank.
- P. Glycol shall be DOW-FROST HD only.

SECTION 22 60 00 GAS AND VACUUM SYSTEMS FOR LABORATORY AND HEALTHCARE FACILITIES

- A. Provide for special systems (gas, oxygen, acetylene, medical gasses, etc.) piping, outlets, system source, etc. as required.

END OF DIVISION 22

DIVISION 23 – HEATING, VENTILATING, AND AIR CONDITIONING

(Revision Date: 03/11/16)

General HVAC Comments:

Chiller:

1. Include heated evaporator, hail guards and Lon cards.
2. Include "Navigator" hand-held interface or equivalent for non-Carrier Equipment.

Fan Coils:

1. Use units with only one fan motor to reduce maintenance. If two motor units are required, monitor both fans through BMS and require back-draft dampers on each fan.
2. Fan Coils shall be equipped with ECM motors.

BMS Controls:

1. Provide links to sequence of operations, controls and mechanical drawings on each "page" of graphics. Also show on the Control Drawings the cable number identification from the Control Panel to each device. In the field the Cable number identification should match and be labeled at each termination.
2. All alarms once triggered need to be displayed at unit, building, and campus levels. Only critical Boiler and Chiller alarms need to be displayed until manually acknowledged and reset. Alarm time of occurrence must be included in trend capabilities.
3. Provide display of fire alarms in trending logs and occupancy status in graphics.
4. On Control Drawings show Circuit Breaker numbers and location of power supply for controllers.

Glycol feeders:

1. Provide "dual" unit for both heating and cooling loops complete with secondary drain pan and 6" sides. Brand to be from Flint Services.
2. Monitor system pressure with alarms.

Boilers:

1. Provide individual regulators for each boiler. Provide over-sized screens on intakes and exhaust to prevent hoar frost blockage.
2. Provide LON Communication Interface if budget allows and include CSD Compliance even if under 700,000 B.T.U.

SECTION 23 00 00 HEATING, VENTILATING, AND AIR CONDITIONING

GENERAL

- A. Design criteria shall include a study indicating the construction cost on a life cycle cost analysis. Consult with Project Manager for appropriate level of analysis. Conservation of energy and efficiency of operation shall be considered. HVAC equipment shall meet Washington State Energy Code.

DRAWINGS

- A. Drawings shall be clear and concise, and for clarity, plumbing plans shall be shown on separate sheets from heating and ventilating and/or air conditioning. Where heating and air conditioning are two separate systems and overlay each other, detail drawings at not less than 1/4" scale shall be drawn to show that sufficient space is available. Mechanical and electrical plans must be coordinated along with structural plans to make sure all work called for can be located in space allocated. All mechanical rooms shall be detailed at 1/4" scale. Indicate all necessary sections to show relative positions and clearances.

CODES AND STANDARDS

- A. Sheet metal work shall conform to the S.M.A.C.N.A. Standards.
- C. Heating and cooling coils shall be A.R.I. rated and certified.
- D. All fans shall have A.M.C.A. certified rating.

- E. Fire dampers shall bear U.L. label.
 - 1. Fire damper shall be equipped with Belimo Acuator; Honeywell damper actuators are not acceptable.
- F. Ventilation and indoor air quality shall conform to Washington State Ventilation and Indoor Air Quality Code and/or ASHRAE recommendations, and Current Energy code, whichever is most stringent.
- G. All work shall comply with applicable local codes and ordinances.

DESIGN CONDITIONS

- A. Design conditions shall be based on ASHRAE Handbook (latest edition), and Current Energy code.
- B. Office/classroom interior conditions:
 - 1. Verify set points with Project Manager.

APPROVAL OF MATERIALS AND EQUIPMENT

- A. All mechanical materials and equipment must be submitted by the Contractor and approved by the Design Engineer before being released for shipment. One approved copy of submittal data shall be provided to the Project Manager. Coordinate with Division 1 requirements.

COMMISSIONING

- A. Shall meet all WAC 51-11-1416 requirements.

MECHANICAL DEMOLITION AND RETROFIT

- A. Provide for demolition of existing systems being removed. Coordinate with Project Manager during design for salvage of existing equipment.
- B. For asbestos and lead paint removal, see SECTION 02 80 00 FACILITIES REMEDIATION.

23 05 53 IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

- A. Plastic Labels for equipment:
 - 1. Material and Thickness: Multilayer, multicolor, plastic labels for mechanical engraving, 1/8 inch thick, and having predrilled holes for attachment hardware.
 - 2. Letter Color: White.
 - 3. Background Color: Black.
 - 4. Maximum Temperature: Able to withstand temperatures up to 160 deg F.
 - 5. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.
 - 6. Minimum Letter Size: 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two thirds to three-fourths the size of principal lettering.
 - 7. Fasteners: Stainless-steel rivets or self-tapping screws.
 - 8. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.
- B. Label Content: Include equipment's Drawing designation or unique equipment number and room or area designation OR as specified by Owner.
 - 1. Similar to: Where equipment number is FC-2; room number is 124
 - a. Label = **FC-2-124**
- C. Equipment Label Schedule: For each item of equipment to be labeled, on 8-1/2-by-11-Inch bond paper. Tabulate equipment identification number and identify Drawing numbers where equipment is indicated (plans, details, and schedules), plus the Specification Section number and title where equipment is specified. Equipment schedule shall be included in operation and maintenance data.

23 09 00 INSTRUMENTATION AND CONTROL FOR HVAC

- A. Drawings and controls specifications shall contain a complete description of the required sequence of control for all systems and components including interlocks,

- occupied/standby/unoccupied time scheduling (specific times to be coordinated with Project Manager).
- B. Separate adjustable set points for heating and cooling shall be provided for Occupied, Standby and Unoccupied.
 - C. Controls System shall allow programming to be installed at hardware as close as possible to controlled environment and remotely from the control system server. All individual controller programs will be accessible and editable through the system server. Any software needed to access and edit controller shall be provided. Training as needed shall also be provided.
 - D. Control sequences shall be available for College review at the 65% design stage.
 - E. Include in Contract Documents:
 - 1. Control sequence ladder diagrams
 - 2. Schematic controls diagram
 - 3. Matrix of control
 - 4. Legend for controls diagrams.
 - F. Controls point and equipment acronyms shall work with existing District systems.
 - G. The naming of points in the energy management control system (EMCS) and must be reviewed and approved by the Project Manager.
 - H. Depending upon the size and complexity of the system controlled by the EMCS, software training may be required. Verify training requirements with the Project Manager.
 - I. Use T.A.C. Duradrive or Belimo valves and actuators only. Submit to CCS project manager for approval. No substitutes.
 - J. Metering of Electrical, Water, and Gas usage as well as deduct metering for irrigation shall be included. System shall generate monthly reports in provided format.

23 09 13 INSTRUMENTATION AND CONTROL DEVICES FOR HVAC

- A. Systems shall be fully compatible with existing central direct digital EMCS 100% Lon Certified controls systems, existing Universal Network control and Enterprise control systems.
 - 1. Shall be 100% Echelon, Niagara certified.
- B. Smaller remodel and addition projects may be bid requiring an extension of the existing controls system. Connection to our IA System and any LON controllers reutilized shall have Niagara Wizards for our current server system. Larger projects will require competitive bidding between the approved EMCS contractors. Verify requirements with the Project Manager.
- C. TCP/IP TAC IA series compatible Universal Network controller required. To include full integration into Enterprise server with equipment and building graphics.
- D. Room Sensors, Electronic (EMCS) Control:
 - 1. Include override switch/button for occupant activation of preprogrammed period for return to occupied cycle from unoccupied.
 - 2. Include set-point adjustment capability for occupant adjustment of set-point within plus/minus two degrees of programmed set-point in office areas and fixed point in common areas.
 - 3. Occupancy and Carbon Dioxide sensors and demand ventilation programming shall be provided for all classrooms and conference room areas.
- E. Local Thermostats: Are not allowed. EMCS integration is required.
- F. Air Stream Sensors:
 - 1. Discharge air sensors may be probe type if air stream is not stratified.
 - 2. Averaging type sensors should always be used for mixed air stream.
 - 3. Freeze stats should be manual reset bulb type that has one foot of length per every two or three square feet of duct area.
- G. Control Points – the following control points shall be included as a minimum:
 - 1. Exhaust systems: Enable/disable local control for special exhaust systems such as welding exhaust. Air flow in CFM.
 - 2. Building Static Pressure: Occupied Schedule. (Not needed delete #2)
 - 3. Individual Terminal Boxes: Occupied Schedule; Set-point; Discharge Temperature; Valve Positions; Damper positions. Air flow in CFM.

4. Air Handlers: Occupied Schedule; Return Temp; Valve Positions; Supply Pressure; Supply Temp; Damper Positions; Outside Temp; Mixed Air Temp; Filter status. Set-points; VFD status and set-points.
5. Pumps: Start-Stop; Occupied Schedule; Differential Pressure Switch Status; Pressure Control, if applicable; VFD status and set-points.
6. Boilers: Start-Stop; Occupied Schedule; Return Water Temp; Supply Water Temp; Boiler Status; Boiler Alarms.
7. Chillers: Start-Stop; Occupied Schedule; Return Water Temp; Supply Water Temp; Chiller Status; Chiller Alarms. Load, power consumption, and refrigerant pressure if supplied by Chiller Controls.
8. Heat Exchangers: Inlet Water Temperatures; Outlet Water Temperatures.
9. Controls Air Compressor: Low Pressure Alarm; Current pressure. (delete #9)
10. Include low-glycol level alarm on all glycol feeders.
11. Fire Alarm: Provide alarm status to our AI System and trend any activity.
12. All control points will be integrated into the Enterprise server with graphics.

23 09 23 DIRECT-DIGITAL CONTROL SYSTEM FOR HVAC

- A. It is the intent of the Owner to have a state of the art direct digital Energy Management and Control System (EMCS) controlling all facilities in the District. This system shall be designed for heating and cooling control, peak load demand limiting start/stop time optimization utilizing the current Enterprise central system along with stand-alone remote field panels and controllers.
- B. Below is a list of base requirements for the graphical interface and control system:
 1. Add quick view screens for all fan coils and similar sub-units to show the current status of each unit. Include a listing for each unit with variable airflow the design minimum and maximum airflow settings and the actual. Provide the room number of the area served in the listing.
 2. Add links to the detail screens of the sub-systems to the appropriate sequence of operations for that system.
 3. Add a link from the buildings home screen to the TAB report, Commissioning Report, and the Systems Concept and Operating Manual. Make this information adjustable so that settings and function descriptions may be edited.
 4. Display all critical alarms such as chiller, boiler, AHU, RTU, and pump alarms to the appropriate building on the campus view screen. Maintain **any** alarm as an active alarm until acknowledged.
 5. Display all alarms on the building home and floor plans and add a page to display and list the last 20 alarms: the unit, the exact alarm, the current status, when they occurred, when they were acknowledged, and when cleared.
 6. Display all over-rides on the building floor plans to show any unit or device in an over-ridden condition.
 7. Display on the building floor plan the location and current value of the AHU and building flow and static pressure sensors and the hydronic system flow and pressure sensors.
 8. Highlight on the building floor plan all areas and systems with an abnormal condition.
 9. Add additional information to all VFD regulated systems to show the maximum design volume of the device and a detailed description to correspond to the unit labels.
 10. Add winter modes to all pumps subject to freezing conditions so as to activate at an adjustable OSA setting and to operate at an adjustable speed.

SECTION 23 20 00 HVAC PIPING AND PUMPS

- A. Hot and chilled water heating systems shall have reverse return piping layout where economically feasible.
- B. Flow control devices shall be utilized at all coils and heating or cooling equipment and as required for balancing of systems.
- C. Coordinate heating and cooling systems with Project Manager during design.

- D. Provide service blow-out air connections on all condensate drains. Where (2) or more units share a common condensate line, provide ball valve to close off back air into condensing unit catch tray.

23 21 00 HYDRONIC PIPING AND PUMPS

- A. Heating and cooling pumps shall be single stage end suction, double suction, or inline type.
- B. Variable capacity pump systems shall have multiple pump systems or variable frequency drive speed control of pumps. *TACO, Inc.* brand pumps are not allowed.
- C. Back-up pumping systems shall be provided for both heating and cooling.
- D. Pumps shall be floor mounted wherever possible. Where floor mounting is not appropriate, mounting shall be below the low water cut off and not higher than 4 feet from the floor for service access. A minimum of 30" of unobstructed access from at least one side shall be maintained.
- E. Vertical pumps are preferred.
- F. Variable speed pumps shall utilize variable frequency drives with recommended rated motors or manufacturers integrated controllers.

SECTION 23 30 00 HVAC AIR DISTRIBUTION

23 31 00 HVAC DUCTS AND CASINGS

- A. Ductwork shall be designed in accordance with the ASHRAE Guide and Data Book, latest edition. Duct Board shall not be used.
- B. All Take-Off's from main duct line shall be at 45 degrees.
- C. All main trunks will connect to air handlers with an opening at least 35 percent larger than the main trunk. When more than one, connections shall be sized proportionally to the required air flow.
- D. Provide for manual balancing dampers at all branch ducts to outlets, located as close to take-off and as far from outlet as practical.
- E. Provide for manual opposed blade dampers at major branch ducts as required for system balance.
- F. Provide for manual opposed blade volume dampers on each zone duct from multi-zone units downstream from hot and cold zone dampers at unit.
- G. Provide for noise and sound control in duct system. Evaluate use of acoustical lining against possible problems with fiber erosion of lining and/or the build-up of germs or allergens.
- H. Reuse of existing ductwork needs to be fully assessed during design. The two major issues to be considered are the condition and the cleanliness of existing ducts.

23 33 00 AIR DUCT ACCESSORIES

- A. "Sound and Vibration Control", Chapter 43, 1995 HVAC Applications. Perform sound analysis on fans and equipment where sound might be generated.

23 34 00 HVAC FANS

- A. Exhaust fans shall be selected for quiet operation. Type and configuration shall be coordinated with building use and construction.
- B. Provide time delay on shutdown of restroom exhaust fans controlled by room light switch and energy management system.
- C. High efficiency motor and VFD on all fans greater than 3HP; include VFD communication and integration into EMCS system; heat recovery systems will be utilized when applicable.

23 37 00 AIR OUTLETS AND INLETS

- A. Outside air intakes shall be located above grade level and shall be coordinated with building systems and adjacent building systems so exhaust fumes and/or heat will not be pulled into ventilation systems. Avoid prevailing winds and also low pressure side of building opposite prevailing winds.

- B. Outside air intakes shall be sized and protected so that rain and snow will not be pulled into the building or equipment through intakes.
- C. Intakes shall be sized so they do not generate or radiate noise either to or from the building.
- D. Each outside air intake shall have a pre-filter located within 10 feet of it.
- E. Provide for exhaust of all toilet rooms, custodial closets and mechanical rooms.
- F. Provide make-up air to all spaces being exhausted.
- G. Consider heat reclaim on all exhaust air systems in accordance with ASRE energy standards or higher.
- H. Building air outlets shall be selected for quiet operation. Outlets shall be compatible with surface they are installed in.
- I. Supply air outlets shall allow for air pattern adjustment.
- J. Return and exhaust air outlets shall be fixed blade type.
- K. Outlets shall be selected to maintain a minimum Air Diffusion Performance Index (ADPI) of 80%. Coordinate air outlet types with Project Manager during design.
- L. Outside through the wall inlet and outlet grilles shall be equipped with screens to not allow birds or leaves to enter.

23 38 00 Ventilation Hoods

- A. Provide for separate exhaust systems for kitchen hoods and dishwashers.
- B. Provide for separate exhaust systems for fume hoods and special laboratory hoods. Refer to District's "Fume Hood System Standards and Selection Criteria" available from the Project Manager.
- C. Provide for separate exhaust systems for shop hoods, sawdust collection systems, carbon monoxide fumes, paint spray areas, etc.
- D. Exhaust systems for fumes, etc. shall be discharged above roof and into airstream and shall be located so exhaust fumes will not be pulled into outside air intakes of this or adjacent building systems.
- E. Provide u-tube manometer with visual display on exhaust pipe from hood so that the equipment user can tell if hood is operating correctly.
- F. Radon mitigation piping system shall be installed under floor with vertical riser to roof for possible future installation of fan if required.
- G. Coordinate special exhausts, hoods, controls, etc., with the Project Manager during design.

SECTION 23 40 00 HVAC AIR CLEANING DEVICES

- A. Provide for filters in all HVAC systems. Coordinate filter efficiencies and sizes with Project Manager during design. Filters shall be sized for off-the-shelf procurement with pleated media in 2" thickness x 20" x 20" or 20" x 25" is preferred.
- B. If permanent HVAC System is used by the contractor for temporary heat during construction, filters must be installed. Provide new filters prior to project acceptance by Owner.
- C. If it becomes absolutely necessary to operate any air handler equipment during the construction process, and upon prior approval of the Project Manager, return and supply filters must be checked and changed frequently by the contractor prior to conveyance to owner.
- D. Any and all construction dust/debris/particulates will be cleaned from all equipment and surfaces prior to acceptance by owner.

SECTION 23 50 00 CENTRAL HEATING EQUIPMENT

23 52 00 HEATING BOILERS

- A. Boilers shall be gas fired type with life expectancy of boiler compatible with life expectancy of building. High efficiency 90+ equipment with a life expectancy of building should be established at 50 years. Maintenance shall be considered.

SECTION 23 60 00 CENTRAL COOLING EQUIPMENT

- A. Provide for a cooling system for building per life cycle cost analysis.
- B. Cooling shall be coordinated with heating and ventilation systems.
- C. Cooling system shall utilize direct expansion cooling, chilled water cooling or evaporative cooling (direct or indirect type). Chilled water systems preferred. Provide capacity control for DX systems to include hot gas bypass and multiple stage unloading as applicable.
- D. Systems and equipment shall be of high quality construction, having an estimated service life expectancy of at least 20 years, based on ASHRAE 1995 Applications Handbook, Chapter 33, Owning - Operating Costs.
- E. Packaged rooftop units shall be avoided, if possible.
- F. 16 SEER or above.

23 64 00 PACKAGED WATER CHILLERS

- A. Chillers shall be packaged air cooled type, reciprocating with air cooled condenser, or screw type with air cooled condenser. Water cooled chillers with cooling towers are discouraged.
- B. Air cooled chillers and condensers shall be located to minimize vibration and noise transmission to buildings.
- C. Cooling towers, if used, shall be located to minimize possibility of vapor contact with humans.
- D. Screw chillers require special attention to noise attenuation.

SECTION 23 70 00 CENTRAL HVAC EQUIPMENT

- A. All air type systems shall have 100% OSA capability with demand ventilation and air economizer control cycle.
- B. In the interest of conserving energy, HVAC systems shall be triple deck multi-zone, dual duct, four pipe fan coil, variable volume fan systems. Any system that subcools and reheats should be avoided.
- C. Life Cycle Cost Analysis shall be done on three (3) significantly different systems. Coordinate with Project Manager to determine which systems should be studied.
- D. Auxiliary perimeter heat should be considered for exterior perimeter areas of building.
- E. Heat recovery shall be considered for exhaust systems and used on all systems using large amounts of outside air.
- F. Outside ventilation air shall be provided during occupied periods in compliance with Washington State Ventilation and Indoor Air Quality Code and/or ASHRAE Energy, Indoor air quality and demand ventilation recommendations, whichever is the most stringent.
- G. Separate HVAC systems shall be provided for auditoriums, theaters, etc. to allow for odd hour occupancy without energizing entire building systems, and must utilize demand ventilation and occupancy control.
- H. All VAV boxes, fan-coil units, mixing boxes, fans, etc. located above ceilings shall be identified with a labels attached to the ceiling grid of lay-in ceilings, or to the access panel at gypsum board ceilings. Labels shall be clear plastic with black lettering, providing the unit name and number as identified on the Record Drawings. The design team as well as the installing contractors need to take special care in the locating of above ceiling equipment so that access to the equipment is maintained without obstructions.
- I. Each room should have its own temperature control, except specific instances such as several adjacent offices with identical orientations and occupancies.
- J. Size and configure mixed air sections of air handlers to avoid stratification and resulting freeze-stat problems. Insure mixed air section is not pressurized above atmosphere by return fan on systems so equipped.
- K. VAV/FC boxes on offices shall be limited to no less than one per 3 offices or no more than 400 square feet.
- L. Air Handler Access Doors shall include Interlocked electrical safety devices on latches.

23 74 00 PACKAGED OUTDOOR HVAC EQUIPMENT

- A. Provide for heat recovery and tempered air make-up air systems for all exhaust systems. Make-up air can be from building systems for smaller exhaust systems. For larger exhaust systems, dedicated make-up air systems, possibly gas fired with evaporative cooling, shall be considered.

- B. Coordinate with the Project Manager during design.

END OF DIVISION 23

DIVISION 26 – ELECTRICAL

(Revision Date: 10/28/15)

NOTE: Reference DIVISION 33 for CCS Standards regarding manholes, transformer vaults, and underground duct banks.

SECTION 26 00 00 ELECTRICAL**GENERAL**

- A. The electrical design shall be cost effective, energy efficient, and shall utilize current technology. The Consultant is to work with the Avista Corp., or other local utilities, to incorporate energy saving designs into the building.
- B. Unless otherwise noted, electrical material & installation must meet or exceed NEC Standards and Washington State Electrical Code (RCW 19.28 Electricians and Electrical Installations).
- C. If the project includes remodeling, the Contractor shall be required to remove all fixtures, switches, receptacles, conduit, wiring and miscellaneous equipment not being reused. This shall include items not in use at the start of the Contract. Abandoned circuits shall have their wire pulled back to the panel of origin. Abandoned circuits from previous projects encountered in the construction area are also to have their wire pulled back to the panel of origin.
- D. Existing items being reused as part of a remodel project shall be completely cleaned, renovated, tested and adjusted by the Contractor.
- E. During remodel projects, remaining circuits interrupted by construction shall be extended as needed to keep the integrity of the circuits intact. These extensions shall be concealed wherever possible.
- F. Unless otherwise instructed by the Project Manager, the College maintains the first rights to all electrical equipment and materials removed during demolition or remodeling projects. See SECTION 02 42 91 REMOVAL AND SALVAGE OF CONSTRUCTION MATERIALS.
- G. All non-incandescent light fixtures to be removed during demolition shall be “de-lamped” prior to disposal. Lamps to be placed intact in cardboard containers to be furnished by Owner. Deliver full cardboard containers to Owner designated area on SCC or SFCC campus.
- H. Light Fixture ballasts determined to be PCB containing shall be removed from fixtures and delivered to Owner designated containment vessel on either SCC or SFCC campus.
- I. Particular attention must be paid to the location of junction boxes to insure they will always be in plain view and readily accessible when within an arm’s length of any obstructions above a ceiling.
- J. All junction boxes and conduits must be securely anchored to the structure or framing components. Mechanical fasteners should be utilized over tied wire for anchoring.
- K. Remove all existing unused wiring.

26 05 13 MEDIUM-VOLTAGE CABLES

- A. All wiring shall be copper, rated at 600 volts unless otherwise approved by the Project Manager.
- B. Wire sizes #12 AWG and #10 AWG shall be solid type THHN/THWN. Wire size #8 AWG and larger shall be stranded type THHN/THWN or size #4 AWG and larger may be type XHHW. Minimum wire size shall be #12 AWG, unless noted otherwise. Exceptions:
 - 1. See SECTION 27 05 28 COMMUNICATIONS CIRCUITS.
 - 2. See SECTION 27 05 28 CABLE TRANSMISSION AND RECEPTION EQUIPMENT.
 - 3. Use stranded wire for motor connections from J-box to motor.
- C. Wire nut connectors shall include full metal cap, Scotch-Lok brand or equal approved by the Project Manager. Wire nut connectors are not to be installed using power tools.

- D. Stranded cables shall be connected to lugs using mechanical connectors. Plastic caps, as recommended by the connector manufacturer, are to be used over the mechanical connector, and wrapped with electrical tape.
- E. All conduit fittings shall have insulated bushings in place before pulling wires.
- F. Where the distance from the over current device to the first outlet exceeds 100', the minimum wire size shall be #10 AWG. In all cases, voltage drop must not be greater than 3%.
- G. All receptacle circuits associated with computer outlets shall have separate neutrals. No shared neutrals will be allowed.
- H. Provide separate equipment ground conductor full length of all raceways, including low-voltage.
- I. For paralleled conductors, lengths of the conductors shall be identical and one conductor for each phase and neutral shall be run in each conduit.
- J. Branch circuit current carrying conductors shall be color coded: 120 / 208V: black, red and blue, 277 / 480V: brown, orange and yellow.
- K. Wires shall be pulled in such a manner as to avoid kinking or abrasion to the insulation. Use only approved lubricants that do not deteriorate conductors or insulation. Oil or grease shall not be used to lubricate wires.

26 05 26 GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

- A. All grounding conductors shall be copper.
- B. Install ground rod at each manhole, hand hole, transformer, and sectionalizing cubicle and make connection to all exposed metal parts.
- C. Provide a continuous grounding conductor (#2/0 AWG, 600V, with THW insulation) throughout all underground duct banks. Connect grounding conductor to each ground rod, including existing.
- D. All products to be UL listed as suitable for the purposed specified and indicated.
- E. Provide separate grounding conductor full length of all raceways.
- F. References:
 - 1. NETA ATS – Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems (International Electrical Testing Association).
 - 2. NFPA 70 – National Electrical Code
 - 3. RCW 19.28
- G. Performance Requirements:
 - 1. Grounding System Resistance: 10 ohms
- H. Products:
 - 1. Rod Electrodes:
 - a. Manufacturers: Thompson Lightning Protection, Inc. Model #TL5810, or equal
 - b. Material: Copper-clad steel
 - c. Diameter: 5/8 inch
 - d. Length: 8 feet long for pad-mount transformers and light poles, 10 feet long for all else unless otherwise indicated
 - 2. Ground Plates:
 - a. Manufacturers: Thompson Lightning Protection, Inc. Model #233MM, or equal.
 - b. Obtain acceptance from the Engineer before substituting ground plates in lieu of ground rods.
 - c. Material: 20 gauge copper
 - d. Size: 24 inches square
 - 3. Mechanical Connectors:
 - a. Materials: Fasteners, splices and connectors shall be specifically selected for the materials to be joined.
 - b. Manufacturers:
 - 1) Cable Connectors: Thompson Lightning Protection, Inc. Model #423, or equal.
 - 2) Pipe Clamp Connectors: Thompson Lightning Protection, Inc. Models #803, #804, and #805, or equal.

- 3) Rebar Clamps: Thompson Lightning Protection, Inc. Models #493, #802, and #803, or equal.
 - 4) Bonding Plates: Thompson Lightning Protection, Inc. Model #639, or equal.
 - 5) Grounding Rod Clamps: Thompson Lightning Protection, Inc. Model #693, or equal.
4. Exothermic Connections:
 - a. Exothermic fusion welds shall be provided for all underground connections. Exothermic fusion shall be avoided elsewhere, except where specifically accepted by the Engineer.
 5. Wire:
 - a. Material: Stranded copper.
 - b. System grounding electrode conductors and bonding conductors shall be stranded single conductors, with 600 volt insulation, sized to meet NFPA 70 requirements, as manufactured by General Cable, Rome, Southwire or Triangle.
 - c. Bonding conductors, except rebar bonding conductors at ground terminals, shall be cabled assemblies of 14 strands of 17 AWG copper wire assembled in a braided smooth twist resulting in ¼ inch diameter cable of 28,500 circular mil cross-sections with a net weight of 92 pounds per 1000 linear feet.
- I. Execution:
 1. Examination:
 - a. Verify that final backfill and compaction has been completed before driving rod electrodes.
 2. General:
 - a. Grounding conductors shall be copper in all cases - no exceptions.
 - b. Ground all interior metallic plumbing lines to the premises grounding electrode system in accordance with local codes. Maintain continuity of the ground across isolating (dielectric) fittings in the following manner:
 - 1) Provide a brass, saddle type, two (2) bolt grounding clamp on the pipe on each side of the isolating fitting.
 - 2) Provide a green insulated #6 AWG TW solid copper conductor connecting the two (2) grounding clamps together.
 - c. Exothermic fusion welds shall not be used.
 - d. Grounding connections shall be irreversible crimp type connections. Utilize Burndy Hyground system or approved equal.
 - 1) Connectors shall have identification marking indicating conductor ranges and the appropriate die.
 - 2) Embossed, factory stamped die numbers shall appear on connector.
 - 3) All connections shall be made with tools and equipment approved for the intended use and as recommended by the manufacturer.
 3. Ufer Ground:
 - a. Ufer Ground. Provide continuous #4 bare copper conductor mechanically attached to concrete encased footing reinforcing steel, minimum 20 feet on center, and bonded to the main electrical grounding bus bar. Size grounding electrode conductor as indicated.
 4. Service Grounding:
 - a. Utility transformer grounding shall be accomplished by installation of a #4/0 bare copper grounding grid as follows:
 - 1) Drive one (1) 5/8 inch x 8 foot copper-clad steel ground rod such that when the installation is complete this ground rod extends 3 inches above the vault floor under the high voltage compartment.
 - 2) Drive one (1) 5/8 inch x 8 foot copper-clad steel ground rod similar to the above except under the low voltage compartment.
 - 3) Drive one (1) 5/8 inch copper clad steel ground rod at each of the four corners of the transformer pad, 6 inches outside the concrete pad edge to a depth such that the top of each ground rod is approximately 6 inches below finished grade.

- 4) Provide a #4/0 bare, stranded copper conductor connecting the corner ground rods together in a girdle of rectangular pattern, approximately 6 inches outside the concrete pad edge. Provide another #4/0 bare stranded ground conductor connecting this girdle to the ground rods under the high and low voltage terminating compartments of the transformer. Connect the conductors to the ground rods at the elevation between natural earth and gravel sub-base.
 - 5) Maximum ground resistance of 10 ohms shall be provided by supplementing the grounding methods specified herein as required. Ground resistance shall be measured in normally dry conditions at least forty-eight (48) hours after rainfall.
5. Ground the neutral of the secondary electrical system at the service equipment. A grounding electrode system shall be formed by bonding to metallic water lines and foundation reinforcing bars. In addition, the metal frame of the building, where applicable, shall be bonded to the grounding electrode system. Grounding connections made to the water systems shall be coordinated with the Mechanical Contractor and bonding jumpers shall be installed wherever deemed necessary.
 6. Where the metallic water lines or the foundation reinforcing bars are not suitable for use as grounding electrodes as controlled by local requirements, provide multiple copper-clad ground rods. A minimum of four (4) ground rods shall be provided and shall be connected in a loop in such instances. Do not abandon the ground connection to the cold water system even if it is not to be used as the primary grounding electrode.
 7. Provide multiple grounding electrodes as required to achieve an overall resistance of not over 10 ohms for the premises grounding electrode.
 8. The secondary electrical system ground shall consist of copper grounding electrode conductors, sized per the drawings and installed in a PVC conduit which shall be routed to the system grounding electrodes in the most direct manner. Connect the conduit and the conductor to the grounding electrode with malleable iron conduit hub and a two-bolt ground clamp approved for the purpose.
- J. Distribution Grounding:
1. Provide grounding electrodes and grounding electrode conductors for separately-derived electrical systems, including dry-type transformers. Ground the neutral of each separately derived electrical system. Bond the grounding electrodes for each separately-derived system to the premises grounding electrode system.
 2. Use the green insulated equipment grounding conductor of code size installed in the conduit system for equipment and enclosure bonding. If conduits require an increase in size to accommodate this conductor, the entire run shall likewise be increased in size.
 3. Where a conduit enters the enclosure of a switchboard, motor control center or transformer from below, provide an insulated-throat grounding bushing on the conduit and a bonding jumper connecting it to the ground bus and metal frame of the equipment.
 4. Where a conduit enters a painted sheet metal enclosure, the paint shall be cleaned from the area around the locknut to allow metal-to-metal contact or a grounding locknut shall be used.
 5. Provide a redundant equipment grounding conductor together with each feeder run in addition to the conduit system grounding path.
 6. Provide a redundant equipment grounding conductor, in addition to the conduit system ground path and in addition to the phase and neutral conductors shown on the plans, in each branch circuit conduit which supplies receptacles, lights or fixed electrical equipment. An additional isolated ground conductor shall be provided where so indicated on the drawings.
 7. Provide a copper, equipment grounding terminal bar in all panelboards, new or existing, where equipment grounding conductors terminate, bonded to a grounding bushing on the conduit feeding the panelboard.
 8. Provide separate grounding conductors at motor connections, transformer connections, and where flexible or non-metallic conduit is used.
 9. Connect the ground terminal on each receptacle to the metallic raceway system with a bonding jumper, except in the case of surge-suppression or isolated-ground type

receptacles. The ground terminal of surge-suppression or isolated-ground type receptacles shall be connected to an insulated, equipment grounding conductor run with the branch circuit conductors, but isolated from the conduit system except at the panelboard, where it shall be connected to the panelboard ground bus. Maintain continuity of the ground to every outlet in the system.

10. Metal frames in rooms likely to accumulate water on the floor shall be bonded to the electrical system ground with a green insulated #10 AWG (minimum) grounding conductor, routed in conduit and bonded to the conduit at each end.
- K. Special Requirements for Communications Systems:
1. The AC power circuit to the central equipment for each communications system shall be run in steel conduit and shall include a No.10 AWG insulated copper ground conductor which shall run, to the ground bus in the panelboard that serves the communications system. This ground conductor shall serve as the communications system ground.
 2. Conduits for communications cable shall be steel conduit which shall maintain electrical continuity throughout the conduit run. Conduits shall be grounded to the power system ground and shall be provided with insulated bushings at the entry to the central equipment cabinet to maintain the integrity of the communications system ground.
 3. Grounding of all audio equipment shall be made at a single point in the central equipment cabinet.
 4. Grounding of shields for shielded cables shall occur only at the central equipment inputs or outputs of power amplifier. Non-grounded ends shall be terminated with wedge-on collars. Care shall be taken to preserve continuity of shields at all connection points.
- L. Documentation:
1. After installation and prior to covering connections, photograph close-up each ground terminal and the associated connections to structural steel and reinforcing bar. Each bonding connection between the anchor bolts for the structural steel columns and the reinforcing bar in the foundation or footing shall also be photographed.
 2. Photographs shall be numbered and neatly assembled in a PDF or similar document having not more than (2) photographs per page. Each page shall be printed in color and included in the Operation and Maintenance Manuals. The location of each photograph shall be clearly identified on plan view drawings included in the Manuals. A CD or DVD containing digital copies of all ground installation photos shall be clearly labeled and included with the Operation and Maintenance Manuals.
 3. At the completion of the project, drawings and photographs shall be updated to as-built status and incorporated in the project Operation and Maintenance Manuals.
- M. Testing:
1. After installation, the grounding electrode systems shall be tested for system conductivity and ground terminal resistance-to-earth.
 2. Tests shall be conducted using IEEE three-point test equipment in accordance with applicable standards.
 3. The test report shall be included in the Operation and Maintenance Manual.

26 05 33 RACEWAY & BOXES FOR ELECTRICAL SYSTEMS

- A. All branch raceways shall be routed above the ceiling space wherever possible.
- B. All raceways shall be installed parallel or at right angles to the building lines. Raceways shall not be installed diagonally.
- C. Acceptable raceway materials and uses are as follows:
 1. Rigid Steel Conduit: all exposed exterior raceways; for transition of nonmetallic raceways before rising above floor slabs or grade and in locations specifically required by current electrical code. Use rigid steel sweeps on all bends or require that a minimum of 1/8" polypropylene pull rope used on wire pulls. Use 90° rigid steel sweeps below grade.
 2. Electrical Metallic Tubing (EMT): general use. EMT shall not be installed underground or in concrete.
 3. Rigid Nonmetallic Tubing (PVC): all conduits installed underground, and in concrete slabs. Rigid nonmetallic conduit run shall make a transition to rigid steel before rising

- above the slab, or out of the ground. Rigid nonmetallic conduit is not to be used inside a building unless encased in concrete, or unless being used in a corrosive or wet location. Consult with the Project Manager for any application outside of these conditions.
4. Rigid Nonmetallic Conduit (Type DB PVC, EB not allowed): duct banks. See SECTION 26 05 43 UNDERGROUND DUCTBANK.
 5. Flexible Conduit: connections to recessed lighting fixtures, motors and other equipment requiring flexibility of movement. Limit use to dry locations. Maximum length shall be 6'. Flexible connections to motors are to include one (1) 90-degree bend. Flexible conduit may be "fished" in existing walls. Provide a grounding conductor in all flexible conduit.
 6. Flexible Conduit, Liquid Tight: damp or wet locations including all connections to pumps.
 7. Surface Metal Raceway: all locations are to be verified with the Project Manager. Run raceways parallel with building lines.
 8. Surface Nonmetallic Raceway: all locations are to be verified with the Project Manager at the time of design. Raceways shall meet UL flammability requirements. Run raceways parallel with building lines. Nonmetallic Raceway shall not be installed in places of assembly.
 9. Cable Tray: Provide for Communications and Systems wiring in corridors and specialty rooms as designated by A/E and Owner. Cable tray to be ladder type with curved sweeps and drops with no sharp corners or edges. Use only products from a single manufacturer throughout. No field formed or fabricated materials/pieces permitted.
 10. NO METAL CLAD (MC) CABLE ALLOWED.
- D. Fittings, Couplings and Connectors: CCS prefers the use of compression style as opposed to set screw type connectors. Utilize fittings listed and approved for specific conduit or raceway system. Typically use T & B, Bridgeport or equal approved by the Project Manager.
- E. All raceways shall be independently supported from the structure. Do not anchor to a suspended ceiling system, ceiling hangers, HVAC ductwork, or piping to within 12" of equipment for control wiring. Raceways installed exposed on roofs or in raised floor applications shall be supported by UV resistant, closed cell polyethylene foam pipe supports as manufactured by Pipe Pier (www.pipepier.com) or equal.
- F. Stub-ups in floor slabs shall be made with an adjustable top or coupling threaded inside for plugs, set flush with the finished floor. For connections to equipment, extend raceway from fitting with rigid steel conduit; flexible metal conduit may be used 6" above the floor.
- G. Hickey bends are not acceptable in conduit 1" and larger. Use manufactured elbows or bends fabricated in a bending machine.
- H. Provide roof jacks at all roof penetrations. Coordinate roof jack type and installation with General Contractor. Equipment must be compatible with required roof guarantee.
- I. Minimum size conduit to be 3/4", except 1/2" conduit may be used where a single circuit of two #12 AWG or two #14 AWG wires are installed-only after first junction box from panel. Minimum size conduit to be 3/4" below grade.
- J. All unused raceways installed for future use shall be provided with a nylon pull string. Raceways larger than 1 1/2" shall be provided with a 1/4" poly pull line.
- K. Where raised computer floors are specified, assure that size of grommets and hand holes, and location of outlets under floor, are coordinated with the Project Manager and College Technical Staff.
- L. Conduit connections between outlet boxes located less than 24" apart on opposite sides of a wall shall be made with a loop of flexible conduit, to limit sound transmission. Use of flexible conduit in a concealed space is not acceptable because of limited ability to add additional circuit conductors. If flexible conduit is used, use only straight connectors. Flexible conduit must be secured with wide radius bends.
- M. Provide five (5) 3/4" spare conduits stubbed into accessible ceiling spaces above and below each flush mounted branch circuit panelboard.

Pull and Junction Boxes

- A. Provide galvanized sheet steel junction and pull boxes, with screw-on covers, of the type, shape, and size to suit each respective location and installation.
- B. Maximum of 100' conduit length without installing pull box location. Condulettes are not allowed without prior authorization by Project Manager.
- C. Boxes 100 cubic inches or smaller: Standard outlet box with stamped knockouts.
- D. Boxes 150 cubic inches or larger: Code gauge steel with sides formed and welded, with screw covers unless shown to have hinged doors. Hinged doors shall have locking device same as furnished for panel boards. Knockouts shall be factory stamped, or formed in the field with a cutting tool to provide a clean symmetrically cut hole.
- E. Boxes for exterior or wet areas: Weatherproofed galvanized steel construction with proper gaskets and corrosion resistant fasteners

Floor Boxes

- A. Avoid the use of floor boxes whenever possible. If floor boxes must be used, specify an adjustable metal cast box with brass cover.
- B. Where flush floor boxes are shown adjacent to one another, mount boxes 3" apart.
- C. Floor boxes are to be Hubbell, Steel City, Wiremold or approved equal.

Outlet Boxes

- A. Flush outlet boxes shall be galvanized pressed (not welded) steel, of the knockout type, not less than 4" square, minimum 14 gauge, 2 1/8" deep minimum.
- B. Outlet boxes shall be adequately supported with products manufactured for such purpose. Conduits shall be supported a maximum of 12" from entrance into outlet box or to current NEC code, whichever is more stringent.
- C. Provide mud rings for all flush boxes. Boxes which occur in concrete block walls shall be equipped with 1 1/2" square cornered tile extensions. Extension rings should be avoided. Flush or concealed boxes should be sized for the purpose, wire size and number. Boxes shall be sized per NEC. Conduit runs and fill should be arranged so that extension boxes are not needed.
- D. Outlet boxes installed in surface metallic raceway systems shall be standard (1 3/4") boxes manufactured as part of the system and/or sized for the purpose determined by number and size of wires..
- E. Boxes for exterior below grade installation shall be watertight, rated for exterior use, with gasketed covers and watertight connections. Boxes shall be cast steel, fully coated with corrosive protective compound. Boxes in paved areas shall be traffic rated.
- F. Flush ceiling and wall outlet boxes shall have a 3/8" fixture stud where fixture depends on such for support.
- G. Each ceiling outlet occurring in a suspended ceiling shall be supported from a bar hanger rigidly attached to ceiling support channels.
- H. Outlet boxes shall be supported independent from the raceway system.
- I. All mud rings on outlet boxes shall be flush with the wall.
- J. Above desk height mounting for boxes in small offices may be desired. Coordinate requirements with the Project Manager.

26 05 36 CABLE TRAYS FOR ELECTRICAL SYSTEMS

- A. Cable Tray: communications and systems wiring in corridors and communications rooms.. Cable tray to be ladder type with curved sweeps and no sharp corners or edges.
- B. Ground Cable Trays according to manufactures written instructions.

26 05 53 IDENTIFICATION FOR ELECTRICAL SYSTEMS

- A. Provide nameplates on all Main and Distribution Switchboards, Emergency Switchboard, Motor Control Centers, starters, panelboards, telephone cabinets, disconnect switches, time

- clocks, and miscellaneous systems junction boxes and cabinets. Nameplates shall be fabricated from black acrylic plastic, with 1/4" or 3/8" engraved white letters.
- B. Provide new nameplates as required for existing equipment.
 - C. Provide nameplates at each protective device in switchboard and distribution centers, showing circuit serviced.
 - D. Label cover of all junction boxes, showing system identification and/or circuit number. Junction boxes in finished areas shall have acrylic plastic nameplates. Junction boxes in unfinished areas or above ceilings may be identified with permanent marking pen.
 - E. All wiring in all outlet and junction boxes shall be properly identified as to cable source, panel and circuit number.
 - F. Require a typewritten directory on heavy card stock for each panel. All circuits shall be listed. "Spares" and "Spaces" shall also noted. The Contractor is to include a copy of each directory card in the project O&M manual, See SECTION 01780 CLOSEOUT SUBMITTALS.
 - G. Where electrical connections are required, coordinate the names of mechanical equipment shown on the electrical drawings, with the equipment names used on the mechanical drawings. Equipment names are to be approved by the Project Manager.
 - H. All device plates shall be engraved with circuit number and source panel.

26 08 00 COMMISSIONING OF ELECTRICAL SYSTEMS

- A. Coordinate requirements for Commissioning of building with the Project Manager and Project Engineer.

SECTION 26 10 00 MEDIUM VOLTAGE ELECTRICAL DISTRIBUTION

- A. The Medium Voltage Equipment of the Primary Distribution shall be of the 15 kV class.
- B. Load break elbows are to be 200 amp with integral test point.
- C. At locations where load break elbows are used (including pad mount transformers), provide a stand-off insulator (parking bushing), with protective insulated cap for each phase.
- D. Where junctions are needed in manholes or vaults, provide 200 amp 3-point or 4-point load break junction modules. For each phase, provide at least one spare point with insulated protective cap. In addition, provide two parking bushings with insulated protective caps on each junction module bracket.
- E. Provide a fault indicator on the test point of each 200 amp load break elbow at distribution points such as manholes or sectionalizing cabinets.
- F. New underground primary distribution system shall be an extension of the existing system.
- G. The installing contractor shall have at least 10 years of experience installing underground primary cable.
- H. Raceway for primary cable shall be 4" PVC installed in a concrete ductbank. Add red dye to top layer of concrete.
- I. All connections shall be made with load break elbows.
- J. Ductbank to have locator tape 12" to 15" above the concrete.
- K. Test cable system prior to energizing with High Potential equipment.

26 12 19 PAD-MOUNTED, LIQUID-FILLED, MEDIUM-VOLTAGE TRANSFORMERS

- A. Above ground pad-mounted transformers are preferred.
- B. Pad-mounted transformer shall be rated at 13,200V delta to 120/208V or 277/480V wye. Primary windings shall have (2) 2-1/2 taps above and (2) 2-1/2 taps below rated voltage. Minimum impedance shall be 5.0%. BIL rating shall be 60kV. The transformer shall have a K-rating and be sized 33% larger than calculated load.
- C. The transformers are to have an oil-immersed, gang operated, two-position (on/off), load-break, manually operated switch, capable of switching transformer full-load current. Operating handle must be in the primary compartment, and must be hot stick operable.
- D. There are to be (3) current limiting, draw-out fuses in load-break, dry-well fuse-holders. Provide general purpose, distribution current-limiting fuses with an interrupting capacity of

- 50,000 amperes. Fuse-holders shall be located in the primary compartment and be hot stick operable for external replacement of fuses.
- E. The transformers are to have fill, drain and sample taps, upper and lower filter press connections and tap changer. These may be located in either of the incoming or outgoing line compartments. Provide sampling device on sampling tap.
 - F. The transformer is to have a ground rod, see SECTION 26 05 26 Grounding and Bonding for Electrical Systems..
 - G. PCB Removal: The Consultant shall consult with the Project Manager to determine if it is necessary to visit the site and inspect transformers and related equipment for possible PCB contamination. As appropriate, the Owner and Consultant will determine at that time whether sampling and possible disposal of these PCB's will be the responsibility of the Owner or should be included in the construction contract. All suspect equipment that is scheduled for demolition and has not already been tested shall be tested for PCB contamination. Removal and disposal of PCB contaminated equipment shall comply with all EPA regulations

SECTION 26 20 00 LOW-VOLTAGE ELECTRICAL TRANSMISSION

26 24 00 SWITCHBOARDS AND PANELBOARDS

COMPUTER POWER CENTER

- A. Computer circuits in all Computer Labs are to be fed from dedicated Computer Power Center Panels.
- B. The Consultant is to coordinate with the Design Committee and the Project Manager to determine the location of proposed computer workstations and other computer lab equipment. The power sources that are to be utilized for these items are to be fed from circuits originating from the Computer Power Center Panels.
- C. The Computer Power Center Panels are to have Transient Voltage Surge Suppression to protect the branch circuits and the panel.
- D. The surge suppression is to be mounted next to the panel and use the 1, 3 and 5 circuits.
- E. Computer Labs and other designated classrooms are to have a phase failure relay system that will automatically shut the power to computers in that lab. The relay system is to have a manual reset switch. The switch shall also be capable of manually shutting down the computer circuits. The location of the switch, relay and contactor panels is to be coordinated with the Design Committee or the Project Manager.

26 24 13 SWITCHBOARDS

- A. Switchboard installation and connection of internal wiring shall not require removal of side or rear plates of the panel.
- B. The bus bar arrangement (facing switchboard) shall be phase A-B-C, left to right, top to bottom, and front to rear.
- C. The feeder protective devices shall be fusible switches.
- D. The main protective devices shall be bolted pressure contact switches. The operating mechanism shall provide quick, positive switching action independent of the speed which it is operated. The operating handles shall be mechanically interlocked with the fuse compartment door. The switches shall be suitable for use on circuits having available fault currents of 100,000 amperes RMS symmetrical.
- E. Fuses shall be coordinated with all "upstream" fuse protection.
- F. An extra set of fuses and fuse cabinet are to be provided. Mount fuse cabinet in electrical room.
- G. The Main Switchgear is to have factory installed metering. Metering shall provide individual phase, neutral voltage and current monitoring. The meter is to have peak demand recording on a 15 minute cycle. The meter shall also provide 3-phase kW hour usage.
- H. The Main Switchboard is to be protected with a Transient Voltage Surge Suppression device. Coordinate specifications for all surge suppression devices with the Project Manager.

26 27 26 WIRING DEVICES

- A. Standard wall switches and receptacles shall be ivory in color. Emergency UPS backed power receptacles shall be gray, emergency generator backed power shall be red, and hospital grade receptacles shall be orange. The color of all other specialty receptacles and switches shall be selected by the architect.
- B. All receptacles will be mounted with ground pin up.
- C. The following list of devices sets a standard of quality for wall switches; manufacturer's spec grade only:
- | | |
|--------------------------------------|--------------------|
| a. Single Pole Switches | Hubbell #1221-I |
| b. Three-Way Switches | Hubbell #1223-I |
| c. Four-Way Switches | Hubbell #1224-I |
| d. Single Pole Switch/Red Pilot Lamp | Hubbell #1221-PL |
| e. Weatherproof Switch | Hubbell #1781-I |
| f. Momentary Contact Switch | Hubbell #1557-I |
| g. Dimmer Switches | See SECTION 265000 |
- D. The following list of devices sets a standard of quality for receptacles; manufacturer's spec grade only:
- | | |
|-----------------------------|----------------------------------|
| a. Duplex Receptacles | Hubbell #5352-I |
| b. Safety Receptacles | Hubbell #SG62-I |
| c. Clock Receptacles | Hubbell #5235 |
| d. Dryer Receptacle | Hubbell #9340 w/#9339-6 cord set |
| e. Range Receptacle | Hubbell #7512 w/#7914-6 cord set |
| f. GFI Receptacle | Hubbell #GF5352-I |
| g. Weatherproof Receptacles | Hubbell #GF5352-I |
- E. In all remodel areas, replace existing switches and receptacles with new.
- F. All receptacles to be rated at 20 amps, minimum. Circuit conductor size must be #12 copper minimum or 20 amps minimum size circuit.
- G. Device plates for receptacles and switches shall be brushed stainless steel, similar to Hubbell series 302/304 and engraved with panel and circuit numbers.

26 28 00 LOW-VOLTAGE CIRCUIT PROTECTIVE DEVICES**Disconnect Switches**

- A. Each motor and equipment item rated at 1 HP or larger shall be equipped with a two or three pole, fused heavy-duty disconnect switch, sized to match the motor or equipment, but not less than one pole per phase conductor.. Fractional HP, single-phase motors may be equipped with toggle-type, motor rated disconnect switches.
- B. Switches shall be externally operable, quick-make, quick-break, with neutral connecting block as required, and lockable operating handle. Mount in code gauge steel cabinet. Switches shall be manufactured by switchboard manufacturer.

Elevator Disconnect Switches

- A. Install the elevator power module switches in the elevator equipment room. Provide one switch to control the power for the elevator equipment and one switch to control the power for the elevator cab.
- B. Elevator Power Module Switch shall have class J fuses, control transformer (with fusing), 120 volt shunt trip, and (2) dry auxiliary contacts (convertible from normally open to normally closed). The manufacturer and model of this elevator disconnect system shall be the Bussman Power Module Switch or equal.

SECTION 26 29 23 VARIABLE FREQUENCY CONTROLLERS

- A. Products:

1. Manufacturers: ABB is preferred. No substitutions without prior approval by Project Manager.
2. Siemens products are not allowed and shall not be used.
- B. Motors 3 HP and above will be rated for and equipped with Variable Frequency Drives.
- C. Fractional Motors up to 1 HP will be ECM type unless prior approval from the owner.

SECTION 26 30 00 FACILITY ELECTRICAL POWER GENERATING AND STORING EQUIPMENT

26 32 13.16 GAS-ENGINE-DRIVEN GENERATOR SETS

- A. Emergency power shall be provided by a natural gas powered generator.
- B. All emergency circuits are to be fed from one panel (2 section panel if required).
- C. Remote monitoring capability is desirable. As a minimum, the generator shall have the ability to report any "trouble" in the system, including a failure to charge by the battery charger, and no load centers required for the generators.
- D. The emergency panel and generator shall have 25% spare capacity designed into them.
- E. Items to include on the emergency panel are exit lighting, all fixtures on night light circuits, fire alarm, security system, telephone switch, Prox. Card Access and items requested by the Owner during design.
- F. Verify if elevator can be specified with battery powered elevator lowering option before adding the elevator load to the emergency power system.
- G. Generator to be designed and installed in accordance in accordance with ANSI, NEC, ISO,UL508, IEEE and NEMA.
- H. The generator set shall be UL 2200 Standard for Safety for Stationary Engine Generator Assemblies.
- I. Submittals to include: Specification sheet indicating standard and optional accessories, interconnect wiring diagram of complete emergency system including generator, switch gear, battery charger and remote alarm indications, engine mechanical data, electrical data, resistance, reactance and time constants, control panel schematics, automatic load transfer switches, and a Manufactures written warranty.
- J. Provide Operations and Maintenance instructions for normal operation and maintenance.
- K. There shall be a one source system of responsibility for warranty thru a local representative with factory trained service personnel. The automatic transfer switch shall be supplied by the generator set manufacture in order to maintain a single source responsibility. The generator set supplier is responsible to provide a properly sized cooling system that will operate at 120 degree ambient temperature at full load conditions.
- L. Manufactures warranty will be for a minimum of two years and to include repair, parts and labor.
- M. Recommended manufactures: Onan – provided by Cummins Northwest, Caterpillar – provided by Wester States Equipment.
- N. Specifications for the generator will include a solid state design automatic voltage regulator that maintains output voltage within 0.5% for any constant load between no load and full load.
- O. Provide a mounted Control Panel for complete control and monitoring of engine and generator functions.
- P. Provide one set of dry contacts each for signaling the DDC system for generator running and generator fail. Provide remote control capabilities to allow the DDC system to start and stop via a dry contact. In addition the generator set control panel shall be provided with a RS485 communications network card.
- Q. A critical type Silencer shall be properly sized and furnished according to manufactures recommendations.

26 36 23 AUTOMATIC TRANSFER SWITCHES

- A. Automatic transfer switch shall be enclosed type, and provided by the engine generator set manufacturer and compatible with the generator model selected by the sole source provider.
- B. Switch shall have short circuit rating matched to switch gear fault current rating.
- C. Switch shall conform to the requirements Underwriters Laboratories standard for automatic transfer switches. IEC certified at 208 VAC.
- D. The ATS shall incorporate adjustable three phase under voltage sensing on the normal source.
- E. If the engine generator should fail while carrying the load, retransfer to the normal power source shall be made instantaneously upon restoration of proper voltage on (90%) on the normal source.
- F. Warranty for a minimum of two years and extendable warranties available upon request.
- G. Controls shall be capable of external communication and network interface.
- H. The ATS shall be provided with an internal Modbus Communication Card capable with interfacing with the generator set for a single communications line to the building management system.
- I. Adjustments to all settings shall be made from the front of panel through an easy to view screen that will display the frequency of both sources.
- J. Capable of wall mounting.

SECTION 26 50 00 LIGHTING

- A. All Fluorescent, and metal halide lamps are to be “low mercury” type lamps with “ECO” or similar labeling to indicate lamps are low mercury. Submittals for all lamps of these types shall include mercury level testing data and consultant shall verify lamps are within the EPA’s “low mercury” threshold of 0.2 PPM. Forward one copy of approved test data to the Project Manager.
- B. Individual fuses are required on all indoor and exterior fixtures. Fuses for pole fixtures should be in hand hole at base of pole.
- C. Flex whips are to be used to power lay-in fixtures only. Daisy chaining of fixtures is not allowed except in a master/slave installation. Note that MC cable is never allowed; use only flexible conduit.
- D. Down lights are to be standard PL lamp types. Avoid the use of incandescent fixtures unless required specific to an application. Lamps are to have the same characteristics as described in A. of this section.
- E. Use of non-standard lamps and fixtures is to be approved by the CCS Project Manager.
- F. Fluorescent dimming shall be full range from 100% to 5% light output without any lamp flicker. Use Advance Mark X REZ-2S32 dimming ballasts, or equal. Electronic wall dimming switches are to be used. The following dimming switches or their equal are suggested for use:
 - 1. Leviton # 6667-31 -----120 volt up to 500 watts
 - 2. Leviton # 6667-37-----277 volt up to 500 watts
 - 3. Leviton #26-666-31-----120 volt up to 1200 watt
 - 4. Leviton #26-666-37-----277 volt up to 1200 watts
- G. Distance Learning Classrooms shall require a combination of fluorescent dimming and studio lighting and control features above those of normal classrooms with dimming requirements. Careful consideration in the Distance Learning Classrooms of fluorescent dimming, theatrical dimming and the elimination of harmonic noise for the audio visual equipment shall be necessary. The fluorescent dimming shall be as specified above, along with any additional filters necessary to reduce harmonic distortion. Theater quality lights with fresnel lens and stage dimming technology shall be used to light the area of the classroom being utilized for remote transmission. Discuss layout and equipment choices with the Project Manager.
- H. No “value miser” ballasts are to be allowed. No Motorola ballasts are to be used.
- I. Lighting fixtures, lamps and ballast to include a GLR fixture mounted fuse.

- J. Acceptable ballast manufacturers include: G.E., Advance, Sylvania, Universal and Magntech. (Contractor to provide submittal documentation of ballast manufacture for approval by A/E and Owners; contractor to provide additional 5 year warranty on all ballasts.)
- K. Florescent lamps to be 3500 kelvin in color.

26 51 00 INTERIOR LIGHTING

- A. Interior Lighting Fixtures, Lamps, and Ballasts to include a GLR fixture mounted fuse.
- B. Acceptable ballast manufacturers include: G.E., Advance, Sylvania, Universal and Magntech. (Contractor to provide submittal documentation of ballast manufacture for approval by A/E and Owners; contractor to provide additional 5 year warranty on all ballasts.)
- C. Florescent lamps to be 3500 kelvin in color.
- D. Avoid the use of 2' x 2' recessed fluorescent fixtures, exceptions to be approved by the Owner.
- E. Provide occupancy sensors in all offices and where designated by A/E and Owner. Using only manufacturers:
 - 1. Wattstopper
 - 2. Hubble, or
 - 3. Leviton
- F. All occupancy sensors shall be installed mounted to outlet box.
- G. All Lighting for Interior Common areas and Exterior are to be controlled by a manufactured programmable lighting control panel with the ability to have multiple schedules and relays. Acceptable manufactures are Cooper Greengate, Lighting Control Design and Watt Stopper.

26 52 00 EMERGENCY LIGHTING

- A. Provide emergency lighting in all laboratories or classrooms, corridors and all egress areas including stairwells.

26 53 00 EXIT SIGNS

- A. Green lettering only on exit signs. Provide battery backup on all non-emergency generator buildings.

26 55 00 SPECIAL PURPOSE LIGHTING

- B. Indoor sports lighting is to be designed around a lensed 400w MH fixture or LED.

26 56 00 EXTERIOR LIGHTING**EXTERIOR LIGHTING CONTROLS**

- A. Lighting will be controlled by the Lighting Control Panel and photocell.
- B. Install an AC toggle switch in separate enclosure adjacent to time clock to override system. Label switch.
- C. Coordinate location of any on all night security lights with the Project Manager.
- D. Coordinate lighting sequence schedule with the Project Manager.
- E. Exterior Lighting fixture shall be Lithonia KAD series, unless otherwise specified by CCS-Project Manager.
 - a. LED.
 - b. IES type II asymmetric High performance reflectors
 - c. Ballast and Drivers with multi-tap voltages (120, 208, 240, 277V)
 - d. Round pole mounting with 4" arm,
 - e. Black powder coat finish,
 - f. Lamp(s) shall be included.
- F. Exterior Lighting Pole shall be Lithonia RSS series, unless otherwise specified by the CCS-Project Manager.
 - a. Include round pole base cover to match.
 - b. For SCC, poles shall be mounted on round pre-cast concrete pole base, 24" diam., 24" above finished grade (reference Appendix Drawing C2).

- c. For SFCC, poles shall be mounted on square, tapered pre-cast concrete pole base, 20" x 20", 30" above finished grade (reference Appendix Drawings C3).
- G. Verify with the CCS-Project Manager the number of spare fixtures, poles and ballasts for parking lot and walkway fixtures to be provided by the Contractor.
- H. SFCC Campus only: Shall be added to the Lighting Control Panel / photocell system of the building providing power to the Parking Lot and/or side walk.
- I. All types will have to be pre-approved by the CCS Project Manager.

END OF DIVISION 26

DIVISION 27 – COMMUNICATIONS

(Revision Date: 03/11/16)

See APPENDIX Page AP-3 for “CCS COMMUNICATIONS SYMBOL STANDARDS”

SECTION 27 00 00 COMMUNICATIONS

GENERAL

- A. Provide a dedicated system of pathways from every communications outlet in the building to the nearest Communications Room, and from every Communications Room to the Entrance Room, with connections to the inter-building communications system. The system is to be based on the TIA/EIA-568-B Telecommunications Wiring Standards. All empty conduit pathways over ten feet in length require a pull string to be left in the conduit after installation.
- B. The Entrance Room and each Communication Room shall be located such that no unshielded twisted pair (UTP) horizontal cable run shall exceed 90 meters (295 feet).
- C. Entrance Room: The Entrance Room functions as the interconnection point between the building's internal systems and the communications services entering from the exterior-building communications system. The systems included in this room are typically voice, data, and audio/visual. The Entrance Room may also serve as a Communications Room. The Entrance Room shall be designed exclusively for communication services and shall not be shared with electrical power, fire alarm distribution, security system equipment, storage or custodial services. Any exceptions must be discussed with the Project Manager. Major plumbing, electrical, ventilation distribution systems should be routed outside the Entrance Room. Provide the following:
 1. Minimum of (2) 4" conduits to accessible duct bank system from main backboard. One of the conduits shall have installed (4) 1" corrugated orange inner ducts. Verify requirements with the Project Manager.
 2. 1 1/2" conduit for emergency power to the emergency equipment panel.
 3. 1" conduit for "Area Of Refuge" riser for buildings requiring such a location for telephone only.
 4. 208V/120V 3 phase dedicated panel for the Entrance Room. The panel is to be rated at 100 amps and have a neutral rated at 200% for non-linear loads. The panel is to have Transient Voltage Surge Suppression. The Transient Voltage Surge Suppression is to be mounted next to the panel. All Communications Room's power in the building will be fed from this panel.
 5. Install a contiguous intra-building grounding and bonding system in compliance with NEC Article 250 and TIA/EIA-607 using a minimum conductor size of 6 AWG with a horizontal ground bus bar on the backboard near the riser penetrations.
- D. Communication Room: There is to be at least one Communication Room per floor. Vertically align Communications Rooms where possible. The Consultant is to confirm with the Project Manager whether satellite and / or wireless communications will be incorporated into the communications system. If there is a satellite / wireless link, make provisions in the design for a pathway from the communications room on the highest floor to the roof to accommodate the link. This is usually a 3" conduit. Also provide a power feed (120V) to the roof. Coordinate power requirements with the Project Manager.
- E. Entrance Room, Communications Rooms:
Provide the following:
 1. 3/4" MDO backboard on designated walls beginning at finished floor to 8'-0" above finished floor. MDO to be painted white. Use appropriate materials where code requires fire rated paint.
 2. Overhead cable tray (ladder type) around perimeter of room 6" from wall. Provide divided cable tray to separate riser cable from any horizontal distribution of station cable or other low voltage cable on that floor. Size cable tray to provide a cross-sectional area

equivalent to the required number of conduit sleeves through the walls. Use cable tray manufacturer specific accessories including waterfalls, bends, and connections only. No field manufactured equipment or fitting are allowed.

3. Minimum of (2) 4" conduits to vertically aligned Communication Rooms.
4. Minimum of (2) 4" conduit sleeves, or equivalent cable tray, for horizontal communication distribution.
5. 4" conduit tie, or equivalent cable tray, to other Communications Rooms located on same floor.
6. Minimum of four dedicated, 120V, 20A isolated-ground circuits serving four double duplex receptacles. Location to be determined by location of equipment rack(s).
7. Convenience outlet below the light switch, 18" AFF.
8. Horizontal ground bus bar horizontally, located on the backboard near the riser penetrations.
Additional Requirements:
 9. HVAC shall maintain a constant temperature of 64 degrees F to 75 degrees F with at least one air change per hour.
 10. Fire protection will be as required by applicable codes.
 11. Communications rooms shall be equipped with aluminum 19" by 7' frame system equipment racks to house equipment, owner-provided or as specified, and contractor provided termination equipment for the multiple cable types. Verify quantity and locations with Design Committee Chair or Project Manager.
 - 11.1. Provide each rack arrangement (lineup) with a double vertical rack cabling section at each end and between each pair of racks. They are to 7'H x 6"W x 12.75" D.
 - 11.2. Provide double rack mounting space horizontal wire management panels. Provide one wire management panel above and below each communications designed for category 6A wiring and equipped with split "D" rings and cable distribution spools.
 - 11.3. Provide rear cable management bars on each rack, one behind each patch panel for routing and securing cables.
 - 11.4. Data cables are to be neatly bundled using Velcro straps or approved equal.
 - 11.5. Provide one surge protected, hospital grade power strip with a 15' cord for each equipment rack.
 12. Provide a UPS emergency power backup system for data and communications equipment. Coordinate requirements and possible emergency generator, with Project Manager. UPS devices should be sized according to total equipment power demands for a period of no less than 45 minutes without generator backup and no less than 20 minutes with generator backup.
 13. Typically, dedicated data and communications rooms at the college do not meet the definition of Computer Room as defined in NFPA 75. Therefore, the requirement for single point shut down of power to these dedicated rooms does not apply. This is to be verified and noted on the design drawings.
- F. The Consultant is to coordinate with the Design Committee or the Project Manager on the location of "Distance Learning Education Rooms." These rooms are to have the following items as a minimum:
 1. (1) ¾" conduit back to a predetermined communications equipment rack. The classroom starting point of the conduit is to be coordinated with the Project Manager or Design Committee.
 2. The Distance Learning Education Rooms are to have either a projector screen or two TV sets or both. Coordinate the location and requirement of these items with the Project Manager or Design Committee.
 3. There is to be a 2" conduit from a predetermined ceiling space location to the front of the classroom Teacher's Work Station or other dedicated space. The 2" conduit is for a VGA cable. The ceiling location and Teacher's Work Station is to be coordinated with the Project Manager or Design Committee.
 4. The ceiling space location mentioned in item #3 above is to have a single duplex receptacle in the ceiling space near that location. The receptacle circuit is to be a

- dedicated circuit. The circuit can also power the VCR and Codec mentioned below in item #5.
5. In front of the classroom, opposite the entry door, a dedicated location for the VCR, Codec and other required electronic equipment will be established. This location is to have a minimum of the following:
 - a. A ¾" conduit from the Codec to the ceiling mounted video camera. The ¾" conduit is to terminate in a 4" square box with single gang mud ring and blank plate at the Codec location. The location and height of the gang box to be determined by the Project Manager or Design Committee.
 - b. A minimum of (2) single duplex receptacle in this area. Coordinate location of receptacles in relation to VCR and Codec equipment.
 - c. A ¾" conduit from the VCR location to both the TV monitor locations.
 - d. A 2" conduit from the Teacher's Work Station to the dedicated location. This is for computer projection to either of the TV's screens.
 - e. The Teacher's Work Station is to have a minimum of a double duplex receptacle.
 6. A single gang receptacle is to be mounted in the ceiling space near the video camera(s) mentioned above – OR installed to accommodate inclusive white board/projector system, depending on design and program requirements.
 7. A dedicated circuit is to be established for the wall or ceiling mounted TV's mentioned above. TV locations are also to have an inner building cable TV outlet. Consultant is to coordinate the location of the signal and power receptacles with the mounting hardware to support the TV set.

COMMUNICATIONS CIRCUITS

A. GENERAL

1. Communications (data and voice) structured wiring systems shall include adherence to the most currently available Building Industry Consulting Service International (BICSI) Telecommunications Distribution Methods Manual (TDMM) 11th or latest edition, ANSI/TIA/EIA Telecommunications Building Wiring Standards, and the national fire Protection Association National Electrical Code (NFPA 70) latest adopted edition.

B. CONTRACTOR QUALIFICATIONS

1. The communications contractor shall be fully acquainted with the above referenced standards.
2. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by the approved system supplier to install manufacturer's product, in order to insure receipt of manufacturer's warranty.

C. COPPER CABLE INSTALLATION AND TESTING

1. Telephone and data outlets will be the same and are to be combined into a single communication outlet (see appendix AP-3).
2. Provide a 1" minimum conduit (must be large enough to accommodate 4 each CAT6A cables, with 30% space remaining) from each communications outlet box for cabling. Stub conduit up into the ceiling space and extend conduit to within 1 foot of the nearest cable tray.
3. All communication outlet boxes shall be 4" x 4" x 2-1/8" double gang electrical junction boxes with a single gang mud ring.
4. Communications outlet shall be located not more than four feet from an electrical outlet.
5. Provide (4) four-pair cables from the equipment rack to each communications outlet. Confirm number of outlets with Design Committee.
6. Each communications cable shall be installed in a "home-run" configuration. No "daisy chained" conduit or cables shall be allowed.
7. Cables shall be labeled. The labeling shall be permanent and legible. Labels shall be machine printed (see LABELING this section).
8. Stripping of cable jacket, untwisting of cable pairs and termination and performance test and their procedures shall be done according to the procedure defined in the ANSI/TIA/EIA-568-B.1 standard and the ISO/IEC 11801 standard.

9. All communications cables, both voice and data, shall be Category 6A, unless otherwise specified and approved by Project Manager (i.e. renovations and remodels).
 10. Communications cables shall be blue in color for new construction. For renovations and remodels, color(s) shall be determined by the project manager.
 11. Provide a telephone outlet, with (1) four-pair communications cable, at each "Area of Refuge" for buildings requiring such a location. Phone at this location shall be similar to Cortel 2554, Red in color unless otherwise noted. Make sure jack plate and phone attachment are compatible to allow phone to mount flush over plate.
 12. Provide a communications outlet in each mechanical room. Phone at this location shall be similar to Cortel 2554, unless otherwise noted, mounted above outlet and Ivory in color or as determined by Project Manager.
 13. For offices, provide two communications outlets, one each on opposite walls. Typically the outlets should be located on each of the sidewalls of the office; not the wall where the door is located and not the wall opposite the door. In offices without built-in furnishing, outlet shall be mounted at 36" to center of device. In offices with built-in furnishings, coordinate with casework.
 14. For Classrooms provide one communications outlet at the front of the classroom centered below the board, and one centered on the opposite wall. Outlets shall be mounted at 18" to center of device. Provide one telephone outlet, with (1) four-pair communications cable, at each classroom entrance for emergency use. Phone at this location shall be similar to Cortel 2554, Red in color, unless otherwise noted. Make sure jack plate and phone attachment are compatible to allow phone to mount flush over plate.
 15. For laboratories, communications outlets shall be spaced according to initial quantities and arrangements of equipment with at least ten percent extra capacity for expansion/rearrangement.
 16. Contractor shall test and certify, and provide hard copy test results, that cabling and terminations installed meets applicable TIA/EIA conventions and standards and that the cabling and terminations will support 1000Base TX (gigabit) Ethernet technologies, or 10Gigabit (augmented 6) depending on application.
 17. Category 6A test equipment shall be Fluke DSP 4300 or equal as approved by Project Manager.
- D. COPPER CABLING REQUIREMENTS
1. CommScope Systimax Solutions components shall be specified, allow no substitution based on existing campus systems and equipment. For renovations and remodel projects, cabling and equipment shall match building standards at time of construction unless otherwise specified by the Project Manager.
 2. Category 6A (to adhere to TIA/EIA-568-B.2-10 standard and the ISO/IEC 11801 standard or latest revision):
 - a. Enhanced category 6A, four-pair, #23 AWG solid bare copper, insulated, twisted pairs, unshielded plenum or non-plenum as required.
 - b. Gigaspeed RJ45 jack and 4-port, acrylic faceplate. Provide ivory blank module inserts for all unused modular jack openings in faceplates.
 - c. Gigaspeed patch panel(s). (Number of ports depends on number of wire runs.)
 3. All Patch cords shall be Category 6A, gigaspeed. Quantities furnished shall be equal to ½ the total number of workstation ports. Two-thirds of the patch cords furnished shall be the color *black*, the remaining to be the color *yellow*.
 4. Products shall be installed, unless specifically noted otherwise by Project Manager, to allow for 30% spare wiring capacity, at a minimum, in cable trays and raceways or by current code, whichever is the most stringent.
 5. All products shall be installed to provide a complete vendor end-to-end solution from the work station outlet to the horizontal cross-connect to the vertical cross-connect in the MDF.
- E. GROUNDING
1. Bonding and Grounding: Communication bonding and grounding shall be in accordance with the NEC and NFPA.
- F. PATCH PANELS

1. The termination blocks shall support the appropriate Category 6A applications and facilitate cross connection and inter connection using modular patch cords.
 2. All patch panels shall be wired to TIA EIA T568-B standards. Maintain proper strip length of cable jacket and avoid spreading pairs.
 3. The patch panels shall be able to support same speeds as cable type.
- G. FIBER CABLING REQUIREMENTS AND TESTING
1. Fiber optic cable shall be installed in 1" inner duct.
 2. Each Communications Room shall have a 12-strand multi-mode fiber optic riser cable run back to the Entrance Room. Fiber optic riser cable shall be 12-strand, 50/125 micron multi-mode cable as manufactured by Optical Cable Corporation or approved equal.
 3. Cabling between buildings will typically be a hybrid cable containing a 24-strand, 50/125 micron multimode cable and a 12-strand single mode, DX-series, as manufactured by Optical Cable Corporation or approved equal. Verify requirements and number of fiber and type with Project Manager.
 4. Fiber optic cable runs to be terminated in fiber distribution panels. Terminations are to be ST style connectors unless otherwise directed by the Project Manager. Fusion splicing is allowed ONLY with prior authorization by the Project Manager.
 5. Wall or rack fiber patch panel mounting requirements will be determined by the Project Manager. Rack mounting is preferred.
 6. Fiber optic cables shall be tested and documented at 850nm/1300nm with maximum 0% failure allowed. TIA/EIA-568-B.3 standards shall be followed.
 - 6.1 Fluke DSP 4300 or equal shall be used for testing.
- H. LABELING
1. All relevant components of the cabling and fiber optic system are to be accurately identified and labeled. This includes, but is not limited to, communications outlet plates, patch panels and blocks, fiber cables and strands, and copper cables at each end.
 2. Labels are to be machine printed.
 3. New construction:
 - a. Copper cabling:
 - 1) Each copper cabling patch panel in each communications room is to be assigned a unique alpha designator, A,B,C . . . The contractor will label each patch panel, top to bottom, with its unique designator.
 - 2) The top of each communications outlet plate will be identified with a unique alphanumeric label that identifies the source communications room and patch panel, and the ports on that plate. For example, the first four-port plate in room 101, served by patch panel A in room 105, would be identified by the label "105-A-1-4".
 - b. Fiber cabling:
 - 1) Each fiber optic patch panel in each communications room is to be assigned a unique alpha designator, A,B,C . . . The contractor will label each patch panel, top to bottom, with its unique designator. It is permissible to have copper patch panels and fiber optic patch panels use the same designators.
 - 2) Each fiber optic cable shall be identified by a unique identifier that uses the following configuration: (strands)-(mode)-(size) TO (building number)-(room number)-(patch panel designator); where "strands" = number of fiber strands, "mode" = "MM" for multi-mode or "SM" for single mode, size is fiber size in microns, "building number" is the number of the building at the other end of the cable, "room number" is the room the other end of the cable terminates in, "patch panel designator" is the patch panel designator for the patch panel the other end of the cable is terminated in. Size is omitted for single mode cable.
- Example 1:** a 24 strand, multi-mode, 50 micron cable installed between patch panel A in room 101 in building 5 and patch panel B in room 103 in building 7 would be labeled "24-MM-50 TO 7-103-B" in building 5 and "24-MM-50 TO 5-101-A" in building 7.

Example 2: a hybrid cable containing a 24 strand, multi-mode, 50 micron cable and a 12 strand, single mode cable between the same patch panels in example 1 would be labeled “24-MM-50 / 12-SM TO 7-103-B” in building 5 and “24-MM-50 / 12-SM TO 5-101-A” in building 7.

4. Remodel or addition:
 - a. Labeling of patch panels and communications outlet plates will conform to the new construction labeling scheme. Small or unique installations may use the labeling scheme already in use. Consult with Project Manager and District Telephone Service for confirmation.
- I. DOCUMENTATION
1. The contractor shall provide fully documented, 11” x 17” or larger, scale drawings of the entire copper and/or fiber optic distribution system. Documentation to include building and floor layouts with communications and telephone outlet, and patch panel locations, with associated labeling and all other information pertinent to the installation. Documentation shall be provided both in hard copies posted in the Communications Rooms and as part of operations and maintenance manuals, and on a CD capable of being viewed and edited in AutoCAD.

27 40 00 AUDIO-VIDEO COMMUNICATIONS

27 41 00 AUDIO-VIDEO SYSTEMS

- A. Classroom Wiring Considerations
 1. Podium/Lectern location (floorbox) is the primary wiring termination point for AV wiring needs in a room. This acts as the ‘hub’ for room control and electronics. In-floor location should accommodate a large lectern, high-back stool and enough surrounding area to be accessed from all sides.
 2. Preference for oversized floor boxes. Hubbell SystemOne recessed floor boxes (CFB6G30, etc). Generally one 2” conduit, stubbed to the ceiling is required for future expansion (if not explicitly used during initial install). 6-gang+, rectangle, all-metal construction is preferred (no plastic lids, etc).
 - a. 6 Cat6a data runs, terminated in floorbox, back to data closet
 - b. 1 Cat6a/5e run from floorbox to projector control (A.3)
 - c. 2 Cat6a runs, terminated in floorbox, to projector plate (A.5.b)
 - d. 1” conduit from floorbox, stubbed to ceiling for Ceiling Speaker wiring.
 - i. Generally wired in 70v, mono – finalized during project design.
 - ii. Speakon connection in floorbox is preferred (1/4” is OK if floorbox space is a concern)
 3. Ceiling speakers should be placed appropriately throughout room (30 person room would have 4 speakers, etc).
 - a. Lowell LT-6A-T870-Vb or equiv. preferred
 - b. Wired for 70v and 40watt amp (owner provides amp) unless project details specify otherwise
 - c. Contractor purchases, installs and wires speakers
 4. Recessed/hanging projection screens should have hard-wired motor control (rocker, digital switch plate, etc) to lectern (generally on the wall the screen is on). Additionally, ½” conduit from the floorbox to screen motor/control box is required. Wired on the screen side for RS-232 per Manf. specs and terminated in the floorbox on an RJ45. Cat6a being used for general project communication wiring can be used, though Cat5e can be substituted in this case. Locking wall-plates for screen control are *not required*.
 5. Preference for high-gain (+1) commercial drop-down screens from Draper, Da-Lite, etc. Preference for screens that are sold with appropriate screen control wall plate for lectern

wall area (most models can be purchased with an approved switch). Screen must have RS-232/Relay control option (as would be wired per A.3, above).

6. Projector ceiling plate from Chief, Peerless, etc should be mounted on-center with drop down screen, generally between 12' and 14' back from screen. This final detail should be discussed at the project level. CCS provides material from the plate down (pole, projector mount and projector). 2-gang power terminated above ceiling plate.
 - a. 2 Cat6a data runs, terminated above plate, back to data closet
 - b. 2 Cat6a runs, terminated above plate, back to lectern floorbox
7. SmartBoard (SB)/TV wiring is IN ADDITION to the default wiring for projector and dropdown screen. General room specs are for ceiling projector systems, SB/TV options would be added at the individual project level
 - a. SB/TV installation requires double duplex power at 90" or higher, generally one stud bay to the left or right of the SB/TV mounting location center (to accommodate the projector that would be mounted, dead center, above the SB).
 - b. Adjacent to power, AV/Data wiring:
 - i. 2 Cat6a data runs, terminated at wall plate, back to data closet
 - ii. 2 Cat6a runs, terminated at wall plate, back to lectern floorbox
8. Concerns for video conference equipment wiring (ITV)
 - a. ITV is a project level decision, on a room by room basis
- B. Meeting Space and Small room considerations
 1. SmartBoard (SB)/TV are preferred in small spaces over ceiling projectors
 2. SB/TV installation requires double duplex power at 90" or higher, generally one stud bay to the left or right of the SB/TV mounting location center (to accommodate the projector that would be mounted, dead center, above the SB).
 3. Adjacent to power, AV/Data wiring:
 - a. 2 Cat6a data runs, terminated at wall plate, back to data closet
 - b. 2 Cat6a runs, terminated at wall plate, back to:
 - 1) Floorbox in room, if specified in project
 - 2) 14" AFF below the SB/TV install area
 - c. 4 Cat6a data runs, terminated at wall plate, back to data closet and positioned on to a wall adjacent to the SB/TV mounting location
 4. IF Meeting Space or Small Room has a floor box, the required terminations should match the classroom spec (A.2) minus the terminations for the ceiling projector (A.2.c)
- A. Digital Signage considerations
 1. Digital signage (usual a flat-panel display 42"-55") requires:
 - a. 2 Cat6a data runs, terminated at wall plate, back to data closet (plate at 84" AFF)
 - b. Single gang/single duplex power at 84" AFF
 2. Digital signage quantity and locations are a per project decision
- B. Coax/TV concerns
 - a. If required for project, RG6 (quad or triple shielded) terminated on rack in primary closet
 - b. Risers from primary closet to additional data closets in building.
 - c. If required in classroom, RG6 extended from nearest closet to floorbox in classrooms and/or SB/TV location in areas without floorboxes
- C. Large spaces (auditoriums, multi-use rooms, etc) are designed on a project by project basis.

27 53 00 DISTRIBUTED SYSTEMS

27 53 13 CLOCK SYSTEMS

FOR RENOVATIONS & NEW CONSTRUCTION:

- A. Provide Valcom GPS Wireless Clock system. Clock model V-AW12LP 12", 24V/110V Version. The system shall synchronize all clocks to each other. Each clock acts as a

- repeater and transmitter. The system shall utilize GPS technology to provide atomic time. Clocks shall automatically adjust for Daylight Saving Time.
- B. The system shall include an internal clock reference so that failure of the GPS signal shall not cause the clocks to fail in indicating time.

END OF DIVISION 27

DIVISION 28 – ELECTRONIC SAFETY AND SECURITY

(Revision Date: 03/11/16)

SECTION 28 00 00 ELECTRONIC SAFETY AND SECURITY

28 05 00 CARD READERS

- A. Building card readers will be powered from the emergency generator panel.

SECTION 28 10 00 ELECTRONIC ACCESS CONTROL AND INTRUSION DETECTION

SECURITY SYSTEMS

- A. Verify with the Project Manager whether a security system is to be installed at the time of construction or whether only the rough-in will be done at that time.
- B. Every exterior door and roof hatch is to have a concealed switch and magnet. Use Sentrol #1078 (Sentrol CO., Portland, OR, 800-547-2556) or equal. Position the switch in the door frame head, and the magnet in the top of the door, at strike side about 3 or 4 inches from the end of the door. The electrical contractor is to coordinate the installation of these items with the general contractor. As a minimum, devices are to be wired to an accessible junction box.
- C. Verify with the Project Manager which exterior doors are to have a card reader.
- D. Door access cards shall be proximity type cards compatible with the existing access card database and must work with all proximity sensors currently installed on the campus.
- E. Security system signals shall be compatible with the wide area network and the system is to be capable of being monitored from a central location.
- F. Each door is to be set up as a separate zone unless it is in a common area with other doors such as the lobby.
- G. Only the exterior doors of a vestibule are to be monitored.
- H. If the budget will allow, all exterior common doors that are normally open during business hours are to have an electric strike and be controlled by the building access control system. Consult with Project Manager for building Lock-Down design.
- I. Covers of access control and intrusion detection system J-boxes are to be painted Blue. ??

28 13 53 SECURITY ACCESS DETECTION

- A. Security systems will be included in most new construction and in some remodel projects.
- B. As a minimum, door contacts wired to accessible locations will be required at all exterior doors and roof hatches.
- C. Verify the requirements for each project with the Project Manager.
- D. Designated building entrances shall be roughed-in for future card access control system including electric strikes and removable (keyed) center mullion.

SECTION 28 30 00 ELECTRONIC DETECTION AND ALARM

Fire alarm systems are required in all new buildings.

28 31 00 FIRE DETECTION AND ALARM

- A. Fire alarm panel shall be either Zone or Addressable type, Silent Knight by Honeywell. Verify choice of system with the Project Manager. Where budget allows, an addressable system is preferred.
- B. Fire alarm panel shall be compatible with campus wide area network.
- C. Fire alarm panel shall be addressable back to Central Monitoring Station forming a complete and compatible network.
- D. Fire alarm system shall communicate with AI system for monitoring HVAC activity during alarm condition. A dry set of contacts shall be provided at the fire alarm panel.

- E. Contractor/Installer shall demonstrate that new fire alarm panel is integrated into the network and provides the same level of supervisory functions as other panels and devices established on the network.
- F. Annunciator panel to be in easily accessible location. This location is to be confirmed with the local Fire Marshal.
- G. At existing buildings, new zones to be added as required. There is to be no “daisy chaining” to existing zones.
- H. Use the same colored wire throughout the circuit. Preferred wire color is red, but should be color coded to the phase supplying the unit and the grounding conductor if insulated shall be green or green with yellow stripes.
- I. Covers of fire alarm J-boxes and covers shall be painted red.
- J. Label all wiring at each J-box or device using printed labels
- K. Contractor to provide 1-line drawing in operation and maintenance manuals indicating room number and zone for each fire alarm device.

END OF DIVISION 28

DIVISION 31 – EARTHWORK

(Revision Date: 03/11/16)

SECTION 31 00 00 EARTHWORK

SECTION 31 10 00 SITE CLEARING

SECTION 31 21 13 RADON MITIGATION

PART 1 GENERAL:

1.01 SECTION INCLUDES

- A. Furnish and install Radon Mitigation System as shown on the drawings and herein specified.
- B. Include gas collection pipes and vent pipes.
- C. Coordinate placement of electrical junction box for future fan connection.

1.02 REFERENCES

- A. U.S. Environmental Protection Agency
 - 1. EPA 625-R-92-016 - Radon Prevention in the Design and Construction of Schools and Other Large Buildings.
 - 2. EPA 402-R-93-078 - Radon Mitigation Standards (RMS).

1.03 SUBMITTALS

- A. Submit shop drawings. Indicate dimensions, layout of collection and vent piping, roof flashing details and location of electrical junction box.
- B. Submit product data on base course, pipe, vapor retarder, sealants and accessories.

1.04 QUALITY ASSURANCE

- A. Perform Work in accordance with EPA 402-R-93-078 and EPA 625-R-92-016.

1.05 QUALIFICATIONS

- A. Installer: Company specializing in performing work of this section with minimum five years documented experience.

1.07 COORDINATION

- A. Coordinate work with foundations, slabs on grade, interior partitions, and roofing to ensure openings capable of permitting radon gas penetration to building interior are sealed.

PART 2 PRODUCTS:

2.01 GENERAL DESIGN REQUIREMENTS

- A. Radon Vent: One continuous sealed pipe shall run from a point within the aggregate under each concrete slab to a point outside the building. Joints and connections shall be permanently gas tight. The continuous sealed pipe shall interface with the aggregate.
 - 1. The perforated pipe shall remain in the aggregate area and shall be capped at the ends.
 - 2. The continuous sealed pipe shall terminate no less than twelve inches above the roof. The continuous sealed pipe shall be labeled "radon vent" at a location inside the Penthouse. The label shall be placed so as to remain visible to an occupant.
 - 3. The minimum pipe diameter shall be four inches unless otherwise approved. Acceptable sealed plastic pipe shall be smooth walled, and may include either PVC 3034 or ABS schedule of equivalent wall thickness.
 - 4. The entire sealed pipe systems shall be sloped to drain to the sub-slab aggregate.
 - 5. To the extent practicable, the sealed pipe shall be located inside the thermal envelope of the building in order to enhance passive stack venting.

- B. Fan Circuit and Wiring and Location: An area for location of an inline shall be provided. The Location shall be as close as practicable to the radon vent pipe's point of exit from the building, or shall be outside the building shell; and shall be located so that the fan and all downstream piping is isolated from the indoor air. Provisions shall be made to allow future activation of an in-line fan on the radon vent pipe need to place new wiring. A one hundred ten volt power supply shall be provided at a junction fan location.
- C. Separate Aggregate Areas: If the aggregate area underneath the concrete slab is not continuous, but is separated into distinct isolated aggregate areas by footing or other barrier, a minimum of one radon vent pipe shall be installed into each separate aggregate area.

2.02 PIPE MATERIALS

- A. Pipe: ASTM 02729; polyvinyl chloride pipe.
 - 1. Joints: Socket ends for solvent welding.
 - 2. Joint Cement: ASTM 02564, solvent type.
 - 3. Fittings: Polyvinyl chloride .
- B. Gas Vent Pipe; Un-Perforated pipe, 3 inch diameter nominal size,
- C. Gas Collection Pipe: Perforated pipe, 4 inch round nominal size.

2.03 ACCESSORIES

- A. Penetration Boot: Form using vapor retarder with stainless steel clamping ring.
- B. Roof Flashing: Sheet metal as specified in Section 07 62 00.
- C. Vent Cap: Plastic with screen to prevent insect intrusion.
- D. Joint Filler: Compressible type with recovery rate of minimum 95 percent.
 - 1. PVC Foam: ASTM 01752; closed cell polyvinyl chloride foam.
 - 2. Sponge Rubber: ASTM 01752; premolded sponge rubber.
- A. Tape: self-adhering type, 2 inch Wide, compatible with vapor retarder.
- B. Electrical Junction Box: as specified in DIVISION 26 ELECTRICAL.

PART 3 EXECUTION:

3.01 EXAMINATION

- A. Verify slab on grade subbase is compacted, graded, and ready to receive work.

3.02 GAS COLLECTION PIPE INSTALLATION

- A. Install gas collection pipe on clean cut subsoil. Lay pipe level.
- B. Connect gas collection pipe to gas vent pipe with solvent welded fitting.
- C. Stub gas vent piping minimum 12 inches above top of slab on grade. Temporarily cap pipe stub to prevent material from entering piping.

3.03 GAS VENT INSTALLATION

- A. Install gas vent pipe where indicated on drawings.
 - 1. Manifold multiple vent pipes from isolated floor areas in Mechanical Room into single vent through roof.
- B. Extend gas vent pipe to minimum 12 inches above roof and minimum of 10 feet from fresh air intakes.
 - 1. Make pipe joints gas tight with solvent welded fittings.
 - 2. Support pipe at each floor and attic penetration.
- C. Identify gas vent pipe with permanent markings maximum 25 feet (7.6m) on center and within 12 inches (300 mm) of both sides of floor construction and below roof construction. Mark pipe as RADON VENT.
- D. Fire stop gas vent pipe penetrations through fire rated assemblies as specified in Section 07 84 00.
- E. Install electrical junction box near gas vent pipe for future connection to in-line fan and system failure alarms.
 - 1. Wire junction box to separate circuit on power panel.
 - 2. Label circuit for intended use.

3. Coordinate electrical installation with work of Division 26.

3.04 FIELD QUALITY CONTROL

- A. Request inspection of gas collection pipe before placing aggregate cover over pipe.
- B. Request inspection of vapor retarder before placing slab on grade.

END OF DIVISION 31

DIVISION 32 – EXTERIOR IMPROVEMENTS

(Revision Date: 03/11/16)

SECTION 32 00 00 EXTERIOR IMPROVEMENTS

See Also Division 03 – Concrete

Reference City of Spokane, Engineering Services Standard Plans
Washington State Department of Transportation Standard Plans

32 01 00 OPERATION AND MAINTENANCE OF EXTERIOR IMPROVEMENTS

32 01 17 FLEXIBLE PAVING REPAIR

- A. At repairs to utility trenches in asphalt paving, edges of asphalt at trenches are to be saw cut to a straight line after the subgrade has been backfilled.

SECTION 32 10 00 BASES, BALLASTS, AND PAVING

GENERAL:

Irrigation Sleeves:

- A. Irrigation sleeves are to be provided under all new hard surfaced paving. All lawn and planter areas are to be connected with sleeves to all adjacent lawn and planter areas to provide routing for current and future irrigation needs. If required, verify location of spare sleeves with the Project Manager.
- B. Sleeves are to be a minimum of 6" diameter PVC pipe, located approximately 1' below the surface to the top of the pipe. Extend sleeves 12" minimum beyond the edge of hard surfacing. Sleeves placed for future use are to be capped at both ends.
- C. Concrete walks, curbs, and mow strips are to be marked with a 2" high 'X' at the edge over top of each end of the irrigation sleeve. The 'X' may be either tooled into the surface for the green concrete, or saw cut after the concrete cures. Sleeves shall be located to allow easy access to fully slide piping through after installation.

Other Sleeves:

- A. Provide additional sleeves under sidewalks for future use by the District. Consult with the Project Manager for project requirements.
- B. Sleeves in this category are not to be used by the project for irrigation purposes.
- C. Sleeves are to be a minimum of 6" diameter PVC pipe, located approximately 18" below the surface to the top of the pipe. Extend sleeves 12" minimum beyond the edge of hard surfacing. Cap both ends.
- D. Concrete walks, curbs, and mow strips are to be marked with a 2" high 'X' at the edge over top of each end of the irrigation sleeve. The 'X' may be either tooled into the surface for the green concrete, or saw cut after the concrete cures.

32 12 16 ASPHALT PAVING

Typical paving profile for roadways, driveways, and parking lots:

- A. Hot Mix Asphalt (HMA) pavement shall conform to current WSDOT Specification, Division 5-04, Class ½-inch (PG 64-28) to the depth of 3-inches compacted or as indicated on the drawings.
- B. Aggregate Granular Base Course shall conform to current WSDOT Specification, Division 4 "Bases" and Division 9 "Aggregates". Crushed surfacing top course shall be 5/8-inch minus according to the gradations in Section 9-03.9(3). Base course may be applied in a single lift of 6" depth or as indicated on the drawings (see appendix for detail). Compaction shall be performed and continued until not less than 95% of the maximum density, determined by ASTM D1557, is obtained.
- C. Soil Sterilization: The sterilant shall be a borate or chlorate sterilant containing not less than 25% sodium chlorate and shall be mixed thoroughly with water at a rate of 1-1/2 lbs. of sterilant per gallon of water. Sterilant is to be applied to the subgrade just prior to paving. Provide 5 year warranty from sterilant manufacturer.

- D. The tops of all manholes, valve boxes, catch basins, et al. shall be adjusted to be flush with the finished grade. The new bituminous surface treatment and base course shall be feathered into existing surfaces to provide a smooth transition.

32 13 13 CONCRETE PAVING

- A. Place no concrete when air temperature is predicted to fall below 40-degrees F within the succeeding 24 hours unless approved equipment to maintain a mass temperature of 50-degrees F or above is present and ready for use at the site.
- B. Place no concrete when air temperature is predicted to exceed 90-degrees F in the succeeding 24 hours, except under the direction of Project Manager.
- C. Conform to ACI 306 and ACI 305 for cold weather and hot weather concreting.
- D. Concrete shall meet tolerances of ACI 117. Slabs and walks and paving shall meet requirements of ACI 302.1 R-96, Chapter 8.
- E. Cement shall be one brand of Portland cement meeting ASTM C150, Type I or Type II. Either Type may be used, but changes in Type or in admix shall be at approved locations.
- F. Aggregate shall be clean, hard, durable particles of natural sand conforming to ASTM C33 for fine aggregate. Clean uniformly hard, durable particles of gravel or crushed stone conforming to ASTM C33 for coarse aggregate. Special as specified for exposed aggregate flat work.

Sieve size	Percent Passing
2-inch	100%
1-1/2-inch	90-100% (min 600 lbs/cubic yard)
1-inch	20-55%
3/4-inch	0-15%
3/8-inch	0-5%
No. 200	0-1.5%

- G. Driveway Apron concrete shall be 6" in depth or as indicated and minimum reinforcement of #3 bars @ 16" O.C. each way unless otherwise indicated.
- H. Compact the granular base to 95% of maximum dry unit weight in accordance with ASTM D1557.
- I. The concrete shall be sealed with L & M Construction Chemicals, Inc. Pentane 40 penetrating Silane treatment, or approved equal, in accordance with manufacturer's recommendations. Also See Division 03 Concrete
- J. 14 day "wet cure" is required.
- K. Wet cut all joints within 1-1/2 hours after finishing. Maximum spacing is 20 feet on interior slabs or as indicated.
- L. See DWG C2 and C3 for light pole base details. (Reference DIVISION 26 - Electrical

32 16 13 CONCRETE CURBS AND GUTTERS

- A. Concrete curbing shall be sealed with L & M Construction Chemicals, Inc. Pentane 40 penetrating Silane treatment, or approved equal, in accordance with manufacturer's recommendations. Also see Division 03 - CONCRETE.

32 17 23 PAVEMENT MARKING

- A. Striping of roadways and parking lots, and painting of curbs, is to be included in the Contract.
- B. *For projects at SCC*, striping of parking lots is to be done in yellow paint.
- C. *For projects at SFCC*, striping of student parking areas is to be done in yellow paint. Striping of faculty parking areas is to be done in white paint.
- D. All accessible parking stalls, ("State Disabled Parking Permit Required" and "D Permit Required") are to be striped with white paint.
- E. Several colors of curb painting may be required, depending on designation of parking stalls. Verify requirements with the Project Manager.
1. Faculty parking: Red, with "FACULTY" stenciled in 6" white lettering.
 2. Visitor parking: Green, with "VISITOR" stenciled in 6" white lettering.

3. Student parking: (unpainted)
4. Disabled parking: Blue.
5. No parking: Yellow.

32 18 00 ATHLETIC AND RECREATIONAL SURFACES

32 18 16 SYNTHETIC RESILIENT SURFACING

32 18 16 13 PLAYGROUND PROTECTIVE SURFACING

Playground Surfacing:

- A. The wood chip surfacing used at all childcare facilities managed by The District is the patented Fibar System. This system includes a 10 year performance warranty. All repairs, modifications, or additions to existing playground areas are to maintain the use of this product, in order to maintain the warranty. Substitution of other products may be permitted in newly developed playground areas. Review options with the Project Manager.
- B. The system includes a crushed rock base, geotextile filter fabric, a drainage system, and wood fiber surfacing. The thickness of the wood fibers is typically 12", but is dependent upon the maximum height of the playground equipment installed in the area. A rubber mat is incorporated at the bottom of slides and elsewhere following the manufacturer's recommendations.
- C. Fibar is represented in the region by Sitelines Park and Playground Products, 626 128th Street S.W., Suite 104A, Everett, Washington 98204, phone (425) 355-5655.

SECTION 32 80 00 IRRIGATION SYSTEM

Materials:

- A. For systems at SCC (and IEL facilities supported by SCC):
 1. Heads: Toro 800 Series
 2. Valves: Irritrol 770 Series
 3. Controllers: Toro Custom Command
 4. Gate Valves: Rainbird BV Series PVC Ball Valve
- B. For systems at SFCC (and IEL facilities supported by SFCC):
 1. Heads: Rainbird 5004+ series
 2. Valves: Rainbird PEB series.
 3. Controllers: ESPLX.
- C. When PVC pipe is used, it must be schedule 40 or better.

Design:

- A. Irrigation systems are to be designed for automated, timed watering.
- B. Systems are to be designed for air blow out. Provide quick connect couplings.
- C. Assure heads are placed to keep water off of buildings and other structures. Typically space 8" from walls.
- D. Stagger sprinkler head locations to assure full, even coverage.
- E. Sprinkler layout drawings are to be submitted to the Project Manager for review simultaneous with the Consultant's review. The Contractor shall not be directed to proceed with sprinkler installation without the concurrence of the Project Manager.

Annual Season:

- A. The irrigation systems are typically activated on or about April 15 every spring.
- F. The irrigation systems are typically winterized on or about October 15 every fall.
- G. Construction projects otherwise completed between these dates must provide written agreements covering correction of irrigation system problems if the system has not been accepted by the Project Manager prior to the fall winterization of the campus.

SECTION 32 90 00 PLANTING

GENERAL:

- A. At SFCC, all plantings are to conform to the "SFCC Landscape Master Plan", dated 3/1/96. Copies are available from the Project Manager.
- B. All existing plants, shrubs and/or trees within the construction zone, within 20 feet outside of the construction zone, and are not scheduled to be removed during construction shall be protected from harm as determined and directed by the project manager and or the landscape architect of record.
- C. All wire baskets and burlap wrap are to be removed from the balls of all trees and shrubs during planting. Soil at the sides of all holes dug for trees and shrubs is to be loosened to remove any "glazing" that may inhibit root penetration. The Contractor is to notify the Project Manager prior to backfilling around new trees to allow time for inspection by College personnel.

32 91 00 PLANTING PREPARATION

Topsoil:

- A. Assume that topsoil must be imported onto the site for all projects.
- B. Topsoil to be clean, rich, fertile soil free of debris, noxious weeds, major roots, and no rocks over 1 ½" in size. Gradation to be: 15 to 60% sand, 10 to 60% silt, 0 to 10% clay, and minimum 5% organic matter. Mead "Sandy Loam" will not be accepted because of noxious weed content.
- C. For 208 Drainage swales, local Mead "Sandy Loam" is not acceptable as it contains too much silt for water to easily penetrate. Subgrades must be scarified 12" deep and all compaction should held in the range of 70-80% for both the subgrade and topsoil. Till-in to subgrade minimum of 2" top soil, and again, holding compaction to the 70-80% range.

Shrub Beds:

- A. Use of shrub beds should be limited, particularly in open lawn areas. It is recommended to incorporate trees into groupings within shrub beds rather than stand alone in open lawns.
- B. Shrub beds are to be covered with a 2" layer of basalt chip gravel, size 5/8".
- C. Shrub beds are to be irrigated.
- D. Plant material in shrub beds should be of indigenous plant material.
- E. Shrub beds shall be used as buffer zones around buildings.

32 92 00 TURF AND GRASSES

Lawns:

- A. All lawn areas are to be separated from walls of buildings or shrub beds with a concrete mow strip at least 12" wide.
- B. In general, new lawn areas are to be sodded. Discuss with the Project Manager, the viability of hydro seed on an individual project basis.
- C. Lawn areas are to be aerated to a depth of at least 4", and top dressed with a minimum of 2" of sand prior to installation of sod. The Contractor is to notify the Project Manager prior to the start of placing sod to allow time for inspection by College personnel.
- D. Edge of sod is to meet edges of mow strips, curbs, and walks flush with the top of the concrete.
- E. Lawn areas are to be irrigated.

END OF DIVISION 32

DIVISION 33 – UTILITIES

(Revision Date: 03/11/16)

SECTION 33 10 00 WATER UTILITIES

33 12 19 WATER UTILITY DISTRIBUTION FIRE HYDRANTS

Fire Hydrants shall meet the requirements outlined in **Section 9-30.5 of the City of Spokane General Special Provisions and Standard Plan Y-101:**

A. Hydrants:

1. Fire hydrants shall conform to AWWA C502-94, or latest revision thereof, and the Standard for Dry-Barrel Fire Hydrants.
2. Fire hydrants shall be of standard manufacture and of a pattern approved by the Community Colleges of Spokane and/or the Authority Having Jurisdiction.
3. The fire hydrant shall be designed and manufactured such that the valve seat can be replaced without the necessity of digging the hydrant.
4. The fire hydrant shoe (hydrant bottom section containing the hydrant main valve seat assembly) shall be ductile iron with epoxy coating (**NOTE:** Cast iron is not acceptable).
5. Hydrants shall be equipped with hose port and steamer port cap chains.
6. Hydrants shall be painted in accordance to AWWA C502, Section 4.2 Painting, and in accordance to the Community Colleges of Spokane standard color(s) as follows:
7. Solid Yellow (see exterior metal coatings Division 9 of these standards).

B. End Connections:

1. The end connection shall be mechanical joint conforming to AWWA C-110 and C-111.

C. Hydrant Dimensions: The dimensions and details of the hydrant and nozzels, unless otherwise noted, shall be as follows:

1. Working pressure shall be 150 PSI.
2. Hydrant connection pipes shall be 6-inch inside diameter, ductile iron mechanical joint pipe.
3. Main valve seat: only fire hydrants with a compression type main valve that closes with water pressure will be accepted. The design shall allow for the operating parts, including the valve seat to be removed through the barrel without excavation. The minimum diameter opening shall be 5 ¼-inch. Main valve seats must be threaded type.
4. Hydrants shall have two 2 ½-inch nozzles and one 4 ½-inch nozzle. Nozzels shall be threaded-in type or 1/4 turn O-ring with lock. (NOTE: Threaded nozzels shall not be accepted.)
5. Hydrants shall be suitable for 5-foot, 5 ½-foot, and 6-foot bury (as specified) and equipped with ground line safety flange.
6. There shall be a minimum of 18-inches between the center of the pumper nozzle nut and the ground line.
7. There shall be a minimum of 34-inches between the ground line and the top of the operating nut.
8. Hydrants shall have a ductile iron shoe with epoxy coating.
9. Hydrants shall open left (COUNTER CLOCKWISE).
10. Hydrants shall have national standard stems and caps meeting the following: a. Pattern of nut: pentagon. b. Height of nut: 1-inch minimum. c. Size: 1 ½-inch at the base, 1 7/16-inch at the top, faces to be tapered uniformly.
11. Hydrants shall be equipped with hose port and streamer port cap chains attached to the nozzle section.
12. Hydrants shall have O-ring stuffing boxes.
13. Stortz fitting:
 - a. Harrington Model – Stortz 125 – 5-inch or equal.
 - b. 1/4 turn hydrant streamer port adapter.

- c. 5-inch Stortz X 4.5-inch female thread.
 - d. National hose thread 4.5-inch to match the existing pattern.
 - e. Stortz blind cap with cable.
 - f. Two lock screws to hydrant nozzle for theft protection.
- D. Saddles
1. Saddles shall be ductile iron, bronze, or stainless steel.
 2. Saddles used for 3/4-inch, 1-inch, 1 ½-inch, and 2-inch services shall be double strap and shall be female iron pipe thread outlet.
- E. Acceptable Manufacturers and Models of Hydrants:
1. American Darling – Model #B-62-B
 2. Clow – Medallion
 3. M & H (Dresser) – 929 Reliant
 4. Mueller – Super Centurion 200
 5. Waterous – Pacer WB-67
 6. Kennedy – Guardian K-81

SECTION 33 51 00 NATURAL GAS DISTRIBUTION

- A. Where ever possible underground, polyethylene piping and tubing is preferred. Product shall conform to ASTM D3350 and ASTM D2513. Minimum wall thickness shall conform to ANSI-AMSE B31.8. PE pipe is for underground use only. Steel sleeves maybe needed at high traffic crossings.

SECTION 33 71 19 ELECTRICAL MANHOLES AND HANDHOLES

- A. Vaults/manholes are to be prefabricated in sections and traffic rated.
- B. Vaults/manholes are to have 12" minimum of cover except for the cover section. The cover section shall be set flush with finished grade in paved areas and 2 inches above finished grade in unpaved areas. (should be flush everywhere)
- C. The cover section is to have a 42" square spring assisted traffic cover with flush penta-head bolt. The cover is also to have a concealed padlock hasp large enough to accept a Schlage padlock.
- D. Vaults/manholes are to have a permanent, bolt-on ladder.
- E. All vaults/manholes are to have a ground rod.
- F. All vaults/manholes are to have a floor drain with 2 cubic foot gravel pocket.
- G. All vaults/manholes are to be watertight. A sealing compound shall be applied to the concrete on the inside and outside of the vault prior to installation to prevent penetration into the vault. After ducts are terminated, the patched areas around ducts and other penetrations shall also be sealed.
- H. Seal unused ducts and around primary cables with "Duc-Seal;" or equal.
- I. Provide a permanently attached brass tag at the top of each vault/manhole with engraved identification as directed by the Project Manager.
- J. Power vaults/manholes are to have a minimum inside dimensions of 14'-0" long by 9'-0" wide by 8'-0" high. Covers shall say "ELECTRICAL" and "DANGER HIGH VOLTAGE."
- K. Communications vaults/manholes are to have minimum inside dimensions of 7'-0" long by 4'-8" wide by 7'-0" high. Covers shall say "COMMUNICATIONS".
- L. In all vaults/manholes provide a damp location fluorescent light fixture, with a weatherproof switch at the top of the ladder. Provide a weatherproof convenience receptacle in all vaults/manholes.

- M. Mount a plastic laminated primary distribution system one-line diagram in each primary vault/manhole. Include a "YOU ARE HERE" symbol.
- N. Provide a permanently attached brass tag on the top of each vault/manhole with engraved identification as directed by the Project Manager.
- O. Use of vaults and confined space should be avoided whenever possible.

SECTION 33 71 20 TRANSFORMER VAULTS

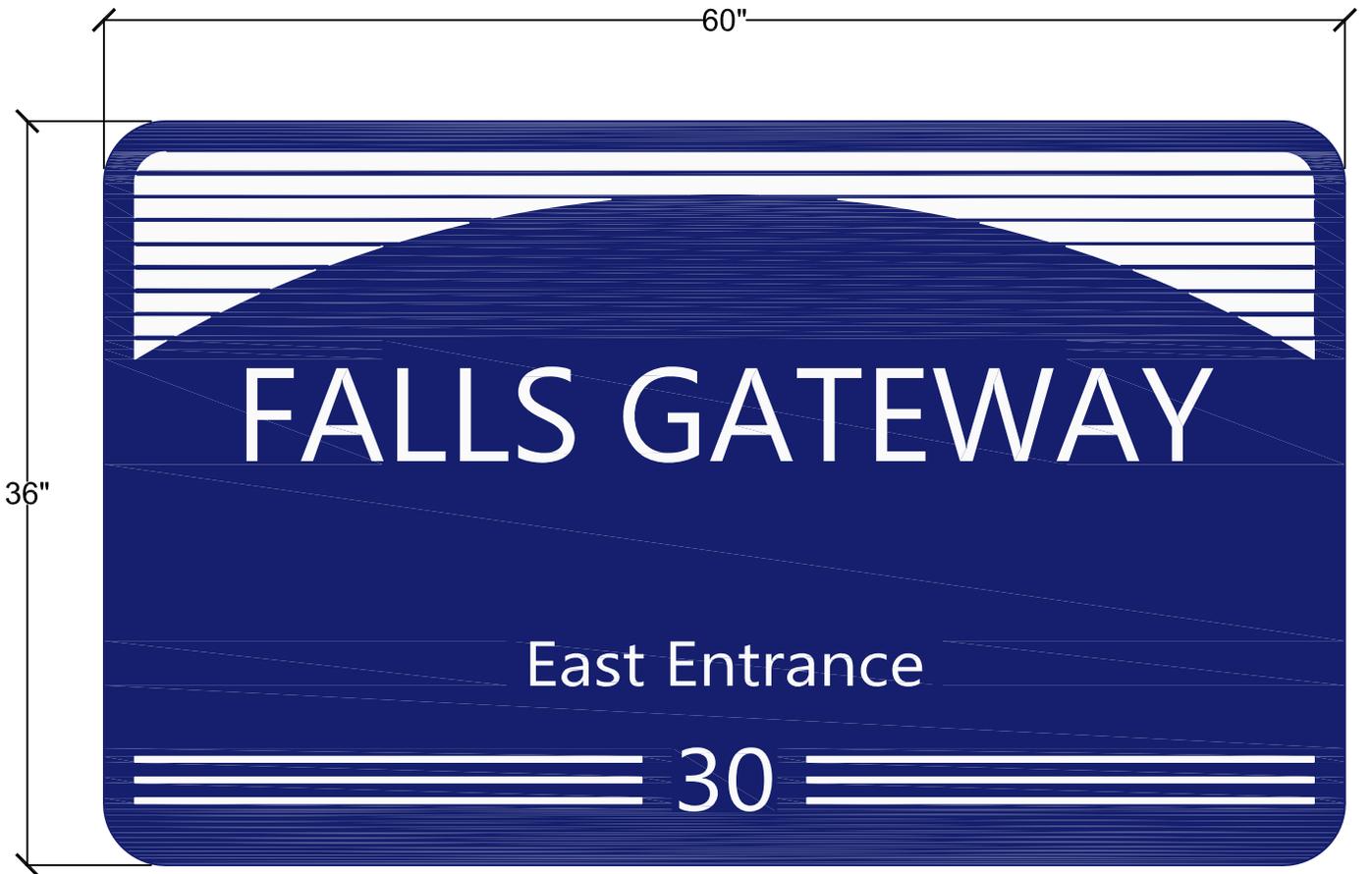
- A. **Transformers shall be placed above ground wherever possible. Only if not feasible above ground will underground vaults be acceptable and shall be specified with the following in consideration:**
- B. Vaults shall be a minimum of 8'-0" inside height by 10'-0" inside width.
- C. Provide Utility Vault grate/vent doors with frame, rated for traffic loading. Size vent so that there are 3 square inches (net) ventilation per KVA of installed KVA capacity. Provide weather protection to discourage precipitation and vegetation from entering vault.
- D. Access opening shall be equipped with a flush pentahead bolt and a concealed padlock hasp, sized large enough to accept the college's standard padlock.
- E. Provide threaded inserts in each corner and in the center of the vault floor for pulling in irons. Provide two irons per vault.
- F. Install (4) 3/4" x 10"-0" copper clad steel ground rods in each vault. Interconnect with #2/0 AWG copper. Connect all metal parts in vault to grounding system. See SECTION 16160 GROUNDING.
- G. Provide sump with metal grating at low voltage end of the vault. Sump shall have capacity for the oil contained in the largest transformer. Provide a local "sump oil alarm" with a remote alarm in location as dictated by the Project Manager.
- H. Provide a water sump pump at the low voltage end of the vault. Pump to automatically shut down if oil alarm is activated. Floor to slope to sump.
- I. Top of vault shall be level. Covers shall be set flush with finished grade in paved areas and 2" above finished grade in unpaved areas.
- J. All vaults shall be watertight. Care shall be taken to position gaskets per manufacturer's recommendations. A sealing compound shall be applied to the concrete on the inside and the outside of vault prior to installation to prevent penetration into the manhole. After ducts are terminated, the patched areas around ducts and other penetrations shall also be sealed.
- K. In all vaults/manholes provide a damp location fluorescent light fixture, with a weatherproof switch at the top of the ladder. Provide a weatherproof convenience receptacle in all vaults/manholes.
- L. Seal unused ducts and around primary cables with "Duc-Seal" or equal. Seal all joints and cracks with sealing compound to make vault watertight.
- M. Mount a plastic laminated primary distribution system one-line diagram in each primary vault/manhole. Include a "YOU ARE HERE" symbol. Provide signage for identification of confined space.
- N. Provide a permanently attached brass tag on the top of each vault/manhole with engraved identification as directed by the Project Manager.

SECTION 33 71 21 UNDERGROUND DUCTBANK

- A. The Consultant shall have a minimum of 3 years experience with the installation of primary cables, or shall subcontract the field inspection phase to others with the necessary experience.
- B. Ductbank shall have 4" diameter Type EB PVC ducts encased in reinforced concrete.
- C. Ducts shall be run in a straight line, using only standard, sweeping bends only if needed. Ducts shall be graded vertically to slope to handholes. Crooked runs will not be allowed. Provide end bells at all termination points.

- D. Provide nonmetallic duct spacers and chairs at 5'-0" (max.) intervals.
- E. Attach reinforcing steel to each corner of duct spacers. Dowel reinforcing steel into manhole wall or other concrete structure at each end of ductbank.
- F. Form ductbank with reusable and not with trench walls preferred.
- G. Concrete shall be RED ready mix, 3,000 psi, 5 1/2 sack mix. Largest aggregate shall be 7/8".
- H. All ducts shall be watertight. Duct runs shall be installed so that all runs slope to the associated manhole.
- I. During construction, partially completed duct lines shall be protected from the entrance of debris by means of suitable conduit plugs. As each section of ductbank is completed, a testing mandrel shall be drawn through until the conduit is clear. Conduit plugs shall then be immediately reinstalled.

END OF DIVISION 33



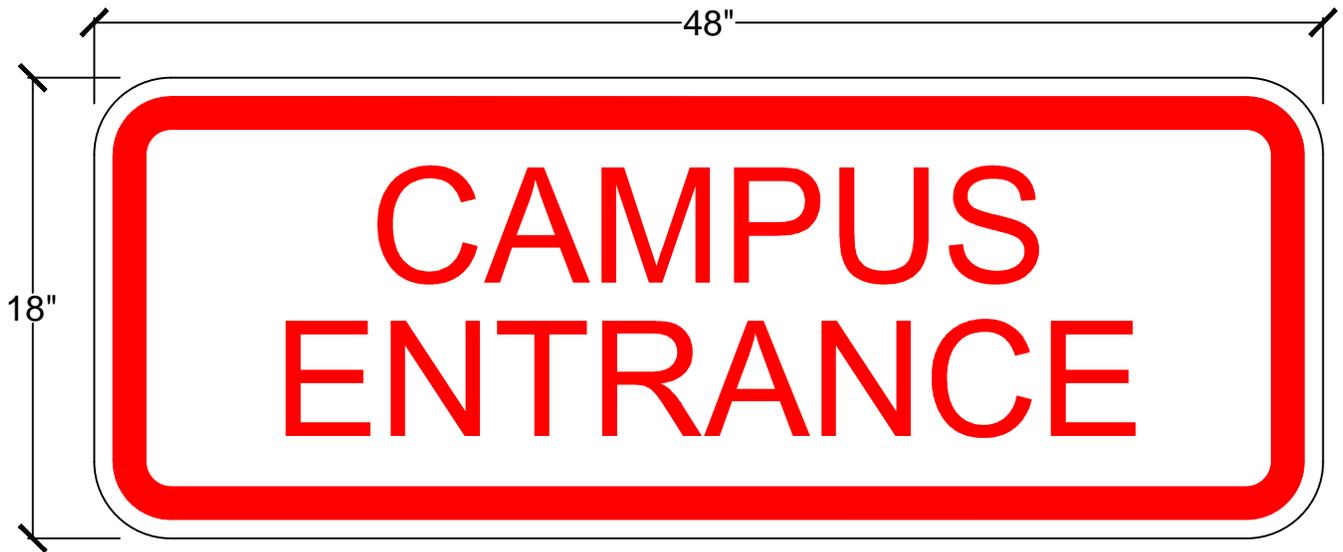
- Sign Material: .125AL
- 60" x 36"
- Colors/Design per file

	DISTRICT FACILITIES	CCS STANDARDS SIGNAGE DETAILS Bldg Sign Standard	DRN. BY: CJB	SCALE: NTS
	FACILITIES PLANNING AND DESIGN		CHECK:	CAD NAME: CCS Signage
			APPR:	DWG. NO.:
			DATE: 9-17-13	EX-BSS
			REV.: DATE:	
			REV. BY:	

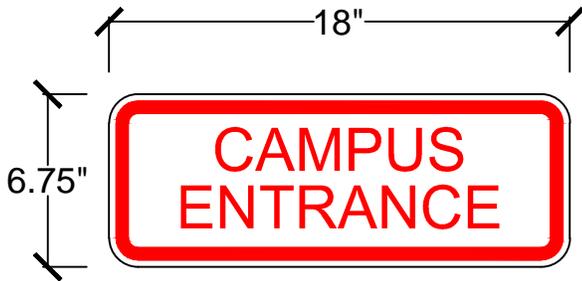


- Sign Material: .125AL
- 36" x 48"
- Colors/Design per file

 <p>Community Colleges of Spokane</p>	DISTRICT FACILITIES	<p>CCS STANDARDS SIGNAGE DETAILS</p> <p>Bldg Sign Standard</p>	DRN. BY: CJB	SCALE:
	FACILITIES PLANNING AND DESIGN		CHECK:	NTS
			APPR:	CAD NAME:
			DATE: 9-17-13	CCS Signage
	REV.: DATE:	DWG. NO.:		
	REV. BY:	EX-BSM		

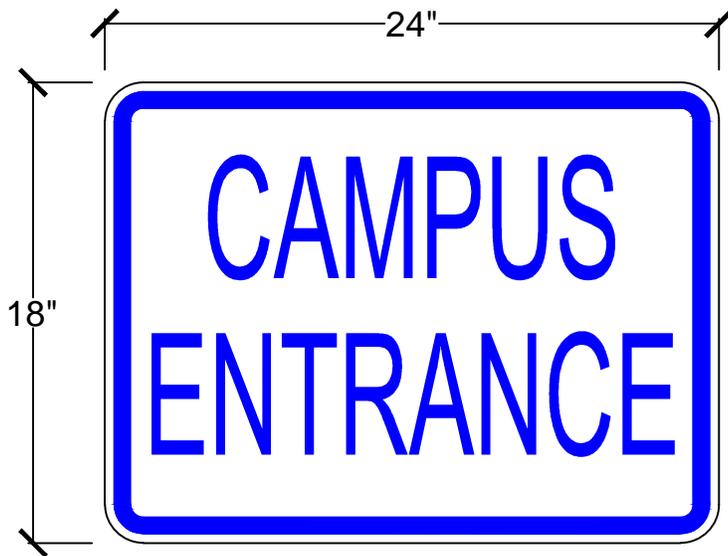


TYPE EX10.1



- Sign Material: .080AL
- High Intensity Grade Sheeting

TYPE EX10.2



TYPE EX10.3

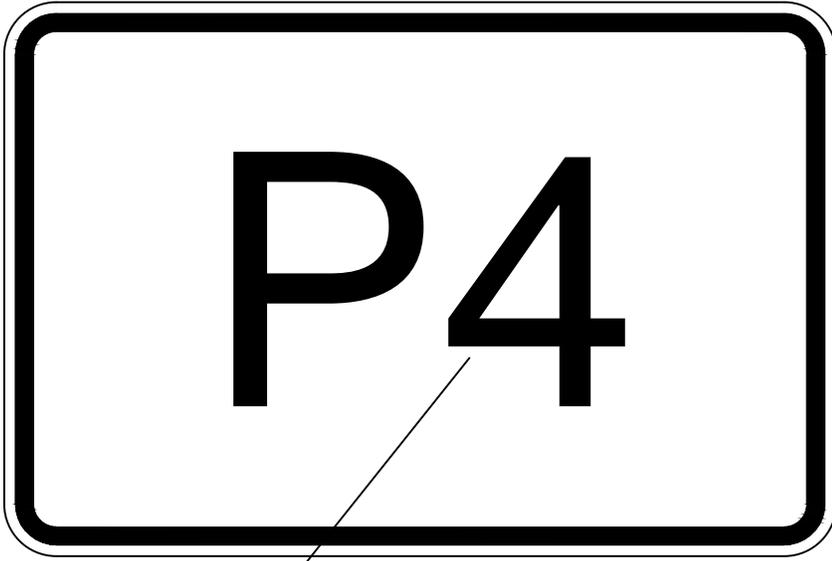
 <p>Community Colleges of Spokane</p>	DISTRICT FACILITIES	<p>CCS STANDARDS SIGNAGE DETAILS</p> <p>TYPE EX10.x</p>	DRN. BY: CJB	SCALE: NTS
	FACILITIES PLANNING AND DESIGN		CHECK:	CAD NAME: CCS Signage
			APPR:	DATE: 8-19-13
			REV.:	DATE:
			REV. BY:	DWG. NO.: ST-EX10.x



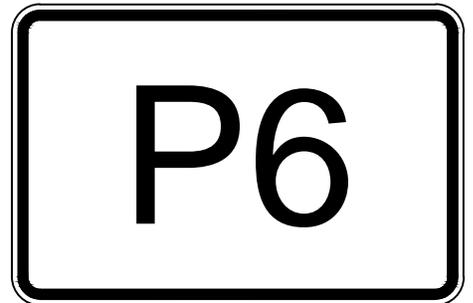
4"

- Sign Material: .125AL
- 24" x 24", 3" Radius Corners
- High Intensity Grade Sheeting

	DISTRICT FACILITIES	CCS STANDARDS SIGNAGE DETAILS TYPE EX9.1 24"x 24"	DRN. BY: CJB	SCALE: NTS
	FACILITIES PLANNING AND DESIGN		CHECK:	APPR:
			DATE: 8-20-13	DWG. NO.: ST-EX9.1
			REV.: DATE:	
			REV. BY:	



11"



- Sign Material: .125AL
- 36" x 24", 3" Radius Corners
- High Intensity Grade Sheeting
- Basis WSDOT R10-13



DISTRICT
FACILITIES

FACILITIES
PLANNING
AND
DESIGN

**CCS STANDARDS
SIGNAGE DETAILS**

**TYPE EX8.1
36"x 24"**

DRN. BY: **CJB**

CHECK:

APPR:

DATE: **8-20-13**

REV.:

DATE:

REV. BY:

SCALE:

NTS

CAD NAME:

CCS Signage

DWG. NO.:

ST-EX8.1

6"

2"

6"

6"

4"



- Sign Material: .125AL
- 48" x 48", 3" Radius Corners
- High Intensity Grade Sheeting



DISTRICT FACILITIES

FACILITIES PLANNING AND DESIGN

CCS STANDARDS SIGNAGE DETAILS

**TYPE EX7.4
48"x 48"**

DRN. BY: **CJB**

CHECK:

APPR:

DATE: **8-20-13**

REV.:

DATE:

REV. BY:

SCALE:

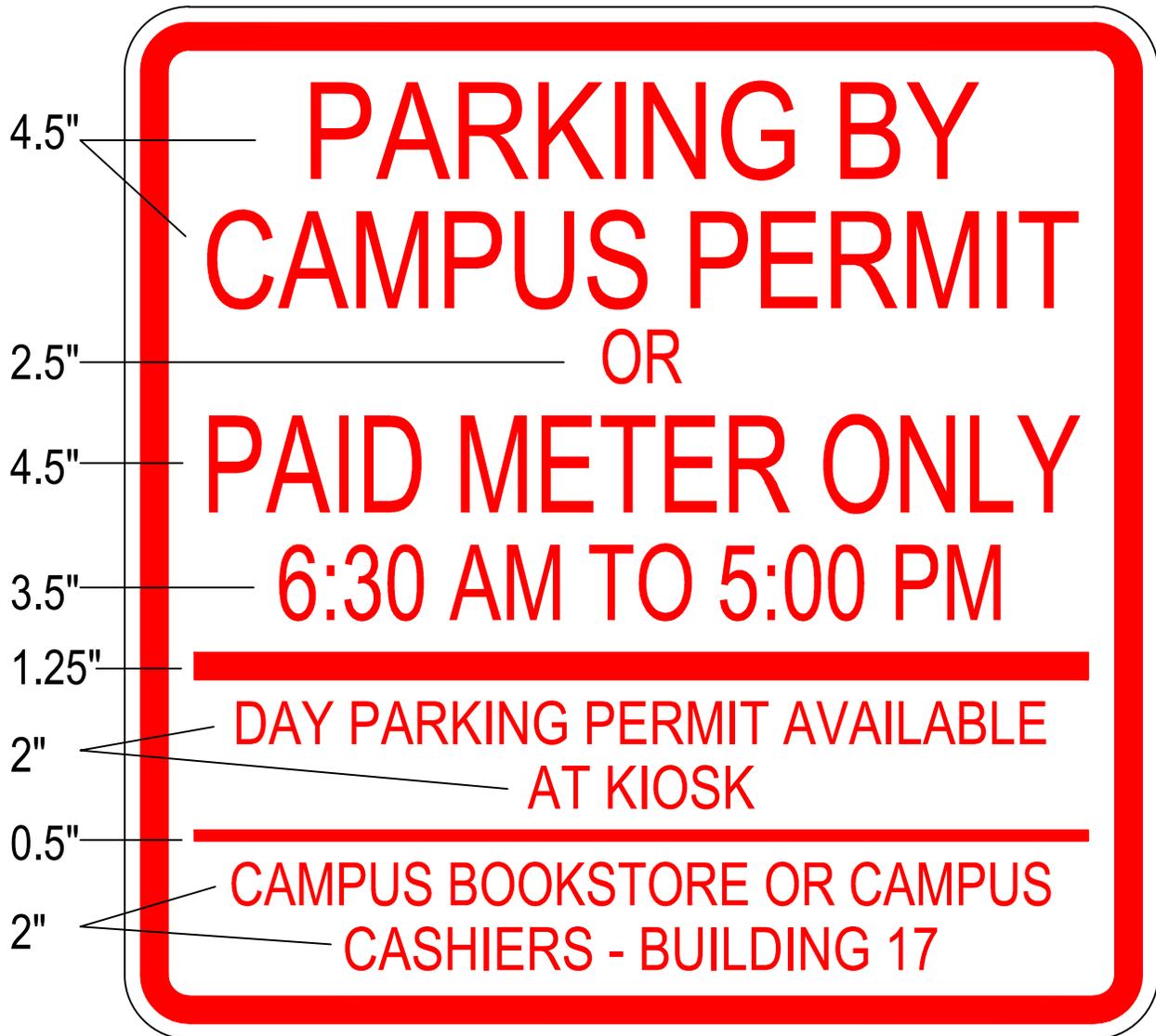
NTS

CAD NAME:

CCS Signage

DWG. NO.:

ST-EX7.4



- Sign Material: .125AL
- 48" x 48", 3" Radius Corners
- High Intensity Grade Sheeting

	DISTRICT FACILITIES	CCS STANDARDS SIGNAGE DETAILS TYPE EX7.3 48"x 48"	DRN. BY: CJB	SCALE: NTS
	FACILITIES PLANNING AND DESIGN		CHECK:	CAD NAME: CCS Signage
			APPR:	DWG. NO.: ST-EX7.3
			DATE: 8-20-13	
			REV.: DATE:	
	REV. BY:			

**THIS LOT
FACULTY &
METERED
PARKING ONLY**

6"

- Sign Material: .125AL
- 48" x 48", 3" Radius Corners
- High Intensity Grade Sheeting



DISTRICT
FACILITIES

FACILITIES
PLANNING
AND
DESIGN

**CCS STANDARDS
SIGNAGE DETAILS**

**TYPE EX7.2
48"x 48"**

DRN. BY: **CJB**

CHECK:

APPR:

DATE: **8-20-13**

REV.:

DATE:

REV. BY:

SCALE:

NTS

CAD NAME:

CCS Signage

DWG. NO.:

ST-EX7.2



- Sign Material: .125AL
- 48" x 48", 3" Radius Corners
- High Intensity Grade Sheeting



DISTRICT FACILITIES

FACILITIES PLANNING AND DESIGN

CCS STANDARDS SIGNAGE DETAILS

**TYPE EX7.1
48"x 48"**

DRN. BY: CJB

CHECK:

APPR:

DATE: 8-19-13

REV.:

DATE:

REV. BY:

SCALE:

NTS

CAD NAME:

CCS Signage

DWG. NO.:

ST-EX7.1



TYPE EX6A.1a

- Sign Material: .080AL
- 12" x 18"
- High Intensity Grade Sheeting
- WSDOT R7-1, R7-101

	DISTRICT FACILITIES	CCS STANDARDS SIGNAGE DETAILS TYPE EX6A.x 12"x 18"	DRN. BY: CJB	SCALE: NTS
	FACILITIES PLANNING AND DESIGN		CHECK:	CAD NAME: CCS Signage
			APPR:	
			DATE: 8-19-13	DWG. NO.:
			REV.: DATE:	ST-EX6A.x
	REV. BY:			



TYPE EX5A.1



TYPE EX5A.2



TYPE EX5A.1a



TYPE EX5A.1b

- Sign Material: .080AL
- 12" x 18" (12" x 6", EX5A.1a & b)
- High Intensity Grade Sheeting
- WSDOT R7-1, R7-101

	DISTRICT FACILITIES	CCS STANDARDS SIGNAGE DETAILS TYPE EX5A.x 12"x 18"	DRN. BY: CJB	SCALE:
	FACILITIES PLANNING AND DESIGN		CHECK:	NTS
			APPR:	CAD NAME:
			DATE: 8-19-13	CCS Signage
			REV.: DATE:	DWG. NO.:
	REV. BY:	ST-EX5A.x		



TYPE EX4F.1

- Sign Material: .080AL
- 12" x 18"
- High Intensity Grade Sheeting
- WSDOT R7-1, R7-101

	DISTRICT FACILITIES	CCS STANDARDS SIGNAGE DETAILS TYPE EX4F.x 12"x 18"	DRN. BY: CJB	SCALE: NTS		
	FACILITIES PLANNING AND DESIGN		CHECK:	CAD NAME: CCS Signage		
			APPR:		DWG. NO.:	
			DATE: 8-19-13	REV.:	DATE:	ST-EX4F.x
			REV. BY:			



TYPE EX4E.1



TYPE EX4E.2

- Sign Material: .080AL
- 12" x 18" (EX4E.2 - 18" x 24")
- High Intensity Grade Sheeting
- WSDOT R7-1, R7-101

	DISTRICT FACILITIES	CCS STANDARDS SIGNAGE DETAILS TYPE EX4E.x 12"x 18"	DRN. BY: CJB	SCALE: NTS
	FACILITIES PLANNING AND DESIGN		CHECK:	CAD NAME: CCS Signage
			APPR:	DWG. NO.: ST-EX4E.x
			DATE: 8-19-13	
			REV.: DATE:	
	REV. BY:			



TYPE EX4D.1



TYPE EX4D.2



TYPE EX4D.3



TYPE EX4D.4

- Sign Material: .080AL
- 12" x 18"
- High Intensity Grade Sheeting
- WSDOT R7-1, R7-101

	DISTRICT FACILITIES	CCS STANDARDS SIGNAGE DETAILS TYPE EX4D.x 12"x 18"	DRN. BY: CJB	SCALE: NTS
	FACILITIES PLANNING AND DESIGN		CHECK:	CAD NAME: CCS Signage
			APPR:	DWG. NO.: ST-EX4D.x
			DATE: 8-19-13	
	REV.:	DATE:		
		REV. BY:		



TYPE EX4C.1



TYPE EX4C.2



TYPE EX4C.3



TYPE EX4C.4

- Sign Material: .080AL
- 12" x 18"
- High Intensity Grade Sheeting
- WSDOT R7-1, R7-101

	DISTRICT FACILITIES	CCS STANDARDS SIGNAGE DETAILS TYPE EX4C.x 12"x 18"	DRN. BY: CJB	SCALE: NTS	
	FACILITIES PLANNING AND DESIGN		CHECK:	CAD NAME: CCS Signage	
			APPR:	DATE: 8-19-13	DWG. NO.:
			REV.:	DATE:	ST-EX4C.x
		REV. BY:			



TYPE EX4B.1



TYPE EX4B.2

- Sign Material: .080AL
- 12" x 18"
- High Intensity Grade Sheeting
- WSDOT R7-1, R7-101

	DISTRICT FACILITIES	CCS STANDARDS SIGNAGE DETAILS TYPE EX4B.x 12"x 18"	DRN. BY: CJB	SCALE: NTS
	FACILITIES PLANNING AND DESIGN		CHECK:	CAD NAME: CCS Signage
			APPR:	DWG. NO.: ST-EX4B.x
			DATE: 8-19-13	
			REV.: DATE:	
	REV. BY:			



TYPE EX4A.1



TYPE EX4A.2



TYPE EX4A.3



TYPE EX4A.4

- Sign Material: .080AL
- 12" x 18"
- High Intensity Grade Sheeting
- WSDOT R7-1, R7-101

	DISTRICT FACILITIES	CCS STANDARDS SIGNAGE DETAILS TYPE EX4A.x 12"x 18"	DRN. BY: CJB	SCALE: NTS
	FACILITIES PLANNING AND DESIGN		CHECK:	CAD NAME: CCS Signage
			APPR:	DWG. NO.: ST-EX4A.x
			DATE: 8-19-13	
	REV.:	DATE:		
		REV. BY:		



- Sign Material: .080AL
- 18" x 24", 1.5" Radius Corners
- High Intensity Grade Sheeting
- Basis WSDOT R2-1

	DISTRICT FACILITIES	CCS STANDARDS SIGNAGE DETAILS TYPE EX2.2a 18" x 24"	DRN. BY: CJB	SCALE: NTS
	FACILITIES PLANNING AND DESIGN		CHECK:	CAD NAME: CCS Signage
			APPR:	DWG. NO.: ST-EX2.2a
			DATE: 8-19-13	
			REV.: DATE:	
			REV. BY:	



- Sign Material: .080AL
- 18" x 24", 1.5" Radius Corners
- High Intensity Grade Sheeting
- WSDOT R2-1



DISTRICT FACILITIES

FACILITIES PLANNING AND DESIGN

CCS STANDARDS SIGNAGE DETAILS

**TYPE EX2.1
18" x 24"**

DRN. BY: **CJB**

CHECK:

APPR:

DATE: **8-19-13**

REV.:

DATE:

REV. BY:

SCALE:

NTS

CAD NAME:

CCS Signage

DWG. NO.:

ST-EX2.1



- Sign Material: .080AL
- 24" x 24"
- High Intensity Grade Sheeting
- WSDOT R1-1

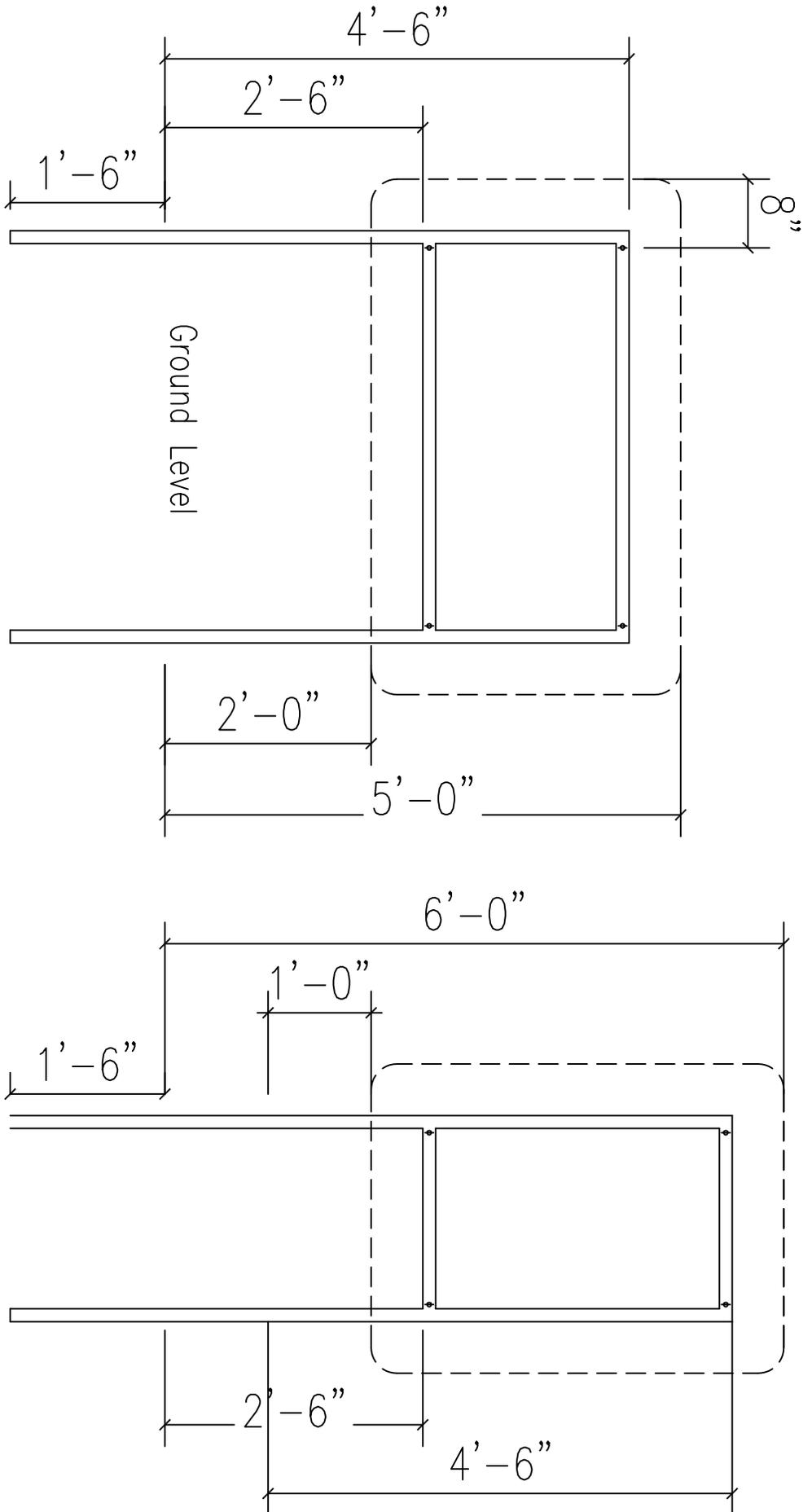
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	FACILITIES PLANNING AND DESIGN		CHECK:	CAD NAME: CCS Signage
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	REV. BY:			



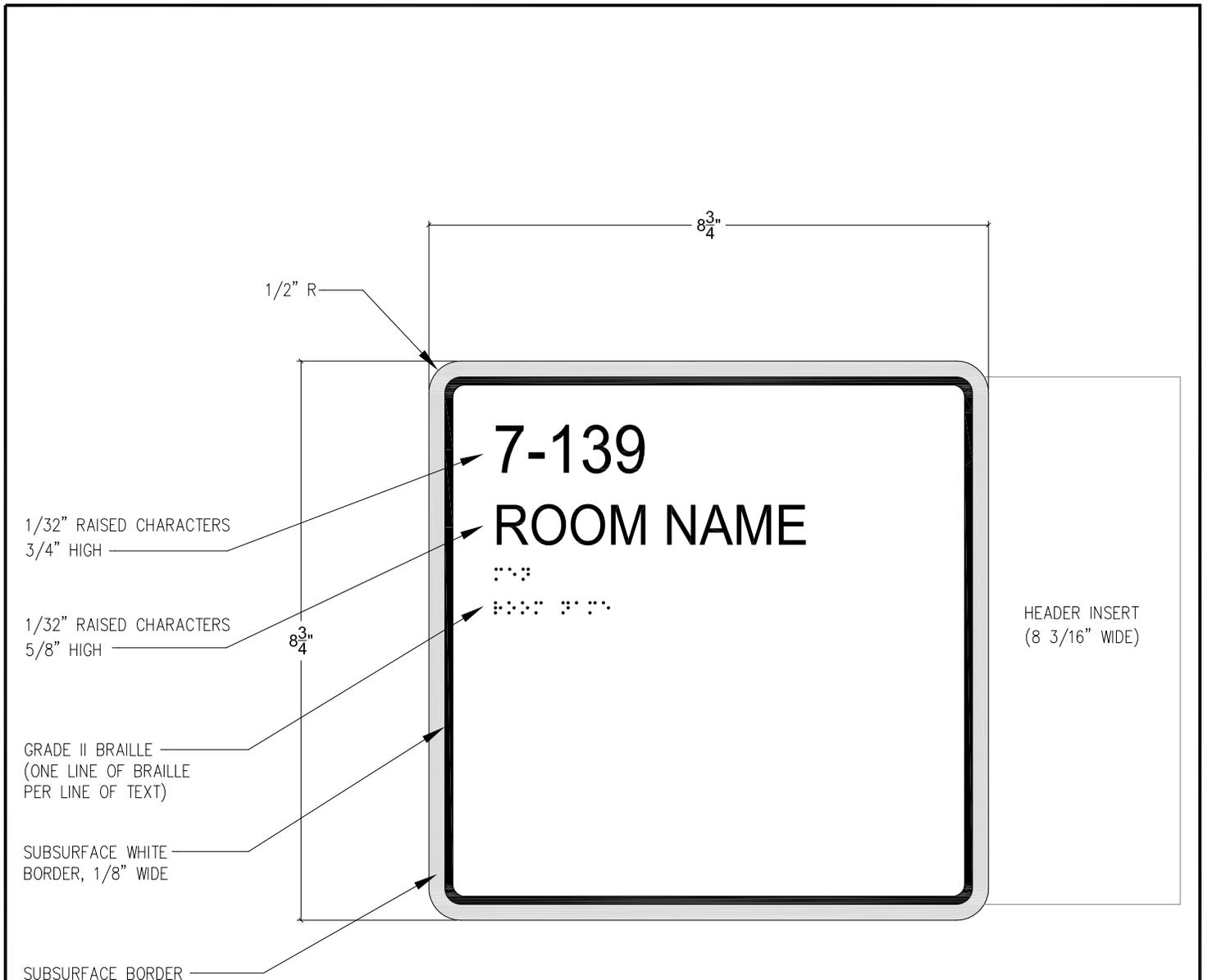
QTY: 1

- Sign Material: .080AL
- 18" x 24", 1.5" Radius Corners
- High Intensity Grade Sheeting (Blk on Ylw)
- Basis WSDOT R18-101

	DISTRICT FACILITIES	CCS STANDARDS SIGNAGE DETAILS TYPE EX2.3 18" x 24"	DRN. BY: CJB	SCALE: NTS
	FACILITIES PLANNING AND DESIGN		CHECK:	CAD NAME: CCS Signage
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			DATE: 10-11-13	
	REV.:	DATE:		
		REV. BY:		



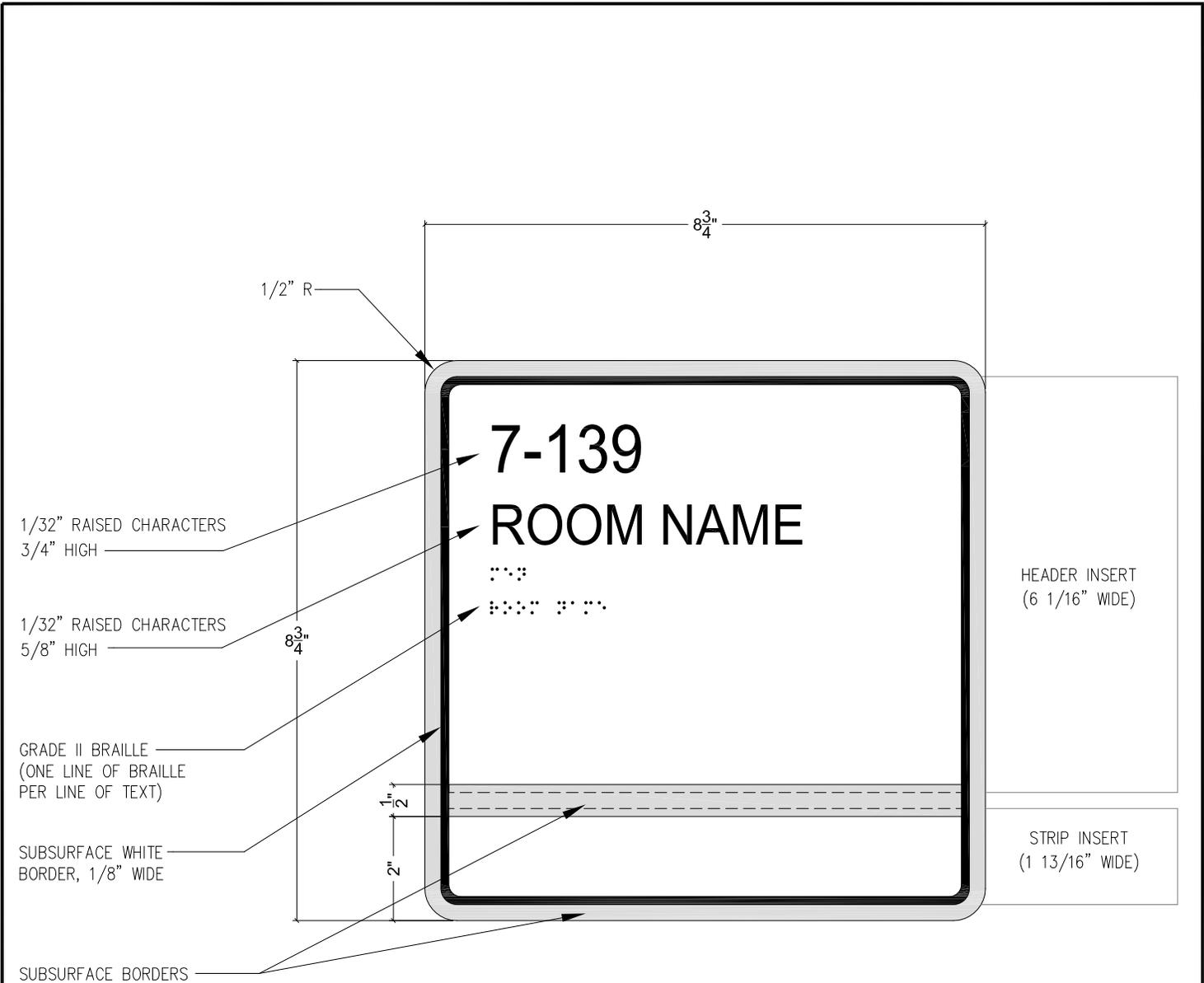
SCALE	TITLE	SHEET NO.
DATE	Exterior Sign Details	
8.11.08		
COMMUNITY COLLEGES OF SPOKANE FACILITIES DEPARTMENT SPOKANE, WA 99217		PROJECT Exterior Signage Community Colleges of Spokane



TYPE A
CHANGABLE SIGN WITH COLOR INSERT

- NOTES: 1. SEE DETAIL SHEET D1.0 FOR MORE DIMENSIONS
2. COMPLY WITH MOST CURRENT ADA AND CODE REQUIREMENTS.

 <p>COMMUNITY COLLEGES OF SPOKANE</p>	DISTRICT FACILITIES	<p>CCS STANDARDS SIGNAGE DETAILS</p> <p>TYPE A</p>	DRN. BY: CJB	SCALE: NTS	
	FACILITIES PLANNING AND DESIGN		CHECK:	APPR:	CAD NAME: CCS Signage
			DATE: 4-2-10	REV.:	DATE:
			REV. BY:	DWG. NO.: ST-A	



TYPE B
CHANGABLE SIGN WITH COLOR INSERT

NOTES: 1. SEE DETAIL SHEET D1.0 FOR MORE DIMENSIONS
2. COMPLY WITH MOST CURRENT ADA AND CODE REQUIREMENTS.

	DISTRICT FACILITIES	CCS STANDARDS SIGNAGE DETAILS TYPE B	DRN. BY: CJB	SCALE: NTS
	FACILITIES PLANNING AND DESIGN		CHECK:	CAD NAME: CCS Signage
			APPR:	DWG. NO.:
			DATE: 4-2-10	ST-B
			REV.:	
			DATE:	
			REV. BY:	



TYPE C
WITH BLANK COLOR INSERTS

XX-XXX = Bldg No.-Rm. No.

- NOTES: 1. SEE DETAIL SHEET D1.0 FOR MORE DIMENSIONS
 2. COMPLY WITH MOST CURRENT ADA AND CODE REQUIREMENTS.
 3. RESTROOM SIGNS SHALL HAVE WHITE PICTOGRAMS AND TEXT ON STANDARD ADA BLUE BACKGROUND

	DISTRICT FACILITIES	CCS STANDARDS SIGNAGE DETAILS TYPE C	DRN. BY: CJB	SCALE: NTS
	FACILITIES PLANNING AND DESIGN		CHECK:	CAD NAME: CCS Signage
			APPR:	DWG. NO.:
			DATE: 2/13/13	ST-C
			REV.:	
			DATE:	
			REV. BY:	



TYPE D
WITH BLANK COLOR INSERTS

XX-XXX = Bldg No.-Rm. No.

- NOTES: 1. SEE DETAIL SHEET D1.0 FOR MORE DIMENSIONS
 2. COMPLY WITH MOST CURRENT ADA AND CODE REQUIREMENTS.
 3. RESTROOM SIGNS SHALL HAVE WHITE PICTOGRAMS AND TEXT ON STANDARD ADA BLUE BACKGROUND

	DISTRICT FACILITIES	CCS STANDARDS SIGNAGE DETAILS TYPE D	DRN. BY: CJB	SCALE: NTS
	FACILITIES PLANNING AND DESIGN		CHECK:	CAD NAME: CCS Signage
			APPR:	DWG. NO.:
			DATE: 2/13/13	ST-D
			REV.:	
			DATE:	
			REV. BY:	



TYPE E
WITH BLANK COLOR INSERTS

XX-XXX = Bldg No.-Rm. No.

- NOTES: 1. SEE DETAIL SHEET D1.0 FOR MORE DIMENSIONS
 2. COMPLY WITH MOST CURRENT ADA AND CODE REQUIREMENTS.
 3. RESTROOM SIGNS SHALL HAVE WHITE PICTOGRAMS AND TEXT ON STANDARD ADA BLUE BACKGROUND

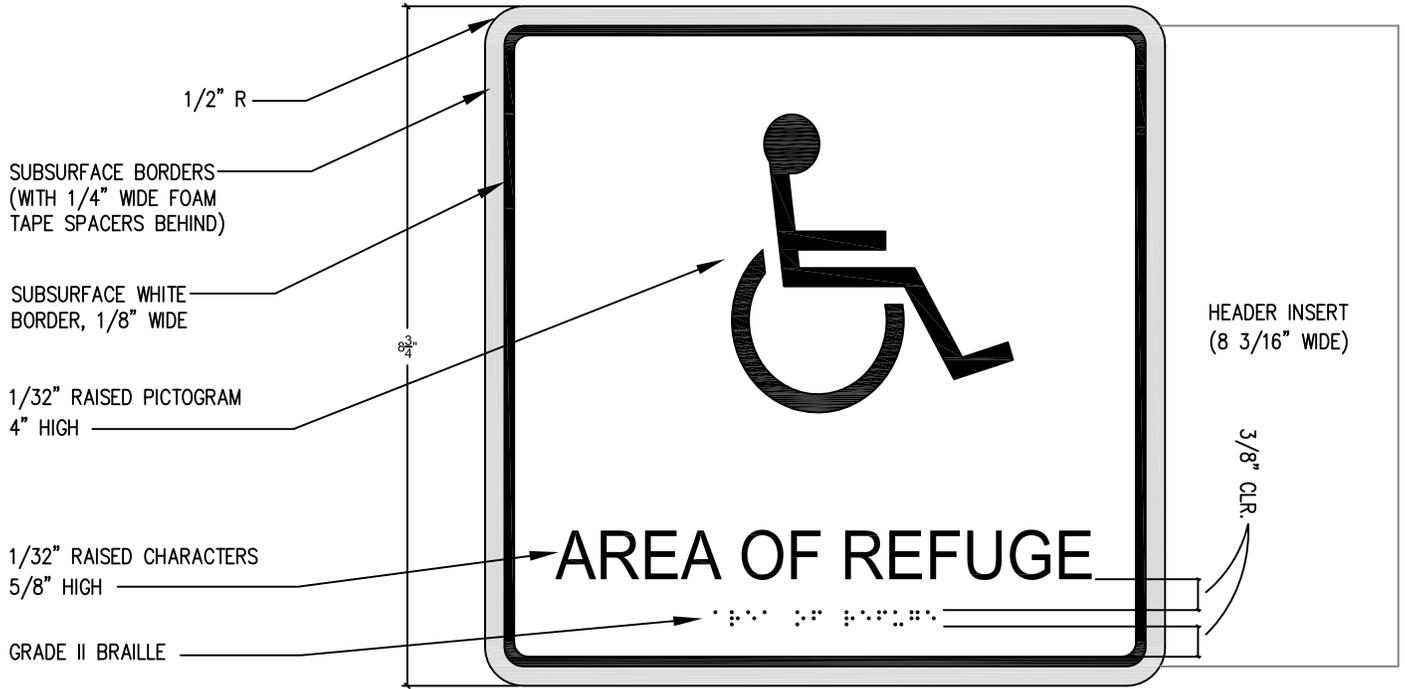
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	FACILITIES PLANNING AND DESIGN		CHECK:	APP:
			DATE: 2/13/13	DWG. NO.:
			REV.:	ST-E
			DATE:	
			REV. BY:	



TYPE F
WITH BLANK COLOR INSERTS

- NOTES: 1. SEE DETAIL SHEET D1.0 FOR MORE DIMENSIONS
2. COMPLY WITH MOST CURRENT ADA AND CODE REQUIREMENTS.

	DISTRICT FACILITIES	CCS STANDARDS SIGNAGE DETAILS TYPE F	DRN. BY: CJB	SCALE: NTS
	FACILITIES PLANNING AND DESIGN		CHECK:	APPR:
			DATE: 2/13/13	DWG. NO.:
			REV.: DATE:	ST-F
			REV. BY:	

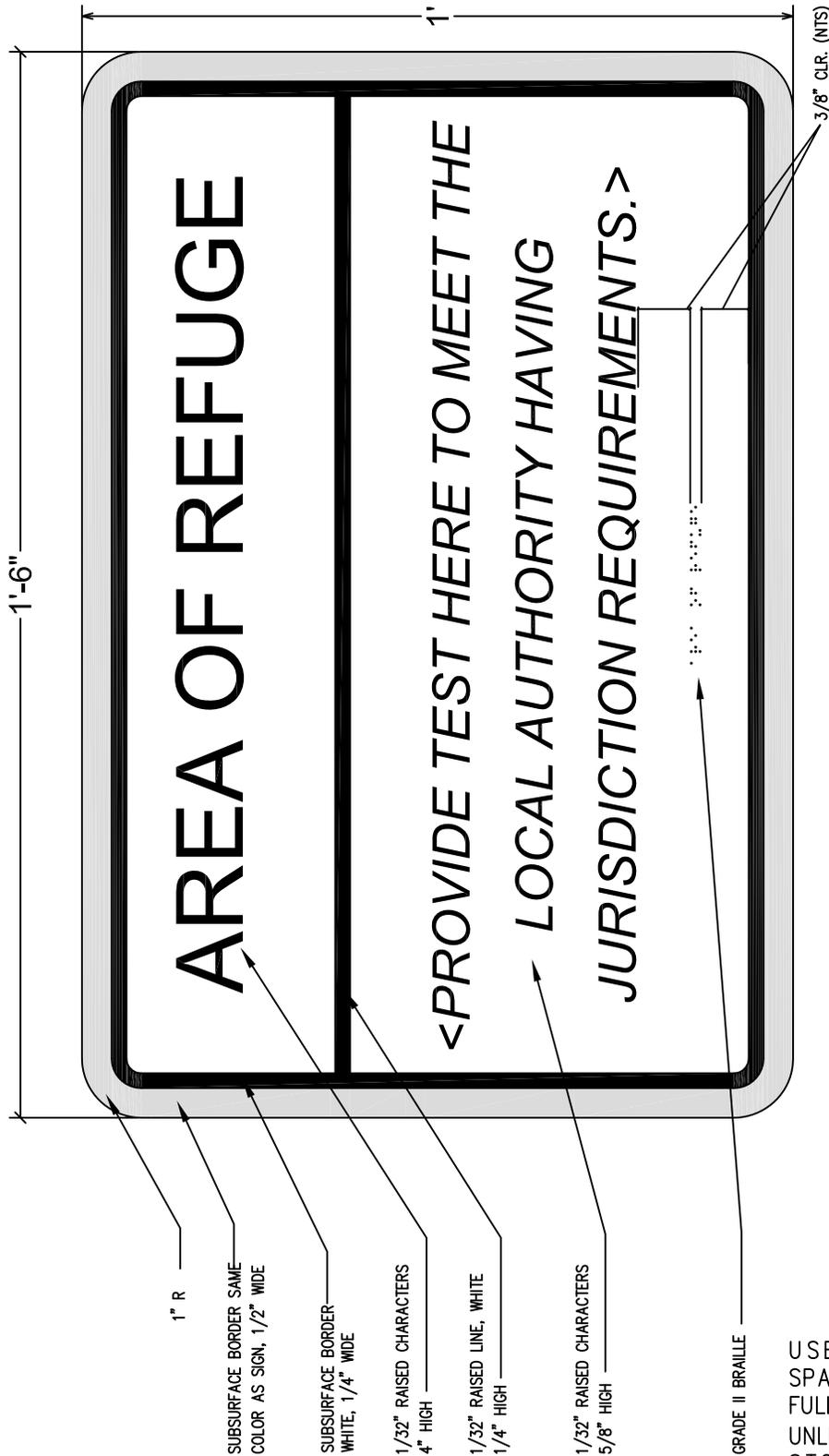


TYPE G
WITH BLANK COLOR INSERTS

NOTES:

1. SEE DETAIL SHEET D1.0 FOR MORE DIMENSIONS.
2. COMPLY WITH MOST CURRENT ADA AND CODE REQUIREMENTS.
3. COLOR TO BE WHITE ON ADA BLUE.

	DISTRICT FACILITIES	CCS STANDARDS SIGNAGE DETAILS TYPE G	DRN. BY: CJB	SCALE: NTS
	FACILITIES PLANNING AND DESIGN		CHECK:	CAD NAME: CCS Signage
			APPR:	DWG. NO.:
			DATE: 11-19-12	ST-G
			REV.:	
			DATE:	
			REV. BY:	



TYPE H

NOTES:

1. COMPLY WITH MOST CURRENT ADA AND CODE REQUIREMENTS.
2. COLOR TO BE WHITE ON ARCHITECTURAL GREY.

USED WITH IN REFUGE SPACE: NOT REQUIRED IN FULLY SPRINKLED BUILDINGS UNLESS THREE (3) OR MORE STORIES. VERIFY WITH CURRENT CODES AND REQUIREMENTS.



DISTRICT FACILITIES

FACILITIES PLANNING AND DESIGN

CCS STANDARDS SIGNAGE DETAILS

TYPE H

DRN. BY: **CJB**

CHECK:

APPR:

DATE: **2/4/13**

REV.:

DATE:

REV. BY:

SCALE:

NTS

CAD NAME:

CCS Signage

DWG. NO.:

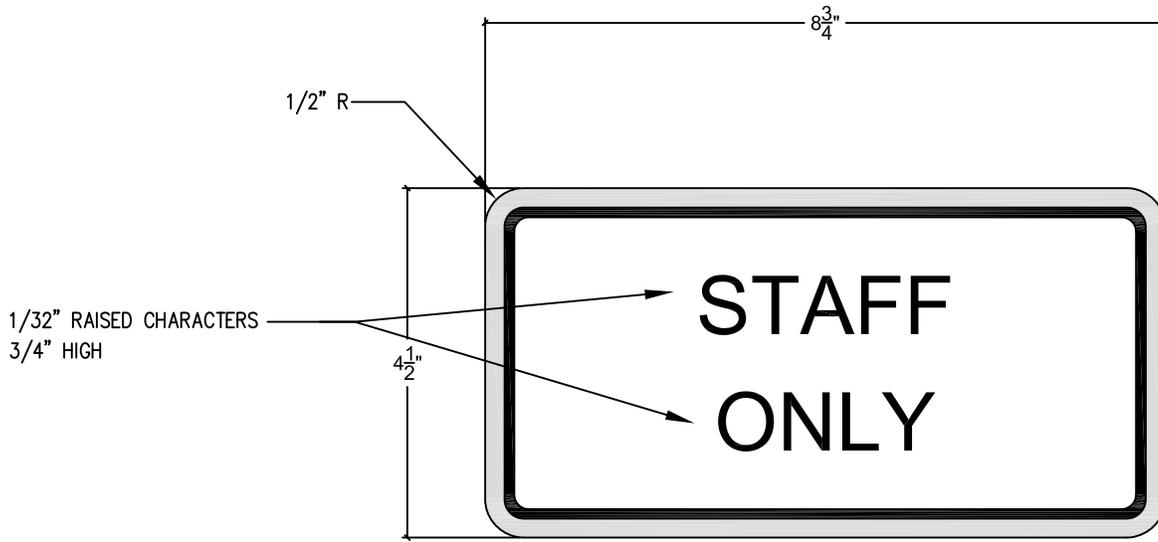
ST-H



TYPE J
WITH BLANK COLOR INSERTS

- NOTES: 1. SEE DETAIL SHEET D1.0 FOR MORE DIMENSIONS
2. COMPLY WITH MOST CURRENT ADA AND CODE REQUIREMENTS.

	DISTRICT FACILITIES	CCS STANDARDS SIGNAGE DETAILS TYPE J	DRN. BY: CJB	SCALE: NTS
	FACILITIES PLANNING AND DESIGN		CHECK:	CAD NAME: CCS Signage
			APPR:	DWG. NO.:
			DATE: 2/13/13	ST-J
			REV.:	
			DATE:	
			REV. BY:	



TYPE K

- NOTES: 1. SEE DETAIL SHEET D1.0 FOR MORE DIMENSIONS
2. COMPLY WITH MOST CURRENT ADA AND CODE REQUIREMENTS.



DISTRICT
FACILITIES

FACILITIES
PLANNING
AND
DESIGN

**CCS STANDARDS
SIGNAGE DETAILS**

TYPE K

DRN. BY: **CJB**

CHECK:

APPR:

DATE: **10-11-13**

REV.:

DATE:

REV. BY:

SCALE:

NTS

CAD NAME:

CCS Signage

DWG. NO.:

ST-K



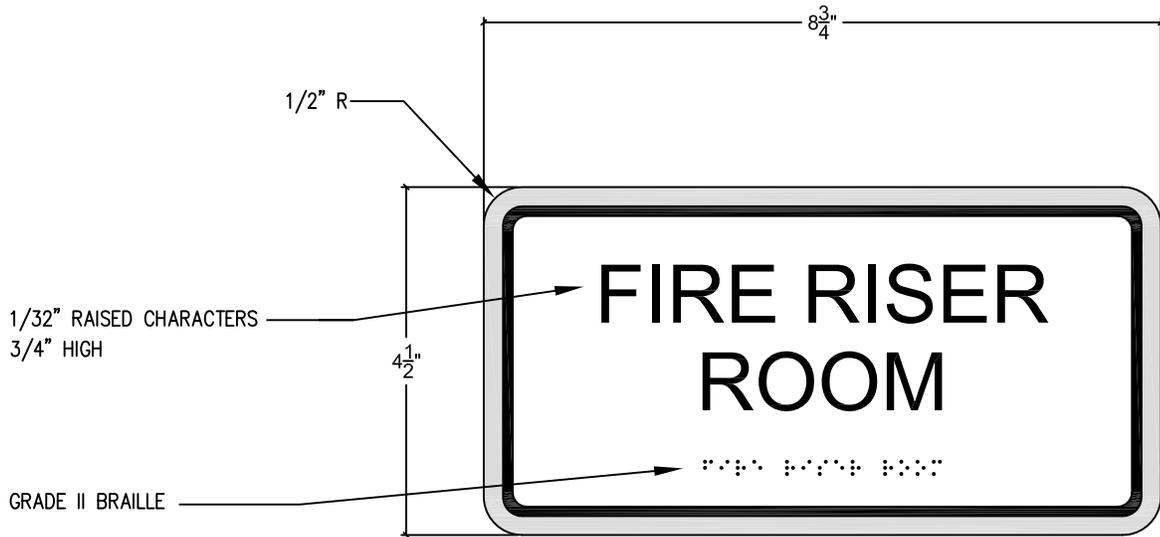
TYPE K

Match Kroy K521 ADA Blue (PMS 654C) for outer border and interior.
Text, braille, and inner border shall be white..



- NOTES: 1. SEE DETAIL SHEET D1.0 FOR MORE DIMENSIONS
2. COMPLY WITH MOST CURRENT ADA AND CODE REQUIREMENTS.

	DISTRICT FACILITIES	CCS STANDARDS SIGNAGE DETAILS TYPE K.x	DRN. BY: CJB	SCALE: NTS
	FACILITIES PLANNING AND DESIGN		CHECK:	CAD NAME: CCS Signage
			APPR:	DWG. NO.:
			DATE: 3-28-14	ST-K.x
			REV.:	
			DATE:	
			REV. BY:	



TYPE K.2

Match True Color 255,0,0 Red for outer border and interior.
Text, braille, and inner border shall be white..



NOTES: 1. SEE DETAIL SHEET D1.0 FOR MORE DIMENSIONS
2. COMPLY WITH MOST CURRENT ADA AND CODE REQUIREMENTS.



DISTRICT FACILITIES

FACILITIES PLANNING AND DESIGN

CCS STANDARDS SIGNAGE DETAILS

TYPE K.x

DRN. BY: **CJB**

CHECK:

APPR:

DATE: **6-18-14**

REV.:

DATE:

REV. BY:

SCALE:

NTS

CAD NAME:

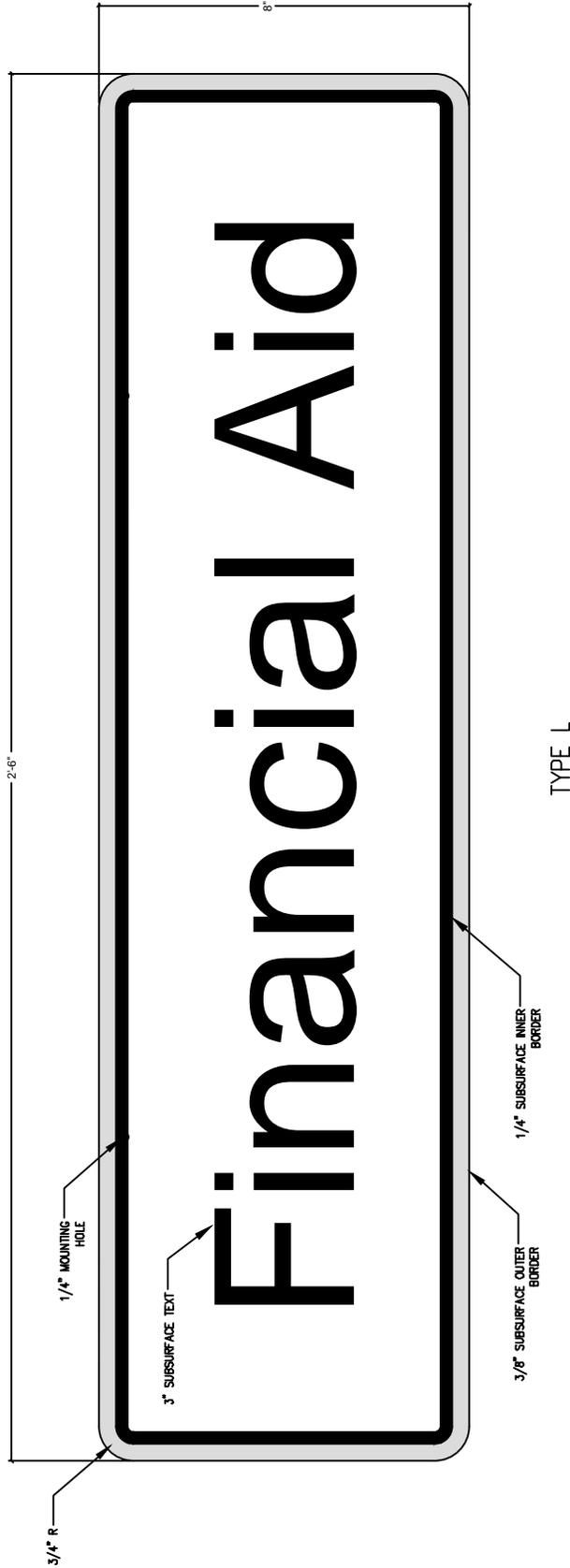
CCS Signage

DWG. NO.:

ST-K.2

Match Kroy K723 Burgandy (PMS 216C) for outer border and interior.
Text, braille, and inner border shall be Kroy K524 Beige (PMS 453C).

- NOTES: 1. SEE DETAIL SHEET D1.0 FOR MORE DIMENSIONS
2. COMPLY WITH MOST CURRENT ADA AND CODE REQUIREMENTS.



DISTRICT FACILITIES

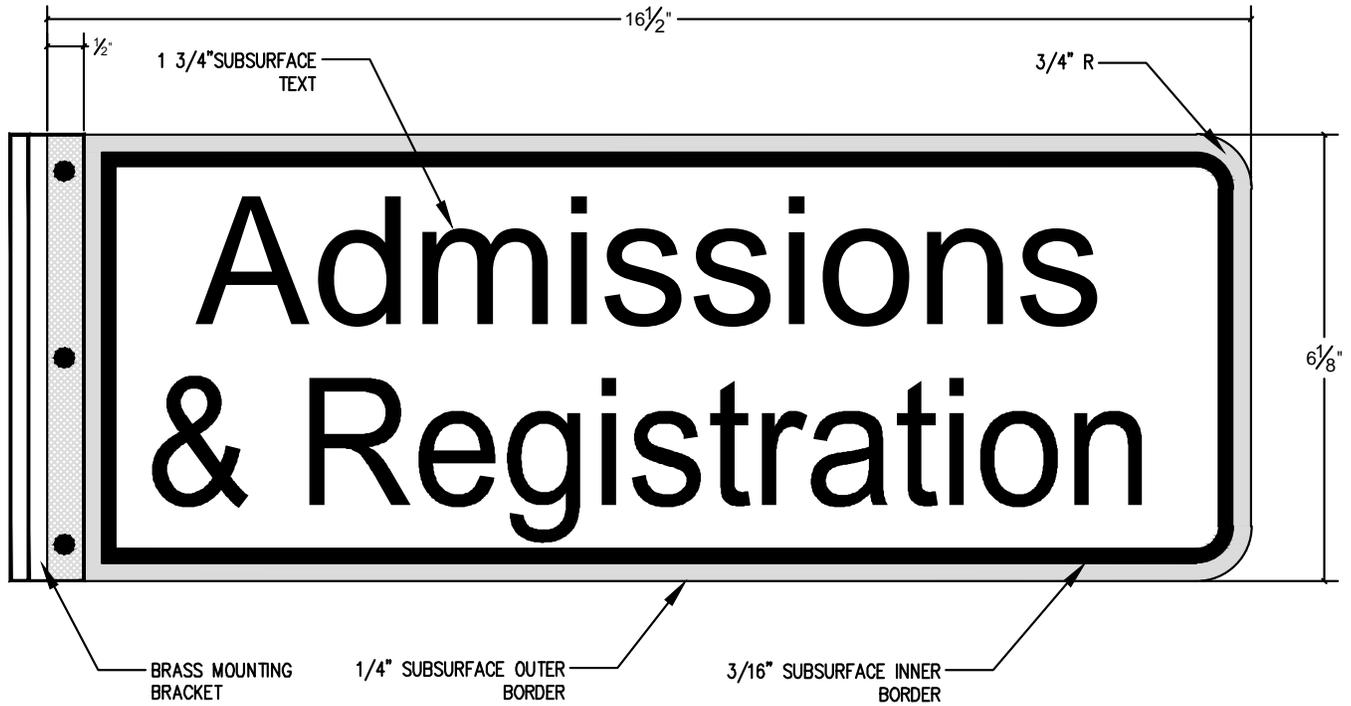
FACILITIES PLANNING AND DESIGN

CCS STANDARDS SIGNAGE DETAILS

TYPE L

DRN. BY: CJB	
CHECK:	
APPR:	
DATE: 12-13-13	
REV.:	DATE:
REV. BY:	

SCALE: NTS
CAD NAME: CCS Signage
DWG. NO.: ST-L



TYPE M

****SIGN IS DOUBLE SIDED****

SPECIAL NOTE:

Match Kroy K723 Burgandy (PMS 216C) for outer border and interior. Text, braille, and inner border shall be Kroy K524 Beige (PMS 453C). Provide bracket with sign package. Text and color to be subsurface.

- NOTES: 1. SEE DETAIL SHEET D1.0 FOR MORE DIMENSIONS
2. COMPLY WITH MOST CURRENT ADA AND CODE REQUIREMENTS.



DISTRICT FACILITIES

FACILITIES PLANNING AND DESIGN

CCS STANDARDS SIGNAGE DETAILS

TYPE M

DRN. BY: **CJB**

CHECK:

APPR:

DATE: **12-13-13**

REV.:

DATE:

REV. BY:

SCALE:

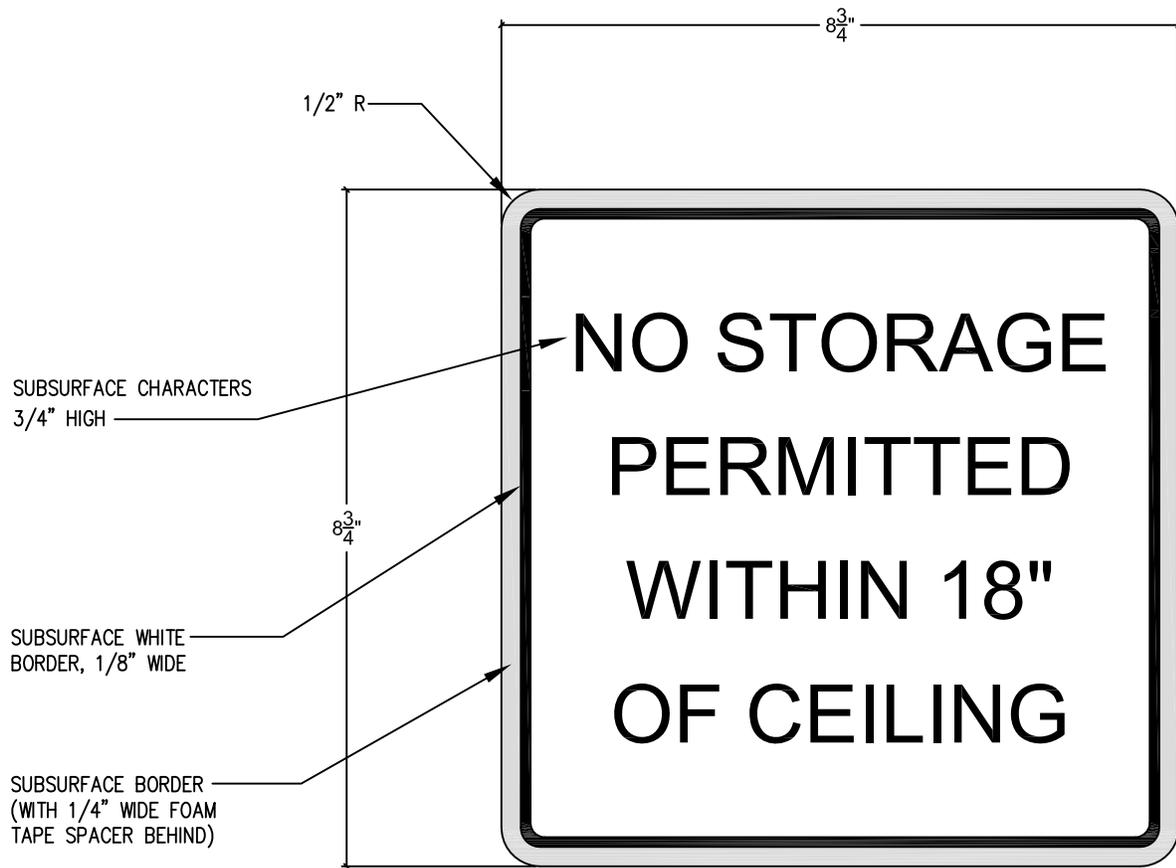
NTS

CAD NAME:

CCS Signage

DWG. NO.:

ST-M

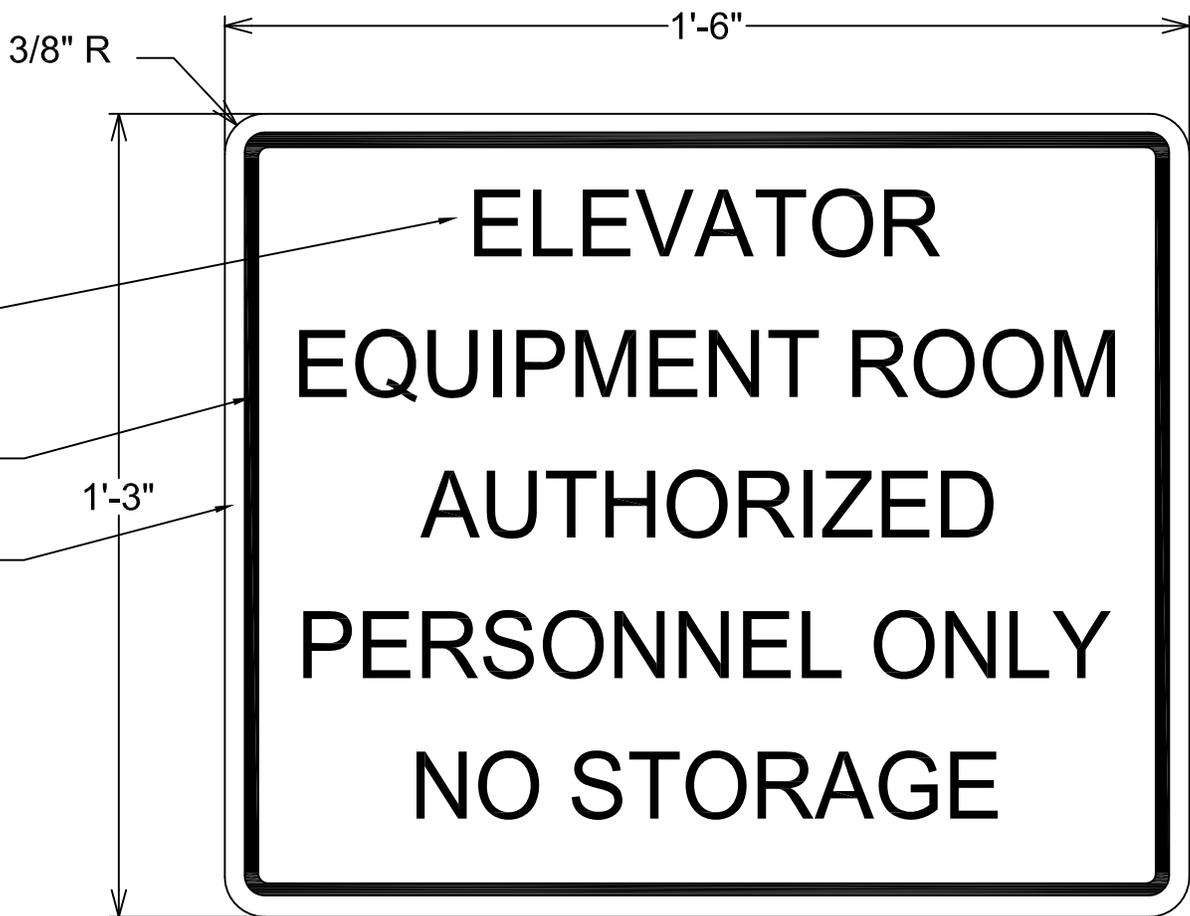


TYPE N

NOTES:

1. COMPLY WITH MOST CURRENT ADA AND CODE REQUIREMENTS.
2. COLOR TO BE WHITE ON ARCHITECTURAL GREY.

	DISTRICT FACILITIES	CCS STANDARDS SIGNAGE DETAILS TYPE N	DRN. BY: CJB	SCALE: NTS
	FACILITIES PLANNING AND DESIGN		CHECK:	CAD NAME: CCS Signage
			APPR:	DWG. NO.: ST-N
			DATE: 6-2-14	
			REV.: DATE:	
			REV. BY:	



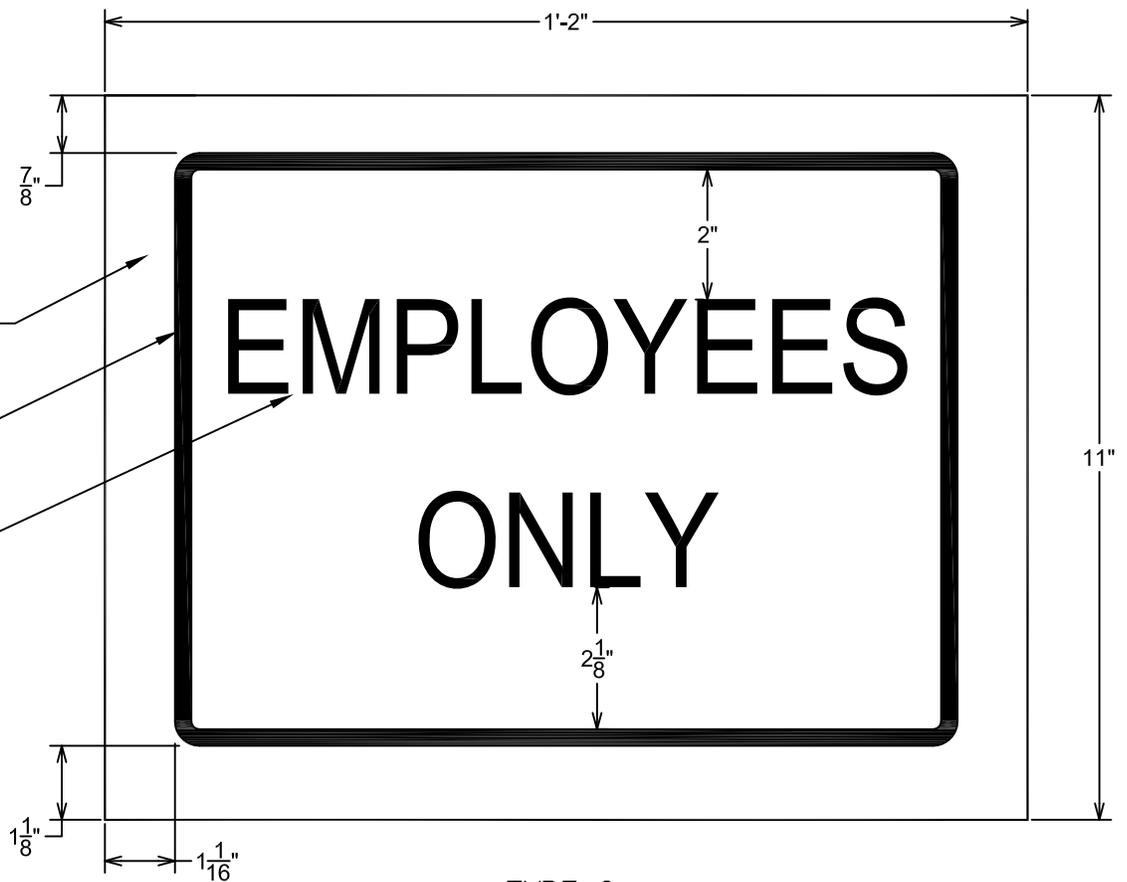
TYPE P



NOTES:

1. COMPLY WITH MOST CURRENT ADA AND CODE REQUIREMENTS.
2. COLOR TO BE WHITE ON ARCHITECTURAL GREY (KROY K125. PMS 426U)

	DISTRICT FACILITIES	CCS STANDARDS SIGNAGE DETAILS TYPE P	DRN. BY: CJB	SCALE: NTS
	FACILITIES PLANNING AND DESIGN		CHECK:	CAD NAME: CCS Signage
			APPR:	DWG. NO.:
			DATE: 6-9-14	ST-P
			REV.: DATE:	
			REV. BY:	



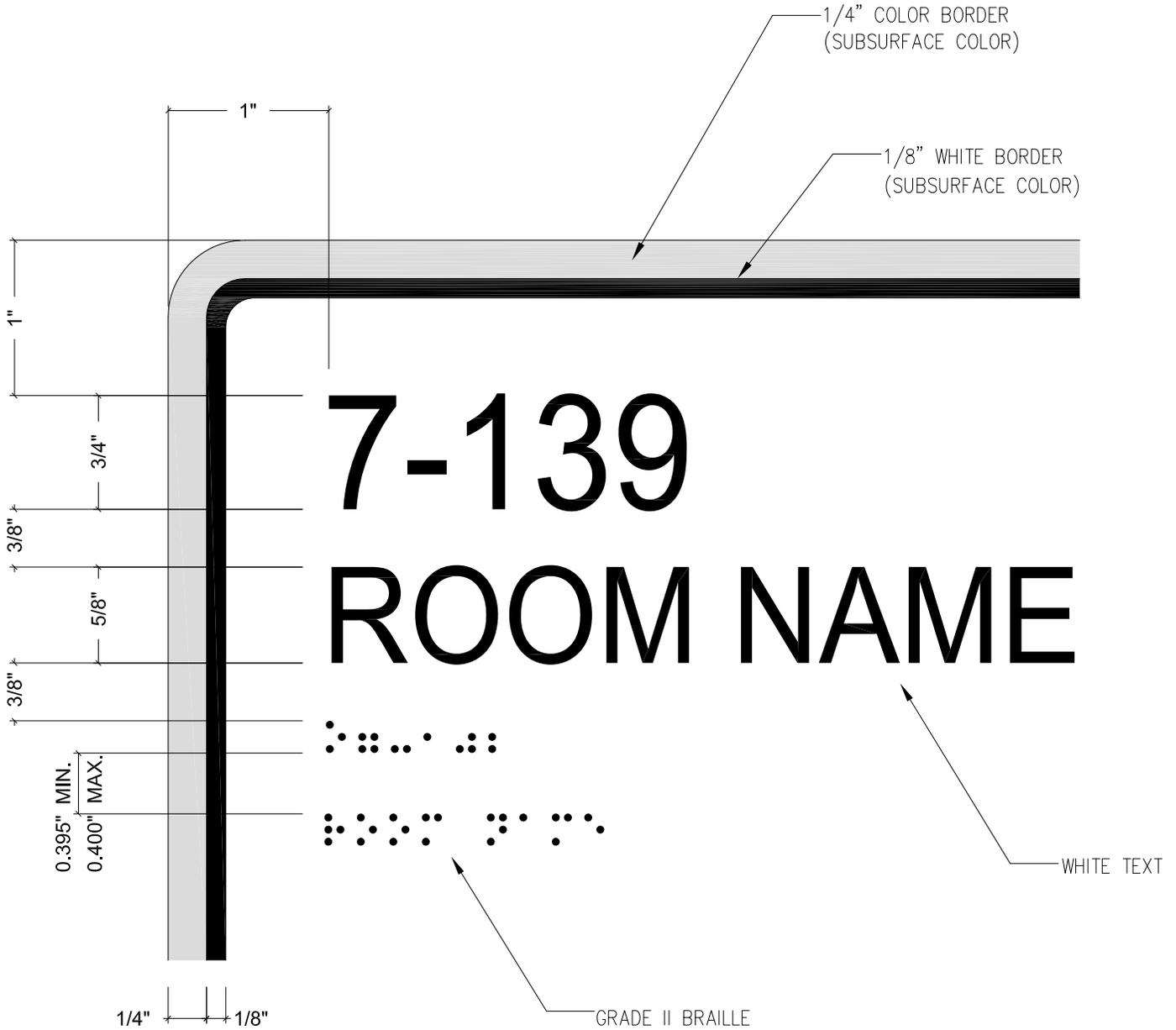
TYPE Q



NOTES:

1. COMPLY WITH MOST CURRENT ADA AND CODE REQUIREMENTS.
2. COLOR TO BE WHITE ON ARCHITECTURAL GREY (KROY K125. PMS 426U)

	DISTRICT FACILITIES	CCS STANDARDS SIGNAGE DETAILS TYPE Q	DRN. BY: CJB	SCALE: NTS
	FACILITIES PLANNING AND DESIGN		CHECK:	CAD NAME: CCS Signage
			APPR:	DWG. NO.:
			DATE: 8/22/14	ST-Q
			REV.:	
			DATE:	
			REV. BY:	



NOTE: VERIFY DIMENSIONS AND COMPLY WITH THE MOST CURRENT ADA REQUIREMENTS



DISTRICT FACILITIES

FACILITIES PLANNING AND DESIGN

CCS STANDARDS SIGNAGE DETAILS

DETAIL SHEET

DRN. BY: **CJB**

CHECK:

APPR:

DATE: **4/2/10**

REV.:

DATE:

REV. BY:

SCALE:

NTS

CAD NAME:

CCS Signage

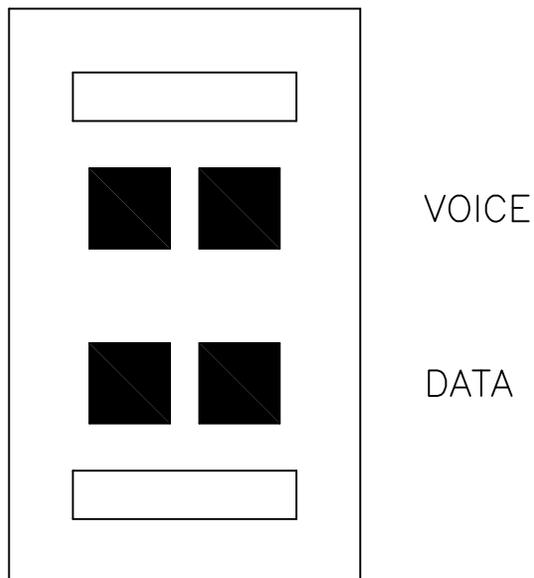
DWG. NO.:

D1.0

CCS COMMUNICATIONS SYMBOL STANDARDS

-  TELEPHONE OUTLET
-  4 EA 4 PAIR CABLES
-  2 EA VOICE | 2 EA DATA
-  FLOOR MOUNTED
-  CEILING MOUNTED

WALL PLATE LAYOUT



SCALE NTS	TITLE SYMBOLS	SHEET NO. AP - 3
DATE 2/12/09		
COMMUNITY COLLEGES OF SPOKANE FACILITIES DEPARTMENT SPOKANE, WA 99217	PROJECT CCS COMMUNICATIONS SYMBOLS	



SCC Furniture Standards

SCC Standards for New Construction or Renovation

Furniture Standards

Furniture standards are designed to ensure SCC provides quality products that have sufficient flexibility to meet the unique and evolving needs of the entire faculty, staff and students. Basic furniture standards will include:

- Strength and durability (long-lasting): High rub fabrics or polymer material, chrome or electrostatic painted finishes, cleanable
- Timeless design with high visual appeal
- Functional with ergonomic design factors
- Flexible / adjustable / future oriented
- Price and value
- Low emission of volatile organic compounds
- Warranty
- Service availability from vendor / ability to purchase replacement parts
- Attentive to Universal Design
(The design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design for a broad range of abilities)
- Compliance with ADA laws
- "Green" standards.

The **ANSI** and **BIFMA** standards may be consulted to determine specific durability and operational criteria.

Other Selection Criteria to Consider

Work surfaces must be large enough so that the keyboard and monitor can be placed directly in front of the worker. A 30-inch deep typing surface is usually adequate for a 17" monitor and keyboard. Do not purchase 24-inch deep work surfaces for computer workstations. For a large (>17") monitor, select a deeper work surface. Furniture must be adaptable to current state of the art technology.

Work surfaces with rounded edges are preferable to those with sharp edges.

The layout of the workstation is important and may impact chair selection. Chair arms may bump into the desk with workstation layouts that are "L" or "U" shaped.

Avoid furniture with storage cabinets or book shelves above the typing surface. The shelves may make it impossible to place the monitor at the correct viewing height.

Use medium tone, patterned laminates on table tops to hide dirt.

Note: CCS Purchasing guidelines may require buyer to obtain at least 20% of items from the Department of Corrections. Inquire at Facilities or Purchasing to determine current guidelines.

Equipment and Furnishings List

Classrooms, Computer Labs and Study Areas

Classroom Tables

- Double t-legs or L-legs for added sturdiness.
- Glides (carpet) or locking casters (hard surfaces) depending on flooring.
- Depth options to suit classroom needs. Most applications will require 24” depth, but 18 and 30” may be required for specific classroom. Standardize width to accommodate 2 students per table.
- Nesting or flip top as needed for some classrooms or labs.
- ADA: Two adjustable height, single student tables per classroom required.
 - One person quick adjustment - does not require special tools to adjust, has removable crank or electric as appropriate for location.
 - Lightweight, on casters for easy movement with locking mechanisms (preferred).
 - Ability to adjust height to accommodate a standing student.

Classroom Chairs

Classroom and computer chairs should unite comfort and durability. A broad seat and back, ergonomic design which provides adequate comfort to minimize pressure points, supports the back, ease of movement, designed for the greatest range of body sizes for extended periods of sitting in mind, and attentive to Universal Design.

- Ease of maintenance and comfort.
- High rub fabrics or polymer material, electrostatic finishes, cleanable
- Sled base stacking, 4 legs with or without casters, nesting, depending on classroom usage and flooring.
- Flex back and broad seat
- Lumbar support (preferred)
- Available in matching “stool” for instructor
- Stools with backs (as above) as appropriate for labs.
- ADA Two adjustable chairs for students with disabilities per classroom.
 - Ergonomic, adjust up/down, forward/back
 - Armrests – drop down , adjust width/height or removable
 - Lumbar support
 - Adjustment mechanisms should be lever or paddle that can be manipulated easily.
 - Generous seat area

Computer Tables for PC-Equipped Labs and Computer Classrooms

- Double t-legs or L-legs for added sturdiness.

- Depth options to suit classroom needs. Most applications will require 24” depth, but 18” and 30” depths may be required for specific classroom. Standardize width to accommodate 2 students per table.
- ADA Two adjustable height single student tables per classroom required.
 - One person – quick adjustment - does not require tools to adjust, has removable crank or electric as appropriate for location.
 - Lightweight, on casters for easy movement with locking mechanisms (preferred).
 - Ability to adjust height to accommodate a standing student.
- Wire management system - power up modules (*systems that make power and data access easy and discrete by enclosing power outlets and data ports.*)

Computer Lab and Computer Classroom Chairs

Classroom and computer chairs should unite comfort and durability. A broad seat and back, ergonomic design which provides adequate comfort to minimize pressure points, supports the back, ease of movement, designed for the greatest range of body sizes for extended periods of sitting in mind, and attentive to universal design.

- Ease of maintenance and comfort.
- High rub fabrics or polymer material, electrostatic finishes, cleanable
- 4 legs with casters or star base swivel.
- Flex back.
- No arms.
- Lumbar support (preferred).
- Adjustable (preferred)
- Available in matching “stool” for instructor.
- ADA Two adjustable chairs for students with disabilities per classroom.
 - Ergonomic, adjust up/down, forward/back
 - Armrests – drop down , adjust width/height or removable
 - Lumbar support
 - Adjustment mechanisms should be lever or paddle that can be manipulated easily.
 - Generous seat area

Lecterns required for each classroom, lab, computer lab (See current Electronic Classroom Standards).

Smartboards required for each classroom, lab computer lab (See current Electronic Classroom Standards).

Study Space

The individual projects will determine the furnishings needs for student study space, depending on space configuration and identified needs.

- Tables to accommodate laptop use
 - Wire management system - power up modules (*systems that make power and data access easy and discrete by enclosing power outlets and data ports.*)

- Chairs
- Lounge chairs for large spaces
- Furniture easily moveable, depending on location.
- Storage space for books, backpacks, coats
- Work with designer for specifics to fit for environment/space

Faculty and Staff Offices

Furniture for faculty and staff offices should have the flexibility of freestanding furniture with performance of a complete office system. It should link in a variety of configurations to meet diverse needs and create an efficient office design. The furniture must have acceptable work space for computer/keyboard, multiple options (overhead storage cabinets, shelves, filing cabinets, cable management), and be easy to move and reuse.

Faculty Office (Standard 10' x 12')

- Working desk space of at least 30"D x 60" W in addition to computer/keyboard space for all full time faculty office space and adjunct office space.
- Prefer steel construction.
- Accommodate computer / keyboard tray
- File cabinet: 4 drawer 48" (lateral) per FT, 2 drawer 48" (lateral) per PT
- Book shelf (5 shelves per FT, 2-3 per PT)
- Table and guest chair
- Office chair (computer use)
 - Pneumatic height adjustment
 - With or without arms
 - Independently adjustable and lockable seat and back tilt
 - Adjustable lumbar support
 - Adjustable seat pan depth (preferred)
 - See ADA chair description for persons with disabilities.

Staff Office

- Working Desk space of at least 30"D x 60" W in addition to computer/keyboard space.
- Prefer steel construction.
- Accommodate computer (optional keyboard tray)
- Lateral file cabinet (s)
- Shelving units
- Office chair (computer use)
 - Pneumatic height adjustment
 - With or without arms
 - Independently adjustable and lockable seat and back tilt
 - Adjustable lumbar support
 - Adjustable seat pan depth (preferred)
 - See ADA chair description for persons with disabilities.
- Guest chair
- Auxiliary work space for work study student(s)

Administrative Offices

Administrative office furniture elements to include generous workspace, features and options that create a well organized appearance which meet the needs of the occupant and reflects a professional office. Ergonomic design and comfort are essential.

Administrative Assistant Office

- **L- or U-** shaped work space
- Accommodate computer (optional keyboard tray)
- Lateral file cabinet(s)
- Shelving units
- Credenza
- Guest chairs
- Office chair (computer use)
 - Pneumatic height adjustment
 - With or without arms
 - Independently adjustable and lockable seat and back tilt
 - Adjustable lumbar support
 - See ADA chair description for persons with disabilities
- Adjustable seat pan depth (preferred)
- Auxiliary work space for work study student(s)

Administrator Office

- L-shaped work space
- Accommodate computer (optional keyboard tray)
- Credenza
- File cabinets
- Shelving units / Bookcases
- Table and Guest Chairs
- Office chair (computer use)
 - Pneumatic height adjustment
 - With or without arms
 - Independently adjustable and lockable seat and back tilt
 - Adjustable lumbar support
 - Adjustable seat pan depth (preferred)
 - See ADA chair description for persons with disabilities

Conference Room

- Room size, traffic space and doors accessible to people in wheelchairs.
- Furniture should accommodate technology needs; including power and data plug-ins or wireless connections.
- Conference Table (optional cable management strip)
- Guest chairs – as appropriate to lengthy periods of sitting
- Smartboards (See current Electronic Classroom Standards)

Faculty Lounge

- Tables to seat 4 places
- Guest chairs
- Lounge furniture (chairs or sofa)
- Easily moveable, depending on location.

Note: Include green plants throughout building to emphasize “green” nature of buildings
Natural or silk.

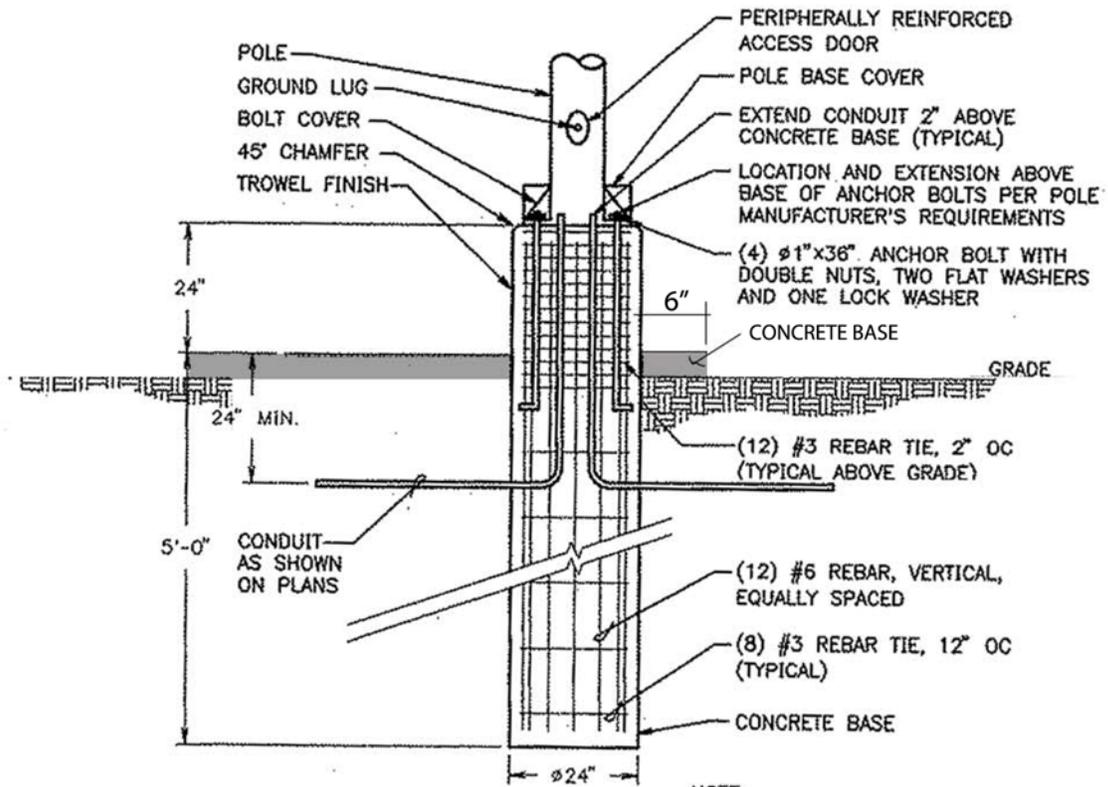
Final draft compiled and approved by the SCC Facilities Council Office and Classroom Furnishings Committee 1-12-10.

Submitted for review and approved by:

Facilities Council 1/21/10

College Alliance 2/09/10

SCC Cabinet 3/17/10

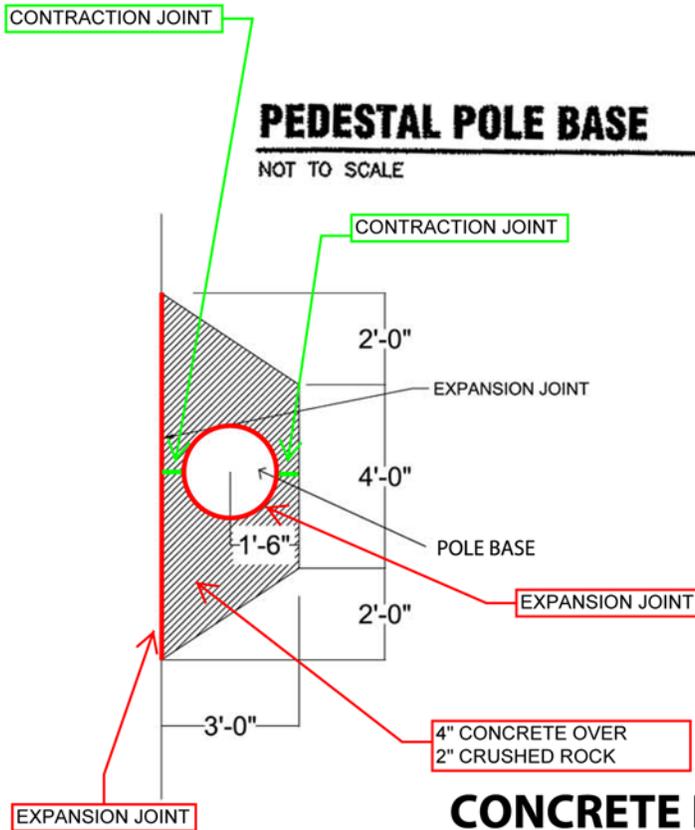


NOTE:
REBAR SHALL BE 2" MIN FROM OUTER
EDGE OF BASE (Ø20")

DETAIL SHOWN FOR BIDDING PURPOSES
ONLY. POLE BASE SHALL BE DESIGNED
BY A LICENSED STRUCTURAL ENGINEER.
SUBMIT DESIGN FOR APPROVAL.

PEDESTAL POLE BASE

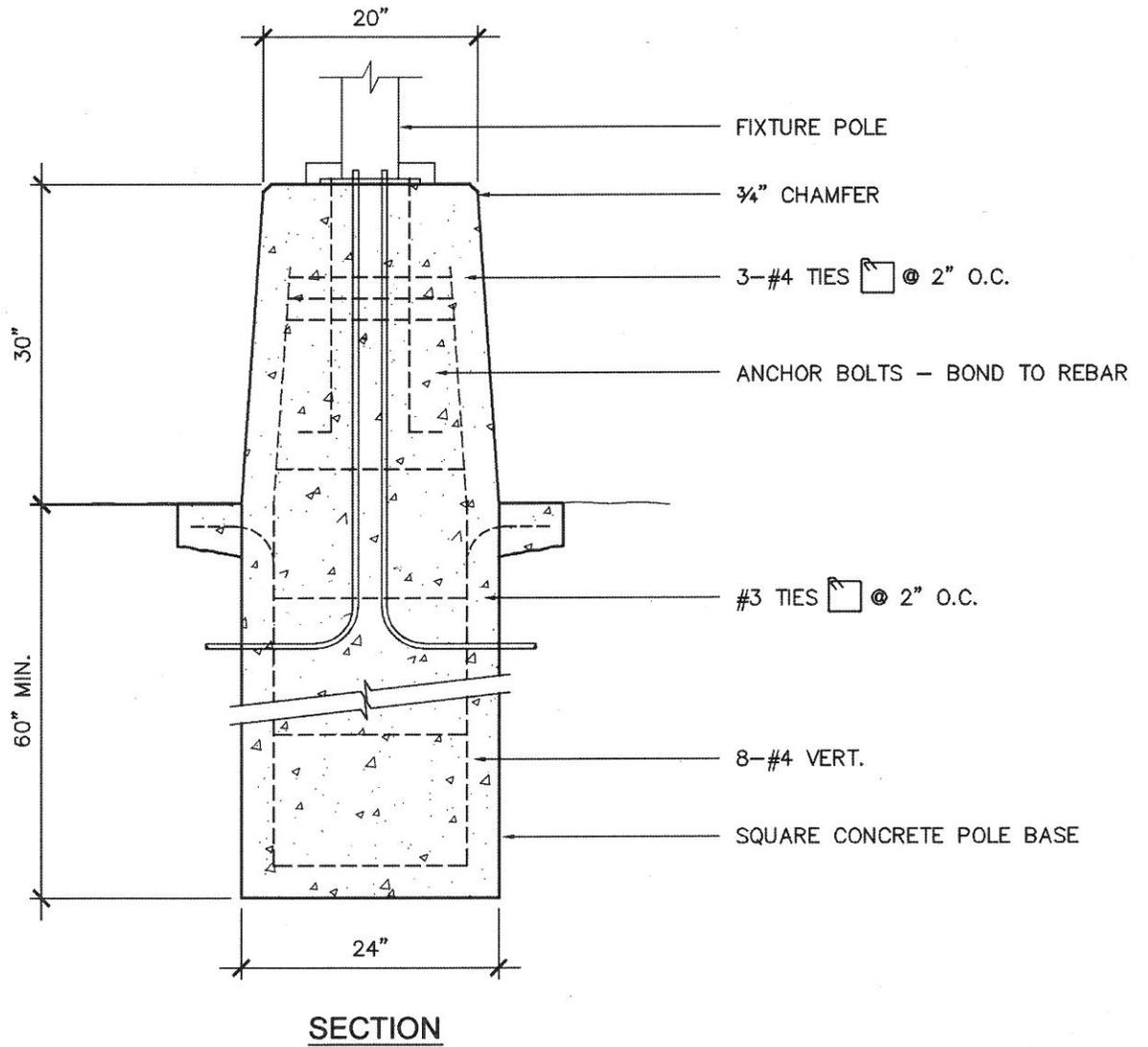
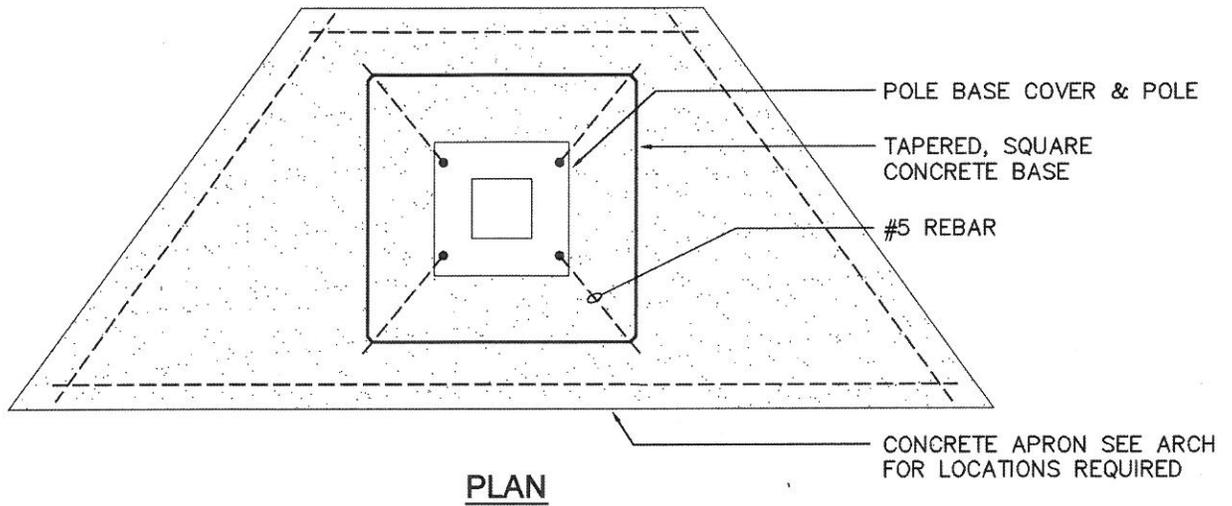
NOT TO SCALE



CONCRETE BASE

NOT TO SCALE

REF. SHEET A-010



1

BASE STYLE A

NO SCALE