

FACILITY DESIGN CRITERIA MANUAL

**KENAI PENINSULA BOROUGH
MAINTENANCE DEPT.**

OCTOBER 2003

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FACILITY DESIGN CRITERIA MANUAL

NOTE TO THE USER:

Over the years Borough personnel have gained a store of valuable experience and date relating to building design and function. It is our intent that this manual compile the experience and information of Borough and School District personnel to define desirable and undesirable design features proven over the years. It is not presumed to be complete or authoritative, and will be added to and changed as time goes by.

We have attempted to address function as it relates to physical use, maintenance and operation of the facility. The evaluations are subjective and specific life cycle costs have not been determined.

The manual focuses primarily on school facilities, but should be flexible enough to include other construction. We have attempted to avoid tunnel vision and not restrict creativity. We certainly do not claim to have a corner on any design features or ideas and welcome your additions, comments, and experience in an effort to continually improve this manual. The manual is intended to be easily updated and should be periodically reviewed.

Both prescriptive specs (specified items or brand) and performance specs (quality of end result or feature) have been used, however, we have attempted to use performance specifications as much as possible. Items in the manual have been ranked accordingly to desirability but are not to be considered cast in concrete.

We have attempted not to be nit picky, but include items that have a significant importance to the cost and function of the end product. We would appreciate your careful review of this manual with the hope that all of us will benefit from our collective previous experiences and reinvent wheels or recreate headaches.

Designers must specify the best, expect the best, and inspect the best if we are to receive the best. In other words, clearly define the work, expect the performance and properly inspect the product.

Conditions and products are forever changing, therefore, this manual is designed to be at best a draft and will hopefully be continually updated. If not, it will quickly and assuredly lose its value.

**Ed Hakert, AIA
Public Works Director
Kenai Peninsula Borough**

(1985)

**Updated October 2003
Maintenance Department
Kenai Peninsula Borough**

**Mike Tauriainen, P. E.
Consultant**

(1985)

**Updated April 1993
Maintenance Department
Kenai Peninsula Borough**

The criteria on the following pages are organized according to the Construction Specifications Institute (CSI) 16 Division Format for Construction Specifications (see attached appendix). Each division is a separate unit and is subdivided into broadscope section titles. Additional broadscope or narrowscope section titles may be added as necessary.

"CODE" Reflects Desirability As Follows:

- A - Required (or have a good reason why not)**
- B - Prefer**
- C - Prefer Not**
- D - Not Acceptable (or be able to show why we should be stuck with it)**

The following is an example of the format:

**DIVISION 13
SPECIAL CONSTRUCTION**

Code 13100 AUDIO METRIC ROOM

A Wenger, Industrial Acoustic or KPB approved equal.

13850 SWIMMING POOL

A Prefer tiles concrete pool, must be thick set tile. Deck must be concrete, broomed finish and not painted.

D Aluminum pools not acceptable.

A Require maxiflex diving boards. Require KDI Paragon stanchions.

A Install eye wash and shower in Filtration Room.

A Require Strantrol pool chemical control system.

A Lighting must be accessible from pool deck (i.e. not over pool).

B Prefer dry chlorine system.

A Prefer sand filter system.

13100 AUDIO METRIC ROOM is a broadscope section title of DIVISION 13, SPECIAL CONSTRUCTION.

- A Review and enclose as part of specifications the latest KPB boiler plate for general conditions. Any modifications must be approved by the Borough's Legal Department. Include copy with Design Criteria.

01200 PROJECT MEETINGS

- B Preconstruction meeting in the Owner's office. In addition to general contractor, representatives of the mechanical, electrical and other major subcontractors shall attend. Review all materials that might require long lead times, schedule, communications, chain of command, etc.
- B Prefer weekly job site meetings.

01010 SUMMARY OF WORK

- B Clearly define project and work limits.
- A Provide schedule of owner-furnished equipment. Provide for coordination of owner-furnished-contractor-installed items. Blocking, inserts, templates, etc., storage and staging of equipment furnished by Borough.
- A Identify construction schedule for completion of spaces, fire alarms systems, sprinkler systems, etc, and responsibilities for partial occupancy.
- A Designers shall review project with and obtain approval from state and local agencies such as State Department of Education, Fire Marshall, Fire Departments, Departments of Health, Education, Environmental Conservation, etc. Review list with Owner during preliminary phase.

01150 MEASUREMENT AND PAYMENT

- B Make judicious use of unit prices. Suggest for over-excavation and backfill. Quantities to be determined by cross sectional analysis.

01400 QUALITY CONTROL

- A Owner will pay for and provide construction testing. Contractor shall coordinate with Owner for testing schedules. Contractor shall pay for all failed tests, expenses, and reinspections.

01500 TEMPORARY FACILITIES AND CONTROLS

- A All projects shall require a project sign, review, content, and location with KPB.**
- B KPBSD orders permanent power installation. Contractor coordinates with KPB/Electric Utility for temporary power. For additions to existing buildings, KPBSD will supply contractor with power if existing services is sufficient. Contractor to pay difference over historic usage. Be sure this is caught and billed prior to end of warranty period. Secure historic data from Kenai Peninsula Borough School District.**
- B Temporary lighting by contractor.**
- B Temporary heating by contractor. Except in remodel contractor to pay difference in historic useage.**
- B Telephone: KPBSD will initiate order for phone. Contractor to provide phone for construction.**
- B Temporary Water: Each project unique, review with KPB.**
- B Temporary Sewer: Each project unique, review with KPB.**
- B Construction Barriers: Review with KPB, and school principals, specify types of barriers and provide details for construction if required.**
- A Security: Contractor responsible, especially with existing facilities. Master keys will be provided by Borough Maintenance as required.**
- B Noise Control: Contractor coordinate with Owner.**
- B Dust Control: Essential where adjacent to existing facility. Specify methods and materials to be used.**
- A All temporary connections shall be made in an approved manner, meeting all applicable codes. Caution should be taken so systems are not overloaded. During normal school hours the school shall have priority use of these facilities. The contractor shall take special precautions to keep his temporary connections and lines from being damaged. Temporary connections shall be disconnected and removed prior to completion of the project and returned to original conditions.**

01600 MATERIAL AND EQUIPMENT

- A Changes made after the project is bid and awarded should be avoided. We have had a problem with unacceptable changes made at the submittal state. Review 4.4.7 and 4.4.8 of the General Conditions KPM-IBM February 1983, substitutions.**

Also include in boiler plate a form for request for substitution. See example form attached.

SUBSTITUTIONS

- A 4.4.7 If the plans or specifications permit the Contractor to furnish or use a substitute material, equipment or detail specified, such substitution is subject to approval by written addendum ten (10) working days prior to the time of bid closing and if the Contractor desires to use a proposed substitute, then the Contractor shall certify to the Architect that the proposed substitute will: (1) perform adequately the functions required by the plans and specifications, (2) be similar and equal in performance to that specified, (3) be suited to the same use and function as specified, and (4) equal or exceed all other specifications.**

4.4.8 The Contractor shall indicate to the Architect any deviation in performance, appearance or quality from the specified material, equipment or detail. No substitute shall be ordered or installed without the written approval of the architect, who shall be the judge of quality and who may require the Contractor to furnish any data about the proposed substitute which the Architect considers pertinent. The Owner shall be informed by the Architect of the proposed substitute prior to the Architect's approval, and the Owner shall give the final approval of any proposed material, equipment or detail to the Architect for transmittal to the Contractor. The Owner may require the Contractor to provide performance guarantees and bonds for the proposed substitute in the form the Owner deems necessary.

- A KPB must be informed of ALL changes made in submittals.**

- A Owner must REVIEW all changes in furnishings.**

01700 PROJECT CLOSEOUT

- A Designer shall submit mylars and four blueprints of record drawings to KPB by designer. Show actual location of major conduit runs, piping and underground utilities. Furnish Contractor with sepia or mylars of all drawings for Contractor to submit prints with pay request.**
- A A thorough operations and maintenance manual shall be submitted. Owner requires five (5) copies for maintenance.**
- A A thorough hands-on demonstration of all systems shall be made with general contractor, mechanical, electrical and other required subs -- architect and engineering personnel, KPB maintenance, KPBSD personnel. This may take more than one day, and must be scheduled two weeks in advance. All alarms and all mechanical systems shall be run completely through all phases (e.g., actual fire test of fire alarms).**

- B Substantial completion inspections should be performed with drop-in ceiling panels not installed.**
- B Spare parts and maintenance materials, review with KPB. List all spare parts that should be maintained on hand, and give names and addresses of replacement suppliers, provide complete list in one location of specifications and see that copy is transmitted to Owner at substantial completion.**
- A Special cleaning and care instructions for all finish materials must be provided verbally and in writing to the custodial staff.**
- A Contractors' marked up record drawings shall become the property of the Borough. Designer shall deliver them along with mylars and blue lines to the Borough.**

02200 EARTHWORK

All exterior play slabs, walks, ramps, and etc. that receive asphalt paving or concrete shall be placed on N.F.S. material. Extend N.F.S. material minimum 6" beyond edge or slab at bottom of excavation.

- A Concrete slabs adjoining buildings at doorways shall be constructed on moisture proofed footers and foundations walls.**

02500 SITE UTILITIES (Add from Notes)

All well houses must have removable section of roof or fenced off with locked gate.

02700 SITE IMPROVEMENTS

- B A separate area needs to be provided for exterior storage. This building is to store grounds maintenance equipment, snow blowers, ladders, field and track equipment, etc. Minimum heat and finish required. Overhead door recommended.**
- A Provide expansion joints where walks join buildings. Cover with thresholds at doorways.**
- B Landscape areas in excess of 100' from building line, provide hydrant for irrigation. Design to drain with minimum effort. Grade irrigation piping to drain by gravity.**
- A Fence fabric shall be specified "knuckle-knuckle". Barbs up or down not allowed.**
- B Rebound walls at tennis courts.**

02010 SUBSURFACE EXPLORATION

- B** Include soils information when available and include in drawings or specifications. Notify Contractor that the information is for his use only and may not be used for bidding purposes. Soils reports by their nature are generalizations and actual conditions may vary from those indicated by the report.

02110 DEMOLITION

- B** Coordinate all demolition with KPB. Review with KPB materials that are to be salvaged and where they are to be stored.

02200 EARTHWORK

- B** State whether on site materials may be used and any limitations.
- A** Location of disposal area for demolition or clearing, if allowed on site, shall be shown on drawings. Types of material suitable for disposal on site must be identified. Areas of future expansion and site development should be avoided as disposal sites. Locations shall be properly incorporated into the record drawings.

02500 DRAINAGE

- A** Identify where snowplow will stockpile snow and allow for spring drainage - think of dry wells.
- A** Require dry well overflow vent with double 90° elevation and screen.
- A** Positive drainage away from buildings must be provided. Finished floor elevation minimum one foot above surrounding grade.
- A** Provide adequate slopes in parking lots, drives and playgrounds in order to avoid ponding.
- A** Do not interfere with natural drainage of adjacent properties. Visit the site when it is raining and observe actual drainage patterns.

Make sure site elevations are taken to establish school floor elevations to elevate high enough for drainage and proper run off to avoid puddle problems.

02500 SITE UTILITIES

- A All major underground utilities shall be adequately marked with permanent markers. Name utility with sign identify depth of bury, at property lines, entry into buildings and at changes in direction. These shall be properly incorporated into the record drawings.**
- B Surface fuel storage should be surrounded by a properly constructed dike and fence with a gate.**

02600 PAVING AND SURFACING

- B Minimize curbing as it makes snow removal difficult.**
- C Prefer no asphalt curb.**
- A Use speed dips not speed bumps when needed for traffic control.**

02700 SITE IMPROVEMENTS

- D Underground sprinkler systems not preferred.**
- A Provide water supply as required and ample hose bibs on building exteriors. Provide for drain down or water supply lines not used during winter months.**
- B Provide precast parking bumpers along walkways where required.**
- A Provide traffic barriers in front of access walks with removable section to allow authorized vehicle access.**
- B Coordinate with KPBSD on play and recreation facilities.**
- B Fences: Coordinate height with KPB to achieve desired control.**
- B Gates: Adequate size and location to allow for snow removal and equipment. A twelve inch (12") minimum height above grade.**
- B Prefer rubberized surface for tennis courts.**
- B Asphalt play areas shall be well-drained, generally 1-1.5% minimum slope.**
- A Avoid placing large one inch (1") plus stones around perimeter of buildings. These invite window breakage and sprained ankles.**
- A All weather 8 lane tracks at High School facilities.**
- D No planter boxes.**
- A Trees and shrubbery areas will be approved by Owner's Representative only.**

03300 CAST IN PLACE CONCRETE

- A Testing shall be arranged by Owner.**
- B Cold weather concreting should conform to ACE 306 requirements.**
- C Prefer no calcium chloride in concrete.**
- C Prefer no vapor barrier under slabs unless required for moisture protection.**

Exposed concrete walls should be sacked, brushed, broomed or touched up immediately after removal of forms, depending on the finish desired.

Make sure all entry concrete by school entrance and exits have proper footing depths 48" or more to prevent frost heave into doors; we experienced this from past school designs. Also, maintain proper footing depth for entire school foundation.

- A Testing shall be arranged by Owner.**
- B Cold weather masonry should conform to "recommended practices and guide specifications for cold weather masonry construction" by International Masonry Industry or similar.**

Exposed masonry walls should be brushed or broomed after jointing.
- C Storage and placement of CMU's must be protected from water inundation and/or rain.**
- A Require CMU's that have a smooth surface free of excessive voids or protrusions. Both long surfaces must be brushed free of aggregate crumble.**

- B Be aware of long delivery steel that may delay project.**

06100 ROUGH CARPENTRY

- A Provide backing for all wall mounted door stops.**
- A Provide backing for wall hung lavatories and toilets. Pegboard and other -- cabinets, gym equipment, chalkboards and tack boards, toilet partitions, toilet accessories, drapes, and movie screens.**
- A Identify blocking required during shop drawing approval and don't allow G.W.B. to proceed until all blocking has been checked against approved shop drawing.**

06170 PREFABRICATED STRUCTURAL WOOD

- B Industrial grade glue-laminated members adequate for appearance or better.**
- A Carefully detail all connections and closely check shop drawings for connections.**

07150 DAMPROOFING

- B Suggest no vapor barrier under slabs unless high moisture content in sub-soils.
- A Bituthane waterproofing recommended on foundations walls where required.
- C Problem with rain penetration of plywood siding (including at fasteners) under driving rain conditions in Seward (Seward High School). Back up siding with perforated 15# felt.
- A Vapor barriers and/or seal concrete sub floor under gym flooring.

07200 INSULATION

- A Provide vents so all insulation can breathe.
- C Fiberglass batt insulation in metal stud walls -- must be full 16" or 24" wide to prevent sagging. Require Contractor to call for insulation and vapor barrier inspection in each area 24 hours in advance of G.W.B.
- A Insulation and vapor barrier. All seams and penetrations in vapor barrier must be taped with tape adequate to seal joints.

07400 PREFORMED ROOFING and SIDING

- C Prefer no metal roofing. We have problems with snow dumping and fasteners working loose. Review in detail overhang. Hot or cold roof venting means of holding snow, contributes to icing roofs designed for standing seam metal roofing must be designed with extreme care. Architect will be required to correct all problems created by design of this type of roof.

07500 MEMBRANE ROOFING

- B Suggest shingles or similar roofing on adequately pitched roof.
- A Roofing: Alternative roofing systems should be investigated and reviewed closely with the Borough Maintenance personnel, Depart of Public Works, and the Construction Advisory Board. Very tight specifications should be written for all roofing components. Shop drawings must be required for all items including flashings, expansion joints, drain details and insulation applications. Shop drawings must be checked thorough and actual application monitored in the field continuously by qualified personnel throughout the roofing process.

- B** Protected membrane (IRMA) roofs have performed well. Specify membrane approved by Dow Chemical for IRMA Installation. Borough requires 10 years warranty from Dow for membrane, as well as, insulation and top cover.
- B** Specifications for built-up membrane roofing have been adequate. Problems usually result from weather, workmanship and inspection. These areas need special attention. Investigate elastomeric roofing and bid as alternate. Consider condensation, location of roof drains, don't design expansion joints at low areas, put them up on curbs.
- B** Roof drains should be set in pans with extender rings and roof membrane sandwiched between pan and clamp ring to assure they are lower than adjacent roof. If roof drains are piped to dry wells, dry wells must be heat taped to below frost line.
- D** No hyplon roofs.

07600 FLASHING and SHEET METAL

- B** Prefer Ceraloy, Lexsuco reinforced flashing or equal flexible flashing. Flashing joints should be sealed with butyl rubber. Coping joints should be sealed with butyl and reinforced to prevent separation due to uneven weight distribution around joints.
- C** We have experienced problems with painting of some aluminum flashings. The paint doesn't stick. An anodized aluminum. Verify gauge.
- D** Scuppers on flat roofs are not acceptable; use interior roof drains. Stress drains in all low spots, and heat tape and insulate drains if they are in exposed entries or otherwise unprotected.
- A** Flashings should be sealed wherever there is a possibility of pending water.

07800 ROOF ACCESSORIES

- C** Skylights are nice and they brighten up on interior spaces, but our experience is that they are costly, are subject to vandalism and require maintenance. If you want to use them, you are going to have to convince us of their importance.
- C** We have problems with some roof expansion joints. These require extra attention and adequate detail. Don't locate in low areas, prefer on curbs when necessary.
- A** Provide roof access hatches with ladders inside buildings. These must have locks and be keyed into master.
- A** Provide hose bibs on roof areas, for clean up and maintenance.

- A Provide enough slope (crickets) to assure that water flows directly to roof drains.**
- A Coordinate Owner supplied equipment with roof installation, i.e., satellite dish, antenna, weather instruments, etc.**

07900 SEALANTS

- C We have had problems with kids pulling the sealant out of joints. This is not a severe problem, but we have been wrestling with for a number of years. Lack of inspection and proper detailing.**
- A Two-part pour in sealants work well on flat walks but must be applied only during warm weather. Make sure all manufacturers instructions are closely followed for all sealants.**
- D Do not use silicone on roof drains.**

08100 HOLLOW METAL STEEL DOORS and FRAMES

1. General

- A. **Related Documents:** Drawings and General Provisions of Contract including General and Supplementary Conditions apply to work of this section.

2. Description of Work

Extent of standard steel doors and frames is shown and scheduled on drawings.

Builders hardware is specified elsewhere in Division 8.

3. Quality Assurance

- A. Provide doors and frames complying with Steel Door Institute "Recommended Specifications: Standard Steel Doors and Frames" (SDI-100) and as herein specified.
- B. **Manufacturer:** Provide standard steel doors and frames by a single firm specializing in production of this type of work, as by the following manufacturer unless prior approved:

CURRIES MANUFACTURING INC. - MASON CITY, IOWA

- C. **Fire Rated Assemblies:** Fabricate fire rated assemblies in accordance with requirements of Underwriters' Laboratories Inc. (UL). Place UL labels where visible when assemblies are installed in position. Construct and install assemblies to comply with NFPA Standard Number 80. Refer to drawings for class requirements.

4. Shop Drawings and Product Data:

- A. Submit Shop Drawings and Product Data; indicate general construction, configurations, jointing methods, reinforcements, anchorage methods, door swings, door and glass opening sizes, and hardware locations.

5. Fabrication General:

- A. Fabricate steel door and frame units to be rigid, neat in appearance and free from defects, warp or buckle.

- B. Fabricate exposed faces of doors and panels, including stiles and rails, from only cold rolled steel.
- C. Fabricate frames, concealed stiffeners, reinforcements, edge channels, louvers and moldings from either cold rolled steel or hot rolled steel (at fabricator's option).
- D. Exposed Fasteners: Unless otherwise indicated, provide counter sunk flat or oval phillips heads for exposed screws and bolts.
- E. Finish Hardware Preparation: Prepare doors and frames to receive mortised and concealed finish hardware in accordance with final finish hardware schedule and templates provided by hardware supplier, surface applied hardware preparations provided with function holes, drilling and tapping to be done in field by General Contractor. Comply with applicable requirements of ANSI A-115 series specifications for door and frame preparation for hardware.
- F. Locate finish hardware as shown on final shop drawings or if not shown, in accordance with "Recommended Locations for Builder's Hardware", published by Door & Hardware Institute.
- G. Shop Painting:
 - 1. Clean, treat, and paint exposed surfaces of steel door and frame units, including galvanized surfaces and back side of frames, with one coat factory applied baked on rust inhibitive primer paint. Finish painting specified in other section to be done on job site.
- H. Provide Astragals for double doors where removable center mullions are not provided. Provide in accordance with UL requirements for labeled doors.
- I. Fill surface depressions with metallic paste filler and grind to smooth uniform finish.

6. Steel Doors

- A. Exterior Doors: Curries Mfg. 747T
 - 1. Face sheets shall be of 16 gauge galvanized steel.
 - 2. Internal Stiffeners:
 - a. Minimum 20 gauge steel, continuous one piece full vertical height.
 - b. Space at not over 6" centers.

- c. Spot weld to face panels at maximum 5" intervals.
 - d. Vertical edges of face panels shall be joined and welded full height, then ground smooth to conceal seams.
 - 3. Sound Deadening: Interior surfaces shall be treated with a sound-deadening material to eliminate metallic ring.
 - 4. Glazing Stops: 18 gauge steel, secured with countersunk sheet metal screws at minimum 12" intervals.
 - 5. Lock rail to be one piece full height 14 gauge channel.
 - 6. Hinge rail to be one piece full height 12 gauge channel formed and tapped for hinges.
 - 7. Both top and bottom of doors to receive 16 gauge inverted closure channels.
 - 8. Door beveled 1/8" in 21" at lock edge only.
- B. Interior Doors: Curries Mfg. 707N**
- 1. Face sheets shall be of 18 gauge steel.
 - 2. Internal Stiffeners:
 - a. Reinforce, stiffen, insulate and sound deaden with a solid slab of expanded poly styrene foam permanently bonded to the inside of each face skin.
 - b. Both lock and hinge rail edge of the door shall be welded, filled and ground smooth the full height of the door (707N).
 - 3. Lock rail to be one piece full height 14 gauge channel.
 - 4. Hinge rail to be one piece full height 14 gauge channel formed and tapped for hinges.
 - 5. Both top and bottom of doors to receive 16 gauge inverted closure channels.
 - 6. Doors beveled 1/8" x 2' at lock edge only.

7. Steel Frames

A. General:

1. **Door Silencers:** Except on weatherstripped frames, drill stops to receive two silencers on strike jambs of single-swing frames and two silencers on heads of double-swing frames.
 - a. Manufacturer's "stick on" silencers will not be acceptable in lieu of drilled type.
 2. **Plaster Guards:** Proved 26 gauge steel plaster guards or mortar boxes, welded to frame, at back of finish hardware cutouts where mortar or other materials might obstruct hardware operation.
 3. **Anchors:**
 - a. Provide an anchor at each jamb for each 2' - 6" of door height or fraction thereof.
 - b. Vary anchor types to provide positive fastening to adjacent construction.
 - c. Secure a metal clip angle at bottom of each jamb member for anchoring to floor, with a minimum of 2 fasteners.
 4. **Stops and Trims:** Applied stops shall be formed of 18 gauge steel, corners made to a close neat fit, and secured at 12" intervals with countersunk sheet metal screws.
- B. Exterior Door and Relite Frames:**
1. 14 gauge galvanized steel.
 2. Mitered corners - welding construction.
- C. Interior Door Frames:**
1. 16 gauge steel.
 2. Mitered corners - knock down construction for field assembly.
- D. Interior Relite Frames:**
1. 16 gauge steel.
 2. Mitered butted corners - welded construction.
- E. Fabrication**
1. Accurately form and cut mitered corners of welded type frames. Weld on inside surfaces. Grind welded joints to smooth uniform finish.

2. Accurately form interlocking joints of knocked down frames to maintain alignment of parts when field assembled.
3. Accurately cope and securely weld butt joints of mullions of glazed lights. Grind welded joints to smooth uniform finish.
4. Provide removable mullions for double doors. Reinforce head sections where mullions occur. Removable mullions may be supplied in Section 08700 finish hardware if specified that way.
5. Fill surface depressions of hollow metal frames with metallic paste filler and grind to smooth finish.
6. All frames shall receive a factory baked-on coat of rust-inhibitive primer.
7. Touch up areas where factory coating has been removed due to sanding, welding, or handling.

8. **Delivery, Storage, and Handling**

- A. Deliver, store, and handle hollow metal work in a manner to prevent damage and deterioration and in accord with any special storage and handling requirements or manufacturer.
- B. Provide packaging such as cardboard or other containers, separators, banding spreaders, and paper wrappings to protect hollow metal items.
- C. Store doors upright, in a protected dry area, at least 1" or more off the ground or floor and at least 1/4" between individual pieces.

9. **Inspection**

- A. **Installer must examine** substrate and conditions under which steel doors and frames are to be installed and must notify Contractor in writing of any conditions detrimental to proper and timely completion of work. Do not proceed with work until unsatisfactory conditions have been corrected in manner acceptable to installer.

10. **Installation**

General: Install standard steel doors, frames and accessories in accordance with final shop drawings and manufacturer's data, and as herein specified.

Placing frames: Comply with provisions of SDI-105 "Recommended Erection Instruction for Steel Frames", unless otherwise indicated.

- A. In masonry construction, locate three wall anchors per jamb at hinge and strict levels. Building-in of anchors and grouting of frames is specified in Division 4.
- B. At in-place concrete or masonry construction, set frames and secure to adjacent construction with machine screws and masonry anchorage devices.
- C. Install fire-rated frames in accordance with NFPA Standard No. 80.
- D. In metal stud partitions, install at least three wall anchors per jamb at hinge and strict levels. In closed steel stud partitions, attach wall anchors to studs with tapping screws. Provide base anchors for all frames more than 3' - 0" wide. Attach base anchor to floor with power tool.

Door Installation:

- A. Fit hollow metal doors accurately in frames, within clearances specified in SDI-100.
- B. Place fire-rated doors with clearances as specified in NFPA Standard No. 80.

11. Adjust and Clean

Prime Coat Touch UP: Immediately after erection, sand smooth any rusted or damaged areas of prime coat and apply touch-up of compatible air-drying primer.

Final Adjustments: Check and readjust operating finish hardware items, leaving steel doors and frames undamaged and in complete and proper operating condition.

08111 STEEL DOORS & FRAMES

PART 1 GENERAL

No wood or aluminum doors.

Vertical edges shall join the face sheets by a continuous weld extending the full height of the door. Welds are to be ground, filled and dressed smooth to make them invisible and provide a smooth flush surface.

1.01 QUALITY ASSURANCE

- A. Conform to requirements of SDI-100 and NAAMM.

- B. Fire rated door and frame construction: Conform to UL 10B. Fabricate fire rated assemblies in accordance with requirements of Underwriter's Laboratories Inc. (UL).**
- C. Installed frame and door assembly: Conform to NFPA.**
- D. Provide rated double doors tested and approved without astragals.**

1.02 SUBMITTALS

- A. Indicate frame configuration, anchor types and spacing, location of cutouts for hardware, reinforcement, and finish.**
- B. Indicate door elevations, internal reinforcement, closure method, insulation, and cutouts for glazing.**
- C. Submit manufacturer's certification that insulated door and frame assemblies proposed have been tested and meet or exceed requirements of SDI-113.**

1.03 DELIVERY, STORAGE AND HANDLING

- A. Protect products.**
- B. Provide packaging such as cardboard or other containers, separators, banding spreaders, and paper wrappings to protect hollow metal items. Protect doors and frames with resilient packaging sealed with heat shrunk plastic.**
- C. Break seal at site to permit ventilation.**
- D. Deliver, store and handle hollow metal work in manner to prevent damage and deterioration and in accord with any special storage and handling requirements of manufacturer.**
- E. Store doors upright, in a protected dry area, at least 1 inch or more off the ground or floor and at least 1 inch between individual pieces.**

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Doors and Frames: Following products are for general reference only and are subject to compliance with specified requirements.**
- B. Doors: Curriers; Amweld; CECO; Steelcraft.**

2.02 DOORS AND FRAMES

- A. Exterior Doors: SDI-100 Grade III model 4, NAAMM 16 ga. minimum face thickness, galvanized, G60 coating designation in accordance with ASTM A525, and insulated.**
- B. Interior Doors: SDI-100 Grade II Model 4, NAAMM 18 ga. minimum face thickness.**
- C. Sound Door System: Provide perimeter gaskets, thresholds and hardware on door schedule.**
- D. Exterior and Vestibule Frames: 14 ga. galvanized, G60 coating designation.**
- E. Interior Frames: 16 ga. galvanized for opening width less than 40 in.; 14 ga. galvanized for 40 in. opening width and over.**

2.03 DOOR CORE

- A. Exterior Doors:**
 - 1. Core: Polystyrene or polyurethane foam.**
 - 2. Maximum "U" factor: .014**
- B. Interior Doors:**
 - 1. Core: Polystyrene or polyurethane foam where acceptable for rated and non-rated doors, except provide mineral fiberboard cores where required for fire rating.**

2.04 ACCESSORIES

- A. Metal Filler Panels: SDI-100 Grade III Model 2, 16 ga. minimum face thickness, 1-3/8 in. panel thickness, galvanized to G60 coating designation in accordance with ASTM A525, with Polystyrene or polyurethane foam core.**
- B. Rubber Silencers: Products of door manufacturer, Glynn Johnson, Builders Brass, Quality, Ives, or Russwin.**
 - 1. Provide three for each single door frame; two for each pair of door frames without mullion; and three for each door in a pair of doors frame with a mullion.**
 - 2. Type: Removable, suitable for metal frames, similar and equal to Glynn Johnson GJ64.**
 - 3. Install prior to grouting frames, or make provisions to accommodate installation of silencers.**

- C. **Filler Panel and Applied Glazing Stops:** Rolled steel channel shape, 18 ga. , mitered corners made to a close neat fit; secured with countersunk tamperproof sheet metal screws at minimum 12 in. intervals at glass lites, secured with countersunk style tamperproof sheet metal screws at minimum 6 in. intervals at filler panels. Provide stops with UL label in rated doors and frames.
- D. **Grout Fill:** Frames grouted in place. Frames grouted before installation: Gypsum type, non-corrosive, suitable for conditions of use.
- E. **Exposed Fasteners:** Unless otherwise indicated, provide countersunk flat phillips heads for exposed screws and bolts.
- F. **Provide anchor types as required for positive fastening to adjacent construction and to comply with scheduled fire label requirements.**

2.05 PROTECTIVE COATINGS

- A. **Primer:** Manufacturer's standard baked-on primer, suitable for finish paint specified.
- B. **Prime inside of frames to be grout filled with asphaltic coating.**

2.06 FABRICATION

- A. **Fabricate frames as follows:**
 - 1. **Exterior frames shall be thermal break type, fabricated with closed cell polyethylene foam, polyvinyl chloride, or other thermal barrier material standard with manufacturer between interior and exterior frame surfaces. Frame connection between jamb and head shall be fully welded, ground smooth and galvanizing touch-up. Frames shall be prepared for plate and pipe or butterfly existing opening type anchors and interior of frame filled with polyurethane foam insulation.**
 - 2. **Fabricate galvanized frames at interior unit masonry as welded unit type. Frame connection between jamb and head shall be fully welded and seamless. Accurately cope and securely weld butt joints of mullions of glazed lights. Grind welded joints to smooth uniform finish. Provide with 4 in. face at head as required for masonry wall coursing.**
 - 3. **Fabricate frames at in-place interior unit masonry as knocked-down mitered type. Accurately form interlocking joints of knocked down frames to maintain alignment of parts when field assembled. Frame connection between jamb and head shall be setup, spot welded and grouted before installation. Dimple**

frames for filling of anchor points with appropriate filler. Size frame dimples to accommodate flat head bolts without grinding, and for filling of anchor points to cover bolt heads 1/16 in. minimum and flush with frame. Fill surface depressions of hollow metal frames with metallic paste filler and grind to smooth finish. Frames shall be prepared for plate and pipe or butterfly existing opening type anchors as required for rated frame installation.

4. Fabricate frames at gypsum wallboard partitions as drywall slip-on type, except frames with sidelights shall be welded unit type.
 - a. Accurately form and cut interlocking joints of knocked down frames to maintain hairline alignment of parts when field assembled.
- B. Fabricate frames and doors with hardware reinforcement plates welded in place. Provide mortar guard boxes, minimum 26 ga.
 1. Hinge reinforcement: Minimum 10 ga.
 2. Closer reinforcement: Minimum 12 ga.
 3. Lock reinforcement: Minimum 14 ga.
 4. Finish Hardware Preparation: Prepare doors and frames to receive mortised and concealed finish hardware in accordance with final finish hardware schedule and templates provided by hardware supplier, surface applied hardware preparations provided with function holes, drilling and tapping to be done in field. Comply with applicable requirements of ANSI A115 for door and frame preparation for hardware.
 5. Locate finish hardware as shown on final shop drawings.
 6. Removable mullions for double doors. Reinforce head sections where mullions occur.
- C. Prepare frame for silencers, three single rubber silencers for single doors on strike side, and two single silencers on frame head at double doors without mullions.
- D. Attach fire rated metal label to each rated frame and door unit where visible when doors are in open position.
 1. Provide labeled frames with integral or applied smoke gaskets in accordance with UBC.

2. Where oversize metal doors and frames are required, provide certification and information required by applicable authorities for approval.
- E. Close top edge of exterior door flush with inverted steel channel closure. Seal joints watertight. Close bottom edge of exterior door with steel channel closure.
- F. Anchor metal filler panels in place and seal with continuous beads of sealant by "interior dry method", to provide waterproof and weathertight installation.
- G. Doors beveled 1/8 in. in 2 in. at lock edge only.

2.07 FINISH

- A. Exterior Units: Galvanized, ASTM A525, G60 coating designation. Galvanize after fabrication and hardware preparation. Shop prime.
- B. Interior Units: Shop prime.
 1. Clean, treat, and paint exposed surfaces of steel door and frame units, including galvanized surfaces and back side of frames, with one coat factory applied baked on rust inhibitive primer paint. Touch up areas where factory coating has been removed due to sanding, welding, or handling.
 2. Fill surface depressions with metallic paste filler and grind to smooth uniform finish, ready to receive gloss finish.
- C. Primer: Baked on, compatible with finish coat.

PART 3 EXECUTION

3.01 INSPECTION

- A. Installer must examine substrate and conditions under which steel doors and frames are to be installed and must notify Contractor in writing of any conditions detrimental to proper and timely completion of work.
- B. Do not proceed with work until unsatisfactory conditions have been corrected in manner acceptable to installer.

3.02 INSTALLATION

- A. General: Install steel doors, frames and accessories in accordance with final shop drawings and manufacturer's data, and as herein specified.**
- B. Install frames in Accordance with Drawings, SDI-100, SDI-105, SDI-111, and manufacturer's accepted shop drawings.**
- C. Install non-rated doors in accordance with DHI.**
- D. Coordinate with all construction for anchor placement.**
- E. Coordinate installation of glass and glazing.**
- F. Install stiffening roll formed steel reinforcement channels between two abutting frames. Anchor to structure above and to floor.**
 - 1. Install steel splice plate reinforcement between abutting frames as required for field splicing.**
 - 2. Secure a metal clip angle at bottom of each jamb and permanent mullion member of anchoring to floor, with a minimum of 2 fasteners.**
- G. Frames in drywall: Set "slip-on" type frames in place after drywall installed. Seal frames at sound walls. Provide base anchors for all frames with openings more than 3'-0" wide, plus one compression anchor per jamb for "slip-on" type frames, three anchors per jamb for welded frames, and mullion section base and head anchors. Provide anchors at jambs of borrow lites and sidelites, as above, plus two sill anchors. Attach base anchor to floor with power tool.**
- H. Frames IN CMU: To extent practicable, install concurrently with installation of CMU, with minimum three T-strap, adjustable or wire masonry anchors per jamb. Masonry anchors shall be required for rated frame installation, and a minimum of 7 ga. mild temper steel for wire anchors. In masonry construction, locate three wall anchors per jamb at approximately hinge and strike levels.**
- I. Frames in In-Place CMU:**
 - 1. Anchor frame jambs and head with minimum 3/8 in. concealed bolts into expansion shields or inserts as required for rated frame installation. Provide at jamb at 6 in. from top and bottom and at 26 in. o.c. between, unless otherwise shown. Provide relite jamb anchors as specified above, plus two head and three sill anchors.**
 - 2. Fill head and jambs completely with grout. Fill all anchor dimples with appropriate filler and grind smooth prior to painting. Grind smooth finish cap over grout filling holes prior to painting. If**

frame is grout-filled prior to installation, provide continuous sealant between masonry and frame.

J. Frames in exterior walls shall be completely filled with polyurethane foam insulation.

1. Install exterior and interior vestibule frames with base anchors plus three anchors per jamb, mullion section base and head anchors.

3.02 TOLERANCES

A. Maximum Diagonal Distortion: 1/16 in. measured with straight edge, corner to corner.

1. Fit hollow metal doors accurately in frames, within clearances specified in SDI-100.
2. Place fire-rated doors with clearances specified in NFPA 80.

3.03 ADJUSTING AND CLEANING

A. Adjust hardware for smooth and balanced door movement.

B. Sound Doors:

1. After finish hardware is installed, adjust operating parts for smooth operation and continuous contact between seals and adjoining surfaces.
2. Assure no gaps occur between head, jamb and threshold seals. Visually inspect sound door assemblies in closed position for light leaks to identify potential acoustic leaks. Adjust to achieve light seal.
3. Adjust threshold seal to be in full contact with floor or threshold, as appropriate.

C. Prime Coat Touch Up: Immediately after erection, sand smooth any rusted or damaged areas of prime coat and apply touch-up of compatible air-drying primer.

D. Final Adjustments: Check and readjust operating finish hardware items, leaving steel doors and frames undamaged and in complete and proper operating condition.

08200 WOOD and PLASTIC DOORS

- C We have experienced significant problems with fire rated "solid core" doors because of insufficient rails and stiles for hardware. Once the hardware comes loose, it is nearly impossible to repair. Perhaps additional wood back-up can be specified at points of attachment for butts, door closures and knobs. Special packaging of doors to protect from moisture during shipment will reduce warpage.**

08300 SPECIAL DOORS

- B We have experienced problems with inadequate bracing of overhead door roller channels and have even had doors drop out. Overhead door locks are required and should be keyed to master system. Close attention to heat loss through overhead doors.**
- C We have had problems with mechanical linkage door seals on overhead doors.**
- A Require any roll-up doors on fire alarm system be on stand alone smoke sensor.**
- C Prefer no side coiling doors or grills.**
- B minimum glass in interior doors.**
- B Provide dutch door between storage and chemistry lab. Comply with code requirements.**

08400 ENTRANCES

- A Require removable center mullions for all double doors.**
- D No glass in bottom half of doors and entries; use insulated panels on exterior door.**
- B Grating outside of entry (preferable under overhang) with minimum 1' (?) space for snow mud, below bottom of grate. Galvanized steel preferred with small panels less than 73# to allow for removal. Drain pit. Coordinate with requirements at handicapped entry.**
- B Crosswalk or grating in foyer. Recess slab and provide transition angle.**
- B 4041 LCN for handicapped entries.**
- B Provide expansion joint at thresholds and assure thresholds are wide enough to cover joints and provide transition between floor materials. Thresholds required at transition from carpet to wood gym floor, carpet ceramic tile, etc.**

- D Aluminum door at entries should be avoided (problems with inadequate strength at hinges, short service life and security).
- A Entry grating shall meet UBC requirements (the Borough has received many entry grates that do not meet code requirements).

08500 METAL WINDOWS

- A No paint on metal windows.
- B Require very good thermal break.
- B Foam seal in place works well.
- D Screens for operating windows.

08600 WOOD WINDOWS

- C Prefer no side-sliding windows.
- A Provide good details to prevent penetration of water.
- B Minimize glass area, but provide at least one operable window per classroom. Review code.

08650 SPECIAL WINDOWS

- D Provide relight between chemical storage and lab to provide observation.
- C One way mirror glass at Special Ed. Room.
- A Glass between office and shop areas.
- D Color or tinted exterior windows.

08700 HARDWARE

PART 1 GENERAL

- A Schlage keys required. No exceptions.
- B Provide extra lock sets.

- A Von Dupin panic hardware, no internal or external vertical rod. Model 88 or 99 with removable center mullion is preferred. Consider Von Dupin standard and C. D. 99 Rim device (like at McNeil Canyon).
- A LCN door closure required.
- A Keys shall be sent to KPB Maintenance. Number of sets of keys shall be coordinated with Owner.
- A Provide common key for common room cabinets in lab.
- B Provide locking doors on all lab storage cabinets.

1.01 DESCRIPTION OF WORK

A. Definition:

"Finish Hardware" includes items known commercially as builders hardware which are required for swing, sliding and folding doors, except special types of unique and non-matching hardware specified in the same section as the door and door frame. Type of items in this section include, but are not limited to:

1. Hinges
2. Lock Cylinders and Keys
3. Lock and Latch Sets
4. Exit Devices
5. Closures
6. Miscellaneous Door Control Devices
7. Thresholds
8. Weatherstripping
9. Kick and Mop Plates

B. Related Work Described Elsewhere:

1. Rough Carpentry
2. Finish Carpentry
3. Metal Doors and Frames
4. Wood Doors

1.02 QUALITY ASSURANCE

- A. Fire-Rated Openings: Provide hardware for fire-rated openings in compliance with NFPA. Provide only hardware which has been tested and listed by UL for types and sizes of doors required and complies with requirements of door and door frame labels.

- B. Manufacturers:** Companies specializing in manufacturing door hardware with minimum three years experience. Obtain each kind of hardware (latch and lock sets, hinges, closers, etc.) from only one manufacturer, although several may be indicated as offering products complying with requirements.
- C. Hardware Supplier:** Company specializing in supplying institutional door hardware with two years experience furnishing hardware in the project area, and approved by lock, closer, and exit device manufacturers.
- D. Hardware Supplier Personnel:** Employ an Architectural Hardware Consultant (AHC) who is available, at reasonable times during the course of the work, for consultation about project's hardware requirements, to Owner, Architect and Contractor.
- E. Installer:** Finish hardware shall be installed only by experienced tradesmen, either at the door and frame fabrication plant or at the project site.
- F. Installation Meeting:** Prior to the installation of any hardware except butts, the Hardware Supplier's Architectural Hardware Consultant shall attend one meeting scheduled by the General Contractor with the General Installer, School District inspectors, and School District personnel. The Hardware Supplier shall instruct regarding installation, and supervise the installation of the following:
 - 1. One of each type of exit device.
 - 2. One lockset.
 - 3. One of each type of door closer.
 - 4. One each of any additional type of hardware requested.
- G. Prior to final inspection the Hardware Supplier's Architectural Hardware Consultant shall make detailed inspection of each opening for which hardware was furnished to verify all of the following:**
 - 1. All items of hardware have been installed as required by the Contract Documents.
 - 2. All hardware items have been installed and adjusted in accordance with manufacturer's installation instructions and further that all items have been installed using fasteners or anchors recommended for the conditions of installation.
 - 3. Adequate reinforcing and/or backing has been provided.
 - 4. No conditions exist which would reduce the normal useful life under normal conditions of use of the facility. Upon completion of inspection provide to General Contractor a written report listing any items which do not conform to all of above. The Contractor shall immediately review report and transmit copy to the Architect indicating what corrective measure will be taken and schedule of completion.

1.03 REGULATORY REQUIREMENTS

- A. Hardware for fire-rated openings shall be in compliance with all fire and building codes applicable to the district in which the building is located. Provide only hardware which has been tested and listed by UL for the types and sizes of doors required, and which complies with the requirements of the door and door frame labels.**
- B. Comply with applicable requirements of ANSI A117.1.**

1.04 SUBMITTALS

- A. Submit schedule, shop drawings, product data, and samples.**
 - 1. Hardware Schedule: Submit final hardware schedule in the manner and format specified, complying with the actual construction progress schedule requirements. Hardware schedules are intended for coordination of work.**
- B. Indicate locations and mounting heights of each type of hardware.**
- C. Supply templates to door and frame manufacturer's to enable proper and accurate sizing and cut-outs for hardware. Review door and frame shop drawings to confirm that adequate provisions are made for proper installation of hardware.**
 - 1. Furnish hardware templates to each fabricator of doors, frames, and other work to be factory-prepared for the installation of hardware. Upon Owner's Representative's request, check the shop drawings of such other work, to confirm that adequate provisions are made for the proper installation of hardware.**
- D. Provide product data on specified hardware, including wiring diagrams where applicable. Submit manufacturers technical information for each item of hardware. Include whatever information may be necessary to show compliance with requirements, and include instruction for installation and for maintenance of operating parts and finish. Transmit copy of applicable data to installer.**
- E. Submit samples, if requested, of each exposed hardware category, illustrating style, color, and finish.**
- F. Undamaged, acceptable hardware samples may be incorporated into the Work.**
- G. Furnish keying schedule with keying information as outlined in the DHI pamphlet "Keying Procedures, Systems and Nomenclatures". Furnish two (2) key biting lists.**
- H. Submit manufacturer's parts lists and installation instructions.**

- I. Submit manufacturer's certificate that fire rated hardware has been tested and listed by UL for types and sizes of doors required and complies with requirements of door and frame labels.
- J. **Final Hardware Schedule:** Based on builders hardware indicated, organize hardware schedule into "hardware sets" indicating complete designations of every item required for each door or opening. Opening numbers shall be same as those on Contract Drawings and Schedules. Include the following information:
 - 1. Type, style, function, size, and finish of each hardware item.
 - 2. Name and manufacturer of each item.
 - 3. Fastening and other pertinent information.
 - 4. Location of hardware set cross-referenced to indications of drawings both on floor plans and in door and frame schedule.
 - 5. Explanation of all abbreviations, symbols, codes, etc. contained in the schedule.
- K. **Submittal Sequence:** Submit six (6) schedules at earliest possible date particularly where acceptance of hardware schedule must precede fabrication of other work (e.g., hollow metal frames) which is critical in the project construction schedule. Include with schedule the product data, samples, shop drawings of other work affected by builders hardware, and other information essential to the coordinated review of hardware schedule.

1.05 OPERATIONS AND MAINTENANCE DATA

- A. Submit operation and maintenance data.
- B. Include data on operating hardware, lubrication requirements, and inspection procedures related to preventive maintenance.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Package hardware items individually; label and identify package with door opening code to match hardware schedule.
 - 1. Furnish all finish hardware with each unit clearly marked and numbered in accordance with hardware portion of the door schedule. Basic installation instructions shall be included in the packages.
 - 2. Package each item complete with all necessary pieces and fasteners.
 - 3. Properly wrap and cushion each item to prevent marring or other damage during delivery and storage.
- B. **Delivery and Storage:** Do not deliver finished hardware to the project site until a secure, dry, sheltered area, away from traffic, is available for its storage and protection. Store off the floor with appropriate dunnage and appropriately covered to prevent damage in even of water infiltration. Coordinate hardware with other work. Tag each item or package

separately, with identification related to the final hardware schedule, and include basic installation instruction in the package. Deliver individually packaged hardware items at the proper times to the proper locations (shop or project site) for installation.

- C. Inventory hardware jointly with representatives of the hardware supplier and the hardware installer until each is satisfied that the count is correct.
- D. Deliver keys and cores to KPB Maintenance Department, Atten: Locksmith, 47140 East Poppy Lane, Soldotna, Alaska 99611, by security shipment direct from hardware supplier.
- E. Protect hardware from theft by cataloging and storing in secure area. Provide secure lock-up for hardware delivered to the project, but not yet installed. Control the handling and installation of hardware items which are not immediately replaceable, so that the completion of the work will not be delayed by hardware losses, both before and after installation.

1.07 GUARANTEE

- A. Finish hardware shall be guaranteed against defects in workmanship and operation for a period of one year, backed by a factory guarantee of the hardware manufacturer, except the door closers shall be so guaranteed for five years. No liability shall be assumed by the hardware supplier where faulty operation is due to improper installation or lack of normal maintenance.

1.08 EXTRA STOCK

- A. Furnish the following:
 - 1. Two (2) each locksets
 - 2. Two (2) each door closers
 - 3. Two (2) each exit devices

1.09 MAINTENANCE MATERIALS

- A. Provide special wrenches and tools applicable to each difference or special hardware component.
- B. Provide maintenance tools and accessories supplied by hardware component manufacturer.

PART 2: PRODUCTS

2.01 GENERAL

- A. Symbols used are from the catalogs of:

1. ST Stanley Hardware
2. SC Schlage Lock Co.
3. LCN LCN Door Closures
4. VD Von Duprin
5. BBW Builders Brass Works
6. PE Pemko
7. GJ Glynn Johnson
8. RI Rixon/Firemark
9. CI Cipco Corporation
10. PE Pemko Manufacturing Company
11. BA Baldwin Hardware Manufacturing Corp.

2.02 MANUFACTURERS/HARDWARE REQUIREMENTS

Butts: On exterior door add heavy-duty hinges. Add anti friction bearing to all butts.

A. Butts: Stanley, McKinney, Lawrence, Hager;

1. **Sizes:** For 1-3/4 in. doors:
 - a. Exterior and Vestibule Doors: 5" x 4-1/2"
 - b. Interior Doors up to 36" wide: 4-1/2" x 4-1/2"
 - c. Interior Doors over 36" wide: 5" x 4-1/2"
 - d. Doors wider than 36" must have extra heavy hinges. Width of butts shall be as required to clear projecting trim or structural conditions so that the maximum degree of opening is obtained.
2. **Quantity:** 3 ea. pair up to and including 90 in. in height, 4 ea. over 90 in. in height.
3. For unusual size or weight doors, furnish type, size and quantity recommended by the butt manufacturer.
4. All locked doors to have non-removable pins (NRP set screws in barrel).
5. Where required to clear trim or provide 180 degree swing, provide hinges with sufficient throw.

B. Locksets and Latches: Schlage

1. Design: 06B L Series
2. Backset: 2-3/4in.

C. Hospital Latchsets: McKinney, Sargent

D. Exit Devices: Von Duprin

1. Furnish thru-bolts for doors.

E. Push/Pulls: Von Duprin

F. Cylinders: Schlage

1. Interchangeable cores.

2. Provide spaces and springs, and compression and blocking rings as required.
 3. Provide trim rings.
- G. Closers: LCN
1. Provide door plates, spaces and shoe supports where required.
 2. Provide cold weather fluid at exterior and vestibule doors.
 3. Provide special rust inhibitor at all exterior doors.
 4. Provide special closer mounting as required where interference with weather-strip or sound seals occur.
 5. Furnish thru-bolts for doors.
- H. Coordinators: Glynn Johnson, Builders Brass, Door Controls, Ives.
- I. Stops and Holders: Glynn Johnson, Builders Brass, Quality
1. Where wall stops are not applicable, provide floor stops.
 2. Mount WB33 stops at \pm 6ft. 6 in. unless otherwise directed.
- J. Thresholds: Pemko, Reese, National Guard.
- K. Weather-strip: Pemko, Reese, National Guard, Sealeze.
1. All mullions shall be weather-stripped.
- L. Automatic Flush Bolts: Glynn Johnson, Door Controls, Ives
- M. Kick Plates: Cipco, Building Brass, Quality.
1. Size: 8 in. height by width required to provide 1/4 in. clearance at sides of doors, stops, and weather-strips.
 2. Drill and countersink for screws.
- N. Electronic/Magnetic Hold Opens:
- O. No substitutions for above listed manufacturers will be accepted.

2.03 KEYING

All cabinets in the nurse's office to have cabinet locks.

Each classroom to have at least one locking cabinet to match room key.

- A. **Doors Locks: Grand master keyed including construction keying, and control keying for core removable cylinders.**

Cabinet Locks:

1. Furnish cabinet locks with cylinders, trim rings, keys and all accessories required for complete installation.
2. Furnish number indicated on Drawings.
3. Furnish Schlage 46-002 X 36-031 X 10-052 X 626 cabinet locks.
4. Key cabinet locks to match room door key.

- B. Supply four (4) change keys for each room.**
- C. Supply keys in the following quantities:**
 - 1. Six (6) each master keys.**
 - 2. Four (4) each grand master keys**
 - 3. Six (6) construction master keys**
 - 4. Two (2) control keys**
 - 5. Two (2) Key extractors**
 - 6. Two (2) key biting lists.**
- D. Individual keying shall be as directed by the Owner, and shall be done at the factory. Coordinate keying with existing grand master keying systems as directed by the Owner's Representative. Arrange for availability of Hardware Supplier's Architectural Hardware Consultant to meet with Owner's Representative for developing keying schedule.**
- E. The lock manufacturers shall direct by way of registered mail, all change keys, master keys, and key blanks to Kenai Peninsula Borough Maintenance Dept., Atten: Locksmith, 47140 East Poppy Lane, Soldotna, Alaska 99669.**

2.04 KEY BOX

- A. Key Box: Sheet steel, welded construction, piano hinged door with pin tumbler type lock keyed separately from building system; portable; as manufactured by Telkee, Inc.**
- B. Box Size: 12-1/8 in. wide, 18-1/4 in. high. 5 in. deep.**
- C. Internal hooks for 125 keys.**
- D. Horizontal metal strips for key hook labeling with plastic strip cover over paper labels.**
- E. Finish: Baked enamel finish, standard color.**

PART 3 EXECUTION

3.01 INSPECTION

- A. Verify that doors and frames are ready to receive work and dimensions are as indicated on shop drawings.**
- B. Verify that power supply is available to power operated devices.**
- C. Verify that solid blocking for all wall stops is in place.**

- D. Beginning of installation means acceptance of existing conditions.**

3.02 SURFACE CONDITIONS

- A. Determine that all prior work is complete and surfaces are acceptable for subsequent operations. Promptly notify Owner's Representative of discrepancies and do not proceed until fully resolved.**
- B. Provide solid blocking for all wall stops.**
- C. Fasteners: Check all conditions and use fastening devices as needed to securely anchor all hardware as per manufacturer's published templates. Self-tapping sheet metal screws are not acceptable. All closers and exit devices on wood doors shall be thru-bolted.**

3.03 INSTALLATION

- A. Install hardware in accordance with manufacturer's instructions and requirements of SDI, ANSI/NFPA and BHMA.**
- B. Use the templates provided by hardware item manufacturer.**
 - 1. Whenever cutting and fitting are required to install hardware on surfaces which will be painted or finished at a later time, install each item completely and then remove and store until completion of the finishes. After completion of the finishes reinstall each item.**
 - 2. Do not install surface-mounted items until finishes have been completed.**
- C. Mount units at heights listed in "Recommended Locations for Builder's Hardware; by BHMA.**
- D. Conform to ANSI A117.1 for positioning requirements for the handicapped.**
- E. Fasteners: Check all conditions and use fastening devices as needed to securely anchor all hardware as per manufacturers published templates. Self-tapping sheet metal screws are not acceptable. All closers and exit devices shall be thru-bolted.**
- F. Adjust and check each operating item of hardware to insure proper operations and function of every unit.**

3.04 ADJUSTMENT

- A. Whenever hardware installation is made more than one month prior to acceptance or occupancy, make a final check and adjustment of all hardware items during the week prior to acceptance or occupancy. Clean and lubricate operating items as necessary to restore proper function and**

- finish of hardware and doors. Adjust door control devices to compensate for final operation of heating and ventilation equipment.**
- B. After mechanical systems have been balanced, adjust door closers to comply with the following ANSI requirements:**
- 1. With the door open 70 degrees, the door closer shall be adjusted so that the door will take at least three seconds to move to a point where the leading edge of the door is three inches from latching.**
 - 2. The maximum force for pushing or pulling a door shall be as follows:**
 - a) Fire doors shall have the minimum opening force allowable by the appropriate administrative authority.**
 - b) Other Doors:**

Exterior Hinged Doors: 8.5 lbf

Interior Hinged Doors: 5 lbf
 - c) These forces do not apply to the force required to retract latch bolt or disengage other devices that may hold the door in a closed position.**
- C. Conduct a final check of finish hardware the final week before acceptance, clean and adjust as necessary to provide proper function and operation. Instruct Owner's maintenance personnel in proper operation and maintenance procedures of hardware and finishes.**

09250 GYPSUM WALLBOARD

- A No nailing of G.W.B. allowed, screw attach only.**
- C Not recommended for corridor unless with wainscot.**
- A Not recommended for restrooms or shower rooms, investigate wonder board (ceramic product designed for ceramic tile), with ceramic tile, or thick set tile.**
- B Provide splash protection when used near fountain or sinks, and water resistant G.W.B.**
- A Provide solid framing behind all wall-mounted door stops.**
- A Provide backing at all joints.**

09300 TILE

- A Bonding tile will be by factory recommendations.**
- A Review use of wonder board backing, no waterproof G.W.B. allowed. Special specifications for wonder board max stud spacing 16" o.c., support all joints. Shim wall flush, plumb, and square.**
- B Tile works well in pool and shower rooms (Soldotna High School is good).**
- A Thick set floors in wet areas is a must.**
- B Prefer quarry tile for large kitchen installation. Set in place with epoxy grout.**
- A Shower rooms must have non-slip floors.**
- A Require a five year warranty on all ceramic tile work.**
- A Shower rooms shall have water proof membrane installed on sub-floor.**

09500 ACOUSTICAL TREATMENT

- B Nikiski Elementary gym has good acoustics, as does McNeil Canyon Elementary.**

- B** Where sound treatment is necessary and lay-in ceiling panels are used, walls should extend full height and be sound treated. Caulk around perimeter of all walls.
- B** 2' x 4' lay-in suspended ceilings are preferred for classrooms, offices, etc.
- A** Hallway ceiling heights should be kept sufficiently high in corridors to prevent students from jumping up and hitting the ceiling. A desired ceiling height in junior and senior high schools is at least 11 feet. When ceiling heights must be lower, use impact resistant ceiling materials such as Tectum panels or plywood backed drywall.
- A** Suspended ceilings in corridors are a problem in junior and senior high school if not high enough, 10 foot minimum.
- B** Marlite panels have proved satisfactory where ceiling is exposed to abuse.
- D** Concealed spline ceilings NOT ACCEPTABLE.
- B** Gymnasium walls require special attention. These areas are used for concerts, plays, public meetings and lunch rooms, Carpet over plywood works well, McNeil Canyon Elementary is good.
- A** No suspended ceilings with tile in gyms.
- D** Unbacked, perforated C.A.B., Masonite, etc., not acceptable in gyms. Walls even above 8' are subject to impact by balls, shotputs, and kids.
- C** Prefer no acoustical metal ceilings.

09950 WOOD FLOORING

- B** Prefer hardwood flooring in high school and junior high gymnasiums. Provide proper materials, quality control to prevent "dead" spots. Provide anchored sleeper system.
- A** Special protection during shipment to control moisture content and monitoring of moisture during installation is a must.
- A** Gym floor system must be fully D.I.N. rated.
- D** Steel splined gymnasium flooring not acceptable.
- D** Wood parquet gymnasium flooring.
- A** Vapor barrier and/or seal concrete sub-floors under gym floor.
- A** Installer must be certified by manufacturer.

- A Vented floor systems with vented covering a must, unvented systems not allowed over concrete.**
- A Floor sealer and finish shall be approved water base sealer.**
- A Game line marking paint shall be oil base enamel. Tape not allowed.**
- A Game line layout shall be reviewed by School District Athletic Personnel.**

09650 RESILIENT FLOORING

- B Good for small kitchens; other similar areas. Cove up for continuous base, easy cleaning, eliminates base molding.**
- C No cutback adhesive.**
- A Close control of temperature during installation is required.**
- C No 12" x 12" floor tile in bathrooms or similar areas.**
- B Use sheet vinyl in classrooms around sinks, also in art classrooms, science rooms, dark rooms and other wet work areas.**

09680 CARPETING

- D Plastic insert tracks on floor covering.**
- A 20 lb. tuft bind or woven through the back goods only.**
- A Direct glue down only, release type glue not allowed.**
- A Carpet and installation shall be warranted a minimum of five (5) years.**
- A Carpet shall be run to manufacturer's recommendations. Indicate carpet direction on drawings. No visible seams will be accepted.**
- A Carpet scraps larger than 3' x 3' shall be left at the job site.**
- B Avoid carpet in traffic areas where there are not classrooms.**

09700 SPECIAL FLOORING

- A Sheet vinyl in wet areas, sinks, drinking fountains, etc.**

- B** Prefer rubber tile set in epoxy on multi-use floors in elementary school gyms and hardwood in junior and senior high school gyms. Special attention toward humidity in hardwood floor areas.
- A** Locker rooms are a special case and require special design attention. Non-slip floors in shower areas, pool areas and walkways are essential.
- A** Paint floors in Mechanical Rooms and clear water seal.
- A** Treat all exposed concrete floors with hardener.

09900 PAINTING

Manufacturers:

- B** Fuller O'Brien, Devoe
- B** Devoe Coatings
- B** Glidden Coatings and Resins
- B** Clorox Corporation/Olympic
- B** Minwax
- B** Columbia Paints
- B** Sierra Coatings
- A** Corridors, kitchens, locker rooms, restrooms require special attention; durable finish such as semi-gloss Alkyd heavy duty enamel or epoxy have performed well, very smooth straight wall finishes not preferred due to magnifying of defects, prefer slight texturing or other effects. Kitchen walls must be smooth surface (epoxy paint).
- D** No flat latex paints allowed.
- A** Semi-gloss latex enamel all classrooms.
- A** Hard or semi-gloss finish: All natural wood (lacquer or varathane finish).
- A** All metal door jams to be gloss Alkyd heavy duty enamel.
- A** Kitchens require smooth cleanable finishes.
- A** Tightly control moisture in block prior to painting.
- A** Semi-gloss oil enamel paint minimum quality.
- D** Flat Paints not allowed (except ceilings).
- D** Painted block walls in kitchens not acceptable. Consult A.D.E.C.
- A** Exterior and interior block and concrete walls shall be sealed with block fill.

- D Semi-transparent wood stains not allowed on exteriors. No exterior painting done after September 30th unless 45° air temperature.
- A All exterior wood should be back primed before put on building.
- B One coat of enamel undercoat after blockfill on block walls.
- A All painted metal doors and jambs (pre-primed), two coats Alkyd semi-gloss oil - smooth finish.
- A Exterior wood buildings: If latex is used, wood should have a coat of oil base primer and two coats of 1009 acrylic latex.
- A Galvanized metal ladders and handrails should not be painted. If painted, need to be etched, then primed and epoxy paint used.

09950 WALL COVERINGS

- D Vinyl-coated fabric wall covering, wallpaper and other fabrics -- NOT ACCEPTABLE for corridor walls; tack strips in elementary corridors is good.
- D Wallpaper generally not acceptable.
- B Cork wall covering good for classrooms, but must be dense surface.
- D Open grain "natural" cork surface crumbles and is NOT ACCEPTABLE.
- B Walls in gym should be designed to reduce reverberation and absorb sound. This is very critical when gym is multi-purpose.
- A Interior partitions to receive washable pt gloss or semi-gloss. No flat latex.

10100 CHALKBOARDS and TACKBOARDS

- A Chalkboards should be green or tan, be well lit and have a 25 year manufacturer's warranty. Tackboards should be of a durable, non-disintegrating material. Use modular mounting systems allowing height adjustment and interchange and section replacement of panels.
- B Chalkboards: 4' x 12' standard size, math room 4' x 16' with 4' grid area. Map rails with map hooks on all chalkboards. Also, two flag holders per classroom are required. White chalkboards for felt tip markers desirable in some areas, review with user.
- B Tackboards: Require dense finish, 1/4" cork on 1/2" backing, 4' x 12' standard with aluminum frames.
- C Fastening of boards to wall has occasionally been a problem. Provide adequate backing.
- B Provide tack rails in elementary school corridors.

10150 COMPARTMENTS and CUBICLES

- B Toilet partitions: Should have floor to ceiling braces with extra framing in ceiling for attachment, if required. Top rails should be designed to discourage swinging from them. Extra reinforcement must be provided where access attach. Solid plastic should be used in pool areas.
- D Built-in aquariums are prohibited.

10260 WALL and CORNER GUARDS

- B Prefer corner guards in corridors and other high use areas. Not necessary on C.M.U.

10350 FLAGPOLES

- B Prefer 30' tapered aluminum poles with built-in cord.

10400 IDENTIFYING DEVICES

- B Provide school name on exterior of building.

- B Make sure it is done, standardized; coordinate with Kenai Peninsula Borough School District.**
- B Provide road sign.**

10500 LOCKERS

- A Require well ventilated lockers in locker rooms. Debourgh All American or KPB approved equal.**
- A Check with KPB on hall lockers.**
- B Prefer sloping top lockers in corridors with integral combination lock.**
- B Coordinate with KPBSD on locker types.**
- B Homer high School wardroom lockers are good.**
- A In elementary schools, coat and boot racks are required.**

10600 PARTITIONS

- A Folding partitions: Must be Modernfold, Spacesetter Model 202, or approved equal. Utilize tackable fiberboard covers with vinyl fabric or chalkboards as appropriate. Provide for secure attachment to the floor when closed. No access doors should be used through partitions. Have Contractor expedite track delivery, as it is often a long lead item. Heavy duty rollers on top.**
- B Folding partitions at Redoubt Elementary are good.**
- D Accordion-type folding partitions not acceptable.**
- C We have had poor experience with demountable, folding, portable and otherwise non-permanent partitions. Design carefully and review with KPB. Review bottom bracing system.**

10670 STORAGE SHELVING

- B Coordinate with KPBSD. Identify who furnishes.**

10800 TOILET and BATH ACCESSORIES

- B Specialties: Toilet accessories, shall be Owner furnished, Contractor installed. Coordinate delivery and blocking requirements with School District Purchasing, at telephone number 262-9361. Include:**

1. Soap dispensers
2. Paper towel dispensers
3. Toilet paper holders

Standardize.

- B Metal framed mirrors in all bathrooms. Secure list from KPB School District Purchasing.**

GENERAL NOTE: Very carefully review each piece of equipment to be placed in building (i.e. size, storage, access, power required, water hookup, exhaust, code problems, etc.). Provide list of all Contractor installed equipment to KPBSD Purchasing department.

11100 BANK and VAULT EQUIPMENT

- A All vaults shall be fireproofed for student reference storage.
- D No floor safes.

11180 DARK ROOM EQUIPMENT

- A Eye bubbler required.
- A Coordinate with KPBSD (secure information on standards from School District teaching personnel).
- A Require acid resistant countertops.
- C Prefer no revolving darkroom doors.
- A Adjustable water mixing valve.
- A Ventilation with hood over chemical counter and sinks.

11400 FOOD SERVICE EQUIPMENT

(Add) Coordinate carefully size of kitchen sinks, spray nozzles, dishwasher installation, and size and type of trays to be used. Grease trap must be provided in kitchen, for sinks. Be sure that proper water temperature is available. Have State Department of Health review and approve entire kitchen installation prior to final drawings.

- A Review with Owner, consult with registered food service consultant.
- B Contractor to furnish and install for large facilities.
- B Check with KPBSD for preferred brands of equipment. Check with KPBSD and size doors to fit cafeteria tables or other equipment with special width or height requirements.

- A No built-in tables.**
- A Design adequate exhaust for kitchen equipment (exhaust hoods for all heat producing equipment, exhaust fan for kitchen in general, satellite kitchens in general have experienced uncomfortable heat build up due to inadequate exhaust). Shunt trip breakers and solenoid gas valve.**
- A Install Class 2 exhaust vents in all satellite kitchens.**
- A Garbage disposal and hot water booster.**

11500 ATHLETIC EQUIPMENT

- A Backboards: Coordinate with KPBSD. Contractor furnish and install, keyed switching. Heavy duty worm drive winches. Basketball rims to be safety chained to backboard.**

Nevco Daktronics scoreboards most acceptable. Be sure to provide conduit and wire to scorers location. If curtain is used to divide court, two scoreboards required and three scorer locations. Provide scoreboard protector screen.

- A Gym Dividers: Will go full width or length.**
- B Portable Gymnasium Equipment: Owner supply, Contractor install. Coordinate floor plates and anchors. Prefer Proter, Nissen plates.**
- A Hydrotherapy equipment shall be Contractor furnished and installed with permanent UL approved electrical connection. Ground fault protection.**
- A Require double metal doors for gym equipment storage room. Verify height and width. Will handle largest piece of equipment to be used and stored.**

Require lift for transfer of athletic equipment if facility has upper gym area.

11500 INDUSTRIAL EQUIPMENT

- B Paint spray booths, Contractor furnish and install. Vented to outside.**
- A Require master shunt trip for all rotating shop equipment.**

We have experienced problems with extremely noisy shop dust collectors. Suggest separate room for collector. Coordinate closely dust collection system and shop equipment. Purchase ducts for collection should be under slab if possible. Also provide inlets in floor that doors can be swept into.

- A Shop Equipment: UL approved. Owner specified, Contractor furnish and install. Coordinate size, type, etc. All work benches shall be equipped with given disconnect air hoses and piping.
- A Eye bubblers in all shops.

11600 LABORATORY EQUIPMENT

- A Require master shutoff for gas.
- A Require automatic emergency shower/eyewash station, with floor drain. Provide acid proof drains, tops and sinks. All lab sinks must have trash trap, for easy clean out.
- A Fume hood shall have explosion proof motors, lights and switches. Duct hoods directly to exterior of building.

ART ROOMS

- A Shall have exhaust vented to outside with explosion proof motors, lights, switches, no substitutes. Over kilns.
- A Eye bubblers required.

12300 CABINETS and STORAGE

- A Plastic Laminate cabinets. Prefer Monitor, Fleetwood Harmon (Coastcraft).
- B Wood cabinets. Prefer Kewaunee.
- C We have had some problems with warping of full-length cabinet doors (i.e., 6' ±).

12500 WINDOW TREATMENT

- D No blinds on interior relite windows.
- D No blinds on interior doors.
- B Prefer Levelor blinds or approved equal.
- B Drapes in music rooms as required for acoustics. Contractor furnish and install.

12670 RUGS and MATS

- B Prefer secured grating at exterior of main entries under overhang. High heel shoe proof. Grating must be bolted down. Minimum of 6" pit.

127000 SEATING

- A Prefer steel backed auditorium seats, Owner approval required.
- A Bleachers: Molded plastic seats, closed deck design, electric powered extension and retraction. Installation by factory trained personnel. Locks shall be required with Schlage keys coded to building master. Key on wall outlet must be visible to see bleacher from front.
- D Metal bleachers not acceptable (Interkal not acceptable).

13100 AUDIO METRIC ROOM

- A Wenger, Industrial Acoustic or KPB approved equal.**

13850 SWIMMING POOL

- A Prefer tiled concrete pool, must be thick set tile. Deck must be concrete, broomed finish and not painted.**
- D Aluminum pools not acceptable.**
- A Require maxiflex diving boards. Require KDI Paragon stanchions.**
- A Require Strantrol pool chemical control system.**
- B Prefer dry chlorine system.**
- A Prefer sand filter system.**
- A Lighting must be accessible from pool deck (i.e., not over pool).**
- A No heating controls over pool.**
- A Provide handicapped access to pool, shower rooms, and viewing area. Handicap lift into pool.**
- A Install eye wash and shower in Filtration Room.**
- A Install commercial grade pump in backwash pit to handle solids.**
- A Light fixtures shall be designed to operate in chlorine atmospheres and high ambient temperatures.**
- A All doors must be steel.**
- A Investigate use of sealed pump motors to prevent contamination from D. E., acid, pool water, etc.**
- A Wax sealed sprinkler heads required.**
- B Install waste water filter system, size to filter tank capacity. Install at exit door level, not down in pit.**
- A Require gutter overflow elevation within $\pm 1/8"$. Use stainless steel gutters.**

- B** Prefer large rectangular filter element not multiple bundles with center core collection.
- A** Locate pool chemical control panel in pool manager's office.
- C** Consider adjustable floor in shallow end of the pool to allow for both competition and use by small non-swimming children.
- B** Prefer automatic level control add water device and a manual fill.
- B** Provide good access to filters, floor level, not in sump where custodian stands to add chemicals and filter material.
- A** Top of filter tank must be above pool level.
- A** Prefer plastic PVC Sch. 80 supply and return lines.
- A** Provide 1" hosebib with rack and valve in pool equipment room for filter backwash.
- A** Provide several hosebibs, hoses and pool cleaning equipment storage facilities around the pool deck.
- B** Provide for spectators at meets; possible broadcast capabilities.
- A** In the chlorine storage tank room we want the room heated.
- A** In the chlorine storage tank room we want all the duct to be stainless and the fan housing stainless (exhaust system).
- A** Make-up air to chlorine storage room must come from outside.
- A** Duracon 200 coating on all pool lockers; must be 75% ventable.

14200 ELEVATORS

- B Elevators may be more cost effective than ramps.**
- B When elevators are used, maximize use to permit freight, gym equipment, etc. and not just handicapped students.**
- A Meet all A.D.A. Codes.**

14300 HOISTS and CRANES

- B Where facility has an upper deck, provide hoist for moving athletic equipment back and forth. Keyed switch.**

15010 GENERAL PROVISIONS

- A Asbuilts are essential. This must be spelled out very clearly in the contract documents and must be diligently pursued during construction by Owner, Designer, and Contractor.**
- A Inspection: Mechanical inspection is critical, particularly anything underground, before covering.**
- A Maintenance personnel, mechanical engineer, and mechanical contractor should all be part of the balancing team under the supervision of the mechanical engineer. Mechanical engineer responsible for balancing systems.**
- A Require day/night cycle on all air handlers.**
- A Paint-spray booths and swimming pools should be provided with adequate ventilation. The exhaust vent cannot be near a fresh air supply of H.V.A.C. systems. Swimming pools should be served by a separate mechanical system, inclusive of humidity control and ventilation preventing chlorine odor entering the rest of the school. Do not use aluminum pools. Check with D.E.C.**
- A Need to take extra consideration on air change over in shower rooms and computer rooms.**
- A Need to keep all plumbing vents and generator exhaust away from fresh air intakes.**

15050 BASIC MATERIALS and METHODS

- A No vitriolic piping shall be used for heating pipes or domestic water lines.**
- A Prefer 3' wide pipe chases; 18" too small, provide lockable, keyed to master access door and light with in use lighted switch, located outside of room.**
- A Ball valves preferred in all locations, full flow with stainless steel ball.**
- A Provide ball valves on air bleeders.**
- A Provide 6 oz. canvas jacket on ductwork and pipe in all mechanical rooms over insulation.**
- A Use only copper pipes for domestic water supply; type L or better.**
- A Prefer Powers show mixing valve.**

- B** Threaded pipe is acceptable up to 2", flanged on larger to facilitate replacement.
- A** Circulating pumps to be Grundfos.
- D** Foil-backed all purpose insulation jacket not allowed.

15300 WASTEWATER TREATMENT and DISPOSAL

- C** Prefer no solenoid valves on high pressure lines, unless shock arresters are installed.
- A** Provide adequate floor drains in mechanical rooms, generator rooms, boiler rooms. Would like floor sinks in boiler rooms.
- A** Install floor sinks in Boiler Room near boiler relief valves. Install utility sink in Boiler Room.
- A** Provide grease traps for all kitchens.
- B** Prefer two-compartment septic tanks, steel or concrete tanks acceptable. Size for expansions.
- A** Locate septic system to allow for pumping; future expansion.
- B** Leach areas. Prefer deep absorption trench in most cases.

15400 PLUMBING

- A** Provide full backing for wall-hung plumbing fixtures (bond beam in CMU, (2) 2 x 12 in frame wall, etc.).
- B** Cleanouts must be properly placed and capped. One cleanout within 3" of outside building marked with 4" x 4", 5 feet above ground with base buried minimum 3'. LOCATE ON ASBUILT.
- A** Isolation valves shall be provided for each plumbing group, individual sinks, water heaters, heating zones, shower columns. All valves shall be full flow ball valves with stainless steel ball.
- A** Exterior cleanouts shall not have concrete poured directly around stand pipe or cap.
- A** Interior cleanouts shall not be covered with continuous runs of finished flooring (i.e. carpet, sheet vinyl).

- A Wash fountains: Prefer Acorne stainless steel with foot valve. Match heights to users. Plastic cowling not acceptable.**
- B Provide air exhaust to all shop benches, and provide quick disconnect couplings on all air outlets.**
- A Review installation of all kitchen equipment closely, with mechanical, verify complete dishwashing system with KPBSD (i.e. tray size, water temperature required, special spray nozzle, number of tubs in sink, water booster heater, etc.).**
- A Provide plastic or pyrex traps in science rooms, not lead. Provide trash trap on science and art classroom sinks with easy access for cleaning.**
- A Master gas and water shut-off required for science room, and overhead sign indicating location.**
- A Drinking fountains to be American Standard or Haws.**
- A Provide vacuum breakers for all hosebibs in kitchen, janitor rooms, etc.**
- A Use Sloan or Zern flush valves with exposed body on toilets and urinals. No exceptions.**
- A No Delaney flush valves.**
- A Require recessed drinking fountains in adjoining gym area. American Standard or Haws, bubblers to be provided along with sink in all elementary classrooms. Push button.**
- A Provide flow restrictors on showers. Provide timers on all shower heads.**
- A Provide clean out manhole on domestic hot water tank, also room to pull heat exchanger coil. Domestic hot water tank should be concrete or glass lined.**
- A Provide floor sinks in Mechanical Room and Generator Room.**
- A Heating and/or domestic piping shall not be placed under concrete slabs.**
- A Construct three foot wide pipe chases wherever possible.**
- A All restrooms, dressing rooms, electrical, boiler, and mechanical rooms should have floor drains.**
- B Prefer boiler heat exchanger on domestic hot water heaters. Access manhole required for maintenance and cleaning.**
- A Prefer separate check valve on cold water side before mixing valves (prevents potential hot water flow to cold water line).**

- A No balancing valves used as shut off valves.
- A Globe valves should be provided for boiler make up water, not gate valves.
- A When not required for handicapped, want Delta 2523 for lavs, and avoid goose neck faucets in rooms because of breakage.

15500 FIRE PROTECTION

- A Provide ABC Fire Extinguishers, 10 pound minimum (water-only not acceptable).
- A BC for kitchen with dry chemical fire retardant.
- B Provide fire blankets in Home Ec. and Auto Shops (similar to Soldotna High School).
- A Sprinkler heads located in chlorine atmosphere must be dipped in wax.
- D Grinnell sprinkler systems not acceptable. Parts malfunction, lack of quality performance on past projects (KCHS was a problem).
- A Provide smoke detectors for supply and return air ducts. Connect to shut down fans and trip fire alarm. Also connect fire alarm to shut down fans.
- A Kitchen hood extinguisher systems shall be dry chemical type with a remote pull station connect to fire alarm panel. Place valves and parts requiring service or testing in easily accessible locations.

15600 POWER or HEAT GENERATION

- A Provide outside access to Boiler Room and Generator Room for equipment replacement and maintenance. Should be on ground floor.
- A Burners: Gordon Piat very desirable.
- A Use natural gas where available.
- A Ground level double wall storage tanks shall be properly diked for fuel spills.
- A Provide day tanks for burners, especially in penthouse. Install return line with check valve from burner to day tank. Size return line from day tank to main tank to handle volume of supply line. Use of teflon tape prohibited on all natural gas and fuel oil systems.

- A Size of day tank shall be large enough to supply boilers with one (1) hour running time at high fire with both boilers running and in no case shall be less than 25 gallons.**
- A Do not skimp on space in Boiler Room, allow room to clean tubes and remove and replace equipment. An overhead traveling block may be appreciated.**
- D Boilers: Oil-fired Hydrotherm boilers not acceptable. Weil McLain is preferred.**
- B Fire tubed boilers preferred.**
- B Prefer large boilers able to handle 80% to 65% - 70% maximum load each. Prefer no modular boilers for large installations.**
- A Circulating pumps to be Grundfos.**
- A Provide oil level indicators on fuel tanks.**
- A Very Important: Boiler headers shall be quipped with a 1-1/2" tee and valve for hookup of portable emergence boiler.**
- D Slab heat systems not to be used.**
- A Floor sinks shall be placed in Boiler Rooms close to pumps, safety valves, and clean outs.**
- A Boilers: Up to 1.5 million BTU cast iron sectionals. Fire tube for oil fired installations. Prefer Weil McLain. Above 1.5 million BTU Scotch Marine. Prefer Kewanee, Burnham. No Cleaver Brooks.**
- A Specify low water cutoff on all boilers. Prefer float type MacDonald Miller No. 63.**
- D No electronic low water cutoffs.**
- D Glycol. Not to be used unless absolutely necessary.**

15800 AIR DISTRIBUTION

- B Prefer some hot water baseboard heat in facilities. This works better for emergency power, can run hot water circulating pumps when can not run large fans. 100% forced air results in cold spots because of short circuits.**
- A All perimeter rooms in a building shall have baseboard heat where possible.**
- A Provide adequate room to service and maintain air handling units (pull coils and fan).**

- B Prefer constant volume air systems.**
- A Air Handling Units: Pace only/Logic Air.**
- A Provide throw-away type air filters with two sets of filters in base bid.**
- A Provide for several spare access panels with locking doors to be installed in G.W.B. or C.M.U., located by field representative.**
- A Provide extra ventilation in computer rooms and all shower rooms.**
- B Convector covers: Slope or provide other solution to students sitting on them. Provide extra heavy duty covers and rigid attachment. Paint in field.**
- C Exterior vents, ducts: Problems with snow drifting and entering system, especially flush-mounted wall vents, roof top intake needs to be high enough to prevent snow blockage.**
- A Provide ball valves on automatic air bleed valves on heating system.**
- C Noisy unit ventilators are very irritating, avoid use of unit heaters in classrooms if possible, or provide sound dampening. Prefer large air handling system.**
- A Roof vents, exhaust and supply are required to be extended 4' above roof.**

15900 CONTROLS and INSTRUMENTATION

- A Use KISS method for control systems. Maintenance must be simple and parts available.**
- A Automatic controls must be used judiciously and purpose clearly marked.**
- A Provide blinking warning light on roof with mechanical systems tied in. Light comes on when building temperature drops below 50° F. Investigate automatic telephone dialer also. Required on remote facilities.**
- A Prefer pneumatic heating controls. On DDC controls, end drive device shall be pneumatic.**
- B Thermostats should not be accessible to students and covered if accessible, Unigard or equal.**
- B Prefer Honeywell boiler controls (better service and maintenance, though others have been improving).**
- A Pneumatic Controls: Prefer Honeywell, Johnson, No Robert Shaw. DDC Controls - prefer Siemens or Johnson.**
- A Air Compressors: Prefer Devilbiss or Quincy.**

- A Day/night cycle timers on heating/ventilating system, with bypass timers on each zone.**
- A Freeze controls for heating coils that have outside air duct to them. Prefer selectable automatic reset and manual reset.**
- A Provide seven day clock that are programmable, that can be programmed for the year, 365 day with holiday programming.**

16000 GENERAL PROVISIONS

- A We have experienced problems with safe wiring of therapeutic pools. If conduit is provided then make connection under contract, ground fault protection a must.**

16100 BASIC MATERIALS and METHODS

Provide spare conduit, minimum 3/4", no 1/2" EMT, pot metal cast/no malleable fittings, for electric power, clock and speaker system, central T.V., and fire alarm system, etc., terminate in entries or at other locations where future additions or improvements might take place. Provide adequate conduit for future expansion. Special attention to present and future computer use and cable T.V.

- B Square D panel boards with bolt on breaker. Provide 50% general over required capacity. Specify in basic bid with plus or minus alternate for other manufacturers or equal. Surge protected panel - provided for computer outlets.**
- A Provide main disconnect for each facility. Maximum amperage on each disconnect limited to 800 amps. No solid wire allowed.**
- D Floor mounted monument type outlets not acceptable. Provide recessed only with closeable lids and corrosion protection for boxes. Metal lids only.**
- A Do not skimp on outlets. (Two to three, 20 amp circuits per classroom).**
- A Plug mold above base cabinets works well (2 circuit plug mold).**
- A Review outlet. Lay out on a room-by-room basis with user group.**
- A Floor boxes to be concealed service or stage pocket style. No floor outlets.**
- A Use steel electrical cover plates in corridors, gyms, multi-purpose rooms and other areas subject to abuse or impact.**
- A Emergency/Night Lights: BAS (Building Automation System). For buildings not used on a 24-hour per day basis automatic control of corridor emergency/night lights should be considered to allow the corridors to be "blacked out" during unoccupied hours for energy and equipment wear savings, and so that intruders do not have light to make their way around the building. These lights should be switched back on automatically whenever the building is scheduled for occupancy or when a security or fire alarm is received. Control of emergency/night lights may be accomplished by providing a lighting contactor adjacent to the electrical panel presently feeding these circuits. The existing**

circuits should be re-routed through the contactor which in turn is controlled by the time clock.

- A Site Lighting:** Site lighting should be shut down under program control late at night for the following reasons: *(Again, in the summer outside lights rarely come on, if but for a few hours. In the winter months, we need all the light we can get around the building. We feel it cuts down on intruders and vandalism. In many schools, we find it better to by-pass the time clock.)*

1. To provide a "blackout" site to discourage people from loitering on the site during unauthorized hours. Exterior lighting shall be easily accessed, maintained and replaced.
2. To reduce electrical energy consumption.
3. To extend the life of equipment by reducing use by approximately 50% per year.
4. To reduce the public's perception of waste.

Automatic control of site lighting by the PLC lights to be switched on whenever a fire alarm is received at night. Control of site lighting by the PLC is accomplished by interfacing the existing site lighting contactors or low voltage relays to the system. All exterior/underground shall be in rigid conduit, a must, with ground polled.

- A Utility Monitoring:** The following items dealing with utility services (electric, gas) shall be monitored:

1. Electrical consumption and demand.
2. Natural gas consumption.

Electrical consumption and demand shall be monitored via a meter pulse device. Installation of the meter shall be coordinated with the appropriate utility.

Natural gas consumption shall be monitored by a retrofit pulse meter provided by the appropriate utility.

16200 POWER GENERATION

- A** All facilities shall have standby power generation equipment. Fuel shall be diesel, unless otherwise required. Gasoline not acceptable. Tank heater on generators, automatic fill day tank, detail exhaust and allow large enough opening and access for replacement of entire unit. Require automatic transfer switch. Batter float charger. In unheated areas, block heater should be connected to heat lower block engine oil as well.

- A Main Service: Allow for 50% future expansion, and design for minimum number of meters, so as to take advantage of demand use rates. Main service not to exceed 800 amps, if more power is needed use multiple disconnects.
- B Prefer underground service in rigid conduit from property line.
- A Phase failure for all mechanical.
- A 30 amp GFCI, Hose, Septic at Camp Ground for school host at two locations. These can and should be locations the School District has picked out in conjunction with the Maintenance Dept.

16500 LIGHTING

- A Provide a battery pack emergency light in Generator Room, Mechanical Room, Kitchen, Office, Boiler Room and any interior room with no exterior windows.
- B Provide florescent fixture in Generator Room, Mechanical Room, Boiler Room, and Kitchen. Connect to "E" panel.
- B Provide simple but adequate lighting in crawl spaces, pipe chases, utilidors. In these areas a lighted switch that indicates when lights are on is desired, outside of room.
- B Gym lights (cord & plug - safety chained), exit lights in gym, outside lights and outside speakers, and emergency lights need "Lexan" guards.
- C Use of controlled dimmer lights (Lutron Palsar) (not recommended).
- A Provide timer or other control to minimize power wastage of all outdoor lighting with special attention to skating rink lights and tennis court lights. (Three hour timer).
- A Investigate alternative switching of lights and possible use of energy efficient ballast. Separate switching of each bank of lights or half of each bank on separate switch.
- A Require vandal protection for exterior lighting. (Lexan)
- A Standardize fixtures and bulbs whenever possible. By-pin type florescent holders preferred. Push-in pin sockets, not twist in.

16600 SPECIAL SYSTEMS

- A Provide shunt trip switch to shut off all equipment in shops -- ready access. All shop equipment to be U. L. approved.

- A Provide self limiting heat tapes on all roof drains that are exposed to freezing. Pilot light switching.**
- A Provide emergency and standby lights, particularly in pools, locker rooms, toilet rooms, corridors and non-windowed rooms.**
- B Provide override switch in business machines room and computer rooms for security. Surge protection on computer circuits.**
- A Use LED exit lights wherever possible. Otherwise standardize all exit light bulbs. Check with Borough Maintenance.**
- C We have experienced some problems with combined corridor lighting emergency lighting at Seward High School.**

16700 COMMUNICATIONS

- B Standardize where possible. Dukane battery operated clocks. Dukane intercom, MES 350 or Starcall.**
- A Provide conduit installed for future installation of cables for television systems, computer systems, and satellite T.V.**
- B Provide master T. V. antenna equipment in systems. Broadband with single antenna with cables to Library.**
- B Telephone Systems: Coordinate with KPBSD.**
- B Separate broadcasting capabilities needed in gym for two hook-ups.**
- B Review public address systems for athletic fields, swimming pool, gym, auditoriums, with KPBSD. Also should be designed with high noise levels, in mind, to provide adequate coverage to all areas. Phone to athletic fields.**
- B Provide solid state bell system. Phone to athletic fields part of intercom.**
- A Provide battery operated room clocks for all sites. Rauland digital system is good if installed properly.**
- A Interface of existing systems with additions requires extra special attention. In some cases an upgrade of the existing may be required. Provide adequate inspection at end of project to confirm system is complete.**
- B Provide "call" buttons next to light switches as part of intercom system.**
- A Provide provisions for connection of the fire alarm panel into the telephone lines with after-hours automatic dialing feature.**

- A Gym Scoreboards: Standardize, Daktronics or Nevco scoreboards, Install protective nets for scoreboards. Wireless control, athletic field included.**
- A Basketball Backboards: Should have redundant limit switches. Should use momentary gym curtain key switch raising and lowering controls.**
- A Security Alarms: Should have auto-dialers with 4 telephone number dialing capabilities. Should use door switches. Provide motion detectors in office and computer rooms. Provide interior and exterior horn type sounding devices.**
- A Theater Lighting: Manufacturer to provide maintenance training or supply a factory representative to demonstrate systems to Maintenance and users.**
- A Dimmer equipment must be located in dust free atmosphere. Strand equipment.**